

## ***Planning Commission***

**June 13, 2019  
City Hall, Council Chambers  
749 Main Street  
6:30 PM**

For agenda item detail see the Staff Report and other supporting documents included in the complete meeting packet.

**Public Comment will be limited to three (3) minutes per speaker.**

1. Call to Order
2. Roll Call
3. Approval of Agenda
4. Approval of Minutes
  - a. April 11, 2019 minutes
  - b. May 9, 2019 Minutes
5. Public Comment on Items Not on the Agenda
6. New Business – Public Hearing Items
  - a. **Sireno Neighborhood Child Care Center SRU:** This application has been withdrawn
  - b. **Lot 7, Block 4, Colorado Technological Center First Filing (602 Taylor Ave) PUD:** A request for approval of a Planned Unit Development to allow the construction of a 22,500 sf building and associated site improvements. (Resolution 10, Series 2019)
    - Applicant: RVP Architecture
    - Case Manager: Felicity Selvoski, Planner/Historic Preservation
  - c. **Centennial Valley General Development Plan Amendment; Lots 2 and 3, Parcel O, Filing 7:** A request for an amendment to the Centennial Valley General Development Plan concerning allowed uses, heights and densities and other development provisions at 550 S. McCaslin Blvd and 919 W. Dillon Rd. (Resolution 11, Series 2019)
    - Applicant: City of Louisville, Seminole Land Holding, Inc., Centennial Valley Properties I, LLC
    - Case Manager: Rob Zuccaro, Director of Planning and Building Safety

- d. LMC Amendment – Sign Code Update:** A request for approval of an ordinance amending Title 17 of the Louisville Municipal Code regarding sign regulations throughout the City of Louisville (Resolution 12, Series 2019)

  - Applicant: City of Louisville
  - Case Manager: Lisa Ritchie, Senior Planner
7. Planning Commission Comments
8. Staff Comments
9. Items Tentatively Scheduled for the regular meeting July 11, 2019:
  - Speedy Sparkle PUD Amendment
  - Transportation Master Plan
  - 824 South Street SRU
  - 1776 Boxelder PUD
10. Adjourn

***Planning Commission  
Meeting Minutes  
April 11<sup>th</sup>, 2019  
City Hall, Council Chambers  
749 Main Street  
6:30 PM***

**Call to Order** – Chair Brauneis called the meeting to order at 6:30 PM.

**Roll Call** was taken and the following members were present:

Commission Members Present: Steve Brauneis, Chair  
Dietrich Hoefner  
Keaton Howe  
Tom Rice  
Jeff Moline

Commission Members Absent: Debra Williams  
David Hsu, Vice Chair

Staff Members Present: Rob Zuccaro, Dir of Planning & Building Safety  
Lisa Ritchie, Senior Planner  
Amelia Brackett, Planning Clerk

**APPROVAL OF AGENDA**

Howe moved and Moline seconded a motion to approve the April 11<sup>th</sup>, 2019 agenda. Motion passed unanimously by voice vote.

**APPROVAL OF MINUTES**

Rice moved and Moline seconded a motion to approve the March 14<sup>th</sup>, 2019 minutes. Motion passed unanimously by voice vote.

**PUBLIC COMMENTS ON ITEMS NOT ON THE AGENDA**

None.

**DISCUSSION**

**Draft Sign Code**

Ritchie presented the major areas of proposed change to the City's sign code. The goals of the sign code updated were to consolidate the various documents that govern signage, to respond to Supreme Court rulings from 2015 on municipal sign codes, and to bring the sign code in line with reasonable requests that currently require waivers. She summarized feedback from a focus group, an open house, and a survey on Engage Louisville. In general, participants supported marginally larger signs and other possible changes suggested by the review, but the feedback was inconclusive on electronic signs.

***PUD Process***

Brauneis asked about the difference between “consistency” and “compatibility” in the language and for an explanation on color differentiation requirements.

Ritchie replied that the language matched other waiver criteria meant to ensure that the design was appropriate for the site.

Brauneis observed that “appropriate” was a better word than “compatible” to that end.

Rice suggested getting rid of the “consistent” and just leave “compatible” since “consistent” could be read as “the same” or “nearly the same,” which did not seem to be the intent.

Howe asked if the size of the allowable sign would be based on the size of the lot.

Ritchie and Zuccaro responded that the language was meant to help the signs scale up with the size of the building and the size of the lot.

Howe asked if the language on scale would relate to downtown.

Ritchie agreed that the scale of a downtown project would be different than projects elsewhere in the city, so the “scale” would be different.

Brauneis suggested that “appropriate” would be better than “consistent” for this point, as well.

Rice stated that he liked the first criterion, which demanded “excellence” as a benchmark for obtaining a waiver.

Hoefner suggested looking into the overlap among the four criteria with an eye toward condensing them into fewer points since often the Commission reviewed the list of criteria but then decided on a single point so maybe fewer points would be responsive to that.

***Minor Modifications and Master Sign Program***

Moline wondered if the incentive for an increase of up to 10% sign area through the Master Sign Program was sufficient.

Brauneis asked for the criteria for someone to be considered part of the Master Sign Program.

Ritchie replied that the Master Sign Program was an option for places with unique signage needs in specific uses and the bonus was meant to encourage excellence in design.

Rice agreed with Commissioner Moline’s point that the incentive should be greater, but asked for the thinking behind the 10% number.

Ritchie replied that the community was okay with signs that were a little bigger. 10% on height would be a lot since the height allowance was already high, but an increase beyond 10% for area could be acceptable. She suggested that they could increase the percentage or they could scale back on the by-right option and leave the 20% on area or scale back on the by-right signage size with the increase to 20% as the incentive.

Brauneis noted that scaling back the by-right seemed like penalizing people who wanted to be involved in the Master Sign Program.

Zuccaro stated that staff would bring additional information on this issue to the Commission.

### ***Areas in Louisville***

Ritchie presented the different areas in the sign plan: residential, commercial, industrial, mixed-used, and downtown. She noted that the downtown area was experiencing the least changes to signage criteria, since the City did not receive many waiver requests for the downtown area.

### ***Sandwich board signs***

Ritchie asked for feedback on where businesses could put their sandwich boards vis-à-vis the location of their business and allowing sandwich boards outside of downtown.

Rice asked if there were any caps on the total number of sandwich boards and voiced a concern for having too many of them on sidewalks.

Zuccaro replied that the allowances to have a sandwich board away from your storefront would only apply to alley-access businesses and a couple of private pedestrian alleyways downtown. The proposed language did not allow second-story businesses to have sandwich boards. He added that there was no cap on the total number of sandwich boards.

Brauneis thought it was excessive for businesses on Front Street to advertise on Main Street.

Moline asked for the rationale that business owners used to request allowing businesses on other streets to put their signs on Main Street.

Ritchie responded that these businesses largely made the argument that their signs were more effective if they were on Main Street.

Hoefner stated that he was sympathetic to the alley-fronted businesses. While those businesses knew they were going to have to operate in an alley, he liked the character of the alleyways and wanted to help encourage businesses there. He agreed that there should be limitations on where sandwich boards could be.

Rice noted that these could be considered de facto permanent signs even if they had to be taken in every night.

Zuccaro observed that sandwich boards could bring character to an area, but they had to be done right. He asked for commissioner comment on sandwich boards outside of downtown.

Brauneis and Hoefner noted that some existing signs were not of high quality.

Ritchie replied that there were standards for the design of sandwich boards and no plastic boards or letters were permitted.

Rice asked if there was a model community for regulating sandwich boards.

Zuccaro noted that staff had looked into other communities. The proposed language made it explicit how much sidewalk space had to be left unencumbered, what materials the sandwich boards could be, and how far the boards could be from the business in an effort to reduce clutter.

Howe stated that he was sympathetic with the alleyway issue, but also with the tenants who were paying a premium to be on Main Street. He advocated for linking the signs with the businesses spatially, especially since more clutter diluted the ability of other businesses to advertise.

### ***Murals outside of downtown***

Rice suggested having more regulations and standards for murals since murals could be bad.

Ritchie replied that the permitting process would ensure that there would be no commercial elements embedded in the art since that would be regulated under different criteria. Staff did not want to get into regulating artistic design.

Zuccaro noted that the City already allowed murals. The only thing that was changing downtown was the allowed size.

Moline asked if the proposed language would allow someone downtown to do an entire side.

Ritchie replied that someone could cover the sides and the back of their buildings, just not on the front.

Hoefner supported keeping it artistically open and observed that tenants with financial interests in a building would not support a bad mural.

Howe asked if there were a board that could evaluate the murals.

Zuccaro replied that public murals could go through a review process, but private artistic endeavors could not be regulated the same way.

Hoefner noted that RiNo in Denver had a number of cool murals that had helped to put the neighborhood on the map.

### **Flags**

Ritchie described the changes to the flag criteria, since they could no longer be regulated by content. The new criteria included size restrictions and number of flag restrictions.

### **Electronic Message Centers**

Ritchie noted that school signs were exempt from City regulations.

Brauneis stated that he felt the fewer of these the better and noted that they could contribute to residential light pollution.

Hoefner stated that gas stations did not bother him but other types of EMCs should go through a PUD. He did not support anything that flashed or moved through images too quickly.

Brauneis noted that the messaging speed for some of these signs was set at an optimal speed to get messages across to people driving by.

Ritchie stated that there are different regulations for not distracting drivers and it was important to consider who they were trying to create a message for.

Moline appreciated the detail, but he was a little worried that enforcement might be difficult and suggested moving some of the criteria to guidelines.

Ritchie responded that staff could dial back some of the specifics if the Commission decided to keep it as a PUD process only.

Rice stated that keeping it as a PUD only would allow City control while also not trying to write a one-size-fits-all set of criteria.

Zuccaro added that the community feedback was generally not comfortable with promoting these kinds of signs.

Brauneis asked about the gas station and menu board signs.

Zuccaro replied that those kinds of signs would be exempted.

Howe stated that making it different for the downtown area was that it was a disadvantage to a business downtown.

Ritchie replied that EMCs were not allowed downtown as menu boards.

Rice stated that the EMCs did not seem “compatible” with downtown. He agreed with Chair Brauneis that he wanted fewer of these signs, not more.

Zuccaro summarized that the Commission suggested keeping it as a PUD only and cutting back on the specificity in the criteria.

### ***Commercial areas***

Ritchie encouraged the commissioners to continue thinking about signs they liked and didn't like in the area and let staff know over the next few weeks.

Moline asked if it would be possible to know how many signs would be made non-conforming by these updates.

Ritchie replied that it would be very difficult to evaluate all the signs, but anything existing would be grandfathered in and staff anticipated that more signs would be conforming than non-conforming based on these changes.

### ***Downtown***

Brauneis asked for examples of current freestanding signs in Louisville currently.

Zuccaro listed Moxie, the Underground, and the gas station. He explained that freestanding signs might be appropriate for businesses that don't come up to the front property line. He noted that allowing freestanding signs in any case might allow buildings with setbacks of a few feet to add freestanding signs in front of their wall signs.

Rice suggested language offering that applicants could have either a wall sign or a freestanding sign.

### ***Temporary signs***

Rice noted that in commercial buildings that don't fill up, signs for rent or sale are effectively permanent. While he did not like the signs usually, their utility was indisputable.

Moline asked about the permit process.

Ritchie responded that staff would have to make sure that the permit section was not regulating print on temporary signs.

Zuccaro noted that staff had considered regulating changes of copy, especially situations with illumination changes. That would not affect the code, but would probably occur over the counter.

Moline observed that there were a lot of regulations related to illumination.

Richtie replied that those regulations attended to impact on neighbors and dark sky impacts.

### ***BRaD Requests***

Ritchie informed the Commission of the feedback from the BRaD discussion:

- Consider teardrop banners for Grand Openings
- Murals outside of Downtown and remove % restrictions
- Support sandwich boards outside of downtown
- Concern about allowing alley fronting businesses a sandwich board anywhere within the block
- Allow Electronic Message Centers

- Freestanding signs – reduce minimum building size to get the larger size

Brauneis observed that he thought teardrop banners were cheap and easy to use for businesses so they should not be outright banned.

Howe stated that there was some benefit to the teardrop banners for people who are driving and can give businesses the opportunity to advertise in non-pedestrian areas.

Hoefner voiced a concern about high winds and the teardrop banners.

Moline asked for staff's rationale for not allowing teardrop banners.

Zuccaro replied that he did not think the teardrop banners were considered high-quality sign types, but on a very limited basis they could be okay.

Brauneis asked if the 30-day grand opening counted as a "limited basis."

Ritchie noted that there were some areas that had high turnover and would have these signs more often.

Rice liked the definition section and suggested adding "raceway" and "way-finding" to the list.

Moline suggested that in the non-conforming signage language should regulate based on the area of the sign rather than the cost of the sign as a trigger.

Brauneis stated that the update to the Downtown Sign Guidelines a few years ago was meant to foster creativity and that encouraging creativity was a good idea when possible. He did not want signs to look the same here as they do everywhere else.

Moline stated that the graphics in the staff packet and the way the Code was laid out was user-friendly for laypeople in the community.

Ritchie responded to Commissioner Moline's emailed question, explaining that sign area was calculated using one viewpoint. So for a multidimensional sign where you could view multiple sides at once, whatever the largest surface area was visible from one point, that all counted toward your surface area.

Ritchie also addressed Commissioner Moline's other question about the language "enforced by city manager" and stated that that was typical language for enforcement.

Howe asked if there were exceptions for entry points to the city.

Zuccaro replied that the sign code would not address those issues. The consultant for the Small Area Plans designed entry signs for those plans but they had not been formally adopted or approved.

Hoefner suggested making it explicit in the language that the City wanted to encourage creativity and innovation around signs in the PUD process. General agreement from the Commission.

Zuccaro noted that there was aspirational language in the Downtown Sign Guide and thought that adding that kind of language to the new manual was a good idea.

Ritchie stated that the adoption of the sign code was tentatively on the June agenda and she encouraged the commissioners to reach out to staff with their observations over the coming months.

### **2019 Planning Commission Work Plan**

Brauneis noted that some commissioners had requested this discussion.

Zuccaro referred the commissioners to three documents to guide their discussion of the Commission's 2019 work plan: The Strategic Planning Framework, City Program Goals and Objectives, and the City of Louisville Comprehensive Plan. He noted that takeaways from the Commission's work plan would be funneled into the Council's 2020 work plan. He covered the goals from each of the three guiding documents and invited the Commission to address the following discussion points:

- Study session on topics of interest and additional research from staff?
- Explore and propose zoning or subdivision ordinance amendments?
- Explore Comprehensive Plan Amendments?
- Other ideas beyond the proposed workload?

Rice found the prioritization of the various projects appropriate.

Howe wondered how to approach the redevelopment and economic prosperity issues and if the Commission should be considering these issues on the scale of singular projects, like the McCaslin redevelopment, or considering them more broadly across the city?

Zuccaro replied that the Small Area Plans had been an opportunity to consider making changes to encourage development desires in incorporating those into zoning. The McCaslin study allowed the City to do market analysis in a way that they had not done in the Small Area Plans and, as such, the McCaslin area study would be a case study for those broader processes and considerations.

Howe asked who was responsible for pushing issues of economic development currently.

Zuccaro replied that the City had a staff and a committee for economic development and they were tasked with being the liaison between the business community and City Council. If there were concerns that overlapped with zoning then the Planning Commission should be involved in those discussions.

Howe wondered if there should be an additional box on the priorities list that addressed economic prosperity beyond specific area studies.

Brauneis responded that conducting the McCaslin Area Study first would allow for the City to have more information for future projects.

Moline added that there could be a review process of what worked and did not work in the 2013 Comprehensive Plan.

Zuccaro noted that a number of different things drove land use policy, including neighborhood character and fiscal revenue. The Commission could dive into the fiscal model that staff uses, though generally the Planning Commission does not address those issues. However, understanding market trends and projections, as well as City fiscal operations, might be helpful when the Commission is making its decisions.

Howe suggested that studying economic prosperity, vitality, and sustainability be a high priority overall.

Zuccaro asked what the commissioners envisioned the Commission doing in 2019 and 2020 to address that concern.

Hoefner suggested looking at the Code and seeing if there were regulations that were preventing businesses from setting up shop.

Brauneis replied that that would be a daunting process. The Commission could react to studies like the McCaslin Area Study and could apply lessons from that study to other areas.

Moline suggested using economic prosperity as a focus point when the Commission reviewed the 2020 Comprehensive Plan.

Rice observed that the Commission had to focus its energies to headway and the McCaslin area was one of the main needs affecting the city's economic vitality. He asked when the Commission would see the McCaslin study.

Zuccaro replied that staff was aiming for June and for July or August for the Transportation Master Plan.

Hoefner stated that it had been helpful to see the higher-level view. General agreement.

#### **COMMISSIONER COMMENTS**

Moline asked about the status of the southwest corner of South Boulder Road and Highway 42.

Zuccaro replied that staff had worked with Coal Creek Station on the application but had not taken it to Council yet.

#### **STAFF COMMENTS**

None.

Ritchie noted that the Speedy Sparkle was iffy for making it on the May agenda.

- 468 S Arthur Wireless Facility
- Speedy Sparkle PUD Amendment
- Adoption of updated FIRM floodplain maps
- Sireno Neighborhood Child Care Center – SRU

**Adjourn:** Rice made motion to adjourn. Howe seconded. Brauneis adjourned meeting at 8:25 PM.

***Planning Commission  
Meeting Minutes  
May 9<sup>th</sup>, 2019  
City Hall, Council Chambers  
749 Main Street  
6:30 PM***

**Call to Order** – Chair Brauneis called the meeting to order at 6:30 PM.

**Roll Call** was taken and the following members were present:

Commission Members Present: Steve Brauneis, Chair  
David Hsu, Vice Chair  
Keaton Howe  
Jeff Moline  
Debra Williams

Commission Members Absent: Tom Rice  
Dietrich Hoefner

Staff Members Present: Rob Zuccaro, Dir of Planning & Building Safety  
Lisa Ritchie, Senior Planner  
Amelia Brackett, Planning Clerk

**ELECTION OF VICE CHAIR**

Moline volunteered Commissioner Rice for the role of Vice Chair based on his thoughtful review of applications and his consideration of the needs of the community. He added that Commissioner Rice was willing to serve in the role.

Brauneis noted that the election was open to other people in the room and the Commission could decide to postpone given the two absent commissioners.

Williams seconded Commissioner Moline's recommendation. Voice vote. All in favor.

**APPROVAL OF AGENDA**

Williams moved and Hsu seconded a motion to approve the May 9<sup>th</sup>, 2019 agenda. Motion passed unanimously by voice vote.

**APPROVAL OF MINUTES**

Commissioners Hsu and Williams abstained. Quorum was not met, therefore the motion was continued to next month.

**PUBLIC COMMENTS ON ITEMS NOT ON THE AGENDA**

None.

**NEW BUSINESS – PUBLIC HEARING ITEMS**

**Sireno Neighborhood Child Care Center SRU:** A request for approval of a Special Review Use to allow a Neighborhood Child Care Center to provide care for up to 12 children at 224 Front Street (Resolution 8, Series 2019) ***REQUEST TO CONTINUE TO JUNE 13, 2019***

- Applicant: Front Street Child Care, Denise Ehrmann Sireno
- Case Manager: Lisa Ritchie, Senior Planner

Ritchie informed the Commission that staff and the applicant were requesting a continuance to work out additional details.

Moline moved to continue the item until June 13<sup>th</sup>, 2019 and Howe seconded. Voice vote. All in favor.

**LMC Amendment: Floodplain Map Update:** A request for an amendment to Title 17 of the Louisville Municipal Code concerning adoption of updated flood insurance rate maps and penalty provisions for floodplain and zoning regulations (Resolution 9, Series 2019).

- Applicant: City of Louisville
- Case Manager: Rob Zuccaro, Director of Planning and Building Safety

Public notice was met on April 19<sup>th</sup> and April 21<sup>st</sup> as required.

Zuccaro presented the updates to the floodplain map and asked for comments from the Commission on the updated map. The map, which should be much more accurate than previous iterations, will be effective on August 15, 2019 and is based on information from an updated study and survey. The map also consolidates various changes made since 2012. The ordinance applies to the 100-year floodplain, which is the floodplain subject to regulation. The map also includes shading for the Floodway and for areas requiring increased regulation.

Brauneis asked how much land in the 100-year floodplain was privately owned.

Zuccaro responded that a huge part of the floodplain was on the Coal Creek Golf Course. Five years ago, there were over 200 structures in the floodplain and a large part of that was downtown. There was a major drainage project downtown a couple summers ago that took Old Town and Downtown out of the floodplain. At last count, there were 60 structures in the floodplain. Zuccaro noted that with the new map amendment, that number would decrease to a few dozen, though he did not have hard numbers. These changes were based on new mapping technologies and not due to major upstream changes as far as Director Zuccaro was aware.

Brauneis asked what would happen for an owner who was newly counted in the floodplain.

Zuccaro replied that could be a big change, which is why staff have been reaching out to property owners in the floodplain neighborhoods with information. The flood insurance requirement would impact these properties, but it might be a good thing that they have flood insurance since these maps are more accurate.

Howe asked what made these maps more accurate.

Zuccaro replied that they were more accurate because of better surveying and mapping capabilities. He made the distinction between the “floodway,” which is where the water actually flows during a flood and the “floodplain,” was where the water can back up onto a property. There are higher regulatory standards for floodways.

Staff recommends approval of Resolution 9, Series 2019, recommending approval of an ordinance amending LMC Chapter 17.56 concerning adoption of an updated Flood Insurance Study and Flood Insurance Rate Maps, and the addition of reference to penalty provisions.

Hsu asked about Louisville’s flood rating.

Zuccaro explained that less risk meant lower ratings so the rating was not about the quality of preparation necessarily. However, the City got points for doing storm water maintenance and public education on the floodplain.

Hsu asked how the 2013 flood and climate change affected the projections.

Zuccaro replied that his impression was that engineers used a standard model for floodplains based on topographical surveys and historic data that were likely adjusted with new information from recent years.

Moline added that the 2013 flood had gone into the County’s floodplain dataset.

Zuccaro reiterated that he did not know if the updated map included data from the 2013 flood. He added that floods never looked exactly like the projections, because of highly variable issues like trapped debris.

Williams stated that in the Town of Superior the surveyors felt confident in their recent maps because they had more information than ever before. She felt confident that the maps for Louisville used similar data and was much more exact than it was in previous iterations.

Howe asked Director Zuccaro to speak more to the impact on citizens who might forego insurance based on the new map only to have their houses flooded.

Zuccaro replied that the City’s communications did not push insurance information or recommendations, they only informed residents who had to have flood insurance.

Howe asked how many structures were added to the floodplain.

Zuccaro replied that it was fewer than a dozen.

Howe concluded that the floodplain changes could impact citizens significantly.

Williams stated that required flood insurance was pretty cheap. If a resident were outside a floodplain and wanted insurance, it was possible but very expensive. She added that there was a cap to the insurance amount.

Howe asked what the benefits were for shrinking the floodplain map instead of thinking worst-case scenario.

Zuccaro replied that staff and the consultants thought it was a much more accurate map. Those who were previously mandated to get flood insurance may no longer be mandated to do so and, conversely, people who were added to the floodplain would have better information about the danger to their homes and get flood insurance.

Moline added that the City had made a positive change to the floodplain by removing the downtown area from the 100-year floodplain and he congratulated the town for doing that work.

Zuccaro noted that the downtown work had been completed in 2018. He added that if a homeowner were on the edge of the floodplain, he or she could survey the finished floor of the property and have an engineer certify that the floor was out of the floodplain and therefore not be required to pay insurance. He noted that there were few structures according to the new map and that City engineers were looking into options to removing the few structures that were left in the floodplain now.

Williams asked about the floodplain southwest of South Boulder Road and 96<sup>th</sup> Street.

Zuccaro replied that there was a waterway at that location.

Ritchie added that another area in the floodplain, the baseball field, was designed with water storage capacity.

Zuccaro noted that the insurance requirement was only for properties with a federally-backed loan.

Williams asked how the structures in the floodplain went from 200 structures down to 60 and then to approximately 24.

Ritchie stated that along the Coal Creek Corridor a high number of properties were being removed, in addition to the mitigation work downtown from 2018.

Williams asked if the change to the Coal Creek Corridor was due to urban drainage.

Zuccaro replied that that was due to the new map alone.

Howe asked about the update to the penalty provisions.

Zuccaro replied that the penalties themselves were not changing. Colorado Water Conservation Board, an agent of FEMA, reviewed the ordinance and asked for a reference to the penalty provisions in the floodplain chapter.

Brauneis asked for additional questions of staff. Seeing none, he invited commissioner comments.

Howe stated that he guessed he had to rely on the engineers who were making the new map. He thought it important that citizens knew there are no guarantees.

Brauneis responded that it was important to remember that all the old maps were based on old assumptions.

Moline added that these maps were made by people whose job it was to understand flooding. The maps would allow people to understand the risk that was before them when investing in a particular property.

Brauneis reopened public comment for Zuccaro to show the Commission another version of the map to show the number of homes in the Coal Creek area.

Brauneis clarified the meaning of the 100-year flood plain, explaining that in any given year there was a 1% chance of that kind of flood happening, not that it was a flood that would happen every 100 years.

Williams added that the new push was to think in terms of 50-year floodplains. She noted that the map would not change the fact that people living near the floodplain would know that they were living near the floodplain.

Hsu stated that there would never be a determination between a 100-year flood and a 101-year flood and concluded that the risk was pretty low for any liability.

Moline observed that the godfather of the floodplain was a professor at the University of Colorado and that the region had some of the best people in the world working on this problem. He thought that these floodplains were a great public service.

Howe agreed but stated that he did not have the credentials to judge the map.

Hsu replied that the Commission was voting on the process staff undertook to get the map developed, not on the map itself.

Zuccaro gave an overview of the process. He explained that the engineering consultants developed the map and every local jurisdiction had the opportunity to review the study they created. The City also had a certified flood engineer on staff who reviewed the map as well.

Moline moved to approve Resolution 9, Series 2019. Williams seconded. Roll call vote. All in favor. Motion carries.

**468 S Arthur Wireless Facility SRU:** The applicant has withdrawn this application.

#### **COMMISSIONER COMMENTS**

Brauneis thanked Commissioner Hsu for his homework in advance of meetings, his attention to detail, and passion for the subject.

Moline thanked Commissioner Hsu for his detailed eye and stated that he had relied on him for his review on complex items. He was grateful to work with him and get to know him as a friend.

Hsu thanked his fellow Planning Commissioners past and present for donating their time in service of the City. It was nice that the commissioners could have disagreements and start over with each new item. He also thanked staff for their patience answering his questions and working with applicants. He thought that the meetings were getting into the details of these proposals to make sure the City was doing the right thing and make things easier for City Council. He thanked City Council for putting him on the Commission. He observed that the Commission presented the sometimes rare opportunity to see the difference you make, even when you do not always feel that way in other aspects of life.

Williams stated that it was always a better discussion when Commissioner Hsu was involved.

#### **STAFF COMMENTS**

Zuccaro echoed the statements of gratitude for Commissioner Hsu and for everything he had contributed to staff's process.

#### **ITEMS TENTATIVELY SCHEDULED FOR JUNE 13<sup>TH</sup>, 2019**

- Sign Code Update
- 602 Taylor PUD

Ritchie noted that the Speedy Sparkle may not make it on the June agenda.

There were other possible projects on the docket, as well. Staff will be in contact to schedule an overflow meeting if the agenda looks like it will run too long.

**Adjourn:** Hsu made motion to adjourn. Moline seconded. Chair Brauneis adjourned meeting at 7:21 PM.

**ITEM:** PUD-0199-2019: Elixinol, LLC

**PLANNER:** Felicity Selvoski, Planner

**OWNER:** Elixinol, LLC

**REPRESENTATIVE:** Robert Van Pelt  
RVP Architecture, P.C.  
Boulder, CO 80303

**EXISTING ZONING:** I – Industrial

**LOCATION:** 602 Taylor Avenue

**TOTAL SITE AREA:** 1.20 Acres

**REQUEST:** Approval of Resolution No. 10, Series 2019, a request for a Planned Unit Development to allow construction of a 22,500 SF, two-story building and associated site improvements.

**VICINITY MAP:**



**SUMMARY:**

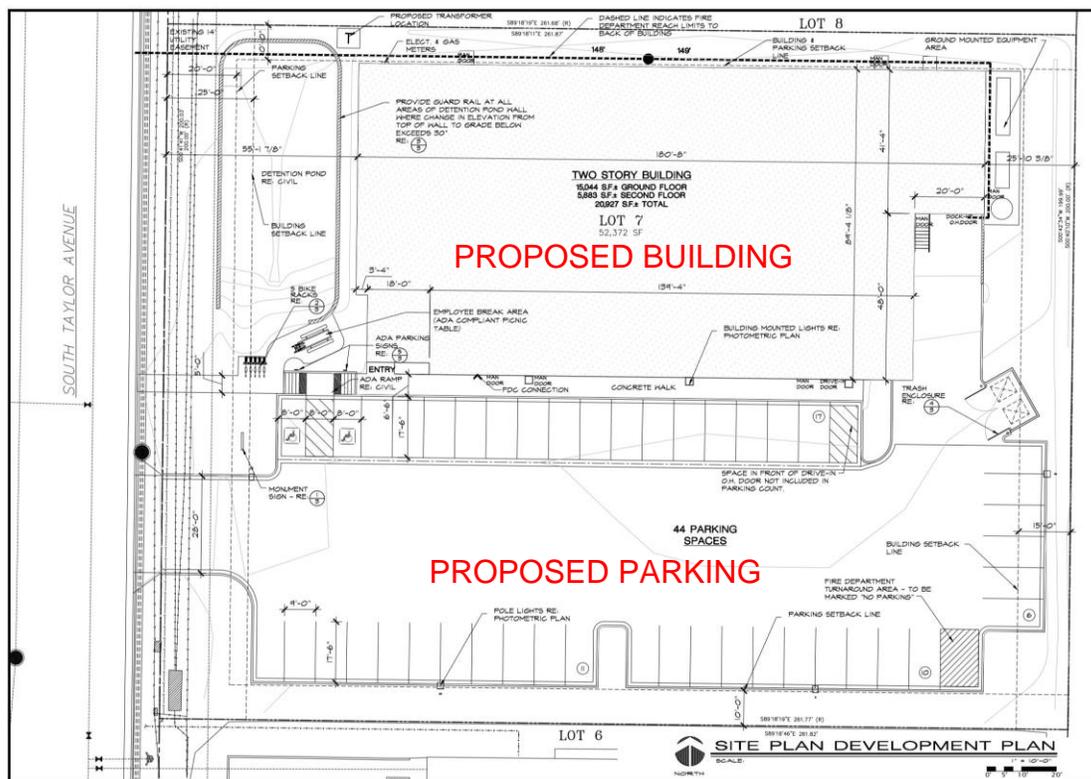
The owner, Elixinol, LLC, represented by applicant, RVP Architecture, requests approval of a Planned Unit Development (PUD) to allow construction of an 22,500 SF, two-story building, landscaping, parking and other site improvements.

The site is located in the Colorado Technology Center (CTC) on S. Taylor Avenue. The property is zoned Industrial (I) and is subject to the Industrial Development Design Standards and Guidelines (IDDSG).

**BACKGROUND:**

The City approved the original plat for the property in 1979 as part of the Colorado Technological Center First Filing subdivision. The property owner, Elixinol, LLC, currently leases approximately 10,000 SF in the building at 638 Taylor, immediately south of the subject property. They are seeking approval of a PUD to approve construction of a 22,500 SF, two-story building at 602 Taylor.

Figure 1: Elixinol Site Plan



**ANALYSIS:**

PUD Amendment

The PUD is subject to the IDDSG and Section 17.28.120 of the Louisville Municipal Code.

*IDDSG: 1. Site Planning*

The application complies with the standards in this section, including all minimum setbacks and building and site orientation standards. The application proposes to locate the detention pond along Taylor Avenue west of the building. The building is located along the north portion of the lot with parking located to the south. The proposal includes one new pedestrian connection to Taylor Avenue, employee gathering areas, and appropriate screening of utilities. The proposal includes an employee entrance on the southwest side of the building. The proposed loading dock is recessed along the east side of the building in the non-public zone, minimizing its appearance. The lot meets the minimum landscape requirements and the standards for site grading in the IDDSG.

*IDDSG: 2. Vehicular Circulation and Parking*

The site is adjacent Taylor Avenue on the west and private property on the south, east, and north. Access is accommodated through one drive aisle to the south of the proposed building. The drive aisle will be 47.5 feet which is wide enough to accommodate trucks and fire access and complies with the IDDSG.

The application includes 44 parking spaces. The proposed development will house office, manufacturing, and warehouse space. Based on the space dedicated to each use, the parking required under the IDDSG is 44 spaces. This proposal meets the required number of parking spaces.

<b>Parking Spaces – By Type</b>	<b>Square Feet</b>	<b>Ratio</b>	<b>Required</b>
Office	3,421 SF	@ 4/1000	13.68
Manufacturing	12,799 SF	@ 2/1000	25.60
Warehouse	4,707 SF	@ 1/1000	4.71
Total			43.99
<b>Parking Spaces – Provided</b>	<b>Proposed Spaces</b>		
Standard	42		
Accessible	2		
Total	44		
Bicycle	5		

*IDDSG: 3. Pedestrian and Bicycle Circulation*

The applicant proposes pedestrian connections and bicycle parking consistent with the standards of the IDDSG. The application includes 5 exterior bicycle parking spaces near the employee entrance. The plans include pedestrian access via sidewalks to the adjacent street and throughout the site.

*IDDSG: 4. Architectural Design*

The PUD provides for appropriate building relationships and compatibility by including landscaping and orientation that minimizes from public view the loading areas of the site. The proposed building is a two story tilt-up concrete structure. The main entry

area will have extensive storefront glazing to add variation to the concrete portions of the building as well as enhance the pedestrian arrival experience. The proposed building height is approximately 30 feet tall with a two-foot parapet and is allowed under the IDDSG. All roof-top mechanical units will be set back a minimum of 25 feet from the edge of the parapet.

*IDDSG: 5. Landscape Design*

The application complies with standards in the IDDSG for perimeter landscaping adjacent to abutting property, parking lot landscaping, and building and loading and service area landscaping.

*IDDSG: 6. Fences and Walls*

The applicant does not propose additional fences or walls.

*IDDSG: 7. Sign Design*

The site plan includes a monument sign facing Taylor Avenue which complies with the regulations in the IDDSG. The PUD does not include a waiver request for wall signage, therefore any future signs will need to comply with the Sign Code unless a PUD amendment is sought.

*IDDSG: 8. Exterior Site Lighting*

Staff finds the application complies with the IDDSG for the lighting design. The application includes wall mounted and pole mounted full cut-off LED light fixtures that will safely light the property.

*Compliance with 17.28.120*

Section 17.28.120 of the Louisville Municipal Code lists 28 criteria for PUDs that must be satisfied or found not applicable in order to approve a PUD. Analysis and staff's recommended finding of each criterion is provided in the attached appendix.

**STAFF RECOMMENDATION:**

Staff recommends approval of Resolution 10 Series 2019 recommending approval of a Planned Unit Development for Lot 7, Block 4, Colorado Technological Center Filing 1.

**ATTACHMENTS:**

1. Resolution No. 10, Series 2019
2. Application Materials
3. PUD Amendment

**APPENDIX: PUD Criteria Analysis – Elixinol PUD**

Criteria 17.28.120 (A)	Finding	Narrative
1. An appropriate relationship to the surrounding area.	Compliant	The use is appropriate for the area and permitted in the Industrial zone district. The site design is consistent with the context of the surrounding area.
2. Circulation in terms of the internal street circulation system, designed for the type of traffic generated, safety, separation from living areas, convenience, access, and noise and exhaust control. Proper circulation in parking areas in terms of safety, convenience, separation and screening.	Compliant	The application provides for adequate and safe internal circulation.
3. Consideration and provision for low and moderate-income housing	Not applicable	The property is zoned Industrial. Residential uses are not allowed.
4. Functional open space in terms of optimum preservation of natural features, including trees and drainage areas, recreation, views, density relief and convenience of function	Compliant	The PUD complies with landscape requirements in the IDDSG.
5. Variety in terms of housing types, densities, facilities and open space	Not applicable	The property is zoned Industrial. Residential uses are not allowed.
6. Privacy in terms of the needs of individuals, families and neighbors	Compliant	The PUD complies with site planning provisions in the IDDSG, assuring appropriate privacy of neighboring properties.
7. Pedestrian and bicycle traffic in terms of safety, separation, convenience, access points of destination and attractiveness	Compliant	The PUD complies with pedestrian and bicycle requirements in the IDDSG, ensuring adequate pedestrian and bicycle access.
8. Building types in terms of appropriateness to density, site relationship and bulk	Compliant	The PUD complies with site planning and building height requirements in the IDDSG, ensuring an appropriate bulk for buildings and relationship to other development in the CTC.
9. Building design in terms of orientation, spacing, materials, color, texture, storage, signs and lighting	Compliant	The PUD complies with the architectural design and site planning requirements in the IDDSG. The design incorporates

		adequate articulation, building materials and site configuration.
10. Landscaping of total site in terms of purpose, such as screening, ornamental types used, and materials used, if any; and maintenance, suitability and effect on the neighborhood	Compliant	The PUD complies with landscape requirements in the IDDSG ensuring adequate screening and compatible landscaping for the CTC.
11. Compliance with all applicable development design standards and guidelines and all applicable regulations pertaining to matters of state interest, as specified in <u>chapter 17.32</u>	Compliant, with waiver	The PUD complies with all applicable development design standards and guidelines.
12. None of the standards for annexation specified in <u>chapter 16.32</u> have been violated	Not applicable	The property was annexed in 1976.
13. Services including utilities, fire and police protection, and other such services are available or can be made available to adequately serve the development specified in the final development plan	Compliant	The Public Works Department and Louisville Fire District reviewed the PUD and meets their requirements.

Criteria 17.28.120 (B)	Finding	Narrative
1. Development shall be in accordance with the adopted elements of the comprehensive development plan of the city, and in accordance with any adopted development design standards and guidelines.	Compliant	The PUD complies with the adopted elements of the comprehensive plan, and the adopted development design standards and guidelines.
2. No structures in a planned unit development shall encroach upon the floodplain. Existing bodies of water and existing stream courses shall not be channelized or altered in a planned unit development plan.	Compliant	The property is not located in a floodplain, nor are there any existing bodies of water in the area.
3. No occupied structure shall be located on ground showing severe subsidence potential without adequate design and study approved specifically by the city.	Compliant	There is no known subsidence on the property.

<p>4. The proposal should utilize and preserve existing vegetation, land forms, waterways, and historical or archeological sites in the best manner possible. Steep slopes and important natural drainage systems shall not be disrupted. How the proposal meets this provision, including an inventory of how existing vegetation is included in the proposal, shall be set forth on the landscape plan submitted to the city.</p>	<p>Compliant</p>	<p>The PUD is appropriate for the context of the existing conditions of the property.</p>
<p>5. Visual relief and variety of visual sitings shall be located within a development in the overall site plan. Such relief shall be accomplished by building placements, shortened or interrupted street vistas, visual access to open space and other methods of design.</p>	<p>Compliant</p>	<p>The PUD complies with site planning requirements in the IDDSG, ensuring proper building placement, vistas and access to open space.</p>
<p>6. Open space within the project shall be located in such a manner as to facilitate pedestrian use and to create an area that is usable and accessible to residents of surrounding developments.</p>	<p>Compliant</p>	<p>The PUD complies with requirements in the IDDSG.</p>
<p>7. Street design should minimize through traffic passing residential units. Suggested standards with respect to paving widths, housing setbacks and landscaping are set forth in public works standards of the city and applicable development design standards and guidelines. The system of streets, including parking lots, shall aid the order and aesthetic quality of the development.</p>	<p>Compliant</p>	<p>The PUD complies with requirements in the IDDSG, ensuring properly designed landscaping adjacent to public streets.</p>
<p>8. There shall exist an internal pedestrian circulation system separate from the vehicular system such that allows access to adjacent parcels as well as to parks, open space or recreation</p>	<p>Compliant</p>	<p>The PUD complies with bicycle and pedestrian requirements in the IDDSG, ensuring adequate pedestrian and bicycle access.</p>

facilities within the development. Pedestrian links to trail systems of the city shall be provided.		
9. The project and development should attempt to incorporate features which reduce the demand for water usage.	Compliant	The PUD proposes minimal use of water.
10. Landscape plans shall attempt to reduce heating and cooling demands of buildings through the selection and placement of landscape materials, paving, vegetation, earth forms, walls, fences, or other materials.	Compliant	The PUD complies with landscape requirements in the IDDSG, providing for shading of parking and pedestrian areas.
11. Proposed developments shall be buffered from collector and arterial streets. Such buffering may be accomplished by earthen berms, landscaping, leafing patterns, and other materials. Entrance islands defining traffic patterns along with landscaping shall be incorporated into entrances to developments.	Compliant	The PUD complies with the requirements of the IDDSG and includes adequate landscaping and buffering from adjacent streets.
12. There shall be encouraged the siting of lot arrangement, building orientation and roof orientation in developments so as to obtain the maximum use of solar energy for heating.	Compliant	The PUD provides unshaded roof structures so that solar energy may be utilized in the future.
13. The overall PUD shall provide a variety of housing types.	Not applicable	Housing is not proposed.
14. Neighborhoods within a PUD shall provide a range of housing size.	Not applicable	Housing is not proposed.
15. Architectural design of buildings shall be compatible in design with the contours of the site, compatible with surrounding designs and neighborhoods, shall promote harmonious transitions and scale in character in areas of different planned uses, and shall contribute to a mix of styles within the city.	Compliant	The PUD proposes architecture that is compatible in design with the contours of the site, with surrounding designs and neighborhoods.

**RESOLUTION NO. 10  
SERIES 2019**

**A RESOLUTION RECOMMENDING APPROVAL OF A REQUEST FOR A FINAL PLANNED UNIT DEVELOPMENT (PUD) TO ALLOW THE CONSTRUCTION OF A NEW 22,500 SQUARE FOOT BUILDING AND ASSOCIATED SITE IMPROVEMENTS FOR THE PROEPRTY AT 602 TAYLOR AVENUE.**

**WHEREAS**, there has been submitted to the Louisville Planning Commission an application for approval of a request for of a final Planned Unit Development (PUD) to allow the construction of a new 22,500 square foot building and associated site improvements for the property at 602 Taylor Avenue; and

**WHEREAS**, the City Staff has reviewed the information submitted and found that, subject to conditions, the application complies with the Louisville zoning and subdivision regulations and other applicable sections of the Louisville Municipal Code; and;

**WHEREAS**, the Planning Commission has considered the application at a duly noticed public hearing on June 13, 2019, where evidence and testimony were entered into the record, including the findings in the Louisville Planning Commission Staff Report dated June 13, 2019.

**NOW THEREFORE, BE IT RESOLVED** that the Planning Commission of the City of Louisville, Colorado does hereby recommend approval of a request for a final Planned Unit Development (PUD) for the construction of a new 22,500 square foot building and associated site improvements for the property at 602 Taylor Avenue.

**PASSED AND ADOPTED** this 13<sup>th</sup> day of June, 2019.

By: \_\_\_\_\_  
Steve Brauneis, Chairperson  
Planning Commission

Attest: \_\_\_\_\_  
Debra Williams, Secretary  
Planning Commission

**LAND USE APPLICATION**

**CASE NO.** \_\_\_\_\_

**APPLICANT INFORMATION**

Firm: RVP Architecture, P.C.  
 Contact: Robert Van Relt  
 Address: 3223 Arapahoe Ave #220  
Boulder, CO 80303  
 Mailing Address: same  
 Telephone: 303-443-5355  
 Fax: -  
 Email: bob@rvparchitecture.com

**OWNER INFORMATION**

Firm: Elixinol, LLC  
 Contact: Gabriel Etteusan  
 Address: 580 Burbank St. Unit J  
Broomfield, CO 80020  
 Mailing Address: same  
 Telephone: 844-804-3504  
 Fax: -  
 Email: gabriel@elixinol.com

**REPRESENTATIVE INFORMATION**

Firm: Same as Applicant  
 Contact: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_  
 Telephone: \_\_\_\_\_  
 Fax: \_\_\_\_\_  
 Email: \_\_\_\_\_

**PROPERTY INFORMATION**

Common Address: 402 Taylor  
 Legal Description: Lot 7 Blk 4  
 Subdivision CTZ First Filing  
 Area: 52,372 Sq. Ft.

**TYPE (S) OF APPLICATION**

- Annexation
- Zoning
- Preliminary Subdivision Plat
- Final Subdivision Plat
- Minor Subdivision Plat
- Preliminary Planned Unit Development (PUD)
- Final PUD
- Amended PUD
- Administrative PUD Amendment
- Special Review Use (SRU)
- SRU Amendment
- SRU Administrative Review
- Temporary Use Permit: \_\_\_\_\_
- CMRS Facility: \_\_\_\_\_
- Other: (easement / right-of-way; floodplain; variance; vested right; 1041 permit; oil / gas production permit)

**PROJECT INFORMATION**

Summary: New 22,500 s.f. building  
(2 story) on vacant lot.  
Building to house the  
operations of Elixinol, LLC  
(property owner).

Current zoning: I Proposed zoning: I

**SIGNATURES & DATE**

Applicant: [Signature]  
 Print: Robert Van Relt  
 Owner: [Signature]  
 Print: Gabriel Etteusan  
 Representative: [Signature]  
 Print: Robert Van Relt

**CITY STAFF USE ONLY**

- Fee paid: \_\_\_\_\_
- Check number: \_\_\_\_\_
- Date Received: \_\_\_\_\_



March 6, 2016

City of Louisville Planning Department  
749 Main Street  
Louisville, CO 80027

**Letter of Request – Final PUD, Lot 7, Block 4, CTC First Filing  
(602 Taylor Avenue)**

Elixinol, LLC is seeking approval to build a new building on the above referenced lot in the Colorado Technological Center. Elixinol, LLC is a leader in the production of hemp products in Europe, the U.S. and Australia. They specialize in the development of organic CBD and related hemp products for distribution to consumers here in the U.S. They are anticipating having 35 employees at this new facility and are currently leasing approximately 10,000 s.f. in the adjacent building at 638 Taylor. They intend to occupy both facilities.

Final PUD approval is being sought for a two story 22,500 s.f. building. The ground floor of 15,000 s.f. will house their research, production, distribution and warehouse functions. The second floor will contain office and employee amenity areas. 45 parking spaces will be provided (a ratio of 2 spaces per 1,000 s.f.), which is adequate to handle employees and visitors. A single ingress/egress location is being proposed. A loading dock is proposed at the east of the building.

The building is oriented very similar to the adjacent building they are leasing next door. The building will be 30' tall at its highest point. Construction is to be tilt up concrete panels with interior steel columns and bar joists. The building will have an automatic fire sprinkler system throughout. The main entry area will have extensive storefront glazing to add some variation to the concrete portions of the building as well as enhance the pedestrian arrival experience. Variations in heights of the parapets will also help to differentiate parts of the building and three to four color combinations will be used on the panels to give variety to the concrete elements. Landscaping will play a major role in the entry area and the employee break/relaxation area just west of this entry. The loading area is far back enough on the site to occur entirely in the private zone. The site layout meets the setback and bulk requirements of the IDDSG adopted by the City. We also believe the site and building design meets or exceeds all the other design criteria set forth in that document.

If you have any questions, please feel free to contact me.

Sincerely,

Robert Van Pelt  
Architect

4141 Arapahoe Avenue, Suite 100  
Boulder, Colorado 80303

(303) 443-5355  
Fax (303) 444-5085

**FINAL DRAINAGE REPORT  
602 TAYLOR AVENUE  
LOT 7, BLOCK 4  
COLORADO TECHNOLOGICAL CENTER FILING 1  
LOUISVILLE, COLORADO**

**Prepared For:**

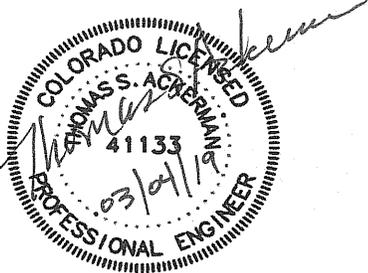
RVP Architecture, P.C.  
3223 Arapahoe Avenue  
Suite 220  
Boulder, CO 80303

**Prepared By:**

Hurst and Associates, Inc.  
1265 S. Public Rd. Suite B  
Lafayette, CO 80026

Job Number 2515-5  
March 5, 2019

I hereby certify that this report for the final drainage design of Lot 7, Block 4 of the Colorado Technological Center, Filing 1 was prepared by me (or under my direct supervision) in accordance with the provisions of the City of Louisville *Storm Drainage Design and Technical Criteria Manual* for the owners thereof.



Thomas S Akherman  
Registered Professional Engineer  
State of Colorado No. 41133

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Map Pocket - 1. Grading & Drainage Plan

## ***INTRODUCTION***

The intent of this drainage report is to present the drainage design of the proposed drainage facilities of Lot 7, Block 4 of Colorado Technological Center Filing 1. The project site is located at 602 Taylor Avenue. Also, it is located in the southwest quarter of Section 16, Township 1 South, and Range 69 West of the Sixth Principal Meridian, City of Louisville, County of Boulder, and State of Colorado. A single light industrial building will be built. The project site is currently vacant. Runoff from the approximate western two-thirds of the site drains westerly to Taylor Avenue. Runoff from the approximate eastern one-third of the site drains easterly onto the eastern adjoiner's property. This report analyzes the impact of the storm events only and is not intended to analyze the effects of future irrigation or groundwater conditions.

## ***HYDROLOGIC/HYDRAULIC ANALYSIS***

The drainage system was designed using a 2-year minor storm return period and a 100-year major storm return period. The storm water runoff was determined using the Rational Method as presented in the *Urban Drainage and Flood Control District Manual*. Drainage basins were defined by the proposed grading and the locations of the proposed inlets and storm sewers. Times of concentration (Tc) were developed for each basin. These times and the Time-Intensity-Frequency Curve in the *City of Louisville's Design and Technical Criteria* were used to determine the minor and major storm intensities and the corresponding runoffs for each sub-basin. Calculations are located within **Appendix A**.

## ***DRAINAGE FACILITY DESIGN***

The drainage design conveys the developed runoff from the project site to a proposed on-site detention pond along Taylor Avenue. Curb and gutters, concrete pans, inlets, and storm pipes carry the developed runoff to the proposed detention pond. The storm sewer systems were designed to convey the 100-year flows to the proposed detention pond. See **Appendix B** and **Appendix C** for a detailed analysis of the proposed storm pipes and inlets. The proposed detention pond will release flows into the existing 36-inch storm pipe located along the eastern curb line of Taylor Avenue.

Runoff from 0.09 acres of Lot 7 will bypass the proposed detention pond and enter Taylor Avenue. The 0.09 acres includes 0.08 acres of grass or landscaping and 0.1 acres of asphalt or concrete. This will have minimal impact on surrounding areas. Runoff from 0.04 grassed or landscaped acres of Lot 7 will bypass the proposed detention pond and enter the eastern adjoiner's property. This will have minimum impact on the surrounding areas.

The *Urban Drainage and Flood Control District's* Detention Design worksheet was used to determine the 10-year and 100-year volumes. The 10-year and 100-year release rates were determined using the City of Louisville's *Storm Drainage and Technical Criteria Manual*. To improve the quality of

the released flows, a water quality capture volume is incorporated into the design. The water quality capture volume and release rate are based upon the design procedures set forth in the *Urban Drainage and Flood Control Drainage Design Guidelines* for extended detention basins. The outfall structure will have small outlets that extend the emptying time of the frequent storm events to facilitate pollutant removal.

WQCV	V <sub>10</sub>	V <sub>100</sub>	Q <sub>10</sub>	Q <sub>100</sub>
0.03 ac-ft	0.09 ac-ft	0.13 ac-ft	0.33 cfs	1.11 cfs

### ***EROSION CONTROL***

Temporary erosion control will be provided during construction and grading of the project. This includes silt fencing, inlet protection, and the seeding and mulching of disturbed areas. Permanent erosion control for storm sewer outfalls will be provided.

### **CONCLUSION**

The drainage design conveys the developed runoff from the project site to a proposed detention pond located along Taylor Avenue. Curb and gutters, concrete pans, inlets, and storm pipes will carry the developed runoff to the proposed detention pond. The detention pond will release the runoff into the existing 36-inch storm pipe located along the eastern curb line of Taylor Avenue. The proposed drainage facilities conform to the design standards set forth in the City of Louisville's *Storm Drainage and Technical Criteria Manual*.

### ***REFERENCES***

- 1) City of Louisville's *Storm Drainage and Technical Criteria Manual* as prepared by WHPacific, Inc. and dated August 2013.
- 2) *Urban Storm Drainage Criteria Manual*, Urban Drainage and Flood Control District.





# Final Planned Unit Development

## Lot 7, Block 4, CTC, First Filing

### New Building at 602 Taylor Avenue

**CITY COUNCIL CERTIFICATE**

APPROVED THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_\_\_, BY THE CITY COUNCIL OF THE CITY OF LOUISVILLE, COLORADO, RESOLUTION NO. \_\_\_\_\_ SERIES \_\_\_\_\_

MAYOR \_\_\_\_\_ CITY CLERK \_\_\_\_\_

**PLANNING COMMISSION CERTIFICATE**

RECOMMENDED APPROVAL THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_\_\_, BY THE PLANNING COMMISSION OF THE CITY OF LOUISVILLE, COLORADO, RESOLUTION NO. \_\_\_\_\_ SERIES \_\_\_\_\_

**CLERK AND RECORDER CERTIFICATE**  
(COUNTY OF BOULDER  
STATE OF COLORADO)

I HEREBY CERTIFY THAT THIS INSTRUMENT WAS FILED IN MY OFFICE AT \_\_\_\_\_ O'CLOCK, \_\_\_\_\_ M., THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_\_\_, AND IS RECORDED IN PLAN FILE \_\_\_\_\_, FEE \_\_\_\_\_ PAID \_\_\_\_\_, FILM NO. \_\_\_\_\_, RECEPTION \_\_\_\_\_.

RECORDER \_\_\_\_\_ DEPUTY \_\_\_\_\_

**OWNERSHIP SIGNATURE BLOCK**

BY SIGNING THIS P.U.D., THE OWNER ACKNOWLEDGES AND ACCEPTS ALL THE REQUIREMENTS AND INTENT SET FORTH IN THIS P.U.D.

WITNESS OUR HANDS AND SEALS THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_\_\_.

ELIXINOL, LLC. (OWNER)

NOTARY \_\_\_\_\_

**LEGAL DESCRIPTION:** LOT 7, BLOCK 4, COLORADO TECHNOLOGICAL CENTER, FIRST FILING. LOCATED IN SECTION 16, TOWNSHIP 1 SOUTH, RANGE 69 WEST, 6TH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO.

**ZONING AND PARKING INFORMATION**

**ZONING:** INDUSTRIAL PUD. (COLORADO TECH CENTER PUD)  
**SETBACKS (PRINCIPAL BUILDING):** SETBACKS (PARKING):  
FRONT (SOUTH TAYLOR): 50' FRONT (SOUTH TAYLOR): 20'  
REAR: 10' REAR: N/A  
SIDE: 10' SIDE: 10'

ALLOWABLE MAXIMUM BUILDING HEIGHT: 40'  
(PER CITY OF LOUISVILLE (DDSG))  
PROPOSED BUILDING HEIGHT: 30'-0"

**PARKING:**  
SPACES REQUIRED (2 SPACES PER 1,000 S.F. MIN.): \_\_\_\_\_ = 30 SPACES  
GROUND FLOOR: 15,044 S.F. / 500 = 12 SPACES  
SECOND FLOOR: 5,883 S.F. / 500 = 42 SPACES  
TOTAL PARKING REQUIRED: \_\_\_\_\_ = 42 SPACES  
TOTAL PARKING PROVIDED: \_\_\_\_\_ = 44 SPACES  
SEE NOTE #8 BELOW ON BREAKDOWN OF ANTICIPATED USES IN BUILDING.

**SPACES PROVIDED:**  
HANDICAP SPACES: 2 SPACES = 8'-0"x11'-6"\* = 2 SPACES  
FULL SIZE SPACES: 4'-0"x11'-6"\* = 42 SPACES  
TOTAL PARKING PROVIDED: \_\_\_\_\_ = 44 SPACES  
\*NOTE: 11'-6" DEEP PARKING SPACES WITH 18" OVERHANG = 19'-0" STANDARD DEPTH

- GENERAL NOTES:**
- THE PROJECT IS TO BE CONSTRUCTED IN ONE PHASE.
  - CONSTRUCTION MATERIALS ARE AS FOLLOWS:  
WALLS: PRE-CAST CONCRETE PANELS PAINTED AS FOLLOWS  
COLOR P-1: SHERWIN WILLIAMS SW 6966 "BLUEBLOOD"  
COLOR P-2: SHERWIN WILLIAMS SW 6002 "ESSENTIAL GRAY"  
COLOR P-3: SHERWIN WILLIAMS SW 1008 "EXTRA WHITE"  
ROOF: TAPERED WHITE TPO ROOF (CONCEALED BY PARAPET)  
WINDOWS: ALUMINUM/STEEL - NATURAL ANODIZED FINISH  
CANOPIES: ALUMINUM/STEEL PAINTED P-3
  - THE PROJECT IS TO BE DESIGNED IN ACCORDANCE WITH THE CRITERIA SET FORTH IN THE CITY OF LOUISVILLE INDUSTRIAL DEVELOPMENT DESIGN STANDARDS AND GUIDELINES (IDDSG).
  - ALL EXISTING PUBLIC AND PRIVATE SIDEWALK, CURB, GUTTER AND ASPHALT ADJACENT TO THE PERIMETER OF THE SITE THAT IS CRACKED, SETTLED, OR OTHERWISE DAMAGED SHALL BE REMOVED AND REPLACED BY THE CONTRACTOR AS DETERMINED NECESSARY BY THE CITY, AS PART OF THE PROJECT, AND AT THE DEVELOPER'S EXPENSE.
  - NO OFF SITE IMPROVEMENTS ARE ANTICIPATED TO BE REQUIRED IN CONNECTION WITH THIS PROJECT.
  - ANY ROOF TOP SCREENING SHALL BE SUBJECT TO THE IDDSG OR THE DESIGN REGULATIONS IN EFFECT AT THE TIME OF INSTALLATION.
  - ANY RETAINING WALL MATERIAL ASSOCIATED WITH THE DETENTION POND WILL MATCH THE PRIMARY BUILDING COLORS.
  - THE BUILDING IS ANTICIPATED TO HAVE THE FOLLOWING BREAKDOWN OF USES: OFFICE - 3,421 S.F., MANUFACTURING - 12,719 S.F., WAREHOUSE - 4,701 S.F.

**LAND USE BREAKDOWN**

USE	AREA	PERCENT
BUILDING COVERAGE:	15,044 S.F.	28.7%
PARKING AND DRIVES:	20,280 S.F.	38.7%
SIDEWALKS AND EQUIP. PAD:	1,926 S.F.	3.7%
OPEN SPACE (LANDSCAPED):	15,122 S.F.	28.4%
<b>TOTAL: LOT SIZE</b>	<b>52,372 S.F.</b> 1.20 ACRES	<b>100%</b>
<b>TOTAL BUILDING AREA:</b>	<b>20,421 S.F.</b>	
GROUND FLOOR:	15,044 S.F.	
UPPER FLOOR:	5,883 S.F.	

**PROJECT DATA**

**OWNER:**  
ELIXINOL, LLC  
580 BURBANK STREET, UNIT 155  
BROOMFIELD, COLORADO 80020  
844-204-2504 phone

**ARCHITECT/PLANNER:**  
RVP ARCHITECTURE AND CONSULTING, P.C.  
3223 ARAPAHOE AVENUE, SUITE 220  
BOULDER, COLORADO 80505  
303-443-5355

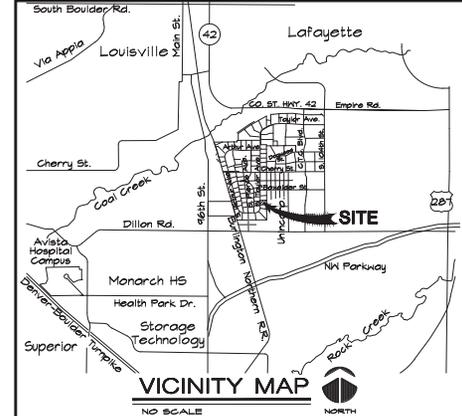
**CIVIL ENGINEER:**  
HURST & ASSOCIATES, INC.  
1265 PUBLIC ROAD, SUITE B  
LAFAYETTE, COLORADO 80026  
303-444-4105

**LANDSCAPE ARCHITECT:**  
TOPE LLC  
1466 N. FRANKLIN COURT  
LOUISVILLE, COLORADO 80021  
303-500-1058

**LIGHTING PHOTOMETRIC DESIGN:**  
THE LIGHTING AGENCY  
2661 11TH STREET  
DENVER, COLORADO 80211  
303-455-1012 phone

**PUD DRAWING INDEX**

1	COVER SHEET
2	SITE PLAN DEVELOPMENT PLAN
3	SITE DETAILS
4	ELEVATIONS
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6	GRADING PLAN
7	LANDSCAPE NOTES AND TABLES
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11	LIGHTING CUT SHEETS



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**Elixinol, LLC New Building**  
Lot 7, Block 4, CTC First Filing 602 Taylor Avenue  
Louisville, Colorado

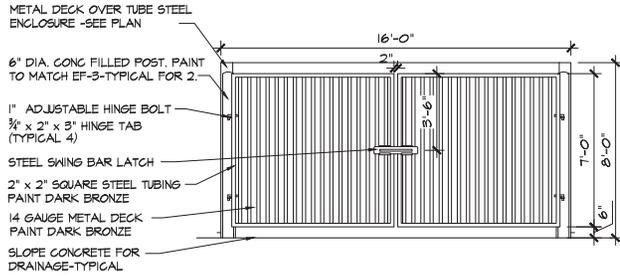
PROJ NO: 18-14  
DATE: MARCH 8, 2019  
REV: MAY 7, 2019

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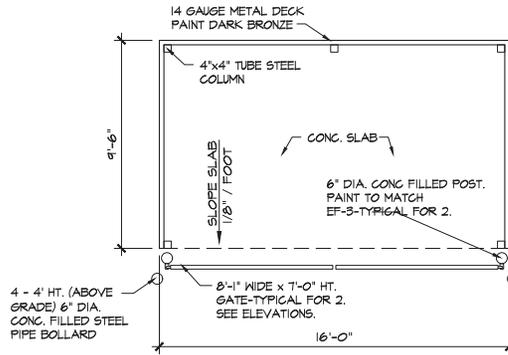
COVER SHEET

1  
SHEET 1 OF 11

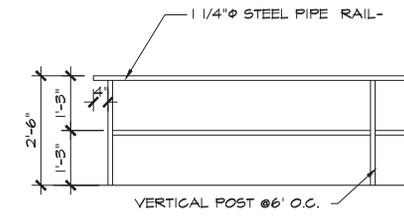




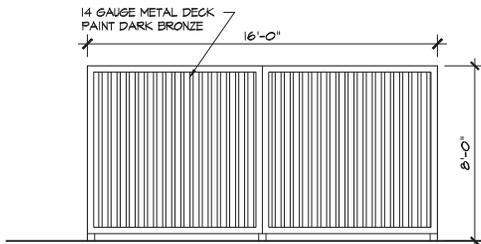
FRONT ELEVATION



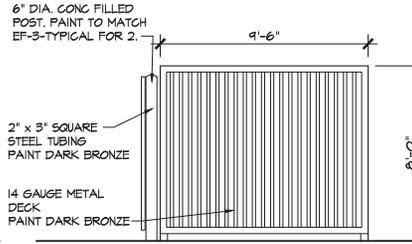
PLAN



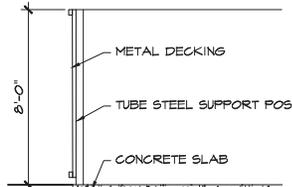
GUARD RAIL DETAIL  
SCALE: 1/2" = 1'-0"



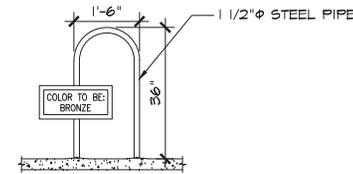
REAR ELEVATION



SIDE ELEVATION

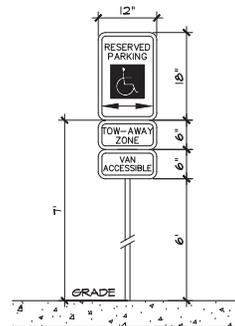


SECTION

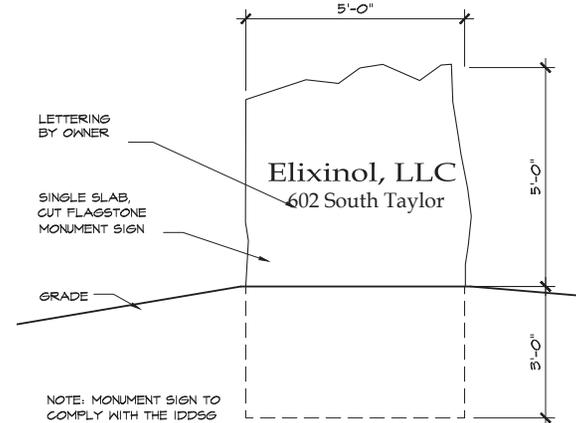


BIKE RACK DETAIL  
SCALE: 1/2" = 1'-0"

TRASH ENCLOSURE DETAILS  
SCALE: 3/8" = 1'-0"



ADA. SIGN DETAIL  
SCALE: 1" = 1'-0"



SIGN DETAIL  
SCALE: 1/2" = 1'-0"

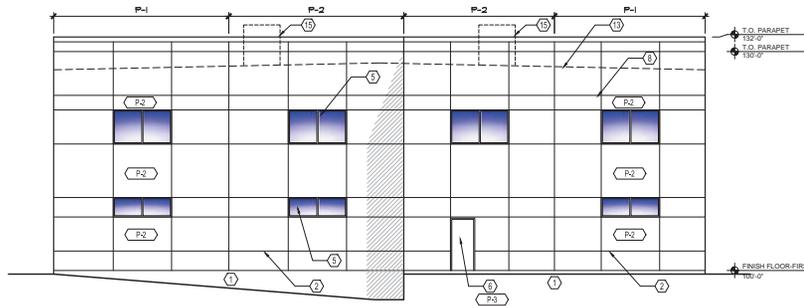
**KVP Architecture**  
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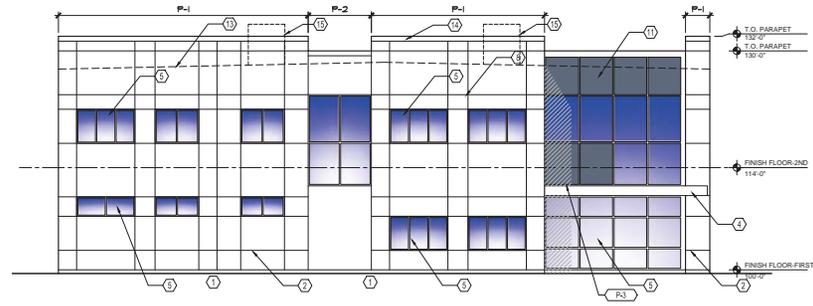
PROJ NO: 18-14  
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REV:

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SITE DETAILS



**EAST ELEVATION**  
SCALE: 1/8" = 1'-0"

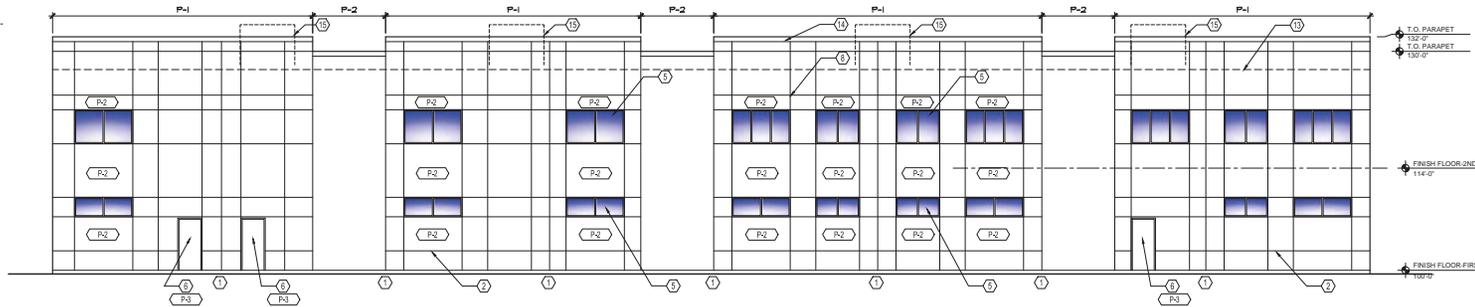


**WEST ELEVATION**  
SCALE: 1/8" = 1'-0"

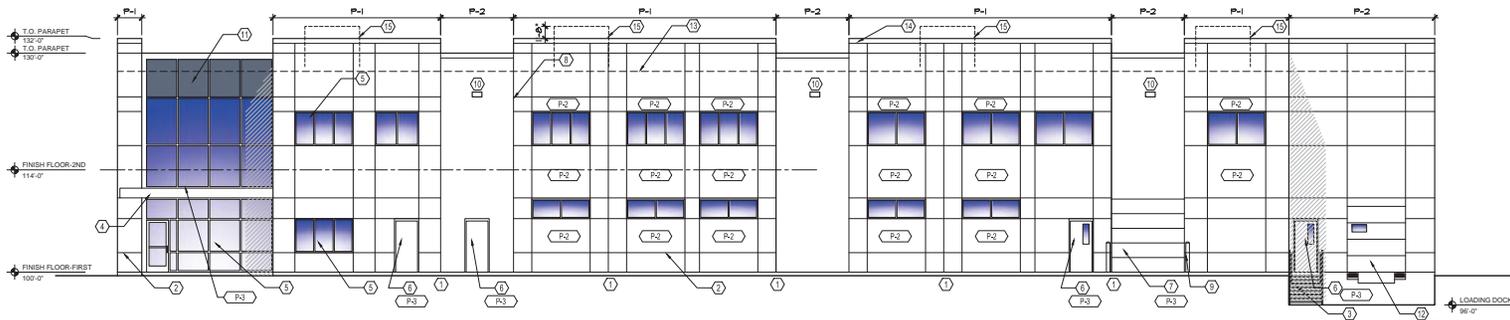
**ELEVATION NOTES**

1. PANEL JOINT
2. TEXTURED PRE-CAST CONC. EXTERIOR WALL PANELS - TYPICAL
3. METAL STAIR
4. METAL/ALUMINUM CANOPY
5. ALUMINUM STOREFRONT WINDOWS AND DOORS (NATURAL ANODIZED FINISH)
6. STEEL MAN DOOR
7. DRIVE IN O.H. DOOR
8. HORIZONTAL AND VERTICAL REVEALS
9. BOLLARD
10. WALL PAC LIGHT (RE: ELECTRICAL)
11. SPANDREL GLASS
12. OVERHEAD DOCK DOOR
13. LINE OF ROOF BEHIND PARAPET (DASHED)
14. PAINTED METAL PARAPET CAP
15. APPROX. LOCATION AND SIZE OF RTU'S (ALL WILL BE SET BACK MIN. 25' FROM EDGE OF PARAPET).

- COLOR NOTES:**
- P-1: SHERWIN WILLIAMS SW 6966 "BLUEBLOOD"
  - P-2: SHERWIN WILLIAMS SW 6002 "ESSENTIAL GRAY"
  - P-3: SHERWIN WILLIAMS SW 7006 "EXTRA WHITE"



**NORTH ELEVATION**  
SCALE: 1/8" = 1'-0"



**SOUTH ELEVATION**  
SCALE: 1/8" = 1'-0"

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**Elixinol, LLC New Building**  
Lot 7, Block 4, CTC First Filing 602 Taylor Avenue  
Louisville, Colorado

PROJ NO: 18-14  
DATE: MARCH 6, 2018  
REV: MAY 7, 2018

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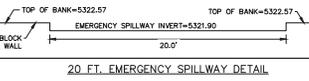
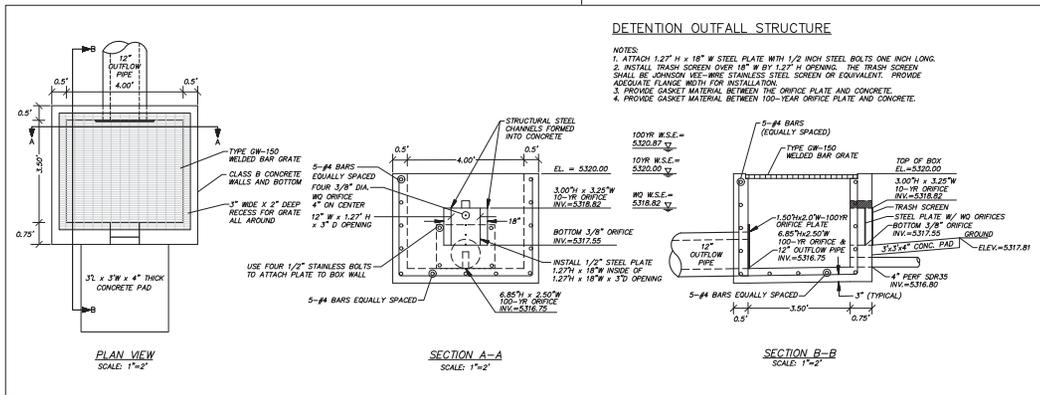
ELEVATIONS



LEGEND

- Proposed Waterline
- - - Existing Waterline
- - - Proposed Sewerline
- - - Existing Sewerline
- Stormline
- W Water Service
- SS Sewer Service
- FS Fire Service
- G Existing Gas Line
- E Ex. Underground Electric
- OHE Ex. Overhead Electric
- FO Existing Fiber Optic
- T Existing Telephone Line
- TV Existing Cable TV Line
- ▲ Thrust Block
- ⊕ Water Valve
- ⊕ Fire Hydrant
- ⊕ Plug
- - - Existing Contours
- - - Proposed Contours
- Flow Arrow
- ⊕ Basin Designation
- Basin Boundary

**LOT 7, BLOCK 4**  
**COLORADO TECHNOLOGICAL CENTER FILING 1**  
**602 SOUTH TAYLOR AVENUE**  
**PLANNED UNIT DEVELOPMENT**  
 LOCATED IN THE SOUTHWEST QUARTER OF SECTION 16,  
 TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN,  
 CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO



**DETENTION POND CHARACTERISTICS**

Q10 = 0.34 CFS  
 Q100 = 1.12 CFS

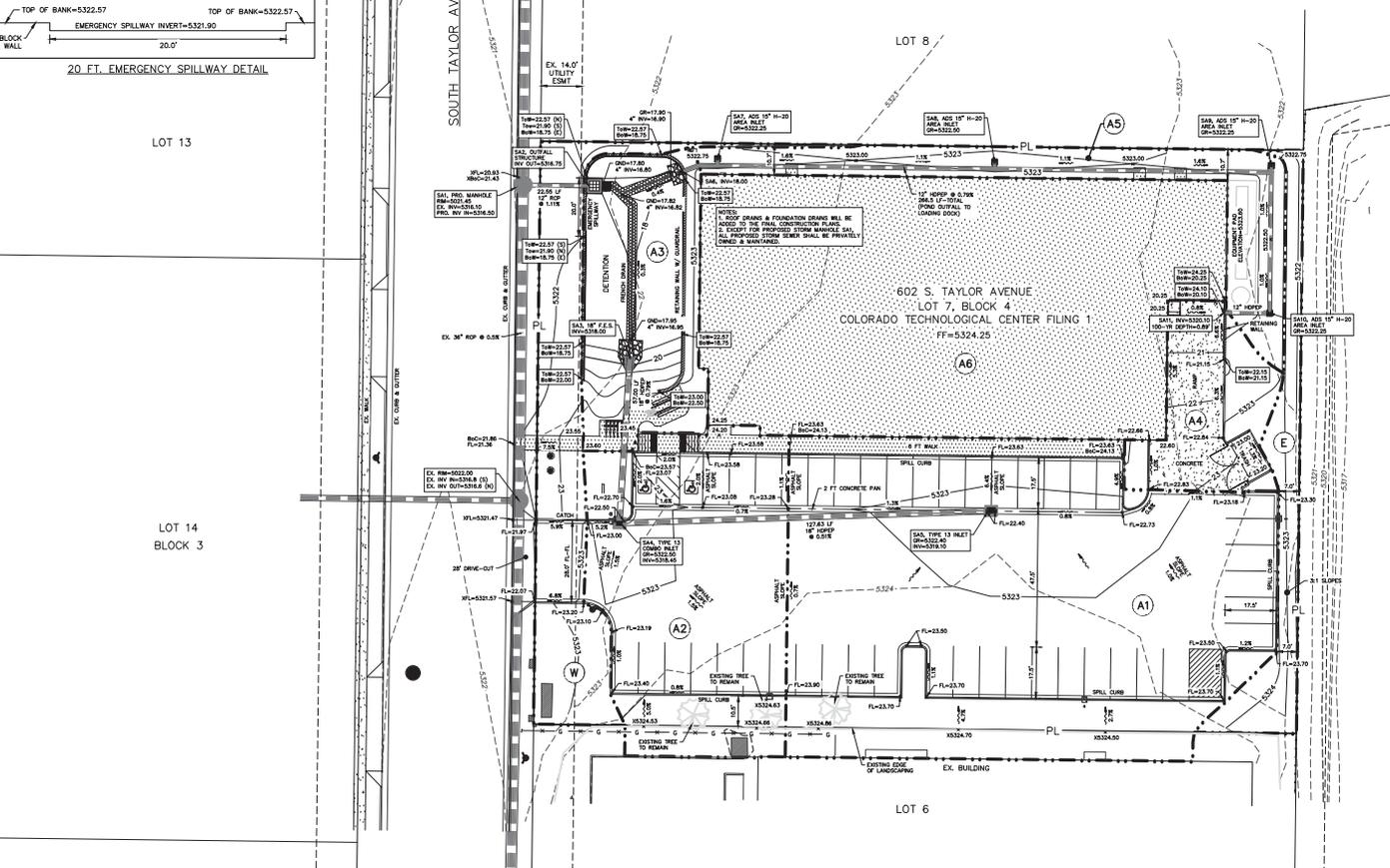
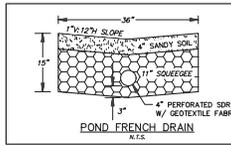
WQ VOL = 0.027 AC-FT  
 10-YR VOL = 0.087 AC-FT  
 100-YR VOL = 0.133 AC-FT

WQ W.S.E. = 5318.82  
 10-YEAR W.S.E. = 5320.00  
 100-YEAR W.S.E. = 5320.87

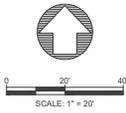
ON-SITE CONTRIBUTING AREA  
 % IMPERVIOUSNESS = 72.4%

Basin	Area (ac.)	C <sub>1</sub>	C <sub>2</sub>	T <sub>c</sub> (min)	I <sub>s</sub> (in/hr)	I <sub>max</sub> (in/hr)	Q <sub>1</sub> (cfs)	Q <sub>10</sub> (cfs)
A1	0.29	0.73	0.87	0.7	3.45	9.06	0.98	3.07
A2	0.96	0.70	0.86	0.3	3.35	8.90	0.38	1.24
A3	0.09	0.11	0.54	5.0	3.55	9.40	0.04	0.47
A4	0.05	0.62	0.50	5.0	3.55	9.40	0.12	0.42
A5	0.07	0.18	0.56	5.0	3.55	9.40	0.04	0.39
A6	0.35	0.73	0.83	5.0	3.55	9.40	0.90	2.69
T	0.04	0.04	0.50	5.0	3.55	9.40	0.01	0.20
W	0.08	0.17	0.57	5.0	3.55	9.40	0.05	0.47

Basin	Area (ac.)	C <sub>1</sub>	C <sub>2</sub>	T <sub>c</sub> (min)	I <sub>s</sub> (in/hr)	I <sub>max</sub> (in/hr)	Q <sub>1</sub> (cfs)	Q <sub>10</sub> (cfs)
A1	0.29	0.73	0.87	0.7	3.45	9.06	0.98	3.07
A2	0.96	0.70	0.86	0.3	3.35	8.90	0.38	1.24
A3	0.09	0.11	0.54	5.0	3.55	9.40	0.04	0.47
A4	0.05	0.62	0.50	5.0	3.55	9.40	0.12	0.42
A5	0.07	0.18	0.56	5.0	3.55	9.40	0.04	0.39
A6	0.35	0.73	0.83	5.0	3.55	9.40	0.90	2.69
T	0.04	0.04	0.50	5.0	3.55	9.40	0.01	0.20
W	0.08	0.17	0.57	5.0	3.55	9.40	0.05	0.47



LOT 2  
 LOUISVILLE CORP. CAMPUS  
 © CTC, REPLAT A



**HURST**  
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**Elixinol, LLC New Building**  
 Lot 7, Block 4, CTC First Filing 602 Taylor Avenue  
 Louisville, Colorado

PROJ NO: 18-14  
 DATE: MARCH 6, 2019  
 REV: MAY 7, 2019

PRELIMINARY  
 NOT FOR  
 CONSTRUCTION

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**LANDSCAPE SHEET INDEX**

- 7 LANDSCAPE NOTES AND TABLES
- 8 LANDSCAPE PLAN
- 9 LANDSCAPE DETAILS

**PLANT LEGEND**

**DECIDUOUS SHADE TREES**

SYMBOL	QUANTITY	BOTANIC NAME	COMMON NAME	SIZE	WATER NEEDS	TYP. MATURE SIZE	
						HEIGHT	SPREAD
AC RR	2	ACER NYRABO 'FIS-KIKAMI'	RUGGED RIDGE MAPLE	2.5' CAL.	M	45'	35'
CE OC	5	CELTIS OCCIDENTALIS	WESTERN HACKBERRY	2.5' CAL.	L-W	50'-60'	40'-50'
OU MU	2	QUERCUS MUEHLBENBERGII	CHINKAPIN OAK	2.5' CAL.	M	40'	40'
TI CO	4	TILIA CORDATA 'GLENLEVEN'	GLENLEVEN LINDEN	2.5' CAL.	M	40'	35'
ULM ACC	3	ULMUS X 'MORTON'	ACCOLADE ELM	2.5' CAL.	M	50'	30'
TOTAL	16						

**DECIDUOUS ORNAMENTAL TREES**

SYMBOL	QUANTITY	BOTANIC NAME	COMMON NAME	SIZE	WATER NEEDS	TYP. MATURE SIZE	
						HEIGHT	SPREAD
AC TA	11	ACER TATARICUM 'PATTERN PERFECT'	PATTERN PERFECT MAPLE	8' CLUMP	M	15'-20'	15'-20'
TOTAL	11						

**EVERGREEN TREES**

SYMBOL	QUANTITY	BOTANIC NAME	COMMON NAME	SIZE	WATER NEEDS	TYP. MATURE SIZE	
						HEIGHT	SPREAD
PI PU	3	PICEA PUNGENS	COLORADO SPRUCE (GREEN)	6' HT.	L-W	60'	25'
PI NI	1	PINUS NIGRA	AUSTRIAN PINE	6' HT.	M	50'	30'
PI OG	5	PINUS NIGRA 'OREGON GREEN'	OREGON GREEN AUSTRIAN PINE	6' HT.	L-W	15'-20'	12'-15'
TOTAL	9						

**DECIDUOUS SHRUBS**

SYMBOL	QUANTITY	BOTANIC NAME	COMMON NAME	SIZE	WATER NEEDS	TYP. MATURE SIZE	
						HEIGHT	SPREAD
CC DK	12	CARYOPTERIS X CLANDONENSIS 'DARK KNIGHT'	DARK KNIGHT SPIREA	#5 CONT.	L-W	3'	3'
COR BAI	9	CORNUS SERICEA 'BAILEY'	RED TWIG DOGWOOD	#5 CONT.	M	6'-8'	6'-8'
CH LS	3	PIERISJA ATRIPURCHOLIA 'LITTLE SPIRE'	LITTLE SPIRE RUSSIAN SAGE	#5 CONT.	L	2'-3'	2'-3'
PF FA	12	POTENTILLA FRUTICOSA 'FAROS'	DIAMONIA SUNSHOT POTENTILLA	#5 CONT.	L	3'	3'
PO JE	18	PHYSCARPUS OPULIFOLIUS 'EFAN'	AMBER JUBILEE NINEBARK	#5 CONT.	M	6'	4'
RH AR	28	RHUS AROMATICA 'GROW-LOW'	GRO-LOW SUMAC	#5 CONT.	L-W	2'-3'	6'-8'
RH TR	7	RHUS TRILOBATA	THREE-LEAF SUMAC	#5 CONT.	L-W	3'-6'	3'-6'
RHU AUT	6	RHUS TRILOBATA 'AUTUMN AMBER'	AUTUMN AMBER SUMAC	#5 CONT.	L	18"	6'-8"
ROS GLA	5	ROSA GLAUCIA	REDLEAF ROSE	#5 CONT.	L-W	6'	4'-6'
SAL NAN	10	SALIX PURPUREA 'NANA'	DWARF ARCTIC BLUE WILLOW	#5 CONT.	M-H	6'	6'
SJ AW	6	SPIREA JAPONICA 'ANTHONY WATERER'	ANTHONY WATERER SPIREA	#5 CONT.	M	3'	3'
VB RAL	11	VBURNUM DENTATUM 'RALPH SENIOR'	AUTUMN JAZZ VBURNUM	#5 CONT.	M	11'	9'
VB MOH	3	VBURNUM LANTANA 'MOHICAN'	MOHICAN VBURNUM	#5 CONT.	L-W	6'	6'
VB LEN	6	VBURNUM LENTAGO	NANNYBERRY VBURNUM	#5 CONT.	L-W	8'-15'	6'-8'
TOTAL	136						

**ORNAMENTAL GRASSES**

SYMBOL	QUANTITY	BOTANIC NAME	COMMON NAME	SIZE	WATER NEEDS	TYP. MATURE SIZE	
						HEIGHT	SPREAD
BA BG	44	BOUPELOUA GRACILIS 'BLONDE AMBITION'	BLONDE AMBITION BLUE GRAMA GRASS	#1 CONT.	L	30"	30"
PA HE	3	PANDIUM VIRGATUM 'HEAVY METAL'	HEAVY METAL SWITCHGRASS	#1 CONT.	L	3'-4'	12'-18'
TOTAL	47						

**PLANT LEGEND NOTES**

- ALL TREES B&B.
- IN THE CASE OF A DISCREPANCY BETWEEN THE PLANT SCHEDULE AND THE PLANS, THE PLANS SUPERSEDE THE PLANT SCHEDULE.
- PLANT SPECIES AND SIZES ARE BASED ON CITY OF LOUISVILLE SITE REVIEW PROCESS. NO PLANT SUBSTITUTIONS WILL BE PERMITTED WITHOUT PRIOR WRITTEN AUTHORIZATION, AND SUBSTITUTION REQUESTS MAY BE DENIED.

**PLANTING PLAN NOTES**

- PROVIDE TREE PROTECTION FOR ALL EXISTING TREES TO REMAIN. SEE TREE PROTECTION NOTES AND DETAILS ON SHEET L3.0.
- UTILITY LOCATIONS ARE SHOWN ON THE PLANS FOR REFERENCE ONLY. CONTRACTOR IS RESPONSIBLE FOR VERIFYING ACTUAL UTILITY LOCATIONS.

**LANDSCAPE DESIGN STATEMENT**

THIS LANDSCAPE PLAN IS DESIGNED TO MEET OR EXCEED THE REQUIREMENTS OF THE LOUISVILLE INDUSTRIAL DEVELOPMENT DESIGN STANDARDS AND GUIDELINES (IDD5G) WITH RESPECT TO AESTHETICS, MASSING, VISUAL ENHANCEMENT, BUFFERS, AND WATER CONSERVATION.

WATERWISE LANDSCAPING BEST PRACTICES ARE UTILIZED THROUGHOUT THE PROPOSED LANDSCAPE, INCLUDING NATIVE AND ADAPTED PLANTS, SOIL AMENDMENTS, HYDROZONING, EFFICIENT IRRIGATION PRACTICES, MULCHING, AND CONSIDERATION OF MAINTENANCE REQUIREMENTS.

ALL PROPOSED PLANTINGS WILL BE WATERED WITH AN AUTOMATIC, UNDERGROUND IRRIGATION SYSTEM DESIGNED FOR EFFICIENCY.

**PERIMETER LANDSCAPING ADJACENT TO ROADS: TREE REQUIREMENTS**

1 TREE PER 20 LINEAR FEET OF STREET FRONTAGE	
LINEAR FEET OF STREET FRONTAGE	200 LF
TREES REQUIRED	10
TREES PROVIDED (SEE NOTE)	10

NOTE:  
DUE TO THE UNDERGROUND UTILITIES IN THE RIGHT-OF-WAY AREA AND THE UTILITY EASEMENT ADJACENT TO THE RIGHT-OF-WAY, PERIMETER TREES MUST BE SET BACK A MINIMUM OF 22 FEET FROM THE SOUTH TAYLOR AVENUE CURB FLOWLINE.

**PERIMETER LANDSCAPING ADJACENT TO ROADS: SHRUB REQUIREMENTS**

6 SHRUBS PER TREE WITHIN THE STREETScape AREA	
TREES REQUIRED	10
SHRUBS REQUIRED	60
SHRUBS PROVIDED	63

**PERIMETER LANDSCAPING ADJACENT TO ABUTTING PROPERTY: TREE REQUIREMENTS**

SOUTH PROPERTY LINE: 1 TREE PER 30 LINEAR FEET OF PROPERTY LINE	
LINEAR FEET OF PROPERTY LINE	262 LF
TREES REQUIRED	9
TREES PROVIDED	10

NORTH PROPERTY LINE: 1 TREE PER 30 LINEAR FEET OF PROPERTY LINE	
LINEAR FEET OF PROPERTY LINE	262 LF
TREES REQUIRED	9
TREES PROVIDED	11

**REQUIRED PARKING LOT TREES**

1 TREE PER 16 PARKING SPACES	
TOTAL PROPOSED PARKING SPACES	44
PARKING LOT TREES REQUIRED	3
PARKING LOT TREES PROVIDED	3

**BUILDING SITE LANDSCAPING: TREE REQUIREMENTS**

1 DECIDUOUS TREE PER 30 LINEAR FEET OF BUILDING FRONTAGE FOR 50% OF THE BUILDING	
50% OF BUILDING PERIMETER LENGTH	270 LF
TREES REQUIRED	9
TREES PROVIDED	16

NOTE:  
ONLY TREES ON THE NORTH AND EAST SIDES OF THE BUILDING FRONTAGE ARE COUNTED IN THIS CALCULATION. PERIMETER TREES COUNTED ELSEWHERE ARE NOT INCLUDED.

**BUILDING SITE LANDSCAPING: MINIMUM LANDSCAPE COVERAGE**

25% LANDSCAPE COVERAGE WITHIN THE BUILDING SITE	
TOTAL SITE AREA	52,345 SF
LANDSCAPE COVERAGE REQUIRED	13,086 SF
LANDSCAPE COVERAGE PROVIDED	15,984 SF

Eixonol, LLC New Building  
Lot 7, Block 4, CTC First Filing | 602 Taylor Avenue, Louisville, CO

SSAL

REVISIONS	NO.	DATE	DESCRIPTION
1	05/07/2019	RESUB	

ISSUED FOR  
SITE REVIEW

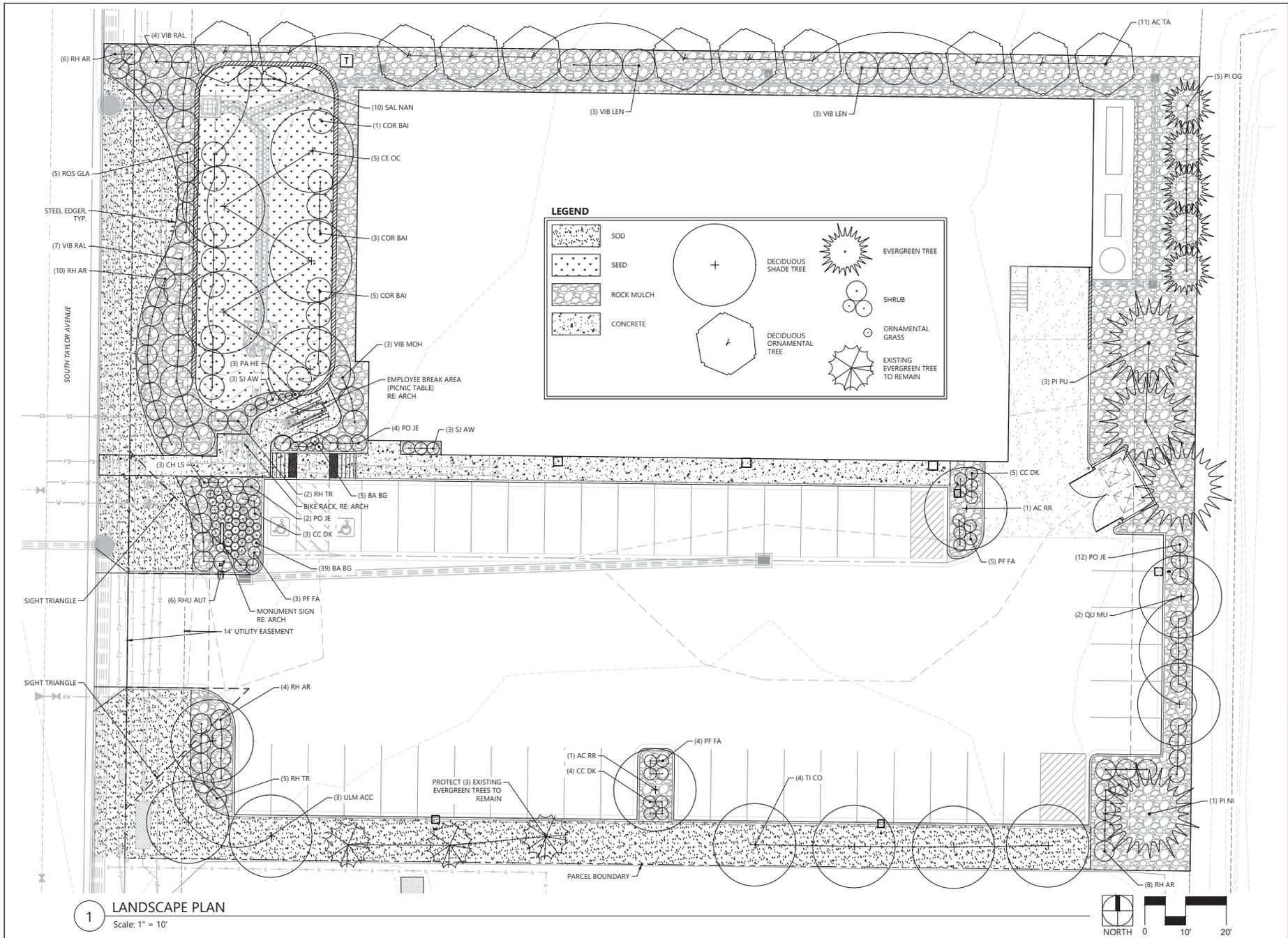
ISSUE DATE  
03/06/2019

SHEET TITLE  
LANDSCAPE NOTES AND TABLES

SHEET NUMBER

7

SHEET 7 OF 11



**Elixonol, LLC New Building**  
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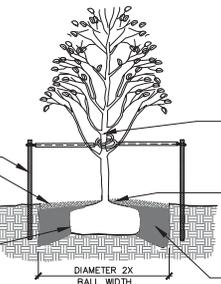
SEAL		
REVISIONS		
NO.	DATE	DESCRIPTION
1	05/07/2019	RESUB
ISSUED FOR		
SITE REVIEW		
ISSUE DATE		
03/06/2019		
SHEET TITLE		
LANDSCAPE PLAN		
SHEET NUMBER		
8		
SHEET 8 OF 11		

**GUYING SYSTEM:**  
MIN. 6 FEET LONG  
LOGPOLE STAKES WITH  
1/2 GAUGE GALVANIZED  
STEEL WIRE WITH  
WHITE PLASTIC FLAGGING  
TAPE. NO BARE WIRE.

CONIFERS TO HAVE 2  
STAKES FOR TREES 6 FEET  
AND LESS. 3 STAKES FOR  
TREES ABOVE 6 FEET.  
DECIDUOUS TREES TO  
HAVE 2 STAKES FOR  
TREES 2-1/2" CAL. ONE  
STAKE ALWAYS IN  
DIRECTION OF PREVAILING  
WINDS. REMOVE STAKES &  
GUYWires AFTER 1 YEAR.

4" MULCH PER NOTES.  
FLUSH WITH SOD AT  
EDGE OR CONTINUOUS  
THROUGHOUT PLANTING  
BED PER PLANS.

REMOVE BURLAP AND  
BASKETS COMPLETELY  
KEEPING ROOTBALL  
INTACT. SET BURLAP AND  
BASKETS NEXT TO TREE  
FOR INSPECTION.

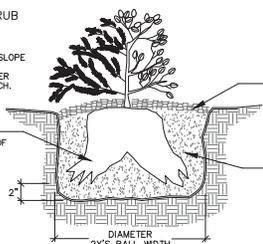


**DECIDUOUS TREE**  
PRUNE AS DIRECTED BY  
OWNER'S REPRESENTATIVE.  
SCARIFY SIDES OF TREE PITS  
AFTER EXCAVATION TO  
BREAK COMPACTION AND  
ALLOW LATERAL ROOT  
PENETRATION.  
WRAP TRUNK FROM GROUND  
LEVEL TO SECOND BRANCH WITH  
4" ASPHALT IMPREGNATED TREE  
WRAP. SECURE ENDS WITH  
FLEXIBLE TAPE. (DOUBLE WRAP  
MAPLES.)  
REMOVE CONTAINER,  
SPLIT BOTTOM 1/2 OF  
BALL, SPREAD AND  
PLANT  
COLLAR OF TREE TO BE  
2" MIN ABOVE  
SURROUNDING GRADE  
PREPARED BACKFILL MIXTURE:  
1. FOUR PARTS NATIVE SOIL  
2. ONE PART TYPE I COMPOST,  
3. MATERIALS TO BE THOROUGHLY  
BLENDED.

1 TREE PLANTING DETAIL  
NOT TO SCALE

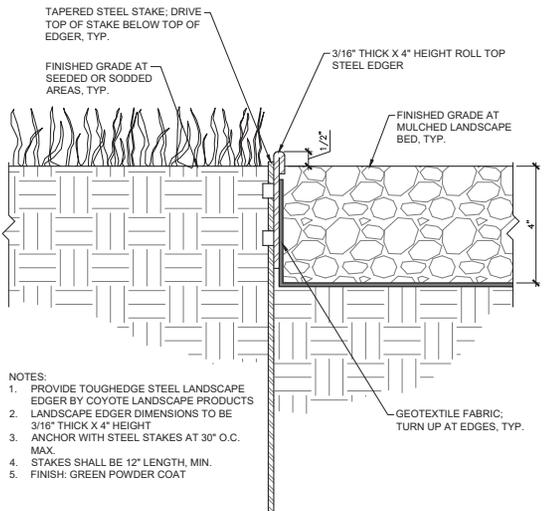
**EVERGREEN SHRUB**

PLACE SPREADING  
EVERGREEN SHRUBS  
PERPENDICULAR TO SLOPE  
OF GROUND. LEAVE  
ENOUGH SPACE UNDER  
BRANCHES FOR MULCH.  
MOUND BACKFILL  
UNDER ROOTBALL.



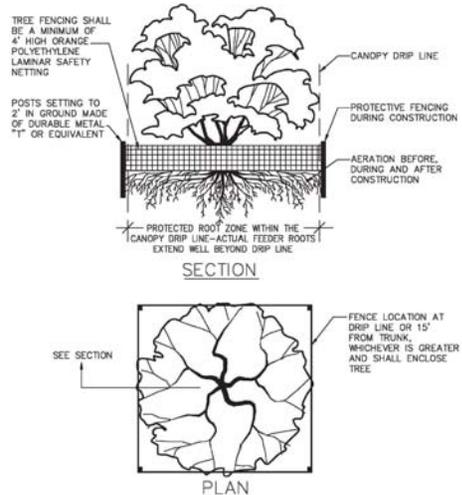
**DECIDUOUS SHRUB**  
PRUNE AS DIRECTED BY  
LANDSCAPE ARCHITECT.  
SET SHRUB PLUMB.  
4" MULCH PER NOTES.  
PREPARED BACKFILL  
MIXTURE:  
1. FOUR PARTS NATIVE SOIL  
2. ONE PART TYPE I  
COMPOST,  
3. MATERIALS TO BE  
THOROUGHLY BLENDED.

2 SHRUB PLANTING DETAIL  
NOT TO SCALE



**NOTES:**  
1. PROVIDE TOUGHEDGE STEEL LANDSCAPE  
EDGER BY COYOTE LANDSCAPE PRODUCTS  
LANDSCAPE EDGER DIMENSIONS TO BE  
3/16" THICK X 4" HEIGHT  
2. ANCHOR WITH STEEL STAKES AT 30" O.C.  
MAX.  
3. STAKES SHALL BE 12" LENGTH, MIN.  
4. FINISH: GREEN POWDER COAT

3 STEEL LANDSCAPE EDGER  
NOT TO SCALE



TREE FENCING SHALL  
BE A MINIMUM OF  
4" HIGH ORANGE  
POLYETHYLENE  
LAMINAR SAFETY  
NETTING  
POSTS SETTING TO  
2" IN GROUND MADE  
OF DURABLE METAL  
1" OR EQUIVALENT  
CANOPY DRIP LINE  
PROTECTIVE FENCING  
DURING CONSTRUCTION  
AERATION BEFORE  
DURING AND AFTER  
CONSTRUCTION  
PROTECTED ROOT ZONE WITHIN THE  
CANOPY DRIP LINE—ACTUAL FEEDER ROOTS  
EXTEND WELL BEYOND DRIP LINE  
FENCE LOCATION AT  
DRIP LINE OR 15'  
FROM TRUNK,  
WHICHEVER IS GREATER  
AND SHALL ENCLOSE  
TREE

4 TREE PROTECTION DETAIL  
NOT TO SCALE

**LANDSCAPE NOTES:**

- TREES IN SODDED AREAS:** PROVIDE A 4" DIAMETER MULCH RING AROUND ALL TREES IN SODDED AREAS, CONSISTING OF 4" DEPTH SHREDDED RED CEDAR MULCH.
- TREES IN SEEDED AREAS:** NO MULCH IN SEEDED DETENTION AREA.
- ROCK MULCH (FOR ROCK MULCHED PLANTING BEDS PER PLANS):** 4" DEPTH RIVER ROCK, 2-1/2" SIZE, BUFF COLOR.
- INSTALL WEED BARRIER FABRIC AT ALL MULCHED PLANTING BEDS** CONFORMING TO THE FOLLOWING: NONWOVEN GEOTEXTILE FILTER FABRIC: POLYPROPYLENE OR POLYESTER FABRIC, 3 OZ./SQ. YD. MINIMUM. COMPOSED OF FIBERS FORMED INTO A STABLE NETWORK SO THAT FIBERS RETAIN THEIR RELATIVE POSITION. FABRIC SHALL BE INERT TO BIOLOGICAL DEGRADATION AND RESIST NATURALLY ENCOUNTERED CHEMICALS, ALKALIS, AND ACIDS.
- TREE STAKES:** TWO INCH (2") DIAMETER BY SIX FOOT (6') LENGTH ROUND WOODEN POSTS OR SIX FOOT (6') LONG, HEAVY-DUTY T-BAR STEEL POSTS WITH WHITE TOPS
- TREE GUYWires:** 1/2" STRAP-X (FLAT SYNTHETIC WEBBING MATERIAL) OR 1/2" CENTRAL BAG POLYESTER STRAPPING WITH 1/2" GAUGE GALVANIZED STEEL WIRE
- SOIL AMENDMENT TO BE TYPE I COMPOST, TYP.** PROVIDE BIO-COMP BY #1 ORGANICS OR APPROVED EQUAL. FINELY SHREDDED, FREE OF PLANTS, ROOTS, STICKS, STONES, LUMPS, AND NOXIOUS WEEDS. THE MATERIAL SHALL CONTAIN A MINIMUM OF 30% ORGANIC MATTER AND SHALL HAVE A pH RANGE OF 4.5 TO 7.5. AND A SALT CONTENT NOT MORE THAN 3 MMS/CM AND MEET THE CLASS I REQUIREMENTS.
- SOIL AMENDMENT AT PLANTING BEDS AND SOD AREAS:** 4 CUBIC YARDS PER 1,000 SQUARE FEET TILLED THOROUGHLY TO A MINIMUM DEPTH OF 6"-9"
- SOIL AMENDMENT AT NATIVE SEED AREAS:** 3 CUBIC YARDS PER 1,000 SQUARE FEET TILLED THOROUGHLY TO A MINIMUM DEPTH OF 6"-9"
- STEEL EDGING:** STEEL EDGING SHALL BE INSTALLED BETWEEN ALL MULCHED PLANTING BEDS AND SOD/SEED AREAS. SEE DETAIL.
- UTILITIES:** NO TREES SHALL BE PLANTED WITHIN 10' OF A WATER OR SEWER LINE. NO SHRUBS OR TREES SHALL BE PLANTED WITHIN A 10' RADIUS AROUND FIRE HYDRANTS.
- DRY UTILITIES:** ALL EXISTING DRY UTILITIES SHALL BE FIELD LOCATED BEFORE ANY DIGGING OR TREE LOCATION STAKING TAKES PLACE. DO NOT PLANT A TREE WITHIN 4' OF ANY EXISTING DRY UTILITY WITHOUT VERIFYING THE DEPTH OF THE UTILITY.
- SOD:** LOCALLY GROWN SOD COMPOSED OF RHIZOMATOUS TALL FESCUE (RTF) SOD FROM GRAFF TURF FARMS OR APPROVED EQUAL.

**UPLAND AREA SEED MIX (FOR ELEVATIONS ABOVE THE DETENTION POND OUTLET STRUCTURE INVERT ELEVATION):**

UPLAND AREA SEED MIX SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS:

BLUE GRAMA (BOULELOUA GRACILIS)	1.8 LBS PLS/ACRE
SAND DROPSSEED (SPOROBOLUS CRYPTANDRUS)	0.2 LBS PLS/ACRE
SIDEOTS GRAMA (BOULELOUA CURTIPENDULA)	6.3 LBS PLS/ACRE
WESTERN WHEATGRASS (PASCOPYRUM SMITHII)	8.2 LBS PLS/ACRE
BUFFALOGRASS (BOULELOUA DACTYLOIDES)	10.7 LBS PLS/ACRE
INLAND SALTGRASS (DISTICHLIS SPICATA)	0.6 LBS PLS/ACRE
PASTURE SAGE (ARTEMISIA FRIGIDA)	0.01 LBS PLS/ACRE
BLANKET FLOWER (GAILLARDIA ARISTATA)	0.5 LBS PLS/ACRE
PRAIRIE CONEFLOWER (RATIBIDA COLUMNIFERA)	0.1 LBS PLS/ACRE
BLUE FLAX (LINUM LEWISII)	0.4 LBS PLS/ACRE
TOTAL PLS POUNDS/ACRE	29.11 LBS PLS/ACRE

PLS = PURE LIVE SEED; SEEDING RATE IS FOR DRILL SEEDING; FOR BROADCAST SEEDING, DOUBLE THE RATE

**DETENTION AREA SEED MIX (FOR ELEVATIONS AT OR BELOW THE DETENTION POND OUTLET STRUCTURE INVERT ELEVATION):**

DETENTION AREA SEED MIX SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS:

ALKALI SACATON (SPOROBOLUS AIROIDES)	0.4 LBS PLS/ACRE
INLAND SALTGRASS (DISTICHLIS SPICATA)	1.2 LBS PLS/ACRE
NUTTALL'S ALKALIGRASS (PUCCINELLIA NUTTALLIANA)	0.2 LBS PLS/ACRE
PRAIRIE CORDGRASS (SPARTINA PECTINATA)	3.0 LBS PLS/ACRE
SLENDER WHEATGRASS (ELYMUS TRACHYCAULUS SPP.)	3.8 LBS PLS/ACRE
WESTERN WHEATGRASS (PASCOPYRUM SMITHII)	5.5 LBS PLS/ACRE
FOWL MANNAGRASS (GLYCERIA STRIATA)	3.3 LBS PLS/ACRE
HARDSTEM BULLRUSH (SCIRPUS ACUTUS)	1.6 LBS PLS/ACRE
BALTIC RUSH (JUNCUS BALTICUS)	0.1 LBS PLS/ACRE
CREeping SPIKERUSH (ELEOCHARIS PALUSTRIS)	1.0 LBS PLS/ACRE
TOTAL PLS POUNDS/ACRE	20.1 LBS PLS/ACRE

PLS = PURE LIVE SEED; SEEDING RATE IS FOR DRILL SEEDING; FOR BROADCAST SEEDING, DOUBLE THE RATE

**STANDARDS AND GUIDELINES:**

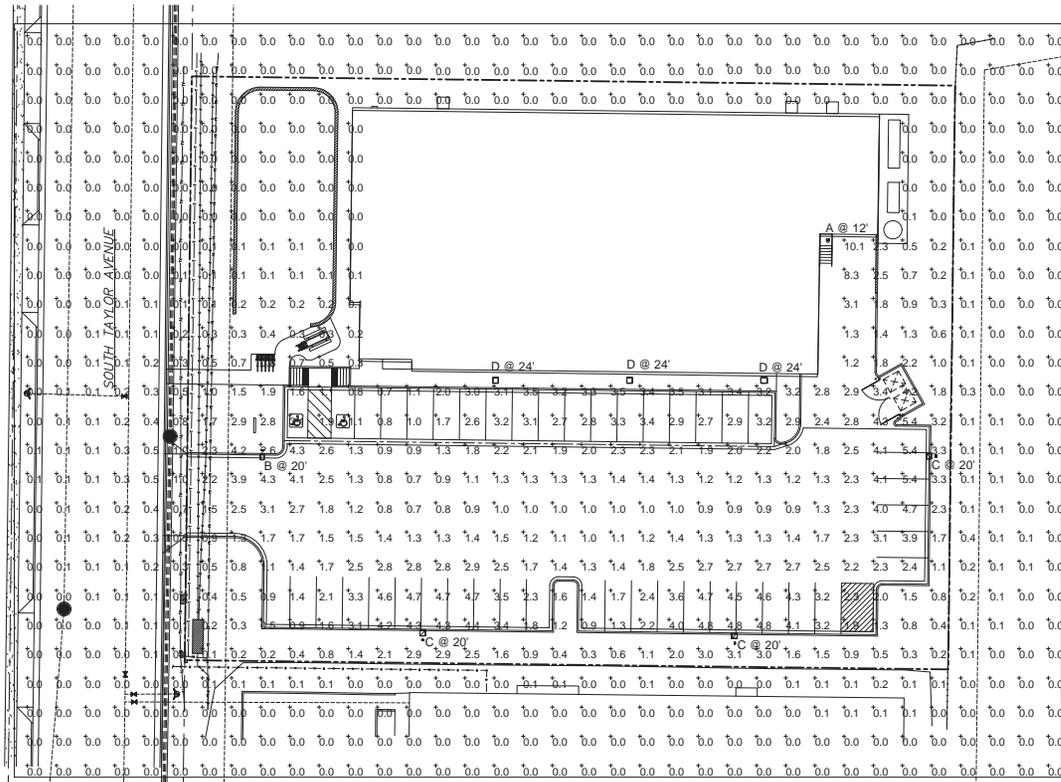
- THE PROPERTY OWNER SHALL REMOVE AND REPLACE DEAD OR DISEASED PLANT MATERIALS IMMEDIATELY WITH THE SAME TYPE, SIZE, AND QUANTITY OF PLANT MATERIAL AS ORIGINALLY INSTALLED.
- AVOID REPLACING PLANT MATERIALS DURING THE DRY WINTER MONTHS BETWEEN DECEMBER AND FEBRUARY AND IN MID-SUMMER.
- CONTACT THE PLANNING DIVISION FOR SPECIFIC TIME REQUIREMENTS FOR LANDSCAPE MATERIAL REPLACEMENT.
- LANDSCAPE MATERIALS LOCATED IN THE PUBLIC RIGHT-OF-WAY ARE TO BE MAINTAINED BY THE ADJUTING PROPERTY OWNER.

REVISIONS	NO.	DATE	DESCRIPTION
	1	05/07/2019	RESUB
ISSUED FOR	SITE REVIEW		
ISSUE DATE	03/06/2019		
SHEET TITLE	LANDSCAPE DETAILS		
SHEET NUMBER	9		
SHEET 9 OF 11			

Symbol	Label	Quantity	Manufacturer	Catalog Number	Description	Lamp	Number Lamps	Filename	Lumens Per Lamp	Light Loss Factor	Wattage
	A	1	Lithonia Lighting	WST LED P3 40K VFLVLT	WST LED, Performance package 3, 4000 K, 90lm/foot beamwidth throw, MVVOLT	LED	1	WST_LED_P3_40K_VFLVLT.ies	6609	0.92	50
	B	1	Lithonia Lighting	DSX1 LED P2 40K VLS	DSX1 LED Visual Comfort, P3 symmetric Type V distribution 40K	LED	1	DSX1_LED_P2_40K_VLS.ies	12221	0.92	116
	C	3	Lithonia Lighting	DSX1 LED P4 40K BLC MVVOLT	DSX1 LED P4 40K BLC MVVOLT	LED	1	DSX1_LED_P4_40K_BLC_MVVOLT.ies	11878	0.92	125
	D	3	Lithonia Lighting	DSX0 LED P3 VLS 40K HS	DSX0 LED Visual Comfort, P3 symmetric Type V distribution 40K with house-side shield	LED	1	DSX0_LED_P3_VLS_40K_HS.ies	8714	0.92	116

Luminaire Locations											
Location								Aim			
No.	Label	X	Y	Z	Mt	Orientation	Tilt	X	Y	Z	
1	A	2247.00	884.00	12.00	12.00	180.00	0.00	2247.00	884.00	0.00	
1	B	2053.00	812.00	20.00	20.00	180.00	0.00	2053.00	810.81	0.00	
1	C	2108.00	747.00	20.00	20.00	0.00	0.00	2108.00	748.19	0.00	
2	C	2213.00	748.00	20.00	20.00	0.00	0.00	2215.00	747.19	0.00	
3	C	2284.00	810.00	20.00	20.00	270.00	0.00	2282.81	810.00	0.00	
1	D	2225.00	837.00	24.00	24.00	180.00	0.00	2225.00	836.50	0.00	
2	D	2179.00	837.00	24.00	24.00	180.00	0.00	2179.00	836.50	0.00	
3	D	2133.00	837.00	24.00	24.00	180.00	0.00	2133.00	836.50	0.00	

Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Calc Zone #1	+	0.8 fc	10.1 fc	0.0 fc	N/A	N/A



**PHOTOMETRIC SITE PLAN**  
 SCALE: 1" = 20'-0"  
 0' 10' 20' 40'

**RVP Architecture**  
 a registered professional corporation  
 3223 Arapahoe Avenue Suite 220  
 Boulder, Colorado 80303  
 (303) 442-5885  
 rvp@rvparch.com

**Elixinol, LLC New Building**  
 Lot 7, Block 4, CTC First Filing 602 Taylor Avenue  
 Louisville, Colorado

PROJ NO: 18-14  
 DATE: MARCH 8, 2018  
 REV: MAY 7, 2018

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PHOTOMETRIC PLAN

10

SHEET 10 OF 11



### WST LED Architectural Wall Sconce

Color	WST LED P1 4K VLS MVOLT SPA COLOR
Part	ELEXINDR
Series	A

#### Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and system-level interoperability.

- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency.
- This luminaire is A+ Certified when ordered with DTL controls marked by a **Shielded Backlight** DTL. DTL equipped luminaires meet the A+ specification for luminaire to photometric interoperability.
- This luminaire is part of an A+ Certified solution for RDMAP or dSeries™ Wireless control networks, providing out-of-the-box control compatibility with simple commissioning, when ordered with drivers and control options marked by a **Shielded Backlight**.

To learn more about A+ visit [www.acuitybrands.com/a+](http://www.acuitybrands.com/a+). See ordering tree for details.

A+ Certified Solutions for RDMAP require the order of one RDMAP node per luminaire. Sold Separately. Visit [www.acuitybrands.com/a+](http://www.acuitybrands.com/a+).

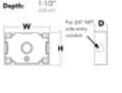
#### Optional Back Box (PBBW)

Height	8.47"
Width	17.01"
Depth	1.70"



#### Optional Back Box (BBW)

Height	6.47"
Width	17.01"
Depth	1.51"



### D-Series VC Size 1 LED Area Luminaire

Color	DSX1 LED P1 4K VLS MVOLT SPA COLOR
Part	(Puls = KW-ASP20-4-0-11-F-DM10-BC)
Series	B

#### Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and system-level interoperability.

- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency.
- This luminaire is A+ Certified when ordered with DTL\* controls marked by a **Shielded Backlight** DTL. DTL equipped luminaires meet the A+ specification for luminaire to photometric interoperability.
- This luminaire is part of an A+ Certified solution for RDMAP or dSeries™ Wireless control networks, providing out-of-the-box control compatibility with simple commissioning, when ordered with drivers and control options marked by a **Shielded Backlight**.

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A+ Certified Solutions for RDMAP require the order of one RDMAP node per luminaire. Sold Separately. Visit [www.acuitybrands.com/a+](http://www.acuitybrands.com/a+).

#### Ordering Information

Series	Part	4K	VLS	MVOLT	SPA	FAO	DOB2D
DSX1	P1	4K	VLS	MVOLT	SPA	FAO	DOB2D

Control option	Driver option	Color
Shielded Backlight	DRIVER	Color

### D-Series Size 1 LED Area Luminaire

Color	DSX1 LED P4K BLC MVOLT SPA COLOR
Part	(Puls = KW-SP20-4-0-11-F-DM10-BC)
Series	C

#### Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and system-level interoperability.

- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency.
- This luminaire is A+ Certified when ordered with DTL\* controls marked by a **Shielded Backlight** DTL. DTL equipped luminaires meet the A+ specification for luminaire to photometric interoperability.
- This luminaire is part of an A+ Certified solution for RDMAP or dSeries™ Wireless control networks, providing out-of-the-box control compatibility with simple commissioning, when ordered with drivers and control options marked by a **Shielded Backlight**.

To learn more about A+ visit [www.acuitybrands.com/a+](http://www.acuitybrands.com/a+). See ordering tree for details.

A+ Certified Solutions for RDMAP require the order of one RDMAP node per luminaire. Sold Separately. Visit [www.acuitybrands.com/a+](http://www.acuitybrands.com/a+).

#### Ordering Information

Series	Part	4K	BLC	MVOLT	SPA
DSX1	P4	4K	BLC	MVOLT	SPA

Control option	Driver option	Color
Shielded Backlight	DRIVER	Color



### WST LED Architectural Wall Sconce

Color	WST LED P1 4K VLS MVOLT SPA COLOR
Part	ELEXINDR
Series	A

#### Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and system-level interoperability.

- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency.
- This luminaire is A+ Certified when ordered with DTL\* controls marked by a **Shielded Backlight** DTL. DTL equipped luminaires meet the A+ specification for luminaire to photometric interoperability.
- This luminaire is part of an A+ Certified solution for RDMAP or dSeries™ Wireless control networks, providing out-of-the-box control compatibility with simple commissioning, when ordered with drivers and control options marked by a **Shielded Backlight**.

To learn more about A+ visit [www.acuitybrands.com/a+](http://www.acuitybrands.com/a+). See ordering tree for details.

A+ Certified Solutions for RDMAP require the order of one RDMAP node per luminaire. Sold Separately. Visit [www.acuitybrands.com/a+](http://www.acuitybrands.com/a+).

#### Optional Back Box (PBBW)

Height	8.47"
Width	17.01"
Depth	1.70"



#### Optional Back Box (BBW)

Height	6.47"
Width	17.01"
Depth	1.51"



### D-Series VC Size 0 LED Area Luminaire

Color	DSX0 LED P1 4K VLS MVOLT SPA COLOR
Part	(Puls = KW-ASP20-4-0-11-F-DM10-BC)
Series	D

#### Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and system-level interoperability.

- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency.
- This luminaire is A+ Certified when ordered with DTL\* controls marked by a **Shielded Backlight** DTL. DTL equipped luminaires meet the A+ specification for luminaire to photometric interoperability.
- This luminaire is part of an A+ Certified solution for RDMAP or dSeries™ Wireless control networks, providing out-of-the-box control compatibility with simple commissioning, when ordered with drivers and control options marked by a **Shielded Backlight**.

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#### Ordering Information

Series	Part	4K	VLS	MVOLT	SPA	FAO	DOB2D
DSX0	P1	4K	VLS	MVOLT	SPA	FAO	DOB2D

Control option	Driver option	Color
Shielded Backlight	DRIVER	Color

**KVP Architecture**  
A+ Certified Architectural Lighting  
3223 Arapahoe Avenue Suite 200  
Boulder, Colorado 80503  
440-9388  
[www.kvparchitecture.com](http://www.kvparchitecture.com)

**Elixinol, LLC New Building**  
Lot 7, Block 4, CTC First Filing 602 Taylor Avenue  
Louisville, Colorado

PROJ NO: 18-14  
DATE: MARCH 8, 2019  
REV:

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LIGHTING CUT SHEETS

11

SHEET 11 OF 11

**ITEM:** ZON-0214-2019, General Development Plan Amendment for Lots 2 and 3, Centennial Valley Parcel O, 7<sup>th</sup> Filing

**PLANNER:** Rob Zuccaro, AICP, Planning and Building Safety Director

**OWNERS:** Seminole Land Holdings, Inc. and Centennial Valley Properties I, LLC

**EXISTING ZONING:** Planned Community Zone District

**LOCATION:** 550 S. McCaslin Boulevard and 919 W. Dillon Road

**TOTAL SITE AREA:** 23.42 Acres +/-

**REQUEST:** Approval of Resolution No. 11, Series 2019, recommending approval of a General Development Plan Amendment concerning allowed uses, heights, densities, and other development provisions for Lots 2 and 3, Centennial Valley Parcel O, 7<sup>th</sup> Filing

**VICINITY MAP:**



## **SUMMARY:**

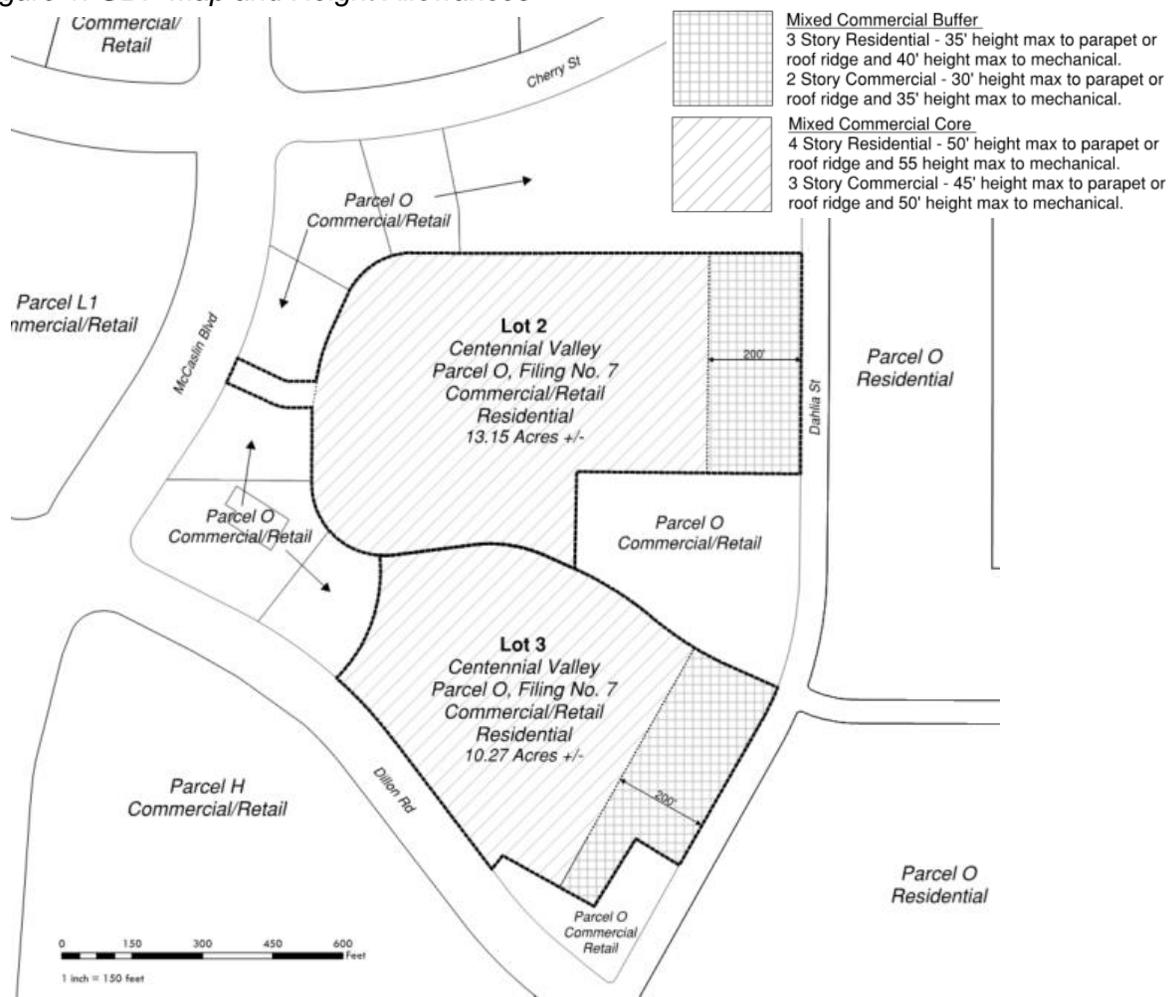
The City of Louisville has worked jointly with the property owners, Seminole Land Holdings, Inc. (Lot 2) and Centennial Valley Properties I, LLC (Lot 3), to propose an amendment to the Centennial Valley General Development Plan (GDP) for Lots 2 and 3, Centennial Parcel O, 7<sup>th</sup> Filing (see Attachment 2). The purpose of the GDP amendment is to implement the findings of the February 1, 2019 McCaslin Parcel O Redevelopment Study (the Parcel O Study) commissioned by the City to understand community and market supported redevelopment options for the subject properties (see Attachment 3). The Parcel O Study was presented to City Council at their February 5, 2019 meeting, at which time they directed staff to work with the property owners on the GDP amendment (see Attachment 4 for minutes).

The GDP amendment would make the following changes to the zoning allowances for the subject properties:

- **Land Uses:** The current GDP limits land uses to “Commercial/Retail” uses as further detailed under Louisville Municipal Code (LMC) Sec. 17.72.090 (see Attachments 5 and 6 for the current GDP and LMC Sec. 17.72.090 respectively). The proposed GDP amendment expands allowed land uses to include Entertainment and Commercial Amusement and Single-Family Attached and Multi-Family Residential.
- **Residential Cap:** A residential cap is set totaling 240 units between the two lots. Incentives are provided to allow additional dwelling units up to a total of 384 units.
- **Residential Incentives:** Three incentives are provided that would result in a 20% (48 unit) bonus per incentive.
  - *An Affordable Housing Incentive* is provided if the development incorporates at least 12% of the units as permanently affordable.
  - *A Public Space Incentive* is provided if the development incorporates at least 12% of the land area into a park, plaza or gathering space with at least 80% of the space continuous. This is above a mandatory public space requirement described below.
  - *A Land Assemblage Incentive* is provided if a minimum of 20 acres of land area is developed under a single Planned Unit Development (PUD) and no more than 87,000 of existing building area is used in the redevelopment. This is to incentives better site planning and layout.
- **Retail Concurrency:** For every 12 units of residential development, the plans must include new development or re-tenanting of vacant retail space with a minimum of 1,000 sq. ft. of new retail or restaurant development and 4,000 sq. ft. of other retail and restaurant or other non-residential development to support the mixed use environment.
- **Commercial Density:** The current GDP limits commercial density to a Floor Area Ratio of 0.2. The proposed GDP amendment would increase the commercial density allowance to 0.3 (excluding any residential components of the development).

- **Public Space:** New residential development must provide a public park, plaza or gathering space totaling a minimum of 7% of the gross development area, with at least 80% of the space contiguous.
- **Block Structure:** Any redevelopment totaling at least 20 acres of land area must include a public or private street grid at 400-600' intervals with multi-modal access.
- **Height Allowance:** The current GDP does not include a height limit. The Commercial Development Design Standards and Guidelines (CDDSG) limits height to 35'. The proposed GDP would provide an increased height allowance in the following two areas designated as "Mixed Commercial Buffer" and "Mixed Commercial Core." The "Mixed Commercial Buffer" includes a height allowance of 3 stories for residential (35' to parapet and 40' to mechanical) and 2 stories commercial (35' to parapet and 40' to mechanical). The "Mixed Commercial Core" includes a taller height allowance of 4 stories for residential (50' to parapet and 55' to mechanical) and 3 stories commercial (45' to parapet and 50' to mechanical).

Figure 1: GDP Map and Height Allowances



**BACKGROUND:**

The City initiated the Parcel O study as a way to address the long-term vacancy of the former Sam's Club property (Lot 2), which has been vacant or underutilized without viable retail uses for the last 9 years. In addition the City anticipates that the Kohl's property (Lot 3) will be vacant at the end of this year with a new Kohl's opening in Lafayette. Retail development within the McCaslin corridor is vital to the fiscal health of the City and either new retail uses or new development to support the viable retail in the corridor is needed to maintain this fiscal health.

The City Council stated goals of the Parcel O Study were to;

- Understand the McCaslin area's potential for retail and commercial development and supportive uses that could foster new investment and development,
- Review the rules and regulations upon properties in the area that may be limiting its full potential for redevelopment,
- Understand and incorporate the property owner's, tenant's and public's input into development and redevelopment options for the area,
- Evaluate various development scenarios that focus on retail and commercial uses with possible residential development only as a secondary use that meet market potential and provide exceptional fiscal benefits for the City by meeting or exceeding past tax revenue performance for the area, and
- Provide recommendations for regulatory changes or other actions that could create more certainty for the development community that encourages redevelopment.

Council direction also included the following principles that were essential to the Parcel O Study:

- Identify emerging markets and retail trends that will result in market supported development scenarios and that ensure the corridor continues to serve as the City's primary retail sales tax base.
- Identify and evaluate development restrictions and regulatory and policy barriers to redevelopment and investment in the corridor.
- Ensure sustainable long-term fiscal health of the City and economic development of the McCaslin corridor by ensuring new development has an exceptional fiscal benefit to the City.
- Reflect residents' desired community character for the corridor in evaluation of development scenarios and study recommendations.

The Parcel O Study focused on market supported and viable redevelopment options and identified barriers to redevelopment. This included an evaluation of market factors, private covenant and City zoning restrictions, financial feasibility, and public desires. Based on these factors, three alternative development scenarios were tested against the project goals. The alternatives were not intended to provide all possible redevelopment options, but instead feasible alternatives to test against the City's set criteria. A summary of each alternative and alignment with project goals is provided on the following page:

Figure 2: Summary of Alternatives from Parcel O Study (page 11)

	Alternative 1: Re-Tenant	Alternative 2 – Partial Redevelopment	Alternative 3 – Major Redevelopment
<b>Description</b>	<ul style="list-style-type: none"> <li>Re-tenant existing vacant/underutilized lots and buildings</li> <li>Includes two retail tenants (70,000 sq. ft.), one office use (35,000 sq. ft.), entertainment or fitness (35,000 sq. ft.), and storage/back office (60,000 sq. ft.)</li> </ul>	<ul style="list-style-type: none"> <li>Partial redevelopment two or more of the larger existing lots. May reuse one, but not all existing buildings.</li> <li>Includes two retail uses (35,000 sq. ft. and 15,000 sq. ft.), one non-retail use such as fitness, recreation or entertainment (35,000 sq. ft.), 120-room hotel, and 245 multi-family residential units.</li> </ul>	<ul style="list-style-type: none"> <li>Comprehensive redevelopment with land assembly (may be phased over time).</li> <li>Represents inclusion of existing retail uses and market demand for additional retail (115,000 sq. ft.), one entertainment or fitness use (35,000 sq. ft.), office uses (65,000 sq. ft.), 120-room hotel, and 525 multi-family residential units.</li> </ul>
<b>Market Support/Challenges</b>	<ul style="list-style-type: none"> <li>Market demand for larger regional retail limited</li> <li>Building configurations not conducive to current retail needs and requirements.</li> <li>Covenants may not support some market-supported uses.</li> </ul>	<ul style="list-style-type: none"> <li>Mix and amount of uses are supportable.</li> <li>Substantial demand for hotel and multi-family uses.</li> <li>GDP and covenants need to be changed to support development scenario.</li> </ul>	<ul style="list-style-type: none"> <li>Mix and amount of uses are supportable.</li> <li>Allows for better orientation to McCaslin frontage and allowed improved marketing to potential users.</li> <li>Assembly of property poses a considerable market challenge.</li> <li>GDP and covenants need to be changed to support development scenario.</li> </ul>
<b>Financial Feasibility</b>	<ul style="list-style-type: none"> <li>Financially feasible based on market inputs.</li> <li>Based on residual land value, price for Lot 2 most limits feasibility.</li> </ul>	<ul style="list-style-type: none"> <li>Most financially feasible based on market inputs.</li> <li>Hotel and multi-family development provide the highest residual land value.</li> <li>Asking price for Lot 2 limits feasibility.</li> </ul>	<ul style="list-style-type: none"> <li>Financially feasible based on market inputs.</li> <li>Hotel and multi-family development provide the highest residual land value and office provides the lowest.</li> <li>Asking price for Lot 2 limits feasibility.</li> </ul>
<b>Community Support</b>	<ul style="list-style-type: none"> <li><i>Use</i> – Little community support for additional big box retailers, preference for smaller format retail and service uses.</li> <li><i>Site Design</i> – Does not reflect community desire for compact, walkable, pedestrian friendly environment.</li> <li><i>Development Characteristics</i> – Does not meet community desire for local, unique, non-chain retail environments with variety of experience.</li> </ul>	<ul style="list-style-type: none"> <li><i>Use</i> – Entertainment and retail uses supported by community input, but reuse of existing building for larger format retailers does not support desire for smaller format retail and service uses.</li> <li><i>Site Design</i> – Some site amenities could be incorporated into the development, but would maintain mostly auto-oriented design.</li> <li><i>Development Characteristics</i> – Does not fully support community desire for a mixed, experience based, and high quality environment.</li> </ul>	<ul style="list-style-type: none"> <li><i>Use</i> – Supports community desire for entertainment/experience based uses to anchor small format, boutique and convenience uses.</li> <li><i>Site Design</i> – Supports major site redesign to include public gathering spaces, paths and trails, and a compact walkable environment.</li> <li><i>Development Characteristics</i> – Supports diverse range of use that accommodates community's desire for a diverse range of uses and supports local and regional shopping destinations.</li> </ul>
<b>Fiscal Impact</b>	<ul style="list-style-type: none"> <li>Provides strong fiscal benefit compared to current conditions (\$17.9 million compared to \$10.7 million over 20 years)</li> </ul>	<ul style="list-style-type: none"> <li>Provides strongest fiscal benefit of alternatives compared to current conditions (\$18.5 million compared to \$10.7 million over 20 years)</li> </ul>	<ul style="list-style-type: none"> <li>Provides strong fiscal benefit compared to current conditions (\$14.8 million compared to \$10.7 million over 20 years)</li> <li>Model shows that residential triggers marginal-cost demand to city services.</li> </ul>

Red = does not align with project goal; Yellow = moderate alignment with project goal; Green = strong alignment with project goal

The proposed GDP amendment is intended to most closely follow Alternative 2, which tested redevelopment of Lots 2 and 3. Alternative 3, which tested redevelopment of the entire area of Parcel O (Cherry to Dillon and McCaslin to Dahlia) better met community supported goals for redevelopment, but is considered unlikely due the need to consolidate 11 lots under separate ownership.

The original Centennial Valley General Development Plan was adopted in 1983 and covered 882 acres, providing a mixed use development with 1,333 dwelling units and 3.677 million square feet of planned building area. The Davidson Mesa open space was dedicated to the City as part of the original development plans. Approximately 70 acres of planned development on the west side of McCaslin Boulevard are still vacant, but platted and zoned for commercial and office development. There have been eight amendment to the General Development Plan since its original adoption in 1983.

### **ANALAYIS:**

#### *GDP Amendment Review Criteria*

LMC Sec. 17.72.060 states that a GDP may be amended pursuant to the same procedure by which the plans was originally approved. The ordinance does not provide specific review criteria for new or amended GDPs. The purpose of the Planned Community Zone District is to:

*...encourage, preserve and improve the health, safety and general welfare of the people of the city by encouraging the use of contemporary land planning principles and coordinated community design. The planned community zone district is created in recognition of the economic and cultural advantages that will accrue to the residents of an integrated, planned community development of sufficient size to provide related areas for various housing types, retail and service activities, recreation, schools and public facilities, and other uses of land.*

Staff finds that the proposed GDP amendment is consistent with this purpose by providing new development options consistent with current land planning principles related to community design. By promoting a mixed-use environment, a redevelopment is more likely to successfully support new retail development and provide a more desirable area to attract regional shoppers and provide amenities to those shoppers and to residents. The GDP amendment promotes the creation of public gathering spaces, such as a park or plaza, and creation of a more pedestrian friendly street network, which were highly desirable amenities commonly noted in the community engagement from the Parcel O study.

Staff also finds that the GDP amendment is consistent with the intent of the original GDP, which is to have a retail and commercial mixed use area with a mix of commercial and residential development east of McCaslin Boulevard and commercial and office uses fronting McCaslin Boulevard and on the west side of McCaslin Boulevard.

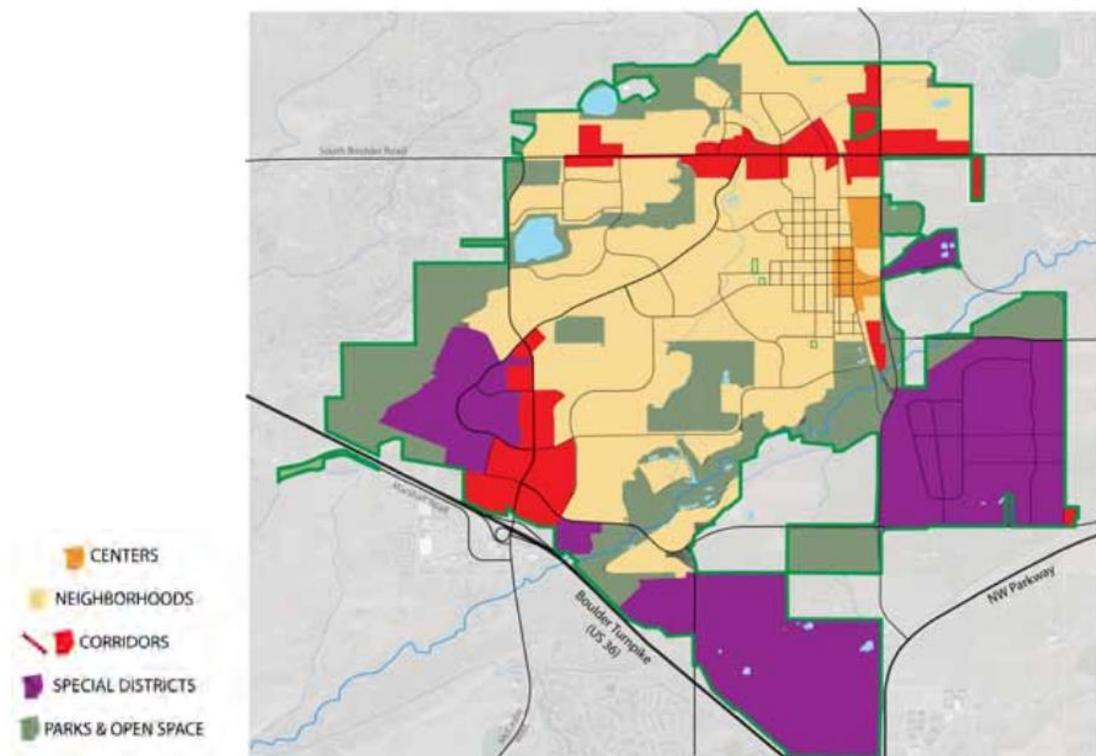
Conformance with the Comprehensive Plan and Small Area Plan

The 2013 Comprehensive Plan (the Plan) designates the area as a Corridor Development Type (see P. 22, Attachment 7), which is defined by the following:

*Generally, corridor development types occur along arterial roadways in a linear form and are disconnected from adjacent land uses. Corridor development types are expected to develop along: McCaslin Boulevard north of Cherry Street and south of Via Appia; along South Boulder Road and along HWY 42, north of Hecla Drive.*

*Corridors typically have strong retail, commercial and multi-family development opportunities. Corridors lack integrated public spaces and typically do not have a focal point and central gathering area. Corridors typically feature a linear, not horizontal, mixture of uses. Generally, their architectural character is defined by the primary arterial roadway.*

Figure 3: Comprehensive Plan Development Types Map



Staff finds that the GDP amendment is consistent with the Corridor Development Type. The proposed development standards provide a mix of retail, commercial and multi-family development opportunities. Although the development type states that corridors lack integrated public space, community input strongly supported a focal gathering point in any new redevelopment.

The Comprehensive Plan also designates the subject properties as part of an Urban Center and includes a “Framework” for the McCaslin Boulevard corridor south of Cherry (see pp. 27-28, Attachment 7). The Plan states that the McCaslin Boulevard Urban Center “shall remain the City’s primary retail center that is supported by a mix of land uses included office and residential.” The plan also calls for a network and secondary streets to support mixed use development and includes an average Floor Area Ratio of 1.0 and up to 30 dwelling units per acre for residential development. The framework states that building heights should range from 1-3 stories with a 4<sup>th</sup> story allowed only if view sheds are preserved and shading mitigated.

The Framework also includes several policies relevant to the GDP amendment, including the following:

*Policy 3. New residential uses should first be introduced in proximity to and a relationship with existing residential areas.*

*Policy 4. Introduce public gathering spaces on both the east and west side of McCaslin Boulevard which will help to create an identity for the area and allow for public events.*

*Policy 5. Retain commercial retail land supply and promote the retention of existing commercial development as a primarily regional retail center.*

*Policy 14. Residential development may be allowed east of McCaslin if it is incorporated into a development proposal which provides exceptionally strong fiscal and economic benefits to the City.*

Staff finds that the GDP amendment is consistent with the Framework plan and policies for McCaslin Boulevard. The proposed commercial and residential densities and heights are consistent with those noted in the Plan. A 4<sup>th</sup> story is allowed with view corridor and shading protection. The GDP amendment includes a 200’ buffer from the existing residential development east of Dahlia Street before any 4-story residential development could take place. Although the Parcel O Study did not contemplate 4-story development, both property owners have requested a 4-story allowance for residential development and believe it would help facilitate a more viable project. Allowing a 4-story development does not change the residential density cap in the plan.

The GDP amendment is also consistent with the stated Framework policies of new residential being in proximity to existing residential and the GDP amendment is intended to match market demand for retail and support new and existing retail in the corridor. The Parcel O Study demonstrates that the redevelopment scenarios supported by the GDP amendment are the most market feasible and thus provides the strongest fiscal and economic benefit to the City.

Following adoption of the 2013 Comprehensive Plan, the City adopted the McCaslin Boulevard Small Area Plan in 2017 (the Small Area Plan) (see Attachment 8). The

Small Area Plan provided a more in-depth analysis and policies for the corridor. The Small Area Plan designates the subject properties as a Center Development Type. The Center Development Type is described by the following: “Buildings are oriented towards the streets and sidewalks with small, consistent setbacks. Pedestrian and bike connectivity is provided by street and sidewalk networks.” The Small Area Plan calls for a secondary street network with smaller block patterns as a way to improve pedestrian and bicycle connectivity. A park is designated as desired within Parcel O if it is to redevelop. A building height plan shows that height should be limited to 2 stories adjacent to existing residential development east of Dahlia Street. The plan does not support any additional residential development within Parcel O or elsewhere in the corridor.

Staff finds that the GDP amendment is consistent with some but not all policies within the Small Area Plan. The requirements within the GDP for a smaller block network and multimodal streets and providing a public gathering space through a larger park or plaza is consistent with the Small Area Plan Policies. The GDP amendment does not meet the 2-story buffer standard along Dahlia illustrated in the Small Area Plan. The GDP amendment proposes to maintain a 2-story height limit for any new commercial development within a 200-foot buffer adjacent to Dahlia Street, consistent with the Small Area Plan, but also includes an allowance for up to 3-story residential development. This would help to accommodate more residential products, including duplexes and row homes, where 3 stories is often desirable. Typically, 3-story residential development can be accommodated with less overall height than 3-story commercial development. The 3-story residential development height limit in the GDP amendment is limited to 5 feet over the 2-story commercial limit.

The GDP amendment does not match the land use plan in the Small Area Plan that limits Parcel O to commercial uses. At the time of the Small Area Plan adoption, the City was actively pursuing retail redevelopment of the for Sam’s Club site. This opportunity is no longer viable, and based on the Parcel O Study, which was centered around a market feasibility analysis, supporting a mix of uses would help to ensure a stronger long-term fiscal health for the City and better match community desires for redevelopment.

In summary, staff finds that the GDP amendment conforms to the policies of the Comprehensive Plan and most policies of the Small Area Plan. The GDP amendment does not meet the height policy and commercial-only land use policy for Parcel O in the Small Area Plan. However, without a viable retail-only redevelopment scenario supported by market conditions, the City desires a change in land uses that can maximize retail opportunities and support existing retail in the corridor. In addition, the Small Area Plan did not contemplate residential development within Parcel O and the height policy limit of 2-stories was set for new commercial development, which typically is taller than residential development with the same number of stories. The Comprehensive Plan and Small Area Plan are advisory documents only and the GDP amendment may still be approved based on other City policies and priorities.

### Transportation Study

A Transportation Impact Analysis (TIA) was completed to evaluate how redevelopment of Parcel O could impact the surrounding transportation network and to provide recommendation on safety improvements and possible mitigations to any impacts (see Attachment 9). The TIA studied both Alternative 2 and Alternative 3 from the Parcel O Study. Again, Alternative 2 included redevelopment of Lots 2 and 3 only and aligns with the proposed GDP amendment. Alternative 3 includes a redevelopment of all of Parcel O and includes more residential development (525 units vs 245 units) and office uses than Alternative 2. The TIA compared the two redevelopment scenarios to current conditions with Sam's Club vacant and a baseline scenario that modeled the Sam's Club as an occupied use. Analysis was also conducted under current (2019) and a future (2040) scenario that modeled background traffic increases. The TIA concluded that the trips associated with both redevelopment scenarios would not adversely impact traffic operations.

Net new project trips for Alternative 3 (full redevelopment of Parcel O) would be less than the trips generated by current development in the AM and PM peak hours. This is primarily due to the existing retail and restaurant uses generating more traffic than the residential uses and office uses included in Scenario 3. Because of the overall trip reduction, intersection analysis was not studied. Under Scenario 2, with less residential development and no office development, there are slightly fewer PM peak trips and slightly more AM peak trips compared to the baseline scenario that assumes the Sam's Club store is occupied. Overall intersection Level of Service is not impacted by this redevelopment scenario.

### Concept Models

In order to better understand how a potential redevelopment under the proposed GDP amendment could occur, the City had two concept models created (see Attachment 10). The models show the allowed densities, heights, use mix, street network and public space concept from the GDP amendment. Concept 2.0 shows a full redevelopment of the Sam's Club property with a mix of residential types, a 1.2 acre public park or plaza and re-tenanting of the Kohl's building with two new tenants along with a hotel with retail and restaurant uses. This concept matches Alternative 2 from the Parcel O Study, and includes the maximum number of residential units identified in the GDP amendment without incentives for additional units (240 units). Concept 2.1 shows a redevelopment of both lots with a mix of residential types, office and commercial development with a 1.4 acre park. This concept shows slightly more residential (256), which could only occur if one of the residential incentives were met. *It is important to note that these two concept drawings do not represent actual proposals and a final development concept for either or both of the lots could look significantly different. They are intended to aid the analysis how the proposed mix of uses, height and densities interrelate with the surrounding development and if these elements match the desired community character for the area.*



**2.0 HYBRID DEVELOPMENT SCENARIO - AERIAL PERSPECTIVE**  
**KOHL'S RETENANT**

DRAFT - 06.05.19

*NOTE: This model's purpose is to illustrate a scenario of development that meets the redevelopment study's findings. It does not represent a developer's proposal. Configuration and layout subject to change in a final design scenario.*



**2.1 HYBRID DEVELOPMENT SCENARIO - AERIAL PERSPECTIVE**  
**NEW CONSTRUCTION ON KOHL'S AND SAM'S CLUB SITES**

DRAFT - 06.05.19

*NOTE: This model's purpose is to illustrate a scenario of development that meets the redevelopment study's findings. It does not represent a developer's proposal. Configuration and layout subject to change in a final design scenario.*



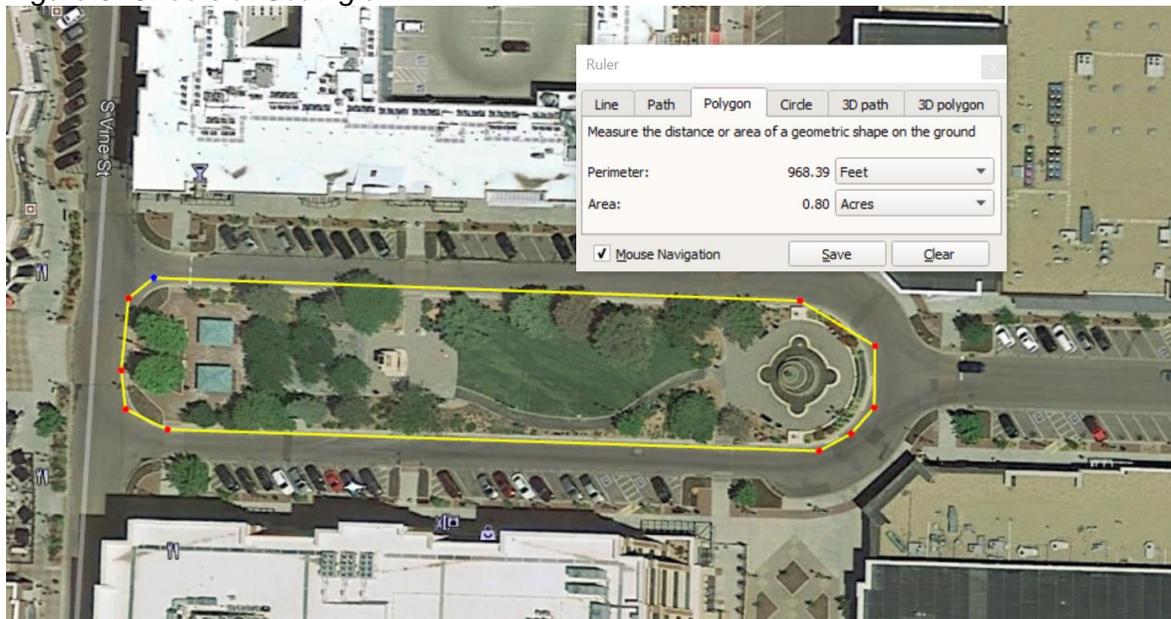
### Public Space Requirement

One of the most common public comments from the Parcel O Study was a desire for a public gathering space of some kind within the McCaslin Corridor. This was also noted as strong desire with the McCaslin Small Area Plan and is shown as a desired element in the Plan's land use map. The GDP amendment includes a requirement for such a public space if one or both properties redevelop with residential uses as percentage of the total development area (7% with 80% of the public space contiguous). If both lots develop together, a minimum of 1.6 acres of public space would be required, with 1.3 acres of the public space being contiguous. If the lots develop individually, the total public space on each lot would range between .7 and .9 acres, with approximately .6 and .7 of the public space being contiguous. There is also a public space incentive for additional residential development that would require the provision of 12 percent of the development area as open space. Staff analyzed public parks and plazas from other new developments and redevelopments to determine what would be a typically sized public space. Below are two examples of public spaces in redevelopments that have incorporated public parks and plazas between that are between .8 and 2.2 acres.

Figure 4: Englewood Civic Center



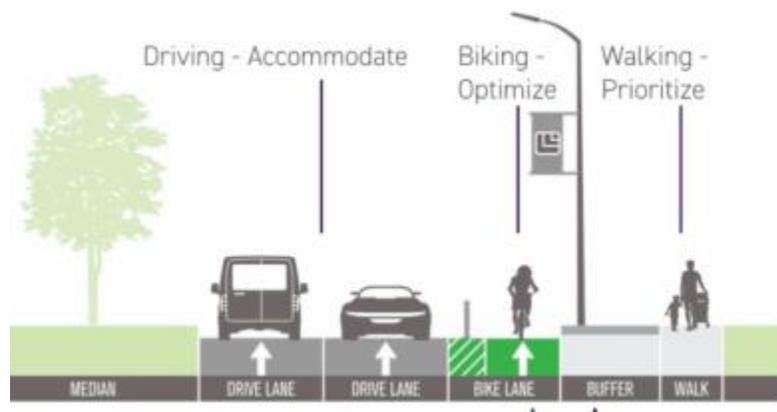
Figure 5: Streets at Southglenn



### Block Structure Requirement

The intent of requiring a smaller block structure with a multimodal road cross section is to improve access overall for the retail users and make the road network more pedestrian and bicycle friendly. Smaller block structures (similar to what is found in Downtown) improves connectivity and pedestrian comfort and access. The street cross section would need to show accommodations for pedestrians and bicycles with designated lanes and/or separated paths or sidewalks. A street cross section is not proposed with the GDP, but could be reviewed with a Planned Unit Development. The following cross section shows a typical multi-modal cross section accommodated vehicles, bicyclists and pedestrians.

Figure 6: Example Multi-Modal Street Section



### **PUBLIC COMMENTS:**

See Attachment 11 for public comments received prior to publication of the packet.

**STAFF RECOMMENDATION:**

Staff recommends approval of Resolution 11, Series 2019 , recommending approval of a General Development Plan Amendment concerning allowed uses, heights, densities, and other development provisions for Lots 2 and 3, Centennial Valley Parcel O, 7<sup>th</sup> Filing.

**ATTACHMENTS:**

1. Resolution 11, Series 2019
2. Proposed GDP Amendment, Lots 2 and 3, Centennial Valley Parcel O, Filing 7
3. McCaslin Parcel O Redevelopment Study
4. February 5, 2019 City Council Minutes
5. July 28, 2015 Centennial Valley General Development Plan
6. LMC Sec. 17.72.090
7. 2013 Comprehensive Plan
8. McCaslin Small Area Plan
9. Transportation Impact Analysis
10. Concept Models
11. Public Comments
12. Application Forms
13. Draft Ordinance

**RESOLUTION NO. 11  
SERIES 2019**

**A RESOLUTION RECOMMENDING APPROVAL OF A REQUEST FOR A GENERAL  
DEVELOPMENT PLAN AMENDMENT CONCERNING ALLOWED USES, HEIGHTS,  
DENSITIES, AND OTHER DEVELOPMENT PROVISIONS FOR LOTS 2 AND 3,  
CENTENNIAL VALLEY PARCEL O, 7<sup>TH</sup> FILING**

**WHEREAS**, the City of Louisville zoned Lots 2 and 3, Centennial Valley Parcel O, 7<sup>th</sup> Filing as Planning Community Zone District along with approval of the first Centennial Valley General Development Plan (GDP) in 1983; and

**WHEREAS**, the City of Louisville has approved several amendments to the GDP since 1983, with the most current GDP amendment approval taking place on July 28, 2015 by Ordinance 1696, 2015; and

**WHEREAS**, the City of Louisville desires to amend the GDP to allow a mix of uses and to updated development standards for Lots 2 and 3, Centennial Valley Parcel O, 7<sup>th</sup> Filing in order to support existing commercial development in the McCaslin corridor and provide a desirable environment for new regional and neighborhood commercial development; and

**WHEREAS**, the Planning Commission has considered the application at a duly noticed public hearing on June 13, 2019, where evidence and testimony were entered into the record, including the findings in the Louisville Planning Commission Staff Report dated June 13, 2019.

**NOW THEREFORE, BE IT RESOLVED** that the Planning Commission of the City of Louisville, Colorado does hereby recommend approval of a General Development Plan Amendment concerning allowed uses, heights, densities, and other development provisions for Lots 2 and 3, Centennial Valley Parcel O, 7<sup>th</sup> Filing.

**PASSED AND ADOPTED** this 13<sup>th</sup> day of June, 2019.

By: \_\_\_\_\_  
Steve Brauneis, Chairperson  
Planning Commission

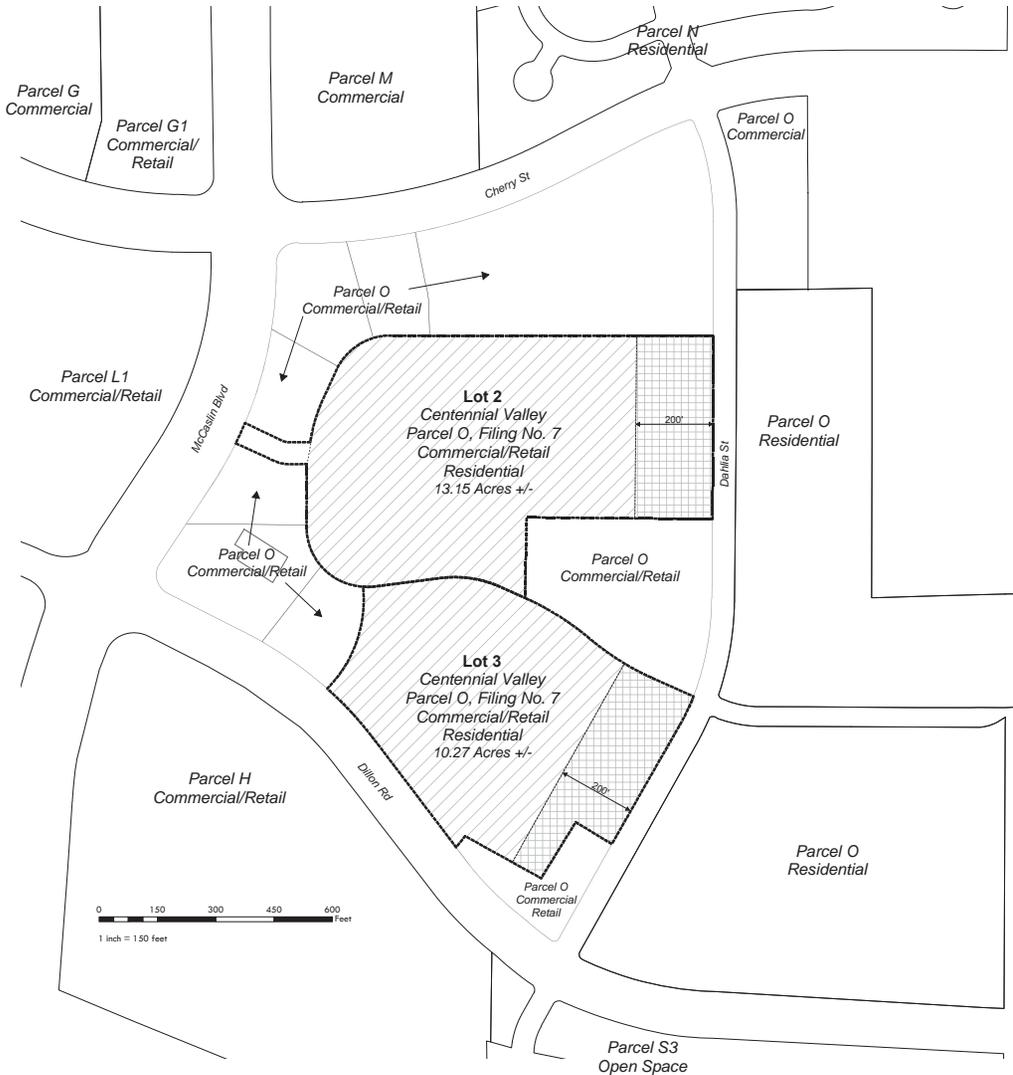
Attest: \_\_\_\_\_  
Debra Williams, Secretary  
Planning Commission

Draft  
05.23.2019

# General Development Plan Amendment Centennial Valley Lots 2 and 3 Parcel O

Lots 2 and 3, Centennial Valley Parcel O, Filing No. 7

Sheet 1 of 1



**Notes**

- Purpose and Intent** - The purpose and intent of this General Development Plan Amendment is to enhance the retail environment in Parcel O and the Centennial Valley planning area by providing a mix of uses and a desirable environment for regional and neighborhood commercial development.
- This General Development Plan Amendment supersedes the use and development standards of previous Centennial Valley General Development Plans and all amendments thereto and the Centennial Valley Amended and Restated Development Agreement and all amendments thereto for Lots 2 and 3 of Parcel O only. Gross allowed building area for Parcel O provided by the Centennial Valley General Development Plan shall be increased proportionately to accommodate the floor area ratios for Lots 2 and 3 approved with this amendment.
- Zoning** - Planned Community Zone District - Commercial/Residential
- Development shall be subject to the Commercial Development Design Standards and Guidelines, or applicable design regulations in effect at the time of development, except as modified by this General Development Plan. Setbacks shall be determined through the Planned Unit Development site plan review process, which is required before any development or construction may commence.

**Maximum Height Allowances**

	<b>Mixed Commercial Buffer</b> 3 Story Residential - 35' height max to parapet or roof ridge and 40' height max to mechanical. 2 Story Commercial - 30' height max to parapet or roof ridge and 35' height max to mechanical.
	<b>Mixed Commercial Core</b> 4 Story Residential - 50' height max to parapet or roof ridge and 55 height max to mechanical. 3 Story Commercial - 45' height max to parapet or roof ridge and 50' height max to mechanical.

**Development Requirements and Incentives**

<b>Allowed Land Uses</b>	<ul style="list-style-type: none"> <li>Commercial/Restaurant/Retail/Office - All uses defined in LMC 17.72.090</li> <li>Entertainment and Commercial Amusement</li> <li>Single-Family Attached and Multi-Family Residential</li> </ul>
<b>Residential Cap</b>	Cap of 120 dwelling units per lot for a total of 240 dwelling units (up to 384 dwelling units possible with cumulative incentives). Unit allowance may be transferred between lots upon consent of each property owner or if both lots are under single ownership.
<b>Retail Concurrence</b>	Every 12 units of residential development must include, through new development or re-leasing of existing vacant commercial buildings subsequent to the date of approval of this General Development Plan Amendment, a minimum of 1,000 square feet of retail or restaurant development and 4,000 square feet of other development which may include additional retail or restaurant uses or any other allowed non-residential uses. Such concurrent development must take place on the same lot as the residential development unless both lots are developed under a single Planned Unit Development.
<b>Public Space Requirement<sup>1</sup></b>	New residential development requires development of a public space equating a minimum of 7% of the gross land area developed for all uses. A minimum of 80% of the Public Spaces must be contiguous. Public Space requirement is capped at 2 acres unless Public Space Incentive is sought.
<b>Commercial Density</b>	0.3 floor area ratio (FAR) (excludes any residential components of development)
<b>Block Structure</b>	All redevelopment that assembles a minimum of 20 acres of land area must provide blocks and street grid at 400-600' intervals with multimodal cross section. Streets may be private or public.
<b>Affordable Housing Incentive<sup>2</sup></b>	New residential development that assembles a minimum of 20 acres of land and includes a minimum 12% of the units restricted as permanently affordable (60-120% AMI) receives up to a 20% bonus (48 units) on the residential cap.
<b>Public Space Incentive<sup>2</sup></b>	New development that provides a minimum of 12% of land area for public spaces receives up to a 20% bonus (48 units) on the residential cap. A minimum of 80% of the Public Spaces must be contiguous.
<b>Land Assemblage Incentive<sup>2</sup></b>	Any development that assembles a minimum of 20 acres in land area for redevelopment under a single Planned Unit Development receives up to a 20% (48 unit) bonus on the residential cap. A maximum of 87,000 square feet of existing building area may be utilized within the development plans.

<sup>1</sup> Public Space includes private or public parks, plazas or gathering spaces. Parking lot landscaping and landscape buffers required by City zoning shall not count towards the Public Space requirement. Stormwater detention area shall not count toward the Public Space requirement with the exception of areas fully integrated into a publicly accessible park, plaza or other gathering space.  
<sup>2</sup> Residential bonuses are a percentage of the base residential cap of 240 units and may be cumulative up to a maximum of 384 units.

**Ownership Signature - Lot 2**

By signing this General Development Plan Amendment the owner acknowledges and accepts all the requirements and intent set forth herein.  
Witness my/our hand(s) seal(s) this \_\_\_ day of \_\_\_\_\_, 20\_\_.

Seminal Land Holding, Inc.

STATE OF COLORADO )  
 )ss

COUNTY OF \_\_\_\_\_ )

The foregoing instrument was acknowledged before me this \_\_\_ day of \_\_\_\_\_, 20\_\_ by \_\_\_\_\_ as \_\_\_\_\_ of \_\_\_\_\_.

My commission expires: \_\_\_\_\_

Notary Public \_\_\_\_\_

**Ownership Signature - Lot 3**

By signing this General Development Plan Amendment the owner acknowledges and accepts all the requirements and intent set forth herein.  
Witness my/our hand(s) seal(s) this \_\_\_ day of \_\_\_\_\_, 20\_\_.

Centennial Valley Properties I, LLC

STATE OF COLORADO )  
 )ss

COUNTY OF \_\_\_\_\_ )

The foregoing instrument was acknowledged before me this \_\_\_ day of \_\_\_\_\_, 20\_\_ by \_\_\_\_\_ as \_\_\_\_\_ of \_\_\_\_\_.

My commission expires: \_\_\_\_\_

Notary Public \_\_\_\_\_

**Planning Commission Certificate**

Approved this \_\_\_ day of \_\_\_\_\_, 20\_\_ by the Planning Commission of the City of Louisville, Colorado. Resolution No. \_\_\_\_\_, Series \_\_\_\_\_

**City Council Certificate**  
Approved this \_\_\_ day of \_\_\_\_\_, 20\_\_ by the City Council of the City of Louisville, Colorado. Resolution No. \_\_\_\_\_, Series \_\_\_\_\_

Mayor Signature \_\_\_\_\_

City Clerk Signature \_\_\_\_\_

**Clerk and Recorder Certificate**

(COUNTY OF BOULDER, STATE OF COLORADO)  
Recorded at \_\_\_\_\_ o'clock, \_\_\_\_\_ M., this \_\_\_ day of \_\_\_\_\_, 20\_\_

Receptions No. \_\_\_\_\_

## Final Report

# McCaslin Parcel O Redevelopment Study

*The Economics of Land Use*



**Prepared for:**  
City of Louisville

**Prepared by:**  
Economic & Planning Systems, Inc.  
and Trestle Strategy Group

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February 1, 2019

EPS #183049

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# 1. Introduction and Summary of Findings

The City of Louisville retained Economic & Planning Systems (EPS) and Trestle Strategy Group (Trestle) to complete a development study focused on revitalization and development options for a portion of the McCaslin Subarea referred to as the McCaslin Parcel O Study Area (Study Area). The purpose of the Study was to determine the market potential and financial feasibility for retail and commercial development uses that can contribute to the retail vibrancy of the corridor and the fiscal health of the city. In addition, the City structured a process that included property owner, tenant, and public input into the recommended findings to identify alignment and build support for revitalization of the area.

## Background

The McCaslin Subarea is a primary retail destination providing services to residents of Louisville and the surrounding communities, as well as an important sales tax generator that contributes to the fiscal health of the City of Louisville. There are a number traditional retail anchors within the corridor including Home Depot, Lowe's, Kohl's, and Safeway. There is also a concentration of restaurant, entertainment, employment, and hospitality uses that contribute to the overall market draw of the corridor.

The McCaslin Parcel O Study Area includes a total of 44.6 acres and 11 parcels as shown in **Figure 1**. The largest parcel in the Study Area is a former Sam's Club membership warehouse store that has been vacant and/or occupied by non-sales tax generating uses since it closed in 2010. Redevelopment options for this property are limited by changes within the retail industry, shifting market conditions within the trade area, outdated infrastructure, and private covenants restricting some potential uses.

Kohl's announced that it will also leave the area when its lease expires in the fall of 2019 further exacerbating the revitalization challenges for the area. The McCaslin Parcel O Redevelopment Study is an effort to identify opportunities for the McCaslin commercial area to encourage retail vibrancy, commercial health, and a desirable place for the community to gather. The City's goals for the Study are to:

- Understand the McCaslin area's potential for retail and commercial development and supportive uses that could foster new investment and development;
- Review the rules and regulations upon properties in the area that may be limiting its full potential for redevelopment;

- Understand and incorporate property owners', tenants' and the public's input into development and redevelopment options for the area;
- Evaluate various development scenarios that focus on retail and commercial uses with possible residential development only as a secondary use, that meet market potential and provide exceptional fiscal benefits for the City by meeting or exceeding past tax revenue performance for the area; and
- Provide recommendations for regulatory changes or other actions that could create more certainty for the development community that encourages redevelopment.

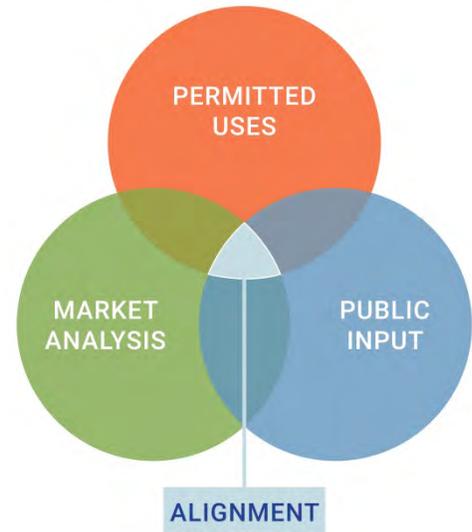
Figure 1. McCaslin Study Area (Parcel O)



## Scope of Work

The redevelopment study analysis and conclusions are summarized in six chapters following this Introduction and Summary of Findings as follows:

- Study Area Overview and Regulatory Framework** – A review and evaluation of development regulations and restrictions affecting re-tenanting or redevelopment of the property including zoning, General Development Plan (GDP), and private covenants and restrictions.
- Economic and Demographic Framework** – A summary of economic and demographic trends and conditions in the City of Louisville and in the larger McCaslin Study Trade Area.
- Retail Market Analysis** – An analysis of retail and commercial market conditions and potentials for the McCaslin Subarea and for Study Area properties including a summary of national and local retail trends, existing sales and spending levels, competitive development patterns, and future opportunities.
- Alternative Uses Market Analysis** – An analysis of market potentials for alternative and supplemental uses of Parcel O buildings and land including office, multifamily housing, hospitality, and entertainment uses.
- Community Engagement Process** – A review of the community engagement process and inputs from the stakeholder outreach process into the identification of potential reuse options.
- Reuse and Redevelopment Alternatives** – Identification of alternative reuse and redevelopment options for the vacant and underutilized properties within the Study Area and a comparative economic and financial evaluation of their feasibility and relative returns. The most viable development programs were defined and evaluated based on their market feasibility, fiscal impact to the city using the City’s fiscal model, and their consistency with the overall goals and objectives of the city and its residents.



## Summary of Findings

The major findings from the development study for the McCaslin Study Area are summarized below.

**1. *The national retail environment is changing dramatically, which is impacting retail opportunities for the McCaslin Subarea.***

The national retail environment has been shifting over the past decade due to the growth of e-commerce, consolidation of retail chain stores, and changing spending patterns from consumers. Many brick and mortar retailers are creating both physical store and online sales platforms that have resulted in consolidation of store outlets to the most central and attractive locations. As well, store formats are shifting to match with new conditions. The retail sector has bifurcated into national mass merchandisers focused on low-cost and convenience, and on national and local specialty retailers providing authentic and value-added higher-quality goods in retail environments that are more experience-oriented. This shift has spurred the growth of restaurants, bars, and entertainment venues as components of retail centers.

**2. *The McCaslin Subarea retail trade area has contracted over time from a regional to more localized community orientation due to new competitive stores and centers along US-36, I-25 North, and within the City of Boulder.***

The regionally oriented retail centers and nodes have experienced significant turnover in the past 10 years as anchor store tenants (Sam's Club, Best Buy, Great Indoors, and Sports Authority) have left the corridor for other locations or due to retail chain closures and mergers and acquisitions. Older shopping centers with vacant anchor stores have looked to alternative uses to bolster demand and reinvent areas as finding available retail tenants to replace large, vacant spaces has been difficult. Despite a significant amount of infill housing development in communities along US-36, the majority of new housing growth has occurred in eastern portions of Broomfield Counties along the I-25 corridor and in the City of Boulder, which has shifted retail growth to these areas over the past 10 years. Kohl's recent decision to close its store in Parcel O and open a new store at US-287 and Arapahoe Road in Lafayette, as well as Lowe's considering to open a new store in the same area, are examples of this trend impacting the Study Area.

**3. *Future retail demand for the McCaslin Subarea is limited as there are few large format retailers not already serving the trade area available to be recruited.***

The McCaslin Community Trade Area is expected to grow by 12,500 households over the next 10 years, which will produce demand for 150,000 square feet of new retail over the time period. It is realistic the Subarea can capture 20 percent of this demand but there will be greater competition from other developments in the area including the Downtown Superior project and

retail projects along US-287 in Lafayette. While it is possible that some of the 215,000 of vacant or soon to be vacant big box retail space in the McCaslin Study Area can be leased to other junior anchor stores, there is insufficient retail demand to absorb all of this space with sales tax generating uses consistent with the City's objectives for the site. If a more desirable place is created within Parcel O, the area will have a better chance to attract more retail than its proportional share.

**4. *There is demand for hotel and multifamily housing within the subarea that can help support revitalization efforts for Parcel O.***

The existing inventory of competitive hotels in the market area is performing at above average occupancy and room rates. Additionally, there is a new Element Hotel under construction in Superior further substantiating the viability of the hotel market. Based on current growth trends, a new hotel is estimated to be supportable in the market area within the next five years. Multifamily rental housing has also been growing in the corridor but is underrepresented in the immediate Louisville market. New condo developments are limited in the Community Trade Area and difficult to attract to the site given market constraints to condo construction. There is an estimated demand for 1,000 to 1,200 new multifamily housing units within the Community Trade Area over the next 10 years.

**5. *The potential for office space in the McCaslin Study Area is expected to be limited to community services and medical related uses.***

The Centennial Valley Plan is an established location for office and flex uses. There is however, vacant land along Centennial Valley Parkway in a location better suited for professional office and flex buildings. The vacant lots are located in a business park setting that is more attractive for traditional office uses use as the land costs are likely lower and they are sized and priced for these uses, reducing the barriers to delivery. The type of office space determined to be suitable for location within the McCaslin Parcel O Area is expected to include community oriented uses such as realty, insurance, banks and medical related uses including medical and dental offices, and outpatient and acute care clinics.

**6. *The financial feasibility analysis indicates mixed-use redevelopment within Parcel O is feasible and would be more valuable to the property owners if the allowable densities are increased and alternative uses such as multifamily and/or fitness and entertainment uses are allowed.***

The feasibility analysis illustrated that redevelopment of two or more of the larger lots is most feasible, provided the GDP and CCRs can be modified accordingly. A more ambitious redevelopment as tested for Alternative 3 would require significant public incentives to facilitate land assembly and the involvement of a master developer including density bonuses, increases in allowable secondary uses (multifamily), and/or public financing support. This is especially true for uses that have lower financial return such as office space.

**7. All three of the alternatives identified for Parcel O were found to have a positive fiscal impact over 20 years.**

The fiscal impact of all three alternatives produced a benefit of over \$10 million over 20 years to the City. As well, all three produced a more positive impact than the site will produce when Kohl's vacates the area. The increase of utilization of the parcel and the retention and/or incorporation of sales tax producing uses (larger retailers, hotel uses) can offset any negative impacts created from non-sales tax producing uses. The potential mixed-use development alternatives (Alternatives 2 and 3) both create fiscal benefits illustrating that allowing for uses such as multifamily residential will help support reinvestment and redevelopment, while not creating a major fiscal burden.

**8. The Community Engagement analysis indicates a strong desire for a mix of uses, including new and unique uses that foster place-making and a family friendly destination.**

Extensive community engagement was conducted and identified a strong desire for new and unique uses ranging from retail, restaurants, entertainment, fitness, and mixed-use residential. Specific area site characteristics and features identified included making the area more walkable and pedestrian friendly, while also adding community spaces such as plazas and other gathering spaces. The community also shared many modern examples of family friendly, mixed use developments and adaptive reuse projects that incorporate food halls, breweries, and other boutique and local type retail environments that would provide a destination for both local community members and visitors. Desired characteristics and uses identified by the community will help support and attract redevelopment and will retain long-term tenants.

## Alternatives Review

Three alternatives were developed and analyzed to provide direction on the redevelopment opportunities for Parcel O. These alternatives were evaluated based on their market support and feasibility, community support (use, site design, development characteristics), and fiscal impact.

The evaluation of the alternatives indicates partial or major redevelopment of Parcel O is possible and desirable as long as it achieves community objectives. Alternative 2 is the most market supportable and feasible and produces the greatest fiscal impact; however it does not fully address community desires. Alternative 3 allows for community desires to be addressed but could prove a challenge to attract and incentivize a developer to do a major, multiple parcel redevelopment. However, redevelopment of Parcel O over time, in various phases/projects, as represented in Alternative 3, can achieve a similar outcome. Alternative 1 maintains the status quo for the conditions in the Subarea but re-tenanting the spaces is needed to maintain the fiscal impact Parcel O has provided historically. Successfully attracting and retaining retail tenants with fiscal performance outlined in Alternative 1 will be difficult given the market analysis, retail trends, and property owner expectations.

## Implementation Recommendations

The extensive and overlapping regulatory and policy documents cause confusion and misalignment surrounding the opportunities, limitations, and constraints for Parcel O redevelopment. Multiple and dated guiding documents makes it burdensome for developers, property owners, and the City of Louisville to navigate the complex entanglement of regulations surrounding not just Parcel O, but also the entire 882-acre General Development Plan (GDP) area. The following actions should be considered to help attract reinvestment and renewed interest into the McCaslin Subarea.

**1. *Modify the existing GDP and Development Agreement to allow for a greater variety of uses (e.g., fitness clubs/studios) and multifamily housing and incentivize retail development through increased density on the site.***

- Initiate a GDP amendment or adopt a new GDP governing Parcel O that will reduce barriers to redevelopment and reflect the City's desired development for the Study Area. The GDP amendment should support either Alternative 2 or 3, allowing redevelopment to occur parcel by parcel or as a larger assembled redevelopment.
- Require redevelopment projects to provide a minimum amount of retail space or sales tax generating uses.
- Create a cap on the total amount of development density and/or acreage within Parcel O that is developed for non-sales tax generating uses, and/or multifamily housing.
- Provide additional density and/or greater allowance for non-sales tax generating uses within redevelopment projects that aggregate existing parcels into sites of greater than 18 acres in size.
- Provide additional density allowance and/or greater allowance for non-sales tax generating uses within redevelopment projects that increase the amount of retail space being redeveloped.

**2. *Provide an additional density allowance and/or greater allowance for non-sales tax generating uses within redevelopment projects that improve connectivity or provide community amenities such as plazas, opens spaces and community gathering spaces. Focus efforts on supporting and growing the retail base in the Subarea and shifting the focus of retail development and tenanting to community-oriented uses.***

- Identify potential locations for major everyday convenience retail anchors that are identified as supportable (including an additional grocery store or beer, wine and liquor superstore) to locate in the Subarea. Utilize incentives and public financing tools to address issues with potential locations.

- Identify and attract larger supportable non-retail anchors such as a large fitness center and/or an entertainment use that can draw additional consumer traffic to the Subarea.
- 3. *Work with the Parcel O property owners to modify the CCRs to allow for an expanded mix of retail and non-retail uses supported in the market and that contribute to the overall viability of the Subarea as a commercial destination.***
- Condense the existing private covenants and various other agreements impacting Parcel O into an amended document. The revised private covenants will need to reflect the original intent and stated responsibilities/obligations while also being modernized to reflect existing and projected market demand.
- 4. *Invest in public improvements and amenities that allow Parcel O to succeed in an evolving commercial market.***
- Identify ways to invest in and/or encourage the incorporation of uses and amenities that will support existing retailers and create a more diversified mixture of retail goods and services in the Subarea with retail area reconfiguration projects and redevelopment projects.
  - Amenities to focus on include: enhanced pedestrian and bicycle paths and connections to and throughout the Subarea, community gathering spaces that are integrated and activated by current and new uses, and enhanced vehicular access and circulation to retail sites.

## Evaluation Summary

The evaluation of the alternatives indicates partial or major redevelopment of Parcel O is possible and desirable as long as it achieves community objectives. Alternative 2 is the most market supportable and feasible and produces the greatest fiscal impact; however it does not fully address community desires. Alternative 3 allows for community desires to be addressed but it will be a challenge to attract and incentivize a developer to do a major, parcel wide redevelopment. However, redevelopment of Parcel O over time, in various phases/projects, can achieve a similar outcome. Alternative 1 maintains the status quo for the conditions in the Subarea but re-tenanting the spaces is needed to maintain the fiscal impact Parcel O has provided historically.

The City should:

- Initiate a GDP amendment to allow for the market and community supported uses shown in Alternatives 2 and 3.
- Work with property owners to:
  - modify the private covenants and
  - modify other private agreements to remove use, height and density barriers to the market and community supported uses.
- Identify potential investments in public infrastructure and amenities to support the market and community supported uses.
- Investigate public financing mechanisms to encourage desired redevelopment scenarios and support community desires.

Figure 2. Alternative Evaluation Summary

	Alternative 1: Re-Tenant	Alternative 2 – Partial Redevelopment	Alternative 3 – Major Redevelopment
<b>Description</b>	<ul style="list-style-type: none"> <li>• Re-tenant existing vacant/underutilized lots and buildings</li> <li>• Includes two retail tenants (70,000 sq. ft.), one office use (35,000 sq. ft.), entertainment or fitness (35,000 sq. ft.), and storage/back office (60,000 sq. ft.)</li> </ul>	<ul style="list-style-type: none"> <li>• Partial redevelopment two or more of the larger existing lots. May reuse one, but not all existing buildings.</li> <li>• Includes two retail uses (35,000 sq. ft. and 15,000 sq. ft.), one non-retail use such as fitness, recreation or entertainment (35,000 sq. ft.), 120-room hotel, and 245 multi-family residential units.</li> </ul>	<ul style="list-style-type: none"> <li>• Comprehensive redevelopment with land assembly (may be phased over time).</li> <li>• Represents inclusion of existing retail uses and market demand for additional retail (115,000 sq. ft.), one entertainment or fitness use (35,000 sq. ft.), office uses (65,000 sq. ft.), 120-room hotel, and 525 multi-family residential units.</li> </ul>
<b>Market Support/Challenges</b>	<ul style="list-style-type: none"> <li>• Market demand for larger regional retail limited</li> <li>• Building configurations not conducive to current retail needs and requirements.</li> <li>• Covenants may not support some market-supported uses.</li> </ul>	<ul style="list-style-type: none"> <li>• Mix and amount of uses are supportable.</li> <li>• Substantial demand for hotel and multi-family uses.</li> <li>• GDP and covenants need to be changed to support development scenario.</li> </ul>	<ul style="list-style-type: none"> <li>• Mix and amount of uses are supportable.</li> <li>• Allows for better orientation to McCaslin frontage and allowed improved marketing to potential users.</li> <li>• Assembly of property poses a considerable market challenge.</li> <li>• GDP and covenants need to be changed to support development scenario.</li> </ul>
<b>Financial Feasibility</b>	<ul style="list-style-type: none"> <li>• Financially feasible based on market inputs.</li> <li>• Based on residual land value, price for Lot 2 most limits feasibility.</li> </ul>	<ul style="list-style-type: none"> <li>• Most financially feasible based on market inputs.</li> <li>• Hotel and multi-family development provide the highest residual land value.</li> <li>• Asking price for Lot 2 limits feasibility.</li> </ul>	<ul style="list-style-type: none"> <li>• Financially feasible based on market inputs.</li> <li>• Hotel and multi-family development provide the highest residual land value and office provides the lowest.</li> <li>• Asking price for Lot 2 limits feasibility.</li> </ul>
<b>Community Support</b>	<ul style="list-style-type: none"> <li>• <i>Use</i> – Little community support for additional big box retailers, preference for smaller format retail and service uses.</li> <li>• <i>Site Design</i> – Does not reflect community desire for compact, walkable, pedestrian friendly environment.</li> <li>• <i>Development Characteristics</i> – Does not meet community desire for local, unique, non-chain retail environments with variety of experience.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Use</i> – Entertainment and retail uses supported by community input, but reuse of existing building for larger format retailers does not support desire for smaller format retail and service uses.</li> <li>• <i>Site Design</i> – Some site amenities could be incorporated into the development, but would maintain mostly auto-oriented design.</li> <li>• <i>Development Characteristics</i> – Does not fully support community desire for a mixed, experience based, and high quality environment.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Use</i> – Supports community desire for entertainment/experience based uses to anchor small format, boutique and convenience uses.</li> <li>• <i>Site Design</i> – Supports major site redesign to include public gathering spaces, paths and trails, and a compact walkable environment.</li> <li>• <i>Development Characteristics</i> – Supports diverse range of use that accommodates community’s desire for a diverse range of uses and supports local and regional shopping destinations.</li> </ul>
<b>Fiscal Impact</b>	<ul style="list-style-type: none"> <li>• Provides strong fiscal benefit compared to current conditions (\$17.9 million compared to \$10.7 million over 20 years)</li> </ul>	<ul style="list-style-type: none"> <li>• Provides strongest fiscal benefit of alternatives compared to current conditions (\$18.5 million compared to \$10.7 million over 20 years)</li> </ul>	<ul style="list-style-type: none"> <li>• Provides strong fiscal benefit compared to current conditions (\$14.8 million compared to \$10.7 million over 20 years)</li> <li>• Model shows that residential triggers marginal-cost demand to city services.</li> </ul>

Red = does not align with project goal; Yellow = moderate alignment with project goal; Green = strong alignment with project goal

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## 2. Study Area Overview and Regulatory Framework

### McCaslin Subarea

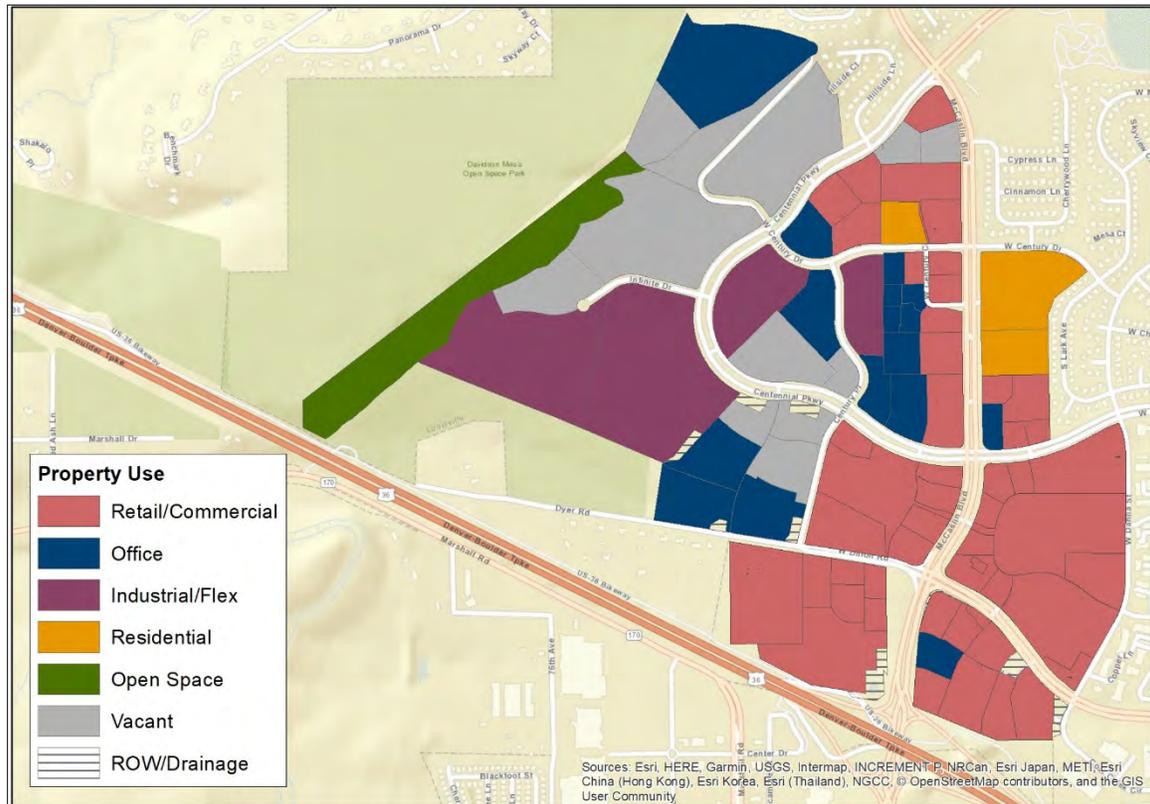
The McCaslin Subarea is located east and west of McCaslin Boulevard, from US-36 on the south to Via Appia Way on the north, in the southwest portion of the City of Louisville. The Subarea was defined for the McCaslin Boulevard Small Area Plan, which was completed in 2017. The McCaslin Redevelopment Study Area (Study Area) is the focus area for this project and is highlighted in orange in **Figure 3**.

**Figure 3. McCaslin Blvd Subarea and Project Study Area**



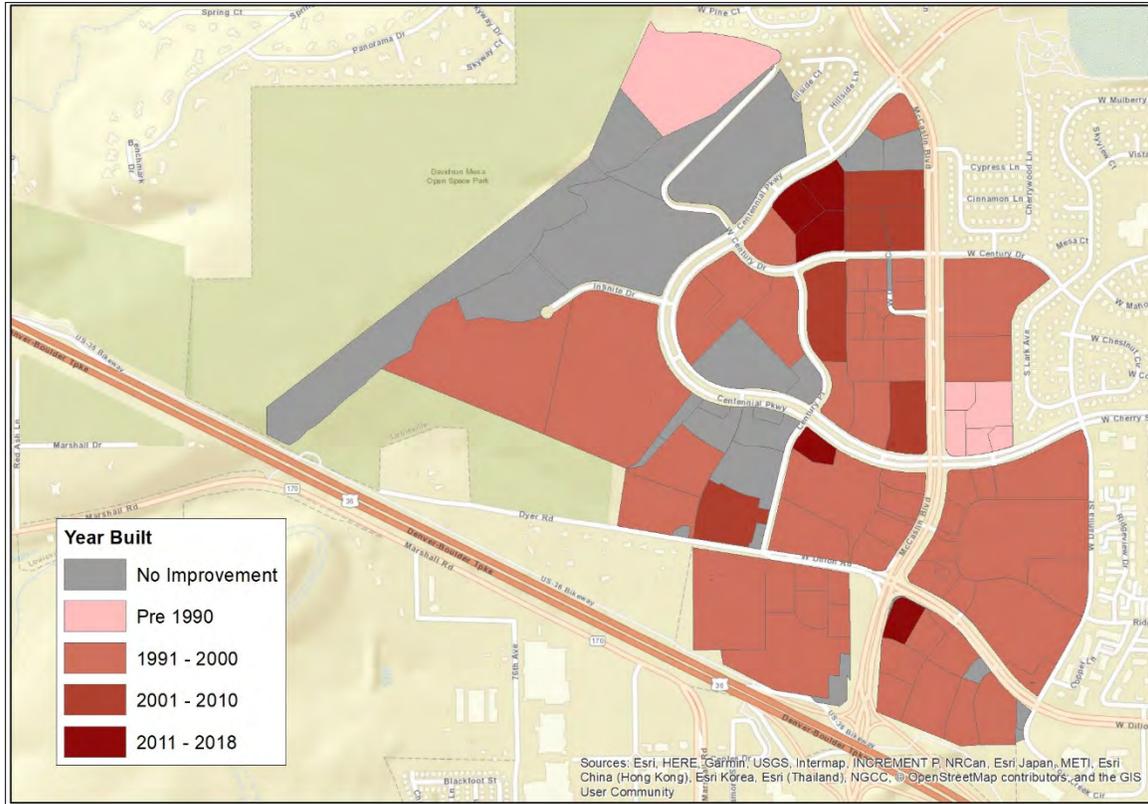
The McCaslin Blvd Subarea is composed primarily of commercial property, as shown in **Figure 4**. There are flexible industrial and public uses within the subarea as well. The Copper Ridge Apartment Homes and Centennial Pavilion Condominiums are the only residential developments within the area. There are also approximately 70 acres of undeveloped vacant land on the north side of Centennial Valley Parkway.

**Figure 4. McCaslin Subarea Property Uses**



The majority of buildings in the Subarea were built in the 1990's as shown in **Figure 5**. While there has been reinvestment in many of the commercial/retail properties, there have only been four new buildings built since 2011, which are highlighted in dark red.

**Figure 5. McCasin Subarea Parcels by Year Built**



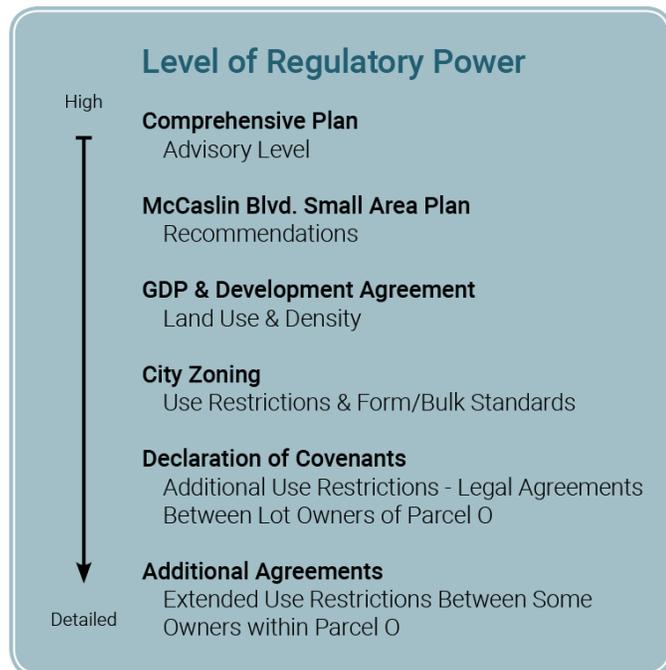
## Regulatory Framework

### Overview and History

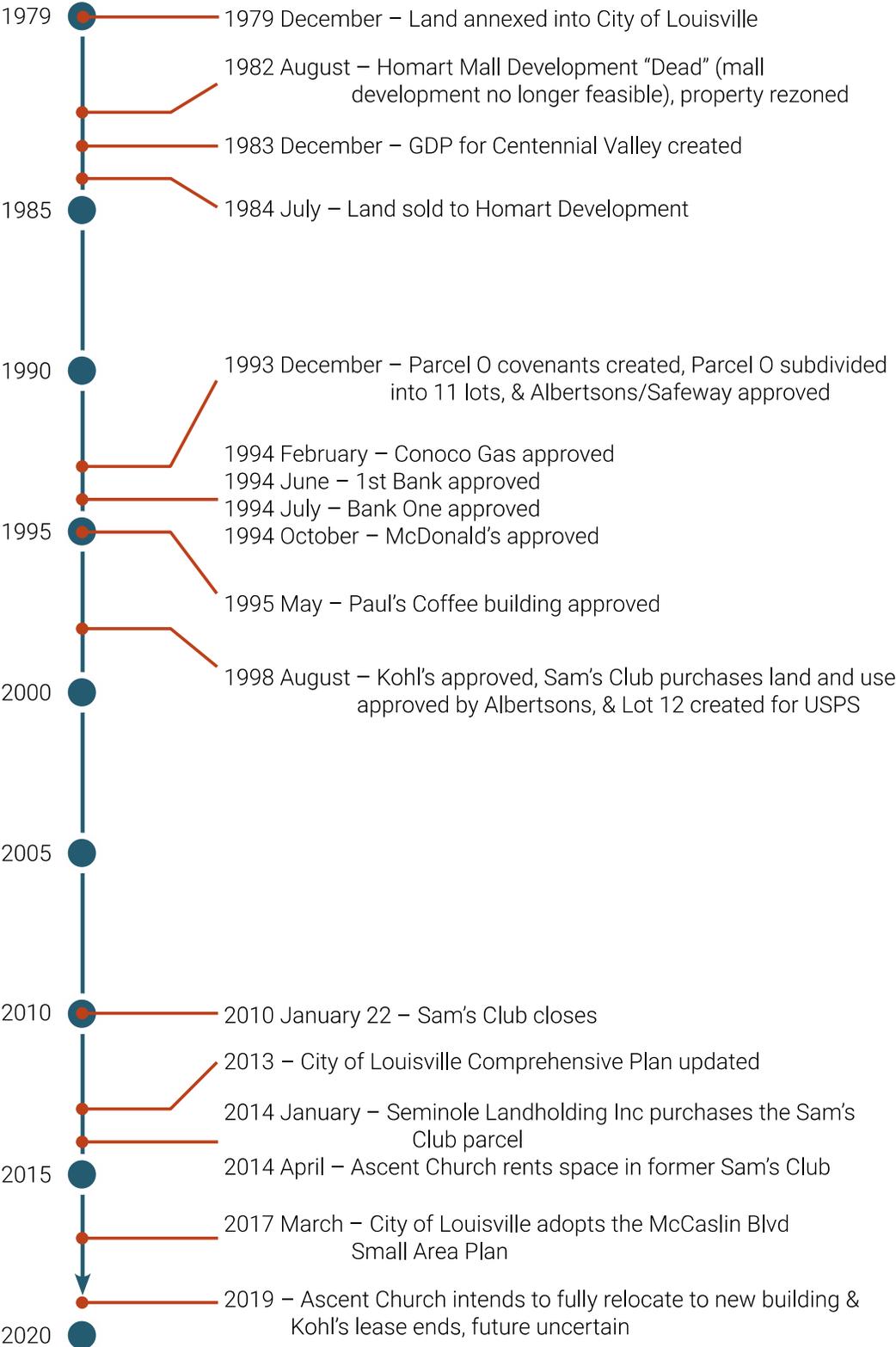
The Centennial Valley plan area consists of 882 acres and was annexed into the city in 1979. A 925,000 square foot mall was intended to anchor the 882 acres and draw regional business to the area; however, in 1982 the proposed mall became economically unfeasible and planning changes were needed. A new General Development Plan (GDP) was created in 1984 creating a new planning foundation that the area is built on today.

