

LIBERTY CLASSICAL ACADEMY

**Proposed Private High School and
Middle School**

Future Elementary School

Providence Road / Weddington Road

Weddington, North Carolina

August 22, 2023

LIBERTY CLASSICAL ACADEMY



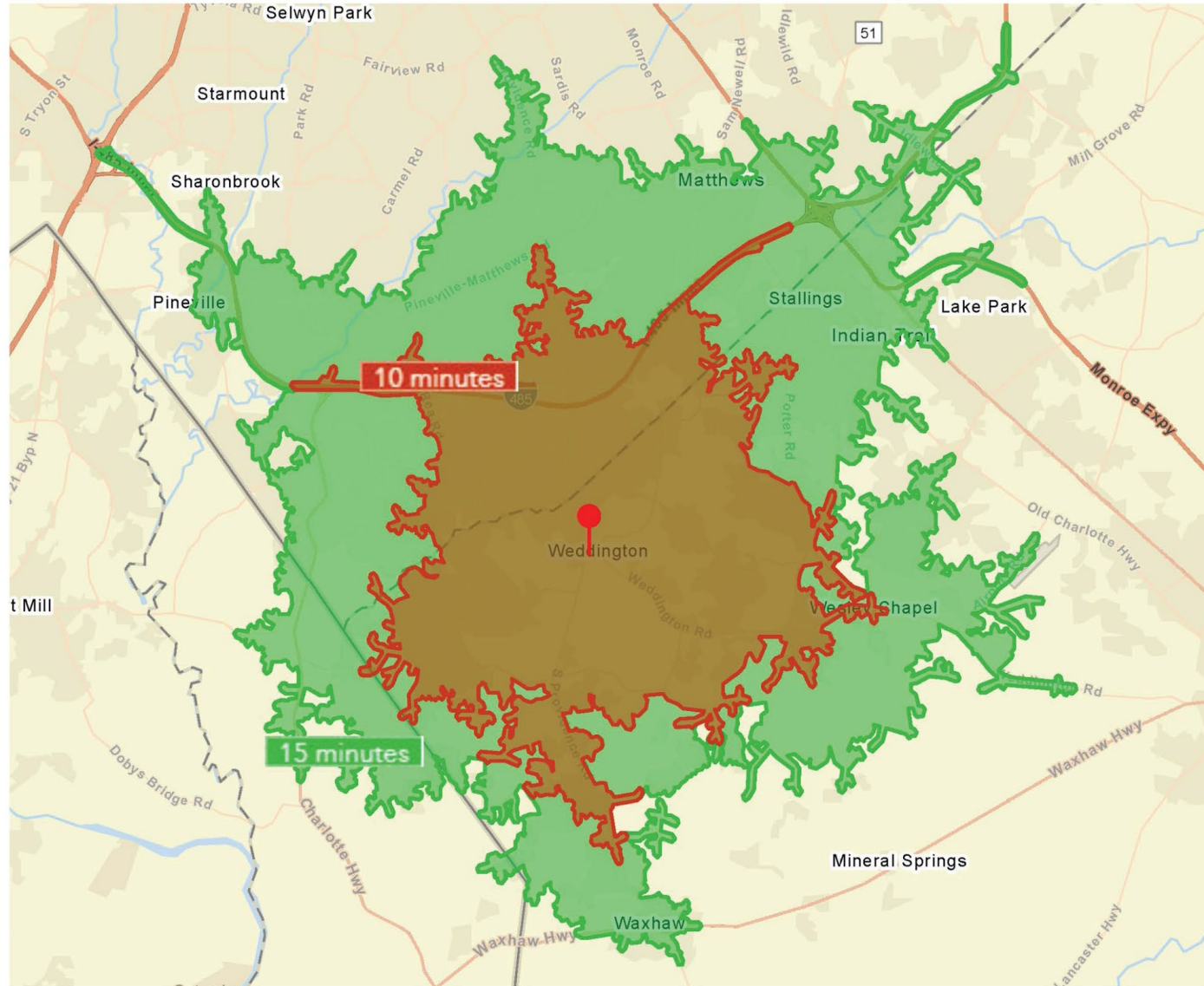
LIBERTY CLASSICAL ACADEMY

WHY WEDDINGTON

Drive Time
Demographics



Liberty Classical Academy



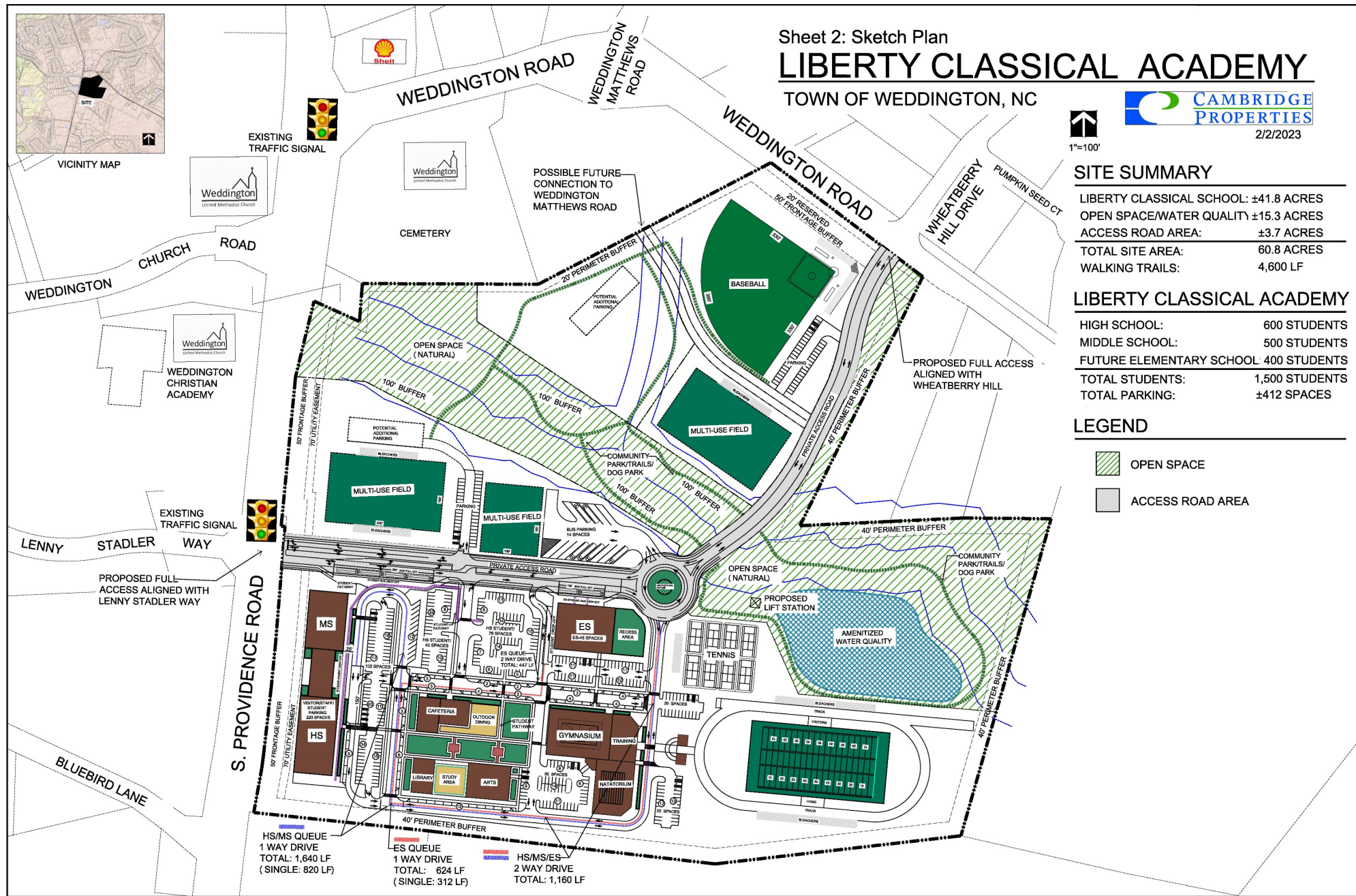
10 Minute Drive Area



15 Minute Drive Area

LIBERTY CLASSICAL ACADEMY

Campus Site Plan Circulation



- TIA Parameters
- Student Population

TIA PARAMETERS

- NCDOT MSTA standards / practices
- Project study area
 - NC-84 (Weddington Road) / NC-16 (S Providence Road)
 - NC-84 (Weddington Road) / Wheatberry Hill Drive / Site Access 1
 - NC-16 (S Providence Road) / Lenny Stadler Way / Site Access 2
 - NC-16 (S Providence Road) / Rea Road
- Counts conducted January 2023

