CITY OF Hollywood FLORIDA
DEPARTMENT OF DEVELOPMENT SERVICES
Engineering, Transportation, and Mobility

Traffic Calming Master Plan

ATKINS

TRAFFIC CALMING ANALYSIS WORKSHEET

Phase 2 Segments

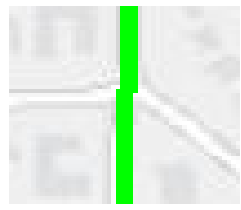
SEGMENT DESCRIPTION

Date:	2/2/2023 (Rev. 2/12/24)	**Segment ID No.:**	1.1	**Speed Limit:**	30 mph	**Directional Split:**	
STREET:	Grant St. at N. 14th Ave.	**Traffic Count ID No.:**	1.1.1	**Posted:**	No	39/61 NB/SB Split	
From:	-	**Jurisdiction:**	City	**Existing Daily Volume:**	2,040		
To:	-	**Functional Class:**	Collector	**85th %ile Speed (Avg):**	35 (35.3) mph	**Average Speed (Avg):**	
Length:	Not Applicable	**Existing TC Devices:**	None	**Warrant Score:**	8	29 (29.6) mph	

Segment Map:

^ North

Segment consists of a single intersection at N. 14th Avenue & Grant St.



Existing Intersection Controls:

Intersection control is a 2-way stop in the EW direction.

Existing Traffic Calming Devices:

No traffic calming devices on this street.

Typical Segment Image:

Looking north from NB approach.

TRAFFIC CALMING ANALYSIS NOTES

1: Citizen Comment: Citizen provided images of tire tracks at the intersection of Grant Street at N. 14th Court. Citizen noted a motorcyclist excessively speeding in this area crashed their vehicle into a parked car in their driveway and has requested the installation of a traffic calming device at this location. Citizen expressed concern that the intersection is ill suited for a residential street due to the large amount of pavement available.

2. Traffic count station was located on N. 14th Avenue and is elevated in the SB direction, suggesting through traffic utilizes this intersection. The data collection location was placed approximately 823 ft North of this intersection which recorded traffic speed and volume data. This intersection is located approximately 578 ft north of Johnson Street.

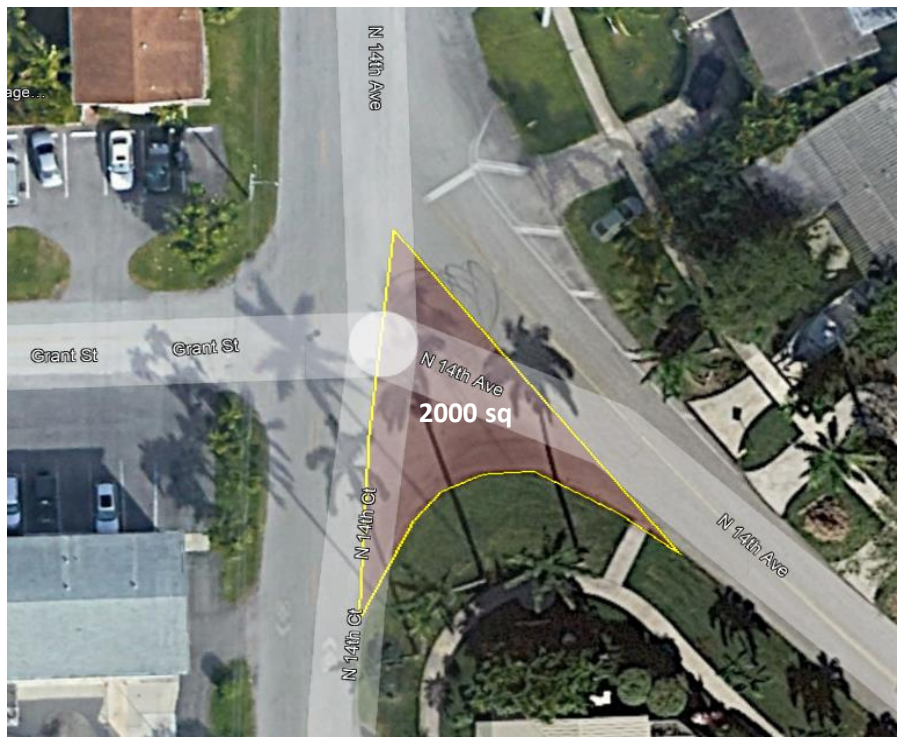
3. Street is classed as a "collector" street with speeds along N. 14th Avenue recorded above the posted speed limit.

4. Intersection is currently a two-way stop controlled intersection in the EB-WB Direction. N. 14th Avenue intersects from the WB at an approximately 45 degree angle while Grant Street from the EB intersects at an approximate angle of 90 degrees. This results in a paved excess of approximately 2000 sq ft shown in the image.

5. The traffic count station recorded 85th Percentile speeds of 35 mph and an average speed of 29.6 mph.

6. Traffic volumes in the N/S direction are slightly elevated compared to typical collector street. With approximately 2,040 VPD travelling in both directions.

7. There are no existing traffic calming devices along N. 14th Avenue.



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Date:	2/2/2023 (Rev. 2/12/24)	**Segment ID No.:**	1.1	**Speed Limit:**	30 mph	**Directional Split:**	
STREET:	Grant St. at N. 14th Ave.	**Traffic Count ID No.**	1.1.1	**Posted:**	No	39/61 NB/SB Split	
From:	-	**Jurisdiction:**	City	**Existing Daily Volume:**	2,040		
To:	-	**Functional Class:**	Collector	**85th %ile Speed (Avg):**	35 (35.3) mph	**Average Speed (Avg):**	
Length:	Not Applicable	**Existing TC Devices:**	None	**Warrant Score:**	8	29 (29.6)	mph

TRAFFIC CALMING ANALYSIS NOTES (Continued)

Observations

1. Intersection skew is large (45 degrees) potentially resulting in higher vehicle turning speeds.
2. Google Earth Images show visible tire marks at the intersection suggesting high speeds and erratic driver behavior.
3. Speeds are elevated above the speed limit of 30 mph by State Statute. 85th %ile speeds along N. 14th Avenue are 35 mph.
4. A sidewalk is provided for pedestrians on the east side of N. 14th Avenue. No pedestrian facilities are provided at the intersection.
5. Minimal lighting is provided at the intersection, with a single streetlight located in the NW quadrant.
6. A review of traffic calming devices and intersection control devices led to the selection of three separate alternatives. This includes a 4-way perpendicular intersection with adjusted skew, T-intersection, and installation of a roundabout.

RECOMMENDATIONS

Roundabout

1. The roundabout center island placement dictates the roundabout position.
2. To utilize pavement, roundabout is shifted to the east such that it obstructs some driveways.
3. Driveway access issues need to be mitigated by providing alternative street access.
4. Roundabout provides minor deflection from the SE to the N and N to S.
5. ROW does provide enough room for roundabout, although is not optimal given access needs and position of the island placement.
6. Overall this option is least recommended due to cost and accessibility issues. In addition, the traffic calming advantages generally associated with roundabout installation are effectively reduced due to the road alignment.

2. 4 Leg Perpendicular Intersection

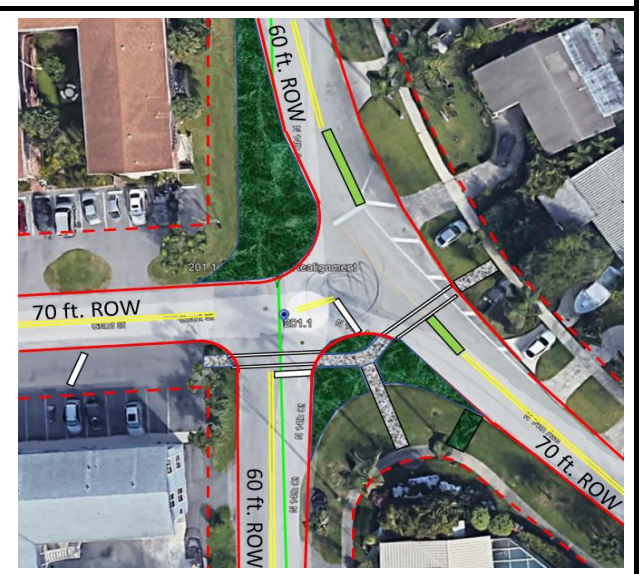
1. Converting the intersection to perpendicular legs requires the re-orientation of the SE leg to reduce the skew.

