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February 17, 2025 **DRMP Job #: 24572**

Cate Farrell
Town of Zebulon
1003 N. Arendell Avenue
Zebulon, NC 27597

Subject: Parking Demand Analysis for Zebulon Mixed-Use – Zebulon, NC

Dear Ms. Farrell:

DRMP has performed a parking demand analysis for the Zebulon Mixed-Use development, which is located east of Zebulon Road and south of Pippin Road in Zebulon, North Carolina. The purpose of this study is to determine if the overall number of parking spaces being proposed can accommodate the peak parking demand for the site upon full build out.

Based on the development information and per discussions between DRMP and the project team, it is understood that the Zebulon Mixed-Use development is expected to consist of a mixture or commercial, restaurant, and residential land uses.

Parking Requirements

Parking requirements were calculated utilizing the Town of Zebulon Unified Development Ordinance (UDO) for Zebulon Mixed-Use. Table 1 summarizes the number of required parking spaces calculated based on the minimum number of motor vehicle spaces required per the following guidelines, which do not consider interaction between uses, time of day, and shared parking. Please see the attached site plan for reference and parking breakdown.

- Multi-family Residences (1.5 per unit + 0.25 guest spaces)
- Restaurant Space (1 per 4 seats)
- Retail Space (1 per 200 square feet)

TABLE 1
REQUIRED MOTOR VEHICLE SPACES

Land Uses	Required Parking Spaces per UDO
101 1-bedroom Multi-family Residences	176.75
139 2+-bedroom Multi-family Residences	243.25
6,100 square feet of Restaurant Space	63
26,000 square feet of Retail Space	130
Total	**613**

Shared Parking

When considering the parking needs for the proposed development, it is important to consider the period of highest demand. The variety of land uses will have different periods for peak demand that allow for the opportunity for the land uses to share parking. To calculate hourly parking demands for the different land uses during a typical weekday and weekend from 6:00 AM to 12:00 AM, data was obtained from the Third Edition of Shared Parking that was published by the Urban Land Institute (ULI) and International Council of Shopping Centers (ICSC). The hourly demand ratios and calculations can be found in the attached tables. Table 2, provides a summary of the expected parking demand during the weekday and weekend peak hours, compared to the number of required parking spaces and the number of parking spaces expected to be provided by the proposed development.

TABLE 2
SHARED PARKING DEMAND SUMMARY

	Weekday Peak Hour (spaces)	Weekend Peak Hour (spaces)
Required Number of Parking Spaces (per Town of Zebulon UDO for Zebulon Mixed-Use)	613	613
Number of Parking Spaces Provided by Proposed Development	406	406
Peak Parking Demand	382	292
20% Parking Reduction	395	395
Number of Excess Parking Spaces Expected	24	114
Number of Excess Parking Spaces Expected with 20% Parking Reduction	13	103

Captive Ratio (Internal Capture)

In addition to the variety of land uses having different periods for peak demand, patrons may visit multiple land uses while visiting the mixed-use development. For example, a consumer that visits a restaurant while shopping. Although visits are made to both land uses, only one parking space is being used. To estimate the captive ratio, internal capture was calculated for the mixed-use development using methodology obtained from the 11.1 Edition of the Trip Generation Manual published by the Institute of Transportation Engineers (ITE) in addition to the National Cooperative Highway Research Program (NCHRP) Report 684. The captive ratios can be found in the attached internal capture tables. To be conservative, the lower internal capture between the weekday AM and PM peak hours was utilized. Refer to the attached trip generation tables and NCHRP worksheets for more detailed information about the proposed development's trip generation potential.

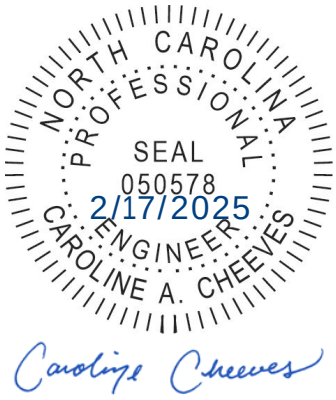
Conclusions

Based on the parking demand analysis, the weekday peak parking demand of 382 spaces is expected to occur from 7:00 PM to 8:00 PM while the weekend peak parking demand of 292 spaces is expected to occur from 1:00 PM to 2:00 PM. When compared to the 406 parking spaces that are to be provided, parking is expected to be at approximately 94% capacity during the weekday peak and 72% capacity during the weekend peak. With 24 additional parking spaces expected to be available during the weekday peak and 114 available parking spaces during the weekend peak, adequate parking should be provided. The development is proposing a 20% reduction in parking. With this reduction the provided parking spaces are still expected to the peak parking demand. During the weekday parking is expected to be at 97% capacity at peak demand and 74% capacity during the weekend peak parking demand.

It is worth noting that this should be considered a conservative estimate. While sharing of parking spaces and captive ratio were considered, a reduction for pedestrians, bicyclists, and/or transit users that could visit the development were not considered, which could further decrease parking demands.

If you have any questions regarding this correspondence, please feel free to contact me at (919) 760-4812.

Sincerely,
DRMP, Inc.



