



**TOWN OF HARRISBURG, NORTH CAROLINA
HARRISBURG TOWN HALL
PLANNING AND ZONING BOARD MEETING**

**March 16, 2021
6:00 PM**

AGENDA

1. THIS WILL BE A TELECONFERENCED MEETING VIA THE ZOOM PLATFORM.

- A. Please click this URL to
join: <https://us02web.zoom.us/j/83082014050?pwd=UWpoTWk1MmYybHBjYjZDWnYwOHJLQT09>
Passcode: 535728

Or join by phone:
Dial: 312 626 6799
929 205 6099

Webinar ID: 830 8201 4050

2. CALL TO ORDER

- A. AGENDA ADOPTION
- B. SPECIAL PRESENTATIONS
- C. PUBLIC COMMENT - Anyone wishing to address the Board may do so during the Public Comment section. Please state your name and address for the record, be courteous and do not repeat what has already been said. Please keep your comments about the subject and not personal in nature.

3. CONSENT AGENDA

- A. Consider the meeting minutes of February 16, 2021 Planning and Zoning Board meeting.

4. OLD BUSINESS

5. NEW BUSINESS

- A. H-2020-03 (R) – Orchid Ridge Subdivision Conditional Rezoning and Zoning Map Amendment.

6. STAFF UPDATES/INFORMATION

7. ADJOURNMENT

Town of Harrisburg's Vision Statement

Harrisburg will be the best small town in North Carolina based on low density housing, excellent economic opportunities, a safe living environment, and efficient and effective municipal services. Amenities such as excellent recreational programs, adequate open space, attractive shopping opportunities, a diversity of restaurants, and a connected system of roadways, sidewalks, greenways, and bicycle lanes will continue to enhance the quality of life of the Town. These services and amenities will be provided while retaining reasonable tax rates and debt levels.



TOWN OF HARRISBURG

Agenda Item Details

Title:

Consider the meeting minutes of February 16, 2021 Planning and Zoning Board meeting.

Presenting Personnel:

Suggested Motion or Action:

Motion to approve the meeting minutes of February 16, 2021 Planning and Zoning Board meeting.

Description/Background:

Recommendation:

Fiscal Impact:

Attachments:

1. PZ MINS FEB 16 2021

**TOWN OF HARRISBURG, NORTH CAROLINA
PLANNING & ZONING ADVISORY BOARD MEETING
TUESDAY, FEBRUARY 16, 2021
6:00 PM**

MINUTES

**1.
CALL TO ORDER**

Andy Rathke called the meeting to order.

PRESENT: Andy Rathke, Lloyd Quay, John Overcash, Jacob Carpenter, Rodney Garner, Thelma Thorne-Chapman, Kevin Schaffner

**A.
AGENDA ADOPTION**

MOTION

Rodney Garner made a motion to adopt the agenda as presented. Second was made by Thelma Thorne-Chapman.

The motion passed 7-0.

**B.
SPECIAL PRESENTATIONS**

**C.
PUBLIC COMMENT**

**2.
CONSENT AGENDA**

A. Planning Board meeting minutes from January 19, 2021 Planning and Zoning Board meeting.

MOTION:

Rodney Garner made a motion to approve the Consent Agenda. Second was made by Jacob Carpenter. **The motion passed 7-0.**

**3.
OLD BUSINESS**

**4.
NEW BUSINESS**

A

H-2020-08 (R) – Kelly Woods Subdivision Conditional Rezoning and Zoning Map Amendment. Harrisburg Real Estate Investments, LCC, the property owner for parcel 55061061470000 has submitted a request to rezone approximately 2.46 acres located off of Plaza Rd Ext. The applicant proposes to develop 4 single-family detached residential dwellings. To achieve this, the applicant is requesting that the property be rezoned from the current Low Density Residential (LDR) in the County to Conditional Residential Low Density (CZ-RL) in accordance with the site plan submitted with the application. A staff report is attached for more information and a site plan is submitted for your consideration. If approved, staff will continue reviewing the site plan in accordance with our Unified Development Ordinance (UDO) during the subsequent Preliminary Plat and Construction Document (CDs) reviews. Staff is recommending approval of the rezoning request with conditions included in the staff report.

1. Applicant agrees to obtain any and all applicable local, state, and federal permits required for development before any development activity can take place.
2. Applicant agrees to restrict cladding materials for all residential buildings to masonry products; vinyl siding will not be used.
3. Applicant agrees that there will be no exposed concrete foundations and that siding must extend to the ground level on all sides of the homes.

After some discussion about the project, they then took the following action:

MOTION:

Jake Carpenter made a motion to recommend approval of H-2020-08 (R) with the following conditions and send it on the Town Council for the consideration with a second from Thelma Thorne-Chapman. **The motion passed 7-0.**

The following Consistency Statement was then proposed:

CONSISTENCY STATEMENT:

1. Based on the staff report, staff presentation and with the conditions proposed, this conditional rezoning request is consistent with the Harrisburg Area Land Use plan and with the conditions it is reasonable and in the public interest.

MOTION:

Rodney Garner made a motion to approve the proposed Consistency Statement with a second from John Overcash. **The motion passed 5-0.**

5.

STAFF UPDATES/INFORMATION

- The list Sushil has sent out to each board member has been super helpful. This will keep all board members up to date on projects that are coming in and that could possibly be coming to the board in the future.
- We have a scheduled Neighborhood Meeting this Thursday; it is virtual and will start at 6pm.
- As you can see, we have a lot of our approved Commercial projects going up along HWY 49. Just to list a few: Wendy's, Backyard Burgers, and Circle K.

6.

ADJOURNMENT

MOTION:

There being no further business, Andy Rathke made a motion to adjourn, with a second from Thelma Thorne-Chapman. **The motion passed 7-0.**

Andy Rathke, Chairman

Carly Bedgood, Secretary



TOWN OF HARRISBURG

Agenda Item Details

Title:

H-2020-03 (R) – Orchid Ridge Subdivision Conditional Rezoning and Zoning Map Amendment.

Presenting Personnel:

Sushil Nepal, Planning & Economic Development Director

Suggested Motion or Action:

If approved, the following motion is suggested:

To approve the conditional rezoning request from Countryside Residential (CR) in the County to Conditional Residential Low Density (CZ-RL) as requested by the applicant for the related property in application H-2020-03 (R).

If denied, the following motion is suggested:

To deny the conditional rezoning request from Countryside Residential (CR) in the County to Conditional Residential Low Density (CZ-RL) as requested by the applicant for the related property in application H-2020-03 (R).

Description/Background:

DR Horton, Inc. on behalf of the the property owners of parcels 5515-6839-76; 5515-7755-96; 5515-6789-55; 5515-7825-98; 5515-8952-26; 5515-8850-53 and 5525-0761-70 has submitted a request to rezone approximately 352.11 acres of land located off Hickory Ridge Road and Lower Rocky River Road. The applicant proposes to develop 459 single-family detached residential dwellings, includes a combination of 60 feet wide lots (227) and 70 feet wide lots (232). To achieve this, the applicant is requesting that the property be rezoned from County CR (Countryside Residential) to CZ-RL (Conditional Zoning Residential Low Density) utilizing Conservation Design guidelines. The proposed gross density of the site is 1.33 dwelling units per acre.

The property is in the County, applicant has also submitted a Petition requesting Annexation for the subject property which is non-contiguous to the current Town of Harrisburg corporate limits. A Town Council public hearing will be held to take action on the rezoning and annexation at the same time.

A staff report is attached for more information and a site plan is submitted for your consideration. If approved, staff will continue reviewing the site plan in accordance with our Unified Development Ordinance (UDO) during the subsequent Preliminary Plat and Construction Document (CDs) reviews. Staff is recommending approval of the rezoning request with conditions included in the staff report.

Recommendation:

With the conditions proposed, the rezoning request is consistent with the Harrisburg Area Land Use Plan. Planning and Zoning Department staff recommends the approval of the rezoning request with conditions.

Fiscal Impact:

None.

Attachments:

1. Orchid Ridge_Rezoning Completed Application
2. Site Location Map_Orchid Ridge
3. H_2020_03_R_Orchid Ridge_Staff Report PB
4. Elevations Example_DR Horton
5. Orchid Ridge_Rezoning Package-reduced
6. Neighborhood Meeting Summary_Orchid Ridge
7. Orchid Ridge_Final TIA Report



APPLICATION FOR CONDITIONAL REZONING

Applications for a Conditional District must be accompanied by an application for a Zoning Map Amendment.

1. Please submit fifteen (15) copies of a complete development plan in conformance with Appendix B, Section B-4 of the UDO (all conditional rezoning applications shall include a site specific development plan which, if approved, shall be binding on the property in question). If approved, a zoning site plan review and approval will be required to receive a zoning compliance permit. For specific requirements, please see the form entitled "Site Plan Requirements".
2. Please list the specific permitted land use(s) that you are proposing. Land use(s) shall be chosen from Article 4.6 in the Harrisburg UDO titled "Use Regulations" and shall correspond to the Zoning District requested.

single-family detached dwelling units
and allowed accessory uses.

3. Please list any specific conditions that you would be willing to impose as part of this application (example: no outside storage permitted on-site, increased buffer width, etc.).

Maximum number of lots and lot sizes

Minimum amount of green space and improvements

Street network

Thread Trail improvements and connections

Certain roadway improvements



Owner Information

It is understood by all parties hereto that while this application will be carefully considered and reviewed, the burden of providing its need and providing all required evidence rests with the below named petitioner. In addition, it is understood and acknowledged that if the property is rezoned as requested, the property involved in this request will be perpetually bound by the use(s) authorized and subject to such conditions as imposed, unless subsequently changed or amended through the rezoning process. It is further understood and acknowledged that it is the responsibility of the petitioner to file the development plan in the Cabarrus County Register of Deeds Office as a deed restriction upon the subject property.

If, after two years from the date of approval substantial construction has not begun, the property in question may revert to its prior zoning designation after a public hearing is held in compliance with the required procedure for a zoning map amendment.

I do hereby certify that all information which I have provided for this application is, to the best of my/our knowledge, correct.

Property Owner (1)	<u>James Ray Flowers Jr.</u>
	<u>Virginia Kale Flowers</u>
Address	<u>7029 Kitty Hawk Lane</u>
	<u>Fort Mill, SC 29707</u>
Phone	<u>704-574-1008</u>
Fax	
Signature	<u>James Ray Flowers Jr.</u> <u>Virginia Kale Flowers</u> <u>Amalia F. Turner</u>

NOTE: If multiple parcels are involved in a request, property owners must sign an application identifying the individual parcel(s) represented. Each parcel included in the request must be accounted for in the application process for the application to be considered complete.



Subject Property Information (1)

1. Street Address N/A
2. PIN(s) (10 digit#) 5515 -- 6839 -- 76 ; -- --
3. Deed Reference Book 12868 Page 0113
4. Township # 1

Description of Subject Property

5. Size (square feet or acreage) 72.89 acres
6. Street Frontage (feet) 250
7. Current Land Use vacant
8. Surrounding Land Use and Zoning Classification

North: Zoning CR Land Use Residential

South: Zoning CR Land Use Residential

East: Zoning CR Land Use Residential

West: Zoning CR Land Use Residential

9. Request to Change Zoning From CR to RL-CZ

10. Is this a request for a Conditional Rezoning? YES NO

(If YES, you must also submit an application for a Conditional Rezoning)

11. Purpose for Request: To allow for the development of the site utilizing the conservation district standards.



Harrisburg NC

The right side of opportunity

Owner/Agent/Applicant Information

It is understood by all parties hereto that while this application will be carefully considered and reviewed, the burden of providing its need and providing all required evidence rests with the below named petitioner.

I do hereby certify that all information which I have provided for this application is, to the best of my/our knowledge, correct.

Amelia F. Turner

12. Property Owner (1)

James Ray Flowers Jr. & Virginia Kale Flowers

Address

7029 Kitty Hawk Lane, Fort Mill SC 29707

Phone

704-574-1008

Fax

Email:

jflowers@brbproperties.com

Signature

Virginia Kale Flowers
James Ray Flowers, Jr.

13. Agent (if any)

Moore & Van Allen, Attn: Bridget Grant

Address

100 N Tryon Street, Ste 4700, Charlotte, NC 28202

Phone

704.331.2379

Fax

704.378.1973

Email

bridgetgrant@mvalaw.com

Signature

Bridget Grant

14. Applicant (if any)

D.R. Horton, Attn: *Daniel McCon*

Address

8001 Arrowridge Boulevard, Charlotte, NC 28273

Phone

704.345.1003

Fax

Email

dbmccord@drhorton.com

Signature

Daniel McCon

NOTE: If multiple parcels are involved in a request, property owners must sign an application identifying the individual parcel(s) represented. Each parcel included in the request must be accounted for in the application process for the application to be considered complete.



HarrisburgNC

The right side of opportunity

Owner Information

It is understood by all parties hereto that while this application will be carefully considered and reviewed, the burden of providing its need and providing all required evidence rests with the below named petitioner. In addition, it is understood and acknowledged that if the property is rezoned as requested, the property involved in this request will be perpetually bound by the use(s) authorized and subject to such conditions as imposed, unless subsequently changed or amended through the rezoning process. It is further understood and acknowledged that it is the responsibility of the petitioner to file the development plan in the Cabarrus County Register of Deeds Office as a deed restriction upon the subject property.

If, after two years from the date of approval substantial construction has not begun, the property in question may revert to its prior zoning designation after a public hearing is held in compliance with the required procedure for a zoning map amendment.

I do hereby certify that all information which I have provided for this application is, to the best of my/our knowledge, correct.

Property Owner (2) Theodore Franklin Suggs
Ann Folsom Suggs
Address 10563 Hickory Ridge Road
Harrisburg, NC 28075
Phone 704-915-9189
Fax _____
Signature Theodore F. Suggs

40 cadillac @
gmail.com

NOTE: If multiple parcels are involved in a request, property owners must sign an application identifying the individual parcel(s) represented. Each parcel included in the request must be accounted for in the application process for the application to be considered complete.

ONLY:



Owner Information

It is understood by all parties hereto that while this application will be carefully considered and reviewed, the burden of providing its need and providing all required evidence rests with the below named petitioner. In addition, it is understood and acknowledged that if the property is rezoned as requested, the property involved in this request will be perpetually bound by the use(s) authorized and subject to such conditions as imposed, unless subsequently changed or amended through the rezoning process. It is further understood and acknowledged that it is the responsibility of the petitioner to file the development plan in the Cabarrus County Register of Deeds Office as a deed restriction upon the subject property.

If, after two years from the date of approval substantial construction has not begun, the property in question may revert to its prior zoning designation after a public hearing is held in compliance with the required procedure for a zoning map amendment.

I do hereby certify that all information which I have provided for this application is, to the best of my/our knowledge, correct.

Property Owner (2)	<u>Theodore Franklin Suggs</u>
	<u>Ann Folsom Suggs</u>
Address	<u>10563 Hickory Ridge Road</u>
	<u>Harrisburg, NC 28075</u>
Phone	<u>704-576-2455</u>
Fax	<u>N/A</u>
Signature	<u>Ann Suggs 2/9/20</u>

NOTE: If multiple parcels are involved in a request, property owners must sign an application identifying the individual parcel(s) represented. Each parcel included in the request must be accounted for in the application process for the application to be considered complete.

OFFICIAL USE ONLY:

Petition Number: _____

Date Filed: _____

Received By: _____



HarrisburgNC

The right side of opportunity

Subject Property Information ⁽²⁾

1. Street Address 2827 Cedar Cove Drive, Harrisburg, NC 28075
2. PIN(s) (10 digit#) 5515 -- 7755 -- 96 ; -- -- --
3. Deed Reference Book 8538 Page 0208
4. Township # 1

Description of Subject Property

5. Size (square feet or acreage) 60.51 acres
6. Street Frontage (feet) 464
7. Current Land Use _____
8. Surrounding Land Use and Zoning Classification
 - North: Zoning CR Land Use _____
 - South: Zoning CR Land Use _____
 - East: Zoning CR Land Use _____
 - West: Zoning CR Land Use _____
9. Request to Change Zoning From CR to RL-C7
10. Is this a request for a Conditional Rezoning? ☒ YES NO
(If YES, you must also submit an application for a Conditional Rezoning)

11. Purpose for Request: _____

To allow development of the site utilizing Conservation District standards



Owner/Agent/Applicant Information

It is understood by all parties hereto that while this application will be carefully considered and reviewed, the burden of providing its need and providing all required evidence rests with the below named petitioner.

I do hereby certify that all information which I have provided for this application is, to the best of my/our knowledge, correct.

12. Property Owner ⁽²⁾ Theodore Franklin Suggs & Ann Folsom Suggs
Address 10563 Hickory Ridge Road, Harrisburg, NC 28075
Phone 704-576-6455
Fax N/A
Email: a.suggs@gmail.com
Signature Ann Suggs 2/9/20

13. Agent (if any) Moore & Van Allen, Attn: Bridget Grant
Address 100 N Tryon Street, Ste 4700, Charlotte, NC 28202
Phone 704.331.2379
Fax 704.378.1973
Email bridgetgrant@mvalaw.com
Signature Bridget Grant

14. Applicant (if any) D.R. Horton, Attn: David McCorso
Address 8001 Arrowridge Boulevard, Charlotte, NC 28273
Phone 704.345.1003
Fax _____
Email d1bmccorso@drhorton.com
Signature David McCorso

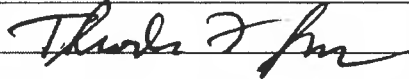
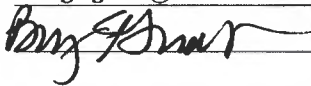
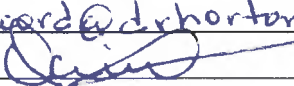
NOTE: If multiple parcels are involved in a request, property owners must sign an application identifying the individual parcel(s) represented. Each parcel included in the request must be accounted for in the application process for the application to be considered complete.



Owner/Agent/Applicant Information

It is understood by all parties hereto that while this application will be carefully considered and reviewed, the burden of providing its need and providing all required evidence rests with the below named petitioner.

I do hereby certify that all information which I have provided for this application is, to the best of my/our knowledge, correct.

12. Property Owner ⁽²⁾ Theodore Franklin Suggs & Ann Folsom Suggs
- Address 10563 Hickory Ridge Road, Harrisburg, NC 28075
- Phone _____
- Fax _____
- Email: _____
- Signature 
13. Agent (if any) Moore & Van Allen, Attn: Bridget Grant
- Address 100 N Tryon Street, Ste 4700, Charlotte, NC 28202
- Phone 704.331.2379
- Fax 704.378.1973
- Email bridgetgrant@mvalaw.com
- Signature 
14. Applicant (if any) D.R. Horton, Attn: David McCom
- Address 8001 Arrowridge Boulevard, Charlotte, NC 28273
- Phone 704.345.1003
- Fax _____
- Email dbmcard@drhorton.com
- Signature 

NOTE: If multiple parcels are involved in a request, property owners must sign an application identifying the individual parcel(s) represented. Each parcel included in the request must be accounted for in the application process for the application to be considered complete.



HarrisburgNC

The right side of opportunity

Owner Information

It is understood by all parties hereto that while this application will be carefully considered and reviewed, the burden of providing its need and providing all required evidence rests with the below named petitioner. In addition, it is understood and acknowledged that if the property is rezoned as requested, the property involved in this request will be perpetually bound by the use(s) authorized and subject to such conditions as imposed, unless subsequently changed or amended through the rezoning process. It is further understood and acknowledged that it is the responsibility of the petitioner to file the development plan in the Cabarrus County Register of Deeds Office as a deed restriction upon the subject property.

If, after two years from the date of approval substantial construction has not begun, the property in question may revert to its prior zoning designation after a public hearing is held in compliance with the required procedure for a zoning map amendment.

I do hereby certify that all information which I have provided for this application is, to the best of my/our knowledge, correct.

Property Owner (3 & 5) Cedar Cove LLC a NC LLC

Address

2536 Cedar Cove Drive

Harrisburg, NC 28075

Phone

Fax

Signature

Ladie Q. Hefner/owner-manager

NOTE: If multiple parcels are involved in a request, property owners must sign an application identifying the individual parcel(s) represented. Each parcel included in the request must be accounted for in the application process for the application to be considered complete.

USE
Petition Number: _____



HarrisburgNC

The right side of opportunity

Subject Property Information ⁽³⁾

1. Street Address 2600 Cedar Cove Drive, Harrisburg, NC 28075
2. PIN(s) (10 digit#) 5515 -- 6789 -- 55 ; -- -- --
3. Deed Reference Book 4815 Page 0116
4. Township # 1

Description of Subject Property

5. Size (square feet or acreage) 1 acre
6. Street Frontage (feet) N/A
7. Current Land Use residential
8. Surrounding Land Use and Zoning Classification

North: Zoning CR Land Use _____

South: Zoning CR Land Use _____

East: Zoning CR Land Use _____

West: Zoning CR Land Use _____

9. Request to Change Zoning From CR to RL-CZ

10. Is this a request for a Conditional Rezoning? YES NO

(If YES, you must also submit an application for a Conditional Rezoning)

11. Purpose for Request: _____

To allow development of the site utilizing Conservation District standards



1. Street Address 2558 Cedar Cove Drive, Harrisburg, NC 28075

2. PIN(s) (10 digit#) 5515 -- 8952 -- 26 ; -- --

3. Deed Reference Book 4815 Page 0114

4. Township # 1

5. Size (square feet or acreage) 107.35

6. Street Frontage (feet) _____

7. Current Land Use residential

8. Surrounding Land Use and Zoning Classification _____

North: Zoning CR Land Use _____

South: Zoning CR Land Use _____

East: Zoning CR Land Use _____

West: Zoning CR Land Use _____

9. Request to Change Zoning From CR to RL-CZ

10. Is this a request for a Conditional Rezoning? YES NO

(If YES, you must also submit an application for a Conditional Rezoning)

11. Purpose for Request: _____

To allow development of the site utilizing Conservation District standards



HarrisburgNC

The right side of opportunity

Owner/Agent/Applicant Information

It is understood by all parties hereto that while this application will be carefully considered and reviewed, the burden of providing its need and providing all required evidence rests with the below named petitioner.

I do hereby certify that all information which I have provided for this application is, to the best of my/our knowledge, correct.

12. Property Owner ^(3 & 5) Cedar Cove LLC a NC LLC

Address 2536 Cedar Cove Drive, Harrisburg, NC 28075

Phone _____

Fax _____

Email: _____

Signature *Barb G. Hefner / owner-manager*

13. Agent (if any) Moore & Van Allen, Attn: Bridget Grant

Address 100 N Tryon Street, Ste 4700, Charlotte, NC 28202

Phone 704.331.2379

Fax 704.378.1973

Email bridgetgrant@mvalaw.com

Signature *Bridget Grant*

14. Applicant (if any) D.R. Horton, Attn: *DAVID M. CORIO*

Address 8001 Arrowridge Boulevard, Charlotte, NC 28273

Phone 704.345.1003

Fax _____

Email *dbmccord@drhorton.com*

Signature *David*

NOTE: If multiple parcels are involved in a request, property owners must sign an application identifying the individual parcel(s) represented. Each parcel included in the request must be accounted for in the application process for the application to be considered complete.



HarrisburgNC

The right side of opportunity

Owner Information

It is understood by all parties hereto that while this application will be carefully considered and reviewed, the burden of providing its need and providing all required evidence rests with the below named petitioner. In addition, it is understood and acknowledged that if the property is rezoned as requested, the property involved in this request will be perpetually bound by the use(s) authorized and subject to such conditions as imposed, unless subsequently changed or amended through the rezoning process. It is further understood and acknowledged that it is the responsibility of the petitioner to file the development plan in the Cabarrus County Register of Deeds Office as a deed restriction upon the subject property.

If, after two years from the date of approval substantial construction has not begun, the property in question may revert to its prior zoning designation after a public hearing is held in compliance with the required procedure for a zoning map amendment.

I do hereby certify that all information which I have provided for this application is, to the best of my/our knowledge, correct.

Property Owner (4)	<u>John Lentz</u>
	<u>Linda H. Lentz</u>
Address	<u>2530 Cedar Cove Drive</u>
	<u>Harrisburg, NC 28075</u>
Phone	<u>704-455-5229</u>
Fax	<u></u>
Signature	<u>John V. Lentz</u>
	<u>Linda H. Lentz</u>

NOTE: If multiple parcels are involved in a request, property owners must sign an application identifying the individual parcel(s) represented. Each parcel included in the request must be accounted for in the application process for the application to be considered complete.



HarrisburgNC

The right side of opportunity

Subject Property Information⁽⁴⁾

1. Street Address 2530 Cedar Cove Drive, Harrisburg, NC 28075
2. PIN(s) (10 digit#) 5515 -- 7825 -- 98 ; -- -- --
3. Deed Reference Book NULL Page NULL
4. Township # 1

Description of Subject Property

5. Size (square feet or acreage) 7.9 acres
6. Street Frontage (feet) N/A
7. Current Land Use residential
8. Surrounding Land Use and Zoning Classification
 - North: Zoning CR Land Use _____
 - South: Zoning CR Land Use _____
 - East: Zoning CR Land Use _____
 - West: Zoning CR Land Use _____
9. Request to Change Zoning From CR to RL-CZ
10. Is this a request for a Conditional Rezoning? YES NO

(If YES, you must also submit an application for a Conditional Rezoning)

11. Purpose for Request: _____

To allow development of the site utilizing Conservation District standards



Owner/Agent/Applicant Information

It is understood by all parties hereto that while this application will be carefully considered and reviewed, the burden of providing its need and providing all required evidence rests with the below named petitioner.

I do hereby certify that all information which I have provided for this application is, to the best of my/our knowledge, correct.

12. Property Owner ⁽⁴⁾ John Lentz and Linda H. Lentz
- Address 2530 Cedar Cove Drive, Harrisburg, NC
- Phone 704-455-5229
- Fax _____
- Email: jlentz@aol.com
- Signature John J. Lentz
Linda H. Lentz
13. Agent (if any) Moore & Van Allen, Attn: Bridget Grant
- Address 100 N Tryon Street, Ste 4700, Charlotte, NC 28202
- Phone 704.331.2379
- Fax 704.378.1973
- Email bridgetgrant@mvalaw.com
- Signature Bridget Grant
14. Applicant (if any) D.R. Horton, Attn: David McCord
- Address 8001 Arrowridge Boulevard, Charlotte, NC 28273
- Phone 704.345.1003
- Fax _____
- Email dbmccord@drhorton.com
- Signature David McCord

NOTE: If multiple parcels are involved in a request, property owners must sign an application identifying the individual parcel(s) represented. Each parcel included in the request must be accounted for in the application process for the application to be considered complete.



Owner Information

It is understood by all parties hereto that while this application will be carefully considered and reviewed, the burden of providing its need and providing all required evidence rests with the below named petitioner. In addition, it is understood and acknowledged that if the property is rezoned as requested, the property involved in this request will be perpetually bound by the use(s) authorized and subject to such conditions as imposed, unless subsequently changed or amended through the rezoning process. It is further understood and acknowledged that it is the responsibility of the petitioner to file the development plan in the Cabarrus County Register of Deeds Office as a deed restriction upon the subject property.

If, after two years from the date of approval substantial construction has not begun, the property in question may revert to its prior zoning designation after a public hearing is held in compliance with the required procedure for a zoning map amendment.

I do hereby certify that all information which I have provided for this application is, to the best of my/our knowledge, correct.

Property Owner (6 & 8) Jeffrey T. Fisher

Address 2500 Cedar Cove Drive

Harrisburg, NC 28075

Phone _____

Fax _____

Signature Jeffrey T. Fisher

NOTE: If multiple parcels are involved in a request, property owners must sign an application identifying the individual parcel(s) represented. Each parcel included in the request must be accounted for in the application process for the application to be considered complete.



Subject Property Information ⁽⁶⁾

1. Street Address 2500 Cedar Cove Drive, Harrisburg, NC 28075
2. PIN(s) (10 digit#) 5515 -- 8850 -- 53 ; -- -- --
3. Deed Reference Book 11096 Page 0294
4. Township # 1

Description of Subject Property

5. Size (square feet or acreage) 6.78 acres
6. Street Frontage (feet) 328.55
7. Current Land Use residential
8. Surrounding Land Use and Zoning Classification

North: Zoning CR Land Use _____

South: Zoning CR Land Use _____

East: Zoning CR Land Use _____

West: Zoning CR Land Use _____

9. Request to Change Zoning From CR to RL-CZ

10. Is this a request for a Conditional Rezoning? ☒ YES ☐ NO

(If YES, you must also submit an application for a Conditional Rezoning)

11. Purpose for Request: _____

To allow development of the site utilizing Conservation District standards



HarrisburgNC

The right side of opportunity

Subject Property Information⁽⁸⁾

1. Street Address 2512 Cedar Cove Drive, Harrisburg, NC 28075
2. PIN(s) (10 digit#) 5515 -- 8811 -- 99 ; -- -- --
3. Deed Reference Book 11096 Page 0294
4. Township # 1

Description of Subject Property

5. Size (square feet or acreage) .21 acres
6. Street Frontage (feet) 328.55
7. Current Land Use vacant
8. Surrounding Land Use and Zoning Classification
 - North: Zoning CR Land Use _____
 - South: Zoning CR Land Use _____
 - East: Zoning CR Land Use _____
 - West: Zoning CR Land Use _____
9. Request to Change Zoning From CR to RL-CZ
10. Is this a request for a Conditional Rezoning? ☒ YES NO

(If YES, you must also submit an application for a Conditional Rezoning)

11. Purpose for Request: _____
To allow development of the site utilizing Conservation District standards



HarrisburgNC

The right side of opportunity

Owner/Agent/Applicant Information

It is understood by all parties hereto that while this application will be carefully considered and reviewed, the burden of providing its need and providing all required evidence rests with the below named petitioner.

I do hereby certify that all information which I have provided for this application is, to the best of my/our knowledge, correct.

12. Property Owner (6 & 8) Jeffrey T Fisher

Address 2500 Cedar Cove Drive, Harrisburg, NC 28075

Phone 704-455-3502

Fax _____

Email: dianne.fisher@gmail.com

Signature Jeffrey T. Fisher

13. Agent (if any) Moore & Van Allen, Attn: Bridget Grant

Address 100 N Tryon Street, Ste 4700, Charlotte, NC 28202

Phone 704.331.2379

Fax 704.378.1973

Email bridgetgrant@mvalaw.com

Signature Bridget Grant

14. Applicant (if any) D.R. Horton, Attn: David McCorn

Address 8001 Arrowridge Boulevard, Charlotte, NC 28273

Phone 704.345.1003

Fax _____

Email dbmccord@drhorton.com

Signature David McCorn

NOTE: If multiple parcels are involved in a request, property owners must sign an application identifying the individual parcel(s) represented. Each parcel included in the request must be accounted for in the application process for the application to be considered complete.



Harrisburg NC

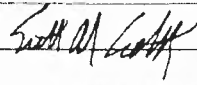
The right side of opportunity

Owner Information

It is understood by all parties hereto that while this application will be carefully considered and reviewed, the burden of providing its need and providing all required evidence rests with the below named petitioner. In addition, it is understood and acknowledged that if the property is rezoned as requested, the property involved in this request will be perpetually bound by the use(s) authorized and subject to such conditions as imposed, unless subsequently changed or amended through the rezoning process. It is further understood and acknowledged that it is the responsibility of the petitioner to file the development plan in the Cabarrus County Register of Deeds Office as a deed restriction upon the subject property.

If, after two years from the date of approval substantial construction has not begun, the property in question may revert to its prior zoning designation after a public hearing is held in compliance with the required procedure for a zoning map amendment.

I do hereby certify that all information which I have provided for this application is, to the best of my/our knowledge, correct.

Property Owner (7)	<u>Lower Rocky River Road LLC</u>
	<u>Inglefield Enterprises LTD</u>
Address	<u>2820 Selwyn Avenue, Ste 500</u>
	<u>Charlotte, NC 28209</u>
Phone	<u>704-334-3212</u>
Fax	
Signature	<u></u>

NOTE: If multiple parcels are involved in a request, property owners must sign an application identifying the individual parcel(s) represented. Each parcel included in the request must be accounted for in the application process for the application to be considered complete.

Subject Property Information ⁽⁷⁾

1. Street Address 10600 Lower Rocky River Road, Concord, NC 28025
2. PIN(s) (10 digit#) 5525 -- 0761 -- 70 ; -- -- --
3. Deed Reference Book 10583 Page 0019
4. Township # 1

Description of Subject Property

5. Size (square feet or acreage) 98.83 acres
6. Street Frontage (feet) 2300.62
7. Current Land Use vacant
8. Surrounding Land Use and Zoning Classification
- | | | |
|--------|------------------|------------------|
| North: | Zoning <u>CR</u> | Land Use <u></u> |
| South: | Zoning <u>CR</u> | Land Use <u></u> |
| East: | Zoning <u>CR</u> | Land Use <u></u> |
| West: | Zoning <u>CR</u> | Land Use <u></u> |
9. Request to Change Zoning From CR to RL-CZ
10. Is this a request for a Conditional Rezoning? (YES) NO

(If YES, you must also submit an application for a Conditional Rezoning)

11. Purpose for Request: _____

To allow development of the site utilizing Conservation District standards



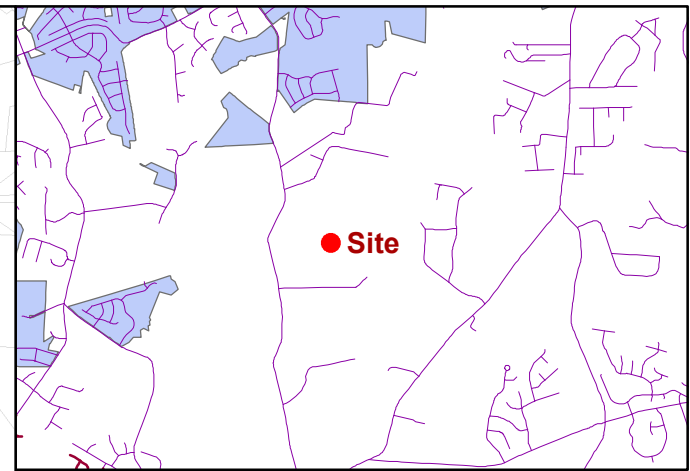
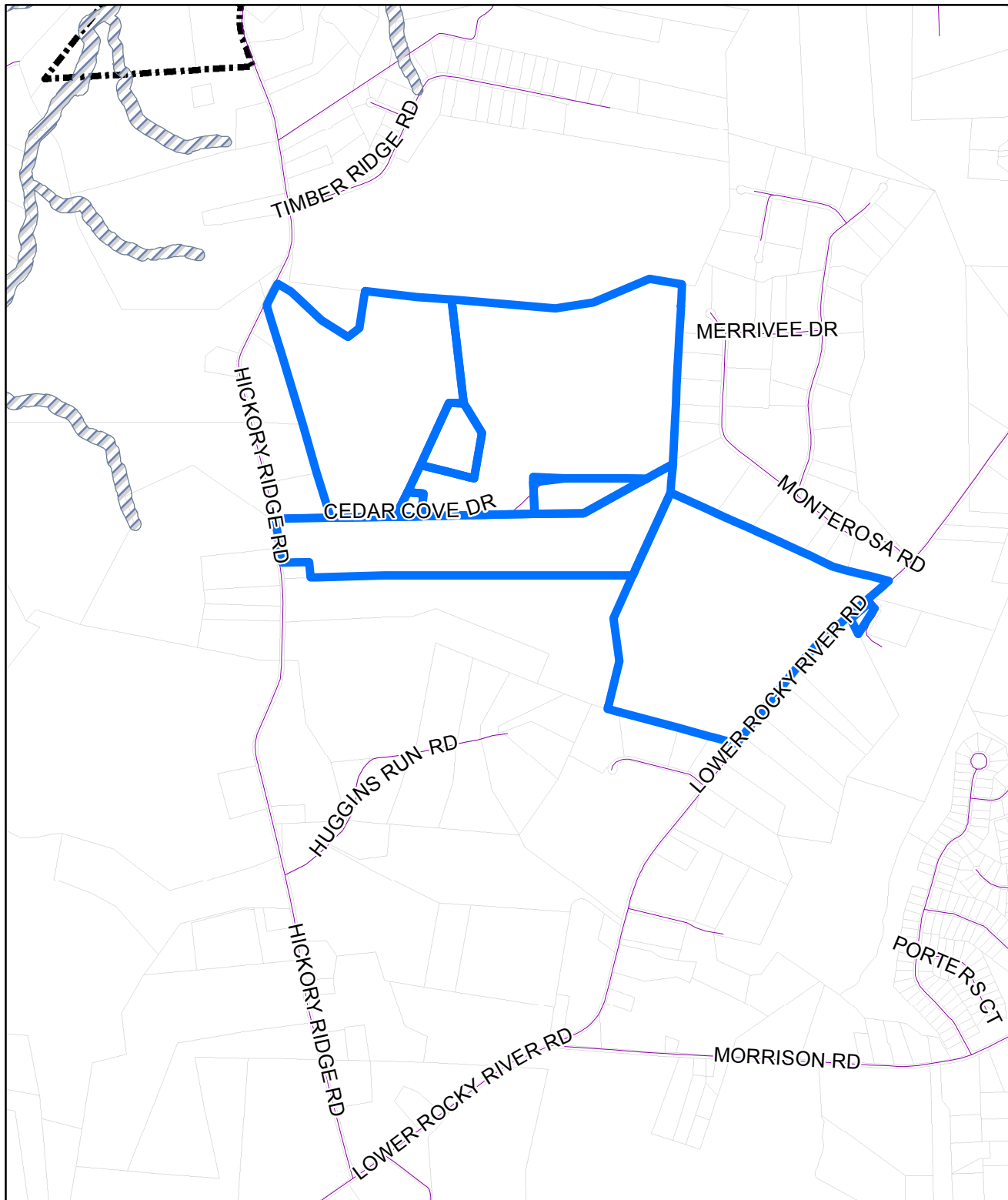
Owner/Agent/Applicant Information

It is understood by all parties hereto that while this application will be carefully considered and reviewed, the burden of providing its need and providing all required evidence rests with the below named petitioner.