2. The 2-way stop control for the west and east leg remains in effect such that traffic flow is not significantly affected by changes.
3. N-S movement remains free flow, resulting in no traffic calming effect due to intersection changes in this direction.
4. Speed of SB traffic may be regulated by vehicles attempting to make a southbound left turn onto N. 14th Avenue which have to yield to oncoming traffic.
5. Vehicles turning right from the east approach need make a sharper turn, resulting in improved visibility of NB oncoming traffic as well as encouraging vehicles to slow down as they approach the stop sign.

6. This option improves the geometric operation of the intersection and improves driver safety. This option has minimal impact on traffic flow and therefore does not provide significant traffic calming effect.

3. T- Intersection

1. Converting the intersection to a T-intersection changes the two-way stop on the EB approach to a side street while allowing N. 14th Avenue to remain free-flow.
2. N-S movement along N. 14th avenue would remain free-flow and have minimal geometric modifications. This effectively shortens the straight roadway length originally present in the N-S direction.
3. The original NB movement would now be required to stop at both Grant St and N. 14th Avenue, significantly impacting this movements traffic operations. It is likely NB and SB traffic would be diverted to utilizing N. 14th Avenue, resulting in increased traffic at the intersection of Johnson Street and N. 14th Avenue.
4. NB speeds could potentially be regulated by vehicles attempting to make a northbound left turn from N. 14th Avenue to Grant Street which have to yield to oncoming traffic.
5. Option provides geometric improvements to the intersection of Grant St at N. 14th Avenue with minimal ROW impacts. Could impact traffic safety and operations depending on traffic volumes. Potentially provides traffic calming measures in the N-S direction.



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Phase 2 Segments

SEGMENT DESCRIPTION

Date:	2/2/2023 (Rev. 2/12/24)	**Segment ID No.:**	1.2	**Speed Limit:**	30	**Directional Split:**
STREET:	N. 14th Avenue	**Traffic Count ID No.:**	1.2.1 - 3	**Posted:**	Yes	41/59 NB/SB Split
From:	Johnson Street	**Jurisdiction:**	City	**Existing Daily Volume:**	2,040/4,220/5,605	
To:	Sheridan Street	**Functional Class:**	Collector	**85th %ile Speed (Avg):**	35/32/36 (34.4)	**Average Speed (Avg):**
Length:	5,283 ft	**Existing TC Devices:**	3 Speed Tables	**Warrant Score:**	8/13/19	30/27/31 (29.2)

Segment Map:

North →

Existing Intersection Controls:

Signal at north end

Stop sign at south end

North →

Existing Traffic Calming Devices:

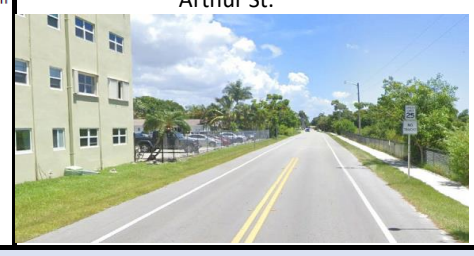
Speed Table along Arthur St. and two speed tables between Harding St. and Sheridan St.

Electronic Speed Feedback Signs
Intersection Improvements
Rectangular Rapid Flashing Beacon
Speed Table
Traffic Circle

North →

Typical Segment Image:

Looking north from midblock near Arthur St.

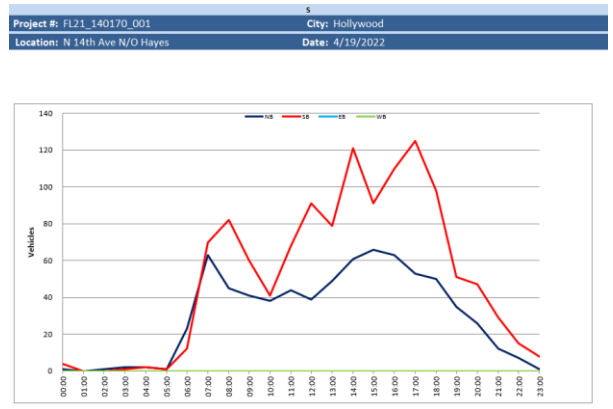


Looking south along N. 14th Avenue from Sheridan St.

TRAFFIC CALMING ANALYSIS NOTES

1. Citizen Comment: Citizen expressed concerns of speeding vehicles from Sheridan Street to Polk Street. Request was made for police presence, increased enforcement or stop signs.
2. Three speed tables exist along this segment, one placed on Arthur Street between N. 14th Avenue North N/S and two placed Harding St and Sheridan St near the north end of the segment. No other traffic calming devices exist.
3. Segment is defined as a collector roadway with an average number of crashes reported, including 12 Injury and 37 property damage crashes.
4. The 85th %-ile speeds are elevated at 35, 32, and 36 mph from the speed limit of 30 mph. Average speeds range from 27 to 31 mph.
5. Traffic volumes are elevated over typical collector roadways, with increasing traffic volumes at the north end of the segment. The NB/SB traffic split is 41/59 suggesting more traffic in the SB direction possibly due to cut-through routes.

6. A review of traffic calming tools led to the selection of speed tables for this corridor. Horizontal deflectors are not viable due to driveways, utilities and bicycle lanes. Despite the roadway classified as a collector, vertical deflections are currently in use. While electronic speed tables could be used to encourage speed compliance, additional vertical deflectors will enforce speed reduction.



RECOMMENDED ACTION

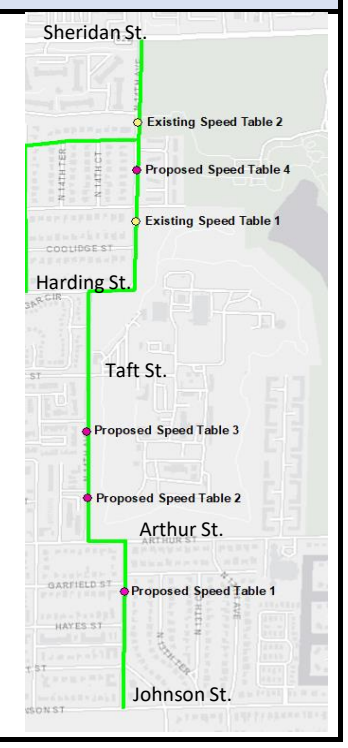
Recommendation

1. The installation of 3 speed tables in addition to the existing speed tables is recommended along N. 14th Avenue.

#1 - 420 ft south of Arthur St centerline
#2 - 420 ft north of Arthur St centerline
#3 - 860 ft north of Arthur St centerline
#4 - 980 ft south of Sheridan St centerline

2. The resulting spacing pattern will be as follows (centerline-centerline):

A. Johnson St to Speed Table #1	890 feet
B. Speed Table #1 to Arthur St	420 feet
C. Arthur St to Speed Table #2	420 feet
D. Speed Table #2 to Speed Table #3	440 feet
E. Speed Table #3 to Taft St Signal	450 feet
F. Taft St Signal to Harding St	670 feet
G. Harding St to Existing Speed Table #1	600 feet
H. Existing Speed Table #1 to Speed Table #4	390 feet
I. Speed Table #4 to Existing Speed Table #2	390 feet
J. Existing Speed Table #2 to Sheridan St	613 feet
Total Length	5,283 feet



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Phase 2 Segments

SEGMENT DESCRIPTION

Date:	2/2/2023 (Rev. 2/12/24)	**Segment ID No.:**	1.3	**Speed Limit:**	25 mph		**Directional Split:**
STREET:	Johnson St. at N. 15th Ave.	**Traffic Count ID No.**	1.3.1 - 1	**Posted:**	Yes		57/43 EB/WB Split
From:	-	**Jurisdiction:**	City	**Existing Daily Volume:**	18,757		
To:	-	**Functional Class:**	Local	**85th %ile Speed (Avg):**	39 (38.6)	mph	**Average Speed (Avg):**
Length:	Not Applicable	**Existing TC Devices:**	None	**Warrant Score:**	15		33 (33.2) mph

