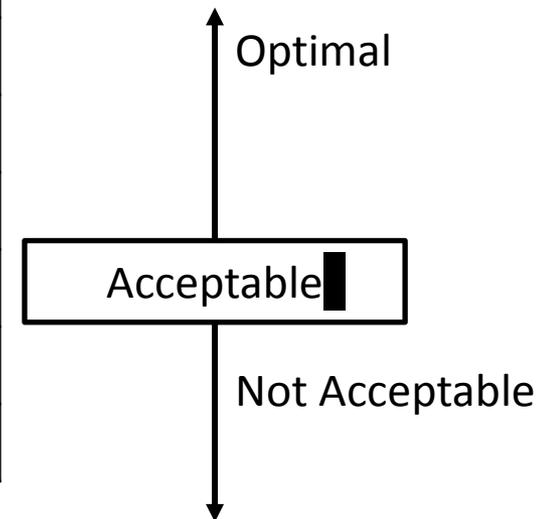


Research Forest Dr at Grogans Mill Rd Intersection Improvement Alternatives (UPDATED)

Level of Service (LOS)

- Level of Service Criteria

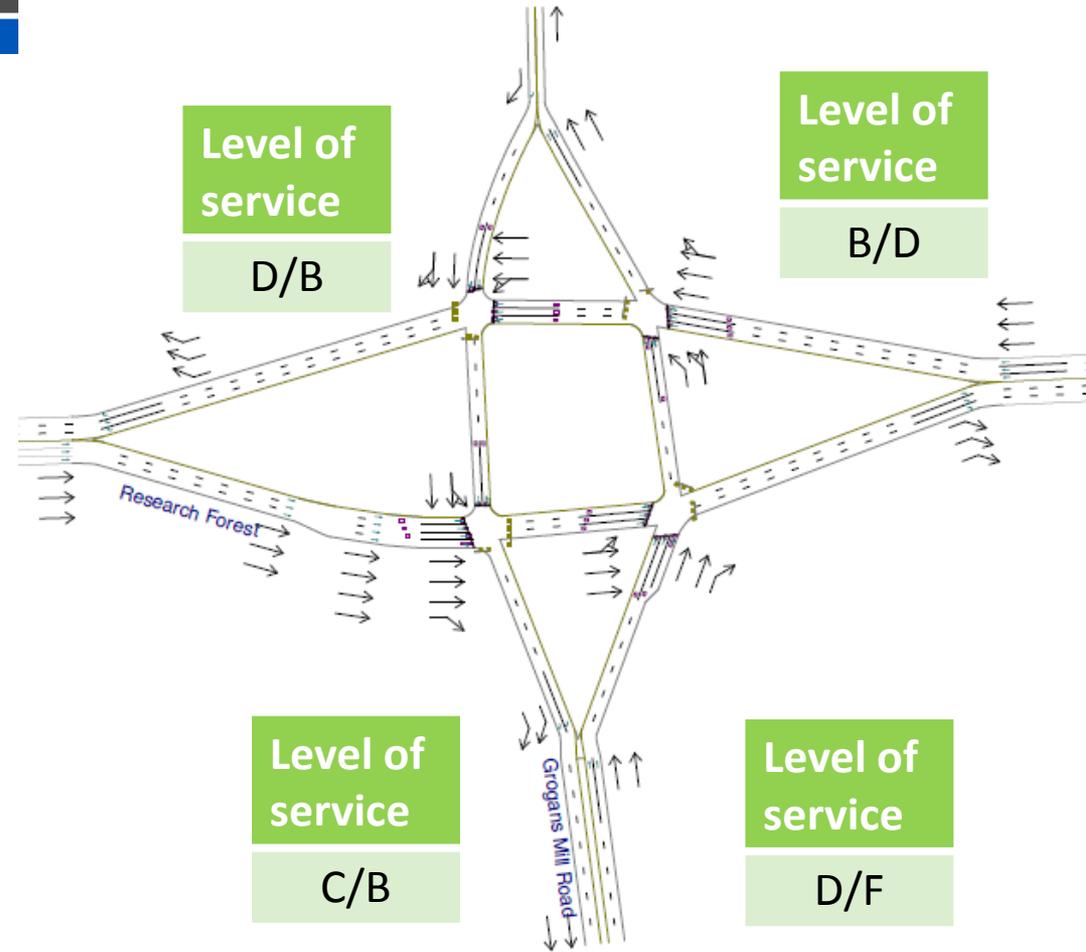
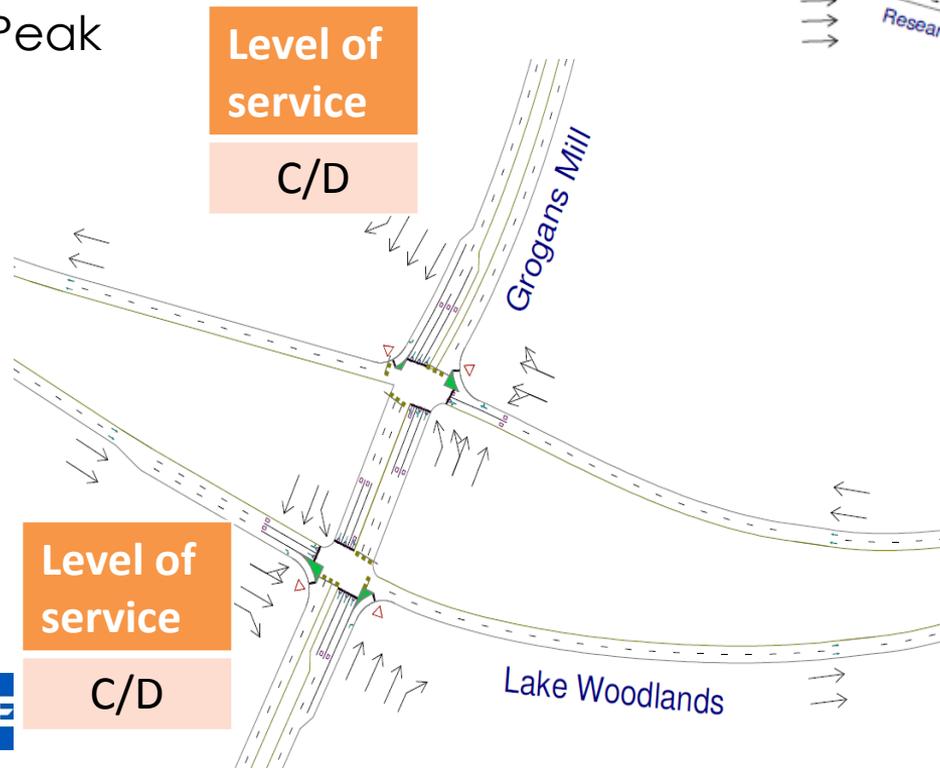
Level of Service	Delay (sec)	Description
A	<10sec	Free-flow traffic
B	10-20sec	Reasonable free-flow
C	20-35sec	Stable flow
D	35-55sec	Approaching unstable flow
E	55-85 sec	Unstable flow
F	>85 sec	Highly congested traffic conditions



