

**ORANGE COUNTY
BOARD OF COMMISSIONERS**

ACTION AGENDA ITEM ABSTRACT

Meeting Date: November 15, 2011

**Action Agenda
Item No.** _____

SUBJECT: Efland-Buckhorn-Mebane Commercial Industrial Transition Activity Nodes and Economic Development District Access Management Plan

DEPARTMENT: Planning and Inspections

PUBLIC HEARING: (Y/N)

Y

ATTACHMENT(S):

- 1a, 1b, and 1c -- Efland-Buckhorn-Mebane
CITAN and EDD Access Management
Plan Maps
- 2. Access Management Toolkit
- 3. Proposed Street Cross Section
- 4. Excerpt from Planning Board
Meeting Minutes

INFORMATION CONTACT:

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PURPOSE: To receive the Planning Board's and Orange Unified Transportation Board's recommendations, close the public hearing, and make a decision on the Efland-Buckhorn-Mebane Commercial Industrial Transition Activity Nodes (CITAN) and Economic Development District (EDD) Access Management Plan.

BACKGROUND: The 2006 Efland-Mebane Small Area Plan included a recommendation for the provision of an efficient, multi-modal transportation system as a transportation objective for the study area with specific recommendations addressing traffic, access, connectivity, walkability/bikeability, and mass transit.

Since 2006, several Plan recommendations have been implemented such as changes to the Water and Sewer Planning Boundary Agreement (WASMPBA) Map, Land Use Element Map, and Zoning Atlas, as well as steps towards public water/sewer infrastructure expansion. These initiatives are in preparation for economic development in the Efland-Buckhorn-Mebane area.

As properties are developed for non-residential and higher density residential land uses, transportation interconnectivity and access will become increasingly important. In preparation, staff is suggesting the initiation of a process to complete a conceptual access management plan for the area for formal BOCC adoption. Formally adopted transportation plans are necessary to procure federal and state funding for projects and to require developer action and contribution in providing transportation infrastructure consistent with a master plan. Adopted access management plans can also be incorporated into regional transportation plans, which will enhance Orange County's collaboration with the western and eastern Metropolitan Planning Organizations. A Unified Development Ordinance (UDO) amendment was adopted by the BOCC on October 18, 2011 to further require development proposals requiring site plan

approval (conditional zoning presently requires integration) to demonstrate compliance with adopted access management plans.

August 23, 2011 BOCC Public Hearing: No members of the public spoke on this proposed Plan.

The BOCC requested a Public Information Meeting to be held in the planning area to inform residents of the major interchange at Mattress Factory Road and Interstates 85/40 that is included in the Plan.

Planning Board: At its September 7, 2011 meeting, the Planning Board unanimously recommended that the BOCC move forward towards adoption of the Plan (See attached excerpt from PB minutes).

Orange Unified Transportation (OUT) Board: The OUT Board reviewed the draft Access Management Plan at its meetings on September 21 and October 19, 2011 and unanimously recommended adoption. One member abstained from voting. (OUT Board minutes are being prepared and will not be available until after tonight's meeting).

Public Information Meeting: Planning Staff held a public information meeting last night (November 14th) to review and respond to questions on the proposed draft Access Management Plan. Staff will include any comments collected in its presentation to the BOCC.