Segment Map:

Existing Intersection Controls: Traffic Circle

Existing Traffic Calming Devices:

None

Typical Segment Image:

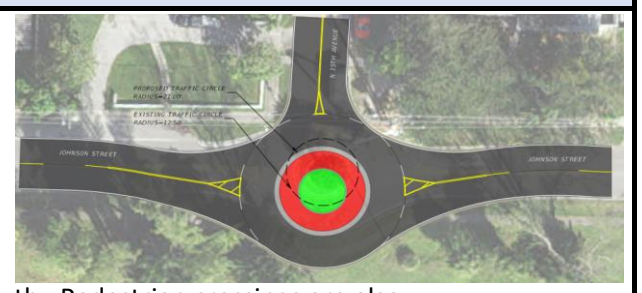
TRAFFIC CALMING ANALYSIS NOTES

1. Citizen Comment: Citizen expressed concerns about drivers crashing into the roundabouts installed along Johnson Street. The current lighting condition along Johnson Street was identified by the citizen as a potential factor contributing to the crashes.
2. A single count location was placed approximately 420 ft west of the intersection. This location was chosen as it is located between intersections being analyzed as part of this traffic calming initiative. The other intersection is located approximately 530 ft west of the count location. Both intersections are roundabouts.
3. The 85th%-ile traffic speeds recorded at the count location averaged 39 mph, exceeding the 30 mph speed limit. The average speed of 33 mph also exceeded the speed limit.

4. Johnson Street is defined as a local street, with a daily volume of approximately 18,757 vehicles. This exceeds the standard traffic volume of a local roadway. Traffic in heavier in the EB direction with a 57/43 EB/WB split, suggesting motorists may use this segment of Johnson Street at a cut-through route.
5. The north side of fronting properties are residential, whereas the south side is a golf course. Both sides of the roadway provide pedestrian sidewalks. Lighting is provided on the north side of the roadway at the intersection.
6. The existing roundabout island is slightly raised, placed in the center of the roadway. The dimensions include an outside diameter of 60 feet, center island of 25 feet including border curbing, and turning roadway width of 17 feet including the outer curb.
7. The high speed and volume recorded along Johnson Street suggest motorists are not entering the roundabout at a safe speed.
8. Based on aerial imagery, it appears some motorists traversing the roundabout shift to the outside of the approach roadways, minimizing the offset c reated by the roundabout to approximately 8 feet. Additionally, some motorists appears to misjudge the horizontal geometry and overshoot their exit, resulting in riding over the outbound outer curb based on tire marks and curb damage observed. Vehicles towing boat trailers amplify this effect.

RECOMMENDED ACTION

1. Modifications of the roundabout island include:
A. Increasing the outside diameter to 74 feet.
B. Increasing the center island diameter to 42-44 feet.
C. Shifting the centerpoint of the island approximately 10 ft. south of Johnson St. centerline.
D. Turn both approach roadways southward toward the shifted island centerpoint.
E. This will increase the nominal offset from 12 ft. to 20 ft.



As shown on the next page, the sidewalk on the south side of Johnson St. will require relocation to the south. Pedestrian crossings are also shown as part of the concept. Roundabout geometry would be similar to the existing roundabout at N. 35th Ave./Garfield St.

2. Install a speed table between N. 16th Court and N. 15th Avenue at 1531 Johnson St.
The spacing between traffic calming devices will be as follows:

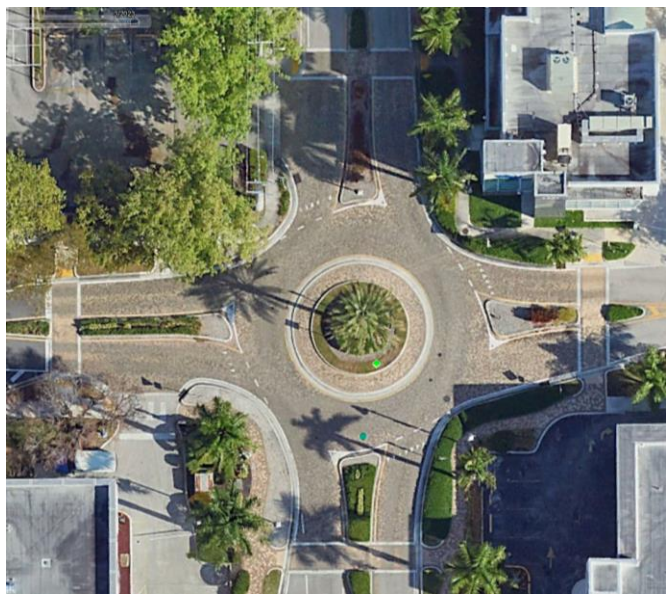
1. N. 15th Avenue to Speed Table	420 feet
2. Speed Table to N. 16th Court	537 feet
Total	957 feet

TRAFFIC CALMING ANALYSIS WORKSHEET

Phase 2 Segments

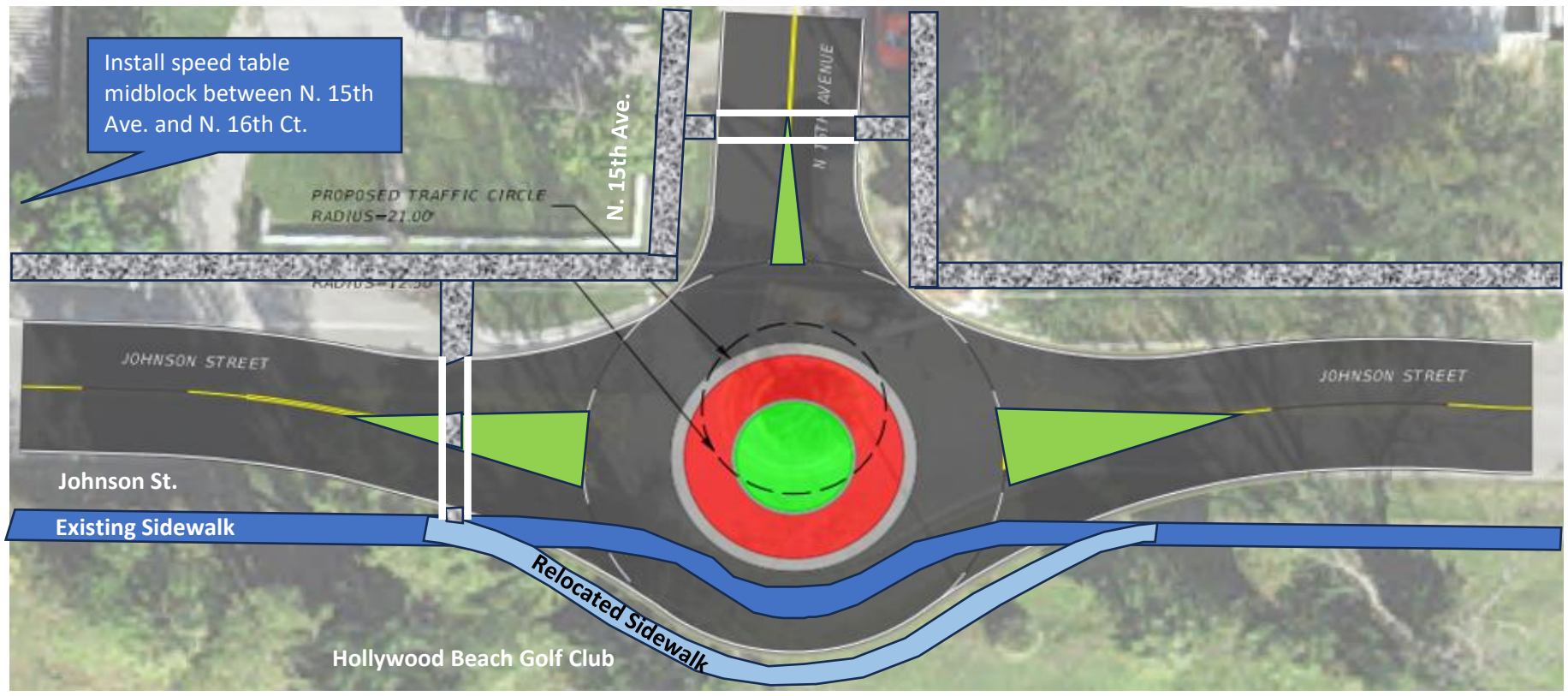
RECOMMENDED ACTION (Continued)