Parcel O is located within the GDP area and was originally 72.3 acres. West Dahlia Street would later split the parcel in two, 44.6 acres to the west and 27.9 acres to the east. In addition to the 1984 GDP, several other documents either advise or regulate development opportunities and limitations within Parcel O. These documents range from the City's comprehensive plan zoning codes, to the GDP, to Parcel O covenants and amendments, and to lot specific limitations. This web of documents has caused some confusion and hesitation around the future redevelopment outlook for Parcel O.

The western portion of Parcel O consists of 13 lots and 11 different owners, each of whom are contractual members of the Parcel's private covenants (two of these lots are owned by all lot owners). The lack of a viable retail tenant for Lot 2 (the former Sam's Club site) has had a negative impact on the City's retail tax revenue and has raised concerns about the future. Redeveloping the lot within the parcel and/or repurposing the 128,600 square foot vacant building will boost the City's tax revenue and regenerate community interest and use of the entire Parcel. Understanding the complex regulations and establishing stakeholder consensus and buy in is essential for long-term success. This regulatory analysis within the entire McCaslin Parcel O Redevelopment Study focuses on the western 44.6 acres of Parcel O.



### Parcel O Timeline



## McCaslin Boulevard Small Area Plan

### *Purpose*

Adopted March 7, 2017, the McCaslin Blvd Small Area Plan is intended to define desired community character, land uses, and public infrastructure priorities to provide a reliable roadmap for public and private investments in the corridor. As an extension of the Comprehensive Plan, the Small Area Plan is a policy document and not a regulatory document. However, the plan serves as the basis for updated design guidelines, any potential zoning changes, capital improvement project requests, and public dedication requirements from private developers. The McCaslin Boulevard Small Area Plan translates the broad policies of the Comprehensive Plan into the specific actions and regulations that will achieve those policies.

The McCaslin Blvd Small Area Plan takes 2013 Comprehensive framework a step further by setting guidelines for how design and land use regulations should be changed and identifying what infrastructure is needed. Parcel O is located within this Small Area Plan.

### *Context*

#### Comprehensive Plan

The 2013 Comprehensive Plan places Parcel O in an Urban Center character zone, which calls for smaller blocks, more connected streets, and a more pedestrian friendly environment.

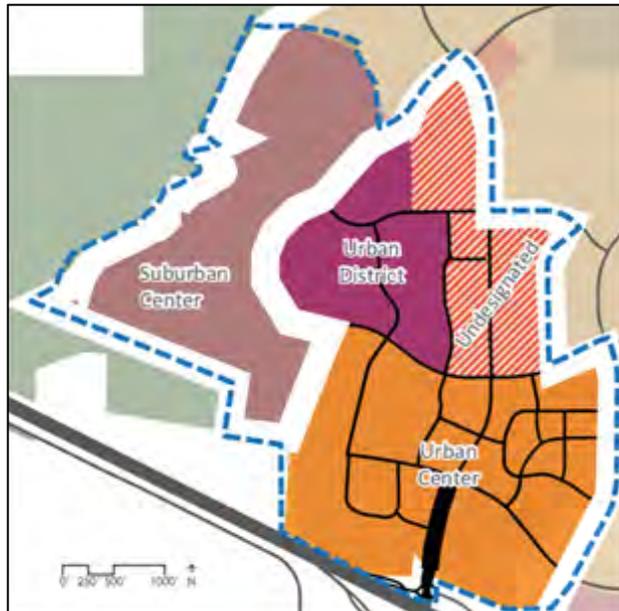
#### Existing Uses

The existing uses for Parcel O include large formal retail, public service/institutional, multi-tenant retail, office, single tenant retail, stand-alone restaurant, and vacant.

#### Property Values

The Small Area Plan identifies the ratio of structure value to the total property value in an effort to identify the likelihood a property is to redevelop. The majority of Parcel O has a low structure to property value ratio indicating significant pressure for redevelopment. The Safeway and Kohl's properties were the only two lots within Parcel O to have a high ratio indicating little to no pressure for redevelopment.

Figure 6. McCaslin Subarea Small Area Plan Districts



**Figure 7. McCaslin Subarea Building to Land Value and Buildout Capacity**



Existing Zoning

The zoning for a property sets limits for how much can be built on a property based on the allowed building height and lot coverage. The ratio of existing square footage to allowed maximum square footage is another indicator of which properties may redevelop, where additional development is more likely on properties with a low ratio. Low ratios within Parcel O indicate its overall square footage opportunity is not being maximized.

***Additional Sections and High Level of Regulation***

Remaining sections of the small area plan discuss overall planning principles, community design principles, placemaking concepts, and an urban design plan for the study area. As a recommendation and guiding document, this document is to be analyzed and incorporated as best as possible in future redevelopment planning efforts; however, this document provides a high level overview for the area. The GDP, underlying City zoning, and restrictive covenants provide more detailed regulations regarding redevelopment.

***Implementation***

The major recommendations of the plan are to be implemented through the adoption of new design standards and guidelines for the corridor. The design elements highlighted in the plan are intended to serve as the basis for the new guidelines, which will need to be reviewed by Planning Commission and adopted by City Council. The new design standards and guidelines will ensure future private development in the corridor complies with the community’s vision and this plan. While the plan does not point towards any use changes for Parcel O, it does call for additional public spaces, including plazas, parks, and open space. The plan states Parcel O public space should be acquired when and if the shopping center redevelops.

Key Recommendations for Parcel O included in the implementation section of the plan are:

- **Planning-Rezoning** – Rezone properties in accordance with the McCaslin Blvd Small Area plan when properties redevelop
- **Design & Construction - Parcel O Public Space** – Public plaza and green space in the Parcel O (Sam’s Club) development
- **Roadways-Parcel O Internal Street Networks** – Create internal street and block pattern within the development
- **Pedestrian Crossing/Traffic Calming-Parcel O Access** – Add speed table in right turn lanes

## GDP and Development Agreement

### Overview

The Centennial Valley General Development Plan (GDP) was created in 1984, includes 882 acres, and has been amended and updated multiple times as the Centennial Valley area has developed. The GDP provides an overall land use plan and general design guidelines for the property, while the associated “Amended and Restated Development Agreement” (Development Agreement) provides a more detailed description of the responsibilities, expectations, and limitations for the Central Valley area. These two regulatory documents are between the City of Louisville and Louisville Associates. Parcel O has experienced minor changes throughout the GDP history; however, it has maintained a Commercial use designation. It is important to note that the effective GDP and Development Agreement created in 1984 fully replaced the original Development Agreement created in relation to the original Homart Mall development. The Homart Mall was the initial planned development for Parcel O in the late 1970s to early 1980s; however, the mall development was later deemed unfeasible in 1982.



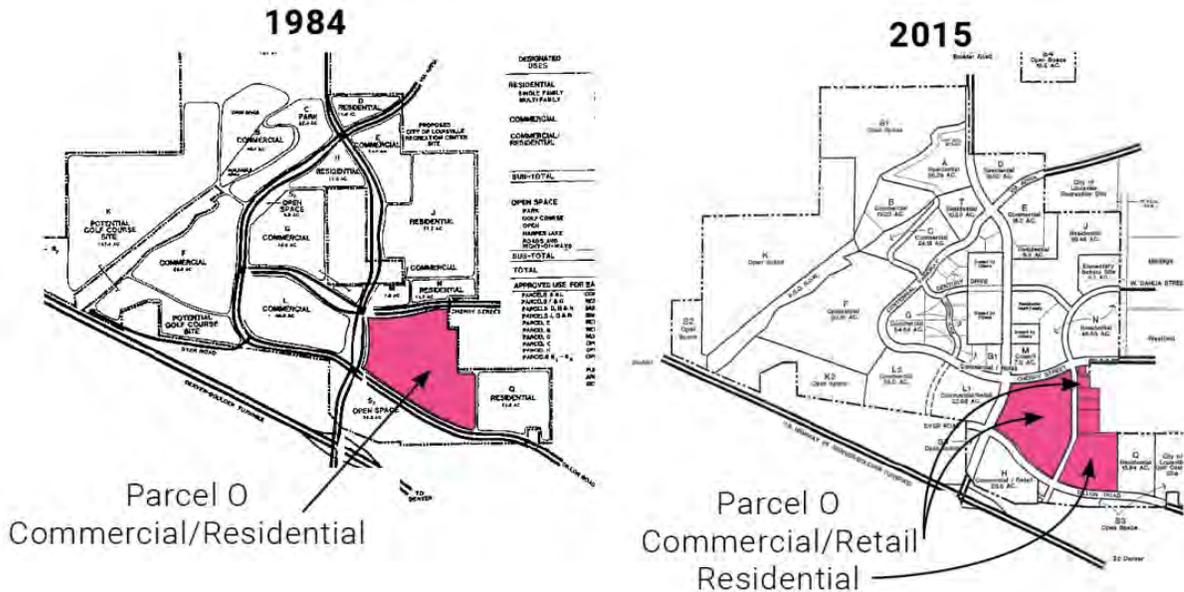
Figure 8. Centennial Valley GDP



**Use Designation and FAR**

Parcel O current land use designation within the GDP on the west side of West Dahlia Street is Commercial/Retail. Initial designation for the entire area of Parcel O in 1984 was Commercial/Residential. This initial designation was changed when West Dahlia Street was constructed and the vast majority of the eastern part of Parcel O was redesignated residential and the western portion was redesignated commercial/retail. West Dahlia was approved in 1988.

Figure 9. Parcel O Change, 1984 to 2015



Initial FAR for Parcel O was 0.5; however, this has been reduced through the many reiterations of the GDP and development agreement and is currently 0.20. A shuffling of square footage allocation per parcel has unfolded throughout the GDP's history. While the overall limit of total buildable commercial square footage has remained at 3,880,900 square feet for the entire GDP area, "buildable square footage may be reallocated to other Commercial Parcels subject to the mutual agreement of the City and the subdivider." Residential dwelling units are also allowed to be reallocated to other residential parcels within the GDP.

**Table 1. Parcel O Density**

		1984	1986	1991	1995	2015
Parcel O Acres		72.3	71.41	71.41	72.52	72.52
Use Designation		Commercial/ Residential	Commercial/ Residential	Commercial/ Residential	Commercial/ Retail/ Residential	Commercial/ Retail/ Residential
Study Area	Commercial Acres	62.40	51.00	51.00	44.62	44.62
	Commercial "Density" FAR	0.50				
	Commercial "Average" FAR		0.50	0.40	0.20	0.20
	Estimated Buildable SF	1,359,100	1,110,780	888,580	390,000	Unidentified
East of Dahlia St.	Residential Acres	9.00	20.41	9.83	27.9	27.9
	Residential Density Maximum	12.00	12.00	18.40	13.70	13.70
	Estimated Units	108	245	180	382	382

### ***City Zoning***

Parcel O is zoned Planned Community Zone District - Commercial (PCZD-C or P-C) within the general planned community zone district framework. "The purpose of the planned community zone district is to encourage, preserve and improve the health, safety and general welfare of the people of the city by encouraging the use of contemporary land planning principles and coordinated community design. The planned community zone district is created in recognition of the economic and cultural advantages that will accrue to the residents of an integrated, planned community development of sufficient size to provide related areas for various housing types, retail and service activities, recreation, schools and public facilities, and other uses of land. This district is designed for use where the area comprising such development project is under single ownership or control at the time of its classification as this district."<sup>1</sup> Planned community zone districts are designated as to general land use categories, such as residential, commercial, industrial, agricultural, office and public uses. The City of Louisville defines Planned Community Commercial (P-C) as "intended to promote the development of well-planned shopping centers and facilities that provide a variety of shopping, professional, business, cultural and entertainment facilities designed to create an attractive and pleasant shopping atmosphere."<sup>1</sup>

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<sup>1</sup> **Planned Community Zone District.** Code of Ordinances City of Louisville. Chapter 17.72.

***GDP Guiding Document and Amendments***

The City of Louisville requires any property located within a planned community zoned district must be accompanied by a general development plan (GDP, as described earlier) for the entire property. This development plan must include a map(s), together with supplementary text materials, and an agreement between developer and City which includes a phasing plan, and such development plan shall set forth the following:

- The proposed use of all lands within the subject property;
- The type or character of development and the number of dwelling units per gross acre proposed;
- The proposed location of school sites, parks, open spaces, recreation facilities and other public and quasi-public facilities;
- The proposed location of all streets shall be coordinated with the adopted general street plan for the city.

After approval by the Planning Commission and City Council, the GDP is recorded at the County's Clerk and Recorder office and all development within the district must comply with the GDP, unless the GDP is amended.

Any adopted planned community general development plan and supplementary development standards may be amended, revised or territory added thereto, pursuant to the same procedure and subject to the same limitations and requirements by which such plan was originally approved.

The director of planning may permit amendments to the planned development community general plan, when such amendments will not affect an increase in the permitted gross density of dwelling units or result in a change in character of the overall development plan. Any such amendment by the director of planning shall have approval by the City Council prior to the amendment becoming effective or the City Council may direct such change be made.

***Permitted Uses***

The following commercial and noncommercial uses may be permitted within any planning area designated "commercial" on the adopted planned community development general plan:

- Any retail trade or service business;
- Professional, business and administrative offices;
- Motels and hotels;
- Cultural facilities, such as museums, theaters, art galleries and churches;
- Pedestrian plazas and pedestrian ways, including such amenities as outdoor art exhibit facilities, statuary, fountains and landscaping features;
- Outdoor specialty uses, including sidewalk cafes and outdoor marketplaces to provide unique congregating places for sales and shopper interests;
- Recreational facilities, both indoors and outdoors, such as ice skating and roller skating rinks which may be designed as integral parts of a center;
- Restaurants, both indoor and drive-in types, food-to-go facilities, sidewalk cafes;
- Hospitals and medical clinics;
- Transportation terminals, parking lots and parking buildings;
- Animal hospitals and clinics;
- Automobile service stations, subject to prescribed performance and development standards;
- Nursing and rest homes;
- Small and large child care centers;
- Financial offices, including banks and savings and loans;
- Accessory structures and uses necessary and customarily incidental to the uses listed in this section;
- Governmental and public facilities;
- Research/office and corporate uses, and facilities for the manufacturing, fabrication, processing, or assembly of scientific or technical products, or other products, if such uses are compatible with surrounding areas. In addition, such facilities shall be completely enclosed and any noise, smoke, dust, odor, or other environmental contamination produced by such facilities, confined to the lot upon which such facilities are located and controlled in accordance with all applicable city, state, or federal regulations;
- Other uses as established by the city council as found to be specifically compatible for commercial and office planning areas;

- Limited wholesale sales as defined in section 17.08.262 of this title are allowed as a special review use;
- Retail marijuana stores and retail marijuana-testing facilities; and
- Health or athletic clubs, spas, dance studios, and fitness studios.

## **Declaration of Covenants, Amendments, and Additional Documents**

### ***Private Covenants***

The original 1993 Private Covenants for Parcel O were created to provide a mutual agreement and understanding around the uses, limitations, and responsibilities between the 11 lot owners of Parcel O. This private and contractual agreement identifies specific uses that are prohibited from the entire parcel, as well as additional use restrictions that are specific individual lots within the parcel. The use restrictions are very limiting, can differ between the 13 lots, and can impose operational limits. The private covenants also build on top of the density limits established in the GDP by establishing height limitations (which vary for different lots), limiting the number of buildings per site, creating parking ratios, and establishing maximum floor areas for specific lots (i.e. Lot 9 is limited to a 9,000 square foot maximum). As an example, a few of the stated prohibited uses from the original 1993 Private Covenants include:

- Industrial
- Entertainment or recreation facility including but not limited to a theatre, skating rink, gym, and dance hall
- Renting/selling/leasing motor vehicles, boats, trailers
- Any business where 50 percent or more of gross income comes from alcoholic beverages for on-premise consumption
- General merchandise discount store/department store (Lot 2 excluded from rule)
- Excludes any warehouse store carrying less than 10,000 SKU items
- No other lot or portion of a lot may be a supermarket, bakery or delicatessen, or butcher shop for as long as Lot 1 remains a supermarket
- Supermarket defined as: at least 5,000 square feet of floor area primarily devoted to retail sale of food and off-premise consumption
- Lot 2 can have a supermarket use less than 6,000 square feet
- No more than two lots may have a bank as the primary use
- No more than one Lot may have fuel station as the primary use
- No more than one Lot at any time used for a drive-in or drive-through restaurant whose primary business is the sale of hamburgers.

**Residential Uses**

It is important to mention that the private covenants do not address residential uses. Residential uses are not identified as a prohibited or as a permitted use in any of the private covenants or related amendments. The PCZD zone district allows residential uses when a DDP designates a parcel for the use. The current GDP excludes residential uses within the Parcel O Study Area.

Unanimous agreement by all owners is required to amend the private covenants. There have been three amendments to the private covenants and they are in effect for 65 years (1993 to 2058) unless canceled, terminated, or modified.

**Additional Documents**

There are a number of additional regulatory documents and private contractual agreements covering Parcel O, many of which have multiple amendments. A few of these key documents include:

- 1998 CC&R Agreement between Lot 1, 2, and 3 owners regarding permitted uses, lot replatting (created Lot 12), building envelop limitations for lot 12, and designated maximum FAR allocations for Lots 2, 3, and 12.
- 1998 Two-Party Agreement that separates Lot 3 into two “Development Areas.” Future redevelopment of Lot 3 will need to adhere to development restrictions laid out in this document. These include:

- Development Area A: no buildings shall be more than one story, no more than 28 feet in height, and no more than eight buildings shall have a coverage ratio exceeding 25%.
- Development Areas A and B Combined: no buildings shall be located thereon if their aggregate dimensions when measured parallel to the combined northerly boundary of Development A and Development B exceeds sixty percent of the length of such northerly boundary; and if there shall be located in either development area A or B a building occupying more than 40,000 square feet of such development area and which parking area, and which building is served by parking areas on the other development area, then such building shall be located substantially on development area B and the parking area serving such building shall be located substantially on development area A.

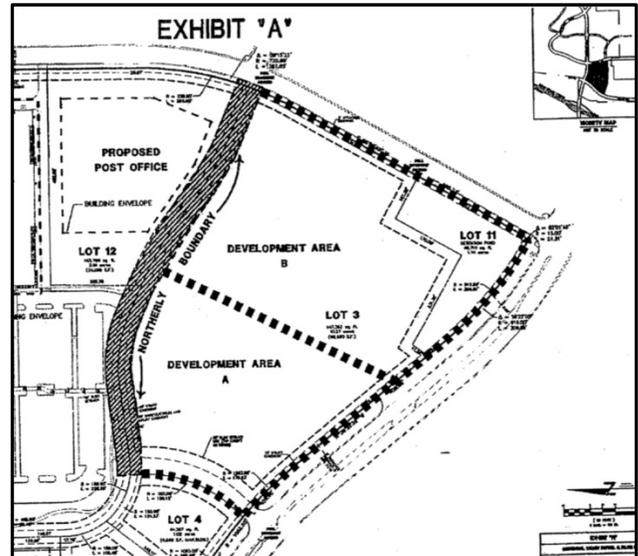


Figure 10. Development Areas A & B of Lot 3

- 2014 Warranty Deed for Lot 2 that prohibits the property from being used as a grocery store/supermarket, wholesale club, discount department store, pharmacy, or for gaming activity purposes. Restrictions are in effect for a period of 25 years, terminating in 2039. This restriction can be removed through a defined payment to the previous owner.
- 1982 Agreement between developer, State Highway Commission, and City of Louisville that limited total development square footage for the GDP area and identified responsibilities for the relocation and reconstruction of the US 36/ McCaslin interchange. With recent expansion of US 36, these limits on square footage are no longer in effect.

### Use Comparison

The Use Analysis chart below summarizes the allowed uses on Parcel O as determined by the City of Louisville Zoning Code and the Declaration of Covenants, Conditions, Restrictions and Grant of Easements (Covenants), which is a private agreement between all of the landowners within Parcel O.

#### Permitted by Zoning and Private Covenants

- Office
- Hotel & motels
- Hospitals & medical clinics (human & animal)
- Nursing & rest homes
- Child care center
- Retail marijuana sales
- Other uses as established by the City Council as found to be specifically compatible for commercial and office planning areas

#### Private Covenant Limited Allowed Uses

- Any retail trade or service business (grocery, motor vehicle sales, warehouse stores, etc.)
- Cultural facilities (no theatres)
- Restaurants (no business where 50% or more income is from on-site alcohol consumption, only 1 drive-through, etc.)

#### Prohibited Uses per Private Covenants

- Recreational facilities, both indoors and outdoors, such as ice skating and roller skating rinks which may be designed as integral parts of a center
- Health or athletic clubs, spas, dance studios, and fitness studios

### 3. Economic and Demographic Framework

This section provides an overview of the demographic and economic conditions within the City of Louisville and the surrounding area. Population, household and employment trends are documented to set the context for the real estate market.

#### Population and Households

The City of Louisville has a population of 21,208. The City experienced a small population decline from 2000 to 2010 but added 2,823 new residents between 2010 and 2018, which equates to an annual rate of 1.8 percent. The City of Boulder and City/County of Broomfield have grown by the most people since 2010 with 11,902 (1.4 percent annually) and 15,135 (3.0 percent annually) new residents respectively. Erie and Lafayette have experienced significant new population growth since 2010, as both have grown by approximately 800 new residents annually and Erie had the fastest rate of growth at 3.9 percent annually, as shown in **Table 2**.

**Table 2. US-36 Corridor Population, 2000 to 2018**

Population	2000	2010	2018	2000-2010			2010-2018		
				Total	Ann. #	Ann. %	Total	Ann. #	Ann. %
<b>US-36 Corridor Cities/Towns</b>									
Louisville	19,213	18,385	21,208	-828	-83	-0.4%	2,823	353	1.8%
Superior	9,032	12,483	13,444	3,451	345	3.3%	961	120	0.9%
Boulder	95,197	97,525	109,427	2,328	233	0.2%	11,902	1,488	1.4%
Lafayette	23,283	24,452	30,928	1,169	117	0.5%	6,476	810	3.0%
Erie	6,604	18,025	24,420	11,421	1,142	10.6%	6,395	799	3.9%
<b>US-36 Corridor Counties</b>									
Boulder County	269,713	294,567	333,953	24,854	2,485	0.9%	39,386	4,923	1.6%
Broomfield County	39,332	55,889	71,024	16,557	1,656	3.6%	15,135	1,892	3.0%

Source: ESRI; Economic & Planning Systems

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The City of Louisville has 8,681 households, as shown in **Table 3**. Louisville added 1,141 households since 2010, which is significantly more than the 161 households added from 2000 to 2010. However, most of the new household growth in the US-36 corridor is occurring outside or on the edges of the trade area—typically three to five miles—from the McCaslin Subarea.

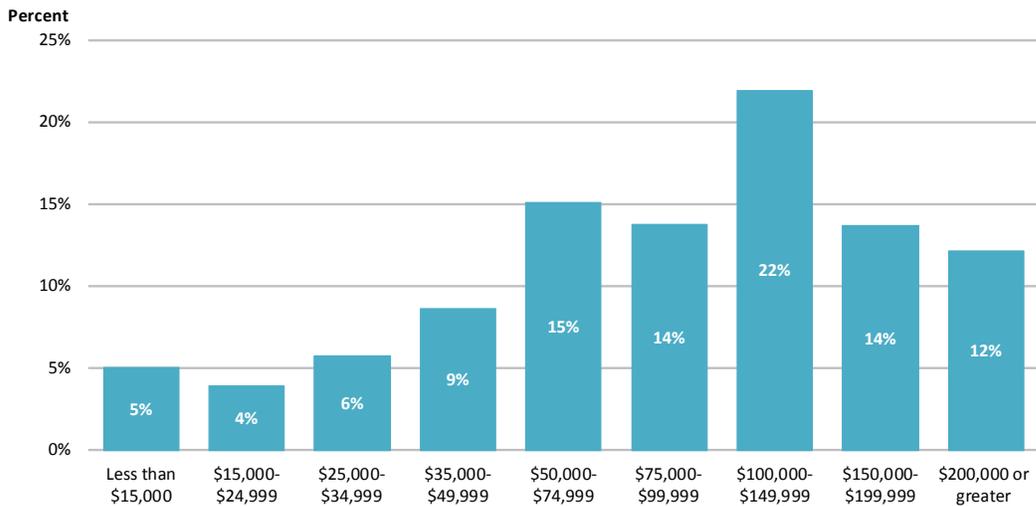
**Table 3. US-36 Corridor Cities and Towns Households, 2000 to 2018**

Households	2000	2010	2018	2000-2010			2010-2018		
				Total	Ann. #	Ann. %	Total	Ann. #	Ann. %
<b>US-36 Corridor Cities/Towns</b>									
Louisville	7,379	7,540	8,681	161	16	0.2%	1,141	143	1.8%
Superior	3,393	4,496	4,764	1,103	110	2.9%	268	34	0.7%
Boulder	39,770	41,359	45,475	1,589	159	0.4%	4,116	515	1.2%
Lafayette	8,815	9,631	11,857	816	82	0.9%	2,226	278	2.6%
Erie	2,292	6,259	8,366	3,967	397	10.6%	2,107	263	3.7%
<b>US-36 Corridor Counties</b>									
Boulder County	106,495	119,300	132,801	12,805	1,281	1.1%	13,501	1,688	1.3%
Broomfield County	14,233	21,414	27,259	7,181	718	4.2%	5,845	731	3.1%

Source: ESRI; Economic & Planning Systems

Louisville households have above average incomes for the region, but lower average incomes than the neighboring communities of Superior and Erie. Forty-eight percent of Louisville households have average incomes over \$100,000, as shown in **Figure 11**.

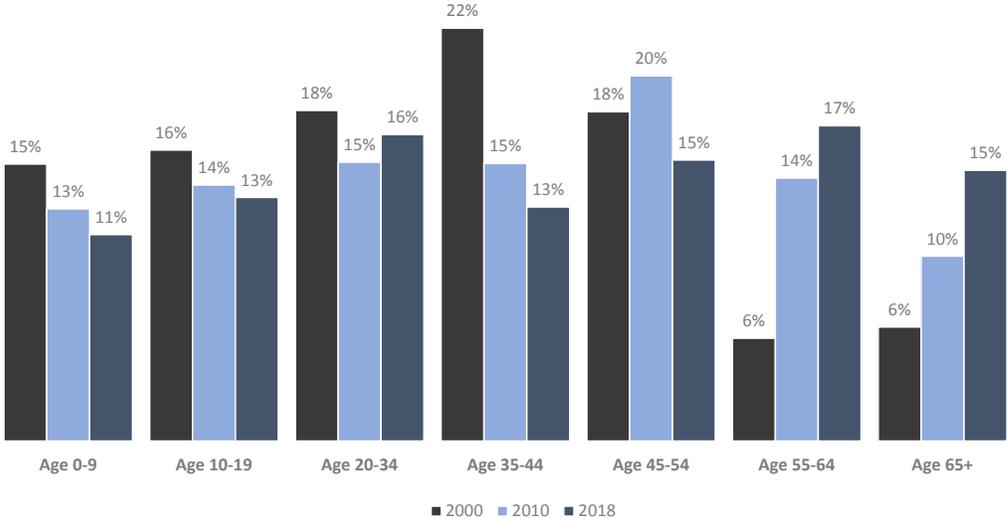
**Figure 11. Louisville Households by Income Cohort, 2018**



Source: ESRI; Economic & Planning Systems

The City of Louisville has an older population than the surrounding communities. The median age is 42 years old and over half of Louisville residents are between the age of 25 and 64. The percent of residents over the age of 55 years old increased from 12 percent in 2000 to 32 percent in 2018 as shown in **Figure 12**. All other age cohorts have experienced a decrease in the percent of residents. The shift to a greater percentage of older residents is attributed to the aging of existing residents and relatively (to neighboring communities aside from Superior) limited new housing growth that has occurred in Louisville since 2000.

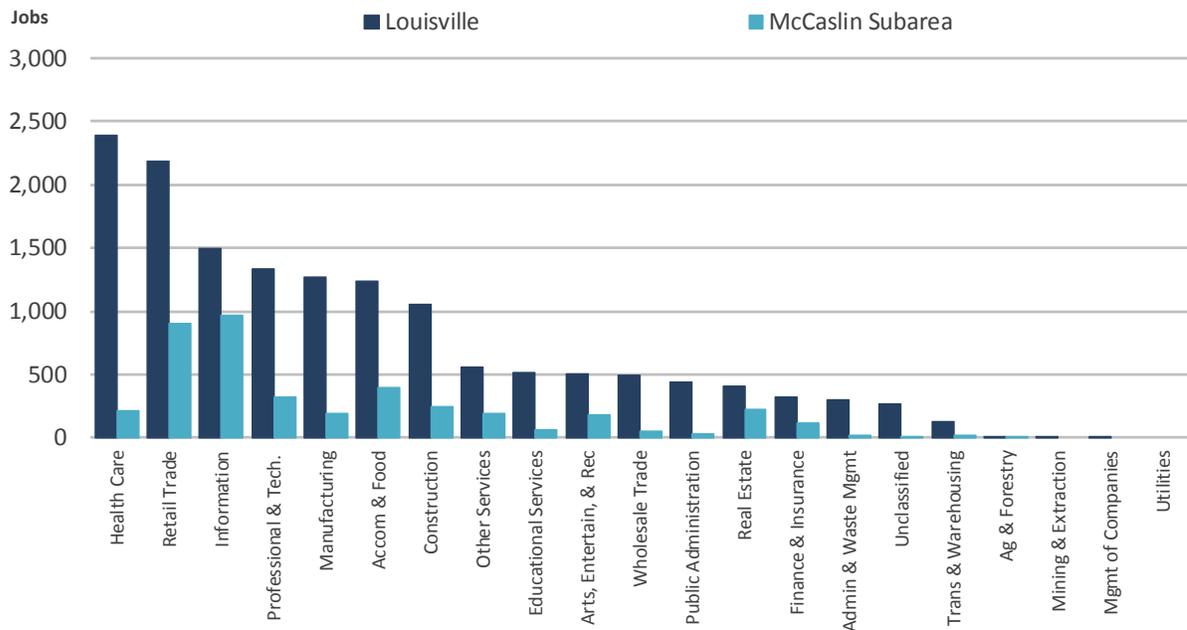
**Figure 12. Louisville Residents by Age Cohort, 2000, 2010 and 2018**



## Employment

Total employment in 2018 was 14,919 for the City of Louisville and 4,163 for the McCaslin Subarea. The largest employment sectors in the City are Health Care, Retail Trade, and Information. Within the McCaslin Subarea, the Information, Retail Trade, and Accommodation and Food Services industries employ the most people.

**Figure 13. McCaslin Subarea and Louisville Employment by Industry**



Source: ESRI; Economic & Planning Systems

The City of Louisville has a small portion of residents that live and work in the city—just under 11 percent. These 1,080 residents make up 7 percent of Louisville’s employment base, as shown in **Table 4**.

**Table 4. Inflow and Outflow of Residents and Workers in Louisville, 2015**

Description	Total	Percent
<b>Labor Force</b>		
Resident and Employed in Louisville	1,080	10.7%
Resident in Louisville, but work elsewhere	9,024	89.3%
Total Residents in Louisville	10,104	100.0%
<b>Employment</b>		
Resident and Employed in Louisville	1,080	7.2%
Empolyed in Louisville, but live elsewhere	13,961	92.8%
Total Employees in Louisville	15,041	100.0%

Source: LEHD; Economic & Planning Systems

As shown in **Table 5**, Louisville has a jobs-housing ratio of 1.68, meaning there are more jobs than housing units in the city. Nearby communities of Superior and Erie have significantly more housing units than jobs and have ratios well below 1. At 2.39, the City of Boulder has the highest ratio in the area; 75 percent of Boulder’s workforce commutes in from other cities as a result (LEHD). Approximately 28 percent of employed Louisville residents commute to Boulder for work, as shown in **Table 6**.

**Table 5. Jobs-Housing Ratio**

	Jobs	2018 Housing Units	Ratio
<b>US-36 Corridor Cities/Towns</b>			
Louisville	14,919	8,871	1.68
Superior	2,956	4,864	0.61
Boulder	112,868	47,129	2.39
Lafayette	12,274	12,041	1.02
Erie	2,542	8,629	0.29
<b>US-36 Corridor Counties</b>			
Boulder County	196,323	138,676	1.42
Broomfield County	39,373	28,642	1.37

Source: ESRI; Economic & Planning Systems

**Table 6. Where Louisville Residents Work**

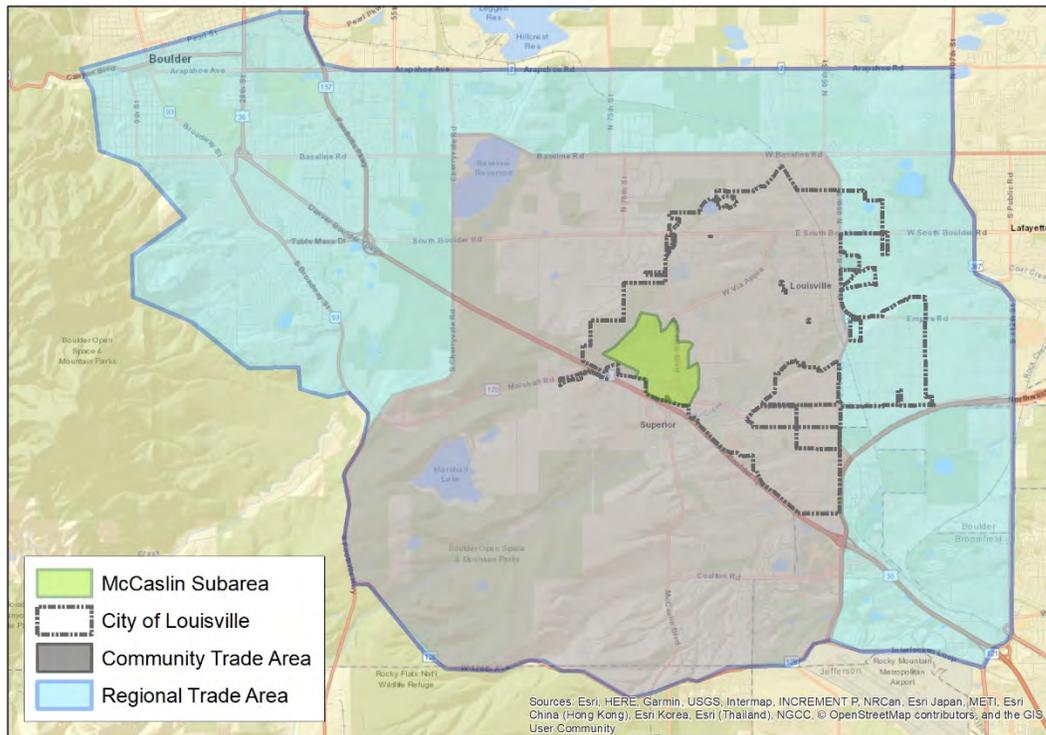
Destination	Jobs	Pct
Boulder	2,843	28%
Denver	1,373	14%
Louisville	1,080	11%
Broomfield	457	5%
Westminster	366	4%
Longmont	326	3%
Lafayette	324	3%
Lakewood	284	3%
Aurora	276	3%
<u>All Other Locations</u>	<u>2,775</u>	<u>27%</u>
<b>Total</b>	<b>10,104</b>	<b>100%</b>

Source: LEHD; Economic & Planning Systems

## Trade Areas Demographics

Retail trade areas were developed for the McCaslin Subarea to illustrate the consumer shed for retailers in the McCaslin Subarea and to estimate existing and future demand for retail from these trade areas. The Community Trade Area used for this analysis represents the primary capture area for retailers providing everyday shopping items (e.g., Safeway). A Community Trade Area is typically a 2-mile radius in size. The Regional Trade Area represents the primary capture area for retailers providing destination oriented, occasional shopping (e.g., Home Depot, Lowe's, and Kohl's). A regional trade area is typically a 5 to 7-mile radius in size. The community and regional trade area boundaries used in this analysis are shown in **Figure 14**.

**Figure 14. Community and Regional Trade Area Boundaries**



The demographic composition of Louisville versus the surrounding region is shown in **Table 7**. The population within the Community Trade Area is 38,399, and within the Regional Trade Area is 127,887. Household incomes in Louisville are lower than the Community Trade Area but higher than the Regional Trade Area. Louisville has the highest median age (42) and a higher percentage of family households than both the Community and Regional Trade Areas.

**Table 7. Louisville and Trade Area Demographics, 2018**

Description	Louisville	Community Trade Area	Regional Trade Area
Population	21,208	38,399	127,887
Households	8,681	15,180	51,621
Avg. Household Size	2.4	2.5	2.3
Percent of Family Households	66.5%	65.3%	48.6%
Avg. Household Income	\$121,634	\$129,912	\$104,978
Median Household Income	\$94,971	\$100,820	\$71,071
Median Age	42	38	31
Education			
Bachelor's	37.6%	38.3%	35.2%
Master's Plus	35.2%	35.9%	37.2%

Source: ESRI; Economic & Planning Systems

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## 4. Retail Market Analysis

This section is an analysis of retail and commercial market conditions and potentials for the McCaslin Subarea and for Study Area properties including a summary of national and local retail trends, existing sales and spending levels, competitive development patterns, and future opportunities.

### National Trends

The retail industry has shifted greatly over the last 10 to 15 years, impacted by the growth of internet sales, declining brick and mortar store sales, retail chain consolidations, and demographic shifts and preferences. Collectively, these trends are impacting store sizes and reducing the overall demand for new retail space locally and nationally.

- **The Rise of E-Commerce** - Between 2001 and 2015, total online retail purchases (excluding auto related) grew from approximately \$29 billion to \$310 billion, an 18.4 percent annual growth rate. Online sales accounted for 22 percent of total retail sales growth. During the same period, brick and mortar stores grew at a 3.7 percent annual growth rate, decreasing their share of the total retail market from 98 percent to 89 percent. Despite still accounting for only 11 percent of overall spending, the growth in online shopping is impacting the demand for traditional brick and mortar stores. This also affects the way retailers are doing business, pushing them to alter store formats and incorporate online sales and marketing into their business concepts. The list of top online retailers reinforces this point as many have a significant brick and mortar presence as well. This group includes such major retailers as Walmart, Target, Home Depot, Best Buy, and Bed Bath & Beyond.
- **Changing Retail Mix** - These changes in spending patterns are impacting the mix of retail space in aggregate as well as within individual districts, corridors, and centers. The restaurant, bar, and microbrewery segment has grown rapidly, and new food and beverage formats have been introduced (e.g., food halls and market halls, farm to table restaurants, and food trucks). These market/food hall establishments (metro area examples include Denver Central Market, The Source, and Avanti in Denver and Stanley Marketplace in Aurora) focus on creating a community atmosphere with shared eating and common spaces and a variety of food options and small format retail options. In contrast, the growth of shoppers' goods store space (general merchandise, apparel, furniture, and other shoppers' goods) is flat or declining, as exhibited by numerous store closures by Macy's, JCPenney, Sears, and Kmart.

- **Store and Chain Consolidation** - Over the past five years, there have been nearly 200 retail chain bankruptcies. In 2017, CNN Money reported there were 5,300 store closing announcements through June 20 compared to 6,200 in 2008 during the Great Recession. There are fewer stores in the market now, making it more difficult to find tenants for new retail developments or to refill existing spaces. Vacancies are increasing nationally as large blocks of space are vacated by store brands that no longer exist.
- **Big Box Reuse** - The loss of anchor stores coupled with an overall decrease of retailers on the market makes re-tenanting vacant big box stores difficult. Retail developers have had some success filling these vacancies with nontraditional tenants, specifically ones that are fitness or entertainment oriented. Gym franchises such as Vasa Fitness, Gold's Gym, Chuze Fitness, Planet Fitness and Crunch Fitness are also frequently located in former big box stores and grocery stores. Between 2016 and 2017, at least 16 fitness centers of 18,500 square feet or larger leased vacant retail space in the Denver metro area totaling over 600,000 square feet of space. Aqua-Tots, a national swimming instruction company, and other similar chains often seek out empty store buildings for new locations, including Aqua-Tots Littleton and Highlands Ranch sites and the forthcoming Goldfish Swim School in Superior.

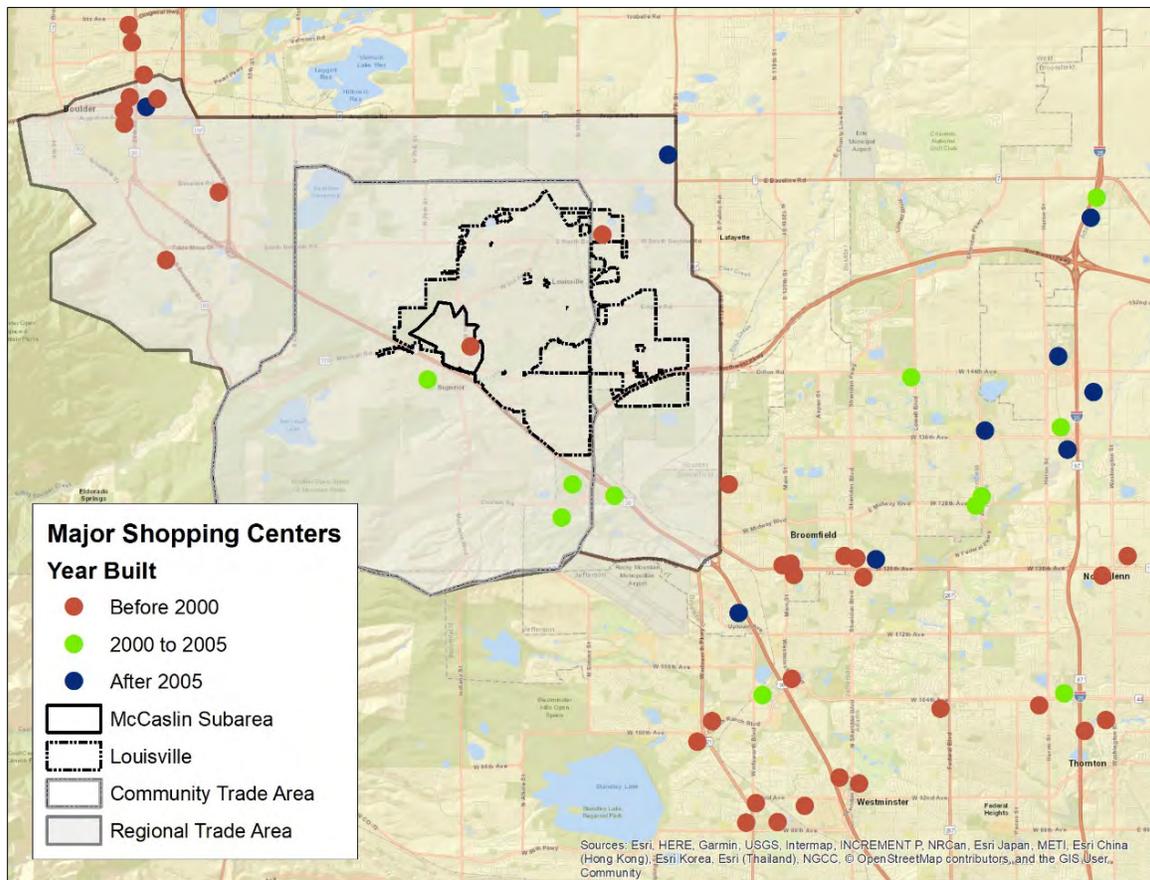
These trends are manifesting themselves within Louisville and the region. The impact of E-commerce and store consolidations are evident in the loss of anchor stores along the US-36 Corridor in Superior (Sports Authority), Louisville (Sam's Club and soon to be Kohl's), and Broomfield (Best Buy and Great Indoors). Going forward the trends in retail will place a greater priority on more experience-oriented retail and adapting to changing technologies.

## Regional Trends

### Northwest Metro Area Retail Development History

Built in 1993, Centennial Valley was the first major retail center located between Boulder and Westminster. Substantial retail development occurred from 2000 to 2005 in Superior and Broomfield as shown in **Figure 15**, creating major competition with greater access and visibility to Highway 36. Since 2005, regional retail development has followed housing development with a shift to Boulder, US-287, and I-25.

**Figure 15. North Denver Metro Area Major Retail Centers by Year Built**



### Regional Retail Anchor Inventory

As shown in **Table 8**, most of the typical, larger anchor retailers are already located within the Regional Trade Area. Most of the major retailers not present were formerly located in the area but left due to low performance (e.g., Ross, Sam’s Club, Hobby Lobby) or as part of a chain consolidating or closing (Sports Authority, Great Indoors and Office Depot).

**Table 8. Existing Retail Inventory**

Retailer	Total Stores		Retailer	Total Stores	
	Community Trade Area	Regional Trade Area		Community Trade Area	Regional Trade Area
<b>Large Format/Anchor</b>			<b>Office Supplies</b>		
<i>Discounter/Supercenter</i>			Office Depot	0	1
Target	1	2	Staples	0	1
Walmart Supercenter	1	2	OfficeMax	1	1
Macy's	1	2	<b>Sporting Goods</b>		
Kohl's	1	1	Dick's Sporting Goods	1	1
JC Penney	0	0	REI	0	1
<i>Warehouse Clubs</i>			<b>Pets</b>		
Costco	1	1	PetSmart	1	1
Sam's Club	0	0	Petco	0	1
<i>Building Materials &amp; Garden</i>			<b>Arts and Crafts</b>		
Home Depot	1	2	Hobby Lobby	0	0
Lowe's	1	1	Michael's	1	2
<b>Apparel</b>			Jo Ann Fabrics	0	1
TJ Maxx	1	1	<b>Books/Music/Toys</b>		
Ross	0	0	Barnes & Noble	0	1
Marshalls	0	1			
DSW	1	1			
Old Navy	1	1			
<b>Appliances/Electronics</b>					
Best Buy	0	1			

Source: Economic & Planning Systems

### Grocery Store Inventory

Grocery Stores are a traditional anchor for shopping centers oriented to a community level trade area (2-miles). Existing grocery stores within the Community Trade Area are listed in **Table 9** and shown in **Figure 16**. The seven grocery stores in the Community Trade Area include two Safeway stores, one of which is located next to the former Sam’s Club in Parcel O. There is a growing presence of natural food grocers (Whole Foods, Sprouts and Alfalfa’s) in the metro area. Other traditional grocers, such as Safeway and Albertsons, are losing market share and are no longer actively opening new stores in the Denver metro market.

**Table 9. Existing Grocery Store Inventory**

Community Trade Area		
Retailer	Location	# of Stores
Alfalfa's Market	785 E. South Boulder Rd., Louisville	1
King Sooper's	1375 E South Boulder Rd., Louisville	1
Safeway	910 W. Cherry St., Louisville 1601 Coalton Rd., Superior	2
Target	400 Marshall Rd., Superior	1
Walmart Supercenter	500 Summit Blvd., Broomfield	1
Whole Foods	303 Marshall Rd., Superior	1
<b>Total</b>		<b>7</b>

Source: Economic & Planning Systems

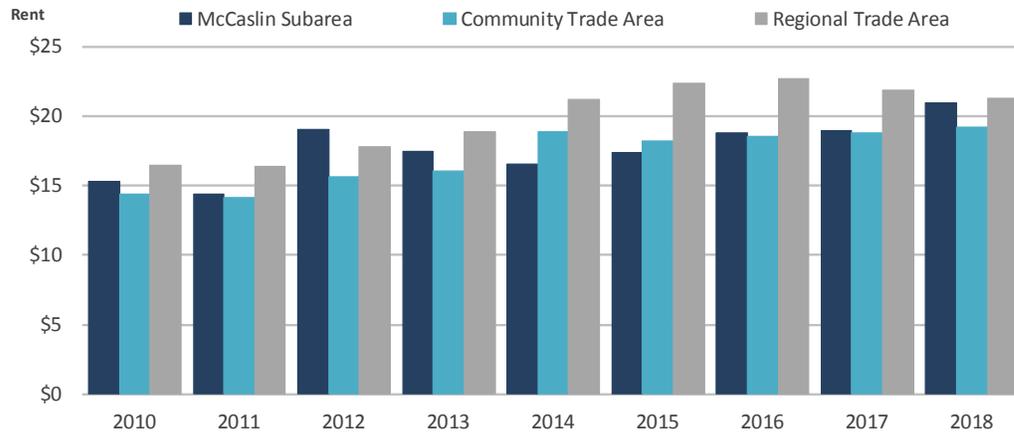
Figure 16. Existing Grocery Store Locations



### Retail Market Conditions

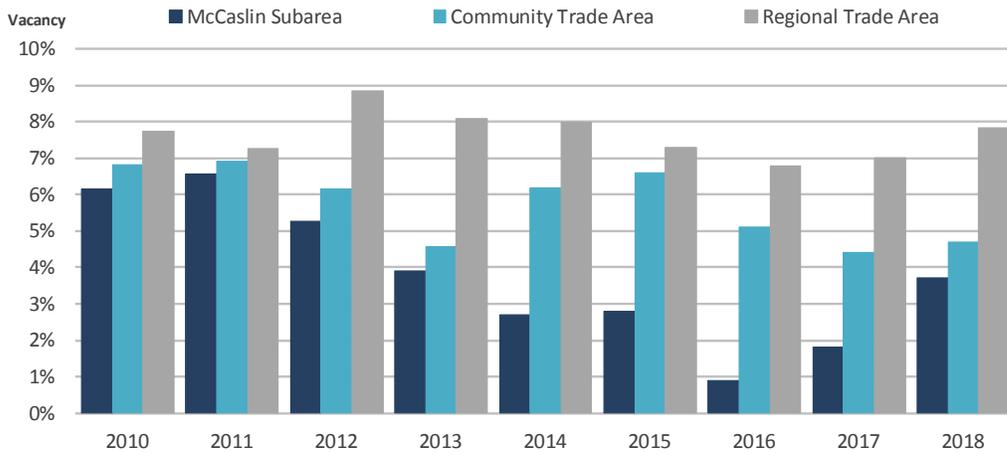
The McCaslin Subarea is still a strong retail location for neighborhood and community uses. Rental rates are higher than in the Community Trade Area, and vacancy rates are lower than the surrounding areas (excluding the Sam’s Club building) as shown in **Figure 17** and **Figure 18**. The average rental rate in the McCaslin Subarea was \$20.92 (NNN) at the end of 2018. The vacancy rate in the McCaslin Subarea was 3.7 percent at the end of 2018 (excluding Sam’s Club), which is lower than the rate in the Community Trade Area (4.7 percent) and Regional Trade Area (7.8 percent).

**Figure 17. Retail Rental Rates**



Source: CoStar 2nd Quarter; Economic & Planning Systems

**Figure 18. Retail Vacancy Rates (Excluding Sam’s Club building)**



Source: CoStar 2nd Quarter; Economic & Planning Systems

## Retail Inventory

There has been minimal new retail development activity in the McCaslin Subarea in the last eight years. The only inventory addition occurred in 2016 with the construction of a small center at the corner of McCaslin Blvd and West Dillon Road. The Community Trade Area and Regional Trade Area also experienced little growth over this time frame; both areas grew at 0.2 percent annually, as shown in **Table 10**. The Community Trade Area attracted 81,000 square feet of new space since 2010.

**Table 10. Retail Inventory Trends**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2010-2018			
										Total	Ann. #	Ann. %	
<b>Retail Inventory (Sq Ft)</b>													
McCaslin Subarea	905,957	905,957	905,957	905,957	905,957	905,957	900,677	913,331	913,331		7,374	922	0.1%
Community Trade Area	4,013,824	4,013,824	4,013,824	4,013,824	4,018,274	4,050,565	4,042,910	4,078,546	4,080,843		67,019	8,377	0.2%
Regional Trade Area	9,511,506	9,512,989	9,518,489	9,541,563	9,544,945	9,591,236	9,547,317	9,593,164	9,673,201		161,695	20,212	0.2%

Source: CoStar 2nd Quarter; Economic & Planning Systems

**Table 11. New Retail Construction**

	2010	2011	2012	2013	2014	2015	2016	2017	2018*	2010-2018*	
										Total	Ann. Avg.
<b>New Construction</b>											
McCaslin Subarea	0	0	0	0	0	0	12,654	0	0	12,654	1,489
Community Trade Area	2,796	0	0	0	36,741	0	16,154	25,279	0	80,970	9,526
Regional Trade Area	7,796	13,083	11,567	17,007	53,897	0	16,154	92,313	21,930	233,747	27,500

\* Through 2018 Q2

Source: CoStar; Economic & Planning Systems

## Planned Projects

Planned retail projects in the Community Trade Area include small infill projects such as the Blue Star Lane and S. Boulder Road project in Louisville and the Ethan Allen Showroom in Superior (described below) or retail space planned as part of larger mixed-use (re)development projects. The Downtown Superior project is planned to add up to 1,400 new housing units and up to 800,000 square feet of commercial uses (retail and office). The eventual development program for Downtown Superior is not set as it will be impacted by its ability to attract retail and employment uses to the site. Regardless of the ultimate amount of retail space developed, it will be competitive with the McCaslin Subarea. The Flatiron Marketplace redevelopment is another mixed use project with a retail component, which will replace an existing retail power center. Redevelopment projects in the McCaslin Subarea will likely be similar in terms of its mix of uses (retail vs. non-retail uses) and may compete for retailers.

Figure 19. Planned Retail and Mixed-Use Developments





**North End Market**

Blue Star Lane & S. Boulder Rd.,  
Louisville

- 4,000 SF retail
- 3,350 SF restaurant building



**Ethan Allen Design Center,  
Superior Marketplace**

600 Center Dr., Superior

- 11,971 SF
- 1.27 acres

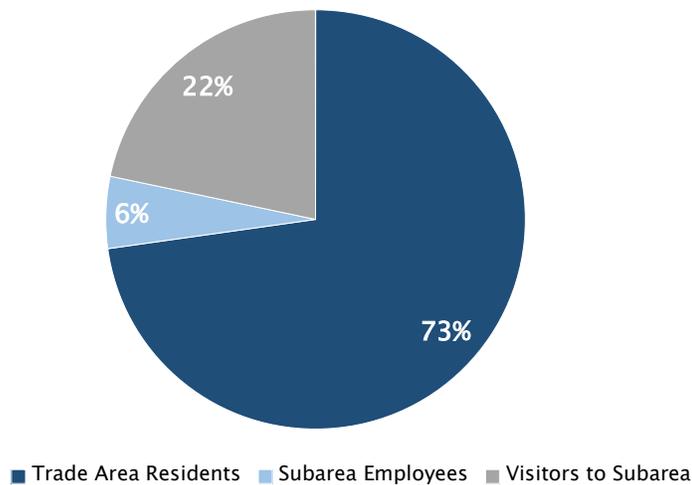
The Design Center will include 277 SF of warehouse space, 683 SF of office space, and 11,011 SF of retail space.

## McCaslin Subarea Sales Conditions

### Distribution of Sales in Subarea

Businesses in the McCaslin Subarea produced \$146 million in net taxable sales in 2017 which generated \$5.1 million sales tax revenue for the City of Louisville. Approximately 80 percent of the net taxable sales occurred in traditional retail stores and restaurants. Sales in the Subarea by consumer group include people who live in the Community Trade Area, people who work in the McCaslin Subarea, and shoppers who visit the Subarea, which includes people who live outside the trade area and/or are visitors to the area (e.g., hotel guests, hockey tournament participants). EPS estimated the distribution of sales in the Subarea to understand what is driving retail demand and how much uses that generated new visitors (employment and hospitality) contribute to the sales base.

**Figure 20. Distribution of McCaslin Subarea Net Taxable Sales**



- Sales to Residents** – The Community Trade Area has 38,399 residents in 15,180 households. These residents are estimated to generate \$371 million in annual retail purchases, of which \$81 million are captured in the Subarea. The trade area resident sales account for 73 percent of Subarea sales. This estimate is based on the existing stores in the Subarea and their actual net taxable sales in 2017.
- Sales to Employees** – The McCaslin Subarea has an estimated 4,263 employees working in the Subarea. The estimated spending by workers in the Subarea is based on estimated office worker spending from the International Council of Shopping Centers (ICSC), which surveys spending patterns of office workers nationally. ICSC estimates that an average office worker spends approximately \$4,750 annually on retail goods while at or near their place of work. Based on the actual stores present in the McCaslin Subarea (also

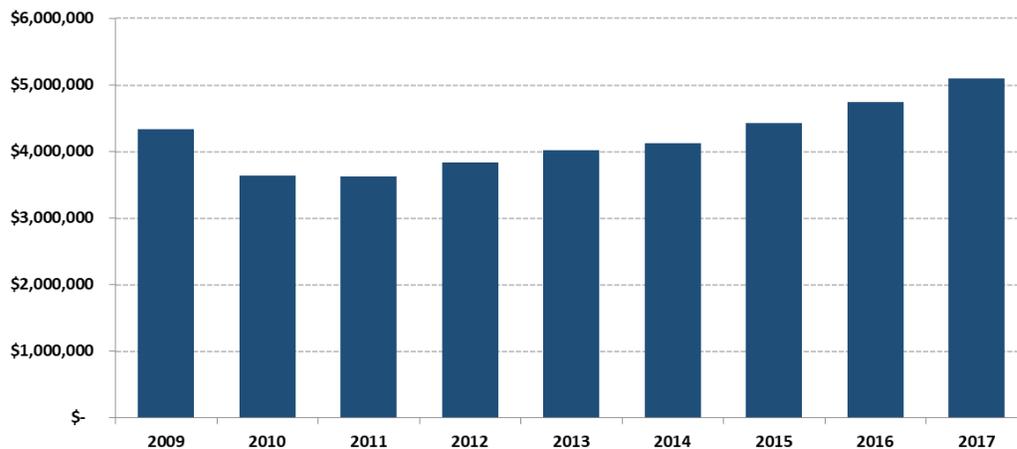
considering retail in areas surrounding the Subarea), EPS estimates an average worker spends approximately \$1,450 annually in the Subarea, which is a total of \$6.2 million or approximately 6 percent of Subarea retail sales (netting out workers who also live in the Community Trade Area).

- Sales to Visitors** – Visitors to the subarea are estimated to generate \$24.2 million or 22 percent of total Subarea sales. This percentage of sales to visitors is an approximation of the amount of sales inflow to the Subarea, which means this amount of sales (and associated customers) that are from people who are traveling to the Subarea to make retail purchases, which is referred to trade area Inflow. Despite having a few regionally oriented retailers (Home Depot, Lowe's and Kohl's) the amount of inflow is not a large portion of the sales meaning that the retailers in the Subarea are mainly serving the residents of the Community Trade Area.

### Sales Tax Trends

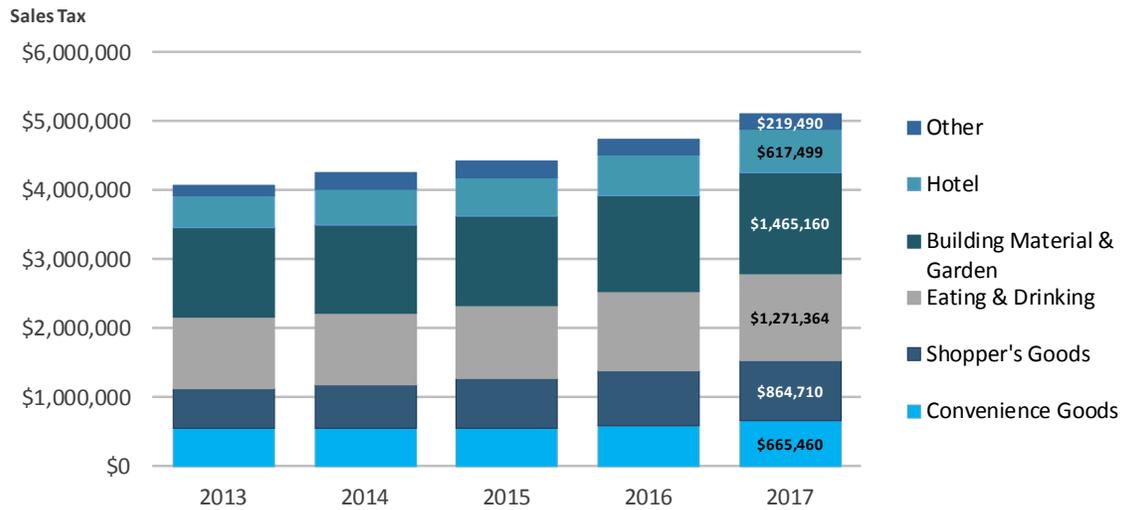
The amount of sales tax generated in the McCaslin Subarea has been growing steadily over the past eight years since Sam's Club closed. The Subarea accounted for \$5.1 million in sales tax revenue in 2017 and generates more sales tax now than it did in 2009 which was the last full year in which Sam's Club was open. In 2009, the Subarea produced \$4.4 million in sales tax revenues, which dropped to \$3.6 million in 2010, as shown in **Figure 21**. Sales tax levels exceeded the 2009 totals for the first time in 2015, which means it took five years to recapture the loss of sales attributed to Sam's Club. Despite the loss of Sam's Club, sales tax revenue generated in the Subarea has grown by 2.1 percent annually since 2009, which exceeds the rate of inflation for this period.

**Figure 21. McCaslin Subarea Sales Tax, 2009 to 2017**



In the past five years, the McCaslin Subarea experienced nearly 6 percent annual growth in sales tax revenue. As shown in **Figure 22**, Building Materials and Eating/Drinking establishments accounted for most of the sales tax revenue generated, while the six area hotels provided nearly 15 percent of the sales tax revenue. Sales tax generated from building materials stores, eating and drinking establishments, hotels, and marijuana sales accounted for the vast majority of retail sales tax growth (85 percent) since 2013.

**Figure 22. Sales Tax Trends**



Source: City of Louisville; Economic & Planning Systems

## Retail Demand

In this section we estimate future retail demand for the Community Trade Area. Demand is estimated based on household expenditures in the trade area. The future demand estimate is based on household growth estimates for the trade area. Retail expenditure potential is estimated based on the percent of income spent on average by store category as outlined in the steps below.

- Based on the U.S. Census of Retail Trade, the percent of Total Personal Income (TPI) spent by store category is determined using retail expenditure potential by retail NAICS categories that correspond with retail store categories. This calculation estimates expected resident spending patterns.
- The growth in trade area expenditure potential is estimated by the same calculation applied to the estimated growth in TPI by time period. TPI calculations are in constant dollars.
- The amount of retail space supported by the growth in trade area expenditures is estimated by dividing expenditure potential by average annual sales per square foot estimates for each store category.

The TPI for the Community Trade Area is estimated by multiplying the number of households by the average household income, as shown in **Table 12**. The future growth of the Community Trade Area is estimated to be 2,450 units from 2018 to 2028.

**Table 12. Community Trade Area Total Personal Income, 2018 to 2028**

Community Trade Area	2018	2028	Change 2018-2028
Households	15,180	17,636	2,456
Avg. Household Income	<u>\$129,912</u>	<u>\$129,912</u>	---
<b>Total Personal Income</b>	<b>\$1,972,064,160</b>	<b>\$2,291,112,895</b>	<b>\$319,048,735</b>

Source: US Census; ESRI; Economic & Planning Systems

The average Colorado household spends approximately 35.1 percent of its TPI in retail stores, as shown in **Table 13**. The annual expenditure potential for total retail goods in the Community Trade Area is estimated to grow by \$54 million from 2018 to 2028.

The expenditure potential for the Community Trade Area was converted into demand for retail square feet by using average sales per square foot factors. The Community Trade Area has a current total demand for retail of approximately 1.9 million square feet, as shown in **Table 14**. Demand from new housing growth in the Community Trade Area is estimated to generate demand for 149,000 square feet of new retail space over the 2018 to 2028 time period.

**Table 13. Retail Expenditure Potential by Store Category, 2018 to 2028**

Store Type	Retail Sales % TPI (2012)	Community Trade Area		
		2018 (\$000s)	2028 (\$000s)	Change 2018-2028 (\$000s)
<b>Total Personal Income (TPI)</b>	<b>100%</b>	<b>\$1,972,064</b>	<b>\$2,125,611</b>	<b>\$153,547</b>
<b>Convenience Goods</b>				
Supermarkets and Other Grocery Stores	6.9%	\$136,451	\$147,075	\$10,624
Convenience Stores (incl. Gas Stations) <sup>1</sup>	2.0%	\$39,032	\$42,072	\$3,039
Beer, Wine, & Liquor Stores	1.1%	\$21,234	\$22,887	\$1,653
Health and Personal Care	1.7%	<u>\$32,846</u>	<u>\$35,404</u>	<u>\$2,557</u>
<b>Total Convenience Goods</b>	<b>11.6%</b>	<b>\$229,564</b>	<b>\$247,438</b>	<b>\$17,874</b>
<b>Shopper's Goods</b>				
<b>General Merchandise</b>				
Traditional Department Stores	0.5%	\$10,001	\$10,780	\$779
Discount Department Stores and Other	0.9%	\$17,307	\$18,654	\$1,348
Warehouse Clubs & Supercenters	5.8%	<u>\$114,380</u>	<u>\$123,285</u>	<u>\$8,906</u>
<b>Subtotal</b>	<b>7.2%</b>	<b>\$141,330</b>	<b>\$152,334</b>	<b>\$11,004</b>
<b>Other Shopper's Goods</b>				
Clothing & Accessories	2.2%	\$42,454	\$45,760	\$3,306
Furniture & Home Furnishings	1.2%	\$23,232	\$25,040	\$1,809
Electronics & Appliances	1.1%	\$21,031	\$22,669	\$1,638
Sporting Goods, Hobby, Book, & Music Stores	1.3%	\$24,866	\$26,802	\$1,936
Miscellaneous Retail	1.3%	<u>\$25,449</u>	<u>\$27,430</u>	<u>\$1,981</u>
<b>Subtotal</b>	<b>6.9%</b>	<b>\$137,032</b>	<b>\$147,702</b>	<b>\$10,669</b>
<b>Total Shopper's Goods</b>	<b>14.1%</b>	<b>\$278,362</b>	<b>\$300,036</b>	<b>\$21,674</b>
<b>Eating and Drinking</b>	<b>6.1%</b>	<b>\$120,092</b>	<b>\$129,442</b>	<b>\$9,350</b>
<b>Building Material &amp; Garden</b>				
Total Building Material & Garden	3.3%	\$64,394	\$69,408	\$5,014
<b>Total Retail Goods</b>	<b>35.1%</b>	<b>\$692,412</b>	<b>\$746,324</b>	<b>\$53,912</b>

<sup>1</sup>Convenience Stores w/Gas (44711) are multiplied by 50% to exclude gas sales  
Source: 2012 Census of Retail Trade; Economic & Planning Systems

**Table 14. Supportable Retail Square Feet, 2018 to 2028**

Store Type	Avg. Sales Per Sq. Ft.	Community Trade Area	
		Total Supportable Space 2018	New Demand 2018-2028
<b>Convenience Goods</b>			
Supermarkets and Other Grocery Stores	\$400	341,000	27,000
Convenience Stores (incl. Gas Stations)	\$400	98,000	8,000
Beer, Wine, & Liquor Stores	\$300	71,000	6,000
Health and Personal Care	\$400	<u>82,000</u>	<u>6,000</u>
<b>Total Convenience Goods</b>		<b>592,000</b>	<b>47,000</b>
<b>Shopper's Goods</b>			
<b>General Merchandise</b>			
Traditional Department Stores	\$250	40,000	3,000
Discount Department Stores	\$350	49,000	4,000
Warehouse Clubs & Supercenters	\$500	<u>229,000</u>	<u>18,000</u>
<b>Subtotal</b>		<b>318,000</b>	<b>25,000</b>
<b>Other Shopper's Goods</b>			
Clothing & Accessories	\$350	121,000	9,000
Furniture & Home Furnishings	\$250	93,000	7,000
Electronics & Appliances	\$500	42,000	3,000
Sporting Goods, Hobby, Book, & Music Stores	\$350	71,000	6,000
Miscellaneous Retail	\$250	<u>102,000</u>	<u>8,000</u>
<b>Subtotal</b>		<b>429,000</b>	<b>33,000</b>
<b>Total Shopper's Goods</b>		<b>747,000</b>	<b>58,000</b>
<b>Eating and Drinking</b>	\$350	<b>343,000</b>	<b>27,000</b>
<b>Building Material &amp; Garden</b>	\$300	<b>215,000</b>	<b>17,000</b>
<b>Total Retail Goods</b>		<b>1,897,000</b>	<b>149,000</b>

Source: 2012 Census of Retail Trade; Economic & Planning Systems

## Future Market Opportunities

The McCaslin Subarea market orientation has shifted from a regional destination when it was first developed, to a smaller community oriented retail node. The ongoing difficulty in attracting larger users to the vacant Sam's Club box and the soon to be vacant Kohl's illustrate the changing nature of the Subarea. The McCaslin area has attracted a limited amount of new retail space (12,500 square feet) since 2010 and the new space has been filled primarily by restaurants. Same is true for the larger trade area, as it has only grown by 8,500 square feet of retail space per year since 2010. Retailers and businesses providing goods and services that serve the surrounding Community Trade Area and nearby workforce are most likely the ones to be attracted to the Subarea.

Going forward, housing growth in the Community Trade Area is estimated to generate an estimated demand of 150,000 square feet of new space over the next 10 years. Currently, the McCaslin Subarea represents 22 percent of the retail space in the Community Trade Area, however only captured 11 percent of new retail space growth since 2010. If the Subarea is able to capture its historic 20 percent share of the new demand, there will be demand for approximately 30,000 square feet over the next 10 years. New retail space in a redevelopment within the Subarea will have to capture new resident sales (estimated 30,000 square feet) and recapture sales that are leaving the Subarea to areas within the Community Trade Area or to outside of the trade area. The base level estimate for new demand is estimated to be 30,000 square feet of new retail with potential to attract additional sales by attracting competitive anchors or junior anchors that address trade area gaps or compete with retailers in other communities within the trade area. The estimated range of potential new retail demand that can be captured in the Subarea is between 30,000 to 70,000 square feet of new space, some of which may occupy vacant retail spaces instead of new retail buildings.

The most likely large anchor of spaces that can be attracted to the subarea are ones that will serve the everyday needs of the Community Trade Area. King Soopers has been exploring a new store in the US-36 and McCaslin Blvd interchange area. It is likely an additional grocery can be attracted to the Subarea; however a new grocery may have major impacts on the existing Safeway. The changes in the liquor laws in Colorado will increase opportunities to attract a large liquor superstore chain to the Subarea. Other large users that can be attracted include entertainment, recreation and fitness uses. These types of uses are increasingly locating in community and neighborhood oriented shopping centers and serve similar trade areas as the retailers around them. Examples of entertainment uses include virtual reality and experiential sports venues. These uses generate additional visitation to retail centers and help add vitality to retail centers. However, they generate a low amount of retail sales and associated sales tax revenue. The refill of the vacant Sports Authority in the Superior Marketplace is an illustration of the tradeoffs and challenges of refilling vacant boxes. The

40,000 square foot Sports Authority space was being split into two spaces for Stickley, a furniture store and for a swim school. While the attraction of the furniture retailer is a positive fiscally for the Town, the amount of sales tax generated by the total space is less than previously generated as furniture store sales taxes are allocated to the destination if it is delivered, further limiting its local sales tax potential.

## 5. Alternative Uses Market Analysis

The market conditions and feasibility of uses that could be an alternative to retail in the McCaslin Subarea were analyzed including office, hotel, and multifamily residential uses.

### Office Market Conditions

This section contains a summary of the office market conditions in Louisville and the larger trade area. A summary of national and local conditions and trends is provided.

#### National Trends

Nationally, office development is moving away from the single use, suburban office park or corporate campus to more mixed use, centrally located, and often transit-accessible locations in major urban areas. Much of this trend has been driven by shifting preferences from the workforce, especially younger, college educated Millennial-aged workers, who wish to have more access to amenities near work such as shopping, services, and dining. Their choice of place to live is being driven by considerations of quality of life and opportunity for employment. As result, employers are making location decisions to be located centrally to their target workforce and locations that have an attractive quality of life. Other office space trends impacting the development and locations of new space include:

- **More Efficient Office Space** - Businesses are leasing less office space per person than in past years. Technology has reduced the need for space, and new workplace designs are more efficient. Open floor plans and shared spaces are becoming more common. In these settings, workers are freer to move around an office with a laptop and mobile phone. The National Association for Industrial and Office Parks (NAIOP) reported in 2015 that the average office lease size had dropped by approximately 10 percent from 2004 through 2014. Some of the trend in efficiency (more workers per square foot of building area) is driven by cost. Fast growing industries like technology are not necessarily cutting space requirements as they desire spacious and luxurious offices to attract the highest skilled talent. Slower growth industries such as law and accounting are reducing their space requirements to cut costs.
- **Co-Working Space** - Co-working space is a new type of office space in which tenants rent desk(s) space in a space shared with other workers and firms. They are popular with small new firms, which can be in any field including professional services, creative industries, and technology. Tenants have access to conference rooms and shared office equipment (e.g., printers, broadband, reception, etc.). The benefits of co-working space are that they

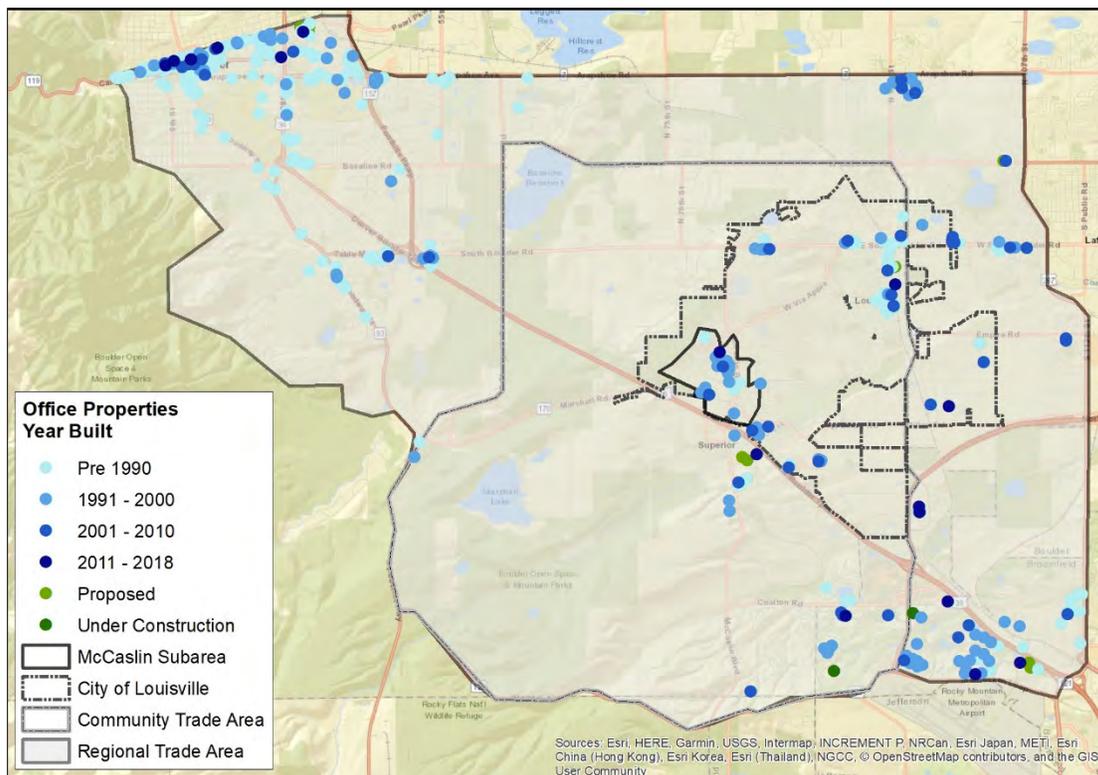
typically have lower tenant finish levels and lower cost than traditional office space and are flexible in that they give a firm a low-cost way to grow from one to a few employees. They also offer, and are marketed for, opportunities for collaboration and knowledge sharing with likeminded people and potential business partners. Some also offer events including networking, speakers, and skill development workshops. Co-working space is popular with entrepreneurs and remote workers. It is becoming more common in major and mid-sized cities but is still a small portion of the total office market.

### Local Office Conditions

The City of Louisville is located between two larger office concentrations in the City of Boulder to the north and the Interlocken/Arista area of Broomfield to the south. These concentrations fall within the Regional Trade Area but outside of the Community Trade Area, as shown in **Figure 23**.

Between 2010 and 2018, the Regional Trade Area added 1.3 million square feet of office space, however the Community Trade Area added only 159,573 square feet. Approximately 50 percent of this new inventory is in Boulder, and 30 percent is in Broomfield. There are also several new projects proposed and under construction, as shown in **Figure 23** and in **Table 15**.

**Figure 23. Regional Office Inventory**



The McCaslin Subarea has 943,300 square feet of office space spread over 21 buildings. A 58,000 square foot building was constructed in Centennial Valley in 2018; this was the McCaslin Subarea’s first office inventory addition since 2008. This building accounted for 36 percent of the new space added to the Community Trade Area and 4 percent of the Regional Trade Area. The majority of the area’s inventory is older, Class B office space.

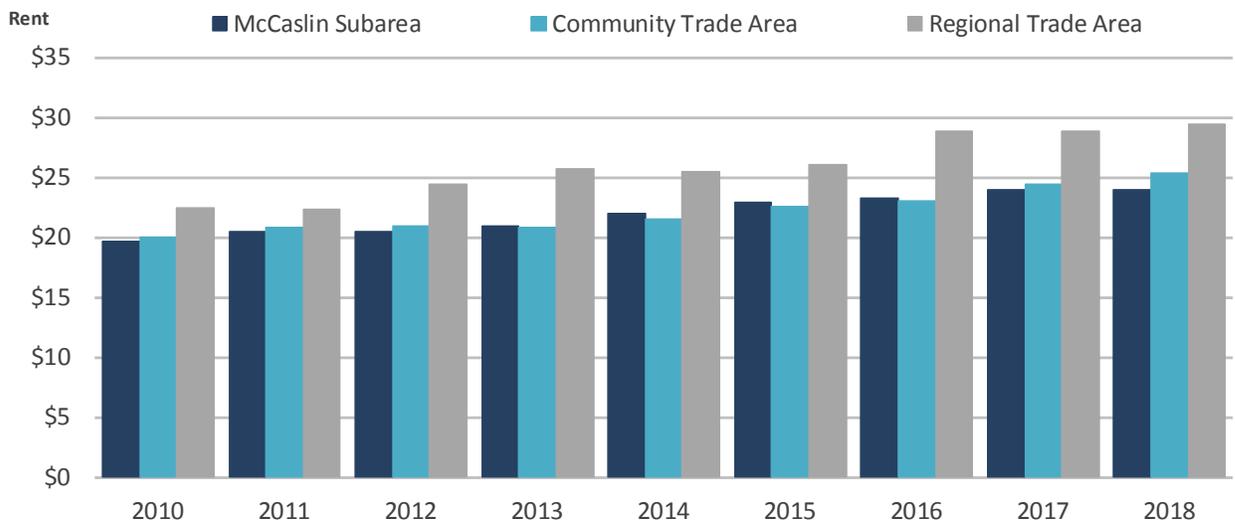
**Table 15. Office Inventory Trends**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2010-2018		
										Total	Ann. #	Ann. %
<b>Office Inventory (Sq Ft)</b>												
McCaslin Subarea	885,611	885,611	885,611	885,611	885,611	885,611	885,611	885,611	943,311	57,700	7,213	0.8%
Community Trade Area	2,734,415	2,734,415	2,734,415	2,734,415	2,734,415	2,734,415	2,745,424	2,745,424	2,893,988	159,573	19,947	0.7%
Regional Trade Area	10,084,723	10,374,012	10,374,012	10,576,998	10,572,468	10,512,468	10,553,470	10,792,225	11,410,377	1,325,654	165,707	1.6%

Source: CoStar 2nd Quarter; Economic & Planning Systems

Rental Rates in the McCaslin Subarea have historically been on par with the Community Trade Area. Rates for the Regional Trade Area have been consistently higher than the two smaller trade areas, as they include office properties in Boulder and Broomfield, which have larger office concentrations. The average rental rates in the McCaslin Subarea have exceeded \$25 per square foot (NNN) and have increased steadily since 2010.

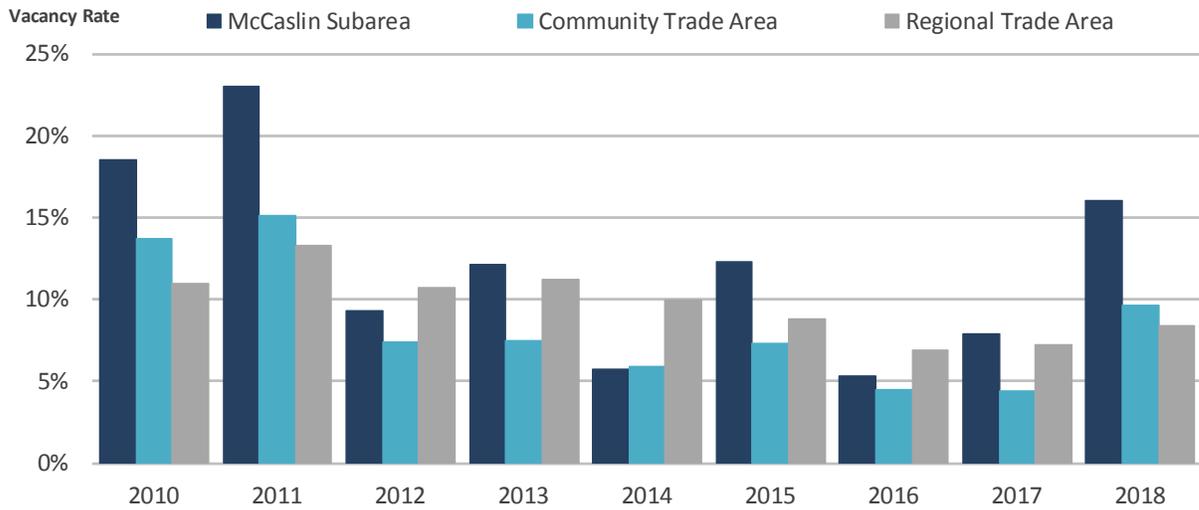
**Figure 24. Office Rental Rates**



Source: CoStar 2nd Quarter; Economic & Planning Systems

The office vacancy rate in the McCaslin Subarea was higher than the surrounding areas in six of the last nine years, in part due to the small size and inventory of the area. A new space in the Centennial Valley Business Park came online in 2018 and is in the process of leasing up, which caused an increase in the 2018 vacancy rate. The growing rental rates and the low vacancy rate in the trade areas in 2017 are indicators of demand for space and the market has responded with new additions in the immediate McCaslin Subarea and Superior areas.

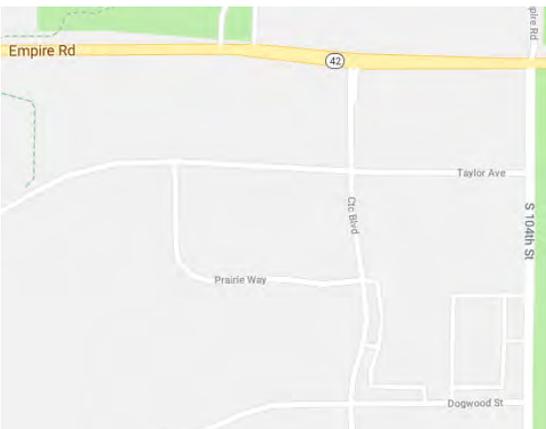
**Figure 25. Office Vacancy Rates**



Source: CoStar 2nd Quarter; Economic & Planning Systems

The planned office development projects in the area are described below. Larger, new office projects are primarily build-to-suit developments with a single tenant occupying the building. Smaller, speculative projects have been built in recent years, but there is a limited number of these types of projects planned in the area.

Table 16. Planned Office Market Developments

Planned Office Market Developments	
	<p><b>Partners Group Headquarters</b> 1200 El Dorado Blvd., Broomfield</p> <ul style="list-style-type: none"> <li>• Three-building complex on 12.5 acres</li> <li>• Total of 22 acres owned</li> <li>• 2019 completion</li> </ul> <p>The American headquarters for Switzerland-based Partners Group, a private-markets investment manager, is under construction and expected to open in 2019.</p>
	<p><b>Viega Headquarters</b> 575 Interlocken Blvd., Broomfield</p> <ul style="list-style-type: none"> <li>• 55,000 SF headquarters</li> <li>• 24,000 SF training facility</li> <li>• 11.8 acres</li> <li>• 2018 completion</li> </ul> <p>Germany-based Viega LLC is relocating its North American headquarters from Wichita, KS.</p>
	<p><b>EOS Phase II, III, IV</b> Edgeview Dr., Broomfield</p> <ul style="list-style-type: none"> <li>• Proposed 2019-2020</li> <li>• Anticipated LEED Platinum</li> </ul> <p>The four-building office campus will consist of approximately 850,000 rentable square feet. Phase I was completed in August 2012.</p>
	<p><b>The Ridge at Colorado Tech Center</b> S. Taylor Ave., Louisville</p> <ul style="list-style-type: none"> <li>• Proposed 2019</li> <li>• 109,000 SF</li> </ul> <p>CoStar lists this site as a proposed office project, however, it may be an industrial/flex use similar to other sites in the CTC.</p>

### **Office Market Potentials**

The Centennial Valley development is a significant employment node along the US-36 corridor, which is a benefit to the McCaslin subarea and larger Louisville community. There are remaining vacant parcels in the development that will over time build out with employment uses. The area is attractive for potential businesses to locate, especially as a more accessible and affordable office location for firms wanting to be near Boulder. However, introduction of employment office uses within a shopping center redevelopment or reconfiguration will be difficult given the competitive sites and locations nearby.

The Community Trade Area has grown by 160,000 square feet of office space since 2010 and the McCaslin subarea has captured 36 percent of this new office space growth—58,000 square feet—primarily in one new office building. If employment growth and office development along the US-36 corridor continues at the historic rate of the past 20 years, there will be demand for approximately 200,000 square feet of new office space over the next 10 years. Using recent capture rates of new development for the subarea, the Subarea could capture 70,000 to 100,000 square feet of new space over the next 10 years.

## Multifamily Market Conditions

### Local For-Rent Multifamily Conditions

The demand in the apartment market along the US-36 corridor has been strong over the past five years. Average rental rates for communities along the US-36 corridor are higher than averages for the Denver Metro Area and vacancy rates are low.

The McCaslin Subarea has attracted one multifamily for-rent property, Copper Ridge Apartment Homes, and one for-sale multifamily property, Centennial Pavilions, since 1994. Inventory in the Community Trade Area grew at an average of 3.8 percent, or 111 units per year, between 2010 and 2018, as shown in **Table 17**. The Regional Trade Area grew by 2.9 percent and 355 units per year over the same time frame.

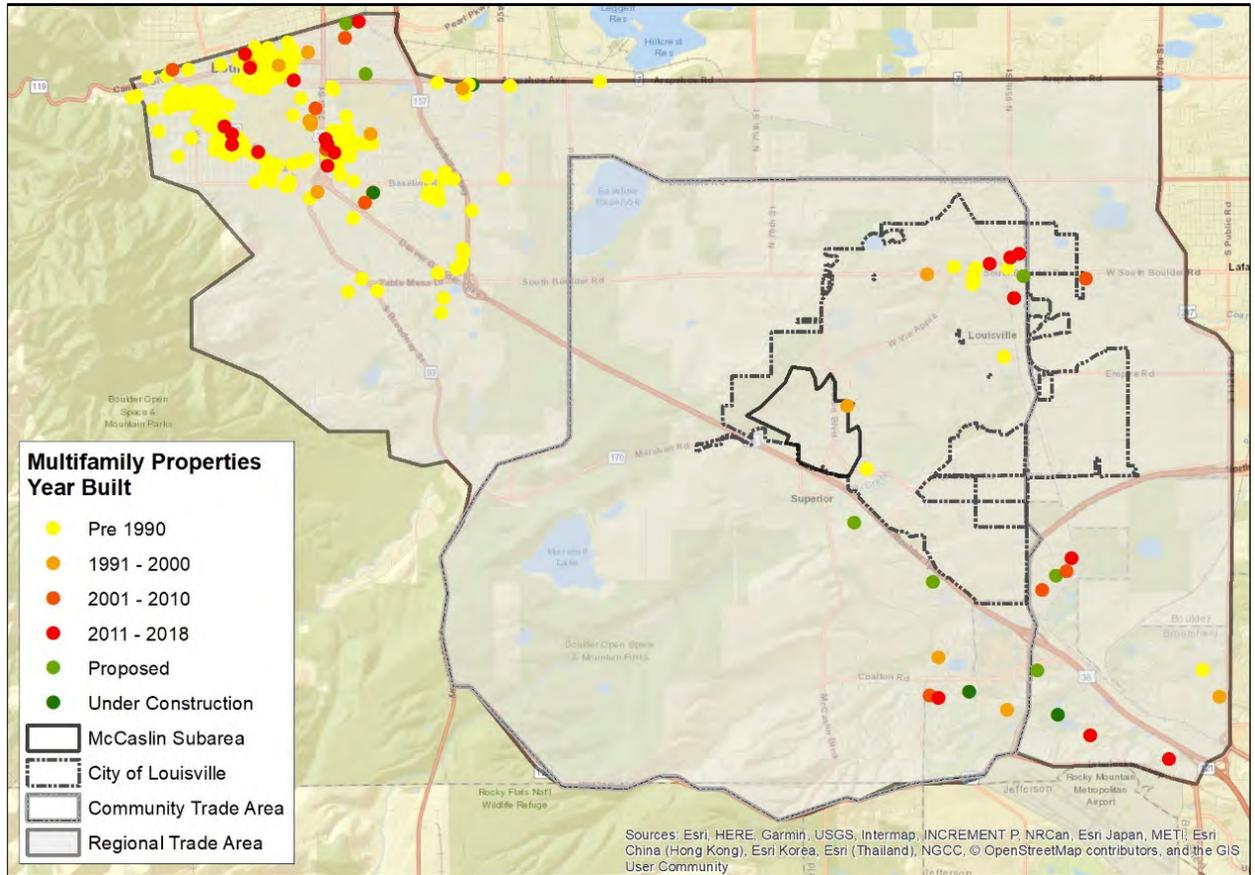
It should be noted that the Arista District in Broomfield is just outside of the Community Trade Area for this Study and includes approximately 1,600 apartment units.

**Table 17. Multifamily Inventory Trends**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2010-2018			
										Total	Ann. #	Ann. %	
<b>Multifamily Inventory (Units)</b>													
McCaslin Subarea	129	129	129	129	129	129	129	129	129	129	0	0	0.0%
Community Trade Area	2,539	2,539	2,539	2,539	2,767	2,987	2,987	3,298	3,428		889	111	3.8%
Regional Trade Area	10,976	10,989	11,005	11,005	12,039	13,079	13,236	13,645	13,812		2,836	355	2.9%

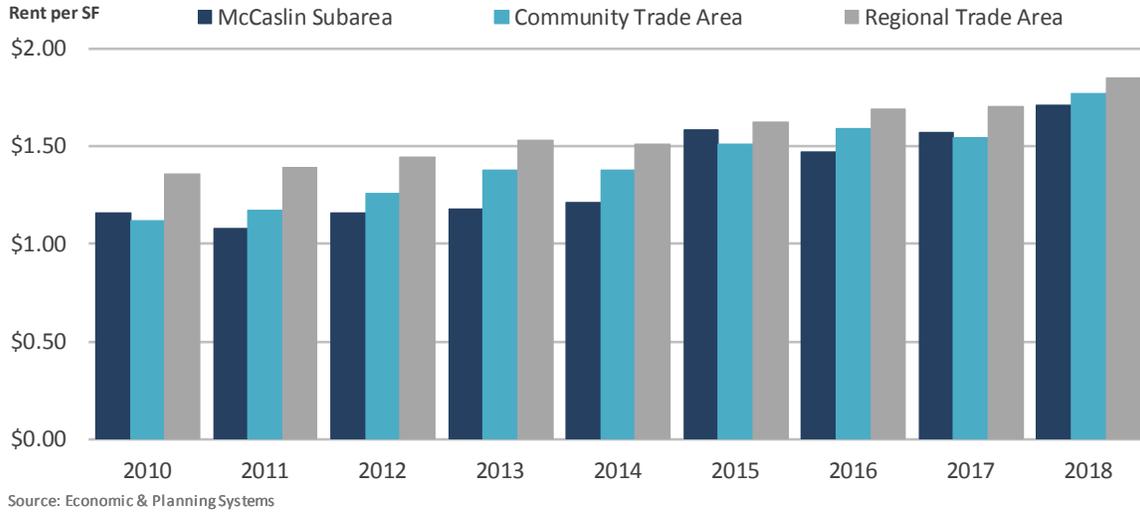
Source: CoStar 2nd Quarter; Economic & Planning Systems

Figure 26. Regional Apartment Inventory



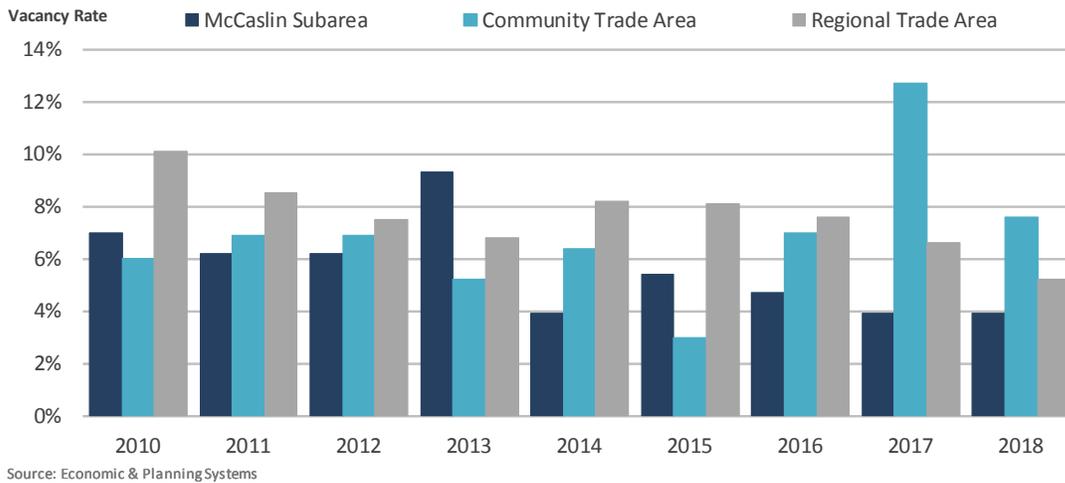
Rents at The Copper Ridge Apartment Homes have historically been lower than the surrounding areas, as demonstrated in **Figure 27**. Average rents for the Regional Trade Area, which includes Boulder, have been consistently higher than the Community Trade Area and McCaslin Subarea.

**Figure 27. Apartment Rent per Square Feet**



The Community Trade Area has a significantly higher multifamily vacancy rate than the McCaslin Subarea and Regional Trade Area due to new inventory that came online in 2017.

**Figure 28. Apartment Vacancy Rate**



The larger apartment complexes in the region (not including Boulder) are shown in **Table 18**. There are currently seven new projects under construction or proposed. There is a divergence in the achievable rents within this competitive set of projects that helps illustrate the feasibility of new development in the area. The majority of units built in the area have average rent per square foot of approximately \$1.75. The two most recent projects in Louisville have been able to achieve higher rental rates of over \$2.10 per square foot. The new projects are urban products built with structured parking. These higher average lease rates are necessary for a project with structured parking to be feasible. The other complexes in the region are primarily surface/detached garage parked with some tuck-under spaces. The level of rent needed to support new development for these more suburban/walk-up complexes is lower at around the \$1.80 per square foot range.

The spread impacts the potential feasibility of a multifamily residential uses in the Study Area. For a more urban apartment complex, with structured parking, the new units will need to achieve rents similar to the DELO Apartments and Centre Court Apartments in Louisville of at or above \$2.10 per square foot. These projects are located next to Downtown Louisville and offer an attractive location. A new project along the McCaslin Blvd. may struggle to offer the same location appeal as Downtown Louisville and may not be able to support these rates. However, access to US-36, the proximity to the Flatiron Flyer BRT stop, and proximity to the jobs and retail in the subarea may be attractive to prospective residents as there are limited rental housing options in the area.

**Table 18. Existing Apartment Developments**

Apartments	Status	Address	City	Units	Year Built	Avg. Rent per Unit	Avg. Rent per Sq Ft
Portals Apartments	Existing	1722-1766 Garfield Ave	Louisville	50	1975	\$1,044	\$2.61
Grand View @ Flatirons	Existing	855 W Dillon Rd	Louisville	180	1990	\$1,589	\$1.88
Copper Ridge Apartment Homes	Existing	240 McCaslin Blvd	Louisville	129	1994	\$1,658	\$1.72
Bell Flatirons	Existing	2200 S Tyler Dr	Superior	1206	1998	\$1,779	\$1.71
Bell Summit at Flatirons	Existing	210 Summit Blvd	Broomfield	500	2004	\$1,537	\$1.51
Terracina Apartment Homes	Existing	13620 Via Varra Rd	Broomfield	386	2008	\$1,694	\$1.83
Catania Apartments	Existing	13585 Via Varra Rd	Broomfield	297	2009	\$1,681	\$1.67
Retreat at the Flatirons	Existing	13780 Del Corso	Broomfield	374	2014	\$1,890	\$1.79
Green Leaf RockVue	Existing	230-250 Summit Blvd	Broomfield	220	2014	\$1,616	\$1.67
Centre Court Apartments	Existing	745 E South Boulder Rd	Louisville	111	2016	\$1,875	\$2.10
DELO Apartments	Existing	1140 Cannon St	Louisville	130	2017	\$1,739	\$2.38
<b>Average</b>						<b>\$1,646</b>	<b>\$1.90</b>

Source: CoStar; Economic & Planning Systems

There are currently seven new projects under construction or proposed, as shown in **Table 19**.

**Table 19. Planned For-Rent Multifamily Developments**

Apartments	Status	Address	City	Units	Year Built
Summit Green Apartments	Under Construction	501 Summit Blvd	Broomfield	184	2019
Interlocken Apartments	Under Construction	355 Eldorado Blvd	Broomfield	311	2019
Rock Creek Zaharias Apartments	Proposed	2036 S 88th St	Louisville	258	2019
Downtown Superior Phase 1-Block 11	Proposed	US Hwy 36 & McCaslin Blvd	Superior	106	2019
Coal Creek Station	Proposed	S Boulder Rd	Louisville	54	2019
Flatiron Marketplace	Proposed	E Flatiron Crossing Dr	Broomfield	324	2019
Terracina Apartment Homes - Phase II	Proposed	13600 Via Varra Rd	Broomfield	100	2020

Source: CoStar; Economic & Planning Systems

### Local For-Sale Multifamily Conditions

The larger Denver metro area has experienced limited new multifamily, for-sale development in the past decade. The impacts of construction defect litigations on condo projects built in the 2000's have increased risks and development costs (e.g. insurance costs) for condo developments. As a result, new condo development has been limited to areas that can support high-end, luxury condos that can support the increased risk and construction costs. New condo development since 2010 has primarily occurred in areas such as Downtown Boulder, Downtown Denver, and Cherry Creek.

There is currently one for-sale, multifamily project within the McCaslin subarea. The Centennial Pavilions project was built in 2005 and has 67 condo units. The average price of units sold in the project in the past two years is \$378,780 (\$328.42 per square foot), with units ranging from \$290,000 to \$451,000 (according to Boulder County Assessor).

There has been a recent increase in proposed condo projects in the Denver metro area outside of the areas mentioned previously with more activity in higher priced communities including Louisville and Boulder County. The North End development in Louisville is currently selling condos, North End Block 10, with an estimated completion data of 2020. Units are listed for sale between \$424,900 and \$494,900 (according to Markel Homes).

## **Multifamily Residential Market Opportunities**

Boulder County and the US-36 Corridor are expected to continue to be desirable locations to capture employment growth over the next decade. Boulder County (the US-36 Corridor, and the City of Boulder especially) continues to increase in employment at a greater rate than housing units. As a result, there will be a continued demand for housing in communities along the US-36 corridor, especially for multifamily housing as it is currently an under-represented use.

The Community Trade Area is expected to grow in housing at similar rates as the past decade, with estimated demand of 1,000 to 1,200 new households in the trade area in the next 10 years.

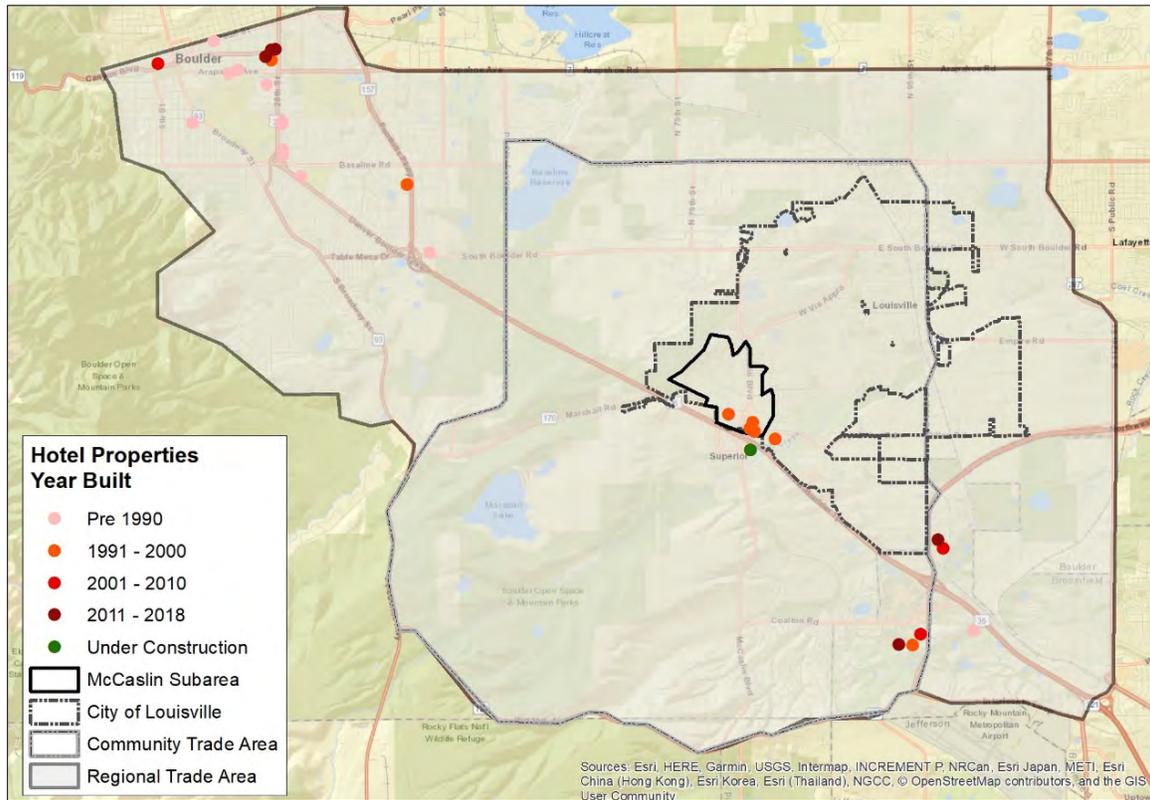
The Community Trade Area has grown by 110 apartment units annually since 2010. The City of Louisville has only captured a minimal amount of new multifamily residential development during this time and the McCaslin subarea has captured no new for-rent housing in this period. (Note this is largely due to land use and zoning designations in the corridor that do not allow this use). Multifamily residential uses will be attracted to locations near employment, with access and visibility to major transportation/transit routes, and near retail goods and services. The McCaslin Subarea is an attractive location for this use and could capture a significant share of housing growth if these uses are allowed in the Subarea.

The demand for condos is difficult to gauge given the lack of recent development. Units within the Centennial Pavilions project are listed online for-rent, which may not indicate strong demand in the subarea for for-sale multifamily. The success of new projects, like the North End condo building, will help prove up demand within more suburban contexts such as Louisville. It is more likely that a for-rent project will be proposed in a redevelopment of Parcel O given the current demand, achievable rent rates, and the lower risk than condos. However, allowing for both product types should be the focus of any changes to development agreements and/or private covenants. Lower density, townhomes are likely in demand but not feasible given the required return within redevelopment of the project.

## Hotel Conditions

The McCaslin Subarea contains five existing hotel properties. Across Highway 36, the Town of Superior’s first hotel, Element, is under construction. The other hotel clusters in the larger regional trade area are located in the Interlocken area in Broomfield and in the City of Boulder, as shown in **Figure 29**.

**Figure 29. Regional Hotel Inventory**



**Table 20. Planned Hotel Developments**

Planned Hotel Developments	
	<p><b>Element Hotel</b> 1 Marshall Road, Superior</p> <ul style="list-style-type: none"> <li>• 121 guest rooms</li> <li>• 4 stories</li> <li>• 2.6 acres</li> </ul> <p>The Element Hotel is under construction on the former Boulder Valley Ice site, near the intersection of McCaslin Blvd. and Marshall Road.</p>

The hotels that would be competitive with a new hotel in the McCaslin Subarea are shown in **Table 21**. There was an influx of new hotels in the area in the late 1990's and early 2000's when approximately 1,344 of the 1,899 rooms in the area were built. In 2017, there was a large influx of new hotel projects with 555 rooms added in 2017 and 2018 and a project under-construction in Superior as previously noted.

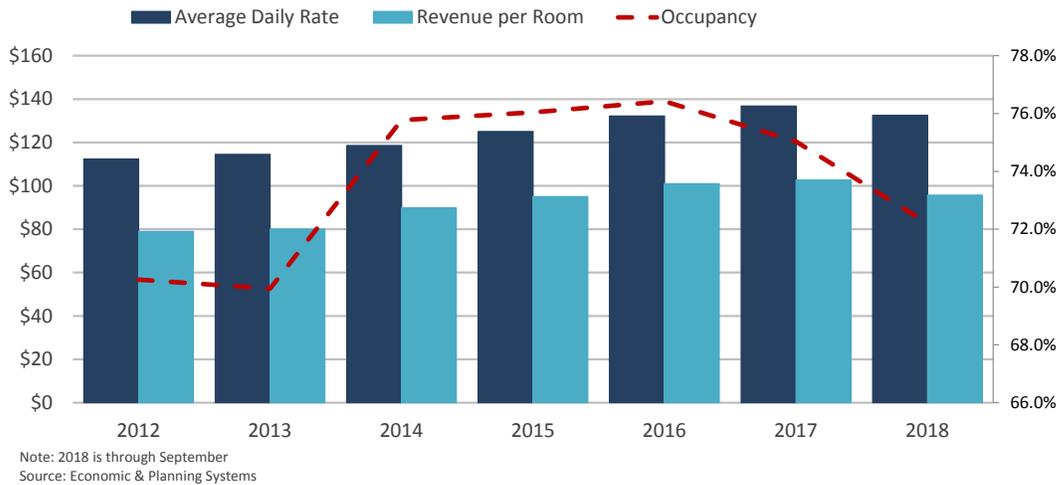
**Table 21. Competitive Hotel Inventory**

Description	City	Month/Year Built	Rooms
Quality Inn Louisville Boulder	Louisville	Mar 1996	68
Hampton Inn Boulder Louisville	Louisville	Aug 1996	80
Courtyard Boulder Louisville	Louisville	Nov 1996	154
La Quinta Inns & Suites Denver Boulder Louisville	Louisville	Apr 1997	120
Omni Interlocken Resort	Broomfield	Jul 1999	390
Best Western Plus Louisville Inn & Suites	Louisville	Oct 1999	62
Residence Inn Boulder Louisville	Louisville	Apr 2000	88
TownePlace Suites Boulder Broomfield Interlocken	Broomfield	Nov 2000	150
Renaissance Boulder Flatiron Hotel	Broomfield	Oct 2002	232
Hyatt House Boulder Broomfield	Broomfield	Jun 2010	123
Holiday Inn Express & Suites Denver Northwest Broomfield	Broomfield	Jul 2017	136
Residence Inn Boulder Broomfield Interlocken	Broomfield	Dec 2017	122
Fairfield Inn & Suites Boulder Broomfield Interlocken	Broomfield	Dec 2017	90
Hampton Inn & Suites Lafayette	Lafayette	Mar 2018	84

Source: STR; Economic & Planning Systems

Average daily rate for competitive hotels in the area was \$137 in 2017 and has grown from \$112 in 2012. Average daily rates and revenue per room has grown steadily from 2012 to 2017. Rates in 2018 (through September) have decreased slightly from 2017 due to the influx of new hotels. Occupancy rates were at their highest in 2016 at 76.4 percent. Occupancy rates in the area have been strong since 2012 and have remained above rates in 2012 even with the new hotels opening in 2017, as shown in **Figure 30**.

**Figure 30. Competitive Hotel ADR, Rev Par, and Occupancy, 2012 to 2018**



### Hotel Market Opportunities

The McCaslin Subarea is an attractive location for limited service hotels in the region evidence by the existing cluster of hotels. The proximity to Boulder and Interlocken and the access to US-36 are the primary advantages.

The recent influx of new hotels in the Community Trade Area and within the City of Boulder indicates there was strong demand for new product in the US-36 corridor. There was very little new inventory added to the corridor since the early 2000's until the last two years. The revenue numbers and occupancy rates have adjusted due to the new inventory but remain strong. As employment in the area continues to grow and the Boulder County continues to remain an attractive location to visit, hotel demand should remain strong. It is likely that the McCaslin Subarea can capture an additional hotel within the next five years.

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## 6. Community Engagement Process

Strategic and focused community outreach and engagement was key to both understanding stakeholder perspectives and concerns, as well as informing the key stakeholders of the importance of revitalization and redevelopment of Parcel O in order to ensure the long term economic health of the City. A primary goal of this engagement was to identify alignment between the stakeholders and the market analysis in order to ensure a successful vision and roadmap for implementation.

### Community Outreach and Input

Several engagement programs were created to both inform the community about the project and to solicit feedback on future uses and redevelopment scenarios. All programs focused on interactive engagement methods to build community awareness of key development challenges, shared market analysis information, and continued to build alignment around potential scenarios and strategies for Parcel O.

#### EngageLouisvilleCo.com

EngageLouisvilleCo is a website dedicated to the project that incorporated a project description and process, City Council goals and principles, images, surveys, market findings, and more. The website received 993 total visits from September through December 2018 and the survey had over 110 responses. Two of the survey responses are illustrated below. To view individual responses received through the EngageLouisvilleCO process, see the Survey Report in **Appendix A**.

Figure 31. Survey Results EngageLouisvilleCo.com



Figure 32. EngageLouisvilleCo.com

Home > McCaslin Parcel O Redevelopment Study

## McCaslin Parcel O Redevelopment Study

**Consultation has concluded**



The McCaslin Parcel O Redevelopment Study is a City of Louisville led process to identify the opportunities for the McCaslin commercial area that will encourage retail vibrancy, commercial health, and a desirable place for the community to gather. Ensuring a vibrant retail corridor is vital to the long term fiscal health of the City. A thoughtful mix of real estate options that fosters quality long term tenants and encourages residents and visitors to enjoy the area is necessary for the area to remain viable.

MCCASLIN PARCEL "O" - SITE USES AND OPPORT...
SURVEYS

### McCaslin Parcel "O" - Site Uses and Opportunities - What do you think?

**Survey will be Closed Friday, November 16.**

We want to hear from you. Based on the market trends and realities, what type of development would you like to see in this area? Tell us your big ideas - don't be shy and keep in mind how to:

- Be responsive to both community interests and market demand
- Boost the vibrancy of our retail corridor as both a destination and a community asset
- Increase Town tax revenue so we can continue to provide more services to residents
- Bring economic vitality for years to come
- Expand and strengthen what you already love about Louisville



McCaslin Parcel O Redevelopment Study  
 ~ 44.6 Acres

### Process

- ✔

**Let's get going!**  
 We are just beginning the project and looking forward to engaging with all of you.  
*Early - Mid August*
- ✔

**Let's see what market possibilities are?**  
 Our team is hard at work reviewing the Louisville market to identify and analyze what the realm of opportunities are.  
*Mid August - Mid October*
- ✔

**Let's see what Parcel O's opportunities and constraints are?**  
 Now we will be reviewing our current regulations and analyzing what needs to be improved.  
*Early September - Mid October*
- ✔

**It's time to chat!**  
 We now enter the community engagement phase, let's all come together as a community and create a vision for the future.  
*Mid August - Mid November*
- ✔

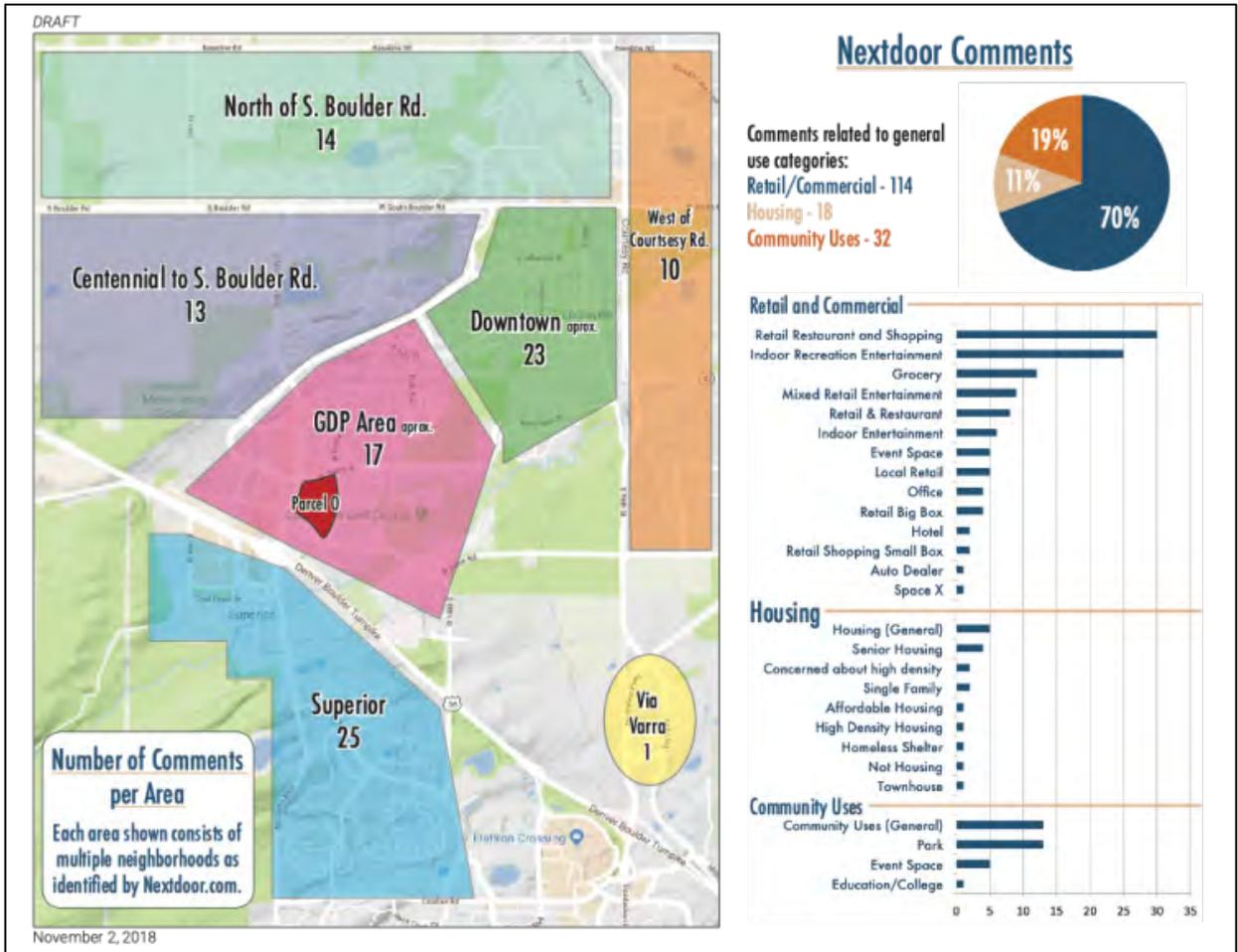
**It's drafting time!**  
 Now that there is a shared vision, our team will get to work on a few redevelopment scenarios that reflect what we want as a community.  
*Early October - Early November*
- ✔

**Here's our findings!**  
 All the great work is over and now we get a chance to present our

**Nextdoor.com**

The Louisville community had already started discussing the future of Parcel O on NextDoor prior to this Parcel O Redevelopment Study. Several comment boards identified desired uses and other varying comments. Those who participated in these online comment boards were from both Louisville and Superior. These comments were reviewed and analyzed as displayed below.

**Figure 33. Nextdoor.com Findings**



## Pop-Ups

An informal and face-to-face survey was conducted at the Paul's Coffee shop located on Parcel O. 30 individuals participated during this one-day event. The pop up survey shared market information and site constraints while asking similar questions to mirror the questions being asked on EngageLouisvilleco.com. Common themes that were expressed from the community during this event include:



Figure 34. Pop-Up Event at Paul's Coffee

- Need for mixed-income housing, apartment, and townhomes
- Continued support for big box stores
- Need for more community spaces
- Desire for unique food and beverage venues
- Make the area more walkable and connected

# What types of PUBLIC SPACES would work here?



## PARK/OPEN SPACE



## PLAZA

### **Property Owner, Broker, and Developer Discussions**

All Parcel O property owners were contacted, one broker for a property within Parcel O, and the developer of the recently completed facility at 994 West Dillon discussed their thoughts and opinions regarding regulations, uses, market conditions, and future opportunities. Key comments include:

- McCaslin is still a good retail location for neighborhood and community retail including grocery.
- It is no longer a regional location and there are rumors big boxes may choose to leave.
- Opportunity for other commercial uses including fitness, entertainment, medical and professional office, and hotels.
- A destination draw like the Sports Stable would increase market draw.
- Additional rooftops would help the area thrive including for-sale and for-rent housing.
- Virtually any supportable uses will require the GDP and covenants to be amended.
- Visibility and access are very challenging.
- Future vacancies are pending.
- Residential rooftops are needed to support additional retail/commercial.
- Expensive City process to get use approvals needed.

### **Citizen's Action Group**

Early in the project, the project team attended the Louisville's Citizen's Action Council (CAC). 50 council and community members learned about the redevelopment study and provided their ideas for the parcel including varying uses, site design, and changing market realities.

## Community Preferences

The multiple engagement channels provided a clear understanding of the communities overall opinion for Parcel O. While all engaged participants were made aware of the regulatory constraints surrounding future redevelopment, they were also informed about the changing market conditions.

### Uses and Design

The community’s top 4 desired general uses were retail/restaurant, residential, health/wellness, and community space. These four high level categories can be further broken down into specific subcategory uses as detailed below using examples and comments provided by the community.

There is a strong desire for new and unique uses that are experience based and will serve both the local community as well as draw individuals from outside Louisville. Consistent descriptive language included, family friendly, unique, local, craft, healthy, handcrafted, quality, small town, inclusive, shared spaces, multi-vendor, and mixed use. A few examples community members mentioned were the Aurora Stanley Marketplace, Boulder’s Rayback Collective, Alexandria’s (VA) Torpedo Factor Art Center, Boston’s Faneuil Hall Marketplace, and Seattle’s Pike Place Market. The community also desires an improved site layout that supports walkability between the individual lots, open and green spaces, outdoor features and play spaces, attractive public spaces, improved streetscapes that facilitate user interactions.

**Table 22. Parcel O Community Preferences**

<b>Retail/Restaurant</b>	<b>Residential</b>	<b>Health/Wellness</b>	<b>Community Space</b>
<ul style="list-style-type: none"> <li>• Local vendors</li> <li>• Upscale retail</li> <li>• Small shops</li> <li>• Outdoor marketplace</li> <li>• Farmers market</li> <li>• Trader Joe’s/Sprouts</li> <li>• Food halls</li> <li>• Breweries</li> <li>• Cafes/Coffee shops</li> <li>• Unique and family oriented dining</li> <li>• Organic</li> </ul>	<ul style="list-style-type: none"> <li>• Apartments</li> <li>• Middle income</li> <li>• Condos</li> <li>• Senior living</li> <li>• Mixed use with residential on top</li> </ul>	<ul style="list-style-type: none"> <li>• Sports fields</li> <li>• Climbing gyms</li> <li>• Indoor tennis</li> <li>• Cross fit</li> <li>• Complementary to rec. center</li> </ul>	<ul style="list-style-type: none"> <li>• Parks/plazas</li> <li>• Green space</li> <li>• Central gathering area</li> <li>• Outdoor seating</li> <li>• Games</li> <li>• Playgrounds</li> <li>• Water features</li> </ul>

## 7. Reuse and Redevelopment Alternatives

Potential re-use and redevelopment alternatives for Parcel O were developed based on the market analysis, stakeholder interviews, and community feedback. The announcement that Kohl's would be departing its current location has broadened the potential redevelopment opportunities but also increases the need to maintain sales tax generating uses. Three development alternatives were created to illustrate the financial feasibility, fiscal impact, and community support for potential futures for Parcel O. The alternatives are designed to align with market realities but also illustrate the trade-offs of potential outcomes for the parcel. The purpose is to help gauge what changes to the status quo are possible and acceptable to the property owners, City of Louisville, and the community at large.

### Development Alternatives

The ongoing underutilization of the Sam's Club property, coupled with the eminent exit of the current use (Ascent Church), made this parcel a primary focus of the project. However, the Kohl's future vacancy also impacts the potential opportunities for redevelopment within the study area. Three varying development alternatives for Parcel O were analyzed and are summarized below. The development programs are shown in **Table 23** and conceptually illustrated in **Figure 35**.

The three alternatives are all supportable by the market (i.e., there is market demand for the uses proposed) but also have different barriers to development (e.g., absorption, attractiveness to developers, parcel ownership). The market support and barriers to each alternative are described and the alternatives are evaluated based on three criteria: 1) financial feasibility, 2) community considerations and support, and 3) fiscal impact.

**Table 23. Parcel O Alternative Development Programs**

	Alternative 1 - Refill Boxes			Alternative 2 - Hybrid			Alternative 3 - Redevelopment		
	Acres	Square Feet	% of Acres	Acres	Square Feet	% of Acres	Acres	Square Feet	% of Acres
Retail	12.0	70,000	27%	7.3	50,000	16%	14.5	115,000	33%
Existing Retail and Services	20.6	83,000	46%	20.6	83,000	46%	---	---	---
Entertainment/Fitness	6.7	35,000	15%	5.3	35,000	12%	3.5	35,000	8%
Office/Medical Office/Acute Care	5.3	35,000	12%	0.0	0	0%	3.0	65,000	7%
Hotel (rooms)	0.0	0	0%	3.5	120	8%	4.0	120	9%
Multifamily (units)	0.0	0	0%	7.0	245	16%	15.0	525	34%
Back-Office/ Storage	0.0	60,000	0%	0.0	0	0%	0.0	0	0%
Unused/Unusable/ROW/Drainage	0.0	15,000	0%	1.0	15,000	2%	4.6	N/A	10%
<b>Total</b>	<b>44.6</b>			<b>44.6</b>			<b>44.6</b>		

Source: Economic & Planning Systems

**Figure 35. Parcel O Development Alternatives**



## Financial Feasibility

The financial feasibility analysis of each alternative utilized a static pro forma that calculates estimated return-on-cost (annual net operating income divided by cost to construct the project) to assess financial feasibility. National publications (CBRE and IRR Research) were used to help to establish hurdle rates for return-on-cost per product as well as interviews completed by EPS with active developers in the Denver metro area for this project and other firm assignments. The pro forma model assumes no land cost, but instead calculates the residual land value the project can support. The residual land value metric is used to compare the value and potential upside of each alternative. A baseline for the land value for parcels within Parcel O is set by the sales price of the Sam's Club property (Lot 2) in 2014. The sale price was \$3.65 million for the building and 13.5-acre lot, which equates to a value per square foot of land of \$6.21 per square foot. A fully occupied building and associated lot likely achieve a higher land value/sales price per square foot, which indicates that projects likely need to produce a value higher than this benchmark to be feasible for investors and/or developers.

## Community Considerations and Support

The considerations and desires expressed by the community throughout the outreach process were compared to the three alternatives to identify how the concepts align. Three areas of consideration (uses, site design, and development characteristics) were used to judge the alternatives' alignment with community desires.

## Fiscal Impact

The fiscal impact analysis of each scenario was completed by City staff using the City of Louisville's fiscal impact model. The analysis utilized the standard inputs for the model with some modifications to match the development alternatives. Market value and absorption inputs were developed by EPS by product type for each alternative. An analysis of the fiscal impact of Parcel O existing land uses was completed to set a baseline for comparison. Under existing land uses and occupancy, Parcel O has a net positive fiscal impact of \$10.7 million over a 20-year period, as shown in **Table 24**. The analysis was performed assuming the Sam's Club building is not occupied by a sales tax generating use (as it is now with the Ascent Church) and the Kohl's is also not occupied by a sales tax producing use (or is vacant) as it will soon be.

**Table 24. Fiscal Impact of Current Uses in Parcel O (20-Years)**

	Current	
	Total (per \$1,000)	% of Total
<b>Revenue by Fund</b>		
General Fund	\$8,129	65%
Open Spaces & Parks Fund	\$1,067	8%
Lottery Fund	\$0	0%
Historic Preservation Fund	\$364	3%
Capital Projects Fund	\$2,993	24%
<b>Total Revenue</b>	<b>\$12,553</b>	
<b>Expenditure by Fund</b>		
General Fund	\$1,423	76%
Open Spaces & Parks Fund	\$0	0%
Lottery Fund	\$0	0%
Historic Preservation Fund	\$0	0%
Capital Projects Fund	\$451	24%
<b>Total Expenditures</b>	<b>\$1,873</b>	
<b>Net Fiscal Impact by Fund</b>		
General Fund	\$6,707	
Open Spaces & Parks Fund	\$1,067	
Lottery Fund	\$0	
Historic Preservation Fund	\$364	
Capital Projects Fund	\$2,542	
<b>Net Fiscal Impact</b>	<b>\$10,680</b>	

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Source: City of Louisville

## Alternatives Evaluation

### Alternative 1 – Re-Tenant

The Alternative 1 concept assumes the two large retail boxes on Lots 2 and 3 are reused for uses supportable in the current McCaslin Subarea market context with its reduced retail trade area draw. It assumes the CCRs restricting uses not directly in competition with existing retailers can be modified (e.g., fitness, recreation, entertainment). This alternative is estimated to be absorbed in four years.

- Lot 2 (Sam's Club) is subdivided into two junior boxes of 35,000 square feet each on the front side with the back half of the building allocated to 60,000 square feet of back office space.
- Lot 3 (Kohl's) is split into two 35,000 square feet junior boxes with the back residual 16,000 square feet lost as unusable space.
- Two re-fill tenants are assumed to be retail tenants and will occupy two of the new divided spaces totaling 70,000 square feet. High potential uses include a liquor superstore (such as Total Wine) and/or other retailers seeking second generation spaces (such as sporting goods or home goods/furniture).
- Two non-retail box uses totaling 70,000 square feet are assumed to occupy the other two subdivided spaces. Likely uses consistent with the market include fitness, entertainment, acute care clinic, other medical office or lab use. These uses are not estimated to generate significant sales tax revenue.
- Retain the 83,000 square feet of existing retail and service uses on parcels not being redeveloped in the alternative.

### Market Support

The market analysis identified a shift towards everyday oriented retailers and services for the subarea. In any event, it is unlikely that any user will fill the entire Sam's Club or Kohl's store. It is most likely the two buildings will be subdivided into smaller spaces of 30,000 to 40,000 square feet and will need to attract two or more users to fill each of the boxes. Alternative 1 assumes that these spaces can be filled with four tenants—two of which are sales tax producing uses. Potential opportunities for the subdivided spaces include attracting fitness and entertainment uses to the corridor to re-fill existing vacant spaces. As well, the most likely retailers (e.g., liquor superstore) serve a community-oriented trade area consistent with current conditions. It may be possible to attract one to two additional mid-sized box retailers to the subarea that are not currently present in the community trade area or are seeking a better location.

### Market Challenges

The assessment of the market demand for retail in the Subarea illustrated that the focus of the trade area is shifting and the opportunities for larger, regionally oriented retailers are limited. This diminished market demand may even impact community-oriented uses as there are a limited number of larger retailers that will take a space as large as 30,000 square feet. There is the potential that it may take longer than four years to refill the boxes. Inability to lease the subdivided spaces may lead to buildings that sit vacant or are leased to temporary tenants (e.g., Halloween store) or non-conventional uses that may not drive demand to the center or may be a deterrent to other retailers leasing in the center.

The private covenants in place for Parcel O limit the types of users that can locate in the vacant boxes. Specifically, recreation and fitness uses are prohibited. As well, restaurants that generate more than 50 percent of their sales from alcohol (e.g., brewery) are limited. As well, retailers that would be in direct competition to the original anchors (Safeway, Sam's Club) are precluded. Any refill use will need to not create a direct competitive concern to the other parties in the private covenant agreement. There is little the City can do to change the private covenants; however, providing some sort of incentive, such as a revised GDP, may spur the owners to make changes to the current agreement.

### Financial Feasibility

The reuse of the vacant retail box alternative was estimated to be financially feasible based on the market inputs (rental rates, construction costs, etc.) utilized. The Alternative 1 assumes the refill uses are able to pay the market average of \$20 per square foot (NNN) not including the back-office/storage space in Lot 2, which is estimated to command \$11 per square foot (NNN). The estimated construction costs to update and subdivide the two vacant boxes are \$37.50 per square foot plus site work improvements to the parking lots. The estimated residual land value for Lot 2 (Sam's Club) is \$3.8 million or \$6.41 per square foot of land. This is slightly higher than the sales price for the parcel in 2014, which was \$3.65 million, and significantly less than the current asking price of approximately \$10 million. Lot 3 is estimated to have a residual land value of \$4.0 million or \$8.65 per square foot of land, as shown in **Table 25**. Combined the residual land values is estimated to be \$7.40 per square foot of land.



Table 25. Alternative 1 Feasibility Summary

Lot 2	Amount	Lot 3	Amount
<b>Program</b>		<b>Program</b>	
Junior Anchor (Retail)	35,000	Junior Anchor (Retail)	35,000
Junior Anchor (Entertainment/Fitness)	35,000	Junior Anchor (Entertainment/Fitness)	35,000
Storage/Back Office	<u>60,000</u>	N/A	<u>0</u>
<b>Subtotal</b>	<b>130,000</b>	<b>Subtotal</b>	<b>70,000</b>
<b>Construction Costs</b>		<b>Construction Costs</b>	
Sitework and Offsites	\$975,000	Sitework and Offsites	\$525,000
Hard Costs	\$2,625,000	Hard Costs	\$2,625,000
Soft Costs	<u>\$1,347,500</u>	Soft Costs	<u>\$1,347,500</u>
<b>Subtotal</b>	<b>\$4,947,500</b>	<b>Subtotal</b>	<b>\$4,497,500</b>
<i>per sf</i>	<i>\$38</i>	<i>per sf</i>	<i>\$64</i>
<b>Operating Revenue</b>		<b>Operating Revenue</b>	
Potential Gross Revenue	\$1,995,000	Potential Gross Revenue	\$1,365,000
Less: Vacancy	-\$139,650	Less: Vacancy	-\$95,550
Effective Gross Income	\$1,855,350	Effective Gross Income	\$1,269,450
Operating Expenses	<u>-\$1,244,975</u>	Operating Expenses	<u>-\$674,975</u>
<b>Net Operating Income</b>	<b>\$610,375</b>	<b>Net Operating Income</b>	<b>\$594,475</b>
Return on Cost (ROC)	12.34%	Return on Cost (ROC)	13.22%
ROC Hurdle	7.00%	ROC Hurdle	7.00%
<b>Residual Land Value</b>	<b>\$3,772,143</b>	<b>Residual Land Value</b>	<b>\$3,995,000</b>
Value per Land SF	\$6.41	Value per Land SF	\$8.65

Source: Economic &amp; Planning Systems

### Community Support

**Uses:** While a few people in the community expressed a desire to bring another big retail box user into the vacant buildings, the majority of input received indicated a desire for uses that were smaller format and would support a diverse range of users and visitors. The reuse of these buildings for similar large format retailers would not support the community's desire for smaller, curated, complementary shopping, dining, and entertainment uses that appeal to multiple consumers.

**Site Design:** Under Alternative 1 the reuse of the existing buildings and the suburban, large format retail shopping center would retain its same development characteristics and would at least meet the community's desires for a compact, walkable, pedestrian friendly environment.

**Development Characteristics:** The development contemplated under this alternative would not meet the community desires for local, unique, non-chain, retail environments that provides variety and experience for a diverse range of neighbors and visitors.

**Fiscal Impact**

The fiscal impact model estimates that Alternative 1 would have a net positive fiscal impact of \$18 million over 20 years, as shown in **Table 26**. This alternative portrays the optimal re-tenanting of the existing retail boxes given market conditions and potential uses likely to be possible with modified private covenants, which produces increased fiscal returns but less than what was previously achieved with the two former anchor retailers.

**Table 26. Alternative 1 Fiscal Impact**

	Current		Alternative 1	
	Total (per \$1,000)	% of Total	Total (per \$1,000)	% of Total
<b>Revenue by Fund</b>				
General Fund	\$8,129	65%	\$14,006	62%
Open Spaces & Parks Fund	\$1,067	8%	\$2,122	9%
Lottery Fund	\$0	0%	\$0	0%
Historic Preservation Fund	\$364	3%	\$730	3%
Capital Projects Fund	<u>\$2,993</u>	24%	<u>\$5,798</u>	26%
<b>Total Revenue</b>	<b>\$12,553</b>		<b>\$22,656</b>	
<b>Expenditure by Fund</b>				
General Fund	\$1,423	76%	\$3,513	75%
Open Spaces & Parks Fund	\$0	0%	\$0	0%
Lottery Fund	\$0	0%	\$0	0%
Historic Preservation Fund	\$0	0%	\$0	0%
Capital Projects Fund	<u>\$451</u>	24%	<u>\$1,179</u>	25%
<b>Total Expenditures</b>	<b>\$1,873</b>		<b>\$4,692</b>	
<b>Net Fiscal Impact by Fund</b>				
General Fund	\$6,707		\$10,493	
Open Spaces & Parks Fund	\$1,067		\$2,122	
Lottery Fund	\$0		\$0	
Historic Preservation Fund	\$364		\$730	
Capital Projects Fund	<u>\$2,542</u>		<u>\$4,620</u>	
<b>Net Fiscal Impact</b>	<b>\$10,680</b>		<b>\$17,964</b>	

Source: City of Louisville

## **Alternative 2 – Partial Redevelopment**

Alternative 2 entails a partial redevelopment of Parcel O. A partial redevelopment would need to include at least one—and more likely two—of the larger lots in Parcel O (Safeway, Sam’s Club, and/or Kohl’s). For evaluation purposes, Alternative 2 assumes Lot 2 Sam’s Club is redeveloped and Lot 3 Kohl’s building is repurposed for two tenants. The alternative assumes covenants restricting uses not directly in competition with existing retailers can be modified to include uses consistent with current market conditions (e.g., fitness, recreation, entertainment) and that this development agreement is modified to allow hotel and multifamily uses. This concept assumes to be absorbed within five to six years.

- Kohl’s building is reused for two boxes similar to Alternative 1 with one a retail use (liquor superstore) and the second a nonretail use (fitness).
- Lot 2 and parking fields are redeveloped with 15,000 square feet of retail space, 245 apartments on the eastern 7 acres at density of 35 units per acre, and a 120 room hotel on 3.5 acres.
- Retain the 83,000 square feet of existing retail and service uses on parcels not being redeveloped in the alternative.

### **Market Support**

The market analysis identifies substantial demand for multifamily and hotel uses within the subarea. These uses are able to support redevelopment costs and can allow for better reconfiguration of Parcel O. Specifically, the new retail can be better positioned for access and visibility, and the parking fields can be right-sized for the retail, which will create more flexibility and space for adding additional uses. The investment and introduction of new uses to the shopping center can be used to help attract larger retail users to the vacant Kohl’s. As well, the market will likely support the attraction of two, larger retail users that either generate significant retail sales tax, and/or will increase visitation to the subarea, which will boost the sales of surrounding retailers.

### **Market Challenges**

The primary challenge to Alternative 2 is that the GDP for Parcel O and the private covenants do not allow for this development program. Multifamily residential is prohibited by the GDP and some potential larger retailers that could be attracted to the site are prohibited or limited by the CCRS. As well, increased height and/or density allowances may be necessary, under the GDP, to make a project feasible.

A coordinated redevelopment of both Lots 2 and 3 may be difficult and/or could take longer to occur. It is easier for one of the larger lots to redevelop individually but there may be more incentive for a developer to combine lots. As mentioned above, both the private covenants and GDP need to be revised or amended for this program to work. The City could provide incentive by revising the GDP to allow more uses, and also modifying the agreement to allow greater utilization of the site especially as an incentive to do a coordinated redevelopment.

### **Financial Feasibility**

Alternative 2 produces a higher total estimated residual land value (combination of Lot 2 and Lot 3) of \$11.5 million compared to Alternative 1, as well as the highest average land value per square foot of \$10.94 per square foot for all three alternatives, as shown in **Table 27**. The multifamily and hotel uses are estimated to generate a significantly higher residual land value than the retail uses. The multifamily parcel is estimated to be able to support a land value of \$5.1 million or \$16.72 per square foot of land. The hotel use is estimated to be able to support a land value of \$2.4 million or \$15.88 per square foot of land. The following model inputs were utilized to estimate project feasibility.



- Multifamily – The construction cost for the project is estimated to be \$224 per square foot or \$211,000 per unit. An average unit size is estimated to be 800 square feet and able to attract an average monthly rental rate of \$1,560 or \$1.95 per square foot.
- Hotel – The 120 room hotel project is estimated to be 60,000 square feet in size. The estimated construction cost is \$367 per square foot or \$183,600 per room. The project room rate is \$170 per night which equates into an estimated average daily rate of \$119.
- The retail space is estimated to have a construction cost of \$230 per square foot. An average rental rate is 30 per square foot (NNN).

Table 27. Alternative 2 Feasibility Summary

Description	Lot 3		Lot 2						Alternative 2 TOTAL	
	Amount	per SF	Multifamily		Hotel		Retail			LOT 2 TOTAL
			Amount	per unit	Amount	per room	Amount	per SF		
<b>PROGRAM</b>										
Multifamily Units		N/A units	245 units		N/A units		N/A units		245	
Hotel Rooms		N/A rooms	N/A rooms		120 rooms		N/A rooms		120	
Net Rentable Area	70,000 sf		195,963 sf		42,000 sf		15,000 sf		252,963	
Gross Building Area	70,000 sf		230,545 sf		60,000 sf		15,000 sf		305,545	
<b>CONSTRUCTION COST</b>										
Site Costs										
Horizontal Costs	\$525,000	\$7.50	\$1,407,000	\$5,743	\$703,500	\$5,863	\$402,000	\$26.80	\$2,512,500	\$3,037,500
Hard Costs										
Core & Shell Construction	\$1,750,000	\$25.00	\$38,846,833	\$158,559	\$14,022,000	\$116,850	\$1,605,000	\$107.00	\$54,473,833	\$56,223,833
Tenant Improvement	\$875,000	\$12.50	\$0	\$0	\$2,580,000	\$21,500	\$750,000	\$50.00	\$3,330,000	\$4,205,000
<b>Subtotal</b>	<b>\$2,625,000</b>	<b>\$37.50</b>	<b>\$38,846,833</b>	<b>\$158,559</b>	<b>\$16,602,000</b>	<b>\$138,350</b>	<b>\$2,355,000</b>	<b>\$157.00</b>	<b>\$57,803,833</b>	<b>\$60,428,833</b>
Soft Costs										
Plan/Design/Eng./Survey	140,000	\$2.00	1,786,724	\$7,293	747,000	\$6,225	195,000	\$13.00	\$2,728,724	\$2,868,724
Municipal/State Fees	\$35,000	\$0.50	\$4,610,900	\$18,820	\$1,500,000	\$12,500	\$225,000	\$15.00	\$6,335,900	\$6,370,900
Development Fees, Financing, Other	\$1,697,500	\$24.25	\$4,968,245	\$20,279	\$2,479,200	\$20,660	\$270,000	\$18.00	\$7,717,445	\$9,414,945
<b>Total</b>	<b>\$5,022,500</b>	<b>\$71.75</b>	<b>\$51,619,701</b>	<b>\$210,693</b>	<b>\$22,031,700</b>	<b>\$183,598</b>	<b>\$3,447,000</b>	<b>\$229.80</b>	<b>\$77,098,401</b>	<b>\$82,120,901</b>
<b>NET OPERATING INCOME</b>										
Potential Rental Income	\$1,365,000	\$11,375	\$4,585,540	\$18,716	\$7,446,000	\$62,050	\$433,048	\$3,609	\$12,464,588	\$13,829,588
Other Income	\$0	\$0	\$389,060	\$1,588	\$566,000	\$4,717	\$0	\$0	\$955,060	\$955,060
Less: Vacancy	-\$95,550	-\$796	-\$248,730	-\$1,015	-\$2,233,800	-\$18,615	-\$30,313	-\$253	-\$2,512,843	-\$2,608,393
Operating Expenditures	-\$674,975	-\$5,625	-\$1,322,735	-\$5,399	-\$3,577,399	-\$29,812	-\$146,411	-\$1,220	-\$5,046,546	-\$5,721,521
<b>Net Operating Income (NOI)</b>	<b>\$594,475</b>	<b>\$4,954</b>	<b>\$3,403,135</b>	<b>\$13,890</b>	<b>\$2,200,801</b>	<b>\$18,340</b>	<b>\$256,323</b>	<b>\$2,136</b>	<b>\$5,860,259</b>	<b>\$6,454,734</b>
<b>RETURN ON COST (ROC)</b>	<b>11.84%</b>		<b>6.59%</b>		<b>9.99%</b>		<b>7.44%</b>		<b>7.60%</b>	<b>7.86%</b>
<b>HURDLE RATE</b>	<b>7.00%</b>		<b>6.00%</b>		<b>9.00%</b>		<b>6.50%</b>			
<b>RESIDUAL LAND VALUE</b>										
Land Value	\$3,470,000		\$5,099,209		\$2,421,646		\$496,431		\$8,017,286	\$11,487,286
Value Per SF	\$7.52		\$16.72		\$15.88		\$5.70		\$13.63	\$10.94

Source: Economic & Planning Systems

### ***Community Support***

**Uses:** The addition of entertainment and retail uses is supported by community input received and provides some new options for both neighbors and visitors to the area. The reuse of one building for similar large format retailers would not support the community's desire for smaller, curated, complementary shopping, dining, and entertainment uses that appeal to multiple consumers. The quantity and type of retail associated with Alternative 2 does not meet the community desires for a significant retail component that provides a gathering space for a wide variety of users.

Hotel was identified as the least desired use for the study area, and while some community members identified housing as possible uses for the overall study area, it was often described as a range of housing options that provide opportunities for empty nesters, low to middle income housing, and housing that was part of a mixed use development. A standalone multifamily project was not a highly prioritized use for the study area.

**Site Design:** The partial redevelopment of the study area could allow for some site improvements that were identified as desired community amenities, including the addition of open spaces, plazas and other connections if it was planned in a comprehensive format. However, due to the existing parcels, ownership divisions, and reuse of one of the big boxes, the project site would need to retain some of the same circulation, parking and auto focused patterns which do not allow for different type of environment that was less auto dependent, more walkable and better integrated into the surrounding neighborhood.

**Development Characteristics:** The partial redevelopment does not address the strong desire for a mixed retail environment that can support many smaller tenants and a "community-centric" marketplace that was a common theme. The amount of retail proposed within this scenario would not meet the community's demand for experience based, family friendly, service and entertainment based retail that is local, unique and high quality.

### ***Fiscal Impact***

The fiscal impact model estimates that Alternative 2 will have a net positive fiscal impact of \$18.5 million over 20 years, as shown in **Table 28**. This alternative produced the most positive impact of the three alternatives. The alternative illustrates how a mixture of uses can still produce positive fiscal benefits to the City even with the introduction of non-sales tax producing and residential uses. The greater utilization of the site generates more value to the City, as well.

Table 28. Alternative 2 Fiscal Impact

	Current		Alternative 2	
	Total (per \$1,000)	% of Total	Total (per \$1,000)	% of Total
<b>Revenue by Fund</b>				
General Fund	\$8,129	65%	\$16,769	64%
Open Spaces & Parks Fund	\$1,067	8%	\$2,118	8%
Lottery Fund	\$0	0%	\$0	0%
Historic Preservation Fund	\$364	3%	\$733	3%
Capital Projects Fund	<u>\$2,993</u>	24%	<u>\$6,586</u>	25%
<b>Total Revenue</b>	<b>\$12,553</b>		<b>\$26,206</b>	
<b>Expenditure by Fund</b>				
General Fund	\$1,423	76%	\$5,062	65%
Open Spaces & Parks Fund	\$0	0%	\$124	2%
Lottery Fund	\$0	0%	\$0	0%
Historic Preservation Fund	\$0	0%	\$0	0%
Capital Projects Fund	<u>\$451</u>	24%	<u>\$2,548</u>	33%
<b>Total Expenditures</b>	<b>\$1,873</b>		<b>\$7,735</b>	
<b>Net Fiscal Impact by Fund</b>				
General Fund	\$6,707		\$11,706	
Open Spaces & Parks Fund	\$1,067		\$1,993	
Lottery Fund	\$0		\$0	
Historic Preservation Fund	\$364		\$733	
Capital Projects Fund	<u>\$2,542</u>		<u>\$4,038</u>	
<b>Net Fiscal Impact</b>	<b>\$10,680</b>		<b>\$18,471</b>	

Source: City of Louisville

### **Alternative 3 – Major Redevelopment**

This concept assumes a comprehensive redevelopment of Parcel O into a new mixed use development. Existing retailers are assumed to be integrated into new commercial or mixed-use space (aside from Kohl's, which is leaving Louisville). The alternative assumes the CCRs are rewritten or substantially modified and a new development agreement is created to allow for greater density and a broader mix of uses. This concept assumes a 10 year, phased buildout.

- The redevelopment assumes a total of 115,000 square feet of retail space on 14.5 acres, accounting for 1/3 of the acreage. In addition, a non-retail entertainment or fitness anchor is included totaling 35,000 square feet.
- A 120 room hotel is attracted to a 3.5 acre site.
- A 4 story, 65,000 square foot office building is included on a 3.0 acre site.
- 525 multifamily apartment units are built in two phases or projects on a total of 15 acres, at the same 35 units per acre density as Alternative 2.

#### **Market Support**

A major redevelopment project would give a prospective developer flexibility to reconfigure access and orientation of the area. The retail space could be better positioned closer to the McCaslin frontage with greater visibility and access. The larger redevelopment would also allow for more flexibility in the transition of development to the surrounding neighborhoods. The redevelopment will allow for the different product types to be better oriented and marketed to potential users/development partners. Multifamily uses are the most likely use to take the largest share of the larger redevelopment and will have less challenges with absorption. The introduction of more traditional office space becomes more attractive as the mixed-use development becomes a more appealing location for employment uses.

#### **Market Challenges**

This scenario assumes a major aggregation of several separately owned lots, which may be difficult. The acquisition costs for many of the existing, occupied buildings along the McCaslin frontage could potentially be too high to support redevelopment. Also, the disruption of the existing retailers and businesses may lead to the loss of these businesses from the site as redevelopment occurs. Attracting and absorbing the amount of retail space planned will be difficult given the challenges in the trade area. A grocery store anchor will need to be retained (Safeway) or a replacement found, along with other one to two junior anchors or larger retailers. Even with a better configured layout for the center and development oriented to the current retail market opportunities, attracting retailers would be challenging.

### *Financial Feasibility*

The Major Redevelopment Alternative produces an estimated residual land value of \$10.12 per square foot, which is a total value of \$19.7 million, as shown on **Table 29**. The multifamily and hotel uses are estimated to generate a significantly higher residual land value than the retail uses in Alternative 2. The office use supports a land value of \$731,414 or \$5.60 per square foot of land, which is less than the lowest of all uses modeled and less per square foot than was achieved in the sale of the Sam's Club site in 2014. The following model inputs were utilized to estimate project feasibility.

- Multifamily – The construction cost for the project is estimated to be \$224 per square foot or \$211,000 per unit. An average unit is estimated to be 800 square feet and able to attract an average monthly rental rate of \$1,560 or \$1.95 per square foot.
- Hotel – The 120 room hotel project is estimated to be 60,000 square feet in size. The estimated construction cost is \$369 per square foot or \$184,400 per room. The project room rate is \$170 per night which equates into an estimated average daily rate of \$119.
- The retail space is estimated to have a construction cost of \$227 per square foot. An average rental rate is \$30 per square foot (NNN).
- The office space is estimated to have a construction cost of \$247 per square foot. An average rental rate is \$25 per square foot (NNN).



**Table 29. Alternative 3 Feasibility Summary**

Description	Combined								TOTAL
	Multifamily		Hotel		Retail		Office		
	Amount	per unit	Amount	per room	Amount	per SF	Amount	per SF	
<b>PROGRAM</b>									
Multifamily Units		525 units		N/A units		N/A units		N/A units	525
Hotel Rooms		N/A rooms		120 rooms		N/A rooms		N/A rooms	120
Net Rentable Area	419,921	sf	42,000	sf	150,000	sf	55,250	sf	667,171
Gross Building Area	494,025	sf	60,000	sf	150,000	sf	65,000	sf	769,025
<b>CONSTRUCTION COST</b>									
Site Costs									
Horizontal Costs	\$3,015,000	\$5,743	\$804,000	\$6,700	\$3,618,000	\$24.12	\$603,000	\$9.28	\$8,040,000
Hard Costs									
Core & Shell Construction	\$83,243,213	\$158,559	\$14,022,000	\$116,850	\$16,050,000	\$107.00	\$8,905,000	\$137.00	\$122,220,213
Tenant Improvement	\$0	\$0	\$2,580,000	\$21,500	\$7,500,000	\$50.00	\$3,250,000	\$50.00	\$13,330,000
<b>Subtotal</b>	<b>\$83,243,213</b>	<b>\$158,559</b>	<b>\$16,602,000</b>	<b>\$138,350</b>	<b>\$23,550,000</b>	<b>\$157.00</b>	<b>\$12,155,000</b>	<b>\$81.03</b>	<b>\$135,550,213</b>
Soft Costs									
Plan/Design/Eng./Survey	3,828,694	\$7,293	747,000	\$6,225	1,950,000	\$13.00	1,007,500	\$15.50	7,533,194
Municipal/State Fees	\$9,880,500	\$18,820	\$1,500,000	\$12,500	\$2,250,000	\$15.00	\$975,000	\$15.00	\$14,605,500
Development Fees, Financing, Other	\$10,646,239	\$20,279	\$2,479,200	\$20,660	\$2,700,000	\$18.00	\$1,332,500	\$20.50	\$17,157,939
<b>Total</b>	<b>\$110,613,645</b>	<b>\$210,693</b>	<b>\$22,132,200</b>	<b>\$184,435</b>	<b>\$34,068,000</b>	<b>\$227.12</b>	<b>\$16,073,000</b>	<b>\$247.28</b>	<b>\$182,886,845</b>
<b>NET OPERATING INCOME</b>									
Potential Rental Income	\$9,826,157	\$18,716	\$7,446,000	\$62,050	\$4,330,476	\$28.87	\$2,059,255	\$31.68	\$23,661,888
Other Income	\$833,700	\$1,588	\$566,000	\$4,717	\$0	\$0.00	\$0	\$0.00	\$1,399,700
Less: Vacancy	-\$532,993	-\$1,015	-\$2,233,800	-\$18,615	-\$303,133	-\$2.02	-\$144,148	-\$2.22	-\$3,214,074
Operating Expenditures	<u>-\$2,834,433</u>	<u>-\$5,399</u>	<u>-\$3,549,438</u>	<u>-\$29,579</u>	<u>-\$1,464,113</u>	<u>-\$9.76</u>	<u>-\$780,809</u>	<u>-\$12.01</u>	<u>-\$8,628,793</u>
<b>Net Operating Income (NOI)</b>	<b>\$7,292,431</b>	<b>\$13,890</b>	<b>\$2,228,762</b>	<b>\$18,573</b>	<b>\$2,563,230</b>	<b>\$17.09</b>	<b>\$1,134,298</b>	<b>\$17.45</b>	<b>\$13,218,721</b>
<b>RETURN ON COST (ROC)</b>	<b>6.59%</b>		<b>10.07%</b>		<b>7.52%</b>		<b>7.06%</b>		<b>7.23%</b>
<b>HURDLE RATE</b>	<b>6.00%</b>		<b>9.00%</b>		<b>6.50%</b>		<b>6.75%</b>		
<b>RESIDUAL LAND VALUE</b>									
Land Value	\$10,926,876		\$2,631,821		\$5,366,311		\$731,414		\$19,656,422
Value Per Land SF	\$16.72		\$15.10		\$6.84		\$5.60		\$10.12

Source: Economic & Planning Systems

### ***Community Support***

**Uses:** The range of uses associated with this alternative could meet the community's demand for both larger format entertainment/experience-based uses to anchor a retail center, which in turn could support smaller format type retail (e.g. service, hospitality, boutique shopping, and convenience). The addition of office space in Alternative 3 increases the 24x7 nature of the shopping center to further activate the retail uses and provide jobs near existing housing centers. The community expressed a desire for innovative, co-working or smaller format office uses to complement the larger office parks in the neighborhood, which could be accommodated in this scenario. Hotel and multifamily, while not identified as high priority uses for the study area, could potentially be supporting uses to the dynamic retail space accomplished in this scenario.

**Site Design:** The large-scale redevelopment of the site under Alternative 3 accommodates many of the major site design features the community desires. The amenities include increased mobility, paths and trails, plazas, gathering spaces and a compact, walkable environment.

**Development Characteristics:** The creation of 115,000 square feet of retail would allow for a diverse range of uses that could accommodate the community's desires for variety, unique offerings, and a shopping center that could serve both as a local and regional destination.

### ***Fiscal Impact***

The fiscal impact model estimates that Alternative 3 will have a net positive fiscal impact of \$14.8 million over 20 years, as shown in **Table 30**. This alternative illustrates how a mixture of uses throughout the whole of Parcel O, even with reduced amounts of retail uses, can still produce positive impacts on the City. Greater utilization of the site produces more revenue than the site currently produces. Even after the estimate expenditures, the site still performs comparably to how Parcel O has impacted the City since Sam's Club left in 2010.

**Table 30. Alternative 3 Fiscal Impact**

	Current		Alternative 3	
	Total (per \$1,000)	% of Total	Total (per \$1,000)	% of Total
<b>Revenue by Fund</b>				
General Fund	\$8,129	65%	\$17,456	63%
Open Spaces & Parks Fund	\$1,067	8%	\$2,223	8%
Lottery Fund	\$0	0%	\$0	0%
Historic Preservation Fund	\$364	3%	\$779	3%
Capital Projects Fund	<u>\$2,993</u>	24%	<u>\$7,050</u>	26%
<b>Total Revenue</b>	<b>\$12,553</b>		<b>\$27,509</b>	
<b>Expenditure by Fund</b>				
General Fund	\$1,423	76%	\$7,710	61%
Open Spaces & Parks Fund	\$0	0%	\$234	2%
Lottery Fund	\$0	0%	\$0	0%
Historic Preservation Fund	\$0	0%	\$0	0%
Capital Projects Fund	<u>\$451</u>	24%	<u>\$4,789</u>	38%
<b>Total Expenditures</b>	<b>\$1,873</b>		<b>\$12,733</b>	
<b>Net Fiscal Impact by Fund</b>				
General Fund	\$6,707		\$9,746	
Open Spaces & Parks Fund	\$1,067		\$1,989	
Lottery Fund	\$0		\$0	
Historic Preservation Fund	\$364		\$779	
Capital Projects Fund	<u>\$2,542</u>		<u>\$2,261</u>	
<b>Net Fiscal Impact</b>	<b>\$10,680</b>		<b>\$14,775</b>	

Source: City of Louisville

# Survey Report

01 March 2017 - 28 January 2019

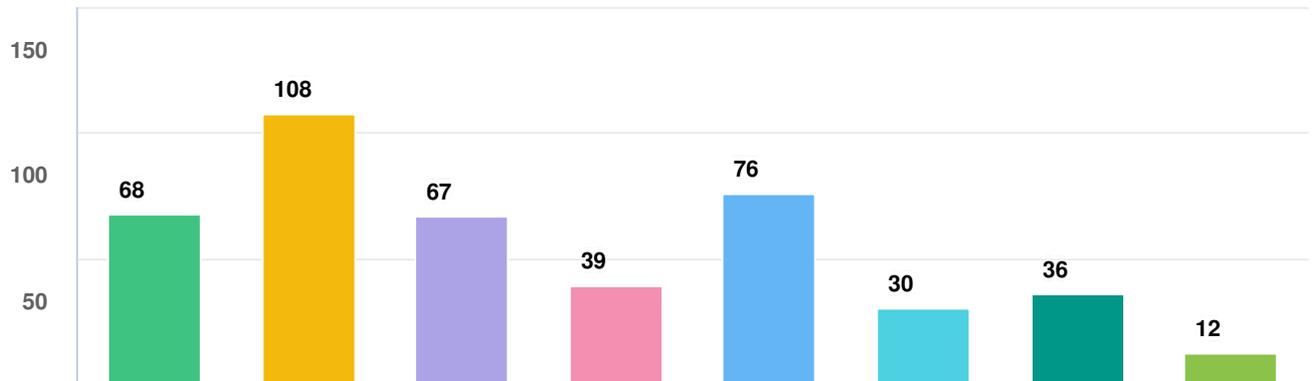
# McCaslin Parcel "O" - Site Uses and Opportunities - What do you think?

PROJECT: McCaslin Parcel O Redevelopment Study

**Engage Louisville CO**



**Q1** Based on the market trends and realities, what type of development, what would you like to see in this area?



**Question options**

- Health/Wellness (gym, spa, etc.)
- Hospitality, Food or Beverage (restaurant, hotel, etc.)
- Entertainment (movie theater, laser tag, etc.)
- Service (repair shops, tutoring, etc.)
- Other (clothing store, book store, etc.)
- Office
- Residential
- Hotel

(143 responses, 0 skipped)

**Q2** | Add your own: What other uses would work here?

vg19

11/05/2018 01:06 PM

Kid oriented activities, such as lasertag.

Anonymous

11/05/2018 03:07 PM

Public space e.g. plaza

Anonymous

11/06/2018 10:29 AM

City Park, Dog Park, outdoor area.

Anonymous

11/06/2018 10:47 AM

Grocery super store...if we can deal with he covenants

Anonymous

11/06/2018 10:49 AM

I would like to see a combination of the above with a park in the middle to encourage people to gather. hide the parking.

Anonymous

11/06/2018 10:57 AM

Open space/park type spaces as connectors for commercial to residential.

Anonymous

11/06/2018 11:02 AM

Trader Joe's!!!!

Anonymous

11/06/2018 11:11 AM

No Hotel! Mixed use, housing and businesses. Business that will connect the residents to the area and take some of the crowds off of downtown making both areas more enjoyable for City residents.

Anonymous

11/06/2018 11:20 AM

Book store would be nice.

Anonymous

11/06/2018 11:26 AM

No Hotel! We want the redevelopment to add the the current neighbors enjoyment.

Anonymous

11/06/2018 11:29 AM

a boutique shopping mall - where stores have booths inside, similar to The Barn in Castle Rock

Anonymous

11/06/2018 11:38 AM

When I think of concepts that could work well in this area, I think of Longmont's new "Village at the Peaks" or Lakewood's "Belmar"

Anonymous

11/06/2018 12:25 PM

Would love to see something like Rayback in this space. A place for adults and kids to hang out.

Anonymous

11/06/2018 01:22 PM

Outdoor mall with small shops and restaurants.

Anonymous

11/06/2018 01:28 PM

town center with beautiful trees, trails, low grow xeric native grass parks, tables and chairs various sizes, gathering places, fireplaces for winter, community place for art and craft festivals bike racks, food trucks, public

Anonymous 11/06/2018 01:36 PM	restroom, water featuresm, I don't know if we have the population base or enough vendors but something like the San Francisco Ferry Building Marketplace would be awesome. Towns all around the world have them. Tax dollars for us. <a href="http://www.ferrybuildingmarketplace.com">www.ferrybuildingmarketplace.com</a> .
Anonymous 11/06/2018 01:44 PM	Trader Joe's or King Soopers
Anonymous 11/06/2018 02:38 PM	Conference and personal events rooms
Anonymous 11/06/2018 03:35 PM	This parcel is fairly ugly in a beautiful town like Louisville. More greenery around the parking lot, EV spots, and better non-automobile options throughout (clean/maintained sidewalks/bike paths) would make a big difference to anything that ends up here
Anonymous 11/06/2018 04:44 PM	A communal spot for multiple types of small businesses similar to the Source, Milk Market, etc. in Denver
Anonymous 11/06/2018 04:57 PM	Art Coop, Music/Concert hall, Dancing venue, Artist studios, Theater, Indoor parachuting, Indoor climbing
Anonymous 11/06/2018 05:01 PM	a wonderful market like Pike Place in Seattle
Anonymous 11/06/2018 05:14 PM	Food stalls center like Philadelphia's reading terminal market
Anonymous 11/06/2018 06:55 PM	More sports fields
Anonymous 11/06/2018 07:39 PM	Ikea
Anonymous 11/06/2018 07:43 PM	Green space mixed in with first floor commercial and second floor residential. Limit height to 2 floors.
Anonymous 11/06/2018 08:29 PM	I think the goal should be to created a walkable mixed use (live, work, shop, and play) district which is fiscally vibrant
Anonymous 11/06/2018 08:49 PM	Cluster these uses around a small (1/2 ac) park to create a vibrant community gathering spot, and add residential on the W side of McCaslin going up to Davidson Mesa and connecting w Centennial, Hillside and Enclave. Yes, I want more residential!
Pete 11/06/2018 09:24 PM	Dense, walkable mixed use with RTD connectivity
keith 11/06/2018 09:30 PM	mixed use specialty ped mall, outdoor experience for kids/families as an alt to downtown which is more adult oriented; something unique not available nearby
SSN 11/06/2018 09:38 PM	Multi-family housing with services, offices, hospitality with shared park/open space

JoyP 11/07/2018 07:25 AM	Trader Joes
Justin Schrader 11/07/2018 09:56 AM	Organic food options
Jenny 11/07/2018 10:54 AM	We would like to see a good grocery store here that is reasonable priced - Trader Joe's would be fantastic or Sprouts.
Juli 11/07/2018 04:29 PM	Mixed use space like The Source
Ryokin 11/07/2018 05:24 PM	Mix of above with small / growing business office space (e.g. Arista in Broomfield)
mb 11/08/2018 10:13 AM	We could always use another park and greens space. Yogurt or Ice Cream, Trader Joes, Gymnastics, dance or Ninja play gym, bowling alley, Chuy's Restaurant, Torchy's Tacos, Chipotle...
Rami Cohen 11/08/2018 12:55 PM	Public basketball/tennis/soccer fields
Maryan 11/08/2018 03:17 PM	Food Hall, Indoor year-round farmer's market
Teresa 11/08/2018 09:06 PM	toy store or children's/maternity consignment
Leslie 11/09/2018 10:59 AM	Maybe a mixed marketplace like Eataty? <a href="https://www.eataly.com/us_en/stores/chicago/">https://www.eataly.com/us_en/stores/chicago/</a>
Steve 11/09/2018 11:04 AM	park and open space as part of mixed use
habacomike 11/09/2018 11:05 AM	Incubator space for light industry -- maker spaces.
Scott 11/09/2018 11:08 AM	I'd like to see the spirit of Old Town Louisville brought to this initiative in terms of unique retail and community-centric activities. We should try to avoid national chains if possible and be as distinct as practical.
Jkat525 11/09/2018 11:12 AM	I would love to have a nice restaurant with really comfortable seating along the lines of White Chocolate Grill, Elways, bonefish, etc.
Fordcokid 11/09/2018 11:12 AM	Tasteful combination of residential, office, restaurants and health/wellness.
Mark Dondelinger 11/09/2018 11:13 AM	Bring back Sams
CB 11/09/2018 11:21 AM	Green space, park with walkable mall-like boutique stores
andrewthak	We should look at some sort of "collective" in the Sam's club building/site,

11/09/2018 11:24 AM	similar to The Source in Denver or on a smaller scale the Rayback Collective in Boulder.
B Eller 11/09/2018 11:27 AM	REI; Trader Joes; fabric store like JoAnn (with classes and family needs); try King Soopers again (Safeway is inadequate for a lot of people). Save the current buildings.
Ala Hason 11/09/2018 11:32 AM	More community type services: food, music, wellness. Community multipurpose room and lots of trees PLEASE
Terri 11/09/2018 12:12 PM	If a restaurant - a high end restaurant - distillery
Lawrenceboyd 11/09/2018 12:25 PM	Having moved from Longmont, a space similar to the village at the peaks ( <a href="http://www.villageatthepeaks.com">www.villageatthepeaks.com</a> ) would be perfect!
WEC 11/09/2018 12:50 PM	Small, locally owned businesses.
coreyhylsted 11/09/2018 01:00 PM	I think mixed is best. Bringing people to work (office) + service / retail / food / wellness is great; I'd look to the Lafayette Marketplace & Denver Union Station for inspiration around creating community space + marketplace.
NA 11/09/2018 01:05 PM	Furniture Sales
ellenvallee 11/09/2018 04:58 PM	Let's pick high quality services and residences in this area.
janet 11/09/2018 07:30 PM	park with cafe, coffee shop and entertainment options for kids, teens & adults (music venue,etc)
jgwalega 11/10/2018 03:53 PM	Too many hotels in the area
dmwalega 11/10/2018 04:02 PM	King Soopers
amygcasey 11/10/2018 04:31 PM	Co-working, food court, Farmers market
SMcMahon 11/11/2018 09:37 AM	A mix of small eateries with small shops featuring local as well as national brands would be ideal - but allow for space to sit while shopping/eating. Also ample parking!
fredeller 11/11/2018 11:07 AM	Speciality shopping such as a design center concept with a number of stores working in conjunction with each other. Speciality stores and entertainment such as REI with climbing walls, independent movie theaters. The entire site should be walkable.
Amasin 11/11/2018 11:13 AM	Stanley Market place is a great example of helping small companies, local gathering, health and wellness offerings, starts ups, open work spaces...
Carolyn H Anderson 11/11/2018 03:18 PM	senior housing, one level or apartments with elevator. We already have enough of all the other so long as Kohl's remains

dl00kner 11/11/2018 04:23 PM	Multi-use space similar to Rayback Collective in Boulder and Denver Milk Bar. Brewery, open beer garden, food trucks and some surrounding retail/services.
PhyllisMP 11/11/2018 05:05 PM	I would like to see a large grocery store as we do not have one at this end of town. We only have a small Safeway. I really liked the idea of a large retail King Soopers here.
cherylmerlino 11/11/2018 05:24 PM	Outdoor mall with multiple offerings such as Town Square in Las Vegas: mytownsquarelasvegas.com. This has restaurants, an outdoor play area for kids, retail shops, offices, services (optical shop), parking garages, arcade, and street parking, too!
helloscherry2 11/12/2018 12:55 PM	I think the area would be best served if it could be a destination from surrounding areas as well as a place where people walk to everyday services. Bookstore, toy store, bowling alley, artsy movie theater, community gathering space (alfalfa) fountains
bpaxton 11/13/2018 07:35 AM	Co-working space (see <a href="https://www.industrydenver.com">https://www.industrydenver.com</a> for an example); something like the Rayback Collective ( <a href="http://therayback.com">http://therayback.com</a> ) would also be nice
aeromarkco 11/13/2018 07:36 AM	A way of transit for the rest of the neighborhood (Louisville) that cannot walk easily to the Park N Ride. Furniture Store, Organic Foods Store (Lucky's or Sprouts), Need more parking i.e. underground parking
shoe23 11/13/2018 03:10 PM	Mixed use residential and retail, Asian grocery store and food court, charter school.
wielandlisa 11/13/2018 03:23 PM	an 'outdoor' equipment/activity store - REI, Cabelas something like that - but no guns!
Laura Adams 11/13/2018 03:45 PM	Something similar to The Source in Denver would be a great addition to Louisville.
Benn8895 11/13/2018 04:34 PM	A type of entertainment facility that ALSO caters to special needs children as well as regular children.
cynthyswift 11/13/2018 05:06 PM	Mixed use development with a kid friendly area in the middle. Any restaurant or shop with an area for kids to run and play automatically gets more business in this area. A combination of the Rayback in Boulder and The District in Lafayette.
rubellite1 11/13/2018 05:39 PM	Small shops, grocery
julialeslie 11/13/2018 08:42 PM	I would love to see a mixed-use food hall/marketplace similar to the Stanley Marketplace in Aurora w/ a mix of restaurants/breweries, shopping, offices & entertainment. This would be a huge draw for people in surrounding cities to visit Louisville
Kara.rigney 11/14/2018 01:30 AM	High quality pool facility for serious swimmers/triathletes
jensmith78 11/14/2018 02:20 PM	Indoor marketplace with flexible space for entrepreneurs, artists & creators - galleries, design studios, craft coffee/wine - a la Barnone in Gilbert AZ ( <a href="http://barnoneaz.com">barnoneaz.com</a> )..

- Alex G  
11/14/2018 05:10 PM  
Plaza, Park, Small Concert Venue, Indoor/Outdoor Marketplace, Cafe, Small businesses and restaurants, farmers market, shade trees, bike/pedestrian trail junction, second story apartments, senior residential units
- Mbb  
11/16/2018 08:32 AM  
A Dairy Center in Boulder type arts & performance center
- Mira  
11/16/2018 01:51 PM  
I would love to see a combo of: Gym and/or fitness class center / Trader Joe's / Indoor kids playspace / brewery / Denver "Aventi" like multi-food court/bar area with playspace / small mini shops like 1-room bookstores, etc. / some mini apartments
- Malexander  
11/16/2018 04:18 PM  
Urban farm, solar station, permanent farmers market
- L.A.Cox  
11/16/2018 05:00 PM  
Can zoning be changed to increase options? No more hotel chains (they don't build community). Small customer oriented boutique shops ( butcherie, cheese shop, tea shop), brewery, restaurants with roof deck to take advantage of incredible view.

**Optional question** (86 responses, 57 skipped)

**Q3 | Where do you see as the biggest opportunity(ies) on this site given the changes to the retail market and the constraints on Parcel O?**

Anonymous  
11/05/2018 02:33 PM  
We have a big open space that could be developed thoughtfully, with no big box stores, and maybe some apartments that could help with housing.

Anonymous  
11/05/2018 03:07 PM  
Mixed use development, anchored by a multi-vendor food hall concept.  
Example: <https://businessden.com/2018/10/04/food-hall-to-anchor-redevelopment-of-mostly-vacant-retail-site-in-edgewater/>

Anonymous  
11/06/2018 10:29 AM  
Upscale retail stores like furniture, book stores, coffee shops, etc. Would be great to have a movie theater.

Anonymous  
11/06/2018 10:38 AM  
There is a definite movement away from big box stores within Louisville and the region as a whole. It seems that there is more of a need for low-to-moderately priced housing as well as general office space in the area and a mixed use development in that capacity could be very useful.

Anonymous  
11/06/2018 10:47 AM  
An integrated plan that includes all the properties in the area...from Kohl's to Safeway and the adjacent businesses around the inner ring. (McDonalds, Bao, Paul's, gas station, banks, etc).. Expanding the vision to include the center that is home to Via Toscana would be smart as well.

Anonymous  
11/06/2018 10:49 AM  
small, locally owned shops and food and beverage

Anonymous  
11/06/2018 10:57 AM  
The biggest opportunity is creating a multi-use development that includes a mix of residential and commercial spaces using outdoor open space or a park-like space as a connection between uses. The opportunity is greater if the the Safeway, Sam's Club, and Kohl's buildings and properties are considered for redevelopment all together. The Kohl's property and the Safeway properties are important partners in the Sam's Club properties success, and should be considered anchors to the entire "O" site. A break up of the larger big box buildings is necessary.

Anonymous  
11/06/2018 11:02 AM  
Louisville needs a better grocery store. I would love to see a Trader Joe's in the old sams club.

Anonymous  
11/06/2018 11:05 AM  
Commercial office space

Anonymous  
11/06/2018 11:11 AM  
Mixed use plus transportation hub.

Anonymous  
11/06/2018 11:20 AM  
Superior really has Louisville beat on shopping with their Costco+Target center. Perhaps going for something not offered there would be useful. The Source in RINO might be an example of how to approach this space from a different angle. This kind of mall would encourage local business. Though it would probably a little business from downtown Louisville, it would also pull in more folks from Superior, Boulder and Broomfield.

Anonymous  
Mixed use with green spaces for the community to come together trying in to

11/06/2018 11:26 AM

the transportation hub on the other side my the theater. Connectivity.

Anonymous

11/06/2018 11:29 AM

People want to support local businesses, that's why something that would house multiple local vendors would work.

Anonymous

11/06/2018 11:31 AM

A cool gathering space (similar to Rayback Collective in Boulder)

Anonymous

11/06/2018 11:32 AM

Determine a way to split this up -- holding out for a big-box retailer does not appear to be a good strategy (in retrospect). I work in the area and this location would be ideal for a hotel to support my visitors that come in from out of town (multiple times per year, multiple days per visit, multiple visitors). Something in the Hilton family at a higher price point than the Hampton Inn. Splitting for restaurants would be good as well. Could also be a large gym, but that seems to be a long shot with the rec center so close.

Anonymous

11/06/2018 11:38 AM

I think Longmont's "Village at the Peaks" (<https://www.villageatthepeaks.com>) or Superior's "Downtown Superior" (<http://downtownsuperior.com>) could be a good example of what could work well here. While I don't mind visiting the Cinnebarre Movie Theatre, the building exterior/interior are an eye sore not to mention everything around it is in decline. What if the empty Sams Club was redeveloped into a modern movie theater (serving as anchor), surrounded by modern restaurants (with patios) and small shops that are connected by a central outdoor area (mini park) where people would enjoy hanging out in the warmer months (fire pit(s), tables, grass, chairs, games for kids, etc)...perhaps farmers markets in the summer, ice rink in the winter, etc.

Anonymous

11/06/2018 12:02 PM

It would be nice to have a green space / park / playground here. A central park, surrounded by outdoor seating cafe's. Maybe a nice fountain or water feature that kids could play in (like water spray thru a grate). An attractive "stroll" around the park, bordered by small retail shops and small cafes. Lots of trees. I don't know what the "constraints" on this parcel are.....I didn't see that in this survey? Maybe I missed that page....

Anonymous

11/06/2018 12:25 PM

Small retail space and good restaurants (not chain) would be nice. Kind of like an alternate downtown.

Anonymous

11/06/2018 01:22 PM

I'd like to see something similar to Boulder 29th st mall -outdoors, small shops, restaurants and perhaps a large draw item like a movie theater

Anonymous

11/06/2018 01:28 PM

Create a place where people want to be and restaurants and shops will follow. Retail and Restaurants like the Source , the Milk Market, and Denver Central Market, etc. will always attract consumers. Maybe a big box sporting goods store if needed to draw people in from 36.

Anonymous

11/06/2018 01:36 PM

The marketplace would give people what they want - to buy local handmade products, specialty products, unique food experiences, etc. It is an experience oriented concept and would get people together to gather at cafes, shops, etc. It would have pedestrian plazas and pedestrian ways, including such amenities as outdoor art exhibits, parks, fountains. It would generate lots of tax revenue for the City and people from out-of-state as well as our surrounding communities including Boulder and Denver would find it to be a worthwhile destination. It would increase property values for all of

Anonymous 11/06/2018 01:37 PM	Louisville and hence increase property taxes for the City. Open areas and food/restaurants coffee shops,
Anonymous 11/06/2018 01:44 PM	Opportunity to have more local businesses and park space. Better, updated grocery store
Anonymous 11/06/2018 01:45 PM	Locally owned restaurants, a walkable space between businesses
Anonymous 11/06/2018 02:38 PM	If we have office space along with conference spaces could fill up the hotels across the street. Also, small and eateries in even a little bit of condos along with an open area for small "hang out" areas it would be a complete village feel.
Anonymous 11/06/2018 02:48 PM	I am worried that we will turn into a Westminster. We are classier than that. Whatever arrives here needs to continue to set our community apart from others. I would prefer high end shops/ retail but not to the extent that Dillon Road becomes like Boulder streets.
Anonymous 11/06/2018 03:35 PM	The old Sam's could be turned into a community hub of small restaurants and local shops, kind of like Avanti in Denver. There's so much parking, making this an awesome hang out place might even ease some of the parking issues downtown is facing. Heck, work with RTD to run shuttles from here to Main & Pine so you can hop in here, shop around at little stalls, grab an appetizer, then head downtown for dinner & drinks. Kohl's is also dying; having something that I actually wanted to go to in that space would be great. Cheap/campy/silly movies, an indoor glow-in-the-dark mini-golf joint, or a year-round indoor farmer's market (yes, I know we live in Colorado, but there are lots of artisans around who make cheese or soap, chickens still lay eggs, etc.). Either spot having a health/fitness/spa thing going on would be awesome; the options in this area are limited because the community center is so great, but it also means everyone in Louisville is always there and it's crowded as heck. This whole area is wildly important to me because I walk to Safeway all the time; I want to see it revitalized and successful and cared for. There are hotels just across Dillon, so having some options available for visitors to see what Louisville really is would be awesome, too.
Anonymous 11/06/2018 04:00 PM	Opportunity to create a gathering place
Anonymous 11/06/2018 04:14 PM	A place that the community can gather to get food shopping and coffee.
Anonymous 11/06/2018 04:21 PM	It seems like the space should be split into smaller lots/buildings. I'd like to see mixed dining/shopping/entertainment in this space, perhaps an indoor market like Denver's Central Market.
Anonymous 11/06/2018 04:44 PM	Places where kids can go play, parents can shop/eat/drink, local artists/entrepreneurs can sell things in small booths, and all within one building but with multiple sections. There are a ton of "startup" entrepreneurs selling things at farmers markets, fairs, etc. that would LOVE to have/rent a booth for a weekend or month and have a chance to market/sell (Brass

Armadillo and Lafayette Flea Market are good examples but those are antiques, not artisanal). All the while, kids could be in a game room, playing in a jungle gym style area, or maybe even bowling/laser tag. You have to bring everyone together and get a sense of community because everyone is there interacting. Make it like the bazaar in Istanbul (in terms of experience, not decor). There's a reason that places like The Source, Zeppelin Station, Milk Market, Denver Central Market, and others are booming. Except those places only apply to adults. Up here you have more kids that would need an outlet in there too. There's nothing in Boulder so people would be inclined to come up if it was something worth visiting (summer AND winter). I think about Acreage. It's in the middle of nowhere but still gets a ton of people there nightly. It's because it's an attraction. Chains aren't attractions. I'm also thinking of the

Anonymous

11/06/2018 04:57 PM

Could you rephrase the question please?

Anonymous

11/06/2018 05:01 PM

whatever

Anonymous

11/06/2018 05:14 PM

Making it viable for the residents and the businesses

Anonymous

11/06/2018 06:55 PM

Opportunity for mixed use- residential (affordable for Seniors or down sizers under \$500k ) gathering spaces, food, sports field

Anonymous

11/06/2018 07:39 PM

Park, offices

Anonymous

11/06/2018 07:43 PM

The Sam's Club property

Anonymous

11/06/2018 08:15 PM

Adding housing which is in demand instead of adding amenities that are available in town or very nearby.

Anonymous

11/06/2018 08:20 PM

Retail stores, restaurants. Make it like another old town area - community events, great place to hang out.

Anonymous

11/06/2018 08:29 PM

Mixed use neighborhood based food and entertainment related uses

Anonymous

11/06/2018 08:35 PM

We could use a sporting goods store.

Anonymous

11/06/2018 08:36 PM

indoor tennis courts

Anonymous

11/06/2018 08:49 PM

Make it mixed use, dense enough to be viable, and include residential. I live nearby and I want that! Please think outside the "No residential/No density" box!

Anonymous

11/06/2018 08:53 PM

Sams Club

<b>Pete</b> 11/06/2018 09:24 PM	Large scale redevelopment that's mixed use and walkable. Close proximity to RTD BRT gives good connectivity to Denver/Boulder!
<b>keith</b> 11/06/2018 09:30 PM	Activities - things to do with an emphasis on open, outdoor and family
<b>SSN</b> 11/06/2018 09:38 PM	Livable multifamily housing close to transit (BRT on 36) - make it a walkable, livable, modern space where folks can live/work/play without getting needing their car; transit connection to BRT on 36
<b>JoyP</b> 11/07/2018 07:25 AM	A Legoland Discovery Center (along with higher-end retail and restaurants similar to 29th St mall) may really do well and is lacking in the Denver Metro area
<b>debritter</b> 11/07/2018 08:09 AM	Transforming the area into a pedestrian friendly retail area would help encourage the community to gather and use the services in the area. Add some green space. Small retailers and restaurants would be good. I don't support a hotel.
<b>Justin Schrader</b> 11/07/2018 09:56 AM	We would love to see an organic quick serve restaurant.
<b>Jenny</b> 11/07/2018 10:54 AM	I see a big opportunity for a good grocery store - Trader Joe's would do very well. Also, wellness and fitness stores could be very successful. I also think that a nice coffee shop / bagel store could do very well like the Brewing Market in Lafayette. A nail salon could do well with a massage place next to it.
<b>amom</b> 11/07/2018 11:45 AM	Food and beverage sites. Gym would also be nice but they may need a specialty gym (ex: rock climbing) since we have a nice new rec center to compete with.
<b>bigalieck</b> 11/07/2018 02:13 PM	Maybe a hotel or new movie theater would work well there? Or a gym that opens earlier than the Rec Center. Or a gym that offers something unique other than what the Rec Center offers, like Orange Theory, or Cross Fit, or a climbing gym.
<b>Juli</b> 11/07/2018 04:29 PM	Mixed use space...retail, office, restaurant, entertainment
<b>Ryokin</b> 11/07/2018 05:24 PM	Mixed use development with entertainment/ retail / small business offices with shuttle to Park N Ride
<b>Kelly</b> 11/08/2018 09:00 AM	Not enough food options
<b>mb</b> 11/08/2018 10:13 AM	A well designed mixed use entertainment/shopping/restaurant area similar to what Longmont did to the old Mall area. Outdoor seating area, play equipment for kids and just an all-ages location with something for everyone.
<b>Louisville lady</b> 11/08/2018 11:45 AM	A more pedestrian friendly retail and dining area (like Main Street in Louisville) but near McCaslin and Highway 36
<b>CBV</b> 11/08/2018 12:14 PM	lot more traffic through that area would increase patronage

Rami Cohen 11/08/2018 12:55 PM	Either make it a public area where people can come together, or make it residential. I am sure the businesses in the area would appreciate the extra traffic in either case.
Allison S 11/08/2018 01:25 PM	Entertainment or restaurant, redeveloped into niche stores
Louisville mom 11/08/2018 02:30 PM	The former Sam's Club site. We use the other stores and services a lot, expect for the banks.
Maryan 11/08/2018 03:17 PM	Entertainment center that appeals to families during the day and early evening with an adult-only with a bar for the evening/night time. Performance and game space, like rock n Bowl in New Orleans.
Amy 11/08/2018 05:01 PM	Entertainment that appeals to an entire family...including young kids such as mini golf or bowling.
No 11/08/2018 06:03 PM	A mix of restaurants and artisan goods. Breads, cheeses, wines, music...
Teresa 11/08/2018 09:06 PM	maybe transforming part of the parking lot into a park / gathering area? kinda like the splash park on south public rd in old town Lafayette or next to the whole food in boulder. restaurants that have outdoor seating?
Leslie 11/09/2018 10:59 AM	We have ample, free parking and easy access to 36.
Steve 11/09/2018 11:04 AM	once Kohl's move (which they will), tear down Kohl's and old Sam's club, replace with mixed use including outdoor areas/parks/open space
habacomike 11/09/2018 11:05 AM	Innovative market niches. Things such as indoor ski experience, air sky diving, etc. Maker space.
nm 11/09/2018 11:05 AM	housing
John Bolmer 11/09/2018 11:07 AM	Something to generate sales taxes, which would not include service companies. There are enough hotels. restaurants, other shops.
Scott 11/09/2018 11:08 AM	I think there's an opportunity to bring innovation in food and beverage here such as international cuisine + local chef driven restaurants. More people are eating out than ever, and more people are food explorers. I also think a book store such as Boulder Bookstore or Tattered cover with a cafe to drive traffic is a great opportunity. And there's the obvious need for more housing. So a mixed use environment would be exciting.
Jkat525 11/09/2018 11:12 AM	I'd love the Safeway to be mre robust - like the one pn 28th in Boulder. We go to other Safeway stores. Also dining and entertainment. I realize the issue of draining downtown business, but we would choose this location if parking were reasonable.
Fordcokid 11/09/2018 11:12 AM	Senior housing, park, decent grocery store. No big boxes. Make the area walkable, similar to a little community within the community with enough good retail to offset the tax loss of Kohl's should it be closed.
Mark Dondelinger	It's a great location. Put in something other than a church.

11/09/2018 11:13 AM

CB

Unique stores, green space for relaxed shopping

11/09/2018 11:21 AM

andrewthak

The "collective" approach, with unique offerings and a community gathering place separate from downtown Louisville. Typically collectives have one anchor restaurant, smaller/artisan food options (bakery, desserts, coffee), food trucks, brewery/tap room, music, activities. Another big box retailer or grocery store would be a waste of space. There are a lot of people nearby, it's convenient to 36 and unique/changing offerings would bring in people from other communities as well.

11/09/2018 11:24 AM

Eajudd

Mixed use development- definitely some residential on site

11/09/2018 11:25 AM

B Eller

Put in shops that require browsing and interaction, so they're not affected by ecommerce. Anything with learning opportunities for families.

11/09/2018 11:27 AM

Ala Hason

Redevelop Sam's club Box into mega food-court type with open courtyard in the middle. Stage for performance for music. With fireplace. Small ice skating ring during the holidays, etc. Not Mall Type food-court!!! But more like casual dining restaurants (similar to downtown Louisville)

11/09/2018 11:32 AM

Anonymous

Grocery, Goodwill, clothes, entertainment all in one place

11/09/2018 11:35 AM

Brian

Walkable, open air retail and smaller, integrated restaurants, some housing. No large box stores. Replace large parking lots. Integrate post office.

11/09/2018 11:43 AM

karen

I think an outdoor live and work option would be the best use of this space. Housing is a huge need.

11/09/2018 11:46 AM

Rick

The old Albertson's/Safeway is a tired looking supermarket. A newer superstore like King Soopers originally announced would be great competition. We shop outside of Louisville due to that. We have a poor representation of upscale restaurants in Boulder County such as Seasons 52, White Chocolate, McCormick Smicks etc. Existing restaurants such as Murphy's and Carrabas are ok sometimes. All the nicer restaurants are downtown Denver or South of Denver in the Park Meadows area. NO RESIDENTIAL OR MULTI FAMILY IS WANTED. Get tax revenue or tear it down and build something you can shop and walk around.

11/09/2018 11:47 AM

BAllen

Check out Rayback collective in Boulder...really cool place that would fit nicely where the Sam's Club is.

11/09/2018 11:50 AM

Terri

Location - close to highway

11/09/2018 12:12 PM

m48martin

Mixed use retail and office. Likely an opportunity for a smaller hotel given location, but might not be big enough to accommodate.

11/09/2018 12:18 PM

Lawrenceboyd

More bistro like restaurants, smaller boutique shops and a whole foods, perhaps a nice fitness center. No big-box retail .

11/09/2018 12:25 PM

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None 11/09/2018 12:29 PM	Mix of food & beverage with unique entertainment spanning generations—don't need another movie theater—as well as some office spaces & services that bring in clients—salon/spa, Pilates studio, music & art instruction, and enough parking to make it easy for customers.
WEC 11/09/2018 12:50 PM	Revitalize the area, small locally owned businesses and restaurants, bookstore, etc.
coreyhylsted 11/09/2018 01:00 PM	Improved diversity and density of options could create a community space. There are a few options in the area; two banks, a gas station, cleaner, and a few food options separated from Kohls, USPS, empty SamsClub, and Safeway -- by a giant, empty parking lots. The big box stores and USPS are also spread out. In the 8 years living in Louisville I've probably seen 10-ish people walking between these giant buildings. Retail is changing. Its becoming more of an experience and service oriented (e.g. Apple Store, Barnes + Noble, etc) Creating a space where people want to hang out is great. Then allowing (but perhaps helping) the market find what will cater to Louisville and surrounding area residents. It's hard given the disconnected buildings. I've often thought about creating a food truck park to help make it more of a destination. And then, similar to Denver's Union Station; provide a community space surrounded by food, bars, smaller retail venues, and services. The challenge is there is very little office space near by to keep constant foot traffic. Which I could be solved by dense residential or better for the city... office space.
NA 11/09/2018 01:05 PM	Furniture and Home Goods Sales
patrickosu 11/09/2018 02:30 PM	restaurants and family friendly activities. Entertainment and education -- maybe a theater geared towards live podcasts.
todd gleeson 11/09/2018 04:01 PM	Sporting goods, REI, etc are not well represented locally Mixed small retail, gallery, office and residential seems to fit our neighborhood Look at Aspen Grove in Littleton as a viable model of small and midsize retail
ellenvallee 11/09/2018 04:58 PM	Sam's club building
janet 11/09/2018 07:30 PM	Boulder prospered by going green with open areas etc which increased property values. I am not sure going totally commercial is the best idea. My niece recently moved for CA to the area and looked at but did not move to Louisville because it was too suburban and the "mall atmosphere" of O area was not attractive. She was looking for fun things for kids and "strolling areas" ( bakery, bookshops, coffee shops plus greenery)
I997720 11/09/2018 11:21 PM	fitness, restaurant, niche/specialty grocer (Trader Joe's)
carolncolo 11/10/2018 05:06 AM	Walmart is extremely successful and I think it would be successful for that location
jgwalega	Would be a good spot for a King Soopers

11/10/2018 03:53 PM

dmwalega

Garbanzos Restaurant, Wendy's

11/10/2018 04:02 PM

amygcasey

Community cohesiveness

11/10/2018 04:31 PM

Doug Johnson

The sams club property has been vacant for a long time. Any type of a thought out development plan would be a step in the right direction.

11/11/2018 07:08 AM

Ryan Korte

technology office space. Something similar to the atmosphere of Industrious (Boulder) or WeWork. I chose hospitality but only for restaurants. (we don't need more hotels in that area with the others nearby.

11/11/2018 09:23 AM

SMcMahon

Biggest opportunity lies in creating an alternative to Louisville Main Street. That area is populated by families with small kids and difficulty finding parking. Ideally, this site would work for residents of all age groups, easy to get to, to park, and provide unique retail and eating establishments. Benches for sitting outside, and offers including, for example, food truck parking, bakery, coffee shop, hand-made soaps, repairs, flower shops, etc., at good prices. If pricing isn't good or the products not unique, the establishments will fail. Customers will go elsewhere or online if there is no compelling offer here.

11/11/2018 09:37 AM

fredeller

I do not think another strip shopping area is needed. A walkable development that would be fun with speciality shopping might make sense. Outdoor stores such as REI with selected activities for both indoor and outdoor might create traffic. There are not many places to go during bad weather- Copper Mountain's Woodward's activity center has a lot of different activities that might be interesting to look at.

11/11/2018 11:07 AM

Amasin

Community support

11/11/2018 11:13 AM

Carolyn H Anderson

We need Kohl's to remain. There are already plenty of hotel/motel rooms here, the food/restaurant capacity is about maxed out, I would think. NO BIG BOX stores needed, they are all failing...I would prefer to see no additional retail facilities. There isn't enough business for them. I would not shop at them.

11/11/2018 03:18 PM

dl00kner

Multi-use space with the brewery/beer garden as the draw to the new surrounding retail/services.

11/11/2018 04:23 PM

jmcquie

Address the term of the 65-year covenants. They have been in place for 25 years now. The American business landscape is very different than it was 25 years ago (for example, take a look at which companies are in the Dow Jones Industrial Average now who were there 25 years ago). There is no reason to believe the pace of change will slow in the next 40 years, constraining the ability of the city to maximize tax revenue.

11/11/2018 04:50 PM

PhyllisMP

Not retail per se but something everyone needs all the time. A large grocery store. Whole Foods is too expensive , Target does not have a complete selection, and Safeway is small and has little organic.

11/11/2018 05:05 PM

cherylmerlino

11/11/2018 05:24 PM

It would be great to capitalize on Colorado's great weather by putting an outdoor mixed use mall on the site--which in turn would maximize sales tax revenue, while staying away from big box retail and offering smaller retail, services, restaurants, etc.... As previously referenced, please take the time to view this website as an example: [mytownsquarelasvegas.com](http://mytownsquarelasvegas.com). This project was well planned and executed perfectly (in the town of Las Vegas where this project had stiff competition!!). I didn't notice in the study if the Post Office is considered to be part of this parcel, but it could be relocated to the far side of the property where Kohls is now, or incorporated into the new plan. We visited the Town Square in Las Vegas on a recent visit and were amazed by it. They did have a Whole Foods as an anchor and a theater, which Louisville/Superior already has, so maybe spicing up the Safeway and adding either a hotel where Kohls is now would work and having the small retail, services, restaurants, etc be where Sam's used to be would be great. A hotel where Kohls is would bring in substantial tax revenue and with CU only 6 miles away, I feel sure a new hotel in Louisville would attract people from Boulder and from Broomfield. I understand there are long-time restrictions for the site that would need to be lifted or altered in order to build and grow the most focal/viable area of Louisville (not to mention the convenience to Highway 36 which will only continue to attract people to shop, dine, and use services in Louisville -- as Boulder's rampant growth continues to ruin that city). As Boulder continues to allow growth there, which stifles traffic, a logical place for people to gravitate to is LOUISVILLE!! Superior absolutely ruined its infrastructure with their town center, so PLEASE DO NOT do anything that Superior did!! It's awful (including the drive into the town center with narrow parking and inconveniently located parking garages). Their roundabouts are awful, and frankly, it does not look very good, either. The residential buildings are awkward and unwelcoming. I know it's not finished yet, but this was not a well thought out project in the least. With a few parking structures (maybe on the other side of the Post Office on the Sam's side) and carefully laid out plans so people can also park on the streets, Louisville's McCaslin Mall could be even better than the 28th Street Mall in Boulder (which isn't great, either.... so, again, please take a look at the website for the one they did exceptionally well in Las Vegas at the Town Square). I have talked to Dennis Maloney about this, as well. He has been great during this entire process, open to new ideas and suggestions he can share, and with follow up and feedback. I really appreciate his service to our community!! Please feel free to call me: Cheryl Merlino (303) 604-0600 Email: [Cheryl@ppp.jobs](mailto:Cheryl@ppp.jobs)

Food and entertainment

camillefowles

11/12/2018 11:24 AM

helloscherry2

11/12/2018 12:55 PM

We need to have complementary businesses and activities that attract the same demographics. Ie— store, indoor entertainment for kids, bowling alley, hair salon for kids, fountains to play in, for adults—bookstore, wine bar, spa, hair salon, art movie theatre, shops like in Stanley market place, boutiques, exercise/ yoga places, chocolate shop, bakery. The key is having high quality

<p>bpaxton 11/13/2018 07:35 AM</p>	<p>businesses that provide goods and services that you either can't get online (haircuts) or that offer a superior experience . It would be SO AMAZING if we could get the Tattered Cover to come here. Unique business with a track record of steady success. Please keep the post office and grocery store-super handybto have in walking distance. Make it a beautiful place where people want to come and are invited in, not just a transactional station. One big advantage this site has is the close proximity to US-36 and the ability to attract out of town visitors. Unique restaurant and work spaces could draw more regional guests.</p>
<p>aeromarkco 11/13/2018 07:36 AM</p>	<p>Turn it into mixed use with residential and retail but keep open space (parks) for folks to walk, ride their bikes, etc. We need ample parking and/or public transport from the rest of Louisville. A bus line running down Dillon and McCaslin and S. Boulder would help</p>
<p>shoe23 11/13/2018 03:10 PM</p>	<p>Changing the layout to be less 1980s to be more more modern will hopefully reinvigorate the area.</p>
<p>Sarahzauner 11/13/2018 03:20 PM</p>	<p>Restaurants, yoga/Pilates, higher-end fitness, cooking classes.</p>
<p>wielandlisa 11/13/2018 03:23 PM</p>	<p>i think there is an opportunity to redesign this to have walkable, parklets ' an 'outdoor mall' type of shopping experience where you can park here and there, but walk around and there is grass, trees, tables and chairs to sit at and eat or talk to friends or on the phone. access to the bus stop that is safe, the area should be well lit and friendly.</p>
<p>Laura Adams 11/13/2018 03:45 PM</p>	<p>Create something like The Source in Denver in the former Sam's Club</p>
<p>Benn8895 11/13/2018 04:34 PM</p>	<p>Where the old Sam's Club used to be.</p>
<p>cynthyswift 11/13/2018 05:06 PM</p>	<p>Mixed use, kids friendly restaurants and retail (also open work/collaboration spots).</p>
<p>rubellite1 11/13/2018 05:39 PM</p>	<p>Break it up into smaller parcels and put in some decent retail</p>
<p>julialeslie 11/13/2018 08:42 PM</p>	<p>The immense size of Parcel 0 is a great opportunity to bring in a range of businesses and services instead of limiting to just one big-box store. A diverse range of businesses and services will attract a broader range of consumers. The Stanley Marketplace in Aurora has proven to be very successful because of its community-first approach and unique way of showcasing local businesses. Louisville prides itself on its small-town charm, and by bringing in a mixed-use, community-centric marketplace, it reinforces the charm and community ethos that we appreciate so much.</p>
<p>AlisaG 11/13/2018 10:30 PM</p>	<p>I think the old Sam's space could be turned into a food hall or something like Stapleton now has</p>
<p>Kara.rigney 11/14/2018 01:30 AM</p>	<p>Large retail space is dying and has been taken over by virtual sales. Abandon the retail approach. Please don't add more multi-family housing. Broomfield is taking care of that need. We are in the center of an</p>

CharlieEaly

11/14/2018 01:17 PM

international elite athlete community in Boulder County. Attract a commercial organization to build athletic space (preferably an indoor Olympic sized pool facility) to support training demand and to host competitions (much like the Veterans Memorial Aquatic Center in Thornton). The currently empty retail space could be transformed to meet the demand from local swim teams including high schools and the Louisville Dolphins as well as swimmers and triathletes in the area. The Rec center and Memory Square could be preserved for seniors and truly recreational swimming. Neither facility (even with the recent improvements) is well suited for serious swimmers.

jensmith78

11/14/2018 02:20 PM

Need to build a version of The Orchard Town Center in Broomfield (I-25). A mixture of retail, food, services (ATT, for example) that are in smaller retail pads or sets of retail pads. Smaller individual buildings, retail pads can be easily adjust for tenants that will come and go. Needs to provide an atmosphere where people will park and walk from store to store (nice sidewalks, kids play areas, music (audio speakers), a firepit seating area I see the biggest opportunity being to create something unique and out of the box. Given that large retail space seems to be falling out of favor - a marketplace concept for local entrepreneurs would surely serve a community need and create something new that would attract visitors from surrounding communities.