STUDENT POPULATION (ANALYSIS YEARS)

- High School – 600 Students
 - 2026
- Middle School – 500 Students
 - 2028
- Elementary School – 400 Students
 - 2031



- School Arrivals / Dismissals
- Assumptions

SCHOOL ARRIVALS / DISMISSALS

- NC-16 peak hours:
 - 8:00 a.m. – 9:00 a.m.
 - 4:45 p.m. – 5:45 pm.
- Each school (high, middle, elementary) analyzed separately
- 45 minutes between respective bell times
- High School arrival **PRIOR** to AM peak hour (~7:15 a.m.)
- Middle School arrival **DURING** AM peak hour (~8:00 a.m.)
- Elementary School arrival **AFTER** AM peak hour (~8:45 a.m.)
- All school **DISMISSALS PRIOR** to NC-16 PM peak hour
- Each school peak (arrivals / dismissals) lasts ~20 minutes

ASSUMPTIONS

- Proposed trips added onto existing network trips
 - No reduction to account for relocation of students
- All schools analyzed with AM peak hour traffic volumes
- Schools assumed to be fully loaded on day one



SCHOOL TRIP GENERATION

Table 4-1: High School Trip Generation Summary

| School | Number of Students | AM Peak Hour | | | (School) PM Peak Hour | | |
|--------|--------------------|--------------|-----|-------|-----------------------|-----|-------|
| | | In | Out | Total | In | Out | Total |
| High | 600 Students | 467 | 247 | 714 | 192 | 446 | 638 |

SOURCE: NCDOT's MSTa School Traffic Calculator Version 102816

Table 4-2: Middle School Trip Generation Summary

| School | Number of Students | AM Peak Hour | | | (School) PM Peak Hour | | |
|--------|--------------------|--------------|-----|-------|-----------------------|-----|-------|
| | | In | Out | Total | In | Out | Total |
| Middle | 500 Students | 349 | 280 | 629 | 196 | 265 | 461 |

SOURCE: NCDOT's MSTa School Traffic Calculator Version 102816

Table 4-3: Elementary School Trip Generation Summary

| School | Number of Students | AM Peak Hour | | | (School) PM Peak Hour | | |
|------------|--------------------|--------------|-----|-------|-----------------------|-----|-------|
| | | In | Out | Total | In | Out | Total |
| Elementary | 400 Students | 280 | 224 | 504 | 157 | 213 | 370 |

SOURCE: NCDOT's MSTa School Traffic Calculator Version 102816

BY RIGHT TRIP GENERATION

Table 1: Trip Generation Summary

| ITE Land Use Code | Independent Variable | AM Peak Hour | | | PM Peak Hour | | |
|--------------------------------------|----------------------|--------------|-----|-------|--------------|-----|-------|
| | | In | Out | Total | In | Out | Total |
| 210 – Single Family Detached Housing | 70 Units | 13 | 41 | 54 | 45 | 26 | 71 |

SOURCE: Institute of Transportation Engineers' *Trip Generation Manual* 11th Edition (2021)

LIBERTY
CLASSICAL
ACADEMY

- School Trip Generation
- By Right Trip Generation



- MSTA On-Site Queuing
- Project Requirements

MSTA ON-SITE QUEUING

- MSTA School Calculator
 - Elementary School
 - 2,221 linear-feet
 - Middle School
 - 2,769 linear-feet
 - High School
 - 2,751 linear-feet
- **No proposed queue spillbacks onto NC-16 or Weddington Road**

