Hybrid Meeting Information

This meeting is being held in a Virtual/In Person format based on City of Durango Resolution R 2022-0017 adopted on April 5, 2022 by the Durango City Council.

The link to the virtual meeting is available here:

http://durangogov.org/zoom

*Please note: If this link does not take you directly to the meeting list, please copy and paste it into the address bar of your web browser.*

A G E N D A

MAYOR: Melissa Youssef

MAYOR PRO-TEM Jessika Buell

COUNCIL MEMBERS: Olivier Bosmans

Dave Woodruff

Gilda Yazzie

CITY MANAGER: José Madrigal

MISSION

The City of Durango and our employees provide efficient city services, effectively maintain city assets and manage growth, are accountable, ethical and fiscally responsible, and collaborate with regional partners to improve the quality of life for our entire community.

VISION

Durango is an authentic, diverse, multigenerational, and thriving community. Our residents value and enjoy our unique natural environment and benefit from the management of our city’s resources in a fiscally responsible, environmental, and socially sustainable manner.

VALUES

* Teamwork
* Dependability
* Professionalism
* Service
* Respect
* Innovation
* Well-Being

STRATEGIC GOALS

* Affordability & Economic Opportunity (AEO)
* Diversity, Equity, Inclusion (DEI)
* Effective Infrastructure Network (EIN)
* Enhanced Livability & Sense of Place (ELSP)
* Environmental Sustainability & Resilience (ESR)
* Financial Excellence & High Performing Government (FE)
* Engaged and Collaborative Governance (ECG)
Theme - Effective Infrastructure Network - 2:15 PM

Future New Business and Review of Agendas - 20 minutes

INFORMATION ONLY ITEMS 2:35 PM

Durango Mesa Park Semi Annual Update - Ture Nycum - 30 minutes

MidTown Safety Improvement Project Update - Devin King - 30 minutes

Retreat Follow Up Transit Funding - Sarah Hill - 1 hour

Adjournment - 4:35 PM

NOTE THAT ALL TIMES ARE APPROXIMATIONS
TO: DURANGO CITY COUNCIL
FROM: TURE NYCUM, PARKS AND RECREATION DIRECTOR

SUBJECT: DURANGO MESA PARK SEMI ANNUAL UPDATE

RECOMMENDATION:

This is an update and discussion on the progress of Durango Mesa Park (DMP) project. No recommendations are needed.

BACKGROUND SUMMARY:

The current DMP project is the implementation of Phase 1 of the DMP Area Plan. This consists of design and installation of a Bike Park, Dog Park and Disc Golf Course. In addition, trails connecting the DMP to Horse Gulch Open Space and Trail system have been designed and construction is underway. Lastly, Phase 1 will also review and update plans, including cost estimates, for improvement to Ewing Mesa Road as well as needed infrastructure for full build out of the Area Plan.

The DMP project has made significant progress in recent months. Staff and representatives from Durango Mesa Park Foundation will be on hand to present the semi annual update and answer questions from Council. Update will include progress on annexation of the DMP, trail construction progress, design work on infrastructure and the bike park, and future operational needs.

STRATEGIC PLAN ALIGNMENT:

The development of Durango Mesa Park supports the following Strategic Goal: Enhance Livability and Sense of Place.

ALTERNATIVE OPTIONS CONSIDERED:

There are no alternative options to consider at this time.

FISCAL IMPACT:

The City has approved 2015 sales tax funds in 2022 and 2023 for the DMP project and additional, but planned, funds will be recommended in the 2024 budget. Discussion of future operational funds to manage and maintain the Bike Park and new trails are being developed and will be presented to City Council at future meetings. This initial investment in Durango Mesa Park will activate and open DMP to future phases of the Area Plan that in turn will generate economic activity in the community.

POTENTIAL ADVERSE IMPACTS:

It’s anticipated that the development of DMP will have positive economic impacts for the community. Potential impacts include an increase in operational funding in the Parks Division.

NEXT STEPS AND TIMELINE:

Next steps for Durango Mesa Park include the completion of trail in 2023 and the construction of the Bike Park and other amenities in 2024. To accomplish this the DMP Foundation and City staff will work on a final MOU and a subsequent funding agreement to complete the project. Foundation and city staff are also working a Great Outdoors Centennial grant application to potentially provide up to $5 Million in additional project funds.
The map below shows the majority of Durango Mesa Park and our proposed trail alignments. While 6 miles is beyond what we assumed we would design initially, we discovered considerable potential on the northern boundary and in Horse Gulch. Driven critically by connections and benefits to the community, we see opportunities for Downhill Flow and Jump Trails, Multi-Use Dual Direction Trails and can connect the north and south end of the property to the Animas River Trail. Construction of the trail infrastructure is planned for a three year timeframe, but several of the proposed trails could be completed before then.

Our ask from the city – all trails on city government property are considered and given a proper easement for the proposed trails below. All environmental assessment permitting and USACE waterway crossing negotiations outside of PTD scope.