Existing Conditions

Existing (2018):
The existing
lane geometry
with

- Level of Service
AM/PM
Peak



Updated H-GAC Traffic Projections

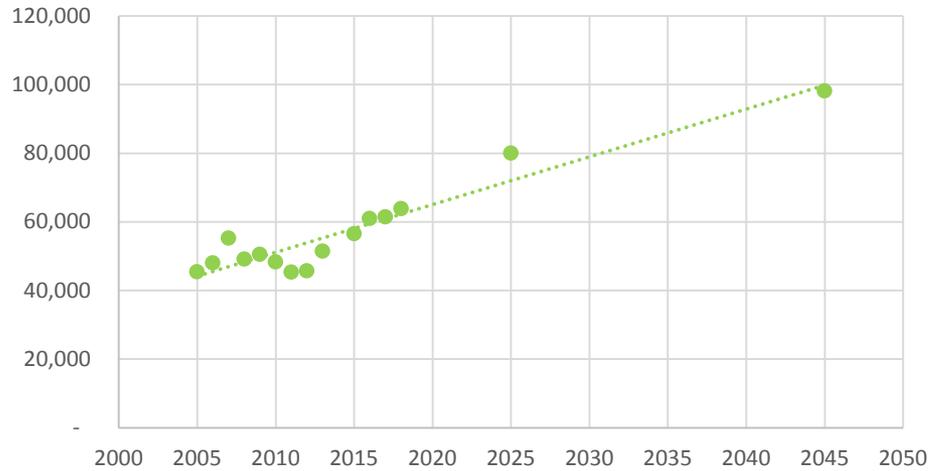
- As part of the 2018 call for projects, H-GAC has published updated traffic projections for the intersections of Research Forest at Grogans Mill and Lake Woodlands at Grogans Mill. The previous H-GAC projections were based on the 2014 H-GAC South Montgomery County Mobility Study. The updated projections reflect changes in population, jobs, and developments since 2014.
- The traffic demand is now expected to balance between both intersections Research Forest at Grogans Mill and Lake Woodlands at Grogans Mill by both design years, 2025 and 2045.
- The new traffic projections have been validated with current traffic counts and growth trends (average annual growth factor of 2.5%).

Research Forest at Grogans Mill Intersection Average Daily Traffic (ADT)		
2014 HGAC Projected Volumes		
Year 2018	Year 2022	Year 2040
62,450	78,300	117,500
2018 HGAC Projected Volumes		
Year 2018	Year 2025	Year 2045
62,450	79,986	98,117

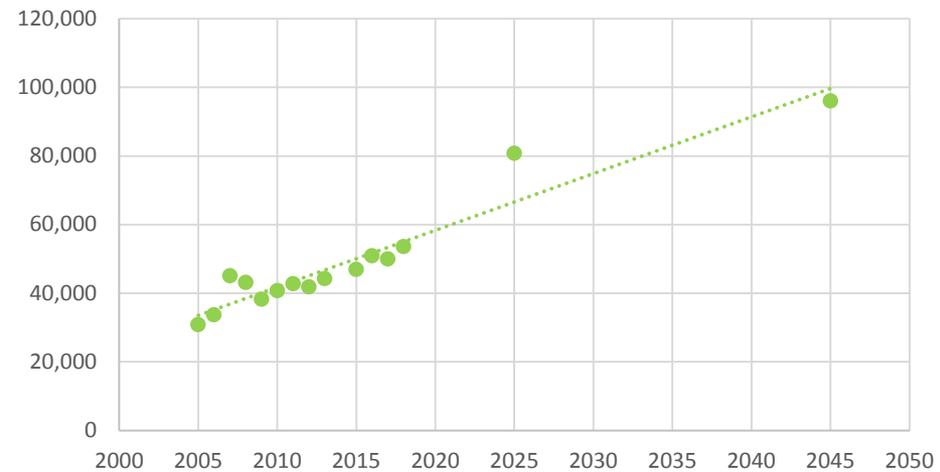
Lake Woodlands at Grogans Mill Intersection Average Daily Traffic (ADT)		
2014 HGAC Projected Volumes		
Year 2018	Year 2022	Year 2040
52,000	102,200	125,500
2018 HGAC Projected Volumes		
Year 2018	Year 2025	Year 2045
52,000	80,729	95,978

