

MEMORANDUM



Public Works Department

Date: October 24, 2016

To: Tempe City Council

From: Shelly Seyler, Deputy Public Works Director – Transportation (350-8854)
Julian Dresang, City Traffic Engineer (350-8025)

Thru: Don Bessler, Public Works Director (350-8205)

Subject: McClintock Drive Street Configuration – 15-month Follow Up
November 3, 2016 Issue Review Session

PURPOSE

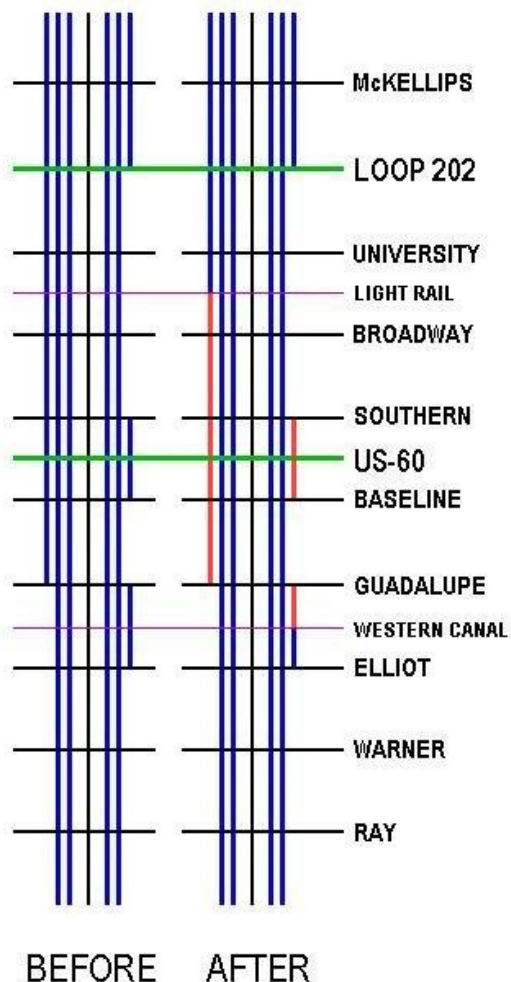
The purpose of this memo is to provide the City Council with traffic data and resident feedback gathered over the past 15 months for the section of McClintock Drive between Broadway and Guadalupe roads.

BACKGROUND

On May 4, 2015, an open house was held to inform the public of the McClintock Drive Paving Project which included the removal of up to one travel lane and the addition of bicycle lanes. Between April 20 and 24, door hangers were sent to 5,800 homes between Broadway and Guadalupe roads from Country Club Way to Dorsey Lane notifying people of the meeting date, time and location. The meeting was held in the evening at the Tempe Public Library and 46 people attended. At the public meeting, a fact sheet was available to the public and a PowerPoint presentation was made.

In July 2015, McClintock Drive between Broadway and Guadalupe roads was repaved as part of Tempe's ongoing Asset Management Capital Maintenance Program. As part of this repaving project, McClintock Drive was reconfigured to include bike lanes on each side of the street, which required the removal of **at least** one vehicle lane on McClintock Drive. A minimum of two vehicular lanes, northbound and southbound, and a middle turn lane was maintained, as well as medians/center turn lanes and formal turn lanes at the signalized intersections. Diagram 1 is an illustration of the number of lanes in each direction prior to the reconfiguration and after the addition of the bicycle lanes. For the entire McClintock corridor, between the north border with the City of Scottsdale and the south border with the City of Chandler, the vehicle lane mileage was reduced from approximately 45 to 40 and the bicycle lane mileage was increased from zero to 7.5.

Diagram 1: McClintock Drive Vehicular Lane Configuration



At the March 17, 2016 Issue Review Session, Council asked staff to continue to collect data and report back on the findings. Over the last six months, staff has continued to collect data. This new data, as well as historical data are provided in this memo.

