RESOLUTION 32-05-22

A RESOLUTION OF THE TOWN COMMISSION OF THE TOWN OF LAKE PARK, FLORIDA SUPPORTING THE FINDINGS AND RECOMMENDATIONS ASSOCIATED WITH THE 10th STREET OVAL-A-BOUT FEASIBILITY STUDY (THE STUDY) AND AUTHORIZING TRANSMITAL TO PALM BEACH COUNTY; AND PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, the Town of Lake Park, Florida (hereinafter "Town") is a municipal corporation of the state of Florida with such power and authority as has been conferred upon it by the Florida Constitution and Chapter 166, Florida Statutes; and

WHEREAS, the Town is empowered to enter into contractual arrangements with other public agencies, private corporations or persons; and

WHEREAS, the Town is responsible for maintaining and operating its traffic and transportation systems and associated infrastructure; and

WHEREAS, the Town has previously determined the need to implement traffic safety and mobility enhancements at the intersection of Tenth Street with Prosperity Farms Road, Northern Drive, and 10th Court by constructing an oval-a-about rotary (the Project); and

WHEREAS, Palm Beach County (the County) has previously expressed a desire to collaborate with the Town to design and construct the Project by adding it to the County's Five-Year Work Plan; and

WHEREAS, at the request of the County, the Town has completed a feasibility study and estimated the construction costs for the Project, the results of which have been presented to the Town Commission; and

WHEREAS, the Town Commission approves of the findings and recommendation with respect to the Project and directs to transmit it to the County for inclusion in the County's Five-Year Work Plan; and

WHEREAS, the Town Manager has recommended that it is in the best interest of the Town to accept the findings and recommendations pertaining to the Project and to transmit them to the County for inclusion in the County's Five-Year Work Plan.

NOW, THEREFORE, BE IT RESOLVED BY THE TOWN COMMISSION OF THE TOWN OF LAKE PARK:

Section 1. The whereas clauses are hereby incorporated herein.

Section 2. The Town Manager is hereby authorized and directed to transmit the findings and recommendations pertaining to the oval-a-bout feasibility study, a copy of which is attached hereto and incorporated herein as Exhibit "A" to Palm Beach County for inclusion in the County's Five-Year Work Plan.

Section 3. This Resolution shall take effect immediately upon its execution.

The foregoing Resolution was offered by Commissioner Michaud who moved its adoption. The motion was seconded by Vice-Mayor Glas-Castro and upon being put to a roll call vote, the vote was as follows:

	AYE	NAY
MAYOR MICHAEL O'ROURKE	✓	
VICE-MAYOR KIMBERLY GLAS-CASTRO	✓	
COMMISSIONER JOHN LINDEN	✓	
COMMISSIONER ROGER MICHAUD	✓	
COMMISSIONER MARY BETH TAYLOR	✓	

The Town Commission thereupon declared the foregoing Resolution No. 32-05-22 duly passed and adopted this 18 day of May, 2022.

TOWN OF LAKE PARK, FLORIDA

BY: _____
MICHAEL O'ROURKE
MAYOR

ATTEST:

_____
VIVIAN MENDEZ
TOWN CLERK

Approved as to form and legal sufficiency:

BY: _____
THOMAS J. BAIRD
TOWN ATTORNEY

TOWN OF LAKE PARK SEAL FLORIDA
(TOWN SEAL)

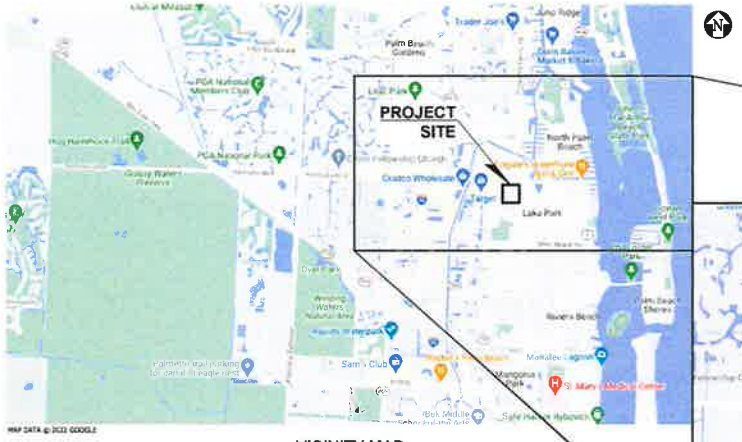
CONCEPTUAL CIVIL ENGINEERING PLANS
FOR
OVAL-A-BOUT INTERSECTION IMPROVEMENTS
10TH STREET & PROSPERITY
LAKE PARK, FL
MARCH 2022

PREPARED FOR:
TOWN OF LAKE PARK

SHEET INDEX

SHEET NO.	SHEET TITLE
C-0	COVER
C-1	CONCEPTUAL ENGINEERING PLAN
C-2	DEMOLITION PLAN
C-3	PAVING, GRADING AND DRAINAGE PLAN
C-4	PAVING, GRADING AND DRAINAGE DETAILS
C-5	PAVEMENT MARKINGS AND SINGAGE DETAILS

TOTAL NO. OF SHEETS = 5



VICINITY MAP
NTS

VICINITY MAP
NTS

CONCEPTUAL DESIGN PHASE

ADAM SWANEY, P.E. PROFESSIONAL ENGINEER LICENSE NO. 75235. THIS DOCUMENT HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY ADAM SWANEY, P.E. USING A SHA-1 AUTHENTICATION CODE. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SHA-1 AUTHENTICATION CODE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

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DESIGN PHASE: CONCEPTUAL

REVISIONS

NO.	DATE	REMARKS	BY

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DRAWN BY: ENGENUITY GROUP, INC.

ADAM SWANEY, P.E. NO. 75235

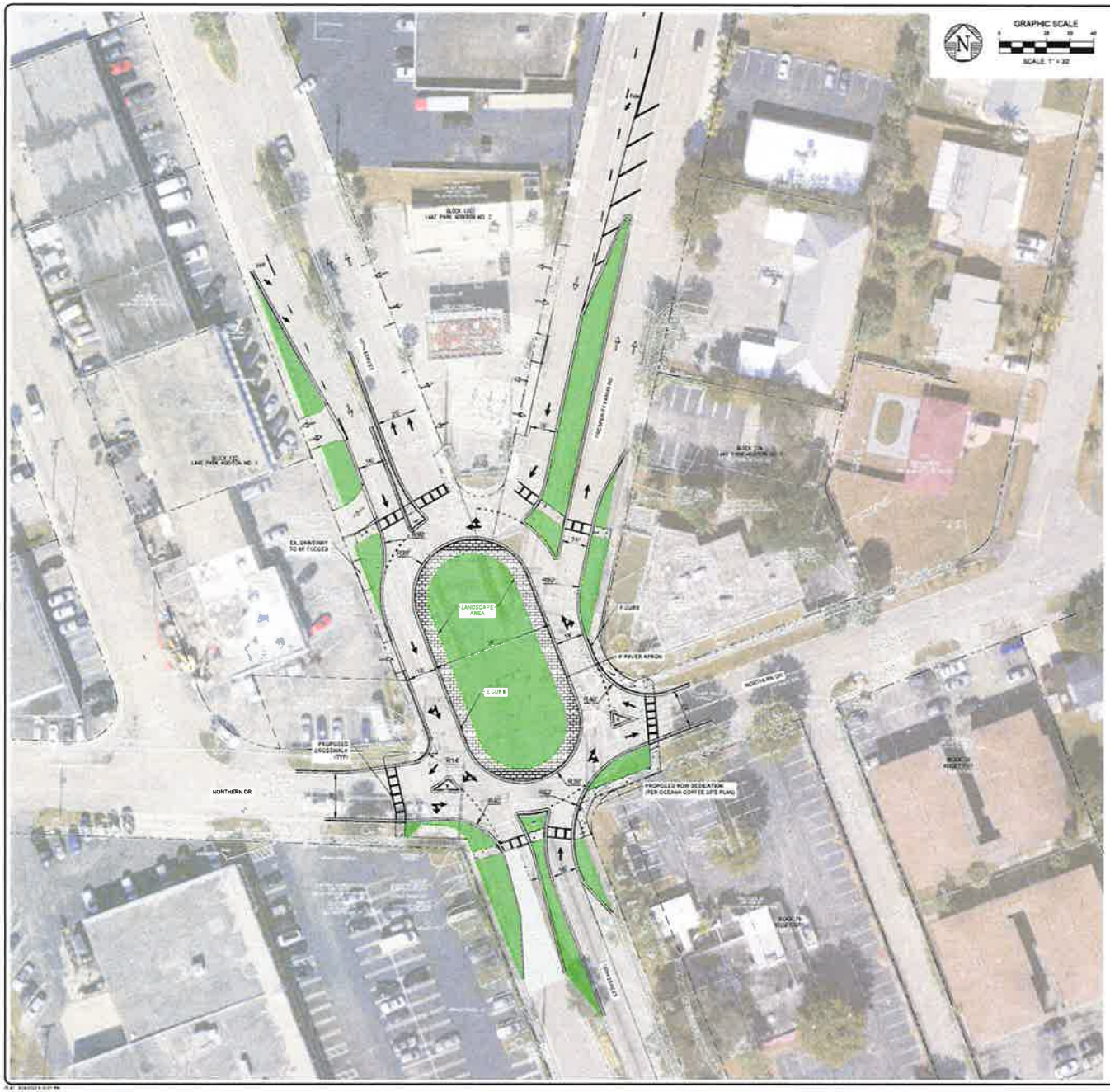
OVAL-A-BOUT INTERSECTION IMPROVEMENTS
10TH STREET & PROSPERITY
LAKE PARK, FL
COVER

engenuity group inc.
1200 N. CONGRESS AVE., SUITE 103
WEST PALM BEACH, FLORIDA 33409
PH: (561)832-1611 - FAX: (561)832-2399 -
WWW.ENGENUITYGROUP.COM CERTIFICATE OF AUTHORIZATION #7935

DRAWN	KG
DATE	MARCH 2022
PROJECT ENGINEER	ACS
APPROVED	KG
APPROVED	ACS

C-0
5

JOB NO.
18187.46



LOCATION MAP
NTS

ENGINEERING LEGEND:

- PROPOSED ASPHALT PAVEMENT
- PROPOSED CONCRETE SIDEWALK
- PROPOSED LANDSCAPE AREA
- PROPOSED PAVERS
- TRAFFIC FLOW DIRECTION
- CATCH BASIN / YARD DRAIN
- 25.00 FINISHED GRADE ELEVATION
- DRAINAGE FLOW DIRECTION

GENERAL NOTES:

1. ELEVATIONS SHOWN HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) AND ARE REFERENCED TO BENCHMARK "Y 402", ELEVATION=16.705' (NAVD 88)
2. TOPOGRAPHIC SURVEY PERFORMED BY ENGENUITY GROUP INC IN NOVEMBER 2020.
3. ALL REMOVED DEBRIS & DEMOLISHED MATERIAL TO BE REMOVED FROM THE SITE AND LEGALLY DISPOSED OF.
4. ALL CROSSWALKS SHALL MEET ADA NO CROSS SLOPE SHALL EXCEED 2%
5. IF PROPOSED WORK DAMAGE PALM BEACH COUNTY ROADWAY, SIDEWALK AND/OR DRAINAGE SYSTEMS, THEN THEY WILL BE CONSTRUCTED REPAIRED OR REPLACED TO ITS ORIGINAL OR BETTER CONDITION AT NO COST TO THE PALM BEACH COUNTY.
6. PAVEMENT MARKINGS AND SIGNING IN PALM BEACH COUNTY RIGHT OF WAY, SHALL BE IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS AND PALM BEACH COUNTY TYPICAL T-P-21
7. CONTRACTOR SHALL CONTACT PBC TRAFFIC OPERATIONS AT 561-233-3900 FORTY-EIGHT (48) HOURS PRIOR TO CONSTRUCTION IF WORK IS BEING DONE WITHIN 10 FEET OF ANY SIGNAL EQUIPMENT.
8. ANY DAMAGE TO SIGNAL EQUIPMENT CAUSED BY THE CONSTRUCTION OF THIS PROJECT MUST BE REPAIRED OR REPLACED TO ORIGINAL OR BETTER CONDITION AT NO COST TO PALM BEACH COUNTY.

LEGEND: (ABBREVIATIONS)

CB	CATCH BASIN
E	EAST
EL	ELEVATION
EXIST	EXISTING
FT	FEET OR FOOT
HDPE	HIGH DENSITY POLYETHYLENE PIPE
INV	INVERT
L	LEFT
LF	LINEAR FEET
N	NORTH
NTS	NOT TO SCALE
ORB	OFFICAL RECORD BOOK
OS	OFFSET
R	RADIUS OR RIGHT
RIM	RIM ELEVATION
PVC	POLYVINYL CHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
R/W	RIGHT-OF-WAY
S	SOUTH
SVC	SERVICE
TYP	TYPICAL
W	WEST
M/E	MATCH EXISTING GRADE

CONCEPTUAL DESIGN PHASE

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REVISIONS		
NO.	DATE	REMARKS
		BY

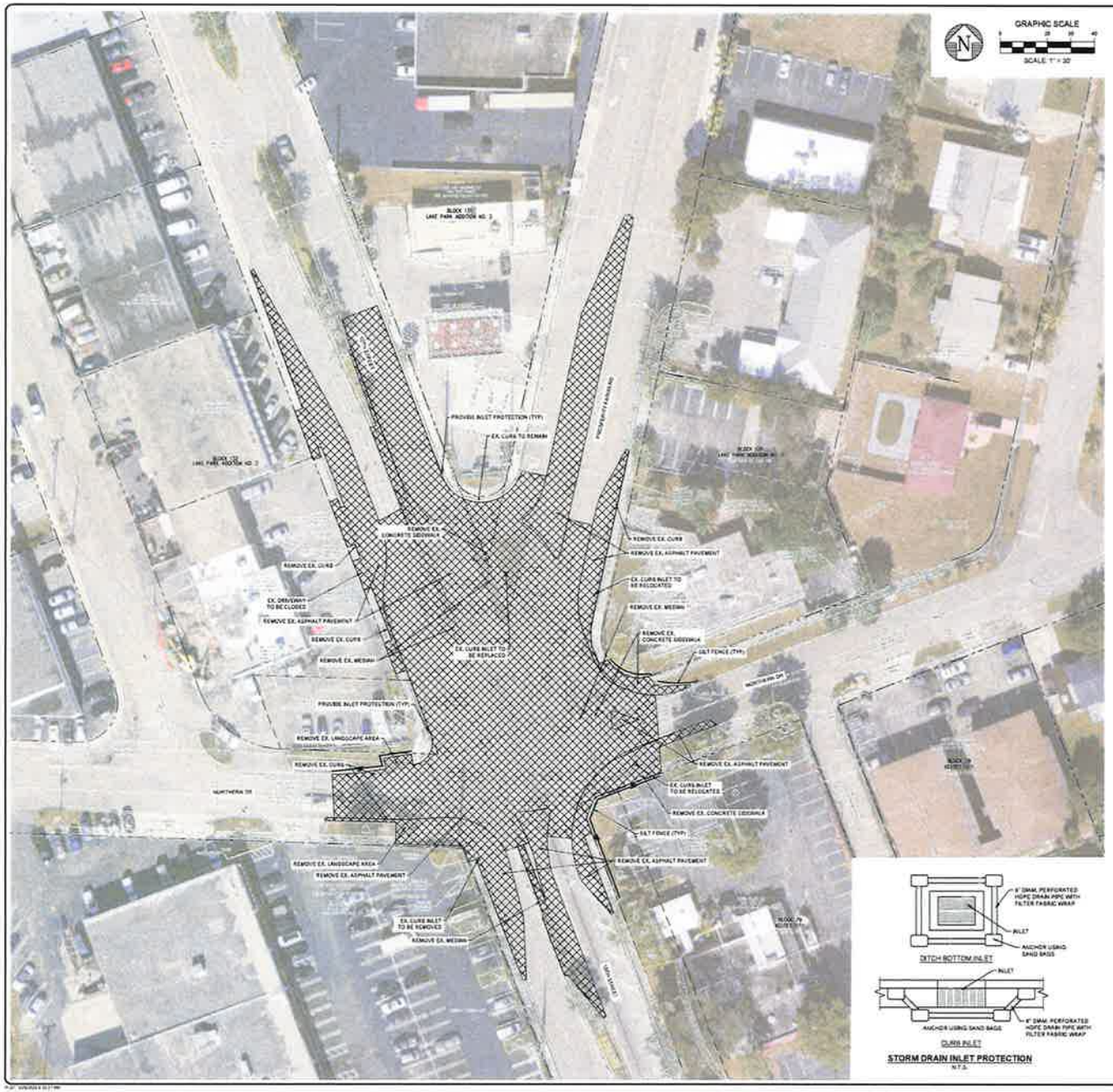
ADAM SWANEY, P.E. NO. 72235

OVAL-A-BOUT INTERSECTION IMPROVEMENTS
10TH STREET & PROSPERITY
LAKE PARK, FL
CONCEPTUAL SITE PLAN

engenuity group inc.
1280 N. CONGRESS AVE., SUITE 103
WEST PALM BEACH, FL 33409
PH (561)800-1151 | FAX (561)623-3280
ENGINEERING BUSINESS CERTIFICATE OF AUTHORIZATION #7915

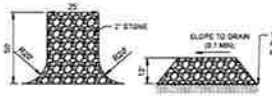
DATE	MARCH 2022	
DRAWN	KG	
PROJECT MANAGER	ACS	
PROJECT ENGINEER	KG	
APPROVED	ACS	

SHEET NO. C-1
5
JOB NO. 18187.46



LOCATION MAP
N.T.S.

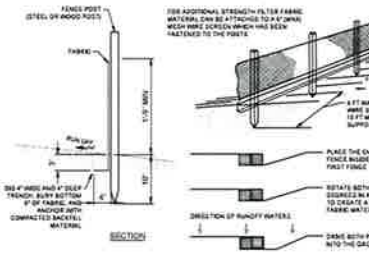
LEGEND	
	DEMOLITION



TEMPORARY GRAVEL ENTRANCE
N.T.S.