Updated 2018 H-GAC Projection Validation with Traffic Growth Trends

Research Forest at Grogans Mill



Lake Woodlands at Grogans Mill

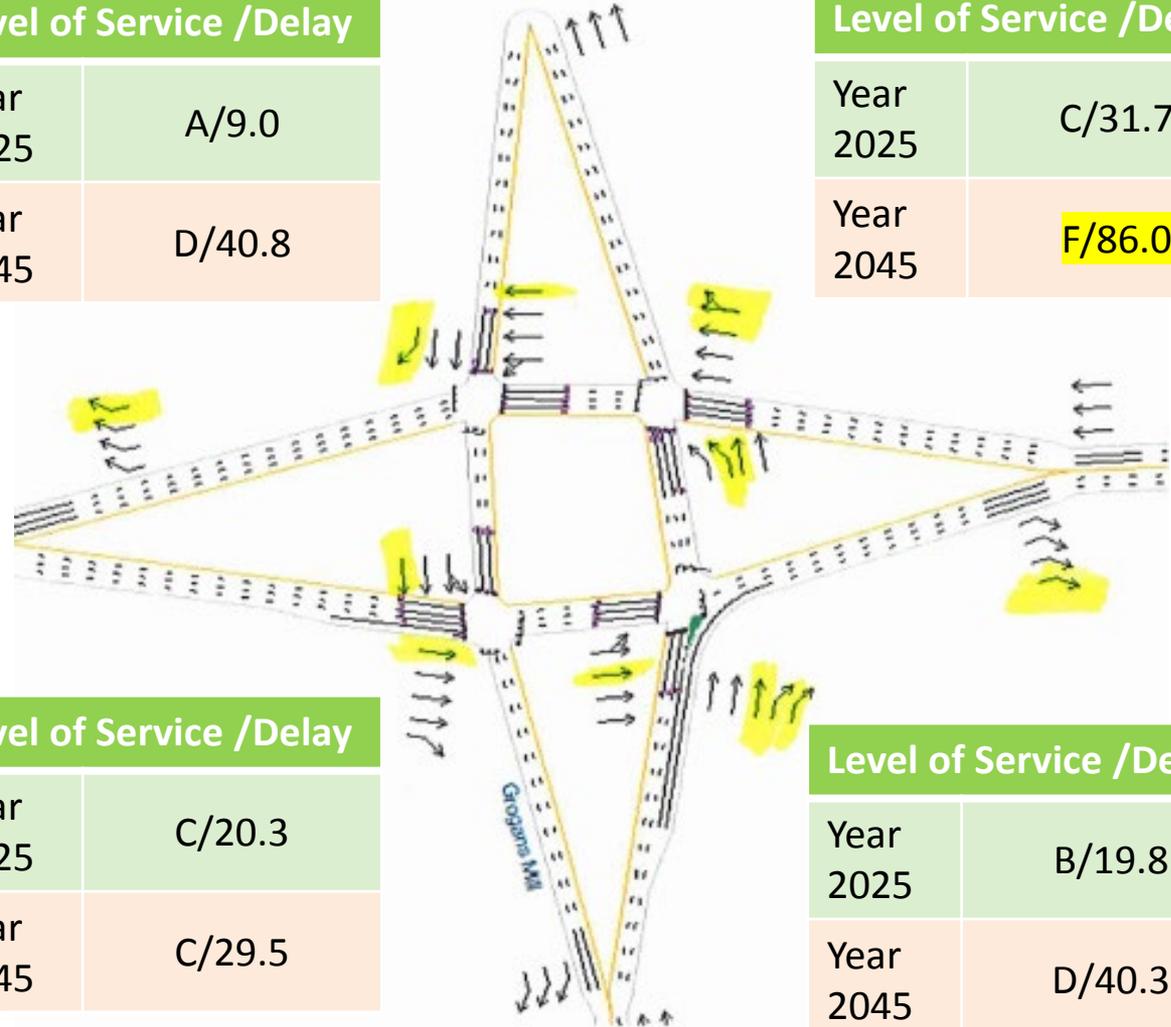


At-Grade Intersection Widening Alternative

- Research Forest Dr and Grogans Mill Rd
- Level of Service/Delay
- Design year 2025 and 2045 PM Peak with Updated HGAC Projections

Level of Service /Delay	
Year 2025	A/9.0
Year 2045	D/40.8

Level of Service /Delay	
Year 2025	C/31.7
Year 2045	F/86.0



Level of Service /Delay	
Year 2025	C/20.3
Year 2045	C/29.5

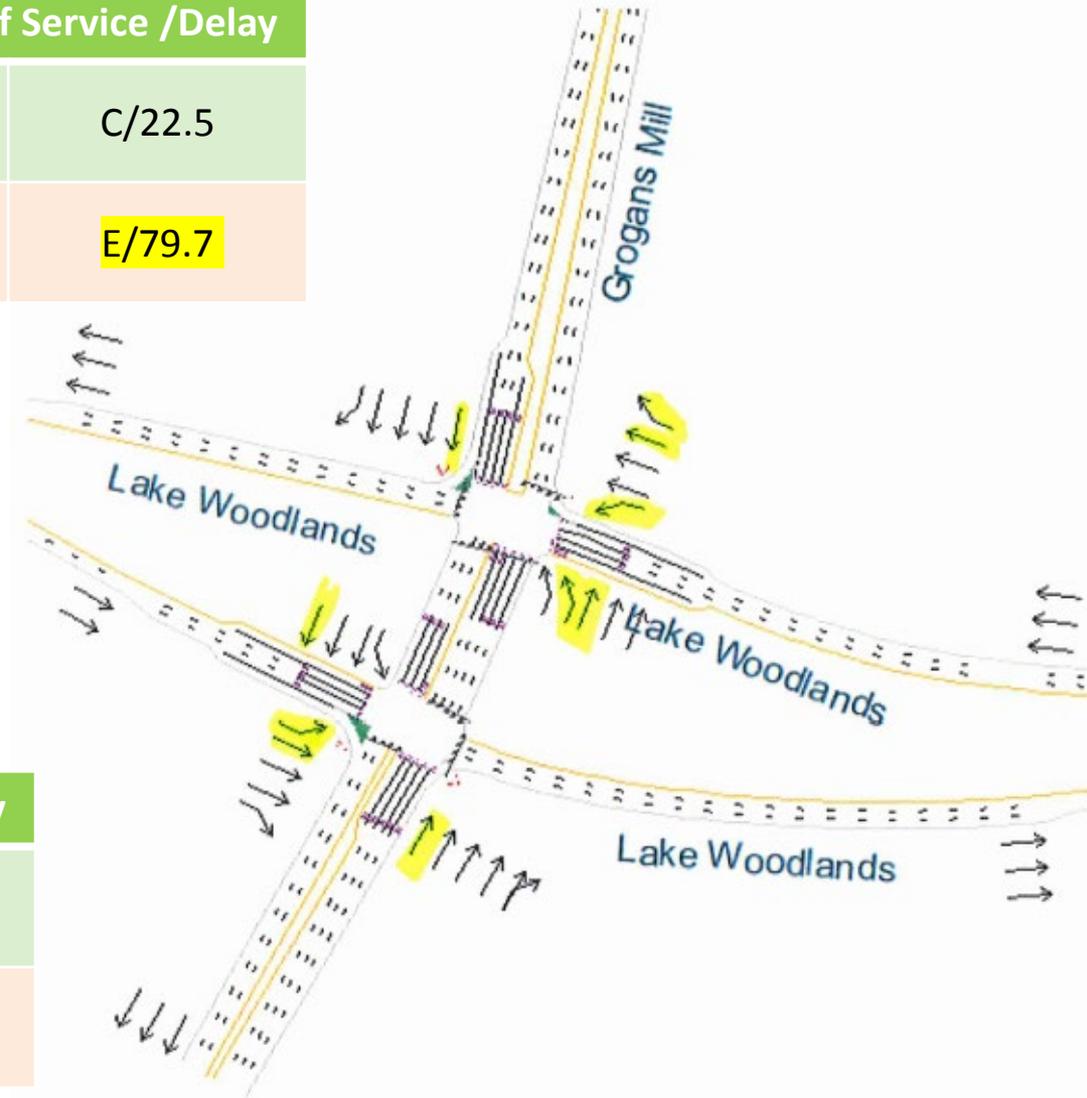
Level of Service /Delay	
Year 2025	B/19.8
Year 2045	D/40.3

