

# PUTT PUTT FUN CENTER

## TRANSPORTATION IMPACT ANALYSIS

### EXECUTIVE SUMMARY



**Prepared for:**

The Town of Chapel Hill  
Public Works Department - Engineering

**Prepared by:**

***HNTB North Carolina, PC***

*343 East Six Forks Road  
Suite 200  
Raleigh, NC 27609*

*NCBELS License #: C-1554*

February 2021



**PUTT PUTT FUN CENTER**  
**TRANSPORTATION IMPACT ANALYSIS**  
**EXECUTIVE SUMMARY**



**Prepared for:**

The Town of Chapel Hill  
Public Works Department - Engineering

**Prepared by:**

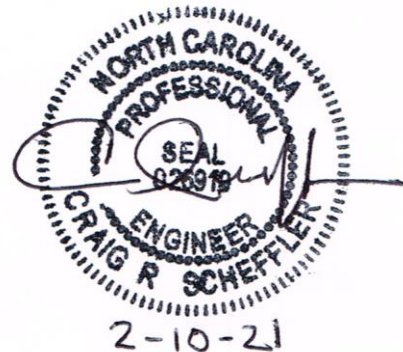
***HNTB North Carolina, PC***

*343 East Six Forks Road  
Suite 200  
Raleigh, NC 27609*

*NCBELS License #: C-1554*

February 2021

**HNTB**





## EXECUTIVE SUMMARY

### Project Overview

The construction of a new commercial development named Putt Putt Fun Center, to be located north of Eubanks Road and adjacent to the Carraway Village development, is being proposed in Chapel Hill. The project proposes to construct an indoor/outdoor recreation center totaling approximately 22,000 square feet of indoor space with outdoor mini-golf and go-kart facilities. In addition, an 86,000 square foot contained mini-storage facility is being proposed as part of the development parcel. **Figure ES-1** shows the general location of the site. The project is anticipated to be fully complete by 2023. This report analyzes the transportation impacts for the build-out scenario for the year 2024 (one year after anticipated completion), the no-build scenario for 2024, as well as 2020 existing year traffic conditions.

The proposed site concept plan shows the addition of a single primary access driveway that would be a direct extension of Chapel Point Drive, a local access street that has been created in the development process of Carraway Village. No other vehicular access connections are proposed. **Figure ES-2** displays the current concept plan of the Putt Putt Fun Center development and nearby land uses and roadways. The project is expected to provide on-site surface parking lots with up to 170 total spaces. This report analyzes and presents the transportation impacts that the Putt Putt Fun Center development will have on the following intersections in the project study area:

- Eubanks Road and Mill House Road
- Eubanks Road and Myrica Street
- Myrica Street and Carraway Village Apartments Access / Eubanks Road Park-and-Ride Access
- Eubanks Road and Carraway Village Access / Northwood Drive
- Eubanks Road and NC 86 (Martin Luther King Jr. Boulevard)

The impacts of the proposed site at the study area intersections will be evaluated during typical weekday PM and Saturday afternoon peak hours, which represent the highest projected activity periods for the Putt Putt Fun Center facility.

### Existing Conditions

#### **Study Area**

The site is located in northern Chapel Hill just to the north of the Eubanks Road corridor and the Carraway Village development and to the south of I-40. The study area contains four signalized intersections and one roundabout intersection. Eubanks Road is a minor arterial facility providing connectivity in northern Chapel Hill, connecting the NC 86 corridor to the east to rural areas to the west. NC 86 is a principal arterial serving regional and local traffic. Remaining roadway facilities are local streets connecting to existing residential or commercial/institutional development in the area.

#### **Site Traffic Generation**

With the addition of new peak hour trips during the PM and Saturday afternoon peak hours, there are potential site traffic impacts to the study area intersections. **Table ES-1** shows the site trip generation details, with generation rates and methodologies taken from the *Institute of Transportation Engineers (ITE) Trip Generation Manual, 10<sup>th</sup> Edition* and supplemented with activity information from the Applicant from a similar Putt Putt Fun Center facility in Fayetteville, NC. A review of the ITE estimates and existing activity data revealed the good correlation exists between the two data sets, though the ITE data for these type of recreation centers is taken from a limited sample. Trip generation estimates for the Chapel Hill



**Town of Chapel Hill: Transportation Impact Analysis**  
*Putt Putt Fun Center - Proposed Commercial Development*

Putt Putt Fun Center site use a growth factor of indoor building sizes compared to the Fayetteville site. Trips for the indoor storage facility were taken from the ITE Trip Generation Manual data.