I do hereby certify that all information which I have provided for this application is, to the best of my/our knowledge, correct.

12. Property Owner ⁽⁷⁾ Lower Rocky River Road LLC & Inglefield Enterprises LTD
Address 2820 Selwyn Avenue Ste 500, Charlotte, NC 28209
Phone 704-334-3212
Fax _____
Email: scoblentz@southstreetpartners.com
Signature [Signature]
13. Agent (if any) Moore & Van Allen, Attn: Bridget Grant
Address 100 N Tryon Street, Ste 4700, Charlotte, NC 28202
Phone 704.331.2379
Fax 704.378.1973
Email bridgetgrant@mvalaw.com
Signature [Signature]
14. Applicant (if any) D.R. Horton, Attn: David McCoro
Address 8001 Arrowridge Boulevard, Charlotte, NC 28273
Phone 704.345.1003
Fax _____
Email dbmccord@drhorton.com
Signature [Signature]

NOTE: If multiple parcels are involved in a request, property owners must sign an application identifying the individual parcel(s) represented. Each parcel included in the request must be accounted for in the application process for the application to be considered complete.



H 2020-03-(R)

Property Identification Number (7 Parcels):
5515-6839-76; 5515-7755-96; 5515-6789-55
5515-7825-98; 5515-8952-26; 5515-8850-53
5525-0761-70

Located along Hickory Ridge Rd and
Lower Rocky River Rd

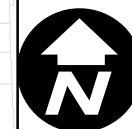
Applicant: DR Horton

Current Zoning: Country Residential (CR / County)

Proposed Zoning:
Conditional Residential Low Density,
Conservation Subdivision (CZ-RL)

Legend

-  Rezoning Site
-  Town Limits
-  Parcels



0 900 1,800 3,600 Feet



Town of Harrisburg
Planning and Economic Development Department
Rezoning Staff Report

DATE: March 9, 2021

SUBJECT:

Request H-2020-03-(R): To rezone approximately 352.11 acres from County CR (Country Residential) to CZ-RL (Conservation Conditional Zoning Residential Low Density)

Location: The subject property is located off Hickory Ridge Road and Lower Rocky River Road (PIN 5515-6839-76; 5515-7755-96; 5515-6789-55; 5515-7825-98; 5515-8952-26; 5515-8850-53 and 5525-0761-70)

Applicant: DR Horton

Staff Report Prepared by: Craig Thomas, Senior Planner

Neighborhood Meeting: March 5, 2020 (originally scheduled for February 20, 2020 but was rescheduled due to inclement weather)

BACKGROUND:

Area: ±352.11 acres Total

Existing Land Use: Vacant/Single-Family Residential

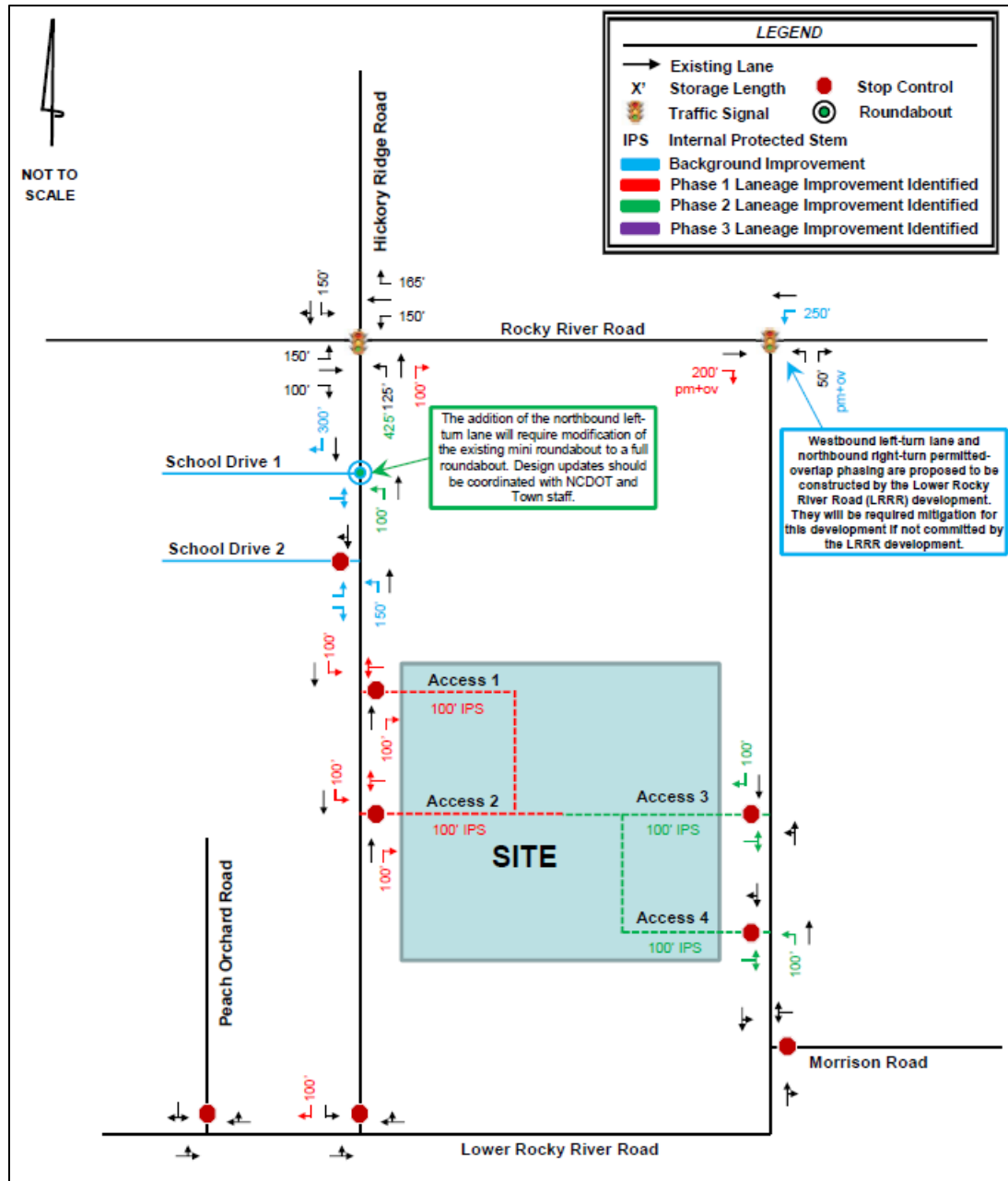
Zoning within 500 feet: North - Countryside Residential (CR), County
South - Countryside Residential (CR), County
East - Countryside Residential (CR), County
West - Countryside Residential (CR), County

Land Uses within 500 feet: North - Single-family Residential, County
South - Single-family Residential, County
East - Single-family Residential, County

APPLICATION SUMMARY:

- The applicant proposes to develop a total of 459 single-family subdivision, includes a combination of 60 feet wide lots (227) and 70 feet wide lots (232). To achieve this, the applicant is requesting that the property be rezoned from County CR (Countryside Residential) to CZ-RL (Conditional Zoning Residential Low Density) utilizing Conservation Design guidelines.
- The proposed gross density of the site is 1.33 dwelling units per acre. The RL district has a maximum allowable density of 2 dwelling units per acre, but upon approval of this rezoning, the density will be capped at 1.33 units/acre and the site plan will be attached with the land.
- Per the Town subdivision regulations, the applicant is providing dedicated public open space. The applicant is protecting a total of 150.58 acres of open space as part of the development.
- The applicant agrees to provide a suitable location for the new future Fire Station along the Lower Rocky River Road frontage.
- The applicant agrees to obtain a twenty five (25) foot easement for the future installation of a greenway trail beyond the northern boundary of the site along the required sewer easement to Reedy Creek. The greenway easement will offer future opportunity to build nearly a mile long segment connecting this future development to points north of this area.
- The applicant agrees to install the following road improvements per the Traffic Impact Analysis (TIA) completed for the project (see map on the following page):
 - **Hickory Ridge Road and Rocky River Road:**
 - Construction of northbound right-turn lane along Hickory Ridge Road with minimum of 100 feet storage and
 - Extension of northbound left-turn lane to provide 425 feet of storage.
 - **Rocky River Road and Lower Rocky River Road:**
 - Construction of eastbound right-turn lane along Rocky River Road with minimum of 200 feet storage and permitting overlap phasing.
 - **Hickory Ridge Road and Lower Rocky River Road:**
 - Construction of southbound right-turn lane along Hickory Ridge Road with minimum of 100 feet storage.
 - **Hickory Ridge Road and School Drive 1:**
 - Construction of northbound left-turn lane along Hickory Ridge Road with minimum of 100 feet storage. This will require modification of the

existing mini roundabout to a full roundabout. Design of these roundabout upgrades should be coordinated with NCDOT and Town staff.



○ **Hickory Ridge Road and Access 1:**

- Construction of westbound approach with one ingress and one egress lane and an internal protected stem of 100 feet.
- Construction of northbound right-turn lane along Hickory Ridge Road with minimum of 100 feet storage.
- Construction of southbound left-turn lane along Hickory Ridge Road with minimum of 100 feet storage.

- **Hickory Ridge Road and Access 2:**
 - Construction of westbound approach with one ingress and one egress lane and an internal protected stem of 100 feet.
 - Construction of southbound left-turn lane along Hickory Ridge Road with minimum of 100 feet storage.
 - Construction of northbound right-turn lane along Hickory Ridge Road with minimum of 100 feet storage.
- **Lower Rocky River Road and Access 3:**
 - Construction of eastbound approach with one ingress and one egress lane and an internal protected stem of 100 feet.
 - Construction of southbound right-turn lane along Lower Rocky River Road with minimum of 100 feet storage.
- **Lower Rocky River Road and Access 4:**
 - Construction of eastbound approach with one ingress and one egress lane and an internal protected stem of 100 feet.
 - Construction of northbound left-turn lane along Lower Rocky River Road with minimum of 100 feet storage.
- As a conditional zoning request, the applicant has submitted a site plan along with the request for rezoning, which is attached for your consideration.
- The property is in the County, applicant has also submitted a Petition requesting Annexation for the subject property which is non-contiguous to the current Town of Harrisburg corporate limits. A public hearing will be held to take action on the rezoning and annexation at the same time.

APPROVAL CRITERIA:

1. The size of the tract in question;

The subject property is approximately 352.11 acres in size.

2. Whether the proposal conforms with and is in furtherance of the implementation of the goals and policies of the Comprehensive Plan, other adopted plans, and the goals, objectives and policies of the Ordinance;

Per the Unified Development Ordinance, the intent of the proposed district depicted on the submitted site plan is as follows:

***RL:** The RL district is established to provide areas for low density single family uses, with a maximum of two (2) dwelling units per acre, which may provide buffers between the agricultural and RE classifications and the higher density areas of the Town. It includes flexible density and minimum lot size requirements to allow for market and design flexibility while preserving the neighborhood character and permitting applicants*

to cluster development in order to preserve environmentally sensitive and agricultural land areas.

Per the Harrisburg Area Land Use Plan, the subject property is located in an area designated on the future land use map as **Very Low Density Residential**. The description of Very Low Density Residential is as follows:

“This area is intended to remain predominantly rural while allowing residential uses at very low densities. Conservation design is a common subdivision approach if utilities are available, allowing small lots in exchange for more open space. Architecture is sensitively integrated, avoiding valuable natural features. Gross densities are less than one unit per acre for conventional subdivisions, and up to two if conservation design standards are met. Some business uses typically located in rural areas, such as small engine repair, may be appropriate provided such uses adhere to performance standards to minimize potential impacts to surrounding uses.”

Based on the description of the Very Low Density Residential land use classification, the proposed conservation development, at 1.33 dwelling units per acre would fall within the conservation threshold of 2 dwelling units per acre that has been set for this area in the Land Use Plan.

With regard to the overall goals of the Land Use Plan, **recommendation LU-5** states that the Town should “Expand Housing Options” to appeal to a broad range of audience, and create value for property owners with smaller lots in exchange for preservation of open space.

Recommendation LU-7 of the Plan recommends consistency between the Town’s zoning regulations and the adopted Future Land Use Map. A table included as part of this goal establishes the “appropriate” zoning districts to use when making zoning decisions based on the Future Land Use Map. The map, as previously stated, designates this area as Very Low Density Residential. The table indicates that the RL district is appropriate for this land use classification.

3. The benefits or detriments for the owner, neighbors and surrounding community;

The benefits to the owner of the property would be that single-family residential development at the proposed density of 1.33 dwelling units per acre could be achieved under the proposed zoning and annexation allows connection to town offered services.

Detriments to the neighbors and surrounding community are consistent with those expected with additional residential development, such as generation of additional traffic and potential traffic congestion during peak times. Certain traffic improvements and road widening has been required as part of the Traffic Impact Analysis (see Application Summary above) performed for the proposed subdivision as a means to mitigate and minimize the additional trip generations in the area associated with this development.

Benefits to the neighbors and the surrounding community include the preservation of open space areas, securing greenway easements to connect development to the Reedy Creek Greenway, and the traffic improvements in the immediate area required by the TIA.

4. Whether the proposed request is in compliance with the adequate public facilities criteria;

a. Utilities:

Utilities are available in this area, and are sufficient to meet the needs of the property. Sewer access is located along Reedy Creek to the north of the properties, and will be available to the development upon annexation. Water access is available to the northwest along Hickory Ridge Road. Any utility line extensions or upgrades necessary to serve this development will be the sole responsibility of the developer.

b. Transportation:

A TIA was completed based on the size of the development and the anticipated amount of traffic generated by the subdivision. All traffic improvements are detailed and depicted on a map in the Application Summary (above) and will be completed and delivered by the proposed project, as per that TIA.

c. Safety and Sanitation Services:

Adequate police, fire, and sanitation services are available for the proposed use, and will be provided upon annexation.

d. Schools:

Per Cabarrus County, the APF Ordinance for schools is currently not being enforced after a ruling by the NC Supreme Court. However, Cabarrus County Schools does still review the capacity of the K-12 schools that this development will feed into and provides future capacity numbers based on the units proposed. For this site, Cabarrus County has provided the following information:

Current Capacity:

Elementary (Hickory Ridge ES) -	<u>88%</u>
Middle (Hickory Ridge MS) -	<u>93%</u>
High (Hickory Ridge HS) -	<u>110%</u>

Future Capacity Based on Unbuilt Lots and Including this Request:

Elementary (Hickory Ridge ES) -	<u>107%</u>
Middle (Hickory Ridge HS) -	<u>101%</u>
High (Hickory Ridge HS) -	<u>117%</u>

As per Cabarrus County School, the Single-family homes in this development will generate upon full buildout an additional 177 elementary students, 89 middle school students, and 118 high school students.

5. The relationship of the uses envisioned under the new zoning and the uses currently present in adjacent tracts. The Commission shall consider the following:

- a. Whether the proposed zoning is compatible with the surrounding area or whether there will be adverse impacts on the capacity or safety of the portion of street network influenced by the rezoning, parking problems, or environmental impacts that the new use will generate such as excessive storm water runoff, water, air or noise pollution, excessive nighttime lighting or other nuisances;**

The proposed single-family development and density of the proposed development (1.33 dwelling units per acre) is compatible with surrounding land uses. The Conservation style subdivision is aimed to preserve 40% open space, most of which is existing tree save areas and will offer environmental benefits. The stormwater generated will be managed internal to the site using stormwater control measures throughout the development and several traffic improvements to the adjacent streets and intersection will ne made as prescribed by the TIA (included in Application Summary of this report) .

- b. Any change of character in the area due to installation of public facilities, other zoning changes, new growth changes, deterioration, and development;**

Like all other development activity in this area, the development of this land would convert former vacant land into a residential neighborhood, while preserving appropriate areas for open space.

- c. The zoning districts and existing land uses of the surrounding properties;**

The areas around this property are generally zoned for low density residential use. Existing land use patterns in the area typically consist of low density residential neighborhoods and vacant forested land and land previously used for agricultural purposes.

- d. Whether the subject property is suitable for the uses to which it has been restricted under the existing zoning classification;**

The property is suitable for the uses which it has been restricted to under the existing zoning classification.

- e. Whether the rezoning is compatible with the adjacent neighborhood, especially concerning neighborhood stability and character;**

As previously mentioned, the specific use of the property, single family residential, is consistent with surrounding neighborhoods and aligns with Harrisburg Area Land Use Plan (HALUP).

- f. The length of time the subject property has remained vacant as zoned (if applicable);**

This property has been vacant.

- g. Whether there is an adequate supply of land available in the subject area and the surrounding community to accommodate the zoning and community needs;**

Land supply is not a direct issue in this area.

- 6. Whether the existing zoning was in error at the time of adoption.**

The existing zoning was not in error at the time of adoption.

Furthermore, as a Conditional Zoning request, the Board must consider the following criteria:

- 7. The proposed Conditional Zoning (CZ) District use's appropriateness for its proposed location and consistency with the purposes, goals, objectives, and policies of the current Land Use Plan.**

The rezoning application to CZ-RL district to the property, with the proposed density limitation, is consistent with the density and lot size standards established for the base RL Zoning District in the Unified Development Ordinance and Very Low Density Residential land use classification in the Land Use Plan.

The development proposal accompanying the rezoning request would restrict permitted uses to single family residences, which are appropriate in this area.

- 8. The use(s) requested are among those listed as an eligible permitted or conditional use in the general use district as included in the rezoning request.**

The applicant is seeking for the following uses to be allowed in this Conditional Zoning District:

- Single-Family Detached Residential; this use is allowed in the RL District.

- 9. The design of the proposed Conditional Zoning (CZ) District use's minimization of adverse effects, including visual impact of the proposed use on adjacent lands; and avoidance of significant adverse impacts on surrounding lands regarding trash, traffic, service delivery, parking and loading, odors, noise, glare and vibration and not create a nuisance.**

The applicant intends to work collaboratively with both Harrisburg town staff and the NC Department of Transportation in identifying and implementing roadway improvement

measures on perimeter roadways intended to mitigate adverse transportation impacts associated with the proposed development. There are four vehicular site access points planned to the neighborhood, two on Hickory Ridge Road and two on Lower Rocky River Road. Traffic improvements to intersections in the immediate area are part of this project, as well as a roadway connection through the neighborhood between Hickory Ridge Road and Lower Rocky River Road. The neighborhood roadway connection also includes multi-use paths to facilitate the use of other modes of transportation. Additionally, walking trails throughout the neighborhood and the easement for future greenway extension to the Reedy Creek Greenway will provide residents in the area greater bicycle and pedestrian mobility alternatives.

Landscaping buffers shown are adequate to meet the needs of the adjacent properties, and open space is designated as part of the subdivision, planting details will be reviewed at a later stage of plan approval.

10. The use limitations and conditions as proposed and/or imposed for the requested district can reasonably be implemented and enforced for the subject property.

The conditions proposed and imposed for this district can be reasonably implemented on this site.

11. When implemented the proposed and/or imposed use limitations and conditions will mitigate specific land development issues that would likely result if the subject property were zoned to accommodate all the uses and the minimum standards of the corresponding general zoning district. If any standards are proposed that are different from the underlying zoning district, the applicant must clearly demonstrate that the overall resultant project is greater than that which is typically allowed by the general district.

All proposed conditions recommended by staff are to bring the site into conformance with applicable local and state regulations.

12. The applicant has agreed to accept the use limitations and conditions as proposed and/or imposed for the requested district.

The applicant will need to agree to all conditions listed in this staff report. Any additional conditions placed on this property will need the acceptance of the applicant before a decision can be made on this application.

13. For an approval, the Board must adopt a consistency statement that the amendment being considered is either consistent or inconsistent with the adopted land use plan and that the Board considers the action to be reasonable and in the public interest.

The Planning and Zoning Board will need to adopt a consistency statement when a recommendation or decision is made on this item.

APPROVAL WITH CONDITIONS:

The proposal is a conditional re-zoning request. Conditions may be imposed on the zoning action; staff recommends that the following conditions be placed on this project. Applicant agrees to the following:

1. Applicant agrees to obtain any and all applicable local, state, and federal permits required for development before any development activity can take place.
2. Applicant agrees to restrict primary cladding materials for all residential buildings to masonry or similar products; vinyl siding will not be used.
3. Applicant agrees to install all required improvements as required by the final approved Traffic Impact Analysis (TIA).
4. Applicant agrees to provide a minimum 8 foot landscape easement (4 feet on each side of the property line, existing tree save or newly planted) for residential lots sharing a rear property line.
5. Applicant agrees to provide a suitable location for the new Fire Station on Lower Rocky River Road.
6. Applicant agrees to protect the Blackwelder Natural Heritage Site to the greatest extent possible as identified in the Natural Heritage Survey.
7. Applicant agrees to acquire and dedicate 25 foot public greenway easement along the entirety of the off-site sewer easement connecting the subdivision to Reedy Creek Greenway.
8. Applicant agrees that there will be no exposed concrete foundations and that siding and/or other material must extend to the ground level on all sides of the homes.
9. Applicant agrees mailbox clusters shall meet ADA Standards at a minimum.
10. Applicant agrees to provide a tree survey identifying all existing heritage trees on site during the Preliminary Plat review and approval. Applicant agrees to the mitigation/replacement of identified heritage trees (during Preliminary Plat) if damaged during construction, in accordance with the Town of Harrisburg Unified Development Ordinance.
11. Applicant agrees that all ponds shall be wet detention ponds with fountains. Ponds shall be designed such that there is a minimum depth of 10' over at least 25% of the permanent pool area.
12. Applicant agrees Phase 2 shall include the entirety of connection from Hickory Ridge Road to Lower Rocky River Road prior to the 173rd lot platted for Phase 2. No lots in Phase 3 shall be platted prior to the completion of the connection.
13. Applicant agrees that all streets should be to the Town of Harrisburg Engineering Design standards, alternate pavement schedule is not allowable. Roadways cross sections will be reviewed and approved at the construction document phase.

RECOMMENDATION:

With the proposed site plan and conditions proposed, the rezoning request is consistent with the Harrisburg Area Land Use Plan. Planning and Zoning Department staff supports approval of the rezoning request with conditions.

D.R.HORTON | Portfolio



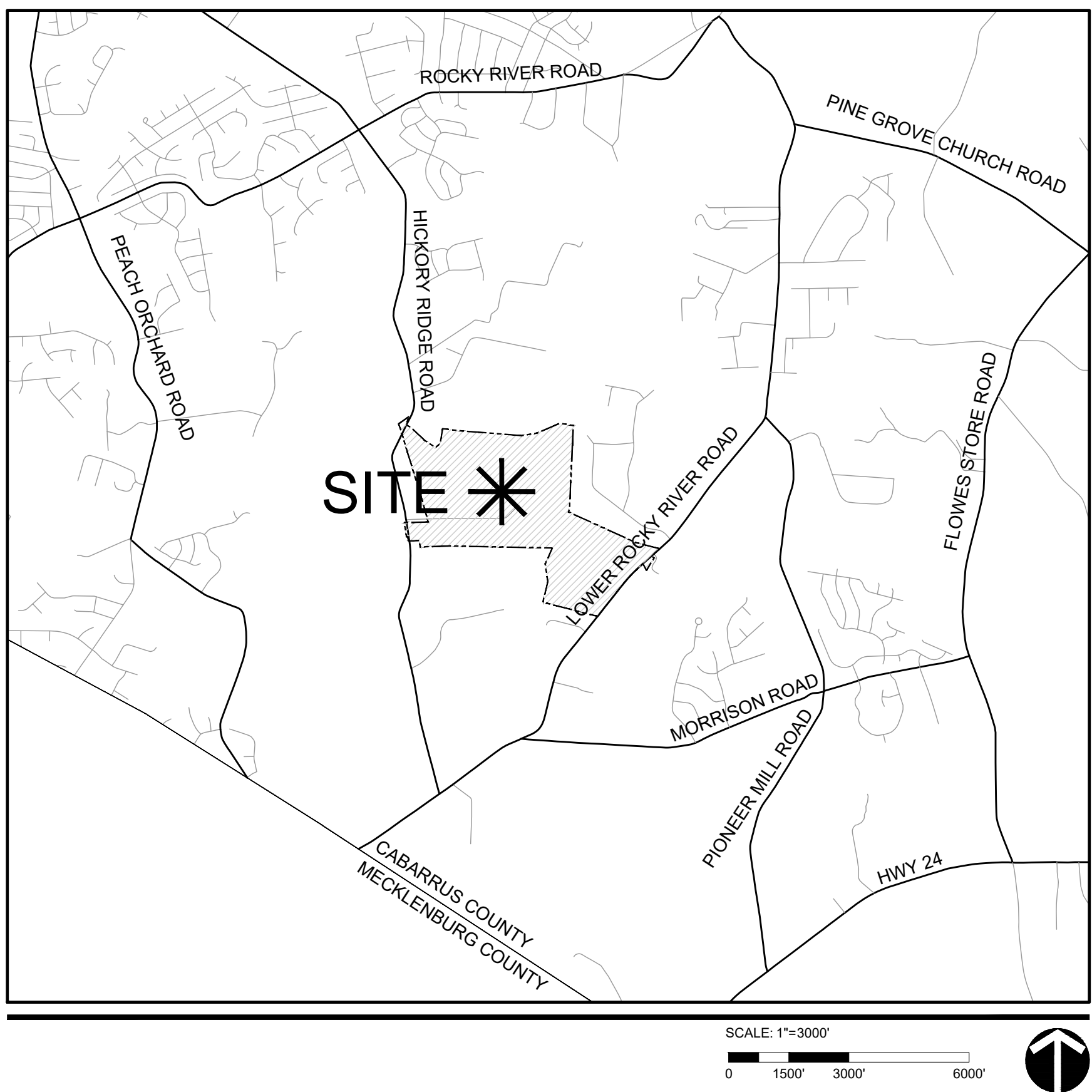
Notable Conditions:

1. Applicant agrees to obtain any and all applicable local, state, and federal permits required for development before any development activity can take place (*see Development Standards Section 7*).
2. Applicant agrees to restrict primary cladding materials for all residential buildings to masonry or similar products; vinyl siding will not be used (*see Development Standards Section 4*).
3. Applicant agrees to install all required improvements as required by the final approved Traffic Impact Analysis (*see Development Standards Section 3*).
4. Applicant agrees to provide a minimum 8 foot landscape easement (4 feet on each side of the property line, existing tree save or newly planted) for residential lots sharing a rear property line.
5. Applicant agrees to provide a suitable location for the new Fire Station on Lower Rocky River Road (*see Development Standards Section 7*).
6. Applicant commits to protect the Blackwelder Natural Heritage Site to the greatest extent possible as identified in the Natural Heritage Survey (*see RZ Sheet 7*).
7. Applicant agrees to acquire and dedicate 25 foot public greenway easement along the entirety of the off-site sewer easement connecting the subdivision to Reedy Creek Greenway.
8. Applicant agrees that there will be no exposed concrete foundations and that siding and/or other materials must extend to the ground level on all sides of the homes.
9. Applicant agrees mailbox clusters shall meet minimum ADA standards (*see Development Standards Section 7*).
10. Applicant agrees to provide a tree survey identifying all existing heritage trees on site during the Preliminary Plat review and approval. Applicant agrees to the mitigation/replacement of identified heritage tress (during Preliminary Plat) if damaged during construction in accordance with the Town of Harrisburg Unified Development Ordinance (*see Development Standards Section 6*).
11. Applicant agrees that all ponds shall be wet detention ponds with fountains. Ponds shall be designed such that there is a minimum depth of 10' over at least 25% of the permanent pool area.
12. Applicant agrees Phase 2 shall include the entirety of connection from Hickory Ridge Road to Lower Rocky River Road prior to the 173rd lot plat for Phase 2. No lots in Phase 3 shall be platted prior to the completion of the connection (*see Development Standards Section 3*).
13. Applicant agrees that all streets should be to the Town of Harrisburg Engineering Design standards, alternate pavement schedule is not allowable. Roadways cross sections will be reviewed and approved at the construction document phase (*see Development Standards Section 3*).

SHEET INDEX

Sheet List Table	
Sheet Number	Sheet Title
RZ-1.0	COVER SHEET
RZ-1.1	SURVEY
RZ-2.0	TECHNICAL DATA
RZ-3.0	CONCEPTUAL SITE PLAN RENDERING
RZ-4.0	CONCEPTUAL SITE PLAN
RZ-4.1-4.5	DETAILED CONCEPTUAL SITE PLANS
RZ-4.6	BLOCK LENGTHS PLAN
RZ-5.0	DEVELOPMENT STANDARDS
RZ-6.0	CONCEPTUAL CONNECTIVITY EXHIBIT
RZ-7.0	OPEN SPACE EXHIBIT

VICINITY MAP



PROJECT TEAM

DEVELOPER

DR HORTON
8001 ARROWRIDGE BLVD.
CHARLOTTE, NC 28273
704.377.2006
CONTACT: ROBERT PRICE

OWNERS

JAME RAY FLOWERS JR &
VIRGINIA KALE FLOWERS
CEDAR COVE LLC
JOHN V. LENTZ
JEFFREY T. FISHER
THEODORE F. SUGGS
ANN FOLSON SUGGS
LOWER ROCKY RIVER ROAD LLC
INGLEFIELD ENTERPRISES LTD
C/O PITTINGER LAND INVESTMENTS

LANDSCAPE ARCHITECT

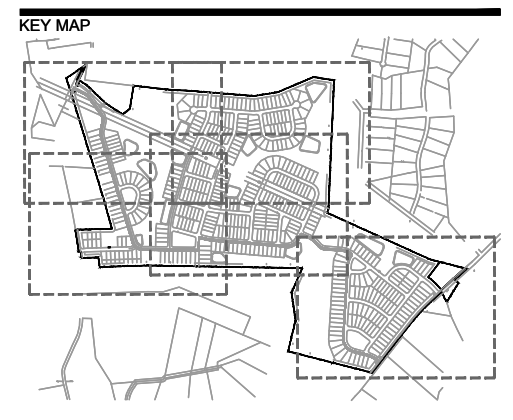
LANDDESIGN
223 NORTH GRAHAM STREET
CHARLOTTE, NC 28202
704.333.0325
CONTACT: MARK KIME

CIVIL ENGINEER

LANDDESIGN
223 NORTH GRAHAM STREET
CHARLOTTE, NC 28202
704.333.0325
CONTACT: MASON GREESON

SURVEYOR

YARBROUGH-WILLIAMS & HOULE INC.
730 WINDSOR OAK COURT
CHARLOTTE, NC 28273
704.556.1990
CONTACT: JOE WHALEY



PROJECT

ORCHID RIDGE

LANDDESIGN PROJ.# 1013319		
REVISION / ISSUANCE		
NO.	DESCRIPTION	DATE
1	REZONING SUBMITTAL	01/07/20
2	REZONING SUBMITTAL	02/10/20
3	REZONING SUBMITTAL	08/06/20
4	REZONING SUBMITTAL	12/10/20
5	REZONING SUBMITTAL	02/19/21
6	REZONING SUBMITTAL	03/05/21

SURVEY

RZ-1.1

DEVELOPMENT SUMMARY

PARCEL ID #:	5515-6839-76 5515-6789-55 5515-8952-26 5525-0761-70	5515-7755-96 5515-7825-98 5515-8850-53
TOTAL PROJECT SIZE:	± 352.11 ACRES	
DEVELOPMENT AREA 1: FIRE STATION:	± 3.20 ACRES	
DEVELOPMENT AREA 2: HICKORY RIDGE:	± 1.04 ACRES	
ROAD ROW AND OFF-SITE DEDICATION:	± 2.60 ACRES	
DEVELOPMENT AREA 3: LOWER ROCKY:	± 345.27 ACRES	
RIVER ROAD ROW AND OFF-SITE DEDICATION:		
DEVELOPMENT AREA 4:		
RESIDENTIAL SUBDIVISION:		

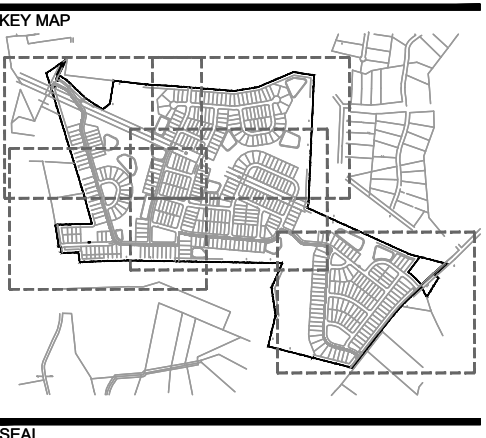
FOR THE PURPOSE OF ORDINANCE COMPLIANCE, THE FOLLOWING CALCULATIONS ARE BASED ON AREA 4 ONLY.

EXISTING ZONING:	CR (CABARRUS COUNTY)
PROPOSED ZONING:	CZ-RL CONSERVATION DISTRICT (TOWN OF HARRISBURG)
EXISTING USE:	VACANT
PROPOSED USE:	SINGLE-FAMILY
PROPOSED LOTS:	227 (60' X 200') MINIMUM 232 (70' X 172') MINIMUM
TOTAL LOTS:	459 LOTS
DUA:	1.33
OPEN SPACE REQUIRED:	±138.11 ACRES (40.00%)
OPEN SPACE PROVIDED:	±150.58 ACRES (43.63%)
ACTIVE OPEN SPACE REQUIRED:	±11.50 ACRES (.025 AC/LOT)
ACTIVE OPEN SPACE PROVIDED:	±19.10 ACRES
MAX. OPEN SPACE ALLOWED IN INACCESSIBLE LAND:	±37.64 ACRES (25.00%)
PROP. OPEN SPACE IN INACCESSIBLE LAND:	±29.10 ACRES (19.32%)
PUBLIC OPEN SPACE REQUIRED:	±13.11 ACRES (3.73% AC/LOT)
PUBLIC OPEN SPACE PROVIDED:	±28.02 ACRES
CLUSTER MAIL BOX UNITS PROVIDED:	28 UNITS

NOTE: LAND DEDICATED FOR FUTURE FIRE STATION NOT INCLUDED IN OPEN SPACE CALCULATIONS.

LOT AND BUILDING REGULATIONS:	12,000 SF
MINIMUM LOT SIZE:	57 FEET (43.6% O.S. REDUCTION)
MINIMUM LOT WIDTH:	20 FEET (43.6% O.S. REDUCTION)
MINIMUM STREET SETBACK:	8.5 FEET (43.6% O.S. REDUCTION)
MINIMUM SIDE SETBACK:	17 FEET (43.6% O.S. REDUCTION)
MINIMUM REAR SETBACK:	35 FEET
MAXIMUM BUILDING HEIGHT:	

NOTE: THE AVERAGE BLOCK LENGTH FOR THE SUBDIVISION SHALL NOT EXCEED 1,800 LINEAR FEET.



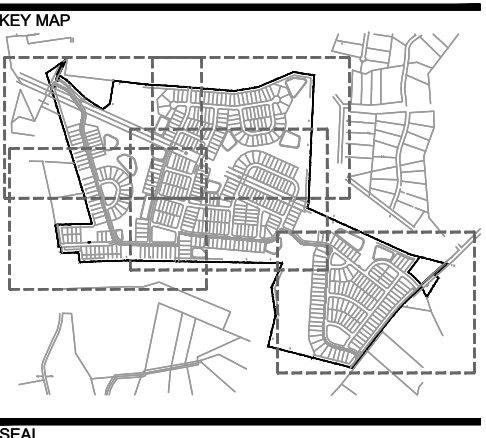
NOT FOR CONSTRUCTION

ORCHID RIDGE

DR HORTON
8001 ARROWRIDGE BLVD.
CHARLOTTE, NC 28273

SYMBOL LEGEND

- DEVELOPMENT AREA 1, 2, AND 3
- 50' VEGETATIVE BUFFER
- 150' DUKE POWER ROW
- PROPOSED STREET NETWORK
- SITE INGRESS/EGRESS



SEAL

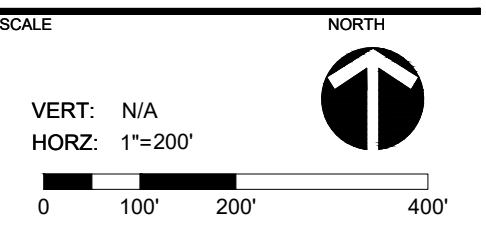
NOT FOR
CONSTRUCTION

ORCHID RIDGE

DR HORTON
8001 ARROWRIDGE BLVD.
CHARLOTTE, NC 28273

REVISION / ISSUANCE		
NO.	DESCRIPTION	DATE
1	REZONING SUBMITTAL	01/07/20
2	REZONING SUBMITTAL	02/10/20
3	REZONING SUBMITTAL	08/06/20
4	REZONING SUBMITTAL	12/10/20
5	REZONING SUBMITTAL	02/19/21
6	REZONING SUBMITTAL	03/05/21

DESIGNED BY: MEK
DRAWN BY: JAL
CHECKED BY: LDI



SHEET TITLE
CONCEPTUAL SITE PLAN
RENDERING

SHEET NUMBER
RZ-3.0

DEVELOPMENT SUMMARY

PARCEL ID #:	5515-6839-76	5515-7755-06
	5515-6789-55	5515-7825-98
	5515-8952-26	5515-8850-53
	5525-0761-70	

TOTAL PROJECT SIZE:	± 352.11 ACRES
DEVELOPMENT AREA 1: FIRE STATION:	± 3.20 ACRES
DEVELOPMENT AREA 2: HICKORY RIDGE	
ROAD ROW AND OFF-SITE DEDICATION:	± 1.04 ACRES
DEVELOPMENT AREA 3: LOWER ROCKY	
RIVER ROAD ROW AND	
OFF-SITE DEDICATION:	± 2.60 ACRES
DEVELOPMENT AREA 4:	
RESIDENTIAL SUBDIVISION:	± 345.27 ACRES

FOR THE PURPOSE OF ORDINANCE COMPLIANCE, THE FOLLOWING
CALCULATIONS ARE BASED ON AREA 4 ONLY.