SILT FENCE NOTES:

1. THE HEIGHT OF A SILT FENCE SHALL NOT EXCEED 34 INCHES (86 CM).
2. THE FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID THE USE OF JOINTS.
3. POSTS SHALL BE SPACED A MINIMUM OF 10 FEET (3 M) APART AT THE BARRIER LOCATION AND DRIVEN SECURELY INTO THE GROUND A MINIMUM OF 12 INCHES (30 CM). WHEN EXTRA STRENGTH FABRIC IS USED WITHOUT THE WIRE SUPPORT FENCE, POST SPACING SHALL NOT EXCEED 6 FEET (1.8 M).
4. A TRENCH SHALL BE EXCAVATED APPROXIMATELY 4 INCHES (10 CM) WIDE AND 4 INCHES (10 CM) DEEP ALONG THE LINE OF POSTS AND UP-SLOPE FROM THE BARRIER.
5. WHEN STANDARD STRENGTH FILTER FABRIC IS USED, A WIRE MESH SUPPORT FENCE SHALL BE FASTENED SECURELY TO THE UP-SLOPE SIDE OF THE POSTS USING HEAVY DUTY WIRE STAPLES AT LEAST 1 INCH (25 MM) LONG, TIE WIRES, OR HOG RINGS. THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF 2 INCHES (5 CM) AND SHALL NOT EXTEND MORE THAN 36 INCHES (90 CM) ABOVE THE ORIGINAL GROUND SURFACE.
6. THE STANDARD STRENGTH FILTER FABRIC SHALL BE STAPLED OR WIRED TO THE FENCE, AND 8 INCHES (20 CM) OF THE FABRIC SHALL BE EXTENDED INTO THE TRENCH. THE FABRIC SHALL NOT EXTEND MORE THAN 36 INCHES (90 CM) ABOVE THE ORIGINAL GROUND SURFACE.
7. FILTER CLOTH TO BE FASTENED SECURELY TO POSTS WITH TIES SPACED EVERY 24 INCHES AT TOP AND MID. SECTION. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
8. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE OR DEPTH OF ACCUMULATED SEDIMENT REACHES 6 INCHES.
9. SILT FENCE SHALL BE INSTALLED PER MANUFACTURES SPECIFICATIONS PRIOR TO THE START OF CONSTRUCTION AND SHALL NOT BE REMOVED UNTIL CONSTRUCTION IS COMPLETE.
10. THE CONTRACTOR SHALL INSPECT AND REPAIR THE SILT FENCE AFTER EACH RAIN EVENT AND REMOVE SEDIMENT WHEN NECESSARY.
11. ASHAVED SEDIMENT SHALL BE DEPOSITED IN AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFFSITE AND CAN BE PERMANENTLY STABILIZED.
12. THE SILT FENCE SHALL BE PLACED ON SLOPE CONTOUR TO MAXIMIZE ITS PONDING EFFICIENCY.
13. IF DITCH LEVEL IS DEEPER THAN 20", THEN A FLOATING SILT SCREEN SHALL BE USED.
14. THE TRENCH SHALL BE BACKFILLED AND THE SOIL COMPACTED OVER THE FILTER FABRIC.
15. ALL PROJECTS REQUIRE SUBMITTAL OF POLLUTION PREVENTION PLAN.
16. ALL PROJECTS 1 AC. OR MORE MUST SUBMIT NOTICE OF INTENT NOIS TO FDEP.



SILT FENCE INSTALLATION DETAIL
N.T.S.

STORM DRAIN INLET PROTECTION
N.T.S.

CONCEPTUAL DESIGN PHASE

ADAM SWANEY, P.E., PROFESSIONAL ENGINEER LICENSE NO. 72535. THIS DOCUMENT HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY ADAM SWANEY, P.E. USING A SHA-1 AUTHENTICATION CODE. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SHA-1 AUTHENTICATION CODE MUST BE VERIFIED ON ANY ELECTRONIC COPIES

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REVISIONS		
NO.	DATE	REMARKS
		BY

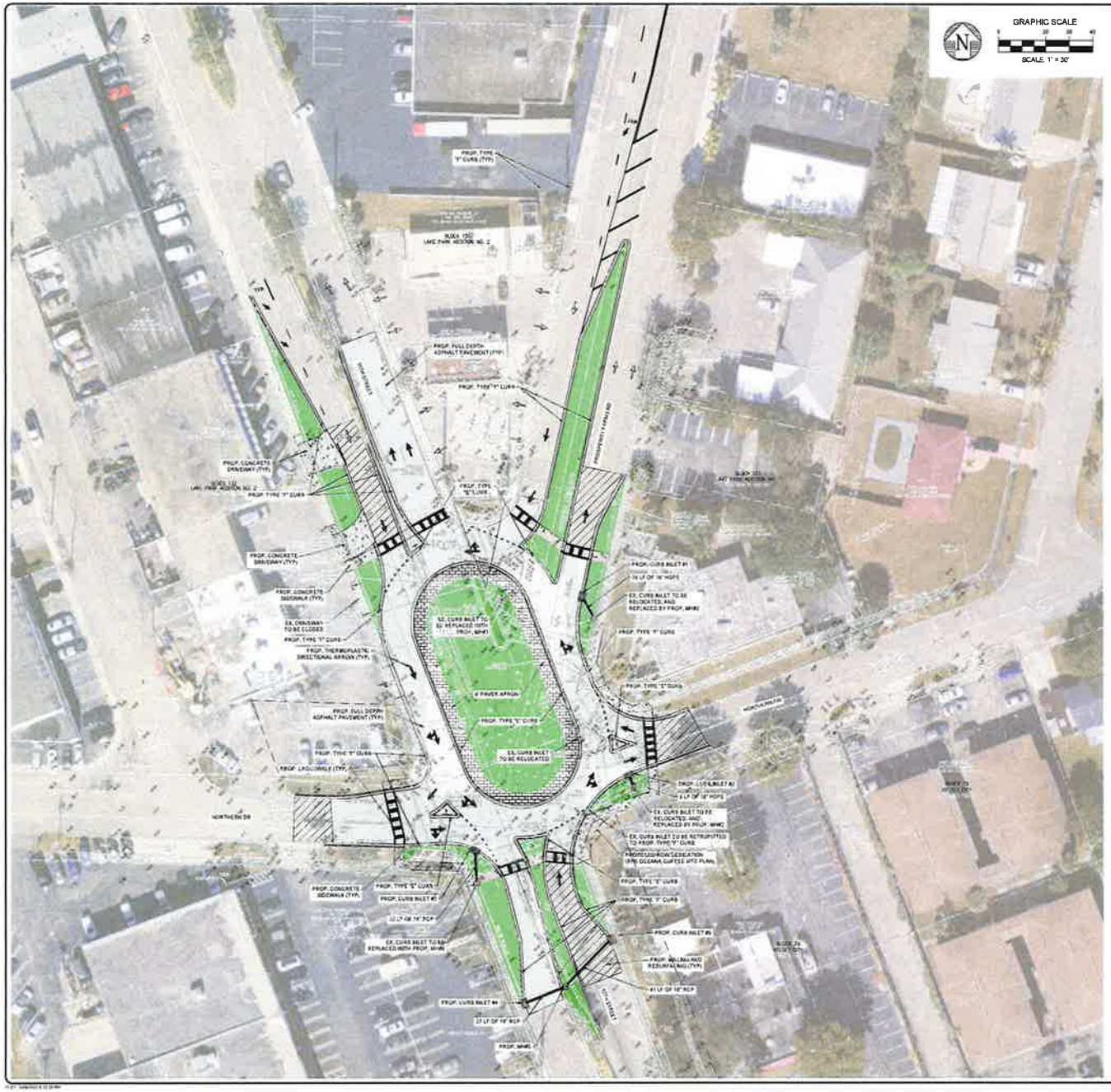
ADAM SWANEY, P.E.
NO. 72535

OVAL-A-BOUT INTERSECTION IMPROVEMENTS
10TH STREET & PROSPERITY
LAKE PARK, FL
CONCEPTUAL DEMOLITION PLAN

A Virginia Stockwell Company
engenuity group inc.
1288 N. CONGRESS AVE., SUITE 103
WEST PALM BEACH, FL 33409
PH (561)935-1151 - FAX (561)623-3380
WWW.ENGENUITYGROUP.COM CERTIFICATE OF AUTHORIZATION #1915

DATE	MARCH 2022	
DRAWN	KC	
PROJECT ENGINEER	ACS	
PROJECT MANAGER	KC	
CHECKED	ACS	

SHEET NO. C-2
SHEET 5
JOB NO. 18187.46



LOCATION MAP
NTS

ENGINEERING LEGEND:

- PROPOSED ASPHALT PAVEMENT
- PROPOSED CONCRETE SIDEWALK
- PROPOSED LANDSCAPE AREA
- PROPOSED PAVERS
- TRAFFIC FLOW DIRECTION
- CATCH BASIN / YARD DRAIN
- FINISHED GRADE ELEVATION
- DRAINAGE FLOW DIRECTION

GENERAL NOTES:

1. ELEVATIONS SHOWN HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) AND ARE REFERENCED TO BENCHMARK "X 402", ELEVATION=16.79' (NAVD 88).
2. TOPOGRAPHIC SURVEY PERFORMED BY ENGENUITY GROUP, INC. IN NOVEMBER 2020.
3. ALL ROADWAY SIGNS & SIGNALIZED MATERIAL TO BE REMOVED FROM THE SITE AND LEGALLY DISPOSED OF.
4. ALL CROSSWALKS SHALL MEET ADA, NO CROSS SLOPE SHALL EXCEED 2%.
5. IF PROPOSED WORK DAMAGE PALM BEACH COUNTY ROADWAY, SIDEWALK AND/OR DRAINAGE SYSTEMS, THEN THEY WILL BE CONSTRUCTED REPAIRED OR REPLACED TO ITS ORIGINAL OR BETTER CONDITION AT NO COST TO THE PALM BEACH COUNTY.
6. PAVEMENT MARKINGS AND SIGNING IN PALM BEACH COUNTY RIGHT OF WAY, SHALL BE IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS AND PALM BEACH COUNTY TYPICAL 1-P-21.
7. CONTRACTOR SHALL CONTACT PBC TRAFFIC OPERATIONS AT 561-233-3600 FORTY-EIGHT (48) HOURS PRIOR TO CONSTRUCTION IF WORK IS BEING DONE WITHIN 10 FEET OF ANY SIGNAL EQUIPMENT.
8. ANY DAMAGE TO SIGNAL EQUIPMENT CAUSED BY THE CONSTRUCTION OF THIS PROJECT MUST BE REPAIRED OR REPLACED TO ORIGINAL OR BETTER CONDITION AT NO COST TO PALM BEACH COUNTY.

LEGEND: (ABBREVIATIONS)

CB	CATCH BASIN
E	EAST
EL	ELEVATION
EXIST	EXISTING
FT	FEET OR FOOT
HDPE	HIGH DENSITY POLYETHYLENE PIPE
INV	INVERT
L	LEFT
LF	LINEAR FEET
N	NORTH
NTS	NOT TO SCALE
ORB	OFFICAL RECORD BOOK
OS	OFFSET
R	RADIUS OR RIGHT
RIM	RIM ELEVATION
PVC	POLYVINYL CHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
R/W	RIGHT-OF-WAY
S	SOUTH
SVC	SERVICE
TYP	TYPICAL
W	WEST
M/E	MATCH EXISTING GRADE

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NO.	DATE	REMARKS	BY

ADAM SWANEY, P.E. NO. 72235

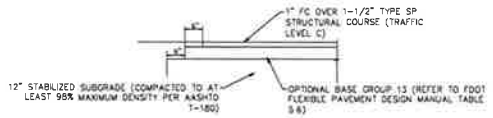
OVAL-A-BOUT INTERSECTION IMPROVEMENTS
10TH STREET & PROSPERITY
LAKE PARK, FL

CONCEPTUAL PAVING, GRADING AND DRAINAGE PLAN

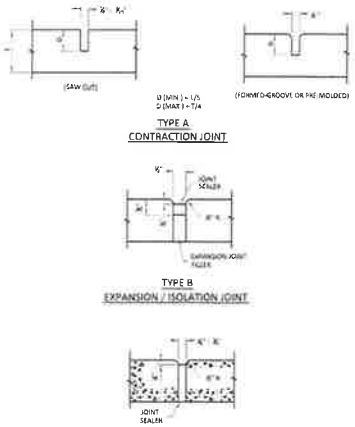
engenuity group inc.
1300 N CONGRESS AVE, SUITE 101
WEST PALM BEACH, FLORIDA 33409
PH (561)855-1511 / FAX (561)623-4280
WWW.ENGENUITYGROUP.COM CERTIFICATE OF AUTHORIZATION #7955

DESIGNED	KG	MARCH 2022
DRAWN	ACS	
PROJECT ENGINEER	KG	
PROJECT MANAGER	ACS	

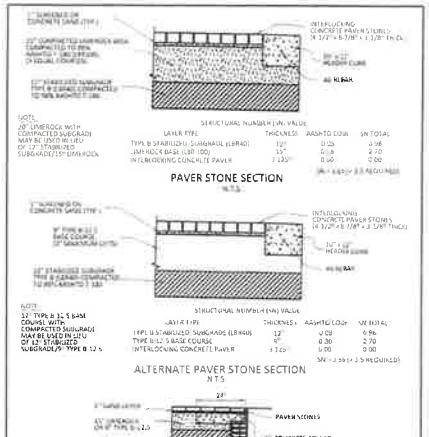
SHEET NO. C-3
5
JOB NO. 18187.46



PAVEMENT SECTION
(WITHIN PALM BEACH COUNTY R/W)
NTS



PALM BEACH COUNTY DEPARTMENT OF ENGINEERING & PUBLIC WORKS	CONCRETE JOINTS	DRAWING NO. 1000.1



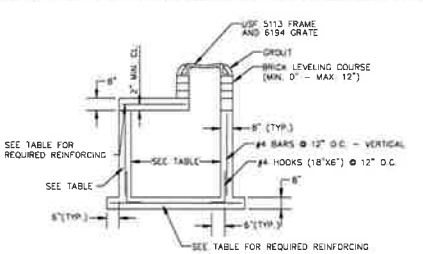
PALM BEACH COUNTY DEPARTMENT OF ENGINEERING & PUBLIC WORKS	PAVER STONE DETAIL STANDARDS FOR NON-PLAN COLLECTOR ROADS	DRAWING NO. 1000.4A

PAVER STONE SPECIFICATIONS

1. PAVER STONES MUST MEET OR EXCEED ASTM C936 SPECIFICATIONS, STANDARD SPECIFICATION FOR SOLID INTERLOCKING CONCRETE PAVING UNITS.
2. PROVIDE 12" STABILIZED SUBGRADE THAT IS LIME ROCK COMPACTED TO 98% AASHTO T-180.
3. SAWCUT NEATLY, REMOVE AND DISPOSE OF EXISTING PAVEMENT AND BASE. PROVIDE A MINIMUM 10" LIMEROCK BASE (LBR 100) OR CEMENT TREATED BASE OF APPROVED EQUAL, PRIMED AND COMPACTED IN 6" LIFTS, 98% COMPACT TO 98% AASHTO T-180.
4. PLACE BEDDING COURSE OF SHARP, NORMAL WEIGHT SCREENING OR CONCRETE SAND TO A UNIFORM DEPTH OF 1" (1 INCH) TO GRADE. CONTRACTOR MAY CONSTRUCT A SAND-CEMENT MORTAR MIX IN SAND BED TO STABILIZE TILE PAVER SYSTEM AND MINIMIZE SETTLEMENT.
5. INSTALL INTERLOCKING CONCRETE PAVER STONES WITH A HERRINGBONE PATTERN, 4 3/8" (80 MM) THICK.
6. WHERE REQUIRED, CUT PAVING STONES WITH AN APPROVED CUTTER TO FIT ACCURATELY ON ALL EDGES, NEATLY AND WITHOUT DAMAGE.
7. TAMP PAVING STONES WITH MECHANICAL VIBRATOR UNTIL UNIFORMLY LEVEL TRUE TO GRADE AND FREE FROM MOVEMENT.
8. FILL VOIDS IN JOINTS BY SWEEPING IN FINE, DRY AGGREGATE SAND.
9. WASH AND CLEAN THE SURFACE AS REQUIRED.
10. PAVERS MUST BE COMPLETELY REMOVED BY SAWING CONCRETE CURBS (TYP.), MEDIAN, VALLEY GUTTER (TYP. "D" OR TYPE "F"). HEADER CURB SHALL BE OF WHITE CONCRETE WITH GLASS SPHERES WHICH USED TO OUTLINE A CROSSWALK.
11. PROVIDE 12" PRICE CONCRETE 4,500 PSI. OF AROUND ALL STRUCTURES WITH MINOR STONE RADIUS. TOP OF CONCRETE COLLAR TO BE SCALED AT BOTTOM OF SAND LAYER.
12. SIGNING, PAVEMENT MARKINGS AND REFLECTIVE PAVEMENT MARKERS SHALL BE IN ACCORDANCE WITH PALM BEACH COUNTY TYPICAL DRAWING NO. I-V-17 (OR LATEST REVISION) AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. PAVERS SHALL USED FOR PAVEMENT MARKING SHALL MEET COLORING AND RETROREFLECTIVITY REQUIREMENTS OF T 71 (OR LATEST REVISION).
13. OR UTILITY CONDUITS TO BE PLACED. CONDUITS AND PULL BOX LIDS TO BE PROVIDED AS NECESSARY FOR LOOP LEAD INS AS APPROVED BY PBC. NO CONDUITS, LOOPS OR PULL BOXES TO BE CONSTRUCTED UNDER PAVER STONES OR HEADER CURBS.

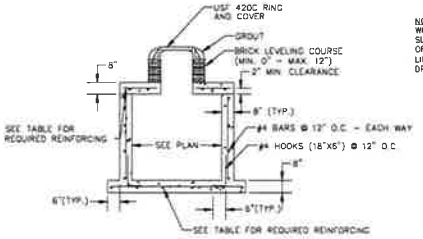
PALM BEACH COUNTY DEPARTMENT OF ENGINEERING & PUBLIC WORKS	PAVER STONE SPECIFICATIONS	DRAWING NO. 1000.4B

INLET TYPE	STRUCTURE SIZE (REC)	STRUCTURE SIZE(ROUND)	SLAB REINFORCING REQUIRED	HORIZ. REINFORCING REQ.
3	36" x 36"	36" ø	#4 BARS @ 12" O.C. - EW	#4 BARS @ 10" O.C.
4	48" x 48"	48" ø	#5 BARS @ 10" O.C. - EW	#5 BARS @ 10" O.C.
5	54" x 54"	54" ø	#5 BARS @ 10" O.C. - EW	#5 BARS @ 10" O.C.
6	60" x 60"	60" ø	#5 BARS @ 10" O.C. - EW	#5 BARS @ 10" O.C.
7	66" x 66"	66" ø	#6 BARS @ 10" O.C. - EW	#6 BARS @ 10" O.C.
8	72" x 72"	72" ø	#6 BARS @ 10" O.C. - EW	#6 BARS @ 10" O.C.

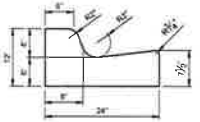


DRAINAGE INLET

STRUCTURE SIZE	STEEL REINFORCING REQUIRED
4' DIAM	#4 BARS @ 12" O.C. - EW
5' DIAM	#4 BARS @ 10" O.C. - EW
6' DIAM	#5 BARS @ 10" O.C. - EW
7' DIAM	#5 BARS @ 10" O.C. - EW
8' DIAM	#6 BARS @ 7" O.C. - EW



DRAINAGE MANHOLE



NOTE
WHEN USED ON HIGH SIDE OF ROADWAYS, THE CROSS SLOPE OF THE GUTTER SHALL MATCH THE CROSS SLOPE OF THE ADJACENT PAVEMENT AND THE THICKNESS OF THE LIP SHALL BE 6" UNLESS OTHERWISE SHOWN ON THE DRAWINGS

TYPE "F" CURB

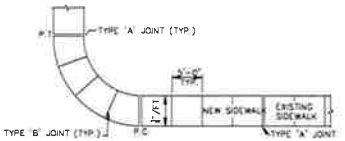
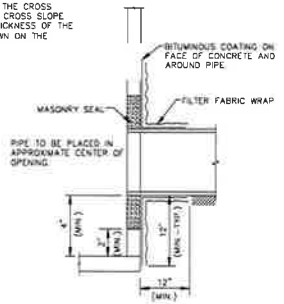


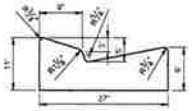
TABLE OF SIDEWALK THICKNESS	
LOCATION	
RESIDENTIAL AREAS	4"
AT DRIVEWAYS AND OTHER AREAS	6"

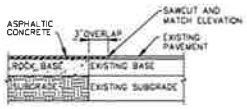
1. ALL SIDEWALKS SHALL MEET ADA STANDARDS. SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2%. SIDEWALK LONGITUDINAL SLOPE SHALL NOT EXCEED 5%.
2. CONSTRUCT SIDEWALK ON 6" THICK COMPACTED SUBGRADE (98% AASHTO T-180).

