

# LSC Responses to EPC Deviation Redlines

## OWNER, APPLICANT, AND ENGINEER DECLARATION

To the best of my knowledge, the information on this application and all additional or supplemental documentation is true, factual and complete. I am fully aware that any misrepresentation of any information on this application may be grounds for denial. I have familiarized myself with the rules, regulations and procedures with respect to preparing and filing this application. I also understand that an incorrect submittal will be cause to have the project removed from the agenda of the Planning Commission, Board of County Commissioners and/or Board of Adjustment or delay review until corrections are made, and that any approval of this application is based on the representations made in the application and may be revoked on any breach of representation or condition(s) of approval.

Signature of owner (or authorized representative)

Date

Engineer's Seal, Signature  
And Date of Signature



## DEVIATION REQUEST 1 (Attach diagrams, figures, and other documentation to clarify request)

**DEVIATION No. 1 – Intersection Spacing (Rev. 11/17/2023; 6/2/2023; Original 1/4/2020):** A deviation from the standards of or in Sections **2.2.5.D** and **2.3.2** of the Engineering Criteria Manual (ECM) is requested. The request is for – **Part 1a:** a full-movement, roundabout intersection on a proposed Non-Residential Collector street 580 feet south of the Woodmen Road/US Highway 24 intersection (centerline spacing – estimated, following widening of US Highway 24 to four lanes). **Part 1b:** a three-quarter-movement intersection (access to commercial lots- Willet Way) on a proposed Non-Residential Collector street 235 feet west of the Retail Row Street/Rio Lane intersection (centerline spacing).

This deviation is one of four submitted with this application. Deviation Exhibit A (attached) graphically summarizes all four deviation requests, including this one. Please refer to the attached Deviation Exhibits 1-1, 1-2, and 1-3 which graphically shows this Deviation request No. 1, parts 1a and 1b. Deviation Exhibits 3-2 and 3-3 are also attached and are referenced below.

Identify the specific ECM standard which a deviation is requested:

### **2.2.5.D Collector Access Standards**

For Part 1a: On major collector roadways, the closest roadway intersection to an arterial roadway shall be 660 feet (right-of-way line of arterial to centerline of local roadway);

For Part 1b: On major collector roadways, local roadway intersection spacing shall be 330 feet (centerline spacing).

### **2.3.2 Design Standards by Functional Classification**

Table 2-7: Roadway Design Standards for Urban Collectors and Locals

Criteria for an Urban Non-Residential Collector Roadway: 660 feet intersection spacing, 330 feet between Local roadways.

Standard 2.3.2 requires 660-foot spacing between intersections for Urban Non-Residential Collector roadways. This standard is reflected in ECM Table 2-7 (Roadway Design Standards for Urban Collectors and Locals). The spacing between local roadways is 330 feet.

### **2.2.4.B.4 Roadway Functional Classifications and Urban/Rural Designations – Urban Roadways - Non-Residential Collector**


Intersection and parcel access locations and design are reviewed by the ECM Administrator to ensure roadway objectives are being met.

# LSC Responses to EPC Deviation Redlines

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Page: 4

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 Number: 1      Author: Jeff Rice - EPC Engineering      Date: 12/19/2023 2:51:44 PM  
Signature of owner (

The deviation will not adversely affect maintenance and its associated cost.

The deviation will not affect maintenance or maintenance costs as multiple approach lanes to a major intersection are typical. The southbound lanes approaching the roundabout will be analyzed at the design stage to ensure County snowplows and other maintenance vehicles can be accommodated.

Regarding Part 1b:

The deviation will have little effect on maintenance or maintenance costs as the proposed spacing is only 95 feet short of the standard and there would be no south leg of the intersection of Retail Row Street/Willet Way Way to maintain. The proposed project street layout, with the deviation, would allow for the through connection between Rio Road and the Woodmen Road/US Highway 24 intersection, which would be beneficial to County Maintenance vehicles.

The deviation will not adversely affect aesthetic appearance.

The shorter access spacing will not affect the aesthetics as multiple approach lanes and wider cross sections on the approach to a major intersection are typical.

Part 1b: The shorter access spacing will not affect the aesthetics as the intersections would be constructed to County standards.

The deviation meets the design intent and purpose of the ECM standards.

The proposed intersection spacing, given the site-specific characteristics, will allow the greater objectives mentioned above to be met, not adversely affecting operations or safety given the analysis presented in that section of this deviation.

The proposed lane design will accommodate the projected queues between Woodmen and the roundabout intersection, which meets the intent and purpose of the ECM intersection spacing standard back from an arterial roadway.

The deviation meets the control measure requirements of Part I.E.3 and Part I.E.4 of the County's MS4 permit, as applicable.

The requested deviation meets control measure requirements of Part I.E.3 and Part I.E.4 of the MS4 Permit.


HWY 24? 1

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Number: 1      Author: Jeff Rice - EPC Engineering      Subject: Callout      Date: 12/19/2023 12:36:03 PM

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HWY 24?