EXISTING ZONING:	CR (CABARRUS COUNTY)
PROPOSED ZONING:	CZ-RL CONSERVATION DISTRICT (TOWN OF HARRISBURG)
EXISTING USE:	VACANT
PROPOSED USE:	SINGLE-FAMILY
PROPOSED LOTS:	227 (60' X 200') MINIMUM 232 (70' X 172') MINIMUM 459 LOTS
TOTAL LOTS:	1.33
DUA:	±138.11 ACRES (40.00%)
OPEN SPACE REQUIRED:	±150.59 ACRES (43.63%)
ACTIVE OPEN SPACE REQUIRED:	±11.50 ACRES (.025 AC/LOT)
MAX. OPEN SPACE PROVIDED:	±19.10 ACRES
IN INACCESSIBLE LAND:	±37.64 ACRES (25.00%)
PROP. OPEN SPACE IN	
INACCESSIBLE LAND:	±29.10 ACRES (19.32%)
PUBLIC OPEN SPACE REQUIRED:	±13.11 ACRES (1/3 AC/LOT)
PUBLIC OPEN SPACE PROVIDED:	±28.02 ACRES

NOTE: LAND DEDICATED FOR FUTURE FIRE STATION NOT INCLUDED
IN OPEN SPACE CALCULATIONS.

LOT AND BUILDING REGULATIONS:	12,000 SF
MINIMUM LOT SIZE:	57 FEET (43.6% O.S. REDUCTION)
MINIMUM LOT WIDTH:	20 FEET (43.6% O.S. REDUCTION)
MINIMUM STREET SETBACK:	8.5 FEET (43.6% O.S. REDUCTION)
MINIMUM SIDE SETBACK:	17 FEET (43.6% O.S. REDUCTION)
MINIMUM REAR SETBACK:	35 FEET
MAXIMUM BUILDING HEIGHT:	

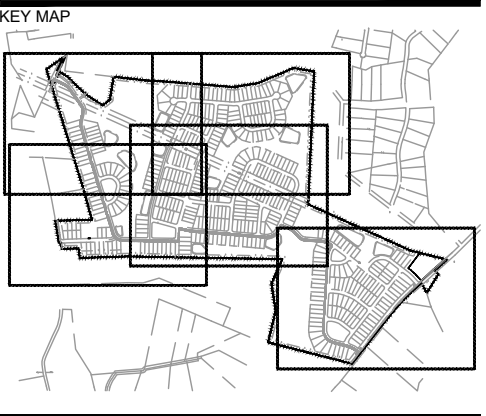
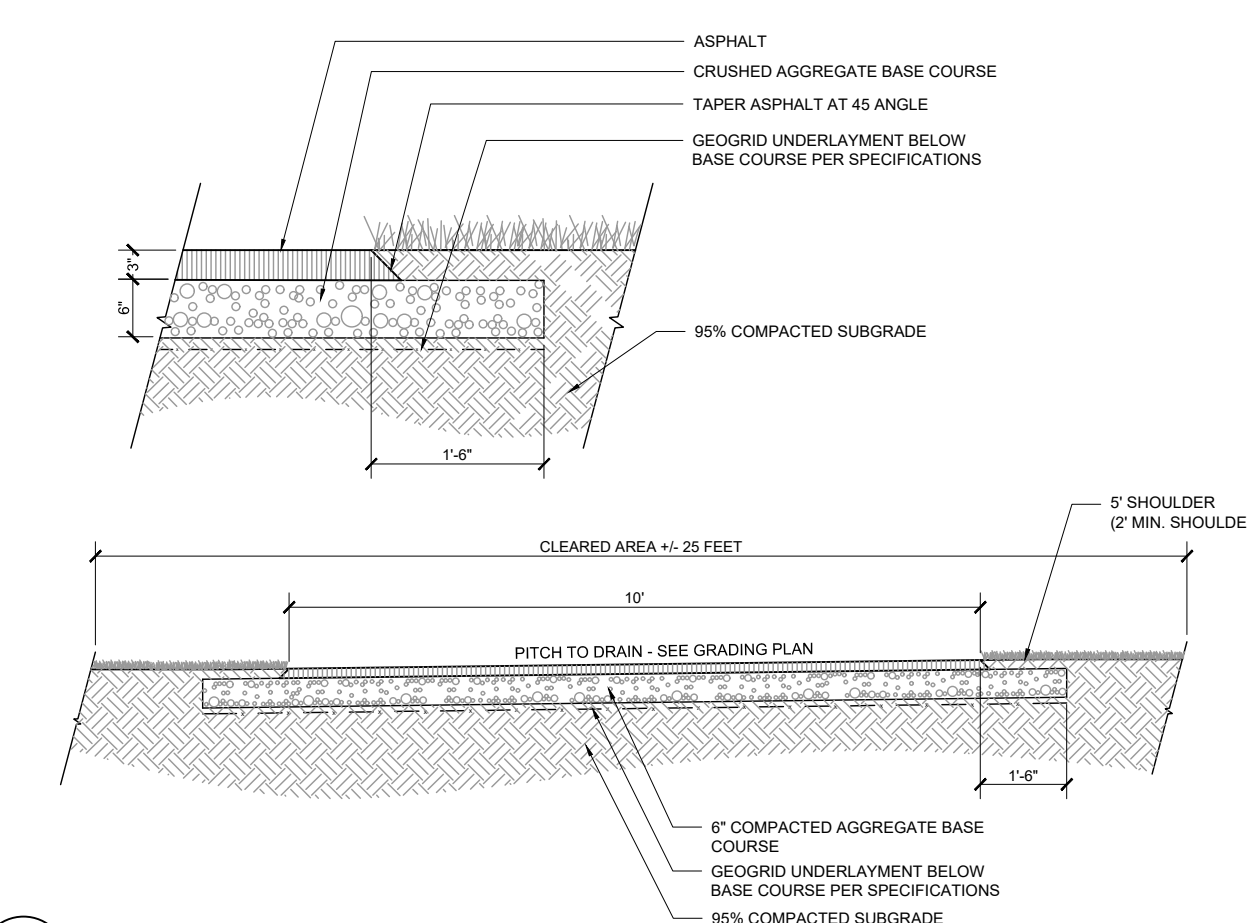
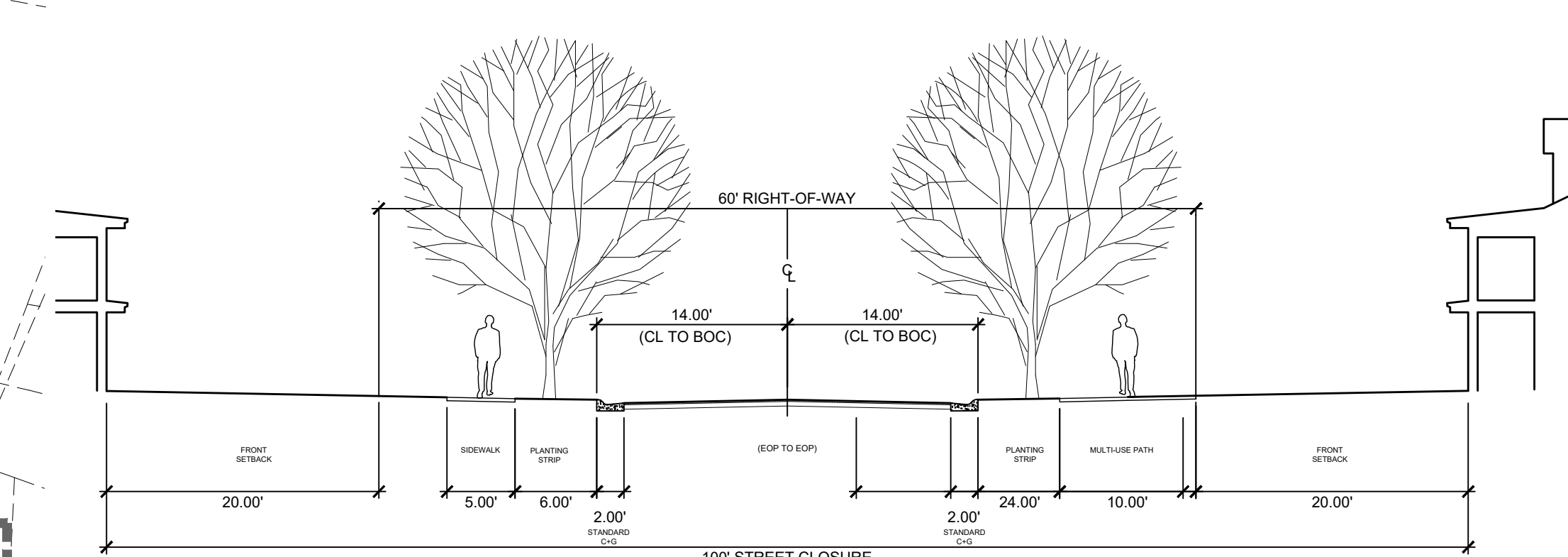
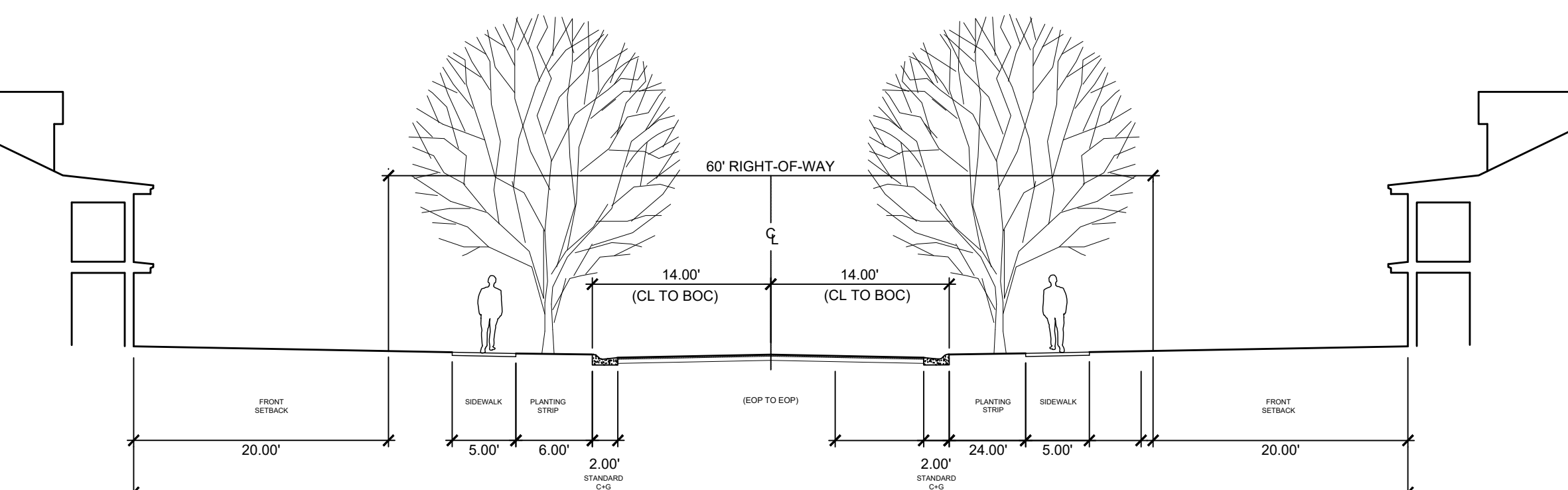
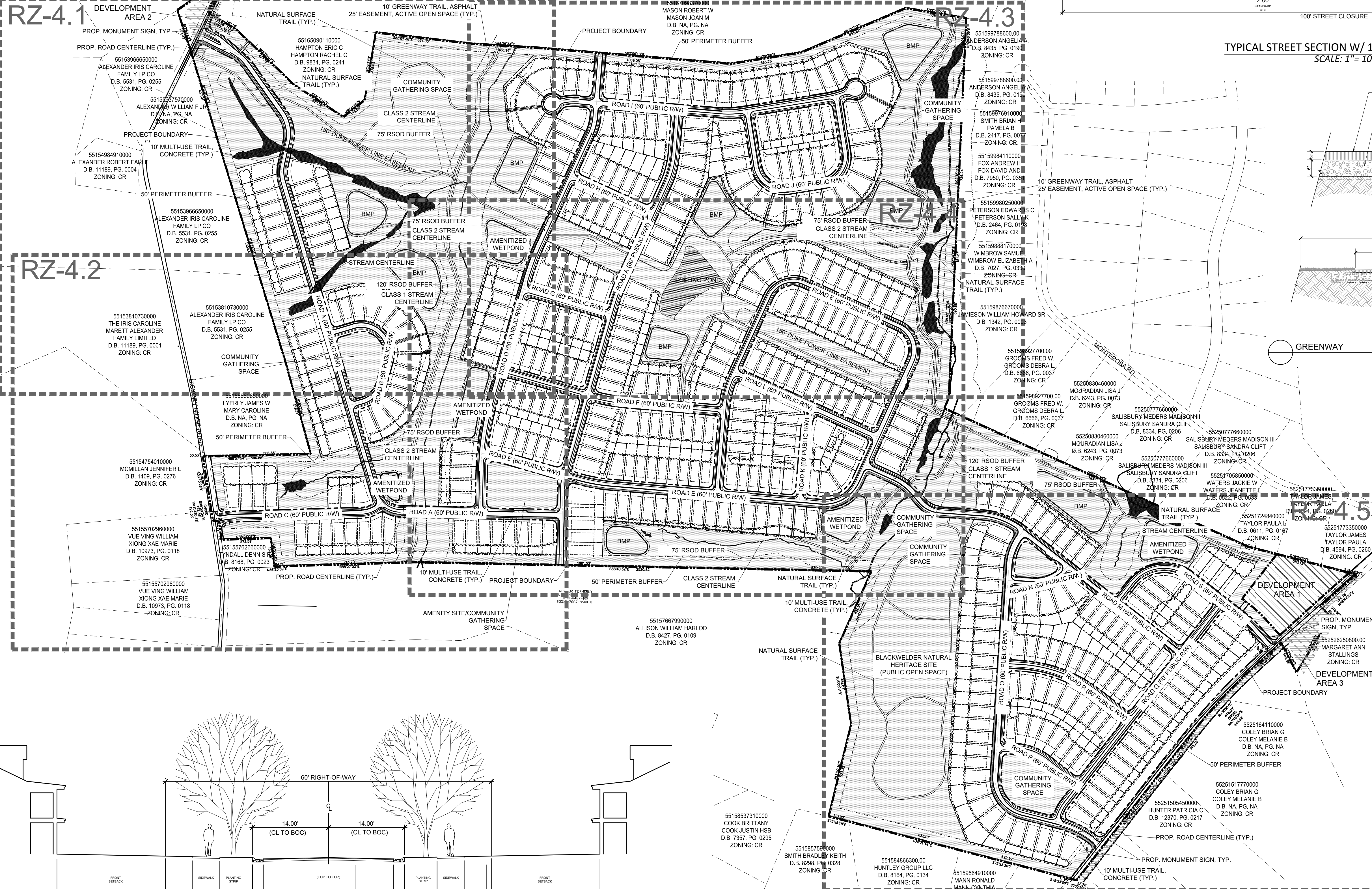
NOTE: THE AVERAGE BLOCK LENGTH FOR THE SUBDIVISION SHALL
NOT EXCEED 1,800 LINEAR FEET.

RZ-4.1

RZ-4.3

RZ-4.2

RZ-4.5



NOT FOR
CONSTRUCTION

ORCHID RIDGE

DR HORTON
8001 ARROWRIDGE BLVD.
CHARLOTTE, NC 28273

NOTE: SITE PLAN IS CONCEPTUAL IN NATURE AND SUBJECT TO CHANGE DURING THE PRELIMINARY PLAT AND LAND DEVELOPMENT DESIGN DEVELOPMENT PROCESS SO LONG AS FINAL DESIGN ADHERES TO THE PROVISIONS SET FORTH IN THE REZONING PLAN AND THE UNIFIED DEVELOPMENT ORDINANCE.

HATCH LEGEND

- DEVELOPMENT AREA 1
- DEVELOPMENT AREA 2 & 3
- OPEN SPACE
- APPROXIMATE DEED RESTRICTED TREE SAVE AREA

LINETYPE LEGEND

- PROJECT BOUNDARY LINE
- PROP. RW
- EXIST. PROPERTY LINE
- EXIST. EOP
- FEMA FLOODZONE
- STREAM BUFFER

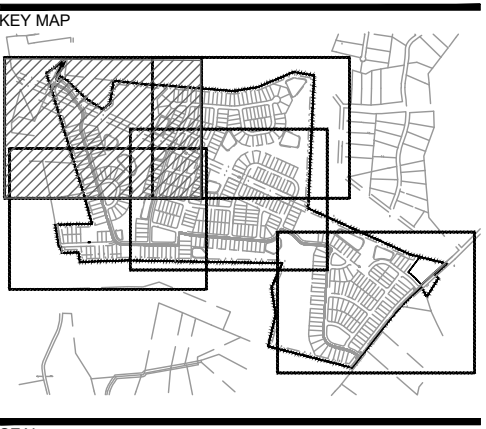
REVISION / ISSUANCE		
NO.	DESCRIPTION	DATE
1	REZONING SUBMITTAL	01/07/20
2	REZONING SUBMITTAL	02/10/20
3	REZONING SUBMITTAL	08/06/20
4	REZONING SUBMITTAL	12/10/20
5	REZONING SUBMITTAL	02/19/21
6	REZONING SUBMITTAL	03/05/21

DESIGNED BY: MEK	
DRAWN BY: JAL	
CHECKED BY: LDI	

VERT: N/A	
HORIZ: 1"=300'	

SHEET TITLE	CONCEPTUAL SITE PLAN
-------------	----------------------

SHEET NUMBER	RZ-4.0
--------------	--------



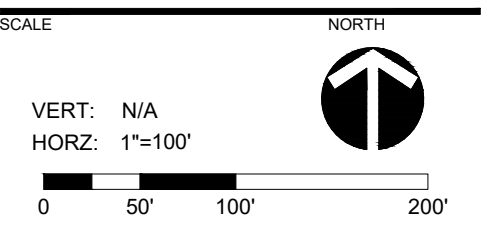
NOT FOR
CONSTRUCTION

ORCHID RIDGE

DR HORTON
8001 ARROWRIDGE BLVD.
CHARLOTTE, NC 28273

REVISION / ISSUANCE		
NO.	DESCRIPTION	DATE
1	REZONING SUBMITTAL	01/07/20
2	REZONING SUBMITTAL	02/10/20
3	REZONING SUBMITTAL	08/06/20
4	REZONING SUBMITTAL	12/10/20
5	REZONING SUBMITTAL	02/19/21
6	REZONING SUBMITTAL	03/05/21

DESIGNED BY: MEK
DRAWN BY: JAL
CHECKED BY: LDI

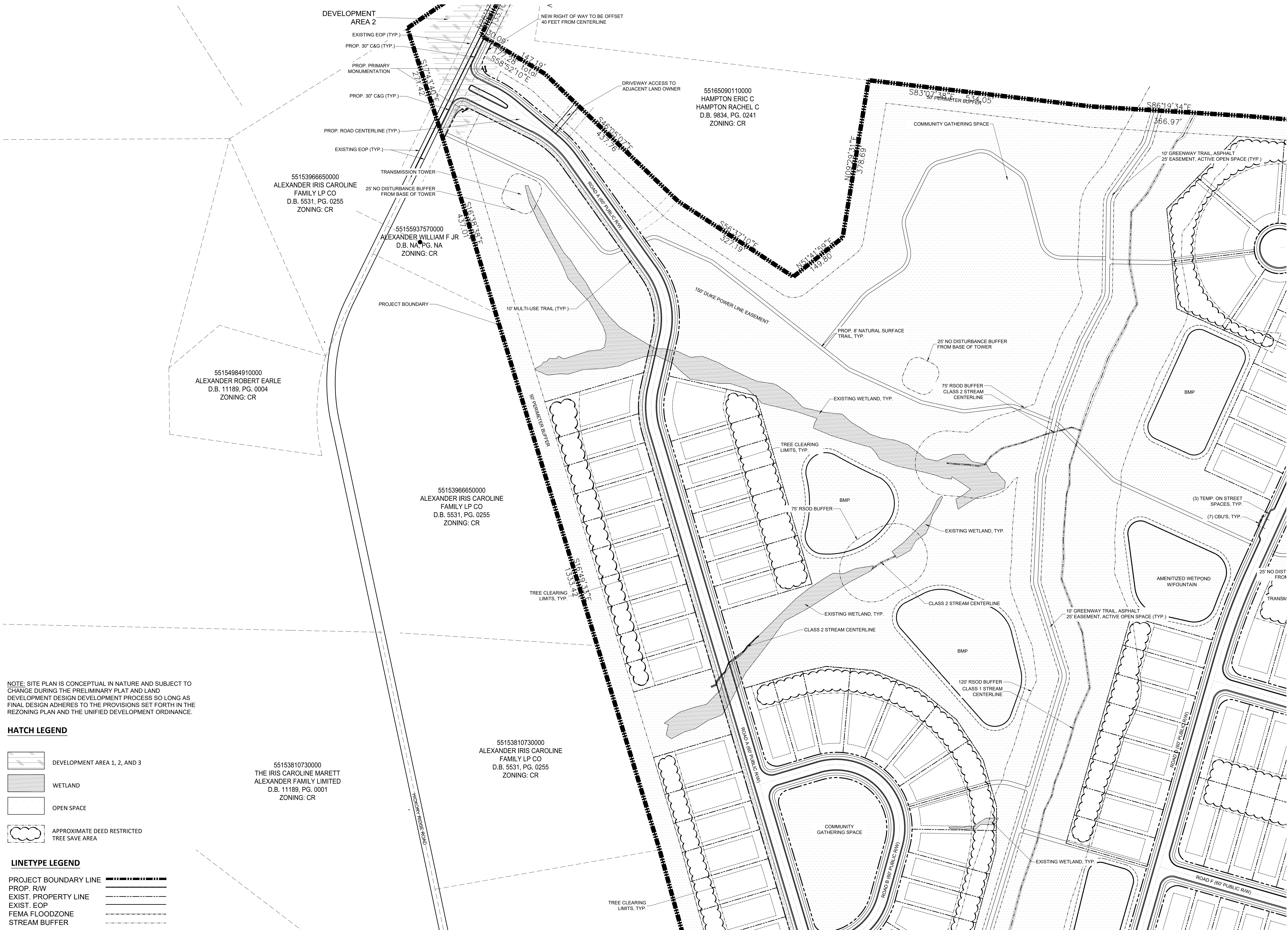


SHEET TITLE

CONCEPTUAL DETAILED
SITE PLAN

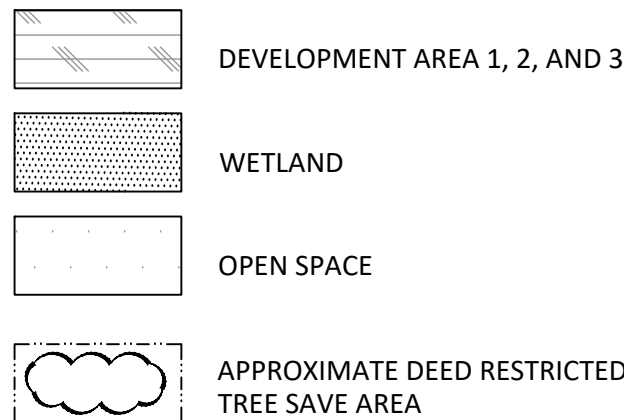
SHEET NUMBER

RZ-4.1

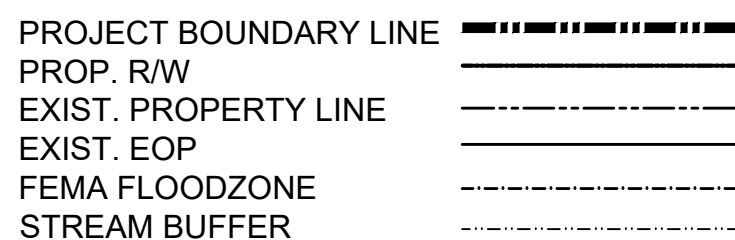


NOTE: SITE PLAN IS CONCEPTUAL IN NATURE AND SUBJECT TO CHANGE DURING THE PRELIMINARY PLAT AND LAND DEVELOPMENT DESIGN DEVELOPMENT PROCESS SO LONG AS FINAL DESIGN ADHERES TO THE PROVISIONS SET FORTH IN THE REZONING PLAN AND THE UNIFIED DEVELOPMENT ORDINANCE.

HATCH LEGEND



LINETYPE LEGEND



ORCHID RIDGE

LANDDESIGN PROJ.# 1018319

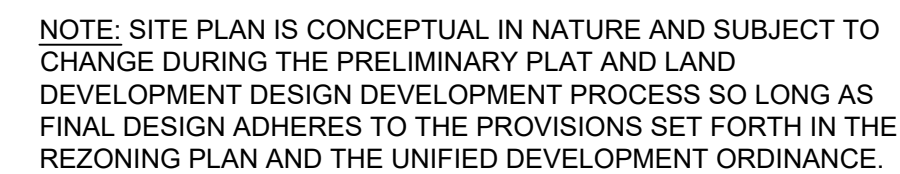
NO.	DESCRIPTION	DATE
1	REZONING SUBMITTAL	01/07/20
2	REZONING SUBMITTAL	02/10/20
3	REZONING SUBMITTAL	08/06/20
4	REZONING SUBMITTAL	12/10/20
5	REZONING SUBMITTAL	02/19/21
6	REZONING SUBMITTAL	03/05/21

SCALE NORTH

SHEET TITLE

SHEET NUMBER _____

RZ-4.2



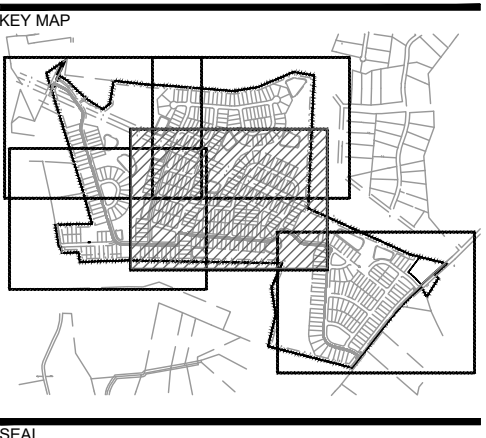
 DEVELOPMENT AREA 1, 2, AND 3

 WETLAND

 OPEN SPACE

 APPROXIMATE DEED RESTRICTED TREE SAVE AREA

PROJECT BOUNDARY LINE
PROP. R/W
EXIST. PROPERTY LINE
EXIST. EOP
FEMA FLOODZONE
STREAM BUFFER



NOT FOR
CONSTRUCTION

ORCHID RIDGE

DR HORTON
8001 ARROWRIDGE BLVD.
CHARLOTTE, NC 28273

LANDDESIGN PROJ.# 1018319

REVISION / ISSUANCE

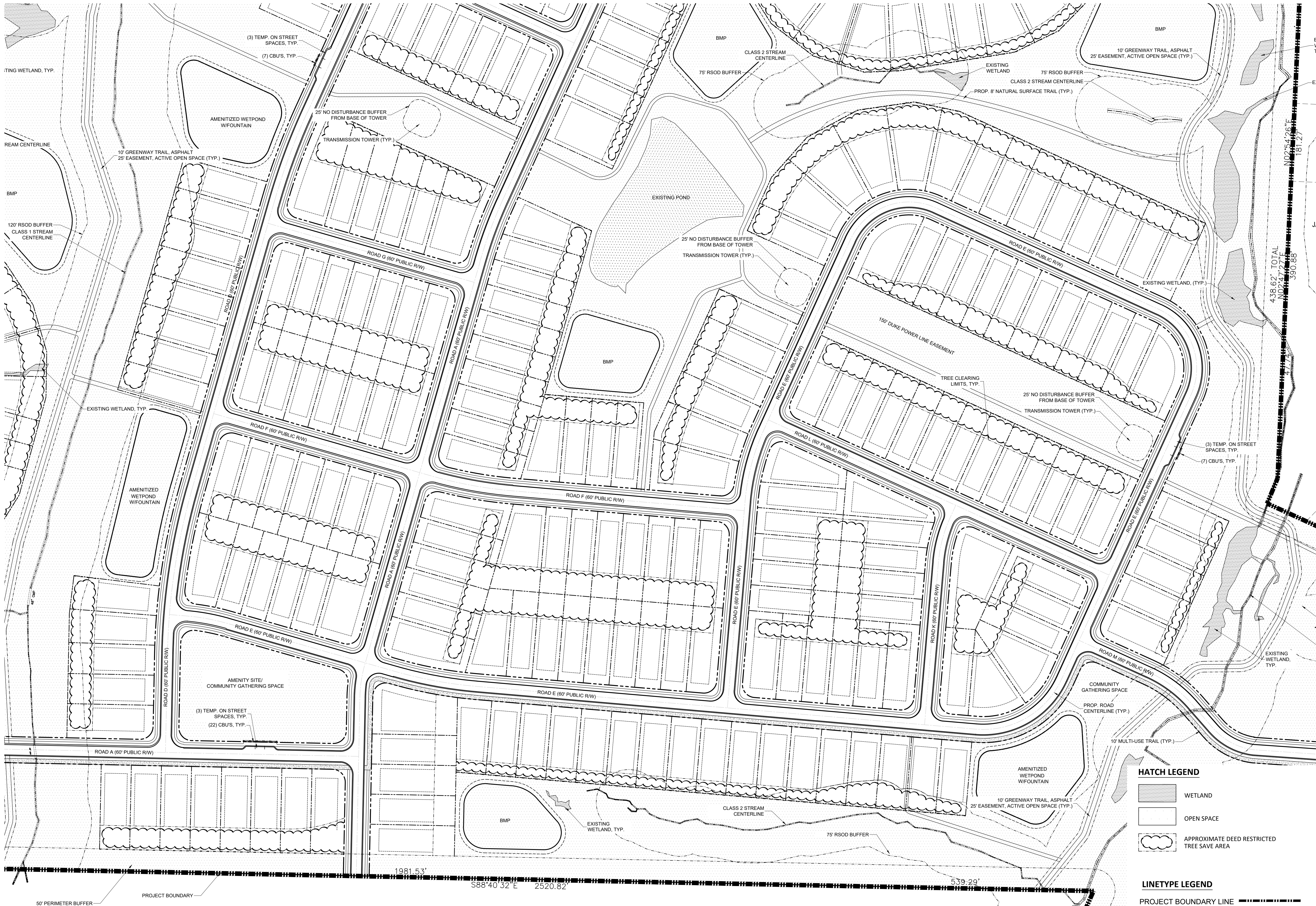
NO.	DESCRIPTION	DATE
1	REZONING SUBMITTAL	01/07/20
2	REZONING SUBMITTAL	02/10/20
3	REZONING SUBMITTAL	08/06/20
4	REZONING SUBMITTAL	12/10/20
5	REZONING SUBMITTAL	02/19/21
6	REZONING SUBMITTAL	03/05/21

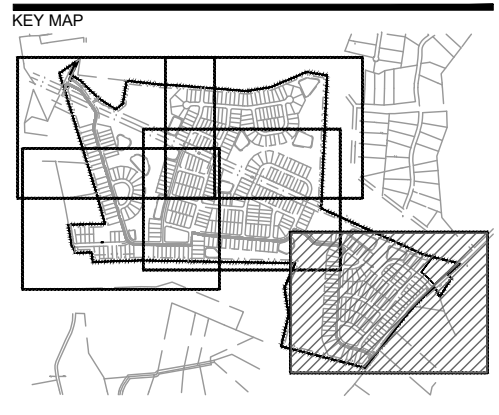
DESIGNED BY: MEK
DRAWN BY: JAL
CHECKED BY: LDI

SCALE NORTH
VERT: N/A
HORZ: 1"=100'
0 50' 100' 200'

CONCEPTUAL DETAILED
SITE PLAN

SHEET NUMBER
RZ-4.4





NOT FOR
CONSTRUCTION

ORCHID RIDGE

DR HORTON
8001 ARROWRIDGE BLVD.
CHARLOTTE, NC 28273

LANDDESIGN PROJ.# 1018319

REVISION / ISSUANCE

NO.	DESCRIPTION	DATE
1	REZONING SUBMITTAL	01/07/20
2	REZONING SUBMITTAL	02/10/20
3	REZONING SUBMITTAL	08/06/20
4	REZONING SUBMITTAL	12/10/20
5	REZONING SUBMITTAL	02/19/21
6	REZONING SUBMITTAL	03/05/21

DESIGNED BY: MEK
DRAWN BY: JAL
CHECKED BY: LDI

SCALE: NORTH
VERT: N/A
HORZ: 1"=100'
0 50' 100' 200'

SHEET TITLE
CONCEPTUAL DETAILED
SITE PLAN

SHEET NUMBER

RZ-4.5



AVERAGE INTERIOR BLOCK
PERIMETER LENGTH = 24,093 LF/ 17 BLOCKS = 1,417 LF

SQUARE YARDS: 9,926 SY

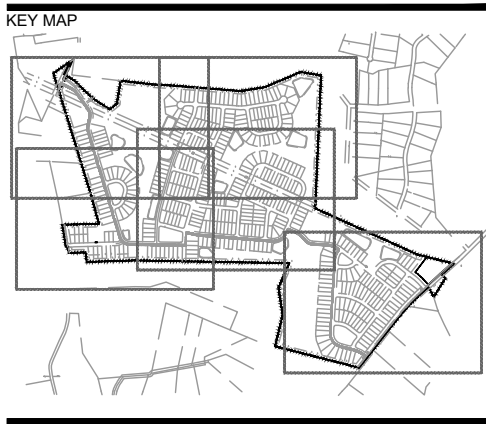


PROJECT

CHARLOTTE, NC 28273

BLOCK LENGTHS PLAN

PROJECT BOUNDARY LINE
PROP. R/W
EXIST. PROPERTY LINE
EXIST. EOP
FEMA FLOODZONE
STREAM BUFFER



SEAL

NOT FOR
CONSTRUCTION

PROJECT

ORCHID RIDGE

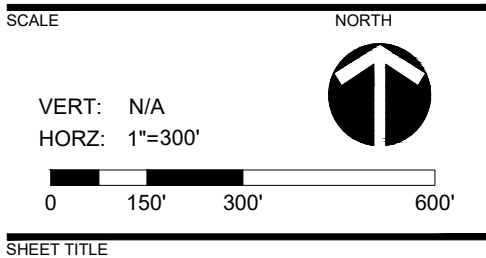
DR HORTON
8001 ARROWRIDGE BLVD.
CHARLOTTE, NC 28273

LANDDESIGN PROJ.# 1018319

REVISION / ISSUANCE

NO.	DESCRIPTION	DATE
1	REZONING SUBMITTAL	01/07/20
2	REZONING SUBMITTAL	02/10/20
3	REZONING SUBMITTAL	08/06/20
4	REZONING SUBMITTAL	12/10/20
5	REZONING SUBMITTAL	02/19/21
6	REZONING SUBMITTAL	03/05/21

DESIGNED BY: MEK
DRAWN BY: JAL
CHECKED BY: LDI



DEVELOPMENT STANDARDS

SHEET NUMBER

RZ-5.0

DR Horton
Development Standards
3/8/2021
Rezoning Petition

Site Development Data:

--**Acreage:** ± 352.11 acres
--**Tax Parcel #:** 5515-6839-67, 5515-6789-55, 5515-8952-23, 5515-8850-53, 5515-7755-96, and 5515-7825-98
--**Existing Zoning:** CR (Cabarrus County)
--**Proposed Zoning:** RL-CZ
--**Existing Uses:** Vacant
--**Proposed Uses:** Up to 459 single-family detached dwelling units and government buildings as allowed by right and under prescribed conditions in the RL-CZ zoning district as further described in Section 2 below.