CONCRETE SIDEWALK

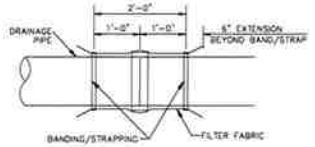


FILTER FABRIC WRAP ON GROUTED PIPE TO STRUCTURE JOINT

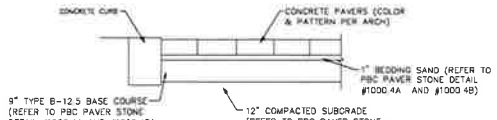




ASPHALT PAVEMENT JOINT



FILTER FABRIC JOINT WRAP



CONCRETE PAVER SECTION
NTS

CONCEPTUAL DESIGN PHASE

ADAM SWANEY, P.E. PROFESSIONAL ENGINEER LICENSE NO. 72235. THIS DOCUMENT HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY ADAM SWANEY, P.E. USING A SHA-1 AUTHENTICATION CODE. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SHA-1 AUTHENTICATION CODE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

811 Know what's below. Call before you dig.

DESIGN PHASE: CONCEPTUAL

NO.	DATE	REVISIONS	BY

ADAM SWANEY, P.E. NO. 72235

OVAL-A-BOUT INTERSECTION IMPROVEMENTS
10TH STREET & PROSPERITY
LAKE PARK, FL

PAVING, GRADING AND DRAINAGE DETAILS

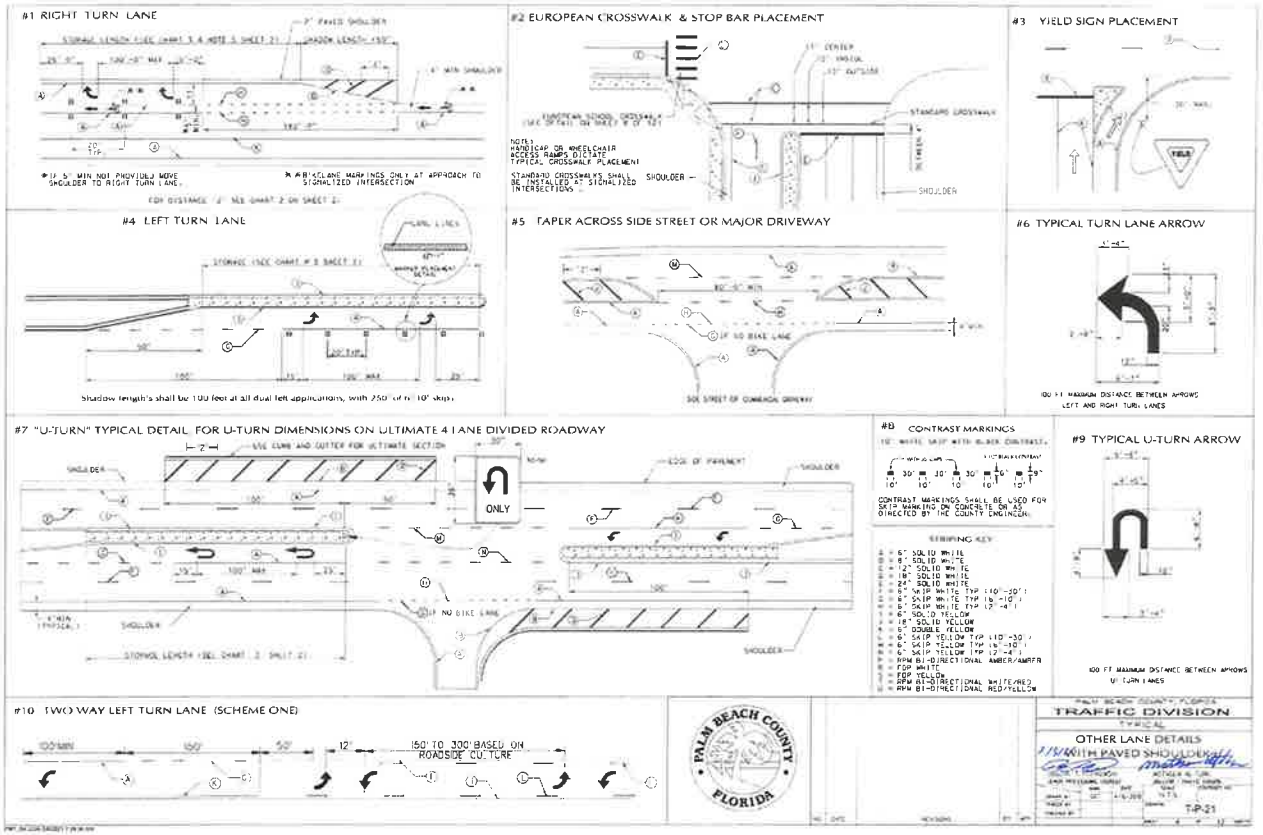
engenuity group inc.
1280 N CONGRESS AVE. SUITE 101
WEST PALM BEACH, FL 33409
PH. 561.249.8600
WWW.ENGENUITYGROUP.COM CERTIFICATE OF AUTHORIZATION #31915

DATE	DRAWN	ENGINEER	PROJECT MGR.	CHECKED
MARCH 2022	KC	ACS	KC	ACS

C-4
5
JOB NO. 18187.46

M4-10D "TRUCK TURN ONLY" SIGN (36"x 30")

M4-10N "NO U-TURN" SIGN (24"x 24")



PALM BEACH COUNTY FLORIDA

TRAFFIC DIVISION

OTHER LANE DETAILS

TYPICAL

11'/4' PAVED SHOULDER

T-P-21

CONCEPTUAL DESIGN PHASE

ADAM SWANEY, P.E., PROFESSIONAL ENGINEER LICENSE NO. 72235.
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Know what's below. Call before you dig. 811

DESIGN PHASE: CONCEPTUAL

REVISIONS

NO.	DATE	REMARKS	BY

ADAM SWANEY, P.E.
NO. 72235

OVAL-A-BOUT INTERSECTION IMPROVEMENTS
10TH STREET & PROSPERITY
LAKE PARK, FL

PAVEMENT MARKINGS AND SINGAGE DETAILS

engenuity group inc.
1280 N. CONGRESS AVE., SUITE 103
WEST PALM BEACH, FL 33409
PH (561)868-1151 / FAX (561)842-3392
WWW.ENGENUITYGROUP.COM (CERTIFICATE OF AUTHORIZATION #31819)

DATE	MARCH 2022
DRAWN	KG
PROJECT ENGINEER	ACS
CHECKED	KG
APPROVED	ACS
DRAWN	ACS

SHEET C-5
5
JOB NO. 18187.46

NO.	DATE	REMARKS	BY

OVAL-A-BOUT CONCEPT
10TH STREET & PROSPERITY
LAKE PARK, FL
VEHICLE TRACKING EXHIBIT

engenuity group inc
engineering • planning • management
1200 N CONGRESS AVE. SUITE 101
WEST PALM BEACH, FLORIDA 33409
PH (561)623-1151 • FAX (561)623-1152 •
WWW.ENGINUITYGROUP.COM CERTIFICATE OF AUTHORIZATION #7095

DRAWN	KG	1	2
DESIGNED	KG	SHEET NO.	OF
PROJECT MANAGER	KG		
CHECKED	ACS		
DATE	01/26/2022	JOB NO.	18187.46

ALL DRAWINGS, PLANS, SPECIFICATIONS AND COPIES THEREOF AS INSTRUMENTS OF SERVICE ARE AND SHALL REMAIN THE PROPERTY OF ENGINEERING GROUP, INC. THEY ARE NOT TO BE USED IN WHOLE OR IN PART FOR ANY PURPOSE OR PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF ENGINEERING GROUP, INC. AND ARE NOT TO BE CHANGED OR COPIED IN ANY FORM OR MANNER WHATSOEVER. ANY UNAUTHORIZED USE OF THESE DRAWINGS SHALL BE AT THE SOLE RISK AND LIABILITY OF THE USER.

WB-50 - Intermediate Semi-Trailer

Overall Length	55.000ft
Overall Width	8.500ft
Overall Body Height	12.052ft
Min Body Ground Clearance	1.334ft
Max Track Width	8.500ft
Lock-to-lock time	6.00s
Wax Steering Angle (Virtual)	17.90°

CONCEPTUAL ENGINEERING PLAN

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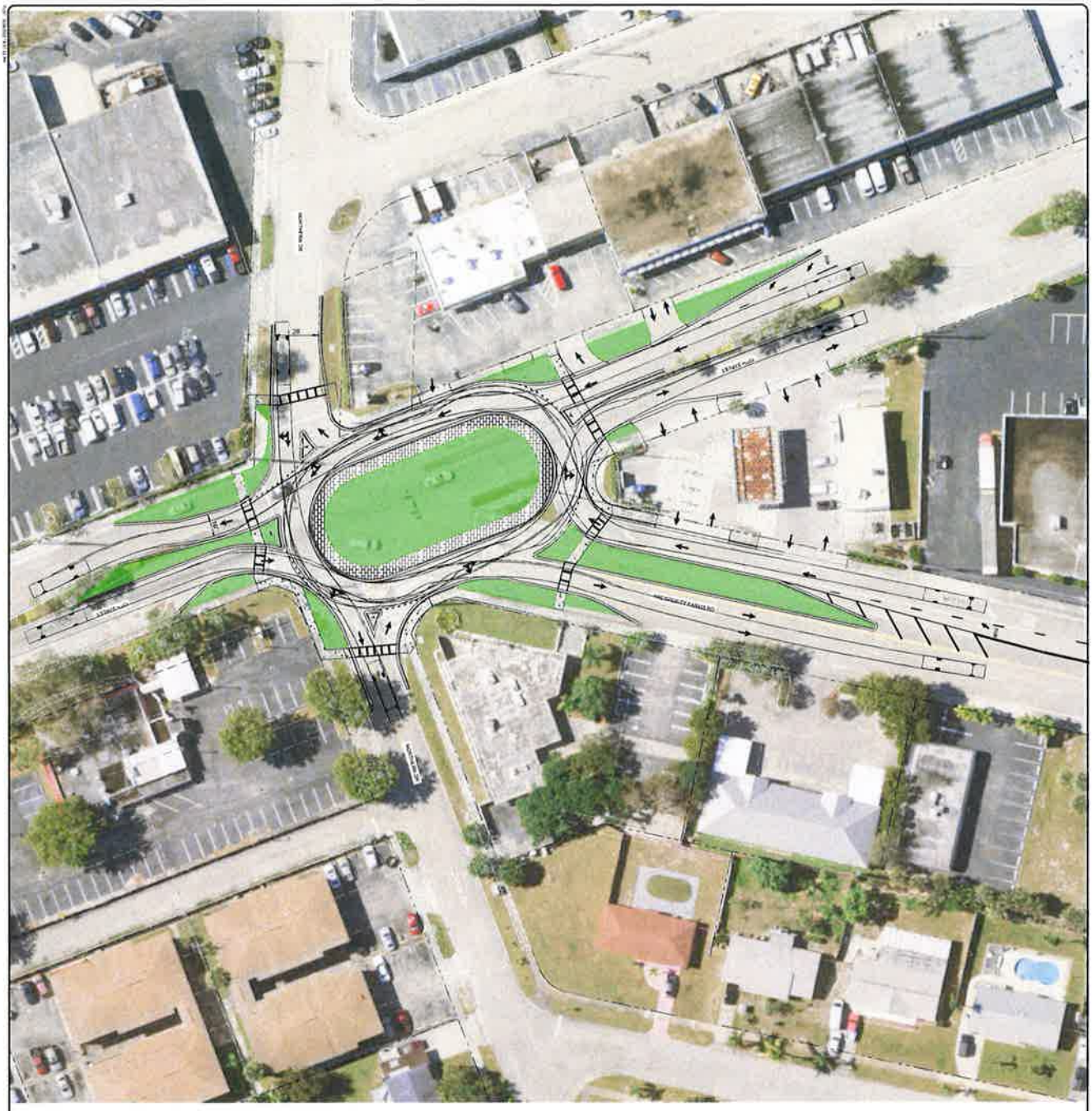
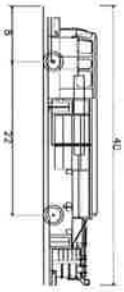
ENGINEERING PLAN, CONCEPTUAL





Pumper Fire Truck
Overall Length
Overall Width
Overall Body Height
Min. Body Ground Clearance
Track Width
Lock-to-Lock time
Max Wheel Angle

40.000ft
8.500ft
0.655ft
0.667ft
0.000ft
45.00°

GRAPHIC SCALE
SCALE 1" = 20'

LEGEND
PROPOSED LANDSCAPE AREA
TRAFFIC FLOW DIRECTION
PROPOSED CONCRETE SIDEWALK
PAVERS

LOCATION MAP

CONCEPTUAL ENGINEERING PLAN

811 Know what's below. Call before you dig.

ENGINEERING PLAN, CONCEPTUAL

DATE	01/26/2022
DRAWN	KG
PROJECT ENGINEER	ACS
PROJECT MANAGER	KG
CHECKED	ACS

SHEET NO. 2 OF 2
18187.46

engenuity group inc.
A Higher Standard of Excellence
1280 N CONGRESS AVE., SUITE 101
WEST PALM BEACH, FLORIDA 33409
PH (561)956-1151 FAX (561)832-9360
WWW.ENGENUITYGROUP.COM CERTIFICATE OF AUTHORIZATION #7090

OVAL-A-BOUT CONCEPT
10TH STREET & PROSPERITY
LAKE PARK, FL

VEHICLE TRACKING EXHIBIT

ADAM SWANEL, P.E.
NO. 72215

REVISIONS		
NO.	DATE	REMARKS

ENGINEER'S CONCEPTUAL COST ESTIMATE
OVAL-A-BOUT INTERSECTION IMPROVEMENTS

Engenuity Project No. 18187.46

	Description	Unit	Quantity	Unit Cost*	Total
	SITE PREPERATION				
1	NPDES Erosion Control	LS	1	$6,000.00	$6,000.00
2	Clearing & Grubbing	LS	1	$6,000.00	$6,000.00
3	Earthwork (Excavation, Fill, Embankment)	LS	1	$20,000.00	$20,000.00
4	Demolition	LS	1	$90,000.00	$90,000.00
	ROADWAY CONSTRUCTION				
5	12" Stabilized Subgrade	SY	2,245	$7.50	$16,837.50
6	Optional Base Group 13	SY	2,245	$26.00	$58,370.00
7	1" FC over 1-1/2" SP Asphalt (w/ tack and prime coat)	SY	2,245	$25.00	$56,125.00
8	Mill/resurface aspahlt (1" FC Average Depth)	SY	520	$20.00	$10,400.00
9	Pavers (including base and subgrade)	SY	336	$110.00	$36,947.78
10	Type E Curb	LF	663	$30.00	$19,890.00
10	Type F Curb	LF	1,765	$30.00	$52,950.00
11	Header Curb	LF	352	$30.00	$10,560.00
12	Sodding	SY	1,791	$15.00	$26,861.67
13	Striping and Signage	LS	1	$10,000.00	$10,000.00
14	Adjust manholes and valves to grade	LS	1	$10,000.00	$10,000.00
	SIDEWALK & ROW CONSTRUCTION				
15	Concrete Sidewalk (4in)	SY	223	$65.00	$14,466.11
16	Concrete Driveway/Sidewalk (6in)	SY	111	$80.00	$8,844.44
17	ADA Ramp	EA	10	$2,000.00	$20,000.00
	DRAINAGE CONSTRUCTION				
18	Drainage Inlet	EA	5	$7,000.00	$35,000.00
19	Drainage Manhole	EA	5	$7,000.00	$35,000.00
20	18" RCP Drainage	LF	115	$75.00	$8,625.00
21	Connect to Existing	EA	4	$750.00	$3,000.00
	ADDITIONAL ITEMS				
	Lighting (BY OTHERS)	LS	1	$100,000.00	$100,000.00
	Lanscape and Irrigation (BY OTHERS)	LS	1	$100,000.00	$100,000.00
	Overhead Signal Removal (BY OTHERS)	LS	1	$75,000.00	$75,000.00
				SUBTOTAL	**$830,877.50**
22	Mobilization/Demobilization and General Conditions (10%)	LS	1	$83,087.75	$83,087.75
23	Engineering, Legal, Admin (20%)	LS	1	$166,175.50	$166,175.50
24	Maintenance of Traffic (12%)	LS	1	$99,705.30	$99,705.30
25	Contingency (25%)	LS	1	$207,719.38	$207,719.38
				TOTAL	**$1,387,565.43**

NOTE: THIS ENGINEERS' OPINION OF COST IS FOR PRELIMINARY FEASIBILITY AND BUDGET PURPOSES ONLY. IT IS NOT BASED ON A COMPLETED SET OF APPROVED PLANS.

Adam Swaney, P.E.
FL License #72235

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ENGINEERS SURVEYORS GIS MAPPERS

C. ANDRE RAYMAN, P.S.M.
KEITH B. JACKSON, P.E.
LISA A. TROPEPE, P.E.
ADAM SWANEY, P.E., LEED AP
JENNIFER MALIN, P.S.M.

March 29, 2022

Nadia Di Tommaso,
Community Development Director
Town of Lake Park
535 Park Avenue
Lake Park, FL 33403

Re: 10th Street Oval About Planning and Zoning comments

Dear Ms. DiTommaso:

Please see below our response to the P&Z comments received on 2/3/22. Thank you.

Planning and Zoning Comments:

General Comments

1. Staff has concern with the one-lane configuration. How is this intended to function? We feel the wide single lane design could lead to situations where people bypass though technically shouldn't do so. Have you explored the feasibility of a two-lane design to remain consistent with the current configuration of the major intersecting roads? We would like to understand the pros and cons.

Engenuity Response: The one lane configuration was selected in order to provide a safe roundabout that would limit potential conflicts, and be able to fit withing the restricted existing right of way. This was also a configuration that was analyzed during the traffic study phase of this project and was shown to work with the anticipated traffic.

2. We feel the pavers in the outside edge of the oval about pose a maintenance and use programming issue. We anticipate cars may drive over these features and pedestrians may attempt to use this area as a sidewalk. We believe this area should be materialled in such a way that its intended function cannot be confused. We feel a type D curb may be more appropriate.

Engenuity Response: The paver area is a typical design element for roundabouts, that allows for large trucks to drive over this area with a mountable curb, for situations in which a truck larger than a WB-40 enters the roundabout. The material can be changed to stamped concrete or other option that the county and Lake Park will accept.

3. Landscaping islands in the northwest section appear too close to some of the existing parking areas. Have these landscape areas been analyzed in connection to their impacts on the existing parking.

Engenuity Response: The landscape areas near existing parking are placed in areas that are currently roadway, so the impact to the existing parking would be minimal. The parking in this area currently does not meet code for driveway width. With the addition of landscape in this area and the proposed roadway narrowing, there may be potential to provide a more code compliant parking lot on the private property.

4. Is there a possibility of testing the oval-about concept on a limited-time basis? We feel this may be useful in helping us understand potential end-user behaviors that might not have been anticipated.

C. ANDRE RAYMAN, P.S.M.
KEITH B. JACKSON, P.E.
LISA A. TROPEPE, P.E.
ADAM SWANEY, P.E., LEED AP
JENNIFER MALIN, P.S.M.

Engenuity Response: It likely would not be able to be tested out in a temporary fashion at the actual location due to the conflicting design elements of the roundabout compared to the existing intersection. However, the design could be laid out to scale at another location such as a large open parking lot, with cones or paint, in order to drive through the roundabout with different vehicles to test maneuverability.

5. When is it anticipated that property owners will be engaged on the question of ROW acquisition? We believe they should be involved in the process, if they are not already.

Engenuity Response: We would recommend engaging the property owners early in the process.

