To access the Agenda and Backup Materials electronically, go to the City of Grand Junction Website. To participate or watch the meeting virtually register for the GoToWebinar.

GRAND JUNCTION CITY COUNCIL
MONDAY, FEBRUARY 3, 2025
WORKSHOP, 5:30 PM
FIRE DEPARTMENT TRAINING ROOM
625 UTE AVENUE

1. Discussion Topics

a. Colorado Mesa University Campus Master Plan

b. 7th Street Active Transportation Corridor Study Update

c. Impact Fee and Linkage Fee Study

2. City Council Communication

An unstructured time for Councilmembers to discuss current matters, share ideas for possible future consideration by Council, and provide information from board & commission participation.

3. Next Workshop Topics

4. Other Business

What is the purpose of a Workshop?

The purpose of the Workshop is to facilitate City Council discussion through analyzing information, studying issues, and clarifying problems. The less formal setting of the Workshop promotes conversation regarding items and topics that may be considered at a future City Council meeting.

How can I provide my input about a topic on tonight's Workshop agenda?

Individuals wishing to provide input about Workshop topics can:

1. Send input by emailing a City Council member (Council email addresses) or call one or more members of City Council (970-244-1504)

2. Provide information to the City Manager (citymanager@gjcity.org) for dissemination to the City Council. If your information is submitted prior to 3 p.m. on the date of the Workshop, copies will be provided to Council that evening. Information provided after 3 p.m. will be disseminated the next business day.

3. Attend a Regular Council Meeting (generally held the 1st and 3rd Wednesdays of each month at 5:30 p.m. at City Hall) and provide comments during "Public Comments."

Grand Junction City Council

Workshop Session

Item #1.a.

Meeting Date:	February 3, 2025
Presented By:	President John Marshall
Department:	Community Development
Submitted By:	Tamra Allen, Community Development Department Director

Information

SUBJECT:

Colorado Mesa University Campus Master Plan

EXECUTIVE SUMMARY:

Colorado Mesa University is in the process of updating its Master Plan. President John Marshall will present CMU's updated plan.

BACKGROUND OR DETAILED INFORMATION:

Colorado Mesa University is in the process of updating its Master Plan. President John Marshall will present CMU's updated plan.

FISCAL IMPACT:

For discussion purposes only.

SUGGESTED ACTION:

For discussion purposes only.

Attachments

None

Grand Junction City Council

Workshop Session

Item #1.b.

Meeting Date:	February 3, 2025
Presented By:	Trenton Prall, Engineering & Transportation Director, Henry Brown, Mobility Planner
Department:	Community Development
Submitted By:	Trent Prall, Engineering & Transportation Director

Information

SUBJECT:

7th Street Active Transportation Corridor Study Update

EXECUTIVE SUMMARY:

Staff will provide an update on the study including feedback received from a December community meeting and recommended next steps.

BACKGROUND OR DETAILED INFORMATION:

The 2023 Pedestrian and Bicycle Plan (PBP) identified existing Levels of Traffic Stress and gaps along the City's sidewalk and Active Transportation Corridor networks, prioritizing projects to benefit sidewalk users and cyclists, respectively. Network gaps (i.e., missing sidewalks or no dedicated cycle facilities on higher-speed roadways) are generally prioritized over retrofitting existing facilities. Priority was assigned based on various criteria, categorized into PBP objectives: Equitable, Safe, Connected, Multimodal Community, and Quality. Criteria include proximity to schools, bus stops, low-income neighborhoods, locations with frequent and severe crash history, and facilities providing access across barriers.

Based on this assessment, 7th Street was rated High Priority for sidewalk retrofits and High Priority for cycle facility gaps (north of Grand Avenue) and retrofits (south of Grand Avenue). Given its presence on the High Injury Network (including having intersections amongst the most dangerous in Mesa County), central proximity within the City, and direct access to key destinations (e.g., D51 schools and CMU, St. Mary's and Downtown employment hubs, and Riverfront Trail); as well as connectivity to existing and planned multimodal infrastructure on Horizon Drive and 26 1/2 Road to Summer Hill Way, respectively, 7th Street was selected as the first corridor to be evaluated coming out of the PBP.

In 2024, consultants led a technical feasibility assessment of alternative 7th Street designs, which would accommodate 25-year modeled growth vehicular demand while allowing for the establishment of a low-stress and connected Active Transportation Facility between the Riverfront Trail and Horizon Drive. Consultants were tasked with balancing four key priority areas in the recommendation of a technically feasible alternative:

- Vehicular Capacity: Not to degrade existing Levels of Service for motor vehicles in present year and under future-year modeled growth scenario, and not to degrade emergency response along the corridor.
- Pedestrian and Bicycle Level of Traffic Stress (LOTS) and Directness: Minimize LOTS and out-of-path travel.
- Landscaping and Street Trees: Minimize impact to existing landscaping, especially historical street trees.
- Cost/Complexity: Minimize curb touches and strive to work within existing rights-of-way (i.e., limit private property impacts).

Based on input from the public and from the Steering Committee (comprised of 7th Street neighbors and nearby business owners; representatives from major employers/land-owners adjacent to the corridor, the Chamber of Commerce, Historic Preservation Board, and Urban Trails Committee; and at-large community members), the consultant delivered a recommendation for a technically feasible alternative, which staff presented for feedback from City Council (September 16, 2024 Workshop), key stakeholder groups (CMU, St. Mary's, D51 community October-November, 2024), and to the general public at in-person and virtual information sessions (December 3 and 4, 2024, respectively).

Throughout the outreach process, it became clear that aspects of the recommended alternative were not uniformly acceptable to the entire community despite the technical feasibility. Specifically, two segments of 7th Street were found not to have the vehicular volumes (neither present day nor in the future-year modeled growth scenario) to require as many travel lanes as are currently provided. This enabled the consultant to design alternatives that met the conveyance objectives at the lowest complexity, with cross-sections that fit into the existing right-of-way or even out existing curb-lines. Some in the community perceived this proposal to be a high risk to their existing travel habits.

During the outreach, it became clear that there was a high level of misunderstanding or assumptions from the public about aspects of design that were not present in the alternatives being presented. Specifically, many concerns were expressed about additional parking or vertical delineators being added to Historic 7th Street--which were never proposed. Staff believe this is due to an assumption that elements being evaluated on 4th and 5th Streets during the Complete Streets Pilot would be reapplied directly to 7th Street. There was also some lack of awareness of some of the existing infrastructure along 7th Street, as some attendees vocalized a lack of support for the existing conditions, perhaps confusing it with study recommendations.

With the intent of creating a vision that is not just technically feasible, but also more acceptable to a broader range of community members, Staff recommends adding scope for the consultant to evaluate a limited number of alternatives for the two segments for which the study originally recommended could feasibly repurpose vehicle lanes for the multi-modal traveler, including these segments:

1. Grand Avenue to North Avenue, and
2. Patterson Road to Horizon Drive.

New alternatives may compromise some of the original study objectives, such as cost, directness, and/or street trees. However, the consultant would be asked to ensure that the exploration of alternatives still delivers a technically feasible and constructible low-stress, connected Active Transportation Facility.

Staff recommends continuing to progress the study to develop, evaluate, and render visualizations of a limited number of alternatives in these sections. The process would continue to be informed by input from stakeholders such as the Historic Preservation Board, Forestry Board, and Urban Trails Committee, as well as returning to the Steering Committee for assessment and feedback. An additional public outreach event would be held before presenting a final study to City Council.

FISCAL IMPACT:

Tentative additional consultant scope is anticipated to require additional investment of up to $15,000.

SUGGESTED ACTION:

For discussion and direction only.

Attachments

1. Technically Feasible Alternatives
2. 12-3 Public Meeting Feedback and Voting
3. 12-3 Public Meeting concept responses
4. GJ 7th St Corridor Report v1 wAppendices Reduced (1)

Possible Intersection Treatments:
Two Stage Turn Queue Box
Bike Ramps
Bike Box
Leading Pedestrian Intervals

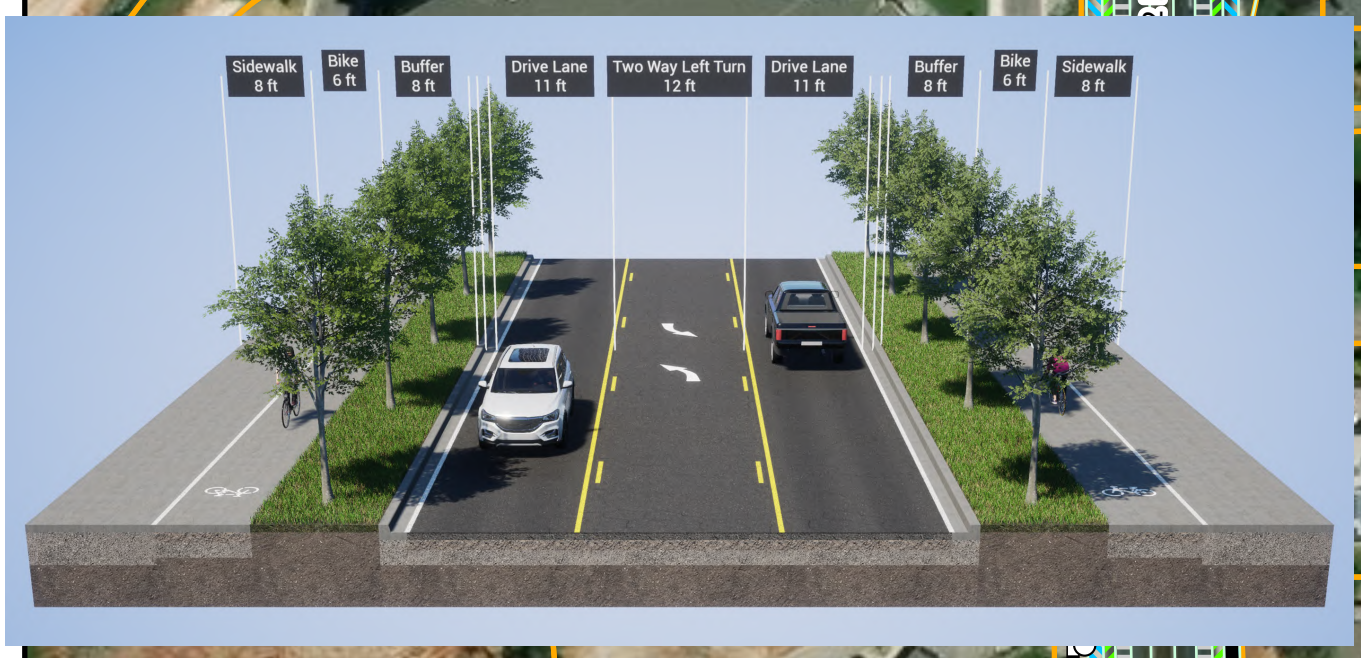
HORIZON PL

HORIZON DR

Slip Lane

Slip Lane

GLEN CT



Utility Pole

Possible Intersection Treatments:
Crossbike Striping
Leading Pedestrian Intervals
No Right Turn On Red
Corner Islands

PATTERSON RD

N 7TH ST

- Full Closure
- Right-In Right-Out
- 3/4 Access
- Light Poles
- Trees
- Retaining Wall/Curb
- Property Lines
- Crossbike
- Bike Lane
- Buffer
- Sidewalk
- Trail

250 125 0 250 500 FEET

Segment 1: Horizon Drive to Patterson Road
7th Street Active Transportation Study

HORIZONTAL DATUM: GCS WGS 1984
VERTICAL DATUM: NAVD 88
AERIAL IMAGERY SOURCE: [AERIAL IMAGERY SOURCE]

PROJECT NUMBER: 2404-00271
SITE LOCATION: Grand Junction
DATE: SEPTEMBER 6, 2024
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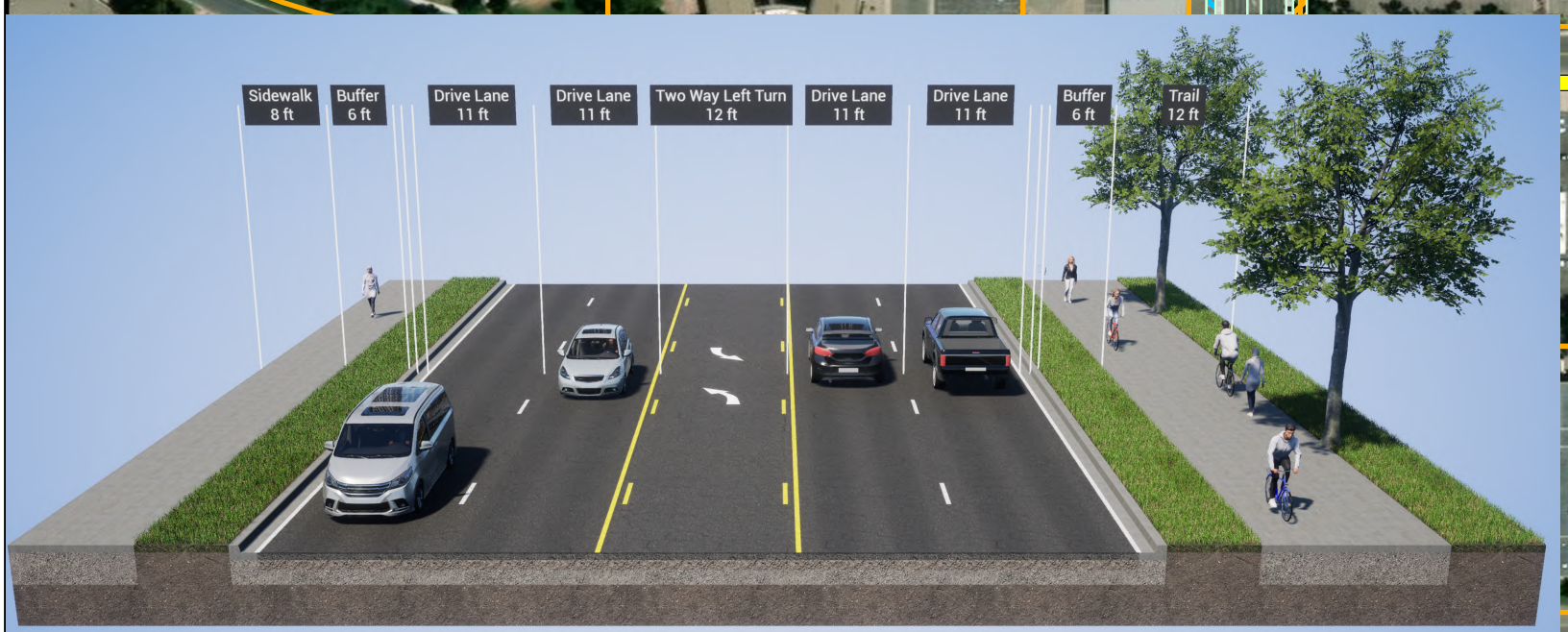
Utility Pole
26 1/2 RD
N 8TH CT
PATTERSON RD
Possible Intersection Treatments:
Crossbike Striping
Leading Pedestrian Intervals
No Right Turn On Red
Corner Islands
Pedestrian Landing
EMERGENCY ENTRANCE
Possible Intersection Treatments:
Crossbike Striping
Leading Pedestrian Intervals
No Right Turn On Red
Corner Islands
Pedestrian Phase Timing
Slip Lane
WELLINGTON AVE
CENTER AVE
Encroaching Parking
Possible Intersection Treatments:
Crossbike Striping
Leading Pedestrian Intervals
No Right Turn On Red
Corner Islands
Encroaching P


N 6TH ST
Utility Pole
Utility Pole
Signal Pole
N 8TH ST
PINYON AVE
Possible Intersection Treatments:
Crossbike Striping
Leading Pedestrian Intervals
No Right Turn On Red
Corner Islands
Signal Pole
Signal Pole
ORCHARD AVE
Signal Box
Signal Pole
Signal Pole
Maxar, Microsoft
Pedestrian Landing

Full Closure
Right-In Right-Out
3/4 Access
Light Poles
Trees
Retaining Wall/Curb
Property Lines
Crossbike
Bike Lane
Buffer
Sidewalk
Trail

500 250 0 500 FEET

Segment 2: Patterson Road to Orchard Boulevard
7th Street Active Transportation Study

HORIZONTAL DATUM: GCS WGS 1984
VERTICAL DATUM: NAVD 88
AERIAL IMAGERY SOURCE: [AERIAL IMAGERY SOURCE]

PROJECT NUMBER:	2404-00271
SITE LOCATION:	Grand Junction
DATE:	SEPTEMBER 6, 2024
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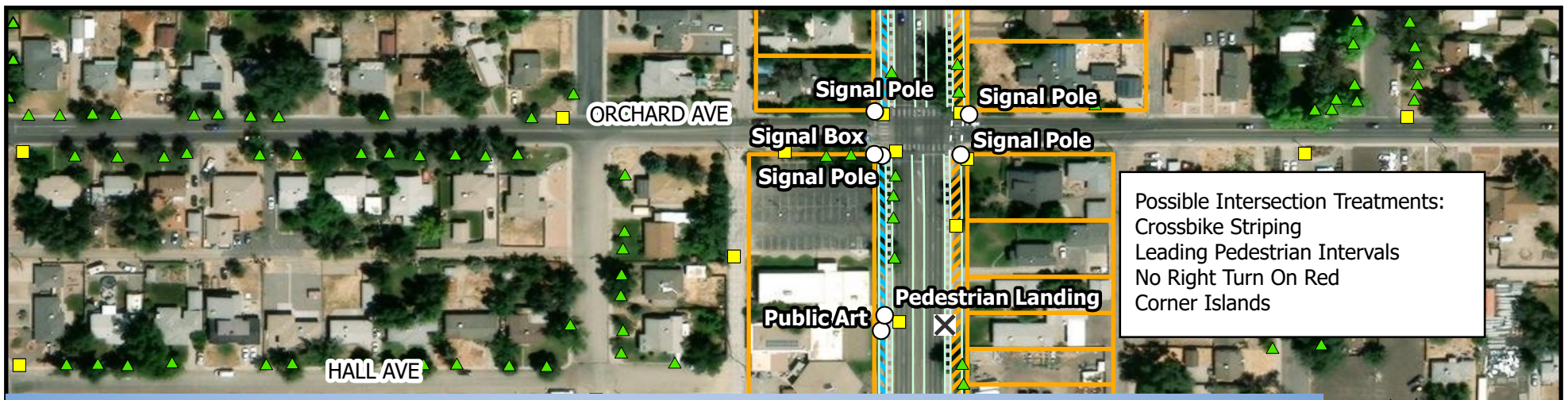

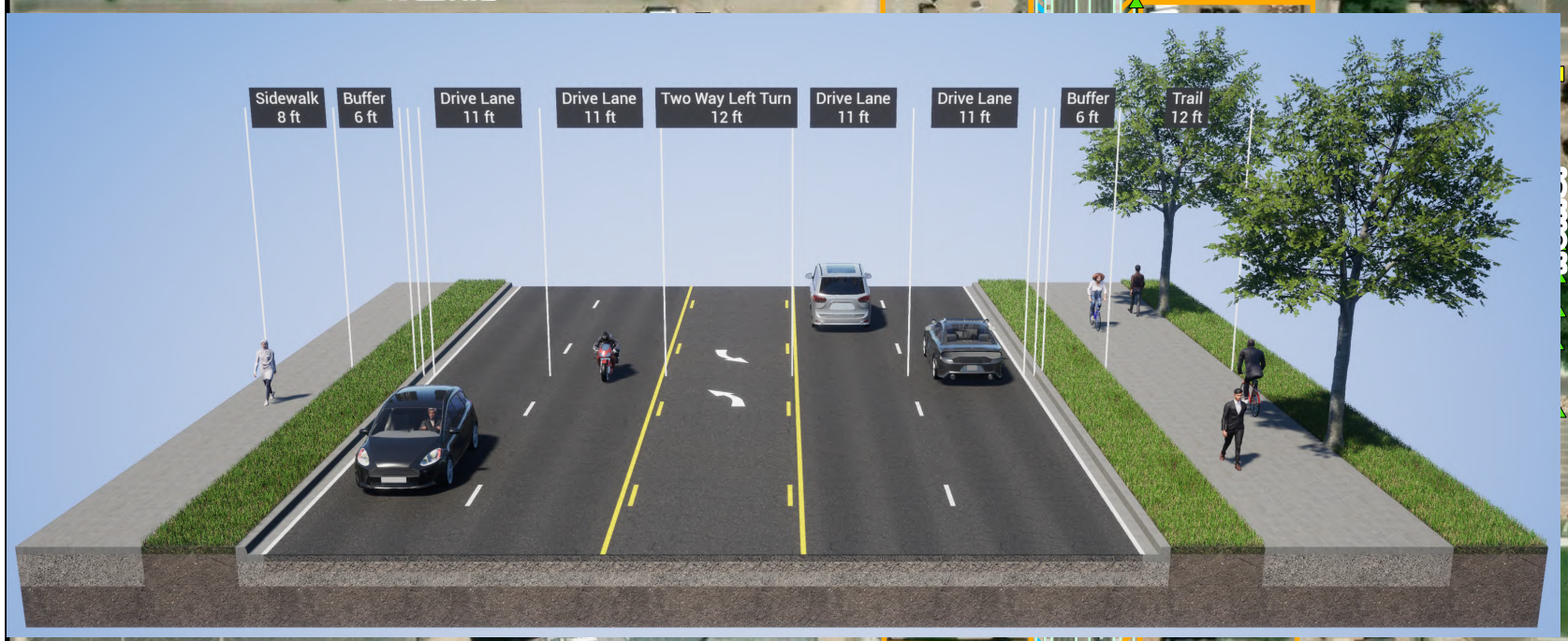

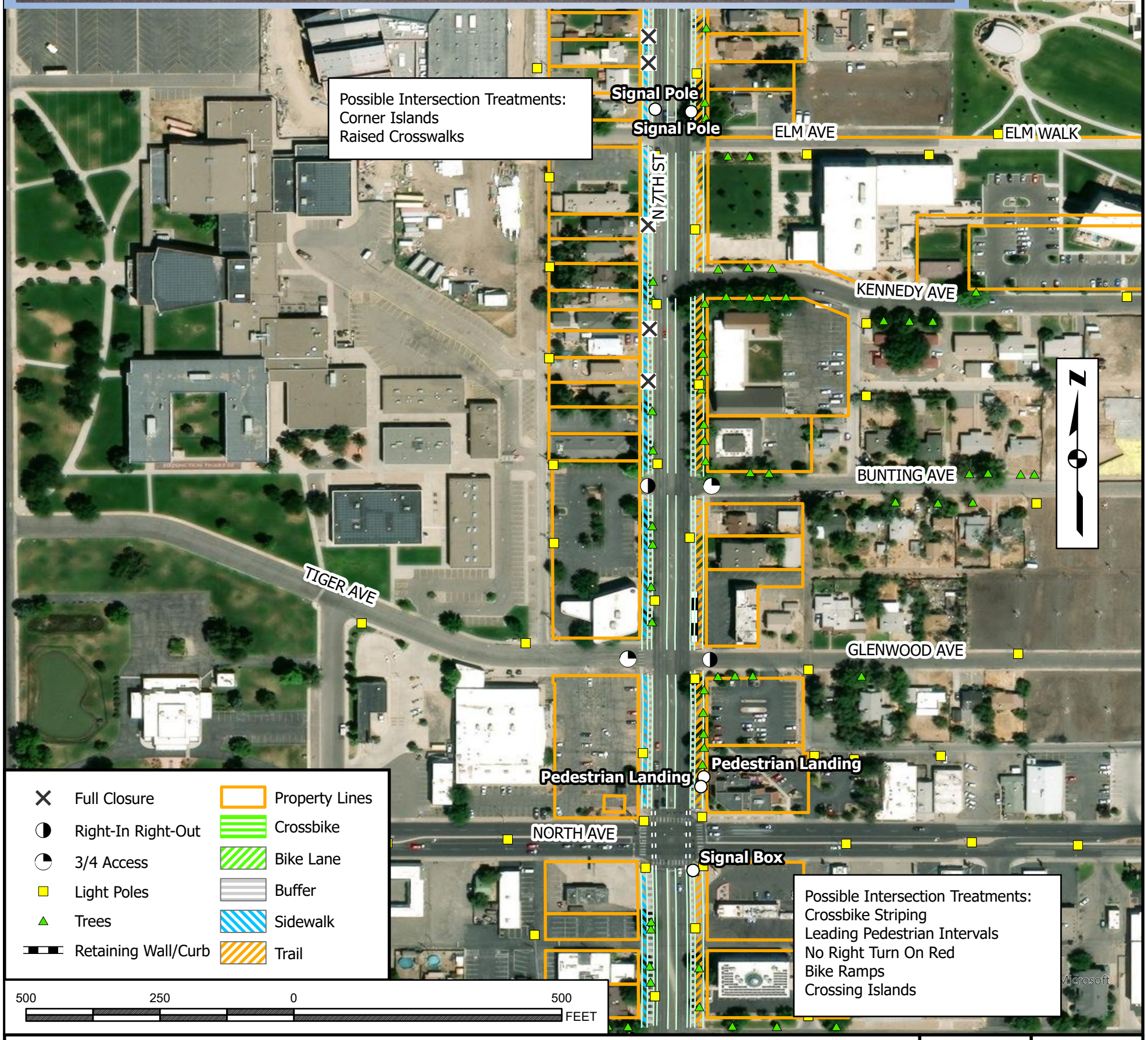

Segment 3: Orchard Avenue to North Avenue
7th Street Active Transportation Study

HORIZONTAL DATUM: GCS WGS 1984
VERTICAL DATUM: NAVD 88
AERIAL IMAGERY SOURCE: [AERIAL IMAGERY SOURCE]

PROJECT NUMBER:	2404-00271
SITE LOCATION:	Grand Junction
DATE:	SEPTEMBER 6, 2024
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Pedestrian Landing

Pedestrian Landing

NORTH AVE

Signal Box

Possible Intersection Treatments:
Crossbike Striping
Leading Pedestrian Intervals
No Right Turn On Red
Bike Ramps
Crossing Islands

HILL AVE

N 6TH ST

N 5TH ST

GUNNISON AVE

N 8TH ST

Possible Intersection Treatments:
Two Stage Turn Queue Box
Crossbike Striping
Leading Pedestrian Intervals
No Right Turn On Red
Bike Ramps
Crossing Islands
Corner Islands
Bike Box

CHIPETA AVE

Pedestrian Landing

OURAY AVE

Possible Intersection Treatments:
Two Stage Turn Queue Box
Crossbike Striping
Leading Pedestrian Intervals
No Right Turn On Red
Bike Ramps
Crossing Islands
Corner Islands
Bike Box
Roundabout

Pedestrian Landing

Pedestrian Landing

Pedestrian Landing

GRAND AVE

Signal Box

N

Full Closure
Right-In Right-Out
3/4 Access
Light Poles
Street Lights
Trees

Retaining Wall/Curb
Property Lines
Crossbike
Bike Lane
Buffer
Sidewalk
Trail

500 250 0 500
FEET

Segment 4: North Avenue to Grand Avenue
7th Street Active Transportation Study

HORIZONTAL DATUM: GCS WGS 1984
VERTICAL DATUM: NAVD 88
AERIAL IMAGERY SOURCE: [AERIAL IMAGERY SOURCE]

PROJECT NUMBER:	2404-00271
SITE LOCATION:	Grand Junction
DATE:	SEPTEMBER 6, 2024
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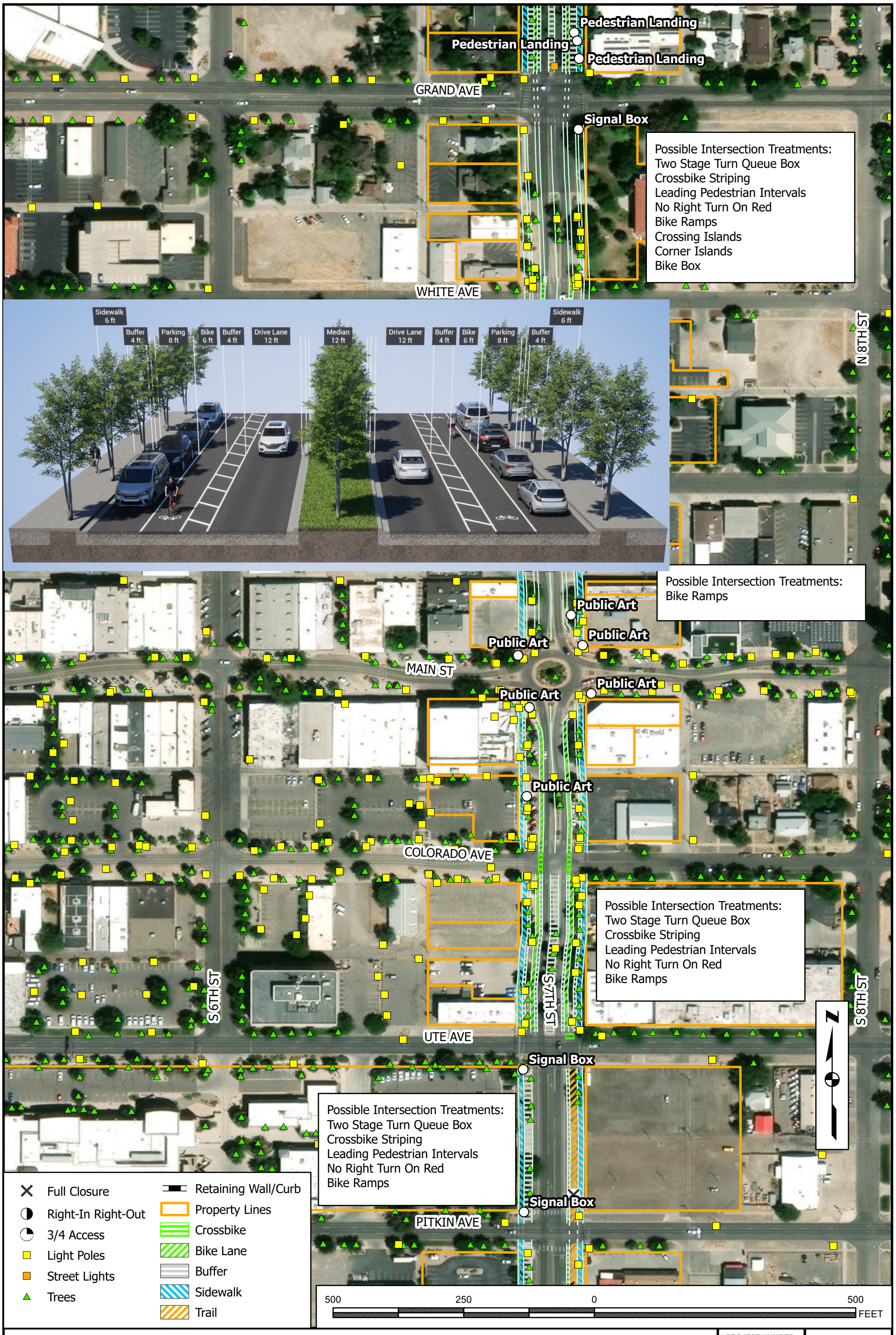

Segment 5: Grand Avenue to I-70 Business-Ute/Pitkin Ave
7th Street Active Transportation Study

HORIZONTAL DATUM: GCS WGS 1984
VERTICAL DATUM: NAVD 88
AERIAL IMAGERY SOURCE: [AERIAL IMAGERY SOURCE]

PROJECT NUMBER:	2404-00271
SITE LOCATION:	Grand Junction
DATE:	SEPTEMBER 6, 2024
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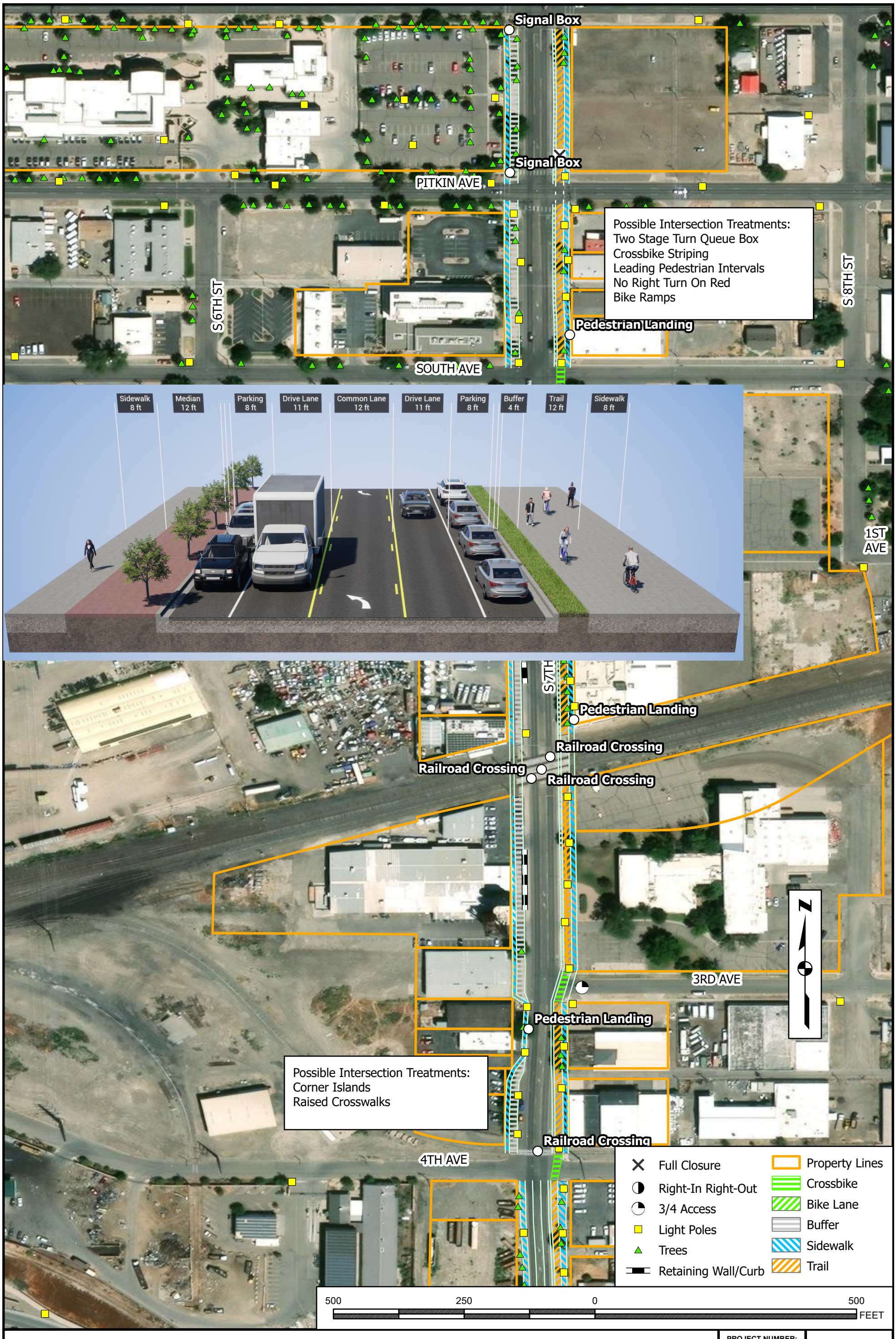

Segment 6a: I-70 Business-Ute/Pitkin Avenue to 4th Avenue
7th Street Active Transportation Study

HORIZONTAL DATUM: GCS WGS 1984
VERTICAL DATUM: NAVD 88
AERIAL IMAGERY SOURCE: [AERIAL IMAGERY SOURCE]

PROJECT NUMBER:	2404-00271
SITE LOCATION:	Grand Junction
DATE:	SEPTEMBER 6, 2024
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Possible Intersection Treatments:
Corner Islands
Raised Crosswalks

Railroad Crossing

4TH AVE

WINTERS AVE

NOLAND AVE

RIVERSIDE PKWY

KIMBALL

Intersection treatments:
Bike Ramps
Crossbike Striping
Leading Pedestrian Intervals
No Right Turn On Red

STRUTHERS AVE

Full Closure
Right-In Right-Out
3/4 Access
Light Poles
Trees
Retaining Wall/Curb
Property Lines
Crossbike
Bike Lane
Buffer
Sidewalk
Trail

250 125 0 250
FEET

Segment 6b: 4th Avenue to Struthers Avenue
7th Street Active Transportation Study

HORIZONTAL DATUM: GCS WGS 1984
VERTICAL DATUM: NAVD 88
AERIAL IMAGERY SOURCE: [AERIAL IMAGERY SOURCE]

PROJECT NUMBER: 2404-00271
SITE LOCATION: Grand Junction
DATE: SEPTEMBER 6, 2024
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Feedback: Public Meeting on Dec. 3, 2024

As a pedestrian, do you feel comfortable using the current 7th Street sidewalk configuration to travel? Please place a sticky note on your response and provide an explanation.

Answers in between Yes and No:

- I feel somewhat safe, but would prefer better infrastructure
- As an able-bodied ped, I am usually comfortable walking 7th. However, I have frequently been cut off crossing intersections by drivers going way too fast (40+mph). A more vulnerable user may feel significantly less safe crossing intersection. Lower Speeds and few lanes please!

Yes

- Yes, I walk on 7th on sidewalks- certainly not in the street!
- How is this an improvement?
- I hate your unhelpful ideas!
- I am a 72 year old retired construction inspector. I walk downtown al the time! No problems anywhere. As I age, the "walk light" on 7th and Grand should be programmed longer. There are no "problems" on 7th Street needing fixed!
- Yes, I can share sidewalk with cyclists- it's fine
- I feel quite comfortable as a pedestrian, as the sidewalk is plenty wide with a wide easement separating it from the street. Love the trees and historic look!!
- Yes. It's fine. Leave it alone
- Yes use alleys for bikes put a roundabout at Grand and 7th
- I really like the changes on 5th and 4th slower traffic is so much safer- it was like a freeway
- Not better with your plan
- I live in between Orchard and North (westside) and often walk and feel safe but due to the college and high school feel like the sidewalk on both sides should be wider. I do walk Main St. often and never felt unsafe but wider sidewalks would be nice
- Yes because of the shade in the historic district
- Yes, leave it alone
- I frequently walk both directions of N. 7th and find the sidewalks safe and adequate as is. Cyclists pass by me with no issues

No

- No, not really. High vehicle speeds, sidewalks close to roads, walking across multiple lanes with turning vehicles
- No, way too small and close to cars moving too fast. And bikes need to use it because the road isn't safe
- Not north of Patterson
- Walking along 7th to access medical care doesn't feel safe
- My daughter walked a few times from Grand to GJHS and did not feel safe. She started taking the but- GVT at times but it was also difficult
- No not safe without better infrastructure for bikes and pedestrians
- During daytime hours it's fine but uneven sidewalks are a trip hazard especially at night
- No scooter and bicycles also use sidewalks
- No north of North. South of North is comfortable
- No- speeds too high, too many points of impact
- What about "stress levels" for vehicle drivers?
- No

As a cyclist, do you feel comfortable using the current 7th Street bike configuration to travel? Please place a sticky note on your response and provide an explanation.

Yes

- 4th and 5th Streets, Main Street, 7th Street. Do not have to accommodate bicycle traffic, we don't have that much.
- Yes, I can share with pedestrians on sidewalk. It works well
- I bike on 15th and 10th make those the bike emphasis routes
- Yes, plenty of room already
- No bikes on 7th use alleys for bikes roundabout on 7th and Grand
- I will not bike on 4th, 5th or 7th. I will avoid it
- We already have 1st, 4th, and 5th for bikes need some area to move the volume of traffic through the area. Had to stop two times from Ute to Grand on 5th because of more traffic than the new 1 lane accommodates. Grr…
- Your plan will make traffic worse
- South of Grand yes. Maybe south of North. It's a little weird in the historic section of 7th

No

- No, that's why I use 6th
- Do not feel safe North of Grand. When I wanted to bike to Eureka, took a very circuitous route as I didn't feel safe on 7th especially with my daughter
- No! No protection too much speed purposeful aggression by drivers
- No, too much traffic
- You have already ruined Grand Junction with your bike lanes and parking in the street downtown. I will fight funding for this every way I can
- No, I use 6th St. through traffic- easy ride
- No in between Grand and Patterson. Lanes are too narrow and traffic to heavy
- I ride real sketchy. A couple blocks on 7th and even I feel really uncomfortable. Riding sidewalks is obviously even worse, I have take either 4th, 5th, 6th or 10th
- No at all. You gotta fight the cars for space or pedestrians. Not safe at all either way. Probably will be hit. That's why you don't see many bikes
- No. I will not bike w/o bike lane. South of Grand is okay. I don't own a car and bike daily
- No- pedestrians on sidewalks, compete with bicycles and scooters
- no! Wish there was a separate path to get to my doc from downtown
- Bringing kids to camp at Eureka! is terrible for bikes and pedestrians
- Getting from downtown to St. Mary's by bike is horrible!
- No, I would like to see improved bike/ped safety. It only takes one aggressive or distracted driver to hurt or kill someone
- No, not enough room for bikes
- No but 7th is not an appropriate route. Put the main routes for bikes and cars on separate streets

Would the proposed concept design make you feel more comfortable traveling to your destination?

Please provide your feedback on the alternative concepts by placing a green pompom in the jar for a "yes" if you agree or a red pompom for a "no" if you disagree.
Additionally, you can share your thoughts by writing a comment on a sticky note and attaching it to the board.

Horizon Dr. to Patterson Rd.	Patterson Rd. to North Ave.	North Ave. to Grand Ave.	Grand Ave. to I-70 B	I-70 B to 4th Ave.	4th Ave. to Struthers
• No, severe bottleneck • No • No already congested at St. Mary's- emergencies and pedestrians • Yes but not a lot of destinations for me • A good way to safely increase ped/bike traffic to the southern areas of town, yes. • Yes- this is the best improvement! I'd like to see al them like this		• No- keep historic section as is. Allow bikes on sidewalks and add bike stop signs	• Absolutely not- leave the road alone, it makes no sense to shrink infrastructure in a growing community • This section is tough. I am okay with no changes but it would be nice		

Would the proposed concept design make you feel more comfortable traveling to your destination?

Please provide your feedback on the alternative concepts by placing a green pompom in the jar for a "yes" if you agree or a red pompom for a "no" if you disagree.
Additionally, you can share your thoughts by writing a comment on a sticky note and attaching it to the board.

Horizon Dr. to Patterson Rd.

- No
- No, I need that road as is
- Yes, 1 lane each way is plenty
- Yes- we need safer places to walk. Gas is not cheap!
- No- not enough space
- No not enough space
- Yes- appreciate separation of sidewalk/ bike lane from street. People are driving too fast on that stretch of road.

Patterson Rd. to North Ave.

- Elm needs a significantly better traffic light for pedestrian crossing. Tree covers lights!
- No, leave road as is
- No
- No
- No
- Yes, nice compromise
- Yes- agree its a nice compromise
- No
- Yes
- Yes, nice compromise. Especially the area north of Orchard. That are needs better access

North Ave. to Grand Ave.

- No, leave road as is(two others agreed)
- No (X5)
- Yes, increase walkability and biking options
- yes! very needed
- No, keep as is
- Yes, too much traffic!
- Yes, needs slowing down- lots of pedestrian and traffic everywhere. (one other agreed)
- No- sidewalks are fine to walk
- No, leave it as is!
- Keep it 4 lanes

Grand Ave. to I-70 B

- Bikes should stay off of 7th St. There are plenty of other options on 12th St., 10th St., and now 4th and 5th. The original bike lane on 3rd St. and 6th St. work well and bikes should use them. The City should use and advertise what we already have
- No if any of these proposals involves taking (AKA buying) peoples land!!
- No
- I love it
- No
- Yes please

I-70 B to 4th Ave.

- No (X3)
- Yes, connect downtown with riverfront
- Yes (X2)

4th Ave. to Struthers

- No (X3)
- Yes, connect downtown with riverfront
- Yes (X2)

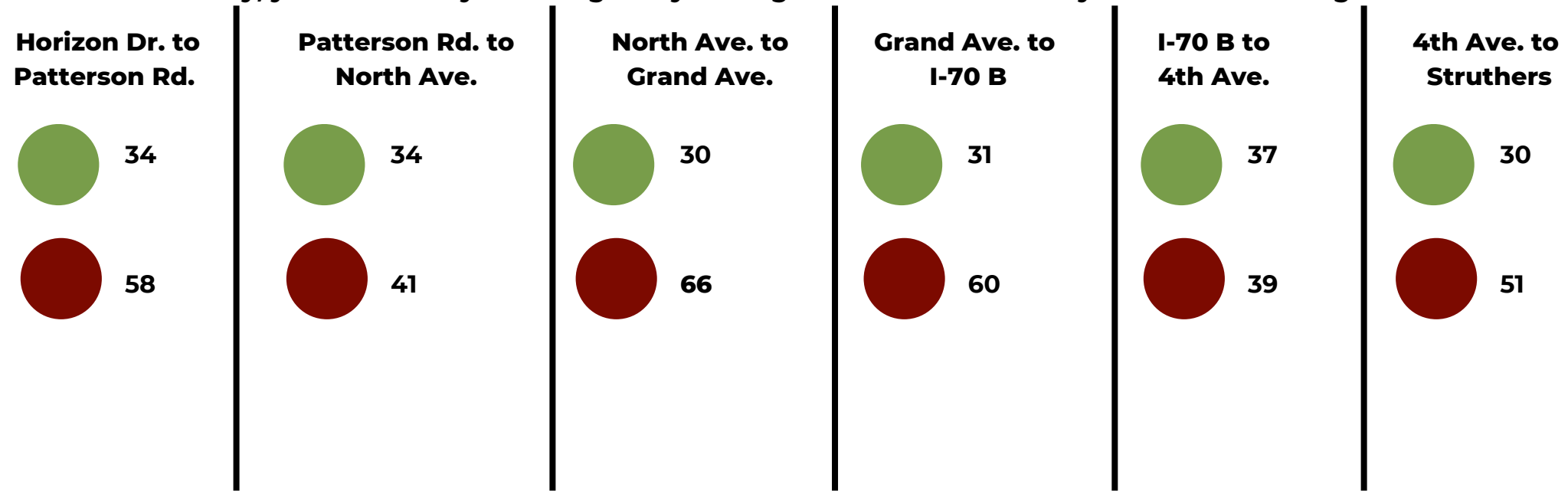
Would the proposed concept design make you feel more comfortable traveling to your destination?

Please provide your feedback on the alternative concepts by placing a green pompom in the jar for a "yes" if you agree or a red pompom for a "no" if you disagree.
Additionally, you can share your thoughts by writing a comment on a sticky note and attaching it to the board.

Horizon Dr. to Patterson Rd.	Patterson Rd. to North Ave.	North Ave. to Grand Ave.	Grand Ave. to I-70 B	I-70 B to 4th Ave.	4th Ave. to Struthers
• No, correct 5 lanes traffic necessary to accommodate growing number of vehicles and emergency vehicles traveling to St. Mary's. • No • Yes, thinks about all people • No trees will block view when pulling out					

Would the proposed concept design make you feel more comfortable traveling to your destination?

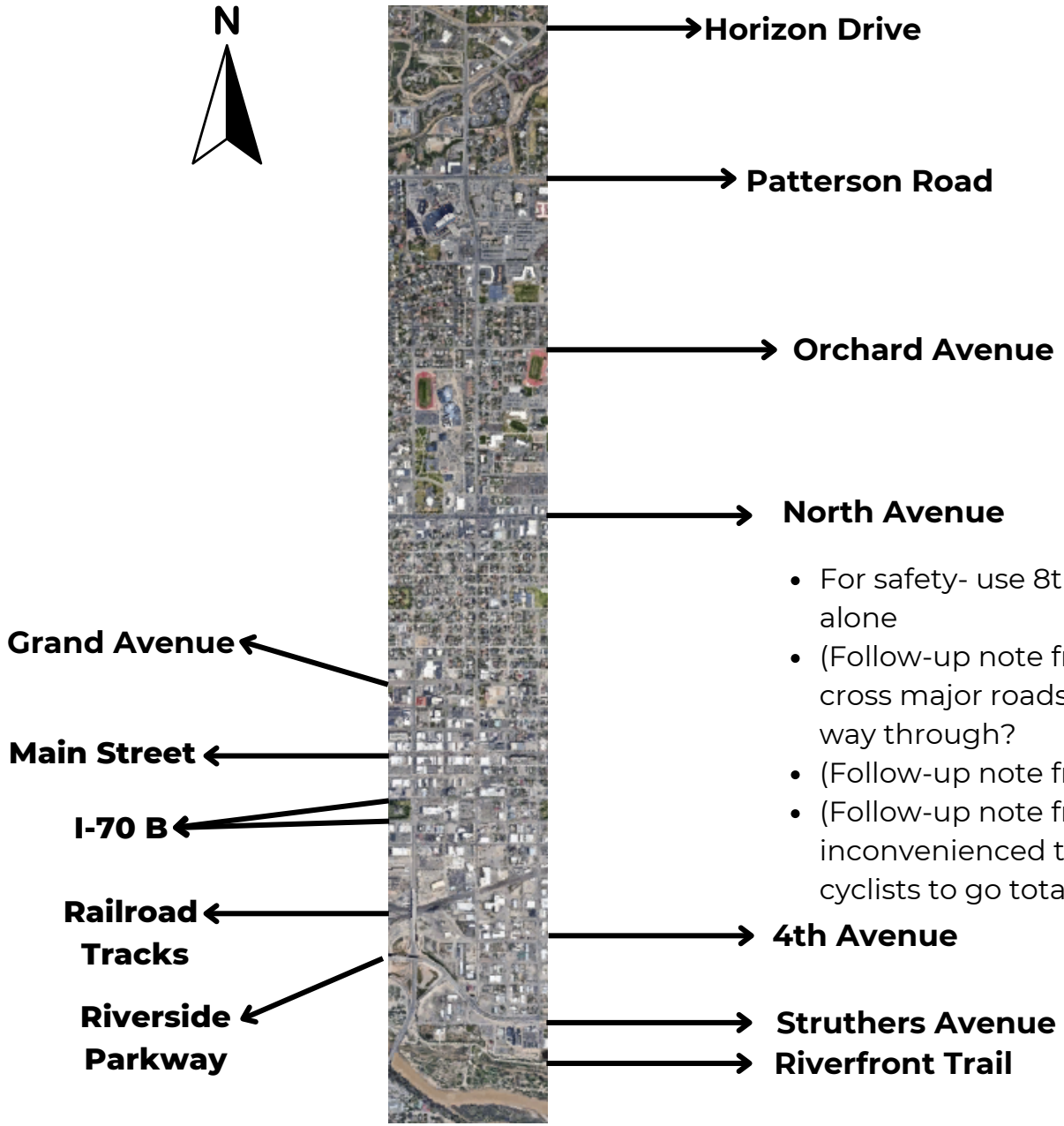
Please provide your feedback on the alternative concepts by placing a green pompom in the jar for a "yes" if you agree or a red pompom for a "no" if you disagree.
Additionally, you can share your thoughts by writing a comment on a sticky note and attaching it to the board.



Overall comments (all sections):

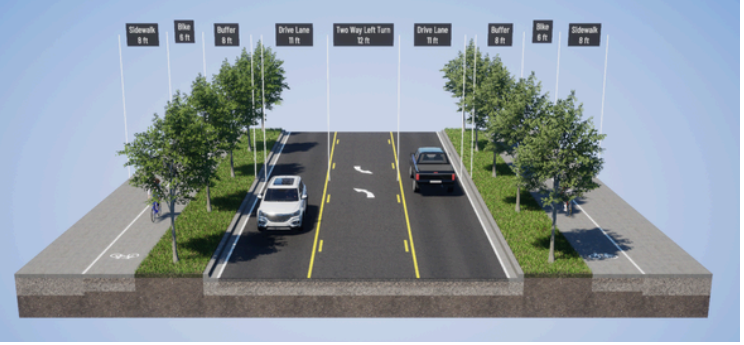
- Like it all overall- also need to focus on 7th St. crossings
- Build/improve sidewalk structure to allow both bike and peds. Keep bikes off streets they are not safe there and riders are uncomfortable. Bikes already ride there.

7th Street Corridor Map



Feedback:

- For safety- use 8th and 6th for bicycle and Ped. Leave major corridor alone
- (Follow-up note from feedback above) But then how will ped/bikes cross major roads safely? No signals on 8th or 6th and neither go all the way through?
- (Follow-up note from feedback above) Answer, jog to a signal
- (Follow-up note from feedback above)Si drivers can't be inconvenienced to drive a little slower and meanwhile you want cyclists to go totally out of direction?!?! Drivers are so whiney + entitled

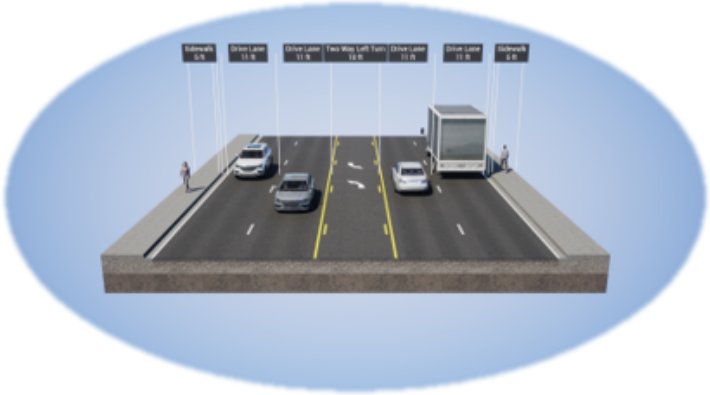


Concept: Horizon Dr. to Patterson Rd.

- So much better
- Great gateway to the city
- I like this design, don't need two lanes each directions in this area
- Yes, please
- Road from 7th to 26 1/2 Rd. is a race track not safe!!
- Love it, protect pedestrians
- I lived where a higher traffic street was transformed to this configuration from 4 lanes and it was wonderful, decision to drive walk and ride. Fewer wrecks!

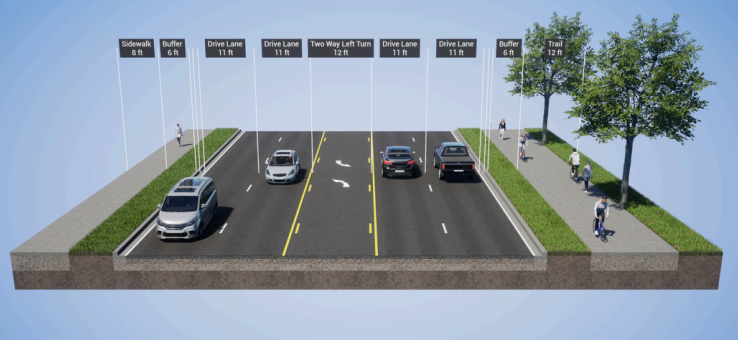
- No please do not do this there is more enough room
- Don't reduce the number of lanes. Leave it as it is
- Maybe not
- Do not reduce lanes
- Don't reduce traffic lanes. Leave as is!
- We are going to need more traffic lanes not less as we grow. Find a way without losing lanes
- Our city is growing and we need the four lanes of traffic. Some roadways don't carry so much traffic and this plan would be great for them. 3rd St, 6th St. etc.

- If you want to reduce vehicle speeds, have you tried narrowing lanes with paint first, cheapest



Existing: Horizon Rd. to Walnut Ave.

- No comments added

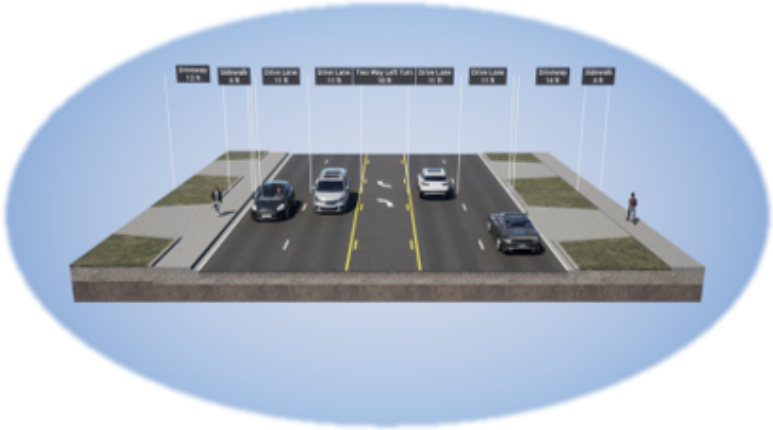


Concept: Patterson Rd. to North Ave.

- Money well spent!
- Would like to see more division of Ped & Bike, but would work well
- Love, Love, Love
- Looks safe and inviting for pedestrians walking
- Can't wait!
- Yes, Please
- Would be great for better access to Patterson and St. Marys.
- I like the addition of the shade trees
- I like the trail concept

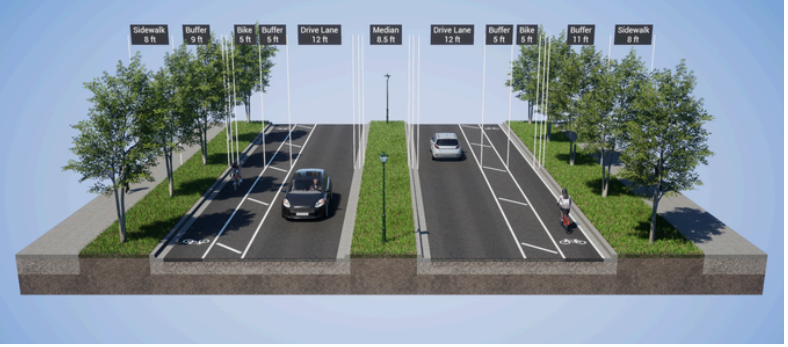
- Will destroy 7th Street businesses!
- Find a different way
- Seems like a waste of money
- Will loose parking lot at Hill and Homes Real Estate

- All the south bound bike traffic would need to move to the east side
- Do we really need 5 lanes? 12 Ft. is kind low for 2 directions of cycles and pedestrians. Would like more space for bikes and peds
- What happens to driveways?



Existing: Walnut to Teller

- No comments added



Concept: North Ave. to Grand Ave.

- I like it
- Yes! Reducing the need for driving and increasing other options will reduce traffic
- Looks good. Would prefer rapid bicycle tracks but a buffered bike lane could be good if combined with enough traffic calming
- Great opportunity for travel options
- Like it! 10' sidewalks
- Would encourage non-decidvous trees and native plants- overall layout looks better for active transportation options
- Love the integration of historic trees
- Change is good!
- We need to slow the speed down on 7th. This plan would work!

- Leave it alone!
- This idea makes zero sense and should not even be considered
- No! This is difficult to see bicyclists and walkers when crossing the street going east and west. Just tried it on 4th and 5th St.
- Bad idea
- Very bad idea
- Don't do it
- Do not bend over backwards for bicycles
- Keep as is the roads are crowded in and there have been speeding feels unnecessary
- this is ugly
- No, leave functionality as is
- Keep it 4 lanes
- Please keep it as 4 lanes. Traffic is already backed up on 4th and 5th Streets
- Why parking? Leave it as is!!
- Don't need on street parking. There's enough traffic for 2 lanes each direction
- I ride a bike, walk, and drive but I do not want the historic district disturbed
- Separate by using another street, (8th or 6th) Leave 7th alone
- Find a way to maintain 4 lanes-not 2 we are growing

- Maybe. Maybe a bit much? Keep trees
- Quieter traffic is needed in this area-very busy with pedestrian and residents of historic district walking. On street parking not so needed
- Why not keep the existing lanes but widen the sidewalk only? Yes
- Not sure parking is assessed

Existing: Teller Ave. to Grand Ave.

- No comments added

Concept: Grand Ave. to I-70B

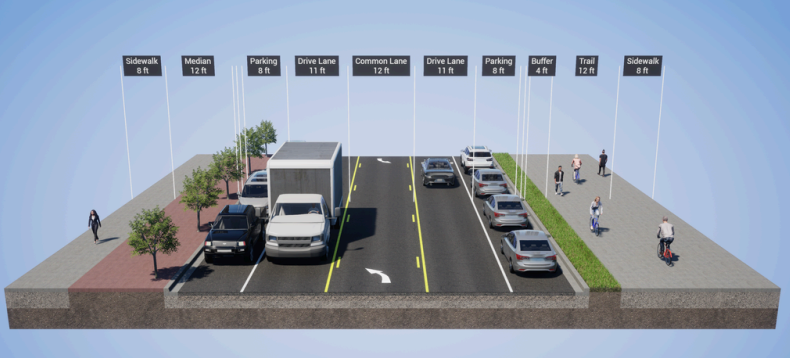
- Very big change. Much better cyclists. Most cars use left lane (southbound) because it goes to 1 lane after Grand.
- Nice! Why not a similar design to 4th and 5th bike w. protected lane?
- Much better with kids on bikes!
- I can't parallel park and I love this idea!
- Might not need parking. Looks good
- I like this design. Could possibly do more sidewalk and less parking as there is plenty of on street parking on side road

- Parking & bike lane don't seem safer. Parking is more difficult and backs up traffic
- From parking to traffic difficult to get into traffic
- Ugly. Runis the look of this area
- 6' is way to small remove parking on one side for bigger sidewalks
- 4th and 5th Streets are a disaster!! Don't do the same to 7th. Leave them alone!! 4th and 5th- go back to original
- I am open to this design for safety but all the cones like on 4th and 5th St. cause way more confusion then helpfulness. This would also give more parking to those homeowners
- Make it even more difficult to get downtown and support those businesses

- On street parking is needed north and south of main on 7th St. busy traffic with restaurants etc.
- Not sure parking is needed
- Would prefer protected bike lane but ok
- What happens to the roundabout to main st.

Existing: Grand to I-70B

- No comments added



Concept: I-70B to 4th Ave.

- Would be nice to increase people and safety in this part of town! I'm for it!
- Looks good! Thanks for prioritizing safety
- Big improvements
- +1 +1

- Too much concrete, would prefer more landscaping on sidewalk fo an enjoyable walking experience
- No trees on the east side?
- Grade separated bike lanes 2-way is better than separate cycke trail. Too much transition from bike lanes to trail
- So much concrete. No shade for west facing windows

- Could the 12 ft. median be a south bound bike path?
- Agree (with above comment)

Existing: I-70B to Winters

- No comments added

Concept: 4th Ave. to Struthers Ave.

- Yes but with trees, please.
- Agreed with the comment above

- Feel unsafe as a cyclist crossing Riverside SB because people don't follow the no right on red sign

Existing: Winters to Riverside Pkwy

- I think current bike lanes are okay, unless path can be built entire length , uncompromised

CITY OF Grand Junction COLORADO

(DRAFT) 7TH STREET ACTIVE TRANSPORTATION FACILITY FEASIBILITY STUDY

Grand Junction, CO

August 2024

7th Street Active Transportation Facility Feasibility Study

Grand Junction, CO

August 2024

Prepared for:

City of Grand Junction

Prepared by:

KLJ Engineering

I hereby certify that the *7th Street Active Transportation Facility Feasibility Study* was prepared by me or under my direct supervision and that I am a duly registered professional engineer under the laws of the State of Colorado.

Joseph DeVore, PE, PTOE, RSP2	CO License No:	Date:

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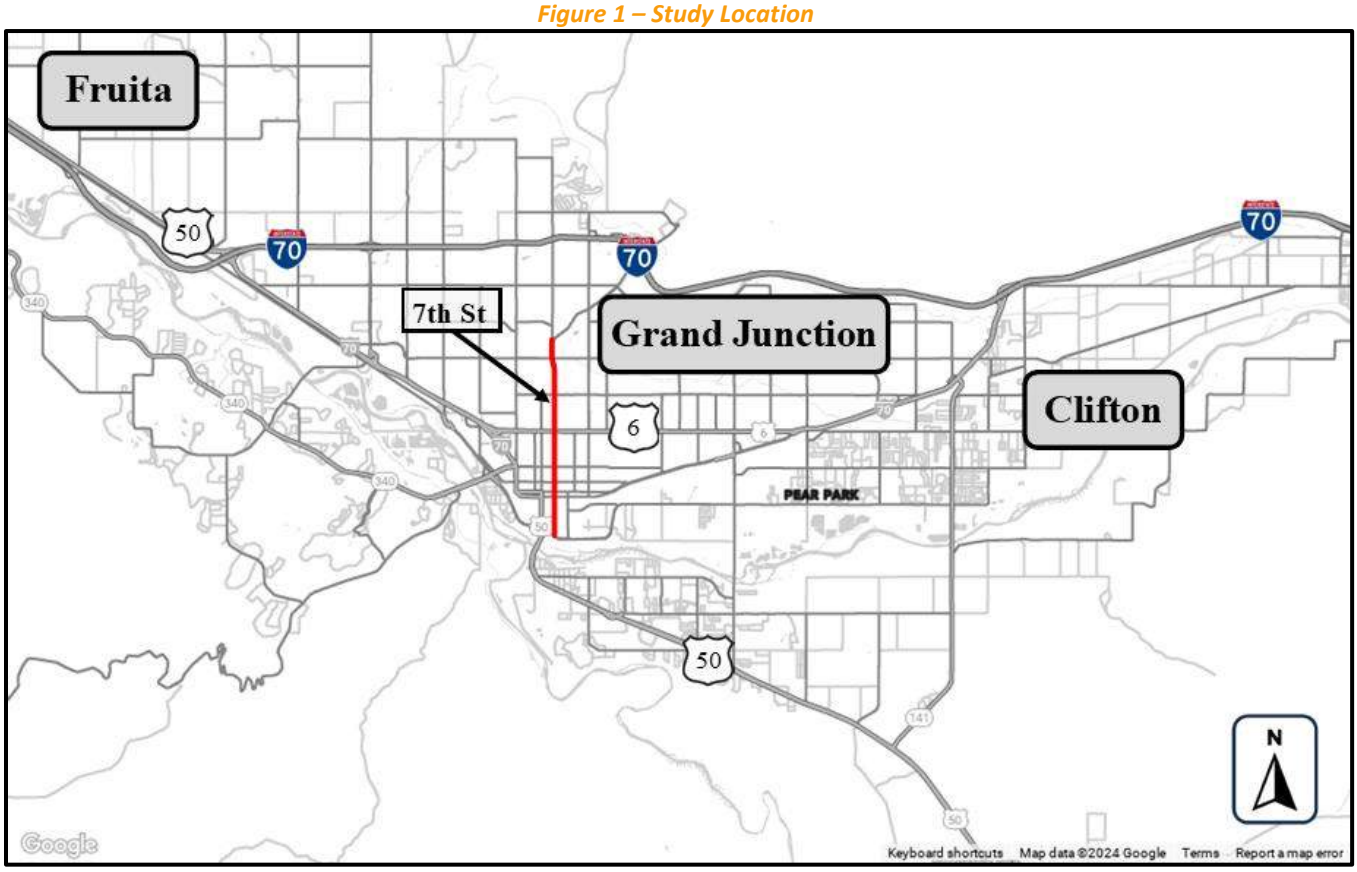
Introduction

The City of Grand Junction introduced their *Pedestrian & Bicycle Plan* (PBP) in April of 2023 with the aim to improve the pedestrian and bicycle facilities at prioritized locations throughout the city. Through the One Grand Junction Comprehensive Plan and the PBP, the City of Grand Junction has identified the need to continue to develop a safe, balanced, and well-connected transportation system that enhances mobility of all travel modes along with the importance of installing low-stress, high comfort bike facilities along the active transportation corridors. One of these locations, 7th Street, is a significant corridor for north and south travel for pedestrian, bicycle, public transit, and personal vehicles. Connections along the 7th Street corridor includes downtown Grand Junction, North Avenue (US 6), Colorado Mesa University (CMU), Tope Elementary, Grand Junction High School, Intermountain Health Saint Mary's Regional Hospital, several healthcare offices, clinics, businesses, Eureka Science Center, The Art Center, and residential neighborhoods. The corridor experiences high volumes of pedestrians walking and crossing between North Avenue and Patterson Road due to the schools, hospital, and substantial dining and retail shopping within three blocks of North Avenue. Additionally, 7th Street is one of the few corridors that allows for the crossing of railroad tracks south of downtown which makes it a popular corridor for accessing recreation and entertainment along the Riverfront Trail at Las Colonias. This report looks to determine existing conditions along the 7th Street corridor and provide multimodal facility alternatives based on feasibility, community feedback, cost, and operational service to expand multimodal use and comfort along 7th Street.

Figure 1 – Study Location

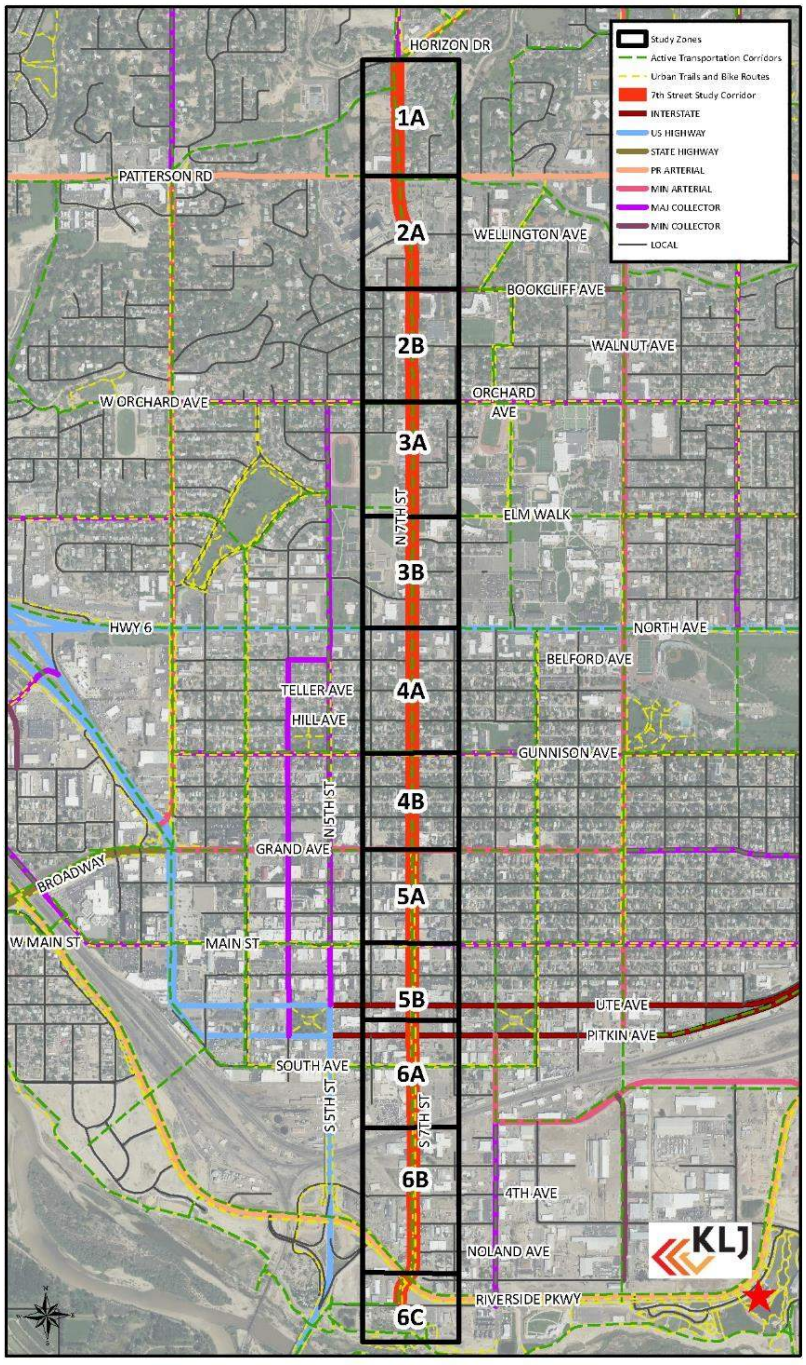


Study Area

Study Intersections

The 7th Street corridor is broken up into segments where the roadway has similar geometry, traffic volumes, and right of way (ROW). Each segment includes multiple major intersections which can be seen in **Figure 2** and the **Segments & Intersections** list below. As segment improvements are considered, transitions through intersections dividing each segment will be an important aspect of the final corridor recommendation.

Figure 2 – Study Intersections



SEGMENTS & INTERSECTIONS

Segment 1. Horizon Dr to Patterson Dr
- Int I. Horizon Dr
- Int II. Patterson Dr

Segment 2. Patterson Dr to Orchard Ave
- Int II. Patterson Dr
- Int III. Wellington Ave
- Int IV. Bookcliff Ave
- Int V. Orchard Ave

Segment 3. Orchard Ave to North Ave
- Int V. Orchard Ave
- Int VI. Elm Ave
- Int VII. North Ave

Segment 4. North Ave to Grand Ave
- Int VII. North Ave
- Int VIII. Gunnison Ave
- Int IX. Grand Ave

Segment 5. Grand Ave to Ute Ave
- Int IX. Grand Ave
- Int X. Main St
- Int XI. Ute Ave

Segment 6. Ute Ave to Struthers Ave
- Int XI. Ute Ave
- Int XII. Pitkin Ave
- Int XIII. Riverside Pkwy
- Int XIV. Struthers Ave

Traffic Volumes

Existing Volumes

KLJ Engineering collected 24-hour intersection traffic counts for the study area using StreetLight Data for each month in 2022 and January to May of 2023. Traffic volumes from the highest volume month, July 2022, were used for the base volumes seen in this study. Volumes were verified and adjusted using the *Grand Junction Transportation Map* to be a conservative volume set versus measured AADT on the corridor. Peak volumes at each intersection are used to provide a conservative analysis of the roadway network and seasonal adjustment factors were not needed for the study.

The AM peak was observed to be from 9:00 AM to 10:00 AM, and the PM peak was observed to be from 4:00 PM to 5:00 PM. A Peak Hour Factor (PHF) of 0.93 and 0.95 for the AM and PM peak respectively was calculated for the corridor using the Turning Movement Counts (TMCs). The existing intersection TMCs for AM and PM peak are shown in **Table 1** and the raw unprocessed traffic volumes and individual intersection peak times are included in **Appendix A**.

Table 1 – Existing Peak Hour Turning Movement Counts

Int ID	Intersection	Control	Peak	Northbound			Southbound			Eastbound			Westbound		
				L	T	R	L	T	R	L	T	R	L	T	R
I	Horizon Dr	Signal	AM	114	281	273	33	264	33	10	24	54	413	34	19
			PM	17	418	379	24	316	30	11	22	63	319	35	19
II	Patterson Dr	Signal	AM	176	348	106	68	418	304	237	657	176	71	865	26
			PM	297	594	356	58	274	342	204	1007	353	265	973	26
III	Wellington Ave	Signal	AM	40	514	87	40	625	30	37	10	40	43	10	41
			PM	161	1012	87	40	795	40	105	42	121	35	42	174
IV	Bookcliff Ave	Signal	AM	4	547	46	20	715	7	36	10	4	55	5	45
			PM	0	1098	0	45	887	0	0	5	0	46	10	136
V	Orchard Ave	Signal	AM	113	509	211	54	648	58	58	130	17	52	65	44
			PM	57	1007	53	57	821	76	82	393	121	99	170	44
VI	Elm Ave	SSSC	AM	0	602	16	24	688	0	0	0	0	16	0	0
			PM	0	1036	20	16	886	0	0	0	0	24	0	20
VII	North Ave	Signal	AM	87	285	139	98	529	92	185	889	43	232	418	49
			PM	43	286	327	298	285	186	559	1523	87	93	1050	248
VIII	Gunnison Ave	Signal	AM	4	467	44	13	683	2	9	34	4	18	44	13
			PM	9	541	7	7	461	7	10	52	2	9	156	15
IX	Grand Ave	Signal	AM	57	234	15	67	401	204	205	242	99	31	213	31
			PM	92	169	20	29	308	164	216	283	57	25	290	40
X	Main St	RAB	AM	41	213	28	81	355	83	46	55	73	16	46	29
			PM	41	214	14	14	249	79	41	46	49	39	46	29
XI	Ute Ave	Signal	AM	129	135	-	-	318	77	-	-	-	81	966	118
			PM	82	190	-	-	239	116	-	-	-	42	736	39
XII	Pitkin Ave	Signal	AM	-	218	55	241	170	-	49	890	78	-	-	-
			PM	-	218	55	121	162	-	81	1058	39	-	-	-
XIII	Riverside Pkwy	Signal	AM	23	48	9	45	30	82	41	283	80	60	354	111
			PM	35	25	20	123	20	82	71	534	48	17	320	91
XIV	Struthers Ave	SSSC	AM	-	-	-	93	-	78	42	91	-	-	23	40
			PM	-	-	-	50	-	45	39	18	-	-	46	44

L – Left, T – Thru, R – Right; SSSC – Side Street Stop Controlled; RAB – Roundabout

Intersection Capacity Analysis Methodology

Intersection Capacity Analysis was conducted to understand any segments along 7th Street that could benefit from a lane reduction or narrowed vehicle ROW to expand space for multimodal ROW uses.

Delay and Level of Service (LOS)

Intersection Level of Service (LOS) analysis is based on the *Highway Capacity Manual* 7th Edition (HCM) methodology. Control delay thresholds for each LOS can be seen in **Table 2**. At intersections, LOS is a function of average delay per vehicle where LOS "A" represents free flow traffic (underutilized roadway), and LOS "F" represents undesirable delay. LOS "E" or worse is considered to have operations concerns.

Table 2 – Intersection Delay and LOS Thresholds

LOS	Control Delay Per Vehicle (sec.)	
	Unsignalized Intersection	Signalized Intersection
A	≤ 10	≤ 10
B	> 10 and ≤ 15	> 10 and ≤ 20
C	> 15 and ≤ 25	> 20 and ≤ 35
D	> 25 and ≤ 35	> 35 and ≤ 55
E	**> 35 and ≤ 50**	**> 55 and ≤ 80**
F	**> 50**	**> 80**

For signalized intersections, the LOS is based on the average stopped delay per vehicle. The procedures used to evaluate signalized intersections use detailed information on geometry, lane use, signal timing, peak hour volumes, arrival types, and other parameters. This information is then used to calculate delay and determine the capacity of each intersection.

Overall intersection LOS is undefined within the HCM for side-street stop-controlled intersections. The LOS for the side-street stop-controlled intersections in the analysis is based on the delay experienced by a few movements within the intersection, rather than on the overall stopped delay per vehicle at the intersection. Due to this situation, the LOS assigned to a side-street stop-controlled intersection is based on the minor approach delay for vehicles turning left, right, and going across the major street from the minor street approach and major approach vehicles turning left.

Traffic Models

Traffic operations analysis was completed using *Synchro 12* software, which includes road geometry, such as number of lanes, storage lengths, link distances, speed limits, and traffic volumes. The results of the Synchro analysis are displayed as Measures of Effectiveness (MOE). The primary MOE's that are used in the study area are delay and LOS. Scenario Analysis was conducted for each of the segments to understand if 5-lane to 3-lane conversions produced worsened or unacceptable LOS at any of the study intersections in that section. Details of the full existing conditions results and restrict capacity (3-lane scenario) can be seen in **Table 3.** All Synchro results can be found in **Appendix B.**

Table 3 – Intersection Delay and LOS for 7th Street Corridor

Int ID	Intersection	Control	Peak	Existing	No Right Turn Lane	3- Lane	3- Lane 2045
I	Horizon Dr	Signal	AM	11.9 (B)	11.9 (B)	13.5 (B)	13.0 (B)
			PM	10.1 (B)	10.1 (B)	11.7 (B)	13.1 (B)
II	Patterson Dr	Signal	AM	41.3 (D)	53.9 (D)	50.2 (D)	**79.4 (E)**
			PM	**92.2 (F)**	**104.1 (F)**	**100.3 (F)**	**>120 (F)**
III	Wellington Ave	Signal	AM	7.5 (A)	8.1 (A)	-	-
			PM	18.4 (B)	19.2 (B)	-	-
IV	Bookcliff Ave	Signal	AM	10.0 (B)	-	-	-
			PM	**58.9 (E)**	-	-	-
V	Orchard Ave	Signal	AM	29.6 (C)	-	-	-
			PM	40.1 (D)	-	-	-
VI	Elm Ave	SSSC	AM	0.6 (A)	-	-	-
			PM	1.5 (A)	-	-	-
VII	North Ave	Signal	AM	36.6 (D)	-	**58.8 (E)**	**111.5 (F)**
			PM	**117.4 (F)**	-	**>120 (F)**	**>120 (F)**
VIII	Gunnison Ave	Signal	AM	12.1 (B)	-	11.1 (B)	39.8 (D)
			PM	10.9 (B)	-	12.5 (B)	17.4 (B)
IX	Grand Ave	Signal	AM	23.7 (C)	23.7 (C)	33.4 (C)	48.7 (D)
			PM	21.2 (C)	21.2 (C)	26.9 (C)	53.6 (D)
X	Main St	RAB	AM	7.4 (A)	-	-	-
			PM	5.6 (A)	-	-	-
XI	Ute Ave	Signal	AM	13.0 (B)	13.9 (B)	-	-
			PM	9.9 (A)	10.8 (B)	-	-
XII	Pitkin Ave	Signal	AM	12.1 (B)	12.7 (B)	-	-
			PM	12.2 (B)	12.5 (B)	-	-
XIII	Riverside Pkwy	Signal	AM	17.0 (B)	-	-	-
			PM	17.6 (B)	-	-	-
XIV	Struthers Ave	SSSC	AM	5.8 (A)	-	-	-
			PM	5.0 (A)	-	-	-

**Delay is measured in seconds per vehicle*

Traffic analysis identified that only minor operational delay increases were expected for removing right-turn lanes at Horizon Dr, Wellington Ave, Grand Ave, Ute Ave, and Pitkin Ave. 5-lane to 3-lane road capacity improvements are expected to add minimal delay at Horizon Dr, 15-20 seconds of delay at Gunnison Ave and Grand Ave, and create failing LOS F conditions at North Ave. Patterson Dr was an interesting location as a 3-lane conversion is expected to provide better operations than just removing right-turn lanes. With a high percentage of right-turning traffic it would be more beneficial to consider a 3-lane section through Patterson Dr than just narrowing and removing right-turn lanes.

Intersection Enhancements

Intersection enhancement analysis follows improvements shown in the *Improving Intersections for Pedestrians and Bicyclists* by the Federal Highway Administration (FHWA). Improvements considered are shown below with a description, benefits, and consideration criteria. These enhancements are considered at intersections that have a multimodal safety concern, high conflict volume between vehicles/peds, and where intersection area is generally available to maximize multimodal safety.

CURB EXTENSIONS

Curb extensions are areas where the sidewalk or curb is extended into the parking lane to improve visibility between pedestrians and vehicles while reducing the crossing distance for pedestrians. Additional benefits include turning vehicles having a reduced speed and preventing parking at corners of an intersection. Turning radii should be considered and the design should accommodate larger vehicles as needed based on land use. Based on location, landscaping and hardscaping should be considered.

Figure 3 – Curb Extension

Grand Junction 7th St & Rood Ave

CROSSING ISLANDS

Crossing islands are raised islands located between travel lanes at crosswalk locations to help protect the crosser from vehicles. The islands help to provide additional visual indicators for drivers on the location of a crosswalk and gives the crosser a refuge allowing them to only deal with one direction of traffic at a time while crossing. Crossing islands need to accommodate all anticipated users and crossing signs can be installed to further improve the visibility of crosswalk users. Left turn or minor approach access may be impacted by crossing islands.

Figure 4 – Crossing Island

Grand Junction 12th St North of Ridge Dr

CORNER ISLANDS

Corner islands provide a separation between crosswalks at the corners of intersections. The separation helps prevent confusion for drivers by providing a clear direction where a pedestrian plans to cross the roadway. The turning radii of vehicles should be accounted for and accommodate larger vehicles as needed.

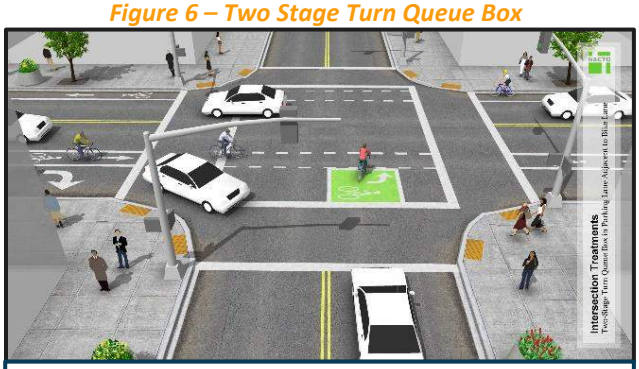
Figure 5 – Corner Island

Grand Junction 7th St at Grand Ave

TWO STAGE TURN QUEUE BOX

Two stage turn queue boxes are marked areas outside of the travel lanes that allow bicyclists to wait and make left turns. The queue boxes help by providing a safe area for bicyclists while looking for an adequate gap in traffic to cross the travel lanes. This configuration provides a higher comfort level for bicyclists at the cost of typically increased delay.

Figure 6 – Two Stage Turn Queue Box

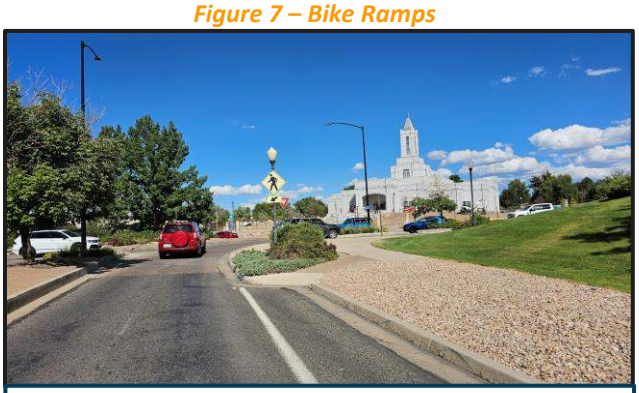


NACTO Urban Bikeway Design Guide

BIKE RAMPS

Bike ramps are transition areas between bike lanes along the travel lanes to a pathway near an intersection. This improvement is helpful at intersections with high vehicular traffic volumes to minimize additional delay added to the crossings. Additionally, bike ramps consolidate conflict points at intersections between vehicles, bicyclists, and pedestrians. Widths of the shared paths should be able to accommodate all user types at the intersection.

Figure 7 – Bike Ramps

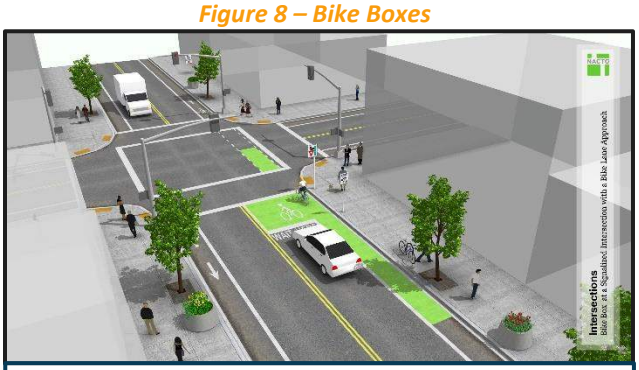


Grand Junction Horizon Dr at 12th St

BIKE BOX

Bike boxes are designated areas at intersections where bicyclists can wait in front of stopped vehicles during a red signal phase. Bicyclists are more visible to motorists at the start of the green signal phase which can reduced conflicts between bicycles and vehicles, mitigate right turn conflicts, and help group bicyclists together to clear intersections more quickly. This also benefits pedestrians by reducing vehicle encroachment into the crosswalk.

Figure 8 – Bike Boxes



NACTO Urban Bikeway Design Guide

CROSSBIKE STRIPING

Intersection crossing markings indicate the intended path of bicycles. They guide bicyclists on a safe and direct path through intersections, including driveways and ramps. Clear boundaries are created between the paths of bicycles and motor vehicles within the intersection. They are marked with dotted bicycle lane line extensions and may be supplemented with green color or bike symbols between these lines.

Figure 9 – Crossbike Striping

7th Street and White Avenue

LEADING PEDESTRIAN INTERVALS (LPI)

A leading pedestrian interval provides pedestrians using crosswalks at signalized intersections the opportunity to enter the crosswalk prior to vehicles receiving a green signal phase. This increases visibility of crossing pedestrians, reduces conflicts between pedestrians and vehicles, and enhanced safety for pedestrians who may be slower to start into the intersection.

Figure 10 – Leading Pedestrian Intervals

FHWA LPI Countermeasure Tech Sheet

NO RIGHT TURN ON RED

Right turn on red restrictions help to increase the safety of pedestrians and decrease crashes at intersections. This creates a concern with increased right turn on green conflicts which can be addressed using a leading pedestrian interval. Right turn on red restrictions should be used at locations with high volumes of pedestrians.

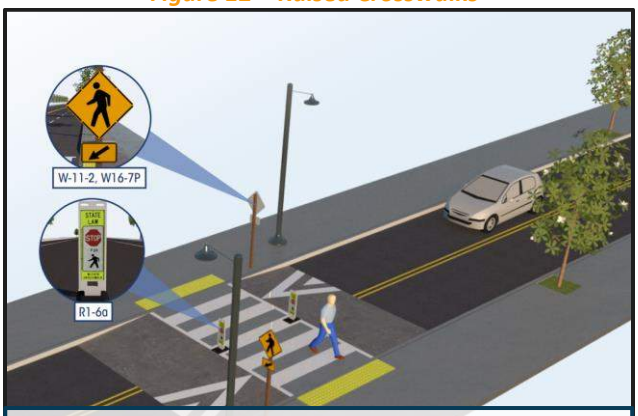
Figure 11 – No Right Turn on Red

Grand Junction 7th St at Patterson Rd

RAISED CROSSWALKS

Raised crosswalks are ramped speed tables spanning the width of the roadway and are typically used at midblock crossing locations or at the entrance to a minor street at an intersection. The raised crosswalk makes pedestrians more prominent in the driver's field of vision and removes the need for pedestrians to change grade when crossing. This improvement may reduce speeds of drivers and improve yielding. Drainage and snowplowing can be a concern and should be accounted for at locations with raised crosswalks.

Figure 12 – Raised Crosswalks



FHWA Raised Crosswalk Countermeasure Tech Sheet

7th Street Corridor

Segment 1 (Horizon Dr to Patterson Rd)

EXISTING CONDITIONS

The current roadway characteristics of segment one, Horizon Drive to Patterson Road, are shown below in **Table 4** and a cross section showing the existing lane configuration can be seen in **Figure 13**. This segment was identified as adding a Buffered Bike Lane along 7th Street in this segment. It is expected to connect into the existing trail and on-street bike-lanes on Horizon Drive, trail connection west at Village Coop of Grand Junction, and future trail/buffered bike lanes along Patterson Road.

Table 4 – Segment 1 Characteristics

	Segment Characteristic	Description
Segment 1	Speed Limit	35 mph
	Cross Section Geometry	2 NB, 2 SB, 1 TWLTL
	Cross Section Width	66 ft
	ROW	80 ft
	AADT	≈ 15,500 Vehicles
	Ped Facilities	Sidewalk on E & W
	Bike Facilities	NA

NB – Northbound, SB – Southbound, TWLTL – Two Way Left Turn Lane
AADT – Average Annual Daily Traffic

Figure 13 – Segment 1 Existing Section

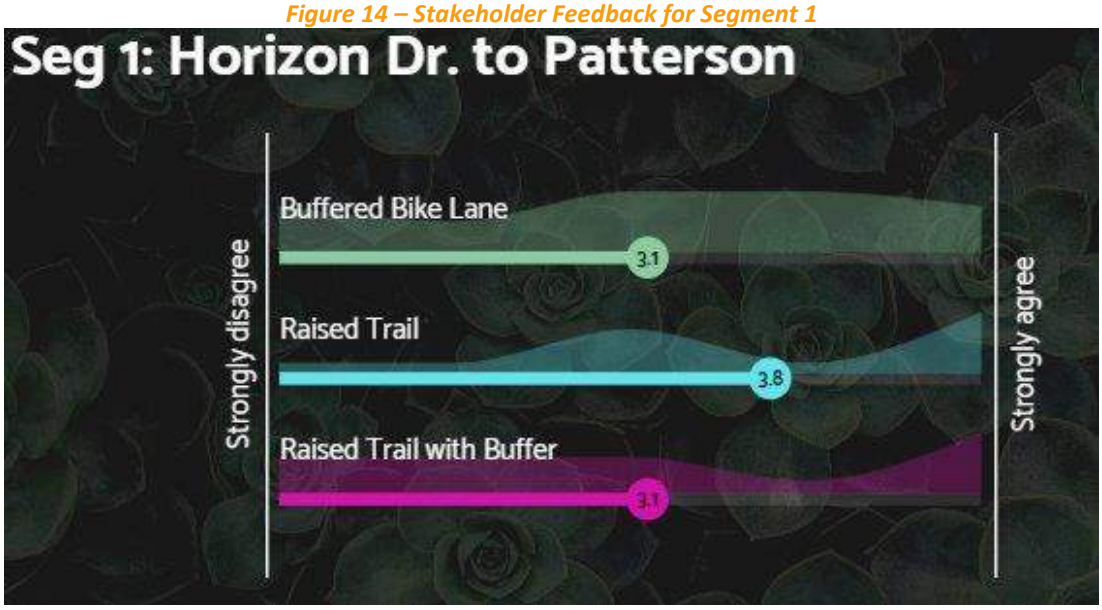
Right turn lanes exist along the roadway section at the intersections of Patterson Road, Glen Court, and Horizon Drive. The ROW varies slightly along this segment and is not able to fully utilize the area within the cross-section

geometry due to the roadway being located along a hill with some areas constrained by retaining walls and other structural elements for properties along the hillside.

ALTERNATIVES

Limitations of the usable ROW for this segment creates a challenge for expanding the existing lane configuration to include bike facilities. Stakeholder feedback for potential alternatives can be seen in **Figure** 14.

Figure 14 – Stakeholder Feedback for Segment 1

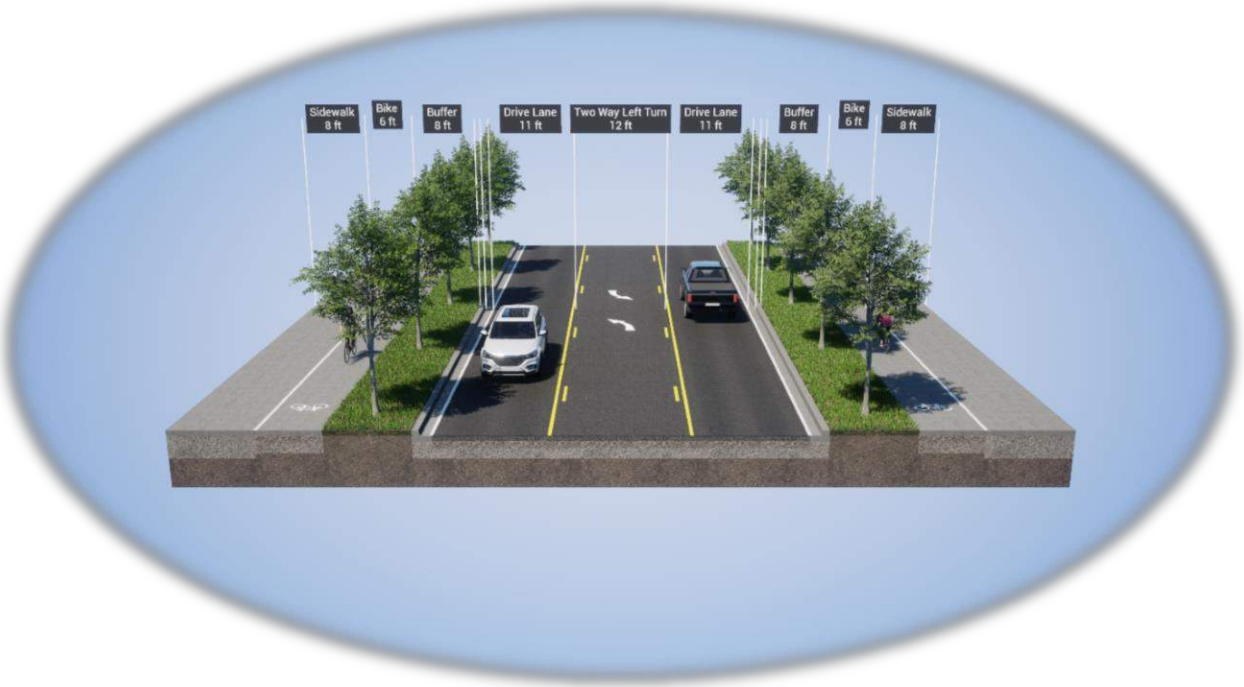


The raised trial option showed the highest average score with moderate support of the buffered bike lane and raised trail with buffer scores. Based on limitations and feedback for segment one, it is recommended that a raised bike lane or raised trail should be included in this section based on ROW outside of the existing travel lanes today. Multiple lane configurations were considered to accommodate the bike lane with a 3-lane and 5-lane layout and the raised trail with a 3-lane layout. Cross sections including the improvements can be seen in **Figure 15**, **Figure 16,** and **Figure 17**.

Figure 15 – Segment 1 Alternative – Raised Bike Lane - 5 Lanes

The raised bike lane using a five-lane section utilizes 78 feet of the potential 80 feet available. This alternative provides dedicated bike lanes providing a safer option for cyclists while expanding the pedestrian crosswalks. Barrier or mountable style curbs could be used depending on operational preferences to clear snow. This alternative does not have green space for snow storage.

Figure 16 – Segment 1 Alternative – Raised Protected Bike Lane – 3 Lanes



The raised protected bike lane using a three-lane section increases the width of the utilized ROW from 64 feet to 70 feet and provides a higher comfort level for all users of the roadway.

Figure 17 – Segment 1 Alternative – Trail – 3 Lanes

The raised trail using the three-lane section has similar benefits to the raised protected bike lane but provides a nice transition into Horizon Drive as users of the trail will not need to cross 7th Street to head east. The vehicular Level of Service (LOS) is expected to be negatively impacted with a reduction of lanes along 7th Street. However, this can be an intentional tradeoff if pedestrian and bicyclist separation from traffic is crucial and mitigated somewhat if lane capacity is expanded just around Patterson Road. Results of the Synchro 12 analysis can be seen in **Table 5**.

Table 5 – Segment 1 Alternative Analysis LOS Results

	Intersection	Existing Int Delay (LOS)	3-Lane Alt Int Delay (LOS)	3-Lane Alt Int Delay (LOS) - 2045
Seg 1	Horizon Drive	11.9 (B)	13.5 (B)	13.0 (B)
	Patterson Road	**92.2 (F)**	**100.3 (F)**	**>120 (F)**

Delay is measure in seconds per vehicle
Existing includes 5-Lanes, Alternative includes 3-Lanes

The existing roadway segment is currently experiencing operational concerns at Patterson Road and would be exaggerated by 8 seconds per vehicle of delay if the number of lanes along 7th Street were reduced at the intersection. However, the roadway could transition from the five lanes at Patterson Road down to three lanes north to Horizon Drive and is expected to operate at an adequate LOS. This segment could be utilized as a transition zone between the northern side of Horizon Drive and facilities planned south of Patterson Road.

COMPARISON

The scoring criteria used to compare the existing roadway to each alternative is based on the *Grand Junction Pedestrian & Bicycle Plan* dated April 2023. Important factors such as the Level of Traffic Stress (LTS), Vehicular

Level of Service (LOS), and impacts to existing landscape, parking, and accesses are included in the scoring matrix which can be seen in **Table 6**.

Table 6 – Segment 1 Scoring Matrix

Scoring Criteria	Measure	Existing Results	*Bike (5-Lane)*	*Buffered Bike (3-Lane)*	*Trail (3-Lane)*
Pedestrian LTS	Level Of Traffic Stress	**LTS 4**	**LTS 3**	**LTS 2**	**LTS 2**
Vehicular LOS	Synchro LOS	**LOS F**	**LOS F**	**LOS F**	**LOS F**
Bicycle LTS	Level Of Traffic Stress	**LTS 4**	**LTS 3**	**LTS 2**	**LTS 2**
Landscaping	Greenspace Impact Or Add	-	**NA**	**+ 6 ft E & W**	**+ 6 ft E & W**
Intermodal Safety	Crash Benefit	-	**Separation (Medium)**	**Buffer & Separation (High)**	**Buffer & Separation (High)**
Impact On Parking	# Of Parking Spaces	-	**NA**	**NA**	**NA**
Impact To Access	Turn Lane Improvements	-	**NA**	**High**	**High**
Cost	Low, Mid, High	-	**Mid**	**High**	**High**

INTERSECTION ENHANCEMENTS

Intersection enhancements that were considered for this segment are listed below with any notable benefits and difficulties with each enhancement.

Horizon Drive

1. **Two Stage Turn Queue Box** – Allow for bicyclists to have a safe location to wait outside of the travel lane before making their left turn off 7th Street. May not be applicable depending on bicycle facilities planned along the segment.
2. **Bike Ramps** – Provide a smooth transition between intersection crossing and bicycle facility along 7th Street.
3. **Bike Box** – Provide a safe area for bicyclists to wait during a red phase. Easier to implement and could provide a significant benefit as the bicycle facility grows near Horizon Drive.
4. **Leading Pedestrian Intervals** – Not much benefit with channelized right turn lanes. Easy to implement if pedestrian crashes increase at this intersection.

Patterson Road

1. **Corner Islands** – Clarify which direction pedestrians plan to cross. May result in crossings moving slightly farther from the intersection.
2. **Crossbike Striping** – Provides clearly indicated pathways for where bicycles should travel through the intersection. Helps drivers see where to watch for bicycles when turning off 7th Street.
3. **Leading Pedestrian Intervals** – Improve safety for crossing pedestrians to allow drivers a chance to see crossing pedestrians prior to turning.

4. **No Right Turn on Red** – Currently exists for southbound traffic and could be considered for other approaches if pedestrian crashes increase at this intersection. Pairs well with Leading Pedestrian Intervals.

Segment 2 (Patterson Rd to Orchard Ave)

EXISTING CONDITIONS

The current roadway characteristics of segment two, Patterson Road to Orchard Avenue, are shown below in **Table 4** and a cross section showing the existing lane configuration can be seen in **Figure 13**.

Table 7 – Segment 2 Characteristics

	Segment Characteristic	Description
Segment 2	Speed Limit	35 mph
	Cross Section Geometry	2 NB, 2 SB, 1 TWLTL
	Cross Section Width	92 ft
	ROW	100 ft
	AADT	≈ 19,500 Vehicles
	Ped Facilities	Sidewalk on E & W
	Bike Facilities	NA

NB – Northbound, SB – Southbound, TWLTL – Two Way Left Turn Lane
AADT – Average Annual Daily Traffic

Figure 18 – Segment 2 Existing Section

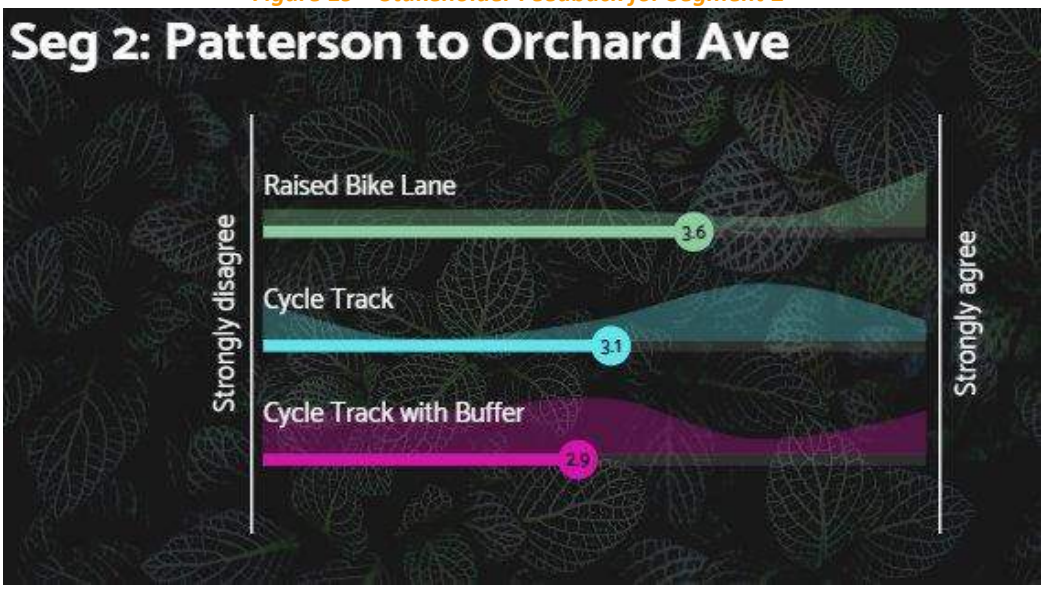
Right turn lanes exist along the roadway section at the intersections of Patterson Road and Wellington Avenue. The ROW varies slightly along the north part of this segment where the roadway alignment moves east where it then continues directly south with little variation to the ROW. Various accesses to businesses and residential lots exist throughout this segment. Additionally, Saint Mary's Hospital creates a large pedestrian demand at the

Wellington Avenue intersection from employees using parking lots on the east side of the roadway crossing to the west. Future development of a pedestrian bridge is planned to alleviate the high demand at this location.

ALTERNATIVES

The current configuration provides a buffered sidewalk for pedestrians on one side of the roadway however, there is enough ROW to improve the pedestrian facilities and provide independent bike facilities. Multiple alternatives were considered including a raised bike lane, cycle track, and a cycle track with a larger buffer to allow for future roadway growth. Stakeholder feedback for potential alternatives along this segment can be seen in **Figure 14**.

Figure 19 – Stakeholder Feedback for Segment 2



The cycle track alternative received the most positive feedback with a higher general rating even though the raised bike lane option showed a higher average score. Installation of a cycle track and sidewalk may prove difficult with some of the mature trees found on the east side of the roadway along this segment. Based on feedback and feasibility for segment two, it is recommended that a raised trail or raised bike lanes should be included in this section. A raised trail will provide space for both pedestrians and bikes with some flexibility to allow the path to avoid any trees that are to remain in place. The sidewalk on the west was moved to provide a buffer. Cross sections including the improvements can be seen in **Figure 20** and **Figure 21**.

Figure 20 – Segment 2 Alternative – Raised Trail

Figure 21 – Segment 2 Alternative – Raised Bike Lane

The raised trail and raised bike lane alternative sections utilize 88 feet and 96 feet respectively of the potential 100 feet available. These alternatives provide dedicated areas for bikes away from the vehicular traffic providing

a safer option for cyclists while expanding the pedestrian crosswalks. A buffer between the vehicles improves the comfort level along the segment.

COMPARISON

The scoring criteria used to compare the existing roadway to each alternative is based on the *Grand Junction Pedestrian & Bicycle Plan* dated April 2023. Important factors such as the Level of Traffic Stress (LTS), Vehicular Level of Service (LOS), and impacts to existing landscape, parking, and accesses are included in the scoring matrix which can be seen in **Table 6**.

Table 8 – Segment 2 Scoring Matrix

Scoring Criteria	Measure	Existing Results	*Raised Trail*	*Raised Bike Lane*
Pedestrian LTS	Level Of Traffic Stress	**LTS 4**	**LTS 2**	**LTS 2**
Vehicular LOS	Synchro LOS	**LOS E**	**LOS E**	**LOS E**
Bicycle LTS	Level Of Traffic Stress	**LTS 4**	**LTS 2**	**LTS 2**
Landscaping	Greenspace Impact Or Add	-	**≈ Similar**	**≈ Similar**
Intermodal Safety	Crash Benefit	-	**Buffer & Separation (High)**	**Buffer & Separation (High)**
Impact On Parking	# Of Parking Spaces	-	**NA**	**NA**
Impact To Access	Turn Lane Improvements	-	**High (Patterson & Wellington)**	**High (Patterson & Wellington)**
Cost	Low, Mid, High	-	**Mid**	**Mid**

INTERSECTION ENHANCEMENTS

Intersection enhancements that were considered for this segment are listed below with any notable benefits and difficulties with each enhancement.

Patterson Road

1. **Corner Islands** – Clarify which direction pedestrians plan to cross. May result in crossings moving slightly farther from the intersection.
2. **Crossbike Striping** – Provides clearly indicated pathways for where bicycles should travel through the intersection. Helps drivers see where to watch for bicycles when turning off 7th Street.
3. **Leading Pedestrian Intervals** – Improve safety for crossing pedestrians to allow drivers a chance to see crossing pedestrians prior to turning.
4. **No Right Turn on Red** – Currently exists for southbound traffic and could be considered for other approaches if pedestrian crashes increase at this intersection. Pairs well with Leading Pedestrian Intervals.

Wellington Avenue

1. **Corner Islands** – Northeast corner could benefit with two crosswalks. Provide visual separation for drivers to distinguish where pedestrians are crossing.
2. **Crossbike Striping** – Provides clearly indicated pathways for where bicycles should travel through the intersection. Helps drivers see where to watch for bicycles when turning off 7th Street.

3. **Leading Pedestrian Intervals** – High pedestrian volumes exist due to the hospital and this enhancement could improve the safety of pedestrians.
4. **No Right Turn on Red** – Could be added to westbound and northbound traffic to further help protect pedestrians at the intersection.
5. **Pedestrian Phase Timing** – Walk timing could be increased to accommodate hospital-based pedestrian demand. This must be considered with vehicle traffic impacts.

Bookcliff Avenue

1. **Corner Islands** – Clarify which direction pedestrians plan to cross. May result in crossings moving slightly farther from the intersection.
2. **Leading Pedestrian Intervals** – Improve safety for crossing pedestrians to allow drivers a chance to see crossing pedestrians prior to turning.
3. **No Right Turn on Red** – Current conditions include yield to pedestrian signs and could be changed to no right turn on red if pedestrian crashes become an issue to try and improve pedestrian safety.

Orchard Avenue

1. **Corner Islands** – Clarify which direction pedestrians plan to cross. May result in crossings moving slightly farther from the intersection.
2. **Crossbike Striping** – Provides clearly indicated pathways for where bicycles should travel through the intersection. Helps drivers see where to watch for bicycles when turning off 7th Street.
3. **Leading Pedestrian Intervals** – Improve safety for crossing pedestrians to allow drivers a chance to see crossing pedestrians prior to turning.
4. **No Right Turn on Red** – Could be added to help protect pedestrians at the intersection. Pairs well with leading pedestrian intervals.

Segment 3 (Orchard Ave to North Ave)

EXISTING CONDITIONS

The current roadway characteristics for segment three, Orchard Avenue to North Avenue, are shown below in **Table 9** and a cross section showing the existing lane configuration can be seen in **Figure 22**.