1. General Provisions:

a. Site Location. These Development Standards form a part of the Rezoning Plan associated with the Rezoning Petition filed by D.R. Horton ("Petitioner") to accommodate the development of up to four hundred fifty-nine (459) single-family detached dwelling units as generally depicted on the Rezoning Plan. The proposed development will be on an approximately 352 acre site located on Hickory Ridge Road (the "Site").

b. Zoning Districts/Ordinance. Development of the Site will be governed by the Rezoning Plan as well as the applicable provisions of the Harrisburg Zoning Ordinance (the "Ordinance"). Unless the Rezoning Plan establishes more stringent standards the regulations established under the Ordinance for the RL-CZ zoning classification shall govern.

c. Graphics and Alterations. The schematic depictions lots, sidewalks, structures and buildings, building elevations, driveways, streets and other development matters and site elements (collectively the "Development/Site Elements") set forth on the Rezoning Plan should be reviewed in conjunction with the provisions of these Development Standards. The layout, locations, sizes and formulations of the Development/Site Elements depicted on the Rezoning Plan are graphic representations of the Development/Site elements proposed. Changes to the Rezoning Plan not anticipated by the Rezoning Plan will be reviewed and approved as allowed by Ordinance.

Since the project has not undergone the design development and construction phases, it is intended that this Rezoning Plan provide for flexibility in allowing some alterations or modifications from the graphic representations of the Development/Site Elements. Therefore, there may be instances where minor modifications will be allowed without requiring the Administrative Amendment Process per the Ordinance. These instances would include changes to graphics if they are minor and don't materially change the overall design intent depicted on the Rezoning Plan.

The Planning Director will determine if such minor modifications are allowed per this amended process, and if it is determined that the alteration does not meet the criteria described above, the Petitioner shall then follow the Administrative Amendment Process of the Ordinance; in each instance, however, subject to the Petitioner's appeal rights set forth in the Ordinance.

d. Number of Buildings Principal and Accessory. The total number of principal buildings to be developed on the Site shall not exceed four hundred and sixty-one (461). Accessory buildings and structures located on the Site shall not be considered in any limitation on the number of buildings on the Site.

2. Permitted Uses & Development Areas:

For ease of reference, the Rezoning Plan sets forth various development areas as generally depicted on Sheet RZ-2 as Development Area 1, Development Area 2, Development Area 3, and Development Area 4 (each a "Development Area" and collectively the "Development Areas").

a. Development Area 1. The principal buildings constructed within Development Area 1 on the Site may be developed with up to one building for municipal and/or government uses.

b. Development Areas 2 and 3. Areas 2 and 3 shall be reserved as open space and/or uses permitted in the RL zoning district.

c. Development Area 4. The principal buildings constructed within Development Area 4 on the Site may be developed with up to four hundred and sixty-one (461) single-family detached dwelling units.

i. The minimum lot size shall be 12,000 square feet with a minimum lot width of fifty (50) feet.

3. Access and Transportation:

1. Proposed Access.

a. Access to the Site will be from Hickory Ridge Road and Lower Rocky River Road as generally depicted on the Rezoning Plan.

b. The placement and configuration of the vehicular access points are subject to any minor modifications required to accommodate final site development and construction plans and to any adjustments required for approval by the Town of Harrisburg and/or NCDOT in accordance with applicable published standards.

c. The Petitioner shall install phased transportation improvements per the approved traffic impact analysis.

d. The overall street network is conceptual in nature and may be adjusted during the permitting process so long as the provisions of the Ordinance related to connectivity, block lengths and links are adhered to.

e. The Site shall meet the provisions of the Ordinance related to connectivity.

II. Proposed Improvements.

a. The Petitioner plans to provide or cause to be provided on its own or in cooperation with other parties who may implement portions of the improvements, the improvements set forth in the approved Transportation Impact Study subject to the provisions set forth in Section III.

III. Standards, Phasing and Other Provisions.

a. Town of Harrisburg and NCDOT Standards. All of the foregoing public roadway improvements will be subject to the standards and criteria of the Town of Harrisburg and/or NCDOT (as it relates to the roadway improvements within their respective road system authority). It is understood that an alternate pavement schedule is not permitted and roadway cross sections will be reviewed and approved at the construction document phase. It is also understood that such improvements may be undertaken by the Petitioner on its own or in conjunction with other development or roadway projects taking place within the area, by way of a private/public partnership effort or other public sector project support.

b. Phasing.

Notwithstanding the commitments of the Petitioner to provide for the roadway improvements described in the approved Traffic Impact Study, the following provisions shall permit development to take place prior to completion of all of the above-referenced improvements:

(i) The Petitioner has the right to construct up to the maximum amount of land use densities shown below by constructing the appropriate roadway improvements listed, or by submitting construction plans for the appropriate roadway improvements as indicated in a particular phase, for each level of development without being required to construct the remainder of the required transportation improvements listed in the approved Traffic Impact Study until the development density levels shown below are exceeded:

Phase 1: 142 single family units

Phase 2: 227 single family units

Phase 3: 90 single family units

(ii) It is understood Phase 2 shall include the entirety of connection from Hickory Ridge Road to Lower Rocky River Road prior to the 173rd lot plat for Phase 2. No lots in Phase 3 shall be platted prior to the completion of the connection.

c. Substantial Completion. Reference to "substantial completion" for certain improvements as set forth in the provisions of the approved TIS shall mean completion of the roadway improvements in accordance with the standards set forth in the approved TIS provided, however, in the event certain non-essential roadway improvements (as reasonably determined by the Town of Harrisburg) are not completed at the time that the Petitioner seeks to obtain a certificate of occupancy for building(s) on the Site in connection with related development phasing described above, then the Town of Harrisburg may instruct applicable authorities and/or departments to allow the issuance of certificates of occupancy for the applicable buildings, and in such event the Petitioner may be asked to post a letter of credit or a bond for any improvements not in place at the time such a certificate of occupancy is issued to secure completion of the applicable improvements.

d. Right-of-way Conveyance. The Petitioner will dedicate via fee simple conveyance any additional right-of-way indicated on the Rezoning Plan as right-of-way to be dedicated, the additional right-of-way will be dedicated prior to the issuance of the first certificate of occupancy. The Petitioner will provide a permanent sidewalk easement for any of the proposed sidewalks located along the public streets located outside of the right-of-way where ROW dedication is not provided.

e. Alternative Improvements. Changes to the above referenced roadway improvements can be approved through Council action upon the determination and mutual agreement of Petitioner, and the Town of Harrisburg; provided, however, the proposed alternate transportation improvements provide (in the aggregate) comparable transportation network benefits to the improvements identified in this Petition in the overall area of the rezoning. It is understood that changes to the TIA shall not require a rezoning.

For example, transportation improvements may be substituted and/or payment in lieu for other improvements in the overall area of the rezoning may be implemented as described in subsection (d) above.

4. Architectural Standards:

a. The building materials used on the principal buildings constructed on Site will be a combination of portions of the following: brick, stone, precast stone, precast concrete, synthetic stone, cementitious fiber board, cementitious fiber shake, EIFS, stucco, decorative block and/or wood. Vinyl or Aluminum shall not be used as a primary siding material however it may be used on windows, soffits, fascia and/or similar roof overhang elements, handrails/railings, and/or other miscellaneous trim elements. The proposed roofing materials will be architectural shingles, slate, tile and/or metal.

b. The minimum single-family residential unit size shall be 1,600 square feet for a single-story unit and 2,000 square feet for a 2-story unit.

c. The Petitioner agrees to restrict cladding materials for all buildings to cladding products other than vinyl siding.

d. In respect to a principal structure, architectural features such as cornices, eaves, steps, gutters, and fire escapes may project up to three feet into any required yard, unless they would obstruct driveways, which might be used for service and emergency vehicles. This does not apply to accessory structures.

e. There shall be no exposed concrete foundations; siding and/or other materials must extend to the ground level on all sides of the homes.

5. Buffers, Yards, and Open Space:

a. A fifty (50) foot perimeter landscape buffer shall be provided as generally depicted on the Rezoning Plan.

b. Petitioner will delineate a deed restricted tree preservation area at the rear of lots as generally depicted on the Rezoning Plan. Petitioner commits to the preservation of all existing trees 30" caliper or greater within the deed restricted portion of the lot. Petitioner reserves the right to provide hand clearing within the deed restricted portion of each lot. Clear cutting will not be allowed. *Where deed restricted tree save areas are provided, the area shall be a minimum depth of thirty feet. Deed restrictions are not provided on all lots.*

c. Petitioner shall provide a minimum eight (8) foot landscape easement (4 feet on each side of the property line, existing tree save or newly planted) for residential lots sharing a rear property line.

d. Community gathering space shall be provided as generally depicted on the Rezoning Plan and is intended to provide pockets of open space throughout the development. Community gathering spaces may include benches, play structures, trails, signature landscaping, courtyards, lawns and/or other features that provide opportunities to recreate or foster community engagement.

e. An amenity area shall be provided in one of the community gathering spaces generally depicted on the Rezoning Plan and may include one or more of the following: pool, cabana, clubhouse, play areas, and/or picnic seating.

f. A system of trails shall be provided throughout the Site as generally depicted on the rezoning plan and will include the following types of trails:

i. 10' concrete multi-use path

ii. 10' asphalt greenway trail

iii. 5'-8' natural surface trail

6. Environmental Features:

a. Stormwater and water quality features and details shall comply with the Ordinance and engineering standards.

b. All stormwater BMPs will be screened by landscaping on any side facing lots and when visible from public streets. BMP(s) fronting public streets shall include amenities and serve as a feature for the community. All wet ponds shall be constructed with a fountain.

c. The Petitioner shall mitigate or replace heritage trees if damaged during construction in accordance with the Ordinance.

d. Wet ponds will have a ten (10) foot depth over minimum 25% of the permanent pool area.

e. The applicant agrees to not utilize sand filters as a stormwater control measure.

f. Applicant understands that lots may be lost due to the RSOD/no build buffer and SCM Sizing during the construction document phase.

7. Miscellaneous Provisions:

a. Petitioner agrees to obtain all applicable local, state, and federal permits required for development before any development activity occurs on the Site.

b. Petitioner shall dedicate and convey ±3.2 acres of land (the "Dedicated Parcel") to the Town of Harrisburg for a future fire station and/or other municipal services as generally depicted on the Rezoning Plan.

c. Mailbox clusters shall meet ADA standards.

8. Amendments to the Rezoning Plan:

a. Future amendments to the Rezoning Plan (which includes these Development Standards) may be applied for by the then Owner or Owners of the applicable portion of the Site affected by such amendment in accordance with the provisions of the Ordinance.

9. Binding Effect of the Rezoning Application:

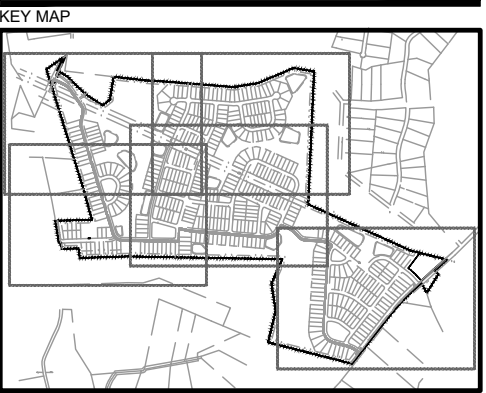
a. If this Rezoning Petition is approved, all conditions applicable to the development of the Site imposed under the Rezoning Plan will, unless amended in the manner provided under the Ordinance, be binding upon and insure to the benefit of the Petitioner and subsequent owners of the Site and their respective heirs, devisees, personal representatives, successors in interest or assigns.

AVERAGE BLOCK LENGTH

TOTAL BLOCK LENGTH = 44,481 LF
NUMBER OF BLOCKS = 83

AVERAGE BLOCK LENGTH = 44,481 LF / 83 BLOCKS = 535 LF

NOTE: THE PERIMETER BLOCK LENGTHS DEPICTED AND SUMMARIZED IN THE TABLE ARE CONCEPTUAL IN NATURE ONLY. THE ACTUAL PERIMETER BLOCK LENGTHS CONSTRUCTED MAY VARY SO LONG AS THE AVERAGE PERIMETER BLOCK LENGTH DOES NOT EXCEED 1800 LINEAR FEET AS SET FORTH IN THE ORDINANCE.



SEAL

NOT FOR
CONSTRUCTION

PROJECT

ORCHID RIDGE

DR HORTON
8001 ARROWRIDGE BLVD.
CHARLOTTE, NC 28273

LANDDESIGN PROJ.# 1018319

REVISION / ISSUANCE

NO.	DESCRIPTION	DATE
1	REZONING SUBMITTAL	01/07/20
2	REZONING SUBMITTAL	02/10/20
3	REZONING SUBMITTAL	08/06/20
4	REZONING SUBMITTAL	12/10/20
5	REZONING SUBMITTAL	02/19/21
6	REZONING SUBMITTAL	03/05/21

DESIGNED BY: MEK
DRAWN BY: JAL
CHECKED BY: LDI

SCALE NORTH
VERT: N/A
HORZ: 1"=300'
0 150' 300' 600'

SHEET TITLE
CONCEPTUAL
CONNECTIVITY PLAN

SHEET NUMBER

RZ-6.0

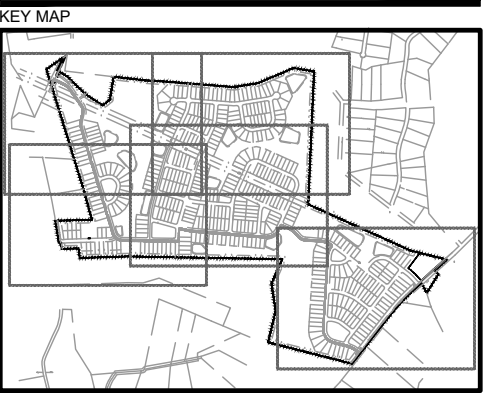


● = NODES (37)

●# = LINKS (57)

CONNECTIVITY RATIO REQUIRED: 1.40

CONNECTIVITY RATIO PROVIDED: 1.54



SEAL

NOT FOR
CONSTRUCTION

ORCHID RIDGE

DR HORTON
8001 ARROWRIDGE BLVD.
CHARLOTTE, NC 28273

LANDDESIGN PROJ.# 1018319

REVISION / ISSUANCE

NO.	DESCRIPTION	DATE
1	REZONING SUBMITTAL	01/07/20
2	REZONING SUBMITTAL	02/10/20
3	REZONING SUBMITTAL	08/06/20
4	REZONING SUBMITTAL	12/10/20
5	REZONING SUBMITTAL	02/19/21
6	REZONING SUBMITTAL	03/05/21

DESIGNED BY: MEK
DRAWN BY: JAL
CHECKED BY: LDI

SCALE
VERT: N/A
HORZ: 1"=300'
SHEET TITLE

OPEN SPACE

SHEET NUMBER

RZ-7.0

OPEN SPACE SUMMARY		
OPEN SPACE	QTY	UNIT
TOTAL PARCELSQUARE FOOTAGE	15,039,961	SF
TOTAL PARCELACREAGE	345.27	AC
OPEN SPACE REQUIRED SF (40.0%)	6,015,984	SF
OPEN SPACE REQUIRED AC (40.0%)	138.11	AC
OPEN SPACE PROVIDED SF	6,559,264	SF
OPEN SPACE PROVIDED AC	150.58	AC
OPEN SPACE PERCENTAGE PROVIDED	43.63%	PCT
DUKE POWER EASEMENT SF	665,442	SF
DUKE POWER EASEMENT AC	15.28	AC
DUKE POWER PERCENTAGE	4.42%	PCT
PERIMETER BUFFER SF	1,031,939	SF
PERIMETER BUFFER AC	23.69	AC
PERIMETR BUFFER PERCENTAGE	6.86%	PCT
ACCESSIBLE OPEN SPACE REQUIRED	QTY	UNIT
TOTAL LOTS	460	
REQUIRED ACCESSIBLE OPEN SPACE	0.025	AC
REQUIRED ACRES ACCESSIBLE OPEN SPACE	11.50	AC
PROVIDED ACCESSIBLE OPEN SPACE SF	831,996	SF
PROVIDED ACCESSIBLE OPEN SPACE ACRES	19.10	AC
ACCESSIBLE OPEN SPACE PERCENTAGE	5.53%	AC
INACCESSIBLE OPEN SPACE		
MAX INACCESSIBLE OPEN SPACE ALLOWED	1,639,816	SF
MAX INACCESSIBLE OPEN SPACE ALLOWED	37.64	AC
MAX INACCESSIBLE OPEN SPACE ALLOWED	25%	PCT
PROVIDED INACCESSIBLE OPEN SPACE	29.10	AC



ACCESSIBLE OPEN SPACE
+/- 19.10 ACRES

INACCESSIBLE OPEN SPACE
+/- 29.10 ACRES

OVERALL OPEN SPACE
+/- 150.58 ACRES

COMMUNITY MEETING REPORT FOR REZONING PETITION
D.R. Horton – Hickory Ridge Road

Subject: Rezoning Petition | Hickory Ridge Road
Owner/Developer: D.R. Horton
Property: ± 352 acres located at Hickory Ridge Road (the "Site").

This Community Meeting Report is being filed prior to the Public Hearing.

PERSONS AND ORGANIZATIONS CONTACTED WITH DATES AND EXPLANATIONS OF HOW CONTACTED:

The required Community Meeting was held on Thursday, March 5, 2020. A representative of the Town mailed a written notice of the date, time and location of the Community Meeting to the individuals and organizations by depositing the Community Meeting Notice in the U.S. mail. Notice was also provided on the Town of Harrisburg website.

TIME AND LOCATION OF MEETING:

The Community Meeting was held on Thursday, March 5, 2020 at 6:00 PM, at the Town of Harrisburg Town Hall, 4100 Main Street, Harrisburg, North Carolina 28075.

PERSONS IN ATTENDANCE AT MEETING:

The sign-in sheet from the required Community Meeting is attached as **Exhibit A**. The Petitioner's representatives at the required Community Meeting were Kristin Bickman, Robert Price, Marty Davis and David McCord with D.R. Horton, LLC. Also in attendance was Mark Kime with LandDesign and Bridget Grant, land use consultant with Moore & Van Allen, PLLC.

SUMMARY OF ISSUES DISCUSSED AT MEETING:

I. Overview of Petitioner's Presentation.

Introduction and Overview of Development Plan.

Kristin Bickman provided a brief overview of D.R. Horton and shared precedent imagery depicting the quality of the proposed development. Bridget Grant described the overall rezoning timeline and the benefits of conditional zoning and the conservation district. Ms. Grant then described the site location, existing zoning, proposed land use, development approach and the proposed rezoning plan. Ms. Grant opened the meeting to the audience for questions.

II. Summary of Questions/Comments and Responses:

Residents inquired what the density for the proposed development is less the required open space. The team explained that density, a national practice, is determined on the total land area and the proposed density is 1.3 dwelling units per acre.

Attendees inquired about lot sizes, density in the surrounding area and whether or not the proposed plan is consistent with the adopted land use policy. Ms. Grant confirmed that the

smallest lot size permitted is 10,000 sq ft and the average lot size is just above 12,000 sq ft. The existing density for surrounding properties is unknown, however the proposed plan and the use of the conservation district is consistent with the adopted land use policy. In response to a resident's question, it was noted that other municipalities and counties have a typical residential density between 2-3 dwelling units per acre. Charlotte is 4 DUA and higher.

Attendees inquired how sewer and water will be provided. Mark Kime stated that the site will gravity sewer into the Reedy Creek drainage basin and will require off-site easements to make the connection. It was noted that the potential granite shelf will be taken into consideration during design and assurances for sewer capacity are not granted until the development is ready to begin construction. A water line extension will be required from the school site under construction north of the site on Hickory Ridge Road.

Attendees inquired about access points, bike lanes and sidewalks. The development team confirmed that sidewalks would be provided throughout the development. There are access points on Lower Rocky River Road and Hickory Ridge Road. There is interest from the community in providing bike lanes along Lower Rocky River Road, however, they are not anticipated at this time

One attendee inquired about the proposed dedication of land for a Fire Station. The development team confirmed that the site was being dedicated at the request of staff and that the development team would not be constructing the proposed station.

Attendees inquired about the status of the traffic impact study and proposed improvements. The development team confirmed that the traffic study is not yet complete and that improvements will likely be provided prior to the issuance of certificates of occupancy. The scoping meeting to set the limits of the study has not occurred yet.

Residents requested information about the character of the development and how it will fit into the surrounding context. The development team described maintaining a buffer along the periphery of the site consistent with surrounding area. The development standards included with the rezoning plan include architectural standards, minimum home sizes and other details to provide certainty on the overall quality of the development. The development team confirmed it is very unlikely the D.R. Horton would bring in another builder.

It was noted that specific details would be addressed further into the rezoning and land development process.

Bridget Grant thanked everyone for their attendance and Town Staff closed the meeting.

III. Changes Made in Response to Feedback:

The Petitioner made the following changes in response to community and general feedback:

- The minimum lot size was increased from 10,000 sq ft to 12,000 sq ft. The average lot size is anticipated to be 1/3 acre.

- The minimum common open space requirement was decreased to 40% to increase lot sizes.
- The number of lots was reduced to 460 lots.
- Tree save areas will be provided throughout the proposed community with limitations on clear-cutting to preserve the existing large mature tree canopy.
- Pocket open spaces will be provided throughout the proposed development to create opportunities for community engagement.
- A larger 50' perimeter buffer will be provided. Clear-cutting in the buffer shall not be permitted and will assist in maintaining the character along Hickory Ridge Road and Lower Rocky River Road
- In response to density questions, the Development Team has confirmed that the proposed density of the development, *less the land dedicated to the Town for a future fire station or other municipal uses, the DUKE easement, and the undevelopable portions of the Blackwelder Natural Area*, is 1.54 DUA.

We believe the proposed density as calculated by Ordinance, or otherwise, is consistent with the Harrisburg Area Land Use Plan.

cc: Mayor and Members of the Town of Harrisburg Council
 Members of the Harrisburg Planning and Zoning Committee
 Kristin Bickman, D.R. Horton, LLC
 Marty Davis, D.R. Horton, LLC
 David McCord, D.R. Horton, LLC
 Mark Kime, LandDesign,
 Jeff Brown, Moore & Van Allen, PLLC
 Bridget Grant, Moore & Van Allen, PLLC

Hickory Ridge Rd Parcels

Sign in Sheet

Neighborhood Meeting

03/05/2020

6:00 pm

Name

Address

Frank & Elizabeth Dentism 10117 Blossom Dr. Concord, NC

Sharon Hinz 416 Mammoth Oaks Dr Concord

Archie Erien 8259 Anderson Pl.

CHARLIE MOON 1825 GALLOWAYER RD, CHAR

Jane Ordix 2003 Monterosa Rd.

PETE STEFAN & DEAN 3950 STALLINGS RD

Colin Meath 2064 Norum Dr.

Joe & Sue Ordasz 6011 ROBERTA Rd.

Gail & Bob Alexander Hickory Ridge Rd

Laura & Joe Milliken 5899 Crimson Oak Ct Hburg

Venu Koleti 8608 Lavender Pl, Harrisburg NC

Lisa Wallace 11274 Hickory Ridge Rd Harrisburg NC

Christy Carpenter 9524 Millen Dr. Harrisburg NC

MIKE THEVENIN 8467 MIDDLETON CIRCLE HARRISBURG NC

Sandy Morgan 7173 Ruth Fidler Ln, Harrisburg, NC 28075

Hickory Ridge Rd Parcels

Sign in Sheet

Neighborhood Meeting

03/05/2020

6:00 pm

Name

Address

Linda Lentz

2530 Cedar Cove Dr. Harrisburg NC

Dianne Fisher

2500 Cedar Cove Dr Harrisburg NC

~~Jim Flowers~~ ~~Hickory Ridge Harrisburg~~

Barbara Whaley

9811 Blossom Dr Concord NC 28025

BRIAN COLEY

10215 BLOSSOM DR NE, CONCORD NC 28025

CHRIS G

Harrisburg

Pat Hunt

10901 Lower Rocky River Rd, Concord, NC 28025

Joni & Carol Longley

2772 Cedar Cove Dr. Harrisburg

William & Alexander

10075 Hickory Ridge Rd

ERIC HANSEN

10051 HICKORY RIDGE RD

Jennifer McMillan

10490 Hickory Ridge Rd.

JESSICA FARR

4455 Mill Landing Dr.

Bill & Laura Carriker

9058 Hickory Ridge Rd., Harrisburg

Melanie Freeman

8776 L. Rocky River Rd Concord

Beverly Heltzer

8429 Woodlawn Ln.

Stacy Greene

8776 Lower Rocky River Concord

JOHN MEYER

10501 Lower Rocky River Rd 9461 Hester Ct.

**Traffic Impact Analysis for
Hickory Ridge Road Development
Harrisburg, North Carolina**

Prepared for:

**Town of Harrisburg
Harrisburg, North Carolina**

Prepared by:

**Kimley-Horn and Associates, Inc.
NC License #F - 0102
200 South Tryon Street, Suite 200
Charlotte, North Carolina 28202
(704) 333-5131**

**February 2021
018536041**



Laura N Reid
2/8/21

TABLE OF CONTENTS

	<u>Page No.</u>
1.0 EXECUTIVE SUMMARY	1
2.0 INTRODUCTION	6
3.0 EXISTING TRAFFIC CONDITIONS	7
3.1 STUDY AREA	7
3.2 EXISTING TRAFFIC VOLUME DEVELOPMENT	8
4.0 BACKGROUND TRAFFIC VOLUME DEVELOPMENT	14
4.1 HISTORICAL BACKGROUND GROWTH TRAFFIC	14
4.2 APPROVED DEVELOPMENTS	14
5.0 SITE TRAFFIC VOLUME DEVELOPMENT	22
5.1 SITE ACCESS	22
5.2 TRAFFIC GENERATION	22
5.3 SITE TRAFFIC DISTRIBUTION AND ASSIGNMENT	23
5.4 BUILD-OUT TRAFFIC VOLUMES	23
6.0 CAPACITY ANALYSIS	32
6.1 ROCKY RIVER ROAD AND HICKORY RIDGE ROAD	35
6.2 ROCKY RIVER ROAD AND LOWER ROCKY RIVER ROAD	37
6.3 PEACH ORCHARD ROAD AND LOWER ROCKY RIVER ROAD	39
6.4 HICKORY RIDGE ROAD AND LOWER ROCKY RIVER ROAD	40
6.5 MORRISON ROAD AND LOWER ROCKY RIVER ROAD	42
6.6 HICKORY RIDGE ROAD AND SCHOOL DRIVE 1	44
6.7 HICKORY RIDGE ROAD AND SCHOOL DRIVE 2	46
6.8 HICKORY RIDGE ROAD AND ACCESS 1	47
6.9 HICKORY RIDGE ROAD AND ACCESS 2	48
6.10 LOWER ROCKY RIVER ROAD AND ACCESS 3	49
6.11 LOWER ROCKY RIVER ROAD AND ACCESS 4	50
7.0 AUXILIARY TURN LANE WARRANTS	51
8.0 CRASH DATA ANALYSIS	55
9.0 MITIGATION IMPROVEMENTS	57
APPENDIX	60

List of Figures

	<u>Page No.</u>
FIGURE 1.1 – IDENTIFIED MITIGATION IMPROVEMENTS	5
FIGURE 3.1 – STUDY AREA/SITE LOCATION	10
FIGURE 3.2 – PROPOSED SITE PLAN	11
FIGURE 3.3 – EXISTING ROADWAY LANEAGE	12
FIGURE 3.4 – 2020 EXISTING TRAFFIC VOLUMES	13
FIGURE 4.1 – 2023 PHASE 1 BACKGROUND AM PEAK-HOUR TRAFFIC VOLUMES	16
FIGURE 4.2 – 2023 PHASE 1 BACKGROUND PM PEAK-HOUR TRAFFIC VOLUMES	17
FIGURE 4.3 – 2025 PHASE 2 BACKGROUND AM PEAK-HOUR TRAFFIC VOLUMES	18
FIGURE 4.4 – 2025 PHASE 2 BACKGROUND PM PEAK-HOUR TRAFFIC VOLUMES	19
FIGURE 4.5 – 2026 PHASE 3 BACKGROUND AM PEAK-HOUR TRAFFIC VOLUMES	20
FIGURE 4.6 – 2026 PHASE 3 BACKGROUND PM PEAK-HOUR TRAFFIC VOLUMES	21
FIGURE 5.1 – SITE TRAFFIC DISTRIBUTION AND ASSIGNMENT – PHASE 1	24
FIGURE 5.2 – SITE TRAFFIC DISTRIBUTION AND ASSIGNMENT – PHASE 2 & PHASE 3	25
FIGURE 5.3 – 2023 PHASE 1 BUILD-OUT AM PEAK-HOUR TRAFFIC VOLUMES	26
FIGURE 5.4 – 2023 PHASE 1 BUILD-OUT PM PEAK-HOUR TRAFFIC VOLUMES	27
FIGURE 5.5 – 2025 PHASE 2 BUILD-OUT AM PEAK-HOUR TRAFFIC VOLUMES	28
FIGURE 5.6 – 2025 PHASE 2 BUILD-OUT PM PEAK-HOUR TRAFFIC VOLUMES	29
FIGURE 5.7 – 2026 PHASE 3 BUILD-OUT AM PEAK-HOUR TRAFFIC VOLUMES	30
FIGURE 5.8 – 2026 PHASE 3 BUILD-OUT PM PEAK-HOUR TRAFFIC VOLUMES	31
FIGURE 9.1 – IDENTIFIED MITIGATION IMPROVEMENTS	59

List of Tables

	<u>Page No.</u>
TABLE 3.1 - COUNT DATA METHODOLOGY	8
TABLE 5.1 – PHASE 1 TRIP GENERATION	22
TABLE 5.2 – PHASE 2 TRIP GENERATION	23
TABLE 5.3 – PHASE 3 TRIP GENERATION	23
TABLE 6.0-A VEHICULAR LOS CONTROL DELAY THRESHOLDS FOR <u>UNSIGNALIZED</u> INTERSECTIONS	33
TABLE 6.0-B VEHICULAR LOS CONTROL DELAY THRESHOLDS FOR <u>SIGNALIZED</u> INTERSECTIONS	33
TABLE 6.1 – ROCKY RIVER ROAD AND HICKORY RIDGE ROAD	35
TABLE 6.2 – ROCKY RIVER ROAD AND LOWER ROCKY RIVER ROAD	37
TABLE 6.3 – PEACH ORCHARD ROAD AND LOWER ROCKY RIVER ROAD	39
TABLE 6.4 – HICKORY RIDGE ROAD AND LOWER ROCKY RIVER ROAD	40
TABLE 6.5 – MORRISON ROAD AND LOWER ROCKY RIVER ROAD	42
TABLE 6.6 – HICKORY RIDGE ROAD AND SCHOOL DRIVE 1	44
TABLE 6.7 – HICKORY RIDGE ROAD AND SCHOOL DRIVE 2	46
TABLE 6.8 – HICKORY RIDGE ROAD AND ACCESS 1	47
TABLE 6.9 – HICKORY RIDGE ROAD AND ACCESS 2	48
TABLE 6.10 – LOWER ROCKY RIVER ROAD AND ACCESS 3	49
TABLE 6.11 – LOWER ROCKY RIVER ROAD AND ACCESS 4	50
TABLE 8.1 – CRASH SEVERITY SUMMARY	55
TABLE 8.2 – ACCIDENT FREQUENCY SUMMARY	55
TABLE 8.3 – ACCIDENT TYPE SUMMARY	56

1.0 Executive Summary

The purpose of this Traffic Impact Analysis (TIA) is to evaluate the vehicular traffic impacts on the surrounding transportation infrastructure as a result of the proposed Hickory Ridge Road development. The primary objectives of the study are:

- To estimate trip generation and distribution for the proposed development.
- To perform intersection capacity analyses for the identified study area.
- To determine the potential traffic impacts of the proposed development.
- To identify improvements to mitigate the proposed development's traffic impacts.

The proposed Hickory Ridge Road development is located between Hickory Ridge Road and Lower Rocky River Road in Harrisburg, North Carolina. Based on the site plan provided by the applicant, the proposed development is currently envisioned to consist of the following land uses and phases:

- Phase 1: 143 single-family homes
- Phase 2: 227 single-family homes
- Phase 3: 90 single-family homes

For the purposes of this TIA, a Phase 1 build-out year of 2023, Phase 2 build-out year of 2025, and Phase 3 build-out year of 2026 were considered. Based on the provided site plan and information provided by the applicant, the proposed development will be accessed via four external access points:

- Access 1 – an unsignalized, full-movement connection to Hickory Ridge Road approximately 850 feet south of Timber Ridge Road
- Access 2 – an unsignalized, full-movement connection to Hickory Ridge Road approximately 2,700 feet south of Access 1
- Access 3 – an unsignalized, full-movement connection to Lower Rocky River Road approximately 900 feet south of Monterosa Road (Phase 2 & Phase 3 only)
- Access 4 – an unsignalized, full-movement connection to Lower Rocky River Road approximately 1,400 feet south of Access 3 (Phase 2 & Phase 3 only)

A TIA scoping meeting was held with the Town of Harrisburg and representatives of the applicant virtually on September 2, 2020, to obtain background information and to ascertain the scope and parameters to be included in this TIA. A Memorandum of Understanding (MOU) was developed based on discussions from this meeting, and subsequent phasing discussions, that documented all scoping parameters to be used for the TIA and was reviewed and agreed upon by the Town of Harrisburg and the applicant. Additionally, North Carolina Department of Transportation (NCDOT) reviewed and approved the MOU, which is included in the **Appendix**.

The following AM and PM peak-hour scenarios were analyzed to determine the proposed development's transportation impacts on the surrounding network:

- 2020 Existing Conditions
- 2023 Phase 1 Background Conditions
- 2023 Phase 1 Build-Out Conditions
- 2025 Phase 2 Background Conditions
- 2025 Phase 2 Build-Out Conditions
- 2026 Phase 3 Background Conditions
- 2026 Phase 3 Build-Out Conditions

Based on coordination with the Town, NCDOT, and the Applicant, this TIA evaluated operations under each of the AM and PM peak-hour scenarios above for the following study area intersections:

1. Rocky River Road and Hickory Ridge Road
2. Rocky River Road and Lower Rocky River Road
3. Peach Orchard Road and Lower Rocky River Road
4. Hickory Ridge Road and Lower Rocky River Road
5. Morrison Road and Lower Rocky River Road
6. Hickory Ridge Road and School Drive 1 (background and build only)
7. Hickory Ridge Road and School Drive 2 (background and build only)
8. Hickory Ridge Road and Access 1 (all build scenarios)
9. Hickory Ridge Road and Access 2 (all build scenarios)
10. Lower Rocky River Road and Access 3 (Phase 2 & Phase 3 only)
11. Lower Rocky River Road and Access 4 (Phase 2 & Phase 3 only)

Kimley-Horn was retained to determine the potential traffic impacts of this development (in accordance with the traffic study guidelines in the *NCDOT Policy on Street and Driveway Access to North Carolina Highways* and set forth by the *Town of Harrisburg Unified Development Ordinance – Appendix F*), and to identify transportation improvements that may be required to mitigate these impacts. This report presents trip generation, distribution, capacity analyses, and identified transportation improvements required to mitigate anticipated traffic demands produced by the subject development.

Based on the capacity analyses performed at each of the identified study intersections, along with review of the auxiliary turn-lane warrants contained herein, the following improvements have been identified to mitigate the impact of the proposed development on the adjacent street network:

Hickory Ridge Road and Rocky River Road

Phase 1

- Construction of a northbound right-turn lane along Hickory Ridge Road with a minimum of 100 feet of storage.

Phase 2

- Extension of the northbound left-turn lane to provide 425 feet of storage.

Rocky River Road and Lower Rocky River Road

Phase 1

- Construction of an eastbound right-turn lane along Rocky River Road with a minimum of 200 feet of storage and permitted overlap phasing.

Westbound left-turn lane and northbound right-turn permitted-overlap phasing are proposed to be constructed by the Lower Rocky River Road (LRRR) development. They will be required mitigation for this development if not committed by the LRRR development.

Hickory Ridge Road and Lower Rocky River Road

Phase 1

- Construction of a southbound right-turn lane along Hickory Ridge Road with a minimum of 100 feet of storage.

Hickory Ridge Road and School Drive 1

Phase 2

- Construction of a northbound left-turn lane along Hickory Ridge Road with a minimum of 100 feet of storage.

The addition of the northbound left-turn lane will require modification of the existing mini roundabout to a full roundabout. Design of these roundabout upgrades should be coordinated with NCDOT and Town staff.

Hickory Ridge Road and Access 1

Phase 1

- Construction of the westbound approach with one ingress & one egress lane and an internal protected stem of 100 feet.
- Construction of a northbound right-turn lane along Hickory Ridge Road with a minimum storage length of 100 feet.
- Construction of a southbound left-turn lane along Hickory Ridge Road with a minimum storage length of 100 feet.

Hickory Ridge Road and Access 2

Phase 1

- Construction of the westbound approach with one ingress & one egress lane and an internal protected stem of 100 feet.
- Construction of a southbound left-turn lane along Hickory Ridge Road with a minimum storage length of 100 feet.
- Construction of a northbound right-turn lane along Hickory Ridge Road with a minimum storage length of 100 feet.

