



---

TO:	BUSP	DATE:	July 2024
FROM:	Brian Beisel	HSR PROJECT NO.:	2022250.00
SUBJECT:	White Stadium – Franklin Park Internal Traffic Operations		

---

*Howard Stein Hudson* (HSH) has conducted an evaluation of the transportation conditions within Franklin Park, specifically along Circuit Drive as it travels through the Park, including the transportation impacts of the National Women’s Soccer League (NWSL) team game day events (the Project). The Project Site, located north of Circuit Drive, currently contains an athletic field for soccer or football, surrounded by a track and served by stadium seating for approximately 10,000 spectators.

The Project intends to modernize the facilities to host NWSL games and expand the stadium capacity to approximately 11,000 spectators. NWSL games could occur on weekday evenings and weekend afternoons/evenings, therefore the analysis focuses both on weekday evening and the Franklin Park Saturday midday peak hour. To access White Stadium, spectators are expected to primarily utilize mass transit, including shuttles from nearby MBTA stations as well shuttle bus routes providing connections to satellite parking locations. Two shuttle bus pick-up/drop-off areas are proposed in the vicinity of the site and include from Walnut Avenue west of the stadium and the Valley Gates Lot to the south of the stadium located on the north side of Circuit Drive, west of Pierpont Road.

## Study Methodology

---

The Existing Condition analysis includes an inventory of the existing transportation conditions. Existing counts for vehicles, bicycles, and pedestrians were collected at the study area intersections. A traffic data collection effort forms the basis for the transportation analysis conducted as part of this evaluation.

## Study Area

---

The transportation study area runs along Circuit Drive and is bounded by Blue Hill Avenue to the east and the Arborway to the west. The study area consists of the following seven intersections in the vicinity of the Project site, also shown in **Figure 1**:

- Blue Hill Avenue/Columbia Road/Franklin Park Road (signalized);
- Blue Hill Avenue/Glen Lane/Glenway Street (signalized);
- Circuit Drive/Pierpont Road East (unsignalized);



Figure 1. Study Area Intersections





- Circuit Drive/Pierpont Road West (unsignalized);
- Circuit Drive/Jewish War Veterans Drive (unsignalized);
- Circuit Drive/Shattuck Hospital Driveway (unsignalized); and
- Circuit Drive/Arborway/Morton Street (signalized).

## Existing Traffic Data

---

Vehicular volume data was collected throughout Franklin Park on Saturday, June 15, 2024 and Tuesday June 18, 2024. Weather conditions were optimal for activity within Franklin Park, with clear skies and temperatures above 70 degrees. Turning Movement Counts (TMCs) and vehicle classification counts were conducted at study area intersections for an 11-hour period from 7:00 a.m. – 6:00 p.m. The vehicle classification counts included car, heavy vehicle, pedestrian, and bicycle movements. The detailed traffic count data is provided in **Attachment A**.

## Existing Vehicle Volumes

---

Due to the nature of the Project and its anticipated gametimes, a review of the existing weekday p.m. peak period (5:00 p.m. – 6:00 p.m.) and existing Saturday mid-day peak period (1:00 p.m. – 2:00 p.m.) was completed. It was determined that existing traffic volumes along Circuit Drive are greater during the Saturday midday period, providing a more conservative analysis than the existing weekday p.m. period.

The peak hour volume includes approximately 1,000 vehicle travelling through the Circuit Drive/Pierpont Road intersection, the majority of which travel the entire length of the Circuit Driveway between Blue Hill Avenue and the Arborway. The Existing Condition Saturday midday period traffic volumes are shown in **Figure 2**.