Table 9 – Segment 3 Characteristics

	Segment Characteristic	Description
Segment 2	Speed Limit	35 mph
	Cross Section Geometry	2 NB, 2 SB, 1 TWLTL
	Cross Section Width	82 ft
	ROW	100 ft
	AADT	≈ 20,000 Vehicles
	Ped Facilities	Sidewalk on E & W
	Bike Facilities	NA

NB – Northbound, SB – Southbound, TWLTL – Two Way Left Turn Lane
AADT – Average Annual Daily Traffic

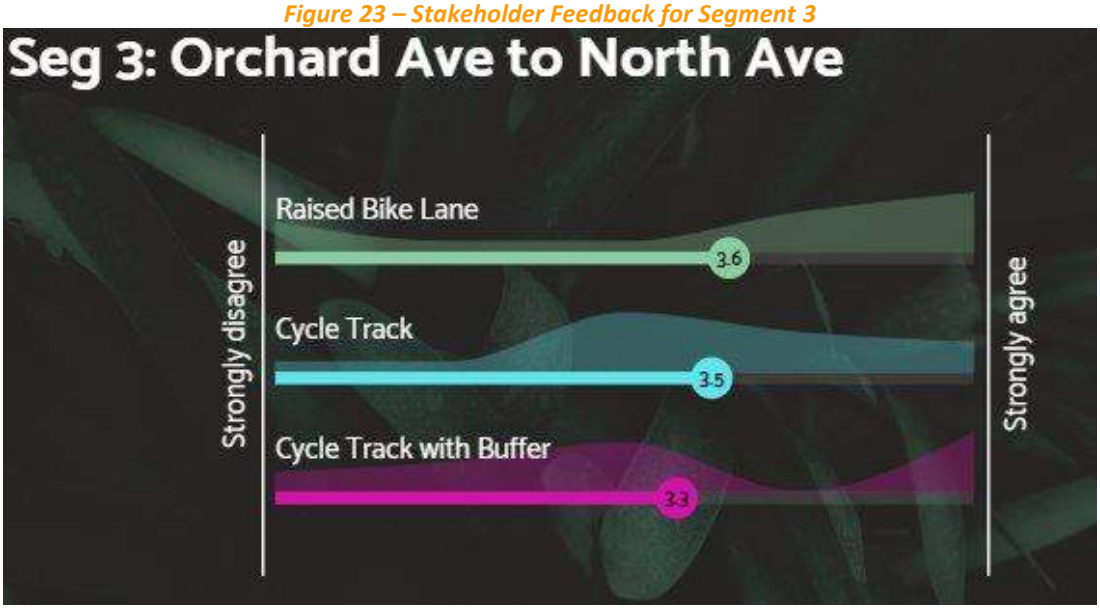
Figure 22 – Segment 3 Existing Section

The ROW has little variation along this segment. Various accesses to businesses, residential lots, and Colorado Mesa University exist throughout this segment. Additionally, there is a bus stop just south of Elm Avenue and a push button crossing north of Elm Avenue. Future development of the Grand Junction High School plans to provide access along Elm Avenue for vehicles.

ALTERNATIVES

The current configuration provides a buffered sidewalk for pedestrians with one side having a small four foot buffer and the other side providing a 12 foot buffer. There is approximately 20 feet of unutilized ROW which can be used to provide independent bike facilities. Multiple alternatives were considered including a raised bike lane, cycle track, and a cycle track with a larger buffer to allow for future roadway growth. Stakeholder feedback for potential alternatives along this segment can be seen in **Figure 23**.

Figure 23 – Stakeholder Feedback for Segment 3



The cycle track alternative received the most positive feedback with a higher general rating even though the raised bike lane option showed a higher average score. Installation of a cycle track and sidewalk may prove difficult with some of the mature trees found on the east side of the roadway along this segment. Based on feedback and feasibility for segment two, it is recommended that a raised trail should be included in this section. A raised trail will provide space for both pedestrians and bikes with some flexibility to allow the path to avoid any trees that are to remain in place. The sidewalk on the west was moved to provide a buffer. A cross section including the improvements can be seen in **Figure 24**.

Figure 24 – Segment 3 Alternative – Raised Trail

The raised trail alternative sections utilize 88 feet of the potential 100 feet available. This alternative provides a dedicated area for bikes away from the vehicular traffic providing a safer option for cyclists while expanding the pedestrian crosswalks. The trail also provides flexibility for areas where it may be necessary to avoid trees along the corridor. A buffer between the vehicles improves the comfort level along the segment. It is recommended to keep the cycle track located on the east side of the roadway to minimize the need for users to cross 7th Street as there are more connections to other pedestrian and bike facilities east of this segment.

COMPARISON

The scoring criteria used to compare the existing roadway to each alternative is based on the *Grand Junction Pedestrian & Bicycle Plan* dated April 2023. Important factors such as the Level of Traffic Stress (LTS), Vehicular Level of Service (LOS), and impacts to existing landscape, parking, and accesses are included in the scoring matrix which can be seen in **Table 10**.

Table 10 – Segment 3 Scoring Matrix

Scoring Criteria	Measure	Existing Results	*Raised Trail*
Pedestrian LTS	Level Of Traffic Stress	**LTS 3**	**LTS 2**
Vehicular LOS	Synchro LOS	**LOS F**	**LOS F**
Bicycle LTS	Level Of Traffic Stress	**LTS 4**	**LTS 2**
Landscaping	Greenspace Impact Or Add	-	**≈ Similar**
Intermodal Safety	Crash Benefit	-	**Buffer & Separation (High)**
Impact On Parking	# Of Parking Spaces	-	**NA**
Impact To Access	Turn Lane Improvements	-	**NA**
Cost	Low, Mid, High	-	**Mid**

INTERSECTION ENHANCEMENTS

Intersection enhancements that were considered for this segment are listed below with any notable benefits and difficulties with each enhancement.

Orchard Avenue

1. **Corner Islands** – Clarify which direction pedestrians plan to cross. May result in crossings moving slightly farther from the intersection.
2. **Crossbike Striping** – Provides clearly indicated pathways for where bicycles should travel through the intersection. Helps drivers see where to watch for bicycles when turning off 7th Street.
3. **Leading Pedestrian Intervals** – Improve safety for crossing pedestrians to allow drivers a chance to see crossing pedestrians prior to turning.
4. **No Right Turn on Red** – Could be added to help protect pedestrians at the intersection. Pairs well with leading pedestrian intervals.

Elm Avenue

5. **Corner Islands** – Clarify which direction pedestrians plan to cross. May result in crossings moving slightly farther from the intersection.

6. **Raised Crosswalks** – Use of the raised crosswalk should be limited to the Elm Avenue approach due to high volumes on 7th Street and high pedestrian volumes from Colorado Mesa University and Grand Junction High School. Could create issues for drainage and snowplowing.

North Avenue

1. **Corner Islands** – Clarify which direction pedestrians plan to cross. May result in crossings moving slightly farther from the intersection. High pedestrian volumes are seen at this intersection and would greatly help improve visual indication for drivers when large groups of pedestrians are planning to cross.
2. **Bike Ramps** – Provide a smooth transition between intersection crossing and bicycle facility along 7th Street.
3. **Crossbike Striping** – Provides clearly indicated pathways for where bicycles should travel through the intersection. Helps drivers see where to watch for bicycles when turning off 7th Street.
4. **Leading Pedestrian Intervals** – Improve safety for crossing pedestrians to allow drivers a chance to see crossing pedestrians prior to turning. Could be useful during peak pedestrian times from Colorado Mesa University and especially Grand Junction High School.
5. **No Right Turn on Red** – Could be added to help protect pedestrians at the intersection. Pairs well with leading pedestrian intervals.

Segment 4 (North Ave to Grand Ave)

EXISTING CONDITIONS

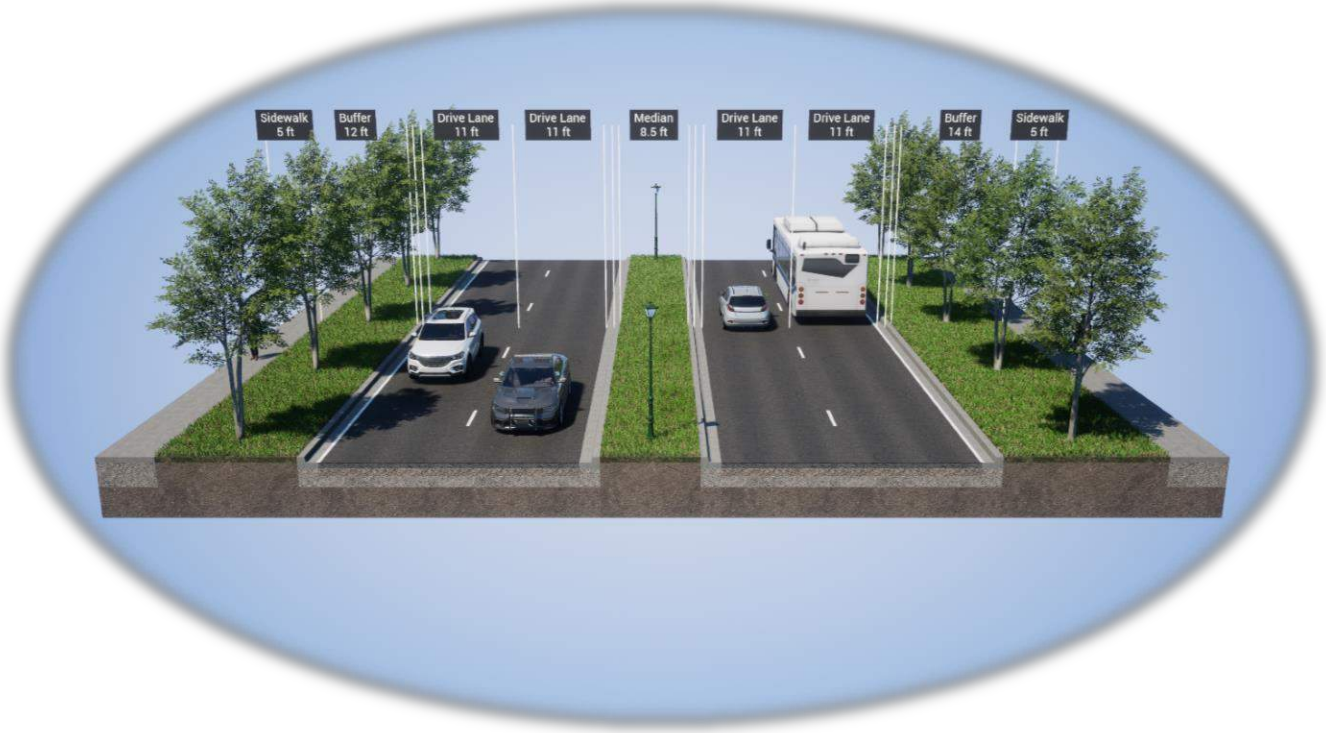
The current roadway characteristics of segment four, North Avenue to Grand Avenue, are shown below in **Table 11** and a cross section showing the existing lane configuration can be seen in **Figure 25**.

Table 11 – Segment 4 Characteristics

	Segment Characteristic	Description
Segment 4	Speed Limit	30 mph
	Cross Section Geometry	2 NB, 2 SB
	Cross Section Width	92 ft
	ROW	100 ft
	Existing AADT	≈ 12,000 Vehicles
	2050 AADT	15-16,000 Vehicles
	Ped Facilities	Sidewalk on E & W
	Bike Facilities	NA

NB – Northbound, SB – Southbound, TWLTL – Two Way Left Turn Lane
AADT – Average Annual Daily Traffic

Figure 25 – Segment 4 Existing Section

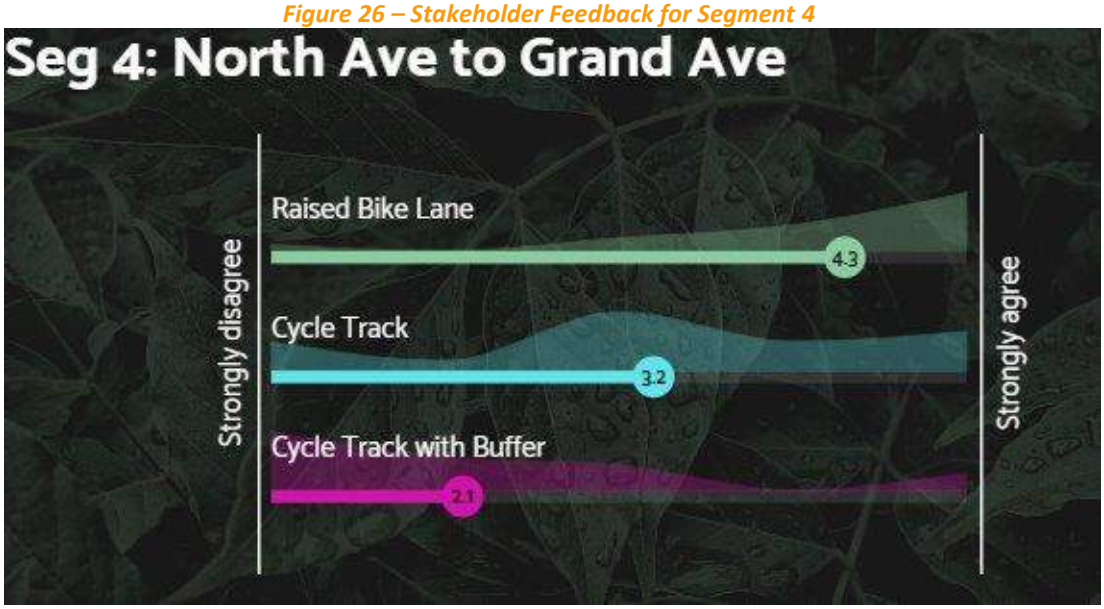


There are no right turn lanes along this segment with the roadway being constrained by existing landscaping. Accesses are limited to alleyways and streets with a raised median throughout the majority of this segment. The buffers along the east and west of the roadway contain existing trees.

ALTERNATIVES

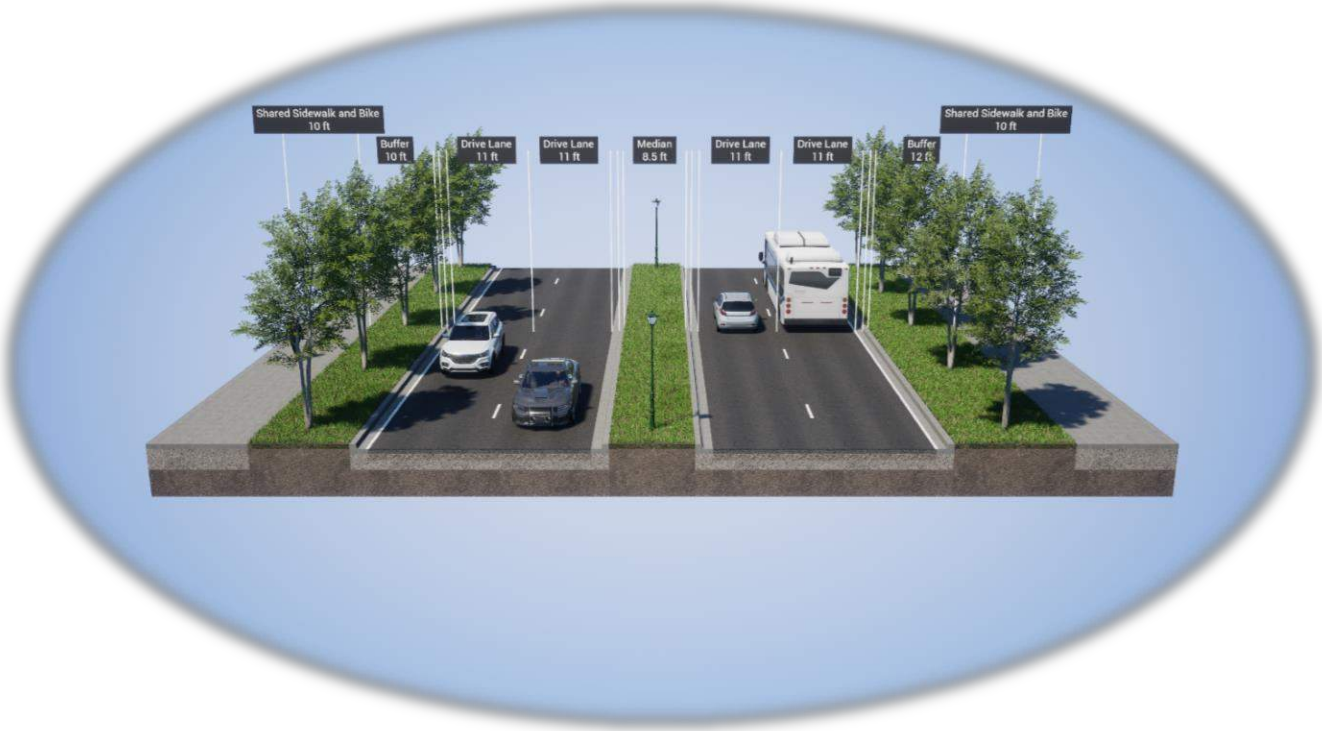
The current configuration provides a buffered sidewalk for pedestrians with little room for the addition of bike lanes without effecting existing landscape. Multiple alternatives were considered including a raised bike lane, cycle track, and a cycle track with a larger buffer to allow for future roadway growth. Stakeholder feedback for potential alternatives along this segment can be seen in **Figure 26**.

Figure 26 – Stakeholder Feedback for Segment 4



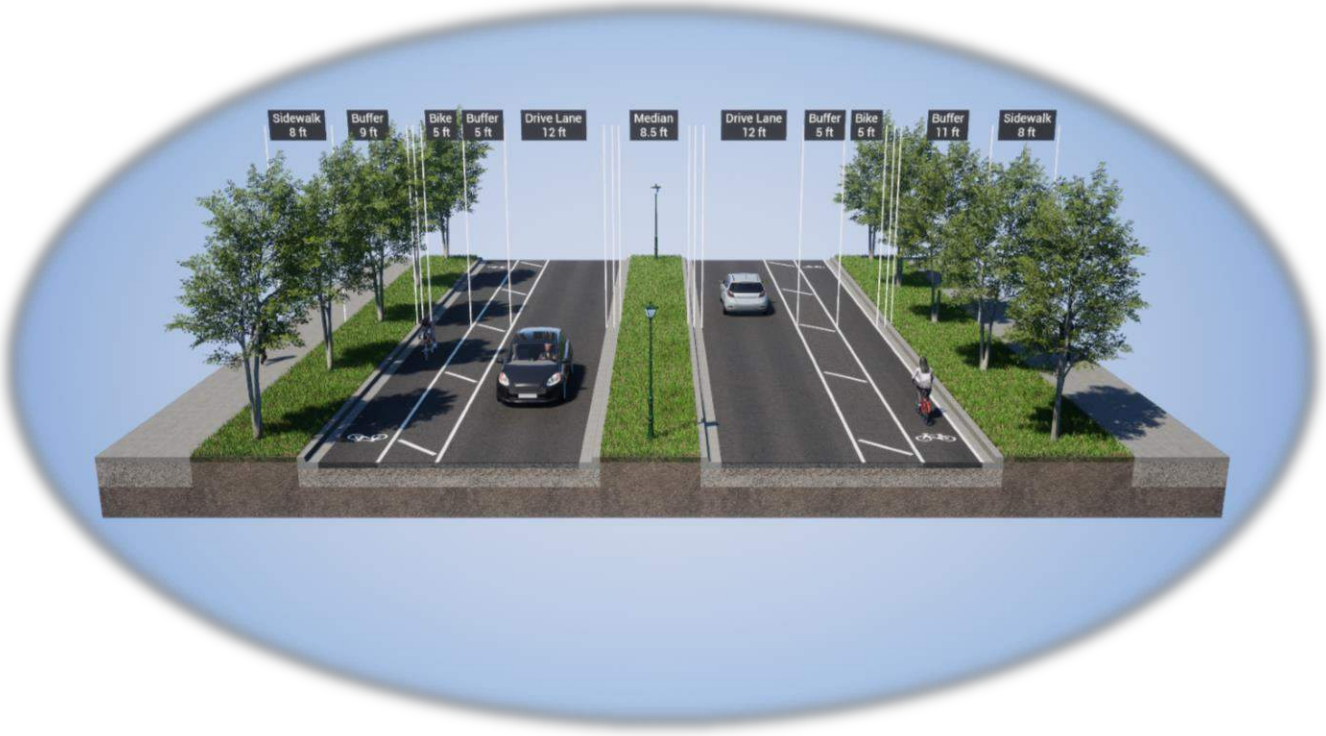
The raised bike lane alternative received the most positive feedback. However, two versions of this alternative were looked at due to the landscape restrictions. Lane configurations include a striped bike lane for a 2-lane layout and shared sidewalk and bike path for a 4-lane layout. A raised bike lane is not shown as a striped bike lane is much more feasible and still provides similar benefits but can be converted to a raised bike lane if needed. Cross sections including improvements can be seen in **Figure 27** and **Figure 28**.

Figure 27 – Segment 4 Alternative – Shared Sidewalk and Bike Lane - 4 Lanes



The four lane section utilizes 95 feet of the potential 100 feet available. This alternative provides a shared sidewalk for pedestrians and bikes along both the east and west sides of the corridor. Landscaping will be minimally impacted and provide a large buffer between from the roadway.

Figure 28 – Segment 4 Alternative – Striped Bike Lane – 2 Lanes



Barriers could be installed in conjunction with the stiped bike lane to create a protected bike lane further increasing the safety and level of comfort of bicyclists. These barriers can include flex posts, planters, rigid bollards, parking strips, or concrete barriers. Emergency vehicles are a concern along this segment which makes mountable barriers or flex posts an ideal candidate.

The two lane section utilizes 89 feet of ROW and provides a higher comfort level for all users of the roadway. However, the vehicular Level of Service (LOS) is expected to be impacted with a reduction of lanes. Intersections included in the study and part of segment four were analyzed with the reduction in lanes to determine if a reduction from four lanes to two is feasible for the entire length of the segment. Results of the Synchro 12 analysis can be seen in **Table 12**.

Table 12 – Segment 4 Alternative Analysis LOS Results

	Intersection	Existing Int Delay (LOS)	Alternative Int Delay (LOS)	Alternative Int Delay (LOS) - 2045
Seg 1	North Ave	**117.4 (F)**	**>120 (F)**	**>120 (F)**
	Gunnison Ave	12.1 (B)	12.5 (B)	39.8 (D)
	Grand Ave	23.7 (C)	33.4 (C)	53.6 (D)

Delay is measure in seconds per vehicle
Existing includes 5-Lanes, Alternative includes 3-Lanes

The existing roadway segment is currently experiencing operational concerns at North Avenue and would only be exaggerated if the number of lanes along 7th Street were reduced at the intersection. However, the roadway could transition from the five lanes at North Avenue down to three lanes heading south and is expected to

operate at an adequate LOS. Additionally, if operations degrade at Gunnison Avenue or Grand Avenue, the striped bike lane could be striped as a shared lane at those locations to allow for right turn lanes along the roadway.

COMPARISON

The scoring criteria used to compare the existing roadway to each alternative is based on the *Grand Junction Pedestrian & Bicycle Plan* dated April 2023. Important factors such as the Level of Traffic Stress (LTS), Vehicular Level of Service (LOS), and impacts to existing landscape, parking, and accesses are included in the scoring matrix which can be seen in **Table 13**.

Table 13 – Segment 4 Scoring Matrix

Scoring Criteria	Measure	Existing Results	*Shared Bike & Sidewalk (2-Lane)*	*Striped Bike (4-Lane)*
Pedestrian LTS	Level Of Traffic Stress	**LTS 3**	**LTS 2**	**LTS 3**
Vehicular LOS	Synchro LOS	**LOS B**	**LOS C**	**LOS B**
Bicycle LTS	Level Of Traffic Stress	**LTS 4**	**LTS 2**	**LTS 2**
Landscaping	Greenspace Impact Or Add	-	**+ 4 ft E & W**	**≈ Similar**
Intermodal Safety	Crash Benefit	-	**Buffer & Separation (High)**	**Buffer & Separation (High)**
Impact On Parking	# Of Parking Spaces	-	**NA**	**NA**
Impact To Access	Turn Lane Improvements	-	**NA**	**NA**
Cost	Low, Mid, High	-	**Mid**	**Low**

INTERSECTION ENHANCEMENTS

Intersection enhancements that were considered for this segment are listed below with any notable benefits and difficulties with each enhancement.

North Avenue

1. **Corner Islands** – Clarify which direction pedestrians plan to cross. May result in crossings moving slightly farther from the intersection. High pedestrian volumes are seen at this intersection and would greatly help improve visual indication for drivers when large groups of pedestrians are planning to cross.
2. **Bike Ramps** – Provide a smooth transition between intersection crossing and bicycle facility along 7th Street.
3. **Crossbike Striping** – Provides clearly indicated pathways for where bicycles should travel through the intersection. Helps drivers see where to watch for bicycles when turning off 7th Street.
4. **Leading Pedestrian Intervals** – Improve safety for crossing pedestrians to allow drivers a chance to see crossing pedestrians prior to turning. Could be useful during peak pedestrian times from Colorado Mesa University and especially Grand Junction High School.
5. **No Right Turn on Red** – Could be added to help protect pedestrians at the intersection. Pairs well with leading pedestrian intervals.

Gunnison Avenue

1. **Crossing Islands** – Provide a refuge while crossing 7th Street and help drivers identify pedestrians crossing as this segment has some visual clutter. Crossing islands would greatly benefit the pedestrians but may not be possible if left turn lanes are required with growth of the 7th Street corridor.
2. **Two Stage Turn Queue Box** – Allow for bicyclists to have a safe location to wait outside of the travel lane before making their left turn off 7th Street. May not be applicable depending on bicycle facilities planned along the segment.
3. **Bike Ramps** – Provide a smooth transition between intersection crossing and bicycle facility along 7th Street.
4. **Bike Box** – Provide a safe area for bicyclists to wait during a red phase. Relatively easy to implement.
5. **Leading Pedestrian Intervals** – Improve safety for crossing pedestrians to allow drivers a chance to see crossing pedestrians prior to turning. Gunnison Avenue has crosswalks that are set back from the intersection and this enhancement could provide additional time for drivers to see crossing pedestrians.
6. **No Right Turn on Red** – Could be added to help protect pedestrians at the intersection. Pairs well with leading pedestrian intervals.
7. **Raised Crosswalks** - Use of the raised crosswalk should be limited to the Gunnison Avenue approach due to high volumes on 7th Street. Volumes seen along Gunnison Avenue may be too high for drivers to comfortably use the intersection especially with existing left turn lanes. Additionally, raised crosswalks could create issues for drainage and snowplowing.

Grand Avenue

1. **Crossing Islands** - Provide a refuge while crossing 7th Street and help drivers identify pedestrians crossing as this segment has some visual clutter. A crossing island on the north side of this intersection would greatly benefit the pedestrians but may not be possible if a dedicated left turn lane is required as the 7th Street corridor continues to see increased traffic.
2. **Corner Islands** – Current conditions include corner islands on the east side of the intersection. Corner islands could help clarify which direction pedestrians plan to cross on the west side of the intersection. May result in crossings moving slightly farther from the intersection.
3. **Two Stage Turn Queue Box** – Allow for bicyclists to have a safe location to wait outside of the travel lane before making their left turn off 7th Street. May not be applicable depending on bicycle facilities planned along the segment.
4. **Bike Ramps** – Provide a smooth transition between intersection crossing and bicycle facility along 7th Street depending on planned bicycle crossings at the intersection.
5. **Bike Box** – Provide a safe area for bicyclists to wait during a red phase. Relatively easy to implement.
6. **Crossbike Striping** – Provides clearly indicated pathways for where bicycles should travel through the intersection. Helps drivers see where to watch for bicycles when turning off 7th Street.
7. **Leading Pedestrian Intervals** – Improve safety for crossing pedestrians to allow drivers a chance to see crossing pedestrians prior to turning.
8. **No Right Turn on Red** – Could be added to help protect pedestrians at the intersection. Pairs well with leading pedestrian intervals.

Segment 5 (Grand Ave to I-70B – Ute & Pitkin Ave)

EXISTING CONDITIONS

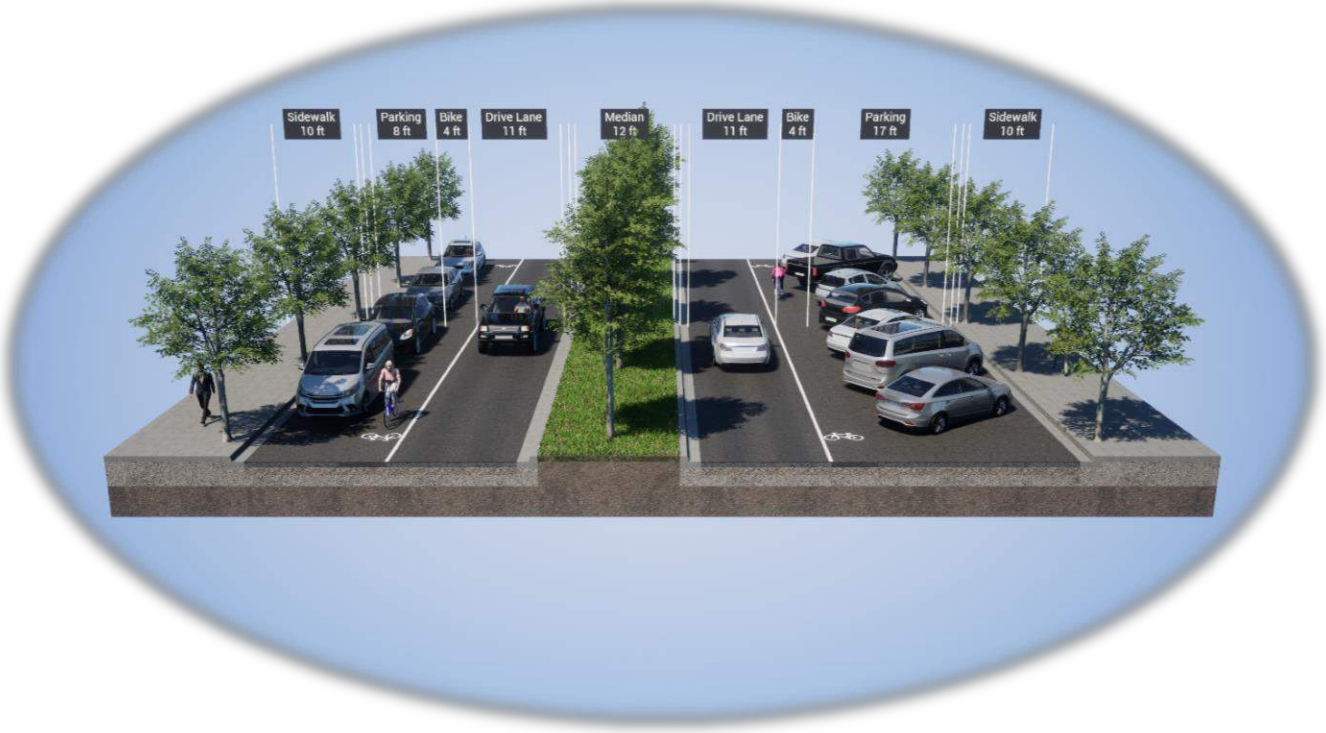
The current roadway characteristics for segment five, Grand Avenue to I-70 Business Loop, are shown below in **Table 14** and a cross section showing the existing lane configuration can be seen in **Figure 29**.

Table 14 – Segment 5 Characteristics

	Segment Characteristic	Description
Segment 2	Speed Limit	25 mph
	Cross Section Geometry	1 NB, 1 SB
	Cross Section Width	89 ft
	ROW	100 ft
	AADT	≈ 8,000 Vehicles
	Ped Facilities	Sidewalk on E & W
	Bike Facilities	Bike Lane on E & W

NB – Northbound, SB – Southbound, TWLTL – Two Way Left Turn Lane
AADT – Average Annual Daily Traffic

Figure 29 – Segment 5 Existing Section

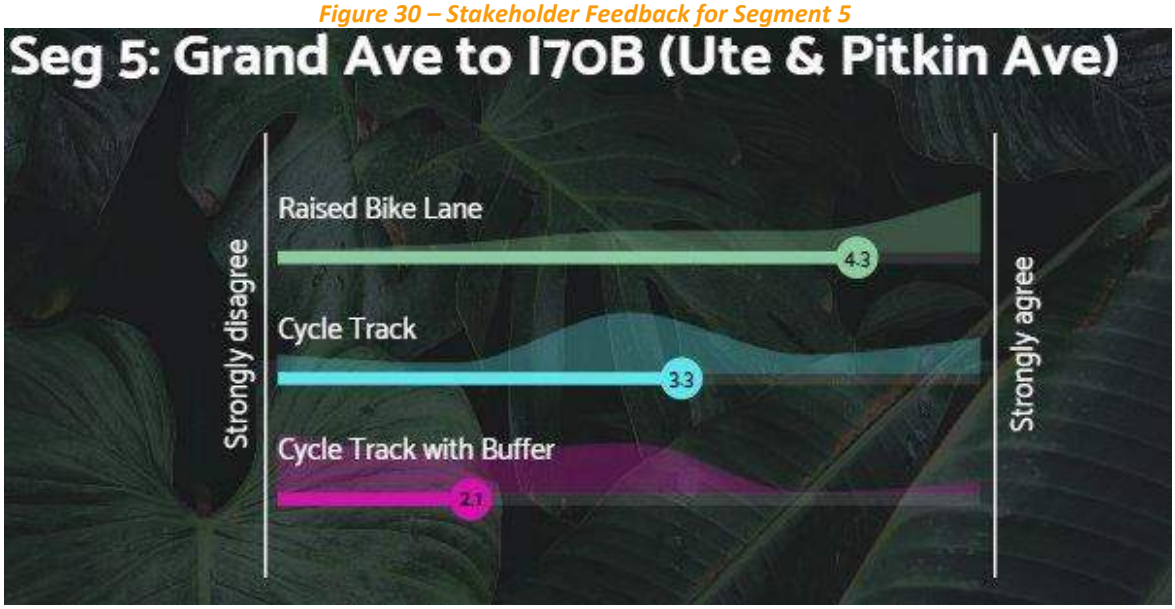


The ROW has little variation however the roadway moves east and west with alternating diagonal parking along the segment. Various accesses to businesses exist throughout this segment with a bus stops near Grand Avenue and north of Ute Avenue. Multiple pedestrian crossings exist across 7th Street with high pedestrian traffic near Main Street. The sidewalks along this segment are used as patio space and for displays by the local businesses. A continuous bike lane exists throughout this segment as well.

ALTERNATIVES

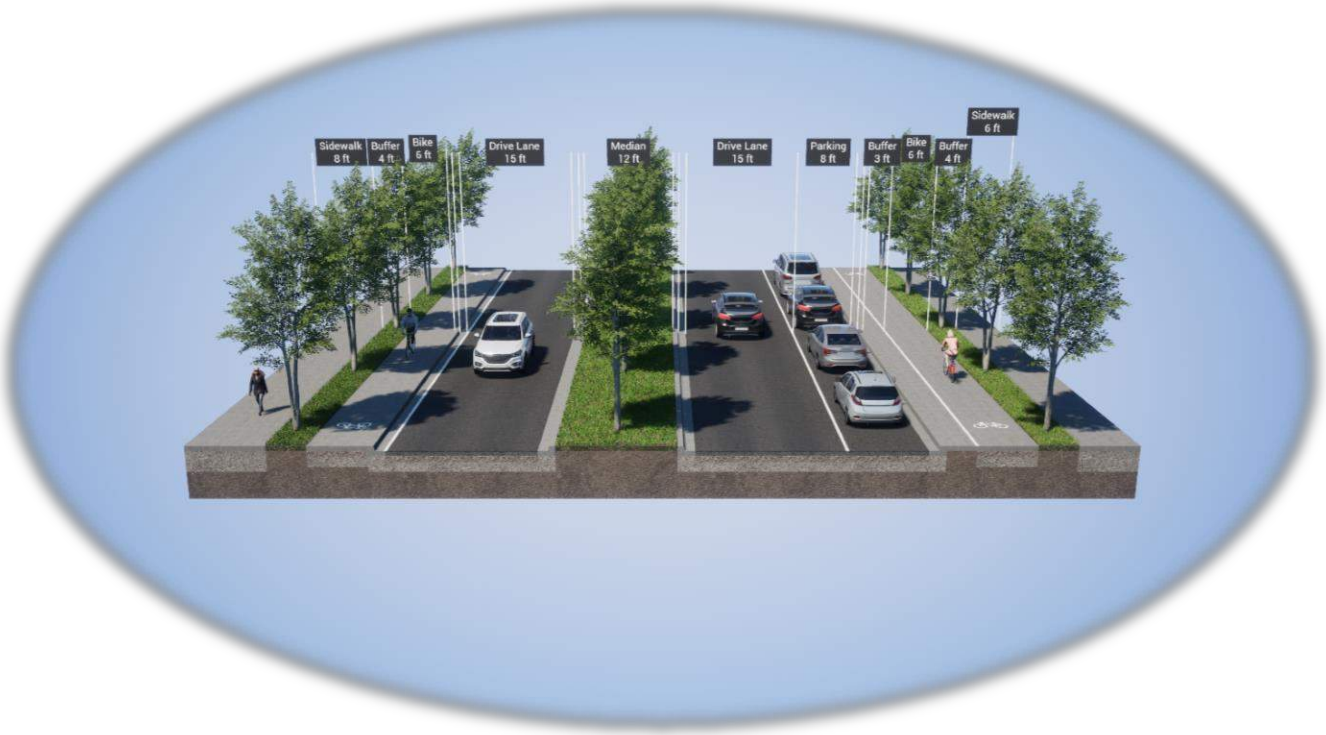
The current configuration provides sidewalk, parking, and bike lanes. There is approximately 18 feet of unutilized ROW in areas along the segment which are typically used for various local businesses. Multiple alternatives were considered including a raised bike lane, cycle track, and a cycle track with a larger buffer to allow for future roadway growth. Stakeholder feedback for potential alternatives along this segment can be seen in **Figure 30**.

Figure 30 – Stakeholder Feedback for Segment 5



The raised bike lane alternative received the most positive feedback for this segment. Bike lanes with additional buffer adjacent to the travel lanes are also provided as an alternative due to the sidewalk being used for multiple purposes such as dining and display areas. The location of sidewalks remains relatively unchanged with diagonal parking being replaced with parallel parking and bike lane buffers from the parking areas. The raised bike lanes include a physical buffer to separate the downtown pedestrian traffic from bikes to prevent additional conflicts. Raised bike lanes could feature barrier or mountable style curbs depending on operational preferences for snow clearing. Cross sections including the improvements can be seen in **Figure 31** and **Figure 32**.

Figure 31 – Segment 5 Alternative – Raised Bike Lane

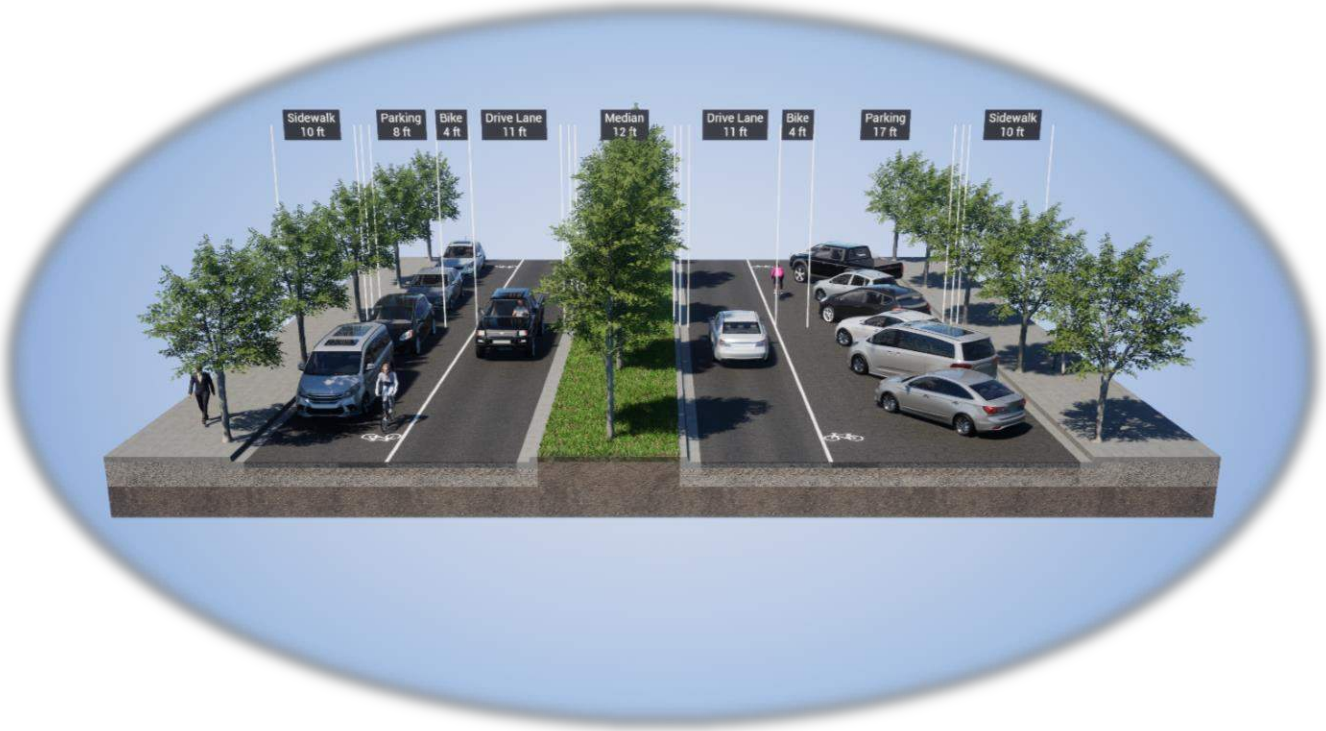


The striped bike lane alternative section utilizes 96 feet of the potential 100 feet available. This alternative provides additional space for bikers providing a safer travel lane while maintaining some parking along the segment. Bikes and pedestrians are also separated helping prevent conflicts with current uses of the sidewalk and buffer areas.

Figure 32 – Segment 5 Alternative – Striped Bike Lane

An additional interim condition could be considered to change parking along this segment from pull-in parking to back-in parking. This would improve visibility of vehicles entering back into the roadway but would reduce the total parking spaces by a small amount. **Figure 33** includes this improvement.

Figure 33 – Segment 5 Alternative – Back-In Parking



COMPARISON

The scoring criteria used to compare the existing roadway to each alternative is based on the *Grand Junction Pedestrian & Bicycle Plan* dated April 2023. Important factors such as the Level of Traffic Stress (LTS), Vehicular Level of Service (LOS), and impacts to existing landscape, parking, and accesses are included in the scoring matrix which can be seen in **Table 15**.

Table 15 – Segment 5 Scoring Matrix

Scoring Criteria	Measure	Existing Results	*Striped Bike*	*Raised Bike*
Pedestrian LTS	Level Of Traffic Stress	**LTS 1**	**LTS 1**	**LTS 1**
Vehicular LOS	Synchro LOS	**LOS B**	**LOS B**	**LOS B**
Bicycle LTS	Level Of Traffic Stress	**LTS 2**	**LTS 2**	**LTS 1**
Landscaping	Greenspace Impact Or Add	-	**NA**	**+8 ft**
Intermodal Safety	Crash Benefit	-	**Separation (Medium)**	**Separation (Medium)**
Impact On Parking	# Of Parking Spaces	-	**- 17**	**- 30**
Impact To Access	Turn Lane Improvements	-	**NA**	**NA**
Cost	Low, Mid, High	-	**Mid**	**Mid**

INTERSECTION ENHANCEMENTS

Intersection enhancements that were considered for this segment are listed below with any notable benefits and difficulties with each enhancement.

Grand Avenue

1. **Crossing Islands** - Provide a refuge while crossing 7th Street and help drivers identify pedestrians crossing as this segment has some visual clutter. A crossing island on the north side of this intersection would greatly benefit the pedestrians but may not be possible if a dedicated left turn lane is required as the 7th Street corridor continues to see increased traffic.
2. **Corner Islands** – Current conditions include corner islands on the east side of the intersection. Corner islands could help clarify which direction pedestrians plan to cross on the west side of the intersection. May result in crossings moving slightly farther from the intersection.
3. **Two Stage Turn Queue Box** – Allow for bicyclists to have a safe location to wait outside of the travel lane before making their left turn off 7th Street. May not be applicable depending on bicycle facilities planned along the segment.
4. **Bike Ramps** – Provide a smooth transition between intersection crossing and bicycle facility along 7th Street depending on planned bicycle crossings at the intersection.
5. **Bike Box** – Provide a safe area for bicyclists to wait during a red phase. Relatively easy to implement.
6. **Crossbike Striping** – Provides clearly indicated pathways for where bicycles should travel through the intersection. Helps drivers see where to watch for bicycles when turning off 7th Street.
7. **Leading Pedestrian Intervals** – Improve safety for crossing pedestrians to allow drivers a chance to see crossing pedestrians prior to turning.
8. **No Right Turn on Red** – Could be added to help protect pedestrians at the intersection. Pairs well with leading pedestrian intervals.

Main Street

1. **Bike Ramps** – Provide a smooth transition between intersection crossing and bicycle facility along 7th Street depending on planned bicycle crossings at the intersection. Could be beneficial to separate bike paths from vehicles in the round-a-bout.

Ute Avenue

1. **Bike Box** - Provide a safe area for bicyclists to wait during a red phase. Relatively easy to implement.
2. **Bike Ramps** – Provide a smooth transition between intersection crossing and bicycle facility along 7th Street depending on planned bicycle crossings at the intersection.
3. **Crossbike Striping** – Provides clearly indicated pathways for where bicycles should travel through the intersection. Helps drivers see where to watch for bicycles when turning off 7th Street.
4. **Leading Pedestrian Intervals** – Improve safety for crossing pedestrians to allow drivers a chance to see crossing pedestrians prior to turning.
5. **No Right Turn on Red** – Could be added to help protect pedestrians at the intersection. Pairs well with leading pedestrian intervals.

Pitkin Avenue

1. **Two Stage Turn Queue Box** – Allow for bicyclists to have a safe location to wait outside of the travel lane before making their left turn off 7th Street. May not be applicable depending on bicycle facilities planned along the segment.

2. **Bike Ramps** – Provide a smooth transition between intersection crossing and bicycle facility along 7th Street depending on planned bicycle crossings at the intersection.
3. **Crossbike Striping** – Provides clearly indicated pathways for where bicycles should travel through the intersection. Helps drivers see where to watch for bicycles when turning off 7th Street.
4. **Leading Pedestrian Intervals** – Improve safety for crossing pedestrians to allow drivers a chance to see crossing pedestrians prior to turning.
5. **No Right Turn on Red** – Could be added to help protect pedestrians at the intersection. Pairs well with leading pedestrian intervals.

Segment 6a (I-70B - Ute & Pitkin Ave to 4th Ave)

EXISTING CONDITIONS

The current roadway characteristics for segment 6a, I-70 Business Loop to 4th Avenue, are shown below in **Table 16** and a cross section showing the existing lane configuration can be seen in **Figure 34**.

Table 16 – Segment 6a Characteristics

	Segment Characteristic	Description
Segment 2	Speed Limit	25 mph
	Cross Section Geometry	1 NB, 1 SB, 1 TWLTL
	Cross Section Width	94 ft
	ROW	100 ft
	AADT	≈ 4,000 Vehicles
	Ped Facilities	Sidewalk on E & W
	Bike Facilities	Bike Lane on E & W

NB – Northbound, SB – Southbound, TWLTL – Two Way Left Turn Lane
AADT – Average Annual Daily Traffic

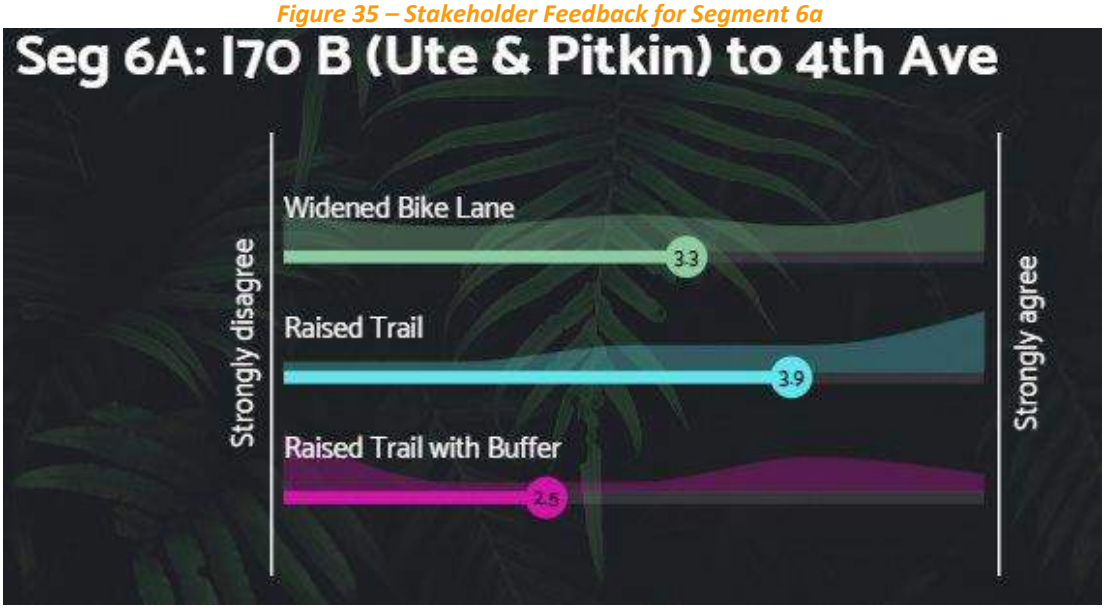
Figure 34 – Segment 6a Existing Section

The ROW has little variation along this segment and includes parallel parking and bike lanes along the length of the segment. Various accesses to businesses and industrial lots exist throughout this segment and one railroad crossing. A large buffer can be found on both sides of the roadway.

ALTERNATIVES

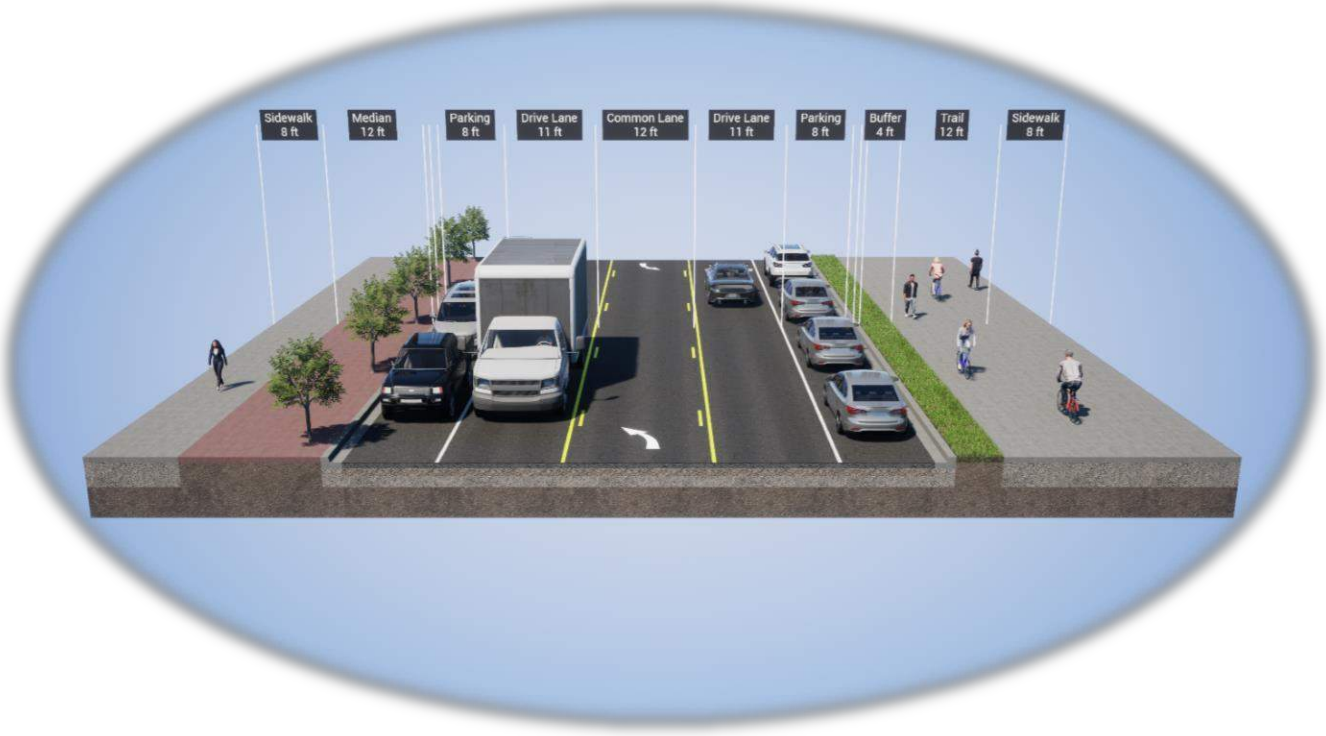
The current configuration provides a buffered sidewalk for pedestrians with the east side having an eight foot buffer and the west side providing a 12 foot buffer. There is approximately 10 feet of unutilized ROW which can be used to provide improved bike and pedestrian facilities along this segment. Multiple alternatives were considered including widening the bike lanes, a raised trail, and a raised trail with a larger buffer to allow for future roadway growth. Stakeholder feedback for potential alternatives along this segment can be seen in **Figure 35**.

Figure 35 – Stakeholder Feedback for Segment 6a



The raised trail alternative received the most positive feedback and is recommended for this segment. The bike lanes are moved from the roadway and bikes are able to utilize the raised trail on one side of the roadway while the other side remains unchanged. A buffer is provided between the trail and parking. A cross section including the improvements can be seen in **Figure 36**.

Figure 36 – Segment 6a Alternative – Raised Trail



The raised trail alternative section utilizes 92 feet of the potential 100 foot ROW. This alternative provides a shared trail for pedestrians and bikes providing a safer option for cyclists while also maintaining pedestrian walkways. Keeping the raised trail located on the east side of the roadway can minimize the need for users to

cross 7th Street as there are more connections to other pedestrian and bike facilities east of this segment. Providing the trail along the west of the roadway minimizes the number of access that a user would need to cross which reduces conflict points. The location of the trail should be considered in conjunction with segment 6b due to crossings not existing within the segments and only possible on the north end of segment 6a and the south end of 6b.

COMPARISON

The scoring criteria used to compare the existing roadway to each alternative is based on the *Grand Junction Pedestrian & Bicycle Plan* dated April 2023. Important factors such as the Level of Traffic Stress (LTS), Vehicular Level of Service (LOS), and impacts to existing landscape, parking, and accesses are included in the scoring matrix which can be seen in **Table 17**.

Table 17 – Segment 6a Scoring Matrix

Scoring Criteria	Measure	Existing Results	*Raised Trail*
Pedestrian LTS	Level Of Traffic Stress	**LTS 2**	**LTS 2**
Vehicular LOS	Synchro LOS	**LOS B**	**LOS B**
Bicycle LTS	Level Of Traffic Stress	**LTS 2**	**LTS 2**
Landscaping	Greenspace Impact Or Add	-	**+ 4 ft E**
Intermodal Safety	Crash Benefit	-	**Buffer & Separation (High)**
Impact On Parking	# Of Parking Spaces	-	**NA**
Impact To Access	Turn Lane Improvements	-	**NA**
Cost	Low, Mid, High	-	**Mid**

INTERSECTION ENHANCEMENTS

Intersection enhancements that were considered for this segment are listed below with any notable benefits and difficulties with each enhancement.

Ute Avenue

1. **Bike Box** - Provide a safe area for bicyclists to wait during a red phase. Relatively easy to implement.
2. **Bike Ramps** – Provide a smooth transition between intersection crossing and bicycle facility along 7th Street depending on planned bicycle crossings at the intersection.
3. **Crossbike Striping** – Provides clearly indicated pathways for where bicycles should travel through the intersection. Helps drivers see where to watch for bicycles when turning off 7th Street.
4. **Leading Pedestrian Intervals** – Improve safety for crossing pedestrians to allow drivers a chance to see crossing pedestrians prior to turning.
5. **No Right Turn on Red** – Could be added to help protect pedestrians at the intersection. Pairs well with leading pedestrian intervals.

Pitkin Avenue

1. **Two Stage Turn Queue Box** – Allow for bicyclists to have a safe location to wait outside of the travel lane before making their left turn off 7th Street. May not be applicable depending on bicycle facilities planned along the segment.
2. **Bike Ramps** – Provide a smooth transition between intersection crossing and bicycle facility along 7th Street depending on planned bicycle crossings at the intersection.
3. **Crossbike Striping** – Provides clearly indicated pathways for where bicycles should travel through the intersection. Helps drivers see where to watch for bicycles when turning off 7th Street.
4. **Leading Pedestrian Intervals** – Improve safety for crossing pedestrians to allow drivers a chance to see crossing pedestrians prior to turning.
5. **No Right Turn on Red** – Could be added to help protect pedestrians at the intersection. Pairs well with leading pedestrian intervals.

4th Avenue

1. **Corner Islands** – Current conditions include corner islands on the east side of the intersection. Corner islands could help clarify which direction pedestrians plan to cross on the west side of the intersection. May result in crossings moving slightly farther from the intersection.
2. **Raised Crosswalks** - Use of the raised crosswalk should be limited to the 4th Avenue approach due to high volumes on 7th Street. High truck volumes at 4th Steet due to the industrial lots found nearby may make raised crosswalks less desirable as it could increase the time for a larger vehicle to turn onto 7th Street resulting in a degraded level of service for vehicles. However, it would reduce speeds of vehicles approaching the intersection and improve pedestrian safety. Additionally, raised crosswalks could create issues for drainage and snowplowing.

Segment 6b (4th Ave to Struthers Ave)

EXISTING CONDITIONS

The current roadway characteristics for segment 6b, 4th Avenue to Struthers Avenue, are shown below in **Table 18** and a cross section showing the existing lane configuration can be seen in **Figure 37**.

Table 18 – Segment 6b Characteristics

	Segment Characteristic	Description
Segment 2	Speed Limit	25 mph
	Cross Section Geometry	1 NB, 1 SB, 1 TWLTL
	Cross Section Width	56 ft
	ROW	60 ft
	AADT	≈ 2,400 Vehicles
	Ped Facilities	Sidewalk on E & W
	Bike Facilities	NA

NB – Northbound, SB – Southbound, TWLTL – Two Way Left Turn Lane
AADT – Average Annual Daily Traffic

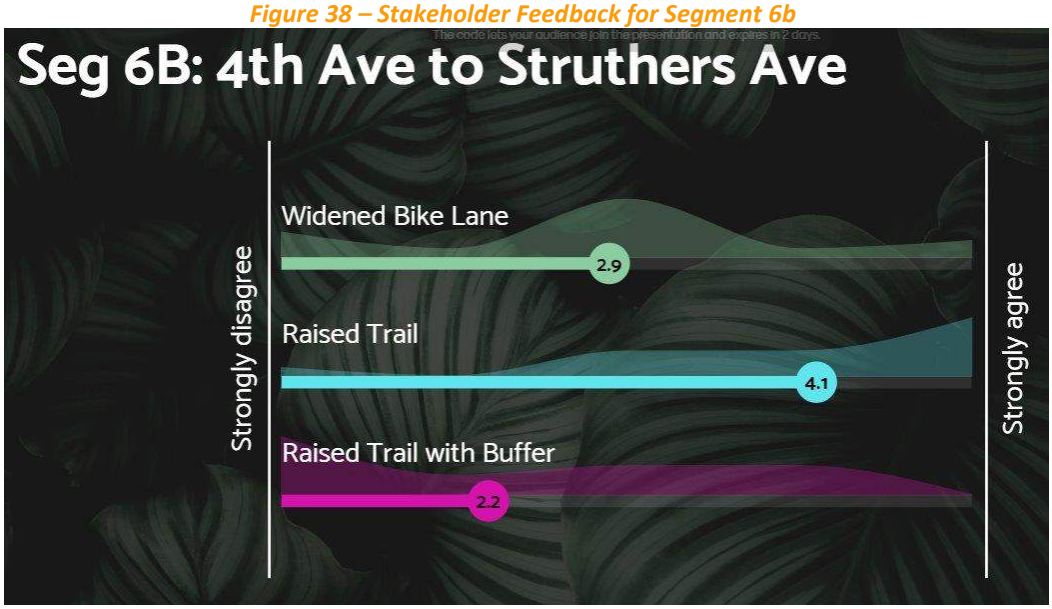
Figure 37 – Segment 6b Existing Section

The ROW has little variation along this segment with the exception around Riverside Parkway due to the roadway changing alignment further west. Various accesses to businesses and industrial lots exist throughout this segment. Struthers Avenue is where 7th Street ends with a major connection to the riverfront trail located east of the intersection. No pedestrian or bike facilities exist to connect the corridor with the riverfront trail.

ALTERNATIVES

The current configuration provides sidewalk for pedestrians and striped bike lanes on both sides of the roadway. There is approximately 6 feet of unutilized ROW which can be used to provide facilities for bikes to separate them from the vehicular traffic. Both alternatives look to remove the bicyclists from the roadway to improve the safety over the existing conditions. Stakeholder feedback for potential alternatives along this segment can be seen in **Figure 38**.

Figure 38 – Stakeholder Feedback for Segment 6b



The raised trail alternative received the most positive feedback for segment 6b. It is recommended that a raised trail be included in this segment. The location and width of sidewalks are slightly altered to provide adequate room for the raised trail. A cross section including the improvements can be seen in **Figure 39**.

Figure 39 – Segment 6b Alternative – Raised Trail

The raised trail alternative section utilizes 56 feet of the potential 60 foot ROW. This alternative provides a shared trail for pedestrians and bikes providing a safer option for cyclists while also maintaining pedestrian walkways. Keeping the raised trail located on the east side of the roadway can minimize the need for users to cross 7th Street as there are more connections to other pedestrian and bike facilities east of this segment.

Providing the trail along the west of the roadway minimizes the number of access that a user would need to cross which reduces conflict points. Connections to the riverfront trail should be considered to provide a seamless transition between the 7th Street corridor and the riverfront trail.

COMPARISON

The scoring criteria used to compare the existing roadway to each alternative is based on the *Grand Junction Pedestrian & Bicycle Plan* dated April 2023. Important factors such as the Level of Traffic Stress (LTS), Vehicular Level of Service (LOS), and impacts to existing landscape, parking, and accesses are included in the scoring matrix which can be seen in **Table 19**.

Table 19 – Segment 6b Scoring Matrix

Scoring Criteria	Measure	Existing Results	*Raised Trail*
Pedestrian LTS	Level Of Traffic Stress	**LTS 2**	**LTS 2**
Vehicular LOS	Synchro LOS	**LOS A**	**LOS A**
Bicycle LTS	Level Of Traffic Stress	**LTS 1**	**LTS 1**
Landscaping	Greenspace Impact Or Add	-	**+ 4 ft E**
Intermodal Safety	Crash Benefit	-	**Separation (Medium)**
Impact On Parking	# Of Parking Spaces	-	**NA**
Impact To Access	Turn Lane Improvements	-	**NA**
Cost	Low, Mid, High	-	**Low**

INTERSECTION ENHANCEMENTS

Intersection enhancements that were considered for this segment are listed below with any notable benefits and difficulties with each enhancement.

4th Avenue

1. **Corner Islands** – Current conditions include corner islands on the east side of the intersection. Corner islands could help clarify which direction pedestrians plan to cross on the west side of the intersection. May result in crossings moving slightly farther from the intersection.
2. **Raised Crosswalks** - Use of the raised crosswalk should be limited to the 4th Avenue approach due to high volumes on 7th Street. High truck volumes at 4th Steet due to the industrial lots found nearby may make raised crosswalks less desirable as it could increase the time for a larger vehicle to turn onto 7th Street resulting in a degraded level of service for vehicles. However, it would reduce speeds of vehicles approaching the intersection and improve pedestrian safety. Additionally, raised crosswalks could create issues for drainage and snowplowing.

Riverside Parkway

1. **Bike Ramps** – Provide a smooth transition between intersection crossing and bicycle facility along 7th Street depending on planned bicycle crossings at the intersection.
2. **Crossbike Striping** – Provides clearly indicated pathways for where bicycles should travel through the intersection. Helps drivers see where to watch for bicycles when turning off 7th Street.

3. **Leading Pedestrian Intervals** – Improve safety for crossing pedestrians to allow drivers a chance to see crossing pedestrians prior to turning. This intersection sees high volumes of southbound right traffic and would drastically improve pedestrian safety on the western side of the intersection.
4. **No Right Turn on Red** – Could be added to help protect pedestrians at the intersection especially for southbound right turns. However this may result in a significant decrease to level of service and should be considered. Pairs well with leading pedestrian intervals.

Access Control

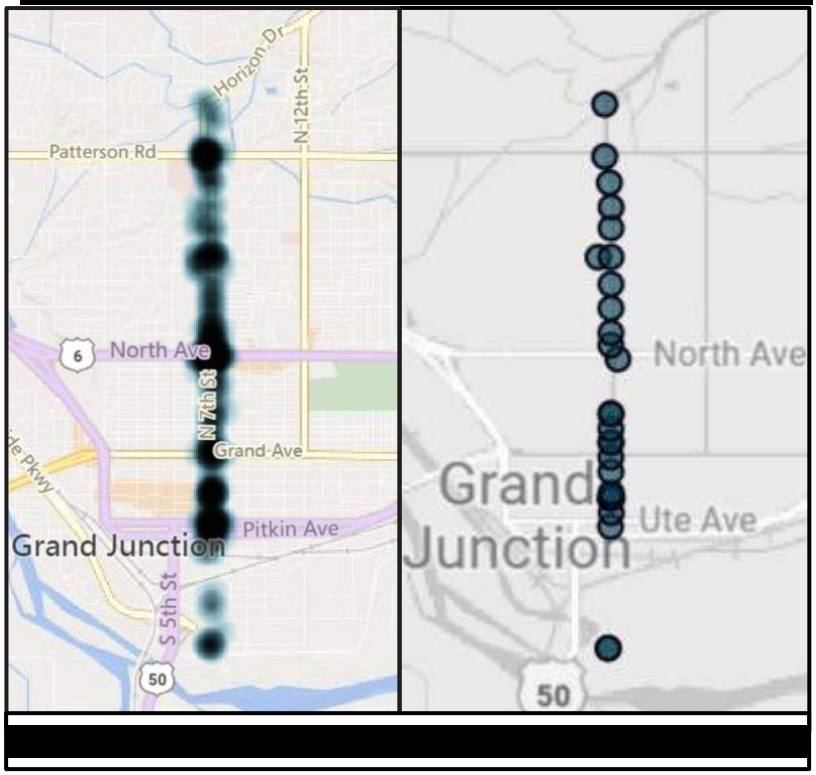
Access and additional roadway intersections found along 7th Street were considered for potential closure or restrictions to further improve the corridor safety. A map showing possible closures and restrictions can be found in **Appendix C**. Locations where minor streets could be restricted are proposed due to low volumes of traffic making those movements and alternate connections to 7th Street being within a reasonable distance from the existing connection. Restricting access to 7th Street will most likely create additional traffic on nearby north/south roadways such as 4th/5th Street and 10th Street. The additional traffic is not expected to impact the nearby roadways in a significant way but should be considered if large developments are planned in the future. Additionally, if East Middle School plans to reopen then traffic patterns should be analyzed to determine where restricted access is possible.

Safety Analysis

Crash History

The Mesa County Regional Transportation Planning Office provided crash data along the 7th Street corridor for a 7-year period between January 2016 and December 2022. The data provided is part of the Safety Action Plan for Mesa County and can be seen in **Appendix D**. Over the seven-year period a total of 694 crashes were reported with three fatalities, 15 pedestrian crashes, and 24 bicyclist crashes. A high number of vehicular crashes can be seen at North Avenue in part due to the high volumes of motor vehicles. A heatmap of the motor vehicle crashes can be seen in **Figure 40** on the left.

Figure 40 – Crash Heatmaps (Total - Left and Ped/Bike – Right)



Pedestrian and bicycle crashes are relatively similar throughout the corridor with a few more seen at high volume intersections such as Wellington Avenue and Main Street. A map showing the locations of each pedestrian and bicycle crash can be seen in **Figure 40** on the right. Unfortunately, one fatal bicycle crash occurred in 2022 at Mesa Avenue which is south of Orchard Avenue between a motorcycle and a bicyclist both using the roadway. A significant portion of the

incapacitating and fatal crashes include bicyclists with a higher volume between Patterson Road and North Avenue. This is partially due to a lack of existing bicycle facilities within the area and limited alternate routes near Colorado Mesa University and Grand Junction High School. The roadway network south of North Avenue is well connected with lower volume streets which bicyclists tend to prefer over 7th Street. Improvements to the 7th Street corridor will increase the safety for bicyclists and pedestrians which should help prevent future crashes and reduce the severity of crashes.

Public Engagement

Pop-Up Event

The City of Grand Junction and KLJ Engineering conducted a pop-up event at the farmer's market on Main Street on July 11, 2024. The pop-up event included two display boards showing existing conditions along the corridor accompanied by alternatives for each section; pop-up visitors were invited to vote on their favorite option for each section of the 7th Street Corridor. The pop-up event boards can be found in **Appendix E.** In addition to the display boards, booth visitors had the opportunity to vote on their top three project priorities for roadway improvements along the corridor; the list included seven different items, which mirrored the project priority list on the Engage GJ online survey for the project.

During the pop-up event, 77 individuals engaged with one or more aspects of the event including project information and flyers, interactive display boards, and priority voting. Participants were encouraged to participate by placing a colored dot on their preferred multimodal option for each segment. Segments 2 & 3 received the most positive feedback for the raised bike lanes, segment 4 had a split in votes with slightly more preferring the striped bike lane, segment 5 the preference was for raised bike lanes, and segment 6 showed a preference for a raised trail. Through the Mason Jar polling activity, safety enhancements between vehicles and pedestrians/bicyclists had the most votes, demonstrating to be the most important design aspect for booth visitors. Bicycle level of stress received the second highest number of votes, followed by landscaping/greenspace, which ranked as the third most important project priority.

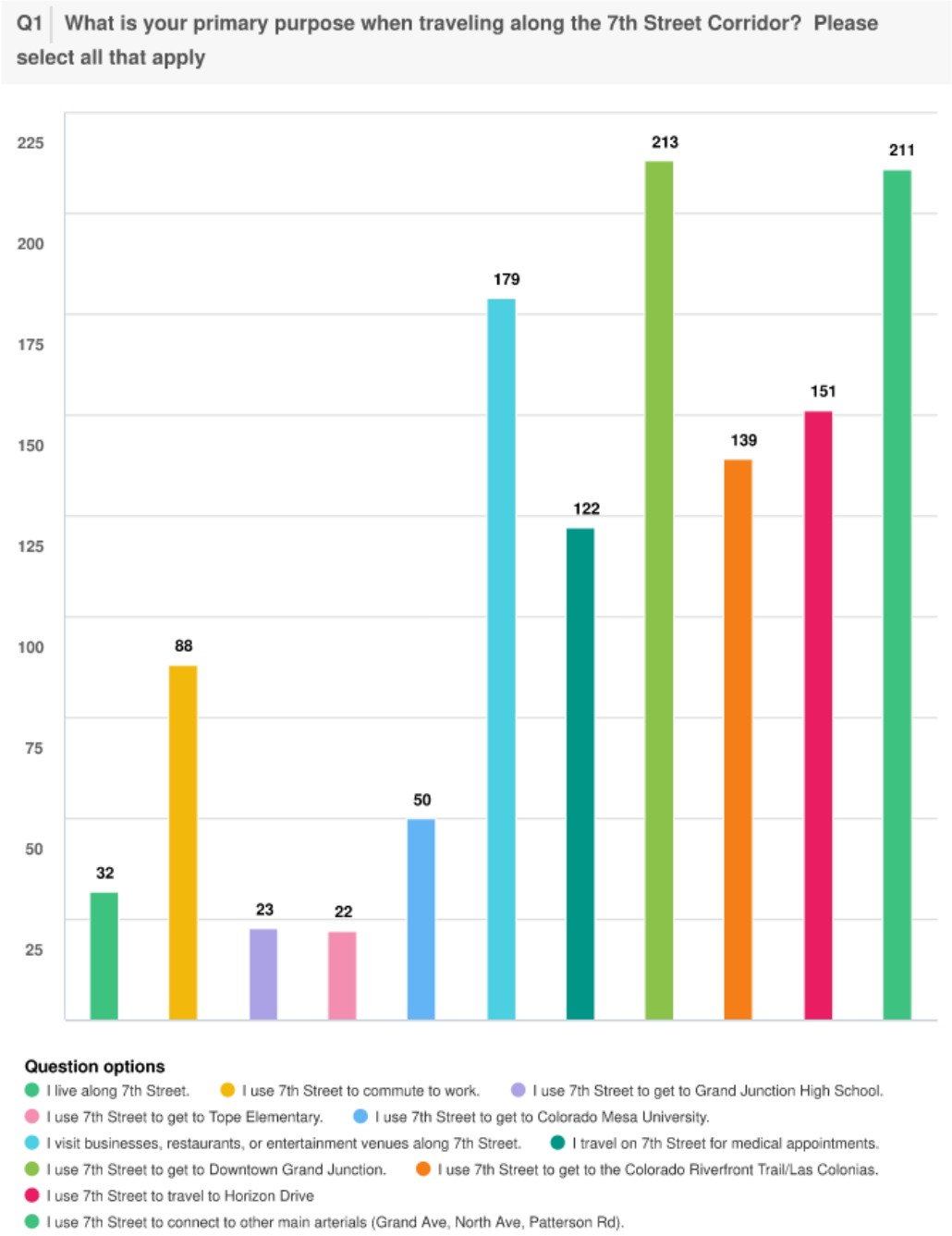
Website

The City of Grand Junction distributed a press release, informing the public about the study and inviting the community to share their feedback on the project website, which was hosted on the City's Engage GJ platform. During the pop-up on July 11, visitors were informed of the website and provided with a flyer featuring the QR code for the website. The City of Grand Junction also shared the website on their social media, which was shared by several community pages in the Grand Valley. There were 986 site visits, most of the hits came from local news stations (KJCT & KKCO) who featured the 7th Street project website on their news websites.

The Engage GJ website included project information and an opportunity for public input on the 7th Street Corridor. Website visitors had the option to place pins on an interactive map, submit general comments, and complete a survey with targeted questions about the project.

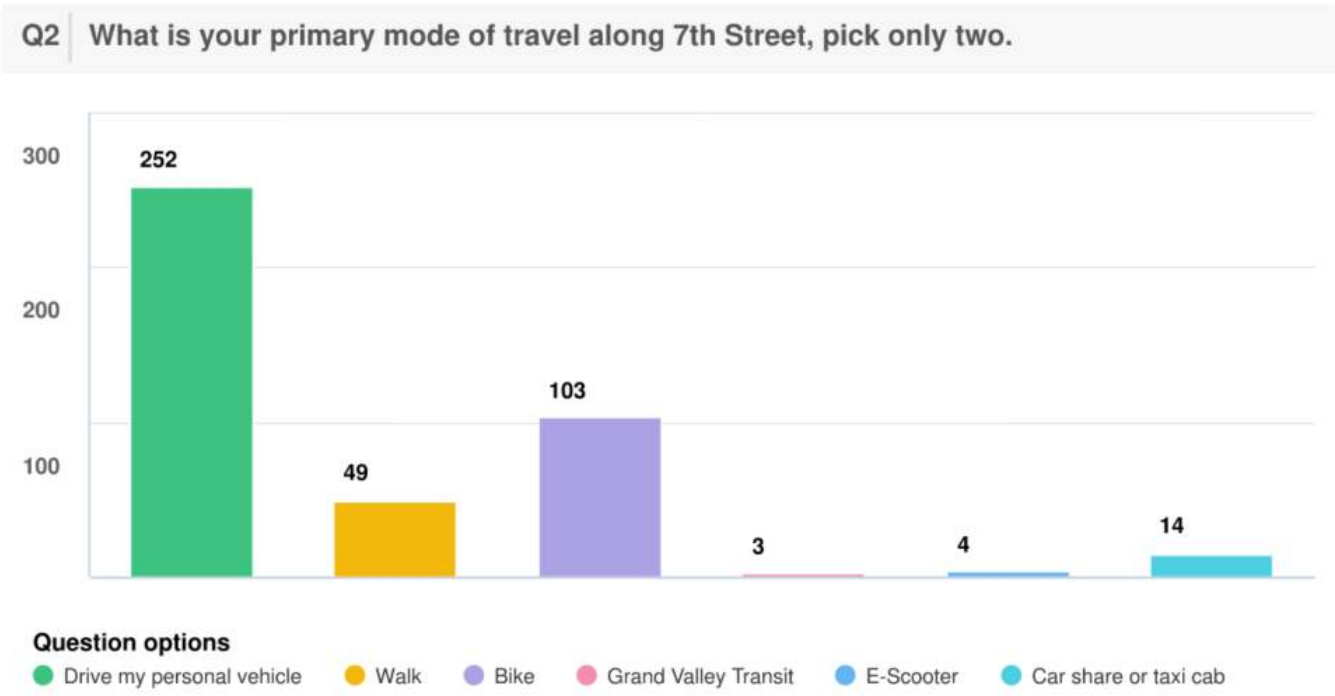
Overall, there were 286 submissions from the online survey, a full summary of the results is shown in **Appendix F**. The survey included two sections; questions about the corridor and utilization along with the option to vote on the multimodal options for each segment of the study area. In the first section of the survey, respondents were asked how they utilize the 7th Street corridor, their primary mode of travel along the corridor, rank seven different project priorities, and whether individuals would walk or bike more if improvements were made. The second section featured images of existing conditions along with the options for improvements; respondents voted on their preference for multimodal improvement for each segment.

Figure 41 – Survey Results - 7th Street Purpose for Travelling



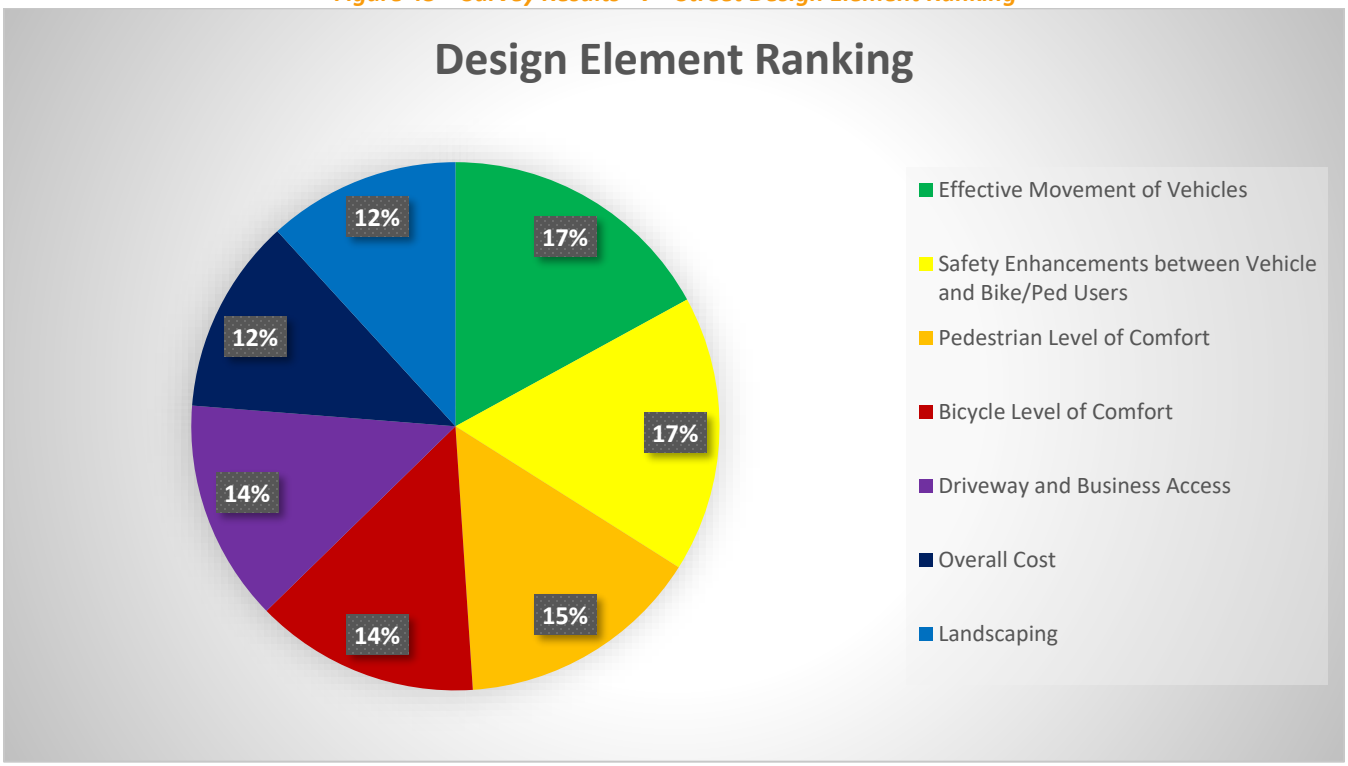
According to the survey, 7th Street is primarily used as a connection to Downtown Grand Junction and other major roadways such as North Avenue and Patterson Road with connections to nearby commercial land uses. The results show that most users do not stay on 7th Street for long and use it as a collector roadway. The results for user's primary mode of travel can be seen in **Figure 42**.

Figure 42 – Survey Results - 7th Street Primary Mode of Travel



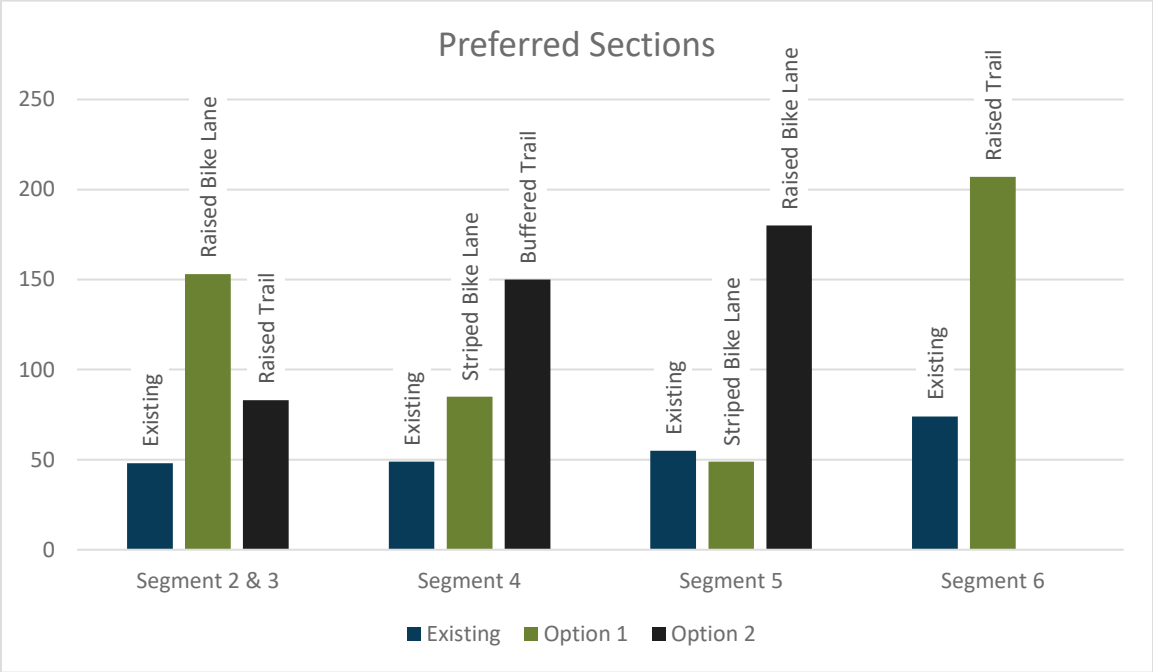
A significant portion of responses include bicyclist which shows that bike facilities along 7th Street is something the community would drastically benefit from. The survey requested that individuals rank the design elements from their most important to least important elements. Results regarding the ranking of design elements are shown as a weighting of the total design and can be seen in **Figure 43**.

Figure 43 – Survey Results - 7th Street Design Element Ranking



While ranking project priorities, the survey results show the greatest concern was for the effective movement of vehicles, followed by safety enhancements between vehicles and bike/ped users, and the third greatest concern was pedestrian level of comfort, bicycle level of comfort came in fourth, then driveway and business access, overall cost, and finally landscaping was viewed with the least concern. **Figure 44** shows responses on the preferred improvements along 7th Street.

Figure 44 – Survey Results - 7th Street Preferred Sections



Responses to each segment indicate that users of the corridor would prefer the bicycle facilities to be separated from the vehicle travel paths. It also shows that it would be preferable to have dedicated bike lanes rather than a shared path except for Segment 4 which preferred a buffered trail facility.

Conclusion

The City of Grand Junction introduced *their Pedestrian & Bicycle Plan* (PBP) in April of 2023 with the aim to improve the pedestrian and bicycle facilities at prioritized locations throughout the city. Through the One Grand Junction Comprehensive Plan and the PBP, the City of Grand Junction has identified the need to continue to develop a safe, balanced, and well-connected transportation system that enhances mobility of all travel modes along with the importance of installing low-stress, high comfort bike facilities along the active transportation corridors. One of these locations, 7th Street, is a significant corridor for north and south travel for pedestrian, bicycle, public transport, and personal vehicles. Connections along the 7th Street corridor includes downtown Grand Junction, North Avenue, Colorado Mesa University (CMU), Tope Elementary, Grand Junction High School, Saint Mary's Regional Hospital, several healthcare offices, clinics, businesses, Eureka Science Center, Art Center, and residential neighborhoods. The corridor experiences high volumes of pedestrians between North Avenue and Patterson Road due to the schools, hospital, and substantial dining and retail shopping within three blocks of North Avenue. Additionally, 7th Street is one of the few corridors that allows for the crossing of railroad tracks adjacent to downtown which makes it a popular corridor for accessing recreation and entertainment along the Riverfront Trail at Las Colonias. This report looks to determine existing conditions along the 7th Street corridor and provide alternatives based on feasibility, community feedback, cost, and operational service. Key conclusions of the study

for each segment creating a cohesive corridor plan are discussed below. A recommendations map can be found in **Appendix C**.

Crash History

- Crash data was analyzed between January 2016 and December 2022.
- A total of 694 crashes were reported including three fatalities, 15 pedestrian crashes, and 24 bicycle crashes.
- A high volume of crashes can be seen around North Avenue partly due to the high volumes of traffic.
- Pedestrian and bicycle crashes show hot spots between Grand Avenue and Ute Avenue with a noticeable number seen at Wellington Avenue and Main Street.
- Of the fatal crashes, one included a bicycle in 2022 which was located at Mesa Avenue, south of Orchard Avenue.
- A significant portion of the incapacitating and fatal crashes include bicyclists with a higher volume between Patterson Road and North Avenue. This is partially due to a lack of bicycle facilities along this segment of roadway and limited alternate routes near Colorado Mesa University and Grand Junction High School.

Public Engagement

- The pop-up event attracted 77 individuals who engaged with the project.
- Results of the pop-up event showed a preference for raised bike lanes along segments 2, 3, & 5. Segment 4 showed a preference for a striped bike lane and segment 6 had a preference for a raised trail.
- The pop-up event found safety enhancements between vehicles and pedestrians/bicycles, bicyclist level of comfort, and landscaping to be the most important design elements.
- The online survey received 285 submissions.
- Survey results show that individuals use 7th Street primarily to access other main roadways, Downtown Grand Junction, and commercial land uses within the area.
- A significant portion of users are bicyclists with 36% of submissions saying they use bikes along the corridor.
- The survey showed the greatest concern was for the effective movement of vehicles, followed by safety enhancements between vehicles and bike/ped users.
- Survey results include a preferred section for segment 2 & 3 to be the raised bike lane, segment 4 to be the buffered trail, segment 5 to be the raised bike lane, and segment 6 to be the raised trail.

Segment 1 (Horizon Dr to Patterson Rd)

ALTERNATIVES

1. Raised Bike Lane – Keep the 5-lane configuration for vehicles. Widen sidewalks and add raised bike lane between sidewalks and vehicle travel lanes.
2. Buffered Bike Lane – Reduce the 5-lane to 3-lane configuration for vehicles. Add a buffer between the vehicle lanes and bike lanes with sidewalks on each side.
3. Trail – Reduce the 5-lane to 3-lane configuration for vehicles. Add a buffer between the vehicle lanes and sidewalks/trail. Shared pedestrian and bicycle trail on one side of the roadway.

INTERSECTION ENHANCEMENTS

Int #	Intersection	Curb Extensions	Crossing Islands	Corner Islands	Turn Queue Boxes	Bike Ramps	Bike Box	Crossbike Striping	Increase Ped Time	Leading Ped Interval	No Right Turn on Red	Raised Crosswalk
I	Horizon Drive				✓	✓	✓			✓		
II	Patterson Road			✓				✓		✓	✓	

RECOMMENDATION

Intersection analysis at Horizon Dr supported a road diet from a 5-lane to a 3-lane section from Horizon Drive to up to the Patterson Rd intersection with minimal delay increases. With Directional bike lanes north of Horizon Drive expected along 26.5 Road, raised bike lanes for segment 1 were preferred as they would provide a physical separation from the roadway section. Stakeholder feedback supported a raised bicycle facility without the need for a wider buffer that might impact right-of-way.

Segment 2 (Patterson Rd to Orchard Ave)

ALTERNATIVES

1. Raised Trail - Keep the 5-lane configuration for vehicles. Widen sidewalks and add buffer between vehicle travel lanes and sidewalks. Add a raised trail between sidewalk and buffer area on one side of the roadway.
2. Raised Bike Lane - Keep the 5-lane configuration for vehicles. Widen sidewalks and add raised bike lane between sidewalks and vehicle travel lanes. Bike Ramps could also be utilized in the northbound direction if right turn lanes were kept at Glen Ct and Horizon Dr.

INTERSECTION ENHANCEMENTS

Int #	Intersection	Curb Extensions	Crossing Islands	Corner Islands	Turn Queue Boxes	Bike Ramps	Bike Box	Crossbike Striping	Increase Ped Time	Leading Ped Interval	No Right Turn on Red	Raised Crosswalk
II	Patterson Road			✓				✓		✓	✓	
III	Wellington Avenue			✓				✓	✓	✓	✓	
IV	Bookcliff Avenue			✓							✓	
V	Orchard Avenue			✓				✓		✓	✓	

RECOMMENDATION

Intersection analysis at Patterson Road supports a road diet from the 5-lane section to a 3-lane section with right-turn lanes with minimal delay increases. The roadway south of Patterson Road should transition back to the existing 5-lane section. Analysis also showed a minimal delay increase at Wellington Avenue with the removal of the southbound right turn lane which could provide additional safety for bicyclists as drivers would not cross the shared bike path. Wellington Avenue can be used to transition from bike lanes on both sides of the roadway to the shared trail on the east. The raised trail is the preferred section for segment 2 as this would provide bicyclists with a travel path outside of the roadway while allowing for some flexibility in the path to avoid any critical landscaping such as trees. It is recommended that the trail be a minimum of 12 feet where possible.

Segment 3 (Orchard Ave to North Ave)

ALTERNATIVES

1. Raised Trail – Keep the 5-lane configuration for vehicles. Widen the sidewalk on one side of the roadway and add a trail to the other side of the roadway. Provide a buffer between the roadway and the sidewalk/trail.

INTERSECTION ENHANCEMENTS

Int #	Intersection	Curb Extensions	Crossing Islands	Corner Islands	Turn Queue Boxes	Bike Ramps	Bike Box	Crossbike Striping	Increase Ped Time	Leading Ped Interval	No Right Turn on Red	Raised Crosswalk
V	Orchard Avenue			✓				✓		✓	✓	
VI	Elm Ave		✓									✓
VII	North Ave			✓		✓		✓		✓	✓	

RECOMMENDATION

Segment 3 has a preferred section of a raised trail which provides bicyclists separation from the roadway and continues the recommended section from segment 2. The raised trail on the east of the corridor allows for a smooth transition between segments and provides additional connections to the various bicycle routes found through Colorado Mesa University. Additional buffer area was not available without extensive right-of-way impacts limiting the alternatives and eventual recommendation.

Segment 4 (North Ave to Grand Ave)

ALTERNATIVES

1. Shared Sidewalk and Bike Lanes – Keep the 4-lane configuration for vehicles. Widen the existing sidewalks as much as possible to fit between the trees found along the corridor and the ROW.
2. Striped Bike Lane – Reduce the 4-lane to 2-lane configuration for vehicles. Widen the existing sidewalks and restripe the outside lanes of the roadway to accommodate bicycles.

INTERSECTION ENHANCEMENTS

Int #	Intersection	Curb Extensions	Crossing Islands	Corner Islands	Turn Queue Boxes	Bike Ramps	Bike Box	Crossbike Striping	Increase Ped Time	Leading Ped Interval	No Right Turn on Red	Raised Crosswalk
VII	North Ave			✓		✓		✓		✓	✓	
VIII	Gunnison Ave		✓		✓	✓	✓			✓	✓	✓
IX	Grand Ave		✓	✓	✓	✓	✓	✓		✓	✓	

RECOMMENDATION

Intersection analysis did not support a road diet from a 4-lane section to a 2-lane section at North Avenue but did support it for the remainder of the segment to the south. The striped bike lane is the preferred section between North Avenue and Grand Avenue which will reduce the lanes to a 2-lane section with a transition near Belford Avenue. Flex posts could be installed in the buffer area to provide additional safety benefits for bicyclists while allowing vehicles to use the bike lane if necessary to move out of the roadway for emergency vehicles.

Segment 5 (Grand Ave to I-70B – Ute & Pitkin Ave)

ALTERNATIVES

1. Striped Bike Lane – Change all angled parking to parallel parking and widen the bike lanes where possible.
2. Raised Bike Lane – Remove angled parking and add raised bike lanes outside of the travel lanes and include a buffer between the parking and bike lanes.

INTERSECTION ENHANCEMENTS

Int #	Intersection	Curb Extensions	Crossing Islands	Corner Islands	Turn Queue Boxes	Bike Ramps	Bike Box	Crossbike Striping	Increase Ped Time	Leading Ped Interval	No Right Turn on Red	Raised Crosswalk
IX	Grand Ave		✓	✓	✓	✓	✓	✓		✓	✓	
X	Main St					✓						
XI	Ute Ave					✓	✓	✓		✓	✓	

RECOMMENDATION

The recommended section for segment 5 is a buffered bike lane which would require changing the diagonal parking to parallel parking but would allow for a buffer between traveling vehicles and the bicyclists. Intersection analysis shows a minimal delay increase with the removal of the southbound right turn lane at Ute Avenue which would provide additional room for the bike lane through the intersection.

Segment 6a (I-70B – Ute & Pitkin Ave to 4th Ave)

ALTERNATIVES

1. Raised Trail – Remove the bike lanes from the roadway and add a trail to one side of the roadway.

INTERSECTION ENHANCEMENTS

Int #	Intersection	Curb Extensions	Crossing Islands	Corner Islands	Turn Queue Boxes	Bike Ramps	Bike Box	Crossbike Striping	Increase Ped Time	Leading Ped Interval	No Right Turn on Red	Raised Crosswalk
XII	Pitkin Ave				✓	✓		✓		✓	✓	
	4th Ave			✓								✓

RECOMMENDATION

Intersection analysis showed minimal delay increases at Ute Avenue and Pitkin Avenue with the removal of the southbound right and northbound right respectively. The recommended section between Ute Avenue and 4th Avenue is a raised trail on the east side of the corridor. Bicyclists would have separation from the vehicular traffic along the roadway and a dedicated sidewalk could also be maintained. A perpendicular bike crossing should be considered at the railroad crossing to improve comfort and help prevent bike accidents.

Segment 6b (4th Ave to Struthers Ave)

ALTERNATIVES

1. Raised Trail – Remove the bike lanes from the roadway and replace the sidewalk with a trail on one side of the roadway.

INTERSECTION ENHANCEMENTS

Int #	Intersection	Curb Extensions	Crossing Islands	Corner Islands	Turn Queue Boxes	Bike Ramps	Bike Box	Crossbike Striping	Increase Ped Time	Leading Ped Interval	No Right Turn on Red	Raised Crosswalk
XIII	Riverside Pkwy					✓		✓		✓	✓	
XIV	Struthers Ave											

RECOMMENDATION

A raised trail is recommended to provide a seamless transition between segment 6a and the Riverfront Trail. The east crossing at Riverside Parkway could be moved slightly to farther to the east to reduce the total distance a pedestrian or bicyclist would need to travel across within the roadway. However, any change to the crossing location should account for visibility of the users especially with the northbound right movement.

