



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY  
GOVERNOR

LYNDO TIPPETT  
SECRETARY

February 21, 2008

In reply, refer to  
File No. SC-2007-107  
SC-2007-108

**MEMORANDUM**

**TO:** Reuben E. Blakley, P.E., District Engineer  
Division 8, District 1

**FROM:** Doumit Y. Ishak, Congestion Management Regional Engineer  
Congestion Management Section

**THRU:** J. Kevin Lacy, P.E., CPM, State Traffic Engineer  
Traffic Engineering and Safety Systems Branch

**SUBJECT:** Proposed Polks Landing and Williams Corner Developments on US 15-501  
Chatham County



Per your request, the Access Management Group of the Traffic Engineering and Safety Systems Branch has completed a review of the subject sites. Based on our analysis of the preliminary site plans prepared by Jerry Turner and Associates, Inc. (dated 11/2/07) and The John R. McAdams Company, Inc. (5/17/07) and the Revised Traffic Impact Analyses (TIA's) prepared by Kimley-Horn and Associates (sealed and dated 1/11/08) for both developments, with consideration given to their impacts on the adjacent transportation facilities, we offer the following comments and recommendations for your consideration.

**Proposed Development**

According to the TIA's, the proposed Polks Landing and Williams Corner Developments are to be located opposite each another on US 15-501 just north of SR 1721 (Lystra Road). The TIA's state the developments are to be constructed by 2010 and are to consist of the following:

Polks Landing Development

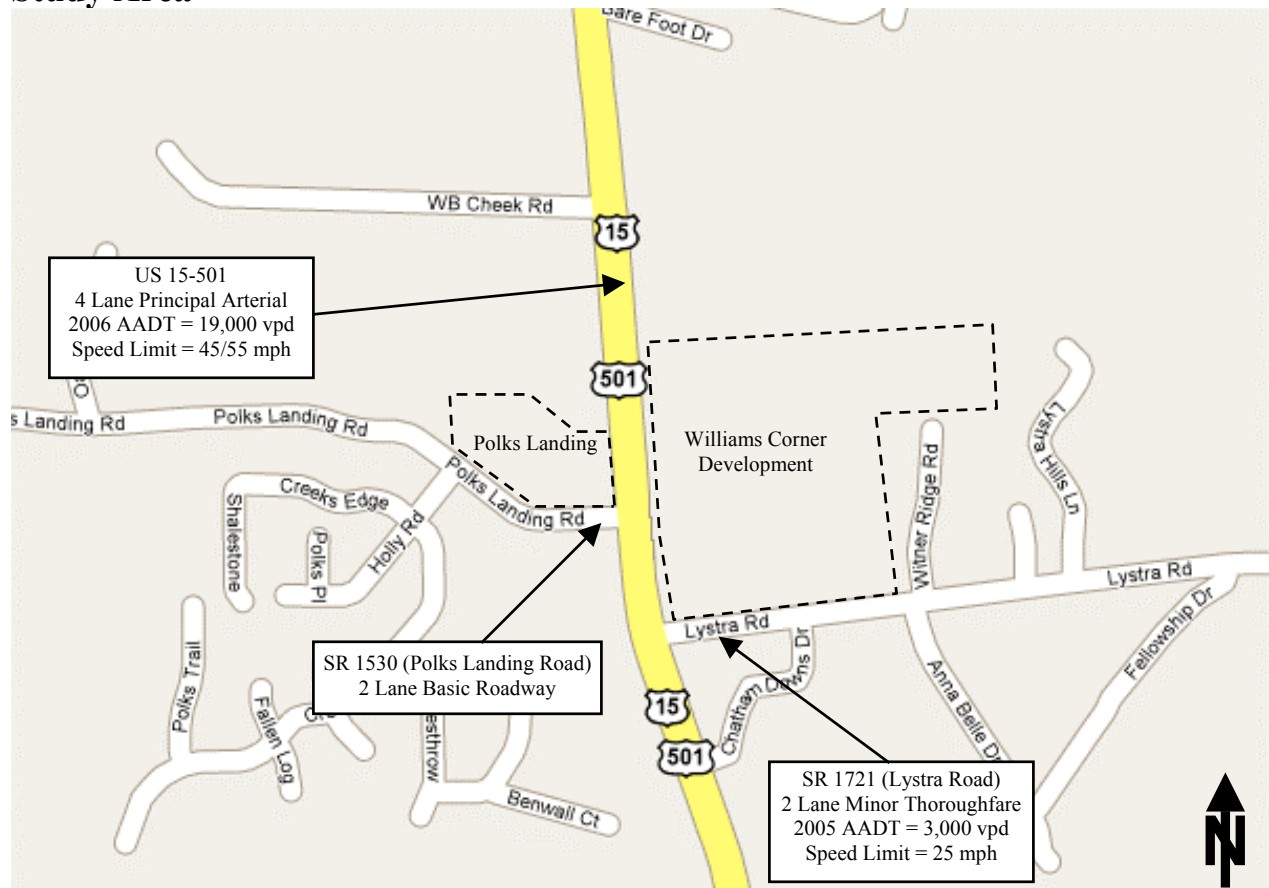
- 5,000 square feet of Day Care Center
- 49,000 square feet of General Office Building
- 32,200 square feet of Shopping Center
- 14,600 square feet of Pharmacy with Drive Through Window
- 4,200 square feet of Drive-In Bank
- 4,000 square feet of Fast Food Restaurant with Drive Through Window

