

November 15, 2016

**TO:** Board of Mayor and Aldermen

**FROM:** Paul Holzen, Director of Engineering  
Jimmy Wiseman, Assistant Director of Engineering  
Carl Baughman, Traffic Engineer III  
Josh King, Senior Planner

**SUBJECT:** Ashcroft Valley Development Plan – Recommended Offsite Transportation Improvements

**Purpose**

The purpose of this memo is to provide information to the Board of Mayor and Aldermen (BOMA) for the consideration of offsite Transportation Improvements related to Ashcroft Valley Development Plan

**Background**

Ashcroft Valley currently has numerous MOS related to connectivity. These MOS make it very difficult to complete a traffic impact study addressing all off-site conditions. For this reason, the applicant shall be required to update the traffic impact study following BOMA approval or denial of the MOS's. This will allow City staff and our on-call traffic engineer to finalize traffic distributions and offsite requirements. The final TIS shall be approved by the City Engineer prior to the submitting the first site plan. The summary below is a list of staff recommendations of approval.

**General Conditions of Approval:**

1. The Development Plan shall be modified to allow adequate guest/visitor parking for all alley loaded residential lots. Specifically lots 133, 134, 135, 136, 137, 143, 144 145, 148, 149, 226, 227, 228, 229, 232, 233, 234 and 235. **Given the design speed (40MPH) along South Carothers Roadway and the superelevation that will be required, no parallel parking shall be allowed on South Carothers Roadway.**
2. The proposed intersection of Local Road E and South Carothers Roadway shall be re-evaluated to ensure Local Road E meets a minimum design speed of 25MPH. AASHTO standards recommends a minimum radius of 198' vs. the 70' radius as shown in the development plan. It should be noted that this may have offsite right-of-way acquisition issues. Staff would be willing to consider a single lane roundabout at this intersection. This roundabout shall be designed to meet AASHTO standards for a design speed of 40 MPH (Posted at 30MPH).
3. In conjunction with the first site plan or infrastructure submittal, full construction drawings shall be prepared for all improvements required on South Carothers Roadway so that Right-of-Way can be reserved and coordinated with adjacent property owners and developers. The Developer shall be required to coordinate with all off-site property owners and pay all cost associated with the Design, Right-of-way and Construction. In the event negotiations fail, for the Right-of-way

acquisition, the City shall attempt to acquire the property and use condemnation as a last resort for South Carothers Roadway only.

## **Conditions of approval with 100% Connectivity**

### **In conjunction with the northern portion of the proposed project:**

1. At the intersection with Highway 96E, the northbound approach of Ridgeway Drive should be widened to include two northbound turn lanes. Specifically, the existing northbound lane should be retained as left turn lane, and a separate through/right turn lane with at least 75 feet of storage should be constructed to the east. With connectivity the developer shall install a traffic signal at HWY 96E. The signal shall be designed to ensure that left turn phases operate concurrently. The exact details of the traffic signal shall be evaluated as part of the TIS update.
2. At the intersection with Ridgeway Drive, an eastbound right turn lane should be provided on Highway 96E. This turn lane should include at least 150 feet of storage and should be designed and constructed according to AASHTO standards.

### **In conjunction with the southern portion of the proposed project:**

3. A northbound right turn lane should be provided on Carothers Parkway at the intersection with S. Carothers Road. This turn lane should include at least 100 feet of storage and should be designed and constructed according to AASHTO standards. No road impact fee offsets will be allowed with this improvement.
4. A traffic signal will likely be warranted at the intersection of Carothers Parkway and S. Carothers Road as all of the approved residential projects on Carothers Parkway and S. Carothers Road are developed. If constructed, this traffic signal should be designed and constructed to include protected and permissive signal phases for southbound motorists, as well as right turn overlap signal phases for northbound and westbound approaches. **Staff does not recommend the installation of the traffic signal until Carothers Parkway is widened to a 4/5 lane roadway.** Any type of signal installed today would be removed as part of a future widening of Carothers Parkway and we would essentially be paying for the signal two times. The signal is only warranted as development continues and staff will continue to evaluate this.
5. The western project access on S. Carothers Road should be constructed to include one entering lane and one exiting lane, striped as a shared left and right turn lane. In conjunction with this configuration, a southbound/eastbound left turn lane should be provided on S. Carothers Road at the project access. This turn lane should include at least 100 feet of storage and should be designed and constructed according to AASHTO standards **(See Exhibit A)**.
6. The eastern (main) project access on S. Carothers Road should be constructed to include one entering lane and two exiting lanes, striped as separate left and right turn lanes. This project access shall be constructed with S. Carothers Road to allow free-flowing traffic on S. Carothers Road and the main project access shall tee into S. Carothers Road. S. Carothers Road shall be designed as a two lane high volume street with turn lanes as required. The design speed on S. Carothers Road shall be 40 MPH so that it can be posted at 30 mph. Due to limited sight distance a westbound right turn lane shall be added, at the main entrance, on S. Carothers Road to

prevent future accidents. In conjunction with this configuration, a southbound/eastbound left turn lane should be provided on S. Carothers Road at the project access. This turn lane should include at least 100 feet of storage and should be designed and constructed according to AASHTO standards (**See Exhibit A**).

