



Hallandale Beach Proposed Community Gates Golden Isles and Three Islands

Presented by CALTRAN Engineering Group, Inc.
and Regions Security

Presentation Outline

Introduction

Study Areas

Proposed Gate System

Queue Analysis

Cost Estimates

Conclusion

Q&A

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

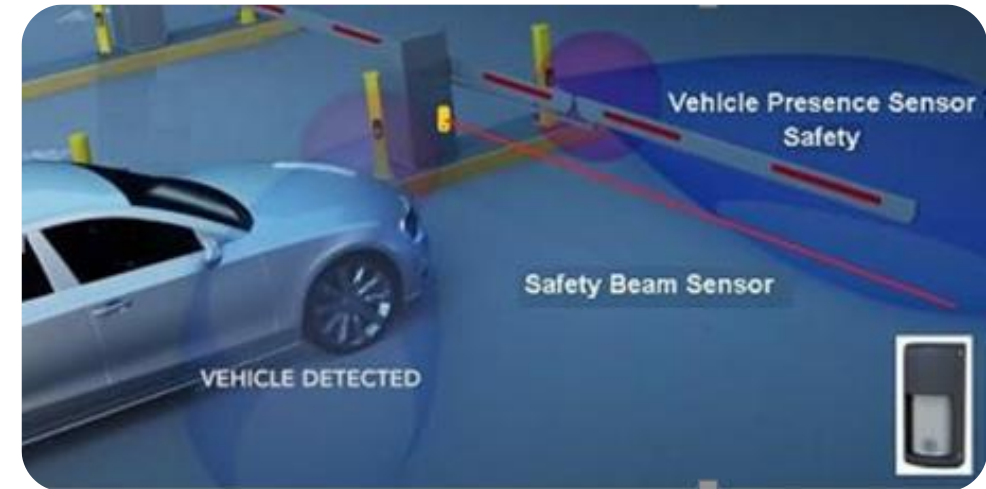


Gate 2 & 3 Study Area – Three Islands



Proposed Gate System Overview

CHAMBERLAIN
LiftMaster
PROFESSIONAL



- 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 process 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





Golden Isles

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 Length		140' (5 vehicles)	
Sufficient Storage?		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 Length		700' (28 vehicles)	
Sufficient Storage?		Yes	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

Conclusion

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?