Roundabout at N. 35th Ave./Garfield St. (44 ft. diameter)

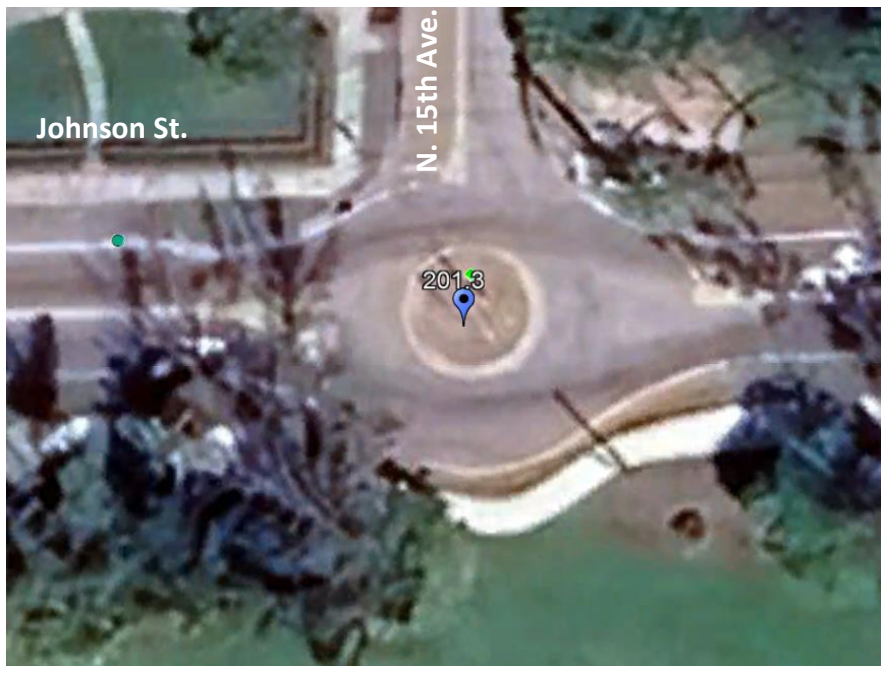


Existing Roundabout Looking East

Proposed Roundabout



Existing Roundabout



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Phase 2 Segments

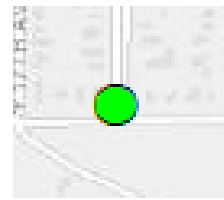
SEGMENT DESCRIPTION

Date:	10/20/2020 (Rev. 2/12/24)	**Segment ID No.:**	1.4	**Speed Limit:**	30 Mph		**Directional Split:**
STREET:	Johnson St. at N.16th Ct.	**Traffic Count ID No.:**	1.3.1 - 1	**Posted:**	No		57/43 EB/WB Split
From:	-	**Jurisdiction:**	City	**Existing Daily Volume:**	18,757		
To:	-	**Functional Class:**	Local	**85th %ile Speed (Avg):**	39 (38.6)	mph	**Average Speed (Avg):**
Length:	N/A	**Existing TC Devices:**	Traffic circle	**Warrant Score:**	15		33 (33.2)

Segment Map:

Existing Intersection Controls:

Traffic Circle



Existing Traffic Calming Devices:

None.

Typical Segment Image:

Looking WB at the traffic circle.

TRAFFIC CALMING ANALYSIS NOTES

1. Citizen Comment: Citizen expressed concerns about drivers crashing into the roundabouts installed along Johnson Street. The current lighting condition along Johnson Street was identified by the citizen as a potential factor contributing to the crashes.
2. A single count location was placed approximately 530 ft east of the intersection. This location was chosen as it is located between intersections being analyzed as part of this traffic calming initiative. The other intersection is located approximately 430 ft east of the count location (Johnson Street at N. 15th Avenue). Both intersections are roundabouts.
3. The 85th%-ile traffic speeds recorded at the count location averaged 39 mph, exceeding the 30 mph speed limit. The average speed of 33 mph also exceeded the speed limit.
4. Johnson Street is defined as a local street, with a daily volume of approximately 18,757 vehicles. This exceeds the standard traffic volume of a local roadway. Traffic in heavier in the EB direction with a 57/43 EB/WB split, suggesting motorists may use this segment of Johnson Street at a cut-through route.
5. The north side of fronting properties are residential, whereas the south side is a golf course. Both sides of the roadway provide pedestrian sidewalks. Lighting is provided on the north side of the roadway at the intersection.
6. The existing roundabout island is slightly raised, placed in the center of the roadway. The dimensions include an outside diameter of 60 feet, center island of 25 feet including border curbing, and turning roadway width of 17 feet including the outer curb.
7. The high speed and volume recorded along Johnson Street suggest motorists are not entering the roundabout at a safe speed.

8. Based on aerial imagery, it appears some motorists traversing the roundabout shift to the outside of the approach roadways, minimizing the offset created by the roundabout to approximately 8 feet. Additionally, some motorists appears to misjudge the horizontal geometry and overshoot their exit, resulting in riding over the outbound outer curb based on tire marks and curb damage observed. Vehicles towing boat trailers amplifies this effect.

RECOMMENDED ACTION

1. Modifications of the roundabout island include:
A. Increasing the outside diameter to 74 feet.
B. Increasing the center island to 42 feet.
C. Shifting the centerpoint of the island 10 ft south of Johnson St centerline.
D. Turn both approach roadways southward toward the shifted centerpoint.
E. This will increase the nominal offset from 12 ft to 20 ft.

Design of the roundabout at Johnson Street at N. 16th Court would be similar to the design at N. 15th Avenue, however, would require a southbound median to be incorporated.

• Johnson St. at N 15th Ave.

As for roundabout revision at N. 15th Ave./Johnson St. (Phase 2 - Segment 1.3), the sidewalk on the south side of Johnson St. would need to be relocated to the south. Pedestrian crossing would be similar to those at N. 15th Ave./Johnson St. See that worksheet for details.

2. Install a speed table between N. 16th Ct. and N. 15th Ave.
The spacing between traffic calming devices will be as follows:

A. N. 16th Court to Speed Table	537 feet
B. Speed Table to N. 15th Avenue	420 feet
Total	957 feet

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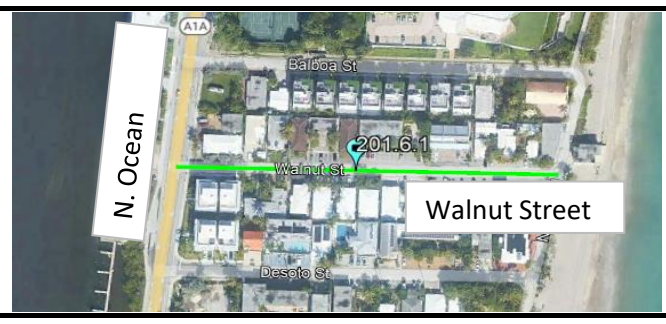
TRAFFIC CALMING ANALYSIS WORKSHEET

Phase 2 Segments

SEGMENT DESCRIPTION

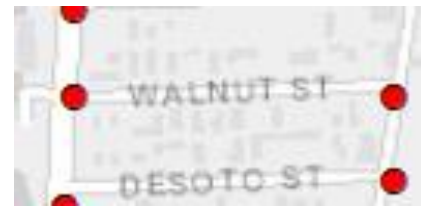
Date:	2/2/2023 (rev. 2/12/24)	**Segment ID No.:**	1.6	**Speed Limit:**	30 mph		**Directional Split:**
STREET:	Walnut Street	**Traffic Count ID No.**	1.6.1 - 1	**Posted:**	No		61/39 EB/WB Split
From:	SR A1A/N.Ocean Dr.	**Jurisdiction:**	City	**Existing Daily Volume:**	236		
To:	N. Surf Road	**Functional Class:**	Local	**85th %ile Speed (Avg):**	21 (21.5)	mph	**Average Speed (Avg):**
Length:	634 ft.	**Existing TC Devices:**	None	**Warrant Score:**	7		15 (15.4) mph

Segment Map:



Existing Intersection Controls:

Stop controlled at both ends.