Lower Rocky River Road and Access 3

Phase 2

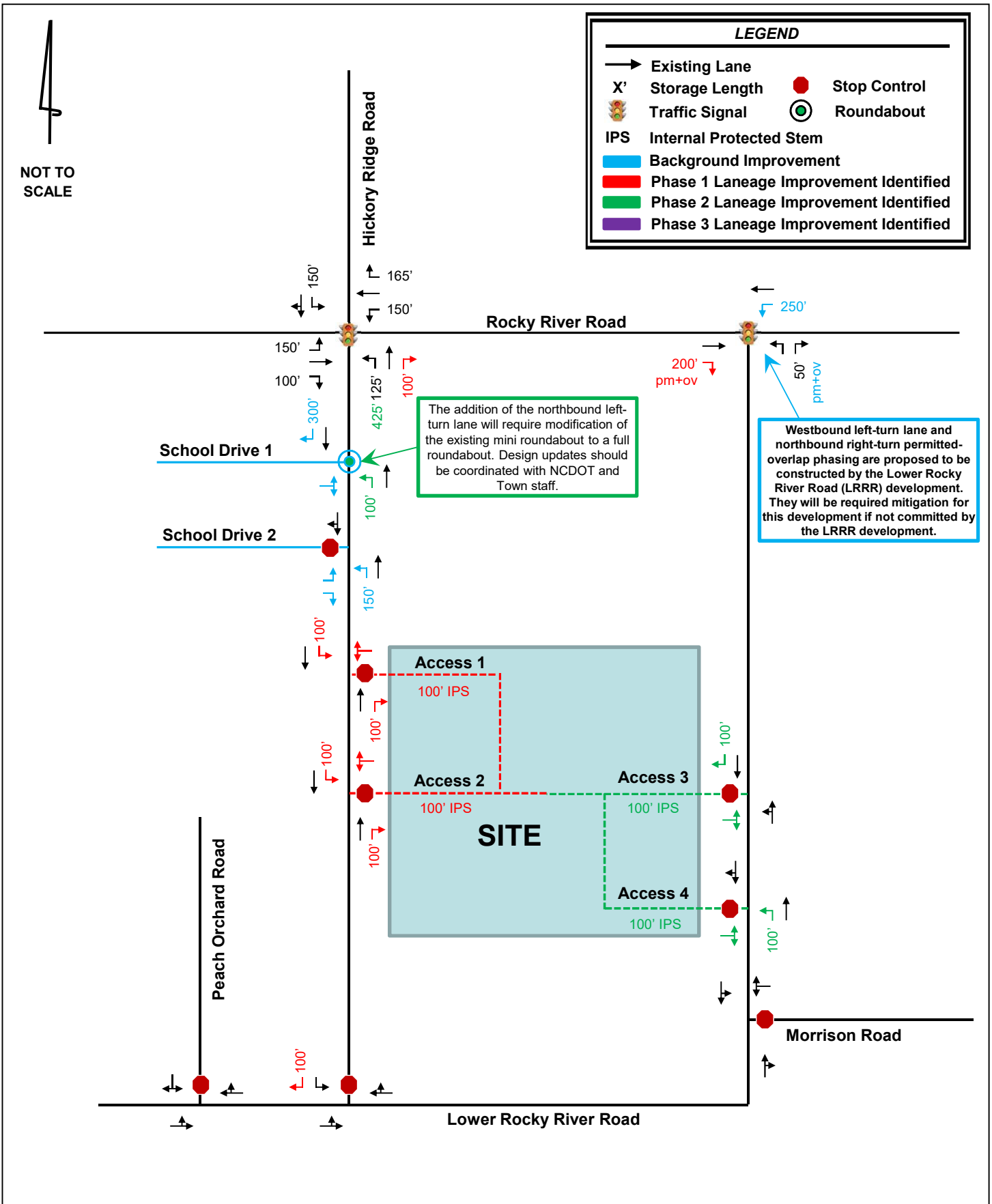
- Construction of the eastbound approach with one ingress & one egress lane and an internal protected stem of 100 feet.
- Construction of a southbound right-turn lane along Lower Rocky River Road with a minimum storage length of 100 feet.

Lower Rocky River Road and Access 4

Phase 2

- Construction of the eastbound approach with one ingress & one egress lane and an internal protected stem of 100 feet.
- Construction of a northbound left-turn lane along Lower Rocky Road with a minimum storage length of 100 feet.

The mitigation improvement identified within the study area are shown in **Figure 1.1**. The improvements shown on this figure are subject to approval by NCDOT and the Town of Harrisburg. All additions and attachments to the State and Town roadway system shall be properly permitted, designed and constructed in conformance to standards maintained by the agencies.



2.0 Introduction

The proposed Hickory Ridge Road development is located between Hickory Ridge Road and Lower Rocky River Road in Harrisburg, North Carolina. Based on the site plan provided by the applicant, the proposed development is currently envisioned to consist of the following land uses and phases:

- Phase 1: 143 single-family homes
- Phase 2: 227 single-family homes
- Phase 3: 90 single-family homes

For the purposes of this TIA, a Phase 1 build-out year of 2023, Phase 2 build-out year of 2025, and Phase 3 build-out year of 2026 were considered. Based on the provided site plan and information provided by the applicant, the proposed development will be accessed via four external access points:

- Access 1 – an unsignalized, full-movement connection to Hickory Ridge Road approximately 850 feet south of Timber Ridge Road
- Access 2 – an unsignalized, full-movement connection to Hickory Ridge Road approximately 2,700 feet south of Access 1
- Access 3 – an unsignalized, full-movement connection to Lower Rocky River Road approximately 900 feet south of Monterosa Road (Phase 2 & Phase 3 only)
- Access 4 – an unsignalized, full-movement connection to Lower Rocky River Road approximately 1,400 feet south of Access 3 (Phase 2 & Phase 3 only)

A TIA scoping meeting was held with the Town of Harrisburg and representatives of the applicant virtually on September 2, 2020, to obtain background information and to ascertain the scope and parameters to be included in this TIA. A Memorandum of Understanding (MOU) was developed based on discussions from this meeting, and subsequent phasing discussions, that documented all scoping parameters to be used for the TIA and was reviewed and agreed upon by the Town of Harrisburg and the applicant. Additionally, North Carolina Department of Transportation (NCDOT) reviewed and approved the MOU, which is included in the **Appendix**.

Kimley-Horn was retained to determine the potential traffic impacts of this development (in accordance with the traffic study guidelines in the *NCDOT Policy on Street and Driveway Access to North Carolina Highways* and set forth by *Town of Harrisburg Unified Development Ordinance – Appendix F*), and to identify transportation improvements that may be required to mitigate these impacts. This report presents trip generation, distribution, capacity analyses, crash analyses and identified transportation improvements required to mitigate anticipated traffic demands produced by the subject development.

3.0 Existing Traffic Conditions

Existing traffic conditions were coordinated with Town of Harrisburg and NCDOT staff and collected through field observations and previously collected turning-movement counts to establish the existing conditions baseline analysis.

3.1 STUDY AREA

Based on coordination with the Town, NCDOT and the applicant, the study area for this TIA includes the following existing intersections:

1. Rocky River Road and Hickory Ridge Road
2. Rocky River Road and Lower Rocky River Road
3. Peach Orchard Road and Lower Rocky River Road
4. Hickory Ridge Road and Lower Rocky River Road
5. Morrison Road and Lower Rocky River Road

Figure 3.1 shows the study area intersections and the site location, **Figure 3.2** shows the proposed site plan for the development as provided by the applicant and **Figure 3.3** shows the existing roadway geometry at the study intersections.

The primary roadways in the vicinity of the site are Hickory Ridge Road, Lower Rocky River Road, Rocky River Road, Morrison Road, and Peach Orchard Road.

Hickory Ridge Road is currently a two-lane, undivided local road with a posted speed limit of 45 miles per hour (mph) in the vicinity of the proposed development. Hickory Ridge Road carries an annual average daily traffic (AADT) volume of 1,400 vehicles per day (vpd) north of Lower Rocky River Road based on 2019 NCDOT AADT data.

Lower Rocky River Road is currently a two-lane, undivided minor collector with a posted speed limit of 45 mph in the vicinity of the proposed development. Lower Rocky River Road carries an AADT volume of 4,800 vpd south of Pine Grove Church Road and 2,700 vpd south of Pioneer Mill Road based on 2019 AADT data.

Rocky River Road is currently a two-lane, undivided major collector west of the Lower Rocky River Road intersection with a posted speed limit of 45 mph in the vicinity of the proposed development. Rocky River Road carries an AADT volume of 11,000 vpd based on 2019 NCDOT AADT data. To the east of the Lower Rocky River intersection, it is a two-lane, undivided minor arterial and carries a volume of 8,000 vpd based on 2019 NCDOT AADT data.

Morrison Road is currently a two-lane, undivided local road with a posted speed limit of 45 mph in the vicinity of the proposed development. Morrison Road carries an AADT volume of 1,100 vpd based on 2019 NCDOT AADT data.

Peach Orchard Road is currently a two-lane, undivided local road with a posted speed limit of 45 mph in the vicinity of the proposed development. Peach Orchard Road carries an AADT volume of 750 vpd based on 2019 NCDOT AADT data.

3.2 EXISTING TRAFFIC VOLUME DEVELOPMENT

Due to COVID-19 and associated impacts to work and school schedules at the time of this TIA, it was determined that new peak-hour turning movement counts may not be indicative of “typical” traffic operations. Existing traffic volumes were determined based on the alternative methodology outlined below and as documented in the approved MOU (included in the **Appendix**).

AM (7:00-9:00 AM) and PM (4:00-6:00 PM) intersection turning-movement, heavy-vehicle, pedestrian and bicycle counts were collected by National Data and Surveying (NDS) on Thursday, May 18, 2017, at the intersection of Rocky River Road and Hickory Ridge Road.

AM (7:00-9:00 AM) and PM (4:00-6:00 PM) intersection turning-movement, heavy-vehicle, pedestrian and bicycle counts were collected by NDS on Tuesday, April 24, 2018, at the following intersections:

- Rocky River Road and Lower Rocky River Road
- Hickory Ridge Road and Lower Rocky River Road

AM (7:00-9:00 AM) and PM (4:00-6:00 PM) intersection turning-movement, heavy-vehicle, pedestrian and bicycle counts were collected by NDS on Wednesday, November 18, 2020, at the following intersections:

- Peach Orchard Road and Lower Rocky River Road
- Morrison Road and Lower Rocky River Road

Existing traffic counts were grown based on historic AADTs in the study area. Growth rates for each roadway can be seen in **Table 3.1** below.

Table 3.1 - Count Growth Methodology			
Study Area Intersection	Count Date	Source	Methodology to determine 2020 traffic volumes
Rocky River Road and Hickory Ridge Road	5/18/17	NDS	• Grow Rocky River Road by 4% per year • Grow Hickory Ridge Road by 2% per year
Rocky River Road and Lower Rocky River Road	4/24/18	NDS	• Grow Rocky River Road by 4% per year • Grow Lower Rocky River Road by 5% per year
Peach Orchard Road and Lower Rocky River Road	11/18/20	NDS	• Grow by 20% (see methodology below)
Hickory Ridge Road and Lower Rocky River Road	4/24/18	NDS	• Grow Hickory Ridge Road by 2% per year • Grow Lower Rocky River Road by 5% per year
Morrison Road and Lower Rocky River Road	11/18/20	NDS	• Grow by 20% (see methodology below)

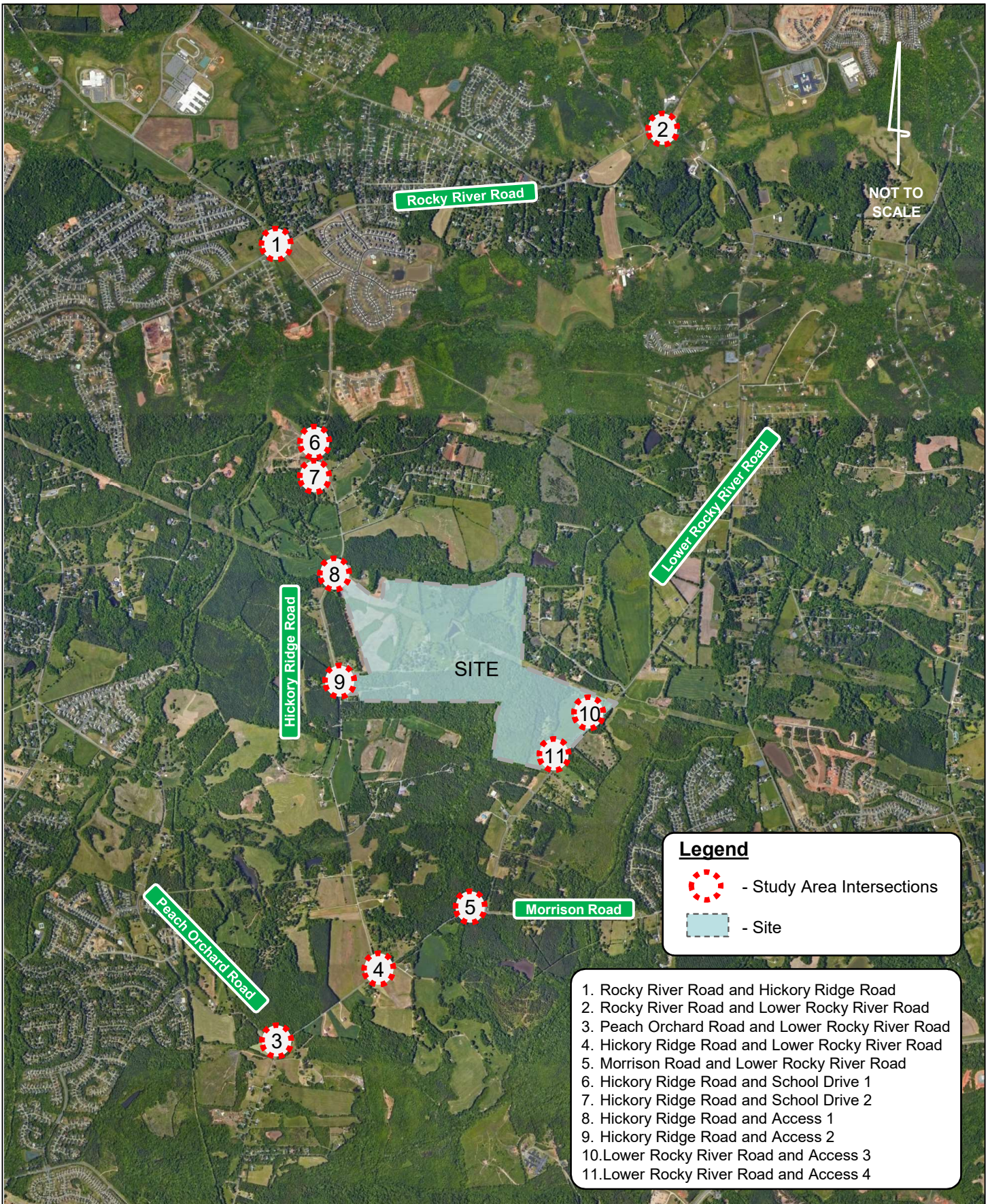
NDS – National Data & Surveying Services (traffic count subconsultant)

Through volumes along Lower Rocky River Road at Peach Orchard Road and Morrison Road were compared to the grown 2020 volumes at the intersection of Hickory Ridge Road and Lower Rocky River Road to determine an appropriate COVID-19 factor. Based on this comparison, the turning-

movement counts at these intersections were grown by 20% to determine the 2020 existing traffic volumes. Hand calculations of this factor can be found in the **Appendix**.

Volume balancing was performed along Lower Rocky River Road between Peach Orchard Road and Morrison Road. Volume balancing was not performed between the remaining study area intersections due to the presence of driveways and spacing between the intersections. Peak-hour intersection turning-movement count data is provided in the **Appendix**. A summary of the count data and methodology can be seen in **Figure 3.1**.

Figure 3.4 illustrates the 2020 existing AM and PM peak-hour traffic volumes.





HICKORY RIDGE ROAD ASSEMBLAGE • HARRISBURG, NC • CONCEPT PLAN
 DN1018319 | 10.12.2020 | DR HORTON

© 2000 Blackwell Science Ltd *Journal of Internal Medicine* 247: 369–375

LEGEND

→ Existing Lane

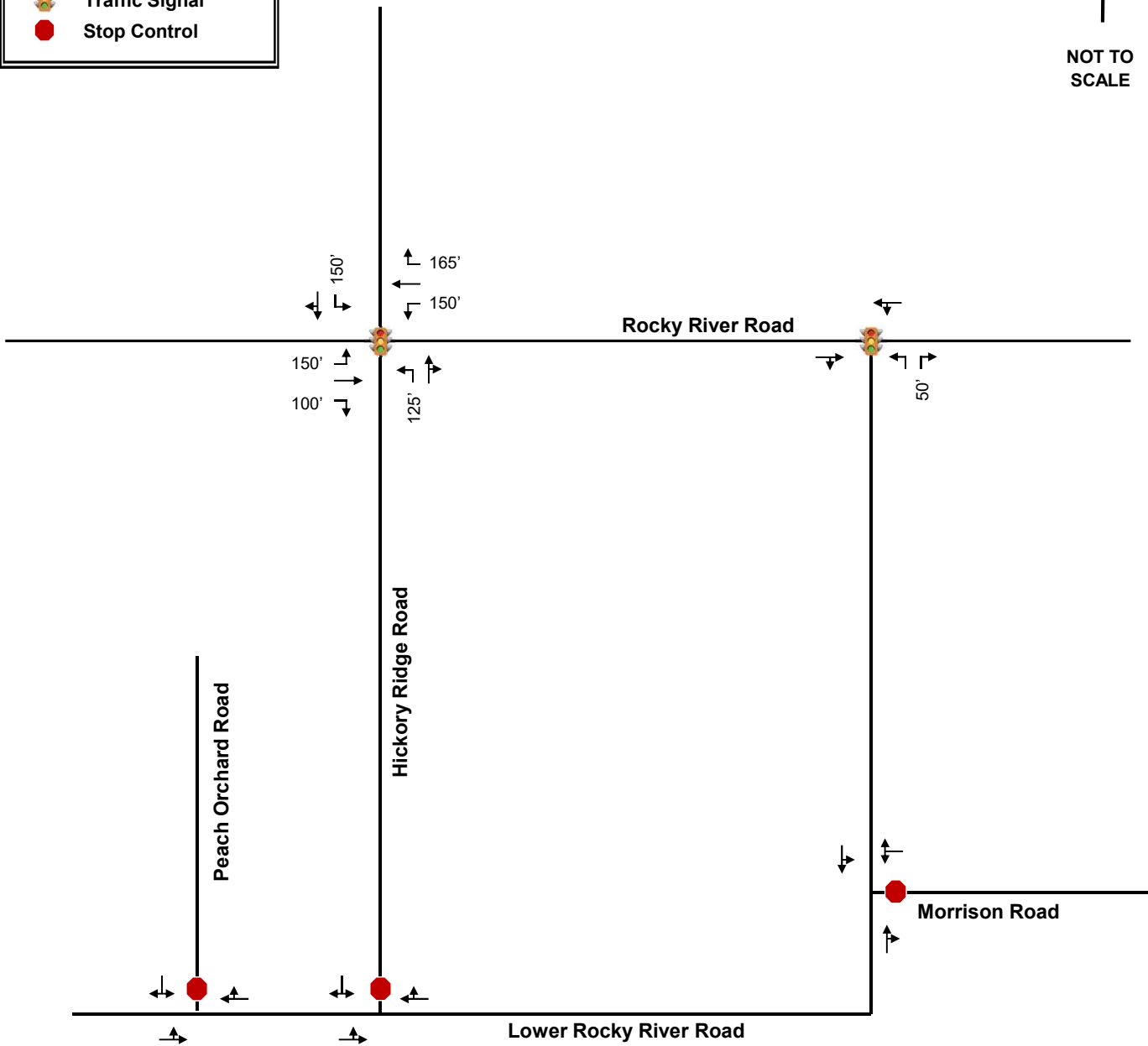
X' Storage Length

Traffic Signal

● Stop Control



NOT TO SCALE



LEGEND

XX

AM Peak-Hour Traffic Volumes

(XX)

PM Peak-Hour Traffic Volumes

●

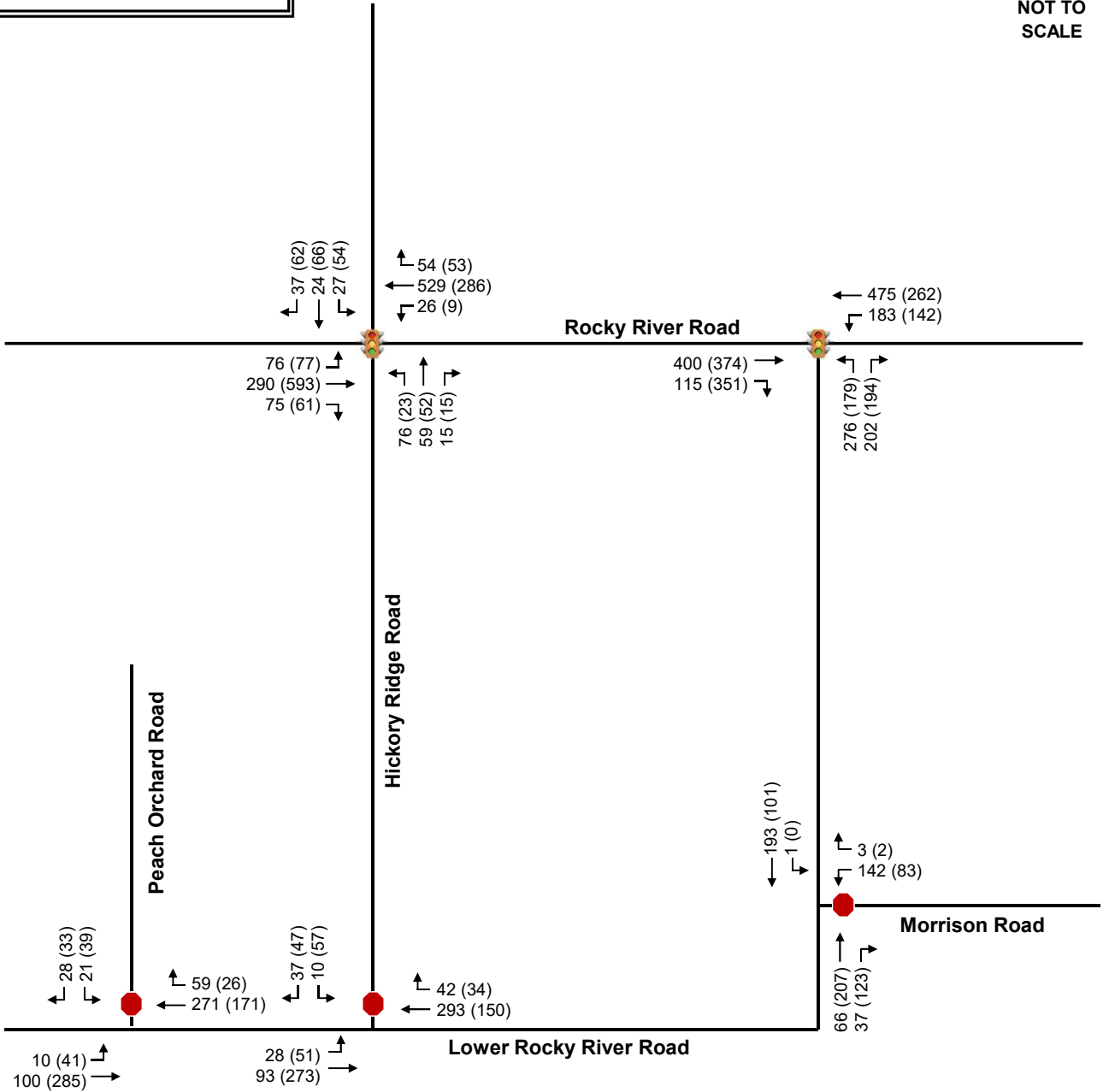
Stop Control

🚦

Traffic Signal



NOT TO SCALE



4.0 Background Traffic Volume Development

Projected background (non-project) traffic is defined as the expected growth or change in traffic volumes on the surrounding roadway network between the year the existing counts were collected and the expected build-out year absent the construction and opening of the proposed project. This includes both non-specific general growth based on historical increase in local traffic volumes (historical background growth), along with specific growth and/or change in traffic volumes caused by either approved, but not yet fully-constructed, off-site developments and/or planned transportation projects specifically identified within the vicinity of the proposed development.

4.1 HISTORICAL BACKGROUND GROWTH TRAFFIC

Historical background growth is the increase in existing traffic volumes due to usage increases and non-specific growth throughout the area, and accounts for growth that is independent of specific off-site developments or planned transportation projects. Historical background growth traffic is calculated using an annual growth rate, which is applied to the existing traffic volumes up to the future horizon years. For this analysis, an annual growth rate of 2% was applied to the 2020 existing peak-hour traffic volumes to calculate base 2023, 2025, and 2026 background traffic volumes. This methodology was determined based on coordination with Town of Harrisburg and NCDOT staff.

4.2 APPROVED DEVELOPMENTS

At the direction of the Town of Harrisburg and NCDOT staff, eight approved developments that are expected to impact traffic volumes within the study area were included in the background traffic volumes for this TIA, including:

- Farmington Mixed Use
- Holcombe Woods
- Grantham
- Essex Homes
- Camellia Gardens
- Stallings Road Subdivision
- Addison Park
- SW Cabarrus Elementary School

Per coordination with the Town, all developments were assumed to be 0% built-out at the time of the turning-movement counts.

Volumes for the approved developments were obtained from the following sources:

- Farmington TIA (Davenport, May 2018)
- Holcombe Property TIA (SEPI Engineering and Construction, November 2014)
- Avanti – Robinson Church Road Subdivision TIA [Grantham] (STV Incorporated, November 2014)
- Camellia Gardens TIA (Kimley-Horn, June 2019)
- Stallings Road Subdivision TIA (Kimley-Horn, October 2018)
- New Southwest Elementary School TIA (Kimley-Horn, March 2018)

Site trips for the SW Cabarrus Elementary School were calculated for the school peak hours (7-9 AM and 2-4 PM) in the *New Southwest Elementary School TIA*. To determine PM peak hour site

trips for this TIA, the hourly breakdowns for Elementary School in *Trip Generation* (Institute of Transportation Engineers, Tenth Edition, 2017) were utilized to determine a PM peak hour factor.

A TIA was not performed for Essex Homes or Addison Park. Therefore, trip generation was performed for these sites and project trips associated with these developments were distributed throughout the study area based on the existing turning movement counts.

All approved development calculations are provided in the **Appendix**.

The following laneage improvements were identified at the intersection of Rocky River Road and Hickory Ridge Road in the *New Southwest Elementary School TIA*:

- Extension of the northbound left-turn lane to provide 150 feet of storage
- Construction of a northbound right-turn lane with 275 feet of storage
- Construction of a southbound right-turn lane with 100 feet of storage
- Extension of the eastbound right-turn lane to provide 250 feet of storage
- Extension of the westbound left-turn lane to provide 175 feet of storage
- Extension of the westbound right-turn lane to provide 465 feet of storage

The following laneage improvements were identified at the intersection of Hickory Ridge Road and Lower Rocky River Road in the *New Southwest Elementary School TIA*:

- Construction of a southbound right-turn lane with 100 feet of storage
- Construction of an eastbound left-turn lane with 150 feet of storage
- Construction of the westbound right-turn lane with 50 feet of storage

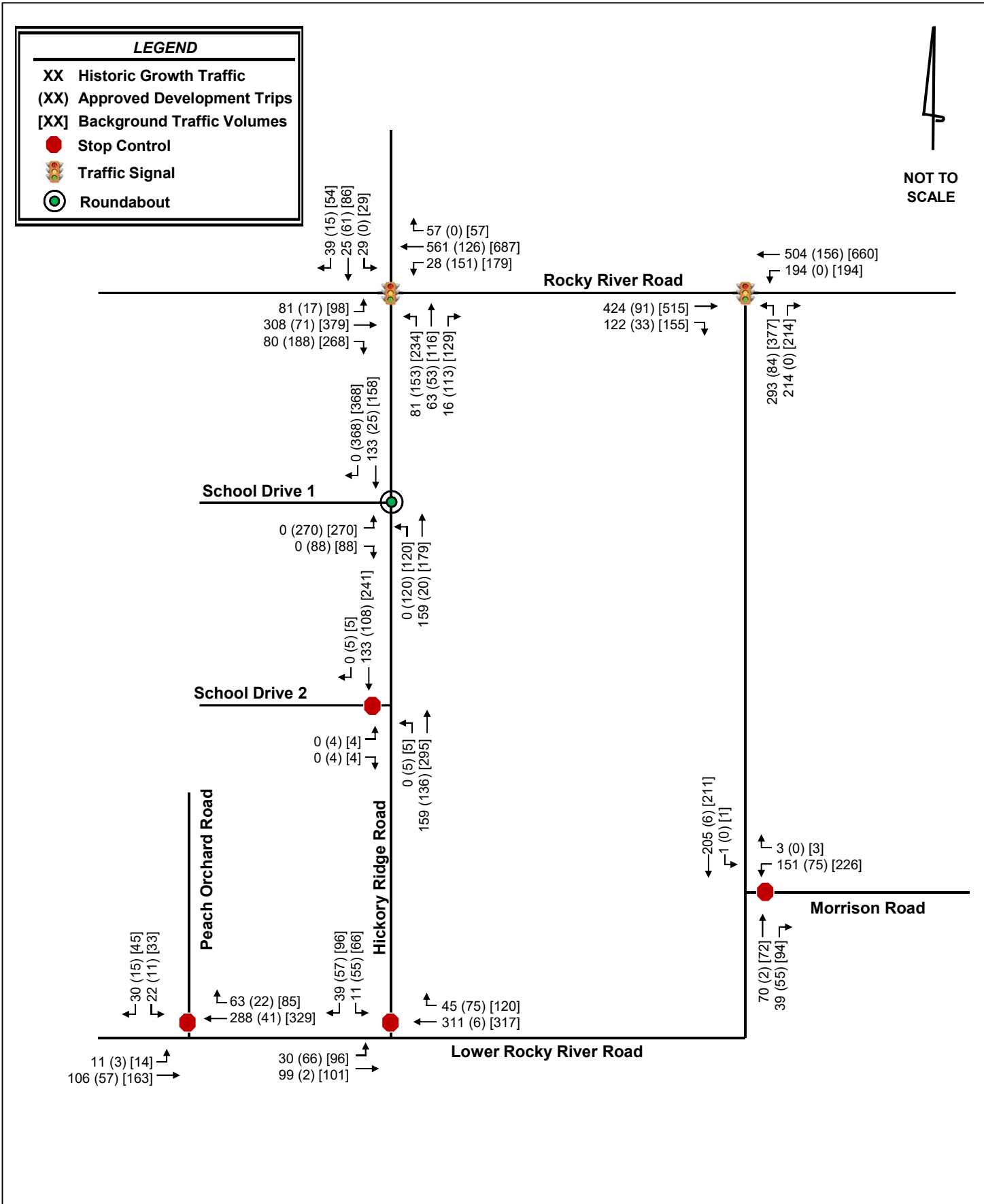
Per a letter from the NCDOT Municipal and School Transportation Assistance (MSTA) group and Congestion Management section dated October 11, 2019, construction of improvements at these two intersections are not committed to be done by the school. Therefore, these improvements associated with the school were not included in the future year conditions.

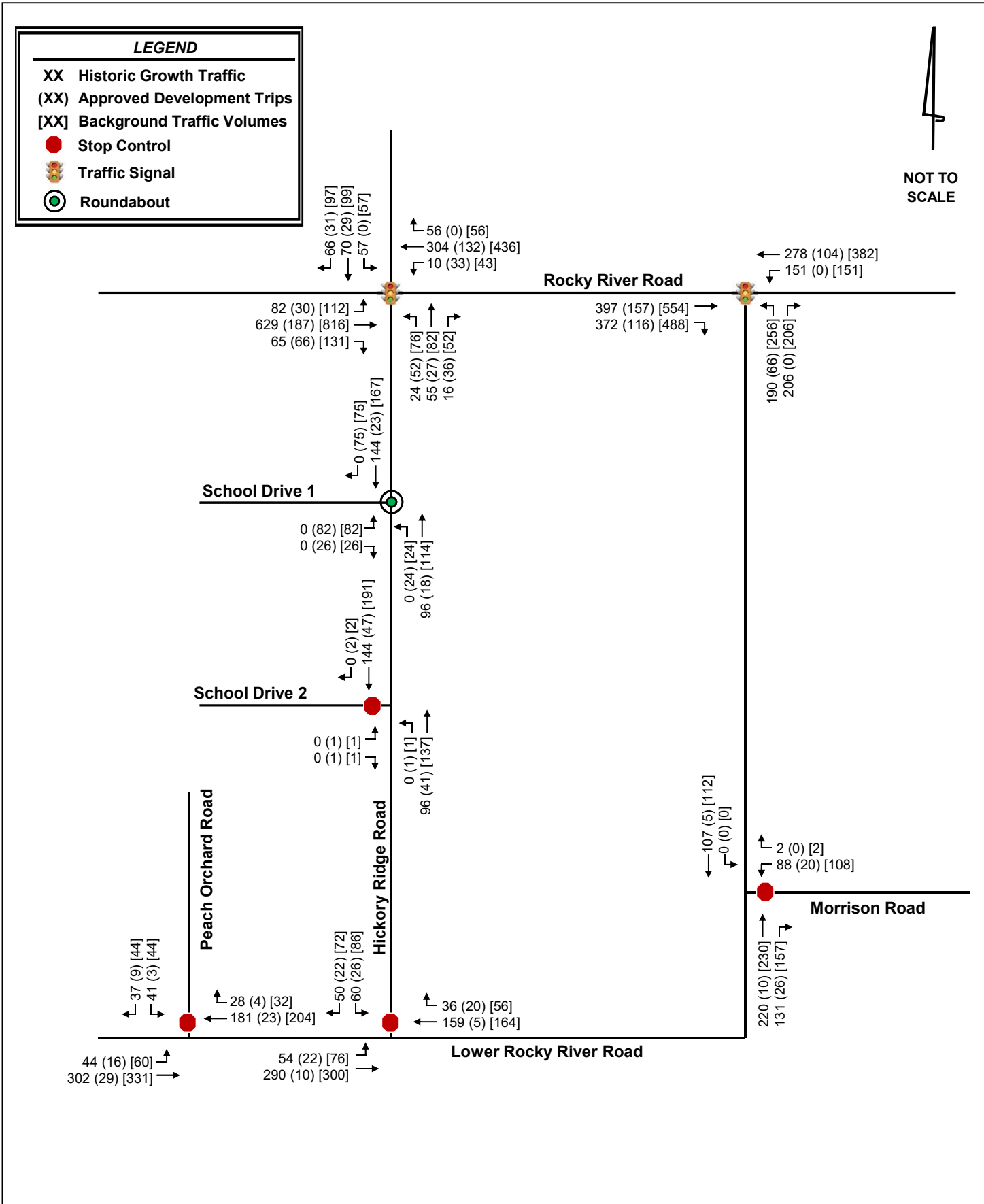
In the TIA scoping meeting, impacts of the proposed development to the SW Cabarrus Elementary School Driveways were discussed. Based on these discussions, the following intersections are included in all future year conditions:

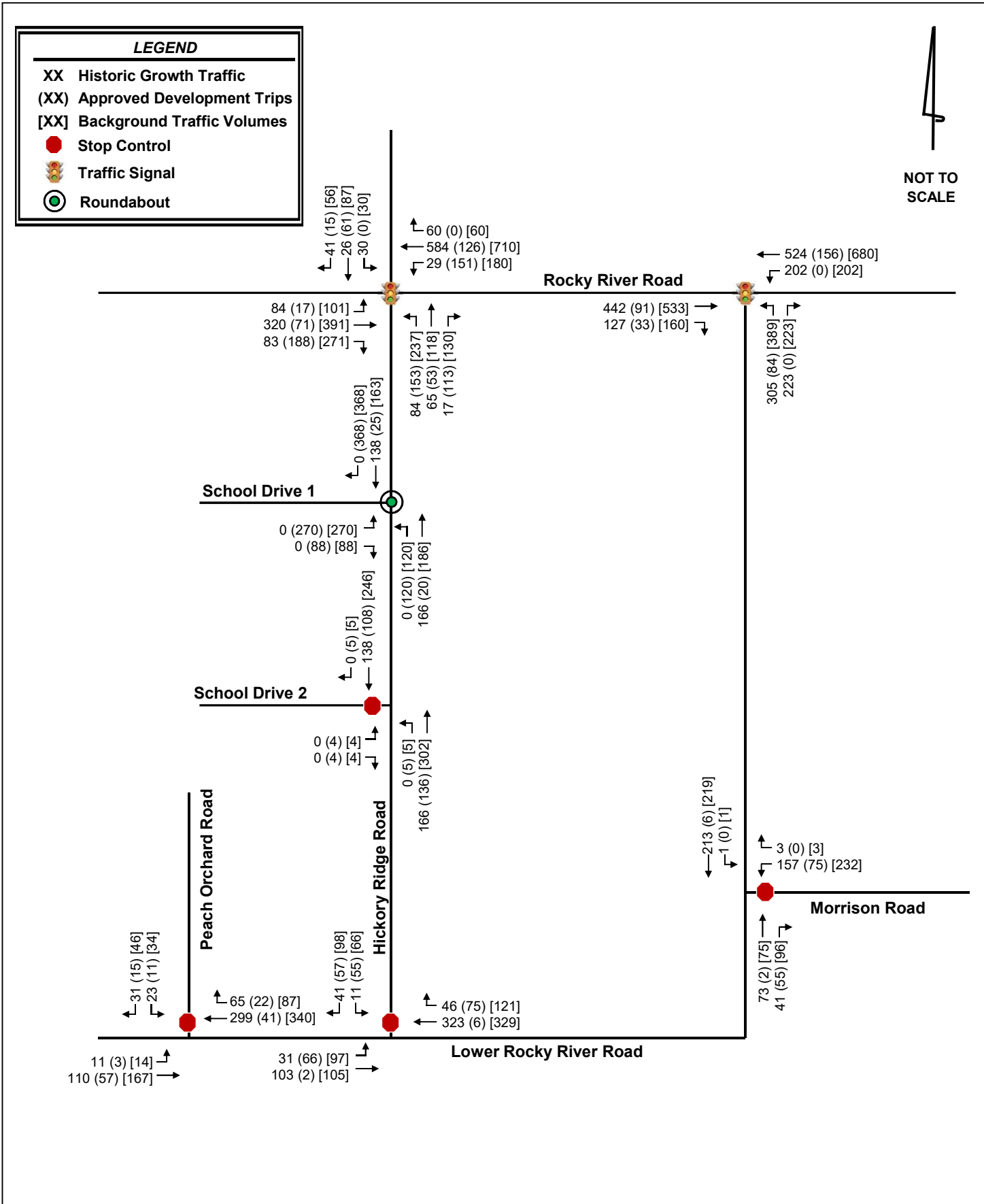
- Hickory Ridge Road and School Drive 1 – mini single-lane roundabout with a southbound right-turn lane
- Hickory Ridge Road and School Drive 2 – stop-controlled t-intersection with a northbound left-turn lane and two school egress lanes