At-Grade Intersection Widening Alternative

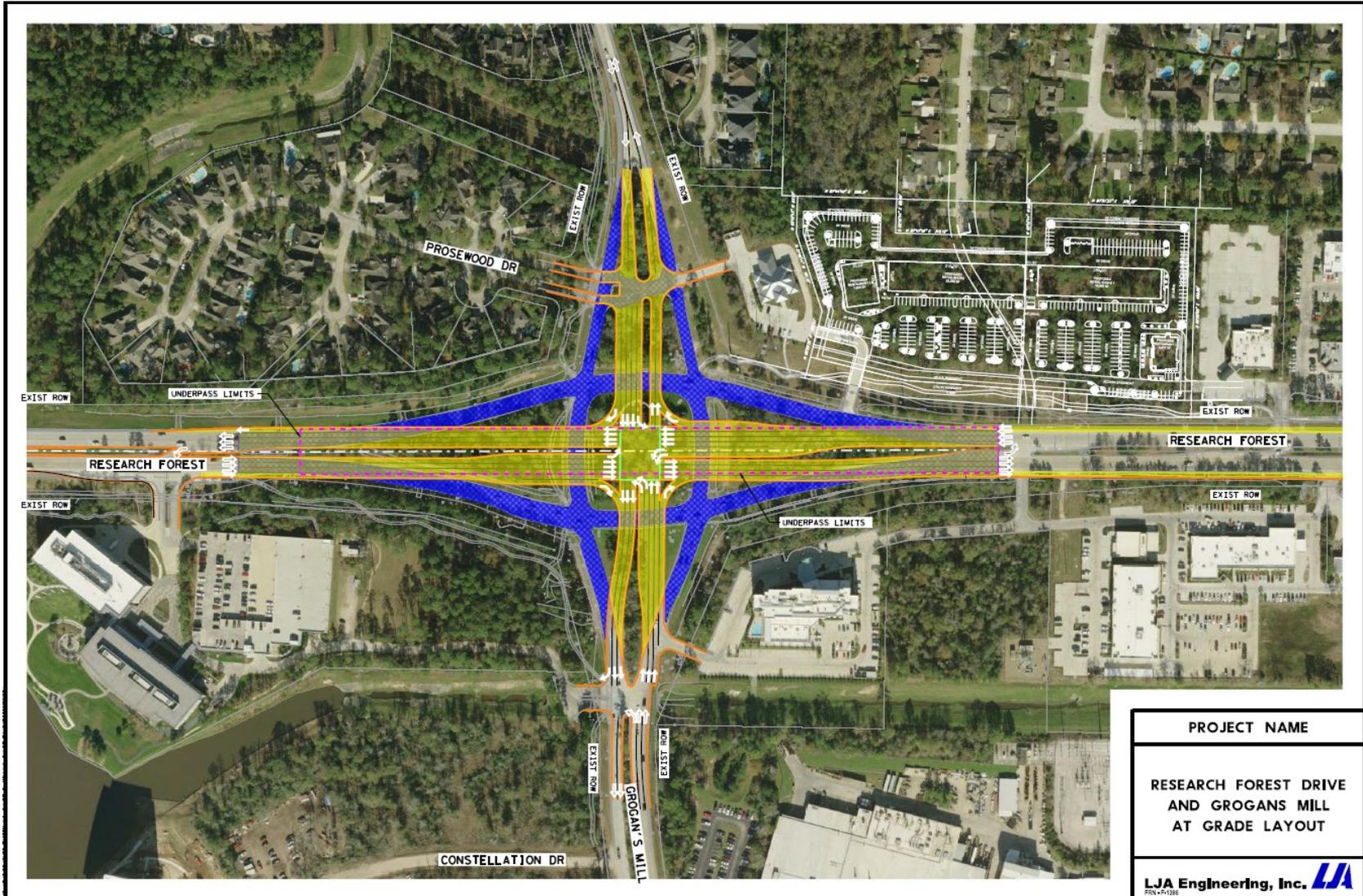
- Lake Woodlands and Grogans Mill Rd
- Level of Service/Delay
- Design year 2025 and 2045 PM Peak with Updated HGAC Projections

