BAL HARBOUR
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OFFICE OF THE VILLAGE MANAGER

NO. 080-2015

LETTER TO COUNCIL

TO: Mayor Martin Packer and Members of the Village Council

FROM: Jorge M. Gonzalez, Village Manager

DATE: May 1, 2015

SUBJECT: Traffic Study – Presentation

The purpose of this Letter to Council (LTC) is to transmit to you the traffic study presentation that the Corradino Group will be discussing at the Council Workshop on the Bal Harbour Expansion Project scheduled for next Tuesday, May 5, 2015 at 7:00 pm.

Mr. Corradino will present his findings, and we anticipate that there will be ample opportunity for you and other attendees to ask questions directly of the engineers.

The report is still in a **draft** format pending the outcome of the Workshop, in the event that further analysis is directed or required. The report will be finalized as soon as possible thereafter. In the meantime, this LTC and attached presentation will be posted on the Village website and made available to all who may be interested.

Please feel free to contact me, should you have any questions or require additional information regarding this matter.

JMG/PAR

BAL HARBOUR SHOPS EXPANSION TRAFFIC STUDY

May 5, 2015

Joseph M. Corradino, AICP
Salman Rathore, P.E.

TODAY

- Scope of Work
  - Methodology
- Purpose of Traffic Study
- Traffic Study Assumptions
  - Previous Study vs. The Corradino Group
- Traffic Study Results
  - Previous Study vs. The Corradino Group
- Questions / Comments

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SCOPE OF WORK (METHODOLOGY)

- Conduct Traffic Impact Study (Bal Harbour Shops Expansion Project)
- Collect Traffic Counts between Thanksgiving & Christmas or during Peak times
- Day / Time selected based on conversations with the Police Department, Village Staff & Residents
- Committed Development Trips near the project area to be included
- Traffic Analysis to be conducted for the nearby intersections
- Analysis scenarios to be included for year 2015 (existing) vs. year 2020 (proposed project completion)
- Traffic study to address any anticipated impacts onto the existing roadway system
- If needed, Mitigation Strategies to be provided
- Traffic Study results to be compared to the previously submitted traffic study (Developer)
- Difference in assumptions and results will be highlighted

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PURPOSE OF TRAFFIC STUDY

- Forecast additional traffic associated with new development based on accepted practices
- Determine the improvements that are necessary to accommodate the new development
- Assist in allocating scarce resources to areas which need improvements
- Identify potential problems with the proposed development which may influence the developer's decision to pursue it
- Allow the community to assess the impacts that a proposed development may have
- Help to ensure safe and reasonable traffic conditions on streets after the development is complete
- Reduce the negative impacts created by developments by helping to ensure that the transportation network can accommodate the development
- Provide direction to community decision makers and developers of expected impacts.

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TRAFFIC STUDY ASSUMPTIONS

Assumptions	Previous Study (Developer)	New Study (Corradino)
Data Collection	February 2014	December 2014 / February 2015
ITE Trip Rates	Lower trip rates are used for the study retail mall (based on data collected)	**Scenario 1** Average of trips used in the study and ITE general retail mall (includes eating and drinking establishments)
ITE Trip Rates	Lower trip rates are used for the study retail mall (based on data collected)	**Scenario 2** Most conservative – Based on the assumption that shops will be redeveloped as a typical shopping center per ITE rates.

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TRAFFIC STUDY RESULTS

PROJECT LOCATION

- **Existing Land Use**

463,477 square feet of gross leasable floor area

- **Proposed Land Use**

Addition of 325,945 square feet of gross leasable floor area for a total of 789,422 square feet

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TRAFFIC STUDY RESULTS

STUDY INTERSECTIONS

The intersection turning movement counts were collected in February 2015 and analyzed at the following intersections located near the project site:

- Bal Cross Drive and Collins Avenue (Unsignalized)
- 96th Street & Bal Harbour Shops south entrance (500 Block) (Signalized)
- 96th Street & Byron Avenue (Signalized)
- Harding Avenue & 96th Street (Signalized)
- Collins Avenue & 96th Street (Signalized)
- Collins Avenue & the 9700 Block (BHS and St. Regis Driveways) (Signalized)
- 96th Street & Bal Bay Drive (Unsignalized)