**DURANGO MESA BIKE PARK DEMONSTRATION PROJECT**

**EXISTING TRAIL SHOWN**

**TRAILS – TRAIL COLORS REFLECTED ON MAP**

- **Mesa Connector (2.1 mi)**
- **Intermediate Downhill (1.3 mi)**
- **Meadow Beg. Downhill (1.1 mi)**
- **Meadow Int. Downhill (1.0 mi)**
- **Telegraph Connector (0.7 mi)**
- **Meadow-Knob Connector (0.6 mi)**

**TRAIL MILEAGE TOTAL: ~6.3 MILES**
TRAIL DESCRIPTIONS
Listed in order of priority
MESA CONNECTOR

The connection of the mesa to city property offers a great opportunity for a multi-use dual direction contour flow trail. By connecting to the existing Horse Gulch trailhead, the Mesa Connector will alleviate some of the traffic on the heavily used road while also providing a beautiful climb (or descent). The alignment climbs up the face of the mesa and connects to the Colorado High School Cycling League course in key areas and ends to the west of the Pautsky’s Point ridgeline. This trail will be a key piece to access the mesa from Downtown Durango. **Build time: 5 weeks**

Details:
- 2.1 miles
- 2-3’ wide dual direction contour flow trail
One of the common themes we have heard consistently from local stakeholders has been the need for progressive trails. The Intermediate Downhill will offer a super fun and fast descent off the mesa, utilizing the northern slopes, complete with berms and jumps. Being intermediate means it will be built with progression in mind but will allow beginners and experts the ability to enjoy the features and challenges. The slopes and terrain are perfect for this type of trail. Stone lips for the jumps have been specified as we have seen the jumps stay consistent without erosion issues, reducing trail maintenance time and effort. In our opinion, this will quickly become one of Durango’s most popular trails. Build time: 14 weeks

Details:
- 1.3 miles
- 6-8’ wide downhill flow/jump trail
- Jumps with beam stone lips
- Berms
- Rollers
- Small tabletop jumps
- Stone armoring

INTERMEDIATE DOWNHILL
MEADOW BEGINNER DOWNHILL

When climbing up Horse Gulch the meadow opens to the south where the excellent slope and open sight lines are begging for a flow trail. The Beginner Flow trail experience starts at the southeast end of Pautsky’s Ridge and drops northward toward Horse Gulch Road. The user will be greeted by berms, rollers and possibly a few small tabletop jumps. With open sight lines and a perfect slope riders will want to session this trail time and time again. The trail terminates before the rider reaches Horse Gulch Road and has the opportunity to jump on a trail back to the top. **Build time: 10 weeks**

Details:
- 1.1 miles
- 4'-6' wide downhill flow trail
- Berms
- Rollers
- Small tabletop jumps
- Stone armoring
- Jumps with beam stone lips
Horse Gulch Meadow has room for another downhill flow experience. This trail will be a little more advanced than its sibling – the Meadow Beginner Downhill Trail. While it will still have berms and rollers, this trail will also have jumps and alternate lines. The open sight lines and optimal grade is prime for a progressive jump trail experience. Downhill trails are bike specific and ridden downhill only.

Build time: 10 weeks

Details:
- 1.0 miles
- 6-8’ wide downhill flow/jump trail
- Berms
- Rollers
- Jumps with beam stone lips
- Wood features
- Flyovers

MEADOW INTERMEDIATE DOWNHILL

CITY OF DURANGO
MEADOW-KNOB CONNECTOR

The Knob is the starting point for the Intermediate Trail and offers a beautiful view of the mesa and the city of Durango. Connecting the Knob to the Horse Gulch Trails and the other proposed trails is key to generating a cohesive trail experience. This trail is multi-use and dual direction, however, anyone on foot will have to descend down to the trails below that are multi-use as the intermediate trail at the top of the knob is specifically for bikes and downhill only.

Build time: 3 weeks

Details:
- 0.6 miles
- Dual direction singletrack trail

TELEGRAPH CONNECTOR

Telegraph is an iconic trail in Durango so it is only fitting to connect it to the mesa at its closest point — the switch back north and below Pautsky’s Point. The area is full of great trails and this connection enables more loops and trail routing options to and from the mesa.

Time to build: TBD. To be built by Durango Trails.

Details:
- 0.7 miles
- Multi-use dual direction singletrack trail
- To be built by Durango Trails
DEMONSTRATION PROJECT, PHASE ONE

Base Trail: A trail is developed with drainage, grade percentage and the end user in mind. Basic trail can be conceptualized and built well without stone armoring, retaining walls and enhanced drainage systems, but that comes at a future cost. Progressive Trail Design will build the best trail possible within budget while adhering to our philosophy of Design • Build • Ride to ensure the experience and final product is best-in-class. Base Trail is the foundation that can be ridden and will work well while Allowances are an educated guess as recommendations to build the best trail for durability and longevity.

Allowances: The best trail design and construction will utilize the natural shape of the terrain but through experience we have learned stone armoring, retaining walls, inside swales and properly spec’d culverts will transform a trail from good to great. This applies not only to the user but also to the land manager as it significantly enhances the durability and longevity of a trail resulting in more manageable maintenance scheduling & costs. Our goal is to build projects to last and meet the requirements of everyone involved. Allowances are a variable cost based on our experience – as recommendations they can be adjusted but Base Trail + Allowances will ensure a world class experience.

ESTIMATE DEMONSTRATION PROJECT, PHASE ONE

TRAIL MILEAGE TOTAL: ~6.8 MILES

Mobilization fee = 5% based on trails chosen to be built.

*Allowances are based on our recommendation for the best trail product. The base trail can be executed, these allowances ensure the best-in-class results are achieved.

**Additional expenses are based on trails chosen to be built.

<table>
<thead>
<tr>
<th>Trail Name</th>
<th>Base Trail</th>
<th>Allowances</th>
<th>Grand Total</th>
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<tr>
<td>Mesa Connector (2.1 mi)</td>
<td>$199,000.00</td>
<td>$64,000.00</td>
<td>$263,000.00</td>
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<td>Meadow Int. Downhill (1 mi)</td>
<td>$162,500.00</td>
<td>$54,800.00</td>
<td>$217,300.00</td>
</tr>
<tr>
<td>Meadow To Knob Connector (0.6 mi)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other / Additional Expenses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Horse Gulch Trailhead Plaza</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction Administration</td>
<td>$5,000.00</td>
<td></td>
<td></td>
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</tbody>
</table>

DEMOnSTRATION PROJECT, PHASE ONE GRAND TOTAL ........... $1,098,195.00
**Mission** (Why we exist)
“The City of Durango and our employees provide, efficient city services, effectively maintain city assets and manage growth, are accountable, ethical, fiscally responsible, and collaborate with regional partners to improve the quality of life for our entire community.”