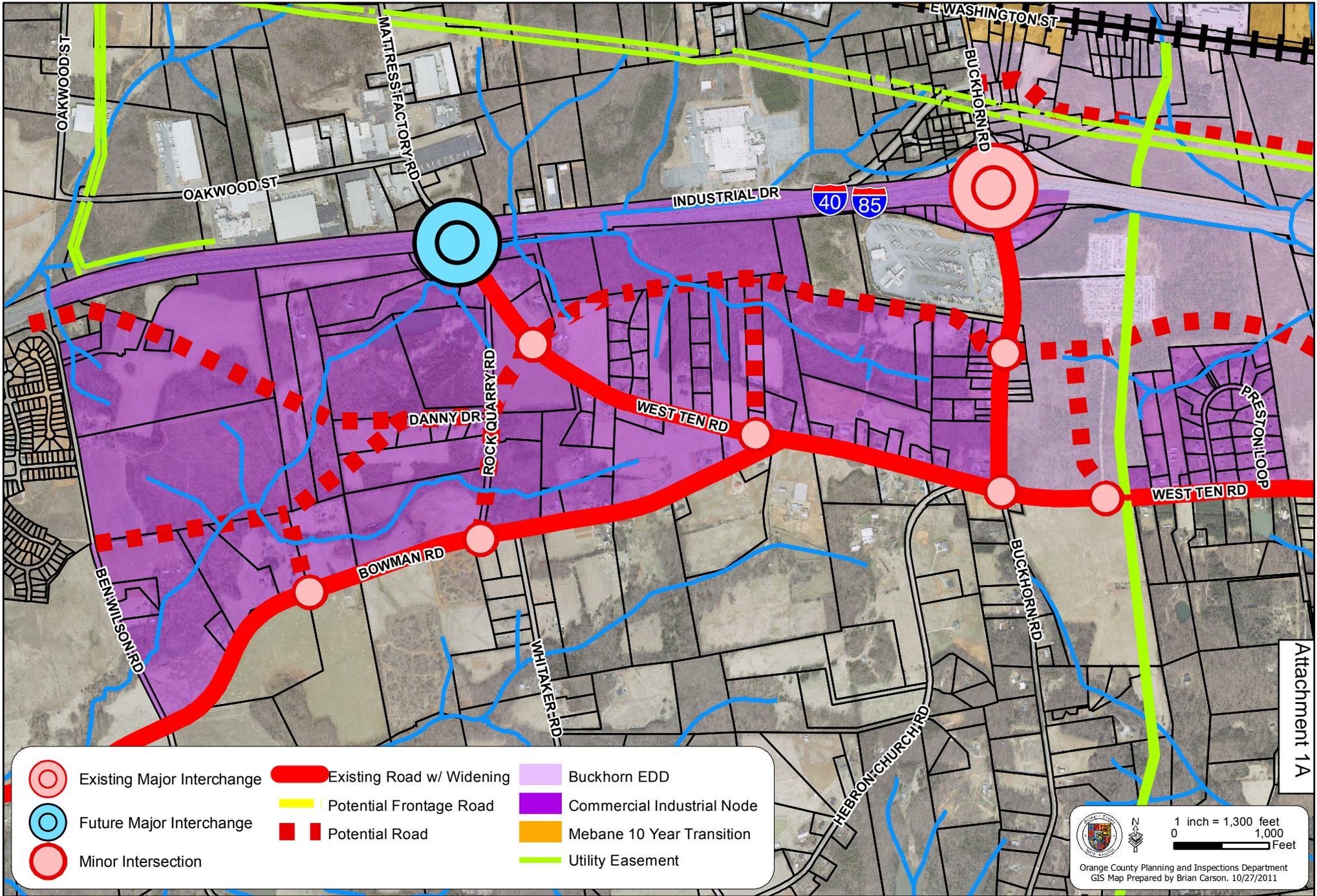
Planning Director's Recommendation: The Planning Director recommends **adoption** of this Access Management Plan (Attachments 1a, 1b, 1c, 2, and 3). Adoption of the plan will lead to more orderly growth which promotes the public health, safety, and general welfare and achieves the purposes of the adopted Comprehensive Plan.

FINANCIAL IMPACT: There is no immediate financial impact pertaining to this item.

RECOMMENDATION(S): The Manager recommends the Board:

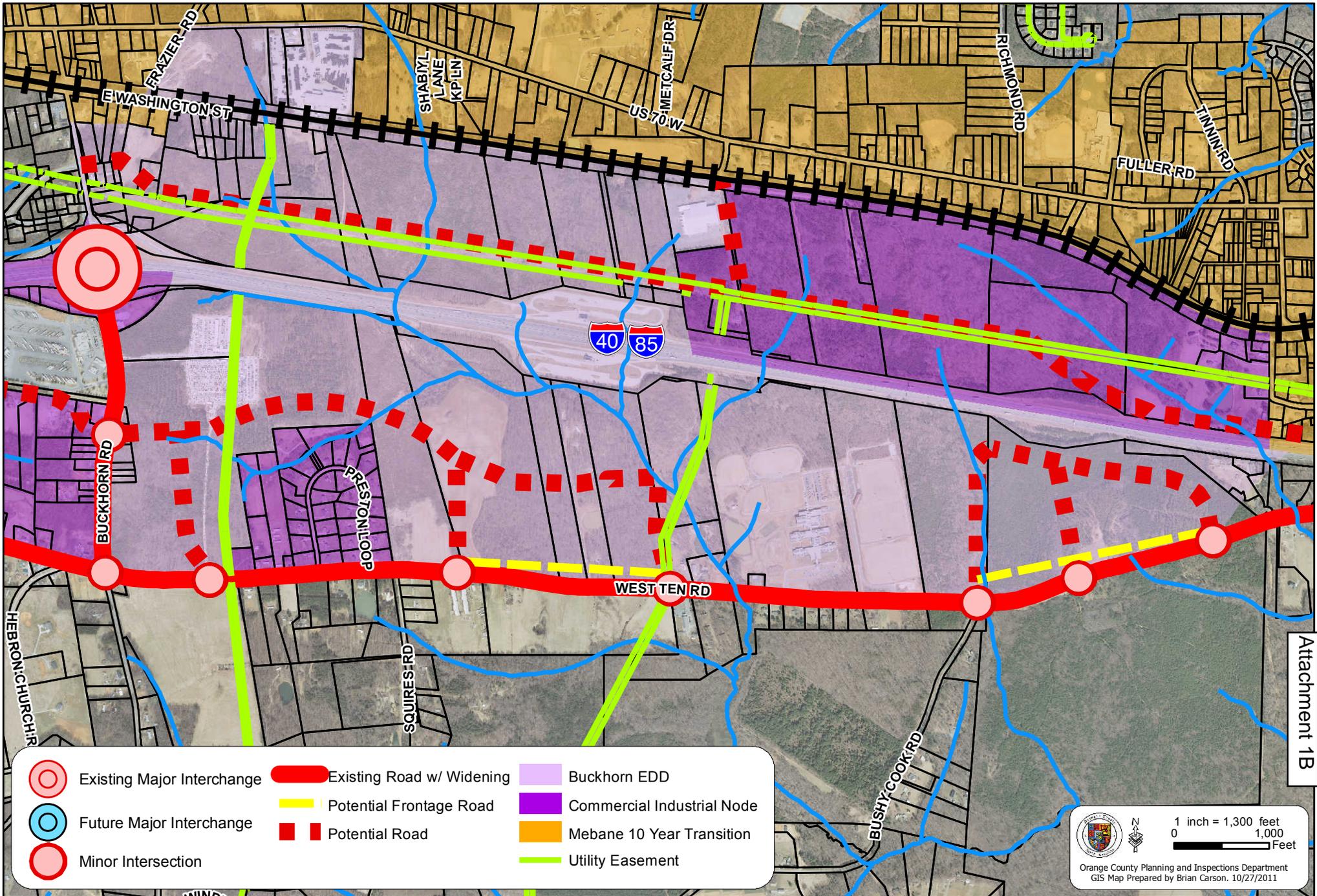
1. Receive the Planning Board's and OUT Board's recommendations of approval;
2. Close the public hearing; and
3. Adopt the Access Management Plan Attachments 1a, 1b, 1c, 2, and 3.

Efland-Buckhorn-Mebane Access Management Plan - Map A



Note: The locations of potential roads and intersections are conceptual and reflect the County's intent to improve access and connectivity. Specific locations will be determined on a case by case basis as development occurs and site specifics are analyzed.