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TRAFFIC STUDY RESULTS

TRAFFIC COUNTS DATA COLLECTION

- Counts collected in December 2014 (Christmas Season)
- These counts were found low when compared to other studies performed in the area
- Counts were retaken in February 2015 which was consistent with the developer's traffic study for the following locations:
  - Bal Cross Drive and Collins Avenue (Unsignalized)
  - 96th Street & Bal Harbour Shops south entrance (500 Block) (Signalized)
  - 96th Street & Byron Avenue (Signalized)
  - Harding Avenue & 96th Street (Signalized)
  - Collins Avenue & 96th Street (Signalized)
  - Collins Avenue & the 9700 Block (BHS and St. Regis Driveways) (Signalized)
  - 96th Street & Bal Bay Drive (Unsignalized)

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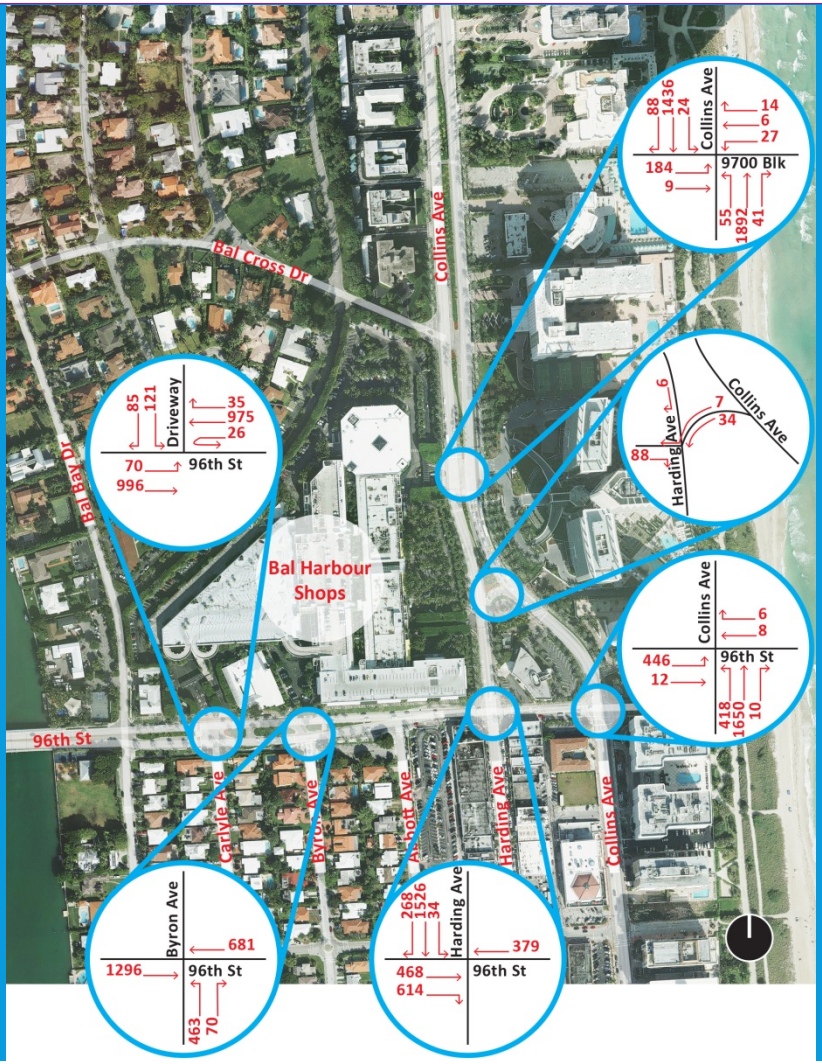
TRAFFIC STUDY RESULTS

DATA COLLECTION LOCATIONS

- February 2015



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TRAFFIC STUDY RESULTS

PROJECT TRIP GENERATION

SCENARIO 1 (AVERAGE TRIPS)

The average of the shops retail (trip rates from Developer's traffic study) and general retail mall from ITE LU Code 820/shopping center (which includes eating and drinking establishments) was used. This average was reflective of a more conservative assumption that takes into account future changes in market conditions that could result in more intense uses for the purposes of traffic generation.

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TRAFFIC STUDY RESULTS

PROJECT TRIP GENERATION

SCENARIO 2 (MOST CONSERVATIVE)

The second scenario assumed the worst case conditions and was based on the assumption that Bal Harbour Shops would be totally redeveloped along the lines of a typical shopping center as specified in the ITE Manual. Trip generation was determined based on the conditions in the future with the assumption that BHS will be totally converted to a standard shopping center.