**Vision** (What we want to be)
“Durango is an authentic, diverse, multigenerational, and thriving community. Our Residents value and enjoy our unique natural environment and benefit from the management of our City’s resources in a fiscally responsible, environmental, and socially sustainable manner.”

**Values** (What we believe in)
Teamwork | Dependability | Professionalism | Service | Respect | Innovation | Well-Being

○ This update on Durango Mesa Park is informational in nature to keep City Council apprised of project progress.
DURANGO MESA PARK PROJECT

**DURANGO MESA PARK**
FROM 2015 to TODAY

- **2015**: Ewing Mesa property purchased to give back to the community in a meaningful way.
- **2016**: County started Master Plan which was completed in 2017.
- **2017**: City Area Plan started & completed.
- **2018**: City Area Plan adopted.
- **2019**: Phase 1 Planning with City and County.
- **2020**: 2021 Bike Park Research & Tours.
- **2021**: City purchased Horse Gulch property for $1.5 million with funds directed for infrastructure.
- **2022**: Hired consultants for infrastructure, annexation and Bike Park Master Plan.
- **2023**: Trail project & Bike Park master plan, Annexation, Emergency Access road.
DURANGO MESA PARK PROJECT

DURANGO MESA PARK
PROJECT PROCESS

Conceptual Master Plan (Exhibit 2)

Base Map

Annexation and Concept Design Process
- Concept Design Phase
- Roadway
- Utilities
- Water
- Sewer
- Power

Annexation Public Process
- Prepare petition
- Annexation Survey
- Complete Submittal
- Planning Commission
- City Council
- Public Hearings
- Annexation Ordinance Readings
- Publish Annexation
- Annexation Finalized
Annexation Process

- **July 24th**: Planning Commission Public Hearing
- **August 1st**: Annexation Petitions Presented to City Council
  - Annexation Impact Report Final Draft
- **September 5th**: City Council Public Hearing
  - First Reading of Annexation Ordinance
- **September 19th**: Second Reading of Annexation Ordinance
- **September 24th**: Published
- **October 4th**: Effective Date
DURANGO MESA PARK PROJECT

ROAD DESIGN

UTILITIES DESIGN

OTHER INFRASTRUCTURE
DURANGO MESA PARK PROJECT

Trail Construction - Horse Gulch Trail System to Durango Mesa Park

- Progressive Trail Design
- AJ Construction
- Durango Trails
DURANGO MESA PARK PROJECT

Trail Construction

VIEW TO THE NORTH
Horse Gulch Trailhead

- Proposed Improvements
The Hub

- Proposed Improvements
Bike Park Design
DURANGO MESA PARK – FUTURE OPERATIONS AND NEXT STEPS

Staffing and Supplies
• 2023 Mid-Year Request, 2024 Budget and Beyond

MOU
• Land Conveyance, etc.

Second Funding Agreement
• Construction of Bike Park, etc.

Anticipated Opening - End of 2024
• Events, Programming, etc. into 2025
BACKGROUND SUMMARY:

This study session item is to provide an update to City Council regarding the MidTown Safety and Connectivity Improvement Design Project. This is a follow-up to the previous City Council discussion on May 16 regarding Animas River Trail connections into downtown. The scope area for this project is 15th, 14th, and 13th streets, East 2nd Avenue, and the Florida Road, 15th Street, and East 3rd Avenue intersection. The project includes improving sidewalk connections, improving ADA compliance and accessibility, improving intersections, improving a transit stop, creating a connection from the Animas River Trail to downtown, and redesigning the Florida Road, 15th Street, and East 3rd Avenue intersection.

The project is currently in the conceptual phase and was presented to the public at an open house on May 23 to receive feedback on the conceptual alternatives. Public outreach will continue during the summer of 2023, including an online survey and pop-up events. It is anticipated that design alternatives will be finalized at the end of the summer of 2023 and progressed to 60% engineering design plans in the fall of 2023.

STRATEGIC PLAN ALIGNMENT:

Effective Infrastructure Network 1.1: Improve safety and connectivity for all modes of transportation.

Effective Infrastructure Network 1.7: Advance community accessibility and walkability.

ALTERNATIVE OPTIONS CONSIDERED:

There are multiple alternative design options being considered with this project. Design alternatives include a mini-roundabout and continuous flow intersection (CFI) at the Florida Road, 15th Street, and East 3rd Avenue intersection. Other alternatives include various design options for East 2nd Avenue and 14th Street.

FISCAL IMPACT:

The design project was budgeted for $300,000 and contracted for $294,607. As of May 2023, $147,303.35 has been spent on the project, not including the traffic study conducted by CDOT.

POTENTIAL ADVERSE IMPACTS:

Design is being carefully coordinated to mitigate impacts to business and residential access and operations. Potential for construction impacts in the future; however, unknown at this time.

NEXT STEPS AND TIMELINE:

City staff will continue the design process and work with the consultant, the public, and stakeholders to finalize design options and progress the design plans to 60%.
September 2, 2022

RE: Draft Report
Midtown Traffic Operations Study
Durango, Colorado
ORGN – R5500-010
SAP PO# - 431007587
SAP O/L# - 321002192
SMART # - 20-HAA-XB-00058-ZD0017

Mr. Dave Peyton, PE
Region 5 Traffic & Safety Resident Engineer

Dear David,
Please find the following Midtown Traffic Operations Study addressing modifications to Camino Del Rio and 13th, 14th, and 15th Streets in Durango Colorado.

If you have any questions concerning the findings contained within this report, please do not hesitate to contact me.