Alex G

11/14/2018 05:10 PM

There is a great opportunity to change this area from a dated car-centric area to a forward looking multi-modal area, and to balance the west end of the City with the dynamic character of the City's historic downtown. This could be the first part of a larger effort to make the McCaslin corridor more hospitable to multi-modal travel. Create new bikeways and expand and re-route existing sidewalks to safely bring people to this area. Doing so would not only make it a desirable location, but it would also help bring more traffic to existing businesses. Connections to the US 36 Bikeway, RTD station, Coal Creek Trail and other non-vehicular paths should be a priority. Blending public and private infrastructure would create a conducive environment for a farmers market (year round with a conditioned space), concerts, athletics, etc. This would also be a good opportunity to address the lack of senior housing-- especially attractive with the close proximity to a grocery store and other businesses. Adding green spaces, parks, trees, a plaza and even something like a smaller scale Stanley Marketplace would make it a desirable location for several demographics.

jan scrogan

11/15/2018 04:36 PM

Need commonly used businesses so our taxes don't all go to Superior and Broomfield.

wb

11/15/2018 09:33 PM

Provide a facility that includes a community resource such as a health facility, performing arts center, or a combination of small retail.

Mbb

11/16/2018 08:32 AM

An opportunity for a community asset such as a multiuse film & arts center, studios & cafes.

Mira

11/16/2018 01:51 PM

With so many families in the region, I think having a mixed use, hangout space for drinks and decently priced food would be welcome.

drpwsmith

11/16/2018 02:54 PM

Small Local Business

Malexander

11/16/2018 04:18 PM

Kill big noxes and create a new pedestrian neighborhood. Be bold and visionary.

L.A.Cox

11/16/2018 05:00 PM

If the constraints can be broadened, then there are some great options. The other challenge is there is no "There" there. A sense of place needs to be created, not just building another strip mall with chain restaurants and stores. People want to have an experience when they are deciding where to spend their entertainment dollars (food/beverage). Consider placing parking on the perimeter of the retail/restaurant space with the stores & restaurants situated on a square or public space that is still open to the Flatirons view. Make sure to include outdoor seating at the restaurants as well as rooftop tables/seating. This would be a definite draw, as there are only a few places in all of east Boulder county where rooftop seating is an option (Waterloo & Stem). Include a chef oriented restaurant with attention paid to the design and atmosphere - Ex. Hickory & Ash in Broomfield, built in a new shopping/retail center similar to this parcel). As well, to address the change in retail bring in shops that fill the niche where one needs to feel, smell or taste the product (specialty butcherie/cheese shop, loose tea w/tea room, high-end specialty florist (weddings/events = tax \$), organic bath and skincare/make-up, . Include some options that are not filled by the new rec center - Pilates studio with equipment, a pottery studio with classes/parties. Include an area for food trucks situated around tables and outdoor entertainment (corn-hole, lawn bowling/croquet, giant chess). Attention to design, lighting and landscaping to create a space that creates a sense of community and "place" where people will want to visit and linger. Soon there will be a lot more options in the area - right across 36 with Superior's new shopping center, Westminster's planned mixed-use development. Let's try to attract those tax dollars here, as well as give the citizens on this side of Louisville somewhere they can walk to that will also be an addition to all the wonderful things going on in downtown Louisville. This quadrant along McCaslin could really become another draw to the city with commitment to the right design and occupants. Attracting businesses that don't compete with Amazon.

nancybigelow

11/17/2018 08:41 AM

perk1000

11/17/2018 08:43 AM

Things that are not affected by internet businesses. Small "ma & pa" shops can't compete.

(137 responses, 6 skipped)

**Q4 | What types of development would draw people from the NEIGHBORHOOD to shop, eat or drink here? Be specific?**

Anonymous 11/05/2018 02:33 PM	Laser tag, car racing, gym, mini-golf, some sort of entertainment that would be a draw. We don't need any more fast casual food chains, or banks.
Anonymous 11/05/2018 03:07 PM	Great food with boutique retail. Joint events such as markets, open air cinema, ....
Anonymous 11/06/2018 10:29 AM	Entertainment and food.
Anonymous 11/06/2018 10:38 AM	It's not clear whether that area can effectively support more traditional retail space. I think that going to more of a mixed use development (housing and office) is probably going to be more effective in the long run.
Anonymous 11/06/2018 10:47 AM	Not much that wouldn't cannibalize the existing neighborhood retail along the corridor. We are already well served with a good dry cleaners, pharmacy, banks, auto service, liquor store, coffee shop, etc. Sam's wasn't a neighborhood retail center. Neither should its replacement be one.
Anonymous 11/06/2018 10:49 AM	spa (no gym, don't want to pull revenue from rec center), small, unique restaurants (think Moxie, lucky pie/sweet cow), unique bar (no chains), small alternative movie theater (Indy), bike repair and ski repair (no intrusive repair shoes, i.e., no car repair), boutique clothing stores
Anonymous 11/06/2018 10:57 AM	Fitness (yoga, functional fitness), craft brewery/brew pub, distillery, bakery, fast casual food, bike shop with coffee bar (the new "biker bar" concept), escape room, boutique/lifestyle hotel.
Anonymous 11/06/2018 11:02 AM	Trader Joe's, Mountain sun,
Anonymous 11/06/2018 11:05 AM	Children's entertainment Home improvement Food trucks Green space
Anonymous 11/06/2018 11:11 AM	Neighborhood shoppers want places to meet up with each other with beverages, meals, relaxing in green spaces--anything that brings us together within walking distance and keeps us from having to travel far from home for our basic needs.
Anonymous 11/06/2018 11:20 AM	One stop shopping - coffee/books/craft beer + wine and fine food.
Anonymous 11/06/2018 11:26 AM	Good food and beverages, spaces to gather together. Businesses that help citizens improve daily living needs. Mixed use areas surrounded by green spaces linking it to our public transportation and biking and walking enthusiasts.
Anonymous 11/06/2018 11:29 AM	A variety of options. Like the Milk Market in Denver - an upscale food court... Or a food truck destination like the Rayback Collective in Boulder
Anonymous 11/06/2018 11:31 AM	farm to table restaurant, organic restaurant, brewery, community space

- Anonymous  
11/06/2018 11:32 AM  
A restaurant would do it. Walkable from lots of businesses. A hotel serves the visits of offices in the neighborhood. A retail option is a toy store.
- Anonymous  
11/06/2018 11:38 AM  
A good mix of modern, healthy Restaurants, brew pubs, etc with outdoor patios for the warm months connected by a "Village Green" where people would enjoy hanging out (fire pit, water fountain, kids play area, etc) and seasonal events could be held (farmers markets, live music, brew fest, etc).
- Anonymous  
11/06/2018 12:02 PM  
Wow...I thought I just answered that question. A charming, tree filled park, with a fountain for kids to play in, a nice sidewalk winding through the greenspace, surrounded by great cafe's with outdoor seating. But now this is getting annoying, because you've basically asked the same question 3 times.....
- Anonymous  
11/06/2018 12:25 PM  
Family friendly restaurants with good healthy food, a smoothie/juice bar (something like Wonder on Pearl), a place to sit outside and hang out.
- Anonymous  
11/06/2018 01:22 PM  
\* Micro brew or pub like Gravity brewing or Growler USA. \* open air market on weekends \* game or hobby store
- Anonymous  
11/06/2018 01:28 PM  
Unique restaurants like Thrive and Oak in Boulder, Watercourse Foods in Denver, Glacier ice cream in Boulder always has crowds in summer, specialty foods, boutique clothing, gifts, cooking, painting and/or photography classes. Enough already with the breweries and chain restaurants. Add a gated area for humans to watch their dogs play and kid activities like Dartmania in Englewood and/or a splash and rope climbing park like Centennial Center or Westlands Park in Greenwood Village, Warrior Challenge Arena (Broomfield) or Virtual Realty Arcade (for older kids) and it will become a family gathering place.
- Anonymous  
11/06/2018 01:36 PM  
Specialty stores like you find in the SF marketplace and other cities in the states and around the world. Cheese monger, chocolatier, fruit & veggies, wine store, pastry shop, organic food store, tea shop, coffee shop, florist, handmade candles, specialty jam, lotions, etc. Then ethnic and regional restaurants/cafes with limited seating at some. We are such a melting pot that this could be a really cool way to learn about different cultures.
- Anonymous  
11/06/2018 01:37 PM  
Casual dining, outdoor walking paths, ice cream!
- Anonymous  
11/06/2018 01:44 PM  
Intimate local farm to table restaurants and cafes. Park space/playground (like the new Lafayette Silver Creek neighborhood playground). Gym space like Pure Barre. Some boutiques. Brewery pubs/distilleries like what is opening more in Lafayette.
- Anonymous  
11/06/2018 01:45 PM  
Locally owned shops and restaurants. The ability for people to walk from local neighborhoods to eat, play, shop.
- Anonymous  
11/06/2018 02:38 PM  
I Believe it Hass to have a contiguous and very consistent look and feel whether his old architecture or new contemporary architecture. Small little boutique and food kiosks Combined with small little condos or apartments can bring a feel of ownership for both the community surrounding it in outside people coming in.

Anonymous

11/06/2018 02:48 PM

Service industries obviously won't. And we already have a mediocre theater that claims to be a Boulder theater by its name. That alone bothers me that it ever got past city council. I want Louisville to continue to separate itself from other towns, to offer high end goods and entertainment. Please no more low end box stores.

Anonymous

11/06/2018 03:35 PM

A small set of specialty shops would be great - a butcher shop, bakery, produce stand, etc. They each do one or two things amazingly well, instead of doing a little of everything kinda okay. Entertainment options (as mentioned in a previous answer) would give me more reasons to get out of the house when another hike isn't going to work and I don't want to eat any more. I, personally, really miss the hang-out spot - in my hometown it was a tea shop that had couches and old/classic video games. Having a place that had space to play tabletop/board games, hosted video game competitions, served some light food (some of which isn't fried), had knitting club sign-up, and other fun-but-harder-to-monetize activities would be STELLAR.

Anonymous

11/06/2018 04:00 PM

Other retail , boutique shops

Anonymous

11/06/2018 04:14 PM

Local restaurants not chains, water feature for kids to play, a place that plays live music, maybe a good wine bar, high end retail

Anonymous

11/06/2018 04:21 PM

Restaurants, spa, service, or local goods market.

Anonymous

11/06/2018 04:44 PM

A moderately priced place to get a quick meal where I don't have to sit down and tip a waiter. I'd also go if I knew I could get quality vegetables/spices/other food for home. I'd also go if there were good beers on tap and cocktails to be made. I want options where if I go with my wife, she can get noodles while I get hot dogs and my friend has pierogies and his wife gets tamales. Then we all meet at the central area to eat and drink while watching a local jazz band play the night away. When I have kids, they can play in the side areas until 10PM when I know it becomes adult only and the jazz band cuts it loose on the flute for a couple hours. Me personally, if I knew that my favorite salsa/hot sauce vendor was there, I'd be going there once a week to restock. If a local brewer sold his famous concoction in a booth, I'd go there weekly to buy it. Or if the guy on the Oh Oh Facebook page that smokes pork shoulders showed up every Saturday morning, you know I'd be there to get some. You roast hatch chiles and make a killer stew? Yep, I'll be by your booth to buy that regularly and maybe try your other stuff too. I live by Fireside Elementary and have to drive down to Denver to find anything close to this.

Anonymous

11/06/2018 04:57 PM

Small specialty shops

Anonymous

11/06/2018 05:01 PM

a great market

Anonymous

11/06/2018 05:14 PM

Same as previously mentioned... something like reading terminal market in philly

Anonymous 11/06/2018 06:55 PM	Smaller quaint eateries, maybe a restaurant with a movie theater ( check McMenamins in Portland, OR ) another dog park would bring people to shop and eat. Specialty butcher?
Anonymous 11/06/2018 07:39 PM	Something the area doesn't have - food truck lot, something like avanti, craft brewery from local entrepreneurs instead of all chains, something like avanti. Or a new indoor volleyball place like oasis
Anonymous 11/06/2018 07:43 PM	Bike repair, cleaner, old-style barber, microbrew pub with beer garden
Anonymous 11/06/2018 08:15 PM	N/A
Anonymous 11/06/2018 08:20 PM	Ice cream store, Snarf's sandwich, higher end restaurants, boutique shops
Anonymous 11/06/2018 08:29 PM	Walkable, placed base desig of the district
Anonymous 11/06/2018 08:35 PM	Sporting goods store
Anonymous 11/06/2018 08:36 PM	indoor tennis courts
Anonymous 11/06/2018 08:49 PM	The same types of development--and programming--that draw people to downtown Louisville. Create an attractive focal point/gathering spot, surround it with a mix of interesting locally owned uses, make it walkable and bikeable from surrounding neighborhoods (including on the W side of McCaslin) and it will thrive. If it sounds familiar, it is...Downtown Louisville! We just need a west side version! There are no historic structures on this side of town, so make it a contemporary version (taller--with appropriate setbacks and layering--and with mixed use, including residential).
Anonymous 11/06/2018 08:53 PM	Entertainment and food venue
Pete 11/06/2018 09:24 PM	We want people to shop/eat/drink in old Town more than here! Dense mixed use business/residential/fast casual food is the way to go in this area!
keith 11/06/2018 09:30 PM	A giant play structure (day use) within a large grass/park open air amphitheater stage which can be used to host large concerts and outdoor events (tax source)
SSN 11/06/2018 09:38 PM	Hospitality, service, entertainment; other; Please make this a modern development where there are shared green spaces with shops & multi-family housing where folks can gather, walk to a play area, stroll around to shop and dine. NO MORE STRIP MALLS OR BIG BOX STORES WITH LARGE PARKING LOTS. Be creative and think outside the box! This location is perfect for folks to use transit if they work outside of Louisville.
JoyP 11/07/2018 07:25 AM	Legoland Discover Center, or another really cool kid activity along with good coffee (Peet's!)- some nationally know brands. Think like California- if we

debritter 11/07/2018 08:09 AM	have lots of movement from there we have those customers. Outdoor ped mall like 29th St Restaurants and small retailers
Justin Schrader 11/07/2018 09:56 AM	Organic local eatery.
Jenny 11/07/2018 10:54 AM	Grocery store, a bike repair shop, some kids places like a bounce house or a ninja studio
amom 11/07/2018 11:45 AM	A space like The Source in Denver - and easy place to visit and have food and drink access easy
bigalieck 11/07/2018 02:13 PM	Locally-owned restaurants, no chains please! Gym that offers something different from the Rec Center. Sports physical therapy, massage, chiropractic, acupuncture Upscale hair salon Cocktail bars/tapas restaurants
Juli 11/07/2018 04:29 PM	Unique, convenience. Pharmaca, shoe store, play it again sports,
Ryokin 11/07/2018 05:24 PM	Creative retail (non-chain or more rare chains) and entertainment (already have a theater) / restaurants. Especially a high end restaurant which we really have none of (farm-to-table, steakhouse, etc)
Kelly 11/08/2018 09:00 AM	Better sandwich and lunch shops
mb 11/08/2018 10:13 AM	A mixed use space that people can bike to and enjoy a few hours of food, entertainment or shopping. Louisville is such a family-friendly spot and we need something over on this end of town similar to the Lucky Pie/Sweet Cow popularity for all ages.
Louisville lady 11/08/2018 11:45 AM	More family friendly restaurants. The area near Dillon Rd and McCasin has so many marijuana dispensaries, it is not a family environment. I think that is why Noodles & Company closed.
CBV 11/08/2018 12:14 PM	movie theater, we only have cinnebarre near by kids activities, ninja zone type place
Rami Cohen 11/08/2018 12:55 PM	Basketball/tennis/soccer fields, as long as they are free.
Allison S 11/08/2018 01:25 PM	Restaurants, entertainment or any service or retail that has chance of survival. There is already a movie theater across street.
Louisville mom 11/08/2018 02:30 PM	A mix of chain and local eateries. Snarf's, Wahoo's, Anthony's Pizza, an ice cream alternative to Sweet Cow would be great. Mixed entertainment would be good for this family friendly town: large laser tag venue, arcade, bumper cars or something different like that.
Maryan 11/08/2018 03:17 PM	Food Hall with Farmer's market attached. Include informal cooking classes and food demos. Performance space smaller than 1st Bank Center but bigger than the Louisville Arts Center.
Amy	Something like Punch Bowl Social

11/08/2018 05:01 PM

No

Family friendly restaurants/kids play parents eat, good food and drinks

11/08/2018 06:03 PM

Teresa

small locally owned shops... maybe like old town... video game shop?  
toy/game store?

11/08/2018 09:06 PM

Leslie

I think food and other retail. Recreation will have a hard time competing with the price point of the Rec Center, which is looking great after the renovation.

11/09/2018 10:59 AM

Steve

non-chain restaurants and stores like those in downtown louisville. Downtown louisville is the successful model and there's enough demand/traffic to support both locations.

11/09/2018 11:04 AM

habacomike

Something different than what already is available. See suggestions above.

11/09/2018 11:05 AM

nm

whole foods

11/09/2018 11:05 AM

John Bolmer

Let's not OK something that will drive something else out of business. The area could probably handle another restaurant or two. But why set up competition for Safeway, the Louisville Rec Center or CineBarre?

11/09/2018 11:07 AM

Scott

See previous note. Think: Moxie Bakery, Dushanbe Teahouse, Blackbelly Market, Cured/Boxcar. Also, how about a culinary center inspired by Boulder Foodlab? Further — Ceramic studios such as Color me Mine are a great tangible (non-digital) way for families to do activities together. Encourage community and uniqueness. Plant lots of trees.

11/09/2018 11:08 AM

Jkat525

Hospitality and adequate parking. I've recently found that okd san's is the only venue on the atra that can accommodate a large event - i have a dream luncheon.

11/09/2018 11:12 AM

Fordcokid

Food/beverage, nice grocery store, health and wellness.

11/09/2018 11:12 AM

Mark Dondelinger

Retail would be best. There are enough hotels and restaurants in the area.

11/09/2018 11:13 AM

CB

Louisville already has a movie theater, a renovated rec center, and access to big box stores. Would love to see unique shopping and restaurants, NOT chain stores, ie Tattered Cover satellite store, upscale clothing stores. NOT entertainment center!! Would only bring increased traffic with low spending interest.

11/09/2018 11:21 AM

andrewthak

Unique offerings -- a brewery (an established one like Oskar Blues), artisan food/beverage options, activities that kids can do while parents hang out (bags games, indoor ropes course or climbing area, even a video game arcade would be fine)

11/09/2018 11:24 AM

Eajudd

A better grocery store. Maybe an outdoor store. Maybe some space dedicated to pop up stores/artist shops. Coffee shop etc.

11/09/2018 11:25 AM

B Eller

Non-franchise and non fast-food. There's a lot of that already.

11/09/2018 11:27 AM

Ala Hason

Eat and drink, and entertainment

11/09/2018 11:32 AM

Anonymous

Perhaps a "co-working" firm, such as WeWork, or 'Play, Work, Dash'. This area of Colorado has so many flexible workers and working parents. See story on Sunday Morning: <https://www.cbs.com/shows/cbs-sunday-morning/video/08SFHuqMfhFJO8V1ft0eADdBOJFqd0O/co-working-when-the-home-office-is-away-from-home/>

11/09/2018 11:35 AM

Brian

Small, local restaurants with no drug businesses. Specialized restaurants. Venue for entertainment, i.e. concerts, etc.

11/09/2018 11:43 AM

karen

Entertainment for all ages, such as movies, bounce houses and laser tag. We also need tutoring centers for our youth. Bike shops to showcase how cool the trail systems are in Louisville. I would suggest more fast places to eat that are not your typical fast food. I do think a few smaller retail stores would work, but it shouldn't be the focus. My plan would be to anchor the grocery store, Safeway, and build around it. To allow this to work, Safeway has to do a bigger remodel. The grocery chain has got to look fresher and place to gather, not just run in and run out.

11/09/2018 11:46 AM

Rick

Flatirons is close enough so bring in retail and dining but upscale. This is an upscale area that I think the locals would support. Boutique shopping for example. How about a nice steakhouse/seafood restaurant like the Landry chain.

11/09/2018 11:47 AM

Ballen

Something like Rayback collective and a couple of nicer restaurants

11/09/2018 11:50 AM

Terri

Unique high quality restaurant - with outdoor dining - organic farm to table Distillery Small shopping area with locally owned shops

11/09/2018 12:12 PM

m48martin

Hospitality, F&B Service Entertainment (not movie, have that)

11/09/2018 12:18 PM

Lawrenceboyd

Look at Longmont's village at the peaks as a great example - with access by bike/walking trail ([www.villageatthepeaks.com](http://www.villageatthepeaks.com))

11/09/2018 12:25 PM

None

Quick easy healthy food combined with unique intimate sit down restaurants

11/09/2018 12:29 PM

WEC

Unique shops and restaurants, NOT box stores or chains, areas which can provide a sense of community. Bookstore, Paul's Coffee Shop (KEEP PAUL'S!!!), Trader Joe's.

11/09/2018 12:50 PM

coreyhylsted

Louisville is increasing affluent. Downtown Louisville and Lafayette both have a large degree of creative people. That said, I think more variety of smaller food venues and retail shops. This creates an outlet for people in the community but also creates a unique variety. - Creating a space for food trucks [e.g. Raback collective] creates a "What will be there today?" Mexican, Indian, Egg + Breakfast. I would also think that a place where I can work, grab a bite to eat, and do a bit of other things is ideal.

11/09/2018 01:00 PM

NA 11/09/2018 01:05 PM	Outdoor Mall
patrickosu 11/09/2018 02:30 PM	fast causal restaurants, convenience retail, butcher shop
todd gleeson 11/09/2018 04:01 PM	I live <1mile away down Dillon. Restaurants, services, clothing, sporting goods, a *good* grocery store would draw my household.
ellenvallee 11/09/2018 04:58 PM	Local restaurants and boutique shopping
janet 11/09/2018 07:30 PM	pleasant environment with covered places to sit in hot weather with entertainment options and things like play fountains like those I saw in Norfolk VA botanical park that are both visually attractive and let kids run around in them. Could have evening light/music shows with fountains as in some places in China Food options not too upscale or expensive but more "charm" than fast food outlets
I997720 11/09/2018 11:21 PM	Family friendly, parking access, cost effective
carolncolo 11/10/2018 05:06 AM	Again, I suggest a Walmart super store.
jgwalega 11/10/2018 03:53 PM	King Soopers
dmwalega 11/10/2018 04:02 PM	Garbanzos Restaurant, Wendy's, King Soopers
amygcasey 11/10/2018 04:31 PM	YMCA. Or food court with a variety of options, meeting space, event spaces. Could include co-working space
Doug Johnson 11/11/2018 07:08 AM	Good quality, reasonably priced goods and services. Give people a reason not to drive to Boulder or Westminster...
Ryan Korte 11/11/2018 09:23 AM	warehouse like restaurant district (multiple vendors surrounding a common open area)
SMcMahon 11/11/2018 09:37 AM	Provide an alternative to Main Street establishments, with an updated look and feel. Different cuisines, maybe have them all share a delivery program to the area? Some shops could appeal to morning customers (coffee, baked goods, breakfast), some afternoon visitors (unique shops, repair), then evening (eateries that can provide eat-in or take-out for couples and families). Louisville is lacking a solid food delivery service - it's always mostly chain pizza or Chinese. If the eateries here offered delivery as a group, it would be appealing.
fredeller 11/11/2018 11:07 AM	I believe I covered that previously
Amasin	A multi use facility. Drives community of all ages.

11/11/2018 11:13 AM

Carolyn H Anderson

11/11/2018 03:18 PM

We already have more hospitality facilities than comparable cities. The service business you mention can be found elsewhere in town... Small retail shops regularly fail. We do not need manicure shops or spa facilities, we already have them.

dl00kner

11/11/2018 04:23 PM

Hospitality, food and beverage. Would recommend something similar to the Rayback Collective in Boulder.

jmcquie

11/11/2018 04:50 PM

Pretty much any retail use will draw from the neighborhood. I live a 5 minute drive or a 20-minute walk from parcel O and almost most of my neighborhood shopping is done there (groceries, gas, banking, coffee, basic clothing).

PhyllisMP

11/11/2018 05:05 PM

I am specific a large King Soopers wasn't that recommended previously and the neighborhood didn't have a say.

cherylmerlino

11/11/2018 05:24 PM

No "chains", but restaurants, taverns, service shops, a spa, salon, arcade, "to go" and "sit down" types of restaurants that are unique and open-aired in concept (like Sweet Cow in downtown).

camillefowles

11/12/2018 11:24 AM

Service, retail, food and beverage

helloscherry2

11/12/2018 12:55 PM

Inalreday patronize the bank, post office, Safeway, hair salon (fringe)—essential services. I would be drawn to a bookstore, art movie theatre, natural grocer, fabric or knitting store.

bpaxton

11/13/2018 07:35 AM

I think development that is walkable and indoor/outdoor would be successful given the relative busyness of the Friday Street Faire and downtown.

aeromarkco

11/13/2018 07:36 AM

Bike Shop, Micro Brewery, Ethnic Foods, A food court ala high end mix of restaurants. Playhouse,

shoe23

11/13/2018 03:10 PM

Unique food choices. Pedestrian friendly.

Sarahzauner

11/13/2018 03:20 PM

Really hard to tell what is in the lot, how to get there, and where to walk/bike. Need much better and appealing signage, better access points.

wielandlisa

11/13/2018 03:23 PM

a walkable, tree filled space that is inviting with NON brand stores and eateries - no big box / big name stuff. there is plenty of that around. there should be seating and spaces for spending time and walkways to and from each business and eatery. there should be parking at one end and there should be a friendly, safe way to and from the bus stop at McCaslin or even closer in so its not on the main road - tucked back toward the back of the parcel.

Laura Adams

11/13/2018 03:45 PM

Multi use building where with opportunity for pop up shops with local vendors can sell. Butchers, flower shops, cheese shop. It would create a community atmosphere for people to gather.

Benn8895

11/13/2018 04:34 PM

Louisville is becoming a tight community. Local will always be favored over big shops. So local restaurants, shops, services offered by people already in the community would fare well.

<b>cynthyswift</b> 11/13/2018 05:06 PM	Something with alcohol & food that is kid friendly.
<b>rubellite1</b> 11/13/2018 05:39 PM	I live just behind the post office. I'd love to see small shops, restaurants, Trader Joes, some entertainment. I want to walk to places
<b>julialeslie</b> 11/13/2018 08:42 PM	yoga studio kickboxing studio ** deli ** microbreweries /taprooms dessert spot/ice cream gift boutique clothing boutique new york style pizza laser tag climbing gym indoor kid's bounce studio
<b>AlisaG</b> 11/13/2018 10:30 PM	Gmail friendly restaurants with full bars
<b>Kara.rigney</b> 11/14/2018 01:30 AM	Wellness service businesses (e.g., massage, physical therapy, chiropractic) and health food restaurants can be built around a large pool facility to support customers of the pool as well as the greater community.
<b>CharlieEaly</b> 11/14/2018 01:17 PM	Hospitality, Food and Beverage, entertainment but not a movie theatre.
<b>jensmith78</b> 11/14/2018 02:20 PM	Locally owned, small businesses concentrated in a creative/curated space.
<b>Alex G</b> 11/14/2018 05:10 PM	Coffee shop, restaurants, cafes, coffee houses, small shops (book store, bike shop, etc.), park... The key is safely getting people safely to the area. There are a few senior friendly developments to the east, so a key is to create safe routes to get here.
<b>jan scrogan</b> 11/15/2018 04:36 PM	Food entertainment clothing Draw cu students
<b>wb</b> 11/15/2018 09:33 PM	Gym, spa, local (non-chain) restaurants
<b>Mbb</b> 11/16/2018 08:32 AM	Arts gallery & studios, playhouse theater entertainment, mini-mall small retail.
<b>Mira</b> 11/16/2018 01:51 PM	Trader Joe's or ethnic food store - something other than crappy Safeway; Bar Method/Barre type gym/ brewery with playspace for kids and game area for teens / gymnastics place for kids and adults; Pool hall
<b>drpwsmith</b> 11/16/2018 02:54 PM	Small local business, like Paul's Coffee Shop, park-like corridors, walking mall flavor with central parking area, food beverage and entertainment focus. A grocery store would also be nice.
<b>Malexander</b> 11/16/2018 04:18 PM	Walkable small shops, free recreation, something like sweet cow
<b>L.A.Cox</b> 11/16/2018 05:00 PM	See previous.
<b>nancybigelow</b> 11/17/2018 08:41 AM	Sorry, I don't have any suggestions.
<b>perk1000</b> 11/17/2018 08:43 AM	Restaurants and shops surrounding an open court where summer activities could take place.

(137 responses, 6 skipped)

**Q5 | What types of development would draw people from around the REGION and drive sales tax revenue for the City of Louisville?**

vg19

11/05/2018 01:06 PM

A multi-activity facility such as Dave and Buster's. It's near a movie theater, as is the one in Broomfield. Something with games, laser tag, other active activities would be something that isn't in Louisville, or really anywhere nearby. There isn't really anything like it closer than south Broomfield or very north Boulder.

Anonymous

11/05/2018 02:33 PM

See above.

Anonymous

11/05/2018 03:07 PM

Entertainment destination e.g. Top Golf

Anonymous

11/06/2018 10:29 AM

Entertainment, food and beverage

Anonymous

11/06/2018 10:38 AM

It's not clear whether that area can effectively support more traditional retail space. I think that going to more of a mixed use development (housing and office) is probably going to be more effective in the long run.

Anonymous

11/06/2018 10:47 AM

Office, mixed-use, some service (bike shop, scooter shop) a Pedego E-bike store.

Anonymous

11/06/2018 10:49 AM

Indy movie theater (as people age this becomes more of a draw), unique restaurants and bars. The atmosphere - i.e., park in the middle to have music/events at.

Anonymous

11/06/2018 10:57 AM

The synergy of a business mix is critical - think Union Station and Stanley Marketplace. The architecture and planning will be important to coordinate between businesses and residential type buildings.

Anonymous

11/06/2018 11:02 AM

Trader Joe's, Mountain sun

Anonymous

11/06/2018 11:05 AM

Man-made beach during summer converting into ice skating in winter.

Anonymous

11/06/2018 11:11 AM

Good food and beverages, entertainment, mixed uses with transportation into the area so that they too would want to live here and support our community.

Anonymous

11/06/2018 11:20 AM

There is enough big box shopping surrounding the location. Though we are pretty weak on sporting goods.

Anonymous

11/06/2018 11:26 AM

Mixed use. Housing will bring in the people who will shop local.

Anonymous

A variety of options. Like the Milk Market in Denver - an upscale food court...

11/06/2018 11:29 AM	Or a food truck destination like the Rayback Collective in Boulder an intimate music venue would be awesome!
Anonymous	unique entertainment opportunities
11/06/2018 11:31 AM	
Anonymous	A hotel or some entertainment venue (Lego-themed activity park).
11/06/2018 11:32 AM	
Anonymous	Modern Movie Theater surrounded by modern healthy restaurants (beyond fast food) and perhaps a health & wellness chain and/or gym (Orange Theory Fitness?) that doesn't cannibalize business from the redeveloped Rec Center.
11/06/2018 11:38 AM	
Anonymous	OMG...see above
11/06/2018 12:02 PM	
Anonymous	Same as above
11/06/2018 12:25 PM	
Anonymous	* iMax movie theater * swimming or other athletic facility * upscale restaurants
11/06/2018 01:22 PM	
Anonymous	see above except for residents, pay to park or play at Harper Lake and use the Davidson Mesa dog area, could be a money maker
11/06/2018 01:28 PM	
Anonymous	See above. There could also be holiday mart, fall festival, etc. Some of this might seem like it will take away from old town Louisville but things there are really tight for parking and farther from the highway. With it's proximity to Highway 36 the impact on Louisville residents from a traffic perspective would be felt but not so much.
11/06/2018 01:36 PM	
Anonymous	Unique shopping and dining. Umm, light rail.
11/06/2018 01:37 PM	
Anonymous	Trader Joe's. All of the above if done well.
11/06/2018 01:44 PM	
Anonymous	Niche food that is not chain based.
11/06/2018 01:45 PM	
Anonymous	Have an Open Aries it could be more of a field of a downtown Pearl St., Mall or a downtown Louisville at with a little grass areas. It would be a complete half-day or full-day destination place.
11/06/2018 02:38 PM	
Anonymous	How many years have we talked about this parcel? Keep the multi family housing elsewhere. We are not mini Boulder..we are Louisville. Laser tag is listed as an option. That belongs in unincorporated Adams County. Not here. No mega church either, please. How about high end art gallery (not a well meaning frame shop). Get rid of the crappy restaurants there. If you want Mexican, make it a good one like Las Delicias or Los Dos Portrillos. Give our awesome. Parma a better location. Etc etc
11/06/2018 02:48 PM	
Anonymous	The best thing I can say here is that the things that failed here failed because they're not unique enough and a better option won out. A community hub, a
11/06/2018 03:35 PM	

Anonymous 11/06/2018 04:00 PM	row of specialty shops, a restaurant collective, an activity bar... these things don't exist in the area and could satisfy a need that isn't already met somewhere else that's just as convenient. Entertainment , music and art
Anonymous 11/06/2018 04:21 PM	Local goods market, unique entertainment options
Anonymous 11/06/2018 04:44 PM	Same as above, but they'd want to come as there's nothing close to them until you get to Denver. If you build enough attractions and community there, people talk A LOT and will come. Rayback Collective brings people in from all around and they only serve over-priced beers and food truck food. This has to be unique. While you can get tamales anywhere, everyone knows the lady at the Louisville communal place has the best ones. They'll drive for that on a night or weekend.
Anonymous 11/06/2018 04:57 PM	It is difficult to attract businesses with regional draw to this site because those are already in Superior. Home Depot and Lowes are in Louisville but they are disconnected from this site.
Anonymous 11/06/2018 05:01 PM	a great market
Anonymous 11/06/2018 06:55 PM	Outdoor theater? Museum? Look at Waco, TX and all the great things there also Austin. Live music?
Anonymous 11/06/2018 07:39 PM	Something the area doesn't have - food truck lot, something like avanti, craft brewery from local entrepreneurs instead of all chains, something like avanti. Or a new indoor volleyball place like oasis. Ikea
Anonymous 11/06/2018 07:43 PM	The same
Anonymous 11/06/2018 08:20 PM	Kids play place like a Dave and busters, putt putt, race course, etc
Anonymous 11/06/2018 08:29 PM	The corridor is not positioned well to compete regionally. Focus on creating a mixed use district that is walkable with a placed based Louisville design
Anonymous 11/06/2018 08:35 PM	sporting goods store
Anonymous 11/06/2018 08:36 PM	indoor tennis courts
Anonymous 11/06/2018 08:49 PM	See my comments above. Downtown Louisville draws people from surrounding neighborhoods and the region. Westside Louisville can do the same.
Anonymous 11/06/2018 08:53 PM	Entertainment and food venue
Pete 11/06/2018 09:24 PM	Businesses that can't afford Boulder and aren't as industrial as the tech center. Uber is a great example!

keith 11/06/2018 09:30 PM	a large grass/park open air amphitheater stage which can be used to host large concerts and outdoor events (similar to fiddlers green or millennium park in chicago)
SSN 11/06/2018 09:38 PM	Think of all the attributes that get folks to visit downtown Louisville - small walkable streets, quaint, residential housing close to the pool, library, coffee shops, restaurants, ... and try to recreate the attributes on this large parcel of land. It will draw folks from outside the city.
JoyP 11/07/2018 07:25 AM	Trader Joes (is this possible with the covenants?!), Legoland Discovery center or Other well-known kid indoor attraction, unique shopping/dining like 29th St mall. Needs to be *enjoyable* to walk around. Nordstrom Rack?
debritter 11/07/2018 08:09 AM	Specialty shops
Justin Schrader 11/07/2018 09:56 AM	Local micro brewery
Jenny 11/07/2018 10:54 AM	Gyms for kids seem to do very well - Mountain Kids or Xtreme Altitude are some examples. A high end office space or company could also be interesting.
amom 11/07/2018 11:45 AM	A space like The Source in Denver - with samples of beer, food, crafts appropriate for the holidays. Unique enough in offerings that it would be less likely to be driven out by a big box retailer. Also brings a lot of people in for group activities.
bigalieck 11/07/2018 02:13 PM	Hotel Movie theater
Juli 11/07/2018 04:29 PM	Someplace interesting like The Source.
Ryokin 11/07/2018 05:24 PM	The site is too small and the traffic pattern around it too constrained to create a true regional draw. But a high-end restaurant and entertainment would draw customers from the surrounding towns.
Kelly 11/08/2018 09:00 AM	High end restaurants
mb 11/08/2018 10:13 AM	Craft breweries (we really need a Oskar Blues in this town) or small cult food establishments like Snarfs, Torchy's Tacos or something else out of the norm that would draw people to THIS spot.
Louisville lady 11/08/2018 11:45 AM	Some unique shops. Maybe a trampoline park like Sky Zone?
Rami Cohen 11/08/2018 12:55 PM	Something that this area is missing is a good shooting range. Take a look for example at Magnum Shooting Center in Colorado Springs.
Allison S 11/08/2018 01:25 PM	Something original or stellar restaurant
Louisville mom 11/08/2018 02:30 PM	Trader Joe's, probably some kind of trendy gym, a higher end hotel like Embassy Suites.

Maryan 11/08/2018 03:17 PM	Performance space smaller than 1st Bank Center but bigger than the Louisville Arts Center. Include a bar, local coffee shop (Precision Pours?), unique food court
No 11/08/2018 06:03 PM	Open shopping filled with restaurants and specialty shops (breads, cheese, wine, beers, deserts, meats)
Teresa 11/08/2018 09:06 PM	?
Leslie 11/09/2018 10:59 AM	Decent retail.
Steve 11/09/2018 11:04 AM	non-chain restaurants and stores like those in downtown louisville. Downtown louisville is the successful model and there's enough demand/traffic to support both locations. people are already coming from around the region to downtown louisville
habacomike 11/09/2018 11:05 AM	Same as above.
nm 11/09/2018 11:05 AM	hospitality
John Bolmer 11/09/2018 11:07 AM	Perhaps several mom-and-pop local flavor stores and restaurants -- along the lines of Old Town Louisville.
Scott 11/09/2018 11:08 AM	See above.
Jkat525 11/09/2018 11:12 AM	Event center, EXCELLENT restaurant
Fordcokid 11/09/2018 11:12 AM	Auto service, theater, restaurants.
Mark Dondelinger 11/09/2018 11:13 AM	Bring back Sams or another national retailer. IKEA, or Amazon 4-Star. These stores only have one location each in Colorado and they are on the far south side of the Denver Metro area. Bring them North. Beat Broomfield to the punch for once.
CB 11/09/2018 11:21 AM	Upscale and unique shopping and restaurants.
andrewthak 11/09/2018 11:24 AM	Same thing -- has to be unique. They will not come for typical retail, needs to be a communal space. Mixing in residential would be fine too, but there are plenty of people nearby for a unique offering to be successful.
Eajudd 11/09/2018 11:25 AM	? I don't really know - maybe a year round covered farmers market?
B Eller 11/09/2018 11:27 AM	Jump City or Laser Tag. Woodward ski/snowboard Training Camp (like Copper Mountain). Indoor go-carts or playground for a fee. REI; Trader Joes; Jo Ann Fabrics; "treasure hunt" stores like Home Goods and Marshalls; King Sooper Market; Whole Foods (would they move?); carpet store; kitchen and

Ala Hason 11/09/2018 11:32 AM	bath store (higher end than Lowes and Home Depot); Christy Sports Food and drinks with entertainment
Anonymous 11/09/2018 11:35 AM	Mixing work and commerce. Folks work out of Panera, Starbucks, Einstein all day and work.
Brian 11/09/2018 11:43 AM	Will need to come with Superior development. Louisville is behind the curve.
karen 11/09/2018 11:46 AM	Downtown Louisville already draws people from around the region. Continue to support those businesses. This new development should fill a need for the city of Louisville. If you try to compete with what is going on in Superior, you'll lose.
Rick 11/09/2018 11:47 AM	See above. Going downtown Boulder is nice sometimes but all crowded restaurants. If there was an upscale hotel with fine dining would be nice.
BAllen 11/09/2018 11:50 AM	Same as above
Terri 11/09/2018 12:12 PM	I think the development needs to be attractive and modern and inviting - right now what we have on McCaslin is not very inviting.
m48martin 11/09/2018 12:18 PM	Hospitality, F&B Entertainment
Lawrenceboyd 11/09/2018 12:25 PM	Same as above
None 11/09/2018 12:29 PM	Unique, non chain fresh food restaurants, breweries, or wine tasting combined with some well known quick and healthy chains, Laser tag or paint ball
WEC 11/09/2018 12:50 PM	Trader Joe's, boutique destination shopping & restaurants.
coreyhylsted 11/09/2018 01:00 PM	Great question. I alluded to this with the great sea of free parking. When I spend money in Louisville; I am targeting a specific thing. I drive to Home Depot / Lowes for home improvement. I drive to Safeway or King Soopers or Alfalfas for groceries. I drive to go out to eat. I rarely wander; I do the task and then drive home or to my next errand. However. When I go to the Flatirons mall, Pearl Street, 16th St Denver... I get some coffee. I browse several stores. I may grab a snack or a quick meal with the family. I also do this at Louisville's Farmers Market and the friday night community events downtown. I'm feeling good and want to continue the fun without going somewhere, so we take advantage of the good options around us. But around the region... I leave Louisville when I want to 1) Hang out leisurely and shop 2) Get out of the house all day Creating a micro-mall of sorts would mean people in the region coming to the closest mall that fits; and keeping us locals from leaving to spend money elsewhere.
NA	Miniature golf or similar

11/09/2018 01:05 PM

patrickosu

live entertainment, top rated restaurants

11/09/2018 02:30 PM

todd gleeson

retail, a competitive grocery store, sporting goods, a Kohls replacement

11/09/2018 04:01 PM

ellenvallee

restaurants, bars, entertainment

11/09/2018 04:58 PM

janet

pleasant environment with covered places to sit in hot weather with entertainment options and things like play fountains like those I saw in Norfolk VA botanical park that are both visually attractive and let kids run around in them. Could have evening light/music shows with fountains as in some places in China. If striking enough lots of people come too see and these can be themed to holidays, etc. to draw in viewers who then buy food, souvenirs in stalls around etc Food options not too upscale or expensive but more "charm" than fast food outlets

11/09/2018 07:30 PM

I997720

Unique offerings

11/09/2018 11:21 PM

jgwalega

King Soopers

11/10/2018 03:53 PM

dmwalega

Garbanzos Restaurant, Wendy's, King Soopers

11/10/2018 04:02 PM

amygcasey

Entertainment

11/10/2018 04:31 PM

Doug Johnson

Again, quality goods and services focused on the local demographics. Louisville has evolved into a bedroom community with tremendous buying power. This is based on household income.

11/11/2018 07:08 AM

Ryan Korte

office space, but catered to a specific business segment (technology, medical, or other)

11/11/2018 09:23 AM

SMcMahon

Unique experiences in either food or shopping, or unique repair (i.e. phone screen repair). The only other service/entertainment opportunity not currently found nearby might be a Virtual Reality-based one. Maybe a seasonal offering such as a Christmas Market, Artist Market, Farmer's market, etc. would draw a wider geographic area.

11/11/2018 09:37 AM

fredeller

Covered previously

11/11/2018 11:07 AM

Amasin

Views of mountains. One stop shop for all things for all ages. Unique Colorado companies.

11/11/2018 11:13 AM

Carolyn H Anderson

Food, quality restaurants, not fast food. Perhaps small independent outdoor retailers. No big box stores of any kind.

11/11/2018 03:18 PM

dl00kner 11/11/2018 04:23 PM	Add entertainment, like live music, to the concept above.
jmcquie 11/11/2018 04:50 PM	Possibilities include: - dining & entertainment (as Downtown Louisville does now) - high-volume brick & mortar retail (as Costco does for Superior) (I think we bet on the wrong retail chain 25 years ago although it is heard to argue with Walmart's success in general) - auto sales and service (if a Boulder dealer wants to leave boulder as the Audi dealership did for Broomfield recently, we should be very receptive to that. We have to drive into Boulder or the near north suburbs of Denver to have our Hondas and Toyotas serviced, so I would class that as Regional retail category
PhyllisMP 11/11/2018 05:05 PM	Are the hotels at capacity ? What about a small conference center. People like to visit Louisville or an Event center?
cherylmerlino 11/11/2018 05:24 PM	Best use is a hotel on the old Kohls land, like a Holiday Inn Express Hotel, with name recognition, or an All-Suite Hotel like an Embassy Suites.
camillefowles 11/12/2018 11:24 AM	Entertainment, retail, food and beverage
helloscherry2 11/12/2018 12:55 PM	Make it stand out as a place that people feel good in going to. Create a scene—Thoughtful landscape and outdoor play areas for kids, calming—maybe a pedestrian zone. A place where parents could bring kids and have numerous things to do—but a gift or toys, look for books, go bowling/venue for birthday parties, clothes for kids, art center (like clementine studio in Boulder) for kids classes, kid friendly restaurants. We need to stand out and go above and beyond to make an impact—we have such a beautiful view and it would be an amazing setting for something that could have a long lasting and reliable draw for people in the area.
bpaxton 11/13/2018 07:35 AM	I think unique and high quality restaurants would draw people to the area.
aeromarkco 11/13/2018 07:36 AM	Costco, Lucky's, Sprouts but be aware that retail may be overbuilt in the area
shoe23 11/13/2018 03:10 PM	Mixed use.
Sarahzauner 11/13/2018 03:20 PM	Ditto. Need a few good restaurants (can we build on a boulder or Denver local chef brand?) and a solid fitness facility. We're a health-minded community and that area is mostly filled with unhealthy food and pedestrian - unfriendly access.
wielandlisa 11/13/2018 03:23 PM	Good interesting food that you could go to before a movie or eat at while staying at one of the nearby low cost hotels -- a lot of people walk over from the hotels and this needs to be a more cheery/pleasant experience than jay walking across the street and being front and center along with a bunch of traffic. I think a bridge from the hotels over to where the Khol's side is would rock for hotel patrons and be safer and really drive people toward the space.
Laura Adams	Look at multi use spaces that are flourishing in Denver i.e. The Source and

11/13/2018 03:45 PM

Union Station

Benn8895

11/13/2018 04:34 PM

If you created an area designed specifically for special needs children you would have people coming from farther away. Louisville has a lot of activities for children but barely if any can cater to special needs kids. This group of children are completely left out in regards to the fun and entertainment in Louisville. And in most of Colorado for that matter. So develop a bounce place or open gym or park that these kids can and are encouraged to play at. Create a place where kids with sensory issues, wheelchairs, motor planning issues, learning disabilities, speech disabilities can play and feel included. There are thousands of kids in Colorado who fall into these categories. Why not take charge and lead the way in being an all inclusive city. I know parents of these children would be more than willing to drive here so that their children can have the same opportunities as other children have. Something with alcohol & food that is kid friendly.

cynthyswift

11/13/2018 05:06 PM

rubellite11

11/13/2018 05:39 PM

Trader Joes, boutiques, entertainment

julialeslie

11/13/2018 08:42 PM

\*\* deli \*\* microbreweries /taprooms laser tag climbing gym indoor children's bounce studio

Kara.rigney

11/14/2018 01:30 AM

A large, state of the art, pool complex for competition swimmers (not recreational swimming). The facility can be rented for local and large competitions (similar to VMAC in Thornton). VMAC hosts everything from summer swim league championships, to state high school meets, to state and regional meets for USS swimming and water polo tournaments.

CharlieEaly

11/14/2018 01:17 PM

Atmosphere is the key to where people will spend time shopping and eating.

Alex G

11/14/2018 05:10 PM

Restaurants, mid sized grocery store similar to Whole Foods

jan scrogan

11/15/2018 04:36 PM

Food entertainments shopping in general

wb

11/15/2018 09:33 PM

Chain stores and restaurants might draw from around Louisville and the region. But an eclectic mix of small restaurants and shops (depending on the details) might also provide a unique experience that would draw even more people and drive sales tax revenue.

Mbb

11/16/2018 08:32 AM

Unique local arts, museum & retail shopping & eateries.

Mira

11/16/2018 01:51 PM

Trader Joe's / Pool Hall

drpwsmith

11/16/2018 02:54 PM

All of the above.

Malexander 11/16/2018 04:18 PM	Urban farm expo
L.A.Cox 11/16/2018 05:00 PM	See previous.
nancybigelow 11/17/2018 08:41 AM	Walmart, REI, Costco are already in our vicinity. I don't have any suggestions.
perk1000 11/17/2018 08:43 AM	Concert venue, water park, big-box stores, internet business distribution facilities

**Optional question** (131 responses, 12 skipped)

**Q6 | Here's your chance! Tell us your big idea for Parcel O and WHY it would work in Louisville!**

- Anonymous  
11/05/2018 02:33 PM  
I feel a mixed use entertainment area would be great. Unser racing carts, mini-golf, kid friendly fun. There is also some space for apartments.
- Anonymous  
11/05/2018 03:07 PM  
Mixed use development, anchored by a multi-vendor food hall concept to include roof top terrace (amazing Flatirons views!). e.g.  
<https://businessden.com/2018/10/04/food-hall-to-anchor-redevelopment-of-mostly-vacant-retail-site-in-edgewater/>
- Anonymous  
11/06/2018 10:29 AM  
Give us a movie theater!! We need one.
- Anonymous  
11/06/2018 10:38 AM  
Mixed office/housing development
- Anonymous  
11/06/2018 10:47 AM  
E-bike super store. Pedego ideally.
- Anonymous  
11/06/2018 10:49 AM  
park in the middle - people love to gather for music, have this surrounded by 'shops
- Anonymous  
11/06/2018 10:57 AM  
Mixed use commercial & residential with a 50+ managed townhouses as part of the residential community, all mixed in with a diverse variety of lifestyle oriented businesses, including fitness, heathy retail (outdoor, exercise, cycling), local food.
- Anonymous  
11/06/2018 11:02 AM  
Louisville would do great with a Trader Joe's. Most of my friends go into bolder for the Trader Joe's and it is terrible parking and Louisville would really support this kind of development.
- Anonymous  
11/06/2018 11:05 AM  
A man-made beach would be a huge draw for city/region. Limited swimming options beyond public/private pools and nothing of scale-Boulder Reservoir leaves ample room for improvement. <http://www.centennialbeach.org/history>
- Anonymous  
11/06/2018 11:11 AM  
A central green space surrounded by mixed use community. Please not too tall to block the light and views of the current neighbors, but brings them all together--inclusive.
- Anonymous  
11/06/2018 11:20 AM  
A local-shop mall with restaurants, like the Source in RINO.
- Anonymous  
11/06/2018 11:26 AM  
Mixed use areas sourrounding green space for gathering and local venues. However, please do not block the current neighborhoods' views and light.
- Anonymous  
11/06/2018 11:29 AM  
I like the idea of a Rayback Collective / Milk Market venue - with a place for small concerts. An all in one destination. I could grab some dinner, sit by a fire pit outside, listen to music...
- Anonymous  
11/06/2018 11:31 AM  
A shared space that houses local eateries, breweries, cideries, kombucharies, coffee shops, etc. (ideally with some organic options). There would be a shared space in the middle with lots of indoor and outdoor seating and space for kids to run around

Anonymous 11/06/2018 11:32 AM	Louisville is small restaurants, breweries, and family-oriented locations/outings. Need to appeal to this. Create an outdoor environment that works -- a small Lego outdoor park with a couple or rides and lots of "builds." Please see my previous answers
Anonymous 11/06/2018 11:38 AM	
Anonymous 11/06/2018 12:02 PM	again...you've asked the same question 5 times. Read what I already said...
Anonymous 11/06/2018 12:25 PM	Louisville needs more unique and healthy restaurants. I feel like Lafayette has a lot more to offer in that regard and I would like to see that change.
Anonymous 11/06/2018 01:22 PM	Outdoor mall with area for farmer market on weekends. Avoid the hassle of crossirons mall but don't need to go all the way in to Boulder
Anonymous 11/06/2018 01:28 PM	couldn't get the document library to download. will need to read through those before saying more.
Anonymous 11/06/2018 01:36 PM	An indoor/outdoor marketplace.
Anonymous 11/06/2018 01:37 PM	Great to have Safeway, Paul's coffee, Pizza so keep those.
Anonymous 11/06/2018 01:44 PM	I think it needs to be torn down and rebuilt to move away from a strip mall feel. It should be contemporary and include outdoor space mixed with retail/restaurants.
Anonymous 11/06/2018 01:45 PM	Louisville has a lovely downtown area, with delicious places to eat and fun places to visit. But this side of town is lacking that. There is no need to compete, but my family would love to have walkable, local places to eat and play closer to our house.
Anonymous 11/06/2018 02:38 PM	Along with what I said above, or tractable roof in certain areas could increase use both in summer and in the winter.
Anonymous 11/06/2018 02:48 PM	I have plenty of ideas for what shouldn't be there. Maybe a viable regional theater. Not movies...plays and productions similar to the Arvada Center. This better speaks to the new make up of Louisville.
Anonymous 11/06/2018 03:35 PM	I've answered this several times already :) So many ideas!
Anonymous 11/06/2018 04:00 PM	A walkable shopping, restaurant and spa
Anonymous 11/06/2018 04:14 PM	Some place that is walking and bike access - people in Louisville love to bike and walk
Anonymous 11/06/2018 04:21 PM	I'm leaning towards a local market with unique vendors, like Denver's Central Market or The Source.
Anonymous 11/06/2018 04:44 PM	A shared space for entertainment, food, drinks, and artisanal products. Anyone and everyone can sell at a booth and try their big new product on

Anonymous 11/06/2018 04:57 PM	the market. Please see previous entries. 255 characters is too limited for my big idea and why it would work in Louisville
Anonymous 11/06/2018 05:01 PM	a Seattle Pike Place type market
Anonymous 11/06/2018 05:14 PM	Something like Reading Terminal Market. It's fun, a place parents can drop teens safely, everyone can get the food they want, and a good beer or milkshake makes for a great night.
Anonymous 11/06/2018 06:55 PM	Large scale outdoor market like Pikes Place, Seattle, dining hall with several eateries. ( Portland , Or has done this successfully.
Anonymous 11/06/2018 07:39 PM	Indoor multiuse sports center and avanti style local craft eateries
Anonymous 11/06/2018 07:43 PM	Already shared
Anonymous 11/06/2018 08:15 PM	N/A
Anonymous 11/06/2018 08:20 PM	More restaurants. We all eat out a lot, but get tired of the current options.
Anonymous 11/06/2018 08:29 PM	Attractive public space which active in its design and useable by all age groups where food and neighborhood based business can frame activities
Anonymous 11/06/2018 08:35 PM	Inddor tennis courts
Anonymous 11/06/2018 08:36 PM	indoor tennis courts
Anonymous 11/06/2018 08:49 PM	Explore Fairhaven Village Green at <a href="https://www.cob.org/services/recreation/parks-trails/Pages/fairhaven-village-green.aspx">https://www.cob.org/services/recreation/parks-trails/Pages/fairhaven-village-green.aspx</a>
Anonymous 11/06/2018 08:53 PM	Adult entertainment
Pete 11/06/2018 09:24 PM	Dense Mixed use works because you have 7 days a week spending and good connectivity to Denver Boulder
keith 11/06/2018 09:30 PM	Grass open air amphitheater stage venue like Fiddler's Green with enormous play structure for all around use
SSN 11/06/2018 09:38 PM	NEW URBANISM - walkable blocks and streets, housing and shopping in close proximity, and accessible public spaces. The revival of our lost art of place-making, and promotes the creation and restoration of compact, walkable, mixed-use cities
JoyP 11/07/2018 07:25 AM	Legoland Discovery center! There are many of these around the country but none in colorado! Would be huge for Louisville and the area!!

debritter 11/07/2018 08:09 AM	Pedestrian friendly outdoor mall
Justin Schrader 11/07/2018 09:56 AM	Local brewery and a local organic eatery. There are not many options for organic food that is already made in Louisville. I always enjoy tasty local beer.
Jenny 11/07/2018 10:54 AM	Parcel O needs a good grocery store. One that has high quality food but also at a reasonable price. Whole Foods is expensive and the Safeway is just not very high end. A kids gym could also be really good at this location. Outdoor pool for the kids
amom 11/07/2018 11:45 AM	"The Source" like experience but more family friendly with play park for kids in the center. We need another good breakfast place too!
bigalieck 11/07/2018 02:13 PM	More gyms, restaurants, or hotels. I don't think big box is going to make it in Louisville. There is no market for it. Small, locally owned retail is the way to go. We need more "going out" restaurants, but probably on Main
Juli 11/07/2018 04:29 PM	Someplace like south boulder Table Mesa or The Source/Stanley Marketplace
Ryokin 11/07/2018 05:24 PM	See previous answers
Kelly 11/08/2018 09:00 AM	Local bus line around the city to take you to the stop and ride
mb 11/08/2018 10:13 AM	Louisville
Louisville lady 11/08/2018 11:45 AM	A mix of unique shops that are bike and pedestrian friendly. A trampoline park, like Sky Zone. Fun for the family. The closest one now is Arvada. It would be a regional attraction.
CBV 11/08/2018 12:14 PM	Louisville
Rami Cohen 11/08/2018 12:55 PM	Shooting Range
Allison S 11/08/2018 01:25 PM	Some sort of family entertainment that also had drinks for adults
Louisville mom 11/08/2018 02:30 PM	LOUISVILLE
Maryan 11/08/2018 03:17 PM	See ideas above. OR, tear down Sam's Club building and divide the area into a neighborhood like North Broadway with living space above the stores and offices.
Amy 11/08/2018 05:01 PM	Punch Bowl Social with bowling, mini golf, good food and drinks because there are lots of families in Louisville and not that many family-focused entertainment and food establishments.
No	Play area surrounded by artisan shops and good food

11/08/2018 06:03 PM

Teresa

HOCKEY SHOP! HUGE. or maybe some other sports could share the shop.

11/08/2018 09:06 PM

Leslie

Marketplace, like Eatly. It would have diverse use (eating, shopping, cooking school) so appeal to multiple consumers.

11/09/2018 10:59 AM

Steve

gave it - tear down existing structures, replace with mixed use and open space/parks

11/09/2018 11:04 AM

habacomike

It has to be something different. So, a concept not otherwise in the area. There's few places to incubate small businesses -- why not an arts and innovation development focused on maker spaces: light industrial/robotics/coding/woodworking/machining, housing

11/09/2018 11:05 AM

nm

11/09/2018 11:05 AM

John Bolmer

Apple store. The one at Flatirons is always busy. Toy store, if one exists.

11/09/2018 11:07 AM

Scott

An international food and culture hall: Think The Ferry Plaza Building in San Francisco and Ponce City Market in Atlanta.

11/09/2018 11:08 AM

Jkat525

I really like the idea of an upscale entertainment hub.

11/09/2018 11:12 AM

Fordcokid

Make it a walkable small community within a community with a nice grocery store, bakery, restaurant, boutique sandwich shop, coffee shop.

11/09/2018 11:12 AM

Mark Dondelinger

Bringing back Sams Club is my number one choice. Other than that, get IKEA or Amazon 4-star retail stores. Give these two retailers an opportunity to open a location on the north end of the Metro area. If we don't get them, Broomfield or Thornton will

11/09/2018 11:13 AM

CB

Walkable, unique shopping and restaurants with lots of green space to relax, enjoy and encourage lingering and enjoy Colorado's beautiful weather.

11/09/2018 11:21 AM

andrewthak

Collective similar to The Source in Denver or Rayback in Boulder. Make it a unique space, we have nothing like that here.

11/09/2018 11:24 AM

Eajudd

Definitely mixed use

11/09/2018 11:25 AM

B Eller

Please don't tear everything down in put in a bunch of multi-colored apartments. IMO, EBC has enough of those!

11/09/2018 11:27 AM

Ala Hason

Urban type, elegant multi casual dining areas with entertainment (stage) and plenty of trees and flowers. Miniature downtown block

11/09/2018 11:32 AM

Anonymous

Something similar to WeWork

11/09/2018 11:35 AM

Brian 11/09/2018 11:43 AM	Underground parking accessible from mccasin, cherry, & dillinger roads. Connection with downtown using a local light rail. Bike / walking flyovers over major roads to access the new town center.
karen 11/09/2018 11:46 AM	Multi-tenant housing with retail, restaurants and a central park.
Rick 11/09/2018 11:47 AM	Tear down Sam's and redevelop with fine dining and shopping. No more multifamily or zero lot homes. Only adds to the tax burden and traffic with no improvement to attractions for those already living here.
BAllen 11/09/2018 11:50 AM	Something like Rayback collective - food trucks that change daily.
Terri 11/09/2018 12:12 PM	Small town feel - walkable area - unique restaurant and spa and maybe a high end hotel - we have plenty of not great hotels around. A hotel like the Boulderado would a high end restaurant would do well.
m48martin 11/09/2018 12:18 PM	Themed "active" entertainment area with indoor activities for kids like parkour or bike/skateboard setting. Support with services like bike shops and perhaps some medical services too. Have a outdoor sports theme and have a restaurant/bar to support
Lawrenceboyd 11/09/2018 12:25 PM	Longmont has has tremendous success with its village at the peaks mall and I think something similar would work very well
None 11/09/2018 12:29 PM	None
WEC 11/09/2018 12:50 PM	Central square, small park.
coreyhylsted 11/09/2018 01:00 PM	Anything but big box stores. Create a community space where people would like to spend time. Ideally create a space where there is more of variety. IMHO, the food options pale in comparison to downtown.
NA 11/09/2018 01:05 PM	Miniature Golf or similar, lots of families looking for activities.
patrickosu 11/09/2018 02:30 PM	Theater for live events... money is made in music and podcasts by performing live.
todd gleeson 11/09/2018 04:01 PM	would a Prospect-like neighborhood (Longmont) with a bit more gallery and restaurant & small entertainment venue
ellenvallee 11/09/2018 04:58 PM	Build high end town homes and quality restaurants
janet 11/09/2018 07:30 PM	consider building value through unusual attractive amenities that boost property values rather than only though direct commercial activity
I997720 11/09/2018 11:21 PM	Personal preference I would love a Trader Joe's or an Orange Theory Fitness!
carolncolo 11/10/2018 05:06 AM	Walmart super store

jgwalega 11/10/2018 03:53 PM	A decent super market like King Soopers
dmwalega 11/10/2018 04:02 PM	King Soopers, we need a decent grocery store
amygcasey 11/10/2018 04:31 PM	IDK
Doug Johnson 11/11/2018 07:08 AM	Mixed retail and housing, give people the opportunity to walk or cycle to shops and services
Ryan Korte 11/11/2018 09:23 AM	make it stand out by having it look, feel and be for high end retail and business.
SMcMahon 11/11/2018 09:37 AM	Unique shops, eateries, and a constantly changing component by season (Christmas Market, Farmer's Market, etc), with space to sit outdoors.
fredeller 11/11/2018 11:07 AM	Responded previously
Amasin 11/11/2018 11:13 AM	One stop shop for new moms to reiterees. Family gatherings to solo work space needs. Continue supporting our balanced lives in Louisville with a well balanced community attraction.
Carolyn H Anderson 11/11/2018 03:18 PM	Senior housing, needed everywhere, we need more moderately priced senior housing.
dl00kner 11/11/2018 04:23 PM	Same as previous.
jmcquie 11/11/2018 04:50 PM	Automotive retailer (see my earlier comment)
PhyllisMP 11/11/2018 05:05 PM	We don't have a large grocery store close to this area
cherylmerlino 11/11/2018 05:24 PM	McCasin Mall project: an outdoor, open air concept (with a park-like area) of small retail, small restaurants with indoor/outdoor seating, services/stores, and a hotel where Kohls is now. Parking structures located behind Sams and on street parking.
camillefowles 11/12/2018 11:24 AM	Parcel O should have shops but also places to sit, eat, play and gather. Create ambiance: nice lighting, inviting landscaping. A destination for people on this side of town & coming off 36
hellosherry2 11/12/2018 12:55 PM	Make it attractive, make it unique, provide variety with an eye on attracting families, adults both who need essential goods and services and those who want to go a bit deeper than just buying a bunch of cheap stuff
bpaxton 11/13/2018 07:35 AM	As previously mentioned, I think a co-working space and a unique restaurant scene would be great for part of Parcel O. The co-working environment would attract people during the work week and residents would likely frequent the area on weekends.

aeromarkco 11/13/2018 07:36 AM	It could change the character of Louisville, shifting the "scene" from Downtown. I support more mixed use and higher density if it's done correctly with open space, parking and transport
shoe23 11/13/2018 03:10 PM	Asian grocery store and food court (similar to Ranch 99 in California).
Sarahzauner 11/13/2018 03:20 PM	Korean spa and fitness center!
wielandlisa 11/13/2018 03:23 PM	Bridge from hotels to Kohls side/outdoor walkable mall design with lots of grass, trees, sitting areas - outdoor store like REI type merchant - with cool food like ModMarket and a movement/yoga studio + indoor climbing wall!
Laura Adams 11/13/2018 03:45 PM	Something similar to The Source, and housing above retail/business space
Benn8895 11/13/2018 04:34 PM	Make an inclusive park/gym/bounce place that caters to special needs. These kids have no where to go and deserve to have the same fun that the rest of the kids in this town have.
cynthswift 11/13/2018 05:06 PM	Mixed use kid friendly
rubellite11 11/13/2018 05:39 PM	No more big box stores. I would be happy to see a mix of smaller shops. No more residential. Seems like the area is crowded enough already
julialeslie 11/13/2018 08:42 PM	A food-centric, mixed-use marketplace, such as the Stanley in Aurora, would be a terrific fit for Louisville b/c it appeals to a wide range of consumers, brings community together, and keeps the focus on local businesses.
AlisaG 11/13/2018 10:30 PM	No big idea!
Kara.rigney 11/14/2018 01:30 AM	A world class athletic complex does not currently exist in Boulder County or surrounding areas. Our local and statewide swim competitors currently take their revenue to facilities in Thornton, Denver and Colorado Springs.
CharlieEaly 11/14/2018 01:17 PM	Again, a similar concept to The Orchard Town Center - something with an atmosphere where you want to hang out and shop and eat. 29th Street Mall in Boulder is a bad example.
jensmith78 11/14/2018 02:20 PM	Small business/entrepreneurial marketplace - a la Barnone in Gilbert AZ ( <a href="http://barnoneaz.com/">http://barnoneaz.com/</a> ).
Alex G 11/14/2018 05:10 PM	Louisville isn't Thornton or Aurora--a successful development has to recognize the demographics, preferences and voting patterns of our citizens (see votes for open space). Think big. Think Pearl St., not 29th St. Combine Civic and Private uses.
jan scrogan 11/15/2018 04:36 PM	Entertainment and clothing for cu draw as well as local.
wb 11/15/2018 09:33 PM	Performing arts center as an anchor, and a grouping of smaller local restaurants (when Kohls property becomes vacant)
Mbb	Arts center similar to Dairy Center in Boulder. Great access off Hwy 36 will

11/16/2018 08:32 AM

entice arts community & increase traffic for existing restaurants & retail.

Mira

11/16/2018 01:51 PM

I think an Aventi Collective Eatery with an open space pool hall / darts / kids area would be a great draw for families along the 36 corridor

drpwsmith

11/16/2018 02:54 PM

Walking mall (Pearl St, 29th St Mall) with central parking area so that people could park in one spot, then stroll around to various smaller shops and local businesses

Malexander

11/16/2018 04:18 PM

Create a high density urban agriculture zone to grow local high value food and include aquaponics.

L.A.Cox

11/16/2018 05:00 PM

See previous.

nancybigelow

11/17/2018 08:41 AM

I liked the idea of a King Soopers Super store, but that's not going to happen.

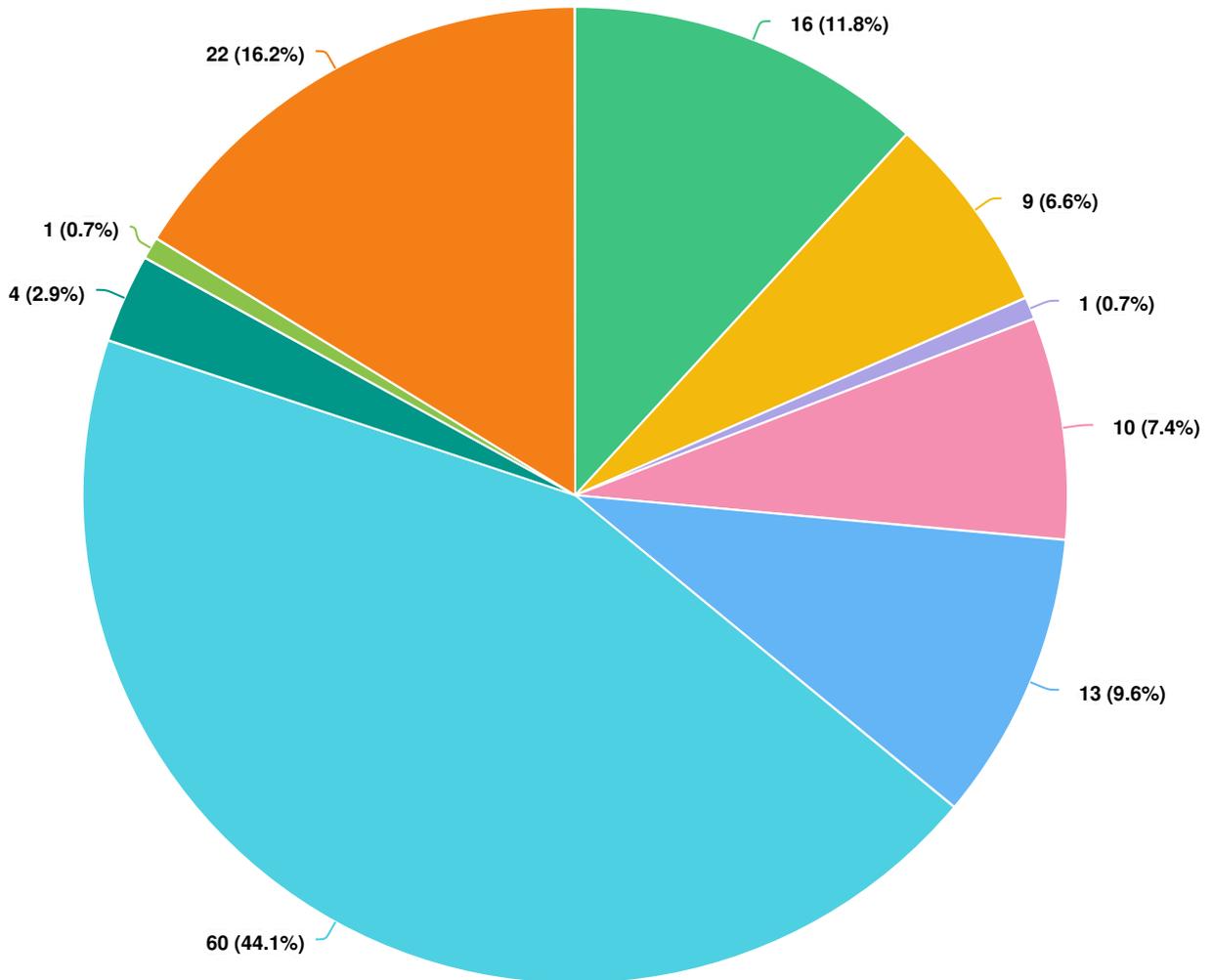
perk1000

11/17/2018 08:43 AM

it has to be businesses that can compete in an internet world

(137 responses, 6 skipped)

Q7 Which Neighborhood do you live in?



Question options

- Cherrywood I or II
- McCasin
- Centennial Pavilion Lofts or Centennial Heights
- Washington Park
- Meadows at Coal Creek
- Coal Creek, Coal Creek Ranch South, Coal Creek Ranch North
- Townhomes at Coal Creek
- Grandview Flatirons
- Other

(136 responses, 7 skipped)

Mayor Muckle read the proclamation and thanked Commissioner Domenico for her service to Boulder County and Louisville. Domenico thanked everyone for the honor and recognition.

### **LIFE IN LOUISVILLE PHOTOGRAPHY CONTEST AWARDS**

Katie Zoss, Cultural Arts & Special Events Coordinator, stated 38 Front Range residents submitted photographs depicting “Life in Louisville” for the 11<sup>th</sup> annual photography contest. These photos chronicle events and daily life in Louisville from January 1 to December 31, 2018 and will be added to the City’s archives to serve as a cultural reference for future generations. All images are available for public viewing on the City’s website. 30 finalist photos were selected and put on display at the Louisville Rec Center from January 25 to February 1, 2019. The public was invited to view the photos and to vote on the People’s Choice Award winner. Each of the winning photographs document a subject unique to Louisville and represents the history, community, and sense of place that makes Louisville a great place to live.

Council presented certificates to the winners of each category.

### **DISCUSSION/DIRECTION/ACTION – FINAL MCCASLIN PARCEL O DEVELOPMENT STUDY AND RECOMMENDATIONS**

Director DeJong stated this is a final report from the consultants for the McCaslin Boulevard Parcel O. The process began in 2018 with the following goals:

- Understand the McCaslin area’s potential for retail and commercial development and supportive uses that could foster new investment and development,
- Review the rules and regulations upon properties in the area that may be limiting its full potential for redevelopment,
- Understand and incorporate the property owner’s, tenant’s, and public’s input into development and redevelopment options for the area,
- Evaluate various development scenarios, that focus on retail and commercial uses with possible residential development only as a secondary use, that meet market potential and provide exceptional fiscal benefits for the City by meeting or exceeding past tax revenue performance for the area, and
- Provide recommendations for regulatory changes or other actions that could create more certainty for the development community to encourage redevelopment.

The McCaslin Area Development Study process and final recommendations should take into account the following principles of importance to the City:

- Identify emerging markets and retail trends that will result in market supported development scenarios and that ensure the corridor continues to serve as the City’s primary retail sales tax base.

- Identify and evaluate development restrictions and regulatory and policy barriers to redevelopment and investment in the corridor.
- Ensure sustainable long-term fiscal health of the City and economic development of the McCaslin corridor by ensuring new development has an exceptional fiscal benefit to the City.
- Reflect residents' desired community character for the corridor in evaluation of development scenarios and study recommendations.

Dan Guimond, City consultant from EPS, stated the summary of the market analysis shows market conditions of sales tax trends increasing, higher than when Sam's closed in 2010. Accounting for inflation, sales tax generation is about \$150,000 above 2009. 2013 – 2017 show nearly 6 % annual growth; building materials and eating/drinking account for the majority of sales tax revenues. The six hotels in the subarea provide nearly 15 percent of sales tax generated. Convenience and shopper's goods sales are driven by the major stores such as Kohl's and Safeway.

Retail findings:

- Demand for retail from new growth over the next 10 years is 150,000 square feet
  - McCaslin Subarea has historically captured 20% of new growth
  - Estimated demand is 30,000 square feet
- Role as regional destination is diminishing
  - Limited inflow of sales other than to a few big boxes
  - New stores to the north and east are shrinking trade area
- Opportunity to attract more neighborhood/community retail stores
  - The subarea captures a relatively small amount of sales for everyday retail goods
  - Examples include additional grocery, specialty foods, beer/wine stores
- Opportunity for uses that attract more visitors to drive demand
  - Entertainment and hospitality uses will attract most visitors
  - Place-making is an essential element for attracting visitors
  - Multifamily and office uses will generate demand but to a lesser degree

Non retail findings

- Residential
  - Strong demand continues as employment growth outpaces housing growth
  - Product type and density are related to supportable rents/prices
- Office
  - Rental rates in the subarea and larger trade area have been growing steadily since 2010
  - Average rental rates in the subarea are reaching point where new development is supportable
  - Parcel O office demand likely limited to medical and community services
- Hotel
  - Limited hotel construction in past decade in the trade area

- New project in Superior indicates renewed demand
- Additional hotel supportable in next 5 years

Danica Powell, City consultant from Trestle, summarized the regulatory framework. She reviewed the regulations, both private and public, including the Comprehensive Plan, the McCaslin Boulevard Small Area Plan, the General Development Plan from 1984 with amendments over the years, the Planned Community Zone District (PCZD) zoning designation, the private covenants that require unanimous agreement from all of the owners, and additional agreements between some lot owners and some warranty deeds which prevent certain uses.

She noted permitted uses by zoning and covenants, those that might be allowed, limited uses, and those prohibited uses per the covenants.

Powell reviewed the public engagement process including meetings with various community groups, pop up stands at shops in the area and use of online platforms. They shared information about the limited uses and why along with what is changing in the market. What they heard from the community was a need for mixed-income housing, continued support for big box stores, need for more community spaces, desire for unique food and beverage venues, and make the McCaslin area more walkable and connected.

They also got comments from NextDoor which was a broader area than the immediate neighborhood. Retail, restaurants and shopping were the highest requests. They tracked the neighborhoods submitting answers.

When asked what you would like to see given the limitations and market trends, the answers included hospitality, food beverage, clothing and book store, entertainment, gym/spa, service shops, residential, office and hotel. Experience based retail, service retail, and unique opportunities with a complement to downtown or complement to other facilities. There was a lot of alignment among the groups.

Matt Prosser, EPS, presented the Alternatives Analysis in response to the market analysis and the public input. Parcel O is 44.6 acres with three large lots. He noted the criteria based on the project goals include market reality/development feasibility, community values, and strong fiscal performance. He noted the existing benchmarks include market value currently and fiscal impact of Parcel O.

He reviewed the three alternatives for the site:

- Alternative 1 – Re-Tenant, repurpose and re-tenant the big boxes, will likely need to repurpose the sites to smaller uses. Types of opportunities would be retail: liquor, sporting goods, furniture, and non-retail: fitness, entertainment, medical office uses.
- Alternative 2 – Partial Redevelopment: redevelopment of one or more larger lots with some reuse of existing buildings. Combination of parcels could be involved.

Remainder redeveloped/repurposed for some retail, small hotel, small retail, and 245 multifamily housing units on 7 acres.

- Alternative 3 - Major Redevelopment: Comprehensive redevelopment of Parcel O into mixed use development with existing retailer and businesses integrated. Assumptions of some retail space, some entertainment or fitness use, small hotel, office space and 525 multifamily housing units on 15 acres.

Councilmember Maloney asked if the land value has gone up from the 2014 price and noted it is currently on the market for much more than that. Prosser stated it might represent what the value would be under redevelopment versus just a retail scenario.

Councilmember Stolzmann asked what is inducing the demand for retail in the scenarios and how does development in Superior affect these options.

Prosser reviewed the summary table of the different alternatives. He reviewed the market support and challenges in each alternative:

- Alternative 1 – demand for larger regional retailers is limited, buildings not conducive to retail requirements, covenants do not support some uses.
- Alternative 2 – mix and amount of uses supportable, substantial demand for hotel and multifamily uses, General Development Plan (GDP) and private covenants need to be changed.
- Alternative 3 – mix and amount of uses supportable over a longer 5-10 year period, allows for better orientation of McCaslin Boulevard, assembly of all properties presents a major challenge and GDP and covenants need to be changed.

Financial Feasibility:

- Alternative 1 - residual land value = \$7.40 per sf, leasing vacant spaces may take longer than desired; ask price for Lot 2 limits redevelopment feasibility.
- Alternative 2 – most financially feasible, residual land value = \$10.94 per sf, hotel and multifamily provide highest land value, mix of uses increases attractiveness and value.
- Alternative 3 – residual land value = \$10.12 per sf, hotel and multifamily provide highest residual land value, office produces the lowest residual land value, assembling the parcels could be challenging and cost may make such a project infeasible.

Fiscal Impacts:

- Alternative 1 produced \$17.9 million over 20 years or \$895,000 per year.
- Alternative 2 produced \$18.5 million over 20 years or \$925,000 per year, strongest fiscal benefit.
- Alternative 3 produced \$14.8 million over 20 years or \$740,000 per year, model shows residential uses trigger marginal cost demand to city services.

Councilmember Stolzmann asked why alternative 2 would not support a marketplace concept. Prosser stated it might work but would be more challenging to try to come up with uses that would produce more revenue than cost. These are generally organically driven and it is a potential space for something like that but need an active property owner to work with and driven by either developer or property owner. It would be a challenge to produce the returns to take the financial risk.

Councilmember Stolzmann asked in Alternative 2 what the limitations are on a hotel there today. If it is allowed why has no one built one here. Prosser stated perhaps the owner doesn't want to take on redevelopment of the remaining part of the site. Director Zuccaro stated the current height limit is 35 feet in the design guidelines and might affect that use. Zoning allows hotels, but there is a financial feasibility issue and height issue.

Councilmember Stolzmann asked if there has been any interest with the current owners with any of these alternatives. Prosser stated there is some interest but they are interested in community input and more flexibility for some different alternatives.

Councilmember Maloney noted the current hotels are flattening in their taxes and asked if it is at saturation. Prosser stated from their data, hotels are growing and contributing to the sales tax collection in the area. Hotel growth is cyclical and there is some renewed demand for hotels.

Councilmember Loo asked if we have the population that is needed to make a marketplace type use work. Prosser stated there seems to be the community support for it, there is demand, but not sure about the density needed for a marketplace. These take a lot of risk. There needs to be an owner or developer passionate about this type of project. The City may need to incentivize such a use.

Ms. Powell noted the owners have said they want predictability in the process. She added marketplace ideas are getting smaller and will likely need to be part of a larger environment.

Powell reviewed the Community Support sections.

- Alternative 1 – showed limited community support for additional big boxes, does not achieve desired pedestrian friendly, walkable environment; lacks local, unique retail environment and experiences.
- Alternative 2 – entertainment and retail supported; limited support for big boxes, some community amenities can be added but remains auto-oriented; does not fully support desired environment.
- Alternative 3 – meets desire for entertainment and experience based uses, major site design can incorporate desired community amenities and connections; supports a diverse range of uses.

Councilmember Leh asked what the community support was for residential development in Parcel O. Powell stated residential did come up in a mixed use setting, particularly

senior housing, downsizing housing, affordable housing. Not much support for large standalone apartment complexes.

Mayor Pro Tem Lipton asked what is the role of housing in making this redevelopment successful. He asked how the number of units was determined for the overall success of the redevelopment. Prosser stated there is no perfect answer how much is needed to support the retail. Dwelling units in the redevelopment drive the financial feasibility; adds vitality to the area at times not currently being seen. Residential creates demand at later hours, throughout the day, on weekends, and diversifies the demand times.

Mayor Pro Tem Lipton asked given the fact Superior and Broomfield are adding housing units, how does this small number make this work. Prosser stated it is the integration with other uses that makes it financially feasibility; it is a desired use that supports other uses and vitality. Finding ways to diversify the users in the area can help make the site more attractive to retailers.

Mr. Guimond added the residential use is at a minimal increment for a developer to get it to operate at a reasonable level.

Guimond summarized the alternatives and next steps. He felt the big boxes would have been filled by now if it were not for the GDP and the covenants. He summarized the Alternative Analysis:

- Private covenants are likely a barrier in all scenarios and need to be addressed
- Re-tenanting may be achievable but does not support community desire
- Partial re-development is the most market supportable and a fiscal performer if the GDP and covenants are addressed but does not fully support community desires
- Major redevelopment meets the community desires but would occur over time

Recommended Implementation Steps:

- Modify the GDP and development agreement to allow for greater variety of uses, multifamily housing and greater density on site as incentive for retail development
- Provide an additional density allowance and greater allowance for non-sales tax generating uses within redevelopment projects that provide community amenities or enhance connectivity
- Modify focus on supporting and growing retail base to include focus on community-oriented uses
- Work with Parcel O property owners to modify the CCRs to allow for an expanded mix of retail and non-retail uses
- Invest in public improvements and amenities that allow Parcel O to succeed in an evolving commercial market

Public Comments

Ryan Atkin, lives in Superior and works for Real Capital Solutions on McCaslin Boulevard, stated the marketplace concept is cool, but the challenge here is unique because there is not the density of those locations. Within one mile of Stanley Marketplace there are 30,000 people but here it would be 7,600 and going further out there is still the density issue. He stated housing projects would work well but should consider condos or townhomes which would be desirable. This would give people the chance to get on the housing ladder and would be less expensive than Boulder. This is a great place to live, housing would be a good use at this location. We need a comprehensive solution.

Jeff Sheets, Koelbel and Company, 5291 E. Yale Avenue, stated the market is not filling the location so we need to consider the retail market is dynamic and is changing. This area is no longer a regional draw as it was 15 years ago; there is too much competition. We are left with community retail which is not the size and scale of what we have here. Carving up the boxes will be a challenge. His company will actively market the Kohl's store but trying to get a large store will be difficult. Alternative 1 is status quo, Alternative 3 is not likely achievable. That leaves Alternative 2. Louisville needs to take the lead in the GDP amendment, not the developers. The owners will take the lead on the private covenants because they are outdated.

Councilmember Leh asked what kinds of uses Sheets would like to see. Sheets stated a residential component would be integrated. That is what business parks are all doing. We need to make it a community draw. Other uses could be medical, a hotel, or variety of other uses. It will take the City and the private land owners to make this work. We don't have the density to do a large food hall; maybe a smaller one could make sense.

Cindy Bedell, 662 West Willow Street, stated she attended many Small Area Plan meetings and wondered why Council is considering scenarios that weren't considered in the Small Area Plan when the area is now producing sales tax. High density residential was taken out of the Small Area Plan because there was no community support. Livable small town feel does not support taller buildings. She asked what the occupancy rate is of other apartments as she had heard it is low.

John Pino, lives in Superior and works at Real Capital Solutions, stated retail is not dying it is just changing. He stated it is clear what existed there no longer functions. He also agreed challenges are low density, competition, poor access and visibility. He stated Superior is already challenged to fill its new retail because of the lack of density. A marketplace would be great but it would need to be smaller. A mix between Alternatives 2 and 3 is more viable with a strong residential component. There needs to be a good mixed use environment but retail there will be smaller than what it is currently as the numbers don't pencil out. There are a lot of these types of underused areas across the country.

Councilmember Maloney stated Sam's has been gone for 9 years, Kohl's is leaving, and this corridor is important for our long-term economic sustainability. It is time to do something as a Council. Council asked for this study and the goals have been met.

Councilmember Maloney recommended moving ahead with a discussion of Alternative 2. It is not the first choice to have residential, but we have unmet needs for senior housing and multi-income housing. We can address the GDP but will need the property owners to help with the covenants. There are a number of things in the fiscal analysis that need to be clarified and refined to clearly understand the fiscal impacts.

Mayor Muckle stated what we have been doing is not working. He wanted to be clear we have tried very hard to re-tenant the Sam's club; have talked to many tenants and developers. There is no evidence this is going to work as we have been doing it. We need to take a new tack on this. He stated he was not a huge fan of additional residential, but it is quite clear we likely need some residential to get this moving. We need to look at the GDP to give better options for a developer to get this moving. Supported a GDP amendment during the next few months.

Councilmember Stolzmann asked if a GDP amendment would require an ordinance. Director Zuccaro stated yes.

Councilmember Stolzmann stated we have a lot of input from the community for the Small Area Plan that is not in line with some of these alternatives. She stated her concern is moving forward with a GDP amendment does not solve the issue of the asking price and the ability to tenant it with something that would perform; she would like to do something to meet expectations of both the owner and the City. She thinks many of the problems with re-tenanting is due to the covenants. She would not like to throw out Alternative 1, but would like to keep 1 and 2, perhaps a hybrid. She would like the Finance Committee to explore fiscal options. She is concerned the path forward does not address the covenants and the imbalance between what the market will bear and the sales price. She would like to explore some of the barriers to re-tenanting such as outdoor sales limits.

Councilmember Leh stated we are trying to find the intersection of permitted uses, market analysis, and public input. The community doesn't want high density housing, perhaps senior or patio home uses would work. There is community concern there is nothing to help activate that area. The market analysis is sobering to fully understand we are not a regional draw and our density is never going to allow for that. City Hall and the Council don't drive the development, these are larger market forces and the covenants are a real impediment. We have to take some action here to help get something to happen; we can't wait for the market. We have to find something fiscally sustainable for the long haul. This corridor supports City services and we can't pretend we don't need it. Alternative 2 is a path or part of the path.

Mayor Muckle moved to direct staff to initiate a GDP amendment to allow for community supported uses allowed for in Alternative 1 or 2 and working with property owners on the covenants. Councilmember Loo seconded.

Mayor Pro Tem Lipton stated Parcel O has been an issue since 1984. Things are different now than in 1984 and those aspirations have changed. The market reality is much different than the planning that got us here. What we do here sends a message to the whole corridor which is critical to our long-term success. What we have been doing isn't working; he would like to remove Alternatives 1 and 3. We need to find something that works in the next 2-3 years. He suggested Alternative 2 or something very close to it to give us a roadmap to understand what actions we need to make get it moving. Alternative 2 or something similar is the only practical option.

Mayor Muckle stated he agreed. The only part of Alternative 1 that might work is an option for re-tenanting that might work with the removal of some covenants or changes to the GDP. Mayor Pro Tem Lipton felt working with Alternative 2 might allow for some of that as well.

Mayor Muckle repeated the motion: staff to initiate a GDP amendment to allow for the market and community supported uses shown in Alternative 2 leaving Alternative 1 as an option. Mayor Pro Tem Lipton offered friendly amendment to direct staff to initiate a GDP amendment to allow for the market and community supported uses shown in Alternative 2. Mayor Muckle noted the motion would also include directing staff to begin working with the owners on the covenants. Councilmember Loo agreed with amendment.

Councilmember Stolzmann would like to include tenanting not currently allowed in the GDP. Why not explore those options and not take Alternative 1 off the table.

Mayor Muckle restated the motion to direct staff to initiate a GDP amendment to allow for the market and community supported uses shown in Alternative 2 and to work with the property owners to modify private covenants.

Councilmember Stolzmann offered a friendly amendment to say within the alternatives. Mayor Pro Tem Lipton seconded for purposes of discussion.

Mayor Pro Tem Lipton asked Mayor Muckle to reframe the motion to somehow not eliminate the uses under Alternative 1.

Mayor Muckle made a motion to change it to include within the alternatives.

**Vote:** Motion failed 1 -5; Council Member Stolzmann voting yes

Members voted on the original motion with Mayor Muckle adding without precluding re-tenanting. Councilmember Loo accepted the change.

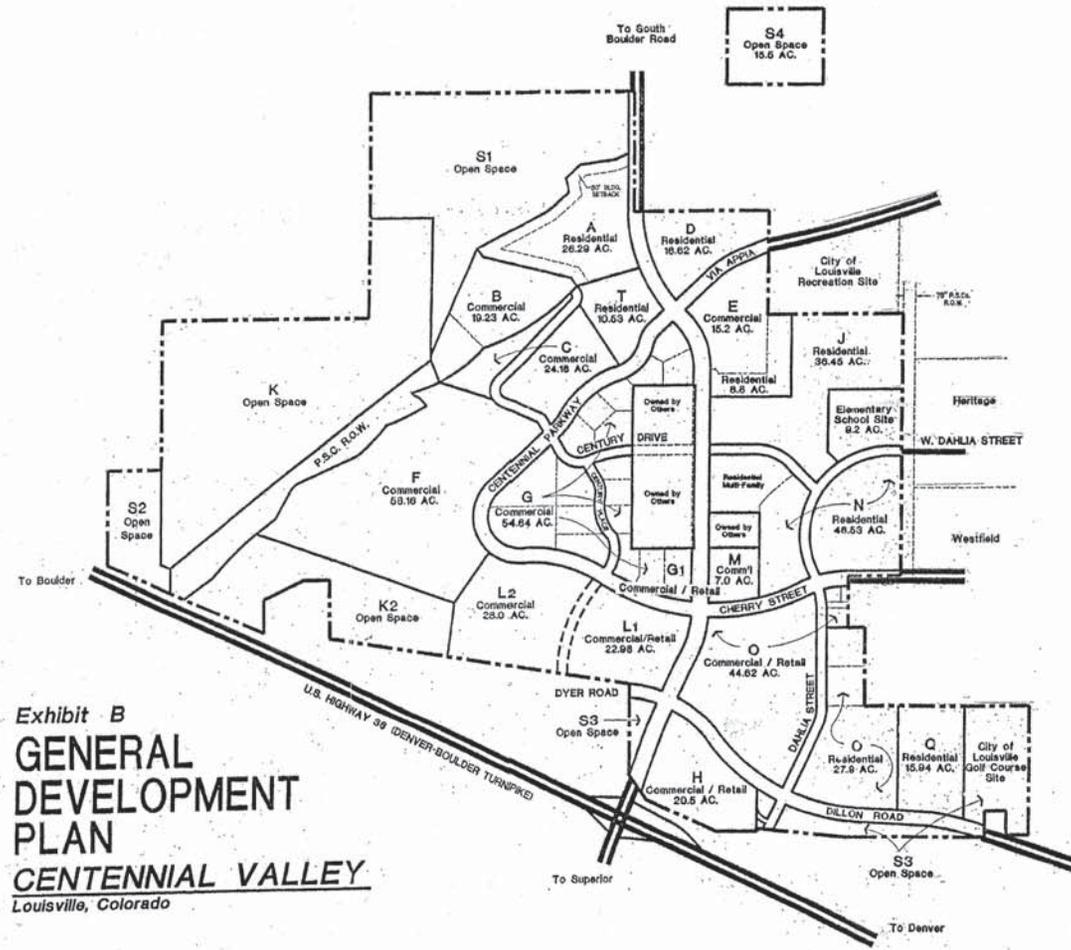
**Vote:** Motion passed 5-1; Councilmember Stolzmann voting no.

**ORDINANCE NO. 1769, SERIES 2019 – AN ORDINANCE AMENDING TITLES 5 AND 17 OF THE LOUISVILLE MUNICIPAL CODE CONCERNING MEDICAL AND RETAIL**

**R**  
Residential  
3.69 AC.

**S5**  
Open Space  
28.89 AC.

**S4**  
Open Space  
15.5 AC.



**Exhibit B**  
**GENERAL DEVELOPMENT PLAN**  
**CENTENNIAL VALLEY**  
Louisville, Colorado

Entered and Amended  
September 2007

DESIGNATED USES	PLANNING AREAS	ACREAGE	AVERAGE DENSITY	DWELLING UNITS	GROSS BUILDING AREA
RESIDENTIAL					
SINGLE FAMILY	A D E J N Q R T	155.48	3.92	609	-
MULTI-FAMILY	N O	37.29	13.70	511	-
<b>TOTAL RESIDENTIAL</b>		<b>192.75</b>	<b>6.81</b>	<b>1120</b>	<b>N/A</b>
NON-RESIDENTIAL					
RETAIL	H L M O G1	62.98	.20	-	522,259 SF
RESEARCH / OFFICE	B C F G L	184.10	.36	-	2,888,400 SF
MIXED USE (EXCLUDING RESIDENTIAL)	O E H M	47.39	.38	-	477,500 SF
<b>TOTAL NON-RESIDENTIAL</b>		<b>294.56</b>	<b>.31</b>	<b>N/A</b>	<b>3,888,159 SF</b>
<b>TOTAL DEVELOPMENT</b>		<b>487.31 AC.</b>	<b>N/A</b>	<b>1120</b>	<b>3,888,159 SF</b>
OPEN SPACE					
OPEN SPACE PARCELS K, K2, S1-S5		295.01			
ARTERIAL ROADS		90.48			
<b>TOTAL OPEN SPACE</b>		<b>385.47</b>			
SCHOOL SITE		9.22			
<b>TOTAL LAND</b>		<b>882.00 AC.</b>			

USE FOR EACH PARCEL ALLOWABLE UNDER DESIGNATED USES (1)

PARCEL L	CORPORATE USER / RETAIL / MIXED USE
PARCEL B C F G	RESEARCH / OFFICE / RETAIL / MIXED USE / COMMERCIAL
PARCEL M	RETAIL / OFFICE
PARCEL O	MIXED USE / RETAIL
PARCEL H	HOTEL / MIXED USE / RETAIL
PARCEL N O	TOWNHOUSE AND MULTI-FAMILY
PARCEL A D E J N Q R T	SINGLE FAMILY DETACHED
PARCEL K - K2	OPEN SPACE
PARCEL S1 - S5	OPEN SPACE

(1) SPECIFIC DESCRIPTIONS OF PERMITTED LAND USES AND DENSITIES FOR EACH PARCEL IDENTIFIED ON THE GDP MAY BE FOUND IN THE CENTENNIAL VALLEY AMENDED AND RESTATED DEVELOPMENT AGREEMENT AS AMENDED.

**OWNERSHIP SIGNATURE BLOCK**  
By signing this PUD, the owner acknowledges and accepts all the requirements and intent set forth in this PUD. Witness my four hand(s) seal(s) this 4<sup>th</sup> day of August, 2015.  
*[Signature]*  
Owner Name and Signature  
*[Signature]* (Notary Seal)  
Notary Name (print)  
*[Signature]*  
Notary Signature  
My Commission Expires April 21, 2017

**PLANNING COMMISSION CERTIFICATE**  
Approved this 9 day of JULY, 2015 by the Planning Commission of the City of Louisville, Colorado.  
Resolution No. 26 Series 2-15

**CITY COUNCIL CERTIFICATE**  
Approved this 26 day of JULY, 2015, by the City Council of the City of Louisville, Colorado.  
Ordinance Resolution No. 1696, Series 2015  
*[Signature]* (City Seal)  
Mayor Signature  
*[Signature]*  
City Clerk Signature

**CLERK AND RECORDER CERTIFICATE**  
(COUNTY OF BOULDER, STATE OF COLORADO)  
I hereby certify that this instrument was filed in my office at        o'clock,        M., this        day of       , 20      , and is recorded in Plan File       , Fee        paid,        Film No.        Reception.  
  
Clerk & Recorder  
  
Deputy

Sec. 17.72.090. - Commercial and office.

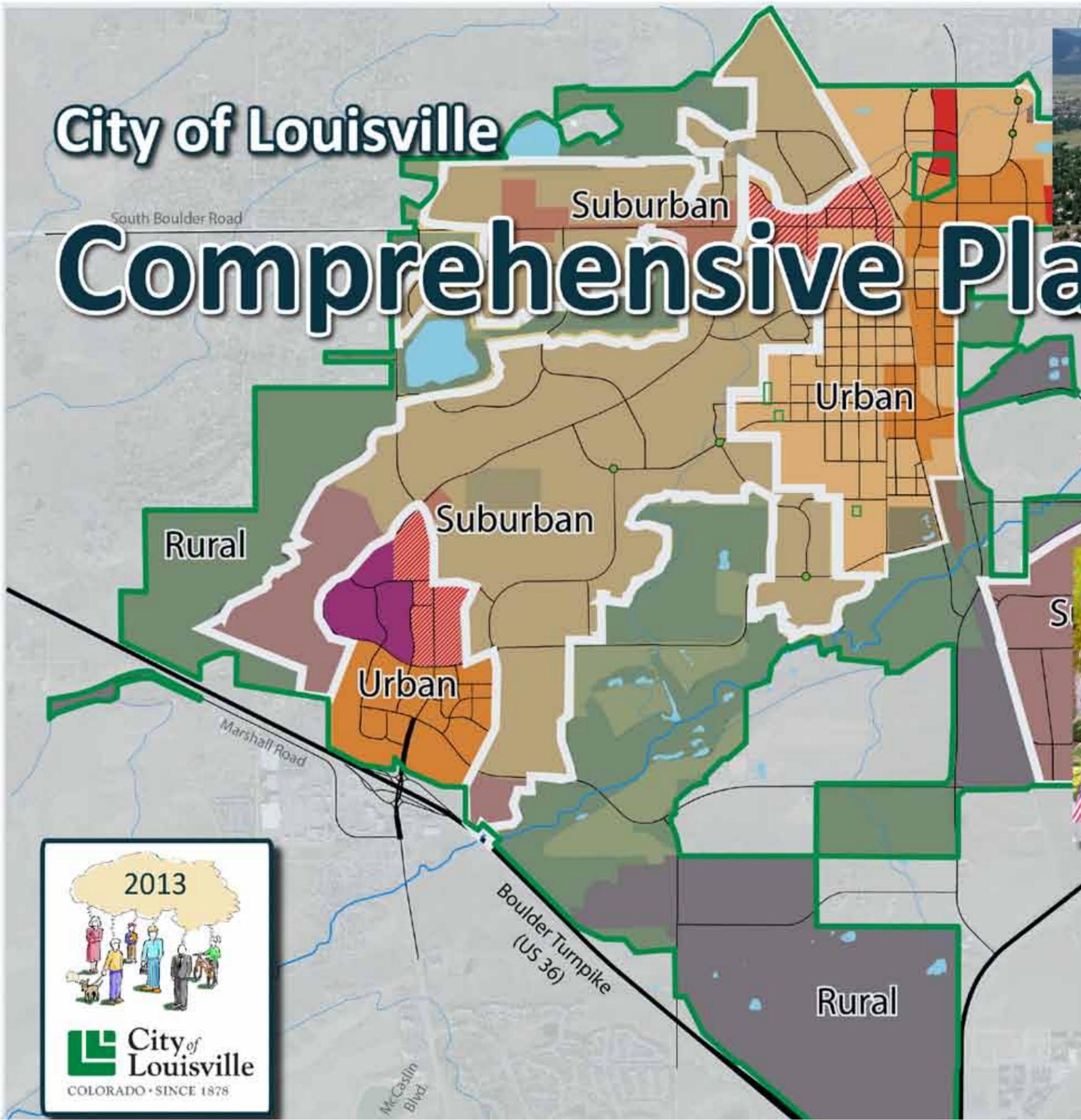
- A. *Generally.* This section is intended to promote the development of well-planned shopping centers and facilities that provide a variety of shopping, professional, business, cultural and entertainment facilities designed to create an attractive and pleasant shopping atmosphere.
- B. *Uses permitted.* The following commercial and noncommercial uses may be permitted within any planning area designated "commercial" on the adopted planned community development general plan:
1. Any retail trade or service business;
  2. Professional, business and administrative offices;
  3. Motels and hotels;
  4. Cultural facilities, such as museums, theaters, art galleries and churches;
  5. Pedestrian plazas and pedestrian ways, including such amenities as outdoor art exhibit facilities, statuary, fountains and landscaping features;
  6. Outdoor specialty uses, including sidewalk cafes and outdoor marketplaces to provide unique congregating places for sales and shopper interests;
  7. Recreational facilities, both indoors and outdoors, such as ice skating and roller skating rinks which may be designed as integral parts of a center;
  8. Restaurants, both indoor and drive-in types, food-to-go facilities, sidewalk cafes;
  9. Hospitals and medical clinics;
  10. Transportation terminals, parking lots and parking buildings;
  11. Animal hospitals and clinics;
  12. Automobile service stations, subject to prescribed performance and development standards;
  13. Nursing and rest homes;
  14. Small and large child care centers;
  15. Financial offices, including banks and savings and loans;
  16. Accessory structures and uses necessary and customarily incidental to the uses listed in this section;
  17. Governmental and public facilities;

18. Research/office and corporate uses, and facilities for the manufacturing, fabrication, processing, or assembly of scientific or technical products, or other products, if such uses are compatible with surrounding areas. In addition, such facilities shall be completely enclosed and any noise, smoke, dust, odor, or other environmental contamination produced by such facilities, confined to the lot upon which such facilities are located and controlled in accordance with all applicable city, state, or federal regulations;
19. Other uses as established by the city council as found to be specifically compatible for commercial and office planning areas.
20. Limited wholesale sales as defined in section 17.08.262 of this title are allowed as a special review use.
21. Retail marijuana stores, retail marijuana testing facilities, medical marijuana centers and medical marijuana testing facilities, except the foregoing uses are not allowed in any mixed use lot that includes a residential use.
22. Reserved.
23. Health or athletic clubs, spas, dance studios, and fitness studios.

(Code 1977, § 17.72.090; Ord. No. 806-1983, § 1; Ord. No. 925-1987, § 1; Ord. No. 1615-2012, § 5, 6-19-2012; Ord. No. 1650-2013, § 6, 12-17-2013; Ord. No. 1665-2014, § 6, 5-20-2014; Ord. No. 1716-2016, § 4, 3-8-2016; Ord. No. 1754-2018, § 5, 2-6-2018; Ord. No. 1769-2019, § 36, 2-5-2019)

# City of Louisville

# Comprehensive Plan



2013

City of Louisville  
COLORADO • SINCE 1878



Adopted  
May 7, 2013  
Resolution 18, Series 2013



“Whatever you can do or dream, you can begin it.  
Boldness has genius, power, and magic. Begin it now.”

*- Johann Wolfgang Von Goethe*

## CITY COUNCIL

Bob Muckle - Mayor  
Hank Dalton - Mayor- Pro Tem (Ward 3)  
Emily Jasiak - (Ward 1)  
Jay Keany - (Ward 1)  
Susan Loo - (Ward 2)  
Frost Yarnell - (Ward 2)  
Ron Sackett - (Ward 3)

## PLANNING COMMISSION

Jeffrey Lipton - Chairman  
Chris Pritchard - Vice Chairman  
Ann O'Connell - Secretary  
Cary Tengler  
Jeff Moline  
Scott Russell  
Steven Brauneis

## CITY BOARDS AND COMMISSIONS

Board of Adjustment  
Building Code Board of Appeals  
Business Retention & Development Committee  
Cultural Council  
Finance Committee  
Golf Course Advisory Board  
Historic Preservation Commission  
Historical Commission  
Horticultural & Forestry Advisory Board  
Housing Authority  
Library Board of Trustees  
Local Licensing Authority  
Open Space Advisory Board  
Revitalization Commission  
Sustainability Advisory Board  
Youth Advisory Board

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Downtown Business Association  
Centennial Valley Business Association  
Colorado Technology Center Metropolitan District  
Citizens Action Committee  
Centennial Heights West HOA

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# Introduction

Louisville, Colorado from its beginnings as a mining town in 1878 to today has become one of the most livable small towns in the United States. Louisville's evolution will continue to be influenced by changes in environmental factors; economic conditions; social and demographic profiles; and physical influences (i.e. US 36 changes) occurring in Louisville, neighboring jurisdictions and the greater Denver metropolitan region.

Clearly, the City's leaders, residents, property owners, and businesses have done an exceptional job. The positive results of the City's Citizen Survey place Louisville in the highest echelon of municipalities in the United States for citizen satisfaction. However, cities and their environments do not remain static and Louisville's opportunities and challenges in maintaining a high quality of life are continually evolving and transforming.

## Purpose

The Comprehensive Plan is the City's tool intended to guide, integrate and align governing regulations, infra-

structure investments, and City services with community values, needs and civic priorities. Louisville's Comprehensive Plan provides the citizens a voice in envisioning and guiding the City's continual evolution.

The Comprehensive Plan is the official statement of the City's Vision and corresponding Core Community Values. The policies contained within the Plan cover a broad range of subject matter related to the long-range (20 year) physical growth of the City. Nine elements function to complement each other in directing future policy decisions towards implementing the Community's Vision and preserving vital community attributes and service levels. These include:

1. Community Form, Character, and Urban Design
2. Neighborhoods and Housing
3. Transportation, Mobility, and Accessibility
4. Community Heritage
5. Parks, Recreation, Trails and Open Space (reference Parks Recreation Open Space and Trails

6. Master Plan (PROST -2011))
7. Municipal Infrastructure
8. Energy
9. Community Services
10. The Economy and Fiscal Health

## Background

Louisville's first Comprehensive Plan was adopted in 1973 when the City had only 2,600 residents, and was then updated in 1975. New Comprehensive Plans were adopted in 1983 (updated in 1989) and 2005 (updated in 2009). The 2012 Comprehensive Plan update will further strengthen the Comprehensive Plan in two key ways:

### 1) Better meet today's unique challenges that were not factors in 2005 and 2009.

Several conditions that influence the City's ability to implement the Community's Vision have changed, or emerged. These conditions include:

**a. Redevelopment vs. new development** – The General Development Plan (GDP) approval for Phillips 66 and the Planned Unit Development (PUD) approval of North End and Steel Ranch entitle the City's last large vacant parcels for development. Future change in Louisville will come almost exclusively in the form of redevelopment. Previous Comprehensive Plans noted the shift in growth patterns; but, they did not provide the necessary tools for the community to adequately review, discuss, and respond to inevitable future infill development requests.

Development issues and concerns of an expanding greenfield community are quite different than those of a redeveloping infill community. Louisville's previous policies generally align with those of an expanding greenfield community. Previous policies focused on measuring, accommodating and mitigating the impact of new development on the capacity of the City's infrastructure, services and quality of life.

In a redeveloping infill community, the capacity of community infrastructure and services is still a concern. However, efficiency—the ability to achieve economies of scale by using existing infrastructure to serve existing

customers at a lower unit cost to each customer—also becomes a consideration. Because infill development can positively or negatively affect existing land uses, understanding how the design, physical character and other aspects of an infill project affect the adjacent neighbors and the City as a whole is critical to determining how the project will impact the existing quality of life.

This Comprehensive Plan provides not only the flexibility and guidance to address redevelopment in the HWY 42 Revitalization District and Downtown, but throughout the City as well. The Plan provides clear policies to guide redevelopment as the McCaslin Boulevard and South Boulder Road corridors age and as infill residential rehabilitation pressures continue to increase in all established residential neighborhoods.

**b. Regional traffic and City transportation policy** – As new development continues in surrounding jurisdictions, Louisville will experience a decreasing share of local traffic on its street network. Future transportation investments in the City will be challenged to accommodate demands for regional traffic mobility and at the same time address livability and economic viability concerns within Louisville.

Louisville's transportation policies and regulations were designed for an expanding community, and do not adequately address the realities of a landlocked and redeveloping City. The City's transportation regulations have begun to shift away from a focus on regional mobility concerns designed to accommodate vehicular traffic, roadway capacity, and safety features for higher speed environments. Louisville's new transportation priorities will be aligned with multimodal transportation, roadway efficiency, property access, and safety features for slower speed environments.

This Comprehensive Plan recognizes the inherent conflicts between regional mobility needs, local property access and quality of life requirements, and aims to provide a balance between community and transportation policies which effectively guide future investments within Louisville.

Please circle the number that comes closest to your opinion about the quality of life in Louisville:					Total	National comparison	Front Range comparison
	Excellent	Good	Fair	Poor			
How do you rate Louisville as a place to live?	78%	20%	2%	0%	100%	Much above	Much above
How do you rate Louisville as a place to raise children?	77%	20%	2%	0%	100%	Much above	Much above
How do you rate the overall quality of life in Louisville?	67%	30%	2%	0%	100%	Much above	Much above
How do you rate your neighborhood as a place to live?	62%	33%	5%	0%	100%	Much above	Much above
How do you rate Louisville as a place to retire?	51%	35%	11%	3%	100%	Much above	Much above
How do you rate Louisville as a place to work?	37%	37%	19%	7%	100%	Much above	Much above

\* Source – City of Louisville Citizen Survey – May 2012



c. **The economy and realities of retail growth** – The downturn in the economy since 2008 and the new realities of regional retail competition, access/visibility of retail sites and new retailing practices require more community based approach to economic development and future sales tax revenues.

Revenue generating regional retail development has moved into adjacent communities of Broomfield, Superior, and Lafayette. Future retail growth trends suggest a continued consolidation and shift in retail away from Louisville, particularly toward communities along the US 36 and the I-25 North corridor. The McCaslin Boulevard Corridor south of Cherry Street remains attractive to regional retail opportunities. However, the form of regional retail has changed significantly since the early 1990s and the original Centennial Valley development approval.

This Comprehensive Plan addresses the evolving pattern of regional retail opportunities near US 36 and the general shifting of regional retail opportunities to formulate guiding policies which ensure the City's future fiscal and economic health.

d. **Neighborhood issues and concerns** – Previous Comprehensive Plans have been silent on neighborhood issues and concerns. The City's residential housing stock is aging and rehabilitation issues within residential areas challenge City resources on a daily basis.

Outside of the Old Town Overlay District, the City's residential areas are governed by independent planned unit developments (PUDs). While these PUDs are comprehensive, they are not equipped to assist the City in providing coherent neighborhood plans and strategies for issues such as: housing rehabilitation, cut-through traffic, safe routes to school, aging infrastructure, and monitoring and maintenance of community services.

This Comprehensive Plan outlines a new city-wide neighborhood planning policy with specific planning areas to ensure proper attention is given to the City's unique and diverse neighborhoods.

## 2) *Better clarify the Community's Vision in terms of community character and physical design to provide the public and staff with a common language and tools to review and discuss redevelopment requests*

The City of Louisville is a diverse community with a number of unique character areas. Other than Downtown and Old Town, the previous Comprehensive Plans did not identify, differentiate, or celebrate, these unique character areas as they relate to the Community Vision.

Clearly, South Boulder Road and its proximity to adjacent land uses are very different than Centennial Valley and its adjacent land uses. The neighborhoods near Davidson Mesa are different from those near Fireside Elementary. The Comprehensive Plan now clarifies and celebrates the differences and outlines policies which guide recommended changes in the Louisville Municipal Code (LMC) that will regulate the form of buildings and community character in each of Louisville's neighborhoods and different commercial districts.

### How to Use this Plan

The Comprehensive Plan is a conceptual guide to review and take action on land use initiatives in the City of Louisville. The document is divided into five sections.

- The first section, the Process, describes the public involvement and community outreach efforts used to generate the Comprehensive Plan.
- The second section, the Planning Context, describes the current conditions of the City along with the key trends and challenges facing the City.
- Sections 3 and 4, the Vision Statement and Core Community Values and the Framework, identify the Community Vision, a Conceptual Land Use Framework and specific policies for the structural elements of the Comprehensive Plan.
- The final section of the document, **Policy Alignment and Implementation**, outlines the City's administration and implementation of the Comprehensive Plan.

**It is important to note that the Comprehensive Plan is not regulatory.** It is an advisory document. Since the Comprehensive Plan does not have the force of law, the City must rely on other regulatory measures to implement the Comprehensive Plan. The Louisville Municipal Code (LMC) is the primary regulatory tool available to the City. Specifically, Buildings and Construction (Chapter 15), the Louisville Subdivision (Chapter 16) and Zoning Ordinances as adopted (Chapter 17) and the zoning map of the City. Additional documents include Small Area Plans, Neighborhood Plans, the Annual Operating and Capital Budget and the Capital Improvement Program.

The LMC chapters on Buildings and Construction, Subdivision, Zoning ordinances, along with the official zoning map control the allowed uses of land as well as preservation and construction requirements and design and bulk standards. The official zoning map reflects a number of zone districts which govern where uses by right and uses by special review may be located. The Subdivision and Zoning ordinances should correspond to the goals and policies of the Comprehensive Plan to ensure that incremental development decisions reflect the Community Vision. All land use applications are reviewed for conformance with the Louisville Municipal Code. All annexations and rezonings are reviewed for conformance with the Louisville Municipal Code and conceptual consistency with the Comprehensive Plan.

The Framework Plan is a map which reflects preferred land use patterns and community character zones for specific geographical areas. The designations are illustrative and are not intended to depict specific uses, densities, or yard and bulk standards for parcel specific locations.

Uses, densities, and yard and bulk standards for individual parcels are conceptual and will be refined in small area and neighborhood plans and implemented through changes to the Louisville Municipal Code.

Louisville Municipal Code Section 17.62.050 (Time for review) states "A review and updating of the comprehensive plan shall occur at least every four years. Ad-

ditional reviews of the comprehensive plan may occur more often as necessary". A Plan review provides the City an opportunity to update the Community Vision and Core Community Values Principles and Policies. Based on this principle, the next review of the Plan shall occur in 2017.



# The Process

The process of drafting this Comprehensive Plan represents the results of the collaborative efforts of community stakeholders: residents, business owners and operators, public and private organizations in the City, as well as the City Council, Planning Commission, and all of the City's Citizen boards and commissions. This Comprehensive Plan Update was developed by City staff following a five-phase process of Desire, Discovery, Design, Discussion, and Documentation.

The first phase of work, **Desire**, focused on updating the City's Vision Statement and corresponding Core Community Values to guide the entire process. The second phase, **Discovery**, allowed City staff and its consultants to discover the functioning of the community, its economic variables, physical characteristics, and regulatory framework. The third phase, **Design**, brought the Planning Team and the community together to draft specific alternative physical framework options for consideration. The fourth phase of work, **Discussion**, allowed City staff to test and refine each alternative and facilitate a community dialog to identify a preferred framework plan which best represents the City's Vision

Statement and Core Community Values. The last phase, **Documentation**, allowed City staff to finalize the document and outline specific implementation strategies.

## Outreach

The City utilized an extensive community outreach process for the Comprehensive Plan. Staff participated in and facilitated over 60 public meetings along with a continuous on-line discussion through the [www.EnvisionLouisvilleCO.com](http://www.EnvisionLouisvilleCO.com) web-site with over 160 participants. The complete outreach effort involved over 500 participants and specifically included:

**Envision Louisville CO – Interactive Website** - The City engaged MindMixer, an Omaha, NE firm, to develop, support and maintain a website capable of hosting web-based town hall meetings promoting an exchange of information and ideas related to the 2012 Comprehensive Plan Update. Over one hundred sixty (160) participated in the on-line discussions.

The first 90 days of the on-line discussions focused exclusively on the Louisville Vision Statement and the

Community Core Values. The second 90 days focused on the Framework Plan and concerns related to specific areas within the City. The final 90 days of conversations related to the drafting of specific elements within the Comprehensive Plan. This simple platform generated a broad audience, a more inclusive dialog and effective community participation.

**Community Design Charrette & Public Meetings** - A series of public meetings and workshops were held to engage the community on key decision points. The public meeting process included:

**Public Kick-off - Vision Statement and Core Community Values Meeting – March, 2012 (DESIRE)** - A public kick-off meeting was held as an introduction of the planning process and included a "post-it" note exercise to gather public ideas and input related to the City's Vision Statement and Core Community Values. During the exercise attendees were asked to write down what they value the most in the City.

**Community Design Charrette and Open House – August 27-30, 2012 (DESIGN)** - A four-day design workshop was organized as a series of meetings and presentations open to the public to develop and refine alternative Framework Plans which would guide the City's growth for the next 20-years. The charrette started with a public presentation and round table discussions. The discussions were designed to facilitate the public in generating alternative Framework Plans. The second day of the charrette was open to the public and concluded with an evening public meeting which allowed the public to refine specific Framework Plan alternatives generated the first night. Day three was open to the public as alternative Framework Plan options were presented to and refined by the City's senior management team. The charrette concluded on the fourth day with a public presentation, where the results of the four-day effort were presented and a community dialog was initiated to identify a preferred 20-year framework Plan for the City's Comprehensive Plan.

**Public Meeting - October, 2012 (DESIRE & DISCOVERY)** - A final public meeting presented the four refined



Framework Plan options generated during the design charrette. Specific impacts associated with each alternative were presented and discussed. A community dot exercise was conducted to facilitate community feedback on a preferred alternative.

**City Board and Commission Meetings (DESIRE & DISCOVERY)** – The Comprehensive Planning effort included two rounds of public meetings with each of the City’s sixteen Citizen boards and commissions. The meetings were organized with the Desire and Discovery Phases of work. The first round of meeting focused on the modification and creation of the City’s Vision Statement and Core Community Values. The second round of meetings focused on the alternative Framework Plan options generated during the Community Design Charrette.

**Special Meetings (DESIRE & DISCOVERY)** – Concurrent with the meetings conducted with the City’s boards and commission, Planning Staff facilitated two rounds of meetings with specific stakeholder and interest groups. The meetings were organized with the Desire and Discovery phases of work. The first round of meeting focused on the modification and creation of the City’s Vision Statement and Core Community Values. The second round of meeting focused on the physical Framework Plan options generated during the Community Design Charrette. These meetings included presentations and discussions with the Louisville Chamber of Commerce, the Downtown Business Association (DBA), the McCaslin Business Association, The Colorado Technology Center Business Association, Koelbel Properties, and Citizen Action Committee.

**City Council and Planning Commission Study Sessions and Meetings (DOCUMENTATION)** – Fourteen Study Sessions or Public Hearings were conducted with the Louisville Planning Commission and City Council. Five items were forwarded to the Planning Commission and City Council. Each item represented key decisions in the generation of the 2012 Comprehensive Plan. After the project scoping, the first item brought to the Planning Commission and City Council was the City’s updated Vision Statement and corresponding Core Community

Values for endorsement. Following the Community Design Charrette staff forwarded a recommendation of the Community Framework Plan for endorsement.

The Draft Plan was reviewed by the Planning Commission in two study sessions and the Final document was forwarded to City Council and approved by Resolution 18, Series 2013



# The Planning Context

## A QUICK HISTORY

Louisville was founded on October 24, 1878, when Louis Nawatny, a manager for the Welch mining operations, laid out a town site near the newly opened coal field and named it after himself. The new settlement was stimulated by the railroad and depended upon it to transport coal. Mining for coal was the genesis for many of the towns in eastern Boulder County.

Louisville grew vigorously with the rapid industrialization of the area's mines. In the wake of a post-Civil War migration, the town's first settlers came from such places as the United States, the United Kingdom, Austria, and Germany, among others. Later, in the 1890s, Italian and Eastern European immigrants, in search of mining work, began populating the area. By 1911, eleven additional residential subdivisions were added to original Louisville. The layout of the town and its population of roughly 2,000 would remain unchanged for several decades. Most houses were small, wood frame structures, with tidy yards, vegetable gardens and space to raise chickens and rabbits in the back.

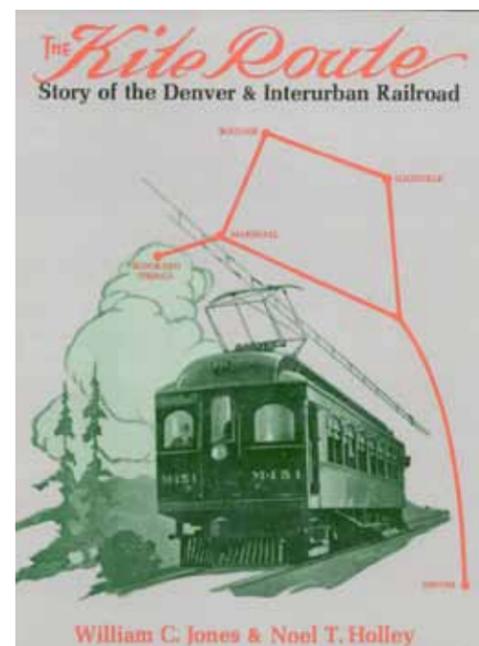
Despite the ethnic differences among groups, most residents lived in harmony. Louisville was homogeneous in that nearly everyone was similarly situated in economic terms. Mining for coal didn't make miners rich, but one could make enough to support a family if one lived modestly. Given the modest incomes, people made do with what they had. Even houses were relocated to where they could be put to better use.

Saloons and billiard halls assumed a very important role in the community. The town boasted an amazing number of drinking establishments, which acted as meeting, eating, sleeping, and relaxing spots. Since Louisville's bars catered to the rough-and-tumble mining crowd, they were restricted by town ordinance to Front Street. By 1908, at least thirteen saloons were in operation along three blocks of Front Street.

The "Denver & Interurban Rail Road." or "The Kite Route" began serving Louisville with electric transportation in 1908. It brought fast, clean, quiet, efficient trans-



City of Louisville - Land Use and Transportation: 1878 to 1909



portation to the town. The Interurban system was established between Boulder and Denver, including a single stop in Louisville. Operations ended in 1926 because of competition from busses and cars.

After World War I, U.S. mines began to close. Simply, the industry found itself with too much supply. Rising competition from other fuels further threatened the coal industry. Coal and railroad revenues further declined with the construction of a natural gas pipeline from Texas to Denver in 1928 and with the gaining popularity of the automobile.

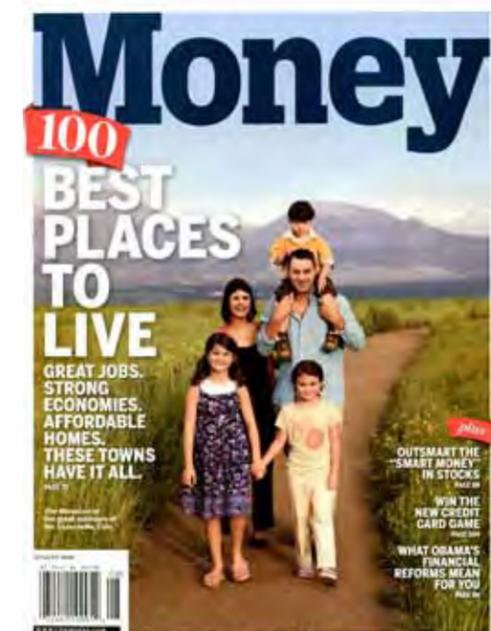
As the last mines were closing in the 1940s and 1950s, Louisville experienced a critical transition. Although the mine closures were a dreaded occurrence, it was only with the end of the coal mining era that Louisville was able to evolve into a modern city. Voters in 1951 approved a bond issue to fund a sewage system, bringing an end to the use of outhouses, and the town paved its streets. The last mine closed in 1955. The Rocky Flats Nuclear Weapons Facility, southwest of Louisville, and other new technology industries, became the area's new primary employers. StorageTek would become a major employer starting in the 1970s.

In 1962, Louisville became a City of Second Class, as defined by the state, having exceeded the state's 2,500 population limit for towns. Modern subdivisions began to be added and the population grew to 19,400. An emphasis on commercial growth along McCaslin Boulevard and South Boulder Road led to many of the historic buildings downtown being left intact.

In 1978, Louisville celebrated the 100th anniversary of its founding with a year of activities, a proclamation from the Governor, a special Labor Day parade, and a commemorative medal. The reflection by many on the community's history led to the establishment of the Louisville Historical Commission in 1979 and the opening of the city-owned Louisville Historical Museum. Twelve Louisville structures were selected to be listed on the National and State Registers of Historic Places. Louisville became a Home Rule City in 2001.



City of Louisville - Land Use and Transportation: 1910 to 2012



# The Planning Context

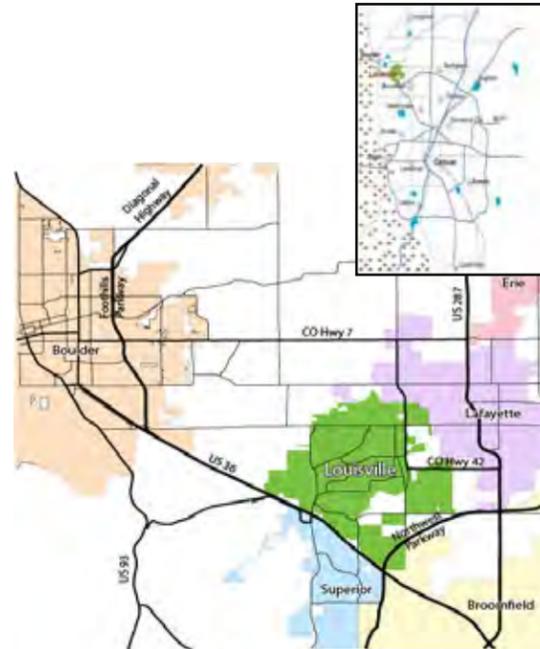
Preserving the past is important to the residents of Louisville. The Louisville Historic Preservation Commission was established in 2002 and a historic preservation ordinance was approved in 2005. Voters in 2008 approved an increase in sales tax for the creation of the Louisville Historic Preservation Fund.

Parks and Open Spaces are also critical components to the desirability of Louisville. The City manages approximately 2,000 acres of open lands. These lands provide visual buffers between local municipalities, support many species of wildlife and diverse plant communities, provide recreational activities through an extensive trail network, and allow agricultural backdrop by maintaining private farming activities in rural areas. The Louisville Open Space Advisory Board was established in 2000. Voters in 2002 and again in 2012 established and continued an increase in the sales tax to fund acquisition, development, and maintenance of parks and open spaces.

Louisville began to achieve national recognition for being among the best places to live in the 2000's. Money Magazine, in its biennial listings of the Best Places to Live in the United States for smaller towns and cities, listed Louisville, Colorado as #5 in 2005; #3 in 2007; and #1 in both 2009 and 2011. Bert Sperling's 2006 book Best Places to Raise Your Family: Experts Choose 100 Top Communities That You Can Afford listed Louisville as the "best of the best" at #1. In 2012, Family Circle magazine placed Louisville among the top ten "Best Towns for Families" based on a survey of 3,335 municipalities with populations ranging from 11,000 to 150,000.

## THE CONTEXT

Louisville is now a city of approximately 18,400 people and is roughly 8.0 square miles in size. Louisville is located in southeastern Boulder County, about 6 miles east of the City of Boulder and 19 miles northwest of Denver. US Highway 36 forms the southwest border of Louisville, and the Northwest Parkway runs adjacent to the southeast corner of the City, connecting Louisville to US Interstate 25 (I-25). The Interlocken Business Park and the Rocky Mountain Metropolitan Airport



are located southeast of the City of Louisville along US Highway 36. The City of Louisville lost population since the 2000 census because of an aging population and an overall reduction in average household sizes.

Many physical, social, economic and political elements influence Louisville's continued evolution. This section of the Comprehensive Plan describes the basic elements which influence Louisville's current form and physical character as well as what elements are expected to influence the City's evolution over the next 20 years.

The description of these planning elements will be city-wide and divided into six primary areas: Natural Environment, Demographic Conditions, Built Environment, Circulation System, Land Uses, and Market Opportunities. The Planning Context will conclude with key findings, along with an identification of where Louisville is expected to experience change and extended stability over the next 20 years.

## Demographics

Staff and the consultant team performed a baseline demographic and economic profile to identify factors which will influence future market conditions and

economic opportunities for the City of Louisville over the next 20 years. This is a summary of a more comprehensive analysis. A complete demographic analysis is documented under separate title and is included as an appendix to the Comprehensive Plan.

The demographic analysis used a regional approach to include the characteristics of households and employment opportunities within commuting distances of Louisville. For comparison purposes and broader geographic context, Boulder County and the State of Colorado are profiled as primary peer geographies. Where appropriate, the cities of Lafayette, Superior, Broomfield and Denver are profiled as secondary geographies.

## Population and Households

The City of Louisville actually saw a decrease in its population from 2000 to 2010. However, Boulder County experienced a 1.1% increase, compared to a 9.7% increase for the nation over the same period. The cities of Superior and Broomfield saw astounding population and household increases from 2000 to 2010. The state experienced relatively robust increases in population of 13.6% and households of 15.6%.

Despite a decline in population, the number of households in Louisville increased 5.1% over the decade. This dichotomy occurred in large measure due to the 8% decrease in average household size throughout the City.

## Race and Ethnicity

The majority of the population of Louisville is white (86%), with those of Hispanic origin making up the second largest group (7%). Louisville has a higher percent-

age of white residents than Boulder County as a whole (79%) and much higher than the Denver metro area average (52%).

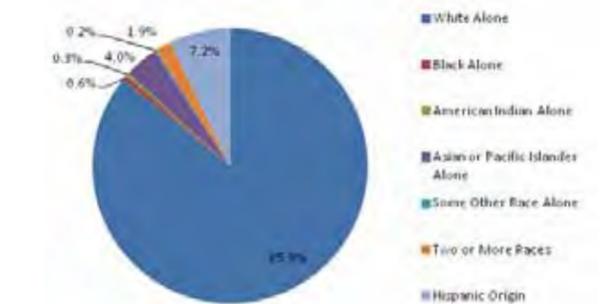
## Age Levels

The median age of Louisville's residents is higher than that of the peer geographies. This aging population corresponds to smaller household sizes as children leave the household. Louisville's median age falls within the 25-55 age bracket, which comprises the majority of the employed population. The lowest 2010 median age among peer geographies is 31.7, in the City of Superior.

	2000	2010	Change
City of Louisville	35.8	38.9	8.7%
City of Lafayette	33.8	37.0	9.5%
City of Superior	30.6	31.7	3.6%
City of Broomfield	33.8	36.7	8.6%
Boulder County	33.5	35.3	5.4%
City of Denver	33.1	33.7	1.8%
State of Colorado	34.4	35.8	4.1%

Source: US Census

## Median Age



Race and Ethnicity

## Population and Households

Jurisdiction	Population			Households			Avg. HH Size		
	2000	2010	Change	2000	2010	Change	2000	2010	Change
City of Louisville	18,868	18,376	-2.6%	7,165	7,529	5.1%	2.62	2.41	-8.0%
City of Lafayette	23,197	24,453	5.4%	8,844	9,632	8.9%	2.54	2.62	3.1%
City of Superior	9,011	12,483	38.5%	3,381	4,496	33.0%	2.67	2.78	4.1%
City of Broomfield	38,272	55,889	46.0%	13,833	21,414	54.8%	2.77	2.60	-6.1%
Boulder County	291,288	294,567	1.1%	114,793	117,629	2.5%	2.45	2.44	-0.4%
City of Denver	554,636	600,158	8.2%	251,435	263,107	4.6%	2.27	2.22	-2.2%
State of Colorado	4,301,261	4,887,061	13.6%	1,659,308	1,918,959	15.6%	2.53	2.49	-1.6%

Source: US Census



# The Planning Context

## Household Income

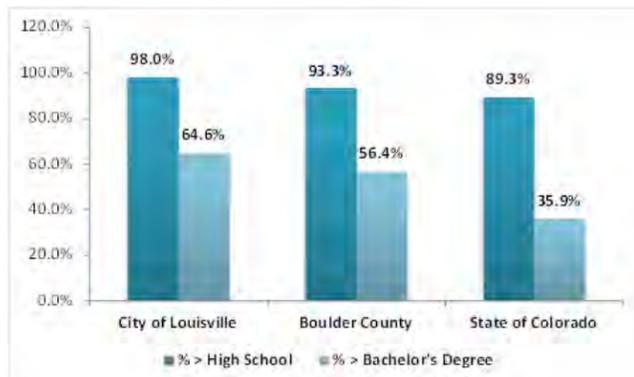
Residents of Louisville enjoy a level of household income nearly 25 percent higher than the median Boulder County income and approximately 44 percent higher than the state's median income, based on 2010 median household income. The highest median household income among peer jurisdictions in 2010 is the City of Superior, at \$96,130.



Median Income

## Educational Attainment

Louisville's population is very well-educated relative to nearby populations, with approximately 64 percent of the population achieving bachelor's degrees or higher, compared to 56 percent in the County and 36 percent in the State. The percentage of high school graduates is also higher, at 98 percent in Louisville compared to 93 percent and 89 percent in the County and State, respectively. A highly-educated workforce is a key element to attracting and retaining high technology industries and advanced professional employers, as well as diversifying the economic base of an area.



Educational Attainment

## Employed Population

Louisville's generally well educated employed population over 16 years of age is comprised of 81 percent white collar workers, 11 percent service workers, and 7 percent blue collar workers. Over 22 percent of the white collar workers are employed in the management/business/financial sector, while the majority (36 percent) is in the professional sector.

Category	Share
Total	10,136
Management, business, science and arts occupations	60.1%
Service occupations	11.6%
Sales and office occupations	20.2%
Natural resources, construction and maintenance occupations	4.0%
Production, transportation, and material moving occupations	4.1%

Source: U.S. Census; TischlerBise

## Employment Sectors

## Inflow/Outflow Characteristics

Although Louisville had a net daily inflow of 1,023 workers in 2010, 92 percent of its 11,159 at-place employees commuted into their jobs from outside of the city. Conversely, 91 percent of Louisville's employed workforce of 10,136 commuted to jobs outside of the city. Only 918, or 9 percent of Louisville's workforce, lived and worked in Louisville.

Labor Market Size	Count	Share
Employed in the City of Louisville	11,159	100.0%
Living in the City of Louisville	10,136	90.8%
Net job inflow (+) or outflow (-)	1,023	

Labor Force Efficiency	Count	Share
Living in the City of Louisville	10,136	100.0%
Living and employed in Louisville	918	9.1%
Living in Louisville but employed outside	9,218	90.9%

Employment Efficiency	Count	Share
Employed in the City of Louisville	11,159	100.0%
Living and employed in Louisville	918	8.2%
Employed in Louisville but living outside	10,241	91.8%

Source: U.S. Census Bureau OnTheMap Application; TischlerBise

## Labor Inflow / Outflow

## Existing Land Uses

Louisville's geographic expansion is near completion. All first generation development has been planned and entitled for the City. Open space and inter-governmental agreements limit Louisville's future expansion to the approximately 12 acres of the Alkonis Property in the

northeast portion of the City near the Steel Ranch Sub-division.

The principal land use in the community is residential low-density, encompassing approximately 26% of the City's total land area. Open space is also a significant contributor to the City of Louisville's physical form and quality of life. Approximately 26% of the City's land area is dedicated to open space, parks, and public spaces.

Currently, nearly 20% of the City's developable land remains vacant. Low-density residential land uses encompass 53% of the total built environment in the City (9 million square feet). The next largest built land uses are: industrial (13%); office (9%); various retailing land uses (8%).

Future growth in the City will focus on infill development. Louisville will now experience second-and-third generation development. Growth trends for the future have shifted from expansion to reinvestment, refurbishment, and redevelopment. Louisville's building stock will continue to age and will require continued improvement and reinvestment to remain economically viable. In the residential land use categories, Louisville has a higher proportion of single family units to multifamily units than its surrounding geographies, at 78 percent compared to 71 percent in Boulder County and 72 percent in the State.

Land Use	Built SF	Lot SF	Built % of Total	Land % of Total
Residential Low Density	9,504,062	50,560,307	53.9%	26.5%
Industrial	2,380,013	9,915,625	13.5%	5.2%
Office	1,608,285	6,420,221	9.1%	3.4%
Residential High Density	1,208,383	3,229,609	6.9%	1.7%
Residential Medium Density	651,142	2,522,050	3.7%	1.3%
Vacant	638,026	36,560,214	3.6%	19.1%
Multi-Tenant Retail	263,566	1,227,664	1.5%	0.6%
Hotel	256,867	748,987	1.5%	0.4%
Single Tenant Retail	247,273	1,514,086	1.4%	0.8%
Mixed Use Commercial	246,747	1,358,985	1.4%	0.7%
Large Format Retail	232,542	1,021,325	1.3%	0.5%
Public Service/ Institutional	206,691	16,737,125	1.2%	8.8%
Stand Alone Restaurant	100,544	621,915	0.6%	0.3%
Entertainment	53,742	399,183	0.3%	0.2%
Agricultural	18,626	6,768,074	0.1%	3.5%
Mixed Use Residential	8,848	42,469	0.1%	0.0%
Mobile Home	1,782	694,901	0.0%	0.4%
Open Space/Parks	1,780	50,696,337	0.0%	26.5%
<b>Total</b>	<b>17,628,919</b>	<b>191,039,078</b>	<b>100.0%</b>	<b>100.0%</b>

Existing Land Uses

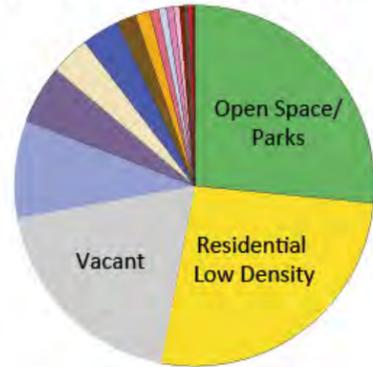
	City of Louisville		Boulder County		State of Colorado	
	Estimate	Percent	Estimate	Percent	Estimate	Percent
Total housing units	7,814		125,768		2,176,600	
Occupied housing units	7,529	96.4%	117,629	93.5%	1,918,959	88.2%
Owner occupied	5,537	73.5%	75,189	63.9%	1,296,670	67.6%
Renter occupied	1,992	26.5%	42,440	36.1%	622,289	32.4%
Avg. HH size of owner occupied unit	2.67		2.51		2.57	
Avg. HH size of renter occupied unit	1.68		2.13		2.31	
Median value of owner occupied units	\$361,200		\$353,300		\$236,600	
Single family units	6,125	78.4%	88,853	70.6%	1,558,501	71.6%
Multifamily units	1,561	20.0%	33,000	26.2%	517,228	23.8%
Mobile homes	128	1.6%	3,915	3.1%	99,621	4.6%

Source: US Census

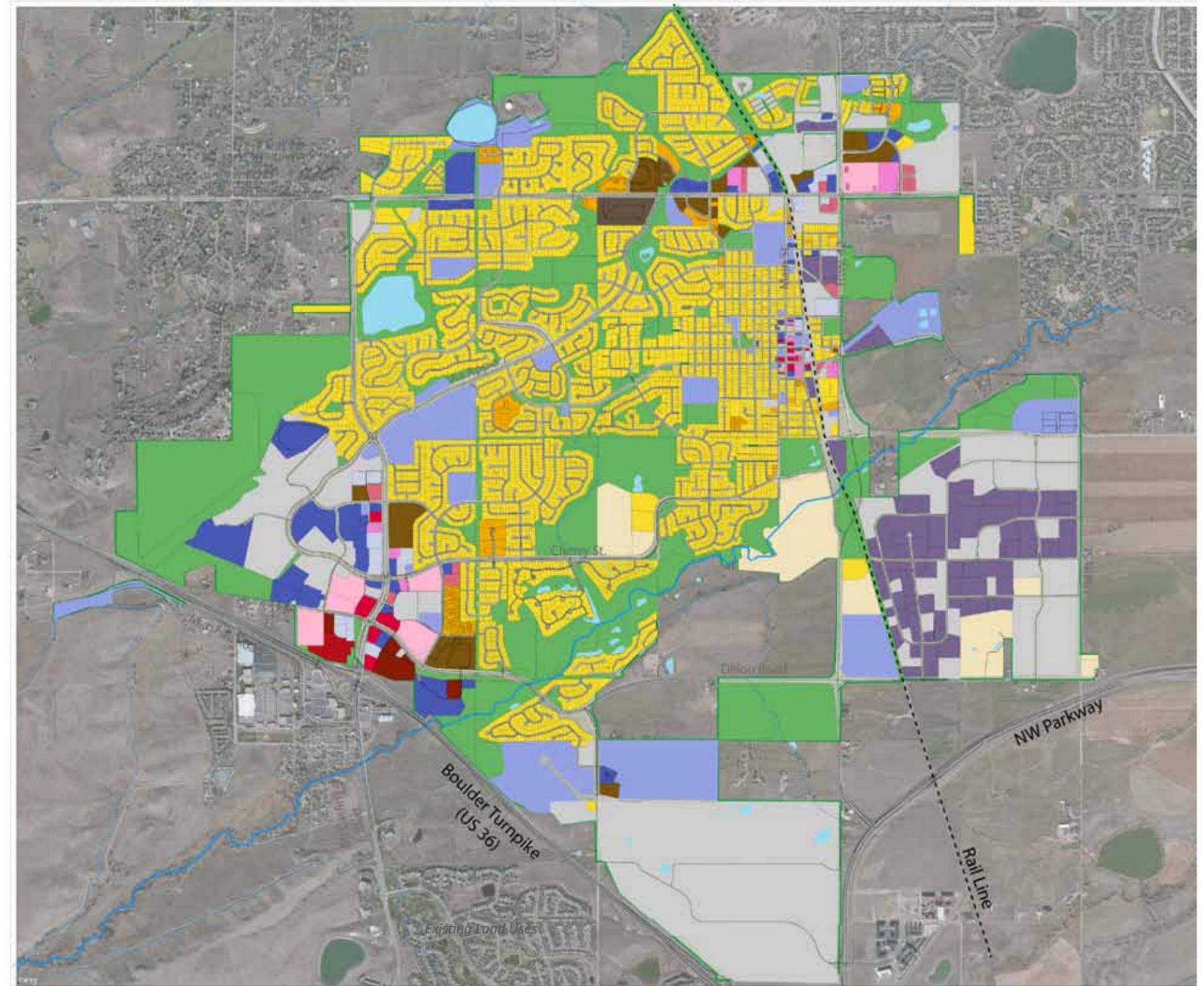
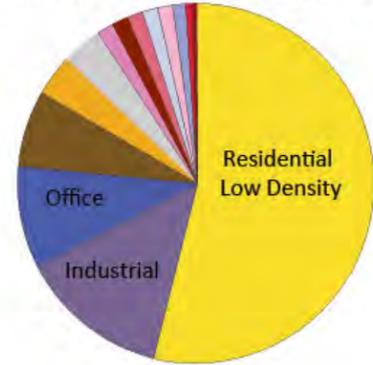
## Housing and Household Information



Land Associated with Each Land Use



Built Square Footage of Each Land Use



Existing Land Use

# The Planning Context

## Natural Environment

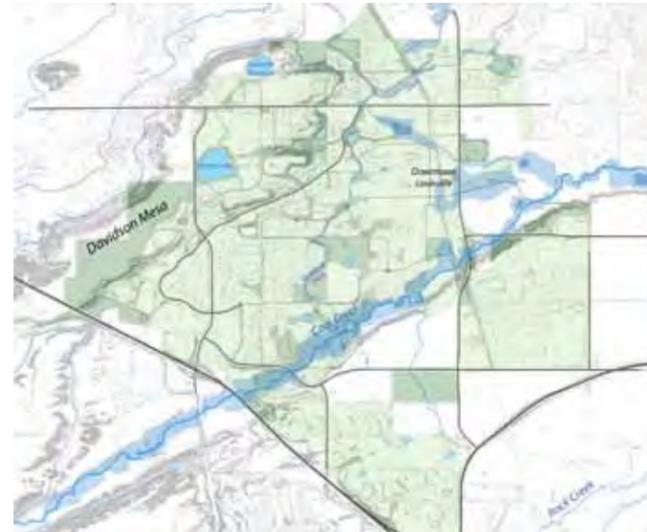
Louisville is located in southeastern Boulder County, generally centered on Coal Creek within the Colorado Piedmont Section of the Great Plains, east of the foothills to the Rocky Mountains. The landform-defining drainage in the Louisville area is the southwest-to-northeast trending Coal Creek. Uplands to the northwest of Coal Creek comprise the drainage divide with the South Boulder Creek drainage basin, and the uplands to the southeast straddle the drainage divide with Rock Creek. Other defining physical features include Davidson Mesa and the slope leading to it in the northwest of the City, as well as the small water bodies throughout the City, most notably Harper Lake.

The area lies eight to ten miles east of the Front Range of the Southern Rocky Mountains. The elevation ranges from about 5,250 feet on the eastern edge of Coal Creek to about 5,530 feet atop Davidson Mesa on the western side of the City.

The City is situated over the Laramie formation at the western end of the Boulder-Weld coalfield, one of the oldest coal mining areas in the Western United States. Coal was mined from the lower part of the Laramie Formation where coal seams were 5-8 feet thick and only 30-40 feet below the ground surface. Many areas of the City of Louisville have been undermined (Maps illustrating the City's undermining are available for review upon request).

With an average elevation of 5,370 feet, the climate of Louisville can be described as a high plains, continental climate, with light rainfall and low humidity. The climate is modified considerably from that expected of a typical high plains environment because of the nearby mountains. Winds are channeled from the Continental Divide down the Front Range and can be severe. Prevailing winds are generally from the west.

The average high temperature in July is 88°F, and the average low temperature in January is 14°F (Weatherbase, 2002). Annual precipitation averages 16 inches. Relative humidity is about 30-35% in summer and about 40-50% in winter. Periods of drought are frequent, usually occur-



Natural Features



ring in the fall and winter. The growing season is approximately 140 days long, with the average date of the first killing frost being September 28th. The last killing frost occurs around May 11 (USDA, 1975).

The grasslands of the Colorado Front Range Piedmont are “shortgrass prairie” and represent a response to predominant dryness as well as historic stress in the form of heavy grazing periods by domestic livestock associated with early settlement.

While grassland habitats around Louisville decreased in both extent and quality, the high quality of life offered by Louisville’s attractive surroundings made the 1980’s and 1990’s a time of rapid suburban expansion. Farms were purchased for development of subdivisions and retail space to support the influx of families moving to Louisville.

Riparian corridors in the area are mostly protected from development through floodplain regulations and open space acquisitions. The loss of adjacent open terrain and the introduction of many invasive plant species have compromised their suitability for many riparian wildlife species.

A few grassland areas on Louisville open space continue to support prairie wildlife, especially areas that are too steep to have been farmed. Some riparian areas on Louisville open space continue to support uses that predated settlement, even though they have been modified by the loss of adjacent habitat, increased human disturbance, and competition with human-tolerant urban wildlife. Other areas of open space have been so highly modified or so impacted by development that they no longer sustain significant use by non-urban species.

## Built Environment

The built environment of Louisville, like the natural environment, informs how the physical development of the City will fit with the community’s character and evolve over time. Three elements of the built environment were examined for the Louisville Comprehensive Plan: the *block pattern*; *municipal infrastructure*; and the *building inventory*.



# The Planning Context

## Block Pattern

The City's street network, or block pattern, is the skeleton of the community. The block pattern dictates the development flexibility and ultimately the physical character of the community. The block pattern establishes the street network and street hierarchy of the community, which in turn dictate the mass, scale, and orientation of buildings. Together, the streets and buildings determine the City's walkability.

As existing streets are improved and new streets are proposed in the Comprehensive Plan, it is important to understand the block pattern that is envisioned will establish the character of development and redevelopment for years to come.

The City's existing block pattern creates three distinctive character zones within Louisville: *urban*, *suburban*, and *rural*. Downtown and Old Town (built before 1960) and the newer subdivisions of North End and Steel Ranch (built since 2008) have established interconnected streets with smaller block patterns and supporting alleys. The block structure in the northeastern portion of the City dictates smaller property parcels, interconnected smaller streets and a more walkable urban character.

Contrasting Downtown and Old Town are the suburban (less walkable) areas of the City along South Boulder Road and McCaslin Boulevard and everything built between 1961 and 2007. The character of these suburban and rural areas of town is influenced by their limited street networks and larger arterials, creating single purpose suburban retailing and employment environments.

A problem with suburban block patterns is that after 10 to 15 years, the retail centers built upon them are outperformed by newer competition. Significant public investment is then needed to reshape the blocks to accommodate a variety of retailing formats and land development patterns, allowing the retail centers to successfully compete again.

Block patterns and infrastructure inform an area's building inventory, development patterns, and land use types. It is important for the Comprehensive Plan to

enable the development of more urban block patterns, building stock and community supported land uses. Urban block patterns, like that in Old Town and Downtown Louisville, have high resiliency and flexibility in accommodating development and redevelopment over time. Typical suburban block patterns have not demonstrated similar resiliency.



Block Pattern

## Municipal Utilities and Infrastructure

Municipal utilities and infrastructure (water, sewer, and storm water) are critical in defining the economic vitality and physical character of the City. Their capacity defines the growth potential of the City. Their placement and design contribute to the physical character of the City.

Louisville's water supply originates from two primary sources: South Boulder Creek and the Northern Colorado Water Conservancy District consisting of the Colorado Big Thompson and Windy Gap projects.

The City is treating 4,000 acre-feet (AF) of water a year, with peak demands approaching 9.0 million gallons per day (mgd). Raw water from the City's established sources is treated and distributed to individual businesses and residences from the City's two water treatment facilities: *the Howard Berry Plant* and *the North Plant*. Currently, both plants operate at or under capacity.



Raw Water Sources

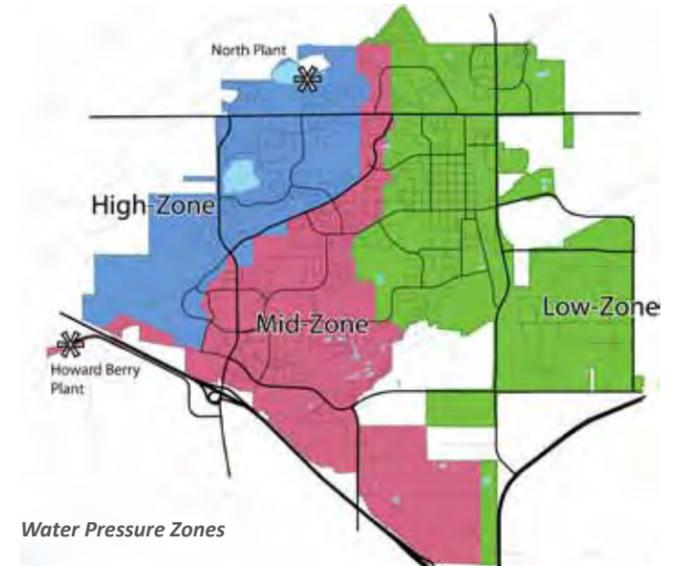
The two water treatment plants have a combined treatment capacity of 13 mgd. Together, the two facilities serve three pressure zones within the City. A water system capacity analysis examined both demand and location of the projected build-out of the City as well as the 20 year market forecast.

The existing water supply and treatment capacity are sufficient to accommodate the expected 20-year development absorption assumptions of the Framework.

However, it is important to note, the Howard Berry Plant may require additional capacity to serve the projected build-out of the mid and lower water pressure zones of the City. The primary driver of future water demand will be the office and industrial uses expected in the Centennial Valley, the Phillips 66 property, and the Colorado Technology Center (CTC).

The Wastewater Treatment Plant provides sanitary sewage treatment for the City of Louisville. There is a surplus of sanitary treatment capacity currently on-line to serve the projected demand of the City as reflected in the Framework.

The Sanitary Treatment Plant is currently operating at a daily average of 2 million gallons per day (mgd) or 59% of its capacity. Historically, the plant has seen flows as high as 2.8 mgd. Additional treatment capacity was added in 1999 giving the plant a maximum permitted capacity of 3.4 mgd.



Water Pressure Zones

The Wastewater Treatment Plant has reached the end of its useful life based upon the age of the facility and upcoming regulatory water quality requirements.

Construction is currently being planned for the Wastewater Treatment Plant to meet regulatory and growth requirements. Improvements to transmission mains and lift stations will be needed with build out of the Colorado Technology Center and the Phillips 66 property.

There are also limitations in the sanitary sewer pipes located in the Downtown and Old Town areas. The pipes in this area are the original vitrified clay pipes, constructed in the mid 1900s. As the pipes have aged, they have begun to break down. The City annually replaces portions of these pipes with PVC pipes to maintain the integrity of the collection system.



Waste Water Treatment Plant Improvement Timelines



# The Planning Context

The City's Engineering Department has an ongoing maintenance program for inspecting storm drainage facilities. The department also provides detailed hydraulic modeling to identify any deficiencies and what improvements are necessary.

The City is currently following the Louisville/Boulder County Outfall System Plan, as completed in 1982, for necessary improvements to the stormwater system. Developers are responsible for completing elements of the outfall system to meet the City's land development and engineering codes.

Overall, the City is positioned well to serve the needs of the Framework at build out. However, as the City continues to age, infrastructure that has deteriorated or become obsolete will need to be replaced or rehabilitated.

## Building Inventory

The City of Louisville's building inventory reflects the diversity, economic stability and physical character of the City. According to the 2010 U.S. Census, there were 7,529 occupied housing units in Louisville out of a total of 7,814, for a vacancy rate of 3.6%. Approximately 74% of the occupied units were owner occupied, compared to 64% in Boulder County and 68% in the State. Louisville's median home value of \$361,200 for owner occupied units was slightly higher than Boulder County at \$353,300, and significantly higher than the state's median value of \$236,600. The highest median housing value among peer jurisdictions in 2010 is the City of Superior at \$389,300.

The bulk of Louisville's building stock was constructed in the three decades between 1970 and 2000 when 84% of the total inventory was delivered. The County and State saw an upsurge of residential construction starting in the 1960s that remained relatively robust past year 2000.

Louisville's building stock is generally divided into four eras of construction. These periods of construction generated distinctively different patterns of development and architectural styles. No single architectural

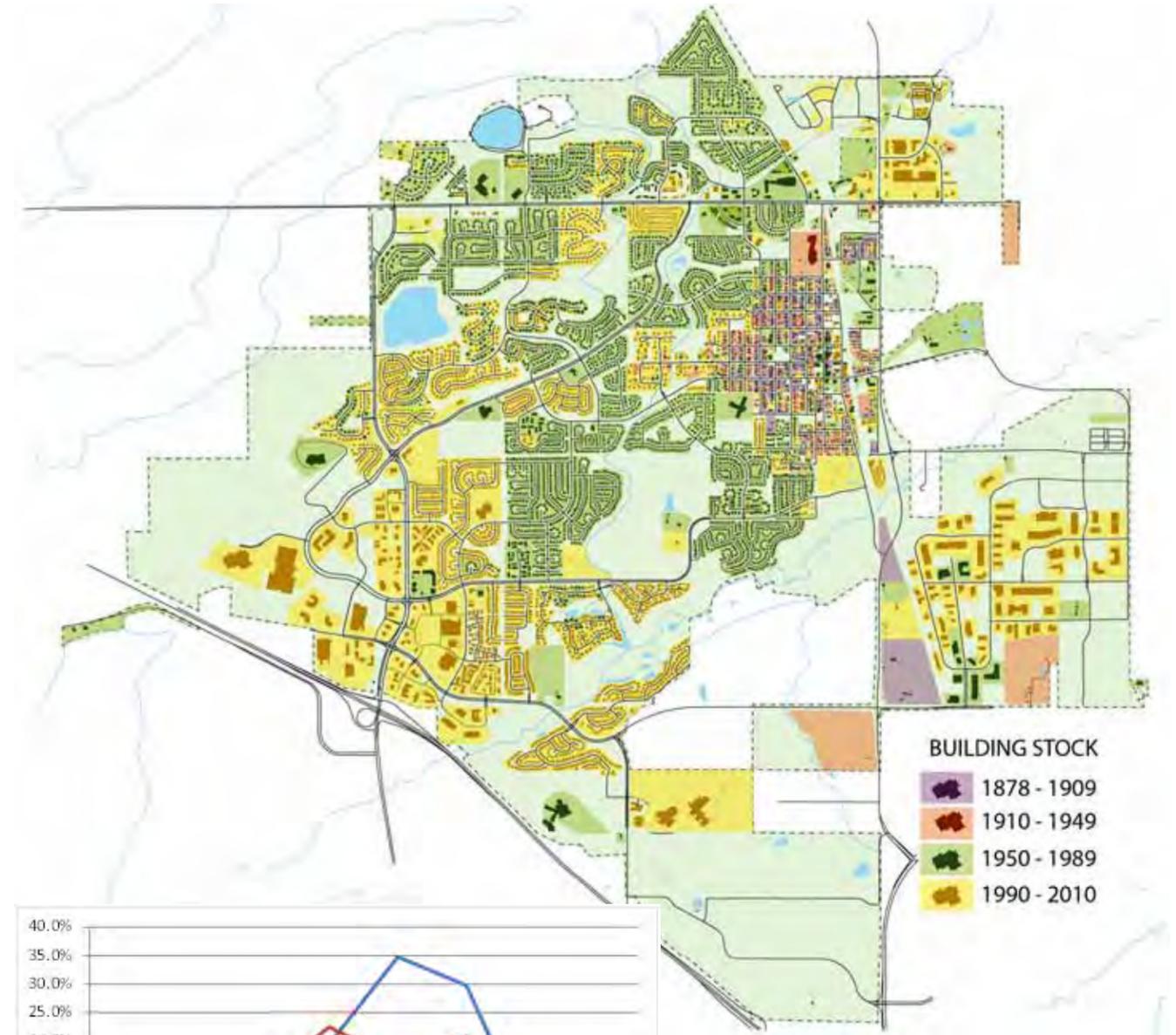


Building Figure Ground

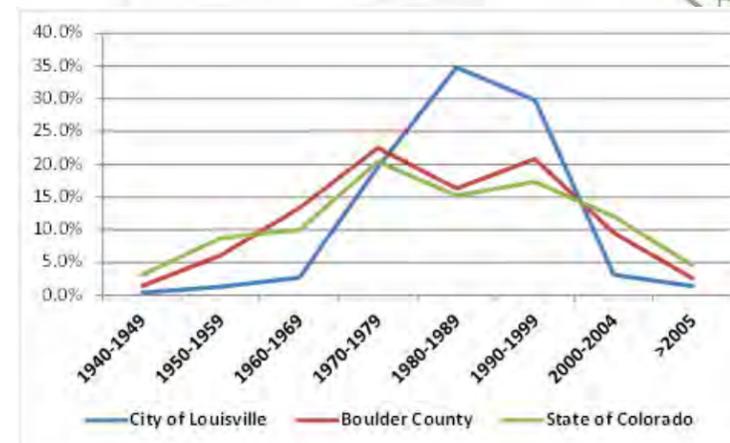
style dominates the Louisville architectural vernacular City-wide, or within any individual era of construction. The development pattern of the City clearly shifted from a pedestrian character and orientation in Old Town and Downtown Louisville (pre-1950) to a vehicle base orientation and character for development after 1950.

Louisville adopted a historic preservation ordinance in 2005 and voters approved an increase in sales tax for the creation of the Louisville Historic Preservation Fund in 2008. The historic preservation ordinance's designation of historic resources is voluntary for buildings over 50 years old. Revenues from the one-eighth percent sales tax are to be retained and spent exclusively within the "Historic Old Town Overlay District" and "Downtown Louisville" to preserve the unique charm and character of historic Old Town Louisville. This revenue source is meant to:

- Provide incentives to preserve historic resources, including funding of programs to identify and attempt to preserve buildings which qualify for listing on the Louisville Register of Historic Places with the consent of the property owner;



Age of Building Stock



Percentage of Existing Buildings by Construction Date



# The Planning Context



Example Buildings Built Between 1878 and 1909



Example Buildings Built Between 1910 and 1949



Example Buildings Built Between 1950 and 1989

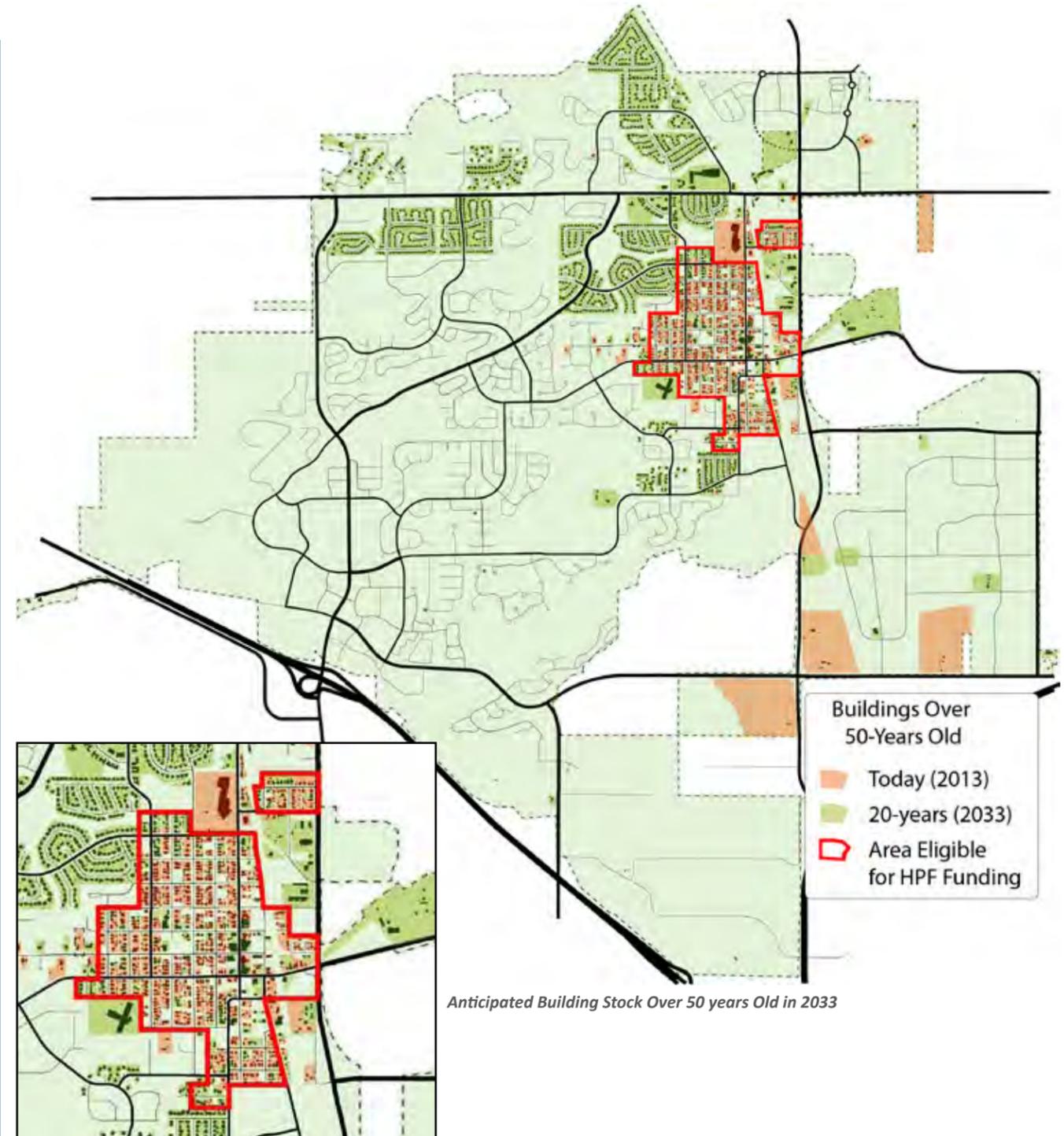


Example Buildings Built Between 1990 and 2012

- above mandatory requirements; and
- For city staff time to administer the programs.

As Louisville's building stock continues to age, more of the City's buildings will become eligible as historic resources. Currently, buildings over 50 years of age are generally constrained to the building stock of Downtown Louisville and Old Town Louisville. However, over the 20 year life of this Comprehensive Plan, it is expected the total number of eligible historic resources will nearly double, including many homes in North Louisville and along South Boulder Road. Under the existing preservation ordinance, these resources will not be eligible for money from the Historic Preservation Fund.

- Provide incentives to preserve buildings that contribute to the historic character of historic Old Town Louisville but do not qualify for listing on the Louisville Register of Historic Places, with such buildings to be treated the same as historic buildings but with lower priority;
- Provide incentives for new buildings and developments within historic Old Town Louisville to limit mass, scale, and number of stories; to preserve setbacks; to preserve pedestrian walkways between buildings; and to utilize materials typical of historic buildings,



# The Planning Context

## Circulation

Louisville is a maturing municipality in which growth trends and traffic patterns are shifting from an expansion focus to an infill orientation. Louisville is situated within rapidly developing east Boulder County, between the residential areas of Lafayette, East Boulder County and Erie, and the employment centers of Boulder, Interlocken, and the US 36 Corridor serving Denver. Louisville's arterial street network provides the primary access routes between these residential and employment areas.

Staff and the consultant team conducted a complete multi-modal transportation analysis for Louisville. Four significant observations have emerged from the transportation analysis when compared to the City's Vision Statement and Core Community Values.

### Street Vehicle Capacity

Staff plotted the Average Daily Traffic (ADT) volumes for the year 2035 on the Louisville Street Network for the preferred Framework Option. Staff then used the Institute of Transportation Engineers (ITE) generalized level of service (LOS) guidelines to document any vehicle capacity concerns with the projected 20 year build out of the City. Vehicle LOS is most commonly used to analyze a roadway's performance by categorizing vehicle traffic flow throughout the day, or during the periods of heaviest use, typically the morning and evening commute. Vehicle LOS is measured using letters from A to F.

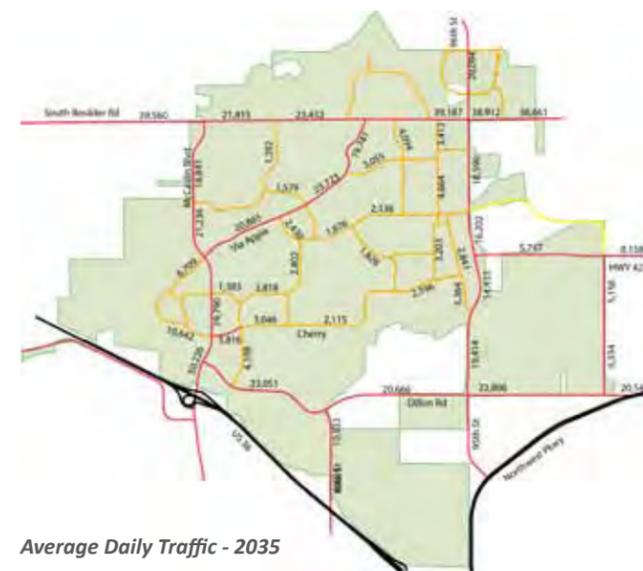
Vehicle based LOS does not measure a pedestrian's, or bicyclist's quality of trip. However, the size and speed of roadway affects the quality of a pedestrian's and bicyclist's trip experience. Generally, a larger and faster roadway corresponds with a higher vehicle LOS. Conversely, a smaller and slower roadway corresponds generally with a higher pedestrian's and bicyclist's quality of experience and a generally lower vehicle LOS. The transportation profession recommends LOS A to LOS C in rural communities, LOS C to D in suburban communities, and LOS C to F in urban communities.

A goal of this Comprehensive Plan is to maintain vehicle LOS C unless to maintain LOS C it would be necessary to

widen the street or make other capacity modifications in a way that would conflict with these desired small town transportation qualities:

- Pedestrians of all ages and abilities should be able to safely and comfortably walk along, or across a street, arterial corridor, or intersection, as well as wait for public transit.
- Bicyclists of all ages and abilities should be able to safely and comfortably ride along, or across a street, arterial corridor, or intersection.
- All streets, arterial corridors and intersections are designed and function to be compatible with the City's desired character zone identified in the Framework.
- Streets, arterial corridors and intersections do not negatively affect the adjacent neighborhoods, historic assets, or natural resources.

Based on these criteria, the majority of the City's streets have the capacity to accommodate the 20 year forecasted traffic volumes for the preferred Framework at LOS C. However, several of the City's arterials will operate at LOS D. It is important to note the anticipated regional cut-through traffic in the year 2035 causes traffic volumes on the arterials to exceed LOS C standards, regardless of any additional development in Louisville. Staff



believes that the required vehicle capacity modifications necessary to maintain LOS C conflict with Louisville's small town transportation quality expectations.

### Regional vs. Local Traffic

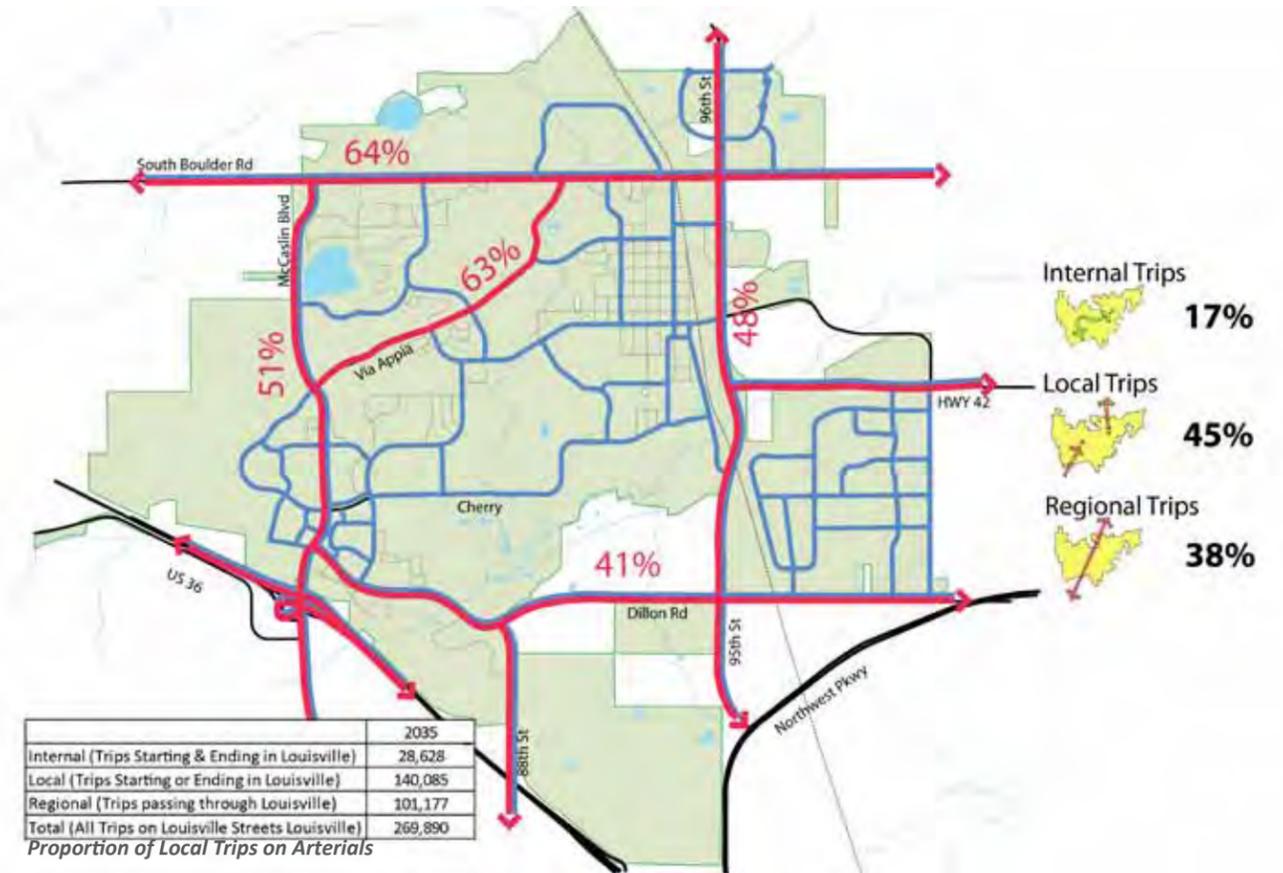
Staff conducted a Select Link Analysis of the 2035 DRCOG Transportation Model. A select link analysis identifies where the origins and destinations of car trips using Louisville streets occur. Louisville's share of traffic on its own roadways is decreasing. In 2035, 38% of all trips on Louisville streets will have neither an origin nor destination in Louisville. More relevant is that regional traffic on Louisville arterial streets in 2035 will account for 40% to 65% of all traffic. As residential areas in East Boulder County and employment areas in Boulder and the US 36 Corridor continue to increase, Louisville's share of traffic on its own roadways will continue to decrease. Only 10% of Louisville's employment base lives

in Louisville. A key transportation strategy for Louisville should be to improve local connectivity and transportation choices internal to the City.

### Transportation Nodes and Economic Opportunities

The City of Louisville has three transportation nodes with varying degrees of economic opportunities: McCaslin Boulevard and US 36, South Boulder Road and Highway 42, and Pine Street and Highway 42. These transportation nodes generate intersecting traffic volumes that retailers are attracted to because of visibility and drive-by opportunities. It is important for the City to recognize and capitalize on these opportunities.

Neighborhood Centers: South Boulder Road and Highway 42 along with McCaslin Boulevard (north of Cherry), represent neighborhood retailing centers. Traffic volumes within these centers will range between 30,000



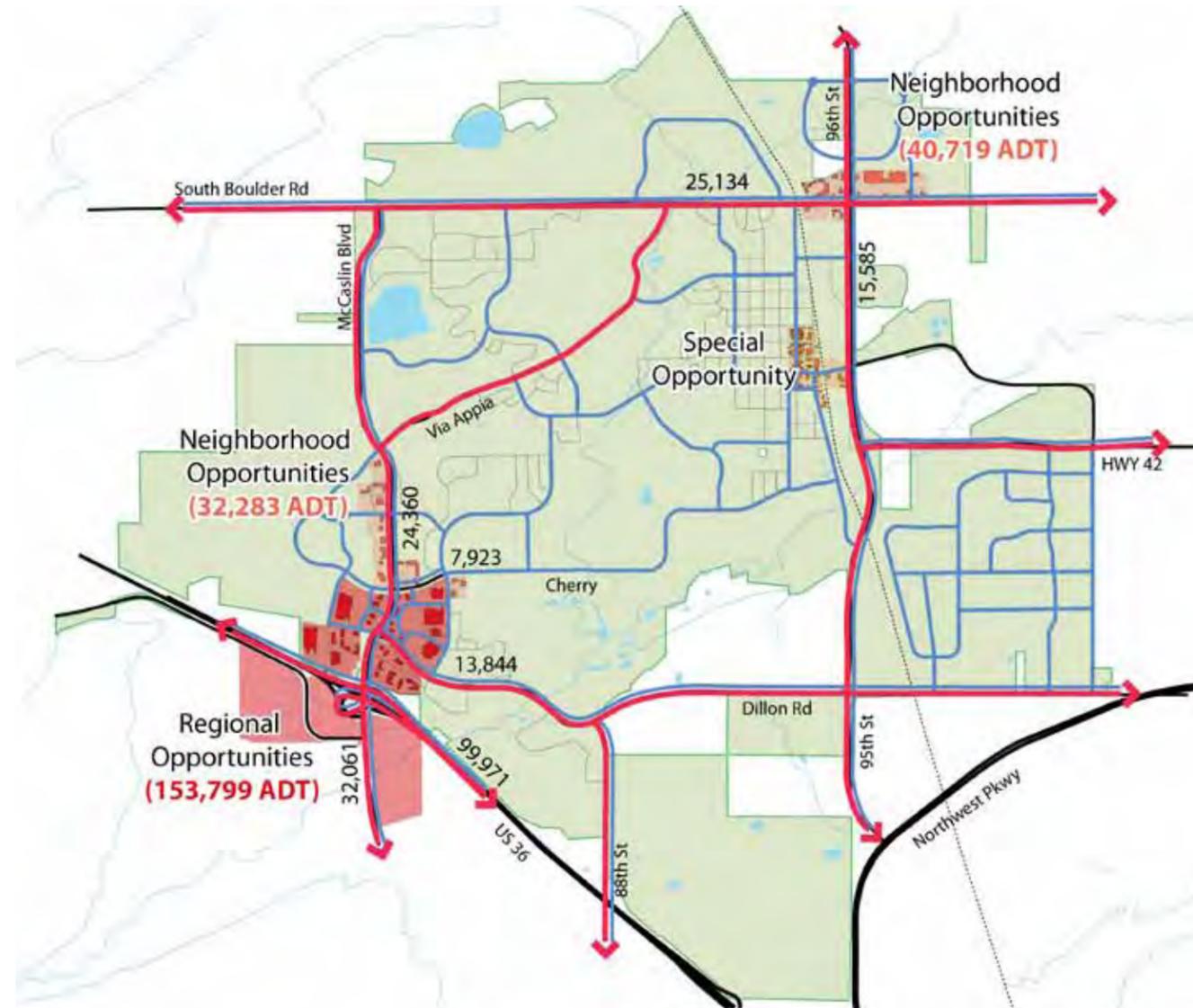
# The Planning Context

and 40,000 vehicles daily by the year 2035. Generally, retailing will be limited to neighborhood opportunities.

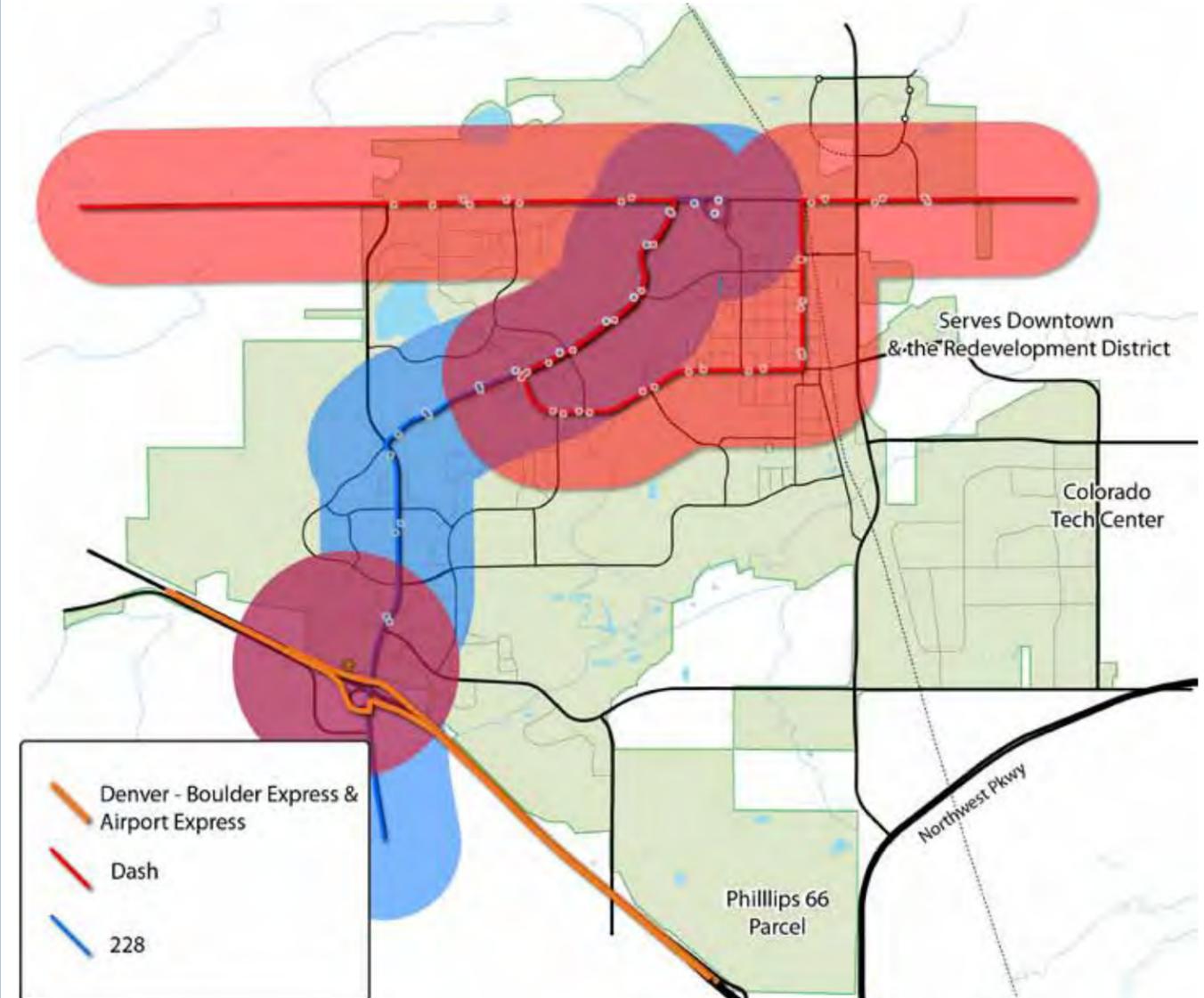
Regional Center: Regional retailing opportunities exist along McCaslin Boulevard south of Cherry Street to the US 36 interchange. In total, 150,000 vehicle trips travel through this transportation node daily.

### Transit Service

Currently, the entire southeastern portion of the City has no local transit service, including Avista Hospital, the Colorado Technology Center, and the Phillips 66 and Monarch Campus properties. All are critical employment areas to the City and the entire metro region.



The Strength of Retail Opportunities Influenced by Average Daily Traffic Volumes



Transit Service

# The Planning Context

## Market Opportunities

The City of Louisville contracted with Tischler Bise to complete a demographic and economic market study for the City which is included as an appendix to the Comprehensive Plan. The following is a brief overview of the market opportunities of the major land uses in the City. The Market Study does not imply the development projections are to be achieved in the Plan.

## Retail

The Economic and Market Assessment indicates there is a surplus of approximately 3 million square feet of retail within a 15 minute drive shed of Louisville. The assessment goes on to suggest it will take between nine and ten years of population growth in the trade area to fill this excess retail space. Based on these findings, the study concludes that the demand for new retail development at the community shopping center scale and higher (100,000 SF and higher) will be soft in Louisville for the next nine to ten years.

Although the study concludes that demand for larger scale retail in the trade area will be weak for the next ten years, there are opportunities to capitalize on emerging market trends to regain lost retail base. Areas like Downtown and the Revitalization District are positioned well to capitalize on emerging market trends favoring mixed use walkable environments. The zoning is in place and infrastructure improvements like the South Street Gateway and the HWY 42 Gateway Project will enable these areas to develop in line with emerging market trends. However, the zoning and current development patterns in Centennial Valley and the McCaslin Boulevard corridor provide little flexibility for new development patterns. Residential mixed use is not currently permitted, and the regulations encourage larger lot, automobile-centered development.

## Office/R&D/Flex Space

The majority of Louisville's office, research and development, and flex space is located in either the Colorado Technology Center (CTC) or Centennial Valley. There are approximately 2.3 million square feet of occupied space in CTC and a great deal of vacant land zoned for additional industrial development including office, research and development, and flex space. The market study suggests the CTC is positioned well in the region and will continue to experience moderate growth for the foreseeable future. Centennial Valley has approximately 425,000 square feet of vacant office space, and the market study indicates it is not likely that additional

speculative office space will be built in this area until the vacant space is occupied.

## Residential

The City of Louisville's residential housing market is constrained by a scarcity of developable land. As currently zoned, the City does not have additional land for greenfield residential development within city limits. The Alkonis parcel in the northeast corner of the City is the last significant parcel of land identified for annexation with the potential for residential development. Opportunities for infill residential development are constrained by a lack of land supply and current zoning regulations which restrict residential development or do not allow it at all.

Despite a scarcity of residential land for development, the Economic and Market Assessment indicates there is significant demand for residential units in Louisville, as evidenced by the rapid and sustainable sales of homes at Steel Ranch and North End. Opening up additional areas for residential development, either through rezoning, or revised development regulations, would likely result in additional residential development as demand is quite strong.

## Fiscal Analysis

Staff worked with an economic and fiscal consultant, Tischler Bise, to assess the fiscal impacts of the Comprehensive Plan over the next 20 years. The complete study is included as an appendix to this plan. At build out, the preferred Framework will produce a balanced amount of residential units, and retail, industrial, and office square footage. However, over the next 20 years the market will only construct a portion of each of these build out scenarios. Additionally, some of the newly constructed square footage and residential units will be added in greenfield locations, while other units and square footage will be constructed in infill locations. The following table outlines the additional square footage and residential units that the fiscal study projects could be built in the next twenty years.

Greenfield development and infill development have different fiscal impacts on the city. For example, a new residential subdivision on the outskirts of town will require the construction of new roads that will need to be maintained by the city, and may require additional police resources. An infill site will likely not need additional roads. The City's current fiscal model does not account for the potential savings of infill development. The fiscal study attached to this plan includes cost adjustments to Operating and Capital Costs for infill de-

Use	Net New
<b>Single Family Residential (Units)</b>	<b>224</b>
GreenField	141
Infill	83
<b>Multi-Family Residential (Units)</b>	<b>967</b>
GreenField	273
Infill	694
<b>Retail (Sq. Ft.)</b>	<b>200,000</b>
GreenField	25,000
Infill	175,000
<b>Industrial (Sq. Ft.)</b>	<b>375,000</b>
GreenField	
Infill	375,000
<b>Office (Sq. Ft.)</b>	<b>450,000</b>
GreenField	250,000
Infill	200,000

20 Year Market Forecast

Source: Source: City of Louisville; TischlerBise

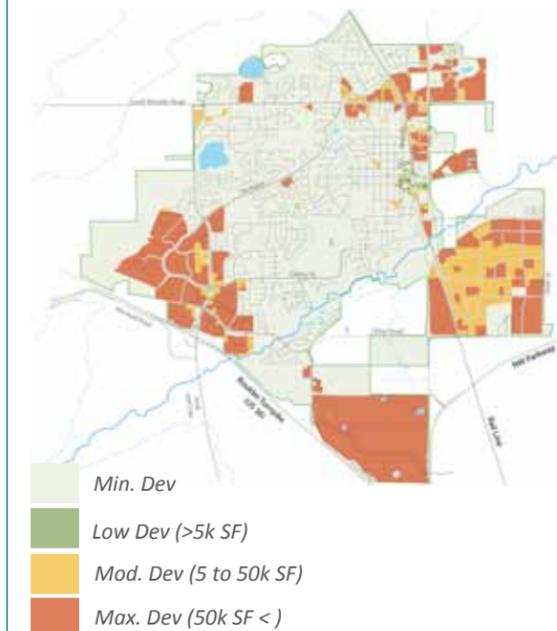
velopment. Based on the discount assumptions in the report, Tischler Bise completed an analysis of operating and capital fiscal impacts for the 20 year build out. The model indicates the proposed land use mixture in this comprehensive Plan is essentially fiscally neutral. Annual operations revenue will be slightly under expenditures by approximately \$93,000 and that annual capital budget will experience a slight surplus of approximately \$115,000 annually. These are rough assumptions based on one out of countless possible build-out scenarios.

City of Louisville, Colorado Fiscal Impact Analysis Summary of Annual Operating and Capital Estimates		
		Total
<b>OPERATING SUMMARY</b>		
Revenue	\$	2,171,664
Expenditures	\$	2,264,780
<b>Total</b>	<b>\$</b>	<b>(93,116)</b>
<b>CAPITAL SUMMARY</b>		
Revenue	\$	875,996
Expenditures	\$	758,349
<b>Total</b>	<b>\$</b>	<b>117,647</b>

## Stability and Change

The three largest land uses in the City are: residential, parks and open space, and vacant or undeveloped. Together these uses comprise approximately three-quarters of the land in the City. On the properties that have been developed, residential makes up more than half of the built square footage in the City, followed by industrial and office, together totaling about one-quarter of the City's built square footage.

The Louisville Municipal Code (LMC), Chapter 17 - Zoning, dictates the amount of development allowed within Louisville. Staff analyzed the LMC with respect to each lot to determine how much development is allowed in addition to what currently exists. This analysis shows a large portion of the City is entitled to additional development.



### Areas with Substantial Buildout Capacity

Most of the entitled development is within retail corridors along South Boulder Road and McCaslin Boulevard; special office and industrial districts of Centennial Valley, the Colorado Technology Center (CTC), and Phillips 66; and within the Downtown and the HWY 42 Redevelopment district. It should be noted, the analysis simply indicates what additional development is allowed and not what the retail, office, and residential markets can absorb.

Several variables influence the likeliness of property developing or redeveloping. One is the ratio between the building



value and the total property value. If the building value is a relatively small portion of the total value, then the property is probably not being used close to its full potential and redevelopment is likely. However, the improved value to property value ratio is not an indicator of immediate development. Many other factors unique to each property also influence the likelihood of development. For example, if a property is owned free and clear, without any debt, this analysis falls short.



- Improvement values (50%) of total Property Values
- Improvement values (40 to 50%) of total Property Values
- Improvement values (30 to 40%) of total Property Values
- Improvement values (>30%) of total Property Values

### Areas with High Development Pressures

Areas with the highest development pressures are typically vacant like some in the CTC and Centennial Valley; however, many older under-developed properties are experiencing significant reinvestment pressure along South Boulder Road and within Old Town.

Staff mapped the allowed additional development in the City with the building to property value ratio for all properties to identify areas experiencing change today and that will likely experience change in the future as the real estate market recovers.

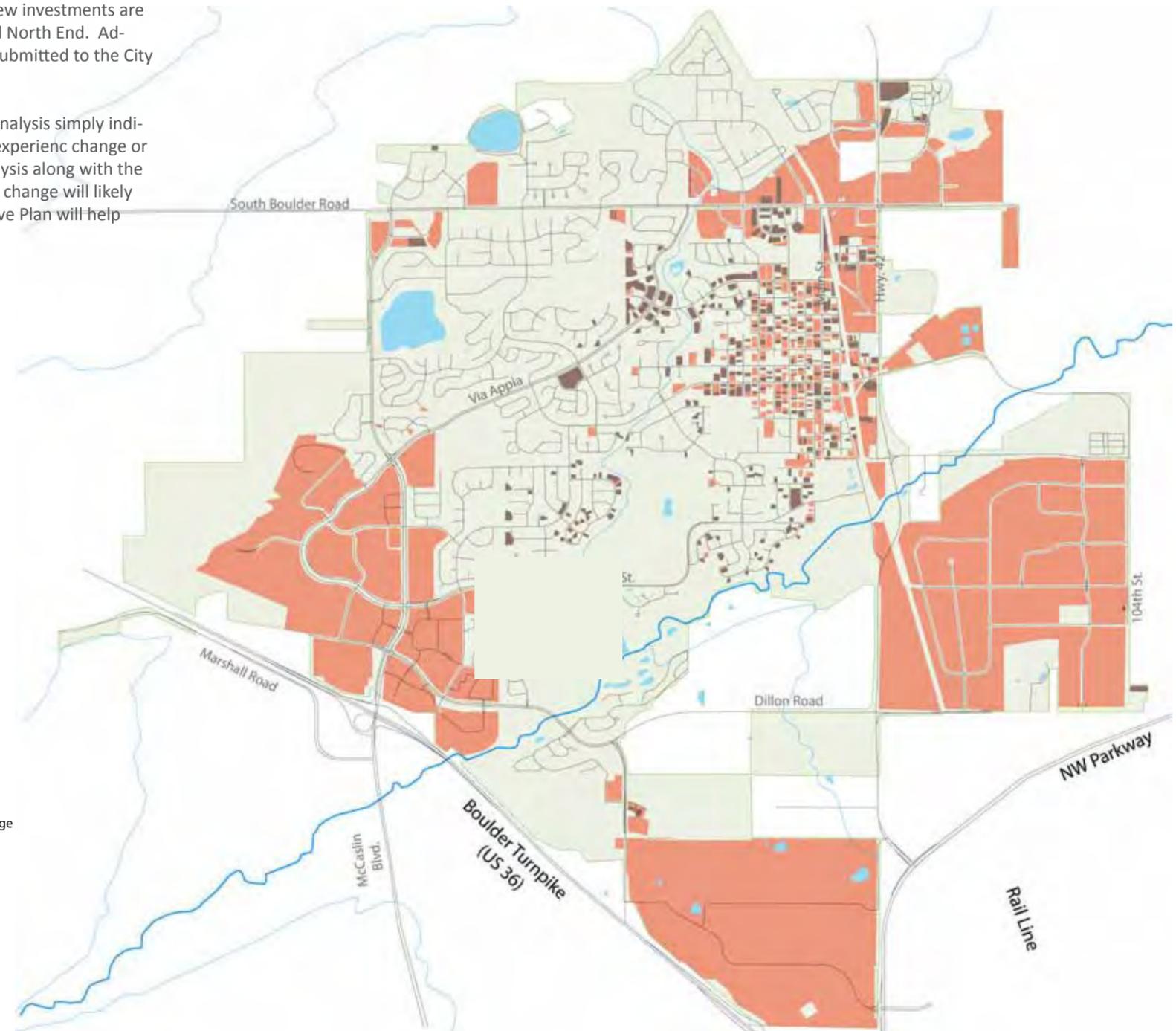
The majority of Louisville is stable; however, some specific areas are experiencing, or will likely experience, change. Downtown, over the last few years, has experienced substantial

reinvestment to its building stock. The Old Town neighborhood is also experiencing significant reinvestment with new houses replacing many of the older homes. This analysis also indicates large residential reinvestments may begin occurring in neighborhoods outside of Old Town. New investments are also occurring in the CTC, Steel Ranch, and North End. Additional development requests are being submitted to the City for property along South Boulder Road.

As a caveat, it is important to realize this analysis simply indicates which areas of the City are likely to experience change or should anticipate future change. This analysis along with the economic market study will indicate when change will likely occur by land use type. The Comprehensive Plan will help guide that change to the City's benefit.

### Areas of Stability and Change

- Areas of Stability
- Areas of Incremental Change
- Areas of Change



# The Vision Statement and Core Community Values

The 20 Year Plan for the City of Louisville has two primary components which guide the direction and implementation of the 2012 Comprehensive Plan Update.

The first key component is the Vision Statement and Core Community Values. The Vision Statement and Core Community Values are supported by the second key component, the Framework Plan.

Louisville's Vision Statement and Core Community Values define how the City sees itself and identify characteristics that should be carried into the future. The Vision Statement and Core Community Values were developed through extensive public outreach and represent the views of residents, business and property owners, and elected and appointed officials. The Vision Statement and Core Community Values serve as the rubric against which the Framework Plan was developed and how future City policies and decisions should be evaluated. All of the recommendations, principles, and policies in this Comprehensive Plan are designed to further the goals of the Vision Statement and Core Community Values.

The Framework Plan illustrates Louisville's community character and development expectations verbalized in the Vision Statement and Core Community Values. Together, the Vision Statement and Core Community Values visualized by the Framework Plan represent the long-range integrated land use, transportation and natural resource vision for the City.



## Vision Statement

*Established in 1878, the City of Louisville is an inclusive, family-friendly community that manages its continued growth by blending a forward-thinking outlook with a small-town atmosphere which engages its citizenry and provides a walkable community form that enables social interaction. The City strives to preserve and enhance the high quality of life it offers to those who live, work, and spend time in the community. Louisville retains connections to the City's modest mining and agricultural beginnings while continuing to transform into one of the most livable, innovative, and economically diverse communities in the United States. The structure and operation of the City will ensure an open and responsive government which integrates regional cooperation and citizen volunteerism with a broad range of high-quality and cost-effective services.*



# The Vision Statement and Core Community Values

## Core Community Values

The following Core Community Values are the foundation upon which the City of Louisville will make decisions and achieve the Community's vision.

### We Value...



**A Sense of Community** . . . where residents, property owners, business owners, and visitors feel a connection to Louisville and to each other, and where the City's character, physical form and accessible government contribute to a citizenry that is actively involved in the decision-making process to meet their individual and collective needs.



**Our Livable Small Town Feel** . . . where the City's size, scale, and land use mixture and government's high-quality customer service encourage personal and commercial interactions.



**A Healthy, Vibrant, and Sustainable Economy** . . . where the City understands and appreciates the trust our residents, property owners, and business owners place in it when they invest in Louisville, and where the City is committed to a strong and supportive business climate which fosters a healthy and vibrant local and regional economy for today and for the future.



**A Connection to the City's Heritage** . . . where the City recognizes, values, and encourages the promotion and preservation of our history and cultural heritage, particularly our mining and agricultural past.



**Sustainable Practices for the Economy, Community, and the Environment** . . . where we challenge our government, residents, property owners, and our business owners to be innovative with sustainable practices so the needs of today are met without compromising the needs of future generations.



**Unique Commercial Areas and Distinctive Neighborhoods** . . . where the City is committed to recognizing the diversity of Louisville's commercial areas and neighborhoods by establishing customized policies and tools to ensure that each maintains its individual character, economic vitality, and livable structure.



**A Balanced Transportation System** . . . where the City desires to make motorists, transit customers, bicyclists and pedestrians of all ages and abilities partners in mobility, and where the City intends to create and maintain a multimodal transportation system to ensure that each user can move in ways that contribute to the economic prosperity, public health, and exceptional quality of life in the City.



**Families and Individuals** . . . where the City accommodates the needs of all individuals in all stages of life through our parks, trails, and roadway design, our City services, and City regulations to ensure they provide an environment which accommodates individual mobility needs, quality of life goals, and housing options.



**Integrated Open Space and Trail Networks** . . . where the City appreciates, manages and preserves the natural environment for community benefit, including its ecological diversity, its outstanding views, clear-cut boundaries, and the interconnected, integrated trail network which makes all parts of the City accessible.



**Safe Neighborhoods** . . . where the City ensures our policies and actions maintain safe, thriving and livable neighborhoods so residents of all ages experience a strong sense of community and personal security.



**Ecological Diversity** . . . where the City, through its management of parks and open space and its development and landscape regulations, promotes biodiversity by ensuring a healthy and resilient natural environment, robust plant life and diverse habitats.