PROJECT REQUIREMENTS

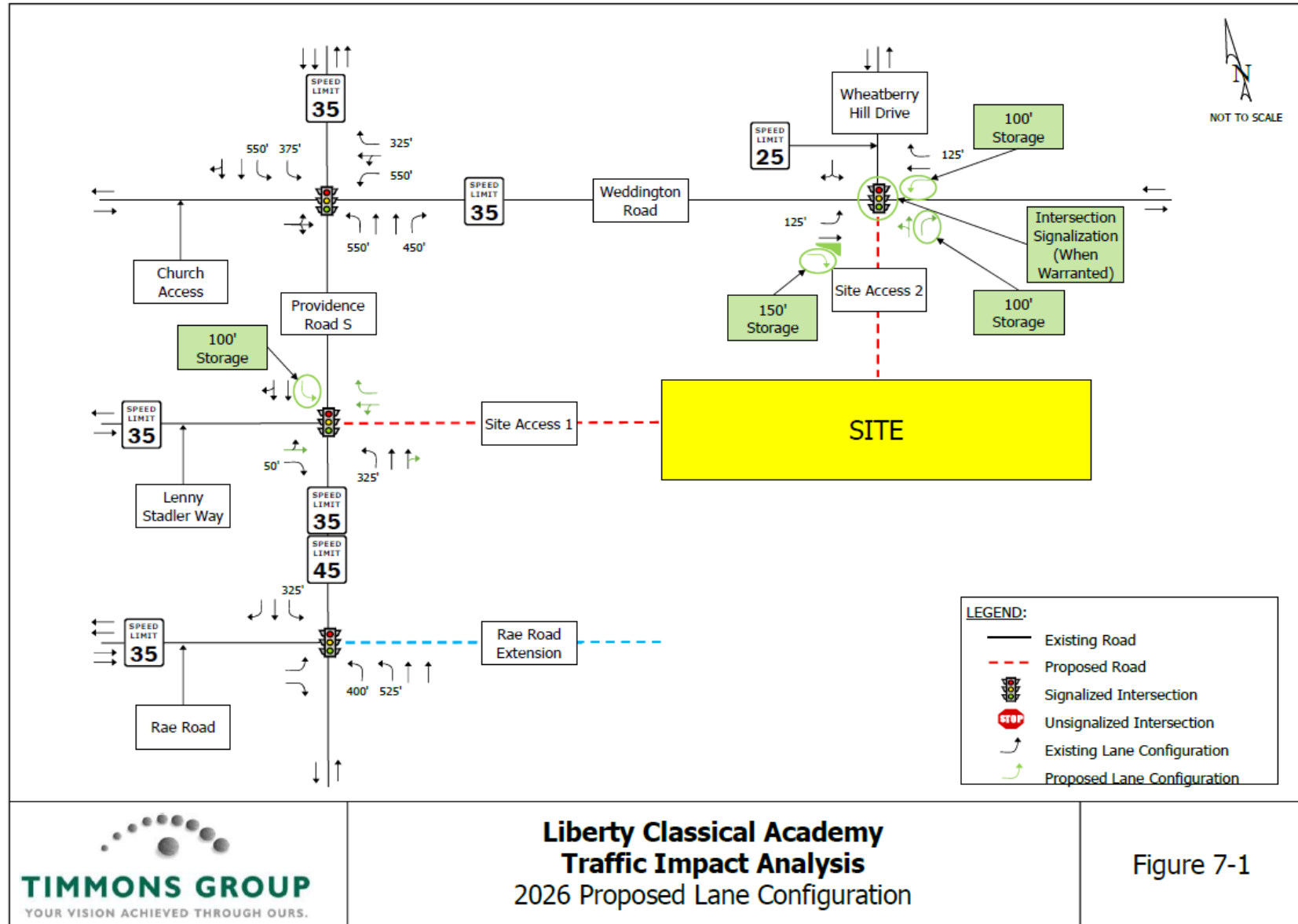
- Providence Road S / Lenny Stadler Way / Site Access 1
 - Dual egress lanes (shared through / left-turn lane and an exclusive right-turn lane)
 - 100-foot southbound left-turn lane (with appropriate taper)
- Site Access 2 / Wheatberry Hill Drive / Weddington Road
 - Intersection Signalization**
 - 150-foot channelized eastbound right-turn lane (with appropriate taper)
 - 100-foot westbound left-turn lane (with appropriate taper)