VOLUME DATA

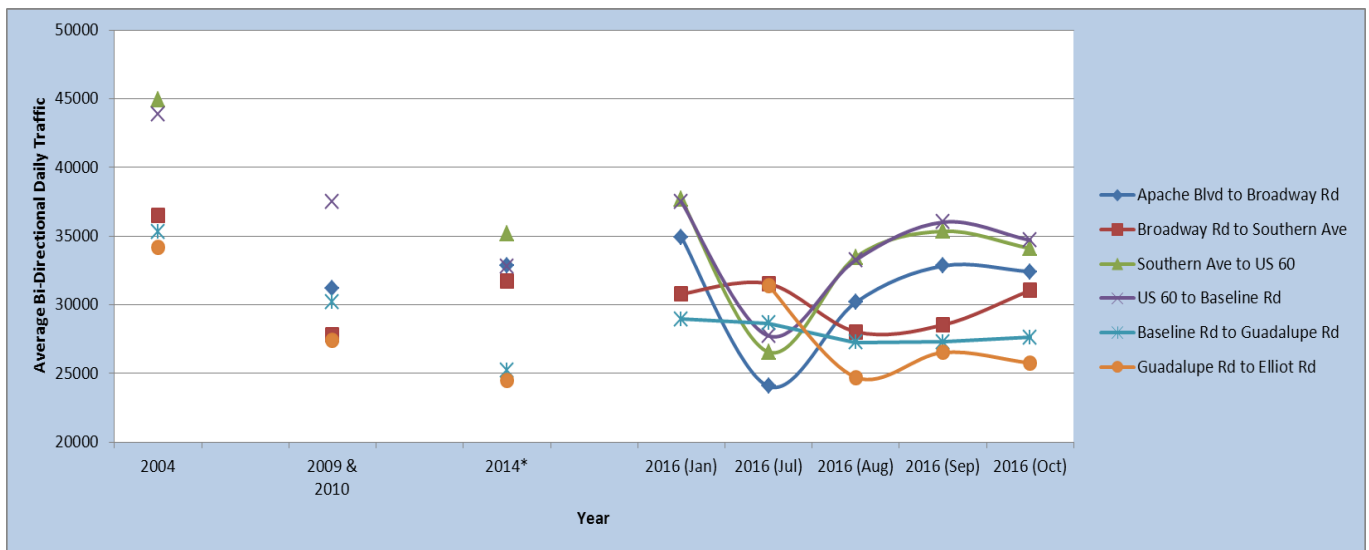
McClintock Drive between Broadway and Guadalupe roads has seen traffic volumes decrease between 2004 and 2016. This decrease is largely attributed to the completion of the urban freeway network and an increase in the number of commuters choosing alternative modes of travel. Table 1 and Chart 1 provide the traffic volumes on McClintock Drive collected in 2004, 2009/10, 2014* and five months in 2016. (*NOTE: It was determined that some of the 2014 data was mistakenly taken while Arizona State University was on spring break and likely under-represents normal traffic conditions). **Traffic volumes continue to be considerably less than levels measured in 2004.**

Table 1: Traffic volumes between 2004 and 2016 on McClintock Drive between Apache and Elliot

	2004 (Nov)	2009 & 2010 (Sep/Oct)	2014 (Mar)	2016				
				Jan	Jul	Aug	Sep	Oct
Apache to Broadway	-	31,175	32,863*	34,913	24,055	30,175	32,828	32,410
Broadway to Southern	36,487	27,807	31,722*	30,782	31,527	28,034	28,529	31,041
Southern to US 60	44,951	-	35,167	37,670	26,551	33,472	35,348	34,101
US 60 to Baseline	43,842	37,496	32,755	37,470	27,732	33,260	36,012	34,692
Baseline to Guadalupe	35,326	30,170	25,208*	28,945	28,656	27,260	27,274	27,607
Guadalupe to Elliot	34,189	27,418	24,510*	-	31,392	24,714	26,524	25,747

- No Data Collected, * ASU on Spring Break

Chart 1: McClintock Vehicle Volumes 2004 and 2016



TRAVEL TIME DATA

Travel time data was collected in 2014 on McClintock Drive between University Drive and Baseline Road as part of signal timing optimization project. The portion of McClintock Drive south of Baseline was outside the limits of that project and thus no 2014 travel time data is available for this section. Travel time data was collected in January, June, July, August, and September of 2016 (after the bicycle lanes were added). Table 2 and Chart 2 list the average 2016 travel times, both during the morning (AM) and afternoon (PM) peak travel hours, for the entire section of McClintock Drive between University Drive and Guadalupe Road. Tables 3 - 6 and Charts 3- 6 compare the average travel times in 2014 to the average travel times in 2016; broken into one mile segments. Table 2 illustrates that during high-traffic conditions (January, September) on average it takes approximately 10 to 11 minutes to travel northbound during the morning peak and 13 to 14 minutes to travel southbound during the afternoon peak between University Drive and Guadalupe Road. As expected, travel times decreased during the summer months (June to August).