Efland-Buckhorn-Mebane Access Management Plan - Map B



	Existing Major Interchange		Existing Road w/ Widening		Buckhorn EDD
	Future Major Interchange		Potential Frontage Road		Commercial Industrial Node
	Minor Intersection		Potential Road		Mebane 10 Year Transition
			Utility Easement		

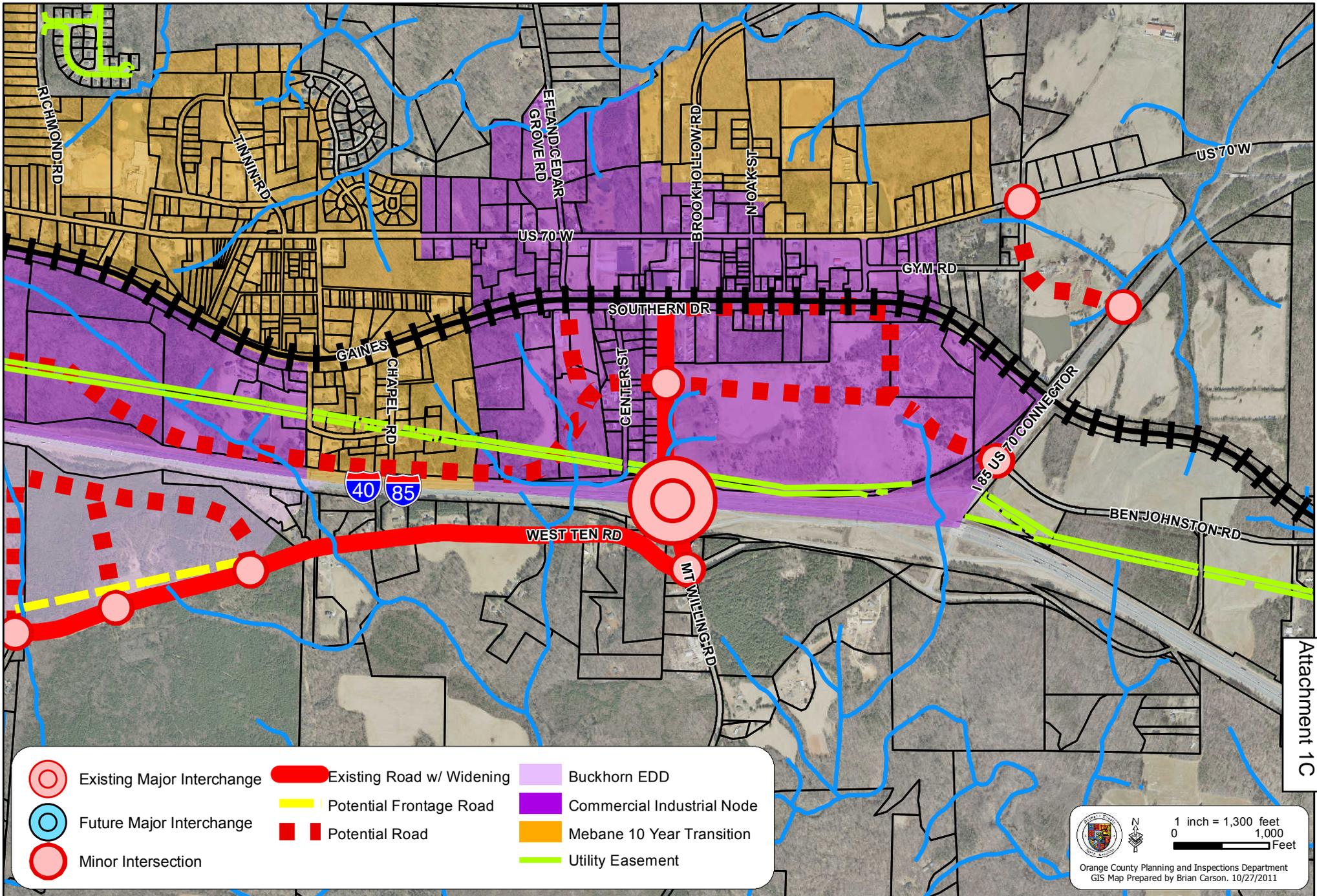
1 inch = 1,300 feet
 0 1,000 Feet

Orange County Planning and Inspections Department
 GIS Map Prepared by Brian Carson, 10/27/2011

Note: The locations of potential roads and intersections are conceptual and reflect the County's intent to improve access and connectivity. Specific locations will be determined on a case by case basis as development occurs and site specifics are analyzed.

Attachment 1B

Efland-Buckhorn-Mebane Access Management Plan - Map C



Attachment 1C

Note: The locations of potential roads and intersections are conceptual and reflect the County's intent to improve access and connectivity. Specific locations will be determined on a case by case basis as development occurs and site specifics are analyzed.