 Author: jchodsdon    Subject: Sticky Note    Date: 2/9/2024 11:46:44 AM  
LSC Response: Corrected.

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**REVIEW AND RECOMMENDATION:**

**Approved by the ECM Administrator**

This request has been determined to have met the criteria for approval. A deviation from Section \_\_\_\_\_ of the ECM is hereby granted based on the justification provided.

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**Denied by the ECM Administrator**

This request has been determined not to have met criteria for approval. A deviation from Section \_\_\_\_\_ of the ECM is hereby denied.

Γ Γ

L J

**ECM ADMINISTRATOR COMMENTS/CONDITIONS:**

County approvals are conditional on CDOT approval. <sup>1</sup>

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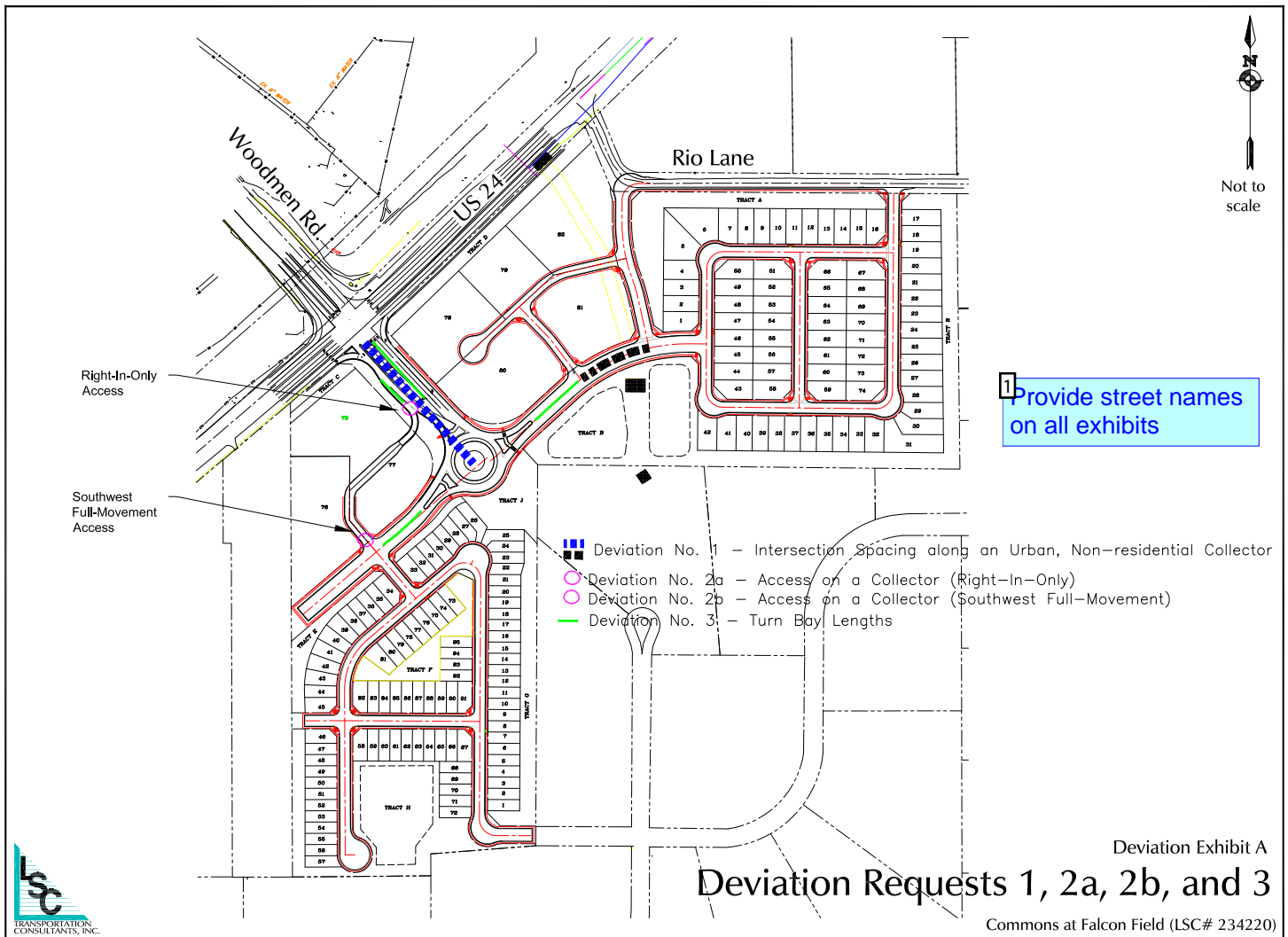
☰ Number: 1 Author: Jeff Rice - EPC Engineering Subject: Text Box Date: 2/4/2024 4:48:10 PM

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County approvals are conditional on CDOT approval.

👤 Author: jchodsdon Subject: Sticky Note Date: 2/4/2024 4:50:28 PM  
LSC Response: Added this note.