Table 2: McClintock Drive Travel Time Data 2016 – University to Guadalupe
(Average Travel Times) in minutes and seconds.

AM Peak (7-9AM)	Jan	Jun	Jul	Aug	Sept	Oct
McClintock NB	10:16	7:49	7:44	8:52	10:36	9:34
McClintock SB	7:40	7:22	7:20	7:39	7:52	8:06
PM Peak (4-6 PM)						
McClintock NB	9:23	9:00	9:55	9:47	9:26	9:34
McClintock SB	12:57	10:23	10:49	12:20	13:47	14:11

Chart 2: McClintock Drive Travel Time Data 2016 – University to Guadalupe
(Average Travel Times) in minutes and seconds.

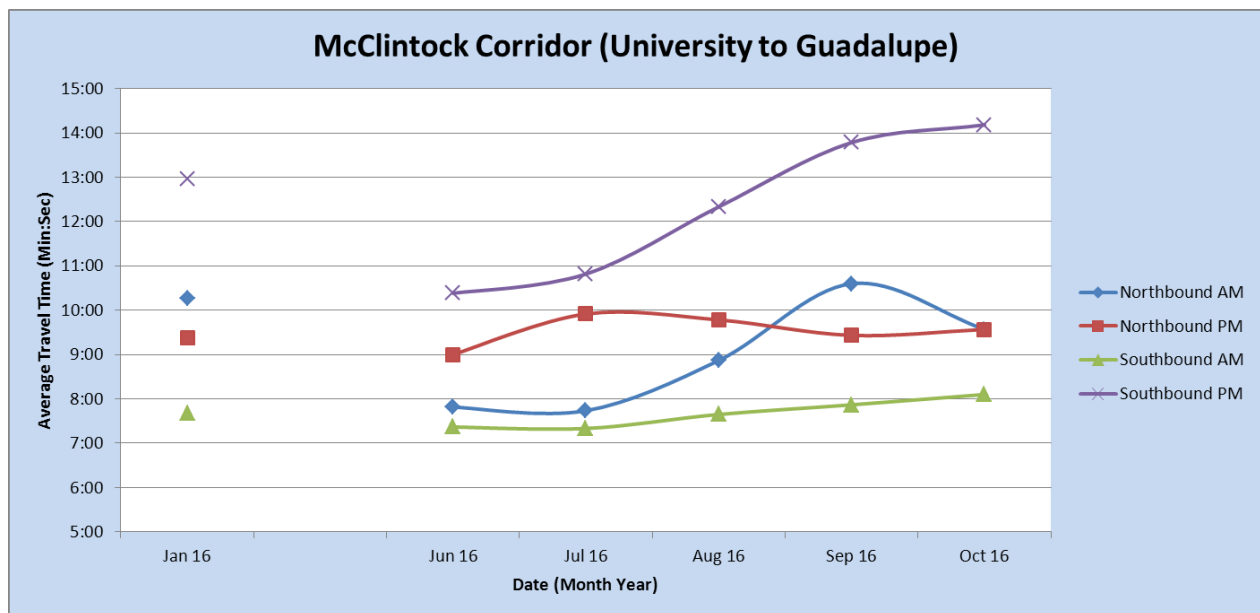


Table 3: McClintock Drive Travel Time Data 2014 and 2016 – University to Broadway

AM Peak (7-9AM)	Feb 2014	Jan 2016	Jun 2016	Jul 2016	Aug 2016	Sept 2016	Oct 2016
McClintock NB	3:07	3:24	2:06	2:09	2:41	3:12	2:47
McClintock SB	1:58	2:03	1:58	1:56	2:02	2:01	2:15
PM Peak (4-6 PM)							
McClintock NB	2:38	3:25	3:15	3:36	3:25	3:38	3:34
McClintock SB	3:11	4:43	3:51	3:57	4:00	5:18	6:00

Chart 3: McClintock Drive Travel Time Data 2014 and 2016 – University to Broadway