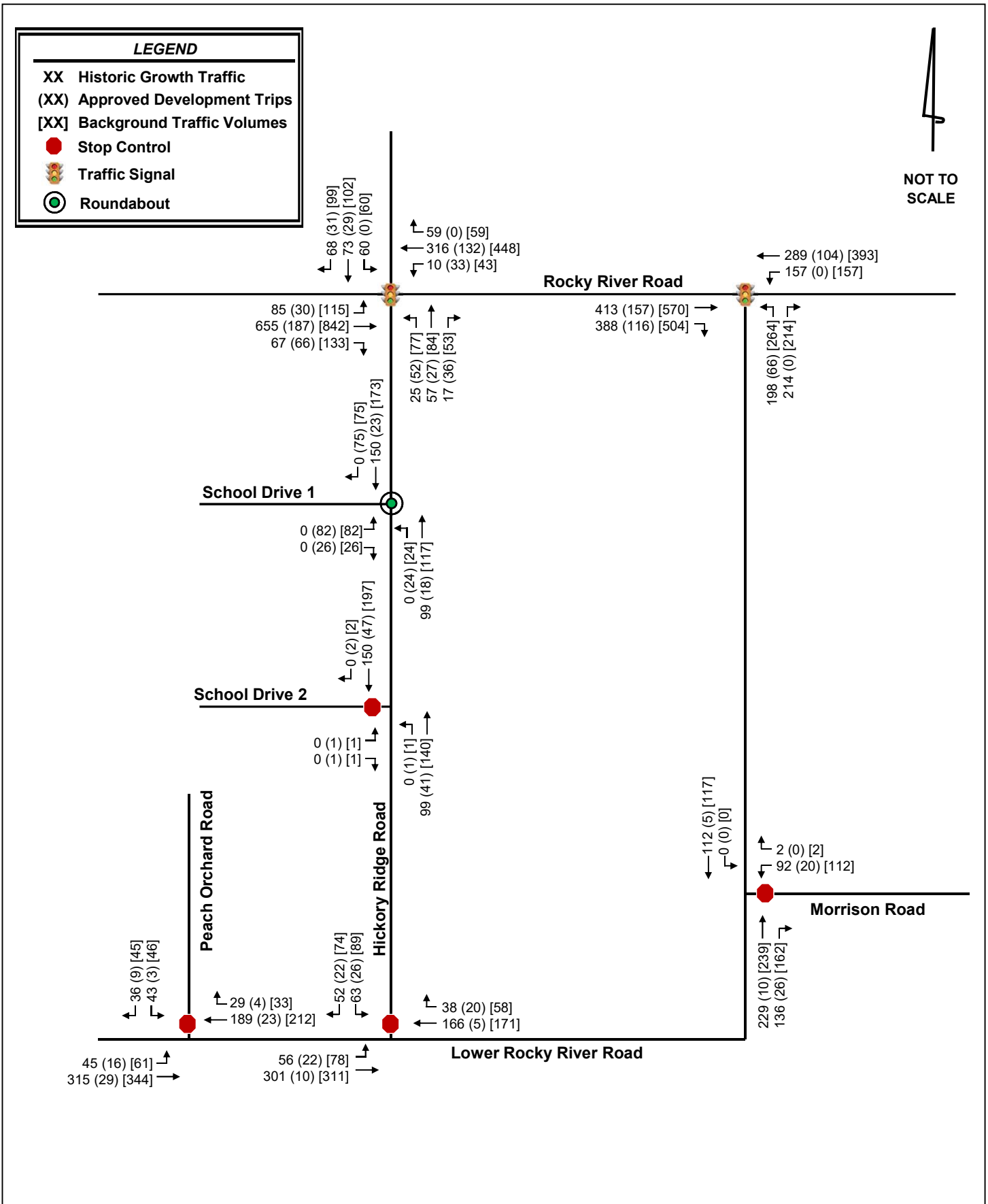
Background traffic volumes, that include the historical growth traffic and approved development trips, are shown in the following figures:

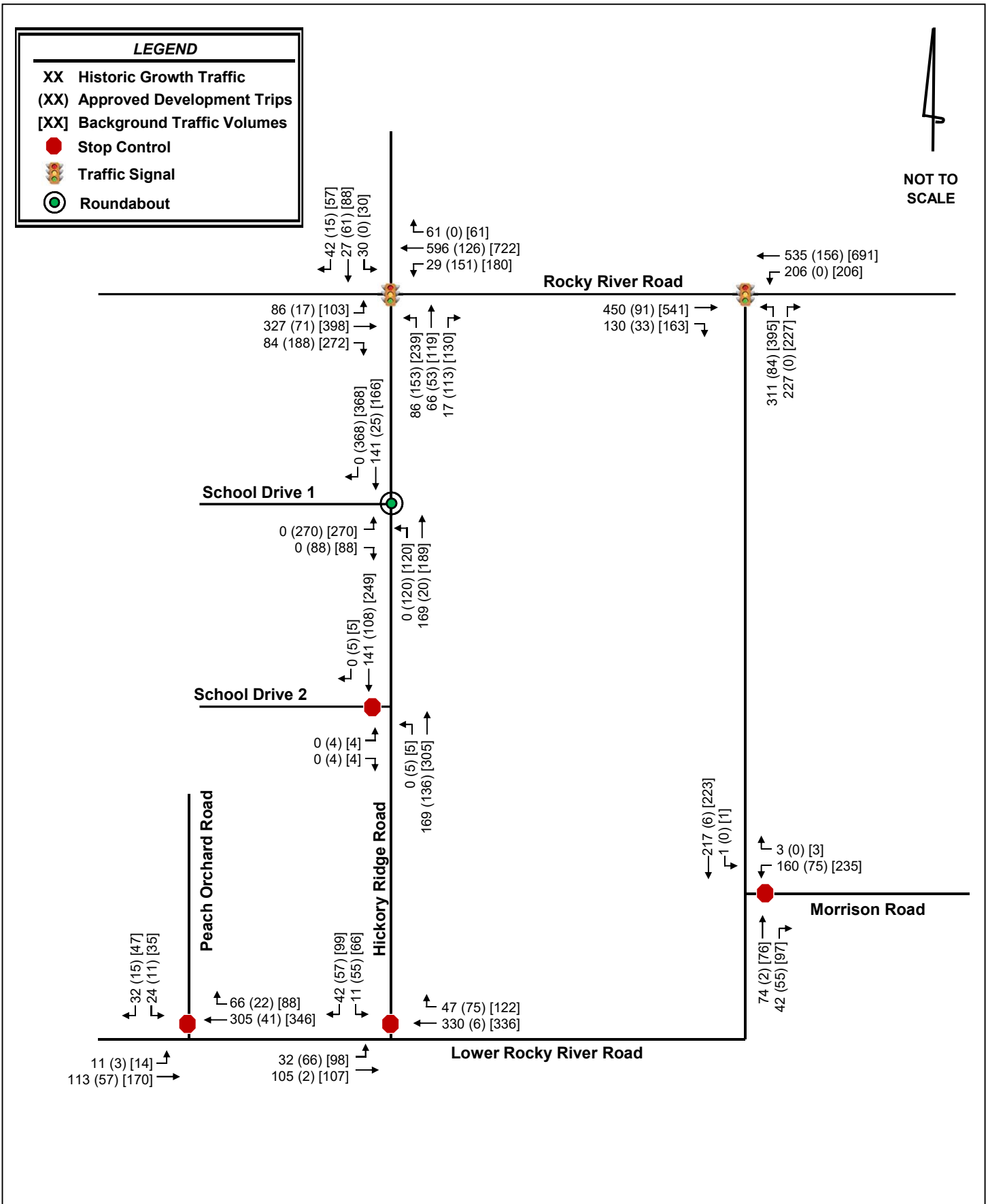
- Figure 4.1 - 2023 Phase 1 Background AM Peak-Hour Traffic Volumes
- Figure 4.2 - 2023 Phase 1 Background PM Peak-Hour Traffic Volumes
- Figure 4.3 - 2025 Phase 2 Background AM Peak-Hour Traffic Volumes
- Figure 4.4 - 2025 Phase 2 Background PM Peak-Hour Traffic Volumes
- Figure 4.5 - 2026 Phase 3 Background AM Peak-Hour Traffic Volumes
- Figure 4.6 - 2026 Phase 3 Background PM Peak-Hour Traffic Volumes

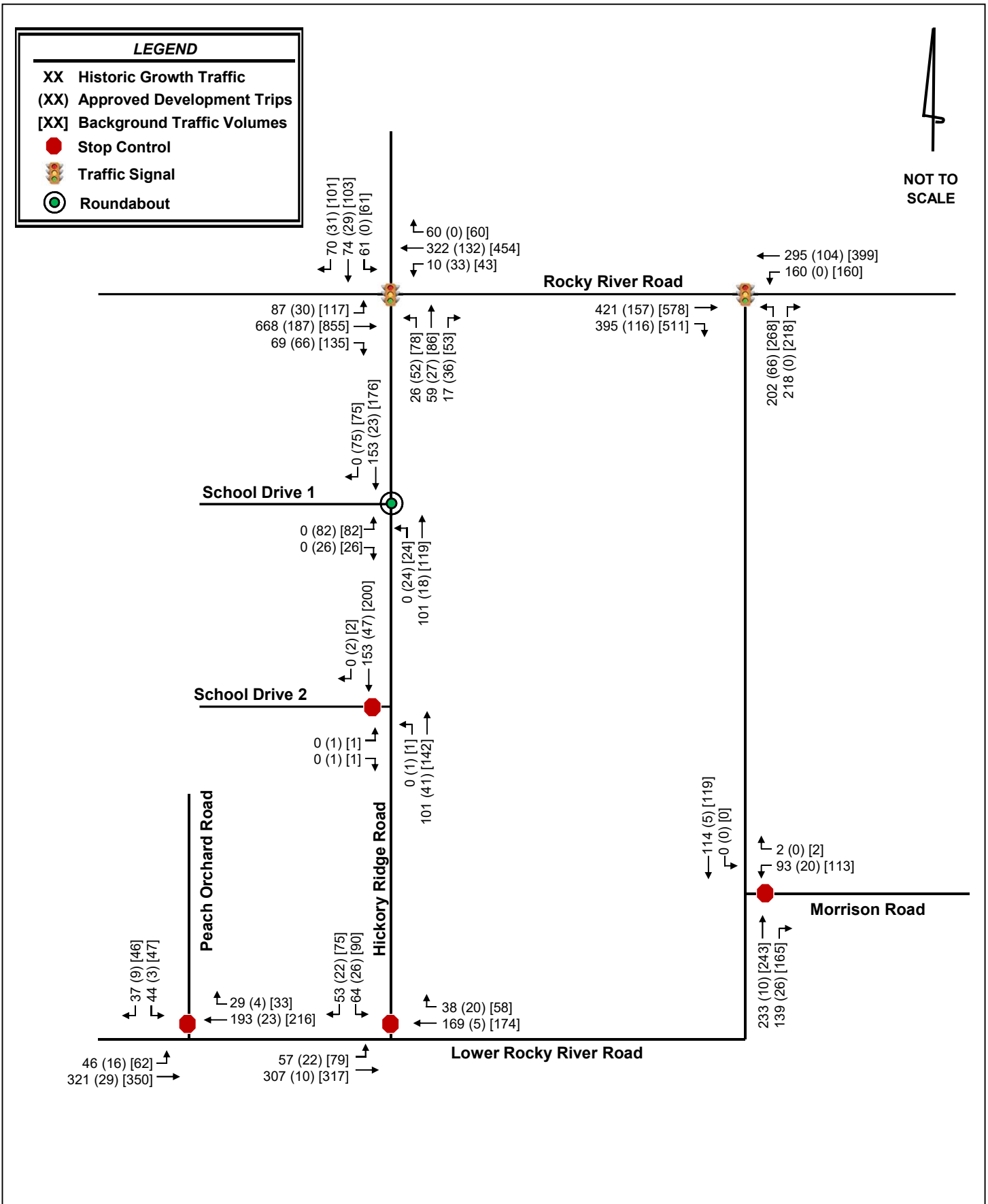












5.0 Site Traffic Volume Development

Site traffic developed for this TIA is defined as the vehicle trips expected to be generated and added to the study area by construction of the proposed development, and the distribution and assignment of that traffic throughout the surrounding network.

5.1 SITE ACCESS

For the purposes of this TIA, a Phase 1 build-out year of 2023, Phase 2 build-out year of 2025, and Phase 3 build-out year of 2026 were considered. Based on the provided site plan and information provided by the applicant, the proposed development will be accessed via four external access points:

- Access 1 – an unsignalized, full-movement connection to Hickory Ridge Road approximately 850 feet south of Timber Ridge Road
- Access 2 – an unsignalized, full-movement connection to Hickory Ridge Road approximately 2,700 feet south of Access 1
- Access 3 – an unsignalized, full-movement connection to Lower Rocky River Road approximately 900 feet south of Monterosa Road (Phase 2 & Phase 3 only)
- Access 4 – an unsignalized, full-movement connection to Lower Rocky River Road approximately 1,400 feet south of Access 3 (Phase 2 & Phase 3 only)

5.2 TRAFFIC GENERATION

The traffic generation potential of the proposed development was determined using the trip generation rates published in *Trip Generation* (Institute of Transportation Engineers, Tenth Edition, 2017). Based on the site plan provided by the applicant, the proposed development is currently envisioned to consist of the following land uses and phases:

- Phase 1: 143 single-family homes
- Phase 2: 227 single-family homes
- Phase 3: 90 single-family homes

Table 5.1, Table 5.2, and Table 5.3 summarize the projected trip generation for the cumulative build conditions of each phase of the proposed development. During a typical weekday, upon full build-out of the proposed development, it has the potential to generate 331 and 440 net new external trips during the AM and PM peak hours, respectively.

Table 5.1 - Phase 1 Trip Generation										
Land Use		Intensity		Daily	AM Peak Hour			PM Peak Hour		
					Total	In	Out	Total	In	Out
	Single-Family Homes [ITE 210]	143	DU	1,445	106	27	79	143	90	53
Net New External Trips				1,445	106	27	79	143	90	53

Table 5.2 - Phase 2 Trip Generation										
Land Use		Intensity		Daily	AM Peak Hour			PM Peak Hour		
					Total	In	Out	Total	In	Out
	Single-Family Homes [ITE 210]	370	DU	3,465	268	67	201	357	225	132
Net New External Trips				3,465	268	67	201	357	225	132

Table 5.3 - Phase 3 Trip Generation										
Land Use		Intensity		Daily	AM Peak Hour			PM Peak Hour		
					Total	In	Out	Total	In	Out
	Single-Family Homes [ITE 210]	460	DU	4,233	331	83	248	440	277	163
Net New External Trips				4,233	331	83	248	440	277	163

5.3 SITE TRAFFIC DISTRIBUTION AND ASSIGNMENT

The proposed development's trips were assigned to the surrounding network based on existing peak-hour turning movements, surrounding land uses, locations of similar land use and population densities in the area. The following site traffic distribution was reviewed and approved as part of the MOU by the Town of Harrisburg, NCDOT and the applicant:

- 20% to/from the west along Rocky River Road
- 20% to/from the north along Hickory Ridge Road
- 20% to/from the east along Rocky River Road
- 5% to/from the east along Morrison Road
- 10% to/from the north along Peach Orchard Road
- 25% to/from the west along Lower Rocky River Road

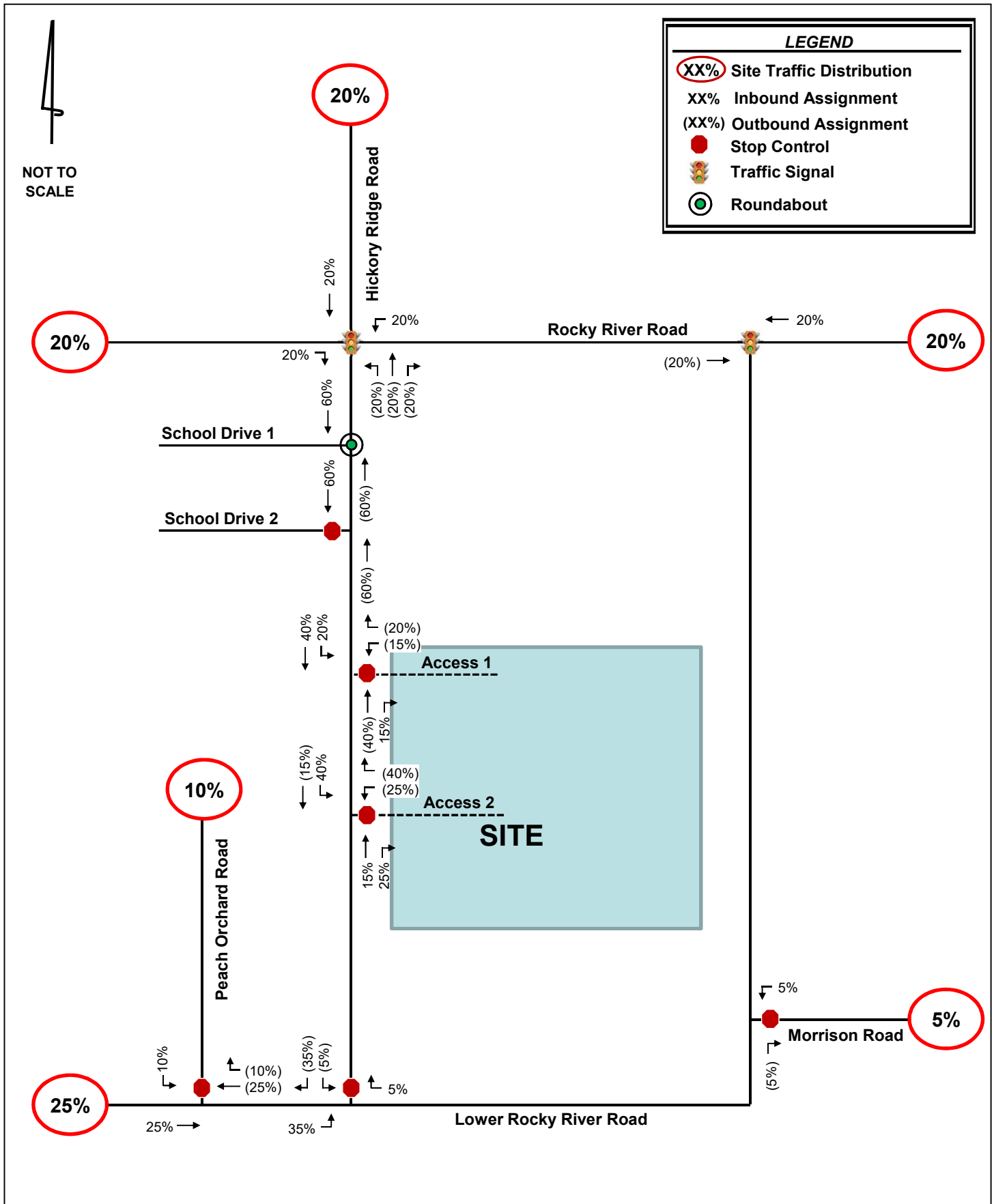
The overall site traffic distribution and assignment for Phase 1 is shown in **Figure 5.1**. The overall site traffic distribution and assignment for Phase 2 and Phase 3 is shown in **Figure 5.2**.

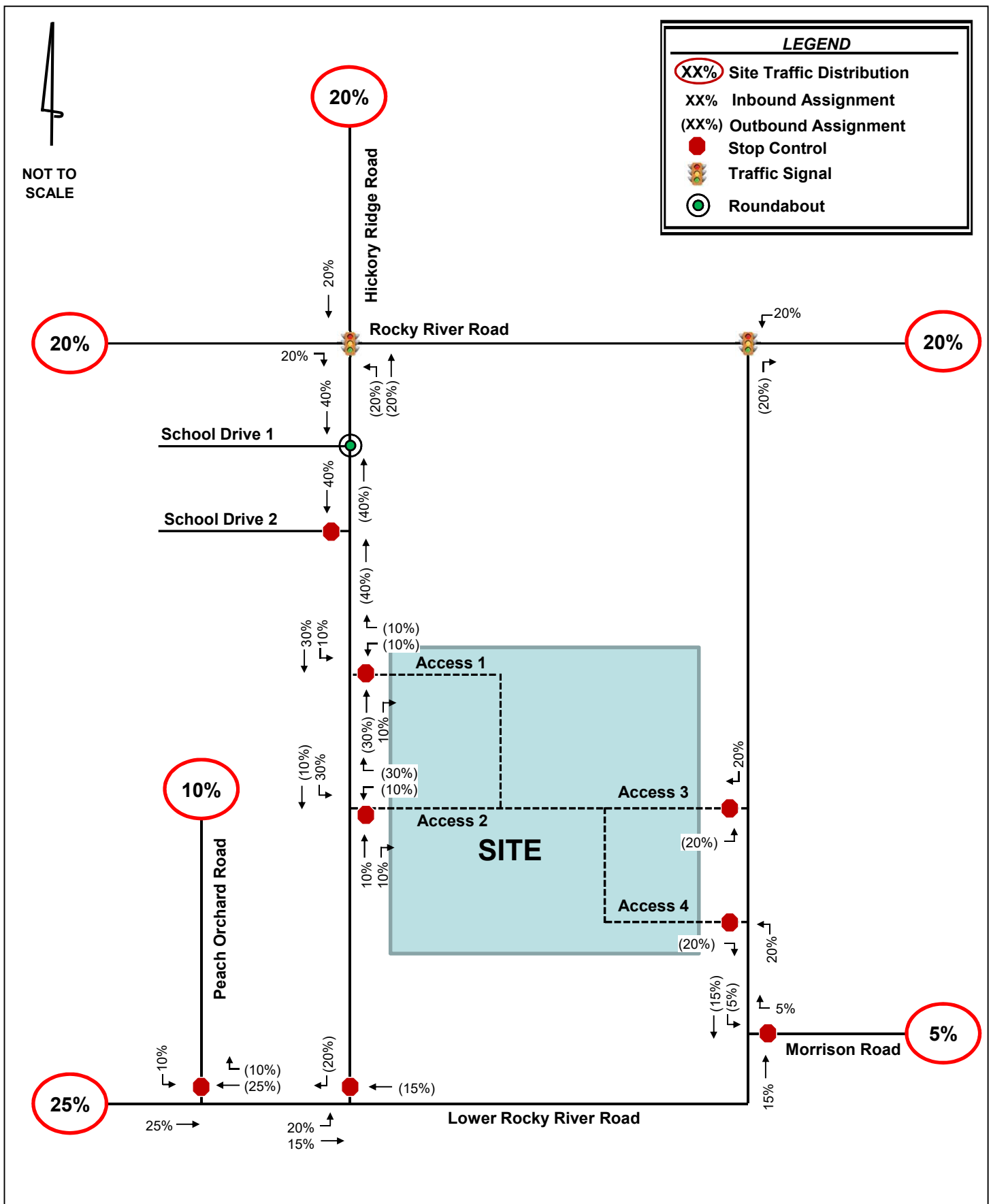
5.4 BUILD-OUT TRAFFIC VOLUMES

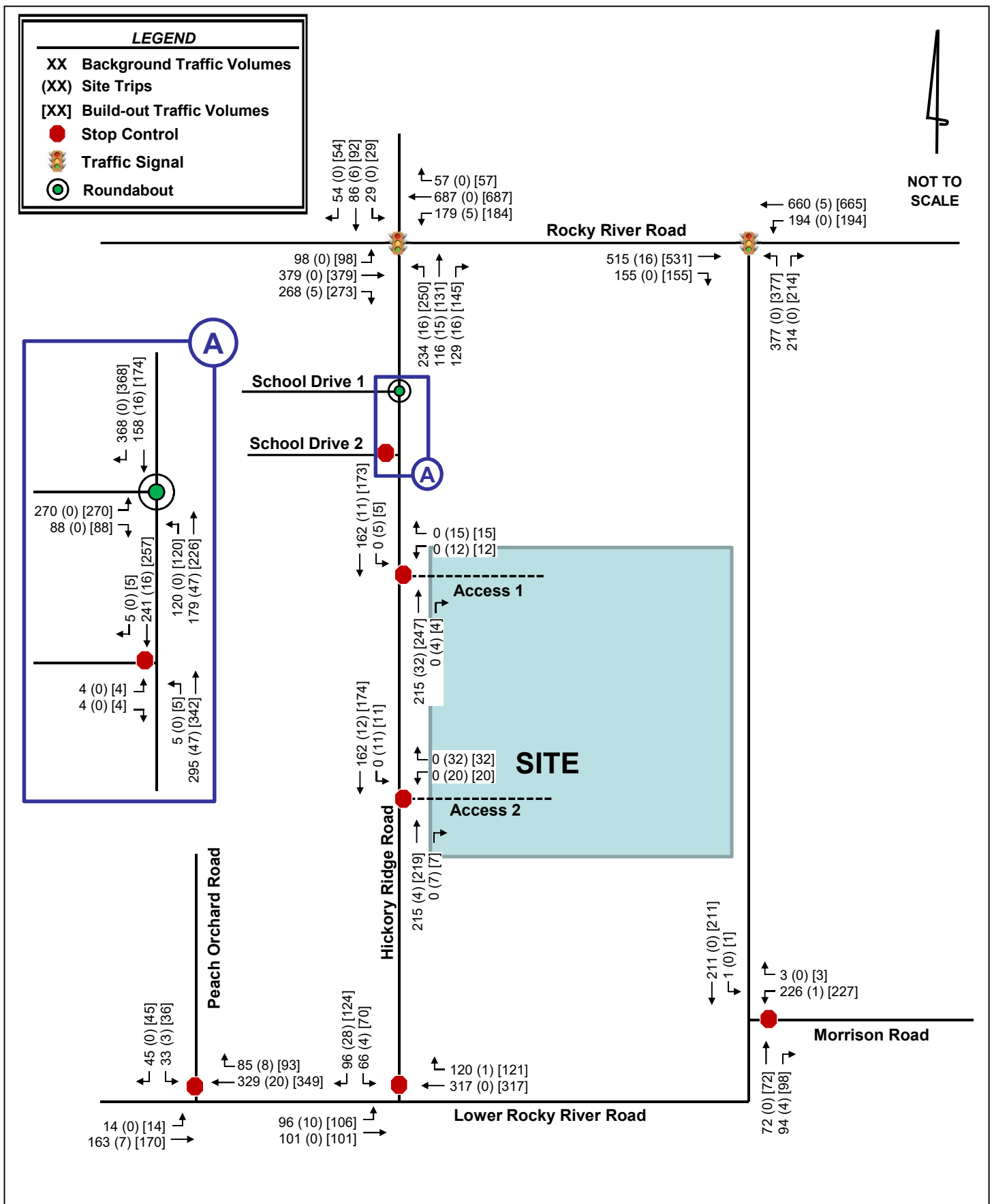
The build-out traffic volumes include the assignment of the projected site traffic generation added to the appropriate background traffic volumes. Build-out traffic volumes are shown in the following figures:

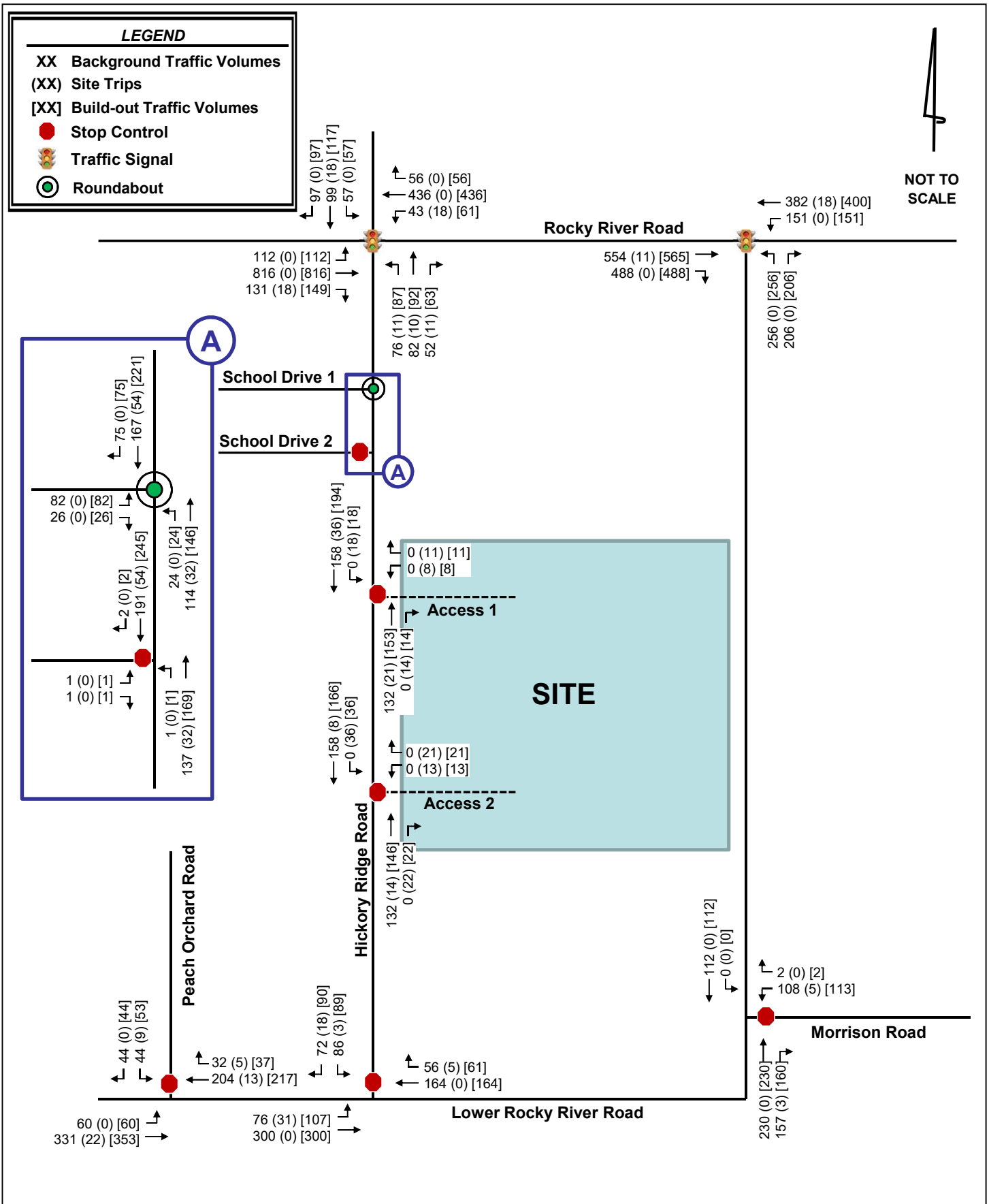
- Figure 5.3 - 2023 Phase 1 Build-out AM Peak-Hour Traffic Volumes
- Figure 5.4 - 2023 Phase 1 Build-out PM Peak-Hour Traffic Volumes
- Figure 5.5 - 2025 Phase 2 Build-out AM Peak-Hour Traffic Volumes
- Figure 5.6 - 2025 Phase 2 Build-out PM Peak-Hour Traffic Volumes
- Figure 5.7 - 2026 Phase 3 Build-out AM Peak-Hour Traffic Volumes
- Figure 5.8 - 2026 Phase 3 Build-out PM Peak-Hour Traffic Volumes

Intersection volume development worksheets for all intersections within the study network are provided in the **Appendix**.