ACCESS MANAGEMENT PROGRAM

(To Be Applied Within Corridors And Development Zones)

ACCESS MANAGEMENT CONCEPTS

1. Driveway-Related Crashes

Much of access management involves managing traffic movements into and out of commercial driveways. The reason for this is that driveway traffic generates a large number of crashes on major roads and streets-arterials and collectors.

2. Driveway Spacing

Maintaining an adequate spacing between commercial driveways is one of the most critical aspects of access management.

3. Driveway Density And Driveway Consolidation

Driveway density (the number of driveways per block or per mile) and driveway consolidation are very important considerations in access management. These roadway characteristics are basic issues in any access management plan or program.

4. Intersection Spacing And Traffic Signal Spacing

Although most discussions about access management focus on the management of private driveways, proper spacing of roadway intersections is an equally important access management issue.

Why is intersection spacing important?

The importance of intersection spacing is similar to that of driveway spacing. As the number of intersections per mile increase, the opportunity for crashes increases. The existence of too many intersections per mile also increases delay and congestion. On the other hand, not providing an adequately dense street network forces motorists and pedestrians to travel farther to their destinations.

5. Functional Areas Of Intersections

It is important to protect the functional area of an intersection from driveway access. Driveways located within this area may result in higher crash rates and increased congestion.

What is the functional area of an intersection?

The functional area of an intersection is that area beyond the physical intersection of two roadways that comprises decision and maneuvering distance, plus any required vehicle storage length. The functional area includes the length of road upstream from an oncoming intersection needed by motorists to perceive the intersection and begin maneuvers to negotiate it. The upstream area consists of distance for travel during a perception-reaction time, travel for maneuvering and deceleration, and queue storage. The functional area also includes the length of road downstream from the intersection needed to reduce conflicts between through traffic and vehicles entering and exiting a property.

6. Conflict Points

Conflict points are commonly used to explain the accident potential of a roadway. Access management strategies are typically designed to reduce the number and density of conflict points.

What is a conflict point?

A conflict point is the point at which a highway user crossing, merging with, or diverging from a road or driveway conflicts with another highway user using the same road or driveway. It is any point where the paths of two through or turning vehicles diverge, merge, or cross.

7. Speed Differential Between Turning Vehicles And Through Traffic

Speed differential is a simple yet important concept that forms the basis for many access management measures.

What is speed differential?

Speed differential is the difference between the speed of vehicles that are continuing along the main roadway versus those that are entering and exiting the driveway. For instance, if through traffic generally moves at 35 miles per hour and cars have to slow to 10 miles per hour to enter a driveway, the speed differential at and near that driveway is 25 miles per hour.

Why is speed differential important?

A speed differential above 20 miles per hour begins to present safety concerns. When the speed differential approaches 30 to 35 miles per hour, the likelihood of a collision between fast moving through vehicles and turning vehicles increases very quickly.

8. Benefits Of Access Management

An effective, local access management program can play an important role in preserving highway capacity, reducing crashes, and avoiding or minimizing costly remedial roadway improvements. The traveling public would then benefit from faster and safer travel. The great majority of businesses would benefit from increased economic vitality along a well-managed corridor. Taxpayers would benefit from more efficient use of existing facilities. And public agencies would benefit from the relatively low cost of access management; they could then use their resources for other needs.

9. Economic Impacts Of Access Management

Business owners often are concerned that changes in access to their premises will have temporary or permanent impacts on their sales. They are concerned that changes in direct access to their property—such as consolidating driveways or installing raised medians will lead to declines in patronage and sales. Perceived impacts of access management on adjacent commercial businesses and landowners are often major impediments to projects moving forward. In the case of access management, perceptions are often worse than reality.

Access management before development offers clarity and relieves the post-development difficulty in retrofitting.