Sincerely,

Steve Winters, PE (AZ, CO)
SHORT ELLIOTT HENDRICKSON
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Appendix B – Traffic Count Data
Appendix C – Trip Generation Data
Appendix D – Trip Distribution
Appendix E – Synchro Analysis- Existing Conditions
Appendix F – Synchro Analysis- Future Conditions
Appendix G – RODEL Reports
Appendix H – Delay and LOS Results Summary
1 Introduction

Short Elliott Hendrickson Inc. (SEH) is pleased to provide this traffic operations study for the Midtown area of Durango, Colorado.

The Durango Urban Renewal Authority (URA) is developing a Midtown Urban Renewal Plan and the City of Durango (City) has initiated this project to address safety, connectivity and accessibility concerns in the Midtown area. CDOT is also in the process on implementing their US 550 and Camino Del Rio Access Control Plan through this area of Durango, which will impact traffic operations on the CDOT and City facilities. Based on Colorado Department of Transportation (CDOT) discussions with the City, there is a shared interest in developing traffic operations analysis to determine impacts on City streets and CDOT’s US 550 facility.

The purpose of this project is to develop intersection and roadway alternatives to address traffic concerns and to compare traffic performance between the existing conditions and future year conditions of each study intersection. This analysis examines existing and long-term (Year 2041) traffic conditions. Typical weekday peak periods of operation were analyzed for site-specific impacts.

2 Existing Conditions

The study area is bounded by 15th Street and Florida Road in the North, 13th Street in the South, Main Avenue (US 550) in the West, and 3rd Avenue in the East, as shown in Figure 1. The study area holds eight roadways, as shown in Table 1.

Table 1: Roadways within the Study Area

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Functional Class</th>
<th>Median Separation</th>
<th># Lanes</th>
<th>Speed Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>US 550 (Camino Del Rio/Main Ave)</td>
<td>Principal Arterial</td>
<td>Divided</td>
<td>4</td>
<td>35</td>
</tr>
<tr>
<td>3rd Avenue</td>
<td>Minor Arterial</td>
<td>Divided</td>
<td>4</td>
<td>25</td>
</tr>
<tr>
<td>Main Avenue (South of E 14th St)</td>
<td>Minor Arterial</td>
<td>Undivided</td>
<td>4</td>
<td>25</td>
</tr>
<tr>
<td>Florida Road</td>
<td>Minor Arterial</td>
<td>Undivided</td>
<td>2</td>
<td>25</td>
</tr>
<tr>
<td>2nd Avenue</td>
<td>Local</td>
<td>Undivided</td>
<td>2</td>
<td>25</td>
</tr>
<tr>
<td>13th Street</td>
<td>Local</td>
<td>Undivided</td>
<td>2</td>
<td>25</td>
</tr>
<tr>
<td>14th Street</td>
<td>Local</td>
<td>Undivided</td>
<td>2</td>
<td>25</td>
</tr>
<tr>
<td>15th Street</td>
<td>Local</td>
<td>Undivided</td>
<td>2</td>
<td>25</td>
</tr>
</tbody>
</table>
US 550 (Camino Del Rio/ Main Avenue) is a CDOT’s divided four-lane Non-Rural Arterial (NR-C) with a posted speed of 35 mph. The remaining roadways have a speed limit of 25 mph. US 550 and 3rd Avenue are divided, while other streets do not have a median separation. Main Avenue south of 14th Street and 3rd Avenue are four-lane minor arterials. Florida Road is also a minor arterial, but with two lanes. The Second Avenue, 13th, 14th, and 15th Street are two-lane local streets.

Figure 1: Study Area

The following six intersections were analyzed, as shown in Figure 2:

1. Main Avenue & 15th Street (STOP at 15th Street)
2. 2nd Avenue & 15th Street (two-way STOP at 2nd Avenue)
3. 3rd Avenue & 15th Street/ Florida Road (STOP for left /YIELD for right at 3rd Avenue)
4. Main Avenue & Camino Del Rio/14th Street (actuated traffic signal)
5. 2nd Avenue & 14th Street (two-way STOP at 2nd Avenue)
6. Main Avenue & 13th Street (STOP at 13th Street)
The Durango & Silverton Narrow Gauge Railroad bisects the Midtown study area running four to six trains daily to/from Durango, except for two-week stoppage in November. Queues formed due to train crossing need approximately three cycles to clear. Note: Train trips were not modeled as a part of this analysis.

Figure 2: Analyzed Intersections
3 Methodology

The methodology flowchart is presented in Figure 3.

**Existing Conditions (Year 2021)**

Existing data used were land use, roadway geometry, posted speed limits, traffic control and signal timing, and turning movement counts. Turning movement counts were collected on Thursday, May 27th, 2021, at 2nd Avenue intersections with 14th and 15th Streets. The remaining four intersection traffic counts were gathered on Friday, September 3rd, 2021. Traffic count data are shown in Appendix A. Balanced traffic counts are used to identify the morning and afternoon peak hours, that are used as a Baseline.

**Future Conditions (Year 2041)**

The future peak traffic demand was calculated as a 20-year projected Baseline demand. Through movements at US 550 are expected to increase by 16% by 2041 (growth factor = 1.16), per CDOT’s Online Transportation Information System (OTIS). SEH also reviewed the TRIP 2030 and TRIP 2040 Studies to determine if the OTIS data was the most accurate information and nothing in the TRIP documents identified more accurate or different growth factors. The local future traffic is estimated from URA proposed land use

Figure 3: Methodology Flowchart
changes and expected traffic generation, as calculated using the Institute of Transportation Engineers (ITE) Trip Generation Manual\(^1\). Due to the economic incentives that will be present in the City’s URA, the local traffic is anticipated to grow by 80% (growth factor = 1.80) within 20 years, or roughly 3% per year. Trip generation data are presented in Appendix B.