**Table ES-1. Weekday and Weekend Trip Generation Summary**

ITE LUC	Description	Type	Daily			Weekday PM Peak			Saturday Afternoon Peak		
			Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
N/A*	Putt Putt Fun Center Facility	Visitors	184	184	368	27	27	54	32	32	64
		Employees	48	48	96	8	8	16	10	10	20
151	Mini-Warehouse	84,000 SF	64	64	128	6	8	14	15	11	26
<b>TOTALS</b>			<b>296</b>	<b>296</b>	<b>592</b>	<b>41</b>	<b>43</b>	<b>84</b>	<b>57</b>	<b>53</b>	<b>110</b>

\* - Growth Factored Comparable Data with Existing Fayetteville, NC Facility

**Background Traffic**

Background traffic growth for the 2024 analysis year is expected to primarily arise from specific development-related traffic growth in and near the project study area. Based on existing information, several Town-approved development projects near the project study area may be expected to contribute to background traffic growth by the 2024 analysis year. The adjacent Carraway Village development was included as a specific background traffic generator for the 2024 analysis year, as were potential future developments along Mill House Road known as Project Triumph and Carolina Donor Services and the expansion of the Chapel Hill North Harris Teeter to include a fueling facility.

**Impact Analysis**

**Peak Hour Intersection Level of Service (LOS)**

Study results indicate existing traffic operations at all study area intersections are acceptable during the PM and Saturday afternoon peak hours. Even with the addition of peak hour site-generated trips to the projected 2024 background traffic volumes, no study area intersections are projected to experience deficient traffic operations in any peak hour in the 2024 analysis year. A summary of the traffic operations for each intersection, related to vehicular delays (overall intersection average for the signalized intersections and roundabout) and the corresponding Level-of-Service (LOS) is shown in **Table ES-2**.

**Table ES-2. Putt Putt Fun Center - LOS and Delay (Seconds/Vehicle) Summary**

Intersections	Peak Hour	2020 Existing		2024 Without Site		2024 With Site	
		LOS	Delay	LOS	Delay	LOS	Delay
Eubanks Road and Mill House Road	PM	A	8.8	B	11.0	B	11.1
	Saturday Afternoon	A	5.0	A	5.1	A	5.1
Eubanks Road and Myrica Street / Chapel Point Drive	PM	B	19.2	C	21.1	C	24.7
	Saturday Afternoon	B	12.2	B	12.7	B	15.5
Eubanks Road and Carraway Village Driveway / Northwood Dr	PM	B	11.8	B	18.1	B	18.2
	Saturday Afternoon	B	10.8	C	22.1	C	21.8
N.C. 86 (MLK Blvd) and Eubanks Road	PM	C	22.3	C	28.1	C	28.8
	Saturday Afternoon	C	21.7	C	27.6	C	28.3
Myrica Street and Carraway Apts Access / Eubanks Park-and-Ride**	PM	A	2.2	A	1.8	A	1.6
	Saturday Afternoon	A	2.4	A	2.4	A	1.7

\*\* - Roundabout



**Access Analysis**

Vehicular site access is to be accommodated by one proposed full movement access driveway connecting as an extension to Chapel Point Drive. Design details related to driveway throat length and adjacent intersection and driveway spacing are shown on the concept plan and are acceptable, based on criteria in the 2003 *NCDOT Policy on Street and Driveway Access to North Carolina Highways* and the 2017 *Town of Chapel Hill Design Manual*.

Local access for pedestrians and bicyclists is adequate in the project study area. Sidewalk is present on the both sides of Myrica Street adjacent to the site parcel and along the north side of Chapel Point Drive that would connect to the site. Signalized and unsignalized crosswalks are present throughout the study area at major intersections and internal roadways within Carraway Village. There are striped bicycle lanes painted on the both sides of Mill House Road between Eubanks Road and the Town Public Works Driveway and along Eubanks Road between Mill House Road and NC 86.

**Other Transportation-Related Analyses**

Other transportation-related analyses relevant to the 2001 Town of Chapel Hill Guidelines for the preparation of Traffic Impact Studies were completed as appropriate. The following topics listed in **Table ES-3** are germane to the scope of this study.