10. Access Management And Pedestrian Safety

Access management is usually promoted as a way to improve driving conditions for motorists. Clearly, access management techniques can lead to roads and streets that are dramatically safer and much easier and more pleasant to drive. However, research also indicates that several key access management techniques are just as valuable to pedestrians. These include:

- reducing the number of driveways, particularly commercial driveways, within a given distance (per block or mile)
- providing for greater distance separation between driveway
- providing a safe refuge for pedestrian crossings with raised medians

COMMON ACCESS MANAGEMENT TREATMENTS

11. Driveway Grade

Along older urban arterial streets, it is common to find rather steep driveways with grades (or slopes) of 5-10 percent or more. Driveways with steep grades were often constructed to allow the driveway and connecting parking lots to drain more efficiently and to save earth-moving costs. On the other hand, more recently constructed arterials typically feature very gentle driveway grades. Driveway grade is an important – yet often overlooked – safety consideration.

The maximum practical grade for driveways varies between 8-14 percent for low-volume driveways and five percent for high-volume driveways (a 30-foot long driveway with a 14 percent grade would rise or fall about four feet along its length). Furthermore, the maximum practical change in grade is about 12 percent. Above this value, many vehicles will scrape their bumpers or other low-hanging parts on the driveway, potentially causing damage to the vehicle and driveway or roadway surface. While this may be the maximum practical grade, it is much safer to use a smaller grade. A minimal grade (say, two percent) is still needed for drainage.

12. Driveway Width

Along older urban arterial streets, it is common to find many narrow driveways. Older commercial driveway and parking lot designs tended to use ten to fifteen foot wide driveways. This type of design will safely accommodate only one vehicle at a time, either an entering or an exiting vehicle. Another common problem is driveways in urban and rural areas that are too wide. In some cases, the driveway may have no discernible boundaries or curbs. Both situations create operational and safety concerns. A properly designed driveway helps turning traffic move off the roadway more quickly and reduces the likelihood of crashes.

13. Clearing Driveways Away From Corners

Clearing driveways away from corners is the simplest, yet perhaps the most critical access management treatment.

What is corner clearance?

Corner clearance is the minimum distance required between an intersection and an adjacent driveway along an arterial road or collector street.

14. Shared/Joint Driveways And/Or Cross Access

Driveway spacing and driveway density are important considerations in managing access. When driveways are spaced too closely together or the number of driveways per block or mile becomes too large, a significant increase in traffic accident rates occurs. Traffic also tends to become congested more quickly in such situations.

What is driveway sharing?

A shared driveway is when two or more adjacent properties use the same driveway for ingress and/or egress. Shared driveways are very common in newer commercial areas, for instance at strip malls, regional shopping centers, and office parks. Sharing driveways is simply good design practice since conflict points caused by motorists entering and leaving the businesses are reduced. This will, in turn, tend to reduce traffic accidents associated with turning traffic and improve the traffic flow on the main road.

What are joint and cross access?

Joint and cross access are formal, legal methods of ensuring that adjacent properties can share driveways. In the case of joint access, two adjacent property owners share a driveway along their common property line. In the case of cross access, one property owner has the legal right to access and use a driveway that is on the adjacent property owner's land.

Joint and cross access can be built into private real estate titles through easements. They can also be encouraged or required in local planning or design standards or in municipal and county ordinances.

15. Continuous Two-Way Left-Turn Lanes

Continuous two-way-left-turn lanes (TWLTL) are a common access management treatment when combined with driveway consolidation and corner clearance. TWLTLs simultaneously provide a separate lane for left turning vehicles and property access. Typically, they are used as the center lane of a five-lane roadway. A less common design involves three lanes, a TWLTL in the center for left turns and one lane in each direction for through traffic.

Recent theory suggests avoiding this design unless road right-of-way conditions are restrictive.

16. Three-Lane Roadways With Two-Way Left-Turn Lanes

Continuous two-way left-turn lanes (TWLTL) are a common access management treatment. Typically, they are used in the center of a four-lane roadway. However, a less-common design involving three lanes – a TWLTL in the center for left turns and one lane in each direction for through traffic – is being used more and more frequently. At first, the idea of a three-lane road may seem strange. But under the right circumstances they can work very well, operating better and more safely than a four-lane undivided road.

17. Raised Medians At Intersections

Raised medians with left-turn lanes at intersections offer a cost-effective means for reducing accidents and improving operations at higher volume intersections. The left-turn lanes separate slower turning vehicles from through traffic and provide a protected space for these vehicles to decelerate and turn. The raised median prohibits left turns into and out of driveways that may be located too close to the functional area of the intersection.