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TRAFFIC STUDY RESULTS

PROJECT TRIP GENERATION

ITE PASS-BY TRIP CREDIT REDUCTION (SCENARIOS 1 AND 2)

The ITE pass-by trip reduction (34%) was applied on both the trip generation scenarios. Pass-by trips are external to the development but are already on the transportation system (i.e., not new trips on the roadway). These trips enter the site as an intermediate stop, or are intercepted, by the proposed development. (**For scenarios 1 and 2, the Pass-by trips were included in the driveways for analysis**)

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TRAFFIC STUDY RESULTS

TRIP DISTRIBUTION AND ASSIGNMENT

The trip distribution and traffic assignment for the BHS project were based on Miami-Dade County's Cardinal Distribution information (TAZ# 598) for the study area, examination of the surrounding roadway network characteristics, existing and future land use patterns.

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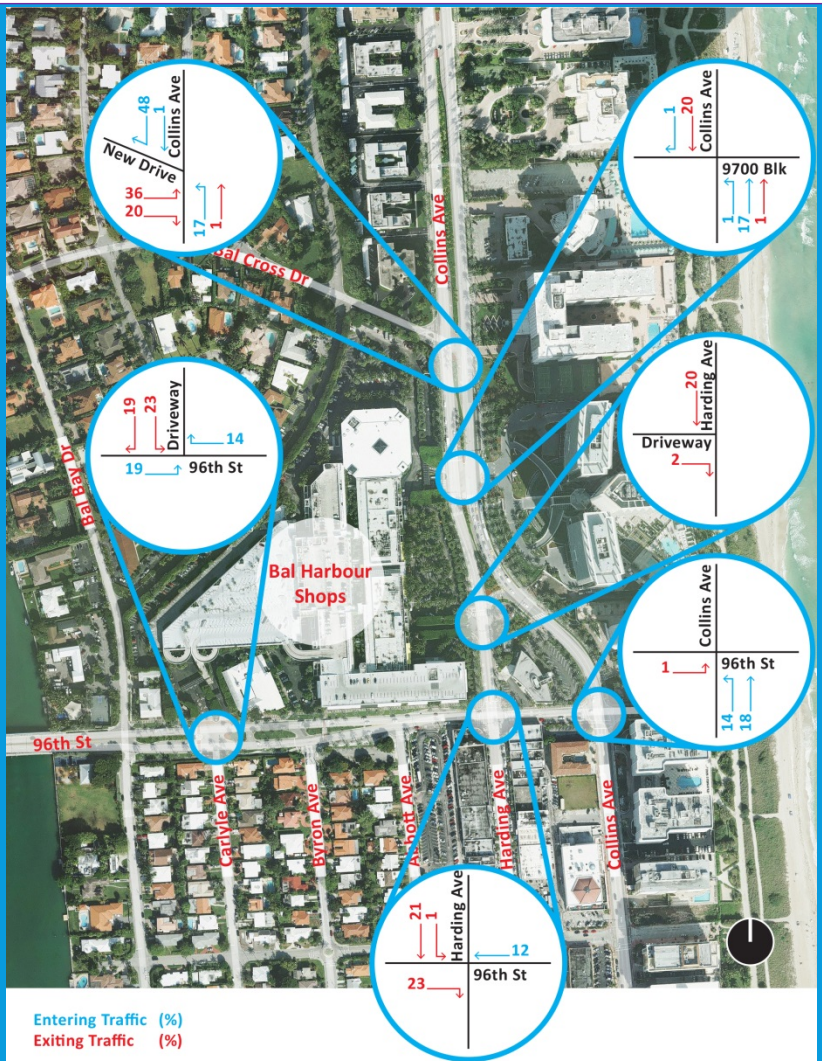
TRAFFIC STUDY RESULTS

TRIP DISTRIBUTION PERCENTAGES

- Based on MDC Cardinal Distribution Information



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TRAFFIC STUDY RESULTS

FUTURE CONDITIONS TRAFFIC VOLUMES

Two sets of future volumes were developed

- **Background Traffic : Existing Counts + Growth Rate + Committed Developments**
  - Existing Counts (Collected in February 2015)
  - Growth Rate (Using FDOT historical counts, Minimal growth rate found but 1% GR used)
  - Committed Developments (Approved projects in Bal Harbour/Surfside but not constructed)
- **Future Total Traffic: Background Traffic+BHS Trips+Proposed Enhancements (BHS)**
  - Background Traffic calculated and as shown above
  - BHS Trips (Scenarios 1 and 2)
  - Proposed Enhancements (As per developer's traffic study)