**Table ES-3. Other Transportation-Related Analyses**

Analysis	Comment
Long-Range Planning Level Daily Volume-Capacity Analysis	The site could add approximately 600 daily trips to the study area network. The Eubanks Road corridor currently carries approximately 9,000 vehicles daily and its daily capacity can be estimated in the range of 25,000+ vehicles for the new four-lane divided cross-section west of Mill House Road. No overall daily capacity issues are anticipated due to the project.
Turn Lane Storage Requirements	Storage bay lengths at study area intersections were analyzed using Synchro and HCM 95 <sup>th</sup> percentile (max) queue length estimates for the 2024 Build Scenario. Two intersection approaches may experience excessive peak hour queues or conditions that exceed existing turn lane storage. Queue issues at both locations may be mitigated by signal timing modifications to add additional green time to the affected signal phases serving these movements and allowing right-turns on red to the affected movement/approach.
Appropriateness of Acceleration/Deceleration Lanes	The site concept plan shows no specifics related to acceleration/deceleration lanes along Chapel Point Drive. Based on the local street 25 mph speed limit on local streets in the vicinity of the site and the fact that the Eubanks Road corridor includes specific acceleration, deceleration, and auxiliary lanes needed for capacity and safety issues, no additional specific acceleration/deceleration lanes are recommended in the project study area.
Pedestrian and Bicycle Analysis	Existing pedestrian and bicycle access and connectivity is adequate in the project study area. Sidewalk exists along the Mill House Road corridor on the east side of the road, though connectivity beyond Mill House Road along the Eubanks Road corridor is currently lacking. Delineated bicycle lanes along Mill House Road are present in the project study area, but again, connectivity along the Eubanks Road corridor to any dedicated bicycle facilities are currently lacking. Pedestrian and bicycle facilities along Eubanks Road from the Park-and-Ride facility to NC 86 are comprehensive and are well connected to internal facilities within the Carraway Village development and adjacent neighborhoods to the south.
Public Transportation Analysis	Public transportation service to the study area is excellent as the nearby Eubanks Road Park-and-Ride is serviced by the high capacity CHT NS bus route. There are existing pedestrian connections from this bus stop to the site parcel, which is only one block away from the Park-and-Ride facility.



## **Mitigation Measures/Recommendations**

### **Planned Improvements**

There are no Town of Chapel Hill or North Carolina Department of Transportation improvement projects for study area roadway facilities within the analysis year time frame of 2020-2024. Just north of the NC 86 and Eubanks Road intersection, NCDOT is planning an upgrade to the I-40/NC 86 interchange and widening I-40 to a six-lane cross-section. Design details of these improvements are beyond the immediate TIA project study area but may have beneficial capacity effects on the NC 86 corridor through the I-40 interchange once the project is complete.

### **Background Committed Improvements**

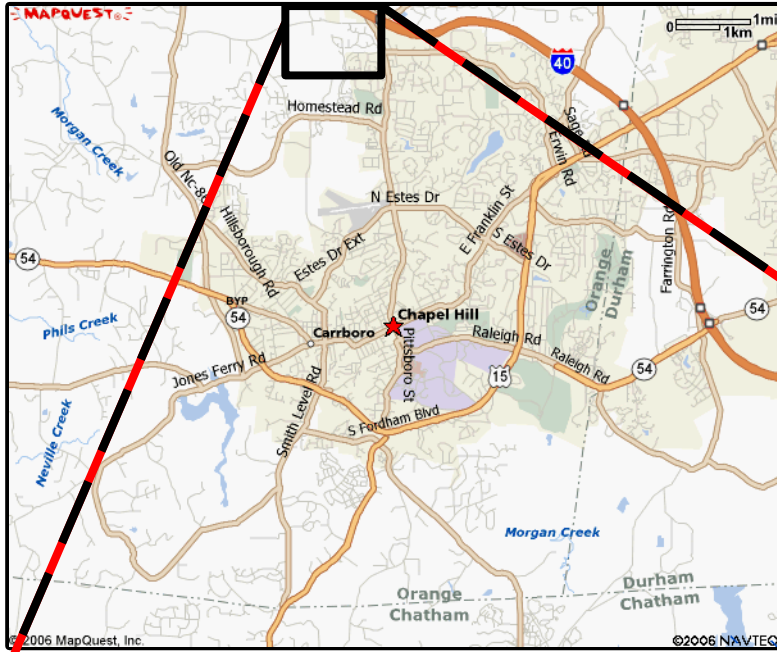
There are no specific geometric improvements to study area roadway intersections or facilities related to background private development projects that are expected to be completed between 2020 and 2024. Most external and internal roadway improvements from the Carraway Village development have been recently completed and are open to traffic. Recommendations from the original TIA for Carraway Village call for signal optimization improvements along the Eubanks Road corridor, which should address any capacity or queue issues once the remaining development within Carraway Village is complete. These signal retiming locations are shown on **Figure ES-3**.