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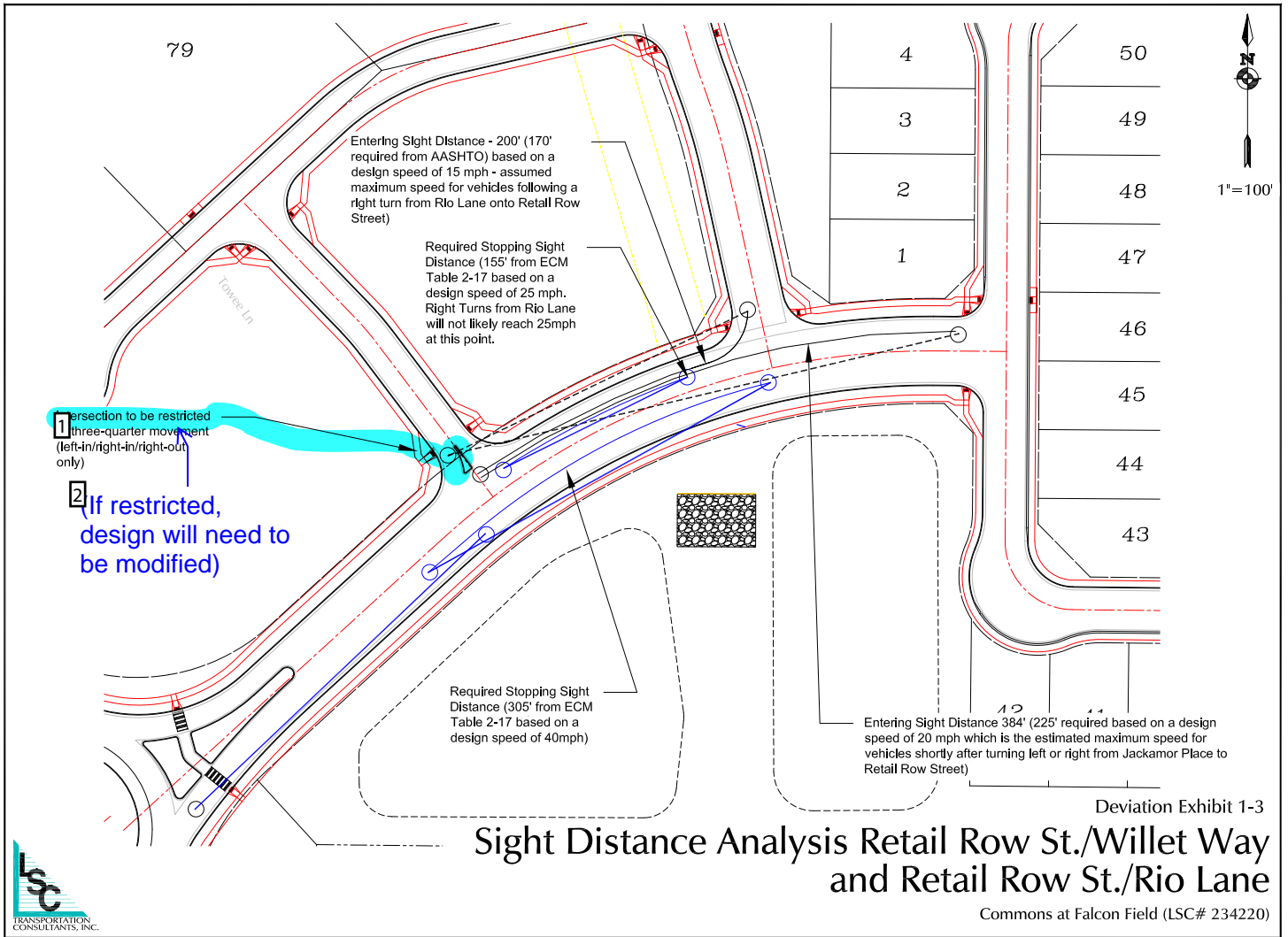


Provide street names on all exhibits


 Author: jchodsdon    Subject: Sticky Note    Date: 2/9/2024 11:47:08 AM  
LSC Response: Added.

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 Number: 1 Author: Jeff Rice - EPC Engineering Date: 12/19/2023 12:41:29 PM

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 Number: 2 Author: Jeff Rice - EPC Engineering Subject: Callout Date: 12/19/2023 12:42:08 PM

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(If restricted, design will need to be modified)

 Author: jchodsdon Subject: Sticky Note Date: 2/9/2024 11:47:40 AM

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LSC Response: This access has been modified to a full-movement and the right-turn island has been removed. Deviation No. 5 allows for this change.

OWNER, APPLICANT, AND ENGINEER DECLARATION

To the best of my knowledge, the information on this application and all additional or supplemental documentation is true, factual and complete. I am fully aware that any misrepresentation of any information on this application may be grounds for denial. I have familiarized myself with the rules, regulations and procedures with respect to preparing and filing this application. I also understand that an incorrect submittal will be cause to have the project removed from the agenda of the Planning Commission, Board of County Commissioners and/or Board of Adjustment or delay review until corrections are made, and that any approval of this application is based on the representations made in the application and may be revoked on any breach of representation or condition(s) of approval.