18. Continuous Raised Median

Continuous raised medians with well-designed median openings are among the most important features for managing access to create a safe and efficient highway system.

19. Comparison Of Raised Median And Two-Way Left-Turn Lanes

Because raised medians are the most restrictive access management treatment, building a raised median along an arterial is often very controversial among business and property owners. Two-way left-turn lanes (TWLTL) are much less so. Business persons and property owners feel that installation of raised medians will have a large, negative impact on their customers, sales, and property values. Therefore, TWLTLs are often suggested as a compromise solution. However, TWLTLs also represent a safety compromise when compared to raised medians. They should be used with care.

20. Frontage And Backage Roads

Frontage and backage roads run parallel the mainline route and provide alternative access to property. Property access is provided along the frontage or backage road, which accesses the arterial via a cross road (with a traffic signal if necessary). This reduces the number and density of conflict points associated with strip development. These roads are generally applicable to commercial development.

A backage road provides access to the rear side of commercial properties located between the backage road and the arterial. It also provides access to properties located on the opposite side of the backage road from the arterial, thus increasing land values and reducing infrastructure costs to individual properties.

A frontage road provides access to the front side of commercial properties located along the arterial. Care must be taken to ensure adequate separation between the arterial and the intersection of the frontage and cross roads.

Why are frontage and backage roads important?

Frontage and backage roads reduce conflict points between through traffic and turning traffic associated with strip development and direct property access to the arterial. Conflict points are associated with reduced levels of roadway safety and operations. Studies have shown that when driveway access to arterial roadways is granted to too many property owners without considering future traffic volumes and road classifications, the additional driveways increase the rate of accidents and decrease the efficiency of the roadway.

21. Dedicated Left And Right Turning Lanes

One of the major concerns of transportation engineers and planners in cities and suburban areas is keeping through traffic moving at a smooth and even pace. When traffic can't move at an even pace, delays and congestion are the result. This frustrates motorists and creates opportunities for "fender-bender" crashes. One of the simplest ways to accomplish smooth and even traffic is to remove the turning traffic from the through traffic flow at road intersections and near busy driveways. Often, dedicated turning lanes are provided to serve that purpose. Many times turning lanes are used in conjunction with raised medians and medians at intersections to provide additional safety by protecting turning traffic.

22. Driveway Turn Radius

Turn radius refers to the extent that the edge of a commercial driveway is “rounded” to permit easier entry and exit by turning vehicles. Driveway entrances with longer turn radii help slower, turning traffic move off the arterial more quickly. They also help traffic leaving a driveway turn and enter the stream of traffic more efficiently. Guidelines for turn radii are generally applied to non-residential developments and subdivisions.

23. Internal Circulation In Land Developments

Internal site design is probably the most neglected discussion point in access management. It would be natural to think that access management concerns stop at the roadway right-of-way line, but in fact they carry through into the property that is provided with access.

Why is internal site design important?

The movement of traffic into and out of properties can be dramatically affected by the internal design for on-site circulation. The internal design of circulation on a property may help or hinder traffic turning off or onto an arterial street. This in turn affects the speed differential between turning and through traffic.

What is the best way to design for internal circulation?

The internal circulation of a land development functions well when it is designed with respect to highway access point(s) rather than the building(s). Design should start from the outside in and finish with the parking and building. Very often, the opposite approach is taken. The circulation design of driveways and parking lots are done last. Here is the optimal internal circulation design approach:

1. Provide safe and reasonable access to and from the street to motorists and pedestrians.
2. Provide a reasonable transition between the access and the internal circulation, especially by making sure the driveways are wide and long enough.
3. Design the parking area and individual parking spaces.
4. Design the building footprint within the constraints of the internal circulation and the parking.

OTHER CORRIDOR DESIGN CONSIDERATIONS

24. Sight Distance

Guidelines for adequate sight distance are one of the most important and basic approaches a community can take in managing access to its roadways. Sight distance guidelines can help communities ensure that its arterials are safe for motorists and pedestrians. Sight distance guidelines can also help communities promote adequate spacing of residential and commercial driveways.