PROJECT REQUIREMENTS

LIBERTY
CLASSICAL
ACADEMY

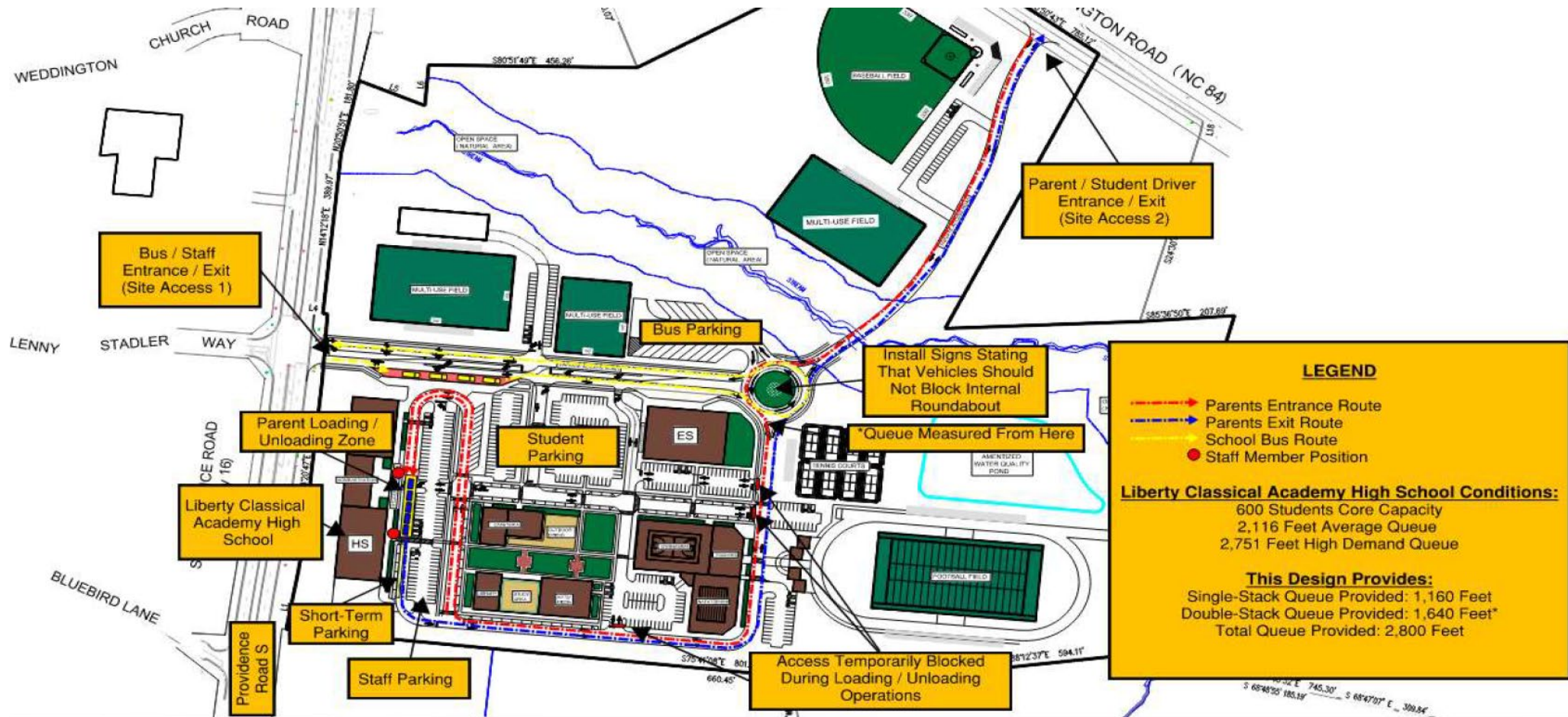
- Project Requirements



HIGH SCHOOL QUEUING

LIBERTY CLASSICAL ACADEMY

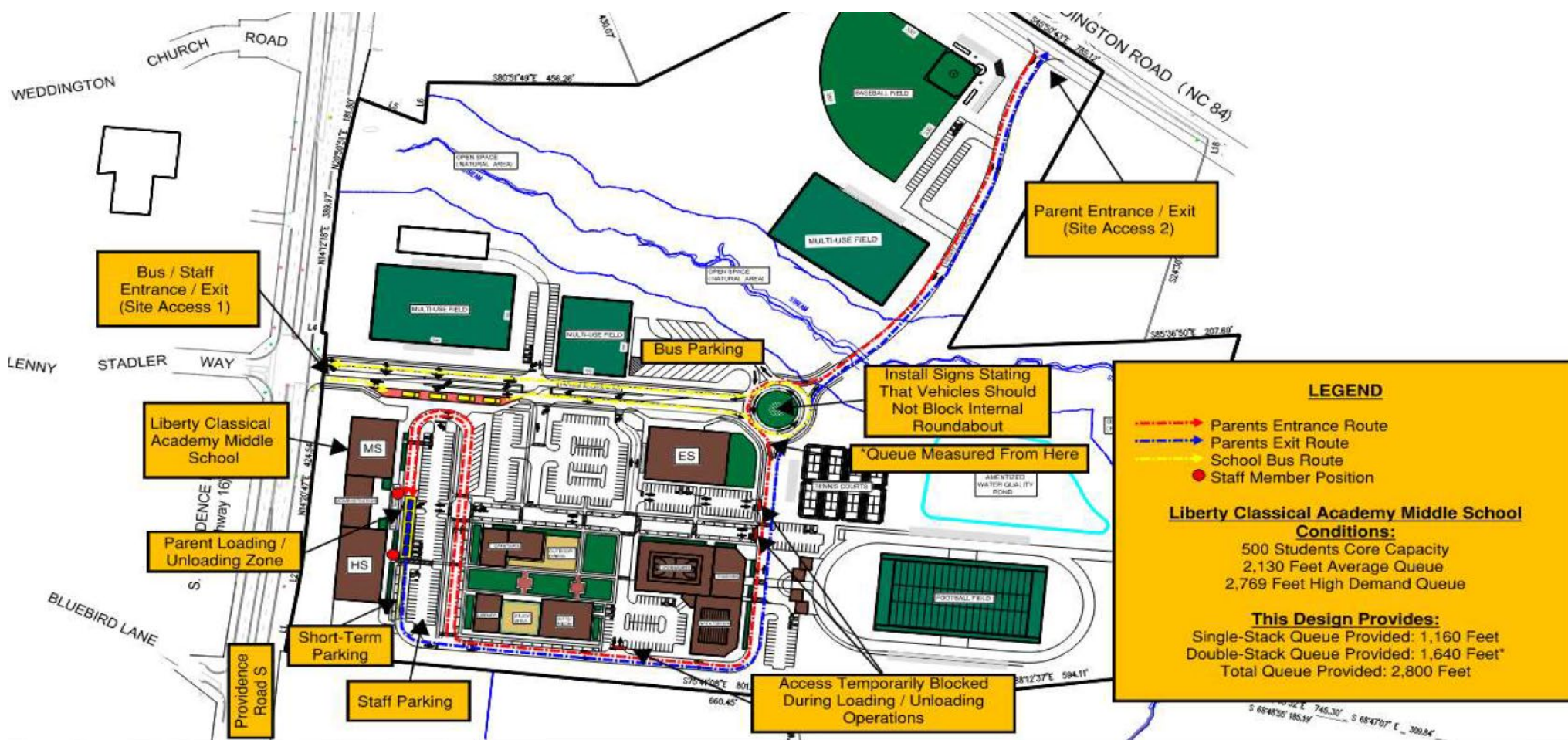
- High School Queuing



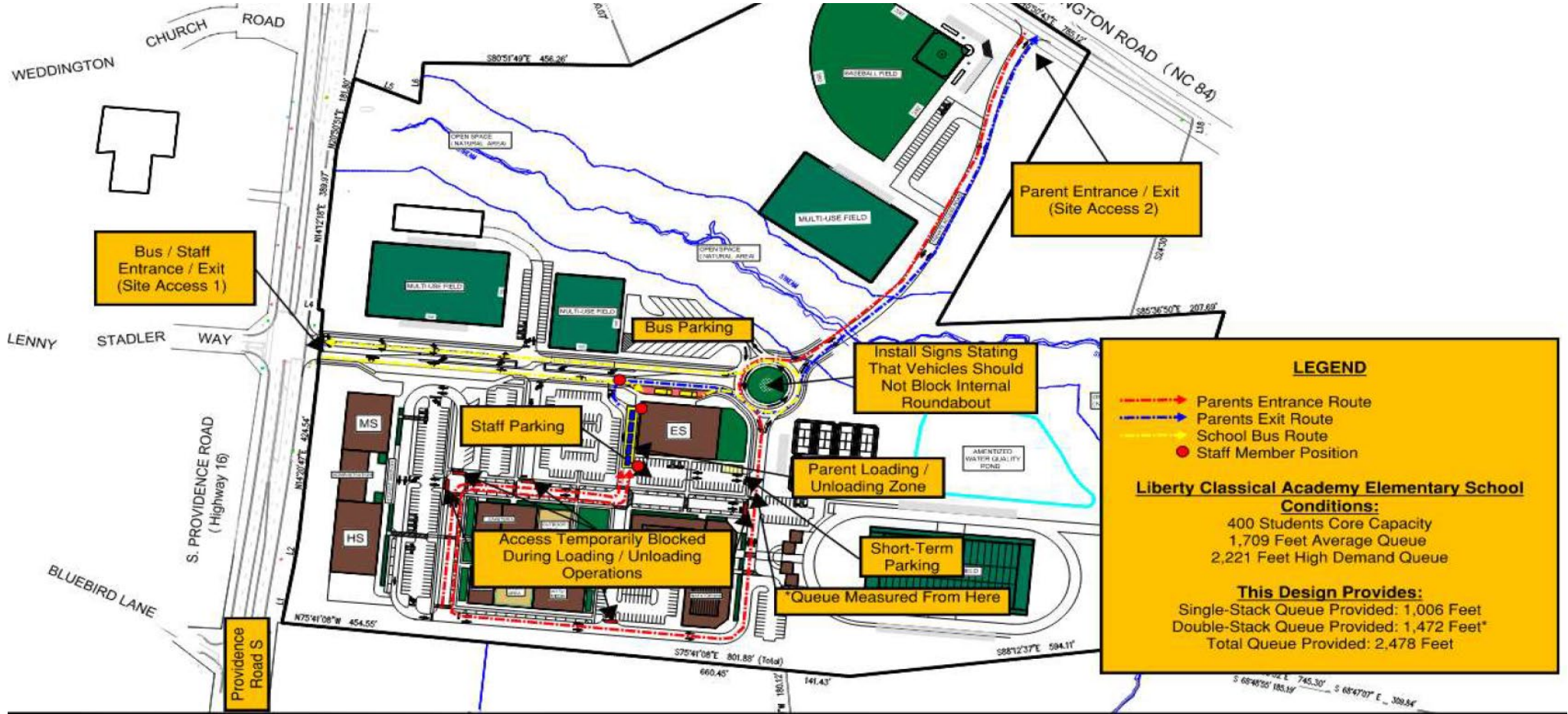
MIDDLE SCHOOL QUEUING

LIBERTY
CLASSICAL
ACADEMY

- Middle School Queuing



ELEMENTARY SCHOOL QUEUING



LEGEND

- - - - - Parents Entrance Route
- - - - - Parents Exit Route
- - - - - School Bus Route
- Staff Member Position

Liberty Classical Academy Elementary School Conditions:

- 400 Students Core Capacity
- 1,709 Feet Average Queue
- 2,221 Feet High Demand Queue

This Design Provides:

- Single-Stack Queue Provided: 1,006 Feet
- Double-Stack Queue Provided: 1,472 Feet*
- Total Queue Provided: 2,478 Feet

LIBERTY CLASSICAL ACADEMY