**Excellence in Education and Lifelong learning** . . . where the City allocates the appropriate resources to our library services and cultural assets and where the City actively participates with our regional partners to foster the region's educational excellence and create a culture of lifelong learning within the City and Boulder County.



**Civic Participation and Volunteerism** . . . where the City engages, empowers, and encourages its citizens to think creatively, to volunteer and to participate in community discussions and decisions through open dialogue, respectful discussions, and responsive action.



**Open, Efficient and Fiscally Responsible Government** . . . where the City government is approachable, transparent, and ethical, and our management of fiscal resources is accountable, trustworthy, and prudent.

# The Vision Statement and Core Community Values

## CHARACTER ZONES

This Comprehensive Plan Update introduces a new language and format to the community's Framework. The intent of the change is to clarify and illustrate the community's expectations related to the City's land use function, form, and character in the Framework, and to ensure the City's Vision Statement and Core Community Values are properly translated and illustrated in the Comprehensive Plan. The new language simplifies the format of the Framework into character zones. The character zones are described by two variables: development patterns and development types.

### Development Patterns

Three development patterns are found in Louisville: *urban*, *suburban*, and *rural*. These development patterns reflect the look and feel of the City. Development patterns dictate how streets are laid out; how property parcels are subdivided; how buildings are designed and arranged on a site; and how parks and public spaces are integrated into the community.

Specifically, the development patterns in the Framework establish guidelines for Small Area and Neighborhood Plans to implement specific regulations within the Louisville Municipal Code (LMC). The specific elements the development patterns influence include:

#### Building Form and Design

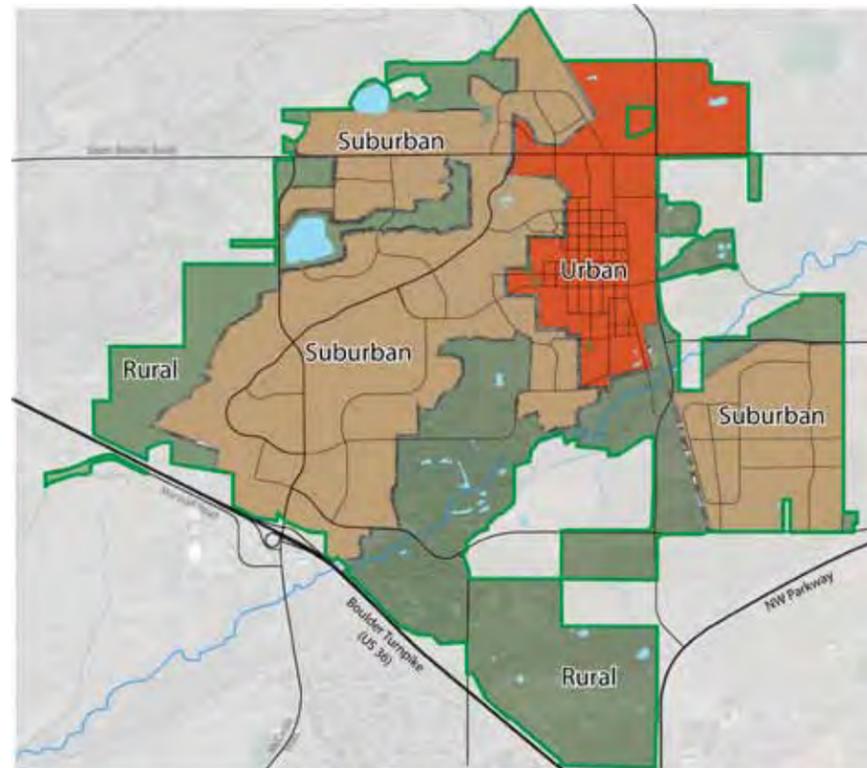
- Building Heights
- Building Mass and Scale
- Building Orientation

#### Infrastructure

- Streets
- Blocks
- Storm Water Facilities
- Public Spaces and Trails

#### Design Standards

- Yard & Bulk
- Parking Ratios
- Site Design



## Urban Pattern

The urban portions of Louisville are found in the north-east quadrant of the City and are generally more compact and walkable. The majority of the urban development pattern occurred in Louisville prior to 1960. Some urban development patterns have occurred since 2008. The urban areas of the City include: Downtown, Old Town, North End and Steel Ranch. Generally, the urban pattern of development includes the following distinguishing design characteristics.

### Streets

- Interconnected street network (smaller blocks)
- Alley / rear loaded properties
- Multimodal (Vehicle, pedestrian, bike, transit)
- Reduced speeds
- Balanced civic and mobility responsibilities

### Parcels

- Smaller parcels

### Building Design and Orientation

- Street Orientation
- Pedestrian mass, scale, and details

### Civic & Public Infrastructure

- Integrated
- Multi-purpose
- Formal landscape



Example Figure Ground - Downtown & Old Town Louisville



# The Vision Statement and Core Community Values

## Suburban Pattern

The suburban portions of Louisville generally evolved between 1960 and 2008 and are found along: Via Appia; McCaslin Boulevard; South Boulder Road; Centennial Valley; and within the Colorado Technology Center. The suburban patterns of development are typically more spread-out and multimodal when compared to urban patterns of development. Generally, suburban patterns of development include the following distinguishing design characteristics.

### Streets

- Disconnected street network (larger blocks)
- Street loaded properties
- Multimodal (Vehicular, Pedestrian, Bike, Transit)
- Higher speeds
- Mobility role larger than civic role

### Parcels

- Larger parcels

### Building Orientation

- Oriented towards property
- Vehicular mass, scale, and details

### Civic & Public Infrastructure

- Separated
- Single-purpose
- Informal landscape



Example Figure Ground - McCaslin Boulevard & Centennial Valley

## Rural Pattern

The rural portions of Louisville generally occur along the perimeter of City in the form of open space. However, rural development patterns have also emerged around the Coal Creek Golf Course, 96th Street and south of Dillon Road and include the Phillips 66 property. The rural patterns of development are typically more separated and vehicular based when compared to urban and suburban patterns of development. Generally, rural patterns of development include the following distinguishing design characteristics.

### Streets

- No street network (no block pattern)
- Street loaded properties
- Vehicular and bicycle design (pedestrian needs supported by trail network)
- Higher speeds
- Mobility priority

### Parcels

- Larger parcels

### Building Orientation

- Natural resource orientation
- Vehicular mass, scale, and details

### Civic & Public Infrastructure

- Separated
- Single-purpose
- Native landscape



Example Figure Ground - Avista, Monarch Campus, & Phillips 66 Property



# The Vision Statement and Core Community Values

## DEVELOPMENT TYPES

Five development types occur throughout Louisville: *centers, corridors, neighborhoods, special districts, and parks/open space*. These development types reflect the type of uses and activities; density, or intensity of development; and the amount of public infrastructure desired in different areas of the City.

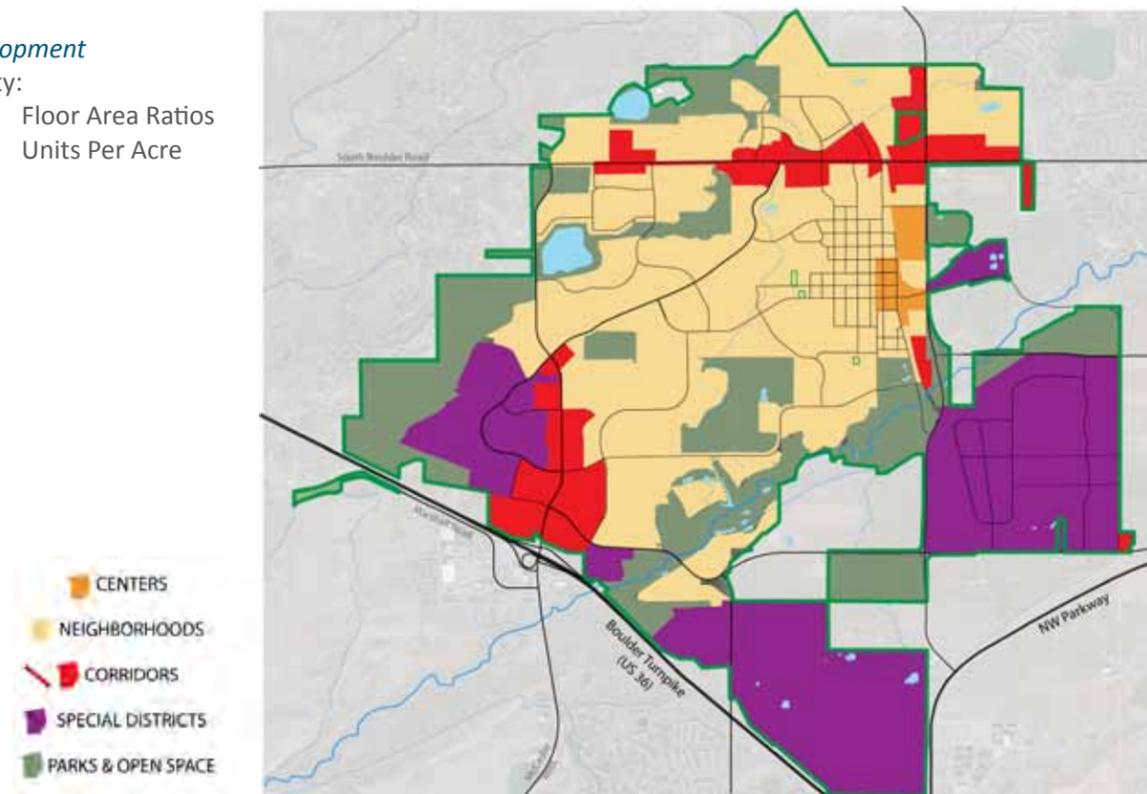
Specifically, the development types in the Framework will establish guidelines for Small Area and Neighborhood Plans to implement specific regulations within the Louisville Municipal Code (LMC). The specific elements the development types influence include:

### Land Use Mix

- Retail
- Commercial
- Residential
- Industrial
- Civic/Institutional

### Allowed Development

- Density:
  - Floor Area Ratios
  - Units Per Acre



## Centers

Downtown Louisville and its relationship with the Old Town neighborhood represent the City's only current center. The City's Framework identifies the emergence of two additional centers: one around South Boulder Road and Highway (HWY) 42, and the other near McCaslin Boulevard and US 36, south of Cherry Street.

Centers are defined by their mixture of uses (retail, commercial, and residential), street interconnectivity, and integrated public spaces. A center's physical design is that of a destination, or gathering point for city-wide activities. Centers are connected to and oriented toward their adjacent land uses. Centers typically have the greatest retailing opportunities. Centers feature integrated public spaces with a recognized public space, or focal point. Centers also have the highest potential for a vertical mix of uses.



# The Vision Statement and Core Community Values

## Corridors

Corridor development types are similar to center development types in the mixture and intensity of land uses. Corridors differ from centers in their shape, connectedness to adjacent land uses, and public space integration. Generally, corridor development types occur along arterial roadways in a linear form and are disconnected from adjacent land uses. Corridor development types are expected to develop along: McCaslin Boulevard north of Cherry Street and south of Via Appia; along South Boulder Road and along HWY 42, north of Hecla Drive.

Corridors typically have strong retail, commercial and multi-family development opportunities. Corridors lack integrated public spaces and typically do not have a focal point and central gathering area. Corridors typically feature a linear, not horizontal, mixture of uses. Generally, their architectural character is defined by the primary arterial roadway.



## Neighborhoods

Neighborhoods are the most abundant development type in the City of Louisville. Neighborhoods are predominantly residential land uses. Neighborhoods range from less dense large lot single family neighborhoods to higher density multi-family communities. Neighborhoods have public spaces either integrated within, or adjacent to them. Neighborhoods are generally sized by a ½ mile diameter (10 minute walk) and have well defined edges and boundaries.

A key component of this Comprehensive Plan update is the introduction of a recommended city-wide neighborhood planning initiative. The neighborhood plans are tailored toward the needs of individual neighborhood. They will ensure the neighborhoods remain livable, stable and successful as the region continues to grow and the City continues to evolve.



# The Vision Statement and Core Community Values

## Special Districts

Special Districts are unique development types customized to a particular location and development opportunity. Special Districts are predominantly a single use development, typically involving either industrial or office land uses. Special Districts range in density and intensity. Public spaces are seldom integrated within the development and are more often adjacent, or nearby the special district. Special districts within Louisville include: Centennial Valley, Coal Creek Business Park, Phillips 66 and the Colorado Technology Center.



## Parks and Open Space

Parks and Open Spaces are development types to be considered in Louisville. Parks and Open Spaces are predominantly a single institutional or civic use, in which retailing and entertainment opportunities may be temporarily allowed through a license agreement with the City. Parks and Open Spaces range in size and activity levels. The Parks and Open Spaces system is guided by the Parks Recreation Open Space and Trails (PROST) Master Plan, a companion document to the Comprehensive Plan.



## THE FRAMEWORK

The Framework uses the new character zone language outlined in the previous section to graphically represent the City of Louisville's adopted Vision Statement and Core Community Values. The Framework also represents a Long-Range Integrated Land Use, Transportation and Natural Resource Plan for the City. These elements provide a specific strategy for enabling the City to review and modify its land development regulations and assist in prioritizing the City's Capital Improvement Program. Together, the Vision Statement, the Core Community Values and the Framework establish community expectations and provide policy guidance for the anticipated areas of change and stability in the City.

The Framework's composition of land uses enables a place for existing and future residents to live, work, shop, and play. The composition of uses ensures a fiscal balance to maintain the City's high quality of services. The Framework also positions the City to capitalize on sound market strategies that will allow the City's revenue generating land uses to stay competitive with neighboring municipalities and the surrounding region.

The core component of the Framework is the identification and development of three mixed use urban centers in the City over the next twenty years.

1. Downtown / the Highway 42 Revitalization District;
2. Highway 42 and South Boulder Road; and,
3. McCaslin Boulevard.

The Framework also designates McCaslin Boulevard (North of Cherry Street and South of Via Appia), South Boulder Road (east of Via Appia), and HWY 42 (north of South Boulder Road) as urban corridors. The special districts of the City are defined to include Centennial Valley, Coal Creek Business Park, the Colorado Technology Center, 96th Street, Dillon Road, and the Phillips 66 property.

The plan identifies various suburban, urban, and rural neighborhoods throughout the City and outlines the parks and open space areas within the City. The follow-

ing section describes what is envisioned through the City's Vision Statement and Core Community Values and graphically represents it within the Framework.

### Street Types and Land Use

The land uses envisioned in the Framework's Center and Corridor development types, are determined by the street types in each area. This Comprehensive Plan identifies four types of streets in the Center and Corridor development types: Retail Primary and Secondary Streets and Mixed Use Primary and Secondary Streets.

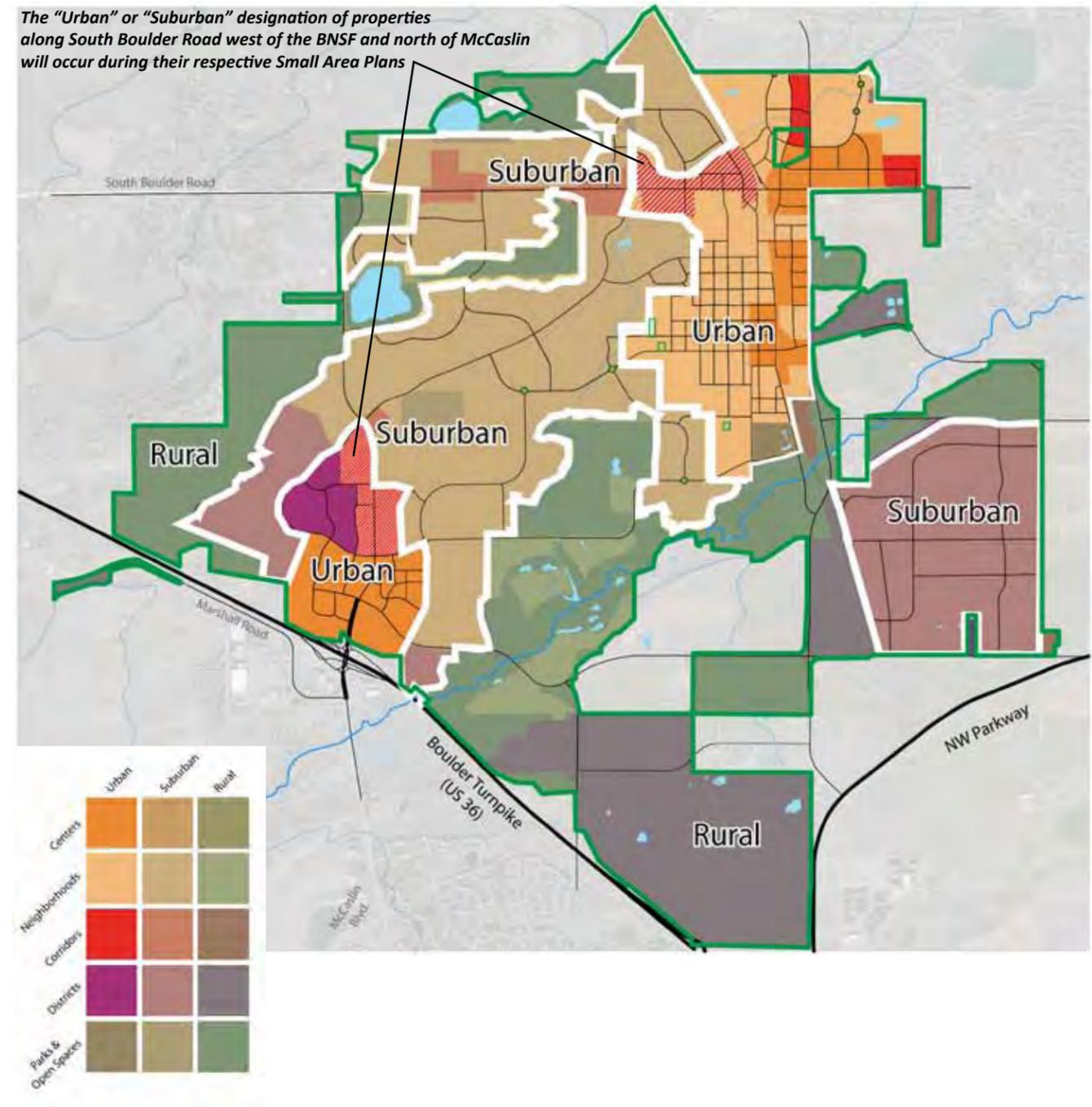
**Retail Primary Streets** are those streets best positioned for retail success. The traffic volumes and visibility these streets provide requires the provision of retail land uses on the ground floor of the buildings adjacent to them. Other commercial uses may be located on a second story, above the ground floor retail use. Residential land uses are not found on Retail Primary Streets.

**Retail Secondary Streets** have the potential for retail success, but their location and traffic volumes suggest that other commercial uses, such as office, may present a more economically viable land use option. Retail land uses should be clustered in key locations on secondary streets where visibility and access exist. Residential land uses are not found on Retail Secondary Streets.

**Mixed Use Primary Streets** are those streets that are located and designed for a mix of complementary uses. These streets may function as the center of a larger mixed use district, and as such are ideally situated for pedestrian activated ground floor commercial uses. Residential uses may occupy the upper floors of a mixed use building on a Mixed Use Primary Street.

**Mixed Use Secondary Streets** are found in mixed use districts, but they are not located in the heart, or center, of the district. The location of the streets and the corresponding reduced traffic volumes suggest that uses other than retail or office may be more appropriate on the ground floor of buildings fronting the street. Residential uses may be the sole use in a building located on a Mixed Use Secondary Street.

The "Urban" or "Suburban" designation of properties along South Boulder Road west of the BNSF and north of McCaslin will occur during their respective Small Area Plans



# The Framework

## DOWNTOWN AND THE HIGHWAY 42 REVITALIZATION DISTRICT

The combination of Downtown Louisville and the HWY 42 Revitalization District is the only one of the three urban centers identified in the Framework that currently operates as an urban center. Historic Downtown Louisville presently has a mix of land uses within a walkable and integrated urban pattern. Future efforts in this center will continue to encourage a healthy and vibrant downtown consisting of a mix of supporting businesses and residences. This Framework looks to build on the success of Downtown Louisville in the HWY 42 Revitalization District.

The existing HWY 42 Revitalization Plan calls for a mix of residential housing types, commercial retail and office areas, and parks and public spaces on the east side of the railroad tracks. As the Downtown and HWY 42 Revitalization District Urban Center continues to evolve, focus should be placed on policy and infrastructure improvements which enable these two areas to evolve as one well connected and cohesive urban center.

### Land Use Mix

The Downtown and Highway 42 Revitalization District Urban Center is intended to include a mix of uses through the entirety of the center, and within individual buildings. The Center will include a mix of Mixed Use Primary and Secondary Streets, and the land uses envisioned will follow those highlighted in the following table. The assignment of the street types in this sub-

Land Use	Street Type			
	Retail		Mixed Use	
	Primary	Secondary	Primary	Secondary
Retail	G	A	E	A
Office	A*	A	E	A
Residential	N	N	A*	A
Industrial	N	N	N	N
Institutional	A	A	A	A

- A Allowed
- A\* Allowed above ground floor
- E Either retail or office required on ground floor
- G Required on ground floor
- N Not allowed

district will be determined during a separate Planning initiative.

**Parking:** Shared parking environment where visitors park once and visit multiple locations without moving their automobile.

**Fiscal Performance:** Land use mix demonstrates positive fiscal benefits

**Density Range:**  
*Floor Area Ratio:* 1.0 – 2.0 with an overall average of 1.5  
*Unit per Acre:* Up to 25 DU/Acre

**Building Height:** 2-3 Stories

### Building Form and Design

- Buildings front the street and the ground floor is activated on primary retail streets.
- Human-scaled buildings.
- Pedestrian design detailing on all building ground floors and around public gathering spaces.
- The growth of the Center will preserve the character and scale of the neighborhoods within the Old Town Overlay District (Little Italy, Miners Field, and Old Town).

### Infrastructure

*Streets:* Reduced speed and multimodal  
*Block Length:* 300-400 Feet  
*Public Spaces and Trails:* Interconnected and integrated into the urban center and nearby open spaces

### Design Standards

*Downtown* - Downtown Framework; Downtown Design Handbook; and, Downtown Parking and Pedestrian Action Plan.  
*Revitalization District* - Mixed Use Development Design Standards and Guideline and Highway 42 Framework Plan.

### Policies

- Continue to recognize historic buildings are an integral part of downtown’s character and success, and develop a Preservation Master Plan for residential and commercial structures with historic eligibility.
- Encourage a diversity of housing types and provide a transition in scale from higher density uses in the core of the Urban Center to the adjacent neighborhoods.
- Promote the development of additional public parking and parking management strategies to efficiently use parking resources, ensure a walkable environment, and alleviate potential parking constraints as the Urban Center continues to redevelop.
- Continue to promote the vitality of the downtown through marketing (such as new identification and directional signs) and collaboration with the Chamber of Commerce, Business Retention and Development Committee, and the Downtown Business Association, as well as supporting destination venues such as the Louisville Street Faire, the Steinbaugh Pavilion, Memory Square, the Louisville Arts Center and the Community Park.
- Encourage business diversity through strategic public infrastructure improvements and business assistance which encourages new private investment and business development.
- Complete the necessary street network, pedestrian, and bicycle connections between the Downtown Area and the Highway 42 Revitalization District to provide travel choices, stabilize existing neighborhoods and create one cohesive urban center.
- Promote safe connections for all transportation modes across major transportation corridors and between adjacent commercial areas.

Pedestrian crossings should be completed across HWY 42 and under the existing rail tracks to ensure safe pedestrian passage.

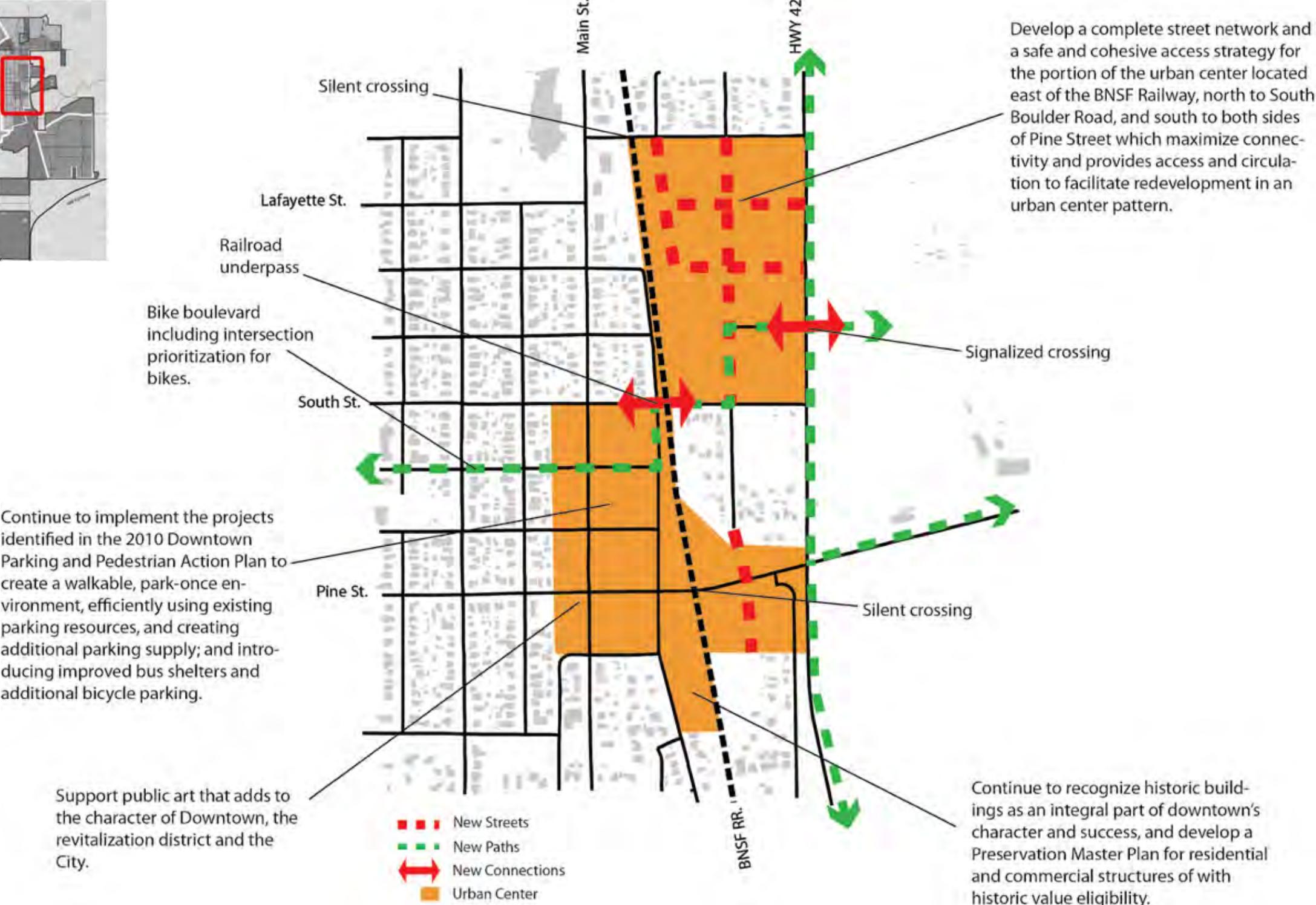
- Develop a complete street network and a safe and cohesive access strategy for the portion of the urban center located east of the BNSF Railway, north to South Boulder Road, and south to both sides of Pine Street which maximizes connectivity and provides access and circulation to facilitate redevelopment in an urban center pattern.
- Promote the health of downtown through a traditional development pattern and pedestrian scaled redevelopment including expansion of business and housing opportunities.
- Continue to implement the projects identified in the 2010 Downtown Parking and Pedestrian Action Plan to create a walkable park once environment, efficiently using existing parking resources, creating additional parking supply; and introducing improved bus shelters and additional bicycle parking.
- Support public art initiatives which add to the character of Downtown, the Revitalization District and the City.
- Street network enhancements should only occur concurrent with the approved development, or redevelopment of a property, or neighborhoods.



# The Framework



Location Map



# The Framework

## MCCASLIN BOULEVARD (SOUTH OF CHERRY)

The McCaslin Boulevard Urban Center will serve as the focal point for a regionally significant commercial activity center. Future public and private investment is needed to transform this area from an auto oriented suburban retail center, to a walkable mixed-use transit supportive urban center. As properties redevelop over time, attention will be given to enabling a more interconnected block structure that introduces a walkable street network, and the possibility of a mixture of uses, to an area that currently consists of large single purpose properties. The block structure in the McCaslin Boulevard Urban Center will allow for larger blocks than those found in Old Town, but basic connectivity through the Center will be enhanced over time.

The forthcoming Diverging Diamond Interchange and Bus Rapid Transit (BRT) center located at the McCaslin and US Highway 36 interchange will provide increased vehicle capacity and regional transit options that will support higher intensity development infill opportunities. While the entire Urban Center will benefit from the enhanced transit service along US 36, the area surrounding the BRT stop should realize a higher development potential. The McCaslin Boulevard Urban Center shall remain the City of Louisville's primary retailing center and will have the highest intensity of development in the City.

### Land Use Mix

The McCaslin Boulevard Urban Center shall remain the City's primary retail center that is supported by a mix of land uses including office and residential. The center will support a vertical mix of land uses with single use residential buildings permitted only in proximity to and a relationship with adjacent to existing residential areas. The Center is intended to include Retail Primary and Secondary Streets and Mixed Use Primary and Secondary Streets. The location and classification of these streets will be determined during the creation of a small area plan for the McCaslin Boulevard Urban Center.

**Parking:** Majority on-site private parking associated with a particular use. Shared

Land Use	Street Type			
	Retail		Mixed Use	
	Primary	Secondary	Primary	Secondary
Retail	G	A	E	A
Office	A*	A	E	A
Residential	N	N	A*	A
Industrial	N	N	N	N
Institutional	A	A	A	A

A Allowed  
 A\* Allowed above ground floor  
 E Either retail or office required on ground floor  
 G Required on ground floor  
 N Not allowed

parking facilities encouraged in the vicinity to the BRT Station.

**Fiscal Performance:** Land use mix demonstrates strong fiscal benefits

### Density Range:

*Floor Area Ratio:* Average of 1.0

*Unit per Acre:* Up to 30 DU/Acre

**Building Height:** 2-3 Stories. A 4th story allowed only if view sheds are preserved, shading impacts are mitigated, and the public realm is not adversely impacted.

### Building Form and Design

1. Ground floor oriented towards the street
2. Ground floor activated with retail and commercial uses and pedestrian scaled development
3. Provide buildings which transition in scale from adjacent uses

### Infrastructure

*Streets:* Reduced speed and multi-modal

*Block Length:* 300-600 Feet

*Public Spaces and Trails:* Public gathering spaces and focal points on both sides of McCaslin Boulevard. Trails integrated into the urban center and transitioning to Davidson Mesa.

### Design Standards

Future development will be guided by a Small Area Plan which will allow for flexibility in the urban center to enable emerging market retail, office, residential and mixed use trends to develop as long as the desirable form of the center is maintained.

The Commercial Development Design Standards and Guidelines (CDDSG) currently guide design in the urban center. These guidelines were created for an auto-centric suburban single-use commercial environment, and do not provide flexibility for a changing commercial retail market. The small area plan will address building placement, block structure, landscaping, and signage requirements consistent with the urban center character, and shall replace the CDDSG in governing the design character of the Urban Center.

### Policies

1. Build upon the planned Diverging Diamond Interchange and the BRT Station to provide a higher intensity mix of interdependent and compatible land uses with quality access to transit opportunities.
2. Encourage higher intensity transit oriented development within proximity of the BRT station.
3. New residential uses should first be introduced in proximity to and a relationship with existing residential areas.
4. Introduce public gathering spaces on both the east and west side of McCaslin Boulevard which will help to create an identity for the area and allow for public events.
5. Retain commercial retail land supply and promote the retention of existing commercial development as a primarily regional retail center.
6. Enhance the City's regional retail opportunities at the US 36 and McCaslin Boulevard interchange.

7. Emphasize retention of commercial retail uses as a component of any transit oriented development.
8. Increase pedestrian connectivity across McCaslin Boulevard and between employment centers, retail areas, and public land areas within the Urban Center transforming McCaslin Boulevard from a barrier, to the feature that connects both sides of the urban center.
9. Promote safe connections for all transportation modes across major transportation corridors and between adjacent commercial areas.
10. Provide safe pedestrian crossings of McCaslin Boulevard to assist in the integration of both sides of the street. Promote site planning design standards that support and facilitate pedestrian and bicycle access and alternative modes of transportation.
11. New gateway features and wayfinding should reinforce the McCaslin Boulevard interchange area as a primary entryway to the City.
12. Support public art and amenities that add to the character of the McCaslin Boulevard Urban Center and the City.
13. Areas west of McCaslin Boulevard should not include any Mixed Use streets.
14. Residential development may be allowed east of McCaslin if it is incorporated into a development proposal which provides exceptionally strong fiscal and economic benefits to the City.





Location Map

Increase pedestrian connectivity across McCaslin Boulevard and between employment centers, retail areas, and public land areas within the Urban Center transforming McCaslin from a barrier into being a feature that connects both sides of the urban center.



New residential uses should first be introduced in proximity to and a relationship with existing residential areas.

Introduce public gathering spaces on both the east and west side of McCaslin which will help to create an identity for the area and allow for public events.

Build upon the planned Diverging Diamond Interchange and the Bus Rapid Transit Station to provide a higher intensity mix of interdependent and compatible land uses with easy access to transit opportunities.

New gateway features and wayfinding should reinforce the McCaslin interchange area as a primary entryway to the City.

# The Framework

## HIGHWAY 42 AND SOUTH BOULDER ROAD

The Highway 42 and South Boulder Road Urban Center will bring the separate parcels surrounding the Highway 42 and South Boulder Road intersection into one cohesive center. As properties redevelop in this area, attention will be paid to introducing a more connected street grid creating smaller parcels which relate to one another in an urban and walkable mixed use environment. Commercial land uses and higher density residential uses will concentrate along the South Boulder Road and Highway 42 intersection while lower density residential uses should locate away from the main arterials to provide a transition to the existing neighborhoods.

### Land Use Mix

The Highway 42 and South Boulder Road Urban Center is intended to include a mix of uses. This center will include a mix of Retail Primary and Secondary Streets and Mixed Use Primary and Secondary Streets. The location and classification of these streets will be determined during the creation of a small area plan for the Highway 42 and South Boulder Road Urban Center.

Land Use	Street Type			
	Retail		Mixed Use	
	Primary	Secondary	Primary	Secondary
Retail	G	A	E	A
Office	A*	A	E	A
Residential	N	N	A*	A
Industrial	N	N	N	N
Institutional	A	A	A	A

- A Allowed
- A\* Allowed above ground floor
- E Either retail or office required on ground floor
- G Required on ground floor
- N Not allowed

**Parking:** On-site private parking associated with a particular use. Allowance for shared parking agreements

**Fiscal Performance:** Land use mix demonstrates positive fiscal benefits

**Density Range:**  
**Floor Area Ratio:** Average of 1.0 FAR  
**Unit per Acre:** Up to 30 DU/Acre

**Building Height:** 2-3 Stories

### Building Form and Design

1. Ground floor oriented towards the street.
2. Ground floor activated with retail and commercial uses and pedestrian scaled development.
3. Provide buildings which transition in scale to adjacent neighborhoods.

### Infrastructure

**Streets:** Slow speed and multimodal with emphasis on creating livable and urban arterial roadways (South Boulder Road and HWY 42).

**Block Length:** 300-400 Feet

**Public Spaces and Trails:** Public gathering spaces and focal points on both sides of HWY 42 interconnected and integrated into the urban center and transitioning through the center to the surrounding trail network and open space.

### Design Standards

A small area plan should be completed to further define the desired form of development in the Highway 42 and South Boulder Road Urban Center. The majority of the center is currently regulated by the Commercial Development Design Standards and Guidelines (CDDSG). These guidelines were created for an auto-centric suburban commercial environment, and they do not address the type of urban center development envisioned in this Comprehensive Plan. The small area plan will address building placement, block structure, landscaping, and

signage requirements consistent with the urban center character and shall replace the CDDSG in governing the design character of the Urban Center.

New design guidelines should be created which address building placement, block structure, landscaping, and signage requirements City-wide consistent with proposed character zones of the City. The Mixed Use Development Design Standards and Guidelines will continue to provide design guidance for the portion of the center located in the Revitalization District.

### Policies

1. Include a mix of low to higher density residential and commercial neighborhood services.
2. Transition from higher intensity uses at the core of the center to lower density uses at the neighborhoods on the periphery of the center
3. To encourage the economic health of existing shopping centers, leverage public investment for infrastructure improvements and business assistance packages to stimulate private redevelopment.
4. Focus on community retail opportunities at the intersection of South Boulder Road and HWY 42 which serve a smaller trade area than those found at a regional retail center.
5. Introduce new roadway network in the center to enable the area to operate as a connected urban center. Medium to high density residential areas should be located with proximity to and pedestrian access to public transportation, neighborhood parks and trail connections and commercial services.
6. As redevelopment occurs, introduce roadway network to enable a variety of redevelopment possibilities. The City should cooperate with the City of Lafayette and Boulder County to secure access between Hecla Lake, Waneka Lake, and Coal Creek.

7. Create a high degree of trail and open space connectivity reinforcing the east/west connectedness of a regional trail system to Hecla Lake and north/south connectedness to Downtown and Coal Creek regional trail.
8. Explore realigning Main Street on the western edge of the urban center to consolidate access near the railroad tracks and introduce a Gateway to the HWY 42 and South Boulder Road urban center and Downtown Louisville.
9. Connect the Highway 42 and South Boulder Road Urban Center to the rest of Louisville by the introduction of new roads, trail connections, and pedestrian crossings of the railroad tracks, South Boulder Road, and HWY 42.
10. Encourage development of new commercial retail services in the Urban Center where the location and scale of such development is consistent with design standards developed for the HWY 42 corridor and the character of the immediate neighborhood.
11. Louisville Plaza shopping center should not include any Mixed Use streets.



# The Framework



Location Map

Introduce new roadway network in the center to enable the area to operate as a connected urban center.

Explore realigning Main Street on the western edge of the urban center to consolidate access near the railroad tracks and introduce a Gateway to the HWY 42 and South Boulder Road urban center and Downtown Louisville.



Create a high degree of trail and open space connectivity reinforcing the east/west connectedness of a regional trail system to Hecla Lake and north/south connectedness to Downtown and Coal Creek regional trail.

Encourage the development of new commercial retail services in the Urban Center where the location and scale of such development is consistent with design standards developed for the Highway 42 corridor and the character of the immediate neighborhood.

Focus on community retail opportunities at the intersection of South Boulder Road and Highway 42 which serve a smaller trade area than those found at a regional retail center.

# The Framework

## SOUTH BOULDER ROAD AND HIGHWAY 42 CORRIDORS

### South Boulder Road Suburban Corridor (West of Via Appia)

South Boulder Road begins as a Suburban Corridor at City limits and remains one as it travels east to Via Appia. As a Suburban Corridor, South Boulder Road's main function is to move all modes of transportation through the corridor and to provide access to the neighborhoods and commercial uses surrounding the corridor. The South Boulder Road Suburban Corridor contains a horizontal mix of uses including residential and commercial. The parcels in the suburban corridor are mainly connected along South Boulder Road and the land uses are setback from the roadway or buffered from it through landscaping. In this fashion, South Boulder road serves as an edge between the uses on either side of it. Safe pedestrian and bicycle crossings at key locations are needed to safely connect both sides of the corridor.

### South Boulder Road Urban Corridor (East of Via Appia)

The South Boulder Road Urban Corridor runs adjacent to South Boulder Road beginning at Via Appia and extending east to the railroad tracks where it feeds into the Highway 42 and South Boulder Road Urban Center. After leaving the Urban Center, South Boulder Road transitions back to an urban corridor until it leaves City limits. The urban corridor section of South Boulder Road begins the transition of the road from a suburban edge where the road is a division between land uses on either side of it, to an urban seam where the land uses in the corridor begin to engage with the road instead of turning their back on it. Development in the urban corridor section of South Boulder Road has a high degree of linear (east/west) connectivity between parcels and transitions to adjacent neighborhoods at the back of the corridor through the scaling down of buildings and the introduction of landscape buffers. The South Boulder Road urban corridor provides a transition to the Downtown and the Revitalization District urban center, and the Highway 42 and South Boulder Road urban center.

### Highway 42 Urban Corridor

The Highway 42 Urban Corridor begins at the City limits adjacent to Paschal Drive and continues south on the

west side of Highway 42 until transitioning to the urban Center at Hecla Drive. This urban corridor focuses on commercial opportunities including office and neighborhood retail along with higher density housing in close proximity to the roadway. The land uses along the corridor will transition and provide connections to the lower density residential uses found on the outer edge of the corridor. Pedestrian and bicycle safe connections will be constructed across Highway 42 to connect users to the amenities on either side of the corridor, and provide regional trail connectivity.

### Land Use Mix

Urban Corridors include a mix of uses including residential, commercial, retail, and park land. The South Boulder Road Corridor and Highway 42 Corridor is a combination of Mixed Use Primary and Secondary Streets. The location and classification of these street segments will be determined during the creation of a small area plan for the Highway 42 and South Boulder Road Corridors. The following table provides an overview of the land uses envisioned in the South Boulder Road and Highway 42 Corridors.

**Parking:** Majority on-site private parking associated with a particular use. Allowance for shared parking agreements in urban corridors.

Land Use	Street Type			
	Retail		Mixed Use	
	Primary	Secondary	Primary	Secondary
Retail	G	A	E	A
Office	A*	A	E	A
Residential	N	N	A*	A
Industrial	N	N	N	N
Institutional	A	A	A	A

A Allowed  
 A\* Allowed above ground floor  
 E Either retail or office required on ground floor  
 G Required on ground floor  
 N Not allowed

**Fiscal Performance:** Land use mix demonstrates positive fiscal benefits in the urban corridor, and may demonstrate neutral fiscal returns in suburban corridors.

### Density Range:

**Floor Area Ratio - Urban Corridors:**

Fronting the Arterial – Up to 1.0 FAR

Not fronting the Arterial - Up to .5 FAR

**Floor Area Ratio - Suburban Corridors:** Less than .25 FAR

**Units per Acre - Urban Corridors:** Up to 25 DU/Acre

**Units per Acre - Suburban Corridors:** Up to 15 DU/Acre

### Building Height:

**Urban Corridors:** 2-3 Stories

**Suburban Corridors:** 2 Stories

### Building Form and Design

**Urban Corridors:** Ground floor is oriented towards the Arterial Road and/or a secondary street. Provide buildings which transition in scale and mass to adjacent neighborhoods on the back of the property

### Infrastructure

**Streets - Urban Corridor Arterials:** Reduced speed accommodating all modes and including safe pedestrian and bicycle crossings

**Street - Suburban Corridor Arterials:** Higher speed streets with safe pedestrian and bicycle crossings at key locations

**Block Length - Urban Corridor:** 300-400 Feet

**Block Length - Suburban Corridor:** 300-600 Feet

**Public Spaces and Trails:** Integrated into and transitioning through the corridor

### Design Standards

There is currently no cohesive design guidance for the urban and suburban corridors in the City. The Commercial Development Design Standards and Guidelines (CDDSG) regulate commercial development, and various planned unit developments and other residential zoning standards govern residential development. The small area plan for the corridor will address building placement, block structure, landscaping, and signage require-

ments consistent with the urban center character and shall replace the CDDSG in governing the design character of the Urban Corridor.

New design guidelines should be created which address building placement, block structure, landscaping, and signage requirements City-wide consistent with proposed character zones of the City.

### Polices

1. In urban corridors, position new buildings close to the arterial road and provide the highest intensity of development adjacent to the road.
2. Use form-based design regulations to focus on establishing a street presence along the arterial corridors
3. Locate retail and commercial land uses in close proximity to South Boulder Road to provide visibility and access.
4. Explore realigning Main Street on the southern edge of the corridor to align with Centennial Drive to provide a gateway to downtown and provide a safe and efficient access plan for the corridor.
5. Provide access for all modes of transportation through the corridor including complete streets with bicycle and pedestrian facilities and safe crossings of the arterial roads.
6. Develop a comprehensive signage and way finding strategy for the corridor.



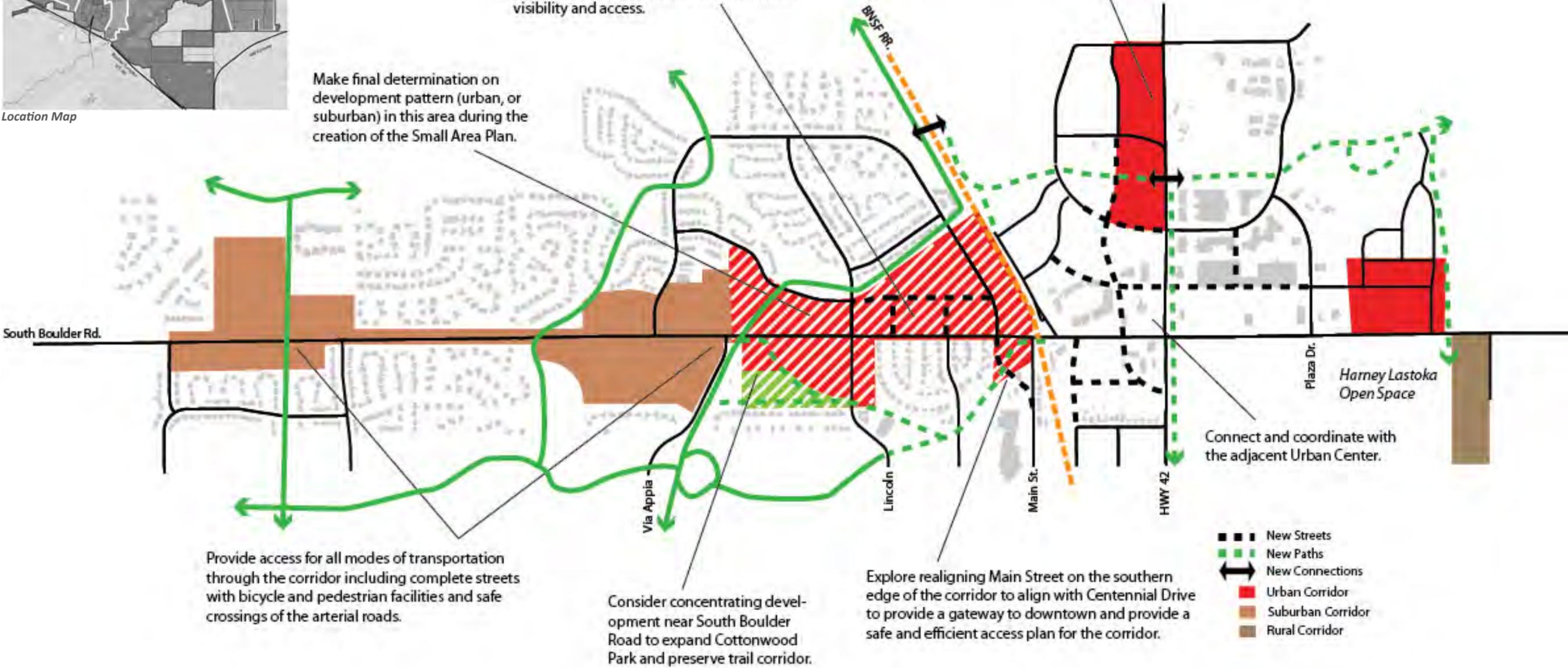


Location Map

Make final determination on development pattern (urban, or suburban) in this area during the creation of the Small Area Plan.

Locate retail and commercial land uses in close proximity to South Boulder Road to provide visibility and access.

In urban corridors, position new buildings close to the arterial road and provide the highest intensity of development adjacent to the road.



# The Framework

## MCCASLIN BOULEVARD CORRIDOR (North of Cherry Street)

McCasin Boulevard transitions from an urban center to an urban corridor from Cherry Street north to Via Appia. The land uses in this corridor will focus on the activity generated by McCasin Boulevard and will include a mix of residential, commercial and neighborhood retail uses. Linear (north/south) connections will be maintained between individual parcels in the corridor. Safe pedestrian and bicycle crossings of McCasin Boulevard will be implemented to enable safe access between the businesses, offices, and residences on either side. The McCasin Boulevard Urban Corridor transitions to a Suburban Corridor at the southeast corner of Via Appia and McCasin.

### Land Use Mix

Urban Corridors include a mix of uses including residential, commercial, retail, and park land. The McCasin Boulevard Corridor is a combination of Mixed Use Primary and Secondary Streets. The location and classification of these street segments will be determined during the creation of a small area plan for the McCasin Boulevard Corridor. The following table provides an overview of the land uses envisioned in the McCasin Boulevard Corridor.

Land Use	Street Type			
	Retail		Mixed Use	
	Primary	Secondary	Primary	Secondary
Retail	G	A	E	A
Office	A*	A	E	A
Residential	N	N	A*	A
Industrial	N	N	N	N
Institutional	A	A	A	A

- A Allowed
- A\* Allowed above ground floor
- E Either retail or office required on ground floor
- G Required on ground floor
- N Not allowed

**Parking:** Majority on-site private parking associated with a particular use. Allowance for shared parking agreements.

**Fiscal Performance:** Land use mix demonstrates positive fiscal benefits.

**Density Range:**  
**Floor Area Ratio:**  
 Fronting McCasin Boulevard – Up to 1.0 FAR  
 Not fronting McCasin Boulevard - Up to .5 FAR  
**Units per Acre:** Up to 30 DU/Acre

**Building Height:** 2-3 Stories

**Building Form and Design**  
 Ground floor is oriented towards McCasin Boulevard and/or a secondary street. Provide buildings which transition in scale to adjacent neighborhoods.

**Infrastructure**  
**Streets – McCasin Boulevard:** Transitioning to lower speeds which accommodate all modes of travel in an urban environment, and including safe bicycle and pedestrian crossings.  
**Block Length:** 300-600 Feet  
**Public Spaces and Trails:** Integrated into and transitioning through the corridor

**Design Standards**  
 There is not currently cohesive design guidance for the McCasin Boulevard urban corridor. The Commercial Development Design Standards and Guidelines regulate new commercial development, and various planned unit developments and other residential zoning standards govern residential development. Unified standards should be created that help to create a cohesive linear corridor with a mix of uses. Setbacks and landscaping standards should be revised to enable visibility of commercial structures and a unified signage and wayfinding program should be implemented.

The small area plan for the corridor will address building placement, block structure, landscaping, and signage

requirements consistent with the urban center character and shall replace the CDDSG in governing the design character of the Urban Corridor.

Form-based design regulations should be used to focus on establishing a street presence along McCasin Boulevard with both single use commercial buildings and mixed use residential buildings.

New design guidelines should be created which address building placement, block structure, landscaping, and signage requirements City-wide consistent with proposed character zones of the City.

### Policies

1. Position new buildings close to the street and provide the highest intensity of development on the Roadway. Interconnect corridor parcels through cross access easements to enable pedestrian and bicycle mobility between uses.
2. Retail and Commercial land uses should be located in close proximity to McCasin Boulevard to provide visibility and access.
3. Use form-based design regulations to focus on establishing a street presence along the arterial corridors.
4. Introduce a unified signage and wayfinding program to provide a gateway to the City of Louisville and establish and identity for the corridor.
5. Provide access for all modes of transportation through the corridor including complete streets with bicycle and pedestrian facilities and safe crossings of McCasin Boulevard.
6. No Mixed Use streets should be designated north of Centennial Pavillion shopping center.





Location Map

Make final determination on development pattern (urban, or suburban) in this area during the creation of the Small Area Plan.

Retail and Commercial land uses should be located in close proximity to McCaslin Boulevard to provide visibility and access.

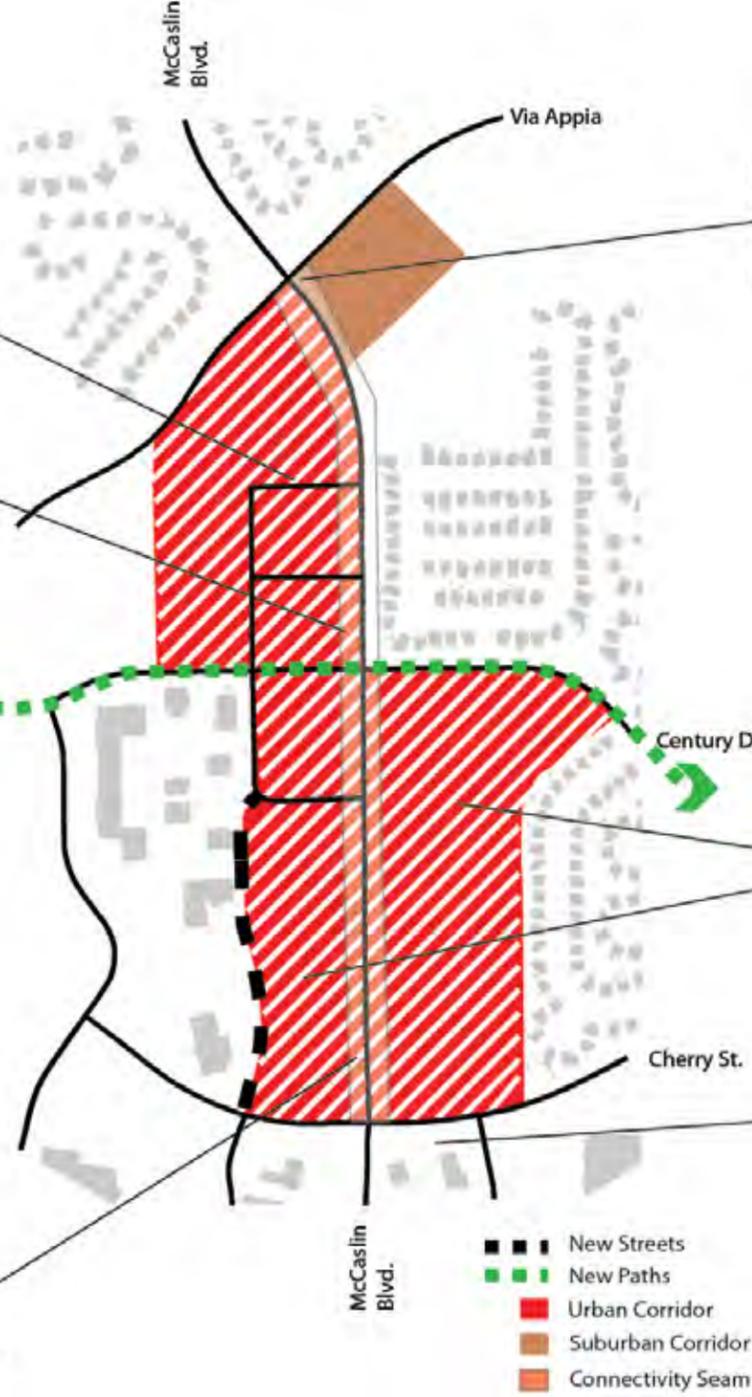
Davidson Mesa Open Space

Introduce a unified signage and way-finding program to provide a gateway to the City of Louisville and establish and identity for the corridor.

Interconnect corridor parcels through cross access easements to enable pedestrian and bicycle mobility between uses.

Connect and coordinate with adjacent Urban Center.

Provide access for all modes of transportation through the corridor including complete streets with bicycle and pedestrian facilities and safe crossings of McCaslin Boulevard.



# The Framework

## SPECIAL DISTRICTS

### Centennial Valley and Coal Creek Business Park

Centennial Valley is an office park special district located between McCaslin Boulevard and the Davidson Mesa Open Space. The portion of the Centennial Valley Business Park located to the west of Centennial Parkway is suburban and consists of single use large office parcels. The portion of the Special District located to the east of Centennial Parkway is urban and consists of smaller office parcels that are interconnected and have direct bicycle and pedestrian access to the McCaslin Boulevard urban center and urban corridor. The Coal Creek Business Park is a suburban office park Special District located adjacent to Dillon Road.

### Colorado Technology Center (CTC)

The Colorado Technology Center Suburban Special District is located in the southeastern corner of the City and includes a mix of industrial, office, and research and development facilities. This Special District is a key employment center for the City and will continue to be in the future. Design standards will serve to buffer land uses of differing intensities in the special district, and maintain a high quality employment center that responds to the needs of businesses.

### 96th and Dillon

The 96th Street and Dillon Road Rural Special District serves as the rural gateway to the City of Louisville. The area will include a mix of commercial, institutional, and industrial uses. The uses in this special district will be separated and buffered from the surrounding roads to maintain the appearance of a rural entryway to the City.

### Phillips 66

The Phillips 66 Rural Special District is located in the southern portion of the City and is currently vacant. The land in this location is a unique subarea of the City which contains vital community facilities that provide critical services to the City and also presents a unique regional development opportunity. Due to the isolated nature of this special district, it is somewhat self-contained. However, the district will remain connected to the region through US 36 and to the rest of Louisville

through pedestrian and bicycle trails.

### Empire Road

The Empire Road rural special district is situated adjacent to municipal recreational fields (Louisville’s baseball and Lafayette’s future soccer) and the Mayhoffer agricultural lands. The district serves as a rural gateway to downtown Louisville and provides direct access for Old Town residents to Boulder County’s open space and the Coal Creek Trail. The area includes the City’s Wastewater Treatment Plant and the Municipal Services Building. The uses and buildings in this special district should celebrate rural entryway to Downtown Louisville and facilitate recreational connections to the Coal Creek Trail.

### Land Use Mix

Each Special District’s land use mix is unique and customized to each individual area. Generally the land use mix within each area is:

**Residential:** Not Allowed

**Retail:** Encouraged in locations where the use can capitalize on the activity in the special district, or traffic on surrounding roads.

**Office:** Allowed as the single use on a parcel, or as part of a mixed commercial/industrial building

**Industrial:** Allowed as the single use on a parcel, or as part of a mixed commercial/industrial building

**Institutional:** Allowed

**Parking:** On-site private parking associated with a particular use.

**Fiscal Performance:** Land use mix demonstrates neutral fiscal benefits and positive economic benefits

### Density Range:

*Floor Area Ratio - Urban:* Up to .75 FAR

*Floor Area Ratio - Suburban:* Up to .5 FAR

*Floor Area Ratio - Rural:* Up to .25 FAR

### Building Height:

*Urban:* 2-3 Stories

*Suburban:* 2-3 Stories

*Rural:* 3 stories. Additional stories permitted if structures are clustered and located out of the public view shed and buffered by surrounding topography and Open Space.

### Building Form and Design

Buildings are oriented towards the property they sit on and serve the unique use requirements of the property.

### Infrastructure

Streets: Varied Speeds

### Block Length:

Urban: 300-600 Feet

Suburban: 1,000 – 2,000 Feet

Rural: No defined block structure

*Public Spaces and Trails:* Serving the periphery of the district.

### Policies

1. Articulate and define Special Districts’ specific character expectations in customized general development plans adopted by City Council.
2. Create walkable special districts that are connected to the rest of the City through sidewalks and pedestrian and bicycle paths.
3. Encourage internal services which meet the daily needs of the people working in the district.
4. Establish new design guidelines, replacing the CDDSG and IDDSG, to address building placement, block structure, landscaping, and signage requirements City-wide consistent with proposed character zones of the City.

5. Use form-based design regulations to focus on establishing a street presence along McCaslin Boulevard with both single use commercial buildings and mixed use residential buildings.





# The Framework

## NEIGHBORHOODS AND HOUSING (NH)

The established residential neighborhoods of Louisville are often overlooked but are of paramount importance to the citizens of Louisville residing in them. The City’s residential housing stock is aging and rehabilitation issues within residential areas will create challenges that the City must be prepared to meet. Outside of Old Town, the City’s residential areas are governed by independent Planned Unit Developments (PUDs). While these PUDs are comprehensive, they are not equipped to assist the City in providing coherent neighborhood plans and strategies for issues such as: housing rehabilitation, cut-through traffic, safe routes to school, aging infrastructure, and monitoring and maintenance of community services.

Changes in adjacent commercial and industrial land uses, particularly infill redevelopment, will also impact neighborhoods, requiring the establishment of compatible design criteria. The neighborhoods must also meet the housing goals of the City, for both current and future residents.

This Comprehensive Plan therefore recommends creating plans for each neighborhood and initiating a housing policy conversation in the City to aid in addressing these and other issues.

The residential areas of Louisville have been characterized into nine neighborhoods. The starting point was circles with half-mile radii, representing a reasonable walking distance. The neighborhoods were then formed around these circles based on geography, connectivity, housing stock, and the input of residents at the charrette and elsewhere. They are as follows:

**Davidson Mesa** – the homes on top of the mesa in the northwest corner of the City, stretching to both sides of South Boulder Road and bounded on the south and east by Coyote Run open space. The area is mostly larger-lot single-family homes, with a few duplexes and some office uses along South Boulder Road.

**North Louisville** – the central residential area north



of South Boulder Road, with the north open space to the west and the BNSF railway to the east. The area consists of single-family homes, townhomes, apartment units, and commercial and retail developments along South Boulder Road.

**Hecla** – the newer homes on either side of HWY 42, north of South Boulder Road and east of the BNSF railway. The area includes apartments, townhomes, single-family homes, senior housing, and significant retail development around South Boulder Road and HWY 42.

**Lake Park** – the houses around Lake Park on Via Appia, bounded by Coyote Run open space to the west, South Boulder Road to the north, and Old Town to the south and east. The area has apartments, townhomes, mobile homes, and single-family homes.

**Hillside** – the houses on the slope of Davidson Mesa, with Via Appia to the south and Coyote Run to the north, stretching across McCaslin Boulevard to the homes on the west. The area is all single-family homes, mostly on larger lots.

**Old Town** – the central area comprised of the Old Town Overlay Zone District, the Central Business District, and

the Mixed Use Overlay District, as well as the newer subdivisions immediately west of Old Town. The area has a diverse mix of single-family houses, both new and old, and multi-family dwellings, as well as commercial areas along Main Street and at South Boulder Road.

**Fireside** – the homes around Fireside Elementary, extending from Cherry Street to Via Appia and McCaslin Boulevard to Warembourg open space. The area includes mostly single-family homes, but also some apartments and townhomes.

**South Louisville** – the houses south of Downtown and north of Dutch Creek open space, with Warembourg open space to the west. The area is almost entirely single-family homes, with a few duplexes and townhomes.

**Coal Creek** – the area along Coal Creek and the golf course, south of Cherry Street and east of Dahlia Street. The area consists of single-family homes, townhomes, and apartments.

**PRINCIPLE NH-1.** Planning Commission shall develop and City Council shall adopt a process for the creation, adoption, and implementation of Neighborhood Plans to define and preserve the unique special qualities of each neighborhood.

**Policy NH-1.1:** The preparation of Neighborhood Plans may be initiated by the City at the request of residents with concurrent support from City Council.

**Policy NH-1.2:** The residents, property owners, and business owners within the neighborhood shall be integrally involved in the creation of the plan, and will work with staff to complete the plans that are presented to City Council for adoption.

**Policy NH-1.3:** The Neighborhood Planning Areas shall include the residential areas, as identified in the accompanying map, as well as the local shops and businesses that serve the area and the public facilities such as parks and schools.

**PRINCIPLE NH-2.** The Neighborhood Plans shall include

definitive steps to be taken by the City, including but not limited to changes in zoning or other regulatory codes and improvements in physical and social infrastructure.

**Policy NH-2.1:** Topics to be addressed in Neighborhood Plans include:

- Addressing issues and concerns identified by residents.
- Transitions between the neighborhood and adjacent neighborhoods and commercial and industrial areas.
- Documenting existing neighborhood character and defining desired future character.
- Compatibility of existing zoning and PUDs with current and future development.
- The adequacy and appropriateness of the street network and street design.
- Facilities for pedestrians and cyclists, including sidewalks and multi-use paths.
- Availability of parking, both on street and off street.
- Other physical infrastructure needs, including water and sewer, power and gas, telephone, cable, and internet, and other civic amenities.
- Neighborhood safety, especially safe routes to school.
- Access to parks, open space, and recreation facilities.
- Provision of and access to social and cultural services.
- Access to public transportation.

**PRINCIPLE NH-3.** Neighborhood Plans shall be compatible with this Comprehensive Plan and other adopted goals and policies for the City.

**Policy NH-3.1:** Street designs shall comply with the City’s complete streets policy and allow appropriate amounts of traffic at appropriate speeds.

**Policy NH-3.2:** Streets shall form an interconnected network.

**Policy NH-3.3:** Transportation facilities shall provide mul-



timodal accessibility for users of all ages and abilities.

*Policy NH-3.4:* Diverse housing opportunities shall be available for residents of varying income levels.

*Policy NH-3.5:* The preservation of significant historic resources shall be encouraged.

*Policy NH-3.6:* Neighborhood Plans shall be compatible with the City’s environmental, economic, and social sustainability.

*Policy NH-3.7:* Neighborhood Plans shall contribute to the sense of place and community that defines Louisville.

**PRINCIPLE NH-4.** The character and identity of existing residential neighborhoods should be maintained while allowing for evolution and reinvestment.

*Policy NH-4.1:* Housing in existing neighborhoods should be compatible with neighborhood plans.

*Policy NH-4.2:* Zoning designations should allow for reasonable reinvestment in existing houses while maintaining the character of the neighborhood and Louisville.

*Policy NH-4.3:* The voluntary preservation of historic structures should continue to be encouraged.

*Policy NH-4.4:* Mixed-income developments should be encouraged.

*Policy NH-4.5:* New developments should be compatible with existing neighborhoods and the Framework.

*Policy NH-4.6:* Community organizations and activities that encourage and provide housing rehabilitation and neighborhood improvements should be supported.

*Policy NH-4.7:* Housing should support vibrant retail and commercial centers that serve local residents.

**PRINCIPLE NH-5.** There should be a mix of housing types and pricing to meet changing economic, social,

and multi-generational needs of those who reside, and would like to reside, in Louisville.

*Policy NH-5.1:* Housing should meet the needs of seniors, empty-nesters, disabled, renters, first-time homebuyers and all others by ensuring a variety of housing types, prices, and styles are created and maintained.

*Policy NH-5.2:* The City should continue to work with Boulder County Housing Authority and others to ensure an adequate supply of affordable housing is available in Louisville.

*Policy NH-5.3:* Higher density housing should be located primarily in the centers and corridors of the Framework.

*Policy NH-5.4:* Potential measures to increase housing type and price diversity should be evaluated, including allowing accessory dwelling units in established neighborhoods only if the essential character of the neighborhood is can be preserved.

*Policy NH-5.5:* Regional changes to job and housing markets should continually be evaluated to address regional opportunities and constraints.

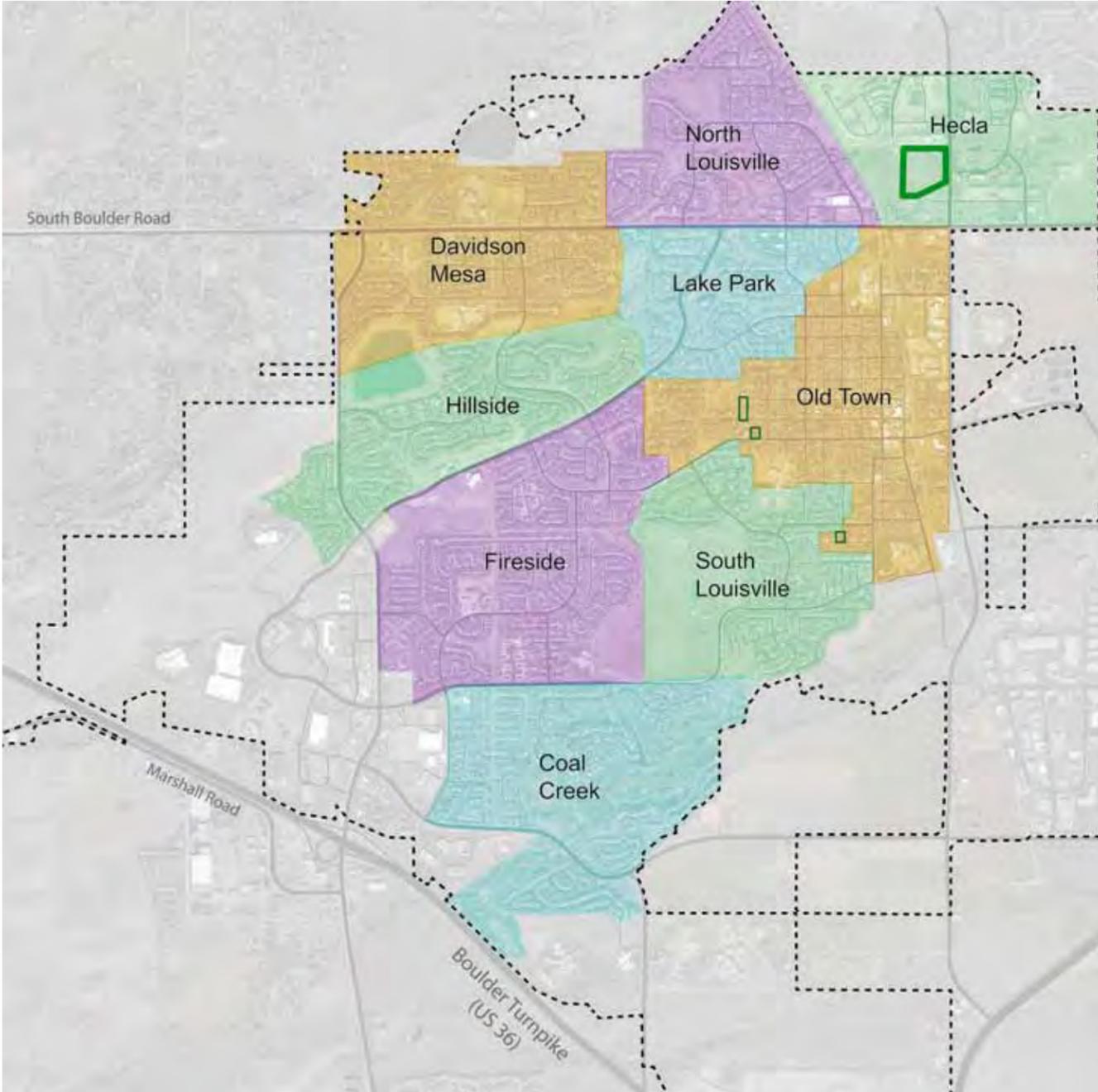
*Policy NH-5.6:* New housing should address defined gaps in the housing market that exist today and into the future.

*Policy NH-5.7:* The City should define standards for low income and affordable housing units, and consider reducing or waiving building permit and impact fees for all qualifying projects.

**PRINCIPLE NH-6.** The City should define City-wide goals for affordable and low-income housing through a public process.

*Policy NH-6.1:* The City should determine to what extent it would like to allow, encourage, or incentivize affordable and low-income housing.

*Policy NH-6.2:* The City should develop specific and achievable actions to meet the defined goals.



Neighborhood Planning Areas

# The Framework

## TRANSPORTATION, MOBILITY, & ACCESSIBILITY (TMA)

Transportation infrastructure is the foundation of city building. The form, function and character of Louisville's transportation infrastructure and adjoining land uses are intrinsically linked – starting with the first Boulder County roads, inter-urban rail between Denver and Boulder, to the Boulder Turnpike and its interchanges. Louisville's urban form and community character are dictated by its transportation systems. Streets provide the means and conveyance of circulation. Streets establish the block structure, organize land uses, and influence the architectural qualities of buildings. Streets are Louisville's most immediate and accessible public space, linking parks and schools to our neighborhoods.

### Background / History

Since 1878, the City of Louisville's community form, character, and urban design have been influenced by its transportation investments. There are generally five stages of transportation investments and corresponding land use development, community growth and changes in Louisville's community character.

**Stage 1: The Embryonic Phase of Development:** The historic core of Louisville grew incrementally between the 1880s and the 1960s. The City's urban form was based on the local mining industry and was guided by the presence of the rail line and the "Kite Route", Denver's inter-urban railroad service to Boulder.

The pattern of Louisville's early development was very walkable and formed what is known today as Downtown and Old Town. Louisville's growth during this time period was primarily residential, organically expanding the original town's street grid. Commercial development stayed within Downtown. Local groceries, goods, and services were provided to the public from various stores in Downtown including Joe's and Ideal Markets. The form of Louisville adhered to an urban pattern of development which better accommodated pedestrians and established Louisville's cherished small town character.

**Stage 2: Major Road Infrastructure is developed:** Louisville's urban pattern changed dramatically in 1952 with the opening of the Boulder Turnpike and again in the 1960s when the toll for the Turnpike was removed and

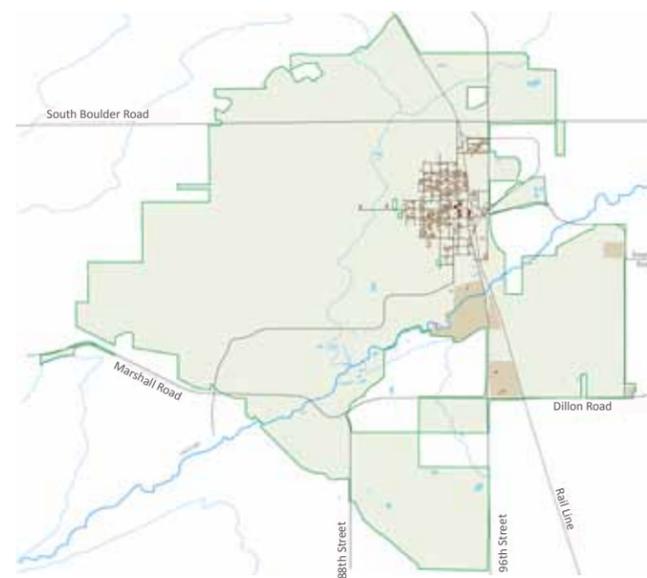
McCaslin Boulevard was first built. Between the 1960s and 1980s, Louisville experienced a significant period of growth and expansion, more than doubling the size of the City. Many new residential subdivisions were developed and the form of the City changed from urban, pedestrian-based design, to suburban, reflecting the mobility of the automobile.

The Boulder Turnpike (US 36) and South Boulder Road improvements increased the accessibility of Louisville to the Denver-Boulder region. In 1978, The Village Square Shopping Center was the first commercial development outside of Downtown and took advantage of the situation by providing a state-of-the-art grocery store capable of serving the Louisville households along with the regional customers commuting along South Boulder Road. As a result, retail services in Downtown were cannibalized by a better located regional competitor. Downtown retail eventually lost economic viability.

**Stage 3: Retailing of the suburbs:** Mass suburbanization of the Front Range, Boulder County, and Louisville followed the major transportation improvements between 1980 and 1995. HWY 42 was realigned; better connect-

ing Louisville to Broomfield and HWY 287. McCaslin Boulevard was widened with a reconfigured interchange at US 36. Additional retail uses were approved and constructed along McCaslin Boulevard (Sam's Club) and South Boulder Road. Louisville Plaza (King Soopers and K-Mart) was located strategically at the intersection of HWY 42 and South Boulder Road, where it was capable of serving both Louisville and Lafayette residents along with the regional customers traveling on the two arterials. Louisville became the regional retail center of east Boulder County.

**Stage 4: Employment Growth:** Regional Employment growth, between 1995 and 2005, followed the newly constructed households. Growth in the Centennial Valley, Colorado Technology Center, and Interlocken (Broomfield) altered traffic patterns. Boulder was no longer the primary employment center. New transportation investments, namely the 96th Street / HWY 42 connector (over the BNSF rail line) and the Northwest Parkway significantly altered north-south travel in Louisville and East Boulder County. The new connection acknowledged the emerging commuting traffic to and from Interlocken, and the US 36 Corridor.



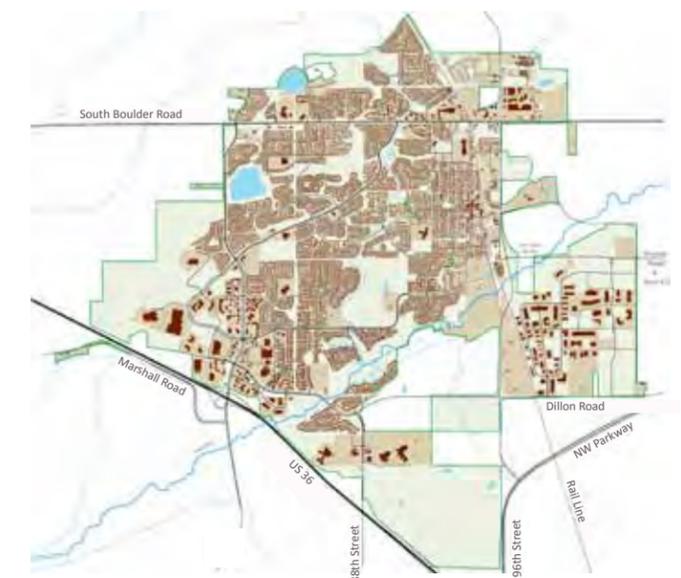
Louisville 1910



Louisville 1970



Louisville 1990



Louisville 2013

# The Framework

New retailers emerged in the Louisville trade area along key regional commuting corridors, including Wal-Mart and King Soopers along US 287 and Target, Costco and Whole Foods at McCaslin Boulevard and US 36. The change in commuting patterns, the continued loss in market share, the generally built out nature of the residential areas in Louisville, and other factors have had their economic impacts on the regional retail structure of the City. Now nearly 40% of the City's sales tax revenues come from local groceries and food and beverage sales, not regional retail.

**Stage 5: Maturity (What's Next?):** As new development continues in neighboring jurisdictions, Louisville's vehicular traffic level of service (LOS) over the next 20 years will deteriorate from LOS C to LOS D regardless of what local development may occur in Louisville. More and more cars on Louisville roads will neither begin nor end their trips in the City. Currently, nearly 40% of all trips on Louisville streets are regional in nature without an origin or destination within Louisville. Future transportation investments in the City will be challenged to accommodate basic demands for regional traffic mobility while maintaining a LOS C and at the same time address livability and economic viability concerns internal to Louisville.

Louisville's physical expansion is near completion. Open space, City boundaries and inter-local agreements with neighboring jurisdictions limit where Louisville can annex and expand. All first generation development has been planned and entitled in Louisville except the 12 acre Alkonis property. Currently, 19% of Louisville's developable land remains vacant. However, this does not mean Louisville will not continue to evolve. Louisville's building stock will continue to age and will require improvements to remain economically viable.

Anticipated transportation projects influencing Louisville's form and character include: McCaslin Boulevard / US 36 Interchange (the Divergent Diamond Interchange and Bus Rapid Transit Station), HWY 42 redesign, and the Regional Transportation District's (RTD) Northwest Rail Corridor. Future Louisville transportation investments are prioritized toward transit and a more bal-

anced (multimodal) system. Correspondingly, Louisville growth trends for the future have shifted away from vehicular-scaled design toward a more pedestrian scaled design; from community expansion to community reinvestment, refurbishment, and redevelopment, as second and third generation development occurs in Louisville.

The construction of the managed lanes along US 36 and the Divergent Diamond Interchange at McCaslin Boulevard will introduce high capacity transit to Louisville. Current land patterns near the interchange and park-and-ride facility do not maximize the opportunities presented by the US 36 Bus Rapid Transit System.

The City's current transportation policies and regulations reflect a community focus on vehicular movement and not a more balanced multimodal transportation system. The policies support transportation actions which continue to expand street capacity and are not consistent with the realities of a community that is landlocked and experiencing second and third generation growth.

The City's current transportation regulations are aligned with regional mobility concerns and are designed to accommodate vehicular traffic, roadway capacity, and safety features for higher speeds. These policies are in direct conflict with the City's Vision Statement and many of the City's Core Community Values. Louisville's transportation priorities need to be aligned with multimodal transportation, roadway efficiency, property access, and safety features to create a balanced transportation system.

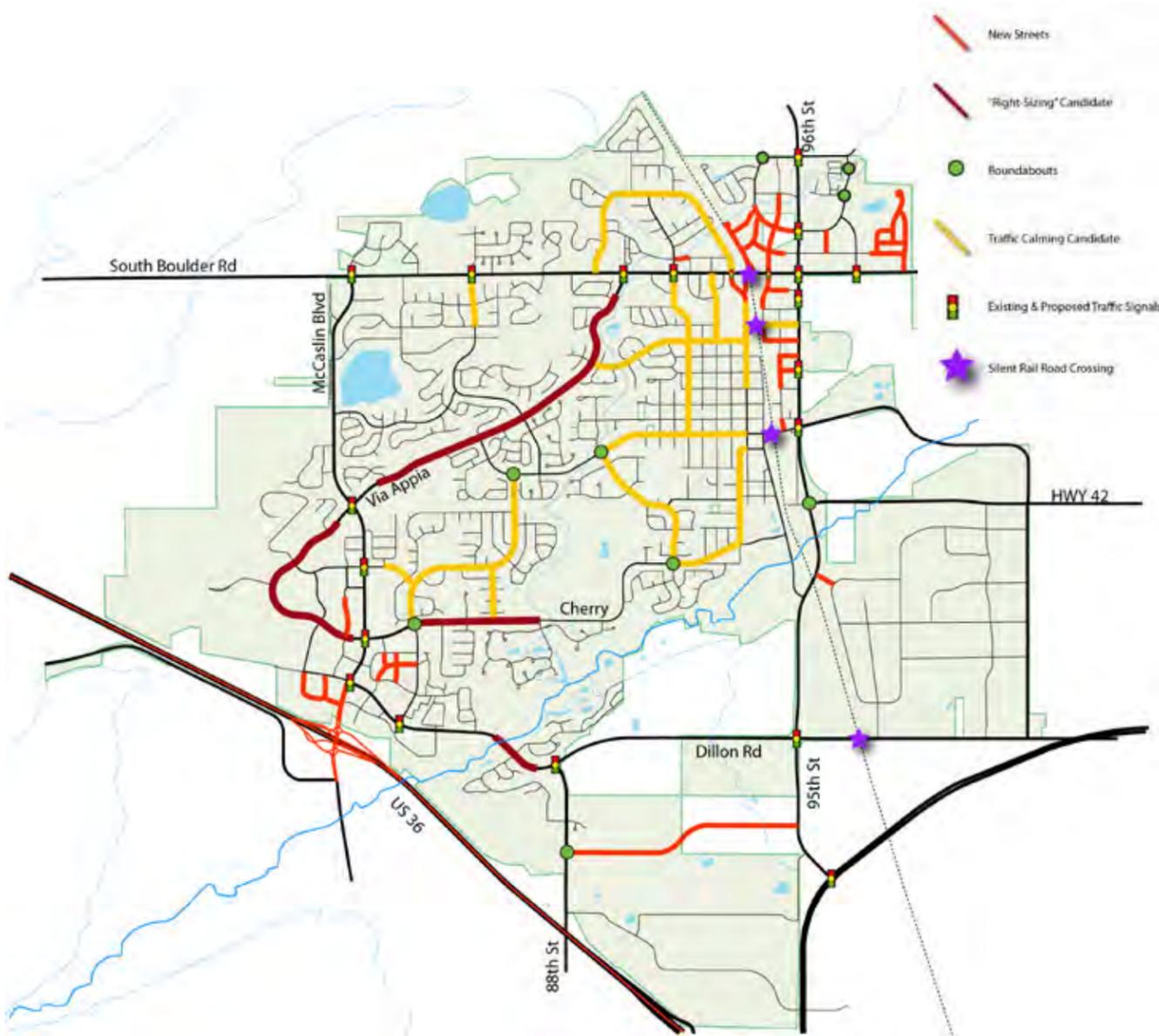
**Analysis and Recommendations**

Using the traffic model developed from the Denver Regional Council of Governments (DRCOG) 20 year forecasts, staff analyzed the transportation impacts associated with the endorsed development scenario. A goal of this Comprehensive Plan is to maintain vehicle LOS C unless to maintain LOS C it would be necessary to widen the street or make other capacity modifications in a way that would conflict with these desired small town transportation qualities:

- Pedestrians of all ages and abilities should be able to safely and comfortably walk along, or across a street, arterial corridor, or intersection, as well as wait for public transit.
- Bicyclists of all ages and abilities should be able to safely and comfortably ride along, or across a street, arterial corridor, or intersection.
- All streets, arterial corridors and intersections

are designed and function to be compatible with the City's desired character zone identified in the Framework.

- Streets, arterial corridors and intersections do not negatively affect the adjacent neighborhoods, historic assets, natural resources, or emergency responses.



Proposed Transportation improvements

# The Framework

Regional cut-through traffic projected by the DRCOG’s model in the year 2035 causes traffic volumes in Louisville to exceed LOS C standards, regardless of what local development may occur in Louisville.

Based on these criteria, the majority of the City’s streets have the capacity to accommodate the 20 year forecasted traffic volumes for the preferred Framework at LOS C. However, several of the City’s arterials will operate at LOS D. It is important to note the anticipated regional cut-through traffic in the year 2035 causes traffic volumes on the arterials to exceed LOS C standards, regardless of any additional development in Louisville. Staff believes that the required vehicle capacity modifications necessary to maintain LOS C conflict with Louisville’s small town transportation quality expectations.

Several significant observations have emerged from the transportation analysis and community outreach efforts of the Comprehensive Plan when compared to the City’s Vision Statement and Core Community Values.

20 year Forecasts - With the approval of the Divergent Diamond Interchange at the McCaslin Boulevard and US 36 interchange, all Louisville streets are expected to meet the anticipated regional traffic forecasts and maintain an overall Level of Service (LOS) D.

**PRINCIPLE TMA-1.** The City of Louisville is committed to creating a context-sensitive, multimodal transportation and trail system which integrates land use, transportation, and recreational considerations and enables vehicles, transit, bicycles, and pedestrians of all ages and abilities to move in ways that contribute to the economic prosperity, public health and exceptional quality of life of Louisville

**Policy TMA-1.1:** New streets are needed as properties experience second-and third-generation redevelopment. The long-term transportation strategy for the City should focus on local street network enhancements balanced with neighborhood traffic calming, improving the connectivity and livability of the City’s arterial network.

**Policy TMA-1.2:** Corridor Master Plans and Preliminary Engineering Designs are needed for Hwy 42/96th Street; McCaslin Boulevard; South Boulder Road; and Dillon Road.

The purpose of these multimodal corridor plans is to outline a plan of action and specific strategies which ensure mobility and access for individuals within a broad range of ages and abilities on all City arterials by providing safe, convenient, and efficient multimodal transportation infrastructure. The Corridor Master Plans and 30% Designs shall meet existing and future needs, support the implementation of adopted community plans, and reflect and support the anticipated and expected development character of the areas they are traversing. Each Corridor Master Plan and 30% Design shall:

- Balance regional mobility and community livability,
- Develop partnerships to work cooperatively with all stakeholders served by the corridor;
- Provide a supportive transportation system that enables the Community’s Land Use Vision;
- Consider and balance the impacts upon natural, social and cultural resources;
- Provide safe and convenient facilities for a broad range of users and multiple modes of travel;
- Accommodate future regional transit plans;
- Promote regional trail connectivity;
- Design sustainable solutions; and,
- Develop creative, cost-effective and implementable solutions.

**Policy TMA-1.3:** The Louisville street network has excess capacity on a few of its arterial streets. Via Appia, Centennial Parkway, Cherry Street (between Dahlia and Heritage Park), and Dillon Road (between 88th Street and Club Circle) are candidates for “right sizing”. Right sizing candidates are roadways where the expected volume of traffic does not warrant the size of the street and the capacity of the street could be reduced and still meet expected traffic levels of service.

Benefits of right sizing include: traffic safety, pedestrian and bicycle accommodation, neighborhood continuity, and reduction in long-term maintenance costs to the City.

Challenges to right sizing include a reduction in mobility, a motorist’s ability to freely maneuver along a corridor, and if done improperly, slower emergency response times.

This recommendation simply identifies these four road segments as candidates for right sizing and recommends a more detailed corridor analysis be conducted to evaluate peak hour traffic conditions and specific pedestrian and bicycle utilization rates along with crash histories for each corridor. The timing of these corridor studies should be aligned with the City’s capital improvement program and reconstruction schedule of each roadway.

**Policy TMA-1.4:** Three roundabouts operate in the City of Louisville; one in the Steel Ranch Community and two in the North End Community. This Comprehensive Plan identifies the potential for a number of additional roundabouts throughout Louisville.

Roundabouts are preferred traffic control devices based on multiple opportunities to improve safety, operational efficiency, and community aesthetics. The intent of the candidate roundabout program in Louisville is to identify opportunities for more detailed analysis and the possibility of introducing roundabouts to promote a safer and more balanced transportation system. The timing of these roundabout studies and their possible implementation should be aligned with the City’s neighborhood planning initiatives and the reconstruction schedule in the Capital Improvement Program for candidate intersections. The benefits of roundabout intersections include:

- Traffic Safety
- Operational Performance
- Traffic Calming
- Pedestrian Safety
- Aesthetics
- Land Use Transitions

- Ongoing Operations and Maintenance
- Environmental Factors

**Policy TMA-1.5:** The transportation analysis identified traffic calming candidate streets throughout Louisville. A number of streets were identified as traffic calming candidates where residential homes “fronted” high volume roadways which carry more than reasonable neighborhood traffic volumes (1,000 vehicles per day). The purpose of this classification is not to reduce the capacity of the street, but to develop physical measures which reduce the speeds at which motorists are traveling along these streets in order to make them traverse the neighborhoods at safe speeds. Physical measures can include narrowing streets or changing street geometrics, among other things. This recommendation identifies these streets as candidates for traffic calming and recommends a more detailed neighborhood traffic plan be created to evaluate real conditions, rather than modeled conditions. The timing of these neighborhood traffic plans should be aligned with the City’s Capital Improvement Program and repaving schedule of each neighborhood, concurrent with the development of recommended Neighborhood Plans.

**Policy TMA-1.6:** Transit service to Louisville can and should be improved. Louisville supports the Regional Transportation District’s (RTD) FasTrack Program. Louisville’s land use strategies are tied to the implementation of the Bus Rapid Transit Corridor along US 36 and the implementation of the Northwest Rail Corridor with a commuter rail station serving Downtown Louisville.

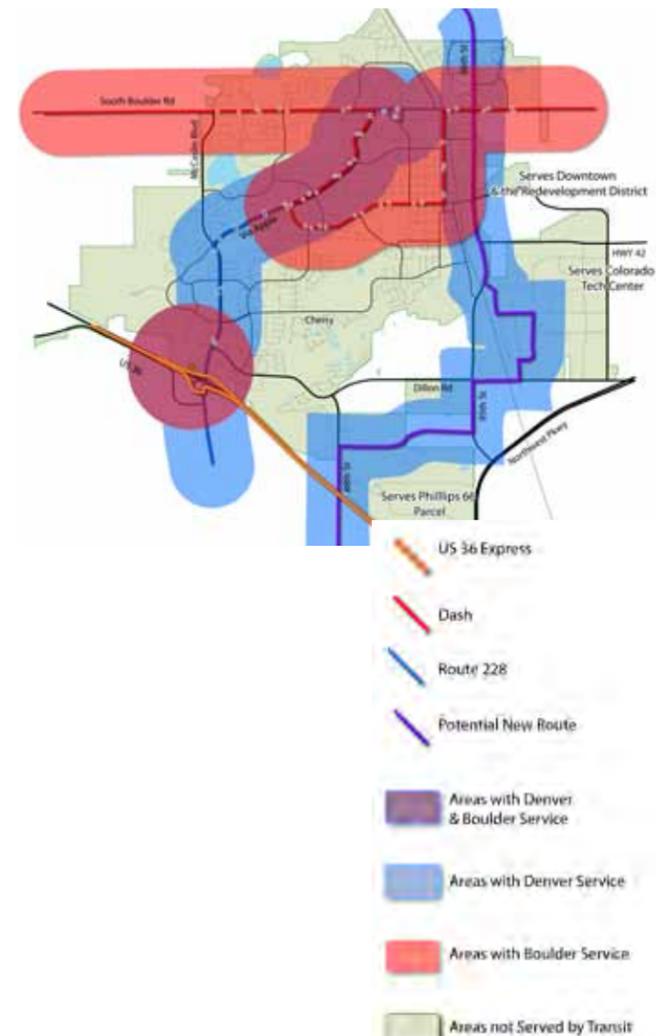
Additionally, there are two key components to local bus transit service within Louisville: *coverage* and *frequency*. Coverage refers to what portions of the City have local transit service. Frequency refers to how often the areas which have local transit service are served by transit. Louisville needs improvements in both aspects of RTD’s local transit service.

Currently, the entire southeastern portion of the City has no local transit service, including Avista Hospital, the Colorado Technology Center, Monarch Campus and the Phillips 66 property. All are critical employment areas



to the City and the entire metro region. The City should work with its neighboring jurisdictions and RTD to provide transit service along HWY 42/96th Street between Lafayette and Broomfield and introduce transit service to Avista Hospital, the Colorado Technology Center, the Monarch Campus, and, as development occurs, the Phillips 66 property.

**Policy TMA-1.7:** Walkability is a key ingredient to livable cities and neighborhoods. Great cities and neighborhoods all feature street level experiences that invite and stimulate pedestrian and bicycling activities. Walkability



Proposed Transit Service Improvements

enhances public safety, fosters personal interactions, improves public health, and increases economic vitality.

Louisville has an excellent recreation trail network and generally a high quality walking environment on its City streets. The intent of this Comprehensive Plan is to establish a transportation policy which raises the bar and better integrates the City's recreational trail network with City's street network. This interconnection will help create a more balanced transportation system that serves the entire City and is designed for all users of all ages and ability levels.

**Policy TMA-1.8:** Louisville has four at-grade crossings of the Burlington Northern Santa Fe (BNSF) Rail line. Three of the crossings: Main Street, Griffith Street and South Boulder Road are located within, or immediately adjacent to established residential neighborhoods. The fourth is located at Dillon Road near the Colorado Technology Center and proposed relocation of the St. Louis Catholic Church and School.

Federal Railroad Administration regulations require locomotive horns be sounded for 15-20 seconds before entering all public at-grade crossings, but not more than one-quarter mile in advance. This federal requirement preempts any state or local laws regarding the use of train horns at public crossings, unless certain improvements are made to the crossings.

The noise level of the horns negatively impacts the quality of life for residents and employees living and working near the rail corridor. It is a recommendation for the City of Louisville to work with its neighboring jurisdictions and the BNSF to create safe Federal Railroad Administration qualifying upgrades to all four rail crossings in the City. The timing of these investments was tied to FasTrack's Northwest Rail Corridor improvements. However, because of the uncertainty of the Northwest Rail Project, the City of Louisville should continue to advance implementation of the four crossings improvements necessary for a City-wide Quiet Zone in a strategy separate from the Northwest Rail Study.

**PRINCIPLE TMA-2.** The City of Louisville should develop and implement area-specific and City-wide transportation plans through an open and collaborative process to achieve the principles and policies outlined above.

**Policy TMA-2.1:** The Planning and Building Safety Department, Public Works Department and the Parks and Recreation Department shall collaboratively generate multimodal transportation plans for the residential neighborhoods and commercial areas of the City. At a minimum, this work shall include:

- a. Safe Routes to School
- b. Parking Management
- c. Pedestrian Circulation
- d. Bicycle Circulation
- e. Vehicular Circulation and Neighborhood Traffic Calming

**Policy TMA-2.2:** The Planning and Building Safety Department, Public Works Department and the Parks and Recreation Department shall collaboratively generate multimodal transportation corridor plans for HWY 42/96th Street; McCaslin Boulevard; South Boulder Road; and Dillon Road which shall include:

- a. Long-Term Land Use Vision and Urban Design Assessment
- b. Near-term and Long-term multimodal transportation performance evaluation
- c. Parking
- d. Transit Circulation and pedestrian access
- e. Pedestrian and bicycle crossings

**Policy TMA-2.3:** The Planning and Building Safety Department, Public Works Department and the Parks and Recreation Department shall generate a City-wide multimodal Transportation Master Plan that incorporates and consolidates the findings of each neighborhood, commercial area, and corridor plan. The plan shall include:

- a. Traffic Management and Traffic Calming Program
- b. Pedestrian Master Plan
- c. Bicycle Master Plan

- d. Transit Service Plan
- e. Primary Corridor Plan
- f. Transportation Demand Management

**Policy TMA-2.4:** The Departments of Planning and Building Safety, Public Works and Parks and Recreation will review and update the current design and construction standards including Resolution 9, Series 1994 (Roadway Construction and Design Standards); and LMC Chapter 12 – Streets and Sidewalks; Chapter 16.16 – Design Standards; and Chapter 17.14 – Mixed Use Zone District.

The review and update will ensure they reflect the best design standards and guidelines to provide flexibility for context-sensitive design. The roadways will be designed within the context of the neighborhood and corridors, recognizing all streets are different. The user, mobility, and land use needs will be balanced and consistent with the context sensitive multimodal transportation policy stated above.

# The Framework

## CULTURAL HERITAGE (CH)

The Cultural Heritage of Louisville consists of the built environment augmented by the stories of those who have lived here. The social history gives life and meaning to buildings that could otherwise not speak, and to the people associated with these structures that provide a tangible link to the past. The principles and policies below will ensure the Cultural Heritage of Louisville is protected and celebrated, in accordance with the Vision Statement and Core Community Values.

**PRINCIPLE CH-1.** The City should support and encourage the voluntary preservation of historic structures through its policies and actions.

*Policy CH-1.1:* The City should create a Preservation Master Plan to define a period of significance and identify resources and guide the City's Historic Preservation Program and the use of Historic Preservation Funds.

*Policy CH-1.2:* Area and Neighborhood Plans should incorporate historic preservation elements, where appropriate.

*Policy CH-1.3:* The City's Design Standards and Guidelines, particularly the Downtown Design Handbook, should be regularly evaluated and updated if necessary to incorporate best practices in historic preservation.

**PRINCIPLE CH-2.** Preservation efforts should contribute to a sustainable community.

*Policy CH-2.1:* The City should highlight preservation projects for their sustainable benefits, expand partnerships with sustainability organizations and programs, and include preservation considerations as it develops new sustainability policies and regulations.

*Policy CH-2.2:* The City should promote economic sustainability through historic preservation, including:

- Promote Louisville as a destination for visitors interested in cultural and historic attractions.
- Coordinate preservation efforts with other

- programs designed to support local businesses.
- Promote adaptive reuse of historic properties.
- Work with economic development partners to include historic resources in redevelopment policies and economic development plans.

*Policy CH-2.3:* The City should promote environmental sustainability through historic preservation, including:

- Expand partnerships with sustainability organizations and programs .
- Create energy efficiency standards to fit historic resources.
- Highlight green building practices through various City programs.

*Policy CH-2.4:* The City should work with affordable housing organizations to utilize historic resources.

**PRINCIPLE CH-3.** City policies should encourage a livable community with a strong sense of history.

*Policy CH-3.1:* The City should evaluate the programmatic needs of the existing Museum to meet museum standards for allocation of resources by developing a Historical; Museum Campus Master Plan.

*Policy CH-3.2:* The City should consider creating a Historic Park where buildings slated for demolition can be moved and used as interpretive education to showcase Louisville's mining and agricultural heritage.

*Policy CH-3.3:* The City should develop procedures for identifying, preserving and protecting archaeological resources.

**PRINCIPLE CH-4.** The City should provide effective public outreach regarding Cultural Heritage issues.

*Policy CH-4.1:* The City should provide educational programs such as a rehabilitation skill-building program for local trade workers.

*Policy CH-4.2:* The City should stage regular outreach events with community organizations that may become

future partners in historic preservation.

*Policy CH-4.3:* The City should promote public awareness and understanding of the city's cultural and social history through programs such as an interactive map which provides hyperlinks to social histories of historic properties.

*Policy CH-4.4:* The City should encourage public participation in the preservation program.

*Policy CH-4.5:* The City should develop policies that provide clear guidance to the public for the treatment of locally designated historic resources.

*Policy CH-4.6:* The City should monitor the preservation program on an on-going basis to assure that it maintains a high level of performance and implement an annual program review that includes Certified Local Government programming.

**PRINCIPLE CH-5.** The City should ensure fiscally-sound best management practices for City historic resources.

*Policy CH-5.1:* The City should establish minimum maintenance requirements for landmark properties.

*Policy CH 5.2:* The City should ensure the policies and extents of the grant and demolition review programs match the community's goals with respect to aging structures outside the traditional historic core.

*Policy CH-5.3:* The City should create an effective and efficient process which guides the voluntary nomination and designation of historic resources and should establish a user-friendly system for the voluntary designation of individual landmarks and districts.

*Policy CH-5.4:* The City should work with past grant recipients to learn from past experiences.



The Framework



Miners on Acme Mine coal car, 1917



Mine rescuers, Acme Mine, circa 1920s



Federal troops camped near Louisville during mine strike violence, 1914



J.J. Steinbaugh's blacksmith shop, Front Street, circa 1890s



Louisville Grain Elevator, 1916



Catholic women preparing chicken dinners to raise money for St. Louis Church, early 1940s

# The Framework

## PARKS, RECREATION, OPEN SPACE, AND TRAILS (PROST)

Louisville’s open space and recreational amenities are among the most highly valued features of the City. These include the City’s recreation center, parks, fields, pools, trails, and open spaces as well as services such as classes, leagues, and senior services. These amenities contribute greatly to the quality of life in Louisville and steps should be taken to ensure they continue to do so.

In 2012, the City adopted a Parks, Recreation, Open Space, and Trails Master Plan (PROST Plan) that defined goals and objectives for Louisville’s parks and recreational amenities.

The PROST Plan made recommendations for maintaining and improving the high level of service enjoyed by Louisville residents and those recommendations, along with the entire PROST Plan, are hereby adopted by this Comprehensive Plan. In summary, the principles and policies identified in the PROST Plan and adopted here are as follows:

**PRINCIPLE PROST-1.** Improve trail connections to promote healthy and enjoyable alternative transportation and opportunities for active recreation

*Policy PROST-1.1:* Enhance the trail user experience through improved wayfinding and additional safety and comfort features.

*Policy PROST-1.2:* Improve safety, accessibility, and continuity for the trails within Louisville.

*Policy PROST-1.3:* Continue to provide connections from Louisville’s trails to regional trails and trails provided by neighboring agencies.

**PRINCIPLE PROST-2.** Maintain existing high levels of service for parks, open space, and trails as Louisville matures and evolves.

*Policy PROST-2.1:* Ensure that Levels of Service are appropriate and equitable now and in the future across the entire city so that all residents have equitable access to services.

**PRINCIPLE PROST-3.** Ensure a Service Delivery Model that remains responsive and relevant to City residents’ leisure behaviors, interests, and needs.

*Policy PROST-3.1:* Address emerging recreation and leisure trends and changing population characteristics including the aging population and current increasing demand for pre-school age programming.

*Policy PROST-3.2:* Respond to the 2008 citizen survey, the 2009 Comprehensive Plan, 2010 citizen survey that suggested teen activities/programming is a high unmet need.

**PRINCIPLE PROST-4.** Enhance programming capacity by exploring opportunities outside of City of Louisville facilities and services.

*Policy PROST-4.1:* Assess partnerships with local organizations and agencies to provide access to other spaces for programming.

**PRINCIPLE PROST-5.** Promote environmental stewardship and education.

*Policy PROST-5.1:* Continue to develop and incorporate environmental stewardship and education curricula to respond to community values.

**PRINCIPLE PROST-6.** Enhance communications and outreach efforts to increase efficiencies and effectiveness.

*Policy PROST-6.1:* Continue to develop and implement an enhanced, streamlined marketing, communications, and outreach plan in response to a need identified to increase efficiencies and create cost-savings.

**PRINCIPLE PROST-7.** Maximize intergovernmental agreements with Boulder Valley School District.

*Policy PROST-7.1:* Maximize partnerships with governmental agencies through adjustments to existing intergovernmental agreements (IGAs).

**PRINCIPLE PROST-8.** Evaluate and review the effectiveness and understanding of partnership agreements.

*Policy PROST-8.1:* Develop and implement a partnership policy to be used for the development of all new partnership agreements.

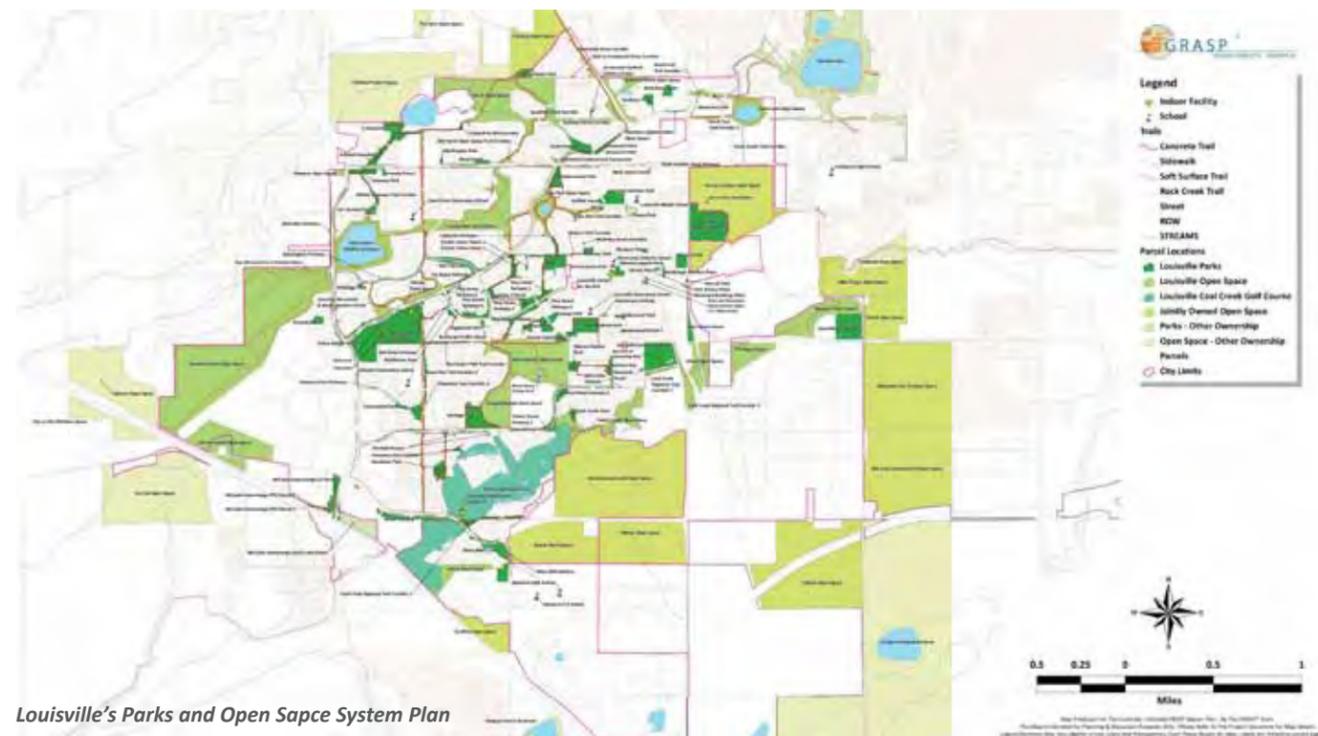
**PRINCIPLE PROST-9.** Define/Improve Park Maintenance Standards.

*Policy PROST-9.1:* Adopt general Park and Athletic Field maintenance standards.

**PRINCIPLE PROST-10.** Define/Improve Open Space Maintenance & Management Standards.

Facility	Quantity
Louisville Parks	306 acres
Louisville Coal Creek Golf Course	154 acres
Louisville Open Space	698 acres
Jointly Owned Open Space	1,060 acres
Open Space – Other Ownership	1,117 acres
Parks – Other Ownership	182 acres
Component	Quantity
Arboretum	1
Art Walks	2
Ball Diamonds	10
Basketball Courts	4
BMX Course	1
Bocce Courts	9
Community Gardens	1
Disc Golf Course	1
Dog Parks	2
Horseshoe Pits	4
In-Line Pk	1
Multi-Purpose Fields	11
Outdoor Fitness Court	2
Playgrounds	13
Picnic Shelters	16
Pool (outdoor)	1
Recreation Center	1
Skate Park	1
Tennis Courts	9
Volleyball Courts	2
Trail Type	Quantity (mile)
Louisville (Soft Surface)	13.23
Louisville (Paved)	15
Louisville (Sidewalks)	9.8
Other Ownership (All Surfaces)	30.4

Facility Inventory



Louisville's Parks and Open Sapce System Plan



*Policy PROST-10.1:* Create, review, and update Open Space Maintenance & Management Plans to provide consistency in management practices throughout the system.

**PRINCIPLE PROST-11.** Sustain the high level of service to which citizens have become accustomed.

*Policy PROST-11.1:* Identify and estimate the cost of future maintenance and operations (staffing, supplies, and services) for any newly-proposed parks, open space, trails, and indoor facilities to ensure that future development O & M is funded.

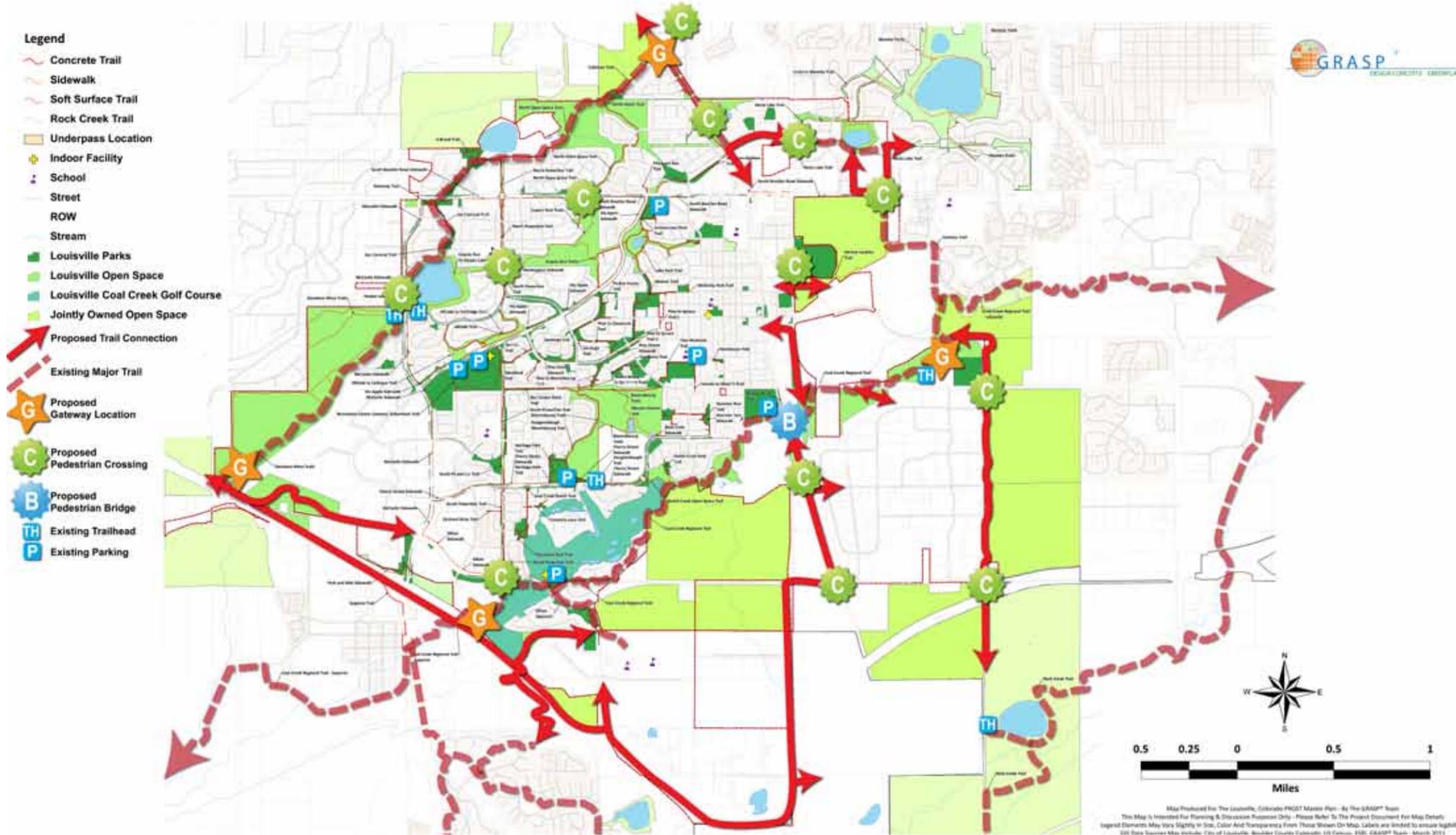
*Policy PROST-11.2:* Create and implement a cost recovery philosophy and policy.

**PRINCIPLE PROST-12.** Renovate, expand, and develop Facilities.

*Policy PROST-12.1:* Conduct Feasibility Studies to understand future capital and operational funding and revenue generation potential.

**PRINCIPLE PROST-13.** Implement 2011 Coal Creek Golf Course Strategic Plan.

*Policy PROST-13.1:* Improve overall maintenance and playability, and secure capital funding for repairs, replacement, and improvements.



Louisville's Regional Trails Improvement Plan

# The Framework

## MUNICIPAL INFRASTRUCTURE (MI)

Louisville’s municipal infrastructure includes roads (addressed in the Transportation section), raw water supply and treatment, sanitary sewers and wastewater treatment, and storm sewers and drainage. Other infrastructure not belonging to the City, but in which the City has a vital interest, include gas, electric, and telecommunications lines.

As described in the Existing Conditions chapter, raw water supply is secured for the City’s planned build out, but improvements may be needed to the water treatment plants to serve new commercial and industrial development. Improvements to the Wastewater Treatment Plant will be undertaken as needed. The City will also make improvements to the storm sewer system to improve water quality and mitigate the impacts of flooding.

**PRINCIPLE MI-1.** The City should provide adequate public facilities, water, sewer and related services to meet the demand of existing and future residents and commercial and industrial growth.

*Policy MI-1.1:* Through the use of water tap fees for new development, the City should ensure that water acquisitions will supply adequate water to meet the needs of the community.

*Policy MI-1.2:* The City’s water quality standards and treatment practices should continue to maintain a high level of health protection for its residents.

*Policy MI-1.3:* The City should ensure that its storm drainage and wastewater treatment system is adequate to meet the demands of existing and planned development.

*Policy MI-1.4:* The City should continue to require the dedication of water rights or the payment of a water resource fee in lieu of dedication from newly annexed property.

**PRINCIPLE MI-2.** The City should take measures to en-

sure development fees provide adequate improvements necessary to serve new development.

*Policy MI-2.1:* The City should develop and utilize long-range plans for determining infrastructure requirements to meet the demand of planned growth.

*Policy MI-2.2:* The City should continue to assess impact fees on new development requiring development to pay its calculated share of new public facilities and infrastructure.

*Policy MI-2.3:* The City should coordinate with other service providers on development requests to ensure that necessary services not provided by the City should be made available for planned new development and redevelopment.

*Policy MI-2.4:* Development patterns should be planned with the consideration of the alignment and location of existing and future public facilities and infrastructure.

*Policy MI-2.5:* Future development and redevelopment should be coordinated with all utilities to ensure that development is buffered to the full extent necessary from the existing locations, as well as future expansion of high pressure natural gas pipeline systems and overhead transmission lines and associated infrastructure.

*Policy MI-2.6:* All new developments should dedicate to the City required right-of-ways and install designated public improvements per approved design standards.

**Principle MI-3.** The City should continue to make improvements to reduce the impacts of potential flooding on property owners.

*Policy MI-3.1:* The City should continue to participate in the Federal Emergency Management Agency (FEMA) Community Rating System to decrease the flood danger and reduce the cost of flood insurance for property owners.

*Policy MI-3.2:* The City should work with FEMA and the Urban Drainage and Flood Control District to define the

floodplain in the Empire Road area and consider pursuing a letter of map change in partnership with private property owners to remove the area from the floodplain.

*Policy MI-3.3:* The City should support appropriate requests for letters of map change brought by private property owners.

*Policy MI-3.4:* The City should continue to follow the Louisville/Boulder County Outfall System Plan and work with neighboring jurisdictions, partner agencies, and property owners to make improvements to the storm sewer system, particularly with respect to Downtown Louisville.

*Policy MI-3.5:* The City should continue to work with and support property owners and developers on maintaining existing and new drainageways to maintain drainage capacity.

**PRINCIPLE MI-4.** The City should take steps to ensure an adequate long-term water supply for the City in the face of droughts and changes to the regional climate.

*Policy MI-4.1:* The City should complete a water conservation plan that will encompass Comprehensive Plan updates and climate impacts with up-to-date raw water needs.

*Policy MI-4.2:* The City should adopt revised Drought Management Practices, including changing the drought surcharge from mandatory to discretionary and adding discussion surrounding water restrictions as a tool.

*Policy MI-4.3:* The City should continue to work with other area municipalities on water supply and delivery strategies and communications.

## ENERGY (E)

The City of Louisville recognizes that protection and conservation of its local and regional environmental resources is important to City residents. Residential and commercial buildings account for nearly half of the elec-

tricity and natural gas consumed in Colorado. Building codes and policy initiatives play a critical role in ensuring that energy efficiency technologies are supported in the marketplace, and provide multiple benefits to homeowners, renters, building owners and tenants, and society at large through reduced energy demand, energy cost savings, and reduced carbon emissions. Policies and procedures should be examined with input from all affected parties to lessen energy consumption, waste generation, water, air, and light pollution impacts to our community. The City should also continue strive to promote wise use of energy resources in its own municipal operations.

**PRINCIPLE E-1.** The City should efficiently use energy resources and continually strive to conserve energy where practical.

*Policy E-1.1:* The City should pursue cost effective measures to reduce its dependency on non-renewable energy sources by pursuing the use of renewable energy sources for residents and businesses as well as for its municipal operations.

*Policy E-1.2:* The City should encourage building designs that maximize the use of natural light and thus diminish the need for energy consuming supplemental lighting.

*Policy E-1.3:* The City should encourage the use of energy-efficient lighting, appliances, and other devices in new development, redevelopment and in municipal operations.

*Policy E-1.4:* The City should encourage the use of landscaping that assists energy savings by the use of buffers and admittance of solar access in the winter and shade in the summer.

*Policy E-1.5:* The City should encourage renewable forms of energy in new development and redevelopment.

*Policy E-1.6:* The City should encourage and pursue opportunities for wind or solar energy for on-farm electrical needs on Parks & Recreation and Open Space-



owned agricultural land.

**PRINCIPLE E-2.** The City should increase its internal purchase of renewable energy and expand opportunities for renewable energy where practical.

**PRINCIPLE E-3.** The City should promote increased energy efficiency in residential and commercial properties.

*Policy E-3.1:* Increase outreach and education efforts with local energy efficiency contractors, designers, home and business owners.

*Policy E-3.2:* Work with partner agencies to offer free and subsidized weatherization services to qualifying residents.

*Policy E-3.3:* Strive to remain current with the following model building codes from the International Code Council: International Energy Conservation Code, International Green Construction Code.

*Policy E-3.4:* The City should establish community-wide energy consumption baseline statistics to inform future conversations regarding City energy policies.

## COMMUNITY SERVICES (CS)

Community services include schools, libraries, police and fire services, solid waste / recycling / composting services, and health services. While not all of these services are provided directly by the City of Louisville, the Vision Statement and Core Community Values have indicated that they are very important. These principles and policies will ensure that the City supports community services to the fullest extent possible.

### Schools

The City of Louisville is served by three elementary schools, the Louisville Middle School, and the K-12 Monarch campus. The following table shows 2012 enrollments and projected enrollments based on build-out of the Framework Plan. Louisville enrollment has been broken out from total enrollment to reflect what portion of the total enrollment is made up of Louisville students.

As the Boulder Valley School District (BVSD) practices an open enrollment policy, the enrollment numbers reflect that approximately 20% to 30% of the total enrollment at the elementary level are comprised of students that open enroll from outside the City of Louisville.

School	October 1 Count 2012				Future % Louisville	Capacity Surplus (Deficit)
	Program Capacity	Louisville Enrollment*	Resident Students*	Total Enrollment		
Fireside El.	576	372	372	449	82.9%	372
Coal Creek El.	555	406	483	453	89.6%	415
Louisville El.	603	481	556	554	86.8%	600
Monarch K-5	427	403	367	403	100.0%	493
Louisville M.S.	691	449	490	632	71.0%	512
Monarch 6-8	506	412	346	412	100.0%	488
Monarch H.S.	1833	1293	1971	1576	82.0%	1475
<b>Total</b>	<b>5191</b>	<b>3816</b>	<b>4585</b>	<b>4479</b>	<b>85.2%</b>	<b>4407</b>

\* Includes students open-enrolled from other Louisville schools

\*\* Number of students residing in the attendance area

Note: High school includes students from additional feeder schools in Superior

Source: Boulder Valley School District

\* Note: Louisville enrollment for Monarch was not determined as the attendance area includes Superior and Louisville.

\*\* Future surplus/deficit based on 2007-2008 program capacity with future enrollment potential based on the Framework Plan.

Louisville public schools reflect a strong connection to the neighborhoods within their respective attendance area and enjoy a high level of parent involvement. As education is a defining attribute of the community, the City will continue to cooperate with BVSD to maintain an excellent school system.

**PRINCIPLE CS-1.** City of Louisville should actively coordinate land use efforts with the Boulder Valley School District and promote excellence in education.

*Policy CS-1.1:* The City should ensure that land use and housing policies of the City complement the mission statement of the BVSD.

*Policy CS-1.2:* The City should promote joint planning activities with BVSD to ensure that new facilities are appropriately located, are provided in a timely manner and meet the needs of extracurricular and community use.

*Policy CS-1.3:* The City should continue to work closely with the BVSD to provide program capacity to meet Louisville and District needs.

*Policy CS-1.4:* The City should continue to refer appropriate proposed residential development applications to the Boulder Valley School District for review and comment and consider the estimated student yield of new residential neighborhoods during the development review process.

*Policy CS-1.5:* The City should encourage BVSD and school principals to become involved in the planning process as the City continues to develop and redevelop in areas that will affect the school district.

*Policy CS-1.6:* The City should encourage new developments to provide Safe Routes to School to ensure the safety of Louisville students as they commute to and from school.

### Library Services

**PRINCIPLE CS-2.** Excellence in education and access to educational opportunities should be a key feature of life in Louisville for residents of all ages.

*Policy CS-2.1:* Library facilities, services, and programs should meet the existing and future library needs of all Louisville residents. The Library should:

- Provide a community gathering place for learning, entertainment, and the exchange of ideas for residents of all ages;
- Provide its citizens with exemplary service, quality print and non-print collections, and access to electronic resources using the latest in proven Technology tools;
- Support the acquisition of pre-literacy skills for Louisville's youngest citizens and encourage literacy for all residents in the digital age;
- Support and encourage an atmosphere of intellectual curiosity and continuing education within the Louisville community through the ongoing enhancement and promotion of the Library's services and programs;
- Strengthen Louisville's longstanding tradition of educational excellence through continued collaboration with local schools and other educational agencies.

*Policy CS-2.2:* Management should be consistent with the Library's policies as adopted by the Board of Trustees, the Library's goals and objectives as delineated in its Strategic Plan, and the City's Home Rule Charter and Louisville Municipal Code.

*Policy CS-2.3:* The City should collaborate with other area municipalities so the Library can pursue consortial agreements to ensure cost-effective services and operation.

### Police and Fire Services

**PRINCIPLE CS-3.** The City should promote the health and safety of the community.

*Policy CS-3.1:* The City should remain committed to maintaining its police force level of service to ensure the safety of the community.

*Policy CS-3.2:* The City should support crime prevention through environmental design.

*Policy CS-3.3:* The City should continue to support a Fire Protection District to ensure preservation of life and property through fire prevention, fire suppression, hazardous materials response and emergency medical services support. The City, together with the Louisville Fire Protection District, should encourage the use and cost effectiveness of fire sprinklers in protecting life and property.

### Health Services

*Policy CS-3.4:* The City should coordinate with the Boulder County Health Department and Avista Hospital to ensure that public health services are available to residents of all ages.

*Policy CS-3.5:* The City should encourage programs or projects that promote healthy eating and active living.

### Solid Waste Services

**PRINCIPLE CS-4.** Promote and implement waste-reduction and recycling programs.

*Policy CS-4.1:* The City should work with governmental,

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private and not-for-profit agencies to develop regional approaches to solid waste reduction and management.

**Policy CS-4.2:** The City should continue its efforts to reduce waste generation from its municipal operations and explore methods for additional reduction. The City should consider the purchase of supplies with recycled content when feasible.

**Policy CS-4.3:** In its own operations, the City should consider the environmental and economic costs, risks, benefits and impact from a life-cycle perspective when making, planning, contracting, purchasing and operating decisions.

**Policy CS-4.4:** The City should continue to promote public education related to the value, methods and techniques of recycling, resource recovery and waste reduction.

**Policy CS-4.5:** The City should promote diversion from the landfill of construction and demolition refuse.

## Civic Events

**PRINCIPLE CS-5:** The City should promote citywide community and civic events

**Policy CS-5.1:** The City should continue to support events such as live music, fairs, parades, ice skating, etc. These events are important to the economic and social welfare of our community.

**Policy CS-5.2:** The City should promote community activities in other areas of the city, such as McCaslin Urban Center and Highway 42/South Boulder Road Urban Center. Activities in these areas cohesively connects them with the rest of the community.

## Arts and Culture

**PRINCIPLE CS-6:** The City promotes the public and private advancement of the arts and culture to strengthen the quality of life and small town character of Louisville by encouraging the development of a City-wide Arts and Cultural Master Plan aimed at integrating the arts, culture and humanities with urban design, economic

development, education and other community development initiatives.

**Policy CS-6.1:** The Community-wide Arts and Culture Master Plan should include the following components:

- Economic Vitality and the Arts - Preserve and share the Louisville's unique setting, character, history, arts and culture by identifying partnerships, resources and attractions that respect the needs and desires of Louisville residents.
- Facility Evaluation and Development - Respond to the growing desire for cultural facilities by identifying short and long-term facility needs and priorities, and recommending public and private methods to meet those needs.
- Public Art and Community Design - Create a stimulating visual environment through the public and private artworks programs, and create a greater understanding and appreciation of art and artists through community dialogue, education and involvement.
- History and Heritage - Work with the Louisville Historical Commission to develop a greater understanding of our heritage and assess the City's facilities in which that history is preserved, interpreted, and shared.
- Humanities - Foster the spirit of community in which the richness of human experience is explored and nurtured through ongoing analysis and exchange of ideas about the relation to self, others and the natural world.
- Local Artists - Encourage local support for a creative and economic environment that allows artists to continue to live and work in and for the community, and for themselves.
- Marketing and Communications - Identify marketing and communication systems to promote the arts and culture through public dialogue, media and education.
- Art and Culture Education - Demonstrate commitment to quality arts and culture education and lifelong learning by advocating for inclusion of the arts and culture in our schools and in community settings.

- City Board and Commission Support - Advance the community's understanding of local zoology and botany with the Horticulture and Forestry Advisory Board.
- Financial Resources - Encourage the fiscal soundness of Louisville Cultural Council by evaluating and recommending improvements to its capacity to maintain effective public, private and earned income funding.

**Policy CS-6.2:** The appropriate City Departments and the Louisville Cultural Council (LCC), as the principal advisory board to the Louisville City Council related to the arts, shall serve as the primary voice for the development of the Arts and Culture Master Plan.

**Policy CS-6.3:** The appropriate City Departments and the LCC shall provide an inclusive public forum for discussion of issues and ideas affecting the development of a City-wide Arts and Culture Master Plan.

## ECONOMIC DEVELOPMENT (ED) AND FISCAL HEALTH (FH)

### Economic Development

Given Louisville's central location along the US 36 Corridor, between Broomfield and Boulder, the community is strategically located to capture its share of the region's business growth. The level of investment that actually occurs within the community will correlate to the City's commitment to its Vision and Core Community Values as expressed in this Comprehensive Plan Update, supportive policies, creative financial solutions and removal of barriers. Barriers to the development of the concepts presented within this document fall within five principal categories – organizational, physical, market, regulatory and financial. Strategies for the removal of these barriers will be critical to the ultimate implementation of the Comprehensive Plan.

Encouraging strategic investment in an environment that contains an appropriate mix of land uses and creates a unique sense of place is the central approach for targeting investment in key areas within the City. This premise assumes concentrating resources in the key

commercial, retail, and employment centers in the City that will have a positive economic ripple effect throughout the entire City. In this way, the City of Louisville, as a public partner, can effectively leverage public investment efforts to overcome barriers and achieve desired outcomes. The economic future of the City will depend on how effectively these leveraged efforts are implemented.

It is also important to note the key role residential development plays in attracting new businesses and retaining existing businesses in the community. A diverse housing base is a prominent criterion businesses use to evaluate a community. The ability of a wide range of employees to live and work in close proximity increases business efficiency, provides a higher quality of life for employees, and discourages companies to relocate their business outside of the community. This relationship between residential diversity, availability and business growth should continue to be fostered in future economic development efforts.

**PRINCIPLE ED-1.** The City should retain and expand existing businesses and create an environment where new businesses can grow.

**Policy ED-1.1:** The City should work to maintain a business friendly environment, where services to new and existing businesses are delivered in a timely and efficient manner.

**Policy ED-1.2:** The City should encourage employment centers to provide goods and services which will bring revenue from outside of the community into the community.

**Policy ED-1.3:** The City should focus on primary job creation that provides job diversity, employment opportunities and increased revenue for Louisville.

**Policy ED-1.4:** The City should focus on efforts that will encourage existing businesses to expand and develop in Louisville.

**Policy ED-1.5:** The City should review requests for busi-



ness assistance based upon criteria under the Business Assistance Program.

*Policy ED-1.6:* The City should continue its business retention program as a means of reaching out to businesses in Louisville to specifically understand the needs of the business community.

**PRINCIPLE ED-2.** The City should direct growth in an economically responsible way in order to maintain high quality amenities and high service levels for residents.

*Policy ED-2.1:* The City should strive to achieve complementary land uses that promote an economically healthy community.

*Policy ED-2.2:* The City should work to maintain and improve community assets such as the educational, housing, recreational, retail and cultural opportunities that encourage local businesses to remain and expand in Louisville.

**PRINCIPLE ED-3.** The City should be responsive to market opportunities as they occur, and maintain and enhance the City’s competitive position to attract development that adheres to the Community Vision.

*Policy ED-3.1:* The City should actively compete for quality economic development opportunities.

*Policy ED-3.2:* The City should consider strategic public investments and partnerships to encourage, promote and recruit private investment that responds to the Community Vision and Core Community Values.

*Policy ED-3.3:* The City should maintain a protocol for responding, from a single point of contact, to real estate, economic and demographic information requests.

*Policy ED-3.4:* The City should support Chamber of Commerce and the Downtown Business Association activities directed toward economic development both financially and through staff and support services.

*Policy ED-3.5:* The City should fund and manage a

successful range of economic development services to respond to business development inquiries.

*Policy ED-3.6:* The City should support redevelopment efforts that bring diversity and income generation to aging and distressed areas within Louisville.

**PRINCIPLE ED-4.** The City should cooperate with surrounding communities to explore opportunities for regional solutions to economic development challenges.

*Policy ED-4.1:* The City should participate with public and private entities that further economic development on a regional and state level.

*Policy ED-4.2:* The City should evaluate the benefits of forming a regional partnership within Boulder County as a vehicle to pool resources and encourage cooperation.

*Policy ED-4.3:* The City should participate in regional activities that promote Louisville.

*Policy ED-4.4:* The City should participate in bringing state and local programs designed to encourage business growth to businesses in Louisville.

**PRINCIPLE ED-5.** The City should work to support and maintain the historic and cultural attributes of the Downtown Business District.

*Policy ED-5.1:* The City should periodically review the Downtown Framework Plan and the Downtown Design Handbook to ensure that the guidelines are applied in a manner that encourages the revitalization of existing structures, historic preservation where applicable, application of appropriate guidelines in the construction of new structures and expansion of existing buildings.

*Policy ED-5.2:* The City should support and promote the revitalization of existing structures that maintain the character of downtown, while providing a diverse business base.

*Policy ED-5.3:* The City should support a mix of uses which bring new revenues to the downtown area.

*Policy ED-5.4:* The City should support and promote efforts that showcase both development opportunity and quality of life in Louisville, such as the “Street Faire,” parades, the “Taste of Louisville,” shopping opportunities and other community events.

### Fiscal Health

A community’s fiscal environment can be described as a “three-legged” stool, balancing nonresidential development, municipal services and amenities and residential development. The first “leg” of the stool – nonresidential development - provides the vast majority of revenues to support municipal services. Municipal services and amenities, the second “leg,” attract residents and maintain their quality of life. The third “leg” – residential development – generates the spending and employees to support nonresidential business. Fiscal sustainability of the community relies on this type of balance, which must continually be maintained, even through changing economic cycles.

Over the past two decades, the City of Louisville has been at the forefront of Boulder County communities in maintaining its fiscal health. The City recognized early on the need for revenue-generating, nonresidential development to offset the costs of providing a high level of service and community amenities to its residents. To this end, the City continues to make significant public investments to attract new businesses to retail, office and industrial developments. In 2011, a use tax was approved by voters to strengthen the tax base and offset the swings experienced from a declining retail market. The City continues to attract high-quality residential development to support business growth.

During the national recession between 2008 and 2010, sales tax revenues in Louisville declined by 6%, as large format retailers in the McCaslin and South Boulder Road Corridors have closed down.

The City’s continued fiscal challenge will be balancing its revenues and expenditures while maintaining the municipal services that its residents expect. This fiscal balance has to occur recognizing that Louisville is land

locked. Successful redevelopment and revitalization will be keys to the City’s future. However, if the desired land use pattern does not support the desired municipal level of service under the existing revenue structure, a change in the revenue structure may be required, similar to the adoption of the use tax.

Certain retail areas of the City of Louisville are depended upon to produce revenues that exceed the cost associated with providing services to them. These areas are the key producers of net positive revenues which in turn are used to provide City-wide services. The majority of the City’s sales tax revenue comes from a few key activity centers (see below). The land use mix in each of these key areas must provide positive fiscal returns to the City, and certain areas must provide exceedingly strong fiscal benefits to the City under the current City tax structure.

- 1. The McCaslin Boulevard and US Highway 36 Interchange** - The McCaslin Boulevard and US Highway 36 Interchange Area generates approximately 33% percent of the City of Louisville’s sales tax revenue. These revenues are due in large part to regional retail operations located in close proximity to McCaslin Boulevard and the Highway 36 interchange. Future land use scenarios should ensure that this area continues to provide strong fiscal benefits to the City by capitalizing on improvements in infrastructure and adapting to market trends.
- 2. The South Boulder Road and Highway 42 area** - In contrast to McCaslin Boulevard’s Regional Retailers, the South Boulder Road and Highway 42 intersection is a Community Retail center serving a smaller trade area. Although sales tax revenue generated in this area is not as high as the McCaslin Boulevard area, the revenue generated in this area is crucial to the continued fiscal success of the City, and the future land use mix in this area should produce positive fiscal returns to the City.
- 3. Downtown Louisville** - Currently, about 18% percent of retail sales tax revenue in the City of Louisville comes from food and beverage sales. A large percentage of this food and beverage sales tax is generated by the restaurants and bars in Downtown Louisville. Future

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land use plans for the Downtown area must continue to provide strong positive benefits to the City by supporting the continued success of the restaurant sector while enabling a diversification into other retail sectors.

**PRINCIPLE FH-1.** The City should maintain fiscal balance through effective land use decisions, focused economic development efforts, encouraging a mix of residential unit types and pricing, and strategic public investments, all consistent with the community's desire for high-quality services and amenities.

*Policy FH-1.1:* Fiscal impacts of proposed annexation, development or redevelopment should be evaluated to determine both operational and capital cost impacts upon all service departments of the City. The City should develop and utilize a marginal cost model which assigns incremental costs to new development based on a desired level of services.

*Policy FH-1.2:* Annexation, development or redevelopment must have a positive impact on the City's fiscal and economic position, especially in historically retail areas. The impact of new development should be evaluated by its effect on City revenue generation, service provision, capital investments, job creation, catalytic opportunities, and quality of life.

*Policy FH-1.3:* Fees associated with development should be continually reviewed, and adjusted, as required to cover the cost of impacts upon the City.

*Policy FH-1.4:* The City should coordinate the need for capital improvements, the need to expand operating programs and services, and the need for revenue prior to the approval of new annexations and rezonings.

*Policy FH-1.5:* With respect to infrastructure investment for new development, the City should carefully evaluate the use of alternative financing mechanisms, including special districts and regional authorities.

*Policy FH-1.6:* The City's fiscal structure should consistently be evaluated to ensure it supports the desired land use pattern and community levels of service.

# Policy Alignment & Implementation

The Comprehensive Plan is a vision document which sets goals and principles to help guide policy initiatives and future developments within the City of Louisville. As stated in the Introduction, the Comprehensive Plan is an advisory document that provides a conceptual framework to advance the Community's Vision Statement and Core Values. It is not a regulatory document, nor does it have the force of law.

Through the 18 month planning process, a clear Vision Statement with supporting Core Values emerged based on thoughtful community input and the premise of ensuring a vibrant, economically successful, and fiscally healthy City which adds to the quality of life of existing and future citizens.

The City of Louisville must take on the task of implementing realistic strategies to translate the Community's Vision Statement and Core Values into reality. The implementation strategy outlined below will be developed through a coordinated effort of updating the Louisville Municipal Code and funding specific initiatives through the City's annual budgeting process. This effort will continue to involve all of Louisville's stakeholder groups including but not limited to residents, property owners, business operators, Boards and Commissions of the City, and the City Council.

This Comprehensive Plan was developed with a broad, long range view for the future of the City. Successfully executing specific implementation strategies will require a focused effort drawing on the expertise of the citizenry, property and business owners, and Boards and Commissions of the City.

Since the Comprehensive Plan does not have the force of law, the City relies on other regulatory measures to implement the plan. The information presented here is designed to provide a range of actions for consideration and sound decision-making. No one step will effectively achieve the Comprehensive Plan's Vision. Rather, implementation will be dependent on a series of actions designed to capitalize on market opportunities and overcome barriers with active community involvement and coordinated regulatory updates. Key to the

successful implementation of the Comprehensive Plan will be the continued identification of actions and an implementation approach tailored to the unique issues identified in the Framework and supporting Principles and Policies. The following is an overview of the various types of strategies that will be used to implement the Vision Statement, Core Community Values, and Framework of this Comprehensive Plan.

## Small Area Plans and Neighborhood Plans

The Comprehensive Plan takes a broad and expansive look at the City and cannot focus on the specific details or development rights of a particular property or parcel. For example, the Comprehensive Plan may state that increased pedestrian connectivity is desired in a certain area of the City, but it does not elaborate on the width of a sidewalk, or the exact location of a street crossing. Similarly, the Comprehensive Plan's Framework may describe development goals of a specific character zone within the City, but it cannot identify a specific development performance measure for a specific property.

To attain the level of detail necessary to advance the Community's vision outlined in the Framework, specific small area plans, or neighborhood plans, are needed to ensure the expectations outlined in the Comprehensive Plan are met on individual properties. These area planning efforts can focus in on certain portions of the City, and examine the specific property information necessary to implement the vision and specific principles and policies outlined in the Comprehensive Plan. Small Area Plans and Neighborhood Plans, both must be used to help implement the Vision Statement, Core Community Values and Framework.

## Louisville Municipal Code Amendments

The Louisville Municipal Code (LMC) is the primary regulatory tool the City has at its disposal to implement the principles and policies outlined in the Comprehensive Plan's Framework. The LMC has the force of law and is the regulatory tool utilized to dictate how the City will conduct business with regards to Revenue and Finance, Parks and Open Space, Public Safety, and Land Use, to name only a few areas. Chapters 15 (Buildings), 16 (Subdivisions) and 17 (Zoning) of the LMC regulate the

use, character, and form of the built environment in the City. Many of the principles and policies outlined in the Framework require city ordinances adopted through properly noticed public hearings to modify or create additional sections to Chapters 15, 16 and 17 of the LMC.

## The City's Operating and Capital Improvement Budget

Many of the principles and policies outlined in the Framework Plan require the dedication of financial resources to be successfully implemented. The City of Louisville updates its budget annually, and it is during this budgeting process that new funding can be dedicated to implement the Comprehensive Plan's Vision Statement, Core Community Values and Framework.

The City's operating budget includes funds for the day-to-day functioning of the City and the ongoing provision of services to the citizenry. Operating budget items include things like snow removal, police services, and operation of the recreational center. To implement the Framework, new funds may need to be dedicated or reallocated through the annual operating budget process.

The Capital Improvement Program (CIP) is dedicated to the construction or acquisition of new assets. Examples of items found in the CIP include the construction of new bridges and roads, or the acquisition of new maintenance equipment. Implementation of the Framework may require the construction of new City funded infrastructure including, for example, trails, utility lines, or roads. The budgeting process will be utilized to identify Operating and Capital Improvement Budget allocations which will assist in the implementation of the Comprehensive Plan.

## The Zoning Map

The Framework is a map that reflects preferred character areas by designating development patterns and development types for general geographical locations in the City. The locations shown on the Framework are illustrative, and are not intended to depict either parcel-specific locations or exact acreage for specific uses.



# Policy Alignment & Implementation

The City of Louisville Zone District Map reflects a number of zone districts that govern where uses by right and uses by special review may be located. The Zoning Map of the City should correspond to the goals and policies of the Comprehensive Plan's Framework Plan to ensure that incremental development decisions reflect the Community Vision. Evaluating and amending the Zoning Map will be necessary to align zoning with the vision, values, principles, and policies outlined in the Comprehensive Plan.

### Existing Zoning Agreements

Planned Community Zone Districts (PCZD) and approved General Development Plans (GDP), in particular, are a result of a contractual agreement between a property owner(s) and the City. These contracts were created in recognition of the economic and cultural advantages that will accrue to the residents of an integrated, planned community development of sufficient size to provide related areas for various housing types, retail and service activities, recreation, schools and public facilities and other multifaceted uses of land. In some instances these zoning agreements no longer reflect the vision, values, principles and policies outlined in the Comprehensive Plan, and they may need to be amended.

Section 17.72.170 of the Louisville Municipal Code (LMC) requires that the amendment process for contractual zoning plans will be subject to the same procedures, limitations and requirements by which such plans were originally approved. The City should lead in coordinating open reviews and amendments of existing zoning agreements between the City and property owners. If agreement on changes cannot be reached, the existing contractual zoning will remain in force as per the terms of the agreement.

### Compliance with Intergovernmental Agreements

Parcels which are affected by an intergovernmental agreement (IGA) remain subject to the provisions and terms of the applicable IGA. The implementation of a preferred land use, which may differ from the land use recommended under the IGA, would require an amend-

ment of the applicable IGA. The Comprehensive Plan may be updated to reflect any new IGA amendments without requiring a complete City Comprehensive Plan amendment process.

### POLICY ALIGNMENT

The various departments, boards, and commissions within the City of Louisville are each focused on specific areas of interest. For example, the Public Works Department's primary responsibility is the municipal infrastructure of the City, while the Open Space Advisory Board is concerned with the management and acquisition of open space properties. The goals and objectives of each

of these groups are specific to their areas of interest, and at times the priorities of one group, may be different with those of another.

The successful implementation of the Comprehensive Plan is dependent upon the alignment of the sometimes divergent policies of the various departments and citizen interests of the City.

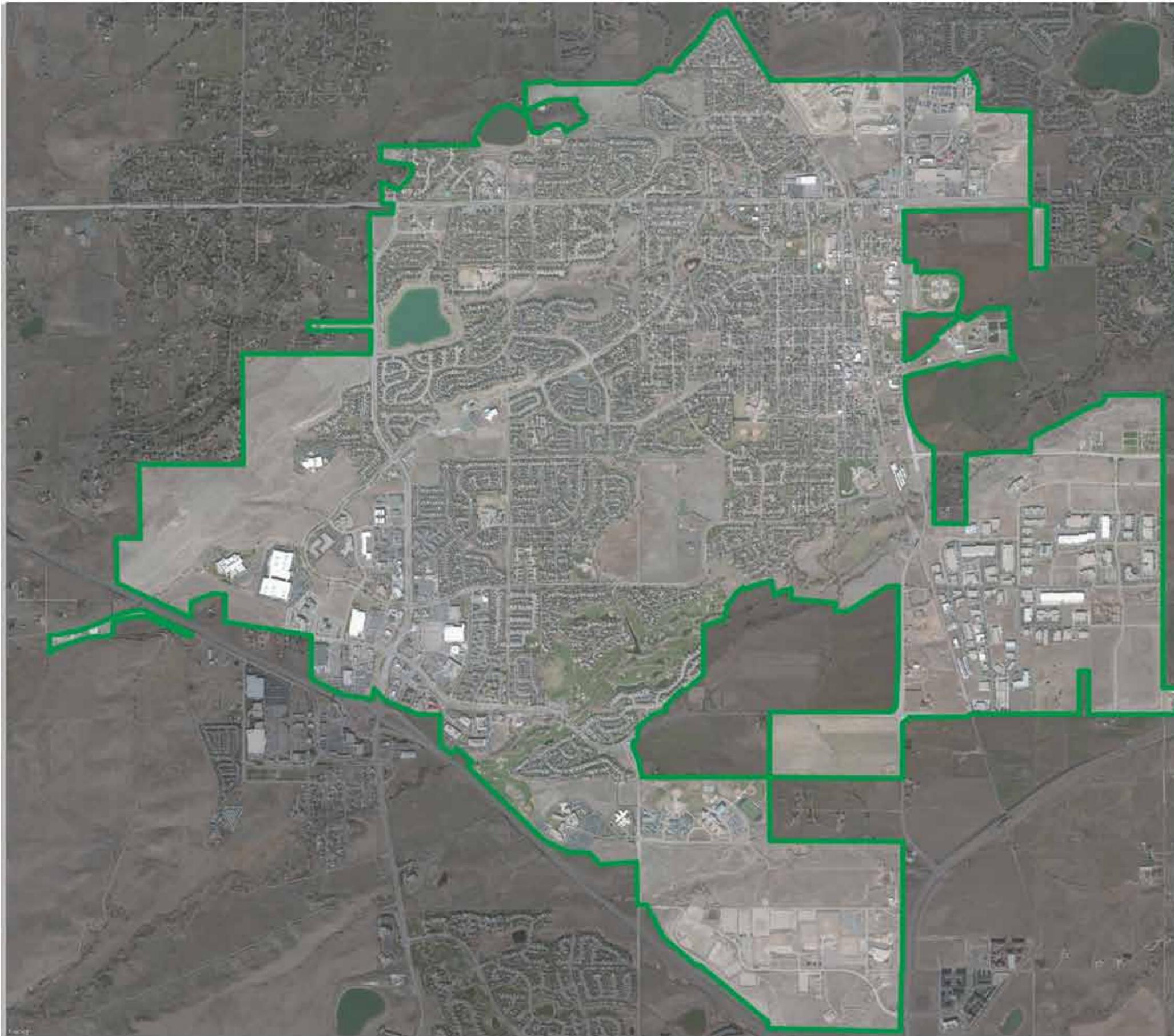
### IMPLEMENTATION ACTION ITEMS

Below is a list of the important steps that should be taken to implement the goals and policies identified in this Comprehensive Plan. These actions are of the vari-

ous types previously described, and together they address every section of the Plan. The table also includes anticipated goals for the completion of each item. Note, the actual timing of actions will be determined annually by the Louisville City Council as it reviews the City's budget and priorities.

These policies alone will not effect the vision outlined in the Framework; that will require the combined efforts of the City, residents, property and business owners in Louisville.

Actions	0-3 Years	3-5 Years	5-10 Years	Actions	0-3 Years	3-5 Years	5-10 Years
<b>Area plans</b>				<b>Community heritage</b>			
McCaslin Blvd	X			Preservation Master Plan	X		
South Boulder Rd	X			<b>Parks, recreation, open space, and trails</b>			
Downtown	X			PROST updates		X	
Phillips 66				Rec center remodel		X	
CTC		X		Missing trail connections	X	X	X
<b>Neighborhood plans</b>				<b>Municipal infrastructure</b>			
Fireside	X			Utility rate study	X		
North Louisville	X			Water and Waste Water Master Plan	X		
Lake Park	X			Storm Water Outfall Master Plan	X		
Hillside	X			Storm drainage improvements		X	
South Louisville	X			<b>Energy</b>			
Davidson Mesa	X			City Wide Energy Assessment	X		
Old Town		X		Update building codes	X	X	X
Coal Creek		X		Develop city-wide energy strategy	X		
Hecla		X		<b>Community services</b>			
<b>Housing</b>				Library Strategic Plan updates		X	
Affordable housing policy	X			CPTED policy	X		
<b>Zoning</b>				Solid waste reduction strategy	X		
Evaluate form based code	X			Arts and Culture Master Plan	X		
Implement code changes		X		<b>Economy and fiscal health</b>			
<b>Transportation</b>				Update fiscal model	X		
Multi-modal Transportation Master Plan	X			<b>Governance</b>			
Coordination on US 36/FasTracks	X	X	X	Policy alignment	X	X	X



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# McCASLIN BLVD

## SMALL AREA PLAN





McCaslin Blvd & US 36

The McCaslin Blvd Small Area Plan is a guide for public and private investment in the McCaslin Blvd corridor over the next 20 years. The study area, incorporating both sides of McCaslin Blvd between Via Appia and US 36 and including all of Centennial Valley, is the primary commercial center of Louisville. Development in the area ranges from older strip retail centers to commercial offices, residential apartments and condominiums, and undeveloped vacant land. The area is a destination for shopping and employment for residents of the City and for those from surrounding areas. The businesses in the corridor contribute a significant portion of the City's sales tax revenue.

The McCaslin Blvd area has seen significant public investment recently, including improvements to US 36, the diverging diamond interchange, and the Flatiron Flyer bus service. There is also major growth occurring nearby in the Superior Town Center. The McCaslin Blvd Small Area Plan provides a framework for capitalizing on these investments and the existing qualities of the corridor to benefit the residents, property owners, and business owners in the study area and throughout the community.

The 2013 Comprehensive Plan update identified the McCaslin Blvd corridor as an area in need of further study through a small area plan process. The small area planning process utilized community input to define desired land uses, preferred physical character of development, and public infrastructure priorities for the area. The public directed the outcome through multiple meetings and workshops, as well as a community survey, and the final plan was approved by Planning Commission and adopted by City Council.



Participants at a public workshop for the McCaslin Blvd Small Area Plan

Early in the planning process, Planning Commission and City Council endorsed the following unranked project principles to guide development of the plan:

- Principle 1 – Improve connectivity and accessibility while accommodating regional transportation needs.
- Principle 2 – Create public and private gathering spaces to meet the needs of residents, employees, and visitors.
- Principle 3 – Enhance bicycle and pedestrian connections to private and public uses.
- Principle 4 – Utilize policy and design to encourage desired uses to locate in the corridor and to facilitate the reuse or redevelopment of vacant buildings.
- Principle 5 - Establish design regulations to ensure development closely reflects the community's vision for the corridor while accommodating creativity in design.
- Principle 6 – Establish development regulations to meet the fiscal and economic goals of the City.

To achieve these principles, the plan includes several major recommendations:

- Limit allowed height to two stories along McCaslin Blvd and adjacent to existing residential neighborhoods
- Decrease total allowed development in the area from what existing zoning and regulations would allow
- Improve connections for pedestrians, cyclists, and automobiles
- Orient development to be more inviting to visitors on foot, on bikes, and in cars
- Develop new public gathering space and access to nearby existing public amenities

The plan calls for the creation of new design guidelines to implement its recommendations. However, it is important to remember these tools only regulate private development, and it is up to property owners to decide if and when they want to develop or redevelop their properties. This plan does not require any changes to existing developments until their owners decide to redevelop them.



Construction of McCaslin Marketplace

These changes are expected to have many benefits for the community, most notably enhancing the small town character of the corridor and transforming it into a place in which residents enjoy spending time. While traffic in the area is expected to increase, reducing the total amount of development allowed in the area will limit the impacts relative to what the existing regulations would allow. Based on the City's fiscal model, the allowed new development in the corridor will increase the area's already strong positive returns to the City.

By following through on the implementation items outlined in this plan, Louisville will be well positioned benefit from changes in the McCaslin Blvd area over the next 20 years.



Wayfinding developed by Louisville Rec Center Summer Camp



459 McCaslin Blvd

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 Jeff Lipton, Mayor Pro Tem, Ward 2  
 Jay Keany, Ward 1  
 Chris Leh, Ward 1  
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 Open Space Advisory Board  
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 mySidewalk  
 National Research Center  
 ArtHouse Design



McCaslin Interchange

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*Pedestrians walk in median along McCaslin Blvd*

Annexation of the McCaslin Blvd area of Louisville began in the late 1970s and development of the area began in the 1980s and 1990s. By the time the 2013 Comprehensive Plan update was adopted, the area ranged from undeveloped greenfield sites to sites undergoing redevelopment. Given this diversity, the Comprehensive Plan called for a more in-depth look at how the McCaslin Blvd area should continue to evolve.

**Purpose**

The McCaslin Blvd Small Area Plan is intended to define desired community character, land uses, and public infrastructure priorities to provide a reliable roadmap for public and private investments in the corridor. As an extension of the Comprehensive Plan, the Small Area Plan is a policy document and not a regulatory document. However, the plan will serve as the basis for updated design guidelines, any potential zoning changes, capital improvement project requests, and public dedication requirements from private developers. The McCaslin Blvd Small Area Plan translates the broad policies of the Comprehensive Plan into the specific actions and regulations that will achieve those policies. The 2013 Comprehensive Plan update had two key purposes:

1. Better meet today's unique challenges of redevelopment versus new development, regional traffic and City transportation policy, the economy and the realities of retail growth, and neighborhood issues and concerns
2. Better clarify the Community's vision in terms of community character and physical design to provide the public and staff with a common language and tools to review and discuss redevelopment requests

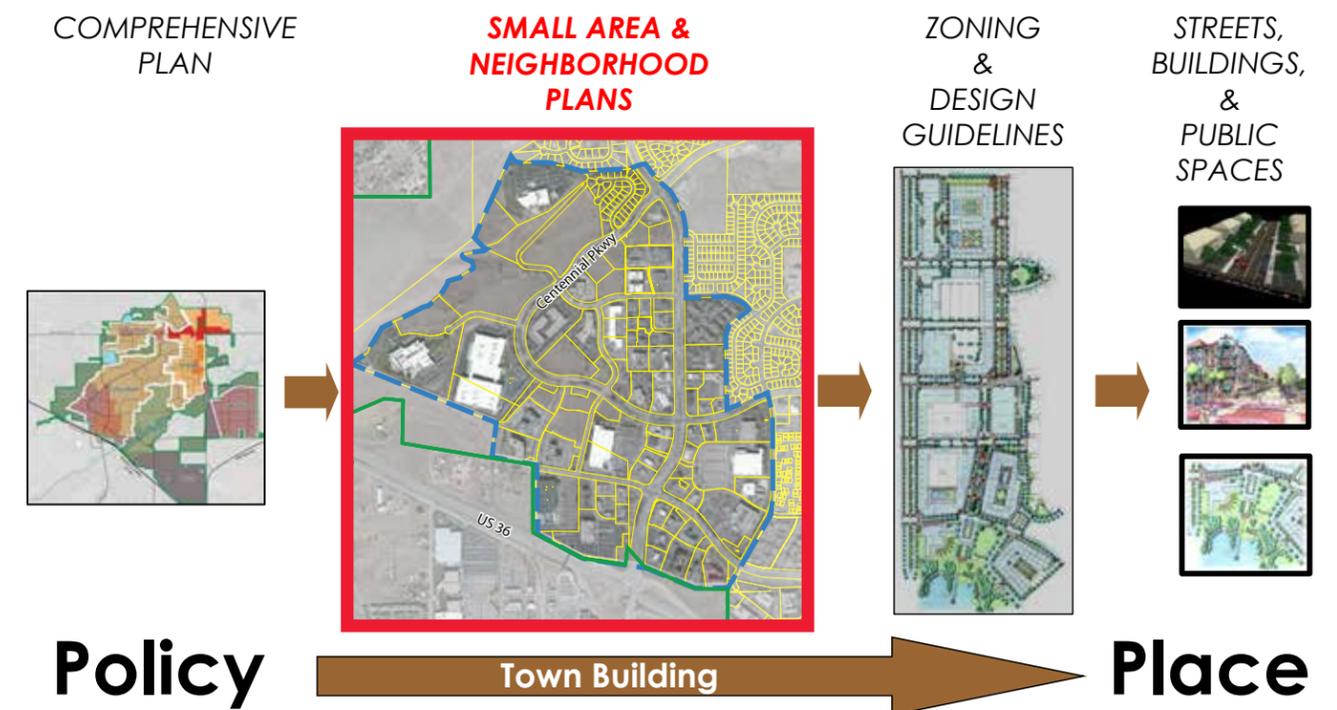
The Comprehensive Plan created a framework to address these purposes through changes in land use, design, and infrastructure. The McCaslin Blvd Small Area Plan takes that framework a step further by setting guidelines for how design and land use regulations should be changed and identifying what infrastructure is needed. The final step, following this plan, will be to draft and adopt the new regulations and build the new infrastructure, through a combination of the City's capital improvement program and private investment.

**How to use this plan**

The McCaslin Blvd Small Area Plan defines the community's vision for the corridor to guide future public and private investment. The document is divided into five sections

1. The Process describes the public involvement and community outreach effort used to generate the Small Area Plan
2. The Context describes the current conditions in the study area and key trends and challenges facing the corridor
3. The Principles describe the general goals for the plan, referred to as the Measures of Success, and the broad design principles to guide future action in the corridor
4. The Plan includes maps and illustrations describing the desired land uses, building character, and street, trail, and park improvements in the study area
5. Implementation describes steps to be taken to achieve the goals of the plan, and includes cost estimates for the anticipated public improvements

The McCaslin Blvd Small Area Plan is a policy document. In order to achieve the community's vision for the corridor described in the plan, regulatory changes will need to be adopted to the Louisville Municipal Code, including the incorporation of new design guidelines for the area. The plan does, however, provide the basis for the City to require private property owners to build or dedicate some public infrastructure or land when properties develop or redevelop. Other public investments will need to be made by the City through the annual capital budgeting process.





City of Louisville Walkability Audit along McCaslin Blvd

The McCaslin Blvd small area plan was developed through a five-step process and involved extensive input from residents within the corridor and throughout the community, property owners, business owners, and elected and appointed officials.

**Step 1 – Set Goals**

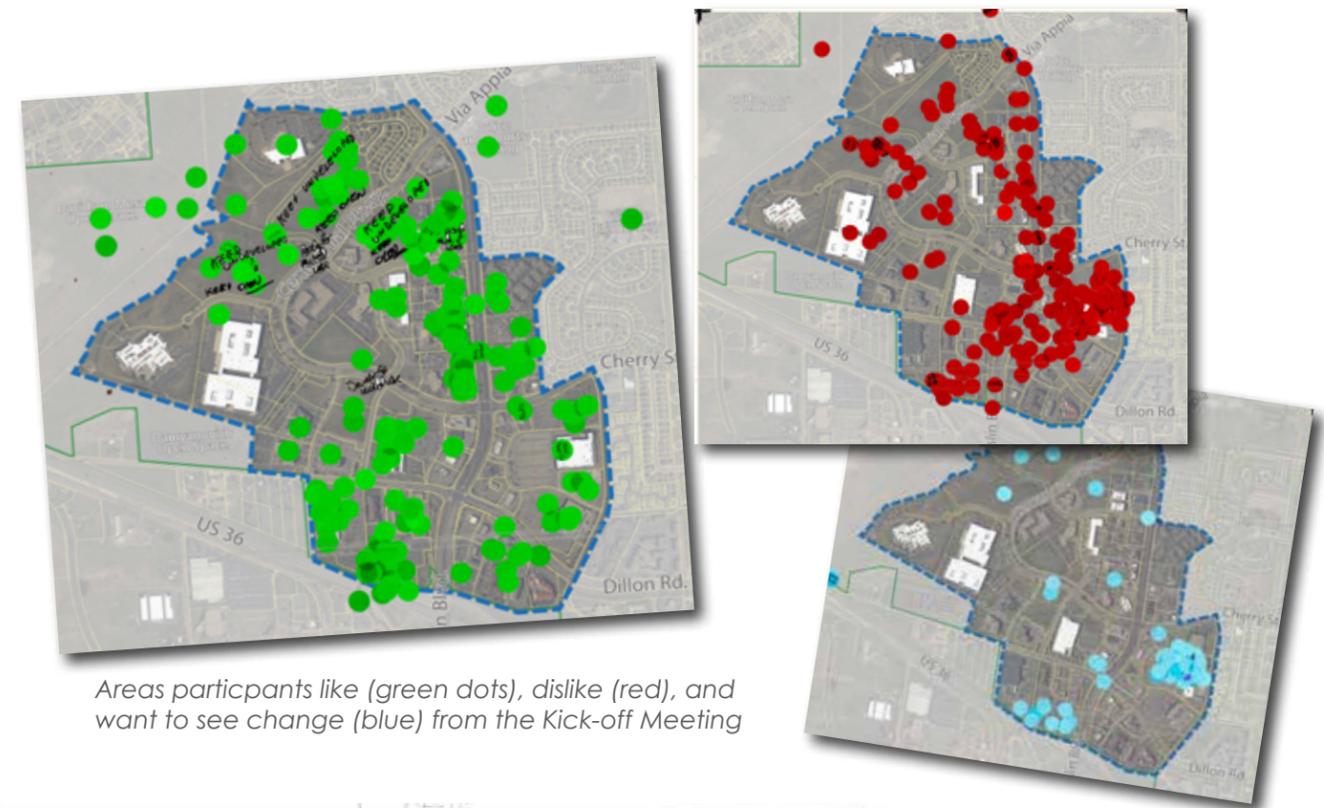
Goals, represented by the Measures of Success (see page 15), were needed to guide the development of the plan. This began with a Technical Advisory Panel (TAP) conducted by the Urban Land Institute in June, 2013. The TAP brought in five outside experts in community development and design, who worked with residents, property owners, and business owners in and around the corridor. The TAP examined possible factors holding back successful development in the corridor and made recommendations for improvements. Questions were also posted on the City's discussion website, EnvisionLouisvilleCO.com, allowing anyone in the community to provide early input.

A public Kick-off Meeting was held in February, 2015. Over 70 people attended the meeting. Participants were asked to identify areas they liked, disliked, and wanted to see change. They also discussed how they would like to use the corridor in the future and how the Core Community Values from the Comprehensive Plan could be incorporated into the area. This input was used to develop an Opportunities and Constraints analysis (see page 13) and the Measures of Success, which were endorsed by Planning Commission and City Council.

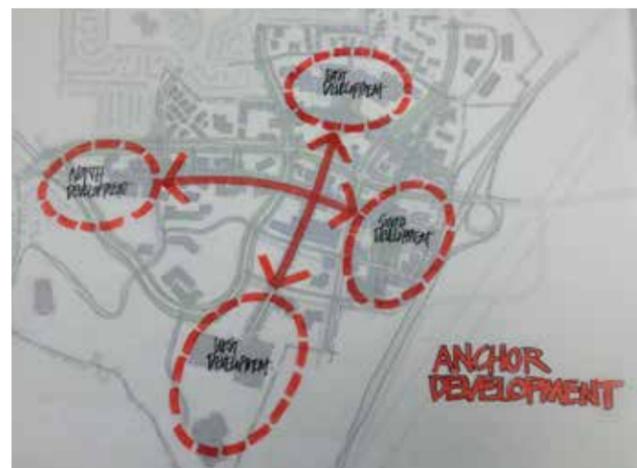
**Step 2 – Corridor Analysis**

The current built environment of the corridor was analyzed, including the existing regulations and how people currently use the corridor. A corridor character assessment was conducted, as was a buildout analysis estimating how much development the existing zoning would allow. Members of the public participated in a Walkability Audit to identify areas where pedestrian and bicycle facilities could be improved.

A Placemaking Workshop was held where participants could brainstorm ideas for solving the problems identified in the Walkability Audit. Attendees reviewed the major intersections in the corridor and the corridor as a whole, identifying opportunities where connections could be enhanced. The City also conducted a mail and internet survey of 1,200 randomly selected homes throughout the community to received input on the desired physical character for the corridor.



Areas participants like (green dots), dislike (red), and want to see change (blue) from the Kick-off Meeting



A diagram from the ULI TAP



Ideas for improving the McCaslin and Cherry intersection from Placemaking Workshop #1

# PROCESS

## Step 3 – Development of Alternatives

Three alternative development scenarios were created based on input received through the public process. A second Placemaking Workshop was held in November, 2015, where participants were asked how they would like to see example sites develop or redevelop in the future. Attendees identified desired land uses and selected sample photos showing the types of buildings and park spaces they would prefer to see on the sites.

The results of this meeting and all the previous public input and analysis were used to develop outlines for three varying development alternatives. Each alternative indicated future allowed land uses and development intensities throughout the corridor.

## Step 4 – Review of Alternatives

The alternatives were analyzed and the results presented to the public for review. For each alternative, a maximum potential buildout, including employee and population projections, was calculated. These data were used to generate a fiscal impact analysis. Potential transportation improvements were also identified, and the buildout data were used to run traffic analyses.

Drawings showing possible building size, location, and character were created for various sites in the corridor. This information was presented to the public at a third Placemaking Workshop in February, 2016, where attendees were asked to identify the character elements, transportation improvements, and buildout scenarios they preferred.



*Proposed development at Colony Square from Placemaking Workshop #2*



*Community responds to alternatives presented at Placemaking Workshop #3*

**Step 5 – Creation of Preferred Alternative**

All the input gathered in the previous steps was used to develop a preferred alternative to serve as the basis for the plan. Input from the third placemaking workshop was utilized to determine favored elements of each alternative to be incorporated into the preferred alternative. Details of the preferred alternative, which serves as the basis for this plan, were then developed for analysis.

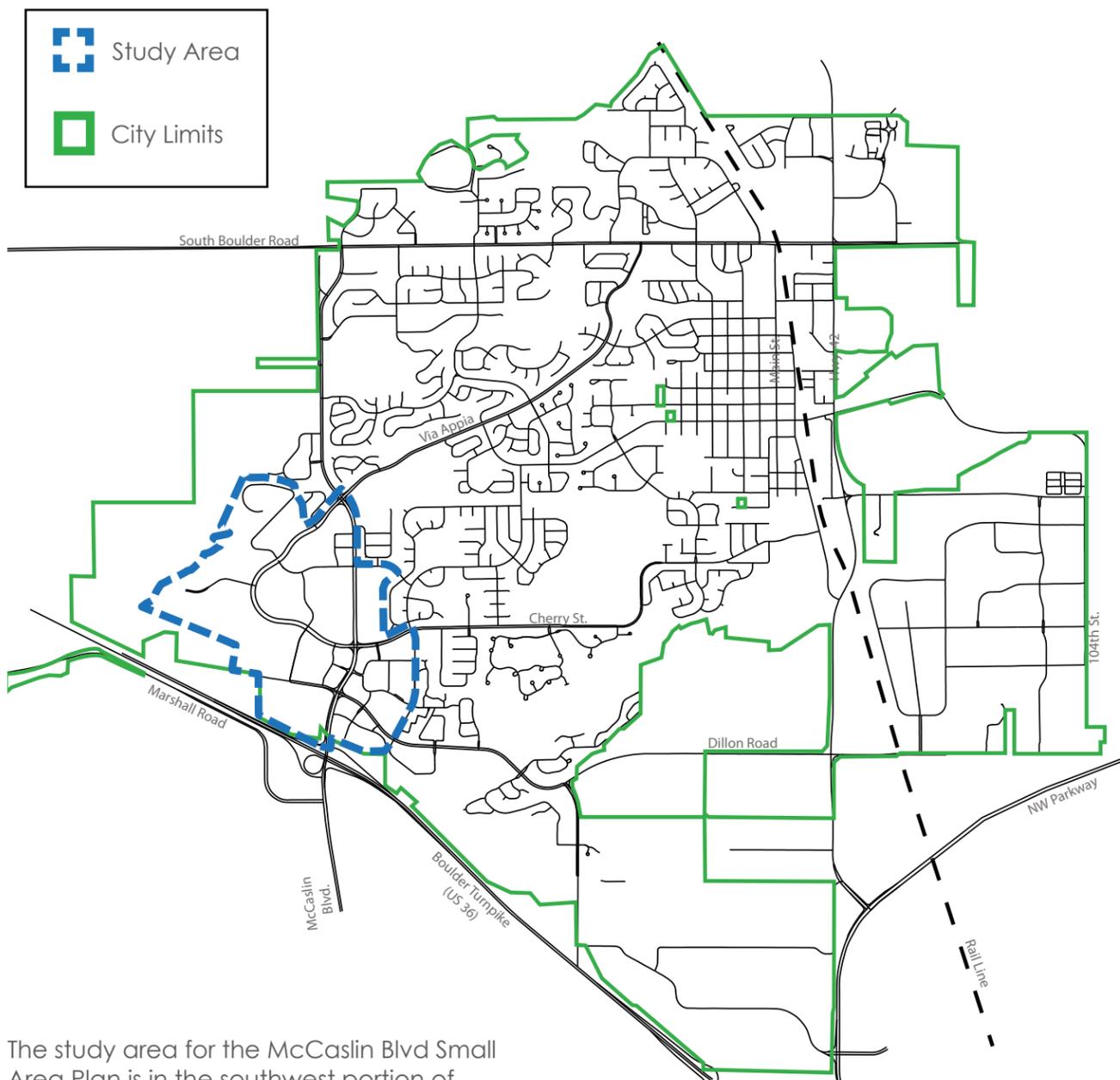
Staff estimated the maximum amount of development the preferred alternative could generate and analyzed the expected transportation and fiscal impacts. The preferred alternative was also evaluated against the Measures of Success defined in Step 1. The preferred alternative was documented in the draft plan presented to Planning Commission and City Council at public hearings. The McCaslin Blvd Small Area Plan was adopted by City Council on March 7, 2017.



Community dot exercise on the draft roadway improvements plan from Placemaking Workshop #3



*View of McCaslin Area*



The study area for the McCaslin Blvd Small Area Plan is in the southwest portion of Louisville, stretching along McCaslin Blvd from Via Appia to the north to the City limit at US 36 to the south. The study area includes areas on both sides of McCaslin Blvd, and extends west to include all of Centennial Valley.

**History**

Until the late 20th century, the area, now known as McCaslin Boulevard, was a series of farms clustered around 80th Street, a dirt road following the township and range system laid out in the early 1860s across Boulder County. The McCaslin Boulevard area became a part of the City of Louisville after the 1979 Centennial Valley annexation which more than doubled the size of the Louisville.

North 80th Street was realigned in the early 1980s to create a new US36 interchange and a retail center. In 1983, the area was branded as the Centennial Valley with an iconic four pillar monument at the intersection of McCaslin Boulevard and Cherry Street and distinctive stoplights along McCaslin. The first commercial development off of the new McCaslin Boulevard was the Centennial Shopping Center at the intersection of McCaslin Blvd and Cherry Street.

Throughout the 1990s, commercial development continued along the corridor with big box stores like Home Depot, Kohl's, and Sam's Club. Hotels located along the southern portion of the corridor close to US 36. Residential subdivisions developed east of McCaslin Boulevard and office developed west of the corridor.

Emphasis on commercial growth along McCaslin Boulevard and South Boulder Road not only boosted Louisville's economy but also contributed to the preservation of historic buildings within the commercial core of Old Town. After 30 years, McCaslin Boulevard is no longer a rural road but a center of commercial development. In 2015, the City, in partnership with CDOT, once again rethought the McCaslin Boulevard interchange and created an award-winning diverging diamond to improve this threshold into Louisville.



*View of McCaslin Blvd from Centennial Parkway circa 1985 (Louisville Historical Museum)*

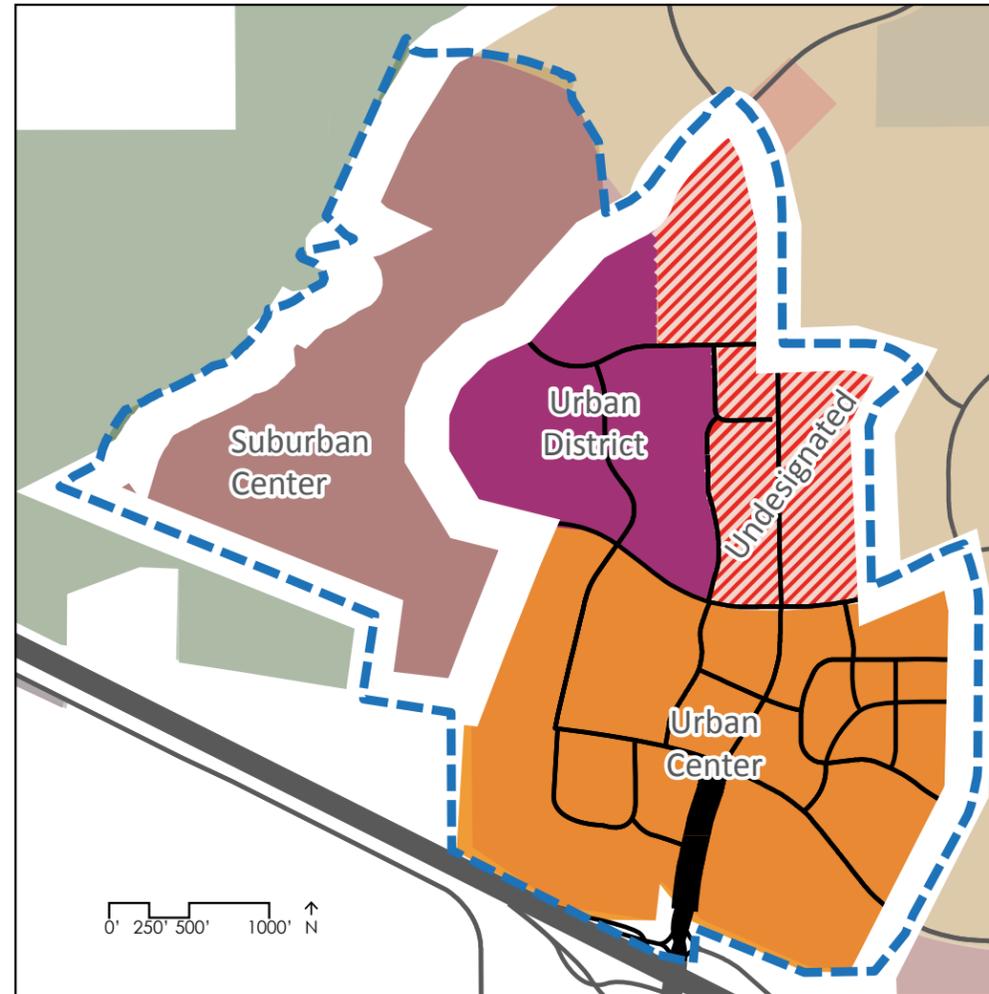
## CONTEXT

### 2013 Comprehensive Plan update

The 2013 Comprehensive Plan update divided the City into three character zones and five development types. The southern portion of the McCaslin Blvd area is in the Urban character zone, while the northern portion was left undetermined between Urban and Suburban. The final designation was to be decided by this Small Area Plan process. Centennial Valley office park, to the west, was designated Suburban.

The Urban character zone calls for smaller blocks, more connected streets, and a more pedestrian friendly environment, while the Suburban character zone calls for more auto-oriented development on larger blocks with larger streets.

The area around the intersection of McCaslin Blvd and Dillon Rd was designated a Center development type, with the Corridor development type to the north, and the Special District type in Centennial Valley. Centers are intended for a mix of uses and more activity, while Corridors are for more specialized uses along major roads, and Special Districts are for developments like office parks.



2013 Comprehensive Plan Framework for McCaslin Area



Study Area Map

**Existing Character**

The McCaslin Blvd corridor primarily functions as a suburban commercial area, with a suburban office park to the west in Centennial Valley. The majority of the development is commercial, with a few residential developments in the northern portion of the study area. The commercial buildings range from big box stores to strip retail centers, stand alone restaurants and hotels, and smaller office buildings. In Centennial Valley, larger office buildings predominate, along with vacant land.

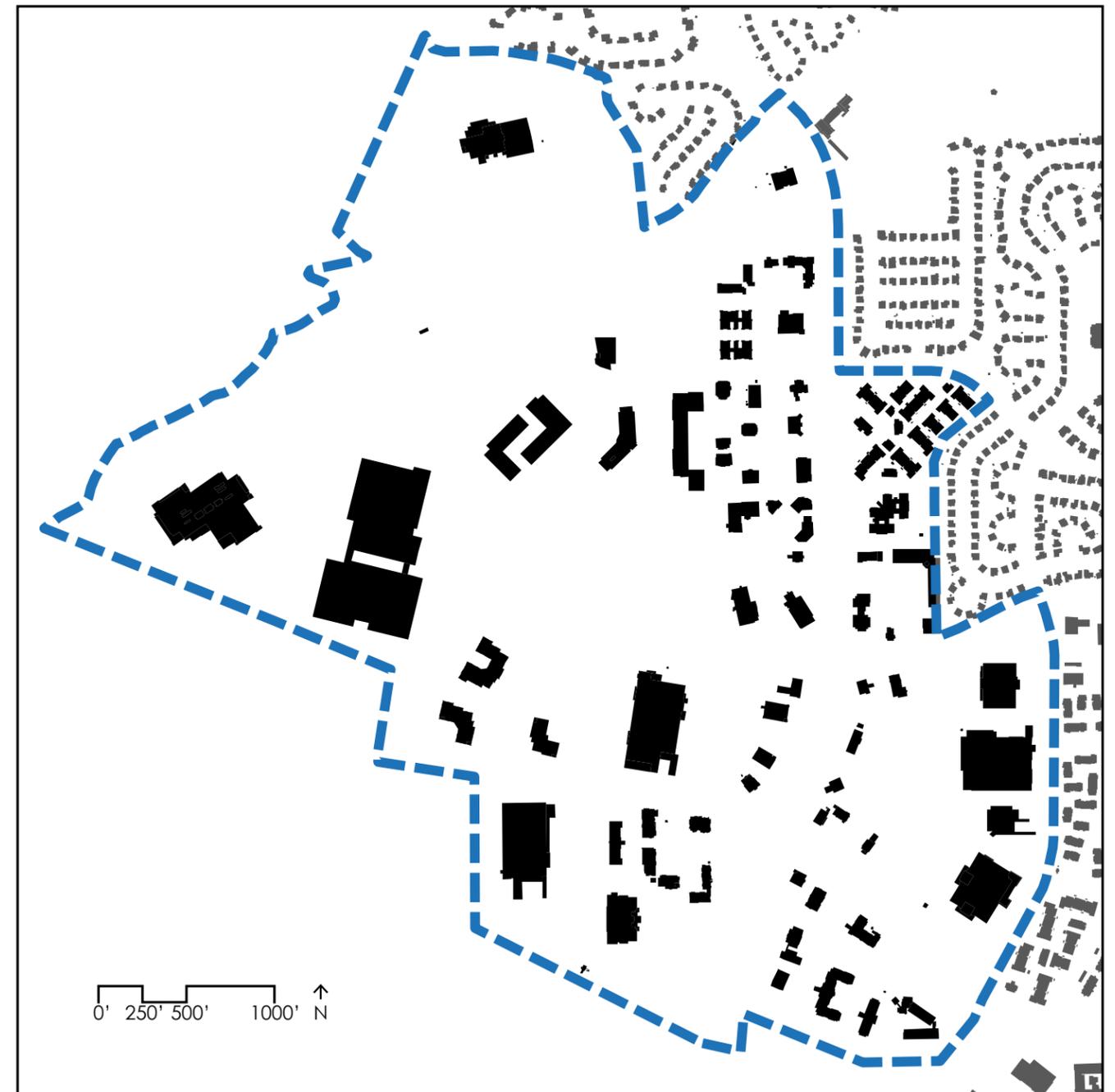


Architecture in the corridor ranges from 1980's stucco and masonry (commercial), to contemporary brick and glass. Commercial building forms are relatively square with flat roofs and parapets used to hide rooftop mechanical units. The buildings are articulated with large aluminum frame windows, post and lintel awnings with metal roof coverings used to engage the public realm. New commercial development in the corridor is governed by the Commercial Development Design Standards and Guidelines, adopted by the City in 1997.

Pedestrian movement in the corridor is mostly on detached sidewalks that vary from four to six feet in width. Tree lawns are placed sporadically through the corridor and bicycle movement is in the right-of-way with designated bike lanes.



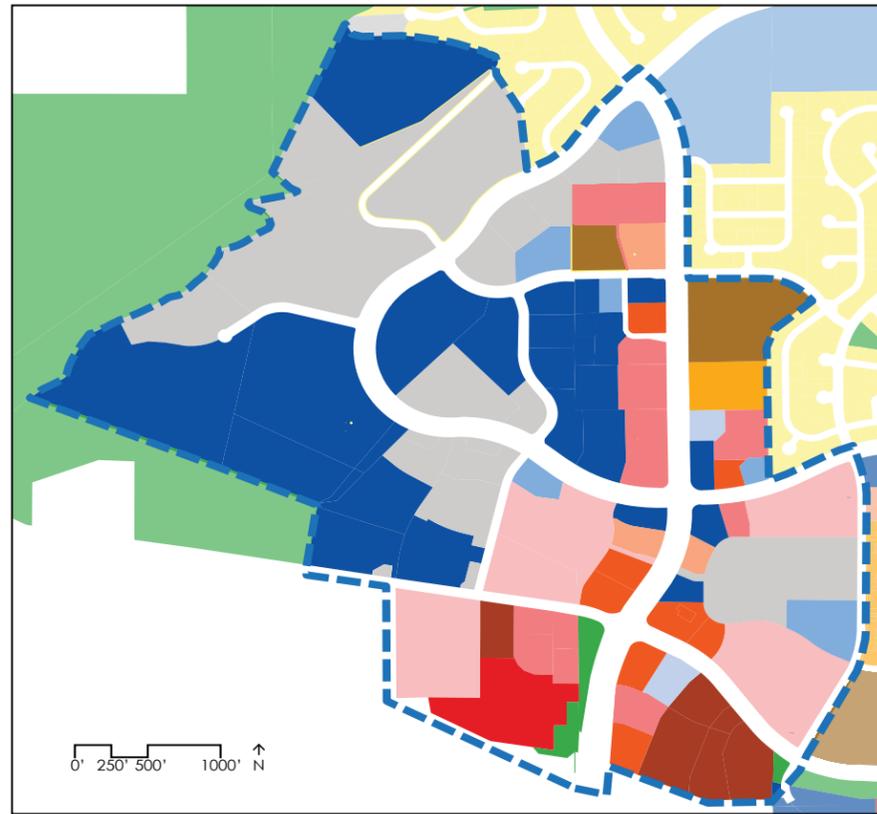
Access is mostly from McCaslin itself, with cross streets creating large blocks of development. The McCaslin right-of-way is wide, often with significant landscaping. This creates a significant separation between buildings and the street, even when property line setbacks are not very great. Monument signs along the street bring attention to the businesses that are less visible.



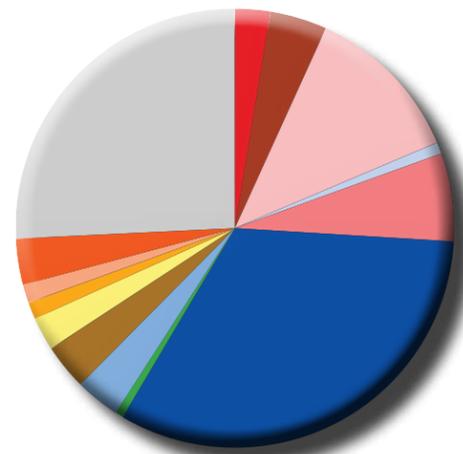
Existing Building Footprints

# CONTEXT

## Existing Uses



Entertainment	2.61%
Hotel	4.20%
Large Format Retail	11.82%
Mixed Use Commercial	0.86%
Multi-Tenant Retail	6.49%
Office	32.56%
Open Space/Park	0.59%
Public Service/Institutional	3.28%
Residential High Density	3.37%
Residential Low Density	2.46%
Residential Medium Density	1.24%
Single Tenant Retail	1.37%
Stand Alone Restaurant	3.41%
Vacant	25.75%

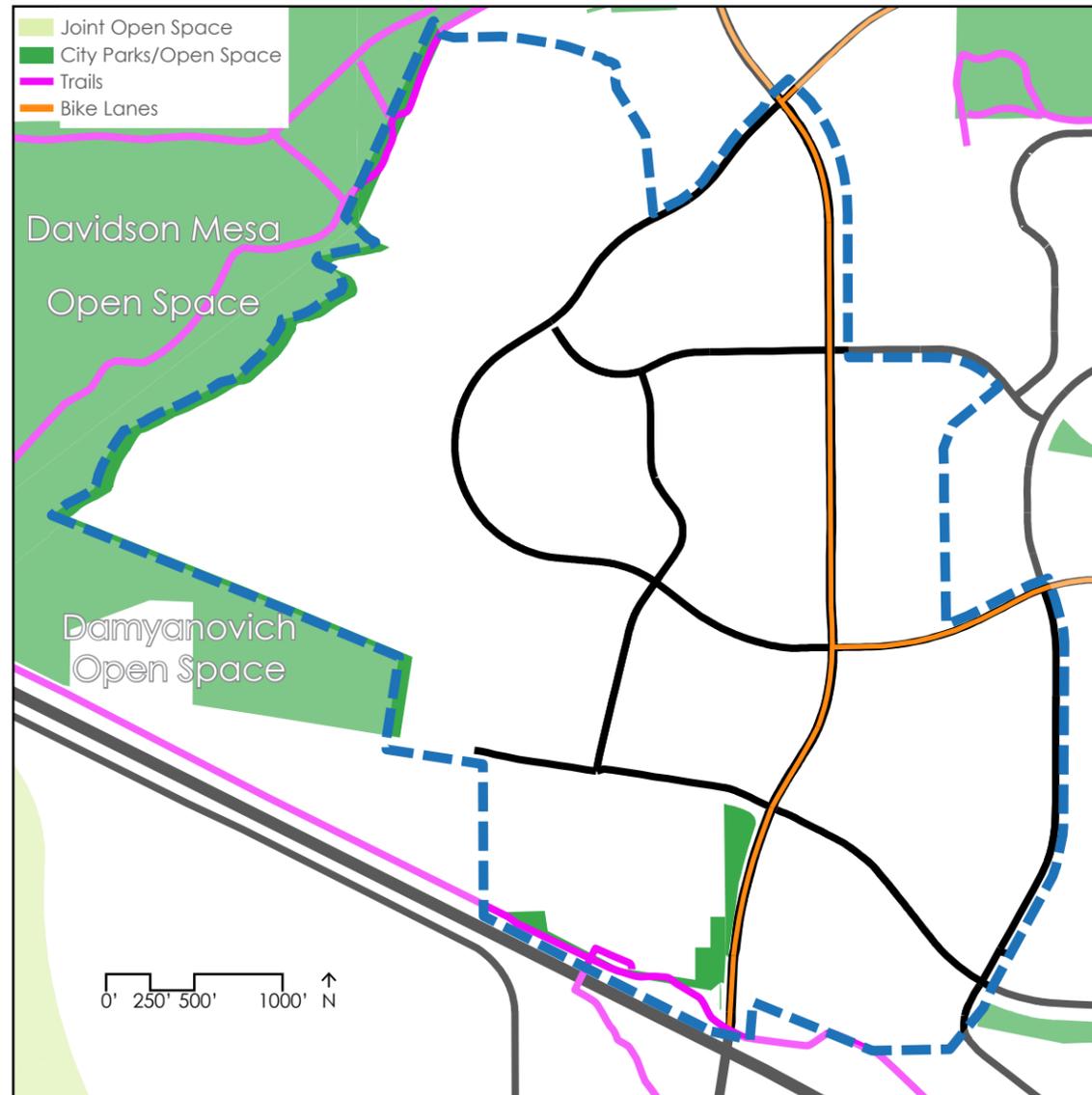


## Development

The most common uses by land area in the study area are office and vacant, mostly to the west in the Centennial Valley office park. Retail uses are concentrated along McCaslin, particularly to the south. There is relatively little residential in study area, making up just seven percent of the land area. Most of the land to the east of the study area is residential development, providing support for the businesses in the corridor. Land to the west is primarily protected open space.



McCaslin Marketplace



**Parks and Open Space**

The study area does not have significant park facilities within the developed area. However, there are large open space nearby, notably Davidson Mesa immediately to the west, though there is no direct access to the open space from the study area. There are no active park facilities or civic gathering spaces adjacent to the study area, but the Recreation Center is just to the northeast.

**Pedestrian and Bike Facilities**

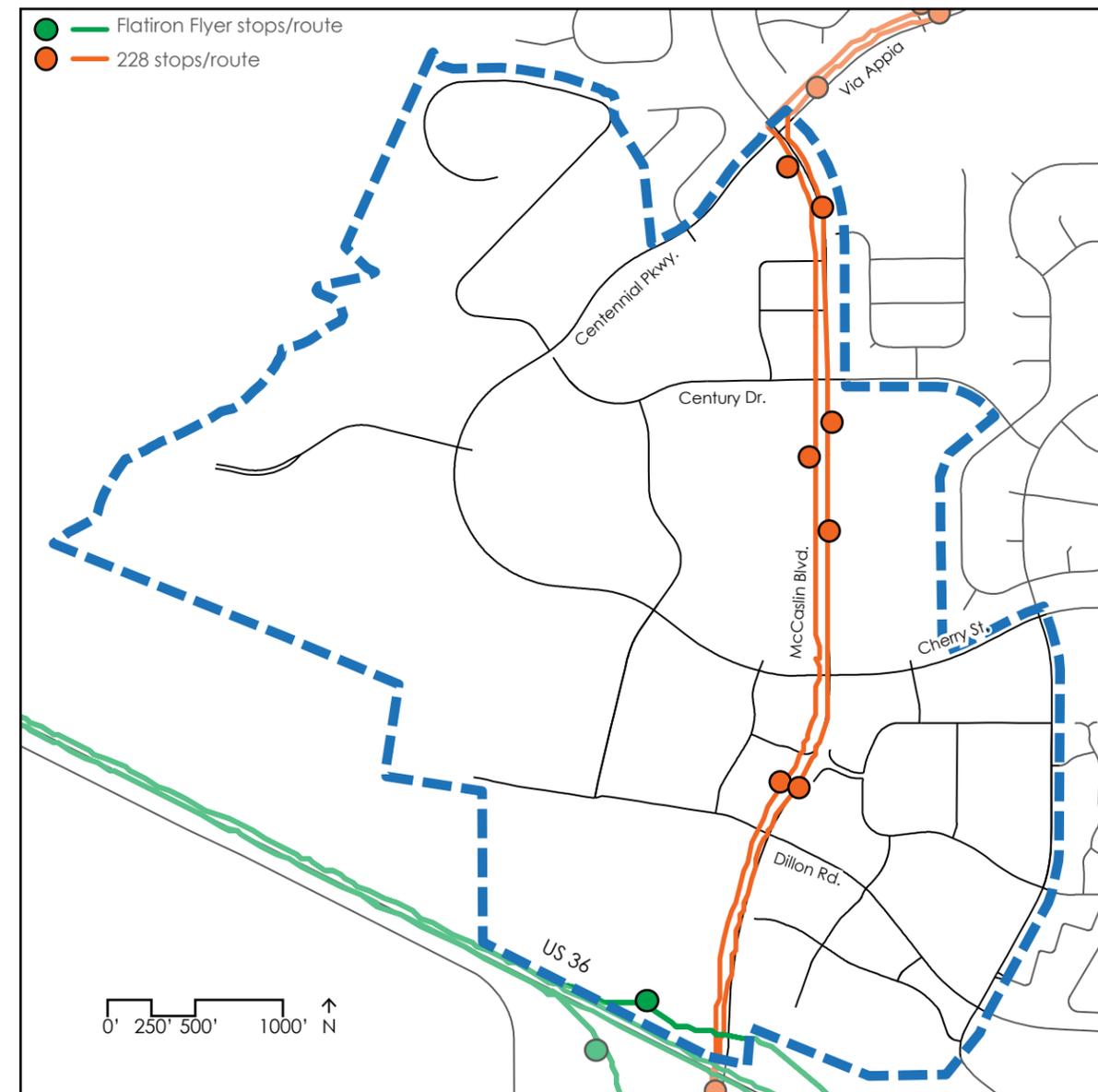
There are several trails on the periphery of the study area, but there are generally poor connections to them. The new US 36 bikeway can be accessed from McCaslin, but there are limited connections to Davidson Mesa trails to the west and the Powerline Trail to the east. McCaslin, Cherry, and Via Appia all have on-street bike lanes. The large blocks provide limited opportunities to cross McCaslin.

**Streets**

Traffic in the area is heavily influenced by US 36, which carries around 100,000 cars per day. McCaslin Blvd carries around 50,000 cars per day near the interchange with US 36, and about 40,000 further north. Most traffic is directed onto the arterials, with large traffic numbers also on Dillon and Via Appia, and smaller volumes on Centennial and Cherry.

**Transit**

The McCaslin Station, with service from the RTD Flatiron Flyer bus rapid transit, is accessible from Colony Square, at the south end of the study area. Connections through the study area are provided by the RTD on route 228, connecting to northern Louisville, Superior, and Broomfield, with 30 minute intervals during peak hours, and 60 minute intervals off-peak.



# CONTEXT

## Property Values

The ratio of a property's structure value to total value is one indicator of how likely the property is to redevelop. While many other factors will be considered before a property owner redevelops a property, a low ratio of structure value to property value indicates the property is not being used to its fullest potential. By this measure, there are many stable properties at the core of the study area, but several properties elsewhere in the corridor, particularly the vacant parcels, are potential candidates for redevelopment.

## Existing Zoning

The zoning for a property sets limits for how much can be built on a property based on the allowed building height and lot coverage. The ratio of existing square footage to allowed maximum square footage is another indicator of which properties may redevelop, where additional development is more likely on properties with a low ratio. Many commercial properties throughout the study area could see additional development under the existing zoning, while the few residential properties are near their maximum allowed buildout.

Remaining potential development in the corridor:

Residential:	42 units
Office:	6,475,712 sq ft
Retail:	871,911 sq ft



**Opportunities/Constraints Analysis**

An Opportunities/Constraints analysis categorizes characteristics of the study area based on their value. Opportunities are characteristics that will likely have a positive impact on the area, while constraints will more likely have a negative impact.

The Opportunities/Constraints analysis in the table below was compiled based on the ULI TAP and comments collected at public meetings and through EnvisionLouisvilleCO.com. The analysis was endorsed by Planning Commission and City Council during the goal setting phase of the project to help identify project principles and measures of success and guide the creation of the plan.

Opportunities	Constraints
<ul style="list-style-type: none"> <li>• Traffic volume providing potential customers for businesses</li> <li>• Investments at McCaslin/US 36 interchange and McCaslin Station</li> <li>• Significant park/open space amenities just outside the corridor</li> <li>• Several areas ready for investment</li> <li>• Significant landscaping along the corridor</li> <li>• Potential for identity-defining features</li> <li>• Existing hotels in area</li> </ul>	<ul style="list-style-type: none"> <li>• Disconnected parcels and difficulty of adding new connections</li> <li>• Traffic speeds making the corridor unpleasant for visitors</li> <li>• Lack of visibility for businesses</li> <li>• Limited bike and pedestrian connectivity</li> <li>• Lack of civic gathering spaces in the corridor</li> <li>• Outdated site and building designs and development, signage, and zoning regulations</li> <li>• Visitors unaware of connections to the rest of Louisville</li> <li>• Potential customer base limited by transportation connections, regional competition, reliance on daytime office workers, and surrounding open space</li> <li>• Lack of community consensus on desired uses</li> </ul>



**Community Survey**

In Spring 2015, the City mailed a community survey to 1200 randomly selected residents. By the summer of 2015, 426 surveys were returned. The survey included questions about how respondents currently use the corridor and how they would like to use it in the future. The survey also included a visual preference portion, providing respondents with photos showing options for different types of buildings, parks, and rights of way, and asking them to rate how appropriate each element was for the study area.

Pedestrian-friendly buildings of one to three stories were the most desired in the visual preference questions. Natural parks and open spaces, as well as wide detached sidewalks and trails were also preferred. These photos were some of the highest ranked images in the survey.





McCasin Blvd Placemaking Workshop #1

**Project Principles and Measures of Success**

The overall goal of the McCaslin Blvd Small Area Plan project, based on direction from the Comprehensive Plan and City Council, is to create a land use and infrastructure plan that conforms to Louisville's character and is supported by the community. To that end, the plan must support the core community values identified in the Comprehensive Plan. Based on community input, the three values in which the McCaslin Blvd area is deficient and most needs improvement are as follows:

- A sense of community
- Sustainable practices for the economy, community, and environment
- Unique commercial areas and distinctive neighborhoods

To address these deficiencies the following six project principles were adopted, in no particular order, with associated measures of success for each. The principles and measures of success were endorsed by Planning Commission and City Council early in the planning process and served as guides for the development and evaluation of the alternative scenarios. The preferred alternative adopted as the basis for this plan best satisfied these principles and measures of success.

**Principle 1** – Improve connectivity and accessibility while accommodating regional transportation needs.

- a) Increase the network connectivity of roads parallel to McCaslin Blvd
  - i) Are vehicles able to move between parcels without returning to McCaslin Blvd?
- b) Make sure traffic passing through the corridor does not make it an undesirable place to live, work, play, and travel
  - i) Does traffic noise decrease?
  - ii) Do pedestrians and bicyclists feel safe?
  - iii) How long will a trip take on the corridor?

- c) Accommodate future regional transportation plans
  - i) How does the corridor alternative adequately address future transportation needs?
  - ii) How does the corridor alternative accommodate adopted regional transit plans?
- d) Provide wayfinding to locations within and outside the corridor
  - i) Are visitors able to find key destinations and locations in the study area?
  - ii) Are visitors able to find connections to key destination outside the study area, such as Downtown?
- e) Allow visitors arriving by bus or car to the area to easily access the entire area
  - i) Are visitors arriving at the RTD Park'n'Ride able to make connections to final destinations and back to the Park'n'Ride?
  - ii) Are visitors arriving by car able to park once and visit multiple destinations?

**Principle 2** – Create public and private gathering spaces to meet the needs of residents, employees, and visitors.

- a) Provide for community amenities identified in the survey and elsewhere
- b) Provide a central civic space to help create a sense of place
- c) Encourage, through design guidelines or incentives, private developers to incorporate publicly accessible spaces into new developments
- d) Identify which, if any, undeveloped parcels should be purchased for park/open space
  - i) Does the ratio of acres to users meet City standards?
  - ii) Do public spaces connect to form a cohesive network?
- e) Provide programming to activate public spaces

**Principle 3** – Enhance bicycle and pedestrian connections to private and public uses.

- a) Provide safe and convenient facilities that serve a broad range of users with multiple modes of travel
  - i) Are all modes of travel accommodated?
  - ii) Are users of all ages and ability levels accommodated?
  - iii) Do the improvements proposed provide safer conditions for all users and ability levels?
  - iv) Are existing deficiencies addressed?
  - v) Do bike and pedestrian facilities connect to trip beginning and end points?
- b) Design solutions that the City can realistically maintain over time
- c) Promote regional trail connectivity within the study area
  - i) Is a connection provided through the study area to Davidson Mesa and the new underpass?

