East Grand Avenue
Complete Streets
Pilot Project

Council Work Session
August 6, 2018

Project Milestones
*Bridge closed September 19, 2016*
*Pilot project opened September 1, 2017*
*Bridge reopened November 20, 2017*

Jeff Wiggins, AICP
Active Transportation Planner
Project Genesis

THE TOMORROW PLAN
Partnering For a Greener Greater Des Moines

GUIDE DSM
STRATEGIC PLAN 2016-2031

PLAN DSM
CREATING OUR TOMORROW

MOVE DSM
TRANSPORTATION FOR EVERYONE

CONNECT DOWNTOWN

LIVE DSM
PARKS AND RECREATION COMPREHENSIVE PLAN

CITY OF DES MOINES

East Grand Avenue Pilot Project

GREATER DES MOINES PARTNERSHIP

Urban Land Institute Iowa
Location Map – 7 blocks of E. Grand Ave.
Before Conditions

- Established Business District
- Also Trying to “Reinvent Itself”
- Traffic Conditions
  - 56’ wide roadway
  - Parking on both sides
  - Important bus route
  - Important commuter route
  - 8,200 vehicles per day
Project Elements & Goals

Safety Improvement
- Reduce crashes & injuries
- Slow vehicle speeds, eliminate passing
- Shorten pedestrian crossing distance
- Create protected bike lanes
- Improve transit operations
- Incorporate complete streets elements
- Preserve parking options
**Engagement & Education**

**Working Relationships**
- Historic East Village Neighborhood Association
- DM Public Works & Fire Departments
- DART
- Des Moines MPO
- Business Engagement on Corridor

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**E Grand Avenue Complete Street Concepts**

**Pedestrians**
- Crosswalk: At intersections, use the wide crosswalks like usual.
- Sidewalk: No change, keep enjoying the East Village Shops!

**Transit Users**
- Raised Concrete Bus Stop: UDAF riders can wait for the bus on safe bus stops next to the new travel lanes where the buses will maintain their regular stops.

**Bicyclists**
- Protected Bike Lane: The areas marked in green are potential conflict areas.
- Bike Lane Crossing: Watch for turning vehicles.
- Two-stage Bike Box: 1. Travel through the intersection in the street; 2. Wait in the green box until the side street gets a green light.
- Yield to Pedestrians: Always yield to pedestrians when their paths cross.

**Drivers**
- Travel Lane: Lanes for drivers are pretty normal by the bike lane, so be sure to watch out for others trying to park and pedestrians when crossing areas marked in green.
- Parking Stall: Parallel parking is now out away from the curb. Use the white T and red lines to help line yourself up in the parking spot.
- Parking Meter: Don’t forget to plug the meter! You will need to cross the bike lane to the sidewalk to get to your meter.
30,000 Foot View (50’ drone view)
Project Costs

Pilot Cost = $205,000
  • Existing Marking Removal / Fog Seal
  • Regular Traffic Paint & Delineators
  • Minor concrete changes (Curb Ramps / Islands)
  • Parking Meter Additions / Relocation (by City)
  • No Landscaping

Pilot Project Maintenance Costs
  • Annual Paint & Delineators by contractor = $22,000
Performance Metrics

- Parking Operations
- Injury Crashes & Crash Severity
- Traffic Volume
- Vehicular Speed & Travel Time
- Public Works Operations
- Emergency Response Time
- Public Input

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Parking Operations

E. Grand Before & After Data

May-2016 | May-2018 | Block
--- | --- | ---
$841.50 | $1,838.70 | E. 2nd-E. 4th
$708.10 | $666.83 | E. 4th-E. 5th
$1,272.94 | $1,385.68 | E. 5th-E. 6th
$0 | $470.10 | E. 6th-E. 7th

Add Remove
River-E. 1st 0 2
E. 1st-E. 2nd 20 4
E. 2nd-E. 4th 0 11
E. 4th-E. 5th 0 11
E. 5th-E. 6th 0 5
E. 6th-E. 7th 6 4
E. 6th St. 4 0
Penn Ave 11 0

Total: 41 37
Crash History
2008-2018

Safety Analysis, Visualization, and Evaluation Resource (SAVER) Quick Report
2008-2018