6. Because the intersections are so close together, the northbound lane may create some traffic conflicts. Particularly at the gas station, we feel there could be conflicts between those exiting the oval and those entering or exiting the gas station. We believe the striping should direct drivers exiting the oval away from this access point with a dedicated outside lane.

Engenuity Response: the design in this area has been revised to allow for two lanes of traffic in this area, which will keep the existing gas station exit as is.

Adam Swaney, P.E.

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ENGINEERS SURVEYORS GIS MAPPERS

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March 29, 2022

Nadia Di Tommaso,
Community Development Director
Town of Lake Park
535 Park Avenue
Lake Park, FL 33403

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Planning and Zoning Comments:

General Comments

1. Staff has concern with the one-lane configuration. How is this intended to function? We feel the wide single lane design could lead to situations where people bypass though technically shouldn't do so. Have you explored the feasibility of a two-lane design to remain consistent with the current configuration of the major intersecting roads? We would like to understand the pros and cons.

Engenuity Response: The one lane configuration was selected in order to provide a safe roundabout that would limit potential conflicts, and be able to fit withing the restricted existing right of way. This was also a configuration that was analyzed during the traffic study phase of this project and was shown to work with the anticipated traffic.

Thank you for your response. Please simply ensure that this project can sustain the traffic volumes brought on by the additional growth and redevelopment of the 10th Street and Park Avenue corridors.

2. We feel the pavers in the outside edge of the oval about pose a maintenance and use programming issue. We anticipate cars may drive over these features and pedestrians may attempt to use this area as a sidewalk. We believe this area should be materialled in such a way that its intended function cannot be confused. We feel a type D curb may be more appropriate.

Engenuity Response: The paver area is a typical design element for roundabouts, that allows for large trucks to drive over this area with a mountable curb, for situations in which a truck larger than a WB-40 enters the roundabout. The material can be changed to stamped concrete or other option that the county and Lake Park will accept.

Staff notes your response. Staff still has concerns with the material selection as it relates to the high probability of being driven over and the ongoing maintenance of these areas. When stakeholder meetings are held, details on the landscape area within the island needs to be discussed for a determination on the landscaping and additional elements included in this area.

3. Landscaping islands in the northwest section appear too close to some of the existing parking areas. Have these landscape areas been analyzed in connection to their impacts on the existing parking.

Engenuity Response: The landscape areas near existing parking are placed in areas that are currently roadway, so the impact to the existing parking would be minimal. The parking in this area currently does not meet code for driveway

C. ANDRE RAYMAN, P.S.M.
KEITH B. JACKSON, P.E.
ADAM SWANEY, P.E., LEED AP
JENNIFER MALIN, P.S.M.

width. With the addition of landscape in this area and the proposed roadway narrowing, there may be potential to provide a more code compliant parking lot on the private property.

Staff acknowledges the existing nonconforming parking conditions on adjacent properties along 10th Street. If the proposed plan intends on improving the nonconforming situation as it relates to the parking areas and the required circulation in these parking areas, please provide details on how this will be accomplished. The proposed access to the lots may need adjustment in order to facilitate adequate circulation. Please explore providing additional pavement area behind the angled parking stalls to assist with backing up. We will rely on your review and analysis for the best configuration.

4. Is there a possibility of testing the oval-about concept on a limited-time basis? We feel this may be useful in helping us understand potential end-user behaviors that might not have been anticipated.

Engenuity Response: It likely would not be able to be tested out in a temporary fashion at the actual location due to the conflicting design elements of the roundabout compared to the existing intersection. However, the design could be laid out to scale at another location such as a large open parking lot, with cones or paint, in order to drive through the roundabout with different vehicles to test maneuverability.

Response acknowledged. We do not believe testing this configuration at an alternative location would be beneficial or provide for accurate analysis.

5. When is it anticipated that property owners will be engaged on the question of ROW acquisition? We believe they should be involved in the process, if they are not already.

Engenuity Response: We would recommend engaging the property owners early in the process.

Staff agrees stakeholder input will be extremely valuable in this process.

6. Because the intersections are so close together, the northbound lane may create some traffic conflicts. Particularly at the gas station, we feel there could be conflicts between those exiting the oval and those entering or exiting the gas station. We believe the striping should direct drivers exiting the oval away from this access point with a dedicated outside lane.

Engenuity Response: the design in this area has been revised to allow for two lanes of traffic in this area, which will keep the existing gas station exit as is.

In an effort to provide as much visibility and clearance to the traffic circulation pattern, staff is open to revisiting this discussion during public outreach. The crosswalks continue to be a point of concern and should be analyzed when these meetings are held and we will deter to the design professionals to determine the safest configuration and most appropriate locations for pedestrian crossings.

Adam Swaney, P.E.

O'ROURKE
ENGINEERING & PLANNING

10th Street and Prosperity Farms Road
Intersection Improvements; Selected Alternative

Prepared for
Town of Lake Park

August 28, 2020

BACKGROUND

In recent years, operational and safety concerns at the intersection of 10th Street and Prosperity Farms Road led the town to take temporary measures to address those concerns. The Town retained O'Rourke Engineering & Planning to identify alternatives and ultimately recommend a preferred option. Three alternatives were addressed initially, 1) upgrades to the signalized intersection, 2) removal of the signal and replacement by a standard roundabout and 3) removal of the signal and replacement by the oval-a-bout.

After extensive analysis, review by the town staff, the Town Commission and Palm Beach County, the oval about has been selected to take to the next design and funding level. An overview of the selected project is presented herein.

EXISTING CONDITIONS

The intersection of 10th Street at Prosperity Farms is currently signalized with five legs controlled at the intersection. Bollards on the south leg narrow the leg to one northbound lane for through movements and right turn movements, a left turn lane exists as well. There are several "free flow" movements with directional islands. In an attempt to simplify movements for the drivers, the Northern Drive free flow to Prosperity Farms has been closed.

Exhibit 1 is an aerial photograph of the intersection as it exists today.

Turning Movement Volumes

The intersection was counted during the AM and PM peak hours on December 4, 2019. The peak hour turning movement volumes are shown in **Exhibit 2.**

Level of Service

SIDRA software was used to evaluate the intersection as a signalized intersection. Using the phasing provided by Palm Beach County and applying Highway Capacity Manual 2010

criteria, the intersection operates at Level of Service D/E. **Exhibit 3** summarizes the LOS by movement. Detailed results and input data are provided in **Attachment A: Intersection Level of Service.**

Crash Data

Crash data were obtained from the Palm Beach County Sheriff's office. They identified several crashes/ incidents per year in the area of the intersection. Details of the accident reports were retrieved. **Exhibit 4.1** summarizes the crashes in 2017, 2018 and 2019. In 2017, 11 accidents with 5 involving bodily injuries were recorded. Anecdotally it appears that the modifications to the intersection have reduced the total numbers of crashes. 12 total crashes were recorded by PBSO in 2018 and 2019. One accident involved bodily injury and one involved a bicyclist. **Exhibit 4.2** illustrates the accident locations in 2018 and 2019. It is expected that the oval a bout will reduce confusion and possibly lead to an even further reduction in crashes.

OVAL- A -BOUT, ELONGATED ROUNDABOUT ALTERNATIVE

Exhibit 5 illustrates the elongated roundabout or oval- a- bout alternative. The design removes the signal and controls the conflicting movements by circulating them around the oval after making the right turn only at then entry to the oval. This design provides greater distance between the entering legs which was seen as an advantage to the circular roundabout. The design has to prevent "straight through movements" from occurring in order to allow the minor movements to enter the flow of traffic. This design has been reviewed with Palm Beach County. The County accepted either the round a bout or the oval about option. If the roundabout had been selected, they did require that the separate right turn lane be removed from southbound at Prosperity Farms Road. The Oval about is

Level of Service - Oval- a- bout

SIDRA software was applied to determine the level of service of the elongated roundabout or oval -a -bout. The intersection shows an improvement to level of service C. **Exhibit 6** illustrates the LOS by movement.

R/W map Elongated roundabout, Oval- a- bout

Exhibit 7 illustrates the elongated roundabout or oval-a-bout on the same right of way base. It appears that the elongated roundabout will largely fit within the right of way. All of this information is preliminary and survey data and a more refined design will be necessary. However, this comparison indicates that the elongated roundabout may have a clearer path to construction relative to the need for right of way.

Estimated Costs

Preliminary cost estimates have been prepared to for Oval A bout. Approximately $478,000 is estimated to construct the elongated roundabout. These costs do not include beautification within the oval. As the design progresses, this estimate can be refined. The City may be able to

undertake some of the tasks such as MOT to reduce the cost. **Exhibit 8** provide the details of the estimate

Grant Opportunities / Funding Strategies

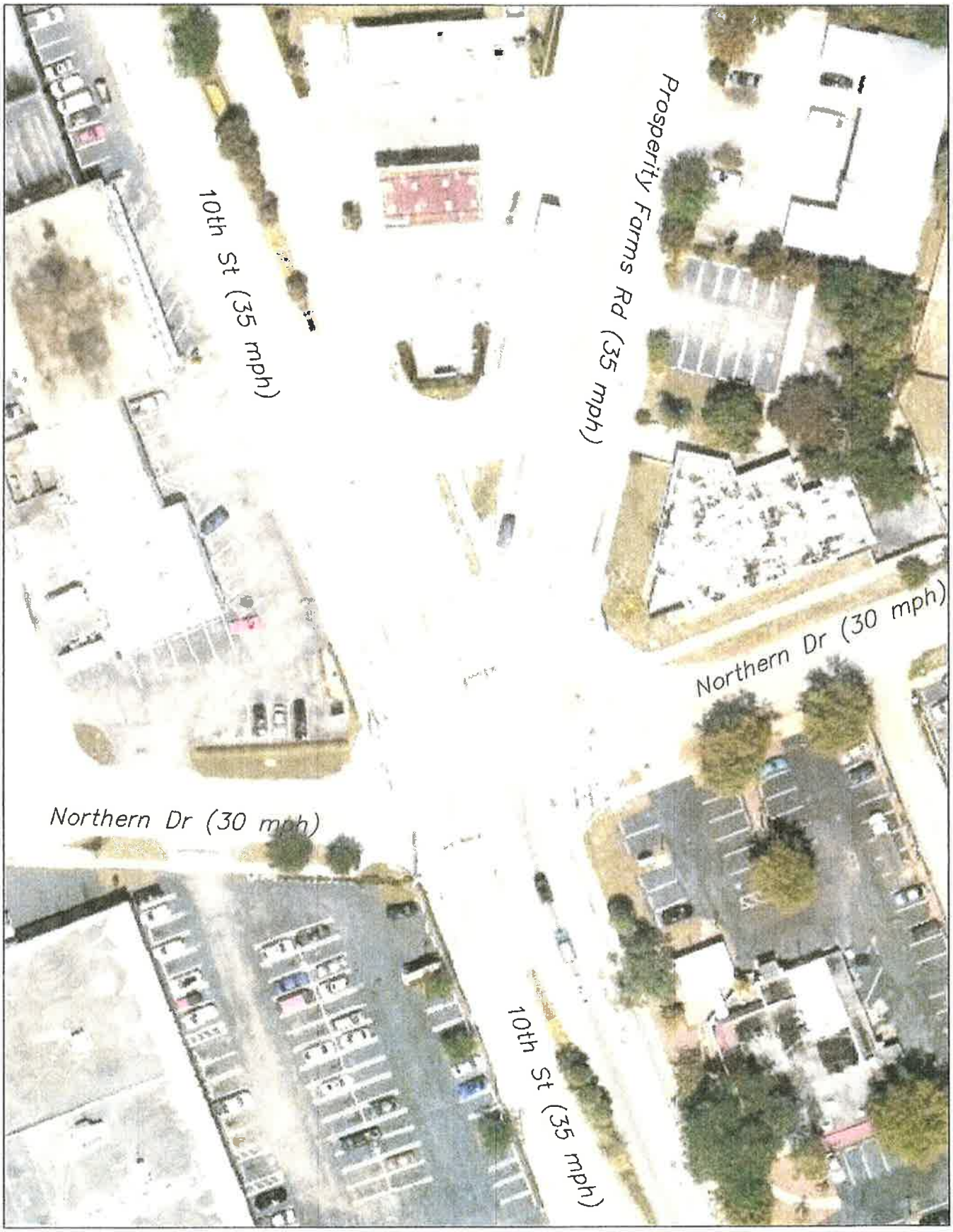
There are two options through the Palm Beach County Transportation Planning Agency (TPA); the local initiative program (LI) and the Alternative Transportation Program. After discussions with Valerie Nelson at TPA, it appears the LI will be the best option to pursue funding. The purpose of the Palm Beach Transportation Planning Agency's (TPA) Local Initiative (LI) Program is to help advance lower-cost, non-regionally significant transportation projects identified by local communities. Funding is available by Fiscal Year. The process and project package are included as **Attachment B**. Additional information will need to be added to the project to be competitive and win support for funding the project. Specifically, pedestrian or bicycle components will need to be enhanced within the preliminary concept. If funded, the project would be added to the Transportation Improvement Program in the next fiscal year, with formal design 2 to 3 years our and constructions 4 to 5 years out.

NEXT STEPS

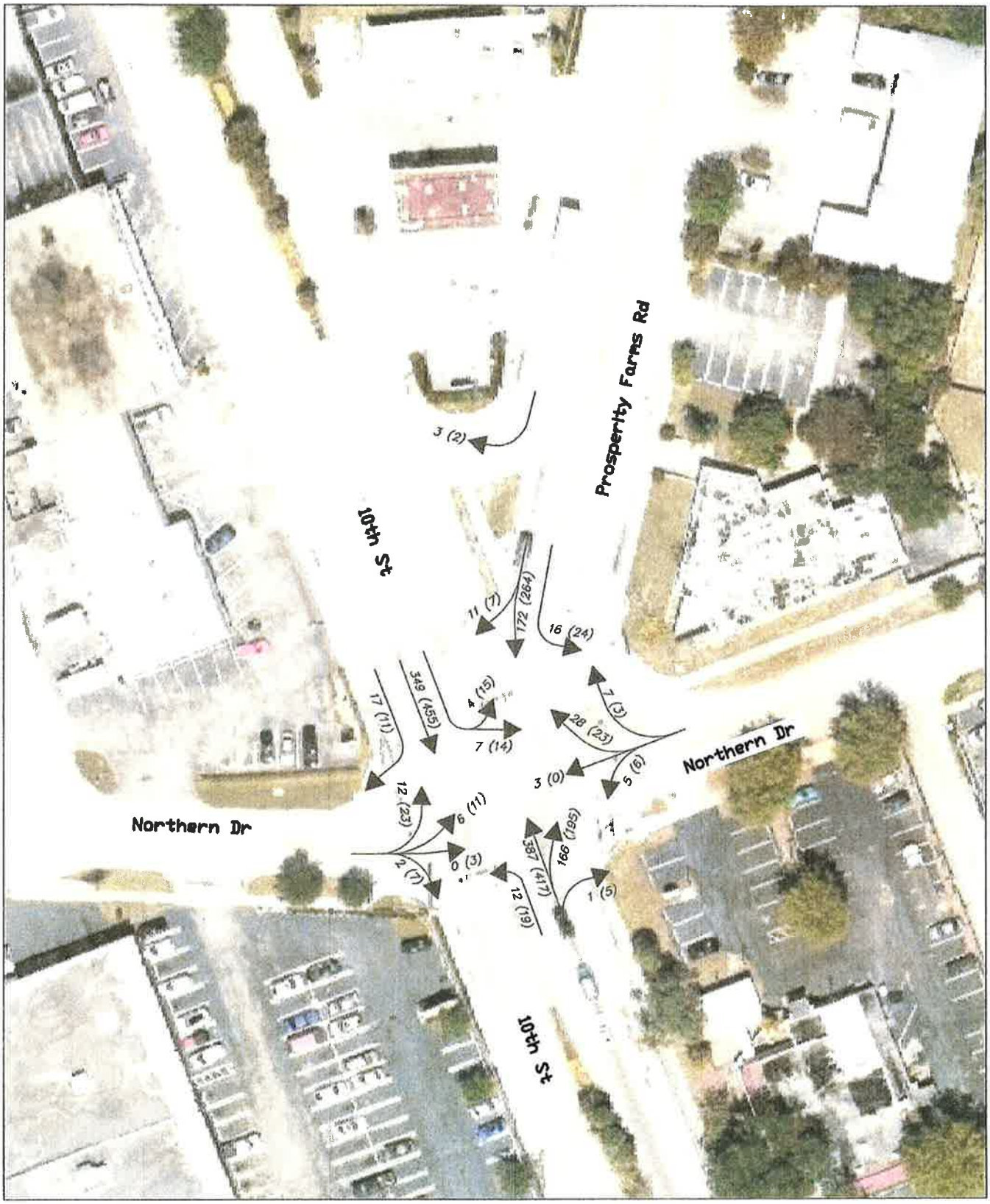
To move the project forward, the Town should have the topographic and boundary survey completed to identify the need for right of way. The town should highlight pedestrian and bicycle features within the plan with regard to the funding criteria identified within the LI funding information. The new funding scoring criteria will be posted likely the end of October 2020. Under the current criteria, I believe the project could score the necessary 25 points. However, additional steps may need to be taken such as community support letters, calculation of fossil fuel savings, identification of non-motorized linkages, income levels and percentage of underserved within the project service area.

The project description and information may need to be augmented to support a competitive grant application. The Town of Lake Park should attend the LI virtual training meeting to occur in November and then proceed to compile the required documents.

We look forward to assisting you as the project advances in the process.