Existing Traffic Calming Devices:

None.

Typical Segment Image:

Looking east at midblock between AR A1A and N. Surf Rd.

TRAFFIC CALMING ANALYSIS NOTES

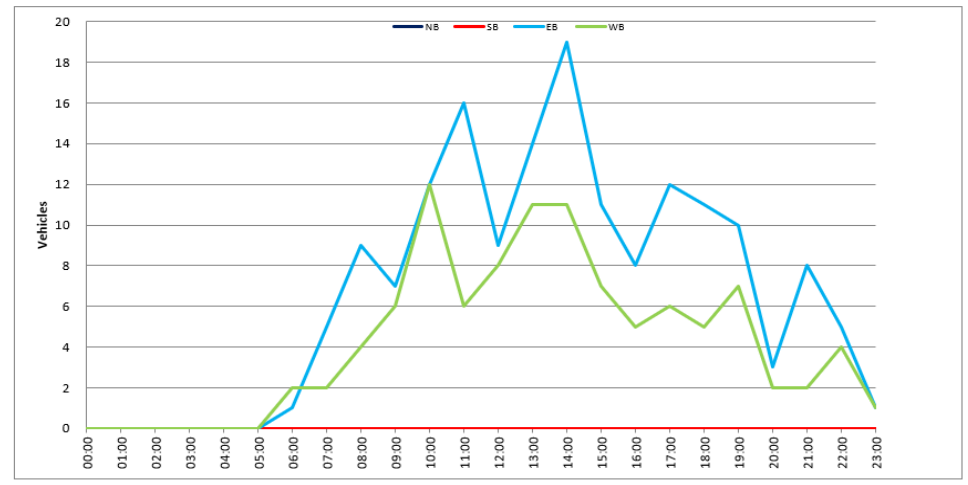
1. No details provided. However, this section of roadway is a shared use roadway located near N. Surf Road which was requested to be analyzed as part of this Traffic Calming Study.
2. No traffic calming devices are present. Sidewalks are only available for approximately 10% of the south roadway.
3. Section is a shared use area close to beach access. Both sides of the road primarily perpendicular parking to residents and hotels.
4. Crash history includes 5 crashes including 2 injury crashes and 3 property damage crashes, with all injury crashes occurring at intersection of N. Ocean Dr.

5. The 85th percentile speed was recorded at 21 mph, lower than the speed limit of 30 mph, the nominal unposted speed limit. The average speed as recorded at 15 mph. This suggests speeding is not an issue along this segment and does not contribute to a warrant for traffic calming devices.
6. The average daily traffic volume was recorded as 707 vehicles with approximately a 61/39 EB/WB split. This could suggest vehicles using this segment as a cut-through, although it is more likely vehicles simply enter to the west which is the main road to park and may exit in the other direction.

Prepared by NDS/ATD

Project #: FL21_140170_006 **City:** Hollywood

Location: Walnut St E/O SR A1A/N Ocean Dr **Date:** 4/19/2022



7. The fronting properties are a combination of residential and hotels. The businesses provide perpendicular parking spaces for guests. The roadway center lane is unmarked and provides approximately 10 ft. lanes on either side. However, the segment appears to be primarily used as a one lane facility and shared use with bicycles.

8. The primary factors contributing to a warrant is crashes and pedestrian activities. Due to the majority of crashes occurring at the intersection with Highway SR A1A, and low speeds these points for warrant analysis can be discounted. Therefore, no traffic calming action is recommended for this segment.

RECOMMENDED ACTION

No action recommended as Walnut Street primarily meets warrant criteria due to crashes occurring at the intersection of Highway 1A1. Combined with low speeds and volumes, traffic calming devices are unnecessary.

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TRAFFIC CALMING ANALYSIS WORKSHEET

Phase 2 Segments

SEGMENT DESCRIPTION

Date:	2/2/2023 (Rev 02/12/24)	**Segment ID No.:**	1.7	**Speed Limit:**	25 mph	**Directional Split:**	
STREET:	Liberty Street	**Traffic Count ID No.:**	1.7.1 - 2	**Posted:**	Yes	47/53 EB/WB Split	
From:	US 1	**Jurisdiction:**	City	**Existing Daily Volume:**	1,152/808		
To:	N. 14th Avenue	**Functional Class:**	Local	**85th %ile Speed (Avg):**	31/27 (29) mph	**Average Speed (Avg):**	
Length:	2,740 ft.	**Existing TC Devices:**	2 Speed Tables	**Warrant Score:**	12/5	24/22 (22.8) mph	

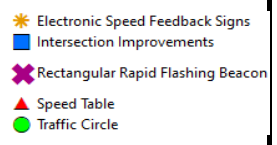
Segment Map:

Existing Intersection Controls:

Stop signs at east and west ends.

Existing Traffic Calming Devices:

Speed tables near N. 14th Terrace and N. 16th Ave.



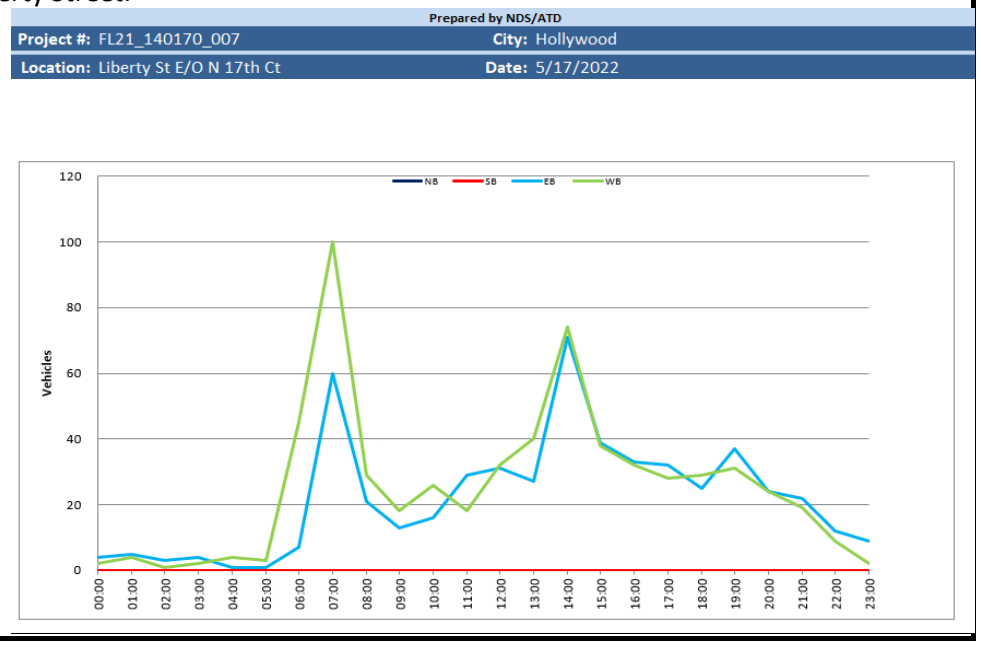
Typical Segment Image:

Looking east from midblock.

TRAFFIC CALMING ANALYSIS NOTES

1. Citizen Comment: Citizen expressed concerns of speeding along Liberty Street in both directions. Additionally, geometric concerns regarding a trench forming from the north to south across Liberty Street were identified. Lack of signing displaying the speed limit was raised including high pedestrian populations with lack of sidewalks. Citizen recommended speed reducing risers at the 1700 block of Liberty Street.

2. Two speed tables exist along Liberty Street, with one located between N. 15th Avenue and N. 16th Avenue and another located between N 14th Avenue and N. 15th Avenue. Sidewalks are provided along approximately 40% of Liberty Street on both sides of the roadway, located at both the east and west ends.
3. Two traffic counts were performed along Liberty Street, recording an average 85th percentile speed of 31 mph and 27 mph. However, the second traffic count was located approximately 140 ft from a speed table which likely impacted the recorded 85th percentile speed. The posted speed limit is 25mph which is below both recorded 85th percentile speeds. The average speed of drivers was recorded as 24 mph and 22 mph.
4. The average daily volume recorded at both count stations was 1,152 and 808 for the west and east counts respectively with a 47/53 EB WB split suggesting little cut through traffic occurs along Liberty Street. The higher volume from the west count is likely due to the commercial properties present in that area. Liberty Street is classified as a local street with slightly above the expected volume.
5. The fronting properties in the west segment are primarily commercial and provide perpendicular driveways for customer access. The rest of the segment is primarily residential with driveways providing on road access to properties. Most residence have street tress.
6. Crash data did not show a significant amount of crashes, with only 4 property damage incidents reported along Liberty Street. Most of these crashes occurred at the west end of the segment near the intersection of US 1 and Liberty Street.