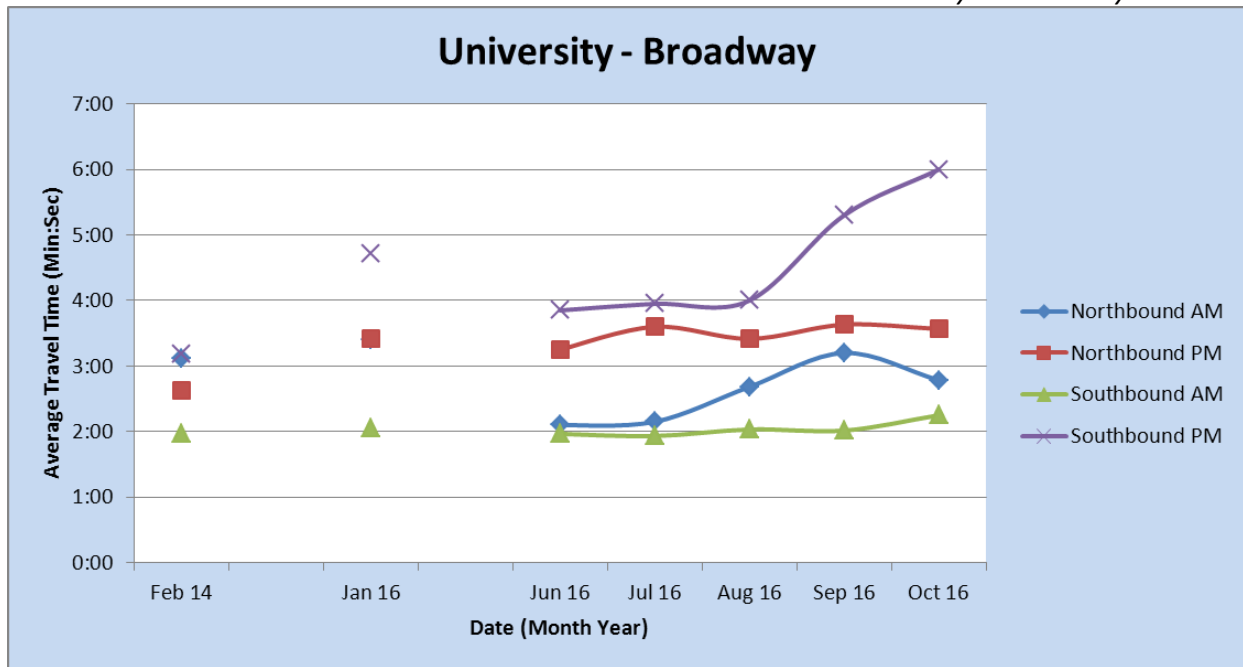


Table 4: McClintock Drive Travel Time Data 2014 and 2016 –Broadway to Southern

AM Peak (7-9AM)	Feb 2014	Jan 2016	Jun 2016	Jul 2016	Aug 2016	Sep 2016	Oct 2016
McClintock NB	2:14	2:01	1:44	1:41	1:56	2:14	1:55
McClintock SB	1:56	2:11	2:04	2:03	2:03	2:12	2:08
PM Peak (4-6 PM)							
McClintock NB	2:08	2:00	1:59	2:00	1:54	1:53	1:58
McClintock SB	2:12	3:05	2:07	2:11	3:26	3:03	3:06

