Traffic forecast for the project was developed using:	
Travel Demand Model	Growth Rates
Type of Travel Demand Model Used: ☒ Metropolitan Planning Model ☐ Other Model (*specify*) _____	Annual: 0.7% to 1.4%, depending on alternative
Is the travel demand model based on the latest adopted Long Range Transportation Plan?	
☒YES	☐NO
12/10/2014 initial, amended 3/14/2018 Date when MPO adopted the latest Long Range Transportation Plan	Explain why
2010 Base Year of Travel Demand Model	
2040 Horizon Year of Travel Demand Model	
Long Range Transportation Plan documentation is available at (provide web address): http://forwardpinellas.org/wp-content/uploads/2016/08/2040-LRTP.pdf	
Traffic Data and Factors	
Standard K = 0.090 D Factor = 0.50 to 0.55 T_{Daily} = 3.5%	Data Collection Year = 2016 Opening Year = 2025 Interim Year = 2035 Design Year = 2045
Discuss any changes in land use, economics, population and employment data since the model was built. No changes of significance were identified by participating agencies during study methodology discussions.	
Traffic Analysis Assumptions	
Discuss study area, data calibration/validation parameters, analysis tools, analysis periods and MOEs. Study assumptions are summarized in the traffic analysis methodology memorandum dated February 29, 2016, attached hereto.	

MEMORANDUM

Date: February 29, 2016

To: Waddah Farah, Florida Department of Transportation (FDOT), District Seven

From: Bill Oliver, PE, PTOE, Kittelson and Associates, Inc.

Cc: Menna Yassin, PE (FDOT PD&E Project Manager); Peter Maass PE, PTOE; David Winkle, AICP; Don Skelton, H.W. Lochner, Inc., Bill Howell, PE, H.W. Lochner, Inc., Jack Freeman, PE, Kittelson and Associates, Inc.

Subject: Draft Traffic Methodology Statement
FPID: 435914-1-22-01 -- US 19 (SR 55) PD&E Study Reevaluation from 70th Avenue North to SR 690/118th Avenue North, Pinellas County
Design Traffic Technical Memorandum
FDOT Contract No.: C9N42

1. Traffic data collection including 72-hour (Tuesday through Thursday) bi-directional machine counts and 2-hour a.m. and p.m. peak hour turning movement counts at the study intersections will be conducted in February and March, 2016, at the locations listed below. No traffic data will be collected during the week of March 21 through 25, due to Pinellas Schools spring break. Review of FDOT traffic count synopsis reports and counts recorded by Adams Traffic in February, 2016, indicate that the two-way a.m. peak hour in this vicinity begins between 7:15 a.m. to 7:45 a.m., but that one-way volumes in the northbound direction of travel continue to increase through 9:00 a.m., while the southbound volumes decline. To record both the two-way peak and the one-way peak volumes, a.m. turning movements will be counted from 7:15 to 9:15. The p.m. peak shows a more traditional p.m. peak hour starting in the 4:45 to 5:00 timeframe, so the period from 4:15 to 6:15 p.m. will be counted.

a.) 72-hour (Tuesday through Thursday) directional vehicle counts will be recorded at the following locations:

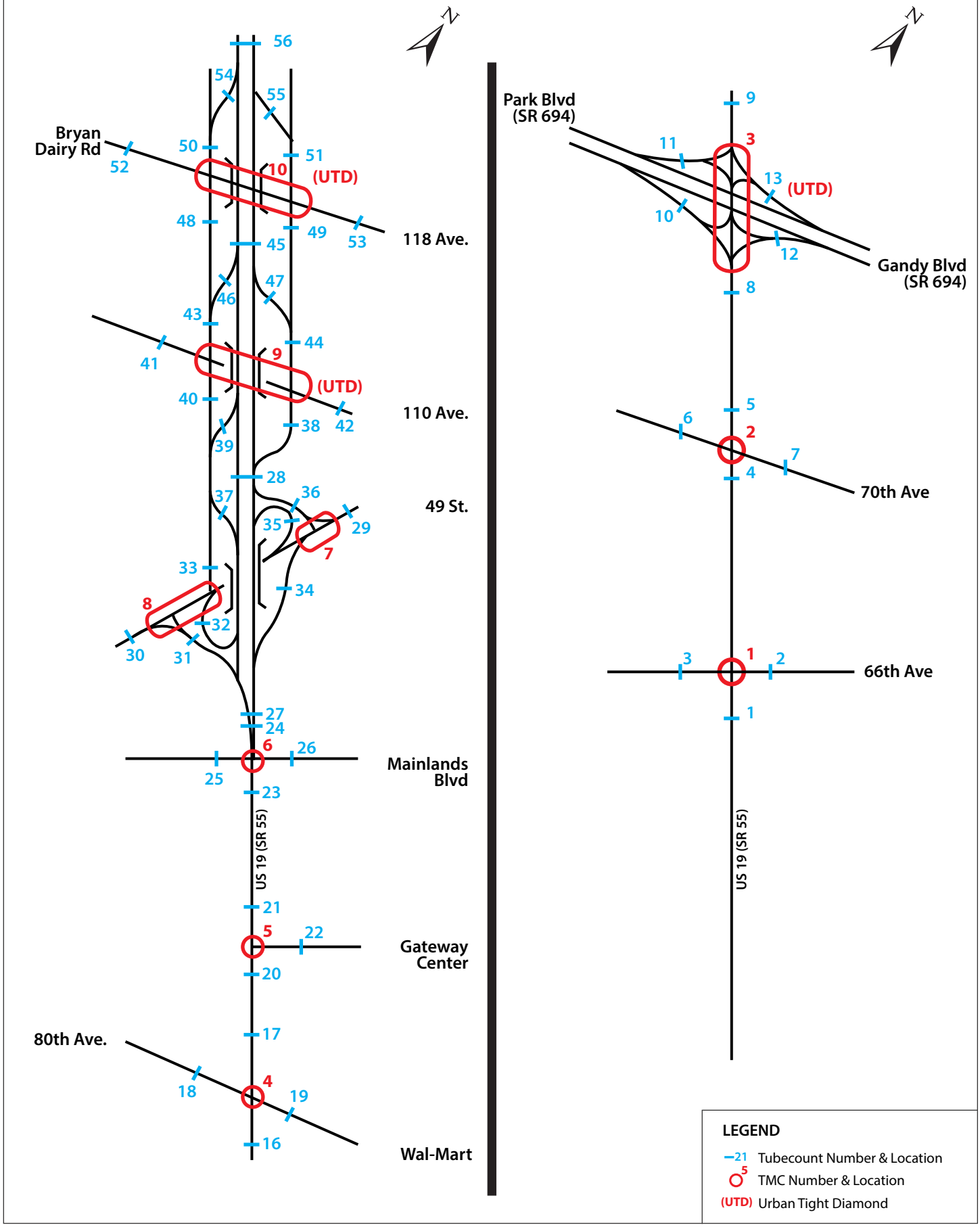
1. US 19 south of 66th Av N
2. 66th Av N east of US 19
3. 66th Av N west of US 19
4. US 19 south of 70th Ave N
5. US 19 north of 70th Ave N
6. 70th Ave N west of US 19
7. 70th Ave N east of US 19
8. US 19 south of Gandy Blvd
9. US 19 north of Gandy Blvd
10. EB Park Blvd off-ramp to US 19
11. WB Park Blvd on-ramp from US 19
12. EB Gandy Blvd on-ramp from US 19
13. WB Gandy Blvd off-ramp to US 19
14. Park Blvd west of US 19
15. Gandy Blvd east of US 19
16. US 19 south of 80th Ave N
17. US 19 north of 80th Ave N
18. 80th Ave N west of US 19
19. Walmart Entrance
20. US 19 south of Gateway Center Blvd
21. US 19 north of Gateway Center Blvd
22. Gateway Center Blvd east of US 19
23. US 19 south of Mainland Blvd
24. US 19 north of Mainland Blvd
25. Mainland Blvd west of US 19
26. Mainland Blvd east of US 19