### **Applicant Committed Improvements**

Based on the preliminary site concept plans and supporting development information provided, there are no specific external transportation-related improvements proposed adjacent to the Putt Putt Fun Center.

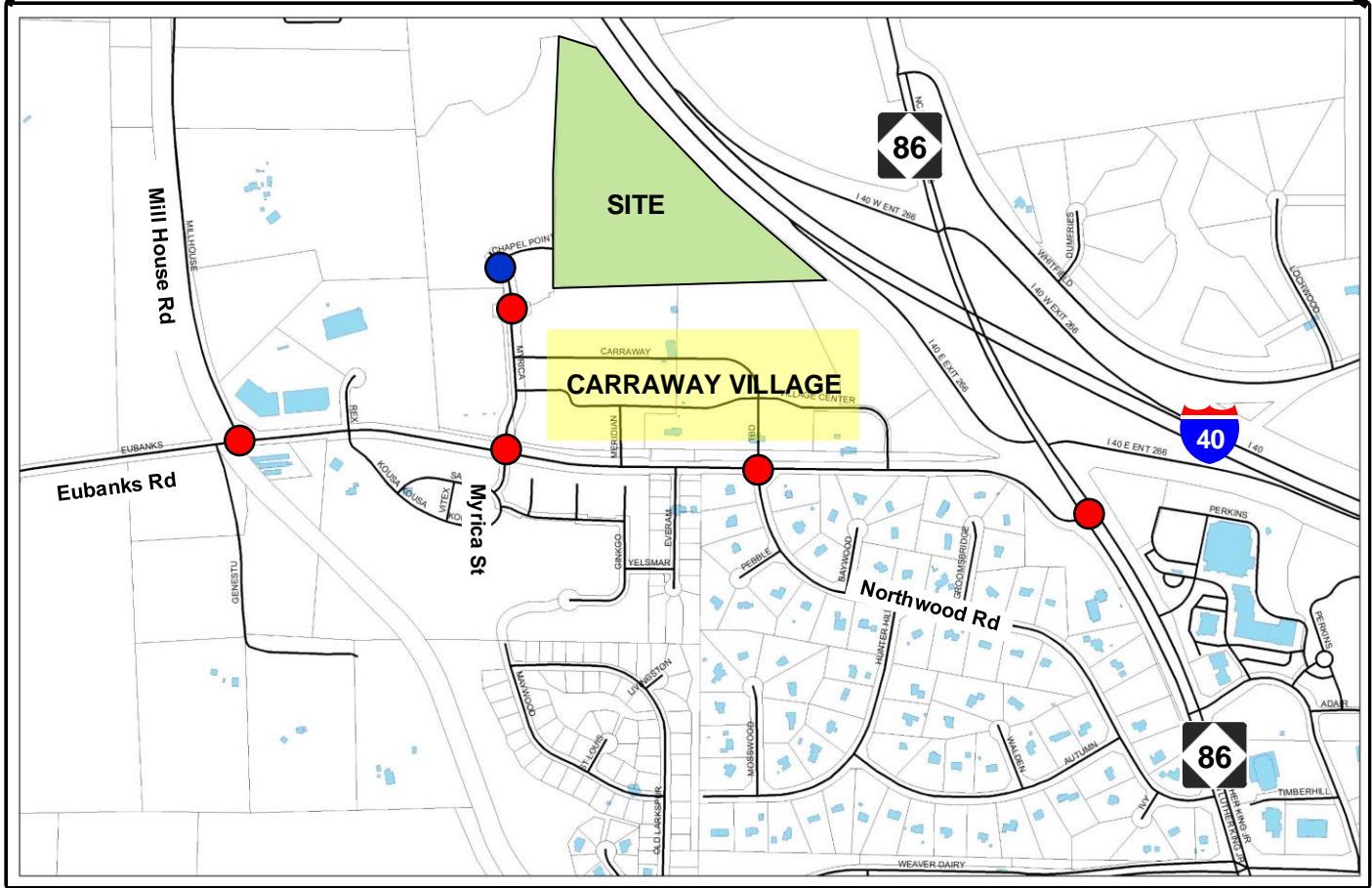
### **Necessary Improvements**

Based on traffic capacity analyses for the 2024 design year, and analyses of existing study area turning bay storage lengths and site access, there are no additional improvements recommended as being necessary for adequate transportation network operations in the project study area.