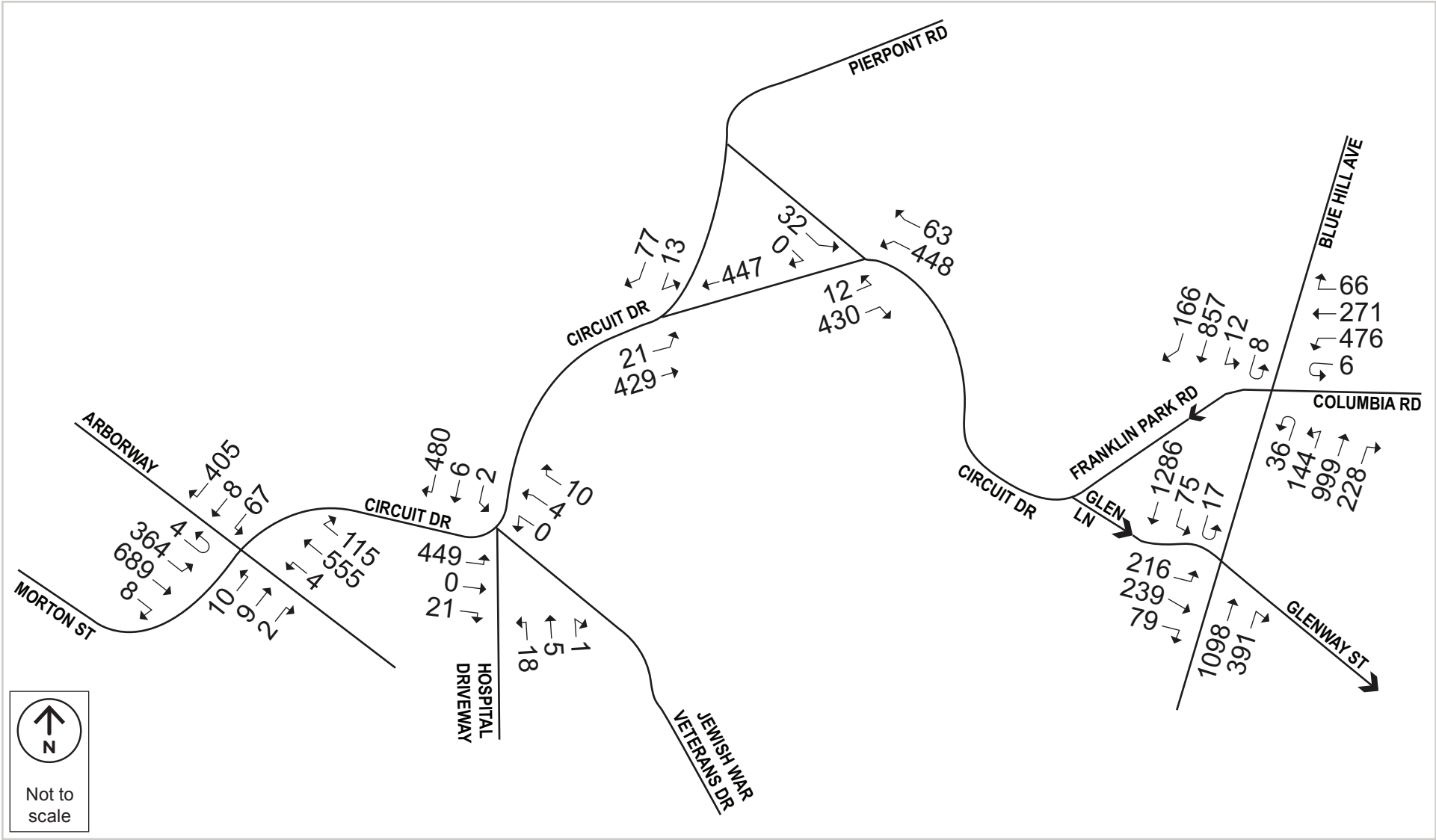
## Future Vehicle Volumes

---

The NWSL game day events are expected to add shuttle vehicles along Circuit Drive. Over a two hour period before and after events, it is anticipated that there will be 104 shuttles travelling along Circuit Drive, or roughly 50 during the peak hour. Compared to the approximately 1,000 vehicles already traveling on Circuit Drive, this vehicle volume increase will not be perceivable to park goers compared to non game days.



Figure 2. Existing Condition Vehicle Volumes, Saturday 1:00 p.m - 2:00 p.m.





## Vehicle Operations Analysis Methodology

The criterion for evaluating vehicle operations is level of service (LOS), which is determined by assessing average delay experienced by vehicles at intersections and along intersection approaches.

The latest approved version of Trafficware’s Synchro software package was used to calculate average delay and associated LOS at the study area intersections. This software is based on the vehicle operational analysis methodology of the Transportation Research Board’s (TRB’s) Highway Capacity Manual (HCM).

LOS designations are based on average delay per vehicle for all vehicles entering an intersection. Table 1 displays the intersection LOS criteria. LOS A indicates the most favorable condition, with minimum traffic delay, while LOS F represents the worst condition, with significant traffic delay. However, LOS E or F is often typical for a stop-controlled minor street that intersects a major roadway and does not necessarily indicate that the operations at the intersection are poor or failing.

*Table 1. Level of Service Criteria*

Level of Service	Average Stopped Delay (seconds/vehicle)	
	Signalized Intersection	Unsignalized Intersection
A	≤10	≤10
B	>10 and ≤20	>10 and ≤15
C	>20 and ≤35	>15 and ≤25
D	>35 and ≤55	>25 and ≤35
E	>55 and ≤80	>35 and ≤50
F	>80	>50

In addition to delay and LOS, the operational capacity and vehicular queues are calculated and used to further quantify traffic operations at intersections. The following describes these other calculated measures:

- The volume-to-capacity ratio (v/c ratio) is a measure of congestion at an intersection approach. A v/c ratio below one indicates that the intersection approach has adequate capacity to process the arriving traffic volumes over the course of an hour. A v/c ratio of one or greater indicates that the traffic volume on the intersection approach exceeds capacity.
- The 50th percentile queue length, measured in feet, represents the maximum queue length during cycle of the traffic signal with typical (or median) entering traffic volumes.



- The 95th percentile queue length, measured in feet, denotes the farthest extent of the vehicle queue (to the last stopped vehicle) upstream from the stop line. This maximum queue occurs 5%, or less, of the time during the peak hour, and typically does not develop during off-peak hours. Since volumes fluctuate throughout the hour, the 95th percentile queue represents what can be considered a “worst case” condition. Queues at an intersection are generally below the 95th percentile length throughout most of the peak hour. It is also unlikely that 95th percentile queues for each approach to an intersection occur simultaneously.