APPENDIX A – RAW TRAFFIC VOLUMES

Struthers Ave

	2022_1	2022_2	2022_3	2022_4	2022_5	2022_6	2022_7	2022_8	2022_9	2022_10	2022_11	2022_12	2023_1	2023_2	2023_3	2023_4	2023_5
NBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SBL	158	176	212	223	243	282	630	293	259	246	163	156	158	176	237	249	339
SBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SBR	112	122	127	100	87	99	541	93	124	102	150	141	108	118	133	110	106
WBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBT	31	17	42	56	57	38	459	30	26	48	17	3	7	5	24	20	16
WBR	131	168	153	182	190	208	578	187	213	234	167	125	134	155	181	208	252
EBL	106	111	140	114	75	61	541	66	77	94	100	109	108	131	97	94	92
EBT	26	22	34	41	49	36	183	30	29	20	30	23	5	8	16	18	20
EBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23

Riverside Pkwy

	2022_1	2022_2	2022_3	2022_4	2022_5	2022_6	2022_7	2022_8	2022_9	2022_10	2022_11	2022_12	2023_1	2023_2	2023_3	2023_4	2023_5
NBL	122	138	135	168	120	104	433	104	116	129	80	72	95	94	97	150	195
NBT	87	91	107	103	128	117	244	104	100	99	86	72	76	79	76	110	120
NBR	21	25	34	53	42	63	86	54	35	59	42	29	37	52	56	59	51
SBL	375	512	552	533	498	576	737	569	499	560	493	490	478	464	609	592	595
SBT	86	91	113	108	144	139	195	110	104	105	113	85	81	75	108	118	135
SBR	584	676	644	593	605	543	577	527	602	558	528	517	555	612	638	577	551
WBL	23	37	28	39	34	52	172	52	58	60	28	15	20	31	44	52	79
WBT	4588	4771	4959	4893	5203	5086	5710	5380	5317	5203	4691	4633	4824	4724	4862	5234	5353
WBR	385	385	454	430	423	477	737	444	442	501	466	442	431	448	509	495	476
EBL	535	581	577	635	549	538	618	555	523	587	681	605	592	601	609	574	577
EBT	4302	4571	4827	4775	4996	4861	5923	4939	4976	4923	4529	4384	4370	4514	4636	4813	5072
EBR	100	100	127	129	111	132	477	123	110	122	65	85	79	113	97	138	171
	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23

Pitkin Ave

	2022_1	2022_2	2022_3	2022_4	2022_5	2022_6	2022_7	2022_8	2022_9	2022_10	2022_11	2022_12	2023_1	2023_2	2023_3	2023_4	2023_5
NBL	22	22	21	14	33	19	78	23	25	22	28	28	19	25	31	29	50
NBT	940	948	1044	1094	1082	1071	2178	1025	1093	1204	1173	1012	1027	998	1179	1181	1120
NBR	293	316	357	381	375	384	544	376	371	329	349	376	382	362	444	403	380
SBL	792	842	989	958	1059	1019	1368	1156	1091	994	914	897	871	829	934	925	1022
SBT	909	985	1135	1128	1159	1095	1693	1062	1045	1044	964	975	942	931	1108	1215	1178
SBR	14	20	29	20	35	18	81	19	31	26	28	29	21	19	32	28	41
WBL	13	24	31	26	24	21	0	32	27	17	15	13	9	33	21	21	8
WBT	1	0	0	0	1	1	0	0	2	0	1	1	2	1	2	2	3
WBR	7	17	26	17	17	21	0	20	35	16	14	11	12	33	21	17	10
EBL	562	624	629	663	703	677	486	647	712	650	599	664	601	634	760	735	825
EBT	6993	7456	7701	7817	8201	7935	8864	8247	8331	8168	7600	7253	7199	7590	7997	8232	8529
EBR	351	368	400	349	369	423	508	352	331	399	384	351	382	356	392	423	460
	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23

Ute Ave

	2022_1	2022_2	2022_3	2022_4	2022_5	2022_6	2022_7	2022_8	2022_9	2022_10	2022_11	2022_12	2023_1	2023_2	2023_3	2023_4	2023_5
NBL	431	451	501	478	500	516	860	526	568	579	597	492	537	487	604	584	552
NBT	1163	1200	1252	1286	1342	1284	1712	1174	1271	1302	1347	1325	1196	1241	1519	1431	1437
NBR	30	28	30	32	45	31	0	38	42	29	23	25	24	24	32	29	27
SBL	27	27	31	28	40	23	0	34	36	31	16	25	23	22	30	28	27
SBT	1408	1515	1730	1680	1836	1739	2588	1831	1743	1719	1672	1569	1448	1451	1713	1753	1797
SBR	1337	1400	1443	1467	1418	1398	1044	1388	1431	1436	1140	1188	1224	1250	1396	1313	1439
WBL	334	349	387	406	415	369	544	352	419	347	413	407	450	396	455	467	412
WBT	7715	8092	8778	8698	8969	8876	9615	8871	9055	8791	8506	8093	8185	8442	8766	9050	9360
WBR	638	667	753	734	700	714	673	869	774	784	727	739	788	702	703	737	725
EBL	17	24	22	27	18	23	154	20	29	18	14	16	15	31	31	29	34
EBT	1	0	1	0	5	0	0	2	2	2	1	1	1	2	2	2	0
EBR	29	29	22	33	22	22	81	23	29	22	19	14	22	32	37	30	38
	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23

Main St

	2022_1	2022_2	2022_3	2022_4	2022_5	2022_6	2022_7	2022_8	2022_9	2022_10	2022_11	2022_12	2023_1	2023_2	2023_3	2023_4	2023_5
NBL	200	218	209	213	198	213	408	214	219	219	234	264	200	191	229	237	209
NBT	1485	1569	1694	1853	1892	1865	2415	1959	1899	1952	1787	1795	1693	1681	1899	2080	2084
NBR	132	154	168	172	182	179	278	183	177	161	134	146	136	165	201	171	181
SBL	319	351	354	363	391	356	284	379	462	469	294	325	348	325	379	373	355
SBT	2212	2370	2578	2871	2896	2864	3338	2988	2989	2928	2522	2416	2335	2383	2634	2922	3165
SBR	579	644	706	788	639	784	793	700	688	715	710	718	707	692	756	827	780
WBL	172	170	196	227	276	223	317	194	205	189	146	162	159	177	180	196	221
WBT	682	709	741	783	639	764	919	713	739	768	842	809	776	764	787	811	776
WBR	468	531	574	577	611	644	569	605	594	575	624	546	491	543	585	609	634
EBL	438	399	432	511	434	464	459	468	466	416	447	470	388	442	438	454	416
EBT	477	485	535	498	437	548	551	481	498	484	511	556	423	477	563	552	523
EBR	279	336	303	343	271	336	489	303	309	315	328	426	277	331	369	324	315
	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23

Grand Ave

	2022_1	2022_2	2022_3	2022_4	2022_5	2022_6	2022_7	2022_8	2022_9	2022_10	2022_11	2022_12	2023_1	2023_2	2023_3	2023_4	2023_5
NBL	592	703	664	641	718	748	791	722	734	733	747	812	710	695	756	786	764
NBT	2059	2232	2477	2657	2534	2454	2850	2492	2413	2349	2295	2258	2173	2276	2434	2491	2475
NBR	187	219	221	253	277	276	338	305	326	305	260	271	249	231	294	258	299
SBL	308	283	317	319	256	271	427	321	316	312	311	328	304	284	354	333	356
SBT	2886	3113	3468	3703	3576	3509	4045	3530	3617	3473	3132	3114	3103	3215	3384	3550	3795
SBR	1417	1518	1652	1769	1745	1659	1733	1755	1768	1793	1509	1453	1428	1455	1638	1667	1762
WBL	215	221	262	302	290	273	253	266	279	300	263	273	246	226	251	286	268
WBT	2097	2336	2289	2383	2509	2392	2832	2496	2571	2430	2366	2253	2132	2312	2368	2555	2630
WBR	287	312	321	316	297	275	543	299	280	292	245	234	262	223	245	246	254
EBL	1520	1694	1888	1877	1873	1791	2383	1834	1861	1918	1671	1550	1679	1668	1873	1905	2148
EBT	2529	2566	2697	2814	2972	2869	3271	2971	3084	2981	2864	2685	2778	2889	3055	3207	3200
EBR	560	817	743	668	787	769	1108	778	749	803	719	751	650	703	753	778	755
	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23

Gunnison Ave

	2022_1	2022_2	2022_3	2022_4	2022_5	2022_6	2022_7	2022_8	2022_9	2022_10	2022_11	2022_12	2023_1	2023_2	2023_3	2023_4	2023_5
NBL	39	38	35	49	36	24	88	65	81	76	93	53	69	81	84	74	79
NBT	3753	4064	4516	4485	4565	4264	5397	4471	4409	4422	4005	3940	3906	3923	4462	4481	4691
NBR	96	82	120	123	119	86	132	101	115	102	117	100	92	100	128	106	86
SBL	185	168	179	184	201	157	131	192	221	227	201	177	184	206	183	213	199
SBT	4446	4680	5212	5290	5336	5086	6045	5422	5425	5329	4684	4675	4601	4672	5200	5303	5558
SBR	100	80	96	116	116	104	44	135	162	161	150	106	98	112	116	144	111
WBL	172	208	186	212	253	192	176	216	232	236	214	192	196	186	176	217	276
WBT	309	347	420	444	574	509	886	539	539	522	511	451	488	372	464	512	508
WBR	240	203	221	260	293	195	131	249	296	212	198	215	224	230	228	280	309
EBL	98	110	102	105	91	122	88	77	94	96	90	69	64	102	111	83	105
EBT	278	323	268	269	299	329	677	330	339	380	349	271	276	323	299	319	335
EBR	58	64	65	74	74	70	44	61	64	62	60	52	48	64	80	84	88
	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23

North Ave

	2022_1	2022_2	2022_3	2022_4	2022_5	2022_6	2022_7	2022_8	2022_9	2022_10	2022_11	2022_12	2023_1	2023_2	2023_3	2023_4	2023_5
NBL	1112	1162	1243	1295	1270	1139	1306	1199	1226	1146	1026	1109	1006	1048	1080	1075	1159
NBT	3365	3531	3740	3691	3842	3668	4599	3899	4031	4060	3829	3503	3680	3633	3812	3916	3936
NBR	1028	1102	1156	1175	1091	1092	1210	1158	1080	1057	944	1005	1064	1000	1038	1125	1064
SBL	1360	1457	1400	1530	1437	1406	2375	1553	1572	1516	1305	1163	1286	1346	1454	1448	1510
SBT	3975	4185	4362	4537	4576	4556	4802	4669	4742	4872	4402	4138	4269	4335	4403	4493	4732
SBR	1657	1673	1792	1725	1790	1856	2323	1911	1729	1776	1569	1390	1649	1650	1698	1753	1695
WBL	1059	1098	1164	1242	1191	1112	1815	1324	1389	1224	1020	1120	1124	989	1115	1184	1222
WBT	9713	9884	10688	10438	10391	10188	12505	10126	10217	10347	9689	9945	9548	10189	10551	10705	10831
WBR	1044	1032	1143	1084	1071	1070	1137	1283	1364	1340	1074	952	1027	1014	1110	1261	1276
EBL	2462	2785	2881	3152	3226	3173	4692	3417	3373	3074	2710	2655	2832	2896	2946	3163	3245
EBT	10992	11320	11859	12223	12204	12121	13710	12698	12359	12390	10879	11276	10832	11038	11531	11795	11648
EBR	962	988	1193	1147	1125	1086	870	1181	1111	1085	1000	885	970	944	970	959	976
	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23

Elm Ave

	2022_1	2022_2	2022_3	2022_4	2022_5	2022_6	2022_7	2022_8	2022_9	2022_10	2022_11	2022_12	2023_1	2023_2	2023_3	2023_4	2023_5
NBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NBT	6606	7114	7487	7702	7795	7534	9812	7964	8050	7827	7200	7012	6948	7199	7466	7831	7947
NBR	27	35	32	68	68	63	157	75	22	32	35	31	47	52	45	76	102
SBL	64	74	77	71	102	73	235	90	105	107	77	85	39	78	77	74	63
SBT	6892	7162	7535	7769	7715	7539	9554	7583	7632	7637	7248	6981	6860	7222	7421	7524	7759
SBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBL	43	45	53	71	80	85	156	51	61	56	48	35	56	47	60	86	63
WBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBR	56	54	62	71	56	79	156	84	74	74	73	67	30	60	47	83	71
EBL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EBT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EBR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23

Orchard Ave	2022_1	2022_2	2022_3	2022_4	2022_5	2022_6	2022_7	2022_8	2022_9	2022_10	2022_11	2022_12	2023_1	2023_2	2023_3	2023_4	2023_5
NBL	278	319	295	301	289	370	569	543	447	407	349	315	371	397	467	447	470
NBT	6190	6655	7230	7519	7578	7346	9392	7395	7569	7413	6612	6569	6421	6469	6920	7346	7460
NBR	800	896	859	881	930	838	1110	1063	1113	1114	1004	918	915	1070	1203	1210	1131
SBL	400	447	431	472	548	516	382	504	561	564	441	477	475	456	541	622	606
SBT	6444	6752	7415	7487	7468	7458	9623	7264	7253	7354	6849	6751	6555	6676	7168	7383	7504
SBR	760	711	719	855	805	675	763	819	768	732	762	731	739	758	761	845	698
WBL	772	772	704	822	897	732	686	950	958	1063	912	725	810	952	994	984	983
WBT	1378	1399	1451	1539	1702	1529	1698	1869	1799	1866	1866	1824	1752	1655	1777	1850	1840
WBR	423	429	435	513	557	472	437	475	585	564	496	444	437	473	531	566	575
EBL	803	856	891	915	863	844	822	989	966	966	988	866	801	937	902	929	905
EBT	1182	1354	1366	1562	1432	1484	1502	1518	1577	1729	1825	1910	1642	1669	1696	1766	1793
EBR	362	349	305	355	311	317	341	343	410	352	352	289	278	361	336	304	371
	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23

Bookcliff Ave	2022_1	2022_2	2022_3	2022_4	2022_5	2022_6	2022_7	2022_8	2022_9	2022_10	2022_11	2022_12	2023_1	2023_2	2023_3	2023_4	2023_5
NBL	118	121	132	141	108	134	74	141	144	125	79	98	106	111	115	118	116
NBT	6133	6541	7045	7334	7305	7123	9007	7228	7594	7328	6611	6424	6391	6648	6825	7167	7527
NBR	455	463	464	408	470	484	552	598	608	579	666	559	564	522	592	563	548
SBL	356	361	361	416	440	367	408	410	376	360	373	342	308	317	343	317	309
SBT	6313	6456	6964	7115	7124	7165	9175	7105	7096	7050	6588	6510	6532	6685	6983	7102	7374
SBR	121	124	113	126	133	155	146	127	156	143	89	73	124	153	115	128	119
WBL	423	456	529	502	497	458	552	476	539	508	591	533	485	478	553	568	517
WBT	54	60	76	83	80	84	80	60	81	70	57	68	73	65	79	67	86
WBR	470	540	566	565	527	512	726	535	502	471	509	496	456	453	516	467	435
EBL	105	122	92	118	122	140	219	142	115	124	97	75	122	114	98	136	151
EBT	46	63	57	71	71	83	0	83	91	87	97	89	88	88	82	78	86
EBR	77	112	125	142	122	149	37	151	122	103	70	85	117	122	133	112	114
	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23

Patterson Rd	2022_1	2022_2	2022_3	2022_4	2022_5	2022_6	2022_7	2022_8	2022_9	2022_10	2022_11	2022_12	2023_1	2023_2	2023_3	2023_4	2023_5
NBL	2008	2138	2159	2118	2141	2204	2538	2300	2374	2306	2118	2007	2062	2200	2320	2225	2206
NBT	2867	3434	3680	3857	3898	3716	4808	3764	3808	3624	3227	3182	3166	3385	3544	3693	3937
NBR	1538	1634	1639	1650	1620	1510	1957	1682	1783	1699	1536	1373	1491	1480	1524	1632	1663
SBL	549	576	576	696	657	621	478	643	671	583	556	535	500	528	524	593	643
SBT	2877	3164	3385	3565	3627	3490	4216	3544	3321	3344	3009	3039	3047	3098	3197	3336	3563
SBR	2608	2712	2752	2895	3092	2915	3353	3018	2899	2960	2861	2664	2640	2845	2989	3059	3292
WBL	1436	1472	1528	1451	1449	1397	1672	1519	1564	1463	1436	1397	1373	1477	1573	1542	1583
WBT	9971	10330	10694	11265	11417	11155	12599	11208	11356	11193	10885	10918	10085	10360	10970	11034	11171
WBR	500	553	566	572	568	526	513	582	587	531	528	507	463	504	511	543	586
EBL	1726	1993	2029	1976	2055	1982	2269	1919	1945	2002	1967	1863	1776	1948	1959	1957	2138
EBT	9672	10059	10602	10868	10946	10561	12080	10959	10784	10932	10709	10609	9909	10234	10897	10626	11009
EBR	2045	2149	2294	2119	2141	2158	3031	2166	2271	2253	2126	2015	2149	2283	2377	2337	2252
	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23

Horizon Dr		2022_1	2022_2	2022_3	2022_4	2022_5	2022_6	2022_7	2022_8	2022_9	2022_10	2022_11	2022_12	2023_1	2023_2	2023_3	2023_4	2023_5
	NBL	156	152	178	170	179	150	0	188	211	177	164	149	130	141	187	180	189
	NBT	1689	1808	1861	1823	1834	1804	2061	1923	1890	1897	1796	1686	1728	1790	1852	1896	1929
	NBR	3009	3493	3878	3872	4139	3956	4899	3906	4021	3916	3495	3390	3369	3626	3796	4035	4111
	SBL	406	295	269	329	292	279	245	279	241	258	263	232	204	255	262	260	285
	SBT	1839	1908	1906	1954	2029	1908	2439	2089	1956	2022	1892	1905	1958	1904	1949	2024	2101
	SBR	47	67	43	88	81	27	0	50	58	64	67	56	40	58	91	91	53
	WBL	3691	3714	4204	4362	4585	4527	5205	4500	4386	4400	3968	3758	3794	3982	4253	4469	4639
	WBT	64	69	127	90	89	100	110	97	112	107	107	112	89	105	105	137	154
	WBR	341	307	293	297	297	248	245	255	259	271	278	273	185	234	259	280	287
	EBL	24	55	27	54	45	13	0	27	35	21	44	47	32	50	80	81	46
	EBT	46	55	60	53	55	24	0	70	83	56	63	51	63	53	75	73	101
	EBR	170	188	214	199	223	222	109	221	234	245	218	183	164	199	234	254	221
		Jan-22	**Feb-22**	**Mar-22**	**Apr-22**	**May-22**	**Jun-22**	**Jul-22**	**Aug-22**	**Sep-22**	**Oct-22**	**Nov-22**	**Dec-22**	**Jan-23**	**Feb-23**	**Mar-23**	**Apr-23**	**May-23**

		Struthers	Riverside	Pitkin Ave	Ute Ave	Main St	Grand Ave	Gunnison Ave	North Ave	Elm Ave	Orchard	Bookcliff	Patterson Rd	Horizon Dr	Wellington Ave
Jul-22	12:00:00 AM	54	50	42	41	36	39	37	93	133	95	86	216	141	79
	1:00:00 AM	0	4	15	16	20	40	37	42	44	47	43	44	24	47
	2:00:00 AM	0	2	7	8	10	20	19	21	22	24	22	22	12	23
	3:00:00 AM	0	2	6	7	8	11	11	12	13	30	25	18	10	41
	4:00:00 AM	0	5	20	39	35	38	36	41	43	101	84	34	34	78
	5:00:00 AM	0	19	70	0	0	39	36	129	348	391	258	104	34	243
	6:00:00 AM	0	42	153	39	71	226	289	382	564	569	599	454	344	707
	7:00:00 AM	0	0	161	162	142	263	542	671	1083	1226	1159	833	654	1023
	8:00:00 AM	0	41	201	279	404	696	907	1012	1295	1254	1104	838	276	1026
	9:00:00 AM	195	130	401	474	732	1023	1196	1230	1290	1593	1308	1421	854	1206
	10:00:00 AM	0	41	283	239	365	455	576	761	905	1107	978	1041	582	859
	11:00:00 AM	0	124	522	556	623	650	754	1294	1032	1180	1431	1316	683	1441
	12:00:00 PM	0	41	523	521	769	650	754	1294	1032	1180	1431	1316	683	1441
	1:00:00 PM	0	0	645	679	703	948	871	1307	1593	1619	1519	1360	648	1364
	2:00:00 PM	0	123	601	436	671	948	871	1307	1593	1619	1519	1360	648	1364
	3:00:00 PM	52	172	320	436	467	692	685	1443	1466	1517	1310	1118	719	1286
	4:00:00 PM	0	205	364	518	464	761	903	1427	2313	2342	2033	1576	720	2115
	5:00:00 PM	0	164	360	393	518	617	684	1192	1379	1723	1426	1147	889	1164
	6:00:00 PM	105	211	198	275	372	188	324	634	516	527	297	416	238	271
	7:00:00 PM	774	272	361	160	190	153	219	399	689	621	472	494	241	550
	8:00:00 PM	0	0	244	282	303	234	219	308	349	333	212	350	240	157
	9:00:00 PM	0	319	203	241	290	354	256	359	218	235	172	106	103	118
	10:00:00 PM	0	399	484	405	256	311	290	426	391	481	382	385	242	352
	11:00:00 PM	0	0	73	79	120	156	146	232	261	234	213	350	69	240

APPENDIX B – SYNCHRO INTERSECTION ANALYSIS SUMMARIES

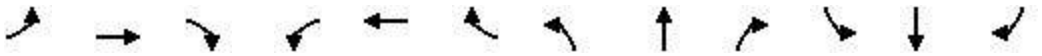
HCM 7th Signalized Intersection Summary
2: 7th St & Riverside Pkwy

08/09/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	283	80	60	354	111	23	48	9	45	30	82
Future Volume (veh/h)	41	283	80	60	354	111	23	48	9	45	30	82
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	47	325	92	69	407	128	26	55	10	52	34	94
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	162	898	250	178	897	279	473	504	92	535	144	397
Arrive On Green	0.09	0.33	0.33	0.10	0.34	0.34	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	1781	2745	765	1781	2668	830	1262	1540	280	1337	439	1213
Grp Volume(v), veh/h	47	209	208	69	270	265	26	0	65	52	0	128
Grp Sat Flow(s),veh/h/ln	1781	1777	1733	1781	1777	1721	1262	0	1820	1337	0	1652
Q Serve(g_s), s	1.4	4.9	5.1	2.0	6.5	6.7	0.8	0.0	1.4	1.6	0.0	3.1
Cycle Q Clear(g_c), s	1.4	4.9	5.1	2.0	6.5	6.7	4.0	0.0	1.4	2.9	0.0	3.1
Prop In Lane	1.00		0.44	1.00		0.48	1.00		0.15	1.00		0.73
Lane Grp Cap(c), veh/h	162	582	567	178	598	579	473	0	596	535	0	541
V/C Ratio(X)	0.29	0.36	0.37	0.39	0.45	0.46	0.05	0.00	0.11	0.10	0.00	0.24
Avail Cap(c_a), veh/h	162	582	567	178	598	579	473	0	596	535	0	541
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.3	14.1	14.1	23.2	14.3	14.3	14.9	0.0	12.9	13.9	0.0	13.5
Incr Delay (d2), s/veh	4.5	1.7	1.8	6.2	2.5	2.6	0.2	0.0	0.4	0.4	0.0	1.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.9	1.9	1.1	2.6	2.5	0.2	0.0	0.6	0.5	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	27.8	15.8	16.0	29.4	16.7	16.9	15.2	0.0	13.3	14.3	0.0	14.5
LnGrp LOS	C	B	B	C	B	B	B		B	B		B
Approach Vol, veh/h		464			604			91			180	
Approach Delay, s/veh		17.1			18.3			13.8			14.5	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.5	23.0		22.5	10.0	22.5		22.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.0	18.5		18.0	5.5	18.0		18.0				
Max Q Clear Time (g_c+I1), s	3.4	8.7		6.0	4.0	7.1		5.1				
Green Ext Time (p_c), s	0.0	2.2		0.2	0.0	1.7		0.7				

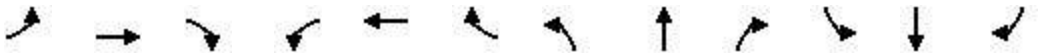
Intersection Summary		
HCM 7th Control Delay, s/veh	17.0	
HCM 7th LOS	B	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	890	78	0	0	0	0	218	55	241	170	0
Future Volume (veh/h)	49	890	78	0	0	0	0	218	55	241	170	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	56	1023	90				0	251	63	277	195	0
Peak Hour Factor	0.87	0.87	0.87				0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	103	1875	165				0	748	634	487	748	0
Arrive On Green	0.40	0.40	0.40				0.00	0.40	0.40	0.67	0.67	0.00
Sat Flow, veh/h	257	4687	412				0	1870	1585	1066	1870	0
Grp Volume(v), veh/h	405	371	392				0	251	63	277	195	0
Grp Sat Flow(s),veh/h/ln	1858	1702	1796				0	1870	1585	1066	1870	0
Q Serve(g_s), s	7.5	7.5	7.5				0.0	4.2	1.1	10.1	1.9	0.0
Cycle Q Clear(g_c), s	7.5	7.5	7.5				0.0	4.2	1.1	14.3	1.9	0.0
Prop In Lane	0.14		0.23				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	743	681	718				0	748	634	487	748	0
V/C Ratio(X)	0.55	0.55	0.55				0.00	0.34	0.10	0.57	0.26	0.00
Avail Cap(c_a), veh/h	743	681	718				0	748	634	487	748	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.67	1.67	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	10.4	10.4	10.4				0.0	9.4	8.4	8.7	4.8	0.0
Incr Delay (d2), s/veh	2.9	3.1	3.0				0.0	1.2	0.3	4.8	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
%ile BackOfQ(50%),veh/ln	2.9	2.7	2.8				0.0	1.6	0.4	1.7	0.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	13.2	13.5	13.3				0.0	10.6	8.7	13.4	5.6	0.0
LnGrp LOS	B	B	B					B	A	B	A	
Approach Vol, veh/h		1169						314			472	
Approach Delay, s/veh		13.3						10.2			10.2	
Approach LOS		B						B			B	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		22.5		22.5		22.5						
Change Period (Y+Rc), s		4.5		4.5		4.5						
Max Green Setting (Gmax), s		18.0		18.0		18.0						
Max Q Clear Time (g_c+I1), s		6.2		9.5		16.3						
Green Ext Time (p_c), s		1.3		4.4		0.5						

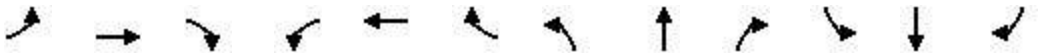
Intersection Summary												
HCM 7th Control Delay, s/veh		12.1										
HCM 7th LOS		B										



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	81	966	118	129	135	0	0	318	77
Future Volume (veh/h)	0	0	0	81	966	118	129	135	0	0	318	77
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Lane Width Adj.				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				93	1110	136	148	155	0	0	366	89
Peak Hour Factor				0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				148	1766	216	398	748	0	0	748	634
Arrive On Green				0.40	0.40	0.40	0.80	0.80	0.00	0.00	0.40	0.40
Sat Flow, veh/h				370	4416	541	936	1870	0	0	1870	1585
Grp Volume(v), veh/h				465	428	446	148	155	0	0	366	89
Grp Sat Flow(s),veh/h/ln				1852	1702	1773	936	1870	0	0	1870	1585
Q Serve(g_s), s				9.1	9.1	9.1	5.1	0.9	0.0	0.0	6.6	1.6
Cycle Q Clear(g_c), s				9.1	9.1	9.1	11.7	0.9	0.0	0.0	6.6	1.6
Prop In Lane				0.20		0.31	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				741	681	709	398	748	0	0	748	634
V/C Ratio(X)				0.63	0.63	0.63	0.37	0.21	0.00	0.00	0.49	0.14
Avail Cap(c_a), veh/h				741	681	709	398	748	0	0	748	634
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				10.8	10.8	10.8	6.2	2.8	0.0	0.0	10.1	8.6
Incr Delay (d2), s/veh				4.0	4.4	4.2	2.7	0.6	0.0	0.0	2.3	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
%ile BackOfQ(50%),veh/ln				3.6	3.3	3.4	0.6	0.4	0.0	0.0	2.6	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				14.8	15.2	15.0	8.9	3.4	0.0	0.0	12.4	9.0
LnGrp LOS				B	B	B	A	A			B	A
Approach Vol, veh/h					1339			303			455	
Approach Delay, s/veh					15.0			6.1			11.7	
Approach LOS					B			A			B	

Timer - Assigned Phs	2			6		8						
Phs Duration (G+Y+Rc), s	22.5			22.5		22.5						
Change Period (Y+Rc), s	4.5			4.5		4.5						
Max Green Setting (Gmax), s	18.0			18.0		18.0						
Max Q Clear Time (g_c+I1), s	13.7			8.6		11.1						
Green Ext Time (p_c), s	0.6			1.7		4.3						

Intersection Summary		
HCM 7th Control Delay, s/veh	13.0	
HCM 7th LOS	B	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	205	242	99	31	213	31	57	234	15	67	401	204
Future Volume (veh/h)	205	242	99	31	213	31	57	234	15	67	401	204
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	236	278	114	36	245	36	66	269	17	77	461	234
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	406	449	380	321	747	108	301	1824	814	128	598	613
Arrive On Green	0.07	0.24	0.24	0.07	0.24	0.24	0.07	0.51	0.51	0.39	0.39	0.39
Sat Flow, veh/h	1781	1870	1585	1781	3114	452	1781	3554	1585	189	1547	1585
Grp Volume(v), veh/h	236	278	114	36	138	143	66	269	17	538	0	234
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1777	1789	1781	1777	1585	1736	0	1585
Q Serve(g_s), s	5.0	10.0	4.4	1.1	4.8	4.9	1.5	3.0	0.4	14.0	0.0	8.0
Cycle Q Clear(g_c), s	5.0	10.0	4.4	1.1	4.8	4.9	1.5	3.0	0.4	20.4	0.0	8.0
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	0.14		1.00
Lane Grp Cap(c), veh/h	406	449	380	321	426	429	301	1824	814	726	0	613
V/C Ratio(X)	0.58	0.62	0.30	0.11	0.32	0.33	0.22	0.15	0.02	0.74	0.00	0.38
Avail Cap(c_a), veh/h	406	449	380	321	426	429	301	1824	814	726	0	613
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.9	25.4	23.3	19.1	23.5	23.5	14.2	9.6	9.0	20.2	0.0	16.5
Incr Delay (d2), s/veh	6.0	6.3	2.0	0.7	2.0	2.1	1.7	0.2	0.0	6.7	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	1.8	5.0	1.8	0.5	2.2	2.3	0.7	1.1	0.1	9.0	0.0	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.9	31.7	25.4	19.8	25.5	25.6	15.9	9.8	9.0	26.9	0.0	18.4
LnGrp LOS	C	C	C	B	C	C	B	A	A	C		B
Approach Vol, veh/h		628			317			352			772	
Approach Delay, s/veh		29.5			24.9			10.9			24.3	
Approach LOS		C			C			B			C	

Timer - Assigned Phs		2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s		43.0	9.5	22.5	9.5	33.5	9.5	22.5				
Change Period (Y+Rc), s		4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s		38.5	5.0	18.0	5.0	29.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s		5.0	3.1	12.0	3.5	22.4	7.0	6.9				
Green Ext Time (p_c), s		2.0	0.0	1.0	0.0	2.5	0.0	1.1				

Intersection Summary	
HCM 7th Control Delay, s/veh	23.7
HCM 7th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	34	4	18	44	13	4	467	44	13	683	2
Future Volume (veh/h)	9	34	4	18	44	13	4	467	44	13	683	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	39	5	21	51	15	5	537	51	15	785	2
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	664	650	83	685	555	163	84	1280	121	92	1405	4
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	1335	1625	208	1362	1388	408	7	3199	301	22	3512	9
Grp Volume(v), veh/h	10	0	44	21	0	66	314	0	279	418	0	384
Grp Sat Flow(s),veh/h/ln	1335	0	1833	1362	0	1797	1859	0	1648	1843	0	1700
Q Serve(g_s), s	0.2	0.0	0.7	0.4	0.0	1.0	0.0	0.0	5.5	0.0	0.0	7.9
Cycle Q Clear(g_c), s	1.2	0.0	0.7	1.1	0.0	1.0	5.4	0.0	5.5	7.8	0.0	7.9
Prop In Lane	1.00		0.11	1.00		0.23	0.02		0.18	0.04		0.01
Lane Grp Cap(c), veh/h	664	0	733	685	0	719	825	0	659	820	0	680
V/C Ratio(X)	0.02	0.00	0.06	0.03	0.00	0.09	0.38	0.00	0.42	0.51	0.00	0.56
Avail Cap(c_a), veh/h	664	0	733	685	0	719	825	0	659	820	0	680
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.8	0.0	8.3	8.6	0.0	8.4	9.7	0.0	9.8	10.4	0.0	10.5
Incr Delay (d2), s/veh	0.0	0.0	0.2	0.1	0.0	0.3	1.3	0.0	2.0	2.3	0.0	3.4
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	0.1	0.0	0.2	0.1	0.0	0.4	2.0	0.0	1.9	3.0	0.0	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	8.8	0.0	8.5	8.7	0.0	8.7	11.1	0.0	11.7	12.7	0.0	13.8
LnGrp LOS	A		A	A		A	B		B	B		B
Approach Vol, veh/h		54			87			593			802	
Approach Delay, s/veh		8.5			8.7			11.4			13.2	
Approach LOS		A			A			B			B	

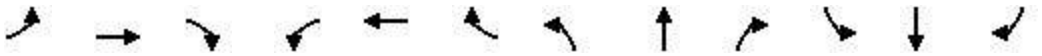
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		22.5		22.5		22.5		22.5				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.0		18.0		18.0		18.0				
Max Q Clear Time (g_c+I1), s		7.5		3.2		9.9		3.1				
Green Ext Time (p_c), s		2.7		0.1		3.2		0.3				

Intersection Summary												
HCM 7th Control Delay, s/veh			12.1									
HCM 7th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	185	889	43	232	418	49	87	285	139	98	529	92
Future Volume (veh/h)	185	889	43	232	418	49	87	285	139	98	529	92
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	213	1022	49	267	480	56	100	328	160	113	608	106
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	511	1100	53	341	958	111	259	609	291	328	791	138
Arrive On Green	0.15	0.32	0.32	0.13	0.30	0.30	0.06	0.26	0.26	0.06	0.26	0.26
Sat Flow, veh/h	1781	3452	165	1781	3207	373	1781	2332	1115	1781	3026	526
Grp Volume(v), veh/h	213	526	545	267	265	271	100	248	240	113	356	358
Grp Sat Flow(s),veh/h/ln	1781	1777	1841	1781	1777	1803	1781	1777	1670	1781	1777	1776
Q Serve(g_s), s	6.0	22.9	22.9	8.0	9.8	9.9	3.2	9.6	9.9	3.7	14.8	14.9
Cycle Q Clear(g_c), s	6.0	22.9	22.9	8.0	9.8	9.9	3.2	9.6	9.9	3.7	14.8	14.9
Prop In Lane	1.00		0.09	1.00		0.21	1.00		0.67	1.00		0.30
Lane Grp Cap(c), veh/h	511	566	587	341	531	539	259	464	436	328	464	464
V/C Ratio(X)	0.42	0.93	0.93	0.78	0.50	0.50	0.39	0.53	0.55	0.34	0.77	0.77
Avail Cap(c_a), veh/h	511	566	587	341	531	539	259	464	436	328	464	464
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.6	26.4	26.4	18.8	23.1	23.1	20.9	25.4	25.5	20.2	27.3	27.3
Incr Delay (d2), s/veh	2.5	23.8	23.2	16.4	3.3	3.3	4.3	4.4	4.9	2.8	11.6	11.7
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	2.6	12.9	13.3	4.6	4.4	4.5	1.6	4.5	4.4	1.7	7.4	7.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	17.0	50.2	49.6	35.1	26.5	26.5	25.2	29.7	30.4	23.0	38.9	39.0
LnGrp LOS	B	D	D	D	C	C	C	C	C	C	D	D
Approach Vol, veh/h		1284			803			588			827	
Approach Delay, s/veh		44.4			29.4			29.2			36.8	
Approach LOS		D			C			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	25.4	15.0	30.0	9.6	25.4	16.6	28.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.1	20.9	10.5	25.5	5.1	20.9	12.1	23.9
Max Q Clear Time (g_c+I1), s	5.7	11.9	10.0	24.9	5.2	16.9	8.0	11.9
Green Ext Time (p_c), s	0.0	2.0	0.0	0.4	0.0	1.6	0.2	2.6

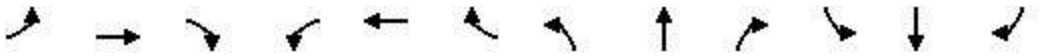
Intersection Summary	
HCM 7th Control Delay, s/veh	36.6
HCM 7th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	130	17	52	65	44	113	509	211	54	648	58
Future Volume (veh/h)	58	130	17	52	65	44	113	509	211	54	648	58
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	67	149	20	60	75	51	130	585	243	62	745	67
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	527	447	60	495	287	195	307	712	295	295	959	86
Arrive On Green	0.08	0.28	0.28	0.08	0.28	0.28	0.08	0.29	0.29	0.08	0.29	0.29
Sat Flow, veh/h	1781	1615	217	1781	1038	706	1781	2449	1016	1781	3297	296
Grp Volume(v), veh/h	67	0	169	60	0	126	130	424	404	62	401	411
Grp Sat Flow(s),veh/h/ln	1781	0	1831	1781	0	1743	1781	1777	1688	1781	1777	1817
Q Serve(g_s), s	1.6	0.0	4.8	1.5	0.0	3.7	3.2	14.5	14.5	1.5	13.4	13.5
Cycle Q Clear(g_c), s	1.6	0.0	4.8	1.5	0.0	3.7	3.2	14.5	14.5	1.5	13.4	13.5
Prop In Lane	1.00		0.12	1.00		0.40	1.00		0.60	1.00		0.16
Lane Grp Cap(c), veh/h	527	0	507	495	0	483	307	517	491	295	517	528
V/C Ratio(X)	0.13	0.00	0.33	0.12	0.00	0.26	0.42	0.82	0.82	0.21	0.78	0.78
Avail Cap(c_a), veh/h	527	0	507	495	0	483	307	517	491	295	517	528
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.2	0.0	18.7	14.2	0.0	18.3	15.7	21.5	21.5	15.2	21.1	21.1
Incr Delay (d2), s/veh	0.5	0.0	1.8	0.5	0.0	1.3	4.2	13.7	14.4	1.6	10.9	10.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	2.1	0.6	0.0	1.6	1.5	7.4	7.1	0.7	6.6	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.7	0.0	20.5	14.7	0.0	19.6	19.9	35.1	35.9	16.8	32.0	31.9
LnGrp LOS	B		C	B		B	B	D	D	B	C	C
Approach Vol, veh/h		236			186			958			874	
Approach Delay, s/veh		18.8			18.0			33.4			30.9	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	23.4	9.5	22.5	9.6	23.4	9.5	22.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.1	18.9	5.0	18.0	5.1	18.9	5.0	18.0
Max Q Clear Time (g_c+I1), s	3.5	16.5	3.5	6.8	5.2	15.5	3.6	5.7
Green Ext Time (p_c), s	0.0	1.2	0.0	0.6	0.0	1.6	0.0	0.5

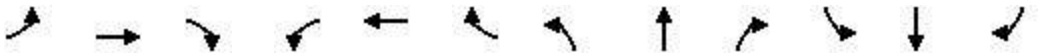
Intersection Summary	
HCM 7th Control Delay, s/veh	29.6
HCM 7th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	10	4	55	5	45	4	547	46	20	715	7
Future Volume (veh/h)	36	10	4	55	5	45	4	547	46	20	715	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	41	11	5	63	6	52	5	629	53	23	822	8
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	143	22	634	154	8	634	369	1327	112	357	1442	14
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.80	0.80	0.80
Sat Flow, veh/h	1	56	1585	1	20	1585	661	3318	279	759	3606	35
Grp Volume(v), veh/h	52	0	5	69	0	52	5	336	346	23	405	425
Grp Sat Flow(s),veh/h/ln	57	0	1585	21	0	1585	661	1777	1820	759	1777	1864
Q Serve(g_s), s	0.0	0.0	0.1	0.0	0.0	0.9	0.2	6.3	6.3	0.7	3.8	3.8
Cycle Q Clear(g_c), s	18.0	0.0	0.1	18.0	0.0	0.9	4.0	6.3	6.3	7.0	3.8	3.8
Prop In Lane	0.79		1.00	0.91		1.00	1.00		0.15	1.00		0.02
Lane Grp Cap(c), veh/h	166	0	634	162	0	634	369	711	728	357	711	746
V/C Ratio(X)	0.31	0.00	0.01	0.43	0.00	0.08	0.01	0.47	0.47	0.06	0.57	0.57
Avail Cap(c_a), veh/h	166	0	634	162	0	634	369	711	728	357	711	746
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.9	0.0	8.1	20.4	0.0	8.4	10.6	10.0	10.0	5.0	3.1	3.1
Incr Delay (d2), s/veh	4.9	0.0	0.0	8.1	0.0	0.3	0.1	2.3	2.2	0.3	3.3	3.1
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	0.5	0.0	0.0	1.0	0.0	0.3	0.0	2.3	2.3	0.1	1.3	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	19.8	0.0	8.1	28.5	0.0	8.6	10.7	12.2	12.2	5.4	6.4	6.2
LnGrp LOS	B		A	C		A	B	B	B	A	A	A
Approach Vol, veh/h		57			121			687			853	
Approach Delay, s/veh		18.8			20.0			12.2			6.3	
Approach LOS		B			B			B			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		22.5		22.5		22.5		22.5				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.0		18.0		18.0		18.0				
Max Q Clear Time (g_c+I1), s		8.3		20.0		9.0		20.0				
Green Ext Time (p_c), s		2.9		0.0		3.5		0.0				

Intersection Summary												
HCM 7th Control Delay, s/veh			10.0									
HCM 7th LOS			B									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	237	657	176	71	865	26	176	348	106	68	418	304
Future Volume (veh/h)	237	657	176	71	865	26	176	348	106	68	418	304
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	272	755	202	82	994	30	202	400	122	78	480	349
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	327	1354	604	192	1076	32	293	881	393	346	809	361
Arrive On Green	0.18	0.38	0.38	0.11	0.31	0.31	0.17	0.50	0.50	0.02	0.08	0.08
Sat Flow, veh/h	1781	3554	1585	1781	3522	106	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	272	755	202	82	501	523	202	400	122	78	480	349
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1851	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	13.2	15.0	8.1	3.9	24.6	24.6	7.5	6.6	4.1	3.0	11.8	19.8
Cycle Q Clear(g_c), s	13.2	15.0	8.1	3.9	24.6	24.6	7.5	6.6	4.1	3.0	11.8	19.8
Prop In Lane	1.00		1.00	1.00		0.06	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	327	1354	604	192	543	566	293	881	393	346	809	361
V/C Ratio(X)	0.83	0.56	0.33	0.43	0.92	0.92	0.69	0.45	0.31	0.23	0.59	0.97
Avail Cap(c_a), veh/h	327	1354	604	192	543	566	293	881	393	346	809	361
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.4	21.9	19.8	37.6	30.2	30.2	24.0	18.7	18.1	24.9	37.6	41.3
Incr Delay (d2), s/veh	21.4	1.7	1.5	6.8	23.7	23.1	12.6	1.7	2.1	1.5	3.2	39.7
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	7.5	6.2	3.1	2.0	13.5	14.0	3.9	2.5	1.6	1.4	5.9	12.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	56.8	23.5	21.2	44.4	54.0	53.3	36.5	20.4	20.2	26.4	40.8	80.9
LnGrp LOS	E	C	C	D	D	D	D	C	C	C	D	F
Approach Vol, veh/h		1229			1106			724			907	
Approach Delay, s/veh		30.5			52.9			24.9			55.0	
Approach LOS		C			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.2	26.8	14.2	38.8	12.0	25.0	21.0	32.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.7	22.3	9.7	34.3	7.5	20.5	16.5	27.5
Max Q Clear Time (g_c+I1), s	5.0	8.6	5.9	17.0	9.5	21.8	15.2	26.6
Green Ext Time (p_c), s	0.0	2.5	0.0	5.4	0.0	0.0	0.1	0.6

Intersection Summary	
HCM 7th Control Delay, s/veh	41.3
HCM 7th LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	24	54	413	34	19	114	281	273	33	264	33
Future Volume (veh/h)	10	24	54	413	34	19	114	281	273	33	264	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	11	28	62	523	0	0	131	323	0	38	303	38
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	244	561	634	1332	748		509	1421		497	1272	158
Arrive On Green	0.40	0.40	0.40	0.40	0.00	0.00	0.13	0.13	0.00	0.40	0.40	0.40
Sat Flow, veh/h	354	1403	1585	2613	1870	0	1039	3554	1585	1057	3181	395
Grp Volume(v), veh/h	39	0	62	523	0	0	131	323	0	38	168	173
Grp Sat Flow(s),veh/h/ln	1757	0	1585	1307	1870	0	1039	1777	1585	1057	1777	1799
Q Serve(g_s), s	0.0	0.0	1.1	6.9	0.0	0.0	5.3	3.7	0.0	1.1	2.8	2.9
Cycle Q Clear(g_c), s	0.6	0.0	1.1	7.5	0.0	0.0	8.1	3.7	0.0	4.8	2.8	2.9
Prop In Lane	0.28		1.00	1.00		0.00	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	805	0	634	1332	748		509	1421		497	711	720
V/C Ratio(X)	0.05	0.00	0.10	0.39	0.00		0.26	0.23		0.08	0.24	0.24
Avail Cap(c_a), veh/h	805	0	634	1332	748		509	1421		497	711	720
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.3	0.0	8.4	10.6	0.0	0.0	16.6	13.3	0.0	10.8	8.9	9.0
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.9	0.0	0.0	1.2	0.4	0.0	0.3	0.8	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	0.2	0.0	0.4	1.6	0.0	0.0	1.4	1.2	0.0	0.3	1.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	8.4	0.0	8.7	11.4	0.0	0.0	17.8	13.7	0.0	11.1	9.7	9.8
LnGrp LOS	A		A	B			B	B		B	A	A
Approach Vol, veh/h		101			523			454			379	
Approach Delay, s/veh		8.6			11.4			14.9			9.9	
Approach LOS		A			B			B			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	22.5	22.5	22.5	22.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.0	18.0	18.0	18.0
Max Q Clear Time (g_c+I1), s	10.1	3.1	6.8	9.5
Green Ext Time (p_c), s	1.6	0.3	1.5	1.4

Intersection Summary	
HCM 7th Control Delay, s/veh	11.9
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	10	40	43	10	41	40	514	87	40	625	30
Future Volume (veh/h)	37	10	40	43	10	41	40	514	87	40	625	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	0.98		0.98	0.98		0.98	0.98		0.91	0.97		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	43	11	46	49	11	47	46	591	100	46	718	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	659	124	518	660	122	520	355	1197	202	404	1421	
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.80	0.80	0.80	0.53	0.53	0.00
Sat Flow, veh/h	1321	310	1296	1322	304	1300	721	2993	504	729	3554	1585
Grp Volume(v), veh/h	43	0	57	49	0	58	46	350	341	46	718	0
Grp Sat Flow(s),veh/h/ln	1321	0	1606	1322	0	1605	721	1777	1721	729	1777	1585
Q Serve(g_s), s	0.9	0.0	1.0	1.1	0.0	1.0	1.5	2.9	3.0	1.7	5.8	0.0
Cycle Q Clear(g_c), s	2.0	0.0	1.0	2.1	0.0	1.0	7.3	2.9	3.0	4.7	5.8	0.0
Prop In Lane	1.00		0.81	1.00		0.81	1.00		0.29	1.00		1.00
Lane Grp Cap(c), veh/h	659	0	642	660	0	642	355	711	688	404	1421	
V/C Ratio(X)	0.07	0.00	0.09	0.07	0.00	0.09	0.13	0.49	0.50	0.11	0.51	
Avail Cap(c_a), veh/h	659	0	642	660	0	642	355	711	688	404	1421	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	9.0	0.0	8.4	9.0	0.0	8.4	5.0	3.0	3.0	8.3	7.7	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.3	0.2	0.0	0.3	0.8	2.4	2.5	0.6	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	0.3	0.0	0.3	0.3	0.0	0.3	0.2	1.0	1.0	0.3	1.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	9.2	0.0	8.7	9.3	0.0	8.7	5.7	5.4	5.5	8.9	9.0	0.0
LnGrp LOS	A		A	A		A	A	A	A	A	A	
Approach Vol, veh/h		100			107			737			764	
Approach Delay, s/veh		8.9			8.9			5.5			9.0	
Approach LOS		A			A			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	22.5	22.5	22.5	22.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.0	18.0	18.0	18.0
Max Q Clear Time (g_c+I1), s	9.3	4.0	7.8	4.1
Green Ext Time (p_c), s	3.0	0.3	3.6	0.3

Intersection Summary	
HCM 7th Control Delay, s/veh	7.5
HCM 7th LOS	A

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	5.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	42	91	23	40	93	78
Future Vol, veh/h	42	91	23	40	93	78
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	48	105	26	46	107	90

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	72	0	-	0	251	49
Stage 1	-	-	-	-	49	-
Stage 2	-	-	-	-	201	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1528	-	-	-	738	1019
Stage 1	-	-	-	-	973	-
Stage 2	-	-	-	-	833	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1528	-	-	-	713	1019
Mov Cap-2 Maneuver	-	-	-	-	713	-
Stage 1	-	-	-	-	940	-
Stage 2	-	-	-	-	833	-

Approach	EB	WB	SB
HCM Control Delay, s/v	2.35	0	10.71
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	568	-	-	-	826
HCM Lane V/C Ratio	0.032	-	-	-	0.238
HCM Control Delay (s/veh)	7.4	0	-	-	10.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.9

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	16	0	0	0	602	16	24	688	0
Future Vol, veh/h	0	0	0	16	0	0	0	602	16	24	688	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	85	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	18	0	0	0	692	18	28	791	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1192	1556	395	1152	1547	355	791	0	0	710	0	0
Stage 1	846	846	-	701	701	-	-	-	-	-	-	-
Stage 2	346	710	-	451	846	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	143	112	604	153	113	641	825	-	-	885	-	-
Stage 1	323	377	-	395	439	-	-	-	-	-	-	-
Stage 2	643	435	-	558	377	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	138	108	604	148	110	641	825	-	-	885	-	-
Mov Cap-2 Maneuver	138	108	-	148	110	-	-	-	-	-	-	-
Stage 1	313	365	-	395	439	-	-	-	-	-	-	-
Stage 2	643	435	-	540	365	-	-	-	-	-	-	-

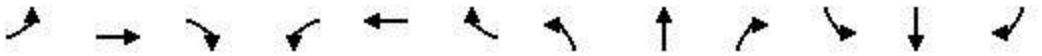
Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	32.75	0	0.31
HCM LOS	A	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	825	-	-	-	148	-	885	-	-
HCM Lane V/C Ratio	-	-	-	-	0.124	-	0.031	-	-
HCM Control Delay (s/veh)	0	-	-	0	32.7	0	9.2	-	-
HCM Lane LOS	A	-	-	A	D	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	0.4	-	0.1	-	-

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	200	104	324	596
Demand Flow Rate, veh/h	204	106	331	608
Vehicles Circulating, veh/h	529	352	213	120
Vehicles Exiting, veh/h	199	192	520	338
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	7.4	4.8	6.2	8.4
Approach LOS	A	A	A	A

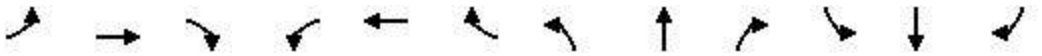
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	204	106	331	608
Cap Entry Lane, veh/h	804	964	1110	1221
Entry HV Adj Factor	0.979	0.981	0.979	0.980
Flow Entry, veh/h	200	104	324	596
Cap Entry, veh/h	788	945	1087	1196
V/C Ratio	0.254	0.110	0.298	0.498
Control Delay, s/veh	7.4	4.8	6.2	8.4
LOS	A	A	A	A
95th %tile Queue, veh	1	0	1	3



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	534	48	17	320	91	35	25	20	123	20	82
Future Volume (veh/h)	71	534	48	17	320	91	35	25	20	123	20	82
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	79	593	53	19	356	101	39	28	22	137	22	91
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	178	1110	99	162	897	251	485	317	249	547	104	430
Arrive On Green	0.10	0.34	0.34	0.09	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	1781	3299	294	1781	2741	767	1279	970	762	1354	318	1315
Grp Volume(v), veh/h	79	319	327	19	229	228	39	0	50	137	0	113
Grp Sat Flow(s),veh/h/ln	1781	1777	1817	1781	1777	1731	1279	0	1732	1354	0	1632
Q Serve(g_s), s	2.3	8.0	8.0	0.5	5.5	5.6	1.3	0.0	1.1	4.3	0.0	2.8
Cycle Q Clear(g_c), s	2.3	8.0	8.0	0.5	5.5	5.6	4.0	0.0	1.1	5.4	0.0	2.8
Prop In Lane	1.00		0.16	1.00		0.44	1.00		0.44	1.00		0.81
Lane Grp Cap(c), veh/h	178	598	611	162	582	566	485	0	567	547	0	534
V/C Ratio(X)	0.44	0.53	0.54	0.12	0.39	0.40	0.08	0.00	0.09	0.25	0.00	0.21
Avail Cap(c_a), veh/h	178	598	611	162	582	566	485	0	567	547	0	534
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.3	14.8	14.8	23.0	14.3	14.3	14.8	0.0	12.8	14.7	0.0	13.4
Incr Delay (d2), s/veh	7.8	3.4	3.3	1.5	2.0	2.1	0.3	0.0	0.3	1.1	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	1.2	3.2	3.3	0.3	2.1	2.2	0.4	0.0	0.4	1.3	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	31.1	18.2	18.1	24.4	16.3	16.5	15.1	0.0	13.1	15.8	0.0	14.3
LnGrp LOS	C	B	B	C	B	B	B		B	B		B
Approach Vol, veh/h		725			476			89			250	
Approach Delay, s/veh		19.5			16.7			14.0			15.1	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.0	22.5		22.5	9.5	23.0		22.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	18.0		18.0	5.0	18.5		18.0				
Max Q Clear Time (g_c+I1), s	4.3	7.6		6.0	2.5	10.0		7.4				
Green Ext Time (p_c), s	0.0	1.8		0.2	0.0	2.4		0.8				

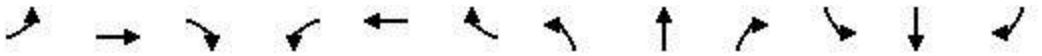
Intersection Summary	
HCM 7th Control Delay, s/veh	17.6
HCM 7th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	81	1058	39	0	0	0	0	218	55	121	162	0
Future Volume (veh/h)	81	1058	39	0	0	0	0	218	55	121	162	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	90	1176	43				0	242	61	134	180	0
Peak Hour Factor	0.90	0.90	0.90				0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	148	1938	71				0	748	634	495	748	0
Arrive On Green	0.40	0.40	0.40				0.00	0.40	0.40	0.80	0.80	0.00
Sat Flow, veh/h	371	4844	177				0	1870	1585	1076	1870	0
Grp Volume(v), veh/h	450	413	446				0	242	61	134	180	0
Grp Sat Flow(s),veh/h/ln	1852	1702	1838				0	1870	1585	1076	1870	0
Q Serve(g_s), s	8.7	8.7	8.7				0.0	4.0	1.1	2.8	1.1	0.0
Cycle Q Clear(g_c), s	8.7	8.7	8.7				0.0	4.0	1.1	6.8	1.1	0.0
Prop In Lane	0.20		0.10				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	741	681	735				0	748	634	495	748	0
V/C Ratio(X)	0.61	0.61	0.61				0.00	0.32	0.10	0.27	0.24	0.00
Avail Cap(c_a), veh/h	741	681	735				0	748	634	495	748	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	10.7	10.7	10.7				0.0	9.3	8.4	4.4	2.8	0.0
Incr Delay (d2), s/veh	3.7	4.0	3.7				0.0	1.1	0.3	1.3	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
%ile BackOfQ(50%),veh/ln	3.4	3.1	3.3				0.0	1.5	0.3	0.5	0.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.4	14.7	14.4				0.0	10.4	8.7	5.7	3.6	0.0
LnGrp LOS	B	B	B					B	A	A	A	
Approach Vol, veh/h		1309						303			314	
Approach Delay, s/veh		14.5						10.1			4.5	
Approach LOS		B						B			A	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		22.5		22.5		22.5						
Change Period (Y+Rc), s		4.5		4.5		4.5						
Max Green Setting (Gmax), s		18.0		18.0		18.0						
Max Q Clear Time (g_c+I1), s		6.0		10.7		8.8						
Green Ext Time (p_c), s		1.2		4.4		1.1						

Intersection Summary												
HCM 7th Control Delay, s/veh		12.2										
HCM 7th LOS		B										



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	42	736	39	82	190	0	0	239	116
Future Volume (veh/h)	0	0	0	42	736	39	82	190	0	0	239	116
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Lane Width Adj.				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				47	818	43	91	211	0	0	266	129
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				112	1940	102	457	748	0	0	748	634
Arrive On Green				0.40	0.40	0.40	0.80	0.80	0.00	0.00	0.40	0.40
Sat Flow, veh/h				279	4850	254	989	1870	0	0	1870	1585
Grp Volume(v), veh/h				313	287	308	91	211	0	0	266	129
Grp Sat Flow(s),veh/h/ln				1856	1702	1825	989	1870	0	0	1870	1585
Q Serve(g_s), s				5.5	5.5	5.5	2.0	1.3	0.0	0.0	4.5	2.4
Cycle Q Clear(g_c), s				5.5	5.5	5.5	6.5	1.3	0.0	0.0	4.5	2.4
Prop In Lane				0.15		0.14	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				743	681	730	457	748	0	0	748	634
V/C Ratio(X)				0.42	0.42	0.42	0.20	0.28	0.00	0.00	0.36	0.20
Avail Cap(c_a), veh/h				743	681	730	457	748	0	0	748	634
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				9.7	9.7	9.7	4.4	2.8	0.0	0.0	9.4	8.8
Incr Delay (d2), s/veh				1.8	1.9	1.8	1.0	0.9	0.0	0.0	1.3	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
%ile BackOfQ(50%),veh/ln				2.0	1.9	2.0	0.3	0.5	0.0	0.0	1.7	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				11.5	11.6	11.5	5.4	3.8	0.0	0.0	10.8	9.5
LnGrp LOS				B	B	B	A	A			B	A
Approach Vol, veh/h					908			302			395	
Approach Delay, s/veh					11.6			4.3			10.4	
Approach LOS					B			A			B	

Timer - Assigned Phs	2			6		8						
Phs Duration (G+Y+Rc), s	22.5			22.5		22.5						
Change Period (Y+Rc), s	4.5			4.5		4.5						
Max Green Setting (Gmax), s	18.0			18.0		18.0						
Max Q Clear Time (g_c+I1), s	8.5			6.5		7.5						
Green Ext Time (p_c), s	1.1			1.5		3.9						

Intersection Summary		
HCM 7th Control Delay, s/veh	9.9	
HCM 7th LOS	A	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	216	283	57	25	290	40	92	169	20	29	308	164
Future Volume (veh/h)	216	283	57	25	290	40	92	169	20	29	308	164
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	240	314	63	28	322	44	102	188	22	32	342	182
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	444	518	439	380	871	118	347	1558	695	85	507	463
Arrive On Green	0.08	0.28	0.28	0.08	0.28	0.28	0.08	0.44	0.44	0.29	0.29	0.29
Sat Flow, veh/h	1781	1870	1585	1781	3145	426	1781	3554	1585	84	1736	1585
Grp Volume(v), veh/h	240	314	63	28	181	185	102	188	22	374	0	182
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1777	1794	1781	1777	1585	1820	0	1585
Q Serve(g_s), s	5.0	9.5	1.9	0.7	5.3	5.4	2.4	2.0	0.5	3.2	0.0	6.0
Cycle Q Clear(g_c), s	5.0	9.5	1.9	0.7	5.3	5.4	2.4	2.0	0.5	11.7	0.0	6.0
Prop In Lane	1.00		1.00	1.00		0.24	1.00		1.00	0.09		1.00
Lane Grp Cap(c), veh/h	444	518	439	380	492	497	347	1558	695	592	0	463
V/C Ratio(X)	0.54	0.61	0.14	0.07	0.37	0.37	0.29	0.12	0.03	0.63	0.00	0.39
Avail Cap(c_a), veh/h	444	518	439	380	492	497	347	1558	695	592	0	463
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.2	20.4	17.7	14.5	18.9	19.0	14.0	10.8	10.4	20.4	0.0	18.4
Incr Delay (d2), s/veh	4.6	5.2	0.7	0.4	2.1	2.1	2.2	0.2	0.1	5.1	0.0	2.5
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	3.0	4.6	0.8	0.3	2.3	2.4	1.1	0.8	0.2	5.5	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	21.8	25.6	18.4	14.9	21.0	21.1	16.2	11.0	10.5	25.4	0.0	20.9
LnGrp LOS	C	C	B	B	C	C	B	B	B	C		C
Approach Vol, veh/h		617			394			312			556	
Approach Delay, s/veh		23.4			20.6			12.6			23.9	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	33.0	9.5	22.5	9.5	23.5	9.5	22.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	28.5	5.0	18.0	5.0	19.0	5.0	18.0
Max Q Clear Time (g_c+I1), s	4.0	2.7	11.5	4.4	13.7	7.0	7.4
Green Ext Time (p_c), s	1.3	0.0	1.1	0.0	1.4	0.0	1.5

Intersection Summary	
HCM 7th Control Delay, s/veh	21.2
HCM 7th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	52	2	9	156	15	9	541	7	7	461	7
Future Volume (veh/h)	10	52	2	9	156	15	9	541	7	7	461	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	11	58	2	10	173	17	10	601	8	8	512	8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	555	719	25	670	670	66	89	1393	18	88	1391	22
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	1193	1797	62	1343	1676	165	16	3484	46	14	3477	54
Grp Volume(v), veh/h	11	0	60	10	0	190	324	0	295	276	0	252
Grp Sat Flow(s),veh/h/ln	1193	0	1859	1343	0	1841	1852	0	1694	1852	0	1692
Q Serve(g_s), s	0.3	0.0	0.9	0.2	0.0	3.1	0.0	0.0	5.7	0.0	0.0	4.7
Cycle Q Clear(g_c), s	3.4	0.0	0.9	1.1	0.0	3.1	5.7	0.0	5.7	4.7	0.0	4.7
Prop In Lane	1.00		0.03	1.00		0.09	0.03		0.03	0.03		0.03
Lane Grp Cap(c), veh/h	555	0	744	670	0	736	823	0	678	823	0	677
V/C Ratio(X)	0.02	0.00	0.08	0.01	0.00	0.26	0.39	0.00	0.44	0.34	0.00	0.37
Avail Cap(c_a), veh/h	555	0	744	670	0	736	823	0	678	823	0	677
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.2	0.0	8.4	8.7	0.0	9.0	9.8	0.0	9.8	9.5	0.0	9.5
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.0	0.0	0.8	1.4	0.0	2.0	1.1	0.0	1.6
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	0.1	0.0	0.3	0.1	0.0	1.1	2.1	0.0	2.0	1.7	0.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	10.2	0.0	8.6	8.8	0.0	9.9	11.2	0.0	11.8	10.6	0.0	11.1
LnGrp LOS	B		A	A		A	B		B	B		B
Approach Vol, veh/h		71			200			619			528	
Approach Delay, s/veh		8.8			9.8			11.5			10.8	
Approach LOS		A			A			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		22.5		22.5		22.5		22.5				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.0		18.0		18.0		18.0				
Max Q Clear Time (g_c+I1), s		7.7		5.4		6.7		5.1				
Green Ext Time (p_c), s		2.8		0.2		2.4		0.8				

Intersection Summary												
HCM 7th Control Delay, s/veh			10.9									
HCM 7th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	559	1523	87	93	1050	248	43	286	327	298	285	186
Future Volume (veh/h)	559	1523	87	93	1050	248	43	286	327	298	285	186
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	621	1692	97	103	1167	276	48	318	363	331	317	207
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	478	1797	102	147	949	222	231	324	289	261	540	344
Arrive On Green	0.24	0.53	0.53	0.05	0.33	0.33	0.04	0.18	0.18	0.12	0.26	0.26
Sat Flow, veh/h	1781	3418	195	1781	2857	669	1781	1777	1585	1781	2081	1327
Grp Volume(v), veh/h	621	874	915	103	722	721	48	318	363	331	270	254
Grp Sat Flow(s),veh/h/ln	1781	1777	1835	1781	1777	1750	1781	1777	1585	1781	1777	1631
Q Serve(g_s), s	33.5	64.3	66.0	5.3	46.5	46.5	3.0	25.0	25.5	16.5	18.5	19.2
Cycle Q Clear(g_c), s	33.5	64.3	66.0	5.3	46.5	46.5	3.0	25.0	25.5	16.5	18.5	19.2
Prop In Lane	1.00		0.11	1.00		0.38	1.00		1.00	1.00		0.81
Lane Grp Cap(c), veh/h	478	934	965	147	590	581	231	324	289	261	461	423
V/C Ratio(X)	1.30	0.94	0.95	0.70	1.22	1.24	0.21	0.98	1.26	1.27	0.59	0.60
Avail Cap(c_a), veh/h	478	934	965	147	590	581	231	324	289	261	461	423
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.2	31.0	31.4	35.9	46.8	46.8	43.7	57.0	57.3	41.3	45.3	45.5
Incr Delay (d2), s/veh	149.8	17.5	18.9	24.2	114.8	122.7	2.0	45.8	140.8	146.7	5.4	6.2
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	35.8	31.3	33.4	3.3	39.2	39.9	1.5	15.3	21.5	17.9	8.8	8.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	195.0	48.5	50.3	60.1	161.6	169.4	45.7	102.9	198.1	187.9	50.6	51.7
LnGrp LOS	F	D	D	E	F	F	D	F	F	F	D	D
Approach Vol, veh/h		2410			1546			729			855	
Approach Delay, s/veh		86.9			158.5			146.5			104.1	
Approach LOS		F			F			F			F	

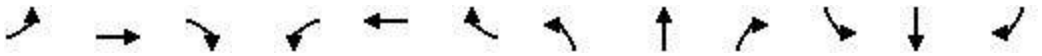
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.0	30.0	10.9	78.1	10.2	40.8	38.0	51.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	16.5	25.5	6.4	73.6	5.7	36.3	33.5	46.5
Max Q Clear Time (g_c+I1), s	18.5	27.5	7.3	68.0	5.0	21.2	35.5	48.5
Green Ext Time (p_c), s	0.0	0.0	0.0	4.7	0.0	2.8	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	117.4
HCM 7th LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	82	393	121	99	170	44	57	1007	53	57	821	76
Future Volume (veh/h)	82	393	121	99	170	44	57	1007	53	57	821	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	91	437	134	110	189	49	63	1119	59	63	912	84
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	412	433	133	170	448	116	258	1373	72	213	1313	121
Arrive On Green	0.06	0.31	0.31	0.05	0.31	0.31	0.05	0.40	0.40	0.05	0.40	0.40
Sat Flow, veh/h	1781	1373	421	1781	1432	371	1781	3434	181	1781	3290	303
Grp Volume(v), veh/h	91	0	571	110	0	238	63	579	599	63	493	503
Grp Sat Flow(s),veh/h/ln	1781	0	1795	1781	0	1804	1781	1777	1838	1781	1777	1816
Q Serve(g_s), s	3.4	0.0	31.5	4.2	0.0	10.4	2.0	29.0	29.0	2.0	23.1	23.1
Cycle Q Clear(g_c), s	3.4	0.0	31.5	4.2	0.0	10.4	2.0	29.0	29.0	2.0	23.1	23.1
Prop In Lane	1.00		0.23	1.00		0.21	1.00		0.10	1.00		0.17
Lane Grp Cap(c), veh/h	412	0	565	170	0	565	258	711	735	213	709	725
V/C Ratio(X)	0.22	0.00	1.01	0.65	0.00	0.42	0.24	0.81	0.82	0.30	0.69	0.69
Avail Cap(c_a), veh/h	412	0	565	170	0	565	258	711	735	213	709	725
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.5	0.0	34.3	26.2	0.0	27.2	18.7	26.7	26.7	20.6	25.0	25.0
Incr Delay (d2), s/veh	1.2	0.0	40.4	17.5	0.0	2.3	2.2	9.9	9.7	3.5	5.6	5.4
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	1.5	0.0	19.7	2.5	0.0	4.8	0.9	13.6	14.0	1.0	10.3	10.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	22.7	0.0	74.6	43.7	0.0	29.5	20.9	36.6	36.4	24.1	30.5	30.4
LnGrp LOS	C		F	D		C	C	D	D	C	C	C
Approach Vol, veh/h		662			348			1241			1059	
Approach Delay, s/veh		67.5			34.0			35.7			30.1	
Approach LOS		E			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	44.5	10.0	36.0	9.6	44.4	10.2	35.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	40.0	5.5	31.5	5.1	39.9	5.7	31.3
Max Q Clear Time (g_c+I1), s	4.0	31.0	6.2	33.5	4.0	25.1	5.4	12.4
Green Ext Time (p_c), s	0.0	4.8	0.0	0.0	0.0	5.6	0.0	1.3

Intersection Summary	
HCM 7th Control Delay, s/veh	40.1
HCM 7th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	5	0	46	10	136	0	1098	0	45	887	0
Future Volume (veh/h)	0	5	0	46	10	136	0	1098	0	45	887	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	6	0	51	11	151	0	1220	0	50	986	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	120	561	0	540	33	448	120	1029	0	120	1955	0
Arrive On Green	0.00	0.30	0.00	0.30	0.30	0.30	0.00	0.55	0.00	0.55	0.55	0.00
Sat Flow, veh/h	1224	1870	0	1410	109	1493	571	1870	0	457	3647	0
Grp Volume(v), veh/h	0	6	0	51	0	162	0	1220	0	50	986	0
Grp Sat Flow(s),veh/h/ln	1224	1870	0	1410	0	1602	571	1870	0	457	1777	0
Q Serve(g_s), s	0.0	0.1	0.0	1.6	0.0	4.7	0.0	33.0	0.0	0.0	10.4	0.0
Cycle Q Clear(g_c), s	0.0	0.1	0.0	1.7	0.0	4.7	0.0	33.0	0.0	33.0	10.4	0.0
Prop In Lane	1.00		0.00	1.00		0.93	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	120	561	0	540	0	480	120	1029	0	120	1955	0
V/C Ratio(X)	0.00	0.01	0.00	0.09	0.00	0.34	0.00	1.19	0.00	0.42	0.50	0.00
Avail Cap(c_a), veh/h	120	561	0	540	0	480	120	1029	0	120	1955	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	14.7	0.0	15.4	0.0	16.4	0.0	13.5	0.0	30.0	8.4	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.3	0.0	1.9	0.0	93.7	0.0	10.3	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	0.0	0.1	0.0	0.5	0.0	1.9	0.0	36.8	0.0	1.0	3.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	14.8	0.0	15.7	0.0	18.2	0.0	107.2	0.0	40.3	9.3	0.0
LnGrp LOS		B		B		B		F		D	A	
Approach Vol, veh/h		6			213			1220			1036	
Approach Delay, s/veh		14.8			17.6			107.2			10.8	
Approach LOS		B			B			F			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	37.5	22.5	37.5	22.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	33.0	18.0	18.0	18.0
Max Q Clear Time (g_c+I1), s	35.0	2.1	35.0	6.7
Green Ext Time (p_c), s	0.0	0.0	0.0	0.8

Intersection Summary	
HCM 7th Control Delay, s/veh	58.9
HCM 7th LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	204	1007	353	265	973	26	297	594	356	58	274	342
Future Volume (veh/h)	204	1007	353	265	973	26	297	594	356	58	274	342
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	227	1119	392	294	1081	29	330	660	396	64	304	380
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	299	1103	379	304	1513	41	335	850	379	151	510	228
Arrive On Green	0.17	0.43	0.43	0.17	0.43	0.43	0.13	0.24	0.24	0.04	0.14	0.14
Sat Flow, veh/h	1781	2594	892	1781	3535	95	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	227	760	751	294	543	567	330	660	396	64	304	380
Grp Sat Flow(s),veh/h/ln	1781	1777	1710	1781	1777	1853	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	17.0	59.5	59.5	22.9	35.3	35.3	18.5	24.3	33.5	4.3	11.2	20.1
Cycle Q Clear(g_c), s	17.0	59.5	59.5	22.9	35.3	35.3	18.5	24.3	33.5	4.3	11.2	20.1
Prop In Lane	1.00		0.52	1.00		0.05	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	299	755	727	304	760	793	335	850	379	151	510	228
V/C Ratio(X)	0.76	1.01	1.03	0.97	0.71	0.71	0.99	0.78	1.04	0.42	0.60	1.67
Avail Cap(c_a), veh/h	299	755	727	304	760	793	335	850	379	151	510	228
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.6	40.3	40.3	57.7	33.0	33.0	47.0	49.7	53.3	49.3	56.1	59.9
Incr Delay (d2), s/veh	16.5	34.3	42.3	43.8	5.7	5.5	45.7	6.9	58.2	8.4	5.1	320.0
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	9.0	32.5	32.9	14.0	16.2	16.8	6.9	11.5	19.3	2.3	5.4	28.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	72.0	74.6	82.6	101.5	38.7	38.5	92.7	56.6	111.4	57.7	61.2	379.9
LnGrp LOS	E	F	F	F	D	D	F	E	F	E	E	F
Approach Vol, veh/h		1738			1404			1386			748	
Approach Delay, s/veh		77.7			51.7			80.9			222.8	
Approach LOS		E			D			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	38.0	28.4	64.0	23.0	24.6	28.0	64.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.1	33.5	23.9	59.5	18.5	20.1	23.5	59.9
Max Q Clear Time (g_c+I1), s	6.3	35.5	24.9	61.5	20.5	22.1	19.0	37.3
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.3	7.6

Intersection Summary	
HCM 7th Control Delay, s/veh	92.2
HCM 7th LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	22	63	319	35	19	17	418	379	24	316	30
Future Volume (veh/h)	11	22	63	319	35	19	17	418	379	24	316	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	12	24	70	401	0	0	19	464	0	27	351	33
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	283	515	634	1331	748		488	1421		448	1314	123
Arrive On Green	0.40	0.40	0.40	0.40	0.00	0.00	0.40	0.40	0.00	0.40	0.40	0.40
Sat Flow, veh/h	441	1288	1585	2604	1870	0	999	3554	1585	928	3285	307
Grp Volume(v), veh/h	36	0	70	401	0	0	19	464	0	27	189	195
Grp Sat Flow(s),veh/h/ln	1729	0	1585	1302	1870	0	999	1777	1585	928	1777	1815
Q Serve(g_s), s	0.0	0.0	1.2	5.0	0.0	0.0	0.6	4.1	0.0	0.9	3.2	3.3
Cycle Q Clear(g_c), s	0.5	0.0	1.2	5.5	0.0	0.0	3.8	4.1	0.0	5.0	3.2	3.3
Prop In Lane	0.33		1.00	1.00		0.00	1.00		1.00	1.00		0.17
Lane Grp Cap(c), veh/h	798	0	634	1331	748		488	1421		448	711	726
V/C Ratio(X)	0.05	0.00	0.11	0.30	0.00		0.04	0.33		0.06	0.27	0.27
Avail Cap(c_a), veh/h	798	0	634	1331	748		488	1421		448	711	726
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.3	0.0	8.5	10.0	0.0	0.0	10.4	9.3	0.0	11.0	9.1	9.1
Incr Delay (d2), s/veh	0.1	0.0	0.4	0.6	0.0	0.0	0.1	0.6	0.0	0.3	0.9	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	0.2	0.0	0.4	1.1	0.0	0.0	0.1	1.3	0.0	0.2	1.1	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	8.4	0.0	8.8	10.5	0.0	0.0	10.5	9.9	0.0	11.3	10.0	10.0
LnGrp LOS	A		A	B			B	A		B	A	A
Approach Vol, veh/h		106			401			483			411	
Approach Delay, s/veh		8.7			10.5			10.0			10.1	
Approach LOS		A			B			A			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	22.5	22.5	22.5	22.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.0	18.0	18.0	18.0
Max Q Clear Time (g_c+I1), s	6.1	3.2	7.0	7.5
Green Ext Time (p_c), s	2.4	0.3	1.7	1.1

Intersection Summary	
HCM 7th Control Delay, s/veh	10.1
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	42	121	35	42	174	161	1012	87	40	795	40
Future Volume (veh/h)	105	42	121	35	42	174	161	1012	87	40	795	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	117	47	134	39	47	193	179	1124	97	44	883	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	498	711	634	575	128	526	287	1324	114	202	1421	
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.00
Sat Flow, veh/h	1140	1777	1585	1203	320	1314	629	3310	285	457	3554	1585
Grp Volume(v), veh/h	117	47	134	39	0	240	179	603	618	44	883	0
Grp Sat Flow(s),veh/h/ln	1140	1777	1585	1203	0	1634	629	1777	1819	457	1777	1585
Q Serve(g_s), s	3.6	0.7	2.5	1.0	0.0	4.6	9.1	13.9	13.9	4.1	8.9	0.0
Cycle Q Clear(g_c), s	8.3	0.7	2.5	3.5	0.0	4.6	18.0	13.9	13.9	18.0	8.9	0.0
Prop In Lane	1.00		1.00	1.00		0.80	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	498	711	634	575	0	654	287	711	728	202	1421	
V/C Ratio(X)	0.23	0.07	0.21	0.07	0.00	0.37	0.62	0.85	0.85	0.22	0.62	
Avail Cap(c_a), veh/h	498	711	634	575	0	654	287	711	728	202	1421	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	12.4	8.3	8.8	10.0	0.0	9.5	19.3	12.3	12.3	20.6	10.8	0.0
Incr Delay (d2), s/veh	1.1	0.2	0.8	0.2	0.0	1.6	9.8	12.0	11.9	2.5	2.1	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	0.9	0.3	0.8	0.3	0.0	1.6	2.5	6.4	6.5	0.5	3.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	13.5	8.5	9.6	10.2	0.0	11.1	29.1	24.3	24.2	23.0	12.8	0.0
LnGrp LOS	B	A	A	B		B	C	C	C	C	B	
Approach Vol, veh/h		298			279			1400			927	
Approach Delay, s/veh		11.0			11.0			24.9			13.3	
Approach LOS		B			B			C			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	22.5	22.5	22.5	22.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.0	18.0	18.0	18.0
Max Q Clear Time (g_c+I1), s	20.0	10.3	20.0	6.6
Green Ext Time (p_c), s	0.0	0.9	0.0	1.3

Intersection Summary	
HCM 7th Control Delay, s/veh	18.4
HCM 7th LOS	B

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	39	18	46	44	50	45
Future Vol, veh/h	39	18	46	44	50	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	43	20	51	49	56	50

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	100	0	-	0	182	76
Stage 1	-	-	-	-	76	-
Stage 2	-	-	-	-	107	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1493	-	-	-	807	986
Stage 1	-	-	-	-	947	-
Stage 2	-	-	-	-	918	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1493	-	-	-	783	986
Mov Cap-2 Maneuver	-	-	-	-	783	-
Stage 1	-	-	-	-	920	-
Stage 2	-	-	-	-	918	-

Approach	EB	WB	SB
HCM Control Delay, s/v	5.12	0	9.72
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1232	-	-	-	868
HCM Lane V/C Ratio	0.029	-	-	-	0.122
HCM Control Delay (s/veh)	7.5	0	-	-	9.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	24	0	20	0	1036	20	16	886	0
Future Vol, veh/h	0	0	0	24	0	20	0	1036	20	16	886	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	85	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	27	0	22	0	1151	22	18	984	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1596	2193	492	1690	2182	587	984	0	0	1173	0	0
Stage 1	1020	1020	-	1162	1162	-	-	-	-	-	-	-
Stage 2	576	1173	-	528	1020	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	71	45	522	61	45	453	697	-	-	591	-	-
Stage 1	253	312	-	207	267	-	-	-	-	-	-	-
Stage 2	470	264	-	502	312	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	66	43	522	59	44	453	697	-	-	591	-	-
Mov Cap-2 Maneuver	66	43	-	59	44	-	-	-	-	-	-	-
Stage 1	246	303	-	207	267	-	-	-	-	-	-	-
Stage 2	447	264	-	487	303	-	-	-	-	-	-	-

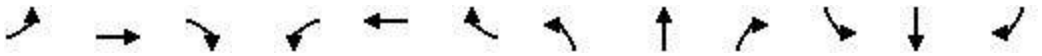
Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	65.69	0	0.2
HCM LOS	A	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	697	-	-	-	59	453	591	-	-
HCM Lane V/C Ratio	-	-	-	-	0.453	0.049	0.03	-	-
HCM Control Delay (s/veh)	0	-	-	0	109.3	13.4	11.3	-	-
HCM Lane LOS	A	-	-	A	F	B	B	-	-
HCM 95th %tile Q(veh)	0	-	-	-	1.7	0.2	0.1	-	-

Intersection	
Intersection Delay, s/veh	5.6
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	151	126	300	381
Demand Flow Rate, veh/h	154	129	306	389
Vehicles Circulating, veh/h	343	337	115	143
Vehicles Exiting, veh/h	189	84	382	323
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.3	5.0	5.2	6.2
Approach LOS	A	A	A	A

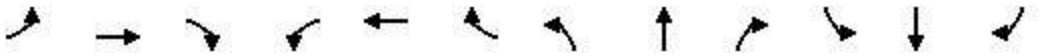
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	154	129	306	389
Cap Entry Lane, veh/h	973	979	1227	1193
Entry HV Adj Factor	0.980	0.977	0.981	0.981
Flow Entry, veh/h	151	126	300	381
Cap Entry, veh/h	953	956	1204	1169
V/C Ratio	0.158	0.132	0.249	0.326
Control Delay, s/veh	5.3	5.0	5.2	6.2
LOS	A	A	A	A
95th %tile Queue, veh	1	0	1	1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	205	242	99	31	213	31	57	234	15	67	401	204
Future Volume (veh/h)	205	242	99	31	213	31	57	234	15	67	401	204
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	236	278	114	36	245	36	66	269	17	77	461	234
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	348	401	340	256	623	90	326	1085	919	105	497	243
Arrive On Green	0.07	0.21	0.21	0.06	0.20	0.20	0.06	0.58	0.58	0.47	0.47	0.47
Sat Flow, veh/h	1781	1870	1585	1781	3114	452	1781	1870	1585	128	1047	511
Grp Volume(v), veh/h	236	278	114	36	138	143	66	269	17	772	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1777	1789	1781	1870	1585	1687	0	0
Q Serve(g_s), s	6.3	12.3	5.5	1.4	6.1	6.2	1.6	6.3	0.4	30.2	0.0	0.0
Cycle Q Clear(g_c), s	6.3	12.3	5.5	1.4	6.1	6.2	1.6	6.3	0.4	39.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	0.10		0.30
Lane Grp Cap(c), veh/h	348	401	340	256	355	358	326	1085	919	844	0	0
V/C Ratio(X)	0.68	0.69	0.34	0.14	0.39	0.40	0.20	0.25	0.02	0.91	0.00	0.00
Avail Cap(c_a), veh/h	348	401	340	256	355	358	326	1085	919	844	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	30.5	32.6	29.9	26.2	31.2	31.3	9.4	9.3	8.0	22.7	0.0	0.0
Incr Delay (d2), s/veh	10.2	9.5	2.6	1.2	3.2	3.3	1.4	0.5	0.0	16.0	0.0	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	2.7	6.5	2.3	0.7	2.9	3.0	0.7	2.6	0.1	18.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.6	42.1	32.6	27.3	34.4	34.6	10.8	9.8	8.1	38.7	0.0	0.0
LnGrp LOS	D	D	C	C	C	C	B	A	A	D		
Approach Vol, veh/h		628			317			352			772	
Approach Delay, s/veh		39.8			33.7			9.9			38.7	
Approach LOS		D			C			A			D	

Timer - Assigned Phs	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	56.7	9.5	23.8	9.5	47.2	10.8	22.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	52.2	5.0	19.3	5.0	42.7	6.3	18.0
Max Q Clear Time (g_c+I1), s	8.3	3.4	14.3	3.6	41.8	8.3	8.2
Green Ext Time (p_c), s	1.9	0.0	0.9	0.0	0.5	0.0	1.1

Intersection Summary	
HCM 7th Control Delay, s/veh	33.4
HCM 7th LOS	C

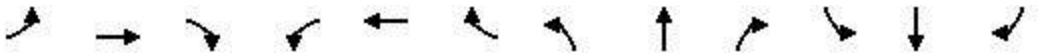


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	34	4	18	44	13	4	467	44	13	683	2
Future Volume (veh/h)	9	34	4	18	44	13	4	467	44	13	683	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	39	5	21	51	15	5	537	51	15	785	2
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	485	487	62	505	417	123	62	921	87	68	1010	3
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.55	0.55	0.55	0.73	0.73	0.73
Sat Flow, veh/h	1335	1625	208	1362	1388	408	3	1675	158	12	1837	5
Grp Volume(v), veh/h	10	0	44	21	0	66	593	0	0	802	0	0
Grp Sat Flow(s),veh/h/ln	1335	0	1833	1362	0	1797	1836	0	0	1854	0	0
Q Serve(g_s), s	0.3	0.0	1.0	0.7	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.9	0.0	1.0	1.7	0.0	1.6	12.8	0.0	0.0	16.1	0.0	0.0
Prop In Lane	1.00		0.11	1.00		0.23	0.01		0.09	0.02		0.00
Lane Grp Cap(c), veh/h	485	0	550	505	0	539	1070	0	0	1081	0	0
V/C Ratio(X)	0.02	0.00	0.08	0.04	0.00	0.12	0.55	0.00	0.00	0.74	0.00	0.00
Avail Cap(c_a), veh/h	485	0	550	505	0	539	1070	0	0	1081	0	0
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	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	16.0	0.0	15.1	15.7	0.0	15.3	9.0	0.0	0.0	5.8	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.2	0.0	0.5	2.1	0.0	0.0	4.6	0.0	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	0.1	0.0	0.4	0.2	0.0	0.7	4.7	0.0	0.0	4.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.0	0.0	15.3	15.8	0.0	15.7	11.0	0.0	0.0	10.4	0.0	0.0
LnGrp LOS	B		B	B		B	B			B		
Approach Vol, veh/h		54			87			593			802	
Approach Delay, s/veh		15.5			15.8			11.0			10.4	
Approach LOS		B			B			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.5		22.5		37.5		22.5				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		33.0		18.0		33.0		18.0				
Max Q Clear Time (g_c+I1), s		14.8		3.9		18.1		3.7				
Green Ext Time (p_c), s		3.9		0.1		5.3		0.3				
Intersection Summary												
HCM 7th Control Delay, s/veh			11.1									
HCM 7th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	185	889	43	232	418	49	87	285	139	98	529	92
Future Volume (veh/h)	185	889	43	232	418	49	87	285	139	98	529	92
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	213	1022	49	267	480	56	100	328	160	113	608	106
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	437	1021	49	278	906	105	142	454	221	363	599	104
Arrive On Green	0.14	0.30	0.30	0.12	0.28	0.28	0.09	0.77	0.77	0.05	0.39	0.39
Sat Flow, veh/h	1781	3452	165	1781	3207	373	1781	1187	579	1781	1551	270
Grp Volume(v), veh/h	213	526	545	267	265	271	100	0	488	113	0	714
Grp Sat Flow(s),veh/h/ln	1781	1777	1841	1781	1777	1803	1781	0	1766	1781	0	1822
Q Serve(g_s), s	9.5	35.5	35.5	13.8	15.1	15.2	4.1	0.0	17.4	4.6	0.0	46.3
Cycle Q Clear(g_c), s	9.5	35.5	35.5	13.8	15.1	15.2	4.1	0.0	17.4	4.6	0.0	46.3
Prop In Lane	1.00		0.09	1.00		0.21	1.00		0.33	1.00		0.15
Lane Grp Cap(c), veh/h	437	526	545	278	502	509	142	0	676	363	0	703
V/C Ratio(X)	0.49	1.00	1.00	0.96	0.53	0.53	0.71	0.00	0.72	0.31	0.00	1.02
Avail Cap(c_a), veh/h	437	526	545	278	502	509	142	0	676	363	0	703
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	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.3	42.3	42.3	34.7	36.3	36.4	28.1	0.0	10.8	22.1	0.0	36.9
Incr Delay (d2), s/veh	3.8	39.4	38.8	44.6	3.9	3.9	25.6	0.0	6.6	2.2	0.0	38.0
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	4.4	21.1	21.8	8.7	7.1	7.3	2.6	0.0	4.9	2.1	0.0	27.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.2	81.7	81.0	79.2	40.2	40.3	53.7	0.0	17.3	24.4	0.0	74.8
LnGrp LOS	C	F	F	E	D	D	D		B	C		F
Approach Vol, veh/h		1284			803			588			827	
Approach Delay, s/veh		72.5			53.2			23.5			67.9	
Approach LOS		E			D			C			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.4	50.4	19.2	40.0	10.0	50.8	20.8	38.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.9	45.9	14.7	35.5	5.5	46.3	16.3	33.9
Max Q Clear Time (g_c+I1), s	6.6	19.4	15.8	37.5	6.1	48.3	11.5	17.2
Green Ext Time (p_c), s	0.0	3.5	0.0	0.0	0.0	0.0	0.3	3.0

Intersection Summary	
HCM 7th Control Delay, s/veh	58.8
HCM 7th LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	237	657	176	71	865	26	176	348	106	68	418	304
Future Volume (veh/h)	237	657	176	71	865	26	176	348	106	68	418	304
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	272	755	202	82	994	30	202	400	122	78	480	349
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	287	1013	271	141	998	30	234	561	476	311	522	442
Arrive On Green	0.16	0.37	0.37	0.08	0.28	0.28	0.15	0.60	0.60	0.04	0.19	0.19
Sat Flow, veh/h	1781	2772	742	1781	3522	106	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	272	484	473	82	501	523	202	400	122	78	480	349
Grp Sat Flow(s),veh/h/ln	1781	1777	1737	1781	1777	1851	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	13.6	21.4	21.4	4.0	25.4	25.4	6.9	13.5	3.3	2.8	22.7	18.9
Cycle Q Clear(g_c), s	13.6	21.4	21.4	4.0	25.4	25.4	6.9	13.5	3.3	2.8	22.7	18.9
Prop In Lane	1.00		0.43	1.00		0.06	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	287	650	635	141	503	525	234	561	476	311	522	442
V/C Ratio(X)	0.95	0.75	0.75	0.58	1.00	1.00	0.86	0.71	0.26	0.25	0.92	0.79
Avail Cap(c_a), veh/h	287	650	635	141	503	525	234	561	476	311	522	442
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.67	0.67	0.67
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.4	24.9	24.9	40.0	32.2	32.2	24.2	15.3	13.3	22.1	35.6	34.1
Incr Delay (d2), s/veh	41.3	7.6	7.8	16.5	39.2	38.4	31.7	7.5	1.3	1.9	23.9	13.4
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	9.0	9.8	9.6	2.4	15.8	16.4	4.7	4.9	1.2	1.3	14.0	9.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	78.7	32.5	32.7	56.5	71.4	70.6	56.0	22.8	14.6	24.0	59.5	47.5
LnGrp LOS	E	C	C	E	E	E	E	C	B	C	E	D
Approach Vol, veh/h		1229			1106			724			907	
Approach Delay, s/veh		42.8			69.9			30.7			51.8	
Approach LOS		D			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	31.5	11.6	37.4	11.4	29.6	19.0	30.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	27.0	7.1	32.9	6.9	25.1	14.5	25.5
Max Q Clear Time (g_c+I1), s	4.8	15.5	6.0	23.4	8.9	24.7	15.6	27.4
Green Ext Time (p_c), s	0.0	2.2	0.0	4.1	0.0	0.2	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	50.2
HCM 7th LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	24	54	413	34	19	114	281	273	33	264	33
Future Volume (veh/h)	10	24	54	413	34	19	114	281	273	33	264	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	11	28	62	523	0	0	131	323	0	38	303	38
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	244	561	634	1332	748		433	748		415	652	82
Arrive On Green	0.40	0.40	0.40	0.40	0.00	0.00	0.13	0.13	0.00	0.40	0.40	0.40
Sat Flow, veh/h	354	1403	1585	2613	1870	0	1039	1870	1585	1057	1629	204
Grp Volume(v), veh/h	39	0	62	523	0	0	131	323	0	38	0	341
Grp Sat Flow(s),veh/h/ln	1757	0	1585	1307	1870	0	1039	1870	1585	1057	0	1834
Q Serve(g_s), s	0.0	0.0	1.1	6.9	0.0	0.0	5.4	7.2	0.0	1.3	0.0	6.2
Cycle Q Clear(g_c), s	0.6	0.0	1.1	7.5	0.0	0.0	11.6	7.2	0.0	8.4	0.0	6.2
Prop In Lane	0.28		1.00	1.00		0.00	1.00		1.00	1.00		0.11
Lane Grp Cap(c), veh/h	805	0	634	1332	748		433	748		415	0	733
V/C Ratio(X)	0.05	0.00	0.10	0.39	0.00		0.30	0.43		0.09	0.00	0.46
Avail Cap(c_a), veh/h	805	0	634	1332	748		433	748		415	0	733
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.3	0.0	8.4	10.6	0.0	0.0	19.7	14.8	0.0	13.4	0.0	10.0
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.9	0.0	0.0	1.8	1.8	0.0	0.4	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	0.2	0.0	0.4	1.6	0.0	0.0	1.6	3.1	0.0	0.3	0.0	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	8.4	0.0	8.7	11.4	0.0	0.0	21.5	16.6	0.0	13.9	0.0	12.1
LnGrp LOS	A		A	B			C	B		B		B
Approach Vol, veh/h		101			523			454			379	
Approach Delay, s/veh		8.6			11.4			18.0			12.2	
Approach LOS		A			B			B			B	

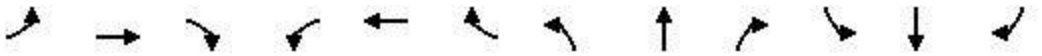
Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	22.5	22.5	22.5	22.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.0	18.0	18.0	18.0
Max Q Clear Time (g_c+I1), s	13.6	3.1	10.4	9.5
Green Ext Time (p_c), s	1.0	0.3	1.3	1.4

Intersection Summary	
HCM 7th Control Delay, s/veh	13.5
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

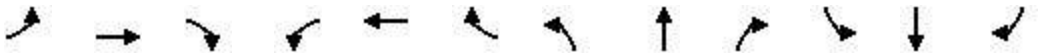
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	216	283	57	25	290	40	92	169	20	29	308	164
Future Volume (veh/h)	216	283	57	25	290	40	92	169	20	29	308	164
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	240	314	63	28	322	44	102	188	22	32	342	182
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	417	503	426	323	708	96	382	935	793	69	422	216
Arrive On Green	0.11	0.27	0.27	0.06	0.22	0.22	0.06	0.50	0.50	0.38	0.38	0.38
Sat Flow, veh/h	1781	1870	1585	1781	3145	426	1781	1870	1585	56	1111	568
Grp Volume(v), veh/h	240	314	63	28	181	185	102	188	22	556	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1777	1794	1781	1870	1585	1735	0	0
Q Serve(g_s), s	8.2	11.8	2.4	0.9	7.0	7.1	2.6	4.5	0.6	10.1	0.0	0.0
Cycle Q Clear(g_c), s	8.2	11.8	2.4	0.9	7.0	7.1	2.6	4.5	0.6	23.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.24	1.00		1.00	0.06		0.33
Lane Grp Cap(c), veh/h	417	503	426	323	400	404	382	935	793	707	0	0
V/C Ratio(X)	0.58	0.62	0.15	0.09	0.45	0.46	0.27	0.20	0.03	0.79	0.00	0.00
Avail Cap(c_a), veh/h	417	503	426	323	400	404	382	935	793	707	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.5	25.7	22.3	21.1	26.7	26.8	12.0	11.1	10.1	22.5	0.0	0.0
Incr Delay (d2), s/veh	5.7	5.8	0.7	0.5	3.7	3.7	1.7	0.5	0.1	8.6	0.0	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	3.9	5.8	1.0	0.4	3.3	3.4	1.2	1.9	0.2	10.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	26.1	31.5	23.0	21.6	30.4	30.5	13.7	11.6	10.2	31.1	0.0	0.0
LnGrp LOS	C	C	C	C	C	C	B	B	B	C		
Approach Vol, veh/h		617			394			312			556	
Approach Delay, s/veh		28.5			29.8			12.2			31.1	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	44.5	9.5	26.0	9.6	34.9	13.0	22.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	40.0	5.0	21.5	5.1	30.4	8.5	18.0
Max Q Clear Time (g_c+I1), s	6.5	2.9	13.8	4.6	25.2	10.2	9.1
Green Ext Time (p_c), s	1.3	0.0	1.2	0.0	1.7	0.0	1.4

Intersection Summary	
HCM 7th Control Delay, s/veh	26.9
HCM 7th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	52	2	9	156	15	9	541	7	7	461	7
Future Volume (veh/h)	10	52	2	9	156	15	9	541	7	7	461	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	11	58	2	10	173	17	10	601	8	8	512	8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	429	588	20	540	549	54	71	928	12	70	926	14
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	0.51	0.51	0.51	0.51	0.51	0.51
Sat Flow, veh/h	1193	1797	62	1343	1676	165	9	1823	24	8	1820	28
Grp Volume(v), veh/h	11	0	60	10	0	190	619	0	0	528	0	0
Grp Sat Flow(s),veh/h/ln	1193	0	1859	1343	0	1841	1856	0	0	1855	0	0
Q Serve(g_s), s	0.4	0.0	1.2	0.3	0.0	4.3	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.6	0.0	1.2	1.5	0.0	4.3	13.4	0.0	0.0	10.7	0.0	0.0
Prop In Lane	1.00		0.03	1.00		0.09	0.02		0.01	0.02		0.02
Lane Grp Cap(c), veh/h	429	0	608	540	0	602	1011	0	0	1011	0	0
V/C Ratio(X)	0.03	0.00	0.10	0.02	0.00	0.32	0.61	0.00	0.00	0.52	0.00	0.00
Avail Cap(c_a), veh/h	429	0	608	540	0	602	1011	0	0	1011	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	15.6	0.0	12.9	13.4	0.0	13.9	9.9	0.0	0.0	9.2	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.1	0.0	1.4	2.8	0.0	0.0	1.9	0.0	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	0.1	0.0	0.5	0.1	0.0	1.8	5.1	0.0	0.0	3.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.7	0.0	13.2	13.5	0.0	15.2	12.7	0.0	0.0	11.2	0.0	0.0
LnGrp LOS	B		B	B		B	B			B		
Approach Vol, veh/h		71			200			619			528	
Approach Delay, s/veh		13.6			15.2			12.7			11.2	
Approach LOS		B			B			B			B	

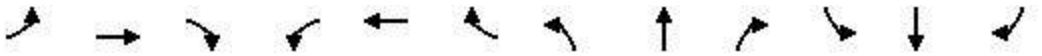
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		32.5		22.5		32.5		22.5				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		28.0		18.0		28.0		18.0				
Max Q Clear Time (g_c+I1), s		15.4		6.6		12.7		6.3				
Green Ext Time (p_c), s		3.4		0.2		3.1		0.8				

Intersection Summary												
HCM 7th Control Delay, s/veh			12.5									
HCM 7th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	559	1523	87	93	1050	248	43	286	327	298	285	186
Future Volume (veh/h)	559	1523	87	93	1050	248	43	286	327	298	285	186
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	621	1692	97	103	1167	276	48	318	363	331	317	207
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	401	1538	88	115	827	194	178	231	263	223	369	241
Arrive On Green	0.20	0.45	0.45	0.04	0.29	0.29	0.04	0.29	0.29	0.10	0.35	0.35
Sat Flow, veh/h	1781	3418	195	1781	2857	669	1781	797	910	1781	1056	690
Grp Volume(v), veh/h	621	874	915	103	722	721	48	0	681	331	0	524
Grp Sat Flow(s),veh/h/ln	1781	1777	1835	1781	1777	1750	1781	0	1707	1781	0	1746
Q Serve(g_s), s	27.5	63.0	63.0	5.0	40.5	40.5	2.6	0.0	40.5	13.5	0.0	39.1
Cycle Q Clear(g_c), s	27.5	63.0	63.0	5.0	40.5	40.5	2.6	0.0	40.5	13.5	0.0	39.1
Prop In Lane	1.00		0.11	1.00		0.38	1.00		0.53	1.00		0.40
Lane Grp Cap(c), veh/h	401	800	826	115	514	506	178	0	494	223	0	610
V/C Ratio(X)	1.55	1.09	1.11	0.90	1.40	1.43	0.27	0.00	1.38	1.48	0.00	0.86
Avail Cap(c_a), veh/h	401	800	826	115	514	506	178	0	494	223	0	610
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	45.5	38.5	38.5	43.4	49.8	49.8	36.3	0.0	49.8	42.3	0.0	42.3
Incr Delay (d2), s/veh	258.4	60.3	65.2	59.3	193.1	202.6	3.7	0.0	183.1	239.8	0.0	14.6
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	38.3	40.3	42.7	3.1	45.5	46.1	1.3	0.0	42.3	20.0	0.0	19.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	303.9	98.8	103.7	102.7	242.9	252.3	39.9	0.0	232.8	282.1	0.0	57.0
LnGrp LOS	F	F	F	F	F	F	D		F	F		E
Approach Vol, veh/h		2410			1546			729			855	
Approach Delay, s/veh		153.5			238.0			220.1			144.1	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.0	45.0	9.5	67.5	9.6	53.4	32.0	45.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	13.5	40.5	5.0	63.0	5.1	48.9	27.5	40.5
Max Q Clear Time (g_c+I1), s	15.5	42.5	7.0	65.0	4.6	41.1	29.5	42.5
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	184.4
HCM 7th LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	204	1007	353	265	973	26	297	594	356	58	274	342
Future Volume (veh/h)	204	1007	353	265	973	26	297	594	356	58	274	342
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	227	1119	392	294	1081	29	330	660	396	64	304	380
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	279	936	322	261	1240	33	343	615	521	115	448	379
Arrive On Green	0.16	0.36	0.36	0.15	0.35	0.35	0.13	0.33	0.33	0.04	0.24	0.24
Sat Flow, veh/h	1781	2594	892	1781	3535	95	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	227	760	751	294	543	567	330	660	396	64	304	380
Grp Sat Flow(s),veh/h/ln	1781	1777	1710	1781	1777	1853	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	17.2	50.5	50.5	20.5	40.0	40.0	17.5	46.0	31.3	3.8	20.7	33.5
Cycle Q Clear(g_c), s	17.2	50.5	50.5	20.5	40.0	40.0	17.5	46.0	31.3	3.8	20.7	33.5
Prop In Lane	1.00		0.52	1.00		0.05	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	279	641	617	261	623	650	343	615	521	115	448	379
V/C Ratio(X)	0.81	1.19	1.22	1.13	0.87	0.87	0.96	1.07	0.76	0.56	0.68	1.00
Avail Cap(c_a), veh/h	279	641	617	261	623	650	343	615	521	115	448	379
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.1	44.8	44.8	59.7	42.5	42.5	38.8	47.0	42.1	42.2	48.4	53.3
Incr Delay (d2), s/veh	22.4	98.8	112.2	94.3	15.5	15.0	39.6	57.8	10.0	18.0	8.1	46.7
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	9.5	39.4	40.2	16.0	20.0	20.8	12.3	30.9	13.6	2.2	10.6	18.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	79.5	143.5	157.0	154.1	58.0	57.5	78.4	104.8	52.1	60.2	56.4	99.9
LnGrp LOS	E	F	F	F	E	E	E	F	D	E	E	F
Approach Vol, veh/h		1738			1404			1386			748	
Approach Delay, s/veh		141.0			77.9			83.4			78.9	
Approach LOS		F			E			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	50.5	25.0	55.0	22.0	38.0	26.4	53.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	46.0	20.5	50.5	17.5	33.5	21.9	49.1
Max Q Clear Time (g_c+I1), s	5.8	48.0	22.5	52.5	19.5	35.5	19.2	42.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.2	3.8

Intersection Summary	
HCM 7th Control Delay, s/veh	100.3
HCM 7th LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	22	63	319	35	19	17	418	379	24	316	30
Future Volume (veh/h)	11	22	63	319	35	19	17	418	379	24	316	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	12	24	70	401	0	0	19	464	0	27	351	33
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	283	515	634	1331	748		488	748		348	1314	123
Arrive On Green	0.40	0.40	0.40	0.40	0.00	0.00	0.40	0.40	0.00	0.40	0.40	0.40
Sat Flow, veh/h	441	1288	1585	2604	1870	0	999	1870	1585	928	3285	307
Grp Volume(v), veh/h	36	0	70	401	0	0	19	464	0	27	189	195
Grp Sat Flow(s),veh/h/ln	1729	0	1585	1302	1870	0	999	1870	1585	928	1777	1815
Q Serve(g_s), s	0.0	0.0	1.2	5.0	0.0	0.0	0.6	8.9	0.0	1.1	3.2	3.3
Cycle Q Clear(g_c), s	0.5	0.0	1.2	5.5	0.0	0.0	3.8	8.9	0.0	10.0	3.2	3.3
Prop In Lane	0.33		1.00	1.00		0.00	1.00		1.00	1.00		0.17
Lane Grp Cap(c), veh/h	798	0	634	1331	748		488	748		348	711	726
V/C Ratio(X)	0.05	0.00	0.11	0.30	0.00		0.04	0.62		0.08	0.27	0.27
Avail Cap(c_a), veh/h	798	0	634	1331	748		488	748		348	711	726
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.3	0.0	8.5	10.0	0.0	0.0	10.4	10.8	0.0	14.8	9.1	9.1
Incr Delay (d2), s/veh	0.1	0.0	0.4	0.6	0.0	0.0	0.1	3.8	0.0	0.4	0.9	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	0.2	0.0	0.4	1.1	0.0	0.0	0.1	3.5	0.0	0.2	1.1	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	8.4	0.0	8.8	10.5	0.0	0.0	10.5	14.6	0.0	15.2	10.0	10.0
LnGrp LOS	A		A	B			B	B		B	A	A
Approach Vol, veh/h		106			401			483			411	
Approach Delay, s/veh		8.7			10.5			14.5			10.3	
Approach LOS		A			B			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	22.5	22.5	22.5	22.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.0	18.0	18.0	18.0
Max Q Clear Time (g_c+I1), s	10.9	3.2	12.0	7.5
Green Ext Time (p_c), s	1.7	0.3	1.2	1.1

Intersection Summary	
HCM 7th Control Delay, s/veh	11.7
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

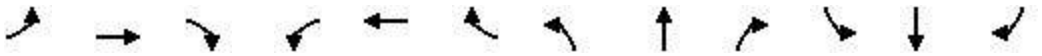
HCM 7th Signalized Intersection Summary
6: 7th St & Grand Ave

08/16/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	297	351	144	45	309	45	83	339	22	97	582	296
Future Volume (veh/h)	297	351	144	45	309	45	83	339	22	97	582	296
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	341	403	166	52	355	52	95	390	25	111	669	340
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	299	401	340	179	623	90	189	1085	919	145	697	752
Arrive On Green	0.07	0.21	0.21	0.06	0.20	0.20	0.06	0.58	0.58	0.47	0.47	0.47
Sat Flow, veh/h	1781	1870	1585	1781	3114	452	1781	1870	1585	209	1469	1585
Grp Volume(v), veh/h	341	403	166	52	201	206	95	390	25	780	0	340
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1777	1789	1781	1870	1585	1677	0	1585
Q Serve(g_s), s	6.3	19.3	8.3	2.0	9.2	9.4	2.3	10.0	0.6	36.2	0.0	12.9
Cycle Q Clear(g_c), s	6.3	19.3	8.3	2.0	9.2	9.4	2.3	10.0	0.6	41.1	0.0	12.9
Prop In Lane	1.00		1.00	1.00		0.25	1.00		1.00	0.14		1.00
Lane Grp Cap(c), veh/h	299	401	340	179	355	358	189	1085	919	841	0	752
V/C Ratio(X)	1.14	1.00	0.49	0.29	0.57	0.57	0.50	0.36	0.03	0.93	0.00	0.45
Avail Cap(c_a), veh/h	299	401	340	179	355	358	189	1085	919	841	0	752
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	34.8	35.4	31.0	27.5	32.5	32.5	20.5	10.0	8.1	23.0	0.0	15.8
Incr Delay (d2), s/veh	96.0	46.1	4.9	4.1	6.4	6.6	9.2	0.9	0.1	17.7	0.0	2.0
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	11.5	13.7	3.6	1.0	4.5	4.6	1.4	4.1	0.2	19.0	0.0	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	130.8	81.5	36.0	31.6	38.9	39.1	29.8	11.0	8.1	40.6	0.0	17.8
LnGrp LOS	F	F	D	C	D	D	C	B	A	D		B
Approach Vol, veh/h		910			459			510			1120	
Approach Delay, s/veh		91.7			38.2			14.3			33.7	
Approach LOS		F			D			B			C	

Timer - Assigned Phs	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	56.7	9.5	23.8	9.5	47.2	10.8	22.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	52.2	5.0	19.3	5.0	42.7	6.3	18.0
Max Q Clear Time (g_c+I1), s	12.0	4.0	21.3	4.3	43.1	8.3	11.4
Green Ext Time (p_c), s	2.9	0.0	0.0	0.0	0.0	0.0	1.3

Intersection Summary	
HCM 7th Control Delay, s/veh	48.7
HCM 7th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	49	6	26	64	19	6	677	64	19	991	3
Future Volume (veh/h)	13	49	6	26	64	19	6	677	64	19	991	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	15	56	7	30	74	22	7	778	74	22	1139	3
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	459	489	61	488	415	123	63	925	87	69	1007	3
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.55	0.55	0.55	0.73	0.73	0.73
Sat Flow, veh/h	1300	1630	204	1339	1385	412	4	1681	159	15	1830	5
Grp Volume(v), veh/h	15	0	63	30	0	96	859	0	0	1164	0	0
Grp Sat Flow(s),veh/h/ln	1300	0	1834	1339	0	1796	1844	0	0	1850	0	0
Q Serve(g_s), s	0.5	0.0	1.5	1.0	0.0	2.4	0.0	0.0	0.0	9.4	0.0	0.0
Cycle Q Clear(g_c), s	2.9	0.0	1.5	2.5	0.0	2.4	23.6	0.0	0.0	33.0	0.0	0.0
Prop In Lane	1.00		0.11	1.00		0.23	0.01		0.09	0.02		0.00
Lane Grp Cap(c), veh/h	459	0	550	488	0	539	1075	0	0	1078	0	0
V/C Ratio(X)	0.03	0.00	0.11	0.06	0.00	0.18	0.80	0.00	0.00	1.08	0.00	0.00
Avail Cap(c_a), veh/h	459	0	550	488	0	539	1075	0	0	1078	0	0
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	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	16.6	0.0	15.2	16.1	0.0	15.5	11.4	0.0	0.0	8.9	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.4	0.2	0.0	0.7	6.2	0.0	0.0	51.4	0.0	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	0.2	0.0	0.6	0.3	0.0	1.0	9.3	0.0	0.0	19.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.7	0.0	15.6	16.4	0.0	16.3	17.6	0.0	0.0	60.3	0.0	0.0
LnGrp LOS	B		B	B		B	B			F		
Approach Vol, veh/h		78			126			859			1164	
Approach Delay, s/veh		15.9			16.3			17.6			60.3	
Approach LOS		B			B			B			E	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.5		22.5		37.5		22.5				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		33.0		18.0		33.0		18.0				
Max Q Clear Time (g_c+I1), s		25.6		4.9		35.0		4.5				
Green Ext Time (p_c), s		3.7		0.2		0.0		0.4				

Intersection Summary												
HCM 7th Control Delay, s/veh			39.8									
HCM 7th LOS			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	229	1100	53	287	517	61	108	353	172	121	655	114
Future Volume (veh/h)	229	1100	53	287	517	61	108	353	172	121	655	114
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	263	1264	61	330	594	70	124	406	198	139	753	131
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	394	1021	49	278	905	106	142	454	221	252	599	104
Arrive On Green	0.14	0.30	0.30	0.12	0.28	0.28	0.09	0.77	0.77	0.05	0.39	0.39
Sat Flow, veh/h	1781	3451	166	1781	3203	377	1781	1187	579	1781	1552	270
Grp Volume(v), veh/h	263	650	675	330	329	335	124	0	604	139	0	884
Grp Sat Flow(s),veh/h/ln	1781	1777	1840	1781	1777	1803	1781	0	1766	1781	0	1822
Q Serve(g_s), s	12.1	35.5	35.5	14.7	19.6	19.7	5.3	0.0	30.5	5.8	0.0	46.3
Cycle Q Clear(g_c), s	12.1	35.5	35.5	14.7	19.6	19.7	5.3	0.0	30.5	5.8	0.0	46.3
Prop In Lane	1.00		0.09	1.00		0.21	1.00		0.33	1.00		0.15
Lane Grp Cap(c), veh/h	394	526	544	278	502	509	142	0	676	252	0	703
V/C Ratio(X)	0.67	1.24	1.24	1.19	0.66	0.66	0.88	0.00	0.89	0.55	0.00	1.26
Avail Cap(c_a), veh/h	394	526	544	278	502	509	142	0	676	252	0	703
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	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.3	42.3	42.3	35.7	37.9	37.9	28.5	0.0	12.3	25.7	0.0	36.9
Incr Delay (d2), s/veh	8.7	122.2	122.8	114.1	6.5	6.5	48.1	0.0	16.7	8.4	0.0	127.3
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	6.0	33.2	34.5	14.4	9.4	9.6	3.9	0.0	7.8	3.0	0.0	44.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	35.0	164.4	165.0	149.7	44.5	44.5	76.5	0.0	29.0	34.1	0.0	164.2
LnGrp LOS	C	F	F	F	D	D	E		C	C		F
Approach Vol, veh/h		1588			994			728			1023	
Approach Delay, s/veh		143.2			79.4			37.1			146.5	
Approach LOS		F			E			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.4	50.4	19.2	40.0	10.0	50.8	20.8	38.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.9	45.9	14.7	35.5	5.5	46.3	16.3	33.9
Max Q Clear Time (g_c+I1), s	7.8	32.5	16.7	37.5	7.3	48.3	14.1	21.7
Green Ext Time (p_c), s	0.0	3.5	0.0	0.0	0.0	0.0	0.2	3.3

Intersection Summary	
HCM 7th Control Delay, s/veh	111.5
HCM 7th LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	279	775	208	84	1020	31	208	410	125	80	493	359
Future Volume (veh/h)	279	775	208	84	1020	31	208	410	125	80	493	359
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	321	891	239	97	1172	36	239	471	144	92	567	413
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	295	1072	287	147	1069	33	214	658	557	236	568	482
Arrive On Green	0.17	0.39	0.39	0.08	0.30	0.30	0.09	0.35	0.35	0.04	0.30	0.30
Sat Flow, veh/h	1781	2771	742	1781	3520	108	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	321	571	559	97	591	617	239	471	144	92	567	413
Grp Sat Flow(s),veh/h/ln	1781	1777	1737	1781	1777	1851	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	21.5	37.7	37.8	6.9	39.5	39.5	11.5	28.4	8.4	4.6	39.4	31.9
Cycle Q Clear(g_c), s	21.5	37.7	37.8	6.9	39.5	39.5	11.5	28.4	8.4	4.6	39.4	31.9
Prop In Lane	1.00		0.43	1.00		0.06	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	295	688	672	147	540	562	214	658	557	236	568	482
V/C Ratio(X)	1.09	0.83	0.83	0.66	1.10	1.10	1.12	0.72	0.26	0.39	1.00	0.86
Avail Cap(c_a), veh/h	295	688	672	147	540	562	214	658	557	236	568	482
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.3	36.0	36.0	57.9	45.3	45.3	37.6	36.5	30.1	31.6	45.2	42.6
Incr Delay (d2), s/veh	78.5	11.2	11.5	21.1	67.4	66.9	97.3	6.6	1.1	4.8	37.2	17.6
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	16.0	18.1	17.8	3.9	27.2	28.2	10.2	14.0	3.4	2.3	23.8	14.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	132.7	47.2	47.5	79.0	112.6	112.2	134.9	43.1	31.2	36.4	82.4	60.2
LnGrp LOS	F	D	D	E	F	F	F	D	C	D	F	E
Approach Vol, veh/h		1451			1305			854			1072	
Approach Delay, s/veh		66.2			109.9			66.8			69.9	
Approach LOS		E			F			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.8	50.2	15.2	54.8	16.0	44.0	26.0	44.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.3	45.7	10.7	50.3	11.5	39.5	21.5	39.5
Max Q Clear Time (g_c+I1), s	6.6	30.4	8.9	39.8	13.5	41.4	23.5	41.5
Green Ext Time (p_c), s	0.0	3.0	0.0	5.2	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	79.4
HCM 7th LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	28	64	487	40	22	134	331	322	39	311	39
Future Volume (veh/h)	12	28	64	487	40	22	134	331	322	39	311	39
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	14	32	74	616	0	0	154	380	0	45	357	45
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	261	541	634	1311	748		388	748		408	651	82
Arrive On Green	0.40	0.40	0.40	0.40	0.00	0.00	0.40	0.40	0.00	0.40	0.40	0.40
Sat Flow, veh/h	392	1353	1585	2576	1870	0	983	1870	1585	1003	1628	205
Grp Volume(v), veh/h	46	0	74	616	0	0	154	380	0	45	0	402
Grp Sat Flow(s),veh/h/ln	1745	0	1585	1288	1870	0	983	1870	1585	1003	0	1833
Q Serve(g_s), s	0.0	0.0	1.3	8.7	0.0	0.0	6.4	6.9	0.0	1.6	0.0	7.6
Cycle Q Clear(g_c), s	0.7	0.0	1.3	9.4	0.0	0.0	14.0	6.9	0.0	8.5	0.0	7.6
Prop In Lane	0.30		1.00	1.00		0.00	1.00		1.00	1.00		0.11
Lane Grp Cap(c), veh/h	802	0	634	1311	748		388	748		408	0	733
V/C Ratio(X)	0.06	0.00	0.12	0.47	0.00		0.40	0.51		0.11	0.00	0.55
Avail Cap(c_a), veh/h	802	0	634	1311	748		388	748		408	0	733
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.3	0.0	8.5	11.2	0.0	0.0	15.8	10.2	0.0	13.4	0.0	10.4
Incr Delay (d2), s/veh	0.1	0.0	0.4	1.2	0.0	0.0	3.0	2.5	0.0	0.5	0.0	2.9
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	0.0	0.4	2.0	0.0	0.0	1.5	2.6	0.0	0.4	0.0	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	8.4	0.0	8.9	12.4	0.0	0.0	18.8	12.6	0.0	13.9	0.0	13.3
LnGrp LOS	A		A	B			B	B		B		B
Approach Vol, veh/h		120			616			534			447	
Approach Delay, s/veh		8.7			12.4			14.4			13.4	
Approach LOS		A			B			B			B	

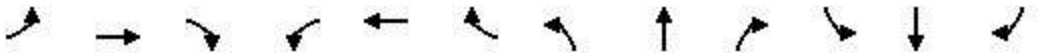
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		22.5		22.5		22.5		22.5				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.0		18.0		18.0		18.0				
Max Q Clear Time (g_c+I1), s		16.0		3.3		10.5		11.4				
Green Ext Time (p_c), s		0.6		0.3		1.6		1.5				

Intersection Summary												
HCM 7th Control Delay, s/veh			13.0									
HCM 7th LOS			B									

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	313	411	83	36	421	58	133	245	29	42	447	238
Future Volume (veh/h)	313	411	83	36	421	58	133	245	29	42	447	238
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	348	457	92	40	468	64	148	272	32	47	497	264
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	367	524	444	187	517	70	238	1032	875	67	505	261
Arrive On Green	0.16	0.28	0.28	0.05	0.16	0.16	0.05	0.55	0.55	0.46	0.46	0.46
Sat Flow, veh/h	1781	1870	1585	1781	3143	428	1781	1870	1585	69	1088	561
Grp Volume(v), veh/h	348	457	92	40	264	268	148	272	32	808	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1777	1793	1781	1870	1585	1718	0	0
Q Serve(g_s), s	17.5	25.6	4.9	2.0	16.0	16.2	4.7	8.4	1.0	35.7	0.0	0.0
Cycle Q Clear(g_c), s	17.5	25.6	4.9	2.0	16.0	16.2	4.7	8.4	1.0	51.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.24	1.00		1.00	0.06		0.33
Lane Grp Cap(c), veh/h	367	524	444	187	292	295	238	1032	875	833	0	0
V/C Ratio(X)	0.95	0.87	0.21	0.21	0.90	0.91	0.62	0.26	0.04	0.97	0.00	0.00
Avail Cap(c_a), veh/h	367	524	444	187	292	295	238	1032	875	833	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	31.2	37.7	30.3	35.9	45.1	45.1	13.3	12.9	11.3	29.5	0.0	0.0
Incr Delay (d2), s/veh	35.4	17.9	1.1	2.6	32.5	33.6	11.7	0.6	0.1	24.7	0.0	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	11.0	14.2	2.0	1.0	9.6	9.9	2.7	3.7	0.4	26.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	66.6	55.7	31.3	38.5	77.6	78.7	25.0	13.6	11.4	54.3	0.0	0.0
LnGrp LOS	E	E	C	D	E	E	C	B	B	D		
Approach Vol, veh/h		897			572			452			808	
Approach Delay, s/veh		57.4			75.4			17.2			54.3	
Approach LOS		E			E			B			D	