Level of Service /Delay	
Year 2025	C/22.5
Year 2045	E/79.7

Level of Service /Delay	
Year 2025	D/46.8
Year 2045	E/73.0



At-Grade Widening Single Intersection Design



At-Grade Single Intersection Alternative

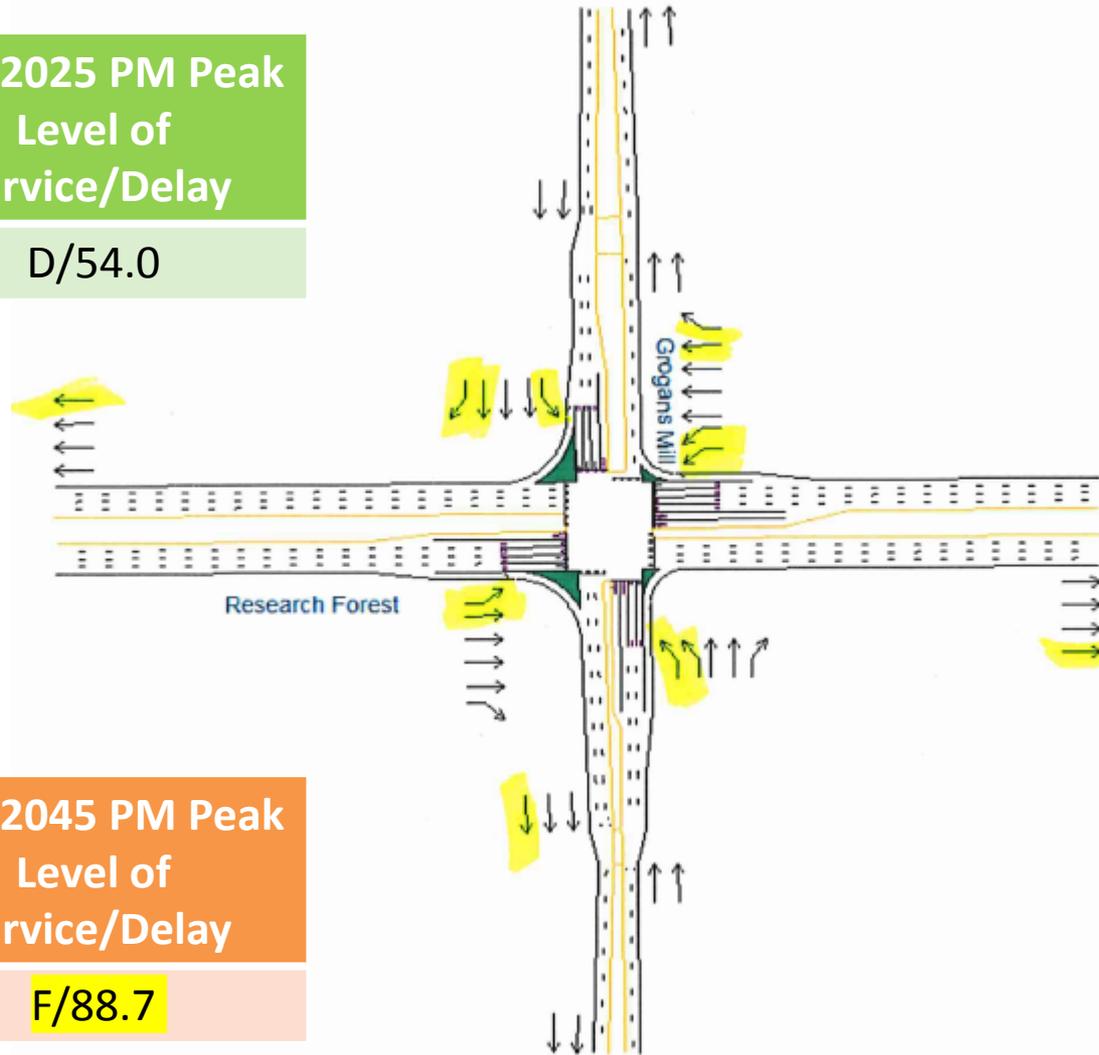
- Research Forest Dr and Grogans Mill Rd
- Level of Service/Delay
- Design year 2025 and 2045 with Updated HGAC Projections