Signature of owner (or authorized representative)

Date

Engineer's Seal, Signature  
And Date of Signature



**DEVIATION REQUEST 2a** (Attach diagrams, figures, and other documentation to clarify request)

**DEVIATION No. 2 – Access to a Collector Street (Rev. 6/2/2023; Original 1/4/2020):** A deviation from the standards of or in Sections **2.2.5.D** and **2.3.2 (Table 2-7)** of the Engineering Criteria Manual (ECM) is requested. Requests for access are reviewed by the ECM Administrator as per ECM Section 2.2.4.B.4. The request is for a right-in-only access point to the planned extension on Woodmen Road (as an Urban Non-Residential Collector Street within the Falcon Field development). This proposed right-in-only access would be located between the US Highway 24/Woodmen Road intersection and the planned roundabout (365' centerline spacing from US Highway 24). This access would provide ingress for the three commercial lots on the west side of Woodmen Road (extended into the site).

This deviation is one of four submitted with this application. Deviation Exhibit A (attached) graphically summarizes all four deviation requests, including this one. This requested access point (driveway) is shown on this exhibit. Deviation Exhibits 2a-1 and 2a-2 are also attached and are referenced below.

Identify the specific ECM standard which a deviation is requested:

2.3.2 Design Standards by Functional Classification

Table 2-7: Roadway Design Standards for Urban Collectors and Locals

Criteria for an Urban Non-Residential Collector Roadway: No access permitted

Standard 2.3.2 does not permit access on Urban Non-Residential Collector roadways. This standard is reflected in ECM Table 2-7 (Roadway Design Standards for Urban Collectors and Locals).

**2.2.4.B,4 Roadway Functional Classifications and Urban/Rural Designations – Urban Roadways - Non-Residential Collector** Intersection and parcel access locations and design are reviewed by the ECM Administrator to ensure roadway objectives are being met.

2.2.5.D Roadway Access Criteria – Collector Access Standards:

This criterion indicates that *single-family residence access to major collector roadways is not permitted*. However, **commercial** access is requested to an Urban Non-Residential Collector.



State the reason for the requested deviation:

This deviation is needed as the ECM standard is no access to Non-Residential Collector streets. Non-Residential Collector streets are proposed within the development adjacent to the commercial areas:

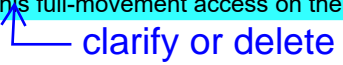
- 1) to provide access to this development **and**
- 2) to provide a street stub to allow for a future access connection to serve the adjacent parcel to the west **and**
- 3) to provide a replacement for the Rio Lane connection to US Highway 24 per the *US 24 Access Management Plan* (with the replacement connection being the south leg of the Woodmen/US Highway 24 intersection).

The applicant is requesting this access, in addition to the full-movement access on Retail Row Street, as no direct parcel access will be allowed to US Highway 24. Without this deviation, the only other access would be the one to Retail Row Street near the southwest corner of the proposed three commercial lots (the "back corner" with respect to the proposed connection to the Woodmen Road/US Highway 24 intersection). This would hamper the marketing viability of the site and competitiveness in the market, of the development, especially any potential "convenience business" use on the "hard corner" of US Highway 24/Woodmen (extended). The proposed right-in-only access would provide a secondary (but superior, from a commercial business perspective) entry point in addition to the other access to Retail Row Street.

Explain the proposed alternative and compare to the ECM standards (May provide applicable regional or national standards used as basis):

- Table 2-7: Roadway Design Standards for Urban Collectors and Locals indicates for an Urban Non-Residential Collector Roadway: No access permitted.
- The standards indicate "Where no local public or private road exists, temporary or partial turn movement parcel access may be permitted"
- Collector Access Criteria indicates: This criterion indicates that single-family residence access to major collector roadways is not permitted. However, **commercial** access is requested to an Urban Non-Residential Collector.
- Intersection and parcel access locations and design are reviewed by the ECM Administrator to ensure roadway objectives are being met.

The request is for a right-in-only access point to the planned extension on Woodmen Road (as an Urban Non-Residential Collector Street within the Falcon Field development). This proposed right-in-only access would be located on the west side of Woodmen Road (extended into the site) between the US Highway 24/Woodmen Road intersection and the planned roundabout at Retail Row Street. The spacing, based on a future four-lane lane US Highway 24, would be 365 feet (centerline to centerline), about 260 feet from the end of the radius of the eastbound right-turn lane on US 24 (to the centerline of the access) and about 180 feet from the end of the radius of the eastbound right-turn lane on US 24 to beginning of the corner radius of the access.

The type of access point<sup>1</sup> requested is a commercial access, which would not involve vehicles backing onto the street as is typical with single-family individual lot access points (referenced in ECM section 2.2.5.D).<sup>2</sup> This full-movement access on the north side will align with the planned public Urban Local street on the south side – Towhee Court.<sup>3</sup>  clarify or delete

A partial-turn, right-in-only access is requested and left turns would be physically prevented. There would be no vehicles turning onto Woodmen Road (extended), as the access would be an entrance only.