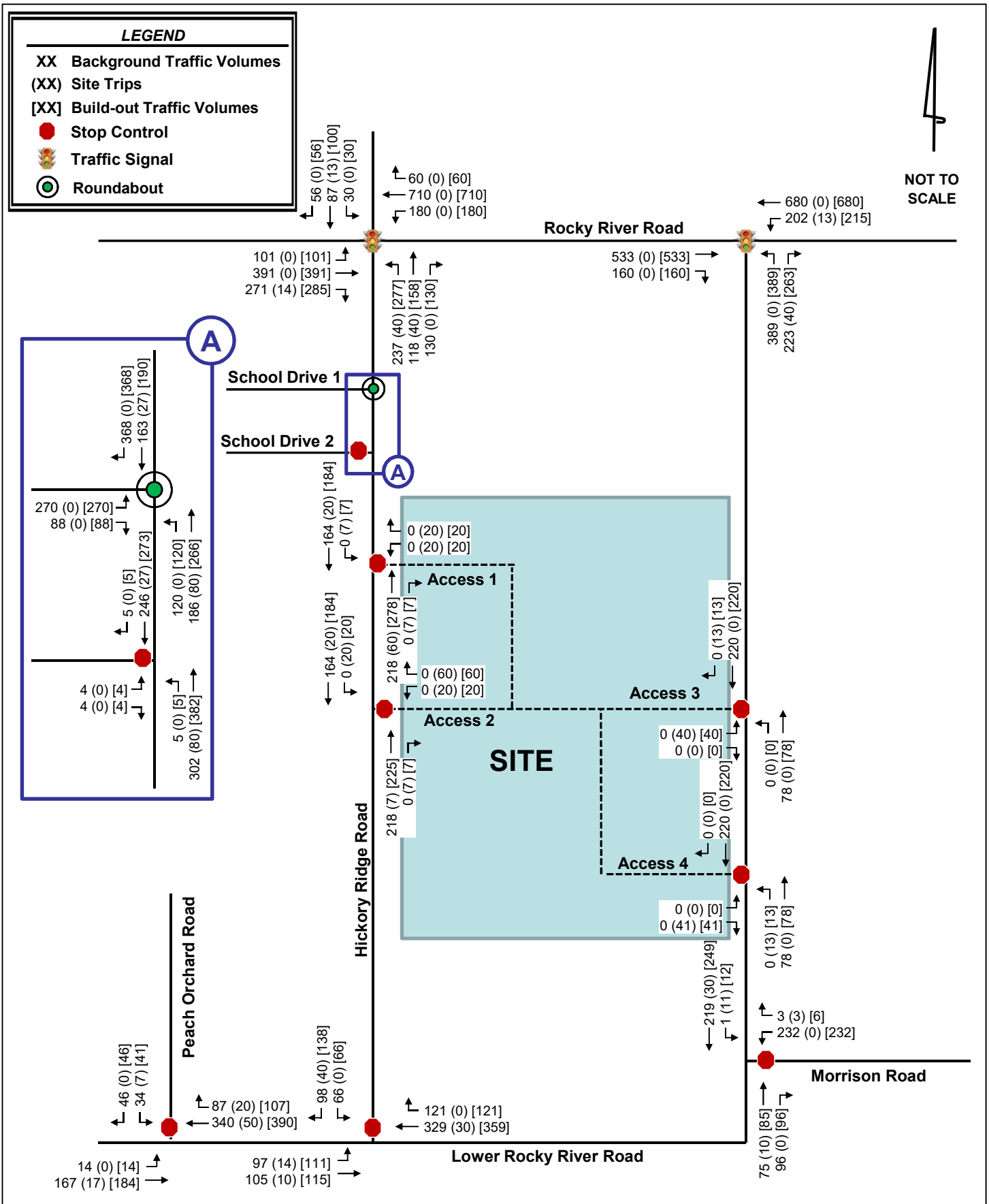


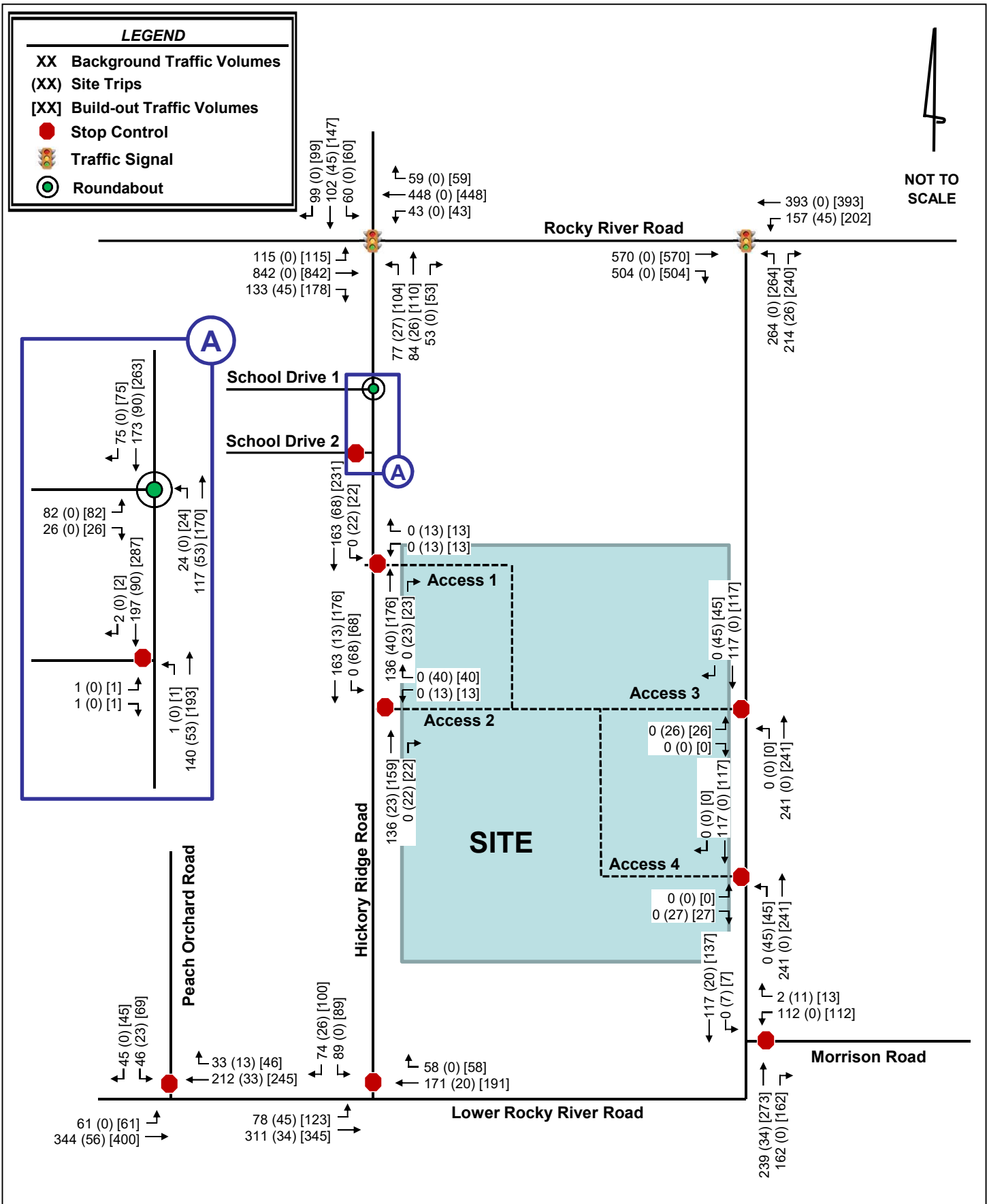




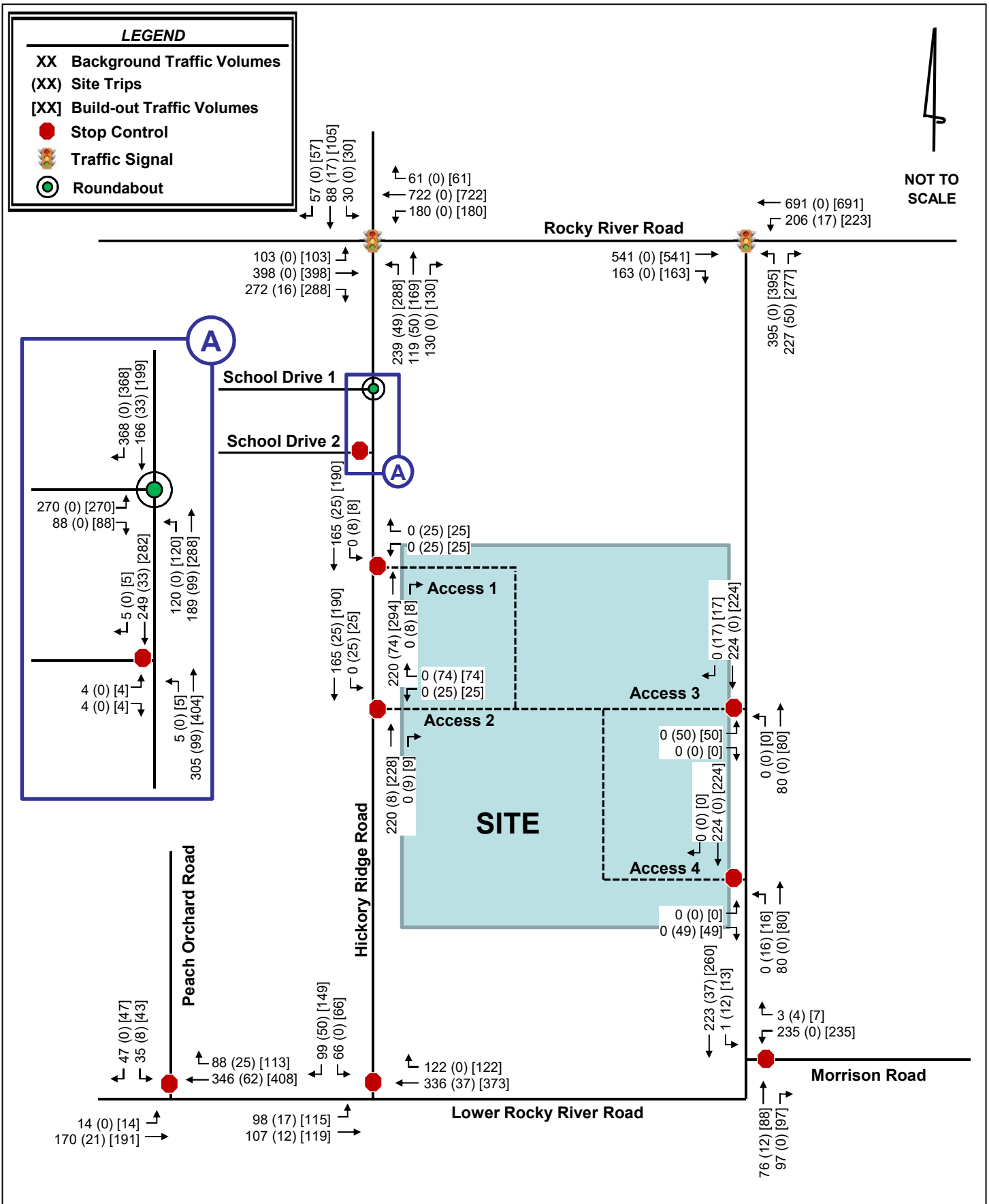


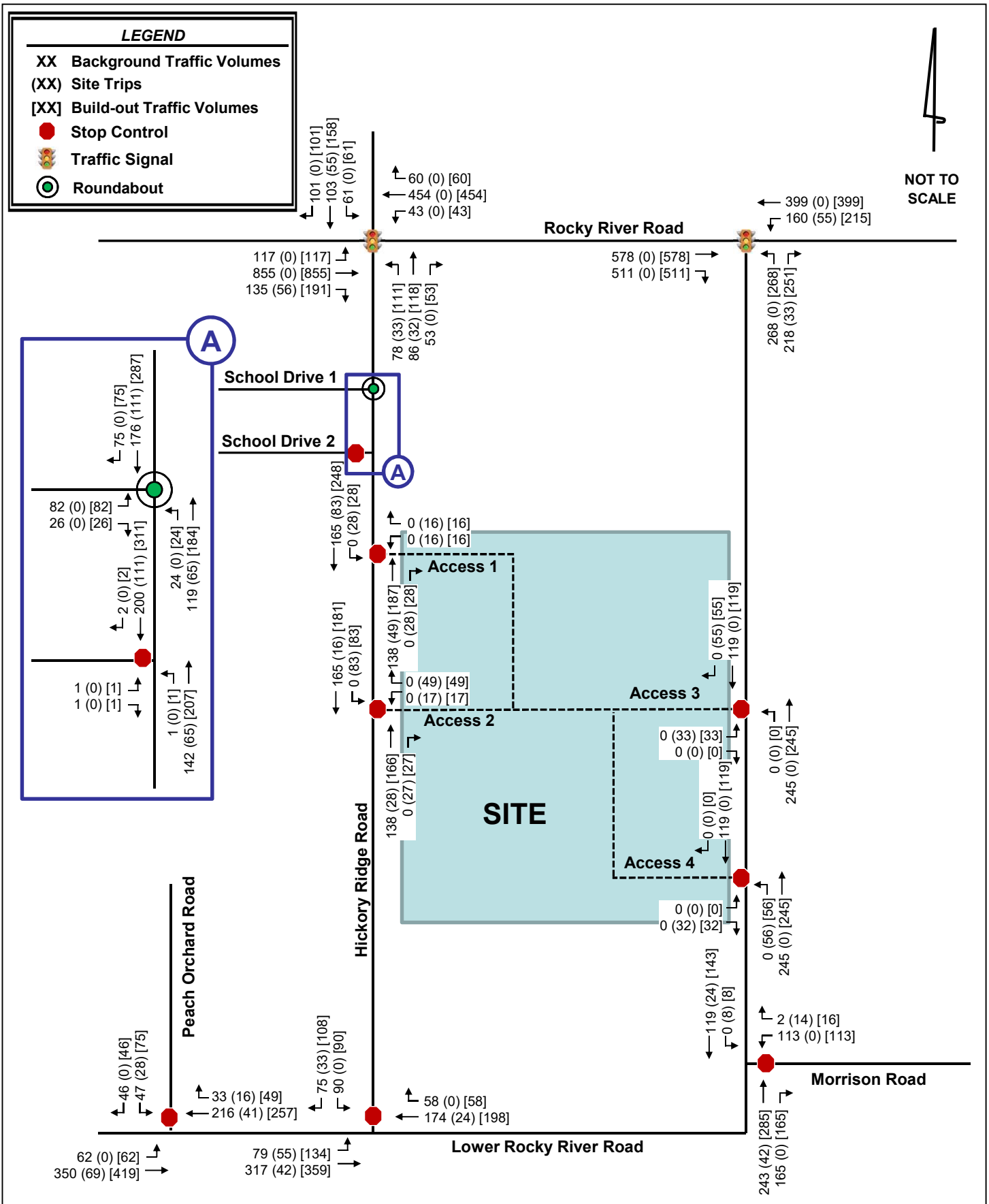
	Hickory Ridge Road Development Traffic Impact Analysis	2023 Phase 1 Build-Out PM Peak- Hour Traffic Volumes	Figure 5.4
--	---	---	-----------------------





Kimley»Horn	Hickory Ridge Road Development Traffic Impact Analysis	2025 Phase 2 Build-Out PM Peak-Hour Traffic Volumes	Figure 5.6
---------------------------	--	---	------------------------------





6.0 Capacity Analysis

Based on the requirements set forth by the *Town of Harrisburg Unified Development Ordinance – Appendix F* and in accordance with the traffic study guidelines in the *NCDOT Policy on Street and Driveway Access to North Carolina Highways*, capacity analyses were performed at the study area intersections for each of the following AM and PM peak-hour scenarios:

- 2020 Existing Conditions
- 2023 Phase 1 Background Conditions
- 2023 Phase 1 Build-Out Conditions
- 2025 Phase 2 Background Conditions
- 2025 Phase 2 Build-Out Conditions
- 2026 Phase 3 Background Conditions
- 2026 Phase 3 Build-Out Conditions

Capacity analyses were performed for the AM and PM peak hours using Synchro Version 10 and SIDRA 9 software to determine the operating characteristics at the study area intersections of the adjacent street network and to evaluate the impacts of the proposed development. Capacity is defined as the maximum number of vehicles that can pass over a particular road segment, or through a particular intersection, within a specified period of time under prevailing operational, geometric and controlling conditions within a set time duration. SIDRA is typically used to analyze roundabout operations using a macroscopic model that uses gap acceptance and lane utilization to determine capacity, where capacity is based on the size of time gaps between vehicles that motorists choose when entering a roundabout. These software programs use methodologies contained in the *Highway Capacity Manual* (HCM) to determine the operating characteristics of an intersection.

The *Highway Capacity Manual* (HCM) defines LOS as a “quantitative stratification of a performance measure or measures representing quality of service” and is used to “translate complex numerical performance results into a simple A-F system representative of travelers’ perceptions of the quality of service provided by a facility or service”. The HCM defines six levels of service, LOS A through LOS F, with A having the best operating conditions from the traveler’s perspective and F having the worst. However, it must be understood that “the LOS letter result hides much of the complexity of facility performance”, and that “the appropriate LOS for a given system element in the community is a decision for local policy makers”. According to the HCM, “for cost, environmental impact, and other reasons, roadways are typically designed not to provide LOS A conditions during peak periods but instead to provide some lower LOS that balances individual travelers’ desires against society’s desires and financial resources. Nevertheless, during low-volume periods of the day, a system element may operate at LOS A.”

LOS for a two-way stop-controlled (TWSC) intersection is determined by the control delay at the side-street approaches, typically during the highest volume periods of the day, the AM and PM peak periods. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. With respect to field measurements, control delay is defined as the total elapsed time from the time a vehicle stops at the end of the queue to the time the vehicle departs from the stop line. It is typical for stop sign-controlled side streets and driveways intersecting major streets to experience long delays during peak hours, particularly for left-turn movements. The majority of the traffic moving through the intersection on the major street experiences little or no delay.

LOS for signalized intersections is reported for the intersection as a whole, and typically during the highest volume periods of the day, the AM and PM peak periods. One or more movements at an intersection may experience a low level-of-service, while the intersection as a whole may operate acceptably.

LOS for roundabout intersections is also reported for the overall intersection and its approaches but uses the same control delay thresholds as the unsignalized intersections. However, if the volume-to-capacity ratio on an approach of the intersection is greater than 1.0, that approach or intersection is reported as LOS F regardless of the reported control delay.

Table 6.0-A and **6.0-B** list the LOS control delay thresholds published in the HCM for unsignalized and signalized intersections, respectively, as well as the unsignalized operational descriptions assumed herein.

Table 6.0-A Vehicular LOS Control Delay Thresholds for Unsignalized Intersections		
Level-of-Service	Average Control Delay per Vehicle [sec/veh]	
A	≤ 10	Short Delays
B	> 10 – 15	
C	> 15 – 25	
D	> 25 – 35	Moderate Delays
E	> 35 – 50	
F	> 50	Long Delays

Table 6.0-B Vehicular LOS Control Delay Thresholds for Signalized Intersections	
Level-of-Service	Average Control Delay per Vehicle [sec/veh]
A	≤ 10
B	> 10 – 20
C	> 20 – 35
D	> 35 – 55
E	> 55 – 80
F	> 80

Using the signal timing plans provided by NCDOT, cycle lengths and splits were optimized for the existing conditions analysis. A Congestion Management minimum cycle length of 120 seconds based on the phasing of the signalized intersections was also utilized. Intersection cycle lengths and splits were optimized in background conditions and utilized in build-out conditions.

The following modifications from the background data collected were applied to the capacity analyses to meet NCDOT *Congestion Management Capacity Analysis Guidelines*:

- Right-turn-on-red (RTOR) operations were not allowed.
- Protected-only left-turn phasing was used for analysis of future operations where protected/permitted left-turn phasing and a dedicated left-turn lane exists.

- Lost time adjust was added to the yellow and all-red times provided in the existing signal plans to maintain at total lost time of 5 seconds for each movement.
- A minimum of 4 vehicles per hour were used for permissible movements, excluding movements into and out of the proposed site.

In the existing condition, the observed peak hour factor (PHF) was used in the analysis. A weighted PHF was used for all future year conditions in the AM peak hour to account for the impacts of school traffic. A 0.9 PHF was used for all future conditions in the PM peak hour.

Capacity analysis reports generated by Synchro Version 10 software are included in the **Appendix**.

6.1 ROCKY RIVER ROAD AND HICKORY RIDGE ROAD

Table 6.1 summarizes the LOS, control delay and 95th percentile queue lengths at the signalized intersection of Rocky River Road and Hickory Ridge Road.

Table 6.1 - Rocky River Road and Hickory Ridge Road													
Condition	Measure	EB			WB			NB			SB		Intersection
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBTR	NBR	SBL	SBTR	LOS (Delay)
AM Peak Hour													
2020 Existing	LOS (Delay)	B (12.5)			C (24.5)			D (35.8)			D (37.8)		C (22.6)
	Synchro 95th Q	36'	189'	32'	17'	417'	31'	76'	86'	-	33'	82'	
2023 Background	LOS (Delay)	D (48.5)			E (75.5)			F (82.6)			F (108.4)		E (70.8)
Phase 1	Synchro 95th Q	147'	457'	176'	228'	#946'	52'	291'	303'	-	59'	182'	
2023 Build-out	LOS (Delay)	D (48.5)			E (76.4)			F (89.7)			F (113.2)		E (73.5)
Phase 1	Synchro 95th Q	147'	457'	181'	235'	#946'	52'	314'	344'	-	59'	192'	
2023 Build-out IMP	LOS (Delay)	D (50.9)			E (71.6)			E (71.5)			F (96.6)		E (66.8)
Phase 1	Synchro 95th Q	#132'	415'	169'	204'	#844'	43'	279'	138'	98'	51'	168'	
2025 Background	LOS (Delay)	D (52.2)			E (72.5)			F (87.1)			F (120.0)		E (72.9)
Phase 2	Synchro 95th Q	#144'	449'	171'	212'	#923'	49'	280'	295'	-	56'	175'	
2025 Build-out	LOS (Delay)	D (52.1)			E (72.5)			F (109.0)			F (130.7)		E (79.8)
Phase 2	Synchro 95th Q	#144'	449'	183'	212'	#923'	49'	#349'	373'	-	56'	#219'	
2025 Build-out IMP	LOS (Delay)	D (54.6)			E (77.1)			F (82.5)			F (120.9)		E (74.6)
Phase 2	Synchro 95th Q	#166'	458'	184'	233'	#958'	50'	#372'	186'	104'	59'	#220'	
2026 Background	LOS (Delay)	D (50.2)			E (75.0)			F (97.2)			F (123.1)		E (75.8)
Phase 3	Synchro 95th Q	144'	454'	172'	212'	#946'	49'	285'	299'	-	56'	#181'	
2026 Build-out	LOS (Delay)	D (50.1)			E (75.0)			F (127.6)			F (139.2)		F (85.5)
Phase 3	Synchro 95th Q	144'	454'	184'	212'	#946'	49'	#385'	#423'	-	56'	#234'	
2026 Build-out IMP	LOS (Delay)	D (54.1)			E (76.7)			F (99.1)			F (94.1)		E (76.5)
Phase 3	Synchro 95th Q	154'	490'	116'	227'	#1020'	52'	#422'	201'	75'	58'	213'	
PM Peak Hour													
2020 Existing	LOS (Delay)	B (18.2)			B (17.9)			C (33.2)			D (35.1)		C (21.8)
	Synchro 95th Q	40'	453'	37'	8'	203'	33'	32'	89'	-	62'	166'	
2023 Background	LOS (Delay)	D (37.0)			C (26.8)			E (56.7)			E (66.4)		D (40.0)
Phase 1	Synchro 95th Q	155'	#896'	67'	77'	370'	41'	#136'	176'	-	#98'	#285'	
2023 Build-out	LOS (Delay)	D (37.1)			C (28.9)			E (60.0)			E (69.7)		D (41.7)
Phase 1	Synchro 95th Q	155'	#896'	75'	#112'	370'	41'	#164'	201'	-	#98'	#320'	
2023 Build-out IMP	LOS (Delay)	D (36.1)			C (28.6)			E (55.9)			E (69.5)		D (40.7)
Phase 1	Synchro 95th Q	155'	#896'	75'	#112'	370'	39'	#164'	128'	82'	95'	#320'	
2025 Background	LOS (Delay)	D (36.8)			C (25.8)			E (61.2)			E (70.5)		D (40.6)
Phase 2	Synchro 95th Q	159'	#920'	66'	77'	371'	41'	#153'	183'	-	#108'	#306'	
2025 Build-out	LOS (Delay)	D (36.9)			C (26.2)			E (76.2)			F (82.4)		D (45.1)
Phase 2	Synchro 95th Q	159'	#920'	87'	77'	371'	41'	#216'	#228'	-	#108'	#397'	
2025 Build-out IMP	LOS (Delay)	D (40.6)			C (27.8)			E (63.4)			E (74.6)		D (44.8)
Phase 2	Synchro 95th Q	159'	#958'	92'	77'	391'	42'	#204'	148'	71'	99'	#373'	
2026 Background	LOS (Delay)	D (37.6)			C (25.9)			E (62.0)			E (72.2)		D (41.3)
Phase 3	Synchro 95th Q	162'	#943'	67'	77'	376'	41'	#155'	186'	-	#109'	#311'	
2026 Build-out	LOS (Delay)	D (37.4)			C (26.2)			F (83.0)			F (93.2)		D (47.9)
Phase 3	Synchro 95th Q	162'	#943'	93'	77'	376'	41'	#230'	#245'	-	#109'	#424'	
2026 Build-out IMP	LOS (Delay)	D (44.0)			C (28.8)			E (61.1)			E (79.7)		D (47.4)
Phase 3	Synchro 95th Q	162'	#994'	98'	77'	403'	43'	#207'	156'	70'	100'	#400'	
Existing/Background Storage		150'		100'	150'		165'	125'			150'		
Exceeds storage													
# 95th percentile volume exceeds capacity, queue may be longer													

As shown in **Table 6.1**, under 2020 existing conditions, the overall intersection is expected to operate at LOS C in both peak hours.

Phase 1

Under 2023 background conditions, the overall intersection is expected to operate at LOS E and LOS D in the AM and PM peak hours, respectively. It should be noted that the significant increase in LOS and delay from existing to background conditions is due to the addition of approved development traffic. With the addition of site traffic, the intersection is expected to continue to operate at the same LOS with an increase in delay. In the AM peak hour, the northbound and

southbound approaches are expected to operate at LOS F with increases in delay caused by the addition of site traffic.

To mitigate site impacts, a northbound right-turn lane with 100 feet of storage and permitted overlap phasing is recommended. With this improvement in place, the AM peak hour is expected to continue operating at LOS E, but the northbound and southbound approaches and overall intersection delays are expected to improve and operate with less delay than the background condition.

Phase 2

Under 2025 background conditions, the AM and PM peak hours are expected to operate at LOS E and LOS D, respectively. With the addition of site traffic, the intersection is expected to continue to operate at the same LOS with an increase in delay. In the AM peak hour, the northbound and southbound approaches are expected to operate at LOS F with increases in delay caused by the addition of site traffic.

With the implementation of the northbound right-turn improvement identified in Phase 1, site impacts are expected to be mitigated. No additional improvements are recommended for capacity reasons due to Phase 2 site traffic.

With the addition of site traffic and the recommended improvements, the northbound left-turn queue is expected to exceed the available storage in both peak hours. In the AM peak hour, the queue is expected to increase to 372'. Due to Phase 3 anticipated queues outlined below, it is recommended that the site extend this turn lane to provide 425 feet of storage.

Phase 3

Under 2026 background conditions, the AM and PM peak hours are expected to operate at LOS E and LOS D, respectively. With the addition of site traffic, the PM peak hour is expected to remain at LOS D while the AM peak hour is expected to drop to LOS F.

With the implementation of the northbound right-turn improvement identified in Phase 1, site impacts are expected to be mitigated. No additional improvements are recommended for capacity reasons due to Phase 3 site traffic.

With the addition of site traffic and the recommended improvements, the northbound left-turn queue is expected to exceed the available storage in both peak hours. In the AM peak hour, the queue is expected to increase to 422'. The recommended Phase 2 turn-lane extension is anticipated to accommodate this queue.

It should be noted that in all future year scenarios in the AM peak hour, the eastbound right-turn, and westbound left-turn lane queuing is expected to exceed the existing storage. In all future year scenarios in the PM peak hour, the northbound left-turn and eastbound left-turn lane queuing is expected to exceed the existing storage. Since the storage of the remaining lanes are exceeded in all future year scenarios and site traffic is not expected to significantly increase queues, extension of these turn lanes by the proposed development is not recommended.

6.2 ROCKY RIVER ROAD AND LOWER ROCKY RIVER ROAD

Table 6.2 summarizes the LOS, control delay and 95th percentile queue lengths at the signalized intersection of Rocky River Road and Lower Rocky River Road.

Table 6.2 - Rocky River Road and Lower Rocky River Road								
Condition	Measure	EB		WB		NB		Intersection
		EBT	EBR	WBL	WBT	NBL	NBR	LOS (Delay)
AM Peak Hour								
2020 Existing	LOS (Delay)	F (100.7)		F (126.3)		F (134.4)		F (120.5)
	Synchro 95th Q	#678'	-	-	#1017'	#521'	#357'	
2023 Background Phase 1	LOS (Delay)	F (230.1)		F (289.8)		F (215.3)		F (251.3)
	Synchro 95th Q	#1053'	-	-	#1458'	#739'	#366'	
2023 Build-out Phase 1	LOS (Delay)	F (237.2)		F (293.9)		F (215.3)		F (255.2)
	Synchro 95th Q	#1095'	-	-	#1470'	#739'	#366'	
2023 Build-out IMP Phase 1	LOS (Delay)	D (46.1)		C (31.7)		D (47.8)		D (40.5)
	Synchro 95th Q	#455'	49'	176'	347'	#385'	118'	
2025 Background Phase 2	LOS (Delay)	F (249.0)		F (312.4)		F (229.8)		F (270.5)
	Synchro 95th Q	#1102'	-	-	#1525'	#765'	#386'	
2025 Build-out Phase 2	LOS (Delay)	F (249.0)		F (324.0)		F (244.4)		F (279.0)
	Synchro 95th Q	#1102'	-	-	#1562'	#765'	#488'	
2025 Build-out IMP Phase 2	LOS (Delay)	D (46.6)		D (38.9)		D (50.1)		D (44.4)
	Synchro 95th Q	454'	54'	#216'	388'	#432'	162'	
2026 Background Phase 3	LOS (Delay)	F (257.8)		F (324.0)		F (237.9)		F (280.3)
	Synchro 95th Q	#1124'	-	-	#1562'	#781'	#398'	
2026 Build-out Phase 3	LOS (Delay)	F (257.8)		F (340.2)		F (259.1)		F (292.4)
	Synchro 95th Q	#1124'	-	-	#1608'	#781'	#524'	
2026 Build-out IMP Phase 3	LOS (Delay)	D (50.0)		D (39.6)		D (53.1)		D (46.6)
	Synchro 95th Q	503'	60'	237'	427'	#473'	184'	
PM Peak Hour								
2020 Existing	LOS (Delay)	D (52.9)		E (73.4)		F (81.1)		E (65.4)
	Synchro 95th Q	#901'	-	-	#446'	223'	#274'	
2023 Background Phase 1	LOS (Delay)	F (154.9)		F (169.4)		F (159.8)		F (159.8)
	Synchro 95th Q	#1676'	-	-	#929'	#525'	#425'	
2023 Build-out Phase 1	LOS (Delay)	F (160.3)		F (185.7)		F (159.8)		F (166.9)
	Synchro 95th Q	#1700'	-	-	#973'	#525'	#425'	
2023 Build-out IMP Phase 1	LOS (Delay)	B (18.4)		B (18.0)		C (29.4)		C (20.7)
	Synchro 95th Q	422'	147'	#171'	154'	235'	135'	
2025 Background Phase 2	LOS (Delay)	F (170.6)		F (184.9)		F (171.9)		F (174.6)
	Synchro 95th Q	#1747'	-	-	#971'	#545'	#445'	
2025 Build-out Phase 2	LOS (Delay)	F (170.6)		F (226.8)		F (191.7)		F (190.9)
	Synchro 95th Q	#1747'	-	-	#1076'	#545'	#512'	
2025 Build-out IMP Phase 2	LOS (Delay)	C (20.3)		C (20.9)		C (31.2)		C (23.0)
	Synchro 95th Q	437'	183'	#225'	145'	#269'	156'	
2026 Background Phase 3	LOS (Delay)	F (178.3)		F (193.2)		F (178.3)		F (182.2)
	Synchro 95th Q	#1781'	-	-	#993'	#556'	#453'	
2026 Build-out Phase 3	LOS (Delay)	F (178.3)		F (244.9)		F (205.3)		F (203.0)
	Synchro 95th Q	#1781'	-	-	#1121'	#556'	#540'	
2026 Build-out IMP Phase 3	LOS (Delay)	C (21.8)		C (21.5)		C (31.5)		C (24.0)
	Synchro 95th Q	#469'	197'	#235'	148'	#277'	160'	
Existing/Background Storage							50'	
Exceeds storage								
# 95th percentile volume exceeds capacity, queue may be longer								

As shown in **Table 6.2**, under 2020 existing conditions, the overall intersection is expected to operate at LOS F and LOS E in the AM and PM peak hours, respectively.

Phase 1

Under 2023 background conditions, the overall intersection is expected to operate at LOS F in both peak hours. It should be noted that the significant increase in LOS and delay from existing to background conditions is due to the addition of approved development traffic. With the addition of site traffic, the intersection is expected to continue to operate at LOS F with increases in delay. Due to these increases in delay, mitigation was considered at this intersection.

To mitigate the impact of site traffic, the following improvements are recommended at this intersection:

- Eastbound right-turn lane along Rocky River Road with a minimum of 200 feet of storage and permitted-overlap phasing.
- Westbound left-turn lane along Rocky River Road with a minimum of 250 feet of storage.
- Implementation of permitted-overlap phasing on the northbound right-turn lane.

With these recommendation in place, the overall intersection is expected to operate at LOS D and LOS C in the AM and PM peak hours, respectively.

Implementation of the eastbound right-turn lane could be limited by several existing conditions at this intersection, including utilities in the southwest quadrant of the intersection, distance between the intersection and Pembroke Road, and graves/headstones on the southside of Rocky River Road. In addition, implementation of the westbound left-turn lane would require widening along Rocky River Road, both east and west of Lower Rocky River Road. If all widening is done to the north side of Rocky River Road, the total linear impact could be 1,000-1,500 feet and could impact driveways to Rocky River Presbyterian Church and the intersection of Rocky River Road and Pharr Mill Road.

The westbound left-turn lane and northbound right-turn permitted-overlap phasing are proposed to be constructed by the Lower Rocky River Road (LRRR) development. They will be required mitigation for this development if not committed by the LRRR development. .

Phase 2

Under 2025 background conditions, both peak hours are expected to operate at LOS F. With the addition of site traffic, the intersection is expected to continue to operate at LOS F with increases in delay.

With the implementation of the Phase 1 improvements, site impacts are expected to be mitigated. No additional improvements are recommended for capacity reasons due to Phase 2 site traffic.

Phase 3

Under 2026 background conditions, both peak hours are expected to operate at LOS F. With the addition of site traffic, the intersection is expected to continue to operate at LOS F with increases in delay.

With the implementation of the Phase 1 improvements, site impacts are expected to be mitigated. No additional improvements are recommended for capacity reasons due to Phase 3 site traffic.

6.3 PEACH ORCHARD ROAD AND LOWER ROCKY RIVER ROAD

Table 6.3 summarizes the LOS, control delay and 95th percentile queue lengths at the unsignalized, stop-controlled intersection of Peach Orchard Road and Lower Rocky River Road.

Table 6.3 - Peach Orchard Road and Lower Rocky River Road				
Condition	Measure	EB	WB	SB
		EBLT	WBTR	SBLR
AM Peak Hour				
2020 Existing	LOS (Delay)	A (1.3)	A (0.0)	B (12.0)
	Synchro 95th Q	1'	0'	9'
2023 Background Phase 1	LOS (Delay)	A (1.0)	A (0.0)	C (15.3)
	Synchro 95th Q	2'	0'	22'
2023 Build-out Phase 1	LOS (Delay)	A (1.0)	A (0.0)	C (16.0)
	Synchro 95th Q	2'	0'	24'
2025 Background Phase 2	LOS (Delay)	A (1.0)	A (0.0)	C (15.7)
	Synchro 95th Q	2'	0'	23'
2025 Build-out Phase 2	LOS (Delay)	A (1.0)	A (0.0)	C (17.7)
	Synchro 95th Q	2'	0'	29'
2026 Background Phase 3	LOS (Delay)	A (1.0)	A (0.0)	C (15.9)
	Synchro 95th Q	2'	0'	24'
2026 Build-out Phase 3	LOS (Delay)	A (1.0)	A (0.0)	C (18.7)
	Synchro 95th Q	2'	0'	32'
PM Peak Hour				
2020 Existing	LOS (Delay)	A (1.5)	A (0.0)	B (13.6)
	Synchro 95th Q	3'	0'	19'
2023 Background Phase 1	LOS (Delay)	A (1.7)	A (0.0)	B (14.1)
	Synchro 95th Q	4'	0'	18'
2023 Build-out Phase 1	LOS (Delay)	A (1.6)	A (0.0)	C (15.3)
	Synchro 95th Q	4'	0'	23'
2025 Background Phase 2	LOS (Delay)	A (1.7)	A (0.0)	B (14.5)
	Synchro 95th Q	4'	0'	20'
2025 Build-out Phase 2	LOS (Delay)	A (1.6)	A (0.0)	C (18.5)
	Synchro 95th Q	4'	0'	35'
2026 Background Phase 3	LOS (Delay)	A (1.7)	A (0.0)	B (14.7)
	Synchro 95th Q	4'	0'	21'
2026 Build-out Phase 3	LOS (Delay)	A (1.6)	A (0.0)	C (20.2)
	Synchro 95th Q	4'	0'	40'

As shown in **Table 6.3**, in both peak hours, with and without site traffic, the stop-controlled southbound approach is expected to operate with short delays. Therefore, no improvements are recommended for capacity purposes in any of the build-out phases.

6.4 HICKORY RIDGE ROAD AND LOWER ROCKY RIVER ROAD

Table 6.4 summarizes the LOS, control delay and 95th percentile queue lengths at the unsignalized, stop-controlled intersection of Hickory Ridge Road and Lower Rocky River Road.

Table 6.4 - Hickory Ridge Road and Lower Rocky River Road					
Condition	Measure	EB	WB	SB	
		EBLT	WBTR	SBLR	SBR
AM Peak Hour					
2020 Existing	LOS (Delay)	A (2.6)	A (0.0)	B (11.3)	
	Synchro 95th Q	3'	0'	7'	-
2023 Background Phase 1	LOS (Delay)	A (6.2)	A (0.0)	D (30.7)	
	Synchro 95th Q	14'	0'	112'	-
2023 Build-out Phase 1	LOS (Delay)	A (6.3)	A (0.0)	E (36.5)	
	Synchro 95th Q	15'	0'	144'	-
2023 Build-out IMP Phase 1	LOS (Delay)	A (6.3)	A (0.0)	C (20.4)	
	Synchro 95th Q	15'	0'	60'	60'
2025 Background Phase 2	LOS (Delay)	A (6.1)	A (0.0)	D (32.1)	
	Synchro 95th Q	15'	0'	117'	-
2025 Build-out Phase 2	LOS (Delay)	A (6.3)	A (0.0)	E (46.2)	
	Synchro 95th Q	16'	0'	177'	-
2025 Build-out IMP Phase 2	LOS (Delay)	A (6.3)	A (0.0)	C (22.2)	
	Synchro 95th Q	16'	0'	67'	67'
2026 Background Phase 3	LOS (Delay)	A (6.1)	A (0.0)	D (33.7)	
	Synchro 95th Q	15'	0'	122'	-
2026 Build-out Phase 3	LOS (Delay)	A (6.4)	A (0.0)	F (56.1)	
	Synchro 95th Q	17'	0'	207'	-
2026 Build-out IMP Phase 3	LOS (Delay)	A (6.4)	A (0.0)	C (23.6)	
	Synchro 95th Q	17'	0'	74'	74'
PM Peak Hour					
2020 Existing	LOS (Delay)	A (2.3)	A (0.0)	C (17.1)	
	Synchro 95th Q	6'	0'	40'	-
2023 Background Phase 1	LOS (Delay)	A (2.1)	A (0.0)	C (16.2)	
	Synchro 95th Q	5'	0'	40'	-
2023 Build-out Phase 1	LOS (Delay)	A (2.8)	A (0.0)	C (18.2)	
	Synchro 95th Q	7'	0'	52'	-
2023 Build-out IMP Phase 1	LOS (Delay)	A (2.8)	A (0.0)	C (15.3)	
	Synchro 95th Q	7'	0'	32'	32'
2025 Background Phase 2	LOS (Delay)	A (2.1)	A (0.0)	C (17.0)	
	Synchro 95th Q	5'	0'	43'	-
2025 Build-out Phase 2	LOS (Delay)	A (3.0)	A (0.0)	C (21.8)	
	Synchro 95th Q	9'	0'	68'	-
2025 Build-out IMP Phase 2	LOS (Delay)	A (3.0)	A (0.0)	C (17.3)	
	Synchro 95th Q	9'	0'	41'	41'
2026 Background Phase 3	LOS (Delay)	A (2.1)	A (0.0)	C (17.3)	
	Synchro 95th Q	5'	0'	45'	-
2026 Build-out Phase 3	LOS (Delay)	A (3.1)	A (0.0)	C (24.0)	
	Synchro 95th Q	10'	0'	79'	-
2026 Build-out IMP Phase 3	LOS (Delay)	A (3.1)	A (0.0)	C (18.4)	
	Synchro 95th Q	10'	0'	46'	46'

As shown in **Table 6.4**, under 2020 existing conditions, the stop-controlled southbound approach of Hickory Ridge Road is expected to operate with short delays in both peak hours.

