STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

January 8, 2010

To: Lyle W. Overcash, P.E
Martin, Alexiou, Bryson
4000 Westchase Boulevard, Suite 530
Raleigh, NC 27607

Subject: Proposed Treyburn Middle School Traffic Impact Analysis Addendum #2 Review

The proposed Treyburn Middle School site, developed by Durham Public Schools, is located north of the SR 1631 (Snow Hill Road) and Altrada Drive intersection in Durham, North Carolina. The proposed development will consist of an 850-student middle school with an anticipated build-out year of 2011 and analysis year of 2012. The proposed middle school is projected to generate 711 A.M. peak hour site trips and 276 P.M. peak hour site trips via two site drive accesses. This second addendum to the original TIA has been submitted to reflect the relocation of site driveway one (1) aligning with Novaglen Road and site driveway two (2) 1,275 feet west of Snow Hill Drive.

The TIA analyzed the following five (5) intersections:
- SR 1631 (Snow Hill Road) / SR 1002 (Mason Road) and US 501 (Roxboro Road) – Signalized
- SR 1631 (Snow Hill Road) and SR 1752 (Novaglen Road)/ Site Access #1 - Unsignalized
- SR 1631 (Snow Hill Road) and SR 1748 (Altrada Drive) – Unsignalized
- SR 1631 (Snow Hill Road) and Site Access #2 – Unsignalized
- SR 1631 (Snow Hill Road) and Snow Hill Drive - Unsignalized

Approved Surrounding Developments

1. **Treyburn Residential**
   A residential development located on the east side of Sawmill Creek Parkway; consists of 221 single-family residential units.
2. **Treyburn Retail**
   A commercial development located in the southern quadrant of the Roxboro Road and Orange Factory Road intersection; consists of a 43,359 square foot supermarket, a 23,400 square foot shopping center, a bank with 3 drive-through windows, a 5,000 square foot high-turnover sit-down restaurant, and a 14,418 square foot pharmacy with drive-through window.
3. **Alexander Village**
   A residential development located in the southeast and southwest quadrants of the Hebron Road and Danube Lane intersection; consists of 221 single-family residential units, 264 apartments, and 208 townhomes.

DIVISION 5 - DISTRICT 2, 815 STADIUM DRIVE, DURHAM NC 27704-2713
Telephone: 919-220-4750 Fax: 919-560-3357

TIP Roadway Improvement Projects Relevant to Proposed Development

- **NCDOT TIP #U-4721 "Northern Durham Parkway"**– proposes a new urban freeway facility on a new location from I-540 to US 501 (Roxboro Road).

Trip Generation and Distribution

- 10% to/from the west via SR 1002 (Mason Road)
- 25% to/from the north via US 501 (Roxboro Road)
- 30% to/from the south via US 501 (Roxboro Road)
- 3% to/from the south via SR 1752 (Novaglen Road)
- 10% to/from the south via SR 1748 (Altrada Drive)
- 10% to/from the north via Snow Hill Drive
- 2% to/from the south via Whispering Meadow Lane
- 10% to/from the east via SR 1631 (Snow Hill Road)

Capacity Analysis for Existing and Future Conditions

- Existing (2008) Conditions
- Projected (2012) No-Build Conditions (Existing traffic + Background Growth + Approved Developments)
- Projected (2012) Build Conditions (Existing traffic + Background Growth + Approved Developments + Site Traffic Without Improvements)
- Projected (2012) Build Improved Conditions (Existing traffic + Background Growth + Approved Developments + Site Traffic With Improvements)

Summary of Road Improvements

The Department has reviewed the preliminary site plan and Traffic Impact Analysis (TIA) for the Treyburn Middle School prepared by Martin, Alexiou, Bryson, (Sealed and dated September 11, 2008), the TIA addendum prepared by Martin, Alexiou, Bryson, (Sealed and dated January 29, 2009), and the second addendum prepared by Martin, Alexiou, Bryson, (Sealed and dated October 30, 2009). In order to accommodate the site-generated traffic safely and efficiently, while also attempting to protect the functional integrity and operational capacity of the adjacent roadway facilities, we require the following improvements and/or restrictions related to this development.

SR 1631 (Snow Hill Road) / SR 1002 (Mason Road) and US 501 (Roxboro Road)

Due to the anticipated impacts that the additional traffic volumes associated with this development may have on the adjacent traffic facilities and with various other geometric improvements that may occur, this intersection may require signal modifications to accommodate this additional traffic volume.

Southbound US 501 (Roxboro Road)

- Lengthen the southbound left-turn lane from 125 feet to 275 feet.

Westbound SR 1631 (Snow Hill Road)

- Lengthen the westbound left-turn lane from 75 feet to 200 feet.

SR 1631 (Snow Hill Road) and SR 1752 (Novaglen Road)/Site Access #1

Eastbound SR 1631 (Snow Hill Road)

- Construct an exclusive left-turn lane with a minimum of 100 feet storage and appropriate taper.