Caroline Cheeves, PE
Traffic Analysis Project Manager

Attachments: Site Plan
Parking Demand Analysis Tables
Trip Generation Tables (Weekday and Weekend)
Internal Capture Worksheets (Weekday and Weekend)

PROJECT DATA TABLE — 11.18.2024

Site Area	14.546 Ac

OUTPARCEL RETAIL

Lot	Lot Area	Bldg SF	Max. Seats	P'kg Provided	Drive-Thru
OP 1	37,967 sf	3,230 sf	140	35	Dual / 263 lf
OP 2	31,363 sf	2,146 sf	88	22	Dual / 248 lf
OP 3	14,281 sf	576 sf	0	6	Single / 157 lf

MIXED - USE RETAIL

Bldg	Stories	Floorplate	Leasable SF	P'kg Required	P'kg Provided
MU 1	1	10,656 sf	9,482 sf	37	37
MU 2	1	10,656 sf	9,482 sf	37	37

MIXED - USE APARTMENTS

Bldg	Stories	1 BR	2 BR	3 BR	Total Units
MU 1	3	24	6	0	30
MU 2	3	24	6	0	30

APARTMENTS

Bldg	Stories	1 BR	2 BR	3 BR	Total Units
A	4	16	36	0	52
B	4	16	32	8	56
C	3	12	9	12	33
D	3	9	24	6	39
Totals		101	113	26	**240**
Mix %		42.1%	47.1%	10.8%	

Parking				
Resident Pk'g (1.5 per unit)	151.5	169.5	39	360
Visitor Pk'g (0.25 per unit)	25.25	28.25	6.5	60
Total Req'd Parking	176.75	197.75	45.5	420
Total Required Parking - Mixed Use & Apts				494
20% Parking Reduction				395.2
Total Parking Provided				406
Compact Parking Provided (max. 30% / 122 spaces)				120
Existing Tree Retention Provided (SF / %)				16,787 / 2.64%
Open Space Provided (SF / %)				8,416 / 1.32%

0 20 40 80 120
SCALE: 1" = 40'

NOVEMBER 2024

Highway 96 Property | Zebulon, North Carolina

PLANWORX ARCHITECTURE

project master plan

TABLE 2
Zebulon Mixed-Use
PARKING DEMAND ANALYSIS - WEEKDAY

Land Uses	Retail, Restaurant, Theater, Hotel, Pharmacy, Residential, and Office	Retail (<400,000 sq. ft.) including Convenience Store with Gas Pumps				Pharmacy			
Unadjusted Total No. of Spaces (1)	613	130		Spaces Total		0		Spaces Total	
Reserved Spaces (Residential)		Visitor	ULI Visitor	Employee	ULI Employee	Visitor	ULI Visitor	Employee	ULI Employee
User Split Ratio (2)		81%	-	19%	-	88%	-	12%	-
User Split Total No. of Spaces	613	105	-	25	-	0	-	0	-
ULI Shared Parking Analysis	No Shared Parking	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]
Time of Day									
6 a.m.		2	1%	3	10%	0	5%	0	20%
7 a.m.		6	5%	4	15%	0	20%	0	30%
8 a.m.		16	15%	7	25%	0	30%	0	40%
9 a.m.		37	35%	12	45%	0	60%	0	80%
10 a.m.		63	60%	19	75%	0	60%	0	90%
11 a.m.		79	75%	24	95%	0	67%	0	100%
12 p.m.		105	100%	25	100%	0	85%	0	100%
1 p.m.		105	100%	25	100%	0	90%	0	100%
2 p.m.		100	95%	25	100%	0	95%	0	100%
3 p.m.		90	85%	25	100%	0	97%	0	100%
4 p.m.		90	85%	25	100%	0	100%	0	100%
5 p.m.		90	85%	25	100%	0	100%	0	100%
6 p.m.		95	90%	25	100%	0	100%	0	80%
7 p.m.		84	80%	25	100%	0	85%	0	50%
8 p.m.		69	65%	23	90%	0	55%	0	35%
9 p.m.		48	45%	15	60%	0	35%	0	20%
10 p.m.		16	15%	10	40%	0	20%	0	20%
11 p.m.		6	5%	5	20%	0	5%	0	20%
12 a.m.		0	0%	0	0%	0	5%	0	20%

Land Uses	Restaurant (Fine)				Restaurant (Family)			
Unadjusted Total No. of Spaces (1)	0		Spaces Total		0		Spaces Total	
Reserved Spaces (Residential)	Visitor	ULI Visitor	Employee	ULI Employee	Visitor	ULI Visitor	Employee	ULI Employee
User Split Ratio (2)	85%	-	15%	-	88%	-	12%	-
User Split Total No. of Spaces	0	-	0	-	0	-	0	-
ULI Shared Parking Analysis	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]
Time of Day								
6 a.m.	0	0%	0	0%	0	25%	0	50%
7 a.m.	0	0%	0	20%	0	50%	0	75%
8 a.m.	0	0%	0	50%	0	60%	0	90%
9 a.m.	0	0%	0	75%	0	75%	0	90%
10 a.m.	0	15%	0	90%	0	85%	0	100%
11 a.m.	0	40%	0	90%	0	90%	0	100%
12 p.m.	0	75%	0	90%	0	100%	0	100%
1 p.m.	0	75%	0	90%	0	90%	0	100%
2 p.m.	0	65%	0	90%	0	50%	0	100%
3 p.m.	0	40%	0	75%	0	45%	0	75%
4 p.m.	0	50%	0	75%	0	45%	0	75%
5 p.m.	0	75%	0	100%	0	75%	0	95%
6 p.m.	0	95%	0	100%	0	80%	0	95%
7 p.m.	0	100%	0	100%	0	80%	0	95%
8 p.m.	0	100%	0	100%	0	80%	0	95%
9 p.m.	0	100%	0	100%	0	60%	0	80%
10 p.m.	0	95%	0	100%	0	55%	0	65%
11 p.m.	0	75%	0	85%	0	75%	0	65%
12 a.m.	0	25%	0	35%	0	25%	0	35%

Land Uses	Restaurant (Fast Casual/Fast Food)				Movie Theater			
Unadjusted Total No. of Spaces (1)	63		Spaces Total		0		Spaces Total	
Reserved Spaces (Residential)	Visitor	ULI Visitor	Employee	ULI Employee	Visitor	ULI Visitor	Employee	ULI Employee
User Split Ratio (2)	86%	-	14%	-	90%	-	10%	-
User Split Total No. of Spaces	54	-	9	-	0	-	0	-
ULI Shared Parking Analysis	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]
Time of Day								
6 a.m.	3	5%	2	20%	0	0%	0	0%
7 a.m.	6	10%	2	20%	0	0%	0	0%
8 a.m.	11	20%	3	30%	0	0%	0	0%
9 a.m.	17	30%	4	40%	0	0%	0	0%
10 a.m.	30	55%	7	75%	0	0%	0	0%
11 a.m.	46	85%	9	100%	0	0%	0	10%
12 p.m.	54	100%	9	100%	0	20%	0	50%
1 p.m.	54	100%	9	100%	0	45%	0	60%
2 p.m.	49	90%	9	95%	0	55%	0	60%
3 p.m.	33	60%	7	70%	0	55%	0	75%
4 p.m.	30	55%	6	60%	0	55%	0	75%
5 p.m.	33	60%	7	70%	0	60%	0	100%
6 p.m.	46	85%	9	90%	0	60%	0	100%
7 p.m.	44	80%	9	90%	0	80%	0	100%
8 p.m.	27	50%	6	60%	0	100%	0	100%
9 p.m.	17	30%	4	40%	0	100%	0	100%
10 p.m.	11	20%	3	30%	0	80%	0	100%
11 p.m.	6	10%	2	20%	0	65%	0	70%
12 a.m.	3	5%	2	20%	0	40%	0	50%

Land Uses	Live Theater				Residential (3 Bedroom)			
Unadjusted Total No. of Spaces (1)	0		Spaces Total		0		Spaces Total	
Reserved Spaces (Residential)	Visitor	ULI Visitor	Employee	ULI Employee	Visitor	ULI Visitor	Employee	ULI Employee
User Split Ratio (2)	81%	-	19%	-	4%	-	96%	-
User Split Total No. of Spaces	0	-	0	-	0	-	0	-
ULI Shared Parking Analysis	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]
Time of Day								
6 a.m.	0	0%	0	0%	0	0%	0	95%
7 a.m.	0	0%	0	10%	0	10%	0	85%
8 a.m.	0	0%	0	10%	0	20%	0	75%
9 a.m.	0	1%	0	20%	0	20%	0	65%
10 a.m.	0	1%	0	20%	0	20%	0	60%
11 a.m.	0	1%	0	20%	0	20%	0	55%
12 p.m.	0	1%	0	30%	0	20%	0	50%
1 p.m.	0	1%	0	30%	0	20%	0	50%
2 p.m.	0	1%	0	30%	0	20%	0	50%
3 p.m.	0	1%	0	30%	0	20%	0	55%
4 p.m.	0	1%	0	30%	0	20%	0	60%
5 p.m.	0	1%	0	30%	0	40%	0	65%
6 p.m.	0	1%	0	100%	0	60%	0	70%
7 p.m.	0	25%	0	100%	0	100%	0	75%
8 p.m.	0	100%	0	100%	0	100%	0	80%
9 p.m.	0	100%	0	100%	0	100%	0	85%
10 p.m.	0	0%	0	30%	0	100%	0	95%
11 p.m.	0	0%	0	10%	0	80%	0	97%
12 a.m.	0	0%	0	5%	0	50%	0	100%

Land Uses	Medical Office				Hotel - Leisure			
Unadjusted Total No. of Spaces (1)	0		Spaces Total		0		Spaces Total	
Reserved Spaces (Residential)	Visitor	ULI Visitor	Employee	ULI Employee	Visitor	ULI Visitor	Employee	ULI Employee
User Split Ratio (2)	67%	-	33%	-	87%	-	13%	-
User Split Total No. of Spaces	0	-	0	-	0	-	0	-
ULI Shared Parking Analysis	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]
Time of Day								
6 a.m.	0	0%	0	0%	0	95%	0	10%
7 a.m.	0	0%	0	20%	0	95%	0	30%
8 a.m.	0	90%	0	100%	0	90%	0	100%
9 a.m.	0	90%	0	100%	0	80%	0	100%
10 a.m.	0	100%	0	100%	0	70%	0	100%
11 a.m.	0	100%	0	100%	0	70%	0	100%
12 p.m.	0	30%	0	100%	0	65%	0	100%
1 p.m.	0	90%	0	100%	0	65%	0	100%
2 p.m.	0	100%	0	100%	0	70%	0	100%
3 p.m.	0	100%	0	100%	0	70%	0	100%
4 p.m.	0	90%	0	100%	0	75%	0	70%
5 p.m.	0	80%	0	100%	0	80%	0	70%
6 p.m.	0	67%	0	67%	0	85%	0	40%
7 p.m.	0	30%	0	30%	0	85%	0	20%
8 p.m.	0	15%	0	15%	0	90%	0	20%
9 p.m.	0	0%	0	0%	0	95%	0	20%
10 p.m.	0	0%	0	0%	0	95%	0	20%
11 p.m.	0	0%	0	0%	0	100%	0	10%
12 a.m.	0	0%	0	0%	0	100%	0	5%

Land Uses	Residential (1 Bedroom)				Residential (2 Bedrooms)			
Unadjusted Total No. of Spaces (1)	176.75		Spaces Total		243.25		Spaces Total	
Reserved Spaces (Residential)	Visitor	ULI Visitor	Resident	ULI Employee	Visitor	ULI Visitor	Resident	ULI Employee
User Split Ratio (2)	10%	-	90%	-	6%	-	94%	-
User Split Total No. of Spaces	18	-	159	-	14	-	229	-
ULI Shared Parking Analysis	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]
Time of Day								
6 a.m.	0	0%	152	95%	0	0%	218	95%
7 a.m.	2	10%	136	85%	2	10%	195	85%
8 a.m.	4	20%	120	75%	3	20%	172	75%
9 a.m.	4	20%	104	65%	3	20%	149	65%
10 a.m.	4	20%	96	60%	3	20%	138	60%
11 a.m.	4	20%	88	55%	3	20%	126	55%
12 p.m.	4	20%	80	50%	3	20%	115	50%
1 p.m.	4	20%	80	50%	3	20%	115	50%
2 p.m.	4	20%	80	50%	3	20%	115	50%
3 p.m.	4	20%	88	55%	3	20%	126	55%
4 p.m.	4	20%	96	60%	3	20%	138	60%
5 p.m.	8	40%	104	65%	6	40%	149	65%
6 p.m.	11	60%	112	70%	9	60%	161	70%
7 p.m.	18	100%	120	75%	14	100%	172	75%
8 p.m.	18	100%	128	80%	14	100%	184	80%
9 p.m.	18	100%	136	85%	14	100%	195	85%
10 p.m.	18	100%	152	95%	14	100%	218	95%
11 p.m.	15	80%	155	97%	12	80%	223	97%
12 a.m.	9	50%	159	100%	7	50%	229	100%

Land Uses	Office (100,000-500,000 sq. ft.)				Mosaic at Chatham Park		
Unadjusted Total No. of Spaces (1)	0		Spaces Total		613	Spaces Total	
Reserved Spaces (Residential)	Visitor	ULI Visitor	Employee	ULI Employee	Sub Total	Captive Ratio	Total Spaces Required with Shared Parking During the Weekday
User Split Ratio (2)	7%	-	93%	-			
User Split Total No. of Spaces	0	-	0	-			
ULI Shared Parking Analysis	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]		x.x%	
Time of Day							
6 a.m.	0	0%	0	3%	380	21.4%	299
7 a.m.	0	1%	0	15%	353	21.4%	278
8 a.m.	0	20%	0	50%	336	21.4%	265
9 a.m.	0	60%	0	90%	330	21.4%	260
10 a.m.	0	100%	0	100%	360	21.4%	283
11 a.m.	0	45%	0	100%	379	21.4%	298
12 p.m.	0	15%	0	85%	395	21.4%	311
1 p.m.	0	45%	0	85%	395	21.4%	311
2 p.m.	0	95%	0	95%	385	21.4%	303
3 p.m.	0	45%	0	95%	376	21.4%	296
4 p.m.	0	15%	0	85%	392	21.4%	309
5 p.m.	0	10%	0	60%	422	21.4%	332
6 p.m.	0	5%	0	25%	468	21.4%	368
7 p.m.	0	2%	0	15%	486	21.4%	382
8 p.m.	0	1%	0	5%	469	21.4%	369
9 p.m.	0	0%	0	3%	447	21.4%	352
10 p.m.	0	0%	0	1%	442	21.4%	348
11 p.m.	0	0%	0	0%	424	21.4%	334
12 a.m.	0	0%	0	0%	409	21.4%	322

TABLE 2
MOSAIC AT CHATHAM PARK
PARKING DEMAND ANALYSIS - WEEKEND

Land Uses	Retail, Restaurant, Theater, Hotel, Pharmacy, Residential, and Office	Retail (<400,000 sq. ft.) including Convenience Store with Gas Pumps				Pharmacy			
Unadjusted Total No. of Spaces (1)	613	130		Spaces Total		0		Spaces Total	
Reserved Spaces (Convenience Mart + Gas)		Visitor	ULI Visitor	Employee	ULI Employee	Visitor	ULI Visitor	Employee	ULI Employee
User Split Ratio (2)		80%	-	20%	-	88%	-	12%	-
User Split Total No. of Spaces	613	104	-	26	-	0	-	0	-
ULI Shared Parking Analysis	No Shared Parking	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]
Time of Day									
6 a.m.	0	2	1%	3	10%	0	8%	0	15%
7 a.m.	0	6	5%	4	15%	0	25%	0	35%
8 a.m.	0	32	30%	11	40%	0	50%	0	70%
9 a.m.	0	52	50%	20	75%	0	75%	0	85%
10 a.m.	0	73	70%	23	85%	0	95%	0	100%
11 a.m.	0	94	90%	25	95%	0	100%	0	100%
12 p.m.	0	99	95%	26	100%	0	100%	0	100%
1 p.m.	0	104	100%	26	100%	0	100%	0	100%
2 p.m.	0	104	100%	26	100%	0	100%	0	85%
3 p.m.	0	99	95%	26	100%	0	100%	0	75%
4 p.m.	0	94	90%	26	100%	0	100%	0	60%
5 p.m.	0	84	80%	25	95%	0	90%	0	55%
6 p.m.	0	78	75%	23	85%	0	50%	0	45%
7 p.m.	0	73	70%	21	80%	0	33%	0	40%
8 p.m.	0	68	65%	20	75%	0	25%	0	30%
9 p.m.	0	52	50%	17	65%	0	15%	0	20%
10 p.m.	0	32	30%	12	45%	0	5%	0	10%
11 p.m.	0	11	10%	4	15%	0	4%	0	10%
12 a.m.	0	0	0%	0	0%	0	3%	0	5%

Land Uses	Restaurant (Fine)				Restaurant (Family)				Restaurant (Fast Casual/Fast Food)			
Unadjusted Total No. of Spaces (1)	0		Spaces Total		0		Spaces Total		63		Spaces Total	
Reserved Spaces (Convenience Mart + Gas)	Visitor	ULI Visitor	Employee	ULI Employee	Visitor	ULI Visitor	Employee	ULI Employee	Visitor	ULI Visitor	Employee	ULI Employee
User Split Ratio (2)	86%	-	14%	-	88%	-	12%	-	86%	-	14%	-
User Split Total No. of Spaces	0	-	0	-	0	-	0	-	54	-	9	-
ULI Shared Parking Analysis	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]
Time of Day												
6 a.m.	0	0%	0	0%	0	10%	0	50%	3	5%	2	15%
7 a.m.	0	0%	0	20%	0	25%	0	75%	6	10%	2	20%
8 a.m.	0	0%	0	30%	0	45%	0	90%	11	20%	3	30%
9 a.m.	0	0%	0	60%	0	70%	0	90%	17	30%	4	40%
10 a.m.	0	0%	0	75%	0	90%	0	100%	30	55%	7	75%
11 a.m.	0	15%	0	75%	0	90%	0	100%	46	85%	9	100%
12 p.m.	0	50%	0	75%	0	100%	0	100%	54	100%	9	100%
1 p.m.	0	55%	0	75%	0	85%	0	100%	54	100%	9	100%
2 p.m.	0	45%	0	75%	0	65%	0	100%	49	90%	9	95%
3 p.m.	0	45%	0	75%	0	40%	0	75%	33	60%	7	70%
4 p.m.	0	45%	0	75%	0	45%	0	75%	30	55%	6	60%
5 p.m.	0	60%	0	100%	0	60%	0	95%	33	60%	7	70%
6 p.m.	0	90%	0	100%	0	70%	0	95%	46	85%	9	90%
7 p.m.	0	95%	0	100%	0	70%	0	95%	44	80%	9	90%
8 p.m.	0	100%	0	100%	0	65%	0	95%	27	50%	6	60%
9 p.m.	0	90%	0	100%	0	30%	0	80%	17	30%	4	40%
10 p.m.	0	90%	0	100%	0	25%	0	65%	11	20%	3	30%
11 p.m.	0	90%	0	85%	0	15%	0	65%	6	10%	2	20%
12 a.m.	0	50%	0	50%	0	10%	0	35%	3	5%	2	20%

Land Uses	Movie Theater				Live Theater				Residential (3 Bedrooms)			
Unadjusted Total No. of Spaces (1)	0		Spaces Total		0		Spaces Total		0		Spaces Total	
Reserved Spaces (Convenience Mart + Gas)	Visitor	ULI Visitor	Employee	ULI Employee	Visitor	ULI Visitor	Employee	ULI Employee	Visitor	ULI Visitor	Employee	ULI Employee
User Split Ratio (2)	97%	-	3%	-	83%	-	18%	-	6%	-	94%	-
User Split Total No. of Spaces	0	-	0	-	0	-	0	-	0	-	0	-
ULI Shared Parking Analysis	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]
Time of Day												
6 a.m.	0	0%	0	0%	0	0%	0	0%	0	80%	0	50%
7 a.m.	0	0%	0	0%	0	0%	0	10%	0	45%	0	50%
8 a.m.	0	0%	0	0%	0	0%	0	10%	0	35%	0	50%
9 a.m.	0	0%	0	0%	0	1%	0	20%	0	50%	0	50%
10 a.m.	0	0%	0	0%	0	1%	0	20%	0	35%	0	50%
11 a.m.	0	0%	0	0%	0	1%	0	20%	0	50%	0	50%
12 p.m.	0	20%	0	50%	0	1%	0	30%	0	50%	0	50%
1 p.m.	0	45%	0	60%	0	17%	0	100%	0	30%	0	50%
2 p.m.	0	55%	0	60%	0	67%	0	100%	0	25%	0	50%
3 p.m.	0	55%	0	75%	0	67%	0	100%	0	30%	0	50%
4 p.m.	0	55%	0	75%	0	1%	0	30%	0	55%	0	75%
5 p.m.	0	60%	0	100%	0	1%	0	30%	0	100%	0	100%
6 p.m.	0	60%	0	100%	0	1%	0	100%	0	95%	0	100%
7 p.m.	0	80%	0	100%	0	25%	0	100%	0	60%	0	75%
8 p.m.	0	100%	0	100%	0	100%	0	100%	0	30%	0	50%
9 p.m.	0	100%	0	100%	0	100%	0	100%	0	10%	0	20%
10 p.m.	0	100%	0	100%	0	0%	0	30%	0	1%	0	20%
11 p.m.	0	80%	0	70%	0	0%	0	10%	0	1%	0	20%
12 a.m.	0	50%	0	50%	0	0%	0	5%	0	0%	0	0%

Land Uses	Medical Office				Hotel - Leisure				Residential (1 Bedroom)			
Unadjusted Total No. of Spaces (1)	0		Spaces Total		0		Spaces Total		176.75		Spaces Total	
Reserved Spaces (Convenience Mart + Gas)	Visitor	ULI Visitor	Employee	ULI Employee	Visitor	ULI Visitor	Employee	ULI Employee	Visitor	ULI Visitor	Resident	ULI Employee
User Split Ratio (2)	67%	-	33%	-	87%	-	13%	-	14%	-	86%	-
User Split Total No. of Spaces	0	-	0	-	0	-	0	-	25	-	152	-
ULI Shared Parking Analysis	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]
Time of Day												
6 a.m.	0	0%	0	0%	0	95%	0	10%	0	0%	137	90%
7 a.m.	0	0%	0	20%	0	95%	0	30%	5	20%	130	85%
8 a.m.	0	90%	0	100%	0	90%	0	100%	5	20%	122	80%
9 a.m.	0	90%	0	100%	0	80%	0	100%	5	20%	114	75%
10 a.m.	0	100%	0	100%	0	70%	0	100%	5	20%	107	70%
11 a.m.	0	100%	0	100%	0	70%	0	100%	5	20%	105	69%
12 p.m.	0	30%	0	100%	0	65%	0	100%	5	20%	104	68%
1 p.m.	0	0%	0	0%	0	65%	0	100%	5	20%	102	67%
2 p.m.	0	0%	0	0%	0	70%	0	100%	5	20%	101	66%
3 p.m.	0	0%	0	0%	0	70%	0	100%	5	20%	84	55%
4 p.m.	0	0%	0	0%	0	75%	0	70%	5	20%	92	60%
5 p.m.	0	0%	0	0%	0	80%	0	70%	10	40%	84	55%
6 p.m.	0	0%	0	0%	0	85%	0	40%	15	60%	76	50%
7 p.m.	0	0%	0	0%	0	85%	0	20%	25	100%	84	55%
8 p.m.	0	0%	0	0%	0	90%	0	20%	25	100%	99	65%
9 p.m.	0	0%	0	0%	0	95%	0	20%	25	100%	114	75%
10 p.m.	0	0%	0	0%	0	95%	0	20%	25	100%	130	85%
11 p.m.	0	0%	0	0%	0	100%	0	10%	20	80%	137	90%
12 a.m.	0	0%	0	0%	0	100%	0	5%	13	50%	152	100%

Land Uses	Residential (2 Bedrooms)				Office (100,000-500,000 sq. ft.)				Mosaic at Chatham Park		
Unadjusted Total No. of Spaces (1)	243.25		Spaces Total		0		Spaces Total		613	Spaces Total	
Reserved Spaces (Convenience Mart + Gas)	Visitor	ULI Visitor	Resident	ULI Employee	Visitor	ULI Visitor	Employee	ULI Employee	Sub Total	Captive Ratio	Total Spaces Required with Shared Parking During the Weekday
User Split Ratio (2)	8%	-	92%	-	9%	-	91%	-			
User Split Total No. of Spaces	20	-	223	-	0	-	0	-			
ULI Shared Parking Analysis	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]	Adj. Total	Adj. Rate[3]		x.x%	
Time of Day											
6 a.m.	0	0%	201	90%	0	0%	0	0%	348	35.7%	224
7 a.m.	4	20%	190	85%	0	20%	0	20%	347	35.7%	224
8 a.m.	4	20%	179	80%	0	60%	0	60%	367	35.7%	236
9 a.m.	4	20%	168	75%	0	80%	0	80%	384	35.7%	247
10 a.m.	4	20%	157	70%	0	90%	0	90%	406	35.7%	262
11 a.m.	4	20%	154	69%	0	100%	0	100%	442	35.7%	285
12 p.m.	4	20%	152	68%	0	90%	0	90%	453	35.7%	292
1 p.m.	4	20%	150	67%	0	80%	0	80%	454	35.7%	292
2 p.m.	4	20%	148	66%	0	60%	0	60%	446	35.7%	287
3 p.m.	4	20%	123	55%	0	40%	0	40%	381	35.7%	245
4 p.m.	4	20%	134	60%	0	20%	0	20%	391	35.7%	252
5 p.m.	8	40%	123	55%	0	10%	0	10%	374	35.7%	241
6 p.m.	12	60%	112	50%	0	5%	0	5%	371	35.7%	239
7 p.m.	20	100%	123	55%	0	0%	0	0%	399	35.7%	257
8 p.m.	20	100%	145	65%	0	0%	0	0%	410	35.7%	264
9 p.m.	20	100%	168	75%	0	0%	0	0%	417	35.7%	269
10 p.m.	20	100%	190	85%	0	0%	0	0%	423	35.7%	272
11 p.m.	16	80%	201	90%	0	0%	0	0%	397	35.7%	256
12 a.m.	10	50%	223	100%	0	0%	0	0%	403	35.7%	260

Table 1: Site Trip Generation

TOTAL TRIPS

Code	Land Use	Size	Unit	Daily			AM Peak			PM Peak		
				In	Out	Total	In	Out	Total	In	Out	Total
220	Apartments	240	units	807	807	1,614	23	74	97	78	46	124
822	Strip Retail	26.0	KSF	708	708	1,416	37	24	61	86	85	171
932	High-Turnover Restaurant	5.5	KSF	295	295	590	29	24	53	31	19	50
937	Coffee/Donut Shop w/ Drive-Thru	0.6	KSF	160	160	320	27	25	52	12	11	23
						0			0			0
						0			0			0
						0			0			0
						0			0			0
						0			0			0
Total Trips				**1,970**	**1,970**	**3,940**	**116**	**147**	**263**	**207**	**161**	**368**

Internal Capture Rate (Table 5A): *AM* 15%, *PM* 16%

INTERNAL CAPTURE

Code	Land Use	Size	Unit	Daily			AM Peak			PM Peak		
				In	Out	Total	In	Out	Total	In	Out	Total
220	Apartments	240	units				4	11	15	13	7	20
822	Strip Retail	26	KSF				5	4	9	14	13	27
932	High-Turnover Restaurant	6	KSF				4	4	8	5	3	8
937	Coffee/Donut Shop w/ Drive-Thru	1	KSF				4	4	8	2	2	4
Total Trips				**0**	**0**	**0**	**17**	**23**	**40**	**34**	**25**	**59**

EXTERNAL TRIPS

Code	Land Use	Size	Unit	Daily			AM Peak			PM Peak		
				In	Out	Total	In	Out	Total	In	Out	Total
220	Apartments	240	units	807	807	1614	19	63	82	65	39	104
822	Strip Retail	26	KSF	708	708	1416	32	20	52	72	72	144
932	High-Turnover Restaurant	6	KSF	295	295	590	25	20	45	26	16	42
937	Coffee/Donut Shop w/ Drive-Thru	1	KSF	160	160	320	23	21	44	10	9	19
Total Trips				**1,970**	**1,970**	**3,940**	**99**	**124**	**223**	**173**	**136**	**309**

PASS-BY RATES

RATE	Land Use	ITE Pass-By Rates		
		Daily	AM	PM
A	Apartments	0.0%	0.0%	0.0%
B	Strip Retail	0.0%	0.0%	29.0%
C	High-Turnover Restaurant	0.0%	0.0%	43.0%
D	Coffee/Donut Shop w/ Drive-Thru	0.0%	90.0%	98.0%
E		0.0%	0.0%	0.0%
F		0.0%	0.0%	0.0%

PASS-BY TRIPS

RATE	Land Use	Size	Unit	24 Hour Volumes			AM Peak Hour Trips			PM Peak Hour Trips		
				Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
A	Apartments	240	units	0	0	0	0	0	0	0	0	0
B	Strip Retail	26	KSF	0	0	0	0	0	0	21	21	42
C	High-Turnover Restaurant	6	KSF	0	0	0	0	0	0	9	9	18
D	Coffee/Donut Shop w/ Drive-Thru	1	KSF	0	0	0	20	20	40	9	9	18
Pass-By Trips				0	0	0	20	20	40	39	39	78
Applied Pass-By Trips				0	0	0	20	20	40	39	39	78

TRIP GENERATION SUMMARY

Code	Land Use	Size	Unit	Daily			AM Peak			PM Peak		
				In	Out	Total	In	Out	Total	In	Out	Total
220	Apartments	240	units	807	807	1614	23	74	97	78	46	124
822	Strip Retail	26	KSF	708	708	1416	37	24	61	86	85	171
932	High-Turnover Restaurant	6	KSF	295	295	590	29	24	53	31	19	50
937	Coffee/Donut Shop w/ Drive-Thru	1	KSF	160	160	320	27	25	52	12	11	23
Total Trips				**1,970**	**1,970**	**3,940**	**116**	**147**	**263**	**207**	**161**	**368**
Internal Capture (15% AM & 16% PM)				*0*	*0*	*0*	*-17*	*-23*	*-40*	*-34*	*-25*	*-59*
Total External Trips				**1,970**	**1,970**	**3,940**	**99**	**124**	**223**	**173**	**136**	**309**
Pass-By Trips				0	0	0	-20	-20	-40	-39	-39	-78
Total Primary Trips				***1,970***	***1,970***	***3,940***	***79***	***104***	***183***	***134***	***97***	***231***

Table 1: Site Trip Generation

TOTAL TRIPS

Code	Land Use	Size	Unit	Daily						Saturday Peak		
				In	Out	Total				In	Out	Total
220	Apartments	240	units	807	807	1,614				546	546	1,092
822	Strip Retail	26.0	KSF	708	708	1,416				87	84	171
932	High-Turnover Restaurant	5.5	KSF	295	295	590				337	336	673
937	Coffee/Donut Shop w/ Drive-Thru	0.6	KSF	160	160	320				27	26	53
						0						0
						0						0
						0						0
						0						0
						0						0
Total Trips				**1,970**	**1,970**	**3,940**				**997**	**992**	**1,989**

Internal Capture Rate (Table 5A): *AM* 0%, *PM* 15%

INTERNAL CAPTURE

Code	Land Use	Size	Unit	Daily			AM Peak			PM Peak		
				In	Out	Total	In	Out	Total	In	Out	Total
220	Apartments	240	units				0	0	0	82	82	164
822	Strip Retail	26	KSF				0	0	0	13	13	26
932	High-Turnover Restaurant	6	KSF				0	0	0	51	50	101
937	Coffee/Donut Shop w/ Drive-Thru	1	KSF				0	0	0	4	4	8
Total Trips				**0**	**0**	**0**	**0**	**0**	**0**	**150**	**149**	**299**

EXTERNAL TRIPS

Code	Land Use	Size	Unit	Daily			AM Peak			PM Peak		
				In	Out	Total	In	Out	Total	In	Out	Total
220	Apartments	240	units	807	807	1614	0	0	0	464	464	928
822	Strip Retail	26	KSF	708	708	1416	0	0	0	74	71	145
932	High-Turnover Restaurant	6	KSF	295	295	590	0	0	0	286	286	572
937	Coffee/Donut Shop w/ Drive-Thru	1	KSF	160	160	320	0	0	0	23	22	45
Total Trips				**1,970**	**1,970**	**3,940**	**0**	**0**	**0**	**847**	**843**	**1,690**

PASS-BY RATES

RATE	Land Use	ITE Pass-By Rates		
		Daily	AM	PM
A	Apartments	0.0%	0.0%	0.0%
B	Strip Retail	0.0%	0.0%	29.0%
C	High-Turnover Restaurant	0.0%	0.0%	43.0%
D	Coffee/Donut Shop w/ Drive-Thru	0.0%	90.0%	98.0%
E		0.0%	0.0%	0.0%
F		0.0%	0.0%	0.0%

PASS-BY TRIPS

RATE	Land Use	Size	Unit	24 Hour Volumes			AM Peak Hour Trips			PM Peak Hour Trips		
				Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
A	Apartments	240	units	0	0	0	0	0	0	0	0	0
B	Strip Retail	26	KSF	0	0	0	0	0	0	21	21	42
C	High-Turnover Restaurant	6	KSF	0	0	0	0	0	0	123	123	246
D	Coffee/Donut Shop w/ Drive-Thru	1	KSF	0	0	0	0	0	0	22	22	44
Pass-By Trips				0	0	0	0	0	0	166	166	332
Applied Pass-By Trips				0	0	0	0	0	0	166	166	332

TRIP GENERATION SUMMARY

Code	Land Use	Size	Unit	Daily			AM Peak			PM Peak		
				In	Out	Total	In	Out	Total	In	Out	Total
220	Apartments	240	units	807	807	1614				546	546	1092
822	Strip Retail	26	KSF	708	708	1416				87	84	171
932	High-Turnover Restaurant	6	KSF	295	295	590				337	336	673
937	Coffee/Donut Shop w/ Drive-Thru	1	KSF	160	160	320				27	26	53
Total Trips				**1,970**	**1,970**	**3,940**	**0**	**0**	**0**	**997**	**992**	**1,989**
Internal Capture (0% AM & 15% PM)				*0*	*0*	*0*	*0*	*0*	*0*	*-150*	*-149*	*-299*
Total External Trips				**1,970**	**1,970**	**3,940**	**0**	**0**	**0**	**847**	**843**	**1,690**
Pass-By Trips				0	0	0	0	0	0	-166	-166	-332
Total Primary Trips				***1,970***	***1,970***	***3,940***	***0***	***0***	***0***	***681***	***677***	***1,358***

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Zebulon Road Mixed-Use	**Organization:**	DRMP
Project Location:	Zebulon NC	**Performed By:**	GB
Scenario Description:		**Date:**	11/25/2024
Analysis Year:	2029	**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0	0	0
Retail	822	26	KSF	61	37	24
Restaurant	932/937	6	KSF	105	56	49
Cinema/Entertainment				0	0	0
Residential	220	240	du	97	23	74
Hotel				0	0	0
All Other Land Uses[2]				0	0	0
				263	116	147

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office	1.10	0%	0%	1.10	0%	0%
Retail	1.10	0%	0%	1.10	0%	0%
Restaurant	1.10	0%	0%	1.10	0%	0%
Cinema/Entertainment	1.10	0%	0%	1.10	0%	0%
Residential	1.10	0%	0%	1.10	0%	0%
Hotel	1.10	0%	0%	1.10	0%	0%
All Other Land Uses[2]	1.10	0%	0%	1.10	0%	0%

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		3	0	1	0
Restaurant	0	3		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	12	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	289	128	161
Internal Capture Percentage	15%	16%	13%
External Vehicle-Trips[5]	225	98	127
External Transit-Trips[6]	0	0	0
External Non-Motorized Trips[6]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	10%	15%
Restaurant	24%	7%
Cinema/Entertainment	N/A	N/A
Residential	8%	16%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual* , published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Zebulon Road Mixed-Use	**Organization:**	DRMP
Project Location:	Zebulon NC	**Performed By:**	GB
Scenario Description:		**Date:**	11/25/2024
Analysis Year:	2029	**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0	0	0
Retail	822	26	KSF	171	86	85
Restaurant	932/937	6	KSF	73	43	30
Cinema/Entertainment				0	0	0
Residential	220	240	du	124	78	46
Hotel				0	0	0
All Other Land Uses[2]				0	0	0
				368	207	161

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office	1.10	0%	0%	1.10	0%	0%
Retail	1.10	0%	0%	1.10	0%	0%
Restaurant	1.10	0%	0%	1.10	0%	0%
Cinema/Entertainment	1.10	0%	0%	1.10	0%	0%
Residential	1.10	0%	0%	1.10	0%	0%
Hotel	1.10	0%	0%	1.10	0%	0%
All Other Land Uses[2]	1.10	0%	0%	1.10	0%	0%

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		4000	4000		4000	
Retail					4000	
Restaurant					4000	
Cinema/Entertainment					4000	
Residential		4000	4000			
Hotel					4000	

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		14	0	2	0
Restaurant	0	14		0	1	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	1	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	406	228	178
Internal Capture Percentage	16%	14%	19%
External Vehicle-Trips[5]	309	177	132
External Transit-Trips[6]	0	0	0
External Non-Motorized Trips[6]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	16%	17%
Restaurant	32%	45%
Cinema/Entertainment	N/A	N/A
Residential	3%	4%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

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NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Zebulon Road Mixed-Use	**Organization:**	DRMP
Project Location:	Zebulon NC	**Performed By:**	GB
Scenario Description:		**Date:**	2/4/2025
Analysis Year:	2029	**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail	822	26	KSF	0		
Restaurant	932/937	6	KSF	0		
Cinema/Entertainment				0		
Residential	220	240	du	0		
Hotel				0		
All Other Land Uses[2]				0		
				0	0	0

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office	1.10	0%	0%	1.10	0%	0%
Retail	1.10	0%	0%	1.10	0%	0%
Restaurant	1.10	0%	0%	1.10	0%	0%
Cinema/Entertainment	1.10	0%	0%	1.10	0%	0%
Residential	1.10	0%	0%	1.10	0%	0%
Hotel	1.10	0%	0%	1.10	0%	0%
All Other Land Uses[2]	1.10	0%	0%	1.10	0%	0%

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	0	0	0
Internal Capture Percentage	0%	0%	0%
External Vehicle-Trips[5]	0	0	0
External Transit-Trips[6]	0	0	0
External Non-Motorized Trips[6]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	N/A	N/A
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	N/A	N/A
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual* , published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

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NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Zebulon Road Mixed-Use	**Organization:**	DRMP
Project Location:	Zebulon NC	**Performed By:**	GB
Scenario Description:		**Date:**	2/4/2025
Analysis Year:	2029	**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0	0	0
Retail	822	26	KSF	171	87	84
Restaurant	932/937	6	KSF	726	364	362
Cinema/Entertainment				0	0	0
Residential	220	240	du	171	87	84
Hotel				0	0	0
All Other Land Uses[2]				0	0	0
				1,068	538	530

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office	1.10	0%	0%	1.10	0%	0%
Retail	1.10	0%	0%	1.10	0%	0%
Restaurant	1.10	0%	0%	1.10	0%	0%
Cinema/Entertainment	1.10	0%	0%	1.10	0%	0%
Residential	1.10	0%	0%	1.10	0%	0%
Hotel	1.10	0%	0%	1.10	0%	0%
All Other Land Uses[2]	1.10	0%	0%	1.10	0%	0%

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		4000	4000		4000	
Retail					4000	
Restaurant					4000	
Cinema/Entertainment					4000	
Residential		4000	4000			
Hotel					4000	

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		27	0	2	0
Restaurant	0	48		0	7	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	2	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	1,174	592	582
Internal Capture Percentage	15%	15%	15%
External Vehicle-Trips[5]	909	459	450
External Transit-Trips[6]	0	0	0
External Non-Motorized Trips[6]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	51%	32%
Restaurant	7%	14%
Cinema/Entertainment	N/A	N/A
Residential	9%	3%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

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