Phase 1

Under 2023 background conditions, the stop-controlled, southbound approach is expected to operate at LOS D and LOS C in the AM and PM peak hours, respectively. With the addition of site traffic, the stop-controlled southbound approach is expected to drop to LOS E in the AM peak hour.

Due to this drop in LOS, a southbound right-turn lane with 100 feet of storage is recommended. With the implementation of this turn-lane, the stop-controlled, southbound approach is expected to operate at LOS C with short delays in both peak hours.

Phase 2

Under 2025 background conditions, the AM and PM peak hours are expected to operate at LOS D and LOS C, respectively. With the addition of site traffic, the stop-controlled southbound approach is expected to drop to LOS E in the AM peak hour.

With the implementation of the Phase 1 improvements, site impacts are expected to be mitigated. No additional improvements are recommended for capacity reasons due to Phase 2 site traffic.

Phase 3

Under 2026 background conditions, the AM and PM peak hours are expected to operate at LOS D and LOS C, respectively. With the addition of site traffic, the stop-controlled southbound approach is expected to drop to LOS F in the AM peak hour.

With the implementation of the Phase 1 improvements, site impacts are expected to be mitigated. No additional improvements are recommended for capacity reasons due to Phase 3 site traffic.

6.5 MORRISON ROAD AND LOWER ROCKY RIVER ROAD

Table 6.5 summarizes the LOS, control delay and 95th percentile queue lengths at the unsignalized, stop-controlled intersection of Morrison Road and Lower Rocky River Road.

Table 6.5 - Morrison Road and Lower Rocky River Road					
Condition	Measure	WB	NB		SB
		WBLR	NBTR	NBR	SBLT
AM Peak Hour					
2020 Existing	LOS (Delay)	B (12.9)	A (0.0)		A (0.6)
	Synchro 95th Q	29'	0'	-	1'
2023 Background Phase 1	LOS (Delay)	C (19.0)	A (0.0)		A (0.6)
	Synchro 95th Q	85'	0'	-	1'
2023 Build-out Phase 1	LOS (Delay)	C (18.9)	A (0.0)		A (0.6)
	Synchro 95th Q	84'	0'	-	1'
2025 Background Phase 2	LOS (Delay)	C (18.5)	A (0.0)		A (0.1)
	Synchro 95th Q	82'	0'	-	0'
2025 Build-out Phase 2	LOS (Delay)	D (27.3)	A (0.0)		A (1.4)
	Synchro 95th Q	127'	0'	-	3'
2025 Build-out IMP Phase 2	LOS (Delay)	C (22.3)	A (0.0)		A (1.4)
	Synchro 95th Q	104'	0'	0'	3'
2026 Background Phase 3	LOS (Delay)	C (20.3)	A (0.0)		A (0.6)
	Synchro 95th Q	94'	0'	-	1'
2026 Build-out Phase 3	LOS (Delay)	D (30.4)	A (0.0)		A (1.5)
	Synchro 95th Q	142'	0'	-	3'
2026 Build-out IMP Phase 3	LOS (Delay)	C (24.2)	A (0.0)		A (1.5)
	Synchro 95th Q	115'	0'	0'	3'
PM Peak Hour					
2020 Existing	LOS (Delay)	B (13.2)	A (0.0)		A (0.3)
	Synchro 95th Q	18'	0'	-	0'
2023 Background Phase 1	LOS (Delay)	B (13.4)	A (0.0)		A (0.3)
	Synchro 95th Q	21'	0'	-	0'
2023 Build-out Phase 1	LOS (Delay)	B (13.6)	A (0.0)		A (0.3)
	Synchro 95th Q	23'	0'	-	0'
2025 Background Phase 2	LOS (Delay)	B (13.8)	A (0.0)		A (0.3)
	Synchro 95th Q	23'	0'	-	0'
2025 Build-out Phase 2	LOS (Delay)	B (15.0)	A (0.0)		A (0.5)
	Synchro 95th Q	28'	0'	-	1'
2025 Build-out IMP Phase 2	LOS (Delay)	B (13.5)	A (0.0)		A (0.5)
	Synchro 95th Q	24'	0'	0'	1'
2026 Background Phase 3	LOS (Delay)	B (14.0)	A (0.0)		A (0.3)
	Synchro 95th Q	24'	0'	-	0'
2026 Build-out Phase 3	LOS (Delay)	C (15.5)	A (0.0)		A (0.5)
	Synchro 95th Q	31'	0'	-	1'
2026 Build-out IMP Phase 3	LOS (Delay)	B (13.9)	A (0.0)		A (0.5)
	Synchro 95th Q	26'	0'	0'	1'

As shown in **Table 6.5**, in both peak hours, the stop-controlled westbound approach is expected to operate with short delays.

Phase 1

Under 2023 background conditions, the overall intersection is anticipated to operate at LOS C and B in the AM and PM peak hours, respectively. With the addition of the site traffic, both peak hours are expected to continue to operate at the same LOS as the background conditions. Therefore, no improvements are recommended at this intersection for capacity reasons due to Phase 1 site traffic.

Phase 2

Under 2025 background conditions, the overall intersection is anticipated to operate at LOS C and B in the AM and PM peak hours, respectively. With the addition of the site traffic, the stop-controlled, westbound approach is expected to drop to LOS D in the AM peak hour.

Due to this drop in LOS, a northbound right-turn lane with 100 feet of storage was considered. With this improvement in place, the westbound approach is expected to return to LOS C with short delays in the AM peak hour. However, based on coordination with the agencies and the projected operations without the turn lane, this lane will not be a responsibility of Phase 2 of the proposed development.

Phase 3

Under 2026 background conditions, the overall intersection is expected to operate at LOS C and LOS B in the AM and PM peak hours, respectively. With the addition of the site traffic, the AM peak hour is expected to drop to LOS D and the PM peak hour is expected to drop to LOS C.

Due to the drops in LOS, a northbound right-turn lane with 100 feet of storage was also considered for this Phase. With the implementation this improvement, the westbound approach is expected to return to LOS C and LOS B with short delays in the AM and PM peak hours, respectively. However, based on coordination with the agencies and the projected operations without the turn lane, this lane will not be a responsibility of Phase 3 of the proposed development.

6.6 HICKORY RIDGE ROAD AND SCHOOL DRIVE 1

Table 6.6 summarizes the LOS, control delay and 95th percentile queue lengths at the future roundabout intersection of Hickory Ridge Road and School Drive 1.

Table 6.6 - Hickory Ridge and School Drive 1								
Condition	Measure	EB		NB		SB		Intersection
		EBL	EBR	NBL	NBT	SBT	SBR	LOS (Delay)
AM Peak Hour								
2023 Background Phase 1	LOS (Delay)	B (13.6)		C (16.9)		B (10.8)		B (13.1)
	Synchro 95th Q	245'	245'	-	175'	24'	215'	
2023 Build-out Phase 1	LOS (Delay)	B (14.2)		C (19.8)		B (10.7)		B (14.1)
	Synchro 95th Q	263'	263'	-	225'	26'	215'	
2025 Background Phase 2	LOS (Delay)	B (13.8)		C (17.5)		B (10.8)		B (13.3)
	Synchro 95th Q	253'	253'	-	185'	25'	215'	
2025 Build-out Phase 2	LOS (Delay)	B (14.9)		C (23.7)		B (10.7)		C (15.4)
	Synchro 95th Q	282'	282'	-	292'	29'	215'	
2025 Build-out IMP Phase 2	LOS (Delay)	B (14.9)		A (8.8)		B (10.7)		B (11.5)
	Synchro 95th Q	282'	282'	31'	64'	29'	215'	
2026 Background Phase 3	LOS (Delay)	B (14.0)		C (17.7)		B (10.7)		B (13.4)
	Synchro 95th Q	258'	258'	-	190'	26'	215'	
2026 Build-out Phase 3	LOS (Delay)	C (15.3)		D (26.4)		B (10.6)		C (16.2)
	Synchro 95th Q	290'	290'	-	338'	30'	215'	
2026 Build-out IMP Phase 3	LOS (Delay)	C (15.3)		A (9.2)		B (10.6)		B (11.7)
	Synchro 95th Q	290'	290'	31'	74'	30'	215'	
PM Peak Hour								
2023 Background Phase 1	LOS (Delay)	A (4.2)		A (4.0)		A (3.6)		A (3.8)
	Synchro 95th Q	12'	12'	-	15'	15'	7'	
2023 Build-out Phase 1	LOS (Delay)	A (4.5)		A (4.2)		A (3.9)		A (4.1)
	Synchro 95th Q	13'	13'	-	19'	21'	7'	
2025 Background Phase 2	LOS (Delay)	A (4.2)		A (4.0)		A (3.6)		A (3.8)
	Synchro 95th Q	12'	12'	-	15'	15'	7'	
2025 Build-out Phase 2	LOS (Delay)	A (4.7)		A (4.4)		A (4.2)		A (4.3)
	Synchro 95th Q	14'	14'	-	22'	26'	7'	
2025 Build-out IMP Phase 2	LOS (Delay)	A (4.7)		A (3.9)		A (4.2)		A (4.2)
	Synchro 95th Q	14'	14'	2'	17'	26'	7'	
2026 Background Phase 3	LOS (Delay)	A (4.2)		A (4.0)		A (3.6)		A (3.9)
	Synchro 95th Q	13'	13'	-	15'	16'	7'	
2026 Build-out Phase 3	LOS (Delay)	A (4.8)		A (4.5)		A (4.3)		A (4.5)
	Synchro 95th Q	14'	14'	-	24'	29'	7'	
2026 Build-out IMP Phase 3	LOS (Delay)	A (4.8)		A (4.0)		A (4.3)		A (4.3)
	Synchro 95th Q	14'	14'	2'	18'	29'	7'	
Existing/Background Storage							300'	

Phase 1

As shown in **Table 6.6**, under 2023 background conditions, the overall intersection is anticipated to operate at LOS B and LOS A in the AM and PM peak hours, respectively. With the addition of site traffic, both peak hours are anticipated to continue to operate at their respective LOS from the background conditions. Therefore, no improvements are recommended at this intersection for capacity purposes due to Phase 1 site traffic.

Phase 2

Under 2025 background conditions, the overall intersection is expected to operate at LOS B and LOS A in the AM and PM peak hours, respectively. With the addition of site traffic, the PM peak hour is anticipated to continue to operate at LOS A while the AM peak hour is expected to drop to LOS C.

To mitigate site impacts, a northbound left-turn lane with 100 feet of storage is recommended. With this improvement in place, the overall intersection is expected to return to LOS B.

The addition of the northbound left-turn lane will require modification of the existing mini roundabout to a full roundabout. Design of these roundabout upgrades should be coordinated with NCDOT and Town staff.

Phase 3

Under 2026 background conditions, the overall intersection is expected to operate at LOS B and LOS A in the AM and PM peak hours, respectively. With the addition of site traffic, the PM peak hour is anticipated to continue to operate at LOS A while the AM peak hour is expected to drop to LOS C. Further, the northbound approach is expected to drop to LOS D in the AM peak hour.

With the implementation of the northbound left-turn lane improvement identified in Phase 2, site impacts are expected to be mitigated. No additional improvements are recommended for capacity reasons due to Phase 3 site traffic.

6.7 HICKORY RIDGE ROAD AND SCHOOL DRIVE 2

Table 6.7 summarizes the LOS, control delay and 95th percentile queue lengths at the future unsignalized, stop-controlled intersection of Hickory Ridge Road and School Drive 2.

Table 6.7 - Hickory Ridge Road and School Drive 2						
Condition	Measure	EB		NB		SB
		EBL	EBR	NBL	NBT	SBTR
AM Peak Hour						
2023 Background Phase 1	LOS (Delay)	B (13.9)		A (0.2)		A (0.0)
	Synchro 95th Q	2'	1'	1'	0'	0'
2023 Build-out Phase 1	LOS (Delay)	B (14.5)		A (0.2)		A (0.0)
	Synchro 95th Q	2'	1'	1'	0'	0'
2025 Background Phase 2	LOS (Delay)	B (14.1)		A (0.2)		A (0.0)
	Synchro 95th Q	2'	1'	1'	0'	0'
2025 Build-out Phase 2	LOS (Delay)	C (15.2)		A (0.1)		A (0.0)
	Synchro 95th Q	2'	1'	1'	0'	0'
2026 Background Phase 3	LOS (Delay)	B (14.2)		A (0.2)		A (0.0)
	Synchro 95th Q	2'	1'	1'	0'	0'
2026 Build-out Phase 3	LOS (Delay)	C (15.5)		A (0.1)		A (0.0)
	Synchro 95th Q	3'	1'	1'	0'	0'
PM Peak Hour						
2023 Background Phase 1	LOS (Delay)	B (10.1)		A (0.2)		A (0.0)
	Synchro 95th Q	0'	0'	0'	0'	0'
2023 Build-out Phase 1	LOS (Delay)	B (10.7)		A (0.2)		A (0.0)
	Synchro 95th Q	1'	0'	0'	0'	0'
2025 Background Phase 2	LOS (Delay)	B (10.2)		A (0.2)		A (0.0)
	Synchro 95th Q	0'	0'	0'	0'	0'
2025 Build-out Phase 2	LOS (Delay)	B (11.2)		A (0.1)		A (0.0)
	Synchro 95th Q	1'	0'	0'	0'	0'
2026 Background Phase 3	LOS (Delay)	B (10.2)		A (0.2)		A (0.0)
	Synchro 95th Q	0'	0'	0'	0'	0'
2026 Build-out Phase 3	LOS (Delay)	B (11.5)		A (0.1)		A (0.0)
	Synchro 95th Q	1'	0'	0'	0'	0'
Existing/Background Storage		150'		150'		

Phase 1

As shown in **Table 6.7**, under 2023 background conditions, the stop-controlled, eastbound approach is anticipated to operate at LOS B in both peak hours with short delays. With the addition of site traffic, both peak hours are anticipated to continue to operate at LOS B with short delays. Therefore, no improvements are recommended at this intersection for capacity purposes due to Phase 1 site traffic.

Phase 2

Under 2025 background conditions, the stop-controlled, eastbound approach is expected to operate at LOS B with short delays in both peak hours. With the addition of site traffic, the AM peak

hour is expected to drop to LOS C. However, this drop in LOS is due to an increase of 1.1 seconds of delay. Therefore, no improvements are recommended at this intersection for capacity purposes due to Phase 2 site traffic.

Phase 3

Under 2026 background conditions, the stop-controlled, eastbound approach is expected to operate at LOS B with short delays in both peak hours. With the addition of site traffic, the AM peak hour is expected to drop to LOS C. However, this drop in LOS is due to an increase of 1.3 seconds of delay. Therefore, no improvements are recommended at this intersection for capacity purposes due to Phase 3 site traffic.

6.8 HICKORY RIDGE ROAD AND ACCESS 1

Table 6.8 summarizes the LOS, control delay and 95th percentile queue lengths at the proposed unsignalized, stop-controlled intersection of Hickory Ridge Road and Access 1.

Table 6.8 - Hickory Ridge Road and Access 1				
Condition	Measure	WB	NB	SB
		WBLR	NBT	SBT
AM Peak Hour				
2023 Build-out Phase 1	LOS (Delay)	B (12.0)	A (0.0)	A (0.2)
	Synchro 95th Q	4'	0'	0'
2025 Build-out Phase 2	LOS (Delay)	B (13.0)	A (0.0)	A (0.3)
	Synchro 95th Q	7'	0'	1'
2026 Build-out Phase 3	LOS (Delay)	B (13.5)	A (0.0)	A (0.3)
	Synchro 95th Q	10'	0'	1'
PM Peak Hour				
2023 Build-out Phase 1	LOS (Delay)	B (10.2)	A (0.0)	A (0.8)
	Synchro 95th Q	2'	0'	1'
2025 Build-out Phase 2	LOS (Delay)	B (10.9)	A (0.0)	A (0.8)
	Synchro 95th Q	3'	0'	1'
2026 Build-out Phase 3	LOS (Delay)	B (11.4)	A (0.0)	A (1.0)
	Synchro 95th Q	5'	0'	2'

As shown in **Table 6.8**, the stop-controlled site access is expected to operate with short delays in both peak hours in all build-out phases. Therefore, no improvements are recommended for capacity purposes in any build-out phase.

Based on the anticipated queues on the westbound approach, an internal protected stem of 100 feet is recommended.

6.9 HICKORY RIDGE ROAD AND ACCESS 2

Table 6.9 summarizes the LOS, control delay and 95th percentile queue lengths at the proposed unsignalized, stop-controlled intersection of Hickory Ridge Road and Access 2.

Table 6.9 - Hickory Ridge Road and Access 2				
Condition	Measure	WB	NB	SB
		WBLR	NBTR	SBLT
AM Peak Hour				
2023 Build-out Phase 1	LOS (Delay)	B (12.1)	A (0.0)	A (0.4)
	Synchro 95th Q	9'	0'	1'
2025 Build-out Phase 2	LOS (Delay)	B (12.2)	A (0.0)	A (0.8)
	Synchro 95th Q	13'	0'	1'
2026 Build-out Phase 3	LOS (Delay)	B (12.7)	A (0.0)	A (1.0)
	Synchro 95th Q	18'	0'	2'
PM Peak Hour				
2023 Build-out Phase 1	LOS (Delay)	B (10.3)	A (0.0)	A (1.6)
	Synchro 95th Q	4'	0'	2'
2025 Build-out Phase 2	LOS (Delay)	B (10.5)	A (0.0)	A (2.5)
	Synchro 95th Q	7'	0'	4'
2026 Build-out Phase 3	LOS (Delay)	B (10.9)	A (0.0)	A (2.9)
	Synchro 95th Q	9'	0'	5'

As shown in **Table 6.9**, the stop-controlled site access is expected to operate with short delays in both peak hours in all build-out phases. Therefore, no improvements are recommended for capacity purposes in any build-out phase.

Based on the anticipated queues on the westbound approach, an internal protected stem of 100 feet is recommended.

6.10 LOWER ROCKY RIVER ROAD AND ACCESS 3

Table 6.10 summarizes the LOS, control delay and 95th percentile queue lengths at the proposed unsignalized, stop-controlled intersection of Lower Rocky River Road and Access 3. This access point is proposed to be operational in Phase 2 and Phase 3 of the development

Table 6.10 - Lower Rocky River Road and Access 3				
Condition	Measure	EB	NB	SB
		EBLR	NBLT	SBTR
AM Peak Hour				
2025 Build-out Phase 2	LOS (Delay)	B (11.1)	A (0.0)	A (0.0)
	Synchro 95th Q	6'	0'	0'
2026 Build-out Phase 3	LOS (Delay)	B (11.3)	A (0.0)	A (0.0)
	Synchro 95th Q	7'	0'	0'
PM Peak Hour				
2025 Build-out Phase 2	LOS (Delay)	B (11.4)	A (0.0)	A (0.0)
	Synchro 95th Q	4'	0'	0'
2026 Build-out Phase 3	LOS (Delay)	B (11.6)	A (0.0)	A (0.0)
	Synchro 95th Q	5'	0'	0'

As shown in **Table 6.10**, the stop-controlled site access is expected to operate with short delays upon build-out in both peak hours. Therefore, no improvements are recommended for capacity purposes in any build-out phase.

Based on the anticipated queues on the eastbound approach, an internal protected stem of 100 feet is recommended.

6.11 LOWER ROCKY RIVER ROAD AND ACCESS 4

Table 6.11 summarizes the LOS, control delay and 95th percentile queue lengths at the proposed unsignalized, stop-controlled intersection of Lower Rocky River Road and Access 4. This access point is proposed to be operational in Phase 2 and Phase 3 of the development.

Table 6.11 - Lower Rocky River Road and Access 4				
Condition	Measure	EB	NB	SB
		EBLR	NBLT	SBTR
AM Peak Hour				
2025 Build-out Phase 2	LOS (Delay)	A (9.8)	A (1.0)	A (0.0)
	Synchro 95th Q	5'	1'	0'
2026 Build-out Phase 3	LOS (Delay)	A (9.9)	A (1.2)	A (0.0)
	Synchro 95th Q	6'	1'	0'
PM Peak Hour				
2025 Build-out Phase 2	LOS (Delay)	A (9.0)	A (1.4)	A (0.0)
	Synchro 95th Q	3'	3'	0'
2026 Build-out Phase 3	LOS (Delay)	A (9.1)	A (1.7)	A (0.0)
	Synchro 95th Q	3'	3'	0'

As shown in **Table 6.11**, the stop-controlled site access is expected to operate with short delays upon build-out in both peak hours. Therefore, no improvements are recommended for capacity purposes in any build-out phase.

Based on the anticipated queues on the eastbound approach, an internal protected stem of 100 feet is recommended.

7.0 Auxiliary Turn Lane Warrants

Warrants for additional turn-lane improvements for unsignalized intersection beyond those necessary for capacity were determined based on a review of the figure titled 'Warrant for Left and Right-Turn Lanes' found on page 80 in the *NCDOT Policy On Street And Driveway Access to North Carolina Highways*. The results of the warrants for left and right-turn lanes under background and build-out conditions are summarized by intersection below and included in the **Appendix**.

Lower Rocky River Road and Peach Orchard Road

2023 Background Conditions

- Westbound right-turn lane along Lower Rocky River Road with a minimum storage length of 75 feet
- Eastbound left-turn lane along Lower Rocky River Road with a minimum storage length of 75 feet

2023 Build Conditions

- Westbound right-turn lane along Lower Rocky River Road with a minimum storage length of 75 feet
- Eastbound left-turn lane along Lower Rocky River Road with a minimum storage length of 75 feet

2025 Background Conditions

- Westbound right-turn lane along Lower Rocky River Road with a minimum storage length of 75 feet
- Eastbound left-turn lane along Lower Rocky River Road with a minimum storage length of 75 feet

2025 Build Conditions

- Westbound right-turn lane along Lower Rocky River Road with a minimum storage length of 75 feet
- Eastbound left-turn lane along Lower Rocky River Road with a minimum storage length of 75 feet

2026 Background Conditions

- Westbound right-turn lane along Lower Rocky River Road with a minimum storage length of 75 feet
- Eastbound left-turn lane along Lower Rocky River Road with a minimum storage length of 75 feet

2026 Build Conditions

- Westbound right-turn lane along Lower Rocky River Road with a minimum storage length of 75 feet
- Eastbound left-turn lane along Lower Rocky River Road with a minimum storage length of 75 feet

Since both turn lanes are warranted in both background and build-out conditions, no auxiliary turn lanes are recommended to be constructed by the proposed development.

Lower Rocky River Road and Hickory Ridge Road

2023 Background Conditions

- Westbound right-turn lane along Lower Rocky River Road with a minimum storage length of 100 feet

- Eastbound left-turn lane along Lower Rocky River Road with a minimum storage length of 100 feet

2023 Build Conditions

- Westbound right-turn lane along Lower Rocky River Road with a minimum storage length of 100 feet
- Eastbound left-turn lane along Lower Rocky River Road with a minimum storage length of 100 feet

2025 Background Conditions

- Westbound right-turn lane along Lower Rocky River Road with a minimum storage length of 100 feet
- Eastbound left-turn lane along Lower Rocky River Road with a minimum storage length of 100 feet

2025 Build Conditions

- Westbound right-turn lane along Lower Rocky River Road with a minimum storage length of 100 feet
- Eastbound left-turn lane along Lower Rocky River Road with a minimum storage length of 100 feet

2026 Background Conditions

- Westbound right-turn lane along Lower Rocky River Road with a minimum storage length of 100 feet
- Eastbound left-turn lane along Lower Rocky River Road with a minimum storage length of 100 feet

2026 Build Conditions

- Westbound right-turn lane along Lower Rocky River Road with a minimum storage length of 100 feet
- Eastbound left-turn lane along Lower Rocky River Road with a minimum storage length of 100 feet

Since both turn lanes are warranted in both background and build-out conditions, no auxiliary turn lanes are recommended to be constructed by the proposed development.

Lower Rocky River Road and Morrison Road

2023 Background Conditions

- Northbound right-turn lane along Lower Rocky River Road with a minimum storage length of 100 feet

2023 Build Conditions

- Northbound right-turn lane along Lower Rocky River Road with a minimum storage length of 100 feet

2025 Background Conditions

- Northbound right-turn lane along Lower Rocky River Road with a minimum storage length of 100 feet

2025 Build Conditions

- Northbound right-turn lane along Lower Rocky River Road with a minimum storage length of 100 feet

2026 Background Conditions

- Northbound right-turn lane along Lower Rocky River Road with a minimum storage length of 100 feet

2026 Build Conditions

- Northbound right-turn lane along Lower Rocky River Road with a minimum storage length of 100 feet

As outlined in **Section 6.5**, a northbound right-turn lane with 100 feet of storage is recommended at this intersection for capacity purposes. Based on the auxiliary turn-lane warrants, this storage length is anticipated to accommodate future queues.

Hickory Ridge Road and Access 1

2026 Build Conditions

- Northbound right-turn lane along Hickory Ridge Road with a minimum storage length of 50 feet
- Southbound left-turn lane along Hickory Ridge Road with a minimum storage length of 50 feet

A minimum storage length of 100 feet is typically required for auxiliary turn lanes by NCDOT. Therefore, a southbound left-turn lane and a northbound right-turn lane each with a minimum of 100 feet of storage are recommended.

Based on coordination with the Town and NCDOT staff, these turn lanes should be constructed in Phase 1 of the development.

Hickory Ridge Road and Access 2

2023 Build Conditions

- Southbound left-turn lane along Hickory Ridge Road with a minimum storage length of 50 feet

2025 Build Conditions

- Southbound left-turn lane along Hickory Ridge Road with a minimum storage length of 75 feet

2026 Build Conditions

- Northbound right-turn lane along Hickory Ridge Road with a minimum storage length of 50 feet
- Southbound left-turn lane along Hickory Ridge Road with a minimum storage length of 75 feet

A minimum storage length of 100 feet is typically required for auxiliary turn lanes by NCDOT. Therefore, a southbound left-turn lane with a minimum of 100 feet of storage is recommended for Phase 1 of the development.

A northbound right-turn lane with a minimum of 100 feet of storage is recommended for Phase 3 of the development. Based on coordination with the Town and NCDOT staff, this turn lanes should be constructed in Phase 1 of the development.

Lower Rocky River Road and Access 3**2025 Build Conditions**

- Southbound right-turn lane along Lower Rocky River Road with a minimum storage length of 50 feet

2026 Build Conditions

- Southbound right-turn lane along Lower Rocky River Road with a minimum storage length of 50 feet

A minimum storage length of 100 feet is typically required for auxiliary turn lanes by NCDOT. Therefore, a southbound right-turn lane with a minimum of 100 feet of storage is recommended for Phase 2 site traffic.

Lower Rocky River Road and Access 4**2025 Build Conditions**

- Northbound left-turn lane along Lower Rocky River Road with a minimum storage length of 50 feet

2026 Build Conditions

- Northbound left-turn lane along Lower Rocky River Road with a minimum storage length of 50 feet

A minimum storage length of 100 feet is typically required for auxiliary turn lanes by NCDOT. Therefore, a northbound left-turn lane with a minimum of 100 feet of storage is recommended for Phase 2 site traffic.

8.0 Crash Data Analysis

Crash data was obtained at study intersections for crashes that occurred between November 1, 2017 and October 31, 2020. Over this three-year period, 19 total crashes were reported at the five study intersections. The breakdown of crashes at these five study intersections by severity, frequency, and accident type can be seen the tables below.

Table 8.1 – Crash Severity Summary

Crash Type	Number of Crashes
Fatal Crashes	0
Class A	1
Class B	0
Class C	6
Property Damage Only	12
Total	19

Table 8.1 above displays the total number of crashes by severity type from most to least severe. As shown, there were no fatal crashes reported in the study area intersections over the past three years. There was one Class A crash reported. ‘Class A’ incidents are crashes in which serious injury is suspected, which can include significant loss of blood or broken bones. ‘Class B’ incidents are crashes in which minor injury is suspected, such as bruises or minor cuts. There were no Class B crash types within the study area reported over the three years. There were 6 ‘Class C’ crashes reported, which are defined as crashes wherein possible injuries occur. Possible injuries are injuries reported by the person or indicated by his/her behavior, but no wounds or injuries are physically present, such as limping or complaint of neck pain. There were 12 crashes in which only property damage occurred, meaning no injury was reported in 63% of the recorded crashes at the study intersections.

Table 8.2 – Accident Frequency Summary

Location	Crashes/100 MEV
Rocky River Road and Hickory Ridge Road	21.34
Rocky River Road and Lower Rocky River Road	76.69
Peach Orchard Road and Lower Rocky River Road	50.68
Hickory Ridge Road and Lower Rocky River Road	19.84
Morrison Road and Lower Rocky River Road	20.75
Average	39.95

Shown in **Table 8.2** are the accident frequency rates for each study intersection, reported in crashes per 100 million entering vehicles (MEV). Their rates resulted in a weighted average crash rate of 39.95 crashes per 100 MEV, with the highest rate occurring at the intersection of Rocky River Road and Lower Rocky River Road.

Table 8.3 – Accident Type Summary

Crash Type	Rocky River Road and Hickory Ridge Road	Rocky River Road and Lower Rocky River Road	Peach Orchard Road and Lower Rocky River Road	Hickory Ridge Road and Lower Rocky River Road	Morrison Road and Lower Rocky River Road
Angle	2		2		
Animal	1	1			
Fixed Object		1			
Left-Turn, Different Roadways					1
Left-Turn, Same Roadway		2			
Other Non-Collision				1	
Ran off Road - Straight		1			
Ran off Road - Right		1			
Rear End, Slow or Stop	1	4			
Sideswipe, Opposite Direction			1		
Total	4	10	3	1	1

As seen in **Table 8.3**, at the five study intersections, the most common crash type was a rear end caused by slowing or stopping, with 26% of crashes. This crash type is often associated with mainline traffic along a corridor with unsignalized turning movements with the lack of turn lanes onto side-streets. The second most common crash type was an angle collision.

9.0 Mitigation Improvements

Based on the capacity analyses performed at each of the identified study intersections, the following improvements have been identified to mitigate the impact of the proposed development on the adjacent street network:

Hickory Ridge Road and Rocky River Road

Phase 1

- Construction of a northbound right-turn lane along Hickory Ridge Road with a minimum of 100 feet of storage.

Phase 2

- Extension of the northbound left-turn lane to provide 425 feet of storage.

Rocky River Road and Lower Rocky River Road

Phase 1

- Construction of an eastbound right-turn lane along Rocky River Road with a minimum of 200 feet of storage and permitted overlap phasing.

Westbound left-turn lane and northbound right-turn permitted-overlap phasing are proposed to be constructed by the Lower Rocky River Road (LRRR) development. They will be required mitigation for this development if not committed by the LRRR development.

Hickory Ridge Road and Lower Rocky River Road

Phase 1

- Construction of a southbound right-turn lane along Hickory Ridge Road with a minimum of 100 feet of storage.

Hickory Ridge Road and School Drive 1

Phase 2

- Construction of a northbound left-turn lane along Hickory Ridge Road with a minimum of 100 feet of storage.

The addition of the northbound left-turn lane will require modification of the existing mini roundabout to a full roundabout. Design of these roundabout upgrades should be coordinated with NCDOT and Town staff.

Hickory Ridge Road and Access 1

Phase 1

- Construction of the westbound approach with one ingress & one egress lane and an internal protected stem of 100 feet.
- Construction of a northbound right-turn lane along Hickory Ridge Road with a minimum storage length of 100 feet.
- Construction of a southbound left-turn lane along Hickory Ridge Road with a minimum storage length of 100 feet.

Hickory Ridge Road and Access 2**Phase 1**

- Construction of the westbound approach with one ingress & one egress lane and an internal protected stem of 100 feet.
- Construction of a southbound left-turn lane along Hickory Ridge Road with a minimum storage length of 100 feet.
- Construction of a northbound right-turn lane along Hickory Ridge Road with a minimum storage length of 100 feet.

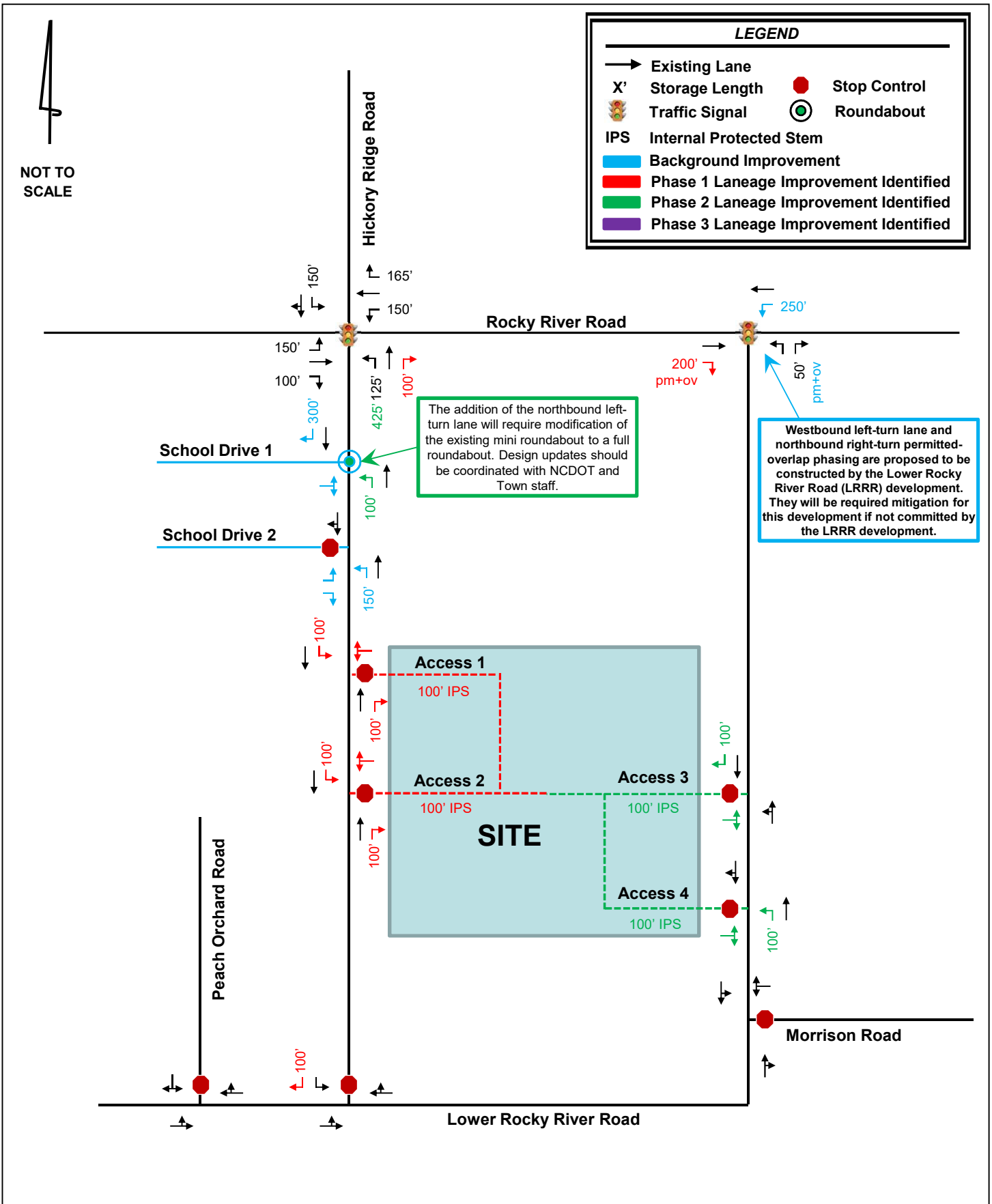
Lower Rocky River Road and Access 3**Phase 2**

- Construction of the eastbound approach with one ingress & one egress lane and an internal protected stem of 100 feet.
- Construction of a southbound right-turn lane along Lower Rocky River Road with a minimum storage length of 100 feet.

Lower Rocky River Road and Access 4**Phase 2**

- Construction of the eastbound approach with one ingress & one egress lane and an internal protected stem of 100 feet.
- Construction of a northbound left-turn lane along Lower Rocky Road with a minimum storage length of 100 feet.

The mitigation improvement identified within the study area are shown in **Figure 9.1**. The improvements shown on this figure are subject to approval by NCDOT and the Town of Harrisburg. All additions and attachments to the State and Town roadway system shall be properly permitted, designed and constructed in conformance to standards maintained by the agencies.



APPENDIX