Year 2025 PM Peak
Level of
Service/Delay

D/54.0

Year 2045 PM Peak
Level of
Service/Delay

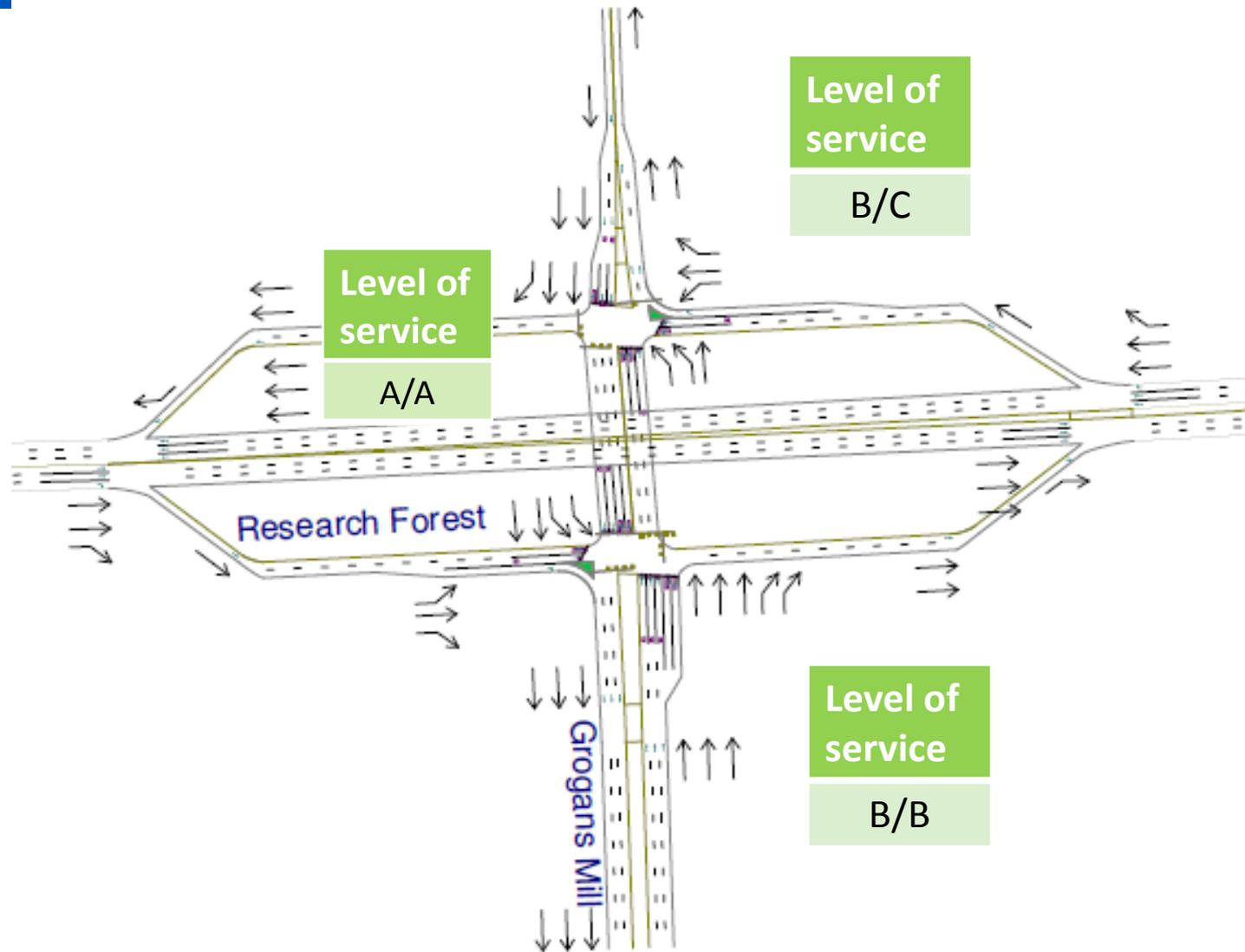
F/88.7



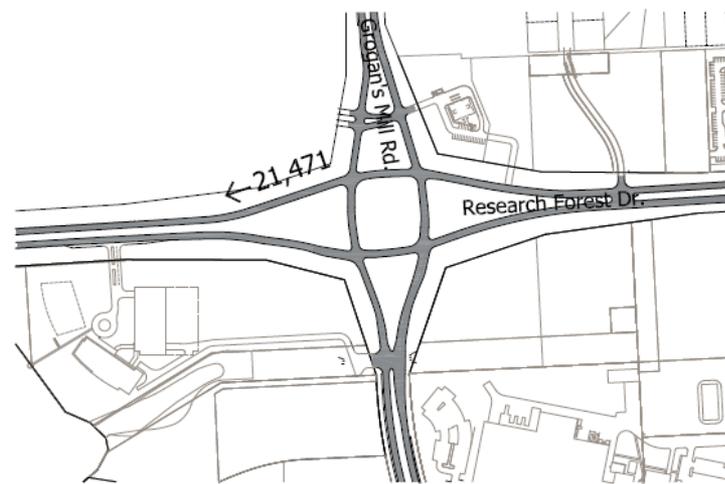
Alternatives

Underpass:
existing lanes at-grade, plus the underpass with 6 lanes

- Level of Service PM peak
- Design year 2025/2045
- Four intersection reconfigured to two intersections



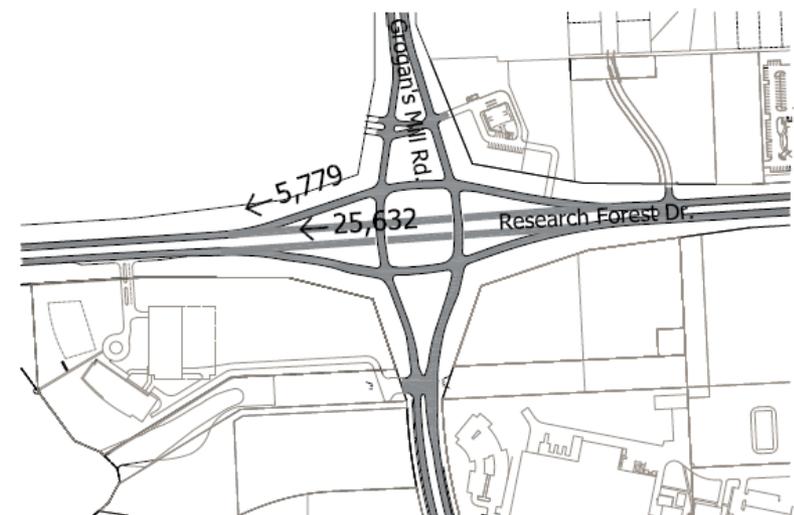
Average Daily Traffic (ADT) Comparison



2018 Average Daily Traffic (ADT)

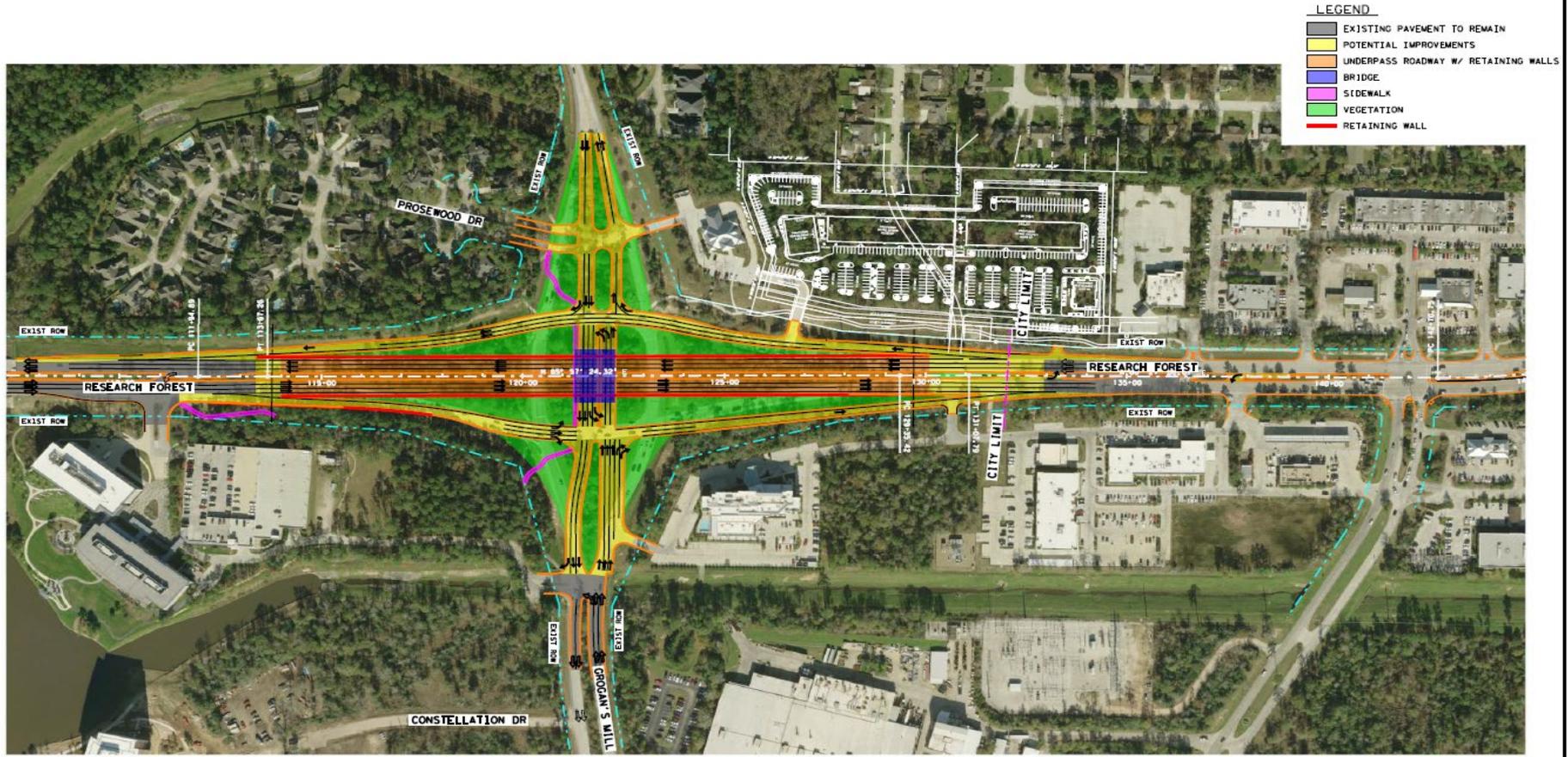


2025 ADT's without the Underpass



2025 ADT with the Underpass

Recommended Underpass Alternative



LJA Engineering, Inc. 

