



APPENDIX N

TURN LANE WARRANT ANALYSIS

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Philadelphia County: Philadelphia County PennDOT Engineering District: 6	Analysis Date: 7/3/2013 Conducted By: TLM Checked By: AJC Agency/Company Name: PENNONI
Intersection & Approach Description: 8th Street (SB) and Casino Entrance - Evaluation for Right Turn Lane at Site Ent on 8th Street	
Analysis Period: 2021 Build Design Hour: FRI Street Peak Intersection Control: Unsignalized Posted Speed Limit (MPH): 25 Type of Terrain: Level	Number of Approach Lanes: 2 Undivided or Divided Highway: Undivided Type of Analysis: Right Turn Lane Left or Right-Turn Lane Analysis?: Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume: N/A

Opposing Volume: N/A

Left Turn Volume: N/A

% Left Turns in Advancing Volume: N/A

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	0	0.0%	N/A
	Through	-	679	0.0%	679
	Right	-	251	0.0%	251

Advancing Volume: 930

Right Turn Volume: 251

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: N/A	Applicable Warrant Figure: Figure 11
Warrant Met?: N/A	Warrant Met?: Yes

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	251
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	
Average # of Vehicles/Cycle:	4.0

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	175	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	175	Feet

Additional Findings:
N/A

Additional Comments / Justifications:

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Philadelphia County: Philadelphia County PennDOT Engineering District: 6	Analysis Date: 7/3/2013 Conducted By: TLM Checked By: AJC Agency/Company Name: PENNONI
Intersection & Approach Description: 8th Street (SB) and Casino Entrance - Evaluation for Right Turn Lane at Site Ent on 8th Street	
Analysis Period: 2021 Build Design Hour: FRI Casino Peak Intersection Control: Unsignalized Posted Speed Limit (MPH): 25 Type of Terrain: Level	Number of Approach Lanes: 2 Undivided or Divided Highway: Undivided Left or Right-Turn Lane Analysis?: Type of Analysis Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	0	0.0%	N/A
	Through	-	828	0.0%	828
	Right	-	324	0.0%	324

Advancing Volume:	1152
Right Turn Volume:	324

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: N/A	Applicable Warrant Figure: Figure 11
Warrant Met?: N/A	Warrant Met?: Yes

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized	Average # of Vehicles/Cycle: 5.0
Design Hour Volume of Turning Lane: 324	
Cycles Per Hour (Assumed): 60	
Cycles Per Hour (If Known): 	

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	200	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	200	Feet

Additional Findings: N/A

Additional Comments / Justifications:

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Philadelphia County: Philadelphia County PennDOT Engineering District: 6	Analysis Date: 7/3/2013 Conducted By: TLM Checked By: AJC Agency/Company Name: PENNONI
Intersection & Approach Description: 8th Street (SB) and Casino Entrance - Evaluation for Right Turn Lane at Site Ent on 8th Street	
Analysis Period: 2021 Build Design Hour: SAT Casino Peak Intersection Control: Unsignalized Posted Speed Limit (MPH): 25 Type of Terrain: Level	Number of Approach Lanes: 2 Undivided or Divided Highway: Undivided Left or Right-Turn Lane Analysis?: Right Turn Lane Type of Analysis

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A

% Left Turns in Advancing Volume:	N/A
-----------------------------------	-----

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	0	0.0%	N/A
	Through	-	801	0.0%	801
	Right	-	468	0.0%	468

Advancing Volume:	1269
Right Turn Volume:	468

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: N/A	Applicable Warrant Figure: Figure 11
Warrant Met?: N/A	Warrant Met?: Yes

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	468
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	
Average # of Vehicles/Cycle:	8.0

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	325	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	325	Feet

Additional Findings:
N/A

Additional Comments / Justifications:

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Philadelphia	Analysis Date: 7/3/2013
County: Philadelphia County	Conducted By: TLM
PennDOT Engineering District: 6	Checked By: AJC
	Agency/Company Name: PENNONI
Intersection & Approach Description: 9th Street and Market Street - Evaluation for NB right turn lane on 9th Street	
Analysis Period: 2021 Build	Number of Approach Lanes: 2
Design Hour: FRI Street	Undivided or Divided Highway: Undivided
Intersection Control: Unsignalized	
Posted Speed Limit (MPH): 25	Type of Analysis
Type of Terrain: Level	Left or Right-Turn Lane Analysis?: Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A

% Left Turns in Advancing Volume:	N/A
-----------------------------------	-----

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	99	0.0%	99
	Through	-	587	0.0%	587
	Right	-	232	0.0%	232

Advancing Volume:	918
Right Turn Volume:	232

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: N/A	Applicable Warrant Figure: Figure 11
Warrant Met?: N/A	Warrant Met?: Yes

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	232
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	
Average # of Vehicles/Cycle:	4.0

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	175	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	175	Feet

Additional Findings:
N/A

Additional Comments / Justifications:

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Philadelphia	Analysis Date: 7/3/2013
County: Philadelphia County	Conducted By: TLM
PennDOT Engineering District: 6	Checked By: AJC
	Agency/Company Name: PENNONI
Intersection & Approach Description: 9th Street and Market Street - Evaluation for NB right turn lane on 9th Street	
Analysis Period: 2021 Build	Number of Approach Lanes: 2
Design Hour: FRI Casino	Undivided or Divided Highway: Undivided
Intersection Control: Unsignalized	
Posted Speed Limit (MPH): 25	Type of Analysis
Type of Terrain: Level	Left or Right-Turn Lane Analysis?: Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume: N/A

Opposing Volume: N/A

Left Turn Volume: N/A

% Left Turns in Advancing Volume: N/A

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	71	0.0%	71
	Through	-	490	0.0%	490
	Right	-	201	0.0%	201

Advancing Volume: 762

Right Turn Volume: 201

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: N/A	Applicable Warrant Figure: Figure 11
Warrant Met?: N/A	Warrant Met?: Yes

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized	
Design Hour Volume of Turning Lane: 201	
Cycles Per Hour (Assumed): 60	
Cycles Per Hour (If Known):	Average # of Vehicles/Cycle: 3.0

Type of Traffic Control	PennDOT Publication 46, Exhibit 11-6					
	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	150	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	150	Feet

Additional Findings: N/A

Additional Comments / Justifications:

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Philadelphia	Analysis Date: 7/3/2013
County: Philadelphia County	Conducted By: TLM
PennDOT Engineering District: 6	Checked By: AJC
	Agency/Company Name: PENNONI
Intersection & Approach Description: 9th Street and Market Street - Evaluation for NB right turn lane on 9th Street	
Analysis Period: 2021 Build	Number of Approach Lanes: 2
Design Hour: SAT Casino	Undivided or Divided Highway: Undivided
Intersection Control: Unsignalized	
Posted Speed Limit (MPH): 25	Type of Analysis
Type of Terrain: Level	Left or Right-Turn Lane Analysis?: Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A
Opposing	Left	Yes			N/A
	Through	-			N/A
	Right	Yes			N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A

% Left Turns in Advancing Volume:	N/A
-----------------------------------	-----

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	81	0.0%	81
	Through	-	586	0.0%	586
	Right	-	282	0.0%	282

Advancing Volume:	949
Right Turn Volume:	282

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: N/A	Applicable Warrant Figure: Figure 11
Warrant Met?: N/A	Warrant Met?: Yes

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	282
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	
Average # of Vehicles/Cycle:	5.0

Type of Traffic Control	PennDOT Publication 46, Exhibit 11-6					
	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	200	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	200	Feet

Additional Findings:
N/A

Additional Comments / Justifications: