



Traffic Analysis Report

Columbia Lane 11 -17, Homebush



Schindler

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Traffic Analyses

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1 July 2020

This traffic analysis has been prepared
by:-

Manuel Dias
Sales Manager - New Instalations and
Modernisations
manuel.dias@au.schindler.com
0413 801 626

Schindler Lifts Australia Pty Ltd
Building D, Sir Joseph Banks Corporate
Park
36 - 38 Lord Street, Botany, NSW, 2019

www.au.schindler.com

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Summary

Legend

Setup	Abbreviations
Traffic Situation: See Section 2	P5: Persons transported on average within 5 minutes
Floors: Floors served by lifts	HC5: P5 relative to group population
Population: Population served by lifts	WT: Average waiting time per passenger
Rating: See Section 2	DT: Average destination time per passenger
	IS: Average number of intermediate stops per passenger
	LW: Passengers waiting more than 90 seconds [%]

1 Building A - 2 lifts

Lifts: 2 Conventional, 1350 kg, 2.50 m/s

Traffic Situation	Floors	Population	Rating	P5	HC5	WT	DT	IS	LW
Two-Way Residential	-3..-2, 0..24	449	3.8 ★★★★★	27	6.0 %	51.6 s	98.9 s	1.8	16.5 %

2 Building A - 3 lifts

Lifts: 3 Conventional, 1350 kg, 2.00 m/s

Traffic Situation	Floors	Population	Rating	P5	HC5	WT	DT	IS	LW
Two-Way Residential	-3..-2, 0..24	449	4.9 ★★★★★	31	7.0 %	35.5 s	81.1 s	1.3	6.2 %

3 Building B - 2 lifts

Lifts: 2 Conventional, 1350 kg, 2.50 m/s

Traffic Situation	Floors	Population	Rating	P5	HC5	WT	DT	IS	LW
Two-Way Residential	-4..-2, 0..24	488	3.3 ★★★★★	29	6.0 %	68.2 s	125.0 s	2.5	29.3 %

4 Building B - 3 lifts

Lifts: 3 Conventional, 1350 kg, 2.00 m/s

Traffic Situation	Floors	Population	Rating	P5	HC5	WT	DT	IS	LW
Two-Way Residential	-4..-2, 0..24	488	4.4 ★★★★★	34	7.0 %	47.3 s	101.3 s	1.8	13.1 %

Standards and Recommendations

Every analysis covers a full range of traffic intensities, reporting handling capacity HC5 and average waiting time WT as main criteria. As a general guideline, Schindler defines a rating in the range of 0.0 (worst) to 6.0 (best) based on these criteria. Recommended ratings are 3.0 or higher:

Schindler Traffic Analysis Ratings									
Traffic Situation	Traffic Definition			Rating ≥ 3.0		Rating ≥ 4.0		Rating ≥ 5.0	
	Incoming	Outgoing	Inter-floor	HC5	WT	HC5	WT	HC5	WT
Two-Way Residential	50 %	50 %	0 %	≥ 6 %	≤ 80 s	≥ 7 %	≤ 60 s	≥ 8 %	≤ 40 s

Ratings are also displayed by a corresponding number of stars and may be interpreted on a global basis as follows:

Rating	Stars	Residential
≥ 3.0	★★★★★	Basic segment
≥ 4.0	★★★★★	Medium segment
≥ 5.0	★★★★★	Premium segment

Details

3.1 Building A - 2 lifts

3.1.1 Building and Population

Number of Floors: 28
Building Population: 449

Floor Name	Floor Height [m]	Floor Level [m]	Description	Quantity	Unit	Density	Density Unit	Gross Population	Vacancy Factor	Visitor Factor	Net Population	Σ
24	3.05	81.15	Residential	12.0	persons	1.0	*	12			12	+
23	3.05	78.10	Residential	12.0	persons	1.0	*	12			12	+
22	3.05	75.05	Residential	12.0	persons	1.0	*	12			12	+
21	3.05	72.00	Residential	18.0	persons	1.0	*	18			18	+
20	3.05	68.95	Residential	18.0	persons	1.0	*	18			18	+
19	3.05	65.90	Residential	18.0	persons	1.0	*	18			18	+
18	3.05	62.85	Residential	18.0	persons	1.0	*	18			18	+
17	3.05	59.80	Residential	18.0	persons	1.0	*	18			18	+
16	3.05	56.75	Residential	18.0	persons	1.0	*	18			18	+
15	3.05	53.70	Residential	18.0	persons	1.0	*	18			18	+
14	3.05	50.65	Residential	18.0	persons	1.0	*	18			18	+
13	3.05	47.60	Residential	18.0	persons	1.0	*	18			18	+
12	3.05	44.55	Residential	18.0	persons	1.0	*	18			18	+
11	3.05	41.50	Residential	18.0	persons	1.0	*	18			18	+
10	3.05	38.45	Residential	18.0	persons	1.0	*	18			18	+
9	3.05	35.40	Residential	18.0	persons	1.0	*	18			18	+
8	3.05	32.35	Residential	16.5	persons	1.0	*	17			17	+
7	3.05	29.30	Residential	22.5	persons	1.0	*	23			23	+
6	3.05	26.25	Residential	24.0	persons	1.0	*	24			24	+
5	3.05	23.20	Residential	24.0	persons	1.0	*	24			24	+
4	3.05	20.15	Residential	24.0	persons	1.0	*	24			24	+
3	3.05	17.10	Residential	24.0	persons	1.0	*	24			24	+
2	3.05	14.05	Residential	24.0	persons	1.0	*	24			24	+
1	3.05	11.00	Residential	19.5	persons	1.0	*	20			20	+
0	4.10	6.90	Lobby									
-1	3.90	3.00	Parking						50 %			
-2	3.00	0.00	Parking	50.0	parking lots	1.2	pers. / lot	60	50 %		30	
-3	3.00	-3.00	Parking	60.0	parking lots	1.2	pers. / lot	72	50 %		36	

Details

Building A - 2 lifts

Lifts

3.1.2 Lifts

Control: Conventional

	1	2
 Lift	A	B
 Rated Load [kg]	1350	1350
 Weight per Person [kg]	75	75
 Pass./Deck gross	18	18
 Max. Car Filling	80 %	80 %
 Pass./Deck net	14	14
 Drive Type		
 Max. Speed [m/s]	2.50	2.50
 Max. Acceleration [m/s ²]	1.00	1.00
 Drive Jerk [m/s ³]	1.00	1.00
 Door Type		
 Door Width [mm]	1000	1000
 Opening Time [s]	2.2	2.3
 Closing Time [s]	2.9	2.9
 Door and Drive Delays [s]	1.0	1.0
 Transfer Time per Person [s]	1.0	1.0
 Min. Transfer Time [s]	1.0	1.0
 Number of Decks	1	1
 Travel Height [m]	84.15	84.15
24 Residential		
23 Residential		
22 Residential		
21 Residential		
20 Residential		
19 Residential		
18 Residential		
17 Residential		
16 Residential		
15 Residential		
14 Residential		
13 Residential		
12 Residential		
11 Residential		
10 Residential		
9 Residential		
8 Residential		
7 Residential		
6 Residential		
5 Residential		
4 Residential		
3 Residential		
2 Residential		
1 Residential		
0 Lobby		
-1 Parking		
-2 Parking		
-3 Parking		

3.1.3 Two-Way Residential

3.1.3.1 Traffic Definition

Population served by lifts: 449

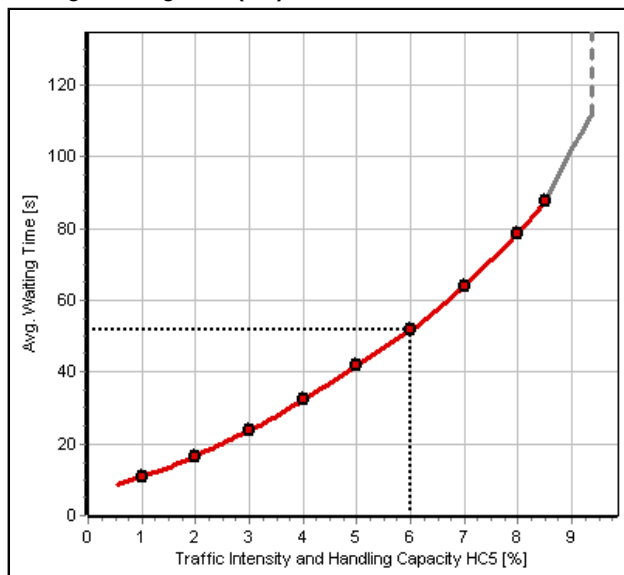
Passenger Flows					
Floor	Description	Incoming 50 %		Outgoing 50 %	
24	Residential		2.7 %	2.7 %	
23	Residential		2.7 %	2.7 %	
22	Residential		2.7 %	2.7 %	
21	Residential		4.0 %	4.0 %	
20	Residential		4.0 %	4.0 %	
19	Residential		4.0 %	4.0 %	
18	Residential		4.0 %	4.0 %	
17	Residential		4.0 %	4.0 %	
16	Residential		4.0 %	4.0 %	
15	Residential		4.0 %	4.0 %	
14	Residential		4.0 %	4.0 %	
13	Residential		4.0 %	4.0 %	
12	Residential		4.0 %	4.0 %	
11	Residential		4.0 %	4.0 %	
10	Residential		4.0 %	4.0 %	
9	Residential		4.0 %	4.0 %	
8	Residential		3.7 %	3.7 %	
7	Residential		5.0 %	5.0 %	
6	Residential		5.4 %	5.4 %	
5	Residential		5.4 %	5.4 %	
4	Residential		5.4 %	5.4 %	
3	Residential		5.4 %	5.4 %	
2	Residential		5.4 %	5.4 %	
1	Residential		4.3 %	4.3 %	
0	Lobby	85.3 % 			 85.3 %
-1	Parking				
-2	Parking	6.7 % 			 6.7 %
-3	Parking	8.0 % 			 8.0 %

[Details](#)

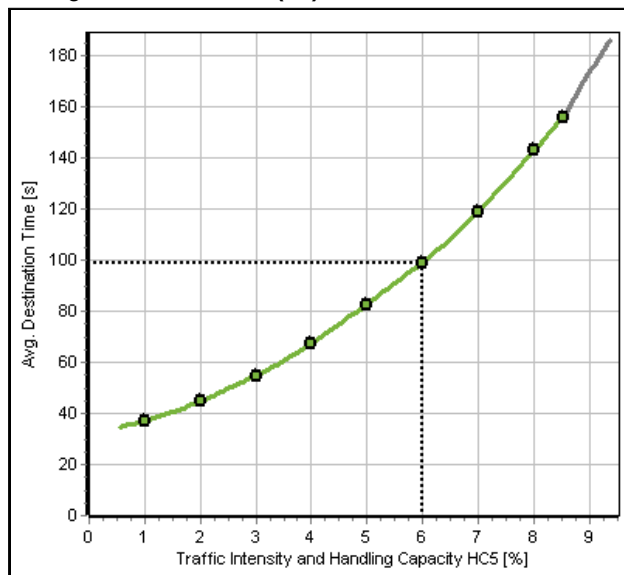
Building A - 2 lifts
Two-Way Residential

3.1.3.2 Performance

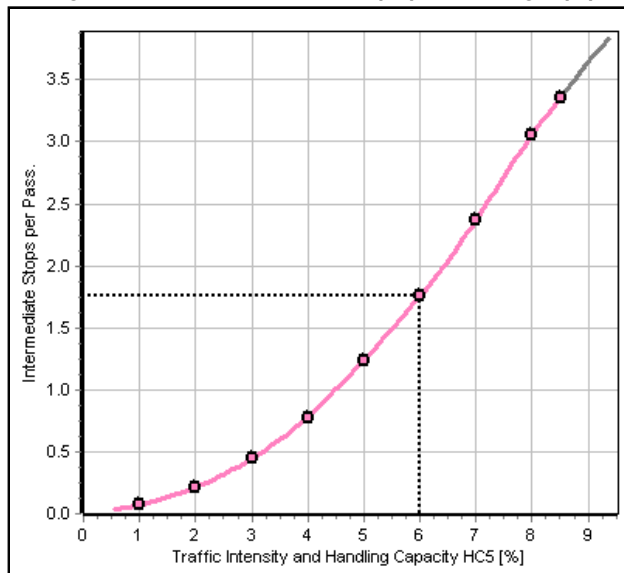
Average Waiting Time (WT)



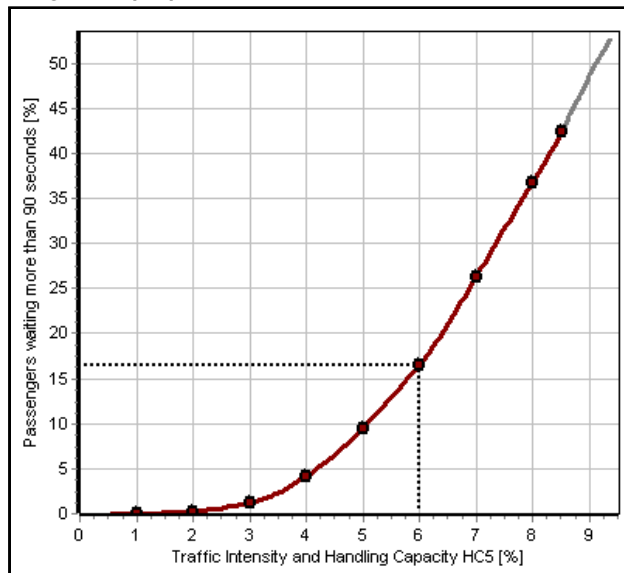
Average Destination Time (DT)



Average Number of Intermediate Stops per Passenger (IS)



Long Waits (LW)



HC5 [%]	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	8.5
P5	4.5	9.0	13.5	17.9	22.4	26.9	31.4	35.9	38.2
WT [s]	10.9	16.6	23.7	32.2	41.8	51.6	63.8	78.7	87.8
DT [s]	37.1	44.6	54.7	67.4	82.6	98.9	118.8	142.5	155.7
IS	0.1	0.2	0.4	0.8	1.2	1.8	2.4	3.1	3.4
LW [%]	0.0	0.2	1.2	4.1	9.4	16.5	26.2	36.7	42.5

3.2 Building A - 3 lifts

3.2.1 Building and Population

Number of Floors: 28
Building Population: 449

Floor Name	Floor Height [m]	Floor Level [m]	Description	Quantity	Unit	Density	Density Unit	Gross Population	Vacancy Factor	Visitor Factor	Net Population	Σ
24	3.05	81.15	Residential	12.0	persons	1.0	*	12			12	+
23	3.05	78.10	Residential	12.0	persons	1.0	*	12			12	+
22	3.05	75.05	Residential	12.0	persons	1.0	*	12			12	+
21	3.05	72.00	Residential	18.0	persons	1.0	*	18			18	+
20	3.05	68.95	Residential	18.0	persons	1.0	*	18			18	+
19	3.05	65.90	Residential	18.0	persons	1.0	*	18			18	+
18	3.05	62.85	Residential	18.0	persons	1.0	*	18			18	+
17	3.05	59.80	Residential	18.0	persons	1.0	*	18			18	+
16	3.05	56.75	Residential	18.0	persons	1.0	*	18			18	+
15	3.05	53.70	Residential	18.0	persons	1.0	*	18			18	+
14	3.05	50.65	Residential	18.0	persons	1.0	*	18			18	+
13	3.05	47.60	Residential	18.0	persons	1.0	*	18			18	+
12	3.05	44.55	Residential	18.0	persons	1.0	*	18			18	+
11	3.05	41.50	Residential	18.0	persons	1.0	*	18			18	+
10	3.05	38.45	Residential	18.0	persons	1.0	*	18			18	+
9	3.05	35.40	Residential	18.0	persons	1.0	*	18			18	+
8	3.05	32.35	Residential	16.5	persons	1.0	*	17			17	+
7	3.05	29.30	Residential	22.5	persons	1.0	*	23			23	+
6	3.05	26.25	Residential	24.0	persons	1.0	*	24			24	+
5	3.05	23.20	Residential	24.0	persons	1.0	*	24			24	+
4	3.05	20.15	Residential	24.0	persons	1.0	*	24			24	+
3	3.05	17.10	Residential	24.0	persons	1.0	*	24			24	+
2	3.05	14.05	Residential	24.0	persons	1.0	*	24			24	+
1	3.05	11.00	Residential	19.5	persons	1.0	*	20			20	+
0	4.10	6.90	Lobby									
-1	3.90	3.00	Parking						50 %			
-2	3.00	0.00	Parking	50.0	parking lots	1.2	pers. / lot	60	50 %		30	
-3	3.00	-3.00	Parking	60.0	parking lots	1.2	pers. / lot	72	50 %		36	

Details

Building A - 3 lifts

Lifts

3.2.2 Lifts

Control: Conventional

	1	2	3
 Lift	A	B	C
 Rated Load [kg]	1350	1350	1350
 Weight per Person [kg]	75	75	75
 Pass./Deck gross	18	18	18
 Max. Car Filling	80 %	80 %	80 %
 Pass./Deck net	14	14	14
 Drive Type			
 Max. Speed [m/s]	2.00	2.00	2.00
 Max. Acceleration [m/s ²]	0.90	0.90	0.90
 Drive Jerk [m/s ³]	1.00	1.00	1.00
 Door Type			
 Door Width [mm]	1000	1000	1000
 Opening Time [s]	2.5	2.6	2.6
 Closing Time [s]	3.2	3.2	3.2
 Door and Drive Delays [s]	1.0	1.0	1.0
 Transfer Time per Person [s]	1.0	1.0	1.0
 Min. Transfer Time [s]	1.0	1.0	1.0
 Number of Decks	1	1	1
 Travel Height [m]	84.15	84.15	84.15
24 Residential			
23 Residential			
22 Residential			
21 Residential			
20 Residential			
19 Residential			
18 Residential			
17 Residential			
16 Residential			
15 Residential			
14 Residential			
13 Residential			
12 Residential			
11 Residential			
10 Residential			
9 Residential			
8 Residential			
7 Residential			
6 Residential			
5 Residential			
4 Residential			
3 Residential			
2 Residential			
1 Residential			
0 Lobby			
-1 Parking			
-2 Parking			
-3 Parking			

3.2.3 Two-Way Residential

3.2.3.1 Traffic Definition

Population served by lifts: 449

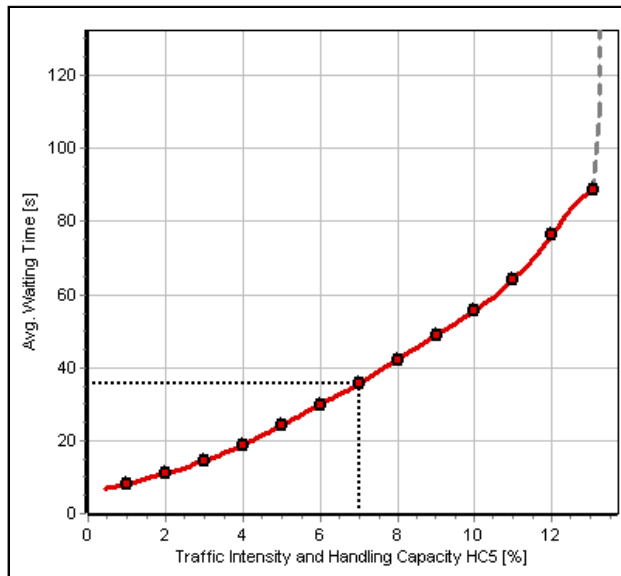
Passenger Flows					
Floor	Description	Incoming 50 %		Outgoing 50 %	
24	Residential		2.7 %	2.7 %	
23	Residential		2.7 %	2.7 %	
22	Residential		2.7 %	2.7 %	
21	Residential		4.0 %	4.0 %	
20	Residential		4.0 %	4.0 %	
19	Residential		4.0 %	4.0 %	
18	Residential		4.0 %	4.0 %	
17	Residential		4.0 %	4.0 %	
16	Residential		4.0 %	4.0 %	
15	Residential		4.0 %	4.0 %	
14	Residential		4.0 %	4.0 %	
13	Residential		4.0 %	4.0 %	
12	Residential		4.0 %	4.0 %	
11	Residential		4.0 %	4.0 %	
10	Residential		4.0 %	4.0 %	
9	Residential		4.0 %	4.0 %	
8	Residential		3.7 %	3.7 %	
7	Residential		5.0 %	5.0 %	
6	Residential		5.4 %	5.4 %	
5	Residential		5.4 %	5.4 %	
4	Residential		5.4 %	5.4 %	
3	Residential		5.4 %	5.4 %	
2	Residential		5.4 %	5.4 %	
1	Residential		4.3 %	4.3 %	
0	Lobby	85.3 % 			 85.3 %
-1	Parking				
-2	Parking	6.7 % 			 6.7 %
-3	Parking	8.0 % 			 8.0 %

[Details](#)

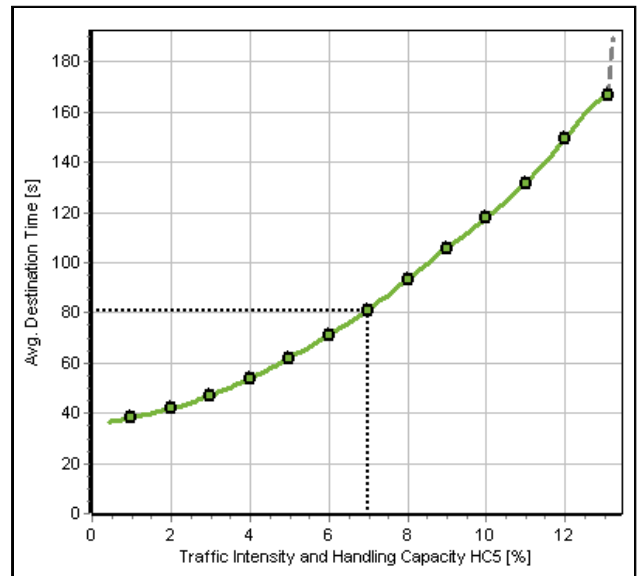
Building A - 3 lifts
Two-Way Residential

3.2.3.2 Performance

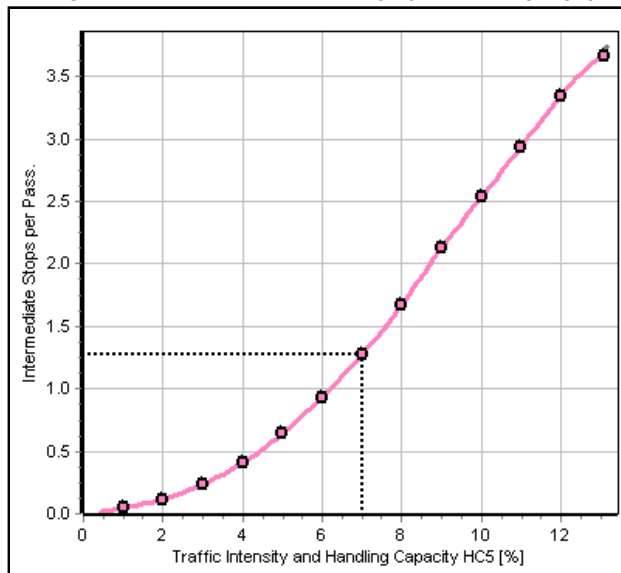
Average Waiting Time (WT)



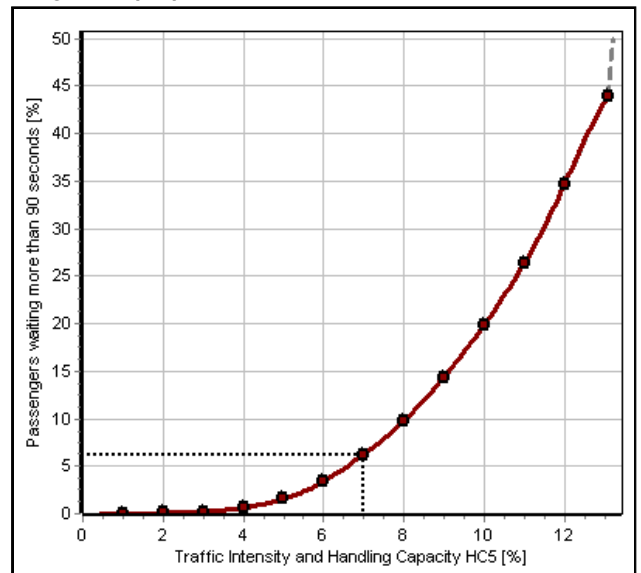
Average Destination Time (DT)



Average Number of Intermediate Stops per Passenger (IS)



Long Waits (LW)



HC5 [%]	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.1
P5	4.5	9.0	13.5	17.9	22.4	26.9	31.4	35.9	40.4	44.9	49.3	53.8	58.7
WT [s]	8.1	10.9	14.4	18.8	24.2	29.8	35.5	42.1	48.7	55.5	63.9	76.4	88.7
DT [s]	38.3	41.8	47.0	53.7	61.9	71.1	81.1	93.1	105.7	117.7	131.7	149.6	166.5
IS	0.0	0.1	0.2	0.4	0.6	0.9	1.3	1.7	2.1	2.5	2.9	3.3	3.7
LW [%]	0.0	0.1	0.2	0.6	1.6	3.4	6.2	9.7	14.3	19.9	26.3	34.7	44.0

3.3 Building B - 2 lifts

3.3.1 Building and Population

Number of Floors: 29
Building Population: 488

Floor Name	Floor Height [m]	Floor Level [m]	Description	Quantity	Unit	Density	Density Unit	Gross Population	Vacancy Factor	Visitor Factor	Net Population	Σ
24	3.05	81.15	Residential	25.5	persons	1.0	*	26			26	+
23	3.05	78.10	Residential	18.0	persons	1.0	*	18			18	+
22	3.05	75.05	Residential	18.0	persons	1.0	*	18			18	+
21	3.05	72.00	Residential	18.0	persons	1.0	*	18			18	+
20	3.05	68.95	Residential	18.0	persons	1.0	*	18			18	+
19	3.05	65.90	Residential	18.0	persons	1.0	*	18			18	+
18	3.05	62.85	Residential	18.0	persons	1.0	*	18			18	+
17	3.05	59.80	Residential	18.0	persons	1.0	*	18			18	+
16	3.05	56.75	Residential	19.5	persons	1.0	*	20			20	+
15	3.05	53.70	Residential	19.5	persons	1.0	*	20			20	+
14	3.05	50.65	Residential	19.5	persons	1.0	*	20			20	+
13	3.05	47.60	Residential	19.5	persons	1.0	*	20			20	+
12	3.05	44.55	Residential	19.5	persons	1.0	*	20			20	+
11	3.05	41.50	Residential	19.5	persons	1.0	*	20			20	+
10	3.05	38.45	Residential	19.5	persons	1.0	*	20			20	+
9	3.05	35.40	Residential	19.5	persons	1.0	*	20			20	+
8	3.05	32.35	Residential	18.0	persons	1.0	*	18			18	+
7	3.05	29.30	Residential	24.0	persons	1.0	*	24			24	+
6	3.05	26.25	Residential	24.0	persons	1.0	*	24			24	+
5	3.05	23.20	Residential	24.0	persons	1.0	*	24			24	+
4	3.05	20.15	Residential	24.0	persons	1.0	*	24			24	+
3	3.05	17.10	Residential	24.0	persons	1.0	*	24			24	+
2	3.05	14.05	Residential	24.0	persons	1.0	*	24			24	+
1	3.05	11.00	Residential	18.0	persons	1.0	*	18			18	+
0	4.10	6.90	Lobby									
-1	3.90	3.00	Parking						50 %			
-2	3.00	0.00	Parking	50.0	parking lots	1.2	pers. / lot	60	50 %		30	
-3	3.00	-3.00	Parking	60.0	parking lots	1.2	pers. / lot	72	50 %		36	
-4	3.00	-6.00	Parking	73.0	parking lots	1.2	pers. / lot	88	50 %		44	