0' 50' 100' 250'
SCALE: 1"=250'

RESEARCH FOREST DRIVE
AND GROGANS MILL
UNDERPASS OPTION 10

Underpass Benefit/Cost Analysis

Delay Benefit	Safety Benefit	Emissions Benefit	Federal Construction Cost	Benefit/Cost
11.3	29.9	0.03	16.8	2.44

Multimodal Level of Service		
	No-Build LOS	Build LOS
Bicycle	E/F*	E/E*
Pedestrian	E	C
Bus	C/F*	C/C*

* Operational LOS

Underpass Cost Estimate (\$ Million)

Cost Items	Total	Federal	Local Match
Construction Cost	\$17.56	\$14.04	\$3.52
Utility Relocation Cost	\$0.87	-	\$0.87
TxDOT Fee	\$2.40	\$ 1.83	\$0.57
Design Fee	\$1.84	-	\$1.84
Inflation Cost (3 years)	\$1.39	\$0.97	\$0.42
Total Cost	\$24.06	\$16.84	\$7.22

Support Letters and Resolutions

1. WRUD- HGAC Resolution

2. Montgomery County Precinct 3 Letter

3. City of Shenandoah Resolution

4. Woodlands Area Chamber of Commerce Resolution

A RESOLUTION FOR THE SUPPORT AND FUNDING COMMITMENT OF A GRANT APPLICATION THROUGH THE HOUSTON-GALVESTON AREA COUNCIL TRANSPORTATION IMPROVEMENT PROGRAM CALL FOR PROJECTS FOR

THE WOODLANDS ROAD UTILITY DISTRICT NO. 1

WHEREAS, the Houston-Galveston Area Council (H-GAC) has issued the 2018 Transportation Improvement Program (TIP) Call for Projects;

WHEREAS, the Woodlands Road Utility District No. 1 ("the RUD") has developed a partnership with Montgomery County and the City of Shenandoah to develop an underpass improvement project at the intersection of Research Forest Drive and Grogans Mill Road;

WHEREAS, Montgomery County has agreed to serve as the project sponsor and will provide a portion of the required local match commitment;

WHEREAS, the RUD is committed to providing the remaining required local share commitment as established by the H-GAC; and

WHEREAS, if funded, the RUD agrees to maintain positive collaboration with all project partners to satisfy all project development, implementation, and maintenance responsibilities related to the project.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE WOODLANDS ROAD UTILITY DISTRICT NO. 1 THAT:

Section 1. The RUD Board hereby authorizes coordination with Montgomery County to ensure the submittal of all required data and information to support a request for the pursuit of discretionary funding.

Section 2. The RUD Board hereby authorizes the commitment of non-federal resources to provide the local match requirement for the project.

Section 3. This resolution shall be effective immediately upon adoption.

PASSED AND APPROVED this 16th day of August, 2018.

ATTEST:

Secretary, Board of Directors
(SEAL)

Chairman Board of Directors



JAMES NOACK
COMMISSIONER PRECINCT 3
MONTGOMERY COUNTY

1130 Prudi Road
Spring, Texas 77380
Email: com.noack@montco.org

Comco: (936) 538-7817
Houston: (281) 367-3977
Fax: (281) 329-7321

Friday, April 06, 2018

Mr. Bill Neill
Chairman
The Woodlands Road Utility District #1
C/O Bryan Yates
Schwartz, Page & Harding L.L.P.
1300 Post Oak Blvd - 1400
Houston, Texas 77056

Re: Letter of support for proposed underpass at Research Forest Drive at Grogan's Mill Road

Dear Mr. Neill:

I am in full support of the request by The Woodlands Road Utility District to the Houston-Galveston Area Council for federal funding for this proposed underpass grade-separation at the intersection of Research Forest Drive and Grogan's Mill Road.

After evaluating numerous alternatives including at-grade widening, a roundabout, SPUI, and direct connectors, a grade-separated intersection in which the continuous thru movement is on Research Forest Drive is the best possible solution. An underpass at this intersection seems to be the most appropriate improvement and I believe will have the community's support.

I am also working with the City of Shenandoah and TxDOT to identify improvements to alleviate existing congestion along this corridor at I-45 including an expansion of capacity under the existing underpass as well as improvements to the eastbound right turn movement and the southbound to westbound right turn movement.

The combination of the proposed improvements along the corridor will reduce congestion significantly along this important Major Thoroughfare gateway into Montgomery County.

Regards,

James Noack
Commissioner, Prec.3

CC: Mayor Ritch Wheeler - City of Shenandoah
Alain Clark, MPO Director - Houston Galveston Area Council
Adam Galland, Area Engineer - Texas Department of Transportation

RESOLUTION NO. R-18-008

A RESOLUTION SUPPORTING THE UNDERPASS AT GROGANS MILL AND RESEARCH FOREST

WHEREAS, the City of Shenandoah supports the economic development in Montgomery County, Texas;

WHEREAS, economic development and quality of life are directly affected by mobility and roadway improvements; and

WHEREAS, County Commissioner Noack has proposed improving Research Forest Drive by constructing an underpass where Research Forest Drive will run underneath Grogans Mill Road; and

WHEREAS, this road improvement will benefit the residents of Shenandoah, The Woodlands and all of Montgomery County,

NOW THEREFORE BE IT RESOLVED THAT

The City of Shenandoah fully supports the construction of a Research Forest underpass beneath Grogans Mill Road.

PASSED AND APPROVED this 23rd day of May, 2018.