CITY OF Hollywood FLORIDA
DEPARTMENT OF DEVELOPMENT SERVICES
Engineering, Transportation, and Mobility

Traffic Calming Master Plan

ATKINS

TRAFFIC CALMING ANALYSIS WORKSHEET

Phase 2 Segments

SEGMENT DESCRIPTION

Date:	2/2/2023 (Rev 02/12/24)	**Segment ID No.:**	1.7	**Speed Limit:**	25 mph	**Directional Split:**
STREET:	Liberty Street	**Traffic Count ID No.:**	1.7.1 - 2	**Posted:**	Yes	47/53 EB/WB Split
From:	US 1	**Jurisdiction:**	City	**Existing Daily Volume:**	1,152/808	
To:	N. 14th Avenue	**Functional Class:**	Local	**85th %ile Speed (Avg):**	31/27 (29) mph	**Average Speed (Avg):**
Length:	2,740 ft.	**Existing TC Devices:**	2 Speed Tables	**Warrant Score:**	12/5	24/22 (22.8) mph

TRAFFIC CALMING ANALYSIS NOTES (Continued)

Observations

1. No sign of cut-through traffic as noted, with directional split 47/53 in the EB/WB direction.
2. Street classified as a local street.
3. Speeds are elevated above the posted speed limit of 25 MPH.
4. The segment is approximately half a mile long with sidewalks on the west and east side.
5. A review of available traffic calming tools led to the selection of speed tables and an intersection divider for this corridor. Consideration was given to two additional speed tables and the implementation of an intersection divider to help provide traffic calming between the two existing speed tables. The two existing speed tables are 780 ft apart, not allowing enough space to provide an additional speed table between them.

RECOMMENDED ACTION

Recommendation

1. The installation of speed tables and an intersection divider along Liberty Street is proposed as follows:
   - #1 Speed Table - 390 ft. east of US 1 centerline (at 1711 Liberty St.)
   - #2 Speed Table - 288 ft. west of N. 16th Avenue centerline (at 1610 Liberty St.)
   - #3 Speed Table - 40 ft. west of N. 15th Ave. centerline (at 1502 Liberty St.)

2. The resulting spacing pattern will be as follows:

A. US 1 centerline to #1 Speed Table		**620 feet**
B. #1 Speed Table to #2 Speed Table		**415 feet**
C. #2 Speed Table to Existing Speed Table #1		**435 feet**
D. Existing Speed Table #1 to Speed Table 3		**390 feet**
E. Speed Table 3 to Existing Speed Table #2		**400 feet**
F. Existing Speed Table #2 to N. 14th Avenue centerline		**480 feet**
	Total	**2,740 feet**

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DEPARTMENT OF DEVELOPMENT SERVICES

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TRAFFIC CALMING ANALYSIS WORKSHEET

Phase 2 Segments

SEGMENT DESCRIPTION

Date:	Jan. 24, 2023 (Rev. 02/12/24)	**Segment ID No.:**	1.8	**Speed Limit:**	25 mph	**Directional Split:**
STREET:	S. 12th Avenue	**Traffic Count ID No.**	1.8.1 - 3	**Posted:**	No	54/46 NB/SB Split
From:	Washington St.	**Jurisdiction:**	City	**Existing Daily Volume:**	735/1,097/568	
To:	Hollywood Blvd.	**Functional Class:**	Local	**85th %ile Speed (Avg):**	29/30/29 (29.4) mph	**Average Speed (Avg):**
Length:	3,040 feet	**Existing TC Devices:**	None	**Warrant Score:**	10/10/8	23/24/24 (23.4) mph

Segment Map:

North →

Existing Intersection Controls:

Stop signs at north and south end

Stop sign at Harrison St

North →

Existing Traffic Calming Devices:

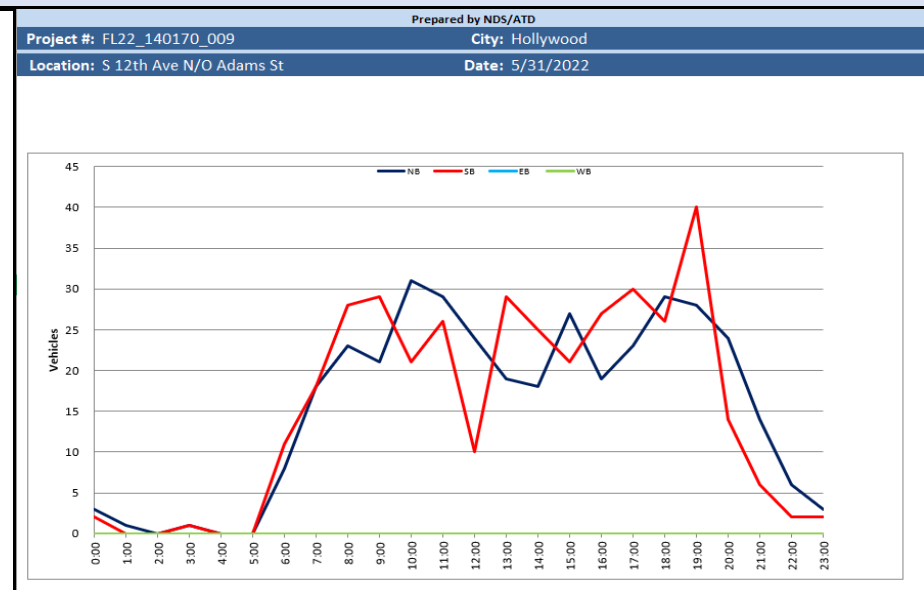
No traffic calming devices on this segment.

Typical Segment Image:

Looking south at midblock.

TRAFFIC CALMING ANALYSIS NOTES

1. Citizen Comment: Citizen expressed concerns of vehicles speeding along S. 12th Avenue and has requested speed humps to be installed.
2. Crash history includes 6 injury and 7 property damage only crashes over 5 years, or 2.6 crashes per year on the average over a 0.57 mile length. There were three bicycle crashes, one at each intersection ends and one near the middle. The crashes were generally spread over the segment length with no definable patterns. There were 4 angle, 5 other, 3 bicycle, and 1 left turn crash. The alignment curvatures did not seem susceptible to crashes.
3. The alignment is generally somewhat open with few sight restrictions.
4. Volumes are low to moderate depending on the location.
5. 85th-ile speeds average 4.4 mph over the posted speed limit of 25 mph.
6. Based on the three bicycle crashes, the segment scenary make attract bicyclists. There is a separate paved path along the lake bulkhead which is available to bicyclists, but there are no designated bicycle facilities along the segment.
7 The N. Southlake Drive and S. Southlake Drive approaches have a Stop Sign control, but at the S. Southlake Drive intersection, there is also a northbound Stop Sign, while the N. Northlake Drive intersection does not have a southbound Stop Sign. The sharp alignment curves are both marked with arrow signs, while the northern curve also has several chevron signs.



RECOMMENDED ACTION

1. It is recommended to install four speed tables along this segment to moderate the elevated travel speeds. This analysis considered the two relatively sharp alignment curves as a form of traffic calming that reduces travel speed. The diagram on Page 2 with companion tables lay out the location of the proposed speed tables and the resulting separation of the speed table and existing intersection traffic controls.

2. It is also recommended to modify the interesections of Madison St. and Jackson St. with S. 12th Ave. as presented on Page 3 of the worksheet. Option A is considered the preferred approach to better defining the geometry of these two intersections and reduce driver confusion and indecision.