**Scenarios Analyzed**

In addition to the baseline/ no action, Scenario 0, another 11 traffic design scenarios were analyzed, as specified by stakeholders, CDOT and the City. The scenarios are graphically presented in Appendix C, and are defined as follows:

1. **Removal of the southbound left (SBL) turn at Main Avenue & Camino Del Rio/ 14\(^{th}\) Street intersection**- The traffic using the SBL at US 550 to turn into 14\(^{th}\) Street is diverted to SBL at either 13\(^{th}\) or 15\(^{th}\) Street. So, this scenario was tested for sensitivity to two extreme traffic splits:
   1-1. 80% of 14\(^{th}\) SBL traffic is using SBL at 13\(^{th}\) Street, while 20% is using SBL at 15\(^{th}\) Street.
   1-2. 80% of 14\(^{th}\) SBL traffic is using SBL at 15\(^{th}\) Street, while 20% is using SBL at 13\(^{th}\) Street.

Removal of SBL at 14\(^{th}\) Street was used in the remaining scenarios, excluding Scenarios 4 and 5. Also, the more conservative and more probable, first variation traffic split was applied throughout.

2. **Right In/Right Out** - The 14\(^{th}\) Street can be accessed only from Main Street by making a right turn and the only possible maneuver from 14\(^{th}\) Street is right.

3. **14\(^{th}\) Street converted to a one-way westbound street between 3\(^{rd}\) Avenue and Main Avenue/US 550.**

4. The west leg of 14\(^{th}\) Street realigned as two lanes, shared and right, and is included in the intersection signal control.

5. **3\(^{rd}\) Avenue & 15\(^{th}\) Street intersection redesigned:**
   5-1. So that Northbound left (NBL) turns are removed.
   5-2. Into a continuous flow intersection (CFI).
   5-3. Into a mini roundabout. Two growth factors are tested: 1.80 (matching the local traffic growth), and 1.16 (US 550 traffic growth).

6. **2\(^{nd}\) Avenue converted to a one-way southbound street between 13\(^{th}\) Street and 15\(^{th}\) Street combined with Scenario 1.**

7. **2\(^{nd}\) Avenue converted to one-way southbound street between 13\(^{th}\) Street and 15\(^{th}\) Street combined with Scenario 2.**

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\(^1\) Trip Generation. Institute of Transportation Engineers. 10\(^{th}\) Edition. 2020.
8. 2nd Avenue converted to one-way southbound street between 13th Street and 15th Street combined with Scenario 3.

9. 2nd Avenue converted to a one-way street: southbound between 15th Street and 14th Street and northbound between 13th Street and 14th Street, combined with Scenario 1.

10. 2nd Avenue converted to a one-way street: southbound between 15th Street and 14th Street and northbound between 13th Street and 14th Street, combined with Scenario 2.

11. 2nd Avenue converted to a one-way street: southbound between 15th Street and 14th Street and northbound between 13th Street and 14th Street, combined with Scenario 3.

So, the total of 15 variations were analyzed, as summarized in Table 2.

Table 2: List of Analyzed Scenarios

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<tr>
<th>Scenario #</th>
<th>Variation</th>
<th>Description</th>
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<tr>
<td>0</td>
<td></td>
<td>Baseline/ No Action</td>
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<tr>
<td>1</td>
<td>1-1</td>
<td>14th NO SBL- 80% Split 13th St</td>
</tr>
<tr>
<td></td>
<td>1-2</td>
<td>14th NO SBL- 80% Split 15th St</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>14th RIRO</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>14th ONE-WAY WB</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>14th REALIGNEd</td>
</tr>
<tr>
<td>5</td>
<td>5-1</td>
<td>3rd NO NBL</td>
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<tr>
<td></td>
<td>5-2</td>
<td>3rd/15th CFI</td>
</tr>
<tr>
<td></td>
<td>5-3</td>
<td>3rd/15th ROUNDABOUT</td>
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<tr>
<td>6</td>
<td></td>
<td>14th NO SBL + 2nd ONE-WAY SB</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>14th RIRO + 2nd ONE-WAY SB</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>14th ONE-WAY WB + 2nd ONE-WAY SB</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>14th NO SBL + 2nd ONE-WAY NB+SB</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>14th RIRO + 2nd ONE-WAY NB+SB</td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>14th ONE WAY WB + 2nd ONE-WAY NB+SB</td>
</tr>
</tbody>
</table>

Traffic Distribution

Changing intersection design by removing lanes or prohibiting maneuvers changes how traffic demand gets satisfied. Most of this traffic gets redistributed to the most logical and convenient alternative. So, each of the analyzed scenarios was assigned a new set of
intersection turning movement flows. The total traffic demand and the existing intersection turning ratios at approach legs were maintained. Traffic flow distribution for each scenario is presented in Appendix D, with marked added (green) and diverted (red) flows.

**Traffic simulation**

Two analysis software were used to simulate the existing and future traffic conditions: RODEL and Synchro 11, both using Highway Capacity Manual\(^2\) methodology. RODEL modeled a roundabout in Scenario 5-3, while Synchro simulated all other intersection layouts.

Once the existing inputs and behavior were coded into the simulation software, the animation was used to visually check the reasonability of the microsimulation. The software parameters were then calibrated to faithfully mimic the field conditions.

The software setup was then replicated to other scenarios, with altered traffic demands. Each of the 15 alternatives was simulated four times: existing morning (AM) and afternoon (PM) peak demand, and future AM and PM peak demand. Therefore, simulation was run 60 times.

**Software Output Analysis**

Simulation software output supplied intersection turning movement and overall approach delays (in seconds per vehicle), and the corresponding levels of service (LOS). LOS is a measure that describes intersection operations, ranging from A (very good, free flow conditions) to F (poor, congested conditions). Typically, LOS C or better is desired.