The proposed raised center median on Woodmen Road (extended) will physically prevent left-turning movements into the access. Left turns out (or right turns out) will not occur as the access drive will be one-way-in only with on-site signage, markings and channelization as needed.


The criteria indicate that parcel access locations can be reviewed by the ECM Administrator.

Allowing this access point would be necessary as it would assist with the implementation of the *US 24 Access Management Plan* with the Rio Lane replacement connection to US Highway 24 and allowance for adjacent parcel access to the west (which would also benefit US Highway 24 access management).


Criteria for driveways in ECM Section 2.4.1 access criteria would be met (refer to the section below "The deviation will not adversely affect safety or operations" for additional details).

The proposed right-in-only access point would provide low-impact, low conflict secondary entry point to the commercial lot areas west of Woodmen. The site plan should be designed with careful consideration for the right-in access drives such that traffic can freely enter the site (with adequate stopping sight distance internally) and not queue back onto the main entry street. Any internal lot/parking bay access will need to be carefully evaluated with site design (site development plan stage), especially if close to the entry radius of these right-in access points.


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 Number: 1 Author: Jeff Rice - EPC Engineering Date: 12/19/2023 2:29:17 PM

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 Number: 2 Author: Jeff Rice - EPC Engineering Date: 12/19/2023 2:29:53 PM

This full-movement access on the north side will align with the planned public Urban Local street on the south side – Towhee Court.

 Number: 3 Author: Jeff Rice - EPC Engineering Subject: Callout Date: 12/19/2023 2:30:34 PM

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[clarify or delete](#)

 Author: jchodsdon Subject: Sticky Note Date: 2/9/2024 11:48:05 AM

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LSC Response: This has been deleted.

Explain the proposed alternative and compare to the ECM standards (May provide applicable regional or national standards used as basis):

A minimum of 80' of distance from the end of the entry radius to the first driveway would provide the stopping sight distance for a vehicle entering at 15 mph. Additional distance would be needed to account for the back of any internal vehicle queues which may form. A distance of about 175-200 feet from the end of the entry radius to an intersection with a north/south internal access drive would likely be optimal, but a shorter entry throat or distance to the first internal lot driveway may also meet the above-mentioned objectives, depending on the internal street configuration, land uses and associated trip generation.



Address alternative - 2 access points on Retail Row, which would require one next to or at the roundabout



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Number: 1 Author: Jeff Rice - EPC Engineering Subject: Callout Date: 12/19/2023 2:34:06 PM

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Address alternative - 2 access points on Retail Row, which would require one next to or at the roundabout

 Author: jchodsdon Subject: Sticky Note Date: 2/9/2024 11:48:21 AM  
LSC Response: Added.

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82  
Approximate Scale  
1" = 150'

Woodmen Rd.

TRACT D

79

81

78

80

US-24  
Colors are missing

Note: Proposed Right-In-Only Access

Required Stopping Sight  
Distances:  
Red Line (SB Thru @40 mph) -  
305' (305' required)  
Blue Line (EB RT @15 mph) -  
175' (80 required)  
Green Line (WB LT @20 mph) -  
235' (115' required)  
from ECM Table 2-17

TRACT

77

TRACT J

76

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# Deviation Exhibit 2a-2 Right-In-Only Access Stopping Sight Distance

Commons at Falcon Field (LSC# 234220)


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 Number: 1      Author: Jeff Rice - EPC Engineering      Subject: Arrow      Date: 12/19/2023 2:49:23 PM


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 Number: 2      Author: Jeff Rice - EPC Engineering      Subject: Arrow      Date: 12/19/2023 2:50:59 PM

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 Number: 3      Author: Jeff Rice - EPC Engineering      Subject: Arrow      Date: 12/19/2023 2:49:20 PM

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 Number: 4      Author: Jeff Rice - EPC Engineering      Subject: Callout      Date: 12/19/2023 2:44:44 PM

Colors are missing

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 Author: jchodsdon    Subject: Sticky Note    Date: 2/9/2024 11:48:34 AM  
LSC Response: Corrected.

OWNER, APPLICANT, AND ENGINEER DECLARATION

To the best of my knowledge, the information on this application and all additional or supplemental documentation is true, factual and complete. I am fully aware that any misrepresentation of any information on this application may be grounds for denial. I have familiarized myself with the rules, regulations and procedures with respect to preparing and filing this application. I also understand that an incorrect submittal will be cause to have the project removed from the agenda of the Planning Commission, Board of County Commissioners and/or Board of Adjustment or delay review until corrections are made, and that any approval of this application is based on the representations made in the application and may be revoked on any breach of representation or condition(s) of approval.

Signature of owner (or authorized representative)

Date

Engineer's Seal, Signature  
And Date of Signature



**DEVIATION REQUEST 2b** (Attach diagrams, figures, and other documentation to clarify request)

**DEVIATION No. 2 – Access to a Collector Street (Rev. 6/2/2023; Original 1/4/2020):** A deviation from the standards of or in Sections **2.2.5.D** and **2.3.2 (Table 2-7)** of the Engineering Criteria Manual (ECM) is requested. Requests for access are reviewed by the ECM Administrator as per ECM Section 2.2.4.B.4. The request is for the following access point to proposed Urban Non-Residential Collector Streets within the Falcon Field development: A full-movement access point is proposed to the planned Non-Residential Collector Retail Row Street located approximately 475 west of the proposed roundabout and will provide access to the three commercial lots north of the collector. This access would align with a proposed public Urban Local Street, Nunbird Ct., that will extend south of Retail Row Street.

This deviation is one of four submitted with this application. Deviation Exhibit A (attached) graphically summarizes all four deviation requests, including this one. This requested access point (driveway) is shown on this exhibit. Deviation Exhibits 2b-1 and 3-2 are also attached and are referenced below.

Identify the specific ECM standard which a deviation is requested:

2.3.2 Design Standards by Functional Classification

Table 2-7: Roadway Design Standards for Urban Collectors and Locals

Criteria for an Urban Non-Residential Collector Roadway: No access permitted

Standard 2.3.2 does not permit access on Urban Non-Residential Collector roadways. This standard is reflected in ECM Table 2-7 (Roadway Design Standards for Urban Collectors and Locals).

**2.2.4.B.4 Roadway Functional Classifications and Urban/Rural Designations – Urban Roadways - Non-Residential Collector**

Intersection and parcel access locations and design are reviewed by the ECM Administrator to ensure roadway objectives are being met.

**2.2.5.D Roadway Access Criteria – Collector Access Standards:**

This criterion indicates that *single-family residence access to major collector roadways is not permitted*. However, **commercial** access is requested to an Urban Non-Residential Collector.

State the reason for the requested deviation:

The deviation is requested primarily as no direct lot access will be allowed to US Highway 24, and given the proposed preliminary plan, there would be no egress from these three lots unless the deviation is approved. If the right-in-only access proposed with Deviation No. 2a is approved, this will provide a second entry point and an entry point from Retail Row Street. Non-Residential Collector streets are proposed to provide access to this development and the adjacent parcel to the west and provide for a replacement Rio Lane connection to US Highway 24 to the Woodmen/US Highway 24 intersection per the *US 24 Access Management Plan*. This deviation is needed to provide access to Retail Row Street (a proposed Non-Residential Collectors) for the proposed three commercial lots west of the extension of Woodmen Road. This deviation would allow for the commercial lot access.



Number: 1

Author: Jeff Rice - EPC Engineering

Date: 12/19/2023 2:51:27 PM

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Signature of owner (o

The deviation will not adversely affect safety or operations.

The request would be for access located 475 feet west of the roundabout.

ECM Section 2.4.1 access criteria states the following five access design guidelines:

Adequate Spacing

This access would align with the proposed public street on the south side of Retail Row Street.

The ECM indicates that accesses shall be separated by a distance equal to the entering sight-distance values in Table 2-35.

Exhibit 2b-1 shows a sight-distance analysis for the proposed access. As shown in this exhibit, this access would meet the criteria for stopping sight distance when considering the anticipated design speed of traffic turning from the roundabout.

Proper Alignments

The proposed site-access point should be aligned at 90 degrees to the adjacent roadway centerline. The adjacent roadway grades are essentially level. Vertical alignment criteria in ECM Section 2.4.1.C.2 shall be met for the driveway.

Coordinated Widths with Its Intended Use

The ECM requires a minimum 25-foot width for a commercial access point on a Non-Residential Collector roadway. The site-access drive (30 feet wide minimum) would meet this criterion. The driveway radii will be designed for the design vehicle based on AutoTurn truck-turning templates of the design vehicle (WB-62 multi-unit trucks).

Clearances from Intersection

This access would form the north leg of a proposed public street intersection as it would align with a proposed public street on the south side of Retail Row Street.

Access to commercial or industrial parcels fronting Non-Residential Collector roadways shall be located within the range of 115-480 feet from the point of curvature or point of tangency of the curb line of adjacent intersections. The ECM indicates that the clearance will depend on the sight distance, driveway location with respect to the intersection, intersection control, and posted speed limit. In all cases, a minimum corner clearance of 50 feet shall be provided. The location of the access point is within the range specified in the ECM.

2.3.7.E.1,2 Turn Lane Design

The ECM standard is 155-foot lane plus 160-foot taper, plus storage. The attached Deviation Exhibit 3-2. Please refer to Deviation No. 3 for additional details.

The deviation will not adversely affect maintenance and its associated cost.

The deviation will not affect maintenance or maintenance costs as this access point would be maintained by the commercial center owner/manager.

The deviation will not adversely affect aesthetic appearance.

This access point will not affect the aesthetics as unnecessary access or "curb cuts" are not proposed, i.e., the street would not look "cluttered" with curb cuts.


The deviation meets the design intent and purpose of the ECM standards.

The proposed light-in only site access would meet all five access design guidelines stated in ECM Section 2.4.1.