Timer - Assigned Phs	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	65.2	9.5	35.3	9.6	55.6	22.2	22.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	60.7	5.0	30.8	5.1	51.1	17.7	18.1
Max Q Clear Time (g_c+I1), s	10.4	4.0	27.6	6.7	53.1	19.5	18.2
Green Ext Time (p_c), s	2.0	0.0	1.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	53.6
HCM 7th LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	75	3	13	226	22	13	785	10	10	669	10
Future Volume (veh/h)	15	75	3	13	226	22	13	785	10	10	669	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	17	83	3	14	251	24	14	872	11	11	743	11
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	316	538	19	469	504	48	66	999	12	65	1000	15
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.55	0.55	0.55	0.55	0.55	0.55
Sat Flow, veh/h	1104	1794	65	1311	1681	161	10	1817	23	8	1819	27
Grp Volume(v), veh/h	17	0	86	14	0	275	897	0	0	765	0	0
Grp Sat Flow(s),veh/h/ln	1104	0	1859	1311	0	1841	1850	0	0	1854	0	0
Q Serve(g_s), s	0.8	0.0	2.0	0.5	0.0	7.4	3.8	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	8.1	0.0	2.0	2.5	0.0	7.4	25.2	0.0	0.0	18.8	0.0	0.0
Prop In Lane	1.00		0.03	1.00		0.09	0.02		0.01	0.01		0.01
Lane Grp Cap(c), veh/h	316	0	558	469	0	552	1078	0	0	1080	0	0
V/C Ratio(X)	0.05	0.00	0.15	0.03	0.00	0.50	0.83	0.00	0.00	0.71	0.00	0.00
Avail Cap(c_a), veh/h	316	0	558	469	0	552	1078	0	0	1080	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.6	0.0	15.4	16.3	0.0	17.3	11.7	0.0	0.0	10.3	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.6	0.1	0.0	3.2	7.5	0.0	0.0	3.9	0.0	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	0.2	0.0	0.9	0.1	0.0	3.3	10.2	0.0	0.0	7.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	21.0	0.0	16.0	16.5	0.0	20.5	19.2	0.0	0.0	14.2	0.0	0.0
LnGrp LOS	C		B	B		C	B			B		
Approach Vol, veh/h		103			289			897			765	
Approach Delay, s/veh		16.8			20.3			19.2			14.2	
Approach LOS		B			C			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	37.5	22.5	37.5	22.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	33.0	18.0	33.0	18.0
Max Q Clear Time (g_c+I1), s	27.2	10.1	20.8	9.4
Green Ext Time (p_c), s	3.2	0.2	4.5	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	17.4
HCM 7th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	692	1885	108	115	1299	307	53	354	405	369	353	230
Future Volume (veh/h)	692	1885	108	115	1299	307	53	354	405	369	353	230
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	769	2094	120	128	1443	341	59	393	450	410	392	256
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	398	1561	89	113	851	196	109	225	258	232	373	243
Arrive On Green	0.20	0.46	0.46	0.04	0.30	0.30	0.03	0.28	0.28	0.10	0.35	0.35
Sat Flow, veh/h	1781	3418	194	1781	2869	659	1781	796	911	1781	1056	690
Grp Volume(v), veh/h	769	1079	1135	128	878	906	59	0	843	410	0	648
Grp Sat Flow(s),veh/h/ln	1781	1777	1835	1781	1777	1752	1781	0	1706	1781	0	1746
Q Serve(g_s), s	29.5	68.5	68.5	5.5	44.5	44.5	3.5	0.0	42.5	15.5	0.0	52.9
Cycle Q Clear(g_c), s	29.5	68.5	68.5	5.5	44.5	44.5	3.5	0.0	42.5	15.5	0.0	52.9
Prop In Lane	1.00		0.11	1.00		0.38	1.00		0.53	1.00		0.40
Lane Grp Cap(c), veh/h	398	811	838	113	527	520	109	0	483	232	0	616
V/C Ratio(X)	1.93	1.33	1.35	1.13	1.67	1.74	0.54	0.00	1.74	1.77	0.00	1.05
Avail Cap(c_a), veh/h	398	811	838	113	527	520	109	0	483	232	0	616
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	49.6	40.8	40.8	47.8	52.8	52.8	42.2	0.0	53.8	47.0	0.0	48.6
Incr Delay (d2), s/veh	427.9	156.6	167.4	123.6	308.1	342.3	18.1	0.0	343.1	362.1	0.0	50.8
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	61.9	64.8	69.4	5.6	64.9	68.9	2.1	0.0	64.3	29.2	0.0	31.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	477.5	197.4	208.1	171.4	360.8	395.0	60.3	0.0	396.9	409.1	0.0	99.3
LnGrp LOS	F	F	F	F	F	F	E		F	F		F
Approach Vol, veh/h		2983			1912			902			1058	
Approach Delay, s/veh		273.7			364.3			374.9			219.4	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.0	47.0	10.0	73.0	9.6	57.4	34.0	49.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	15.5	42.5	5.5	68.5	5.1	52.9	29.5	44.5
Max Q Clear Time (g_c+I1), s	17.5	44.5	7.5	70.5	5.5	54.9	31.5	46.5
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	303.9
HCM 7th LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	241	1188	416	313	1147	31	350	701	420	68	323	403
Future Volume (veh/h)	241	1188	416	313	1147	31	350	701	420	68	323	403
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	268	1320	462	348	1274	34	389	779	467	76	359	448
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	272	984	331	255	1299	35	305	611	518	107	443	375
Arrive On Green	0.15	0.38	0.38	0.14	0.37	0.37	0.12	0.33	0.33	0.03	0.24	0.24
Sat Flow, veh/h	1781	2612	878	1781	3536	94	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	268	881	901	348	640	668	389	779	467	76	359	448
Grp Sat Flow(s),veh/h/ln	1781	1777	1712	1781	1777	1853	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	22.5	56.5	56.5	21.5	53.4	53.5	18.5	49.0	42.2	4.9	27.2	35.5
Cycle Q Clear(g_c), s	22.5	56.5	56.5	21.5	53.4	53.5	18.5	49.0	42.2	4.9	27.2	35.5
Prop In Lane	1.00		0.51	1.00		0.05	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	272	669	645	255	653	681	305	611	518	107	443	375
V/C Ratio(X)	0.99	1.32	1.40	1.36	0.98	0.98	1.28	1.27	0.90	0.71	0.81	1.19
Avail Cap(c_a), veh/h	272	669	645	255	653	681	305	611	518	107	443	375
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.4	46.8	46.8	64.3	46.9	46.9	40.8	50.5	48.2	45.9	54.1	57.3
Incr Delay (d2), s/veh	51.0	152.6	188.2	186.5	30.7	30.2	146.9	136.2	21.5	32.5	14.9	110.7
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	14.0	52.9	57.4	22.9	28.8	30.0	20.9	45.7	19.6	3.1	14.6	25.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	114.4	199.3	234.9	250.8	77.6	77.2	187.7	186.7	69.7	78.5	68.9	168.0
LnGrp LOS	F	F	F	F	E	E	F	F	E	E	E	F
Approach Vol, veh/h		2050			1656			1635			883	
Approach Delay, s/veh		203.9			113.8			153.5			120.0	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	53.5	26.0	61.0	23.0	40.0	27.4	59.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	49.0	21.5	56.5	18.5	35.5	22.9	55.1
Max Q Clear Time (g_c+I1), s	6.9	51.0	23.5	58.5	20.5	37.5	24.5	55.5
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	154.8
HCM 7th LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	26	74	376	41	22	20	493	447	28	373	35
Future Volume (veh/h)	13	26	74	376	41	22	20	493	447	28	373	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	14	29	82	473	0	0	22	548	0	31	414	39
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	277	522	634	1309	748		454	748		290	1314	123
Arrive On Green	0.40	0.40	0.40	0.40	0.00	0.00	0.40	0.40	0.00	0.40	0.40	0.40
Sat Flow, veh/h	428	1305	1585	2564	1870	0	938	1870	1585	859	3284	308
Grp Volume(v), veh/h	43	0	82	473	0	0	22	548	0	31	223	230
Grp Sat Flow(s),veh/h/ln	1734	0	1585	1282	1870	0	938	1870	1585	859	1777	1815
Q Serve(g_s), s	0.0	0.0	1.5	6.3	0.0	0.0	0.7	11.2	0.0	1.4	3.9	3.9
Cycle Q Clear(g_c), s	0.6	0.0	1.5	6.9	0.0	0.0	4.7	11.2	0.0	12.6	3.9	3.9
Prop In Lane	0.33		1.00	1.00		0.00	1.00		1.00	1.00		0.17
Lane Grp Cap(c), veh/h	799	0	634	1309	748		454	748		290	711	726
V/C Ratio(X)	0.05	0.00	0.13	0.36	0.00		0.05	0.73		0.11	0.31	0.32
Avail Cap(c_a), veh/h	799	0	634	1309	748		454	748		290	711	726
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.3	0.0	8.5	10.4	0.0	0.0	10.9	11.5	0.0	16.8	9.3	9.3
Incr Delay (d2), s/veh	0.1	0.0	0.4	0.8	0.0	0.0	0.2	6.3	0.0	0.7	1.2	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	0.2	0.0	0.5	1.4	0.0	0.0	0.1	4.7	0.0	0.3	1.3	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	8.4	0.0	9.0	11.2	0.0	0.0	11.1	17.7	0.0	17.6	10.4	10.4
LnGrp LOS	A		A	B			B	B		B	B	B
Approach Vol, veh/h		125			473			570			484	
Approach Delay, s/veh		8.8			11.2			17.5			10.9	
Approach LOS		A			B			B			B	

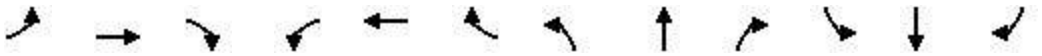
Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	22.5	22.5	22.5	22.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.0	18.0	18.0	18.0
Max Q Clear Time (g_c+I1), s	13.2	3.5	14.6	8.9
Green Ext Time (p_c), s	1.5	0.4	0.9	1.3

Intersection Summary	
HCM 7th Control Delay, s/veh	13.1
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

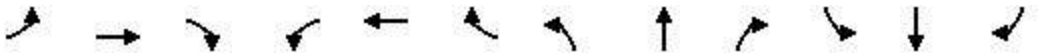
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	890	78	0	0	0	0	218	55	241	170	0
Future Volume (veh/h)	49	890	78	0	0	0	0	218	55	241	170	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	56	1023	90				0	251	63	277	195	0
Peak Hour Factor	0.87	0.87	0.87				0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	103	1875	165				0	577	145	452	748	0
Arrive On Green	0.40	0.40	0.40				0.00	0.40	0.40	0.67	0.67	0.00
Sat Flow, veh/h	257	4687	412				0	1443	362	1066	1870	0
Grp Volume(v), veh/h	405	371	392				0	0	314	277	195	0
Grp Sat Flow(s),veh/h/ln	1858	1702	1796				0	0	1805	1066	1870	0
Q Serve(g_s), s	7.5	7.5	7.5				0.0	0.0	5.7	11.2	1.9	0.0
Cycle Q Clear(g_c), s	7.5	7.5	7.5				0.0	0.0	5.7	16.9	1.9	0.0
Prop In Lane	0.14		0.23				0.00		0.20	1.00		0.00
Lane Grp Cap(c), veh/h	743	681	718				0	0	722	452	748	0
V/C Ratio(X)	0.55	0.55	0.55				0.00	0.00	0.43	0.61	0.26	0.00
Avail Cap(c_a), veh/h	743	681	718				0	0	722	452	748	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.67	1.67	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	10.4	10.4	10.4				0.0	0.0	9.8	10.0	4.8	0.0
Incr Delay (d2), s/veh	2.9	3.1	3.0				0.0	0.0	1.9	6.1	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
%ile BackOfQ(50%),veh/ln	2.9	2.7	2.8				0.0	0.0	2.1	1.9	0.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	13.2	13.5	13.3				0.0	0.0	11.7	16.1	5.6	0.0
LnGrp LOS	B	B	B						B	B	A	
Approach Vol, veh/h		1169						314			472	
Approach Delay, s/veh		13.3						11.7			11.8	
Approach LOS		B						B			B	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		22.5		22.5		22.5						
Change Period (Y+Rc), s		4.5		4.5		4.5						
Max Green Setting (Gmax), s		18.0		18.0		18.0						
Max Q Clear Time (g_c+I1), s		7.7		9.5		18.9						
Green Ext Time (p_c), s		1.3		4.4		0.0						

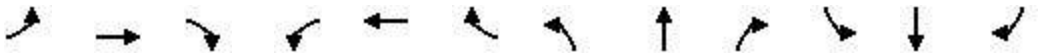
Intersection Summary												
HCM 7th Control Delay, s/veh		12.7										
HCM 7th LOS		B										



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	81	966	118	129	135	0	0	318	77
Future Volume (veh/h)	0	0	0	81	966	118	129	135	0	0	318	77
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Lane Width Adj.				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				93	1110	136	148	155	0	0	366	89
Peak Hour Factor				0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				148	1766	216	345	748	0	0	581	141
Arrive On Green				0.40	0.40	0.40	0.80	0.80	0.00	0.00	0.40	0.40
Sat Flow, veh/h				370	4416	541	936	1870	0	0	1453	353
Grp Volume(v), veh/h				465	428	446	148	155	0	0	0	455
Grp Sat Flow(s),veh/h/ln				1852	1702	1773	936	1870	0	0	0	1807
Q Serve(g_s), s				9.1	9.1	9.1	6.3	0.9	0.0	0.0	0.0	9.1
Cycle Q Clear(g_c), s				9.1	9.1	9.1	15.4	0.9	0.0	0.0	0.0	9.1
Prop In Lane				0.20		0.31	1.00		0.00	0.00		0.20
Lane Grp Cap(c), veh/h				741	681	709	345	748	0	0	0	723
V/C Ratio(X)				0.63	0.63	0.63	0.43	0.21	0.00	0.00	0.00	0.63
Avail Cap(c_a), veh/h				741	681	709	345	748	0	0	0	723
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				10.8	10.8	10.8	8.3	2.8	0.0	0.0	0.0	10.8
Incr Delay (d2), s/veh				4.0	4.4	4.2	3.8	0.6	0.0	0.0	0.0	4.1
Initial Q Delay(d3), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.6	3.3	3.4	0.7	0.4	0.0	0.0	0.0	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				14.8	15.2	15.0	12.1	3.4	0.0	0.0	0.0	15.0
LnGrp LOS				B	B	B	B	A				B
Approach Vol, veh/h					1339			303			455	
Approach Delay, s/veh					15.0			7.7			15.0	
Approach LOS					B			A			B	

Timer - Assigned Phs	2			6		8						
Phs Duration (G+Y+Rc), s	22.5			22.5		22.5						
Change Period (Y+Rc), s	4.5			4.5		4.5						
Max Green Setting (Gmax), s	18.0			18.0		18.0						
Max Q Clear Time (g_c+I1), s	17.4			11.1		11.1						
Green Ext Time (p_c), s	0.1			1.6		4.3						

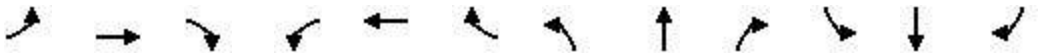
Intersection Summary												
HCM 7th Control Delay, s/veh		13.9										
HCM 7th LOS		B										



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	205	242	99	31	213	31	57	234	15	67	401	204
Future Volume (veh/h)	205	242	99	31	213	31	57	234	15	67	401	204
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	236	278	114	36	245	36	66	269	17	77	461	234
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	406	449	380	321	747	108	301	1743	110	128	598	613
Arrive On Green	0.07	0.24	0.24	0.07	0.24	0.24	0.07	0.51	0.51	0.39	0.39	0.39
Sat Flow, veh/h	1781	1870	1585	1781	3114	452	1781	3395	213	189	1547	1585
Grp Volume(v), veh/h	236	278	114	36	138	143	66	140	146	538	0	234
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1777	1789	1781	1777	1832	1736	0	1585
Q Serve(g_s), s	5.0	10.0	4.4	1.1	4.8	4.9	1.5	3.1	3.2	14.0	0.0	8.0
Cycle Q Clear(g_c), s	5.0	10.0	4.4	1.1	4.8	4.9	1.5	3.1	3.2	20.4	0.0	8.0
Prop In Lane	1.00		1.00	1.00		0.25	1.00		0.12	0.14		1.00
Lane Grp Cap(c), veh/h	406	449	380	321	426	429	301	912	940	726	0	613
V/C Ratio(X)	0.58	0.62	0.30	0.11	0.32	0.33	0.22	0.15	0.16	0.74	0.00	0.38
Avail Cap(c_a), veh/h	406	449	380	321	426	429	301	912	940	726	0	613
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.9	25.4	23.3	19.1	23.5	23.5	14.2	9.6	9.7	20.2	0.0	16.5
Incr Delay (d2), s/veh	6.0	6.3	2.0	0.7	2.0	2.1	1.7	0.4	0.4	6.7	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	1.8	5.0	1.8	0.5	2.2	2.3	0.7	1.2	1.3	9.0	0.0	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.9	31.7	25.4	19.8	25.5	25.6	15.9	10.0	10.0	26.9	0.0	18.4
LnGrp LOS	C	C	C	B	C	C	B	A	B	C		B
Approach Vol, veh/h		628			317			352			772	
Approach Delay, s/veh		29.5			24.9			11.1			24.3	
Approach LOS		C			C			B			C	

Timer - Assigned Phs		2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s		43.0	9.5	22.5	9.5	33.5	9.5	22.5				
Change Period (Y+Rc), s		4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s		38.5	5.0	18.0	5.0	29.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s		5.2	3.1	12.0	3.5	22.4	7.0	6.9				
Green Ext Time (p_c), s		1.8	0.0	1.0	0.0	2.5	0.0	1.1				

Intersection Summary	
HCM 7th Control Delay, s/veh	23.7
HCM 7th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	237	657	176	71	865	26	176	348	106	68	418	304
Future Volume (veh/h)	237	657	176	71	865	26	176	348	106	68	418	304
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	272	755	202	82	994	30	202	400	122	78	480	349
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	327	1354	604	192	1076	32	228	666	201	315	448	325
Arrive On Green	0.18	0.38	0.38	0.11	0.31	0.31	0.17	0.50	0.50	0.02	0.08	0.08
Sat Flow, veh/h	1781	3554	1585	1781	3522	106	1781	2690	811	1781	1965	1425
Grp Volume(v), veh/h	272	755	202	82	501	523	202	263	259	78	434	395
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1851	1781	1777	1724	1781	1777	1614
Q Serve(g_s), s	13.2	15.0	8.1	3.9	24.6	24.6	7.5	9.5	9.8	3.0	20.5	20.5
Cycle Q Clear(g_c), s	13.2	15.0	8.1	3.9	24.6	24.6	7.5	9.5	9.8	3.0	20.5	20.5
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.47	1.00		0.88
Lane Grp Cap(c), veh/h	327	1354	604	192	543	566	228	440	427	315	405	368
V/C Ratio(X)	0.83	0.56	0.33	0.43	0.92	0.92	0.88	0.60	0.61	0.25	1.07	1.08
Avail Cap(c_a), veh/h	327	1354	604	192	543	566	228	440	427	315	405	368
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.4	21.9	19.8	37.6	30.2	30.2	25.3	19.5	19.5	25.1	41.6	41.6
Incr Delay (d2), s/veh	21.4	1.7	1.5	6.8	23.7	23.1	35.7	5.9	6.3	1.9	65.2	68.4
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	7.5	6.2	3.1	2.0	13.5	14.0	5.1	3.8	3.8	1.4	17.0	15.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	56.8	23.5	21.2	44.4	54.0	53.3	61.0	25.3	25.8	27.0	106.8	110.0
LnGrp LOS	E	C	C	D	D	D	E	C	C	C	F	F
Approach Vol, veh/h		1229			1106			724			907	
Approach Delay, s/veh		30.5			52.9			35.5			101.4	
Approach LOS		C			D			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.2	26.8	14.2	38.8	12.0	25.0	21.0	32.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.7	22.3	9.7	34.3	7.5	20.5	16.5	27.5
Max Q Clear Time (g_c+I1), s	5.0	11.8	5.9	17.0	9.5	22.5	15.2	26.6
Green Ext Time (p_c), s	0.0	2.3	0.0	5.4	0.0	0.0	0.1	0.6

Intersection Summary	
HCM 7th Control Delay, s/veh	53.9
HCM 7th LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	24	54	413	34	19	114	281	273	33	264	33
Future Volume (veh/h)	10	24	54	413	34	19	114	281	273	33	264	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	11	28	62	523	0	0	131	323	0	38	303	38
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	244	561	634	1332	748		509	1421		497	1272	158
Arrive On Green	0.40	0.40	0.40	0.40	0.00	0.00	0.13	0.13	0.00	0.40	0.40	0.40
Sat Flow, veh/h	354	1403	1585	2613	1870	0	1039	3647	0	1057	3181	395
Grp Volume(v), veh/h	39	0	62	523	0	0	131	323	0	38	168	173
Grp Sat Flow(s),veh/h/ln	1757	0	1585	1307	1870	0	1039	1777	0	1057	1777	1799
Q Serve(g_s), s	0.0	0.0	1.1	6.9	0.0	0.0	5.3	3.7	0.0	1.1	2.8	2.9
Cycle Q Clear(g_c), s	0.6	0.0	1.1	7.5	0.0	0.0	8.1	3.7	0.0	4.8	2.8	2.9
Prop In Lane	0.28		1.00	1.00		0.00	1.00		0.00	1.00		0.22
Lane Grp Cap(c), veh/h	805	0	634	1332	748		509	1421		497	711	720
V/C Ratio(X)	0.05	0.00	0.10	0.39	0.00		0.26	0.23		0.08	0.24	0.24
Avail Cap(c_a), veh/h	805	0	634	1332	748		509	1421		497	711	720
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.3	0.0	8.4	10.6	0.0	0.0	16.6	13.3	0.0	10.8	8.9	9.0
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.9	0.0	0.0	1.2	0.4	0.0	0.3	0.8	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	0.2	0.0	0.4	1.6	0.0	0.0	1.4	1.2	0.0	0.3	1.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	8.4	0.0	8.7	11.4	0.0	0.0	17.8	13.7	0.0	11.1	9.7	9.8
LnGrp LOS	A		A	B			B	B		B	A	A
Approach Vol, veh/h		101			523			454			379	
Approach Delay, s/veh		8.6			11.4			14.9			9.9	
Approach LOS		A			B			B			A	

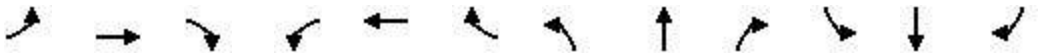
Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	22.5	22.5	22.5	22.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.0	18.0	18.0	18.0
Max Q Clear Time (g_c+I1), s	10.1	3.1	6.8	9.5
Green Ext Time (p_c), s	1.6	0.3	1.5	1.4

Intersection Summary	
HCM 7th Control Delay, s/veh	11.9
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

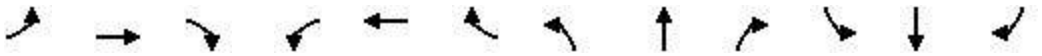
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	10	40	43	10	41	40	514	87	40	625	30
Future Volume (veh/h)	37	10	40	43	10	41	40	514	87	40	625	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	0.98		0.98	0.98		0.98	0.98		0.91	0.97		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	43	11	46	49	11	47	46	591	100	46	718	34
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	659	124	518	660	122	520	345	1197	202	404	1378	65
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.80	0.80	0.80	0.53	0.53	0.53
Sat Flow, veh/h	1321	310	1296	1322	304	1300	700	2993	504	729	3444	163
Grp Volume(v), veh/h	43	0	57	49	0	58	46	350	341	46	370	382
Grp Sat Flow(s),veh/h/ln	1321	0	1606	1322	0	1605	700	1777	1721	729	1777	1830
Q Serve(g_s), s	0.9	0.0	1.0	1.1	0.0	1.0	1.6	2.9	3.0	1.7	6.1	6.1
Cycle Q Clear(g_c), s	2.0	0.0	1.0	2.1	0.0	1.0	7.7	2.9	3.0	4.7	6.1	6.1
Prop In Lane	1.00		0.81	1.00		0.81	1.00		0.29	1.00		0.09
Lane Grp Cap(c), veh/h	659	0	642	660	0	642	345	711	688	404	711	732
V/C Ratio(X)	0.07	0.00	0.09	0.07	0.00	0.09	0.13	0.49	0.50	0.11	0.52	0.52
Avail Cap(c_a), veh/h	659	0	642	660	0	642	345	711	688	404	711	732
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.0	0.0	8.4	9.0	0.0	8.4	5.1	3.0	3.0	8.3	7.7	7.7
Incr Delay (d2), s/veh	0.2	0.0	0.3	0.2	0.0	0.3	0.8	2.4	2.5	0.6	2.7	2.6
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	0.3	0.0	0.3	0.3	0.0	0.3	0.2	1.0	1.0	0.3	2.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	9.2	0.0	8.7	9.3	0.0	8.7	5.9	5.4	5.5	8.9	10.5	10.4
LnGrp LOS	A		A	A		A	A	A	A	A	B	B
Approach Vol, veh/h		100			107			737			798	
Approach Delay, s/veh		8.9			8.9			5.5			10.3	
Approach LOS		A			A			A			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	22.5	22.5	22.5	22.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.0	18.0	18.0	18.0
Max Q Clear Time (g_c+I1), s	9.7	4.0	8.1	4.1
Green Ext Time (p_c), s	2.9	0.3	3.5	0.3

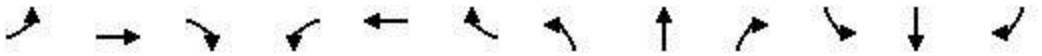
Intersection Summary	
HCM 7th Control Delay, s/veh	8.1
HCM 7th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	81	1058	39	0	0	0	0	218	55	121	162	0
Future Volume (veh/h)	81	1058	39	0	0	0	0	218	55	121	162	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	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
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	90	1176	43				0	242	61	134	180	0
Peak Hour Factor	0.90	0.90	0.90				0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	148	1938	71				0	577	145	460	748	0
Arrive On Green	0.40	0.40	0.40				0.00	0.40	0.40	0.80	0.80	0.00
Sat Flow, veh/h	371	4844	177				0	1442	363	1076	1870	0
Grp Volume(v), veh/h	450	413	446				0	0	303	134	180	0
Grp Sat Flow(s),veh/h/ln	1852	1702	1838				0	0	1805	1076	1870	0
Q Serve(g_s), s	8.7	8.7	8.7				0.0	0.0	5.4	3.3	1.1	0.0
Cycle Q Clear(g_c), s	8.7	8.7	8.7				0.0	0.0	5.4	8.7	1.1	0.0
Prop In Lane	0.20		0.10				0.00		0.20	1.00		0.00
Lane Grp Cap(c), veh/h	741	681	735				0	0	722	460	748	0
V/C Ratio(X)	0.61	0.61	0.61				0.00	0.00	0.42	0.29	0.24	0.00
Avail Cap(c_a), veh/h	741	681	735				0	0	722	460	748	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	10.7	10.7	10.7				0.0	0.0	9.7	5.2	2.8	0.0
Incr Delay (d2), s/veh	3.7	4.0	3.7				0.0	0.0	1.8	1.6	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
%ile BackOfQ(50%),veh/ln	3.4	3.1	3.3				0.0	0.0	2.0	0.5	0.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.4	14.7	14.4				0.0	0.0	11.5	6.8	3.6	0.0
LnGrp LOS	B	B	B						B	A	A	
Approach Vol, veh/h		1309						303			314	
Approach Delay, s/veh		14.5						11.5			4.9	
Approach LOS		B						B			A	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		22.5		22.5		22.5						
Change Period (Y+Rc), s		4.5		4.5		4.5						
Max Green Setting (Gmax), s		18.0		18.0		18.0						
Max Q Clear Time (g_c+I1), s		7.4		10.7		10.7						
Green Ext Time (p_c), s		1.3		4.4		0.9						

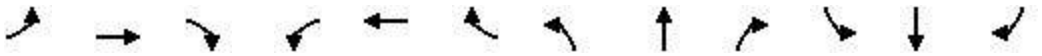
Intersection Summary												
HCM 7th Control Delay, s/veh		12.5										
HCM 7th LOS		B										



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	42	736	39	82	190	0	0	239	116
Future Volume (veh/h)	0	0	0	42	736	39	82	190	0	0	239	116
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Lane Width Adj.				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)				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
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				47	818	43	91	211	0	0	266	129
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				112	1940	102	385	748	0	0	476	231
Arrive On Green				0.40	0.40	0.40	0.80	0.80	0.00	0.00	0.40	0.40
Sat Flow, veh/h				279	4850	254	989	1870	0	0	1190	577
Grp Volume(v), veh/h				313	287	308	91	211	0	0	0	395
Grp Sat Flow(s),veh/h/ln				1856	1702	1825	989	1870	0	0	0	1767
Q Serve(g_s), s				5.5	5.5	5.5	2.8	1.3	0.0	0.0	0.0	7.8
Cycle Q Clear(g_c), s				5.5	5.5	5.5	10.5	1.3	0.0	0.0	0.0	7.8
Prop In Lane				0.15		0.14	1.00		0.00	0.00		0.33
Lane Grp Cap(c), veh/h				743	681	730	385	748	0	0	0	707
V/C Ratio(X)				0.42	0.42	0.42	0.24	0.28	0.00	0.00	0.00	0.56
Avail Cap(c_a), veh/h				743	681	730	385	748	0	0	0	707
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				9.7	9.7	9.7	6.4	2.8	0.0	0.0	0.0	10.4
Incr Delay (d2), s/veh				1.8	1.9	1.8	1.4	0.9	0.0	0.0	0.0	3.2
Initial Q Delay(d3), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.0	1.9	2.0	0.4	0.5	0.0	0.0	0.0	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh				11.5	11.6	11.5	7.8	3.8	0.0	0.0	0.0	13.6
LnGrp LOS				B	B	B	A	A				B
Approach Vol, veh/h					908			302			395	
Approach Delay, s/veh					11.6			5.0			13.6	
Approach LOS					B			A			B	

Timer - Assigned Phs	2			6		8						
Phs Duration (G+Y+Rc), s	22.5			22.5		22.5						
Change Period (Y+Rc), s	4.5			4.5		4.5						
Max Green Setting (Gmax), s	18.0			18.0		18.0						
Max Q Clear Time (g_c+I1), s	12.5			9.8		7.5						
Green Ext Time (p_c), s	0.7			1.6		3.9						

Intersection Summary												
HCM 7th Control Delay, s/veh		10.8										
HCM 7th LOS		B										



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	216	283	57	25	290	40	92	169	20	29	308	164
Future Volume (veh/h)	216	283	57	25	290	40	92	169	20	29	308	164
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	240	314	63	28	322	44	102	188	22	32	342	182
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	444	518	439	380	871	118	347	1407	163	85	507	463
Arrive On Green	0.08	0.28	0.28	0.08	0.28	0.28	0.08	0.44	0.44	0.29	0.29	0.29
Sat Flow, veh/h	1781	1870	1585	1781	3145	426	1781	3209	371	84	1736	1585
Grp Volume(v), veh/h	240	314	63	28	181	185	102	103	107	374	0	182
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1777	1794	1781	1777	1804	1820	0	1585
Q Serve(g_s), s	5.0	9.5	1.9	0.7	5.3	5.4	2.4	2.2	2.3	3.2	0.0	6.0
Cycle Q Clear(g_c), s	5.0	9.5	1.9	0.7	5.3	5.4	2.4	2.2	2.3	11.7	0.0	6.0
Prop In Lane	1.00		1.00	1.00		0.24	1.00		0.21	0.09		1.00
Lane Grp Cap(c), veh/h	444	518	439	380	492	497	347	779	791	592	0	463
V/C Ratio(X)	0.54	0.61	0.14	0.07	0.37	0.37	0.29	0.13	0.14	0.63	0.00	0.39
Avail Cap(c_a), veh/h	444	518	439	380	492	497	347	779	791	592	0	463
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.2	20.4	17.7	14.5	18.9	19.0	14.0	10.9	10.9	20.4	0.0	18.4
Incr Delay (d2), s/veh	4.6	5.2	0.7	0.4	2.1	2.1	2.2	0.4	0.4	5.1	0.0	2.5
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	3.0	4.6	0.8	0.3	2.3	2.4	1.1	0.9	0.9	5.5	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	21.8	25.6	18.4	14.9	21.0	21.1	16.2	11.2	11.2	25.4	0.0	20.9
LnGrp LOS	C	C	B	B	C	C	B	B	B	C		C
Approach Vol, veh/h		617			394			312			556	
Approach Delay, s/veh		23.4			20.6			12.9			23.9	
Approach LOS		C			C			B			C	

Timer - Assigned Phs		2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s		33.0	9.5	22.5	9.5	23.5	9.5	22.5				
Change Period (Y+Rc), s		4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s		28.5	5.0	18.0	5.0	19.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s		4.3	2.7	11.5	4.4	13.7	7.0	7.4				
Green Ext Time (p_c), s		1.2	0.0	1.1	0.0	1.4	0.0	1.5				

Intersection Summary		
HCM 7th Control Delay, s/veh		21.2
HCM 7th LOS		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	204	1007	353	265	973	26	297	594	356	58	274	342
Future Volume (veh/h)	204	1007	353	265	973	26	297	594	356	58	274	342
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	227	1119	392	294	1081	29	330	660	396	64	304	380
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	286	984	338	260	1287	35	311	605	363	134	327	292
Arrive On Green	0.16	0.38	0.38	0.15	0.36	0.36	0.14	0.28	0.28	0.04	0.18	0.18
Sat Flow, veh/h	1781	2594	892	1781	3535	95	1781	2136	1281	1781	1777	1585
Grp Volume(v), veh/h	227	760	751	294	543	567	330	549	507	64	304	380
Grp Sat Flow(s),veh/h/ln	1781	1777	1710	1781	1777	1853	1781	1777	1640	1781	1777	1585
Q Serve(g_s), s	14.7	45.5	45.5	17.5	33.6	33.6	16.9	34.0	34.0	3.5	20.2	22.1
Cycle Q Clear(g_c), s	14.7	45.5	45.5	17.5	33.6	33.6	16.9	34.0	34.0	3.5	20.2	22.1
Prop In Lane	1.00		0.52	1.00		0.05	1.00		0.78	1.00		1.00
Lane Grp Cap(c), veh/h	286	674	648	260	647	675	311	503	465	134	327	292
V/C Ratio(X)	0.79	1.13	1.16	1.13	0.84	0.84	1.06	1.09	1.09	0.48	0.93	1.30
Avail Cap(c_a), veh/h	286	674	648	260	647	675	311	503	465	134	327	292
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.4	37.3	37.3	51.3	34.9	34.9	34.7	43.0	43.0	39.3	48.2	49.0
Incr Delay (d2), s/veh	19.8	75.6	87.8	96.0	12.4	12.0	68.2	66.9	68.8	11.6	34.6	158.6
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	8.0	33.2	34.2	14.6	16.4	17.0	13.1	23.9	22.3	1.9	12.0	21.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	68.2	112.8	125.1	147.3	47.4	46.9	102.9	109.9	111.8	51.0	82.7	207.5
LnGrp LOS	E	F	F	F	D	D	F	F	F	D	F	F
Approach Vol, veh/h		1738			1404			1386			748	
Approach Delay, s/veh		112.3			68.1			108.9			143.4	
Approach LOS		F			E			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	38.5	22.0	50.0	21.4	26.6	23.8	48.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.0	34.0	17.5	45.5	16.9	22.1	19.3	43.7
Max Q Clear Time (g_c+I1), s	5.5	36.0	19.5	47.5	18.9	24.1	16.7	35.6
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.2	4.2

Intersection Summary	
HCM 7th Control Delay, s/veh	104.1
HCM 7th LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	22	63	319	35	19	17	418	379	24	316	30
Future Volume (veh/h)	11	22	63	319	35	19	17	418	379	24	316	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	12	24	70	401	0	0	19	464	0	27	351	33
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	283	515	634	1331	748		488	1421		448	1314	123
Arrive On Green	0.40	0.40	0.40	0.40	0.00	0.00	0.40	0.40	0.00	0.40	0.40	0.40
Sat Flow, veh/h	441	1288	1585	2604	1870	0	999	3647	0	928	3285	307
Grp Volume(v), veh/h	36	0	70	401	0	0	19	464	0	27	189	195
Grp Sat Flow(s),veh/h/ln	1729	0	1585	1302	1870	0	999	1777	0	928	1777	1815
Q Serve(g_s), s	0.0	0.0	1.2	5.0	0.0	0.0	0.6	4.1	0.0	0.9	3.2	3.3
Cycle Q Clear(g_c), s	0.5	0.0	1.2	5.5	0.0	0.0	3.8	4.1	0.0	5.0	3.2	3.3
Prop In Lane	0.33		1.00	1.00		0.00	1.00		0.00	1.00		0.17
Lane Grp Cap(c), veh/h	798	0	634	1331	748		488	1421		448	711	726
V/C Ratio(X)	0.05	0.00	0.11	0.30	0.00		0.04	0.33		0.06	0.27	0.27
Avail Cap(c_a), veh/h	798	0	634	1331	748		488	1421		448	711	726
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.3	0.0	8.5	10.0	0.0	0.0	10.4	9.3	0.0	11.0	9.1	9.1
Incr Delay (d2), s/veh	0.1	0.0	0.4	0.6	0.0	0.0	0.1	0.6	0.0	0.3	0.9	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	0.2	0.0	0.4	1.1	0.0	0.0	0.1	1.3	0.0	0.2	1.1	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	8.4	0.0	8.8	10.5	0.0	0.0	10.5	9.9	0.0	11.3	10.0	10.0
LnGrp LOS	A		A	B			B	A		B	A	A
Approach Vol, veh/h		106			401			483			411	
Approach Delay, s/veh		8.7			10.5			10.0			10.1	
Approach LOS		A			B			A			B	

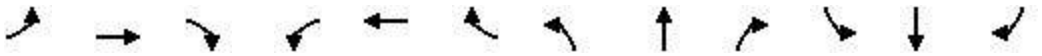
Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	22.5	22.5	22.5	22.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.0	18.0	18.0	18.0
Max Q Clear Time (g_c+I1), s	6.1	3.2	7.0	7.5
Green Ext Time (p_c), s	2.4	0.3	1.7	1.1

Intersection Summary	
HCM 7th Control Delay, s/veh	10.1
HCM 7th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	42	121	35	42	174	161	1012	87	40	795	40
Future Volume (veh/h)	105	42	121	35	42	174	161	1012	87	40	795	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	117	47	134	39	47	193	179	1124	97	44	883	44
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	498	711	634	575	128	526	277	1324	114	202	1378	69
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Sat Flow, veh/h	1140	1777	1585	1203	320	1314	603	3310	285	457	3445	172
Grp Volume(v), veh/h	117	47	134	39	0	240	179	603	618	44	455	472
Grp Sat Flow(s),veh/h/ln	1140	1777	1585	1203	0	1634	603	1777	1819	457	1777	1839
Q Serve(g_s), s	3.6	0.7	2.5	1.0	0.0	4.6	8.7	13.9	13.9	4.1	9.3	9.3
Cycle Q Clear(g_c), s	8.3	0.7	2.5	3.5	0.0	4.6	18.0	13.9	13.9	18.0	9.3	9.3
Prop In Lane	1.00		1.00	1.00		0.80	1.00		0.16	1.00		0.09
Lane Grp Cap(c), veh/h	498	711	634	575	0	654	277	711	728	202	711	736
V/C Ratio(X)	0.23	0.07	0.21	0.07	0.00	0.37	0.65	0.85	0.85	0.22	0.64	0.64
Avail Cap(c_a), veh/h	498	711	634	575	0	654	277	711	728	202	711	736
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.4	8.3	8.8	10.0	0.0	9.5	19.7	12.3	12.3	20.6	10.9	10.9
Incr Delay (d2), s/veh	1.1	0.2	0.8	0.2	0.0	1.6	11.2	12.0	11.9	2.5	4.4	4.3
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	0.9	0.3	0.8	0.3	0.0	1.6	2.5	6.4	6.5	0.5	3.6	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	13.5	8.5	9.6	10.2	0.0	11.1	30.8	24.3	24.2	23.0	15.3	15.1
LnGrp LOS	B	A	A	B		B	C	C	C	C	B	B
Approach Vol, veh/h		298			279			1400			971	
Approach Delay, s/veh		11.0			11.0			25.1			15.6	
Approach LOS		B			B			C			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		22.5		22.5		22.5		22.5				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.0		18.0		18.0		18.0				
Max Q Clear Time (g_c+I1), s		20.0		10.3		20.0		6.6				
Green Ext Time (p_c), s		0.0		0.9		0.0		1.3				

Intersection Summary												
HCM 7th Control Delay, s/veh			19.2									
HCM 7th LOS			B									

APPENDIX C – RECOMMENDATION MAPS

Possible Intersection Treatments:
Two Stage Turn Queue Box
Bike Ramps
Bike Box
Leading Pedestrian Intervals

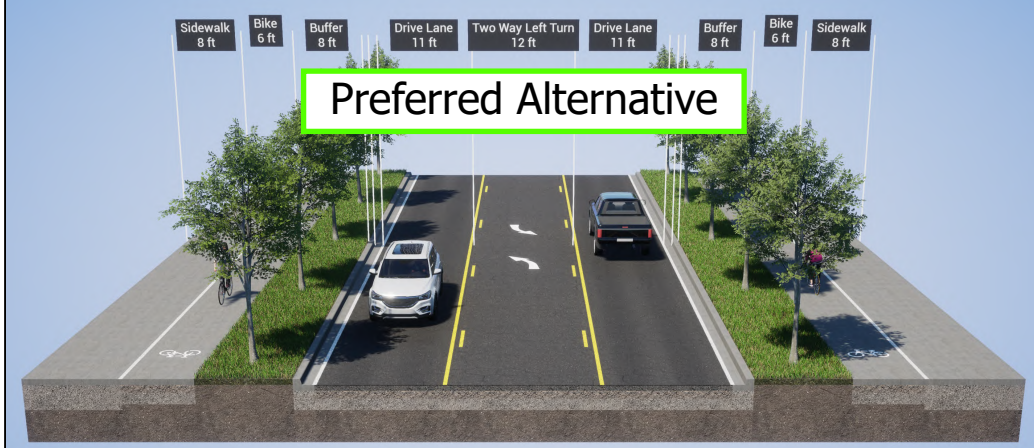
HORIZON PL

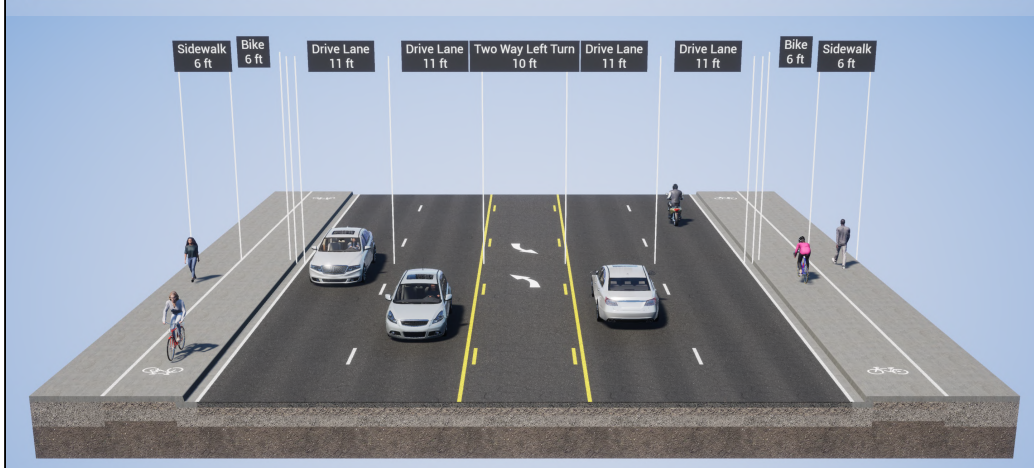
HORIZON DR

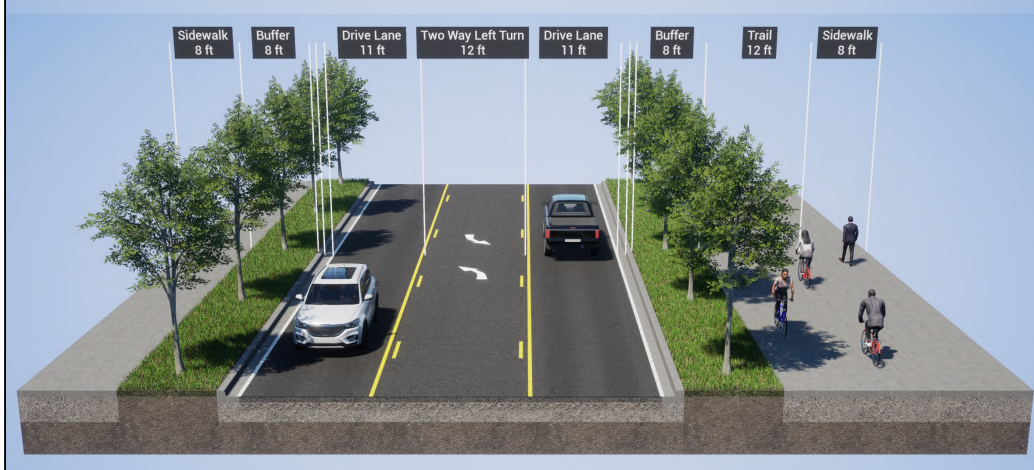
Slip Lane

Slip Lane

Preferred Alternative







261/2 RD

GLEN CT

Utility Pole

Utility Pole

Possible Intersection Treatments:
Crossbike Striping
Leading Pedestrian Intervals
No Right Turn On Red
Corner Islands

PATTERSON RD

N 7TH ST

Full Closure
Right-In Right-Out
3/4 Access
Light Poles
Trees
Retaining Wall/Curb

Property Lines
Crossbike
Bike Lane
Buffer
Sidewalk
Trail

250 125 0 250 500 FEET

Segment 1: Horizon Drive to Patterson Road
7th Street Active Transportation Study

HORIZONTAL DATUM: GCS WGS 1984
VERTICAL DATUM: NAVD 88
AERIAL IMAGERY SOURCE: [AERIAL IMAGERY SOURCE]

PROJECT NUMBER: 2404-00271
SITE LOCATION: Grand Junction
DATE: AUGUST 21, 2024
PAGE 1 OF 7

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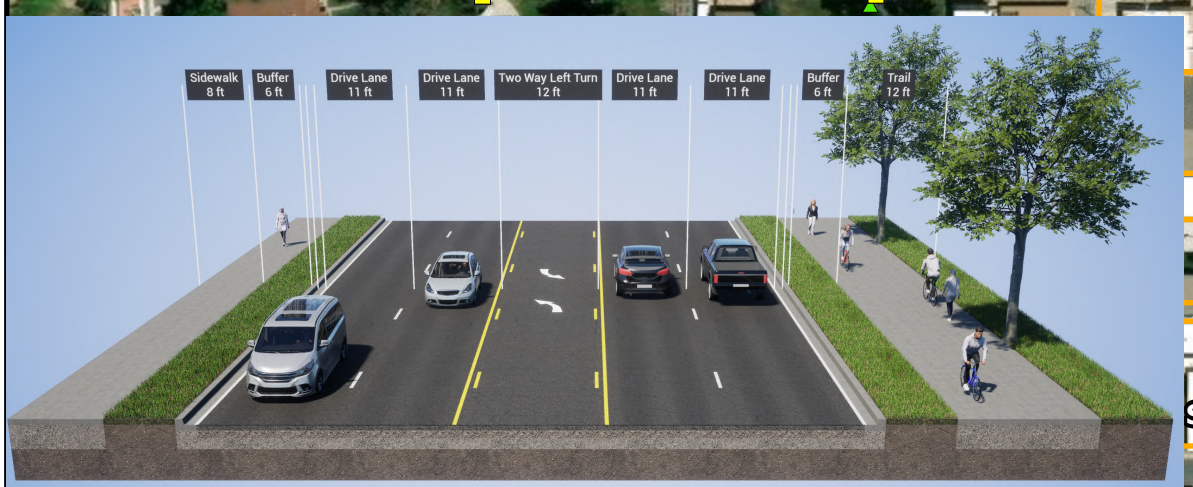
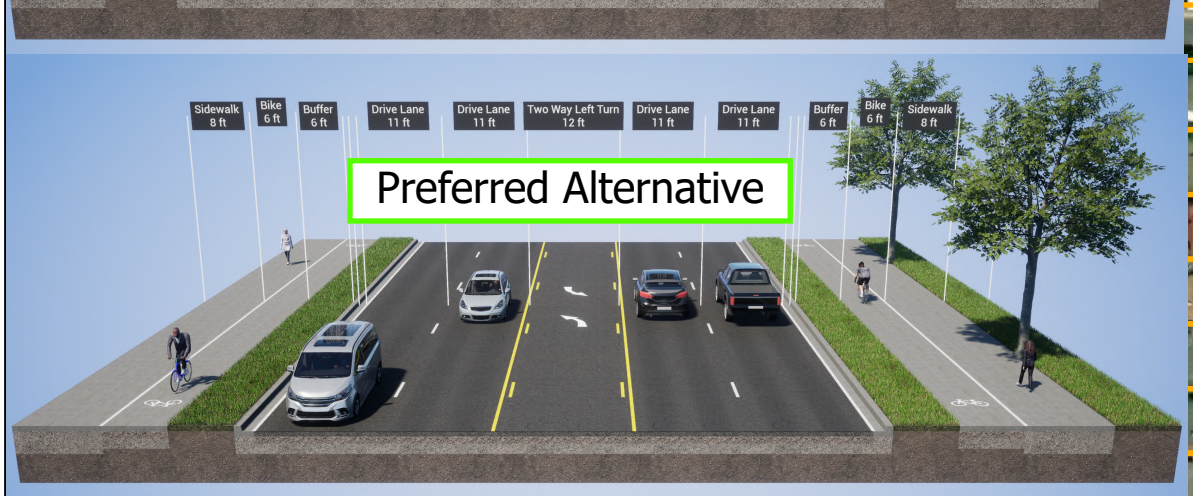
Utility Pole
26 1/2 RD
N 8TH CT
PATTERSON RD
Possible Intersection Treatments:
Crossbike Striping
Leading Pedestrian Intervals
No Right Turn On Red
Corner Islands
Pedestrian Landing
EMERGENCY ENTRANCE
Possible Intersection Treatments:
Crossbike Striping
Leading Pedestrian Intervals
No Right Turn On Red
Corner Islands
Pedestrian Phase Timing
Slip Lane
WELLINGTON AVE
CENTER AVE
Encroaching Parking
Possible Intersection Treatments:
Crossbike Striping
Leading Pedestrian Intervals
No Right Turn On Red
Corner Islands
Encroaching P
BOOKCLIFF AVE
N 7TH ST
Encroaching Parking
Encroaching Parking
Encroaching Parking
Signal Pole
Signal Pole
Utility Pole
Utility Pole
Utility Pole
Signal Pole
Possible Intersection Treatments:
Crossbike Striping
Leading Pedestrian Intervals
No Right Turn On Red
Corner Islands
N 8TH ST
Signal Pole
Signal Pole
ORCHARD AVE
Signal Box
Signal Pole
Signal Pole
Maxar, Microsoft
Pedestrian Landing





- Full Closure
- Right-In Right-Out
- 3/4 Access
- Light Poles
- Trees
- Retaining Wall/Curb
- Property Lines
- Crossbike
- Bike Lane
- Buffer
- Sidewalk
- Trail

500 250 0 500 FEET

Segment 2: Patterson Road to Orchard Boulevard
7th Street Active Transportation Study

HORIZONTAL DATUM: GCS WGS 1984
VERTICAL DATUM: NAVD 88
AERIAL IMAGERY SOURCE: [AERIAL IMAGERY SOURCE]

PROJECT NUMBER: 2404-00271
SITE LOCATION: Grand Junction
DATE: AUGUST 21, 2024
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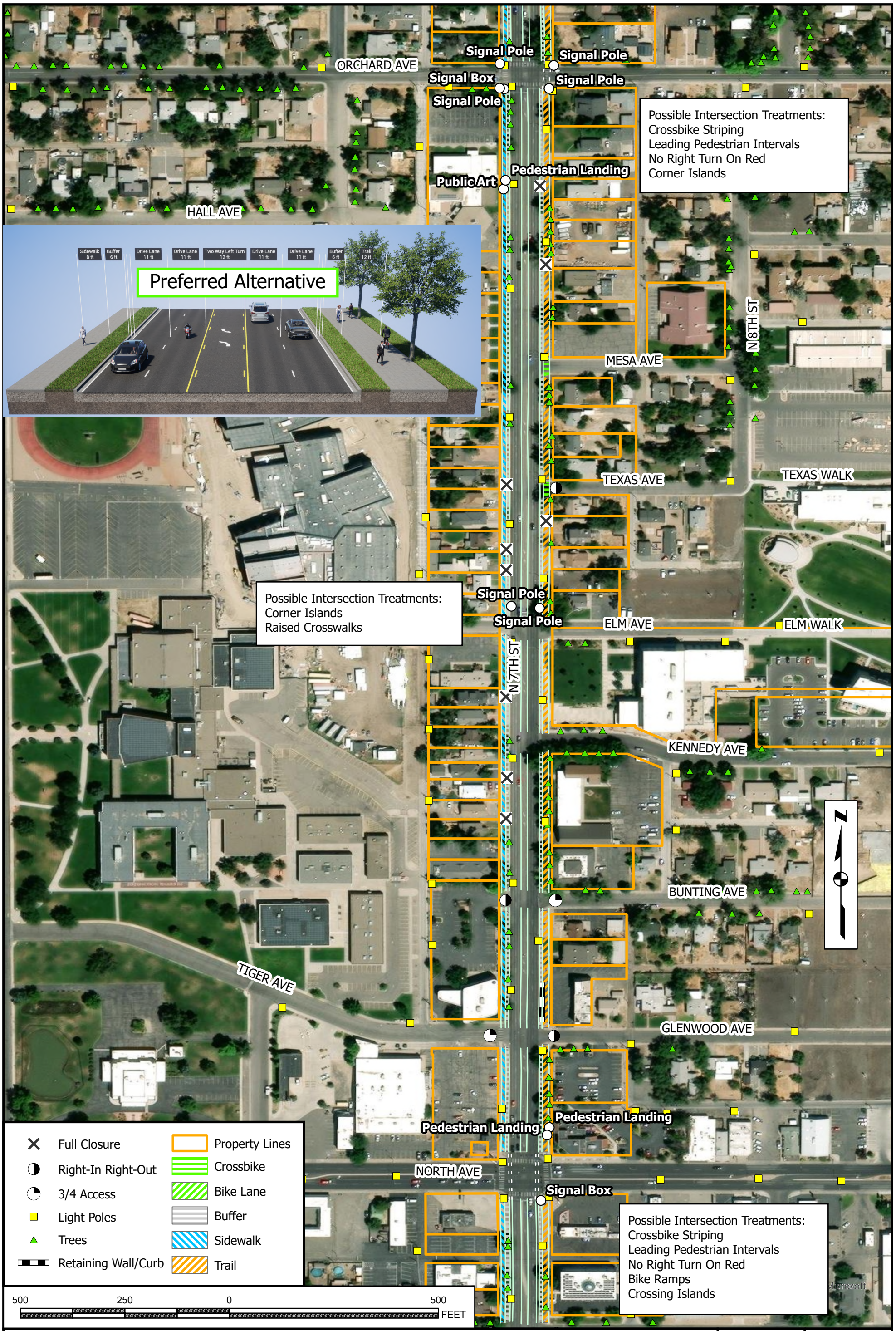

Segment 3: Orchard Avenue to North Avenue
7th Street Active Transportation Study

HORIZONTAL DATUM: GCS WGS 1984
VERTICAL DATUM: NAVD 88
AERIAL IMAGERY SOURCE: [AERIAL IMAGERY SOURCE]

PROJECT NUMBER:	2404-00271
SITE LOCATION:	Grand Junction
DATE:	AUGUST 21, 2024
	PAGE 3 OF 7

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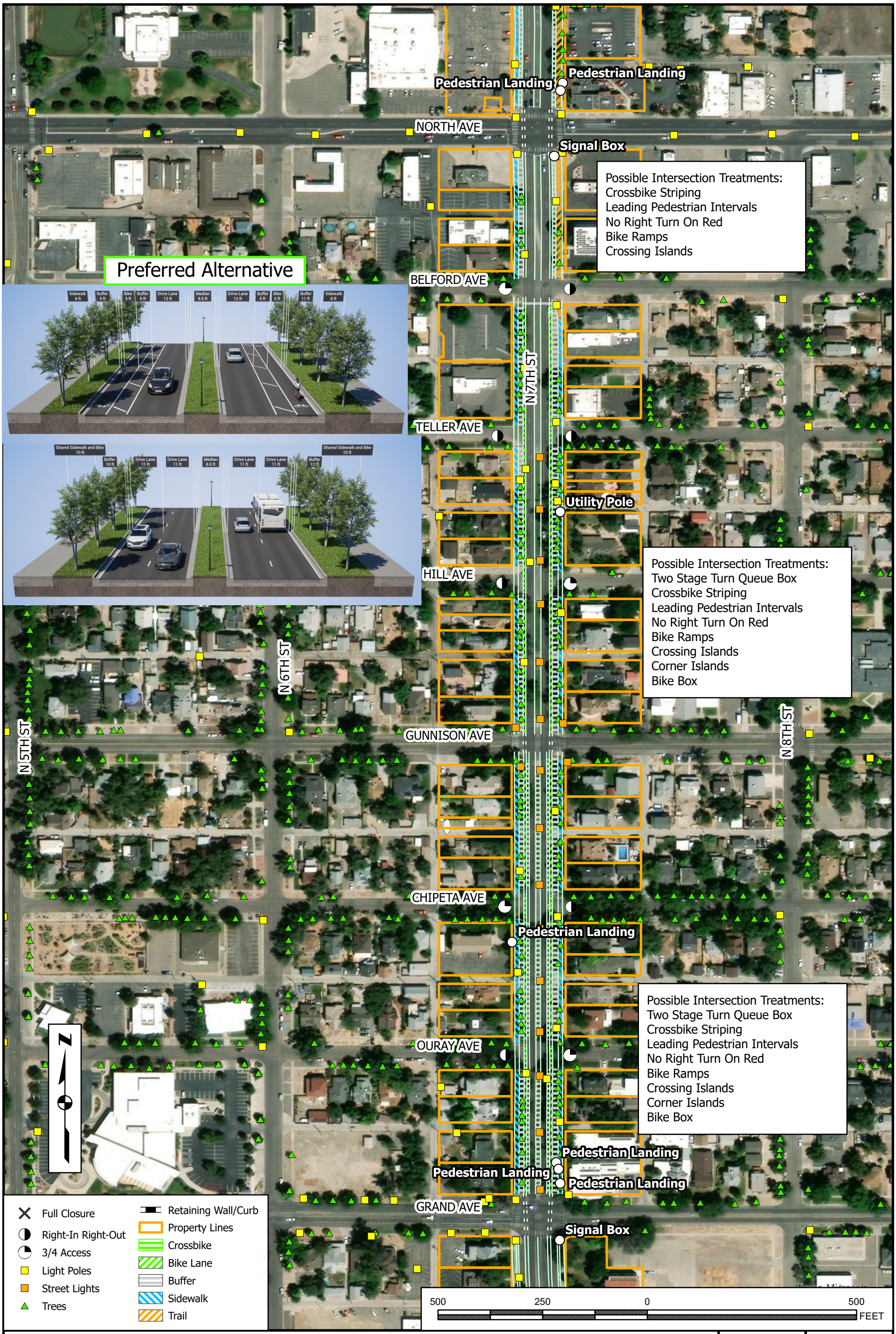

Segment 4: North Avenue to Grand Avenue
7th Street Active Transportation Study

HORIZONTAL DATUM: GCS WGS 1984
VERTICAL DATUM: NAVD 88
AERIAL IMAGERY SOURCE: [AERIAL IMAGERY SOURCE]

PROJECT NUMBER:	2404-00271
SITE LOCATION:	Grand Junction
DATE:	AUGUST 21, 2024
	PAGE 4 OF 7

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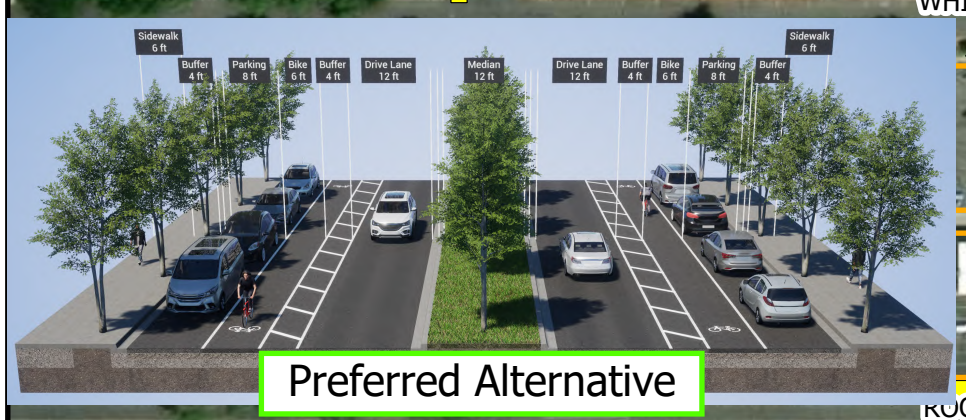

Preferred Alternative

Pedestrian Landing
Pedestrian Landing
Pedestrian Landing
GRAND AVE
Signal Box

Possible Intersection Treatments:
Two Stage Turn Queue Box
Crossbike Striping
Leading Pedestrian Intervals
No Right Turn On Red
Bike Ramps
Crossing Islands
Corner Islands
Bike Box

WHITE AVE
N 7TH ST
N 8TH ST
Public Art
Public Art
ROOD AVE
Public Art
Public Art
Public Art
MAIN ST
Public Art
Public Art
Public Art
COLORADO AVE
S 6TH ST
S 7TH ST
S 8TH ST
UTE AVE
Signal Box
Signal Box
PITKIN AVE

Possible Intersection Treatments:
Bike Ramps

Possible Intersection Treatments:
Two Stage Turn Queue Box
Crossbike Striping
Leading Pedestrian Intervals
No Right Turn On Red
Bike Ramps

Possible Intersection Treatments:
Two Stage Turn Queue Box
Crossbike Striping
Leading Pedestrian Intervals
No Right Turn On Red
Bike Ramps

- Full Closure
- Right-In Right-Out
- 3/4 Access
- Light Poles
- Street Lights
- Trees
- Retaining Wall/Curb
- Property Lines
- Crossbike
- Bike Lane
- Buffer
- Sidewalk
- Trail

500 250 0 500 FEET

Segment 5: Grand Avenue to I-70 Business-Ute/Pitkin Ave
7th Street Active Transportation Study

HORIZONTAL DATUM: GCS WGS 1984
VERTICAL DATUM: NAVD 88
AERIAL IMAGERY SOURCE: [AERIAL IMAGERY SOURCE]

PROJECT NUMBER:	2404-00271
SITE LOCATION:	Grand Junction
DATE:	AUGUST 21, 2024
	PAGE 5 OF 7

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Signal Box

Signal Box

PITKIN AVE

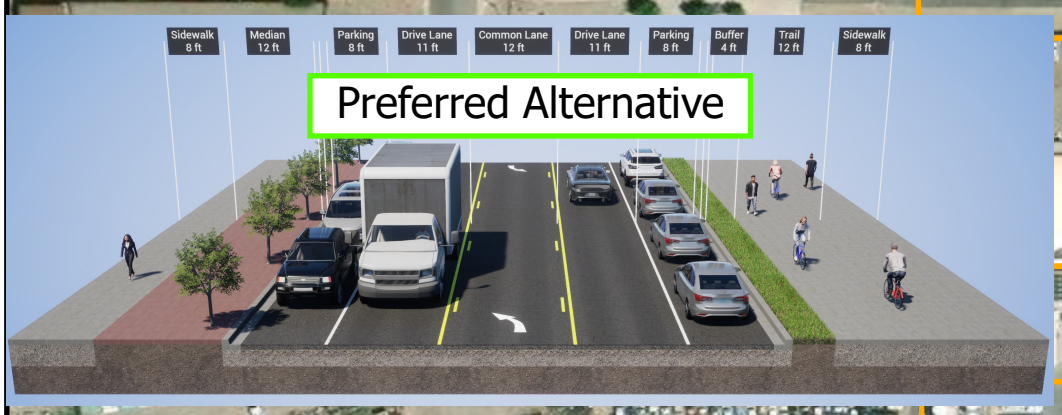
S 6TH ST

S 8TH ST

Possible Intersection Treatments:
Two Stage Turn Queue Box
Crossbike Striping
Leading Pedestrian Intervals
No Right Turn On Red
Bike Ramps

Pedestrian Landing

SOUTH AVE



1ST AVE

S 7TH ST

Pedestrian Landing

Railroad Crossing

Railroad Crossing

Railroad Crossing

3RD AVE

Pedestrian Landing

Possible Intersection Treatments:
Corner Islands
Raised Crosswalks

Railroad Crossing

4TH AVE

N

Full Closure	Property Lines
Right-In Right-Out	Crossbike
3/4 Access	Bike Lane
Light Poles	Buffer
Trees	Sidewalk
Retaining Wall/Curb	Trail

500 250 0 500 FEET

Segment 6a: I-70 Business-Ute/Pitkin Avenue to 4th Avenue
7th Street Active Transportation Study

HORIZONTAL DATUM: GCS WGS 1984
VERTICAL DATUM: NAVD 88
AERIAL IMAGERY SOURCE: [AERIAL IMAGERY SOURCE]

PROJECT NUMBER: 2404-00271
SITE LOCATION: Grand Junction
DATE: AUGUST 21, 2024
PAGE 6 OF 7

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Possible Intersection Treatments:
Corner Islands
Raised Crosswalks

Intersection treatments:
Bike Ramps
Crossbike Striping
Leading Pedestrian Intervals
No Right Turn On Red

Railroad Crossing
4TH AVE
WINTERS AVE
S 7TH ST
NOLAND AVE
RIVERSIDE PKWY
KIMBALL
STRUTHERS AVE

Full Closure
Right-In Right-Out
3/4 Access
Light Poles
Trees
Retaining Wall/Curb
Property Lines
Crossbike
Bike Lane
Buffer
Sidewalk
Trail

250 125 0 250
FEET

Segment 6b: 4th Avenue to Struthers Avenue
7th Street Active Transportation Study

HORIZONTAL DATUM: GCS WGS 1984
VERTICAL DATUM: NAVD 88
AERIAL IMAGERY SOURCE: [AERIAL IMAGERY SOURCE]

PROJECT NUMBER: 2404-00271
SITE LOCATION: Grand Junction
DATE: AUGUST 21, 2024
PAGE 7 OF 7

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APPENDIX D – CRASH DATA

Mesa County Motor Vehicle Crash Query Tool

Mesa County Safety Action Plan
Enhancing Roadway Safety in Our Community

REGIONAL TRANSPORTATION PLANNING OFFICE
Grand Valley MPO · Grand Valley TPR · Grand Valley Transit

Summary

Period
1/5/2016
12/27/2022

Injury Severity
- [ ] No Injury (PDO)
- [ ] Possible/Complaint of Injury (C)
- [ ] Evident Non-Incapacitating (B)
- [ ] Evident, Incapacitating (A)
- [ ] Fatal (K)

Collision Manner
- [ ] Approach Turn
- [ ] Bicycle or Pedal Cycle
- [ ] Bicycle/Motorized Bicycle
- [ ] Broadside
- [ ] Concrete Highway Barrier
- [ ] Curb
- [ ] Curb or Island
- [ ] Fence
- [ ] Fence or Fence Part

Rural or Urban
- [ ] Urban

Coordinates
- [ ] Known

Average Crashes Per Year
99

Crash Total
694

Total Injuries
241

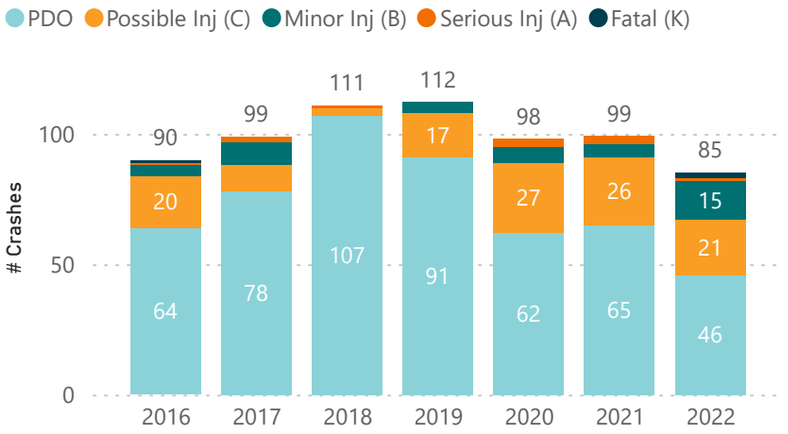
Total Fatalities
3

Total Hit and Runs
29

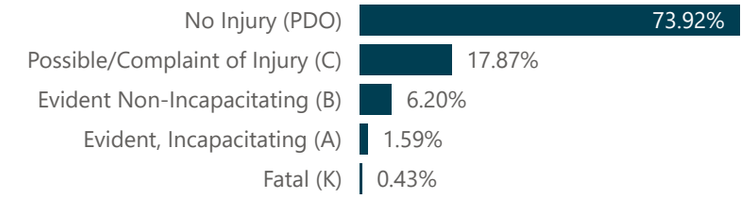
Total Pedestrian Crashes
15

Total Bicyclist Crashes
24

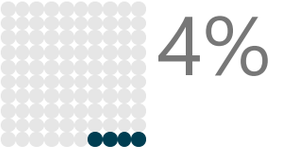
Crashes by Year and Severity



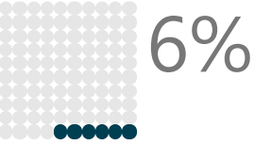
Crashes by Severity - Percentage



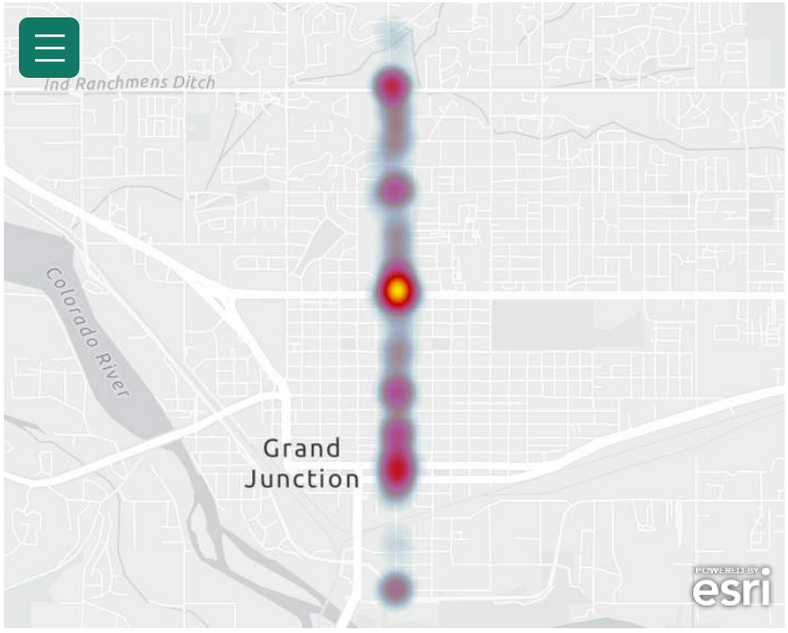
% of Impairment-Related Crashes



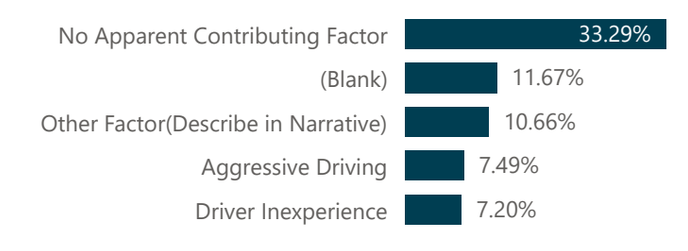
% of Speed-Related Crashes



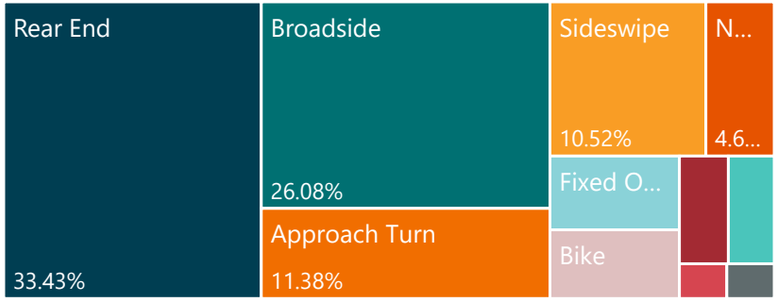
Collision Map



Violation of Unit 1



Crash Type



Page 1
Report Printed: 05/25/2024
Source: Mesa County Diexsys and CDOT data

Mesa County Motor Vehicle Crash Query Tool

Mesa County Safety Action Plan
Enhancing Roadway Safety in Our Community

REGIONAL TRANSPORTATION PLANNING OFFICE
Grand Valley MPO · Grand Valley TPR · Grand Valley Transit

Crash Total
694

When

Period
1/5/2016
12/27/2022

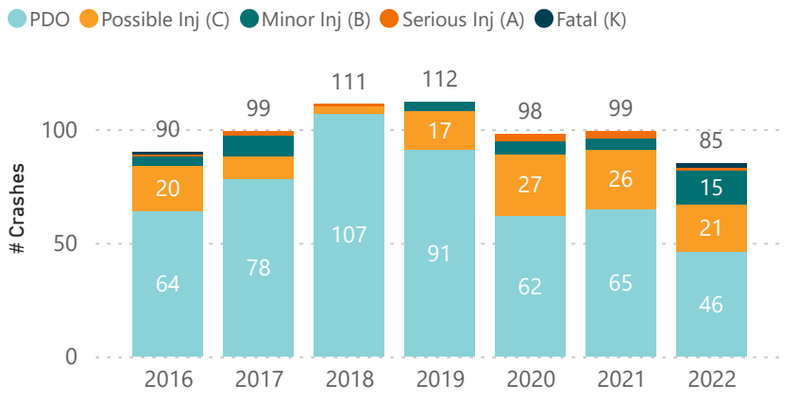
Injury Severity
- [ ] No Injury (PDO)
- [ ] Possible/Complaint of Injury (C)
- [ ] Evident Non-Incapacitating (B)
- [ ] Evident, Incapacitating (A)
- [ ] Fatal (K)

Collision Manner
- [ ] Approach Turn
- [ ] Bicycle or Pedal Cycle
- [ ] Bicycle/Motorized Bicycle
- [ ] Broadside
- [ ] Concrete Highway Barrier
- [ ] Curb
- [ ] Curb or Island
- [ ] Fence
- [ ] Fence or Fence Part

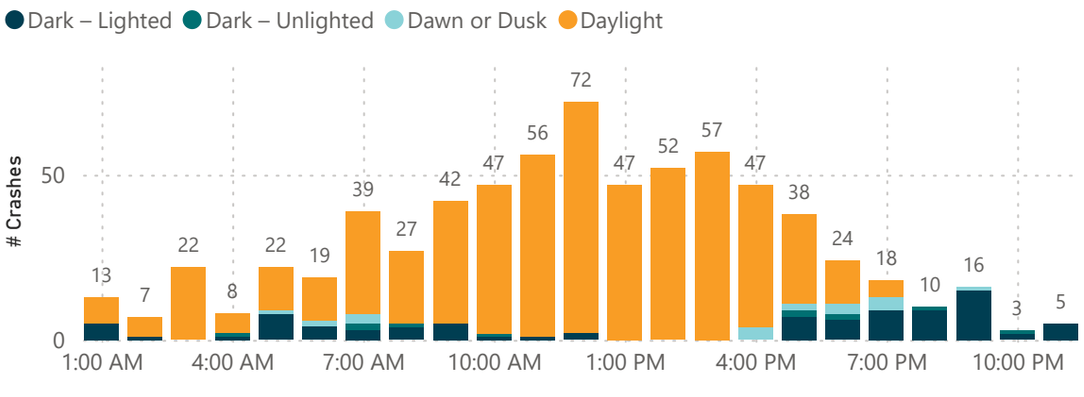
Rural or Urban
- [ ] Urban

Coordinates
- [ ] Known

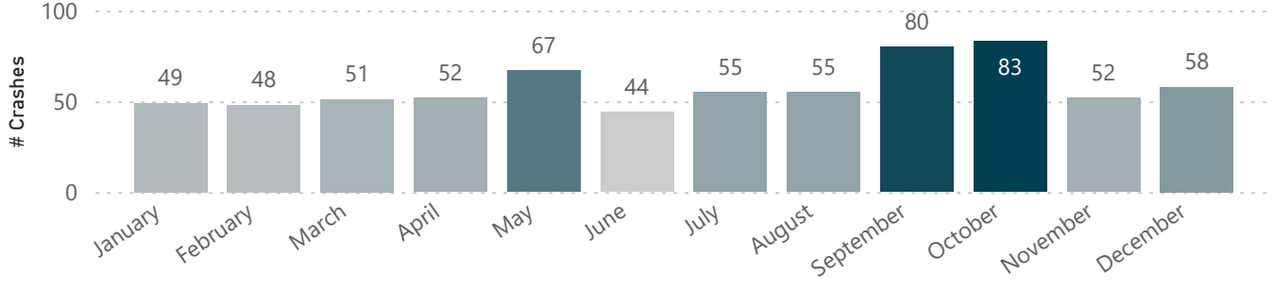
Crashes by Year and Severity



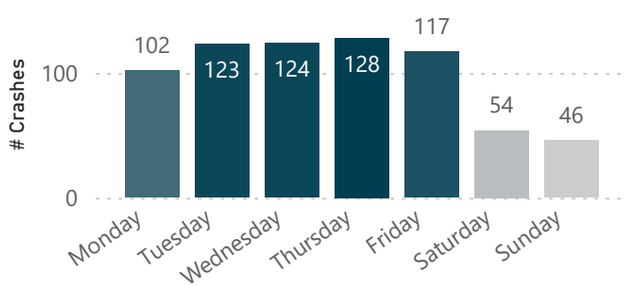
Crashes by Time of Day and Light Condition



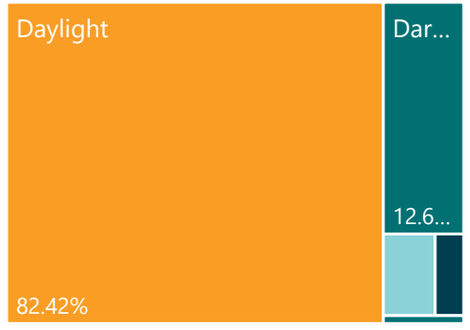
Crashes by Month



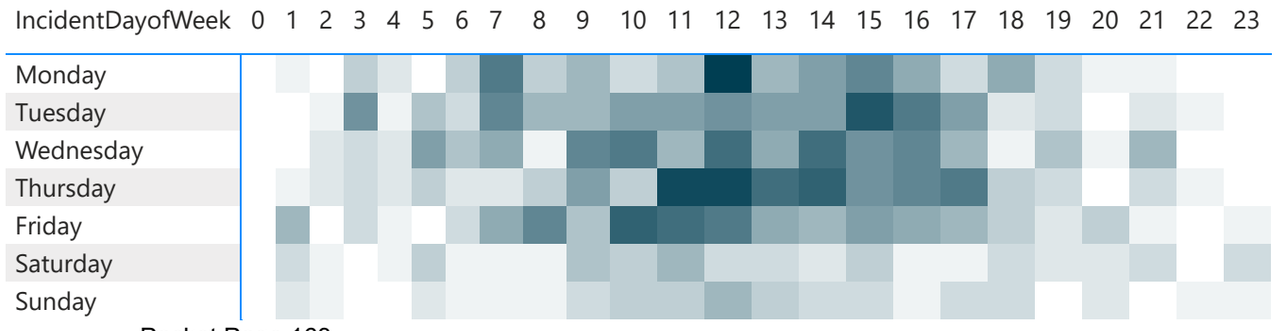
Crashes by Day of the Week



Crashes by Lighting Condition



Crash Frequency by Hour and Day of the Week



Report Printed: 05/25/2024
Source: Mesa County Diexsys and CDOT data

Mesa County Motor Vehicle Crash Query Tool

Mesa County Safety Action Plan
Enhancing Roadway Safety in Our Community

REGIONAL TRANSPORTATION PLANNING OFFICE
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Crash Total
694

Where

Period
1/5/2016
12/27/2022

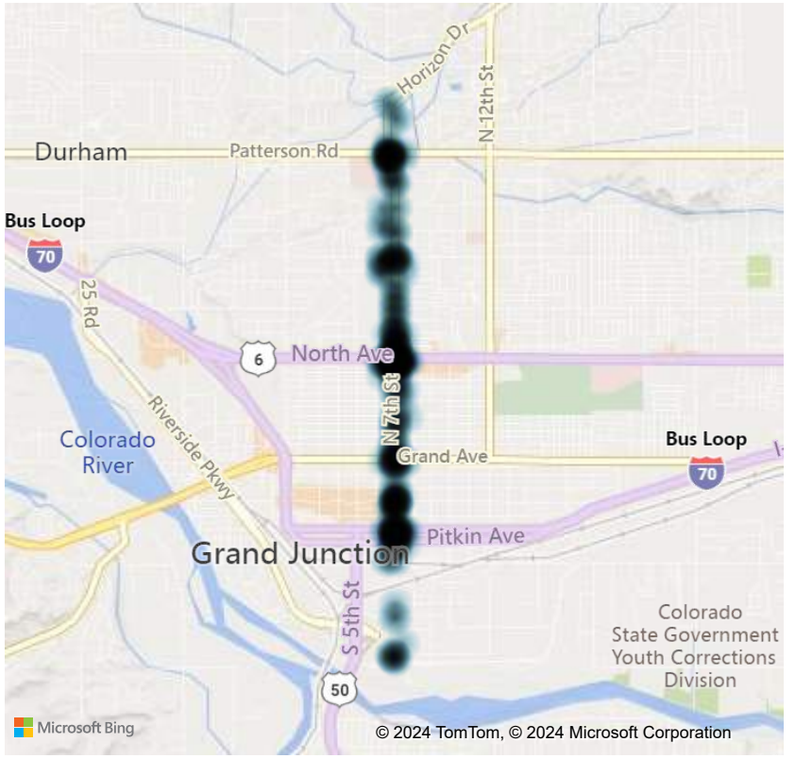
Injury Severity
- No Injury (PDO)
- Possible/Complaint of Injury (C)
- Evident Non-Incapacitating (B)
- Evident, Incapacitating (A)
- Fatal (K)

Collision Manner
- Approach Turn
- Bicycle or Pedal Cycle
- Bicycle/Motorized Bicycle
- Broadside
- Concrete Highway Barrier
- Curb
- Curb or Island
- Fence
- Fence or Fence Part

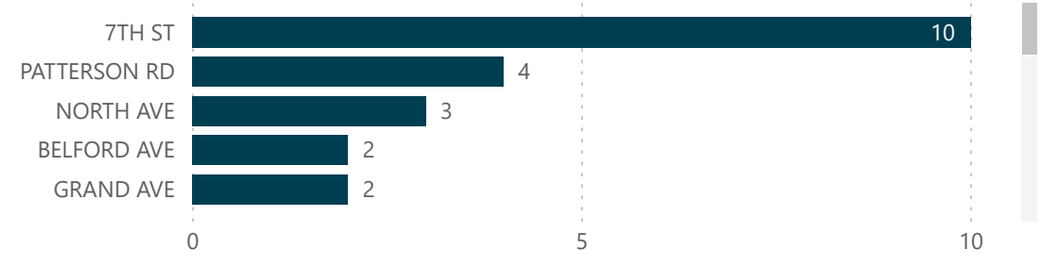
Rural or Urban
- Urban

Coordinates
- Known

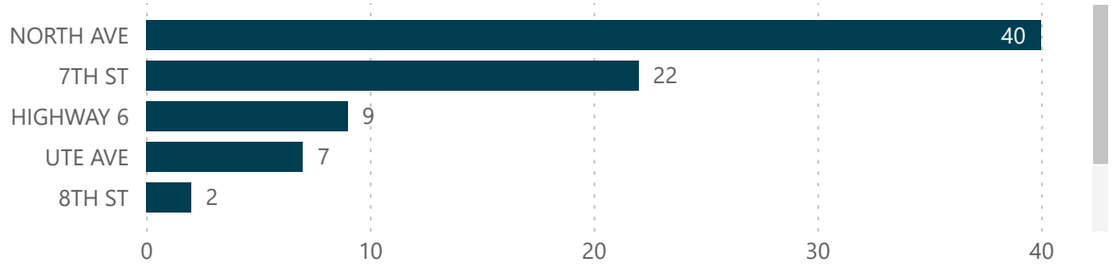
Collision Map



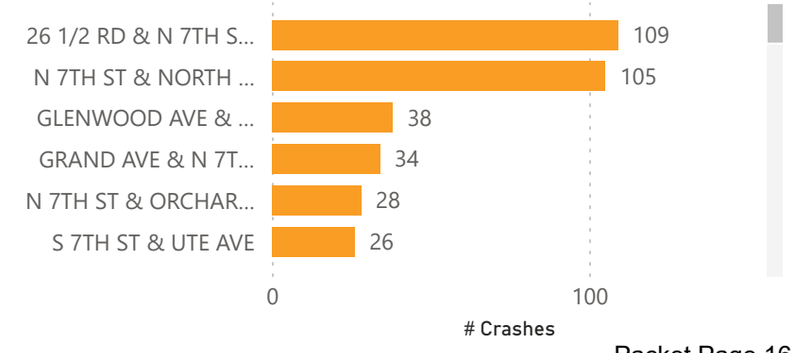
Segment Crashes (City & County Roadways)



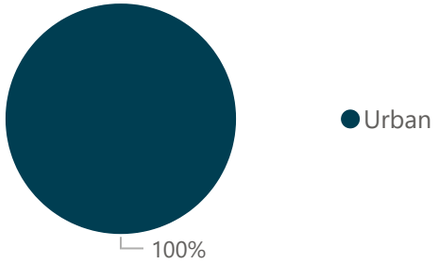
Segment Crashes (State Roadways)



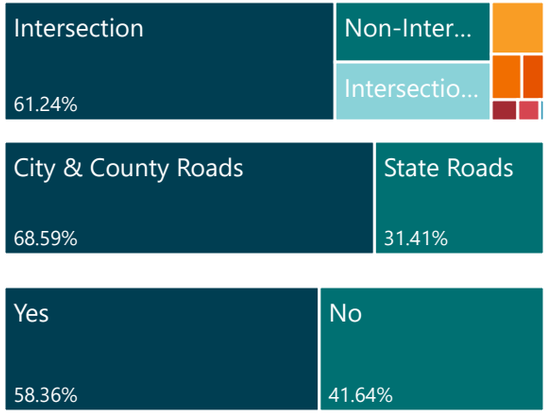
High Crash Intersections (<150 feet)



Rural vs Urban Crashes



Crash Location



Report Printed: 05/25/2024
Source: Mesa County Diexsys and CDOT data

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Crash Total
694

Why

Period
1/5/2016
12/27/2022

Injury Severity
- [ ] No Injury (PDO)
- [ ] Possible/Complaint of Injury (C)
- [ ] Evident Non-Incapacitating (B)
- [ ] Evident, Incapacitating (A)
- [ ] Fatal (K)

Collision Manner
- [ ] Approach Turn
- [ ] Bicycle or Pedal Cycle
- [ ] Bicycle/Motorized Bicycle
- [ ] Broadside
- [ ] Concrete Highway Barrier
- [ ] Curb
- [ ] Curb or Island
- [ ] Fence
- [ ] Fence or Fence Part

Rural or Urban
- [ ] Urban

Coordinates
- [ ] Known

Impairment

4%

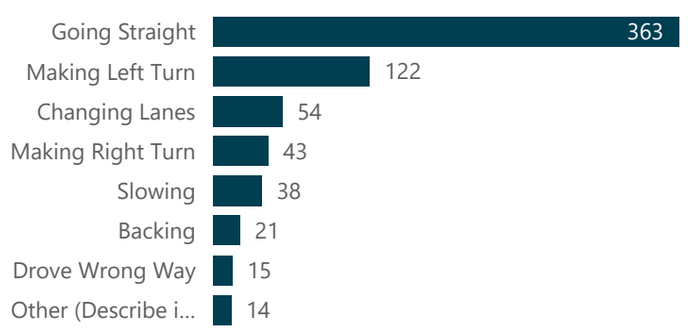
Speeding

6%

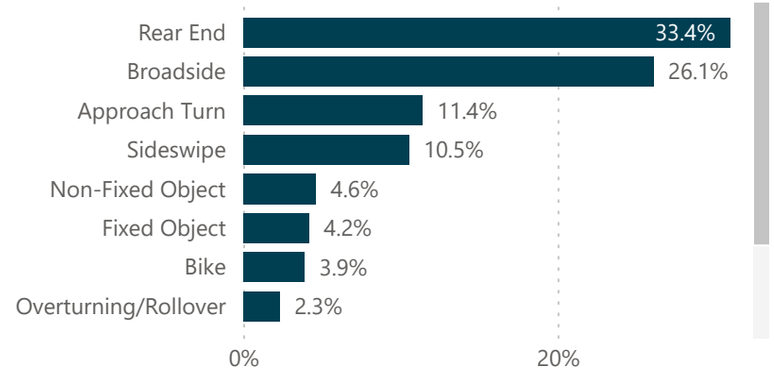
Fixed Object Collision

5%

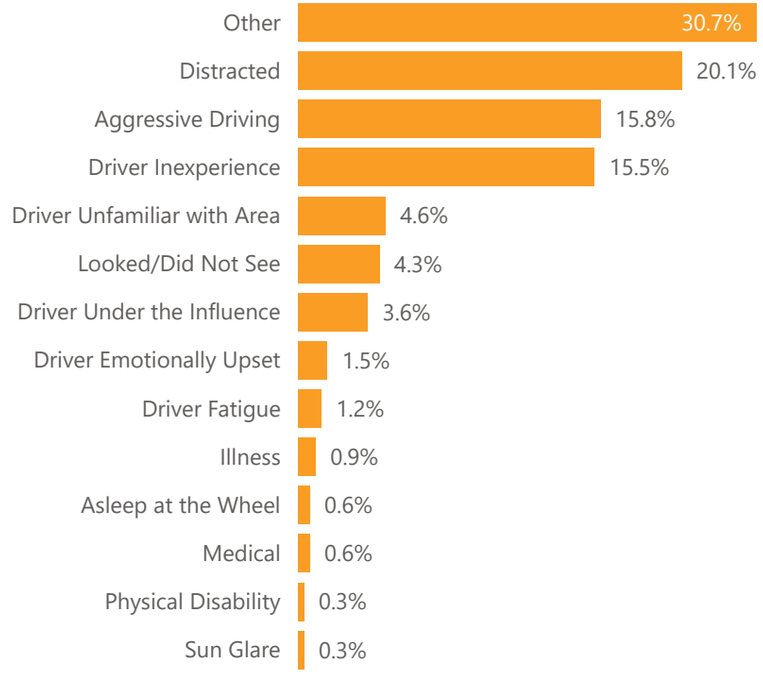
Unit 1 Action



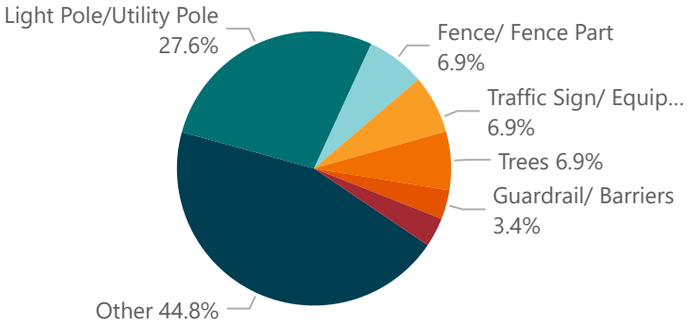
Crash Type



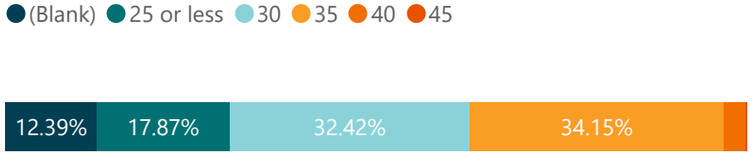
Contributing Factor



First Harmful Event - Fixed Object Crashes



Posted Speed Limit of Unit 1



Report Printed: 05/25/2024
Source: Mesa County Diexsys and CDOT data

Mesa County Motor Vehicle Crash Query Tool

Mesa County Safety Action Plan
Enhancing Roadway Safety in Our Community

REGIONAL TRANSPORTATION PLANNING OFFICE
Grand Valley MPO · Grand Valley TPR · Grand Valley Transit

Crash Total
694

Who

Period
1/1/2016
12/31/2022

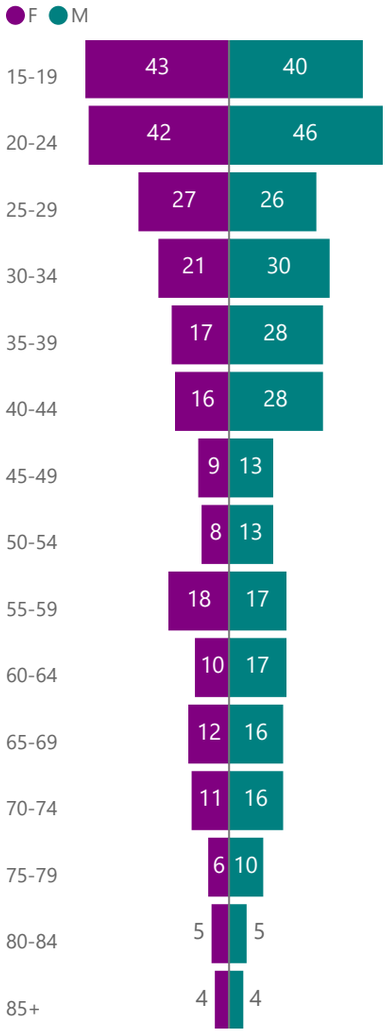
Injury Severity
- [ ] No Injury (PDO)
- [ ] Possible/Complaint of Injury (C)
- [ ] Evident Non-Incapacitating (B)
- [ ] Evident, Incapacitating (A)
- [ ] Fatal (K)

Collision Manner
- [ ] Approach Turn
- [ ] Bicycle or Pedal Cycle
- [ ] Bicycle/Motorized Bicycle
- [ ] Broadside
- [ ] Concrete Highway Barrier
- [ ] Curb
- [ ] Curb or Island
- [ ] Fence
- [ ] Fence or Fence Part

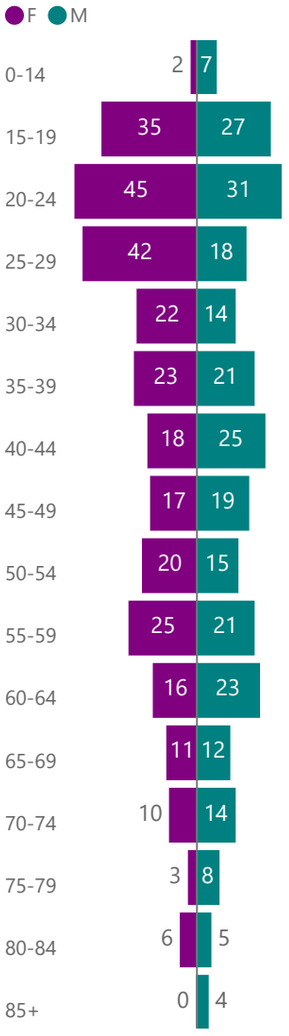
Rural or Urban
- [ ] Urban

Coordinates
- [ ] Known

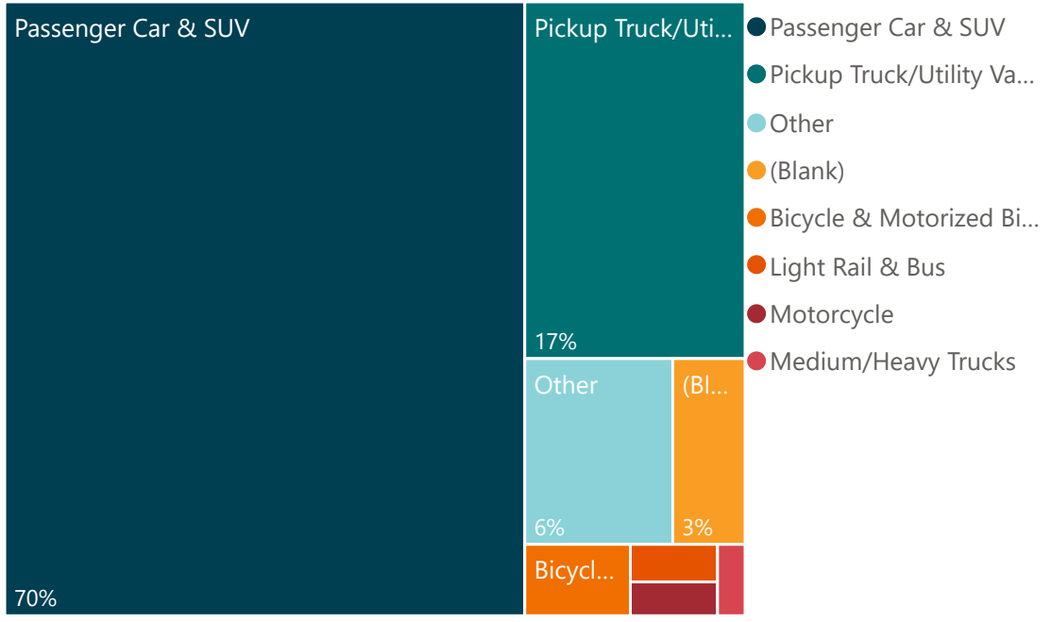
Drivers of Unit 1 by Age and Gender



Drivers of Unit 2 by Age and Gender



Unit Body Style



Report Printed: 05/25/2024
Source: Mesa County Diexsys and CDOT data

Mesa County Motor Vehicle Crash Query Tool

Mesa County Safety Action Plan
Enhancing Roadway Safety in Our Community

REGIONAL TRANSPORTATION PLANNING OFFICE
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KSI

Period
6/6/2016
10/9/2022

Injury Severity
- [ ] Evident, Incapacitating (A)
- [ ] Fatal (K)

Collision Manner
- [ ] Bicycle or Pedal Cycle
- [ ] Bicycle/Motorized Bicycle
- [ ] Broadside
- [ ] Head On
- [ ] Head-On
- [ ] Overturning/Rollover
- [ ] Pedestrian
- [ ] Rear End

Rural or Urban
- [ ] Urban

Coordinates
- [ ] Known

Average Crashes Per Year
2

Crash Total
14

Total Injuries
27

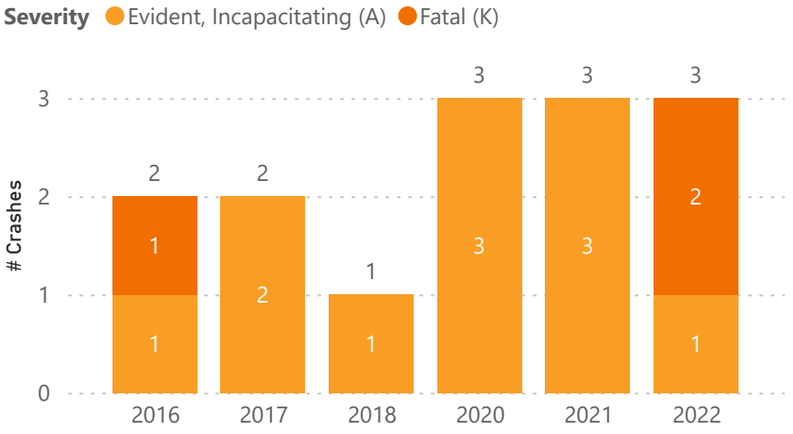
Total Fatalities
3

Total Hit and Runs
0

Total Pedestrian Crashes
2

Total Bicyclist Crashes
2

Crashes by Year and Severity

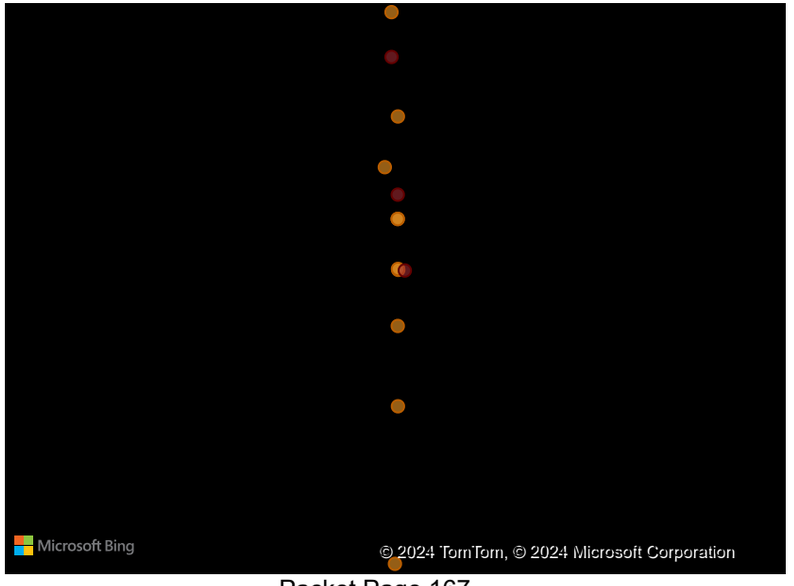


Crashes by Severity - Percentage

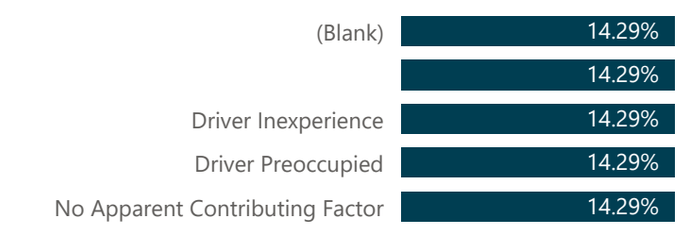
% of Impairment-Related Crashes

% of Speed-Related Crashes

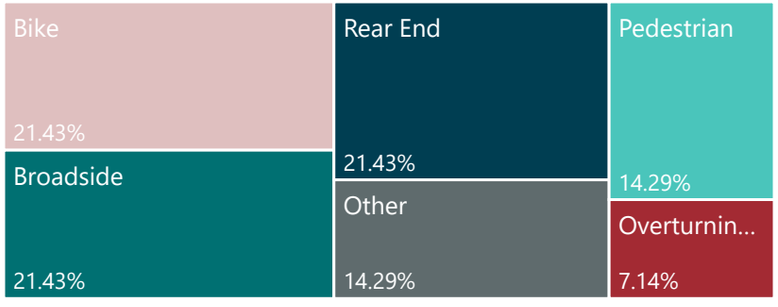
Collision Map



Violation of Unit 1



Crash Type



Report Printed: 05/25/2024
Source: Mesa County Diexsys and CDOT data

Mesa County Safety Action Plan
Enhancing Roadway Safety in Our Community

Average Crashes Per Year

Mesa County Motor Vehicle Crash Query Tool

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Ped and Bike

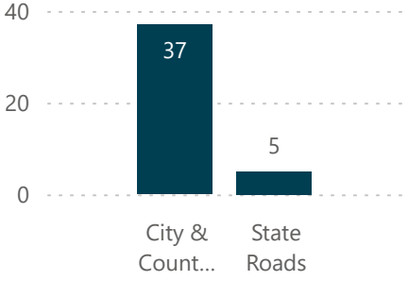
Period
3/21/2016
10/1/2022

Injury Severity
- [ ] No Injury (PDO)
- [ ] Possible/Complaint of Injury (C)
- [ ] Evident Non-Incapacitating (B)
- [ ] Evident, Incapacitating (A)
- [ ] Fatal (K)

Rural or Urban
- [ ] Urban

Coordinates
- [ ] Known

Road Type



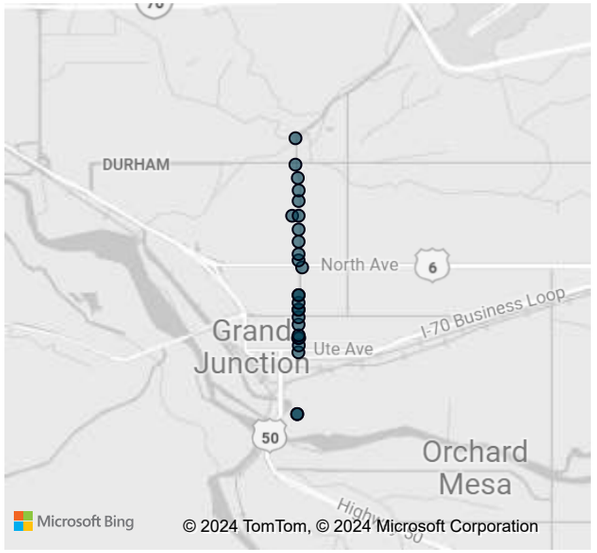
Crash Total
42

Total Injuries
22

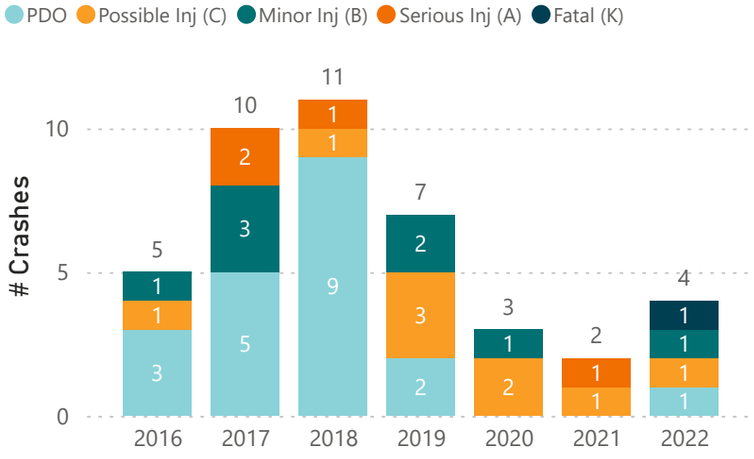
Total Fatalities
1

Total Hit and Runs
2

Collision Map



Crashes by Year and Severity

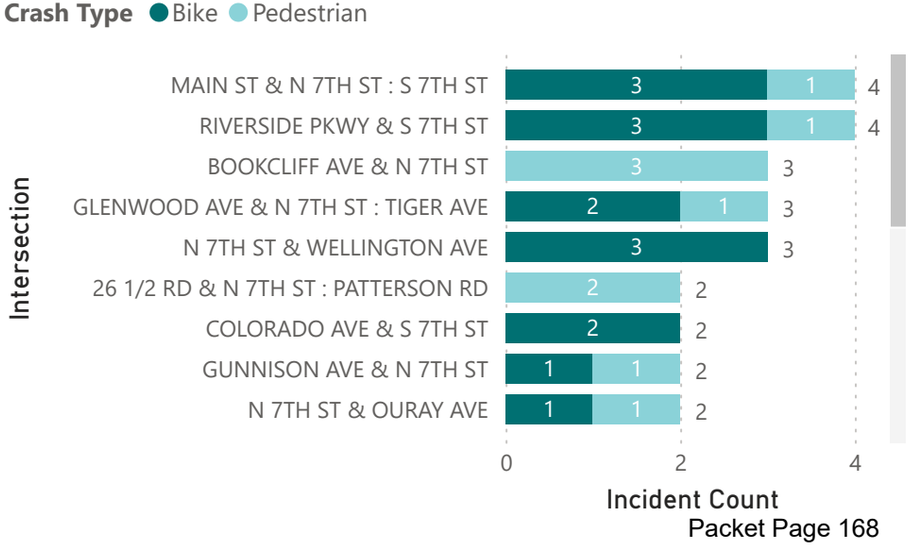


Speeding
2%

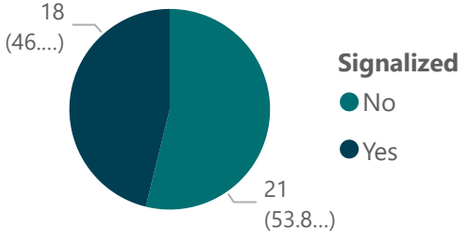
Impairment
12%

Hit and Run
5%

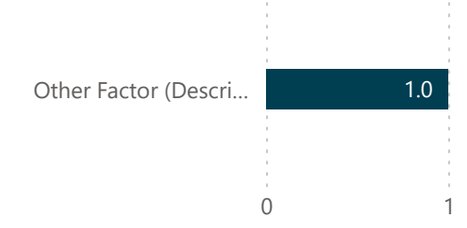
High Crash Intersections



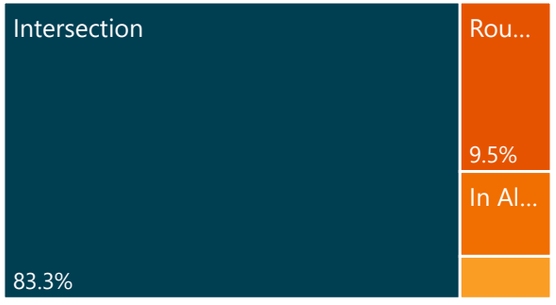
Intersection Crashes



Bicyclist Violation



Crash Location



Crashes by Lighting Condition

Mesa County Motor Vehicle Crash Query Tool

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Motorcycle

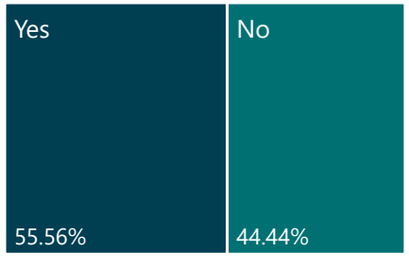
Period
11/20/2016
4/2/2022

Injury Severity
- [ ] No Injury (PDO)
- [ ] Evident Non-Incapacitating (B)
- [ ] Evident, Incapacitating (A)

Rural or Urban
- [ ] Urban

Coordinates
- [ ] Known

Traffic Light Presence



Average Crashes Per Year
2

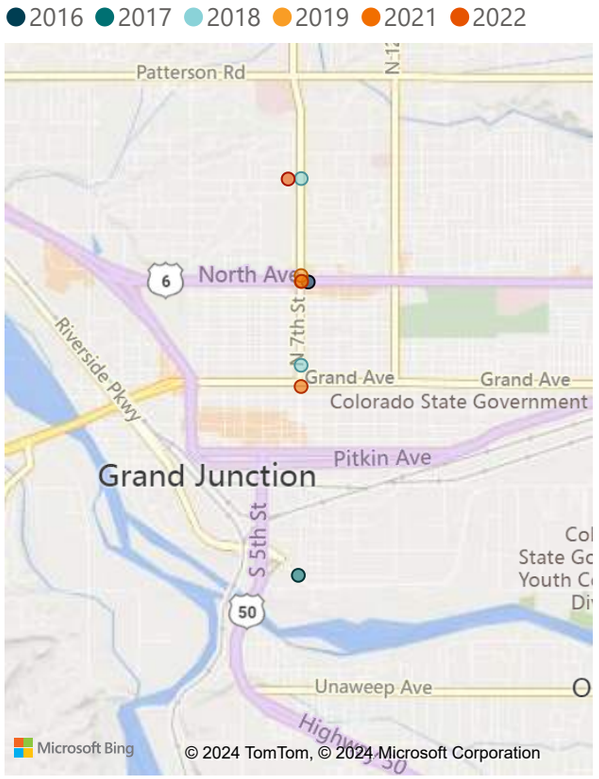
Crash Total
9

Total Injuries
4

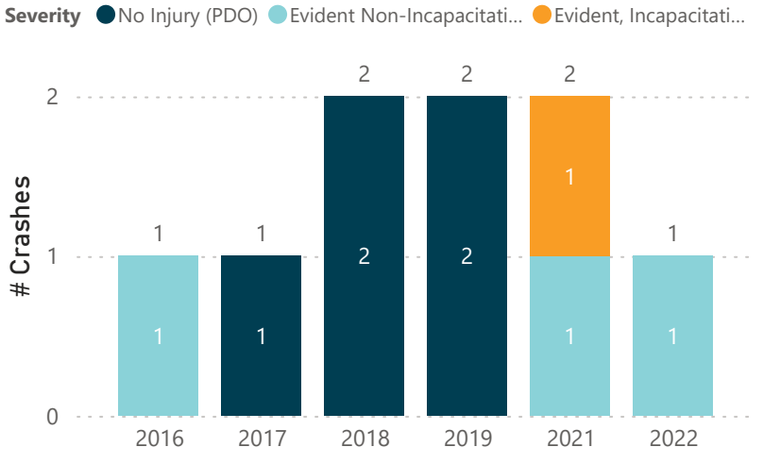
Total Fatalities
(Blank)

Total Hit and Runs
0

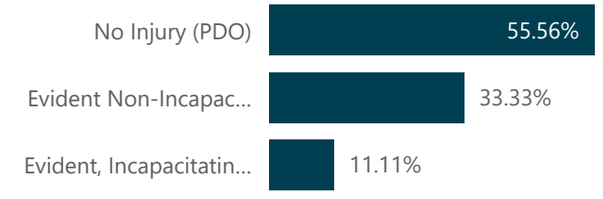
Collision Map



Crashes by Year and Severity

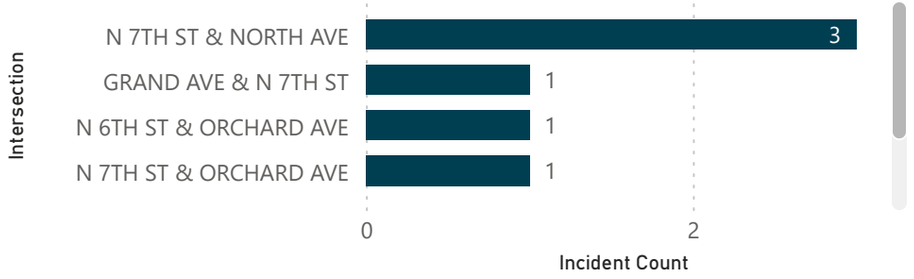


Crashes by Severity - Percentage

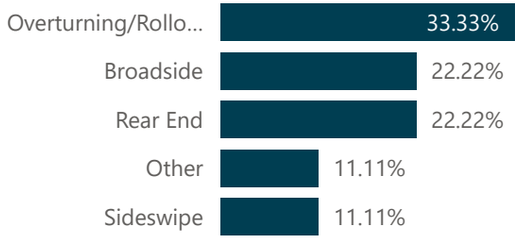


Crashes by Lighting Condition

High Crash Intersections



Collision Manner



APPENDIX E – POP-UP EVENT BOARDS

7th Street
Active Transportation Corridor

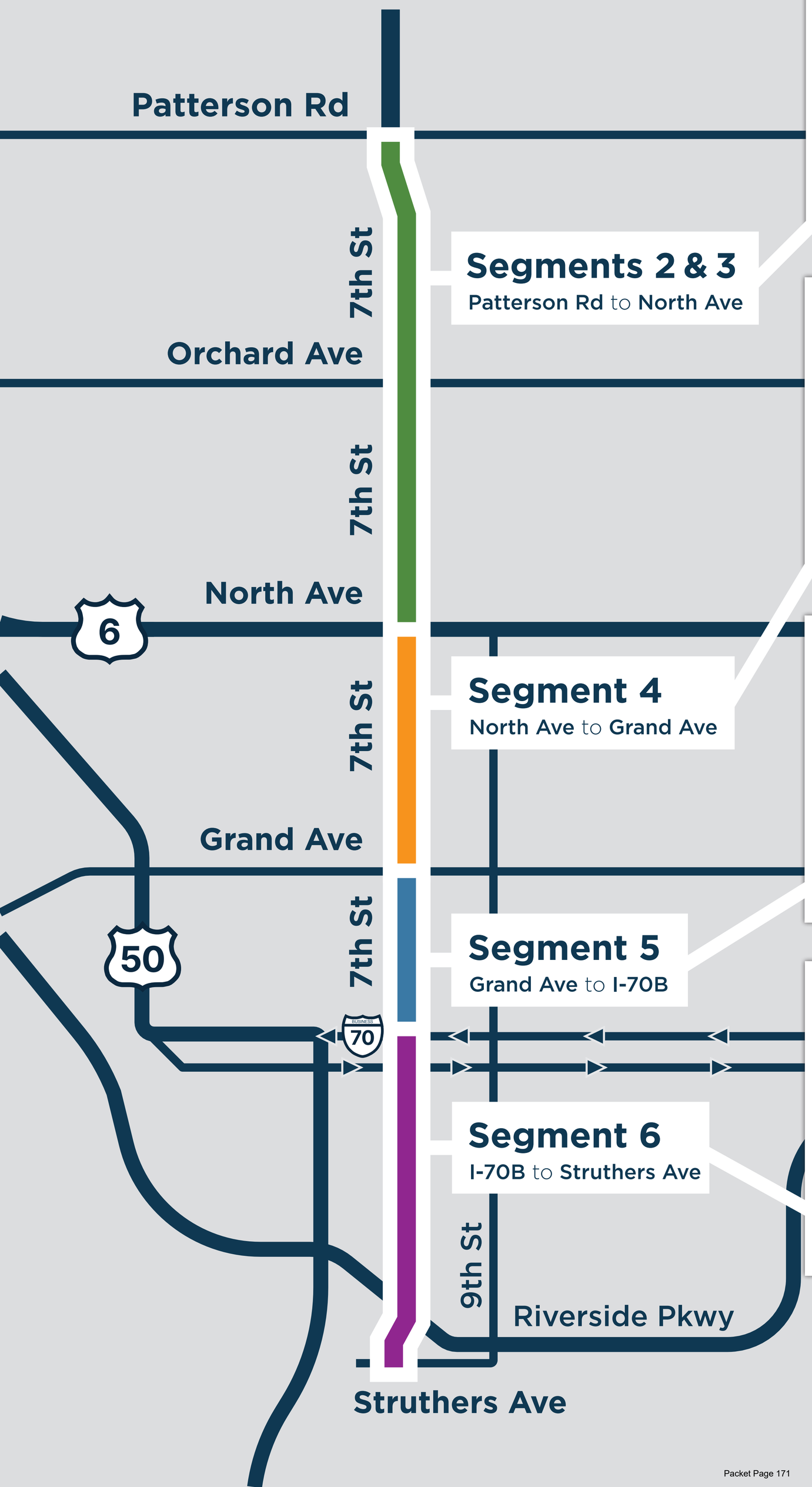
Current Conditions

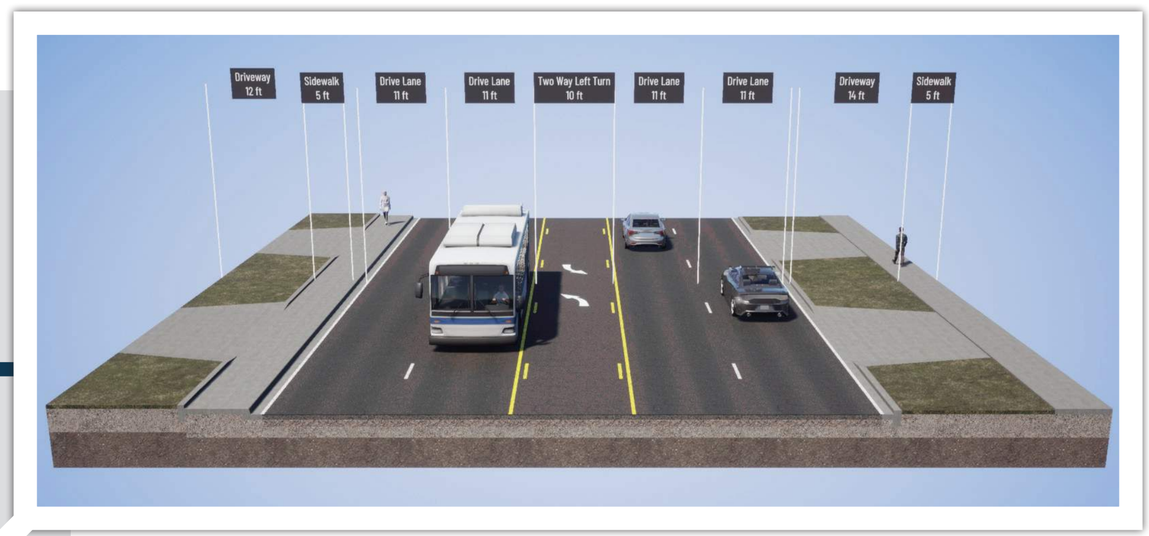
Identified as a need in the One Grand Junction Comprehensive Plan & Pedestrian and Bicycle Plan.