### Williams Corner Development

- 40 Dwelling Units of Townhomes
- 12,500 square feet of Day Care Center
- 50,500 square feet of Shopping Center
- 150,000 square feet of Medical Office Building
- 6,000 square feet of Medical Office Building (Veterinarian Office)
- 10,000 square feet of Medical Office Building (Optician Office)
- 60,000 square feet of Business Park
- 50,500 square feet of Specialty Retail Center
- 25,000 square feet of Supermarket
- 15,000 square feet of Pharmacy/Drugstore with Drive Through Window
- 4,200 square feet of Drive-In Bank

Access to the Polks Landing development is proposed via one full movement driveway on US 15-501 and one full movement driveway on SR 1530 (Polks Landing Road). Access to the proposed Williams Corner Development is proposed via one full movement, one right-in/right-out, and one directional crossover (leftover) on US 15-501 and one full movement driveway and one right-in/right-out driveway on SR 1721 (Lystra Road).

### **Study Area**



Note: Route classifications shown are according to the 1996 Chatham County Thoroughfare Plan.

## TIP Projects/Strategic Highway Corridor

According to the North Carolina Department of Transportation (NCDOT) *2007-2013 Transportation Improvement Program* (TIP), there are no active TIP projects located in the vicinity of the proposed development.

According to the NCDOT *Strategic Highway Corridors Vision Map*, as adopted by the North Carolina Board of Transportation, **US 15-501** is defined as a **boulevard** within the project area. The primary purpose of the Strategic Highways Corridors is to enhance the mobility and connectivity of the highway system. Additional information regarding Strategic Highway Corridor Facility Types may be accessed via the Internet at:

[http://www.ncdot.org/doh/preconstruct/tpb/SHC/pdf/NCDOT\\_Facility\\_Types.pdf](http://www.ncdot.org/doh/preconstruct/tpb/SHC/pdf/NCDOT_Facility_Types.pdf)

## Trip Generation

Based on appropriate methodology outlined in the *ITE Trip Generation Manual, (7<sup>th</sup> Edition)*, the *sum of the two developments* is projected to generate approximately **26,430** vehicle trips per day. The following tables provide the expected unadjusted peak hour volumes during a typical weekday for each development.

According to the *ITE Trip Generation Manual, (7<sup>th</sup> Edition)*, the proposed Polks Landing Development is projected to generate approximately **8,716** vehicle trips per day with the following peak hour volumes anticipated.

<b>Polks Landing Development</b>		
<b>Peak Hour</b>	<b>IN</b>	<b>OUT</b>
<b>AM</b>	333	218
<b>PM</b>	426	526

According to the *ITE Trip Generation Manual, (7<sup>th</sup> Edition)*, the proposed Williams Corner Development is projected to generate approximately **17,717** vehicle trips per day with the following peak hour volumes anticipated.