O'ROURKE ENGINEERING & PLANNING	Existing Conditions 10th St & Prosperity Farms INTERSECTION IMPROVEMENTS	Exhibit 1
JOB#:	DATE: 2.4.2020	



O'ROURKE ENGINEERING & PLANNING	LEGEND *XX(XX) = AM(PM)*	Exhibit 2 Intersection Volumes 10th St & Prosperity Farms
JOB#:	DATE: 11.7.19	

Exhibit 3

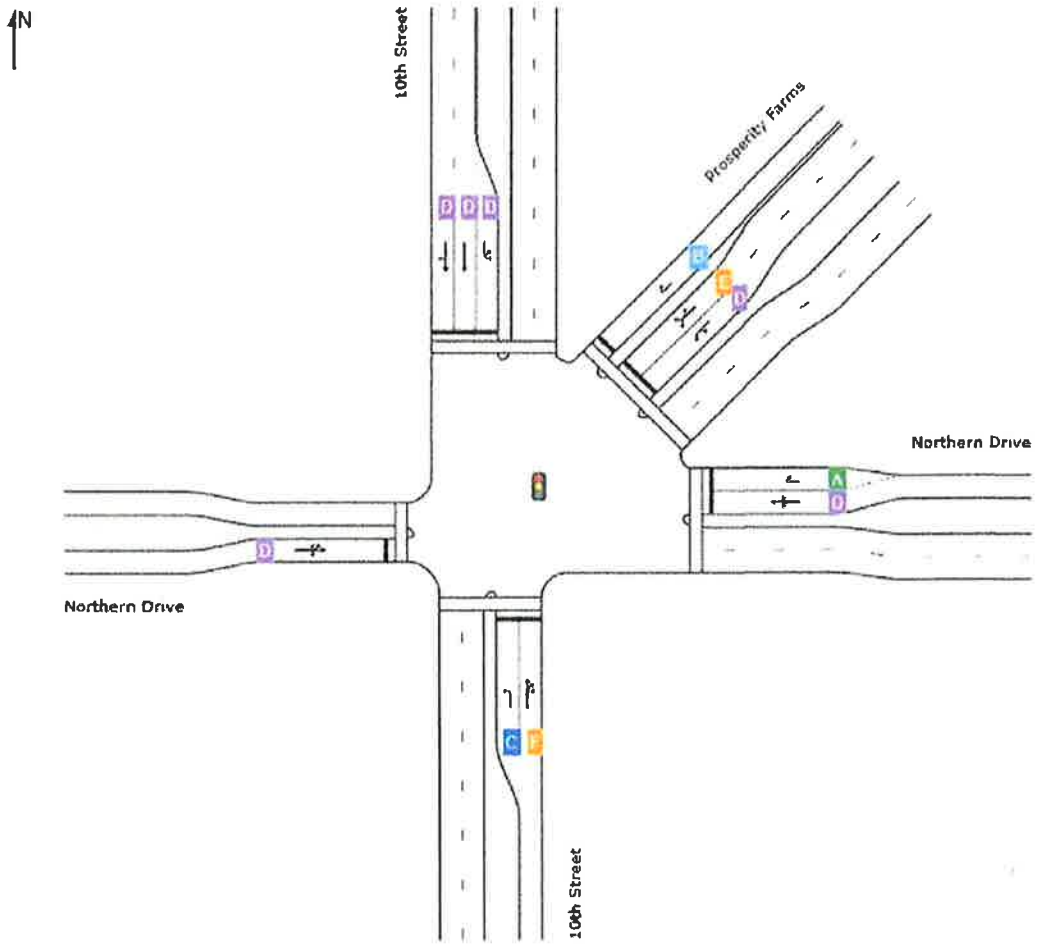
LANE LEVEL OF SERVICE

Lane Level of Service

Site: LP1 [10th Street and Prosperity and Northern]

10th Street and Prosperity
Site Category: Signalized Alternative
Signals - Pretimed Isolated Cycle Time = 118 seconds (Site User-Given Phase Times)

	Approaches					Intersection
	South	East	Northeast	North	West	
LOS	E	D	E	D	D	E



Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

EXHIBIT 4.1: CRASH DATA

Incident #	Report #	ORI_NUM *	Incident Date	SOURCE *	TYPE CODE	TYPE DESCRIPTION	LOCATION	CITY	ZIP
201800143713	19081428	FL0501900	6/12/2019 0:14	ANI/ALI	4	MOTOR VEH CRASH		LAKE PARK	33403
201900852377	19119133	FL0501900	9/25/2019 13:06	ANI/ALI	4	MOTOR VEH CRASH		LAKE PARK	33403
201900869862	19139522	FL0501900	11/20/2019 11:23	ANI/ALI	4	MOTOR VEH CRASH		LAKE PARK	33403
201901053358	18044695	PBSO	3/1/2018 9:42	ANIALI	4	MOTOR VEH CRASH		LAKE PARK	33403
E1700107353	18042441	PBSO	2/23/2018 14:56	ANIALI	3	HIT AND RUN		LAKE PARK	33403
E1700360214	18080225	PBSO	5/30/2018 18:06	ANIALI	4W	MOTOR VEHICLE CRASH - WITH INJURIES		LAKE PARK	33403
E1700365504	18049204	PBSO	3/12/2018 16:18	ANIALI	3	HIT AND RUN		LAKE PARK	33403
E1700390884	18090529	PBSO	6/26/2018 15:14	ANIALI	4	MOTOR VEH CRASH		LAKE PARK	33403
E1701025265	18123773	FL0501900	9/19/2018 15:42	ANI/ALI	4	MOTOR VEH CRASH		LAKE PARK	33403
E1701025265	1814890	PBSO	11/26/2018 21:20	PHONE	4	MOTOR VEH CRASH	NORTHERN DR	LAKE PARK	33403
E1701180968	17034027	PBSO	2/1/2017 9:11	PHONE	4W	MOTOR VEHICLE CRASH - WITH INJURIES	10TH ST & NORTHERN DR	LAKE PARK	33403
E1701212181	17040342	PBSO	2/15/2017 22:47	ANIALI	4W	MOTOR VEHICLE CRASH - WITH INJURIES		LAKE PARK	33403
E1800182626	17060870	PBSO	4/5/2017 16:51	ANIALI	4	MOTOR VEH CRASH		LAKE PARK	33403
E1800202164	17064907	PBSO	4/15/2017 11:09	ANIALI	4	MOTOR VEH CRASH		LAKE PARK	33403
E1800239747	17065536	PBSO	4/17/2017 7:51	ANIALI	4	MOTOR VEH CRASH		LAKE PARK	33403
E1800399177	17068679	PBSO	4/24/2017 17:12	PHONE	4	MOTOR VEH CRASH	NORTHERN DR & 10TH ST	LAKE PARK	33403
E1800498730		PBSO	9/28/2017 8:54	ANIALI	4	MOTOR VEH CRASH		LAKE PARK	33403
E1800505712	17145742	PBSO	10/30/2017 17:46	ANIALI	4W	MOTOR VEHICLE CRASH - WITH INJURIES		LAKE PARK	33403
E1800597010	17145742	PBSO	10/30/2017 17:46	ANIALI	4W	MOTOR VEHICLE CRASH - WITH INJURIES		LAKE PARK	33403
E1800828368	17164784	PBSO	12/17/2017 21:47	ANIALI	4	MOTOR VEH CRASH		LAKE PARK	33403
UNKNOWN	17168609	PBSO	12/28/2017 3:40	ANIALI	4W	MOTOR VEHICLE CRASH - WITH INJURIES		LAKE PARK	33403

Exhibit 4.2

750-020-05
TRAFFIC ENGINEERING
OPERATIONS
10/15

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

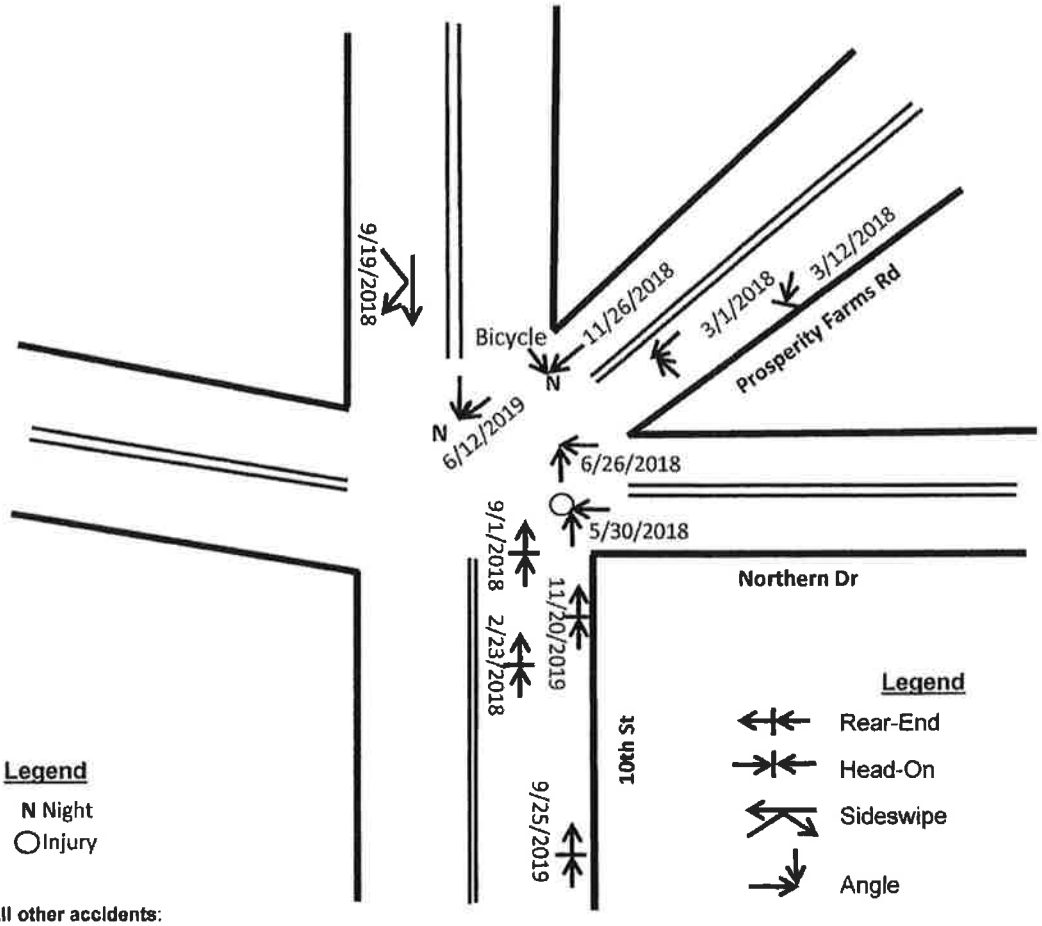
COLLISION DIAGRAM - INTERSECTION

General Analysis Information		**Site Information**
Intersection Number		
Intersection Name	10th Street & Prosperity Farms Rd/Northern Drive	Location
Analysis Years	2018-2019	Project Number

Notes

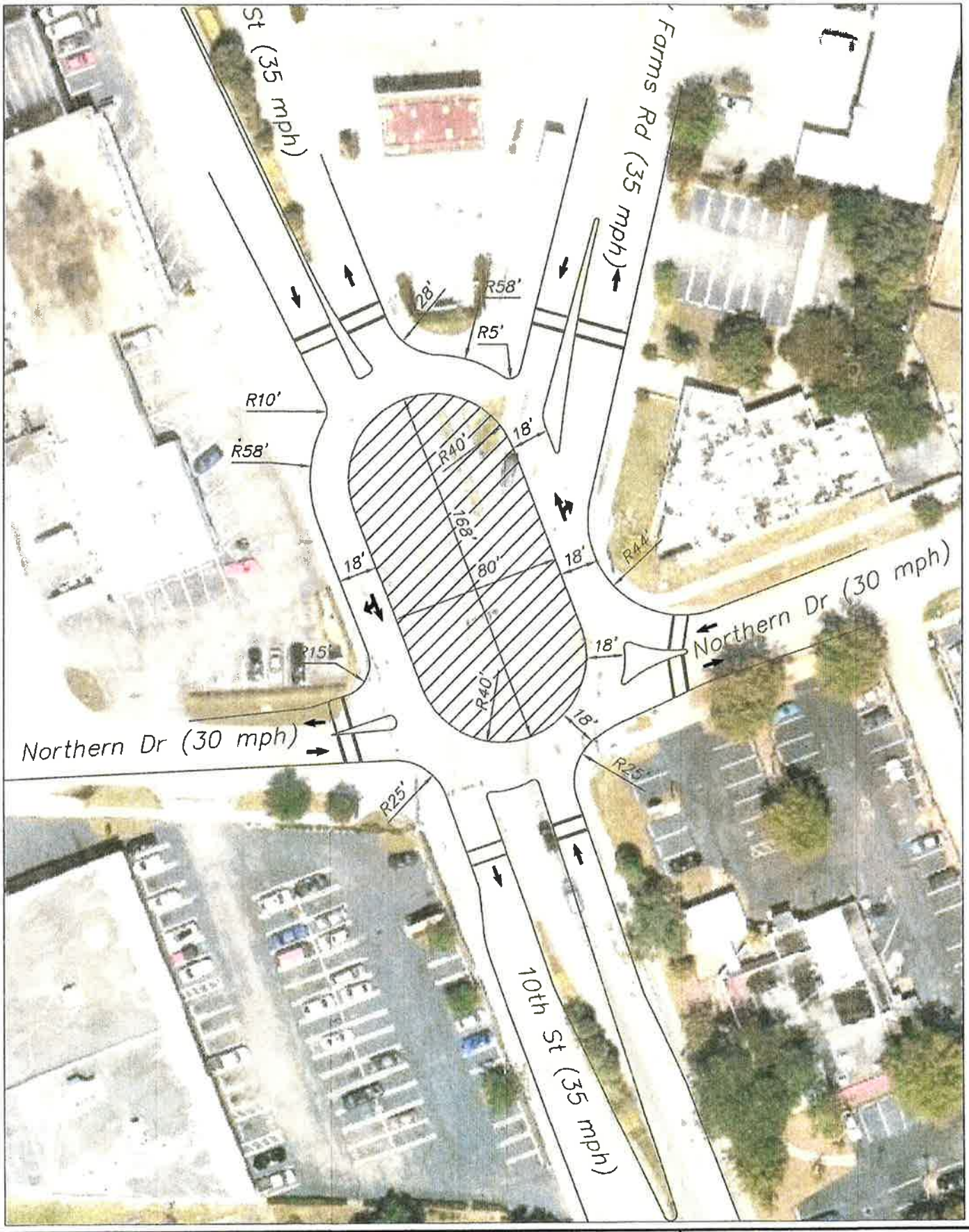
1) Collision Diagram symbology illustrated in Figure 5-4 of Chapter 5 of the Highway Safety Manual should be used.
2) The legend may be used to clarify symbology that identifies total number of crashes, injuries, fatalities, pavement conditions, etc.

Field Data Collection



All other accidents:
Property damage only, dry/day

Total Intersection Crashes per the Crash Summary	
Total Crashes Graphed on this Page	12
Total Injury Crashes	1
Total Fatal Crashes	0
Total PDO Crashes	11



O'ROURKE ENGINEERING & PLANNING	OVAL-A-BOUT CONCEPT 10th St & Prosperity Farms INTERSECTION IMPROVEMENTS	Exhibit 5
JOB#: DATE: 2.26.2020		

Exhibit 6

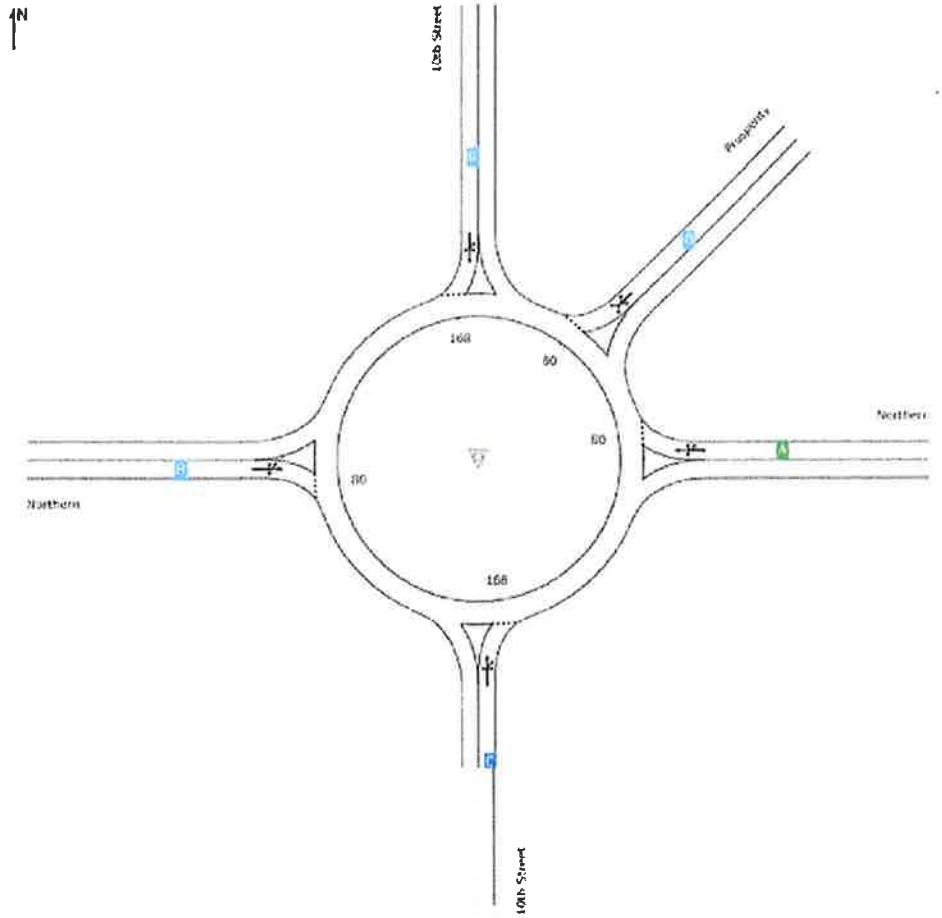
LANE LEVEL OF SERVICE

Lane Level of Service

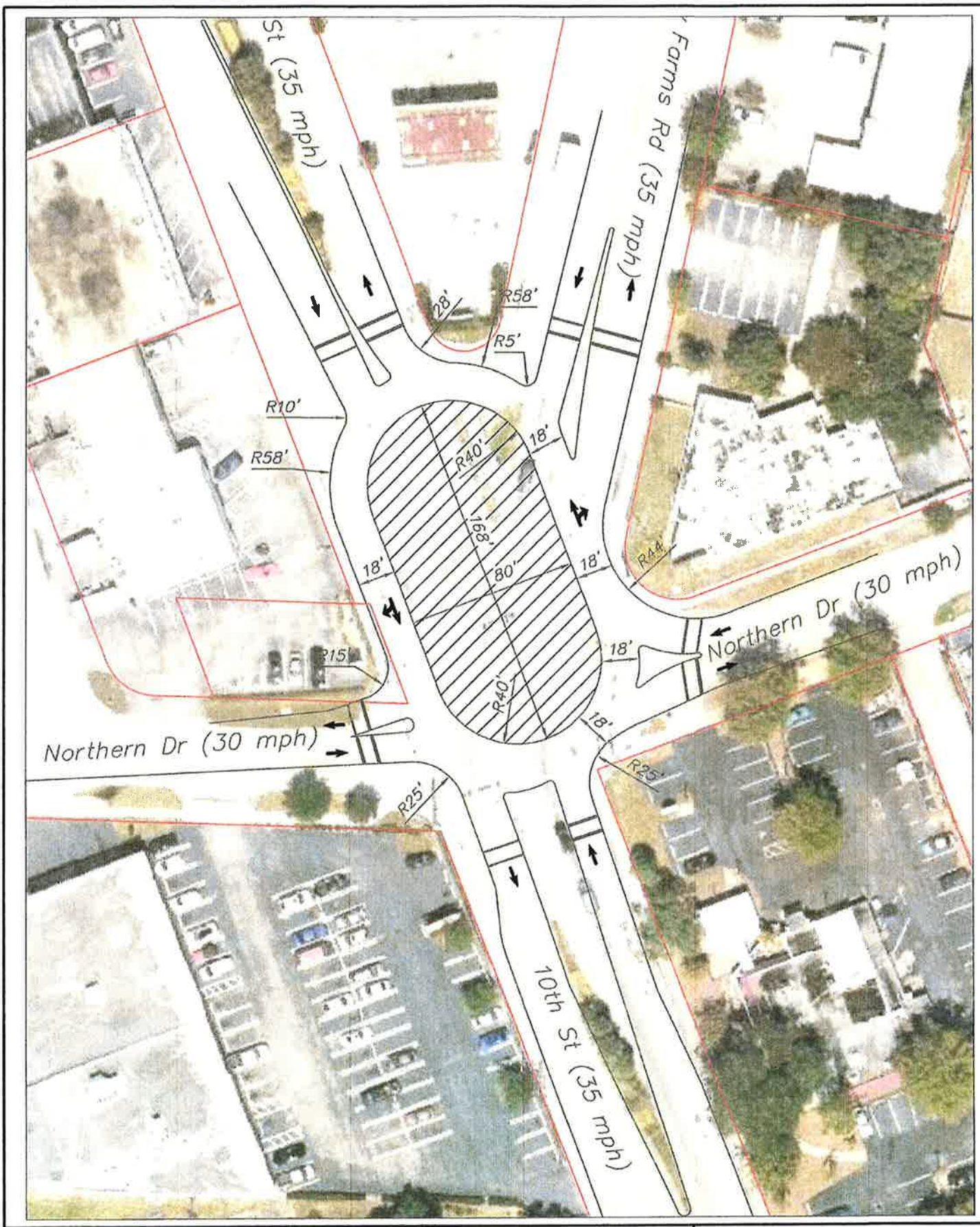
Site: 101 [Prosperity and 10th]

Roundabout
Site Category: (None)
Roundabout

	Approaches					Intersection
	South	East	Northeast	North	West	
LOS	C	A	B	B	B	C



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.