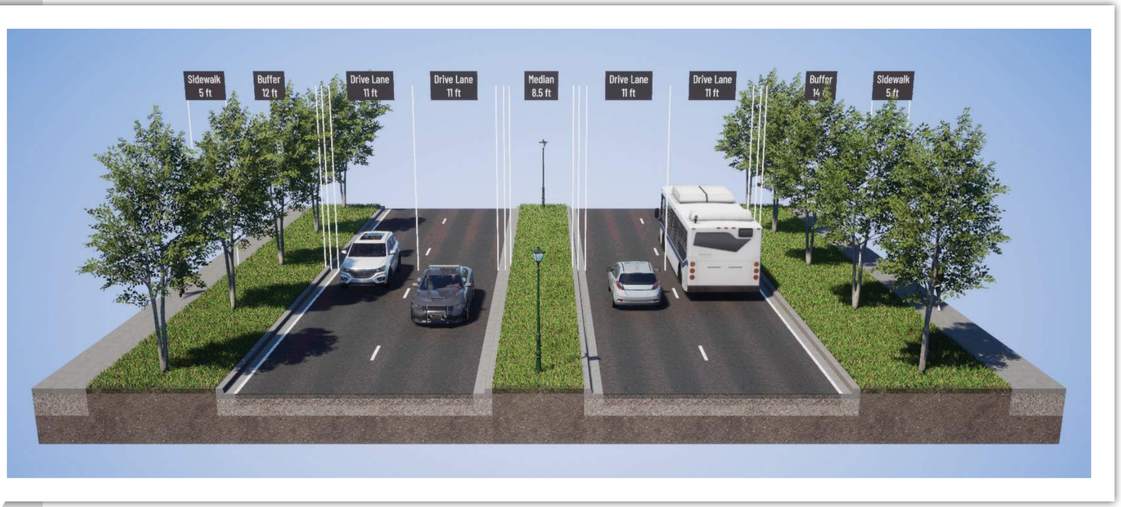
High instances of injuries.

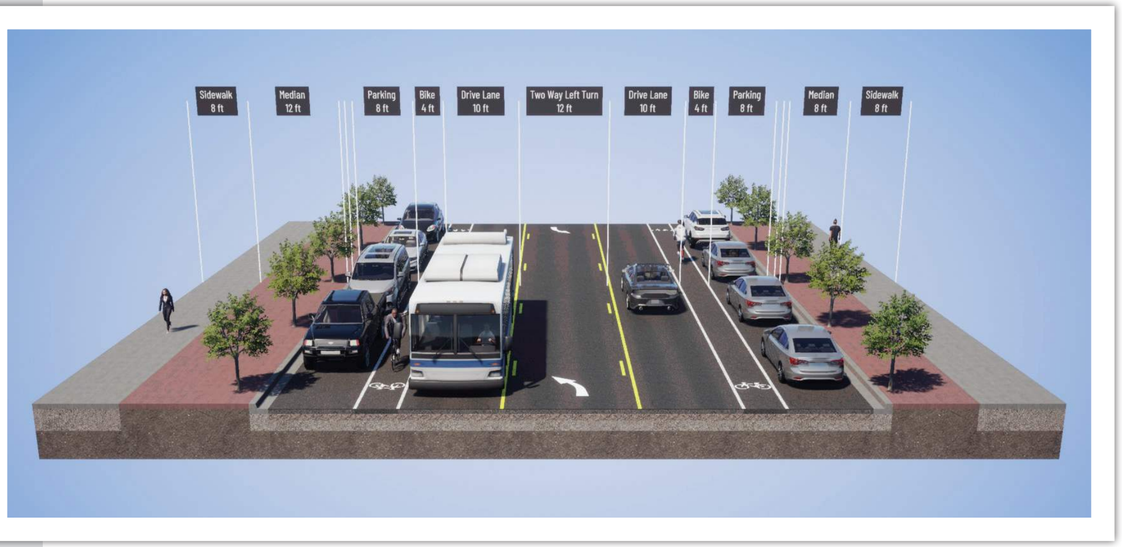
High priority corridor for cycling and pedestrian facilities.

Connects Riverfront Trail to jobs, services, and other trail corridors.









CITY OF Grand Junction COLORADO

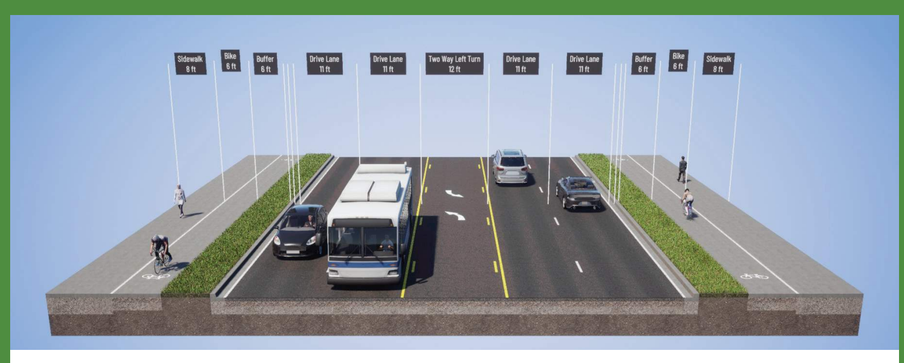
7th Street Active Transportation Corridor

Vote for your favorite option for each segment.

CITY OF Grand Junction COLORADO

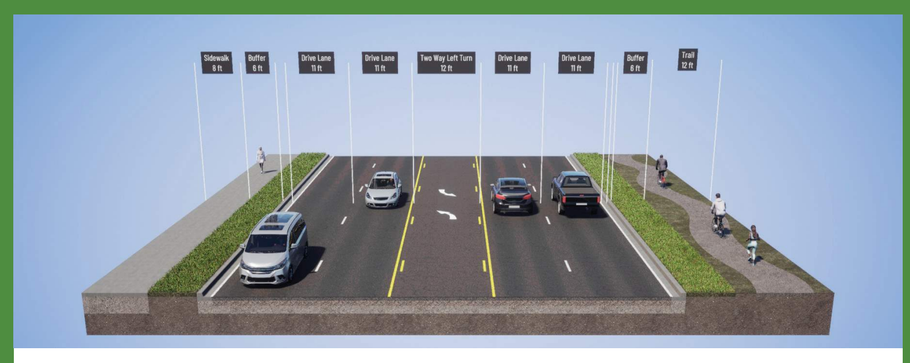
Segments 2 & 3

Patterson Rd to North Ave



Raised Bike Lane

Lane-separated path for pedestrians and bikes.



Raised Trail

Shared trail for bikes and pedestrians.

Segment 4

North Ave to Grand Ave

Buffered Trail

Shared trail for bikes and pedestrians, with tree buffered boulevard.

Striped Bike Lane

Bike lane on roadway with striped separation from vehicles, separate sidewalk for pedestrians.

Segment 5

Grand Ave to I-70B

Existing

Bike lane on roadway with striped separation from vehicles, separate sidewalk for pedestrians. Roadway includes parallel and angled parking.
(Maximum Parking)

Striped Bike Lane

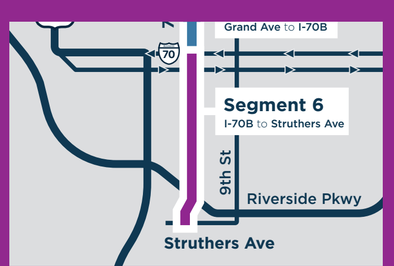
Bike lane on roadway with striped separation from vehicles, separate sidewalk for pedestrians. Parallel parking on both sides of roadway.
(Reduced Parking)

Raised Bike Lane

Lane-separated path for pedestrians and bikes.
(Minimal Parking)

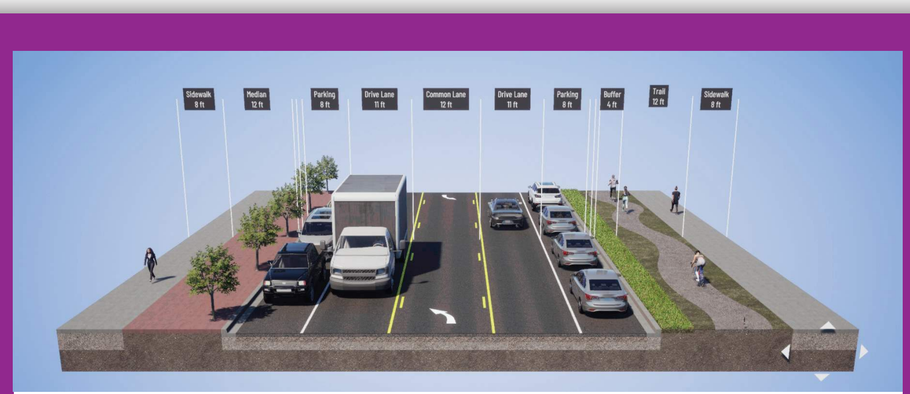
Segment 6

I-70B to Struthers Ave



Existing

Bike lane on roadway with striped separation from vehicles, separate sidewalk for pedestrians. Parallel parking on both sides of roadway.



Raised Trail

Raised bicycle trail with adjacent sidewalk. Parallel parking on both sides of roadway.

APPENDIX F – SURVEY RESULTS

7th Street Active Transportation Corridor

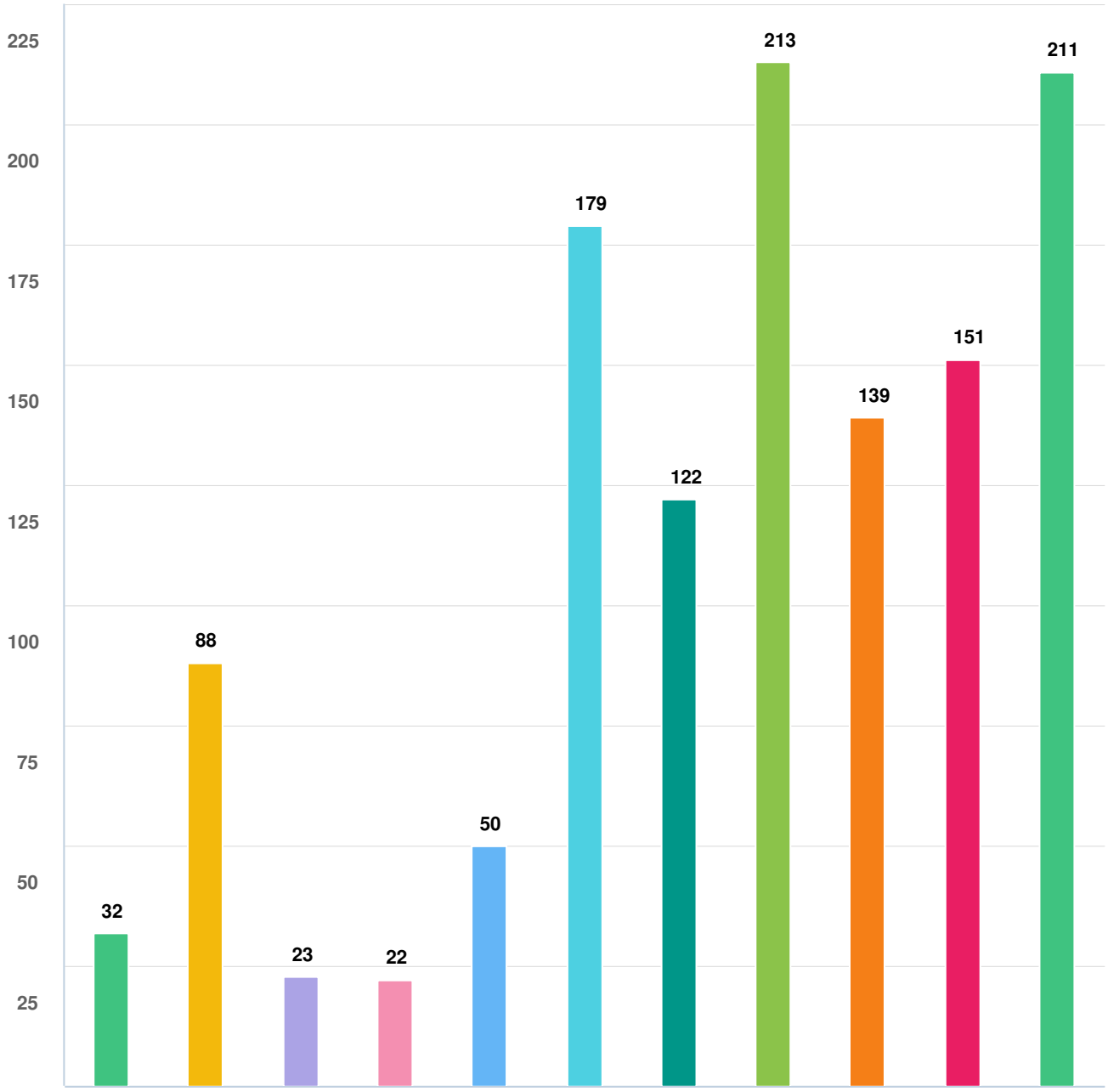
SURVEY RESPONSE REPORT

01 July 2024 - 31 July 2024

PROJECT NAME:
7th Street Active Transportation Corridor

SURVEY QUESTIONS

Q1 What is your primary purpose when traveling along the 7th Street Corridor? Please select all that apply

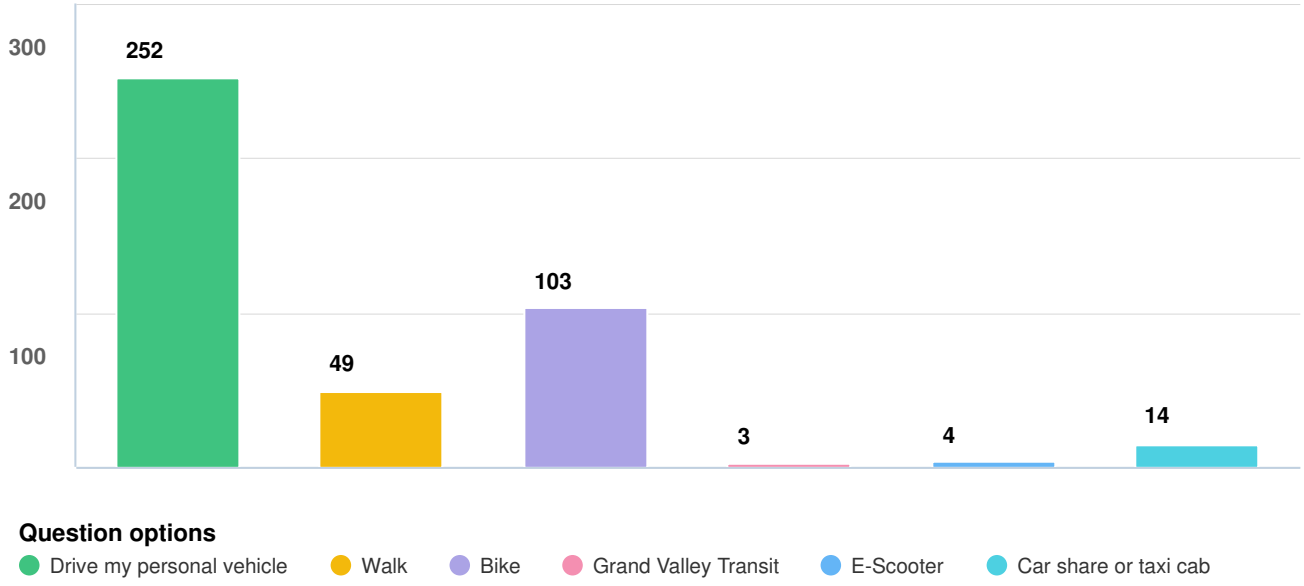


Question options

- I live along 7th Street.
- I use 7th Street to commute to work.
- I use 7th Street to get to Grand Junction High School.
- I use 7th Street to get to Tope Elementary.
- I use 7th Street to get to Colorado Mesa University.
- I visit businesses, restaurants, or entertainment venues along 7th Street.
- I travel on 7th Street for medical appointments.
- I use 7th Street to get to Downtown Grand Junction.
- I use 7th Street to get to the Colorado Riverfront Trail/Las Colonias.
- I use 7th Street to travel to Horizon Drive
- I use 7th Street to connect to other main arterials (Grand Ave, North Ave, Patterson Rd).

Mandatory Question (285 response(s))
Question type: Checkbox Question

Q2 What is your primary mode of travel along 7th Street, pick only two.



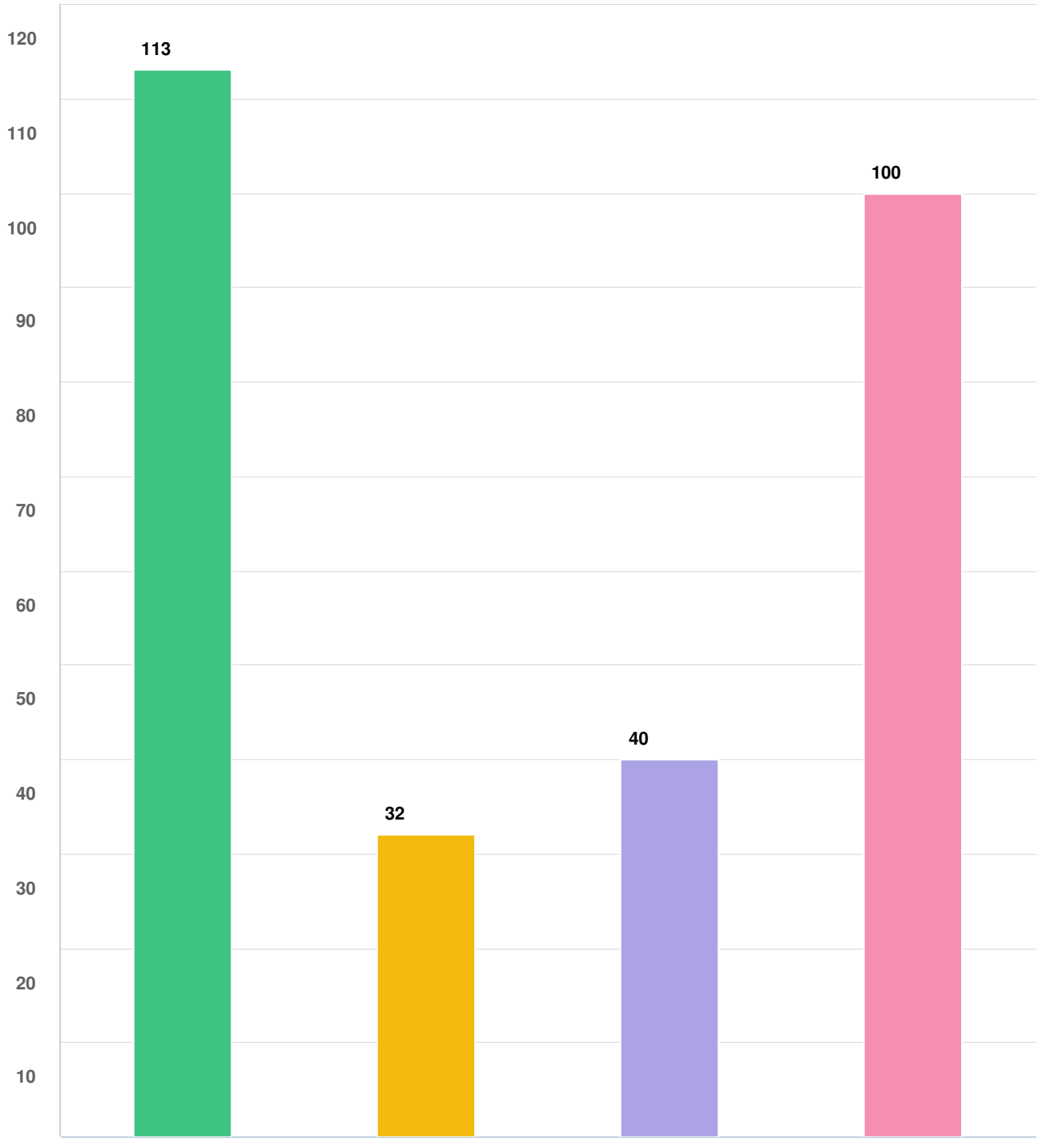
Mandatory Question (285 response(s))
Question type: Checkbox Question

Q3 The City of Grand Junction aims to improve the 7th Street Corridor between the Riverfront Trail and Horizon Drive. Please ...

OPTIONS	AVG. RANK
Effective movement of vehicles	3.29
Safety enhancements between vehicle and bike/ped users	3.31
Pedestrian level of comfort while using the corridor	3.74
Bicycle level of comfort while using the corridor	4.08
Driveway and Business Access	4.13
Overall Cost of Design and Construction	4.68
Landscaping/Greenspace	4.76

Mandatory Question (285 response(s))
Question type: Ranking Question

Q4 If the City of Grand Junction made improvements to 7th Street that enhanced the safety of bikes and pedestrians would you use this corridor more?

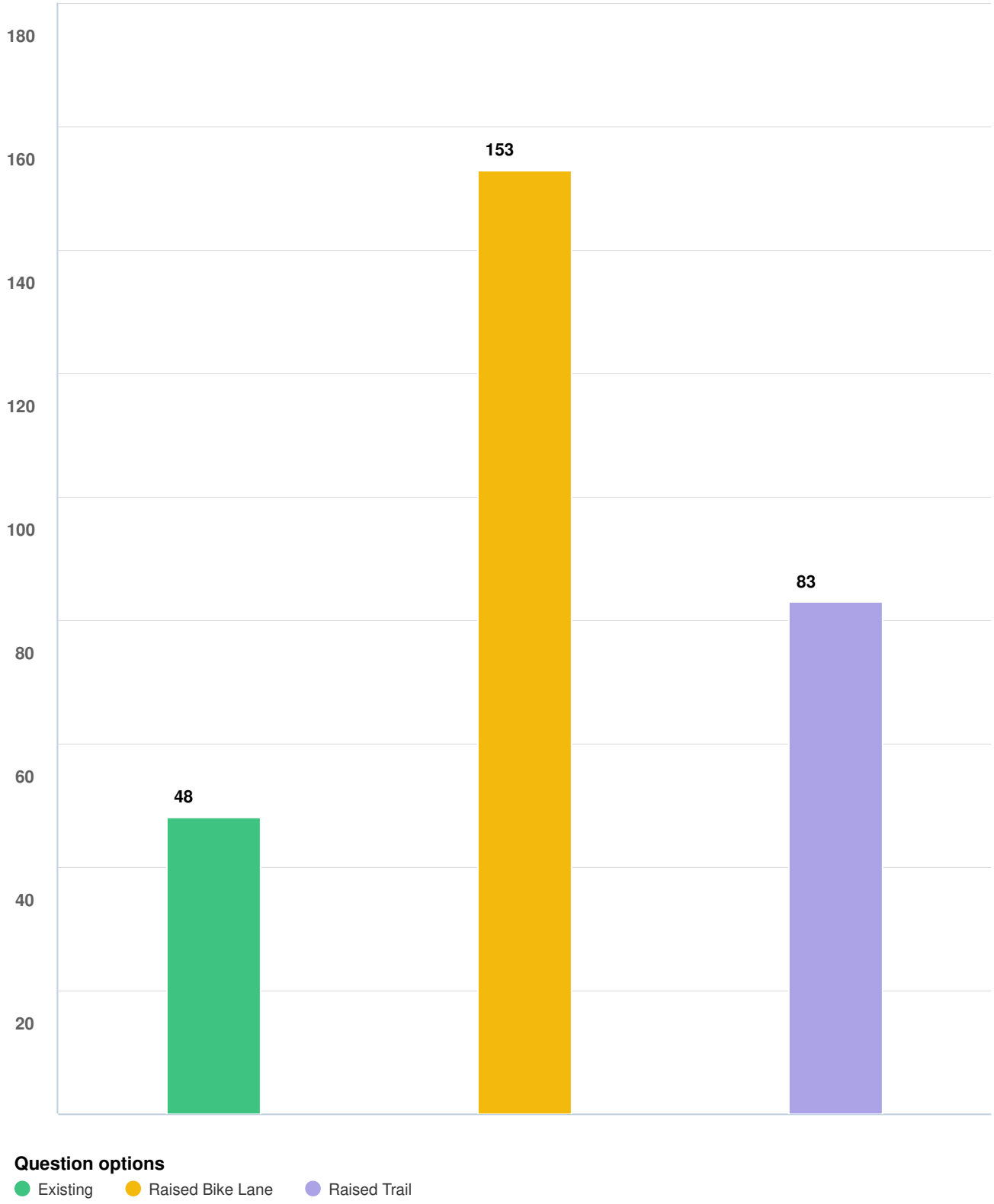


Question options

- I would bike more.
- I would walk more.
- I would walk or bike the same amount.
- I would not walk or bike on 7th Street even if it were safer or more comfortable.

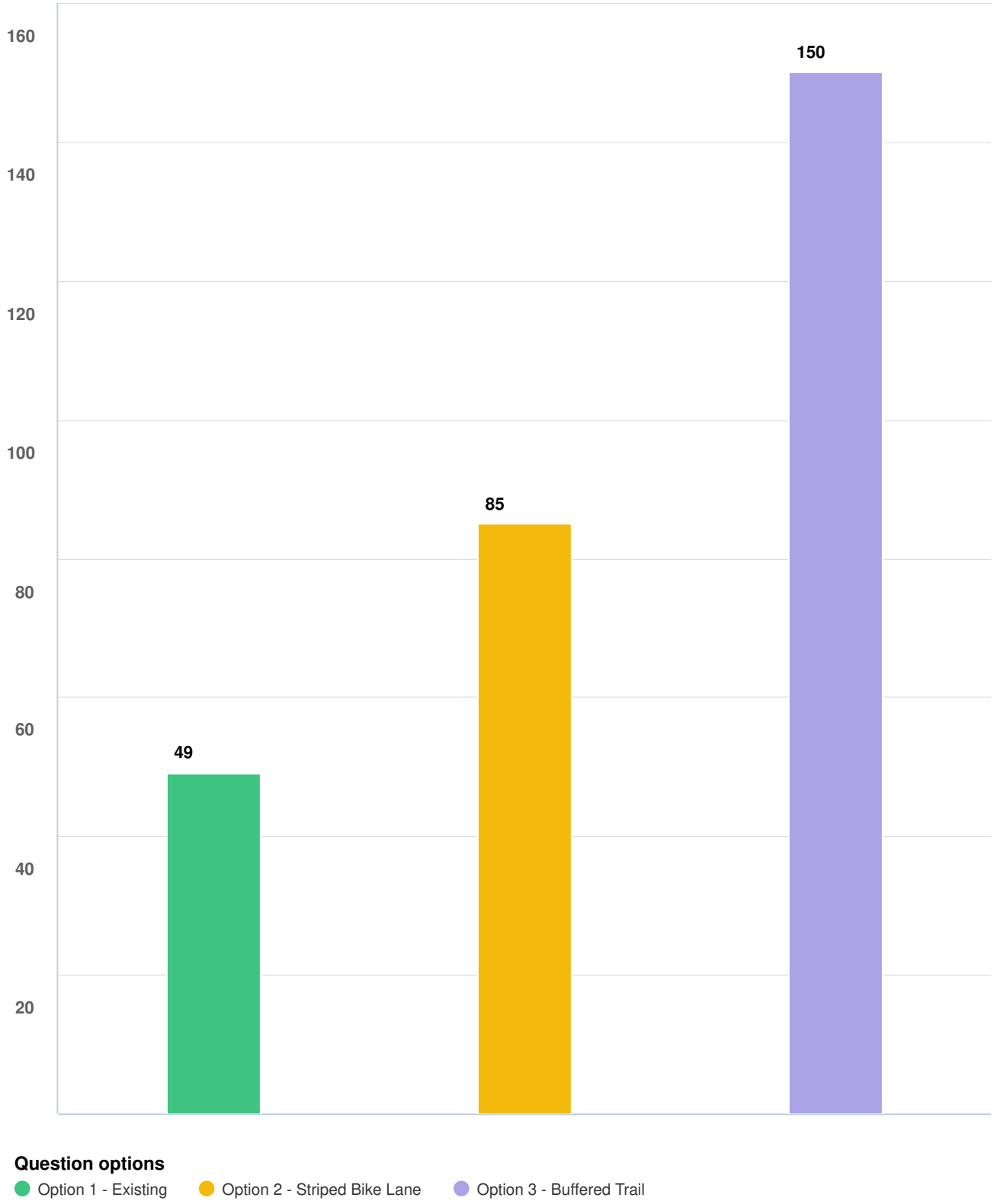
Mandatory Question (285 response(s))
Question type: Checkbox Question

Q5 **7th Street - Patterson Rd. to North AveChoose between Option 1 (Existing), Option 2 (Raised Bike Lane), and Option 3 (Raised Trail).Existing: detached sidewalk for pedestrians, no bicycle facilities.Raised Bike Lane: separate path with one lane for...**



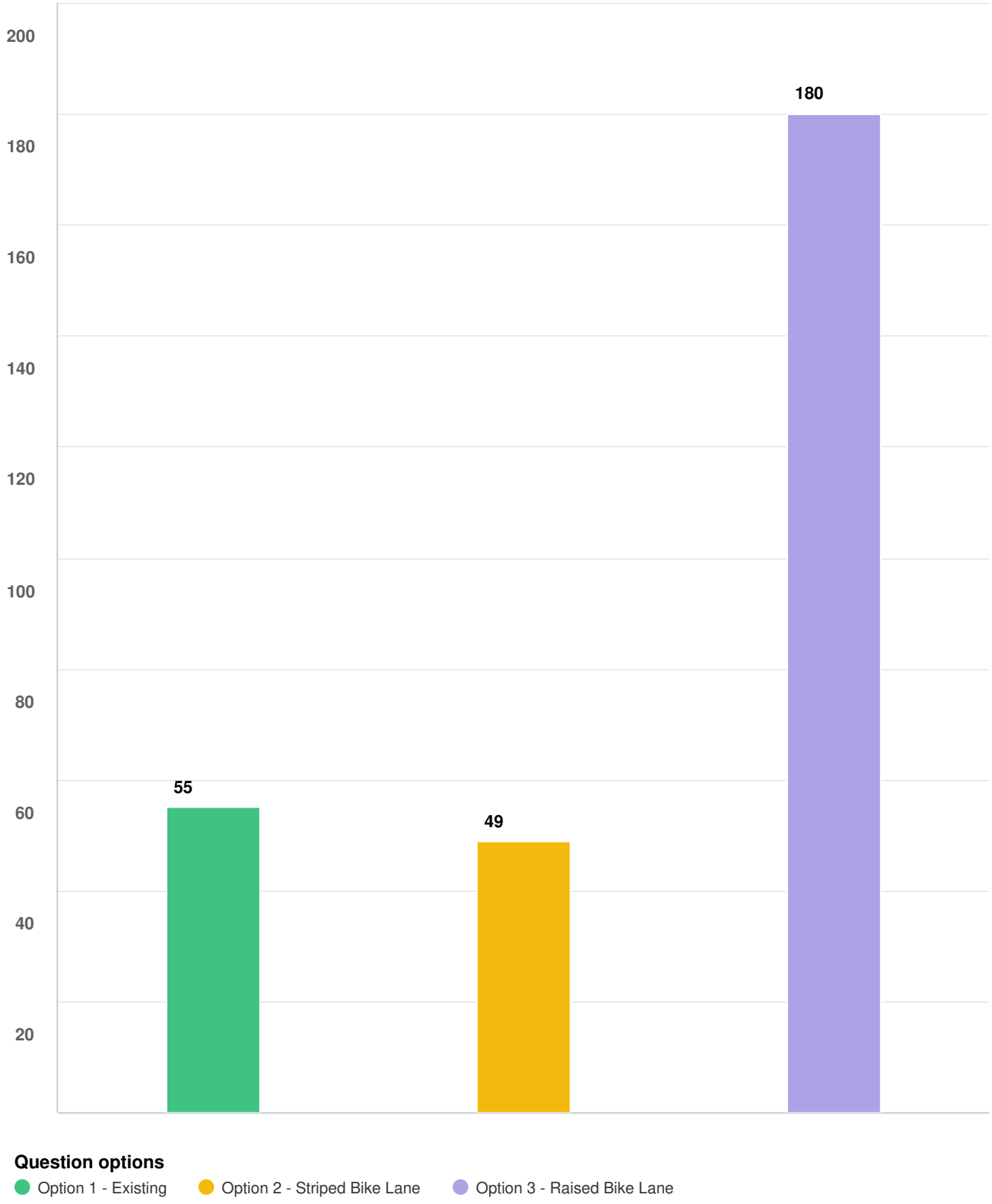
Optional question (284 response(s), 2 skipped)
Question type: Checkbox Question

Q6 7th Street - North Ave to Grand AveChoose between Option 1 (Existing), Option 2 (Striped Bike Lane), and Option 3 (Buffered Trail).Existing: detached sidewalk for pedestrians, no bicycle facilities.Striped Bike Lane: bike lane on roadway with strip...



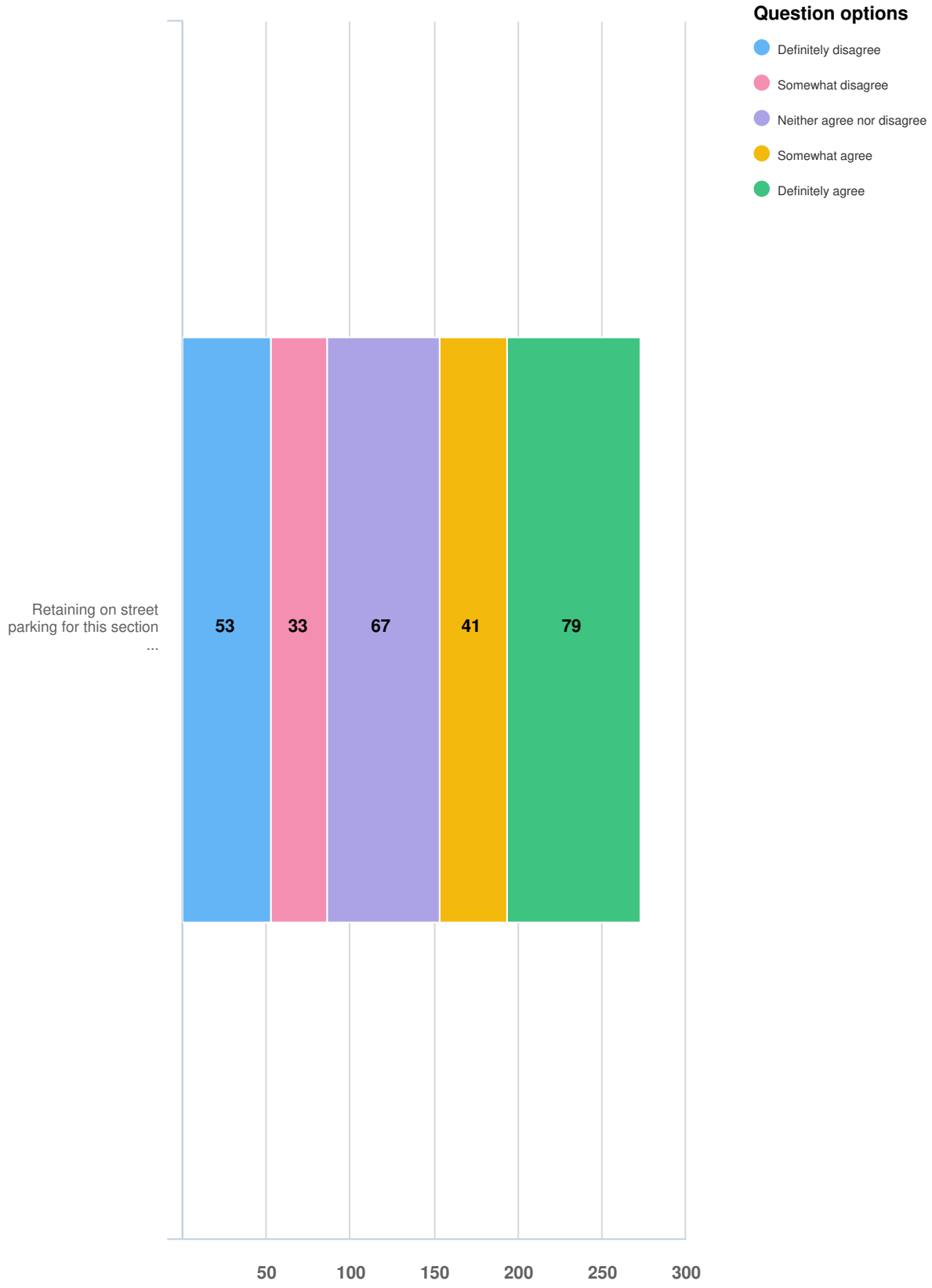
Optional question (284 response(s), 2 skipped)
Question type: Checkbox Question

Q7 7th Street - Grand Ave to I-70B. Choose between Option 1(Existing), Option 2 (Striped Bike Lane), and Option 3 (Raised Bike Lane).Existing: Bike lane on roadway with striped separation from vehicles, separate sidewalk for pedestrians. Roadway incl...



Optional question (284 response(s), 2 skipped)
Question type: Checkbox Question

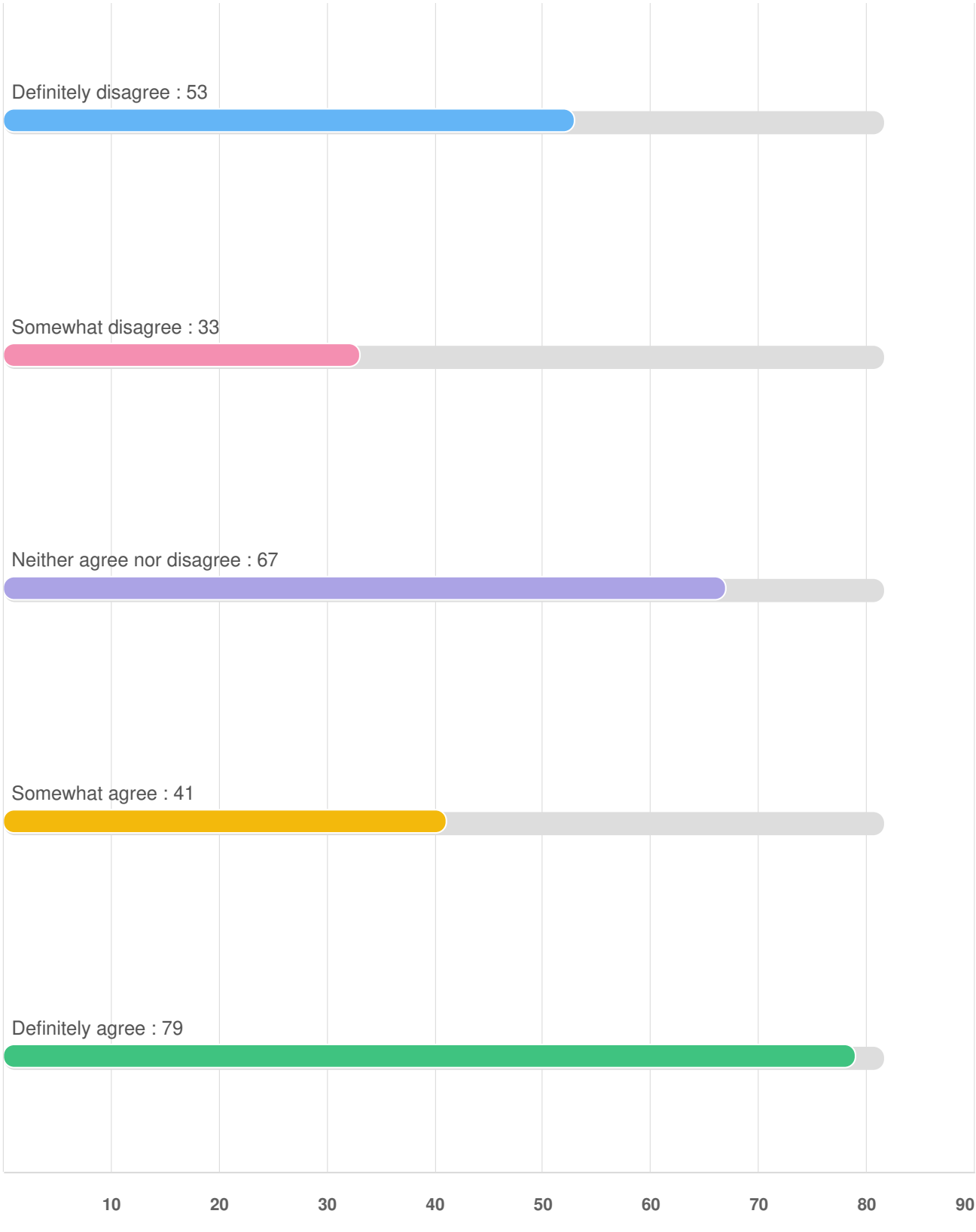
Q8 7th Street - Grand Ave to I-70B The existing conditions for (7th Street - Grand Ave to I-70B) includes on street parking.



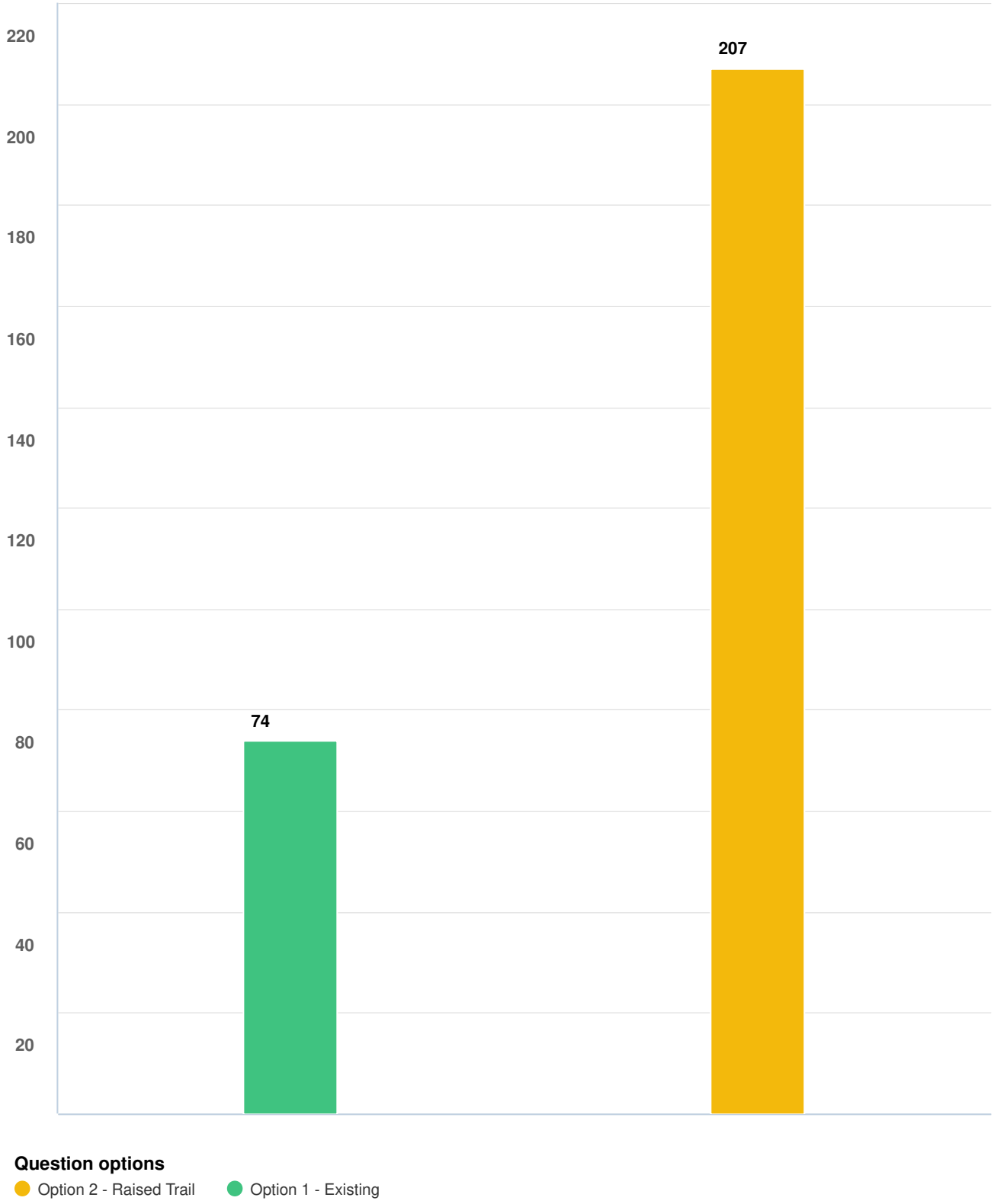
Optional question (273 response(s), 13 skipped)
Question type: Likert Question

Q8 | 7th Street - Grand Ave to I-70B The existing conditions for (7th Street - Grand Ave to I-70B) includes on street parking.

Retaining on street parking for this section of 7th Street is important to me.

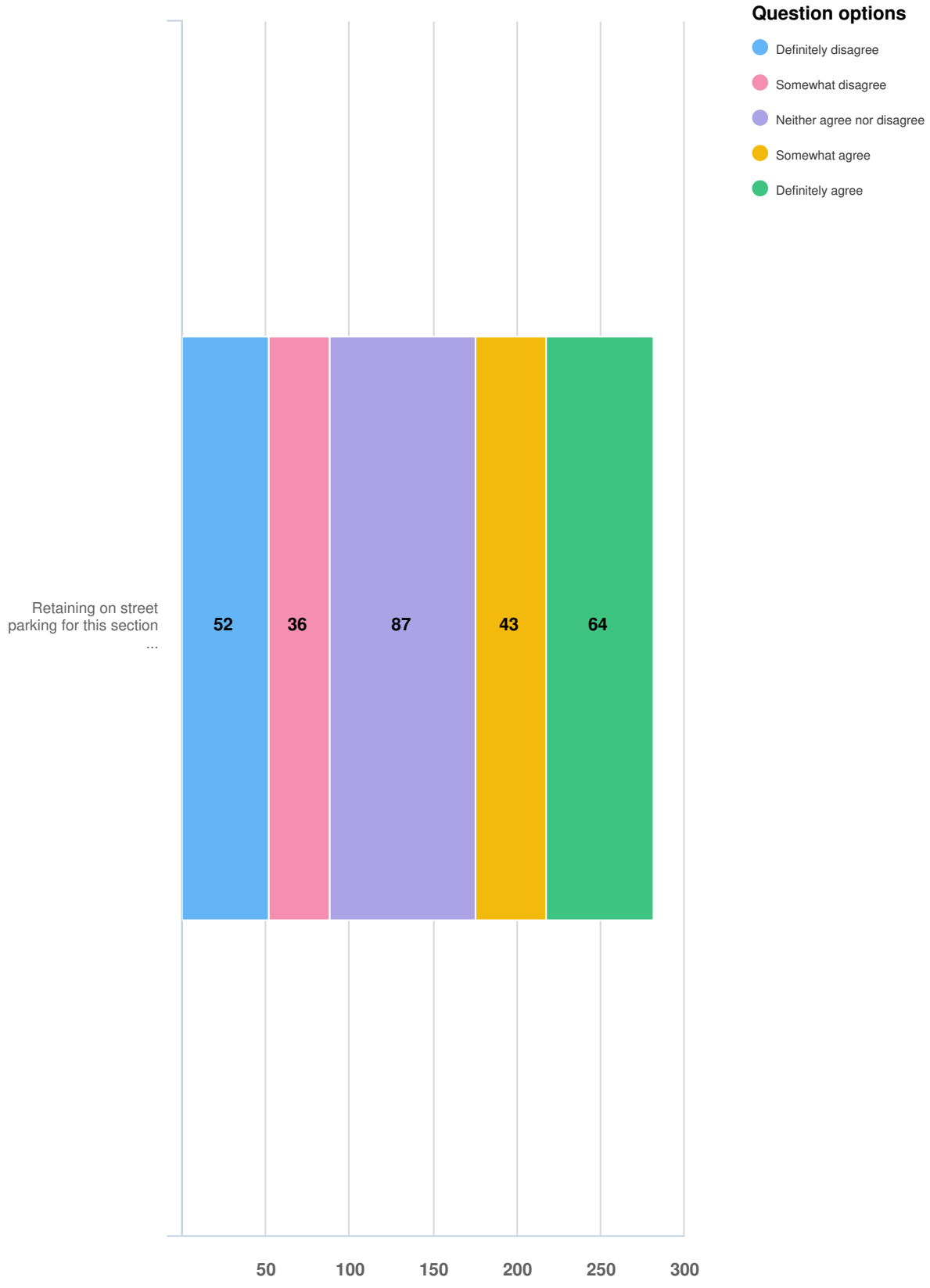


Q9 | **7th Street - I-70B to Struthers Ave. Choose between Option 1(Existing) and Option 2 (Raised Trail). Existing: bike lane on roadway with striped separation from vehicles and separate sidewalk for pedestrians. Parallel parking on both sides of roadw...**



Optional question (281 response(s), 5 skipped)
Question type: Checkbox Question

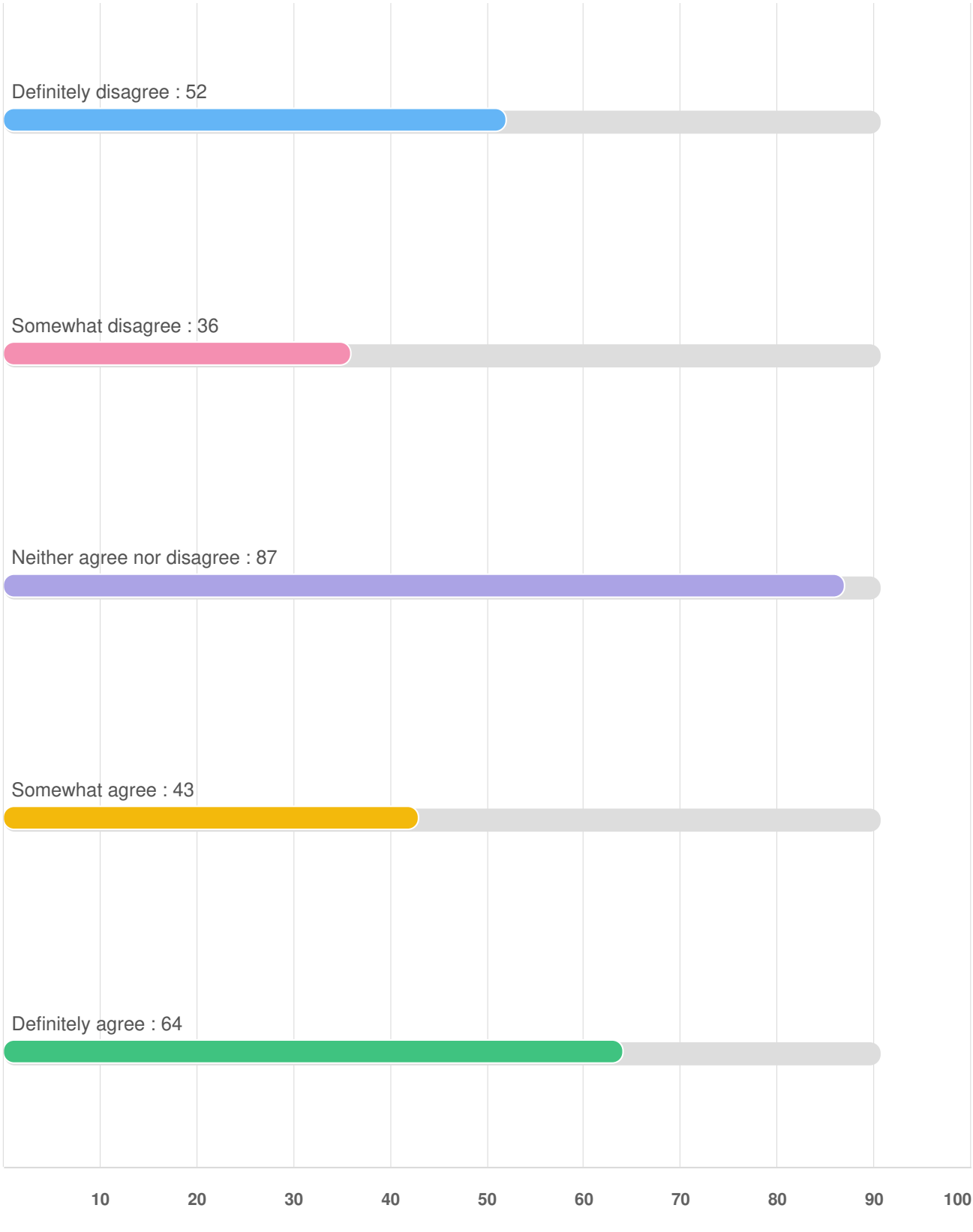
Q10 7th Street - I-70B to Struthers AveThe existing conditions for (7th Street - I-70B to Struthers Ave) includes on street parking.



Optional question (282 response(s), 4 skipped)
Question type: Likert Question

Q10 | 7th Street - I-70B to Struthers AveThe existing conditions for (7th Street - I-70B to Struthers Ave) includes on street parking.

Retaining on street parking for this section of 7th Street is important to me.



Grand Junction City Council

Workshop Session

Item #1.c.

Meeting Date:	February 3, 2025
Presented By:	TischlerBise, Mike Bennett
Department:	Community Development
Submitted By:	Tamra Allen, Community Development Director

Information

SUBJECT:

Impact Fee and Linkage Fee Study

EXECUTIVE SUMMARY:

The Grand Junction Municipal Code ("Code" or "GJMC") requires the City to update its impact fee study once every five years. The City's last fee study for transportation, police, fire, parks, and municipal facilities was completed in 2019. The City has contracted with TischlerBise to update its fee study and create a nexus study for an affordable housing linkage fee. TischlerBise has completed the Impact Fee Study Update, as well as the Linkage Fee study, both of which were presented to the City Council at the December 16 workshop and to the stakeholders on December 2, 2024. The City Council met with the Stakeholder group to receive direct feedback at a workshop on January 14, 2025. Staff is meeting with the Stakeholder group January 30, 2025, prior to this meeting and will share feedback with the Council at this workshop.

The purpose of this workshop is to discuss fee adoption and next steps.

BACKGROUND OR DETAILED INFORMATION:

TischlerBise is a fiscal, economic, and planning consulting firm specializing in fiscal/economic impact analysis, impact fees, user fees, market feasibility, infrastructure financing studies, and related revenue strategies. The firm has been providing consulting services to public agencies for more than 30 years and has prepared more than 1,000 impact fee/infrastructure financing studies in that time.

Impact fees are simple in concept but complex in delivery. Generally, the jurisdiction imposing the fee must:
(1) identify the purpose of the fee,
(2) identify the use to which the fee is to be put,
(3) show a reasonable relationship between the fee's use and the type of development

project, and
(4) account for and spend the fees collected only for the purpose(s) used in calculating the fee.

Reduced to its simplest terms, the process of calculating impact fees involves the following two steps:
1. Determine the cost of development-related capital improvements, and
2. Allocate those costs equitably to various types of development.

Code section 21.02.070(a) Development Impact Fees, provides that the impact fees described in this section (Transportation, Police, Fire, and Parks) and the administrative procedures of the section shall be reviewed at least once every five years by an independent consultant, as directed by the City Manager, to ensure that (i) the demand and cost assumptions underlying the impact fees are still valid, (ii) the resulting impact fees do not exceed the actual costs of constructing capital facilities that are of the type for which the impact fees are paid and that are required to serve new impact-generating development, (iii) the monies collected or to be collected in each impact account have been and are expected to be spent for capital facilities for which the impact fees were paid, and (iv) the capital facilities for which the impact fees are to be used will benefit the new development paying the impact fees. The City's last fee study for transportation, police, fire, parks, and municipal facilities was completed in 2019.

The City has contracted with TischlerBise to update its fee study and create a nexus study for an affordable housing linkage fee - a strategy from the adopted 2021 Housing Strategy that was readopted as a strategy in the updated 2024 Housing Strategy.

The Stakeholder Group met in July, August (fire, police, municipal facilities), November (linkage fee), and December (transportation and parks/parkland), and four community meetings were also held in July, August, November, and December. The stakeholder group also met with City Council on January 14 to provide feedback on the fees.

Information about the fee study including all fees have been made available throughout the process on https://engagegj.org/impact-fees-study.

FISCAL IMPACT:

The adoption and implementation of growth-related impact fees are a fiscal policy of the City. Fiscal impact will be considered at a future date and will depend upon the Council's consideration of an updated fee schedule. The City has contracted with TischlerBise to perform the fee study update and linkage fee study. The consultant was selected through a competitive RFP process, and services have been retained for a fee not to exceed $149,810.00.

In 2024, the city collected $5.1 million in impact fees for fire, police, parks and transportation. Based on most recent sales tax collection to collect this amount in sale tax, it would equate to a .20% sales tax increase. To collect this amount in property tax would equate to an increase of 3.55 mills.

SUGGESTED ACTION:

Discussion and Direction

Attachments

1. impact fee code section
2. Impact Fee Stakeholder List
3. Grand Junction Housing Linkage Fee_Draft_20241213
4. Grand Junction CO Dev Impact Fee Study 12.12.24
5. BBC - AMGD Grand Junction_Report Final_01172025
6. PRAB Letter Concerning the 2025 update to impact fees (1)
7. Staff Recommended Residential Impact Fees 020325 Workshop
8. Staff Recommended Non Residential Impact Fees 020325 Workshop
9. DRAFT Staff Recommendation 02.03.2025

(i) Before making any construction or alteration to a site or structure, such owner shall make application to the City for a Certificate of Appropriateness. The Director shall review such application for compliance with the Guidelines and Standards and make an initial determination and recommendation to the Board. The Director may include in that recommendation any conditions deemed appropriate to comply with the Guidelines and Standards and with the Zoning and Development Code.

(ii) The Board shall have jurisdiction to review City staff recommendations and to decide applications for Certificates of Appropriateness at a public hearing. The Board may include any conditions of approval deemed appropriate for compliance with the Guidelines and Standards. No owner shall construct or alter a structure or site in the District without first obtaining a Certificate of Appropriateness from the Board.

(iii) A decision of the Board may be appealed to City Council within 30 days of the issuance of the decision. Appeals to City Council shall be de novo.

(iv) All reviews pursuant to this subsection (2) shall determine if the new construction or alteration is compatible with the historic designation as provided in the North Seventh Street Historic Residential District Guidelines and Standards. In reviewing an application, consideration shall be given to design, siting, form, texture, setbacks, orientation, alignment, finish, material, scale, mass, height, and overall visual compatibility, according to and with reference to the applicable Guidelines and Standards of the North Seventh Street Historic Residential District. For purposes of this section, the term "compatible" shall mean consistent with, harmonious with and/or enhancing the mixture of complementary architectural styles either of the architecture of an individual structure or the character of the surrounding structures.

(h) Revocation of Designation

(1) If a building or special feature on a designated site has been altered in such a way so as to negate the features necessary to retain designation, the owner may apply to the Historic Board for a revocation of the designation or the Historic Board shall recommend revocation of the designation to the City Council in the absence of the owner's application to do so.

(2) If a designated structure is moved or demolished, the designation shall, without notice and without Historic Board recommendation, automatically terminate. If moved, a new application for designation at the new location must be made in order for designation to be considered.

(3) Upon the City Council's decision to revoke a designation, the Director shall cause a revocation notice to be sent to the property owner.

21.02.070 Development Fees

(a) Development Impact Fees

(1) Title

This section shall be known and may be cited as the "Grand Junction, Colorado, Impact Fee Ordinance" or "Impact Fee Ordinance."

(2) Authority

The City has the authority to adopt this section pursuant to Article XX, § 6 of the Colorado State Constitution, the City's home rule charter, the City's general police powers, and other laws of the State of Colorado.

(3) Application

This section shall apply to all development within the territorial limits of the City, except development exempted pursuant to GJMC 21.02.070(a)(5)(ii).

(4) Purpose

(i) The intent of this section is to ensure that new development pays a proportionate share of the cost of city parks and recreation, fire, police, and transportation capital facilities.

(ii) It is the intent of this section that the impact fees imposed on new development are no greater than necessary to defray the impacts directly related to proposed new development.

(iii) Nothing in this section shall restrict the City from requiring an applicant for a development approval to construct reasonable capital facility improvements designed and intended to serve the needs of an applicant's project, whether or not such capital facility improvements are of a type for which credits are available under GJMC 21.02.070(a)(6), Credits.

(5) Development Impact Fees to Be Imposed

(i) Fee Obligation, Payment, and Deposit

(A) Obligation to Pay and Time of Payment

Any person who causes the commencement of impact-generating development, except those exempted pursuant to GJMC 21.02.070(a)(5)(ii) shall be obligated to pay impact fees pursuant to the terms of this section. The obligation to pay the impact fees shall run with the land. The amount of the impact fees shall be determined in accordance with GJMC 21.02.070(a)(5)(iii) and the fee schedule in effect at the time of issuance of a Planning Clearance and paid to the Director at the time of issuance of a Planning Clearance. If any credits are due pursuant to GJMC 21.02.070(a)(6) those shall be determined prior to the issuance of a Planning Clearance and payment of the impact fees.

(B) Fees Promptly Deposited into City Accounting Funds

All monies paid by a fee payer pursuant to this section shall be identified as impact fees and shall be promptly deposited in the appropriate City impact fee accounting funds established and described in GJMC 21.02.070(a)(7).

(C) Extension of Previously Issued Development Approval

If the fee payer is applying for an extension of a development approval issued prior to January 1, 2020, the impact fees required to be paid shall be the net increase between the impact fees applicable at the time of the current permit

extension application and any impact fees previously paid pursuant to this section, and shall include any impact fees established subsequent to such prior payment.

(D) Fee Based on Approved Development

If the Planning Clearance is for less floor area than the entire development approved pursuant to the development approval, the fee shall be computed separately for the floor area of development covered by the Planning Clearance, and with reference to the use categories applicable to such development covered by the Planning Clearance.

(E) Permit for Change in Use, Expansion, Redevelopment, Modification

If the fee payer is applying for a Planning Clearance to allow for a change of use or for the expansion, redevelopment, or modification of an existing development, the impact fees required to be paid shall be based on the net increase in the impact fees for the new use as compared to the previous use and actual fee paid for the previous use, and shall include any impact fees established subsequent to such prior payment.

(F) Prior Conditions and/or Agreements

Any person who prior to January 1, 2020, has agreed in writing with the City, as a condition of permit approval, to pay an impact fee shall be responsible for the payment of the impact fees under the terms of such agreement, and the payment of the impact fees may be offset against any impact fees due pursuant to the terms of this section.

(G) Time of Submittal

For nonresidential and multifamily development (excluding townhomes, duplexes, and condominium residence(s)) the fee shall be calculated as of the submission of a complete application and construction commences within two years of approval. Should construction fail to commence within two years, the applicant shall pay those fees in place at the time of issuance of a Planning Clearance.

(ii) Exemptions

The following types of development shall be exempt from payment of impact fees. Any claim for exemption shall be made no later than the time when the applicant applies for the first Planning Clearance. Any claim for exemption not made at or before that time shall be waived. The Director shall determine the validity of any claim for exemption pursuant to the standards set forth below.

(A) Replacing Existing Residential Unit with New Unit

Reconstruction, expansion, alteration, or replacement of a previously existing residential unit that does not create any additional residential units.

(B) New Impact-Generating Development Creates No Greater Demand than Previous Development.

New impact-generating development that the fee payer can demonstrate will create no greater demand over and above that produced by the existing use or development.

(C) Building after Fire or Other Catastrophe

Rebuilding the same amount of floor space of a structure that was destroyed by fire or other catastrophe.

(D) Accessory Structures

Construction of unoccupied accessory structures related to a residential unit.

(E) Previous Payment of Same Amount of Impact Fees

Impact-generating development for which an impact fee was previously paid in an amount that equals or exceeds the impact fee that would be required by this section.

(F) Government

Development by the federal government, the state, school district, county or the City.

(G) Complete Development Application Approved Prior to Effective Date of Chapter

For development for which a complete application for a Planning Clearance was approved prior to January 1, 2020; and for nonresidential and multifamily development for which a complete application was submitted prior to January 1, 2020, so long as construction commences by January 1, 2022, the required fees shall be those in effect at time of submittal.

(H) Small Additions and Renovations for Residential Uses

Construction of an addition to an existing dwelling unit of 500 square feet or less, or expansion of finished space for an existing dwelling unit of 500 square feet or less. This exemption shall only be used one time for each dwelling unit and does not apply to accessory dwelling units.

(iii) Calculation of Amount of Impact Fees

(A) Impact Fee Schedule

Except for those electing to pay impact fees pursuant to GJMC 21.02.070(a)(5)(iii)(B), the impact fees applicable to the impact-generating development shall be as determined by the impact fee schedule, which is hereby adopted and incorporated herein. The impact fee schedules are based on the impact fee studies. It applies to classes of land uses within the City, differentiates between types of land uses, and is intended to defray the projected impacts caused by proposed new development on city capital facilities. The determination of the land use category(ies) in the impact fee schedules that are applicable to

impact-generating development shall be made by the Director with reference to the impact fee studies and the methodologies therein; the then-current edition of the ITE Trip Generation Manual, published by the Institute of Traffic Engineers; the City zoning and development code; the then-current land use approvals for the development; and any additional criteria set forth in duly promulgated administrative rules.

a. Annual Adjustment of Impact Fees to Reflect Effects of Inflation

The impact fee schedule shall be adjusted annually and/or biannually consistent with the impact fee study. Commencing on January 1, 2023, and on January 1st of each subsequent year, each impact fee amount set forth in the impact fee schedule shall be adjusted for inflation, as follows:

1. For transportation impact fees, the fees shall be adjusted for inflation based on the latest 10-year average of the Colorado Department of Transportation Construction Cost Index, published quarterly by CDOT.
2. For fire, police, and parks the fees shall be adjusted for inflation based on the most recent Construction Cost Index published by Engineering News Record.
3. The adjusted impact fee schedule shall become effective immediately upon calculation and certification by the City Manager and shall not require additional action by the City Council to be effective.

b. Impact-Generating Development Not Listed in the Impact Fee Schedule

If the proposed impact-generating development is of a type not listed in the impact fee schedule, then the impact fees applicable are those of the most nearly comparable type of land use. The determination of the most nearly comparable type of land use shall be made by the Director with reference to the impact fee study and City code.

c. Mix of Uses

If the proposed impact-generating development includes a mix of those uses listed in the impact fee schedule, then the impact fees shall be determined by adding the impact fees that would be payable for each use as if it was a freestanding use pursuant to the impact fee schedule.

(B) Independent Fee Calculation Study

In lieu of calculating the amount(s) of impact fees by reference to the impact fee schedule, a fee payer may request that the amount of the required impact fee be determined by reference to an independent fee calculation study.

a. Preparation of Independent Fee Calculation Study

If a fee payer requests the use of an independent fee calculation study, the fee payer shall be responsible for retaining a qualified professional (as

determined by the Director) to prepare the independent fee calculation study that complies with the requirements of this section, at the fee payer's expense.

b. General Parameters for Independent Fee Calculation Study

Each independent fee calculation study shall be based on the same level of service standards and unit costs for the capital facilities used in the impact fee study and shall document the relevant methodologies and assumptions used.

c. Procedure

1. An independent fee calculation study shall be initiated by submitting an application to the Director together with an application fee to defray the costs associated with the review of the independent fee calculation study.
2. The Director shall determine if the application is complete. If it is determined the application is not complete, a written statement outlining the deficiencies shall be sent by mail to the person submitting the application. The Director shall take no further action on the application until it is complete.
3. When it is determined the application is complete, the application shall be reviewed by the Director and a written decision rendered on whether the impact fees should be modified, and, if so, what the amount should be, based on the standards in GJMC 21.02.070(a)(6)(i).

d. Standards

If, on the basis of generally recognized principles of impact analysis, the Director determines the data, demand information and assumptions used by the applicant to calculate the impact fees in the independent fee calculation study more accurately measure the proposed impact-generating development's impact on the appropriate capital facilities, the impact fees determined in the independent fee calculation study shall be deemed the impact fees due and owing for the proposed development. The fee adjustment shall be set forth in a fee agreement. If the independent fee calculation study fails to satisfy these requirements, the impact fees applied shall be the impact fees established in the impact fee schedule.

(6) Credits

(i) Standards

(A) General

Any person causing the commencement of impact-generating development may apply for credit against impact fees otherwise due, up to but not exceeding the full obligation of impact fees proposed to be paid pursuant to the provisions of

this section, for any contributions or construction (as determined appropriate by the Director) accepted in writing by the City for capital facilities. Credits against impact fees shall be provided only for that impact fee for which the fee is collected.

(B) Valuation of Credits

a. Construction

Credit for construction of capital facilities shall be valued by the City based on complete engineering drawings, specifications, and construction costs estimates submitted by the fee payer to the City. The Director shall determine the amount of credit due, if any, based on the information submitted, or, if he/she determines the information is inaccurate or unreliable, then on alternative engineering or construction costs determined by and acceptable to the Director.

b. Contributions

Contributions for capital facilities shall be based on the value of the contribution or payment at the time it is made to the City.

(C) When Credits Become Effective

a. Construction

Credits for construction of capital facilities shall become effective after the credit is approved pursuant to this section, a written credit agreement is entered into and (a) all required construction has been completed and has been accepted by the City, (b) suitable maintenance and financial warranty has been received and approved by the City, and (c) all design, construction, inspection, testing, financial warranty, and acceptance procedures have been completed in compliance with all applicable City requirements. Approved credits for the construction of capital facilities may become effective at an earlier date if the fee payer posts security in the form of an irrevocable letter of credit, escrow agreement, or cash and the amount and terms of such security are acceptable by the City Manager. At a minimum, such security must be in the amount of the approved construction credit plus 20 percent, or an amount determined to be adequate to allow the City to construct the capital facilities for which the credit was given, whichever is higher.

b. Contribution

Credits for contributions for capital facilities shall become effective after the credit is approved in writing pursuant to this section, a credit agreement is entered into and the contribution is made to the City in a form acceptable to the City.

c. Transferability of Credits

Credits for contributions, construction or dedication of land shall be transferable within the same development and for the same capital facility

for which the credit is provided but shall not be transferable outside the development. Credit may be transferred pursuant to these terms and conditions by a written instrument, to which the City is a signatory, that clearly identifies which credits issued under this section are to be transferred. The instrument shall be signed by both the transferor and transferee, and the document shall be delivered to the Director for registration of the change in ownership. If there are outstanding obligations under a credit agreement, the City may require that the transferor or transferee or both (as appropriate) enter into an amendment to the credit agreement to assure the performance of such obligations.

d. Total Amount of Credit

The total amount of the credit shall not exceed the amount of the impact fees due for the specific facility fee (e.g., fire, police, parks).

e. Capital Contribution Front-Ending Agreement

The City may enter into a capital contribution front-ending agreement with any developer who proposes to construct capital facilities to the extent the fair market value of the construction of these capital facilities exceeds the obligation to pay impact fees for which a credit is provided pursuant to this section. The capital contribution front-ending agreement shall provide proportionate and fair share reimbursement linked to the impact-generating development's use of the capital facilities constructed.

(ii) Procedure

(A) Submission of Application

In order to obtain a credit against impact fees, the fee payer shall submit an offer for contribution or construction. The offer shall be submitted to the Director and must specifically request a credit against impact fees.

(B) Contribution Offer Contents

The offer for contribution credit shall include the following:

a. Construction

If the proposed credit involves construction of capital facilities:

1. The proposed plan for the specific construction certified by a duly qualified and licensed Colorado engineer;
2. The projected costs for the suggested improvement, which shall be based on local information for similar improvements, along with the construction timetable for the completion thereof. Such estimated costs may include the costs of construction or reconstruction, the costs of all labor and materials, the costs of all lands, property, rights, easements and franchises acquired, financing charges, interest prior to and during construction and for one year after completion of construction, costs of

plans and specifications, surveys of estimates of costs and of revenues, costs of professional services, and all other expenses necessary or incident to determining the feasibility or practicability of such construction or reconstruction;

3. A statement made under oath of the facts that qualify the fee payer to receive a contribution credit.

b. Contribution

If the proposed offer involves a credit for any contribution for capital facilities, the following documentation shall be provided:

1. A copy of the Planning Clearance for which the contribution was established;
2. If payment has been made, proof of payment; or
3. If payment has not been made, the proposed method of payment.

(C) Determination of Completeness

The Director shall determine if the application is complete. If it is determined that the proposed application is not complete, the Director shall send a written statement to the applicant outlining the deficiencies. No further action shall be taken on the application until all deficiencies have been corrected.

(D) Decision

The Director shall determine if the offer for credit is complete and if the offer complies with the standards in GJMC 21.02.070(a)(6)(i).

(iii) Credit Agreement

If the offer for credit is approved by the Director, a credit agreement shall be prepared and signed by the applicant and the City Manager. The credit agreement shall provide the details of the construction or contribution of capital facilities, the time by which it shall be dedicated, completed, or paid, and the value (in dollars) of the credit against the impact fees the fee payer shall receive for the construction or contribution.

(iv) Accounting of Credits

Each time a request to use approved credits is presented to the City, the Director shall reduce the amount of the impact fees, and shall note in the City's records and the credit agreement the amount of credit remaining, if any.

(7) Impact Fee Accounts

(i) Establishment of Impact Fee Accounts

(A) Establishment of Impact Fee Accounts

For the purpose of ensuring impact fees collected pursuant to this section are designated for the mitigation of capital facility impacts reasonably attributable to new impact-generating development that paid the impact fees.

(B) Establishment of Impact Fee Accounts

Impact fees shall be deposited into five accounts (collectively, Impact Fee Accounts): transportation, parks and recreation, capital facilities, fire capital facilities, and police capital facilities accounts.

(ii) Deposit and Management of Impact Fee Accounts

(A) Managed in Conformance with § 29-1-801 C.R.S. et seq

The Impact Fee Accounts shall bear interest and shall be managed in conformance with § 29-1-801 C.R.S. et seq. No impact fees(s) or other similar development land development charge(s) shall be imposed or collected except pursuant to a schedule(s) that is(are) (a) adopted by ordinance by the City Council, pursuant to a legally sufficient study(ies); (b) generally applicable to a broad class of property; and (c) serves to defray the projected impacts on capital facilities caused by development. The City shall from time to time quantify the reasonable impacts of proposed development on existing capital facilities and establish the impact fee(s) or land development charge(s) at a level no greater than necessary to defray such impacts directly related to proposed development. No impact fee or other similar land development charge shall be imposed to remedy any deficiency in capital facilities that exists without regard to the proposed development.

(B) Immediate Deposit of Impact Fees in City Accounting Funds

All Parks and Recreation, Fire, Police, and Transportation impact fees collected by the City pursuant to this section shall be promptly deposited into the appropriate interest bearing accounting fund(s) ("Impact Fee Accounts") of the City designated, as allowed by § 29-1-803 C.R.S., by category, account or fund as determined by the City Manager or their designee. Any interest or other income earned on money deposited shall be credited to the Impact Fees Account(s) and no other City accounting fund(s).

(C) Interest Earned on Impact Fee Account Monies

Any impact fees not immediately expended shall be deposited as provided in this section. Interest earned on money in the Impact Fee Accounts shall be considered part of such account(s) and shall be subject to the same restrictions on use applicable to the impact fees deposited in such account.

(D) Income Derived Retained in Accounts until Spent

All income derived from the deposits shall be retained in the accounts until spent pursuant to the requirements of this section.

(E) Expenditure of Impact Fees

Monies in each account shall be considered to be spent in the order collected, on a first-in/first-out basis.

(iii) Annual Report

At least once annually the City will publish on its official website a report for the most recent fiscal year stating the amount of each Impact fee and/or land development charge collected to the Impact Fee Accounts, the average annual interest rate on each account and the total amount disbursed from each account.

(8) Expenditure of Impact Fees

(i) Capital Facilities Impact Fees

The monies collected from each capital facilities impact fee shall be used only to acquire or construct capital facilities within the City. Each and all capital facilities impact fees may, as determined by the City Council, be expended anywhere within the City notwithstanding the location of the project for which the impacts were paid.

(ii) No Monies Spent for Routine Maintenance, Rehabilitation or Replacement of Capital Facilities

No monies shall be spent for periodic or routine maintenance, rehabilitation, or replacement of any City transportation, parks and recreation, fire, or police capital facilities.

(iii) No Monies Spent to Remedy Deficiencies Existing on Effective Date of Chapter

No monies shall be spent to remedy existing deficiencies in transportation capital facilities, parks and recreation capital facilities, fire capital facilities, or police capital facilities.

(iv) Transportation Impact Fees

Transportation impact fee monies may be spent for the reconstruction and replacement of existing roads, the construction of new road systems and may be used to pay debt service on any portion of any current or future general obligation bond or revenue bond issued after July 6, 2004, and used to finance major road system improvements. All Transportation Impact Fees may, as determined by the City Council, be expended anywhere within the City notwithstanding the location of the project for which the impacts were paid.

(9) Refund of Impact Fees Paid

(i) Refund of Impact Fees Not Spent or Encumbered in 10 Years

A fee payer or the fee payer's successor-in-interest may request a refund of any impact fees not spent or encumbered within 10 years from the date the fee was paid, along with interest actually earned on the fees. Impact fees shall be deemed to be spent on the basis of the first fee collected shall be the first fee spent.

(ii) Procedure for Refund

The refund shall be administered by the Director, and shall be undertaken through the following process:

(A) Submission of Refund Application

A fee payer or successor-in-interest shall submit within one year following the end of the tenth year from the date on which the Planning Clearance was issued for which a refund is requested. The refund application shall include the following information:

a. A copy of the dated receipt issued for payment of the impact fee;

b. A copy of the Planning Clearance.

(B) Determination of Completeness

The Director shall determine if the refund application is complete. If the application is not complete, the Director shall mail the applicant a written statement outlining the deficiencies. The Director shall take no further action on the refund application until it is complete.

(C) Decision on Refund Application

When the refund application is complete, it shall be reviewed and approved if the Director determines a fee has been paid which has not been spent within the 10-year period. The refund shall include the fee paid plus interest actually earned on the impact fee.

(iii) Limitations

(A) Expiration of Planning Clearance without Possibility of Extension

If a fee payer has paid an impact fee required by this section and obtained a Planning Clearance, and the Planning Clearance for which the impact fee was paid later expires without the possibility of further extension, then the fee payer or the fee payer's successor-in-interest may be entitled to a refund of the impact fee paid, without interest. In order to be eligible to receive a refund of impact fees pursuant to this subsection, the fee payer or the fee payer's successor-in-interest shall be required to submit an application for such refund to the Director within 30 days after the expiration of the Planning Clearance for which the fee was paid. If a successor-in-interest claims a refund of the impact fee, the City may require written documentation that such rights have been conveyed to the claimant. If there is uncertainty as to the person to whom the refund is to be paid or if there are conflicting demands for such refund, the City Attorney may interplead such funds.

(iv) No Refund If Project Demolished, Destroyed, Altered, Reconstructed or Reconfigured

After an impact fee has been paid pursuant to this section, no refund of any part of such fee shall be made if the development for which the impact fee was paid is later demolished, destroyed, or is altered, reconstructed, reconfigured, or changed in use so as to reduce the size or intensity of the development or the number of units in the development.

(10) Low-Moderate Income Housing

In order to promote the provision of low-moderate income housing in the City, the City Council may agree in writing to pay some or all of the impact fees imposed on a proposed low or moderate income housing development by this section from other unrestricted funds of the City. Payment of impact fees on behalf of a fee payer shall be at the discretion of the City Council and may be made pursuant to goals and objectives adopted by the City Council to promote housing affordability.

(11) Administration, Appeals and Updates of Determination or Decision of Director to City Manager

(i) Review Every Five Years

The impact fees described in this section and the administrative procedures of this section shall be reviewed at least once every five years by an independent consultant, as directed by the City Manager, to ensure that (i) the demand and cost assumptions underlying the impact fees are still valid, (ii) the resulting impact fees do not exceed the actual costs of constructing capital facilities that are of the type for which the impact fees are paid and that are required to serve new impact-generating development, (iii) the monies collected or to be collected in each impact account have been and are expected to be spent for capital facilities for which the impact fees were paid, and (iv) the capital facilities for which the impact fees are to be used will benefit the new development paying the impact fees.

(ii) Appeal

(A) Director Determination or Decision

Any determination or decision made by the Director under this section may be appealed to the City Manager by filing with the City Manager within 30 days of the determination or decision for which the appeal is being filed: (A) a written notice of appeal on a form provided by the City Manager, (B) a written explanation of why the appellant feels the determination or decision is in error, and (C) an appeal fee established by the City.

(B) City Manager Review

The City Manager shall fix a time and place for hearing the appeal, and shall mail notice of the hearing to the appellant at the address given in the notice of appeal. The hearing shall be conducted at the time and place stated in the notice given by the City Manager. At the hearing, the City Manager shall consider the appeal and either affirm or modify the decision or determination of the Director based on the relevant standards and requirements of this section. The decision of the City Manager shall be final.

(C) Administrative Rules

The City Manager and Director, and their respective designees, may from time to time establish written administrative rules, not inconsistent with the provisions of this section, to facilitate the implementation of this section as provided in GJMC

21.02.010. Without limiting the foregoing, the Director is authorized to establish written administrative rules, not inconsistent with the provisions of this section, for use in the determination of the land use category(ies) in the impact fee schedule that is applicable to impact-generating development. All administrative rules adopted pursuant hereto shall be published in written form and copies thereof maintained in the offices of the Director and City Clerk. Administrative rules adopted pursuant hereto and a copy of such rules shall be made available without charge to fee payers and other persons requesting a copy thereof.

(12) Impact Fee Schedule – Fire, Police, Parks and Recreation, and Transportation

Table 21.02-8: Impact Fee Schedule (2023) Fire, Police, Parks and Recreation & Transportation

		Fire	Police	Parks & Recreation	Transportation
Single-Family					
<1,250 sq. ft. of living area	Dwelling	$751	$323	$1,333	$3,078
1,250 to 1,649 sq. ft. of living area	Dwelling	$751	$323	$1,333	$4,711
1,650 to 2,299 sq. ft. of living area	Dwelling	$751	$323	$1,333	$5,377
2,300 sq. ft. or more of living area	Dwelling	$751	$323	$1,333	$7,042
Manufactured Home in a Manufactured Housing Community	Pad	$751	$323	$1,333	$3,196
Multi-family	Dwelling	$494	$212	$897	$2,881
RV Park	Pad	$494	$212	---	$3,196
Hotel/Lodging	1,000 sf	$517	$218	---	$3,972 [1]
Retail/Commercial	1,000 sf	$517	$218	---	$7,227
Convenience Commercial (Gas station/Drive Thru)	1,000 sf	$517	$218	---	$15,364
Office	1,000 sf	$202	$86	---	$5,799
Institutional/ Public	1,000 sf	$202	$86	---	$1,426
Industrial	1,000 sf	$70	$30	---	$2,025
Warehousing	1,000 sf	$36	$15	---	$921

Notes:
[1] Hotel/Lodging Transportation Fee calculated per Room
Fees will be increased annually for inflation

(b) School Land Dedication Fee

(1) Standard for School Land Dedication

Dedication of suitable school lands for school purposes shall be required of any development if the school district determines that such development includes within it

land which is necessary for implementing a school plan. In all other cases, the fee required under GJMC 21.02.070(b)(1)(ii) shall be paid in lieu of a school land dedication.

(i) Standard for Fee in Lieu of School Land Dedication

Except in cases where a school land dedication is required in accordance with this section, or an exemption under this section applies, all development and all projects which contain a new dwelling shall be subject to fees in lieu of school land dedication (SLD fee) in an amount per dwelling unit determined by resolution of the City Council. SLD fees shall be collected by the City for the exclusive use and benefit of the school district in which such development is located and shall be expended by the school district solely to acquire real property or interests in real property reasonably needed for development or expansion of school sites and facilities, or to reimburse the school district for sums expended to acquire such property or interests. Revenues from such fees shall be used only for such purposes.

(ii) Payment, Prepayment, Exemption, Credit, and Refund of SLD Fee

(A) No building permit shall be issued for a dwelling, multiple-family dwelling or multifamily dwelling which is or contains one or more dwelling units until and unless the SLD fee for such dwelling unit in effect at the time such permit is applied for has been paid as required by this section.

(B) Nothing in GJMC 21.02.070(b)(1)(i) shall preclude a holder of a development permit for a residential development or mixed-use development containing a residential development component from prepaying the SLD fees to become due under this section for one or more dwellings, multiple-family dwellings or multifamily dwellings to be constructed in such development. Such prepayment shall be made upon the filing of a Final Plat for residential development, at the SLD fee rate then in effect and in the amount which would have been due had a building permit application for such dwelling been pending at the time of prepayment. A subsequent building permit for a dwelling, multiple-family dwelling or multifamily dwelling which is or contains one or more dwelling units for which the SLD fees have been prepaid shall be issued without payment of any additional SLD fees. However, if such permit would allow additional dwelling units for which SLD fees have not been prepaid, such permit shall not be issued until the SLD fees for such additional dwelling units have been paid at the rate per dwelling unit in effect at the time the building permit application was made.

(C) Any prepayment of SLD fees in accordance with this section shall be documented by a memorandum of prepayment which shall contain, at minimum, the following:

a. The legal description of the real property subject to residential development for which an SLD fee is being prepaid;

b. A description of the development permit issued concerning such real property, and a detailed statement of the SLD fees owed pursuant to such permit which are being prepaid;

c. The notarized signatures of the record owner of the property or their duly authorized agents; and

d. The notarized signature of the County Manager indicating approval of the prepayment plan, if the fee was paid while the real property was outside the limits of the City; or if the fee was paid at the time the real property was within the limits of the City, of the City Manager, indicating approval of the prepayment plan.

(iii) Exemptions

The following shall be exempted from payment of the SLD fee:

(A) Alterations or expansion of an existing building except where the use is changed from nonresidential to residential and except where additional dwelling units result;

(B) The construction of accessory buildings or structures;

(C) The replacement of a destroyed or partially destroyed building or structure with a new building or structure of the same size and use;

(D) The installation of a replacement mobile home on a lot or other parcel when a fee in lieu of land dedication for such mobile home has previously been paid pursuant to this section or where a residential mobile home legally existed on such site on or before the Effective Date of the ordinance codified in this section;

(E) Nonresidential buildings, nonresidential structures, or nonresidential mobile homes;

(F) Nursing homes, adult foster care facilities or specialized group facilities; and

(G) City- or County-approved planned residential developments that are subject to recorded covenants restricting the age of the residents of said dwelling units such that the dwelling units may be classified as housing for older persons pursuant to the Federal Fair Housing Amendments Act of 1988.

(iv) Credits

(A) An applicant for a development permit (or a holder of such a permit) who owns other suitable school lands within the school district in which the development is located may offer to convey such lands to the school district in exchange for credit against all or a portion of the SLD fees otherwise due or to become due. The offer must be in writing, specifically request credit against fees in lieu of school land dedication, and set forth the amount of credit requested. If the City and the school district accept such offer, the credit shall be in the amount of the

value of the suitable school lands conveyed, as determined by written agreement between the City, the school district and the permit holder or applicant.

(B) Credit against SLD fees otherwise due or to become due will not be provided until good and sufficient title to the property offered under this subsection is conveyed to and accepted by the school district. Upon such conveyance, the school district and the City shall provide the applicant with a letter or certificate setting forth the dollar amount of the credit, the reason for the credit, and a description of the project or development to which the credit shall be applied.

(C) Credits shall not be transferable from one project or development to another.

(v) Refund of Fees Paid

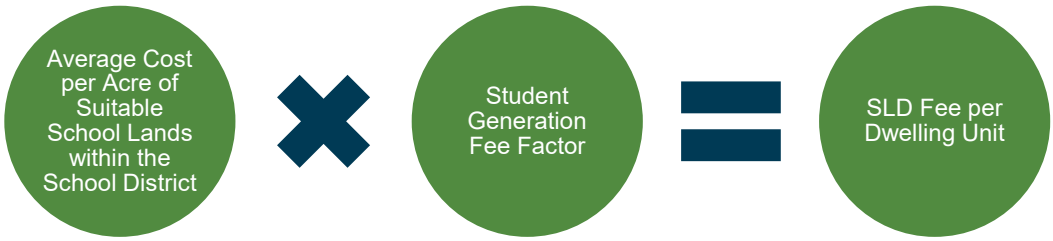
(A) Any SLD fee which has not been expended by the school district within five years of the date of collection shall be refunded, with interest at the rate of five percent per annum compounded annually, to the person who paid the fee. Prior to such refund, such amount shall be reduced by an amount equal to three percent of the principal amount to be refunded, for the costs incurred by the City in the refund of such fee. The City shall give written notice by U.S. mail to the person who paid the fee at their address as reflected in the records of the Mesa County Clerk and Recorder. If such person does not file a written claim for such refund with the City within 90 days of the mailing of such notice, such refund shall be forfeited and shall be retained and used for the purposes set forth in this section.

(B) The City Council may, upon the school district's request, extend the five-year period of time specified in GJMC 21.02.070(b)(1)(v)(A) upon a showing that such extension is reasonably necessary in order for the school district to complete or close a purchase transaction entered into in writing by such district prior to expiration of such period, or to give the school district an opportunity to exercise a purchase option it acquired prior to expiration of such period. Such request shall be made at a public hearing of the City Council. In no event shall any extension of time exceed an additional five-year period.

(2) Fees in Lieu of School Land Dedication (SLD Fees)

(i) SLD fees shall be collected and held in trust for the use and benefit of the school district containing the residential development for which the fee is collected. Such fees shall be expended by the school district to acquire additional real property for expansion of school facilities and construction of new school facilities necessitated by new residential development in the school district, or to reimburse the school district for sums expended to acquire such property. The amount of the SLD fee shall be based on a methodology which takes into account the student generation rates of new residential development, the quantity of land required to build new school facilities on a per pupil basis, and the anticipated cost of acquiring suitable school lands in the school district to expand existing school facilities and construct new school facilities to accommodate new residential development without decreasing current levels of educational services.

(ii) The SLD fee and the value of the variables in the formula to determine the SLD fee shall be set by resolution of the City Council in accordance with the following formula:



(For example, if the average cost of suitable school lands within the school district is $15,000 per acre and the student generation fee factor is 0.023, the SLD fee per dwelling unit would be $15,000 x 0.023, or $345.00.)

(iii) The average cost per acre of suitable school lands within the school district ("average cost per acre for SLD fee") and the student generation fee factor ("SGF factor") shall be determined by City Council. Before City Council considers modification of either, a 60-day prior written notice shall be provided to the school district. If a written request for a public hearing specifying which factor, the average cost per acre for SLD fee and/or the SGF factor, the school district wants to be heard on is received by the City from the school district at least 30 days before the matter is scheduled to be determined by City Council, a public hearing shall occur. At a hearing where City Council is considering the modification of the average cost per acre for SLD fee, City Council shall consider the school district's long range capital improvement plans and any other evidence, comments or recommendations submitted by the school district. At a hearing where City Council is considering the modification of the SGF factor, City Council shall consider the school district's school facilities plan currently in place, the methodology and data supporting the proposed modification, and any evidence, comments or recommendations submitted by the school district.

(iv) The SLD fee in effect as of January 1, 2006, was $460.00. The SGF factor used to determine the SLD fee was 0.023. This SLD fee and SGF factor shall continue until otherwise modified by City Council as set forth in this Code.

Impact Fee Stakeholder Group

#	Organization/Group	Name
1.	HBA of Western Colorado	Diane Schwenke
2.	Western Colorado Contractors' Association	Shawna Grieger
3.	Grand Junction Area Realtor's Association	Hogan Peterson
4.	Grand Junction Chamber of Commerce	Candace Carnahan, Primary Evan Walton, Secondary
5.	Latino Chamber of Commerce	Jorge Pantoja
6.	Grand Junction Economic Partnership	Curtis Englehart
7.	Grand Valley RTPO/Grand Valley Transit	Dana Brosig
8	Urban Trails Committee	Dr. Stephen Meyer
9.	Downtown Development Authority	TBD
10.	Parks & Recreation Advisory Board	Bill Findlay, Primary Lisa Whelan, Secondary (in July)
11.	Grand Junction Housing Authority	Jill Norris
12.	Non-profit Housing Representative	Emilee Powell
13.	Citizen's Police Academy Graduate	Laurel Walters
14	Local Fire Department representative	Steve Skulski
15.	Community Members at-large	Chuck McDaniel
16.	Community Members at-large	Charlie Gechter
17.	Community Members at-large	Orin Zyvan
18.	Community Members at-large	Ken Scissors
19.	Community Members at-large	Christi Reece

Affordable Housing Linkage Fee Support Study

Prepared for:

City of Grand Junction, Colorado

DRAFT

December 13, 2024

TischlerBise
FISCAL | ECONOMIC | PLANNING

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Bethesda, MD 20816
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EXECUTIVE SUMMARY

The City of Grand Junction, Colorado, retained TischlerBise, Inc., to develop an Affordable Housing Linkage Fee Support Study. The purpose of this report is to define and analyze the linkage between nonresidential development[1] and the demand for affordable housing. Through the analysis of existing types of nonresidential development, income levels of employees, and the composition of worker households by size of household, this analysis determines the demand for affordable housing created by each type of nonresidential development. The study then determines nonresidential development's share of the City's cost to provide the demanded affordable housing as the affordable housing linkage fee.

Maximum supportable affordable housing linkage fees are shown in Figure 1 based on the assumptions included in this study. Based on the findings in the study, this is the maximum supportable fee amount (per 1,000 square feet) reflecting the nexus between the demand for affordable housing from different types of nonresidential development and the cost of housing in Grand Junction. Maximum supportable linkage fees *per job* are also provided and shown in Figure 2. Affordable housing linkage fees may be adopted at levels lower than the maximum supportable fees.

Figure 1: Maximum Supportable Affordable Housing Linkage Fees by Land Use

				Linkage Fees Per 1,000 Sq. Ft.[1]						
Household Income Level	Housing Prototype	Affordability Gap per Unit	Estimated City Funding % Share[2]	Retail / Commercial	Convenience Commercial	Office	Institutional	Industrial	Warehousing	Lodging
			10%							
50% AMI (Rental)	Rental	$279,900	$27,990	$2,323	$10,216	$252	$1,777	$42	$0	$1,008
60% AMI (Rental)	Rental	$263,900	$26,390	$2,718	$12,007	$620	$106	$53	$13	$1,227
80% AMI (Owner)	Ownership	$167,895	$16,790	$1,822	$8,009	$1,436	$722	$101	$34	$999
100% AMI (Owner)	Ownership	$111,994	$11,199	$745	$3,281	$1,025	$482	$90	$28	$0
Total				**$7,608**	**$33,513**	**$3,333**	**$3,087**	**$286**	**$75**	**$3,234**
									Per Lodging Room[3]	*$1,940*
									Per RV Park Site[4]	*$174*

1. TischlerBise analysis (housing demand per 1,000 square feet of bulding area multiplied by affordability gap); assumes 35% worker households in Grand Junction.
2. See supporting figures.
3. Converted from square feet based on 600 square feet of gross building area per room for lodging.
4. RV Park jobs per site of .05 multiplied by Lodging land use fee per job ($3,477). See Appendix B for further detail.

Figure 2. Maximum Supportable Affordable Housing Linkage Fees per Job

	Retail / Commercial	Convenience Commercial	Office	Institutional	Industrial	Warehousing	Lodging
Linkage Fee per 1,000 Sq. Ft.	$7,608	$33,513	$3,333	$3,087	$286	$75	$3,234
Jobs per 1,000 Sq. Ft.	2.12	9.35	3.26	2.86	1.16	0.34	0.93
Linkage Fee per Job	**$3,589**	**$3,584**	**$1,022**	**$1,079**	**$247**	**$221**	**$3,477**

[1] Given the nature of the Grand Junction economy—namely, that residential development does not generate significant permanent job creation, TischlerBise's recommendation is to focus the linkage fee on nonresidential development and pursue other approaches for residential mitigation.

METHODOLOGY

The linkage fee analysis is comprised of two parts: (1) Mitigation Determination and (2) Linkage Fee Calculation. The following two diagrams outline the process under each part.

Figure 3. Mitigation Determination

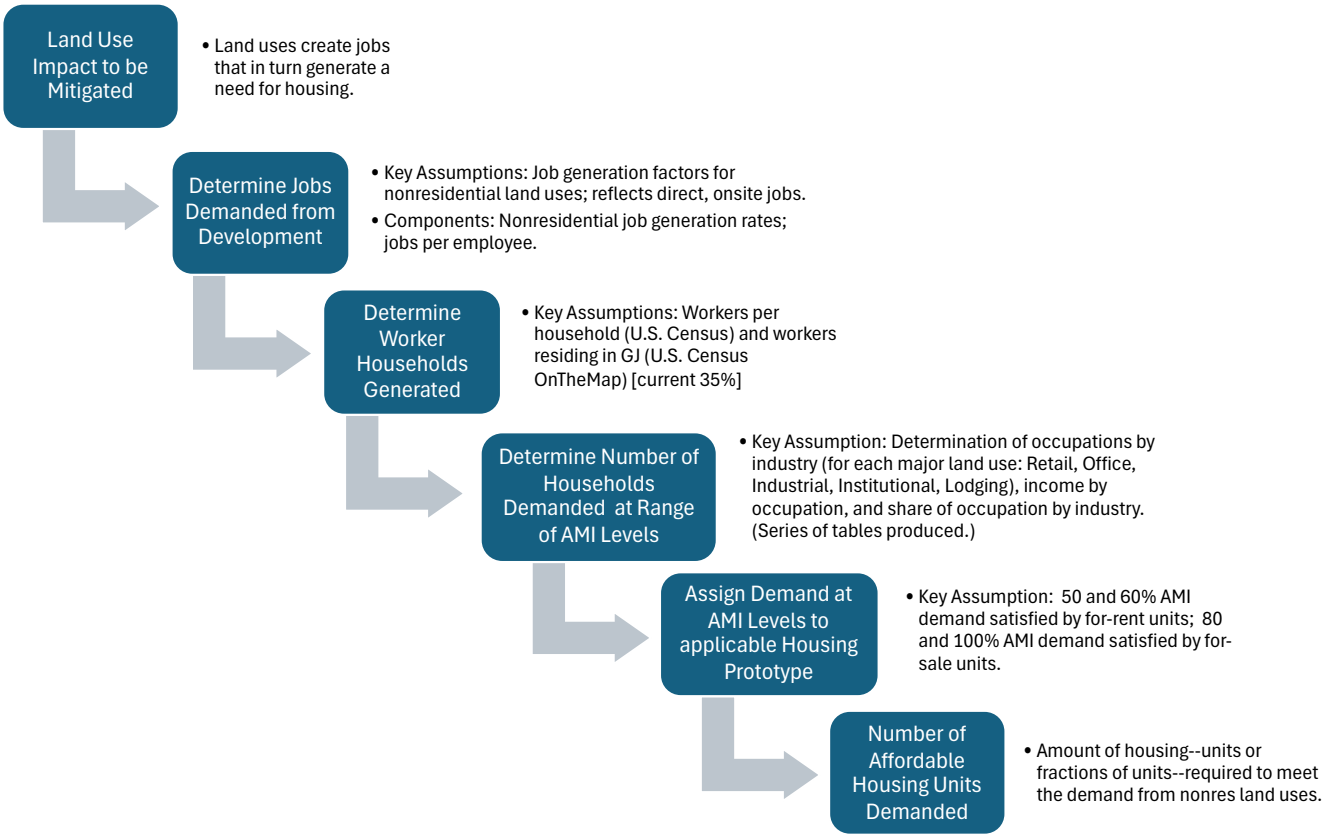
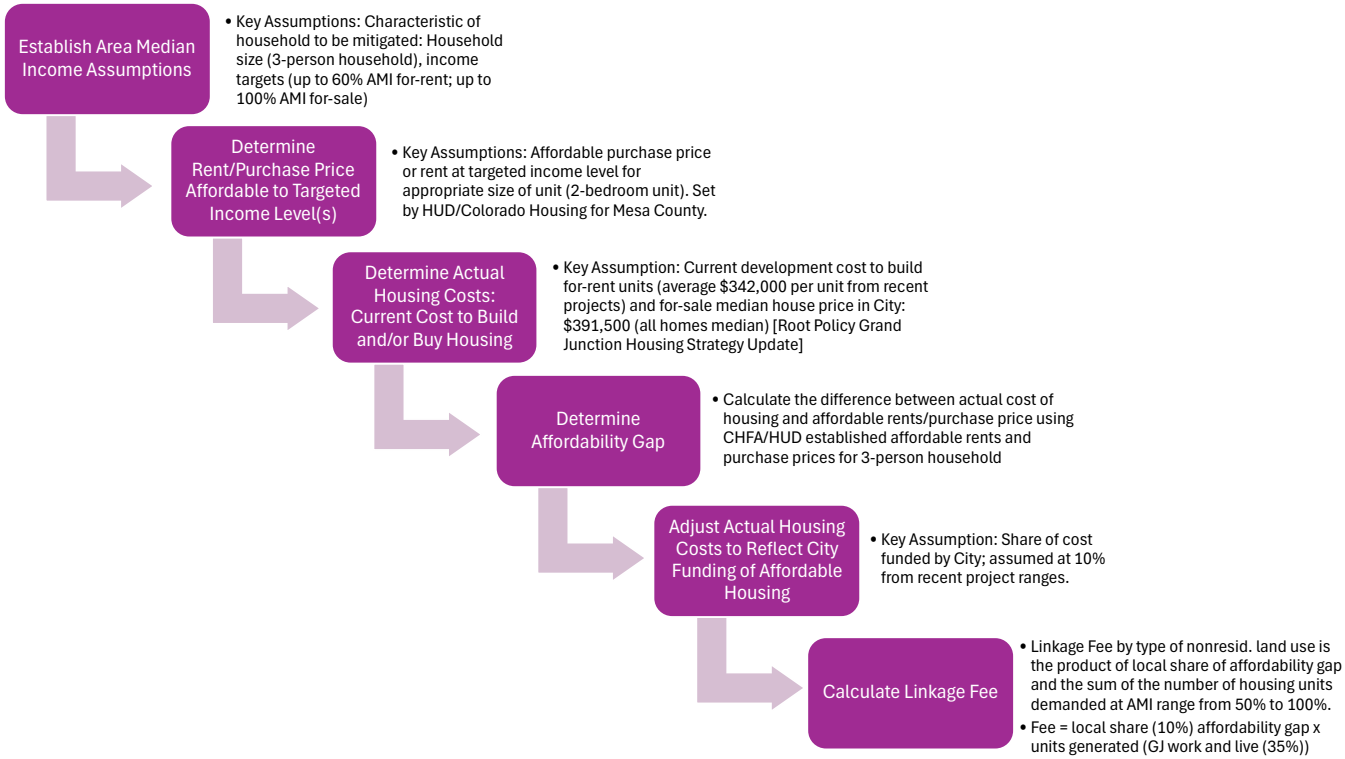


Figure 4. Linkage Fee Calculation



Each of the steps above is described in greater detail in the body of the report. The end point for the Affordable Housing Linkage Fee Support Study is the determination of demand for affordable housing units in the City of Grand Junction from different types of nonresidential development and to quantify the respective land use's share of the cost to provide affordable housing. The following elements are included in the study along with a reference to the corresponding section of this report:

Mitigation Determination

1. Jobs generated from different types of nonresidential development (Report section: "Building Types and Industries");
2. Number of workers estimated to be generated due to that development (Report section: "Worker Households");
3. Income level of the workers and worker households generated which entails determining the following:
    a. Type of occupations of the workers generated (Report section: "Occupations");
    b. Average salaries of those workers (Report section: "Household Income");

c. Average household income by type and size of household; (Report section: "Household Income");

d. Number and share of worker households by each income level group (e.g., below median household income level) (Report section: "Households by Income Level");

4. Adjustment for workers who both live and work in Grand Junction (thus accounting for those workers who live outside of the City) (Report section: "Commuter Adjustment");

5. Share of the new worker households/number of affordable housing units demanded by each type of nonresidential building at each income level (Report section: "Housing Demand");

Linkage Fee Calculation

1. Types of housing units applicable to meet the needs of workers at different income levels (Report section: "Housing Prototypes");

2. Cost per unit to construct two-bedroom affordable for-rent and median sale price of for-sale housing units (Report section: "Housing Costs");

3. The difference between what households can afford to spend on housing costs and what it costs to produce or purchase housing in Grand Junction (Report section: "Affordability Gap");

4. The maximum supportable cost per 1,000 square feet of nonresidential development needed to deliver affordable housing at targeted income levels and reflective of the City's share of costs (Report section: "Maximum Supportable Affordable Housing Linkage Fees").

