



Hallandale Beach Proposed Community Gates Golden Isles and Three Islands

Presented by CALTRAN Engineering Group, Inc. and Regions Security



Presentation Outline



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Introduction, Purpose, and Goal

Introduction: This study was initiated to address the City of Hallandale Beach Police Department concerns regarding neighborhood security and to prevent increasing number of nonresidents entering.

Purpose: In response to these concerns, the community is considering the installation of a gated entry system that will allow monitoring of ingress vehicles.

Goal: The proposed gates aim to enhance security and create a safer, quieter, and more protected environment for the residents without overly restricting right of access with minimal impact to traffic.







Gate 1 Study Area – Golden Isles







Gate 2 & 3 Study Area – Three Islands







Proposed Gate System Overview



- Monitored entry with LiftMaster breakaway stop arms.
- Integrated Radio Frequency Identification (RFID) system.
- Average service time per vehicle: $\leq \sim 10$ seconds.
- Minimal delay while ensuring security and monitoring.





Queue Time Calculation Example

- Golden Isles Gate 1
 - Classic Queueing Method: M/M/1 queue model
- Arrival Rate (λ): 100 vehicles per hour (vph)
 - [Visitor side only peak hour demand]
- Proposed Gate Service Rate (μ): 360 vph
 - [Can proses 360 visitors per hour, or 10 seconds per vehicle]
- 95th Percentile Queue Lengths: 2 vehicles
 - [maximum probability of 2 vehicles queued based on above arrival vs. service rates]
- Storage Length = 5 vehicles [PASS]

Proposed Gate System Service Rate:			
Vehicle Slow to Stop	1.5 seconds		
Plate capture	0.5 second		
Gate opening time	2.5 seconds		
Driver reaction/start-up	1.0 second		
Vehicle clearing the gate	3.0 seconds		
Subtotal (entry/exit)	8.5 seconds		
Added safety time buffer	1.5 seconds		
Total service rate per vehicle =	10 seconds		







Gate 1				
Criteria	Eq.	Existing Gate Operations	Proposed Gate Operations	
Service Rate	(µ)	5 sec/vehicle (720 vph)	10 sec/vehicle (360 vph)	
Arrival Rate	(λ)	100 vph	100 vph	
Utilization	(p)	0.139 ratio	0.278 ratio	
Average Wait	(W)	< 0.01 mins	0.06 mins	
Average Veh.	(L)	0.161 (1 vehicle)	0.385 (1 vehicle)	
95 th %tile.	(Q)	0.822 (1 vehicle)	1.405 (2 vehicles)	
Storage Len	gth	140' (5 vehicles)		
Sufficient Storage? Yes		Yes	Yes	



Three Island – South Gate

Gate 2 – South Gate				
Criteria	Eq.	Existing Gate Operations	Proposed Gate Operations	
Service Rate	(µ)	5 sec/vehicle (720 vph)	10 sec/vehicle (360 vph)	
Arrival Rate	(λ)	330 vph	330 vph	
Utilization	(p)	0.458 ratio	0.917 ratio	
Average Wait	(W)	0.07 mins	1.83 mins	
Average Veh.	(L)	1 vehicle	11 vehicles	
95 th %tile.	(Q)	3 vehicles	17 vehicles	
Storage Leng	gth	700' (28 vehicles)		
Sufficient Storage? Yes Ye		Yes		





Three Island – West Gate

Gate 3 – West Gate				
Criteria	Eq.	Existing Gate Operations	Proposed Gate Operations	
Service Rate	(µ)	5 sec/vehicle (720 vph)	10 sec/vehicle (360 vph)	
Arrival Rate	(λ)	140 vph	140 vph	
Utilization	(p)	0.194 ratio	0.389 ratio	
Average Wait	(W)	< 0.01 mins	0.11 mins	
Average Veh.	(L)	1 vehicle	1 vehicle	
95 th %tile.	(Q)	1 vehicle	2 vehicles	
Storage Length		550' (22 vehicles)		
Sufficient Storage?		Yes	Yes	

Queue Time Calculation Summary



Cost Estimate – Implementation



Golden Isles Gate 1:

• ~ \$4,200 roadway improvements + security hardware

Three Islands Gate 2:

• ~ \$37,300 roadway improvements + security hardware

Three Islands Gate 3:

• ~ \$24,900 roadway improvements + security hardware



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Conclusion

Regions Security "Ensuring A Safer Tomorrow"

The proposed gate system meets all operational needs.

- improves safety and gives residents peace of mind.
- Regulates access effectively.
- Queue delays are minimal under peak conditions.

Recommended implementation is Cost-Effective.





Any Questions?