27. US 19 south of 49th St N
28. US 19 north of 49th St N
29. 49th St N east/north of US 19
30. 49th St N west/south of US 19
31. SB US 19 on-ramp from 49th St N
32. SB US 19 off-ramp to EB/NB 49th St N
33. SB US 19 frontage road off-ramp to WB/SB 49th St N
34. NB US 19 off-ramp to EB/NB 49th St N
35. NB US 19 off-ramp to WB/SB 49th St N
36. NB US 19 on-ramp from 49th St N
37. SB US 19 frontage road slip on-ramp from 110th Ave N to SB US 19
38. NB US 19 off-ramp to 110th Ave N
39. SB US 19 slip off-ramp to west frontage road
40. 110th Ave N on-ramp to SB US 19 west frontage road
41. 110th Ave N west of US 19
42. 110th Ave N east of US 19
43. SB US 19 west frontage road to 110th Ave N
44. NB US 19 east frontage road from 110th Ave N
45. US 19 north of 110th Ave N
46. SB US 19 slip off-ramp to west frontage road north of 110th Ave N
47. NB US 19 slip on-ramp from east frontage road north of 110th Ave N
48. West frontage road from Bryan Dairy Rd/118th Ave N
49. East frontage road to Bryan Dairy Rd/118th Ave N
50. West frontage road to Bryan Dairy Rd/118th Ave N
51. East frontage road from Bryan Dairy Rd/118th Ave N
52. Bryan Dairy Rd west of US 19
53. Bryan Dairy Rd east of US 19
54. SB US 19 slip off-ramp to west frontage road north of Bryan Dairy Rd/118th Ave N
55. NB US 19 slip on-ramp from east frontage road north of Bryan Dairy Rd/118th Ave N
56. US 19 north of Bryan Dairy Rd/118th Ave N
57. Park Blvd west of 40th St N
58. 40th St N north of Park Blvd
59. The Shoppes at Park Place entrance
60. Park Blvd west of 43rd St N
61. 43rd St N north of Park Blvd
62. 43rd St N south of Park Blvd
63. Gandy Blvd west of Grand Ave
64. Gandy Blvd east of Grand Ave
65. Grand Ave south of Gandy Blvd
66. Grand Ave north of Gandy Blvd

A schematic diagram of the above count locations is provided in Figure 1.

b.) 2-hour a.m. and p.m. peak period manual vehicle turning movement counts will be performed for at the following intersections:

1. US 19 / 66th Ave N
2. US 19 / 70th Ave N
3. US 19 / Gandy Blvd
4. US 19 / 80th Ave N/Wal-Mart Driveway
5. US 19 / Gateway Centre Blvd
6. US 19 / Mainland Blvd
7. NB US 19 / 49th St N
8. SB US 19 / 49th St N
9. US 19 / 110th Ave N
10. US 19 / Bryan Dairy Rd-118th Ave N
11. Gandy Blvd / Grand Ave
12. Park Blvd / 40th St N
13. Park Blvd / 43rd St N



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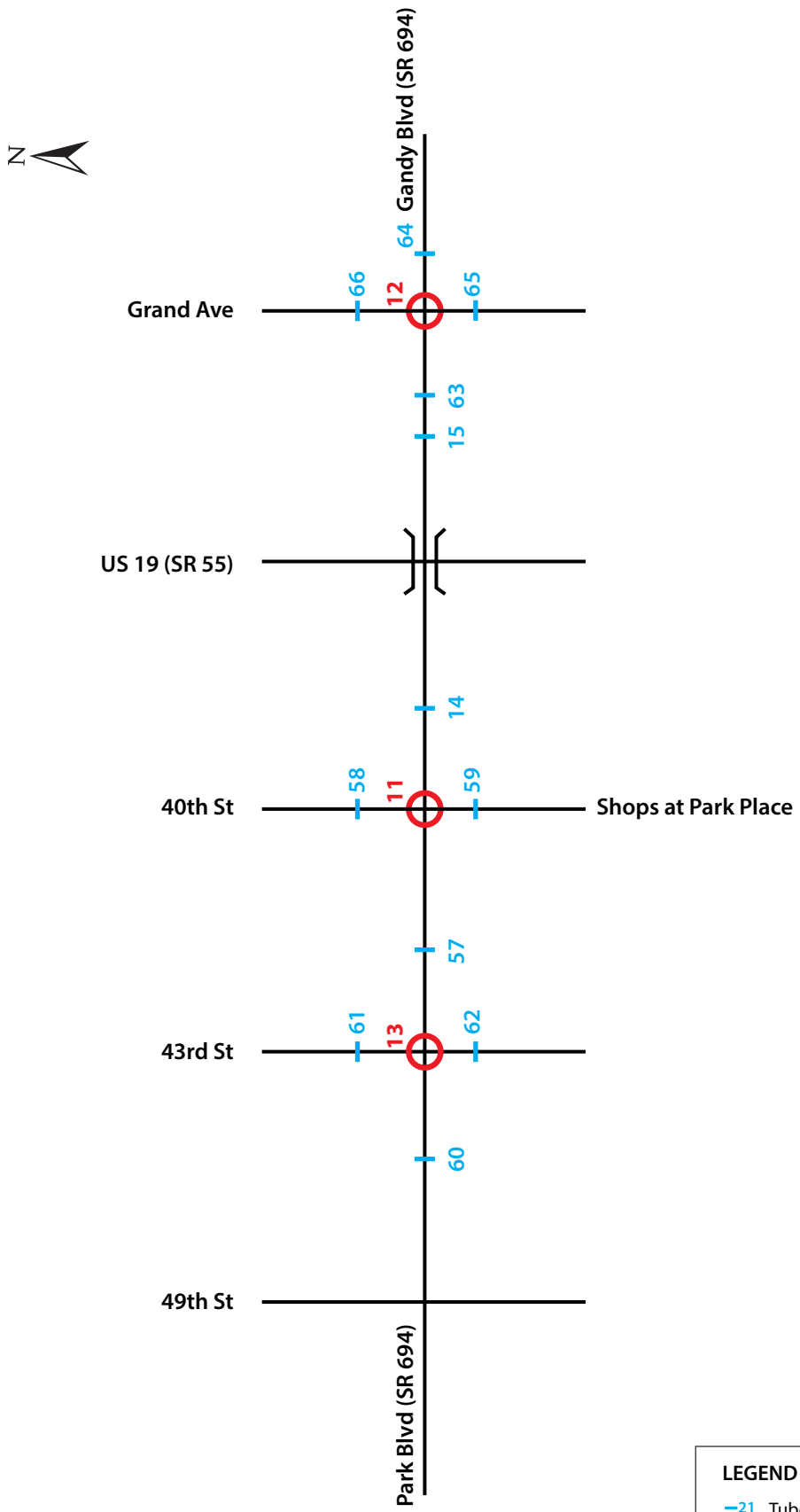
TRAFFIC DATA COLLECTION LOCATIONS