### 4 Results & Discussion

The Synchro 11 outputs showing intersection delays and matching levels of service (LOS) are shown in Appendices E for existing conditions and F for future (Year 2041) conditions. Appendix G provides RODEL output with LOS results for the mini roundabout at 15th St/3rd Ave/Florida Rd. Appendix H summarizes all three.

**Scenario 0 (Baseline/ No Action)** - Currently, 3rd Ave & 15th St/Florida Rd and Main Ave & Camino Del Rio/14th Street both operate at LOS F with over 90 seconds of delay per vehicle in the PM peak hour, while the other four intersections are satisfactory. However, in 2041, delay at 3rd Ave & 15th St will reach over 20-minute delay per vehicle in the morning peak (LOS F), and over an hour per vehicle in the afternoon (LOS F). Main Ave & Camino Del Rio/14th St intersection will also operate at LOS F in both AM and PM peaks. The congestion is expected to spread North, to Main Ave & 15th (LOS F) and 2nd St & 15th St (PM- LOS D). 2nd Ave & 14th St and Main Ave & 13th are expected to operate with no delays even in 20 years.

**Scenario 1 (14th NO SBL)** - SBL removal at Main Ave & Camino Del Rio/14th St is expected to force vehicles to take alternative SBL- either at 13th St or at 15th St. Although expected that vehicles traversing through the midtown before turning left will cause longer wait times, it is the opposite. In fact, vehicles taking SBL at 15th Street will additionally load the already congested 3rd Ave & 15th St, delaying vehicles over an hour on average.

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Still, preventing vehicles from turning left at 14th St has a slight positive effect, as delay at Main Ave & Camino Del Rio/14th St drops by 30-100%, but remains too long (LOS F).

**Scenario 2 (14th RIRO)** - Only right-in and right-out turns allowed into and from 14th St almost solve Main Ave & Camino Del Rio/14th St’s poor operations. Existing and AM future traffic undergo very good conditions (LOS B and C), while PM future traffic would have almost a minute long average delays and LOS D. Still, 3rd Ave & 15th St are again impacted through doubled delays and hours of waiting. Moreover, Main Ave & 15th St are impacted through long delays at 2041 PM peak, lasting for around 2 minutes per vehicle. Also, vehicles waiting at 13th St to turn left to Main Ave wait 5 minutes on average in the future PM peak.

**Scenario 3 (14th ONE-WAY WB)** - Converting 14th St to a one-way street has a negligible positive effect. Future AM LOS would be D instead of F if no action were taken. Still, future PM LOS remains F, even with halved delays (Scenario 0: 216 seconds; Scenario 3: 104 seconds). All the remaining intersection maneuvers are still substandard.

**Scenario 4 (14th REALIGNED)** - Adding the 5th intersection leg takes a valuable green time from other four movements, further growing the delays, tripling them in AM and doubling in PM peak.

**Scenario 5-1 (3rd NO NBL)** - The removal of Northbound left (NBL) at 3rd and 15th/Florida Rd intersection betters the “No Action” F performance. Forbidding NBL improves operations to LOS B in the morning, and although 40 times lower delays, overall PM delays remain at LOS F.

**Scenario 5-2 (3rd/15th CFI)** - Continuous flow intersection performs similarly to Scenario 5-1, with the difference that the queued traffic is moved further to the South with CFI.

**Scenario 5-3 (3rd/15th ROUNDABOUT)** - The mini roundabout with the inscribed diameter of 80 ft at 3rd and 15th/Florida Rd operates at LOS A under existing peak demands. The mini roundabout operates at LOS F if the future demand grows by 80%, as the local traffic. However, if growth is 16% (as US 550), future LOS is B.

**Scenario 6 (14th NO SBL + 2nd ONE-WAY SB)** – Simultaneously forbidding SBL at Main Ave & Camino Del Rio/14th St and converting 2nd Ave to a one-way street causes traffic that normally uses 2nd Ave to go North, and turns left onto 14th St, to use alternative routes. NB traffic on 2nd Ave is low, and this traffic diverts away from 14th St if it turns into a one-way, SB only, street. Still, this has a positive impact to EB and NB (delay decrease by 10-15 seconds when comparing Scenarios 1 and 6) at Main Ave & Camino Del Rio/14th St. Traffic operations South of 13th Street are out of scope of this report but increase in traffic is expected there.

**Scenario 7 (14th RIRO + 2nd ONE-WAY SB)** – Converting 2nd Ave to SB negatively affects the promising Scenario 2. Even more traffic would wait to turn westbound left at Main Ave/15th Street, as 2nd St can no longer take them to their destination. So, vehicles are forced to use Main St, delayed for over 40 minutes. The newly allocated traffic worsens Main Ave & Camino Del Rio/14th St intersection operations. The existing LOS B becomes D in the morning and E in the afternoon. Future operations switch in the AM from C to F and in the PM from D to E.
Scenario 8 (14th ONE-WAY WB + 2nd ONE-WAY SB) – Adapting both 14th St and 2nd Ave to one-way streets worsens the performance of Main Ave & Camino Del Rio/14th St, due to added traffic from South. This scenario keeps operations at LOS F but doubles the delays.

Scenario 9 (14th NO SBL + 2nd ONE-WAY NB + SB) – Conversion of 2nd St to a one-way street in NB direction from 13th towards 14th, and SB direction from 15th to 14th allows the traffic demand to access 14th St but eliminates options to exit the bottleneck at Main Ave & Camino Del Rio/14th St. This inevitably further diminishes traffic operations at this intersection, so the LOS remains F.