Details

Building B - 2 lifts
Lifts

3.3.2 Lifts

Control: Conventional

	1	2
 Lift	A	B
 Rated Load [kg]	1350	1350
 Weight per Person [kg]	75	75
 Pass./Deck gross	18	18
 Max. Car Filling	80 %	80 %
 Pass./Deck net	14	14
 Drive Type		
 Max. Speed [m/s]	2.50	2.50
 Max. Acceleration [m/s ²]	1.00	1.00
 Drive Jerk [m/s ³]	1.00	1.00
 Door Type		
 Door Width [mm]	1000	1000
 Opening Time [s]	2.3	2.3
 Closing Time [s]	2.9	2.9
 Door and Drive Delays [s]	1.0	1.0
 Transfer Time per Person [s]	1.0	1.0
 Min. Transfer Time [s]	1.0	1.0
 Number of Decks	1	1
 Travel Height [m]	87.15	87.15
24 Residential		
23 Residential		
22 Residential		
21 Residential		
20 Residential		
19 Residential		
18 Residential		
17 Residential		
16 Residential		
15 Residential		
14 Residential		
13 Residential		
12 Residential		
11 Residential		
10 Residential		
9 Residential		
8 Residential		
7 Residential		
6 Residential		
5 Residential		
4 Residential		
3 Residential		
2 Residential		
1 Residential		
0 Lobby		
-1 Parking		
-2 Parking		
-3 Parking		
-4 Parking		

3.3.3 Two-Way Residential

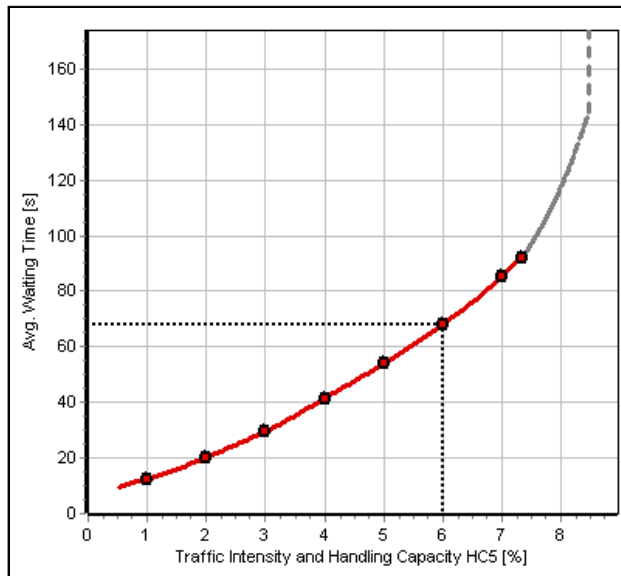
3.3.3.1 Traffic Definition

Population served by lifts: 488

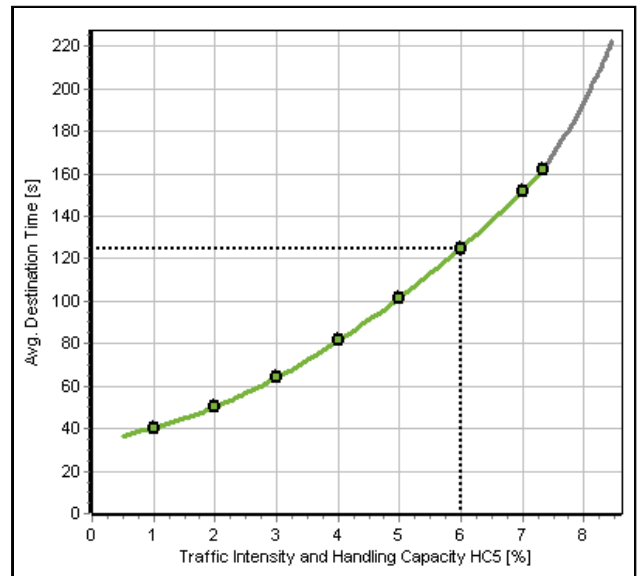
Passenger Flows									
Floor Description		Incoming 50 %			Outgoing 50 %				
24 Residential			5.2 %	5.2 %					
23 Residential			3.7 %	3.7 %					
22 Residential			3.7 %	3.7 %					
21 Residential			3.7 %	3.7 %					
20 Residential			3.7 %	3.7 %					
19 Residential			3.7 %	3.7 %					
18 Residential			3.7 %	3.7 %					
17 Residential			3.7 %	3.7 %					
16 Residential			4.0 %	4.0 %					
15 Residential			4.0 %	4.0 %					
14 Residential			4.0 %	4.0 %					
13 Residential			4.0 %	4.0 %					
12 Residential			4.0 %	4.0 %					
11 Residential			4.0 %	4.0 %					
10 Residential			4.0 %	4.0 %					
9 Residential			4.0 %	4.0 %					
8 Residential			3.7 %	3.7 %					
7 Residential			4.9 %	4.9 %					
6 Residential			4.9 %	4.9 %					
5 Residential			4.9 %	4.9 %					
4 Residential			4.9 %	4.9 %					
3 Residential			4.9 %	4.9 %					
2 Residential			4.9 %	4.9 %					
1 Residential			3.7 %	3.7 %					
0 Lobby	77.5 %					77.5 %			
-1 Parking									
-2 Parking	6.2 %					6.2 %			
-3 Parking	7.4 %					7.4 %			
-4 Parking	9.0 %					9.0 %			

3.3.3.2 Performance

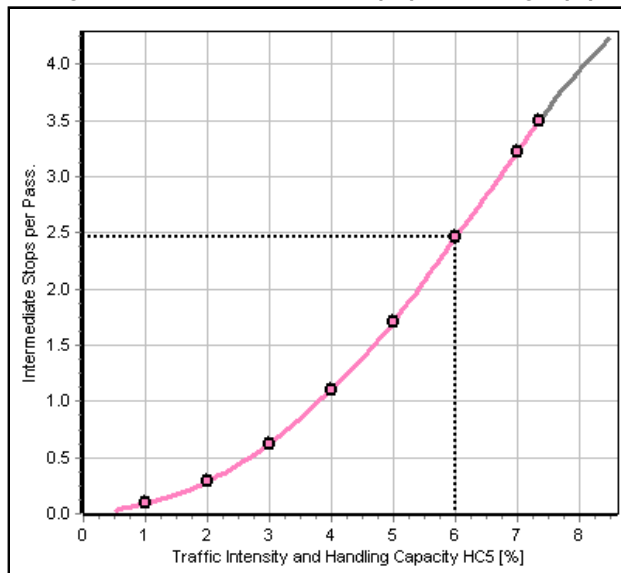
Average Waiting Time (WT)