• Elementary School Queuing



- NC-16 (S Providence Road) Travel Time Impacts

NC-16 (S PROVIDENCE ROAD) TRAVEL TIME IMPACTS

- NCDOT to monitor corridor signal timings following construction
- 2028 AM Peak Hour Corridor Speeds
 - Northbound
 - Without School – 24 mph
 - With Middle School – 20 mph
 - Southbound
 - Without School – 25 mph
 - With Middle School – 23 mph
- 2028 PM (School) Peak Hour Corridor Speeds
 - Northbound
 - Without School – 24 mph
 - With Middle School – 24 mph
 - Southbound
 - Without School – 10 mph
 - With Middle School – 9 mph



- NC-16 (S Providence Road) Intersection Delays

NC-16 (S PROVIDENCE ROAD) INTERSECTION DELAYS

- Peak Hour Delays (without / with Middle School)
 - NC-16 (S Providence Road) / Weddington Road
 - AM Peak – LOS D → LOS E
 - PM (School) Peak – LOS C → LOS C
 - NC-16 (S Providence Road) / Lenny Stadler Way
 - AM Peak – LOS A → LOS B
 - PM (School) Peak – LOS A → LOS B
 - NC-16 (S Providence Road) / Rea Road
 - AM Peak – LOS C → LOS D
 - PM (School) Peak – LOS D → LOS D



• Items of Note

ITEMS OF NOTE

- Each school (high, middle, elementary) analyzed separately
- 45 minutes between respective bell times
- Only Middle school arrival to occur during NC-16 AM peak hour
 - High school / Elementary school before / after, respectively
- All school dismissals prior to NC-16 PM peak hour
- Each school peak (arrivals / dismissals) lasts ~20 minutes
- School impacts:
 - No PM peak hour impacts
 - No summer impacts
 - No weekend impacts
 - No holiday impacts
- By right construction of 70 single family homes
 - Will have PM peak hour impact