Figure 1A



LEGEND

21 Tubecount Number & Location

5 TMC Number & Location

FDOT

TRAFFIC DATA COLLECTION LOCATIONS

Figure **1B**

2. Review of FDOT machine count synopsis reports indicates typical a.m. and p.m. peak hour to daily traffic ratios (K) ranging from 0.071 to 0.085. Recognizing that peak hour volumes are likely constrained and that peak hour travel demands in urban areas are a bit higher, we anticipate using the standard K_{100} factor of 9% for this area. Following collection of the machine count data, we will reconfirm this parameter, and recommendations will also be made for the D-factor and the truck percentages to be used for this study. A letter on the recommended design traffic factors will be submitted to FDOT for review and approval.

3. Existing year 2016 design hour traffic volumes will be developed by applying the recommended K and D factors to the annual average daily traffic (AADT) on the intersection approaches to determine the directional design hour volumes (DDHV). To derive the design hour turning volumes, observed turning proportions will be preserved, with volumes adjusted to align with the DDHV's.

4. The latest available Tampa Bay Regional Planning (TBRPM) Version 8.1 Base year (2010) model or newer will be used for design traffic forecasts. The 2010 validation model will be checked for reasonableness and, if necessary, adjustments will be made to improve accuracy. This review will compare validation year model volumes with FDOT-recorded traffic counts in an area within one- to one-and-a-half miles of the study corridor. Locations where the counts and model volumes differ substantially will be identified and reviewed for potential causes, such as erroneous z-data, unreasonable network coding, or adjustments to facility-type (speed and capacity) assignments. Adjustments will be considered in the context of improving the local area assignments *without compromising model-wide validation*. The guidelines of the FDOT "*Project Traffic Forecasting Handbook*" will be used as the criteria for evaluating model validity. The opening year will be 2020, the design year will be 2040 and the interim year will be 2030.

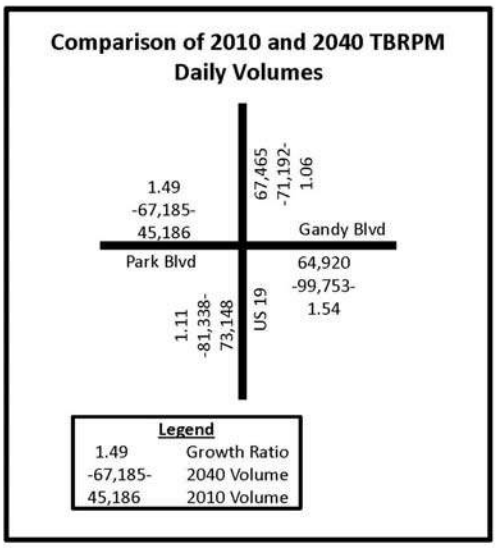
5. 2030 and 2040 model traffic projections will be used, with "smoothing" adjustments, to derive 2030 and 2040 AADTs. AADT's will not be interpolated using 2010 or 2015 volumes, since changes to travel patterns are expected before 2020 with the opening of the Gateway (118^{th} Av) Expressway.