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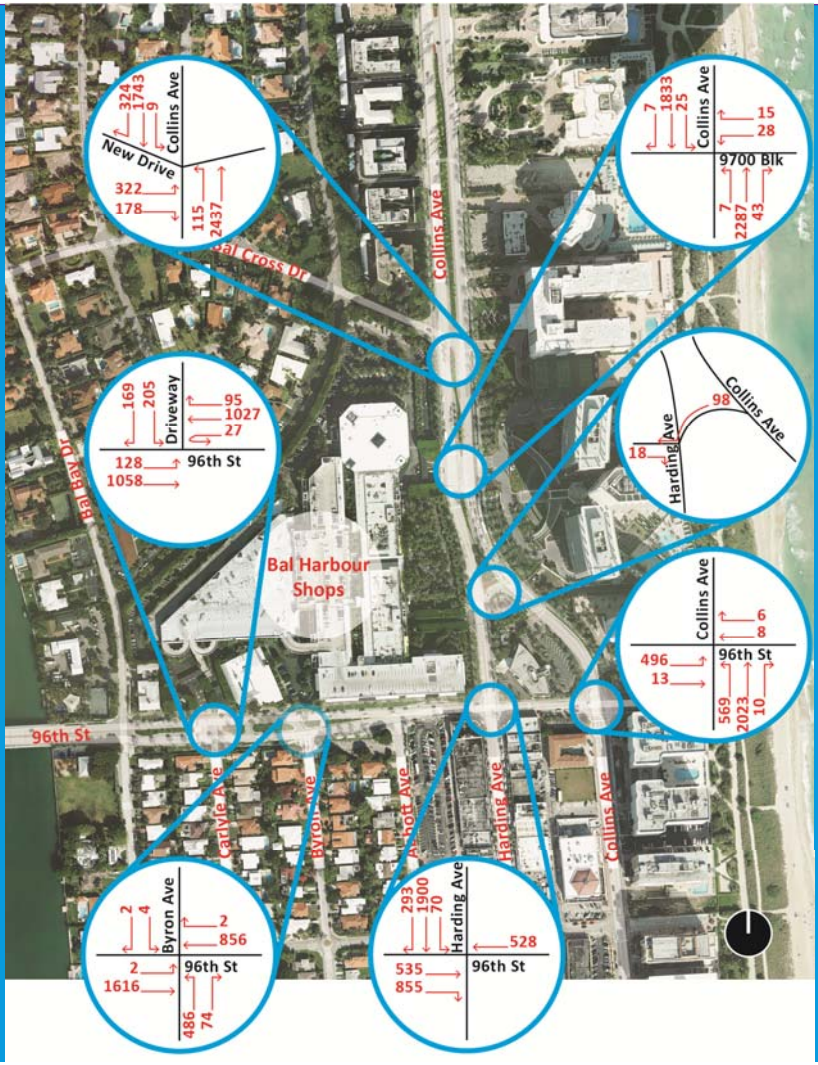
TRAFFIC STUDY RESULTS

FUTURE TOTAL TRAFFIC (SCENARIO 1)