<b>Williams Corner Development</b>		
<b>Peak Hour</b>	<b>IN</b>	<b>OUT</b>
<b>AM</b>	701	290
<b>PM</b>	679	1,071

At full build-out, both developments are expected to produce the following anticipated unadjusted peak hour volumes.

<b>Total for Both Developments</b>		
<b>Peak Hour</b>	<b>IN</b>	<b>OUT</b>
<b>AM</b>	1,034	508
<b>PM</b>	1,105	1,597

## **Observations/Recommendations**

Due to the close proximity of these developments to one another, traffic generated by each development will affect the same stretch of the US 15-501 corridor. Therefore, this memorandum will provide comments for overall improvements related to the entire roadway network in the vicinity of these developments.

In order to accommodate the site-generated traffic safely and efficiently, while also attempting to protect the functional integrity and operational capacity of the adjacent roadway facilities, we offer the following comments and recommendations for your consideration.

### **US 15-501 and Proposed Williams Corner North Driveway (Signalized)**

#### **Williams Corner Recommended Improvements**

Due to the anticipated impacts that the additional site-generated traffic may have on this intersection, we recommend, with approval from the Regional Traffic Engineer and the Division Traffic Engineer, that this intersection be signalized. The following recommendations are based on a traffic signal in place.

If a new crossover on an existing facility is proposed then the approval or denial is the responsibility of the State Traffic Engineer.

#### **Westbound Proposed Williams Corner North Driveway**

- We concur with the TIA recommendation to provide a two-lane cross-section consisting of one ingress lane and one egress lane. The egress lane should provide for an exclusive right-turn lane only.
- The egress lane should provide a minimum of 150 feet of internal protected storage before parking and crossing maneuvers should be allowed. A concrete island should be provided to encourage exiting right-turn movements only.

#### **Northbound US 15-501**

- We concur with the TIA recommendation to provide an exclusive right-turn lane with 100 feet (minimum) of full storage and appropriate deceleration taper.

#### **Southbound US 15-501**

- We recommend providing an exclusive southbound left-turn lane with 300 feet (minimum) of full storage and appropriate transitional taper.
- A second feasible access scenario for the proposed Williams Corner Development is concurrence with the TIA recommendation to provide an unsignalized southbound leftover with 150 feet (minimum) of full storage and appropriate transitional taper at this intersection, and utilize the existing southbound left-turn lane at the proposed Williams Corner South Driveway to accommodate additional southbound left-turning vehicles entering the site.

### **US 15-501 and Proposed Williams Corner Center Driveway/Holly Ridge Road Extension (Signalized)**

Due to the anticipated impacts that the additional site-generated traffic may have on this intersection, we recommend, with approval from the Regional Traffic Engineer and the Division Traffic Engineer, that this intersection be signalized. The cost of signalization should be shared

between both proposed developments. The following recommendations are based on a traffic signal in place.

If a new crossover on an existing facility is proposed then the approval or denial is the responsibility of the State Traffic Engineer.

Based upon our review, the proposed multi-phase signal recommended in the TIA (Access Scenario 1), performed poorly, resulting in delays and queuing along the US 15-501 corridor. In order to better represent the vision of US 15-501 as a Strategic Highway Corridor, we recommend a limited movement intersection at this location. Our analysis eliminated northbound and southbound left-turn movements into the proposed developments as well as eastbound and westbound through traffic crossing US 15-501 between the proposed developments. The vehicles anticipated to make these movements can be accommodated by utilizing other proposed access points.

### **Williams Corner Recommended Improvements**

#### Westbound Proposed Williams Corner Center Driveway

- We recommend providing a three-lane cross-section consisting of one ingress lane and two egress lanes. The egress lanes should consist of an exclusive left-turn lane and an exclusive right-turn lane and provide 300 feet (minimum) of internal protected storage before parking and crossing maneuvers should be allowed.

#### Northbound US 15-501

- We concur with the TIA recommendation to provide an exclusive right-turn lane with 100 feet (minimum) of full storage and appropriate deceleration taper.

