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July 8, 2020
Revised October 12, 2020

Mr. Jim Harrison, Principal
Northshore Market Investors, LLC
2020 21st Avenue, Suite 202
Nashville, TN 37212

**RE: NORTSHORE TOWN CENTER CLINGMANS DOME DRIVE & HORIZON DRIVE
RESIDENTIAL DEVELOPMENT REVISION, TRAFFIC STUDY, KNOXVILLE, TN.**

Dear Mr. Harrison:

This letter report is a summary of the anticipated trip generation for the proposed development of an additional 35 single-family units (sfu) in the Northshore Town Center located in southwest Knoxville adjacent to the Pellissippi Parkway (I-140) and Northshore Drive (SR 332) interchange. **Figure 1** illustrates this location. These 35sfu are proposed in addition to an existing 158 lots. The previously planned 325 multi-family residential development has been replaced by single-family residential, a variation of the uses assumed for the original Northshore Town Center traffic study approved March of 2011 and previous updates. The trip generation of the Northshore Town Center is updated in this letter to reflect the development of the proposed additional 35sfu for a residential subdivision of 193 total single-family units. The proposed site plan is illustrated in **Figure 2**. The trip generation included in this letter report builds upon a September 2019 transportation analysis for the Northshore Town Center that was completed for the Taco Bell restaurant land use revision. The development of an additional 35sfu is proposed within Zone E of the original 2011 traffic study (See **Figure 3** for the analysis zones). The trip generation for this report was updated by applying single family residential rates published in the current 10th edition of **Trip Generation**, the recognized reference published by the Institute of Transportation Engineers (ITE).

The trip generation for the additional 35sfu is presented in **Table 1** as the difference between the existing 158 lots and the total residential lots of 193. The 158 lots are increased 38sfu from 120sfu previously studied in 2011. This trip generation is compared to the **Table 2** trip generation updated in the September 2019 study prepared for the Taco Bell fast food development. The updated trip generation for the Northshore Town Center with the change in the proposed residential development is presented in the **Table 3**.





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TABLE 1 CLINGMANS DOME DRIVE & HORIZON DRIVE RESIDENTIAL

LAND USE	L.U.C	SIZE	DAILY TRAFFIC	AM PEAK			PM PEAK		
				ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
SINGLE FAMILY	210	193	1,904	35	106	141	120	71	191
SINGLE FAMILY	210	158	1,584	29	88	117	99	58	158
TRIP GENERATION		35	320	6	18	24	21	13	33

REFERENCE: Trip Generation 10th Edition, published by the Institute of Transportation Engineers.



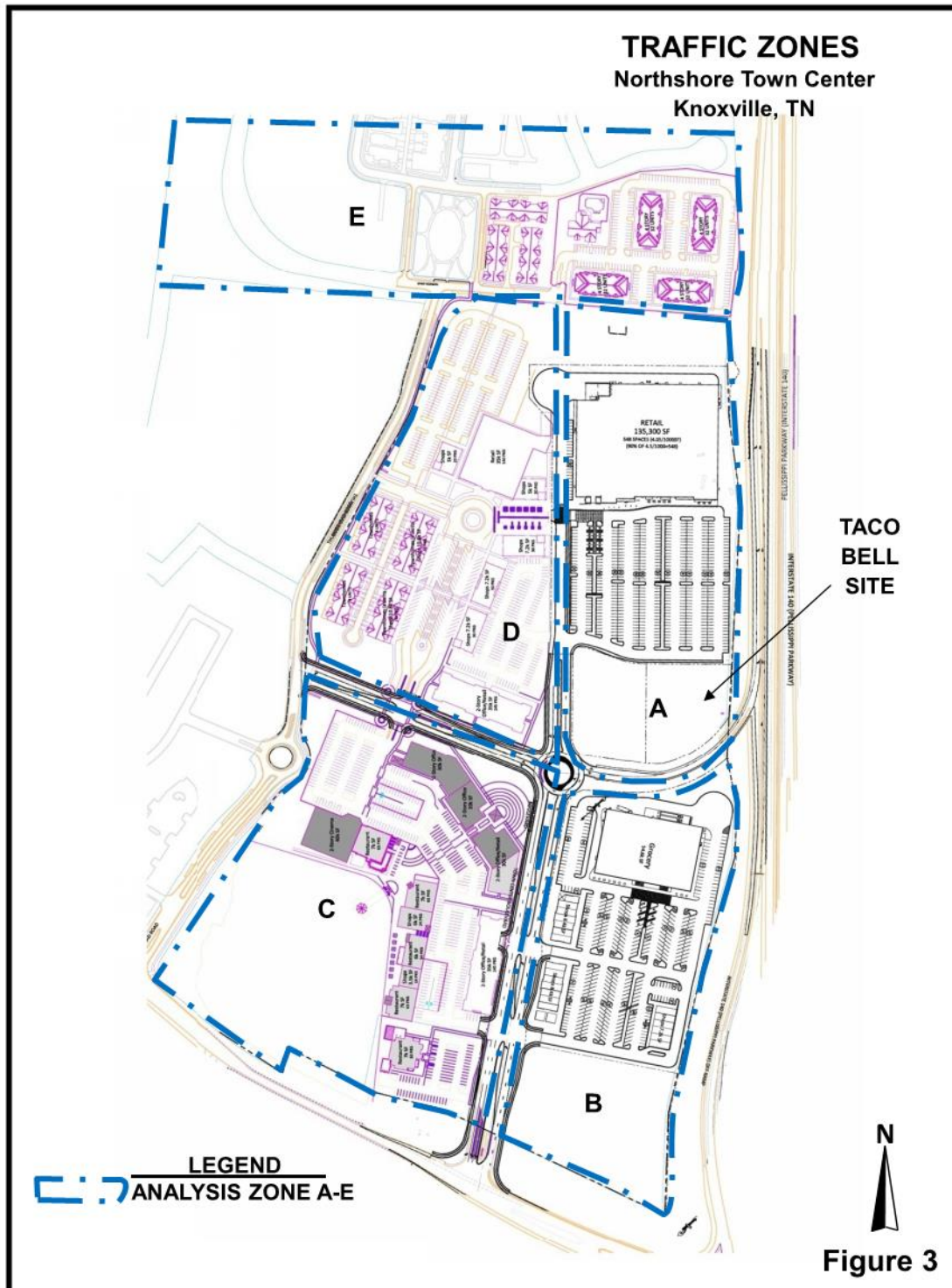
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TABLE 2
NORTHSHORE TOWN CENTER
Trip Generation-September 2019

ZONE	LAND USE	L.U.C	SIZE	DAILY TRAFFIC	ENTER	AM PEAK EXIT	TOTAL	PM PEAK ENTER	EXIT	TOTAL
A	<i>DISCOUNT STORE¹</i>	815	135,320			<i>EXISTING TRAFFIC</i>				
	FASTFOOD REST. (w. drive thru)	934	2,900	1,366	59	57	116	49	45	95
	DRIVE-IN BANK ³	912	5,500	573	30	22	52	56	56	112
	SUB-TOTAL		143,720	1,939	89	79	168	105	101	207
	Internal Trips	10%		194	9	8	17	11	10	21
	Pass-By Trips	30%		582	27	24	50	32	30	62
	Primary Trips			1,163	53	47	101	63	61	124
B	<i>SUPERMARKET</i>	850	54,000			<i>ZONE BUILTOUT</i>				
	<i>SPECIAL RETAIL</i>	814	25,900			<i>EXISTING TRAFFIC</i>				
	<i>FASTFOOD RESTAURANT</i>	934	4,992							
	<i>DRIVE-IN BANK</i>	912	4,500							
C	<i>OFFICE BLDG</i>	710	57,500			<i>EXISTING TRAFFIC</i>				
	SHOPPING CENTER	820	87,000	5,469	121	74	195	235	255	490
	H.T. RESTAURANT	932	14,000	1,571	77	63	140	85	52	137
	MULTIPLEX THEATER	445	8		-	-	-	56	54	110
	SUB-TOTAL		158,500	7,040	198	137	335	376	361	737
	Internal Trips	10%		704	20	14	34	38	36	74
	Pass-By Trips	25%		1,760	50	34	84	94	90	184
	Primary Trips			4,576	129	89	218	244	234	478
D	KNOX CO MULTI-FAMILY	225	24	265	3	11	14	14	12	26
	SHOPPING CENTER	820	79,100	5,831	84	51	135	246	266	512
	MEDICAL OFFICE	720	24,000	834	49	14	63	23	60	83
	SUB-TOTAL		103,100	6,930	136	76	212	284	338	622
	Internal Trips	10%		693	14	8	22	28	34	62
	Pass-By Trips	30%		2,079	41	23	64	85	101	186
	Primary Trips			4,158	82	46	128	170	203	373
E	<i>SINGLE FAMILY</i>	210	120	1,230	23	68	91	76	45	121
	Existing SFU		88	924	17	50	67	57	33	90
	Added Trips		32	306	6	18	24	19	12	31
	KNOX CO MULTI-FAMILY	225	325	2,753	35	124	159	125	102	227
	SUB-TOTAL		357	3,059	41	142	182	144	114	259
TOTAL TRIP GENERATION				18,968	464	434	898	910	914	1,824
TOTAL PRIMARY TRIP GENERATION				12,956	305	324	629	622	612	1,234

REFERENCE: Trip Generation, 10th Edition, published by the Institute of Transportation Engineers.

This trip generation also reflects the existing residential development of Zone E, estimated with 88 current single-family units. Therefore, another 105sfu may be developed including the proposed 35sfu included in this study.



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TABLE 3
NORTHSHORE TOWN CENTER
Trip Generation-July 2020

ZONE	LAND USE	L.U.C	SIZE	DAILY TRAFFIC	ENTER	AM PEAK EXIT	TOTAL	ENTER	PM PEAK EXIT	TOTAL
A	<i>DISCOUNT STORE</i>	815	135,320			<i>EXISTING TRAFFIC</i>				
	FASTFOOD REST. (w. drive thru)	934	2,900	1,366	59	57	116	49	45	94
	DRIVE-IN BANK ³	912	5,500	573	30	22	52	56	56	112
	SUB-TOTAL		143,720	1,939	89	79	168	105	101	206
	Internal Trips	10%		194	9	8	17	11	10	21
	Pass-By Trips	30%		582	27	24	50	32	30	62
	Primary Trips			1,163	53	47	101	63	61	124
B	<i>SUPERMARKET</i>	850	54,000			<i>ZONE BUILTOUT EXISTING TRAFFIC</i>				
	<i>SPECIAL RETAIL</i>	814	25,900							
	<i>FASTFOOD RESTAURANT</i>	934	4,992							
	<i>DRIVE-IN BANK</i>	912	4,500							
C	<i>OFFICE BLDG</i>	710	57,500			<i>EXISTING TRAFFIC</i>				
	SHOPPING CENTER	820	87,000	5,469	121	74	195	235	255	490
	H.T. RESTAURANT	932	14,000	1,571	77	63	140	85	52	137
	MULTIPLEX THEATER	445	8		-	-		56	54	110
	SUB-TOTAL		158,500	7,040	198	137	335	376	361	737
	Internal Trips	10%		704	20	14	34	38	36	74
	Pass-By Trips	25%		1,760	50	34	84	94	90	184
	Primary Trips			4,576	129	89	218	244	234	478
D	KNOX CO MULTI-FAMILY	225	24	265	3	11	14	14	12	26
	SHOPPING CENTER	820	79,100	5,831	84	51	135	246	266	512
	MEDICAL OFFICE	720	24,000	834	49	14	63	23	60	83
	SUB-TOTAL		103,100	6,930	136	76	212	284	338	622
	Internal Trips	10%		693	14	8	22	28	34	62
	Pass-By Trips	30%		2,079	41	23	64	85	101	186
	Primary Trips			4,158	82	46	128	170	203	373
E	SINGLE FAMILY	210	193	1,904	35	106	141	120	71	191
	Existing Single-Family Units	210	88	924	17	50	67	57	33	90
	Single Family Subdivision Buildout		105	980	18	56	74	63	38	101
TOTAL TRIP GENERATION				16,889	441	348	789	828	838	1,666
TOTAL PRIMARY TRIP GENERATION				10,877	282	238	520	541	535	1,076

REFERENCE: Trip Generation, 10th Edition, published by the Institute of Transportation Engineers.

This table reflects the trip generation from the study prepared in September 2019 but updated to reflect the existing approximate 88 single-family residential units that have been developed to date.



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TABLE 4
Northshore Town Center
Trip Generation Comparison

	DATE	DAILY TRAFFIC	AM PEAK			PM PEAK		
			ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
NORTHSHORE TOWN CENTER	Sep-19	18,966	464	433	897	910	914	1,824
Primary Trips		12,955	305	323	627	623	612	1,235
NORTHSHORE TOWN CENTER	Jul-20	16,888	442	347	789	829	838	1,667
Primary Trips		10,876	282	237	520	541	536	1,077
Change in Trips Generated		-2,079	-22	-85	-108	-81	-76	-158
Change in Primary Trips		-2,079	-22	-85	-108	-81	-76	-158

REFERENCE: Trip Generation 10th Edition, published by the Institute of Transportation Engineers.

The comparison of the Zone E trip generation is presented in **Table 5**.

TABLE 5
Zone E Trip Generation Comparison

ZONE	LAND USE	L.U.C	SIZE	DAILY TRAFFIC	AM PEAK			PM PEAK		
					ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
E Sept 2019	SINGLE FAMILY	210	32	305	6	17	23	20	12	31
	KNOX CO MULTI-FAMILY	Knox Co	325	2,753	35	124	159	125	102	227
	TOTAL		357	3,058	41	141	181	145	114	259
E July 2020	SINGLE FAMILY	210	105	980	18	56	74	63	38	101
Trip Generation Reduction			252	2,079	22	85	108	81	76	158

REFERENCE: Trip Generation 10th Edition, published by the Institute of Transportation Engineers.

The comparison of the current updated trip generation with the trip generation of 2019 finds that the trip generation is reduced as many as 109 and 158 during the AM and PM peak hours, respectively. The reduction in trip generation is the difference in the trips generated by 325 multi-family units and trips generated by the additional total of 73sfu (38sfu additional units from 120sfu+proposed 35sfu additional). The trips generated by the 35 additional single-family residential units as identified in **Table 1** should have a negligible impact on the Northshore Town Center access with 21 total entering trips during the PM peak hour and 18 total exiting



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trips during the AM peak hour as compared to the trip generation of 158sfu. The increase in the eastbound traffic from Northshore Drive to Thunderhead Road is estimated at less than 5vph and less than 10vph westbound from Northshore Drive to Thunderhead Road during the PM peak. The exiting traffic from Thunderhead Road is less than 20vph during the AM peak hour. With the less than 5vph increase for the left-turn movement, the impact on the left-turn storage is negligible.

Should you have any questions, please call me.

Sincerely,
CDM Smith Inc.



John F. Gould, P.E.
Senior Transportation Engineer

Project No. 250330