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TRAFFIC CALMING ANALYSIS WORKSHEET

Phase 2 Segments

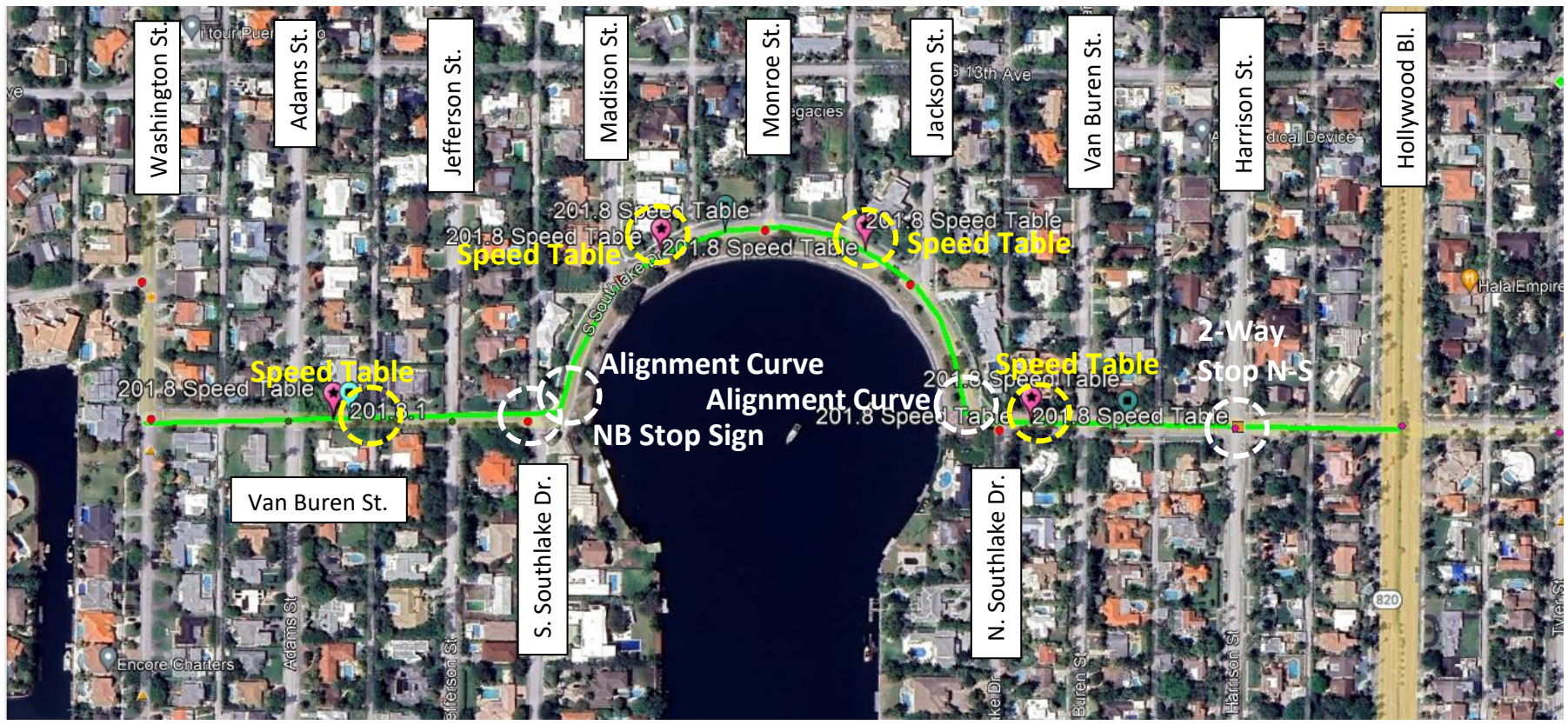
SEGMENT DESCRIPTION

Date:	Jan. 24, 2023 (Rev. 02/12/24)	**Segment ID No.:**	1.8	**Speed Limit:**	25 mph	**Directional Split:**
STREET:	S. 12th Avenue	**Traffic Count ID No.**	1.8.1 - 3	**Posted:**	No	54/46 NB/SB Split
From:	Washington St.	**Jurisdiction:**	City	**Existing Daily Volume:**	735/1,097/568	
To:	Hollywood Blvd.	**Functional Class:**	Local	**85th %ile Speed (Avg):**	29/30/29 (29.4) mph	**Average Speed (Avg):**
Length:	3,040 feet	**Existing TC Devices:**	None	**Warrant Score:**	10/10/8	23/24/24 (23.4) mph

RECOMMENDED ACTION

Proposed Improvements

NORTH >



Proposed Speed Tables

Speed Table 1	80 feet north of Adams St.
Speed Table 2	240 feet south of Monroe St.
Speed Table 3	210 feet north of Monroe St.
Speed Table 4	70 feet north of North Southlake Dr.

Resulting Spacing

Washington Street centerline (Stop Sign) to Speed Table 1	400 feet
Speed Table 1 to NB Stop Sign at S. Southlake Dr. centerline	435 feet
S. Southlake Dr. centerline to South Alignment Curve	50 feet
South Alignment Curve to Speed Table 2	440 feet
Speed Table 2 to Speed Table 3	450 feet
Speed Table 3 to North Alignment Curve	450 feet
North Alignment Curve to Speed Table 4	120 feet
Speed Table 4 to 2-Way N-S Stop Sign at Harrison St. centerline	440 feet
Harrison St. centerline (2-Way N-S Stop Sign)to Hollywood Blvd. centerline (Stop Sign)	355 feet
TOTAL	3,140 feet

TRAFFIC CALMING ANALYSIS WORKSHEET

Phase 2 Segments

SEGMENT DESCRIPTION

Date:	Jan. 24, 2023 (Rev. 02/12/24)	**Segment ID No.:**	1.8	**Speed Limit:**	25 mph	**Directional Split:**
STREET:	S. 12th Avenue	**Traffic Count ID No.**	1.8.1 - 3	**Posted:**	No	54/46 NB/SB Split
From:	Washington St.	**Jurisdiction:**	City	**Existing Daily Volume:**	735/1,097/568	
To:	Hollywood Blvd.	**Functional Class:**	Local	**85th %ile Speed (Avg):**	29/30/29 (29.4) mph	**Average Speed (Avg):**
Length:	3,040 feet	**Existing TC Devices:**	None	**Warrant Score:**	10/10/8	23/24/24 (23.4) mph

RECOMMENDED ACTION

Intersection Modification Options

- ***At Jackson St. and Madison St. Intersections***
- ***Jackson St. intersection illustrated.***

While crash history did not flag any issues with the skewed intersections at S. 12th Ave. and the Jackson St. and Madison St. intersections, options to address the unusual geometry were developed. Note that the options illustrate the Jackson St. intersection, but mirror-image treatments would apply at the Madison St. intersection as well.

Option A: Adds an island to better define intersection geometry and does not affect drainage. Considered as the preferred option.

Option B: Removes pavement on one side of the intersection to create a 90-degree junction. May affect drainage and is more costly.

Option C: Somewhat similar to Option B in terms of realignment, but adds two small islands which may be confusing. While not affecting drainage, considered less preferable to Option A.

Option A is the preferred option by better defining the intersection in a simpler way at relatively low cost.

OPTION A: One Large Island

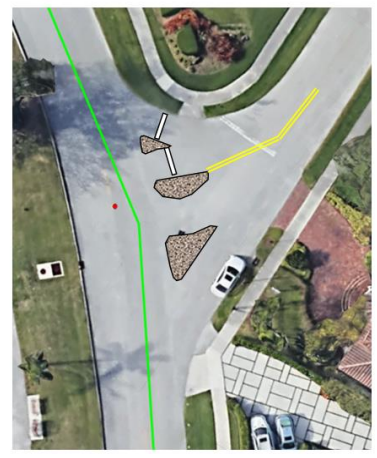
- Provides standard perpendicular intersection.
- Better defines movements through expanse of paving.
- Requires some pavement removal.
- Concept can be flipped for similar intersection with reversed geometry.
- Low cost.
- Preferred option.

OPTION B:

- Provides standard perpendicular intersection.
- Better defines movements through expanse of paving.
- Requires some pavement removal.
- Concept can be flipped for similar intersection with reversed geometry.
- More expensive.
- Workable option to Option A.

OPTION C:

- Provides perpendicular intersection.
- Better defines movements through expanse of paving.
- Should not affect drainage.
- More complicated island layout.
- Not preferred.