### **Polks Landing Recommended Improvements**

According to the TIA, the proposed Holly Ridge Road Extension will be provided as part of the Proposed Polks Landing Development. The following recommendations are made based on the extension of Holly Ridge Road from SR 1530 (Polks Landing Road) to US 15-501 being in place by the build-out year (2010) of the development, with the proposed access to US 15-501 serving as the main access point for Polks Landing.

#### Eastbound Proposed Holly Ridge Road Extension

- We recommend providing a three-lane cross-section consisting of one ingress lane and two egress lanes. The egress lanes should consist of an exclusive left-turn lane and an exclusive right-turn lane and provide 250 feet (minimum) of internal protected storage before parking and crossing maneuvers should be allowed.

#### Southbound US 15-501

- We concur with the TIA recommendation to provide an exclusive right-turn lane with 150 feet (minimum) of full storage and appropriate deceleration taper.

**US 15-501 and SR 1530 (Polks Landing Road)/ Proposed Williams Corner South Driveway (Unsignalized)**

Based on the anticipated traffic volumes, it appears that this intersection may meet signal warrants during or at full build out of the site; therefore, this intersection should be monitored for signalization. If signalization is required at the build-out of the developments, then the responsibility should be that of the Proposed Polks Landing Development.

**Williams Corner Recommended Improvements**

**Westbound Proposed Williams Corner South Driveway**

- We concur with the TIA recommendation to provide a two-lane cross-section consisting of one ingress lane and one egress lane. The egress lane should consist of an exclusive right-turn lane only.
- The egress lane should provide a minimum of 150 feet of internal protected storage before parking and crossing maneuvers should be allowed. A concrete island should be provided to encourage exiting right-turn movements only.

**Northbound US 15-501**

- We concur with the TIA recommendation to provide an exclusive right-turn lane with 100 feet (minimum) of full storage and appropriate deceleration taper.

**Southbound US 15-501**

- Due to the right-in/right-out conditions recommended for the Proposed Williams Corner South Driveway, we recommend prohibiting the existing left-turn/U-turn movement at this intersection. Vehicles anticipated to make this movement should be accommodated by the left-turn/U-turn at the downstream intersection with SR 1721 (Lystra Road).
- As previously mentioned, a second access alternative would be to utilize the existing southbound left-turn lane at this location to provide access to the proposed Williams Corner Development. It should be noted that if this option is chosen, we recommend, with approval from the Regional Traffic Engineer and the Division Traffic Engineer, that this intersection be signalized with a two phase signal design.

**Eastbound SR 1530 (Polks Landing Road)**

- Due to the right-in/right-out conditions recommended for this approach, left-turns will be prohibited. Vehicles anticipated to make this movement should be accommodated by the downstream intersection with SR 1721 (Lystra Road).

**Polks Landing Recommended Improvements**

**Northbound US 15-501**

- We recommend extending the existing exclusive left-turn lane to provide 250 feet (minimum) of full storage and appropriate transitional taper.

**US 15-501 and SR 1721 (Lystra Road) (Signalized)**

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

It should be noted that as this area continues to develop in the future, we anticipate the need to redesign this intersection in order to better accommodate the anticipated traffic volumes.

### **Williams Corner Recommended Improvements**

#### Westbound SR 1721 (Lystra Road)

- We recommend providing dual left-turn lanes with 250 feet (minimum) of full storage and appropriate transitional taper.
- We concur with the TIA recommendation to extend the existing right-turn lane to provide 225 feet (minimum) of full storage and appropriate deceleration taper.

### **Recommended Joint Improvements**

#### Southbound US 15-501

- We recommend providing dual left-turn lanes with 250 feet (minimum) of full storage and appropriate transitional taper.
- To accommodate the dual left-turn lanes, dual receiving lanes will be required on the eastbound SR 1721 (Lystra Road) departure. We recommend full storage for the additional receiving lane extend a minimum of 1,200 feet with appropriate transitional taper.