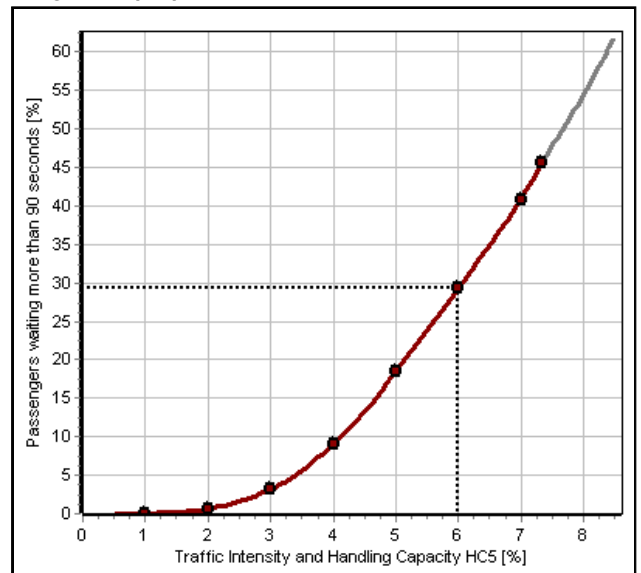
Average Destination Time (DT)



Average Number of Intermediate Stops per Passenger (IS)



Long Waits (LW)



HC5 [%]	1.0	2.0	3.0	4.0	5.0	6.0	7.0	7.3
P5	4.9	9.8	14.6	19.5	24.4	29.3	34.1	35.8
WT [s]	12.5	20.1	29.6	41.5	54.0	68.2	85.1	92.1
DT [s]	40.3	50.2	63.9	81.6	101.5	125.0	151.7	162.0
IS	0.1	0.3	0.6	1.1	1.7	2.5	3.2	3.5
LW [%]	0.1	0.6	3.2	9.0	18.5	29.3	40.9	45.7

[Details](#)

Building B - 3 lifts
Building and Population

3.4 Building B - 3 lifts

3.4.1 Building and Population

Number of Floors: 29

Building Population: 488

Floor Name	Floor Height [m]	Floor Level [m]	Description	Quantity	Unit	Density	Density Unit	Gross Population	Vacancy Factor	Visitor Factor	Net Population	Σ
24	3.05	81.15	Residential	25.5	persons	1.0	*	26			26	+
23	3.05	78.10	Residential	18.0	persons	1.0	*	18			18	+
22	3.05	75.05	Residential	18.0	persons	1.0	*	18			18	+
21	3.05	72.00	Residential	18.0	persons	1.0	*	18			18	+
20	3.05	68.95	Residential	18.0	persons	1.0	*	18			18	+
19	3.05	65.90	Residential	18.0	persons	1.0	*	18			18	+
18	3.05	62.85	Residential	18.0	persons	1.0	*	18			18	+
17	3.05	59.80	Residential	18.0	persons	1.0	*	18			18	+
16	3.05	56.75	Residential	19.5	persons	1.0	*	20			20	+
15	3.05	53.70	Residential	19.5	persons	1.0	*	20			20	+
14	3.05	50.65	Residential	19.5	persons	1.0	*	20			20	+
13	3.05	47.60	Residential	19.5	persons	1.0	*	20			20	+
12	3.05	44.55	Residential	19.5	persons	1.0	*	20			20	+
11	3.05	41.50	Residential	19.5	persons	1.0	*	20			20	+
10	3.05	38.45	Residential	19.5	persons	1.0	*	20			20	+
9	3.05	35.40	Residential	19.5	persons	1.0	*	20			20	+
8	3.05	32.35	Residential	18.0	persons	1.0	*	18			18	+
7	3.05	29.30	Residential	24.0	persons	1.0	*	24			24	+
6	3.05	26.25	Residential	24.0	persons	1.0	*	24			24	+
5	3.05	23.20	Residential	24.0	persons	1.0	*	24			24	+
4	3.05	20.15	Residential	24.0	persons	1.0	*	24			24	+
3	3.05	17.10	Residential	24.0	persons	1.0	*	24			24	+
2	3.05	14.05	Residential	24.0	persons	1.0	*	24			24	+
1	3.05	11.00	Residential	18.0	persons	1.0	*	18			18	+
0	4.10	6.90	Lobby									
-1	3.90	3.00	Parking						50 %			
-2	3.00	0.00	Parking	50.0	parking lots	1.2	pers. / lot	60	50 %		30	
-3	3.00	-3.00	Parking	60.0	parking lots	1.2	pers. / lot	72	50 %		36	
-4	3.00	-6.00	Parking	73.0	parking lots	1.2	pers. / lot	88	50 %		44	

Details

Building B - 3 lifts

Lifts

3.4.2 Lifts

Control: Conventional

	1	2	3
 Lift	A	B	C
 Rated Load [kg]	1350	1350	1350
 Weight per Person [kg]	75	75	75
 Pass./Deck gross	18	18	18
 Max. Car Filling	80 %	80 %	80 %
 Pass./Deck net	14	14	14
 Drive Type			
 Max. Speed [m/s]	2.00	2.00	2.00
 Max. Acceleration [m/s ²]	0.90	0.90	0.90
 Drive Jerk [m/s ³]	1.00	1.00	1.00
 Door Type			
 Door Width [mm]	1000	1000	1000
 Opening Time [s]	2.6	2.6	2.6
 Closing Time [s]	3.2	3.2	3.2
 Door and Drive Delays [s]	1.0	1.0	1.0
 Transfer Time per Person [s]	1.0	1.0	1.0
 Min. Transfer Time [s]	1.0	1.0	1.0
 Number of Decks	1	1	1
 Travel Height [m]	87.15	87.15	87.15
24 Residential			
23 Residential			
22 Residential			
21 Residential			
20 Residential			
19 Residential			
18 Residential			
17 Residential			
16 Residential			
15 Residential			
14 Residential			
13 Residential			
12 Residential			
11 Residential			
10 Residential			
9 Residential			
8 Residential			
7 Residential			
6 Residential			
5 Residential			
4 Residential			
3 Residential			
2 Residential			
1 Residential			
0 Lobby			
-1 Parking			
-2 Parking			
-3 Parking			
-4 Parking			