Westbound SR 1631 (Snow Hill Road)

- Construct an exclusive left-turn lane with a minimum of 75 feet storage and appropriate taper.

Southbound Proposed Access #1

- Construct to a three (3) lane cross-section consisting of one (1) ingress and two (2) egress lanes providing one (1) exclusive right-turn lane and one (1) exclusive left-turn lane with a minimum of 150 feet of internal storage.

SR 1631 (Snow Hill Road) and SR 1748 Altrada Drive
No future geometric improvements are necessary at this intersection at this time to mitigate site-generated traffic.

SR 1631 (Snow Hill Road) and Snow Hill Drive/ Whispering Meadow Lane
No future geometric improvements are necessary at this intersection at this time to mitigate site-generated traffic.

SR 1631 (Snow Hill Road) and Site Access #2
Eastbound SR 1631 (Snow Hill Road)

- Construct an exclusive left-turn lane with a minimum of 250 feet storage and appropriate taper.

Southbound Proposed Access #2

- Construct to a three (3) lane cross-section consisting of one (1) ingress and two (2) egress lanes providing one (1) exclusive right-turn lane and one (1) exclusive left-turn lane with a minimum of 250 feet of internal storage.

The school should provide a minimum of 1,425 feet of queuing distance to accommodate students in the loading/unloading zone.

It is recommended that the installation of a sidewalk be put in place along the frontage of the school on SR 1631(Snow Hill Drive). The installation of this sidewalk would provide a safe walking route for students in the surrounding neighborhoods who may be walking to the proposed school site.

General

Due to, but not limited to, the comments and recommendations from this review of the proposed developments, changes in the internal circulation may be necessary to ensure that driver confusion is minimized to the maximum extent possible.

Any signal revisions, modifications, or additions necessitated by the development should be coordinated with the Regional Traffic Engineer, the Division Traffic Engineer, the Signals and Geometrics Section and the City of Durham.

Any pavement marking revisions/modifications necessitated by the development should be the responsibility of the developer and coordinated with the Division Traffic Engineer.

Any roadway modifications or improvements necessitated by the development should be the responsibility of the developer unless otherwise noted.

Reference should also be made to the information included in the "General Recommendations Attachment."

NCDOT driveway permits will be required for driveway access on SR 1631 (Snow Hill Road). Once the driveway permit has been approved and issued, a copy of the final driveway permit requirements should be forwarded to this office. If we can provide further assistance, please contact me at (919) 220-4750.

Sincerely,

Michelle R. F. Gray

Michelle R. F. Gray
Assistant District Engineer

Attachment

cc/ Mr. H. Wesley Parham, P.E.

General Recommendations Attachment
(For Treyburn Middle School Addendum #2)

Adequate horizontal and vertical sight distances should be reserved at all proposed entrances. Foliage that interferes with sight distance should be cut back to protect lines of sight. The District Engineer should determine if all drainage facilities are adequate. Curb cuts and curb ramps should be constructed in conformance with the "*Guidelines for Curb Cuts and Ramps for Disabled Persons*," if applicable.

The developer may be required to obtain an approved encroachment agreement covering proposed work within the state right-of-way. If this is the case, the encroachment should be cross-referenced to this review.

All street and driveway entrances onto state system roadways should be controlled with appropriate traffic control devices, including but not limited to, stop, yield, directional, regulatory, and advisory signs and pavement markings. All traffic control devices shall conform to the requirements set forth in the Manual on Uniform Traffic Control Devices. Final pavement marking and signing plans should be submitted to the Division Traffic Engineer for approval prior to the installation of any signs and/or pavement markings.

Unless otherwise noted, a recommended width of 40 feet (curb face to curb face) should be used at each drive. It is also recommended that 40 feet (minimum) radii should be used at each drive to accommodate any service type vehicles or truck traffic that may visit the site.

If the developer anticipates adding or petitioning for addition to the state system, all roads/streets should be designed and constructed in conformance with the current North Carolina Department of Transportation design and construction guidelines.

All "outparcels" or "excluded areas" should be served internally with no additional access onto abutting roadways. The developer should convey this condition in any lease or sell agreements.

As required by the "*Policy on Street and Driveway Access to North Carolina Highways*," dated July 2003, the applicant is responsible for identifying all right-of-way and/or control-of-access limits and for including this information on all submittals. Failure to accurately disclose R/W and C/A limits could result in the denial or closure of access points.

Adequate right-of-way for widening and sight distance triangles should be reserved. Consideration should be given to the possible future need for signalization and associated span poles, controller and pad, and guy wires at the intersections

Any additional development, either within this site or adjacent to this site, that intends on using this development's access will require an updated driveway permit and re-evaluation of geometric and traffic control needs.

All widening should include appropriate transitional and deceleration tapers. Recommended turn lane and transitional treatments are shown on pages 78 and 79 of the "*Policy on Street and Driveway Access to North Carolina Highways*," dated July 2003.

Where possible, opposite side driveways should be aligned to prevent the operational and safety problems caused by offset driveways.