### **SR 1721 (Lystra Road) and Proposed Williams Corner West Driveway (Unsignalized)**

#### **Williams Corner Recommended Improvements**

##### Southbound Proposed Williams Corner West Driveway

- We concur with the TIA recommendation to provide a two-lane cross-section consisting of one ingress lane and one egress lane. The egress lane should consist of an exclusive right-turn lane only.
- The egress lane should provide a minimum of 150 feet of internal protected storage before parking and crossing maneuvers should be allowed. A concrete island should be provided to encourage exiting right-turn movements only.

### **SR 1721 (Lystra Road) and Williams Corner East Driveway/Chatham Downs Driveway (Unsignalized)**

#### **Williams Corner Recommended Improvements**

##### Southbound Williams Corner East Driveway

- We concur with the TIA recommendation to provide a two-lane cross-section consisting of one ingress lane and one egress lane. The egress lane should consist of a combination through/left-turn/right-turn lane and provide a minimum of 100 feet of internal protected storage before parking and crossing maneuvers should be allowed.

##### Eastbound SR 1721 (Lystra Road)

- We concur with the TIA recommendation to provide an exclusive left-turn lane, however we recommend providing 100 feet (minimum) of full storage and appropriate transitional taper.

**SR 1530 (Polks Landing Road) and Holly Ridge Road/Proposed Holly Ridge Road Extension (Unsignalized)**

**Polks Landing Recommended Improvements**

**Southbound Holly Ridge Road Extension**

- We concur with the TIA recommendation to provide a two-lane cross-section consisting of one ingress lane and one egress lane. The egress lane should consist of a combination through/left-turn/right-turn lane and provide 100 feet (minimum) of internal protected storage before parking and crossing maneuvers should be allowed.

**General**

We encourage providing additional access to the Polks Landing Development from SR 1530 (Polks Landing Road) closer to the US 15-501 Intersection than the proposed Holly Ridge Road Extension access.

Cross-access to adjacent properties is strongly encouraged to reduce repetitive trips and provide future alternative routes of ingress/egress.

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

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

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

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

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

Once the driveway permit has been approved and issued, a copy of the final driveway permit requirements should be forwarded to this office. If we can provide further assistance, please contact me or Doumit Y. Ishak at (919) 773-2800.

JKL:dyi:rtb

cc: T. Johnson, P.E. (Attention: R.W. Stone, II, P.E.)  
T. M. Hopkins, P.E. (Attention: A. D. Wyatt, P.E., P.T.O.E.)  
A. L. Grandy  
G. A. Fuller, P.E. (Attention: P. L. Alexander, P.E.)  
J. H. Dunlop, P.E.



**GENERAL RECOMMENDATIONS ATTACHMENT**  
(For SC-2007-107 / Williams Corner Development and  
SC-2007-108 / Polks Landing Development)