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Traffic Calming Master Plan

TRAFFIC CALMING ANALYSIS WORKSHEET

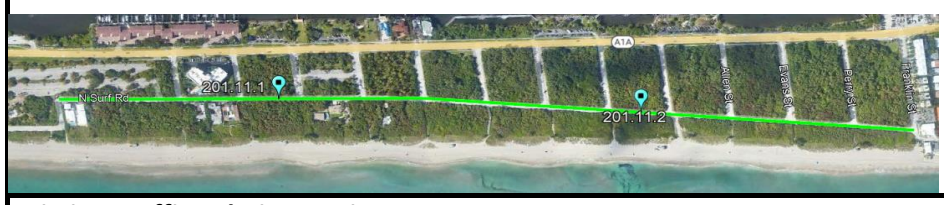
Phase 2 Segments

SEGMENT DESCRIPTION

Date:	2/1/2023 (Rev. 2/12/24)	**Segment ID No.:**	1.11	**Speed Limit:**	15 mph	**Directional Split:**	
STREET:	N. Surf Road	**Traffic Count ID No.:**	11.1-11.2	**Posted:**	Yes	Not Available.	
From:	Simms St.	**Jurisdiction:**	City	**Existing Daily Volume:**	409/453		
To:	Franklin St.	**Functional Class:**	Local	**85th %ile Speed (Avg):**	Not Available.	**Average Speed (Avg):**	
Length:	4,013 ft	**Existing TC Devices:**	None	**Warrant Score:**	Not Available.	Not Available.	

Segment Map:

North →

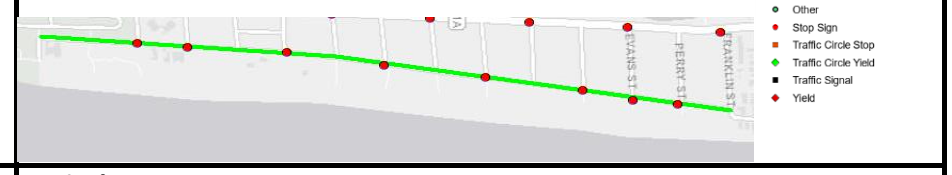


Existing Intersection Controls:

Stop signs located on side streets.

SB Stop sign at Evans St.

North →

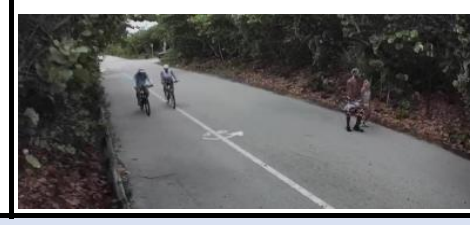


Existing Traffic Calming Devices:

No traffic calming devices on this segment.

Typical Segment Image:

Looking SB from Meade St.



Looking NB from Cody St.

TRAFFIC CALMING ANALYSIS NOTES

1. No Citizen comment.
2. No Traffic Calming devices are present. No sidewalks are present, although a bicycle lane is available along the entire segment. Since the segment is one-way only one bicycle lane is provided. Pedestrian traffic currently utilizes the roadway or bicycle lane for walking.
3. Crash history shows only two minor crashes occurred along North Surf Road. Both occurred at intersections including a rear end to side crash with a parked motor vehicles and an off-road intersection crash.
4. Speeds were not recorded at this location, although video footage suggests vehicles travel below the posted speed limit of 15 mph.
5. The segment runs parellel with N Ocean Dr (Highway A1A) which is used as the primary collector for vehicles. N. Surf Drive is fronted by primarily vegetation, with the exception of some commercial buildings providing driveway access. N. Surf Drive provides beach access at at approximately 11 locations along the segment, making it a common route for pedestrians to use to access the beach.

6. N. Surf Drive segment is one-directional, requiring one-way traffic in the NB direction for most of the segment. At the north end of the segment, the direction switches to southbound for approximately 530 ft north of Evans St. Most roads providing perpindicular access to N. Surf road provide parking spaces.
7. On average, the recording stations counted 409 and 453 vehicles at count location 11.1 and 11.2 respectively. The traffic on Sunday was significantly higher than Friday or Saturday, with 975 vehicles, 1521 pedestrians, and 1095 bicycles recorded at the south count station. Similarly, the north count station recorded 777 vehicles, 1335 pedestrians, and 1254 bicycles. The daily volume ranges for pedestrians was 487-1521, for bicyclists 771 to 1254 and vehicles was 157 to 1035.
8. The direction of travel for bicyclists and pedestrians was close to 50/50 for northbound/southbound. Most vehicles were travelling northobund except for 1-3% travelling in the wrong direction (southbound).
9. The mode share on average was 39% pedestrians, 42% bicyclists, and 19% vehicles. One Sunday, the overall mode share was 41% pedestrians, 34% bicyclists, and 25% vehicles.

10. Vehicles are mostly seeking beach access parking. Other users include recreational walkers, beach access pedestrians, rollerbladers, skateboarders, bicyclists, motorized bike. Bicyclists were observed passing pedestrians and opposing bicycle movements. Pedestrians observed stopping in bicycle lane and being passed by cars on the road. Pedestrians also observed utilizing both the bicycle lane and road.

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TRAFFIC CALMING ANALYSIS WORKSHEET

Phase 2 Segments

SEGMENT DESCRIPTION

Date:	2/1/2023 (Rev. 2/12/24)	**Segment ID No.:**	1.11	**Speed Limit:**	15 mph	**Directional Split:**
STREET:	N. Surf Road	**Traffic Count ID No.:**	11.1-11.2	**Posted:**	Yes	Not Available.
From:	Simms St.	**Jurisdiction:**	City	**Existing Daily Volume:**	409/453	
To:	Franklin St.	**Functional Class:**	Local	**85th %ile Speed (Avg):**	Not Available.	**Average Speed (Avg):**
Length:	4,013 ft	**Existing TC Devices:**	None	**Warrant Score:**	Not Available.	Not Available.

TRAFFIC CALMING ANALYSIS NOTES (Continued)

Observations

1. The use of the east lane of the roadway is posted as "bidirectional bicycles" every two blocks. This limited guidance could lead all modes to utilizing different parts of the street at various times.
2. Vehicle speeds were observed to generally conform to the posted speed limit of 15 mph. The speed of bicyclists were estimated at 5-15 mph and pedestrians as 1-5 mph, suggesting good conformance across all modes.
3. Most vehicles are looping between eastbound and westbound cross streets to find parking access/egress rather than utilizing N. Surf Road for extended Northbound travel.
4. The most vulnerable road users are pedestrians which are make up a large percentage of the mode split.
5. While typical traffic calming devices are not necessary, improvements to safety and mobility of N. Surf Road are needed. The design approach should aim to achieve the following: Providing designated areas for each mode of transport where possible, seperating modes in relation to relative vulnerability, and considering bidirectional movements

RECOMMENDATIONS

NOTE: BELOW RECOMMENDATION IS SUPERCEDED BY A PRESENTATION (dated Feb. 23, 2024) which presents a variety of alternatives. The City is presently evealuating those and possibly other options. Eventual implementation may occur as part of a road resurfacing project for this segment.

1. The lane usage of N. Surf Road is recommended to be modified as follows:
   A) Provide a 10' southbound shares use lane on the west side of the road for vehicles
   B) Provide a 7.5' designated pedestrian lane on the east side of the road
   C) Insert a 4.5' designated NB bicycle lane between the vehicle and pedestrian lane
2. This provides the greatest seperation between pedestrians and vehicles and also allows for separate directional lanes for bicycles.
3. This configuration provides pedestrians with direct beach access, allowing for slow movements and minimizing conflicts.
4. Implementing the proposed configuration requires the following changes to N. Surf Road:
   A) Reversing existing northbound street segment to southbound flow
   B) Removing existing bicycle lane pavement markings and replace with pedestrian markings
   C) Add SB bicycle lane pavement markings
   D) Add NB sharrow lane pavement markings (Vehicle and Bicycles)
   E) Add guidance signing on street usage
   F) Replace One-Way signs for reversed flow condition with reinforcing pavement arrows
   G) Reverse flow and angle parking on Freedom Street