O'ROURKE ENGINEERING & PLANNING	OVAL-A-BOUT CONCEPT 10th St & Prosperity Farms INTERSECTION IMPROVEMENTS	Exhibit 7
JOB#: DATE: 2.26.2020		

Exhibit 8

Preliminary Cost Estimate

10th Street & Prosperity Farms Road Intersection and Safety Improvements

~~Alternative 2~~ Elongated Roundabout, Oval a bout

Pay Item Group	Item	Unit	Qty	Price	Total
102	Mobilization	LS	1	$ 23,518	$ 23,518
102	MOT	LS	1	$ 45,000	$ 45,000
102	Erosion Control	LS	1	$ 12,500	$ 12,500
110	Pavement Removal	Sqft	4,500	$ 3	$ 13,500
110	Removal of existing Span Wire and Poles	LS	1	$ 25,000	$ 25,000
327	Milling	Syd	5,500	$ 6	$ 31,075
334	Pavement Resurfacing 3"	Ton	890	$ 131	$ 116,590
425	Drainage piping <30"	Ft	200	$ 85	$ 17,000
430	Miscellaneous Drainage Structures	Ea	6	$ 4,500	$ 27,000
520	Curb-Roadway	Ft	2,000	$ 30	$ 60,000
520	Curb Roundabout	Ft	300	$ 30	$ 9,000
520	Curb for Median Islands	Ft	580	$ 30	$ 17,400
522	6" wide 4" thick Sidewalks	Syd	400	$ 36	$ 14,400
710	Striping	GM	1	$ 3,500	$ 3,500
				Subtotal:	**$ 415,483**
				Contingency (15%)	**$ 62,322**
				Total:	**$ 477,805**

*Notes: Quantities are based on conceptual plan only and subject to change based on preliminary design.

Attachment A
Intersection Level of Service

DETAILED OUTPUT

Site: 101 [Prosperity and 10th]

Roundabout
Site Category: (None)
Roundabout

OUTPUT TABLE LINKS

Roundabouts

Roundabout Basic Parameters
Site: Prosperity and 10th

Site ID: 101
Roundabout

Central Island Diam ft	Circ Width ft	Insc Diam. ft	Entry Radius ft	Entry Angle deg	Circ Lanes	Entry Lanes	Av.Entry Lane Width ft	App Dist ft	Prop Queued Upstr Signal	Extra Bunching %
South: 10th Street										
168.0*	18.0*	204.0*	65.0*	90.0*	1	1	13.00*	1600	NA	0.0N
East: Northern										
80.0*	18.0*	116.0*	65.0*	90.0*	1	1	13.00*	1600	NA	0.0N
NorthEast: Prosperity										
80.0*	18.0*	116.0*	65.0*	45.0*	1	1	13.00*	1600	NA	0.0N
North: 10th Street										
168.0*	18.0*	204.0*	65.0*	90.0*	1	1	13.00*	1600	NA	0.0N
West: Northern										
80.0*	18.0*	116.0*	65.0*	45.0*	1	1	13.00*	1600	NA	0.0N

Roundabout Capacity Model: US HCM 2010
* These parameters do not affect estimated capacity values in the HCM 2010 Capacity Model.
NA Not Applicable (single Site analysis or unconnected Site in Network analysis).
N Program option resulted in zero value (single Site analysis or unconnected Site in Network analysis).

Go to Table Links (Top)

Roundabout Circulating / Exiting Stream Parameters
Site: Prosperity and 10th

Site ID: 101
Roundabout

Dest	Turn	Lane No.	Lane Type	Opng Flow veh/h	HVE pcu/ veh	Adj. Flow pcu/h	%Near Lane Only	%Exit Flow Incl.	Cap. Const. Effect	O-D Factor	Aver Speed mph	In-Bunch Headway sec	Prop. Bunched
South: 10th Street													
N	L2	1	Dominant	205	1.03	212	0.0	0.0	N	-	16.3	0.00	0.000
N	T1	1	Dominant	205	1.03	212	0.0	0.0	N	-	16.3	0.00	0.000
NE	R1	1	Dominant	205	1.03	212	0.0	0.0	N	-	16.3	0.00	0.000
E	R2	1	Dominant	205	1.03	212	0.0	0.0	N	-	16.3	0.00	0.000

East: Northern												
S	L2	1	Dominant	847	1.03	872	0.0	0.0	N	-	24.0	0.00	0.000
W	T1	1	Dominant	847	1.03	872	0.0	0.0	N	-	24.0	0.00	0.000
N	R2	1	Dominant	847	1.03	872	0.0	0.0	N	-	24.0	0.00	0.000
NE	R3	1	Dominant	847	1.03	872	0.0	0.0	N	-	24.0	0.00	0.000
NorthEast: Prosperity												
E	L3	1	Dominant	529	1.03	545	0.0	0.0	N	-	24.5	0.00	0.000
S	L1	1	Dominant	529	1.03	545	0.0	0.0	N	-	24.5	0.00	0.000
W	R1	1	Dominant	529	1.03	545	0.0	0.0	N	-	24.5	0.00	0.000
N	R3	1	Dominant	529	1.03	545	0.0	0.0	N	-	24.5	0.00	0.000
North: 10th Street												
NE	L3	1	Dominant	248	1.03	255	0.0	0.0	N	-	16.5	0.00	0.000
E	L2	1	Dominant	248	1.03	255	0.0	0.0	N	-	16.5	0.00	0.000
S	T1	1	Dominant	248	1.03	255	0.0	0.0	N	-	16.5	0.00	0.000
W	R2	1	Dominant	248	1.03	255	0.0	0.0	N	-	16.5	0.00	0.000
West: Northern												
N	L2	1	Dominant	745	1.03	767	0.0	0.0	N	-	23.5	0.00	0.000
NE	L1	1	Dominant	745	1.03	767	0.0	0.0	N	-	23.5	0.00	0.000
E	T1	1	Dominant	745	1.03	767	0.0	0.0	N	-	23.5	0.00	0.000
S	R2	1	Dominant	745	1.03	767	0.0	0.0	N	-	23.5	0.00	0.000

Roundabout Capacity Model: US HCM 2010

Go to Table Links (Top)

Roundabout Gap Acceptance Parameters
Site: Prosperity and 10th

Site ID: 101
Roundabout

Dest	Turn	Lane No.	Lane Type	In-Bunch Headway sec	Prop. Bunched	Priority Sharing	RVE for Entry	Critical Gap Headway sec	Critical Gap Dist ft	Follow-up Headway sec
South: 10th Street										
Model Calibration Factor (HCM 2010): 1.00										
Entry/Circ. Flow Adjustment (HCM 2010): None										
W	L2	1	Dominant	0.00	0.000	N	1.03	5.19	124.4	3.19
N	T1	1	Dominant	0.00	0.000	N	1.03	5.19	124.4	3.19
NE	R1	1	Dominant	0.00	0.000	N	1.03	5.19	124.4	3.19
E	R2	1	Dominant	0.00	0.000	N	1.03	5.19	124.4	3.19
East: Northern										
Model Calibration Factor (HCM 2010): 1.00										
Entry/Circ. Flow Adjustment (HCM 2010): None										
S	L2	1	Dominant	0.00	0.000	N	1.03	5.19	183.1	3.19
W	T1	1	Dominant	0.00	0.000	N	1.03	5.19	183.1	3.19
N	R2	1	Dominant	0.00	0.000	N	1.03	5.19	183.1	3.19
NE	R3	1	Dominant	0.00	0.000	N	1.03	5.19	183.1	3.19
NorthEast: Prosperity										
Model Calibration Factor (HCM 2010): 1.00										
Entry/Circ. Flow Adjustment (HCM 2010): None										
E	L3	1	Dominant	0.00	0.000	N	1.03	5.19	186.6	3.19
S	L1	1	Dominant	0.00	0.000	N	1.03	5.19	186.6	3.19
W	R1	1	Dominant	0.00	0.000	N	1.03	5.19	186.6	3.19
N	R3	1	Dominant	0.00	0.000	N	1.03	5.19	186.6	3.19
North: 10th Street										
Model Calibration Factor (HCM 2010): 1.00										
Entry/Circ. Flow Adjustment (HCM 2010): None										
NE	L3	1	Dominant	0.00	0.000	N	1.03	5.19	125.4	3.19
E	L2	1	Dominant	0.00	0.000	N	1.03	5.19	125.4	3.19
S	T1	1	Dominant	0.00	0.000	N	1.03	5.19	125.4	3.19
W	R2	1	Dominant	0.00	0.000	N	1.03	5.19	125.4	3.19
West: Northern										
Model Calibration Factor (HCM 2010): 1.00										
Entry/Circ. Flow Adjustment (HCM 2010): None										
N	L2	1	Dominant	0.00	0.000	N	1.03	5.19	179.1	3.19
NE	L1	1	Dominant	0.00	0.000	N	1.03	5.19	179.1	3.19
E	T1	1	Dominant	0.00	0.000	N	1.03	5.19	179.1	3.19
S	R2	1	Dominant	0.00	0.000	N	1.03	5.19	179.1	3.19

Roundabout Capacity Model: US HCM 2010

Dist (Distance): Spacing, i.e. distance between the front ends of two successive vehicles across all lanes in the circulating or exiting stream

Go to Table Links (Top)

Roundabout Flow Rates
Site: Prosperity and 10th

Site ID: 101
Roundabout

CIRCULATING LANE FLOW RATES

Lane	Circulating Flow Rate

No.	veh/h	pcu/h	Percent
South: 10th Street			
1	205	212	100.0%
Total	205	212	
East: Northern			
1	847	872	100.0%
Total	847	872	
NorthEast: Prosperity			
1	529	545	100.0%
Total	529	545	
North: 10th Street			
1	248	255	100.0%
Total	248	255	
West: Northern			
1	745	767	100.0%
Total	745	767	

The US HCM 2010 roundabout capacity model option is in use.
This model considers only the total circulating flow and not the flow rates in individual circulating lanes. To model the effects of flow distribution in circulating lanes on the entry capacity results, you should use the SIDRA Standard roundabout capacity model.

APPROACH LANE FLOW RATES

Lane No.	Approach Flows (veh/h) Out	To Downst	Total
South: 10th Street			
1	5	686	691
Total	5	686	691
East: Northern			
1	3	32	35
Total	3	32	35
NorthEast: Prosperity			
1	1	221	222
Total	1	221	222
North: 10th Street			
1	12	526	538
Total	12	526	538
West: Northern			
1	8	147	155
Total	8	147	155

Go to Table Links (Top)

Movements

Intersection Negotiation and Travel Data
Site: Prosperity and 10th

Site ID: 101
Roundabout

TRAVEL SPEED, TRAVEL DISTANCE AND TRAVEL TIME

From Approach	To Exit	Turn	Running Speed mph	Travel Speed mph	Travel Distance ft	Travel Time s	Total Travel Distance Dem Flows veh-mi/h	Arv Flows veh-mi/h	Tot.Trav. Time veh-h/h
South: 10th Street									
	West	L2	29.4	25.8	3336.4#	88.1#	13.0	13.0	0.5
	North	T1	30.3	26.5	3336.4#	85.8#	286.4	286.4	10.8
	NorthEast	R1	30.1	26.4	3336.4#	86.1#	133.9	133.9	5.1
	East	R2	28.1	24.8	3336.4#	91.6#	3.4	3.4	0.1
East: Northern									
	South	L2	29.4	27.1	3275.4#	82.5#	3.4	3.4	0.1
	West	T1	29.0	26.8	3275.4#	83.4#	0.7	0.7	0.0
	North	R2	29.6	27.3	3275.4#	81.7#	15.5	15.5	0.6
	NorthEast	R3	27.8	25.7	3275.4#	86.8#	2.0	2.0	0.1
NorthEast: Prosperity									
	East	L3	28.9	26.5	3406.4#	87.5#	16.8	16.8	0.6
	South	L1	29.2	26.8	3406.4#	86.7#	120.6	120.6	4.5
	West	R1	27.6	25.5	3406.4#	91.2#	4.9	4.9	0.2
	North	R3	28.1	25.9	3406.4#	89.7#	0.7	0.7	0.0
North: 10th Street									
	NorthEast	L3	31.1	28.1	3362.6#	81.5#	10.4	10.4	0.4
	East	L2	30.9	27.9	3362.6#	82.0#	9.7	9.7	0.3
	South	T1	31.8	28.7	3362.6#	80.0#	315.0	315.0	11.0
	West	R2	29.3	26.6	3362.6#	86.3#	7.6	7.6	0.3
West: Northern									
	North	L2	29.4	26.6	3391.5#	87.0#	15.4	15.4	0.6

	NorthEast	L1	29.1	26.4	3391.5#	87.6#	* 77.5	77.5	2.9
	East	T1	29.4	26.6	3391.5#	86.9#	2.1	2.1	0.1
	South	R2	26.8	24.5	3391.5#	94.5#	4.9	4.9	0.2
ALL VEHICLES:			30.4	27.1	3358.4#	84.3#	1044.0	1044.0	38.5

"Running Speed" is the average speed excluding stopped periods.

Travel Time values include cruise times and intersection delays including acceleration, deceleration and idling delays.

Travel Distance and Travel Time values include travel on the External Exit section based on the Exit Distance or user-specified Downstream Distance value as applicable.

INTERSECTION NEGOTIATION DATA

From Approach	To Exit	Turn	Negn Radius ft	Negn Speed mph	Negn Dist ft	App Dist ft	Exit Dist ft	Downstr Dist ft
South: 10th Street								
	West	L2	69.2	16.6	271.7	1600	488	NA
	North	T1	219.1	25.7	140.3	1600	488	NA
	NorthEast	R1	254.4	27.2	116.3	1600	488	NA
	East	R2	202.1	25.0	78.6	1600	488	NA
East: Northern								
	South	L2	58.2	15.6	228.6	1600	488	NA
	West	T1	219.1	25.7	140.3	1600	488	NA
	North	R2	95.9	18.8	44.8	1600	488	NA
	NorthEast	R3	58.2	16.5	32.8	1600	488	NA
NorthEast: Prosperity								
	East	L3	69.2	16.6	326.1	1600	488	NA
	South	L1	61.9	15.9	194.4	1600	488	NA
	West	R1	254.4	27.2	116.3	1600	488	NA
	North	R3	58.2	16.5	32.8	1600	488	NA
North: 10th Street								
	NorthEast	L3	69.2	16.6	326.1	1600	488	NA
	East	L2	76.5	17.3	300.5	1600	488	NA
	South	T1	254.4	27.2	155.0	1600	488	NA
	West	R2	202.1	25.0	78.6	1600	488	NA
West: Northern								
	North	L2	58.2	15.6	228.6	1600	488	NA
	NorthEast	L1	61.9	15.9	194.4	1600	488	NA
	East	T1	254.4	27.2	155.0	1600	488	NA
	South	R2	95.9	18.8	44.8	1600	488	NA

Maximum Negotiation (Design) Speed = 30.0 mph

NA Downstream Distance does not apply if:
- Exit is an internal leg of a network
- "Program" option was specified
- Distance specified was less than the Exit Negotiation Distance
- Distance specified was greater than the exit leg length

MOVEMENT SPEEDS AND GEOMETRIC DELAY

Mov ID	Turn	App. Speeds Cruise mph	App. Speeds Negn mph	Exit Speeds Negn mph	Exit Speeds Cruise mph	Queue Movs-up Speed mph	Geom Delay sec
South: 10th Street							
3	L2	35.0	16.6	16.6	30.0	26.2	0.0
8	T1	35.0	25.7	25.7	35.0	26.2	0.0
18a	R1	35.0	27.2	27.2	35.0	26.2	0.0
18	R2	35.0	25.0	25.0	30.0	26.2	0.0
East: Northern							
1	L2	30.0	15.6	15.6	30.0	14.5	0.0
6	T1	30.0	25.7	25.7	30.0	14.5	0.0
16	R2	30.0	18.8	18.8	35.0	14.5	0.0
16b	R3	30.0	16.5	16.5	30.0	14.5	0.0
NorthEast: Prosperity							
1bx	L3	30.0	16.6	16.6	30.0	17.4	0.0
1ax	L1	30.0	15.9	15.9	35.0	17.4	0.0
16ax	R1	35.0	27.2	27.2	30.0	17.4	0.0
16bx	R3	35.0	16.5	16.5	35.0	17.4	0.0
North: 10th Street							
7b	L3	30.0	16.6	16.6	30.0	24.1	0.0
7	L2	30.0	17.3	17.3	30.0	24.1	0.0
4	T1	35.0	27.2	27.2	35.0	24.1	0.0
14	R2	35.0	25.0	25.0	30.0	24.1	0.0
West: Northern							
5	L2	30.0	15.6	15.6	35.0	15.2	0.0
5a	L1	30.0	15.9	15.9	35.0	15.2	0.0
2	T1	30.0	27.2	27.2	35.0	15.2	0.0
12	R2	30.0	18.8	18.8	30.0	15.2	0.0

HCM Delay Formula option used: Geometric Delay is not included in Control Delay.

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Movement Capacity and Performance Parameters
Site: Prosperity and 10th

Site ID: 101
Roundabout

MOVEMENT CAPACITY PARAMETERS

Mov ID	Turn	Mov Cl.	Arv Flow veh/h	Opng Flow veh/h	Movement Adjust. Flow pcu/h	Total Cap. veh/h	Prac. Deg. Satn xp	Prac. Spare Cap. %	Deg. Satn x
South: 10th Street									
3	L2	#	21	205	212	27	0.85	9	0.779*
8	T1	#	453	205	212	582	0.85	9	0.779*
18a	R1	#	212	205	212	272	0.85	9	0.779*
18	R2	#	5	205	212	7	0.85	9	0.779*
East: Northern									
1	L2	#	5	847	872	72	0.85	1021	0.076
6	T1	#	1	847	872	14	0.85	1021	0.076
16	R2	#	25	847	872	330	0.85	1021	0.076
16b	R3	#	3	847	872	43	0.85	1021	0.076
NorthEast: Prosperity									
1bx	L3	#	26	529	545	75	0.85	144	0.349
1ax	L1	#	187	529	545	536	0.85	144	0.349
16ax	R1	#	8	529	545	22	0.85	144	0.349
16bx	R3	#	1	529	545	3	0.85	144	0.349
North: 10th Street									
7b	L3	#	16	248	255	26	0.85	34	0.633
7	L2	#	15	248	255	24	0.85	34	0.633
4	T1	#	495	248	255	781	0.85	34	0.633
14	R2	#	12	248	255	19	0.85	34	0.633
West: Northern									
5	L2	#	24	745	767	78	0.85	179	0.305
5a	L1	#	121	745	767	396	0.85	179	0.305
2	T1	#	3	745	767	11	0.85	179	0.305
12	R2	#	8	745	767	25	0.85	179	0.305

* Maximum degree of saturation
\# Combined Movement Capacity parameters are shown for all Movement Classes.