- Background Traffic+BHS Scenario 1 Trips + Proposed Enhancements



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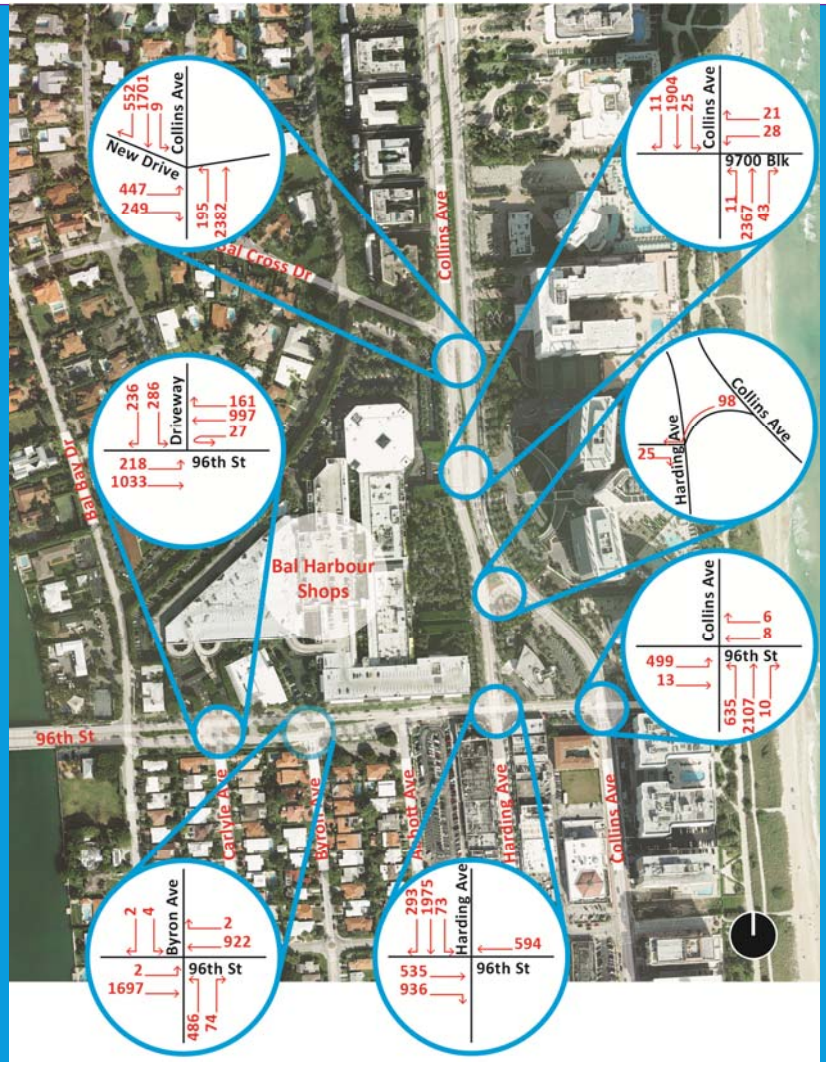
TRAFFIC STUDY RESULTS

FUTURE TOTAL TRAFFIC (SCENARIO 2)

- Background Traffic+BHS Scenario 2 Trips + Proposed Enhancements



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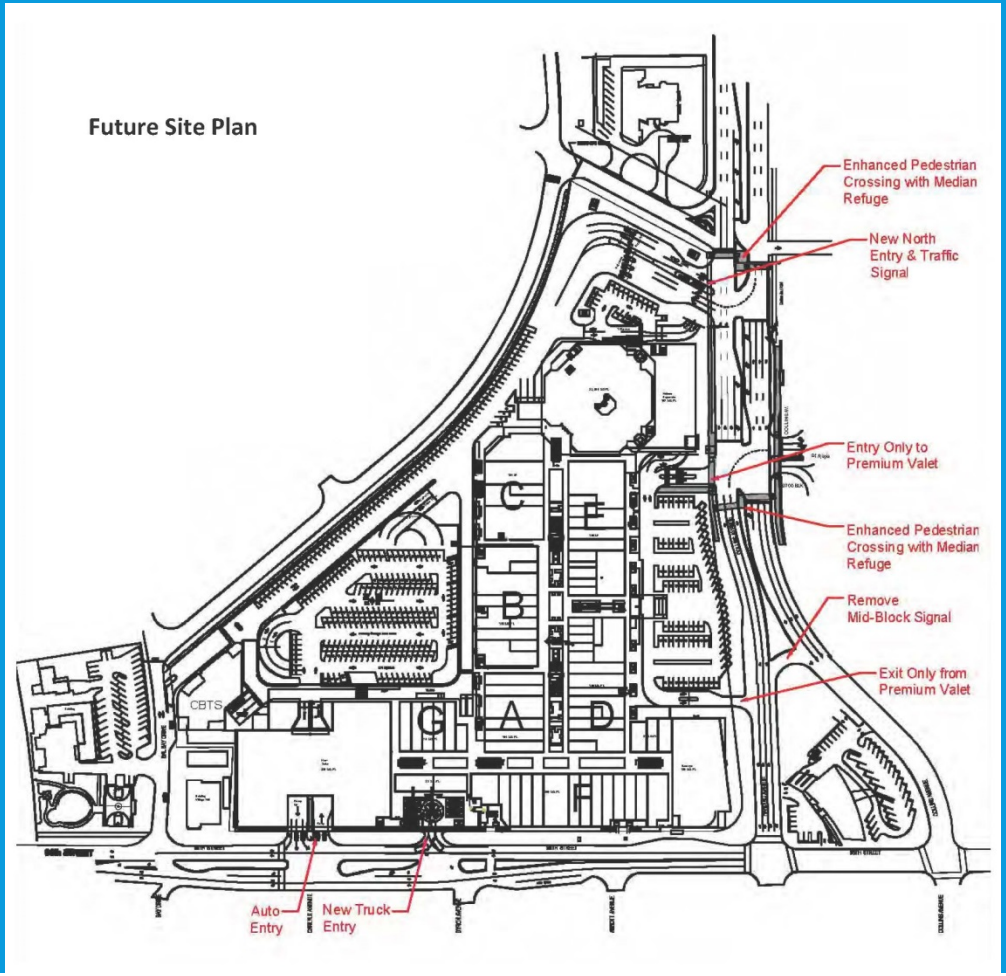
TRAFFIC STUDY RESULTS