3.4.3 Two-Way Residential

3.4.3.1 Traffic Definition

Population served by lifts: 488

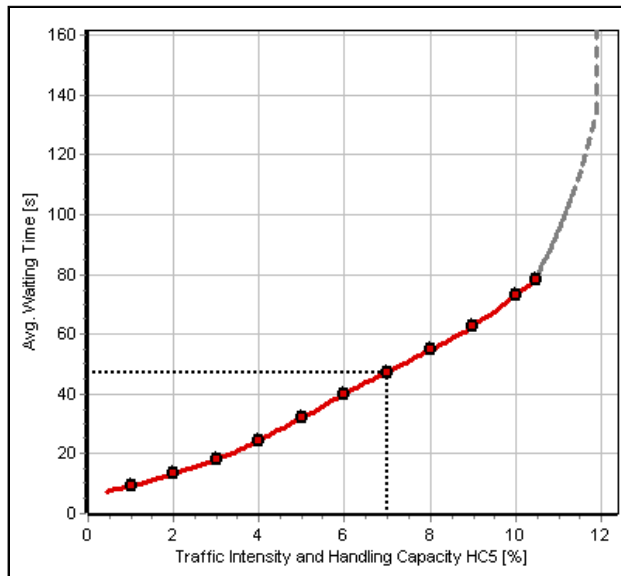
Passenger Flows									
Floor Description		Incoming 50 %			Outgoing 50 %				
24 Residential			5.2 %	5.2 %					
23 Residential			3.7 %	3.7 %					
22 Residential			3.7 %	3.7 %					
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20 Residential			3.7 %	3.7 %					
19 Residential			3.7 %	3.7 %					
18 Residential			3.7 %	3.7 %					
17 Residential			3.7 %	3.7 %					
16 Residential			4.0 %	4.0 %					
15 Residential			4.0 %	4.0 %					
14 Residential			4.0 %	4.0 %					
13 Residential			4.0 %	4.0 %					
12 Residential			4.0 %	4.0 %					
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10 Residential			4.0 %	4.0 %					
9 Residential			4.0 %	4.0 %					
8 Residential			3.7 %	3.7 %					
7 Residential			4.9 %	4.9 %					
6 Residential			4.9 %	4.9 %					
5 Residential			4.9 %	4.9 %					
4 Residential			4.9 %	4.9 %					
3 Residential			4.9 %	4.9 %					
2 Residential			4.9 %	4.9 %					
1 Residential			3.7 %	3.7 %					
0 Lobby	77.5 %						77.5 %		
-1 Parking									
-2 Parking	6.2 %						6.2 %		
-3 Parking	7.4 %						7.4 %		
-4 Parking	9.0 %						9.0 %		

[Details](#)

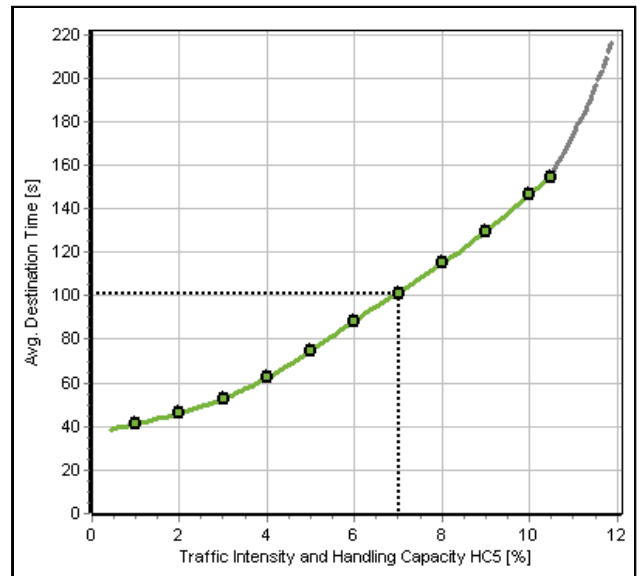
Building B - 3 lifts
Two-Way Residential

3.4.3.2 Performance

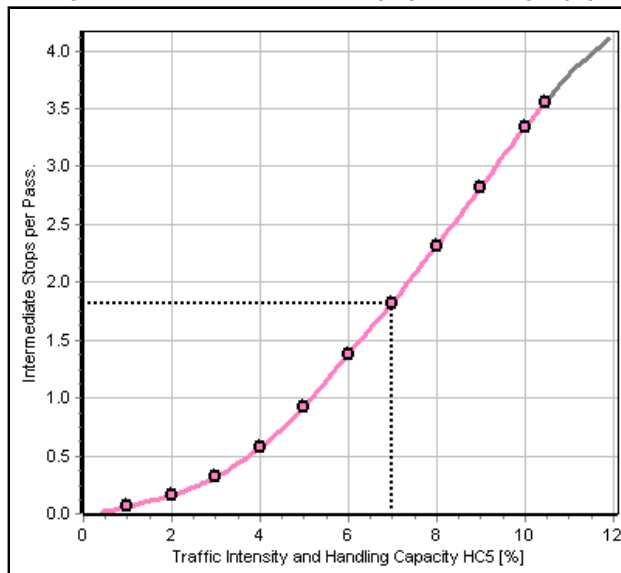
Average Waiting Time (WT)



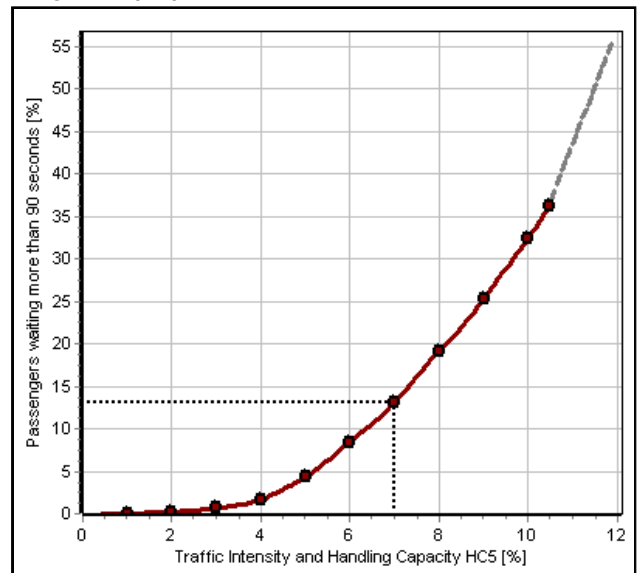
Average Destination Time (DT)



Average Number of Intermediate Stops per Passenger (IS)



Long Waits (LW)



HC5 [%]	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	10.5
P5	4.9	9.8	14.6	19.5	24.4	29.3	34.1	39.0	43.9	48.8	51.1
WT [s]	9.2	13.4	18.2	24.4	32.1	40.0	47.3	54.7	62.6	72.9	78.1
DT [s]	41.2	46.2	52.7	62.4	74.8	88.4	101.3	115.0	129.3	146.4	154.5
IS	0.1	0.2	0.3	0.6	0.9	1.4	1.8	2.3	2.8	3.3	3.6
LW [%]	0.0	0.2	0.7	1.7	4.4	8.4	13.1	19.1	25.2	32.5	36.2

How Schindler Undertakes Traffic Analyses

4.1 Introduction

A traffic analysis studies the performance of a group of lifts, based on assumptions about the expected traffic situation. The main performance measurements are handling capacity and waiting time. Reliable and comparable performance results are found by means of benchmark simulations which reflect the expected real behavior of a group of lifts under a wide range of traffic situations.