### LEGEND

- = Existing Building Footprint
- = Existing Study Area Intersection
- = Proposed Site Access
- = Proposed Site Parcel



NOT TO SCALE

Source: Town of Chapel Hill GIS Files

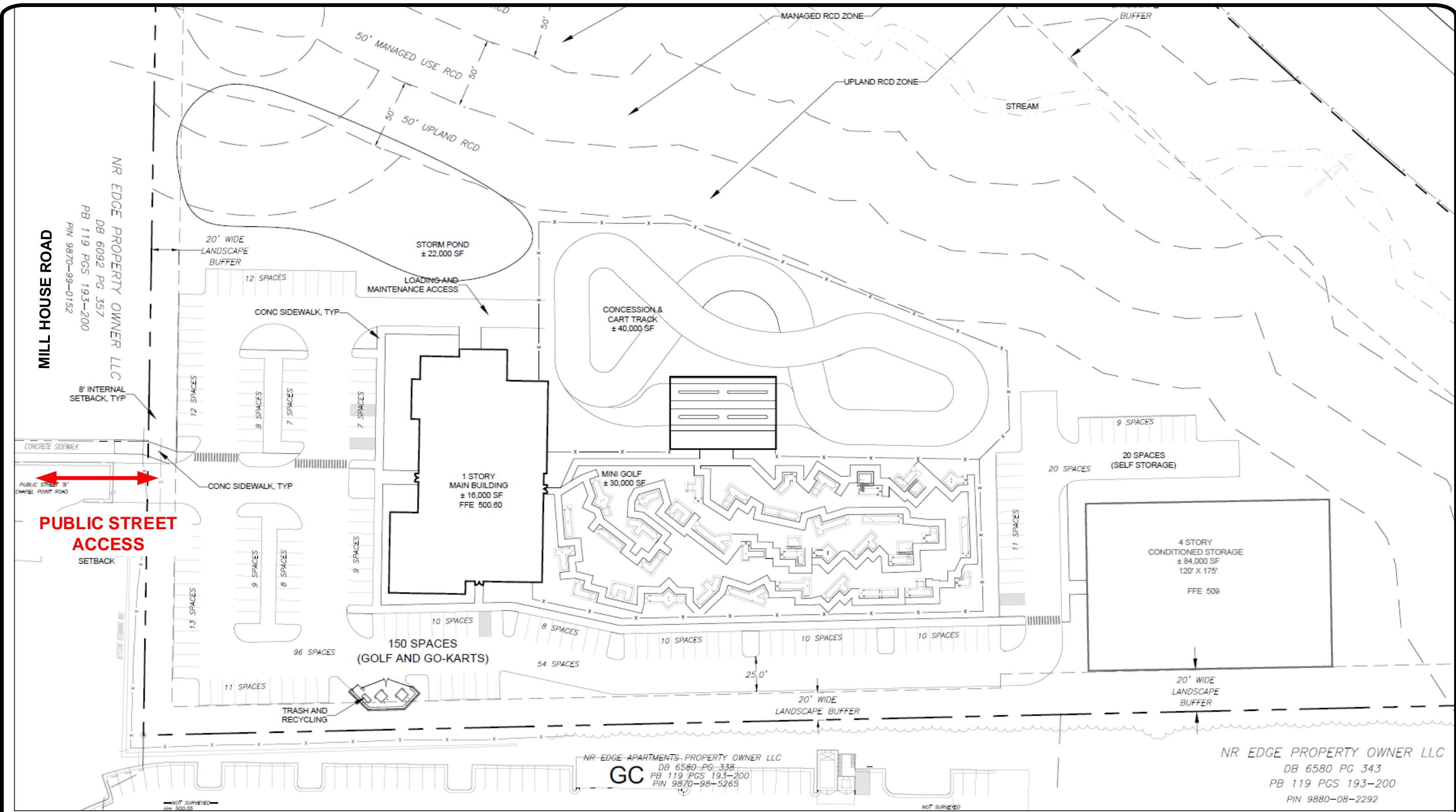


## Putt Putt Fun Center Transportation Impact Analysis

### PROJECT STUDY AREA

DATE: February 2021

**FIGURE ES-1**



<p>NOT TO SCALE</p>	<p><b>LEGEND</b></p> <p> = PROPOSED SITE ACCESS</p>	<p><b>Putt Putt Fun Center</b> Transportation Impact Analysis</p>	<p>DATE: February 2021</p>
		<p><b>SITE CONCEPT PLAN</b></p>	<p><b>FIGURE ES-2</b></p>