The deviation meets the control measure requirements of Part I.E.3 and Part I.E.4 of the County's MS4 permit, as applicable.

The requested deviation meets control measure requirements of Part I.E.3 and Part I.E.4 of the MS4 Permit.

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 Number: 1      Author: Jeff Rice - EPC Engineering      Date: 12/19/2023 3:13:07 PM  
right-in only

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 Author: jchodsdon    Subject: Sticky Note    Date: 2/9/2024 11:48:40 AM  
LSC Response: Corrected (text removed).

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Access Entering Sight Distance for Multi-unit Trucks (425' from ECM Table 2-35 based on a posted speed of 25mph which is just over the fastest path speed for the southbound to eastbound right turn in the roundabout (the R5 speed))

For this site-specific situation, SSD for approaching vehicles is reasonable and sufficient for an entering multi-unit truck. It may be difficult to keep the area between this line and the curb free from obstructions.

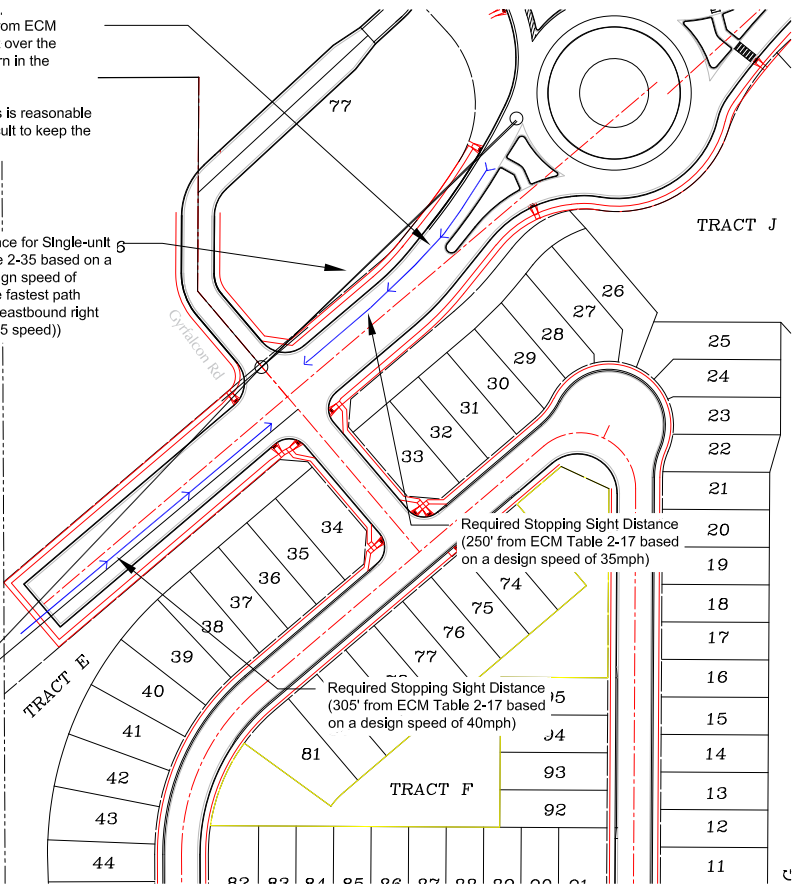
Access Entering Sight Distance for Single-unit Trucks (325' from ECM Table 2-35 based on a posted speed of 25mph (design speed of 30mph) which is just over the fastest path speed for the southbound to eastbound right turn in the roundabout (the R5 speed))

Access Entering Sight Distance for Single-unit Trucks (455' from ECM Table 2-35 based on a posted speed of 35mph)

Access Entering Sight Distance for Multi-unit Trucks (595' from ECM Table 2-35 based on a posted speed of 35mph)

Required Stopping Sight Distance (250' from ECM Table 2-17 based on a design speed of 35mph)

Required Stopping Sight Distance (305' from ECM Table 2-17 based on a design speed of 40mph)



1 line is missing



# Sight Distance Analysis Retail Row St./Dunlin Dr

Deviation Exhibit 2b-1  
Commons at Falcon Field (LSC# 234220)


2 Nunbird

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Number: 1 Author: Jeff Rice - EPC Engineering Subject: Callout Date: 12/19/2023 3:19:52 PM

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 Author: jchodsdon Subject: Sticky Note Date: 2/9/2024 11:48:47 AM  
LSC Response: Added. Figure Revised.

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Number: 2 Author: Jeff Rice - EPC Engineering Subject: Callout Date: 12/19/2023 3:15:37 PM

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[/Nunbird](#)

 Author: jchodsdon Subject: Sticky Note Date: 2/9/2024 11:48:56 AM  
LSC Response: Corrected.

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OWNER, APPLICANT, AND ENGINEER DECLARATION

To the best of my knowledge, the information on this application and all additional or supplemental documentation is true, factual and complete. I am fully aware that any misrepresentation of any information on this application may be grounds for denial. I have familiarized myself with the rules, regulations and procedures with respect to preparing and filing this application. I also understand that an incorrect submittal will be cause to have the project removed from the agenda of the Planning Commission, Board of County Commissioners and/or Board of Adjustment or delay review until corrections are made, and that any approval of this application is based on the representations made in the application and may be revoked on any breach of representation or condition(s) of approval.