7. Finally, in conjunction with the preparation of final construction documents for the proposed project, sight triangles should be provided to identify the sight distances which will be available, based on the specific location of the project access and its design parameters. These sight triangles should be developed based on guidelines that are included in A Policy on Geometric Design of Highways and Streets, which is published by the American Association of State Highway and Transportation Officials (AASHTO) and commonly known as The Green Book. Specifically, The Green Book indicates that for a speed of 40 mph, the minimum stopping sight distance is 305 feet. This is the distance that motorists on S. Carothers Road will need to come to a stop if a vehicle turning from the project access creates a conflict. Also, based on The Green Book, the minimum intersection sight distance is 445 feet. This is the distance that motorists on the project access will need to safely complete a turn onto S. Carothers Road.

#### **Without 100% Connectivity**

1. A northbound right turn lane should be provided on Carothers Parkway at the intersection with S. Carothers Road. This turn lane should include at least 100 feet of storage and should be designed and constructed according to AASHTO standards. No road impact fee offsets will be allowed with this improvement.
2. A traffic signal will likely be warranted at the intersection of Carothers Parkway and S. Carothers Road as all of the approved residential projects on Carothers Parkway and S. Carothers Road are developed. If constructed, this traffic signal should be designed and constructed to include protected and permissive signal phases for southbound motorists, as well as right turn overlap signal phases for northbound and westbound approaches. **Staff does not recommend the installation of the traffic signal until Carothers Parkway is widened to a 4/5 lane roadway.** Any type of signal installed today would be removed as part of a future widening of Carothers Parkway and we would essentially be paying for the signal two times.
3. The western project access on S. Carothers Road should be constructed to include one entering lane and one exiting lane, striped as a shared left and right turn lane. In conjunction with this configuration South Carothers Roadway shall be constructed as a three lane minor collector roadway that would include a left / eastbound turn lane and should include at least 100 feet of storage (**See Exhibit B**).
4. The eastern (main) project access on S. Carothers Road should be constructed to include one entering lane and two exiting lanes, striped as separate left and right turn lanes. This project access shall be constructed with S. Carothers Road to allow free-flowing traffic on S. Carothers Road and the main project access shall tee into S. Carothers Road. S. Carothers Road shall be designed as a three lane minor collector street. The design speed on S. Carothers Road shall be 40 MPH so that it can be posted at 30 mph. Due to limited sight distance a westbound right turn lane shall be added, at the main entrance, on S. Carothers Road to prevent future accidents. In

conjunction with this configuration, a southbound/eastbound left turn lane should be provided on S. Carothers Road at the project access. This turn lane should include at least 100 feet of storage and should be designed and constructed according to AASHTO standards (**See Exhibit B**).

5. Finally, in conjunction with the preparation of final construction documents for the proposed project, sight triangles should be provided to identify the sight distances which will be available, based on the specific location of the project access and its design parameters. These sight triangles should be developed based on guidelines that are included in A Policy on Geometric Design of Highways and Streets, which is published by the American Association of State Highway and Transportation Officials (AASHTO) and commonly known as The Green Book. Specifically, The Green Book indicates that for a speed of 40 mph, the minimum stopping sight distance is 305 feet. This is the distance that motorists on S. Carothers Road will need to come to a stop if a vehicle turning from the project access creates a conflict. Also, based on The Green Book, the minimum intersection sight distance is 445 feet. This is the distance that motorists on the project access will need to safely complete a turn onto S. Carothers Road.
6. A roadway connection to Stanford Drive and Biltmore Court or Cross Creek Drive shall be required as a gated emergency connection. This should be completed as a two lane curb and guttered roadway with emergency gates that meet the requirements of the Franklin Fire Department. In addition, these roadways shall be designed to meet City of Franklin Street specifications.

### **Financial Impact**

As the City continues to develop there will be increased pressure to make capital improvements to Carothers Parkway and S. Carothers Road. Without connectivity, The City will be forcing 3,560 VPD to use South Carothers Roadway. Without 100% connectivity, it is recommended that S Carothers Roadway be upgraded to a minor collector to handle the long term traffic in the area. While feasible, this change would have a direct impact on the cost of other future capital projects.



The diagram is an aerial photograph of a rural area with a proposed road layout overlaid. The road starts from the top left, curves to the right, and then curves back to the left. Key features include:

- Left Turn Lane:** Indicated at the first curve (top left) and the second curve (middle right).
- 30 mph superelevated curve:** Labeled for both the first and second curves.
- 12' Trail:** A narrow path branching off the main road between the two curves.
- Right Turn Lane Required for Safety:** A lane branching off the main road at the end of the second curve.

The road is marked with yellow dashed lines for the centerline and solid lines for the edges. Green areas represent grassy fields, and brown areas represent bare earth or dry grass. Several houses and a barn are visible in the background.

Left Turn Lane

30 mph superelevated curve

12' Trail

Left Turn Lane

Right Turn Lane  
Required for Safety

30 mph superelevated curve

With Connectivity  
Two Lane Typical Section  
Design Speed = 40 mph  
Posted Speed = 30 mph



Left Turn Lane

30 mph superelevated curve

12' Trail

Left Turn Lane

Right Turn Lane  
Required for Safety

30 mph superelevated curve

The diagram is an aerial photograph of a rural area with a proposed road layout overlaid. The road is shown in grey with yellow and white lane markings. It features two curves, both labeled '30 mph superelevated curve'. A '12' Trail' is indicated by a black line with a white arrow. Two 'Left Turn Lane' labels point to specific sections of the road. A 'Right Turn Lane Required for Safety' label points to a section of the road. The surrounding area includes fields, trees, and some buildings.

Without Connectivity  
Three Lane Typical Section  
Design Speed = 40 mph  
Posted Speed = 30 mph