What is sight distance?

Sight distance is the length of highway visible to a driver. A safe sight distance is the distance needed by a driver on an arterial, or a driver exiting a driveway or street, to verify that the road is clear and avoid conflicts with other vehicles. Sight lines must be kept free of objects which might interfere with the ability of drivers to see other vehicles. Features such as hills, curves in the road, vegetation, other landscaping, signs, and buildings can reduce sight distance.

25. Incorporating Aesthetics Into Access Management

Access management projects often involve widening existing roadways to add either an additional two-way-left-turn lane (TWLTL) or a raised median. Such projects can lead to a wide expanse of concrete and asphalt. An aesthetically pleasing treatment, however, does not need to run counter to sound access management practices. In fact, aesthetics can and should be incorporated into access management project plans.

Why are aesthetics important?

Access management projects are much more likely to be accepted by the public and by business owners of adjacent properties if they look good as well as improve safety and traffic flow.

26. Clear Zones, Utility Placement And Lighting

Adequate clear zones with proper placement of utilities and sufficient lighting are essential components of well designed roadways. Proper design will help ensure sufficient sight distance and improve roadway operating safety.

What is a clear zone?

The American Association of State Highway and Transportation Officials (AASHTO) *Green Book* states that “a clear zone is used to designate the unobstructed, relatively flat area provided beyond the edge of the traveled way for the recovery of errant vehicles.” Utilities, structures, signs, trees, and other objects should not be located within the clear zone.

80' – 100' Proposed Street Cross Sections – 80' Example Below

Figure 1a.

80' PROPOSED STREET CROSS SECTION
SHOULDER SECTION

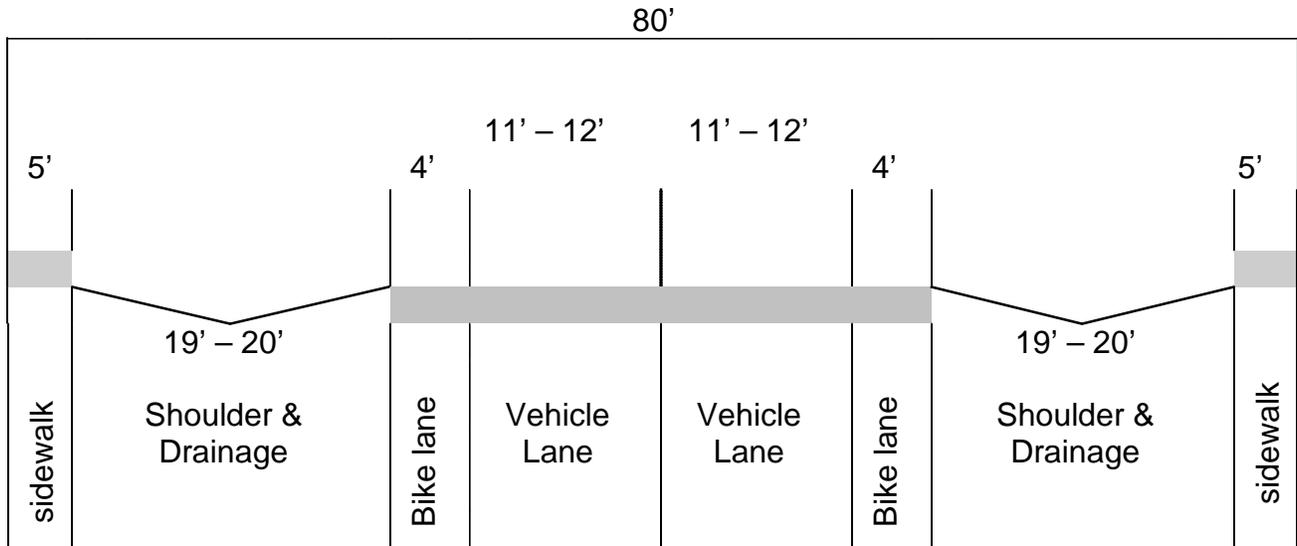


Figure 1b.

80' PROPOSED STREET CROSS SECTION
CURB & GUTTER SECTION