M. Ritchey Wheeler, Mayor

ATTEST:
Courtney Clary, City Secretary

APPROVED AS TO FORM:

William Ferebee, City Attorney



A RESOLUTION IN SUPPORT OF THE SUBMISSION OF THE RESEARCH FOREST DRIVE AND GROGANS MILL ROAD UNDERPASS THROUGH THE HOUSTON-GALVESTON AREA COUNCIL TRANSPORTATION IMPROVEMENT PROGRAM

WHEREAS, The Houston Galveston Area Council (HGAC) has issued the 2018 Transportation Improvement Program (TIP) Call for Projects;

WHEREAS, Mobility is very important to the residents and businesses in Montgomery county;

WHEREAS, The Woodlands Area Chamber of Commerce represents over 2000 businesses in the area and is the second largest chamber in the Houston region;

WHEREAS, South Montgomery County stakeholders have supported and worked in partnership with The Houston-Galveston Area Council (HGAC) and TxDOT to implement mobility improvements over many years;

WHEREAS, The development of an underpass at the intersection of Research Forest Drive and Grogans Mill Road has been identified as a project of regional significance which will improve mobility, reduce travel time delay, and reduce the incidence of intersection related traffic collisions;

WHEREAS, The South County Mobility Study dated September, 2015, by HGAC concluded that a grade-separated intersection was needed at Research Forest Drive and Grogans Mill Road

WHEREAS, The Woodlands Road Utility District and Montgomery County Precinct 3 have agreed to provide the required local funding for the project;

WHEREAS, Montgomery County as project sponsor will submit this project for approval for federal funding support;

WHEREAS, Montgomery County agrees to maintain and operate the project improvements for their useful life if the Project is funded and constructed;

NOW THEREFORE BE IT RESOLVED, that The Woodlands Area Chamber of Commerce strongly supports this project and the request for funding in the 2018 Transportation Improvement Plan (TIP) Call for Projects.

PASSED AND APPROVED this 27th of July, 2018.

JJ Hilde, President & CEO

Frank Holmes, Chairman





JAMES NOACK
COMMISSIONER PRECINCT 3
MONTGOMERY COUNTY

1130 Pruitt Road
Spring, Texas 77380
Email: Evan.Besong@mctx.org

Conroe: (936) 539-7817
Houston: (281) 367-3977
Fax: (281) 298-7321

Oct. 23, 2018

RESIDENT FAQs

Research Forest Drive Underpass at Grogan's Mill Road

1. Why is an underpass considered the best option to improve traffic flow at the Research Forest-Grogan's Mill intersection?

- The South Montgomery County Mobility Study provided three options for this intersection at-grade, overpass and underpass.
- The underpass, recommended by engineering consulting firm BGE, provides the best benefit-to-cost ratio. The underpass scores highest for level of service, improving traffic from unacceptable/failing grades in areas to optimal for traffic flow through the intersection and for turning movements.
- Cost: The underpass is estimated at \$24 million, with 80 percent of that funded through the Houston-Galveston Area Council's Transportation Improvement Program and the majority of the remaining costs paid for by The Woodlands Road Utility District, leaving less than \$1 million of county taxpayer money needed for this project.
- The underpass option meets and exceeds the level of service required on Research Forest Drive through 2040 and is the least expensive option for local taxpayers considering the funding matches that would be received for the project.
- The overpass was rejected by the Shenandoah City Council in 2012, comes with an estimated price tag of \$40 million with direct connectors and does not improve all levels of service to optimal at that intersection.
- An "at-grade" solution also would produce unacceptable levels of service for the traffic along Research Forest Drive by 2025, and the \$4 million price tag would be all local dollars because the H-GAC most likely would not support a project that results in unacceptable/failing levels of service.

2. What safety and flooding issues will be created by the underpass?

- Research Forest Drive at Grogan's Mill Road accounted for more traffic wrecks than any other intersection in The Woodlands from Sept. 1, 2017, to Aug. 20, 2018
- The existing four-point signal intersection, which has proven dangerous as evidenced by the number of accidents, will be reconfigured into a two-point signal intersection with the underpass. The new two-point intersection is projected to significantly reduce accidents.
- Flooding:
 - Pumps will drain the overpass during flood events.
 - Advance signals will direct vehicles to the existing grade-level lanes if water levels are too high in the underpass.
 - If the underpass is closed, traffic can pass through the intersection on the higher existing lanes.

3. Won't this underpass just push congestion down the road to Interstate 45?

- The BGE study shows traffic congestion improvements traveling east and west along Research Forest with the underpass.
- The South Montgomery County Mobility Study calls for additional lanes in each direction on Research Forest under Interstate 45, and the City of Shenandoah is working with TxDOT on constructing those lanes.
- In addition to rejecting a Research Forest overpass at Grogan's Mill in 2012, the Shenandoah City Council also rejected a flyover at Interstate 45 and Research Forest. Both of those projects were proposed to be placed on the TIP and were supported by The Woodlands Township at the time. While the flyover could have reduced congestion at that intersection, the additional lanes and right turn lane from Research Forest to the I-45 feeder road should keep traffic flowing with the new underpass.

4. How will the underpass affect quality of life and home values?

- **Noise:** The underpass provides the best solution to minimizing the impact of motor-vehicle noise.
- The 2018 traffic counts show 21,471 vehicles traveling on the at-grade lanes. Only 20 percent of that traffic would travel those existing lanes if an underpass is constructed.
- With approximately 17,520 to 21,471 vehicles shifted to the underpass by 2025, only around 3,951 vehicles per day would travel Prosewood, greatly reducing the noise.
- **Emissions:** The better traffic flow is to accommodate the increasing number of vehicles projected along Research Forest; it is not to encourage more traffic. The underpass will move vehicles more quickly through the intersection, thus reducing the number of vehicles sitting at that intersection emitting exhaust.
- **Home values:** The Woodlands/Shenandoah area remains a very popular community for homebuyers, as reflected in the consistent growth in home values. There is no indication that an underpass would reduce interest in this sought-after lifestyle.

5. Why build an underpass on Grogan's Mill at Research Forest instead of at Lake Woodlands?

- **Traffic Counts:** The recent traffic county study by BGE for April 2018 showed much higher vehicle numbers along east-west Research Forest than east-west Lake Woodlands Drive.
- The vehicle traffic also has grown at a much faster pace (more than 20 percent) along Research Forest than along that section of Lake Woodlands at Grogan's Mill (less than 15 percent). Vehicle numbers even dropped between 2014 and 2018 along Lake Woodlands Drive near Lake Front Circle.
- The extensive Sam Moon development in Shenandoah (movie theater, retail, hotels, office buildings and multifamily living) has the most direct route from The Woodlands via Research Forest, which will add to the traffic count.
- With demographics shifting to younger families in the older villages of Panther Creek and Cochran's Crossing, more traffic will be generated in The Woodlands in the future.

RECOMMENDATION:

- Submit the underpass project to HGAC with support from The Township
- During the evaluation and scoring process by HGAC, survey residents in Cochran's Crossing and Alden Bridge who are also affected by the project
- Combine all resident input
- Receive the preliminary project scores and ranking from HGAC
- Make a decision to accept or reject funding