Chart 4: McClintock Drive Travel Time Data 2014 and 2016 –Broadway to Southern

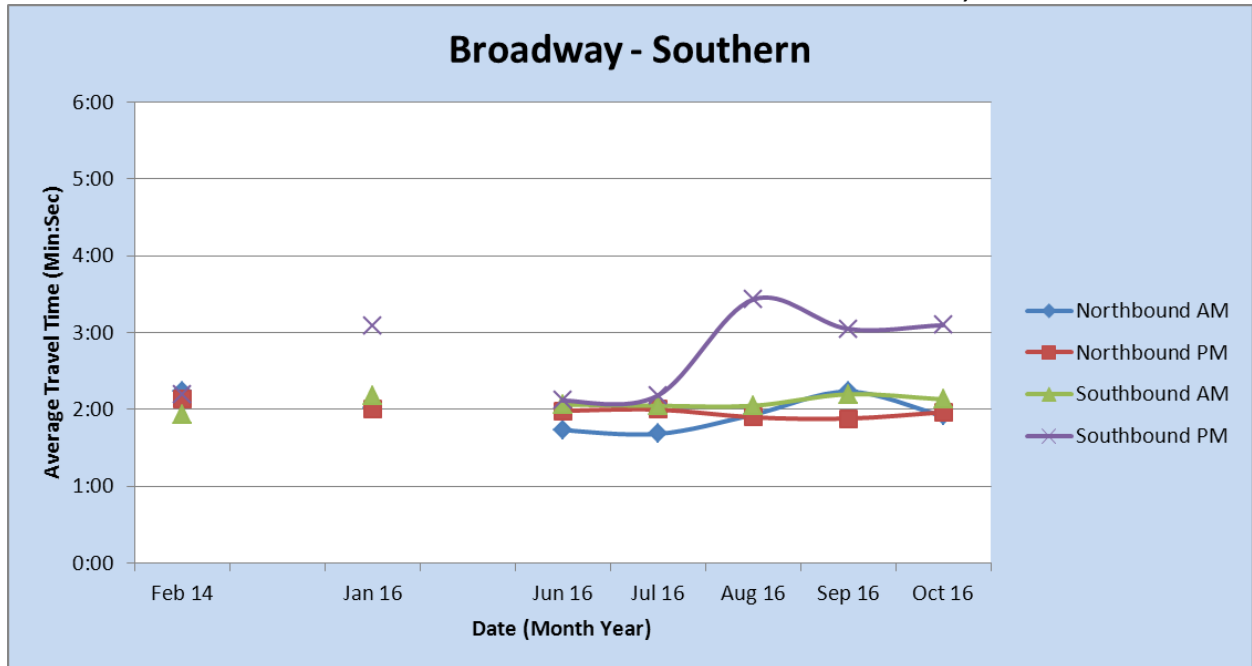


Table 5: McClintock Drive Travel Time Data 2014 and 2016 – Southern to Baseline

AM Peak (7-9AM)	Feb 2014	Jan 2016	Jun 2016	Jul 2016	Aug 2016	Sep 2016	Oct 2016
McClintock NB	1:51	2:36	2:01	2:03	2:07	2:25	2:44
McClintock SB	1:45	1:36	1:36	1:35	1:45	1:47	1:54
PM Peak (4-6 PM)							
McClintock NB	1:53	1:49	1:39	1:57	2:18	1:47	2:05
McClintock SB	2:03	2:58	2:10	2:33	2:31	3:11	3:14