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

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

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

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

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

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

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

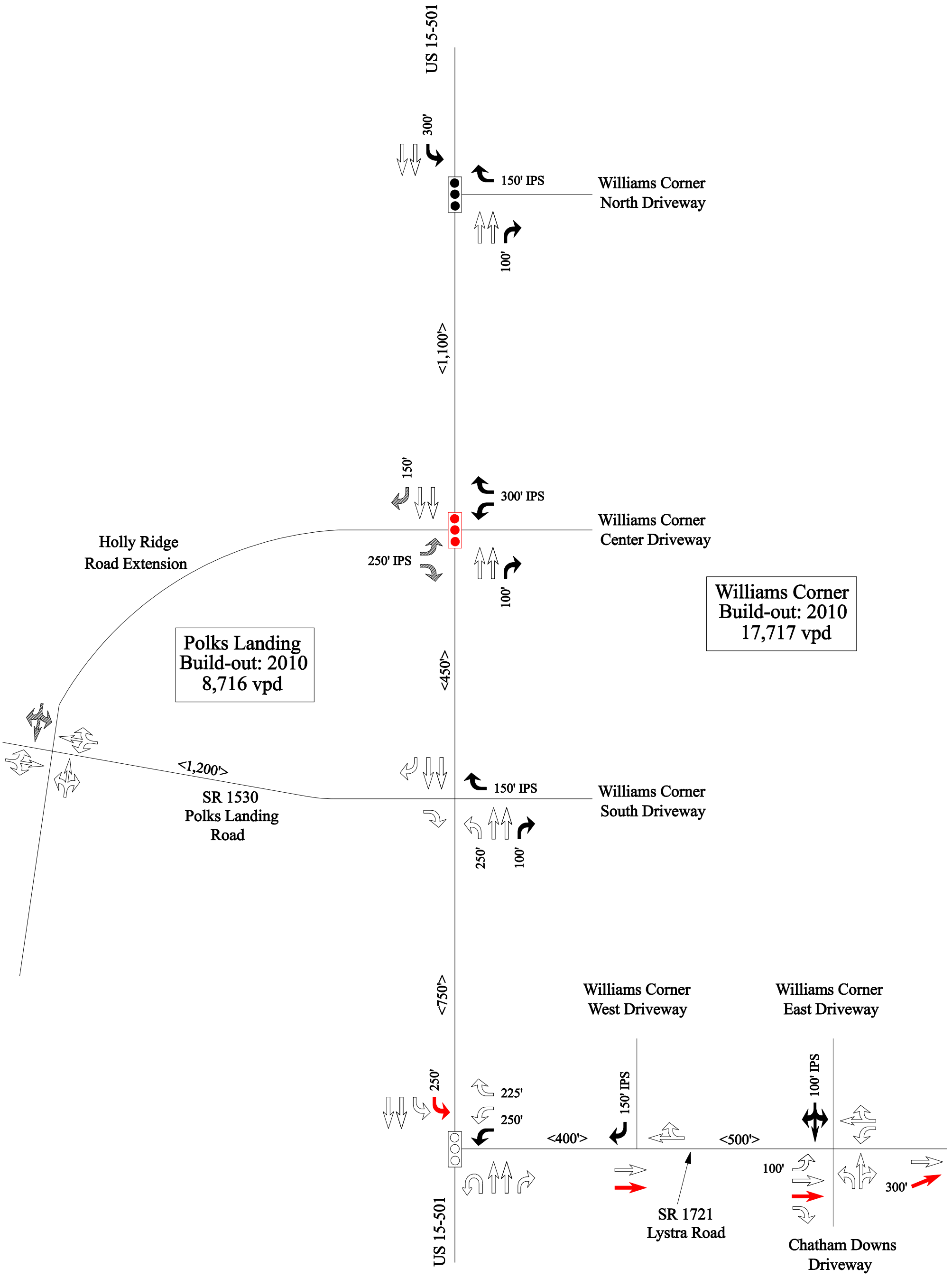
Adequate right-of-way for widening and sight distance triangles should be reserved. Consideration should be given to the possible future need for signalization and the associated span poles, controller and pad, and guy wires at the intersections along US 15-501.

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

**GENERAL RECOMMENDATIONS ATTACHMENT**  
(For SC-2007-107 / Williams Corner Development and  
SC-2007-108 / Polks Landing Development; continued)