**Principle 4** – Utilize policy and design to encourage desired uses to locate in the corridor and to facilitate the reuse or redevelopment of vacant buildings.

- a) Does the land use mix demonstrate strong fiscal benefits?
- b) Do allowed uses serve community needs as defined in survey and elsewhere?
- c) Are allowed uses supported by the market?
  - i) To what extent are incentives and/or public infrastructure partnerships needed to induce identified uses to locate in the study area?
  - ii) To what extent do uses capitalize on investments at the US 36 interchange and Bus Rapid Transit station?
- d) Is the process for approving desired uses and desired character simpler and more predictable?

**Principle 5** - Establish design regulations to ensure development closely reflects the community's vision for the corridor while accommodating creativity in design.

- a) Physical form should incorporate desires expressed in the community survey and elsewhere
- b) Ensure signage and landscape regulations allow for adequate business visibility without detracting from aesthetic qualities of the corridor
  - i) Does signage clearly direct visitors to businesses without appearing overbearing or too cluttered?
  - ii) Does landscaping provide for a pleasant visitor experience while still providing visibility to businesses?
- c) Allow flexibility to respond to changes in market requirements, design trends, and creativity in design

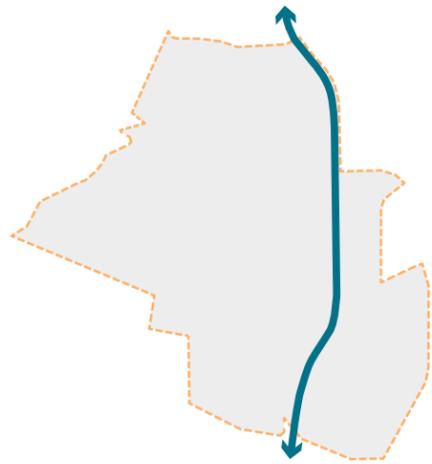
**Principle 6** – Establish development regulations to meet the fiscal and economic goals of the City.

- a) Does the proposed plan demonstrate long-term, strong economic benefits for the corridor?
  - i) Are allowed uses complimentary and will they reinforce each other?
  - ii) Are allowed uses supported by the market and likely to locate in the corridor?
- b) Does the proposed plan demonstrate strong positive fiscal returns to the City?
  - i) Will the timing of development maintain sufficiently strong returns at all times?
  - ii) Are alternative funding or taxing schemes required to meet the City's other goals for the corridor?

# PRINCIPLES

## Community Design Principles and Placemaking Concepts

The Project Principles and Measures of Success, along with additional public input and analysis, led to the development of the community design principles, development types, and placemaking concepts described on the following pages. While the above section directed the outcome of the plan, the following section provides general guidelines for development in the corridor. The community design principles provide goals for public and private investment in the corridor. The development types describe desired patterns of development for different subareas within the corridor. The placemaking concepts call for more specific items to be included in new development based on development type. These will all be incorporated into new design standards and guidelines to be developed after adoption of this plan.



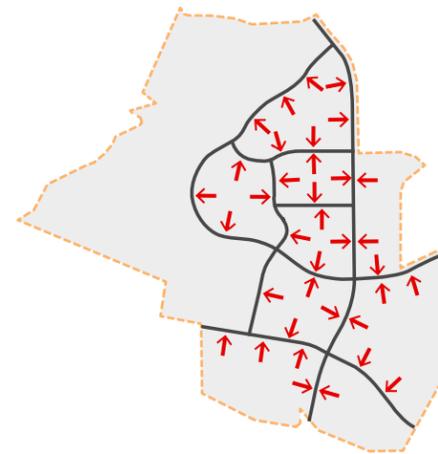
### Improve McCaslin

- Safer and more pleasant street to use for all
- Clear distinction between street and driveways
- Buildings that face the street and are accessible from the sidewalk



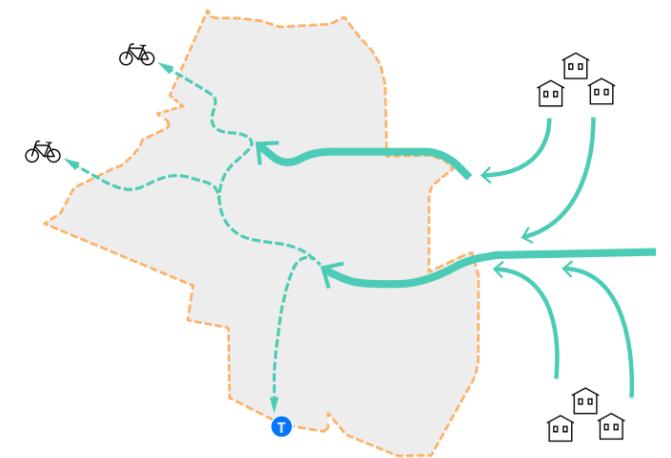
### Smaller blocks

- Facilitate incremental development with smaller blocks
- Create transportation options with additional streets
- Eliminate confusion between driveways and roads



### Development faces out

- Transition from inward-facing development to outward-facing development
- Make developments fully accessible from sidewalks
- Put parking on the interior of the site and locate buildings on the periphery



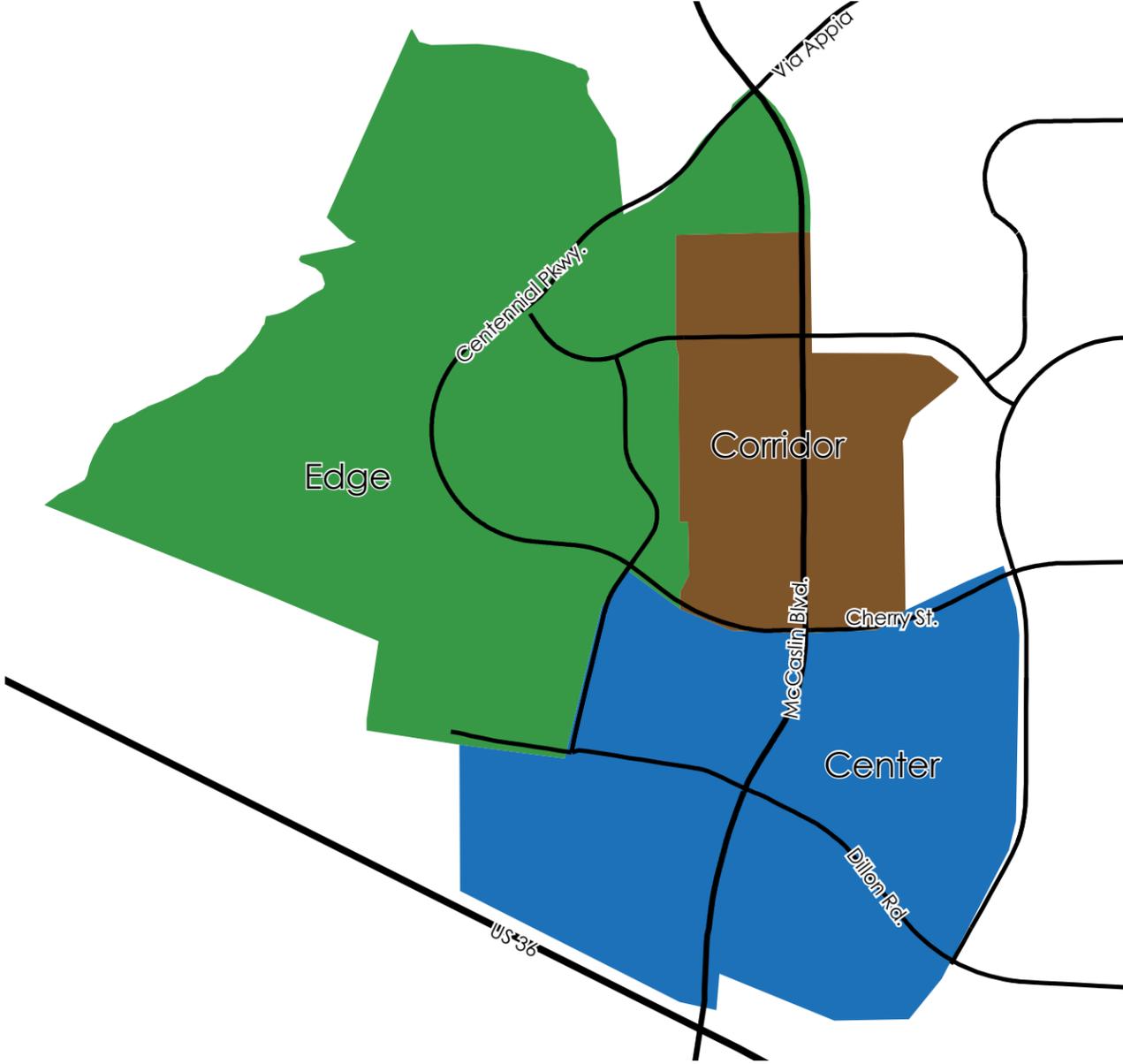
### Connect residents to amenities

- Safer and simpler east/west connections
- Improvements to Cherry/Centennial and Century Drive
- Additional green fingers connecting to Davidson Mesa

# PRINCIPLES

## Development Types

Development types dictate how streets are laid out, how property parcels are subdivided, how buildings are designed and arranged on a site, and how parks and public spaces are integrated into the community. The types below correspond to the Development Patterns identified in the 2013 Comprehensive Plan update.



Center - corresponds to the urban pattern. Consists of small parcels with limited landscaping. Buildings are oriented toward streets and sidewalks with small, consistent setbacks. Pedestrian and bike connectivity is provided by street and sidewalk networks.



Edge - corresponds to the rural pattern. Consists of large parcels with natural landscaping. Buildings are clustered with significant setbacks from streets. Pedestrian and bike connectivity is provided by soft-surface trails.



Corridor - corresponds to the suburban pattern. Consists of medium-sized parcels with more formal landscaping. Buildings are oriented toward streets and parking lots with varying setbacks. Pedestrian and bike connectivity is provided by large sidewalks, on-street bike lanes, and hard-surface trails.

# PRINCIPLES

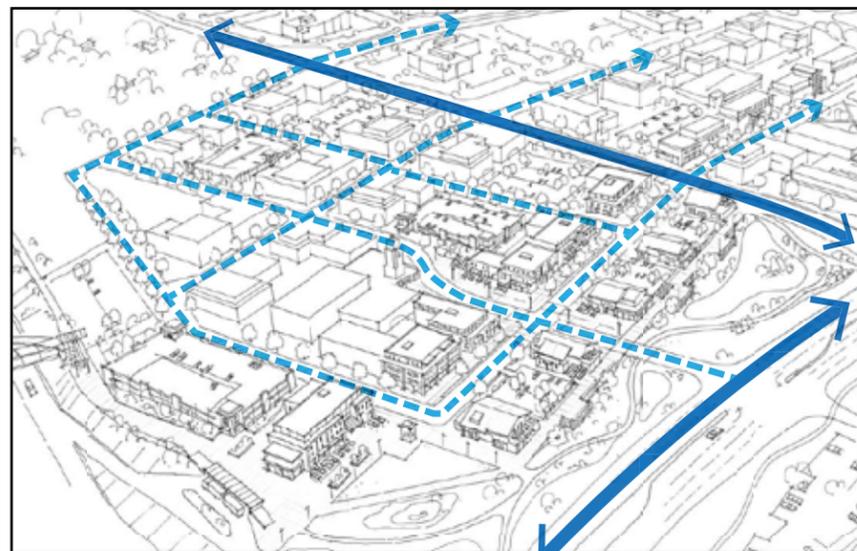
## Placemaking Concepts - Center



Gateway park – a well-landscaped park and transit plaza that creates an attractive and welcoming entry to the community; provides bikes and pedestrian access to the BRT station; and allows for better visibility into the site and station area



Views into the site – perpendicular streets and spaces that showcase destinations within the site



Smaller Blocks – a regular pattern of gridded streets that break down the scale of development to create more walkable blocks

## Placemaking Concepts - Edge

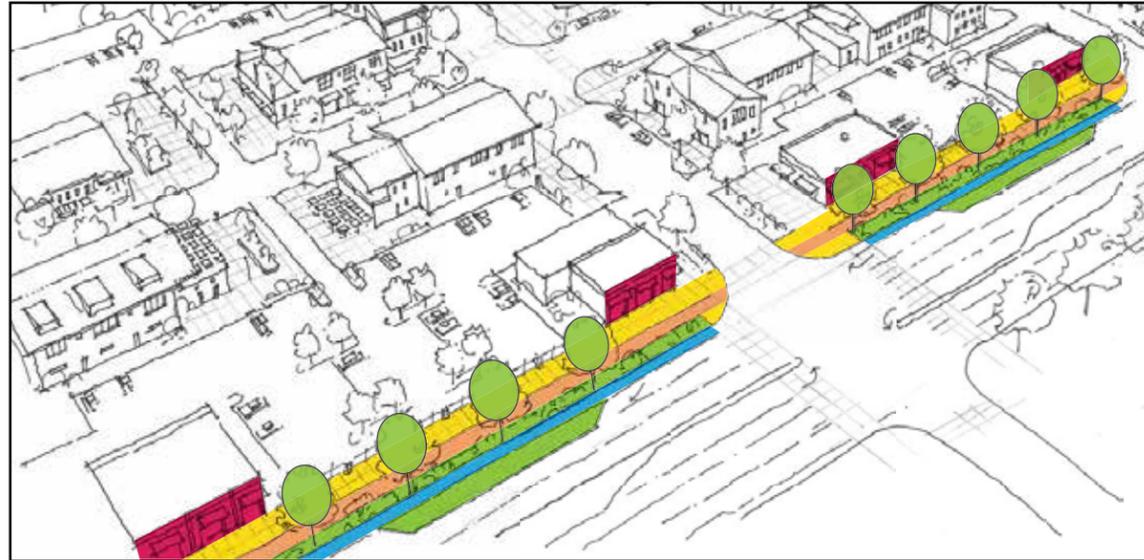
Cluster buildings – a pattern of smaller footprint, low-profile buildings arranged in close proximity to one another in order to preserve open space and views into Davidson Mesa



Green fingers – trail and open space corridors between development sites that preserve and enhance access to Davidson Mesa and local and regional trail networks



Placemaking Concepts - Corridor



Active Edge – an engaging environment for walkers, bikers, and shoppers along McCaslin, including pedestrian and bicycle accommodations (sidewalk, multi-use trail, and on-street bike lane); landscaping and street trees; and active retail frontages with access from McCaslin



Views into the site – perpendicular streets and spaces that showcase destinations within the site



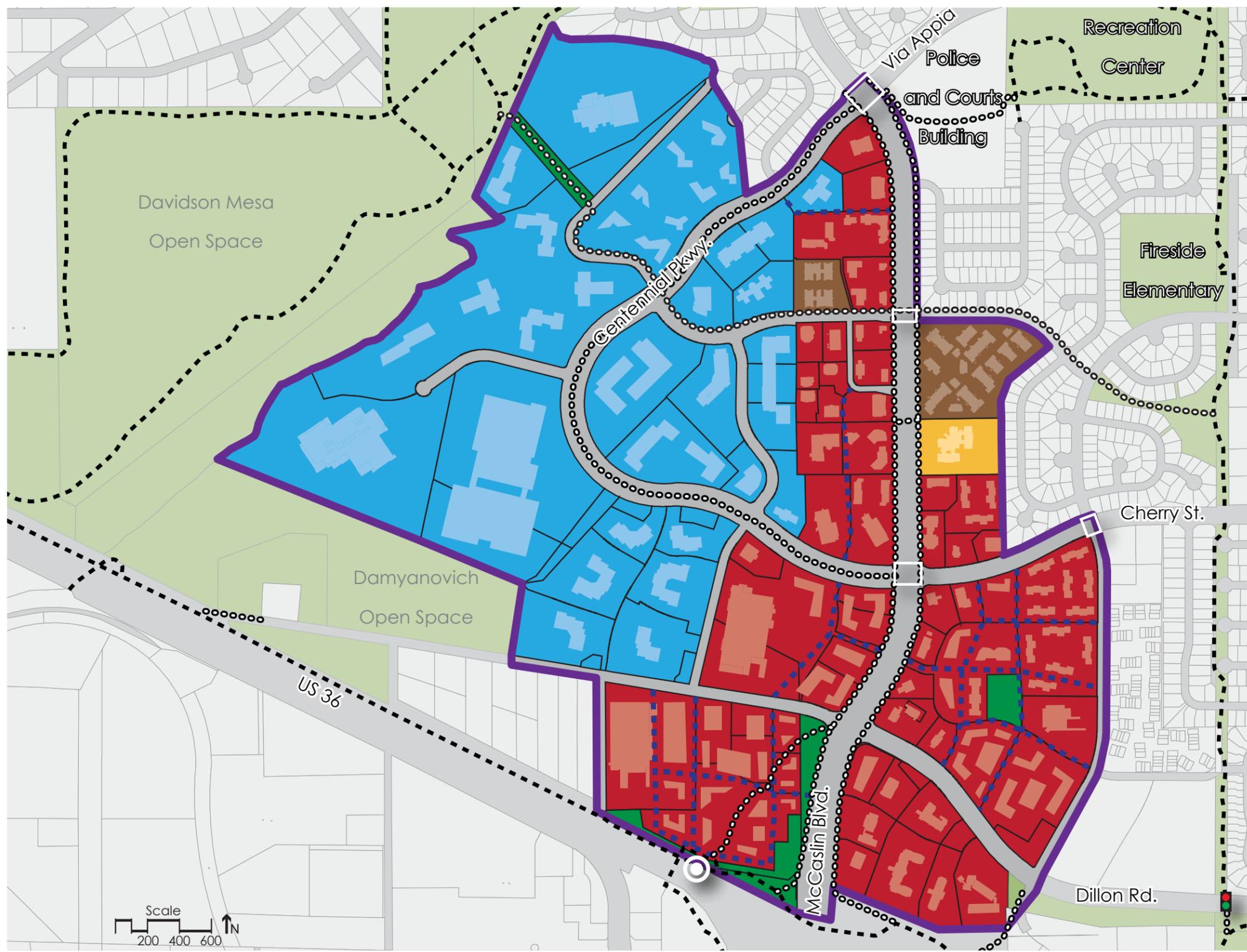
Core retail street – A street parallel to McCaslin would serve as the primary retail spine; new development features active ground-floor retail that addresses the street, as well as pedestrian-friendly streetscape and gathering spaces



Internal gathering spaces – green and/or hardscaped spaces (parks, plazas, courtyards, patios, ect.) that may be public or private and create places for gathering and community interaction within the site



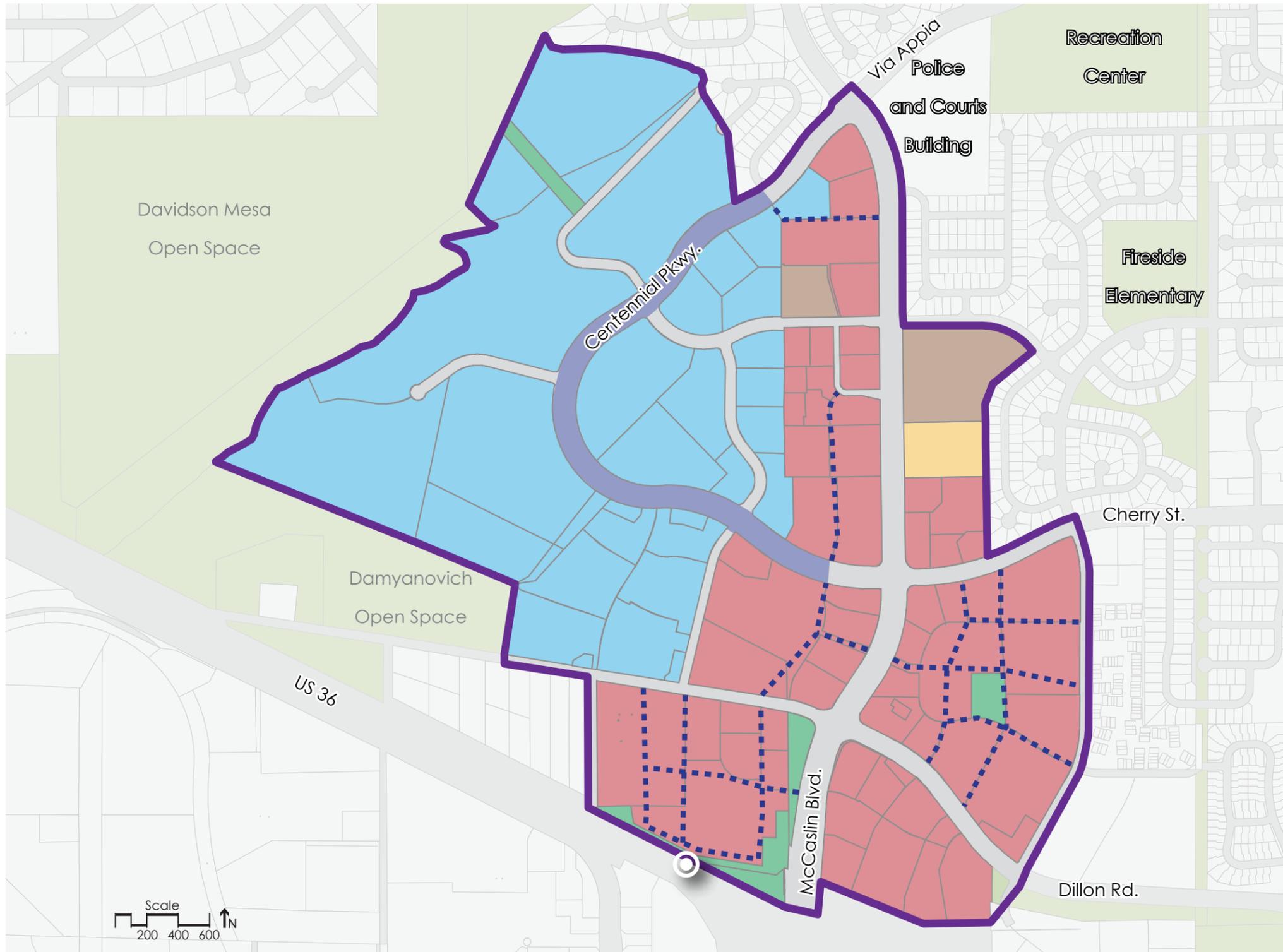
*View from Davidson Mesa*



**Urban Design Plan**  
 The urban design plan is a conceptual illustration of how the corridor could develop under this plan. It includes allowed land uses as well as footprints for existing, planned, and conceptual future buildings. The plan also includes transportation and pedestrian improvements further detailed on following pages. This map and the maps and illustrations that follow are conceptual and not intended to show the exact locations or designs of improvements.

- Existing Bus Rapid Transit Station
- Retail/Office
- Office
- Residential High Density
- Residential Medium Density
- Park
- Open Space

# THE PLAN

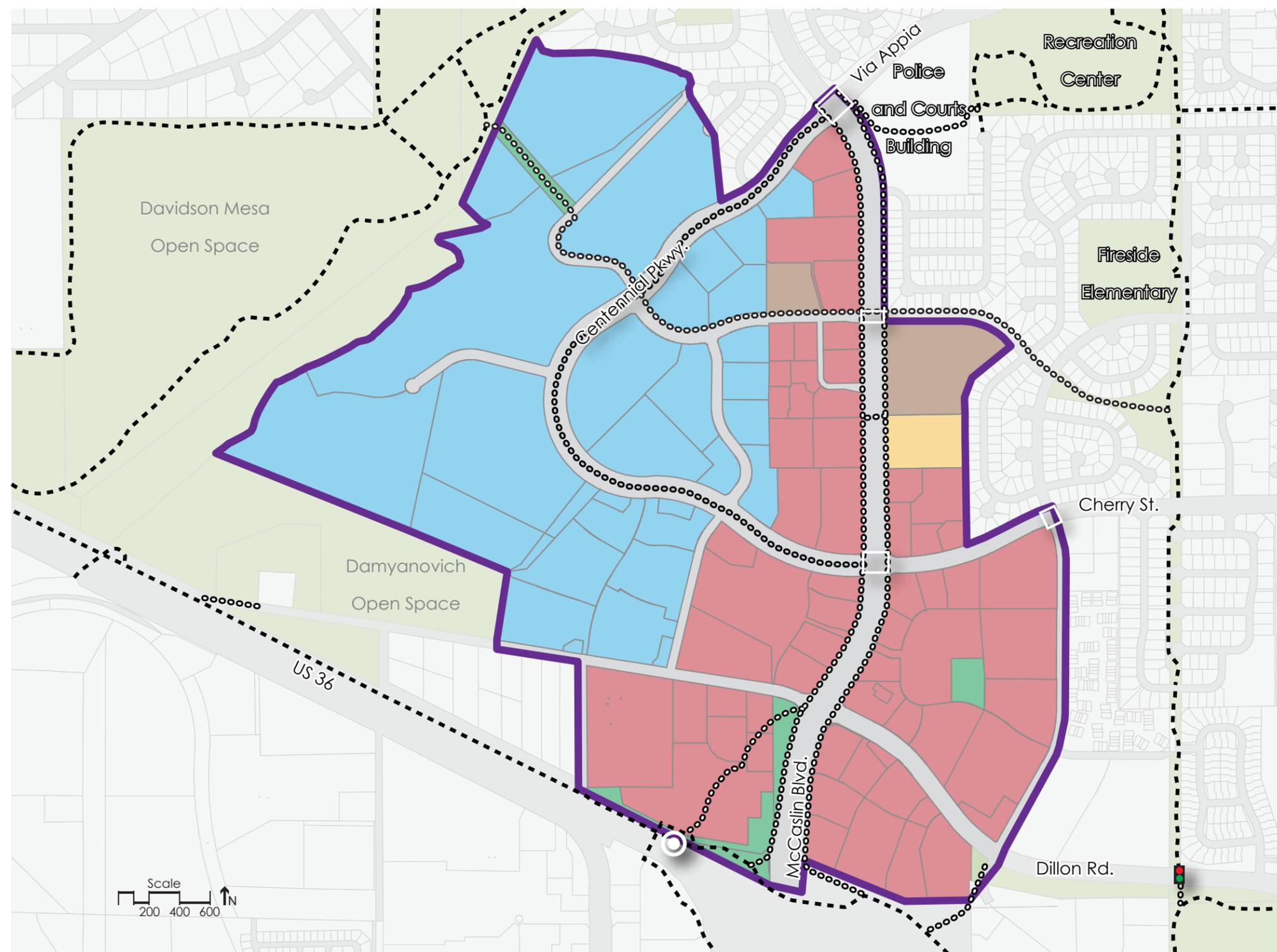


## Street Improvement Plan

The street improvement plan shows where new automobile connections should be made. The plan does not call for any new public streets, but enhanced private connections between developments and the establishment of smaller street and block networks within larger superblocks. The streets and blocks shown on this plan are illustrative, with final locations and alignments to be determined as properties redevelop. The Plan also calls for Centennial Parkway to have only one travel lane in each direction for most of its length and change the existing outside lane to a bike lane and parking spaces. Additional roadway and streetscape improvements are detailed in the Roadway Plan and Traffic Improvement table below.

- ■ ■ Internal streets/connections
- ▬ Outside lane converted to bike lane and parking
- McCaslin Park 'n' Ride/Flatiron Flyer station

## THE PLAN



### Pedestrian/Trails Improvement Plan

The trail improvement plan includes proposed new trails in and around the corridor, including enhanced sidewalks/trails along McCaslin Blvd. The plan also shows recommended locations for new or enhanced crosswalks and or signalized pedestrian crossings. The proposal for McCaslin Blvd includes a widened sidewalk, multi-use trail, and enhanced on-street bike lanes. The proposal for Centennial Pkwy is a soft-surface trail in the median and change the existing outside lane to a bike lane and parking spaces.

### Parks and Open Space

The plan recommends a new green space and public plaza on the Parcel O (Sam's Club) site. The space can be acquired either through dedication or easement if and when the shopping center redevelops. The public space should provide a gathering spaces for residents, workers, and visitors in the corridor.

The plan also recommends acquiring land in the western portion of Centennial Valley to provide a new trailhead and connection to Davidson Mesa. The property can either be purchased, or acquired in conjunction with development, perhaps in exchange for zoning concessions.

Finally, the City should enhance the open space between McCaslin Blvd and Colony Square to create an attractive gateway instead of simply a landscape buffer.

-  Existing trails
-  New/enhanced trails/sidewalks/crossings
-  New/enhanced crosswalks
-  New pedestrian signal

# THE PLAN

## Roadway Improvements



**Roadway Improvements**

The roadway improvements map provides an illustration of the transportation and trail improvements. More specifically, this plan calls for modifications to McCaslin Blvd described by intersection in the table to the right. These improvements will in some places help traffic function more efficiently or provide additional vehicular access, and in others will increase pedestrian safety and accessibility without significant detrimental impacts on traffic operations.

In addition, as properties develop and redevelop, pedestrian connections from streets and sidewalks to destinations inside developments must be provided.

**Transit**

As the corridor develops, the City should continue to capitalize on the investment in enhanced bus service at the McCaslin Station. The recommendations in the First and Final Mile Study and other enhancements should be implemented to improve accessibility to and from the corridor and the rest of the City. The 228 route, which already serves the McCaslin Blvd corridor, should be periodically evaluated to ensure it is providing adequate service as development occurs. The City should continue to work with RTD and other partners to implement these enhancements.

**Transit Oriented Development**

Louisville is fortunate to have benefited from several very significant public investments in regional transportation improvements at McCaslin and Highway 36 (McCaslin Station). McCaslin Station is an integral connection in the US 36 Bus Rapid Transit (BRT) system. This BRT system was funded and constructed with the intention to provide and enhance access to employment centers, schools, educational institutions, retail, parks, open space, recreation and community resources for all populations along the corridor. These investments have provided Louisville with new and exciting opportunities to improve its connectivity locally and within the region.

Generally, Transit Oriented Development (TOD) is thought of as a type of development that encourages residents, visitors, and workers to drive less and better utilize transit. TOD would place emphasis on pedestrian and bicyclist-friendly development, and first and last mile connections that enable better multi-modal access to and from the McCaslin BRT station and other points within Louisville

Looking forward into the future, Louisville should consider how this robust transportation infrastructure can help the City improve its economic prosperity and overall quality of life for its residents. While not specifically addressed in the McCaslin Small Area Plan, the City should begin thinking strategically about how the McCaslin area might evolve to better support the use of transit and its potential benefits towards economic sustainability, business development and retention, environmental stewardship, and quality of life in Louisville.

As redevelopment naturally occurs, the City should recognize that the McCaslin Station area provides a unique opportunity that if properly planned could:

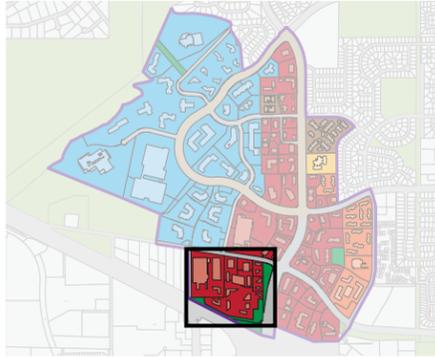
- Encourage pedestrian activity and discourage automobile dependency;
- Support improved commuting into the City to places of employment using transit and other multi-modal options with particular attention to first mile-last mile challenges;
- Contribute to the economic growth and increase the fiscal success of the McCaslin corridor by making the area a more desirable place to locate and operate a business;
- Enable more of the local work force to live in the community; and,
- Improve the environmental sustainability and stewardship of the City

Louisville needs to continue the community dialogue to help define appropriate transit oriented development that would be unique to the Louisville community and leverage its enhanced transportation infrastructure, while recognizing the community's desire to maintain its character and small-town community values.

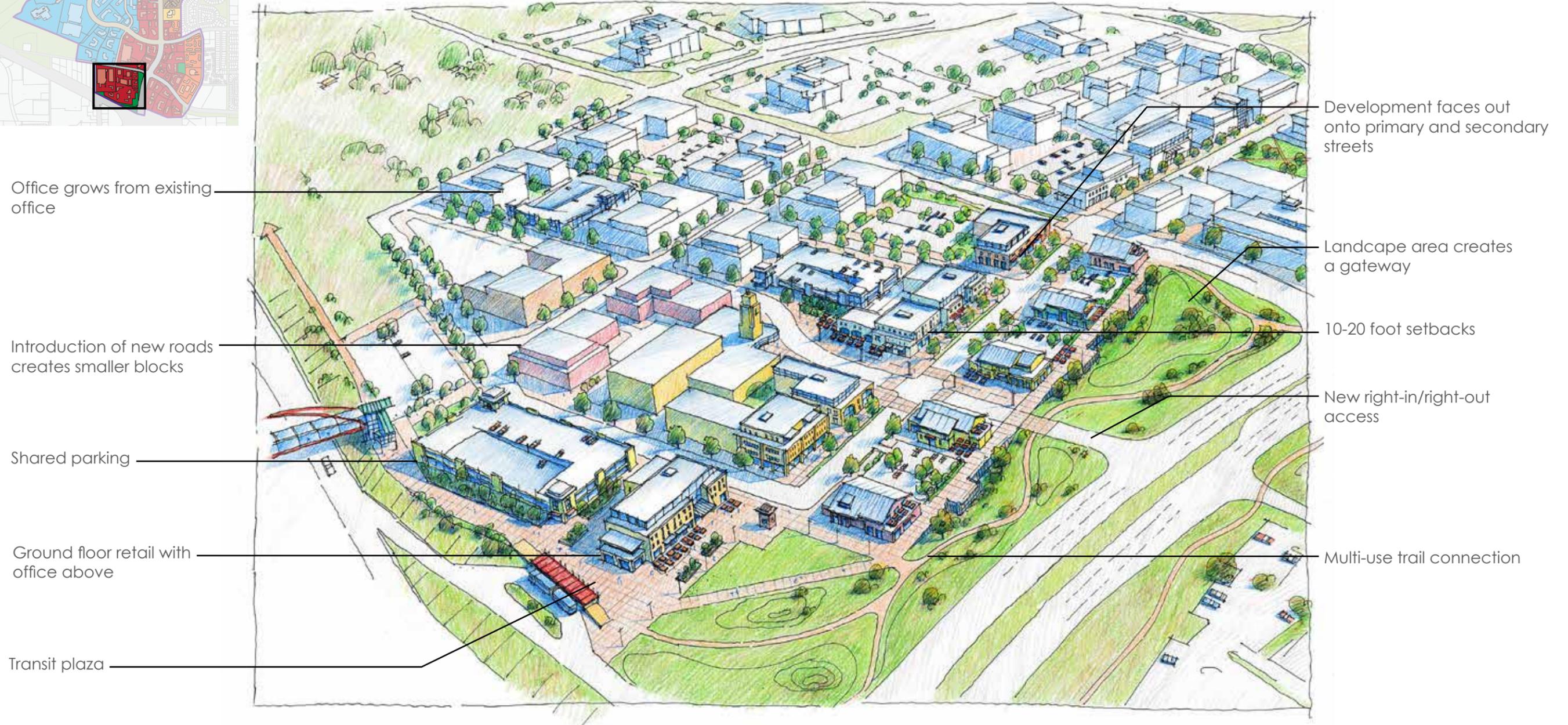
While the McCaslin Small Area Plan does not contemplate any changes to the current 2013 Comprehensive Plan policies for transit oriented mixed-use development, the community can consider future opportunities through the City's Comprehensive Plan amendment and rezoning processes if appropriate opportunities arise.

McCaslin Blvd Traffic Improvements by Intersection	
Centennial Parkway/McCaslin/Via Appia	Maintain intersection and stacking capability at the Via Appia and McCaslin connection, but for the rest of Centennial Parkway have only one travel lane in each direction and change the existing outside lane to a bike lane and parking spaces. Provide acceleration and deceleration right turn lanes with raised tables to and from the south.
Centennial Pavilion (North Entrance)	Reconfigure to allow eastbound left from access road.
Century Drive	Extend medians to create pedestrian refuges.
Shops at Centennial Valley/Centennial Center Driveways	Eliminate westbound left. Re-design to allow independent left turns to each driveway.
Centennial Parkway/McCaslin/Cherry	Maintain intersection and stacking capability at the Via Appia and McCaslin connection, but for the rest of Centennial Parkway have only one travel lane in each direction and change the existing outside lane to a bike lane and parking spaces. Install raised tables in all channeled right turn lanes.
Parcel L/Parcel O Driveways	Install raised tables in all channeled right turn lanes.
Dillon Road	Construct third northbound through lane, new northbound right, and convert westbound right to yield condition.
Colony Square Access	Create new right-in, right-out access street on west side of McCaslin between Dillon Rd and US 36 to serve Colony Square.
Dahlia Drive and Cherry Street	Eliminate acceleration and deceleration lanes on eastbound Cherry. Extend medians to create pedestrian refuges.

# THE PLAN



## Colony Square Concept Illustrative Center Development Type



Office grows from existing office

Introduction of new roads creates smaller blocks

Shared parking

Ground floor retail with office above

Transit plaza

Development faces out onto primary and secondary streets

Landscape area creates a gateway

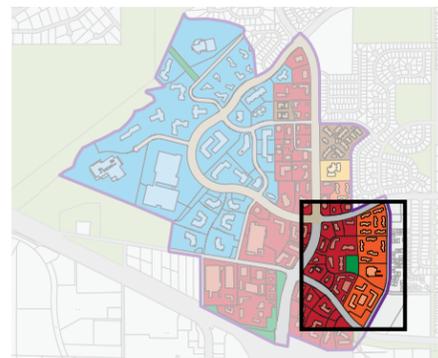
10-20 foot setbacks

New right-in/right-out access

Multi-use trail connection

# THE PLAN

## Parcel O Concept Illustrative Center Development Type



1-2 story buildings along McCaslin

Mix of hard and soft landscaping

A variety of building styles

Not a consistent street wall

Wide sidewalks with landscaping

Design concepts do not preclude large-format retail

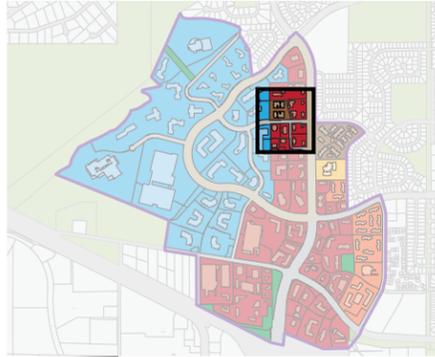
Public and private green spaces and plazas

Mix of surface and structured parking

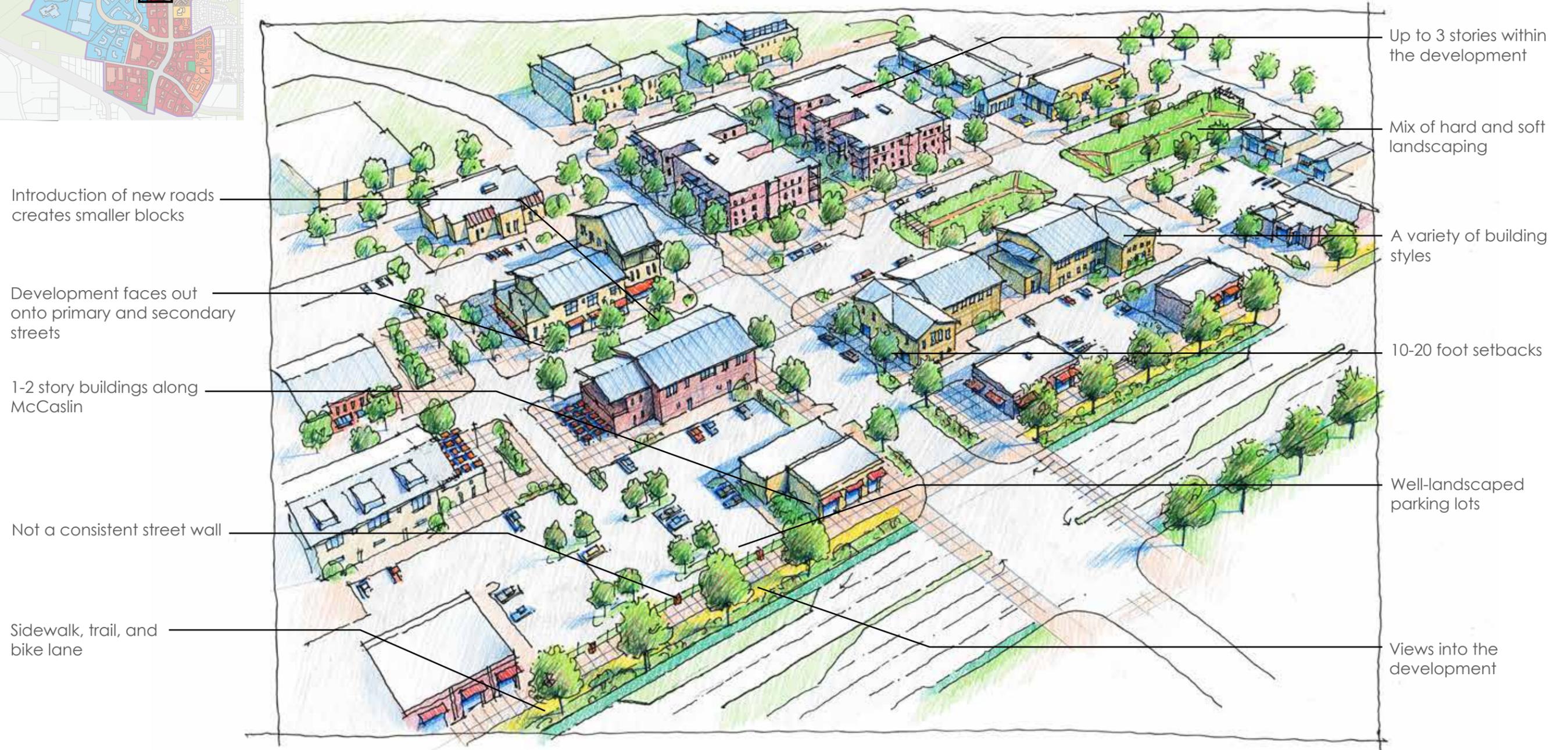
Up to 3 stories within the development

Views into the development

# THE PLAN



## Centennial Pavilions Concept Illustrative Corridor Development Type



Introduction of new roads creates smaller blocks

Development faces out onto primary and secondary streets

1-2 story buildings along McCaslin

Not a consistent street wall

Sidewalk, trail, and bike lane

Up to 3 stories within the development

Mix of hard and soft landscaping

A variety of building styles

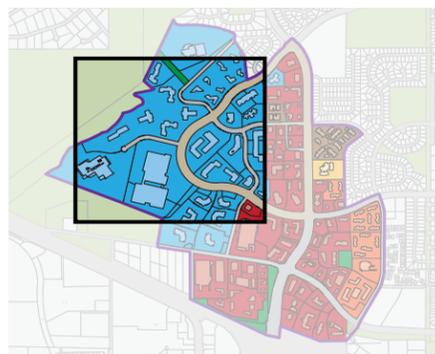
10-20 foot setbacks

Well-landscaped parking lots

Views into the development

# THE PLAN

## Centennial Valley Concept Illustrative Edge Development Type



Smaller, clustered office buildings preserve open space and access to Davidson mesa

Larger setbacks

Natural landscaping

Buildings up to 3 stories

Trails connect to open space

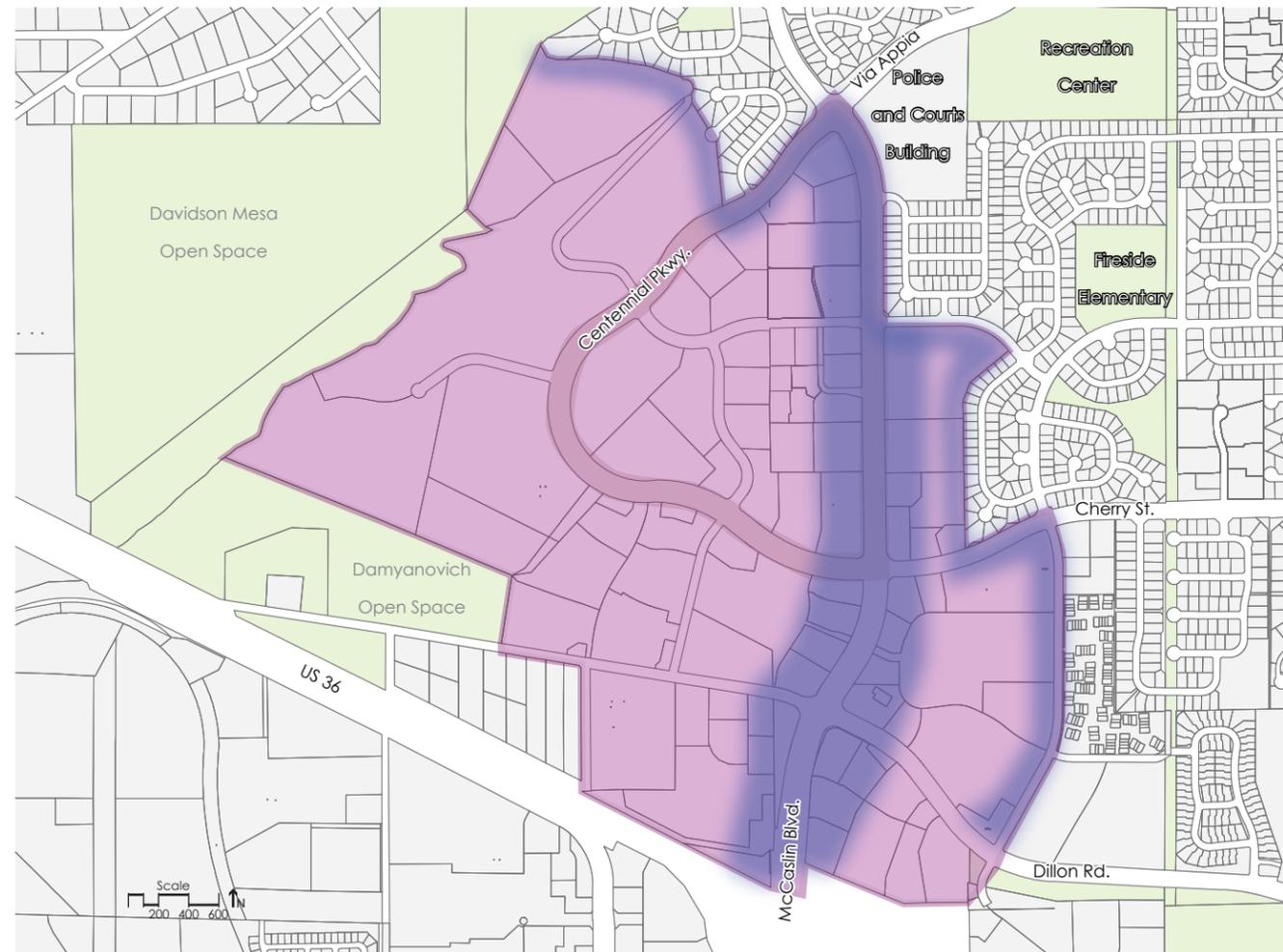
Office grows from office

Mix of sidewalks and trails

# THE PLAN

## Building Height Plan

The building height plan shows where different heights are allowed in the corridor. Buildings along McCaslin Blvd should be a mix of one and two stories. Further back from the corridor, buildings should be a mix of two and three stories. In addition, residential protection standards relating to height, setbacks, landscaping, and other design elements will be developed to ensure existing residential neighborhoods are not adversely impacted by new development. These conditions and standards are to be further defined in the new design standards and guidelines for the corridor.



363 Centennial Parkway

## Development Impact

This plan modifies allowed land uses in the corridor and the amount of development allowed. The tables below show what development is currently in the study area and how much more development could occur under this plan at full buildout. The numbers below represent the preferred alternative land use plan, which is a combination of the popular elements of the three alternatives presented at the third Placemaking Workshop. The preferred alternative represents a reduction from what the existing zoning allows at the time of adoption, mostly because of the decreased height allowances.

Existing Development in Study Area		
Retail	897,781	Square feet
Office	1,769,692	Square feet
Residential	277	Units
Employees	7,993	People
Residents	333	People

Projected 20 Year Increase under proposed scenario		
Retail	470,872	Square feet
Office	1,468,006	Square feet
Residential	0	Units
Employees	5,909	People
Residents	0	People

Maximum 2 stories
  Maximum 3 stories

**Fiscal Impact**

The table below shows the projected 20 year cumulative fiscal impact based on the projected maximum buildout and the City's 2015 fiscal model. This is the impact from new development, which will be in addition to the areas current positive fiscal impacts. As required by the 2013 Comprehensive Plan update, the area will have a positive fiscal impact.

20 Year Cumulative Fiscal Impact	
<i>Revenue by Fund</i>	
General Fund	\$27,892,000
Urban Revitalization District Fund	\$0
Open Space & Parks Fund	\$3,960,000
Lottery Fund	\$0
Historic Preservation Fund	\$1,458,000
Capital Projects Fund	\$11,822,000
<b>TOTAL REVENUE</b>	<b>\$45,132,000</b>
<i>Expenditures by Fund</i>	
General Fund	\$15,106,000
Urban Revitalization District Fund	\$0
Open Space & Parks Fund	\$31,000
Lottery Fund	\$0
Historic Preservation Fund	\$0
Capital Projects Fund	\$4,970,000
<b>TOTAL EXPENDITURES</b>	<b>\$20,107,000</b>
<i>Net Fiscal Result by Fund</i>	
General Fund	\$12,786,000
Urban Revitalization District Fund	\$0
Open Space & Parks Fund	\$3,929,000
Lottery Fund	\$0
Historic Preservation Fund	\$1,458,000
Capital Projects Fund	\$6,853,000
<b>NET FISCAL IMPACT</b>	<b>\$25,025,000</b>

**Traffic Impact**

The table below summarizes traffic impacts by using the amount of time it would take a car to travel the length of the McCaslin Blvd corridor during the morning and evening rush hours. The buildout of the corridor, particularly the substantial amount of potential office development in Centennial Valley, will significantly increase peak-hour traffic. Because the preferred alternative entails less total development than the current regulations allow, the buildout travel times presented below are faster than they would be under a no-change alternative. Most of the additional delay would occur at the Dillon Rd and McCaslin Blvd intersection and are mitigated to some extent by the proposed improvements to that intersection described above.

McCaslin Blvd Corridor		
Average Corridor Travel Time		
	Northbound	Southbound
<b>Existing Network</b>		
AM Peak	2 min 13 sec	2 min 30 sec
PM Peak	2 min 24 sec	2 min 27 sec
<b>Buildout</b>		
AM Peak	3 min 45 sec	6 min 40 sec
PM Peak	5 min 0 sec	5 min 0 sec

**Schools Impact**

Because there is no additional residential development allowed in the McCaslin Blvd area under this plan, there will be no impact on the schools.



McCaslin Station



*Centennial Valley sculpture*

The major recommendations of the plan will be implemented through the adoption of new design standards and guidelines for the corridor. The design elements highlighted in the Plan section will serve as the basis for the new guidelines, which will need to be reviewed by Planning Commission and adopted by City Council. The new design standards and guidelines will ensure future private development in the corridor complies with the community's vision and this plan. Funding for this will come from the City's annual operating budget.

Public improvements in the corridor will be implemented either by City funding, contributions from private developers, or a combination. The City's annual capital improvement program budgeting process

provides an opportunity for the City to fund and construct infrastructure. The capital improvements listed in the table below are recommended for inclusion in upcoming budgets to help meet the goals of the plan. The timeline is intended to guide requests as funding and opportunity allows.

Some public infrastructure may be built and paid for by private property owners in conjunction with development of their property. The City may require such improvements if the need for them is identified in an adopted plan, such as this one. Some of the capital improvements identified in this plan and listed below can be required from private development projects, and some may be funded or built jointly by the developer and the City.

Infrastructure design, whether built by the City or by private developers, must meet the applicable local, state, and federal construction standards. The construction standards control the design of streets, sidewalks, and public utilities. The standards will need to be updated along with the design standards and guidelines so public infrastructure conforms to the principles of this plan. In addition, most of the infrastructure improvements called for in this plan have not been engineered yet, so they will continue to be evaluated and modified as design work proceeds.

The plan also calls for additional public spaces, including plazas, parks, and open space. The Parcel O public space should be acquired when and if the shopping center redevelops. The Davidson Mesa trailhead should be acquired either through purchase or in conjunction with development.

**Cost Estimates**

Cost estimates in the table below use broad ranges because the improvements have not been designed yet and to account for changing construction costs. Estimates are categorized as follows:

- \$ Less than \$100,000
- \$\$ Between \$100,000 and \$500,000
- \$\$\$ Between \$500,000 and \$1 million
- \$\$\$\$ More than \$1 million

Recommended Public Improvements					
Project	Description	Opinion of Probable Cost	Schedule		
			1-5 Years	6-10 Years	11-20 Years
<b>PLANNING (Operating Budget)</b>					
McCaslin Blvd Design Guidelines	New design standards and guidelines for the study area based on this plan	\$	•		
Rezoning	Rezone properties in accordance with this plan when they redevelop	\$			
<b>DESIGN AND CONSTRUCTION (Capital Budget)</b>					
<b>Parks and Public Spaces</b>					
Davidson Mesa Trailhead	New trailhead off of Centennial Pkwy to access Davidson Mesa	\$\$\$\$		•	
Parcel O Public Space	Public plaza and green space in the Parcel O (Sam's Club) development				
Colony Square Improvements	Enhance open space between Colony Square and McCaslin Blvd to create gateway	\$\$\$			•
<b>Pedestrian and Bicycle Connections</b>					
Pedestrian crossing between Century and Cherry	New pedestrian crossing mid-block on McCaslin between Century and Cherry	\$\$		•	
Connection to Park'n'Ride	Create pedestrian/bike connection from McCaslin/Dillon intersection to bus station	\$\$		•	
Pedestrian signal on Dillon	New pedestrian crossing connecting Powerline Trail with Coal Creek Trail	\$\$	•		

# IMPLEMENTATION

Recommended Public Improvements					
Project	Description	Opinion of Probable Cost	Schedule		
			1-5 Years	6-10 Years	11-20 Years
<b>Trails</b>					
Multi-use path on McCaslin	Convert sidewalks to multi-use paths on both sides of McCaslin from US 36 to Via Appia	\$\$\$			•
Multit-use path on Centennial Pkwy	Create multi-use path in the median on Centennial Pkwy	\$\$\$			•
Centennial Pkwy to Davidson Mesa	Create trail connection from Centennial Pkwy to new trailhead at Davidson Mesa	\$\$		•	
Century Dr West	Create multi-use path connection along Century between McCaslin and Centennial Pkwy	\$		•	
Century Dr East	Create multi-use path connection along Century between McCaslin and Powerline Trail	\$\$		•	
Connection from 36 to Dillon	New trail connection from US 36 bikeway to Dillon Rd sidewalk near La Quinta Inn	\$		•	
Connection accross Police property	New trail connection from trails on Rec Center property to McCaslin/Via Appia intersection	\$		•	
<b>Roadways (Private)</b>					
Connection West of McCaslin	New vehicular access between Key Bank and McCaslin Plaza (Chipotle shopping center)				
Connection from McCaslin to Centennial Pkwy	New driveway connecting McCaslin to Centennial Pkwy north of Centennial Pavilions				
Colony Square Access	New right-in-right-out access from McCaslin to Colony Square				
Internal Street Network - Parcel O	Create internal street and block pattern within the development				
Internal Street Network - Parcel L1	Create internal street and block pattern within the development				
Internal Street Network - Colony Square	Create internal street and block pattern within the development				
<b>Pedestrian Crossings/Traffic Calming</b>					
McCaslin and Via Appia	Add speed table in right turn lanes	\$			•
McCaslin and Century Drive	Extend McCaslin medians to create pedestrian refuges	\$		•	
McCaslin and Cherry	Add speed table in right turn lanes	\$			•
Parcel O/Parcel L1 Accesses	Add speed table in right turn lanes	\$			•

## IMPLEMENTATION

Recommended Public Improvements					
Project	Description	Opinion of Probable Cost	Schedule		
			1-5 Years	6-10 Years	11-20 Years
<b>Roadway</b>					
Centennial Pkwy	Install curb bump-outs at intersections and reduce to one lane	\$\$\$			•
<b>Intersection Improvements</b>					
Dillon and McCaslin	Add additional northbound through lane	\$\$\$\$			•
Cherry and McCaslin	Modify to accommodate reduced width of Centennial	\$\$\$			•
Cherry and Dahlia	Remove acceleration and deceleration lanes	\$\$\$			•
Via Appia and McCaslin	Modify to accommodate reduced width of Centennial	\$\$\$			•
<b>Median Improvements</b>					
Median north of Cherry	Modify center median to allow left turn into Shops at Centennial Cenennial Valley & Centennial Center (Key Bank/Starbucks shopping center)	\$			•
Median north of Centennial Pavilion	Modify center median to allow left turn onto McCaslin from drive north of Centennial Pavilion	\$			•
<b>Bike Lanes</b>					
McCaslin Blvd	Enhance bike lanes on McCaslin between US 36 and Via Appia	\$			•
Centennial Parkway	Add bike lanes	\$	•		



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*City of Louisville*  
**McCaslin Parcel O  
Transportation Study**

# Parcel O Redevelopment Transportation Impact Analysis

Prepared for:  
City of Louisville

May 31, 2019

DN19-0625

FEHR  PEERS



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- Appendix C: MXD+ Tool Explanation
- Appendix D: Existing Parcel O Driveway Tube Counts
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- Appendix F: Project Trips Added per Intersection

# EXECUTIVE SUMMARY

This Transportation Impact Analysis (TIA) studies potential transportation impacts resulting from the proposed redevelopment alternatives for McCaslin Parcel O as identified in the *McCaslin Parcel O Redevelopment Study (2019)*. The report includes analysis of traffic operations for each scenario and the corresponding level of service.

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## Analysis Parameters

The Parcel O site is bound by McCaslin Boulevard to the west, Dahlia Street to the east, Cherry Street to the north, and Dillon Road to the south.

The transportation impacts on study area intersections were assessed for two different years, existing conditions (2019) and projected future conditions (2040). Analysis included the evaluation of intersection level of service (LOS) and delay, as well as mitigations when applicable.

Per request by City of Louisville staff, the following intersections were studied in the AM and PM peak hours.

1. Marshall Road / McCaslin Boulevard
2. Eastbound US 36 Ramps / McCaslin Boulevard
3. Westbound US 36 Ramps / McCaslin Boulevard
4. Dillon Road / McCaslin Boulevard
5. Dahlia Street / Dillon Road
6. Cherry Street / Dahlia Street
7. Cherry Street / McCaslin Boulevard
8. Century Drive / McCaslin Boulevard
9. Via Appia / McCaslin Boulevard

These study intersections were analyzed for the following eight scenarios:

1. Existing Development with Sam's Club Vacant
2. Existing Development with Sam's Club Occupied
3. Alternative 2
4. Alternative 3
5. 2040 Existing Development with Sam's Club Vacant

6. 2040 Existing Development with Sam's Club Occupied
7. 2040 Alternative 2
8. 2040 Alternative 3

A description of each scenario can be found in Section 1.2.6 of this report.

---

## Findings & Mitigations

The study analyzed the transportation impacts from the proposed redevelopment alternatives that partially or fully redeveloped the Parcel O site. According to the capacity analysis performed, **it is concluded that the trips associated with both redevelopment strategies would not adversely impact the operation of study intersections.**

---

### Existing Conditions

Under existing conditions scenarios, all intersections operates at LOS D or better across all scenarios except for the McCaslin Boulevard and Dillon Road intersection. The intersection currently operates at LOS E under existing traffic conditions without any addition of proposed project trips. With the proposed project trips, the intersection LOS and delay can be improved from current conditions through a re-timing of the signal. The proposed mitigation does not change McCaslin Boulevard's timing due to the coordination of the corridor, but re-optimizes the green time allocated for the Dillon Road, specifically the westbound left-turn and through movements. The mitigations resulted in the intersection operating at a LOS D in the AM and a LOS E in the PM peak hour. That is an improvement over Existing Development with Sam's Club Vacant in the AM peak hour and maintains the LOS in the PM peak hour with the addition of Alternative 2 project trips.

---

### Future (2040) Conditions

Under 2040 conditions, the following summarizes proposed mitigations through signal re-timing or re-configuring the McCaslin Boulevard and Dillon Road intersection because it operates at a LOS E or F in 2040 with just signal re-timing.

Overall, optimizing green time for the major traffic movements at the following intersections will accommodate the higher vehicle volumes anticipated for 2040:

- McCaslin Boulevard and Marshall Road: Additional time for both the northbound and eastbound movements

- McCaslin Boulevard and the US-36 westbound ramps: Additional time for the southbound movement
- McCaslin Boulevard and Cherry Street: Additional time for the southbound movement

The optimization was done because it was assumed that signal timings would be reasonably updated as traffic volumes increase over time. Although this would de-emphasize the priority of moving traffic along McCaslin Boulevard, this assumption is more reasonable than expecting very high levels of delay on cross-streets.

Since the intersection of McCaslin Boulevard and Dillon Road consistently operates below a LOS D, two potential infrastructure mitigations were modeled in Synchro under future conditions:

1. Adding an additional westbound left turn lane on Dillon Road.
2. Adding an additional westbound left turn lane on Dillon Road *and* an additional northbound through lane on McCaslin Boulevard.

The proposed mitigation poses feasibility concerns due to right-of-way constraints. In addition, without additional roadway widening of McCaslin Boulevard north of this intersection, vehicle delay would simply be shifted to intersections north. However, the two potential roadway mitigation options do improve intersection performance at McCaslin Boulevard and Dillon Road. It is recommended that additional study be conducted as a part of future permitting for Parcel O.

---

## **Safety Analysis**

A safety analysis of the four signalized intersections immediately adjacent to Parcel O (McCaslin Boulevard and Dillon Road, McCaslin Boulevard and Cherry Street, Cherry Street and Dahlia Street, and Dillon Road and Dahlia Street) and the seven driveway access points was conducted using four years and three months of crash data (January 1, 2015 to March 31, 2019) provided by the City. This did not include field observations or consideration of near-misses. Additional safety concerns may exist though not indicated by the historic crash data review.

During the analysis period 164 crashes occurred – three of which were vehicle-bicycle crashes. Of those, 18 crashes resulted in injury with one serious bodily injury which was a bicyclist at the McCaslin Boulevard and Dillon Road intersection and one fatality which was

a motorcyclist at the driveway access immediately east of the McCaslin Boulevard and Cherry Street intersection. The following outlines intersection crash trends developed by this analysis and includes high-level recommendations that require additional feasibility assessment and design:

- McCaslin Boulevard and Dillon Road – 96 crashes:
  - o Add additional signage and skip striping to eliminate confusion resulting in crashes due to the far right northbound lane ending at the intersection.
  - o Review the number and placement of eastbound/westbound signal heads and applicable signage to address through vehicles crashing into left-turning vehicles as a result of the left-turn arrow indication being mistaken for their time to proceed.
  - o Consider bicyclist connectivity through, and west of the intersection along Dyer Road. A cyclist was rear-ended and seriously injured while riding in the right travel lane immediately west of the intersection.
- McCaslin Boulevard and Cherry Street – 31 crashes:
  - o A total of 16 crashes are attributed to northbound or southbound left-turning vehicles and vehicles traveling through the intersection colliding due to the permissive turning opportunity when the green ball is illuminated. The intersection meets guidelines for crashes and volumes per the *Manual of Uniform Traffic Control Devices (MUTCD)* and guidance followed by the City of Boulder that utilizes national best practices. By changing the turning control to protected-only, the Synchro 9 outputs illustrated no significant increase in delays or queuing, however, it is recommended that additional traffic simulation analysis be conducted prior to implementation.
- Driveway Access (400 feet east of McCaslin/Cherry) – 4 crashes:
  - o All four crashes, one of which resulted in a fatality, were due to vehicles attempting to go straight into the shopping center north of Parcel O even though the two lanes are marked for right- and left-turns only. It is recommended that this driveway be offset from the one to the north upon redevelopment of the site.

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## **Multimodal Connectivity**

A high-level analysis of existing and potential multimodal connections was studied so the City may consider these improvements upon redevelopment of the Parcel O site. To ensure that people are able to access the site via multiple modes, the following is recommended:

- US 36 Trail connections via Dyer Road and adjacent to Coal Creek Circle.
- Power Line Trail connection via Ridge Place.
- Multiuse paths within the site boundaries along McCaslin Boulevard, Dillon Road, and Cherry Street upon redevelopment.
- Upgrading the McCaslin Boulevard and Cherry Street intersection with speed tables for the channelized right-turns (the same as what exists today as Dillon Road).

# 1.0 INTRODUCTION

This Transportation Impact Analysis (TIA) report provides findings and recommendations for potential transportation impacts resulting from proposed redevelopment scenarios under consideration for McCaslin Parcel O in Louisville, Colorado. Additional analysis of safety improvements and multimodal connections was also completed as a part of this study.

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## 1.1 Study Area

The McCaslin Parcel O site includes 11 retail or commercial parcels with surface parking totaling 44.6 acres. It is bound by McCaslin Boulevard to the west, Dahlia Street to the east, Cherry Street to the north, and Dillon Road to the south. **Figure 1** shows the study area. As of May 2019, one of the anchor stores is closed: Sam's Club. Along the periphery, small retail or commercial businesses remain such as a bank, gas station, and post office, as well as fast food and sit-down restaurants.

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## 1.2 Project Scope

This report documents the analysis of vehicle trip impacts that would result from the redevelopment alternatives identified by the City of Louisville per the *McCaslin Parcel O Redevelopment Study (2019)*. A total of nine study intersections were analyzed under eight scenarios for both the AM and PM peak hours. The report also includes an evaluation of transportation operations and mitigation strategies when applicable. In addition, a safety analysis was conducted using over four years of crash data, as well as a conceptual multimodal connectivity analysis for inter-site trips.

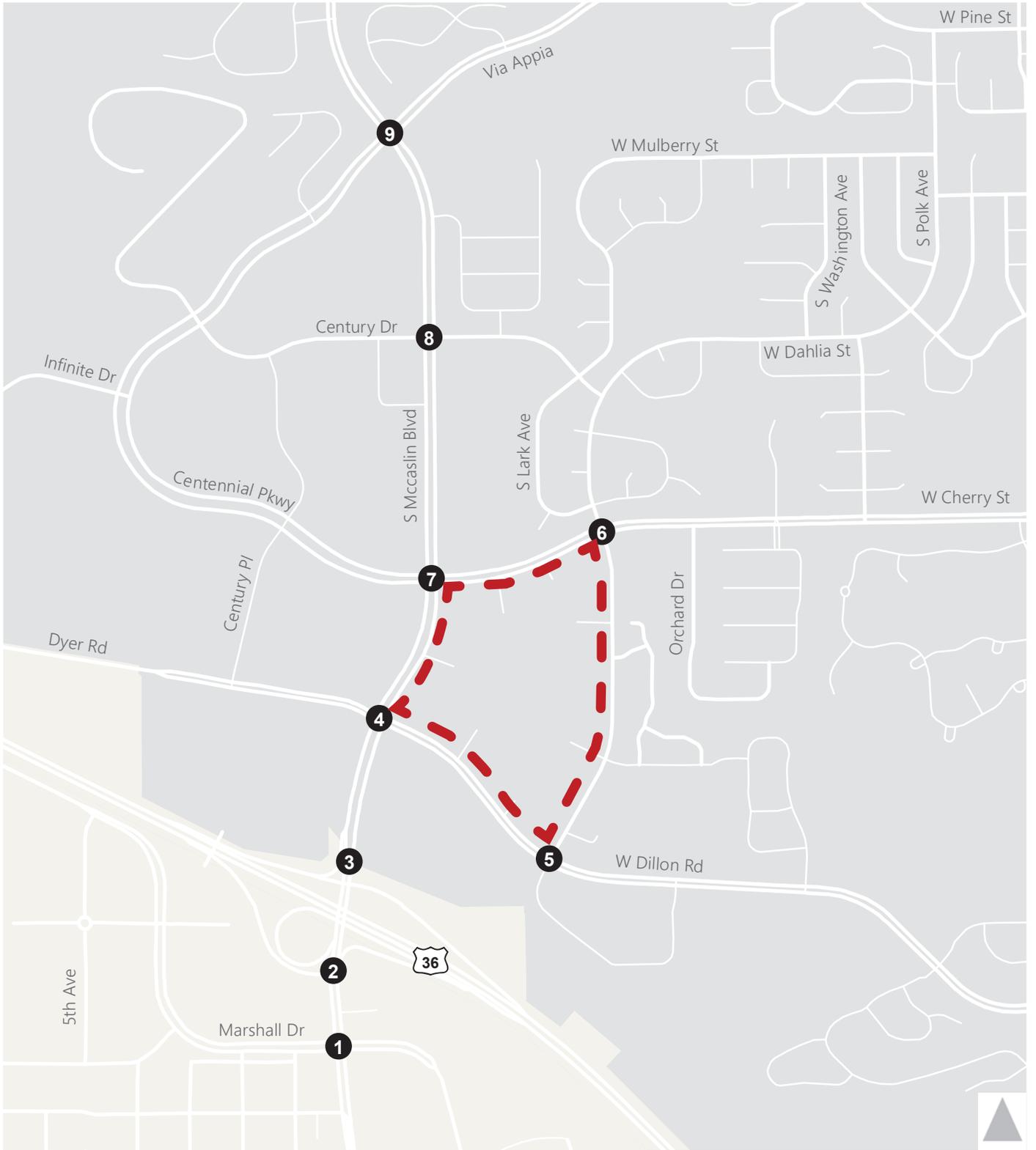
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### 1.2.1 Study Intersections

This study reviews the operations and impact on nine study intersections. **Figure 1** illustrates study intersection locations, of which all are currently signalized.

1. Marshall Road / McCaslin Boulevard
2. Eastbound US 36 Ramps / McCaslin Boulevard
3. Westbound US 36 Ramps / McCaslin Boulevard
4. Dillon Road / McCaslin Boulevard

5. Dahlia Street / Dillon Road
6. Cherry Street / Dahlia Street
7. Cherry Street / McCaslin Boulevard
8. Century Drive / McCaslin Boulevard
9. Via Appia / McCaslin Boulevard



■ Louisville

■ Superior



Study Area

Figure 1  
Study Intersections

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## 1.2.2 Data Collection & Forecasting

Vehicle, pedestrian, and bicyclist counts were collected on Wednesday, April 24, 2019 during the AM and PM peak travel hours at the nine study intersections. The existing AM and PM peak hour counts are shown in **Figure 2** and the detailed count data can be found in **Appendix A**.

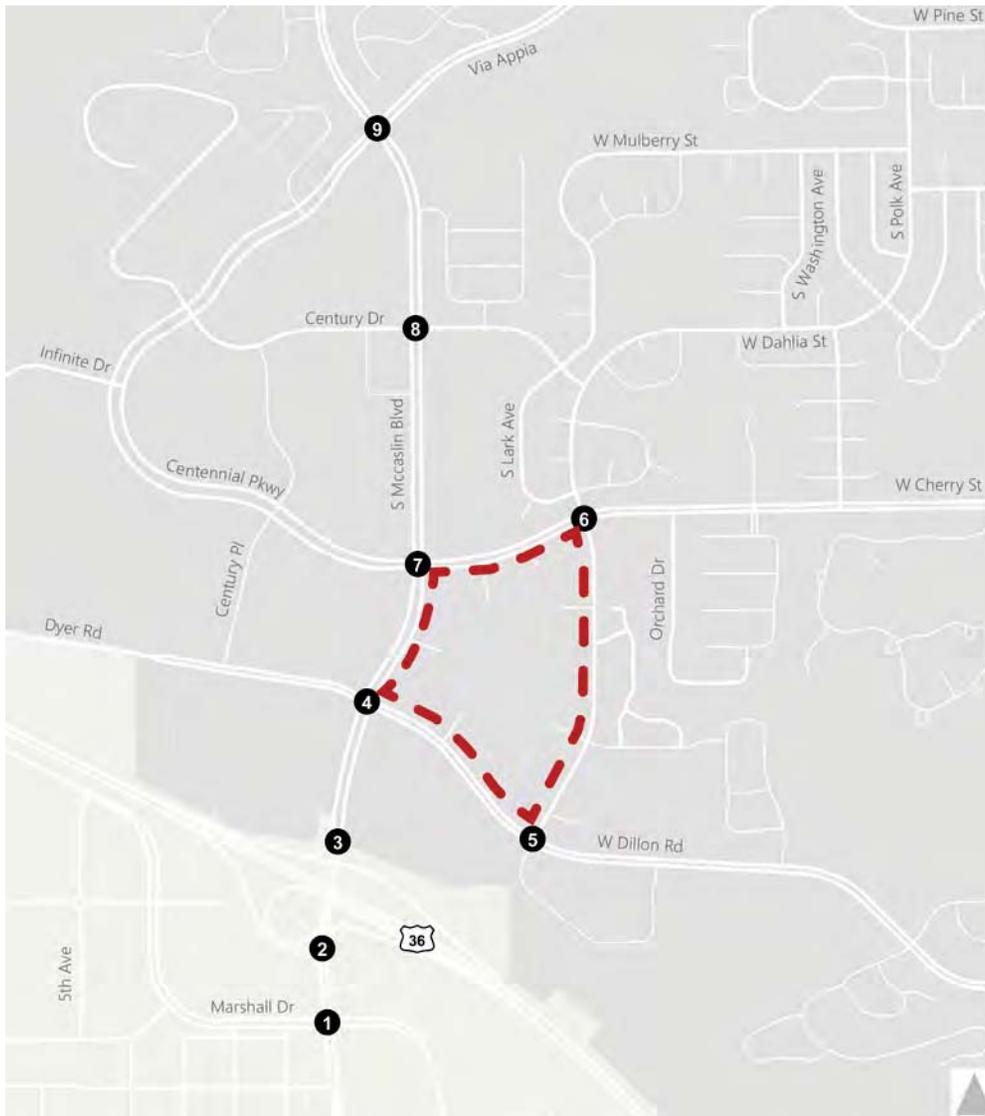
The analysis also included a projection of 2040 traffic volumes in the City of Louisville. To determine the change in traffic volumes for the study area, outputs from the Denver Regional Council of Governments (DRCOG) Focus Travel Model were used to generate a traffic growth rate specific to streets in the study area. The Focus Travel Model was used to generate traffic volumes on each street in the DRCOG region for both the AM and PM peak hours today and in 2040. All street segments that connect through one of the nine study intersections were selected, with the exception of US 36 since highway volumes may change at a different rate. Percent change of traffic volumes between 2015 – the proxy for existing traffic volumes – and 2040 was calculated on an annual basis. The resulting growth factors for AM and PM periods were similar so an average annual growth rate of 2.1% was applied to existing traffic volumes to calculate 2040 volumes. All 2040 scenarios in this report use traffic volumes calculated using the 2.1% annual growth rate during both peak periods. **Figure 3** illustrates the forecasted volumes per intersection for the AM and PM peak hours.

Signal timings were obtained from the Town of Superior for the Marshall Road and McCaslin Boulevard intersection as well as both intersections of the US 36 and McCaslin Boulevard diverging diamond interchange. The remaining signal timings were shared by City of Louisville staff.

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## 1.2.3 Intersection Operations Analysis

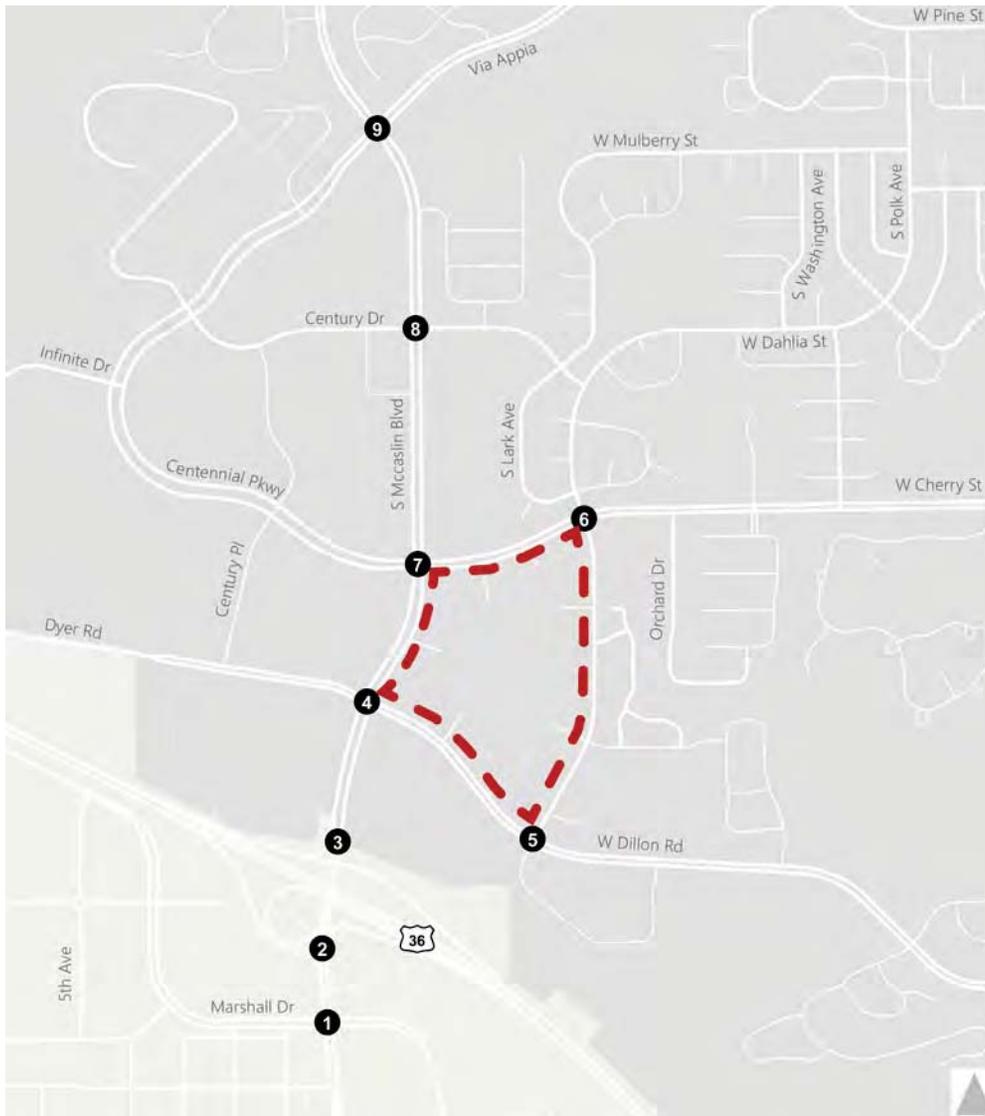
Intersection operations were analyzed using Synchro 9 to determine the level of service (LOS) and overall intersection delay in seconds under each scenario. Proposed mitigations were also analyzed using the software. Synchro reports for all scenarios and mitigation strategies can be found in **Appendix B**.



1. McCaslin Blvd/Marshall Road	2. McCaslin Blvd/US-36 E	3. McCaslin Blvd/US-36 W
<p>Marshall Road</p> <p>McCasin Blvd</p> <p>329 (696) 420 (901) 109 (125)</p> <p>51 (35) 13 (26) 36 (67)</p> <p>344 (787) 12 (45) 68 (350)</p> <p>243 (166) 825 (666) 68 (36)</p>	<p>US-36 E (off-ramp)</p> <p>McCasin Blvd</p> <p>US-36 E (on-ramp)</p> <p>464 (687) 670 (1,226)</p> <p>319 (295) 210 (504)</p> <p>173 (363) 1,110 (1,146)</p>	<p>McCasin Blvd</p> <p>US-36 W (on-ramp)</p> <p>US-36 W (off-ramp)</p> <p>928 (1,622) 347 (407)</p> <p>671 (575) 213 (314)</p> <p>977 (1,127) 447 (317)</p>
4. McCaslin Blvd/Dillon Road	5. Dahlia Street/Dillon Road	6. Dahlia Street/Cherry Street
<p>Dillon Road</p> <p>McCasin Blvd</p> <p>97 (103) 800 (1,166) 137 (255)</p> <p>286 (189) 143 (118) 396 (532)</p> <p>45 (145) 26 (188) 65 (260)</p> <p>198 (175) 1,029 (0) 402 (451)</p>	<p>Dillon Road</p> <p>Dahlia Street</p> <p>50 (69) 23 (8) 161 (179)</p> <p>117 (140) 685 (651) 8 (3)</p> <p>28 (91) 462 (754) 95 (6)</p> <p>10 (88) 0 (19) 2 (6)</p>	<p>Cherry Street</p> <p>Dahlia St</p> <p>95 (69) 75 (80) 18 (11)</p> <p>8 (7) 327 (203) 95 (79)</p> <p>40 (87) 131 (367) 48 (92)</p> <p>55 (58) 37 (71) 41 (126)</p>
7. McCaslin Boulevard/Cherry Street	8. McCaslin Boulevard/Century Drive	9. McCaslin Boulevard/Via Appia Way
<p>Centennial Parkway</p> <p>McCasin Boulevard</p> <p>Cherry Street</p> <p>47 (69) 714 (1,144) 84 (185)</p> <p>138 (115) 86 (24) 259 (209)</p> <p>61 (83) 34 (72) 79 (207)</p> <p>247 (60) 931 (1,026) 144 (250)</p>	<p>Century Drive</p> <p>McCasin Boulevard</p> <p>47 (95) 844 (1,183) 46 (82)</p> <p>74 (38) 6 (9) 58 (30)</p> <p>46 (141) 3 (24) 26 (89)</p> <p>111 (90) 912 (1,020) 29 (57)</p>	<p>Via Appia Way</p> <p>McCasin Boulevard</p> <p>44 (22) 549 (960) 46 (140)</p> <p>181 (66) 111 (18) 369 (309)</p> <p>16 (41) 24 (118) 11 (16)</p> <p>20 (18) 781 (645) 206 (555)</p>



Figure 2  
Existing Traffic Volumes and Lane Configurations



1. McCaslin Blvd/Marshall Road	2. McCaslin Blvd/US-36 E	3. McCaslin Blvd/US-36 W
4. McCaslin Blvd/Dillon Road	5. Dahlia Street/Dillon Road	6. Dahlia Street/Cherry Street
7. McCaslin Boulevard/Cherry Street	8. McCaslin Boulevard/Century Drive	9. McCaslin Boulevard/Via Appia Way



Figure 3  
Future Traffic Volumes and Lane Configurations



### 1.2.4 Level of Service (LOS) Criteria

To measure and describe the operational status of the local roadway network and corresponding intersections, transportation planners and engineers commonly use a grading system called level of service (LOS) put forth by the Transportation Research Board’s Highway Capacity Manual (HCM) 2010. LOS characterizes the operation conditions of an intersection’s traffic flow; ranging from LOS A (indicating free flow traffic conditions with little or no delay) to LOS F (representing over-saturated conditions where traffic flows exceed the design capacity, resulting in long queues and delays). This grading system represents the perspectives of drivers and are an indication of the comfort and convenience associated with driving. Traffic conditions with LOS E or F are generally considered unacceptable and represent significant travel delay and inefficient motor vehicle operation. The LOS is determined differently depending on the type of control at the intersection. **Table 1** illustrates the LOS and corresponding delay thresholds.

The City of Louisville does not have a minimum threshold policy for LOS, however, many jurisdictions consider acceptable a LOS of D or better.

Table 1: Signalized Intersection Level of Service Definitions		
Level of Service (LOS)	Description	Average Control Delay per Vehicle (seconds)
A	Operations with very low delay occurring resulting from favorable progression, and/or short cycle lengths	<10.0
B	Operations with low delay occurring resulting from good progression, and/or short cycle lengths	> 10 – 20.0
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	>20 – 35.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, and high V/C ratios. Many vehicles stopped and individual cycle failures are noticeable.	>35 – 55.0
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	>55 – 80.0
F	Operations with unacceptable delays to most drivers resulting from over-saturation, poor progression, and/or very long cycle lengths.	>80

Source: *Highway Capacity Manual* (Transportation Research Board, 2010)

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## 1.2.5 Redevelopment Alternatives

The *McCaslin Parcel O Redevelopment Study (2019)* identifies two redevelopment opportunities that could be potentially pursued by a developer in the future.

Alternative 2 would redevelop two parcels, the former Sam's Club and where Kohl's currently operates, with 120 hotel rooms, 245 multifamily housing units, and 35,000 square feet of fitness or other specialty retail.

Alternative 3 would redevelop the entire 44.6 acre site and include proposed uses such as the addition of 65,000 square feet of office space, 120 hotel rooms, 525 multifamily housing units, 35,000 square feet of fitness or other specialty retail, and 115,000 square feet of other retail, restaurants/eateries, or services.

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## 1.2.6 Analysis Conditions

A total of eight scenarios were studied in both the AM and PM peak hours to evaluate potential impacts on the transportation system. **Table 2** provides a description and the objective of each.

**Table 2: Scenario Explanation**

Scenario	Description	Objective
1. Existing Development with Sam's Club Vacant	Traffic operations as they exist today per traffic count data collected on April 24, 2019 (includes Kohl's traffic as it is still in operation).	To show existing traffic conditions.
2. Existing Development with Sam's Club Occupied	Existing counts plus the generated trips if no vacancies existing (i.e. Sam's Club was still operating and the 1,500 feet of existing vacant retail were filled).	To show the traffic operations if Sam's Club or another similar discount warehouse store were in business.
3. Alternative 2	Existing counts plus project trips generated by the uses proposed in Alternative 2 (does not include existing Kohl's trips or potential Sam's Club trips as those two parcels would be redeveloped in this scenario).	To show the estimated traffic operations with the addition of trips from the redevelopment of the Sam's Club and Kohl's parcels.
4. Alternative 3	Existing counts plus the project trips generated by the uses proposed in Alternative 3.	To compare the redevelopment of the entire site to existing conditions.
5. 2040 Existing Development with Sam's Club Vacant	Traffic operations as they are estimated in 2040 using a growth factor applied to the existing counts (includes Kohl's traffic as it is still in operation).	To show estimated future forecasted traffic conditions with no change to Parcel O as it exists today.
6. 2040 Existing Development with Sam's Club Occupied	2040 future forecast plus the generated trips if no vacancies existing (i.e. Sam's Club was still operating and the 1,500 feet of existing vacant retail were filled).	To show the future traffic operations if Sam's Club or another similar discount warehouse store were in business.
7. 2040 Alternative 2	2040 future forecast plus project trips generated by the uses proposed in Alternative 2 (does not include existing Kohl's trips or potential Sam's Club trips as those two parcels would be redeveloped in this scenario).	To show the estimated future traffic operations with the addition of trips from the redevelopment of the Sam's Club and Kohl's parcels.
8. 2040 Alternative 3	2040 future forecast plus the project trips generated by the uses proposed in Alternative 3.	To compare the redevelopment of the entire site to future forecasted conditions.

Source: Fehr & Peers, May 2019

## 2.0 PROJECT TRIPS

### 2.1 Trip Generation

The vehicle trips associated with each alternative were calculated using the Institute of Transportation Engineers (ITE) *Trip Generation Manual 10<sup>th</sup> Edition*.

A mixed-use reduction was applied to Alternative 2 and Alternative 3 by using Fehr & Peers MXD+ Web-based tool that estimates trip generation for mixed-use developments. Current accepted methodologies, such as the ITE Trip Generation methodology, are primarily based on data collected at suburban, single-use, freestanding sites. These defining characteristics limit their applicability to mixed-use development projects. The land use mix, design features, and setting of the proposed development would include characteristics that influence travel behavior differently from typical single-use suburban developments. Thus, traditional data and methodologies, such as ITE, would not accurately estimate the project vehicle trip generation. Further explanation and validation of this tool can be found in **Appendix C**.

Trip reductions proposed using MXD+ ranged from 16 percent to 21 percent of the total trip generation proposed by ITE. **Table 3** shows the percent reductions per peak hour for both alternatives. Trip reductions per mode show the shift that could occur from driving to transit, walking or bicycling, or internal capture (trips intra-site due to the mix of uses).

Table 3: Estimated MXD+ Percent Reductions		
Mode	AM Peak	PM Peak
<b>Alternative 2</b>		
Transit	5%	6%
Walk/Bike	3%	3%
Internal Capture	11%	7%
Total	19%	16%
<b>Alternative 3</b>		
Transit	6%	7%
Walk/Bike	4%	3%
Internal Capture	11%	7%
Total	21%	17%

Source: Fehr & Peers, May 2019

Staff recommended a 10 percent reduction be applied across all alternatives to provide a conservative estimate of traffic operation impacts, while accepting the methodology of people traveling differently inter- and intra-site due to the proposed denser mix of uses and nearby walking, bicycling, and transit connections.

### Sam’s Club Occupied

The trip generation for this scenario is used to consider operational impacts if Parcel O did not have vacancies. The “Discount Club” land use illustrates an operational Sam’s Club or other discount warehouse store, and the 1,500 square feet of retail is included for the existing vacant retail space on the north side of the site. **Table 4** illustrates the estimated peak hour project trips for this scenario.

**Table 4: Sam’s Club Occupied Trip Generation**

Land Use	ITE Code	Size	Units	AM Peak Hour					PM Peak Hour				
				In		Out		Total Trips	In		Out		Total Trips
				%	Trips	%	Trips		%	Trips	%	Trips	
Discount Club	857	129	KSF	70%	44	30%	19	63	50%	269	50%	269	538
Shopping Center	820	1.5	KSF	62%	1	38%	1	2	48%	3	52%	3	6
<b>ITE Subtotal</b>					<b>45</b>		<b>20</b>	<b>65</b>		<b>272</b>		<b>272</b>	<b>544</b>

Source: Fehr & Peers, May 2019  
Key: KSF = 1,000 square feet

### Alternative 2

The trips produced by Alternative 2 include the land uses that would be constructed on the Sam’s Club and Kohl’s parcels. The 10 percent mixed-use trip reduction is applied as well as a subtraction of the trips produced by an operating Kohl’s (using the “Department Store” ITE land use). These Kohl’s trips are subtracted from the total because the volumes collected on April 24, 2019 inherently include people driving to/from Kohl’s and under this scenario the Kohl’s parcel would be redeveloped thereby eliminating any trips produced by that use. Following these reductions, a net total of the estimated Alternative 2 project trips (bottom row) were applied to the existing traffic counts to produce the projected traffic operations for this scenario. **Table 5** shows the estimated project trips generated by Alternative 2.

**Table 5: Alternative 2 Trip Generation**

Land Use	ITE Code	Size	Units	AM Peak Hour					PM Peak Hour				
				In		Out		Total Trips	In		Out		Total Trips
				%	Trips	%	Trips		%	Trips	%	Trips	
Multifamily Housing	220	245	DU	23%	26	77%	87	113	63%	86	37%	51	137
Hotel	310	120	Rms	59%	33	41%	23	56	51%	37	49%	35	72
Shopping Center	820	51.5	KSF	62%	30	38%	18	48	48%	94	52%	102	196
Health/Fitness Club	492	35	KSF	51%	23	49%	22	45	57%	69	43%	52	121
<b>ITE Subtotal</b>					<b>112</b>		<b>150</b>	<b>262</b>		<b>286</b>		<b>240</b>	<b>526</b>
<i>Mixed-Use Trip Reduction (10%)</i>					-11		-15	-26		-29		-24	-53
<b>Alternative 2 Subtotal</b>					<b>101</b>		<b>135</b>	<b>236</b>		<b>257</b>		<b>216</b>	<b>473</b>
<i>Subtraction of Replaced Kohl's Trips</i>					-32		-18	-50		-84		-84	-168
<b>Net Total Alternative 2 Project Trips<sup>1</sup></b>					<b>69</b>		<b>117</b>	<b>186</b>		<b>173</b>		<b>132</b>	<b>305</b>

Source: Fehr & Peers, May 2019

Key: KSF = 1,000 square feet, DU = dwelling units, Rms = hotel rooms

<sup>1</sup> These trips were used for the traffic operations analysis

### Alternative 3

The trips produced by Alternative 3 include the proposed uses constructed upon redevelopment of the entire 44.6 acre site. The 10 percent mixed-use trip reduction is applied as well as a subtraction of the existing trips that the Parcel O site currently produces on an average weekday. Vehicle counts were collected at all seven driveway access points to develop an existing trip generation for Parcel O as it operates today. The vehicle count data was collected on Tuesday, May 7, 2019 and includes all inbound and outbound vehicle trips traveling through each driveway during the AM and PM peak periods. The detailed count data is included in **Appendix D**. These trips are subtracted from the total generated by the proposed uses to quantify a net trip total for Alternative 3. **Table 6** illustrates the estimated project trips produced by Alternative 3.

**Table 6: Alternative 3 Trip Generation**

Land Use	ITE Code	Size	Units	AM Peak Hour					PM Peak Hour				
				In		Out		Total Trips	In		Out		Total Trips
				%	Trips	%	Trips		%	Trips	%	Trips	
Office	710	65	KSF	86%	65	14%	11	76	16%	12	84%	63	75
Multifamily Housing	220	525	DU	23%	56	77%	186	242	63%	185	37%	109	294
Hotel	310	120	Rms	59%	33	41%	23	56	51%	37	49%	35	72
Shopping Center	820	115	KSF	62%	67	38%	41	108	48%	210	52%	228	438
Health/Fitness Club	492	35	KSF	51%	23	49%	22	45	57%	69	43%	52	121
<b>ITE Subtotal</b>					<b>244</b>		<b>283</b>	<b>527</b>		<b>513</b>		<b>487</b>	<b>1,000</b>
<i>Mixed-Use Trip Reduction (10%)</i>					-24		-28	-53		-51		-49	-100
<b>Alternative 3 Subtotal</b>					<b>220</b>		<b>255</b>	<b>474</b>		<b>462</b>		<b>438</b>	<b>900</b>
<i>Subtraction of Existing Site Generated Trips</i>					-455		-356	-811		-582		-547	-1,129
<b>Net Total Alternative 3 Project Trips</b>					<b>-235</b>		<b>-101</b>	<b>-337</b>		<b>-120</b>		<b>-109</b>	<b>-229</b>

Source: Fehr & Peers, May 2019

Key: KSF = 1,000 square feet, DU = dwelling units, Rms = hotel rooms

The net new project trips are negative because the site as it operates today generates more vehicle trips than the proposed land uses would. This is primarily due to the higher number of trips generated in the AM and PM peak hours by retail (general merchandise and food stores), gas stations, and fast food establishments as compared to multifamily housing or a hotel. Though multifamily housing technically means more people living in Parcel O, that housing type produces less vehicle trips per unit than a single-family home or other lower-density housing type. The proposed office use is small enough in total square footage that the trip generation is low. Furthermore, the difference between the ITE subtotal and the existing site generated trips is large enough that the mixed-use reduction does not tip the balance between positive and negative trip generation.

Alternative 3 was also analyzed using ITE generated trips from the existing land uses to create a reduction. It was determined that collecting the actual existing trips that Parcel O produces on an average weekday would provide the most accurate picture, however, the ITE table can be found in **Appendix E** for comparative purposes.

## Trip Generation Conclusions

**Table 7** shows each scenario that was considered and a description of why or why not traffic operations were analyzed.

**Table 7: Considerations for Traffic Operations Analysis per Scenario**

Scenario	Traffic Ops Analyzed?	Why or Why Not?
1. Existing Development with Sam's Club Vacant	Yes	Provides a baseline of existing traffic operations.
2. Existing Development with Sam's Club Occupied	Yes	A fully tenanted Sam's Club adds additional trips to the existing counts.
3. Alternative 2	Yes	Alternative 2 adds trips to the existing counts.
4. Alternative 3	No	Due to the substantial change in land use type from approximately 300,000 square feet of retail/commercial to a mix of uses, the trips generated under this alternative are negative after subtracting the existing trips that the site generates.
5. 2040 Existing Development with Sam's Club Vacant	Yes	Provides a baseline of future traffic operations.
6. 2040 Existing Development with Sam's Club Occupied	Yes	A fully tenanted Sam's Club adds additional trips to the future forecasts.
7. 2040 Alternative 2	Yes	Alternative 2 adds trips to the future forecasts.
8. 2040 Alternative 3	No	Due to the substantial change in land use type from approximately 300,000 square feet of retail/commercial to a mix of uses, the trips generated under this alternative are negative after subtracting the existing trips that the site generates.

Source: Fehr & Peers, May 2019

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## 2.2 Trip Distribution

The external trip distribution values were determined using the DRCOG Focus Model and were approved by city staff.

- US 36 (west of McCaslin Boulevard): 20%
- US 36 (east of McCaslin Boulevard): 20%
- McCaslin Boulevard (south of Marshall Drive): 15%
- McCaslin Boulevard (north of Via Appia): 10%
- Via Appia (east of McCaslin Boulevard): 10%
- Dillon Road (east of Dahlia Street): 10%
- Dahlia Street (north of Cherry Street): 5%
- Cherry Street (east of Dahlia Street): 5%
- Marshall Drive (west of McCaslin Boulevard): 5%

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## 2.3 Trip Assignment

Vehicular traffic was assigned by applying the trip distribution percentages to the estimated total trips generated for each scenario. A table illustrating the number of project trips added per movement at each intersection can be found in **Appendix F**.

## 3.0 SCENARIO ANALYSIS

### 3.1 Existing Scenarios

The traffic operations of three scenarios were studied under existing conditions:

1. Existing Development with the Sam's Club Vacant
2. Existing Development with the Sam's Club Occupied
3. Alternative 2

Overall, study intersection delay does not change or increases by less than one second in seven of the nine study intersections (intersections 1, 2, 5, 6, 7, 8, and 9) when comparing the Existing Traffic with Sam's Club Vacant or the Existing Traffic with Sam's Club Occupied scenarios to Alternative 2. At the McCaslin Boulevard and US 36 westbound intersection, delay increases by up to 3 seconds and 2 seconds in the AM and PM peak hours respectively due to Alternative 2 trips. The only study intersection that experiences more significant delay between Alternative 2 and the other two scenarios is the McCaslin Boulevard and Dillon Road intersection.

Under Existing Development with the Sam's Club Vacant (using the traffic counts collected on April 24<sup>th</sup>), the McCaslin Boulevard and Dillon Road intersection currently operates at a LOS E. With the addition of trips from Alternative 2, the intersection maintains a LOS E in the AM peak hour and delay increases by 16 seconds. The intersection degrades to a LOS F in the PM peak hour and delay increases by 13 seconds. Of note, the PM peak hour has worse LOS and delay under the Existing Traffic with the Sam's Club Occupied versus under Alternative 2 conditions because a discount warehouse store generates more trips in the PM hour than all Alternative 2 uses combined.

The LOS F in the PM peak hour under the Alternative 2 scenario can be mitigated by re-timing the signal, with additional explanation in the following sub-section. All other intersections operate at a LOS D or better under all scenarios. **Table 8** illustrates the LOS and overall intersection delay in both the AM and PM peak hours under all existing scenarios.

**Table 8: Existing Study Intersections Level of Service Summary**

ID	Intersection	Peak Hour	Existing with Sam's Club Vacant		Existing with Sam's Club Occupied		Alternative 2	
			LOS <sup>1</sup>	Delay <sup>2</sup>	LOS	Delay	LOS	Delay
1	McCaslin Blvd/Marshall Rd	AM	C	21.8	C	21.8	C	21.5
		PM	C	29.0	C	28.8	C	28.9
2	McCaslin Blvd/US 36 EB	AM	D	36.3	D	36.3	D	36.4
		PM	D	38.2	D	40.3	D	38.2
3	McCaslin Blvd/US 36 WB	AM	D	49.9	D	51.8	D	53.2
		PM	D	39.0	D	38.8	D	41.8
4	McCaslin Blvd/Dillon Rd	AM	<b>E</b>	<b>63.2</b>	<b>E</b>	<b>65.6</b>	<b>E</b>	<b>79.2</b>
		PM	<b>E</b>	<b>67.4</b>	<b>F</b>	<b>97.2</b>	<b>F</b>	<b>80.9</b>
5	Dahlia St/Dillon Rd	AM	B	17.2	B	17.3	B	17.6
		PM	C	22.3	C	22.9	C	22.6
6	Dahlia St/Cherry St	AM	B	12.2	B	12.2	B	12.3
		PM	B	11.6	B	11.9	B	11.7
7	McCaslin Blvd/Cherry St	AM	C	23.5	C	23.6	C	23.7
		PM	C	21.8	C	22.2	C	22.0
8	McCaslin Blvd/Century Dr	AM	B	15.1	B	15.1	B	15.2
		PM	A	8.2	A	8.0	A	8.0
9	McCaslin Blvd/Via Appia	AM	C	20.3	C	20.5	C	20.5
		PM	B	18.4	B	19.1	B	18.9

Source: Fehr & Peers, May 2019

Notes:

<sup>1</sup> LOS = Level of Service; LOS Calculations conducted using Synchro 9

<sup>2</sup> Overall intersection average control delay expressed in seconds per vehicle

**Bold** illustrates LOS E or F operations

### 3.1.2 Existing Mitigation

Re-timing the traffic signal at McCaslin Boulevard and Dillon Road would help improve intersection operations. McCaslin Boulevard's traffic signals are coordinated, therefore the proposed re-timing maintains the total time currently allocated to the northbound and southbound movements within the 120 second cycle length. The proposed re-timing would increase green time to the westbound through and left-turn movements for both peak hours by re-adjusting the time for Dillon Road movements. In the AM peak hour LOS would improve from a LOS E to a D with overall delay of 36 seconds. In the PM peak hour LOS would improve from a LOS F to a E with overall delay of 73 seconds. Under the proposed

mitigation scenarios, LOS and delay is improved to better than Existing with Sam’s Club Vacant in the AM peak hour and within five second of delay between that scenario and Alternative 2 during the PM peak hour.

Proposed signal timing outputs are included in **Appendix B. Table 9** illustrates the mitigated LOS and delay with the re-timing.

<b>Table 9: Alternative 2 Proposed Study Intersection Mitigation Level of Service</b>							
ID	Intersection	Peak Hour	Alternative 2		Proposed Mitigation		
			LOS <sup>1</sup>	Delay <sup>2</sup>	LOS	Delay	Δ Delay <sup>3</sup>
4	McCaslin Blvd/Dillon Rd	AM	<b>E</b>	<b>79.2</b>	D	35.9	-43.3
		PM	<b>F</b>	<b>80.9</b>	<b>E</b>	<b>72.7</b>	-8.2

Source: Fehr & Peers, May 2019

Notes:

<sup>1</sup> LOS = Level of Service. LOS Calculations conducted using Synchro 9

<sup>2</sup> Overall intersection average control delay expressed in seconds per vehicle

<sup>3</sup> Change in delay between Alternative 2 and the proposed mitigation in seconds

**Bold** illustrates LOS E or F operations

## 3.2 2040 Scenarios

The traffic operations of three scenarios were studied under future (2040) conditions:

1. 2040 Existing Development with Sam’s Club Vacant
2. 2040 Existing Development with Sam’s Club Occupied
3. 2040 Alternative 2

Since traffic volumes are projected to increase on City of Louisville roadways by 2040, traffic signal timing for study intersections 1, 3, 4, and 7 were optimized prior to generating the 2040 LOS outputs. The optimization was conducted using Synchro 9 which takes into account a variety of factors and re-assigns timings to minimize delay. This was done because it was assumed that signal timings would be reasonably updated as traffic volumes increase over time. Although this would de-emphasize the priority of moving traffic along McCaslin Boulevard, this assumption is more reasonable than expecting very high levels of delay on cross-streets.

Overall, minor increases in delay are produced by the addition of project trips. Intersections that are already operating below a LOS D due to forecasted traffic growth continue to degrade slightly with the addition of project trips. Seven of the nine study intersections



experience an increase in delay of less than one second and LOS remains stable when comparing the 2040 Existing Development with Sam’s Club Vacant or 2040 Existing Development with Sam’s Club Occupied to the 2040 Alternative 2 scenario.

While the intersection of McCaslin Boulevard and US-36 westbound ramps consistently experiences high delay even without the addition of project trips from the 2040 Alternative 2 scenario, the signals are already timed so as to permit maximum throughput from both directions of travel. Therefore delay cannot be mitigated to conditions of LOS D or better through signal re-timing.

The McCaslin Boulevard and Dillon Road intersection continues to operate at a LOS E or F under all future scenarios. Signal timing mitigations were explored for the intersection, however, proved ineffective in reducing delay to LOS D or better conditions. Two potential infrastructure mitigations were explored in the following Section 3.2.1.

**Table 10** illustrates the LOS and overall delay for each intersection in both the AM and PM peak hours under all future scenarios.

**Table 10: Future (2040) Study Intersections Level of Service Summary**

ID	Intersection	Peak Hour	2040 with Sam's Club Vacant		2040 with Sam's Club Occupied		2040 Alternative 2	
			LOS <sup>1</sup>	Delay <sup>2</sup>	LOS	Delay	LOS	Delay
1	McCaslin Blvd/Marshall Rd	AM	C	24.6	C	24.6	C	24.6
		PM	D	51.4	D	51.4	D	51.4
2	McCaslin Blvd/US 36 EB	AM	D	36.1	D	36.7	D	36.4
		PM	D	37.9	D	38.2	D	38.1
3	McCaslin Blvd/US 36 WB	AM	<b>E</b>	<b>78.5</b>	<b>F</b>	<b>80.2</b>	<b>F</b>	<b>80.9</b>
		PM	<b>E</b>	<b>60.9</b>	<b>F</b>	<b>80.0</b>	<b>E</b>	<b>71.4</b>
4	McCaslin Blvd/Dillon Rd	AM	<b>E</b>	<b>58.0</b>	<b>E</b>	<b>59.7</b>	<b>E</b>	<b>66.5</b>
		PM	<b>F</b>	<b>131.8</b>	<b>F</b>	<b>163.7</b>	<b>F</b>	<b>149.1</b>
5	Dahlia St/Dillon Rd	AM	B	19.5	B	19.5	B	19.8
		PM	C	29.8	C	30.7	C	30.2
6	Dahlia St/Cherry St	AM	B	16.6	B	16.8	B	17.0
		PM	B	14.4	B	14.9	B	14.6
7	McCaslin Blvd/Cherry St	AM	D	39.4	D	39.7	D	39.8
		PM	D	47.5	<b>E</b>	<b>55.5</b>	D	51.5
8	McCaslin Blvd/Century Dr	AM	B	14.7	B	14.7	B	14.8
		PM	A	8.3	A	8.1	A	8.2
9	McCaslin Blvd/Via Appia	AM	D	48.5	D	49.5	D	49.8
		PM	C	28.2	C	31.2	C	30.1

Source: Fehr & Peers, May 2019

Notes:

<sup>1</sup> LOS = Level of Service; LOS Calculations conducted using Synchro 9

<sup>2</sup> Overall intersection average control delay expressed in seconds per vehicle

**Bold** illustrates LOS E or F operations

### 3.2.1 2040 Mitigation Recommendations

Since the McCaslin Boulevard and Dillon Road intersection consistently exhibits high delay and signal re-timing could not produce conditions of LOS D or better, two potential mitigations were modeled in Synchro for the PM peak period:

1. Add an additional westbound left-turn lane on Dillon Road.
2. Add an additional westbound left-turn lane on Dillon Road *and* an additional northbound through lane on McCaslin Boulevard.



Each mitigation scenario would require reconfiguring the roadway because the existing two lane movement becomes a three lane movement. If a third westbound left-turn lane is added to Dillon Road then the delay is reduced by approximately 35 seconds, however, the intersection remains at LOS F. If a third northbound through lane is added on McCaslin Boulevard in addition to the third westbound left-turn lane, then the added capacity would reduce the delay even further to a LOS E. Potential right-of-way constraints may limit the feasibility of this mitigation. By adding the third northbound through lane, the delay would likely only be moved north to the Cherry Street intersection and not necessarily be resolved. It is recommended that additional study be conducted as a part of future permitting for Parcel O.

Signal timing outputs are included in **Appendix B. Table 11** illustrates the mitigated LOS and delay with the re-timing.

Table 11: Future Study Intersection Mitigations								
ID	Intersection	Peak Hour	2040 Alternative 2		Mitigation 1		Mitigation 2	
			LOS <sup>1</sup>	Delay <sup>2</sup>	LOS	Delay	LOS	Delay
4	McCaslin Blvd/Dillon Rd	AM	N/A	N/A	N/A	N/A	N/A	N/A
		PM	<b>F</b>	<b>149.1</b>	<b>F</b>	<b>115.0</b>	<b>E</b>	<b>71.0</b>

Source: Fehr & Peers, May 2019

Notes:

<sup>1</sup> LOS = Level of Service; LOS Calculations conducted using Synchro 9

<sup>2</sup> Overall intersection average control delay expressed in seconds per vehicle

**Bold** illustrates LOS E or F operations

Mitigation for other study intersections include optimizing green time for the major traffic movements at the following intersections which will accommodate the higher vehicle volumes anticipated for 2040:

- McCaslin Boulevard and Marshall Road: Additional green-time for northbound and eastbound movements
- McCaslin Boulevard and the US-36 westbound ramps: Additional green-time for southbound movements
- McCaslin Boulevard and Centennial Parkway: Adding additional green-time to the southbound movements

## 4.0 SAFETY ANALYSIS

A safety analysis of the four signalized intersections immediately adjacent to Parcel O (McCaslin Boulevard and Dillon Road, McCaslin Boulevard and Cherry Street, Cherry Street and Dahlia Street, and Dillon Road and Dahlia Street) and the seven driveway access points was conducted using four years and three months of crash data (January 1, 2015 to March 31, 2019) provided by the City. **Figure 4** shows the number of crashes per intersection, the intersections where bicycle-vehicle crashes occurred, and the locations where crashes resulted in serious bodily injury (SBI) or a fatality. This did not include field observations or consideration of near-misses. Additional safety concerns may exist though not indicated by the historic crash data review.

During the analysis period 164 crashes occurred – three of which were vehicle-bicycle crashes. Of those, 18 crashes resulted in injury with one SBI which was a bicyclist at the McCaslin Boulevard and Dillon Road intersection and one fatality which was a motorcyclist at the driveway access immediately east of the McCaslin Boulevard and Cherry Street intersection.

The following sections document crash trends per intersection which were developed by analyzing the crash reports, and each incident cause and outcome. The recommendations are high-level and require additional feasibility assessment and design.

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### McCaslin Boulevard & Dillon Road

A total of 96 crashes were recorded at this intersection.

1. Northbound Through Crashes: Northbound vehicles in the far right lane attempt to switch to the middle lane after realizing that lane turns into right-turn only at Dillon Road. It is recommended that the existing striping and signage be reviewed to find potential solutions. One option is changing to a skip stripe for the far right lane after it departs the interchange to provide warning that the lane is ending.
2. Eastbound & Westbound Through Crashes: Eastbound or westbound through vehicles mistake the left-turn signal indication as their time to proceed through the intersection and then crash into the left-turning vehicles who have the left-turn arrow indication. It is recommended that the City review both the number and

placement of signal heads to ensure that the existing traffic signals follow *Manual on Uniform Traffic Control Devices* (MUTCD) guidance, as well as providing applicable signage to ensure confusion is limited.

3. Bicyclist Safety: The bike lane ends west of the intersection which inhibits those continuing westbound on Dyer Road which connects to destinations west of McCaslin Boulevard and the US 36 Trail. This gap in connectivity creates potentially unsafe conditions for bicyclists as they travel westbound. A bicyclist was rear-ended and seriously injured because they were in the travel lane immediately west of the intersection. Enhancements via a bike lane or multiuse path are recommended for consideration to fill this existing gap.

---

## McCaslin Boulevard & Cherry Street

This intersection experienced a total of 31 crashes, of which 16 were attributed to northbound or southbound left-turning vehicles and vehicles traveling through the intersection colliding. Due to the existing permissive-protected signal control, left-turning vehicles may turn when the green ball is illuminated and no through vehicles are present. An analysis of changing the left-turn movements to protected-only was completed per the MUTCD and guidance followed by the City of Boulder. The warrant was met in the northbound direction during both peak hours, and either partially met or met in the southbound direction in the AM and PM peak hours respectively. Due to the crash history and high traffic volumes in all directions, it is recommended that the northbound and southbound left-turn movements become protected-only.

An analysis of the operational and queuing effects was completed using Synchro 9 to determine how the intersection would operate with northbound and southbound protected-only left-turns. To be conservative, the two scenarios with the lowest LOS in the AM and PM peak hours were studied. In the AM peak hour the delay would increase ten seconds from 24 to 34 seconds of overall delay and remain at a LOS C. In the PM peak hour the delay would increase four seconds from 22 to 26 seconds of overall delay and remain at a LOS C. The left-turn queue is estimated to not spill out of the existing storage lane for both directions during the peak periods; however, it is recommended that additional traffic simulation analysis be conducted prior to implementation.

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## **Driveway Access Intersection**

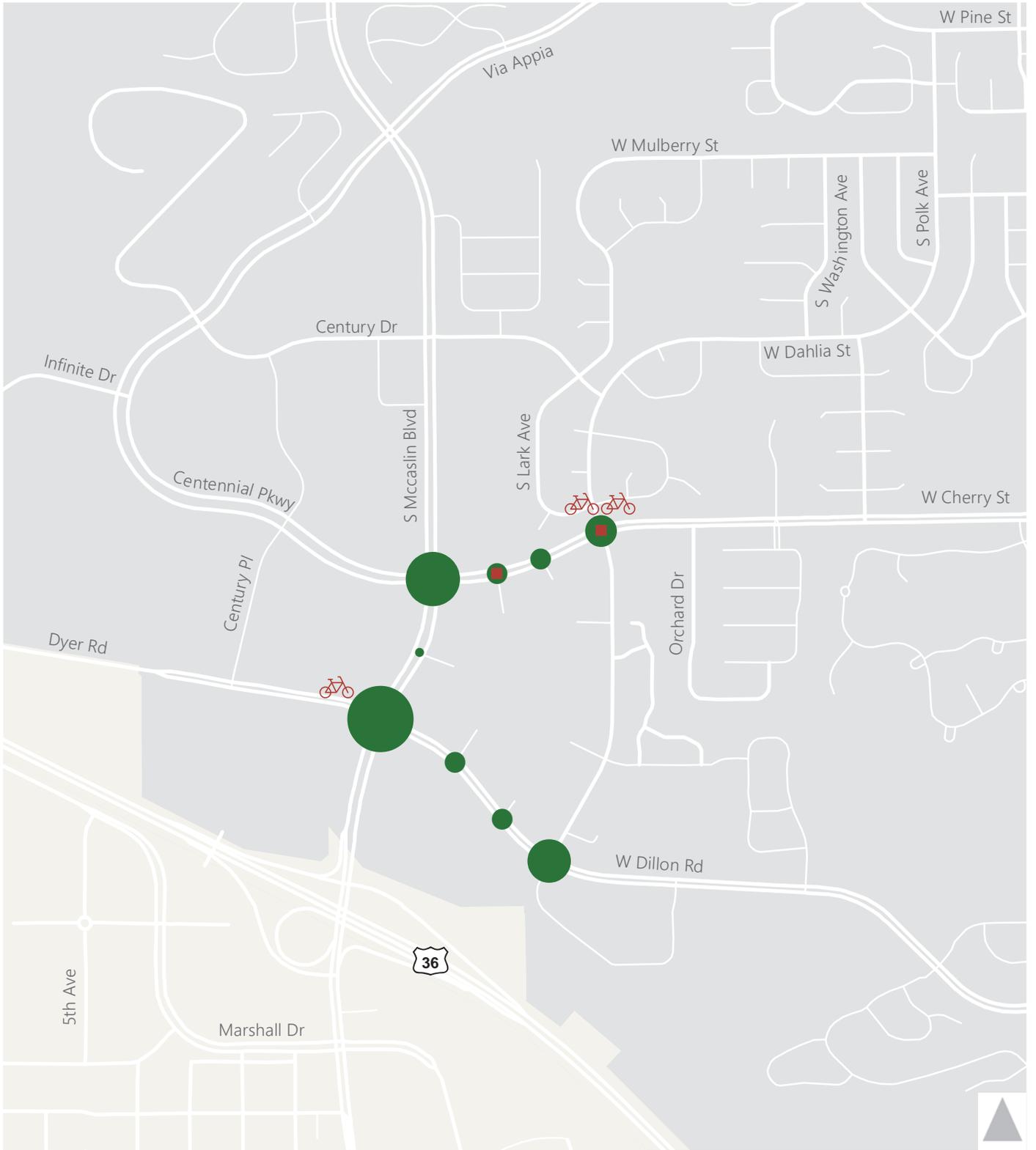
The driveway 400 feet east of the McCaslin Boulevard and Cherry Street intersection, which serves both Parcel O and the shopping center to the north, had four crashes in total and one resulted in a fatality. All four crashes were the result of a northbound vehicle exiting Parcel O and attempting to go straight into the shopping center north of Cherry Street, though the two storage lanes are currently marked for left- and right-turns only. It is recommended that this driveway be offset from the one to the north when the site is redeveloped to remove the possibility of vehicles attempting this movement.

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## **Additional Considerations**

A crash analysis of the McCaslin Boulevard and Century Drive intersection was not a part of this study's scope; however, a volume analysis was done for the intersection as it also has northbound and southbound permissive-protected left-turning movements similar to Cherry Street. Using the same quantitative methods applied at Cherry Street, the northbound left-turn partially met or met the warrant in the AM and PM peak hours respectively. The southbound direction did not meet or partially meet the warrant in the AM and PM peak hours respectively.

An analysis of the operational and queuing effects was completed using Synchro 9 to determine how the intersection would operate with northbound and southbound protected-only left-turns. To be conservative, the two scenarios with the lowest LOS in the AM and PM peak hours were studied. In the AM peak hour the delay would increase two seconds from 8 to 10 seconds of overall delay and remain at a LOS A. In the PM peak hour the delay would increase six seconds from 15 to 21 seconds of overall delay and increase from a LOS B to a C. The left-turn queue is estimated to not spill out of the existing storage lane for both directions during the peak periods; however, it is recommended that additional traffic simulation analysis be conducted prior to implementation as well as analysis of the intersection's crash history.



- Serious Bodily Injury or Fatal Crash
- 🚲 Vehicle-Bicycle Crash
- Louisville
- Superior

Figure 4  
Crash History (January 2015 - March 2019)

## 5.0 MULTIMODAL CONNECTIVITY ANALYSIS

A high-level analysis of existing and potential multimodal connections was studied so the City may consider these improvements upon redevelopment of the Parcel O site.

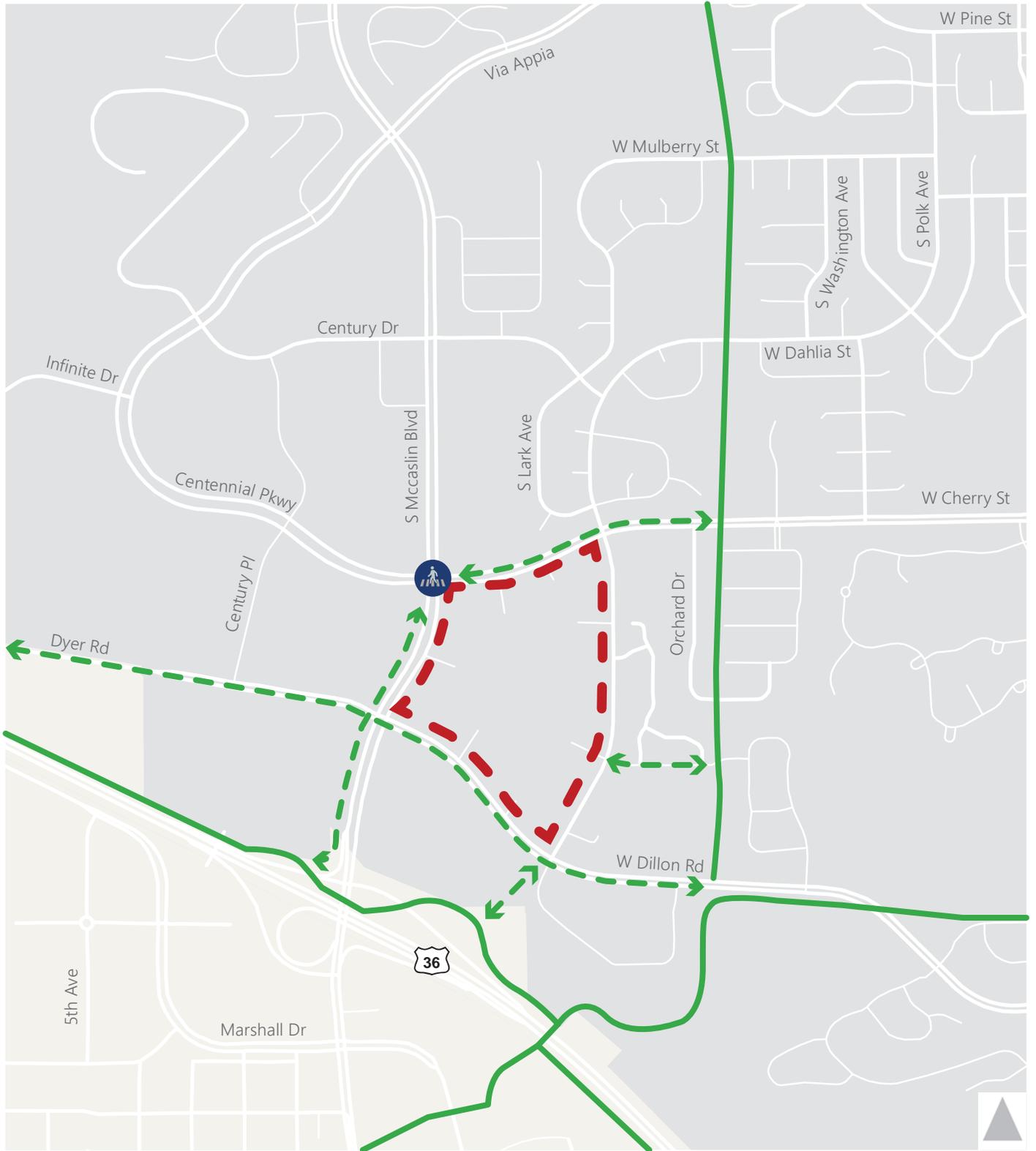
Existing transit access includes McCaslin Station approximately one-half mile away that serves the Flatiron Flyer and a bus stop north of Dillon Road serving the Route 228 bus. Existing bicycle (and some pedestrian) access is served by the US 36 Trail to the south and west, and the Power Line Trail located to the east of Dahlia Street.

To ensure that people are able to access the site via multiple modes, it is recommended that pedestrian and bicycle connections be considered to those transit and regional trail connections. **Figure 5** shows the locations of potential future multiuse trail connections to both regional trails. These possible connections include:

- US 36 Trail via Dyer Road
- Power Line Trail via bike lanes along Ridge Place
- US 36 Trail and Power Line Trail via a connection adjacent to Coal Creek Circle

Upon any reconstruction of McCaslin Boulevard, Cherry Street, or Dillon Road due to redevelopment of the site, multi-use paths should be considered along the site boundaries to facilitate additional low-stress connections.

Pedestrian accessibility was also considered and could be achieved adjacent to Parcel O by implementing speed tables for the channelized right-turns at the McCaslin Boulevard and Cherry Street intersection (the same as what exists today at Dillon Road).



Pedestrian Crossing Improvement



Low-Stress Bicycle Connection



 Louisville

 Superior



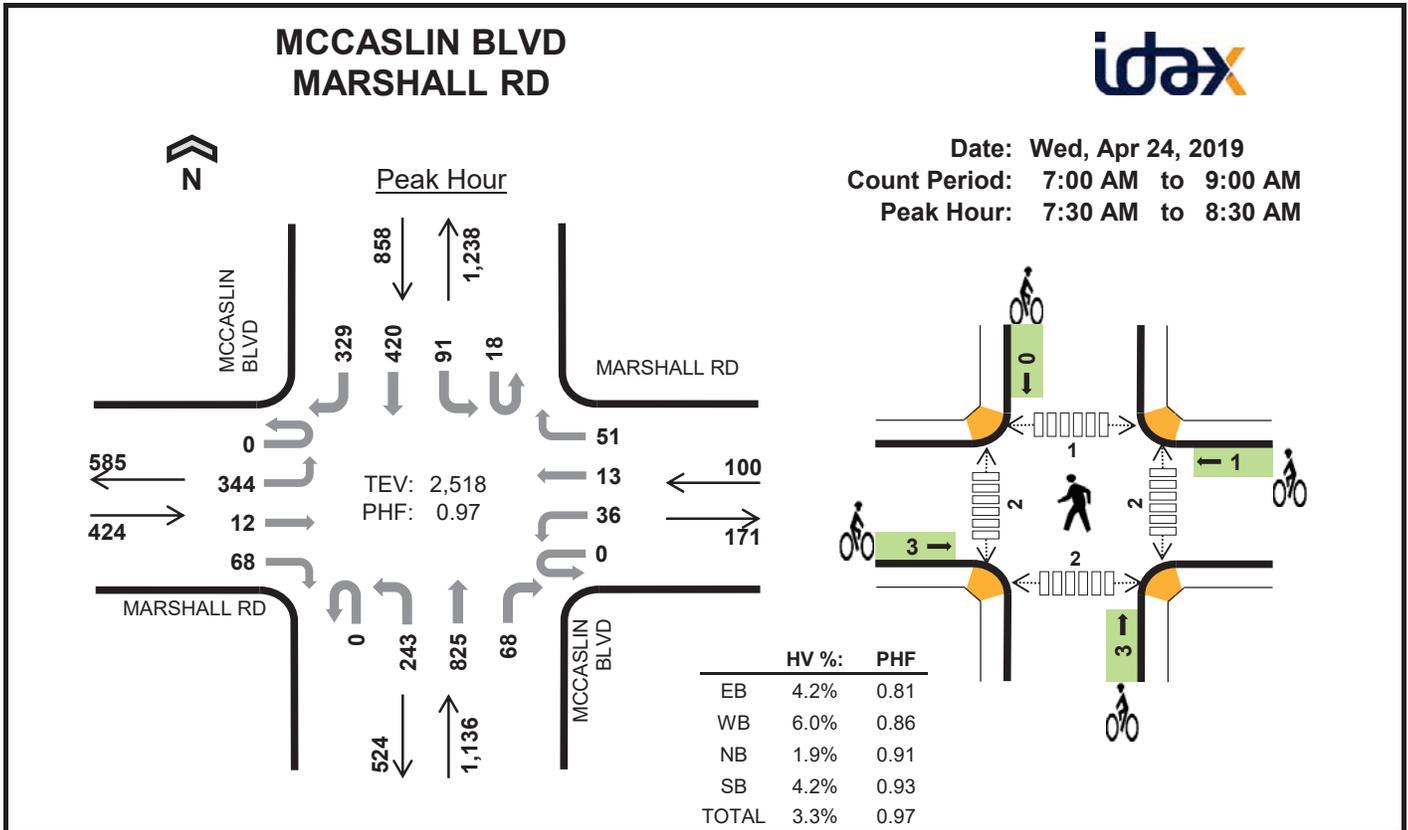
Study Area

Figure 5

## Multimodal Improvements

Appendix A:  
Existing Turning Movement Counts



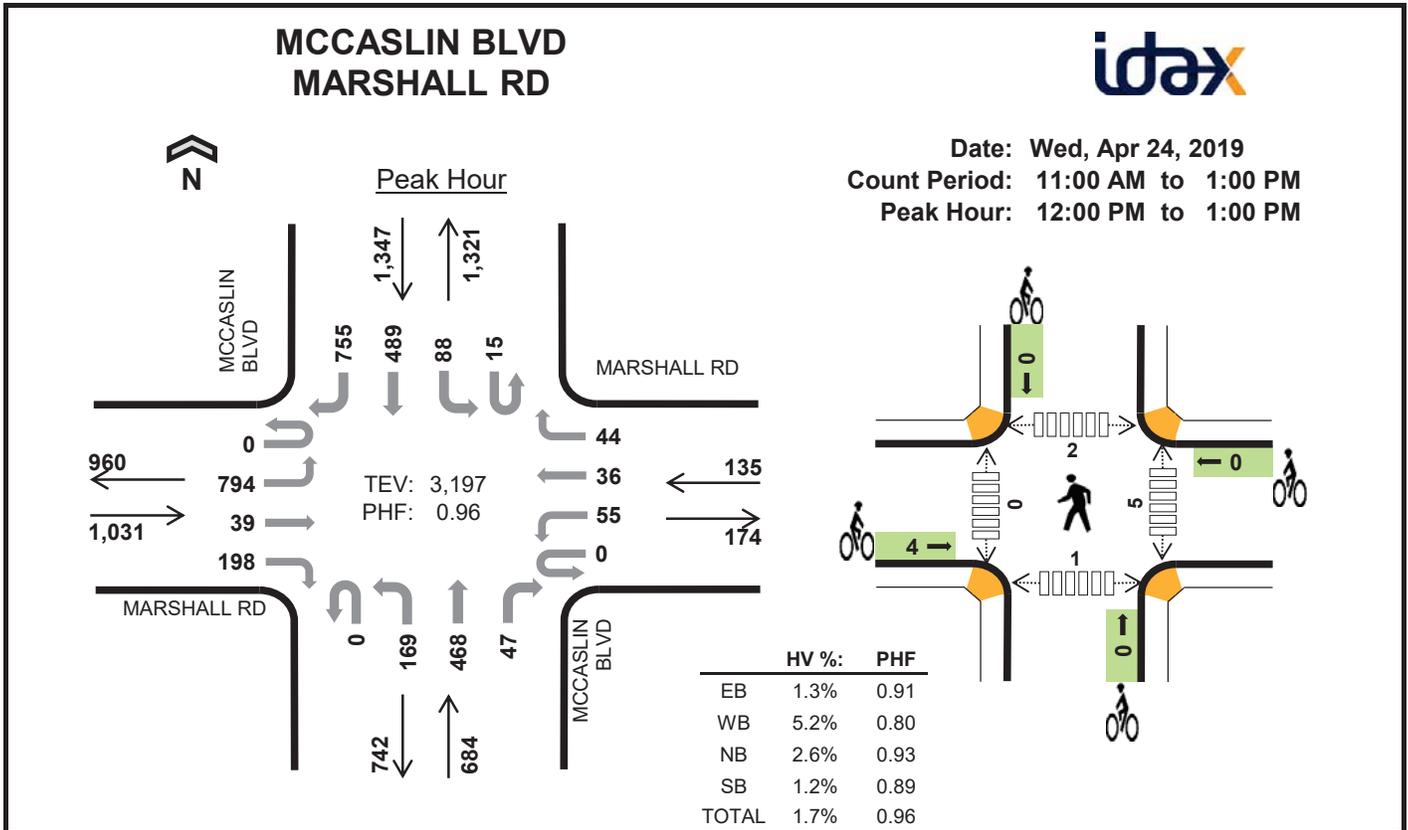


**Two-Hour Count Summaries**

Interval Start	MARSHALL RD Eastbound				MARSHALL RD Westbound				MCCASLIN BLVD Northbound				MCCASLIN BLVD Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	59	5	12	0	4	1	2	0	38	120	15	6	17	68	30	377	0
7:15 AM	0	64	5	11	0	7	4	9	0	53	147	15	9	23	77	66	490	0
7:30 AM	0	78	2	8	0	8	4	17	0	90	205	17	2	21	81	83	616	0
7:45 AM	0	84	2	12	0	5	5	9	0	64	222	15	0	28	111	89	646	2,129
8:00 AM	0	86	3	18	0	12	3	12	0	54	209	20	5	24	126	75	647	2,399
8:15 AM	0	96	5	30	0	11	1	13	0	35	189	16	11	18	102	82	609	2,518
8:30 AM	0	101	6	13	0	10	2	11	0	37	214	19	5	17	91	89	615	2,517
8:45 AM	0	114	6	19	0	13	3	8	0	36	165	8	5	34	97	76	584	2,455
Count Total	0	682	34	123	0	70	23	81	0	407	1,471	125	43	182	753	590	4,584	0
Peak Hour	0	344	12	68	0	36	13	51	0	243	825	68	18	91	420	329	2,518	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	2	0	2	5	9	0	0	0	0	0	1	0	1	0	2
7:15 AM	4	0	1	8	13	0	0	1	0	1	0	2	0	0	2
7:30 AM	2	1	8	7	18	1	0	1	0	2	0	0	0	0	0
7:45 AM	1	1	3	8	13	0	0	1	0	1	1	2	1	0	4
8:00 AM	3	1	8	10	22	2	0	0	0	2	1	0	0	1	2
8:15 AM	12	3	3	11	29	0	1	1	0	2	0	0	0	1	1
8:30 AM	5	1	6	4	16	0	0	0	0	0	0	0	0	0	0
8:45 AM	4	2	9	7	22	1	0	1	0	2	0	0	0	0	0
Count Total	33	9	40	60	142	4	1	5	0	10	3	4	2	2	11
Peak Hour	18	6	22	36	82	3	1	3	0	7	2	2	1	2	7

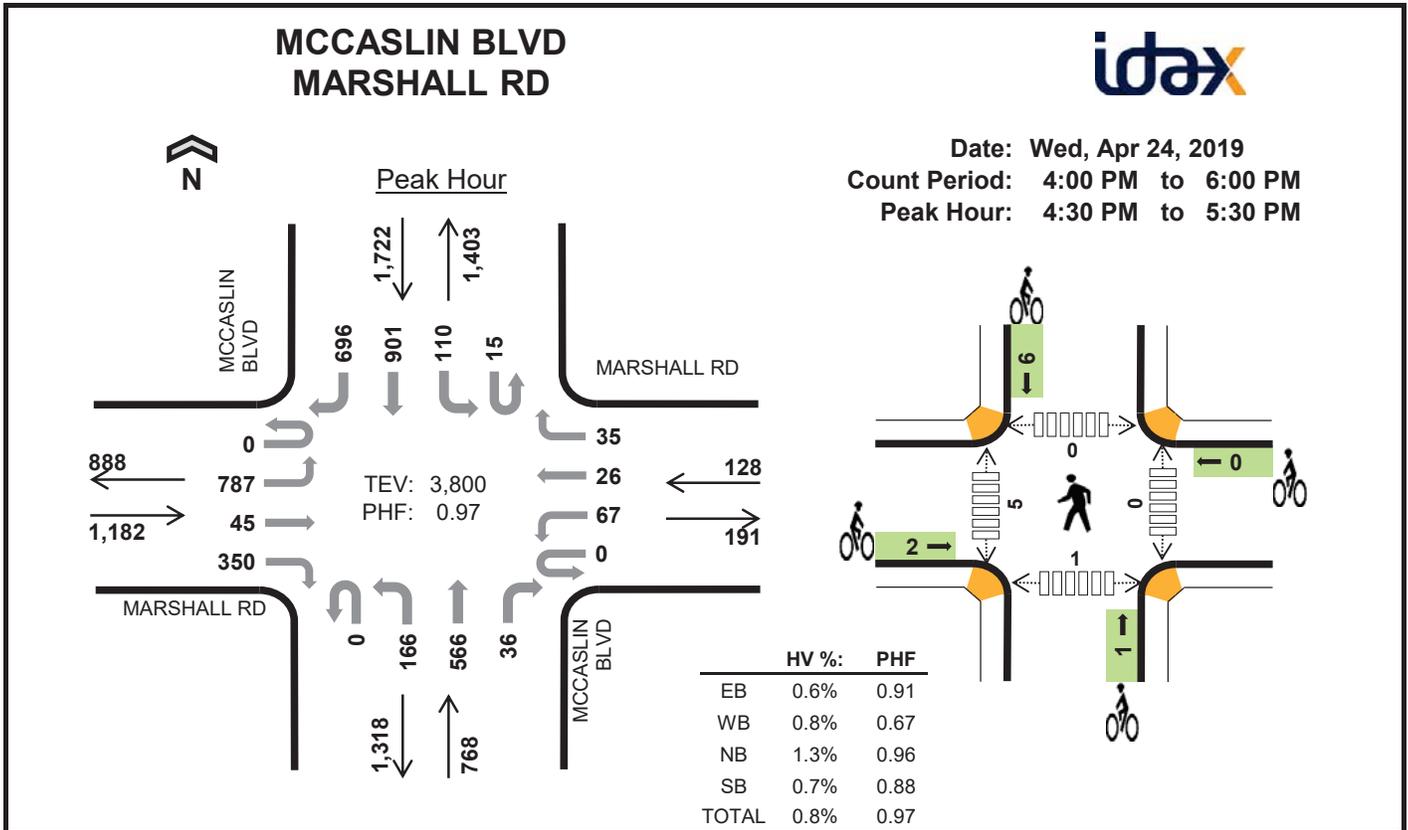


**Two-Hour Count Summaries**

Interval Start	MARSHALL RD Eastbound				MARSHALL RD Westbound				MCCASLIN BLVD Northbound				MCCASLIN BLVD Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
11:00 AM	0	139	7	35	0	11	7	11	0	29	87	15	3	8	75	166	593	0
11:15 AM	0	157	7	43	0	5	7	9	0	35	91	11	4	24	80	191	664	0
11:30 AM	0	161	9	36	0	11	7	14	0	32	118	12	2	12	81	201	696	0
11:45 AM	0	169	11	39	0	7	7	13	0	54	104	19	3	23	125	225	799	2,752
<b>12:00 PM</b>	<b>0</b>	<b>190</b>	<b>10</b>	<b>46</b>	<b>0</b>	<b>13</b>	<b>6</b>	<b>14</b>	<b>0</b>	<b>44</b>	<b>128</b>	<b>9</b>	<b>4</b>	<b>22</b>	<b>129</b>	<b>194</b>	<b>809</b>	<b>2,968</b>
<b>12:15 PM</b>	<b>0</b>	<b>188</b>	<b>11</b>	<b>43</b>	<b>0</b>	<b>17</b>	<b>7</b>	<b>5</b>	<b>0</b>	<b>51</b>	<b>116</b>	<b>16</b>	<b>3</b>	<b>22</b>	<b>136</b>	<b>216</b>	<b>831</b>	<b>3,135</b>
12:30 PM	0	190	13	56	0	15	11	16	0	29	109	15	5	22	95	158	734	3,173
12:45 PM	0	226	5	53	0	10	12	9	0	45	115	7	3	22	129	187	823	3,197
Count Total	0	1,420	73	351	0	89	64	91	0	319	868	104	27	155	850	1,538	5,949	0
<b>Peak Hour</b>	<b>0</b>	<b>794</b>	<b>39</b>	<b>198</b>	<b>0</b>	<b>55</b>	<b>36</b>	<b>44</b>	<b>0</b>	<b>169</b>	<b>468</b>	<b>47</b>	<b>15</b>	<b>88</b>	<b>489</b>	<b>755</b>	<b>3,197</b>	<b>0</b>

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
11:00 AM	4	1	2	5	12	0	0	0	0	0	0	0	0	0	0
11:15 AM	2	2	5	9	18	0	0	0	0	0	0	0	0	0	0
11:30 AM	4	3	7	5	19	0	0	0	2	2	1	0	1	0	2
11:45 AM	10	1	4	3	18	1	0	1	0	2	2	0	0	2	4
<b>12:00 PM</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>5</b>	<b>12</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>4</b>
<b>12:15 PM</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>6</b>	<b>14</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>
12:30 PM	4	2	6	2	14	0	0	0	0	0	1	0	1	0	2
12:45 PM	4	1	6	3	14	1	0	0	0	1	0	0	0	0	0
Count Total	33	14	36	38	121	5	0	1	2	8	8	0	3	3	14
<b>Peak Hour</b>	<b>13</b>	<b>7</b>	<b>18</b>	<b>16</b>	<b>54</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>5</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>8</b>



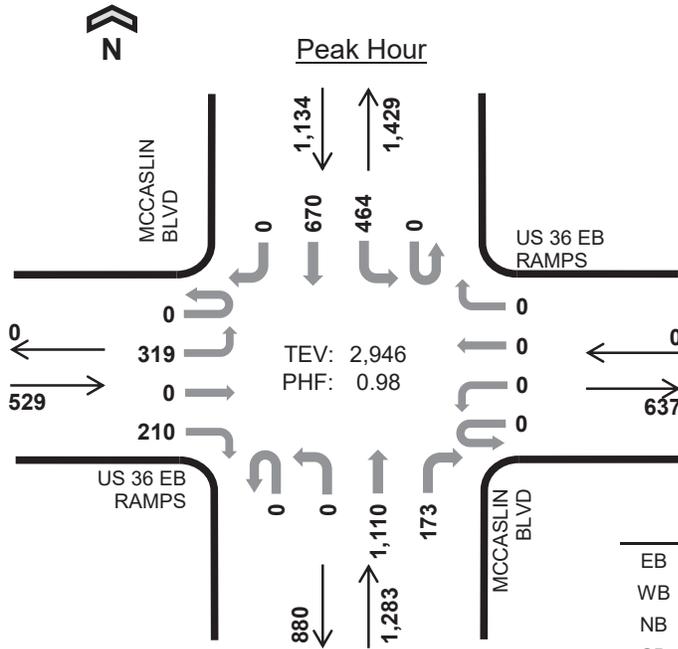
**Two-Hour Count Summaries**

Interval Start	MARSHALL RD				MARSHALL RD				MCCASLIN BLVD				MCCASLIN BLVD				15-min Total	Rolling One Hour
	Eastbound		Westbound		Northbound		Southbound		UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	188	10	61	0	15	4	9	0	40	124	9	3	22	142	180	807	0
4:15 PM	0	160	9	86	0	16	10	14	0	37	109	10	6	25	191	186	859	0
<b>4:30 PM</b>	<b>0</b>	<b>204</b>	<b>8</b>	<b>78</b>	<b>0</b>	<b>15</b>	<b>5</b>	<b>9</b>	<b>0</b>	<b>38</b>	<b>150</b>	<b>6</b>	<b>2</b>	<b>28</b>	<b>181</b>	<b>173</b>	<b>897</b>	<b>0</b>
4:45 PM	0	187	6	89	0	11	2	13	0	39	147	7	6	33	236	166	942	3,505
5:00 PM	0	212	24	89	0	25	12	11	0	47	141	11	3	25	210	170	980	3,678
<b>5:15 PM</b>	<b>0</b>	<b>184</b>	<b>7</b>	<b>94</b>	<b>0</b>	<b>16</b>	<b>7</b>	<b>2</b>	<b>0</b>	<b>42</b>	<b>128</b>	<b>12</b>	<b>4</b>	<b>24</b>	<b>274</b>	<b>187</b>	<b>981</b>	<b>3,800</b>
5:30 PM	0	169	16	106	0	18	5	4	0	38	139	9	5	25	181	151	866	3,769
5:45 PM	0	157	2	91	0	16	5	3	0	33	114	14	3	19	238	189	884	3,711
Count Total	0	1,461	82	694	0	132	50	65	0	314	1,052	78	32	201	1,653	1,402	7,216	0
<b>Peak Hour</b>	<b>0</b>	<b>787</b>	<b>45</b>	<b>350</b>	<b>0</b>	<b>67</b>	<b>26</b>	<b>35</b>	<b>0</b>	<b>166</b>	<b>566</b>	<b>36</b>	<b>15</b>	<b>110</b>	<b>901</b>	<b>696</b>	<b>3,800</b>	<b>0</b>

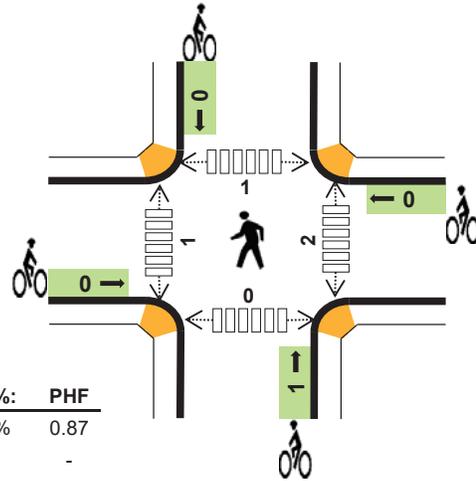
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	3	4	2	9	0	1	0	0	1	0	1	0	1	2
4:15 PM	2	1	4	1	8	0	1	0	2	3	0	4	0	0	4
<b>4:30 PM</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>
4:45 PM	3	1	2	4	10	0	0	0	0	0	0	1	0	0	1
5:00 PM	0	0	3	2	5	1	0	0	1	2	0	0	0	1	1
<b>5:15 PM</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>9</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
5:30 PM	1	0	1	2	4	0	0	0	3	3	1	0	0	0	1
5:45 PM	1	0	1	2	4	1	0	0	0	1	2	0	2	0	4
Count Total	11	5	20	19	55	3	2	1	11	17	3	10	2	2	17
<b>Peak Hour</b>	<b>7</b>	<b>1</b>	<b>10</b>	<b>12</b>	<b>30</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>6</b>	<b>9</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>1</b>	<b>6</b>

# MCCASLIN BLVD US 36 EB RAMPS



Date: Wed, Apr 24, 2019  
Count Period: 7:00 AM to 9:00 AM  
Peak Hour: 7:45 AM to 8:45 AM



	HV %:	PHF
EB	1.5%	0.87
WB	-	-
NB	2.3%	0.95
SB	2.8%	0.92
TOTAL	2.3%	0.98

## Two-Hour Count Summaries

Interval Start	US 36 EB RAMPS				US 36 EB RAMPS				MCCASLIN BLVD				MCCASLIN BLVD				15-min Total	Rolling One Hour
	Eastbound		Westbound		Northbound		Southbound		UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	44	0	30	0	0	0	0	0	0	166	32	0	94	105	0	471	0
7:15 AM	0	67	0	43	0	0	0	0	0	0	196	37	0	92	118	0	553	0
7:30 AM	0	69	0	37	0	0	0	0	0	0	274	38	0	121	165	0	704	0
<b>7:45 AM</b>	<b>0</b>	<b>96</b>	<b>0</b>	<b>56</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>278</b>	<b>43</b>	<b>0</b>	<b>108</b>	<b>172</b>	<b>0</b>	<b>753</b>	2,481
8:00 AM	0	66	0	54	0	0	0	0	0	0	282	37	0	135	174	0	748	2,758
8:15 AM	0	75	0	54	0	0	0	0	0	0	252	52	0	109	162	0	704	2,909
8:30 AM	0	82	0	46	0	0	0	0	0	0	298	41	0	112	162	0	741	2,946
8:45 AM	0	95	0	48	0	0	0	0	0	0	234	49	0	94	163	0	683	2,876
Count Total	0	594	0	368	0	0	0	0	0	0	1,980	329	0	865	1,221	0	5,357	0
Peak Hour	0	319	0	210	0	0	0	0	0	0	1,110	173	0	464	670	0	2,946	0

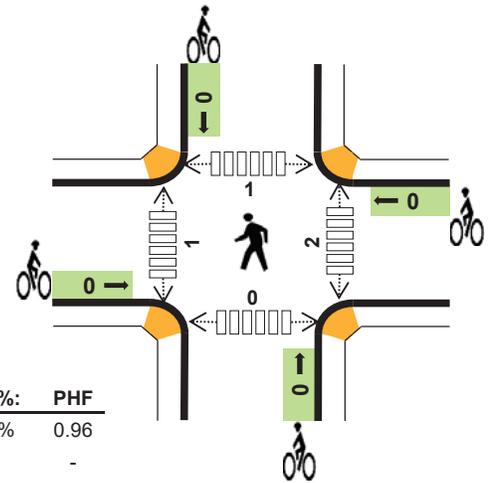
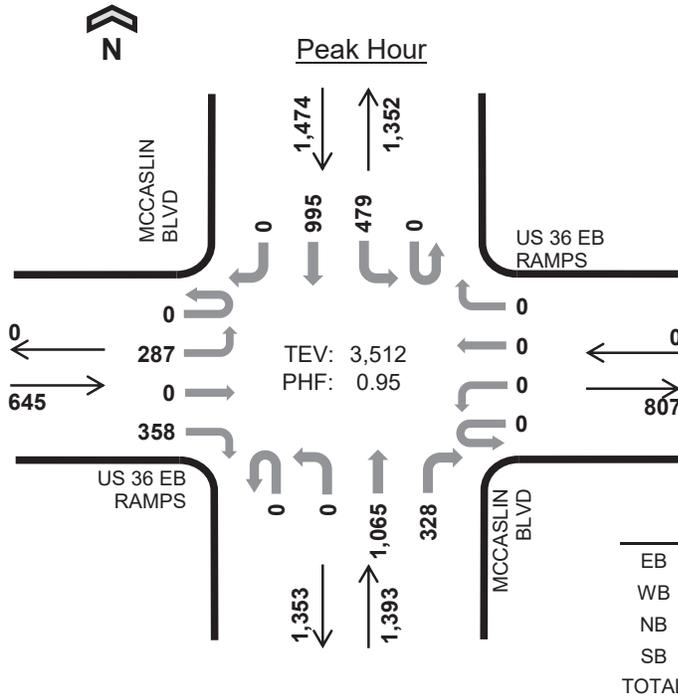
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	1	0	3	5	9	0	0	0	0	0	0	3	3	0	6
7:15 AM	1	0	3	7	11	0	0	0	0	0	0	1	1	0	2
7:30 AM	3	0	5	7	15	0	0	1	0	1	0	0	0	0	0
<b>7:45 AM</b>	<b>2</b>	<b>0</b>	<b>4</b>	<b>8</b>	<b>14</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>4</b>
8:00 AM	3	0	7	9	19	0	0	0	0	0	0	0	0	0	0
8:15 AM	2	0	10	10	22	0	0	1	0	1	0	0	0	0	0
8:30 AM	1	0	8	5	14	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	8	5	13	0	0	1	0	1	0	0	1	0	1
Count Total	13	0	48	56	117	0	0	3	0	3	2	5	6	0	13
Peak Hour	8	0	29	32	69	0	0	1	0	1	2	1	1	0	4

# MCCASLIN BLVD US 36 EB RAMPS



Date: Wed, Apr 24, 2019  
 Count Period: 11:00 AM to 1:00 PM  
 Peak Hour: 12:00 PM to 1:00 PM



	HV %:	PHF
EB	1.4%	0.96
WB	-	-
NB	1.3%	0.91
SB	1.8%	0.87
TOTAL	1.5%	0.95

## Two-Hour Count Summaries

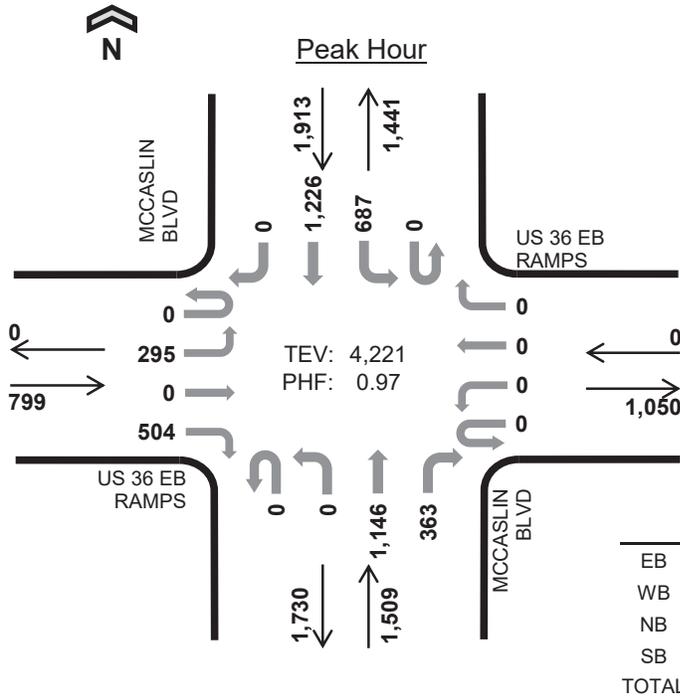
Interval Start	US 36 EB RAMPS				US 36 EB RAMPS				MCCASLIN BLVD				MCCASLIN BLVD				15-min Total	Rolling One Hour
	Eastbound		Westbound		Northbound		Southbound		UT	LT	TH	RT	UT	LT	TH	RT		
11:00 AM	0	64	0	77	0	0	0	0	0	0	198	64	0	106	186	0	695	0
11:15 AM	0	59	0	83	0	0	0	0	0	0	218	64	0	81	218	0	723	0
11:30 AM	0	76	0	83	0	0	0	0	0	0	243	56	0	123	231	0	812	0
11:45 AM	0	70	0	100	0	0	0	0	0	0	241	71	0	123	257	0	862	3,092
12:00 PM	0	71	0	79	0	0	0	0	0	0	270	84	0	117	263	0	884	3,281
12:15 PM	0	64	0	96	0	0	0	0	0	0	258	74	0	135	287	0	914	3,472
12:30 PM	0	81	0	86	0	0	0	0	0	0	253	70	0	110	189	0	789	3,449
12:45 PM	0	71	0	97	0	0	0	0	0	0	284	100	0	117	256	0	925	3,512
Count Total	0	556	0	701	0	0	0	0	0	0	1,965	583	0	912	1,887	0	6,604	0
Peak Hour	0	287	0	358	0	0	0	0	0	0	1,065	328	0	479	995	0	3,512	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

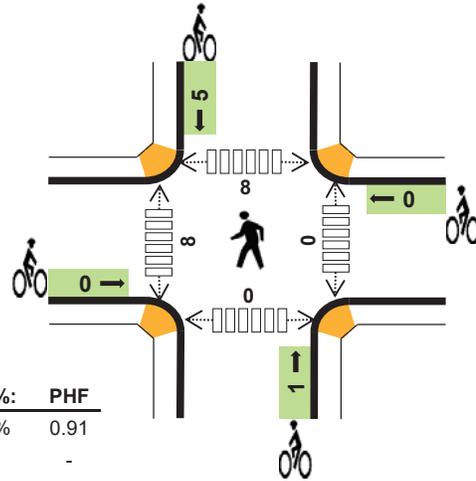
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
11:00 AM	2	0	3	4	9	0	0	0	0	0	0	0	0	0	0
11:15 AM	3	0	5	11	19	0	0	0	0	0	2	0	0	0	2
11:30 AM	5	0	7	2	14	0	0	0	2	2	0	0	0	0	0
11:45 AM	3	0	10	6	19	0	0	1	0	1	0	0	0	0	0
12:00 PM	2	0	4	6	12	0	0	0	0	0	0	0	0	0	0
12:15 PM	2	0	4	9	15	0	0	0	0	0	1	0	0	0	1
12:30 PM	3	0	3	6	12	0	0	0	0	0	1	0	0	0	1
12:45 PM	2	0	7	6	15	0	0	0	0	0	0	1	1	0	2
Count Total	22	0	43	50	115	0	0	1	2	3	4	1	1	0	6
Peak Hour	9	0	18	27	54	0	0	0	0	0	2	1	1	0	4



# MCCASLIN BLVD US 36 EB RAMPS



Date: Wed, Apr 24, 2019  
 Count Period: 4:00 PM to 6:00 PM  
 Peak Hour: 4:30 PM to 5:30 PM



	HV %:	PHF
EB	0.6%	0.91
WB	-	-
NB	0.7%	0.92
SB	0.8%	0.96
TOTAL	0.8%	0.97

## Two-Hour Count Summaries

Interval Start	US 36 EB RAMPS Eastbound				US 36 EB RAMPS Westbound				MCCASLIN BLVD Northbound				MCCASLIN BLVD Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	64	0	86	0	0	0	0	0	0	268	65	0	162	279	0	924	0
4:15 PM	0	72	0	114	0	0	0	0	0	0	238	82	0	144	273	0	923	0
<b>4:30 PM</b>	<b>0</b>	<b>67</b>	<b>0</b>	<b>107</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>307</b>	<b>82</b>	<b>0</b>	<b>176</b>	<b>297</b>	<b>0</b>	<b>1,036</b>	0
4:45 PM	0	70	0	132	0	0	0	0	0	0	261	117	0	172	299	0	1,051	3,934
<b>5:00 PM</b>	<b>0</b>	<b>84</b>	<b>0</b>	<b>120</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>314</b>	<b>94</b>	<b>0</b>	<b>166</b>	<b>306</b>	<b>0</b>	<b>1,084</b>	4,094
5:15 PM	0	74	0	145	0	0	0	0	0	0	264	70	0	173	324	0	1,050	4,221
5:30 PM	0	63	0	126	0	0	0	0	0	0	302	51	0	125	274	0	941	4,126
5:45 PM	0	68	0	140	0	0	0	0	0	0	225	71	0	135	272	0	911	3,986
Count Total	0	562	0	970	0	0	0	0	0	0	2,179	632	0	1,253	2,324	0	7,920	0
<b>Peak Hour</b>	<b>0</b>	<b>295</b>	<b>0</b>	<b>504</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,146</b>	<b>363</b>	<b>0</b>	<b>687</b>	<b>1,226</b>	<b>0</b>	<b>4,221</b>	<b>0</b>

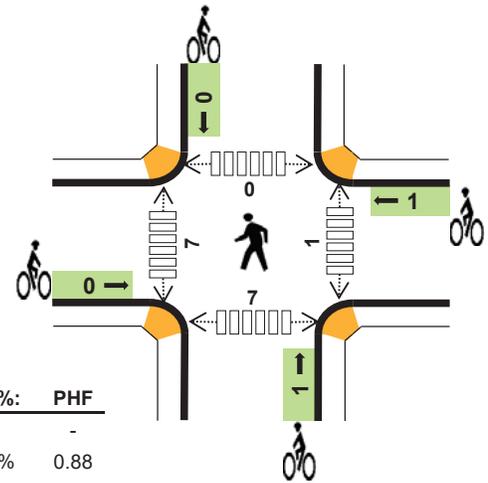
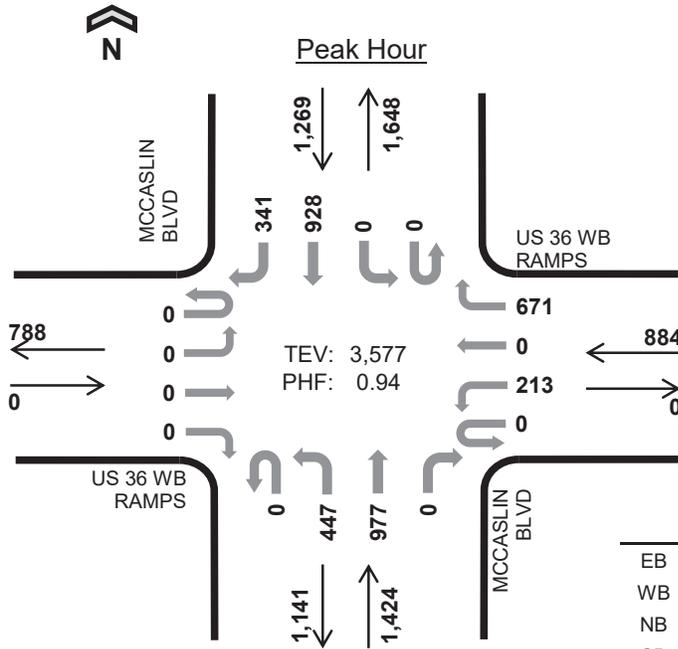
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	1	0	6	7	14	0	0	0	0	0	0	2	2	0	4
4:15 PM	1	0	6	3	10	0	0	0	1	1	1	4	4	0	9
4:30 PM	0	0	2	4	6	0	0	0	3	3	0	3	2	0	5
4:45 PM	1	0	5	5	11	0	0	0	0	0	0	1	2	0	3
<b>5:00 PM</b>	<b>3</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>4</b>
5:15 PM	1	0	3	5	9	0	0	1	1	2	0	2	2	0	4
5:30 PM	1	0	1	1	3	0	0	0	2	2	0	1	2	0	3
5:45 PM	1	0	2	3	6	0	0	0	0	0	0	0	1	0	1
Count Total	9	0	26	30	65	0	0	1	8	9	1	15	17	0	33
<b>Peak Hour</b>	<b>5</b>	<b>0</b>	<b>11</b>	<b>16</b>	<b>32</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>5</b>	<b>6</b>	<b>0</b>	<b>8</b>	<b>8</b>	<b>0</b>	<b>16</b>

# MCCASLIN BLVD US 36 WB RAMPS



Date: Wed, Apr 24, 2019  
 Count Period: 7:00 AM to 9:00 AM  
 Peak Hour: 7:45 AM to 8:45 AM



	HV %:	PHF
EB	-	-
WB	3.4%	0.88
NB	1.6%	0.93
SB	1.7%	0.93
TOTAL	2.1%	0.94

## Two-Hour Count Summaries

Interval Start	US 36 WB RAMPS				US 36 WB RAMPS				MCCASLIN BLVD				MCCASLIN BLVD				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	57	0	130	0	75	136	0	0	0	123	66	587	0
7:15 AM	0	0	0	0	0	46	0	122	0	88	170	0	0	0	195	71	692	0
7:30 AM	0	0	0	0	0	54	0	131	0	108	239	0	0	0	205	102	839	0
<b>7:45 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>58</b>	<b>0</b>	<b>192</b>	<b>0</b>	<b>109</b>	<b>253</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>256</b>	<b>85</b>	<b>953</b>	3,071
8:00 AM	0	0	0	0	0	55	0	161	0	126	226	0	0	0	225	101	894	3,378
8:15 AM	0	0	0	0	0	55	0	169	0	101	225	0	0	0	241	79	870	3,556
8:30 AM	0	0	0	0	0	45	0	149	0	111	273	0	0	0	206	76	860	3,577
8:45 AM	0	0	0	0	0	63	0	186	0	81	249	0	0	0	221	63	863	3,487
Count Total	0	0	0	0	0	433	0	1,240	0	799	1,771	0	0	0	1,672	643	6,558	0
Peak Hour	0	0	0	0	0	213	0	671	0	447	977	0	0	0	928	341	3,577	0

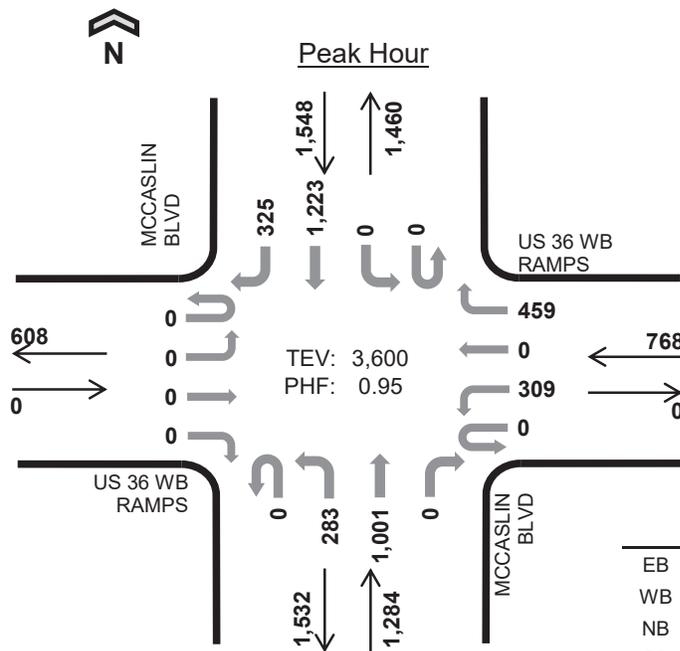
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	4	3	4	11	0	1	0	0	1	0	2	0	2	4
7:15 AM	0	4	1	5	10	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	6	7	3	16	0	0	1	0	1	3	5	0	5	13
<b>7:45 AM</b>	<b>0</b>	<b>9</b>	<b>2</b>	<b>7</b>	<b>18</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>3</b>
8:00 AM	0	7	8	4	19	0	0	0	0	0	0	3	0	3	6
8:15 AM	0	11	6	5	22	0	0	1	0	1	0	2	0	2	4
8:30 AM	0	3	7	5	15	0	0	0	0	0	0	1	0	1	2
8:45 AM	0	5	4	4	13	0	0	1	0	1	1	0	0	0	1
Count Total	0	49	38	37	124	0	2	3	0	5	5	14	0	14	33
Peak Hour	0	30	23	21	74	0	1	1	0	2	1	7	0	7	15

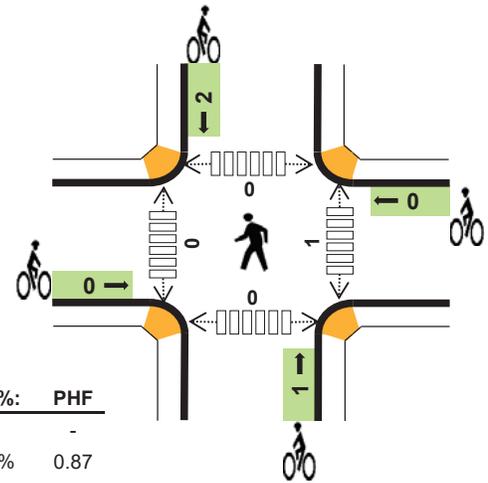
# MCCASLIN BLVD US 36 WB RAMPS



Date: Wed, Apr 24, 2019  
Count Period: 11:00 AM to 1:00 PM  
Peak Hour: 11:30 AM to 12:30 PM



TEV: 3,600  
PHF: 0.95



	HV %:	PHF
EB	-	-
WB	2.1%	0.87
NB	1.6%	0.95
SB	1.7%	0.89
TOTAL	1.8%	0.95

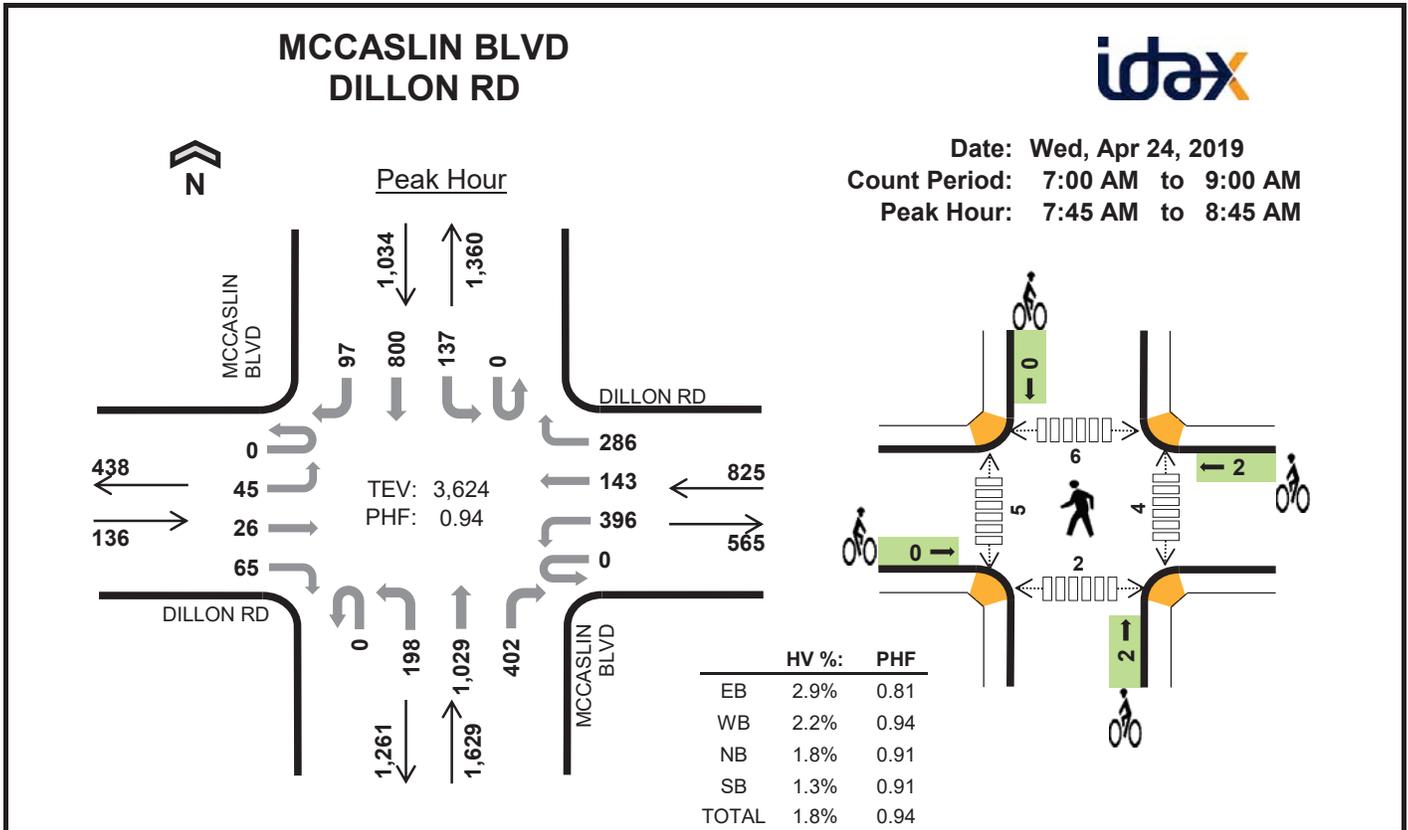
## Two-Hour Count Summaries

Interval Start	US 36 WB RAMPS				US 36 WB RAMPS				MCCASLIN BLVD				MCCASLIN BLVD				15-min Total	Rolling One Hour
	Eastbound		Westbound		Northbound		Southbound		UT	LT	TH	RT	UT	LT	TH	RT		
11:00 AM	0	0	0	0	0	46	0	90	0	73	183	0	0	0	246	82	720	0
11:15 AM	0	0	0	0	0	72	0	98	0	64	214	0	0	0	232	70	750	0
11:30 AM	0	0	0	0	0	69	0	113	0	80	241	0	0	0	268	80	851	0
11:45 AM	0	0	0	0	0	92	0	128	0	54	247	0	0	0	299	94	914	3,235
12:00 PM	0	0	0	0	0	74	0	108	0	64	273	0	0	0	302	68	889	3,404
12:15 PM	0	0	0	0	0	74	0	110	0	85	240	0	0	0	354	83	946	3,600
12:30 PM	0	0	0	0	0	63	0	123	0	83	248	0	0	0	239	87	843	3,592
12:45 PM	0	0	0	0	0	68	0	114	0	77	279	0	0	0	305	69	912	3,590
Count Total	0	0	0	0	0	558	0	884	0	580	1,925	0	0	0	2,245	633	6,825	0
Peak Hour	0	0	0	0	0	309	0	459	0	283	1,001	0	0	0	1,223	325	3,600	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
11:00 AM	0	4	4	6	14	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	10	6	10	26	0	0	0	1	1	0	1	0	1	2
11:30 AM	0	3	8	3	14	0	0	0	2	2	0	0	0	0	0
11:45 AM	0	2	6	7	15	0	0	1	0	1	0	0	0	0	0
12:00 PM	0	6	3	6	15	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	5	4	11	20	0	0	0	0	0	1	0	0	0	1
12:30 PM	0	3	6	5	14	0	0	0	0	0	0	1	0	1	2
12:45 PM	0	3	3	4	10	0	0	0	0	0	1	0	0	0	1
Count Total	0	36	40	52	128	0	0	1	3	4	2	2	0	2	6
Peak Hour	0	16	21	27	64	0	0	1	2	3	1	0	0	0	1





#### Two-Hour Count Summaries

Interval Start	DILLON RD Eastbound				DILLON RD Westbound				MCCASLIN BLVD Northbound				MCCASLIN BLVD Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	4	6	6	0	69	12	29	1	21	160	86	0	24	116	13	547	0
7:15 AM	0	8	6	4	0	85	24	33	1	21	162	97	0	22	169	27	659	0
7:30 AM	0	10	5	13	0	102	21	64	1	34	216	97	0	24	207	26	820	0
7:45 AM	0	11	8	11	0	104	39	77	0	58	280	109	0	27	210	25	959	2,985
8:00 AM	0	12	5	13	0	111	29	59	0	34	253	96	0	29	227	29	897	3,335
8:15 AM	0	9	5	20	0	90	33	63	0	50	239	102	0	44	181	25	861	3,537
8:30 AM	0	13	8	21	0	91	42	87	0	56	257	95	0	37	182	18	907	3,624
8:45 AM	0	15	8	22	0	91	37	66	0	66	249	120	0	41	163	22	900	3,565
Count Total	0	82	51	110	0	743	237	478	3	340	1,816	802	0	248	1,455	185	6,550	0
Peak Hour	0	45	26	65	0	396	143	286	0	198	1,029	402	0	137	800	97	3,624	0

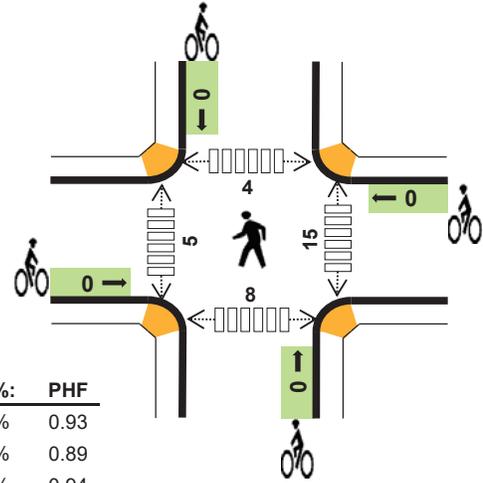
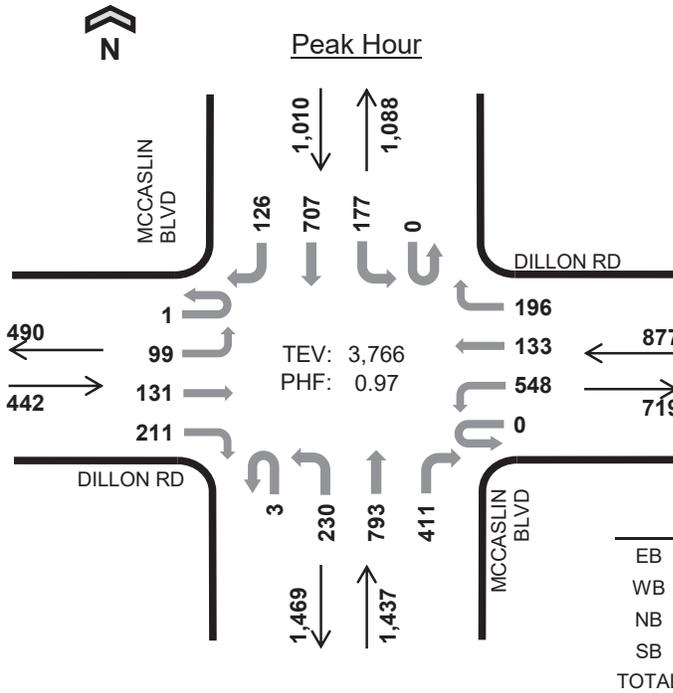
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	2	1	7	5	15	0	1	0	0	1	0	0	0	0	0
7:15 AM	0	4	1	3	8	0	0	0	0	0	0	2	2	1	5
7:30 AM	1	2	8	1	12	0	0	0	0	0	1	2	0	1	4
7:45 AM	1	5	7	2	15	0	0	0	0	0	2	0	1	1	4
8:00 AM	0	3	8	4	15	0	0	1	0	1	1	1	0	1	3
8:15 AM	0	4	8	4	16	0	2	1	0	3	1	2	3	0	6
8:30 AM	3	6	7	3	19	0	0	0	0	0	0	2	2	0	4
8:45 AM	0	0	5	5	10	0	0	0	0	0	0	0	0	0	0
Count Total	7	25	51	27	110	0	3	2	0	5	5	9	8	4	26
Peak Hour	4	18	30	13	65	0	2	2	0	4	4	5	6	2	17

### MCCASLIN BLVD DILLON RD



Date: Wed, Apr 24, 2019  
 Count Period: 11:00 AM to 1:00 PM  
 Peak Hour: 11:45 AM to 12:45 PM



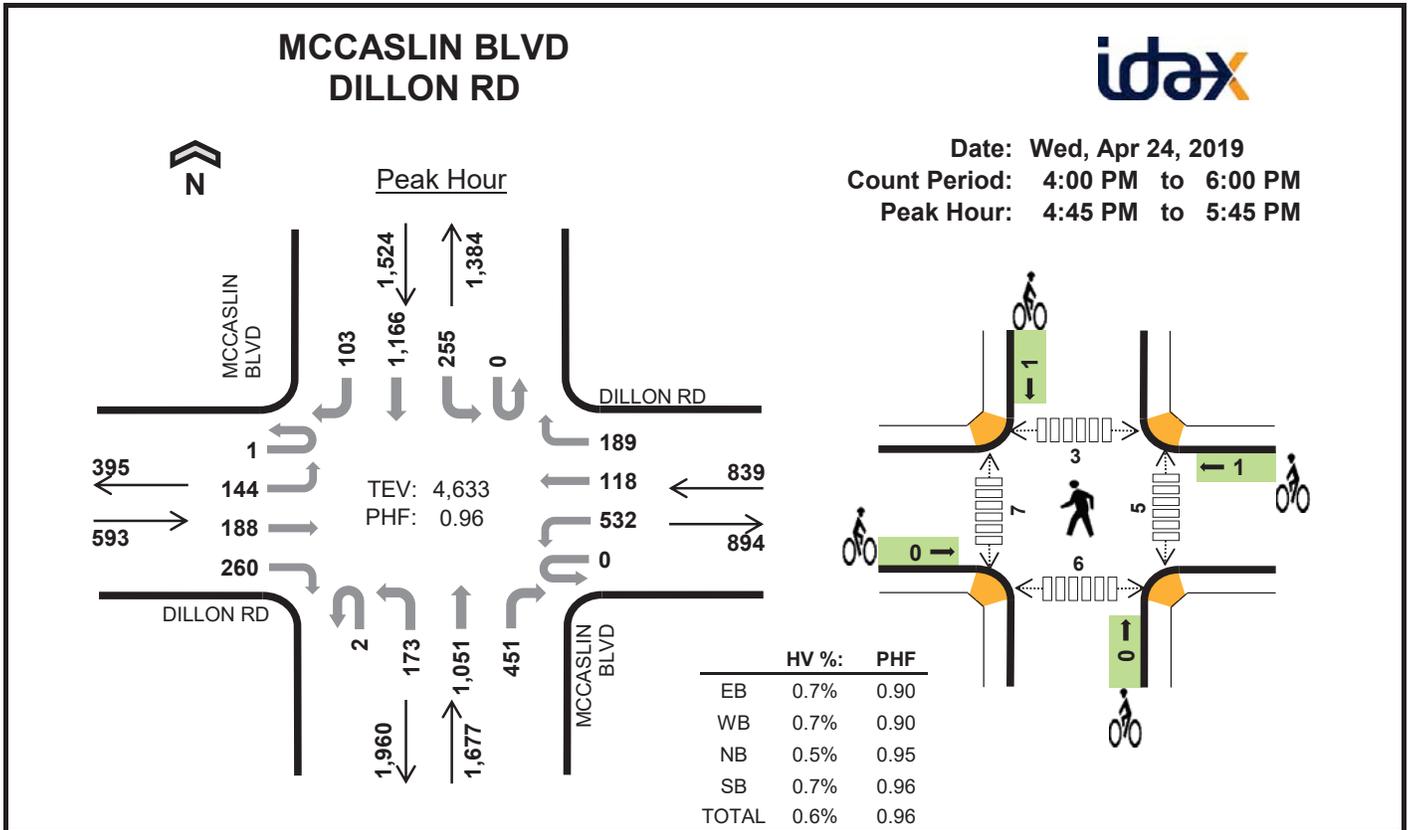
	HV %:	PHF
EB	2.7%	0.93
WB	1.7%	0.89
NB	1.7%	0.94
SB	1.2%	0.95
TOTAL	1.7%	0.97

#### Two-Hour Count Summaries

Interval Start	DILLON RD Eastbound				DILLON RD Westbound				MCCASLIN BLVD Northbound				MCCASLIN BLVD Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
11:00 AM	0	15	16	33	0	109	17	35	1	44	140	90	0	33	179	20	732	0
11:15 AM	0	25	24	41	0	82	24	44	1	55	149	94	0	34	156	19	748	0
11:30 AM	0	23	17	63	0	102	27	54	2	56	191	96	0	50	184	22	887	0
<b>11:45 AM</b>	<b>0</b>	<b>30</b>	<b>28</b>	<b>59</b>	<b>0</b>	<b>150</b>	<b>38</b>	<b>56</b>	<b>0</b>	<b>70</b>	<b>188</b>	<b>105</b>	<b>0</b>	<b>43</b>	<b>169</b>	<b>34</b>	<b>970</b>	3,337
12:00 PM	0	21	43	55	0	116	22	49	1	60	188	106	0	41	186	38	926	3,531
12:15 PM	1	27	22	55	0	164	35	46	1	55	186	93	0	43	193	24	945	3,728
12:30 PM	0	21	38	42	0	118	38	45	1	45	231	107	0	50	159	30	925	3,766
12:45 PM	0	27	25	47	1	120	33	40	0	63	196	116	1	44	204	32	949	3,745
Count Total	1	189	213	395	1	961	234	369	7	448	1,469	807	1	338	1,430	219	7,082	0
Peak Hour	1	99	131	211	0	548	133	196	3	230	793	411	0	177	707	126	3,766	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
11:00 AM	0	4	6	3	13	0	1	0	0	1	0	0	0	0	0
11:15 AM	2	4	9	7	22	0	0	0	1	1	0	2	0	0	2
11:30 AM	2	4	10	2	18	0	0	0	2	2	0	0	0	1	1
<b>11:45 AM</b>	<b>5</b>	<b>4</b>	<b>7</b>	<b>2</b>	<b>18</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>
12:00 PM	2	4	5	3	14	0	0	0	0	0	6	3	0	5	14
12:15 PM	3	3	5	7	18	0	0	0	0	0	3	2	2	2	9
12:30 PM	2	4	7	0	13	0	0	0	0	0	1	0	2	1	4
12:45 PM	1	4	3	3	11	0	0	0	0	0	1	2	1	1	5
Count Total	17	31	52	27	127	0	1	0	3	4	16	9	5	10	40
Peak Hour	12	15	24	12	63	0	0	0	0	0	15	5	4	8	32

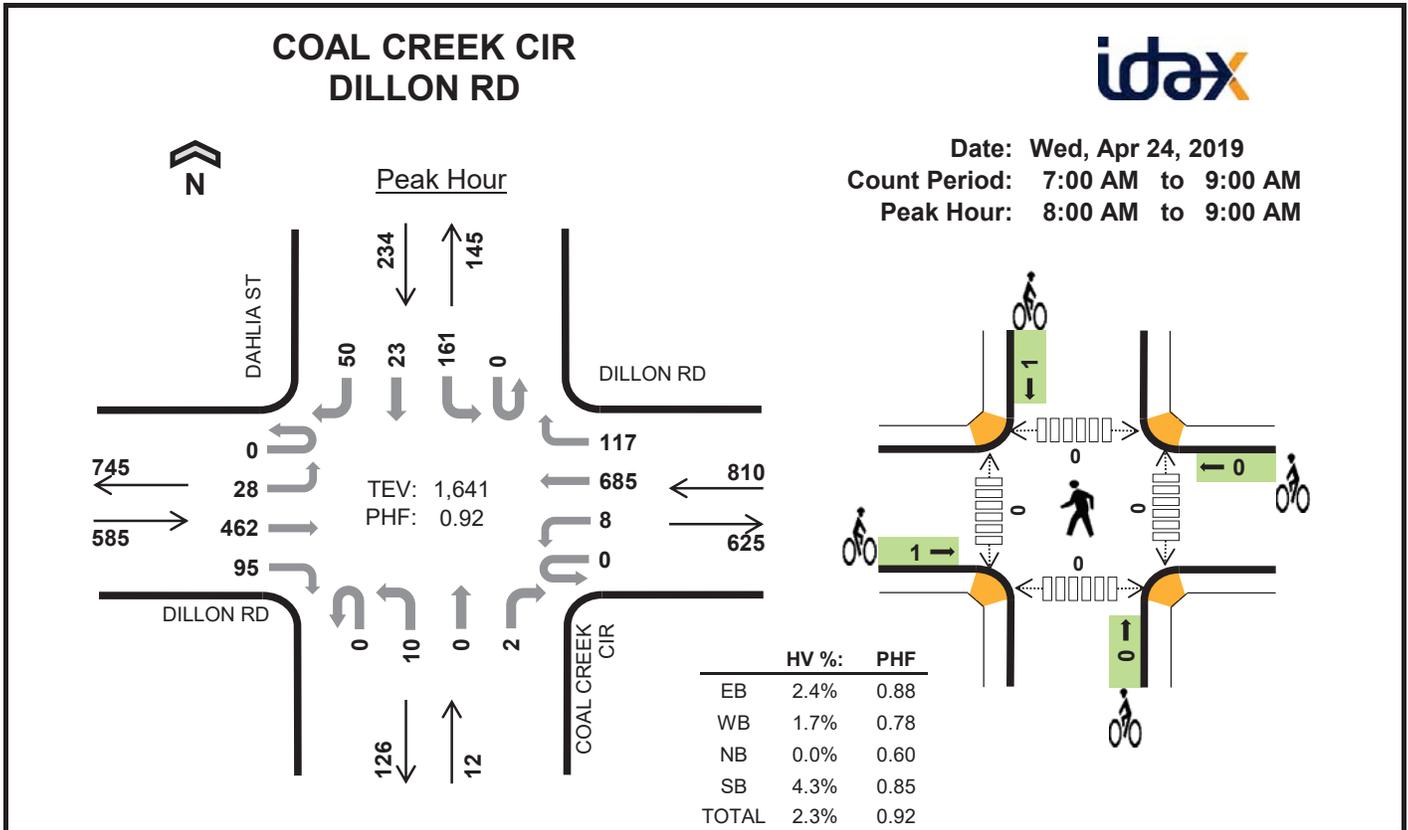


**Two-Hour Count Summaries**

Interval Start	DILLON RD Eastbound				DILLON RD Westbound				MCCASLIN BLVD Northbound				MCCASLIN BLVD Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	46	42	64	0	125	26	36	0	36	216	94	0	66	249	21	1,021	0
4:15 PM	1	22	26	53	0	122	22	32	2	47	211	118	0	44	248	23	971	0
4:30 PM	0	47	38	48	0	149	19	39	1	41	224	105	0	56	269	26	1,062	0
<b>4:45 PM</b>	<b>1</b>	<b>42</b>	<b>50</b>	<b>61</b>	<b>0</b>	<b>141</b>	<b>34</b>	<b>53</b>	<b>2</b>	<b>42</b>	<b>265</b>	<b>120</b>	<b>0</b>	<b>62</b>	<b>302</b>	<b>28</b>	<b>1,203</b>	4,257
5:00 PM	0	32	55	78	0	129	26	45	0	48	267	125	0	76	302	18	1,201	4,437
5:15 PM	0	29	43	66	0	146	32	55	0	43	240	102	0	62	292	29	1,139	4,605
5:30 PM	0	41	40	55	0	116	26	36	0	40	279	104	0	55	270	28	1,090	4,633
5:45 PM	0	42	28	43	1	143	18	46	0	43	214	115	0	74	242	26	1,035	4,465
Count Total	2	301	322	468	1	1,071	203	342	5	340	1,916	883	0	495	2,174	199	8,722	0
Peak Hour	1	144	188	260	0	532	118	189	2	173	1,051	451	0	255	1,166	103	4,633	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	5	6	3	14	0	0	0	0	0	0	1	2	0	3
4:15 PM	0	2	6	5	13	0	0	0	2	2	2	1	4	1	8
4:30 PM	1	1	3	3	8	0	0	0	0	0	4	4	1	0	9
<b>4:45 PM</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>7</b>
5:00 PM	1	1	3	3	8	0	0	0	0	0	3	5	2	2	12
5:15 PM	0	3	2	3	8	0	1	0	0	1	0	0	0	1	1
5:30 PM	1	1	3	1	6	0	0	0	1	1	0	0	0	1	1
5:45 PM	1	0	1	3	5	1	0	0	0	1	5	2	4	2	13
Count Total	6	14	25	25	70	1	1	0	3	5	16	15	14	9	54
Peak Hour	4	6	9	11	30	0	1	0	1	2	5	7	3	6	21



**Two-Hour Count Summaries**

Interval Start	DILLON RD Eastbound				DILLON RD Westbound				COAL CREEK CIR Northbound				DAHLIA ST Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	5	97	12	0	0	93	14	0	3	0	1	0	14	1	4	244	0
7:15 AM	0	4	107	14	0	0	113	22	0	1	0	1	0	30	2	16	310	0
7:30 AM	0	5	105	12	1	0	190	27	0	3	0	0	0	26	3	14	386	0
7:45 AM	0	7	105	20	0	1	172	38	0	2	0	1	0	31	1	13	391	1,331
<b>8:00 AM</b>	<b>0</b>	<b>6</b>	<b>95</b>	<b>29</b>	<b>0</b>	<b>3</b>	<b>153</b>	<b>19</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>33</b>	<b>9</b>	<b>17</b>	<b>368</b>	<b>1,455</b>
8:15 AM	0	3	123	25	0	2	162	28	0	5	0	0	0	53	6	10	417	1,562
<b>8:30 AM</b>	<b>0</b>	<b>5</b>	<b>113</b>	<b>19</b>	<b>0</b>	<b>1</b>	<b>218</b>	<b>39</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>33</b>	<b>4</b>	<b>11</b>	<b>445</b>	<b>1,621</b>
8:45 AM	0	14	131	22	0	2	152	31	0	0	0	1	0	42	4	12	411	1,641
Count Total	0	49	876	153	1	9	1,253	218	0	19	0	5	0	262	30	97	2,972	0
<b>Peak Hour</b>	<b>0</b>	<b>28</b>	<b>462</b>	<b>95</b>	<b>0</b>	<b>8</b>	<b>685</b>	<b>117</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>161</b>	<b>23</b>	<b>50</b>	<b>1,641</b>	<b>0</b>

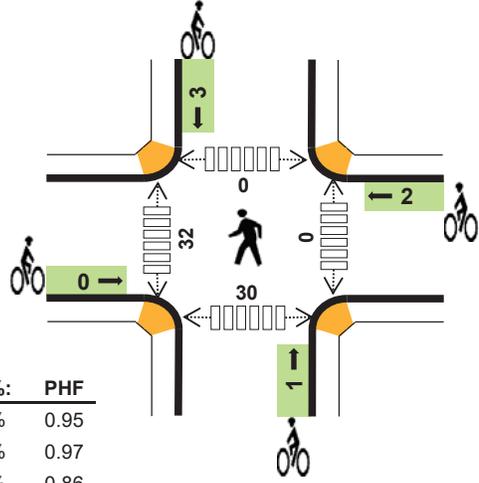
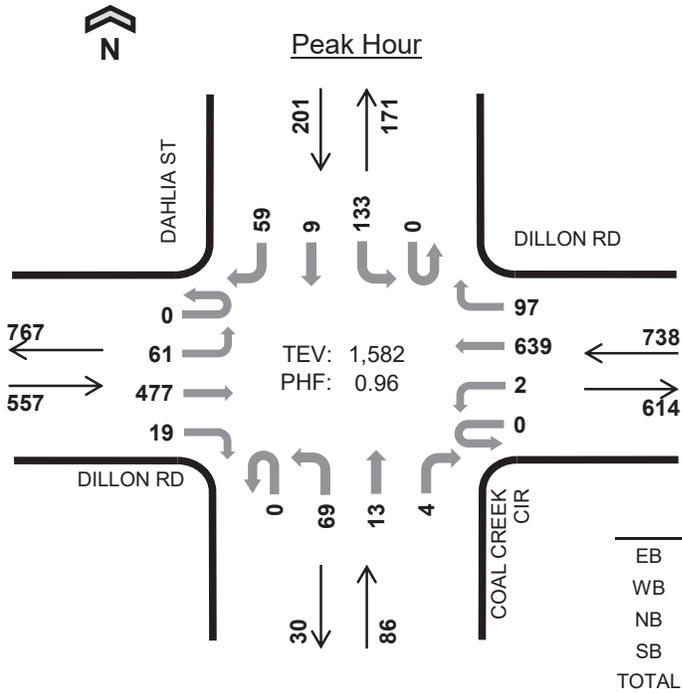
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	5	1	0	0	6	0	0	0	0	0	0	0	0	1	1
7:15 AM	0	4	0	2	6	0	0	0	0	0	0	1	0	1	2
7:30 AM	0	1	0	0	1	0	0	1	1	2	0	0	0	0	0
7:45 AM	1	2	1	2	6	0	0	0	0	0	0	0	0	0	0
<b>8:00 AM</b>	<b>4</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
8:15 AM	6	4	0	7	17	1	0	0	0	1	0	0	0	0	0
<b>8:30 AM</b>	<b>1</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
8:45 AM	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0
Count Total	20	22	1	14	57	1	0	1	2	4	0	1	0	2	3
<b>Peak Hour</b>	<b>14</b>	<b>14</b>	<b>0</b>	<b>10</b>	<b>38</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

### COAL CREEK CIR DILLON RD



Date: Wed, Apr 24, 2019  
 Count Period: 11:00 AM to 1:00 PM  
 Peak Hour: 11:30 AM to 12:30 PM



	HV %:	PHF
EB	2.2%	0.95
WB	1.6%	0.97
NB	2.3%	0.86
SB	4.0%	0.84
TOTAL	2.1%	0.96

#### Two-Hour Count Summaries

Interval Start	DILLON RD Eastbound				DILLON RD Westbound				COAL CREEK CIR Northbound				DAHLIA ST Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
11:00 AM	0	15	106	1	0	1	124	20	0	6	3	2	0	34	2	17	331	0
11:15 AM	0	16	109	8	0	2	134	27	0	5	1	1	0	36	3	10	352	0
11:30 AM	0	15	116	6	0	1	159	24	0	18	3	0	0	39	3	18	402	0
11:45 AM	0	11	133	3	0	1	162	24	0	17	1	2	0	37	2	19	412	1,497
12:00 PM	0	20	121	4	0	0	159	17	0	17	6	2	0	32	1	10	389	1,555
12:15 PM	0	15	107	6	0	0	159	32	0	17	3	0	0	25	3	12	379	1,582
12:30 PM	0	12	151	18	0	0	142	16	0	9	2	3	0	29	6	13	401	1,581
12:45 PM	0	10	136	17	0	1	141	24	0	7	2	0	0	30	3	9	380	1,549
Count Total	0	114	979	63	0	6	1,180	184	0	96	21	10	0	262	23	108	3,046	0
Peak Hour	0	61	477	19	0	2	639	97	0	69	13	4	0	133	9	59	1,582	0

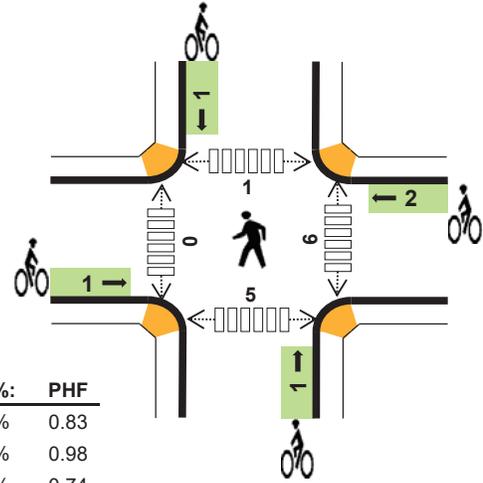
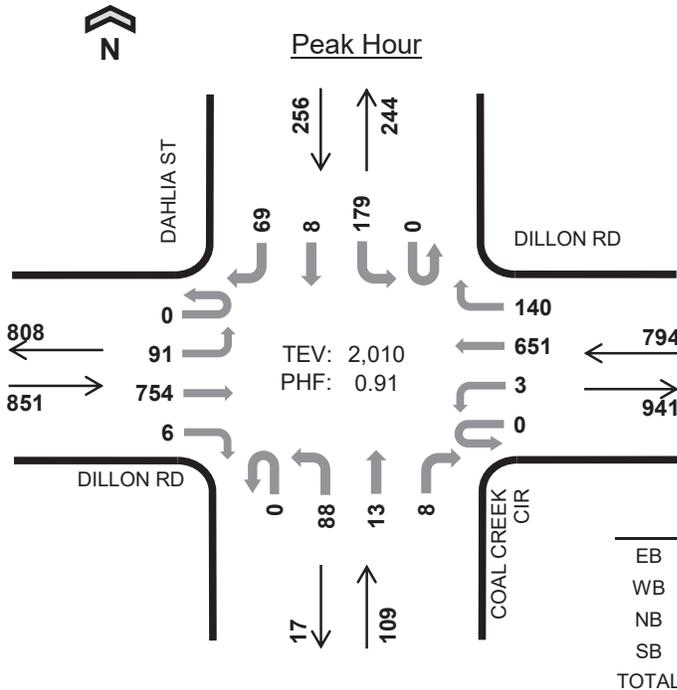
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
11:00 AM	0	4	0	1	5	0	0	0	0	0	0	0	0	0	0
11:15 AM	4	3	0	0	7	0	0	0	2	2	0	0	0	0	0
11:30 AM	2	2	1	3	8	0	0	0	3	3	0	1	0	0	1
11:45 AM	6	5	0	2	13	0	0	0	0	0	0	0	0	0	0
12:00 PM	3	3	0	1	7	0	1	1	0	2	0	1	0	0	1
12:15 PM	1	2	1	2	6	0	1	0	0	1	0	30	0	30	60
12:30 PM	4	1	1	1	7	0	0	0	1	1	1	1	0	1	3
12:45 PM	1	1	0	1	3	0	0	1	0	1	21	1	26	0	48
Count Total	21	21	3	11	56	0	2	2	6	10	22	34	26	31	113
Peak Hour	12	12	2	8	34	0	2	1	3	6	0	32	0	30	62

### COAL CREEK CIR DILLON RD



Date: Wed, Apr 24, 2019  
 Count Period: 4:00 PM to 6:00 PM  
 Peak Hour: 4:45 PM to 5:45 PM