Scenario 10 (14th RIRO + 2nd ONE-WAY NB + SB) – Adapting Scenario 7 and adding NB segment to 2nd St allows vehicles to enter the midtown zone from other directions besides from North. Consequently, traffic is more evenly disbursed across the network and Main Ave & Camino Del Rio/14th St intersection performance is mended. Also, Main Ave & 15th St intersections have less delays in the future AM (LOS B), than they would with 2nd Ave being only in SB direction (LOS F). On the other hand, future PM operations are worse than in Scenario 7 - doubled delays, LOS still F. Most of the vehicles look to exit the midtown zone, blocking the study area’s border intersections.

Scenario 11 (14th ONE-WAY WB + 2nd ONE-WAY NB + SB) – Similarly to Scenario 10, splitting 2nd Ave one-way directions prolongs delays at all Main Ave intersections. However, the most noticeable operations corruption is for WBL maneuver at Main Ave & 13th St, as heavier traffic causes less gaps in flow for vehicles to take advantage of and turn left to Main Ave from 13th St.

5 Conclusion & Recommendations

The existing and predicted (2041) Durango midtown traffic operations have been analyzed with Synchro 11 and RODEL simulation software. Another 11 design scenarios, including sensitivity analysis and 3rd Ave and 15th/Florida Rd intersection alternative designs were evaluated. The main findings are as follows:

- Camino Del Rio/Main Ave/14th St and 3rd Ave and 15th St/Florida Rd intersections already perform poorly. However, 2041 traffic demand will produce LOS F at both morning and evening peaks, at both intersections. Delay at 3rd Ave/15th St/Florida Rd will reach an hour per vehicle.

- The remaining intersections will have 80% more traffic demand in 2041 than now. The added traffic will mostly spill northbound of the study area, so SBL and WBR at Main Ave & 15th St intersection, and NB movement at 3rd Ave & 15th Street will have delays with LOS F. In addition, a vehicle waiting at a STOP at 13th St to enter Main Ave will wait up to 45 seconds (LOS E).

- Removal of SBL maneuver reduces delays at Camino Del Rio/Main Ave/14th St. Sensitivity analysis of the SBL removal showed that 3rd Ave & 15th St intersection would suffer most with added traffic demand.
The best effect of SBL removal at Camino Del Rio/Main Ave/14th St is when combined with RI/RO only operations. In this way, 2041 delay improves to LOS C in a morning peak and LOS D in the afternoon peak. However, WBL maneuver at Main Ave/13th will be delayed up to 5 minutes per vehicle in a future PM peak.

Converting 14th Street to a one-way WB street deteriorates Camino Del Rio/Main Ave/14th St intersection operations, due to the reduced outflow capacity.

The realigned 5th intersection leg at Camino Del Rio/Main Ave/14th St increases delays, by lowering the intersection capacity for all approaches.

Both removal of NBL and continuous flow intersection at 3rd Ave & 15th St improve operations, but insufficiently.

The mini roundabout improves peak operations to LOS B in 2041, if traffic demand growth matches US 550 growth.

2nd St functioning as a one-way southbound street increases delays at both Camino Del Rio/Main Ave/14th St and its neighboring intersection Main Ave & 15th St (LOS E or F). It is even worse if 2nd St gets split into NB and SB one-way segments separated by 14th Street.

Transforming the 14th Street approach to US 550 to Right-In/ Right-Out and removing the existing SBL (Scenario 2) would have the most positive effect for Main Ave & Camino Del Rio/14th St intersection operations, with a limited negative impact to Main Ave & 15th Street intersection. However, SEH recommends that the 14th Street approach to US 550 be converted to Right-In/ Right-Out and the existing SBL be removed. In addition E 2nd Ave be converted to one-way SB to accommodate the two-way cycle track (Scenario 7). The one-way SB conversion of E 2nd will come with a reduction in LOS on adjacent intersections vs. Scenario 2.

Also, the proposed mini roundabout at 3rd Ave/15th St/ Florida Rd potentially improves service at all directions in 2041. The sufficient inscribed diameter is 80 feet, keeping Right of Way acquisition and construction costs relatively low. With the proposed two redesigns, both current traffic bottlenecks could be eradicated for the next 20 years. The City will need to be cognizant of the grade of 15th Street (eastbound) as it enters the RAB, which is steep and should be mitigated as best as possible.

The proposed mini roundabout might decrease approach turn and broadside crashes at the intersection as well as severity of other crashes. However, vulnerable groups should be additionally protected with high visibility crossings or shared pedestrian/bicycle paths near the roundabout.

Bike lanes along 2nd Ave will help multimodality, sustainability and midtown economic development and aesthetics.
On the north side of 15th Street, the proposed design consists of a 6-ft sidewalk along the ROW and a 6-ft cross pan along the existing edge of road to divert flows away from the auto shop. There is a transition zone of asphalt between the cross pan and sidewalk to help with drainage and maintain vehicle access to the auto shop.

On the south side of 15th Street, the proposed design calls for widening the existing sidewalk along the right-of-way to 6-ft and will extend from Main Street, east to the alley with the addition of new curb and gutter. Existing parking spaces to the west of the building entrance are to be removed and replaced by a strip of landscaping, while the current parking spaces to the east of the building entrance will remain.

Moving eastward through the alley, a new crosswalk will connect with another proposed section of sidewalk, curb and gutter that will extend to 2nd Avenue. This section of sidewalk will have a driveway cut to maintain access to business parking and dumpster. The 15th Street roadway is to maintain existing striping patterns.
Alternative 1: On the south side of 15th Street, the proposed design consists of new curb and gutter, sidewalk, and curb ramps at all intersections and drive crossings. To the east of 2nd Avenue, a strip of landscaping will act as a buffer between the sidewalk and 15th Street.

2nd Avenue is proposed to be a one-way street southbound. The west side of 2nd Avenue features a two-way cycle track (10 ft) separated from the roadway by a curb and gutter median. The east side of 2nd Avenue features new curb and gutter, sidewalk, and five angled parking spaces.