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

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



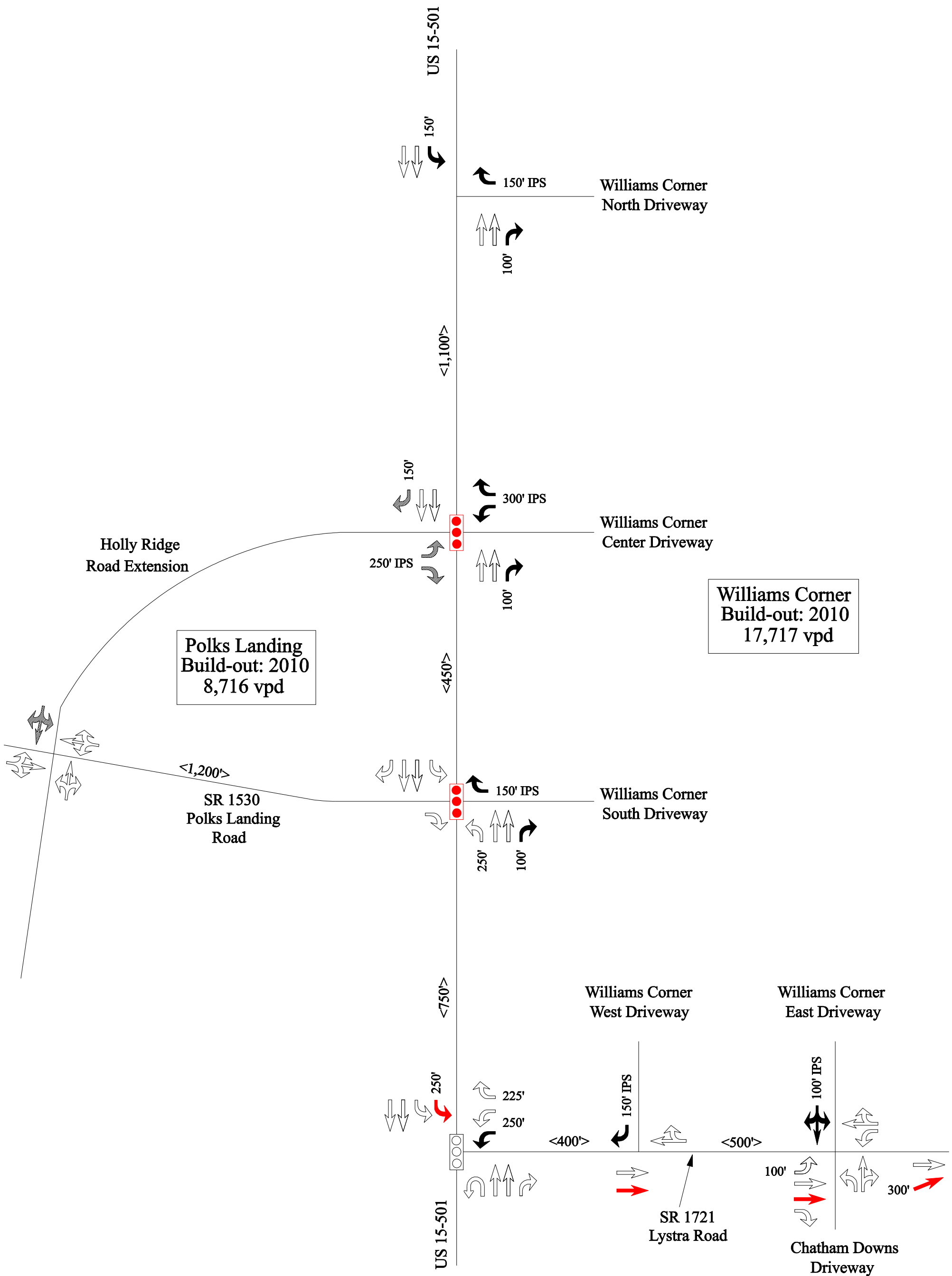
## Access Option 1

### Williams Corner & Polks Landing Developments (SC-2007-107 & SC-2007-108) Legend

- |     |   |        |  |
|-----|---|--------|--|
|     | Existing Lane                           | <XXX'> | Approximate Distance Between Intersections |
|     | Recommended Laneage (Williams Corner)   | XXX'   | Storage Lengths                            |
|     | Recommended Laneage (Polks Landing)     |        | Existing Signal                            |
|     | Recommended Laneage (Joint Improvement) |        | Proposed Signal                            |
| IPS | Internal Protected Storage              |        |  |

\* Drawing Not To Scale \*





## Access Option 2

### Williams Corner & Polks Landing Developments (SC-2007-107 & SC-2007-108) Legend

- |  |   |  |  |
|--|---|--|--|
|  | Existing Lane                           |  | Approximate Distance Between Intersections |
|  | Recommended Laneage (Williams Corner)   |  | Storage Lengths                            |
|  | Recommended Laneage (Polks Landing)     |  | Existing Signal                            |
|  | Recommended Laneage (Joint Improvement) |  | Proposed Signal                            |
|  | Internal Protected Storage              |  |  |

\* Drawing Not To Scale \*