	HV %:	PHF
EB	0.2%	0.83
WB	0.5%	0.98
NB	0.0%	0.74
SB	0.0%	0.98
TOTAL	0.3%	0.91

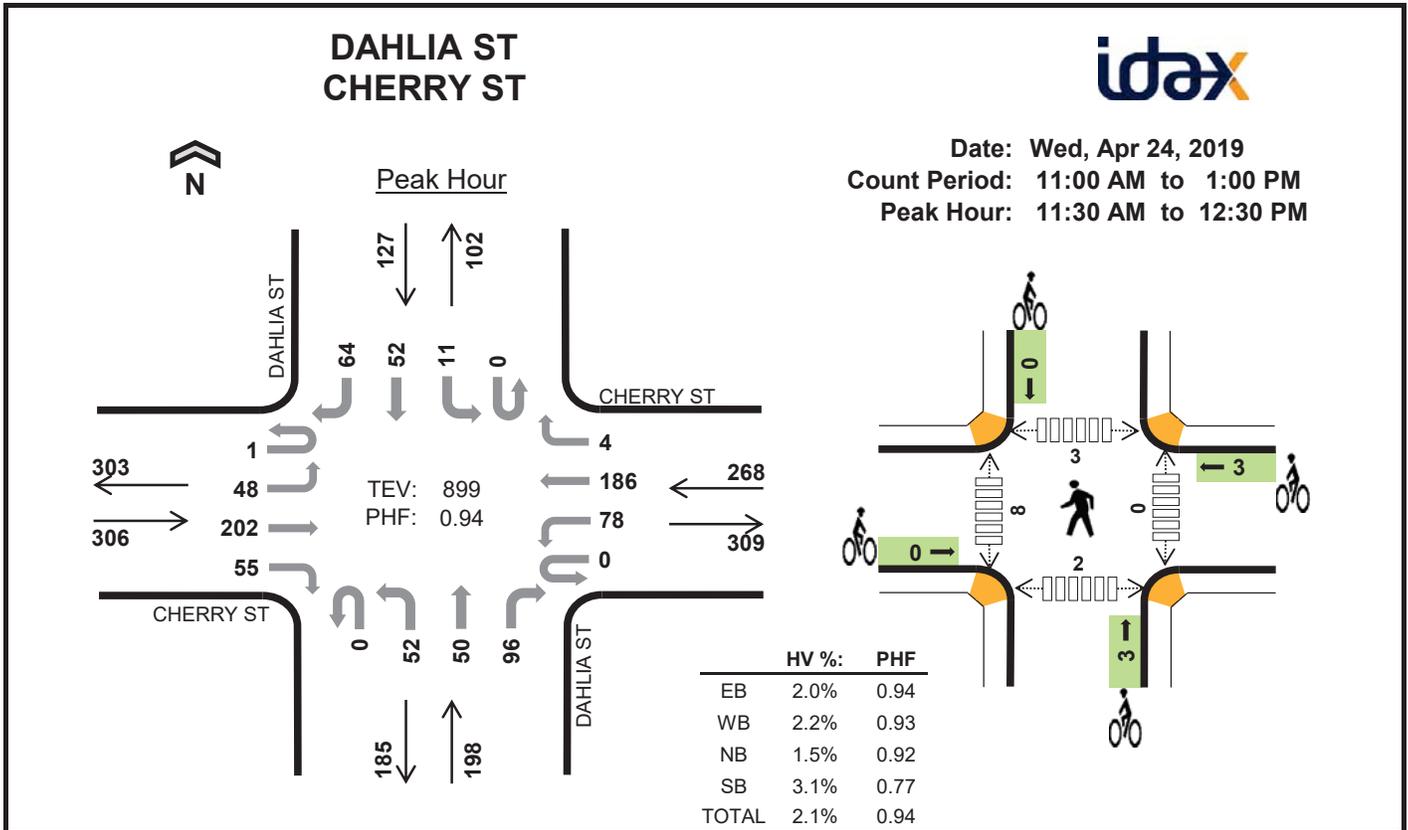
#### Two-Hour Count Summaries

Interval Start	DILLON RD Eastbound				DILLON RD Westbound				COAL CREEK CIR Northbound				DAHLIA ST Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	15	177	1	1	0	152	27	0	16	2	1	0	34	3	11	440	0
4:15 PM	0	21	152	2	0	2	131	36	0	18	1	0	0	47	2	10	422	0
4:30 PM	0	16	170	0	0	0	148	34	0	18	5	3	0	44	1	10	449	0
4:45 PM	0	28	181	1	0	1	154	35	0	30	7	0	0	45	1	19	502	1,813
5:00 PM	0	29	228	0	0	0	165	38	0	22	3	2	0	46	1	18	552	1,925
5:15 PM	0	10	163	4	0	1	166	33	0	22	3	4	0	43	3	16	468	1,971
5:30 PM	0	24	182	1	0	1	166	34	0	14	0	2	0	45	3	16	488	2,010
5:45 PM	0	23	162	4	0	0	113	25	0	9	5	1	0	49	1	17	409	1,917
Count Total	0	166	1,415	13	1	5	1,195	262	0	149	26	13	0	353	15	117	3,730	0
Peak Hour	0	91	754	6	0	3	651	140	0	88	13	8	0	179	8	69	2,010	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	3	3	1	2	9	0	0	0	1	1	0	1	0	0	1
4:15 PM	5	1	0	2	8	0	0	1	0	1	0	0	0	0	0
4:30 PM	1	2	0	1	4	0	0	1	0	1	2	0	0	1	3
4:45 PM	0	0	0	0	0	0	0	0	0	0	4	0	0	1	5
5:00 PM	1	1	0	0	2	0	1	0	0	1	0	0	0	2	2
5:15 PM	1	3	0	0	4	0	1	0	0	1	0	0	1	1	2
5:30 PM	0	0	0	0	0	1	0	1	1	3	2	0	0	1	3
5:45 PM	0	0	1	0	1	0	0	0	1	1	0	1	0	1	2
Count Total	11	10	2	5	28	1	2	3	3	9	8	2	1	7	18
Peak Hour	2	4	0	0	6	1	2	1	1	5	6	0	1	5	12





**Two-Hour Count Summaries**

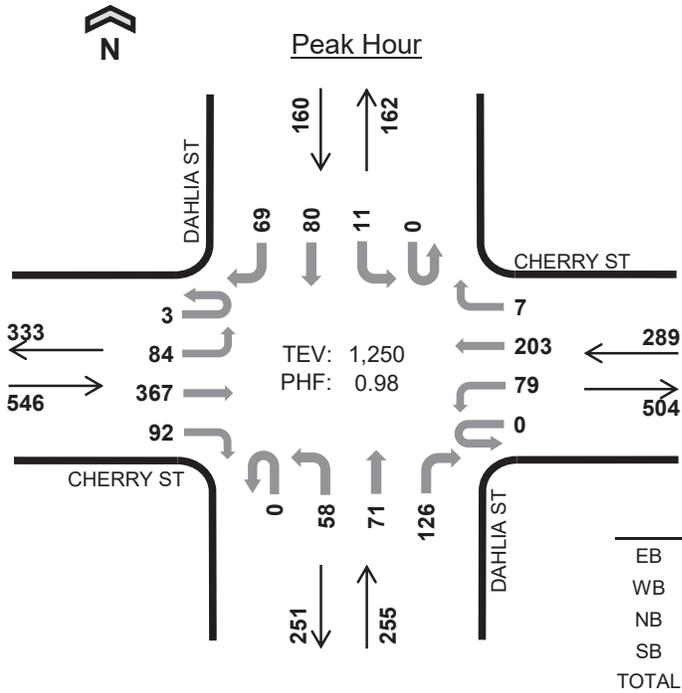
Interval Start	CHERRY ST Eastbound				CHERRY ST Westbound				DAHILIA ST Northbound				DAHILIA ST Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
11:00 AM	0	7	49	5	0	28	51	1	0	6	7	17	0	4	15	18	208	0
11:15 AM	1	20	38	15	0	13	51	3	0	9	6	20	0	1	13	12	202	0
11:30 AM	0	11	46	18	0	22	46	4	0	13	15	19	0	5	22	14	235	0
11:45 AM	1	9	49	12	0	26	39	0	0	14	11	27	0	2	9	16	215	860
12:00 PM	0	15	53	13	0	19	53	0	0	14	14	26	0	1	13	18	239	891
12:15 PM	0	13	54	12	0	11	48	0	0	11	10	24	0	3	8	16	210	899
12:30 PM	0	12	56	6	0	12	49	1	0	11	3	13	0	1	13	13	190	854
12:45 PM	1	9	62	14	0	20	58	1	0	14	10	17	0	3	10	19	238	877
Count Total	3	96	407	95	0	151	395	10	0	92	76	163	0	20	103	126	1,737	0
Peak Hour	1	48	202	55	0	78	186	4	0	52	50	96	0	11	52	64	899	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

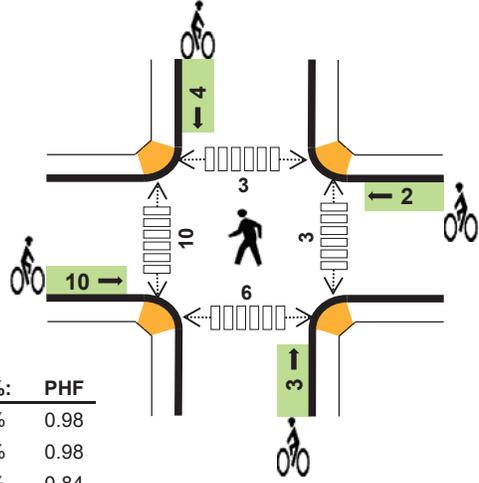
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
11:00 AM	1	0	0	2	3	0	0	1	1	2	2	0	2	1	5
11:15 AM	0	0	1	0	1	0	1	1	2	4	0	3	3	1	7
11:30 AM	0	0	1	3	4	0	1	0	0	1	0	1	0	0	1
11:45 AM	3	0	0	0	3	0	0	0	0	0	0	0	0	1	1
12:00 PM	3	1	1	1	6	0	2	2	0	4	0	4	2	1	7
12:15 PM	0	5	1	0	6	0	0	1	0	1	0	3	1	0	4
12:30 PM	1	0	0	0	1	2	1	0	1	4	0	0	1	0	1
12:45 PM	0	0	0	0	0	3	0	1	0	4	0	1	1	2	4
Count Total	8	6	4	6	24	5	5	6	4	20	2	12	10	6	30
Peak Hour	6	6	3	4	19	0	3	3	0	6	0	8	3	2	13



### DAHLIA ST CHERRY ST



Date: Wed, Apr 24, 2019  
Count Period: 4:00 PM to 6:00 PM  
Peak Hour: 5:00 PM to 6:00 PM



	HV %:	PHF
EB	0.4%	0.98
WB	0.3%	0.98
NB	0.0%	0.84
SB	0.0%	0.95
TOTAL	0.2%	0.98

#### Two-Hour Count Summaries

Interval Start	CHERRY ST Eastbound				CHERRY ST Westbound				DAHLIA ST Northbound				DAHLIA ST Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	11	73	16	0	14	44	5	0	11	12	24	0	0	15	9	234	0
4:15 PM	0	18	73	20	0	25	55	5	0	9	16	35	0	5	15	17	293	0
4:30 PM	0	20	75	17	0	21	67	3	0	6	16	25	0	7	18	12	287	0
4:45 PM	0	17	80	23	0	28	32	6	0	12	18	39	0	4	21	11	291	1,105
<b>5:00 PM</b>	<b>0</b>	<b>20</b>	<b>92</b>	<b>20</b>	<b>0</b>	<b>21</b>	<b>48</b>	<b>0</b>	<b>0</b>	<b>15</b>	<b>23</b>	<b>38</b>	<b>0</b>	<b>1</b>	<b>24</b>	<b>15</b>	<b>317</b>	<b>1,188</b>
5:15 PM	0	18	91	25	0	21	51	2	0	10	19	25	0	2	20	16	300	1,195
5:30 PM	0	21	96	23	0	21	49	3	0	15	14	31	0	3	18	21	315	1,223
<b>5:45 PM</b>	<b>3</b>	<b>25</b>	<b>88</b>	<b>24</b>	<b>0</b>	<b>16</b>	<b>55</b>	<b>2</b>	<b>0</b>	<b>18</b>	<b>15</b>	<b>32</b>	<b>0</b>	<b>5</b>	<b>18</b>	<b>17</b>	<b>318</b>	<b>1,250</b>
Count Total	3	150	668	168	0	167	401	26	0	96	133	249	0	27	149	118	2,355	0
<b>Peak Hour</b>	<b>3</b>	<b>84</b>	<b>367</b>	<b>92</b>	<b>0</b>	<b>79</b>	<b>203</b>	<b>7</b>	<b>0</b>	<b>58</b>	<b>71</b>	<b>126</b>	<b>0</b>	<b>11</b>	<b>80</b>	<b>69</b>	<b>1,250</b>	<b>0</b>

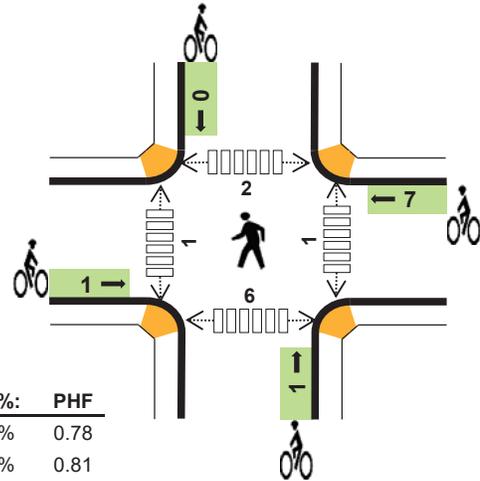
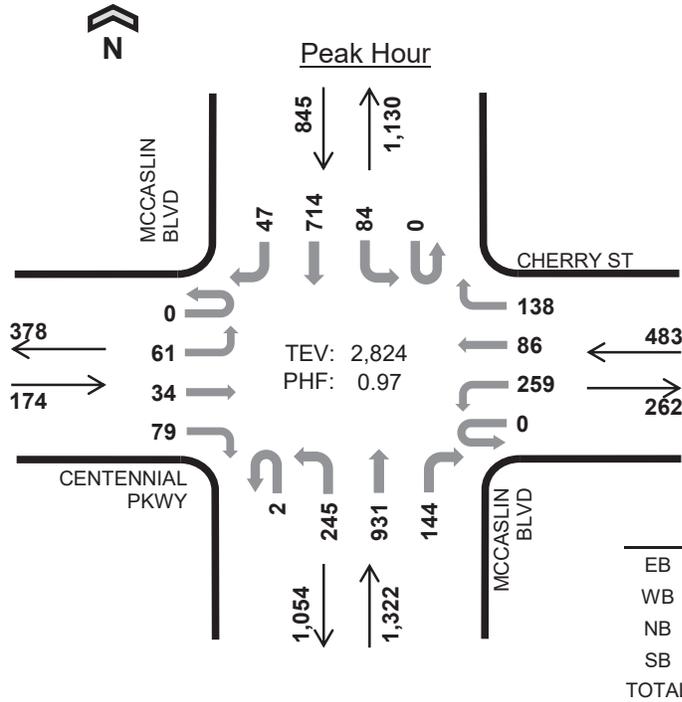
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	1	0	0	1	2	1	0	0	0	1	1	1	0	2	4
4:15 PM	1	0	0	1	2	0	0	1	1	2	2	0	3	3	8
4:30 PM	1	0	0	0	1	3	1	1	1	6	0	3	0	0	3
4:45 PM	0	0	0	0	0	0	3	0	0	3	1	1	0	3	5
<b>5:00 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>4</b>	<b>9</b>
5:15 PM	0	0	0	0	0	2	1	0	0	3	1	0	0	1	2
5:30 PM	0	1	0	0	1	4	0	1	0	5	1	5	2	1	9
<b>5:45 PM</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>9</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>
Count Total	5	1	0	2	8	14	6	5	6	31	7	15	6	14	42
<b>Peak Hour</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>10</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>19</b>	<b>3</b>	<b>10</b>	<b>3</b>	<b>6</b>	<b>22</b>

# MCCASLIN BLVD CENTENNIAL PKWY



Date: Wed, Apr 24, 2019  
 Count Period: 7:00 AM to 9:00 AM  
 Peak Hour: 7:45 AM to 8:45 AM



	HV %:	PHF
EB	3.4%	0.78
WB	0.6%	0.81
NB	1.7%	0.94
SB	1.5%	0.95
TOTAL	1.6%	0.97

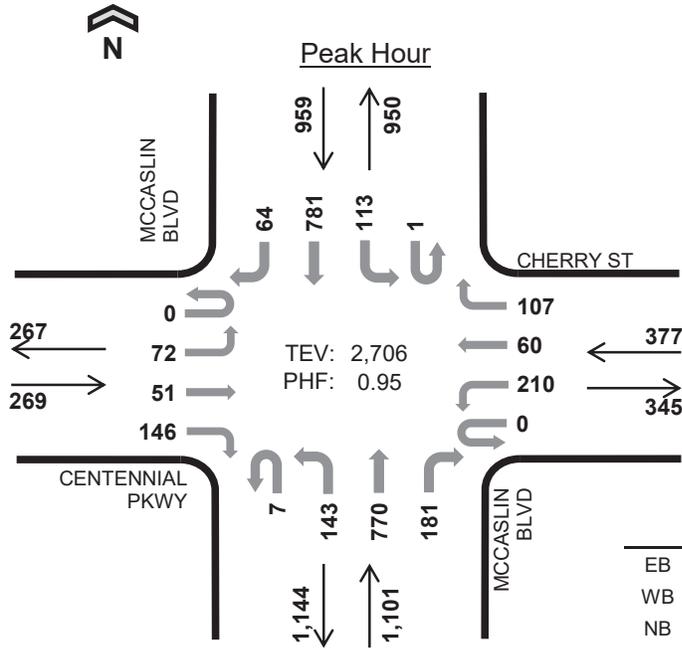
## Two-Hour Count Summaries

Interval Start	CENTENNIAL PKWY				CHERRY ST				MCCASLIN BLVD				MCCASLIN BLVD				15-min Total	Rolling One Hour
	Eastbound		Westbound		Westbound		Northbound		Southbound		Southbound		Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	3	6	20	0	37	12	20	1	36	135	17	0	14	111	8	420	0
7:15 AM	0	6	2	20	0	51	10	21	1	45	119	29	0	7	169	3	483	0
7:30 AM	0	6	1	21	0	67	23	35	0	51	217	29	0	16	141	2	609	0
7:45 AM	0	7	10	19	0	63	15	33	0	64	239	48	0	21	191	8	718	2,230
8:00 AM	0	17	4	18	0	82	25	42	0	71	219	29	0	20	190	12	729	2,539
8:15 AM	0	13	12	18	0	60	26	29	1	53	218	28	0	17	181	18	674	2,730
8:30 AM	0	24	8	24	0	54	20	34	1	57	255	39	0	26	152	9	703	2,824
8:45 AM	0	17	9	20	0	36	16	35	0	71	206	34	0	30	176	15	665	2,771
Count Total	0	93	52	160	0	450	147	249	4	448	1,608	253	0	151	1,311	75	5,001	0
Peak Hour	0	61	34	79	0	259	86	138	2	245	931	144	0	84	714	47	2,824	0

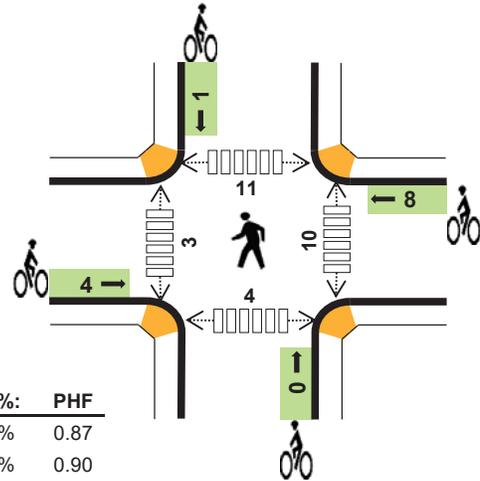
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	4	6	10	0	0	0	0	0	1	0	0	1	2
7:15 AM	1	0	4	1	6	0	1	0	0	1	1	0	0	0	1
7:30 AM	0	1	8	2	11	0	1	0	0	1	1	1	0	0	2
7:45 AM	2	2	8	5	17	0	0	0	0	0	0	0	0	0	0
8:00 AM	2	1	4	3	10	1	4	1	0	6	0	1	1	1	3
8:15 AM	1	0	3	4	8	0	1	0	0	1	1	0	0	4	5
8:30 AM	1	0	7	1	9	0	2	0	0	2	0	0	1	1	2
8:45 AM	1	1	2	3	7	0	3	1	0	4	2	0	2	0	4
Count Total	8	5	40	25	78	1	12	2	0	15	6	2	4	7	19
Peak Hour	6	3	22	13	44	1	7	1	0	9	1	1	2	6	10

# MCCASLIN BLVD CENTENNIAL PKWY



Date: Wed, Apr 24, 2019  
Count Period: 11:00 AM to 1:00 PM  
Peak Hour: 12:00 PM to 1:00 PM



	HV %:	PHF
EB	1.5%	0.87
WB	1.6%	0.90
NB	0.7%	0.96
SB	0.5%	0.90
TOTAL	0.8%	0.95

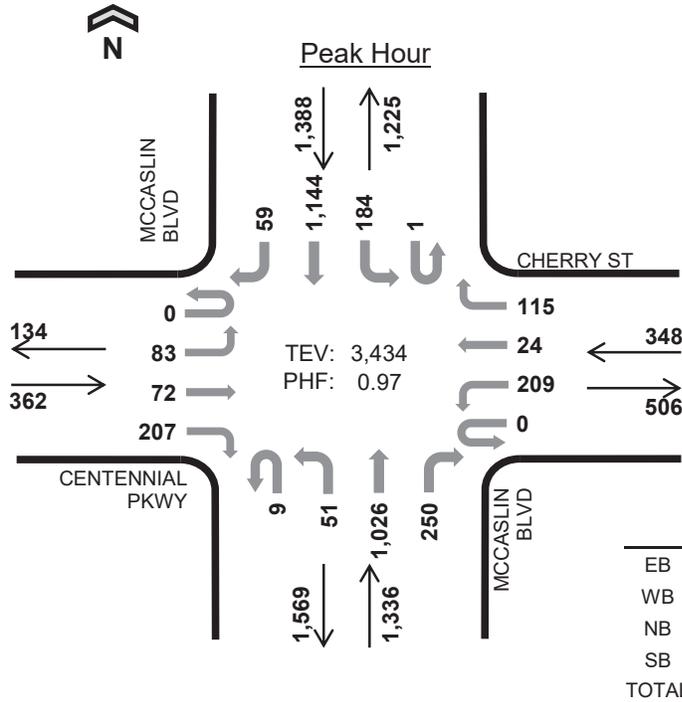
## Two-Hour Count Summaries

Interval Start	CENTENNIAL PKWY				CHERRY ST				MCCASLIN BLVD				MCCASLIN BLVD				15-min Total	Rolling One Hour
	Eastbound		Westbound		Westbound		Northbound		Southbound		Southbound		Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
11:00 AM	0	9	10	31	0	48	13	27	2	15	145	35	0	23	166	13	537	0
11:15 AM	0	15	11	25	0	45	10	23	2	21	166	40	0	31	155	20	564	0
11:30 AM	0	6	15	36	0	47	7	18	2	22	203	36	0	30	200	11	633	0
11:45 AM	0	15	10	38	0	44	10	28	2	32	221	38	0	29	179	13	659	2,393
<b>12:00 PM</b>	<b>0</b>	<b>20</b>	<b>13</b>	<b>44</b>	<b>0</b>	<b>67</b>	<b>14</b>	<b>24</b>	<b>2</b>	<b>31</b>	<b>180</b>	<b>50</b>	<b>1</b>	<b>32</b>	<b>212</b>	<b>20</b>	<b>710</b>	<b>2,566</b>
12:15 PM	0	22	16	39	0	42	11	25	1	42	194	43	0	25	194	18	672	2,674
12:30 PM	0	14	9	29	0	49	14	33	3	44	197	43	0	22	175	15	647	2,688
12:45 PM	0	16	13	34	0	52	21	25	1	26	199	45	0	34	200	11	677	2,706
Count Total	0	117	97	276	0	394	100	203	15	233	1,505	330	1	226	1,481	121	5,099	0
<b>Peak Hour</b>	<b>0</b>	<b>72</b>	<b>51</b>	<b>146</b>	<b>0</b>	<b>210</b>	<b>60</b>	<b>107</b>	<b>7</b>	<b>143</b>	<b>770</b>	<b>181</b>	<b>1</b>	<b>113</b>	<b>781</b>	<b>64</b>	<b>2,706</b>	<b>0</b>

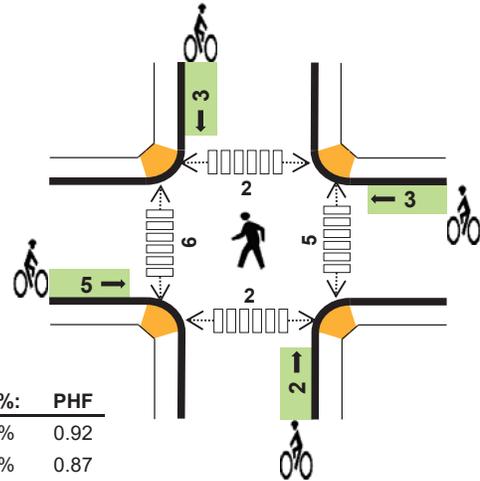
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
11:00 AM	1	2	2	3	8	0	0	0	0	0	0	0	1	0	1
11:15 AM	2	2	2	5	11	0	2	0	2	4	1	2	2	0	5
11:30 AM	3	0	5	1	9	1	0	0	2	3	1	6	1	5	13
11:45 AM	1	0	5	3	9	0	1	1	0	2	1	2	1	2	6
<b>12:00 PM</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>8</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>5</b>	<b>1</b>	<b>7</b>	<b>2</b>	<b>15</b>
12:15 PM	0	3	1	2	6	0	2	0	0	2	0	1	1	2	4
12:30 PM	0	0	3	1	4	3	2	0	0	5	4	0	2	0	6
12:45 PM	1	1	1	2	5	0	1	0	1	2	1	1	1	0	3
Count Total	11	10	22	17	60	5	11	1	5	22	13	13	16	11	53
<b>Peak Hour</b>	<b>4</b>	<b>6</b>	<b>8</b>	<b>5</b>	<b>23</b>	<b>4</b>	<b>8</b>	<b>0</b>	<b>1</b>	<b>13</b>	<b>10</b>	<b>3</b>	<b>11</b>	<b>4</b>	<b>28</b>

# MCCASLIN BLVD CENTENNIAL PKWY



Date: Wed, Apr 24, 2019  
 Count Period: 4:00 PM to 6:00 PM  
 Peak Hour: 4:45 PM to 5:45 PM



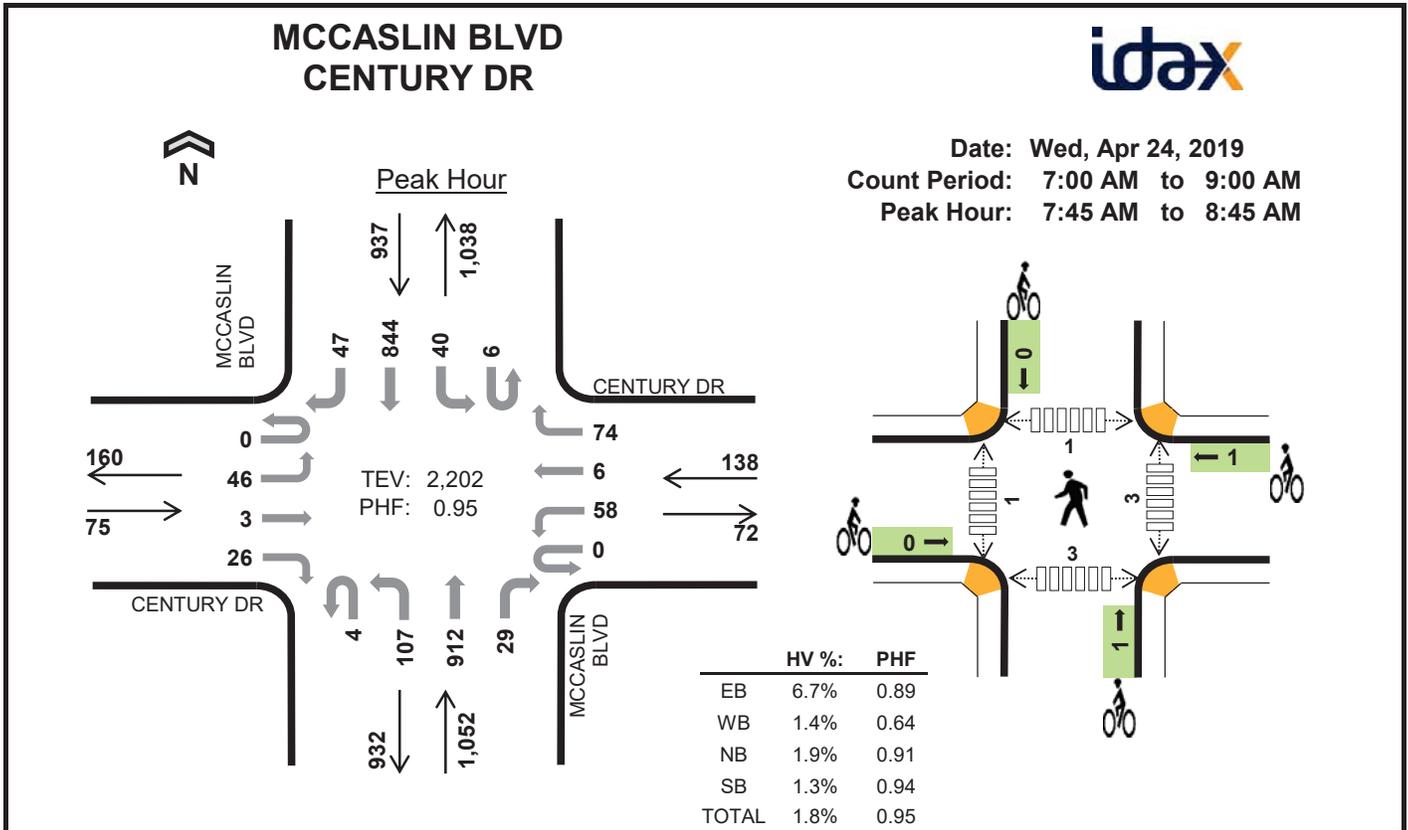
	HV %:	PHF
EB	0.6%	0.92
WB	0.3%	0.87
NB	0.7%	0.98
SB	0.6%	0.94
TOTAL	0.6%	0.97

## Two-Hour Count Summaries

Interval Start	CENTENNIAL PKWY				CHERRY ST				MCCASLIN BLVD				MCCASLIN BLVD				15-min Total	Rolling One Hour
	Eastbound		Westbound		Westbound		Northbound		Southbound		Southbound		Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	11	20	53	0	51	8	17	3	9	226	57	0	36	236	7	734	0
4:15 PM	0	12	15	29	0	46	11	23	3	11	169	57	0	33	244	13	666	0
4:30 PM	0	27	16	63	0	60	14	26	1	12	237	63	0	38	259	17	833	0
4:45 PM	0	18	18	55	0	41	7	21	4	12	248	67	0	41	298	13	843	3,076
5:00 PM	0	21	17	60	0	63	6	30	2	15	267	56	0	48	280	18	883	3,225
5:15 PM	0	24	20	51	0	47	3	30	1	13	243	67	0	39	315	14	867	3,426
5:30 PM	0	20	17	41	0	58	8	34	2	11	268	60	1	56	251	14	841	3,434
5:45 PM	0	23	18	33	0	50	8	24	0	9	219	69	0	36	303	10	802	3,393
Count Total	0	156	141	385	0	416	65	205	16	92	1,877	496	1	327	2,186	106	6,469	0
Peak Hour	0	83	72	207	0	209	24	115	9	51	1,026	250	1	184	1,144	59	3,434	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	1	3	4	8	0	0	0	1	1	0	0	0	1	1
4:15 PM	0	1	3	6	10	1	0	0	2	3	3	0	0	3	6
4:30 PM	2	0	2	5	9	1	2	1	1	5	3	0	0	3	6
4:45 PM	1	0	2	2	5	0	1	0	1	2	2	3	1	0	6
5:00 PM	0	0	2	3	5	0	1	0	0	1	0	2	0	2	4
5:15 PM	0	0	3	3	6	2	1	2	0	5	1	1	1	0	3
5:30 PM	1	1	2	1	5	3	0	0	2	5	2	0	0	0	2
5:45 PM	0	0	2	2	4	1	2	0	2	5	4	2	2	4	12
Count Total	4	3	19	26	52	8	7	3	9	27	15	8	4	13	40
Peak Hour	2	1	9	9	21	5	3	2	3	13	5	6	2	2	15

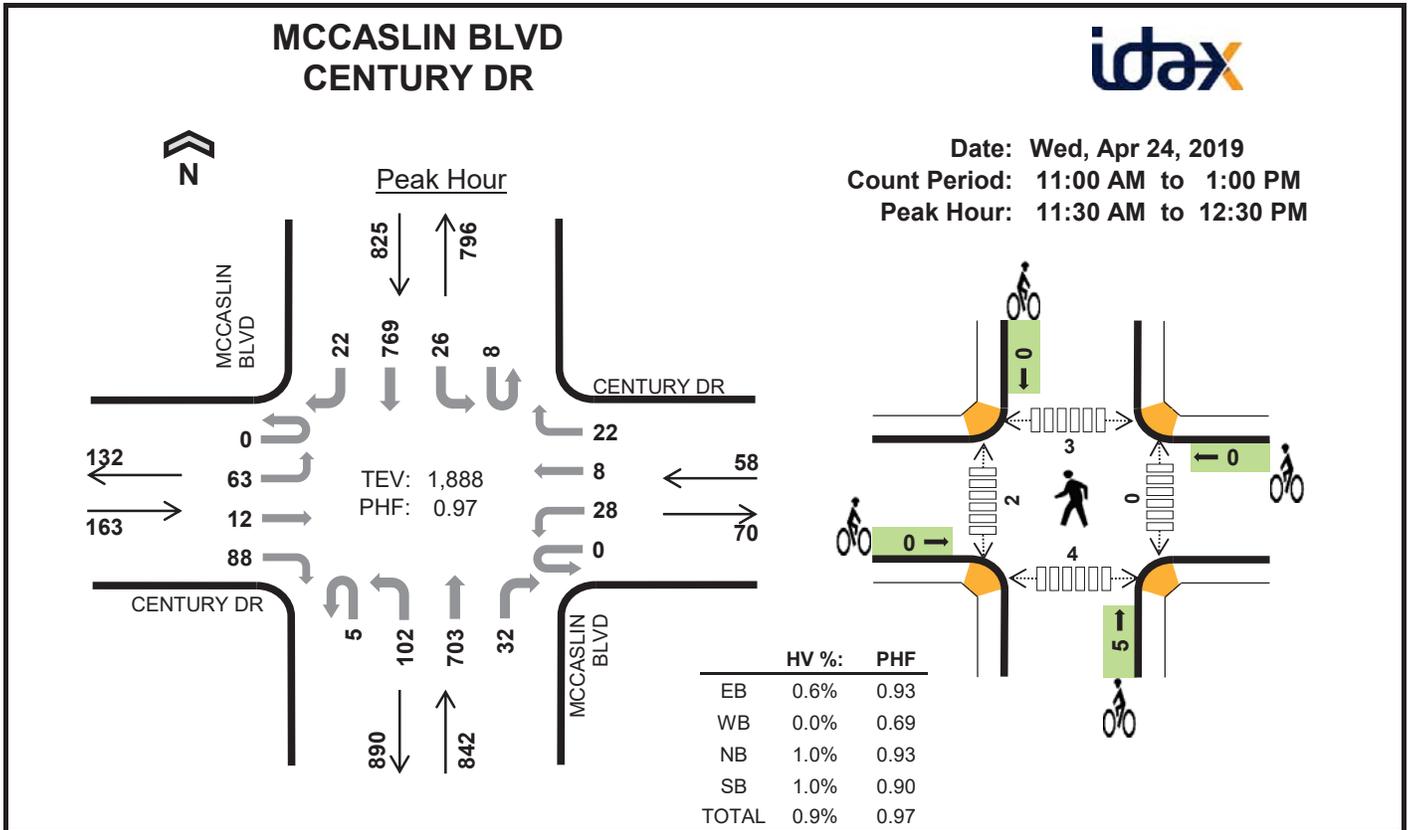


**Two-Hour Count Summaries**

Interval Start	CENTURY DR Eastbound				CENTURY DR Westbound				MCCASLIN BLVD Northbound				MCCASLIN BLVD Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	6	1	3	0	11	1	10	2	21	131	0	0	2	128	10	326	0
7:15 AM	0	10	1	3	0	7	2	11	6	13	121	1	2	3	175	4	359	0
7:30 AM	0	7	0	6	0	14	1	4	4	15	224	5	1	5	168	4	458	0
7:45 AM	0	10	3	6	0	18	4	15	0	25	229	5	1	19	206	11	552	1,695
8:00 AM	0	14	0	7	0	24	0	30	0	24	223	9	2	5	226	16	580	1,949
8:15 AM	0	11	0	7	0	9	2	18	3	27	214	5	1	11	210	10	528	2,118
8:30 AM	0	11	0	6	0	7	0	11	1	31	246	10	2	5	202	10	542	2,202
8:45 AM	0	4	1	8	0	8	1	17	1	26	200	5	0	6	205	14	496	2,146
Count Total	0	73	6	46	0	98	11	116	17	182	1,588	40	9	56	1,520	79	3,841	0
Peak Hour	0	46	3	26	0	58	6	74	4	107	912	29	6	40	844	47	2,202	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	1	4	6	11	0	0	0	0	0	1	0	0	0	1
7:15 AM	1	0	3	1	5	0	0	0	0	0	1	0	1	0	2
7:30 AM	0	0	5	2	7	0	0	1	1	2	0	1	1	1	3
7:45 AM	2	1	7	3	13	0	0	0	0	0	0	0	0	0	0
8:00 AM	1	0	5	5	11	0	1	1	0	2	1	0	0	1	2
8:15 AM	2	1	1	2	6	0	0	0	0	0	2	0	1	0	3
8:30 AM	0	0	7	2	9	0	0	0	0	0	0	1	0	2	3
8:45 AM	1	0	2	1	4	0	0	0	0	0	0	0	0	1	1
Count Total	7	3	34	22	66	0	1	2	1	4	5	2	3	5	15
Peak Hour	5	2	20	12	39	0	1	1	0	2	3	1	1	3	8



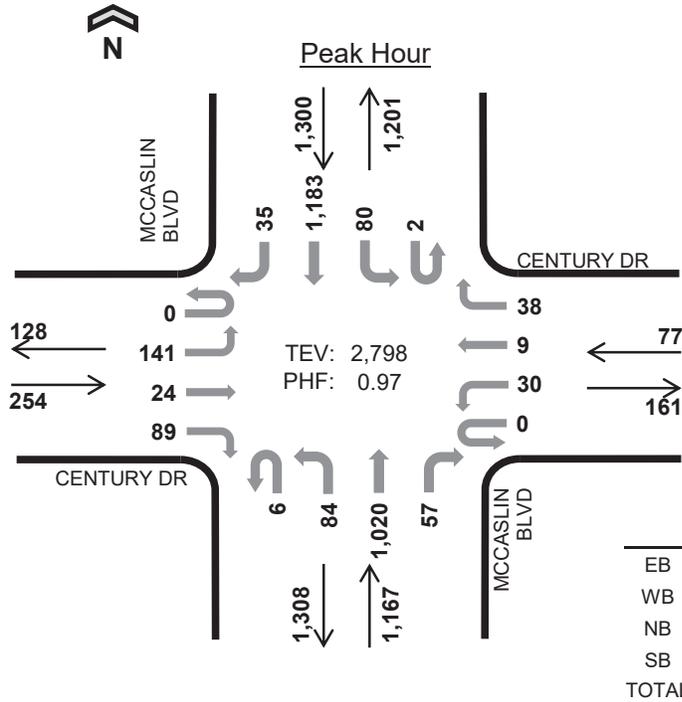
#### Two-Hour Count Summaries

Interval Start	CENTURY DR Eastbound				CENTURY DR Westbound				MCCASLIN BLVD Northbound				MCCASLIN BLVD Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
11:00 AM	0	13	1	11	0	9	1	10	3	20	131	5	1	3	179	11	398	0
11:15 AM	0	20	5	9	0	7	2	4	7	23	138	7	1	7	184	2	416	0
<b>11:30 AM</b>	<b>0</b>	<b>12</b>	<b>3</b>	<b>28</b>	<b>0</b>	<b>4</b>	<b>1</b>	<b>8</b>	<b>3</b>	<b>29</b>	<b>167</b>	<b>6</b>	<b>3</b>	<b>8</b>	<b>213</b>	<b>4</b>	<b>489</b>	<b>0</b>
11:45 AM	0	19	5	18	0	5	5	6	0	28	178	9	0	1	179	9	462	1,765
12:00 PM	0	17	3	24	0	13	1	7	2	21	167	6	3	8	198	6	476	1,843
12:15 PM	0	15	1	18	0	6	1	1	0	24	191	11	2	9	179	3	461	1,888
12:30 PM	0	19	4	13	0	10	0	5	3	25	168	15	1	6	157	5	431	1,830
12:45 PM	0	16	2	20	0	10	1	6	3	31	176	9	2	10	189	10	485	1,853
Count Total	0	131	24	141	0	64	12	47	21	201	1,316	68	13	52	1,478	50	3,618	0
<b>Peak Hour</b>	<b>0</b>	<b>63</b>	<b>12</b>	<b>88</b>	<b>0</b>	<b>28</b>	<b>8</b>	<b>22</b>	<b>5</b>	<b>102</b>	<b>703</b>	<b>32</b>	<b>8</b>	<b>26</b>	<b>769</b>	<b>22</b>	<b>1,888</b>	<b>0</b>

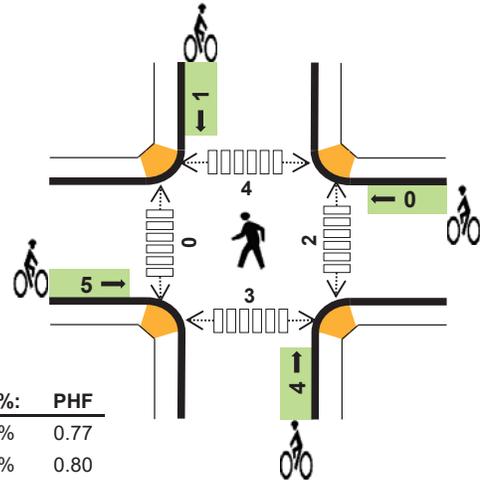
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
11:00 AM	0	2	2	2	6	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	1	4	5	0	0	0	2	2	0	1	2	0	3
<b>11:30 AM</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>3</b>
11:45 AM	1	0	4	2	7	0	0	1	0	1	0	0	1	0	1
12:00 PM	0	0	2	1	3	0	0	2	0	2	0	0	1	2	3
12:15 PM	0	0	0	2	2	0	0	2	0	2	0	1	1	0	2
12:30 PM	2	0	1	2	5	0	0	0	0	0	0	2	1	2	5
12:45 PM	2	1	3	2	8	0	0	0	0	0	0	2	1	0	3
Count Total	5	3	15	18	41	0	0	5	2	7	0	7	7	6	20
<b>Peak Hour</b>	<b>1</b>	<b>0</b>	<b>8</b>	<b>8</b>	<b>17</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>9</b>

## MCCASLIN BLVD CENTURY DR



Date: Wed, Apr 24, 2019  
Count Period: 4:00 PM to 6:00 PM  
Peak Hour: 4:45 PM to 5:45 PM



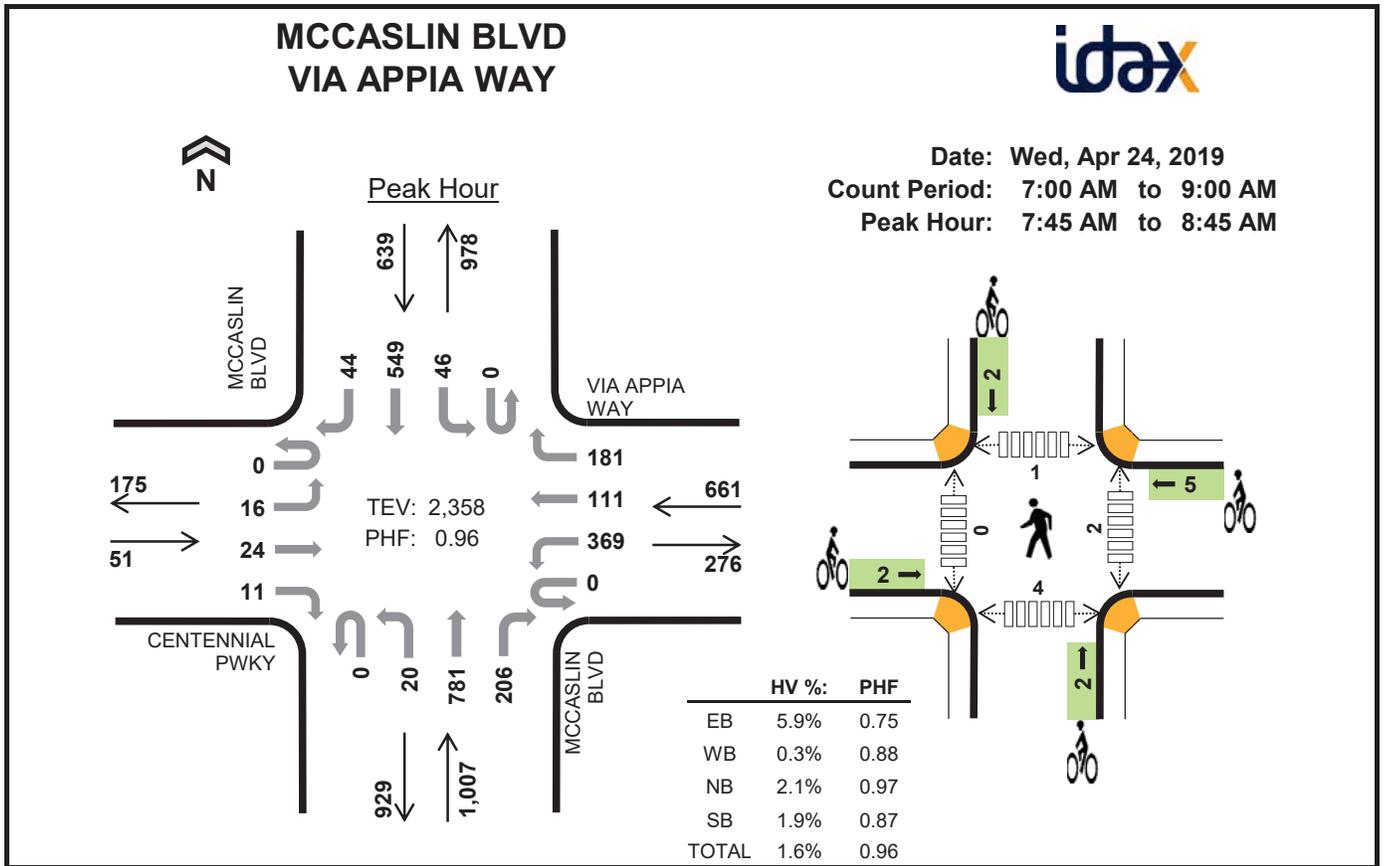
	HV %:	PHF
EB	0.0%	0.77
WB	0.0%	0.80
NB	0.7%	0.94
SB	0.8%	0.93
TOTAL	0.6%	0.97

### Two-Hour Count Summaries

Interval Start	CENTURY DR Eastbound				CENTURY DR Westbound				MCCASLIN BLVD Northbound				MCCASLIN BLVD Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	23	2	21	0	9	0	7	4	13	230	9	0	13	258	3	592	0
4:15 PM	0	13	4	20	0	3	0	10	1	17	169	11	1	12	262	5	528	0
4:30 PM	0	42	7	27	0	4	3	6	1	19	243	12	4	17	259	9	653	0
4:45 PM	0	38	8	21	0	4	3	11	1	15	247	12	1	12	324	14	711	2,484
5:00 PM	0	41	9	33	0	10	0	6	1	24	268	18	0	11	290	9	720	2,612
5:15 PM	0	32	3	23	0	11	3	10	2	22	248	13	1	29	292	7	696	2,780
5:30 PM	0	30	4	12	0	5	3	11	2	23	257	14	0	28	277	5	671	2,798
5:45 PM	0	23	4	13	0	8	1	3	1	25	224	18	2	24	331	10	687	2,774
Count Total	0	242	41	170	0	54	13	64	13	158	1,886	107	9	146	2,293	62	5,258	0
Peak Hour	0	141	24	89	0	30	9	38	6	84	1,020	57	2	80	1,183	35	2,798	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	1	3	4	8	0	0	1	2	3	0	0	0	0	0
4:15 PM	1	0	5	5	11	0	0	0	2	2	0	1	0	1	2
4:30 PM	1	0	3	5	9	0	0	1	0	1	1	2	1	0	4
4:45 PM	0	0	2	2	4	2	0	0	0	2	0	0	2	1	3
5:00 PM	0	0	2	5	7	0	0	1	0	1	0	0	0	0	0
5:15 PM	0	0	2	2	4	1	0	3	0	4	0	0	1	0	1
5:30 PM	0	0	2	1	3	2	0	0	1	3	2	0	1	2	5
5:45 PM	0	0	0	2	2	1	0	0	0	1	2	0	0	2	4
Count Total	2	1	19	26	48	6	0	6	5	17	5	3	5	6	19
Peak Hour	0	0	8	10	18	5	0	4	1	10	2	0	4	3	9



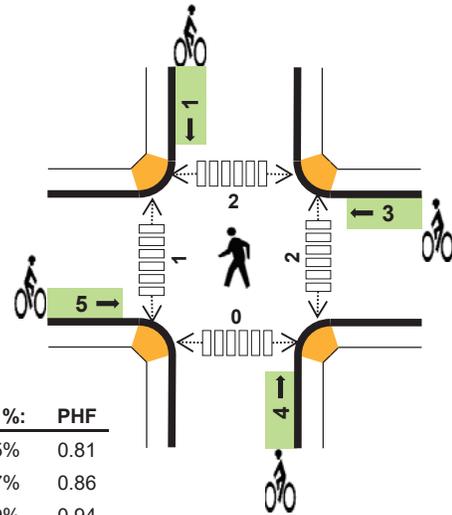
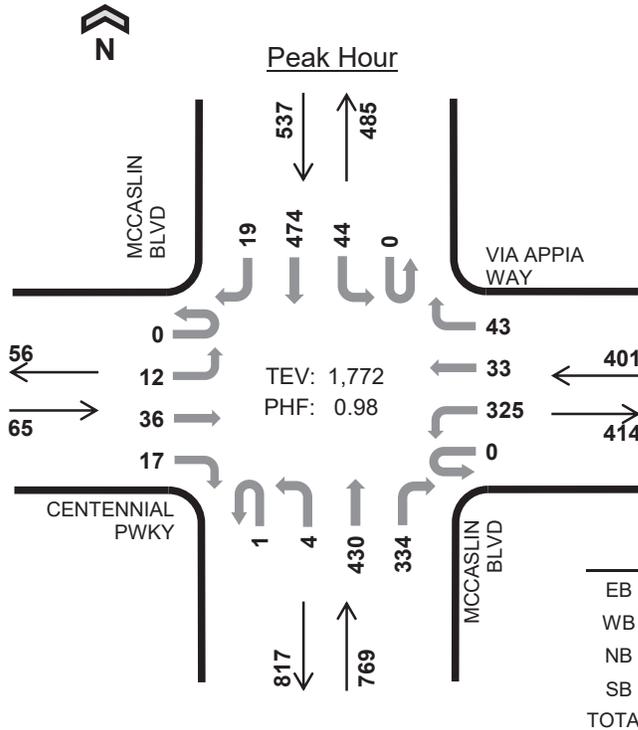
### Two-Hour Count Summaries

Interval Start	CENTENNIAL PWKY				VIA APPIA WAY				MCCASLIN BLVD				MCCASLIN BLVD				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	3	0	1	0	69	18	22	0	0	109	26	0	4	70	3	325	0
7:15 AM	0	3	2	0	1	61	16	32	0	1	119	32	0	11	126	8	412	0
7:30 AM	0	6	3	6	0	78	30	39	0	2	195	44	0	11	99	7	520	0
7:45 AM	0	5	10	2	0	86	32	42	0	3	189	60	0	10	137	9	585	1,842
8:00 AM	0	0	5	4	0	110	23	54	0	4	210	46	0	10	136	9	611	2,128
8:15 AM	0	6	6	2	0	83	28	48	0	8	179	59	0	14	153	17	603	2,319
8:30 AM	0	5	3	3	0	90	28	37	0	5	203	41	0	12	123	9	559	2,358
8:45 AM	0	4	10	2	0	85	23	26	0	5	166	61	0	12	129	11	534	2,307
Count Total	0	32	39	20	1	662	198	300	0	28	1,370	369	0	84	973	73	4,149	0
Peak Hour	0	16	24	11	0	369	111	181	0	20	781	206	0	46	549	44	2,358	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	3	4	3	10	0	0	0	1	1	1	0	0	0	1
7:15 AM	0	0	3	1	4	0	0	0	0	0	0	0	0	0	0
7:30 AM	1	3	5	2	11	0	0	0	1	1	0	2	1	1	4
7:45 AM	2	0	7	4	13	0	0	1	1	2	0	0	0	2	2
8:00 AM	1	1	5	4	11	2	1	1	0	4	1	0	0	1	2
8:15 AM	0	0	3	3	6	0	2	0	0	2	1	0	1	1	3
8:30 AM	0	1	6	1	8	0	2	0	1	3	0	0	0	0	0
8:45 AM	1	0	2	3	6	0	1	1	0	2	0	1	0	0	1
Count Total	5	8	35	21	69	2	6	3	4	15	3	3	2	5	13
Peak Hour	3	2	21	12	38	2	5	2	2	11	2	0	1	4	7

# MCCASLIN BLVD VIA APPIA WAY



	HV %:	PHF
EB	1.5%	0.81
WB	0.7%	0.86
NB	0.9%	0.94
SB	0.9%	0.95
TOTAL	0.9%	0.98

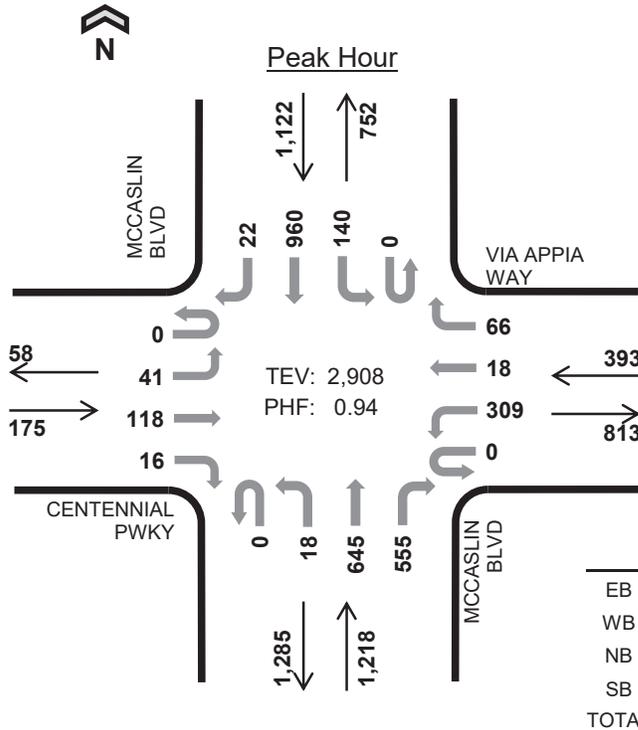
## Two-Hour Count Summaries

Interval Start	CENTENNIAL PWKY				VIA APPIA WAY				MCCASLIN BLVD				MCCASLIN BLVD				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
11:00 AM	0	4	7	2	0	73	8	13	0	2	87	65	0	10	117	4	392	0
11:15 AM	0	3	9	2	0	79	5	10	0	1	70	84	0	11	123	2	399	0
<b>11:30 AM</b>	<b>0</b>	<b>5</b>	<b>8</b>	<b>6</b>	<b>0</b>	<b>91</b>	<b>5</b>	<b>20</b>	<b>0</b>	<b>2</b>	<b>96</b>	<b>80</b>	<b>0</b>	<b>14</b>	<b>120</b>	<b>7</b>	<b>454</b>	<b>0</b>
11:45 AM	0	2	10	2	0	82	9	8	0	1	113	91	0	8	112	1	439	1,684
12:00 PM	0	2	14	4	0	88	7	9	1	1	114	79	0	14	112	7	452	1,744
12:15 PM	0	3	4	5	0	64	12	6	0	0	107	84	0	8	130	4	427	1,772
12:30 PM	0	3	6	2	0	55	3	15	0	2	108	87	0	6	104	2	393	1,711
12:45 PM	0	2	10	0	0	81	8	13	0	4	106	83	0	17	122	5	451	1,723
Count Total	0	24	68	23	0	613	57	94	1	13	801	653	0	88	940	32	3,407	0
<b>Peak Hour</b>	<b>0</b>	<b>12</b>	<b>36</b>	<b>17</b>	<b>0</b>	<b>325</b>	<b>33</b>	<b>43</b>	<b>1</b>	<b>4</b>	<b>430</b>	<b>334</b>	<b>0</b>	<b>44</b>	<b>474</b>	<b>19</b>	<b>1,772</b>	<b>0</b>

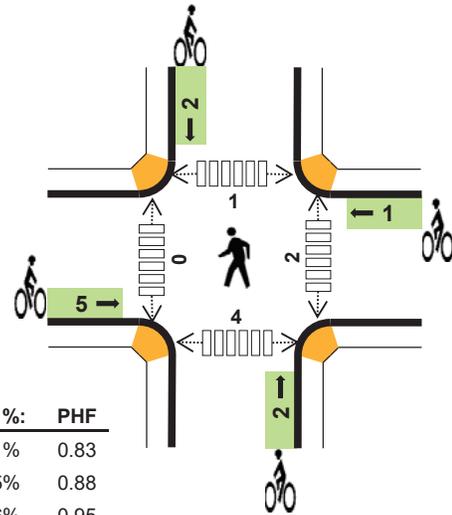
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
11:00 AM	2	2	5	2	11	0	0	0	0	0	0	1	0	0	1
11:15 AM	2	4	1	1	8	1	2	0	1	4	0	1	0	0	1
<b>11:30 AM</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>6</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
11:45 AM	0	0	2	2	4	0	0	0	0	0	0	1	1	0	2
12:00 PM	1	0	1	0	2	4	0	1	1	6	1	0	0	0	1
12:15 PM	0	1	2	1	4	1	1	3	0	5	1	0	1	0	2
12:30 PM	0	0	2	1	3	2	0	1	1	4	1	0	0	0	1
12:45 PM	0	1	3	1	5	0	0	0	0	0	0	1	0	0	1
Count Total	5	10	18	10	43	8	5	5	3	21	3	4	2	0	9
<b>Peak Hour</b>	<b>1</b>	<b>3</b>	<b>7</b>	<b>5</b>	<b>16</b>	<b>5</b>	<b>3</b>	<b>4</b>	<b>1</b>	<b>13</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>5</b>

# MCCASLIN BLVD VIA APPIA WAY



Date: Wed, Apr 24, 2019  
Count Period: 4:00 PM to 6:00 PM  
Peak Hour: 4:45 PM to 5:45 PM



	HV %:	PHF
EB	1.1%	0.83
WB	1.5%	0.88
NB	0.6%	0.95
SB	0.3%	0.94
TOTAL	0.6%	0.94

## Two-Hour Count Summaries

Interval Start	CENTENNIAL PWKY				VIA APPIA WAY				MCCASLIN BLVD				MCCASLIN BLVD				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	6	23	3	0	70	4	13	0	1	126	110	0	14	199	3	572	0
4:15 PM	0	6	14	2	0	83	7	10	0	4	121	98	0	20	210	5	580	0
4:30 PM	0	10	27	2	0	65	0	15	0	2	123	148	0	20	215	2	629	0
<b>4:45 PM</b>	<b>0</b>	<b>11</b>	<b>23</b>	<b>6</b>	<b>0</b>	<b>94</b>	<b>8</b>	<b>6</b>	<b>0</b>	<b>3</b>	<b>162</b>	<b>133</b>	<b>0</b>	<b>34</b>	<b>244</b>	<b>6</b>	<b>730</b>	2,511
5:00 PM	0	14	34	5	0	62	6	22	0	6	154	145	0	34	227	6	715	2,654
<b>5:15 PM</b>	<b>0</b>	<b>9</b>	<b>34</b>	<b>3</b>	<b>0</b>	<b>87</b>	<b>2</b>	<b>23</b>	<b>0</b>	<b>3</b>	<b>179</b>	<b>139</b>	<b>0</b>	<b>39</b>	<b>254</b>	<b>5</b>	<b>777</b>	2,851
5:30 PM	0	7	27	2	0	66	2	15	0	6	150	138	0	33	235	5	686	2,908
5:45 PM	0	11	16	1	0	99	6	15	0	6	133	102	0	53	261	6	709	2,887
Count Total	0	74	198	24	0	626	35	119	0	31	1,148	1,013	0	247	1,845	38	5,398	0
<b>Peak Hour</b>	<b>0</b>	<b>41</b>	<b>118</b>	<b>16</b>	<b>0</b>	<b>309</b>	<b>18</b>	<b>66</b>	<b>0</b>	<b>18</b>	<b>645</b>	<b>555</b>	<b>0</b>	<b>140</b>	<b>960</b>	<b>22</b>	<b>2,908</b>	<b>0</b>

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	3	4	7	2	0	0	1	3	1	1	0	0	2
4:15 PM	0	3	4	3	10	0	2	0	2	4	0	0	0	0	0
4:30 PM	0	1	3	2	6	0	0	0	0	0	0	0	0	0	0
<b>4:45 PM</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>4</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>
5:00 PM	1	0	2	2	5	0	0	0	0	0	0	0	0	1	1
<b>5:15 PM</b>	<b>0</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>
5:30 PM	1	1	2	0	4	1	0	1	2	4	0	0	1	1	2
5:45 PM	0	2	0	0	2	1	1	1	1	4	0	0	0	0	0
Count Total	2	12	17	12	43	8	4	3	6	21	3	1	1	4	9
<b>Peak Hour</b>	<b>2</b>	<b>6</b>	<b>7</b>	<b>3</b>	<b>18</b>	<b>5</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>10</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>4</b>	<b>7</b>

Appendix B:  
Synchro Reports



Existing AM

HCM 2010 Signalized Intersection Summary  
 1: McCaslin Blvd & Marshall Road

Existing - AM  
 05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	344	12	68	36	13	51	243	825	68	109	420	329
Future Volume (veh/h)	344	12	68	36	13	51	243	825	68	109	420	329
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	364	0	70	37	13	53	251	851	0	112	433	0
Adj No. of Lanes	3	0	1	1	1	1	2	3	1	2	3	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	479	0	139	95	100	83	1674	3364	1047	571	2014	627
Arrive On Green	0.09	0.00	0.09	0.05	0.05	0.05	0.29	0.67	0.00	0.06	0.67	0.00
Sat Flow, veh/h	5270	0	1528	1757	1845	1526	3408	5036	1568	3408	5036	1568
Grp Volume(v), veh/h	364	0	70	37	13	53	251	851	0	112	433	0
Grp Sat Flow(s),veh/h/ln	1757	0	1528	1757	1845	1526	1704	1679	1568	1704	1679	1568
Q Serve(g_s), s	8.1	0.0	5.2	2.4	0.8	4.1	0.0	8.1	0.0	2.5	4.0	0.0
Cycle Q Clear(g_c), s	8.1	0.0	5.2	2.4	0.8	4.1	0.0	8.1	0.0	2.5	4.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	479	0	139	95	100	83	1674	3364	1047	571	2014	627
V/C Ratio(X)	0.76	0.00	0.50	0.39	0.13	0.64	0.15	0.25	0.00	0.20	0.21	0.00
Avail Cap(c_a), veh/h	1142	0	331	293	307	254	1674	3364	1047	644	2014	627
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	53.3	0.0	52.0	54.8	54.1	55.6	11.1	8.0	0.0	23.4	12.6	0.0
Incr Delay (d2), s/veh	0.9	0.0	1.1	2.6	0.6	8.0	0.0	0.2	0.0	0.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.0	2.3	1.3	0.4	1.9	1.9	3.8	0.0	1.2	1.8	0.0
LnGrp Delay(d),s/veh	54.2	0.0	53.0	57.4	54.6	63.6	11.1	8.1	0.0	23.5	12.9	0.0
LnGrp LOS	D		D	E	D	E	B	A		C	B	
Approach Vol, veh/h		434			103			1102			545	
Approach Delay, s/veh		54.0			60.3			8.8			15.0	
Approach LOS		D			E			A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	40.6	54.0		10.5	8.4	86.2		14.9				
Change Period (Y+Rc), s	6.0	* 6		4.0	4.0	6.0		4.0				
Max Green Setting (Gmax), s	8.0	* 48		20.0	7.0	49.0		26.0				
Max Q Clear Time (g_c+I1), s	2.0	6.0		6.1	4.5	10.1		10.1				
Green Ext Time (p_c), s	1.8	3.0		0.2	0.0	6.9		0.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			21.8									
HCM 2010 LOS			C									
<b>Notes</b>												

# HCM Signalized Intersection Capacity Analysis

## 2: McCaslin Boulevard & US-36 E ramps

Existing - AM  
05/21/2019



Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations		↑↑↑		↑↑↑					↑↑↑	
Traffic Volume (vph)	0	210	0	1110	0	0	0	0	670	0
Future Volume (vph)	0	210	0	1110	0	0	0	0	670	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5		7.5					9.3	
Lane Util. Factor		0.76		0.91					0.94	
Frbp, ped/bikes		1.00		1.00					1.00	
Flpb, ped/bikes		1.00		1.00					1.00	
Frt		0.85		1.00					1.00	
Flt Protected		1.00		1.00					0.95	
Satd. Flow (prot)		3610		5085					4990	
Flt Permitted		1.00		1.00					0.95	
Satd. Flow (perm)		3610		5085					4990	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	214	0	1133	0	0	0	0	684	0
RTOR Reduction (vph)	0	160	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	54	0	1133	0	0	0	0	684	0
Confl. Peds. (#/hr)			1						2	
Confl. Bikes (#/hr)					1					
Turn Type		Prot		NA					Prot	
Protected Phases		4		8					2	
Permitted Phases										
Actuated Green, G (s)		30.5		30.5					72.7	
Effective Green, g (s)		30.5		30.5					72.7	
Actuated g/C Ratio		0.25		0.25					0.61	
Clearance Time (s)		7.5		7.5					9.3	
Vehicle Extension (s)		8.0		0.2					8.0	
Lane Grp Cap (vph)		917		1292					3023	
v/s Ratio Prot		0.02		c0.22					c0.14	
v/s Ratio Perm										
v/c Ratio		0.06		0.88					0.23	
Uniform Delay, d1		33.9		42.9					10.8	
Progression Factor		1.00		1.13					0.54	
Incremental Delay, d2		0.1		6.6					0.2	
Delay (s)		34.0		55.1					6.0	
Level of Service		C		E					A	
Approach Delay (s)	34.0			55.1			0.0		6.0	
Approach LOS	C			E			A		A	
<b>Intersection Summary</b>										
HCM 2000 Control Delay			36.3				HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio			0.42							
Actuated Cycle Length (s)			120.0				Sum of lost time (s)		16.8	
Intersection Capacity Utilization			48.2%				ICU Level of Service		A	
Analysis Period (min)			15							

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 3: US-36 W ramps & McCaslin Boulevard

Existing - AM  
 05/21/2019



Movement	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR	NEL	NER
Lane Configurations					↑↑↑↑			↑	↑↑↑↑	
Traffic Volume (vph)	0	0	0	0	928	0	0	671	977	0
Future Volume (vph)	0	0	0	0	928	0	0	671	977	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					7.2			7.2	9.3	
Lane Util. Factor					0.91			1.00	0.94	
Frbp, ped/bikes					1.00			1.00	1.00	
Flpb, ped/bikes					1.00			1.00	1.00	
Frt					1.00			0.86	1.00	
Flt Protected					1.00			1.00	0.95	
Satd. Flow (prot)					5085			1611	4990	
Flt Permitted					1.00			1.00	0.95	
Satd. Flow (perm)					5085			1611	4990	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	0	987	0	0	714	1039	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	45	0	0
Lane Group Flow (vph)	0	0	0	0	987	0	0	669	1039	0
Confl. Peds. (#/hr)									7	
Confl. Bikes (#/hr)										
Turn Type					NA			Prot	Prot	
Protected Phases					2			6	8	
Permitted Phases										
Actuated Green, G (s)					42.8			42.8	60.7	
Effective Green, g (s)					42.8			42.8	60.7	
Actuated g/C Ratio					0.36			0.36	0.51	
Clearance Time (s)					7.2			7.2	9.3	
Vehicle Extension (s)					8.0			8.0	8.0	
Lane Grp Cap (vph)					1813			574	2524	
v/s Ratio Prot					0.19			c0.42	c0.21	
v/s Ratio Perm										
v/c Ratio					0.54			1.17	0.41	
Uniform Delay, d1					30.8			38.6	18.5	
Progression Factor					1.23			1.00	0.23	
Incremental Delay, d2					0.9			92.3	0.5	
Delay (s)					38.9			130.9	4.6	
Level of Service					D			F	A	
Approach Delay (s)		0.0			38.9		130.9		4.6	
Approach LOS		A			D		F		A	
<b>Intersection Summary</b>										
HCM 2000 Control Delay			49.9		HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.72							
Actuated Cycle Length (s)			120.0		Sum of lost time (s)				16.5	
Intersection Capacity Utilization			50.3%		ICU Level of Service				A	
Analysis Period (min)			15							
c Critical Lane Group										

HCM 2010 Signalized Intersection Summary  
4: McCaslin Blvd & Dillon Road

Existing - AM  
05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	26	65	396	143	286	198	1029	402	137	800	97
Future Volume (veh/h)	45	26	65	396	143	286	198	1029	402	137	800	97
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	48	28	0	421	152	0	211	1095	0	146	851	0
Adj No. of Lanes	2	1	1	2	1	1	2	2	1	2	3	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	160	143	121	272	203	173	269	2147	960	201	2984	929
Arrive On Green	0.05	0.08	0.00	0.03	0.04	0.00	0.08	0.61	0.00	0.12	1.00	0.00
Sat Flow, veh/h	3442	1863	1583	3442	1863	1583	3442	3539	1583	3442	5085	1583
Grp Volume(v), veh/h	48	28	0	421	152	0	211	1095	0	146	851	0
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1721	1863	1583	1721	1770	1583	1721	1695	1583
Q Serve(g_s), s	1.6	1.7	0.0	9.5	9.7	0.0	7.2	21.1	0.0	4.9	0.0	0.0
Cycle Q Clear(g_c), s	1.6	1.7	0.0	9.5	9.7	0.0	7.2	21.1	0.0	4.9	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	160	143	121	272	203	173	269	2147	960	201	2984	929
V/C Ratio(X)	0.30	0.20	0.00	1.55	0.75	0.00	0.78	0.51	0.00	0.73	0.29	0.00
Avail Cap(c_a), veh/h	875	528	449	272	203	173	373	2147	960	373	2984	929
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	0.96	0.96	0.00	1.00	1.00	0.00	0.90	0.90	0.00
Uniform Delay (d), s/veh	55.3	51.9	0.0	58.4	56.2	0.0	54.3	13.4	0.0	52.1	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.7	0.0	262.1	13.5	0.0	6.2	0.9	0.0	3.3	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.9	0.0	14.4	5.8	0.0	3.7	10.6	0.0	2.4	0.1	0.0
LnGrp Delay(d),s/veh	56.1	52.6	0.0	320.6	69.7	0.0	60.5	14.3	0.0	55.4	0.2	0.0
LnGrp LOS	E	D		F	E		E	B		E	A	
Approach Vol, veh/h		76			573			1306			997	
Approach Delay, s/veh		54.8			254.0			21.8			8.3	
Approach LOS		D			F			C			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.4	76.4	11.1	18.1	12.0	78.8	15.0	14.2				
Change Period (Y+Rc), s	5.0	6.0	5.5	5.0	5.0	6.0	5.5	5.0				
Max Green Setting (Gmax), s	13.0	42.0	30.5	13.0	13.0	42.0	9.5	34.0				
Max Q Clear Time (g_c+I1), s	9.2	2.0	3.6	11.7	6.9	23.1	11.5	3.7				
Green Ext Time (p_c), s	0.2	31.5	0.1	0.1	0.2	16.5	0.0	0.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			63.2									
HCM 2010 LOS			E									

HCM 2010 Signalized Intersection Summary  
5: Coal Creek Ci/Dahlia Street & Dillon Road

Existing - AM  
05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	462	95	8	685	117	10	0	2	161	23	50
Future Volume (veh/h)	28	462	95	8	685	117	10	0	2	161	23	50
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	30	502	103	9	745	127	11	0	2	175	25	54
Adj No. of Lanes	1	2	1	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	482	2518	1103	556	2485	1112	199	0	236	268	77	167
Arrive On Green	0.01	0.23	0.23	0.01	0.70	0.70	0.15	0.00	0.15	0.15	0.15	0.15
Sat Flow, veh/h	1774	3539	1551	1774	3539	1583	1314	0	1583	1409	521	1125
Grp Volume(v), veh/h	30	502	103	9	745	127	11	0	2	175	0	79
Grp Sat Flow(s),veh/h/ln	1774	1770	1551	1774	1770	1583	1314	0	1583	1409	0	1646
Q Serve(g_s), s	0.6	13.7	6.2	0.2	9.5	3.1	0.9	0.0	0.1	14.5	0.0	5.1
Cycle Q Clear(g_c), s	0.6	13.7	6.2	0.2	9.5	3.1	6.1	0.0	0.1	14.6	0.0	5.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.68
Lane Grp Cap(c), veh/h	482	2518	1103	556	2485	1112	199	0	236	268	0	245
V/C Ratio(X)	0.06	0.20	0.09	0.02	0.30	0.11	0.06	0.00	0.01	0.65	0.00	0.32
Avail Cap(c_a), veh/h	557	2518	1103	648	2485	1112	442	0	528	528	0	549
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	1.00	1.00	1.00	1.00	0.00	1.00	0.94	0.00	0.94
Uniform Delay (d), s/veh	5.3	18.5	15.6	5.8	6.7	5.8	48.4	0.0	43.5	49.8	0.0	45.7
Incr Delay (d2), s/veh	0.0	0.2	0.2	0.0	0.3	0.2	0.1	0.0	0.0	3.0	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	6.8	2.7	0.1	4.8	1.4	0.3	0.0	0.1	5.9	0.0	2.4
LnGrp Delay(d),s/veh	5.3	18.6	15.8	5.8	7.1	6.0	48.5	0.0	43.6	52.8	0.0	46.5
LnGrp LOS	A	B	B	A	A	A	D		D	D		D
Approach Vol, veh/h		635			881			13				254
Approach Delay, s/veh		17.5			6.9			47.7				50.9
Approach LOS		B			A			D				D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.8	91.4		22.9	6.9	90.3		22.9				
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	7.0	57.0		40.0	7.0	57.0		40.0				
Max Q Clear Time (g_c+I1), s	2.2	15.7		16.6	2.6	11.5		8.1				
Green Ext Time (p_c), s	0.0	11.6		1.2	0.0	11.8		1.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				17.2								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary  
6: Dahlia St/Dahlia Street & Cherry Street

Existing - AM  
05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	131	48	95	327	8	55	37	41	18	75	95
Future Volume (veh/h)	40	131	48	95	327	8	55	37	41	18	75	95
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	43	139	51	101	348	9	59	39	44	19	80	101
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	632	1692	739	781	1755	45	222	147	166	306	136	172
Arrive On Green	0.07	0.96	0.96	0.05	0.50	0.50	0.18	0.18	0.18	0.18	0.18	0.18
Sat Flow, veh/h	1774	3539	1546	1774	3523	91	1194	797	900	1303	738	932
Grp Volume(v), veh/h	43	139	51	101	174	183	59	0	83	19	0	181
Grp Sat Flow(s),veh/h/ln	1774	1770	1546	1774	1770	1844	1194	0	1697	1303	0	1671
Q Serve(g_s), s	0.7	0.1	0.1	1.7	3.3	3.3	2.9	0.0	2.5	0.8	0.0	5.9
Cycle Q Clear(g_c), s	0.7	0.1	0.1	1.7	3.3	3.3	8.8	0.0	2.5	3.3	0.0	5.9
Prop In Lane	1.00		1.00	1.00		0.05	1.00		0.53	1.00		0.56
Lane Grp Cap(c), veh/h	632	1692	739	781	882	919	222	0	313	306	0	308
V/C Ratio(X)	0.07	0.08	0.07	0.13	0.20	0.20	0.27	0.00	0.27	0.06	0.00	0.59
Avail Cap(c_a), veh/h	778	1692	739	892	882	919	240	0	339	326	0	334
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.99	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.1	0.7	0.7	7.0	8.4	8.4	26.4	0.0	21.0	22.4	0.0	22.4
Incr Delay (d2), s/veh	0.0	0.1	0.2	0.0	0.5	0.5	0.6	0.0	0.4	0.1	0.0	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.1	0.1	0.8	1.7	1.8	1.0	0.0	1.2	0.3	0.0	2.9
LnGrp Delay(d),s/veh	7.1	0.8	0.9	7.0	8.9	8.9	27.0	0.0	21.4	22.5	0.0	24.7
LnGrp LOS	A	A	A	A	A	A	C		C	C		C
Approach Vol, veh/h		233			458			142				200
Approach Delay, s/veh		2.0			8.5			23.8				24.5
Approach LOS		A			A			C				C
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.3	34.7		17.1	7.0	35.9		17.1				
Change Period (Y+Rc), s	5.0	6.0		6.0	5.0	6.0		6.0				
Max Green Setting (Gmax), s	7.0	24.0		12.0	7.0	24.0		12.0				
Max Q Clear Time (g_c+I1), s	3.7	2.1		7.9	2.7	5.3		10.8				
Green Ext Time (p_c), s	0.0	4.2		0.7	0.0	3.9		0.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				12.2								
HCM 2010 LOS				B								

HCM Signalized Intersection Capacity Analysis  
 7: McCaslin Boulevard & Centennial Parkway/Cherry Street

Existing - AM  
 05/21/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	34	79	259	86	138	247	931	144	84	714	47
Future Volume (vph)	61	34	79	259	86	138	247	931	144	84	714	47
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1543	3433	1863	1536	1769	3539	1561	1770	3539	1547
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.33	1.00	1.00	0.23	1.00	1.00
Satd. Flow (perm)	1770	3539	1543	3433	1863	1536	613	3539	1561	435	3539	1547
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	63	35	81	267	89	142	255	960	148	87	736	48
RTOR Reduction (vph)	0	0	74	0	0	126	0	0	65	0	0	21
Lane Group Flow (vph)	63	35	7	267	89	16	255	960	83	87	736	27
Confl. Peds. (#/hr)	2		6	6		2	1		1	1		1
Confl. Bikes (#/hr)			1			7			1			
Turn Type	custom	NA	Perm	custom	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases	3		3	4		4	6		6	2		2
Actuated Green, G (s)	10.1	10.1	10.1	13.8	13.8	13.8	74.7	67.7	67.7	75.5	68.1	68.1
Effective Green, g (s)	10.1	10.1	10.1	13.8	13.8	13.8	74.7	67.7	67.7	75.5	68.1	68.1
Actuated g/C Ratio	0.08	0.08	0.08	0.12	0.12	0.12	0.62	0.56	0.56	0.63	0.57	0.57
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.5	3.5	3.5	2.5	2.5	2.5	3.0	4.0	4.0	2.0	4.0	4.0
Lane Grp Cap (vph)	148	297	129	394	214	176	449	1996	880	356	2008	877
v/s Ratio Prot	c0.04	0.01		c0.08	0.05		c0.03	0.27		0.02	0.21	
v/s Ratio Perm			0.00			0.01	c0.32		0.05	0.14		0.02
v/c Ratio	0.43	0.12	0.05	0.68	0.42	0.09	0.57	0.48	0.09	0.24	0.37	0.03
Uniform Delay, d1	52.2	50.8	50.5	51.0	49.4	47.5	10.8	15.6	12.0	9.8	14.2	11.4
Progression Factor	1.00	1.00	1.00	0.97	0.96	2.12	0.90	0.55	0.50	0.55	1.16	1.00
Incremental Delay, d2	2.3	0.2	0.2	4.1	0.9	0.2	1.4	0.7	0.2	0.1	0.5	0.1
Delay (s)	54.5	51.0	50.8	53.6	48.5	100.8	11.1	9.3	6.2	5.5	16.9	11.5
Level of Service	D	D	D	D	D	F	B	A	A	A	B	B
Approach Delay (s)		52.1			66.1			9.3			15.4	
Approach LOS		D			E			A			B	

Intersection Summary		
HCM 2000 Control Delay	23.5	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.57	C
Actuated Cycle Length (s)	120.0	Sum of lost time (s)
Intersection Capacity Utilization	60.8%	21.0
Analysis Period (min)	15	ICU Level of Service
		B

c Critical Lane Group

HCM 2010 Signalized Intersection Summary  
8: McCaslin Boulevard & Century Drive

Existing - AM  
05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	3	26	58	6	74	111	912	29	46	844	47
Future Volume (veh/h)	46	3	26	58	6	74	111	912	29	46	844	47
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.97	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	48	3	27	61	6	78	117	960	31	48	888	49
Adj No. of Lanes	1	1	0	1	1	0	1	3	1	1	3	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	150	11	96	202	8	110	524	3493	1063	397	3309	182
Arrive On Green	0.03	0.07	0.07	0.04	0.08	0.08	0.01	0.23	0.23	0.04	1.00	1.00
Sat Flow, veh/h	1774	159	1429	1774	111	1449	1774	5085	1547	1774	4933	272
Grp Volume(v), veh/h	48	0	30	61	0	84	117	960	31	48	610	327
Grp Sat Flow(s),veh/h/ln	1774	0	1588	1774	0	1561	1774	1695	1547	1774	1695	1814
Q Serve(g_s), s	3.0	0.0	2.2	3.8	0.0	6.3	2.4	18.7	1.9	1.0	0.0	0.0
Cycle Q Clear(g_c), s	3.0	0.0	2.2	3.8	0.0	6.3	2.4	18.7	1.9	1.0	0.0	0.0
Prop In Lane	1.00		0.90	1.00		0.93	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	150	0	107	202	0	119	524	3493	1063	397	2274	1217
V/C Ratio(X)	0.32	0.00	0.28	0.30	0.00	0.71	0.22	0.27	0.03	0.12	0.27	0.27
Avail Cap(c_a), veh/h	194	0	251	230	0	247	563	3493	1063	508	2274	1217
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.88	0.88	0.88	0.87	0.87	0.87
Uniform Delay (d), s/veh	50.0	0.0	53.2	49.3	0.0	54.1	5.6	21.7	15.2	7.0	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.0	1.1	0.6	0.0	5.6	0.1	0.2	0.0	0.0	0.3	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	1.0	1.9	0.0	2.9	1.2	8.9	0.8	0.5	0.1	0.2
LnGrp Delay(d),s/veh	50.9	0.0	54.3	49.9	0.0	59.8	5.7	21.9	15.3	7.1	0.3	0.5
LnGrp LOS	D		D	D		E	A	C	B	A	A	A
Approach Vol, veh/h		78			145			1108			985	
Approach Delay, s/veh		52.2			55.6			20.0			0.7	
Approach LOS		D			E			C			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.4	86.5	9.0	15.1	7.4	88.4	10.1	14.1				
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0				
Max Green Setting (Gmax), s	7.0	65.0	7.0	19.0	10.0	62.0	7.0	19.0				
Max Q Clear Time (g_c+I1), s	4.4	2.0	5.0	8.3	3.0	20.7	5.8	4.2				
Green Ext Time (p_c), s	0.0	49.8	0.0	0.3	0.0	35.1	0.0	0.4				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			15.1									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary  
 9: McCaslin Boulevard & Via Appia Way/Via Appia Way

Existing - AM  
 05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	24	11	369	111	181	20	781	206	46	549	44
Future Volume (veh/h)	16	24	11	369	111	181	20	781	206	46	549	44
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	17	25	0	384	116	0	21	814	0	48	572	0
Adj No. of Lanes	1	2	1	2	1	1	1	2	1	1	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	110	220	99	441	238	203	550	2201	984	513	2231	998
Arrive On Green	0.06	0.06	0.00	0.13	0.13	0.00	0.03	1.00	0.00	0.02	0.63	0.00
Sat Flow, veh/h	1774	3539	1583	3442	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	17	25	0	384	116	0	21	814	0	48	572	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1721	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	1.1	0.8	0.0	13.1	6.9	0.0	0.5	0.0	0.0	1.2	8.5	0.0
Cycle Q Clear(g_c), s	1.1	0.8	0.0	13.1	6.9	0.0	0.5	0.0	0.0	1.2	8.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	110	220	99	441	238	203	550	2201	984	513	2231	998
V/C Ratio(X)	0.15	0.11	0.00	0.87	0.49	0.00	0.04	0.37	0.00	0.09	0.26	0.00
Avail Cap(c_a), veh/h	414	826	369	459	248	211	646	2201	984	594	2231	998
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.97	0.97	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	53.3	53.1	0.0	51.4	48.7	0.0	8.3	0.0	0.0	7.9	9.8	0.0
Incr Delay (d2), s/veh	0.5	0.2	0.0	15.8	1.1	0.0	0.0	0.5	0.0	0.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.4	0.0	7.2	3.7	0.0	0.3	0.1	0.0	0.6	4.2	0.0
LnGrp Delay(d),s/veh	53.7	53.3	0.0	67.2	49.8	0.0	8.3	0.5	0.0	7.9	10.1	0.0
LnGrp LOS	D	D		E	D		A	A		A	B	
Approach Vol, veh/h		42			500			835			620	
Approach Delay, s/veh		53.5			63.1			0.7			9.9	
Approach LOS		D			E			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.5	81.7		20.4	6.6	80.6		12.5				
Change Period (Y+Rc), s	4.0	6.0		5.0	4.0	6.0		5.0				
Max Green Setting (Gmax), s	8.0	48.0		16.0	8.0	48.0		28.0				
Max Q Clear Time (g_c+I1), s	2.5	10.5		15.1	3.2	2.0		3.1				
Green Ext Time (p_c), s	0.0	16.8		0.2	0.0	18.3		0.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				20.3								
HCM 2010 LOS				C								

Existing PM

HCM 2010 Signalized Intersection Summary  
 1: McCaslin Blvd & Marshall Road

Existing - PM  
 05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	787	45	350	67	26	35	166	566	36	125	901	696
Future Volume (veh/h)	787	45	350	67	26	35	166	566	36	125	901	696
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	844	0	361	69	27	36	171	584	0	129	929	0
Adj No. of Lanes	3	0	1	1	1	1	2	3	1	2	3	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	1349	0	395	103	108	92	964	2652	826	632	1969	613
Arrive On Green	0.25	0.00	0.25	0.06	0.06	0.06	0.14	0.52	0.00	0.05	0.77	0.00
Sat Flow, veh/h	5375	0	1575	1792	1881	1591	3476	5136	1599	3476	5136	1599
Grp Volume(v), veh/h	844	0	361	69	27	36	171	584	0	129	929	0
Grp Sat Flow(s),veh/h/ln	1792	0	1575	1792	1881	1591	1738	1712	1599	1738	1712	1599
Q Serve(g_s), s	16.7	0.0	26.7	4.5	1.6	2.6	0.0	7.4	0.0	3.0	7.9	0.0
Cycle Q Clear(g_c), s	16.7	0.0	26.7	4.5	1.6	2.6	0.0	7.4	0.0	3.0	7.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1349	0	395	103	108	92	964	2652	826	632	1969	613
V/C Ratio(X)	0.63	0.00	0.91	0.67	0.25	0.39	0.18	0.22	0.00	0.20	0.47	0.00
Avail Cap(c_a), veh/h	1478	0	433	269	282	239	964	2652	826	632	1969	613
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	39.9	0.0	43.7	55.4	54.1	54.5	21.9	15.8	0.0	24.8	9.6	0.0
Incr Delay (d2), s/veh	0.5	0.0	21.5	7.2	1.2	2.7	0.0	0.2	0.0	0.1	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.3	0.0	14.0	2.5	0.9	1.2	1.9	3.6	0.0	1.4	3.8	0.0
LnGrp Delay(d),s/veh	40.4	0.0	65.2	62.7	55.2	57.2	21.9	16.0	0.0	24.8	10.4	0.0
LnGrp LOS	D		E	E	E	E	C	B		C	B	
Approach Vol, veh/h		1205			132			755			1058	
Approach Delay, s/veh		47.8			59.7			17.4			12.1	
Approach LOS		D			E			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	23.0	52.0		10.9	7.0	68.0		34.1				
Change Period (Y+Rc), s	6.0	* 6		4.0	4.0	6.0		4.0				
Max Green Setting (Gmax), s	5.0	* 46		18.0	3.0	48.0		33.0				
Max Q Clear Time (g_c+I1), s	2.0	9.9		6.5	5.0	9.4		28.7				
Green Ext Time (p_c), s	1.1	7.2		0.3	0.0	4.3		1.4				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			29.0									
HCM 2010 LOS			C									
<b>Notes</b>												

# HCM Signalized Intersection Capacity Analysis

## 2: McCaslin Boulevard & US-36 E ramps

Existing - PM  
05/21/2019



Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations		↑↑↑		↑↑↑					↑↑↑	
Traffic Volume (vph)	0	504	0	1146	0	0	0	0	1226	0
Future Volume (vph)	0	504	0	1146	0	0	0	0	1226	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5		7.5					9.3	
Lane Util. Factor		0.76		0.91					0.94	
Frbp, ped/bikes		1.00		1.00					1.00	
Flpb, ped/bikes		1.00		1.00					1.00	
Frt		0.85		1.00					1.00	
Flt Protected		1.00		1.00					0.95	
Satd. Flow (prot)		3646		5136					5040	
Flt Permitted		1.00		1.00					0.95	
Satd. Flow (perm)		3646		5136					5040	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	520	0	1181	0	0	0	0	1264	0
RTOR Reduction (vph)	0	42	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	478	0	1181	0	0	0	0	1264	0
Confl. Peds. (#/hr)	8		8							
Confl. Bikes (#/hr)					1			5		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type		Prot		NA					Prot	
Protected Phases		4		8					2	
Permitted Phases										
Actuated Green, G (s)		32.2		32.2					71.0	
Effective Green, g (s)		32.2		32.2					71.0	
Actuated g/C Ratio		0.27		0.27					0.59	
Clearance Time (s)		7.5		7.5					9.3	
Vehicle Extension (s)		8.0		0.2					8.0	
Lane Grp Cap (vph)		978		1378					2982	
v/s Ratio Prot		0.13		c0.23					c0.25	
v/s Ratio Perm										
v/c Ratio		0.49		0.86					0.42	
Uniform Delay, d1		37.0		41.7					13.4	
Progression Factor		1.00		1.28					1.75	
Incremental Delay, d2		1.6		5.0					0.3	
Delay (s)		38.6		58.4					23.6	
Level of Service		D		E					C	
Approach Delay (s)	38.6			58.4		0.0			23.6	
Approach LOS	D			E		A			C	
<b>Intersection Summary</b>										
HCM 2000 Control Delay			40.1		HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.56							
Actuated Cycle Length (s)			120.0		Sum of lost time (s)				16.8	
Intersection Capacity Utilization			59.5%		ICU Level of Service				B	
Analysis Period (min)			15							
c Critical Lane Group										

HCM Signalized Intersection Capacity Analysis  
3: McCaslin Boulevard & US-36 W ramps

Existing - PM  
05/21/2019



Movement	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR	NEL	NER	
Lane Configurations					↑↑↑↑			↑	↑↑↑↑		
Traffic Volume (vph)	0	0	0	0	1622	0	0	575	1127	0	
Future Volume (vph)	0	0	0	0	1622	0	0	575	1127	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					7.2			7.2	9.3		
Lane Util. Factor					0.91			1.00	0.94		
Frbp, ped/bikes					1.00			1.00	1.00		
Flpb, ped/bikes					1.00			1.00	1.00		
Frt					1.00			0.86	1.00		
Flt Protected					1.00			1.00	0.95		
Satd. Flow (prot)					5136			1627	5040		
Flt Permitted					1.00			1.00	0.95		
Satd. Flow (perm)					5136			1627	5040		
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Adj. Flow (vph)	0	0	0	0	1690	0	0	599	1174	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	36	0	0	
Lane Group Flow (vph)	0	0	0	0	1690	0	0	563	1174	0	
Confl. Peds. (#/hr)						3		2	3		
Confl. Bikes (#/hr)											
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	
Turn Type					NA			Prot	Prot		
Protected Phases					2			6	8		
Permitted Phases											
Actuated Green, G (s)					44.8			44.8	58.7		
Effective Green, g (s)					44.8			44.8	58.7		
Actuated g/C Ratio					0.37			0.37	0.49		
Clearance Time (s)					7.2			7.2	9.3		
Vehicle Extension (s)					8.0			8.0	8.0		
Lane Grp Cap (vph)					1917			607	2465		
v/s Ratio Prot					0.33			c0.35	c0.23		
v/s Ratio Perm											
v/c Ratio					0.88			0.93	0.48		
Uniform Delay, d1					35.1			36.1	20.4		
Progression Factor					1.15			1.00	0.20		
Incremental Delay, d2					4.3			22.5	0.6		
Delay (s)					44.6			58.6	4.7		
Level of Service					D			E	A		
Approach Delay (s)		0.0			44.6		58.6		4.7		
Approach LOS		A			D		E		A		
<b>Intersection Summary</b>											
HCM 2000 Control Delay			33.5		HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.67								
Actuated Cycle Length (s)			120.0		Sum of lost time (s)				16.5		
Intersection Capacity Utilization			83.2%		ICU Level of Service				E		
Analysis Period (min)			15								
c Critical Lane Group											

HCM 2010 Signalized Intersection Summary  
4: McCaslin Blvd & Dillon Road

Existing - PM  
05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	188	260	532	118	189	175	1051	451	255	1166	103
Future Volume (veh/h)	145	188	260	532	118	189	175	1051	451	255	1166	103
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	151	196	0	554	123	0	182	1095	0	266	1215	0
Adj No. of Lanes	2	1	1	2	1	1	2	2	1	2	3	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	214	272	231	362	352	299	243	1747	781	290	2578	803
Arrive On Green	0.06	0.14	0.00	0.03	0.06	0.00	0.07	0.49	0.00	0.17	1.00	0.00
Sat Flow, veh/h	3476	1881	1599	3476	1881	1599	3476	3574	1599	3476	5136	1599
Grp Volume(v), veh/h	151	196	0	554	123	0	182	1095	0	266	1215	0
Grp Sat Flow(s),veh/h/ln	1738	1881	1599	1738	1881	1599	1738	1787	1599	1738	1712	1599
Q Serve(g_s), s	5.1	11.9	0.0	12.5	7.5	0.0	6.2	27.1	0.0	9.0	0.0	0.0
Cycle Q Clear(g_c), s	5.1	11.9	0.0	12.5	7.5	0.0	6.2	27.1	0.0	9.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	214	272	231	362	352	299	243	1747	781	290	2578	803
V/C Ratio(X)	0.71	0.72	0.00	1.53	0.35	0.00	0.75	0.63	0.00	0.92	0.47	0.00
Avail Cap(c_a), veh/h	768	455	386	362	352	299	463	1747	781	290	2578	803
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	0.95	0.95	0.00	1.00	1.00	0.00	0.77	0.77	0.00
Uniform Delay (d), s/veh	55.2	49.0	0.0	57.9	49.3	0.0	54.8	22.6	0.0	49.6	0.0	0.0
Incr Delay (d2), s/veh	3.1	3.6	0.0	251.5	0.6	0.0	3.4	1.7	0.0	26.8	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	6.5	0.0	18.7	4.0	0.0	3.1	13.8	0.0	5.4	0.1	0.0
LnGrp Delay(d),s/veh	58.4	52.6	0.0	309.5	49.8	0.0	58.2	24.3	0.0	76.4	0.5	0.0
LnGrp LOS	E	D		F	D		E	C		E	A	
Approach Vol, veh/h		347			677			1277			1481	
Approach Delay, s/veh		55.1			262.3			29.2			14.1	
Approach LOS		E			F			C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.4	66.2	12.9	27.5	15.0	64.6	18.0	22.4				
Change Period (Y+Rc), s	5.0	6.0	5.5	5.0	5.0	6.0	5.5	5.0				
Max Green Setting (Gmax), s	16.0	41.0	26.5	15.0	10.0	47.0	12.5	29.0				
Max Q Clear Time (g_c+I1), s	8.2	2.0	7.1	9.5	11.0	29.1	14.5	13.9				
Green Ext Time (p_c), s	0.2	34.3	0.3	0.8	0.0	16.7	0.0	0.9				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				67.4								
HCM 2010 LOS				E								

HCM 2010 Signalized Intersection Summary  
5: Coal Creek Ci/Dahlia Street & Dillon Road

Existing - PM  
05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	91	754	6	3	651	140	88	13	8	179	8	69
Future Volume (veh/h)	91	754	6	3	651	140	88	13	8	179	8	69
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	0.99		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1881	1881	1881	1900	1881	1881	1900
Adj Flow Rate, veh/h	100	829	7	3	715	154	97	14	9	197	9	76
Adj No. of Lanes	1	2	1	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	468	2374	1036	374	2259	985	263	212	136	322	34	285
Arrive On Green	0.01	0.22	0.22	0.00	0.63	0.63	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	1792	3574	1560	1792	3574	1559	1311	1061	682	1385	169	1424
Grp Volume(v), veh/h	100	829	7	3	715	154	97	0	23	197	0	85
Grp Sat Flow(s),veh/h/ln	1792	1787	1560	1792	1787	1559	1311	0	1743	1385	0	1592
Q Serve(g_s), s	2.3	23.5	0.4	0.1	11.0	4.8	8.1	0.0	1.3	16.1	0.0	5.4
Cycle Q Clear(g_c), s	2.3	23.5	0.4	0.1	11.0	4.8	13.5	0.0	1.3	17.4	0.0	5.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.39	1.00		0.89
Lane Grp Cap(c), veh/h	468	2374	1036	374	2259	985	263	0	349	322	0	319
V/C Ratio(X)	0.21	0.35	0.01	0.01	0.32	0.16	0.37	0.00	0.07	0.61	0.00	0.27
Avail Cap(c_a), veh/h	555	2374	1036	474	2259	985	438	0	581	507	0	531
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.72	0.72	0.72	1.00	1.00	1.00	1.00	0.00	1.00	0.97	0.00	0.97
Uniform Delay (d), s/veh	7.6	24.9	15.9	9.7	10.2	9.0	46.3	0.0	38.9	46.0	0.0	40.6
Incr Delay (d2), s/veh	0.1	0.3	0.0	0.0	0.4	0.3	1.0	0.0	0.1	2.2	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	11.8	0.2	0.0	5.6	2.1	3.0	0.0	0.6	6.4	0.0	2.4
LnGrp Delay(d),s/veh	7.7	25.2	15.9	9.7	10.5	9.4	47.3	0.0	39.0	48.2	0.0	41.1
LnGrp LOS	A	C	B	A	B	A	D		D	D		D
Approach Vol, veh/h		936			872			120			282	
Approach Delay, s/veh		23.3			10.3			45.7			46.0	
Approach LOS		C			B			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.3	85.7		29.0	9.2	81.8		29.0				
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	7.0	57.0		40.0	10.0	54.0		40.0				
Max Q Clear Time (g_c+I1), s	2.1	25.5		19.4	4.3	13.0		15.5				
Green Ext Time (p_c), s	0.0	13.7		1.9	0.0	15.0		1.9				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			22.3									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary  
6: Dahlia St/Dahlia Street & Cherry Street

Existing - PM  
05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	367	92	79	203	7	58	71	126	11	80	69
Future Volume (veh/h)	87	367	92	79	203	7	58	71	126	11	80	69
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	0.99		0.97	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1900	1881	1881	1900	1881	1881	1900
Adj Flow Rate, veh/h	89	374	94	81	207	7	59	72	129	11	82	70
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	738	1731	748	654	1699	57	247	108	194	195	169	144
Arrive On Green	0.10	0.97	0.97	0.05	0.48	0.48	0.06	0.06	0.06	0.18	0.18	0.18
Sat Flow, veh/h	1792	3574	1545	1792	3525	119	1229	592	1061	1178	923	788
Grp Volume(v), veh/h	89	374	94	81	105	109	59	0	201	11	0	152
Grp Sat Flow(s),veh/h/ln	1792	1787	1545	1792	1787	1856	1229	0	1653	1178	0	1711
Q Serve(g_s), s	1.5	0.2	0.1	1.3	1.9	1.9	2.8	0.0	7.1	0.5	0.0	4.8
Cycle Q Clear(g_c), s	1.5	0.2	0.1	1.3	1.9	1.9	7.6	0.0	7.1	7.7	0.0	4.8
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.64	1.00		0.46
Lane Grp Cap(c), veh/h	738	1731	748	654	862	895	247	0	302	195	0	313
V/C Ratio(X)	0.12	0.22	0.13	0.12	0.12	0.12	0.24	0.00	0.66	0.06	0.00	0.49
Avail Cap(c_a), veh/h	855	1731	748	774	862	895	329	0	413	274	0	428
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.93	1.00	1.00	1.00	0.99	0.00	0.99	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.5	0.5	0.5	6.9	8.5	8.5	29.0	0.0	26.4	26.5	0.0	22.0
Incr Delay (d2), s/veh	0.0	0.3	0.3	0.0	0.3	0.3	0.5	0.0	2.5	0.1	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.2	0.1	0.6	1.0	1.0	1.0	0.0	3.5	0.2	0.0	2.3
LnGrp Delay(d),s/veh	6.5	0.8	0.8	6.9	8.8	8.8	29.4	0.0	28.9	26.7	0.0	23.1
LnGrp LOS	A	A	A	A	A	A	C		C	C		C
Approach Vol, veh/h		557			295			260				163
Approach Delay, s/veh		1.7			8.3			29.0				23.4
Approach LOS		A			A			C				C
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.0	35.1		17.0	8.1	34.9		17.0				
Change Period (Y+Rc), s	5.0	6.0		6.0	5.0	6.0		6.0				
Max Green Setting (Gmax), s	7.0	21.0		15.0	7.0	21.0		15.0				
Max Q Clear Time (g_c+I1), s	3.3	2.2		9.7	3.5	3.9		9.6				
Green Ext Time (p_c), s	0.0	5.1		1.1	0.0	4.8		1.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				11.6								
HCM 2010 LOS				B								

HCM Signalized Intersection Capacity Analysis  
 7: McCaslin Boulevard & Centennial Parkway/Cherry Street

Existing - PM  
 05/21/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	72	207	209	24	115	60	1026	250	185	1144	59
Future Volume (vph)	83	72	207	209	24	115	60	1026	250	185	1144	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	3574	1555	3467	1881	1561	1787	3574	1566	1787	3574	1537
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.15	1.00	1.00	0.21	1.00	1.00
Satd. Flow (perm)	1787	3574	1555	3467	1881	1561	290	3574	1566	389	3574	1537
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	86	74	213	215	25	119	62	1058	258	191	1179	61
RTOR Reduction (vph)	0	0	171	0	0	107	0	0	109	0	0	27
Lane Group Flow (vph)	86	74	42	215	25	12	62	1058	149	191	1179	34
Confl. Peds. (#/hr)	2		2	2		2	6		5	5		6
Confl. Bikes (#/hr)			5			3			2			3
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	custom	NA	Perm	custom	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases	3		3	4		4	6		6	2		2
Actuated Green, G (s)	11.9	11.9	11.9	12.3	12.3	12.3	76.6	67.8	67.8	73.0	66.0	66.0
Effective Green, g (s)	11.9	11.9	11.9	12.3	12.3	12.3	76.6	67.8	67.8	73.0	66.0	66.0
Actuated g/C Ratio	0.10	0.10	0.10	0.10	0.10	0.10	0.64	0.56	0.56	0.61	0.55	0.55
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.5	3.5	3.5	2.5	2.5	2.5	3.0	4.0	4.0	2.0	4.0	4.0
Lane Grp Cap (vph)	177	354	154	355	192	160	294	2019	884	318	1965	845
v/s Ratio Prot	c0.05	0.02		c0.06	0.01		0.02	0.30		c0.04	0.33	
v/s Ratio Perm			0.03			0.01	0.12		0.10	c0.33		0.02
v/c Ratio	0.49	0.21	0.27	0.61	0.13	0.08	0.21	0.52	0.17	0.60	0.60	0.04
Uniform Delay, d1	51.2	49.7	50.0	51.5	49.0	48.7	11.0	16.1	12.5	11.9	18.1	12.4
Progression Factor	1.00	1.00	1.00	0.96	0.97	3.23	0.53	0.39	0.12	1.40	0.59	1.00
Incremental Delay, d2	2.5	0.3	1.1	2.4	0.2	0.1	0.3	0.8	0.3	2.1	1.3	0.1
Delay (s)	53.6	50.1	51.2	52.1	47.7	157.3	6.1	7.2	1.8	18.8	12.0	12.5
Level of Service	D	D	D	D	D	F	A	A	A	B	B	B
Approach Delay (s)		51.5			86.6			6.1			12.9	
Approach LOS		D			F			A			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			21.8									C
HCM 2000 Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			120.0							21.0		
Intersection Capacity Utilization			66.8%									C
Analysis Period (min)			15									
c Critical Lane Group												

HCM 2010 Signalized Intersection Summary  
 8: McCaslin Boulevard & Century Drive

Existing - PM  
 05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	141	24	89	30	9	38	90	1020	57	82	1183	35
Future Volume (veh/h)	141	24	89	30	9	38	90	1020	57	82	1183	35
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.98		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1881	1881	1900	1881	1881	1881	1881	1881	1900
Adj Flow Rate, veh/h	145	25	92	31	9	39	93	1052	59	85	1220	36
Adj No. of Lanes	1	1	0	1	1	0	1	3	1	1	3	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	251	42	154	165	18	78	404	3298	1002	423	3280	97
Arrive On Green	0.08	0.12	0.12	0.02	0.06	0.06	0.04	0.85	0.85	0.06	1.00	1.00
Sat Flow, veh/h	1792	344	1266	1792	303	1314	1792	5136	1561	1792	5123	151
Grp Volume(v), veh/h	145	0	117	31	0	48	93	1052	59	85	815	441
Grp Sat Flow(s),veh/h/ln	1792	0	1611	1792	0	1617	1792	1712	1561	1792	1712	1850
Q Serve(g_s), s	8.9	0.0	8.3	1.9	0.0	3.5	2.2	4.9	0.7	2.0	0.0	0.0
Cycle Q Clear(g_c), s	8.9	0.0	8.3	1.9	0.0	3.5	2.2	4.9	0.7	2.0	0.0	0.0
Prop In Lane	1.00		0.79	1.00		0.81	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	251	0	196	165	0	96	404	3298	1002	423	2192	1185
V/C Ratio(X)	0.58	0.00	0.60	0.19	0.00	0.50	0.23	0.32	0.06	0.20	0.37	0.37
Avail Cap(c_a), veh/h	251	0	322	276	0	323	494	3298	1002	516	2192	1185
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.85	0.85	0.85	0.83	0.83	0.83
Uniform Delay (d), s/veh	46.2	0.0	49.9	51.6	0.0	54.7	6.7	3.5	3.2	6.7	0.0	0.0
Incr Delay (d2), s/veh	2.8	0.0	2.2	0.4	0.0	2.9	0.1	0.2	0.1	0.1	0.4	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.0	3.8	1.0	0.0	1.6	1.1	2.3	0.3	1.0	0.1	0.2
LnGrp Delay(d),s/veh	49.1	0.0	52.1	52.0	0.0	57.6	6.8	3.7	3.3	6.7	0.4	0.7
LnGrp LOS	D		D	D		E	A	A	A	A	A	A
Approach Vol, veh/h		262			79			1204			1341	
Approach Delay, s/veh		50.4			55.4			3.9			0.9	
Approach LOS		D			E			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	82.8	15.0	13.2	8.8	83.1	7.6	20.6				
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0				
Max Green Setting (Gmax), s	10.0	54.0	10.0	24.0	10.0	54.0	10.0	24.0				
Max Q Clear Time (g_c+I1), s	4.2	2.0	10.9	5.5	4.0	6.9	3.9	10.3				
Green Ext Time (p_c), s	0.0	47.7	0.0	0.7	0.0	43.5	0.0	0.6				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			8.2									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary  
 9: McCaslin Boulevard & Via Appia Way/Via Appia Way

Existing - PM  
 05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	118	16	309	18	66	18	645	555	140	960	22
Future Volume (veh/h)	41	118	16	309	18	66	18	645	555	140	960	22
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	44	126	0	329	19	0	19	686	0	149	1021	0
Adj No. of Lanes	1	2	1	2	1	1	1	2	1	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	136	271	121	396	214	182	350	2131	953	598	2259	1011
Arrive On Green	0.08	0.08	0.00	0.11	0.11	0.00	0.02	1.00	0.00	0.05	0.63	0.00
Sat Flow, veh/h	1792	3574	1599	3476	1881	1599	1792	3574	1599	1792	3574	1599
Grp Volume(v), veh/h	44	126	0	329	19	0	19	686	0	149	1021	0
Grp Sat Flow(s),veh/h/ln	1792	1787	1599	1738	1881	1599	1792	1787	1599	1792	1787	1599
Q Serve(g_s), s	2.8	4.1	0.0	11.1	1.1	0.0	0.5	0.0	0.0	3.7	17.7	0.0
Cycle Q Clear(g_c), s	2.8	4.1	0.0	11.1	1.1	0.0	0.5	0.0	0.0	3.7	17.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	136	271	121	396	214	182	350	2131	953	598	2259	1011
V/C Ratio(X)	0.32	0.47	0.00	0.83	0.09	0.00	0.05	0.32	0.00	0.25	0.45	0.00
Avail Cap(c_a), veh/h	373	745	333	492	267	227	494	2131	953	633	2259	1011
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.94	0.94	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	52.5	53.1	0.0	52.0	47.6	0.0	10.0	0.0	0.0	7.6	11.4	0.0
Incr Delay (d2), s/veh	1.0	0.9	0.0	8.9	0.1	0.0	0.0	0.4	0.0	0.1	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	2.0	0.0	5.8	0.6	0.0	0.2	0.1	0.0	1.8	8.9	0.0
LnGrp Delay(d),s/veh	53.6	54.0	0.0	60.9	47.7	0.0	10.0	0.4	0.0	7.6	12.0	0.0
LnGrp LOS	D	D		E	D		A	A		A	B	
Approach Vol, veh/h		170			348			705			1170	
Approach Delay, s/veh		53.9			60.2			0.6			11.5	
Approach LOS		D			E			A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.4	81.8		18.7	9.7	77.6		14.1				
Change Period (Y+Rc), s	4.0	6.0		5.0	4.0	6.0		5.0				
Max Green Setting (Gmax), s	11.0	47.0		17.0	8.0	50.0		25.0				
Max Q Clear Time (g_c+I1), s	2.5	19.7		13.1	5.7	2.0		6.1				
Green Ext Time (p_c), s	0.0	17.9		0.4	0.0	25.0		0.6				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				18.4								
HCM 2010 LOS				B								

Existing plus Baseline (Fully Tenanted Sam's Club) AM

HCM 2010 Signalized Intersection Summary  
 1: McCaslin Blvd & Marshall Road

Existing + Baseline (Fully Tenanted  
 Sam's Club) - AM 05/21/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	346	12	68	36	13	51	243	832	68	109	423	330
Future Volume (veh/h)	346	12	68	36	13	51	243	832	68	109	423	330
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	366	0	70	37	13	53	251	858	0	112	436	0
Adj No. of Lanes	3	0	1	1	1	1	2	3	1	2	3	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	481	0	139	95	100	83	1671	3362	1047	568	2014	627
Arrive On Green	0.09	0.00	0.09	0.05	0.05	0.05	0.29	0.67	0.00	0.06	0.67	0.00
Sat Flow, veh/h	5270	0	1528	1757	1845	1526	3408	5036	1568	3408	5036	1568
Grp Volume(v), veh/h	366	0	70	37	13	53	251	858	0	112	436	0
Grp Sat Flow(s),veh/h/ln	1757	0	1528	1757	1845	1526	1704	1679	1568	1704	1679	1568
Q Serve(g_s), s	8.1	0.0	5.2	2.4	0.8	4.1	0.0	8.2	0.0	2.5	4.0	0.0
Cycle Q Clear(g_c), s	8.1	0.0	5.2	2.4	0.8	4.1	0.0	8.2	0.0	2.5	4.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	481	0	139	95	100	83	1671	3362	1047	568	2014	627
V/C Ratio(X)	0.76	0.00	0.50	0.39	0.13	0.64	0.15	0.26	0.00	0.20	0.22	0.00
Avail Cap(c_a), veh/h	1142	0	331	293	307	254	1671	3362	1047	641	2014	627
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	53.2	0.0	51.9	54.8	54.1	55.6	11.1	8.0	0.0	23.4	12.6	0.0
Incr Delay (d2), s/veh	0.9	0.0	1.0	2.6	0.6	8.0	0.0	0.2	0.0	0.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.0	2.3	1.3	0.4	1.9	1.9	3.8	0.0	1.2	1.9	0.0
LnGrp Delay(d),s/veh	54.2	0.0	53.0	57.4	54.6	63.6	11.1	8.2	0.0	23.5	12.9	0.0
LnGrp LOS	D		D	E	D	E	B	A		C	B	
Approach Vol, veh/h		436			103			1109			548	
Approach Delay, s/veh		54.0			60.3			8.8			15.0	
Approach LOS		D			E			A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	40.5	54.0		10.5	8.4	86.1		15.0				
Change Period (Y+Rc), s	6.0	* 6		4.0	4.0	6.0		4.0				
Max Green Setting (Gmax), s	8.0	* 48		20.0	7.0	49.0		26.0				
Max Q Clear Time (g_c+I1), s	2.0	6.0		6.1	4.5	10.2		10.1				
Green Ext Time (p_c), s	1.8	3.0		0.2	0.0	7.0		0.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			21.8									
HCM 2010 LOS			C									
<b>Notes</b>												

HCM Signalized Intersection Capacity Analysis  
2: McCaslin Boulevard & US-36 E ramps

Existing + Baseline (Fully Tenanted  
Sam's Club) - AM 05/21/2019



Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations		↑↑↑		↑↑↑					↑↑↑	
Traffic Volume (vph)	0	210	0	1119	0	0	0	0	674	0
Future Volume (vph)	0	210	0	1119	0	0	0	0	674	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5		7.5					9.3	
Lane Util. Factor		0.76		0.91					0.94	
Frbp, ped/bikes		1.00		1.00					1.00	
Flpb, ped/bikes		1.00		1.00					1.00	
Frt		0.85		1.00					1.00	
Flt Protected		1.00		1.00					0.95	
Satd. Flow (prot)		3610		5085					4990	
Flt Permitted		1.00		1.00					0.95	
Satd. Flow (perm)		3610		5085					4990	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	214	0	1142	0	0	0	0	688	0
RTOR Reduction (vph)	0	159	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	55	0	1142	0	0	0	0	688	0
Confl. Peds. (#/hr)			1						2	
Confl. Bikes (#/hr)					1					
Turn Type		Prot		NA					Prot	
Protected Phases		4		8					2	
Permitted Phases										
Actuated Green, G (s)		30.7		30.7					72.5	
Effective Green, g (s)		30.7		30.7					72.5	
Actuated g/C Ratio		0.26		0.26					0.60	
Clearance Time (s)		7.5		7.5					9.3	
Vehicle Extension (s)		8.0		0.2					8.0	
Lane Grp Cap (vph)		923		1300					3014	
v/s Ratio Prot		0.02		c0.22					c0.14	
v/s Ratio Perm										
v/c Ratio		0.06		0.88					0.23	
Uniform Delay, d1		33.7		42.9					10.9	
Progression Factor		1.00		1.13					0.53	
Incremental Delay, d2		0.1		6.7					0.2	
Delay (s)		33.9		55.1					6.0	
Level of Service		C		E					A	
Approach Delay (s)	33.9			55.1			0.0		6.0	
Approach LOS	C			E			A		A	
<b>Intersection Summary</b>										
HCM 2000 Control Delay			36.3		HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.42							
Actuated Cycle Length (s)			120.0		Sum of lost time (s)				16.8	
Intersection Capacity Utilization			48.4%		ICU Level of Service				A	
Analysis Period (min)			15							
c Critical Lane Group										

HCM Signalized Intersection Capacity Analysis  
 3: McCaslin Boulevard & US-36 W ramps

Existing + Baseline (Fully Tenanted  
 Sam's Club) - AM 05/21/2019



Movement	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR	NEL	NER
Lane Configurations					↑↑↑↑			↑	↑↑↑↑	
Traffic Volume (vph)	0	0	0	0	936	0	0	680	995	0
Future Volume (vph)	0	0	0	0	936	0	0	680	995	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					7.2			7.2	9.3	
Lane Util. Factor					0.91			1.00	0.94	
Frbp, ped/bikes					1.00			1.00	1.00	
Flpb, ped/bikes					1.00			1.00	1.00	
Frt					1.00			0.86	1.00	
Flt Protected					1.00			1.00	0.95	
Satd. Flow (prot)					5085			1611	4990	
Flt Permitted					1.00			1.00	0.95	
Satd. Flow (perm)					5085			1611	4990	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	0	996	0	0	723	1059	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	43	0	0
Lane Group Flow (vph)	0	0	0	0	996	0	0	680	1059	0
Confl. Peds. (#/hr)									7	
Confl. Bikes (#/hr)										
Turn Type					NA			Prot	Prot	
Protected Phases					2			6	8	
Permitted Phases										
Actuated Green, G (s)					42.8			42.8	60.7	
Effective Green, g (s)					42.8			42.8	60.7	
Actuated g/C Ratio					0.36			0.36	0.51	
Clearance Time (s)					7.2			7.2	9.3	
Vehicle Extension (s)					8.0			8.0	8.0	
Lane Grp Cap (vph)					1813			574	2524	
v/s Ratio Prot					0.20			c0.42	c0.21	
v/s Ratio Perm										
v/c Ratio					0.55			1.18	0.42	
Uniform Delay, d1					30.9			38.6	18.6	
Progression Factor					1.24			1.00	0.23	
Incremental Delay, d2					0.9			99.8	0.5	
Delay (s)					39.1			138.4	4.7	
Level of Service					D			F	A	
Approach Delay (s)		0.0			39.1		138.4		4.7	
Approach LOS		A			D		F		A	
<b>Intersection Summary</b>										
HCM 2000 Control Delay			51.8		HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.74							
Actuated Cycle Length (s)			120.0		Sum of lost time (s)				16.5	
Intersection Capacity Utilization			50.8%		ICU Level of Service				A	
Analysis Period (min)			15							
c Critical Lane Group										

HCM 2010 Signalized Intersection Summary  
4: McCaslin Blvd & Dillon Road

Existing + Baseline (Fully Tenanted  
Sam's Club) - AM 05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	26	65	404	143	288	198	1048	410	139	804	97
Future Volume (veh/h)	45	26	65	404	143	288	198	1048	410	139	804	97
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	48	28	0	430	152	0	211	1115	0	148	855	0
Adj No. of Lanes	2	1	1	2	1	1	2	2	1	2	3	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	160	143	121	272	203	173	269	2145	960	203	2984	929
Arrive On Green	0.05	0.08	0.00	0.03	0.04	0.00	0.08	0.61	0.00	0.12	1.00	0.00
Sat Flow, veh/h	3442	1863	1583	3442	1863	1583	3442	3539	1583	3442	5085	1583
Grp Volume(v), veh/h	48	28	0	430	152	0	211	1115	0	148	855	0
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1721	1863	1583	1721	1770	1583	1721	1695	1583
Q Serve(g_s), s	1.6	1.7	0.0	9.5	9.7	0.0	7.2	21.7	0.0	5.0	0.0	0.0
Cycle Q Clear(g_c), s	1.6	1.7	0.0	9.5	9.7	0.0	7.2	21.7	0.0	5.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	160	143	121	272	203	173	269	2145	960	203	2984	929
V/C Ratio(X)	0.30	0.20	0.00	1.58	0.75	0.00	0.78	0.52	0.00	0.73	0.29	0.00
Avail Cap(c_a), veh/h	875	528	449	272	203	173	373	2145	960	373	2984	929
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	0.96	0.96	0.00	1.00	1.00	0.00	0.90	0.90	0.00
Uniform Delay (d), s/veh	55.3	51.9	0.0	58.4	56.2	0.0	54.3	13.6	0.0	52.0	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.7	0.0	276.5	13.5	0.0	6.2	0.9	0.0	3.3	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.9	0.0	15.0	5.8	0.0	3.7	10.8	0.0	2.4	0.1	0.0
LnGrp Delay(d),s/veh	56.1	52.6	0.0	334.9	69.7	0.0	60.5	14.5	0.0	55.3	0.2	0.0
LnGrp LOS	E	D		F	E		E	B		E	A	
Approach Vol, veh/h		76			582			1326			1003	
Approach Delay, s/veh		54.8			265.6			21.8			8.3	
Approach LOS		D			F			C			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.4	76.4	11.1	18.1	12.1	78.7	15.0	14.2				
Change Period (Y+Rc), s	5.0	6.0	5.5	5.0	5.0	6.0	5.5	5.0				
Max Green Setting (Gmax), s	13.0	42.0	30.5	13.0	13.0	42.0	9.5	34.0				
Max Q Clear Time (g_c+I1), s	9.2	2.0	3.6	11.7	7.0	23.7	11.5	3.7				
Green Ext Time (p_c), s	0.2	31.8	0.1	0.1	0.2	16.2	0.0	0.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			65.6									
HCM 2010 LOS			E									

HCM 2010 Signalized Intersection Summary  
5: Coal Creek Ci/Dahlia Street & Dillon Road

Existing + Baseline (Fully Tenanted  
Sam's Club) - AM 05/21/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	463	95	8	689	118	10	0	2	162	23	51
Future Volume (veh/h)	29	463	95	8	689	118	10	0	2	162	23	51
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	32	503	103	9	749	128	11	0	2	176	25	55
Adj No. of Lanes	1	2	1	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	480	2515	1102	555	2480	1109	199	0	237	269	77	169
Arrive On Green	0.01	0.23	0.23	0.01	0.70	0.70	0.15	0.00	0.15	0.15	0.15	0.15
Sat Flow, veh/h	1774	3539	1551	1774	3539	1583	1313	0	1583	1409	514	1131
Grp Volume(v), veh/h	32	503	103	9	749	128	11	0	2	176	0	80
Grp Sat Flow(s),veh/h/ln	1774	1770	1551	1774	1770	1583	1313	0	1583	1409	0	1645
Q Serve(g_s), s	0.6	13.7	6.2	0.2	9.6	3.2	0.9	0.0	0.1	14.6	0.0	5.2
Cycle Q Clear(g_c), s	0.6	13.7	6.2	0.2	9.6	3.2	6.1	0.0	0.1	14.7	0.0	5.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.69
Lane Grp Cap(c), veh/h	480	2515	1102	555	2480	1109	199	0	237	269	0	246
V/C Ratio(X)	0.07	0.20	0.09	0.02	0.30	0.12	0.06	0.00	0.01	0.65	0.00	0.33
Avail Cap(c_a), veh/h	554	2515	1102	647	2480	1109	441	0	528	528	0	548
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	1.00	1.00	1.00	1.00	0.00	1.00	0.94	0.00	0.94
Uniform Delay (d), s/veh	5.4	18.5	15.7	5.8	6.8	5.8	48.4	0.0	43.5	49.7	0.0	45.6
Incr Delay (d2), s/veh	0.0	0.2	0.2	0.0	0.3	0.2	0.1	0.0	0.0	3.0	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	6.8	2.7	0.1	4.8	1.5	0.3	0.0	0.1	5.9	0.0	2.4
LnGrp Delay(d),s/veh	5.4	18.7	15.8	5.8	7.1	6.1	48.5	0.0	43.5	52.8	0.0	46.5
LnGrp LOS	A	B	B	A	A	A	D		D	D		D
Approach Vol, veh/h		638			886			13			256	
Approach Delay, s/veh		17.6			7.0			47.7			50.8	
Approach LOS		B			A			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.8	91.3		22.9	7.0	90.1		22.9				
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	7.0	57.0		40.0	7.0	57.0		40.0				
Max Q Clear Time (g_c+I1), s	2.2	15.7		16.7	2.6	11.6		8.1				
Green Ext Time (p_c), s	0.0	11.7		1.2	0.0	11.9		1.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				17.3								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary  
6: Dahlia St/Dahlia Street & Cherry Street

Existing + Baseline (Fully Tenanted  
Sam's Club) - AM 05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	132	49	96	328	8	55	37	41	18	76	96
Future Volume (veh/h)	41	132	49	96	328	8	55	37	41	18	76	96
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	44	140	52	102	349	9	59	39	44	19	81	102
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	631	1688	737	779	1750	45	221	148	167	307	137	173
Arrive On Green	0.07	0.95	0.95	0.05	0.50	0.50	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	1774	3539	1546	1774	3523	91	1192	797	900	1303	740	931
Grp Volume(v), veh/h	44	140	52	102	175	183	59	0	83	19	0	183
Grp Sat Flow(s),veh/h/ln	1774	1770	1546	1774	1770	1844	1192	0	1697	1303	0	1671
Q Serve(g_s), s	0.7	0.1	0.1	1.7	3.3	3.3	2.9	0.0	2.5	0.8	0.0	6.0
Cycle Q Clear(g_c), s	0.7	0.1	0.1	1.7	3.3	3.3	8.9	0.0	2.5	3.3	0.0	6.0
Prop In Lane	1.00		1.00	1.00		0.05	1.00		0.53	1.00		0.56
Lane Grp Cap(c), veh/h	631	1688	737	779	879	916	221	0	314	307	0	310
V/C Ratio(X)	0.07	0.08	0.07	0.13	0.20	0.20	0.27	0.00	0.26	0.06	0.00	0.59
Avail Cap(c_a), veh/h	776	1688	737	889	879	916	239	0	339	326	0	334
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.99	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.1	0.7	0.7	7.0	8.4	8.4	26.4	0.0	20.9	22.3	0.0	22.4
Incr Delay (d2), s/veh	0.0	0.1	0.2	0.0	0.5	0.5	0.6	0.0	0.4	0.1	0.0	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.1	0.1	0.8	1.7	1.8	1.0	0.0	1.2	0.3	0.0	3.0
LnGrp Delay(d),s/veh	7.1	0.8	0.9	7.0	8.9	8.9	27.1	0.0	21.4	22.4	0.0	24.8
LnGrp LOS	A	A	A	A	A	A	C		C	C		C
Approach Vol, veh/h		236			460			142			202	
Approach Delay, s/veh		2.0			8.5			23.7			24.6	
Approach LOS		A			A			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.3	34.6		17.1	7.1	35.8		17.1				
Change Period (Y+Rc), s	5.0	6.0		6.0	5.0	6.0		6.0				
Max Green Setting (Gmax), s	7.0	24.0		12.0	7.0	24.0		12.0				
Max Q Clear Time (g_c+I1), s	3.7	2.1		8.0	2.7	5.3		10.9				
Green Ext Time (p_c), s	0.0	4.2		0.7	0.0	3.9		0.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				12.2								
HCM 2010 LOS				B								

## HCM Signalized Intersection Capacity Analysis

## 7: McCaslin Boulevard &amp; Centennial Parkway/Cherry Street

Sam's Club) - AM

05/21/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	34	79	263	86	139	247	934	150	87	721	47
Future Volume (vph)	61	34	79	263	86	139	247	934	150	87	721	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1543	3433	1863	1536	1769	3539	1561	1770	3539	1547
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.33	1.00	1.00	0.23	1.00	1.00
Satd. Flow (perm)	1770	3539	1543	3433	1863	1536	608	3539	1561	432	3539	1547
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	63	35	81	271	89	143	255	963	155	90	743	48
RTOR Reduction (vph)	0	0	74	0	0	127	0	0	68	0	0	21
Lane Group Flow (vph)	63	35	7	271	89	16	255	963	87	90	743	27
Confl. Peds. (#/hr)	2		6	6		2	1		1	1		1
Confl. Bikes (#/hr)			1			7			1			
Turn Type	custom	NA	Perm	custom	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases	3		3	4		4	6		6	2		2
Actuated Green, G (s)	10.1	10.1	10.1	13.8	13.8	13.8	74.6	67.6	67.6	75.6	68.1	68.1
Effective Green, g (s)	10.1	10.1	10.1	13.8	13.8	13.8	74.6	67.6	67.6	75.6	68.1	68.1
Actuated g/C Ratio	0.08	0.08	0.08	0.12	0.12	0.12	0.62	0.56	0.56	0.63	0.57	0.57
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.5	3.5	3.5	2.5	2.5	2.5	3.0	4.0	4.0	2.0	4.0	4.0
Lane Grp Cap (vph)	148	297	129	394	214	176	445	1993	879	355	2008	877
v/s Ratio Prot	c0.04	0.01		c0.08	0.05		c0.03	0.27		0.02	0.21	
v/s Ratio Perm			0.00			0.01	c0.32		0.06	0.14		0.02
v/c Ratio	0.43	0.12	0.05	0.69	0.42	0.09	0.57	0.48	0.10	0.25	0.37	0.03
Uniform Delay, d1	52.2	50.8	50.5	51.0	49.4	47.5	10.9	15.7	12.1	9.8	14.2	11.4
Progression Factor	1.00	1.00	1.00	0.97	0.96	2.10	0.89	0.56	0.56	0.55	1.16	1.00
Incremental Delay, d2	2.3	0.2	0.2	4.5	0.9	0.2	1.5	0.7	0.2	0.1	0.5	0.1
Delay (s)	54.5	51.0	50.8	53.9	48.4	100.0	11.2	9.5	6.9	5.5	16.9	11.5
Level of Service	D	D	D	D	D	F	B	A	A	A	B	B
Approach Delay (s)		52.1			66.0			9.5			15.5	
Approach LOS		D			E			A			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			23.6			HCM 2000 Level of Service		C				
HCM 2000 Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)		21.0				
Intersection Capacity Utilization			61.1%			ICU Level of Service		B				
Analysis Period (min)			15									
c Critical Lane Group												

HCM 2010 Signalized Intersection Summary  
 8: McCaslin Boulevard & Century Drive

Existing + Baseline (Fully Tenanted  
 Sam's Club) - AM 05/21/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	3	26	58	6	74	111	916	29	46	854	47
Future Volume (veh/h)	46	3	26	58	6	74	111	916	29	46	854	47
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.97	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	48	3	27	61	6	78	117	964	31	48	899	49
Adj No. of Lanes	1	1	0	1	1	0	1	3	1	1	3	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	150	11	96	202	8	110	520	3493	1063	395	3312	180
Arrive On Green	0.03	0.07	0.07	0.04	0.08	0.08	0.01	0.23	0.23	0.04	1.00	1.00
Sat Flow, veh/h	1774	159	1429	1774	111	1449	1774	5085	1547	1774	4936	268
Grp Volume(v), veh/h	48	0	30	61	0	84	117	964	31	48	617	331
Grp Sat Flow(s),veh/h/ln	1774	0	1588	1774	0	1561	1774	1695	1547	1774	1695	1815
Q Serve(g_s), s	3.0	0.0	2.2	3.8	0.0	6.3	2.4	18.8	1.9	1.0	0.0	0.0
Cycle Q Clear(g_c), s	3.0	0.0	2.2	3.8	0.0	6.3	2.4	18.8	1.9	1.0	0.0	0.0
Prop In Lane	1.00		0.90	1.00		0.93	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	150	0	107	202	0	119	520	3493	1063	395	2274	1217
V/C Ratio(X)	0.32	0.00	0.28	0.30	0.00	0.71	0.23	0.28	0.03	0.12	0.27	0.27
Avail Cap(c_a), veh/h	194	0	251	230	0	247	559	3493	1063	507	2274	1217
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.88	0.88	0.88	0.86	0.86	0.86
Uniform Delay (d), s/veh	50.0	0.0	53.2	49.3	0.0	54.1	5.6	21.8	15.2	7.0	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.0	1.1	0.6	0.0	5.6	0.1	0.2	0.0	0.0	0.3	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	1.0	1.9	0.0	2.9	1.2	8.9	0.8	0.5	0.1	0.2
LnGrp Delay(d),s/veh	50.9	0.0	54.3	49.9	0.0	59.8	5.7	22.0	15.3	7.1	0.3	0.5
LnGrp LOS	D		D	D		E	A	C	B	A	A	A
Approach Vol, veh/h		78			145			1112			996	
Approach Delay, s/veh		52.2			55.6			20.1			0.7	
Approach LOS		D			E			C			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.4	86.5	9.0	15.1	7.4	88.4	10.1	14.1				
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0				
Max Green Setting (Gmax), s	7.0	65.0	7.0	19.0	10.0	62.0	7.0	19.0				
Max Q Clear Time (g_c+I1), s	4.4	2.0	5.0	8.3	3.0	20.8	5.8	4.2				
Green Ext Time (p_c), s	0.0	50.1	0.0	0.3	0.0	35.2	0.0	0.4				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			15.1									
HCM 2010 LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	24	11	374	111	181	20	783	208	46	554	44
Future Volume (veh/h)	16	24	11	374	111	181	20	783	208	46	554	44
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	17	25	0	390	116	0	21	816	0	48	577	0
Adj No. of Lanes	1	2	1	2	1	1	1	2	1	1	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	110	220	99	445	241	205	546	2196	982	511	2227	996
Arrive On Green	0.06	0.06	0.00	0.13	0.13	0.00	0.03	1.00	0.00	0.02	0.63	0.00
Sat Flow, veh/h	1774	3539	1583	3442	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	17	25	0	390	116	0	21	816	0	48	577	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1721	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	1.1	0.8	0.0	13.4	6.9	0.0	0.5	0.0	0.0	1.2	8.7	0.0
Cycle Q Clear(g_c), s	1.1	0.8	0.0	13.4	6.9	0.0	0.5	0.0	0.0	1.2	8.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	110	220	99	445	241	205	546	2196	982	511	2227	996
V/C Ratio(X)	0.15	0.11	0.00	0.88	0.48	0.00	0.04	0.37	0.00	0.09	0.26	0.00
Avail Cap(c_a), veh/h	414	826	369	459	248	211	642	2196	982	592	2227	996
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.97	0.97	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	53.3	53.1	0.0	51.3	48.5	0.0	8.3	0.0	0.0	7.9	9.9	0.0
Incr Delay (d2), s/veh	0.5	0.2	0.0	16.5	1.1	0.0	0.0	0.5	0.0	0.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.4	0.0	7.4	3.7	0.0	0.3	0.1	0.0	0.6	4.3	0.0
LnGrp Delay(d),s/veh	53.7	53.3	0.0	67.8	49.6	0.0	8.3	0.5	0.0	7.9	10.1	0.0
LnGrp LOS	D	D		E	D		A	A		A	B	
Approach Vol, veh/h		42			506			837			625	
Approach Delay, s/veh		53.5			63.6			0.7			10.0	
Approach LOS		D			E			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.5	81.5		20.5	6.6	80.4		12.5				
Change Period (Y+Rc), s	4.0	6.0		5.0	4.0	6.0		5.0				
Max Green Setting (Gmax), s	8.0	48.0		16.0	8.0	48.0		28.0				
Max Q Clear Time (g_c+I1), s	2.5	10.7		15.4	3.2	2.0		3.1				
Green Ext Time (p_c), s	0.0	16.9		0.1	0.0	18.4		0.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				20.5								
HCM 2010 LOS				C								

Existing plus Baseline (Fully Tenanted Sam's Club) PM

HCM 2010 Signalized Intersection Summary  
1: McCaslin Blvd & Marshall Road

Existing + Baseline (Fully Tenanted  
Sam's Club) - PM 05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	801	45	350	67	26	35	166	607	36	125	942	710
Future Volume (veh/h)	801	45	350	67	26	35	166	607	36	125	942	710
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	859	0	361	69	27	36	171	626	0	129	971	0
Adj No. of Lanes	3	0	1	1	1	1	2	3	1	2	3	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	1349	0	395	103	108	92	945	2652	826	608	1969	613
Arrive On Green	0.25	0.00	0.25	0.06	0.06	0.06	0.14	0.52	0.00	0.05	0.77	0.00
Sat Flow, veh/h	5375	0	1575	1792	1881	1591	3476	5136	1599	3476	5136	1599
Grp Volume(v), veh/h	859	0	361	69	27	36	171	626	0	129	971	0
Grp Sat Flow(s),veh/h/ln	1792	0	1575	1792	1881	1591	1738	1712	1599	1738	1712	1599
Q Serve(g_s), s	17.1	0.0	26.7	4.5	1.6	2.6	0.0	8.1	0.0	3.0	8.5	0.0
Cycle Q Clear(g_c), s	17.1	0.0	26.7	4.5	1.6	2.6	0.0	8.1	0.0	3.0	8.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1349	0	395	103	108	92	945	2652	826	608	1969	613
V/C Ratio(X)	0.64	0.00	0.91	0.67	0.25	0.39	0.18	0.24	0.00	0.21	0.49	0.00
Avail Cap(c_a), veh/h	1478	0	433	269	282	239	945	2652	826	608	1969	613
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	40.1	0.0	43.7	55.4	54.1	54.5	22.4	16.0	0.0	24.8	9.6	0.0
Incr Delay (d2), s/veh	0.5	0.0	21.4	7.2	1.2	2.7	0.0	0.2	0.0	0.1	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.5	0.0	14.0	2.5	0.9	1.2	1.9	3.9	0.0	1.4	3.9	0.0
LnGrp Delay(d),s/veh	40.6	0.0	65.1	62.7	55.2	57.2	22.4	16.2	0.0	24.9	10.5	0.0
LnGrp LOS	D		E	E	E	E	C	B		C	B	
Approach Vol, veh/h		1220			132			797			1100	
Approach Delay, s/veh		47.8			59.7			17.5			12.2	
Approach LOS		D			E			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	23.0	52.0		10.9	7.0	68.0		34.1				
Change Period (Y+Rc), s	6.0	* 6		4.0	4.0	6.0		4.0				
Max Green Setting (Gmax), s	5.0	* 46		18.0	3.0	48.0		33.0				
Max Q Clear Time (g_c+I1), s	2.0	10.5		6.5	5.0	10.1		28.7				
Green Ext Time (p_c), s	1.1	7.6		0.3	0.0	4.7		1.4				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			28.8									
HCM 2010 LOS			C									
<b>Notes</b>												

HCM Signalized Intersection Capacity Analysis  
2: McCaslin Boulevard & US-36 E ramps

Existing + Baseline (Fully Tenanted  
Sam's Club) - PM  
05/21/2019



Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations		↑↑↑		↑↑↑					↑↑↑	
Traffic Volume (vph)	0	504	0	1201	0	0	0	0	1281	0
Future Volume (vph)	0	504	0	1201	0	0	0	0	1281	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5		7.5					9.3	
Lane Util. Factor		0.76		0.91					0.94	
Frbp, ped/bikes		1.00		1.00					1.00	
Flpb, ped/bikes		1.00		1.00					1.00	
Frt		0.85		1.00					1.00	
Flt Protected		1.00		1.00					0.95	
Satd. Flow (prot)		3646		5136					5040	
Flt Permitted		1.00		1.00					0.95	
Satd. Flow (perm)		3646		5136					5040	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	520	0	1238	0	0	0	0	1321	0
RTOR Reduction (vph)	0	41	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	479	0	1238	0	0	0	0	1321	0
Confl. Peds. (#/hr)	8		8							
Confl. Bikes (#/hr)					1				5	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type		Prot		NA					Prot	
Protected Phases		4		8					2	
Permitted Phases										
Actuated Green, G (s)		33.9		33.9					69.3	
Effective Green, g (s)		33.9		33.9					69.3	
Actuated g/C Ratio		0.28		0.28					0.58	
Clearance Time (s)		7.5		7.5					9.3	
Vehicle Extension (s)		8.0		0.2					8.0	
Lane Grp Cap (vph)		1029		1450					2910	
v/s Ratio Prot		0.13		c0.24					c0.26	
v/s Ratio Perm										
v/c Ratio		0.47		0.85					0.45	
Uniform Delay, d1		35.6		40.7					14.5	
Progression Factor		1.00		1.29					1.74	
Incremental Delay, d2		1.4		4.6					0.3	
Delay (s)		37.0		57.3					25.6	
Level of Service		D		E					C	
Approach Delay (s)	37.0			57.3			0.0		25.6	
Approach LOS	D			E			A		C	
<b>Intersection Summary</b>										
HCM 2000 Control Delay			40.3		HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.59							
Actuated Cycle Length (s)			120.0		Sum of lost time (s)				16.8	
Intersection Capacity Utilization			61.6%		ICU Level of Service				B	
Analysis Period (min)			15							
c Critical Lane Group										

HCM Signalized Intersection Capacity Analysis  
3: McCaslin Boulevard & US-36 W ramps

Existing + Baseline (Fully Tenanted  
Sam's Club) - PM 05/21/2019

										
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR	NEL	NER
Lane Configurations					  				  	
Traffic Volume (vph)	0	0	0	0	1731	0	0	629	1236	0
Future Volume (vph)	0	0	0	0	1731	0	0	629	1236	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					7.2			7.2	9.3	
Lane Util. Factor					0.91			1.00	0.94	
Frbp, ped/bikes					1.00			1.00	1.00	
Flpb, ped/bikes					1.00			1.00	1.00	
Frt					1.00			0.86	1.00	
Flt Protected					1.00			1.00	0.95	
Satd. Flow (prot)					5136			1627	5040	
Flt Permitted					1.00			1.00	0.95	
Satd. Flow (perm)					5136			1627	5040	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	0	1803	0	0	655	1288	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	36	0	0
Lane Group Flow (vph)	0	0	0	0	1803	0	0	619	1288	0
Confl. Peds. (#/hr)						3		2	3	
Confl. Bikes (#/hr)										
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type					NA			Prot	Prot	
Protected Phases					2			6	8	
Permitted Phases										
Actuated Green, G (s)					44.8			44.8	58.7	
Effective Green, g (s)					44.8			44.8	58.7	
Actuated g/C Ratio					0.37			0.37	0.49	
Clearance Time (s)					7.2			7.2	9.3	
Vehicle Extension (s)					8.0			8.0	8.0	
Lane Grp Cap (vph)					1917			607	2465	
v/s Ratio Prot					0.35			c0.38	c0.26	
v/s Ratio Perm										
v/c Ratio					0.94			1.02	0.52	
Uniform Delay, d1					36.3			37.6	21.0	
Progression Factor					1.14			1.00	0.21	
Incremental Delay, d2					5.8			41.7	0.7	
Delay (s)					47.2			79.3	5.2	
Level of Service					D			E	A	
Approach Delay (s)		0.0			47.2		79.3		5.2	
Approach LOS		A			D		E		A	
<b>Intersection Summary</b>										
HCM 2000 Control Delay			38.3		HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.74							
Actuated Cycle Length (s)			120.0		Sum of lost time (s)				16.5	
Intersection Capacity Utilization			87.4%		ICU Level of Service				E	
Analysis Period (min)			15							
c Critical Lane Group										

HCM 2010 Signalized Intersection Summary  
4: McCaslin Blvd & Dillon Road

Existing + Baseline (Fully Tenanted  
Sam's Club) - PM 05/21/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	188	260	646	118	207	175	1165	500	266	1215	103
Future Volume (veh/h)	145	188	260	646	118	207	175	1165	500	266	1215	103
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	151	196	0	673	123	0	182	1214	0	277	1266	0
Adj No. of Lanes	2	1	1	2	1	1	2	2	1	2	3	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	214	272	231	362	352	299	243	1747	781	290	2578	803
Arrive On Green	0.06	0.14	0.00	0.03	0.06	0.00	0.07	0.49	0.00	0.17	1.00	0.00
Sat Flow, veh/h	3476	1881	1599	3476	1881	1599	3476	3574	1599	3476	5136	1599
Grp Volume(v), veh/h	151	196	0	673	123	0	182	1214	0	277	1266	0
Grp Sat Flow(s),veh/h/ln	1738	1881	1599	1738	1881	1599	1738	1787	1599	1738	1712	1599
Q Serve(g_s), s	5.1	11.9	0.0	12.5	7.5	0.0	6.2	31.6	0.0	9.5	0.0	0.0
Cycle Q Clear(g_c), s	5.1	11.9	0.0	12.5	7.5	0.0	6.2	31.6	0.0	9.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	214	272	231	362	352	299	243	1747	781	290	2578	803
V/C Ratio(X)	0.71	0.72	0.00	1.86	0.35	0.00	0.75	0.70	0.00	0.96	0.49	0.00
Avail Cap(c_a), veh/h	768	455	386	362	352	299	463	1747	781	290	2578	803
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	0.95	0.95	0.00	1.00	1.00	0.00	0.72	0.72	0.00
Uniform Delay (d), s/veh	55.2	49.0	0.0	57.9	49.3	0.0	54.8	23.8	0.0	49.8	0.0	0.0
Incr Delay (d2), s/veh	3.1	3.6	0.0	396.4	0.6	0.0	3.4	2.3	0.0	33.5	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	6.5	0.0	26.0	4.0	0.0	3.1	16.1	0.0	5.9	0.1	0.0
LnGrp Delay(d),s/veh	58.4	52.6	0.0	454.3	49.8	0.0	58.2	26.1	0.0	83.3	0.5	0.0
LnGrp LOS	E	D		F	D		E	C		F	A	
Approach Vol, veh/h		347			796			1396			1543	
Approach Delay, s/veh		55.1			391.8			30.3			15.4	
Approach LOS		E			F			C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.4	66.2	12.9	27.5	15.0	64.6	18.0	22.4				
Change Period (Y+Rc), s	5.0	6.0	5.5	5.0	5.0	6.0	5.5	5.0				
Max Green Setting (Gmax), s	16.0	41.0	26.5	15.0	10.0	47.0	12.5	29.0				
Max Q Clear Time (g_c+I1), s	8.2	2.0	7.1	9.5	11.5	33.6	14.5	13.9				
Green Ext Time (p_c), s	0.2	35.5	0.3	0.8	0.0	12.9	0.0	0.9				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				97.2								
HCM 2010 LOS				F								

HCM 2010 Signalized Intersection Summary  
5: Coal Creek Ci/Dahlia Street & Dillon Road

Existing + Baseline (Fully Tenanted  
Sam's Club) - PM 05/21/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	769	6	3	674	144	88	13	8	191	8	87
Future Volume (veh/h)	101	769	6	3	674	144	88	13	8	191	8	87
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	0.99		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1881	1881	1881	1900	1881	1881	1900
Adj Flow Rate, veh/h	111	845	7	3	741	158	97	14	9	210	9	96
Adj No. of Lanes	1	2	1	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	452	2344	1023	360	2218	967	256	221	142	334	28	303
Arrive On Green	0.01	0.22	0.22	0.00	0.62	0.62	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1792	3574	1560	1792	3574	1559	1288	1061	682	1385	136	1451
Grp Volume(v), veh/h	111	845	7	3	741	158	97	0	23	210	0	105
Grp Sat Flow(s),veh/h/ln	1792	1787	1560	1792	1787	1559	1288	0	1743	1385	0	1588
Q Serve(g_s), s	2.6	24.1	0.4	0.1	11.9	5.1	8.3	0.0	1.3	17.2	0.0	6.7
Cycle Q Clear(g_c), s	2.6	24.1	0.4	0.1	11.9	5.1	15.0	0.0	1.3	18.5	0.0	6.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.39	1.00		0.91
Lane Grp Cap(c), veh/h	452	2344	1023	360	2218	967	256	0	363	334	0	331
V/C Ratio(X)	0.25	0.36	0.01	0.01	0.33	0.16	0.38	0.00	0.06	0.63	0.00	0.32
Avail Cap(c_a), veh/h	534	2344	1023	461	2218	967	417	0	581	507	0	529
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.68	0.68	0.68	1.00	1.00	1.00	1.00	0.00	1.00	0.96	0.00	0.96
Uniform Delay (d), s/veh	8.1	25.6	16.3	10.2	10.9	9.6	46.6	0.0	38.1	45.5	0.0	40.3
Incr Delay (d2), s/veh	0.1	0.3	0.0	0.0	0.4	0.4	1.1	0.0	0.1	2.3	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	12.1	0.2	0.0	6.0	2.3	3.0	0.0	0.6	6.8	0.0	3.0
LnGrp Delay(d),s/veh	8.2	25.9	16.4	10.2	11.3	10.0	47.7	0.0	38.2	47.8	0.0	40.9
LnGrp LOS	A	C	B	B	B	A	D		D	D		D
Approach Vol, veh/h		963			902			120			315	
Approach Delay, s/veh		23.8			11.1			45.9			45.5	
Approach LOS		C			B			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.3	84.7		30.0	9.5	80.5		30.0				
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	7.0	57.0		40.0	10.0	54.0		40.0				
Max Q Clear Time (g_c+I1), s	2.1	26.1		20.5	4.6	13.9		17.0				
Green Ext Time (p_c), s	0.0	14.0		2.1	0.1	15.5		2.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				22.9								
HCM 2010 LOS				C								

HCM 2010 Signalized Intersection Summary  
6: Dahlia St/Dahlia Street & Cherry Street

Existing + Baseline (Fully Tenanted  
Sam's Club) - PM 05/21/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	376	97	84	212	7	61	77	131	11	86	77
Future Volume (veh/h)	95	376	97	84	212	7	61	77	131	11	86	77
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	0.99		0.97	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1900	1881	1881	1900	1881	1881	1900
Adj Flow Rate, veh/h	97	384	99	86	216	7	62	79	134	11	88	79
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	723	1696	733	639	1666	54	246	118	200	197	172	155
Arrive On Green	0.11	0.95	0.95	0.05	0.47	0.47	0.06	0.06	0.06	0.19	0.19	0.19
Sat Flow, veh/h	1792	3574	1545	1792	3530	114	1214	615	1043	1166	900	808
Grp Volume(v), veh/h	97	384	99	86	109	114	62	0	213	11	0	167
Grp Sat Flow(s),veh/h/ln	1792	1787	1545	1792	1787	1857	1214	0	1658	1166	0	1707
Q Serve(g_s), s	1.6	0.4	0.2	1.4	2.1	2.1	3.0	0.0	7.5	0.5	0.0	5.3
Cycle Q Clear(g_c), s	1.6	0.4	0.2	1.4	2.1	2.1	8.3	0.0	7.5	8.1	0.0	5.3
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.63	1.00		0.47
Lane Grp Cap(c), veh/h	723	1696	733	639	843	876	246	0	317	197	0	327
V/C Ratio(X)	0.13	0.23	0.14	0.13	0.13	0.13	0.25	0.00	0.67	0.06	0.00	0.51
Avail Cap(c_a), veh/h	836	1696	733	757	843	876	317	0	415	265	0	427
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	0.90	1.00	1.00	1.00	0.99	0.00	0.99	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.8	0.8	0.8	7.2	8.9	8.9	29.2	0.0	26.3	26.4	0.0	21.7
Incr Delay (d2), s/veh	0.0	0.3	0.3	0.0	0.3	0.3	0.5	0.0	2.7	0.1	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.2	0.2	0.7	1.1	1.1	1.0	0.0	3.7	0.2	0.0	2.6
LnGrp Delay(d),s/veh	6.8	1.1	1.2	7.2	9.2	9.2	29.7	0.0	28.9	26.6	0.0	23.0
LnGrp LOS	A	A	A	A	A	A	C		C	C		C
Approach Vol, veh/h		580			309			275			178	
Approach Delay, s/veh		2.1			8.7			29.1			23.2	
Approach LOS		A			A			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.0	34.5		17.5	8.2	34.3		17.5				
Change Period (Y+Rc), s	5.0	6.0		6.0	5.0	6.0		6.0				
Max Green Setting (Gmax), s	7.0	21.0		15.0	7.0	21.0		15.0				
Max Q Clear Time (g_c+I1), s	3.4	2.4		10.1	3.6	4.1		10.3				
Green Ext Time (p_c), s	0.0	5.2		1.2	0.0	5.0		1.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				11.9								
HCM 2010 LOS				B								

HCM Signalized Intersection Capacity Analysis  
7: McCaslin Boulevard & Centennial Parkway/Cherry Street

Existing + Baseline (Fully Tenanted Sam's Club) - PM  
05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	72	207	264	24	131	60	1064	290	201	1182	59
Future Volume (vph)	83	72	207	264	24	131	60	1064	290	201	1182	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	3574	1556	3467	1881	1562	1787	3574	1566	1787	3574	1537
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.13	1.00	1.00	0.19	1.00	1.00
Satd. Flow (perm)	1787	3574	1556	3467	1881	1562	253	3574	1566	350	3574	1537
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	86	74	213	272	25	135	62	1097	299	207	1219	61
RTOR Reduction (vph)	0	0	151	0	0	119	0	0	128	0	0	29
Lane Group Flow (vph)	86	74	62	272	25	16	62	1097	171	207	1219	32
Confl. Peds. (#/hr)	2		2	2		2	6		5	5		6
Confl. Bikes (#/hr)			5			3			2			3
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	custom	NA	Perm	custom	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases	3		3	4		4	6		6	2		2
Actuated Green, G (s)	12.3	12.3	12.3	14.4	14.4	14.4	74.1	65.3	65.3	70.5	63.5	63.5
Effective Green, g (s)	12.3	12.3	12.3	14.4	14.4	14.4	74.1	65.3	65.3	70.5	63.5	63.5
Actuated g/C Ratio	0.10	0.10	0.10	0.12	0.12	0.12	0.62	0.54	0.54	0.59	0.53	0.53
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.5	3.5	3.5	2.5	2.5	2.5	3.0	4.0	4.0	2.0	4.0	4.0
Lane Grp Cap (vph)	183	366	159	416	225	187	268	1944	852	289	1891	813
v/s Ratio Prot	c0.05	0.02		c0.08	0.01		0.02	0.31		c0.04	0.34	
v/s Ratio Perm			0.04			0.01	0.13		0.11	c0.38		0.02
v/c Ratio	0.47	0.20	0.39	0.65	0.11	0.09	0.23	0.56	0.20	0.72	0.64	0.04
Uniform Delay, d1	50.8	49.4	50.3	50.4	47.1	47.0	12.7	18.0	14.0	13.9	20.2	13.6
Progression Factor	1.00	1.00	1.00	1.00	1.02	2.39	0.49	0.40	0.07	1.15	0.64	1.00
Incremental Delay, d2	2.2	0.3	1.9	3.3	0.2	0.1	0.3	0.9	0.4	6.5	1.6	0.1
Delay (s)	53.0	49.7	52.2	53.6	48.4	112.3	6.6	8.0	1.4	22.4	14.5	13.7
Level of Service	D	D	D	D	D	F	A	A	A	C	B	B
Approach Delay (s)		51.9			71.7			6.6			15.5	
Approach LOS		D			E			A			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			22.2			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			21.0			
Intersection Capacity Utilization			69.4%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 2010 Signalized Intersection Summary  
8: McCaslin Boulevard & Century Drive

Existing + Baseline (Fully Tenanted  
Sam's Club) - PM 05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	141	24	89	30	9	38	90	1074	57	82	1237	35
Future Volume (veh/h)	141	24	89	30	9	38	90	1074	57	82	1237	35
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.98		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1881	1881	1900	1881	1881	1881	1881	1881	1900
Adj Flow Rate, veh/h	145	25	92	31	9	39	93	1107	59	85	1275	36
Adj No. of Lanes	1	1	0	1	1	0	1	3	1	1	3	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	251	42	154	165	18	78	390	3298	1002	406	3285	93
Arrive On Green	0.08	0.12	0.12	0.02	0.06	0.06	0.04	0.85	0.85	0.06	1.00	1.00
Sat Flow, veh/h	1792	344	1266	1792	303	1314	1792	5136	1561	1792	5131	145
Grp Volume(v), veh/h	145	0	117	31	0	48	93	1107	59	85	851	460
Grp Sat Flow(s),veh/h/ln	1792	0	1611	1792	0	1617	1792	1712	1561	1792	1712	1852
Q Serve(g_s), s	8.9	0.0	8.3	1.9	0.0	3.5	2.2	5.3	0.7	2.0	0.0	0.0
Cycle Q Clear(g_c), s	8.9	0.0	8.3	1.9	0.0	3.5	2.2	5.3	0.7	2.0	0.0	0.0
Prop In Lane	1.00		0.79	1.00		0.81	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	251	0	196	165	0	96	390	3298	1002	406	2192	1186
V/C Ratio(X)	0.58	0.00	0.60	0.19	0.00	0.50	0.24	0.34	0.06	0.21	0.39	0.39
Avail Cap(c_a), veh/h	251	0	322	276	0	323	479	3298	1002	499	2192	1186
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.82	0.82	0.82	0.81	0.81	0.81
Uniform Delay (d), s/veh	46.2	0.0	49.9	51.6	0.0	54.7	6.7	3.5	3.2	6.7	0.0	0.0
Incr Delay (d2), s/veh	2.8	0.0	2.2	0.4	0.0	2.9	0.1	0.2	0.1	0.1	0.4	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.0	3.8	1.0	0.0	1.6	1.1	2.4	0.3	1.0	0.1	0.3
LnGrp Delay(d),s/veh	49.1	0.0	52.1	52.0	0.0	57.6	6.8	3.7	3.3	6.8	0.4	0.8
LnGrp LOS	D		D	D		E	A	A	A	A	A	A
Approach Vol, veh/h		262			79			1259			1396	
Approach Delay, s/veh		50.4			55.4			3.9			0.9	
Approach LOS		D			E			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	82.8	15.0	13.2	8.8	83.1	7.6	20.6				
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0				
Max Green Setting (Gmax), s	10.0	54.0	10.0	24.0	10.0	54.0	10.0	24.0				
Max Q Clear Time (g_c+I1), s	4.2	2.0	10.9	5.5	4.0	7.3	3.9	10.3				
Green Ext Time (p_c), s	0.0	48.5	0.0	0.7	0.0	43.9	0.0	0.6				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			8.0									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary  
 9: McCaslin Boulevard & Via Appia Way/Via Appia Way

Existing + Baseline (Fully Tenanted  
 Sam's Club) - PM 05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	118	16	336	18	66	18	672	582	140	987	22
Future Volume (veh/h)	41	118	16	336	18	66	18	672	582	140	987	22
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	44	126	0	357	19	0	19	715	0	149	1050	0
Adj No. of Lanes	1	2	1	2	1	1	1	2	1	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	136	271	121	420	228	193	334	2104	941	582	2234	999
Arrive On Green	0.08	0.08	0.00	0.12	0.12	0.00	0.02	1.00	0.00	0.05	0.62	0.00
Sat Flow, veh/h	1792	3574	1599	3476	1881	1599	1792	3574	1599	1792	3574	1599
Grp Volume(v), veh/h	44	126	0	357	19	0	19	715	0	149	1050	0
Grp Sat Flow(s),veh/h/ln	1792	1787	1599	1738	1881	1599	1792	1787	1599	1792	1787	1599
Q Serve(g_s), s	2.8	4.1	0.0	12.1	1.1	0.0	0.5	0.0	0.0	3.8	18.7	0.0
Cycle Q Clear(g_c), s	2.8	4.1	0.0	12.1	1.1	0.0	0.5	0.0	0.0	3.8	18.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	136	271	121	420	228	193	334	2104	941	582	2234	999
V/C Ratio(X)	0.32	0.47	0.00	0.85	0.08	0.00	0.06	0.34	0.00	0.26	0.47	0.00
Avail Cap(c_a), veh/h	373	745	333	492	267	227	478	2104	941	615	2234	999
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.94	0.94	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	52.5	53.1	0.0	51.7	46.8	0.0	10.5	0.0	0.0	7.9	12.0	0.0
Incr Delay (d2), s/veh	1.0	0.9	0.0	11.1	0.1	0.0	0.0	0.4	0.0	0.1	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	2.0	0.0	6.5	0.6	0.0	0.3	0.1	0.0	1.8	9.4	0.0
LnGrp Delay(d),s/veh	53.6	54.0	0.0	62.8	47.0	0.0	10.5	0.4	0.0	8.0	12.7	0.0
LnGrp LOS	D	D		E	D		B	A		A	B	
Approach Vol, veh/h		170			376			734			1199	
Approach Delay, s/veh		53.9			62.0			0.7			12.1	
Approach LOS		D			E			A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.4	81.0		19.5	9.8	76.6		14.1				
Change Period (Y+Rc), s	4.0	6.0		5.0	4.0	6.0		5.0				
Max Green Setting (Gmax), s	11.0	47.0		17.0	8.0	50.0		25.0				
Max Q Clear Time (g_c+I1), s	2.5	20.7		14.1	5.8	2.0		6.1				
Green Ext Time (p_c), s	0.0	18.0		0.3	0.0	26.2		0.6				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				19.1								
HCM 2010 LOS				B								

Existing plus Alternative 2 AM

HCM 2010 Signalized Intersection Summary  
 1: McCaslin Blvd & Marshall Road

Existing + Alternative 2 - AM  
 05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	347	12	68	36	13	51	243	835	68	109	438	335
Future Volume (veh/h)	347	12	68	36	13	51	243	835	68	109	438	335
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	367	0	70	37	13	53	251	861	0	112	452	0
Adj No. of Lanes	3	0	1	1	1	1	2	3	1	2	3	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	482	0	140	95	100	83	1649	3362	1047	576	2056	640
Arrive On Green	0.09	0.00	0.09	0.05	0.05	0.05	0.28	0.67	0.00	0.06	0.68	0.00
Sat Flow, veh/h	5270	0	1528	1757	1845	1526	3408	5036	1568	3408	5036	1568
Grp Volume(v), veh/h	367	0	70	37	13	53	251	861	0	112	452	0
Grp Sat Flow(s),veh/h/ln	1757	0	1528	1757	1845	1526	1704	1679	1568	1704	1679	1568
Q Serve(g_s), s	8.2	0.0	5.2	2.4	0.8	4.1	0.0	8.2	0.0	2.5	4.0	0.0
Cycle Q Clear(g_c), s	8.2	0.0	5.2	2.4	0.8	4.1	0.0	8.2	0.0	2.5	4.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	482	0	140	95	100	83	1649	3362	1047	576	2056	640
V/C Ratio(X)	0.76	0.00	0.50	0.39	0.13	0.64	0.15	0.26	0.00	0.19	0.22	0.00
Avail Cap(c_a), veh/h	1142	0	331	293	307	254	1649	3362	1047	650	2056	640
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	53.2	0.0	51.9	54.8	54.1	55.6	11.1	8.0	0.0	22.8	11.9	0.0
Incr Delay (d2), s/veh	0.9	0.0	1.0	2.6	0.6	8.0	0.0	0.2	0.0	0.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.0	2.3	1.3	0.4	1.9	1.9	3.8	0.0	1.2	1.9	0.0
LnGrp Delay(d),s/veh	54.2	0.0	52.9	57.4	54.6	63.6	11.1	8.2	0.0	22.9	12.2	0.0
LnGrp LOS	D		D	E	D	E	B	A		C	B	
Approach Vol, veh/h		437			103			1112			564	
Approach Delay, s/veh		54.0			60.3			8.8			14.3	
Approach LOS		D			E			A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	39.5	55.0		10.5	8.4	86.1		15.0				
Change Period (Y+Rc), s	6.0	* 6		4.0	4.0	6.0		4.0				
Max Green Setting (Gmax), s	7.0	* 49		20.0	7.0	49.0		26.0				
Max Q Clear Time (g_c+I1), s	2.0	6.0		6.1	4.5	10.2		10.2				
Green Ext Time (p_c), s	0.9	3.2		0.2	0.0	7.0		0.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			21.5									
HCM 2010 LOS			C									
<b>Notes</b>												

# HCM Signalized Intersection Capacity Analysis

## 2: McCaslin Boulevard & US-36 E ramps

Existing + Alternative 2 - AM

05/21/2019



Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations		↑↑↑		↑↑↑					↑↑↑	
Traffic Volume (vph)	0	210	0	1123	0	0	0	0	694	0
Future Volume (vph)	0	210	0	1123	0	0	0	0	694	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5		7.5					9.3	
Lane Util. Factor		0.76		0.91					0.94	
Frbp, ped/bikes		1.00		1.00					1.00	
Flpb, ped/bikes		1.00		1.00					1.00	
Frt		0.85		1.00					1.00	
Flt Protected		1.00		1.00					0.95	
Satd. Flow (prot)		3610		5085					4990	
Flt Permitted		1.00		1.00					0.95	
Satd. Flow (perm)		3610		5085					4990	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	214	0	1146	0	0	0	0	708	0
RTOR Reduction (vph)	0	159	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	55	0	1146	0	0	0	0	708	0
Confl. Peds. (#/hr)			1						2	
Confl. Bikes (#/hr)					1					
Turn Type		Prot		NA					Prot	
Protected Phases		4		8					2	
Permitted Phases										
Actuated Green, G (s)		30.8		30.8					72.4	
Effective Green, g (s)		30.8		30.8					72.4	
Actuated g/C Ratio		0.26		0.26					0.60	
Clearance Time (s)		7.5		7.5					9.3	
Vehicle Extension (s)		8.0		0.2					8.0	
Lane Grp Cap (vph)		926		1305					3010	
v/s Ratio Prot		0.02		c0.23					c0.14	
v/s Ratio Perm										
v/c Ratio		0.06		0.88					0.24	
Uniform Delay, d1		33.7		42.8					11.0	
Progression Factor		1.00		1.14					0.55	
Incremental Delay, d2		0.1		6.6					0.2	
Delay (s)		33.8		55.6					6.2	
Level of Service		C		E					A	
Approach Delay (s)	33.8			55.6			0.0		6.2	
Approach LOS	C			E			A		A	
<b>Intersection Summary</b>										
HCM 2000 Control Delay			36.4		HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.43							
Actuated Cycle Length (s)			120.0		Sum of lost time (s)				16.8	
Intersection Capacity Utilization			48.9%		ICU Level of Service				A	
Analysis Period (min)			15							

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
3: McCaslin Boulevard & US-36 W ramps

Existing + Alternative 2 - AM  
05/21/2019



Movement	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR	NEL	NER
Lane Configurations					↑↑↑↑			↑	↑↑↑↑	
Traffic Volume (vph)	0	0	0	0	975	0	0	685	1004	0
Future Volume (vph)	0	0	0	0	975	0	0	685	1004	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					7.2			7.2	9.3	
Lane Util. Factor					0.91			1.00	0.94	
Frbp, ped/bikes					1.00			1.00	1.00	
Flpb, ped/bikes					1.00			1.00	1.00	
Frt					1.00			0.86	1.00	
Flt Protected					1.00			1.00	0.95	
Satd. Flow (prot)					5085			1611	4990	
Flt Permitted					1.00			1.00	0.95	
Satd. Flow (perm)					5085			1611	4990	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	0	1037	0	0	729	1068	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	42	0	0
Lane Group Flow (vph)	0	0	0	0	1037	0	0	687	1068	0
Confl. Peds. (#/hr)									7	
Confl. Bikes (#/hr)										
Turn Type					NA			Prot	Prot	
Protected Phases					2			6	8	
Permitted Phases										
Actuated Green, G (s)					42.8			42.8	60.7	
Effective Green, g (s)					42.8			42.8	60.7	
Actuated g/C Ratio					0.36			0.36	0.51	
Clearance Time (s)					7.2			7.2	9.3	
Vehicle Extension (s)					8.0			8.0	8.0	
Lane Grp Cap (vph)					1813			574	2524	
v/s Ratio Prot					0.20			c0.43	c0.21	
v/s Ratio Perm										
v/c Ratio					0.57			1.20	0.42	
Uniform Delay, d1					31.2			38.6	18.6	
Progression Factor					1.24			1.00	0.23	
Incremental Delay, d2					0.8			104.8	0.5	
Delay (s)					39.6			143.4	4.7	
Level of Service					D			F	A	
Approach Delay (s)		0.0			39.6		143.4		4.7	
Approach LOS		A			D		F		A	
<b>Intersection Summary</b>										
HCM 2000 Control Delay			53.2		HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.74							
Actuated Cycle Length (s)			120.0		Sum of lost time (s)				16.5	
Intersection Capacity Utilization			51.7%		ICU Level of Service				A	
Analysis Period (min)			15							
c Critical Lane Group										

HCM 2010 Signalized Intersection Summary  
4: McCaslin Blvd & Dillon Road

Existing + Alternative 2 - AM  
05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	26	65	444	143	293	198	1058	414	140	821	97
Future Volume (veh/h)	45	26	65	444	143	293	198	1058	414	140	821	97
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	48	28	0	472	152	0	211	1126	0	149	873	0
Adj No. of Lanes	2	1	1	2	1	1	2	2	1	2	3	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	160	143	121	272	203	173	269	2144	959	204	2984	929
Arrive On Green	0.05	0.08	0.00	0.03	0.04	0.00	0.08	0.61	0.00	0.12	1.00	0.00
Sat Flow, veh/h	3442	1863	1583	3442	1863	1583	3442	3539	1583	3442	5085	1583
Grp Volume(v), veh/h	48	28	0	472	152	0	211	1126	0	149	873	0
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1721	1863	1583	1721	1770	1583	1721	1695	1583
Q Serve(g_s), s	1.6	1.7	0.0	9.5	9.7	0.0	7.2	22.1	0.0	5.0	0.0	0.0
Cycle Q Clear(g_c), s	1.6	1.7	0.0	9.5	9.7	0.0	7.2	22.1	0.0	5.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	160	143	121	272	203	173	269	2144	959	204	2984	929
V/C Ratio(X)	0.30	0.20	0.00	1.73	0.75	0.00	0.78	0.53	0.00	0.73	0.29	0.00
Avail Cap(c_a), veh/h	875	528	449	272	203	173	373	2144	959	373	2984	929
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	0.96	0.96	0.00	1.00	1.00	0.00	0.89	0.89	0.00
Uniform Delay (d), s/veh	55.3	51.9	0.0	58.4	56.2	0.0	54.3	13.7	0.0	52.0	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.7	0.0	343.9	13.5	0.0	6.2	0.9	0.0	3.3	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.9	0.0	17.5	5.8	0.0	3.7	11.1	0.0	2.5	0.1	0.0
LnGrp Delay(d),s/veh	56.1	52.6	0.0	402.3	69.7	0.0	60.5	14.6	0.0	55.3	0.2	0.0
LnGrp LOS	E	D		F	E		E	B		E	A	
Approach Vol, veh/h		76			624			1337			1022	
Approach Delay, s/veh		54.8			321.3			21.8			8.2	
Approach LOS		D			F			C			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.4	76.4	11.1	18.1	12.1	78.7	15.0	14.2				
Change Period (Y+Rc), s	5.0	6.0	5.5	5.0	5.0	6.0	5.5	5.0				
Max Green Setting (Gmax), s	13.0	42.0	30.5	13.0	13.0	42.0	9.5	34.0				
Max Q Clear Time (g_c+I1), s	9.2	2.0	3.6	11.7	7.0	24.1	11.5	3.7				
Green Ext Time (p_c), s	0.2	32.1	0.1	0.1	0.2	16.0	0.0	0.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				79.2								
HCM 2010 LOS				E								

HCM 2010 Signalized Intersection Summary  
5: Coal Creek Ci/Dahlia Street & Dillon Road

Existing + Alternative 2 - AM  
05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	469	95	8	691	118	10	0	2	166	23	57
Future Volume (veh/h)	31	469	95	8	691	118	10	0	2	166	23	57
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	34	510	103	9	751	128	11	0	2	180	25	62
Adj No. of Lanes	1	2	1	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	477	2504	1097	548	2467	1103	197	0	242	274	72	178
Arrive On Green	0.01	0.23	0.23	0.01	0.70	0.70	0.15	0.00	0.15	0.15	0.15	0.15
Sat Flow, veh/h	1774	3539	1551	1774	3539	1583	1305	0	1583	1409	471	1167
Grp Volume(v), veh/h	34	510	103	9	751	128	11	0	2	180	0	87
Grp Sat Flow(s),veh/h/ln	1774	1770	1551	1774	1770	1583	1305	0	1583	1409	0	1638
Q Serve(g_s), s	0.7	13.9	6.2	0.2	9.8	3.2	0.9	0.0	0.1	14.9	0.0	5.7
Cycle Q Clear(g_c), s	0.7	13.9	6.2	0.2	9.8	3.2	6.6	0.0	0.1	15.0	0.0	5.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.71
Lane Grp Cap(c), veh/h	477	2504	1097	548	2467	1103	197	0	242	274	0	250
V/C Ratio(X)	0.07	0.20	0.09	0.02	0.30	0.12	0.06	0.00	0.01	0.66	0.00	0.35
Avail Cap(c_a), veh/h	550	2504	1097	640	2467	1103	433	0	528	528	0	546
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	0.90	1.00	1.00	1.00	1.00	0.00	1.00	0.94	0.00	0.94
Uniform Delay (d), s/veh	5.5	18.8	15.9	6.0	7.0	6.0	48.4	0.0	43.1	49.5	0.0	45.5
Incr Delay (d2), s/veh	0.0	0.2	0.2	0.0	0.3	0.2	0.1	0.0	0.0	3.0	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	6.9	2.7	0.1	4.8	1.5	0.3	0.0	0.1	6.0	0.0	2.7
LnGrp Delay(d),s/veh	5.5	19.0	16.0	6.0	7.3	6.2	48.6	0.0	43.1	52.5	0.0	46.4
LnGrp LOS	A	B	B	A	A	A	D		D	D		D
Approach Vol, veh/h		647			888			13			267	
Approach Delay, s/veh		17.8			7.1			47.7			50.5	
Approach LOS		B			A			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.8	90.9		23.3	7.0	89.6		23.3				
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	7.0	57.0		40.0	7.0	57.0		40.0				
Max Q Clear Time (g_c+I1), s	2.2	15.9		17.0	2.7	11.8		8.6				
Green Ext Time (p_c), s	0.0	11.8		1.3	0.0	12.0		1.4				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			17.6									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary  
6: Dahlia St/Dahlia Street & Cherry Street

Existing + Alternative 2 - AM  
05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	135	50	96	329	8	56	40	43	18	76	97
Future Volume (veh/h)	43	135	50	96	329	8	56	40	43	18	76	97
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	46	144	53	102	350	9	60	43	46	19	81	103
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	629	1684	735	775	1742	45	222	153	164	303	137	174
Arrive On Green	0.07	0.95	0.95	0.05	0.49	0.49	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	1774	3539	1546	1774	3523	90	1191	822	879	1296	735	935
Grp Volume(v), veh/h	46	144	53	102	175	184	60	0	89	19	0	184
Grp Sat Flow(s),veh/h/ln	1774	1770	1546	1774	1770	1844	1191	0	1701	1296	0	1670
Q Serve(g_s), s	0.8	0.1	0.1	1.7	3.3	3.4	2.9	0.0	2.7	0.8	0.0	6.0
Cycle Q Clear(g_c), s	0.8	0.1	0.1	1.7	3.3	3.4	9.0	0.0	2.7	3.5	0.0	6.0
Prop In Lane	1.00		1.00	1.00		0.05	1.00		0.52	1.00		0.56
Lane Grp Cap(c), veh/h	629	1684	735	775	875	912	222	0	317	303	0	312
V/C Ratio(X)	0.07	0.09	0.07	0.13	0.20	0.20	0.27	0.00	0.28	0.06	0.00	0.59
Avail Cap(c_a), veh/h	773	1684	735	885	875	912	238	0	340	321	0	334
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.99	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.1	0.8	0.8	7.0	8.5	8.5	26.4	0.0	21.0	22.4	0.0	22.3
Incr Delay (d2), s/veh	0.0	0.1	0.2	0.0	0.5	0.5	0.6	0.0	0.5	0.1	0.0	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.1	0.1	0.8	1.7	1.8	1.0	0.0	1.3	0.3	0.0	3.0
LnGrp Delay(d),s/veh	7.1	0.9	1.0	7.1	9.0	9.0	27.0	0.0	21.4	22.5	0.0	24.7
LnGrp LOS	A	A	A	A	A	A	C		C	C		C
Approach Vol, veh/h		243			461			149				203
Approach Delay, s/veh		2.1			8.6			23.7				24.5
Approach LOS		A			A			C				C
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.3	34.5		17.2	7.1	35.7		17.2				
Change Period (Y+Rc), s	5.0	6.0		6.0	5.0	6.0		6.0				
Max Green Setting (Gmax), s	7.0	24.0		12.0	7.0	24.0		12.0				
Max Q Clear Time (g_c+I1), s	3.7	2.1		8.0	2.8	5.4		11.0				
Green Ext Time (p_c), s	0.0	4.2		0.7	0.0	4.0		0.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			12.3									
HCM 2010 LOS			B									

HCM Signalized Intersection Capacity Analysis  
 7: McCaslin Boulevard & Centennial Parkway/Cherry Street

Existing + Alternative 2 - AM

05/21/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	34	79	281	86	145	247	948	155	88	724	47
Future Volume (vph)	61	34	79	281	86	145	247	948	155	88	724	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1543	3433	1863	1537	1769	3539	1561	1770	3539	1547
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.32	1.00	1.00	0.23	1.00	1.00
Satd. Flow (perm)	1770	3539	1543	3433	1863	1537	604	3539	1561	420	3539	1547
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	63	35	81	290	89	149	255	977	160	91	746	48
RTOR Reduction (vph)	0	0	74	0	0	131	0	0	70	0	0	21
Lane Group Flow (vph)	63	35	7	290	89	18	255	977	90	91	746	27
Confl. Peds. (#/hr)	2		6	6		2	1		1	1		1
Confl. Bikes (#/hr)			1			7			1			
Turn Type	custom	NA	Perm	custom	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases	3		3	4		4	6		6	2		2
Actuated Green, G (s)	10.1	10.1	10.1	14.2	14.2	14.2	74.2	67.2	67.2	75.2	67.7	67.7
Effective Green, g (s)	10.1	10.1	10.1	14.2	14.2	14.2	74.2	67.2	67.2	75.2	67.7	67.7
Actuated g/C Ratio	0.08	0.08	0.08	0.12	0.12	0.12	0.62	0.56	0.56	0.63	0.56	0.56
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.5	3.5	3.5	2.5	2.5	2.5	3.0	4.0	4.0	2.0	4.0	4.0
Lane Grp Cap (vph)	148	297	129	406	220	181	441	1981	874	347	1996	872
v/s Ratio Prot	c0.04	0.01		c0.08	0.05		c0.03	0.28		0.02	0.21	
v/s Ratio Perm			0.00			0.01	c0.32		0.06	0.15		0.02
v/c Ratio	0.43	0.12	0.05	0.71	0.40	0.10	0.58	0.49	0.10	0.26	0.37	0.03
Uniform Delay, d1	52.2	50.8	50.5	50.9	49.0	47.2	11.1	16.0	12.3	10.0	14.4	11.6
Progression Factor	1.00	1.00	1.00	0.95	0.94	2.00	0.90	0.56	0.60	0.57	1.16	1.00
Incremental Delay, d2	2.3	0.2	0.2	5.4	0.9	0.2	1.5	0.7	0.2	0.1	0.5	0.1
Delay (s)	54.5	51.0	50.8	53.6	47.0	94.6	11.5	9.7	7.6	5.8	17.3	11.7
Level of Service	D	D	D	D	D	F	B	A	A	A	B	B
Approach Delay (s)		52.1			64.1			9.8			15.8	
Approach LOS		D			E			A			B	

Intersection Summary		
HCM 2000 Control Delay	23.7	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.58	C
Actuated Cycle Length (s)	120.0	Sum of lost time (s)
Intersection Capacity Utilization	61.7%	21.0
Analysis Period (min)	15	ICU Level of Service
		B

c Critical Lane Group

HCM 2010 Signalized Intersection Summary  
8: McCaslin Boulevard & Century Drive

Existing + Alternative 2 - AM  
05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	3	26	58	6	74	111	936	29	46	858	47
Future Volume (veh/h)	46	3	26	58	6	74	111	936	29	46	858	47
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.97	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	48	3	27	61	6	78	117	985	31	48	903	49
Adj No. of Lanes	1	1	0	1	1	0	1	3	1	1	3	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	150	11	96	202	8	110	518	3493	1063	387	3313	179
Arrive On Green	0.03	0.07	0.07	0.04	0.08	0.08	0.01	0.23	0.23	0.04	1.00	1.00
Sat Flow, veh/h	1774	159	1429	1774	111	1449	1774	5085	1547	1774	4938	267
Grp Volume(v), veh/h	48	0	30	61	0	84	117	985	31	48	619	333
Grp Sat Flow(s),veh/h/ln	1774	0	1588	1774	0	1561	1774	1695	1547	1774	1695	1815
Q Serve(g_s), s	3.0	0.0	2.2	3.8	0.0	6.3	2.4	19.2	1.9	1.0	0.0	0.0
Cycle Q Clear(g_c), s	3.0	0.0	2.2	3.8	0.0	6.3	2.4	19.2	1.9	1.0	0.0	0.0
Prop In Lane	1.00		0.90	1.00		0.93	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	150	0	107	202	0	119	518	3493	1063	387	2274	1218
V/C Ratio(X)	0.32	0.00	0.28	0.30	0.00	0.71	0.23	0.28	0.03	0.12	0.27	0.27
Avail Cap(c_a), veh/h	194	0	251	230	0	247	557	3493	1063	499	2274	1218
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.87	0.87	0.87	0.86	0.86	0.86
Uniform Delay (d), s/veh	50.0	0.0	53.2	49.3	0.0	54.1	5.6	21.9	15.2	7.1	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.0	1.1	0.6	0.0	5.6	0.1	0.2	0.0	0.0	0.3	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	1.0	1.9	0.0	2.9	1.2	9.1	0.8	0.5	0.1	0.2
LnGrp Delay(d),s/veh	50.9	0.0	54.3	49.9	0.0	59.8	5.7	22.1	15.3	7.1	0.3	0.5
LnGrp LOS	D		D	D		E	A	C	B	A	A	A
Approach Vol, veh/h		78			145			1133			1000	
Approach Delay, s/veh		52.2			55.6			20.2			0.7	
Approach LOS		D			E			C			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.4	86.5	9.0	15.1	7.4	88.4	10.1	14.1				
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0				
Max Green Setting (Gmax), s	7.0	65.0	7.0	19.0	10.0	62.0	7.0	19.0				
Max Q Clear Time (g_c+I1), s	4.4	2.0	5.0	8.3	3.0	21.2	5.8	4.2				
Green Ext Time (p_c), s	0.0	50.6	0.0	0.3	0.0	35.1	0.0	0.4				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			15.2									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary  
 9: McCaslin Boulevard & Via Appia Way/Via Appia Way

Existing + Alternative 2 - AM  
 05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	24	11	376	111	181	20	793	218	46	556	44
Future Volume (veh/h)	16	24	11	376	111	181	20	793	218	46	556	44
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	17	25	0	392	116	0	21	826	0	48	579	0
Adj No. of Lanes	1	2	1	2	1	1	1	2	1	1	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	110	220	99	447	242	206	545	2194	982	507	2225	995
Arrive On Green	0.06	0.06	0.00	0.13	0.13	0.00	0.03	1.00	0.00	0.02	0.63	0.00
Sat Flow, veh/h	1774	3539	1583	3442	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	17	25	0	392	116	0	21	826	0	48	579	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1721	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	1.1	0.8	0.0	13.4	6.9	0.0	0.5	0.0	0.0	1.2	8.7	0.0
Cycle Q Clear(g_c), s	1.1	0.8	0.0	13.4	6.9	0.0	0.5	0.0	0.0	1.2	8.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	110	220	99	447	242	206	545	2194	982	507	2225	995
V/C Ratio(X)	0.15	0.11	0.00	0.88	0.48	0.00	0.04	0.38	0.00	0.09	0.26	0.00
Avail Cap(c_a), veh/h	414	826	369	459	248	211	640	2194	982	588	2225	995
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.97	0.97	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	53.3	53.1	0.0	51.3	48.5	0.0	8.3	0.0	0.0	7.9	9.9	0.0
Incr Delay (d2), s/veh	0.5	0.2	0.0	16.7	1.1	0.0	0.0	0.5	0.0	0.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.4	0.0	7.4	3.7	0.0	0.3	0.1	0.0	0.6	4.3	0.0
LnGrp Delay(d),s/veh	53.7	53.3	0.0	68.0	49.5	0.0	8.4	0.5	0.0	8.0	10.2	0.0
LnGrp LOS	D	D		E	D		A	A		A	B	
Approach Vol, veh/h		42			508			847			627	
Approach Delay, s/veh		53.5			63.8			0.7			10.0	
Approach LOS		D			E			A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.5	81.4		20.6	6.6	80.4		12.5				
Change Period (Y+Rc), s	4.0	6.0		5.0	4.0	6.0		5.0				
Max Green Setting (Gmax), s	8.0	48.0		16.0	8.0	48.0		28.0				
Max Q Clear Time (g_c+I1), s	2.5	10.7		15.4	3.2	2.0		3.1				
Green Ext Time (p_c), s	0.0	17.1		0.1	0.0	18.6		0.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				20.5								
HCM 2010 LOS				C								

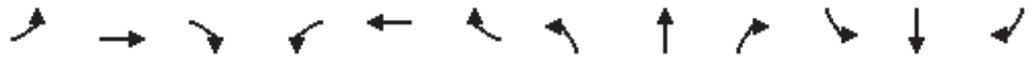
Existing plus Alternative 2 AM (Mitigated)

Timings

Existing + Alternative 2 Mitigation - AM

4: McCaslin Blvd & Dillon Road

05/31/2019

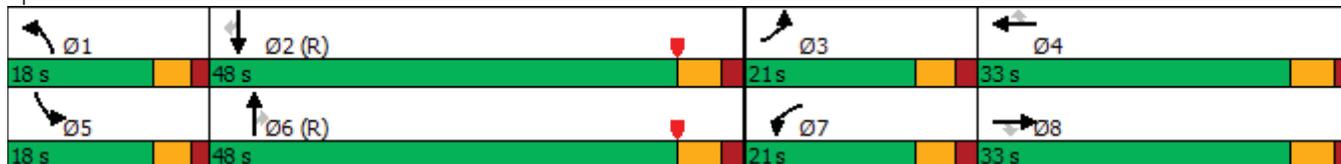


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑	↖	↖↗	↑	↖	↖↗	↑↑	↖	↖↗	↑↑↑	↖
Traffic Volume (vph)	45	26	65	444	143	293	198	1058	414	140	821	97
Future Volume (vph)	45	26	65	444	143	293	198	1058	414	140	821	97
Turn Type	Prot	NA	Perm									
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4			6			2
Detector Phase	3	8	8	7	4	4	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	5.0	7.0	15.0	15.0	7.0	15.0	15.0
Minimum Split (s)	12.5	33.0	33.0	12.5	33.0	33.0	12.0	29.0	29.0	12.0	29.0	29.0
Total Split (s)	21.0	33.0	33.0	21.0	33.0	33.0	18.0	48.0	48.0	18.0	48.0	48.0
Total Split (%)	17.5%	27.5%	27.5%	17.5%	27.5%	27.5%	15.0%	40.0%	40.0%	15.0%	40.0%	40.0%
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0
All-Red Time (s)	2.0	1.0	1.0	2.0	1.0	1.0	1.5	2.0	2.0	1.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.0	5.0	5.5	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag									
Lead-Lag Optimize?												
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max						
Act Effct Green (s)	7.3	11.8	11.8	15.5	20.1	20.1	11.5	63.5	63.5	10.1	62.0	62.0
Actuated g/C Ratio	0.06	0.10	0.10	0.13	0.17	0.17	0.10	0.53	0.53	0.08	0.52	0.52
v/c Ratio	0.23	0.15	0.26	1.07	0.49	0.60	0.64	0.60	0.44	0.52	0.33	0.12
Control Delay	56.3	47.4	2.8	104.1	41.9	15.8	49.9	27.4	10.1	69.4	9.2	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.3	47.4	2.8	104.1	41.9	15.8	49.9	27.4	10.1	69.4	9.2	2.2
LOS	E	D	A	F	D	B	D	C	B	E	A	A
Approach Delay		29.1			64.6			25.8			16.6	
Approach LOS		C			E			C			B	

Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 68 (57%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow  
 Natural Cycle: 100  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.07  
 Intersection Signal Delay: 32.4  
 Intersection LOS: C  
 Intersection Capacity Utilization 68.2%  
 ICU Level of Service C  
 Analysis Period (min) 15

Splits and Phases: 4: McCaslin Blvd & Dillon Road



HCM 2010 Signalized Intersection Summary  
4: McCaslin Blvd & Dillon Road

Existing + Alternative 2 Mitigation - AM  
05/31/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	26	65	444	143	293	198	1058	414	140	821	97
Future Volume (veh/h)	45	26	65	444	143	293	198	1058	414	140	821	97
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	48	28	0	472	152	0	211	1126	0	149	873	0
Adj No. of Lanes	2	1	1	2	1	1	2	2	1	2	3	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	160	150	128	445	304	258	269	1953	874	204	2710	844
Arrive On Green	0.05	0.08	0.00	0.04	0.05	0.00	0.08	0.55	0.00	0.12	1.00	0.00
Sat Flow, veh/h	3442	1863	1583	3442	1863	1583	3442	3539	1583	3442	5085	1583
Grp Volume(v), veh/h	48	28	0	472	152	0	211	1126	0	149	873	0
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1721	1863	1583	1721	1770	1583	1721	1695	1583
Q Serve(g_s), s	1.6	1.7	0.0	15.5	9.5	0.0	7.2	25.1	0.0	5.0	0.0	0.0
Cycle Q Clear(g_c), s	1.6	1.7	0.0	15.5	9.5	0.0	7.2	25.1	0.0	5.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	160	150	128	445	304	258	269	1953	874	204	2710	844
V/C Ratio(X)	0.30	0.19	0.00	1.06	0.50	0.00	0.78	0.58	0.00	0.73	0.32	0.00
Avail Cap(c_a), veh/h	445	435	369	445	435	369	373	1953	874	373	2710	844
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	0.96	0.96	0.00	1.00	1.00	0.00	0.90	0.90	0.00
Uniform Delay (d), s/veh	55.3	51.5	0.0	57.4	52.0	0.0	54.3	17.7	0.0	52.0	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.6	0.0	59.2	1.2	0.0	6.2	1.2	0.0	3.3	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.9	0.0	11.0	5.0	0.0	3.7	12.5	0.0	2.5	0.1	0.0
LnGrp Delay(d),s/veh	56.1	52.1	0.0	116.6	53.2	0.0	60.5	18.9	0.0	55.3	0.3	0.0
LnGrp LOS	E	D		F	D		E	B		E	A	
Approach Vol, veh/h		76			624			1337			1022	
Approach Delay, s/veh		54.6			101.2			25.5			8.3	
Approach LOS		D			F			C			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.4	69.9	11.1	24.6	12.1	72.2	21.0	14.7				
Change Period (Y+Rc), s	5.0	6.0	5.5	5.0	5.0	6.0	5.5	5.0				
Max Green Setting (Gmax), s	13.0	42.0	15.5	28.0	13.0	42.0	15.5	28.0				
Max Q Clear Time (g_c+I1), s	9.2	2.0	3.6	11.5	7.0	27.1	17.5	3.7				
Green Ext Time (p_c), s	0.2	13.3	0.1	0.6	0.2	10.1	0.0	0.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			35.9									
HCM 2010 LOS			D									

Existing plus Alternative 2 PM

HCM 2010 Signalized Intersection Summary  
 1: McCaslin Blvd & Marshall Road

Existing + Alternative 2 - PM  
 05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	796	45	350	67	26	35	166	592	36	125	921	703
Future Volume (veh/h)	796	45	350	67	26	35	166	592	36	125	921	703
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	854	0	361	69	27	36	171	610	0	129	949	0
Adj No. of Lanes	3	0	1	1	1	1	2	3	1	2	3	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	627	0	183	105	110	93	1392	3256	1014	686	2011	626
Arrive On Green	0.12	0.00	0.12	0.06	0.06	0.06	0.27	0.63	0.00	0.08	0.78	0.00
Sat Flow, veh/h	5375	0	1570	1792	1881	1591	3476	5136	1599	3476	5136	1599
Grp Volume(v), veh/h	854	0	361	69	27	36	171	610	0	129	949	0
Grp Sat Flow(s),veh/h/ln	1792	0	1570	1792	1881	1591	1738	1712	1599	1738	1712	1599
Q Serve(g_s), s	14.0	0.0	14.0	4.5	1.6	2.6	0.0	5.9	0.0	2.9	7.6	0.0
Cycle Q Clear(g_c), s	14.0	0.0	14.0	4.5	1.6	2.6	0.0	5.9	0.0	2.9	7.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	627	0	183	105	110	93	1392	3256	1014	686	2011	626
V/C Ratio(X)	1.36	0.00	1.97	0.66	0.25	0.39	0.12	0.19	0.00	0.19	0.47	0.00
Avail Cap(c_a), veh/h	627	0	183	448	470	398	1392	3256	1014	862	2011	626
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	53.0	0.0	53.0	55.3	54.0	54.4	13.2	9.1	0.0	23.6	8.7	0.0
Incr Delay (d2), s/veh	173.0	0.0	456.2	6.8	1.1	2.6	0.0	0.1	0.0	0.0	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.0	0.0	29.3	2.4	0.9	1.2	1.4	2.8	0.0	1.3	3.7	0.0
LnGrp Delay(d),s/veh	226.0	0.0	509.2	62.1	55.1	57.0	13.2	9.3	0.0	23.6	9.5	0.0
LnGrp LOS	F		F	E	E	E	B	A		C	A	
Approach Vol, veh/h		1215			132			781			1078	
Approach Delay, s/veh		310.2			59.3			10.1			11.2	
Approach LOS		F			E			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	38.0	53.0		11.0	8.9	82.1		18.0				
Change Period (Y+Rc), s	6.0	* 6		4.0	4.0	6.0		4.0				
Max Green Setting (Gmax), s	11.0	* 47		30.0	11.0	47.0		14.0				
Max Q Clear Time (g_c+I1), s	2.0	9.6		6.5	4.9	7.9		16.0				
Green Ext Time (p_c), s	1.3	7.4		0.4	0.1	4.6		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay	126.2											
HCM 2010 LOS	F											
<b>Notes</b>												

HCM Signalized Intersection Capacity Analysis  
 2: McCaslin Boulevard & US-36 E ramps

Existing + Alternative 2 - PM  
 05/21/2019



Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations		↑↑↑		↑↑↑					↑↑↑	
Traffic Volume (vph)	0	504	0	1181	0	0	0	0	1253	0
Future Volume (vph)	0	504	0	1181	0	0	0	0	1253	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5		7.5					9.3	
Lane Util. Factor		0.76		0.91					0.94	
Frbp, ped/bikes		1.00		1.00					1.00	
Flpb, ped/bikes		1.00		1.00					1.00	
Frt		0.85		1.00					1.00	
Flt Protected		1.00		1.00					0.95	
Satd. Flow (prot)		3646		5136					5040	
Flt Permitted		1.00		1.00					0.95	
Satd. Flow (perm)		3646		5136					5040	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	520	0	1218	0	0	0	0	1292	0
RTOR Reduction (vph)	0	41	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	479	0	1218	0	0	0	0	1292	0
Confl. Peds. (#/hr)	8		8							
Confl. Bikes (#/hr)					1			5		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type		Prot		NA					Prot	
Protected Phases		4		8					2	
Permitted Phases										
Actuated Green, G (s)		33.3		33.3					69.9	
Effective Green, g (s)		33.3		33.3					69.9	
Actuated g/C Ratio		0.28		0.28					0.58	
Clearance Time (s)		7.5		7.5					9.3	
Vehicle Extension (s)		8.0		0.2					8.0	
Lane Grp Cap (vph)		1011		1425					2935	
v/s Ratio Prot		0.13		c0.24					c0.26	
v/s Ratio Perm										
v/c Ratio		0.47		0.85					0.44	
Uniform Delay, d1		36.1		41.1					14.1	
Progression Factor		1.00		1.32					1.43	
Incremental Delay, d2		1.5		2.9					0.4	
Delay (s)		37.6		57.3					20.5	
Level of Service		D		E					C	
Approach Delay (s)	37.6			57.3			0.0		20.5	
Approach LOS	D			E			A		C	
<b>Intersection Summary</b>										
HCM 2000 Control Delay			38.2				HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio			0.57							
Actuated Cycle Length (s)			120.0				Sum of lost time (s)		16.8	
Intersection Capacity Utilization			60.6%				ICU Level of Service		B	
Analysis Period (min)			15							
c Critical Lane Group										

HCM Signalized Intersection Capacity Analysis  
 3: McCaslin Boulevard & US-36 W ramps

Existing + Alternative 2 - PM  
 05/21/2019

										
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR	NEL	NER
Lane Configurations					↑↑↑			↑	↑↑↑	
Traffic Volume (vph)	0	0	0	0	1675	0	0	610	1197	0
Future Volume (vph)	0	0	0	0	1675	0	0	610	1197	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					7.2			7.2	9.3	
Lane Util. Factor					0.91			1.00	0.94	
Frbp, ped/bikes					1.00			1.00	1.00	
Flpb, ped/bikes					1.00			1.00	1.00	
Frt					1.00			0.86	1.00	
Flt Protected					1.00			1.00	0.95	
Satd. Flow (prot)					5136			1627	5040	
Flt Permitted					1.00			1.00	0.95	
Satd. Flow (perm)					5136			1627	5040	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	0	1745	0	0	635	1247	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	36	0	0
Lane Group Flow (vph)	0	0	0	0	1745	0	0	599	1247	0
Confl. Peds. (#/hr)						3		2	3	
Confl. Bikes (#/hr)										
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type					NA			Prot	Prot	
Protected Phases					2			6	8	
Permitted Phases										
Actuated Green, G (s)					44.8			44.8	58.7	
Effective Green, g (s)					44.8			44.8	58.7	
Actuated g/C Ratio					0.37			0.37	0.49	
Clearance Time (s)					7.2			7.2	9.3	
Vehicle Extension (s)					8.0			8.0	8.0	
Lane Grp Cap (vph)					1917			607	2465	
v/s Ratio Prot					0.34			c0.37	c0.25	
v/s Ratio Perm										
v/c Ratio					0.91			0.99	0.51	
Uniform Delay, d1					35.7			37.3	20.8	
Progression Factor					1.14			1.00	1.00	
Incremental Delay, d2					4.9			33.5	0.7	
Delay (s)					45.7			70.9	21.6	
Level of Service					D			E	C	
Approach Delay (s)		0.0			45.7		70.9		21.6	
Approach LOS		A			D		E		C	
<b>Intersection Summary</b>										
HCM 2000 Control Delay			41.8		HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.71							
Actuated Cycle Length (s)			120.0		Sum of lost time (s)				16.5	
Intersection Capacity Utilization			85.5%		ICU Level of Service				E	
Analysis Period (min)			15							
c Critical Lane Group										