It should be noted that throughout this report an **Industrial Building Prototype** is used to illustrate the methodology and calculations. The Appendix provides detailed data for all building prototypes.

A note on rounding: Calculations throughout this report are based on analysis conducted using Excel software. Results are discussed in the report using multiple decimal places (in most cases), which represent rounded figures. However, in some instances the analysis itself uses figures carried to their ultimate decimal places; therefore, the sums and products generated in the analysis may not equal the sums or products if the reader replicates the calculation with the factors shown in the report (due to the rounding of figures shown).

BUILDING TYPES AND INDUSTRIES

This analysis uses seven building types to determine demand for affordable housing in Grand Junction, Colorado. The building types align with the Grand Junction Development Impact Fee update and include: retail/commercial; convenience commercial; office; institutional; industrial; warehousing; and lodging. Each building type consists of the following industries[2]:

1. **Retail / Commercial** includes retailers, food and drinking places, and personal services. Restaurants and other eating places, food and beverage stores, general merchandise stores, automobile dealers, and building material and supply stores account for the largest share of retail employment.
2. **Convenience Commercial** is a subset of the retail category; the prototype industry used for this analysis is a fast-food restaurant with large drive-through surrounded by a small surface parking lot with access to one or more commercial roads. Establishments have large carry-out clientele and can have long hours of service (including 24-hour service).
3. **Office** refers to a general office building housing multiple tenants including, but not limited to, professional services, insurance companies, investment brokers and tenant services such as banking, restaurants and service retail facilities.
4. **Institutional** includes hospitals, schools, and educational services.
5. **Industrial** refers to manufacturing facilities where the primary activity is the conversion of raw materials or parts into finished products. Size and type of activity may vary substantially from one facility to another. In addition to the actual production of goods, manufacturing facilities generally also have office, warehouse, research and associated functions.
6. **Warehousing** is a subset of industrial land use category which is primarily devoted to the storage of materials, but it may also include office and maintenance areas.
7. **Lodging** reflects hotels, motels, and places providing short-term sleeping accommodations and supporting facilities such as restaurants, cocktail lounges, meeting and banquet rooms or convention facilities, limited recreational facilities (pool, fitness room), and/or other retail and service shops. RV Park is included as a related land use.

[2] Industry: The business activity of a person's employer or, if self-employed, of their company or business. Examples include a grocery store, hospital, bank, or aircraft manufacturer. Industries are classified by NAICS codes. *An industry includes people with different occupations who work for the same type of business.*

Employment Factors

To estimate employment generated by nonresidential land uses, the study uses employee to building area (floor area) data published by the Institute of Transportation Engineers (ITE). The prototypes for each nonresidential land use along with the number of employees per 1,000 square feet of floor area are shown below in Figure 5.

Figure 5: Employee and Building Area Ratios

Land Use Type	ITE Code	Demand Unit	Employees per Demand Unit[1]
Retail/Commercial	820	1,000 SF	2.12
Convenience Commercial	934	1,000 SF	9.35
Office/Service	710	1,000 SF	3.26
Institutional	610	1,000 SF	2.86
Industrial	130	1,000 SF	1.16
Warehousing	150	1,000 SF	0.34
Hotel/Lodging	310	room	0.56
Hotel/Lodging[2]	310	1,000 SF	0.93
RV Park[3]	na	site	0.05

1. Institute of Transportation Engineers (ITE), Trip Generation Manual, 11th Edition, 2021 (unless otherwise specified)

2. Converted from per room factor assuming gross 600 sq.ft./room.

3. National Association of RV Parks & Campgrounds (ARVC) , "2023 Outdoor Hospitality Industry Benchmarking Report."

WORKER HOUSEHOLDS

To calculate the demand for housing units from each building type, employees must first be converted to worker households. This excludes all households without workers and provides an accurate estimate of the number of housing units needed for workers.

Workers per worker household is the product of (1) workers and (2) households with at least one employed person. This ratio is calculated with data from the American Community Survey (ACS) 2018-2022, 5-year estimates provided by the U.S. Census in files known as Public Microdata Samples (PUMS). This data is available for areas with populations of at least 100,000 and therefore available for the City of Grand Junction, Colorado.

Per U.S. Census data, Grand Junction housed 1.8 workers per worker household—this includes full-time and part-time workers. This reveals worker households in the City house more than one worker per worker household; therefore, an additional housing unit will not be needed for every new employee. To determine the number of housing units needed for each building type's employees, the number of new employees generated by each building type is divided by 1.8.

Figure 6: Worker Households

Grand Junction, CO	
Residents in Labor Force	33,631
Worker Households	18,937
Workers per Household	**1.8**

Source: U.S. Census Bureau, 2022: ACS 5-Year Estimates Detailed Tables.

Commuter Analysis

Jobs located in Grand Junction are held by both city residents and non-residents. Therefore, an adjustment is made regarding the demand for housing from nonresidential development; namely to reflect the estimated share of workers who also live in the City of Grand Junction. Commuting data available from the U.S. Census Bureau's online web application, OnTheMap, reveals that 35 percent of jobs in the City are held by City residents.

Figure 7: Resident Workers

Employed in Grand Junction	49,018
Employed and Living in Grand Junction	17,052
Share of GJ Workers Living in GJ	35.0%

Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics (Beginning of Qtr Employment, 2nd Qtr of 2021).

Both factors are applied to jobs created by nonresidential buildings to determine the worker households (i.e., housing units) demanded by each land use type. To determine housing demand from an average size building, all building types are represented as a 20,000-square-foot building throughout this analysis.

Figure 8: Employees and Households by Building Type

		BUILDING/LAND USE TYPE						
		Retail / Commercial	Convenience Commercial	Office	Institutional	Industrial	Warehousing	Lodging
Employees per 1,000 SF[1]		2.12	9.35	3.26	2.86	1.16	0.34	0.93
Employees per	20,000 Sq. Ft.	42.4	187.0	65.2	57.2	23.2	6.8	18.6
Worker Households[2]	1.8	**23.6**	**103.9**	**36.2**	**31.8**	**12.9**	**3.8**	**10.3**
Resident Worker Households[3]	0.4	**8.3**	**36.4**	**12.7**	**11.1**	**4.5**	**1.3**	**3.6**

1. Trip Generation, Institute of Transportation Engineers, 2021. (Institutional is Hospital; Lodging assumes gross 600 sq.ft./room per TischlerBise data.)

2. Source: U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates, Public Use Microdata Sample (PUMS) for Public Use Microdata Areas 1001 (2010 PUMA) and 2501 (2020 PUMA).

3. Grand Junction residents working in city limits; U.S. Census Bureau, OnTheMap web application, 2021.

OCCUPATIONS

The next step in the methodology is to determine the types of occupations[3] generated by each building type. To do this, U.S. Census ACS PUMS data is used. Included are occupation estimates classified by industry using the standard North American Industry Classification System (NAICS) industry codes. Results are shown below in Figure 9.

Figure 9: Occupation Distribution

	BUILDING/LAND USE TYPE						
	Retail / Commercial	Convenience Commercial	Office	Institutional	Industrial	Warehousing	Lodging
Occupation Distribution by Building Type[1]							
Management Occupations	4.3%	4.3%	10.9%	4.1%	13.1%	13.1%	11.1%
Business and Financial Operations Occupations	2.9%	2.9%	5.2%	2.2%	2.0%	2.0%	0.0%
Computer and Mathematical Occupations	0.1%	0.1%	2.3%	2.2%	1.6%	1.6%	0.0%
Architecture and Engineering Occupations	0.0%	0.0%	2.5%	0.2%	3.7%	3.7%	2.0%
Life, Physical, and Social Science Occupations	0.5%	0.5%	1.4%	2.2%	0.7%	0.7%	0.0%
Community and Social Service Occupations	0.0%	0.0%	4.0%	3.1%	0.0%	0.0%	0.0%
Legal Occupations	0.0%	0.0%	1.6%	0.0%	0.0%	0.0%	0.0%
Education, Training, and Library Occupations	0.6%	0.6%	2.3%	61.1%	0.4%	0.4%	0.0%
Arts, Design, Entertainment, Sports, and Media Occupations	3.3%	3.3%	1.3%	2.4%	0.2%	0.2%	8.2%
Healthcare Practitioners and Technical Occupations	1.6%	1.6%	15.0%	0.6%	0.0%	0.0%	0.0%
Healthcare Support Occupations	0.0%	0.0%	10.3%	0.7%	0.0%	0.0%	0.0%
Protective Service Occupations	1.3%	1.3%	4.0%	0.5%	0.7%	0.7%	2.7%
Food Preparation and Serving Related Occupations	22.4%	22.4%	1.7%	3.2%	0.3%	0.3%	8.2%
Building and Grounds Cleaning and Maintenance Occupations	2.0%	2.0%	4.1%	5.6%	1.3%	1.3%	42.3%
Personal Care and Service Occupations	2.4%	2.4%	1.6%	1.1%	0.1%	0.1%	6.3%
Sales and Related Occupations	29.8%	29.8%	3.9%	0.0%	5.9%	5.9%	0.0%
Office and Administrative Support Occupations	9.5%	9.5%	15.9%	9.6%	10.4%	10.4%	12.0%
Farming, Fishing, and Forestry Occupations	0.2%	0.2%	0.1%	0.0%	2.5%	2.5%	0.0%
Construction and Extraction Occupations	0.6%	0.6%	0.8%	0.0%	20.6%	20.6%	0.0%
Installation, Maintenance, and Repair Occupations	3.1%	3.1%	4.6%	0.4%	4.5%	4.5%	1.9%
Production Occupations	2.8%	2.8%	2.9%	0.0%	13.7%	13.7%	0.0%
Transportation and Material Moving Occupations	12.5%	12.5%	3.7%	0.8%	18.1%	18.1%	5.4%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Retail/Commercial and Convenience Commercial reflect the retail industry category; Industrial and Warehousing reflect the industrial industry category.

1. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates, Public Use Microdata Sample (PUMS) for Grand Junction City Public Use Microdata Area (PUMA) 1001 [2010 PUMA boundary] and 2501 [2020 PUMA boundary].

[3] Occupation: A person's job or the type of work they do. Examples include a physical therapist, cashier, security guard, or electrician. The analysis uses "major group level" (per Standard Occupational Classification (SOC) (Bureau of Labor Statistics)).

The next step involves converting the occupation distribution to worker households by occupation. Using the estimate of worker households in Figure 8 and the occupation distribution shown in Figure 9, the number of worker households per occupation for each of the building types can be estimated. For example, as shown below in Figure 10, transportation and material moving occupations account for 2.34 households of the industrial building type's 12.9 total worker households.

Figure 10: Households by Occupation

	BUILDING/LAND USE TYPE						
	Retail / Commercial	Convenience Commercial	Office	Institutional	Industrial	Warehousing	Lodging
Households per 20,000 SF by Occupation and Building Type[1]							
Management Occupations	1.00	4.42	3.93	1.31	1.70	0.50	1.14
Business and Financial Operations Occupations	0.69	3.04	1.87	0.70	0.26	0.08	0.00
Computer and Mathematical Occupations	0.03	0.13	0.82	0.69	0.20	0.06	0.00
Architecture and Engineering Occupations	0.00	0.00	0.92	0.07	0.48	0.14	0.21
Life, Physical, and Social Science Occupations	0.11	0.50	0.52	0.69	0.09	0.03	0.00
Community and Social Service Occupations	0.00	0.00	1.45	0.97	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.57	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.14	0.61	0.82	19.44	0.06	0.02	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.79	3.46	0.47	0.77	0.03	0.01	0.84
Healthcare Practitioners and Technical Occupations	0.38	1.67	5.42	0.20	0.00	0.00	0.00
Healthcare Support Occupations	0.01	0.05	3.73	0.21	0.00	0.00	0.00
Protective Service Occupations	0.31	1.39	1.45	0.15	0.09	0.03	0.28
Food Preparation and Serving Related Occupations	5.29	23.29	0.61	1.03	0.04	0.01	0.84
Building and Grounds Cleaning and Maintenance Occupations	0.47	2.05	1.48	1.78	0.17	0.05	4.36
Personal Care and Service Occupations	0.57	2.50	0.59	0.35	0.01	0.00	0.64
Sales and Related Occupations	7.04	30.98	1.40	0.00	0.76	0.22	0.00
Office and Administrative Support Occupations	2.23	9.83	5.76	3.05	1.34	0.40	1.23
Farming, Fishing, and Forestry Occupations	0.05	0.22	0.02	0.00	0.32	0.09	0.00
Construction and Extraction Occupations	0.14	0.62	0.29	0.00	2.66	0.78	0.00
Installation, Maintenance, and Repair Occupations	0.74	3.25	1.68	0.12	0.59	0.17	0.20
Production Occupations	0.67	2.94	1.06	0.00	1.77	0.52	0.00
Transportation and Material Moving Occupations	2.94	12.96	1.34	0.27	2.34	0.69	0.55
Total Worker Households	**23.60**	**103.90**	**36.20**	**31.80**	**12.90**	**3.80**	**10.30**

1. TischlerBise calculation; based on data from U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates, Public Use Microdata Sample (PUMS) for Grand Junction City Public Use Microdata Area (PUMA) 1001 [2010 PUMA boundary] and 2501 [2020 PUMA boundary].

Income by Occupation

Income data for occupations by industry are also available from the U.S. Census ACS PUMS data for Grand Junction. Incomes are first adjusted to 2022 dollars with the ACS inflation factor and then updated to 2024 dollars by applying the percent increase in wages from the Quarterly Census of Employment and Wages (QCEW) for Mesa County. (QCEW provides the most current data with the limitation that it is only available at the county level. See Figure 12.)

Incomes by occupations are shown below in Figure 11 for the Industrial building prototype.

Figure 11: Income by Occupation for *Industrial* Building Prototype

Occupation Distribution	Grand Junction 2024 Average Income[1]	Occup. as Share of Industrial Workers[2]	Average Income per HH (rounded)	Wrkr Households per 20,000 SF[3]: 12.90 — Total Wrkr Households
Management Occupations	$118,788	13.1%	$15,620	1.70
Business and Financial Operations Occupations	$99,567	2.0%	$1,980	0.26
Computer and Mathematical Occupations	$71,541	1.6%	$1,130	0.20
Architecture and Engineering Occupations	$91,155	3.7%	$3,370	0.48
Life, Physical, and Social Science Occupations	$41,290	0.7%	$300	0.09
Community and Social Service Occupations	$0	0.0%	$0	0.00
Legal Occupations	$0	0.0%	$0	0.00
Educational Instruction and Library Occupations	$47,030	0.4%	$210	0.06
Arts, Design, Entertainment, Sports, and Media Occupations	$18,816	0.2%	$40	0.03
Healthcare Practitioners and Technical Occupations	$0	0.0%	$0	0.00
Healthcare Support Occupations	$0	0.0%	$0	0.00
Protective Service Occupations	$55,886	0.7%	$390	0.09
Food Preparation and Serving Related Occupations	$17,079	0.3%	$50	0.04
Building and Grounds Cleaning and Maintenance Occupations	$24,313	1.3%	$320	0.17
Personal Care and Service Occupations	$37,507	0.1%	$30	0.01
Sales and Related Occupations	$99,314	5.9%	$5,870	0.76
Office and Administrative Support Occupations	$49,455	10.4%	$5,160	1.34
Farming, Fishing, and Forestry Occupations	$31,547	2.5%	$780	0.32
Construction and Extraction Occupations	$53,850	20.6%	$11,110	2.66
Installation, Maintenance, and Repair Occupations	$80,049	4.5%	$3,640	0.59
Production Occupations	$49,947	13.7%	$6,840	1.77
Transportation and Material Moving Occupations	$58,518	18.1%	$10,600	2.34
Weighted Average Annual Wage		**100.0%**	**$67,440**	12.90

1. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates, Public Use Microdata Sample (PUMS) for Grand Junction City Public Use Microdata Area (PUMA) 1001 [2010 PUMA boundary] and 2501 [2020 PUMA boundary]. ACS income adjusted to constant 2022 dollars with ACS data. Average incomes adjusted to 2024 dollars using QCEW percent wage increase in Mesa County from 2022 to 2024.

2. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates, Public Use Microdata Sample (PUMS) for Grand Junction City Public Use Microdata Area (PUMA) 1001 [2010 PUMA boundary] and 2501 [2020 PUMA boundary].

3. Worker Household estimate from U.S. Census data and ITE data.

Figure 12: Income Adjustment to 2024 Dollars

Q1 2022	$968
Q1 2024	$1,140
Net Increase	$172
Percent Increase	17.8%

Source: Labor Market Information, Quarterly Census of Employment and Wages (QCEW) Program for Mesa County (Average Weekly Wage, All Industries) accessed from Colorado Labor Market Information Gateway.

HOUSEHOLD INCOME

Estimating household income is a two-step process. This includes (1) determining household type and size (i.e., number of workers per household (with workers)) for each household size, and (2) estimating household income for each household type.

Worker by Industry by Household Type and Size

Data from U.S. Census ACS 2018-2022 5-Year Estimates identifies the number of workers by industry in each category of household type/size. This data is used to determine income by industry and household type/size. Figure 13 provides the distribution of workers by industry in each household size category.

Figure 13. Workers by Industry by Household Type and Size

Workers by Industry in Each Household Type

	1-person	2-person	3-person	4+ person	Grand Total
Retail	2,553	5,370	3,480	5,693	17,096
Office	4,397	10,715	5,993	9,367	30,472
Industrial	2,335	6,234	3,324	6,322	18,215
Institutional	1,785	2,791	1,670	1,460	7,706
Lodging	70	301	223	190	784
Not Included	0	18	0	0	18
Total	11,140	25,429	14,690	23,032	74,291

% Workers by Industry in Each Household Type

Retail	14.9%	31.4%	20.4%	33.3%	100.0%
Office	14.4%	35.2%	19.7%	30.7%	100.0%
Industrial	12.8%	34.2%	18.2%	34.7%	100.0%
Institutional	23.2%	36.2%	21.7%	18.9%	100.0%
Lodging	8.9%	38.4%	28.4%	24.2%	100.0%
Not Included	0.0%	100.0%	0.0%	0.0%	100.0%

Source: U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates, Public Use Microdata Sample (PUMS) for Grand Junction City Public Use Microdata Area (PUMA) 1001 [2010 PUMA boundary] and 2501 [2020 PUMA boundary].

TischlerBise then determined workers per worker household for each household type and summarized the median income by household size. Results are shown below in Figure 14. Knowing the number of workers in each household type is the basis for calculating household income.

Figure 14. Household Type and Size

	1 person	2 person	3 person	4+ person	Total
Workers[1]	11,140	25,429	14,690	23,032	74,291
Worker Households[1,2]	8,807	15,948	7,021	9,938	41,714
Workers per Worker Household	1.3	1.6	2.1	2.3	1.8
Median Income (Grand Junction)[3]	$66,000	$75,400	$84,800	$94,200	

1. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates, Public Use Microdata Sample (PUMS) for PUMAs 1001 (2010 PUMA) and 2501 (2020 PUMA).

2. Worker household is a household with at least one occupant in the labor force.

3. City of Grand Junction, Root Policy Research, and HUD 2024 income limits: "2024 Mesa County Area Median Income and Affordable Rents and Home Prices" in Grand Junction Housing Strategy Update 2024.

Household Distribution by Type and Size

Determining the distribution of household types is the next step in the analysis. Because the number of workers or non-workers per household affects affordability, the study distributes households by the current share of household types.

Using data from the American Community Survey 2018-2022 5-year estimates, the number of worker households by each building type is estimated. This requires analyzing the ACS data and determining the share of each household type for each of the building types. The share of households by building type is applied to the corresponding estimate of households by occupation shown in Figure 10. Using the industrial building type as an example, Figure 15 shows the number of households by household type for each occupation. Notice the column on the right side of Figure 15 is identical to the industrial column in Figure 10. (Formula example: Management Occupations: 1.7 worker households (Figure 10) x 12.8% 1-person household (Figure 13) = 0.22

Figure 15. Worker Households by Household Type and Size for an *Industrial* Building Prototype

	1 person	2 person	3 person	4+ person	Total
Worker Households per 20,000 sq. ft.[1]					
Management Occupations	0.22	0.58	0.31	0.59	**1.70**
Business and Financial Operations Occupations	0.03	0.09	0.05	0.09	**0.26**
Computer and Mathematical Occupations	0.03	0.07	0.04	0.07	**0.20**
Architecture and Engineering Occupations	0.06	0.16	0.09	0.17	**0.48**
Life, Physical, and Social Science Occupations	0.01	0.03	0.02	0.03	**0.09**
Community and Social Service Occupations	0.00	0.00	0.00	0.00	**0.00**
Legal Occupations	0.00	0.00	0.00	0.00	**0.00**
Education, Training, and Library Occupations	0.01	0.02	0.01	0.02	**0.06**
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.01	0.01	0.01	**0.03**
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	**0.00**
Healthcare Support Occupations	0.00	0.00	0.00	0.00	**0.00**
Protective Service Occupations	0.01	0.03	0.02	0.03	**0.09**
Food Preparation and Serving Related Occupations	0.01	0.01	0.01	0.01	**0.04**
Building and Grounds Cleaning and Maintenance Occupations	0.02	0.06	0.03	0.06	**0.17**
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	**0.01**
Sales and Related Occupations	0.10	0.26	0.14	0.26	**0.76**
Office and Administrative Support Occupations	0.17	0.46	0.25	0.47	**1.34**
Farming, Fishing, and Forestry Occupations	0.04	0.11	0.06	0.11	**0.32**
Construction and Extraction Occupations	0.34	0.91	0.49	0.92	**2.66**
Installation, Maintenance, and Repair Occupations	0.08	0.20	0.11	0.20	**0.59**
Production Occupations	0.23	0.60	0.32	0.61	**1.77**
Transportation and Material Moving Occupations	0.30	0.80	0.43	0.81	**2.34**
Total	**1.66**	**4.40**	**2.39**	**4.46**	**12.90**

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Household Income

The final step in estimating household income requires applying average compensation from Figure 11 to the number of workers per worker household from Figure 14. Shown in Figure 16 are estimates of household income by household type for industrial occupations.

Figure 16: Household Incomes by Type and Occupation for *Industrial* Building Prototype

	1 person	2 person	3 person	4+ person	Average
City of Grand Junction Avg. Household Income by Occupation per Household Size[1]					
Management Occupations	$154,425	$190,061	$249,455	$273,213	$213,819
Business and Financial Operations Occupations	$129,437	$159,308	$209,091	$229,005	$179,221
Computer and Mathematical Occupations	$93,003	$114,465	$150,236	$164,544	$128,774
Architecture and Engineering Occupations	$118,501	$145,847	$191,425	$209,656	$164,078
Life, Physical, and Social Science Occupations	$53,676	$66,063	$86,708	$94,966	$74,321
Community and Social Service Occupations	$0	$0	$0	$0	$0
Legal Occupations	$0	$0	$0	$0	$0
Education, Training, and Library Occupations	$61,139	$75,248	$98,763	$108,169	$84,654
Arts, Design, Entertainment, Sports, and Media Occupations	$24,461	$30,106	$39,514	$43,277	$33,869
Healthcare Practitioners and Technical Occupations	$0	$0	$0	$0	$0
Healthcare Support Occupations	$0	$0	$0	$0	$0
Protective Service Occupations	$72,652	$89,417	$117,360	$128,538	$100,595
Food Preparation and Serving Related Occupations	$22,203	$27,326	$35,866	$39,282	$30,742
Building and Grounds Cleaning and Maintenance Occupations	$31,607	$38,901	$51,058	$55,921	$43,764
Personal Care and Service Occupations	$48,759	$60,011	$78,764	$86,265	$67,512
Sales and Related Occupations	$129,108	$158,902	$208,559	$228,422	$178,765
Office and Administrative Support Occupations	$64,291	$79,128	$103,855	$113,746	$89,019
Farming, Fishing, and Forestry Occupations	$41,011	$50,475	$66,248	$72,557	$56,784
Construction and Extraction Occupations	$70,005	$86,160	$113,085	$123,855	$96,930
Installation, Maintenance, and Repair Occupations	$104,064	$128,079	$168,103	$184,113	$144,089
Production Occupations	$64,931	$79,915	$104,889	$114,878	$89,904
Transportation and Material Moving Occupations	$76,073	$93,629	$122,888	$134,591	$105,332

1. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates, Public Use Microdata Sample (PUMS) for Grand Junction City Public Use Microdata Area (PUMA) 1001 [2010 PUMA boundary] and 2501 [2020 PUMA boundary]. ACS income adjusted to constant 2022 dollars with ACS data. Average incomes adjusted to 2024 dollars using QCEW percent wage increase in Mesa County from 2022 to 2024.

Income Limits

Affordability, in this study, is defined using official household income limits produced by the United States Department of Housing and Urban Development (HUD) for fiscal year 2024 for Mesa County. Area Median Income (AMI) for a 3-person household is $84,800. As shown in Figure 17, income limits are based on the number of persons living in the household. Using these thresholds, it is possible to determine the number of households at each income level for each building type.

Figure 17: Household Income Limits

Household Income Level	% AMI	1-Person	2-Person	3-Person	4-Person	5-Person	6-Person
20% AMI	20%	$13,200	$15,080	$16,960	$18,840	$20,360	$21,860
30% AMI	30%	$19,800	$22,620	$25,440	$28,260	$30,540	$32,790
40% AMI	40%	$26,400	$30,160	$33,920	$37,680	$40,720	$43,720
45% AMI	45%	$29,700	$33,930	$38,160	$42,390	$45,810	$49,185
50% AMI	50%	$33,000	$37,700	$42,400	$47,100	$50,900	$54,650
55% AMI	55%	$36,300	$41,470	$46,640	$51,810	$55,990	$60,115
60% AMI	60%	$39,600	$45,240	$50,880	$56,520	$61,080	$65,580
70% AMI	70%	$46,200	$52,780	$59,360	$65,940	$71,260	$76,510
80% AMI	80%	$52,800	$60,320	$67,840	$75,360	$81,440	$87,440
100% AMI	100%	$66,000	$75,400	$84,800	$94,200	$101,800	$109,300
120% AMI	120%	$79,200	$90,480	$101,760	$113,040	$122,160	$131,160

Source: City of Grand Junction, Root Policy Research, and HUD 2024 income limits: "2024 Mesa County Area Median Income and Affordable Rents and Home Prices" in Grand Junction Housing Strategy Update 2024.

Households by Income Level

Shown below in Figure 18 are the percent of worker households in the industrial building prototype below the area median income for each household size/type.

Figure 18: Percent of Median Income by Household Type and Occupation for *Industrial* Building Prototype

Area Median Income-->	$66,000	$75,400	$84,800	$94,200
Percent of Median Income by Occupation	**1 person**	**2 person**	**3 person**	**4+ person**
Management Occupations	234%	252%	294%	290%
Business and Financial Operations Occupations	196%	211%	247%	243%
Computer and Mathematical Occupations	141%	152%	177%	175%
Architecture and Engineering Occupations	180%	193%	226%	223%
Life, Physical, and Social Science Occupations	*81%*	*88%*	102%	101%
Community and Social Service Occupations	0%	0%	0%	0%
Legal Occupations	0%	0%	0%	0%
Education, Training, and Library Occupations	*93%*	*100%*	116%	115%
Arts, Design, Entertainment, Sports, and Media Occupations	*37%*	*40%*	*47%*	*46%*
Healthcare Practitioners and Technical Occupations	0%	0%	0%	0%
Healthcare Support Occupations	0%	0%	0%	0%
Protective Service Occupations	110%	119%	138%	136%
Food Preparation and Serving Related Occupations	*34%*	*36%*	*42%*	*42%*
Building and Grounds Cleaning and Maintenance Occupations	*48%*	*52%*	*60%*	*59%*
Personal Care and Service Occupations	*74%*	*80%*	*93%*	*92%*
Sales and Related Occupations	196%	211%	246%	242%
Office and Administrative Support Occupations	*97%*	105%	122%	121%
Farming, Fishing, and Forestry Occupations	*62%*	*67%*	*78%*	*77%*
Construction and Extraction Occupations	106%	114%	133%	131%
Installation, Maintenance, and Repair Occupations	158%	170%	198%	195%
Production Occupations	*98%*	106%	124%	122%
Transportation and Material Moving Occupations	115%	124%	145%	143%

Red indicates a value less than 100% (reflecting the median household income).

Based on the median incomes by household size and average incomes by occupation, the number of worker households generated by each nonresidential building type at each household income level (e.g., 50%, 60%, 80%, and 100% AMI) can be determined.

For example, worker households for the industrial building prototype of 20,000 square feet with household incomes between 60 and 80 percent of AMI are shown in Figure 19. The right column shows .35 households generated by the industrial building prototype falling within this income level. (See Appendix B for a series of tables for each nonresidential building type by household income level.)

Figure 19: 80% AMI Worker Households by Household Type and Occupation for *Industrial* Building Prototype

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
80% AMI (Over 60 to 80% AMI)					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	**0.03**	0.00	**0.03**
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.00	0.00	0.00	0.00	0.00
Farming, Fishing, and Forestry Occupations	**0.04**	**0.11**	**0.06**	**0.11**	**0.32**
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.00	0.00	0.00	0.00	0.00
Total	**0.04**	**0.11**	**0.09**	**0.11**	**0.35**

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Figure 20 below includes the number of households by income level for each building prototype (top half), and the percentage of households by income level for each building type (bottom half). This represents the share of households by building prototype in comparison to the median income for Mesa County.

Figure 20: Worker Households by Income Level (per 20,000 sq. ft. building prototype)

	BUILDING/LAND USE TYPE (20,000 sq. ft. building)						
	Retail / Commercial	Convenience Commercial	Office	Institutional	Industrial	Warehousing	Lodging
Households by Income Level[1]							
50% AMI and Below	4.73	20.85	0.50	3.64	0.09	0.01	2.06
60% AMI (Over 50 to 60% AMI)	5.89	26.00	1.33	0.24	0.12	0.04	2.65
80% AMI (Over 60 to 80% AMI)	6.20	27.26	4.88	2.47	0.35	0.10	3.39
100% AMI (Over 80 to 100% AMI)	3.80	16.74	5.24	2.45	0.47	0.14	0.00
120% AMI (Over 100 to 120% AMI)	0.10	0.45	4.85	12.13	2.73	0.82	0.10
120%+ AMI	2.87	12.63	19.39	10.89	9.15	2.69	2.12
Total Worker Households	**23.59**	**103.93**	**36.19**	**31.82**	**12.91**	**3.80**	**10.32**

	Retail / Commercial	Convenience Commercial	Office	Institutional	Industrial	Warehousing	Lodging
Percentage of Households by Income Level[1]							
50% AMI and Below	20.1%	20.1%	1.4%	11.4%	0.7%	0.3%	20.0%
60% AMI (Over 50 to 60% AMI)	25.0%	25.0%	3.7%	0.8%	0.9%	1.1%	25.7%
80% AMI (Over 60 to 80% AMI)	26.3%	26.2%	13.5%	7.8%	2.7%	2.6%	32.9%
100% AMI (Over 80 to 100% AMI)	16.1%	16.1%	14.5%	7.7%	3.6%	3.7%	0.0%
120% AMI (Over 100 to 120% AMI)	0.4%	0.4%	13.4%	38.1%	21.2%	21.6%	1.0%
120%+ AMI	12.2%	12.2%	53.6%	34.2%	70.9%	70.8%	20.5%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Commuter Adjustment

As noted above, an adjustment is recommended for commuters living outside of Grand Junction but working within the city limits as it is unreasonable to assume all new workers will live in Grand Junction. Using commuting data from the U.S. Census Bureau's online web application, OnTheMap, TischlerBise determined 65 percent of Grand Junction's workers live outside the city. To preserve the existing relationship between commuters and non-commuters, households are reduced to 35 percent—the share of Grand Junction's workers who live in the city.

Figure 21: Worker Households in Grand Junction by Income Level (per 20,000 sq. ft. building prototype)

		BUILDING/LAND USE TYPE (20,000 sq. ft. building)						
		Retail / Commercial	Convenience Commercial	Office	Institutional	Industrial	Warehousing	Lodging
Resident Workers (Local %)[1]	35.00%							
Households by Income Level[2]								
50% AMI and Below		1.66	7.30	0.18	1.27	0.03	0.00	0.72
60% AMI (Over 50 to 60% AMI)		2.06	9.10	0.47	0.08	0.04	0.01	0.93
80% AMI (Over 60 to 80% AMI)		2.17	9.54	1.71	0.86	0.12	0.04	1.19
100% AMI (Over 80 to 100% AMI)		1.33	5.86	1.83	0.86	0.16	0.05	0.00
120% AMI (Over 100 to 120% AMI)		0.04	0.16	1.70	4.25	0.96	0.29	0.04
120%+ AMI		1.00	4.42	6.79	3.81	3.20	0.94	0.74
Total		**8.26**	**36.38**	**12.68**	**11.13**	**4.51**	**1.33**	**3.62**

1. Grand Junction residents working in city limits; U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics (Beginning of Qtr Employment, 2nd Qtr of 2021).

2. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

HOUSING DEMAND

To determine the housing need per 1,000 square feet of building area (to be used in the linkage fee calculation), worker households generated per 20,000 square feet of building area, shown above in Figure 21, are converted to households per 1,000 square feet by dividing household estimates by 20. Figure 22 below includes estimates for households by income level and industry (adjusted for resident workers) for each additional 1,000 square feet of building floor area.

Figure 22: Housing Demand in Grand Junction per 1,000 Square Feet of Building Area

	BUILDING/LAND USE TYPE (per 1,000 sq. ft.)						
	Retail / Commercial	Convenience Commercial	Office	Institutional	Industrial	Warehousing	Lodging
Housing Demand per 1,000 Sq. Ft. of Building Area[1]							
50% AMI and Below	0.0830	0.3650	0.0090	0.0635	0.0015	0.0000	0.0360
60% AMI (Over 50 to 60% AMI)	0.1030	0.4550	0.0235	0.0040	0.0020	0.0005	0.0465
80% AMI (Over 60 to 80% AMI)	0.1085	0.4770	0.0855	0.0430	0.0060	0.0020	0.0595
100% AMI (Over 80 to 100% AMI)	0.0665	0.2930	0.0915	0.0430	0.0080	0.0025	0.0000
120% AMI (Over 100 to 120% AMI)	0.0020	0.0080	0.0850	0.2125	0.0480	0.0145	0.0020
120%+ AMI	0.0500	0.2210	0.3395	0.1905	0.1600	0.0470	0.0370
Total	**0.4130**	**1.8190**	**0.6340**	**0.5565**	**0.2255**	**0.0665**	**0.1810**

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis. Adjusted for resident workers.

HOUSING PROTOTYPES

The next step in the analysis is to determine the applicable types of housing units to meet the needs at each income level. The 2024 Grand Junction Housing Strategy Update and City staff provided direction on appropriate housing prototypes by income level per current City housing policy and programs.

- For 50% (50% and below) and 60% (over 50 to 60%) AMI, the analysis assumes a two-bedroom rental apartment.
- For 80% (over 60 to 80%) and 100% (over 80 to 100%) AMI, the housing prototype is a three-bedroom, owner-occupied, single family housing unit.
- The analysis **excludes** incomes at 120% AMI and above (over 100 to 120% and above), because current policies are not in place to offer housing assistance to these households with the linkage fee.

HOUSING COSTS

Several multifamily rental development projects are used to derive an average development cost per unit to represent the cost to build affordable units in the City of Grand Junction. Mother Teresa's Place and The Current are all affordable (60% AMI or less); The Terminal and Liberty Apartments have not yet begun construction and are planned to be partially affordable (90% AMI); and Market Street and Struthers are market rate.

For owner-occupied units, the analysis assumes a median sales price of $391,500 from the 2024 median sale price for all housing units in Mesa County from the 2024 Grand Junction Housing Strategy Update.

Figure 23: Multifamily Rental Unit Development Cost

Project	Year	Total Development Cost	Number of Units	Cost per Unit
Mother Teresa's Place	2023	$14,457,857	40	$361,446
The Current	2024	$26,393,832	54	$488,775
The Terminal	2024 estimate	$35,960,234	106	$339,247
Liberty Apartments	2024 estimate	$20,667,214	72	$287,045
Market Street	2022	$23,976,000	72	$333,000
Struthers	2022	$16,992,000	48	$354,000
The Junction	2022	$82,898,639	256	$323,823
Total / Weighted Average		**$221,345,776**	**648**	**$341,583**
		Weighted Cost per Unit (Rounded)		**$342,000**

Source: City of Grand Junction (for City and other local projects); Grand Junction Housing Authority

AFFORDABILITY GAP

The next step in the analysis is the difference between the cost of housing and the amount households can afford to pay for housing. This is known as the affordability gap. This analysis determines the affordability gap at 50%, 60%, 80% and 100% AMI income levels

As noted, the analysis uses a two-bedroom apartment for 50% and 60% AMI households. For rental prototypes, the affordability gap is the difference between the total development cost and private debt expense—debt supported by rental income.

For 80% and 100% AMI households, the analysis uses a three-bedroom single family housing unit. The affordability gap for ownership prototypes is the difference between the median sales price and the supported sales price based on 2024 Mesa County Area Median Income and Affordable Rents and Home Prices. See Figure 24.

Figure 24. Maximum Affordable Rents and Sale Prices

	MAXIMUM AFFORDABLE							
	Monthly Rent	Sales Price	Monthly Rent	Sales Price	Monthly Rent	Sales Price	Monthly Rent	Sales Price
Housing Unit Size	50% AMI		60% AMI		80% AMI		100% AMI	
1-Person [0 Bdrm]	$825	$108,770	$990	$130,524	$1,320	$174,032	$1,650	$217,540
2-Person [1 Bdrm]	$943	$124,261	$1,131	$149,114	$1,508	$198,818	$1,885	$248,523
3-Person [2 Bdrm]	$1,060	$139,753	$1,272	$167,703	$1,696	$223,605	$2,120	$279,506
4-Person [3 Bdrm]	$1,178	$155,244	$1,413	$186,293	$1,884	$248,391	$2,355	$310,489
5-Person [3-4 Bdrm]	$1,273	$167,769	$1,527	$201,323	$2,036	$268,431	$2,545	$335,539
6-Person [4 Bdrm]	$1,366	$180,130	$1,640	$216,156	$2,186	$288,207	$2,733	$360,259

Source: City of Grand Junction, Root Policy Research, and HUD 2024 income limits: "2024 Mesa County Area Median Income and Affordable Rents and Home Prices" in Grand Junction Housing Strategy Update 2024.

Rental Prototype

To estimate maximum housing costs for rental prototypes, the analysis assumes 30 percent of household income used for housing costs—less utilities paid by the tenant. Shown below in Figure 25, the affordability gap analysis for rental prototypes includes annual rental income, vacancy loss, operating expenses, property taxes, and replacement reserves. Combined, these provide the net operating income used to support private debt. Assuming a debt coverage ratio of 1.2, net operating income at each AMI level is calculated as shown to support debt service on a 30-year loan. For 50% AMI households, the net operating income supports annual debt service of $4,510—a present value of $62,100 on a 30-year loan. In other words, this is the maximum amount the income groups can afford to spend (based on the guidelines), which produce a revenue stream for development of the property.

The revenue stream indicated above is insufficient to cover the development costs. Assuming a total development cost of $342,000 per unit for the rental prototype, the affordability gap for 50% AMI households is $279,900 per unit and for 60% AMI households, $263,900 per unit.

Figure 25: Rental Prototype Affordability Gap

Affordability Gap: Rental Units (per Unit)		50% AMI (Rental)	60% AMI (Rental)
Income Parameters			
Mesa County 3-Person AMI[1]		$84,800	$84,800
Household Income (at Respective %AMI)[1]		$42,400	$50,880
Affordable 2-Bedroom Unit			
Maximum Monthly Rent[2]	30%	$1,060	$1,272
Utility Allowance[1]		($240)	($240)
Net Monthly Rent		$820	$1,032
Operating Income			
Annual Rental Income		$9,840	$12,384
Other Income		$0	$0
Annual Rental Income		$9,840	$12,384
Operating Expenditures			
Vacancy Loss[3]	5%	($492)	($619)
Operating Expenses[4]	40%	($3,936)	($4,954)
Total Expenditures		($4,428)	($5,573)
Net Operating Income (NOI) (Annual)		$5,412	$6,811
Supportable Debt Service[5]	1.2	($4,510)	($5,676)
Cash Flow After Debt		$902	$1,135
Affordability Gap			
Development Cost[6]		$342,000	$342,000
Total Development Cost		$342,000	$342,000
Supported Private Debt Expense[7]	6.00%	$62,100	$78,100
Affordability Gap		**($279,900)**	**($263,900)**

1. 2024 Income Limit and Maximum Rent Tables for Mesa County, Colorado, CHFA (HUD Effective Date April 1, 2024).
2. 2024 Income Limit and Maximum Rent Tables for Mesa County, Colorado, CHFA (HUD Effective Date April 1, 2024). (Based on 30% household income available for rent.)
3. Industry standard.
4. Estimated percent of rental income for operations, maintenance, taxes, insurance, and reserves.
5. Industry standard of debt coverage ratio of 1.2 applied to NOI.
6. City of Grand Junction and Grand Junction Housing Authority
7. Present value of supportable debt service (from above) for a 30-year loan; fall 2024 general apartment loan interest rate.

Ownership Prototype

For ownership units, the analysis assumes the maximum affordable housing price as shown in Figure 24 and repeated in Figure 26. With a median sales price of $391,500 for three-bedroom single family housing unit, the affordability gap for 80% AMI households is $167,895 and $111,994 for 100% AMI households.

Figure 26: Ownership Prototype Affordability Gap

Affordability Gap: Ownership Units	**80% AMI (Owner)**	**100% AMI (Owner)**
Mesa County 3-Person AMI[1]	$84,800	$84,800
Household Income (at Respective %AMI)[1]	$67,840	$84,800
% of Median	*80%*	*100%*
Affordable Sale Price		
Affordable Home Price[1]	$223,605	$279,506
Median Purchase Price: All Homes[2]	$391,500	$391,500
Affordability Gap		
Median Sales Price: Mesa Co. 3-Bdrm SF House	$391,500	$391,500
Supported Sale Price	$223,605	$279,506
Affordability Gap[3]	**($167,895)**	**($111,994)**

1. City of Grand Junction, Root Policy Research, and HUD 2024 income limits: "2024 Mesa County Area Median Income and Affordable Rents and Home Prices" in Grand Junction Housing Strategy Update 2024.
2. City of Grand Junction, Root Policy Research, and HUD 2024 income limits: "2024 Mesa County Area Median Income and Affordable Rents and Home Prices" in Grand Junction Housing Strategy Update 2024. Reflects detached and attached for-sale homes.
3. A negative figure shown in (parentheses), reflects the gap between the cost to purchase a house and the resources available; a positive figure indicates that the income assumed is sufficient to purchase a housing unit.

Figure 27 provides a summary of calculated affordability gaps, by housing prototype and income level.

Figure 27: Summary of Assumptions and Affordability Gaps by Housing Prototype

Income	Prototype	Bedrooms	Type	Housing Cost Affordable at Income Level
50% AMI (Rental)	Rental	2	Apartment	$820 / Month
60% AMI (Rental)	Rental	2	Apartment	$1,032 / Month
80% AMI (Owner)	Ownership	3	Single Family	$223,605
100% AMI (Owner)	Ownership	3	Single Family	$279,506

Income	Prototype	Development Cost[1]	Median Sales Price[2]	Supported Financing[3]	Affordability Gap[4,5]
50% AMI (Rental)	Rental	$342,000		$62,100	($279,900)
60% AMI (Rental)	Rental	$342,000		$78,100	($263,900)
80% AMI (Owner)	Ownership		$391,500	$223,605	($167,895)
100% AMI (Owner)	Ownership		$391,500	$279,506	($111,994)

1. City of Grand Junction and Grand Junction Housing Authority
2. City of Grand Junction, Root Policy Research, and HUD 2024 income limits: "2024 Mesa County Area Median Income and Affordable Rents and Home Prices" in Grand Junction Housing Strategy Update 2024. Reflects detached and attached for-sale homes.
3. See supporting figures in report.
4. Difference between Development Cost or Median Sales Price and Supported Financing.
5. A negative figure shown in (parentheses), reflects the gap between the cost of developing or purchasing a unit and the resources available; a positive figure indicates that the income assumed is sufficient.

MAXIMUM SUPPORTABLE AFFORDABLE HOUSING LINKAGE FEES

To calculate maximum supportable affordable housing linkage fees, housing demand per square foot of building area is multiplied by the affordability gap estimates. An additional adjustment is needed to account for the City's share of funding for affordable housing projects. Based on recent City participation in affordable housing development projects, an estimate of 10 percent City funding is assumed in the affordable housing linkage fee calculation.

Figure 28 repeats the housing demand in the City of Grand Junction per 1,000 square feet by nonresidential building type (repeated from Figure 22).

Figure 28: Housing Demand in Grand Junction per 1,000 Square Feet of Building Area

	BUILDING/LAND USE TYPE (per 1,000 sq. ft.)						
	Retail / Commercial	Convenience Commercial	Office	Institutional	Industrial	Warehousing	Lodging
Housing Demand per 1,000 Sq. Ft. of Building Area[1]							
50% AMI and Below	0.0830	0.3650	0.0090	0.0635	0.0015	0.0000	0.0360
60% AMI (Over 50 to 60% AMI)	0.1030	0.4550	0.0235	0.0040	0.0020	0.0005	0.0465
80% AMI (Over 60 to 80% AMI)	0.1085	0.4770	0.0855	0.0430	0.0060	0.0020	0.0595
100% AMI (Over 80 to 100% AMI)	0.0665	0.2930	0.0915	0.0430	0.0080	0.0025	0.0000
120% AMI (Over 100 to 120% AMI)	0.0020	0.0080	0.0850	0.2125	0.0480	0.0145	0.0020
120%+ AMI	0.0500	0.2210	0.3395	0.1905	0.1600	0.0470	0.0370
Total	**0.4130**	**1.8190**	**0.6340**	**0.5565**	**0.2255**	**0.0665**	**0.1810**

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis. Adjusted for resident workers.

Because current City policy and this linkage fee does not intend to assist households with incomes above 100 percent of area median income, the fee schedule in Figure 29 excludes demand from this AMI level.

Maximum supportable affordable housing linkage fees are shown in Figure 29. Based on the findings in the study, this is the maximum supportable fee amount based on the nexus between demand for affordable housing and costs (to the City of Grand Junction) to provide housing in Grand Junction. Affordable housing linkage fees may be adopted at levels lower than the maximum supportable fees.

Figure 29: Maximum Supportable Affordable Housing Linkage Fees by Land Use

				Linkage Fees Per 1,000 Sq. Ft.[1]						
Household Income Level	**Housing Prototype**	**Affordability Gap per Unit**	**Estimated City Funding % Share**[2]	**Retail / Commercial**	**Convenience Commercial**	**Office**	**Institutional**	**Industrial**	**Warehousing**	**Lodging**
			10%							
50% AMI (Rental)	Rental	$279,900	$27,990	$2,323	$10,216	$252	$1,777	$42	$0	$1,008
60% AMI (Rental)	Rental	$263,900	$26,390	$2,718	$12,007	$620	$106	$53	$13	$1,227
80% AMI (Owner)	Ownership	$167,895	$16,790	$1,822	$8,009	$1,436	$722	$101	$34	$999
100% AMI (Owner)	Ownership	$111,994	$11,199	$745	$3,281	$1,025	$482	$90	$28	$0
Total				**$7,608**	**$33,513**	**$3,333**	**$3,087**	**$286**	**$75**	**$3,234**
									Per Lodging Room[3]	*$1,940*
									Per RV Park Site[4]	*$174*

1. TischlerBise analysis (housing demand per 1,000 square feet of bulding area multiplied by affordability gap); assumes 35% worker households in Grand Junction.
2. See supporting figures.
3. Converted from square feet based on 600 square feet of gross building area per room for lodging.
4. RV Park jobs per site of .05 multiplied by Lodging land use fee per job ($3,477). See Appendix C for further detail.

Figure 30 provides the affordable housing linkage fee *per job* for each land use prototype, calculated by dividing the linkage fee per 1,000 sq. ft. by the average jobs per 1,000 sq. ft. (E.g., Retail/Commercial is $7,608 per 1,000 sq. ft. divided by 2.12 jobs per 1,000 sq. ft. = $3,589 per job (rounded).

Figure 30. Maximum Supportable Affordable Housing Linkage Fees per Job

	Retail / Commercial	Convenience Commercial	Office	Institutional	Industrial	Warehousing	Lodging
Linkage Fee per 1,000 Sq. Ft.	$7,608	$33,513	$3,333	$3,087	$286	$75	$3,234
Jobs per 1,000 Sq. Ft.	2.12	9.35	3.26	2.86	1.16	0.34	0.93
Linkage Fee per Job	**$3,589**	**$3,584**	**$1,022**	**$1,079**	**$247**	**$221**	**$3,477**

APPENDIX A. GLOSSARY

Workers: Full and Part-time employees

Worker Household: Households with at least one worker

Occupation: A person's job or the type of work they do. Examples include a physical therapist, cashier, security guard, or electrician. The analysis uses "major group level" (per Standard Occupational Classification (SOC) (Bureau of Labor Statistics)).

Industry: The business activity of a person's employer or, if self-employed, of their company or business. Examples include a grocery store, hospital, bank, or aircraft manufacturer. Industries are classified by NAICS codes. *An industry includes people with different occupations who work for the same type of business.*

Sources: Bureau of Labor Statistics (**https://www.bls.gov/cps/definitions.htm**); U.S. Census (**https://www.census.gov/glossary/**)

APPENDIX B: SUPPORTING DATA

Nonresidential employee demand factor supporting data is provided below:

Figure 31. Employee Factors

ITE Code	Land Use Group	Demand Unit	Avg Wkdy Trip Ends Per Demand Unit[1]	Avg Wkdy Trip Ends Per Employee[1]	Employees Per Demand Unit	Square Feet Per Employee
130	Industrial Park	1,000 Sq Ft	3.37	2.91	1.16	864
150	Warehousing	1,000 Sq Ft	1.71	5.05	0.34	2,953
310	Hotel	room	7.99	14.34	0.56	na
310	Hotel (assume 600 sf per room)	1,000 Sq Ft			0.93	na
610	Hospital	1,000 Sq Ft	10.77	3.77	2.86	350
710	General Office (avg size)	1,000 Sq Ft	10.84	3.33	3.26	307
820	Shopping Center (avg size ~500ksf)	1,000 Sq Ft	37.01	17.42	2.12	471
934	Fast Food	1,000 Sq Ft	50.94	5.45	9.35	107

1. *Trip Generation , Institute of Transportation Engineers (ITE), 11th Edition (2021).*

Figure 32. RV Park Employee Factor

Median RV Park/Campground Profile

Employees (Full- and Part-Time)	5
Number of Sites	92
Employees per Site	0.05

Figures reflect medians from the Industry Benchmarking Survey conducted by ARVC and Readex Research in 2023.

Source: National Association of RV Parks & Campgrounds (ARVC) , "2023 Outdoor Hospitality Industry Benchmarking Report."

APPENDIX C. BUILDING PROTOTYPE DETAIL

Included in the appendix are the following tables for each building prototype:

1. Income by Occupation
2. Household Distribution
3. Household Income
4. Percent of Median Income by Household Type and Occupation
5. Worker Households per 20,000 sq. ft. by AMI Level
    a. 50% and Below
    b. 60%
    c. 80%
    d. 100%
    e. 120%
    f. 120% and over

RETAIL / COMMERCIAL

Figure 33: Income by Occupation for Retail/Commercial Building Prototype

Occupation Distribution	Grand Junction 2024 Average Income[1]	Occup. as Share of Retail Workers[2]	Average Income per HH (rounded)	Wrkr Households per 20,000 SF[3] 23.6 Total Wrkr Households
Management Occupations	$63,532	4.3%	$2,700	1.0
Business and Financial Operations Occupations	$59,150	2.9%	$1,730	0.7
Computer and Mathematical Occupations	$68,170	0.1%	$80	0.0
Architecture and Engineering Occupations	$0	0.0%	$0	0.0
Life, Physical, and Social Science Occupations	$61,152	0.5%	$300	0.1
Community and Social Service Occupations	$0	0.0%	$0	0.0
Legal Occupations	$0	0.0%	$0	0.0
Educational Instruction and Library Occupations	$26,414	0.6%	$150	0.1
Arts, Design, Entertainment, Sports, and Media Occupations	$23,504	3.3%	$780	0.8
Healthcare Practitioners and Technical Occupations	$105,514	1.6%	$1,700	0.4
Healthcare Support Occupations	$67,287	0.0%	$30	0.0
Protective Service Occupations	$13,791	1.3%	$180	0.3
Food Preparation and Serving Related Occupations	$20,805	22.4%	$4,660	5.3
Building and Grounds Cleaning and Maintenance Occupations	$32,002	2.0%	$630	0.5
Personal Care and Service Occupations	$17,318	2.4%	$420	0.6
Sales and Related Occupations	$34,081	29.8%	$10,160	7.0
Office and Administrative Support Occupations	$21,532	9.5%	$2,040	2.2
Farming, Fishing, and Forestry Occupations	$36,835	0.2%	$80	0.0
Construction and Extraction Occupations	$28,527	0.6%	$170	0.1
Installation, Maintenance, and Repair Occupations	$62,439	3.1%	$1,950	0.7
Production Occupations	$31,658	2.8%	$900	0.7
Transportation and Material Moving Occupations	$27,032	12.5%	$3,370	2.9
Weighted Average Annual Wage		**100.0%**	**$32,030**	23.6

1. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates, Public Use Microdata Sample (PUMS) for Grand Junction City Public Use Microdata Area (PUMA) 1001 [2010 PUMA boundary] and 2501 [2020 PUMA boundary]. ACS income adjusted to constant 2022 dollars with ACS data. Average incomes adjusted to 2024 dollars using QCEW percent wage increase in Mesa County from 2022 to 2024.

2. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates, Public Use Microdata Sample (PUMS) for Grand Junction City Public Use Microdata Area (PUMA) 1001 [2010 PUMA boundary] and 2501 [2020 PUMA boundary].

3. Worker Household estimate from U.S. Census data and ITE data.

Figure 34: Household Distribution for Retail/Commercial Building Prototype

	1 person	2 person	3 person	4+ person	Total
Worker Households per 20,000 sq. ft.[1]					
Management Occupations	0.15	0.32	0.20	0.33	**1.00**
Business and Financial Operations Occupations	0.10	0.22	0.14	0.23	**0.69**
Computer and Mathematical Occupations	0.00	0.01	0.01	0.01	**0.03**
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	**0.00**
Life, Physical, and Social Science Occupations	0.02	0.04	0.02	0.04	**0.11**
Community and Social Service Occupations	0.00	0.00	0.00	0.00	**0.00**
Legal Occupations	0.00	0.00	0.00	0.00	**0.00**
Education, Training, and Library Occupations	0.02	0.04	0.03	0.05	**0.14**
Arts, Design, Entertainment, Sports, and Media Occupatio	0.12	0.25	0.16	0.26	**0.79**
Healthcare Practitioners and Technical Occupations	0.06	0.12	0.08	0.13	**0.38**
Healthcare Support Occupations	0.00	0.00	0.00	0.00	**0.01**
Protective Service Occupations	0.05	0.10	0.06	0.10	**0.31**
Food Preparation and Serving Related Occupations	0.79	1.66	1.08	1.76	**5.29**
Building and Grounds Cleaning and Maintenance Occupat	0.07	0.15	0.09	0.15	**0.47**
Personal Care and Service Occupations	0.08	0.18	0.12	0.19	**0.57**
Sales and Related Occupations	1.05	2.21	1.43	2.34	**7.04**
Office and Administrative Support Occupations	0.33	0.70	0.45	0.74	**2.23**
Farming, Fishing, and Forestry Occupations	0.01	0.02	0.01	0.02	**0.05**
Construction and Extraction Occupations	0.02	0.04	0.03	0.05	**0.14**
Installation, Maintenance, and Repair Occupations	0.11	0.23	0.15	0.25	**0.74**
Production Occupations	0.10	0.21	0.14	0.22	**0.67**
Transportation and Material Moving Occupations	0.44	0.92	0.60	0.98	**2.94**
Total	**3.52**	**7.42**	**4.80**	**7.85**	**23.60**

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Figure 35: Household Income for Retail/Commercial Building Prototype

	1 person	2 person	3 person	4+ person	Average
City of Grand Junction Avg. Household Income by Occupation per Household Size[1]					
Management Occupations	$82,591	$101,651	$133,417	$146,123	$114,357
Business and Financial Operations Occupations	$76,895	$94,640	$124,215	$136,045	$106,470
Computer and Mathematical Occupations	$88,621	$109,072	$143,157	$156,791	$122,706
Architecture and Engineering Occupations	$0	$0	$0	$0	$0
Life, Physical, and Social Science Occupations	$79,498	$97,843	$128,419	$140,650	$110,074
Community and Social Service Occupations	$0	$0	$0	$0	$0
Legal Occupations	$0	$0	$0	$0	$0
Education, Training, and Library Occupations	$34,338	$42,262	$55,468	$60,751	$47,544
Arts, Design, Entertainment, Sports, and Media Occupations	$30,556	$37,607	$49,359	$54,060	$42,308
Healthcare Practitioners and Technical Occupations	$137,168	$168,822	$221,579	$242,681	$189,924
Healthcare Support Occupations	$87,473	$107,659	$141,302	$154,759	$121,116
Protective Service Occupations	$17,929	$22,066	$28,962	$31,720	$24,824
Food Preparation and Serving Related Occupations	$27,046	$33,287	$43,690	$47,851	$37,448
Building and Grounds Cleaning and Maintenance Occupations	$41,603	$51,203	$67,205	$73,605	$57,604
Personal Care and Service Occupations	$22,514	$27,710	$36,369	$39,832	$31,173
Sales and Related Occupations	$44,305	$54,529	$71,570	$78,386	$61,345
Office and Administrative Support Occupations	$27,991	$34,451	$45,216	$49,523	$38,757
Farming, Fishing, and Forestry Occupations	$47,886	$58,936	$77,354	$84,721	$66,303
Construction and Extraction Occupations	$37,084	$45,642	$59,906	$65,611	$51,348
Installation, Maintenance, and Repair Occupations	$81,171	$99,902	$131,122	$143,610	$112,390
Production Occupations	$41,155	$50,652	$66,481	$72,813	$56,984
Transportation and Material Moving Occupations	$35,141	$43,251	$56,767	$62,173	$48,657

1. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates, Public Use Microdata Sample (PUMS) for Grand Junction City Public Use Microdata Area (PUMA) 1001 [2010 PUMA boundary] and 2501 [2020 PUMA boundary]. ACS income adjusted to constant 2022 dollars with ACS data. Average incomes adjusted to 2024 dollars using QCEW percent wage increase in Mesa County from 2022 to 2024.

Figure 36: Percent of Median Income by Household Type and Occupation for Retail/Commercial Building Prototype

Area Median Income-->	$66,000	$75,400	$84,800	$94,200
Percent of Median Income by Occupation	**1 person**	**2 person**	**3 person**	**4+ person**
Management Occupations	125%	135%	157%	155%
Business and Financial Operations Occupations	117%	126%	146%	144%
Computer and Mathematical Occupations	134%	145%	169%	166%
Architecture and Engineering Occupations	0%	0%	0%	0%
Life, Physical, and Social Science Occupations	120%	130%	151%	149%
Community and Social Service Occupations	0%	0%	0%	0%
Legal Occupations	0%	0%	0%	0%
Education, Training, and Library Occupations	*52%*	*56%*	*65%*	*64%*
Arts, Design, Entertainment, Sports, and Media Occupations	*46%*	*50%*	*58%*	*57%*
Healthcare Practitioners and Technical Occupations	208%	224%	261%	258%
Healthcare Support Occupations	133%	143%	167%	164%
Protective Service Occupations	*27%*	*29%*	*34%*	*34%*
Food Preparation and Serving Related Occupations	*41%*	*44%*	*52%*	*51%*
Building and Grounds Cleaning and Maintenance Occupations	*63%*	*68%*	*79%*	*78%*
Personal Care and Service Occupations	*34%*	*37%*	*43%*	*42%*
Sales and Related Occupations	*67%*	*72%*	*84%*	*83%*
Office and Administrative Support Occupations	*42%*	*46%*	*53%*	*53%*
Farming, Fishing, and Forestry Occupations	*73%*	*78%*	*91%*	*90%*
Construction and Extraction Occupations	*56%*	*61%*	*71%*	*70%*
Installation, Maintenance, and Repair Occupations	123%	132%	155%	152%
Production Occupations	*62%*	*67%*	*78%*	*77%*
Transportation and Material Moving Occupations	*53%*	*57%*	*67%*	*66%*

Red indicates a value less than 100% (reflecting the median household income).

Figure 37: Worker Households per 20,000 sq. ft. by AMI Level for Retail/Commercial Building Prototype

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
50% AMI and Below					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.12	0.25	0.00	0.00	0.37
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.05	0.10	0.06	0.10	0.31
Food Preparation and Serving Related Occupations	0.79	1.66	0.00	0.00	2.45
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	0.00	0.00	0.00
Personal Care and Service Occupations	0.08	0.18	0.12	0.19	0.57
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.33	0.70	0.00	0.00	1.03
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.00	0.00	0.00	0.00	0.00
Total	1.37	2.89	0.18	0.29	4.73

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
60% AMI (Over 50 to 60% AMI)					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.02	0.04	0.00	0.00	0.06
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.16	0.26	0.42
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.00	0.00	1.08	1.76	2.84
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	0.00	0.00	0.00
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.00	0.00	0.45	0.74	1.19
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.02	0.00	0.00	0.00	0.02
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.44	0.92	0.00	0.00	1.36
Total	0.48	0.96	1.69	2.76	5.89

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Figure 38: Worker Households per 20,000 sq. ft. by AMI Level for Retail/Commercial Building Prototype (continued)

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
80% AMI (Over 60 to 80% AMI)					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.03	0.05	0.08
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.07	0.15	0.09	0.15	0.46
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	1.05	2.21	0.00	0.00	3.26
Office and Administrative Support Occupations	0.00	0.00	0.00	0.00	0.00
Farming, Fishing, and Forestry Occupations	0.01	0.02	0.00	0.00	0.03
Construction and Extraction Occupations	0.00	0.04	0.03	0.05	0.12
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.10	0.21	0.14	0.22	0.67
Transportation and Material Moving Occupations	0.00	0.00	0.60	0.98	1.58
Total	1.23	2.63	0.89	1.45	6.20

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
100% AMI (Over 80 to 100% AMI)					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	0.00	0.00	0.00
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	1.43	2.34	3.77
Office and Administrative Support Occupations	0.00	0.00	0.00	0.00	0.00
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.01	0.02	0.03
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	1.44	2.36	3.80

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Figure 39: Worker Households per 20,000 sq. ft. by AMI Level for Retail/Commercial Building Prototype (continued)

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
120% AMI (Over 100 to 120% AMI)					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.10	0.00	0.00	0.00	0.10
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	0.00	0.00	0.00
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.00	0.00	0.00	0.00	0.00
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.00	0.00	0.00	0.00	0.00
Total	**0.10**	**0.00**	**0.00**	**0.00**	**0.10**

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
120%+ AMI					
Management Occupations	0.15	0.32	0.20	0.33	1.00
Business and Financial Operations Occupations	0.00	0.22	0.14	0.23	0.59
Computer and Mathematical Occupations	0.00	0.01	0.01	0.01	0.03
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.02	0.04	0.02	0.04	0.12
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.06	0.12	0.08	0.13	0.39
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	0.00	0.00	0.00
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.00	0.00	0.00	0.00	0.00
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.11	0.23	0.15	0.25	0.74
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.00	0.00	0.00	0.00	0.00
Total	**0.34**	**0.94**	**0.60**	**0.99**	**2.87**

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

CONVENIENCE COMMERCIAL

Figure 40: Income by Occupation for Convenience Commercial Building Prototype

Occupation Distribution	Grand Junction 2024 Average Income[1]	Occup. as Share of Retail Workers[2]	Average Income per HH (rounded)	Wrkr Households per 20,000 SF[3] 103.9 Total Wrkr Households
Management Occupations	$63,532	4.3%	$2,700	4.4
Business and Financial Operations Occupations	$59,150	2.9%	$1,730	3.0
Computer and Mathematical Occupations	$68,170	0.1%	$80	0.1
Architecture and Engineering Occupations	$0	0.0%	$0	0.0
Life, Physical, and Social Science Occupations	$61,152	0.5%	$300	0.5
Community and Social Service Occupations	$0	0.0%	$0	0.0
Legal Occupations	$0	0.0%	$0	0.0
Educational Instruction and Library Occupations	$26,414	0.6%	$150	0.6
Arts, Design, Entertainment, Sports, and Media Occupations	$23,504	3.3%	$780	3.5
Healthcare Practitioners and Technical Occupations	$105,514	1.6%	$1,700	1.7
Healthcare Support Occupations	$67,287	0.0%	$30	0.0
Protective Service Occupations	$13,791	1.3%	$180	1.4
Food Preparation and Serving Related Occupations	$20,805	22.4%	$4,660	23.3
Building and Grounds Cleaning and Maintenance Occupations	$32,002	2.0%	$630	2.0
Personal Care and Service Occupations	$17,318	2.4%	$420	2.5
Sales and Related Occupations	$34,081	29.8%	$10,160	31.0
Office and Administrative Support Occupations	$21,532	9.5%	$2,040	9.8
Farming, Fishing, and Forestry Occupations	$36,835	0.2%	$80	0.2
Construction and Extraction Occupations	$28,527	0.6%	$170	0.6
Installation, Maintenance, and Repair Occupations	$62,439	3.1%	$1,950	3.3
Production Occupations	$31,658	2.8%	$900	2.9
Transportation and Material Moving Occupations	$27,032	12.5%	$3,370	13.0
Weighted Average Annual Wage		**100.0%**	**$32,030**	103.9

1. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates, Public Use Microdata Sample (PUMS) for Grand Junction City Public Use Microdata Area (PUMA) 1001 [2010 PUMA boundary] and 2501 [2020 PUMA boundary]. ACS income adjusted to constant 2022 dollars with ACS data. Average incomes adjusted to 2024 dollars using QCEW percent wage increase in Mesa County from 2022 to 2024.

2. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates, Public Use Microdata Sample (PUMS) for Grand Junction City Public Use Microdata Area (PUMA) 1001 [2010 PUMA boundary] and 2501 [2020 PUMA boundary].

3. Worker Household estimate from U.S. Census data and ITE data.

Figure 41: Household Distribution for Convenience Commercial Building Prototype

	1 person	2 person	3 person	4+ person	Total
Worker Households per 20,000 sq. ft.[1]					
Management Occupations	0.66	1.39	0.90	1.47	**4.42**
Business and Financial Operations Occupations	0.45	0.96	0.62	1.01	**3.04**
Computer and Mathematical Occupations	0.02	0.04	0.03	0.04	**0.13**
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	**0.00**
Life, Physical, and Social Science Occupations	0.08	0.16	0.10	0.17	**0.50**
Community and Social Service Occupations	0.00	0.00	0.00	0.00	**0.00**
Legal Occupations	0.00	0.00	0.00	0.00	**0.00**
Education, Training, and Library Occupations	0.09	0.19	0.12	0.20	**0.61**
Arts, Design, Entertainment, Sports, and Media Occupations	0.52	1.09	0.70	1.15	**3.46**
Healthcare Practitioners and Technical Occupations	0.25	0.52	0.34	0.56	**1.67**
Healthcare Support Occupations	0.01	0.02	0.01	0.02	**0.05**
Protective Service Occupations	0.21	0.44	0.28	0.46	**1.39**
Food Preparation and Serving Related Occupations	3.48	7.32	4.74	7.76	**23.29**
Building and Grounds Cleaning and Maintenance Occupations	0.31	0.64	0.42	0.68	**2.05**
Personal Care and Service Occupations	0.37	0.78	0.51	0.83	**2.50**
Sales and Related Occupations	4.63	9.73	6.31	10.32	**30.98**
Office and Administrative Support Occupations	1.47	3.09	2.00	3.27	**9.83**
Farming, Fishing, and Forestry Occupations	0.03	0.07	0.04	0.07	**0.22**
Construction and Extraction Occupations	0.09	0.19	0.13	0.21	**0.62**
Installation, Maintenance, and Repair Occupations	0.49	1.02	0.66	1.08	**3.25**
Production Occupations	0.44	0.92	0.60	0.98	**2.94**
Transportation and Material Moving Occupations	1.94	4.07	2.64	4.32	**12.96**
Total	**15.54**	**32.64**	**21.15**	**34.60**	**103.90**

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Figure 42: Household Income for Convenience Commercial Building Prototype

	1 person	2 person	3 person	4+ person	Average
City of Grand Junction Avg. Household Income by Occupation per Household Size[1]					
Management Occupations	$82,591	$101,651	$133,417	$146,123	$114,357
Business and Financial Operations Occupations	$76,895	$94,640	$124,215	$136,045	$106,470
Computer and Mathematical Occupations	$88,621	$109,072	$143,157	$156,791	$122,706
Architecture and Engineering Occupations	$0	$0	$0	$0	$0
Life, Physical, and Social Science Occupations	$79,498	$97,843	$128,419	$140,650	$110,074
Community and Social Service Occupations	$0	$0	$0	$0	$0
Legal Occupations	$0	$0	$0	$0	$0
Education, Training, and Library Occupations	$34,338	$42,262	$55,468	$60,751	$47,544
Arts, Design, Entertainment, Sports, and Media Occupations	$30,556	$37,607	$49,359	$54,060	$42,308
Healthcare Practitioners and Technical Occupations	$137,168	$168,822	$221,579	$242,681	$189,924
Healthcare Support Occupations	$87,473	$107,659	$141,302	$154,759	$121,116
Protective Service Occupations	$17,929	$22,066	$28,962	$31,720	$24,824
Food Preparation and Serving Related Occupations	$27,046	$33,287	$43,690	$47,851	$37,448
Building and Grounds Cleaning and Maintenance Occupations	$41,603	$51,203	$67,205	$73,605	$57,604
Personal Care and Service Occupations	$22,514	$27,710	$36,369	$39,832	$31,173
Sales and Related Occupations	$44,305	$54,529	$71,570	$78,386	$61,345
Office and Administrative Support Occupations	$27,991	$34,451	$45,216	$49,523	$38,757
Farming, Fishing, and Forestry Occupations	$47,886	$58,936	$77,354	$84,721	$66,303
Construction and Extraction Occupations	$37,084	$45,642	$59,906	$65,611	$51,348
Installation, Maintenance, and Repair Occupations	$81,171	$99,902	$131,122	$143,610	$112,390
Production Occupations	$41,155	$50,652	$66,481	$72,813	$56,984
Transportation and Material Moving Occupations	$35,141	$43,251	$56,767	$62,173	$48,657

1. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates, Public Use Microdata Sample (PUMS) for Grand Junction City Public Use Microdata Area (PUMA) 1001 [2010 PUMA boundary] and 2501 [2020 PUMA boundary]. ACS income adjusted to constant 2022 dollars with ACS data. Average incomes adjusted to 2024 dollars using QCEW percent wage increase in Mesa County from 2022 to 2024.

Figure 43: Percent of Median Income by Household Type and Occupation for Convenience Commercial Building Prototype

Area Median Income-->	$66,000	$75,400	$84,800	$94,200
Percent of Median Income by Occupation	**1 person**	**2 person**	**3 person**	**4+ person**
Management Occupations	125%	135%	157%	155%
Business and Financial Operations Occupations	117%	126%	146%	144%
Computer and Mathematical Occupations	134%	145%	169%	166%
Architecture and Engineering Occupations	0%	0%	0%	0%
Life, Physical, and Social Science Occupations	120%	130%	151%	149%
Community and Social Service Occupations	0%	0%	0%	0%
Legal Occupations	0%	0%	0%	0%
Education, Training, and Library Occupations	***52%***	***56%***	***65%***	***64%***
Arts, Design, Entertainment, Sports, and Media Occupations	***46%***	***50%***	***58%***	***57%***
Healthcare Practitioners and Technical Occupations	208%	224%	261%	258%
Healthcare Support Occupations	133%	143%	167%	164%
Protective Service Occupations	***27%***	***29%***	***34%***	***34%***
Food Preparation and Serving Related Occupations	***41%***	***44%***	***52%***	***51%***
Building and Grounds Cleaning and Maintenance Occupations	***63%***	***68%***	***79%***	***78%***
Personal Care and Service Occupations	***34%***	***37%***	***43%***	***42%***
Sales and Related Occupations	***67%***	***72%***	***84%***	***83%***
Office and Administrative Support Occupations	***42%***	***46%***	***53%***	***53%***
Farming, Fishing, and Forestry Occupations	***73%***	***78%***	***91%***	***90%***
Construction and Extraction Occupations	***56%***	***61%***	***71%***	***70%***
Installation, Maintenance, and Repair Occupations	123%	132%	155%	152%
Production Occupations	***62%***	***67%***	***78%***	***77%***
Transportation and Material Moving Occupations	***53%***	***57%***	***67%***	***66%***

Red indicates a value less than 100% (reflecting the median household income).

Figure 44: Worker Households per 20,000 sq. ft. by AMI Level for Convenience Commercial Building Prototype

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
50% AMI and Below					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.52	1.09	0.00	0.00	1.61
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.21	0.44	0.28	0.46	1.39
Food Preparation and Serving Related Occupations	3.48	7.32	0.00	0.00	10.80
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	0.00	0.00	0.00
Personal Care and Service Occupations	0.37	0.78	0.51	0.83	2.49
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	1.47	3.09	0.00	0.00	4.56
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.00	0.00	0.00	0.00	0.00
Total	6.05	12.72	0.79	1.29	20.85

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
60% AMI (Over 50 to 60% AMI)					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.09	0.19	0.00	0.00	0.28
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.70	1.15	1.85
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.00	0.00	4.74	7.76	12.50
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	0.00	0.00	0.00
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.00	0.00	2.00	3.27	5.27
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.09	0.00	0.00	0.00	0.09
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	1.94	4.07	0.00	0.00	6.01
Total	2.12	4.26	7.44	12.18	26.00

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Figure 45: Worker Households per 20,000 sq. ft. by AMI Level for Convenience Commercial Building Prototype (continued)

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
80% AMI (Over 60 to 80% AMI)					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.12	0.20	0.32
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.31	0.64	0.42	0.68	2.05
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	4.63	9.73	0.00	0.00	14.36
Office and Administrative Support Occupations	0.00	0.00	0.00	0.00	0.00
Farming, Fishing, and Forestry Occupations	0.03	0.07	0.00	0.00	0.10
Construction and Extraction Occupations	0.00	0.19	0.13	0.21	0.53
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.44	0.92	0.60	0.98	2.94
Transportation and Material Moving Occupations	0.00	0.00	2.64	4.32	6.96
Total	5.41	11.55	3.91	6.39	27.26

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
100% AMI (Over 80 to 100% AMI)					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	0.00	0.00	0.00
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	6.31	10.32	16.63
Office and Administrative Support Occupations	0.00	0.00	0.00	0.00	0.00
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.04	0.07	0.11
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	6.35	10.39	16.74

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Figure 46: Worker Households per 20,000 sq. ft. by AMI Level for Convenience Commercial Building Prototype (continued)

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
120% AMI (Over 100 to 120% AMI)					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.45	0.00	0.00	0.00	0.45
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	0.00	0.00	0.00
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.00	0.00	0.00	0.00	0.00
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.00	0.00	0.00	0.00	0.00
Total	**0.45**	**0.00**	**0.00**	**0.00**	**0.45**

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
120%+ AMI					
Management Occupations	0.66	1.39	0.90	1.47	4.42
Business and Financial Operations Occupations	0.00	0.96	0.62	1.01	2.59
Computer and Mathematical Occupations	0.02	0.04	0.03	0.04	0.13
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.08	0.16	0.10	0.17	0.51
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.25	0.52	0.34	0.56	1.67
Healthcare Support Occupations	0.01	0.02	0.01	0.02	0.06
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	0.00	0.00	0.00
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.00	0.00	0.00	0.00	0.00
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.49	1.02	0.66	1.08	3.25
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.00	0.00	0.00	0.00	0.00
Total	**1.51**	**4.11**	**2.66**	**4.35**	**12.63**

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

OFFICE

Figure 47: Income by Occupation for Office Building Prototype

Occupation Distribution	Grand Junction 2024 Average Income[1]	Occup. as Share of Office Workers[2]	Average Income per HH (rounded)	Wrkr Households per 20,000 SF[3]: 36.2 Total Wrkr Households
Management Occupations	$104,330	10.9%	$11,330	3.9
Business and Financial Operations Occupations	$82,054	5.2%	$4,250	1.9
Computer and Mathematical Occupations	$86,446	2.3%	$1,960	0.8
Architecture and Engineering Occupations	$92,723	2.5%	$2,350	0.9
Life, Physical, and Social Science Occupations	$85,122	1.4%	$1,230	0.5
Community and Social Service Occupations	$58,664	4.0%	$2,350	1.5
Legal Occupations	$100,301	1.6%	$1,570	0.6
Educational Instruction and Library Occupations	$28,029	2.3%	$640	0.8
Arts, Design, Entertainment, Sports, and Media Occupations	$52,336	1.3%	$680	0.5
Healthcare Practitioners and Technical Occupations	$102,635	15.0%	$15,370	5.4
Healthcare Support Occupations	$32,748	10.3%	$3,370	3.7
Protective Service Occupations	$68,268	4.0%	$2,740	1.5
Food Preparation and Serving Related Occupations	$28,674	1.7%	$480	0.6
Building and Grounds Cleaning and Maintenance Occupations	$25,169	4.1%	$1,030	1.5
Personal Care and Service Occupations	$22,444	1.6%	$360	0.6
Sales and Related Occupations	$63,970	3.9%	$2,470	1.4
Office and Administrative Support Occupations	$44,884	15.9%	$7,140	5.8
Farming, Fishing, and Forestry Occupations	$24,786	0.1%	$20	0.0
Construction and Extraction Occupations	$55,937	0.8%	$440	0.3
Installation, Maintenance, and Repair Occupations	$54,482	4.6%	$2,520	1.7
Production Occupations	$44,073	2.9%	$1,290	1.1
Transportation and Material Moving Occupations	$40,130	3.7%	$1,490	1.3
Weighted Average Annual Wage		**100.0%**	**$65,080**	36.2

1. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates, Public Use Microdata Sample (PUMS) for Grand Junction City Public Use Microdata Area (PUMA) 1001 [2010 PUMA boundary] and 2501 [2020 PUMA boundary]. ACS income adjusted to constant 2022 dollars with ACS data. Average incomes adjusted to 2024 dollars using QCEW percent wage increase in Mesa County from 2022 to 2024.

2. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates, Public Use Microdata Sample (PUMS) for Grand Junction City Public Use Microdata Area (PUMA) 1001 [2010 PUMA boundary] and 2501 [2020 PUMA boundary].

3. Worker Household estimate from U.S. Census data and ITE data.

Figure 48: Household Distribution for Office Building Prototype

	1 person	2 person	3 person	4+ person	Total
Worker Households per 20,000 sq. ft.[1]					
Management Occupations	0.57	1.38	0.77	1.21	**3.93**
Business and Financial Operations Occupations	0.27	0.66	0.37	0.58	**1.87**
Computer and Mathematical Occupations	0.12	0.29	0.16	0.25	**0.82**
Architecture and Engineering Occupations	0.13	0.32	0.18	0.28	**0.92**
Life, Physical, and Social Science Occupations	0.08	0.18	0.10	0.16	**0.52**
Community and Social Service Occupations	0.21	0.51	0.29	0.45	**1.45**
Legal Occupations	0.08	0.20	0.11	0.17	**0.57**
Education, Training, and Library Occupations	0.12	0.29	0.16	0.25	**0.82**
Arts, Design, Entertainment, Sports, and Media Occupations	0.07	0.16	0.09	0.14	**0.47**
Healthcare Practitioners and Technical Occupations	0.78	1.91	1.07	1.67	**5.42**
Healthcare Support Occupations	0.54	1.31	0.73	1.15	**3.73**
Protective Service Occupations	0.21	0.51	0.29	0.45	**1.45**
Food Preparation and Serving Related Occupations	0.09	0.21	0.12	0.19	**0.61**
Building and Grounds Cleaning and Maintenance Occupations	0.21	0.52	0.29	0.46	**1.48**
Personal Care and Service Occupations	0.08	0.21	0.12	0.18	**0.59**
Sales and Related Occupations	0.20	0.49	0.28	0.43	**1.40**
Office and Administrative Support Occupations	0.83	2.02	1.13	1.77	**5.76**
Farming, Fishing, and Forestry Occupations	0.00	0.01	0.00	0.01	**0.02**
Construction and Extraction Occupations	0.04	0.10	0.06	0.09	**0.29**
Installation, Maintenance, and Repair Occupations	0.24	0.59	0.33	0.52	**1.68**
Production Occupations	0.15	0.37	0.21	0.33	**1.06**
Transportation and Material Moving Occupations	0.19	0.47	0.26	0.41	**1.34**
Total	**5.21**	**12.71**	**7.12**	**11.15**	**36.20**

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Figure 49: Household Income for Office Building Prototype

	1 person	2 person	3 person	4+ person	Average
City of Grand Junction Avg. Household Income by Occupation per Household Size[1]					
Management Occupations	$135,628	$166,927	$219,092	$239,958	$187,793
Business and Financial Operations Occupations	$106,671	$131,287	$172,314	$188,725	$147,698
Computer and Mathematical Occupations	$112,379	$138,313	$181,536	$198,825	$155,602
Architecture and Engineering Occupations	$120,541	$148,358	$194,719	$213,264	$166,902
Life, Physical, and Social Science Occupations	$110,658	$136,194	$178,755	$195,780	$153,219
Community and Social Service Occupations	$76,263	$93,863	$123,195	$134,928	$105,596
Legal Occupations	$130,391	$160,482	$210,632	$230,692	$180,542
Education, Training, and Library Occupations	$36,438	$44,846	$58,861	$64,466	$50,452
Arts, Design, Entertainment, Sports, and Media Occupations	$68,037	$83,738	$109,906	$120,373	$94,205
Healthcare Practitioners and Technical Occupations	$133,426	$164,216	$215,534	$236,061	$184,743
Healthcare Support Occupations	$42,572	$52,396	$68,770	$75,319	$58,946
Protective Service Occupations	$88,748	$109,228	$143,362	$157,016	$122,882
Food Preparation and Serving Related Occupations	$37,276	$45,879	$60,216	$65,951	$51,614
Building and Grounds Cleaning and Maintenance Occupations	$32,719	$40,270	$52,855	$57,888	$45,304
Personal Care and Service Occupations	$29,177	$35,910	$47,132	$51,620	$40,398
Sales and Related Occupations	$83,161	$102,353	$134,338	$147,132	$115,147
Office and Administrative Support Occupations	$58,349	$71,814	$94,256	$103,233	$80,791
Farming, Fishing, and Forestry Occupations	$32,222	$39,657	$52,050	$57,007	$44,615
Construction and Extraction Occupations	$72,718	$89,500	$117,468	$128,656	$100,687
Installation, Maintenance, and Repair Occupations	$70,826	$87,171	$114,412	$125,308	$98,067
Production Occupations	$57,295	$70,517	$92,554	$101,369	$79,332
Transportation and Material Moving Occupations	$52,169	$64,208	$84,272	$92,298	$72,233

1. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates, Public Use Microdata Sample (PUMS) for Grand Junction City Public Use Microdata Area (PUMA) 1001 [2010 PUMA boundary] and 2501 [2020 PUMA boundary]. ACS income adjusted to constant 2022 dollars with ACS data. Average incomes adjusted to 2024 dollars using QCEW percent wage increase in Mesa County from 2022 to 2024.

Figure 50: Percent of Median Income by Household Type and Occupation for Office Building Prototype

Area Median Income-->	$66,000	$75,400	$84,800	$94,200
Percent of Median Income by Occupation	**1 person**	**2 person**	**3 person**	**4+ person**
Management Occupations	205%	221%	258%	255%
Business and Financial Operations Occupations	162%	174%	203%	200%
Computer and Mathematical Occupations	170%	183%	214%	211%
Architecture and Engineering Occupations	183%	197%	230%	226%
Life, Physical, and Social Science Occupations	168%	181%	211%	208%
Community and Social Service Occupations	116%	124%	145%	143%
Legal Occupations	198%	213%	248%	245%
Education, Training, and Library Occupations	***55%***	***59%***	***69%***	***68%***
Arts, Design, Entertainment, Sports, and Media Occupations	103%	111%	130%	128%
Healthcare Practitioners and Technical Occupations	202%	218%	254%	251%
Healthcare Support Occupations	***65%***	***69%***	***81%***	***80%***
Protective Service Occupations	134%	145%	169%	167%
Food Preparation and Serving Related Occupations	***56%***	***61%***	***71%***	***70%***
Building and Grounds Cleaning and Maintenance Occupations	***50%***	***53%***	***62%***	***61%***
Personal Care and Service Occupations	***44%***	***48%***	***56%***	***55%***
Sales and Related Occupations	126%	136%	158%	156%
Office and Administrative Support Occupations	***88%***	***95%***	111%	110%
Farming, Fishing, and Forestry Occupations	***49%***	***53%***	***61%***	***61%***
Construction and Extraction Occupations	110%	119%	139%	137%
Installation, Maintenance, and Repair Occupations	107%	116%	135%	133%
Production Occupations	***87%***	***94%***	109%	108%
Transportation and Material Moving Occupations	***79%***	***85%***	***99%***	***98%***

Red indicates a value less than 100% (reflecting the median household income).

Figure 51: Worker Households per 20,000 sq. ft. by AMI Level for Office Building Prototype

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
50% AMI and Below					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.21	0.00	0.00	0.00	0.21
Personal Care and Service Occupations	0.08	0.21	0.00	0.00	0.29
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.00	0.00	0.00	0.00	0.00
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.00	0.00	0.00	0.00	0.00
Total	0.29	0.21	**0.00**	**0.00**	0.50

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
60% AMI (Over 50 to 60% AMI)					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.12	0.29	0.00	0.00	0.41
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.09	0.00	0.00	0.00	0.09
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.52	0.00	0.00	0.52
Personal Care and Service Occupations	0.00	0.00	0.12	0.18	0.30
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.00	0.00	0.00	0.00	0.00
Farming, Fishing, and Forestry Occupations	0.00	0.01	0.00	0.00	0.01
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.00	0.00	0.00	0.00	0.00
Total	0.21	0.82	0.12	0.18	1.33

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Figure 52: Worker Households per 20,000 sq. ft. by AMI Level for Office Building Prototype (continued)

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
80% AMI (Over 60 to 80% AMI)					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.16	0.25	0.41
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.54	1.31	0.00	1.15	3.00
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.00	0.21	0.12	0.19	0.52
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	0.29	0.46	0.75
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.00	0.00	0.00	0.00	0.00
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.01	0.01
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.19	0.00	0.00	0.00	0.19
Total	0.73	1.52	0.57	2.06	4.88

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
100% AMI (Over 80 to 100% AMI)					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.73	0.00	0.73
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	0.00	0.00	0.00
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.83	2.02	0.00	0.00	2.85
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.15	0.37	0.00	0.00	0.52
Transportation and Material Moving Occupations	0.00	0.47	0.26	0.41	1.14
Total	0.98	2.86	0.99	0.41	5.24

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Figure 53: Worker Households per 20,000 sq. ft. by AMI Level for Office Building Prototype (continued)

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
120% AMI (Over 100 to 120% AMI)					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.21	0.00	0.00	0.00	0.21
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.07	0.16	0.00	0.00	0.23
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	0.00	0.00	0.00
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.00	0.00	1.13	1.77	2.90
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.04	0.10	0.00	0.00	0.14
Installation, Maintenance, and Repair Occupations	0.24	0.59	0.00	0.00	0.83
Production Occupations	0.00	0.00	0.21	0.33	0.54
Transportation and Material Moving Occupations	0.00	0.00	0.00	0.00	0.00
Total	0.56	0.85	1.34	2.10	4.85

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
120%+ AMI					
Management Occupations	0.57	1.38	0.77	1.21	3.93
Business and Financial Operations Occupations	0.27	0.66	0.37	0.58	1.88
Computer and Mathematical Occupations	0.12	0.29	0.16	0.25	0.82
Architecture and Engineering Occupations	0.13	0.32	0.18	0.28	0.91
Life, Physical, and Social Science Occupations	0.08	0.18	0.10	0.16	0.52
Community and Social Service Occupations	0.00	0.51	0.29	0.45	1.25
Legal Occupations	0.08	0.20	0.11	0.17	0.56
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.09	0.14	0.23
Healthcare Practitioners and Technical Occupations	0.78	1.91	1.07	1.67	5.43
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.21	0.51	0.29	0.45	1.46
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	0.00	0.00	0.00
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.20	0.49	0.28	0.43	1.40
Office and Administrative Support Occupations	0.00	0.00	0.00	0.00	0.00
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.00	0.00	0.06	0.09	0.15
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.33	0.52	0.85
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.00	0.00	0.00	0.00	0.00
Total	2.44	6.45	4.10	6.40	19.39

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

INSTITUTIONAL

Figure 54: Income by Occupation for Institutional Building Prototype

Occupation Distribution	Grand Junction 2024 Average Income[1]	Occup. as Share of Institutional Workers[2]	Average Income per HH (rounded)	Households per 20,000 SF[3]: 31.8 — Total Wrkr Households
Management Occupations	$94,030	4.1%	$3,870	1.3
Business and Financial Operations Occupations	$38,596	2.2%	$850	0.7
Computer and Mathematical Occupations	$86,600	2.2%	$1,880	0.7
Architecture and Engineering Occupations	$6,148	0.2%	$10	0.1
Life, Physical, and Social Science Occupations	$81,029	2.2%	$1,750	0.7
Community and Social Service Occupations	$42,109	3.1%	$1,290	1.0
Legal Occupations	$0	0.0%	$0	0.0
Educational Instruction and Library Occupations	$52,056	61.1%	$31,820	19.4
Arts, Design, Entertainment, Sports, and Media Occupations	$35,645	2.4%	$860	0.8
Healthcare Practitioners and Technical Occupations	$84,220	0.6%	$520	0.2
Healthcare Support Occupations	$46,638	0.7%	$310	0.2
Protective Service Occupations	$18,879	0.5%	$90	0.1
Food Preparation and Serving Related Occupations	$28,616	3.2%	$930	1.0
Building and Grounds Cleaning and Maintenance Occupations	$35,862	5.6%	$2,010	1.8
Personal Care and Service Occupations	$4,691	1.1%	$50	0.4
Sales and Related Occupations	$0	0.0%	$0	0.0
Office and Administrative Support Occupations	$18,652	9.6%	$1,790	3.1
Farming, Fishing, and Forestry Occupations	$0	0.0%	$0	0.0
Construction and Extraction Occupations	$0	0.0%	$0	0.0
Installation, Maintenance, and Repair Occupations	$70,817	0.4%	$280	0.1
Production Occupations	$0	0.0%	$0	0.0
Transportation and Material Moving Occupations	$41,384	0.8%	$350	0.3
Weighted Average Annual Wage		**100.0%**	**$48,660**	31.8

1. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates, Public Use Microdata Sample (PUMS) for Grand Junction City Public Use Microdata Area (PUMA) 1001 [2010 PUMA boundary] and 2501 [2020 PUMA boundary]. ACS income adjusted to constant 2022 dollars with ACS data. Average incomes adjusted to 2024 dollars using QCEW percent wage increase in Mesa County from 2022 to 2024.

2. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates, Public Use Microdata Sample (PUMS) for Grand Junction City Public Use Microdata Area (PUMA) 1001 [2010 PUMA boundary] and 2501 [2020 PUMA boundary].

3. Worker Household estimate from U.S. Census data and ITE data.

Figure 55: Household Distribution for Institutional Building Prototype

	1 person	2 person	3 person	4+ person	Total
Worker Households per 20,000 sq. ft.[1]					
Management Occupations	0.30	0.47	0.28	0.25	**1.31**
Business and Financial Operations Occupations	0.16	0.25	0.15	0.13	**0.70**
Computer and Mathematical Occupations	0.16	0.25	0.15	0.13	**0.69**
Architecture and Engineering Occupations	0.02	0.03	0.02	0.01	**0.07**
Life, Physical, and Social Science Occupations	0.16	0.25	0.15	0.13	**0.69**
Community and Social Service Occupations	0.23	0.35	0.21	0.18	**0.97**
Legal Occupations	0.00	0.00	0.00	0.00	**0.00**
Education, Training, and Library Occupations	4.50	7.04	4.21	3.68	**19.44**
Arts, Design, Entertainment, Sports, and Media Occupations	0.18	0.28	0.17	0.15	**0.77**
Healthcare Practitioners and Technical Occupations	0.05	0.07	0.04	0.04	**0.20**
Healthcare Support Occupations	0.05	0.08	0.05	0.04	**0.21**
Protective Service Occupations	0.03	0.05	0.03	0.03	**0.15**
Food Preparation and Serving Related Occupations	0.24	0.37	0.22	0.20	**1.03**
Building and Grounds Cleaning and Maintenance Occupations	0.41	0.65	0.39	0.34	**1.78**
Personal Care and Service Occupations	0.08	0.13	0.08	0.07	**0.35**
Sales and Related Occupations	0.00	0.00	0.00	0.00	**0.00**
Office and Administrative Support Occupations	0.71	1.11	0.66	0.58	**3.05**
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	**0.00**
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	**0.00**
Installation, Maintenance, and Repair Occupations	0.03	0.04	0.03	0.02	**0.12**
Production Occupations	0.00	0.00	0.00	0.00	**0.00**
Transportation and Material Moving Occupations	0.06	0.10	0.06	0.05	**0.27**
Total	**7.37**	**11.52**	**6.90**	**6.03**	**31.80**

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Figure 56: Household Income for Institutional Building Prototype

	1 person	2 person	3 person	4+ person	Average
City of Grand Junction Avg. Household Income by Occupation per Household Size[1]					
Management Occupations	$122,239	$150,448	$197,463	$216,269	$169,254
Business and Financial Operations Occupations	$50,175	$61,754	$81,053	$88,772	$69,474
Computer and Mathematical Occupations	$112,581	$138,561	$181,861	$199,181	$155,881
Architecture and Engineering Occupations	$7,993	$9,838	$12,912	$14,141	$11,067
Life, Physical, and Social Science Occupations	$105,338	$129,647	$170,162	$186,368	$145,853
Community and Social Service Occupations	$54,742	$67,374	$88,429	$96,851	$75,796
Legal Occupations	$0	$0	$0	$0	$0
Education, Training, and Library Occupations	$67,672	$83,289	$109,317	$119,728	$93,700
Arts, Design, Entertainment, Sports, and Media Occupations	$46,338	$57,031	$74,854	$81,983	$64,160
Healthcare Practitioners and Technical Occupations	$109,485	$134,751	$176,861	$193,705	$151,595
Healthcare Support Occupations	$60,629	$74,621	$97,940	$107,267	$83,948
Protective Service Occupations	$24,543	$30,206	$39,646	$43,421	$33,982
Food Preparation and Serving Related Occupations	$37,200	$45,785	$60,093	$65,816	$51,508
Building and Grounds Cleaning and Maintenance Occupations	$46,621	$57,380	$75,311	$82,483	$64,552
Personal Care and Service Occupations	$6,099	$7,506	$9,852	$10,790	$8,444
Sales and Related Occupations	$0	$0	$0	$0	$0
Office and Administrative Support Occupations	$24,248	$29,843	$39,169	$42,899	$33,573
Farming, Fishing, and Forestry Occupations	$0	$0	$0	$0	$0
Construction and Extraction Occupations	$0	$0	$0	$0	$0
Installation, Maintenance, and Repair Occupations	$92,062	$113,307	$148,715	$162,879	$127,470
Production Occupations	$0	$0	$0	$0	$0
Transportation and Material Moving Occupations	$53,800	$66,215	$86,907	$95,184	$74,492

1. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates, Public Use Microdata Sample (PUMS) for Grand Junction City Public Use Microdata Area (PUMA) 1001 [2010 PUMA boundary] and 2501 [2020 PUMA boundary]. ACS income adjusted to constant 2022 dollars with ACS data. Average incomes adjusted to 2024 dollars using QCEW percent wage increase in Mesa County from 2022 to 2024.

Figure 57: Percent of Median Income by Household Type and Occupation for Institutional Building Prototype

Area Median Income-->	$66,000	$75,400	$84,800	$94,200
Percent of Median Income by Occupation	**1 person**	**2 person**	**3 person**	**4+ person**
Management Occupations	185%	200%	233%	230%
Business and Financial Operations Occupations	***76%***	***82%***	***96%***	***94%***
Computer and Mathematical Occupations	171%	184%	214%	211%
Architecture and Engineering Occupations	***12%***	***13%***	***15%***	***15%***
Life, Physical, and Social Science Occupations	160%	172%	201%	198%
Community and Social Service Occupations	***83%***	***89%***	104%	103%
Legal Occupations	0%	0%	0%	0%
Education, Training, and Library Occupations	103%	110%	129%	127%
Arts, Design, Entertainment, Sports, and Media Occupations	***70%***	***76%***	***88%***	***87%***
Healthcare Practitioners and Technical Occupations	166%	179%	209%	206%
Healthcare Support Occupations	***92%***	***99%***	115%	114%
Protective Service Occupations	***37%***	***40%***	***47%***	***46%***
Food Preparation and Serving Related Occupations	***56%***	***61%***	***71%***	***70%***
Building and Grounds Cleaning and Maintenance Occupations	***71%***	***76%***	***89%***	***88%***
Personal Care and Service Occupations	9%	10%	***12%***	***11%***
Sales and Related Occupations	0%	0%	0%	0%
Office and Administrative Support Occupations	***37%***	***40%***	***46%***	***46%***
Farming, Fishing, and Forestry Occupations	0%	0%	0%	0%
Construction and Extraction Occupations	0%	0%	0%	0%
Installation, Maintenance, and Repair Occupations	139%	150%	175%	173%
Production Occupations	0%	0%	0%	0%
Transportation and Material Moving Occupations	***82%***	***88%***	102%	101%

Red indicates a value less than 100% (reflecting the median household income).

Figure 58: Worker Households per 20,000 sq. ft. by AMI Level for Institutional Building Prototype

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
50% AMI and Below					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.02	0.03	0.02	0.01	0.08
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.03	0.05	0.03	0.03	0.14
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	0.00	0.00	0.00
Personal Care and Service Occupations	0.08	0.13	0.08	0.07	0.36
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.71	1.11	0.66	0.58	3.06
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.00	0.00	0.00	0.00	0.00
Total	0.84	1.32	0.79	0.69	3.64

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
60% AMI (Over 50 to 60% AMI)					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.24	0.00	0.00	0.00	0.24
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	0.00	0.00	0.00
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.00	0.00	0.00	0.00	0.00
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.00	0.00	0.00	0.00	0.00
Total	0.24	0.00	0.00	0.00	0.24

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Figure 59: Worker Households per 20,000 sq. ft. by AMI Level for Institutional Building Prototype (continued)

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
80% AMI (Over 60 to 80% AMI)					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.16	0.00	0.00	0.00	0.16
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.18	0.28	0.00	0.00	0.46
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.00	0.37	0.22	0.20	0.79
Building and Grounds Cleaning and Maintenance Occupations	0.41	0.65	0.00	0.00	1.06
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.00	0.00	0.00	0.00	0.00
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.00	0.00	0.00	0.00	0.00
Total	0.75	1.30	0.22	0.20	2.47

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
100% AMI (Over 80 to 100% AMI)					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.25	0.15	0.13	0.53
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.23	0.35	0.00	0.00	0.58
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.17	0.15	0.32
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.05	0.08	0.00	0.00	0.13
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	0.39	0.34	0.73
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.00	0.00	0.00	0.00	0.00
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.06	0.10	0.00	0.00	0.16
Total	0.34	0.78	0.71	0.62	2.45

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Figure 60: Worker Households per 20,000 sq. ft. by AMI Level for Institutional Building Prototype (continued)

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
120% AMI (Over 100 to 120% AMI)					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.21	0.18	0.39
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	4.50	7.04	0.00	0.00	11.54
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.05	0.04	0.09
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	0.00	0.00	0.00
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.00	0.00	0.00	0.00	0.00
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.00	0.00	0.06	0.05	0.11
Total	4.50	7.04	0.32	0.27	12.13

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
120%+ AMI					
Management Occupations	0.30	0.47	0.28	0.25	1.30
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.16	0.25	0.15	0.13	0.69
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.16	0.25	0.15	0.13	0.69
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	4.21	3.68	7.89
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.05	0.07	0.04	0.04	0.20
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	0.00	0.00	0.00
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.00	0.00	0.00	0.00	0.00
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.03	0.04	0.03	0.02	0.12
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.00	0.00	0.00	0.00	0.00
Total	0.70	1.08	4.86	4.25	10.89

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

INDUSTRIAL

Figure 61: Income by Occupation for Industrial Building Prototype

Occupation Distribution	Grand Junction 2024 Average Income[1]	Occup. as Share of Industrial Workers[2]	Average Income per HH (rounded)	Wrkr Households per 20,000 SF[3]: 12.90 Total Wrkr Households
Management Occupations	$118,788	13.1%	$15,620	1.70
Business and Financial Operations Occupations	$99,567	2.0%	$1,980	0.26
Computer and Mathematical Occupations	$71,541	1.6%	$1,130	0.20
Architecture and Engineering Occupations	$91,155	3.7%	$3,370	0.48
Life, Physical, and Social Science Occupations	$41,290	0.7%	$300	0.09
Community and Social Service Occupations	$0	0.0%	$0	0.00
Legal Occupations	$0	0.0%	$0	0.00
Educational Instruction and Library Occupations	$47,030	0.4%	$210	0.06
Arts, Design, Entertainment, Sports, and Media Occupations	$18,816	0.2%	$40	0.03
Healthcare Practitioners and Technical Occupations	$0	0.0%	$0	0.00
Healthcare Support Occupations	$0	0.0%	$0	0.00
Protective Service Occupations	$55,886	0.7%	$390	0.09
Food Preparation and Serving Related Occupations	$17,079	0.3%	$50	0.04
Building and Grounds Cleaning and Maintenance Occupations	$24,313	1.3%	$320	0.17
Personal Care and Service Occupations	$37,507	0.1%	$30	0.01
Sales and Related Occupations	$99,314	5.9%	$5,870	0.76
Office and Administrative Support Occupations	$49,455	10.4%	$5,160	1.34
Farming, Fishing, and Forestry Occupations	$31,547	2.5%	$780	0.32
Construction and Extraction Occupations	$53,850	20.6%	$11,110	2.66
Installation, Maintenance, and Repair Occupations	$80,049	4.5%	$3,640	0.59
Production Occupations	$49,947	13.7%	$6,840	1.77
Transportation and Material Moving Occupations	$58,518	18.1%	$10,600	2.34
Weighted Average Annual Wage		**100.0%**	**$67,440**	12.90

1. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates, Public Use Microdata Sample (PUMS) for Grand Junction City Public Use Microdata Area (PUMA) 1001 [2010 PUMA boundary] and 2501 [2020 PUMA boundary]. ACS income adjusted to constant 2022 dollars with ACS data. Average incomes adjusted to 2024 dollars using QCEW percent wage increase in Mesa County from 2022 to 2024.

2. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates, Public Use Microdata Sample (PUMS) for Grand Junction City Public Use Microdata Area (PUMA) 1001 [2010 PUMA boundary] and 2501 [2020 PUMA boundary].

3. Worker Household estimate from U.S. Census data and ITE data.

Figure 62: Household Distribution for Industrial Building Prototype

	1 person	2 person	3 person	4+ person	Total
Worker Households per 20,000 sq. ft.[1]					
Management Occupations	0.22	0.58	0.31	0.59	**1.70**
Business and Financial Operations Occupations	0.03	0.09	0.05	0.09	**0.26**
Computer and Mathematical Occupations	0.03	0.07	0.04	0.07	**0.20**
Architecture and Engineering Occupations	0.06	0.16	0.09	0.17	**0.48**
Life, Physical, and Social Science Occupations	0.01	0.03	0.02	0.03	**0.09**
Community and Social Service Occupations	0.00	0.00	0.00	0.00	**0.00**
Legal Occupations	0.00	0.00	0.00	0.00	**0.00**
Education, Training, and Library Occupations	0.01	0.02	0.01	0.02	**0.06**
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.01	0.01	0.01	**0.03**
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	**0.00**
Healthcare Support Occupations	0.00	0.00	0.00	0.00	**0.00**
Protective Service Occupations	0.01	0.03	0.02	0.03	**0.09**
Food Preparation and Serving Related Occupations	0.01	0.01	0.01	0.01	**0.04**
Building and Grounds Cleaning and Maintenance Occupations	0.02	0.06	0.03	0.06	**0.17**
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	**0.01**
Sales and Related Occupations	0.10	0.26	0.14	0.26	**0.76**
Office and Administrative Support Occupations	0.17	0.46	0.25	0.47	**1.34**
Farming, Fishing, and Forestry Occupations	0.04	0.11	0.06	0.11	**0.32**
Construction and Extraction Occupations	0.34	0.91	0.49	0.92	**2.66**
Installation, Maintenance, and Repair Occupations	0.08	0.20	0.11	0.20	**0.59**
Production Occupations	0.23	0.60	0.32	0.61	**1.77**
Transportation and Material Moving Occupations	0.30	0.80	0.43	0.81	**2.34**
Total	**1.66**	**4.40**	**2.39**	**4.46**	**12.90**

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Figure 63: Household Income for Industrial Building Prototype

	1 person	2 person	3 person	4+ person	Average
City of Grand Junction Avg. Household Income by Occupation per Household Size[1]					
Management Occupations	$154,425	$190,061	$249,455	$273,213	$213,819
Business and Financial Operations Occupations	$129,437	$159,308	$209,091	$229,005	$179,221
Computer and Mathematical Occupations	$93,003	$114,465	$150,236	$164,544	$128,774
Architecture and Engineering Occupations	$118,501	$145,847	$191,425	$209,656	$164,078
Life, Physical, and Social Science Occupations	$53,676	$66,063	$86,708	$94,966	$74,321
Community and Social Service Occupations	$0	$0	$0	$0	$0
Legal Occupations	$0	$0	$0	$0	$0
Education, Training, and Library Occupations	$61,139	$75,248	$98,763	$108,169	$84,654
Arts, Design, Entertainment, Sports, and Media Occupations	$24,461	$30,106	$39,514	$43,277	$33,869
Healthcare Practitioners and Technical Occupations	$0	$0	$0	$0	$0
Healthcare Support Occupations	$0	$0	$0	$0	$0
Protective Service Occupations	$72,652	$89,417	$117,360	$128,538	$100,595
Food Preparation and Serving Related Occupations	$22,203	$27,326	$35,866	$39,282	$30,742
Building and Grounds Cleaning and Maintenance Occupations	$31,607	$38,901	$51,058	$55,921	$43,764
Personal Care and Service Occupations	$48,759	$60,011	$78,764	$86,265	$67,512
Sales and Related Occupations	$129,108	$158,902	$208,559	$228,422	$178,765
Office and Administrative Support Occupations	$64,291	$79,128	$103,855	$113,746	$89,019
Farming, Fishing, and Forestry Occupations	$41,011	$50,475	$66,248	$72,557	$56,784
Construction and Extraction Occupations	$70,005	$86,160	$113,085	$123,855	$96,930
Installation, Maintenance, and Repair Occupations	$104,064	$128,079	$168,103	$184,113	$144,089
Production Occupations	$64,931	$79,915	$104,889	$114,878	$89,904
Transportation and Material Moving Occupations	$76,073	$93,629	$122,888	$134,591	$105,332

1. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates, Public Use Microdata Sample (PUMS) for Grand Junction City Public Use Microdata Area (PUMA) 1001 [2010 PUMA boundary] and 2501 [2020 PUMA boundary]. ACS income adjusted to constant 2022 dollars with ACS data. Average incomes adjusted to 2024 dollars using QCEW percent wage increase in Mesa County from 2022 to 2024.

Figure 64: Percent of Median Income by Household Type and Occupation for Industrial Building Prototype

Area Median Income-->	$66,000	$75,400	$84,800	$94,200
Percent of Median Income by Occupation	1 person	2 person	3 person	4+ person
Management Occupations	234%	252%	294%	290%
Business and Financial Operations Occupations	196%	211%	247%	243%
Computer and Mathematical Occupations	141%	152%	177%	175%
Architecture and Engineering Occupations	180%	193%	226%	223%
Life, Physical, and Social Science Occupations	***81%***	***88%***	102%	101%
Community and Social Service Occupations	0%	0%	0%	0%
Legal Occupations	0%	0%	0%	0%
Education, Training, and Library Occupations	***93%***	***100%***	116%	115%
Arts, Design, Entertainment, Sports, and Media Occupations	***37%***	***40%***	***47%***	***46%***
Healthcare Practitioners and Technical Occupations	0%	0%	0%	0%
Healthcare Support Occupations	0%	0%	0%	0%
Protective Service Occupations	110%	119%	138%	136%
Food Preparation and Serving Related Occupations	***34%***	***36%***	***42%***	***42%***
Building and Grounds Cleaning and Maintenance Occupations	***48%***	***52%***	***60%***	***59%***
Personal Care and Service Occupations	***74%***	***80%***	***93%***	***92%***
Sales and Related Occupations	196%	211%	246%	242%
Office and Administrative Support Occupations	***97%***	105%	122%	121%
Farming, Fishing, and Forestry Occupations	***62%***	***67%***	***78%***	***77%***
Construction and Extraction Occupations	106%	114%	133%	131%
Installation, Maintenance, and Repair Occupations	158%	170%	198%	195%
Production Occupations	***98%***	106%	124%	122%
Transportation and Material Moving Occupations	115%	124%	145%	143%

Red indicates a value less than 100% (reflecting the median household income).