Chart 5: McClintock Drive Travel Time Data 2014 and 2016 – Southern to Baseline

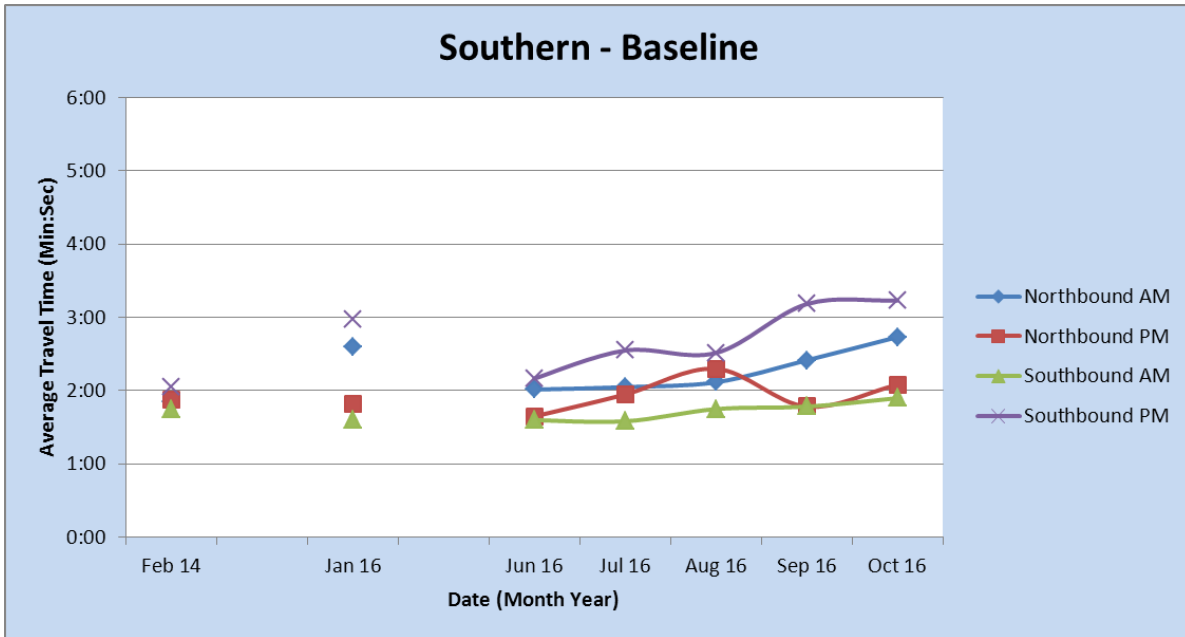


Table 6: McClintock Drive Travel Time Data 2016 – Baseline to Guadalupe

AM Peak (7-9AM)	Feb 2014	Jan 2016	Jun 2016	Jul 2016	Aug 2016	Sep 2016	Oct 2016
McClintock NB	N/A	2:15	1:58	1:52	2:09	2:46	2:07
McClintock SB	N/A	1:50	1:43	1:46	1:48	1:53	1:49
PM Peak (4-6 PM)							
McClintock NB	N/A	2:09	2:07	2:22	2:10	2:08	2:11
McClintock SB	N/A	2:10	2:14	2:09	2:23	2:15	2:21

Chart 6: McClintock Drive Travel Time Data 2016 – Baseline to Guadalupe

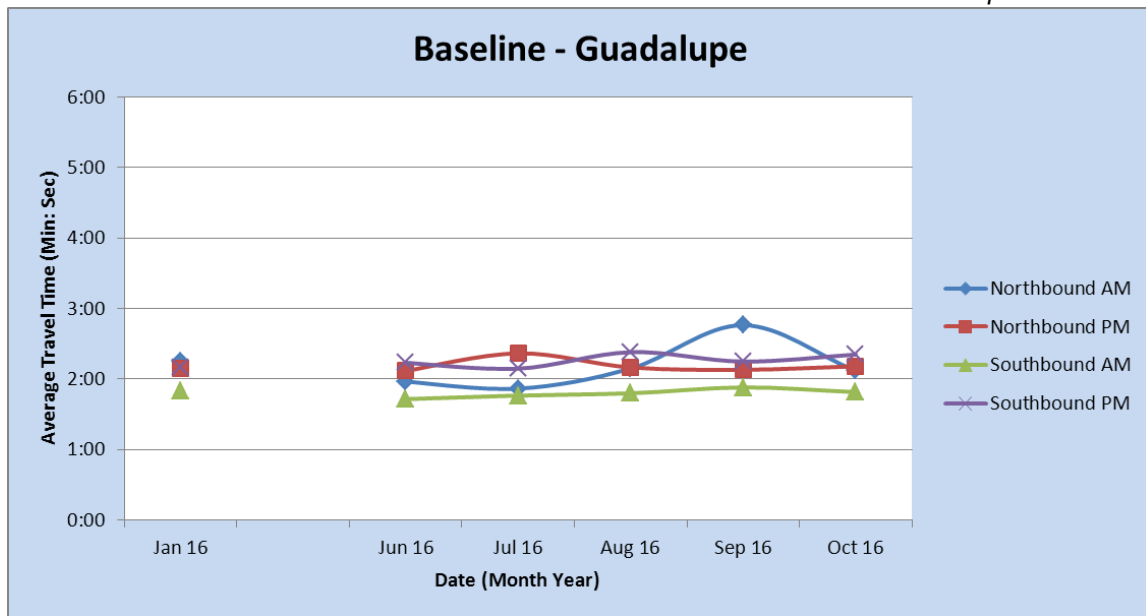


Table 7 below provides the average travel time per mile when traveling the corridor between University and Baseline in the peak and off-peak directions during the morning and afternoon rush hour. The second column provides the optimal average travel time per mile, which is the average time it would take someone to drive each mile at the posted speed limit if there were no sources of delay. Sources of delay would include other vehicles, signals and driveways. The third column provides average travel times per mile before the addition of the bike lanes. The fourth column provides the average travel times per mile during the peak hours of traffic after the bike lanes were installed.

Table 7: Average Travel Time Per Mile – University to Baseline

Direction	Optimal	Before	After
Southbound off-peak (AM)	1:32	1:53	2:05
Northbound off-peak (PM)	1:32	2:13	2:32
Northbound Peak (AM)	1:32	2:24	2:28
Southbound Peak (PM)	1:32	2:29	4:06

Crash Data

Crash data is only available through June 30, 2016. Given that, tables only compare August 2014 – June 2015 and August 2015 – June 2016. As shown in the Tables 8 - 10, crashes continue to show minimal changes at the major intersections but potentially **significant decreases** at the minor intersections (-28%) and midblock locations (-25%). It should be noted, however, that the charts only account for 11 months of before and after data. Industry standards typically require at least three years of crash data prior to making definitive conclusions about the benefits or drawbacks of changes. Using too short of a timeframe allows for statistical bias.