BHS FUTURE PLANNED ENHANCEMENTS (PROPOSED BY THE DEVELOPER)



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TRAFFIC STUDY RESULTS

BHS FUTURE PLANNED ENHANCEMENTS (PROPOSED BY THE DEVELOPER)

These improvements as highlighted in the developer's traffic study are mentioned below:

- Construct a new signalized driveway at the north end of BHS
- Reconstruct the BHS driveway on 96th Street to provide access to the enhanced Shops
- Convert the existing drive opposite the St. Regis into an Entry Only drive for Premium Valet Parking
- Convert the secondary driveway adjacent to the pedestrian crossing signal just north of 96th Street to an Exit Only drive for the Premium Valet parking

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TRAFFIC STUDY RESULTS

BHS FUTURE PLANNED ENHANCEMENTS (PROPOSED BY THE DEVELOPER)

- Replace the existing crosswalks on A1A at the 9700 Block with enhanced (2 stage) crosswalks and at the new driveway at the northern end of BHS
- Remove the mid-block pedestrian signal on Collins/Harding just north of 96th Street
- Develop new traffic signal coordination plans (retiming) to address the improved signal spacing and other changes to the street network and optimize signal operations

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TRAFFIC STUDY RESULTS

WHAT IS LEVEL OF SERVICE?

- Level of Service (LOS) is a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience.

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TRAFFIC STUDY RESULTS

LEVEL OF SERVICE

INTERSECTION LEVEL OF SERVICE

Level of Service	Seconds Delay/Vehicle	Description
LOS A	≤ 10	Most vehicles do not stop at all
LOS B	> 10 and ≤ 20	More vehicles stop than for LOS A
LOS C	> 20 and ≤ 35	The number of vehicles stopping is significant, although many pass through without stopping
LOS D	> 35 and ≤ 55	Many vehicles stop
LOS E	> 55 and ≤ 80	Considered being the limit of acceptable delay
LOS F	> 80	Unacceptable delay

ROADWAY LEVEL OF SERVICE

LOS A: Little or no delay, very low main street traffic.

LOS B: Short traffic delays, many acceptable gaps.

LOS C: Average traffic delays, frequent gaps still occur.

LOS D: Long traffic delays, limited number of acceptable gaps.

LOS E: Very long traffic delays, very small number of acceptable gaps.

LOS F: Extreme traffic delays, virtually no acceptable gaps in traffic.

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TRAFFIC STUDY RESULTS

EXISTING LEVEL OF SERVICE COMPARISON (Developer vs. Corradino)

Intersections			FCI* - 2014 Existing Conditions		TCG** - 2015 Existing Conditions	
Location	Type	Move	PM Peak		PM Peak	
			Delay (sec)	LOS	Delay (sec)	LOS
Collins Avenue & New North Drive	Signalized	All	-	-	-	-
Collins Avenue & 9700 Block	Signalized	All	12.7	B	18.8	B
Collins Avenue & 96th Street	Signalized	All	34.7	C	32.3	C
Harding Avenue & 96th Street	Signalized	All	46.5	D	45.3	D
96th Street & Byron Avenue	Signalized	All	6.5	A	7.1	A
96th Street & S. Mall Entrance	Signalized	All	6.7	A	8.3	A
(*) Results from FCI Traffic Study Dated May 30, 2015.						
(**) Results from The Corradino Group Traffic Study.						