Manner of Crash Collision

<table>
<thead>
<tr>
<th>Manner of Crash Collision</th>
<th>215</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-collision (single vehicle)</td>
<td>22</td>
</tr>
<tr>
<td>Head-on (front to front)</td>
<td>6</td>
</tr>
<tr>
<td>Rear-end (front to rear)</td>
<td>46</td>
</tr>
<tr>
<td>Angle, oncoming left turn</td>
<td>19</td>
</tr>
<tr>
<td>Broadside (front to side)</td>
<td>64</td>
</tr>
<tr>
<td>* Sideswipe, same direction</td>
<td>45</td>
</tr>
<tr>
<td>Sideswipe, opposite direction</td>
<td>2</td>
</tr>
<tr>
<td>Rear to rear</td>
<td>0</td>
</tr>
<tr>
<td>Rear to side</td>
<td>1</td>
</tr>
<tr>
<td>Not reported</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
</tr>
<tr>
<td>Unknown</td>
<td>3</td>
</tr>
</tbody>
</table>

* Correctable crash types
Crash Data

<table>
<thead>
<tr>
<th></th>
<th>Before</th>
<th>After</th>
<th>Change in Crash Rate*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crashes</td>
<td>183</td>
<td>17</td>
<td>-2%</td>
</tr>
<tr>
<td>Injury Crashes**</td>
<td>25</td>
<td>1</td>
<td>-58%</td>
</tr>
</tbody>
</table>

*Crashes per Million VMT

**No fatalities. Includes major & minor injuries.

<table>
<thead>
<tr>
<th></th>
<th>major injury</th>
<th>minor injury</th>
<th>injury%</th>
</tr>
</thead>
<tbody>
<tr>
<td>all crashes</td>
<td>215</td>
<td>8</td>
<td>13%</td>
</tr>
<tr>
<td>vehicle</td>
<td>195</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>bike</td>
<td>8</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>ped</td>
<td>12</td>
<td>2</td>
<td>6</td>
</tr>
</tbody>
</table>

Former crossing conditions at E. 5th
Speed & Travel Time

<table>
<thead>
<tr>
<th>PERIOD</th>
<th>TIME Δ (min: sec)</th>
<th>SPEED Δ (MPH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Westbound AM Rush Hour</td>
<td>+0:25</td>
<td>-4.2</td>
</tr>
<tr>
<td>Mid Day</td>
<td>+0:06</td>
<td>-1.5</td>
</tr>
<tr>
<td>PM Rush Hour</td>
<td>+0:57</td>
<td>-7.0</td>
</tr>
<tr>
<td>Off Hour</td>
<td>+0:12</td>
<td>-3.8</td>
</tr>
<tr>
<td>Eastbound AM Rush Hour</td>
<td>-0:20</td>
<td>+3.1</td>
</tr>
<tr>
<td>Mid Day</td>
<td>+0:25</td>
<td>-4.8</td>
</tr>
<tr>
<td>PM Rush Hour</td>
<td>+0:02</td>
<td>-0.1</td>
</tr>
<tr>
<td>Off Hour</td>
<td>+0:38</td>
<td>-7.0</td>
</tr>
</tbody>
</table>

Why speed matters

Hit by a vehicle traveling at 20 MPH: 9 out of 10 pedestrians survive.

Hit by a vehicle traveling at 30 MPH: 5 out of 10 pedestrians survive.

Hit by a vehicle traveling at 40 MPH: only 1 out of 10 pedestrians survives.
**Maintenance**

<table>
<thead>
<tr>
<th>Service</th>
<th>Cost</th>
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</thead>
<tbody>
<tr>
<td>Plowing (7x)</td>
<td>$1,125</td>
</tr>
<tr>
<td>Stockpile Removal (1x)</td>
<td>$15,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$16,125</strong></td>
</tr>
</tbody>
</table>

*E. Grand Ave. is ~2,300 per side (x2 = 4,600’) of protected bike lanes, 1 mile for estimating.*
Emergency Response

The traffic pattern changes appear to have reduced travel times and the number of vehicle crashes that require a fire department response.

Examine lane width and building access in greater detail in final design.