4.2 Measures and Definitions

The lifts' main task is to manage the traffic, i.e., the transportation needs of passengers and goods, in such a way that the highest possible density of arriving passengers and goods can be transported in the building at the highest possible perceived service quality.

4.2.1 Handling Capacity (P5, HC5)

For a specific lift group, the handling capacity is the amount of passengers transported in an observed time period. Handling capacity is measured by P5 and HC5:

- P5 is the number of persons that is transported on average within 5 minutes.
- HC5 is the percentage of the population on the floors served by the lift group that is transported on average within 5 minutes:

$$HC5 = P5 / (\text{population on floors served by lift group}).$$

Example: Consider a lift group which serves floors with a population of 1000 people. By observation, there are 600 passengers transported within 30 minutes, therefore:

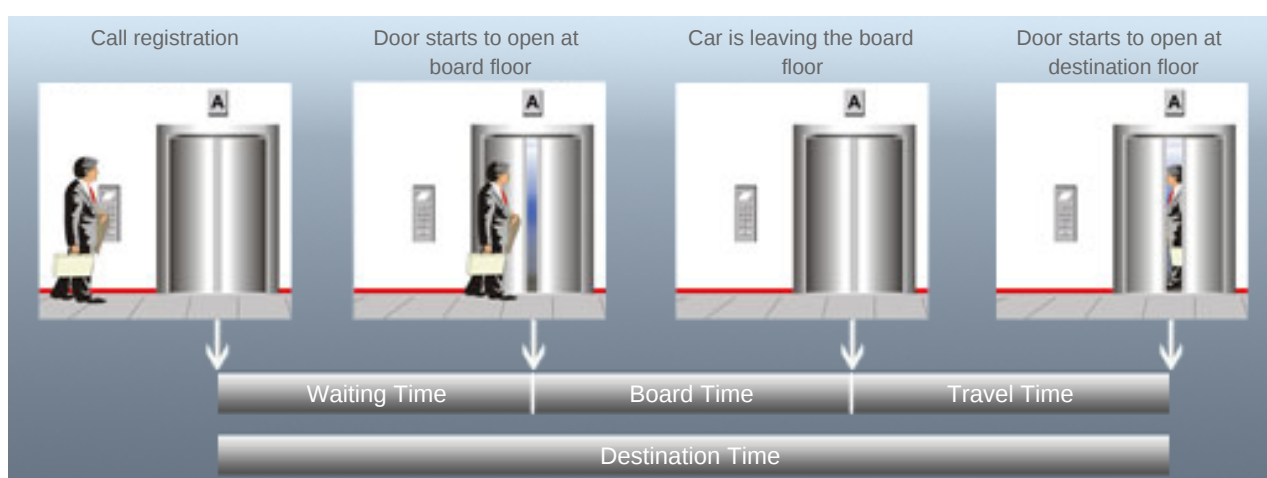
- $P5 = 600 \text{ persons} * (5 \text{ minutes} / 30 \text{ minutes}) = 100 \text{ persons},$
- $HC5 = 100 \text{ persons} / 1000 \text{ persons} = 10.0 \text{ } \%$.

The P5 and HC5 are also measures for the traffic intensity, i.e. the transportation demand. The traffic intensity and the handling capacity are the same as long as the demand is not too high for the lifts.

4.2.2 Waiting Time (WT) and Destination Time (DT)

Waiting time and destination time for an individual passenger are defined as follows:

- waiting time: time from when the passenger registers a landing call (or joins a queue) until the door of the serving lift begins to open on the boarding floor (zero if the door is not closed when the passenger arrives)
- destination time: time from when the passenger registers a landing call (or joins a queue) until the door of the serving lift begins to open on the destination floor



For a number of served passengers in an observed period of time, the average waiting time WT and the average destination time DT are defined in the usual way as mean values of the passengers' individual waiting time and destination time, respectively.

4.2.3 Number of Intermediate Stops (IS)

The number of intermediate stops for an individual passenger is the number of times a lift stops with the passenger between boarding floor and destination floor. For example, for a passenger with a direct (non-stop) trip from boarding floor to destination floor the number of intermediate stops is zero.

For a number of served passengers in an observed period of time, the average number of intermediate stops IS is defined in the usual way as mean value of the passengers' individual number of intermediate stops.

4.2.4 Long Waits (LW)

We define the amount of long waits LW as the percentage of passengers with a waiting time longer than 90 seconds.

4.3 Methods of Traffic Analysis

A traffic analysis should cover a variety of important traffic situations, especially when planning new buildings. Reported values should be as reliable and comparable as possible. However, performance values depend on the methods of the traffic analysis and the basic traffic assumptions.

4.3.1 Simulation vs. calculation methods

In *simulation methods*, a real passenger flow is being replaced by a virtual one, which was created with the help of a random generator and loaded into the same control algorithm as used in a real lift controller. Thus the results can be measured under different traffic conditions and reflect the expected reality to a very large extent.

In contrast, *calculation methods* are based on formulas which only cover a very limited range of traffic situations (usually, only up-peak traffic). The formulas reflect theoretical assumptions rather than a realistic behavior of lift groups, and results are usually too optimistic. Therefore, calculation results should not be compared with simulation results.

Schindler Traffic Analysis Reports are based on simulations in order that the reported results are the most reliable and realistic achievable. Schindler simulations keep the traffic intensity constant over an extended period of time. Simulations are used for the report only if the handling capacity is big enough for the traffic intensity, i.e., no waiting queues are building up.

4.3.2 Wide Range of Traffic Assumptions

The traffic flow in a building keeps changing all the time; no two days are the same. As a rule, traffic depends on many factors (such as location of building, tenant structure, etc.) and may vary considerably during operation of the building. A traffic analysis should take such factors into consideration and try as far as possible to cover future traffic situations.

In a complex building, a single traffic assumption is not sufficient. E.g., it is not sufficient to apply a traffic pattern measured in some other existing building for the design of a new building. In particular, the limits of the handling capacity of the lifts cannot be found by such "spot light" examinations.

Predictions about the range of handling capacity of a lift group can only be made by actually simulating a wide range of traffic situations. A benchmark method applies a reference traffic situation from low to very high traffic intensity; by this, the limits of the lifts' handling capacity can be detected. Schindler uses a benchmark method which gives a neutral system assessment.

Schindler Traffic Analysis Reports are based on different traffic situations (see Section 2) tested by benchmark methods. This ensures that the traffic analysis covers a full range of applications and reports reliable and comparable performance predictions.