MOVEMENT PERFORMANCE

Mov ID	Turn	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Eff. Stop Rate	Total Stops	Perf. Index	Tot.Trav. Distance (veh-mi/h)	Tot.Trav. Time (veh-h/h)	Aver. Speed (mph)
South: 10th Street										
3	L2	0.12	0.14	20.6	1.03	21.2	13.68	13.0	0.5	25.8
8	T1	2.59	3.11	20.6	1.03	464.9	26.43	286.4	10.8	26.5
18a	R1	1.21	1.46	20.6	1.03	217.4	19.31	133.9	5.1	26.4
18	R2	0.03	0.04	20.6	1.03	5.6	13.23	3.4	0.1	24.8
East: Northern										
1	L2	0.01	0.02	8.9	0.60	3.3	0.33	3.4	0.1	27.1
6	T1	0.00	0.00	8.9	0.60	0.7	0.22	0.7	0.0	26.8
16	R2	0.06	0.07	8.9	0.60	15.0	0.85	15.5	0.6	27.3
16b	R3	0.01	0.01	8.9	0.60	2.0	0.28	2.0	0.1	25.7
NorthEast: Prosperity										
1bx	L3	0.08	0.09	10.4	0.62	16.3	1.89	16.8	0.6	26.5
1ax	L1	0.54	0.65	10.4	0.62	116.5	6.38	120.6	4.5	26.8
16ax	R1	0.02	0.03	10.4	0.62	4.7	1.36	4.9	0.2	25.5
16bx	R3	0.00	0.00	10.4	0.62	0.7	1.20	0.7	0.0	25.9
North: 10th Street										
7b	L3	0.07	0.08	14.4	0.73	11.9	6.01	10.4	0.4	28.1
7	L2	0.06	0.07	14.4	0.73	11.1	5.98	9.7	0.3	27.9
4	T1	1.98	2.38	14.4	0.73	362.0	18.52	315.0	11.0	28.7
14	R2	0.05	0.06	14.4	0.73	8.8	5.85	7.6	0.3	26.6
West: Northern										
5	L2	0.08	0.09	11.7	0.66	15.9	1.60	15.4	0.6	26.6
5a	L1	0.39	0.47	11.7	0.66	80.1	4.34	77.5	2.9	26.4
2	T1	0.01	0.01	11.7	0.66	2.2	1.01	2.1	0.1	26.6
12	R2	0.02	0.03	11.7	0.66	5.1	1.13	4.9	0.2	24.5

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Fuel Consumption, Emissions and Cost
Site: Prosperity and 10th

Site ID: 101
Roundabout

FUEL CONSUMPTION, EMISSIONS AND COST (TOTAL)

Mov ID	Turn	Cost Total $/h	Fuel Total gal/h	CO2 Total kg/h	CO Total kg/h	HC Total kg/h	NOX Total kg/h
South: 10th Street							
3	L2	6.75	0.5	4.7	0.00	0.000	0.007
8	T1	147.25	11.5	103.3	0.10	0.009	0.149
18a	R1	68.86	5.4	48.3	0.05	0.004	0.070
18	R2	1.78	0.1	1.2	0.00	0.000	0.002
		224.64	17.6	157.6	0.15	0.013	0.228
East: Northern							
1	L2	1.65	0.1	1.2	0.00	0.000	0.002
6	T1	0.33	0.0	0.2	0.00	0.000	0.000
16	R2	7.56	0.6	5.4	0.00	0.000	0.008
16b	R3	0.99	0.1	0.7	0.00	0.000	0.001
		10.53	0.8	7.6	0.01	0.001	0.011
NorthEast: Prosperity							
1bx	L3	9.50	0.7	6.5	0.01	0.000	0.009
1ax	L1	67.70	5.1	46.0	0.04	0.004	0.064
16ax	R1	2.77	0.2	1.9	0.00	0.000	0.003
16bx	R3	0.39	0.0	0.3	0.00	0.000	0.000
		80.36	6.1	54.6	0.05	0.004	0.076
North: 10th Street							
7b	L3	4.83	0.4	3.5	0.00	0.000	0.005
7	L2	4.51	0.4	3.3	0.00	0.000	0.005
4	T1	145.46	11.8	106.1	0.10	0.008	0.149
14	R2	3.54	0.3	2.6	0.00	0.000	0.004
		158.33	12.9	115.6	0.11	0.009	0.163
West: Northern							
5	L2	8.78	0.7	5.9	0.01	0.000	0.008
5a	L1	44.29	3.3	29.9	0.03	0.002	0.042
2	T1	1.20	0.1	0.8	0.00	0.000	0.001
12	R2	2.81	0.2	1.9	0.00	0.000	0.003
		57.07	4.3	38.6	0.03	0.003	0.054
INTERSECTION:		530.93	41.7	373.9	0.36	0.030	0.531

FUEL CONSUMPTION, EMISSIONS AND COST (RATE)

Mov ID	Turn	Cost Rate $/mi	Fuel Eff. mpg	CO2 Rate g/km	CO Rate g/km	HC Rate g/km	NOX Rate g/km
South: 10th Street							
3	L2	0.52	24.6	226.1	0.20	0.018	0.326
8	T1	0.51	24.9	224.1	0.22	0.019	0.324
18a	R1	0.51	24.9	224.1	0.22	0.019	0.324
18	R2	0.52	24.6	226.1	0.20	0.018	0.326
		0.51	24.8	224.2	0.22	0.019	0.324
East: Northern							
1	L2	0.49	25.4	219.3	0.17	0.016	0.308
6	T1	0.49	25.4	219.3	0.17	0.016	0.308
16	R2	0.49	25.6	217.2	0.19	0.017	0.306
16b	R3	0.49	25.4	219.3	0.17	0.016	0.308
		0.49	25.6	217.8	0.19	0.017	0.307
NorthEast: Prosperity							
1bx	L3	0.56	23.3	238.7	0.19	0.018	0.332
1ax	L1	0.56	23.5	236.7	0.21	0.019	0.330
16ax	R1	0.56	23.3	238.7	0.19	0.018	0.332
16bx	R3	0.56	23.5	236.7	0.21	0.019	0.330
		0.56	23.5	237.0	0.21	0.019	0.330
North: 10th Street							
7b	L3	0.46	26.4	211.4	0.18	0.016	0.297
7	L2	0.46	26.4	211.4	0.18	0.016	0.297
4	T1	0.46	26.6	209.4	0.21	0.017	0.295
14	R2	0.46	26.4	211.4	0.18	0.016	0.297
		0.46	26.6	209.6	0.20	0.017	0.295
West: Northern							
5	L2	0.57	23.2	240.0	0.21	0.019	0.337
5a	L1	0.57	23.2	240.0	0.21	0.019	0.337
2	T1	0.57	23.2	240.0	0.21	0.019	0.337
12	R2	0.57	23.0	242.0	0.19	0.019	0.339
		0.57	23.2	240.1	0.21	0.019	0.337
INTERSECTION:		0.51	25.0	222.5	0.21	0.018	0.316

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Lanes

Lane Performance and Capacity Information
Site: Prosperity and 10th

Site ID: 101
Roundabout

LANE PERFORMANCE

Lane No.	Flow veh/h	Cap veh/h	Deg. Satn x	Aver. Delay sec	Eff. Stop Rate	Queue 95% Back veh	Queue 95% Back ft	Lane Length ft
South: 10th Street								
1	691	888	0.779	20.6	1.03	16.2	415.7	1600.0
East: Northern								
1	35	459	0.076	8.9	0.60	0.2	6.1	1600.0
NorthEast: Prosperity								
1	222	636	0.349	10.4	0.62	1.5	37.2	1600.0
North: 10th Street								
1	538	850	0.633	14.4	0.73	6.9	176.1	1600.0
West: Northern								
1	155	510	0.305	11.7	0.66	1.1	29.2	1600.0

LANE FLOW AND CAPACITY INFORMATION

Lane No.	Total Arv Flow veh/h	Min Cap veh/h	Tot Cap veh/h	Deg. Satn x	Lane Util %
South: 10th Street					
1	691	150	888	0.779	100
East: Northern					
1	35	35	459	0.076	100
NorthEast: Prosperity					
1	222	150	636	0.349	100
North: 10th Street					
1	538	150	850	0.633	100
West: Northern					
1	155	150	510	0.305	100

The capacity values of Continuous Lanes are obtained by adjusting the basic saturation flow for lane width, grade, movement class and turning vehicle effects. Saturation flow scale applies if specified.

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Lane, Approach and Intersection Performance
Site: Prosperity and 10th

Site ID: 101
Roundabout

Lane No.	Arrival Flow (veh/h)	%HV	Adj. Basic Satf.	Deg Sat x	Aver. Delay sec	Longest Queue ft	Lane Length ft
South: 10th Street							
1	691	3		0.779	20.6	416	1600
	691	3		0.779	20.6	416	
East: Northern							
1	35	3		0.076	8.9	6	1600
	35	3		0.076	8.9	6	
NorthEast: Prosperity							
1	222	3		0.349	10.4	37	1600
	222	3		0.349	10.4	37	
North: 10th Street							
1	538	3		0.633	14.4	176	1600
	538	3		0.633	14.4	176	
West: Northern							
1	155	3		0.305	11.7	29	1600
	155	3		0.305	11.7	29	
ALL VEHICLES							
	Total	%		Max	Aver.	Max	

Flow	HV	X	Delay	Queue
1641	3	0.779	16.1	416

Peak flow period = 15 minutes.

Queue values in this table are 95% queue (feet)
Note: Basic Saturation Flows at roundabouts or sign-controlled intersections apply only to continuous lanes.

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Driver Characteristics
Site: Prosperity and 10th

Site ID: 101
Roundabout

Lane No.	Satn Speed mph	Satn Flow veh/h	Satn Hdwy sec	Satn Spacing ft	Average Queue Space ft	Driver Response Time sec
South: 10th Street						
1	25.9	1130	3.19	121.15	25.60	2.51
East: Northern						
1	18.3	1130	3.19	85.63	25.60	2.23
NorthEast: Prosperity						
1	16.4	1130	3.19	76.73	25.60	2.12
North: 10th Street						
1	26.6	1130	3.19	124.23	25.60	2.53
West: Northern						
1	16.3	1130	3.19	76.02	25.60	2.11

Saturation Flow and Saturation Headway are derived from follow-up headway.

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Lane Delays
Site: Prosperity and 10th

Site ID: 101
Roundabout

LANE DELAYS

Lane No.	Deg. Satn x	% Arv During Green	Prog. Factor	Delay (seconds/veh) Min Del dm	Stop-line Delay 1st d1	2nd d2	Total dSL	Acc. Dec. dn	Queuing Total dq	MvUp dqm	Stopd (Idle) di	Geom dig	Control dic
South: 10th Street													
1	0.779	NA	NA	4.1	7.9	12.7	20.6	6.0	15.9	5.3	10.6	0.0	20.6
East: Northern													
1	0.076	NA	NA	7.8	8.2	0.6	8.9	4.1	6.4	0.0	6.4	0.0	8.9
NorthEast: Prosperity													
1	0.349	NA	NA	5.7	7.4	3.0	10.4	4.8	7.5	0.4	7.2	0.0	10.4
North: 10th Street													
1	0.633	NA	NA	4.2	7.4	7.0	14.4	6.2	10.5	2.6	7.9	0.0	14.4
West: Northern													
1	0.305	NA	NA	7.1	8.6	3.1	11.7	4.8	8.6	0.4	8.2	0.0	11.7

HCM Delay Formula option used (Exclude Geometric Delay option applies). Control Delay does not include Geometric Delay, and Stop-line Delay is treated as being same as Control Delay.
dm: Minimum delay for gap acceptance cases
dSL: Stop-line delay (=d1+d2)
dn: Average stop-start delay for all vehicles queued and unqueued
dq: Queuing delay (the part of the stop-line delay that includes stopped delay and queue move-up delay)
dqm: Queue move-up delay
di: Stopped delay (stopped (idling) time at near-zero speed)
dig: Geometric delay
dic: Control delay

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Lane Queues
Site: Prosperity and 10th

Site ID: 101
Roundabout

BACK OF QUEUE (VEHICLES)

Deg.	% Arv	Prog.	Ovrfl.	Back of Queue (veh)	Queue Stor.	Prob.	Prob.

Lane No.	Satn x	During Green	Factor	Queue No	Nb1	Nb2	Nb	95%	Ratio Av.	Ratio 95%	Block %	SL Ov. %
South: 10th Street												
1	0.779	NA	NA	2.2	2.6	3.9	6.5	16.2	0.10	0.26	0.0	NA
East: Northern												
1	0.076	NA	NA	0.0	0.1	0.0	0.1	0.2	0.00	0.00	0.0	NA
NorthEast: Prosperity												
1	0.349	NA	NA	0.0	0.5	0.0	0.6	1.5	0.01	0.02	0.0	NA
North: 10th Street												
1	0.633	NA	NA	0.8	1.6	1.2	2.8	6.9	0.04	0.11	0.0	NA
West: Northern												
1	0.305	NA	NA	0.0	0.4	0.0	0.5	1.1	0.01	0.02	0.0	NA

SIDRA Standard models are used for Back of Queue estimation since HCM only gives Cycle-Average Queues for unsignalised intersections.

BACK OF QUEUE (DISTANCE)

Lane No.	Deg. Satn x	% Arv During Green	Prog. Factor	Ovrfl. Queue No	Back of Queue (ft) Nb1	Nb2	Nb	95%	Queue Stor. Ratio Av.	Ratio 95%	Prob. Block %	Prob. SL Ov. %
South: 10th Street												
1	0.779	NA	NA	57.5	66.6	100.6	167.3	415.7	0.10	0.26	0.0	NA
East: Northern												
1	0.076	NA	NA	0.0	2.4	0.0	2.4	6.1	0.00	0.00	0.0	NA
NorthEast: Prosperity												
1	0.349	NA	NA	1.0	14.0	1.0	15.0	37.2	0.01	0.02	0.0	NA
North: 10th Street												
1	0.633	NA	NA	19.5	40.0	30.8	70.8	176.1	0.04	0.11	0.0	NA
West: Northern												
1	0.305	NA	NA	0.8	11.1	0.6	11.7	29.2	0.01	0.02	0.0	NA

SIDRA Standard models are used for Back of Queue estimation since HCM only gives Cycle-Average Queues for unsignalised intersections.

OTHER QUEUE RESULTS (VEHICLES)

Lane No.	Deg. Satn x	% Arv During Green	Prog. Factor	Ovrfl. Queue No	Cyc-Av. Queue Nc	Cyc-Av. Queue 95%
South: 10th Street						
1	0.779	NA	NA	2.2	4.0	7.2
East: Northern						
1	0.076	NA	NA	0.0	0.1	0.2
NorthEast: Prosperity						
1	0.349	NA	NA	0.0	0.6	1.2
North: 10th Street						
1	0.633	NA	NA	0.8	2.2	3.9
West: Northern						
1	0.305	NA	NA	0.0	0.5	0.9

HCM Delay Formula option used:
Cycle-Average Queue is calculated using average delay from the HCM equation.
(i.e. HCM delays are treated as stop-line delays for this purpose).

OTHER QUEUE RESULTS (DISTANCE)

Lane No.	Deg. Satn x	% Arv During Green	Prog. Factor	Ovrfl. Queue No	Cyc-Av. Queue Nc	Cyc-Av. Queue 95%
South: 10th Street						
1	0.779	NA	NA	57.5	101.3	183.7
East: Northern						
1	0.076	NA	NA	0.0	2.2	4.0
NorthEast: Prosperity						
1	0.349	NA	NA	1.0	16.4	29.8
North: 10th Street						
1	0.633	NA	NA	19.5	55.1	100.0
West: Northern						
1	0.305	NA	NA	0.8	12.9	23.4

HCM Delay Formula option used:
Cycle-Average Queue is calculated using average delay from the HCM equation.
(i.e. HCM delays are treated as stop-line delays for this purpose).

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Lane Queue Percentiles
Site: Prosperity and 10th

Site ID: 101
Roundabout

LANE QUEUE PERCENTILES (VEHICLES)

Lane No.	Deg. Satn x	Percentile Back of Queue (veh) 50%	70%	85%	90%	95%	98%	100%
South: 10th Street								
1	0.779	6.5	8.5	11.9	13.8	16.2	18.0	19.4
East: Northern								
1	0.076	0.1	0.1	0.2	0.2	0.2	0.3	0.3
NorthEast: Prosperity								
1	0.349	0.6	0.8	1.1	1.2	1.5	1.6	1.7
North: 10th Street								
1	0.633	2.8	3.6	5.1	5.8	6.9	7.6	8.2
West: Northern								
1	0.309	0.5	0.6	0.8	1.0	1.1	1.3	1.4

SIDRA Standard models are used for Back of Queue estimation since HCM only gives Cycle-Average Queues for unsignalised intersections.

LANE QUEUE PERCENTILES (DISTANCE)

Lane No.	Deg. Satn x	Percentile Back of Queue (feet) 50%	70%	85%	90%	95%	98%	100%
South: 10th Street								
1	0.779	167.2	216.6	305.3	353.5	415.7	461.4	496.0
East: Northern								
1	0.076	2.4	3.2	4.5	5.2	6.1	6.7	7.2
NorthEast: Prosperity								
1	0.349	14.9	19.4	27.3	31.6	37.2	41.2	44.3
North: 10th Street								
1	0.633	70.8	91.7	129.3	149.7	176.1	195.4	210.1
West: Northern								
1	0.305	11.7	15.2	21.4	24.8	29.2	32.4	34.8

SIDRA Standard models are used for Back of Queue estimation since HCM only gives Cycle-Average Queues for unsignalised intersections.

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Lane Stops
Site: Prosperity and 10th

Site ID: 101
Roundabout

Lane No.	Deg. Satn x	% Arv During Green	Prog. Factor	-- Effective Stop Rate -- he1	he2	Geom. hig	Overall h	Total Stops H	Queue Move-up Rate hqm	Total Queue Move-ups Hqm	Prop. Queued pq	Aver. Num. of Cycles to Depart
South: 10th Street												
1	0.779	NA	NA	0.64	0.38	0.00	1.03	709.1	0.72	495.3	0.78	1.49
East: Northern												
1	0.076	NA	NA	0.60	0.00	0.00	0.60	20.9	0.00	0.0	0.60	0.60
NorthEast: Prosperity												
1	0.349	NA	NA	0.60	0.03	0.00	0.62	138.1	0.07	14.5	0.60	0.66
North: 10th Street												
1	0.633	NA	NA	0.55	0.18	0.00	0.73	393.8	0.36	193.9	0.63	1.00
West: Northern												
1	0.305	NA	NA	0.64	0.03	0.00	0.66	103.2	0.07	11.5	0.64	0.71

hig is the average value for all movements in a shared lane
hqm is average queue move-up rate for all vehicles queued and unqueued

Go to Table Links (Top)

Flow Rates

Origin-Destination Flow Rates (Total)
Site: Prosperity and 10th

Site ID: 101
Roundabout

TOTAL FLOW RATES for All Movement Classes (veh/h)

From SOUTH To:	W	N	NE	E	
Turn:	L2	T1	R1	R2	TOT
Flow Rate	20.7	453.3	212.0	5.4	691.3
%HV (all designations)	3.0	3.0	3.0	3.0	3.0

From EAST To:	S	W	N	NE	
Turn:	L2	T1	R2	R3	TOT
Flow Rate	5.4	1.1	25.0	3.3	34.8
%HV (all designations)	3.0	3.0	3.0	3.0	3.0

From NORTHEAST To:	E	S	W	N	
Turn:	L3	L1	R1	R3	TOT
Flow Rate	26.1	187.0	7.6	1.1	221.7
%HV (all designations)	3.0	3.0	3.0	3.0	3.0

From NORTH To:	NE	E	S	W	
Turn:	L3	L2	T1	R2	TOT
Flow Rate	16.3	15.2	494.6	12.0	538.0
%HV (all designations)	3.0	3.0	3.0	3.0	3.0

From WEST To:	N	NE	E	S	
Turn:	L2	L1	T1	R2	TOT
Flow Rate	23.9	120.7	3.3	7.6	155.4
%HV (all designations)	3.0	3.0	3.0	3.0	3.0

Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications:
Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Effects of Volume Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included.
Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in network analysis.