6. The future AADTs for the no-build conditions will not be considered to be the same as for the build condition. A separate model assignment will be undertaken to estimate AADT's for the no-build scenario.

7. 2020 AADT's will be developed by deriving "backwards growth" factors from the 2030 and 2040 model results.

8. Future year design hour volumes will be developed using the standard K, but the peak period directional volumes from TBRPM 8.1 will be consulted to assess potential changes in D factors. We will advise FDOT staff if changes are proposed. For this study, we propose the use of a turning volume estimating procedure that allows turning proportions to change when growth rates on each leg of the intersection are different (e.g. such as procedures described in NCHRP Reports 255 and 765) *because of the changes to existing travel patterns that will result from opening of the Gateway Expressway and*

different interchange configurations. As evidence thereof, the adjacent figure illustrates the different rates of expected traffic growth on each leg of the US 19/Gandy Blvd/Park Blvd intersection indicated by the TBRPM. Traffic volumes on Gandy/Park are expected to grow by approximately 50 percent, while traffic volumes on US 19 are expected to grow by only five to ten percent. This difference should be allowed to influence the turning volume proportions at the intersection. Changes in the percentages of turning volumes will be reported on the turning volume estimate worksheets.



9. The traffic volumes will not be balanced exactly from one intersection departure to the next intersection approach unless there are no opportunities for traffic to enter or leave the segment between the intersections. Net gain or loss of traffic volumes will be reported in the graphics illustrating design hour volumes for all scenarios. Reasonableness checks, based on 2016 recorded traffic counts, will be done based on access (driveways) and land uses occurring between intersections.

10. Existing and future traffic volumes will be provided to the FDOT for review and approval prior to undertaking operational analyses.

11. Intersection analysis will be conducted using SYNCHRO 9, implementing HCM 2010 procedures.

12. Analysis of build alternatives will be conducted for 2040 conditions only. Opening year and intermediate year analyses will be undertaken for the recommended alternative only. Future analysis of No Build condition will be conducted for the design year 2040 only.

13. Queue length analysis will be conducted for the design year 2040 a.m. and p.m. peak hours for the recommended alternative using SYNCHRO 9.

14. Arterial analysis will be conducted using SYNCHRO 9 for the roadway segments between the intersections listed above.

15. We will seek to provide LOS "D" at the intersections and along the study road segments, but it may not be possible within the scope of "reasonable" improvements at key intersections. Failing that, we will strive to maintain volume:capacity ratios less than 1.00. Failing that, we will seek to preserve better operating conditions on interchange ramps and principal arterial roads than on roads of lesser functional classifications, and improvements in the Build scenario over the No-Build scenario.

16. A CORSIM model will be developed for more detailed analysis of future operating conditions. This model will extend on US 19 from the 66th Av N intersection on the south to the 49th St. interchange on

the north, and along Gandy Blvd/Park Blvd from 43rd St on the west to Grand Av on the east. The model will be calibrated in consideration of guidance provided in the FHWA Traffic Analysis Toolbox. Prior to modeling the recommended alternative in CORSIM, we will provide a technical memorandum documenting the model parameters achieving reasonable replication of observed saturation flow rates, queue lengths (at US 19/Gandy Blvd/Park Blvd), volumes, and speeds under field-observed conditions. These parameters may include such values as average discharge headway, start-up delay, gap acceptance, link speed, vehicle length in queue, and others. The calibrated parameters will serve as the parameters under which the recommended alternative will be modeled for the 2040 condition.

17. Travel speeds in the network will be observed during the same peak season (2016) that the traffic volume data is being recorded. A graphic illustrating the route of travel time data recording is provided in Figure 2. This route focuses on left-turn movements at the US 19/Gandy Blvd/Park Blvd interchange more than the through movements, since these movements are likely to be the most difficult to resolve. Using two vehicles per peak period, we have estimated that six runs can be completed during each of the six peak periods (a.m. and p.m. on three days – Tuesday through Thursday), a total of 18 runs for each peak period.

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ROUTE FOR TRAVEL TIME RUNS

Figure 2