Table 8: Major Intersection Crashes on McClintock: August thorough June

	2014 to 2015	2015 to 2016
Apache	6	7
Broadway	13	9
Southern	17	11
US 60	14	19
Baseline	1	9
Guadalupe	9	9
TOTAL	60	64

Table 9: Minor Intersection Crashes on McClintock: August thorough June

	2014 to 2015	2015 to 2016
Apache to Broadway	N/A	N/A
Broadway to Southern	15	11
Southern to US 60	5	1
US 60 to Baseline	6	2
Baseline to Guadalupe	6	9
TOTAL	32	23

Table 10: Mid-Block Crashes on McClintock: August through June

	2014 to 2015	2015 to 2016
Apache to Broadway	21	17
Broadway to Southern	38	22
Southern to US 60	12	11
US 60 to Baseline	10	13
Baseline to Guadalupe	10	5
TOTAL	91	68

Bicycle Counts on McClintock Drive

The city used video recordings to count bicycles in the bicycle lanes at the intersections of McClintock at Southern and at Baseline. The average number of bikes over the morning (7 to 9 a.m.) peak hours and afternoon (4 to 6 p.m.) peak hours is shown in Table 11.

Table 11: McClintock Drive Bicycle Volumes 2016

	Jul	Aug	Sept
Southern (AM)	10	N/A	13
Southern (PM)	12	N/A	13
Baseline (AM)	9	10	6
Baseline (PM)	12	8	10

In December 2015, Tempe added “candlesticks/bollards” to McClintock Drive as a buffer between bikes and vehicles. The candlesticks (vertical barriers) were installed along McClintock between Southern and Baseline to create more of a separation between bikes and vehicles. To date, the cost of maintaining and replacing these candlesticks/bollards are estimated to be \$7,060 (20 posts x \$85 each = \$1,700 and staff = \$5,360).

Public Comments

Comments were received via email to either staff, Council or through the web site and phone calls to either 311, Council or staff. Between April 2015 and October 27, 2016 at 5 p.m., the City received 892 comments of which 748 were unduplicated. Of the unduplicated comments, 302 people were against the bicycle lanes and 446 were in favor.

In September and October 2016, a telephone survey of 425 Tempe residents was conducted by Behavior Research Center. This telephone is statistically significant with a margin of error is +4.8% at a 95% level of confidence, which means that the probability is 95% that the estimates are within 4.8 percentage points of the numbers that would have obtained had every qualified resident in Tempe been interviewed. A slight majority of Tempe residents (51%) oppose adding bike lanes to major roads in Tempe if it means removing a lane of traffic while 43% support the idea and 6% had no opinion. A non-statistically significant opt-in online survey was also available to all Tempe residents from Sept. 30 to Oct. 23. According to the 332 people who took the opt-in

online survey, 55% of the participants oppose adding bike lanes to major roads in Tempe if it means removing a lane of traffic while 36% support the idea and 9% had no opinion.

On October 11, the Transportation Commission was presented with an update on the McClintock Drive Street Configuration and support keeping the bike lanes.

Cost to Restripe McClintock Drive

The cost to restripe McClintock Drive between Apache Boulevard and Broadway Road to three southbound lanes would cost \$10,000 and take two business days. The cost to restripe McClintock Drive to its original configuration without bike lanes between Apache and Guadalupe would cost \$130,000 and take seven to 10 business days.

Other Design Options

City staff brainstormed other potential changes for this corridor that would maintain the bicycle lanes and improve congestion including:

1. Narrow the travel lane widths/remove buffers/move curbs: \$3 to \$5 million
 - a. Between Apache and Broadway, there is a railroad bridge/underpass that has abutments and a center pier that cannot be moved. In order to add back the southbound travel lane, the bicycle lane would have to be eliminated.
 - b. Between Broadway and Southern, the travel lanes cannot be striped any narrower. The buffers could be removed, but this would only result in six feet (6') of usable space. In order to add back the southbound travel lane, a bicycle lane in one of the directions (north or south) and both buffers would have to be eliminated.
 - c. Between Southern and US-60, the travel lanes could be striped narrower and the buffers could be removed while maintaining the bike lanes. A southbound lane could also be added but would have to "drop" at the US-60 because of the raised medians at the interchange.
 - d. Between US-60 and Baseline, the travel lanes could be striped narrower and the buffers could be removed while maintaining the bike lanes. A southbound travel lane could be added, but it would not begin until Carson Drive (approximately 500 feet south of the interchange) because of the raised medians at the interchange.
 - e. Between Baseline and Guadalupe, the travel lanes cannot be striped any narrower. The buffers could be removed, but this would only result in six feet (6') of usable space. In order to add back the southbound travel lane, a bicycle lane in one of the directions (north or south) and both buffers would have to be eliminated.

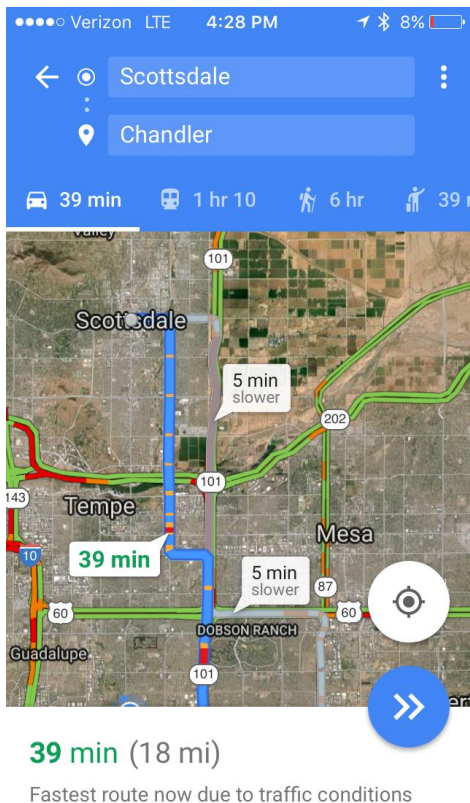
2. Add dedicated bicycle paths behind curb (similar to Hardy between University & Broadway): \$12 million
 - a. Currently, sidewalk widths along McClintock vary between 5 and 8 feet.
 - b. For safety reasons, cycling on the sidewalk is only suggested when a dedicated bicycle facility (bike lane or other) is not present.
 - c. Bicyclists would have to navigate numerous driveways, side streets and alleys.
 - d. Right-of-way would need to be acquired and landscaping would have to be removed.

3. Widen McClintock to accommodate bicycle lanes: \$10 million
 - a. This would not be an option at the railroad bridge/underpass and at the US-60 interchange.
 - b. If buffers were removed, the curb would need to move 5 feet ($6'+5'=11'$ lane).
 - c. If buffers were kept, the curb would need to move 11 feet.
 - d. Right-of-way would need to be acquired and some landscaping would have to be removed.

4. Improve parallel bicycle routes (Lakeshore/Dorsey, Country Club): \$21 million
 - a. Lakeshore Drive would require grade separated crossings at US-60 and UPRR tracks.
 - b. Country Club Way would require a grade separated crossing at UPRR tracks.
 - c. Bicycle detection would need to be added/improved at signalized intersections.
 - d. Bicycle lanes currently exist for the majority of the length of Price Road, however, due to limitations in width they drop at the interchanges. In addition, the Price Frontage road is within the Arizona Department of Transportation (ADOT) right-of-way and any changes would need to be approved/coordinated through ADOT.

Effects of Technology

Many drivers now have access to route choice software to aid with driving navigation. The Google Maps screenshot shows the fastest route to get from downtown Scottsdale to downtown Chandler at 4:30 pm on Tuesday, October 18. For the portion of the trip north of Broadway, the application recommends using McClintock as the faster alternate to Loop 101. If the bicycle lanes were removed and the third southbound lane restored, it is possible that congestion levels would remain the same because McClintock would show up on the navigation applications as the preferred alternate to the freeway and other parallel routes.



ATTACHMENTS

1. PowerPoint
2. Public Comments and Analysis from 311 from April 2015 to March 17, 2016
3. Public Comments and Analysis from 311 from March 18, 2016 to Oct. 27, 2016
4. March 16, 2016 IRS Memo
5. March 16, 2016 IRS PowerPoint
6. April 8, 2016 Friday Packet
7. April 12, 2016 memo to Council
8. Traffic Congestion Telephone Survey
9. Traffic Congestion Opt-in Online Survey