Go to Table Links (Top)

Origin-Destination Flow Rates by Movement Class
Site: Prosperity and 10th

Site ID: 101
Roundabout

FLOW RATES for Light Vehicles (veh/h)

From SOUTH To:	W	N	NE	E	
Turn:	L2	T1	R1	R2	TOT
Flow Rate	20.0	439.7	205.6	5.3	670.6
Mov Class %	97.0	97.0	97.0	97.0	97.0
Flow Scale	1.00	1.00	1.00	1.00	-
Peak Flow Factor	0.92	0.92	0.92	0.92	-
Residual Demand	0.0	0.0	0.0	0.0	0.0

From EAST To:	S	W	N	NE	
Turn:	L2	T1	R2	R3	TOT
Flow Rate	5.3	1.1	24.2	3.2	33.7
Mov Class %	97.0	97.0	97.0	97.0	97.0
Flow Scale	1.00	1.00	1.00	1.00	-
Peak Flow Factor	0.92	0.92	0.92	0.92	-
Residual Demand	0.0	0.0	0.0	0.0	0.0

From NORTHEAST To:	E	S	W	N	
Turn:	L3	L1	R1	R3	TOT
Flow Rate	25.3	181.3	7.4	1.1	215.1
Mov Class %	97.0	97.0	97.0	97.0	97.0
Flow Scale	1.00	1.00	1.00	1.00	-
Peak Flow Factor	0.92	0.92	0.92	0.92	-
Residual Demand	0.0	0.0	0.0	0.0	0.0

From NORTH To:	NE	E	S	W	
Turn:	L3	L2	T1	R2	TOT
Flow Rate	15.8	14.8	479.7	11.6	521.9
Mov Class %	97.0	97.0	97.0	97.0	97.0
Flow Scale	1.00	1.00	1.00	1.00	-
Peak Flow Factor	0.92	0.92	0.92	0.92	-
Residual Demand	0.0	0.0	0.0	0.0	0.0

From WEST To:	N	NE	E	S	
Turn:	L2	L1	T1	R2	TOT
Flow Rate	23.2	117.0	3.2	7.4	150.8
Mov Class %	97.0	97.0	97.0	97.0	97.0
Flow Scale	1.00	1.00	1.00	1.00	-
Peak Flow Factor	0.92	0.92	0.92	0.92	-
Residual Demand	0.0	0.0	0.0	0.0	0.0

FLOW RATES for Heavy Vehicles (veh/h)

From SOUTH To:	W	N	NE	E	
Turn:	L2	T1	R1	R2	TOT
Flow Rate	0.6	13.6	6.4	0.2	20.7
Mov Class %	3.0	3.0	3.0	3.0	3.0
Flow Scale	1.00	1.00	1.00	1.00	-
Peak Flow Factor	0.92	0.92	0.92	0.92	-
Residual Demand	0.0	0.0	0.0	0.0	0.0

From EAST To:	S	W	N	NE	
Turn:	L2	T1	R2	R3	TOT
Flow Rate	0.2	0.0	0.8	0.1	1.0
Mov Class %	3.0	3.0	3.0	3.0	3.0
Flow Scale	1.00	1.00	1.00	1.00	-
Peak Flow Factor	0.92	0.92	0.92	0.92	-
Residual Demand	0.0	0.0	0.0	0.0	0.0

From NORTHEAST To:	E	S	W	N	
Turn:	L3	L1	R1	R3	TOT
Flow Rate	0.8	5.6	0.2	0.0	6.7
Mov Class %	3.0	3.0	3.0	3.0	3.0
Flow Scale	1.00	1.00	1.00	1.00	-
Peak Flow Factor	0.92	0.92	0.92	0.92	-
Residual Demand	0.0	0.0	0.0	0.0	0.0

From NORTH To:	NE	E	S	W	
Turn:	L3	L2	T1	R2	TOT
Flow Rate	0.5	0.5	14.8	0.4	16.1
Mov Class %	3.0	3.0	3.0	3.0	3.0
Flow Scale	1.00	1.00	1.00	1.00	-
Peak Flow Factor	0.92	0.92	0.92	0.92	-
Residual Demand	0.0	0.0	0.0	0.0	0.0

From WEST To:	N	NE	E	S	
Turn:	L2	L1	T1	R2	TOT
Flow Rate	0.7	3.6	0.1	0.2	4.7
Mov Class %	3.0	3.0	3.0	3.0	3.0
Flow Scale	1.00	1.00	1.00	1.00	-
Peak Flow Factor	0.92	0.92	0.92	0.92	-
Residual Demand	0.0	0.0	0.0	0.0	0.0

Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications:
Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Effects of Volume Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included.
Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in network analysis.

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Lane Flow Rates
Site: Prosperity and 10th

Site ID: 101
Roundabout

LANE FLOW RATES AT STOP LINE (veh/h)

From SOUTH To:	W	N	NE	E	
Turn:	L2	T1	R1	R2	TOT
Lane 1					
LV	20.0	439.7	205.6	5.3	670.6
HV	0.6	13.6	6.4	0.2	20.7
Total	20.7	453.3	212.0	5.4	691.3
Approach	20.7	453.3	212.0	5.4	691.3

From EAST To:	S	W	N	NE	
Turn:	L2	T1	R2	R3	TOT
Lane 1					
LV	5.3	1.1	24.2	3.2	33.7
HV	0.2	0.0	0.8	0.1	1.0
Total	5.4	1.1	25.0	3.3	34.8
Approach	5.4	1.1	25.0	3.3	34.8

From NORTHEAST To:	E	S	W	N	
Turn:	L3	L1	R1	R3	TOT
Lane 1					
LV	25.3	181.3	7.4	1.1	215.1
HV	0.8	5.6	0.2	0.0	6.7
Total	26.1	187.0	7.6	1.1	221.7
Approach	26.1	187.0	7.6	1.1	221.7

From NORTH To:	NE	E	S	W	
Turn:	L3	L2	T1	R2	TOT

Lane 1					
LV	15.8	14.8	479.7	11.6	521.9
HV	0.5	0.5	14.8	0.4	16.1
Total	16.3	15.2	494.6	12.0	538.0
Approach	16.3	15.2	494.6	12.0	538.0

From WEST To:	N	NE	E	S	
Turn:	L2	L1	T1	R2	TOT
Lane 1					
LV	23.2	117.0	3.2	7.4	150.8
HV	0.7	3.6	0.1	0.2	4.7
Total	23.9	120.7	3.3	7.6	155.4
Approach	23.9	120.7	3.3	7.6	155.4

EXIT LANE FLOW RATES

Movement Class:	LV	HV	TOT
Exit: SOUTH			
Lane: 1	673.7	20.8	694.6
Total	673.7	20.8	694.6
Exit: EAST			
Lane: 1	48.5	1.5	50.0
Total	48.5	1.5	50.0
Exit: NORTHEAST			
Lane: 1	341.6	10.6	352.2
Total	341.6	10.6	352.2
Exit: NORTH			
Lane: 1	488.2	15.1	503.3
Total	488.2	15.1	503.3
Exit: WEST			
Lane: 1	40.1	1.2	41.3
Total	40.1	1.2	41.3

DOWNSTREAM LANE FLOW RATES FOR EXIT ROADS

Movement Class:	LV	HV	TOT
Exit: SOUTH			
Lane: 1	673.7	20.8	694.6
Total	673.7	20.8	694.6
Exit: EAST			
Lane: 1	48.5	1.5	50.0
Total	48.5	1.5	50.0
Exit: NORTHEAST			
Lane: 1	341.6	10.6	352.2
Total	341.6	10.6	352.2
Exit: NORTH			
Lane: 1	488.2	15.1	503.3
Total	488.2	15.1	503.3
Exit: WEST			
Lane: 1	40.1	1.2	41.3
Total	40.1	1.2	41.3

Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications:
Unit Time for Volumes = 60 minutes
Peak Flow Period = 15 minutes
Effects of Volume Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included.
Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in network analysis.

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Other

Parameter Settings Summary
Site: Prosperity and 10th

Site ID: 101
Roundabout

* Basic Parameters:
  Intersection Type: Roundabout
    US HCM 2010 Roundabout Capacity Model used
  Driving on the right-hand side of the road
  Input data specified in US units
  Model Defaults: US HCM (Customary)
  Peak Flow Period (for performance): 15 minutes
  Unit time (for volumes): 60 minutes.
  HCM Delay Model option used

```
HCM Queue Model option used
Level of Service based on: Delay and v/c (HCM 6)
Queue percentile: 95%
```

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Diagnostics
Site: Prosperity and 10th

```
Site ID: 101
Roundabout


Lane Flow-Capacity Iterations:

  Site Model Variability Index (Iterations 3 to N):   0.0%
  Number of Iterations: 3 (Maximum: 10)

Other Diagnostic Messages (if any):
```

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Organisation: O'ROURKE ENGINEERING & PLANNING | Processed: Thursday, April 16, 2020 2:12:35 PM
Project: C:\Users\Susan\Documents\Projects\Palm Beach County\Lake Park\10th and Prosperity\RoundaboutProsp.10th.oval.sip8

Attachment B
2020 Local Initiatives Program Overview

2020 Local Initiatives (LI) Program Overview

Palm Beach Transportation Planning Agency

The purpose of the Palm Beach Transportation Planning Agency's (TPA) Local Initiative (LI) Program is to help advance lower-cost, non-regionally significant transportation projects identified by our communities. Funding is available by Fiscal Year, starting July 1st of the previous calendar year.

FUNDING AVAILABILITY

Application Deadline:	February 28, 2020
Total Available Funding:	~$20M/year
Grant Reimbursement Maximum:	$5,000,000
Grant Reimbursement Minimum:	$250,000

PROJECT ELIGIBILITY *Eligible projects are as follows:*

Complete Street projects - including:

Lane Narrowing	Transit Infrastructure	Turn Lanes
Lane Elimination	Intelligent Transportation Systems (ITS)	Traffic Signals
Bicycle Facilities	Median Modifications	Striping and Marking
Pedestrian Facilities	Signing and lighting	

Transit capital - Vehicle purchase and shelter construction. Can also pay up to 50% of a 3-year turn-key contract for new transit service (e.g. trolley service).

Non-motorized infrastructure - Separated, buffered or designated bike lanes, sidewalks, shared-use paths, and pedestrian lighting.

Freight efficiency - Airport or seaport off-site road capacity improvements, railway capacity improvements, truck movement improvements.

ELIGIBLE PROJECT SPONSORS

- Municipalities
- County
- State
- Transit agencies
- Tribal governments
- Federal agencies

PROGRAM GUIDELINES

- An applicant may submit a maximum of two (2) applications, with the exception of Palm Beach County who may submit a maximum of six (6) applications across all departments. Only the highest ranked eligible project application from each agency will be included in the TPA's draft List of Priority Projects, unless the applicant's project lead provides the TPA with a preferred rank of their own projects. Palm Beach County may have up to three (3) projects included in the first round. If funding permits, remaining eligible project applications will be added according to the order of prioritization until funding is exhausted.
- An application must score a minimum of 25 out of 100 points in order to be eligible for Board approval on the TPA's List of Priority Projects.
- Applications are limited to a minimum request of $250K and maximum funding amount of $5M, inclusive of all project phases.
- Applications must be submitted online via the application portal pursuant to program schedule.
- Applications must include all required documents listed in the Submittal Checklist.
- Applications will be scored and ranked via the scoring system derived from the TPA's 2045 Long Range Transportation Plan (LRTP) adopted goals, objectives and targets and described more specifically in the Scoring Criteria table.
- The TPA Board makes the final decision regarding inclusion of an application on the TPA's List of Priority Projects and may waive any of the above requirements.
- Projects sponsors are responsible for covering all unanticipated cost increases, including but not limited to price inflation and increases in the cost of construction. Sponsors should anticipate covering these increases with Local Funds by the time the project is ready for construction.

SCHEDULE

Date	Activity and Deadline
October 17, 2019	**Program Kick-off.** TPA Board approves program.
November 1, 2019	**Program Application Workshop.** FDOT and TPA hold workshop to review program application, scoring criteria, schedule, and project implementation requirements. TPA distributes program overview and application information to local agencies and opens online application portal.
November 4, 2019 - January 31, 2020	**Pre-Application Meetings.** Applicants participate in a required one-on-one meeting with TPA and FDOT representatives to discuss project specifics and clarify application requirements.
February 28, 2020	**Application Deadline.** Applicants submit applications, including community letters of support, via online application portal by 5 p.m. TPA provides completed applications to FDOT.
March 6, 2020	**TPA Submits Project List and Tentative Ranking to FDOT.** TPA submits tentative project rankings to FDOT for project feasibility and eligibility determination.
March 27, 2020	**First Email to Applicants.** After initial application review, FDOT emails applicants requesting additional clarification needed before field reviews. If ineligible, TPA to send formal response.
April 3, 2020	**Applicant Responses Due.** Applicants provide FDOT and TPA responses to requested clarifications.
April 6 - 17, 2020	**Field Visits.** FDOT and applicants perform field reviews to ensure potential project is constructible, requires no right-of way acquisition, and determine if drainage is warranted.
April 27, 2020	**Second Email to Applicants.** FDOT sends an email to applicants with comments on issues / concerns, clarifications, updated cost estimates, and/or requests for missing or updated documentation.
April 30, 2020	**Resolution of Support Due to TPA.** Applicants must submit a resolution from their governing body and/or the governing body of the facility owner endorsing the project and committing to funding of operations and maintenance.
May 11, 2020	**Response from Applicants Due.** Deadline for applicants to resolve outstanding eligibility issues and submit final requested documentation to FDOT and TPA.
May 29, 200	**FDOT D4 returns Eligibility Determinations.** FDOT sends TPA final eligibility determinations to finalize draft priority ranking.
July 1-2, 2020	**Draft List of Priority Projects to Committees.** TPA staff presents draft prioritized list of eligible applications to committees for review and input for TPA Board consideration.
July 16, 2020	**Final Priority List Approval by TPA Board.** TPA Board approves final List of Priority Projects.
July 29, 2020	**Submit Project Priorities to FDOT.** TPA submits adopted List of Priority Projects to FDOT and notifies applicants of final priority rankings.

2020 Local Initiatives (LI) Program Overview

Palm Beach Transportation Planning Agency

2020 LI SCORING TABLE Highest Possible Score = 100

Criteria	Value	Scoring	Max
Project improves non-motorized safety by providing: NOTE: Multiply length (up to 2 miles) by factor shown in Value column. Double points if: + Pedestrian facility is in a Tier 1 Pedestrian Location + Bicycle Facility is in a Tier 1 Bicycle Location	separated or raised bicycle lanes -4	8	20
	10ft+ shared-use pathways - 4	8	
	8ft paved pathways - 3	6	
	buffered bike lanes - 3	6	
	designated bike lanes - 2	4	
	new sidewalks - 2	4	
	sidewalk or shared use path widening - 0.5	1	
Project improves safety and/or convenience for non-motorized users (i.e. provide safe access to daily needs for non-drivers, including children, older adults, and individuals with disabilities)		5	5
Project improves performance of hurricane evacuation route		3	3
Project mitigates impacts of sea level rise		2	2
Project improves infrastructure in unacceptable condition with widespread advanced signs of deterioration; potential imminent failure		6	6
Project improves infrastructure in poor condition and mostly below standard, approaching the end of its service life, exhibiting significant deterioration and of strong risk of failure		4	
Non-capacity project implements TSM strategies		7	10
Non-capacity project implements TDM strategies		3	
Capacity project improves congested Thoroughfare intersection(s) where critical sum >1400		5	
Capacity project expands fiber optic traffic signal network		3	
Capacity project expands CCTV camera coverage area on principal arterials		2	
Local Implementation via Local Area Participation (LAP) Agreement or FTA Flex		5	5
FDOT Implementation on State Highway System with Local Funding for design		3	
FDOT Implementation with Local Funding for design		1	
Applicant cancels a previously prioritized and funded project within the past 12 months		-5	
Median Household income within 1 mile of project vs PBC median income ($57,256)	< 60% ($34,354)	5	5
	60 - <80% ($34,354 - $45,805)	3	
	80% - <100% ($45,805 - $57,256)	1	
Traditionally underserved population percentage within 1 mile of project	>80%	5	5
	>60 - 80%	4	
	>40% -60%	3	
	>20% - 40%	2	
	5-20%	1	
Project is endorsed by members of benefit area (HOA, POA, petition, etc.)		3	5
Project has been tested a pilot/pop-up with local funds		2	
Project will have positive environmental impacts (i.e. mitigation activity, pollution prevention & abatement, stormwater management, etc.)		5	8
Project provides alternative fuel modes of transportation		3	
Project improves capacity on congested SIS facility/connector or non-SIS truck route	v/c > 1.2	5	5
	v/c > 1.1	3	
	v/c > 1	1	
Project improves efficient movement of freight in region		5	5
Project improves non-motorized facilities at an interchange, bridge, or railroad crossing		6	6
Project improves service at a transit hub		6	10
Project reduces transit travel time		4	
			100

HOW TO APPLY

1. **Attend the TPA Funding Programs Workshop - November 1, 2019 (optional)**
   Learn about project eligibility, Local Agency Program Certification, and have your specific questions answered by FDOT and TPA Staff.

2. **Attend Pre-Application Meeting with TPA and FDOT staff (required)**
   All applicants must attend a pre-application meeting with TPA and FDOT between November 4, 2019 and January 31, 2020. TPA will schedule these meetings with FDOT and applicants.

3. **Gather the required documents**
   Each project submittal requires an application, online form, and supporting documents outlined in the Submittal Checklist provided below. Missing or late documents may result in project ineligibility.

4. **Submit via online application portal**
   The application process requires the submittal of the application document with associated attachments via the online application portal that can be accessed once live at: www.PalmBeachTPA.org/li

5. **Stay Updated**
   Follow the Program Schedule and look out for emails from TPA and FDOT regarding your project application.

SUBMITTAL CHECKLIST

Please use the following checklist to ensure you are including all documents required to be submitted with your application:

- ☐ Application
- ☐ Must attend Pre-Application meeting
- ☐ Location Map (Aerial)
- ☐ Photograph of project location before construction
- ☐ Typical Section (Existing and Proposed)
- ☐ Detailed Cost Estimate Spreadsheet (prepared and signed by a Professional Engineer from the Agency's Engineering Office)
- ☐ Right-of-Way Ownership Verification (Plats, deeds, prescriptions, certified surveys and/or easements)
- ☐ Community letters of support (due February 28, 2020)
- ☐ Commitment Letter from administering agency's director of Engineering or Public Works Department clearly indicating they will "administer and construct the project if funded by the Palm Beach Transportation Planning Agency's (TPA) Local Initiatives (LI) Program".
- ☐ Participate in FDOT Field Visit (to be scheduled on a weekday April 6-17)
- ☐ Proof of public outreach and support required if proposed project modifies a roadway that provides primary access to a single-family residential lots.
  - Must have > 25% of all landowners in support of the project, whose parcel is directly adjacent to the project. If > 10% of adjacent landowners oppose the project, then the project will not be eligible.
  - The following documentation must be submitted with the application in the form of:
    - Responses to mail outs sent to landowners/residents; Or,
    - Sign-In signatures and input obtained at a neighborhood/public meeting.

    NOTE: Attendance at a council meeting for the resolution of support is not considered a public outreach meeting.
- ☐ Resolution of support from the facility owner(s) clearly indicating that the project may be constructed as proposed and committing to fund ongoing operations and maintenance of the project - due within 60 days of application due date (April 30, 2019). Resolutions for projects to be administered by FDOT must also include language clearly stating the project "may be administered and constructed by FDOT on behalf of the (ROW owner)."