Alternative 2: On the south side of 15th Street, the proposed design consists of new curb and gutter, sidewalk, and curb ramps at all intersections and drive crossings. To the east of 2nd Avenue, there is no landscaping strip (as seen in Alt 1), and instead, the design maintains access to the business with a drive cut in the sidewalk.

2nd Avenue is proposed to be a one-way street southbound. The west side of 2nd Avenue features a diminished landscape strip along new curb and gutter, a two-way cycle track (10 ft) separated from the roadway by a curb and gutter median with new parallel parking spaces along the east edge of the median. The east side of 2nd Avenue features a small stretch new curb and gutter with sidewalk and maintains the south access to the business on the corner.
Alternative 1: It is proposed that 14th Street become a one-way street westbound with bike lanes in both directions and parallel parking on the south side of the street.

Alternative 2: It is proposed that 14th Street remains a two-way street, with existing bike lanes and parallel parking.
Alternative 1: All four corners of the intersection feature proposed curb and gutter bulb out improvements with new sidewalk extensions and curb ramps. To the north and south of the intersection, the west side of 2nd Avenue features a two-way cycle track (10 ft) separated from the roadway by a curb and gutter median. The east side of 2nd Avenue, north of the intersection, features new curb and gutter along with eight angled parking spaces up against the existing sidewalk. The east side of 2nd Avenue, south of the intersection, maintains existing parallel parking past the proposed curb and gutter bulb out improvements.

West of the intersection, it is proposed that 14th Street become a one-way street westbound with bike lanes in both directions and parallel parking on the south side of the street. While to the east of the intersection, 14th Street remains a two-street with existing bike lanes and parallel parking but adds new sidewalk along the southeast.

Alternative 2: All four corners of the intersection feature proposed curb and gutter bulb out improvements with new sidewalk extensions and curb ramps. To the north of the intersection, the west side of 2nd Avenue features a diminished landscape strip along new curb and gutter, a two-way cycle track (10 ft) separated from the roadway by a curb and gutter median with new parallel parking spaces along the east edge of the median. The east side of 2nd Avenue features a drive access and four angled parking spaces. South of the intersection, 2nd Avenue features the same proposed improvements as in Alt 1.

To the east and west of the intersection, it is proposed that 14th Street remains a two-street with existing bike lanes and parallel parking but adds new sidewalk to the southeast of the intersection.
At the corner of 13th Street and Main Street, the proposed design features new detectable warning plates for the crosswalks. To the east of the intersection, both the north and south sides of 13th Street have proposed sidewalk improvements. Roadway striping and parking will match the existing configuration.
Alternative 1: Both the northwest and southwest corners of the intersection feature proposed curb and gutter bulb out improvements with new curb ramps. Additionally, sidewalk improvements are proposed on both sides of 13th Street extending west. As part of the sidewalk improvements along the north side of 13th Street an existing staircase is to be redesigned north of the sidewalk to maintain access to those residences.

To the north of the intersection, along the west side of 2nd Avenue, the proposed two-way cycle track transitions up into the existing sidewalk, which will be widened to 10 ft. Three, existing parallel parking spaces will remain and drive access to the corner building will be maintained with a section of rollover curb and gutter.

Alternative 2: All of the same improvements described in Alt 1 are also proposed in Alt 2, with the exception of the west side of 2nd Avenue to the north of the intersection. Instead of the two-way cycle track transitioning up into the existing sidewalk, it will transition into the roadway just before reaching 2nd Avenue. Thus, there are no remaining parallel parking spots, but drive access to the building on the corner will again be maintained with a section of rollover curb and gutter.

To keep effective stormwater drainage with this alternative, the design proposes a concrete cross pan (seen outlined with white lines) to convey water north and then west across the cycle track to a new storm inlet.
The continuous flow intersection (CFI) facilitates concurrent traffic movements to reduce congestion and increase safety. The primary conflict with the existing intersection at 3rd Ave. and 15th St./Florida Rd., results from drivers needing to cross continual through traffic when making a Northbound left (NBL) from 3rd Ave. or a Southbound left (SBL) unto 3rd Ave., with the SBL also having the right-of-way over the NBL. The CFI minimizes this conflict by synchronizing these left turns with traffic signals, while revised lane configurations allow the opposing traffic to cross outside of the intersection on 3rd Ave.
The mini, single-lane roundabout eliminates the need for all existing left turn and right turn lanes. Continuous traffic flow is promoted with standard roundabout yield procedures. Additionally, more direct pedestrian crossings are provided on all three sides of the roundabout just outside of where vehicles are to yield. Access to private lots (with ability to turn around) prior to RAB will be maintained.
BACKGROUND SUMMARY:
This study session item is a follow up to the Council Budget Retreat. Staff will present a recommendation based on Council’s direction to develop a funding plan for the Transportation Services Fund that avoids transit service reductions by 2027.

STRATEGIC PLAN ALIGNMENT:
Effective Infrastructure Network 1.3: Develop a sustainable funding strategy for expanded transit operations

ALTERNATIVE OPTIONS CONSIDERED:
Over the past several years, the following funding alternatives have been considered:
- Additional grant revenue
- Parking fine increase
- Farebox increase
- Additional fees (ex: linkage and impact fees, unoccupied building fee, flush tax, unimproved lot fee)
- 2005 Sales Tax Reauthorization
- Lodgers’ Tax increase

FISCAL IMPACT:
There are no fiscal impacts at this time.

POTENTIAL ADVERSE IMPACTS:
If additional revenue is not identified for transit operations (approximately $2.5 million annually), transit service reductions will be necessary before 2027.

NEXT STEPS AND TIMELINE:
Next steps are contingent on Council’s direction.