**BEFORE – 9/1/15-9/19/16**
- Response Count: 174
- 90th Percentile Time: 6:21
- Crashes w/ injuries: 10

**AFTER – 10/21/17-7/2/18**
- Response Count: 120
- 90th Percentile Time: 5:54
- Crashes w/ injuries: 1
What We Heard – WikiMap Comments

# ISSUE
18 Travel lanes are too narrow. Vehicles frequently cross double yellow.
17 This is a waste of money. No one uses it.
16 Opening a door into traffic is dangerous. Loading/unloading children & packages is difficult.
12 Snow storage will be problematic
12 Intersection radii are too tight (especially @ E. 6th)
12 Deliveries are very challenging (narrow parking, can't use side ramp).
11 Parking is too narrow. Vehicles encroach on roadway, risk being struck.
10 Bikes are still using the sidewalk, travel lanes, and riding the wrong way. Bikes need to follow rules.
10 The bike lane is too wide. Narrow it or buffer to provide more space for parking and travel lanes.
9 There will be a learning curve for all users
9 I'll shop elsewhere
9 Making E. Grand a testing ground discourages shopping & retail investment.
8 There's too much traffic here. I'll avoid it as a pass-through route.
8 There's not enough parking.
8 Delineators are aesthetically unpleasant, visual clutter, make pedestrians harder to see.

E. Grand Before & After Data

<table>
<thead>
<tr>
<th>#Comment Month</th>
<th>Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>190</td>
<td>September 2017</td>
</tr>
<tr>
<td>13</td>
<td>October 2017</td>
</tr>
<tr>
<td>2</td>
<td>November 2017</td>
</tr>
<tr>
<td>3</td>
<td>December 2017</td>
</tr>
<tr>
<td>9</td>
<td>January 2018</td>
</tr>
<tr>
<td>1</td>
<td>February 2018</td>
</tr>
<tr>
<td>12</td>
<td>March 2018</td>
</tr>
<tr>
<td>0</td>
<td>April 2018</td>
</tr>
<tr>
<td>0</td>
<td>May 2018</td>
</tr>
<tr>
<td>0</td>
<td>June 2018</td>
</tr>
<tr>
<td>230</td>
<td></td>
</tr>
</tbody>
</table>

| emails addresses | 14 |
| Line comments    | 14 |
| Point Comments   | 55 |
| Other comments   | 335|
| Total Comments   | 24 |
| Users(*)         | 414|

* when anonymous users are allowed, the data won’t be precise as multiple users may use the same computer to input.
What We Heard – Open House 8/1/18

Attendees
• Business owners
• Residents
• Employees

Comments Heard
• Lane widths
• Loading & deliveries
• Confusion about configuration
• Changed travel patterns
• Support from frequent users
Lessons Learned – Lane Widths & Striping
Lessons Learned – Delineators & Curb Radii
Lessons Learned – Buffer Area

- Planter Box Row, Vancouver
- Raised Median, Austin
- Raised Median, San Francisco
- Wheel Stops, DC
- Wheel Stops, Minneapolis
- Raised Median Planter, San Francisco
- Planters, Cedar Rapids
- Landscaped Median
- Planter Box, Portland
- Bulb out, NYC
- Barrier Raised Median, Austin
- Raised Median
- Wheel Stops, DC
- Delineators, Minneapolis
Lessons Learned – Maintenance

E. Grand Before & After Data
Conclusions

- Parking remains well-utilized
- >50% reduction in injury related crashes
- Speeds have decreased
- Peak travel times have increased <1 minute
- New infrastructure brings new maintenance costs
- Emergency response time is improved
- Public input is invaluable and has led to changes
Next Steps

Permanent Improvements Cost Estimate = $475,000 - $525,000

- Concrete Islands, traffic signal mast arm extensions, curb ramp relocations, durable markings, etc.
- On-going maintenance by contractor

Maintenance Equipment Needed*

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweeper</td>
<td>$65,000</td>
</tr>
<tr>
<td>Pick up truck</td>
<td>$25,000</td>
</tr>
<tr>
<td>Trailer</td>
<td>$16,000</td>
</tr>
<tr>
<td>Skid Loader</td>
<td>$28,000</td>
</tr>
<tr>
<td>Gator (spreader)</td>
<td>$8,000</td>
</tr>
</tbody>
</table>

Total: $142,000

*Can maintain 8 miles of protected bikeway
East Grand Avenue Complete Streets Pilot Project

Questions?

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