- All study intersections currently operate adequately at an acceptable level of service in the year 2015 when compared to the adopted level of service as per the Village Comprehensive Plan. The existing level of service results from The Corradino Group traffic study are very close to developer's traffic study.

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TRAFFIC STUDY RESULTS

FUTURE LEVEL OF SERVICE COMPARISON (Developer vs. Corradino)

Intersections			FCI* - 2020 With Enhancements		TCG** - 2020 With Enhancements (Scenario 1)		TCG** - 2020 With Enhancements (Scenario 2)	
Location	Type	Move	PM Peak		PM Peak		PM Peak	
			Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Collins Avenue & New North Drive	Signalized	All	9.1	A	14.1	B	28.9	C
Collins Avenue & 9700 Block	Signalized	All	3.7	A	3.9	A	4.0	A
Collins Avenue & 96th Street	Signalized	All	22.2	C	23.0	C	23.4	C
Harding Avenue & 96th Street	Signalized	All	36.3	D	43.4	D	52.2	D
96th Street & Byron Avenue	Signalized	All	12.4	B	16.0	B	17.1	B
96th Street & S. Mall Entrance	Signalized	All	6.5	A	13.6	B	23.3	C
(*) Results from FCI Traffic Study Dated May 30, 2015.								
(**) Results from The Corradino Group Traffic Study for two Trip Generation Scenarios.								

- All study intersections will continue to operate adequately at an acceptable level of service in the year 2020 with proposed project and enhancements (proposed in the developer's traffic study) in place for both trip generation scenarios (Scenario 1 and 2).
- Similar LOS results but higher delays were found in our study.

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TRAFFIC STUDY RESULTS

NEW NORTH DRIVEWAY QUEUING ANALYSIS

- The Queuing Analysis for the New North Driveway was performed based on the methodology outlined in the Institute of Transportation Engineers (ITE) Transportation and Land Development.
- As per the developers traffic study, the New North Driveway at Collins Avenue is proposed to have three entering lanes where shoppers will enter the mall from south and north of Collins Avenue.
- As per the site plan, the three proposed entering lanes can accommodate up to 18 vehicles.
- The arrival time survey data provided by the developer's traffic engineer indicates;
  - The average service time for a vehicle to stop and collect ticket was **8.3 seconds**
  - The data was collected on May 25, 2011 for two entering lanes of BHS at 9700 Block

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TRAFFIC STUDY RESULTS

NEW NORTH DRIVEWAY QUEUING ANALYSIS

- Different scenarios were run based on Scenario 2 entering traffic, number of ticketing lanes and service time. The following results were found:

Entering Lanes (N)	Average Ticket Service Time (Seconds)	Available Stacking (Vehicles)	Anticipated Queue (Vehicles)
3	30 (Corradino Assumption)	18 (As per the plan)	Model **FAILS**/Queuing is an issue
3	15 (Corradino Assumption)	18 (As per the plan)	Model **FAILS**/Queuing is an issue
3	12.75 (Corradino Assumption)	18 (As per the plan)	16 /Queuing is **NOT** an issue
3	10 (Developer's traffic engineer)	18 (As per the plan)	6 /Queuing is **NOT** an issue

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TRAFFIC STUDY RESULTS

NEW NORTH DRIVEWAY QUEUING ANALYSIS

- A system of entry must be proposed in which the average ticket service time is 12.75 seconds or less.
- The Village will work with the developer to increase the length of the stacking lanes or implement a different system of entry that does not require vehicles to stop and collect tickets thus reducing any possibility of cars queueing onto Collins Avenue.

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TRAFFIC STUDY RESULTS

DEVELOPER'S RESPONSIBILITY

- Pay for all the enhancements as mitigation strategy as proposed in their traffic study.
- Work with Village of Bal Harbour to increase the stacking length, develop a better technology or implement a different system of entry for the New North Driveway that does not require vehicles to stop and collect tickets thus reducing any possibility of cars queueing onto Collins Avenue.
- Coordinate with Miami-Dade County Traffic Engineering Department and Village of Bal Harbour to develop strategy in order to provide modified and acceptable signal timing plans for the proposed expansion.

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QUESTIONS / COMMENTS?

- Opportunity for public to express concerns & issues
- Feedback is important
- Feedback / comments can be taken into account as we finalize the report

THANK YOU

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