HCM 2010 Signalized Intersection Summary  
4: McCaslin Blvd & Dillon Road

Existing + Alternative 2 - PM  
05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	188	260	587	118	198	175	1125	483	262	1190	103
Future Volume (veh/h)	145	188	260	587	118	198	175	1125	483	262	1190	103
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	151	196	0	611	123	0	182	1172	0	273	1240	0
Adj No. of Lanes	2	1	1	2	1	1	2	2	1	2	3	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	214	272	231	362	352	299	243	1747	781	290	2578	803
Arrive On Green	0.06	0.14	0.00	0.03	0.06	0.00	0.07	0.49	0.00	0.17	1.00	0.00
Sat Flow, veh/h	3476	1881	1599	3476	1881	1599	3476	3574	1599	3476	5136	1599
Grp Volume(v), veh/h	151	196	0	611	123	0	182	1172	0	273	1240	0
Grp Sat Flow(s),veh/h/ln	1738	1881	1599	1738	1881	1599	1738	1787	1599	1738	1712	1599
Q Serve(g_s), s	5.1	11.9	0.0	12.5	7.5	0.0	6.2	29.9	0.0	9.3	0.0	0.0
Cycle Q Clear(g_c), s	5.1	11.9	0.0	12.5	7.5	0.0	6.2	29.9	0.0	9.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	214	272	231	362	352	299	243	1747	781	290	2578	803
V/C Ratio(X)	0.71	0.72	0.00	1.69	0.35	0.00	0.75	0.67	0.00	0.94	0.48	0.00
Avail Cap(c_a), veh/h	768	455	386	362	352	299	463	1747	781	290	2578	803
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	0.95	0.95	0.00	1.00	1.00	0.00	0.74	0.74	0.00
Uniform Delay (d), s/veh	55.2	49.0	0.0	57.9	49.3	0.0	54.8	23.3	0.0	49.7	0.0	0.0
Incr Delay (d2), s/veh	3.1	3.6	0.0	320.6	0.6	0.0	3.4	2.1	0.0	31.1	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	6.5	0.0	22.1	4.0	0.0	3.1	15.2	0.0	5.7	0.1	0.0
LnGrp Delay(d),s/veh	58.4	52.6	0.0	378.5	49.8	0.0	58.2	25.4	0.0	80.8	0.5	0.0
LnGrp LOS	E	D		F	D		E	C		F	A	
Approach Vol, veh/h		347			734			1354			1513	
Approach Delay, s/veh		55.1			323.4			29.8			15.0	
Approach LOS		E			F			C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.4	66.2	12.9	27.5	15.0	64.6	18.0	22.4				
Change Period (Y+Rc), s	5.0	6.0	5.5	5.0	5.0	6.0	5.5	5.0				
Max Green Setting (Gmax), s	16.0	41.0	26.5	15.0	10.0	47.0	12.5	29.0				
Max Q Clear Time (g_c+I1), s	8.2	2.0	7.1	9.5	11.3	31.9	14.5	13.9				
Green Ext Time (p_c), s	0.2	35.1	0.3	0.8	0.0	14.4	0.0	0.9				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				80.9								
HCM 2010 LOS				F								

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	97	761	6	3	665	143	88	13	8	185	8	78
Future Volume (veh/h)	97	761	6	3	665	143	88	13	8	185	8	78
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	0.99		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1881	1881	1881	1900	1881	1881	1900
Adj Flow Rate, veh/h	107	836	7	3	731	157	97	14	9	203	9	86
Adj No. of Lanes	1	2	1	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	459	2360	1030	368	2238	976	259	216	139	328	31	294
Arrive On Green	0.01	0.22	0.22	0.00	0.63	0.63	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	1792	3574	1560	1792	3574	1559	1299	1061	682	1385	151	1439
Grp Volume(v), veh/h	107	836	7	3	731	157	97	0	23	203	0	95
Grp Sat Flow(s),veh/h/ln	1792	1787	1560	1792	1787	1559	1299	0	1743	1385	0	1590
Q Serve(g_s), s	2.5	23.8	0.4	0.1	11.5	5.0	8.2	0.0	1.3	16.6	0.0	6.1
Cycle Q Clear(g_c), s	2.5	23.8	0.4	0.1	11.5	5.0	14.3	0.0	1.3	17.9	0.0	6.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.39	1.00		0.91
Lane Grp Cap(c), veh/h	459	2360	1030	368	2238	976	259	0	356	328	0	324
V/C Ratio(X)	0.23	0.35	0.01	0.01	0.33	0.16	0.37	0.00	0.06	0.62	0.00	0.29
Avail Cap(c_a), veh/h	543	2360	1030	468	2238	976	427	0	581	507	0	530
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.69	0.69	0.69	1.00	1.00	1.00	1.00	0.00	1.00	0.96	0.00	0.96
Uniform Delay (d), s/veh	7.9	25.2	16.1	9.9	10.5	9.3	46.5	0.0	38.5	45.8	0.0	40.4
Incr Delay (d2), s/veh	0.1	0.3	0.0	0.0	0.4	0.4	1.1	0.0	0.1	2.2	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	11.9	0.2	0.0	5.8	2.2	3.0	0.0	0.6	6.6	0.0	2.7
LnGrp Delay(d),s/veh	7.9	25.5	16.1	9.9	10.9	9.7	47.6	0.0	38.6	48.0	0.0	41.0
LnGrp LOS	A	C	B	A	B	A	D		D	D		D
Approach Vol, veh/h		950			891			120			298	
Approach Delay, s/veh		23.5			10.7			45.8			45.8	
Approach LOS		C			B			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.3	85.2		29.5	9.4	81.1		29.5				
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	7.0	57.0		40.0	10.0	54.0		40.0				
Max Q Clear Time (g_c+I1), s	2.1	25.8		19.9	4.5	13.5		16.3				
Green Ext Time (p_c), s	0.0	13.9		2.0	0.1	15.3		2.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				22.6								
HCM 2010 LOS				C								

HCM 2010 Signalized Intersection Summary  
6: Dahlia St/Dahlia Street & Cherry Street

Existing + Alternative 2 - PM  
05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	91	372	95	82	209	7	59	74	128	11	84	74
Future Volume (veh/h)	91	372	95	82	209	7	59	74	128	11	84	74
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	0.99		0.97	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1900	1881	1881	1900	1881	1881	1900
Adj Flow Rate, veh/h	93	380	97	84	213	7	60	76	131	11	86	76
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	729	1711	740	645	1681	55	245	114	197	197	170	150
Arrive On Green	0.11	0.96	0.96	0.05	0.48	0.48	0.06	0.06	0.06	0.19	0.19	0.19
Sat Flow, veh/h	1792	3574	1545	1792	3529	116	1219	608	1048	1172	907	801
Grp Volume(v), veh/h	93	380	97	84	107	113	60	0	207	11	0	162
Grp Sat Flow(s),veh/h/ln	1792	1787	1545	1792	1787	1857	1219	0	1657	1172	0	1708
Q Serve(g_s), s	1.5	0.3	0.2	1.4	2.0	2.0	2.9	0.0	7.3	0.5	0.0	5.1
Cycle Q Clear(g_c), s	1.5	0.3	0.2	1.4	2.0	2.0	8.0	0.0	7.3	7.9	0.0	5.1
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.63	1.00		0.47
Lane Grp Cap(c), veh/h	729	1711	740	645	851	885	245	0	311	197	0	321
V/C Ratio(X)	0.13	0.22	0.13	0.13	0.13	0.13	0.24	0.00	0.67	0.06	0.00	0.51
Avail Cap(c_a), veh/h	844	1711	740	764	851	885	321	0	414	270	0	427
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.92	1.00	1.00	1.00	0.99	0.00	0.99	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.7	0.7	0.7	7.1	8.7	8.8	29.1	0.0	26.3	26.5	0.0	21.9
Incr Delay (d2), s/veh	0.0	0.3	0.3	0.0	0.3	0.3	0.5	0.0	2.4	0.1	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.2	0.1	0.7	1.1	1.1	1.0	0.0	3.6	0.2	0.0	2.5
LnGrp Delay(d),s/veh	6.7	0.9	1.0	7.1	9.1	9.0	29.6	0.0	28.7	26.6	0.0	23.1
LnGrp LOS	A	A	A	A	A	A	C		C	C		C
Approach Vol, veh/h		570			304			267			173	
Approach Delay, s/veh		1.9			8.5			28.9			23.3	
Approach LOS		A			A			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.0	34.7		17.3	8.2	34.6		17.3				
Change Period (Y+Rc), s	5.0	6.0		6.0	5.0	6.0		6.0				
Max Green Setting (Gmax), s	7.0	21.0		15.0	7.0	21.0		15.0				
Max Q Clear Time (g_c+I1), s	3.4	2.3		9.9	3.5	4.0		10.0				
Green Ext Time (p_c), s	0.0	5.2		1.1	0.0	4.9		1.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			11.7									
HCM 2010 LOS			B									

HCM Signalized Intersection Capacity Analysis  
 7: McCaslin Boulevard & Centennial Parkway/Cherry Street

Existing + Alternative 2 - PM

05/21/2019

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	83	72	207	236	24	123	60	1044	275	195	1168	59	
Future Volume (vph)	83	72	207	236	24	123	60	1044	275	195	1168	59	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.96	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	3574	1556	3467	1881	1562	1787	3574	1566	1787	3574	1537	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.14	1.00	1.00	0.20	1.00	1.00	
Satd. Flow (perm)	1787	3574	1556	3467	1881	1562	269	3574	1566	370	3574	1537	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	
Adj. Flow (vph)	86	74	213	243	25	127	62	1076	284	201	1204	61	
RTOR Reduction (vph)	0	0	160	0	0	113	0	0	121	0	0	28	
Lane Group Flow (vph)	86	74	53	243	25	14	62	1076	163	201	1204	33	
Confl. Peds. (#/hr)	2		2	2		2	6		5	5		6	
Confl. Bikes (#/hr)			5			3			2			3	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	
Turn Type	custom	NA	Perm	custom	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases	3	3		4	4		1	6		5	2		
Permitted Phases	3		3	4		4	6		6	2		2	
Actuated Green, G (s)	12.1	12.1	12.1	13.4	13.4	13.4	75.3	66.5	66.5	71.7	64.7	64.7	
Effective Green, g (s)	12.1	12.1	12.1	13.4	13.4	13.4	75.3	66.5	66.5	71.7	64.7	64.7	
Actuated g/C Ratio	0.10	0.10	0.10	0.11	0.11	0.11	0.63	0.55	0.55	0.60	0.54	0.54	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.5	3.5	3.5	2.5	2.5	2.5	3.0	4.0	4.0	2.0	4.0	4.0	
Lane Grp Cap (vph)	180	360	156	387	210	174	280	1980	867	303	1926	828	
v/s Ratio Prot	c0.05	0.02		c0.07	0.01		0.02	0.30		c0.04	0.34		
v/s Ratio Perm			0.03			0.01	0.12		0.10	c0.36		0.02	
v/c Ratio	0.48	0.21	0.34	0.63	0.12	0.08	0.22	0.54	0.19	0.66	0.63	0.04	
Uniform Delay, d1	51.0	49.5	50.2	50.9	48.0	47.8	11.9	17.1	13.3	12.9	19.2	13.0	
Progression Factor	1.00	1.00	1.00	0.98	1.00	2.85	0.50	0.39	0.09	1.23	0.62	1.00	
Incremental Delay, d2	2.4	0.3	1.5	2.7	0.2	0.1	0.3	0.9	0.4	4.0	1.5	0.1	
Delay (s)	53.3	49.9	51.8	52.8	48.2	136.1	6.3	7.4	1.6	19.9	13.3	13.1	
Level of Service	D	D	D	D	D	F	A	A	A	B	B	B	
Approach Delay (s)		51.7			79.3			6.2			14.2		
Approach LOS		D			E			A			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			22.0			HCM 2000 Level of Service							C
HCM 2000 Volume to Capacity ratio			0.62										
Actuated Cycle Length (s)			120.0			Sum of lost time (s)							21.0
Intersection Capacity Utilization			68.2%			ICU Level of Service							C
Analysis Period (min)			15										
c Critical Lane Group													

HCM 2010 Signalized Intersection Summary  
 8: McCaslin Boulevard & Century Drive

Existing + Alternative 2 - PM  
 05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	141	24	89	30	9	38	90	1046	57	82	1217	35
Future Volume (veh/h)	141	24	89	30	9	38	90	1046	57	82	1217	35
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.98		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1881	1881	1900	1881	1881	1881	1881	1881	1900
Adj Flow Rate, veh/h	145	25	92	31	9	39	93	1078	59	85	1255	36
Adj No. of Lanes	1	1	0	1	1	0	1	3	1	1	3	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	251	42	154	165	18	78	395	3298	1002	415	3283	94
Arrive On Green	0.08	0.12	0.12	0.02	0.06	0.06	0.04	0.85	0.85	0.06	1.00	1.00
Sat Flow, veh/h	1792	344	1266	1792	303	1314	1792	5136	1561	1792	5128	147
Grp Volume(v), veh/h	145	0	117	31	0	48	93	1078	59	85	838	453
Grp Sat Flow(s),veh/h/ln	1792	0	1611	1792	0	1617	1792	1712	1561	1792	1712	1851
Q Serve(g_s), s	8.9	0.0	8.3	1.9	0.0	3.5	2.2	5.1	0.7	2.0	0.0	0.0
Cycle Q Clear(g_c), s	8.9	0.0	8.3	1.9	0.0	3.5	2.2	5.1	0.7	2.0	0.0	0.0
Prop In Lane	1.00		0.79	1.00		0.81	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	251	0	196	165	0	96	395	3298	1002	415	2192	1185
V/C Ratio(X)	0.58	0.00	0.60	0.19	0.00	0.50	0.24	0.33	0.06	0.20	0.38	0.38
Avail Cap(c_a), veh/h	251	0	322	276	0	323	485	3298	1002	508	2192	1185
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.84	0.84	0.84	0.82	0.82	0.82
Uniform Delay (d), s/veh	46.2	0.0	49.9	51.6	0.0	54.7	6.7	3.5	3.2	6.7	0.0	0.0
Incr Delay (d2), s/veh	2.8	0.0	2.2	0.4	0.0	2.9	0.1	0.2	0.1	0.1	0.4	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.0	3.8	1.0	0.0	1.6	1.1	2.3	0.3	1.0	0.1	0.3
LnGrp Delay(d),s/veh	49.1	0.0	52.1	52.0	0.0	57.6	6.8	3.7	3.3	6.8	0.4	0.8
LnGrp LOS	D		D	D		E	A	A	A	A	A	A
Approach Vol, veh/h		262			79			1230			1376	
Approach Delay, s/veh		50.4			55.4			3.9			0.9	
Approach LOS		D			E			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	82.8	15.0	13.2	8.8	83.1	7.6	20.6				
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0				
Max Green Setting (Gmax), s	10.0	54.0	10.0	24.0	10.0	54.0	10.0	24.0				
Max Q Clear Time (g_c+I1), s	4.2	2.0	10.9	5.5	4.0	7.1	3.9	10.3				
Green Ext Time (p_c), s	0.0	48.2	0.0	0.7	0.0	43.7	0.0	0.6				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			8.0									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary  
 9: McCaslin Boulevard & Via Appia Way/Via Appia Way

Existing + Alternative 2 - PM  
 05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	118	16	326	18	66	18	658	568	140	977	22
Future Volume (veh/h)	41	118	16	326	18	66	18	658	568	140	977	22
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	44	126	0	347	19	0	19	700	0	149	1039	0
Adj No. of Lanes	1	2	1	2	1	1	1	2	1	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	136	271	121	412	223	189	340	2113	945	589	2243	1003
Arrive On Green	0.08	0.08	0.00	0.12	0.12	0.00	0.02	1.00	0.00	0.05	0.63	0.00
Sat Flow, veh/h	1792	3574	1599	3476	1881	1599	1792	3574	1599	1792	3574	1599
Grp Volume(v), veh/h	44	126	0	347	19	0	19	700	0	149	1039	0
Grp Sat Flow(s),veh/h/ln	1792	1787	1599	1738	1881	1599	1792	1787	1599	1792	1787	1599
Q Serve(g_s), s	2.8	4.1	0.0	11.7	1.1	0.0	0.5	0.0	0.0	3.7	18.3	0.0
Cycle Q Clear(g_c), s	2.8	4.1	0.0	11.7	1.1	0.0	0.5	0.0	0.0	3.7	18.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	136	271	121	412	223	189	340	2113	945	589	2243	1003
V/C Ratio(X)	0.32	0.47	0.00	0.84	0.09	0.00	0.06	0.33	0.00	0.25	0.46	0.00
Avail Cap(c_a), veh/h	373	745	333	492	267	227	483	2113	945	623	2243	1003
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.94	0.94	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	52.5	53.1	0.0	51.8	47.1	0.0	10.3	0.0	0.0	7.8	11.7	0.0
Incr Delay (d2), s/veh	1.0	0.9	0.0	10.3	0.1	0.0	0.0	0.4	0.0	0.1	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	2.0	0.0	6.2	0.6	0.0	0.2	0.1	0.0	1.8	9.2	0.0
LnGrp Delay(d),s/veh	53.6	54.0	0.0	62.1	47.2	0.0	10.3	0.4	0.0	7.9	12.4	0.0
LnGrp LOS	D	D		E	D		B	A		A	B	
Approach Vol, veh/h		170			366			719			1188	
Approach Delay, s/veh		53.9			61.4			0.7			11.9	
Approach LOS		D			E			A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.4	81.3		19.2	9.7	77.0		14.1				
Change Period (Y+Rc), s	4.0	6.0		5.0	4.0	6.0		5.0				
Max Green Setting (Gmax), s	11.0	47.0		17.0	8.0	50.0		25.0				
Max Q Clear Time (g_c+I1), s	2.5	20.3		13.7	5.7	2.0		6.1				
Green Ext Time (p_c), s	0.0	17.9		0.4	0.0	25.7		0.6				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				18.9								
HCM 2010 LOS				B								

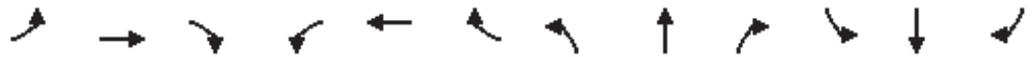
Existing plus Alternative 2 PM (Mitigated)

Timings

Existing + Alternative 2 Mitigation - PM

4: McCaslin Blvd & Dillon Road

05/31/2019

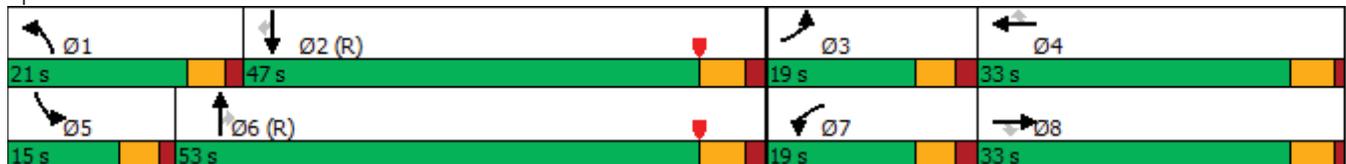


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑	↖	↖↗	↑	↖	↖↗	↖↗	↖	↖↗	↖↗↗	↖
Traffic Volume (vph)	145	188	260	587	118	198	175	1125	483	262	1190	103
Future Volume (vph)	145	188	260	587	118	198	175	1125	483	262	1190	103
Turn Type	Prot	NA	Perm									
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4			6			2
Detector Phase	3	8	8	7	4	4	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	5.0	7.0	15.0	15.0	7.0	15.0	15.0
Minimum Split (s)	12.5	33.0	33.0	12.5	33.0	33.0	12.0	29.0	29.0	12.0	29.0	29.0
Total Split (s)	19.0	33.0	33.0	19.0	33.0	33.0	21.0	53.0	53.0	15.0	47.0	47.0
Total Split (%)	15.8%	27.5%	27.5%	15.8%	27.5%	27.5%	17.5%	44.2%	44.2%	12.5%	39.2%	39.2%
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0
All-Red Time (s)	2.0	1.0	1.0	2.0	1.0	1.0	1.5	2.0	2.0	1.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.0	5.0	5.5	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag									
Lead-Lag Optimize?												
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max						
Act Effct Green (s)	10.1	18.8	18.8	13.5	22.2	22.2	11.1	56.2	56.2	10.0	55.1	55.1
Actuated g/C Ratio	0.08	0.16	0.16	0.11	0.18	0.18	0.09	0.47	0.47	0.08	0.46	0.46
v/c Ratio	0.52	0.67	0.67	1.57	0.35	0.45	0.57	0.70	0.52	0.95	0.53	0.13
Control Delay	58.7	57.9	23.1	299.9	41.7	16.4	53.1	41.1	17.4	96.9	26.9	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.7	57.9	23.1	299.9	41.7	16.4	53.1	41.1	17.4	96.9	26.9	6.1
LOS	E	E	C	F	D	B	D	D	B	F	C	A
Approach Delay		42.8			204.0			35.9			37.3	
Approach LOS		D			F			D			D	

Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 75 (63%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow  
 Natural Cycle: 120  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.57  
 Intersection Signal Delay: 68.6  
 Intersection LOS: E  
 Intersection Capacity Utilization 85.6%  
 ICU Level of Service E  
 Analysis Period (min) 15

Splits and Phases: 4: McCaslin Blvd & Dillon Road



HCM 2010 Signalized Intersection Summary  
4: McCaslin Blvd & Dillon Road

Existing + Alternative 2 Mitigation - PM

05/31/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	188	260	587	118	198	175	1125	483	262	1190	103
Future Volume (veh/h)	145	188	260	587	118	198	175	1125	483	262	1190	103
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	151	196	0	611	123	0	182	1172	0	273	1240	0
Adj No. of Lanes	2	1	1	2	1	1	2	2	1	2	3	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	210	270	230	391	368	313	243	1721	770	290	2541	791
Arrive On Green	0.06	0.14	0.00	0.04	0.06	0.00	0.07	0.48	0.00	0.17	0.99	0.00
Sat Flow, veh/h	3476	1881	1599	3476	1881	1599	3476	3574	1599	3476	5136	1599
Grp Volume(v), veh/h	151	196	0	611	123	0	182	1172	0	273	1240	0
Grp Sat Flow(s),veh/h/ln	1738	1881	1599	1738	1881	1599	1738	1787	1599	1738	1712	1599
Q Serve(g_s), s	5.1	12.0	0.0	13.5	7.5	0.0	6.2	30.4	0.0	9.3	0.6	0.0
Cycle Q Clear(g_c), s	5.1	12.0	0.0	13.5	7.5	0.0	6.2	30.4	0.0	9.3	0.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	210	270	230	391	368	313	243	1721	770	290	2541	791
V/C Ratio(X)	0.72	0.73	0.00	1.56	0.33	0.00	0.75	0.68	0.00	0.94	0.49	0.00
Avail Cap(c_a), veh/h	391	439	373	391	439	373	463	1721	770	290	2541	791
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	0.95	0.95	0.00	1.00	1.00	0.00	0.77	0.77	0.00
Uniform Delay (d), s/veh	55.4	49.1	0.0	57.8	48.6	0.0	54.8	24.0	0.0	49.7	0.3	0.0
Incr Delay (d2), s/veh	3.4	3.7	0.0	264.8	0.5	0.0	3.4	2.2	0.0	31.7	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	6.5	0.0	20.9	4.0	0.0	3.1	15.5	0.0	5.8	0.3	0.0
LnGrp Delay(d),s/veh	58.8	52.8	0.0	322.6	49.2	0.0	58.2	26.2	0.0	81.4	0.8	0.0
LnGrp LOS	E	D		F	D		E	C		F	A	
Approach Vol, veh/h		347			734			1354			1513	
Approach Delay, s/veh		55.4			276.8			30.5			15.4	
Approach LOS		E			F			C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.4	65.4	12.7	28.5	15.0	63.8	19.0	22.2				
Change Period (Y+Rc), s	5.0	6.0	5.5	5.0	5.0	6.0	5.5	5.0				
Max Green Setting (Gmax), s	16.0	41.0	13.5	28.0	10.0	47.0	13.5	28.0				
Max Q Clear Time (g_c+I1), s	8.2	2.6	7.1	9.5	11.3	32.4	15.5	14.0				
Green Ext Time (p_c), s	0.2	20.1	0.2	0.5	0.0	10.2	0.0	0.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				72.7								
HCM 2010 LOS				E								

## 2040 AM – Signal Retiming



Timings

2040 AM

3: McCaslin Boulevard & US-36 W ramps - 2040 Signal Timing

05/21/2019



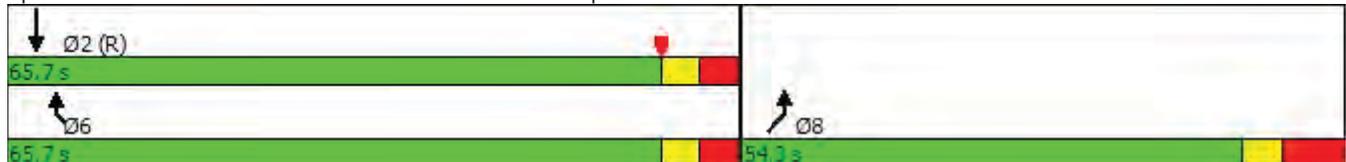
Lane Group	SBT	NWR	NEL
Lane Configurations	↑↑↑	↑	↑↑↑
Traffic Volume (vph)	1440	1040	1515
Future Volume (vph)	1440	1040	1515
Turn Type	NA	Prot	Prot
Protected Phases	2	6	8
Permitted Phases			
Detector Phase	2	6	8
Switch Phase			
Minimum Initial (s)	10.0	10.0	10.0
Minimum Split (s)	43.2	43.2	54.3
Total Split (s)	65.7	65.7	54.3
Total Split (%)	54.8%	54.8%	45.3%
Yellow Time (s)	3.5	3.5	3.5
All-Red Time (s)	3.7	3.7	5.8
Lost Time Adjust (s)	0.0	0.0	0.0
Total Lost Time (s)	7.2	7.2	9.3
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	C-Max	Max	Max
Act Effct Green (s)	58.5	58.5	45.0
Actuated g/C Ratio	0.49	0.49	0.38
v/c Ratio	0.62	1.36	0.86
Control Delay	39.8	196.5	28.4
Queue Delay	0.0	0.8	0.0
Total Delay	39.8	197.4	28.4
LOS	D	F	C
Approach Delay	39.8		28.4
Approach LOS	D		C

Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 48 (40%), Referenced to phase 2:SBT, Start of Yellow  
 Natural Cycle: 140  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.36  
 Intersection Signal Delay: 76.5  
 Intersection Capacity Utilization 70.4%  
 Analysis Period (min) 15

Intersection LOS: E  
 ICU Level of Service C

Splits and Phases: 3: McCaslin Boulevard & US-36 W ramps



Timings

2040 AM

4: McCaslin Blvd & Dillon Road - 2040 Signal Timing

05/21/2019

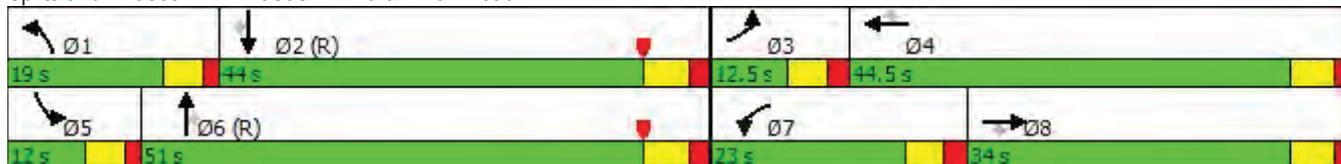


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑	↖	↖↗	↑	↖	↖↗	↑↑	↖	↖↗	↑↑↑↑	↖
Traffic Volume (vph)	70	45	105	615	225	445	310	1595	625	215	1240	155
Future Volume (vph)	70	45	105	615	225	445	310	1595	625	215	1240	155
Turn Type	Prot	NA	Perm									
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4			6			2
Detector Phase	3	8	8	7	4	4	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	5.0	7.0	15.0	15.0	7.0	15.0	15.0
Minimum Split (s)	12.5	34.0	34.0	12.5	18.0	18.0	12.0	29.0	29.0	12.0	29.0	29.0
Total Split (s)	12.5	34.0	34.0	23.0	44.5	44.5	19.0	51.0	51.0	12.0	44.0	44.0
Total Split (%)	10.4%	28.3%	28.3%	19.2%	37.1%	37.1%	15.8%	42.5%	42.5%	10.0%	36.7%	36.7%
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.0
All-Red Time (s)	2.0	1.0	1.0	2.0	1.0	1.0	1.5	2.0	2.0	1.5	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.0	5.0	5.5	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag									
Lead-Lag Optimize?												
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max						
Act Effct Green (s)	7.0	20.5	20.5	17.5	33.5	33.5	13.7	53.5	53.5	7.0	46.9	46.9
Actuated g/C Ratio	0.06	0.17	0.17	0.15	0.28	0.28	0.11	0.45	0.45	0.06	0.39	0.39
v/c Ratio	0.37	0.15	0.25	1.31	0.46	0.85	0.84	1.08	0.73	1.15	0.66	0.23
Control Delay	59.9	39.5	1.4	185.9	26.8	33.2	51.9	75.9	22.7	140.4	30.2	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	39.5	1.4	185.9	26.8	33.2	51.9	75.9	22.7	140.4	30.2	5.7
LOS	E	D	A	F	C	C	D	E	C	F	C	A
Approach Delay		27.7			105.2			59.8			42.6	
Approach LOS		C			F			E			D	

Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 68 (57%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.31  
 Intersection Signal Delay: 63.9  
 Intersection Capacity Utilization 93.4%  
 Analysis Period (min) 15  
 Intersection LOS: E  
 ICU Level of Service F

Splits and Phases: 4: McCaslin Blvd & Dillon Road

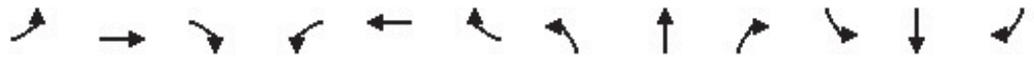


Timings

2040 AM

7: McCaslin Boulevard & Centennial Parkway/Cherry Street - 2040 Signal Timing

05/21/2019

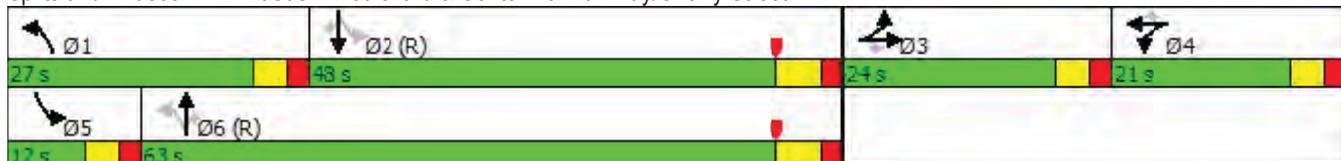


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗	↘	↘↗	↗	↘	↘	↗↗	↘	↘	↗↗	↘
Traffic Volume (vph)	95	55	125	405	135	215	385	1445	225	130	1105	75
Future Volume (vph)	95	55	125	405	135	215	385	1445	225	130	1105	75
Turn Type	custom	NA	Perm	custom	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases	3		3	4		4	6		6	2		2
Detector Phase	3	3	3	4	4	4	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	7.0	16.0	16.0	7.0	15.0	15.0
Minimum Split (s)	24.0	24.0	24.0	21.0	21.0	21.0	12.0	28.0	28.0	12.0	27.0	27.0
Total Split (s)	24.0	24.0	24.0	21.0	21.0	21.0	27.0	63.0	63.0	12.0	48.0	48.0
Total Split (%)	20.0%	20.0%	20.0%	17.5%	17.5%	17.5%	22.5%	52.5%	52.5%	10.0%	40.0%	40.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Act Effct Green (s)	12.6	12.6	12.6	16.0	16.0	16.0	76.4	63.4	63.4	56.4	48.4	48.4
Actuated g/C Ratio	0.10	0.10	0.10	0.13	0.13	0.13	0.64	0.53	0.53	0.47	0.40	0.40
v/c Ratio	0.53	0.15	0.42	0.92	0.56	0.56	1.00	0.80	0.25	0.77	0.80	0.11
Control Delay	60.4	48.1	7.3	74.1	55.5	18.2	72.0	15.8	2.9	45.1	40.0	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.4	48.1	7.3	74.1	55.5	18.2	72.0	15.8	2.9	45.1	40.0	6.4
LOS	E	D	A	E	E	B	E	B	A	D	D	A
Approach Delay		33.8			54.8			24.9			38.6	
Approach LOS		C			D			C			D	

Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 75 (63%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow  
 Natural Cycle: 105  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.00  
 Intersection Signal Delay: 34.7  
 Intersection LOS: C  
 Intersection Capacity Utilization 87.9%  
 ICU Level of Service E  
 Analysis Period (min) 15

Splits and Phases: 7: McCaslin Boulevard & Centennial Parkway/Cherry Street



2040 AM

HCM 2010 Signalized Intersection Summary  
 1: McCaslin Blvd & Marshall Road

2040 AM  
 05/21/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	535	20	110	60	25	80	380	1280	110	170	650	510
Future Volume (veh/h)	535	20	110	60	25	80	380	1280	110	170	650	510
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	567	0	113	62	26	82	392	1320	0	175	670	0
Adj No. of Lanes	3	0	1	1	1	1	2	3	1	2	3	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	694	0	202	131	138	114	1334	2989	931	428	2014	627
Arrive On Green	0.13	0.00	0.13	0.07	0.07	0.07	0.23	0.59	0.00	0.08	0.67	0.00
Sat Flow, veh/h	5270	0	1534	1757	1845	1532	3408	5036	1568	3408	5036	1568
Grp Volume(v), veh/h	567	0	113	62	26	82	392	1320	0	175	670	0
Grp Sat Flow(s),veh/h/ln	1757	0	1534	1757	1845	1532	1704	1679	1568	1704	1679	1568
Q Serve(g_s), s	12.6	0.0	8.3	4.1	1.6	6.3	0.0	17.3	0.0	4.0	6.8	0.0
Cycle Q Clear(g_c), s	12.6	0.0	8.3	4.1	1.6	6.3	0.0	17.3	0.0	4.0	6.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	694	0	202	131	138	114	1334	2989	931	428	2014	627
V/C Ratio(X)	0.82	0.00	0.56	0.47	0.19	0.72	0.29	0.44	0.00	0.41	0.33	0.00
Avail Cap(c_a), veh/h	1142	0	332	293	307	255	1334	2989	931	456	2014	627
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	50.7	0.0	48.8	53.3	52.1	54.3	18.3	13.4	0.0	25.1	13.1	0.0
Incr Delay (d2), s/veh	0.9	0.0	0.9	2.6	0.7	8.1	0.0	0.5	0.0	0.2	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	0.0	3.6	2.1	0.8	2.9	4.2	8.1	0.0	1.8	3.2	0.0
LnGrp Delay(d),s/veh	51.6	0.0	49.8	55.9	52.8	62.4	18.4	13.9	0.0	25.3	13.5	0.0
LnGrp LOS	D		D	E	D	E	B	B		C	B	
Approach Vol, veh/h		680			170			1712			845	
Approach Delay, s/veh		51.3			58.5			14.9			16.0	
Approach LOS		D			E			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	33.3	54.0		13.0	10.0	77.2		19.8				
Change Period (Y+Rc), s	6.0	* 6		4.0	4.0	6.0		4.0				
Max Green Setting (Gmax), s	8.0	* 48		20.0	7.0	49.0		26.0				
Max Q Clear Time (g_c+I1), s	2.0	8.8		8.3	6.0	19.3		14.6				
Green Ext Time (p_c), s	3.3	4.9		0.4	0.0	11.9		1.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			24.6									
HCM 2010 LOS			C									
<b>Notes</b>												

HCM Signalized Intersection Capacity Analysis  
 2: McCaslin Boulevard & US-36 E ramps

2040 AM  
 05/21/2019



Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations		↑↑↑		↑↑↑					↑↑↑	
Traffic Volume (vph)	0	325	0	1720	0	0	0	0	1040	0
Future Volume (vph)	0	325	0	1720	0	0	0	0	1040	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5		7.5					9.3	
Lane Util. Factor		0.76		0.91					0.94	
Frbp, ped/bikes		1.00		1.00					1.00	
Flpb, ped/bikes		1.00		1.00					1.00	
Frt		0.85		1.00					1.00	
Flt Protected		1.00		1.00					0.95	
Satd. Flow (prot)		3610		5085					4990	
Flt Permitted		1.00		1.00					0.95	
Satd. Flow (perm)		3610		5085					4990	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	332	0	1755	0	0	0	0	1061	0
RTOR Reduction (vph)	0	98	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	234	0	1755	0	0	0	0	1061	0
Confl. Peds. (#/hr)			1						2	
Confl. Bikes (#/hr)					1					
Turn Type		Prot		NA					Prot	
Protected Phases		4		8					2	
Permitted Phases										
Actuated Green, G (s)		42.3		42.3					60.9	
Effective Green, g (s)		42.3		42.3					60.9	
Actuated g/C Ratio		0.35		0.35					0.51	
Clearance Time (s)		7.5		7.5					9.3	
Vehicle Extension (s)		8.0		0.2					8.0	
Lane Grp Cap (vph)		1272		1792					2532	
v/s Ratio Prot		0.06		c0.35					c0.21	
v/s Ratio Perm										
v/c Ratio		0.18		0.98					0.42	
Uniform Delay, d1		26.9		38.4					18.5	
Progression Factor		1.00		1.03					0.40	
Incremental Delay, d2		0.3		15.4					0.5	
Delay (s)		27.2		54.9					7.9	
Level of Service		C		D					A	
Approach Delay (s)	27.2			54.9			0.0		7.9	
Approach LOS	C			D			A		A	
<b>Intersection Summary</b>										
HCM 2000 Control Delay			36.1				HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio			0.65							
Actuated Cycle Length (s)			120.0				Sum of lost time (s)		16.8	
Intersection Capacity Utilization			67.0%				ICU Level of Service		C	
Analysis Period (min)			15							

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 3: McCaslin Boulevard & US-36 W ramps

2040 AM  
 05/21/2019



Movement	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR	NEL	NER
Lane Configurations					↑↑↑↑			↑	↑↑↑↑	
Traffic Volume (vph)	0	0	0	0	1440	0	0	1040	1515	0
Future Volume (vph)	0	0	0	0	1440	0	0	1040	1515	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					7.2			7.2	9.3	
Lane Util. Factor					0.91			1.00	0.94	
Frbp, ped/bikes					1.00			1.00	1.00	
Flpb, ped/bikes					1.00			1.00	1.00	
Frt					1.00			0.86	1.00	
Flt Protected					1.00			1.00	0.95	
Satd. Flow (prot)					5085			1611	4990	
Flt Permitted					1.00			1.00	0.95	
Satd. Flow (perm)					5085			1611	4990	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	0	1532	0	0	1106	1612	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	29	0	0
Lane Group Flow (vph)	0	0	0	0	1532	0	0	1077	1612	0
Confl. Peds. (#/hr)									7	
Confl. Bikes (#/hr)										
Turn Type					NA			Prot	Prot	
Protected Phases					2			6	8	
Permitted Phases										
Actuated Green, G (s)					58.5			58.5	45.0	
Effective Green, g (s)					58.5			58.5	45.0	
Actuated g/C Ratio					0.49			0.49	0.38	
Clearance Time (s)					7.2			7.2	9.3	
Vehicle Extension (s)					8.0			8.0	8.0	
Lane Grp Cap (vph)					2478			785	1871	
v/s Ratio Prot					0.30			c0.67	c0.32	
v/s Ratio Perm										
v/c Ratio					0.62			1.37	0.86	
Uniform Delay, d1					22.6			30.8	34.6	
Progression Factor					1.72			1.00	0.70	
Incremental Delay, d2					0.6			175.3	3.9	
Delay (s)					39.5			206.1	28.1	
Level of Service					D			F	C	
Approach Delay (s)		0.0			39.5		206.1		28.1	
Approach LOS		A			D		F		C	
<b>Intersection Summary</b>										
HCM 2000 Control Delay			78.5		HCM 2000 Level of Service				E	
HCM 2000 Volume to Capacity ratio			1.15							
Actuated Cycle Length (s)			120.0		Sum of lost time (s)				16.5	
Intersection Capacity Utilization			70.4%		ICU Level of Service				C	
Analysis Period (min)			15							
c Critical Lane Group										

HCM 2010 Signalized Intersection Summary  
4: McCaslin Blvd & Dillon Road

2040 AM  
05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	45	105	615	225	445	310	1595	625	215	1240	155
Future Volume (veh/h)	70	45	105	615	225	445	310	1595	625	215	1240	155
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	74	48	0	654	239	0	330	1697	0	229	1319	0
Adj No. of Lanes	2	1	1	2	1	1	2	2	1	2	3	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	184	152	129	502	324	276	384	1894	847	201	2450	763
Arrive On Green	0.05	0.08	0.00	0.05	0.06	0.00	0.11	0.54	0.00	0.12	0.96	0.00
Sat Flow, veh/h	3442	1863	1583	3442	1863	1583	3442	3539	1583	3442	5085	1583
Grp Volume(v), veh/h	74	48	0	654	239	0	330	1697	0	229	1319	0
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1721	1863	1583	1721	1770	1583	1721	1695	1583
Q Serve(g_s), s	2.5	2.9	0.0	17.5	15.2	0.0	11.3	51.4	0.0	7.0	2.3	0.0
Cycle Q Clear(g_c), s	2.5	2.9	0.0	17.5	15.2	0.0	11.3	51.4	0.0	7.0	2.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	184	152	129	502	324	276	384	1894	847	201	2450	763
V/C Ratio(X)	0.40	0.32	0.00	1.30	0.74	0.00	0.86	0.90	0.00	1.14	0.54	0.00
Avail Cap(c_a), veh/h	201	450	383	502	613	521	402	1894	847	201	2450	763
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	0.82	0.82	0.00	1.00	1.00	0.00	0.50	0.50	0.00
Uniform Delay (d), s/veh	54.9	51.9	0.0	57.1	53.8	0.0	52.4	24.9	0.0	53.0	1.2	0.0
Incr Delay (d2), s/veh	1.1	1.2	0.0	148.0	2.7	0.0	16.1	7.1	0.0	89.2	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	1.6	0.0	18.7	8.1	0.0	6.2	26.9	0.0	5.8	0.8	0.0
LnGrp Delay(d),s/veh	56.0	53.1	0.0	205.2	56.6	0.0	68.5	32.0	0.0	142.2	1.6	0.0
LnGrp LOS	E	D		F	E		E	C		F	A	
Approach Vol, veh/h		122			893			2027			1548	
Approach Delay, s/veh		54.9			165.4			38.0			22.4	
Approach LOS		D			F			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.4	63.8	11.9	25.9	12.0	70.2	23.0	14.8				
Change Period (Y+Rc), s	5.0	6.0	5.5	5.0	5.0	6.0	5.5	5.0				
Max Green Setting (Gmax), s	14.0	38.0	7.0	39.5	7.0	45.0	17.5	29.0				
Max Q Clear Time (g_c+I1), s	13.3	4.3	4.5	17.2	9.0	53.4	19.5	4.9				
Green Ext Time (p_c), s	0.1	32.7	0.0	1.5	0.0	0.0	0.0	1.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			58.0									
HCM 2010 LOS			E									

HCM 2010 Signalized Intersection Summary  
5: Coal Creek Ci/Dahlia Street & Dillon Road

2040 AM  
05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	715	150	15	1060	185	20	0	5	250	40	80
Future Volume (veh/h)	45	715	150	15	1060	185	20	0	5	250	40	80
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	49	777	163	16	1152	201	22	0	5	272	43	87
Adj No. of Lanes	1	2	1	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	275	2245	984	367	2205	987	255	0	351	368	121	245
Arrive On Green	0.01	0.43	0.43	0.01	0.62	0.62	0.22	0.00	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1774	3539	1551	1774	3539	1583	1255	0	1583	1405	546	1105
Grp Volume(v), veh/h	49	777	163	16	1152	201	22	0	5	272	0	130
Grp Sat Flow(s),veh/h/ln	1774	1770	1551	1774	1770	1583	1255	0	1583	1405	0	1651
Q Serve(g_s), s	1.2	17.8	7.8	0.4	21.8	6.6	1.8	0.0	0.3	22.5	0.0	8.0
Cycle Q Clear(g_c), s	1.2	17.8	7.8	0.4	21.8	6.6	9.8	0.0	0.3	22.8	0.0	8.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.67
Lane Grp Cap(c), veh/h	275	2245	984	367	2205	987	255	0	351	368	0	366
V/C Ratio(X)	0.18	0.35	0.17	0.04	0.52	0.20	0.09	0.00	0.01	0.74	0.00	0.35
Avail Cap(c_a), veh/h	341	2245	984	452	2205	987	395	0	528	525	0	550
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.50	0.50	0.50	1.00	1.00	1.00	1.00	0.00	1.00	0.86	0.00	0.86
Uniform Delay (d), s/veh	10.1	17.7	14.9	9.3	12.6	9.8	43.6	0.0	36.4	45.3	0.0	39.4
Incr Delay (d2), s/veh	0.1	0.2	0.2	0.0	0.9	0.5	0.2	0.0	0.0	3.3	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	8.8	3.4	0.2	10.8	3.0	0.6	0.0	0.1	9.0	0.0	3.7
LnGrp Delay(d),s/veh	10.2	17.9	15.0	9.3	13.5	10.2	43.7	0.0	36.5	48.6	0.0	40.0
LnGrp LOS	B	B	B	A	B	B	D		D	D		D
Approach Vol, veh/h		989			1369			27				402
Approach Delay, s/veh		17.1			13.0			42.4				45.8
Approach LOS		B			B			D				D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.2	82.1		31.6	7.6	80.8		31.6				
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	7.0	57.0		40.0	7.0	57.0		40.0				
Max Q Clear Time (g_c+I1), s	2.4	19.8		24.8	3.2	23.8		11.8				
Green Ext Time (p_c), s	0.0	21.1		1.9	0.0	19.8		2.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				19.5								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary  
6: Dahlia St/Dahlia Street & Cherry Street

2040 AM  
05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	205	75	150	510	15	90	60	65	30	120	150
Future Volume (veh/h)	65	205	75	150	510	15	90	60	65	30	120	150
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	69	218	80	160	543	16	96	64	69	32	128	160
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	517	1559	681	720	1653	49	156	164	176	295	149	186
Arrive On Green	0.09	0.88	0.88	0.08	0.47	0.47	0.33	0.33	0.33	0.20	0.20	0.20
Sat Flow, veh/h	1774	3539	1545	1774	3508	103	1084	818	882	1246	743	929
Grp Volume(v), veh/h	69	218	80	160	274	285	96	0	133	32	0	288
Grp Sat Flow(s),veh/h/ln	1774	1770	1545	1774	1770	1841	1084	0	1701	1246	0	1673
Q Serve(g_s), s	1.2	0.5	0.4	2.9	5.8	5.8	2.0	0.0	3.6	1.4	0.0	10.0
Cycle Q Clear(g_c), s	1.2	0.5	0.4	2.9	5.8	5.8	12.0	0.0	3.6	5.0	0.0	10.0
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.52	1.00		0.56
Lane Grp Cap(c), veh/h	517	1559	681	720	834	867	156	0	340	295	0	335
V/C Ratio(X)	0.13	0.14	0.12	0.22	0.33	0.33	0.61	0.00	0.39	0.11	0.00	0.86
Avail Cap(c_a), veh/h	644	1559	681	792	834	867	156	0	340	295	0	335
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.92	1.00	1.00	1.00	0.99	0.00	0.99	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.0	2.0	2.0	7.7	9.9	9.9	25.6	0.0	17.2	22.8	0.0	23.2
Incr Delay (d2), s/veh	0.0	0.2	0.3	0.1	1.1	1.0	6.9	0.0	0.7	0.2	0.0	19.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.3	0.2	1.4	3.1	3.2	1.9	0.0	1.7	0.5	0.0	6.4
LnGrp Delay(d),s/veh	8.0	2.2	2.3	7.8	11.0	10.9	32.5	0.0	17.9	22.9	0.0	43.0
LnGrp LOS	A	A	A	A	B	B	C		B	C		D
Approach Vol, veh/h		367			719			229				320
Approach Delay, s/veh		3.3			10.2			24.0				41.0
Approach LOS		A			B			C				D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.6	32.4		18.0	7.7	34.3		18.0				
Change Period (Y+Rc), s	5.0	6.0		6.0	5.0	6.0		6.0				
Max Green Setting (Gmax), s	7.0	24.0		12.0	7.0	24.0		12.0				
Max Q Clear Time (g_c+I1), s	4.9	2.5		12.0	3.2	7.8		14.0				
Green Ext Time (p_c), s	0.0	6.8		0.0	0.0	6.0		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				16.6								
HCM 2010 LOS				B								

HCM Signalized Intersection Capacity Analysis  
 7: McCaslin Boulevard & Centennial Parkway/Cherry Street

2040 AM  
 05/21/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	55	125	405	135	215	385	1445	225	130	1105	75
Future Volume (vph)	95	55	125	405	135	215	385	1445	225	130	1105	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1543	3433	1863	1539	1770	3539	1561	1770	3539	1547
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.09	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)	1770	3539	1543	3433	1863	1539	162	3539	1561	173	3539	1547
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	98	57	129	418	139	222	397	1490	232	134	1139	77
RTOR Reduction (vph)	0	0	115	0	0	192	0	0	88	0	0	46
Lane Group Flow (vph)	98	57	14	418	139	30	397	1490	144	134	1139	31
Confl. Peds. (#/hr)	2		6	6		2	1		1	1		1
Confl. Bikes (#/hr)			1			7			1			
Turn Type	custom	NA	Perm	custom	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases	3		3	4		4	6		6	2		2
Actuated Green, G (s)	12.6	12.6	12.6	16.0	16.0	16.0	75.4	63.4	63.4	55.4	48.4	48.4
Effective Green, g (s)	12.6	12.6	12.6	16.0	16.0	16.0	75.4	63.4	63.4	55.4	48.4	48.4
Actuated g/C Ratio	0.10	0.10	0.10	0.13	0.13	0.13	0.63	0.53	0.53	0.46	0.40	0.40
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.5	3.5	3.5	2.5	2.5	2.5	3.0	4.0	4.0	2.0	4.0	4.0
Lane Grp Cap (vph)	185	371	162	457	248	205	396	1869	824	173	1427	623
v/s Ratio Prot	c0.06	0.02		c0.12	0.07		c0.18	0.42		0.05	0.32	
v/s Ratio Perm			0.01			0.02	c0.44		0.09	0.31		0.02
v/c Ratio	0.53	0.15	0.08	0.91	0.56	0.14	1.00	0.80	0.18	0.77	0.80	0.05
Uniform Delay, d1	50.9	48.8	48.5	51.3	48.7	46.0	37.1	23.1	14.7	22.5	31.5	21.8
Progression Factor	1.00	1.00	1.00	0.96	0.96	2.03	1.54	0.61	0.68	0.78	1.10	1.00
Incremental Delay, d2	3.1	0.2	0.3	21.4	2.2	0.2	23.5	1.0	0.1	16.3	4.3	0.1
Delay (s)	54.0	49.1	48.8	70.7	48.7	93.4	80.5	14.9	10.1	33.9	38.9	21.9
Level of Service	D	D	D	E	D	F	F	B	B	C	D	C
Approach Delay (s)		50.6			73.3			26.7			37.5	
Approach LOS		D			E			C			D	

Intersection Summary		
HCM 2000 Control Delay	39.4	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.95	D
Actuated Cycle Length (s)	120.0	Sum of lost time (s)
Intersection Capacity Utilization	87.9%	21.0
Analysis Period (min)	15	ICU Level of Service
		E

c Critical Lane Group

HCM 2010 Signalized Intersection Summary  
 8: McCaslin Boulevard & Century Drive

2040 AM  
 05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	5	45	90	10	115	175	1415	45	75	1310	75
Future Volume (veh/h)	75	5	45	90	10	115	175	1415	45	75	1310	75
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		0.98	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	79	5	47	95	11	121	184	1489	47	79	1379	79
Adj No. of Lanes	1	1	0	1	1	0	1	3	1	1	3	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	180	15	141	254	14	150	377	3197	972	257	2977	171
Arrive On Green	0.05	0.10	0.10	0.06	0.10	0.10	0.04	0.42	0.42	0.06	1.00	1.00
Sat Flow, veh/h	1774	153	1440	1774	131	1439	1774	5085	1547	1774	4920	282
Grp Volume(v), veh/h	79	0	52	95	0	132	184	1489	47	79	950	508
Grp Sat Flow(s),veh/h/ln	1774	0	1593	1774	0	1570	1774	1695	1547	1774	1695	1812
Q Serve(g_s), s	4.8	0.0	3.7	5.7	0.0	9.9	4.6	25.3	2.2	2.1	0.0	0.0
Cycle Q Clear(g_c), s	4.8	0.0	3.7	5.7	0.0	9.9	4.6	25.3	2.2	2.1	0.0	0.0
Prop In Lane	1.00		0.90	1.00		0.92	1.00		1.00	1.00		0.16
Lane Grp Cap(c), veh/h	180	0	156	254	0	163	377	3197	972	257	2051	1096
V/C Ratio(X)	0.44	0.00	0.33	0.37	0.00	0.81	0.49	0.47	0.05	0.31	0.46	0.46
Avail Cap(c_a), veh/h	191	0	252	254	0	249	383	3197	972	348	2051	1096
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.57	0.57	0.57	0.55	0.55	0.55
Uniform Delay (d), s/veh	45.7	0.0	50.5	45.2	0.0	52.6	7.9	20.2	13.5	10.7	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.0	0.9	0.7	0.0	8.9	0.2	0.3	0.1	0.1	0.4	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	1.6	2.8	0.0	4.7	2.2	11.9	0.9	1.0	0.1	0.2
LnGrp Delay(d),s/veh	47.0	0.0	51.4	45.9	0.0	61.5	8.1	20.5	13.6	10.8	0.4	0.8
LnGrp LOS	D		D	D		E	A	C	B	B	A	A
Approach Vol, veh/h		131			227			1720			1537	
Approach Delay, s/veh		48.7			54.9			19.0			1.1	
Approach LOS		D			D			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.6	78.6	11.3	18.5	8.8	81.4	12.0	17.8				
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0				
Max Green Setting (Gmax), s	7.0	65.0	7.0	19.0	10.0	62.0	7.0	19.0				
Max Q Clear Time (g_c+I1), s	6.6	2.0	6.8	11.9	4.1	27.3	7.7	5.7				
Green Ext Time (p_c), s	0.0	61.3	0.0	0.5	0.0	34.2	0.0	0.7				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			14.7									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary  
 9: McCaslin Boulevard & Via Appia Way/Via Appia Way

2040 AM  
 05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	40	20	575	175	285	35	1210	320	75	850	70
Future Volume (veh/h)	25	40	20	575	175	285	35	1210	320	75	850	70
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	26	42	0	599	182	0	36	1260	0	78	885	0
Adj No. of Lanes	1	2	1	2	1	1	1	2	1	1	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	126	252	113	459	248	211	392	2114	946	378	2164	968
Arrive On Green	0.07	0.07	0.00	0.13	0.13	0.00	0.03	1.00	0.00	0.03	0.61	0.00
Sat Flow, veh/h	1774	3539	1583	3442	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	26	42	0	599	182	0	36	1260	0	78	885	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1721	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	1.7	1.3	0.0	16.0	11.3	0.0	1.0	0.0	0.0	2.0	15.6	0.0
Cycle Q Clear(g_c), s	1.7	1.3	0.0	16.0	11.3	0.0	1.0	0.0	0.0	2.0	15.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	126	252	113	459	248	211	392	2114	946	378	2164	968
V/C Ratio(X)	0.21	0.17	0.00	1.31	0.73	0.00	0.09	0.60	0.00	0.21	0.41	0.00
Avail Cap(c_a), veh/h	414	826	369	459	248	211	479	2114	946	440	2164	968
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.90	0.90	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	52.5	52.4	0.0	52.0	49.9	0.0	9.8	0.0	0.0	8.6	12.1	0.0
Incr Delay (d2), s/veh	0.6	0.2	0.0	152.5	10.1	0.0	0.0	1.1	0.0	0.1	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.7	0.0	17.3	6.5	0.0	0.5	0.3	0.0	1.0	7.7	0.0
LnGrp Delay(d),s/veh	53.1	52.6	0.0	204.5	60.1	0.0	9.8	1.1	0.0	8.7	12.7	0.0
LnGrp LOS	D	D		F	E		A	A		A	B	
Approach Vol, veh/h		68			781			1296			963	
Approach Delay, s/veh		52.8			170.8			1.4			12.3	
Approach LOS		D			F			A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.1	79.4		21.0	7.8	77.7		13.5				
Change Period (Y+Rc), s	4.0	6.0		5.0	4.0	6.0		5.0				
Max Green Setting (Gmax), s	8.0	48.0		16.0	8.0	48.0		28.0				
Max Q Clear Time (g_c+I1), s	3.0	17.6		18.0	4.0	2.0		3.7				
Green Ext Time (p_c), s	0.0	23.8		0.0	0.0	32.5		0.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				48.5								
HCM 2010 LOS				D								

2040 PM

HCM 2010 Signalized Intersection Summary  
 1: McCaslin Blvd & Marshall Road

2040 PM  
 05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1220	70	545	105	45	55	260	880	60	195	1395	1080
Future Volume (veh/h)	1220	70	545	105	45	55	260	880	60	195	1395	1080
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	1309	0	562	108	46	57	268	907	0	201	1438	0
Adj No. of Lanes	3	0	1	1	1	1	2	3	1	2	3	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	1523	0	446	144	151	128	546	2209	688	511	1926	600
Arrive On Green	0.28	0.00	0.28	0.08	0.08	0.08	0.09	0.43	0.00	0.07	0.50	0.00
Sat Flow, veh/h	5375	0	1576	1792	1881	1593	3476	5136	1599	3476	5136	1599
Grp Volume(v), veh/h	1309	0	562	108	46	57	268	907	0	201	1438	0
Grp Sat Flow(s),veh/h/ln	1792	0	1576	1792	1881	1593	1738	1712	1599	1738	1712	1599
Q Serve(g_s), s	27.7	0.0	34.0	7.1	2.8	4.1	0.9	14.7	0.0	4.7	26.8	0.0
Cycle Q Clear(g_c), s	27.7	0.0	34.0	7.1	2.8	4.1	0.9	14.7	0.0	4.7	26.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1523	0	446	144	151	128	546	2209	688	511	1926	600
V/C Ratio(X)	0.86	0.00	1.26	0.75	0.30	0.44	0.49	0.41	0.00	0.39	0.75	0.00
Avail Cap(c_a), veh/h	1523	0	446	269	282	239	546	2209	688	519	1926	600
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	40.7	0.0	43.0	54.0	52.0	52.6	46.3	23.7	0.0	27.1	25.5	0.0
Incr Delay (d2), s/veh	5.0	0.0	133.6	7.5	1.1	2.4	0.3	0.6	0.0	0.2	2.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.4	0.0	31.3	3.8	1.5	1.9	4.1	7.0	0.0	2.2	13.1	0.0
LnGrp Delay(d),s/veh	45.7	0.0	176.6	61.5	53.1	55.0	46.6	24.2	0.0	27.2	28.2	0.0
LnGrp LOS	D		F	E	D	E	D	C		C	C	
Approach Vol, veh/h		1871			211			1175			1639	
Approach Delay, s/veh		85.0			57.9			29.3			28.1	
Approach LOS		F			E			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	17.3	51.0		13.7	10.7	57.6		38.0				
Change Period (Y+Rc), s	6.0	* 6		4.0	4.0	6.0		4.0				
Max Green Setting (Gmax), s	5.0	* 45		18.0	7.0	43.0		34.0				
Max Q Clear Time (g_c+I1), s	2.9	28.8		9.1	6.7	16.7		36.0				
Green Ext Time (p_c), s	0.3	8.8		0.4	0.0	7.0		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			51.4									
HCM 2010 LOS			D									
<b>Notes</b>												

HCM Signalized Intersection Capacity Analysis  
2: McCaslin Boulevard & US-36 E ramps

2040 PM  
05/21/2019



Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations		↑↑↑		↑↑↑					↑↑↑	
Traffic Volume (vph)	0	780	0	1775	0	0	0	0	1900	0
Future Volume (vph)	0	780	0	1775	0	0	0	0	1900	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5		7.5					9.3	
Lane Util. Factor		0.76		0.91					0.94	
Frbp, ped/bikes		1.00		1.00					1.00	
Flpb, ped/bikes		1.00		1.00					1.00	
Frt		0.85		1.00					1.00	
Flt Protected		1.00		1.00					0.95	
Satd. Flow (prot)		3646		5136					5040	
Flt Permitted		1.00		1.00					0.95	
Satd. Flow (perm)		3646		5136					5040	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	804	0	1830	0	0	0	0	1959	0
RTOR Reduction (vph)	0	34	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	770	0	1830	0	0	0	0	1959	0
Confl. Peds. (#/hr)	8		8							
Confl. Bikes (#/hr)					1			5		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type		Prot		NA					Prot	
Protected Phases		4		8					2	
Permitted Phases										
Actuated Green, G (s)		47.6		47.6					55.6	
Effective Green, g (s)		47.6		47.6					55.6	
Actuated g/C Ratio		0.40		0.40					0.46	
Clearance Time (s)		7.5		7.5					9.3	
Vehicle Extension (s)		8.0		0.2					8.0	
Lane Grp Cap (vph)		1446		2037					2335	
v/s Ratio Prot		0.21		c0.36					c0.39	
v/s Ratio Perm										
v/c Ratio		0.53		0.90					0.84	
Uniform Delay, d1		27.7		33.9					28.3	
Progression Factor		1.00		1.33					1.01	
Incremental Delay, d2		1.3		4.4					2.0	
Delay (s)		29.0		49.6					30.7	
Level of Service		C		D					C	
Approach Delay (s)	29.0			49.6		0.0			30.7	
Approach LOS	C			D		A			C	
<b>Intersection Summary</b>										
HCM 2000 Control Delay			37.9		HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.87							
Actuated Cycle Length (s)			120.0		Sum of lost time (s)				16.8	
Intersection Capacity Utilization			84.4%		ICU Level of Service				E	
Analysis Period (min)			15							
c Critical Lane Group										

HCM Signalized Intersection Capacity Analysis  
 3: McCaslin Boulevard & US-36 W ramps

2040 PM  
 05/21/2019



Movement	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR	NEL	NER	
Lane Configurations					↑↑↑			↑	↑↑↑		
Traffic Volume (vph)	0	0	0	0	2510	0	0	890	1745	0	
Future Volume (vph)	0	0	0	0	2510	0	0	890	1745	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					7.2			7.2	9.3		
Lane Util. Factor					0.91			1.00	0.94		
Frbp, ped/bikes					1.00			1.00	1.00		
Flpb, ped/bikes					1.00			1.00	1.00		
Frt					1.00			0.86	1.00		
Flt Protected					1.00			1.00	0.95		
Satd. Flow (prot)					5136			1627	5040		
Flt Permitted					1.00			1.00	0.95		
Satd. Flow (perm)					5136			1627	5040		
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Adj. Flow (vph)	0	0	0	0	2615	0	0	927	1818	0	
RTOR Reduction (vph)	0	0	0	0	0	0	0	29	0	0	
Lane Group Flow (vph)	0	0	0	0	2615	0	0	898	1818	0	
Confl. Peds. (#/hr)						3		2	3		
Confl. Bikes (#/hr)											
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	
Turn Type					NA			Prot	Prot		
Protected Phases					2			6	8		
Permitted Phases											
Actuated Green, G (s)					58.5			58.5	45.0		
Effective Green, g (s)					58.5			58.5	45.0		
Actuated g/C Ratio					0.49			0.49	0.38		
Clearance Time (s)					7.2			7.2	9.3		
Vehicle Extension (s)					8.0			8.0	8.0		
Lane Grp Cap (vph)					2503			793	1890		
v/s Ratio Prot					0.51			c0.55	c0.36		
v/s Ratio Perm											
v/c Ratio					1.04			1.13	0.96		
Uniform Delay, d1					30.8			30.8	36.7		
Progression Factor					1.55			1.00	0.40		
Incremental Delay, d2					21.5			74.9	11.4		
Delay (s)					69.2			105.7	26.1		
Level of Service					E			F	C		
Approach Delay (s)		0.0			69.2		105.7		26.1		
Approach LOS		A			E		F		C		
<b>Intersection Summary</b>											
HCM 2000 Control Delay			60.9		HCM 2000 Level of Service				E		
HCM 2000 Volume to Capacity ratio			1.06								
Actuated Cycle Length (s)			120.0		Sum of lost time (s)				16.5		
Intersection Capacity Utilization			112.1%		ICU Level of Service				H		
Analysis Period (min)			15								
c Critical Lane Group											

HCM 2010 Signalized Intersection Summary  
4: McCaslin Blvd & Dillon Road

2040 PM  
05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	225	295	405	825	185	295	275	1630	700	395	1805	160
Future Volume (veh/h)	225	295	405	825	185	295	275	1630	700	395	1805	160
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	234	307	0	859	193	0	286	1698	0	411	1880	0
Adj No. of Lanes	2	1	1	2	1	1	2	2	1	2	3	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	294	373	317	536	504	428	261	1377	616	290	2021	629
Arrive On Green	0.08	0.20	0.00	0.05	0.09	0.00	0.08	0.39	0.00	0.11	0.52	0.00
Sat Flow, veh/h	3476	1881	1599	3476	1881	1599	3476	3574	1599	3476	5136	1599
Grp Volume(v), veh/h	234	307	0	859	193	0	286	1698	0	411	1880	0
Grp Sat Flow(s),veh/h/ln	1738	1881	1599	1738	1881	1599	1738	1787	1599	1738	1712	1599
Q Serve(g_s), s	7.9	18.8	0.0	18.5	11.6	0.0	9.0	46.2	0.0	10.0	40.8	0.0
Cycle Q Clear(g_c), s	7.9	18.8	0.0	18.5	11.6	0.0	9.0	46.2	0.0	10.0	40.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	294	373	317	536	504	428	261	1377	616	290	2021	629
V/C Ratio(X)	0.80	0.82	0.00	1.60	0.38	0.00	1.10	1.23	0.00	1.42	0.93	0.00
Avail Cap(c_a), veh/h	397	455	386	536	530	450	261	1377	616	290	2021	629
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	0.00	0.79	0.79	0.00	1.00	1.00	0.00	0.09	0.09	0.00
Uniform Delay (d), s/veh	53.9	46.1	0.0	56.9	45.3	0.0	55.5	36.9	0.0	53.4	27.1	0.0
Incr Delay (d2), s/veh	6.9	9.9	0.0	278.3	0.4	0.0	84.2	111.5	0.0	190.4	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	10.7	0.0	29.6	6.1	0.0	7.4	44.1	0.0	12.4	19.2	0.0
LnGrp Delay(d),s/veh	60.9	56.0	0.0	335.2	45.7	0.0	139.7	148.4	0.0	243.8	28.1	0.0
LnGrp LOS	E	E		F	D		F	F		F	C	
Approach Vol, veh/h		541			1052			1984			2291	
Approach Delay, s/veh		58.1			282.1			147.1			66.8	
Approach LOS		E			F			F			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.0	53.2	15.6	37.1	15.0	52.2	24.0	28.8				
Change Period (Y+Rc), s	5.0	6.0	5.5	5.0	5.0	6.0	5.5	5.0				
Max Green Setting (Gmax), s	9.0	42.0	13.7	33.8	10.0	41.0	18.5	29.0				
Max Q Clear Time (g_c+I1), s	11.0	42.8	9.9	13.6	12.0	48.2	20.5	20.8				
Green Ext Time (p_c), s	0.0	0.0	0.2	2.8	0.0	0.0	0.0	1.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			131.8									
HCM 2010 LOS			F									

HCM 2010 Signalized Intersection Summary  
5: Coal Creek Ci/Dahlia Street & Dillon Road

2040 PM  
05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	1170	10	5	1010	220	140	25	15	280	15	110
Future Volume (veh/h)	145	1170	10	5	1010	220	140	25	15	280	15	110
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1881	1881	1881	1900	1881	1881	1900
Adj Flow Rate, veh/h	159	1286	11	5	1110	242	154	27	16	308	16	121
Adj No. of Lanes	1	2	1	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	290	2095	914	177	1915	835	322	304	180	412	52	391
Arrive On Green	0.02	0.19	0.19	0.00	0.54	0.54	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	1792	3574	1559	1792	3574	1558	1253	1100	652	1363	187	1413
Grp Volume(v), veh/h	159	1286	11	5	1110	242	154	0	43	308	0	137
Grp Sat Flow(s),veh/h/ln	1792	1787	1559	1792	1787	1558	1253	0	1751	1363	0	1599
Q Serve(g_s), s	4.5	39.5	0.7	0.2	25.1	10.2	13.3	0.0	2.2	26.0	0.0	8.1
Cycle Q Clear(g_c), s	4.5	39.5	0.7	0.2	25.1	10.2	21.4	0.0	2.2	28.2	0.0	8.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.37	1.00		0.88
Lane Grp Cap(c), veh/h	290	2095	914	177	1915	835	322	0	484	412	0	442
V/C Ratio(X)	0.55	0.61	0.01	0.03	0.58	0.29	0.48	0.00	0.09	0.75	0.00	0.31
Avail Cap(c_a), veh/h	342	2095	914	274	1915	835	393	0	584	490	0	533
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	1.00	1.00	1.00	1.00	0.00	1.00	0.92	0.00	0.92
Uniform Delay (d), s/veh	15.9	36.0	20.3	17.5	18.8	15.3	42.8	0.0	32.2	42.6	0.0	34.3
Incr Delay (d2), s/veh	0.1	0.1	0.0	0.0	1.3	0.9	1.3	0.0	0.1	5.1	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	19.7	0.3	0.1	12.7	4.6	4.7	0.0	1.1	10.3	0.0	3.6
LnGrp Delay(d),s/veh	16.0	36.1	20.3	17.5	20.0	16.2	44.2	0.0	32.3	47.8	0.0	34.8
LnGrp LOS	B	D	C	B	C	B	D		C	D		C
Approach Vol, veh/h		1456			1357			197				445
Approach Delay, s/veh		33.8			19.3			41.6				43.8
Approach LOS		C			B			D				D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.5	76.4		38.2	11.5	70.3		38.2				
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	7.0	57.0		40.0	10.0	54.0		40.0				
Max Q Clear Time (g_c+I1), s	2.2	41.5		30.2	6.5	27.1		23.4				
Green Ext Time (p_c), s	0.0	13.0		2.4	0.1	20.6		3.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				29.8								
HCM 2010 LOS				C								

HCM 2010 Signalized Intersection Summary  
 6: Dahlia St/Dahlia Street & Cherry Street

2040 PM  
 05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	570	145	125	315	15	90	110	195	20	125	110
Future Volume (veh/h)	135	570	145	125	315	15	90	110	195	20	125	110
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1900	1881	1881	1900	1881	1881	1900
Adj Flow Rate, veh/h	138	582	148	128	321	15	92	112	199	20	128	112
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	605	1460	630	503	1403	65	256	145	257	183	221	194
Arrive On Green	0.14	0.82	0.82	0.07	0.40	0.40	0.08	0.08	0.08	0.24	0.24	0.24
Sat Flow, veh/h	1792	3574	1541	1792	3472	162	1141	598	1062	1073	914	800
Grp Volume(v), veh/h	138	582	148	128	165	171	92	0	311	20	0	240
Grp Sat Flow(s),veh/h/ln	1792	1787	1541	1792	1787	1847	1141	0	1659	1073	0	1713
Q Serve(g_s), s	2.7	2.6	1.3	2.4	3.6	3.7	4.8	0.0	11.0	1.1	0.0	7.4
Cycle Q Clear(g_c), s	2.7	2.6	1.3	2.4	3.6	3.7	12.2	0.0	11.0	12.1	0.0	7.4
Prop In Lane	1.00		1.00	1.00		0.09	1.00		0.64	1.00		0.47
Lane Grp Cap(c), veh/h	605	1460	630	503	722	746	256	0	402	183	0	415
V/C Ratio(X)	0.23	0.40	0.24	0.25	0.23	0.23	0.36	0.00	0.77	0.11	0.00	0.58
Avail Cap(c_a), veh/h	688	1460	630	594	722	746	264	0	415	191	0	428
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.70	0.70	0.70	1.00	1.00	1.00	0.95	0.00	0.95	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.4	3.5	3.4	9.1	11.7	11.7	30.2	0.0	26.0	27.1	0.0	20.0
Incr Delay (d2), s/veh	0.0	0.6	0.6	0.1	0.7	0.7	0.8	0.0	8.2	0.3	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	1.2	0.6	1.2	1.9	2.0	1.6	0.0	6.0	0.3	0.0	3.7
LnGrp Delay(d),s/veh	8.5	4.1	4.0	9.2	12.5	12.5	31.0	0.0	34.1	27.4	0.0	21.9
LnGrp LOS	A	A	A	A	B	B	C		C	C		C
Approach Vol, veh/h		868			464			403			260	
Approach Delay, s/veh		4.7			11.6			33.4			22.3	
Approach LOS		A			B			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.0	30.5		20.5	9.2	30.2		20.5				
Change Period (Y+Rc), s	5.0	6.0		6.0	5.0	6.0		6.0				
Max Green Setting (Gmax), s	7.0	21.0		15.0	7.0	21.0		15.0				
Max Q Clear Time (g_c+I1), s	4.4	4.6		14.1	4.7	5.7		14.2				
Green Ext Time (p_c), s	0.0	7.5		0.4	0.0	7.3		0.4				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				14.4								
HCM 2010 LOS				B								

HCM Signalized Intersection Capacity Analysis  
 7: McCaslin Boulevard & Centennial Parkway/Cherry Street

2040 PM  
 05/21/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	115	325	325	40	180	95	1590	390	290	1770	95
Future Volume (vph)	130	115	325	325	40	180	95	1590	390	290	1770	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	3574	1560	3467	1881	1561	1787	3574	1565	1787	3574	1537
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.07	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	1787	3574	1560	3467	1881	1561	136	3574	1565	129	3574	1537
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	134	119	335	335	41	186	98	1639	402	299	1825	98
RTOR Reduction (vph)	0	0	136	0	0	166	0	0	153	0	0	50
Lane Group Flow (vph)	134	119	199	335	41	20	98	1639	249	299	1825	48
Confl. Peds. (#/hr)	2		2	2		2	6		5	5		6
Confl. Bikes (#/hr)			5			3			2			3
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	custom	NA	Perm	custom	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases	3		3	4		4	6		6	2		2
Actuated Green, G (s)	16.6	16.6	16.6	13.0	13.0	13.0	66.4	55.4	55.4	72.4	58.4	58.4
Effective Green, g (s)	16.6	16.6	16.6	13.0	13.0	13.0	66.4	55.4	55.4	72.4	58.4	58.4
Actuated g/C Ratio	0.14	0.14	0.14	0.11	0.11	0.11	0.55	0.46	0.46	0.60	0.49	0.49
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.5	3.5	3.5	2.5	2.5	2.5	3.0	4.0	4.0	2.0	4.0	4.0
Lane Grp Cap (vph)	247	494	215	375	203	169	226	1649	722	271	1739	748
v/s Ratio Prot	0.07	0.03		c0.10	0.02		0.04	0.46		c0.13	0.51	
v/s Ratio Perm			c0.13			0.01	0.20		0.16	c0.54		0.03
v/c Ratio	0.54	0.24	0.92	0.89	0.20	0.12	0.43	0.99	0.35	1.10	1.05	0.06
Uniform Delay, d1	48.2	46.1	51.1	52.8	48.8	48.3	24.3	32.1	20.7	39.9	30.8	16.3
Progression Factor	1.00	1.00	1.00	0.96	0.94	1.76	1.91	0.46	0.08	1.32	0.64	0.28
Incremental Delay, d2	2.7	0.3	41.2	22.1	0.3	0.2	0.1	5.4	0.1	80.4	34.1	0.1
Delay (s)	50.9	46.4	92.3	72.7	46.2	85.5	46.5	20.1	1.8	133.2	53.7	4.7
Level of Service	D	D	F	E	D	F	D	C	A	F	D	A
Approach Delay (s)		73.6			75.0			17.9			62.2	
Approach LOS		E			E			B			E	

Intersection Summary			
HCM 2000 Control Delay	47.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 Signalized Intersection Summary  
8: McCaslin Boulevard & Century Drive

2040 PM  
05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	220	40	140	50	15	60	140	1580	90	130	1835	55
Future Volume (veh/h)	220	40	140	50	15	60	140	1580	90	130	1835	55
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1881	1881	1900	1881	1881	1881	1881	1881	1900
Adj Flow Rate, veh/h	227	41	144	52	15	62	144	1629	93	134	1892	57
Adj No. of Lanes	1	1	0	1	1	0	1	3	1	1	3	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	269	49	174	155	29	118	283	3064	931	312	3041	92
Arrive On Green	0.08	0.14	0.14	0.04	0.09	0.09	0.10	1.00	1.00	0.09	1.00	1.00
Sat Flow, veh/h	1792	358	1258	1792	317	1312	1792	5136	1560	1792	5120	154
Grp Volume(v), veh/h	227	0	185	52	0	77	144	1629	93	134	1265	684
Grp Sat Flow(s),veh/h/ln	1792	0	1616	1792	0	1629	1792	1712	1560	1792	1712	1850
Q Serve(g_s), s	10.0	0.0	13.4	3.1	0.0	5.4	3.9	0.0	0.0	3.6	0.0	0.0
Cycle Q Clear(g_c), s	10.0	0.0	13.4	3.1	0.0	5.4	3.9	0.0	0.0	3.6	0.0	0.0
Prop In Lane	1.00		0.78	1.00		0.81	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	269	0	223	155	0	147	283	3064	931	312	2034	1099
V/C Ratio(X)	0.85	0.00	0.83	0.34	0.00	0.52	0.51	0.53	0.10	0.43	0.62	0.62
Avail Cap(c_a), veh/h	269	0	323	241	0	326	345	3064	931	378	2034	1099
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.27	0.27	0.27	0.43	0.43	0.43
Uniform Delay (d), s/veh	47.6	0.0	50.3	47.5	0.0	52.1	7.9	0.0	0.0	8.0	0.0	0.0
Incr Delay (d2), s/veh	20.8	0.0	9.8	0.9	0.0	2.2	0.1	0.2	0.1	0.1	0.6	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.2	0.0	6.6	1.6	0.0	2.5	1.8	0.1	0.0	1.7	0.2	0.4
LnGrp Delay(d),s/veh	68.4	0.0	60.2	48.4	0.0	54.3	8.0	0.2	0.1	8.1	0.6	1.2
LnGrp LOS	E		E	D		D	A	A	A	A	A	A
Approach Vol, veh/h		412			129			1866			2083	
Approach Delay, s/veh		64.7			51.9			0.8			1.3	
Approach LOS		E			D			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.9	77.3	15.0	16.8	10.6	77.6	9.2	22.6				
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0				
Max Green Setting (Gmax), s	10.0	54.0	10.0	24.0	10.0	54.0	10.0	24.0				
Max Q Clear Time (g_c+I1), s	5.9	2.0	12.0	7.4	5.6	2.0	5.1	15.4				
Green Ext Time (p_c), s	0.1	51.7	0.0	1.2	0.1	51.7	0.0	0.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			8.3									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary  
 9: McCaslin Boulevard & Via Appia Way/Via Appia Way

2040 PM  
 05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	185	25	480	30	105	30	1000	860	220	1490	35
Future Volume (veh/h)	65	185	25	480	30	105	30	1000	860	220	1490	35
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	69	197	0	511	32	0	32	1064	0	234	1585	0
Adj No. of Lanes	1	2	1	2	1	1	1	2	1	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	155	309	138	492	267	227	174	1925	861	467	2105	941
Arrive On Green	0.09	0.09	0.00	0.14	0.14	0.00	0.03	1.00	0.00	0.07	0.59	0.00
Sat Flow, veh/h	1792	3574	1599	3476	1881	1599	1792	3574	1599	1792	3574	1599
Grp Volume(v), veh/h	69	197	0	511	32	0	32	1064	0	234	1585	0
Grp Sat Flow(s),veh/h/ln	1792	1787	1599	1738	1881	1599	1792	1787	1599	1792	1787	1599
Q Serve(g_s), s	4.4	6.4	0.0	17.0	1.8	0.0	1.0	0.0	0.0	6.8	39.3	0.0
Cycle Q Clear(g_c), s	4.4	6.4	0.0	17.0	1.8	0.0	1.0	0.0	0.0	6.8	39.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	155	309	138	492	267	227	174	1925	861	467	2105	941
V/C Ratio(X)	0.45	0.64	0.00	1.04	0.12	0.00	0.18	0.55	0.00	0.50	0.75	0.00
Avail Cap(c_a), veh/h	373	745	333	492	267	227	309	1925	861	467	2105	941
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.79	0.79	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	52.1	53.0	0.0	51.5	45.0	0.0	16.9	0.0	0.0	9.9	18.2	0.0
Incr Delay (d2), s/veh	1.5	1.6	0.0	50.7	0.1	0.0	0.1	0.9	0.0	0.3	2.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	3.2	0.0	11.6	0.9	0.0	0.5	0.2	0.0	3.4	19.9	0.0
LnGrp Delay(d),s/veh	53.6	54.6	0.0	102.2	45.1	0.0	17.1	0.9	0.0	10.2	20.8	0.0
LnGrp LOS	D	D		F	D		B	A		B	C	
Approach Vol, veh/h		266			543			1096			1819	
Approach Delay, s/veh		54.3			98.8			1.4			19.4	
Approach LOS		D			F			A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.0	76.7		22.0	12.0	70.6		15.4				
Change Period (Y+Rc), s	4.0	6.0		5.0	4.0	6.0		5.0				
Max Green Setting (Gmax), s	11.0	47.0		17.0	8.0	50.0		25.0				
Max Q Clear Time (g_c+I1), s	3.0	41.3		19.0	8.8	2.0		8.4				
Green Ext Time (p_c), s	0.0	5.5		0.0	0.0	40.7		1.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				28.2								
HCM 2010 LOS				C								

2040 plus Baseline (Fully Tenanted Sam's Club) AM

HCM 2010 Signalized Intersection Summary  
1: McCaslin Blvd & Marshall Road

05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	537	20	110	60	25	80	380	1287	110	170	653	511
Future Volume (veh/h)	537	20	110	60	25	80	380	1287	110	170	653	511
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	569	0	113	62	26	82	392	1327	0	175	673	0
Adj No. of Lanes	3	0	1	1	1	1	2	3	1	2	3	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	696	0	203	131	138	114	1331	2987	930	426	2014	627
Arrive On Green	0.13	0.00	0.13	0.07	0.07	0.07	0.23	0.59	0.00	0.08	0.67	0.00
Sat Flow, veh/h	5270	0	1534	1757	1845	1532	3408	5036	1568	3408	5036	1568
Grp Volume(v), veh/h	569	0	113	62	26	82	392	1327	0	175	673	0
Grp Sat Flow(s),veh/h/ln	1757	0	1534	1757	1845	1532	1704	1679	1568	1704	1679	1568
Q Serve(g_s), s	12.6	0.0	8.3	4.1	1.6	6.3	0.0	17.5	0.0	4.0	6.9	0.0
Cycle Q Clear(g_c), s	12.6	0.0	8.3	4.1	1.6	6.3	0.0	17.5	0.0	4.0	6.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	696	0	203	131	138	114	1331	2987	930	426	2014	627
V/C Ratio(X)	0.82	0.00	0.56	0.47	0.19	0.72	0.29	0.44	0.00	0.41	0.33	0.00
Avail Cap(c_a), veh/h	1142	0	332	293	307	255	1331	2987	930	454	2014	627
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	50.7	0.0	48.8	53.3	52.1	54.3	18.4	13.5	0.0	25.1	13.1	0.0
Incr Delay (d2), s/veh	0.9	0.0	0.9	2.6	0.7	8.1	0.0	0.5	0.0	0.2	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	0.0	3.6	2.1	0.8	2.9	4.2	8.2	0.0	1.8	3.2	0.0
LnGrp Delay(d),s/veh	51.6	0.0	49.7	55.9	52.8	62.4	18.4	14.0	0.0	25.4	13.5	0.0
LnGrp LOS	D		D	E	D	E	B	B		C	B	
Approach Vol, veh/h		682			170			1719			848	
Approach Delay, s/veh		51.3			58.5			15.0			16.0	
Approach LOS		D			E			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	33.2	54.0		13.0	10.0	77.2		19.8				
Change Period (Y+Rc), s	6.0	* 6		4.0	4.0	6.0		4.0				
Max Green Setting (Gmax), s	8.0	* 48		20.0	7.0	49.0		26.0				
Max Q Clear Time (g_c+I1), s	2.0	8.9		8.3	6.0	19.5		14.6				
Green Ext Time (p_c), s	3.3	4.9		0.4	0.0	11.9		1.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			24.6									
HCM 2010 LOS			C									
<b>Notes</b>												

HCM Signalized Intersection Capacity Analysis  
2: McCaslin Boulevard & US-36 E ramps

05/21/2019



Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations		↑↑↑		↑↑↑					↑↑↑	
Traffic Volume (vph)	0	325	0	1729	0	0	0	0	1044	0
Future Volume (vph)	0	325	0	1729	0	0	0	0	1044	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5		7.5					9.3	
Lane Util. Factor		0.76		0.91					0.94	
Frbp, ped/bikes		1.00		1.00					1.00	
Flpb, ped/bikes		1.00		1.00					1.00	
Frt		0.85		1.00					1.00	
Flt Protected		1.00		1.00					0.95	
Satd. Flow (prot)		3610		5085					4990	
Flt Permitted		1.00		1.00					0.95	
Satd. Flow (perm)		3610		5085					4990	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	332	0	1764	0	0	0	0	1065	0
RTOR Reduction (vph)	0	96	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	236	0	1764	0	0	0	0	1065	0
Confl. Peds. (#/hr)			1						2	
Confl. Bikes (#/hr)					1					
Turn Type		Prot		NA					Prot	
Protected Phases		4		8					2	
Permitted Phases										
Actuated Green, G (s)		42.3		42.3					60.9	
Effective Green, g (s)		42.3		42.3					60.9	
Actuated g/C Ratio		0.35		0.35					0.51	
Clearance Time (s)		7.5		7.5					9.3	
Vehicle Extension (s)		8.0		0.2					8.0	
Lane Grp Cap (vph)		1272		1792					2532	
v/s Ratio Prot		0.07		c0.35					c0.21	
v/s Ratio Perm										
v/c Ratio		0.19		0.98					0.42	
Uniform Delay, d1		26.9		38.5					18.5	
Progression Factor		1.00		1.02					0.40	
Incremental Delay, d2		0.3		16.6					0.5	
Delay (s)		27.2		55.9					7.9	
Level of Service		C		E					A	
Approach Delay (s)	27.2			55.9			0.0		7.9	
Approach LOS	C			E			A		A	
<b>Intersection Summary</b>										
HCM 2000 Control Delay			36.7				HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio			0.65							
Actuated Cycle Length (s)			120.0				Sum of lost time (s)		16.8	
Intersection Capacity Utilization			67.3%				ICU Level of Service		C	
Analysis Period (min)			15							
c Critical Lane Group										

HCM Signalized Intersection Capacity Analysis  
3: McCaslin Boulevard & US-36 W ramps

2040 + Baseline (Fully  
Tenanted Sam's Club) - AM  
05/21/2019



Movement	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR	NEL	NER
Lane Configurations					↑↑↑↑			↑	↑↑↑↑	
Traffic Volume (vph)	0	0	0	0	1448	0	0	1049	1533	0
Future Volume (vph)	0	0	0	0	1448	0	0	1049	1533	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					7.2			7.2	9.3	
Lane Util. Factor					0.91			1.00	0.94	
Frbp, ped/bikes					1.00			1.00	1.00	
Flpb, ped/bikes					1.00			1.00	1.00	
Frt					1.00			0.86	1.00	
Flt Protected					1.00			1.00	0.95	
Satd. Flow (prot)					5085			1611	4990	
Flt Permitted					1.00			1.00	0.95	
Satd. Flow (perm)					5085			1611	4990	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	0	1540	0	0	1116	1631	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	29	0	0
Lane Group Flow (vph)	0	0	0	0	1540	0	0	1087	1631	0
Confl. Peds. (#/hr)									7	
Confl. Bikes (#/hr)										
Turn Type					NA			Prot	Prot	
Protected Phases					2			6	8	
Permitted Phases										
Actuated Green, G (s)					58.5			58.5	45.0	
Effective Green, g (s)					58.5			58.5	45.0	
Actuated g/C Ratio					0.49			0.49	0.38	
Clearance Time (s)					7.2			7.2	9.3	
Vehicle Extension (s)					8.0			8.0	8.0	
Lane Grp Cap (vph)					2478			785	1871	
v/s Ratio Prot					0.30			c0.67	c0.33	
v/s Ratio Perm										
v/c Ratio					0.62			1.38	0.87	
Uniform Delay, d1					22.6			30.8	34.8	
Progression Factor					1.73			1.00	0.70	
Incremental Delay, d2					0.6			180.9	4.2	
Delay (s)					39.7			211.6	28.6	
Level of Service					D			F	C	
Approach Delay (s)		0.0			39.7		211.6		28.6	
Approach LOS		A			D		F		C	
<b>Intersection Summary</b>										
HCM 2000 Control Delay			80.2		HCM 2000 Level of Service				F	
HCM 2000 Volume to Capacity ratio			1.16							
Actuated Cycle Length (s)			120.0		Sum of lost time (s)				16.5	
Intersection Capacity Utilization			71.0%		ICU Level of Service				C	
Analysis Period (min)			15							
c Critical Lane Group										

HCM 2010 Signalized Intersection Summary  
4: McCaslin Blvd & Dillon Road

2040 + Baseline (Fully  
Tenanted Sam's Club) - AM

05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	45	105	623	225	447	310	1614	633	217	1244	155
Future Volume (veh/h)	70	45	105	623	225	447	310	1614	633	217	1244	155
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	74	48	0	663	239	0	330	1717	0	231	1323	0
Adj No. of Lanes	2	1	1	2	1	1	2	2	1	2	3	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	184	152	129	502	324	276	384	1894	847	201	2450	763
Arrive On Green	0.05	0.08	0.00	0.05	0.06	0.00	0.11	0.54	0.00	0.12	0.96	0.00
Sat Flow, veh/h	3442	1863	1583	3442	1863	1583	3442	3539	1583	3442	5085	1583
Grp Volume(v), veh/h	74	48	0	663	239	0	330	1717	0	231	1323	0
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1721	1863	1583	1721	1770	1583	1721	1695	1583
Q Serve(g_s), s	2.5	2.9	0.0	17.5	15.2	0.0	11.3	52.6	0.0	7.0	2.4	0.0
Cycle Q Clear(g_c), s	2.5	2.9	0.0	17.5	15.2	0.0	11.3	52.6	0.0	7.0	2.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	184	152	129	502	324	276	384	1894	847	201	2450	763
V/C Ratio(X)	0.40	0.32	0.00	1.32	0.74	0.00	0.86	0.91	0.00	1.15	0.54	0.00
Avail Cap(c_a), veh/h	201	450	383	502	613	521	402	1894	847	201	2450	763
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	0.82	0.82	0.00	1.00	1.00	0.00	0.49	0.49	0.00
Uniform Delay (d), s/veh	54.9	51.9	0.0	57.1	53.8	0.0	52.4	25.2	0.0	53.0	1.2	0.0
Incr Delay (d2), s/veh	1.1	1.2	0.0	155.7	2.7	0.0	16.1	7.8	0.0	92.5	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	1.6	0.0	19.2	8.1	0.0	6.2	27.6	0.0	5.9	0.8	0.0
LnGrp Delay(d),s/veh	56.0	53.1	0.0	212.8	56.5	0.0	68.5	33.0	0.0	145.5	1.6	0.0
LnGrp LOS	E	D		F	E		E	C		F	A	
Approach Vol, veh/h		122			902			2047			1554	
Approach Delay, s/veh		54.9			171.4			38.7			23.0	
Approach LOS		D			F			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.4	63.8	11.9	25.9	12.0	70.2	23.0	14.8				
Change Period (Y+Rc), s	5.0	6.0	5.5	5.0	5.0	6.0	5.5	5.0				
Max Green Setting (Gmax), s	14.0	38.0	7.0	39.5	7.0	45.0	17.5	29.0				
Max Q Clear Time (g_c+I1), s	13.3	4.4	4.5	17.2	9.0	54.6	19.5	4.9				
Green Ext Time (p_c), s	0.1	32.8	0.0	1.5	0.0	0.0	0.0	1.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			59.7									
HCM 2010 LOS			E									

HCM 2010 Signalized Intersection Summary  
5: Coal Creek Ci/Dahlia Street & Dillon Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	716	150	15	1064	186	20	0	5	251	40	81
Future Volume (veh/h)	46	716	150	15	1064	186	20	0	5	251	40	81
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	50	778	163	16	1157	202	22	0	5	273	43	88
Adj No. of Lanes	1	2	1	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	274	2243	983	366	2201	985	255	0	353	370	121	247
Arrive On Green	0.01	0.42	0.42	0.01	0.62	0.62	0.22	0.00	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1774	3539	1551	1774	3539	1583	1254	0	1583	1405	542	1108
Grp Volume(v), veh/h	50	778	163	16	1157	202	22	0	5	273	0	131
Grp Sat Flow(s),veh/h/ln	1774	1770	1551	1774	1770	1583	1254	0	1583	1405	0	1650
Q Serve(g_s), s	1.2	17.8	7.8	0.4	22.0	6.6	1.8	0.0	0.3	22.6	0.0	8.0
Cycle Q Clear(g_c), s	1.2	17.8	7.8	0.4	22.0	6.6	9.9	0.0	0.3	22.9	0.0	8.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.67
Lane Grp Cap(c), veh/h	274	2243	983	366	2201	985	255	0	353	370	0	367
V/C Ratio(X)	0.18	0.35	0.17	0.04	0.53	0.21	0.09	0.00	0.01	0.74	0.00	0.36
Avail Cap(c_a), veh/h	338	2243	983	451	2201	985	394	0	528	525	0	550
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.48	0.48	0.48	1.00	1.00	1.00	1.00	0.00	1.00	0.86	0.00	0.86
Uniform Delay (d), s/veh	10.2	17.8	14.9	9.3	12.7	9.8	43.5	0.0	36.4	45.3	0.0	39.4
Incr Delay (d2), s/veh	0.1	0.2	0.2	0.0	0.9	0.5	0.2	0.0	0.0	3.3	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	8.8	3.4	0.2	10.9	3.0	0.6	0.0	0.1	9.1	0.0	3.7
LnGrp Delay(d),s/veh	10.3	18.0	15.1	9.4	13.6	10.3	43.7	0.0	36.4	48.6	0.0	40.0
LnGrp LOS	B	B	B	A	B	B	D		D	D		D
Approach Vol, veh/h		991			1375			27			404	
Approach Delay, s/veh		17.1			13.1			42.4			45.8	
Approach LOS		B			B			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.2	82.0		31.7	7.6	80.6		31.7				
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	7.0	57.0		40.0	7.0	57.0		40.0				
Max Q Clear Time (g_c+I1), s	2.4	19.8		24.9	3.2	24.0		11.9				
Green Ext Time (p_c), s	0.0	21.2		1.9	0.0	19.8		2.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				19.5								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary  
6: Dahlia St/Dahlia Street & Cherry Street

05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	206	76	151	511	15	90	60	65	30	121	151
Future Volume (veh/h)	66	206	76	151	511	15	90	60	65	30	121	151
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	70	219	81	161	544	16	96	64	69	32	129	161
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	517	1557	680	719	1651	49	155	164	176	295	149	186
Arrive On Green	0.09	0.88	0.88	0.08	0.47	0.47	0.33	0.33	0.33	0.20	0.20	0.20
Sat Flow, veh/h	1774	3539	1545	1774	3508	103	1082	818	882	1246	744	929
Grp Volume(v), veh/h	70	219	81	161	274	286	96	0	133	32	0	290
Grp Sat Flow(s),veh/h/ln	1774	1770	1545	1774	1770	1841	1082	0	1701	1246	0	1673
Q Serve(g_s), s	1.3	0.5	0.4	2.9	5.8	5.8	1.9	0.0	3.6	1.4	0.0	10.1
Cycle Q Clear(g_c), s	1.3	0.5	0.4	2.9	5.8	5.8	12.0	0.0	3.6	5.0	0.0	10.1
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.52	1.00		0.56
Lane Grp Cap(c), veh/h	517	1557	680	719	833	867	155	0	340	295	0	335
V/C Ratio(X)	0.14	0.14	0.12	0.22	0.33	0.33	0.62	0.00	0.39	0.11	0.00	0.87
Avail Cap(c_a), veh/h	643	1557	680	790	833	867	155	0	340	295	0	335
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	1.00	1.00	1.00	0.99	0.00	0.99	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.0	2.0	2.0	7.7	9.9	9.9	25.6	0.0	17.2	22.8	0.0	23.2
Incr Delay (d2), s/veh	0.0	0.2	0.3	0.1	1.1	1.0	7.3	0.0	0.7	0.2	0.0	20.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.3	0.2	1.4	3.1	3.2	1.9	0.0	1.7	0.5	0.0	6.5
LnGrp Delay(d),s/veh	8.0	2.2	2.4	7.8	11.0	11.0	32.9	0.0	17.9	22.9	0.0	43.8
LnGrp LOS	A	A	A	A	B	B	C		B	C		D
Approach Vol, veh/h		370			721			229				322
Approach Delay, s/veh		3.4			10.3			24.2				41.8
Approach LOS		A			B			C				D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.6	32.4		18.0	7.8	34.2		18.0				
Change Period (Y+Rc), s	5.0	6.0		6.0	5.0	6.0		6.0				
Max Green Setting (Gmax), s	7.0	24.0		12.0	7.0	24.0		12.0				
Max Q Clear Time (g_c+I1), s	4.9	2.5		12.1	3.3	7.8		14.0				
Green Ext Time (p_c), s	0.0	6.9		0.0	0.0	6.0		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			16.8									
HCM 2010 LOS			B									

HCM Signalized Intersection Capacity Analysis  
7: McCaslin Boulevard & Centennial Parkway/Cherry Street

05/21/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	55	125	409	135	216	385	1448	231	133	1112	75
Future Volume (vph)	95	55	125	409	135	216	385	1448	231	133	1112	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1543	3433	1863	1539	1770	3539	1561	1770	3539	1547
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.08	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)	1770	3539	1543	3433	1863	1539	158	3539	1561	172	3539	1547
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	98	57	129	422	139	223	397	1493	238	137	1146	77
RTOR Reduction (vph)	0	0	115	0	0	193	0	0	90	0	0	46
Lane Group Flow (vph)	98	57	14	422	139	30	397	1493	148	137	1146	31
Confl. Peds. (#/hr)	2		6	6		2	1		1	1		1
Confl. Bikes (#/hr)			1			7			1			
Turn Type	custom	NA	Perm	custom	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases	3		3	4		4	6		6	2		2
Actuated Green, G (s)	12.6	12.6	12.6	16.0	16.0	16.0	75.4	63.4	63.4	55.4	48.4	48.4
Effective Green, g (s)	12.6	12.6	12.6	16.0	16.0	16.0	75.4	63.4	63.4	55.4	48.4	48.4
Actuated g/C Ratio	0.10	0.10	0.10	0.13	0.13	0.13	0.63	0.53	0.53	0.46	0.40	0.40
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.5	3.5	3.5	2.5	2.5	2.5	3.0	4.0	4.0	2.0	4.0	4.0
Lane Grp Cap (vph)	185	371	162	457	248	205	394	1869	824	172	1427	623
v/s Ratio Prot	c0.06	0.02		c0.12	0.07		c0.18	0.42		0.05	0.32	
v/s Ratio Perm			0.01			0.02	c0.45		0.10	0.32		0.02
v/c Ratio	0.53	0.15	0.08	0.92	0.56	0.15	1.01	0.80	0.18	0.80	0.80	0.05
Uniform Delay, d1	50.9	48.8	48.5	51.4	48.7	46.0	37.4	23.1	14.8	22.6	31.6	21.8
Progression Factor	1.00	1.00	1.00	0.96	0.96	2.03	1.53	0.61	0.67	0.78	1.10	1.00
Incremental Delay, d2	3.1	0.2	0.3	22.9	2.2	0.2	23.5	0.9	0.1	19.1	4.5	0.1
Delay (s)	54.0	49.1	48.8	72.3	48.7	93.6	80.6	15.0	10.0	36.8	39.1	21.9
Level of Service	D	D	D	E	D	F	F	B	B	D	D	C
Approach Delay (s)		50.6			74.2			26.7			37.9	
Approach LOS		D			E			C			D	

Intersection Summary		
HCM 2000 Control Delay	39.7	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.96	D
Actuated Cycle Length (s)	120.0	Sum of lost time (s)
Intersection Capacity Utilization	88.2%	21.0
Analysis Period (min)	15	ICU Level of Service
		E

c Critical Lane Group

HCM 2010 Signalized Intersection Summary  
8: McCaslin Boulevard & Century Drive

2040 + Baseline (Fully  
Tenanted Sam's Club) - AM

05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	5	45	90	10	115	175	1419	45	75	1320	75
Future Volume (veh/h)	75	5	45	90	10	115	175	1419	45	75	1320	75
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		0.98	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	79	5	47	95	11	121	184	1494	47	79	1389	79
Adj No. of Lanes	1	1	0	1	1	0	1	3	1	1	3	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	180	15	141	254	14	150	375	3197	972	256	2979	169
Arrive On Green	0.05	0.10	0.10	0.06	0.10	0.10	0.04	0.42	0.42	0.06	1.00	1.00
Sat Flow, veh/h	1774	153	1440	1774	131	1439	1774	5085	1547	1774	4923	280
Grp Volume(v), veh/h	79	0	52	95	0	132	184	1494	47	79	957	511
Grp Sat Flow(s),veh/h/ln	1774	0	1593	1774	0	1570	1774	1695	1547	1774	1695	1813
Q Serve(g_s), s	4.8	0.0	3.7	5.7	0.0	9.9	4.6	25.4	2.2	2.1	0.0	0.0
Cycle Q Clear(g_c), s	4.8	0.0	3.7	5.7	0.0	9.9	4.6	25.4	2.2	2.1	0.0	0.0
Prop In Lane	1.00		0.90	1.00		0.92	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	180	0	156	254	0	163	375	3197	972	256	2051	1097
V/C Ratio(X)	0.44	0.00	0.33	0.37	0.00	0.81	0.49	0.47	0.05	0.31	0.47	0.47
Avail Cap(c_a), veh/h	191	0	252	254	0	249	381	3197	972	347	2051	1097
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.57	0.57	0.57	0.54	0.54	0.54
Uniform Delay (d), s/veh	45.7	0.0	50.5	45.2	0.0	52.6	7.9	20.3	13.5	10.7	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.0	0.9	0.7	0.0	8.9	0.2	0.3	0.1	0.1	0.4	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	1.6	2.8	0.0	4.7	2.3	12.0	0.9	1.0	0.1	0.2
LnGrp Delay(d),s/veh	47.0	0.0	51.4	45.9	0.0	61.5	8.1	20.5	13.6	10.8	0.4	0.8
LnGrp LOS	D		D	D		E	A	C	B	B	A	A
Approach Vol, veh/h		131			227			1725			1547	
Approach Delay, s/veh		48.7			54.9			19.0			1.1	
Approach LOS		D			D			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.6	78.6	11.3	18.5	8.8	81.4	12.0	17.8				
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0				
Max Green Setting (Gmax), s	7.0	65.0	7.0	19.0	10.0	62.0	7.0	19.0				
Max Q Clear Time (g_c+I1), s	6.6	2.0	6.8	11.9	4.1	27.4	7.7	5.7				
Green Ext Time (p_c), s	0.0	61.4	0.0	0.5	0.0	34.1	0.0	0.7				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			14.7									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary  
9: McCaslin Boulevard & Via Appia Way/Via Appia Way

05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	40	20	580	175	285	35	1212	322	75	855	70
Future Volume (veh/h)	25	40	20	580	175	285	35	1212	322	75	855	70
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	26	42	0	604	182	0	36	1262	0	78	891	0
Adj No. of Lanes	1	2	1	2	1	1	1	2	1	1	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	126	252	113	459	248	211	390	2114	946	377	2164	968
Arrive On Green	0.07	0.07	0.00	0.13	0.13	0.00	0.03	1.00	0.00	0.03	0.61	0.00
Sat Flow, veh/h	1774	3539	1583	3442	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	26	42	0	604	182	0	36	1262	0	78	891	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1721	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	1.7	1.3	0.0	16.0	11.3	0.0	1.0	0.0	0.0	2.0	15.7	0.0
Cycle Q Clear(g_c), s	1.7	1.3	0.0	16.0	11.3	0.0	1.0	0.0	0.0	2.0	15.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	126	252	113	459	248	211	390	2114	946	377	2164	968
V/C Ratio(X)	0.21	0.17	0.00	1.32	0.73	0.00	0.09	0.60	0.00	0.21	0.41	0.00
Avail Cap(c_a), veh/h	414	826	369	459	248	211	477	2114	946	440	2164	968
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.90	0.90	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	52.5	52.4	0.0	52.0	49.9	0.0	9.8	0.0	0.0	8.6	12.1	0.0
Incr Delay (d2), s/veh	0.6	0.2	0.0	157.1	10.1	0.0	0.0	1.1	0.0	0.1	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.7	0.0	17.6	6.5	0.0	0.5	0.3	0.0	1.0	7.8	0.0
LnGrp Delay(d),s/veh	53.1	52.6	0.0	209.1	60.1	0.0	9.8	1.1	0.0	8.7	12.7	0.0
LnGrp LOS	D	D		F	E		A	A		A	B	
Approach Vol, veh/h		68			786			1298			969	
Approach Delay, s/veh		52.8			174.6			1.4			12.4	
Approach LOS		D			F			A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.1	79.4		21.0	7.8	77.7		13.5				
Change Period (Y+Rc), s	4.0	6.0		5.0	4.0	6.0		5.0				
Max Green Setting (Gmax), s	8.0	48.0		16.0	8.0	48.0		28.0				
Max Q Clear Time (g_c+I1), s	3.0	17.7		18.0	4.0	2.0		3.7				
Green Ext Time (p_c), s	0.0	23.8		0.0	0.0	32.6		0.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				49.5								
HCM 2010 LOS				D								

2040 plus Baseline (Fully Tenanted Sam's Club) PM

HCM 2010 Signalized Intersection Summary  
 1: McCaslin Blvd & Marshall Road

2040 + Baseline (Fully  
 Tenanted Sam's Club) - PM

05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1234	70	545	105	45	55	260	921	60	195	1436	1094
Future Volume (veh/h)	1234	70	545	105	45	55	260	921	60	195	1436	1094
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	1323	0	562	108	46	57	268	949	0	201	1480	0
Adj No. of Lanes	3	0	1	1	1	1	2	3	1	2	3	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	1523	0	446	144	151	128	535	2209	688	495	1926	600
Arrive On Green	0.28	0.00	0.28	0.08	0.08	0.08	0.09	0.43	0.00	0.07	0.50	0.00
Sat Flow, veh/h	5375	0	1576	1792	1881	1593	3476	5136	1599	3476	5136	1599
Grp Volume(v), veh/h	1323	0	562	108	46	57	268	949	0	201	1480	0
Grp Sat Flow(s),veh/h/ln	1792	0	1576	1792	1881	1593	1738	1712	1599	1738	1712	1599
Q Serve(g_s), s	28.1	0.0	34.0	7.1	2.8	4.1	1.4	15.5	0.0	4.7	28.1	0.0
Cycle Q Clear(g_c), s	28.1	0.0	34.0	7.1	2.8	4.1	1.4	15.5	0.0	4.7	28.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1523	0	446	144	151	128	535	2209	688	495	1926	600
V/C Ratio(X)	0.87	0.00	1.26	0.75	0.30	0.44	0.50	0.43	0.00	0.41	0.77	0.00
Avail Cap(c_a), veh/h	1523	0	446	269	282	239	535	2209	688	503	1926	600
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	40.9	0.0	43.0	54.0	52.0	52.6	46.9	23.9	0.0	27.2	25.8	0.0
Incr Delay (d2), s/veh	5.4	0.0	133.6	7.5	1.1	2.4	0.3	0.6	0.0	0.2	3.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.6	0.0	31.3	3.8	1.5	1.9	4.1	7.4	0.0	2.2	13.7	0.0
LnGrp Delay(d),s/veh	46.3	0.0	176.6	61.5	53.1	55.0	47.2	24.5	0.0	27.4	28.9	0.0
LnGrp LOS	D		F	E	D	E	D	C		C	C	
Approach Vol, veh/h		1885			211			1217			1681	
Approach Delay, s/veh		85.2			57.9			29.5			28.7	
Approach LOS		F			E			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	17.3	51.0		13.7	10.7	57.6		38.0				
Change Period (Y+Rc), s	6.0	* 6		4.0	4.0	6.0		4.0				
Max Green Setting (Gmax), s	5.0	* 45		18.0	7.0	43.0		34.0				
Max Q Clear Time (g_c+I1), s	3.4	30.1		9.1	6.7	17.5		36.0				
Green Ext Time (p_c), s	0.2	8.6		0.4	0.0	7.3		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			51.4									
HCM 2010 LOS			D									
<b>Notes</b>												

HCM Signalized Intersection Capacity Analysis  
2: McCaslin Boulevard & US-36 E ramps

05/21/2019



Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations		↑↑↑		↑↑↑					↑↑↑	
Traffic Volume (vph)	0	780	0	1830	0	0	0	0	1955	0
Future Volume (vph)	0	780	0	1830	0	0	0	0	1955	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5		7.5					9.3	
Lane Util. Factor		0.76		0.91					0.94	
Frbp, ped/bikes		1.00		1.00					1.00	
Flpb, ped/bikes		1.00		1.00					1.00	
Frt		0.85		1.00					1.00	
Flt Protected		1.00		1.00					0.95	
Satd. Flow (prot)		3646		5136					5040	
Flt Permitted		1.00		1.00					0.95	
Satd. Flow (perm)		3646		5136					5040	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	804	0	1887	0	0	0	0	2015	0
RTOR Reduction (vph)	0	34	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	770	0	1887	0	0	0	0	2015	0
Confl. Peds. (#/hr)	8		8							
Confl. Bikes (#/hr)					1				5	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type		Prot		NA					Prot	
Protected Phases		4		8					2	
Permitted Phases										
Actuated Green, G (s)		48.5		48.5					54.7	
Effective Green, g (s)		48.5		48.5					54.7	
Actuated g/C Ratio		0.40		0.40					0.46	
Clearance Time (s)		7.5		7.5					9.3	
Vehicle Extension (s)		8.0		0.2					8.0	
Lane Grp Cap (vph)		1473		2075					2297	
v/s Ratio Prot		0.21		c0.37					c0.40	
v/s Ratio Perm										
v/c Ratio		0.52		0.91					0.88	
Uniform Delay, d1		27.0		33.7					29.6	
Progression Factor		1.00		1.30					1.01	
Incremental Delay, d2		1.2		4.9					2.4	
Delay (s)		28.3		48.8					32.3	
Level of Service		C		D					C	
Approach Delay (s)	28.3			48.8			0.0		32.3	
Approach LOS	C			D			A		C	
<b>Intersection Summary</b>										
HCM 2000 Control Delay			38.2				HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio			0.89							
Actuated Cycle Length (s)			120.0				Sum of lost time (s)		16.8	
Intersection Capacity Utilization			86.5%				ICU Level of Service		E	
Analysis Period (min)			15							
c Critical Lane Group										

HCM Signalized Intersection Capacity Analysis  
3: McCaslin Boulevard & US-36 W ramps

05/21/2019



Movement	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR	NEL	NER		
Lane Configurations					↑↑↑			↑	↑↑↑			
Traffic Volume (vph)	0	0	0	0	2619	0	0	944	1854	0		
Future Volume (vph)	0	0	0	0	2619	0	0	944	1854	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Total Lost time (s)					7.2			7.2	9.3			
Lane Util. Factor					0.91			1.00	0.94			
Frbp, ped/bikes					1.00			1.00	1.00			
Flpb, ped/bikes					1.00			1.00	1.00			
Frt					1.00			0.86	1.00			
Flt Protected					1.00			1.00	0.95			
Satd. Flow (prot)					5136			1627	5040			
Flt Permitted					1.00			1.00	0.95			
Satd. Flow (perm)					5136			1627	5040			
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96		
Adj. Flow (vph)	0	0	0	0	2728	0	0	983	1931	0		
RTOR Reduction (vph)	0	0	0	0	0	0	0	29	0	0		
Lane Group Flow (vph)	0	0	0	0	2728	0	0	954	1931	0		
Confl. Peds. (#/hr)						3		2	3			
Confl. Bikes (#/hr)												
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%		
Turn Type					NA			Prot	Prot			
Protected Phases					2			6	8			
Permitted Phases												
Actuated Green, G (s)					58.5			58.5	45.0			
Effective Green, g (s)					58.5			58.5	45.0			
Actuated g/C Ratio					0.49			0.49	0.38			
Clearance Time (s)					7.2			7.2	9.3			
Vehicle Extension (s)					8.0			8.0	8.0			
Lane Grp Cap (vph)					2503			793	1890			
v/s Ratio Prot					0.53			c0.59	c0.38			
v/s Ratio Perm												
v/c Ratio					1.09			1.20	1.02			
Uniform Delay, d1					30.8			30.8	37.5			
Progression Factor					1.54			1.00	0.44			
Incremental Delay, d2					41.2			103.2	24.0			
Delay (s)					88.4			133.9	40.7			
Level of Service					F			F	D			
Approach Delay (s)		0.0			88.4		133.9		40.7			
Approach LOS		A			F		F		D			
<b>Intersection Summary</b>												
HCM 2000 Control Delay			80.0		HCM 2000 Level of Service				F			
HCM 2000 Volume to Capacity ratio			1.12									
Actuated Cycle Length (s)			120.0		Sum of lost time (s)				16.5			
Intersection Capacity Utilization			116.3%		ICU Level of Service				H			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 2010 Signalized Intersection Summary  
4: McCaslin Blvd & Dillon Road

2040 + Baseline (Fully  
Tenanted Sam's Club) - PM

05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	225	295	405	939	185	313	275	1744	749	406	1854	160
Future Volume (veh/h)	225	295	405	939	185	313	275	1744	749	406	1854	160
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	234	307	0	978	193	0	286	1817	0	423	1931	0
Adj No. of Lanes	2	1	1	2	1	1	2	2	1	2	3	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	294	373	317	536	504	428	261	1377	616	290	2021	629
Arrive On Green	0.08	0.20	0.00	0.05	0.09	0.00	0.08	0.39	0.00	0.11	0.52	0.00
Sat Flow, veh/h	3476	1881	1599	3476	1881	1599	3476	3574	1599	3476	5136	1599
Grp Volume(v), veh/h	234	307	0	978	193	0	286	1817	0	423	1931	0
Grp Sat Flow(s),veh/h/ln	1738	1881	1599	1738	1881	1599	1738	1787	1599	1738	1712	1599
Q Serve(g_s), s	7.9	18.8	0.0	18.5	11.6	0.0	9.0	46.2	0.0	10.0	43.0	0.0
Cycle Q Clear(g_c), s	7.9	18.8	0.0	18.5	11.6	0.0	9.0	46.2	0.0	10.0	43.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	294	373	317	536	504	428	261	1377	616	290	2021	629
V/C Ratio(X)	0.80	0.82	0.00	1.83	0.38	0.00	1.10	1.32	0.00	1.46	0.96	0.00
Avail Cap(c_a), veh/h	397	455	386	536	530	450	261	1377	616	290	2021	629
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	0.00	0.77	0.77	0.00	1.00	1.00	0.00	0.09	0.09	0.00
Uniform Delay (d), s/veh	53.9	46.1	0.0	56.9	45.3	0.0	55.5	36.9	0.0	53.4	27.6	0.0
Incr Delay (d2), s/veh	6.9	9.9	0.0	377.0	0.4	0.0	84.2	149.1	0.0	208.9	1.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	10.7	0.0	37.0	6.1	0.0	7.4	51.3	0.0	13.2	20.3	0.0
LnGrp Delay(d),s/veh	60.9	56.0	0.0	433.9	45.7	0.0	139.7	186.0	0.0	262.3	29.2	0.0
LnGrp LOS	E	E		F	D		F	F		F	C	
Approach Vol, veh/h		541			1171			2103			2354	
Approach Delay, s/veh		58.1			369.9			179.7			71.1	
Approach LOS		E			F			F			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.0	53.2	15.6	37.1	15.0	52.2	24.0	28.8				
Change Period (Y+Rc), s	5.0	6.0	5.5	5.0	5.0	6.0	5.5	5.0				
Max Green Setting (Gmax), s	9.0	42.0	13.7	33.8	10.0	41.0	18.5	29.0				
Max Q Clear Time (g_c+I1), s	11.0	45.0	9.9	13.6	12.0	48.2	20.5	20.8				
Green Ext Time (p_c), s	0.0	0.0	0.2	2.8	0.0	0.0	0.0	1.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			163.7									
HCM 2010 LOS			F									

HCM 2010 Signalized Intersection Summary  
5: Coal Creek Ci/Dahlia Street & Dillon Road

05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	1185	10	5	1033	224	140	25	15	292	15	128
Future Volume (veh/h)	155	1185	10	5	1033	224	140	25	15	292	15	128
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1881	1881	1881	1900	1881	1881	1900
Adj Flow Rate, veh/h	170	1302	11	5	1135	246	154	27	16	321	16	141
Adj No. of Lanes	1	2	1	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	283	2068	902	169	1875	817	314	312	185	423	46	407
Arrive On Green	0.02	0.19	0.19	0.00	0.52	0.52	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	1792	3574	1559	1792	3574	1557	1231	1100	652	1363	163	1433
Grp Volume(v), veh/h	170	1302	11	5	1135	246	154	0	43	321	0	157
Grp Sat Flow(s),veh/h/ln	1792	1787	1559	1792	1787	1557	1231	0	1751	1363	0	1596
Q Serve(g_s), s	4.9	40.2	0.7	0.2	26.5	10.7	13.6	0.0	2.2	27.1	0.0	9.4
Cycle Q Clear(g_c), s	4.9	40.2	0.7	0.2	26.5	10.7	23.0	0.0	2.2	29.3	0.0	9.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.37	1.00		0.90
Lane Grp Cap(c), veh/h	283	2068	902	169	1875	817	314	0	498	423	0	453
V/C Ratio(X)	0.60	0.63	0.01	0.03	0.61	0.30	0.49	0.00	0.09	0.76	0.00	0.35
Avail Cap(c_a), veh/h	329	2068	902	267	1875	817	374	0	584	490	0	532
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	1.00	1.00	1.00	1.00	0.00	1.00	0.91	0.00	0.91
Uniform Delay (d), s/veh	17.5	36.7	20.7	18.2	19.9	16.1	43.2	0.0	31.5	42.3	0.0	34.1
Incr Delay (d2), s/veh	0.1	0.1	0.0	0.0	1.5	0.9	1.4	0.0	0.1	5.7	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	20.0	0.3	0.1	13.5	4.8	4.7	0.0	1.1	10.8	0.0	4.2
LnGrp Delay(d),s/veh	17.6	36.8	20.7	18.2	21.3	17.0	44.7	0.0	31.6	48.0	0.0	34.6
LnGrp LOS	B	D	C	B	C	B	D		C	D		C
Approach Vol, veh/h		1483			1386			197			478	
Approach Delay, s/veh		34.5			20.6			41.8			43.6	
Approach LOS		C			C			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.5	75.4		39.1	11.9	69.0		39.1				
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	7.0	57.0		40.0	10.0	54.0		40.0				
Max Q Clear Time (g_c+I1), s	2.2	42.2		31.3	6.9	28.5		25.0				
Green Ext Time (p_c), s	0.0	12.6		2.4	0.1	20.0		3.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				30.7								
HCM 2010 LOS				C								

HCM 2010 Signalized Intersection Summary  
6: Dahlia St/Dahlia Street & Cherry Street

05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	143	579	150	130	324	15	93	116	200	20	131	118
Future Volume (veh/h)	143	579	150	130	324	15	93	116	200	20	131	118
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1900	1881	1881	1900	1881	1881	1900
Adj Flow Rate, veh/h	146	591	153	133	331	15	95	118	204	20	134	120
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	595	1427	615	494	1369	62	253	151	262	182	225	201
Arrive On Green	0.15	0.80	0.80	0.07	0.39	0.39	0.08	0.08	0.08	0.25	0.25	0.25
Sat Flow, veh/h	1792	3574	1541	1792	3478	157	1127	609	1053	1063	903	809
Grp Volume(v), veh/h	146	591	153	133	169	177	95	0	322	20	0	254
Grp Sat Flow(s),veh/h/ln	1792	1787	1541	1792	1787	1848	1127	0	1662	1063	0	1712
Q Serve(g_s), s	2.9	3.0	1.5	2.6	3.8	3.8	5.0	0.0	11.4	1.1	0.0	7.9
Cycle Q Clear(g_c), s	2.9	3.0	1.5	2.6	3.8	3.8	12.9	0.0	11.4	12.5	0.0	7.9
Prop In Lane	1.00		1.00	1.00		0.08	1.00		0.63	1.00		0.47
Lane Grp Cap(c), veh/h	595	1427	615	494	703	727	253	0	413	182	0	426
V/C Ratio(X)	0.25	0.41	0.25	0.27	0.24	0.24	0.38	0.00	0.78	0.11	0.00	0.60
Avail Cap(c_a), veh/h	671	1427	615	580	703	727	254	0	415	184	0	428
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.65	0.65	0.65	1.00	1.00	1.00	0.93	0.00	0.93	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.6	3.9	3.8	9.4	12.2	12.2	30.5	0.0	25.9	27.1	0.0	19.9
Incr Delay (d2), s/veh	0.1	0.6	0.6	0.1	0.8	0.8	0.9	0.0	8.6	0.3	0.0	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	1.4	0.7	1.3	2.0	2.1	1.6	0.0	6.2	0.3	0.0	3.9
LnGrp Delay(d),s/veh	8.7	4.5	4.4	9.6	13.0	13.0	31.3	0.0	34.5	27.4	0.0	22.1
LnGrp LOS	A	A	A	A	B	B	C		C	C		C
Approach Vol, veh/h		890			479			417			274	
Approach Delay, s/veh		5.2			12.0			33.8			22.5	
Approach LOS		A			B			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.1	30.0		20.9	9.5	29.6		20.9				
Change Period (Y+Rc), s	5.0	6.0		6.0	5.0	6.0		6.0				
Max Green Setting (Gmax), s	7.0	21.0		15.0	7.0	21.0		15.0				
Max Q Clear Time (g_c+I1), s	4.6	5.0		14.5	4.9	5.8		14.9				
Green Ext Time (p_c), s	0.0	7.6		0.2	0.0	7.4		0.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			14.9									
HCM 2010 LOS			B									

HCM Signalized Intersection Capacity Analysis  
7: McCaslin Boulevard & Centennial Parkway/Cherry Street

05/21/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	115	325	380	40	196	95	1628	430	306	1808	95
Future Volume (vph)	130	115	325	380	40	196	95	1628	430	306	1808	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	3574	1560	3467	1881	1561	1787	3574	1565	1787	3574	1537
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.07	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)	1787	3574	1560	3467	1881	1561	136	3574	1565	129	3574	1537
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	134	119	335	392	41	202	98	1678	443	315	1864	98
RTOR Reduction (vph)	0	0	135	0	0	180	0	0	165	0	0	50
Lane Group Flow (vph)	134	119	200	392	41	22	98	1678	278	315	1864	48
Confl. Peds. (#/hr)	2		2	2		2	6		5	5		6
Confl. Bikes (#/hr)			5			3			2			3
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type	custom	NA	Perm	custom	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases	3		3	4		4	6		6	2		2
Actuated Green, G (s)	16.6	16.6	16.6	13.0	13.0	13.0	66.4	55.4	55.4	72.4	58.4	58.4
Effective Green, g (s)	16.6	16.6	16.6	13.0	13.0	13.0	66.4	55.4	55.4	72.4	58.4	58.4
Actuated g/C Ratio	0.14	0.14	0.14	0.11	0.11	0.11	0.55	0.46	0.46	0.60	0.49	0.49
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.5	3.5	3.5	2.5	2.5	2.5	3.0	4.0	4.0	2.0	4.0	4.0
Lane Grp Cap (vph)	247	494	215	375	203	169	226	1649	722	271	1739	748
v/s Ratio Prot	0.07	0.03		c0.11	0.02		0.04	0.47		c0.14	0.52	
v/s Ratio Perm			c0.13			0.01	0.20		0.18	c0.57		0.03
v/c Ratio	0.54	0.24	0.93	1.05	0.20	0.13	0.43	1.02	0.39	1.16	1.07	0.06
Uniform Delay, d1	48.2	46.1	51.1	53.5	48.8	48.4	24.3	32.3	21.2	39.9	30.8	16.3
Progression Factor	1.00	1.00	1.00	0.96	0.95	1.71	1.93	0.44	0.06	1.32	0.63	0.27
Incremental Delay, d2	2.7	0.3	42.0	58.2	0.4	0.2	0.1	11.7	0.1	101.0	42.0	0.1
Delay (s)	50.9	46.4	93.1	109.6	46.5	83.0	46.9	26.0	1.4	153.7	61.4	4.5
Level of Service	D	D	F	F	D	F	D	C	A	F	E	A
Approach Delay (s)		74.0			97.1			22.0			71.8	
Approach LOS		E			F			C			E	

**Intersection Summary**

HCM 2000 Control Delay	55.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	94.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 Signalized Intersection Summary  
8: McCaslin Boulevard & Century Drive

2040 + Baseline (Fully Tenanted Sam's Club) - PM

05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	220	40	140	50	15	60	140	1634	90	130	1889	55
Future Volume (veh/h)	220	40	140	50	15	60	140	1634	90	130	1889	55
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1881	1881	1900	1881	1881	1881	1881	1881	1900
Adj Flow Rate, veh/h	227	41	144	52	15	62	144	1685	93	134	1947	57
Adj No. of Lanes	1	1	0	1	1	0	1	3	1	1	3	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	269	49	174	155	29	118	276	3064	931	303	3045	89
Arrive On Green	0.08	0.14	0.14	0.04	0.09	0.09	0.10	1.00	1.00	0.09	1.00	1.00
Sat Flow, veh/h	1792	358	1258	1792	317	1312	1792	5136	1560	1792	5125	150
Grp Volume(v), veh/h	227	0	185	52	0	77	144	1685	93	134	1300	704
Grp Sat Flow(s),veh/h/ln	1792	0	1616	1792	0	1629	1792	1712	1560	1792	1712	1851
Q Serve(g_s), s	10.0	0.0	13.4	3.1	0.0	5.4	3.9	0.0	0.0	3.6	0.0	0.0
Cycle Q Clear(g_c), s	10.0	0.0	13.4	3.1	0.0	5.4	3.9	0.0	0.0	3.6	0.0	0.0
Prop In Lane	1.00		0.78	1.00		0.81	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	269	0	223	155	0	147	276	3064	931	303	2034	1099
V/C Ratio(X)	0.85	0.00	0.83	0.34	0.00	0.52	0.52	0.55	0.10	0.44	0.64	0.64
Avail Cap(c_a), veh/h	269	0	323	241	0	326	337	3064	931	369	2034	1099
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.23	0.23	0.23	0.38	0.38	0.38
Uniform Delay (d), s/veh	47.6	0.0	50.3	47.5	0.0	52.1	7.9	0.0	0.0	8.0	0.0	0.0
Incr Delay (d2), s/veh	20.8	0.0	9.8	0.9	0.0	2.2	0.1	0.2	0.0	0.1	0.6	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.2	0.0	6.6	1.6	0.0	2.5	1.8	0.0	0.0	1.7	0.2	0.3
LnGrp Delay(d),s/veh	68.4	0.0	60.2	48.4	0.0	54.3	8.0	0.2	0.0	8.1	0.6	1.1
LnGrp LOS	E		E	D		D	A	A	A	A	A	A
Approach Vol, veh/h		412			129			1922			2138	
Approach Delay, s/veh		64.7			51.9			0.7			1.2	
Approach LOS		E			D			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.9	77.3	15.0	16.8	10.6	77.6	9.2	22.6				
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0				
Max Green Setting (Gmax), s	10.0	54.0	10.0	24.0	10.0	54.0	10.0	24.0				
Max Q Clear Time (g_c+I1), s	5.9	2.0	12.0	7.4	5.6	2.0	5.1	15.4				
Green Ext Time (p_c), s	0.1	51.8	0.0	1.2	0.1	51.8	0.0	0.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			8.1									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary  
9: McCaslin Boulevard & Via Appia Way/Via Appia Way

05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	185	25	507	30	105	30	1027	887	220	1517	35
Future Volume (veh/h)	65	185	25	507	30	105	30	1027	887	220	1517	35
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	69	197	0	539	32	0	32	1093	0	234	1614	0
Adj No. of Lanes	1	2	1	2	1	1	1	2	1	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	155	309	138	492	267	227	168	1925	861	459	2105	941
Arrive On Green	0.09	0.09	0.00	0.14	0.14	0.00	0.03	1.00	0.00	0.07	0.59	0.00
Sat Flow, veh/h	1792	3574	1599	3476	1881	1599	1792	3574	1599	1792	3574	1599
Grp Volume(v), veh/h	69	197	0	539	32	0	32	1093	0	234	1614	0
Grp Sat Flow(s),veh/h/ln	1792	1787	1599	1738	1881	1599	1792	1787	1599	1792	1787	1599
Q Serve(g_s), s	4.4	6.4	0.0	17.0	1.8	0.0	1.0	0.0	0.0	6.8	40.6	0.0
Cycle Q Clear(g_c), s	4.4	6.4	0.0	17.0	1.8	0.0	1.0	0.0	0.0	6.8	40.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	155	309	138	492	267	227	168	1925	861	459	2105	941
V/C Ratio(X)	0.45	0.64	0.00	1.09	0.12	0.00	0.19	0.57	0.00	0.51	0.77	0.00
Avail Cap(c_a), veh/h	373	745	333	492	267	227	303	1925	861	459	2105	941
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.78	0.78	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	52.1	53.0	0.0	51.5	45.0	0.0	17.3	0.0	0.0	9.9	18.5	0.0
Incr Delay (d2), s/veh	1.5	1.6	0.0	68.8	0.1	0.0	0.2	0.9	0.0	0.4	2.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	3.2	0.0	12.8	0.9	0.0	0.5	0.3	0.0	3.4	20.8	0.0
LnGrp Delay(d),s/veh	53.6	54.6	0.0	120.3	45.1	0.0	17.5	0.9	0.0	10.3	21.2	0.0
LnGrp LOS	D	D		F	D		B	A		B	C	
Approach Vol, veh/h		266			571			1125			1848	
Approach Delay, s/veh		54.3			116.1			1.4			19.9	
Approach LOS		D			F			A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.0	76.7		22.0	12.0	70.6		15.4				
Change Period (Y+Rc), s	4.0	6.0		5.0	4.0	6.0		5.0				
Max Green Setting (Gmax), s	11.0	47.0		17.0	8.0	50.0		25.0				
Max Q Clear Time (g_c+I1), s	3.0	42.6		19.0	8.8	2.0		8.4				
Green Ext Time (p_c), s	0.0	4.3		0.0	0.0	41.3		1.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				31.2								
HCM 2010 LOS				C								

2040 plus Alternative 2 AM

HCM 2010 Signalized Intersection Summary  
 1: McCaslin Blvd & Marshall Road

2040 + Alternative 2 - AM  
 05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	538	20	110	60	25	80	380	1290	110	170	668	516
Future Volume (veh/h)	538	20	110	60	25	80	380	1290	110	170	668	516
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	570	0	113	62	26	82	392	1330	0	175	689	0
Adj No. of Lanes	3	0	1	1	1	1	2	3	1	2	3	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	697	0	203	131	138	114	1324	2986	930	425	2014	627
Arrive On Green	0.13	0.00	0.13	0.07	0.07	0.07	0.23	0.59	0.00	0.08	0.67	0.00
Sat Flow, veh/h	5270	0	1534	1757	1845	1532	3408	5036	1568	3408	5036	1568
Grp Volume(v), veh/h	570	0	113	62	26	82	392	1330	0	175	689	0
Grp Sat Flow(s),veh/h/ln	1757	0	1534	1757	1845	1532	1704	1679	1568	1704	1679	1568
Q Serve(g_s), s	12.6	0.0	8.3	4.1	1.6	6.3	0.0	17.5	0.0	4.0	7.1	0.0
Cycle Q Clear(g_c), s	12.6	0.0	8.3	4.1	1.6	6.3	0.0	17.5	0.0	4.0	7.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	697	0	203	131	138	114	1324	2986	930	425	2014	627
V/C Ratio(X)	0.82	0.00	0.56	0.47	0.19	0.72	0.30	0.45	0.00	0.41	0.34	0.00
Avail Cap(c_a), veh/h	1142	0	332	293	307	255	1324	2986	930	453	2014	627
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	50.7	0.0	48.8	53.3	52.1	54.3	18.5	13.5	0.0	25.2	13.1	0.0
Incr Delay (d2), s/veh	0.9	0.0	0.9	2.6	0.7	8.1	0.0	0.5	0.0	0.2	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	0.0	3.6	2.1	0.8	2.9	4.2	8.3	0.0	1.8	3.3	0.0
LnGrp Delay(d),s/veh	51.6	0.0	49.7	55.9	52.8	62.4	18.5	14.0	0.0	25.4	13.6	0.0
LnGrp LOS	D		D	E	D	E	B	B		C	B	
Approach Vol, veh/h		683			170			1722			864	
Approach Delay, s/veh		51.3			58.5			15.0			16.0	
Approach LOS		D			E			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	33.2	54.0		13.0	10.0	77.2		19.9				
Change Period (Y+Rc), s	6.0	* 6		4.0	4.0	6.0		4.0				
Max Green Setting (Gmax), s	8.0	* 48		20.0	7.0	49.0		26.0				
Max Q Clear Time (g_c+I1), s	2.0	9.1		8.3	6.0	19.5		14.6				
Green Ext Time (p_c), s	3.3	5.1		0.4	0.0	11.9		1.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			24.6									
HCM 2010 LOS			C									
<b>Notes</b>												

HCM Signalized Intersection Capacity Analysis  
 2: McCaslin Boulevard & US-36 E ramps

2040 + Alternative 2 - AM  
 05/21/2019



Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR	
Lane Configurations		TTT		TTT					TTT		
Traffic Volume (vph)	0	325	0	1733	0	0	0	0	1064	0	
Future Volume (vph)	0	325	0	1733	0	0	0	0	1064	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		7.5		7.5					9.3		
Lane Util. Factor		0.76		0.91					0.94		
Frbp, ped/bikes		1.00		1.00					1.00		
Flpb, ped/bikes		1.00		1.00					1.00		
Frt		0.85		1.00					1.00		
Flt Protected		1.00		1.00					0.95		
Satd. Flow (prot)		3610		5085					4990		
Flt Permitted		1.00		1.00					0.95		
Satd. Flow (perm)		3610		5085					4990		
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	
Adj. Flow (vph)	0	332	0	1768	0	0	0	0	1086	0	
RTOR Reduction (vph)	0	91	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	241	0	1768	0	0	0	0	1086	0	
Confl. Peds. (#/hr)			1						2		
Confl. Bikes (#/hr)					1						
Turn Type		Prot		NA					Prot		
Protected Phases		4		8					2		
Permitted Phases											
Actuated Green, G (s)		42.4		42.4					60.8		
Effective Green, g (s)		42.4		42.4					60.8		
Actuated g/C Ratio		0.35		0.35					0.51		
Clearance Time (s)		7.5		7.5					9.3		
Vehicle Extension (s)		8.0		0.2					8.0		
Lane Grp Cap (vph)		1275		1796					2528		
v/s Ratio Prot		0.07		c0.35					c0.22		
v/s Ratio Perm											
v/c Ratio		0.19		0.98					0.43		
Uniform Delay, d1		26.9		38.5					18.7		
Progression Factor		1.00		1.02					0.39		
Incremental Delay, d2		0.3		16.5					0.5		
Delay (s)		27.2		55.7					7.8		
Level of Service		C		E					A		
Approach Delay (s)	27.2			55.7			0.0		7.8		
Approach LOS	C			E			A		A		
<b>Intersection Summary</b>											
HCM 2000 Control Delay			36.4							HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.66								
Actuated Cycle Length (s)			120.0							Sum of lost time (s)	16.8
Intersection Capacity Utilization			67.7%							ICU Level of Service	C
Analysis Period (min)			15								

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 3: McCaslin Boulevard & US-36 W ramps

2040 + Alternative 2 - AM  
 05/21/2019



Movement	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR	NEL	NER
Lane Configurations					↑↑↑↑			↑	↑↑↑↑	
Traffic Volume (vph)	0	0	0	0	1487	0	0	1054	1542	0
Future Volume (vph)	0	0	0	0	1487	0	0	1054	1542	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					7.2			7.2	9.3	
Lane Util. Factor					0.91			1.00	0.94	
Frbp, ped/bikes					1.00			1.00	1.00	
Flpb, ped/bikes					1.00			1.00	1.00	
Frt					1.00			0.86	1.00	
Flt Protected					1.00			1.00	0.95	
Satd. Flow (prot)					5085			1611	4990	
Flt Permitted					1.00			1.00	0.95	
Satd. Flow (perm)					5085			1611	4990	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	0	1582	0	0	1121	1640	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	29	0	0
Lane Group Flow (vph)	0	0	0	0	1582	0	0	1092	1640	0
Confl. Peds. (#/hr)									7	
Confl. Bikes (#/hr)										
Turn Type					NA			Prot	Prot	
Protected Phases					2			6	8	
Permitted Phases										
Actuated Green, G (s)					58.5			58.5	45.0	
Effective Green, g (s)					58.5			58.5	45.0	
Actuated g/C Ratio					0.49			0.49	0.38	
Clearance Time (s)					7.2			7.2	9.3	
Vehicle Extension (s)					8.0			8.0	8.0	
Lane Grp Cap (vph)					2478			785	1871	
v/s Ratio Prot					0.31			c0.68	c0.33	
v/s Ratio Perm										
v/c Ratio					0.64			1.39	0.88	
Uniform Delay, d1					22.9			30.8	34.9	
Progression Factor					1.74			1.00	0.70	
Incremental Delay, d2					0.6			183.7	4.3	
Delay (s)					40.3			214.4	28.9	
Level of Service					D			F	C	
Approach Delay (s)		0.0			40.3		214.4		28.9	
Approach LOS		A			D		F		C	
<b>Intersection Summary</b>										
HCM 2000 Control Delay			80.9		HCM 2000 Level of Service				F	
HCM 2000 Volume to Capacity ratio			1.17							
Actuated Cycle Length (s)			120.0		Sum of lost time (s)				16.5	
Intersection Capacity Utilization			71.8%		ICU Level of Service				C	
Analysis Period (min)			15							
c Critical Lane Group										

HCM 2010 Signalized Intersection Summary  
4: McCaslin Blvd & Dillon Road

2040 + Alternative 2 - AM  
05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	45	105	663	225	452	310	1624	637	218	1261	155
Future Volume (veh/h)	70	45	105	663	225	452	310	1624	637	218	1261	155
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	74	48	0	705	239	0	330	1728	0	232	1341	0
Adj No. of Lanes	2	1	1	2	1	1	2	2	1	2	3	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	184	152	129	502	324	276	384	1894	847	201	2450	763
Arrive On Green	0.05	0.08	0.00	0.05	0.06	0.00	0.11	0.54	0.00	0.12	0.96	0.00
Sat Flow, veh/h	3442	1863	1583	3442	1863	1583	3442	3539	1583	3442	5085	1583
Grp Volume(v), veh/h	74	48	0	705	239	0	330	1728	0	232	1341	0
Grp Sat Flow(s),veh/h/ln	1721	1863	1583	1721	1863	1583	1721	1770	1583	1721	1695	1583
Q Serve(g_s), s	2.5	2.9	0.0	17.5	15.2	0.0	11.3	53.2	0.0	7.0	2.4	0.0
Cycle Q Clear(g_c), s	2.5	2.9	0.0	17.5	15.2	0.0	11.3	53.2	0.0	7.0	2.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	184	152	129	502	324	276	384	1894	847	201	2450	763
V/C Ratio(X)	0.40	0.32	0.00	1.40	0.74	0.00	0.86	0.91	0.00	1.16	0.55	0.00
Avail Cap(c_a), veh/h	201	450	383	502	613	521	402	1894	847	201	2450	763
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.00	0.82	0.82	0.00	1.00	1.00	0.00	0.47	0.47	0.00
Uniform Delay (d), s/veh	54.9	51.9	0.0	57.1	53.8	0.0	52.4	25.3	0.0	53.0	1.2	0.0
Incr Delay (d2), s/veh	1.1	1.2	0.0	191.8	2.7	0.0	16.1	8.2	0.0	93.5	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	1.6	0.0	21.7	8.1	0.0	6.2	28.1	0.0	5.9	0.8	0.0
LnGrp Delay(d),s/veh	56.0	53.1	0.0	248.9	56.5	0.0	68.5	33.6	0.0	146.5	1.6	0.0
LnGrp LOS	E	D		F	E		E	C		F	A	
Approach Vol, veh/h		122			944			2058			1573	
Approach Delay, s/veh		54.9			200.2			39.2			23.0	
Approach LOS		D			F			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.4	63.8	11.9	25.9	12.0	70.2	23.0	14.8				
Change Period (Y+Rc), s	5.0	6.0	5.5	5.0	5.0	6.0	5.5	5.0				
Max Green Setting (Gmax), s	14.0	38.0	7.0	39.5	7.0	45.0	17.5	29.0				
Max Q Clear Time (g_c+I1), s	13.3	4.4	4.5	17.2	9.0	55.2	19.5	4.9				
Green Ext Time (p_c), s	0.1	32.8	0.0	1.5	0.0	0.0	0.0	1.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				66.5								
HCM 2010 LOS				E								

HCM 2010 Signalized Intersection Summary  
5: Coal Creek Ci/Dahlia Street & Dillon Road

2040 + Alternative 2 - AM  
05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	722	150	15	1066	186	20	0	5	255	40	87
Future Volume (veh/h)	48	722	150	15	1066	186	20	0	5	255	40	87
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	52	785	163	16	1159	202	22	0	5	277	43	95
Adj No. of Lanes	1	2	1	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	272	2232	978	361	2188	979	253	0	358	374	116	256
Arrive On Green	0.02	0.42	0.42	0.01	0.62	0.62	0.23	0.00	0.23	0.23	0.23	0.23
Sat Flow, veh/h	1774	3539	1551	1774	3539	1583	1246	0	1583	1405	513	1133
Grp Volume(v), veh/h	52	785	163	16	1159	202	22	0	5	277	0	138
Grp Sat Flow(s),veh/h/ln	1774	1770	1551	1774	1770	1583	1246	0	1583	1405	0	1645
Q Serve(g_s), s	1.3	18.1	7.8	0.4	22.3	6.7	1.8	0.0	0.3	22.9	0.0	8.5
Cycle Q Clear(g_c), s	1.3	18.1	7.8	0.4	22.3	6.7	10.3	0.0	0.3	23.2	0.0	8.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.69
Lane Grp Cap(c), veh/h	272	2232	978	361	2188	979	253	0	358	374	0	372
V/C Ratio(X)	0.19	0.35	0.17	0.04	0.53	0.21	0.09	0.00	0.01	0.74	0.00	0.37
Avail Cap(c_a), veh/h	336	2232	978	446	2188	979	387	0	528	525	0	548
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.47	0.47	0.47	1.00	1.00	1.00	1.00	0.00	1.00	0.85	0.00	0.85
Uniform Delay (d), s/veh	10.4	18.0	15.1	9.5	13.0	10.0	43.6	0.0	36.1	45.1	0.0	39.3
Incr Delay (d2), s/veh	0.1	0.2	0.2	0.0	0.9	0.5	0.2	0.0	0.0	3.4	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	8.9	3.4	0.2	11.1	3.0	0.6	0.0	0.1	9.2	0.0	3.9
LnGrp Delay(d),s/veh	10.5	18.2	15.2	9.6	13.9	10.5	43.8	0.0	36.1	48.5	0.0	39.9
LnGrp LOS	B	B	B	A	B	B	D		D	D		D
Approach Vol, veh/h		1000			1377			27				415
Approach Delay, s/veh		17.3			13.4			42.4				45.7
Approach LOS		B			B			D				D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.2	81.7		32.1	7.7	80.2		32.1				
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	7.0	57.0		40.0	7.0	57.0		40.0				
Max Q Clear Time (g_c+I1), s	2.4	20.1		25.2	3.3	24.3		12.3				
Green Ext Time (p_c), s	0.0	21.3		1.9	0.0	19.8		2.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				19.8								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary  
6: Dahlia St/Dahlia Street & Cherry Street

2040 + Alternative 2 - AM  
05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	209	77	151	512	15	91	63	67	30	121	152
Future Volume (veh/h)	68	209	77	151	512	15	91	63	67	30	121	152
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	72	222	82	161	545	16	97	67	71	32	129	162
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	517	1557	680	717	1649	48	154	165	175	291	148	186
Arrive On Green	0.09	0.88	0.88	0.08	0.47	0.47	0.33	0.33	0.33	0.20	0.20	0.20
Sat Flow, veh/h	1774	3539	1545	1774	3508	103	1081	826	876	1241	741	931
Grp Volume(v), veh/h	72	222	82	161	275	286	97	0	138	32	0	291
Grp Sat Flow(s),veh/h/ln	1774	1770	1545	1774	1770	1841	1081	0	1702	1241	0	1672
Q Serve(g_s), s	1.3	0.5	0.4	2.9	5.8	5.9	1.9	0.0	3.7	1.4	0.0	10.1
Cycle Q Clear(g_c), s	1.3	0.5	0.4	2.9	5.8	5.9	12.0	0.0	3.7	5.1	0.0	10.1
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.51	1.00		0.56
Lane Grp Cap(c), veh/h	517	1557	680	717	832	866	154	0	340	291	0	334
V/C Ratio(X)	0.14	0.14	0.12	0.22	0.33	0.33	0.63	0.00	0.41	0.11	0.00	0.87
Avail Cap(c_a), veh/h	642	1557	680	788	832	866	154	0	340	291	0	334
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	1.00	1.00	1.00	0.99	0.00	0.99	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.0	2.0	2.0	7.7	10.0	10.0	25.6	0.0	17.2	22.9	0.0	23.2
Incr Delay (d2), s/veh	0.0	0.2	0.3	0.1	1.1	1.0	7.9	0.0	0.8	0.2	0.0	21.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.3	0.2	1.4	3.1	3.2	1.9	0.0	1.8	0.5	0.0	6.6
LnGrp Delay(d),s/veh	8.0	2.2	2.4	7.8	11.0	11.0	33.5	0.0	18.0	23.1	0.0	44.3
LnGrp LOS	A	A	A	A	B	B	C		B	C		D
Approach Vol, veh/h		376			722			235				323
Approach Delay, s/veh		3.4			10.3			24.4				42.2
Approach LOS		A			B			C				D
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.6	32.4		18.0	7.8	34.2		18.0				
Change Period (Y+Rc), s	5.0	6.0		6.0	5.0	6.0		6.0				
Max Green Setting (Gmax), s	7.0	24.0		12.0	7.0	24.0		12.0				
Max Q Clear Time (g_c+I1), s	4.9	2.5		12.1	3.3	7.9		14.0				
Green Ext Time (p_c), s	0.0	6.9		0.0	0.0	6.0		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				17.0								
HCM 2010 LOS				B								

HCM Signalized Intersection Capacity Analysis  
 7: McCaslin Boulevard & Centennial Parkway/Cherry Street

2040 + Alternative 2 - AM  
 05/21/2019



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	55	125	427	135	222	385	1462	236	134	1115	75
Future Volume (vph)	95	55	125	427	135	222	385	1462	236	134	1115	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1543	3433	1863	1539	1770	3539	1561	1770	3539	1547
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.08	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)	1770	3539	1543	3433	1863	1539	157	3539	1561	164	3539	1547
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	98	57	129	440	139	229	397	1507	243	138	1149	77
RTOR Reduction (vph)	0	0	115	0	0	197	0	0	91	0	0	46
Lane Group Flow (vph)	98	57	14	440	139	32	397	1507	152	138	1149	31
Confl. Peds. (#/hr)	2		6	6		2	1		1	1		1
Confl. Bikes (#/hr)			1			7			1			
Turn Type	custom	NA	Perm	custom	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases	3		3	4		4	6		6	2		2
Actuated Green, G (s)	12.6	12.6	12.6	16.0	16.0	16.0	75.4	63.4	63.4	55.4	48.4	48.4
Effective Green, g (s)	12.6	12.6	12.6	16.0	16.0	16.0	75.4	63.4	63.4	55.4	48.4	48.4
Actuated g/C Ratio	0.10	0.10	0.10	0.13	0.13	0.13	0.63	0.53	0.53	0.46	0.40	0.40
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.5	3.5	3.5	2.5	2.5	2.5	3.0	4.0	4.0	2.0	4.0	4.0
Lane Grp Cap (vph)	185	371	162	457	248	205	394	1869	824	169	1427	623
v/s Ratio Prot	c0.06	0.02		c0.13	0.07		c0.18	0.43		0.05	0.32	
v/s Ratio Perm			0.01			0.02	c0.45		0.10	0.33		0.02
v/c Ratio	0.53	0.15	0.08	0.96	0.56	0.16	1.01	0.81	0.18	0.82	0.81	0.05
Uniform Delay, d1	50.9	48.8	48.5	51.7	48.7	46.0	37.6	23.3	14.8	22.9	31.6	21.8
Progression Factor	1.00	1.00	1.00	0.96	0.96	1.99	1.52	0.62	0.68	0.77	1.10	1.00
Incremental Delay, d2	3.1	0.2	0.3	30.8	2.2	0.2	15.5	0.4	0.0	22.4	4.5	0.1
Delay (s)	54.0	49.1	48.8	80.6	48.7	91.8	72.5	14.7	10.1	40.1	39.2	21.9
Level of Service	D	D	D	F	D	F	E	B	B	D	D	C
Approach Delay (s)		50.6			78.3			24.9			38.3	
Approach LOS		D			E			C			D	

Intersection Summary		
HCM 2000 Control Delay	39.8	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.97	D
Actuated Cycle Length (s)	120.0	Sum of lost time (s)
Intersection Capacity Utilization	88.8%	21.0
Analysis Period (min)	15	ICU Level of Service
		E

c Critical Lane Group

HCM 2010 Signalized Intersection Summary  
 8: McCaslin Boulevard & Century Drive

2040 + Alternative 2 - AM  
 05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	5	45	90	10	115	175	1439	45	75	1324	75
Future Volume (veh/h)	75	5	45	90	10	115	175	1439	45	75	1324	75
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		0.98	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	79	5	47	95	11	121	184	1515	47	79	1394	79
Adj No. of Lanes	1	1	0	1	1	0	1	3	1	1	3	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	180	15	141	254	14	150	374	3197	972	252	2979	169
Arrive On Green	0.05	0.10	0.10	0.06	0.10	0.10	0.04	0.42	0.42	0.06	1.00	1.00
Sat Flow, veh/h	1774	153	1440	1774	131	1439	1774	5085	1547	1774	4924	279
Grp Volume(v), veh/h	79	0	52	95	0	132	184	1515	47	79	960	513
Grp Sat Flow(s),veh/h/ln	1774	0	1593	1774	0	1570	1774	1695	1547	1774	1695	1813
Q Serve(g_s), s	4.8	0.0	3.7	5.7	0.0	9.9	4.6	25.9	2.2	2.1	0.0	0.0
Cycle Q Clear(g_c), s	4.8	0.0	3.7	5.7	0.0	9.9	4.6	25.9	2.2	2.1	0.0	0.0
Prop In Lane	1.00		0.90	1.00		0.92	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	180	0	156	254	0	163	374	3197	972	252	2051	1097
V/C Ratio(X)	0.44	0.00	0.33	0.37	0.00	0.81	0.49	0.47	0.05	0.31	0.47	0.47
Avail Cap(c_a), veh/h	191	0	252	254	0	249	380	3197	972	343	2051	1097
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.56	0.56	0.56	0.54	0.54	0.54
Uniform Delay (d), s/veh	45.7	0.0	50.5	45.2	0.0	52.6	7.9	20.4	13.5	10.8	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.0	0.9	0.7	0.0	8.9	0.2	0.3	0.1	0.1	0.4	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	1.6	2.8	0.0	4.7	2.2	12.2	0.9	1.0	0.1	0.2
LnGrp Delay(d),s/veh	47.0	0.0	51.4	45.9	0.0	61.5	8.1	20.7	13.6	10.9	0.4	0.8
LnGrp LOS	D		D	D		E	A	C	B	B	A	A
Approach Vol, veh/h		131			227			1746			1552	
Approach Delay, s/veh		48.7			54.9			19.1			1.1	
Approach LOS		D			D			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.6	78.6	11.3	18.5	8.8	81.4	12.0	17.8				
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0				
Max Green Setting (Gmax), s	7.0	65.0	7.0	19.0	10.0	62.0	7.0	19.0				
Max Q Clear Time (g_c+I1), s	6.6	2.0	6.8	11.9	4.1	27.9	7.7	5.7				
Green Ext Time (p_c), s	0.0	61.5	0.0	0.5	0.0	33.7	0.0	0.7				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			14.8									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary  
 9: McCaslin Boulevard & Via Appia Way/Via Appia Way

2040 + Alternative 2 - AM  
 05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	40	20	582	175	285	35	1222	332	75	857	70
Future Volume (veh/h)	25	40	20	582	175	285	35	1222	332	75	857	70
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	26	42	0	606	182	0	36	1273	0	78	893	0
Adj No. of Lanes	1	2	1	2	1	1	1	2	1	1	2	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	126	252	113	459	248	211	389	2114	946	374	2164	968
Arrive On Green	0.07	0.07	0.00	0.13	0.13	0.00	0.03	1.00	0.00	0.03	0.61	0.00
Sat Flow, veh/h	1774	3539	1583	3442	1863	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	26	42	0	606	182	0	36	1273	0	78	893	0
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1721	1863	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	1.7	1.3	0.0	16.0	11.3	0.0	1.0	0.0	0.0	2.0	15.7	0.0
Cycle Q Clear(g_c), s	1.7	1.3	0.0	16.0	11.3	0.0	1.0	0.0	0.0	2.0	15.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	126	252	113	459	248	211	389	2114	946	374	2164	968
V/C Ratio(X)	0.21	0.17	0.00	1.32	0.73	0.00	0.09	0.60	0.00	0.21	0.41	0.00
Avail Cap(c_a), veh/h	414	826	369	459	248	211	476	2114	946	437	2164	968
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.90	0.90	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	52.5	52.4	0.0	52.0	49.9	0.0	9.8	0.0	0.0	8.6	12.1	0.0
Incr Delay (d2), s/veh	0.6	0.2	0.0	158.9	10.1	0.0	0.0	1.1	0.0	0.1	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.7	0.0	17.7	6.5	0.0	0.5	0.3	0.0	1.0	7.9	0.0
LnGrp Delay(d),s/veh	53.1	52.6	0.0	210.9	60.1	0.0	9.8	1.1	0.0	8.7	12.7	0.0
LnGrp LOS	D	D		F	E		A	A		A	B	
Approach Vol, veh/h		68			788			1309			971	
Approach Delay, s/veh		52.8			176.1			1.4			12.4	
Approach LOS		D			F			A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.1	79.4		21.0	7.8	77.7		13.5				
Change Period (Y+Rc), s	4.0	6.0		5.0	4.0	6.0		5.0				
Max Green Setting (Gmax), s	8.0	48.0		16.0	8.0	48.0		28.0				
Max Q Clear Time (g_c+I1), s	3.0	17.7		18.0	4.0	2.0		3.7				
Green Ext Time (p_c), s	0.0	23.9		0.0	0.0	32.8		0.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				49.8								
HCM 2010 LOS				D								

2040 plus Alternative 2 PM

HCM 2010 Signalized Intersection Summary  
 1: McCaslin Blvd & Marshall Road

2040 + Alternative 2 - PM  
 05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1229	70	545	105	45	55	260	906	60	195	1415	1087
Future Volume (veh/h)	1229	70	545	105	45	55	260	906	60	195	1415	1087
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	1318	0	562	108	46	57	268	934	0	201	1459	0
Adj No. of Lanes	3	0	1	1	1	1	2	3	1	2	3	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	1523	0	446	144	151	128	540	2209	688	501	1926	600
Arrive On Green	0.28	0.00	0.28	0.08	0.08	0.08	0.09	0.43	0.00	0.07	0.50	0.00
Sat Flow, veh/h	5375	0	1576	1792	1881	1593	3476	5136	1599	3476	5136	1599
Grp Volume(v), veh/h	1318	0	562	108	46	57	268	934	0	201	1459	0
Grp Sat Flow(s),veh/h/ln	1792	0	1576	1792	1881	1593	1738	1712	1599	1738	1712	1599
Q Serve(g_s), s	27.9	0.0	34.0	7.1	2.8	4.1	1.2	15.2	0.0	4.7	27.5	0.0
Cycle Q Clear(g_c), s	27.9	0.0	34.0	7.1	2.8	4.1	1.2	15.2	0.0	4.7	27.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1523	0	446	144	151	128	540	2209	688	501	1926	600
V/C Ratio(X)	0.87	0.00	1.26	0.75	0.30	0.44	0.50	0.42	0.00	0.40	0.76	0.00
Avail Cap(c_a), veh/h	1523	0	446	269	282	239	540	2209	688	508	1926	600
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	40.8	0.0	43.0	54.0	52.0	52.6	46.6	23.8	0.0	27.2	25.7	0.0
Incr Delay (d2), s/veh	5.3	0.0	133.6	7.5	1.1	2.4	0.3	0.6	0.0	0.2	2.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.5	0.0	31.3	3.8	1.5	1.9	4.1	7.3	0.0	2.2	13.3	0.0
LnGrp Delay(d),s/veh	46.1	0.0	176.6	61.5	53.1	55.0	46.9	24.4	0.0	27.4	28.5	0.0
LnGrp LOS	D		F	E	D	E	D	C		C	C	
Approach Vol, veh/h		1880			211			1202			1660	
Approach Delay, s/veh		85.1			57.9			29.4			28.4	
Approach LOS		F			E			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	17.3	51.0		13.7	10.7	57.6		38.0				
Change Period (Y+Rc), s	6.0	* 6		4.0	4.0	6.0		4.0				
Max Green Setting (Gmax), s	5.0	* 45		18.0	7.0	43.0		34.0				
Max Q Clear Time (g_c+I1), s	3.2	29.5		9.1	6.7	17.2		36.0				
Green Ext Time (p_c), s	0.3	8.7		0.4	0.0	7.2		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			51.4									
HCM 2010 LOS			D									
<b>Notes</b>												

HCM Signalized Intersection Capacity Analysis  
2: McCaslin Boulevard & US-36 E ramps

2040 + Alternative 2 - PM  
05/21/2019



Movement	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations		↑↑↑		↑↑↑					↑↑↑	
Traffic Volume (vph)	0	780	0	1810	0	0	0	0	1927	0
Future Volume (vph)	0	780	0	1810	0	0	0	0	1927	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.5		7.5					9.3	
Lane Util. Factor		0.76		0.91					0.94	
Frbp, ped/bikes		1.00		1.00					1.00	
Flpb, ped/bikes		1.00		1.00					1.00	
Frt		0.85		1.00					1.00	
Flt Protected		1.00		1.00					0.95	
Satd. Flow (prot)		3646		5136					5040	
Flt Permitted		1.00		1.00					0.95	
Satd. Flow (perm)		3646		5136					5040	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	804	0	1866	0	0	0	0	1987	0
RTOR Reduction (vph)	0	34	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	770	0	1866	0	0	0	0	1987	0
Confl. Peds. (#/hr)	8		8							
Confl. Bikes (#/hr)					1			5		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type		Prot		NA					Prot	
Protected Phases		4		8					2	
Permitted Phases										
Actuated Green, G (s)		48.2		48.2					55.0	
Effective Green, g (s)		48.2		48.2					55.0	
Actuated g/C Ratio		0.40		0.40					0.46	
Clearance Time (s)		7.5		7.5					9.3	
Vehicle Extension (s)		8.0		0.2					8.0	
Lane Grp Cap (vph)		1464		2062					2310	
v/s Ratio Prot		0.21		c0.36					c0.39	
v/s Ratio Perm										
v/c Ratio		0.53		0.90					0.86	
Uniform Delay, d1		27.2		33.7					29.1	
Progression Factor		1.00		1.31					1.01	
Incremental Delay, d2		1.3		4.7					2.2	
Delay (s)		28.5		49.0					31.6	
Level of Service		C		D					C	
Approach Delay (s)	28.5			49.0			0.0		31.6	
Approach LOS	C			D			A		C	
<b>Intersection Summary</b>										
HCM 2000 Control Delay			38.1		HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.88							
Actuated Cycle Length (s)			120.0		Sum of lost time (s)				16.8	
Intersection Capacity Utilization			85.6%		ICU Level of Service				E	
Analysis Period (min)			15							
c	Critical Lane Group									

HCM Signalized Intersection Capacity Analysis  
 3: McCaslin Boulevard & US-36 W ramps

2040 + Alternative 2 - PM  
 05/21/2019

										
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR	NEL	NER
Lane Configurations					↑↑↑			↑	↑↑↑	
Traffic Volume (vph)	0	0	0	0	2563	0	0	925	1815	0
Future Volume (vph)	0	0	0	0	2563	0	0	925	1815	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					7.2			7.2	9.3	
Lane Util. Factor					0.91			1.00	0.94	
Frbp, ped/bikes					1.00			1.00	1.00	
Flpb, ped/bikes					1.00			1.00	1.00	
Frt					1.00			0.86	1.00	
Flt Protected					1.00			1.00	0.95	
Satd. Flow (prot)					5136			1627	5040	
Flt Permitted					1.00			1.00	0.95	
Satd. Flow (perm)					5136			1627	5040	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	0	0	0	2670	0	0	964	1891	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	29	0	0
Lane Group Flow (vph)	0	0	0	0	2670	0	0	935	1891	0
Confl. Peds. (#/hr)						3		2	3	
Confl. Bikes (#/hr)										
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Turn Type					NA			Prot	Prot	
Protected Phases					2			6	8	
Permitted Phases										
Actuated Green, G (s)					58.5			58.5	45.0	
Effective Green, g (s)					58.5			58.5	45.0	
Actuated g/C Ratio					0.49			0.49	0.38	
Clearance Time (s)					7.2			7.2	9.3	
Vehicle Extension (s)					8.0			8.0	8.0	
Lane Grp Cap (vph)					2503			793	1890	
v/s Ratio Prot					0.52			c0.57	c0.38	
v/s Ratio Perm										
v/c Ratio					1.07			1.18	1.00	
Uniform Delay, d1					30.8			30.8	37.5	
Progression Factor					1.54			1.00	0.43	
Incremental Delay, d2					31.0			93.4	18.5	
Delay (s)					78.5			124.1	34.6	
Level of Service					E			F	C	
Approach Delay (s)		0.0			78.5		124.1		34.6	
Approach LOS		A			E		F		C	
<b>Intersection Summary</b>										
HCM 2000 Control Delay			71.4		HCM 2000 Level of Service				E	
HCM 2000 Volume to Capacity ratio			1.10							
Actuated Cycle Length (s)			120.0		Sum of lost time (s)				16.5	
Intersection Capacity Utilization			114.5%		ICU Level of Service				H	
Analysis Period (min)			15							
c Critical Lane Group										

HCM 2010 Signalized Intersection Summary  
4: McCaslin Blvd & Dillon Road

2040 + Alternative 2 - PM  
05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	225	295	405	880	185	304	275	1704	732	402	1829	160
Future Volume (veh/h)	225	295	405	880	185	304	275	1704	732	402	1829	160
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	234	307	0	917	193	0	286	1775	0	419	1905	0
Adj No. of Lanes	2	1	1	2	1	1	2	2	1	2	3	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	294	373	317	536	504	428	261	1377	616	290	2021	629
Arrive On Green	0.08	0.20	0.00	0.05	0.09	0.00	0.08	0.39	0.00	0.11	0.52	0.00
Sat Flow, veh/h	3476	1881	1599	3476	1881	1599	3476	3574	1599	3476	5136	1599
Grp Volume(v), veh/h	234	307	0	917	193	0	286	1775	0	419	1905	0
Grp Sat Flow(s),veh/h/ln	1738	1881	1599	1738	1881	1599	1738	1787	1599	1738	1712	1599
Q Serve(g_s), s	7.9	18.8	0.0	18.5	11.6	0.0	9.0	46.2	0.0	10.0	41.9	0.0
Cycle Q Clear(g_c), s	7.9	18.8	0.0	18.5	11.6	0.0	9.0	46.2	0.0	10.0	41.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	294	373	317	536	504	428	261	1377	616	290	2021	629
V/C Ratio(X)	0.80	0.82	0.00	1.71	0.38	0.00	1.10	1.29	0.00	1.45	0.94	0.00
Avail Cap(c_a), veh/h	397	455	386	536	530	450	261	1377	616	290	2021	629
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	0.00	0.78	0.78	0.00	1.00	1.00	0.00	0.09	0.09	0.00
Uniform Delay (d), s/veh	53.9	46.1	0.0	56.9	45.3	0.0	55.5	36.9	0.0	53.4	27.3	0.0
Incr Delay (d2), s/veh	6.9	9.9	0.0	326.3	0.4	0.0	84.2	135.7	0.0	202.8	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	10.7	0.0	33.2	6.1	0.0	7.4	48.7	0.0	12.9	19.8	0.0
LnGrp Delay(d),s/veh	60.9	56.0	0.0	383.2	45.7	0.0	139.7	172.6	0.0	256.1	28.6	0.0
LnGrp LOS	E	E		F	D		F	F		F	C	
Approach Vol, veh/h		541			1110			2061			2324	
Approach Delay, s/veh		58.1			324.5			168.1			69.6	
Approach LOS		E			F			F			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.0	53.2	15.6	37.1	15.0	52.2	24.0	28.8				
Change Period (Y+Rc), s	5.0	6.0	5.5	5.0	5.0	6.0	5.5	5.0				
Max Green Setting (Gmax), s	9.0	42.0	13.7	33.8	10.0	41.0	18.5	29.0				
Max Q Clear Time (g_c+I1), s	11.0	43.9	9.9	13.6	12.0	48.2	20.5	20.8				
Green Ext Time (p_c), s	0.0	0.0	0.2	2.8	0.0	0.0	0.0	1.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			149.1									
HCM 2010 LOS			F									

HCM 2010 Signalized Intersection Summary  
5: Coal Creek Ci/Dahlia Street & Dillon Road

2040 + Alternative 2 - PM  
05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	151	1177	10	5	1024	223	140	25	15	286	15	119
Future Volume (veh/h)	151	1177	10	5	1024	223	140	25	15	286	15	119
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1881	1881	1881	1900	1881	1881	1900
Adj Flow Rate, veh/h	166	1293	11	5	1125	245	154	27	16	314	16	131
Adj No. of Lanes	1	2	1	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	286	2083	909	173	1895	826	317	308	183	417	49	399
Arrive On Green	0.02	0.19	0.19	0.00	0.53	0.53	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	1792	3574	1559	1792	3574	1557	1242	1100	652	1363	174	1424
Grp Volume(v), veh/h	166	1293	11	5	1125	245	154	0	43	314	0	147
Grp Sat Flow(s),veh/h/ln	1792	1787	1559	1792	1787	1557	1242	0	1751	1363	0	1597
Q Serve(g_s), s	4.7	39.8	0.7	0.2	25.9	10.5	13.5	0.0	2.2	26.5	0.0	8.8
Cycle Q Clear(g_c), s	4.7	39.8	0.7	0.2	25.9	10.5	22.2	0.0	2.2	28.7	0.0	8.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.37	1.00		0.89
Lane Grp Cap(c), veh/h	286	2083	909	173	1895	826	317	0	491	417	0	447
V/C Ratio(X)	0.58	0.62	0.01	0.03	0.59	0.30	0.49	0.00	0.09	0.75	0.00	0.33
Avail Cap(c_a), veh/h	335	2083	909	271	1895	826	383	0	584	490	0	532
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	1.00	1.00	1.00	1.00	0.00	1.00	0.91	0.00	0.91
Uniform Delay (d), s/veh	16.8	36.3	20.5	17.8	19.3	15.7	43.1	0.0	31.9	42.5	0.0	34.2
Incr Delay (d2), s/veh	0.1	0.1	0.0	0.0	1.4	0.9	1.4	0.0	0.1	5.4	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	19.8	0.3	0.1	13.0	4.7	4.7	0.0	1.1	10.6	0.0	3.9
LnGrp Delay(d),s/veh	16.8	36.4	20.5	17.8	20.7	16.6	44.4	0.0	32.0	47.8	0.0	34.7
LnGrp LOS	B	D	C	B	C	B	D		C	D		C
Approach Vol, veh/h		1470			1375			197			461	
Approach Delay, s/veh		34.1			20.0			41.7			43.6	
Approach LOS		C			B			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.5	75.9		38.6	11.8	69.6		38.6				
Change Period (Y+Rc), s	5.0	6.0		5.0	5.0	6.0		5.0				
Max Green Setting (Gmax), s	7.0	57.0		40.0	10.0	54.0		40.0				
Max Q Clear Time (g_c+I1), s	2.2	41.8		30.7	6.7	27.9		24.2				
Green Ext Time (p_c), s	0.0	12.9		2.4	0.1	20.2		3.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			30.2									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary  
6: Dahlia St/Dahlia Street & Cherry Street

2040 + Alternative 2 - PM  
05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	139	575	148	128	321	15	91	113	197	20	129	115
Future Volume (veh/h)	139	575	148	128	321	15	91	113	197	20	129	115
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1900	1881	1881	1900	1881	1881	1900
Adj Flow Rate, veh/h	142	587	151	131	328	15	93	115	201	20	132	117
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	598	1441	621	498	1384	63	253	149	260	184	223	198
Arrive On Green	0.14	0.81	0.81	0.07	0.40	0.40	0.08	0.08	0.08	0.25	0.25	0.25
Sat Flow, veh/h	1792	3574	1541	1792	3476	158	1132	604	1056	1068	908	805
Grp Volume(v), veh/h	142	587	151	131	168	175	93	0	316	20	0	249
Grp Sat Flow(s),veh/h/ln	1792	1787	1541	1792	1787	1848	1132	0	1661	1068	0	1712
Q Serve(g_s), s	2.8	2.8	1.4	2.5	3.7	3.8	4.9	0.0	11.2	1.1	0.0	7.7
Cycle Q Clear(g_c), s	2.8	2.8	1.4	2.5	3.7	3.8	12.6	0.0	11.2	12.3	0.0	7.7
Prop In Lane	1.00		1.00	1.00		0.09	1.00		0.64	1.00		0.47
Lane Grp Cap(c), veh/h	598	1441	621	498	712	736	253	0	409	184	0	421
V/C Ratio(X)	0.24	0.41	0.24	0.26	0.24	0.24	0.37	0.00	0.77	0.11	0.00	0.59
Avail Cap(c_a), veh/h	677	1441	621	586	712	736	258	0	415	188	0	428
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.67	0.67	0.67	1.00	1.00	1.00	0.94	0.00	0.94	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.5	3.7	3.6	9.3	12.0	12.0	30.4	0.0	25.9	27.0	0.0	20.0
Incr Delay (d2), s/veh	0.1	0.6	0.6	0.1	0.8	0.8	0.8	0.0	8.2	0.3	0.0	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	1.4	0.7	1.3	2.0	2.1	1.6	0.0	6.1	0.3	0.0	3.8
LnGrp Delay(d),s/veh	8.6	4.3	4.2	9.4	12.8	12.8	31.2	0.0	34.1	27.3	0.0	22.1
LnGrp LOS	A	A	A	A	B	B	C		C	C		C
Approach Vol, veh/h		880			474			409			269	
Approach Delay, s/veh		5.0			11.8			33.4			22.4	
Approach LOS		A			B			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.0	30.2		20.8	9.3	29.9		20.8				
Change Period (Y+Rc), s	5.0	6.0		6.0	5.0	6.0		6.0				
Max Green Setting (Gmax), s	7.0	21.0		15.0	7.0	21.0		15.0				
Max Q Clear Time (g_c+I1), s	4.5	4.8		14.3	4.8	5.8		14.6				
Green Ext Time (p_c), s	0.0	7.6		0.3	0.0	7.3		0.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				14.6								
HCM 2010 LOS				B								

HCM Signalized Intersection Capacity Analysis  
 7: McCaslin Boulevard & Centennial Parkway/Cherry Street

2040 + Alternative 2 - PM

05/21/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	130	115	325	352	40	188	95	1608	415	300	1794	95	
Future Volume (vph)	130	115	325	352	40	188	95	1608	415	300	1794	95	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.96	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	3574	1560	3467	1881	1561	1787	3574	1565	1787	3574	1537	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.07	1.00	1.00	0.07	1.00	1.00	
Satd. Flow (perm)	1787	3574	1560	3467	1881	1561	136	3574	1565	129	3574	1537	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	
Adj. Flow (vph)	134	119	335	363	41	194	98	1658	428	309	1849	98	
RTOR Reduction (vph)	0	0	135	0	0	173	0	0	161	0	0	50	
Lane Group Flow (vph)	134	119	200	363	41	21	98	1658	267	309	1849	48	
Confl. Peds. (#/hr)	2		2	2		2	6		5	5		6	
Confl. Bikes (#/hr)			5			3			2			3	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	
Turn Type	custom	NA	Perm	custom	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases	3	3		4	4		1	6		5	2		
Permitted Phases	3		3	4		4	6		6	2		2	
Actuated Green, G (s)	16.6	16.6	16.6	13.0	13.0	13.0	66.4	55.4	55.4	72.4	58.4	58.4	
Effective Green, g (s)	16.6	16.6	16.6	13.0	13.0	13.0	66.4	55.4	55.4	72.4	58.4	58.4	
Actuated g/C Ratio	0.14	0.14	0.14	0.11	0.11	0.11	0.55	0.46	0.46	0.60	0.49	0.49	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.5	3.5	3.5	2.5	2.5	2.5	3.0	4.0	4.0	2.0	4.0	4.0	
Lane Grp Cap (vph)	247	494	215	375	203	169	226	1649	722	271	1739	748	
v/s Ratio Prot	0.07	0.03		c0.10	0.02		0.04	0.46		c0.13	0.52		
v/s Ratio Perm			c0.13			0.01	0.20		0.17	c0.56		0.03	
v/c Ratio	0.54	0.24	0.93	0.97	0.20	0.12	0.43	1.01	0.37	1.14	1.06	0.06	
Uniform Delay, d1	48.2	46.1	51.1	53.3	48.8	48.4	24.3	32.3	21.0	39.9	30.8	16.3	
Progression Factor	1.00	1.00	1.00	0.96	0.95	1.74	1.93	0.45	0.07	1.32	0.63	0.27	
Incremental Delay, d2	2.7	0.3	42.0	37.1	0.3	0.2	0.1	8.0	0.1	93.0	38.9	0.1	
Delay (s)	50.9	46.4	93.1	88.2	46.6	84.4	47.0	22.4	1.5	145.8	58.4	4.6	
Level of Service	D	D	F	F	D	F	D	C	A	F	E	A	
Approach Delay (s)		74.0			84.1			19.4			68.0		
Approach LOS		E			F			B			E		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			51.5		HCM 2000 Level of Service						D		
HCM 2000 Volume to Capacity ratio			1.11										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)						21.0		
Intersection Capacity Utilization			93.3%		ICU Level of Service						F		
Analysis Period (min)			15										
c Critical Lane Group													

HCM 2010 Signalized Intersection Summary  
8: McCaslin Boulevard & Century Drive

2040 + Alternative 2 - PM  
05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	220	40	140	50	15	60	140	1606	90	130	1869	55
Future Volume (veh/h)	220	40	140	50	15	60	140	1606	90	130	1869	55
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1881	1881	1900	1881	1881	1881	1881	1881	1900
Adj Flow Rate, veh/h	227	41	144	52	15	62	144	1656	93	134	1927	57
Adj No. of Lanes	1	1	0	1	1	0	1	3	1	1	3	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	269	49	174	155	29	118	279	3064	931	308	3043	90
Arrive On Green	0.08	0.14	0.14	0.04	0.09	0.09	0.10	1.00	1.00	0.09	1.00	1.00
Sat Flow, veh/h	1792	358	1258	1792	317	1312	1792	5136	1560	1792	5123	151
Grp Volume(v), veh/h	227	0	185	52	0	77	144	1656	93	134	1287	697
Grp Sat Flow(s),veh/h/ln	1792	0	1616	1792	0	1629	1792	1712	1560	1792	1712	1850
Q Serve(g_s), s	10.0	0.0	13.4	3.1	0.0	5.4	3.9	0.0	0.0	3.6	0.0	0.0
Cycle Q Clear(g_c), s	10.0	0.0	13.4	3.1	0.0	5.4	3.9	0.0	0.0	3.6	0.0	0.0
Prop In Lane	1.00		0.78	1.00		0.81	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	269	0	223	155	0	147	279	3064	931	308	2034	1099
V/C Ratio(X)	0.85	0.00	0.83	0.34	0.00	0.52	0.52	0.54	0.10	0.44	0.63	0.63
Avail Cap(c_a), veh/h	269	0	323	241	0	326	340	3064	931	374	2034	1099
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.25	0.25	0.25	0.40	0.40	0.40
Uniform Delay (d), s/veh	47.6	0.0	50.3	47.5	0.0	52.1	7.9	0.0	0.0	8.0	0.0	0.0
Incr Delay (d2), s/veh	20.8	0.0	9.8	0.9	0.0	2.2	0.1	0.2	0.1	0.1	0.6	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.2	0.0	6.6	1.6	0.0	2.5	1.8	0.0	0.0	1.7	0.2	0.3
LnGrp Delay(d),s/veh	68.4	0.0	60.2	48.4	0.0	54.3	8.0	0.2	0.1	8.1	0.6	1.1
LnGrp LOS	E		E	D		D	A	A	A	A	A	A
Approach Vol, veh/h		412			129			1893			2118	
Approach Delay, s/veh		64.7			51.9			0.8			1.3	
Approach LOS		E			D			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.9	77.3	15.0	16.8	10.6	77.6	9.2	22.6				
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0				
Max Green Setting (Gmax), s	10.0	54.0	10.0	24.0	10.0	54.0	10.0	24.0				
Max Q Clear Time (g_c+I1), s	5.9	2.0	12.0	7.4	5.6	2.0	5.1	15.4				
Green Ext Time (p_c), s	0.1	51.8	0.0	1.2	0.1	51.8	0.0	0.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			8.2									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary  
 9: McCaslin Boulevard & Via Appia Way/Via Appia Way

2040 + Alternative 2 - PM  
 05/21/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	185	25	497	30	105	30	1013	873	220	1507	35
Future Volume (veh/h)	65	185	25	497	30	105	30	1013	873	220	1507	35
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	69	197	0	529	32	0	32	1078	0	234	1603	0
Adj No. of Lanes	1	2	1	2	1	1	1	2	1	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	155	309	138	492	267	227	170	1925	861	463	2105	941
Arrive On Green	0.09	0.09	0.00	0.14	0.14	0.00	0.03	1.00	0.00	0.07	0.59	0.00
Sat Flow, veh/h	1792	3574	1599	3476	1881	1599	1792	3574	1599	1792	3574	1599
Grp Volume(v), veh/h	69	197	0	529	32	0	32	1078	0	234	1603	0
Grp Sat Flow(s),veh/h/ln	1792	1787	1599	1738	1881	1599	1792	1787	1599	1792	1787	1599
Q Serve(g_s), s	4.4	6.4	0.0	17.0	1.8	0.0	1.0	0.0	0.0	6.8	40.1	0.0
Cycle Q Clear(g_c), s	4.4	6.4	0.0	17.0	1.8	0.0	1.0	0.0	0.0	6.8	40.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	155	309	138	492	267	227	170	1925	861	463	2105	941
V/C Ratio(X)	0.45	0.64	0.00	1.07	0.12	0.00	0.19	0.56	0.00	0.51	0.76	0.00
Avail Cap(c_a), veh/h	373	745	333	492	267	227	305	1925	861	463	2105	941
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.78	0.78	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	52.1	53.0	0.0	51.5	45.0	0.0	17.2	0.0	0.0	9.9	18.4	0.0
Incr Delay (d2), s/veh	1.5	1.6	0.0	62.0	0.1	0.0	0.2	0.9	0.0	0.4	2.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	3.2	0.0	12.4	0.9	0.0	0.5	0.2	0.0	3.4	20.4	0.0
LnGrp Delay(d),s/veh	53.6	54.6	0.0	113.5	45.1	0.0	17.3	0.9	0.0	10.3	21.1	0.0
LnGrp LOS	D	D		F	D		B	A		B	C	
Approach Vol, veh/h		266			561			1110			1837	
Approach Delay, s/veh		54.3			109.6			1.4			19.7	
Approach LOS		D			F			A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.0	76.7		22.0	12.0	70.6		15.4				
Change Period (Y+Rc), s	4.0	6.0		5.0	4.0	6.0		5.0				
Max Green Setting (Gmax), s	11.0	47.0		17.0	8.0	50.0		25.0				
Max Q Clear Time (g_c+I1), s	3.0	42.1		19.0	8.8	2.0		8.4				
Green Ext Time (p_c), s	0.0	4.7		0.0	0.0	41.1		1.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				30.1								
HCM 2010 LOS				C								

## 2040 plus Alternative 2 PM - Mitigations

HCM 2010 Signalized Intersection Summary 4: McCaslin  
 Blvd & Dillon Road - Mitigation Scenario: Adding a  
 westbound left turn lane

2040 + Alternative 2 - PM

05/20/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	225	295	405	880	185	304	275	1704	732	402	1829	160
Future Volume (veh/h)	225	295	405	880	185	304	275	1704	732	402	1829	160
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	234	307	0	917	193	0	286	1775	0	419	1905	0
Adj No. of Lanes	2	1	1	3	1	1	2	2	1	2	3	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	294	373	317	653	457	388	290	1466	656	290	2107	656
Arrive On Green	0.08	0.20	0.00	0.04	0.08	0.00	0.08	0.41	0.00	0.11	0.55	0.00
Sat Flow, veh/h	3476	1881	1599	5052	1881	1599	3476	3574	1599	3476	5136	1599
Grp Volume(v), veh/h	234	307	0	917	193	0	286	1775	0	419	1905	0
Grp Sat Flow(s),veh/h/ln	1738	1881	1599	1684	1881	1599	1738	1787	1599	1738	1712	1599
Q Serve(g_s), s	7.9	18.8	0.0	15.5	11.7	0.0	9.9	49.2	0.0	10.0	39.9	0.0
Cycle Q Clear(g_c), s	7.9	18.8	0.0	15.5	11.7	0.0	9.9	49.2	0.0	10.0	39.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	294	373	317	653	457	388	290	1466	656	290	2107	656
V/C Ratio(X)	0.80	0.82	0.00	1.41	0.42	0.00	0.99	1.21	0.00	1.45	0.90	0.00
Avail Cap(c_a), veh/h	397	455	386	653	483	410	290	1466	656	290	2107	656
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	0.00	0.78	0.78	0.00	1.00	1.00	0.00	0.09	0.09	0.00
Uniform Delay (d), s/veh	53.9	46.1	0.0	57.4	47.2	0.0	54.9	35.4	0.0	53.4	25.2	0.0
Incr Delay (d2), s/veh	6.9	9.9	0.0	189.5	0.5	0.0	49.2	101.4	0.0	202.8	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	10.7	0.0	18.7	6.2	0.0	6.7	44.9	0.0	12.9	18.7	0.0
LnGrp Delay(d),s/veh	60.9	56.0	0.0	246.9	47.7	0.0	104.2	136.8	0.0	256.1	25.9	0.0
LnGrp LOS	E	E		F	D		F	F		F	C	
Approach Vol, veh/h		541			1110			2061			2324	
Approach Delay, s/veh		58.1			212.3			132.2			67.4	
Approach LOS		E			F			F			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.0	55.2	15.6	34.1	15.0	55.2	21.0	28.8				
Change Period (Y+Rc), s	5.0	6.0	5.5	5.0	5.0	6.0	5.5	5.0				
Max Green Setting (Gmax), s	10.0	44.0	13.7	30.8	10.0	44.0	15.5	29.0				
Max Q Clear Time (g_c+I1), s	11.9	41.9	9.9	13.7	12.0	51.2	17.5	20.8				
Green Ext Time (p_c), s	0.0	2.1	0.2	2.7	0.0	0.0	0.0	1.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			115.3									
HCM 2010 LOS			F									

HCM 2010 Signalized Intersection Summary 4: McCaslin  
 Blvd & Dillon Road - Mitigation Scenario: Adding a  
 westbound left turn lane and a northbound through lane

2040 + Alternative 2 - PM

05/20/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	225	295	405	880	185	304	275	1704	732	402	1829	160
Future Volume (veh/h)	225	295	405	880	185	304	275	1704	732	402	1829	160
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	234	307	0	917	193	0	286	1775	0	419	1905	0
Adj No. of Lanes	2	1	1	3	1	1	2	3	1	2	3	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	294	373	317	779	504	428	232	1893	589	348	2064	643
Arrive On Green	0.08	0.20	0.00	0.05	0.09	0.00	0.07	0.37	0.00	0.13	0.53	0.00
Sat Flow, veh/h	3476	1881	1599	5052	1881	1599	3476	5136	1599	3476	5136	1599
Grp Volume(v), veh/h	234	307	0	917	193	0	286	1775	0	419	1905	0
Grp Sat Flow(s),veh/h/ln	1738	1881	1599	1684	1881	1599	1738	1712	1599	1738	1712	1599
Q Serve(g_s), s	7.9	18.8	0.0	18.5	11.6	0.0	8.0	40.0	0.0	12.0	40.9	0.0
Cycle Q Clear(g_c), s	7.9	18.8	0.0	18.5	11.6	0.0	8.0	40.0	0.0	12.0	40.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	294	373	317	779	504	428	232	1893	589	348	2064	643
V/C Ratio(X)	0.80	0.82	0.00	1.18	0.38	0.00	1.23	0.94	0.00	1.21	0.92	0.00
Avail Cap(c_a), veh/h	397	455	386	779	530	450	232	1893	589	348	2064	643
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	0.00	0.78	0.78	0.00	1.00	1.00	0.00	0.09	0.09	0.00
Uniform Delay (d), s/veh	53.9	46.1	0.0	56.9	45.3	0.0	56.0	36.6	0.0	52.0	26.2	0.0
Incr Delay (d2), s/veh	6.9	9.9	0.0	90.3	0.4	0.0	136.9	10.4	0.0	95.1	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	10.7	0.0	15.1	6.1	0.0	8.2	20.7	0.0	10.3	19.2	0.0
LnGrp Delay(d),s/veh	60.9	56.0	0.0	147.3	45.7	0.0	192.9	47.0	0.0	147.2	27.1	0.0
LnGrp LOS	E	E		F	D		F	D		F	C	
Approach Vol, veh/h		541			1110			2061			2324	
Approach Delay, s/veh		58.1			129.6			67.3			48.8	
Approach LOS		E			F			E			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.0	54.2	15.6	37.1	17.0	50.2	24.0	28.8				
Change Period (Y+Rc), s	5.0	6.0	5.5	5.0	5.0	6.0	5.5	5.0				
Max Green Setting (Gmax), s	8.0	43.0	13.7	33.8	12.0	39.0	18.5	29.0				
Max Q Clear Time (g_c+I1), s	10.0	42.9	9.9	13.6	14.0	42.0	20.5	20.8				
Green Ext Time (p_c), s	0.0	0.1	0.2	2.8	0.0	0.0	0.0	1.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			70.8									
HCM 2010 LOS			E									

Appendix C:  
MXD+ Tool Explanation





**Subject: MainStreet - Trip Generation**

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This memo provides you some background information on the trip generation MXD tool we utilized for the 4120 Brighton Boulevard traffic impact study. This memorandum provides a brief description of the proposed trip generation methodology.

**Trip Generation Methodology**

Current accepted methodologies, such as the Institute of Transportation Engineers (ITE) *Trip Generation* methodology, are primarily based on data collected at suburban, single-use, freestanding sites. These defining characteristics limit their applicability to mixed-use or multi-use development projects, such as the proposed Transit-Oriented-Development, which is in a high-density walkable setting with frequent and nearby local and regional transit service. The land use mix, design features, and setting of the proposed development would include characteristics that influence travel behavior differently from typical single-use suburban developments. Thus, traditional data and methodologies, such as ITE, would not accurately estimate the project vehicle trip generation. In response to the limitations in the ITE methodology, and to provide a straightforward and empirically validated method of estimating vehicle trip generation at mixed-use developments, the US Environmental Protection Agency (EPA) sponsored a national study of the trip generation characteristics of multi-use sites. Travel survey data was gathered from 239 mixed-use developments (MXDs) in six major metropolitan regions, and correlated with the characteristics of the sites and their surroundings. The findings indicate that the amount of external traffic generated is affected by a wide variety of factors, each pertaining to one or more of the following characteristics:

- **The relative numbers of residents and jobs on the site** – the better the site jobs/housing balance, the greater the proportion of commute trips that remain internal.
- **The amount of retail and service use on the site relative to the number of residences** – the greater the degree to which retail and service opportunities match the needs generated by site residents, the greater the internalization of household-generated shopping, personal services and entertainment travel.
- **The amount of retail and service use relative to the number of employees** – the better the balance of employee-oriented retail and service opportunities, the greater the



internal capture of lunchtime and after-work dining, shopping and errands by site employees.

- **The overall size of the development** – the larger the scale of the development in terms of acreage and total amounts of residential and commercial use, the greater the likelihood that travel destinations can be satisfied within the site as a whole
- **The density of development** – the greater the concentration of dwellings and commercial space per acre, the greater the likelihood that the interacting land uses will be near enough together to encourage walking or short-distance internal driving.
- **The internal connectivity for walking or driving among different activities** – measured in terms of the ratio of intersections to total land area within the site directly influences trip internalization and the number of trips made by walking instead of driving.
- **The availability of transit** – the greater the number of jobs within a reasonable travel time via transit, the greater the share of travel likely to occur by transit, and the lower the traffic generation.
- **The number of convenient trip destinations within the immediate area** – the number of retail and other jobs in neighborhoods immediately surrounding the multi-use site reduces the amount of walking to/from the site and reduce traffic generation.

These characteristics were related statistically to the trip behavior observed at the study development sites using Hierarchical Linear Modeling (HLM) techniques. This quantified relationships between characteristics of the MXDs and the likelihood that trips generated by those MXDs will stay internal and/or use modes of transportation other than the private vehicle. These statistical relationships produced equations, known as the EPA MXD model, that allows predicting external vehicle trip reduction as a function of the MXD characteristics. Applying the external vehicle trip reduction percentage to “raw trips”, as predicted by ITE, produces an estimate for the number of vehicle trips traveling in or out of the site.



## Validation of MXD model

Since the conclusion of the EPA sponsored study, Fehr & Peers has been actively enhancing the MXD model to improve sensitivity to various site characteristics, improve peak hour performance, and continue to validate the model against MXDs where data is available.

A set of 28 independent MXD sites across the country that were not included in the initial model development have been tested to validate the model. These sites represent locations where it is expected that traditional data and methodologies, such as ITE, would not accurately estimate the Project vehicle trip generation. **Table 2** presents the performance of the MXD model against ITE and ITE internalization procedures.

**TABLE 2  
MXD MODEL  
VALIDATION STATISTICS COMPARISON**

Validation Statistic	ITE raw	ITE with internalization	MXD model
<b>Daily</b>			
Average Model Error <sup>1</sup>	30%	17%	<b>4%</b>
% RMSE <sup>2</sup>	42%	28%	<b>17%</b>
R-Squared <sup>3</sup>	0.72	0.87	<b>0.95</b>
<b>AM Peak Hour</b>			
Average Model Error	57%	53%	<b>3%</b>
% RMSE	58%	76%	<b>34%</b>
R-Squared	0.56	0.56	<b>0.91</b>
<b>PM Peak Hour</b>			
Average Model Error	56%	41%	<b>22%</b>
% RMSE	96%	81%	<b>59%</b>
R-Squared	-0.56	-0.11	<b>0.41</b>

1. Average model error measures the difference between the estimated trip generation and the counted trip generation of the 28 survey sites.
2. RMSE stands for percent root mean squared error is a demand assessment of performance of transportation models in that it does not apply average that would allow over-estimates and under-estimates to cancel one another out and it penalizes proportionally more for large errors. A % RMSE of less than 40% is generally considered acceptable in transportation modeling.
3. R-squared is a statistical measure that indicates, in this case, the degree to which each method explains the variation in trip generation among the 28 survey sites. A R-Squared value closer to 1.0 indicates that the method fully explains the variation in trip generation amongst the survey sites and would be suitable to be used for that set of site types.

Source: Fehr & Peers, 2012.



Based on all statistical measures, the MXD model performs better than the ITE recommended procedures for these types of sites.

The MXD model has been approved for use by the EPA<sup>1</sup>. It has also been peer-reviewed in the ASCE Journal of Urban Planning and Development<sup>2</sup>, peer-reviewed in a 2012 TRB paper evaluating various smart growth trip generation methodologies<sup>3</sup>, recommended by SANDAG for use on mixed-use smart growth developments<sup>4</sup>, and has been used successfully in multiple certified EIRs in California.

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<sup>1</sup> Trip Generation Tool for Mixed-Use Developments (2012). [www.epa.gov/dced/mxd\\_tripgeneration.html](http://www.epa.gov/dced/mxd_tripgeneration.html)

<sup>2</sup> "Traffic Generated by Mixed-Use Developments—Six-Region Study Using Consistent Built Environmental Measures." Journal of Urban Planning and Development, 137(3), 248–261.

<sup>3</sup> Shafizadeh, Kevan et al. "Evaluation of the Operation and Accuracy of Available Smart Growth Trip Generation Methodologies for Use in California". Presented at 91st Annual Meeting of the Transportation Research Board, Washington, D.C., 2012.

<sup>4</sup> SANDAG Smart Growth Trip Generation and Parking Study.

<http://www.sandag.org/index.asp?projectid=378&fuseaction=projects.detail>

Appendix D:  
Existing Parcel O Driveway Tube Counts



Location: WEST DRIVEWAY E/O MCCASLIN BLVD  
 Date Range: 5/7/2019 - 5/13/2019  
 Site Code: 01

Time	Tuesday			Wednesday			Thursday			Friday			Saturday			Sunday			Monday			Mid-Week Average		
	5/7/2019			5/8/2019			5/9/2019			5/10/2019			5/11/2019			5/12/2019			5/13/2019			Mid-Week Average		
	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total
12:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
1:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
2:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
3:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
4:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
5:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
6:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
7:00 AM	94	70	164	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	94	70	164
8:00 AM	118	87	205	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	118	87	205
9:00 AM	111	97	208	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	111	97	208
10:00 AM	115	73	188	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	115	73	188
11:00 AM	131	72	203	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	131	72	203
12:00 PM	130	121	251	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	130	121	251
1:00 PM	134	93	227	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	134	93	227
2:00 PM	117	89	206	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	117	89	206
3:00 PM	120	76	196	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120	76	196
4:00 PM	160	56	216	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	160	56	216
5:00 PM	153	62	215	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	153	62	215
6:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
7:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
8:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
9:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
10:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
11:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
<b>Total</b>	<b>1,383</b>	<b>896</b>	<b>2,279</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
<b>Percent</b>	<b>61%</b>	<b>39%</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1. Mid-week average includes data between Tuesday and Thursday.

Location: NW DRIVEWAY S/O CHERRY  
 Date Range: 5/7/2019 - 5/13/2019  
 Site Code: 02

Time	Tuesday			Wednesday			Thursday			Friday			Saturday			Sunday			Monday			Mid-Week Average		
	5/7/2019			5/8/2019			5/9/2019			5/10/2019			5/11/2019			5/12/2019			5/13/2019					
	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total
12:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
1:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
2:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
3:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
4:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
5:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
6:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
7:00 AM	40	48	88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	48	88
8:00 AM	33	78	111	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33	78	111
9:00 AM	67	67	134	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	67	67	134
10:00 AM	75	88	163	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	75	88	163
11:00 AM	81	98	179	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	81	98	179
12:00 PM	88	116	204	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	88	116	204
1:00 PM	83	100	183	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	83	100	183
2:00 PM	93	101	194	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	93	101	194
3:00 PM	83	98	181	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	83	98	181
4:00 PM	75	102	177	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	75	102	177
5:00 PM	105	117	222	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	105	117	222
6:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
7:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
8:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
9:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
10:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
11:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
<b>Total</b>	<b>823</b>	<b>1,013</b>	<b>1,836</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
<b>Percent</b>	<b>45%</b>	<b>55%</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1. Mid-week average includes data between Tuesday and Thursday.

Location: NE DRIVEWAY S/O CHERRY ST  
 Date Range: 5/7/2019 - 5/13/2019  
 Site Code: 03

Time	Tuesday			Wednesday			Thursday			Friday			Saturday			Sunday			Monday			Mid-Week Average		
	5/7/2019			5/8/2019			5/9/2019			5/10/2019			5/11/2019			5/12/2019			5/13/2019					
	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total
12:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
1:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
2:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
3:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
4:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
5:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
6:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
7:00 AM	15	12	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	12	27
8:00 AM	18	18	36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	18	36
9:00 AM	22	17	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	17	39
10:00 AM	24	17	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24	17	41
11:00 AM	34	21	55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	34	21	55
12:00 PM	43	37	80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	43	37	80
1:00 PM	44	27	71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	44	27	71
2:00 PM	52	19	71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	19	71
3:00 PM	49	36	85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	49	36	85
4:00 PM	64	35	99	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	64	35	99
5:00 PM	63	32	95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63	32	95
6:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
7:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
8:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
9:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
10:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
11:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
<b>Total</b>	<b>428</b>	<b>271</b>	<b>699</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
<b>Percent</b>	<b>61%</b>	<b>39%</b>																						

1. Mid-week average includes data between Tuesday and Thursday.

Location: EAST (NORTH) DRIVEWAY W/O DAHLIA ST  
 Date Range: 5/7/2019 - 5/13/2019  
 Site Code: 04

Time	Tuesday			Wednesday			Thursday			Friday			Saturday			Sunday			Monday			Mid-Week Average		
	5/7/2019			5/8/2019			5/9/2019			5/10/2019			5/11/2019			5/12/2019			5/13/2019			Mid-Week Average		
	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total
12:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
1:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
2:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
3:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
4:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
5:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
6:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
7:00 AM	22	32	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	32	54
8:00 AM	25	39	64	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	39	64
9:00 AM	33	43	76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33	43	76
10:00 AM	59	40	99	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	59	40	99
11:00 AM	52	41	93	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	41	93
12:00 PM	51	66	117	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	51	66	117
1:00 PM	62	66	128	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	62	66	128
2:00 PM	53	57	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	53	57	110
3:00 PM	70	56	126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70	56	126
4:00 PM	52	48	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	48	100
5:00 PM	63	50	113	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63	50	113
6:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
7:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
8:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
9:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
10:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
11:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
<b>Total</b>	<b>542</b>	<b>538</b>	<b>1,080</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
<b>Percent</b>	<b>50%</b>	<b>50%</b>																						

1. Mid-week average includes data between Tuesday and Thursday.

Location: EAST (SOUTH) DRIVEWAY W/O DAHLIA ST  
 Date Range: 5/7/2019 - 5/13/2019  
 Site Code: 05

Time	Tuesday			Wednesday			Thursday			Friday			Saturday			Sunday			Monday			Mid-Week Average			
	5/7/2019			5/8/2019			5/9/2019			5/10/2019			5/11/2019			5/12/2019			5/13/2019			Mid-Week Average			
	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	
12:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####	
1:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
2:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
3:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
4:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
5:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
6:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
7:00 AM	40	60	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	60	100
8:00 AM	45	85	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	45	85	130
9:00 AM	59	77	136	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	59	77	136
10:00 AM	56	79	135	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	56	79	135
11:00 AM	95	106	201	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	95	106	201
12:00 PM	96	82	178	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	96	82	178
1:00 PM	82	73	155	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	82	73	155
2:00 PM	78	89	167	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	78	89	167
3:00 PM	80	91	171	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	91	171
4:00 PM	104	82	186	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104	82	186
5:00 PM	89	74	163	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	89	74	163
6:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
7:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
8:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
9:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
10:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
11:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
<b>Total</b>	<b>824</b>	<b>898</b>	<b>1,722</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
<b>Percent</b>	<b>48%</b>	<b>52%</b>																							

1. Mid-week average includes data between Tuesday and Thursday.

Location: SE DRIVEWAY N/O DILLON RD  
 Date Range: 5/7/2019 - 5/13/2019  
 Site Code: 06

Time	Tuesday			Wednesday			Thursday			Friday			Saturday			Sunday			Monday			Mid-Week Average		
	5/7/2019			5/8/2019			5/9/2019			5/10/2019			5/11/2019			5/12/2019			5/13/2019			Mid-Week Average		
	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total
12:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
1:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
2:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
3:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
4:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
5:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
6:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
7:00 AM	4	3	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	3	7
8:00 AM	10	2	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	2	12
9:00 AM	16	19	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	19	35
10:00 AM	20	21	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	21	41
11:00 AM	19	28	47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19	28	47
12:00 PM	22	30	52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	30	52
1:00 PM	25	36	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	36	61
2:00 PM	27	25	52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27	25	52
3:00 PM	28	16	44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	16	44
4:00 PM	17	18	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17	18	35
5:00 PM	30	30	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	30	60
6:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
7:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
8:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
9:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
10:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
11:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
<b>Total</b>	<b>218</b>	<b>228</b>	<b>446</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
<b>Percent</b>	<b>49%</b>	<b>51%</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1. Mid-week average includes data between Tuesday and Thursday.