Figure 65: Worker Households per 20,000 sq. ft. by AMI Level for Industrial Building Prototype

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
50% AMI and Below					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.01	0.01	0.01	0.03
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.01	0.01	0.01	0.01	0.04
Building and Grounds Cleaning and Maintenance Occupations	0.02	0.00	0.00	0.00	0.02
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.00	0.00	0.00	0.00	0.00
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.00	0.00	0.00	0.00	0.00
Total	0.03	0.02	0.02	0.02	0.09

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
60% AMI (Over 50 to 60% AMI)					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.06	0.00	0.06	0.12
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.00	0.00	0.00	0.00	0.00
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.06	0.00	0.06	0.12

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Figure 66: Worker Households per 20,000 sq. ft. by AMI Level for Industrial Building Prototype (continued)

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
80% AMI (Over 60 to 80% AMI)					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	**0.03**	0.00	**0.03**
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.00	0.00	0.00	0.00	0.00
Farming, Fishing, and Forestry Occupations	**0.04**	**0.11**	**0.06**	**0.11**	**0.32**
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.00	0.00	0.00	0.00	0.00
Total	**0.04**	**0.11**	**0.09**	**0.11**	**0.35**

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
100% AMI (Over 80 to 100% AMI)					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	**0.01**	**0.03**	0.00	0.00	**0.04**
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	**0.01**	**0.02**	0.00	0.00	**0.03**
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	0.00	0.00	0.00
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	**0.17**	0.00	0.00	0.00	**0.17**
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	**0.23**	0.00	0.00	0.00	**0.23**
Transportation and Material Moving Occupations	0.00	0.00	0.00	0.00	0.00
Total	**0.42**	**0.05**	**0.00**	**0.00**	**0.47**

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Figure 67: Worker Households per 20,000 sq. ft. by AMI Level for Industrial Building Prototype (continued)

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
120% AMI (Over 100 to 120% AMI)					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.02	0.03	0.05
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.01	0.02	0.03
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.01	0.03	0.00	0.00	0.04
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	0.00	0.00	0.00
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.00	0.46	0.00	0.00	0.46
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.34	0.91	0.00	0.00	1.25
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.00	0.60	0.00	0.00	0.60
Transportation and Material Moving Occupations	0.30	0.00	0.00	0.00	0.30
Total	0.65	2.00	0.03	0.05	2.73

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
120%+ AMI					
Management Occupations	0.22	0.58	0.31	0.59	1.70
Business and Financial Operations Occupations	0.03	0.09	0.05	0.09	0.26
Computer and Mathematical Occupations	0.03	0.07	0.04	0.07	0.21
Architecture and Engineering Occupations	0.06	0.16	0.09	0.17	0.48
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.00	0.02	0.03	0.05
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	0.00	0.00	0.00
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.10	0.26	0.14	0.26	0.76
Office and Administrative Support Occupations	0.00	0.00	0.25	0.47	0.72
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.00	0.00	0.49	0.92	1.41
Installation, Maintenance, and Repair Occupations	0.08	0.20	0.11	0.20	0.59
Production Occupations	0.00	0.00	0.32	0.61	0.93
Transportation and Material Moving Occupations	0.00	0.80	0.43	0.81	2.04
Total	0.52	2.16	2.25	4.22	9.15

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

WAREHOUSING

Figure 68: Income by Occupation for Warehousing Building Prototype

Occupation Distribution	Grand Junction 2024 Average Income[1]	Occup. as Share of Industrial Workers[2]	Average Income per HH (rounded)	Wrkr Households per 20,000 SF[3]: 3.80 Total Wrkr Households
Management Occupations	$118,788	13.1%	$15,620	0.50
Business and Financial Operations Occupations	$99,567	2.0%	$1,980	0.08
Computer and Mathematical Occupations	$71,541	1.6%	$1,130	0.06
Architecture and Engineering Occupations	$91,155	3.7%	$3,370	0.14
Life, Physical, and Social Science Occupations	$41,290	0.7%	$300	0.03
Community and Social Service Occupations	$0	0.0%	$0	0.00
Legal Occupations	$0	0.0%	$0	0.00
Educational Instruction and Library Occupations	$47,030	0.4%	$210	0.02
Arts, Design, Entertainment, Sports, and Media Occupations	$18,816	0.2%	$40	0.01
Healthcare Practitioners and Technical Occupations	$0	0.0%	$0	0.00
Healthcare Support Occupations	$0	0.0%	$0	0.00
Protective Service Occupations	$55,886	0.7%	$390	0.03
Food Preparation and Serving Related Occupations	$17,079	0.3%	$50	0.01
Building and Grounds Cleaning and Maintenance Occupations	$24,313	1.3%	$320	0.05
Personal Care and Service Occupations	$37,507	0.1%	$30	0.00
Sales and Related Occupations	$99,314	5.9%	$5,870	0.22
Office and Administrative Support Occupations	$49,455	10.4%	$5,160	0.40
Farming, Fishing, and Forestry Occupations	$31,547	2.5%	$780	0.09
Construction and Extraction Occupations	$53,850	20.6%	$11,110	0.78
Installation, Maintenance, and Repair Occupations	$80,049	4.5%	$3,640	0.17
Production Occupations	$49,947	13.7%	$6,840	0.52
Transportation and Material Moving Occupations	$58,518	18.1%	$10,600	0.69
Weighted Average Annual Wage		**100.0%**	**$67,440**	3.80

1. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates, Public Use Microdata Sample (PUMS) for Grand Junction City Public Use Microdata Area (PUMA) 1001 [2010 PUMA boundary] and 2501 [2020 PUMA boundary]. ACS income adjusted to constant 2022 dollars with ACS data. Average incomes adjusted to 2024 dollars using QCEW percent wage increase in Mesa County from 2022 to 2024.

2. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates, Public Use Microdata Sample (PUMS) for Grand Junction City Public Use Microdata Area (PUMA) 1001 [2010 PUMA boundary] and 2501 [2020 PUMA boundary].

3. Worker Household estimate from U.S. Census data and ITE data.

Figure 69: Household Distribution for Warehousing Building Prototype

	1 person	2 person	3 person	4+ person	Total
Worker Households per 20,000 sq. ft.[1]					
Management Occupations	0.06	0.17	0.09	0.17	**0.50**
Business and Financial Operations Occupations	0.01	0.03	0.01	0.03	**0.08**
Computer and Mathematical Occupations	0.01	0.02	0.01	0.02	**0.06**
Architecture and Engineering Occupations	0.02	0.05	0.03	0.05	**0.14**
Life, Physical, and Social Science Occupations	0.00	0.01	0.01	0.01	**0.03**
Community and Social Service Occupations	0.00	0.00	0.00	0.00	**0.00**
Legal Occupations	0.00	0.00	0.00	0.00	**0.00**
Education, Training, and Library Occupations	0.00	0.01	0.00	0.01	**0.02**
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	**0.01**
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	**0.00**
Healthcare Support Occupations	0.00	0.00	0.00	0.00	**0.00**
Protective Service Occupations	0.00	0.01	0.00	0.01	**0.03**
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	**0.01**
Building and Grounds Cleaning and Maintenance Occupations	0.01	0.02	0.01	0.02	**0.05**
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	**0.00**
Sales and Related Occupations	0.03	0.08	0.04	0.08	**0.22**
Office and Administrative Support Occupations	0.05	0.14	0.07	0.14	**0.40**
Farming, Fishing, and Forestry Occupations	0.01	0.03	0.02	0.03	**0.09**
Construction and Extraction Occupations	0.10	0.27	0.14	0.27	**0.78**
Installation, Maintenance, and Repair Occupations	0.02	0.06	0.03	0.06	**0.17**
Production Occupations	0.07	0.18	0.09	0.18	**0.52**
Transportation and Material Moving Occupations	0.09	0.24	0.13	0.24	**0.69**
Total	**0.48**	**1.32**	**0.68**	**1.32**	**3.80**

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Figure 70: Household Income for Warehousing Building Prototype

	1 person	2 person	3 person	4+ person	Average
City of Grand Junction Avg. Household Income by Occupation per Household Size[1]					
Management Occupations	$154,425	$190,061	$249,455	$273,213	$213,819
Business and Financial Operations Occupations	$129,437	$159,308	$209,091	$229,005	$179,221
Computer and Mathematical Occupations	$93,003	$114,465	$150,236	$164,544	$128,774
Architecture and Engineering Occupations	$118,501	$145,847	$191,425	$209,656	$164,078
Life, Physical, and Social Science Occupations	$53,676	$66,063	$86,708	$94,966	$74,321
Community and Social Service Occupations	$0	$0	$0	$0	$0
Legal Occupations	$0	$0	$0	$0	$0
Education, Training, and Library Occupations	$61,139	$75,248	$98,763	$108,169	$84,654
Arts, Design, Entertainment, Sports, and Media Occupations	$24,461	$30,106	$39,514	$43,277	$33,869
Healthcare Practitioners and Technical Occupations	$0	$0	$0	$0	$0
Healthcare Support Occupations	$0	$0	$0	$0	$0
Protective Service Occupations	$72,652	$89,417	$117,360	$128,538	$100,595
Food Preparation and Serving Related Occupations	$22,203	$27,326	$35,866	$39,282	$30,742
Building and Grounds Cleaning and Maintenance Occupations	$31,607	$38,901	$51,058	$55,921	$43,764
Personal Care and Service Occupations	$48,759	$60,011	$78,764	$86,265	$67,512
Sales and Related Occupations	$129,108	$158,902	$208,559	$228,422	$178,765
Office and Administrative Support Occupations	$64,291	$79,128	$103,855	$113,746	$89,019
Farming, Fishing, and Forestry Occupations	$41,011	$50,475	$66,248	$72,557	$56,784
Construction and Extraction Occupations	$70,005	$86,160	$113,085	$123,855	$96,930
Installation, Maintenance, and Repair Occupations	$104,064	$128,079	$168,103	$184,113	$144,089
Production Occupations	$64,931	$79,915	$104,889	$114,878	$89,904
Transportation and Material Moving Occupations	$76,073	$93,629	$122,888	$134,591	$105,332

1. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates, Public Use Microdata Sample (PUMS) for Grand Junction City Public Use Microdata Area (PUMA) 1001 [2010 PUMA boundary] and 2501 [2020 PUMA boundary]. ACS income adjusted to constant 2022 dollars with ACS data. Average incomes adjusted to 2024 dollars using QCEW percent wage increase in Mesa County from 2022 to 2024.

Figure 71: Percent of Median Income by Household Type and Occupation for Warehousing Building Prototype

Area Median Income-->	$66,000	$75,400	$84,800	$94,200
Percent of Median Income by Occupation	**1 person**	**2 person**	**3 person**	**4+ person**
Management Occupations	234%	252%	294%	290%
Business and Financial Operations Occupations	196%	211%	247%	243%
Computer and Mathematical Occupations	141%	152%	177%	175%
Architecture and Engineering Occupations	180%	193%	226%	223%
Life, Physical, and Social Science Occupations	*81%*	*88%*	102%	101%
Community and Social Service Occupations	0%	0%	0%	0%
Legal Occupations	0%	0%	0%	0%
Education, Training, and Library Occupations	*93%*	*100%*	116%	115%
Arts, Design, Entertainment, Sports, and Media Occupations	*37%*	*40%*	*47%*	*46%*
Healthcare Practitioners and Technical Occupations	0%	0%	0%	0%
Healthcare Support Occupations	0%	0%	0%	0%
Protective Service Occupations	110%	119%	138%	136%
Food Preparation and Serving Related Occupations	*34%*	*36%*	*42%*	*42%*
Building and Grounds Cleaning and Maintenance Occupations	*48%*	*52%*	*60%*	*59%*
Personal Care and Service Occupations	*74%*	*80%*	*93%*	*92%*
Sales and Related Occupations	196%	211%	246%	242%
Office and Administrative Support Occupations	*97%*	105%	122%	121%
Farming, Fishing, and Forestry Occupations	*62%*	*67%*	*78%*	*77%*
Construction and Extraction Occupations	106%	114%	133%	131%
Installation, Maintenance, and Repair Occupations	158%	170%	198%	195%
Production Occupations	*98%*	106%	124%	122%
Transportation and Material Moving Occupations	115%	124%	145%	143%

Red indicates a value less than 100% (reflecting the median household income).

Figure 72: Worker Households per 20,000 sq. ft. by AMI Level for Warehousing Building Prototype

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
50% AMI and Below					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.01	0.00	0.00	0.00	0.01
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.00	0.00	0.00	0.00	0.00
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.00	0.00	0.00	0.00	0.00
Total	**0.01**	**0.00**	**0.00**	**0.00**	**0.01**

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
60% AMI (Over 50 to 60% AMI)					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.02	0.00	0.02	0.04
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.00	0.00	0.00	0.00	0.00
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.02**	**0.00**	**0.02**	**0.04**

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Figure 73: Worker Households per 20,000 sq. ft. by AMI Level for Warehousing Building Prototype (continued)

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
80% AMI (Over 60 to 80% AMI)					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	0.01	0.00	0.01
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.00	0.00	0.00	0.00	0.00
Farming, Fishing, and Forestry Occupations	0.01	0.03	0.02	0.03	0.09
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.00	0.00	0.00	0.00	0.00
Total	0.01	0.03	0.03	0.03	0.10

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
100% AMI (Over 80 to 100% AMI)					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.01	0.00	0.00	0.01
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.01	0.00	0.00	0.01
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	0.00	0.00	0.00
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.05	0.00	0.00	0.00	0.05
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.07	0.00	0.00	0.00	0.07
Transportation and Material Moving Occupations	0.00	0.00	0.00	0.00	0.00
Total	0.12	0.02	0.00	0.00	0.14

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Figure 74: Worker Households per 20,000 sq. ft. by AMI Level for Warehousing Building Prototype (continued)

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
120% AMI (Over 100 to 120% AMI)					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.01	0.01	0.02
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.00	0.01	0.01
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.01	0.00	0.00	0.01
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	0.00	0.00	0.00
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.00	0.14	0.00	0.00	0.14
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.10	0.27	0.00	0.00	0.37
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.00	0.18	0.00	0.00	0.18
Transportation and Material Moving Occupations	0.09	0.00	0.00	0.00	0.09
Total	0.19	0.60	0.01	0.02	0.82

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
120%+ AMI					
Management Occupations	0.06	0.17	0.09	0.17	0.49
Business and Financial Operations Occupations	0.01	0.03	0.01	0.03	0.08
Computer and Mathematical Occupations	0.01	0.02	0.01	0.02	0.06
Architecture and Engineering Occupations	0.02	0.05	0.03	0.05	0.15
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.00	0.00	0.01	0.01
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	0.00	0.00	0.00
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.03	0.08	0.04	0.08	0.23
Office and Administrative Support Occupations	0.00	0.00	0.07	0.14	0.21
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.00	0.00	0.14	0.27	0.41
Installation, Maintenance, and Repair Occupations	0.02	0.06	0.03	0.06	0.17
Production Occupations	0.00	0.00	0.09	0.18	0.27
Transportation and Material Moving Occupations	0.00	0.24	0.13	0.24	0.61
Total	0.15	0.65	0.64	1.25	2.69

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

LODGING

Figure 75: Income by Occupation for Lodging Building Prototype

Occupation Distribution	Grand Junction 2024 Average Income[1]	Occup. as Share of Lodging Workers[2]	Average Income per HH (rounded)	Wrkr Households per 20,000 SF[3] 10.3 Total Wrkr Households
Management Occupations	$159,478	11.1%	$17,700	1.1
Business and Financial Operations Occupations	$0	0.0%	$0	0.0
Computer and Mathematical Occupations	$0	0.0%	$0	0.0
Architecture and Engineering Occupations	$55,883	2.0%	$1,140	0.2
Life, Physical, and Social Science Occupations	$0	0.0%	$0	0.0
Community and Social Service Occupations	$0	0.0%	$0	0.0
Legal Occupations	$0	0.0%	$0	0.0
Educational Instruction and Library Occupations	$0	0.0%	$0	0.0
Arts, Design, Entertainment, Sports, and Media Occupations	$27,258	8.2%	$2,230	0.8
Healthcare Practitioners and Technical Occupations	$0	0.0%	$0	0.0
Healthcare Support Occupations	$0	0.0%	$0	0.0
Protective Service Occupations	$15,737	2.7%	$420	0.3
Food Preparation and Serving Related Occupations	$17,901	8.2%	$1,460	0.8
Building and Grounds Cleaning and Maintenance Occupations	$25,123	42.3%	$10,640	4.4
Personal Care and Service Occupations	$114,771	6.3%	$7,170	0.6
Sales and Related Occupations	$0	0.0%	$0	0.0
Office and Administrative Support Occupations	$26,548	12.0%	$3,180	1.2
Farming, Fishing, and Forestry Occupations	$0	0.0%	$0	0.0
Construction and Extraction Occupations	$0	0.0%	$0	0.0
Installation, Maintenance, and Repair Occupations	$104,367	1.9%	$2,000	0.2
Production Occupations	$0	0.0%	$0	0.0
Transportation and Material Moving Occupations	$3,934	5.4%	$210	0.6
Weighted Average Annual Wage		**100.0%**	**$46,150**	10.3

1. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates, Public Use Microdata Sample (PUMS) for Grand Junction City Public Use Microdata Area (PUMA) 1001 [2010 PUMA boundary] and 2501 [2020 PUMA boundary]. ACS income adjusted to constant 2022 dollars with ACS data. Average incomes adjusted to 2024 dollars using QCEW percent wage increase in Mesa County from 2022 to 2024.

2. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates, Public Use Microdata Sample (PUMS) for Grand Junction City Public Use Microdata Area (PUMA) 1001 [2010 PUMA boundary] and 2501 [2020 PUMA boundary].

3. Worker Household estimate from U.S. Census data and ITE data.

Figure 76: Household Distribution for Lodging Building Prototype

	1 person	2 person	3 person	4+ person	Total
Worker Households per 20,000 sq. ft.[1]					
Management Occupations	0.10	0.44	0.33	0.28	**1.14**
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	**0.00**
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	**0.00**
Architecture and Engineering Occupations	0.02	0.08	0.06	0.05	**0.21**
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	**0.00**
Community and Social Service Occupations	0.00	0.00	0.00	0.00	**0.00**
Legal Occupations	0.00	0.00	0.00	0.00	**0.00**
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	**0.00**
Arts, Design, Entertainment, Sports, and Media Occupations	0.08	0.32	0.24	0.20	**0.84**
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	**0.00**
Healthcare Support Occupations	0.00	0.00	0.00	0.00	**0.00**
Protective Service Occupations	0.02	0.11	0.08	0.07	**0.28**
Food Preparation and Serving Related Occupations	0.08	0.32	0.24	0.20	**0.84**
Building and Grounds Cleaning and Maintenance Occupations	0.39	1.67	1.24	1.06	**4.36**
Personal Care and Service Occupations	0.06	0.25	0.18	0.16	**0.64**
Sales and Related Occupations	0.00	0.00	0.00	0.00	**0.00**
Office and Administrative Support Occupations	0.11	0.47	0.35	0.30	**1.23**
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	**0.00**
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	**0.00**
Installation, Maintenance, and Repair Occupations	0.02	0.08	0.06	0.05	**0.20**
Production Occupations	0.00	0.00	0.00	0.00	**0.00**
Transportation and Material Moving Occupations	0.05	0.21	0.16	0.13	**0.55**
Total	**0.93**	**3.95**	**2.94**	**2.50**	**10.30**

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Figure 77: Household Income for Lodging Building Prototype

	1 person	2 person	3 person	4+ person	Average
City of Grand Junction Avg. Household Income by Occupation per Household Size[1]					
Management Occupations	$207,322	$255,165	$334,904	$366,800	$287,061
Business and Financial Operations Occupations	$0	$0	$0	$0	$0
Computer and Mathematical Occupations	$0	$0	$0	$0	$0
Architecture and Engineering Occupations	$72,647	$89,412	$117,353	$128,530	$100,589
Life, Physical, and Social Science Occupations	$0	$0	$0	$0	$0
Community and Social Service Occupations	$0	$0	$0	$0	$0
Legal Occupations	$0	$0	$0	$0	$0
Education, Training, and Library Occupations	$0	$0	$0	$0	$0
Arts, Design, Entertainment, Sports, and Media Occupations	$35,436	$43,613	$57,242	$62,694	$49,065
Healthcare Practitioners and Technical Occupations	$0	$0	$0	$0	$0
Healthcare Support Occupations	$0	$0	$0	$0	$0
Protective Service Occupations	$20,458	$25,179	$33,048	$36,195	$28,327
Food Preparation and Serving Related Occupations	$23,271	$28,641	$37,592	$41,172	$32,221
Building and Grounds Cleaning and Maintenance Occupations	$32,660	$40,197	$52,758	$57,783	$45,221
Personal Care and Service Occupations	$149,202	$183,634	$241,019	$263,973	$206,588
Sales and Related Occupations	$0	$0	$0	$0	$0
Office and Administrative Support Occupations	$34,512	$42,476	$55,750	$61,060	$47,786
Farming, Fishing, and Forestry Occupations	$0	$0	$0	$0	$0
Construction and Extraction Occupations	$0	$0	$0	$0	$0
Installation, Maintenance, and Repair Occupations	$135,677	$166,987	$219,170	$240,043	$187,860
Production Occupations	$0	$0	$0	$0	$0
Transportation and Material Moving Occupations	$5,115	$6,295	$8,262	$9,049	$7,082

1. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates, Public Use Microdata Sample (PUMS) for Grand Junction City Public Use Microdata Area (PUMA) 1001 [2010 PUMA boundary] and 2501 [2020 PUMA boundary]. ACS income adjusted to constant 2022 dollars with ACS data. Average incomes adjusted to 2024 dollars using QCEW percent wage increase in Mesa County from 2022 to 2024.

Figure 78: Percent of Median Income by Household Type and Occupation for Lodging Building Prototype

Area Median Income-->	$66,000	$75,400	$84,800	$94,200
Percent of Median Income by Occupation	**1 person**	**2 person**	**3 person**	**4+ person**
Management Occupations	314%	338%	395%	389%
Business and Financial Operations Occupations	0%	0%	0%	0%
Computer and Mathematical Occupations	0%	0%	0%	0%
Architecture and Engineering Occupations	110%	119%	138%	136%
Life, Physical, and Social Science Occupations	0%	0%	0%	0%
Community and Social Service Occupations	0%	0%	0%	0%
Legal Occupations	0%	0%	0%	0%
Education, Training, and Library Occupations	0%	0%	0%	0%
Arts, Design, Entertainment, Sports, and Media Occupations	***54%***	***58%***	***68%***	***67%***
Healthcare Practitioners and Technical Occupations	0%	0%	0%	0%
Healthcare Support Occupations	0%	0%	0%	0%
Protective Service Occupations	***31%***	***33%***	***39%***	***38%***
Food Preparation and Serving Related Occupations	***35%***	***38%***	***44%***	***44%***
Building and Grounds Cleaning and Maintenance Occupations	***49%***	***53%***	***62%***	***61%***
Personal Care and Service Occupations	226%	244%	284%	280%
Sales and Related Occupations	0%	0%	0%	0%
Office and Administrative Support Occupations	***52%***	***56%***	***66%***	***65%***
Farming, Fishing, and Forestry Occupations	0%	0%	0%	0%
Construction and Extraction Occupations	0%	0%	0%	0%
Installation, Maintenance, and Repair Occupations	206%	221%	258%	255%
Production Occupations	0%	0%	0%	0%
Transportation and Material Moving Occupations	8%	8%	10%	10%

Red indicates a value less than 100% (reflecting the median household income).

Figure 79: Worker Households per 20,000 sq. ft. by AMI Level for Lodging Building Prototype

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
50% AMI and Below					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.02	0.11	0.08	0.07	0.28
Food Preparation and Serving Related Occupations	0.08	0.32	0.24	0.20	0.84
Building and Grounds Cleaning and Maintenance Occupations	0.39	0.00	0.00	0.00	0.39
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.00	0.00	0.00	0.00	0.00
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.05	0.21	0.16	0.13	0.55
Total	0.54	0.64	0.48	0.40	2.06

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
60% AMI (Over 50 to 60% AMI)					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.08	0.32	0.00	0.00	0.40
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.00	1.67	0.00	0.00	1.67
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.11	0.47	0.00	0.00	0.58
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.00	0.00	0.00	0.00	0.00
Total	0.19	2.46	0.00	0.00	2.65

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Figure 80: Worker Households per 20,000 sq. ft. by AMI Level for Lodging Building Prototype (continued)

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
80% AMI (Over 60 to 80% AMI)					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.24	0.20	0.44
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	1.24	1.06	2.30
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.00	0.00	0.35	0.30	0.65
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	1.83	1.56	3.39

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
100% AMI (Over 80 to 100% AMI)					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.00	0.00	0.00
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	0.00	0.00	0.00
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.00	0.00	0.00	0.00	0.00
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	0.00

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Figure 81: Worker Households per 20,000 sq. ft. by AMI Level for Lodging Building Prototype (continued)

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
120% AMI (Over 100 to 120% AMI)					
Management Occupations	0.00	0.00	0.00	0.00	0.00
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.02	0.08	0.00	0.00	0.10
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	0.00	0.00	0.00
Personal Care and Service Occupations	0.00	0.00	0.00	0.00	0.00
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.00	0.00	0.00	0.00	0.00
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.00	0.00	0.00	0.00	0.00
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.00	0.00	0.00	0.00	0.00
Total	0.02	0.08	0.00	0.00	0.10

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Worker Households per 20,000 sq. ft.[1]	1 person	2 person	3 person	4+ person	Total
120%+ AMI					
Management Occupations	0.10	0.44	0.33	0.28	1.15
Business and Financial Operations Occupations	0.00	0.00	0.00	0.00	0.00
Computer and Mathematical Occupations	0.00	0.00	0.00	0.00	0.00
Architecture and Engineering Occupations	0.00	0.00	0.06	0.05	0.11
Life, Physical, and Social Science Occupations	0.00	0.00	0.00	0.00	0.00
Community and Social Service Occupations	0.00	0.00	0.00	0.00	0.00
Legal Occupations	0.00	0.00	0.00	0.00	0.00
Education, Training, and Library Occupations	0.00	0.00	0.00	0.00	0.00
Arts, Design, Entertainment, Sports, and Media Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Practitioners and Technical Occupations	0.00	0.00	0.00	0.00	0.00
Healthcare Support Occupations	0.00	0.00	0.00	0.00	0.00
Protective Service Occupations	0.00	0.00	0.00	0.00	0.00
Food Preparation and Serving Related Occupations	0.00	0.00	0.00	0.00	0.00
Building and Grounds Cleaning and Maintenance Occupations	0.00	0.00	0.00	0.00	0.00
Personal Care and Service Occupations	0.06	0.25	0.18	0.16	0.65
Sales and Related Occupations	0.00	0.00	0.00	0.00	0.00
Office and Administrative Support Occupations	0.00	0.00	0.00	0.00	0.00
Farming, Fishing, and Forestry Occupations	0.00	0.00	0.00	0.00	0.00
Construction and Extraction Occupations	0.00	0.00	0.00	0.00	0.00
Installation, Maintenance, and Repair Occupations	0.02	0.08	0.06	0.05	0.21
Production Occupations	0.00	0.00	0.00	0.00	0.00
Transportation and Material Moving Occupations	0.00	0.00	0.00	0.00	0.00
Total	0.18	0.77	0.63	0.54	2.12

1. U.S. Census, ACS 2018-22 (PUMS for Grand Junction); TischlerBise analysis.

Draft 2024 Impact Fee Study

Prepared for:

City of Grand Junction, Colorado

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EXECUTIVE SUMMARY

Impact fees are one-time payments for new development's proportionate share of the capital cost of infrastructure. The following study addresses the City of Grand Junction's Municipal Facilities, Fire, Police, Multimodal Transportation, and Parks & Recreation facilities. Impact fees do have limitations and should not be regarded as the total solution for infrastructure funding. Rather, they are one component of a comprehensive funding strategy to ensure provision of adequate public facilities. Impact fees may only be used for capital improvements or debt service for growth-related infrastructure. They may not be used for operations, maintenance, replacement of infrastructure, or correcting existing deficiencies. Although Colorado is a "home-rule" state and home-rule municipalities were already collecting "impact fees" under their home-rule authority granted in the Colorado Constitution, the Colorado Legislature passed enabling legislation in 2001, as discussed further below.

COLORADO IMPACT FEE ENABLING LEGISLATION

For local governments, the first step in evaluating funding options for facility improvements is to determine basic options and requirements established by state law. Some states have more conservative legal parameters that basically restrict local government to specifically authorized actions. In contrast, "home-rule" states grant local governments broader powers that may or may not be precluded or preempted by state statutes depending on the circumstances and on the state's particular laws. Home rule municipalities in Colorado have the authority to impose impact fees based on both their home rule power granted in the Colorado Constitution and the impact fee enabling legislation enacted in 2001 by the Colorado General Assembly.

Impact fees are one-time payments imposed on new development that must be used solely to fund growth-related capital projects, typically called "system improvements". An impact fee represents new growth's proportionate share of capital facility needs. In contrast to project-level improvements, impact fees fund infrastructure that will benefit multiple development projects, or even the entire service area, as long as there is a reasonable relationship between the new development and the need for the growth-related infrastructure.

According to Colorado Revised Statute Section 29-20-104.5, impact fees must be legislatively adopted at a level no greater than necessary to defray impacts generally applicable to a broad class of property. The purpose of impact fees is to defray capital costs directly related to proposed development. The statutes of other states allow impact fee schedules to include administrative costs related to impact fees and the preparation of capital improvement plans, but this is not specifically authorized in Colorado's statute. Impact fees do have limitations and should not be regarded as the total solution for infrastructure funding. Rather, they are one component of a comprehensive portfolio to ensure adequate provision of public facilities. Because system improvements are larger and costlier, they may require bond financing and/or funding from other revenue sources. To be funded by impact fees, Section 29-20-104.5 requires that the capital improvements must have a useful life of at least five years. By law, impact fees can only be used for capital improvements, not operating or maintenance costs. Also, impact fees cannot be used to repair or correct existing deficiencies in existing infrastructure.

ADDITIONAL LEGAL GUIDELINES

Both state and federal courts have recognized the imposition of impact fees on development as a legitimate form of land use regulation, provided the fees meet standards intended to protect against regulatory takings. Land use regulations, development exactions, and impact fees are subject to the Fifth Amendment prohibition on taking of private property for public use without just compensation. To comply with the Fifth Amendment, development regulations must be shown to substantially advance a legitimate governmental interest. In the case of impact fees, that interest is the protection of public health, safety, and welfare by ensuring development is not detrimental to the quality of essential public services. The means to this end is also important, requiring both procedural and substantive due process. The process followed to receive community input (i.e. stakeholder meetings, work sessions, and public hearings) provides opportunities for comments and refinements to the impact fees.

There is little federal case law specifically dealing with impact fees, although other rulings on other types of exactions (e.g., land dedication requirements) are relevant. In one of the most important exaction cases, the U. S. Supreme Court found that a government agency imposing exactions on development must demonstrate an "essential nexus" between the exaction and the interest being protected (see Nollan v. California Coastal Commission, 1987). In a more recent case (Dolan v. City of Tigard, OR, 1994), the Court ruled that an exaction also must be "roughly proportional" to the burden created by development.

There are three reasonable relationship requirements for impact fees that are closely related to "rational nexus" or "reasonable relationship" requirements enunciated by a number of state courts. Although the term "dual rational nexus" is often used to characterize the standard by which courts evaluate the validity of impact fees under the U.S. Constitution, TischlerBise prefers a more rigorous formulation that recognizes three elements: "need," "benefit," and "proportionality." The dual rational nexus test explicitly addresses only the first two, although proportionality is reasonably implied, and was specifically mentioned by the U.S. Supreme Court in the Dolan case. Individual elements of the nexus standard are discussed further in the following paragraphs.

All new development in a community creates additional demands on some, or all, public facilities provided by local government. If the capacity of facilities is not increased to satisfy that additional demand, the quality or availability of public services for the entire community will deteriorate. Impact fees may be used to cover the cost of development-related facilities, but only to the extent that the need for facilities is a consequence of development that is subject to the fees. The Nollan decision reinforced the principle that development exactions may be used only to mitigate conditions created by the developments upon which they are imposed. That principle likely applies to impact fees. In this study, the impact of development on infrastructure needs is analyzed in terms of quantifiable relationships between various types of development and the demand for specific facilities, based on applicable level-of-service standards.

The requirement that exactions be proportional to the impacts of development was clearly stated by the U.S. Supreme Court in the Dolan case and is logically necessary to establish a proper nexus. Proportionality is established through the procedures used to identify development-related facility costs, and in the methods used to calculate impact fees for various types of facilities and categories of development. The demand for facilities is measured in terms of relevant and measurable attributes of development (e.g. persons per household).

A sufficient benefit relationship requires that impact fee revenues be segregated from other funds and expended only on the facilities for which the fees were charged. The calculation of impact fees should also assume that they will be expended in a timely manner and the facilities funded by the fees must serve the development paying the fees. However, nothing in the U.S. Constitution or the state enabling legislation requires that facilities funded with fee revenues be available exclusively to development paying the fees. In other words, benefit may extend to a general area including multiple real estate developments. Procedures for the earmarking and expenditure of fee revenues are discussed near the end of this study. All of these procedural as well as substantive issues are intended to ensure that new development benefits from the impact fees they are required to pay. The authority and procedures to implement impact fees is separate from and complementary to the authority to require improvements.

Development Fee Methods and Cost Components

Figure 1 summarizes service areas, methodology, and infrastructure cost components for each development fee.

Figure 1. Summary of City of Grand Junction Impact Fees

Fee Category	Service Area	Incremental Expansion	Plan-Based	Cost Recovery	Cost Allocation
Fire	Citywide	Facilities, Apparatus	N/A	N/A	Population & Vehicle Trips
Municipal Facilities	Citywide	Municipal Facilities	N/A	N/A	Population & Jobs
Parks and Recreation	201 Service Bdry	Park Land, Open Space, Park Improvements	N/A	N/A	Population
Police	Citywide	Facilities	N/A	N/A	Population & Vehicle Trips
Transportation	Citywide	Principal Arterial, Minor Arterial, Major Collector, Minor Collector, Trail	N/A	N/A	Person Miles Traveled (PMT)

CURRENT IMPACT FEES

Figure 2 provides a schedule of Grand Junction's current impact fees.

Figure 2. Current Impact Fees

Residential Fees per Development Unit							
Development Type	Development Unit	Fire	Municipal Facilities	Parks and Recreation	Police	Transportation	Current Fees
Single <1,250 sq ft	Dwelling	$805	$0	$1,429	$346	$3,285	$5,865
Single 1,250 - 1,649 sq ft	Dwelling	$805	$0	$1,429	$346	$5,028	$7,608
Single 1,650 - 2,299 sq ft	Dwelling	$805	$0	$1,429	$346	$5,738	$8,318
Single 2,300 or more sq ft	Dwelling	$805	$0	$1,429	$346	$7,515	$10,095
Mobile Home	Pad	$805	$0	$1,429	$346	$3,411	$5,991
Multi-Family	Dwelling	$530	$0	$962	$227	$3,075	$4,794

Nonresidential Fees per Development Unit							
Development Type	Development Unit	Fire	Municipal Facilities	Parks and Recreation	Police	Transportation	Current Fees
Retail/Commercial	1,000 SF	$554	$0	$0	$234	$7,713	$8,501
Convenience Commercial	1,000 SF	$554	$0	$0	$234	$16,396	$17,184
Office	1,000 SF	$217	$0	$0	$92	$6,189	$6,498
Institutional/Public	1,000 SF	$217	$0	$0	$92	$1,522	$1,831
Industrial	1,000 SF	$75	$0	$0	$32	$2,161	$2,268
Warehousing	1,000 SF	$39	$0	$0	$16	$983	$1,038
Hotel/Lodging	1,000 SF	$554	$0	$0	$234	$0	$788
Hotel/Lodging	Room	$0	$0	$0	$0	$4,239	$4,239
RV Park	Pad	$530	$0	$0	$227	$3,411	$4,168

Maximum Supportable Impact Fees

Figure 3 provides a schedule of the maximum supportable impact fees. The fees represent the highest amount supportable for each type of residential and nonresidential unit, which represents new growth's fair share of the cost for capital facilities. The City may adopt fees that are less than the amounts shown. However, a reduction in impact fee revenue will necessitate an increase in other revenues, a decrease in planned capital expenditures, and/or a decrease in levels of service.

Figure 3. Maximum Supportable Impact Fees

Residential Fees per Development Unit							
Unit Size	Development Unit	Fire	Municipal Facilities	Parks and Recreation	Police	Transportation	Maximum Supportable
850 or less	Dwelling	$501	$506	$1,824	$215	$3,750	$6,796
851 to 1,000	Dwelling	$648	$655	$2,358	$278	$4,805	$8,744
1,001 to 1,250	Dwelling	$822	$830	$2,991	$352	$6,059	$11,054
1,251 to 1,500	Dwelling	$1,016	$1,026	$3,696	$435	$7,437	$13,610
1,501 to 2,000	Dwelling	$1,276	$1,289	$4,644	$547	$9,285	$17,041
2,001 to 2,500	Dwelling	$1,550	$1,566	$5,641	$664	$11,217	$20,638
2,501 to 3,000	Dwelling	$1,764	$1,782	$6,419	$756	$12,755	$23,476
3,001 to 3,500	Dwelling	$1,944	$1,964	$7,075	$833	$14,030	$25,846
3,501 to 4,000	Dwelling	$2,098	$2,120	$7,634	$899	$15,138	$27,889
4,001 to 4,500	Dwelling	$2,232	$2,255	$8,121	$956	$16,112	$29,676
4,501 or more	Dwelling	$2,352	$2,376	$8,558	$1,008	$16,956	$31,250

Nonresidential Fees per Development Unit							
Development Type	Development Unit	Fire	Municipal Facilities	Parks and Recreation	Police	Transportation	Maximum Supportable
Retail/Commercial	1,000 SF	$1,445	$876	$0	$607	$10,927	$13,855
Convenience Commercial	1,000 SF	$1,989	$3,854	$0	$836	$15,041	$21,720
Office	1,000 SF	$641	$1,342	$0	$270	$6,553	$8,806
Institutional/Public	1,000 SF	$638	$1,178	$0	$268	$6,513	$8,597
Industrial	1,000 SF	$200	$478	$0	$84	$2,035	$2,797
Warehousing	1,000 SF	$102	$140	$0	$43	$1,034	$1,319
Hotel/Lodging	Room	$473	$230	$0	$199	$4,831	$5,733
RV Park	Pad	$160	$21	$0	$67	$1,632	$1,880

General Methods for Impact Fees

There are three general methods for calculating impact fees. The choice of a particular method depends primarily on the timing of infrastructure construction (past, concurrent, or future) and service characteristics of the facility type being addressed. Each method has advantages and disadvantages in a particular situation and can be used simultaneously for different cost components.

Reduced to its simplest terms, the process of calculating impact fees involves two main steps: (1) determining the cost of development-related capital improvements and (2) allocating those costs equitably to various types of development. In practice, though, the calculation of impact fees can become quite complicated because of the many variables involved in defining the relationship between development and the need for facilities within the designated service area. The following paragraphs discuss three basic methods for calculating impact fees and how those methods can be applied to City of Grand Junction.

Cost Recovery Method (past improvements)

The rationale for recoupment, or cost recovery, is that new development is paying for its share of the useful life and remaining capacity of facilities already built, or land already purchased, from which new growth will benefit. This methodology is often used for utility systems that must provide adequate capacity before new development can take place.

Incremental Expansion Method (concurrent improvements)

The incremental expansion method documents current level-of-service (LOS) standards for each type of public facility, using both quantitative and qualitative measures. This approach assumes there are no existing infrastructure deficiencies or surplus capacity in infrastructure. New development is only paying its proportionate share for growth-related infrastructure. Revenue will be used to expand or provide additional facilities, as needed, to accommodate new development. An incremental expansion cost method is best suited for public facilities that will be expanded in regular increments to keep pace with development.

Plan-Based Method (future improvements)

The plan-based method allocates costs for a specified set of improvements to a specified amount of development. Improvements are typically identified in a long-range facility plan and development potential is identified by a land use plan. There are two basic options for determining the cost per demand unit: (1) total cost of a public facility can be divided by total demand units (average cost), or (2) the growth-share of the public facility cost can be divided by the net increase in demand units over the planning timeframe (marginal cost).

EVALUATION OF CREDITS

Regardless of the methodology, a consideration of "credits" is integral to the development of a legally defensible impact fee methodology. There are two types of "credits" with specific characteristics, both of which should be addressed in impact fee studies and ordinances. The first is a revenue credit due to possible double payment situations, which could occur when other revenues may contribute to the capital costs of infrastructure covered by the impact fee. This type of credit is integrated into the Fire and Police impact fee calculations, thus reducing the fee amount. The second is a site-specific credit or developer reimbursement for construction of system improvements. This type of credit is addressed in the administration and implementation of the development impact fee program.

Please note, calculations throughout this report are based on an analysis conducted using MS Excel software. Results are discussed in the memo using one- and two-digit places (in most cases). Figures are typically either truncated or rounded. In some instances, the analysis itself uses figures carried to their ultimate decimal places; therefore, the sums and products generated in the analysis may not equal the sum or product if the reader replicates the calculation with the factors shown in the report (due to the rounding of figures shown, not in the analysis).

FIRE IMPACT FEE

The Fire impact fees include components for station space and apparatus. The incremental expansion methodology is used for both fee components. The Fire impact fee is calculated on a per capita basis for residential development and a per vehicle trip basis for nonresidential development.

The residential fire impact fees are calculated per housing unit. Because the Grand Junction Fire Department also provides emergency medical services and these calls represent the largest percentage of calls to which the Department responds, TischlerBise recommends using nonresidential vehicle trips as the best demand indicator for fire facilities and apparatus, as the trip rates will reflect the presence of people at nonresidential land uses. For example, vehicle trips are highest for commercial/retail developments, such as shopping centers, and lowest for industrial development. Office and institutional trip rates fall between the other two categories. This ranking of trip rates is consistent with the relative demand for fire and emergency medical services and facilities from nonresidential development. Other possible nonresidential demand indicators, such as employment or floor area, will not accurately reflect the demand for service. For example, if employees per thousand square feet were used as the demand indicator, fire impact fees would be too high for office and institutional development because offices typically have more employees per 1,000 square feet than retail uses.

SERVICE AREA

The Grand Junction Fire Department serves an area greater than the City of Grand Junction. Because of this, that portion of the demand cannot be attributed to City residents and businesses, or the impact fees will be disproportionate to demand. Therefore, we asked the Grand Junction Fire Department to conduct an analysis of calls for service inside and outside the City in to determine the amount of activity directed toward residents and businesses inside the City limits. As shown in Figure F1, over the last two calendar years, the City of Grand Junction Fire Department has responded to slightly over 42,000 incidents. Of that total, 83 percent of the incidents were inside the City limits.

Figure F1. Fire and EMS Incident Data for Two-Year Period

Location	Incidents	%
Inside the City	34,918	83%
Incidents outside the City	7,152	17%
Total	**42,070**	**100%**

Source: Grand Junction Fire Department

PROPORTIONATE SHARE FACTORS

Both residential and nonresidential developments increase the demand on Fire facilities and vehicles. To calculate the proportional share between residential and nonresidential demand on Fire facilities and vehicles, a functional population approach is used. The functional population approach allocates the cost of the facilities to residential and nonresidential development based on the activity of residents and workers in the City through the 24 hours in a day.

Residents that do not work are assigned 20 hours per day to residential development and four hours per day to nonresidential development (annualized averages). Residents that work in Grand Junction are assigned 14 hours to residential development and 10 hours to nonresidential development. Residents that work outside Grand Junction are assigned 14 hours to residential development. Inflow commuters are assigned 10 hours to nonresidential development. Based on 2021 functional population data (the latest year available) for Grand Junction, the cost allocation for residential development is 63 percent while nonresidential development accounts for 37 percent of the demand for Fire infrastructure, see Figure F2.

Figure F2. City of Grand Junction Functional Population

Demand Units in 2021					
Residential				Demand Hours/Day	Person Hours
	Population	62,544			
	Residents Not Working		37,046	20	740,920
	Employed Residents		25,498		
	Employed in Grand Junction		17,052	14	238,728
	Employed outside Grand Junction		8,446	14	118,244
				Residential Subtotal	1,097,892
				Residential Share	**63%**
Nonresidential					
	Non-working Residents		37,046	4	148,184
	Jobs Located in Grand Junction		49,018		
	Residents Employed in Grand Junction		17,052	10	170,520
	Nonresident Workers (Inflow Commuters)		31,966	10	319,660
				Nonresidential Subtotal	638,364
				Nonresidential Share	**37%**
				Total	1,736,256

Source: U.S. Census Bureau (population), U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics, Version 6.24.1 (employment).

IMPACT FEE COMPONENTS

Fire Facilities

The incremental expansion component of the Fire impact fee is based on an inventory of existing Citywide facilities. It is important to note the existing inventory includes Station No. 7, which is under construction now and will be open around the time of the impact fee adoption. Therefore, the level of service standards are based on the projected 2025 demand units. The use of existing standards means there are no existing infrastructure deficiencies. The floor area has been provided by the City of Grand Junction staff.

As shown in Figure F3, the Fire Department occupies 99,277 square feet in 10 different facilities. To determine the level of service factors for the impact fee calculation, the amount of facility square footage (99,277) is multiplied by the percentage of activity directed inside the City limits (83%) and then by the functional population split for the City of Grand Junction (found in Figure F2) is used to allocate the square footage and corresponding replacement cost of the fire stations in Figure F3. For example, of the 99,277 square feet of fire space in the City, 82,400 square feet is directed toward City of Grand Junction (99,277 multiplied by 83%). Of this 82,400 impact fee eligible square footage, 51,912 square feet is allocated to residential growth and 30,488 square feet is allocated to nonresidential development.

The allocated square feet of the Grand Junction fire stations are divided by the 2025 residential and nonresidential demand units (population and nonresidential vehicle trips). The result is the current level of service for fire stations in the City. Specifically, there is 0.772 square feet of fire station space per capita and 0.137 square feet per nonresidential vehicle trip.

To estimate the replacement cost of the fire stations, the average cost of $725 per square foot is used. This figure is based on the recent Station No. 7 construction cost. To find the cost per person or cost per nonresidential vehicle trip, the level of service standards is applied to the cost per square foot for fire stations. For example, the residential cost per person is $559.71 (0.772 square feet per person x $725 per square foot = $559.71 per person).

Figure F3. Fire Facilities Level of Service and Cost Factors

Description	Square Feet
Fire Administration Building	14,576
Fire Station No. 1	13,331
Fire Station No. 2	8,461
Fire Station No. 3	10,500
Fire Station No. 4	9,335
Fire Station No. 5 Annex	1,916
Fire Station No. 5	7,291
Fire Station No. 6	10,500
Fire Station No. 7	10,500
Fire Station No. 8	10,500
Fire Training Center	2,367
Total	99,277

Level-of-Service (LOS) Standards

Percentage of Activity in City of Grand Junction	83%
Population in 2025	67,242
Nonresidential Vehicle Trips in 2025	222,710
Residential Share	63%
Nonresidential Share	37%
LOS: Sq. Ft. per Person	**0.772**
LOS: Sq. Ft. per Vehicle Trip	**0.137**

Cost Analysis

Cost per Square Foot*	$725
LOS: Square Feet per Person	0.772
Cost per Person	**$559.71**
LOS: Square Feet per Vehicle Trip	0.137
Cost per Vehicle Trip	**$99.25**

*Source: City of Grand Junction. Based on Station 7 Cost

Fire Apparatus

The second component of the Fire impact fee is fire apparatus. Similar to the station component, the current inventory includes apparatus that will be owned by the City when Station No. 7 opens in 2025. Therefore, the level of service standards are based on the projected 2025 demand units. The City's current inventory of apparatus is contained in Figure F4, which consists of 51 pieces with a total replacement value of $17 million, or an average cost of $334,922 per piece of apparatus. Similar to the facilities component, the apparatus inventory is compared to the percentage of activity directed inside the City of Grand Junction and then allocated based on the proportionate share factors shown in Figure F2. For example, of the 51 pieces of apparatus in the City, approximately 42 pieces of the inventory are directed toward City of Grand Junction (51 pieces of apparatus multiplied by 83%). Of the 42 pieces of impact fee eligible apparatus, approximately 27 pieces are allocated to residential growth and approximately 16 pieces are allocated to nonresidential growth. These allocations are divided by the demand units (population for residential development and nonresidential vehicle trips for nonresidential development) to calculate the current level of service. The current level of service is multiplied by the weighted average cost per fire apparatus to calculate the cost per capita and nonresidential vehicle trip.

For example, there is .00040 pieces of fire apparatus per person in Grand Junction (26.6 apparatus / 67,242 persons = .00040 apparatus per person). As discussed above, a new piece of fire apparatus has an average cost of $334,922, which results in the residential cost equaling $132.83 per person (.00040 vehicles per person x $353,155 per apparatus = $132.83 per person).

Figure F4. Fire Apparatus Inventory and Level of Service

Description	Model	# of Units	Unit Cost	Total Cost
Truck	Smeal 105' Quint	1	$1,700,000	$1,700,000
Truck	Smeal 75' Quint	1	$1,700,000	$1,700,000
Engine	Smeal	4	$1,000,000	$4,000,000
Engine	E-One Pumper	1	$1,000,000	$1,000,000
Engine	Pierce Enforcer	4	$1,000,000	$4,000,000
Battalion Chief	Dodge Ram 1500	1	$86,000	$86,000
Hazmat	BLM	1	$263,000	$263,000
Ambulance	Dodge/Ford/Chevy	14	$86,000	$1,204,000
Rescue	SVI Heavy Rescue Truck	1	$1,000,000	$1,000,000
Brush Engine	HME/BME	2	$375,000	$750,000
Brush Truck	Largo Tank	1	$375,000	$375,000
Tender	International	1	$350,000	$350,000
UTV	Yamaha	2	$25,000	$50,000
ATV	Suzuki	1	$12,000	$12,000
Air Trailer	Misc	1	$40,000	$40,000
Trailers	Trench/Confined Space/Flat	4	$10,000	$40,000
Administrative	SUVs	5	$41,000	$205,000
Administrative	Pickups	6	$51,000	$306,000
Total**		51	$334,922	$17,081,000

Level-of-Service (LOS) Standards**

Percentage of Activity in City of Grand Junction	83%
Population in 2025	67,242
Nonresidential Vehicle Trips in 2025	222,710
Residential Share	63%
Nonresidential Share	37%
LOS: Units per Person	**0.00040**
LOS: Units per Vehicle Trip	**0.00007**

Cost Analysis

Average Cost per Unit	$334,922
LOS: Units per Person	0.00040
Cost per Person	**$132.83**
LOS: Units per Vehicle Trip	0.00007
Cost per Vehicle Trip	**$23.55**

*Source: City of Grand Junction.

**Base Year assumptions have been set to 2025 to include Station 7 Apparatus

PROJECTION OF GROWTH-RELATED FIRE NEEDS

To estimate the demand for future Fire station space, the current level of service (0.772 square feet per person and 0.137 square feet per nonresidential vehicle trip) is applied to the residential and nonresidential growth projected for the City of Grand Junction. As shown in Figure F5, the City is projected to increase by 17,256 residents and 42,895 nonresidential vehicle trips over the next ten years (see Appendix A). As shown in Figure F5, there is a projected need for 19,194 square feet of Fire station space in the City to accommodate the growth at the present level of service. By applying the average cost of a building ($725 per square feet), the total projected expenditure to accommodate new development is estimated at approximately $13.9 million.

Figure F5. 10-Year Fire Infrastructure Needs to Accommodate Growth

Type of Infrastructure	Level of Service			Demand Unit	Unit Cost
Fire Facilities	Residential	0.772	Square Feet	per Person	$725
	Nonresidential	0.137		per Vehicle Trip	

Growth-Related Need for Fire Facilities						
Year		Population	Nonresidential Vehicle Trips	Residential Square Feet	Nonresidential Square Feet	Total
Base	2024	65,517	218,420	50,580	29,901	80,480
Year 1	2025	67,242	222,710	51,912	30,488	82,400
Year 2	2026	68,968	226,999	53,244	31,075	84,319
Year 3	2027	70,694	231,289	54,576	31,662	86,239
Year 4	2028	72,419	235,579	55,909	32,250	88,158
Year 5	2029	74,145	239,868	57,241	32,837	90,078
Year 6	2030	75,871	244,158	58,573	33,424	91,997
Year 7	2031	77,596	248,447	59,905	34,011	93,916
Year 8	2032	79,322	252,737	61,237	34,598	95,836
Year 9	2033	81,048	257,026	62,570	35,186	97,755
Year 10	2034	82,773	261,316	63,902	35,773	99,675
Ten-Year Increase		17,256	42,895	13,322	5,872	19,194
			Projected Expenditure	**$9,658,550**	**$4,257,315**	**$13,915,865**
			Growth-Related Expenditure on Fire Facilities			**$13,915,865**

To estimate the demand for future Fire apparatus, the current level of service (0.00040 apparatus per person and 0.00007 vehicles per nonresidential vehicle trip) is applied to the residential and nonresidential growth projected for the City of Grand Junction. The City is projected to increase by 17,256 residents and 42,895 nonresidential vehicle trips over the next ten years (see Appendix A). As shown in Figure F6, there is a projected need for approximately 10 additional growth-related pieces of apparatus. By applying the average cost of a vehicle ($334,922), the total projected growth-related expenditure is estimated at approximately $3.3 million.

Figure F6. 10-Year Fire Apparatus Needs to Accommodate Growth

Type of Infrastructure	Level of Service			Demand Unit	Unit Cost
Fire Apparatus	Residential	0.00040	Units	per Person	$334,922
	Nonresidential	0.00007		per Vehicle Trip	

Growth-Related Need for Apparatus						
Year		Population	Nonresidential Vehicle Trips	Residential Apparatus	Nonresidential Apparatus	Total
Base	2024	65,517	218,420	26.0	15.4	41.3
Year 1	2025	67,242	222,710	26.7	15.7	42.3
Year 2	2026	68,968	226,999	27.4	16.0	43.3
Year 3	2027	70,694	231,289	28.0	16.3	44.3
Year 4	2028	72,419	235,579	28.7	16.6	45.3
Year 5	2029	74,145	239,868	29.4	16.9	46.3
Year 6	2030	75,871	244,158	30.1	17.2	47.3
Year 7	2031	77,596	248,447	30.8	17.5	48.2
Year 8	2032	79,322	252,737	31.5	17.8	49.2
Year 9	2033	81,048	257,026	32.1	18.1	50.2
Year 10	2034	82,773	261,316	32.8	18.4	51.2
Ten-Year Increase		17,256	42,895	6.8	3.0	9.9
			Projected Expenditure	**$2,292,126**	**$1,010,328**	**$3,302,454**
			Growth-Related Expenditure on Fire Apparatus			**$3,302,454**

PRINCIPAL PAYMENT CREDIT

The City of Grand Junction has existing debt obligations from past fire facility projects: Tax Revenue Bond Series 2010A and Tax Revenue Build America Bond Series 2010B. The proceeds from these bonds funded several fire facilities including Fire Station #1, #2 and the Fire Administration building for a total of $7,100,000 of improvements, representing 20 percent of the 2010 Bonds. This bond series was refinanced in 2019 at a lower interest rate of 5.05%. Figure F8 lists the remaining principal payment schedules for the bonds. The fire department's total remaining principal on the bond is $4.6 million.

The total remaining annual principal payment schedule is distributed to the equivalent residential and nonresidential share, City's population and vehicle trip ends, to find the debt cost per attributed user. To account for the time value of money, annual payments are discounted using a net present value formula based on the applicable discount (5.0%) rate. As shown in Figure F7, this results in a credit of $24.37 per person, and $4.47 per nonresidential trip end.

Figure F7. Principal Payment Credit

Year	Principal Payment (20% of Bond)	Res. Share 63%	Population	Debt Cost per Capita	Nonres. Share 37%	Nonres. Vehicle Trips	Debt Cost per Trip
2024	$197,000	$124,110	65,517	$1.89	$72,890	218,420	$0.33
2025	$198,000	$124,740	67,242	$1.86	$73,260	222,710	$0.33
2026	$208,000	$131,040	68,968	$1.90	$76,960	226,999	$0.34
2027	$218,000	$137,340	70,694	$1.94	$80,660	231,289	$0.35
2028	$229,000	$144,270	72,419	$1.99	$84,730	235,579	$0.36
2029	$240,000	$151,200	74,145	$2.04	$88,800	239,868	$0.37
2030	$252,000	$158,760	75,871	$2.09	$93,240	244,158	$0.38
2031	$265,000	$166,950	77,596	$2.15	$98,050	248,447	$0.39
2032	$278,000	$175,140	79,322	$2.21	$102,860	252,737	$0.41
2033	$292,000	$183,960	81,048	$2.27	$108,040	257,026	$0.42
2034	$306,000	$192,780	82,773	$2.33	$113,220	261,316	$0.43
2035	$322,000	$202,860	84,499	$2.40	$119,140	265,605	$0.45
2036	$335,000	$211,050	86,224	$2.45	$123,950	269,895	$0.46
2037	$348,000	$219,240	87,950	$2.49	$128,760	274,184	$0.47
2038	$362,000	$228,060	89,676	$2.54	$133,940	278,474	$0.48
2039	$376,000	$236,880	91,401	$2.59	$139,120	282,763	$0.49
2040	$388,000	$244,440	93,127	$2.62	$143,560	287,053	$0.50
Total	$4,814,000	$3,032,820		$37.76	$1,781,180		$6.96

Discount Rate	**5.0%**		**5.0%**
Net Present Value	**$24.37**		**$4.47**

MAXIMUM SUPPORTABLE FIRE IMPACT FEE

Figure F8 shows the maximum supportable Fire Impact Fee. Impact fees for Fire are based on persons per housing unit for residential development and vehicle trips per 1,000 square feet for nonresidential development. For residential development, the total cost per person is multiplied by the persons per housing unit to calculate the proposed fee. For nonresidential development, the total cost per vehicle trip is multiplied by the trips per 1,000 square feet, hotel room or other applicable factor to calculate the proposed fee.

The fees represent the highest amount supportable for each type of development, which represents new growth's fair share of the cost for capital facilities. The City may adopt fees that are less than the amounts shown. However, a reduction in impact fee revenue will necessitate an increase in other revenues, a decrease in planned capital expenditures, and/or a decrease in levels of service.

Figure F8. Maximum Supportable Fire Impact Fee

Fee Component	Cost per Person	Cost per Trip
Facilities	$559.71	$99.25
Apparatus	$132.83	$23.55
Principal Payment Credit	($24.37)	($4.47)
Total	$668.16	$118.34

Residential Fees per Development Unit					
Unit Size	Development Unit	Persons per Unit[1]	Maximum Supportable	Current Fees	Increase / (Decrease)
850 or less	Dwelling	0.75	$501	$530	($29)
851 to 1,000	Dwelling	0.97	$648	$530	$118
1,001 to 1,250	Dwelling	1.23	$822	$530	$292
1,251 to 1,500	Dwelling	1.52	$1,016	$805	$211
1,501 to 2,000	Dwelling	1.91	$1,276	$805	$471
2,001 to 2,500	Dwelling	2.32	$1,550	$805	$745
2,501 to 3,000	Dwelling	2.64	$1,764	$805	$959
3,001 to 3,500	Dwelling	2.91	$1,944	$805	$1,139
3,501 to 4,000	Dwelling	3.14	$2,098	$805	$1,293
4,001 to 4,500	Dwelling	3.34	$2,232	$805	$1,427
4,501 or more	Dwelling	3.52	$2,352	$805	$1,547

Nonresidential Fees per Development Unit					
Development Type	Development Unit	Vehicle Trips per Unit[1]	Maximum Supportable	Current Fees	Increase / (Decrease)
Retail/Commercial	1,000 SF	12.21	$1,445	$554	$891
Convenience Commercial	1,000 SF	16.81	$1,989	$554	$1,435
Office	1,000 SF	5.42	$641	$217	$424
Institutional/Public	1,000 SF	5.39	$638	$217	$421
Industrial	1,000 SF	1.69	$200	$75	$125
Warehousing	1,000 SF	0.86	$102	$39	$63
Hotel/Lodging	Room	4.00	$473	$554	($81)
RV Park	Pad	1.35	$160	$530	($370)

1. See Land Use Assumptions

REVENUE FROM FIRE IMPACT FEE

Revenue from the Fire Impact Fee is estimated in Figure F9. There is projected to be 8,180 new housing units and almost 6.6 million square feet of new nonresidential development in Grand Junction by 2034. To find the revenue from each development type, the fee is multiplied by the growth. Overall, the approximately $16.6 million in revenue from the impact fee covers approximately 97 percent of the capital costs generated by projected growth in the City of Grand Junction.

Figure F9. Estimated Revenue from Fire Impact Fee

Infrastructure Costs for Fire

	Total Cost	Growth Cost
Facilities	$13,915,865	$13,915,865
Apparatus	$3,302,454	$3,302,454
Total Expenditures	**$17,218,319**	**$17,218,319**

Projected Fire and Rescue Impact Fee Revenue

		Single-Family	Multi-Family	Retail/Comm.	Office	Inst./Public	Industrial
		$1,550 per Unit	$1,016 per Unit	$1,445 per KSF	$641 per KSF	$638 per KSF	$200 per KSF
Year		Housing Units	Housing Units	KSF	KSF	KSF	KSF
Base	2024	23,347	8,140	10,242	7,639	7,366	7,275
1	2025	23,960	8,345	10,426	7,756	7,584	7,416
2	2026	24,573	8,550	10,610	7,872	7,802	7,557
3	2027	25,186	8,755	10,794	7,988	8,020	7,697
4	2028	25,799	8,960	10,978	8,105	8,239	7,838
5	2029	26,412	9,165	11,162	8,221	8,457	7,979
6	2030	27,025	9,370	11,346	8,337	8,675	8,120
7	2031	27,638	9,575	11,530	8,453	8,893	8,261
8	2032	28,251	9,780	11,714	8,570	9,111	8,401
9	2033	28,864	9,985	11,898	8,686	9,329	8,542
10	2034	29,477	10,190	12,082	8,802	9,548	8,683
Ten-Year Increase		6,130	2,050	1,840	1,163	2,182	1,408
Projected Revenue =>		$9,501,500	$2,082,800	$2,658,986	$745,293	$1,391,800	$281,534

Projected Revenue =>	**$16,661,913**
Total Expenditures =>	**$17,218,319**
General Fund's Share =>	**$556,406**

MUNICIPAL FACILITIES IMPACT FEE

The Municipal Facilities impact fee include components for municipal buildings related to general government and general services functions. The incremental expansion is utilized for this fee calculation. The Municipal Facilities impact fee is calculated on a per capita basis for residential development and a per employee basis for nonresidential development. The residential portion is derived from the product of persons per housing unit (by size of home) multiplied by the net cost per person. The nonresidential portion is derived from the product of employees per 1,000 square feet of nonresidential space multiplied by the net cost per employee (job).

SERVICE AREA

The City of Grand Junction provides general government services throughout the City; therefore, there is a single service area for the Municipal Facilities impact fees.

PROPORTIONATE SHARE FACTORS

Both residential and nonresidential developments increase the demand on Municipal Facilities infrastructure. To calculate the proportionate share between residential and nonresidential demand on Municipal Facilities infrastructure, a functional population approach is used. The functional population approach allocates the cost of the facilities to residential and nonresidential development based on the activity of residents and workers in the City through the 24 hours in a day.

Residents that do not work are assigned 20 hours per day to residential development and four hours per day to nonresidential development (annualized averages). Residents that work in Grand Junction are assigned 14 hours to residential development and 10 hours to nonresidential development. Residents that work outside Grand Junction are assigned 14 hours to residential development. Inflow commuters are assigned 10 hours to nonresidential development. Based on 2021 (the latest year available) functional population data for Grand Junction, the cost allocation for residential development is 63 percent while nonresidential development accounts for 37 percent of the demand for municipal facilities, see Figure M1.

Figure M1. City of Grand Junction Functional Population

Demand Units in 2021				Demand Hours/Day	Person Hours	Proportionate Share
Residential						
Estimated Residents	62,544					
Residents Not Working		37,046		20	740,920	
Employed Residents		25,498				
Employed in Grand Junction			17,052	14	238,728	
Employed outside Grand Junction			8,446	14	118,244	
			Residential Subtotal		1,097,892	63%
Nonresidential						
Non-working Residents		37,046		4	148,184	
Jobs Located in Grand Junction		49,018				
Residents Employed in Grand Junction			17,052	10	170,520	
Nonresident Workers (Inflow Commuters)			31,966	10	319,660	
			Nonresidential Subtotal		638,364	37%
			TOTAL		1,736,256	100%

IMPACT FEE COMPONENTS

Municipal Facilities

The Municipal Facilities Impact Fee is based on ten primary facilities serving the public, and their associated replacement costs. The use of existing standards means there are no existing infrastructure deficiencies. New development is only paying its proportionate share for growth-related infrastructure. The floor area has been provided by the City of Grand Junction staff.

As shown in Figure M2, the City has a total of 140,397 square feet of municipal facility floor area. The functional population split for the City of Grand Junction found in Figure M1 is used to allocate the square footage and corresponding replacement cost of Municipal Facilities infrastructure in Figure M2. Of the 140,397 square feet of applicable general government facilities, 63 percent is allocated to residential development (88,450 square feet) and 37 percent (51,947 square feet) is allocated to nonresidential development. The 2024 population or job totals divide the floor area allocations to find the residential and nonresidential level of service standard. For example, the residential level of service is 1.35 square feet per person (88,450 square feet 65,517 residents = 1.35 square feet per person).

According to discussions with City staff, the estimated replacement cost of municipal facility space is $500 per square foot. To find the cost per person, the level of service standards is applied to the average replacement cost. For example, the residential cost per person is $675.02 (1.35 square feet person x $500 per square foot = $675.02 per person).

Figure M2. Municipal Facilities Level of Service and Cost Factors

Facility	Square Feet
910 Main Street	5,465
Engineering Building	5,170
Daycare Facility	5,525
Wellness Facility	2,050
Transportation Engineering Office	3,600
Municipal Service Center	38,485
Municipal Operations Center	23,345
Field Engineering Building	3,234
Facilities Building	7,523
City Hall	46,000
Total	140,397

Level-of-Service (LOS) Standards

Population in 2024	65,517
Employment in 2024	62,988
Residential Share	63%
Nonresidential Share	37%
LOS: Square Feet per Person	**1.35**
LOS: Square Feet per Job	**0.82**

Cost Analysis

Cost per Square Foot	$500
LOS: Square Feet per Person	1.35
Cost per Person	**$675.02**
LOS: Square Feet per Job	0.82
Cost per Job	**$412.36**

Source: City of Grand Junction

PROJECTION OF GROWTH-RELATED MUNICIPAL FACILITIES FACILITY NEEDS

To estimate the demand for future Municipal Facilities infrastructure, the current level of service (1.35 square feet per person and 0.82 square feet per job) is applied to the residential and nonresidential growth projected for the City of Grand Junction. As shown in Figure M3, the City is projected to increase by 17,256 residents and 16,590 jobs over the next ten years (see Appendix A). Figure M3 indicates that the City will need to construct 36,979 square feet of additional space to maintain current levels of service for Municipal Facilities. By applying the average cost of $500 per square foot), the estimated growth-related cost for Municipal Facilities is approximately $18.5 million over the next ten years.

Figure M3. 10-Year Municipal Facilities Infrastructure Needs to Accommodate Growth

Type of Infrastructure	Level of Service			Demand Unit	Unit Cost / Sq. Ft.
Municipal Facilites	Residential	1.35	Square Feet	per persons	$500
	Nonresidential	0.82		per jobs	

Growth-Related Need for Municipal Facilities						
Year		Population	Jobs	Residential Square Feet	Nonresidential Square Feet	Total Square Feet
Base	2024	65,517	62,988	88,450	51,947	140,397
Year 1	2025	67,242	64,647	90,780	53,315	144,095
Year 2	2026	68,968	66,306	93,109	54,683	147,793
Year 3	2027	70,694	67,965	95,439	56,052	151,491
Year 4	2028	72,419	69,624	97,769	57,420	155,189
Year 5	2029	74,145	71,283	100,098	58,788	158,887
Year 6	2030	75,871	72,942	102,428	60,156	162,584
Year 7	2031	77,596	74,601	104,758	61,524	166,282
Year 8	2032	79,322	76,260	107,088	62,893	169,980
Year 9	2033	81,048	77,919	109,417	64,261	173,678
Year 10	2034	82,773	79,578	111,747	65,629	177,376
Ten-Year Increase		**17,256**	**16,590**	**23,297**	**13,682**	**36,979**
			Projected Expenditure	**$11,648,387**	**$6,841,116**	**$18,489,503**

Growth-Related Expenditure on Municipal Facilities	**$18,489,503**

Maximum Supportable Municipal Facilities Impact Fee

Figure M4 shows the maximum supportable Municipal Facilities Impact Fee. Impact fees for Municipal Facilities are based on persons per housing unit for residential development and employees per 1,000 square feet for nonresidential development. For residential development, the total cost per person is multiplied by the persons per housing unit to calculate the proposed fee. For nonresidential development, the total cost per job is multiplied by the jobs per 1,000 square feet to calculate the proposed fee. The fees represent the highest amount supportable for each type of development, which represents new growth's fair share of the cost for capital facilities. The City may adopt fees that are less than the amounts shown. However, a reduction in impact fee revenue will necessitate an increase in other revenues, a decrease in planned capital expenditures, and/or a decrease in levels of service.

Figure M4. Maximum Supportable Municipal Facilities Impact Fee

Fee Component	Cost per Person	Cost per Job
Municipal Facilities	$675.02	$412.36
Total	$675.02	$412.36

Residential Fees per Development Unit					
Unit Size	Development Unit	Persons per Unit[1]	Maximum Supportable	Current Fees	Increase / (Decrease)
850 or less	Dwelling	0.75	$506	$0	$506
851 to 1,000	Dwelling	0.97	$655	$0	$655
1,001 to 1,250	Dwelling	1.23	$830	$0	$830
1,251 to 1,500	Dwelling	1.52	$1,026	$0	$1,026
1,501 to 2,000	Dwelling	1.91	$1,289	$0	$1,289
2,001 to 2,500	Dwelling	2.32	$1,566	$0	$1,566
2,501 to 3,000	Dwelling	2.64	$1,782	$0	$1,782
3,001 to 3,500	Dwelling	2.91	$1,964	$0	$1,964
3,501 to 4,000	Dwelling	3.14	$2,120	$0	$2,120
4,001 to 4,500	Dwelling	3.34	$2,255	$0	$2,255
4,501 or more	Dwelling	3.52	$2,376	$0	$2,376

Nonresidential Fees per Development Unit					
Development Type	Development Unit	Jobs per Unit[1]	Maximum Supportable	Current Fees	Increase / (Decrease)
Retail/Commercial	1,000 SF	2.12	$876	$0	$876
Convenience Commercial	1,000 SF	9.35	$3,854	$0	$3,854
Office	1,000 SF	3.26	$1,342	$0	$1,342
Institutional/Public	1,000 SF	2.86	$1,178	$0	$1,178
Industrial	1,000 SF	1.16	$478	$0	$478
Warehousing	1,000 SF	0.34	$140	$0	$140
Hotel/Lodging	Room	0.56	$230	$0	$230
RV Park	Pad	0.05	$21	$0	$21

1. See Land Use Assumptions

Revenue from Municipal Facilities Impact Fee

Revenue from the Municipal Facilities Impact Fee is estimated in Figure M5. There is projected to be 8,180 new housing units and 6.6 million additional square feet of nonresidential space in Grand Junction by 2034. To determine the revenue from each development type, the fee is multiplied by the growth. Overall, the revenue from the impact fee covers 98 percent of the capital costs generated by projected growth in the City of Grand Junction.

Figure M5. Estimated Revenue from Municipal Facilities Impact Fee

Infrastructure Costs for Municipal Facilities

	Total Cost	Growth Cost
Municipal Facilities	$18,489,503	$18,489,503
Total Expenditures	**$18,489,503**	**$18,489,503**

Projected Development Impact Fee Revenue

		Single-Family	Multi-Family	Retail/Comm.	Office	Inst./Public	Industrial
		$1,566 per unit	$1,026 per unit	$876 per 1,000 Sq Ft	$1,342 per 1,000 Sq Ft	$1,178 per 1,000 Sq Ft	$478 per 1,000 Sq Ft
Year		**Housing Units**		**KSF**	**KSF**	**KSF**	**KSF**
Base	2024	23,347	8,140	10,242	7,639	7,366	7,275
Year 1	2025	23,960	8,345	10,426	7,756	7,584	7,416
Year 2	2026	24,573	8,550	10,610	7,872	7,802	7,557
Year 3	2027	25,186	8,755	10,794	7,988	8,020	7,697
Year 4	2028	25,799	8,960	10,978	8,105	8,239	7,838
Year 5	2029	26,412	9,165	11,162	8,221	8,457	7,979
Year 6	2030	27,025	9,370	11,346	8,337	8,675	8,120
Year 7	2031	27,638	9,575	11,530	8,453	8,893	8,261
Year 8	2032	28,251	9,780	11,714	8,570	9,111	8,401
Year 9	2033	28,864	9,985	11,898	8,686	9,329	8,542
Year 10	2034	29,477	10,190	12,082	8,802	9,548	8,683
Ten-Year Increase		6,130	2,050	1,840	1,163	2,182	1,408
Projected Revenue =>		$9,599,580	$2,103,300	$1,611,953	$1,560,349	$2,569,813	$672,866

Projected Revenue =>	**$18,117,861**
Total Expenditures =>	**$18,489,503**
General Fund's Share =>	**$371,642**

PARKS & RECREATION IMPACT FEE

The Parks and Recreation Impact Fee is based on the incremental expansion methodology, and includes components for park land acquisition, open space land acquisition, and park improvements. By including a land park land component in the impact fee calculation, it is the City's intent to eliminate the current park land dedication requirement. The parks and recreation impact fee is derived from the product of persons per housing unit (by size of home) multiplied by the net cost per person.

SERVICE AREA

Since Grand Junction Parks provide services to the larger population residing outside the City in the 201 Sewer Service Boundary, parks and recreation infrastructure standards are allocated 100 percent to residential development within this area to establish the current level of service.

IMPACT FEE COMPONENTS

The Parks & Recreation Impact Fee is based on an inventory of existing City parks, current values of recreation improvements, and an inventory of current open space. The use of existing standards means there are no existing infrastructure deficiencies. New development is only paying its proportionate share for growth-related infrastructure.

Discussions with City staff indicate the City's park system essentially serves residents who reside within the 201 Sewer Service Boundary. For purposes of determining level of service standards, this population base will be referred to as the "park population," which is larger than the existing population base of the City.

Park Land

Figure PR1 lists the current inventory of City parks included in the impact fee calculations. To calculate the current level of service, the existing park acreage, (545.28 acres) is divided by the current park population (114,329). This results in a level of service standard of 0.0048 acres of park land per person.

To determine the cost per acre for park land, the City of Grand Junction provided data on the value of park land acquired through the City's current dedication requirement. According to the sample data provided, the City acquired 205 acres with a value of $30,240,255. This equates to a value of $147,513. When this average cost per acre ($147,513) is applied to the existing level of service standard of 0.0048 acres of park land per person, the cost per person is $703.55.

Figure PR1. Park Land Level of Service and Cost Factors

Park Name	Park Type	Acreage
Burkey Park South	Undeveloped Park	9.8
Canyon View Park	Regional Park	115.1
Columbine Park	Community Park	12.4
Darla Jean Park	Small Neighborhood Park	2.2
Dos Rios Park	Community Park	2.98
Duck Pond - Orchard Mesa	Small Neighborhood Park	4.8
Duck Pond - Ridges	Small Neighborhood Park	1.5
Eagle Rim Park	Large Neighborhood Park	11.4
Emerson Park	Community Park	2.5
Flint Ridge Park	Undeveloped Park	3.2
Founder's Colony Park	Small Neighborhood Park	4.4
Hawthorne Park	Small Neighborhood Park	2.7
Honeycomb Park	Small Neighborhood Park	3.6
Horizon Park	Undeveloped Park	12.6
Las Colonias Park	Regional Park	33.6
Lincoln Park	Regional Park	32.9
Matchett Park	Undeveloped Park	207
Paradise Hills Park	Small Neighborhood Park	2.8
Pineridge Park	Community Park	1.9
Riverside Park	Small Neighborhood Park	1.5
Rocket Park	Large Neighborhood Park	2.7
Saccomano Park	Banked Future Park	31.7
Shadow Lake Park	Large Neighborhood Park	5.8
Sherwood Park	Community Park	13.9
Spring Valley I Park	Small Neighborhood Park	3.1
Spring Valley II Park	Small Neighborhood Park	2.5
Washington Park	Small Neighborhood Park	3
Whitman Park	Small Neighborhood Park	2.5
Westlake Park	Large Neighborhood Park	11.2
Total		545.28

Level-of-Service (LOS) Standards

Park Population in 2024 (includes 201 Boundary)	114,329
Residential Share	100%
LOS: Acres per Person	**0.0048**

Cost Analysis

Cost per Acre	$147,513
LOS: Acres per Person	0.0048
Cost per Person	**$703.55**

Source: City of Grand Junction

Open Space

Figure PR2 lists the current inventory of City open space parcels. To calculate the current level of service, the existing open space acreage, (598.3 acres) is divided by the current park population (114,329). This results in a level of service standard of 0.0052 acres of open space land per person.

To determine the cost per acre for open space, the City of Grand Junction provided data on the value of park land acquired through the City's current dedication requirement. According to the sample data provided, the City acquired 205 acres with a value of $30,240,255. This equates to a value of $147,513. When this average cost per acre ($147,513) is applied to the existing level of service standard of 0.0052 acres of open space land per person, the cost per person is $771.96.

Figure PR2. Open Space Level of Service and Cost Factors

Park Name	Acreage
Botanical Gardens Open Space	6.3
Las Colonias Park	32.4
Leach Creek Open Space	0.5
Ridges Open Space	173.9
South Rim Open Space	21.6
Three Sisters Bike Park	294.9
Kindred Reserve	37
Watson Island Open Space	31.7
Total	598.3

Level-of-Service (LOS) Standards

Park Population in 2024 (includes 201 Boundary	114,329
Residential Share	100%
LOS: Acres per Person	**0.0052**

Cost Analysis

Cost per Acre	$147,513
LOS: Acres per Person	0.0052
Cost per Person	**$771.96**

Source: City of Grand Junction

Park Improvements

Figure PR3 lists the current inventory of City improvements included in the impact fee calculations. As shown in Figure PR3, the City currently has 694 different park improvements, with a replacement value of $109.2 million. This equates to an average cost per improvement of $157,464. To calculate the current level of service, the existing park improvements, (694) is divided by the current park population (114,329). This results in a level of service standard of 0.0061 park improvements per person.

As discussed above, the average cost per improvement is $157,464. When the average cost per acre ($157,464) is applied to the existing level of service standard of 0.0061 park improvements per person, the cost per person is $955.83.

Figure PR3. Park Improvements Level of Service and Cost Factors

Description	Improvements	Unit Cost	Total Cost
Adventure Course	1	$600,000	$600,000
Aquatics, Indoor Lap Pool	1	$6,000,000	$6,000,000
Aquatics, Outdoor Lap Pool	1	$15,000,000	$15,000,000
Aquatics, Spray Pad	2	$1,050,000	$2,100,000
Basketball Court, Lit	1	$210,000	$210,000
Basketball Court, Unlit	9	$160,000	$1,440,000
Basketball, Practice	4	$127,000	$508,000
Batting Cage	2	$32,000	$64,000
Bike Course	2	$200,000	$400,000
Diamond Field, Lit	8	$880,000	$7,040,000
Diamond Field, Unlit	2	$450,000	$900,000
Diamond Field, Complex	1	$1,000,000	$1,000,000
Disc Golf	3	$110,000	$330,000
Dog Park	4	$500,000	$2,000,000
Event Space	5	$5,500	$27,500
Fitness Course	2	$15,000	$30,000
Game Court	2	$26,500	$53,000
Garden, Display	100	$10,000	$1,000,000
Horseshoe Pits	15	$3,000	$45,000
Inline Hockey	1	$250,000	$250,000
Natural Area	17	$400,000	$6,800,000
Open Turf	350	$42,500	$14,875,000
Pickleball Court, Lit	20	$165,000	$3,300,000
Pickleball Court, Unlit	4	$115,000	$460,000
Picnic Ground (Tables & Grills)	12	$2,600	$31,200
Playground (Destination)	5	$550,000	$2,750,000
Playground (Local)	19	$300,000	$5,700,000
Public Art Installations	10	$100,000	$1,000,000
Rectangular Field, Complex	1	$900,000	$900,000
Rectangular Field, Large	5	$500,000	$2,500,000
Rectangular Field, Multiple	1	$300,000	$300,000
Rectangular Field, Small	2	$100,000	$200,000
Shelter/Pavillion - Large	28	$130,000	$3,640,000
Shelter/Pavillion - Small	12	$60,000	$720,000
Skate Park - Destination	1	$3,200,000	$3,200,000
Skate Park - Local	2	$750,000	$1,500,000
Trail, Multi-Use, Concrete	13	$1,062,000	$13,806,000
Trailhead	1	$150,000	$150,000
Tennis Court, Lit	12	$300,000	$3,600,000
Tennis Court, Unlit	6	$175,000	$1,050,000
Volleyball Court	4	$50,000	$200,000
Water Access, Developed	1	$1,000,000	$1,000,000
Water Access, General	2	$1,300,000	$2,600,000
Total	**694**	**$157,464**	**$109,279,700**

Level-of-Service (LOS) Standards

Existing Improvements	694
Park Population in 2024 (includes 201 Boundary)	114,329
LOS: Park Improvements per Person	**0.0061**

Cost Analysis

Average Cost per Improvement*	$157,464
LOS: Improvements per Person	0.0061
Cost per Person	**$955.83**

*Source: City of Grand Junction

PROJECTION OF GROWTH-RELATED PARK INFRASTRUCTURE NEEDS

To estimate the 10-year growth needs for park land, the current level of service (0.0048 acres person) is applied to the projected park population growth. The 201 Sewer Service area is projected to increase by 20,526 residents over the next ten years (see Appendix A). As shown in Figure PR4, it is projected that the City will need to purchase 97.9 acres to accommodate the needs generated by new development. By applying the average cost per acre ($147,513 per acre), the estimated growth-related expenditure is approximately $14.4 million.

Figure PR4. 10-Year Park Land Infrastructure Needs to Accommodate Growth

Type	Level of Service	Demand Unit	Unit Cost
Park Land	0.0048 Acres	per person	$147,513

Growth-Related Need for Park Land			
Year		Park Population	Acres
Base	2024	114,329	545.28
Year 1	2025	116,225	554.32
Year 2	2026	118,121	563.36
Year 3	2027	120,016	572.40
Year 4	2028	121,912	581.45
Year 5	2029	123,808	590.49
Year 6	2030	125,704	599.53
Year 7	2031	127,828	609.66
Year 8	2032	130,129	620.63
Year 9	2033	132,471	631.81
Year 10	2034	134,856	643.18
Ten-Year Increase		20,526	97.90

Growth-Related Expenditure for Park Land	$14,441,277

To estimate the 10-year growth needs for open space land acquisition, the current level of service (0.0052 acres person) is applied to the projected park population growth. The 201 Sewer Service area is projected to increase by 20,526 residents over the next ten years (see Appendix A). As shown in Figure PR5, it is projected that the City will need to purchase approximately 140 acres of open space land to accommodate the needs generated by new development. By applying the average cost per acre to acquire park land ($147,513 per acre), the estimated growth-related expenditure is approximately $15.8 million.

Figure PR5. 10-Year Open Space Infrastructure Needs to Accommodate Growth

Type	Level of Service	Demand Unit	Unit Cost
Open Space	0.0052 Acres	per person	$147,513

Growth-Related Need for Open Space			
Year		Park Population	Acres
Base	2024	114,329	598.30
Year 1	2025	116,225	608.22
Year 2	2026	118,121	618.14
Year 3	2027	120,016	628.06
Year 4	2028	121,912	637.98
Year 5	2029	123,808	647.90
Year 6	2030	125,704	657.82
Year 7	2031	127,828	668.94
Year 8	2032	130,129	680.98
Year 9	2033	132,471	693.24
Year 10	2034	134,856	705.72
Ten-Year Increase		20,526	107.42

Growth-Related Expenditure for Open Space	$15,845,467

To estimate the 10-year growth needs for park improvements, the current level of service (0.0068 acres person) is applied to the projected park population growth. The 201 Sewer Service area is projected to increase by 20,526 residents over the next ten years (see Appendix A). As shown in Figure PR6, it is projected that the City will need to construct approximately 125 improvements on existing or future parks to accommodate the needs generated by new development. By applying the average cost per improvement ($157,464 per improvement), the estimated growth-related expenditure is approximately $19.6 million.

Figure PR6. 10-Year Park Improvement Infrastructure Needs to Accommodate Growth

Type	Level of Service	Demand Unit	Unit Cost
Park Improvements	0.0061 Improvements	per person	$157,464

Growth-Related Need for Park Improvements			
Year		Park Population	Improvements
Base	2024	114,329	694.00
Year 1	2025	116,225	705.51
Year 2	2026	118,121	717.01
Year 3	2027	120,016	728.52
Year 4	2028	121,912	740.03
Year 5	2029	123,808	751.54
Year 6	2030	125,704	763.04
Year 7	2031	127,828	775.94
Year 8	2032	130,129	789.91
Year 9	2033	132,471	804.12
Year 10	2034	134,856	818.60
Ten-Year Increase		20,526	124.60

Growth-Related Expenditure for Park Improvements	$19,619,829

MAXIMUM SUPPORTABLE PARKS & RECREATION IMPACT FEE

Figure PR7 shows the cost factors for each component of the City of Grand Junction's Parks and Recreation Impact Fee. Impact fees for parks and recreation are based on persons per housing unit and are only assessed against residential development. The fees for park improvements are calculated per person, so by multiplying the total cost per person by the housing unit size calculates the maximum supportable fee.

The fees represent the highest amount supportable for each type of housing unit, which represents new growth's fair share of the cost for capital facilities. The City may adopt fees that are less than the amounts shown. However, a reduction in impact fee revenue will necessitate an increase in other revenues, a decrease in planned capital expenditures, and/or a decrease in levels of service.

Figure PR7. Maximum Supportable Park & Recreation Impact Fee

Fee Component	Cost per Person
Park Land	$703.55
Open Space	$771.96
Park Improvements	$955.83
Total	$2,431.33

Residential Fees per Development Unit					
Unit Size	Development Unit	Persons per Unit[1]	Maximum Supportable	Current Fees	Increase / (Decrease)
850 or less	Dwelling	0.75	$1,824	$962	$862
851 to 1,000	Dwelling	0.97	$2,358	$962	$1,396
1,001 to 1,250	Dwelling	1.23	$2,991	$962	$2,029
1,251 to 1,500	Dwelling	1.52	$3,696	$1,429	$2,267
1,501 to 2,000	Dwelling	1.91	$4,644	$1,429	$3,215
2,001 to 2,500	Dwelling	2.32	$5,641	$1,429	$4,212
2,501 to 3,000	Dwelling	2.64	$6,419	$1,429	$4,990
3,001 to 3,500	Dwelling	2.91	$7,075	$1,429	$5,646
3,501 to 4,000	Dwelling	3.14	$7,634	$1,429	$6,205
4,001 to 4,500	Dwelling	3.34	$8,121	$1,429	$6,692
4,501 or more	Dwelling	3.52	$8,558	$1,429	$7,129
RV Park	Pad	4.31	$10,479	$0	$10,479

1. See Land Use Assumptions

REVENUE FROM PARKS & RECREATION IMPACT FEE

Revenue from the City's Parks & Recreation Impact Fee is estimated in Figure PR8. Demand for park improvements is driven by both City residents and current/future residents within the 201 Sewer Service Boundary. Therefore, it is difficult to estimate impact fee revenue for parks and recreation because it is not known when (and if) the projected housing units in the 201 Sewer Service Boundary will be annexed into the City of Grand Junction prior to their construction (which is the time the impact fee is paid). Therefore, the impact fee revenue projection is based on projected units in the City of Grand Junction over the next ten years. By multiplying the projected residential growth in the City by the impact fee amounts, we estimate projected impact fee revenue of approximately $46.9 million. Projected expenditures total $49.9 million.

Figure PR8. Estimated Revenue from Parks & Recreation Impact Fee

Infrastructure Costs for Parks

	Growth Cost
Park Land	$14,441,277
Open Space	$15,845,467
Park Improvements	$19,619,829
Total Expenditures	**$49,906,573**

Projected Development Impact Fee Revenue

		Single-Family $6,419 per unit	Multi-Family $3,696 per unit
Year		Housing Units	Housing Units
Base	2024	23,347	8,140
Year 1	2025	23,960	8,345
Year 2	2026	24,573	8,550
Year 3	2027	25,186	8,755
Year 4	2028	25,799	8,960
Year 5	2029	26,412	9,165
Year 6	2030	27,025	9,370
Year 7	2031	27,638	9,575
Year 8	2032	28,251	9,780
Year 9	2033	28,864	9,985
Year 10	2034	29,477	10,190
Ten-Year Increase		6,130	2,050
Projected Revenue =>		$39,346,778	$7,576,039
		Projected Revenue =>	**$46,922,817**
		Total Expenditures =>	**$49,906,573**
		General Fund's Share =>	**$2,983,756**

POLICE IMPACT FEE

The Police impact fees include components for future station space. The incremental expansion methodology is used for the Police impact fee. The Police Impact Fee is calculated on a per capita basis for residential development and a per vehicle trip basis for nonresidential development.

The residential police impact fees are calculated per housing unit. TischlerBise recommends using nonresidential vehicle trips as the best demand indicator for police facilities. Trip generation rates are used for nonresidential development because vehicle trips are highest for commercial/retail developments, such as shopping centers, and lowest for industrial development. Office and institutional trip rates fall between the other two categories. This ranking of trip rates is consistent with the relative demand for police services and facilities from nonresidential development. Other possible nonresidential demand indicators, such as employment or floor area, will not accurately reflect the demand for service. For example, if employees per thousand square feet were used as the demand indicator, police impact fees would be too high for office and institutional development because offices typically have more employees per 1,000 square feet than retail uses.

SERVICE AREA

The City of Grand Junction provides Police services on a uniform basis throughout the City; therefore, there is a single service area for the Police impact fees.

PROPORTIONATE SHARE FACTORS

Both residential and nonresidential developments increase the demand on police facilities. To calculate the proportional share between residential and nonresidential demand on police facilities, a functional population approach is used. The functional population approach allocates the cost of the facilities to residential and nonresidential development based on the activity of residents and workers in the City through the 24 hours in a day.

Residents that do not work are assigned 20 hours per day to residential development and four hours per day to nonresidential development (annualized averages). Residents that work in Grand Junction are assigned 14 hours to residential development and 10 hours to nonresidential development. Residents that work outside Grand Junction are assigned 14 hours to residential development. Inflow commuters are assigned 10 hours to nonresidential development. Based on 2021 functional population data (the latest available) for Grand Junction, the cost allocation for residential development is 63 percent while nonresidential development accounts for 37 percent of the demand for police facilities, see Figure P1.

Figure P1. City of Grand Junction Functional Population

Demand Units in 2021					
Residential				Demand Hours/Day	Person Hours
	Population	62,544			
	Residents Not Working		37,046	20	740,920
	Employed Residents		25,498		
	Employed in Grand Junction		17,052	14	238,728
	Employed outside Grand Junction		8,446	14	118,244
				Residential Subtotal	1,097,892
				Residential Share	**63%**
Nonresidential					
	Non-working Residents		37,046	4	148,184
	Jobs Located in Grand Junction		49,018		
	Residents Employed in Grand Junction		17,052	10	170,520
	Nonresident Workers (Inflow Commuters)		31,966	10	319,660
				Nonresidential Subtotal	638,364
				Nonresidential Share	**37%**
				Total	1,736,256

Source: U.S. Census Bureau (population), U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics, Version 6.24.1 (employment).

IMPACT FEE COMPONENTS

Police Facilities

The Police impact fee is based on an inventory of existing citywide facilities and replacement costs. The use of existing standards means there are no existing infrastructure deficiencies. The floor area has been provided by the City of Grand Junction staff.

As shown in Figure P2, the City of Grand Junction Police Department is housed in the Public Safety Building. This facility occupies 63,863 square feet. To determine the residential level of service, the current Police space square footage (63,863) is multiplied by the residential proportionate share factor (63%) and divided by the current population (65,517) for a level of service standard of 0.614 square feet per person. The nonresidential level of service standard of 0.108 square feet per nonresidential vehicle trip was determined by multiplying the current facility square footage (63,863) by the nonresidential proportionate share factor (37%) and divided by the current average daily nonresidential vehicle trips (218,420).

As shown in Figure P2, the estimated replacement cost is $625 per square foot. This cost is based on the estimated cost for construction of a future Police Annex prepared by the Blythe Group. When the residential (0.614 per person) and nonresidential (0.108 per vehicle trip) per square foot level of service standards are multiplied by the cost per square foot ($625), the resulting cost per demand units are $383.81 per person and $67.61 per nonresidential vehicle trip.

Figure P2. Police Station Level of Service and Cost Factors

Facility	Square Feet
Police Station Building	63,863
Total	63,863

Level-of-Service (LOS) Standards

Population in 2024	65,517
Nonresidential Vehicle Trips in 2024	218,420
Residential Share	63%
Nonresidential Share	37%
LOS: Square Feet per Person	**0.614**
LOS: Square Feet per Vehicle Trip	**0.108**

Cost Analysis

Cost per Square Foot*	$625
LOS: Square Feet per Person	0.614
Cost per Person	**$383.81**
LOS: Square Feet per Vehicle Trip	0.108
Cost per Vehicle Trip	**$67.61**

Source: City of Grand Junction

PROJECTION OF GROWTH-RELATED POLICE FACILITY NEEDS

To estimate the demand for future Police station space, the current level of service (0.614 square feet per person and 0.108 square feet per nonresidential vehicle trip) is applied to the residential and nonresidential growth projected for the City of Grand Junction. As shown in Figure P3, the City is projected to increase by 17,256 residents and 42,895 nonresidential vehicle trips over the next ten years (see Appendix A). As shown in Figure P3, there is projected demand for 15,238 square feet of growth-related Police space to accommodate new development in the City at the present level of service. By applying the average cost per square foot ($625), the total projected growth-related building space expenditure is approximately $9.5 million.

Figure P3. 10-Year Police Space Needs to Accommodate Growth

Type of Infrastructure	Level of Service			Demand Unit	Unit Cost
Police Facilities	Residential	0.614	Square Feet	per Person	$625
	Nonresidential	0.108		per Vehicle Trip	

Growth-Related Need for Police Facilities						
Year		Population	Nonresidential Vehicle Trips	Residential Square Feet	Nonresidential Square Feet	Total
Base	2024	65,517	218,420	40,234	23,629	63,863
Year 1	2025	67,242	222,710	41,293	24,093	65,387
Year 2	2026	68,968	226,999	42,353	24,557	66,911
Year 3	2027	70,694	231,289	43,413	25,021	68,434
Year 4	2028	72,419	235,579	44,473	25,486	69,958
Year 5	2029	74,145	239,868	45,532	25,950	71,482
Year 6	2030	75,871	244,158	46,592	26,414	73,006
Year 7	2031	77,596	248,447	47,652	26,878	74,529
Year 8	2032	79,322	252,737	48,711	27,342	76,053
Year 9	2033	81,048	257,026	49,771	27,806	77,577
Year 10	2034	82,773	261,316	50,831	28,270	79,101
Ten-Year Increase		**17,256**	**42,895**	**10,597**	**4,641**	**15,238**
			Projected Expenditure	**$6,623,191**	**$2,900,325**	**$9,523,517**
			Growth-Related Expenditure on Police Facilities			**$9,523,517**

PRINCIPAL PAYMENT CREDIT

The City of Grand Junction has existing debt obligations for the construction of the present Public Safety Building at a cost of $27.8 million. This total represents 80 percent of the 2010 Bonds. Figure P5 lists the remaining principal payment schedule for the bonds, which totals $19.2 million.

The total remaining annual principal payment schedule is distributed to the equivalent residential and nonresidential share, City's population and vehicle trip ends, to find the debt cost per attributed user. To account for the time value of money, annual payments are discounted using a net present value formula based on the applicable discount (5.0%) rate. This results in a credit of $97.53 per person, and $17.89 per nonresidential trip end.

Figure P4. Principal Payment Credit

Year	Principal Payment (80% of Bond)	Res. Share 63%	Population	Debt Cost per Capita	Nonres. Share 37%	Nonres. Vehicle Trips	Debt Cost per Trip
2024	$788,000	$496,440	65,517	$7.58	$291,560	218,420	$1.33
2025	$792,000	$498,960	67,242	$7.42	$293,040	222,710	$1.32
2026	$832,000	$524,160	68,968	$7.60	$307,840	226,999	$1.36
2027	$872,000	$549,360	70,694	$7.77	$322,640	231,289	$1.39
2028	$916,000	$577,080	72,419	$7.97	$338,920	235,579	$1.44
2029	$960,000	$604,800	74,145	$8.16	$355,200	239,868	$1.48
2030	$1,008,000	$635,040	75,871	$8.37	$372,960	244,158	$1.53
2031	$1,060,000	$667,800	77,596	$8.61	$392,200	248,447	$1.58
2032	$1,112,000	$700,560	79,322	$8.83	$411,440	252,737	$1.63
2033	$1,168,000	$735,840	81,048	$9.08	$432,160	257,026	$1.68
2034	$1,224,000	$771,120	82,773	$9.32	$452,880	261,316	$1.73
2035	$1,288,000	$811,440	84,499	$9.60	$476,560	265,605	$1.79
2036	$1,340,000	$844,200	86,224	$9.79	$495,800	269,895	$1.84
2037	$1,392,000	$876,960	87,950	$9.97	$515,040	274,184	$1.88
2038	$1,448,000	$912,240	89,676	$10.17	$535,760	278,474	$1.92
2039	$1,504,000	$947,520	91,401	$10.37	$556,480	282,763	$1.97
2040	$1,552,000	$977,760	93,127	$10.50	$574,240	287,053	$2.00
Total	$19,256,000	$12,131,280		$151.11	$7,124,720		$27.87

Discount Rate	**5.0%**		**5.0%**
Net Present Value	**$97.53**		**$17.89**

MAXIMUM SUPPORTABLE POLICE IMPACT FEE

Figure P5 shows the maximum supportable Police Impact Fee. Impact fees for Police are based on persons per housing unit for residential development and vehicle trips per 1,000 square feet for nonresidential development. For residential development, the total cost per person is multiplied by the housing unit size to calculate the proposed fee. For nonresidential development, the total cost per vehicle trip is multiplied by the trips per 1,000 square feet to calculate the proposed fee.

The fees represent the highest amount supportable for each type of development, which represents new growth's fair share of the cost for capital facilities. The City may adopt fees that are less than the amounts shown. However, a reduction in impact fee revenue will necessitate an increase in other revenues, a decrease in planned capital expenditures, and/or a decrease in levels of service.

Figure P5. Maximum Supportable Police Impact Fee

Fee Component	Cost per Person	Cost per Trip
Police Facilities	$383.81	$67.61
Principal Payment Credit	($97.53)	($17.89)
Total	$286.28	$49.73

Residential Fees per Development Unit					
Unit Size	Development Unit	Persons per Unit[1]	Maximum Supportable	Current Fees	Increase / (Decrease)
850 or less	Dwelling	0.75	$215	$227	($12)
851 to 1,000	Dwelling	0.97	$278	$227	$51
1,001 to 1,250	Dwelling	1.23	$352	$227	$125
1,251 to 1,500	Dwelling	1.52	$435	$346	$89
1,501 to 2,000	Dwelling	1.91	$547	$346	$201
2,001 to 2,500	Dwelling	2.32	$664	$346	$318
2,501 to 3,000	Dwelling	2.64	$756	$346	$410
3,001 to 3,500	Dwelling	2.91	$833	$346	$487
3,501 to 4,000	Dwelling	3.14	$899	$346	$553
4,001 to 4,500	Dwelling	3.34	$956	$346	$610
4,501 or more	Dwelling	3.52	$1,008	$346	$662

Nonresidential Fees per Development Unit					
Development Type	Development Unit	Vehicle Trips per Unit[1]	Maximum Supportable	Current Fees	Increase / (Decrease)
Retail/Commercial	1,000 SF	12.21	$607	$234	$373
Convenience Commercial	1,000 SF	16.81	$836	$234	$602
Office	1,000 SF	5.42	$270	$92	$178
Institutional/Public	1,000 SF	5.39	$268	$92	$176
Industrial	1,000 SF	1.69	$84	$32	$52
Warehousing	1,000 SF	0.86	$43	$16	$27
Hotel/Lodging	Room	4.00	$199	$234	($35)
RV Park	Pad	1.35	$67	$227	($160)

1. See Land Use Assumptions

REVENUE FROM POLICE IMPACT FEE

Revenue from the Police Impact Fee is estimated in Figure P6. There is projected to be 8,180 new housing units and approximately 6.6 million square feet of additional nonresidential development in Grand Junction by 2034. To find the revenue from each development type, the fee is multiplied by the growth for each land use. Overall, the projected revenue from the Police impact fee totals approximately $7.1 million and covers approximately 75% of the total expected expenditures. Impact fee revenue is less than the projected expenditures due to the required debt credit.

Figure P6. Estimated Revenue from Police Impact Fee

Infrastructure Costs for Police Facilities

	Growth Cost
Police Facilities	$9,523,517
Total Expenditures	**$9,523,517**

Projected Development Impact Fee Revenue

		Single-Family	Multi-Family	Retail/Comm.	Office	Inst./Public	Industrial
		$664 per unit	$435 per unit	$607 per 1000 Sq Ft	$270 per 1000 Sq Ft	$268 per 1000 Sq Ft	$84 per 1000 Sq Ft
Year		Housing Units	Housing Units	KSF	KSF	KSF	KSF
Base	2024	23,347	8,140	10,242	7,639	7,366	7,275
Year 1	2025	23,960	8,345	10,426	7,756	7,584	7,416
Year 2	2026	24,573	8,550	10,610	7,872	7,802	7,557
Year 3	2027	25,186	8,755	10,794	7,988	8,020	7,697
Year 4	2028	25,799	8,960	10,978	8,105	8,239	7,838
Year 5	2029	26,412	9,165	11,162	8,221	8,457	7,979
Year 6	2030	27,025	9,370	11,346	8,337	8,675	8,120
Year 7	2031	27,638	9,575	11,530	8,453	8,893	8,261
Year 8	2032	28,251	9,780	11,714	8,570	9,111	8,401
Year 9	2033	28,864	9,985	11,898	8,686	9,329	8,542
Year 10	2034	29,477	10,190	12,082	8,802	9,548	8,683
Ten-Year Increase		6,130	2,050	1,840	1,163	2,182	1,408
Projected Revenue =>		$4,070,320	$891,750	$1,116,958	$313,930	$584,643	$118,244

Projected Revenue =>	**$7,095,845**
Total Expenditures =>	**$9,523,517**
General Fund's Share =>	**$2,427,672**

TRANSPORTATION IMPACT FEE

The transportation impact fees include components for principal arterials, minor arterials, major collectors, minor collectors, and trails. The incremental expansion methodology is used for the transportation impact fee. The transportation impact fee is calculated on a per person mile traveled (PMT) basis for all development. Costs are allocated to both residential and nonresidential development using trip generation rates, trip adjustment factors, and trip length adjustment factors. Residential trip generation rates are customized to Grand Junction's residential development, as discussed in the following sections. Nonresidential trip generation rates are highest for retail/commercial development and lowest for industrial development, whereas trip rates for office and institutional development fall between the other two categories.

SERVICE AREA

The City of Grand Junction provides a citywide transportation network; therefore, there is a single service area for the transportation impact fees.

PROPORTIONATE SHARE FACTORS

Transportation impact fees should be proportionate to the cost of transportation infrastructure needed to accommodate new development. The transportation impact fees allocate the cost of transportation infrastructure between residential and nonresidential based on trip generation rates, trip adjustment factors, and trip lengths.

VEHICLE TRIPS

Average weekday vehicle trips are used as a measure of demand by land use. Vehicle trips are estimated using average weekday vehicle trip ends from the reference book, *Trip Generation, 11th Edition*, published by the Institute of Transportation Engineers (ITE) in 2021. A vehicle trip end represents a vehicle entering or exiting a development (as if a traffic counter were placed across a driveway). To calculate the impact fees, trip generation rates are adjusted to avoid double counting each trip at both the origin and destination points. The basic trip adjustment factor is 50 percent. As discussed further below, the impact fee methodology includes additional adjustments to make the fees proportionate to the infrastructure demand for particular types of development.

Residential Trip Generation Rates

As an alternative to simply using national average trip generation rates for residential development, published by the Institute of Transportation Engineers (ITE), TischlerBise calculates custom trip rates using local demographic data. Key inputs needed for the analysis, including average number of persons and vehicles available per housing unit, are available from American Community Survey (ACS) data.

Vehicle Trip Ends by Bedroom Range

TischlerBise recommends a fee schedule where larger units pay higher impact fees than smaller units. Benefits of the proposed methodology include: 1) proportionate assessment of infrastructure demand using local demographic data, and 2) a progressive fee structure (i.e., smaller units pay less, and larger units pay more).

TischlerBise creates custom tabulations of demographic data by bedroom range from individual survey responses provided by the U.S. Census Bureau in files known as Public Use Microdata Samples (PUMS). PUMS files are only available for areas of at least 100,000 persons, and Grand Junction is in Public Use Microdata Area (PUMA) 2501. Shown in Figure T1, cells with yellow shading indicate the unweighted survey results, which yield the unadjusted number of persons and vehicles available per housing unit. Unadjusted persons per housing unit and vehicles per housing unit are adjusted to control totals in Grand Junction – 2.11 persons per housing unit and 1.68 vehicles per unit. The analysis multiplies adjusted persons per housing unit estimates by the ITE weighted average trip rate per person to estimate trip ends per housing unit based on persons. The analysis multiplies adjusted vehicles per housing unit estimates by the ITE weighted average trip rate per vehicle to estimate trip ends per housing unit based on vehicles. Finally, the analysis calculates average trip ends per housing unit using the average number of trip ends per person and per vehicle. Housing units with 0-1 bedrooms generate 3.61 vehicle trips ends per day and housing units with 5+ bedrooms generate 11.36 vehicle trip ends per day.

Figure T1: Vehicle Trip Ends by Bedroom Range

Bedroom Range	Persons[1]	Housing Units[1]	Vehicles Available[1]	Housing Mix	Unadjusted PPHU	Adjusted PPHU[2]	Unadjusted VPHU	Adjusted VPHU[2]
0-1	233	193	159	8%	1.21	1.18	0.82	0.73
2	814	496	743	21%	1.64	1.61	1.50	1.33
3	2,647	1,202	2,401	50%	2.20	2.16	2.00	1.78
4	1,089	396	938	17%	2.75	2.70	2.37	2.11
5+	340	96	259	4%	3.54	3.48	2.70	2.40
Total	5,123	2,383	4,500	100%	2.15	2.11	1.89	1.68

National Averages According to ITE

ITE Code	AWVTE per Person	AWVTE per Vehicle	AWVTE per HU	Local Housing Mix
210 SFD	2.65	6.36	9.43	75%
221 Apt	2.28	3.97	4.54	25%
Weighted Avg	2.56	5.75	8.19	100%

Recommended AWVTE per Housing Unit

Bedroom Range	AWVTE per HU Based on Persons[3]	AWVTE per HU Based on Vehicles[4]	AWVTE per Housing Unit[5]
0-1	3.02	4.20	3.61
2	4.12	7.65	5.89
3	5.53	10.24	7.89
4	6.91	12.13	9.52
5+	8.91	13.80	11.36
Average	5.40	9.66	7.53

1. U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates, Public Use Microdata Sample (PUMS) for Colorado PUMA 2501.
2. Represents unadjsted PUMS values scaled to control totals for Grand Junction using 2018-2022 ACS 5-Year Estimates.
3. Adjusted persons per housing unit multiplied by ITE weighted average trip rate per person.
4. Adjusted vehicles available per housing unit multiplied by ITE weighted average trip rate per vehicle.
5. Average trip rates based on persons and vehicles per housing unit.

Vehicle Trip Ends by Housing Size

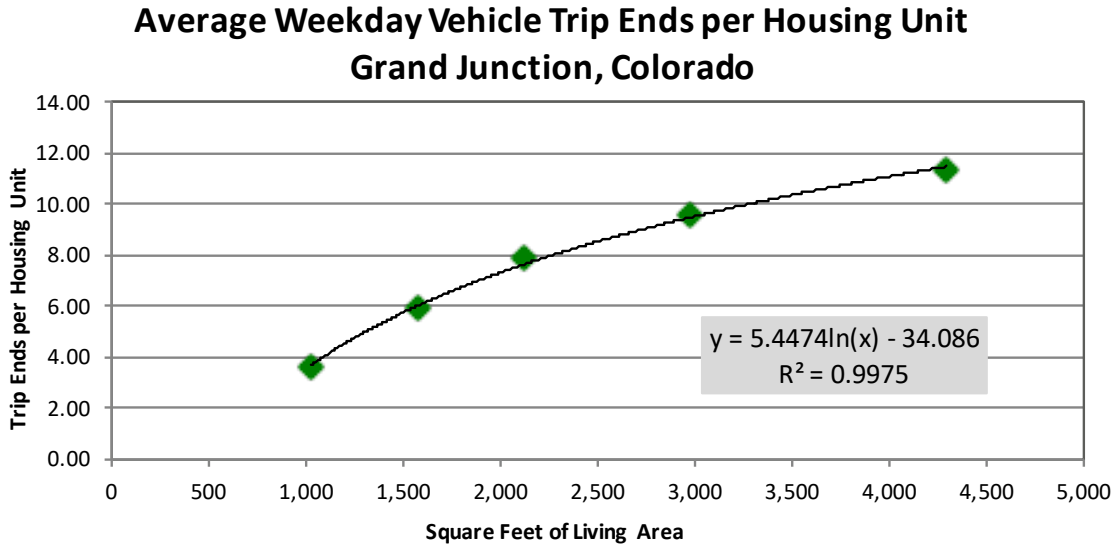
To derive average weekday vehicle trip ends by dwelling size, Tischler Bise uses 2022 U.S. Census Bureau data for housing units constructed in the west region. Based on 2022 estimates, living areas range from 1,021 square feet for 0- to 1-bedroom housing units up to 4,292 square feet for 5+ bedroom housing units. Citywide average floor area and weekday vehicle trip ends, by bedroom range, are plotted in Figure T2 with a logarithmic trend line formula to derive trip ends by housing unit size. TischlerBise recommends a minimum size based on 850 square feet or less and a maximum size of 4,501 square feet or larger.