The peak 15 minutes of data collected during the peak period were isolated to calculate the peak-hour factors (PHFs) for each approach. The percentage of heavy vehicles was noted for each movement as well. PHFs and truck percentages were incorporated into the Synchro model.

## Vehicle Operations Analysis Results

---

**Table 2** summarizes the vehicle operations for the Saturday 1:00 – 2:00 p.m. midday period for the study area intersections under the Existing Condition. The detailed Synchro reports are provided in **Attachment B**.



Table 2. Existing Condition, Capacity Analysis Summary, Saturday 1:00 - 2:00 p.m.

Intersection/Movement	LOS	Delay (Sec)	V/C Ratio	50th Percentile Queue Length (feet)	95th Percentile Queue Length (feet)
<b>Blue Hill Ave/Columbia Rd/Franklin Park Rd</b>	<b>C</b>	<b>34.4</b>	-	-	-
Columbia Rd WB left   left	D	47.3	0.67	180	220
Columbia Rd WB thru	D	53.0	0.71	201	275
Columbia Rd WB right	D	38.1	0.20	43	78
Blue Hill Ave NB left	C	28.0	0.49	49	#283
Blue Hill Ave NB thru   thru   thru/right	C	23.2	0.50	153	#452
Blue Hill Ave SB left	D	51.8	0.21	7	#39
Blue Hill Ave SB thru   thru   thru/right	D	38.5	0.65	245	#451
<b>Blue Hill Ave/Glen Ln/Glenway St</b>	<b>C</b>	<b>34.9</b>	-	-	-
Glen Ln EB left	D	40.6	0.52	130	#367
Glen Ln EB thru	D	40.9	0.55	146	#402
Glen Ln EB right	A	2.4	0.17	0	13
Blue Hill Ave NB thru   thru   thru	D	42.4	0.86	262	319
Blue Hill Ave NB right	E	75.1	0.97	265	#459
Blue Hill Ave SB left	B	14.0	0.21	24	67
Blue Hill Ave SB thru   thru   thru	B	16.4	0.49	153	279
<b>Circuit Dr/Pierpont Rd (East)</b>	-	-	-	-	-
Circuit Dr EB left/thru	A	0.4	0.01	-	1
Circuit Dr WB thru/right	A	0.0	0.33	-	0
Pierpont Rd left/right	C	20.6	0.15	-	13
<b>Circuit Dr/Pierpont Rd (West)</b>	-	-	-	-	-
Circuit Dr EB left/thru	A	0.6	0.02	-	2
Circuit Dr WB thru/right	A	0.0	0.28	-	0
Pierpont Rd left/right	B	14.3	0.21	-	20
<b>Circuit Dr/Jewish War Veterans Dr</b>	-	-	-	-	-
Jewish War Veterans Dr left/right	B	14.4	0.04	-	3
Circuit Dr NB thru/right	A	0.0	0.28	-	0
Circuit Dr SB left/thru	A	0.2	0.01	-	0



Intersection/Movement	LOS	Delay (Sec)	V/C Ratio	50th Percentile Queue Length (feet)	95th Percentile Queue Length (feet)
<b>Circuit Dr/Shattuck Hospital Driveway</b>	-	-	-	-	-
Circuit Dr EB thru/right	A	0.0	0.29	-	0
Circuit Dr WB left/thru	A	0.2	0.01	-	1
Shattuck Hospital Driveway NB left/right	C	21.3	0.12	-	10
<b>Circuit Dr/Arborway/Morton St</b>	C	20.7	-	-	-
Arborway EB left   left	D	50.9	0.71	136	179
Arborway EB thru   thru/right	A	6.5	0.29	69	181
Morton St WB left	A	7.0	0.01	1	5
Morton St WB thru   thru/right	B	15.6	0.38	135	238
Morton St NB left/thru/right	C	35.0	0.14	20	27
Circuit Dr SB left/thru	D	54.5	0.61	83	118
Circuit Dr SB right	B	16.2	0.77	34	91

# = 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is maximum after 2 cycles. Gray shading indicates LOS E or F under the Existing Condition.

As shown in **Table 2**, all of the approaches within Franklin Park operate at LOS C or better during the Saturday 1:00 – 2:00 p.m. midday period. Even with the addition of approximately 50 shuttle bus trips occurring during this hour, which is unlikely as the games are typically expected to occur later in the day on Saturdays, these intersections would continue to operate well within acceptable levels.

## Conclusion

The results of the Existing Condition operations analysis show that all study area intersections operate at acceptable levels of service during the peak Franklin Park activity, the Saturday 1:00 – 2:00 p.m. midday period. Based on the shuttle bus activity expected to occur along Circuit Drive, discernable impacts to the existing traffic operations are not anticipated. As has been shown in previous analysis and discussions, all pick-up/drop-off activity will occur within the Valley Gates lot without backing onto Circuit Drive. The expected capacity of the lot has been estimated to accommodate nearly twice as many buses at one time than are anticipated, thus avoiding any disruptions to the typical traffic flow within Franklin Park.