Location: SW DRIVEWAY N/O DILLON RD  
 Date Range: 5/7/2019 - 5/13/2019  
 Site Code: 07

Time	Tuesday			Wednesday			Thursday			Friday			Saturday			Sunday			Monday			Mid-Week Average		
	5/7/2019			5/8/2019			5/9/2019			5/10/2019			5/11/2019			5/12/2019			5/13/2019			Mid-Week Average		
	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total
12:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
1:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
2:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
3:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
4:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
5:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
6:00 AM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
7:00 AM	120	124	244	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120	124	244
8:00 AM	107	146	253	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	107	146	253
9:00 AM	100	115	215	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	115	215
10:00 AM	136	153	289	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	136	153	289
11:00 AM	143	170	313	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	143	170	313
12:00 PM	166	203	369	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	166	203	369
1:00 PM	138	170	308	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	138	170	308
2:00 PM	133	159	292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	133	159	292
3:00 PM	104	149	253	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104	149	253
4:00 PM	123	147	270	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	123	147	270
5:00 PM	126	135	261	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	126	135	261
6:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
7:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
8:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
9:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
10:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
11:00 PM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
<b>Total</b>	<b>1,396</b>	<b>1,671</b>	<b>3,067</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	#####	#####	#####
<b>Percent</b>	<b>46%</b>	<b>54%</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1. Mid-week average includes data between Tuesday and Thursday.

Appendix E:  
Alternative 3 Trip Generation (ITE Trip Reduction)



Alternative 3: Redevelop Entire Parcel O													
Land Use	ITE Code	Size	Units	AM Peak Hour					PM Peak Hour				
				In		Out		Total	In		Out		Total
				%	Trips	%	Trips	Trips	%	Trips	%	Trips	Trips
General Office Building	710	65	KSF	86%	65	14%	11	76	16%	12	84%	63	75
Multifamily Housing	220	525	DU	23%	56	77%	186	242	63%	185	37%	109	294
Hotel	310	120	Rms	59%	33	41%	23	56	51%	37	49%	35	72
Shopping Center	820	115	KSF	62%	67	38%	41	108	48%	210	52%	228	438
Health/Fitness Club	492	35	KSF	51%	23	49%	22	45	57%	69	43%	52	121
<b>ITE Subtotal</b>													
					244		283	527		513		487	1,000
<b>MXD+ Trip Reductions</b>													
				10%	24	10%	28	53	10%	51	10%	49	100
<b>Net New Total Project Trips</b>													
					220		255	474		462		438	900
<b>Existing Land Uses Replaced in Alternative 3 (ITE rates)</b>													
Supermarket	850	51.3	KSF	60%	118	40%	78	196	51%	242	49%	232	474
Department Store	875	86.5	KSF	64%	32	36%	18	50	50%	84	50%	84	168
Fast-Food Restaurant	934	4.1	KSF	51%	84	49%	81	165	52%	70	48%	64	134
High-Turnover Restaurant	932	9.9	KSF	55%	0	45%	0	0	62%	60	38%	37	97
Drive-In Bank	912	7.6	KSF	58%	42	42%	30	72	50%	78	50%	78	156
Gas Station w/ Convenience	945	12	Pumps	51%	76	49%	73	149	51%	86	49%	82	168
Shopping Center	820	3.5	KSF	62%	2	38%	1	3	48%	6	52%	7	13
US Post Office	732	24	KSF	52%	103	48%	95	198	51%	137	49%	132	269
<b>ITE Subtotal</b>													
					295		221	516		601		563	1,164
<b>Net New Total Project Trips</b>													
					-75		34	-42		-139		-125	-264

Key: DU = Dwelling units; KSF = 1,000 square feet, Rms = Hotel rooms

Appendix F:  
Project Trips Added per Intersection



Baseline Project Trips - AM Peak Hour

Count Year

2019

Peak Hour

7:45 AM - 8:45 AM

ID	Intersection	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	McCaslin Blvd / Marshall Rd	0	7	0	0	0	3	1	2	0	0	0	0
2	McCaslin Blvd / EB Ramps	0	9	0	4	4	0	9	0	0	0	0	0
3	McCaslin Blvd / WB Ramps	0	18	0	0	8	4	0	0	0	0	0	9
4	McCaslin Blvd / Dillon Rd	0	19	8	2	4	0	0	0	0	0	8	2
5	Coal Creek Cir / Dillon Rd	0	0	0	1	0	1	1	1	1	0	0	4
6	Dahlia St / Cherry St	0	0	0	0	1	1	1	1	1	1	1	0
7	McCaslin Blvd / Centennial Pkwy	0	3	6	3	7	0	0	0	0	0	4	1
8	McCaslin Blvd / Century Dr	0	4	0	0	10	0	0	0	0	0	0	0
9	McCaslin Blvd / Via Appia Way	0	2	2	0	5	0	0	0	0	0	5	0

Baseline Project Trips - PM Peak Hour

Count Year

2019

Peak Hour

4:45 to 5:45 pm

ID	Intersection	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	McCaslin Blvd / Marshall Rd	0	41	0	0	41	14	14	0	0	0	0	0
2	McCaslin Blvd / EB Ramps	0	55	0	54	55	0	54	0	0	0	0	0
3	McCaslin Blvd / WB Ramps	0	109	0	0	109	54	0	0	0	0	0	54
4	McCaslin Blvd / Dillon Rd	0	114	49	11	49	0	0	0	0	114	0	18
5	Coal Creek Cir / Dillon Rd	0	0	0	12	0	18	10	15	0	0	23	4
6	Dahlia St / Cherry St	3	6	5	0	6	8	8	9	5	5	9	0
7	McCaslin Blvd / Centennial Pkwy	0	38	40	16	38	0	0	0	0	55	0	16
8	McCaslin Blvd / Century Dr	0	54	0	0	54	0	0	0	0	0	0	0
9	McCaslin Blvd / Via Appia Way	0	27	27	0	27	0	0	0	0	27	0	0

Alternative 2 Project Trips - AM Peak Hour

Count Year

2019

Peak Hour

7:45 AM - 8:45 AM

ID	Intersection	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	McCaslin Blvd / Marshall Rd	0	10	0	0	0	18	6	3	0	0	0	0
2	McCaslin Blvd / EB Ramps	0	13	0	23	24	0	14	0	0	0	0	0
3	McCaslin Blvd / WB Ramps	0	27	0	0	47	22	0	0	0	0	0	14
4	McCaslin Blvd / Dillon Rd	0	29	12	3	21	0	0	0	0	48	0	7
5	Coal Creek Cir / Dillon Rd	0	0	0	5	0	7	3	7	0	0	6	1
6	Dahlia St / Cherry St	1	3	2	0	1	2	3	4	2	1	2	0
7	McCaslin Blvd / Centennial Pkwy	0	17	11	4	10	0	0	0	0	22	0	7
8	McCaslin Blvd / Century Dr	0	24	0	0	14	0	0	0	0	0	0	0
9	McCaslin Blvd / Via Appia Way	0	12	12	0	7	0	0	0	0	7	0	0

Alternative 2 Project Trips - PM Peak Hour

Count Year

2019

Peak Hour

4:45 to 5:45 pm

ID	Intersection	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	McCaslin Blvd / Marshall Rd	0	26	0	0	20	7	9	0	0	0	0	0
2	McCaslin Blvd / EB Ramps	0	35	0	26	27	0	35	0	0	0	0	0
3	McCaslin Blvd / WB Ramps	0	70	0	0	53	26	0	0	0	0	0	35
4	McCaslin Blvd / Dillon Rd	0	74	32	7	24	0	0	0	0	55	0	9
5	Coal Creek Cir / Dillon Rd	0	0	0	6	0	9	6	7	0	0	14	3
6	Dahlia St / Cherry St	1	3	2	0	4	5	4	5	3	3	6	0
7	McCaslin Blvd / Centennial Pkwy	0	18	25	10	24	0	0	0	0	27	0	8
8	McCaslin Blvd / Century Dr	0	26	0	0	34	0	0	0	0	0	0	0
9	McCaslin Blvd / Via Appia Way	0	13	13	0	17	0	0	0	0	17	0	0



## PROGRAM:

- ① 80 Apartments/Condominiums
- ② 1.2 Acre Park
- ③ 64 "Walk Up" Flats
- ④ 64 "Walk Up" Flats
- ⑤ 32 "Walk Up" Flats
- ⑥ 15,000 SF Retail/Restaurant  
120 Key Hotel
- ⑦ 35,000 SF Fitness  
35,000 SF Wine/Liquor Store

### TOTALS:

15,000 SF Retail/Restaurant (new)  
 70,000 SF Fitness/Liquor Store (retenant Kohl's)  
 120 Key Hotel  
 240 Dwelling Units  
 1.2 Acre Park

# 2.0 HYBRID DEVELOPMENT SCENARIO - AERIAL PERSPECTIVE

## KOHL'S RETENANT

DRAFT - 06.05.19

*NOTE: This model's purpose is to illustrate a scenario of development that meets the redevelopment study's findings. It does not represent a developer's proposal. Configuration and layout subject to change in a final design scenario.*



# 2.0 HYBRID DEVELOPMENT SCENARIO - AERIAL PERSPECTIVE

## KOHL'S RETENANT

DRAFT - 06.05.19

*NOTE: This model's purpose is to illustrate a scenario of development that meets the redevelopment study's findings. It does not represent a developer's proposal. Configuration and layout subject to change in a final design scenario.*



## PROGRAM:

- ① 35,000 Fitness
- ② 1.4 Acre Park
- ③ 17,000 SF Retail/Restaurant  
48 Apartments/Condominiums  
56 "Walk Up" Flats  
12 Townhomes  
10 Single Family Homes
- ④ 7,500 SF Retail/Restaurant
- ⑤ 5,500 SF Retail/Restaurant  
120 Key Hotel  
76 Apartments/Condominiums
- ⑥ 44 "Walk Up" Flats  
11 Townhomes
- ⑦ 20,000 SF Retail/Restaurant

### TOTALS:

50,000 SF Retail/Restaurant  
35,000 SF Entertainment/Fitness  
120 Key Hotel  
256 Dwelling Units  
1.4 Acre Park

# 2.1 HYBRID DEVELOPMENT SCENARIO - AERIAL PERSPECTIVE

## NEW CONSTRUCTION ON KOHL'S AND SAM'S CLUB SITES

DRAFT - 06.05.19

*NOTE: This model's purpose is to illustrate a scenario of development that meets the redevelopment study's findings. It does not represent a developer's proposal. Configuration and layout subject to change in a final design scenario.*



## 2.1 HYBRID DEVELOPMENT SCENARIO - AERIAL PERSPECTIVE

### NEW CONSTRUCTION ON KOHL'S AND SAM'S CLUB SITES

DRAFT - 06.05.19

*NOTE: This model's purpose is to illustrate a scenario of development that meets the redevelopment study's findings. It does not represent a developer's proposal. Configuration and layout subject to change in a final design scenario.*

## Rob Zuccaro

---

**Subject:** FW: Parcel O

**From:** Kim Godfrey Racing [<mailto:kim52design@gmail.com>]

**Sent:** Wednesday, June 5, 2019 9:41 AM

**To:** Planning <[planning@Louisvilleco.gov](mailto:planning@Louisvilleco.gov)>; Ashley Stolzmann <[ashleys@louisvilleco.gov](mailto:ashleys@louisvilleco.gov)>

**Subject:** Parcel O

Hello,

I've been following this Parcel O project with great concern. I recently learned that only **one** of our city council members is opposing to amend the current city restrictions for this space. As a home owner and a tax payer going of 10 years in Louisville here, I strongly urge you to NOT change the city's original plans, rather I urge you to honor the desires of the community, that was here first.

The most alarming part of this GDP are the height restrictions. I would like to express my firm objection to any height restriction increase from current limits. Raising the height limits would be to the detriment of the quality of life and property values of adjacent property owners, particularly those of us who are directly east of these lots.

It is not the job of the city to ensure the owner of that lot gets whatever they want. It is unfair to existing property owners to change the zoning in order to shift value from their properties to the overpriced and underutilized lots.

To summarize, please do not ignore the desires of the community as outlined in the small area plan in order to force redevelopment for its own sake. If the market does not support redevelopment, it is fine to let well enough alone until such time that it might. I think that would be highly preferable to a plan that degrades the community and adjacent property values, and flies in the face of the recommendations of the small area plan.

Thank you,  
Kim Godfrey  
*594 Ridge View Dr.  
Louisville, CO 80027*

**LAND USE APPLICATION**

**CASE NO.** \_\_\_\_\_

**APPLICANT INFORMATION**

Firm: Joint City of Louisville/Owner Application  
 Contact: City Manager's Office  
 Address: 749 Main Street  
 \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_  
 \_\_\_\_\_  
 Telephone: 303-335-4533  
 Fax: \_\_\_\_\_  
 Email: info@louisvilleco.gov

**OWNER INFORMATION**

Firm: Seminole Land Holding Inc.  
 Contact: Tom Garvin  
 Address: \_\_\_\_\_  
 \_\_\_\_\_  
 Mailing Address: 8758 Phillips Road  
Boulder, CO 80301  
 Telephone: \_\_\_\_\_  
 Fax: \_\_\_\_\_  
 Email: \_\_\_\_\_

**REPRESENTATIVE INFORMATION**

Firm: \_\_\_\_\_  
 Contact: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_  
 \_\_\_\_\_  
 Telephone: \_\_\_\_\_  
 Fax: \_\_\_\_\_  
 Email: \_\_\_\_\_

**PROPERTY INFORMATION**

Common Address: 550 McCaslin Blvd  
 Legal Description: Lot 2 Blk \_\_\_\_\_  
 Subdivision Centennial Valley Parcel O, Filing No. 7  
 Area: 13.15 Acres Sq. Ft.

**TYPE (S) OF APPLICATION**

- Annexation
- Zoning/General Development Plan Amendment
- Preliminary Subdivision Plat
- Final Subdivision Plat
- Minor Subdivision Plat
- Preliminary Planned Unit Development (PUD)
- Final PUD
- Amended PUD
- Administrative PUD Amendment
- Special Review Use (SRU)
- SRU Amendment
- SRU Administrative Review
- Temporary Use Permit: \_\_\_\_\_
- CMRS Facility: \_\_\_\_\_
- Other: (easement / right-of-way; floodplain; variance; vested right; 1041 permit; oil / gas production permit)

**PROJECT INFORMATION**

Summary: General Development Plan Amendment  
Concerning Allowed Uses, Heights, Densities and  
other Development Provision for Lots 2 and 3,  
Centennial Valley Parcel O, Filing No. 7  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 Current zoning: \_\_\_\_\_ Proposed zoning: \_\_\_\_\_

**SIGNATURES & DATE**

Applicant: Seminole Land Holding Inc.  
 Print: \_\_\_\_\_  
 Owner: \_\_\_\_\_  
 Print: \_\_\_\_\_  
 Representative: \_\_\_\_\_  
 Print: \_\_\_\_\_

**CITY STAFF USE ONLY**

- Fee paid: \_\_\_\_\_
- Check number: \_\_\_\_\_
- Date Received: \_\_\_\_\_

**LAND USE APPLICATION**

**CASE NO.** \_\_\_\_\_

**APPLICANT INFORMATION**

Firm: Joint City of Louisville/Owner Application  
 Contact: City Manager's Office  
 Address: 749 Main Street  
 \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_  
 \_\_\_\_\_  
 Telephone: 303-335-4533  
 Fax: \_\_\_\_\_  
 Email: info@louisvilleco.gov

**OWNER INFORMATION**

Firm: Centennial Valley Properties I, LLC  
 Contact: Jeff Sheets  
 Address: \_\_\_\_\_  
 \_\_\_\_\_  
 Mailing Address: 125 E. Jefferson St  
Syracuse NY  
 Telephone: \_\_\_\_\_  
 Fax: \_\_\_\_\_  
 Email: \_\_\_\_\_

**REPRESENTATIVE INFORMATION**

Firm: \_\_\_\_\_  
 Contact: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_  
 \_\_\_\_\_  
 Telephone: \_\_\_\_\_  
 Fax: \_\_\_\_\_  
 Email: \_\_\_\_\_

**PROPERTY INFORMATION**

Common Address: 919 W. Dillon Rd  
 Legal Description: Lot 3 Blk \_\_\_\_\_  
Subdivision Centennial Valley Parcel O, Filing No. 7  
 Area: 10.27 Acres Sq. Ft.

**TYPE (S) OF APPLICATION**

- Annexation
- Zoning/General Development Plan Amendment
- Preliminary Subdivision Plat
- Final Subdivision Plat
- Minor Subdivision Plat
- Preliminary Planned Unit Development (PUD)
- Final PUD
- Amended PUD
- Administrative PUD Amendment
- Special Review Use (SRU)
- SRU Amendment
- SRU Administrative Review
- Temporary Use Permit: \_\_\_\_\_
- CMRS Facility: \_\_\_\_\_
- Other: (easement / right-of-way; floodplain; variance; vested right; 1041 permit; oil / gas production permit)

**PROJECT INFORMATION**

Summary: General Development Plan Amendment  
Concerning Allowed Uses, Heights, Densities and  
other Development Provision for Lots 2 and 3,  
Centennial Valley Parcel O, Filing No. 7  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 Current zoning: \_\_\_\_\_ Proposed zoning: \_\_\_\_\_

**SIGNATURES & DATE**

Applicant: Centennial Valley Properties, LLC  
 Print: \_\_\_\_\_  
 Owner: \_\_\_\_\_  
 Print: \_\_\_\_\_  
 Representative: \_\_\_\_\_  
 Print: \_\_\_\_\_

**CITY STAFF USE ONLY**

- Fee paid: \_\_\_\_\_
- Check number: \_\_\_\_\_
- Date Received: \_\_\_\_\_

**ORDINANCE NO. XX  
SERIES 2019**

**AN ORDINANCE APPROVING AN AMENDMENT TO THE CENTENIAL VALLEY  
GENERAL DEVELOPMENT PLAN (GDP) CONCERNING ALLOWED USES,  
HEIGHTS, DENSITIES, AND OTHER DEVELOPMENT PROVISIONS FOR LOTS 2  
AND 3, CENTENNIAL VALLEY PARCEL O, 7<sup>TH</sup> FILING**

**WHEREAS**, Seminole Land Holdings, Inc. and Centennial Valley Properties I, LLC are the owners of Lots 2 and 3, Centennial Valley Parcel O, 7<sup>th</sup> Filing, totaling 23.42 acres more or less, which property is located within the Centennial Valley General Development Plan area; and

**WHEREAS**, the City of Louisville zoned Lots 2 and 3, Centennial Valley Parcel O, 7<sup>th</sup> Filing as Planning Community Zone District along with approval of the first Centennial Valley General Development Plan (GDP) in 1983; and

**WHEREAS**, the City of Louisville has approved several amendments to the GDP since 1983, with the most current GDP amendment approval taking place on July 28, 2015 by Ordinance 1696, 2015; and

**WHEREAS**, the City of Louisville desires to amend the GDP to allow a mix of uses and to updated development standards for Lots 2 and 3, Centennial Valley Parcel O, 7<sup>th</sup> Filing in order to support existing commercial development in the McCaslin corridor and provide a desirable environment for new regional and neighborhood commercial development; and

**WHEREAS**, the Louisville Planning Commission has held a public hearing on June 13, 2019 for the proposed GDP amendment recommends approval to the City Council; and

**WHEREAS**, the City Council has duly considered the Commission's recommendation; and

**WHEREAS**, the City Council has held a public hearing on \_\_\_\_\_, 2019 for the proposed GDP amendment has provided notice of the public hearing as provided by law; and

**WHEREAS**, no protests were received by the City pursuant to C.R.S. §31-23-305.

**NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF LOUISVILLE, COLORADO:**

**Section 1.** The City Council of the City of Louisville hereby approves the General Development Plan Amendment, Centennial Valley Lots 2 and 3 Parcel O.

**Section 2.** The General Development Plan Amendment, Centennial Valley Lots 2 and 3 Parcel O shall be recorded in the Offices of the Boulder County Clerk and Recorder.

**INTRODUCED, READ, PASSED ON FIRST READING, AND ORDERED PUBLISHED**  
THIS \_\_\_ DAY OF \_\_\_\_\_, 2019.

\_\_\_\_\_  
Robert P. Muckle, Mayor

ATTEST:

\_\_\_\_\_  
Meredyth Muth, City Clerk

APPROVED AS TO FORM:

\_\_\_\_\_  
Kelley, P.C.  
City Attorney

**PASSED AND ADOPTED ON SECOND AND FINAL READING, THIS \_\_\_ DAY OF**  
\_\_\_\_\_, 2019.

\_\_\_\_\_  
Robert P. Muckle, Mayor

ATTEST:

\_\_\_\_\_  
Meredyth Muth, City Clerk

Exhibit A

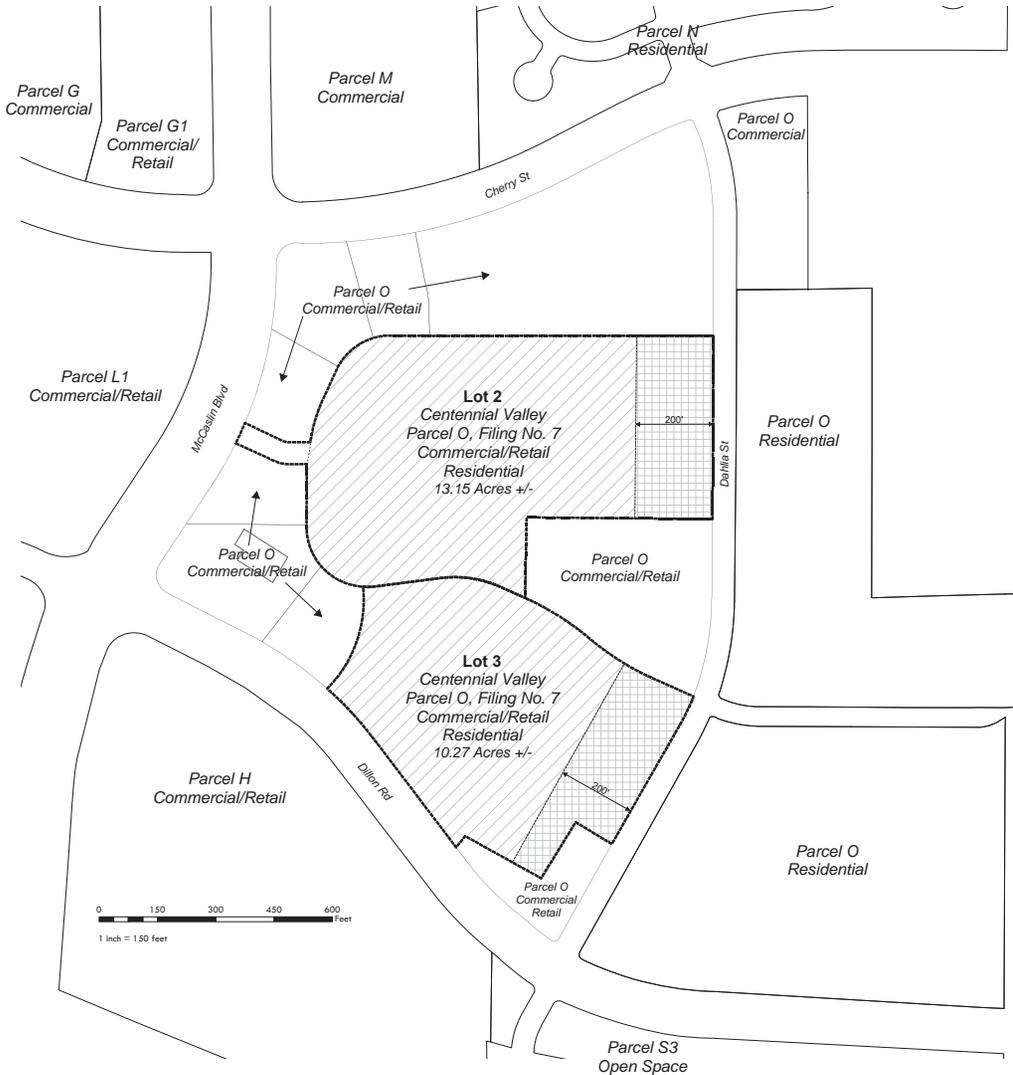
DRAFT

Draft  
05.23.2019

# General Development Plan Amendment Centennial Valley Lots 2 and 3 Parcel O

Lots 2 and 3, Centennial Valley Parcel O, Filing No. 7

Sheet 1 of 1



**Notes**

- Purpose and Intent** - The purpose and intent of this General Development Plan Amendment is to enhance the retail environment in Parcel O and the Centennial Valley planning area by providing a mix of uses and a desirable environment for regional and neighborhood commercial development.
- This General Development Plan Amendment supersedes the use and development standards of previous Centennial Valley General Development Plans and all amendments thereto and the Centennial Valley Amended and Restated Development Agreement and all amendments thereto for Lots 2 and 3 of Parcel O only. Gross allowed building area for Parcel O provided by the Centennial Valley General Development Plan shall be increased proportionately to accommodate the floor area ratios for Lots 2 and 3 approved with this amendment.
- Zoning** - Planned Community Zone District - Commercial/Residential
- Development shall be subject to the Commercial Development Design Standards and Guidelines, or applicable design regulations in effect at the time of development, except as modified by this General Development Plan. Setbacks shall be determined through the Planned Unit Development site plan review process, which is required before any development or construction may commence.

**Maximum Height Allowances**

- Mixed Commercial Buffer**
  - 3 Story Residential - 35' height max to parapet or roof ridge and 40' height max to mechanical.
  - 2 Story Commercial - 30' height max to parapet or roof ridge and 35' height max to mechanical.
- Mixed Commercial Core**
  - 4 Story Residential - 50' height max to parapet or roof ridge and 55 height max to mechanical.
  - 3 Story Commercial - 45' height max to parapet or roof ridge and 50' height max to mechanical.

**Development Requirements and Incentives**

Allowed Land Uses	Commercial/Restaurant/Retail/Office - All uses defined in LMC 17.72.090
Residential Cap	• Entertainment and Commercial Amusement • Single-Family Attached and Multi-Family Residential
Retail Concurrence	• Cap of 120 dwelling units per lot for a total of 240 dwelling units (up to 384 dwelling units possible with cumulative incentives). Unit allowance may be transferred between lots upon consent of each property owner or if both lots are under single ownership.
Public Space Requirement <sup>1</sup>	• Every 12 units of residential development must include, through new development or re-leasing of existing vacant commercial buildings subsequent to the date of approval of this General Development Plan Amendment, a minimum of 1,000 square feet of retail or restaurant development and 4,000 square feet of other development which may include additional retail or restaurant uses or any other allowed non-residential uses. Such concurrent development must take place on the same lot as the residential development unless both lots are developed under a single Planned Unit Development.
Commercial Density	• New residential development requires development of a public space equating a minimum of 7% of the gross land area developed for all uses. A minimum of 80% of the Public Spaces must be contiguous. Public Space requirement is capped at 2 acres unless Public Space Incentive is sought.
Block Structure	• 0.3 floor area ratio (FAR) (excludes any residential components of development)
Affordable Housing Incentive <sup>2</sup>	• All redevelopment that assembles a minimum of 20 acres of land must provide blocks and street grid at 400-600' intervals with multimodal cross section. Streets may be private or public.
Public Space Incentive <sup>2</sup>	• New residential development that assembles a minimum of 20 acres of land and includes a minimum 12% of the units restricted as permanently affordable (60-120% AMI) receives up to a 20% bonus (48 units) on the residential cap.
Land Assemblage Incentive <sup>2</sup>	• New development that provides a minimum of 12% of land area for public spaces receives up to a 20% bonus (48 units) on the residential cap. A minimum of 80% of the Public Spaces must be contiguous.
	• Any development that assembles a minimum of 20 acres in land area for redevelopment under a single Planned Unit Development receives up to a 20% (48 unit) bonus on the residential cap. A maximum of 87,000 square feet of existing building area may be utilized within the development plans.

<sup>1</sup> Public Space includes private or public parks, plazas or gathering spaces. Parking lot landscaping and landscape buffers required by City zoning shall not count towards the Public Space requirement. Stormwater detention area shall not count toward the Public Space requirement with the exception of areas fully integrated into a publicly accessible park, plaza or other gathering space.  
<sup>2</sup> Residential bonuses are a percentage of the base residential cap of 240 units and may be cumulative up to a maximum of 384 units.

**Ownership Signature - Lot 2**

By signing this General Development Plan Amendment the owner acknowledges and accepts all the requirements and intent set forth herein.  
Witness my/our hand(s)  
seal(s) this \_\_\_ day of \_\_\_\_\_, 20\_\_.

Seminal Land Holding, Inc.

STATE OF COLORADO )  
 )ss

COUNTY OF \_\_\_\_\_ )

The foregoing instrument was acknowledged before me this \_\_\_ day of \_\_\_\_\_, 20\_\_ by \_\_\_\_\_ as \_\_\_\_\_ of \_\_\_\_\_.

My commission expires: \_\_\_\_\_

Notary Public \_\_\_\_\_

**Ownership Signature - Lot 3**

By signing this General Development Plan Amendment the owner acknowledges and accepts all the requirements and intent set forth herein.  
Witness my/our hand(s)  
seal(s) this \_\_\_ day of \_\_\_\_\_, 20\_\_.

Centennial Valley Properties I, LLC

STATE OF COLORADO )  
 )ss

COUNTY OF \_\_\_\_\_ )

The foregoing instrument was acknowledged before me this \_\_\_ day of \_\_\_\_\_, 20\_\_ by \_\_\_\_\_ as \_\_\_\_\_ of \_\_\_\_\_.

My commission expires: \_\_\_\_\_

Notary Public \_\_\_\_\_

**Planning Commission Certificate**

Approved this \_\_\_ day of \_\_\_\_\_, 20\_\_ by the Planning Commission of the City of Louisville, Colorado. Resolution No. \_\_\_\_\_, Series \_\_\_\_\_

**City Council Certificate**  
Approved this \_\_\_ day of \_\_\_\_\_, 20\_\_ by the City Council of the City of Louisville, Colorado. Resolution No. \_\_\_\_\_, Series \_\_\_\_\_

Mayor Signature \_\_\_\_\_

City Clerk Signature \_\_\_\_\_

**Clerk and Recorder Certificate**

(COUNTY OF BOULDER, STATE OF COLORADO)  
Recorded at \_\_\_\_\_ o'clock, \_\_\_\_\_ M., this \_\_\_ day of \_\_\_\_\_, 20\_\_

Receptions No. \_\_\_\_\_

**ITEM:** LMCA-0213-2019; Sign Code Update

**PLANNER:** Lisa Ritchie, AICP, Senior Planner

**APPLICANT:** City of Louisville

**REQUEST:** A request for approval of an Ordinance amending Title 17 regarding sign regulations throughout the City of Louisville

**SUMMARY:**

The City has contracted with Russell + Mills, Plan Tools, and Murray Dahl Beery and Renaud, LLP to develop new regulations for signs, and to update the Commercial Development Design Standards and Guidelines (CDDSG) and Industrial Development Design Standards and Guidelines (IDDSG). Staff worked closely with the consultant team and presents the draft Sign Code ordinance for consideration by Planning Commission. The updates to the CDDSG and the IDDSG will occur at a later date.

**BACKGROUND:**

The City has adopted and amended sign regulations over the years, which has resulted in regulations in numerous different documents:

- [Louisville Municipal Code Chapter 17.24](#) – Signs on residential property, temporary signs, other miscellaneous sign regulations
- [CDDSG](#) – Permanent signs in areas regulated by the CDDSG
- [IDDSG](#) – Permanent signs in areas regulated by the IDDSG
- [Downtown Sign Manual](#) – Temporary and permanent signs in Downtown
- [Mixed-Use Design Standards and Guidelines \(MUDDSG\)](#) – Temporary and permanent signs in areas regulated by the MUDDSG

The draft sign code proposes to consolidate regulations for all signs in all areas of Louisville into one document. The draft sign code also includes changes to regulations in response to recent court cases related to the 1<sup>st</sup> Amendment, changes in technology and site design, to accommodate frequently requested and approved sign waivers, and in response to feedback received during the initial public outreach.

**PREVIOUS DISCUSSIONS AND PUBLIC OUTREACH:**

During preparation of the draft Sign Code, staff provided numerous different opportunities for input and feedback over the past year from the following groups:

- Public Open House and online survey, April 26, 2018
- Business Retention and Development Committee, April 1, 2019
- Downtown Business Association, April 12, 2019
- Louisville Chamber of Commerce, email correspondence
- Sign Code Focus Group, email correspondence

- Public Open House, May 1, 2019

Additionally, Planning Commission had a discussion on the draft Sign Code on April 11, 2019. Notes from the above discussions and any public comments received to date are included as attachments.

### **DISCUSSION:**

Under consideration is a draft Ordinance that repeals all sign regulations in the various locations, and adopts by reference the City of Louisville Sign Code, both of which are attached for review. When developing the draft Sign Code, staff reviewed all standards currently in effect and found that some standards were working well, while others required changes to meet the feedback initially provided by the business community and the public. The major areas of change include:

- **Consideration of the 2015 Supreme Court ruling in the *Reed v. Gilbert* case, along with subsequent rulings.** This ruling changed the means in which cities can regulate temporary signs, such as political signs, real estate signs, or special event banners. This ruling requires that all temporary signs be regulated under a “Time, Place, and Manner” framework, and removes our ability to regulate, for example, political signs differently than a special event banner. The lens for application of these new rules basically examines the need to read the message on the sign to determine its regulations, and if so then the regulations are no longer legal. Rather, you can generally regulate instead on the length of time, the allowed location, and the manner of the sign itself (what it is constructed of, how tall, how big, etc).
- **Sandwich boards beyond downtown.** Currently, sandwich boards are only allowed downtown. The draft sign code proposes allowing sandwich boards in Commercial and Mixed-Use areas, as well. Unlike in downtown, where sandwich board signs are allowed on sidewalks in the public right of way, in other commercial areas of the City the location of sandwich board signs would be limited to private property. In all parts of the City, including downtown, sandwich board signs would only be allowed immediately adjacent to the storefront.
- **Larger signs.** The draft sign codes proposes the following changes to allow larger signs:
  - **Properties adjacent to US 36** may receive an additional allowance for height and area for signs fronting US 36.
  - **Size of development.** Currently, the maximum allowed area for freestanding signs is generally standard for all sizes of development. The draft sign code includes ranges of sign regulations based on size of development, smaller allowances for smaller properties, and larger allowances for larger developments.
  - **Removal of Character Height regulations.** Currently the maximum allowed character height for wall signs in the CDDSG is 24” and is 18” in

the IDDSG. The draft sign code removes this limit to allow flexibility in design.

- **Murals.** Currently, murals are only allowed in downtown under specific regulations for allowed areas, size and circumstances on the structure. The draft sign code proposes to allow murals in Commercial, Mixed-Use and on buildings with Institutional uses (museums, schools, recreational, etc.) in Residential areas.
- **Electronic Message Centers.** Currently, electronic message centers are not allowed in any area of Louisville. The draft sign code proposes to allow them on freestanding signs for gas stations, display signs (menu boards) in Commercial and Mixed-Use areas, kiosks, and through the PUD process elsewhere. While there were some public comments in favor of allowing electronic message centers by-right, Planning Commission and the majority of public comments expressed concern that allowing these without careful consideration through approval of a PUD could negatively impact the character of the City.

The draft sign code includes revisions to many other regulations. A summary table comparing existing regulations to the draft sign code is included as an attachment.

**RECOMMENDATION:**

Staff recommends that the Planning Commission approve Resolution 12, Series 2019 recommending to City Council approval of the draft ordinance amending Title 17 regarding sign regulations throughout the City of Louisville.

**ATTACHMENTS:**

1. Resolution 12, Series 2019
2. Draft Ordinance
3. Draft Sign Code
4. Existing Signs Comparison Table
5. Existing Regulations and Draft Sign Code Comparison Table
6. Public Input comments prior to development of the sign code
7. Public Feedback on the Draft Sign Code
8. Business Retention and Development Committee minutes, April 1, 2019
9. Planning Commission minutes, April 11, 2019

**RESOLUTION NO. 12  
SERIES 2019**

**A RESOLUTION RECOMMENDING APPROVAL OF AN ORDINANCE AMENDING  
TITLE 17 OF THE LOUISVILLE MUNICIPAL CODE REGARDING SIGN  
REGULATIONS THROUGHOUT THE CITY OF LOUISVILLE**

**WHEREAS**, the City of Louisville previously adopted procedures and standards pertaining to the regulation of signs within the City; and

**WHEREAS**, the Planning Commission desires to adopt and incorporate into the Louisville Municipal Code a new Sign Code for the City of Louisville, which Sign Code includes standards and guidelines for all signs in the City; and

**WHEREAS**, the Planning Commission desires to repeal the Downtown Louisville Sign Manual and make corresponding amendments to Chapter 17.24 of the Louisville Municipal Code and the City of Louisville Mixed Use, Commercial and Industrial Development Design Standards and Guidelines; and

**WHEREAS**, the Planning Commission has considered the application at a duly noticed public hearing on June 13, 2019, where evidence and testimony were entered into the record, including the findings in the Louisville Planning Commission Staff Report dated June 13, 2019.

**NOW THEREFORE, BE IT RESOLVED** that the Planning Commission of the City of Louisville, Colorado does hereby recommend approval of a request to approve an Ordinance amending Title 17 of the Louisville Municipal Code regarding sign regulations throughout the City of Louisville.

**PASSED AND ADOPTED** this 13<sup>th</sup> of June, 2019.

By: \_\_\_\_\_  
Steve Brauneis, Chairperson  
Planning Commission

Attest: \_\_\_\_\_  
Debra Williams, Secretary  
Planning Commission

**ORDINANCE NO. XXX  
SERIES 2019**

**AN ORDINANCE ADOPTING A NEW SIGN CODE FOR THE CITY OF LOUISVILLE**

**WHEREAS**, the City of Louisville is a Colorado home rule municipal corporation duly organized and existing under laws of the State of Colorado and the City Charter; and

**WHEREAS**, pursuant to such home rule authority and state law, including but not limited to C.R.S. § 31-23-301 et seq., the City has adopted procedures and standards pertaining to the regulation of signs within the City, which are set forth in Chapter 17.24 of the Louisville Municipal Code; the Downtown Louisville Sign Manual; and the City of Louisville Mixed Use, Commercial and Industrial Development Design Standards and Guidelines; and

**WHEREAS**, the City Council desires to adopt and incorporate into the Louisville Municipal Code a new Sign Code for the City of Louisville (the “Sign Code”), which Sign Code includes standards and guidelines for all signs in the City; and

**WHEREAS**, in connection therewith, the City Council desires to repeal the Downtown Louisville Sign Manual and make corresponding amendments to Chapter 17.24 of the Louisville Municipal Code and the City of Louisville Mixed Use, Commercial and Industrial Development Design Standards and Guidelines; and

**WHEREAS**, the City has held public workshops to discuss and gather feedback and comments on the Sign Code; and

**WHEREAS**, after a duly noticed public hearing, where evidence and testimony were entered into the record, the Louisville Planning Commission has recommended the City Council adopt the Sign Code and this ordinance; and

**WHEREAS**, the City Council has reviewed the recommendation of the Louisville Planning Commission and desires to adopt the Sign Code and this ordinance; and

**WHEREAS**, City Council has provided notice of a public hearing on said ordinance by publication as provided by law and held a public hearing as provided in said notice.

**NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF LOUISVILLE, COLORADO:**

**Section 1.** The foregoing recitals are hereby affirmed and incorporated herein by this reference as findings of the City Council.

**Section 2.** Chapter 17.24 of the Louisville Municipal Code is hereby repealed and

reenacted to read as follows:

## **Chapter 17.24 Signs**

Sec. 17.24.010 Sign Code.

Sec. 17.24.020 Violation; penalty.

### **Sec. 17.24.010. Sign Code**

A. There is hereby adopted by reference and incorporated into this Title the City of Louisville Sign Code (“Sign Code”), which Sign Code is set forth in full as Appendix A to this Chapter. The sign requirements, standards and guidelines contained in the Sign Code may be amended from time to time in the manner set forth in Chapter 17.44. A copy of the Sign Code shall be made available for applicants for a sign permit for construction or placement of signs with the City.

B. Any sign proposed for construction or placement within the City shall be regulated solely by and comply with the Sign Code, as adopted and amended from time to time by ordinance of the City Council.

### **Sec. 17.24.010. Violation; penalty.**

Any person who violates any of the provisions of the Sign Code shall be subject to the penalty provided in Section 1.28.010.

**Section 3.** The following definitions in Chapter 17.08 of the Louisville Municipal Code are hereby repealed in their entirety: Sec. 17.08.435 (“Sign”); Sec. 17.08.440 (“Sign, advertising”); Sec. 17.08.445 (Sign, animated); Sec. 17.08.450 (“Sign, arcade”); Sec. 17.08.455 (“Sign, bulletin board”); Sec. 17.08.460 (“Sign, business”); Sec. 17.08.465 (“Sign, construction”); Sec. 17.08.470 (“Sign, flashing”); Sec. 17.08.475 (“Sign, ground”); Sec. 17.08.480 (“Sign, identification”); Sec. 17.08.485 (“Sign, illuminated”); Sec. 17.08.490 (“Sign, nameplate”); Sec. 17.08.495 (“Sign, projecting”); Sec. 17.08.500 (“Sign, real estate”); Sec. 17.08.505 (“Sign, roof”); Sec. 17.08.510 (“Sign, wall”); and Sec. 17.08.515 (“Sign, window”).

**Section 4.** Section 17.08.585 of the Louisville Municipal Code is hereby amended to read as follows (words to be deleted are ~~stricken through~~):

### **Sec. 17.08.585. Variance.**

Variance means a legal modification of applicable zoning district provisions, such as yard, lot width, yard depth, ~~sign~~, setback, and off-street parking and loading regulations, granted due to the peculiar conditions existing within a single piece of

property.

**Section 5.** Section 17.16.180.B.4 of the Louisville Municipal Code is hereby amended to read as follows (words to be added are underlined; words to be deleted are ~~stricken through~~):

**Sec. 17.16.180. Temporary uses.**

B. *Additional provisions applicable to temporary uses.* Temporary uses shall be subject to the following additional regulations:

4. *Signs.* Signs associated with temporary uses shall comply with the City of Louisville Sign Code adopted pursuant to Chapter 17.24 of this Title. ~~In addition to compliance with the sign provisions of chapter 17.24 of this title, the following requirements shall apply to temporary uses:~~

a. ~~Temporary uses shall be limited to one freestanding, wall, banner, sandwich board, construction, or window sign per street frontage;~~

b. ~~Total sign area shall not exceed 64 square feet per temporary use;~~

c. ~~Signs shall not be located off site or in public right of way.~~

**Section 6.** Section 17.16.280 of the Louisville Municipal Code is hereby amended to read as follows (words to be deleted are ~~stricken through~~):

**Sec. 17.16.280. Design Handbook and Sign Manual for Downtown Louisville to apply.**

Any addition, remodeling, relocation, construction, or other improvement within Downtown Louisville and requiring a building permit or any other permit from the city shall comply with all requirements of Design Handbook for Downtown Louisville, as adopted and amended from time to time. ~~Any sign proposed for construction or placement in Downtown Louisville shall be regulated solely by and comply with the Downtown Louisville Sign Manual, as adopted and amended from time to time.~~

**Section 7.** Section 17.16.290 of the Louisville Municipal Code is hereby amended to read as follows (words to be deleted are ~~stricken through~~):

**Sec. 17.16.290. Industrial Development Design Standards and Guidelines to apply.**

Any addition, remodeling, relocation, construction, or other improvement to

an industrial property or project within the city and requiring a building permit, ~~sign permit~~, or any other permit from the city shall comply with all requirements of City of Louisville Industrial Development Design Standards and Guidelines, as adopted and amended from time to time.

**Section 8.** Section 17.16.300.B of the Louisville Municipal Code is hereby amended to read as follows (words to be deleted are ~~stricken through~~):

**Sec. 17.16.300. Mixed use design standards and guidelines to apply.**

B. Applicability. Any addition, remodeling, relocation, construction, or other improvement within the mixed use residential (MU-R) or a commercial community (CC) zone district and requiring a building permit, ~~sign permit~~, or any other approval or permit from the city shall comply with all requirements of the City of Louisville Mixed Use Development Design Standards and Guidelines, as adopted and amended from time to time.

**Section 9.** Section 17.52.100 of the Louisville Municipal Code is hereby amended to read as follows (words to be added are underlined):

**Sec. 17.52.100. Temporary permits.**

Temporary permits for buildings to be constructed and used for storage incidental to the construction of buildings on the property and for signs advertising a subdivision or tract of land or the lots thereon shall be subject to section 17.16.180, the City of Louisville Sign Code adopted pursuant to chapter 17.24, chapter 17.60 and any other applicable provisions of this title.

**Section 10.** Section 15.04.180 of the Louisville Municipal Code is hereby amended to read as follows (words to be deleted are ~~stricken through~~):

**Sec. 15.04.180. Design Handbook for Downtown Louisville to apply.**

Any addition, remodeling, relocation, construction, or other improvement within Downtown Louisville and requiring a building permit, ~~sign permit~~, or any other permit from the city shall comply with all requirements of the Design Handbook for Downtown Louisville, as adopted and amended from time to time.

**Section 11.** Section 15.04.190 of the Louisville Municipal Code is hereby amended to read as follows (words to be deleted are ~~stricken through~~):

**Sec. 15.04.190. Industrial and Commercial Development Design Standards and**

**Guidelines to apply.**

Any addition, remodeling, relocation, construction, or other improvement to an industrial property or project within the city and requiring a building permit, ~~sign permit~~, or any other permit from the city shall comply with the requirements of City of Louisville Industrial Development Design Standards and Guidelines (IDDSG) and the Commercial Development Design Standards and Guidelines (CDDSG) as adopted and amended from time to time.

**Section 12.** Section 12.16.060 of the Louisville Municipal Code is hereby amended to read as follows (words to be deleted are ~~stricken through~~):

**~~Sec. 12.16.060. Permit required for flags and banners.~~**

~~It shall be unlawful for any person to place or cause to be placed across or above any street in the city any flag, banner, or similar sign or symbol without first obtaining a proper sign permit from the city manager or his authorized agent. A sign permit shall be issued upon written application showing the desired sign is to be displayed in connection with a national, state, or local celebration or holiday. Political advertisements or banners are prohibited under this section.~~

**Section 13.** The Downtown Louisville Sign Manual is hereby repealed in its entirety.

**Section 14.** Sections 7.1 to 7.5 of the City of Louisville Commercial Development Design Standards and Guidelines are hereby repealed and reenacted to read as follows:

**7.1 Compliance with Sign Code.**

Signs shall comply with the City of Louisville Sign Code, as amended from time to time.

**Section 15.** Sections 7.1 to 7.5 of the City of Louisville Industrial Development Design Standards and Guidelines are hereby repealed and reenacted to read as follows:

**7.1 Compliance with Sign Code.**

Signs shall comply with the City of Louisville Sign Code, as amended from time to time.

**Section 16.** Section 13 of the City of Louisville Mixed Use Development Design Standards and Guidelines is hereby amended to read as follows (words to be added are underlined; words to be deleted are ~~stricken through~~)::

**13. Sign Design.** ~~The policy, standards, and guidelines for sign design stated in Section 7 of the CDDSG shall apply in the MU-R and CC Zone Districts only to signage placed on a building fronting an arterial street or in a yard or setback adjacent to an arterial street. All other signage in the MU-R District shall comply with the City of Louisville Sign Code, as amended from time to time. ~~sign standards applicable in the Louisville Downtown Area, as stated in the Design Handbook for Downtown Louisville.~~~~

**Section 17.** If any portion of this ordinance is held to be invalid for any reason, such decision shall not affect the validity of the remaining portions of this ordinance. The City Council hereby declares that it would have passed this ordinance and each part hereof irrespective of the fact that any one part be declared invalid.

**Section 18.** The repeal or modification of any provision of the Municipal Code of the City of Louisville by this ordinance shall not release, extinguish, alter, modify, or change in whole or in part any penalty, forfeiture, or liability, either civil or criminal, which shall have been incurred under such provision, and each provision shall be treated and held as still remaining in force for the purpose of sustaining any and all proper actions, suits, proceedings, and prosecutions for the enforcement of the penalty, forfeiture, or liability, as well as for the purpose of sustaining any judgment, decree, or order which can or may be rendered, entered, or made in such actions, suits, proceedings, or prosecutions.

**Section 19.** All other ordinances or portions thereof inconsistent or conflicting with this ordinance or any portion hereof are hereby repealed to the extent of such inconsistency or conflict.

**INTRODUCED, READ, PASSED ON FIRST READING, AND ORDERED PUBLISHED** this \_\_\_\_ day of \_\_\_\_\_, 2019.

\_\_\_\_\_  
Robert P. Muckle, Mayor

ATTEST:

\_\_\_\_\_  
Meredyth Muth, City Clerk

APPROVED AS TO FORM:

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Kelly PC, City Attorney

**PASSED AND ADOPTED ON SECOND AND FINAL READING**, this \_\_\_\_\_ day of \_\_\_\_\_, 2019.

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Robert P. Muckle, Mayor

ATTEST:

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Meredyth Muth, City Clerk

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DRAFT

# Sign Code City of Louisville



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**1.1 PURPOSE.** These sign regulations are established to safeguard the health, safety, convenience, order and welfare of all residents and visitors of Louisville. The City of Louisville recognizes that signs may act as a visual means of communication between the public and businesses and those businesses have an expectation of using signs to identify and advertise themselves.

Specifically, the purpose of these regulations is to provide a balanced and fair legal framework for the design, construction, and placement of signs that:

1. Enhance the City's economy and its businesses by promoting reasonable, orderly, and effective signs which assist in wayfinding and achieve better communication with the public;
2. Promote the efficient communication of messages, ensure that persons exposed to signs are not overwhelmed by the number of messages presented, and enhance the appearance and economic value of the landscape by reducing and preventing sign clutter;
3. Encourage creativity and innovation consistent within the established principles of the City's Design Guidelines;
4. Ensure that signs are compatible with their surroundings, and prevent the construction of signs that are a nuisance to occupants of adjacent and contiguous property due to brightness, reflectivity, bulk, or height;
5. Ensure commercial signs are designed for the purpose of identifying a business in an attractive and functional manner;
6. Ensure signs on the façade of buildings reinforce the City's existing character and are complimentary to the architectural design of Louisville's commercial districts;
7. In Downtown Louisville, promote commerce, enable creativity, ensure visibility for all users, and requires compatibility with the historic architectural character and pedestrian scale, to accomplish the following:
  - a. Establish reasonable and improved standards for business identification;
  - b. Encourage creative and innovative approaches to regulating signs consistent with the established principles of the Design Handbook for Downtown Louisville;
  - c. Promote economic vitality in Downtown Louisville;

- d. Enhance overall visual environment in Downtown Louisville by discouraging signs which contribute to the visual clutter of the streetscape;
  - e. Ensure commercial signs are designed for the purpose of identifying a business in an attractive functional manner;
  - f. Ensure signs on the facade of buildings reinforce the existing character and are complimentary to the architectural design of Downtown Louisville.
8. Provide fair and consistent permitting and enforcement, and
  9. Promote the safety of persons and property by ensuring that signs do not create a hazard by:
    - a. Confusing or distracting motorists; or
    - b. Impairing drivers' ability to see pedestrians, obstacles or other vehicles, or to read traffic signs.

**1.2 INTENT.** It is the intent of these regulations to provide for the proper control of signs in a manner consistent with the First Amendment guarantee of free speech. It is not the intent of these regulations to regulate signs based on the content of their messages. Rather, these regulations advance important, substantial, and compelling governmental interests.

1. The incidental restriction on the freedom of speech that may result from the regulation of signs hereunder is no greater than is essential to the furtherance of the important, substantial, and compelling interests that are advanced by these regulations.
2. The City has an important and substantial interest in preventing sign clutter (which is the proliferation of signs of increasing size and dimensions as a result of competition among property owners for the attention of passing motorists and pedestrians), because sign clutter:
  - a. Creates visual distraction and obstructs views, potentially creating a public safety hazard for motorists, bicyclists, and pedestrians;
  - b. May involve physical obstructions of streets or sidewalks, creating public safety hazards;
  - c. Degrades the aesthetic and essential historic character of Louisville, making the City a less attractive place for tourism, commerce, and private investment; and
  - d. Dilutes or obscures messages displayed along City streets

through the proliferation of distracting structures and competing messages.

3. The City has a substantial and compelling interest in preventing traffic accidents.
4. The City has a substantial and compelling interest in preventing negative impacts associated with temporary signs. Temporary signs may be degraded, damaged, moved, or destroyed by wind, rain, snow, ice, and sun, and after such degradation, damage, movement, or destruction, such signs harm the safety and aesthetics of the City's streets if they are not removed.

**1.3 APPLICABILITY.** These regulations shall apply to the display, construction, erection, alteration, use, maintenance, and location of all signs within the City.

1. Signs may be erected, altered and maintained only for, and be a permitted use in, the district in which the signs are located; shall be located on the same lot as the permitted uses to which they relate, except for sandwich board signs as permitted in Section 5 and shall be clearly incidental, customary and commonly associated with the operation of the permitted use.
2. If any provision of these regulations conflicts with any other adopted City ordinance or regulation that regulates signs, the more restrictive standards shall apply, provided, however, to the extent an approved, unexpired and currently effective Planned Unit Development (PUD) under Louisville Municipal Code Chapter 17.28 includes specific sign allowances and/or restrictions that directly conflict with these regulations, the approved PUD regulations shall apply to the extent of the conflict. In lieu thereof, the property owner may elect to fully comply with these regulations in the area of the conflict.
3. Design guidelines identified within this manual replace the design standards for signs contained in the Design Handbook for Downtown Louisville, the Downtown Louisville Sign Manual, the City of Louisville Commercial Development Design Standards and Guidelines, the City of Louisville Industrial Development Design Standards and Guidelines, the City of Louisville Mixed Use Development Design Standards and Guidelines, and Chapter 17.24 of the Louisville Municipal Code (LMC).
4. The City recognizes other regulations pertaining to signage, specifically the State of Colorado, Department of Highways, "Rules and Regulations Pertaining to Outdoor Advertising," effective January 1, 1984, as may be amended. Where any provision of these regulations

address the same subject matter as other regulations, the more restrictive regulation shall apply.

5. Nothing in these regulations shall be construed as a defense to a violation of applicable state or federal law.
6. All signs displayed, constructed, erected or altered after the effective date of these regulations, as adopted on ~~\*\*\*\*~~, 2019, shall be in conformance with the provisions of these regulations. All signs that are existing at the time of the adoption of these regulations shall not be altered or enlarged without being brought into conformance with these regulations.

**1.4 NONCONFORMING SIGNS** Existing signs which do not conform to the specific provisions of these regulations or to an approved and unexpired PUD, variance, or waiver are designated as nonconforming signs. Nonconforming signs must be brought into compliance with these regulations or must be removed when any of the following conditions exist:

1. Any change which requires a permit per Section 2.1, except copy changes are permitted with an approved permit.
2. The owner wishes to relocate, alter the size, height or supporting structure for the sign.
3. If any such sign or nonconforming portion thereof is destroyed by any means to an extent of more than fifty (50) percent of its replacement value at the time of the destruction, it shall not be reconstructed except in conformity with the applicable provisions of these regulations.
4. The location of the sign is moved or relocated.

## 1.5 ENFORCEMENT

1. The provisions herein shall be enforced by the City Manager. It shall be unlawful to erect, construct, reconstruct, alter or change any sign without first obtaining a sign permit from the City, and no permit shall be issued unless plans of and for the proposed erection, construction, reconstruction, alteration or use fully conform to this Section.
2. It shall be unlawful to erect, construct, move or change the use of any sign in the City or cause the same to be done contrary to or in violation of the provisions of these regulations or amendments



*Freestanding pole signs are not permitted*



*Inflatable signs are not permitted*

thereto.

**1.6 PROHIBITED SIGNS** The following types of signs are prohibited except as noted:

1. All signs not expressly permitted under these regulations or exempt from a permit in accordance with Section 2.2 of these regulations.
2. Any sign other than traffic control signs, that is erected, constructed or maintained within, over or upon a public right-of-way, except projecting signs, signs on awnings or canopies, flags, and sandwich board signs in conformance with these regulations, or temporary signs otherwise granted permission for such location by the City or the Colorado Department of Transportation.
3. Any sign, other than traffic control signs, located in a vision clearance area.
4. Any sign at any location where by reason of its position, size, shape or color, it may obstruct, impair, obscure, interfere with the view of, or be confused with, any traffic control sign, signal or device, or may it interfere with, mislead or confuse traffic.
5. Handheld signs. No person shall place, maintain or otherwise utilize a handheld sign in a manner which obstructs or makes hazardous the free passage of pedestrians and motor vehicles on any street, sidewalk or public-right-of way.
6. Vehicle signs. No person shall park any vehicle or trailer on a public right-of-way or public property, or on private property, so as to be visible from a public right-of-way which has attached thereto or located thereon any sign. This provision applies when the vehicle is placed in a location for the primary purpose of displaying signage and is not intended to prohibit any form of vehicular sign, such as a sign attached to a motor vehicle primarily used for business purposes other than advertising.
7. Teardrop banner signs, as defined in Section 6.1.
8. Any sign attached to a tree or utility pole whether on public or private property.
9. Any flashing, rotating or moving signs, animated signs, signs with moving lights or signs which create the illusion of movement, except for:
  - a. A sign whereon the current time and/or temperature is

- indicated by intermittent lighting shall not be deemed to be a flashing sign.
- b. Traditional barber poles.
  - c. Electronic message signs, subject to the standards in Section 3.4.
10. Inflatable signs or displays placed on the ground or on buildings or tethered to other objects or structures.
  11. Any freestanding pole sign, unless designated as an Iconic or Landmark Sign.
  12. Any sign painted, erected and/or constructed upon, above or over the roof or parapet of any building.
  13. Any off-premise sign, including billboards. Off-premise sandwich board signs are permitted subject to the standards in these regulations.
  14. Any sign that obstructs access to or impedes operation of any fire escape, downspout, window, door, stairway, ladder or opening intended to provide light, air, ingress or egress for any building or structure as may be required by law.
  15. Any sign or sign structure which is structurally unsafe, constitutes a hazard to safety or health by reason of inadequate maintenance, abandonment, dilapidation or obsolescence and/or is not kept in good repair.



*Teardrop banners are not permitted*

**2.1 PERMIT REQUIRED** A permit shall be required in order to change copy, erect, move, alter, reconstruct or repair any permanent or temporary sign, except signs that are exempt from permits in compliance with Section 2.2.

1. An application for a permit for a sign shall be submitted on a form provided by the Department of Building and Safety.
2. Submittal requirements. Each application for a permit shall include:
  - a. A to-scale drawing showing the proposed location of the sign(s) along with the property boundaries, locations, types and square footage areas of all existing signs on the same site.
  - b. Specifications and full color scale drawings shall be included showing the sign type, materials, design, and dimensions.
  - c. Structural supports and/or attachments.
  - d. To-scale landscaping plan, if required.
  - e. Lighting and/or electrical components of the proposed sign(s).
  - f. Additional submittal requirements, as requested at the discretion of the Department of Planning and Building Safety, which information is reasonably necessary to assist in the review of the sign permit application.
  - g. The number of copies of application submittal items shall be determined by the Department of Planning and Building Safety.
  - h. The appropriate fee as adopted and required by the City.
3. Upon receipt of a complete application the Department of Planning and Building Safety shall review the same for compliance with these regulations, all applicable building code requirements, and any other applicable City codes and regulations, and approve, approve with conditions, or deny the application.
4. The Department of Planning and Building Safety shall have the right to inspect the proposed sign location prior to acting on the application, and shall also have the right to inspect the sign after construction to insure compliance with these regulations and any conditions of approval.
5. A permit for a sign shall lapse and have no further effect unless a sign has been erected in compliance with the terms and conditions of the permit within one (1) year after the date of the permit approval, or as provided in the adopted City building codes.

## 2.2 EXEMPTIONS FROM REQUIRED PERMIT

The following signs are exempt from the permit requirements of Section 2.1 above; however, exempt signs remain subject to the remaining provisions of these regulations. Exempt signs shall otherwise be in conformance with all applicable requirements of these regulations, and the construction and safety standards of the City. All signs not listed in this Section and that are not prohibited by Section 1.6 require a permit pursuant to Section 2.1 above. Unless otherwise specifically provided, exempt signs may not be illuminated. Exempt signs include:

1. Signs erected by the City or by any government agency, including but not limited to traffic control signs. These signs may be illuminated for safety purposes.
2. Any public purpose/safety sign and any other notice or warning required by a valid and applicable federal, State or local law, regulation or resolution. These signs may be illuminated for safety purposes.
3. Signs displayed on motor vehicles which are being operated or stored in the normal course of a business, provided that the primary purpose of such vehicles is not for the display of signs and provided that they are parked or stored in areas appropriate to their use as vehicles.
  - a. Signs on vehicles shall not project beyond the surface of the vehicle in a manner which creates a hazard to pedestrians, cyclists, or other vehicles.
  - b. It shall be unlawful to place or store a vehicle with a sign on it in such manner as to increase the permitted sign area or number of signs either on-site or off-site for a non-residential use, as provided in Section 1.6.
4. Temporary decorations or displays, if they are clearly incidental to, customarily, or commonly associated with any national, State, or local holiday or religious celebration provided that such signs shall be displayed for a period of not more than forty five (45) consecutive days nor more than sixty (60) days in any one year. Such decorations or displays may be of any type, number, area, height, location, illumination or animation, provided that such decorations or displays:
  - a. Are maintained and do not constitute a fire hazard; and
  - b. Are located so as not to conflict with, interfere with or visually distract from traffic regulatory devices.



*Public safety and warning sign*



Sign Displayed on a Vehicle



Temporary Decorations



Flag affixed to a pole



Directional sign

5. Flags that are affixed to not more than two (2) permanent flagpoles or flagpoles that are mounted to buildings (either temporary or permanent) provided that such flag maintains a minimum clearance of eight (8) feet from any travel surface and does not exceed twenty-four (24) square feet in Downtown, and forty (40) square feet in all other areas.
6. Incidental and directional signs, as defined in Section 6.1, provided that such signs do not exceed five (5) square feet in sign area.
7. Non-illuminated wall mounted display signs, as defined in Section 6.1, subject to the standards in Section 4.4.
8. Window signs, as defined in Section 6.1, subject to the standards in Section 4.5 and 5.6.
9. Sandwich board signs, as defined in Section 6.1, subject to the standards in Section 5.3.
10. Site signs, as defined in Section 6.1, subject to the standards in Section 5.4.
11. Yard signs, as defined in Section 6.1, subject to the standards in Section 5.5.

## 2.3 WAIVERS AND MODIFICATIONS FROM SIGN REQUIREMENTS

1. Unless eligible for a minor modification in Section 2.3.2, any request for an increase in the maximum allowable height, area, or number of signs permitted by these regulations shall follow the procedures set forth in Title 17 of the Louisville Municipal Code for approval of a Final Planned Unit Development (PUD). The following review criteria will be used as the basis of the evaluation of such request:
  - a. The proposed sign(s) shall encourage excellence in design, exhibit improved creativity, promote community aesthetics, and be appropriate with the character of the area.
  - b. The proposed sign(s) shall be compatible with the color, materials, design of the on-site building(s).
  - c. The proposed signs(s) shall be scaled and located in a manner that is compatible with the scale of the lot and the massing of the building(s), with consideration of legibility of copy area.
  - d. The proposed sign(s) are otherwise in conformity with the

standards of this chapter and applicable design guidelines respecting the size, height, location, design and appearance of the sign(s) involved.

2. The Department of Planning and Building Safety shall be authorized to grant minor modifications of any sign standard, including but not limited to sign area and/or height modifications of ten (10) percent or less, pursuant to the procedure for a Minor Impact Variance set forth in Sec. 17.52.050, and upon a finding that:
  - a. The minor modification is of a technical nature and is required to compensate for some practical difficulty or unusual aspect of the site or the proposed sign.
  - b. The proposed sign(s) shall encourage excellence in design, exhibit improved creativity, promote community aesthetics, and be compatible with the character of the area.
  - c. The proposed sign(s) shall be compatible with the color, materials, design of the on-site building(s).
  - d. The proposed signs(s) shall be scaled and located in a manner that is compatible with the scale of the lot and the massing of the building(s), with consideration of legibility of copy area.



*Creative sign design that could be considered through approval of a waiver for exposed illumination*

## 2.4 ICONIC SIGN DESIGNATION

1. Iconic Signs. Signs which have been officially designated as an Iconic Sign by the Historic Preservation Commission and City Council, and which retain those dimensional, locational, and lighting standards that the sign possessed when it received such a designation, shall benefit from the following privileges:
  - a. May remain on roofs, or exceed height limits found elsewhere in these regulations.
  - b. May exceed dimensional limits found elsewhere in these regulations.
  - c. May change the sign copy and logo so long as the architectural quality of the original sign is maintained, subject to Section 2.4.6.
  - d. Shall not have the sign area deducted from the square footage of sign area granted by other standards in these regulations.
  - e. May remain in a right-of-way unless it becomes a hazard.
  - f. May retain its original lighting patterns and materials.



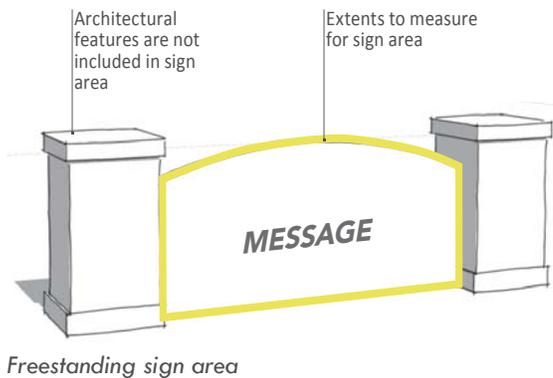
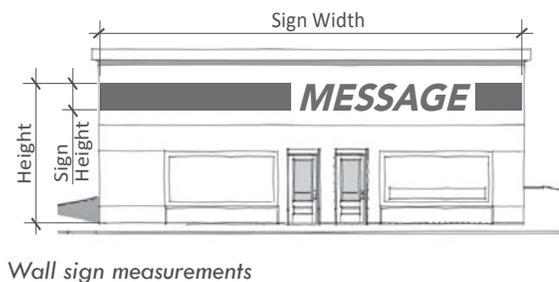
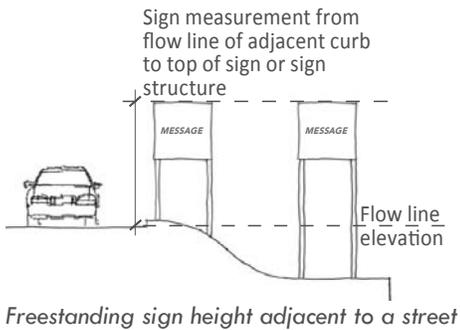
## 2.5 LANDMARK SIGN DESIGNATION

1. Landmark Signs. Signs which have been officially designated as a Landmark Sign by the Historic Preservation Commission and City Council shall benefit from the following privileges:
  - a. May be eligible for historic preservation funds for restoration, repair, or maintenance, with approval from the Historic Preservation Commission and City Council.
  - b. May remain on roofs, or exceed height limits found elsewhere in these regulations.
  - c. May exceed dimensional limits found elsewhere in these regulations.
  - d. May change the sign copy only with an alteration certificate from the Historic Preservation Commission.
  - e. Shall not have the sign area deducted from the square footage of sign area granted by other standards of these regulations.
  - f. May remain in a right-of-way unless it becomes a hazard.
  - g. May retain its original lighting patterns and materials.
2. Review Criteria. A Landmark Sign shall meet the criteria established for a landmark structure as outlined in Section 15.36.050 of the Louisville Municipal Code.
3. Designation. The City of Louisville Historic Preservation Commission and City Council shall have the authority to approve or disapprove the designation of a Landmark Sign based upon the criteria in Section 15.36.050 of the Louisville Municipal Code.
4. At the time of submittal, the applicant must file all information as required by the Department of Planning and Building Safety to determine if the sign meets the criteria.
5. A sign which has been officially designated as a Landmark Sign will not be required to comply with the requirements for nonconforming signs.
6. In addition to a permit under these regulations, a sign which has been officially designated as a Landmark sign shall be required to obtain an Alteration Certificate pursuant to Section 15.36.110 of the Louisville Municipal Code prior to any alteration that requires a permit under these regulations.



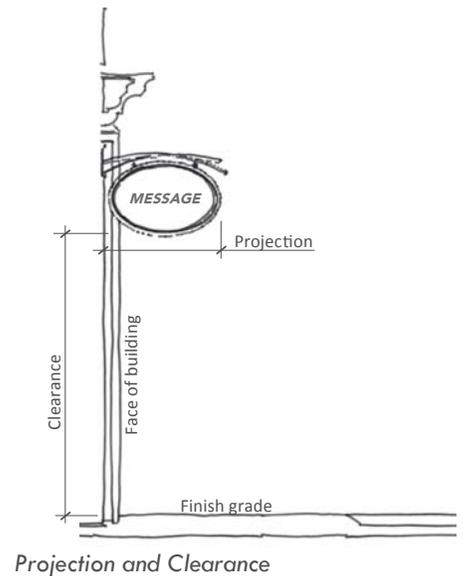
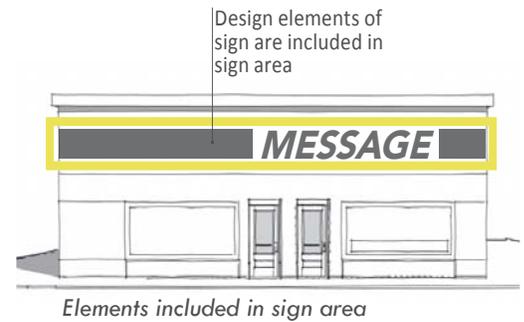
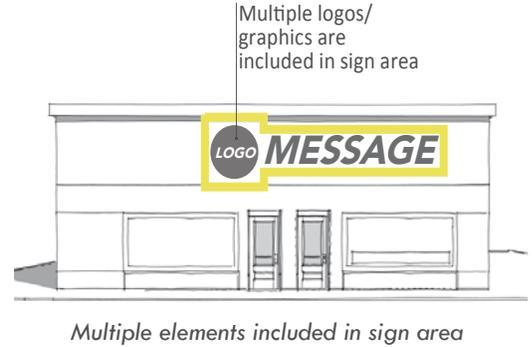
*Designated Landmark Sign*

### 3.1 SIGN MEASUREMENT



1. Height.
  - a. The height of a freestanding sign is the vertical distance to the top of the structure or sign face, whichever is higher, measured from the elevation of average grade in the area within the required landscape area around the base of the sign.
  - b. For freestanding signs adjacent to a street, if said average grade is more than two (2) feet lower than the average grade of the nearest abutting street, then the height of the sign shall be measured from the flow line elevation of said street to the top of the sign face or sign structure, whichever is higher.
  - c. For signs mounted on a building, the height is measured from the average grade of the building frontage.
2. Sign height. Sign height is the vertical distance of the sign area.
3. Area of single-faced signs.
  - a. Sign area is the entire surface area of a sign, including non-structural trim, frame or other material or color forming an integral part of the display or used to differentiate the sign's contents from the background against which they are placed. The supports, uprights, or structures on which any sign is mounted shall not be included in measuring sign area.
  - b. A building's architectural features, structural supports and landscape elements shall not be included within the sign area.
  - c. An awning, canopy, or non-cabinet wall sign's area shall be measured by including within a single continuous rectilinear perimeter of not more than eight straight lines which enclose the extreme limits of writing, representation, lines, emblems, or figures contained within all modules together with any air space, materials or colors forming an integral part or background of the display or materials used to differentiate such sign from the structure against which the sign is placed.

4. Area of multi-faced signs. All sign faces visible from one point shall be counted and considered part of the maximum total sign area allowance for a sign.
  - a. When two (2) identical sign faces are placed back to back so that both faces cannot be viewed from any point at the same time, and are part of the same sign structure, the sign area shall be computed as the measurement of one (1) of the two (2) faces.
  - b. When a sign has more than two (2) display surfaces that are visible from the same viewpoint, or the sign is a three-dimensional object, the area of such sign is the largest display surface visible from any single direction.
5. Area of multiple Signs.
  - a. Whenever more than one (1) sign is placed on a freestanding structure, or on a projecting structure, the combination of signs shall be considered as one sign for the purpose of computing sign area and determining the number of signs on a site.
  - b. Total sign area shall be computed by adding the areas of the individual signs.
6. Projection. Projection is measured as the distance from the face of the building to which a sign is mounted to the furthest point on the sign away from the wall.
7. Clearance. Clearance is measured as the shortest distance between the bottom of a sign and the grade below.



### 3.2 SIGN DESIGN

In general, signs shall have mutually unifying elements which may include uniformity in materials, color, size, height, letter style, sign type, shape, lighting, location on buildings, and design motif.

1. All signs shall be constructed of high quality durable materials.
2. Exposed raceways and conduit.
  - a. Raceways shall only be permitted when other means of attachment are not feasible, except as noted in d.



High quality, unified signage



Exposed raceway



Multi-tenant freestanding sign

- below.
  - b. Exposed raceways shall be as thin and narrow as possible and shall be finished to match the background wall, and shall not extend in width or height beyond the area of the sign's lettering or graphics.
  - c. Conduit shall be concealed from public view.
  - d. Raceways and exposed conduit are not permitted in Downtown Louisville.
- 3. Materials and textures of signs shall be compatible with the architectural character of the site and building.
  - a. Supporting sign structures of freestanding signs shall match the primary finish and colors of the associated building(s).
  - b. The supporting members of a sign shall appear to be free of any extra bracing angle iron, guy wires, cables, etc. The supports shall appear to be an architectural and integral part of the building and/or sign.
- 4. Where possible, freestanding signs shall integrate tenant signs into a single sign structure.
- 5. Wayfinding and directional signage systems shall be of a unified graphical system. Such signage shall be placed in consistent locations near site entries, key points on the internal automobile and pedestrian circulation system, building entries, seating areas, and sidewalk intersections.
- 6. The supporting members of a sign shall appear to be free of any extra bracing angle iron, guy wires, cables, etc. The supports shall appear to be an architectural and integral part of the building and/or sign.

### 3.3 SIGN ILLUMINATION

Illumination of signs shall be in accordance with the following requirements, in addition to the standards provided in Section 4 for each sign type:

- 1. Internally illuminated signs.
  - a. No internally illuminated sign shall include any exposed light source, except that neon or comparable tube lighting is permitted where neon is allowed.
  - b. When an internally illuminated sign cabinet is permitted,

only that portion of the sign face dedicated to the trademark or characters may be translucent. The balance of the sign face shall be opaque.

2. Externally illuminated signs.
  - a. All signs that use external illumination shall have their lighting directed in such a manner as to illuminate only the face of the sign without causing glare.
  - b. The light source must be downcast and fully shielded.
  - c. Projecting light fixtures shall be simple and unobtrusive in appearance, and shall not obscure the graphics of the sign.
3. No illuminated sign visible from and located within three hundred (300) feet of any property in a residential zoning district may be illuminated between the hours of 11:00 p.m. or one-half hour after the use to which it is appurtenant is closed, whichever is later, and 7:00 a.m.
4. The following light sources are prohibited anywhere in Louisville, except as provided for in Section 1.6 and Section 3.4.
  - a. Any flashing, rotating or moving signs, animated signs, signs with moving lights or signs which create the illusion of movement.
5. All illuminated signs in AO-T zone districts shall comply with Section 17.13.110 of the Louisville Municipal Code regarding glare, and the following additional standards:
  - a. Signs shall be illuminated only from a concealed light source internal to the sign structure or shielded from public view and from surrounding properties used to illuminate only the sign face, and not any area beyond the face; and
  - b. Signs shall not remain illuminated between the hours of 9:00 p.m. and 6:00 a.m.



*Electronic message center*



*Electronic message center at a gas station*

### 3.4 ELECTRONIC MESSAGE CENTERS

1. Electronic message centers are permitted for the display of variable pricing on freestanding signs for gasoline stations and display signs in Commercial and Mixed-Use Areas.
2. Any other electronic message center may be permitted only if expressly authorized in an approved Final PUD plan. The electronic message center in the Final PUD plan shall meet the

specific standards in Section 3. below and shall include standards and requirements concerning the design and location of the electronic message center, and shall demonstrate exceptional and unique circumstances warranting the use of the electronic message center.

3. All electronic message centers shall meet the following requirements:
  - a. The electronic message area of a freestanding sign shall be integrated into the design of the freestanding sign. Such electronic message portions of freestanding signs shall not be an add-on feature, but rather must be fully integrated into the sign design.
  - b. All electronic message centers shall be equipped with a malfunction display and the ability to automatically shut off if a malfunction occurs.
  - c. Transition method. The electronic message center shall be limited to static messages, changed only through either dissolve or fade transitions, which may otherwise not have movement, or the appearance or optical illusion of movement, of any part of the sign or structure, design, or pictorial segment of the sign, including the movement of any illumination or the flashing, scintillating or varying of light intensity.
  - d. Transition duration. The transition duration between messages shall not exceed one (1) second.
  - e. Message hold time. Messages shall not transition on a frequent basis. The message hold time shall be appropriate for the site, surrounding neighborhood, uses, and roadway.
  - f. Lighting from an electronic message center shall not exceed 0.3 footcandles between dusk to dawn as measured from the sign's face. The City may require lower light levels if it is determined less light is appropriate for the surrounding area. The electronic message center shall have automatic dimmer software or solar sensors to control brightness for nighttime viewing. the intensity of the light source shall not produce glare, the effect of which constitutes a traffic hazard. Documentation shall be provided from the sign manufacturer which verifies compliance with auto dimming and brightness requirements.
  - g. Existing signage proposed for conversion to the use of an electronic message center shall conform to the sign standards in these regulations prior to issuance of a sign permit. Nonconforming signs shall not be eligible for conversion to an



*Halo lit wall sign*



*Externally illuminated wall sign*

electronic message center.

### 3.5 SIGN INSTALLATION

1. In addition to the permit requirements in Section 2.1, all permanent signs and all components thereof, including sign structures and sign faces, shall be installed in compliance with the adopted building and electrical codes of the City.
  - a. At final inspection by the City, every electric sign shall have affixed thereon an approved Underwriters' Laboratories label, or all wiring of such sign as approved by the State electrical inspector, and all wiring connected to such sign shall comply with all provisions of the applicable regulations of the City relating to electrical installations. This label may be removed following the passage of the final inspection.
  - b. Signs shall be located in such a way as to maintain horizontal and vertical clearance of all overhead electrical conductors in accordance with adopted electrical code specifications, depending on voltages concerned. However, in no case shall a sign be installed closer than forty eight inches (48") horizontally or vertically from any conductor or public utility guy wire, or as recommended by the local public utility company.
  - c. No sign or sign structure shall be installed that impedes pedestrian or vehicular movement, or be erected in such a location as to cause visual obstruction or interference with motor vehicle traffic or traffic-control devices, or obstruct clear vision in any direction from any street intersection or driveway.
  - d. No sign or sign structure shall be installed that obstructs access to or impedes operation of any fire escape, downspout, window, door, stairway, ladder or opening intended to provide light, air, ingress or egress for any building or structure as may be required by law. If possible, signs should not be placed in locations that obscure architectural features such as pilasters, arches, windows, cornices, etc.
  - e. No sign or sign structure shall be installed which is structurally unsafe.
2. Except for flags, window signs and temporary signs conforming to the requirements of these regulations, all signs shall be permanently attached to the ground, a building, or another structure by direct attachment to a rigid wall, frame, or structure.



Externally illuminated wall sign



Halo lit freestanding sign



Neon illuminated signs



Up-lit signs are not allowed

### 3.6 SIGN MAINTENANCE

The owner or lessee of any sign shall take all reasonable actions so that the sign will be maintained.

1. All signs and all parts and components thereof, shall be maintained in a safe condition in compliance with the approved permit and in conformance with these regulations.
  - a. All signs, including sign structures and sign faces, shall be maintained in good repair at all times and shall not constitute a hazard to safety, health or public welfare by reason of inadequate maintenance or deterioration. For the purposes of this Section, good repair shall mean that there are no loose, broken, torn or severely weathered portions of the sign structure or sign face.
  - b. The owner of a sign shall be required to keep signs and supporting hardware structurally safe, clean, free of visible defects, including graffiti, and functioning properly at all times. Exposed surfaces shall be kept clean and neatly painted, and free from rust and corrosion. Defective parts shall be replaced. Repairs to signs shall be equal to or better in quality of materials and design than the original sign.
2. All signs or any part of a sign which is broken or damaged or which is not reasonably maintained such as to present a nuisance, hazard or potential hazard, including any required landscaping, shall be repaired or removed by the sign owner such that the sign no longer is a nuisance or endangers public health and/or safety. If the sign owner fails or refuses to repair or remove the unsafe sign as herein required, the sign shall be deemed a nuisance and the City may abate the same as provided in Section 8.01.050 of the Louisville Municipal Code, as the same may be amended.

### 3.7 SIGN ALTERATION AND REMOVAL

1. Any alteration to an existing sign, including a copy change, shall require a new sign permit pursuant to Section 2.1, unless exempt pursuant to Section 2.2. Alterations shall include, without limitation:
  - a. Changing the size of the sign;
  - b. Changing the shape of the sign;
  - c. Changing the material of which the sign is constructed;
  - d. Changing or adding lighting to the sign;

- e. Changing the location of the sign; or
  - f. Changing the height of the sign.
2. Existing nonconforming signs may be altered in any way that does not change the materials, light source, size height, background, shape or location of the sign without bringing the entire sign into conformance, provided that the cost of the alteration is less than fifty (50) percent of the sign's replacement cost.
  3. Any abandoned or illegal sign, which is not removed from the premises by the owner, user, or property owner within the time frames prescribed shall be subject to removal in accordance with the provisions and procedures detailed in this Section. Any such sign shall be considered a violation of the provisions of these regulations.
    - a. An abandoned permanent sign shall be removed by the owner, user, or property owner within thirty (30) days from time the purpose has passed or no longer applies.
    - b. An abandoned temporary sign shall be removed by the owner, user, or property owner within three (3) days from time the purpose has passed or no longer applies.
    - c. When building-mounted and painted wall signs are removed, the face of the structure shall be treated to conform to surrounding building conditions. Such removal shall not leave any evidence of the sign's existence.
    - d. Any illegal sign shall be removed from the premises upon which it is located within thirty (30) days from the notice of violation, and shall not remain on the premises until and unless a sign permit is issued.
  4. Upon failure of the owner, user, or property owner to comply within the specified time requirements set out in this Section, the City Manager is hereby authorized to cause such abandoned or illegal sign to be removed and any expense attendant thereto shall be paid by the owner, agent, or person having the beneficial use of the building, structure, or premises upon which the sign is located.
    - a. If such removal expense remains unpaid for more than thirty (30) days after such removal is performed and expense incurred by the City and a bill for same was mailed to the permittee or property owner by first class, certified or registered mail, such unpaid charge shall constitute a lien upon the real estate.
    - b. The City Attorney is hereby authorized, in accordance with the law, to file a notice of lien in the office of the County Clerk to

foreclose this lien and to sue the owner of the property of sign permittee, or their agents, in a civil action to recover the money due for the foregoing service, plus all its costs as hereinafter more fully described, together with reasonable attorney's fees to be fixed by the court.

- c. Any such judgement shall be enforced in accordance with law. Included in the expenses recoverable by the City shall be the costs of filing the notice of lien foreclosing such lien and all litigation costs, together with all office and legal expenses incurred in connection with collection of the amount due hereunder.
- d. In lieu of filing and enforcing a lien, the City may certify its costs of removal and enforcement with the County Treasurer under CRS 31-20-105 & 106 for collection in the same manner as real property taxes.
- e. A failure to remove any abandoned or illegal sign and subsequent failure by the Department of Planning and Building Safety to duly notice the owner, user, or property owner of the provisions of this Section shall not be deemed to constitute a waiver of any violations of these regulations, nor to be given any special status.
- f. If, through administrative neglect or inaction, an owner, user, or property owner is not notified of the requirements of this Section within the time frames specified, but is later so notified, such owner, user, or property owner shall take action to either correct the abandonment or illegality or shall cause the sign to be removed within twenty (20) days of such notification.
- g. Any sign removed by the City, in accordance with this Section, shall become the property of the City and may be disposed of in any manner deemed appropriate by the City.

### 3.8 DISTRICT AREAS

The regulations in Section 4 and 5 set forth standards applicable by districts. Contact the Department of Planning & Building Safety to confirm which district is applicable.

**Residential:** Generally, this area is comprised of the residentially zoned properties, or properties developed with residential uses. This area includes properties zoned A, RR, RE, RL, RM, RH, R-RR, SF-LD, SF-MD, SF-HD, SF-R, SF-E, and PCZD-R. This also may include properties with commercial zoning with residential uses approved through a Special

Review Use. Institutional uses include uses defined by Use Groups 9, 11 through 23, and 30 of Section 17.12.030 the Louisville Municipal Code that are located in the above zone districts.

**Commercial:** Generally, this area includes properties with commercial zoning, and that are subject to the Commercial Development Design Standards and Guidelines. This area includes properties that are zoned CN, CC (not Downtown), CB, AO, BO, AO-T (with additional regulations) and PCZD-C.

**Industrial:** Generally, this area includes properties with industrial zoning, and that are subject to the Industrial Development Design Standards and Guidelines. This area includes properties that are zoned I and PCZD-I.

**Mixed-Use:** This area includes properties with mixed-use zoning, and that are subject to the Mixed Use Development Design Standards and Guidelines. This area includes properties that are zoned MU-R and CC-MU. This area also includes properties located on the east side of the railroad tracks within the downtown, as defined in Sec. 17.08.113 of the Louisville Municipal Code.

**Downtown:** This area includes properties with Commercial Community zoning that are located on the west side of the railroad tracks within the Downtown, as defined in Sec. 17.08.113 of the Louisville Municipal Code. Properties located on the east side of the railroad tracks in Downtown are subject to the standards in the Mixed-Use Area.



Residential Area



McCaslin Marketplace - Commercial Area



Louisville Corp. Campus - Industrial Area



DELO - Mixed-Use Area



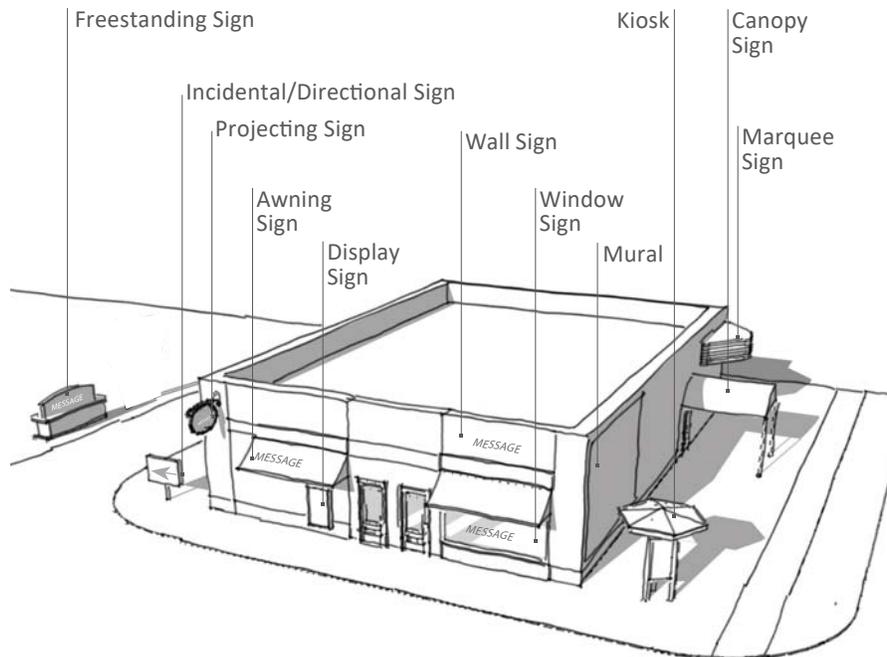
Downtown Louisville

### 4.1 PERMANENT SIGNS.

The standards of this Section apply to all permanent signs. Permanent signs may be subject to additional standards set out elsewhere in these regulations.

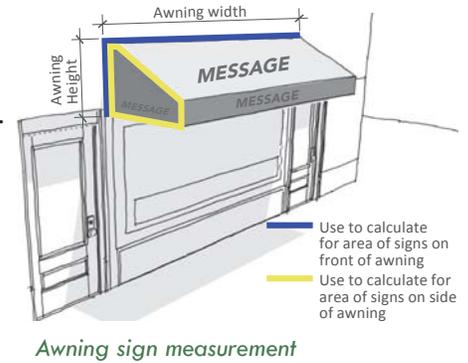
Sign Types. Permanent signs include the following types:

- 4.2 Awning Signs
- 4.3 Canopy Signs
- 4.4 Display Signs
- 4.5 Window Signs
- 4.6 Kiosks
- 4.7 Marquee Signs
- 4.8 Murals
- 4.9 Projecting Signs
- 4.10 Freestanding Signs
- 4.11 Wall Signs



**4.2 AWNING SIGNS** Signs on awnings are subject to the standards below. These regulations do not authorize the installation of awnings with or without signs without obtaining any necessary building permits in compliance with the city’s applicable building and zoning codes.

1. Awnings that contain signs shall be designed to be compatible with the storefront in scale, proportion, material, and color.
2. No awnings with signs shall extend above the roof line of any building, or the first story, whichever is less.
3. No sign mounted to an awning shall project beyond, above or below the face of the awning.
4. The principal function of any awning with a sign must be to provide shelter for a window, a door, or an outdoor seating area.
5. Awnings in Downtown shall project not more than six (6) ft from the face of the building to which it is mounted, or two-thirds (2/3) the width of the walkway above which it is mounted, whichever is less. Awnings in all other areas shall comply with the design regulations in effect in that area.



Standard	Residential	Commercial	Industrial	Mixed-Use	Downtown
Permitted	No	Yes	No	Yes	Yes
Permit Req'd	--	Yes	--	Yes	Yes
Max. Number	--	1 per awning face	--	1 per awning face	1 per awning face
Max. Area	--	40% of area of awning face	--	40% of area of awning face	40% of area of awning face
Min. Clearance	--	8 ft	--	8 ft	8 ft
Max. Height	--	12 ft	--	12 ft	12 ft
Illumination	--	No	--	No	No
Subject to Max. Wall Sign allowance	--	Yes	--	Yes	Yes



**4.3.a CANOPY SIGNS in VEHICULAR AREAS** Signs on canopies in vehicular areas may be permitted only in commercial and mixed-use areas and only if a canopy in a vehicular area is expressly authorized in an approved Final PUD plan. The PUD plan shall contain standards and requirements concerning the design of any canopy in vehicular areas.

1. Canopies with signs shall be designed to be compatible with the storefront in scale, proportion, and color.
2. Signs on a canopy in a vehicular area shall not be permitted to wrap the canopy.

Standard	Residential	Commercial	Industrial	Mixed-Use	Downtown
Permitted	No	Yes	No	Yes	No
Permit Req'd	--	Yes	--	Yes	--
Max. Number	--	1 per frontage	--	1 per frontage	--
Max. Area	--	25% of area of canopy face, or 15 sf, whichever is less	--	25% of area of canopy face, or 15 sf, whichever is less	--
Illumination	--	Internal or Halo lit	--	Internal of Halo lit	--
Subject to Max. Wall Sign allowance	--	Yes	--	Yes	--

### 4.3.b CANOPY SIGNS in PEDESTRIAN AREAS

Signs on canopies are subject to the standards below. These regulations do not authorize the installation of canopies with or without signs without obtaining any necessary building permits in compliance with the city’s applicable building and zoning codes.

1. No sign mounted to a canopy shall project below the face of a canopy. Signs mounted to the top of a canopy shall be designed such that:
  - a. They are comprised of channel letters or other three dimensional forms;
  - b. The mounting hardware and supporting structures of the sign are concealed from view;
  - c. The sign does not extend more than two (2) feet above the top of the canopy, or extend above the nearest roofline, whichever is less.
4. Canopies with signs shall be designed to be compatible with the storefront in scale, proportion, material, and color.
5. Canopies in Downtown shall project not more than six (6) ft from the face of the building to which it is mounted, or two-thirds (2/3) the width of the walkway above which it is mounted, and shall maintain a two (2) ft minimum distance from the back of the curb, whichever is less. Canopies in all other areas shall comply with the design regulations in effect in that area.



Standard	Residential	Commercial	Industrial	Mixed-Use	Downtown
Permitted	Yes, Multi-family and Institutional uses only	Yes	No	Yes	Yes
Permit Req'd	Yes	Yes	--	Yes	Yes
Max. Number	1 per primary entry	1 per primary entry	--	1 per primary entry	1 per primary entry
Max. Area	1 sf copy area per 1 lin ft of canopy	2 sf copy area per 1 lin ft of canopy	--	1 sf copy area per 1 lin ft of canopy	1 sf copy area per 1 lin ft of canopy
Max. Height	1st story	1st story	--	1st story	1st story
Min. Clearance	8 ft	8 ft	--	8 ft	8 ft
Illumination	No	Internally lit	--	Internally lit	No
Subject to Max. Wall Sign allowance	Yes	Yes	--	Yes	Yes



**4.4 DISPLAY SIGNS** Display signs are subject to the standards below. Display signs may be wall mounted or may orient to occupants in a vehicle. Display signs oriented to occupants in a vehicle may be permitted only in commercial and mixed-use areas and only if a drive through is expressly authorized in an approved Final PUD plan.

1. High quality materials shall be used in the construction of display signs.
2. Display signs shall be appropriate in material, size, location and design to the character and architectural detail of the building and site.
3. Display signs may include electronic message centers in commercial and mixed-use areas, subject to Section 3.4.
4. A display sign oriented to a drive through in a Commercial or Mixed-Use area may be an electronic message center that contains up to 100% of the sign area if the display changes no more than three (3) times in a 24-hour period.

Standard	Residential	Commercial	Industrial	Mixed-Use	Downtown
Permitted	No	Yes	No	Yes	Yes
Permit Req'd	--	No, if non-illuminated wall mounted Yes, all others	--	No, if non-illuminated wall mounted Yes, if all others	Yes, if illuminated No, if non-illuminated
Max. Number	--	1 per drive-thru lane and 1 wall mounted per tenant	--	1 per drive-thru lane and 1 wall mounted per tenant	1 wall mounted per tenant
Max. Area	--	8 sf - wall 32 sf - drive-thru	--	8 sf - wall 32 sf - drive-thru	8 sf - wall
Max. Height	--	7 ft	--	7 ft	7 ft
Illumination	--	Internally or Externally lit	--	Internally or Externally lit	Internally or Externally lit
Subject to Max. Wall Sign Allowance	--	No	--	No	No

**4.5 WINDOW SIGNS** Permanent window signs are subject to the following standards:

1. A window sign may be painted on, attached to, or placed within four feet of the inside of a window.



Standard	Residential	Commercial	Industrial	Mixed-Use	Downtown
Permitted	Yes, Institutional and Multi-Family uses only	Yes	Yes	Yes	Yes
Permit Req'd	No	No	No	No	No
Max. Number	1 per building entry	Unlimited, subject to max. area	1 per building entry	Unlimited, subject to max. area	Unlimited, subject to max. area
Max. Area	10% of door/window	25% of window	10% of door/window	25% of window, not to exceed 12 sf	20% of window, not to exceed 8 sf
Max. Height	First Story	First Story	First Story	First Story	First Story
Illumination	No	Internally lit or neon	No	No	No
Subject to Max. Wall Sign allowance	No	Yes, if illuminated No, if non-illuminated	No	No	Neon



**4.6 KIOSKS** Kiosks may be permitted only if expressly authorized in an approved Final PUD plan. The Final PUD plan shall contain specific standards and requirements concerning the design, construction, maintenance and operation of any kiosk.

1. The size and placement of the kiosk is dependent on the proposed activity. Specific design considerations, including illumination, will be approved through the Final PUD or Special Review Use (SRU) process.
2. A kiosk may contain an electronic message center display.



Standard	Residential	Commercial	Industrial	Mixed-Use	Downtown
Permitted	No	Yes, via PUD	No	Yes, via PUD	Yes, via PUD
Permit Req'd	--	Yes	--	Yes	Yes
Max. Height	--	10 ft	--	7 ft	7 ft
Illumination	--	Internally or Externally lit	--	Internally or Externally lit	No

**4.7 MARQUEE SIGNS** Marquee signs are subject to the following standards.

1. A marquee sign shall be designed to be compatible with the storefront in scale, proportions, and color.
2. A marquee sign shall be located on the upper portion of the storefront. A marquee shall not obscure the building’s windows, doors, or ornamental features.
3. A marquee sign is not permitted along an alley frontage.



Standard	Residential	Commercial	Industrial	Mixed-Use	Downtown
Permitted	No	Yes	No	Yes	Yes
Permit Req'd	--	Yes	--	Yes	Yes
Max. Number	--	1 per building	--	1 per building	1 per building
Max. Area	--	1 sf per 1 lin ft of building frontage, not to exceed 150 sf	--	2 sf per 1 lin ft of building frontage, not to exceed 60 sf	2 sf per 1 lin ft of building frontage
Max. Height	--	Roof line, or second story window sill, whichever is less	--	Roof line, or second story window sill, whichever is less	Roof line, or second story window sill, whichever is less
Max. Sign Height	--	8 ft	--	6 ft	4 ft
Min. Clearance	--	8 ft	--	8 ft	8 ft
Max. Projection	--	8 ft, or 2/3 width of adjacent walkway, whichever is less	--	8 ft, or 2/3 width of adjacent walkway, whichever is less	6 ft, or 2/3 width of adjacent walkway, whichever is less
Illumination	--	Externally or internally lit, or neon	--	Externally or internally lit, or neon	Externally or internally lit, or neon
Subject to Max. Wall Sign allowance	--	Yes	--	Yes	Yes



**4.8 MURALS** Murals are subject to the following standards.

1. Murals shall not be located on the primary frontage.
2. Murals may be located on a principal or accessory structure facade, or other structure within a site.

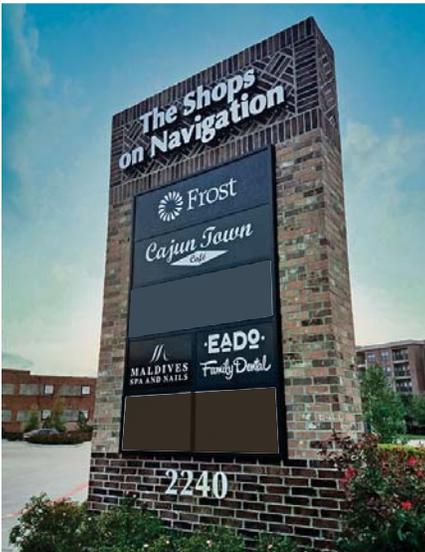
Standard	Residential	Commercial	Industrial	Mixed-Use	Downtown
Permitted	Yes, Institutional uses only	Yes	No	Yes	Yes
Permit Req'd	Yes	Yes	--	Yes	Yes
Max. Number	Unlimited, subject to max. area	Unlimited, subject to max. area	--	Unlimited, subject to max. area	Unlimited, subject to max. area
Max. Area	50% of the building facade or structure area	75% of the building facade or structure area	--	100% of the building facade or structure area	100% of the building facade or structure area
Max. Height	Roof line	Roof line	--	Roof line	Roof line
Illumination	No	No	--	No	No
Subject to Max. Wall Sign Allowance	No	No	--	No	No

**4.9 PROJECTING SIGNS** Projecting signs are subject to the following standards.

1. Projecting signs shall be placed near a building entrance or an access point to a walkway.
2. Projecting signs shall be spaced a minimum of ten (10) feet apart on multi-tenant buildings, unless there is less than ten (10) feet separating tenant entrances.



Standard	Residential	Commercial	Industrial	Mixed-Use	Downtown
Permitted	No	Yes	No	Yes	Yes
Permit Req'd	--	Yes	--	Yes	Yes
Max. Number	--	1 per tenant per frontage, not to exceed 2 per tenant	--	1 per tenant per frontage, not to exceed 2 per tenant	1 per tenant per frontage, not to exceed 2 per tenant
Max. Area	--	12 sf	--	9 sf	9 ft
Min. Clearance	--	8 ft	--	8 ft	8ft
Max. Projection	--	4 ft	--	4 ft	4 ft
Max. Height	--	12 ft	--	12 ft	12 ft
Illumination	--	No	--	No	No
Subject to Max. Wall Sign allowance	--	Yes	--	Yes	Yes



**4.10 FREESTANDING SIGNS** The standards below apply to all freestanding signs.

1. All freestanding signs shall be located outside of the vision clearance area.
2. Freestanding signs may be located in a privately owned and maintained median and shall be setback at least ten (10) feet from nose of the median, and subject to review and approval from the Department of Public Works.
3. Where more than one primary or secondary freestanding sign is permitted, each permitted sign shall be allowed to have the maximum square footage allowed as noted in this section.
4. A freestanding sign may be affixed to an existing retaining wall, provided the retaining wall is expressly authorized by a Final PUD plan and is not located in right-of-way. The minimum setback does not apply to a sign affixed to such a retaining wall.
5. When required, landscaping shall include shrubs, ornamental grasses, perennials, ground covers and other enhancements. Landscaping areas shall not consist of more than twenty-five (25) percent turf or native grasses.

**4.10.a FREESTANDING SIGNS in RESIDENTIAL AREAS** Freestanding signs in residential areas are subject to the standards below.

1. A freestanding sign shall be located at primary or secondary neighborhood entrances or entry drives on privately owned common areas or privately owned and maintained medians. There must be at least six hundred (600) feet of separation between any freestanding sign on the same street.
2. All freestanding signs must be constructed of an opaque background of uniform color, and shall be of high quality materials that are compatible with the character of the neighborhood. Freestanding sign bases or supports shall be constructed of stone, brick, wood, decorative concrete, high quality metal, or other similar materials.
3. Internally lit cabinet signs are not permitted.
4. All freestanding signs shall be in a landscaped area on privately owned common area. A minimum of three (3) square feet of landscaping shall be provided for every one (1) square feet of sign area. Only one face of the sign shall be counted. Landscape plans shall demonstrate that after three years of growth, seventy-five (75) percent of the landscaping area shall be covered with living plants.
5. Freestanding signs for single-family residential areas shall only be permitted for neighborhoods with a Home Owners' Associations (HOA) to ensure the signs are properly maintained over time. If a HOA dissolves, the HOA shall be responsible for removal of the sign prior to dissolving.
6. In place of one sign at a neighborhood entrance, one sign may be placed on each side of the street at the neighborhood entrance, provided the maximum area of both signs combined does not exceed the maximum area for one sign, and the maximum height is reduced to four (4) feet.



Primary Entrance Sign



Secondary Entrance Sign



Entry Sign on a retaining wall

Standard	Residential, Single-Family	Residential, Multi-Family	Residential, Institutional Use
Permitted	Yes	Yes	Yes
Permit Req'd	Yes	Yes	Yes
Max. Number	1 at each neighborhood entrance, not to exceed 4 signs. See note 6.	1 at each entry drive, not to exceed 2 signs. See note 6.	1 at each entry drive, not to exceed 2 signs. See note 6.
Max. Area	32 sf	40 sf	40 sf
Max. Height	6 ft	8 ft	8 ft
Illumination	Externally lit	Externally or halo lit	Externally or halo lit
Min. Setback	5 ft	8 ft	8 ft



High quality compatible freestanding sign



Multi-tenant freestanding sign with only characters illuminated



Cabinet signs without base and border are not permitted

#### 4.10.b FREESTANDING SIGNS in COMMERCIAL AREAS

Freestanding signs in Commercial areas are subject to the following standards.

1. All freestanding signs shall be located along a primary or secondary public street frontage. Only one primary frontage shall be allowed. Sites may have more than one secondary frontage. Sites with more than five hundred (500) feet of primary or secondary frontage shall be allowed to place an additional sign meeting the secondary frontage standards on the that frontage.
2. Primary and secondary freestanding signs shall be located a minimum of seventy-five (75) feet apart.
3. All freestanding signs must be constructed of an opaque background of uniform color, and shall be of high quality materials that are compatible with the building. Freestanding sign bases and support shall be constructed of brick, stone, wood, decorative concrete, high quality metal, or other similar materials.
4. All freestanding signs using an internally lit sign cabinet design shall have an architectural base and border on all sides that is consistent with and/or complements the building materials.
5. All freestanding signs shall be in a landscaped area. A minimum of three (3) square feet of landscaping shall be provided for every one (1) square feet of sign area. Only one face of the sign shall be counted. Landscape plans shall demonstrate that after three years of growth, seventy-five (75) percent of the landscaping area shall be covered with living plants.
6. The minimum setback is not required if the sign is adjacent to right-of-way with more than ten (10) feet between the curb and the property line, provided there is a minimum of five (5) feet between the sign and any adjacent sidewalk.
7. Properties adjacent to US 36 may have an additional freestanding sign oriented to US 36. Freestanding signs oriented toward US 36 may have an additional fifty (50) percent increase in the maximum area and an additional one-hundred (100) percent increase in the maximum height.

**4.10.b FREESTANDING SIGNS in COMMERCIAL AREAS, cont.**

Standard	Commercial Single Tenant Site	Commercial Multi-Tenant Site*	Office Single Tenant Site	Office Multi-Tenant Site
Permitted	Yes	Yes	Yes	Yes
Permit Req'd	Yes	Yes	Yes	Yes
Max. Number	1 per primary frontage, 1 per secondary frontage, not to exceed 2 signs	1 per primary frontage, 1 per secondary frontage, not to exceed 4 signs	1 per primary frontage, 1 per secondary frontage, not to exceed 2 signs	1 per primary frontage, 1 per secondary frontage, not to exceed 3 signs
Max. Area, Primary	48 sf	60 sf - less than 60,000 sf of floor area 96 sf - more than 60,000 sf of floor area	40 sf	48 sf - less than 60,000 sf of floor area 60 sf - more than 60,000 sf of floor area
Max. Area, Secondary	24 sf	32 sf	16 sf	24 sf
Max. Height, Primary	8 ft	12 ft	6 ft	8 ft
Max. Height, Secondary	5 ft	6 ft	5 ft	6 ft
Illumination	Externally, internally or halo lit	Externally, internally or halo lit	Externally, internally or halo lit	Externally, internally or halo lit
Min. Setback	10 ft	10 ft	10 ft	10 ft

\*A commercial multi-tenant site may include an office tenant.



Primary Entrance Sign



Secondary Entrance Sign

### 4.10.c FREESTANDING SIGNS in INDUSTRIAL AREAS

Freestanding signs in industrial areas are subject to the following standards:

1. All freestanding signs shall be located along a primary or secondary public street frontage. Only one primary frontage shall be allowed. Sites may have more than one secondary frontage. Sites with more than five hundred (500) feet of primary or secondary frontage shall be allowed to place an additional sign meeting the secondary frontage standards on that frontage.
2. Primary and secondary freestanding signs shall be located a minimum of seventy-five (75) feet apart.
3. All freestanding signs must be constructed of an opaque background of uniform color, and shall be of high quality materials that are compatible with the building.
4. Internally lit cabinet signs are not permitted.
5. All freestanding signs shall be in a landscaped area. A minimum of three (3) square feet of landscaping shall be provided for every one (1) square feet of sign area. Only one face of the sign shall be counted. Landscape plans shall demonstrate that after three years of growth, seventy-five (75) percent of the landscaping area shall be covered with living plants.

Standard	Industrial, Single Tenant Site	Industrial, Multi-Tenant Site
Permitted	Yes	Yes
Permit Req'd	Yes	Yes
Max. Number	1 per primary frontage, 1 per secondary frontage, not to exceed 2 signs	1 per primary frontage, 1 per secondary frontage, not to exceed 4 signs
Max. Area, Primary	25 sf	40 sf
Max. Area, Secondary	15 sf	25 sf
Max. Height, Primary	6 ft	8 ft
Max. Height, Secondary	5 ft	6 ft
Illumination	Externally lit	Externally lit
Min. Setback	10 ft	15 ft

**4.10.d FREESTANDING SIGNS in MIXED-USE AREAS**

Freestanding signs in mixed-use areas are subject to the following standards:

1. For lots or sites with only residential uses, the standards in for Residential Areas apply. For all other sites, the standards in this Section apply.
1. All freestanding signs shall be located along a primary or secondary public street frontage. Only one primary frontage shall be allowed. Sites may have more than one secondary frontage. Sites with more than five hundred (500) feet of primary or secondary frontage shall be allowed to place an additional sign meeting the secondary frontage standards on the that frontage. If a site has arterial frontage, the arterial frontage shall be the primary frontage for the purpose of these regulations.
2. Primary and secondary freestanding signs shall be located a minimum of seventy-five (75) feet apart.
3. All freestanding signs must be constructed of an opaque background of uniform color, and shall be of high quality materials that are compatible with the building. Freestanding sign bases or supports shall be constructed of stone, brick, wood, decorative concrete, high quality metal, or other similar materials.
4. Internally lit cabinet signs are only permitted on an arterial frontage.
5. All freestanding signs shall be in a landscaped area, or in an appropriate location within a hardscaped area or plaza.



Primary Entrance Sign

Standard	Single Tenant Site Arterial Frontage	Multi-Tenant Site Arterial Frontage	Single Tenant Site Non-arterial Frontage	Multi-Tenant Site Non-arterial Frontage
Permitted	Yes	Yes	Yes	Yes
Permit Req'd	Yes	Yes	Yes	Yes
Max. Number	1 per primary frontage, 1 per secondary frontage, not to exceed 2 signs	1 per primary frontage, 1 per secondary frontage, not to exceed 4 signs	1 per primary frontage, 1 per secondary frontage, not to exceed 2 signs	1 per primary frontage, 1 per secondary frontage, not to exceed 4 signs
Max. Area, Primary	48 sf	60 sf	24 sf	32 sf
Max. Area, Secondary	24 sf	32 sf	16 sf	24 sf
Max. Height, Primary	8 ft	12 ft	6 ft	8 ft
Max. Height, Secondary	5 ft	6 ft	5 ft	6 ft
Illumination	Externally, internally or halo lit	Externally, internally or halo lit	Externally or halo lit	Externally or halo lit
Min. Setback	10 ft	10 ft	50% of the distance of the structures's setback, or 3 ft, whichever is greater	50% of the distance of the structures's setback, or 3 ft, whichever is greater



### 4.10.e FREESTANDING SIGNS in DOWNTOWN

Freestanding signs in Downtown Louisville are subject to the standards below.

1. A freestanding sign shall be located only on a site frontage adjoining a public street.
2. Freestanding signs in Downtown shall be designed to be compatible with the principal building in material, scale, proportions and color. Opaque backgrounds are required and shall be a non-reflective material
3. Freestanding signs in Downtown shall only be used when other allowed types of signage cannot provide adequate messaging.
4. Freestanding signs in Downtown shall not include a cabinet sign or utilize a monolithic base anchored to the ground.

Standard	Downtown
Permitted	Yes
Permit Req'd	Yes
Max. Number	1 per building
Max. Area	9 sf
Max. Height	6 ft
Min. Setback	None, provided no part of sign shall be placed or extend into right-of-way
Illumination	No
Subject to Max. Wall Sign allowance	Yes

**4.11 WALL SIGNS** The standards below apply to all wall signs.

1. Wall signs shall be designed to be compatible with the building in scale, proportions, and color.
2. A wall sign shall not obstruct any portion of a window, doorway or other architectural detail.
3. No sign part, including cut-out letters, may project from the building more than required for construction purposes and in no case more than twelve (12) inches.
4. No wall sign shall extend above the roof or parapet line of any building.





Primary Halo Lit Wall Sign



Secondary Wall Sign

**4.11.a WALL SIGNS in RESIDENTIAL AREAS** Wall signs in residential areas are subject to the standards below.

1. Wall signs may be located on primary and secondary frontages. Only one primary frontage shall be designated per site.
2. Internally lit cabinet signs are not permitted.
3. In place of a wall sign located on primary or secondary frontages, a wall sign may be permitted on an alternative location on the structure, oriented towards a parking lot, plaza, alley, or other area with a public entrance.
4. The area allowance for wall signs shall include any sign area utilized on a canopy sign.

Standard	Residential, Single-Family	Residential, Multi-Family	Residential, Institutional
Permitted	No	Yes	Yes
Permit Req'd	--	Yes	Yes
Max. Number	--	1 per building	1 on primary frontage, 1 on secondary frontage
Max. Area, Primary	--	24 sf	32 sf
Max. Area, Secondary	--	--	15 sf
Max. Height	--	15 ft, or roofline, whichever is less	20 ft, or roofline, whichever is less
Max. Sign Height	--	2 ft	3 ft
Illumination	--	Externally or halo lit	Externally or halo lit

**4.11.b WALL SIGNS in COMMERCIAL AREAS** Wall signs in commercial areas are subject to the standards below.

1. Wall signs may be located on primary and secondary public street frontages. Only one primary frontage shall be designated per site. Sites may have more than one secondary frontage.
2. In place of a wall sign located on primary or secondary frontages, a wall sign may be permitted on an alternative location on the structure, oriented towards a parking lot, plaza, alley, or other area with a public entrance.
3. The area allowance for wall signs shall include any sign area utilized on a canopy sign, awning sign, marquee sign, illuminated window sign, or a projecting sign.
4. In addition to the signs in this section, buildings with public rear entrances may have a six (6) sf unlit sign above each entrance, one (1) per tenant.
5. Properties adjacent to US 36 may have an additional wall sign(s). Wall signs oriented toward US 36 may have an additional fifty (50) percent increase in the maximum area and an additional fifty (50) percent increase in the maximum sign height.
6. The use of individually cut, internally lit or halo lit characters are encouraged.



Standard	Commercial Single Tenant Site	Commercial Multi-Tenant Site	Commercial Office Only Site
Permitted	Yes	Yes	Yes
Permit Req'd	Yes	Yes	Yes
Max. Number	1 at primary frontage plus 1 additional sign for each 100 linear ft of sign wall, 1 at secondary frontage	1 per tenant at primary frontage, 1 per tenant at secondary frontage	1 per tenant at primary frontage, 1 per tenant at secondary frontage
Max. Area, Primary	1 sf per 1 linear ft of building frontage, not to exceed 100 sf	1 sf per 1 linear ft of tenant building frontage, not to exceed 100 sf per sign	1 sf per 1 linear ft of tenant building frontage, not to exceed 40 sf per sign, not to exceed 100 sf total for all wall signs
Max. Area, Secondary or Alternative	.5 sf per linear ft of building frontage, not to exceed 100 sf	.5 sf per linear ft of building frontage, not to exceed 50 sf per sign	.5 sf per linear ft of building frontage, not to exceed 24 sf per sign, not to exceed 60 sf total for all wall signs
Max. Height	Roofline	Roof line	Roof line
Max. Sign Height	3 ft	4 ft	2 ft for buildings less than 25 ft tall, 3 ft for buildings taller than 25 ft
Illumination	Internally, externally, or halo lit or neon	Internally, externally, or halo lit or neon	Internally, externally, or halo lit



### 4.11.c WALL SIGNS in INDUSTRIAL AREAS

Wall signs in industrial areas are subject to the following standards:

1. Wall signs may be located on primary and secondary public street frontages. Only one primary frontage shall be designated per site. Sites may have more than one secondary frontage.
2. In addition to the signs in this section, buildings with public rear entrances may have a 6 sf unlit sign above each entrance, one (1) per tenant.
3. Cabinet signs are not permitted.

Standard	Industrial, Single Tenant Site	Industrial. Multi-Tenant Site
Permitted	Yes	Yes
Permit Req'd	Yes	Yes
Max. Number	1 at primary frontage, 1 at secondary frontage	1 per tenant at primary frontage, 1 per tenant at secondary frontage.
Max. Area, Primary	1 sf per 1 linear ft of building frontage, not to exceed 60 sf	1 sf per 1 linear ft of tenant building frontage, not to exceed 40 sf per sign. If a tenant space is larger than 60,000 sf, the wall sign for that tenant may be up to 60 sf
Max. Area, Secondary	1 sf per 1 linear ft of building frontage, not to exceed 30 sf	1 sf per 1 linear ft of building frontage, not to exceed 25 sf
Max. Height	Roof line	Roof line
Max. Sign Height	3 ft	3 ft
Illumination	No	No

#### **4.11.d WALL SIGNS in MIXED USE AREAS**

Wall signs in mixed use areas are subject to the standards below.

1. For lots or sites with only residential uses, the standards in Residential Areas apply.
2. For all other sites, the standards in Commercial Areas apply.



Externally Lit Wall Sign



Neon Lit Wall Sign



Halo Lit Wall Sign

### 4.11.e WALL SIGNS in DOWNTOWN

1. Wall signs may be located on primary and secondary public street frontages. Only one primary frontage shall be designated per site. Sites may have more than one secondary frontage.
2. In addition to wall signs on primary or secondary frontages, wall signs may be permitted on an alternative location on the structure, such as a parking lot, plaza, alley or other area, provided there is an operable public entrance to the building orienting to that area.
3. The area allowance for wall signs shall include any sign area utilized on a canopy sign, awning sign, marquee sign, or projecting sign.
4. Visible raceways and transformers are not permitted.

Standard	Downtown, Single Tenant Site	Downtown, Multi-Tenant Site
Permitted	Yes	Yes
Permit Req'd	Yes	Yes
Max. Number	1 at primary frontage, 1 at secondary frontage, 1 at alternative area	1 per tenant at primary frontage, 1 per tenant at secondary frontage, 1 per tenant at alternative area
Max. Area, Primary	2 sf per 1 linear ft of building frontage	2 sf per 1 linear ft of building frontage, total for all signs
Max. Area, Secondary and Alternative	1 sf per 1 linear ft of building frontage	1 sf per 1 linear ft of building frontage, total for all signs
Max. Installation Height	Roof line, 20 ft, or 2nd story window sill, whichever is less	Roof line, 20 ft, or 2nd story window sill, whichever is less
Max. Sign Height	--	--
Illumination	Externally, halo lit or neon	Externally, halo lit or neon



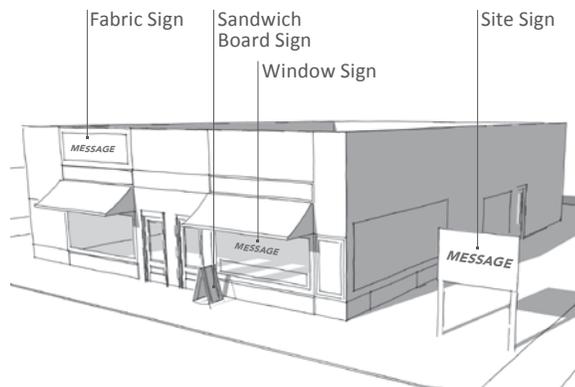
### 5.1 TEMPORARY SIGNS.

The standards of this Section apply to all temporary signs. Temporary signs may be subject to additional standards set out elsewhere within these regulations.

Sign Types. Temporary signs include the following types:

- 5.2 Fabric Signs
- 5.3 Sandwich Board Signs
- 5.4 Site Signs
- 5.5 Yard Signs
- 5.6 Window Signs

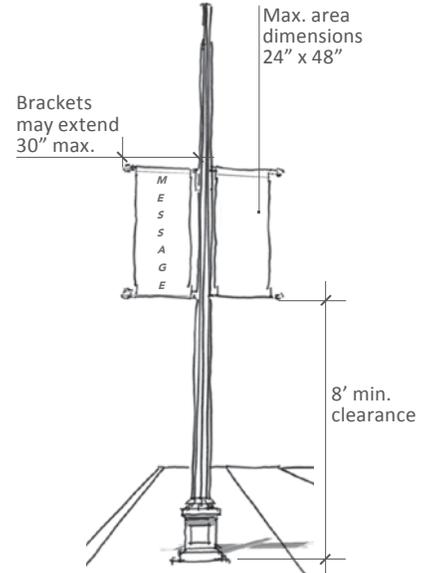
1. The purpose of temporary signs is to display messages for a temporary duration. Temporary signs shall not be used to circumvent the regulations that apply to permanent signs or to add permanent signage to a property in addition to that which is allowed by these regulations.
2. In general, a temporary sign shall be removed as of the date that:
  - a. It becomes an abandoned sign;
  - b. It falls into disrepair; or
  - c. The expiration of the number of days in the tables below.



### 5.2 FABRIC SIGNS

Fabric signs, also referred to as banners, are subject to the following standards:

1. Fabric signs placed on a wall shall not obstruct any portion of a window, doorway, or other architectural detail.
2. Fabric signs mounted on the ground may not be located within the vision clearance area.
3. Fabric signs may be installed on a utility pole with the consent of both the utility provider and the Department of Planning and Building Safety. A fabric sign shall be attached at the top and bottom of utility pole brackets that project no more than thirty (30) inches from the utility pole. Fabric signs installed on utility poles shall not exceed twenty-four (24) inches in width and forty-eight (48) inches in height, with a minimum clearance of eight (8) feet maintained from any travel or walking surface.



Standard	Residential	Commercial	Industrial	Mixed-Use	Downtown
Permitted	Yes, Institutional or Multi-Family uses only	Yes	Yes	Yes	Yes
Permit Req'd	Yes	Yes	Yes	Yes	Yes
Max. Number	1	1 per tenant	1 per building	1 per tenant	1 per tenant
Max. Area	32 sf	60 sf or wall sign allowance, whichever is less	40 sf	40 sf	40 sf
Max. Height	Roof line or 25 ft, whichever is less	Roof line	Roof line	Roof line or 25 ft, whichever is less	Roof line or 25 ft, whichever is less
Max. Time Permitted	60 days in a calendar year, not required to be consecutive	60 days in a calendar year, not required to be consecutive	60 days in a calendar year, not required to be consecutive	60 days in a calendar year, not required to be consecutive	60 days in a calendar year, not required to be consecutive
Illumination	No	No	No	No	No
Min. Setback, if ground mounted	10 ft	10 ft	15 ft	10 ft	3 ft



### 5.3 SANDWICH BOARD SIGNS

Sandwich board signs are subject to the standards below.

1. High quality materials and artistic designs shall be used in the construction of sandwich board signs. No plastic board or plastic letters shall be permitted.
2. A sandwich board sign shall not obstruct pedestrian circulation. A minimum of four (4) feet of sidewalk clearance shall be maintained at all times.
3. Sandwich board signs must be removed each day at close of business.
4. Sandwich board signs must be anchored to the ground or weighted sufficiently to prevent movement by wind.
5. In Downtown, sandwich board signs may be placed in right-of-way on a sidewalk or on a private walkway immediately adjacent to the building frontage with the primary entry of a tenant or site.
6. In Commercial and Mixed-Use areas, sandwich boards are permitted only on walkways not in right-of-way and shall be located adjacent to the business and on the same frontage as the primary entry.

Standard	Residential	Commercial	Industrial	Mixed-Use	Downtown
Permitted	No	Yes	No	Yes	Yes
Permit Req'd	--	No	--	No	No
Max. Number	--	1 per tenant	--	1 per tenant	1 per tenant
Max. Area	--	6 sf	--	6 sf	6 sf
Max. Time Permitted	--	Unlimited	--	Unlimited	Unlimited
Illumination	--	No	--	No	No
Min. Setback	--	None	--	None	None

### 5.4 SITE SIGNS

Site signs are subject to the following standards:

1. Site signs are not intended to be installed in place of a permanent sign.
2. Site signs are only allowed on properties with active listings for sale or for rent, or on properties with active building permits.
3. Site signs may not be located within a vision clearance area.



Standard	Residential	Commercial	Industrial	Mixed-Use	Downtown
Permitted	Yes	Yes	Yes	Yes	Yes
Permit Req'd	No	No	No	No	No
Max. Number	1	1 per frontage, minimum distance between site signs is 1,000 ft	1	1	1
Max. Area	24 sf	32 sf	32 sf	32 sf	24 sf
Max. Height	6 ft	8 ft	8 ft	8 ft	6 ft
Max. Time Permitted	See # 2 above	See # 2 above	See # 2 above	See # 2 above	See # 2 above
Illumination	No	No	No	No	No
Min. Setback	10 ft	15 ft	10 ft	10 ft	3 ft



### 5.5 YARD SIGNS

Yard signs are subject to the standards below.

1. Yard signs may not be placed in a vision clearance area.

Standard	Residential	Commercial	Industrial	Mixed-Use	Downtown
Permitted	Yes	Yes	Yes	Yes	Yes
Permit Req'd	No	No	No	No	No
Max. Number	unlimited for sites with residential uses, 1 per frontage for site with institutional uses	1 per frontage per tenant			
Max. Area	6 sf	6 sf	6 sf	6 sf	6 sf
Max. Height	4 ft	4 ft	4 ft	4 ft	4 ft
Max. Time Permitted	120 days per calendar year, not required to be consecutive	60 days per calendar year, not required to be consecutive	60 days per calendar year, not required to be consecutive	60 days per calendar year, not required to be consecutive	60 days per calendar year, not required to be consecutive
Illumination	No	No	No	No	No
Min. Setback	None	None	None	None	None

### 5.6 WINDOW SIGNS

Temporary window signs are subject to the standards below.

1. Temporary window signs are allowed in all locations where permanent window signs are allowed.
2. The temporary sign area allowance is in addition to the area allowance for permanent window signage, pursuant to Section 4.5. If a site does not utilize all of the permanent allowance, that area may be used for temporary window signage, in addition to the area listed below.
3. Temporary window signs shall be affixed to the window such that the fastener (e.g. tape) is not highly visible, or signs shall be mounted inside of the building for viewing through the window.



Standard	Residential	Commercial	Industrial	Mixed-Use	Downtown
Permitted	Yes	Yes	Yes	Yes	Yes
Permit Req'd	No	No	No	No	No
Max. Number	1	Unlimited, subject to max. area	1 per building entry	Unlimited, subject to max. area	Unlimited, subject to max. area
Max. Area	6 sf	25% of window or door	25% of window or door	25% of window, not to exceed 12 sf	20% of window, not to exceed 8 sf
Max. Time Permitted	120 days per calendar year, not required to be consecutive	60 days per calendar year, not required to be consecutive	60 days per calendar year, not required to be consecutive	60 days per calendar year, not required to be consecutive	60 days per calendar year, not required to be consecutive
Illumination	No	No	No	No	No

**6.1 DEFINITIONS.** The following words, terms and phrases when used in these regulations shall have the meanings ascribed to them in this Section, except where the context clearly indicates a different meaning:

**Abandoned sign** means a sign, including sign face and supporting structure, which is unsafe, constitutes a hazard to safety or health by reason of inadequate maintenance, dilapidation or obsolescence and/or is not kept in good repair; or which contains no sign copy on all sign faces for a continuous period of three (3) months.

**Alteration** means change in the size or shape of an existing sign.

**Animated** means the use of movement or change of lighting to depict action or to create a special effect or scene.

**Animated sign** means any sign flashing or simulating motion with an electronic or manufactured source of supply or contains wind-actuated motion.

**Architectural features** means finished elements of a building that define a structure's architectural style and physical uniqueness, including, but not limited by windows, doors, trim, and ornamental features.

**Awning sign** means a sign permanently affixed to a sheet of canvas or other material stretched on a frame and used to keep the sun or rain off a storefront, window, doorway, or deck.

**Banner.** See definition for Fabric sign.

**Billboard** means any sign in excess of fifty (50) square feet in size oriented to a public street utilized to advertise a product or service that is not produced or conducted on the same property as the sign.

**Building** means any structure built for the shelter or enclosure of persons, animals, chattels or property or substances of any kind, excluding fences.

**Building frontage** means the horizontal, linear dimension of that side of a building which abuts a street, a parking area, plaza, alley, or other circulation area open to the general public; and having either a main window display of the enterprise or a public entrance to the building.

- a. Where more than one use or tenant occupies a building, each such use or tenant having a public entrance or main window display for its exclusive use shall be considered to have its own building frontage, which shall be the frontage width of the portion of the building occupied by that use.
- b. On corner and double-frontage lots, each building frontage that abuts a street, highway, private drives, or alley shall be considered to have both a primary and secondary frontage.

**Cabinet sign** means a sign structure consisting of the frame and face(s), not including the internal components, embellishments or support structure.

**Canopy sign** means a sign permanently affixed to a roofed shelter covering a sidewalk, walkway, driveway or other similar area which shelter may be wholly supported by a building or may be wholly or partially supported by columns, poles or braces extended from the ground.

**Channel letter** means a three-dimensional character that may include an internal or external light source.

**Character** means any graphic symbol used for sign text, included but not limited to letters, numbers and logos.

**City Manager** means the City Manager of Louisville, Colorado or his or her designee.

**Civic event** means any transient amusement enterprise held on property or right-of-way owned, or controlled by the City of Louisville with a license agreement and sponsored by the City.

**Clearance** means the distance from the bottom of a sign face elevated above grade and the grade below.

**Copy** means the words, message, logo, symbols, figures or images on a sign.

**Copy area** means the area that encloses the words, message, logo, symbols, figures or images on a sign.

**Copy change** means replacement or alteration to any portion of a sign that includes copy. This includes any change that alters the script, size, color or arrangement of copy on a sign face, or replacement of a sign face. This does not include any change to manual changable copy, such as readerboards.

**Electric sign** means any sign containing electrical wiring, but not including signs illuminated by exterior light sources, such as floodlights.

**Directional sign** means any sign that is designed and erected for the purpose of providing direction and/or orientation for pedestrian or vehicular traffic with or without reference to, or inclusion of, the name of a product sold or service performed on the lot or in a building, structure or business enterprise occupying the same.

**Display sign** means a sign either 1) mounted on a building wall oriented to pedestrians, or 2) a freestanding sign oriented to occupants of a vehicle in a drive aisle.

**Electronic message center sign** means a sign capable of displaying words, symbols, figures or images that can be electronically or mechanically changed by remote or automatic means.

**Externally illuminated** means lighting by means of a light source which is directed at a reflecting surface in such a way as to illuminate the sign from the front, or a light source which is primarily designed to illuminate the entire building facade upon which a sign is displayed. External illumination does not include lighting which is primarily used for purposes other than sign illumination; e.g., parking lot lights, or lights inside a building which may silhouette a window sign but which are primarily installed to serve as inside illumination.

**Fabric sign** includes any temporary sign, banner, pennant, valance or advertising display constructed of cloth, canvas, fabric or other light material, with or without frames, which is not permanently fixed to a supporting structure.

**Flag.** A fabric device similar to and including national and state flags, designed to be attached to a flagpole.

**Flagpole** means a pole, either building-mounted or freestanding, that is used for displaying a flag.

**Flashing** means a pattern of changing light illumination where the sign illumination alternates suddenly between fully illuminated and fully non-illuminated for the purpose of drawing attention to the sign.

**Freestanding sign** means a sign which is not attached to a building.

**Frontage** means the linear frontage - Primary or Secondary - of a lot, parcel or site abutting on a public street, park, plaza, walkway, or alley.

**Grade** (*ground level*) means the average of the finished grade surface elevation as measured in Section 3.1.1.

**Halo lit** means an illuminated reverse channel letter (open or translucent back) so light from the letter is directed against the surface behind the letter producing a halo lighting effect around the letter. Also referred to as silhouette lit or back lit.

**Handheld sign** means a temporary sign held, suspended or supported by an individual. Handheld signs do not include handheld signs utilized for traffic control or safety purposes. Also known as a human directional, sign spinner or sign twirler sign.

**Hazard** means whenever any portion, support structure or appurtenance of a sign is likely to fail or to become detached or dislodged or collapse.

**Iconic sign** means an existing non-conforming sign with a distinctive architectural style and specifically designated as an Iconic Sign as provided herein.

**Incidental sign** means a small sign affixed to a building or structure, machine, equipment, fence, gate, wall, gasoline pump, public telephone, or utility cabinet.

**Inflatable sign** means a balloon, blimp or other inflated object used for attracting attention.

**Internal illumination** means lighting by means of a light source which is within a sign having a translucent background, silhouetting opaque letters or designs, or which is within letters or designs which are themselves made of a translucent material.

**Kiosk** means a small structure, typically located within a pedestrian walkway or similar circulation area, and intended for use as a key, magazine or similar type of small shop, or for use as display space for posters, notices, exhibits, etc.

**Landmark Sign** means an existing sign with a distinctive architectural style and historic significance which has been officially designated as a Landmark Sign as provided herein.

**Light source** includes neon, fluorescent or similar tube lighting, the incandescent bulb (including the light-producing elements therein) light-emitting diode (LED) and any reflecting surface which, by reason of its construction and/or placement, becomes in effect the light source.

**Logo** means an emblem, letter, character, picture, trademark or symbol used to represent any firm, organization, entity or product.

**Lot** means a portion or parcel of land, whether part of a platted subdivision or otherwise, occupied or intended to be occupied by a building or use and its accessories, together with such yards as are required under the provisions of the Louisville Municipal Code. A lot must be an integral unit of land held under unified ownership in fee or in cotenancy, or under legal control tantamount to such ownership.

**Maintenance** means the repairing or repainting of a portion of a sign structure; periodic changing of bulletin board panels; or renewing of copy which has been made unusable by ordinary wear and tear, weather or accident.

**Marquee** means a permanently-roofed structure with changeable messages attached to and supported by a building above an entrance.

**Marquee sign** means any sign made a part of a marquee and designed to have changeable copy.

**Message hold time** means the time interval a static message must remain on the display before transitioning to another message.

**Multi-tenant building** means a structure housing more than one retail business, office or commercial venture but not including residential apartment buildings, which share the same lot, access and/or parking facilities.

**Mural** means a picture or graphic illustration applied directly to a wall of a building or structure that does not advertise or promote a particular business, service or product.

**Nonconforming sign** means a sign which was validly installed under laws or ordinances in effect at the time of its installation, but which is in conflict with the current provisions of these regulations.

**Off-premise sign** means a sign which advertises or directs attention to products or activities not provided on the parcel or site upon which the sign is located.

**Owner** means a person, firm, corporation or other legal entity recorded as such on the records of the County Assessor including a duly authorized agent or attorney, a purchaser, devisee, fiduciary or a person having a vested or contingent interest in the property in question.

**Pennant** means a triangular, square or rectangular shaped flag attached in a string-type manner. Pennants do not contain any words, logos or emblems.

**Permanent sign** means any sign constructed of durable materials and affixed, lettered, attached to or placed upon a fixed, non-movable, non-portable supporting structure.

**Pole sign** means a permanent sign supported by one or more poles or pylons.

**Projecting sign** means a double-faced sign attached perpendicular to the wall of a building or structure which projects over private or public property.

**Raceway** means an enclosed box that functions as a mounting mechanism, and electronic component enclosure for

wall mounted signage.

**Roof** means the cover of any building, including the eaves and similar projections.

**Roofline** means the highest point on any building where an exterior wall encloses usable floor space, including floor area for housing mechanical equipment. The term “roofline” also includes the highest point on any parapet wall, providing such parapet wall extends around the entire perimeter of the building.

**Roof sign** means a sign erected upon or above a roof or parapet wall of a building and which is wholly or partially supported by such building.

**Sandwich board** means a type of portable sign that is intended to be placed on a hard surface, most commonly a sidewalk. These signs include A-frame signs, signs that are suspended from the top member of an A-frame, signs with weighted bases, and comparable signs.

**Setback** means the distance from the property line to the nearest part of the applicable building, structure, or sign, measured perpendicularly to the property line.

**Sign** means any written copy, display, illustration, insignia or illumination used to communicate a message or idea which is displayed or placed in view of the general public, and shall include every detached sign and every sign attached to or forming a component part of any marquee, canopy, awning, pole, vehicle or other object, whether stationary or movable.

**Sign face** means the exterior display surface of a sign (including nonstructural trim, yet exclusive of the supporting sign structure) upon, against, or through which a message is displayed or illustrated.

**Sign height** shall be the vertical distance from established grade at the base of the sign to the highest element or the uppermost point on the sign or sign structure.

**Sign program** means a design package that identifies a coordinated project theme of uniform design elements for all sign associated with a building, including color, lettering style, material, and placement.

**Site** means a lot, lots, parcel or tract of land under common ownership, or developed together as a single development site, regardless of how many uses occupy the site.

**Site sign** means a temporary freestanding sign constructed of vinyl, plastic, wood or metal and designed or intended to be displayed for a limited period of time on a site with an active listing for sale or for rent, or on properties with active building permits.

**Street frontage** means the linear frontage (or frontages) of a lot or parcel abutting on a private or public street which provides principal access to, or visibility of, the premises.

**Teardrop banner sign** means a type of temporary sign consisting of cloth, bunting, canvas or similar fabric, attached to a single vertical support structure with distinctive color, words, patterns or symbolic logos for display. Also known as a feather banner, flying banner or a wave banner sign.

**Temporary sign** means any sign based upon its materials, location and/or means of construction, e.g., light fabric, cardboard, wallboard, plywood, paper or other light materials, with or without a frame, intended or designed to be displayed for a limited period of time.

**Traffic control sign** means a sign erected in a public right-of-way by an authorized governmental agency for the purposes of traffic regulation and safety.

**Transition duration** means the time interval it takes the display to change from one complete static message to another complete static message.

**Transition method** means a visual effect applied to a message to transition from one message to the next. Transition methods include:

- a. Dissolve – a frame effect accomplished by varying the light intensity or pattern, where the first frame gradually appears to dissipate and lose legibility simultaneously with the gradual appearance and legibility of the second frame.
- b. Fade – a frame effect accomplished by varying the light intensity, where the first frame gradually reduces intensity to the point of not being legible (i.e. fading to black) and the subsequent frame gradually increases intensity to the point of legibility.

**Vehicle sign** means a sign that is printed, painted upon or attached to motor vehicles, including semi-truck trailers, used primarily for the delivery of products, passengers or services or for business purposes other than as a sign.

**Vision clearance area** means a triangular area on a lot at the intersection of two streets, a street and a railroad, a street and an alley, or a street and a recreational trail, two sides of which are curb lines measured from the corner intersection of the curb lines to a distance specified in the Sec. 17.08.590 of the Louisville Municipal Code.

**Wall sign** means any sign painted on or affixed to the wall of a building or structure, or any sign consisting of cut-out letters or devices affixed to a wall with no background defined on the wall in such a manner that the wall forms the background surface of the sign.

**Window** means an opening for letting in light or air or for looking through, usually having a pane or panes of glass, etc. Spandrel glass that appears to be a window shall not be considered as such.

**Window sign** means any sign which is applied or attached to either the interior or exterior of a window and intended to be viewed from outside the building or structure.

**Yard sign** means a temporary freestanding sign constructed of paper, vinyl, plastic, wood, metal or other comparable material, and designed or intended to be displayed for a limited period of time on a lot with one or more existing permanent structures.

Location/Property	Area	Freestanding Sign Area	Draft Code Freestanding Sign Area	Existing Freestanding Sign Height	Draft Code Freestanding Sign Height	Bldg Square Footage
Alfalfas and Centre Court	Commercial	54 sf	60 sf - Multi-tenant	11.5 ft tall	12 ft tall - Multi-tenant	32,093 sf
Village Square	Commercial	54 sf	60 sf - Multi-tenant	12.5 ft tall	12 ft tall - Multi-tenant	45,000 sf
Century Retail Center	Commercial	92 sf (28 sf allowed incorrectly though a building permit)	60 sf - Multi-tenant	12 ft tall	12 ft tall - Multi-tenant	33,150 sf
Avista	Commercial	48 sf	96 sf - Multi-tenant	15 ft tall	12 ft tall - Multi-tenant	200,000+ sf
Louisville Plaza	Commercial	96 sf	96 sf - Multi-tenant	14 ft tall	12 ft tall - Multi-tenant	200,000+ sf
168 Centennial	Office	13 sf	48 sf - Multi-tenant office	6 ft tall	8 ft tall - Multi-tenant office	57,000 sf
400 S McCaslin	Office	32 sf	48 sf - Multi-tenant office	6 ft	8 ft tall - Multi-tenant office	33,000 sf
Delo Plaza	Mixed Use	53 sf	60 sf - Multi-tenant	12 ft tall	12 ft tall - Multi-tenant	13,600 sf
Lowes	Commercial	32 sf	48 sf - Single tenant	5 ft tall	8 ft tall - Single tenant	
Goddard School	Commercial	43 sf	48 sf - Single tenant	7 ft tall	8 ft tall - Single tenant	

Sign Type	Standard	Existing Regulation	Proposed Regulation	Comments
General Standards	Restrictions on raceways	Only prohibited downtown	Prohibited in downtown, design standards in 3.2.2	
	Electronic Message Centers	None, prohibited under moving signs	New standards in 3.4, allowed on gas station monument signs and certain display signs, may be allowed elsewhere with PUD	
	Character height	18" max industrial areas, 24" max commercial areas, 8" min on monument signs	None	
	Illumination	Varies	Varies, generally standards are updated to allow more modern technology	
Awning Signs, 4.2	Downtown, maximum area	1 sf/1 lin ft awning	40% of awning face	
	Commercial, maximum area	None	40% of awning face	
	Mixed-Use, maximum area	Not allowed on arterials, 1 sf/1 lin ft awning elsewhere	40% of awning face	
Canopy Signs in Vehicular Areas, 4.3.a	Maximum area	None	25% of the face of the canopy, on properties with a canopy authorized through a PUD	Also cannot wrap a canopy with colors and materials associated with the design of the canopy sign
Canopy Signs in Pedestrian Areas, 4.3.b	Downtown, maximum area	1 sf/1 lin ft canopy	1 sf/1 lin ft canopy	
	Commercial, maximum area	None	2 sf/1 lin ft canopy	
	Mixed-Use, maximum area	None on arterials, 1 sf/1 lin ft canopy elsewhere	1 sf/1 lin ft canopy	
	Residential, maximum area	None	1 sf/1 lin ft canopy, Multi-Family and Institutional only	
Display Signs, 4.4	Downtown, maximum area	Wall only, 8 sf	Wall only, 8 sf	
	Commercial, maximum area	None	8 sf wall, 32 sf drive-thru	
	Mixed-Use, maximum area	None for arterials, wall only 8 sf elsewhere	8 sf wall, 32 sf drive-thru	
	Maximum height, all areas	None	7 ft	
	Electronic Message Centers	None	In Commercial or Mixed-Use only	

Sign Type	Standard	Existing Regulation	Proposed Regulation	Comments
Window Signs, 4.5	Downtown, maximum area	20% of window or 8 sf, whichever is less	20% of window or 8 sf, whichever is less	1st floor windows only
	Commercial, maximum area	25% of window	25% of window	
	Mixed-Use, maximum area	25% of window	25% of window or 12 sf, whichever is less	
	Industrial, maximum area	25% of window, limited to tenant name only	10% of door/window, 1 per entry	
	Residential, maximum area	None	10% of door/window, 1 per entry, Multi-Family and Institutional only	
Kiosk Signs, 4.6	Downtown, maximum height	PUD only, no standards	7 ft, with PUD	
	Commercial, maximum height	PUD only, no standards	7 ft, with PUD	
	Mixed-Use, maximum height	PUD only, no standards	10 ft, with PUD	
	Industrial, maximum height	PUD only, no standards	Not allowed	
Marquee Signs, 4.7	Downtown, maximum area	2 sf/1 lin ft frontage	2 sf/1 lin ft frontage	
	Commercial, maximum area	None	1 sf/1 lin ft frontage, not to exceed 150 sf	
	Mixed-Use, maximum area	Not allowed on arterials, 2sf/1 lin ft frontage elsewhere	2 sf/1 lin ft frontage, not to exceed 60 sf	
	Downtown, maximum height	4 ft	4 ft	
	Commercial, maximum height	None	8 ft	
	Mixed-Use, maximum height	Not allowed on arterials, 4 ft elsewhere	6 ft	
Murals, 4.8	Downtown, maximum area	50% of building façade, provided wall has minimum 500 sf uninterrupted space	100% building frontage	Not on primary frontage
	Commercial, maximum area	None	75% building frontage	
	Mixed-Use maximum area	Not allowed on arterials, Downtown standards for other areas	100% building frontage	
	Residential, maximum area	None	50% building frontage, Institutional uses only	
Projecting Signs, 4.9	Downtown, maximum area	9 sf	9 sf	
	Commercial, maximum area	4 sf	12 sf	
	Mixed-Use, maximum area	4 sf on arterials, 9 sf elsewhere	9 sf	
	Industrial, maximum area	Not permitted	Not permitted	
	Maximum number	1 per tenant	1 per tenant per frontage, not to exceed 2 signs	

Sign Type	Standard	Existing Regulation	Proposed Regulation	Comments
Freestanding Signs, Residential 4.10a	Maximum number	1 per primary subdivision entrance	Single family neighborhood - 1 per neighborhood entrance, not to exceed 4 signs	
			Multi-family property - 1 at each entry drive, not to exceed 2 signs	
			Institutional use - 1 at each entry drive, not to exceed 2 signs	
	Maximum area	32 sf	Single family neighborhood - 32 sf	
			Multi-family property - 40 sf	
			Institutional use - 40 sf	
	Maximum height	8 ft	Single family neighborhood - 6 sf	
			Multi-family property - 8 sf	
			Institutional use - 8 sf	

Sign Type	Standard	Existing Regulation	Proposed Regulation	Comments
Freestanding Signs, Commercial 4.10b	Maximum number	1 per building, more through PUD	Commercial single tenant - 1 per frontage, not to exceed 2 signs	Sites with more than 500 ft of frontage may have another sign meeting the secondary standards on that frontage
			Commercial multi-tenant - 1 per frontage, not to exceed 4 signs	
			Office single tenant - 1 per frontage, not to exceed 2 signs	
			Office multi-tenant - 1 per frontage, not to exceed 3 signs	
	Maximum area	60 sf retail, 40 sf office	Commercial single tenant -48 sf, 24 sf secondary	
			Commercial multi-tenant - 60 sf when less than 60,000 sf FA, 96 sf when more than 60,000 sf FA, 32 sf secondary	
			Office single tenant -40 sf, 16 sf secondary	
			Office multi-tenant - 48 sf when less than 60,000 sf FA, 60 sf when more than 60,000 sf FA, 24 sf secondary	
			Adjacent to US 36 - additional 50% in area	
	Maximum height	None	Commercial single tenant - 8 ft, 5 ft secondary	
			Commercial multi-tenant - 12 ft, 6 ft secondary	
			Office single tenant - 6 ft, 5 ft secondary	
			Office multi-tenant - 8 ft, 6 ft secondary	
			Adjacent to US 36 - additional 100% in height	

Sign Type	Standard	Existing Regulation	Proposed Regulation	Comments
Freestanding Signs, Industrial, 4.10c	Maximum number	1 per building, more through PUD	Single-tenant - 1 per frontage, not to exceed 2 signs	of frontage may have another sign meeting the secondary standards on that frontage
			Multi-tenant - 1 per frontage, not to exceed 4 signs	
	Maximum area	25 sf	Single-tenant - 25 sf, 15 sf secondary	
			Multi-tenant - 40 sf, 25 sf secondary	
	Maximum height	6 ft	Single-tenant - 6 ft, 5 ft secondary	
			Multi-tenant - 8 ft, 6 ft secondary	
Freestanding signs, Mixed-Use, 4.10d	Maximum number	1 per building, more through PUD	signs	of frontage may have another sign meeting the secondary standards on that
			Multi-tenant - 1 per frontage, not to exceed 4 signs	
	Maximum area	60 sf retail, 40 sf office on arterials, 9 sf elsewhere	secondary	
			Multi-tenant, arterial frontage - 60 sf, 32 sf secondary	
			Single-tenant, non-arterial frontage - 24 sf, 16 sf secondary	
			Multi-tenant, non-arterial frontage - 32 sf, 24, sf secondary	
	Maximum height	None on arterials, 6 sf elsewhere	Single-tenant, arterial frontage - 8 ft, 5 ft secondary	
			Multi-tenant, arterial frontage - 12 ft, 6 ft secondary	
			Single-tenant, non-arterial frontage - 6 ft, 5 ft secondary	
			Multi-tenant, non-arterial frontage - 8 ft, 6 ft secondary	

Sign Type	Standard	Existing Regulation	Proposed Regulation	Comments	
Freestanding signs, Downtown, 4.10e	Maximum number	1 per building	1 per building	Only when other allowed sign types cannot provide adequate messaging	
	Maximum area	9 sf	9 sf		
	Maximum height	6 ft	6 ft		
Wall signs, Residential, 4.11a	Maximum number	undefined	Multi-family - 1 per building		
			Institutional - 1 primary, 1 secondary		
	Maximum area	2 ft	Multi-family - 24 sf		
			Institutional - 32 sf, 15 sf secondary		
	Maximum installation height	undefined	Multi-family - 15 ft or roof line		
			Institutional - 20 ft or roofline		
Maximum sign height	undefined	Multi-family - 2 ft			
		Institutional - 3 ft			
Wall signs, Commercial, 4.11b	Maximum number	1 per tenant frontage, not to exceed 3 signs	Single-tenant - 1 primary, 1 secondary, + 1 each 100 lin ft of wall		
		1 per tenant frontage, not to exceed 3 signs	Multi-tenant - 1 per tenant primary, 1 per tenant secondary		
		1 per tenant	Office only - 1 per tenant primary, 1 per tenant secondary		
	Maximum area	1 sf/1 lin ft, not to exceed 200 sf	1 sf/1 lin ft, not to exceed 200 sf	Single-tenant - 1 sf/1 lin ft, not to exceed 100 sf	
			1 sf/1 lin ft, not to exceed 200 sf	Multi-tenant - 1 sf/1 lin ft, not to exceed 100 sf per sign	
			40 sf each, not to exceed 100 sf total	Office only - 1 sf/1 lin ft, not to exceed 40 sf per sign, 100 sf total	
				Adjacent to US 36, additional 50% area	
	Maximum installation height	None		Single-tenant - Roofline	
				Multi-tenant - Roofline	
				Office only - Roofline	
	Maximum sign height	None, regulates character height		Single-tenant - 3 ft	
				Multi-tenant - 4 ft	
			Office only - 2 ft if less than 25 ft, 3 ft if more than 25 ft tall building		
			Adjacent to US 36, additional 100% height		

Sign Type	Standard	Existing Regulation	Proposed Regulation	Comments
Wall signs, Industrial, 4.11c	Maximum number	1 per tenant	Single tenant - 1 primary, 1 secondary	
			Multi-tenant - 1 per tenant primary, 1 per tenant secondary	
	Maximum area	15 sf per tenant, 80 sf total	Single-tenant - Primary - 1 sf/1 lin ft, not to exceed 60 sf, Secondary - 1sf/1 lin ft, not to exceed 30 sf	
			Multi-tenant -Primary - 1 sf/1 lin ft, not to exceed 40 sf per sign. If a tenant space is larger than 60,000 sf, may have up to 60 sf, Secondary - 1 sf/1 lin ft, not to exceed 25 sf	
	Maximum installation height	25 ft	Roofline	
Maximum sign height	None, regulates character height	3 ft		
Wall signs, Mixed-Use, 4.11d	Standards	Arterial - Same as Existing Commercial Wall Signs, Non-arterial , Same as Existing Downtown Wall Signs	Sites with only residential uses - Proposed Residential Wall Sign standards apply, All other sites - Proposed Commercial Wall Sign standards apply	
Wall signs, Downtown, 4.11e	Maximum number	Subject to max area	Single tenant - 1 primary, 1 secondary, 1 alternative	
			Multi-tenant - 1 per tenant primary, 1 per tenant secondary, 1 per tenant alternative	
	Maximum area	Primary - 2 sf/1 lin ft frontage, Secondary - 1 sf/1 lin ft frontage	Single-tenant - Primary - 2 sf/1 lin ft frontage, Secondary - 1 sf/1 lin ft frontage	
			Multi-tenant - Primary - 2 sf/lin ft frontage, Secondary - 1 sf/1 lin ft frontage	
	Maximum installation height	Roofline, 20 ft, or 2nd story window sill, whichever is less	Roofline, 20 ft, or 2nd story window sill, whichever is less	
Maximum sign height	None	None		

Report generated at: 2018-10-11 19:42:28 by kdean

Project: City Design Guidelines and Sign Code Update

Question: Are there specific areas in the City where electronic message signs should be prohibited?

No.	Contribution	Author	Posted at
1	Not close to homes where lights might disturb people's sleep.	barbara.holub	23 Jul 2018, 12:16 PM
2	They are gaudy and not effective	Pmcentee	23 Jul 2018, 12:28 PM
3	Mainstreet!	Mars512	23 Jul 2018, 12:56 PM
4	South Boulder Rd, McCaslin: They could be distracting and hard to read at 40MPH with small fonts.	darioa	23 Jul 2018, 12:59 PM
5	In the downtown area.	Mortenson947	23 Jul 2018, 01:30 PM
6	EVERYWHERE!!!!!!! NO ELECTRONIC SIGNS	mah	23 Jul 2018, 02:24 PM
7	Historic Downtown	Jeannette96	23 Jul 2018, 02:40 PM
8	Schools and public buildings. I did like the sign at the Lafayette shopping center. That is where I found out there was a pilates class!	nancyk	23 Jul 2018, 02:45 PM
9	everywhere except for schools and churches	RTanner	23 Jul 2018, 03:21 PM
10	Everywhere! Ugly!	dscriber	23 Jul 2018, 03:24 PM
11	Downtown	maryfclough	23 Jul 2018, 03:33 PM
12	This would be useful in areas where there is a large setback from traffic, however many of these only create a distraction and don't add information, beauty or character.	Staje	23 Jul 2018, 04:23 PM
13	none	dunlapcr	23 Jul 2018, 08:45 PM
14	Downtown	Jageiger	23 Jul 2018, 08:59 PM
15	I don't see them as a benefit to the community. There are larger commercial issues rather than flashing signs.	jsroge	24 Jul 2018, 12:14 AM
16	Downtown area	ebenidt	24 Jul 2018, 09:44 AM
17	Every where	faunellwood	24 Jul 2018, 12:18 PM
18	Directly in front of homes not adjacent to biz being advertised.	LaneO84	24 Jul 2018, 01:56 PM
19	Not downtown!	Sucht	24 Jul 2018, 04:41 PM
20	Downtown, certainly. It would detract from the "Old Town" nature of our town.	Bud Talbot	24 Jul 2018, 08:55 PM
21	None along McCaslin or in the downtown. Provide light pollution.	D.Cristopher Benner	25 Jul 2018, 06:53 AM
22	Along roadways because the signs distract drivers and are a safety risk	laesecke	25 Jul 2018, 10:08 AM
23	Would be distracting most places	billyod	26 Jul 2018, 05:45 PM

24	All		mertens	27 Jul 2018, 04:14 PM
		Electronic message signs most likely should be limited to monument signs that support retail or other service oriented businesses.		
25		Perhaps electronic message signs could be allowed for other uses on a temporary and permitted basis.	NMiesen70	29 Jul 2018, 02:26 PM
26		These electronic signs look tacky and are a distraction for drivers.	joneskath	02 Aug 2018, 03:26 PM
27	No		BillK	17 Aug 2018, 09:32 AM
28		Everywhere. This is out of character with our town.	303keane	20 Aug 2018, 12:06 PM
29	All		Plumbdandy	10 Sep 2018, 07:18 PM

END OF REPORT

**Report generated at: 2018-10-11 19:47:29 by kdean**  
**Project: City Design Guidelines and Sign Code Update**  
**Question: Mural Comments**

Contribution	Author	Posted at
1 Never thought of murals. But yes, I think I'll like them!	barbara.holub	23 Jul 2018, 12:13 PM
2 I love them	nancyk	23 Jul 2018, 02:44 PM
3 It's art - art should be everywhere!!	RTanner	23 Jul 2018, 03:19 PM
4 And please paint all of the green utility boxes, like they do in Fort Collins, while you're at it :)	dscriber	23 Jul 2018, 03:23 PM
5 I think it would be wonderful to have as many artistic items on any building around the city. I think of Loveland and how the city sponsors a lot of art around the city. Louisville could do the same. We should support the arts.	vrsalcido	23 Jul 2018, 04:19 PM
6 I love the murals. They add color and beauty and are an expression of local artistry.	Staje	23 Jul 2018, 04:20 PM
7 I believe they are an urban decoration and belong in such. Hell yes!! I travelled through Europe last year and some of	jsroge	24 Jul 2018, 12:13 AM
8 the most intriguing displays of culture were the many large murals and art all over. Artistic expression is the future of a cooperative culture.	LaneO84	24 Jul 2018, 01:51 PM
9 Murals add an artistic flare and beauty to building facades. Diversity and variety can be represented.	Sucht	24 Jul 2018, 04:35 PM
10 As long as the murals are not for commercial purposes and not misinterpreted as billboards.	D.Cristopher Benner	25 Jul 2018, 06:52 AM
11 Grear public art would be an asset in most places	billyod	26 Jul 2018, 05:44 PM
12 If allowed outside of downtown, mural content shall be subject to a City review and approval process to ensure continuity of message etc.	NMiesen70	29 Jul 2018, 02:22 PM
13 They are flat out ugly and most look like graffiti gone bad.	BillK	17 Aug 2018, 09:31 AM
14 The more, the merrier.	Plumbdandy	10 Sep 2018, 07:15 PM

END OF REPORT

**Report generated at: 2018-10-11 19:41:52 by kdean**  
**Project: City Design Guidelines and Sign Code Update**  
**Question: Sandwich Board Comments**

Contribution	Author	Posted at
1 As long as they don't block sidewalks too much Why do downtown business receive special treatment? Why are other Louisville businesses not allowed signs?	barbara.holub	23 Jul 2018, 12:14 PM
2 Now , that said, there should be restrictions on size, placement, etc. There are so many on downtown side walks now they often block pathways there should no sandwich boards anywhere - they obstruct the sidewalk which is already obstructed by folks reading menus and folks stopping to chat with each other and waiters working and tables for business at restaurants.	mah	23 Jul 2018, 02:22 PM
3 No, I hate them in the grocery store and I hate them on the street. Just one more thing to maneuver around!	RTanner	23 Jul 2018, 03:20 PM
4 If any commercial property feels that a sandwich board will help them with foot traffic, then I believe they should be allowed to have these signs. They look good in some areas.	dscriber	23 Jul 2018, 03:24 PM
5 I believe boards to be legitimate and reasonable form of advertising for businesses	vrsalcido	23 Jul 2018, 04:21 PM
6 And there should be no cost or permit for them. Let people promote their businesses at their storefront, only makes sense. Jut need to make sure there are no ADA obstructions.	jsroge	24 Jul 2018, 12:14 AM
7 If they don't unreasonably block sidewalk access, then yes.	LaneO84	24 Jul 2018, 01:53 PM
8 They add visability for small businesses. And seem inviting and quaint.	Sucht	24 Jul 2018, 04:36 PM
9 Helpful and fun	billyod	26 Jul 2018, 05:44 PM

<p>The type, size, material and method of anchoring requirements shall subject to City review and approval to ensure aesthetic quality and safety. Additionally some regulations as to the allowed locations for sandwich boards shall be determined.</p>	<p>NMiesen70</p>	<p>29 Jul 2018, 02:24 PM</p>
<p>This could be an effective way for restaurants and other businesses along McCaslin, South Boulder Road, and other areas with pedestrian traffic to inform potential customers of daily specials, etc.</p>	<p>joneskath</p>	<p>02 Aug 2018, 03:25 PM</p>
<p>They work downtown where there is a lot of foot traffic; they would be hazards on say McCaslin.</p>	<p>BillK</p>	<p>17 Aug 2018, 09:32 AM</p>
<p>With appropriate limitations / regulations</p>	<p>303keane</p>	<p>20 Aug 2018, 12:05 PM</p>
<p>It doesn't seem fair that one commercial district should be allowed to use these but not others.</p>	<p>Plumbdandy</p>	<p>10 Sep 2018, 07:15 PM</p>

END OF REPORT

**Report generated at: 2018-10-11 19:39:57 by kdean**  
**Project: City Design Guidelines and Sign Code Update**  
**Question: Size of Sign Letters**

<b>No.</b>	<b>Contribution</b>	<b>Author</b>	<b>Posted at</b>
1	MINIMIZE signage!	mah	23 Jul 2018, 03:05 PM
2	again, an aging population needs a larger font size	RTanner	23 Jul 2018, 03:28 PM
3	People gotta know where they're headed and a bigger sign on the building is better than a bigger list of signs for the corner. Also, ease of visibility will reduce traffic accidents related to people looking for a place.	LaneO84	24 Jul 2018, 02:10 PM
4	This character size of a sign shall be subject to the location of the building from the street front, zone use of area, surrounding landscape elements and overall proportions of the building or retail development.	NMiesen70	29 Jul 2018, 02:45 PM
5	I don't struggle to see the letters on any existing buildings.	Plumbdandy	10 Sep 2018, 07:43 PM

END OF REPORT

**Report generated at: 2018-10-11 19:46:06 by kdean**  
**Project: City Design Guidelines and Sign Code Update**  
**Question: Size of Signs**

<b>No.</b>	<b>Contribution</b>	<b>Author</b>	<b>Posted at</b>
1	Larger signs would be easier to read but should not be overwhelming	barbara.holub	23 Jul 2018, 12:31 PM
2	We came from CA and the signage is terrible here. We had trouble finding the DMV !	nancyk	23 Jul 2018, 02:51 PM
3	Let's keep Louisville beautiful! Few signs, greater beauty.	mah	23 Jul 2018, 03:04 PM
4	we have an older population that an increase in font size would help tremendously	RTanner	23 Jul 2018, 03:28 PM
5	Or less	Louisvillejoy	25 Jul 2018, 06:35 AM
6	Bigger is not better for these In efforts to assist retail business monument signs need to be visible from vehicular ways. Depending upon the landscaping along the street front this	billyod	26 Jul 2018, 05:53 PM
7	may require that a monument sign is larger than currently allowed. Again I think the size, design, materials, foundation and lighting of monuments signs shall be subject to City review and approval.	NMiesen70	29 Jul 2018, 02:44 PM
8	Keep them small	Wukoki	30 Jul 2018, 10:41 PM
9	Size increase commensurate with information size, e.g. not just large signs with small type, but big signs with big type. Your question asks one thing. Your example illustrates	BillK	17 Aug 2018, 09:37 AM
10	another. Are you asking about increasing the height allowance, or allowing for more square feet, or both? I don't see a need for signs to be any larger OR taller than existing.	Plumbdandy	10 Sep 2018, 07:42 PM

END OF REPORT



September 19, 2018

To Whom It May Concern:

My name is Donna Sigmond and I have been a small business owner in the Louisville area for over 16 years. I am the owner of East West Wellness in the Colony Square II Shopping Center. This past Saturday, we were informed by the Louisville Police Department that our A Frame board situated in front our business violated municipal codes 17.24.030, 71.24.040, and 17.24.170. According to our contact at the City Planning, there is no current permits available for signage of this type. The only permit available at this time is a temporary permit, which is expensive and is only operational for 30 days. This is a definite issue for small businesses, as A Frame and other small freestanding signage is an essential advertising tool. These signs are already an added expense to our business, I have spent \$180 on an item that I can no longer use. We already pay a hefty amount in taxes to the city (property, sales, etc.) and having to pay another large cost is difficult on small business owners. We need to make a distinction in the municipal code between signage that is directly in front of a business used for advertising verses the signs that litter the area and are not within the business frontage or property line.

Small signage for small business owners is essential to help create a thriving business, as well as help the local economy thrive. Support small business by updating the municipal code to include small freestanding signs displayed within the immediate area of the business entrance.

Sincerely,

A handwritten signature in blue ink that reads "Donna Sigmond". The signature is written in a cursive style.

Donna Sigmond, RDN, LAc, LCh, Dipl OM, CLT, FAARFM, ABAHP, Doctorate Candidate

## Kristin Dean

---

**From:** Citizen Inquiries  
**Sent:** Tuesday, May 1, 2018 2:09 PM  
**To:** Kristin Dean  
**Subject:** FW: City of Louisville, CO: Design Guidelines and Sign Code Update Public Workshop #1

FYI

Emily Hogan  
Assistant to the City Manager  
City of Louisville  
303-335-4528  
[ehogan@louisvilleco.gov](mailto:ehogan@louisvilleco.gov)

Sign up for the new Community Update E-Newsletter [here!](#)

**From:** Regina Macy [mailto:reginamacy@gmail.com]  
**Sent:** Tuesday, May 1, 2018 12:44 PM  
**To:** Citizen Inquiries <info@louisvilleco.gov>  
**Subject:** Re: City of Louisville, CO: Design Guidelines and Sign Code Update Public Workshop #1

Hi All, Thank you for your service. Since we live in such a beautiful city with great views please keep in mind the placement of signs. Signs can so easily ruin views. I know you'll do your best. Sincerely, Regina Macy 1021 Willow Place 80027

On Wed, Apr 25, 2018 at 9:01 AM, City of Louisville, CO <[info@louisvilleco.gov](mailto:info@louisvilleco.gov)> wrote:

### **Design Guidelines and Sign Code Update Public Workshop #1**

- Date: 04/26/2018 6:30 PM - 8:30 PM
- Location: City Hall  
[749 Main Street](#)  
[Louisville, Colorado 80027](#)



## Design Guidelines & Sign Code

Please join us for a public workshop to discuss and provide input on the update to the City's commercial and industrial design guidelines and the sign code. We will discuss topics such as building design, landscaping, sidewalk and bicycle connections, lighting, signs, and parking. Visit the [project website](#) for more information and [Engage Louisville](#) to participate online. Be sure to sign up for the Design Guidelines and Sign Code calendar and event [e-notifications](#) to stay informed of upcoming meetings and for other ways to participate.

Having trouble viewing this email? [View on the website instead.](#)

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## Lisa Ritchie

---

**From:** Citizen Inquiries  
**Sent:** Tuesday, April 9, 2019 11:33 AM  
**To:** Lisa Ritchie  
**Subject:** FW: City of Louisville, CO: Draft Sign Code - Public Open House

Hi Lisa. Do you want to respond to this? Thanks!!

Emily Hogan  
Assistant City Manager for Communications & Special Projects  
City of Louisville  
303-335-4528  
[ehogan@louisvilleco.gov](mailto:ehogan@louisvilleco.gov)

---

**From:** Ernie Villany [mailto:ernest.villany.cpa@gmail.com]  
**Sent:** Monday, April 8, 2019 11:43 PM  
**To:** Citizen Inquiries <info@louisvilleco.gov>  
**Subject:** Re: City of Louisville, CO: Draft Sign Code - Public Open House

63 pages to address signage?

Sent from my iPhone

On Apr 8, 2019, at 6:30 PM, City of Louisville, CO <[info@louisvilleco.gov](mailto:info@louisvilleco.gov)> wrote:

### **Draft Sign Code - Public Open House**

- Date: 05/01/2019 6:30 PM - 7:30 PM
- Location: City Hall  
[749 Main Street](#)  
[Louisville, Colorado 80027](#)



The draft Sign Code is ready for review! We want to hear from you with your comments and feedback. You can view the draft Sign Code at [EngageLouisvilleCo.org](http://EngageLouisvilleCo.org). Staff from the Planning Department will provide a brief presentation on the new draft Sign Code, and will be available to answer questions and hear your thoughts. If you aren't able to attend the meeting, you can provide your comments on Engage Louisville, or [Email](#) staff.

Having trouble viewing this email? [View on the website instead.](#)

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# COMMENT FORM

Draft Sign Code | Public Open House | May 1, 2019

**NAME:** Robbin Meets, Stauffer Team Real Estate

**ADDRESS:** 932 Main St.

**EMAIL:** robbin@staufferteam.com

## PROVIDE ANY ADDITIONAL COMMENTS BELOW:

In regards to temporary signage, my concern is that enforcement of signs in right of way will be too restrictive. For events (eg., garage sales, open houses) the inability to put a sign in a public area to advertise the event could make it difficult, if not impossible, to conduct the event. This would affect residents as well as businesses. I would suggest an allowance for these types of signs for a limited time - i.e., weekends between 10am-4pm, or signs allowed for no more than 4 hours at a time. The size and materials could still be regulated but some kind of an opportunity to use these signs is important. Thank you for your consideration!

## SIGN CODE UPDATE OPEN HOUSE

Additional feedback can be sent to [lritchie@louisvilleco.gov](mailto:lritchie@louisvilleco.gov)

## Lisa Ritchie

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**From:** Ashley Stolzmann  
**Sent:** Tuesday, April 9, 2019 11:29 PM  
**To:** Lisa Ritchie  
**Cc:** Rob Zuccaro  
**Subject:** FW: Louisville Municipal Code Courtesy Notice

Hi Lisa,

Some feedback is forwarded below on the sandwich board issue from a couple of the business owners perspective. Would it be possible to have Planning Commission spend some time deliberating about the pros and cons of the sandwich board section in particular as to how it relates to downtown?

Thank you!  
Ashley Stolzmann

---

From: Mike Price [littlehorsebooks@gmail.com]  
Sent: Tuesday, April 9, 2019 7:46 PM  
To: Tracy Hobbs  
Cc: Ashley Stolzmann; liz@pitterpattershop.com; carol.fingerplaystudio@gmail.com; Sarah Lynch; Trent Davol; oldfriendsllc@yahoo.com; Christopher Leh; Jay Keany; caleb@foxpropertymgmt.com; triviumsalon2@gmail.com; kimberlydba@gmail.com; erin@elcphoto.com; jfred740front@gmail.com; eomj@master-jeweler.net  
Subject: Re: Louisville Municipal Code Courtesy Notice

Hi Ashley.

Tracy's points are all valid in my opinion. I have the same issues with the ordinance.

Mike

Sent from my iPhone

On Apr 9, 2019, at 7:19 PM, Tracy Hobbs <tracy@eleanorandhobbs.com<mailto:tracy@eleanorandhobbs.com>> wrote:

Ashley

Thank you for sending me the courtesy message. This new code doesn't meet the needs of my business. It appears to be very similar to the old code. It still does not allow us to place signs at the corner of our block (which is what is needed to draw traffic to our stores). This also adds that we have to weight down our signs which is impractical. In the six years of doing business, I have not found a single way to protect my sign from falling in front range wind. I think that requirement is vague and unattainable. Even if anchored, a strong wind will knock signs down. The question then would be, will we get ticketed if our sign is anchored and still falls? If yes, then do we really need the anchor?

The idea behind a Sandwich board (that planning committee doesn't seem to understand) is to draw in traffic from the more trafficked Main Streets. If you are in Main Street, a sandwich board adjacent to your front door is fine, but if you are like myself on a side street, The sandwich board needs to be at the corners of your block. I am in the middle of the block on Walnut. For my sign to bring traffic in, it needs to be at the corner of Main and Walnut, or at Front and Walnut.

These adjustments need to be made to the pending ordinances.

Tracy Hobbs  
901 Front Street  
Louisville CO 80027

Sent from my iPhone

On Apr 9, 2019, at 10:59 AM, Ashley Stolzmann <ashleys@louisvilleco.gov<mailto:ashleys@louisvilleco.gov>> wrote:

Hi Tracy & Mike,

I want to make sure that you know that the staff have posted a draft of the proposed sign code:

<http://www.louisvilleco.gov/home/showdocument?id=22949>

The draft has not come to Council yet & there is still plenty of time for changes and public input. Does the section on sandwich boards meet your needs (page 54)?

Thank you,

Ashley Stolzmann

Councilmember

303-570-9614

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From: Mike Price <littlehorsebooks@gmail.com<mailto:littlehorsebooks@gmail.com>>

Sent: Wednesday, October 3, 2018 8:33 PM

To: ernie@bouldervalleycpa.com<mailto:ernie@bouldervalleycpa.com>

Cc: Tracy Hobbs; zuccaro@louisvilleco.gov<mailto:zuccaro@louisvilleco.gov>; City Council; Carol Bosshard; Liz Connor; jfred740front@gmail.com<mailto:jfred740front@gmail.com>; Rori Bass; ICE Chris Hobbs; Heather Balser

Subject: Re: Louisville Municipal Code Courtesy Notice

I received the same warning for one of my signs. It's comical.

Sent from my iPhone

On Oct 3, 2018, at 8:12 PM, <ernie@bouldervalleycpa.com<mailto:ernie@bouldervalleycpa.com>>  
<ernie@bouldervalleycpa.com<mailto:ernie@bouldervalleycpa.com>> wrote:

Stories like this have become exhausting and painful to hear. They are offensive on multiple levels, yet sadly, not at all unexpected. In fact, I'm kind of surprised it has taken this long for us to get to this point.

In the nearly ten years I've lived here, the city has clearly lost its way. On multiple levels. Perhaps they never knew which way they should be going and only dumb luck got them here in the first place, but a clear and rapidly growing disconnect has become too big to ignore.

Perhaps that's why Boulder Valley CPAs is leaving Louisville and buying a building in Lafayette? Making that city its new home. Perhaps that's why dozens of people I speak to complain about the stunted growth of our government's leaders? Perhaps that's why people feel there's no cohesive or strategic plan for the future of our city? Perhaps that's why the King Soopers mall looks like an urban retail graveyard? Perhaps that's why retail giants like Kohl's and Lowe's are reviewing their exit strategies? Perhaps we'll never know what really plagues Louisville leadership, but what I do know is the whole thing stinks. As a homeowner I hope someone in city leadership cares enough to prove me wrong, but I'm not optimistic. If leadership can't figure it out I hope the citizens of Louisville do and vote them out.

Respectfully,

Ernest J. Villany, CPA

From: Tracy Hobbs <tracy@eleanorandhobbs.com<mailto:tracy@eleanorandhobbs.com>>  
Sent: Wednesday, October 3, 2018 5:11 PM  
To: zuccaro@louisvilleco.gov<mailto:zuccaro@louisvilleco.gov>; City Council <Council@louisvilleco.gov<mailto:Council@louisvilleco.gov>>  
Cc: Mike Price <littlehorsebooks@gmail.com<mailto:littlehorsebooks@gmail.com>>; Carol Bosshard <carol.fingerplaystudio@gmail.com<mailto:carol.fingerplaystudio@gmail.com>>; Liz Connor <liz@pitterpattershop.com<mailto:liz@pitterpattershop.com>>; jfred740front@gmail.com<mailto:jfred740front@gmail.com>; Rori Bass <triviumsalon2@gmail.com<mailto:triviumsalon2@gmail.com>>; ICE Chris Hobbs <cshobbs@ameritech.net<mailto:cshobbs@ameritech.net>>; Ernie Villany <ernie@bouldervalleycpa.com<mailto:ernie@bouldervalleycpa.com>>; Heather Balser <Heatherb@Louisvilleco.gov<mailto:Heatherb@Louisvilleco.gov>>  
Subject: Louisville Municipal Code Courtesy Notice

Today, Officer S. Kenney came into my store and gave me a citation for 17.24.030 Sign Permits Required and 17.24.040 General standards for signs. She explained to me that I cannot have my sandwich board at the corner of my block, but only in front of and adjacent to my store.

My understanding is that several other businesses in downtown were also given the citation and asked to remove the sandwich boards from the corners of their blocks. We were told the Mr Zuccaro, Director of Planning and Building Safety is a "stickler for code" and that the sandwich boards were "cluttering the side walks".

I explained to officer S. Kenney that I am a stickler for trying to bring business into my store and that is why the Eleanor and Hobbs sandwich board is at the corner of Mani St. and Walnut. The walking traffic in downtown Louisville is dismal at best. If we cut off that small trickle of walking traffic that is on Main Street, I might as well close my doors. Who needs a brick and mortar shop if no one is going to walk in. As each year passes, traffic becomes less and less. For the City of Louisville to enforce a code that hurts business is beyond my understanding.

It becomes ever more clear to me that Louisville isn't interested in supporting small businesses, walking traffic, or a cohesive business environment. I would hope that Louisville City Council would change this city code to read that business owners are allowed to have Sandwich boards at each corner of the block where they reside.

Please let me know what I/We need to do to have this code changed.

Tracy Hobbs  
Owner  
Eleanor and Hobbs

901 Front Street Suite 100  
Louisville, Colorado 80027  
(720) 708-3016  
tracy@eleanorandhobbs.com<mailto:tracy@eleanorandhobbs.com>  
shop-eleanor.com<http://shop-eleanor.com/>

## Lisa Ritchie

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**From:** Michael Ulm <mokba8@gmail.com>  
**Sent:** Monday, April 29, 2019 1:45 PM  
**To:** Lisa Ritchie  
**Cc:** Gmail  
**Subject:** Re: Draft Sign Code Focus Group

Lisa, thanks for including me in the review effort of the sign code draft.

First off let me say, job well done! This is one of the most efficiently comprehensive documents I have viewed/used on the subject. Great work on getting this doc this tight and easily usable.

Just a couple of comments:

1. Section 3.1.3.b - Maybe a diagram showing how a sign displaying more than one visible face might appear?? This is kind of a tall order for a diagrammatic response and might be wishful thinking on my part.
2. Section 3.4.1.a - Do you need to mention that Underwriter Labels need to be visible from the ground? This always seems to be a point of contention as most sign companies would like to hide these for aesthetic reasons. It is truly important for sign compliance inspection but not for much else. Just something to consider.
3. Section 3.6.1.g - Is there really a permit requirement for routine maintenance? If these means re-lamping, etc. then maybe this type of work should be better defined.
4. The formatting for section 4 and 5 is brilliantly simple and efficient. Once again, maybe one of the best implementations I've seen of this info.

That's all I've got. This is really well done and will perform well in the ongoing development of Louisville. If you have any questions, comments or need further explanation please shoot me an email.

Thanks, Michael

Michael Ulm  
[mokba8@gmail.com](mailto:mokba8@gmail.com)

On Apr 13, 2019, at 11:54 AM, Lisa Ritchie <[lritchie@louisvilleco.gov](mailto:lritchie@louisvilleco.gov)> wrote:

Hi everyone,

We'd love to hear from each of you on your own time. There wasn't enough interest in a meeting, which is absolutely fine. If you are able, please send your comments by May 1. If you have any other thoughts or ideas, I'm happy to chat over the phone or set up a separate time to discuss the draft code. Thanks everyone,

Lisa Ritchie, AICP  
Senior Planner  
303-335-4596

Sent from my iPad

On Apr 5, 2019, at 12:45 PM, Lisa Ritchie <[lritchie@louisvilleco.gov](mailto:lritchie@louisvilleco.gov)> wrote:

Hello again,

The sign code is now uploaded for your review on the Engage Louisville website<<https://www.engagelouisvilleco.org/city-design-guidelines-and-sign-code-update>>, and attached to this email. The doodle poll below is still accessible to select your availability, thanks to those of you who have completed your request! We'll set a meeting date by Wednesday of next week, I'll reach back out then to let you know what date was selected.

We are also happy to receive comments via email, or drop by your written comments at City Hall. If you want to discuss with me in person, I'm happy to set up a separate meeting. Please reach out with any questions or concerns. Thanks, and I look forward to hearing from you!

Lisa Ritchie, AICP  
Senior Planner  
City of Louisville  
303-335-4596

From: Lisa Ritchie  
Sent: Monday, April 1, 2019 12:36 PM  
To: '[michael@hostworks.net](mailto:michael@hostworks.net)' <[michael@hostworks.net](mailto:michael@hostworks.net)>; Andy Johnson <[andy@dajdesign.com](mailto:andy@dajdesign.com)>; '[louisville@instantimprints.com](mailto:louisville@instantimprints.com)' <[louisville@instantimprints.com](mailto:louisville@instantimprints.com)>; '[cthoma3@buffalo.edu](mailto:cthoma3@buffalo.edu)' <[cthoma3@buffalo.edu](mailto:cthoma3@buffalo.edu)>; Greg McMenamin <[mcd@mcdallc.com](mailto:mcd@mcdallc.com)>; '[erik@hapcdesign.com](mailto:erik@hapcdesign.com)' <[erik@hapcdesign.com](mailto:erik@hapcdesign.com)>; 'Judy Cruz' <[judy@bscsigns.com](mailto:judy@bscsigns.com)>  
Subject: Draft Sign Code Focus Group

Hello everyone,

Thanks for your participation last year as a focus group member for the updates to the Sign Code and the Design Standards (CDDSG and IDDSG). As you may know, Kristin Dean is no longer with the City. I'll be working on the completion of the updates. The updates to the CDDSG and the IDDSG are still in development, but we have a draft sign code that is ready for your feedback.

At this time, we'd like to set a meeting date to discuss your questions and hear from you about the draft sign code. Please complete the Doodle Poll at the link below. If you are not interested in participating, or would rather provide your feedback outside of the meeting setting, please reach out to me directly.

An email will follow in the next few days with a link to view the draft sign code. We are looking forward to hearing from you! Thanks!

<https://doodle.com/poll/gedhrz6wkfrtsmqj>

Lisa Ritchie, AICP  
Senior Planner  
City of Louisville  
[lritchie@louisvilleco.gov](mailto:lritchie@louisvilleco.gov)<<mailto:lritchie@louisvilleco.gov>>  
303-335-4596

We encourage you to visit our new online maps webpage<<http://www.louisvilleco.gov/residents/departments/planning-building-safety/online-maps>> with planning and land use information.

The Department of Planning & Building Safety is collecting feedback to improve our customer service.

Please let us know how we are doing by completing this short survey!<<https://www.surveymonkey.com/r/DC53NLN>>

<COL Sign Code\_Public Draft 4.3.pdf>

***City Council  
Business Retention and  
Development Committee  
Meeting Minutes***

**April 1, 2019  
Library Meeting Room  
951 Spruce Street  
Louisville, CO 80027**

- I. CALL TO ORDER** –The meeting was called to order by Chair Oberholzer at 8:00 AM in the Library Meeting Room at the Louisville Public Library, 951 Spruce Street, Louisville, Colorado 80027.
- II. ROLL CALL** – The following members were present:

Committee Members Present:

Shelley Angell  
Nicole Mansour  
Steve Erickson  
Mark Oberholzer  
Todd Budin  
Darryl LaRue

Council Liaisons:

Council Member Susan Loo

Absent Committee Members: Scott Reichenberg

Staff Present:

Aaron DeJong, Economic Development Director  
Lisa Ritchie, Senior Planner–Planning & Bldg Safety Dept.  
Rob Zuccaro, Director – Planning & Building Safety Director

Others Present:

Laura Levesque-Catalano Sustainability Advisory Board,  
Jim Tienken, Randy Caranci, Mike Kransdorf, Mike Deborski

**MEETING WAS CALLED TO ORDER BY COMMITTEE CHAIR OBERHOLZER**

**III. APPROVAL OF MARCH 4, 2019 MINUTES** – On proper motion, the Committee approved the BRaD Committee minutes of March 4, 2019.

**IV. APPROVAL OF AGENDA** – Approved.

**V. PUBLIC COMMENTS ON ITEMS NOT ON THE AGENDA:**

**VI. BUSINESS MATTERS OF THE COMMITTEE:**

**1. 2019 Louisville Sign Code Update:**

Senior Planner Lisa Ritchie provided the Committee with a review of the comprehensive update being conducted for the Louisville signage ordinances. Ms. Ritchie noted that the process would seek comment of the public and businesses, and would extend through the summer, with planned presentation to the City Council in the fall. Discussion / questions from the /committee and public included:

- How will the new ordinance handle sandwich boards and sidewalk signs;
- Will there be allowance for Grand Opening signs;
- Teardrop / feather and moving signs;
- Electronic Signs are the future of signage – updated signage code should not unduly restrict use / incorporation of electronic signs;
- Kiosk signs are ideal medium / site for electronic signs;
- Support allowing wall murals;

**2. May Business Forum Discussion:** Aaron DeJong informed the Committee that Dr. Richard Wobbekind had accepted the invitation to present as Keynote Speaker at the upcoming Louisville Business Forum. He is available the week of June 10. The Committee suggested targeting the Forum for:

- Date: Thursday morning June 13 (fall-back date of Wed June 12)
- Time: 8 am networking; Speaker kickoff 8:30 am; Finish 9:30 - 10
- Location: Louisville Rec Center

**3. 2019 BRaD Topic Calendar.** The Committee reviewed the suggested Topic Schedule provided in the agenda packet.

**4. May 1, 2019 Open Government Training (6:30 City Hall).** Members that have not attended the training within the last two years should attend. DeJong notified those who are due for the refresher.

**VII. COUNCIL LIAISON UPDATE.**

- Laura Levesque-Catalano, member of the Louisville Sustainability Advisory Board, informed the Committee about the Louisville Green Business program (flyer attached).
- Ms. Levesque-Catalano noted that Colorado business recycling has much room to improve. Ms. Levesque-Catalano circulated information regarding Colorado

***Planning Commission  
Meeting Minutes  
April 11<sup>th</sup>, 2019  
City Hall, Council Chambers  
749 Main Street  
6:30 PM***

**Call to Order** – Chair Brauneis called the meeting to order at 6:30 PM.

**Roll Call** was taken and the following members were present:

Commission Members Present: Steve Brauneis, Chair  
Dietrich Hoefner  
Keaton Howe  
Tom Rice  
Jeff Moline

Commission Members Absent: Debra Williams  
David Hsu, Vice Chair

Staff Members Present: Rob Zuccaro, Dir of Planning & Building Safety  
Lisa Ritchie, Senior Planner  
Amelia Brackett, Planning Clerk

**APPROVAL OF AGENDA**

Howe moved and Moline seconded a motion to approve the April 11<sup>th</sup>, 2019 agenda. Motion passed unanimously by voice vote.

**APPROVAL OF MINUTES**

Rice moved and Moline seconded a motion to approve the March 14<sup>th</sup>, 2019 minutes. Motion passed unanimously by voice vote.

**PUBLIC COMMENTS ON ITEMS NOT ON THE AGENDA**

None.

**DISCUSSION**

**Draft Sign Code**

Ritchie presented the major areas of proposed change to the City's sign code. The goals of the sign code updated were to consolidate the various documents that govern signage, to respond to Supreme Court rulings from 2015 on municipal sign codes, and to bring the sign code in line with reasonable requests that currently require waivers. She summarized feedback from a focus group, an open house, and a survey on Engage Louisville. In general, participants supported marginally larger signs and other possible changes suggested by the review, but the feedback was inconclusive on electronic signs.

***PUD Process***

Brauneis asked about the difference between “consistency” and “compatibility” in the language and for an explanation on color differentiation requirements.

Ritchie replied that the language matched other waiver criteria meant to ensure that the design was appropriate for the site.

Brauneis observed that “appropriate” was a better word than “compatible” to that end.

Rice suggested getting rid of the “consistent” and just leave “compatible” since “consistent” could be read as “the same” or “nearly the same,” which did not seem to be the intent.

Howe asked if the size of the allowable sign would be based on the size of the lot.

Ritchie and Zuccaro responded that the language was meant to help the signs scale up with the size of the building and the size of the lot.

Howe asked if the language on scale would relate to downtown.

Ritchie agreed that the scale of a downtown project would be different than projects elsewhere in the city, so the “scale” would be different.

Brauneis suggested that “appropriate” would be better than “consistent” for this point, as well.

Rice stated that he liked the first criterion, which demanded “excellence” as a benchmark for obtaining a waiver.

Hoefner suggested looking into the overlap among the four criteria with an eye toward condensing them into fewer points since often the Commission reviewed the list of criteria but then decided on a single point so maybe fewer points would be responsive to that.

***Minor Modifications and Master Sign Program***

Moline wondered if the incentive for an increase of up to 10% sign area through the Master Sign Program was sufficient.

Brauneis asked for the criteria for someone to be considered part of the Master Sign Program.

Ritchie replied that the Master Sign Program was an option for places with unique signage needs in specific uses and the bonus was meant to encourage excellence in design.

Rice agreed with Commissioner Moline’s point that the incentive should be greater, but asked for the thinking behind the 10% number.

Ritchie replied that the community was okay with signs that were a little bigger. 10% on height would be a lot since the height allowance was already high, but an increase beyond 10% for area could be acceptable. She suggested that they could increase the percentage or they could scale back on the by-right option and leave the 20% on area or scale back on the by-right signage size with the increase to 20% as the incentive.

Brauneis noted that scaling back the by-right seemed like penalizing people who wanted to be involved in the Master Sign Program.

Zuccaro stated that staff would bring additional information on this issue to the Commission.

### ***Areas in Louisville***

Ritchie presented the different areas in the sign plan: residential, commercial, industrial, mixed-used, and downtown. She noted that the downtown area was experiencing the least changes to signage criteria, since the City did not receive many waiver requests for the downtown area.

### ***Sandwich board signs***

Ritchie asked for feedback on where businesses could put their sandwich boards vis-à-vis the location of their business and allowing sandwich boards outside of downtown.

Rice asked if there were any caps on the total number of sandwich boards and voiced a concern for having too many of them on sidewalks.

Zuccaro replied that the allowances to have a sandwich board away from your storefront would only apply to alley-access businesses and a couple of private pedestrian alleyways downtown. The proposed language did not allow second-story businesses to have sandwich boards. He added that there was no cap on the total number of sandwich boards.

Brauneis thought it was excessive for businesses on Front Street to advertise on Main Street.

Moline asked for the rationale that business owners used to request allowing businesses on other streets to put their signs on Main Street.

Ritchie responded that these businesses largely made the argument that their signs were more effective if they were on Main Street.

Hoefner stated that he was sympathetic to the alley-fronted businesses. While those businesses knew they were going to have to operate in an alley, he liked the character of the alleyways and wanted to help encourage businesses there. He agreed that there should be limitations on where sandwich boards could be.

Rice noted that these could be considered de facto permanent signs even if they had to be taken in every night.

Zuccaro observed that sandwich boards could bring character to an area, but they had to be done right. He asked for commissioner comment on sandwich boards outside of downtown.

Brauneis and Hoefner noted that some existing signs were not of high quality.

Ritchie replied that there were standards for the design of sandwich boards and no plastic boards or letters were permitted.

Rice asked if there was a model community for regulating sandwich boards.

Zuccaro noted that staff had looked into other communities. The proposed language made it explicit how much sidewalk space had to be left unencumbered, what materials the sandwich boards could be, and how far the boards could be from the business in an effort to reduce clutter.

Howe stated that he was sympathetic with the alleyway issue, but also with the tenants who were paying a premium to be on Main Street. He advocated for linking the signs with the businesses spatially, especially since more clutter diluted the ability of other businesses to advertise.

### ***Murals outside of downtown***

Rice suggested having more regulations and standards for murals since murals could be bad.

Ritchie replied that the permitting process would ensure that there would be no commercial elements embedded in the art since that would be regulated under different criteria. Staff did not want to get into regulating artistic design.

Zuccaro noted that the City already allowed murals. The only thing that was changing downtown was the allowed size.

Moline asked if the proposed language would allow someone downtown to do an entire side.

Ritchie replied that someone could cover the sides and the back of their buildings, just not on the front.

Hoefner supported keeping it artistically open and observed that tenants with financial interests in a building would not support a bad mural.

Howe asked if there were a board that could evaluate the murals.

Zuccaro replied that public murals could go through a review process, but private artistic endeavors could not be regulated the same way.

Hoefner noted that RiNo in Denver had a number of cool murals that had helped to put the neighborhood on the map.

### **Flags**

Ritchie described the changes to the flag criteria, since they could no longer be regulated by content. The new criteria included size restrictions and number of flag restrictions.

### **Electronic Message Centers**

Ritchie noted that school signs were exempt from City regulations.

Brauneis stated that he felt the fewer of these the better and noted that they could contribute to residential light pollution.

Hoefner stated that gas stations did not bother him but other types of EMCs should go through a PUD. He did not support anything that flashed or moved through images too quickly.

Brauneis noted that the messaging speed for some of these signs was set at an optimal speed to get messages across to people driving by.

Ritchie stated that there are different regulations for not distracting drivers and it was important to consider who they were trying to create a message for.

Moline appreciated the detail, but he was a little worried that enforcement might be difficult and suggested moving some of the criteria to guidelines.

Ritchie responded that staff could dial back some of the specifics if the Commission decided to keep it as a PUD process only.

Rice stated that keeping it as a PUD only would allow City control while also not trying to write a one-size-fits-all set of criteria.

Zuccaro added that the community feedback was generally not comfortable with promoting these kinds of signs.

Brauneis asked about the gas station and menu board signs.

Zuccaro replied that those kinds of signs would be exempted.

Howe stated that making it different for the downtown area was that it was a disadvantage to a business downtown.

Ritchie replied that EMCs were not allowed downtown as menu boards.

Rice stated that the EMCs did not seem "compatible" with downtown. He agreed with Chair Brauneis that he wanted fewer of these signs, not more.

Zuccaro summarized that the Commission suggested keeping it as a PUD only and cutting back on the specificity in the criteria.

### ***Commercial areas***

Ritchie encouraged the commissioners to continue thinking about signs they liked and didn't like in the area and let staff know over the next few weeks.

Moline asked if it would be possible to know how many signs would be made non-conforming by these updates.

Ritchie replied that it would be very difficult to evaluate all the signs, but anything existing would be grandfathered in and staff anticipated that more signs would be conforming than non-conforming based on these changes.

### ***Downtown***

Brauneis asked for examples of current freestanding signs in Louisville currently.

Zuccaro listed Moxie, the Underground, and the gas station. He explained that freestanding signs might be appropriate for businesses that don't come up to the front property line. He noted that allowing freestanding signs in any case might allow buildings with setbacks of a few feet to add freestanding signs in front of their wall signs.

Rice suggested language offering that applicants could have either a wall sign or a freestanding sign.

### ***Temporary signs***

Rice noted that in commercial buildings that don't fill up, signs for rent or sale are effectively permanent. While he did not like the signs usually, their utility was indisputable.

Moline asked about the permit process.

Ritchie responded that staff would have to make sure that the permit section was not regulating print on temporary signs.

Zuccaro noted that staff had considered regulating changes of copy, especially situations with illumination changes. That would not affect the code, but would probably occur over the counter.

Moline observed that there were a lot of regulations related to illumination.

Ritchie replied that those regulations attended to impact on neighbors and dark sky impacts.

### ***BRaD Requests***

Ritchie informed the Commission of the feedback from the BRaD discussion:

- Consider teardrop banners for Grand Openings
- Murals outside of Downtown and remove % restrictions
- Support sandwich boards outside of downtown
- Concern about allowing alley fronting businesses a sandwich board anywhere within the block
- Allow Electronic Message Centers

- Freestanding signs – reduce minimum building size to get the larger size

Brauneis observed that he thought teardrop banners were cheap and easy to use for businesses so they should not be outright banned.

Howe stated that there was some benefit to the teardrop banners for people who are driving and can give businesses the opportunity to advertise in non-pedestrian areas.

Hoefner voiced a concern about high winds and the teardrop banners.

Moline asked for staff's rationale for not allowing teardrop banners.

Zuccaro replied that he did not think the teardrop banners were considered high-quality sign types, but on a very limited basis they could be okay.

Brauneis asked if the 30-day grand opening counted as a "limited basis."

Ritchie noted that there were some areas that had high turnover and would have these signs more often.

Rice liked the definition section and suggested adding "raceway" and "way-finding" to the list.

Moline suggested that in the non-conforming signage language should regulate based on the area of the sign rather than the cost of the sign as a trigger.

Brauneis stated that the update to the Downtown Sign Guidelines a few years ago was meant to foster creativity and that encouraging creativity was a good idea when possible. He did not want signs to look the same here as they do everywhere else.

Moline stated that the graphics in the staff packet and the way the Code was laid out was user-friendly for laypeople in the community.

Ritchie responded to Commissioner Moline's emailed question, explaining that sign area was calculated using one viewpoint. So for a multidimensional sign where you could view multiple sides at once, whatever the largest surface area was visible from one point, that all counted toward your surface area.

Ritchie also addressed Commissioner Moline's other question about the language "enforced by city manager" and stated that that was typical language for enforcement.

Howe asked if there were exceptions for entry points to the city.

Zuccaro replied that the sign code would not address those issues. The consultant for the Small Area Plans designed entry signs for those plans but they had not been formally adopted or approved.

Hoefner suggested making it explicit in the language that the City wanted to encourage creativity and innovation around signs in the PUD process. General agreement from the Commission.

Zuccaro noted that there was aspirational language in the Downtown Sign Guide and thought that adding that kind of language to the new manual was a good idea.

Ritchie stated that the adoption of the sign code was tentatively on the June agenda and she encouraged the commissioners to reach out to staff with their observations over the coming months.

### **2019 Planning Commission Work Plan**

Brauneis noted that some commissioners had requested this discussion.

Zuccaro referred the commissioners to three documents to guide their discussion of the Commission's 2019 work plan: The Strategic Planning Framework, City Program Goals and Objectives, and the City of Louisville Comprehensive Plan. He noted that takeaways from the Commission's work plan would be funneled into the Council's 2020 work plan. He covered the goals from each of the three guiding documents and invited the Commission to address the following discussion points:

- Study session on topics of interest and additional research from staff?
- Explore and propose zoning or subdivision ordinance amendments?
- Explore Comprehensive Plan Amendments?
- Other ideas beyond the proposed workload?

Rice found the prioritization of the various projects appropriate.

Howe wondered how to approach the redevelopment and economic prosperity issues and if the Commission should be considering these issues on the scale of singular projects, like the McCaslin redevelopment, or considering them more broadly across the city?

Zuccaro replied that the Small Area Plans had been an opportunity to consider making changes to encourage development desires in incorporating those into zoning. The McCaslin study allowed the City to do market analysis in a way that they had not done in the Small Area Plans and, as such, the McCaslin area study would be a case study for those broader processes and considerations.

Howe asked who was responsible for pushing issues of economic development currently.

Zuccaro replied that the City had a staff and a committee for economic development and they were tasked with being the liaison between the business community and City Council. If there were concerns that overlapped with zoning then the Planning Commission should be involved in those discussions.

Howe wondered if there should be an additional box on the priorities list that addressed economic prosperity beyond specific area studies.