A medium-size unit with 2,501 to 3,000 square feet has a fitted-curve value of 9.05 vehicle trip ends on an average weekday – this is less than the national average of 9.43 vehicle trip ends per single-family unit. A small unit of 850 square feet or less generates 2.66 vehicle trip ends, and this represents 29 percent of demand from a medium-size unit. A large unit of 4,501 square feet or more generates 12.03 vehicle trip ends, and this represents 133 percent of demand from a medium-size unit. With a "one-size-fits-all" approach, small units pay more than their proportionate share while large units pay less than their proportionate share.

Figure T2: Vehicle Trip Ends by Housing Size

Average weekday vehicle trip ends per housing unit derived from 2018-2022 ACS 5-Year PUMS data for the area that includes Grand Junction. Unit size for 0-1 bedroom from the 2022 U.S. Census Bureau average for all multi-family units constructed in the Census West region. Unit size for all other bedrooms from the 2022 U.S. Census Bureau average for single-family units constructed in the Census West region.

Actual Averages per Housing Unit			Fitted-Curve Values	
Bedrooms	Square Feet	Trip Ends	Sq Ft Range	Trip Ends
0-1	1,021	3.61	850 or less	2.66
2	1,573	5.89	851 to 1,000	3.41
3	2,123	7.89	1,001 to 1,250	4.30
4	2,974	9.52	1,251 to 1,500	5.28
5+	4,292	11.36	1,501 to 2,000	6.59
			2,001 to 2,500	7.96
			2,501 to 3,000	9.05
			3,001 to 3,500	9.96
			3,501 to 4,000	10.74
			4,001 to 4,500	11.43
			4,501 or more	12.03



Nonresidential Trip Generation Rates

For nonresidential development, TischlerBise uses trip generation rates published in Trip Generation, Institute of Transportation Engineers, 11th Edition (2021). The prototype for industrial development is Industrial Park (ITE 130) which generates 3.37 average weekday vehicle trip ends per 1,000 square feet of floor area. Institutional/public development uses Hospital (ITE 610) and generates 10.77 average weekday vehicle trip ends per 1,000 square feet of floor area. For office & other services development, the proxy is General Office (ITE 710), and it generates 10.84 average weekday vehicle trip ends per 1,000 square feet of floor area. The prototype for commercial development is Shopping Center (ITE 820) which generates 37.01 average weekday vehicle trips per 1,000 square feet of floor area.

Figure T3: Average Weekday Vehicle Trip Ends by Land Use

ITE Code	Land Use / Size	Demand Unit	Wkdy Trip Ends Per Dmd Unit*	Wkdy Trip Ends Per Employee*	Emp Per Dmd Unit	Sq. Ft. Per Emp
110	Light Industrial	1,000 Sq Ft	4.87	3.10	1.57	637
130	Industrial Park	1,000 Sq Ft	3.37	2.91	1.16	864
140	Manufacturing	1,000 Sq Ft	4.75	2.51	1.89	528
150	Warehousing	1,000 Sq Ft	1.71	5.05	0.34	2,953
310	Hotel	Room	7.99	14.34	0.56	n/a
416	Campground/RV Park**	Campsite	2.70	n/a	0.05	n/a
620	Nursing Home	Bed	3.06	3.31	0.92	n/a
610	Hospital	1,000 Sq Ft	10.77	3.77	2.86	350
710	General Office (avg size)	1,000 Sq Ft	10.84	3.33	3.26	307
720	Medical-Dental Office	1,000 Sq Ft	36.00	8.71	4.13	242
730	Government Office	1,000 Sq Ft	22.59	7.45	3.03	330
840	Auto Sales/Service	1,000 Sq Ft	27.84	11.20	2.49	402
430	Golf Course	Hole	30.38	3.74	1.47	680
444	Movie Theater	1,000 Sq Ft	78.09	53.12	1.47	680
820	Shopping Center (avg size)	1,000 Sq Ft	37.01	17.42	2.12	471
912	Bank	1,000 Sq Ft	100.35	32.73	3.07	326
934	Fast Food	1,000 Sq Ft	50.94	5.45	9.35	107
945	Convenience Store w/Gas Sales	1,000 Sq Ft	624.20	241.21	2.59	386

*Trip Generation, Institute of Transportation Engineers, 11th Edition (2021).

**Employees per Demand Unit from National Association of RV Parks & Campgrounds (ARVC), "2023 Outdoor Hospitality Industry Benchmarking Report."

Trip Rate Adjustments

Trip generation rates require an adjustment factor to avoid double counting each trip at both the origin and destination points. Therefore, the basic trip adjustment factor is 50 percent. As discussed further in this section, the impact fee methodology includes additional adjustments to make the fees proportionate to the infrastructure demand for particular types of development.

Commuter Trip Adjustment

Residential development has a larger trip adjustment factor of 55 percent to account for commuters leaving Grand Junction for work. According to the 2009 National Household Travel Survey (see Table 30) weekday work trips are typically 31 percent of production trips (i.e., all out-bound trips, which are 50 percent of all trip ends). As shown in Figure T4, the U.S. Census Bureau's OnTheMap web application indicates 33 percent of resident workers traveled outside of Grand Junction for work in 2021. In combination, these factors (0.31 x 0.50 x 0.33 = 0.05) support the additional five percent allocation of trips to residential development.

Figure T4: Commuter Trip Adjustment

Trip Adjustment Factor for Commuters	
Employed Residents	25,498
Residents Living and Working in Grand Junction	17,052
Residents Commuting Outside Grand Junction for Work	8,446
Percent Commuting out of Grand Junction	33%
Additional Production Trips[1]	5%
Standard Trip Rate Adjustment	50%
Residential Trip Adjustment Factor	55%

Source: U.S. Census Bureau, OnTheMap Application (v 6.24.1) and LEHD Origin-Destination Employment Statistics, 2021.

1. According to the National Household Travel Survey (2009)*, published in December 2011 (see Table 30), home-based work trips are typically 30.99 percent of "production" trips, in other words, out-bound trips (which are 50 percent of all trip ends). Also, LED OnTheMap data from 2021 indicate that 33 percent of Grand Junction's workers travel outside the city for work. In combination, these factors (0.3099 x 0.50 x 0.33 = 0.05) account for 5 percent of additional production trips. The total adjustment factor for residential includes attraction trips (50 percent of trip ends) plus the journey-to-work commuting adjustment (5 percent of production trips) for a total of 55 percent. *http://nhts.ornl.gov/publications.shtml ; Summary of Travel Trends - Table "Daily Travel Statistics by Weekday vs. Weekend"

Adjustment for Pass-By Trips

For commercial development, the trip adjustment factor is less than 50 percent because this type of development attracts vehicles as they pass by on arterial and collector roads. For example, when someone stops at a convenience store on the way home from work, the convenience store is not the primary destination. For the average shopping center, ITE data indicate 34 percent of the vehicles that enter are passing by on their way to some other primary destination. The remaining 66 percent of attraction trips have the commercial site as their primary destination. Because attraction trips are half of all trips, the trip adjustment factor is 66 percent multiplied by 50 percent, or approximately 33 percent of the trip ends.

Average Weekday Vehicle Trips

Shown below in Figure T5, multiplying average weekday vehicle trip ends and trip adjustment factors (discussed on the previous page) by Grand Junction's existing development units provides the average weekday vehicle trips generated by existing development. As shown below, existing development generates 359,836 vehicle trips on an average weekday.

Figure T5: Average Weekday Vehicle Trips by Land Use

Development Type	Dev Unit	ITE Code	Avg Wkday VTE	Trip Adjustment	2024 Dev Units	2024 Trips
Single Family	HU	210	9.43	55%	23,347	121,090
Multi-Family	HU	221	4.54	55%	8,140	20,326
Retail/Commercial	KSF	820	37.01	33%	10,242	125,090
Office	KSF	710	10.84	50%	7,639	41,406
Institutional/Public	KSF	610	10.77	50%	7,366	39,666
Industrial	KSF	130	3.37	50%	7,275	12,259
Total						359,836

PERSON TRIPS

Grand Junction is a unique community with residents and workers using varying modes of travel. In general, an impact fee study calculates future development's impact on infrastructure. In suburban, greenfield communities that concentrate on roadway expansion to accommodate additional vehicles, a development's impact is best estimated by calculating the additional vehicle trips or vehicle miles traveled (VMT) generated by the development. However, based on the urban environment and residents' travel behaviors, a multimodal approach is necessary for the City of Grand Junction. This is also consistent with the capital improvements identified in Grand Junction's Capital Improvement Plan and Grand Junction's desire to serve all modes of travel. As such, the multimodal approach calculates person trips generated by the varying development types in the study.

Person Trip Methodology

According to the Institute of Transportation Engineers (ITE), there are several elements necessary to calculate person trips. The following equation is provided in the ITE's Trip Generation Handbook (2021):

Person trips = [(vehicle occupancy) x (vehicle trips)] + transit trips + walk trips + bike trips

To create a more streamlined approach, this study uses "walk / bike / scooter" as the sum of walk and bike trips. The Trip Generation Handbook outlines the general approach to calculating person trips:

1. **Estimate vehicle trip ends generated by development type.** This study uses the vehicle trip rates found in Figure T2 for residential development and Figure T3 for nonresidential development.
2. **Determine mode share and vehicle occupancy.** This study uses mode share and vehicle occupancy data for Mesa County provided by Grand Valley Metropolitan Planning Organization (GVMPO) as part of the 2024 Colorado Department of Transportation (CDOT) travel survey.
3. **Convert vehicle trips to person trips.** This conversion calculates the total person trips by combining the vehicle trip mode share and vehicle occupancy.

Mode Share and Vehicle Occupancy

Vehicle trip estimates, by mode, from the CDOT travel survey provide mode share and vehicle occupancy data used in this analysis. According to preliminary results for Mesa County, the vehicle mode share is 86.3 percent for residential trips, 94.7 percent for nonresidential commercial/retail trips, and 89.2 percent for other nonresidential trips. Additionally, the vehicle trips had an average vehicle occupancy of 1.21 passengers per residential trip, 1.25 passengers per nonresidential commercial/retail trip, and 1.20 passengers per other nonresidential trip.

Figure T6: Mode Share

	Residential		Commercial/Retail		Other Nonresidential	
Mode	Trips	Share	Trips	Share	Trips	Share
Vehicle	1,220	86.3%	412	94.7%	181	89.2%
Transit	12	0.9%	0	0.0%	10	4.9%
Walk/Bike/Scooter	181	12.8%	23	5.3%	12	5.9%
Total	1,413	100.0%	435	100.0%	203	100.0%

Figure T7: Vehicle Occupancy

	Residential	Commercial/Retail	Other Nonresidential
Vehicle Occupants	1,474	515	217
Vehicle Trips	1,220	412	181
Vehicle Occupancy	1.21	1.25	1.20

Source: CDOT Travel Survey, Mesa County, 2024 (Preliminary Data)

Calculation of Person Trip Ends

The total person trip end rate for each land use can be calculated using the vehicle trip end rate, vehicle occupancy rate, and vehicle mode share. The following formula to calculate vehicle trip ends is provided in the ITE's Trip Generation Handbook (2021):

Vehicle trip ends = [(person trip ends) x (vehicle mode share)]/(vehicle occupancy)

To calculate average weekday person trip ends for each land use, the analysis inputs vehicle trip ends, vehicle occupancy, and vehicle mode share factors found in earlier sections. For example, a 2,700-square-foot housing unit generates 9.05 average weekday vehicle trip ends, has a vehicle occupancy rate is 1.21, and the vehicle mode share is 86.3 percent. Based on these factors, a 2,700-square-foot housing unit generates 12.69 average weekday person trip ends ([9.05 vehicle trip ends X 1.21 occupancy rate] / 86.3 percent vehicle mode share). Figure T8 includes average weekday person trip ends for each land use.

Figure T8: Average Weekday Person Trip Ends by Land Use

Residential per Development Unit					
Unit Size	Development Unit	Vehicle Trip Ends per Unit[1]	Vehicle Occupancy[2]	Vehicle Mode Share[2]	Person Trip Ends per Unit
850 or less	Dwelling	2.66	1.21	86.3%	3.73
851 to 1,000	Dwelling	3.41	1.21	86.3%	4.78
1,001 to 1,250	Dwelling	4.30	1.21	86.3%	6.03
1,251 to 1,500	Dwelling	5.28	1.21	86.3%	7.40
1,501 to 2,000	Dwelling	6.59	1.21	86.3%	9.24
2,001 to 2,500	Dwelling	7.96	1.21	86.3%	11.16
2,501 to 3,000	Dwelling	9.05	1.21	86.3%	12.69
3,001 to 3,500	Dwelling	9.96	1.21	86.3%	13.96
3,501 to 4,000	Dwelling	10.74	1.21	86.3%	15.06
4,001 to 4,500	Dwelling	11.43	1.21	86.3%	16.03
4,501 or more	Dwelling	12.03	1.21	86.3%	16.87

Nonresidential per Development Unit					
Development Type	Development Unit	Vehicle Trip Ends per Unit[1]	Vehicle Occupancy[2]	Vehicle Mode Share[2]	Person Trip Ends per Unit
Retail/Commercial	1,000 Sq Ft	37.01	1.25	94.7%	48.85
Convenience Commercial	1,000 Sq Ft	50.94	1.25	94.7%	67.24
Office	1,000 Sq Ft	10.84	1.20	89.2%	14.58
Institutional/Public	1,000 Sq Ft	10.77	1.20	89.2%	14.49
Industrial	1,000 Sq Ft	3.37	1.20	89.2%	4.53
Warehousing	1,000 Sq Ft	1.71	1.20	89.2%	2.30
Hotel/Lodging	Room	7.99	1.20	89.2%	10.75
RV Park	Pad	2.70	1.20	89.2%	3.63

1. See Land Use Assumptions
2. CDOT Travel Survey, Mesa County, 2024 (Preliminary Data)

Average Weekday Person Trips

Shown below, multiplying average weekday person trip ends and trip adjustment factors by existing development units provides the average weekday person trips generated by existing development. As shown below, existing development generates 488,921 person trips on an average weekday.

Figure T9: Average Weekday Person Trips by Land Use

Development Type	Dev Unit	ITE Code	Avg Wkday PTE	Trip Adjustment	2024 Dev Units	2024 Person Trips
Single Family	HU	Custom	13.22	55%	23,347	169,757
Multi-Family	HU	Custom	6.37	55%	8,140	28,518
Retail/Commercial	KSF	820	48.85	33%	10,242	165,108
Office	KSF	710	14.58	50%	7,639	55,692
Institutional/Public	KSF	610	14.49	50%	7,366	53,367
Industrial	KSF	130	4.53	50%	7,275	16,478
Total						488,921

PERSON MILES TRAVELED (PMT)

The transportation impact fee is calculated on a per person mile traveled (PMT) basis for all development. Costs are allocated to both residential and nonresidential development using trip generation rates, trip adjustment factors, and trip length adjustment factors.

Trip Length Weighting Factor

The transportation impact fee methodology includes a percentage adjustment, or weighting factor, to account for trip length variation by type of land use. As documented in Table 3-1, Table 3-2, and Table 3-3 of the 2022 National Household Travel Survey, person trips from residential development are approximately 124 percent of the average trip length. The residential trip length adjustment factor includes data on home-based work trips, social, and recreational purposes. Conversely, shopping trips associated with commercial development are roughly 46 percent of the average trip length while other nonresidential development typically accounts for trips that are 61 percent of the average for all trips.

Local Trip Lengths

According to recent estimates, Grand Junction provides approximately 223.1 lane miles of arterials and collectors citywide. Using the capacity standards shown below, Grand Junction's existing network provides 1,759,670 vehicle miles of capacity – the weighted average is 7,887 vehicles per lane.

Figure T10: Existing Arterial and Collector Network

Description	Lane Miles	Lane Cap	VMC
Principal Arterial	74.9	9,000	674,100
Minor Arterial	66.6	8,000	532,400
Major Collector	63.2	7,000	442,050
Minor Collector	18.5	6,000	111,120
Total	223.1	7,887	1,759,670

Source: City of Grand Junction

To derive the average utilization (i.e., average trip length expressed in miles) of the major streets, divide vehicle miles of capacity by person trips attracted to development in Grand Junction. As shown in Figure T9, citywide development currently attracts 488,921 average weekday person trips. Dividing 1,759,670 vehicle miles of capacity by existing average weekday person trips yields an unweighted-average trip length of approximately 3.599 miles. The calibration of average trip length includes the same adjustment factors used in the impact fee calculations (i.e., commuter trip adjustment, pass-by trip adjustment, and average trip length adjustment). With these refinements, the weighted-average trip length is 4.417 miles.

Local Person Miles Traveled

Shown below are the demand indicators for residential and nonresidential land uses related to person miles traveled (VMT).

Figure T11: Average Weekday PMT by Land Use

Residential Development						
Unit Size	Development Unit	Person Trip Ends per Unit	Trip Rate Adjustment[1]	Average Trip Length (miles)[2]	Trip Length Adjustment[3]	PMT per Unit[1]
850 or less	Dwelling	3.73	55%	4.417	124%	11.24
851 to 1,000	Dwelling	4.78	55%	4.417	124%	14.40
1,001 to 1,250	Dwelling	6.03	55%	4.417	124%	18.16
1,251 to 1,500	Dwelling	7.40	55%	4.417	124%	22.29
1,501 to 2,000	Dwelling	9.24	55%	4.417	124%	27.83
2,001 to 2,500	Dwelling	11.16	55%	4.417	124%	33.62
2,501 to 3,000	Dwelling	12.69	55%	4.417	124%	38.23
3,001 to 3,500	Dwelling	13.96	55%	4.417	124%	42.05
3,501 to 4,000	Dwelling	15.06	55%	4.417	124%	45.37
4,001 to 4,500	Dwelling	16.03	55%	4.417	124%	48.29
4,501 or more	Dwelling	16.87	55%	4.417	124%	50.82

Nonresidential Development						
Development Type	Development Unit	Person Trip Ends per Unit	Trip Rate Adjustment[1]	Average Trip Length (miles)[2]	Trip Length Adjustment[3]	PMT per Unit[1]
Retail/Commercial	1,000 Sq Ft	48.85	33%	4.417	46%	32.75
Convenience Commercial	1,000 Sq Ft	67.24	33%	4.417	46%	45.08
Office	1,000 Sq Ft	14.58	50%	4.417	61%	19.64
Institutional/Public	1,000 Sq Ft	14.49	50%	4.417	61%	19.52
Industrial	1,000 Sq Ft	4.53	50%	4.417	61%	6.10
Warehousing	1,000 Sq Ft	2.30	50%	4.417	61%	3.10
Hotel/Lodging	Room	10.75	50%	4.417	61%	14.48
RV Park	Pad	3.63	50%	4.417	61%	4.89

1. See Land Use Assumptions
2. TischlerBise calculation
3. National Household Travel Survey data, 2022; TischlerBise analysis

IMPACT FEE COMPONENTS

The transportation impact fee is based on Grand Junction's existing inventory of arterials, collectors, and trails. The use of existing standards means there are no existing infrastructure deficiencies. New development is only paying its proportionate share for growth-related infrastructure.

Principal Arterial

Grand Junction currently provides approximately 74.9 lane miles of principal arterials to existing development, and Grand Junction plans to construct additional principal arterials to serve future development. Grand Junction's existing level of service is 0.4256 lane miles per 10,000 PMT (74.9 lane miles / (1,759,685 PMT / 10,000)), and the analysis uses the incremental expansion methodology to maintain the existing level of service for principal arterials.

Based on Engineering & Transportation Department estimates, the construction cost for principal arterials is $2,235,034 per lane mile. The analysis uses this cost as a proxy for future growth-related principal arterial costs, and Grand Junction may use impact fees to construct principal arterials to serve future development. For principal arterials, the cost is $95.13 per PMT (74.9 lane miles / 1,759,685 PMT X $2,235,034 per lane mile).

Figure T12: Principal Arterial Level of Service and Cost Factors

Cost Factors	
Principal Arterial Cost per Mile	$13,410,205
Lanes	6.0
Principal Arterial Cost per Lane Mile	$2,235,034

Level-of-Service (LOS) Standards	
Existing Lane Miles	74.9
2024 PMT	1,759,685
Lane Miles per 10,000 PMT	0.4256
Cost per PMT	$95.13

Source: Grand Junction Engineering & Transportation Department

Minor Arterial

Grand Junction currently provides approximately 66.6 lane miles of minor arterials to existing development, and Grand Junction plans to construct additional minor arterials to serve future development. Grand Junction's existing level of service is 0.3782 lane miles per 10,000 PMT (66.6 lane miles / (1,759,685 PMT / 10,000)), and the analysis uses the incremental expansion methodology to maintain the existing level of service for minor arterials.

Based on Engineering & Transportation Department estimates, the construction cost for minor arterials is $2,289,558 per lane mile. The analysis uses this cost as a proxy for future growth-related minor arterial costs, and Grand Junction may use impact fees to construct minor arterials to serve future development. For minor arterials, the cost is $86.59 per PMT (66.6 lane miles / 1,759,685 PMT X $2,289,558 per lane mile).

Figure T13: Minor Arterial Level of Service and Cost Factors

Cost Factors	
Minor Arterial Cost per Mile	$11,447,791
Lanes	5.0
Minor Arterial Cost per Lane Mile	$2,289,558

Level-of-Service (LOS) Standards	
Existing Lane Miles	66.6
2024 PMT	1,759,685
Lane Miles per 10,000 PMT	0.3782
Cost per PMT	$86.59

Source: Grand Junction Engineering & Transportation Department

Major Collector

Grand Junction currently provides approximately 63.2 lane miles of major collectors to existing development, and Grand Junction plans to construct additional major collectors to serve future development. Grand Junction's existing level of service is 0.3589 lane miles per 10,000 PMT (63.2 lane miles / (1,759,685 PMT / 10,000)), and the analysis uses the incremental expansion methodology to maintain the existing level of service for major collectors.

Based on Engineering & Transportation Department estimates, the construction cost for major collectors is $2,731,175 per lane mile. The analysis uses this cost as a proxy for future growth-related major collector costs, and Grand Junction may use impact fees to construct major collectors to serve future development. For major collectors, the cost is $98.01 per PMT (63.2 lane miles / 1,759,685 PMT X $2,731,175 per lane mile).

Figure T14: Major Collector Level of Service and Cost Factors

Cost Factors	
Major Collector Cost per Mile	$8,193,526
Lanes	3.0
Major Collector Cost per Lane Mile	$2,731,175

Level-of-Service (LOS) Standards	
Existing Lane Miles	63.2
2024 PMT	1,759,685
Lane Miles per 10,000 PMT	0.3589
Cost per PMT	$98.01

Source: Grand Junction Engineering & Transportation Department

Minor Collector

Grand Junction currently provides approximately 18.5 lane miles of minor collectors to existing development, and Grand Junction plans to construct additional minor collectors to serve future development. Grand Junction's existing level of service is 0.1052 lane miles per 10,000 PMT (18.5 lane miles / (1,759,685 PMT / 10,000)), and the analysis uses the incremental expansion methodology to maintain the existing level of service for minor collectors.

Based on Engineering & Transportation Department estimates, the construction cost for minor collectors is $2,695,254 per lane mile. The analysis uses this cost as a proxy for future growth-related minor collector costs, and Grand Junction may use impact fees to construct minor collectors to serve future development. For minor collectors, the cost is $28.37 per PMT (18.5 lane miles / 1,759,685 PMT X $2,695,254 per lane mile).

Figure T15: Minor Collector Level of Service and Cost Factors

Cost Factors	
Minor Collector Cost per Mile	$5,390,508
Lanes	2.0
Minor Collector Cost per Lane Mile	$2,695,254

Level-of-Service (LOS) Standards	
Existing Lane Miles	18.5
2024 PMT	1,759,685
Lane Miles per 10,000 PMT	0.1052
Cost per PMT	$28.37

Source: Grand Junction Engineering & Transportation Department

Trail

Grand Junction currently provides approximately 28.26 miles of trails, also known as off-network active transportation corridors, to existing development, and Grand Junction plans to construct additional trails to serve future development. The total value of Grand Junction's existing trails is $67,230,152, and the analysis uses the weighted average of $2,378,589 per mile ($67,230,152 total value / 28.26 miles of existing trails) as a proxy for future growth-related trail costs.

Figure T16: Trail Cost Factors

Constructed Off-Network ATCs	Miles	Est. Construction Investment	Estimated ROW Value	Total Value
Riverfront Trail	13.77	$14,537,861	$14,537,861	$29,075,722
Monument Trail	3.67	$3,874,685	$3,874,685	$7,749,369
Audubon Trail	3.35	$3,537,522	$3,537,522	$7,075,044
Leach Creek Trail	2.41	$7,543,270	$2,543,270	$10,086,541
Eagle Rim Park	1.04	$2,198,651	$1,098,651	$3,297,302
Price Ditch Trail	0.97	$1,027,622	$1,027,622	$2,055,244
Highway 50 Trail	0.75	$793,828	$793,828	$1,587,656
Colorado Mesa University	0.53	$554,517	$554,517	$1,109,034
Independent Ranchman's Trail	0.35	$368,277	$368,277	$736,554
Main Street Bridge	0.30	$1,600,000	$314,931	$1,914,931
Ridges Blvd Trail	0.28	$449,195	$299,195	$748,391
GV Canal Trail	0.27	$280,369	$280,369	$560,738
Ridge Dr Trail	0.20	$212,577	$212,577	$425,154
Westlake Park Trail	0.16	$171,981	$171,981	$343,962
Levi Ct to Horizon Drive	0.10	$103,338	$103,338	$206,676
Little Bookcliff	0.04	$46,460	$46,460	$92,920
Lincoln Park	0.08	$82,456	$82,456	$164,913
Total	28.26	$37,382,610	$29,847,541	$67,230,152

Source: Grand Junction Engineering & Transportation Department

Grand Junction's existing level of service is 0.1606 miles per 10,000 PMT (28.26 miles / (1,759,685 PMT / 10,000)), and the analysis uses the incremental expansion methodology to maintain the existing level of service. The analysis uses the weighted average of $2,378,589 per mile as a proxy for future growth-related costs. The trail cost is $38.21 per PMT (28.26 miles / 1,759,685 PMT X $2,378,589 per mile).

Figure T17: Trail Level of Service and Cost Factors

Cost Factors	
Total Value	$67,230,152
Existing Miles	28.3
Trail Cost per Mile	$2,378,589

Level-of-Service (LOS) Standards	
Existing Miles	28.26
2024 PMT	1,759,685
Miles per 10,000 PMT	0.1606
Cost per PMT	$38.21

Source: Grand Junction Engineering & Transportation Department

PROJECTION OF GROWTH-RELATED TRANSPORTATION NEEDS

As shown in the *Land Use Assumptions* document, projected development includes an additional 8,180 housing units and 6,592,000 square feet of nonresidential floor area over the next 10 years. Based on the trip generation factors discussed in this section, projected development generates an additional 417,742 PMT over the next 10 years. Shown below in Figure T18, Grand Junction needs to construct approximately 17.8 lane miles of principal arterials at a cost of $39,741,374 (17.8 lane miles X $2,235,034 per lane mile), 15.8 lane miles of minor arterials at a cost of $36,172,343 (15.8 lane miles X $2,289,558 per lane mile), 15.0 lane miles of major collectors at a cost of $40,944,901 (15.0 lane miles X $2,731,175 per lane mile), 4.4 lane miles of minor collectors at a cost of $11,849,979 (4.4 lane miles X $2,695,254 per lane mile), and 6.7 miles of trails at a cost of $15,960,159 (6.7 miles X $2,378,589 per mile) over the next 10 years to maintain the existing levels of service.

Figure T18: 10-Year Transportation Infrastructure Needs to Accommodate Growth

Development Type	Dev Unit	Avg Wkday PTE	Trip Adjustment	Trip Length Adjustment	2024 Dev Units	2024 PMT
Single Family	HU	13.22	55%	124%	23,347	929,775
Multi-Family	HU	6.37	55%	124%	8,140	156,198
Retail/Commercial	KSF	48.85	33%	46%	10,242	335,469
Office	KSF	14.58	50%	61%	7,639	150,054
Institutional/Public	KSF	14.49	50%	61%	7,366	143,790
Industrial	KSF	4.53	50%	61%	7,275	44,398
Total						1,759,685

Average Trip Length (miles)	4.417
Average Lane Capacity	7,887

Grand Junction, Colorado	Base 2024	1 2025	2 2026	3 2027	4 2028	5 2029	10 2034	10-Year Increase
Single Family Units	23,347	23,960	24,573	25,186	25,799	26,412	29,477	6,130
Mobile Home Units	8,140	8,345	8,550	8,755	8,960	9,165	10,190	2,050
Retail/Commercial KSF	10,242	10,426	10,610	10,794	10,978	11,162	12,082	1,840
Office KSF	7,639	7,756	7,872	7,988	8,105	8,221	8,802	1,163
Institutional/Public KSF	7,366	7,584	7,802	8,020	8,239	8,457	9,548	2,182
Industrial KSF	7,275	7,416	7,557	7,697	7,838	7,979	8,683	1,408
Single-Family Trips	169,757	174,215	178,672	183,129	187,586	192,043	214,329	44,571
Mobile Home Trips	28,518	29,237	29,955	30,673	31,391	32,110	35,701	7,182
Residential Trips	198,276	203,451	208,627	213,802	218,977	224,153	250,029	51,753
Retail/Commercial Trips	165,108	168,074	171,041	174,007	176,973	179,940	194,772	29,664
Office Trips	55,692	56,539	57,387	58,235	59,082	59,930	64,168	8,476
Institutional/Public Trips	53,367	54,947	56,528	58,108	59,689	61,269	69,172	15,805
Industrial Trips	16,478	16,797	17,116	17,435	17,754	18,072	19,667	3,188
Nonresidential Trips	290,645	296,358	302,071	307,785	313,498	319,211	347,778	57,133
Total Person Trips	**488,921**	**499,809**	**510,698**	**521,587**	**532,475**	**543,364**	**597,807**	**108,887**
Total PMT	**1,759,685**	**1,801,459**	**1,843,234**	**1,885,008**	**1,926,782**	**1,968,556**	**2,177,427**	**417,742**
Principal Arterial Lane Miles	74.9	76.7	78.5	80.2	82.0	83.8	92.7	17.8
Minor Arterial Lane Miles	66.6	68.1	69.7	71.3	72.9	74.4	82.3	15.8
Major Collector Lane Miles	63.2	64.6	66.1	67.6	69.1	70.6	78.1	15.0
Minor Collector Lane Miles	18.5	19.0	19.4	19.8	20.3	20.7	22.9	4.4
Trail Miles	28.3	28.9	29.6	30.3	30.9	31.6	35.0	6.7

PRINCIPAL PAYMENT CREDIT

The City of Grand Junction has outstanding debt obligations of $48,860,000 related to the construction of existing arterial and collector improvements. A credit is necessary since new development will pay the impact fee and will also contribute to future principal payments on the remaining debt through taxes. A credit is not necessary for future interest payments because the analysis excludes interest costs from the impact fee calculation. The analysis divides annual principal payments by projected PMT to determine the annual cost of principal payments per PMT. To account for the time value of money, the analysis calculates the net present value of future principal payments per PMT using the Series 2020B discount rate of 4.00 percent. The net present value of future principal payments related to existing debt is $12.66 per PMT.

Figure T19: Principal Payment Credit

Year	2020A Principal	2020B Principal	Total Principal	PMT	Payment per PMT
2024	$2,040,000	$0	$2,040,000	1,759,685	$1.16
2025	$1,180,000	$0	$1,180,000	1,801,459	$0.66
2026	$1,200,000	$0	$1,200,000	1,843,234	$0.65
2027	$1,225,000	$0	$1,225,000	1,885,008	$0.65
2028	$535,000	$725,000	$1,260,000	1,926,782	$0.65
2029	$0	$1,411,000	$1,411,000	1,968,556	$0.72
2030	$0	$1,411,000	$1,411,000	2,010,330	$0.70
2031	$0	$1,411,000	$1,411,000	2,052,105	$0.69
2032	$0	$1,411,000	$1,411,000	2,093,879	$0.67
2033	$0	$1,411,000	$1,411,000	2,135,653	$0.66
2034	$0	$1,724,000	$1,724,000	2,177,427	$0.79
2035	$0	$1,724,000	$1,724,000	2,219,201	$0.78
2036	$0	$1,724,000	$1,724,000	2,260,976	$0.76
2037	$0	$1,724,000	$1,724,000	2,302,750	$0.75
2038	$0	$1,724,000	$1,724,000	2,344,524	$0.74
2039	$0	$2,105,000	$2,105,000	2,386,298	$0.88
2040	$0	$2,105,000	$2,105,000	2,428,072	$0.87
2041	$0	$2,105,000	$2,105,000	2,469,847	$0.85
2042	$0	$2,105,000	$2,105,000	2,511,621	$0.84
2043	$0	$2,105,000	$2,105,000	2,553,395	$0.82
2044	$0	$2,572,000	$2,572,000	2,591,409	$0.99
2045	$0	$2,572,000	$2,572,000	2,629,422	$0.98
2046	$0	$2,572,000	$2,572,000	2,667,436	$0.96
2047	$0	$2,572,000	$2,572,000	2,705,450	$0.95
2048	$0	$2,572,000	$2,572,000	2,743,464	$0.94
2049	$0	$2,895,000	$2,895,000	2,781,477	$1.04
Total	$6,180,000	$42,680,000	$48,860,000		$21.15
			Interest Rate[1]		4.00%
			Credit per PMT		$12.66

1. Transportation 2020B

Source: Grand Junction Engineering & Transportation Department

MAXIMUM SUPPORTABLE TRANSPORTATION IMPACT FEE

Infrastructure components and cost factors for transportation impact fees are summarized in the upper portion of Figure T20. The cost per service unit is $333.65 per PMT. Transportation impact fees for residential development are calculated per housing unit, based on unit size, and vary proportionately according to the number of PMT per housing unit. The fee of $11,217 for a residential unit with 2,200 square feet is calculated using a cost per service unit of $333.65 per PMT multiplied by 33.62 PMT per unit. Nonresidential impact fees are calculated per development unit and vary proportionately according to the number of PMT per development unit. The industrial fee of $2,035 per development unit is calculated using a cost per service unit of $333.65 per PMT multiplied by 6.10 PMT per development unit.

Figure T20: Maximum Supportable Transportation Impact Fee

Fee Component	Cost per PMT
Principal Arterial	$95.13
Minor Arterial	$86.59
Major Collector	$98.01
Minor Collector	$28.37
Trail	$38.21
Debt Credit	($12.66)
Total	$333.65

Residential Fees per Development Unit					
Unit Size	Development Unit	PMT per Unit[1]	Maximum Supportable	Current Fees	Increase / (Decrease)
850 or less	Dwelling	11.24	$3,750	$3,075	$675
851 to 1,000	Dwelling	14.40	$4,805	$3,075	$1,730
1,001 to 1,250	Dwelling	18.16	$6,059	$3,075	$2,984
1,251 to 1,500	Dwelling	22.29	$7,437	$3,285	$4,152
1,501 to 2,000	Dwelling	27.83	$9,285	$5,028	$4,257
2,001 to 2,500	Dwelling	33.62	$11,217	$5,738	$5,479
2,501 to 3,000	Dwelling	38.23	$12,755	$7,515	$5,240
3,001 to 3,500	Dwelling	42.05	$14,030	$7,515	$6,515
3,501 to 4,000	Dwelling	45.37	$15,138	$7,515	$7,623
4,001 to 4,500	Dwelling	48.29	$16,112	$7,515	$8,597
4,501 or more	Dwelling	50.82	$16,956	$7,515	$9,441

Nonresidential Fees per Development Unit					
Development Type	Development Unit	PMT per Unit[1]	Maximum Supportable	Current Fees	Increase / (Decrease)
Retail/Commercial	1,000 SF	32.75	$10,927	$7,713	$3,214
Convenience Commercial	1,000 SF	45.08	$15,041	$16,396	($1,355)
Office	1,000 SF	19.64	$6,553	$6,189	$364
Institutional/Public	1,000 SF	19.52	$6,513	$1,522	$4,991
Industrial	1,000 SF	6.10	$2,035	$2,161	($126)
Warehousing	1,000 SF	3.10	$1,034	$983	$51
Hotel/Lodging	Room	14.48	$4,831	$4,239	$592
RV Park	Pad	4.89	$1,632	$3,411	($1,779)

1. See Land Use Assumptions

REVENUE FROM TRANSPORTATION IMPACT FEES

Projected fee revenue shown in Figure T21 is based on the development projections in the *Land Use Assumptions* document and the maximum supportable transportation impact fees. If development occurs faster than projected, the demand for infrastructure will increase along with impact fee revenue. If development occurs slower than projected, the demand for infrastructure will decrease and impact fee revenue will decrease at a similar rate. Projected impact fee revenue equals $133,694,557 and projected expenditures equal $144,668,755. Impact fee revenue is less than the projected expenditures due to the required debt credit.

Figure T21: Estimated Revenue from Transportation Impact Fees

Fee Component	Growth Share	Existing Share	Total
Principal Arterial	$39,741,374	$0	$39,741,374
Minor Arterial	$36,172,343	$0	$36,172,343
Major Collector	$40,944,901	$0	$40,944,901
Minor Collector	$11,849,979	$0	$11,849,979
Trail	$15,960,159	$0	$15,960,159
Total	$144,668,755	$0	$144,668,755

		Single-Family $11,217 per unit	Multi-Family $7,437 per unit	Retail/Comm. $10,927 per 1,000 sq ft	Office $6,553 per 1,000 sq ft	Inst./Public $6,513 per 1,000 sq ft	Industrial $2,035 per 1,000 sq ft
Year		Hsg Unit	Hsg Unit	KSF	KSF	KSF	KSF
Base	2024	23,347	8,140	10,242	7,639	7,366	7,275
Year 1	2025	23,960	8,345	10,426	7,756	7,584	7,416
Year 2	2026	24,573	8,550	10,610	7,872	7,802	7,557
Year 3	2027	25,186	8,755	10,794	7,988	8,020	7,697
Year 4	2028	25,799	8,960	10,978	8,105	8,239	7,838
Year 5	2029	26,412	9,165	11,162	8,221	8,457	7,979
Year 6	2030	27,025	9,370	11,346	8,337	8,675	8,120
Year 7	2031	27,638	9,575	11,530	8,453	8,893	8,261
Year 8	2032	28,251	9,780	11,714	8,570	9,111	8,401
Year 9	2033	28,864	9,985	11,898	8,686	9,329	8,542
Year 10	2034	29,477	10,190	12,082	8,802	9,548	8,683
10-Year Increase		6,130	2,050	1,840	1,163	2,182	1,408
Projected Revenue		$71,371,236	$15,824,462	$20,870,099	$7,908,164	$14,746,909	$2,973,688

Projected Fee Revenue	$133,694,557

IMPLEMENTATION AND ADMINISTRATION

Impact fees should be periodically evaluated and updated to reflect recent data. City of Grand Junction will continue to adjust for inflation. If cost estimates or demand indicators change significantly, Grand Junction should update the fee calculations.

Colorado's enabling legislation allows local governments to "waive an impact fee or other similar development charge on the development of low- or moderate-income housing, or affordable employee housing, as defined by the local government."

CREDITS AND REIMBURSEMENTS

A general requirement that is common to development impact fee methodologies is the evaluation of credits. A revenue credit may be necessary to avoid potential double payment situations arising from one-time development impact fees plus on-going payment of other revenues that may also fund growth-related capital improvements. The determination of revenue credits is dependent upon the development impact fee methodology used in the cost analysis and local government policies.

Policies and procedures related to site-specific credits should be addressed in the resolution or ordinance that establishes the development impact fees. Project-level improvements, required as part of the development approval process, are not eligible for credits against development impact fees. If a developer constructs a system improvement included in the fee calculations, it will be necessary to either reimburse the developer or provide a credit against the fees due from that particular development.

SERVICE AREA

A development impact fee service area is a region in which a defined set of improvements provide benefit to an identifiable amount of new development. Within a service area, all new development types (single-family, commercial, etc.) are assessed at the same development impact fee rate. Land use assumptions and development impact fees are each defined in terms of this geography, so that capital facility demand, projects needed to meet that demand, and capital facility cost are all quantified in the same terms. Development impact fee revenue collected within a service area is required to be spent within that service area.

Implementation of a large number of small service areas is problematic. Administration is complicated and, because funds collected within the service area must be spent within that area multiple service areas may make it impossible to accumulate sufficient revenue to fund any projects within the time allowed.

As part of our analysis of the City and the type of facilities and improvements included in the development impact fee calculation, TischlerBise has determined that a citywide service area is appropriate for the City of Grand Junction for all impact fees with the exception of parks and recreation, which includes the 201 Service Area Boundary.

APPENDIX A: LAND USE ASSUMPTIONS

OVERVIEW

The City of Grand Junction, Colorado, retained TischlerBise to analyze the impacts of development on its capital facilities and to calculate impact fees based on that analysis. The population, housing unit, and job

projections contained in this document provide the foundation for the impact fee study. To evaluate demand for growth-related infrastructure from various types of development, TischlerBise prepared documentation on demand indicators by type of housing unit, jobs and floor area by type of nonresidential development. These metrics (explained further below) are the demand indicators to be used in the impact fee study.

Impact fees are based on the need for growth-related capital improvements, and they must be proportionate to the type of land use. The demographic data and development projections are used to demonstrate proportionality and to anticipate the need for future infrastructure. Demographic data reported by the U.S. Census Bureau, and data provided by Grand Junction and Mesa County Regional Transportation Planning Organization (RTPO) staff, are used to calculate base year estimates and annual projections for a 10-year horizon. Impact fee studies typically look out five to ten years, with the expectation that fees will be updated every three to five years.

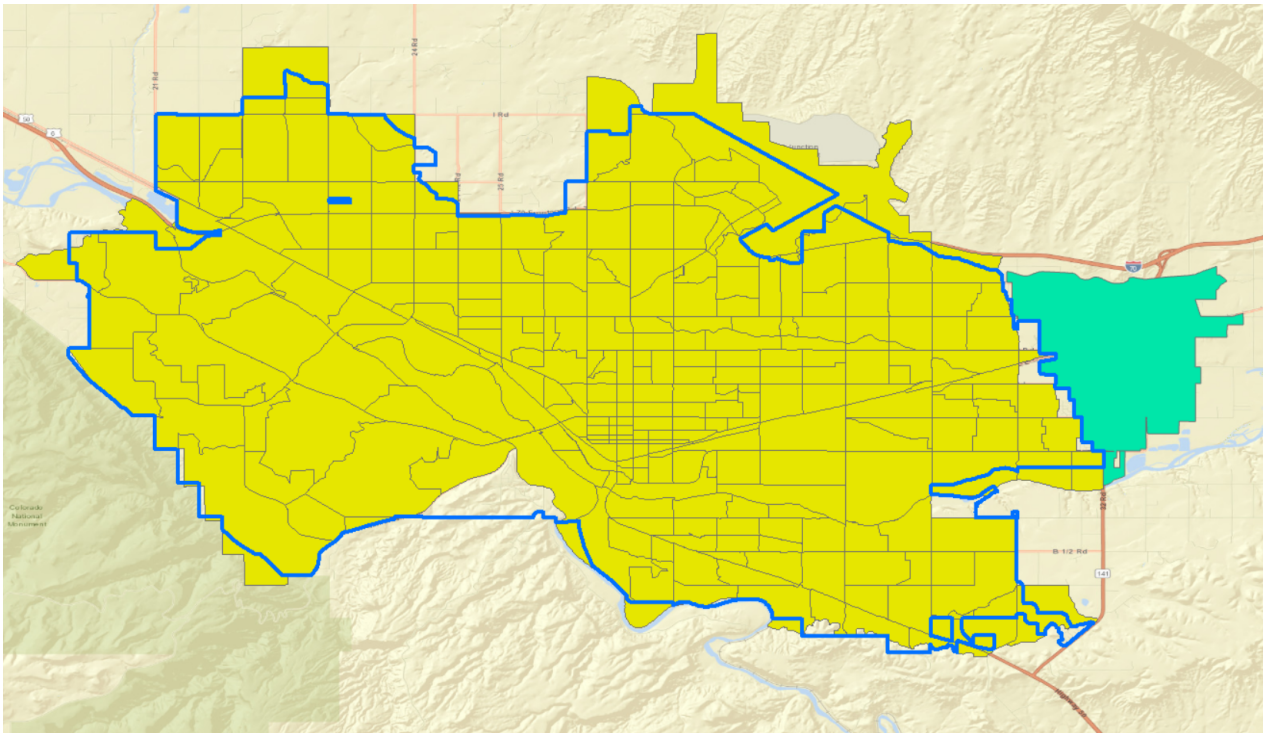
SUMMARY OF GROWTH INDICATORS

Key development projections for Grand Junction's impact fee study are housing units and nonresidential floor area. These projections are used to estimate impact fee revenue and to indicate the anticipated need for growth-related infrastructure. The goal is to have reasonable projections without being overly concerned with precision, because impact fees methodologies are designed to reduce sensitivity to development projections in the determination of the proportionate-share fee amounts. If actual development is slower than projected, impact fee revenue will decline, but so will the need for growth-related infrastructure. In contrast, if development is faster than anticipated, Grand Junction will receive more impact fee revenue, but it will also need to accelerate infrastructure improvements to keep pace with the actual rate of development. Based on the assumptions outlined in the following sections, projected citywide development over the next ten years includes an average of 818 residential units per year and approximately 759,900 square feet of nonresidential floor area per year.

RESIDENTIAL DEVELOPMENT

Current estimates and future projections of residential development are detailed in this section, including population and housing units by type (e.g., single-family versus multi-family units). Due to differing development patterns both in and outside of City limits, TischlerBise reviewed base year population and housing unit estimates for the City of Grand Junction and specific TAZ boundaries from the Transportation Master Plan which are also associated with the 201 Sewer Service Area Boundary. The task at hand is to provide baseline population and housing unit estimates for those areas of the 201 Sewer Service Area Boundary which can reasonably be expected to be annexed into the City of Grand Junction over the next ten years. Figure A1 depicts the 201 Sewer Service Area Boundary (light blue line) and TAZ areas (yellow) incorporated into the study population and housing estimates.

Figure A1: Map of 201 Sewer Service Boundary and TAZ Areas



Occupancy by Housing Type

In 2010 the U.S. Census Bureau transitioned from the traditional long-form questionnaire to the American Community Survey (ACS), which is less detailed and has smaller sample sizes. As a result, Census data now has more limitations than before. For example, data on detached housing units are now combined with attached single units (commonly known as townhouses). For impact fees in Grand Junction, "single-family" residential includes detached units and townhouses that share a common sidewall but are constructed on an individual parcel of land. The second residential category includes all multi-family structures with two or more units on an individual parcel of land.

According to the Census Bureau, a household is a housing unit that is occupied by year-round residents. Impact fees often use per capita standards and persons per housing unit, or persons per household, to derive proportionate-share fee amounts. When persons per housing unit are used in the fee calculations, infrastructure standards are derived using year-round population. When persons per household are used in the fee calculations, the impact fee methodology assumes all housing units will be occupied, this requiring seasonal or peak population to be used when deriving infrastructure standards.

To estimate population and employment for future years, the analysis applies growth assumptions derived from *Grand Valley Metropolitan Planning Organization Mesa County TAZ Estimates,* City GIS parcel data, and standards from the Institute of Transportation Engineers, 11th addition. For the impact fee calculations, TischlerBise will rely on the above referenced as well as a variety of local and regional data sources including the 2018-2022 ACS 5-Year Estimates shown in Figure A2. Collectively, this information is used to indicate the relative number of persons per housing unit, by units in a residential structure, (2.28 PPHU Single-Family, 1.60 PPHU Multi-Family) and the housing mix (75% Single-Family, 25% Multi-Family) in Grand Junction. Because of the minimal seasonal population residing in the City, TischlerBise recommends Grand Junction impose impact fees for residential development according to the number of persons per housing unit.

Figure A2: Occupancy by Housing Type

Housing Type	Persons	Households	Persons per Household	Housing Units	Persons per Housing Unit	Housing Mix	Vacancy Rate
Single-Family Units[1]	50,729	21,230	2.39	22,266	**2.28**	74.60%	4.70%
Multi-Family Units[2]	12,095	6,850	1.77	7,572	**1.60**	25.40%	9.50%
RV Park	56	13	4.31	13	**4.31**	0.04%	0.00%
Total	62,880	28,093	2.24	29,851	**2.11**	100.00%	5.90%

Source: U.S. Census Bureau, 2018-2022 American Community Survey 5-Year Estimates

1. Includes detached, attached (i.e. townhouses), and mobile home units.
2. Includes dwellings in structures with two or more units.

Occupancy by Bedroom Range

Impact fees must be proportionate to the demand for infrastructure. Averages per housing unit have a strong, positive correlation to the number of bedrooms, so TischlerBise recommends a fee schedule where larger units pay proportionately higher impact fees. Benefits of the proposed methodology include 1) a proportionate assessment of infrastructure demand using local demographic data and 2) a progressive fee structure (i.e., smaller units pay less, and larger units pay more).

TischlerBise creates custom tabulations of demographic data by bedroom range using individual survey responses provided by the U.S. Census Bureau in files known as Public Use Microdata Samples (PUMS). PUMS files are only available for areas of at least 100,000 persons, and Grand Junction is in Public Use Microdata Area (PUMA) 2501.

Shown below in Figure A3, cells with yellow shading indicate the unweighted PUMS data used to calculate the unadjusted estimate of 2.15 persons per housing unit for PUMA 2501. Unadjusted persons per housing unit estimates are adjusted to match the control total of 2.11 persons per housing unit for Grand Junction shown in Figure A2. Adjusted persons per housing unit estimates range from 1.18 persons per housing unit for units with zero to one bedroom up to 3.48 persons per housing unit for units with five or more bedrooms.

Figure A3: Occupancy by Bedroom Range

Bedroom Range	Persons[1]	Housing Units[1]	Housing Mix	Unadjusted PPHU	Adjusted PPHU[2]
0-1	233	193	8%	1.21	1.18
2	814	496	21%	1.64	1.61
3	2,647	1,202	50%	2.20	2.16
4	1,089	396	17%	2.75	2.70
5+	340	96	4%	3.54	3.48
Total	5,123	2,383	100%	2.15	2.11

1. U.S. Census Bureau, 2018-2022 American Community Survey (ACS) 5-Year Estimates, Public Use Microdata Sample (PUMS) for Colorado PUMA 2501.

2. Represents unadjsted PUMS values scaled to control totals for Grand Junction using 2018-2022 American Community Survey (ACS) 5-Year Estimates.

Occupancy by Housing Unit Size

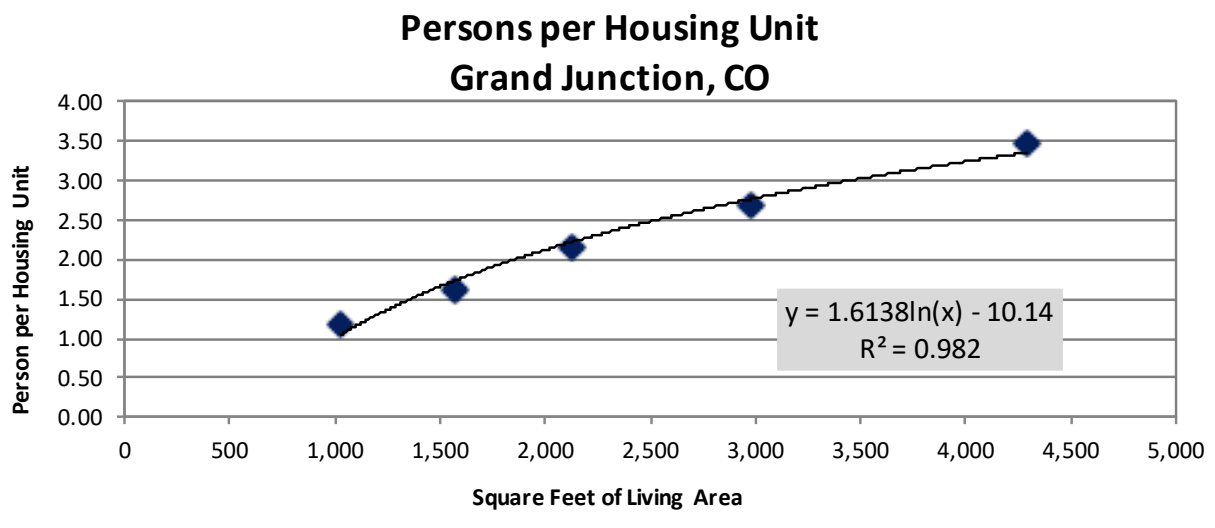
To estimate square feet of living area by bedroom range, TischlerBise uses 2022 U.S. Census Bureau data for housing units constructed in the west region. Based on 2022 estimates, average square feet of living area ranges from 1,021 square feet for housing units with zero to one bedroom up to 4,292 square feet for housing units with five or more bedrooms.

Average square feet of living area and persons per housing unit by bedroom range are plotted in Figure A4 with a logarithmic trend line derived from U.S. Census Bureau estimates discussed in the previous paragraph and adjusted persons per housing unit estimates shown in Figure A3. Using the trend line formula shown in Figure A4, TischlerBise calculates the number of persons per housing unit by square feet of living area. TischlerBise recommends a minimum size range of 850 square feet or less and a maximum size range of 4,501 square feet or more. Using these size ranges, occupancy in the minimum size range is 21 percent of the maximum size range (0.75 PPHU / 3.52 PPHU), 47 percent of the multi-family average shown in Figure A2 (0.75 PPHU / 1.60 PPHU), and 33 percent of the single-family average shown in Figure A2 (0.75 PPHU / 2.28 PPHU).

Figure A4: Occupancy by Housing Unit Size

Average persons per housing unit derived from 2018-2022 ACS PUMS data from Grand Junction. Unit size for 0-1 bedroom from the 2022 U.S. Census Bureau average for all multi-family units constructed in the Census West region. Unit size for all other bedrooms from the 2022 U.S. Census Bureau average for single-family units constructed in the Census West region.

Actual Averages per Housing Unit			Fitted-Curve Values	
Bedrooms	Square Feet	Persons	Sq Ft Range	Persons
0-1	1,021	1.18	850 or less	0.75
2	1,573	1.61	851 to 1,000	0.97
3	2,123	2.16	1,001 to 1,250	1.23
4	2,974	2.70	1,251 to 1,500	1.52
5+	4,292	3.48	1,501 to 2,000	1.91
			2,001 to 2,500	2.32
			2,501 to 3,000	2.64
			3,001 to 3,500	2.91
			3,501 to 4,000	3.14
			4,001 to 4,500	3.34
			4,501 or more	3.52



Recent Residential Construction

The City of Grand Junction provided TischlerBise with recent City residential building permit activity, shown in Figure A5. Although not used to calculate the projections, it is worth noting a total of 2,341 single-family permits and 1,748 multi-family permits were issued in the City from 2019 through 2023. Permit distribution over this period was 57 percent single family and 43 percent multi-family. This ratio differs from the existing housing unit mix of 75 percent single-family units and 25 percent multi-family units shown in Figure A2.

Figure A5: Recent Grand Junction Residential Permit Activity

Year	Single Family	%	Multifamily	%	Total
2019-2023	2,341	57.3%	1,748	42.7%	4,089

Source: City of Grand Junction, CO Building Permit Data

Current Population and Housing

Population and housing unit estimates for the 201 Sewer Service Area Boundary were compiled from data provided by MPO. TischlerBise applied the population, housing unit estimates found within the *Grand Valley 2040 Transportation Master Plan* in each TAZ to derive the number of existing housing units in the service area but outside of the City limits. The resulting estimates, shown in Figure A6, suggest approximately 15,250 housing units (46,737 units within the service area - 31,487 units within the City limits of Grand Junction) exist in the 201 Sewer Service Area Boundary, outside of the City limits for which *impact fees will not be collected*. Deducting the estimated 2024 Grand Junction population from the 201 Sewer Service Area Boundary TAZ area (114,329 - 65,517) results in an estimated population of 48,812 currently residing in the 201 Sewer Service Area, outside of City limits.

Figure A6: 2024 Population and Housing Units

2024 Residential Development			
Residential	**City Limits**	**201 Service Area**	**Total**
Population	65,517	48,812	114,329
Housing Units	31,487	15,250	46,737

Projected Population and Housing Units

Figure A7 summarizes housing unit projections from 2024 to 2034 for the City of Grand Junction, as well as the 201 Sewer Service Area Boundary. Growth in residential units is based on the past five-year average of 818 additional units annually. A total of 55,777 housing units, (9,040 net new units) are projected in the area (City and 201 Sewer Service Area Boundary) by 2034. Given historic housing dispersion throughout the 201 Sewer Service Area Boundary and observed residential unit composition for the area, housing estimates were broken down between existing City limits and areas currently outside but within the 201 Sewer Service Area Boundary. Approximately 75 percent of Grand Junction's housing units are single-family units. City housing unit growth projections have mirrored this ratio, resulting in an additional 6,130 single-family units and 2,050 multi-family units by 2034. For areas outside current City limits but within the 201 Sewer Service Area Boundary, 100 percent the growth of 860 new housing units have been attributed to single-family development reflecting the rural composition of the area. All totals shown in Figure A7 represent estimates as of January 1st of each year.

Figure A7: Grand Junction Residential Development Projections

	2024	2025	2026	2027	2028	2029	2034	10-Year
	Base Year	1	2	3	4	5	10	Increase
POPULATION								
Grand Junction	65,517	67,242	68,968	70,694	72,419	74,145	82,773	17,256
201 /Outside City	48,812	48,982	49,153	49,323	49,493	49,663	52,082	3,270
Total	**114,329**	**116,225**	**118,121**	**120,016**	**121,912**	**123,808**	**134,856**	**20,526**
HOUSING UNITS								
GJ Single-Family	23,347	23,960	24,573	25,186	25,799	26,412	29,477	6,130
GJ Multi-Family	8,140	8,345	8,550	8,755	8,960	9,165	10,190	2,050
Grand Junction Total	**31,487**	**32,305**	**33,123**	**33,941**	**34,759**	**35,577**	**39,667**	**8,180**
201 Bdry Single-Family	15,250	15,326	15,403	15,480	15,557	15,635	16,110	860
Total Housing Units	**46,737**	**47,631**	**48,526**	**49,421**	**50,316**	**51,212**	**55,777**	**9,040**

NONRESIDENTIAL DEVELOPMENT

In addition to data on residential development, the calculation of impact fees requires data on nonresidential development. All land use assumptions and projected growth rates are consistent with socioeconomic data from the Grand Valley 2040 Regional Transportation Plan and the 2024 ESRI Business Summary Report for Grand Junction. TischlerBise uses the term "jobs" to refer to employment by place of work. In Figure A8, the nonresidential development prototypes were used by TischlerBise to derive nonresidential floor area and average weekday vehicle trips ends are shown.

Employment Density Factors and Trip Generation Factors

The prototype for future projections of commercial / retail development is an average-size Shopping Center (ITE 820). Commercial / retail development (i.e. retail and eating / drinking places) is assumed to average 471 square feet per job. For future industrial development, Industrial Park (ITE 130) is a reasonable proxy with an average of 864 square feet per job. For office / other service development, General Office (ITE 710) is the prototype for future office development, with an average of 307 square

feet per job. And finally, Hospital (ITE 610) is the prototype for future institutional development, with an average of 350 square feet per job.

Figure A8: Nonresidential Demand Indicators

ITE Code	Land Use / Size	Demand Unit	Wkdy Trip Ends Per Dmd Unit*	Wkdy Trip Ends Per Employee*	Emp Per Dmd Unit	Sq. Ft. Per Emp
110	Light Industrial	1,000 Sq Ft	4.87	3.10	1.57	637
130	Industrial Park	1,000 Sq Ft	3.37	2.91	1.16	864
140	Manufacturing	1,000 Sq Ft	4.75	2.51	1.89	528
150	Warehousing	1,000 Sq Ft	1.71	5.05	0.34	2,953
310	Hotel	Room	7.99	14.34	0.56	n/a
416	Campground/RV Park**	Campsite	2.70	n/a	0.05	n/a
620	Nursing Home	Bed	3.06	3.31	0.92	n/a
610	Hospital	1,000 Sq Ft	10.77	3.77	2.86	350
710	General Office (avg size)	1,000 Sq Ft	10.84	3.33	3.26	307
720	Medical-Dental Office	1,000 Sq Ft	36.00	8.71	4.13	242
730	Government Office	1,000 Sq Ft	22.59	7.45	3.03	330
840	Auto Sales/Service	1,000 Sq Ft	27.84	11.20	2.49	402
430	Golf Course	Hole	30.38	3.74	1.47	680
444	Movie Theater	1,000 Sq Ft	78.09	53.12	1.47	680
820	Shopping Center (avg size)	1,000 Sq Ft	37.01	17.42	2.12	471
912	Bank	1,000 Sq Ft	100.35	32.73	3.07	326
934	Fast Food	1,000 Sq Ft	50.94	5.45	9.35	107
945	Convenience Store w/Gas Sales	1,000 Sq Ft	624.20	241.21	2.59	386

*Trip Generation, Institute of Transportation Engineers, 11th Edition (2021).

**Employees per Demand Unit from National Association of RV Parks & Campgrounds (ARVC), "2023 Outdoor Hospitality Industry Benchmarking Report."

Nonresidential Floor Area

To determine future employment growth TischlerBise utilized different data sources to forecast future nonresidential development in the study area. To project future employment, our analysis relies on the 2024 ratio of 0.96 jobs per person observed in the MPO's employment data (96 jobs per 100 residents). TischlerBise utilized the ESRI employment estimate of 64,412 jobs for Grand Junction to derive a 2024 base, with jobs allocated to one of four nonresidential categories: Retail/Commercial, Office, Institutional/Public, or Industrial. Utilizing GIS parcel data from the MPO, TischlerBise was able to determine that base year nonresidential square footage totals approximately 32.5 million square feet. Retail/Commercial development occupies 10.2 million square feet, Office development occupies 7.6 million square feet, Institutional development occupies 7.3 million square feet, and Industrial development occupies 7.2 million square feet.

Figure A9: Grand Junction Nonresidential Floor Area and Employment Estimates 2024

Industry Sector	2024 Jobs[1]	Share of Total Jobs	2024 Estimated Floor Area[2]
Retail/Commercial	14,843	24%	10,242,103
Office	14,370	23%	7,639,464
Institutional/Public	23,661	38%	7,366,028
Industrial	10,114	16%	7,275,135
Total	62,988	100%	32,522,730

1. Esri Business Analyst Online, Business Summary, 2024
2. Grand Valley Metropolitan Planning Organization

Projected Nonresidential Floor Area

Once the 2024 employment data was derived for the City, employment growth projections were distributed according to observed 2024 MPO employment sector percentages for the City of Grand Junction (23% Commercial/Retail, 38% Office, 24% Institutional, and 16% Industrial/Flex) (Figure A9). The resulting analysis results in an increase of 16,965 jobs. To calculate growth of nonresidential floor area, TischlerBise applied ITE square feet per employee estimates shown in Figure A8 by estimated sector employment to derive net new annual growth. Projected nonresidential growth over the next ten years results in an increase of 6.59 million square feet. Totals shown below represent estimates as of January 1st of each year.

Figure A10: Nonresidential Development Projections

						5 year increment >>		
	2024	2025	2026	2027	2028	2029	2034	10-Year
	Base Year	1	2	3	4	5	10	Increase
EMPLOYMENT BY TYPE								
GJ Retail/Commercial	14,843	15,234	15,625	16,016	16,407	16,798	18,752	3,909
GJ Office	14,370	14,748	15,127	15,505	15,884	16,262	18,155	3,785
GJ Institutional/Public	23,661	24,284	24,907	25,531	26,154	26,777	29,893	6,232
GJ Industrial	10,114	10,380	10,647	10,913	11,180	11,446	12,778	2,664
Grand Junction Total	**62,988**	**64,647**	**66,306**	**67,965**	**69,624**	**71,283**	**79,578**	**16,590**
NONRES. FLOOR AREA (X 1,000 SF)								
GJ Retail/Commercial	10,242	10,426	10,610	10,794	10,978	11,162	12,082	1,840
GJ Office	7,639	7,756	7,872	7,988	8,105	8,221	8,802	1,163
GJ Institutional/Public	7,366	7,584	7,802	8,020	8,239	8,457	9,548	2,182
GJ Industrial	7,275	7,416	7,557	7,697	7,838	7,979	8,683	1,408
Grand Junction Total	**32,523**	**33,182**	**33,841**	**34,500**	**35,160**	**35,819**	**39,115**	**6,592**

DEVELOPMENT PROJECTIONS

Error! Not a valid bookmark self-reference. includes a summary of cumulative development projections used in the impact fee study. Base year estimates for 2024 are used in the impact fee calculations and *reflect the entirety of the City and Sewer Service 201 growth boundary*. Development projections are used to illustrate a possible future pace of demand for service units and cash flows resulting from revenues and expenditures associated with those demands. All totals represent estimates as of January 1st of each year.

Figure A11: Development Projections Summary

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	10-Year
	Base Year	1	2	3	4	5	6	7	8	9	10	Increase
POPULATION												
Grand Junction	65,517	67,242	68,968	70,694	72,419	74,145	75,871	77,596	79,322	81,048	82,773	17,256
201 /Outside City	48,812	48,982	49,153	49,323	49,493	49,663	49,833	50,232	50,807	51,424	52,082	3,270
Total	**114,329**	**116,225**	**118,121**	**120,016**	**121,912**	**123,808**	**125,704**	**127,828**	**130,129**	**132,471**	**134,856**	**20,526**
HOUSING UNITS												
GJ Single-Family	23,347	23,960	24,573	25,186	25,799	26,412	27,025	27,638	28,251	28,864	29,477	6,130
GJ Multi-Family	8,140	8,345	8,550	8,755	8,960	9,165	9,370	9,575	9,780	9,985	10,190	2,050
Grand Junction Total	**31,487**	**32,305**	**33,123**	**33,941**	**34,759**	**35,577**	**36,395**	**37,213**	**38,031**	**38,849**	**39,667**	**8,180**
201 Bdry Single-Family	15,250	15,326	15,403	15,480	15,557	15,635	15,729	15,823	15,918	16,013	16,110	860
Total Housing Units	**46,737**	**47,631**	**48,526**	**49,421**	**50,316**	**51,212**	**52,124**	**53,036**	**53,949**	**54,863**	**55,777**	**9,040**
EMPLOYMENT BY TYPE												
GJ Retail/Commercial	14,843	15,234	15,625	16,016	16,407	16,798	17,189	17,580	17,971	18,362	18,752	3,909
GJ Office	14,370	14,748	15,127	15,505	15,884	16,262	16,641	17,019	17,398	17,776	18,155	3,785
GJ Institutional/Public	23,661	24,284	24,907	25,531	26,154	26,777	27,400	28,023	28,647	29,270	29,893	6,232
GJ Industrial	10,114	10,380	10,647	10,913	11,180	11,446	11,712	11,979	12,245	12,512	12,778	2,664
Grand Junction Total	**62,988**	**64,647**	**66,306**	**67,965**	**69,624**	**71,283**	**72,942**	**74,601**	**76,260**	**77,919**	**79,578**	**16,590**
NONRES. FLOOR AREA (X 1,000 SF)												
GJ Retail/Commercial	10,242	10,426	10,610	10,794	10,978	11,162	11,346	11,530	11,714	11,898	12,082	1,840
GJ Office	7,639	7,756	7,872	7,988	8,105	8,221	8,337	8,453	8,570	8,686	8,802	1,163
GJ Institutional/Public	7,366	7,584	7,802	8,020	8,239	8,457	8,675	8,893	9,111	9,329	9,548	2,182
GJ Industrial	7,275	7,416	7,557	7,697	7,838	7,979	8,120	8,261	8,401	8,542	8,683	1,408
Grand Junction Total	**32,523**	**33,182**	**33,841**	**34,500**	**35,160**	**35,819**	**36,478**	**37,137**	**37,796**	**38,456**	**39,115**	**6,592**

APPENDIX B: LAND USE DEFINITIONS

RESIDENTIAL DEVELOPMENT

As discussed below, residential development categories are based on data from the U.S. Census Bureau, American Community Survey. Grand Junction will collect development fees from all new residential units. One-time development fees are determined by site capacity (i.e. number of residential units). This category also contains mobile homes and recreational vehicles

Single-Family: Single-Family detached is a one-unit structure detached from any other house, that is, with open space on all four sides. Such structures are considered detached even if they have an adjoining shed or garage. A one-family house that contains a business is considered detached as long as the building has open space on all four sides. Also included in the definition is Single family attached (townhouse), which is a one-unit structure that has one or more walls extending from ground to roof separating it from adjoining structures. In row houses (sometimes called townhouses), double houses, or houses attached to nonresidential structures, each house is a separate, attached structure if the dividing or common wall goes from ground to roof.

202 Multi-Family: 2+ units (duplexes and apartments) are units in structures containing two or more housing units, further categorized as units in structures with "2, 3 or 4, 5 to 9, 10 to 19, 20 to 49, and 50 or more apartments."

RV Park: RV parks typically do not have large buildings, they may feature a park office, restrooms, showers, pools, fishing ponds, walking trails, laundry facilities, and sometimes small retail shops or a restaurant. The park is made up of individual sites for RVs, each with enough space for parking, a small outdoor area, and the necessary hookups. RV parks are typically located near highways, tourist areas, or natural attractions. Short-term stays or overnight visits generally result in more frequent turnover and higher trip generation. Long-term stays or seasonal residents might generate fewer trips on a daily basis, though the overall traffic may still be significant during the peak tourist season.

NONRESIDENTIAL DEVELOPMENT

The proposed general nonresidential development categories (defined below using 2017 ITE Land Use Code) can be used for all new construction within Grand Junction. Nonresidential development categories represent general groups of land uses that share similar average weekday vehicle trip generation rates and employment densities (i.e., jobs per thousand square feet of floor area).

Land Use: 820 Shopping Center Description. A shopping center is an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. A shopping center's composition is related to its market area in terms of size, location, and type of store. A shopping center also provides on-site parking facilities sufficient to serve its own parking demands.

Land Use: 934 Fast-Food Restaurant with Drive-Through Window. This type of land use is characterized by a fast-food restaurant with large drive-through surrounded by a small surface parking lot with access to one or more commercial roads. Establishments have large carry-out clientele, long hours of service (including 24-hour service). The restaurant does not provide table service, and a patron typically orders from a menu board and pays before receiving the meal. A typical stay is less than 30 minutes.

Land Use: 710 General Office Building Description. A general office building has a floor area of 5,000 square feet or greater and houses multiple tenants; it is a location where business affairs, commercial or industrial organizations, or professional persons or firms are conducted. An office building or buildings may contain a mixture of tenants including professional services, insurance companies, investment brokers, and tenant services, such as a bank or savings and loan institution, a restaurant, or cafeteria and service retail facilities.

Land Use: 730 Government Office Building Description. A government office building is an individual office building containing either the entire function or simply one agency of a city, state, federal, or other government unit. Government office buildings do not contain retail, manufacturing, or residential uses and can vary in size from a single story to several stories. They tend to have a large number of office workers, administrative staff, and may also accommodate meetings and public services.

Land Use: 130 Industrial Park. This type of land use involves areas dedicated to industrial activities, where multiple businesses or industrial tenants operate within a designated space. Industrial parks are typically characterized by large, often single-story buildings with high ceilings to accommodate manufacturing equipment, storage, and loading docks, located in areas where there is significant transportation access, such as near highways, railroads, or ports. Buildings may vary in size, and the park may include multiple separate buildings or be comprised of a few larger structures designed for specific industrial activities. The primary activities in these parks generally include manufacturing, assembly, processing, and warehousing. Unlike Light Industrial Parks (Land Use 110), Industrial Parks may accommodate a wider range of industries, including those with moderate to heavy manufacturing or production operations**.**

Land Use: 150 Warehousing Description. A warehouse is primarily devoted to the storage of materials, but it may also include office and maintenance areas. High-cube transload and short-term storage warehouse (Land Use 154), high-cube fulfillment center warehouse (Land Use 155), high-cube parcel hub warehouse (Land Use 156), and high-cube cold storage warehouse (Land Use 157) are related uses.

Land Use: 310 Hotel. Hotels usually consist of multiple floors of guest rooms, common areas, service facilities, and amenities. The design and size can vary from small boutique hotels with a few rooms to large, multi-story hotels with hundreds of rooms and expansive meeting and recreational spaces. The property may also have parking garages, loading docks, and amenities designed to serve both business and leisure travelers. Hotels are often located near highways, business districts, tourist attractions, or transportation hubs, such as airports or train stations, to accommodate the travel needs of guests. Some hotels may be part of larger commercial complexes, while others are standalone properties.

BBC RESEARCH & CONSULTING

January 17, 2025

Ms. Diane Schwenke
Chairman of Associated Members for Growth and Development
Shared via email

Re: Grand Junction Development Impact Fees Comparative Analysis

Dear Ms. Schwenke,

BBC Research & Consulting (BBC) is pleased to share our analysis comparing the proposed development impact fees in Grand Junction, Colorado with peer communities in the Mountain West. The analysis includes a comprehensive overview of the expense that development impact fees add to residential and non-residential property development within each community included in the analysis.

Background and Objectives

Development impact fees (DIFs) are charges levied by local governments on new developments to cover the cost of infrastructure and public services necessitated by growth, such as roads, schools, parks, utilities, and public safety facilities. These fees ensure that the financial burden of accommodating new development is borne by developers rather than existing taxpayers.

For businesses and developers, impact fees are a significant component of the overall cost of developing real estate. Since these costs can vary substantially between communities, impact fees often play an important role in determining where businesses choose to locate. High fees may discourage development in certain areas, especially when comparable locations offer lower fees or other incentives. As a result, communities must carefully balance the need to fund public services with maintaining competitiveness to attract investment and development.

The objective of this study is to compare and contrast the development impact fees the City of Grand Junction is proposing to charge with those of peer communities to understand how the proposed fees will impact new residents, businesses, and developers. The study includes a comprehensive analysis of the expense that development impact fees add to residential and non-residential property development within each community. In addition, the study includes information on populations, housing stock, property taxes, and other relevant metrics for understanding how each community is competitively positioned to attract new residents and businesses.

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Comparative Analysis

The following Grand Junction Development Impact Fee Comparative Analysis presented below summarizes the total estimated development impact fees (DIFs) associated with the new construction of four (4) property types within the City of Grand Junction, Colorado, as well as within five (5) comparative communities in the Mountain West. The property types include single-family detached homes (ranging in size from 1,500 sq. ft. to 3,500 sq. ft.); a 3,200 sq. ft. office building; a 3,200 sq. ft. retail building; and a 10,000 sq. ft. industrial building.

The DIFs charged by each community vary in their comprehensiveness. While Grand Junction is proposing to charge DIFs for police; fire; parks, open space, and trails; transportation; municipal facilities; as well as those development impact fees pertaining to water and sewer plant investment fees, other communities in the study charge impact fees for additional services, such as storm drainage and schools. To make a comparison on equal terms, the comparative analysis evaluates the total cost of fees that would be paid in each community to develop different types of buildings. A summary of the results is shown in Figure I-1, below.

Figure I-1.
Summary of Development Impact Fee Examples by Municipality

	Boise, ID [1]	Greeley, CO [2]	Montrose, CO [3]	Reno, NV [4]	St. George, UT [5]	Average	Grand Junction, CO [6]	Percent Difference (%)
Development Impact Fees ($)								
Residential Examples								
1,500 Sq. Ft. Home	$10,030	$35,039	$12,962	$18,865	$12,628	$17,905	$24,829	39%
2,200 Sq. Ft. Home	$12,250	$38,321	$12,962	$18,865	$12,628	$19,005	$31,857	68%
3,500 Sq. Ft. Home	$14,875	$38,731	$12,962	$18,865	$12,628	$19,612	$37,065	89%
Non-Residential Examples								
3,200 Sq. Ft. Office	$3,770	$61,136	$17,261	$11,710	$10,771	$20,930	$52,718	152%
3,200 Sq. Ft. Retail	$15,648	$77,254	$17,261	$25,916	$12,778	$29,771	$82,360	177%
10,000 Sq. Ft. Industrial	$2,618	$78,760	$17,261	$16,117	$12,477	$25,447	$44,725	76%

Source: (1) Boise City Impact Fee Schedule effective October 1, 2024; City of Boise Water Renewal (Sewer) Connection Fees Updates 2024 [https://www.cityofboise.org/media/19409/fy-2025-impact-fee-schedule.pdf; https://www.cityofboise.org/media/18851/council-memo-connection-fee-memo-final-05_24-v2-1.pdf]

(2) City of Greeley 2025 Development Impact Fee Schedule; City of Greeley Water Rates 2024-2025 [https://greeleygov.com/docs/default-source/building-inspection/2025-development-impact-fees.pdf; https://greeleygov.com/services/ws/development/rates]

(3) City of Montrose Fee Schedule; Communication with City of Montrose Community Development Director, December 9th, 2024

(4) City of Reno Police Facility Impact Fee 2023; Regional Road Impact Fee Schedule 2024; City of Reno Sewer Connection Fee Study 2022 [https://www.reno.gov/home/showpublisheddocument/93177/638636380356870000; https://rtcwashoe.com/wp-content/uploads/2023/12/7th-Edition-Year-2-Indexing.RRIF-Brochure-2023.12.14.pdf; https://www.reno.gov/home/showpublisheddocument/89257/638054091972470000]

(5) City of St. George Impact Fee Facilities Plan & Impact Fee Analysis, 2021 [https://sgcityutah.gov/departments/administrative_services/impact_fees.php]

(6) City of Grand Junction 2024 Impact Fee Study Draft – Maximum Supportable Fee Estimates; City of Grand Junction 2025 Water Connection Fee; City of Grand Junction 2025 Sewer Connection Fee [https://www.gjcity.org/309/Water-Connection-Fee; https://www.gjcity.org/306/Sewer-Connection-Fee]

The current DIFs included in this analysis are based on the existing fee structures for the cities studied. A review of the DIFs shows varying approaches to calculating and applying impact and connection fees. For example, the parks fee for Boise, ID and the transportation and wastewater fees for Reno, NV are averages across the multiple planning districts in each municipality. Both of these cities charge wastewater connection fees for single-family homes rather than by tap size, and their water connection fee data were not available. In Greeley, the relatively high water and wastewater development plant investment fees reflect the value of the city's world-class water infrastructure, which provides reliable and abundant supply. Greeley has invested significantly in state-of-the-art collection, storage, conveyance, and treatment facilities.

Figures I-2 and I-3 provide demographic and economic context for the DIF summary by presenting municipality data on population, home prices, and local property taxes – as well as a breakdown of specific fee categories within the residential and non-residential impact fee analyses. Footnotes for both tables are provided in the Appendix.

Figure I-2.
Single Family Residential Development Impact Fee Analysis

	Boise, ID [1]	Greeley, CO [2]	Montrose, CO [3]	Reno, NV [4]	St. George, UT [5]	Average	Grand Junction, CO [6]
Demographics and Housing							
Population (2023 Est)	235,421	112,609	44,156	274,915	104,578	154,336	69,412
Households (2023 Est)	99,616	38,901	17,529	112,061	35,052	60,632	29,037
Median Household Income ($)	$81,308	$68,650	$66,072	$78,448	$72,870	$73,470	$66,676
Average New Home Price ($)	$519,223	$460,353	$453,808	$548,906	$483,189	$493,096	$464,779
Annual Income to Home Price	15.7%	14.9%	14.6%	14.3%	15.1%	14.9%	14.3%
Annual Taxes							
Sales Tax (%)	0.00%	3.46%	3.88%	0.00%	1.00%	1.67%	3.39%
Mill Levy	132.353	80.920	68.042	155.882	54.935	98.427	71.000
Average New Home Price ($)	$519,223	$460,353	$453,808	$548,906	$483,189	$493,096	$464,779
Annual Taxes ($)	$4,673	$2,533	$2,100	$5,818	$1,805	$3,386	$2,244
Annual Taxes to Home Price	0.90%	0.55%	0.46%	1.06%	0.39%	0.67%	0.48%
Development Impact Fees ($)							
1,500 Sq. Ft. SFR Dwelling							
Police	$506	$276	-	$125	$95	$251	$435
Fire	$1,943	$718	-	-	$320	$994	$1,016
Storm Drainage	-	$473	-	-	$781	$627	-
Parks, Open Space, and Trails	$4,187	$6,135	$1,575	-	$4,525	$4,106	$3,696
Transportation, Street, Road	-	$7,037	-	$5,444	$2,188	$4,890	$7,437
Municipal Facilities	-	-	-	-	-	-	$1,026
School	-	-	$679	-	-	$679	-
Water PIF/Connection Fee*	-	$12,900	$3,205	-	$3,203	$6,436	$5,675
Sewer PIF/Connection Fee*	$3,394	$7,500	$7,503	$13,296	$1,516	$6,642	$5,544
Total (1,500 Sq. Ft.)	**$10,030**	**$35,039**	**$12,962**	**$18,865**	**$12,628**	**$17,905**	**$24,829**
2,200 Sq. Ft. SFR Dwelling							
Police	$676	$334	-	$125	$95	$307	$664
Fire	$2,592	$869	-	-	$320	$1,260	$1,550
Storm Drainage	-	$693	-	-	$781	$737	-
Parks, Open Space, and Trails	$5,588	$7,416	$1,575	-	$4,525	$4,776	$5,641
Transportation, Street, Road	-	$8,609	-	$5,444	$2,188	$5,414	$11,217
Municipal Facilities	-	-	-	-	-	-	$1,566
School	-	-	$679	-	-	$679	-
Water PIF/Connection Fee*	-	$12,900	$3,205	-	$3,203	$6,436	$5,675
Sewer PIF/Connection Fee*	$3,394	$7,500	$7,503	$13,296	$1,516	$6,642	$5,544
Total (2,200 Sq. Ft.)	**$12,250**	**$38,321**	**$12,962**	**$18,865**	**$12,628**	**$19,005**	**$31,857**
3,500 Sq. Ft. SFR Dwelling							
Police	$876	$334	-	$125	$95	$357	$833
Fire	$3,361	$869	-	-	$320	$1,517	$1,944
Storm Drainage	-	$1,103	-	-	$781	$942	-
Parks, Open Space, and Trails	$7,245	$7,416	$1,575	-	$4,525	$5,190	$7,075
Transportation, Street, Road	-	$8,609	-	$5,444	$2,188	$5,414	$14,030
Municipal Facilities	-	-	-	-	-	-	$1,964
School	-	-	$679	-	-	$679	-
Water PIF/Connection Fee*	-	$12,900	$3,205	-	$3,203	$6,436	$5,675
Sewer PIF/Connection Fee*	$3,394	$7,500	$7,503	$13,296	$1,516	$6,642	$5,544
Total (3,500 Sq. Ft.)	**$14,875**	**$38,731**	**$12,962**	**$18,865**	**$12,628**	**$19,612**	**$37,065**

Figure I-3.
Non-Residential Development Impact Fee Analysis

	Boise, ID [1]	Greeley, CO [2]	Montrose, CO [3]	Reno, NV [4]	St. George, UT [5]	Average	Grand Junction, CO [6]
Demographics and Housing							
Population (2023 Est)	235,421	112,609	44,156	274,915	104,578	154,336	69,412
Households (2023 Est)	99,616	38,901	17,529	112,061	35,052	60,632	29,037
Property and Sales Tax							
Sales Tax (%)	0.00%	3.46%	3.88%	0.00%	1.00%	1.67%	3.39%
Mill Levy	132.353	80.920	68.042	155.882	54.935	98.427	71.000
Development Impact Fees ($)							
3,200 Sq. Ft. Office Unit							
Police	$1,021	$1,725	-	$816	$403	$991	$864
Fire	$2,749	$3,840	-	-	$864	$2,484	$2,051
Storm Drainage	-	$1,008	-	-	$467	$738	-
Transportation, Street, Road	-	$20,563	-	$10,894	-	$15,728	$20,970
Municipal Facilities	-	-	-	-	-	-	$4,294
Linkage Fees (Affordable Housing)	-	-	-	-	-	-	$10,624
Water PIF/Connection Fee*	-	$21,500	$5,033	-	$5,763	$10,765	$7,706
Sewer PIF/Connection Fee*	-	$12,500	$12,228	-	$3,274	$9,334	$6,209
Total (3,200 Sq. Ft. Office)	**$3,770**	**$61,136**	**$17,261**	**$11,710**	**$10,771**	**$20,930**	**$52,718**
3,200 Sq. Ft. Retail Unit							
Police	$8,759	$3,213	-	$730	$1,066	$3,442	$1,942
Fire	$6,889	$7,152	-	-	$2,208	$5,416	$4,624
Storm Drainage	-	$1,008	-	-	$467	$738	-
Transportation, Street, Road	-	$31,882	-	$25,186	-	$28,534	$34,966
Municipal Facilities	-		-	-	-	-	$2,803
Linkage Fees (Affordable Housing)	-		-	-	-	-	$24,109
Water PIF/Connection Fee*	-	$21,500	$5,033	-	$5,763	$10,765	$7,706
Sewer PIF/Connection Fee*	-	$12,500	$12,228	-	$3,274	$9,334	$6,209
Total (3,200 Sq. Ft. Retail)	**$15,648**	**$77,254**	**$17,261**	**$25,916**	**$12,778**	**$29,771**	**$82,360**
10,000 Sq. Ft. Industrial Unit							
Police	$1,440	$2,750	-	$585	$760	$1,384	$840
Fire	$1,178	$6,130	-	-	$1,300	$2,869	$2,000
Storm Drainage	-	$3,150	-	-	$1,380	$2,265	-
Transportation, Street, Road	-	$32,730	-	$15,532	-	$24,131	$20,350
Municipal Facilities	-	-	-	-	-	-	$4,780
Linkage Fees (Affordable Housing)	-	-	-	-	-	-	$2,840
Water PIF/Connection Fee*	-	$21,500	$5,033	-	$5,763	$10,765	$7,706
Sewer PIF/Connection Fee*	-	$12,500	$12,228	-	$3,274	$9,334	$6,209
Total (10,000 Sq. Ft. Industrial)	**$2,618**	**$78,760**	**$17,261**	**$16,117**	**$12,477**	**$25,447**	**$44,725**

Figure I-4 illustrates the changes in non-residential development impact fees per 1,000 square feet of building space, excluding the proposed linkage fee. As shown in the table, the proposed fees represent increases ranging from 7% to 342%, with the exception of RV parks, where fees are projected to decrease by approximately 58%.

Figure I-4.
Proposed Change in Non-Residential Development Impact Fees per 1,000 Square Feet of Building Space Without Linkage Fee

Non-Residential Land Use	Change in Impact Fee per 1,000 Sq. Ft.	Percent Change from Current Fee (2025)
Retail/Commercial	$4,790	53%
Office	$1,865	27%
Institutional/Public	$6,651	342%
Industrial	$374	15%
Warehousing	$237	22%
Hotel/lodging	$387	7%
RV Park	-$2,548	-58%

Source: Bennett, M., & Allen, T. (2025, January 14). *Impact fee and linkage fee supplemental information* [Memorandum to the Mayor and Members of City Council].

Discussion and Findings

It is important for communities to balance development impact fees (DIFs) with maintaining competitiveness to attract investment. While these fees fund essential infrastructure, excessively high fees can stifle economic growth by deterring housing, commercial, and industrial developments. A comparative analysis of Grand Junction's proposed DIFs reveals they are substantially higher than those of peer communities, both in number and cost.

For single-family homes, the proposed fees would result in costs 39% to 89% higher than the average, adding $7,000 to $17,000 of additional expense to each home compared to other communities. Non-residential developments face even greater disparities, with fees 76% to 177% higher than other communities in the analysis. For instance, a developer of a 3,200 sq. ft. retail building would pay DIFs totaling approximately $82,400 in Grand Junction, compared to an average of $29,800 elsewhere.

These differences stem from two factors: Grand Junction proposes more fee categories and charges higher rates per fee. For example, the City's affordable housing linkage fee—absent in peer communities—alone rivals or exceeds the total DIF costs of many competitors. High development impact fees risk driving investments to other regions with lower development costs. This analysis highlights the importance of benchmarking to ensure fees remain competitive while still supporting infrastructure needs.

Appendix

Table I-2 Notes

*Water tap fees are based on a 3/4" tap size or equivalent

(1) The Parks fee for the City of Boise is an average of the seven district fees applicable to the seven planning areas of the City. Water connection fee data were not available. Boise charges a sewer connection fee for a single-family home rather than by tap size.

(4) The Transportation fee for the City of Reno is an average of the two distinct fees applicable to the two planning areas of the City. Water connection fee data were not available. Reno charges a sewer connection fee for a single-family home rather than by tap size; the sewer connection fee is an average of the three distinct fees applicable to three areas of the City.

(6) Grand Junction charges a sewer connection fee for a single-family home rather than by tap size.

Table I-2 Sources

(1) Boise City Impact Fee Schedule effective October 1, 2024; City of Boise Water Renewal (Sewer) Connection Fees Updates 2024 [https://www.cityofboise.org/media/19409/fy-2025-impact-fee-schedule.pdf; https://www.cityofboise.org/media/18851/council-memo-connection-fee-memo-final-05_24-v2-1.pdf]

(2) City of Greeley 2025 Development Impact Fee Schedule; City of Greeley Water Rates 2024-2025 [https://greeleygov.com/docs/default-source/building-inspection/2025-development-impact-fees.pdf; https://greeleygov.com/services/ws/development/rates]

(3) City of Montrose Fee Schedule; Communication with City of Montrose Community Development Director, December 9th, 2024

(4) City of Reno Police Facility Impact Fee 2023; Regional Road Impact Fee Schedule 2024; City of Reno Sewer Connection Fee Study 2022 [https://www.reno.gov/home/showpublisheddocument/93177/638636380356870000; https://rtcwashoe.com/wp-content/uploads/2023/12/7th-Edition-Year-2-Indexing.RRIF-Brochure-2023.12.14.pdf; https://www.reno.gov/home/showpublisheddocument/89257/638054091972470000]

(5) City of St. George Impact Fee Facilities Plan & Impact Fee Analysis, 2021 [https://sgcityutah.gov/departments/administrative_services/impact_fees.php]

(6) City of Grand Junction 2024 Impact Fee Study Draft – Maximum Supportable Fee Estimates; City of Grand Junction 2025 Water Connection Fee; City of Grand Junction 2025 Sewer Connection Fee [https://www.gjcity.org/309/Water-Connection-Fee; https://www.gjcity.org/306/Sewer-Connection-Fee]

Table I-3 Notes

*Water and sewer tap fees are based on a 1" tap size or equivalent

(1) Boise calculates commercial sewer connection fees based on a daily average of used water discharges. A comparable example could not be calculated for inclusion in this table. Water connection fee data were not available.

(4) The Transportation fee for the City of Reno is an average of the two distinct fees applicable to the two planning areas of the City. Water and sewer connection fee data were not available for non-residential development. Fees for industrial development are an average of industrial and manufacturing fee rates in Reno.

(6) Grand Junction calculates commercial sewer connection fees based on formulas for a range of development types. An example is shown for a 3,200 sq. ft. retail unit.

Table I-3 Sources

(1) Boise City Impact Fee Schedule effective October 1, 2024; City of Boise Water Renewal (Sewer) Connection Fees Updates 2024 [https://www.cityofboise.org/media/19409/fy-2025-impact-fee-schedule.pdf; https://www.cityofboise.org/media/18851/council-memo-connection-fee-memo-final-05_24-v2-1.pdf]

(2) City of Greeley 2025 Development Impact Fee Schedule; City of Greeley Water Rates 2024-2025 [https://greeleygov.com/docs/default-source/building-inspection/2025-development-impact-fees.pdf; https://greeleygov.com/services/ws/development/rates]

(3) City of Montrose Fee Schedule; Communication with City of Montrose Community Development Director, December 9th, 2024

(4) City of Reno Police Facility Impact Fee 2023; Regional Road Impact Fee Schedule 2024; City of Reno Sewer Connection Fee Study 2022 [https://www.reno.gov/home/showpublisheddocument/93177/638636380356870000; https://rtcwashoe.com/wp-content/uploads/2023/12/7th-Edition-Year-2-Indexing.RRIF-Brochure-2023.12.14.pdf; https://www.reno.gov/home/showpublisheddocument/89257/638054091972470000]

(5) City of St. George Impact Fee Facilities Plan & Impact Fee Analysis, 2021 [https://sgcityutah.gov/departments/administrative_services/impact_fees.php]

(6) City of Grand Junction 2024 Impact Fee Study Draft – Maximum Supportable Fee Estimates; City of Grand Junction 2025 Water Connection Fee; City of Grand Junction 2025 Sewer Connection Fee [https://www.gjcity.org/309/Water-Connection-Fee; https://www.gjcity.org/306/Sewer-Connection-Fee

January 30, 2025

Dear Grand Junction City Council,

As the city grows, setting appropriate impact fees for new development is essential to maintaining the current level of per-person infrastructure without forcing the city to divert funds from other areas of the budget or, worse, see a decline in level of service. On January 9, 2025, the City of Grand Junction Parks and Recreation Advisory Board discussed the updated Park Impact Fees presented by TischlerBise. After lengthy discussion, PRAB voted to approve a motion supporting the credibility of the study, recommending adoption of the Maximum Supportable Impact Fee as presented, and if necessary to help find a resolution acceptable to City Council, encouraging Council to consider modification of the Open Space Fee calculation. This motion was made by PRAB Board Member Chandler Smith and seconded by PRAB Board Member Kyle Gardner. The vote was unanimously approved.

This letter documents PRAB's discussion in making the motion and explains our reasoning behind it. TischlerBise's method of setting the fees strikes us as sound. Their valuation of the current park infrastructures seems to be credible. Using Parks, Recreation and Open Space Master Plan information and outcomes and recent project examples, our parks and recreation staff have diligently worked with TischlerBise to inventory our amenities and have carefully valued them. For example, staff explained they excluded items such as the new Community Recreation Center and the Lincoln Park Stadium complex which receive significant other sources of funding. The calculation of the population that utilizes this infrastructure also seems to be accurate. As a result, we believe the recommended Maximum Supportable Impact Fees reflect the true cost of maintaining current infrastructure levels. Said another way, the fees seem to support the amount of funding required to sustain our quality of life as population grows.

Regarding the inclusion of open space components, we recognize both benefits and drawbacks. A dedicated fund for acquiring open space requires city staff to be mindful in acquiring and maintaining a diversity of landscapes. Open spaces provide unique recreational opportunities, and many of our open spaces are among the most cherished properties in our portfolio. However, past open space acquisitions have often been aided by outside funding, and we are uncertain whether such significant opportunities are as likely to be as abundant in the future. Additionally, in a community with access to millions of acres of public lands, the priority of preserving additional open space within city limits may warrant reevaluation. After lengthy discussion on the topic, PRAB generally feels that if City Council would like to be sensitive to these considerations and show compromise, we suggest modifying but not eliminating the Open Space Fee. Perhaps this could be done by excluding the substantial acreage of the Three Sisters property from the calculations. While smaller acquisitions like Kindred Reserve may very well be possible, huge expanses like Three Sisters may not be.

We understand that this is a contentious issue with passionate advocates on all sides. We acknowledge this is a very difficult issue and appreciate Council's efforts in finding a resolution.

Our suggestion would be to focus on the concrete methodologies used in other communities to calculate what is needed to maintain current levels of service and quality of life rather than speculating about the potential impact of these fees on housing costs. This is especially relevant as the city waives the impact fees for truly affordable housing. We commend both efforts towards providing affordable and attainable housing while generally ensuring growth pays its own way.

Sincerely,

Nancy Strippel
Chair, City of Grand Junction Parks and Recreation Advisory Board

City of Grand Junction City Council Workshop - February 3, 2025
Staff Recommendation on Residential Impact Fees

Residential Impact Fees

		Fire				Municipal Facilities				Parks & Recreation				
Unit Size	Development Unit	2019 Max Supportable[1]	Current Fee (2025)[2]	Current Study Max Supportable	Staff Recommend	2019 Max Supportable[3]	Current Fee (2025)	Current Study Max Supportable	Staff Recommend	2019 Max Supportable[4]	Current Fee (2025)[5]	Current Study Max Supportable	Current Study Max w/o 3 sisters	Staff Recommend
850 or less	Dwelling	$467	$544	$501	$501	$516	$0	$506	$0	$1,055	$988	$1,824	$1,538	$1,538
851 to 1,000	Dwelling	$467	$544	$648	$648	$516	$0	$655	$0	$1,055	$988	$2,358	$1,989	$1,989
1,001 to 1,250	Dwelling	$467	$544	$822	$822	$516	$0	$830	$0	$1,055	$988	$2,991	$2,523	$2,523
1,251 to 1,500	Dwelling	710	$827	$1,016	$1,016	$785	$0	$1,026	$0	$1,605	$1,468	$3,696	$3,117	$3,117
1,501 to 2,000	Dwelling	710	$827	$1,276	$1,276	$785	$0	$1,289	$0	$1,605	$1,468	$4,644	$3,917	$3,917
2,001 to 2,500	Dwelling	710	$827	$1,550	$1,550	$785	$0	$1,566	$0	$1,605	$1,468	$5,641	$4,758	$4,758
2,501 to 3,000	Dwelling	710	$827	$1,764	$1,764	$785	$0	$1,782	$0	$1,605	$1,468	$6,419	$5,414	$5,414
3,001 to 3,500	Dwelling	710	$827	$1,944	$1,944	$785	$0	$1,964	$0	$1,605	$1,468	$7,075	$5,968	$5,968
3,501 to 4,000	Dwelling	710	$827	$2,098	$2,098	$785	$0	$2,120	$0	$1,605	$1,468	$7,634	$6,440	$6,440
4,001 to 4,500	Dwelling	710	$827	$2,232	$2,098	$785	$0	$2,255	$0	$1,605	$1,468	$8,121	$6,850	$6,440
4,501 or more	Dwelling	710	$827	$2,352	$2,098	$785	$0	$2,376	$0	$1,605	$1,468	$8,558	$7,219	$6,440

1-2019 MF Fire equaled $467
2- Current MF Fire equals $530
3-2019 MF Municipal Facilities equaled $516
4-2019 MF Parks equaled $1055
5-Current MF Parks equals $962
6-2019 MF Police equaled $200
7-Current MF Police equals $227
8-2019 MF Transportation Fee equald $4,570
9-Current Transportation 1650 to 2,299 sq.ft equals $5,382, 1250 to 1469 SF equals $6,142

Residential Impact Fees (continued)

		Police				Transportation			
Unit Size	Development Unit	2019 Max Supportable[6]	Current Fee (2025)[7]	Current Study Max Supportable	Staff Recommend	2019 Max Supportable[8]	Current Fee (2025)[9]	Current Study Max Supportable	Staff Recommend
850 or less	Dwelling	$200	$233	$215	$215	$4,570	$3,516	$3,750	$3,750
851 to 1,000	Dwelling	$200	$233	$278	$278	$4,570	$3,516	$4,805	$4,805
1,001 to 1,250	Dwelling	$200	$233	$352	$352	$4,570	$3,516	$6,059	$6,059
1,251 to 1,500	Dwelling	$305	$356	$435	$435	$6,763	$5,382	$7,437	$7,437
1,501 to 2,000	Dwelling	$305	$356	$547	$547	$6,763	$5,382	$9,285	$9,285
2,001 to 2,500	Dwelling	$305	$356	$664	$664	$6,763	$6,142	$11,217	$11,217
2,501 to 3,000	Dwelling	$305	$356	$756	$756	$6,763	$8,044	$12,755	$12,755
3,001 to 3,500	Dwelling	$305	$356	$833	$833	$6,763	$8,044	$14,030	$14,030
3,501 to 4,000	Dwelling	$305	$356	$899	$899	$6,763	$8,044	$15,138	$15,138
4,001 to 4,500	Dwelling	$305	$356	$956	$899	$6,763	$8,044	$16,112	$15,138
4,501 or more	Dwelling	$305	$356	$1,008	$899	$6,763	$8,044	$16,956	$15,138

TOTAL Residential Impact Fees

							Staff Recommendation		
Unit Size	Development Unit	2019 Max Supportable	Current Fee (2025)	Land Dedication	Total Current Costs (2025)	Current Study Max Supportable	Staff Recommend	Increase (Decrease)	% Change from 2025
850 or less	Dwelling	$6,808	$5,281	$1,063	$6,344	$6,796	$6,004	($340)	-5%
851 to 1,000	Dwelling	$6,808	$5,281	$1,063	$6,344	$8,744	$7,720	$1,376	22%
1,001 to 1,250	Dwelling	$6,808	$5,281	$1,063	$6,344	$11,054	$9,756	$3,412	54%
1,251 to 1,500	Dwelling	$10,168	$8,033	$1,063	$9,096	$13,610	$12,005	$2,909	32%
1,501 to 2,000	Dwelling	$10,168	$8,033	$1,063	$9,096	$17,041	$15,025	$5,929	65%
2,001 to 2,500	Dwelling	$10,168	$8,793	$1,063	$9,856	$20,638	$18,189	$8,333	85%
2,501 to 3,000	Dwelling	$10,168	$10,695	$1,063	$11,758	$23,476	$20,689	$8,931	76%
3,001 to 3,500	Dwelling	$10,168	$10,695	$1,063	$11,758	$25,846	$22,775	$11,017	94%
3,501 to 4,000	Dwelling	$10,168	$10,695	$1,063	$11,758	$27,889	$24,575	$12,817	109%
4,001 to 4,500	Dwelling	$10,168	$10,695	$1,063	$11,758	$29,676	$24,575	$12,817	109%
4,501 or more	Dwelling	$10,168	$10,695	$1,063	$11,758	$31,250	$24,575	$12,817	109%

Majority of new home construction falls within these categories.

City of Grand Junction City Council Workshop - February 3, 2025
Staff Recommendation on Residential Impact Fees

Non-Residential Impact Fees

		Fire				Municipal Facilities				Police				Transportation			
Development Type	Development Unit	2019 Max Supportable	Current Fee (2025)	Current Study Max Supportable	Staff Recommend	2019 Max Supportable	Current Fee (2025)	Current Study Max Supportable	Staff Recommend	2019 Max Supportable	Current Fee (2025)	Current Study Max Supportable	Staff Recommend	2019 Max Supportable[2]	Current Fee (2025)	Current Study Max Supportable	Staff Recommend
Retail/Commercial	1,000 SF	$489	$569	$1,445	$1,445	$467	$0	$876	$0	$206	$240	$607	$607	$8,240	$8,256	$10,927	$10,927
Convenience Commercial	1,000 SF	$489	$569	$1,989	$1,989	$467	$0	$3,854	$0	$206	$240	$836	$836	$15,842	$17,551	$15,041	$15,041
Office	1,000 SF	$191	$222	$641	$641	$598	$0	$1,342	$0	$81	$95	$270	$270	$6,685	$6,624	$6,553	$6,553
Institutional/Public	1,000 SF	$191	$222	$638	$638	$598	$0	$1,178	$0	$81	$95	$268	$268	$1,688	$1,629	$6,513	$6,513
Industrial	1,000 SF	$66	$77	$200	$200	$234	$0	$478	$0	$28	$33	$84	$84	$2,078	$2,313	$2,035	$2,035
Warehousing	1,000 SF	$34	$40	$102	$102	$69	$0	$140	$0	$14	$17	$43	$43	$1,075	$1,025	$1,034	$1,034
Hotel/Lodging[1, 3]	1,000 SF	$489	$569	$473	$473	$220	$0	$230	$0	$206	$240	$199	$199	$4,183	$4,537	$4,831	$4,831
RV Park[3]	Pad	462	$544	$160	$160	$20	$0	$21	$0	$198	$233	$67	$67	$3,583	$3,651	$1,632	$1,632

1-Hotel/Lodging, Transportation per Room, other fees per 1,000 SF
2-Using lowest - 2019 study provided $33,203 for Drive Through Restaurant, $26,395 for Convenience store with gas sales)
3-2019 study for Fire and Municipal Facilities did not provide specific land use category

TOTAL Non-Residential Impact Fees					Staff Recommendation		
Unit Size	Development Unit	2019 Max Supportable	Current Fee (2025)	Current Study Max Supportable	Staff Recommend	Increase (Decrease)	% Change from 2025
Retail/Commercial	1,000 SF	$9,402	$9,065	$13,855	$12,979	$3,914	43%
Convenience Commercial	1,000 SF	$17,004	$18,360	$21,720	$17,866	($494)	-3%
Office	1,000 SF	$7,555	$6,941	$8,806	$7,464	$523	8%
Institutional/Public	1,000 SF	$2,558	$1,946	$8,597	$7,419	$5,473	281%
Industrial	1,000 SF	$2,406	$2,423	$2,797	$2,319	($104)	-4%
Warehousing	1,000 SF	$1,192	$1,082	$1,319	$1,179	$97	9%
Hotel/Lodging[1]	1,000 SF	$5,098	$5,346	$5,733	$5,503	$157	3%
RV Park	Pad	$4,263	$4,428	$1,880	$1,859	($2,569)	-58%

Impact Fees Staff Recommendation
02.03.2025

Methodology Revision Recommendations.

- Cap residential unit size at 3,501 and greater for all impact fee categories
- Remove 3-sisters Open Space from Calculation

Fee Recommendations.

- Adopt Transportation in full
- Adopt Parks in full
- Adopt Fire in full
- Adopt Police in full
- Do not adopt Municipal Facilities
- Do not adopt Affordable Housing Linkage fee

Ordinance Recommendations (in concept).

- Revise Section 21.02.070(11)(i) to remove the requirement for the city to hire an independent consultant to review and update the study every 5-years. Replace with periodic updates and review to evaluate need to update study.
- Revise Section 21.05.020(c)(1)(iv), to clarify the developer shall dedicate ROWs for roads and that city will pay fair market value for additional ROW width for collector and arterial roadways adjacent to project.
- Revise Section 21.05.030(b)(2) regarding active transportation trail construction to reassign the offset (credit) from open space fee in-lieu to Transportation Impact fee
- Remove Section 21.05.030(a) Open Space Dedication or Payment of Fee In lieu to no longer require the dedication or in lieu payment for park land
- Maintain provision that “locks in” fees at time for complete application submittal for nonresidential and multifamily development [excluding townhomes, duplexes, and condominium residence(s)] so long as construction commences within two years from date of project approval.
- Maintain annual inflationary increases
- Implement increases over 1 year in two increments (July 1, 2025, and January 1, 2026)

Existing Code Sections for Reference

§ 21.05.020(c)(1)(iv) ROW Dedication. A developer shall dedicate to the City all rights-of-way and easements needed to serve the project. Dedications shall be at no cost to the City and shall not be eligible for impact fee credit(s). If such dedication is claimed to exceed constitutional standards, the owner shall inform the City Attorney who, if agrees, shall ask the City Council to pay a fair share of the value of such dedication or waive all or part of such required dedication.

§ 21.05.030(b)(2): Trail Construction for Open Space Credit**.** If a trail(s) is constructed in addition to the construction of required sidewalks, then the owner may request an offset for the cost of construction of the trail(s) against the project's open space fee in-lieu in an amount not to exceed the total open space fee. The amount of the credit or offset will be determined by the City using established and uniform cost for labor and materials for the specific type and width of the trail(s) constructed.

21.02.070(5)(i)(G) Time of Submittal. For nonresidential and multifamily development [excluding townhomes, duplexes, and condominium residence(s)] the fee shall be calculated as of the submission of a complete application and construction commences within two years of approval. Should construction fail to commence within two years, the applicant shall pay those fees in place at the time of issuance of a Planning Clearance.

21.02.070(11(i)) Review Every Five Years. The impact fees described in this section and the administrative procedures of this section shall be reviewed at least once every five years by an independent consultant, as directed by the City Manager, to ensure that i) the demand and cost assumptions underlying the impact fees are still valid, ii) the resulting impact fees do not exceed the actual costs of constructing capital facilities that are of the type for which the impact fees are paid and that are required to serve new impact-generating development, iii) the monies collected or to be collected in each impact account have been and are expected to be spent for capital facilities for which the impact fees were paid, and iv) the capital facilities for which the impact fees are to be used will benefit the new development paying the impact fees.

§ 21.05.030**(a)** Open Space Dedication or Payment of Fee In-Lieu.

(1) Applicability.

(i) The owner of any residential development, being developed in full or incrementally, of 10 or more lots or 10 or more dwelling units shall dedicate 10% of the gross acreage of the property or the equivalent of 10% of the value of the property as a fee in-lieu of dedication.

(A) The Director shall decide whether to dedicate land or to pay a fee in-lieu.

(B) If a land dedication is preferred by the City, the Director shall work with the applicant to determine an appropriate location on the property by considering the following:

a. The area proposed for dedication is not critical to the overall project design, as determined by the applicant. If this can be met, the land proposed for dedication shall meet some or all of the following criteria:

1. The proposed land can implement the design criteria of the PROS plan and can be maintained by the City;

2. Availability of sufficient flat surface to provide usable park or open space, or suitable open space is provided to preserve one of the following, if located on the site:

i. Unique landforms or natural areas;

ii. Fish or wildlife habitat;

iii. Cultural, historic, or archeological areas;

iv. Outdoor recreation areas; or

v. Unique vegetative areas and significant trees;

3. The area proposed for dedication is not inhibited by any easements or natural hazards that would compromise its intended purpose; and

4. The location of the dedication on the site is proximate to public access.

(ii) Private open space and/or a private recreational area(s) in any development, or an outdoor living area(s) required in a multifamily development, shall not satisfy this open space dedication requirement.

(2) Calculation of Fee In-Lieu.

(i) To calculate the fee in-lieu, the owner shall have the property appraised by a Colorado certified appraiser. The appraiser shall value the total acreage of the property notwithstanding the fact that the owner may develop or propose to develop the property in filings or phases. The applicant is responsible for all costs of the appraisal and report.

(ii) The Appraisal Report shall be in a Summary Appraisal Report form as prescribed by the most recent edition of the Uniform Standards of Professional Appraisal Practice (USPAP). The Appraisal Report shall be provided by the Applicant to the City, as a public record for the City to review, and if it accepts the Appraisal Report, determine fair market value of the property and to otherwise determine compliance with this section.

(3) Dedication and/or Fee Payment.

(i) If the land offered for dedicated has open space or recreational value, the Parks and Recreation Advisory Board shall provide a written recommendation. The City Council may accept the dedication of land so long as the land dedicated to the City is at least 10% of gross acreage or is found to provide adequate public benefit. If the dedication is less than 10% of the gross acreage, the owner shall have the gross acreage appraised per GJMC § 21.05.030(a)(2) to calculate the difference in value between the land dedication and value of the gross acreage. The owner shall pay the difference in calculation to equal the value of 10% of gross acreage.

(ii) For subdivisions, the land dedication or open space fee is required and payable at the time of platting. For any other project(s), the fee is due at the time of Planning Clearance.