Signature of owner (or authorized representative)

Date

Engineer's Seal, Signature  
And Date of Signature



DEVIATION REQUEST (Attach diagrams, figures, and other documentation to clarify request)

DEVIATION No. 3 – Turn Bay Lengths (Rev. 11/27/2023; 6/2/2023; Original 1/4/2020): A deviation from the standards of or in Section 2.3.7.D.1 of the Engineering Criteria Manual (ECM) is requested. The request is for abbreviated left-turn lane lengths, which allow for adequate vehicle storage, but do not include full deceleration distance plus storage.

This deviation is one of four submitted with this application. Deviation Exhibit A (attached) graphically summarizes all four deviation requests, including this one. Please refer to the attached Deviation Exhibits 3-1, 3-2, and 3-3 which graphically show this Deviation request No. 3.

Identify the specific ECM standard which a deviation is requested:

2.3.7.D.1 Turn Lane Design


State the reason for the requested deviation:

The deviation is needed as the proposed intersection and access spacing limits the ability to provide full deceleration length plus vehicle storage distance plus transition taper for the left-turn lanes approaching US Highway 24/Woodmen and the two full-movement site-access points east and west of the roundabout. The site-specific conditions would not necessitate the full deceleration length plus vehicle storage distance plus transition taper for these left-turn lanes.


The ECM requires left-turn lanes on the northbound approach to Woodmen Road and approaching the proposed commercial site-access points on Retail Row Street extending east and west from the roundabout for the proposed access. The deviation request is to allow an abbreviated bay taper length at the access west of the roundabout. At the access east of the roundabout, the request is also to allow an abbreviated bay taper length. Additionally, the request is to 1) allow the ECM standard 155' deceleration distance within the combination of the proposed 120' lane and the second half of the 75' reverse curve bay taper and 2) to allow use the deceleration distance for vehicle storage, when a queue forms, rather than having storage in addition to the deceleration distance. The request is based on the results of the TIS queuing analysis and the proposed site-specific conditions with the roundabout (eliminating the need for back-to-back left-turn lanes between the access points and the roundabout). Please refer to the attached Deviation Exhibits 3-1, 3-2, and 3-3. Note: Queues shown in Exhibit 3-3 are from the June 2023 TIS and will be updated with the upcoming revised TIS. The request requires a deviation as the ECM prescribes deceleration length plus vehicle storage distance plus transition taper for left-turn lanes on Collector roadways where turn lanes are required per section 2.3.7.D.1.

provide [3]


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 Number: 1 Author: Jeff Rice - EPC Engineering Date: 12/19/2023 2:51:54 PM  
Signature of owner (


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 Number: 2 Author: Jeff Rice - EPC Engineering Date: 12/19/2023 3:58:58 PM  
will be updated

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 Number: 3 Author: Jeff Rice - EPC Engineering Subject: Callout Date: 12/19/2023 3:59:08 PM  
[provide](#)

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 Author: jchodsdon Subject: Sticky Note Date: 2/9/2024 11:49:07 AM  
LSC Response: Provided as requested. The queuing analysis has been updated and the results reflected in the revised deviation.

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will any cross-section or posted speed deviations be requested for Retail Row St.?

Explain the proposed alternative and compare to the ECM standards (May provide applicable regional or national standards used as basis):

The deviation request is to allow an abbreviated bay taper length at the access west of the roundabout. At the access east of the roundabout, the request is also to allow an abbreviated bay taper length. Additionally, the request is to 1) allow the ECM standard 155' deceleration distance within the combination of the proposed 120' lane and the second half of the 75' reverse curve bay taper and 2) to allow use the deceleration distance for vehicle storage, when a queue forms, rather than having storage in addition to the deceleration distance.

The ECM standard for a 40-mph design speed limit is 155 feet of full-width lane plus a 160-foot taper plus storage distance. The turn-lane geometry for the left-turn lanes is shown in the attached Deviation Exhibit 3-2. The projected queue lengths from the TIS are shown in Deviation Exhibit 3-3. Please refer to the TIS report for complete details. In this situation, the requested elements of this deviation would be reasonable. The standard ECM taper is 160 feet. However, the ECM allows for a taper ratio of 8:1 for tangent bay tapers in constrained locations. Based on a lane width of 12 feet, the 8:1 ratio would result in a prescribed 96-foot tangent bay taper. The proposed 75-foot-long taper would be 21 feet short of the ECM standard. The tapers would be designed with the roundabout, its splitter islands, and exit lanes. Given the constrained location of the access east of the roundabout, the requested overlapping use of the turn bay for deceleration and storage would also be reasonable and not unexpected by motorists using this roadway. The proposed right-in access would provide an additional entry point for those lots, thus providing an alternative to motorists in the unlikely chance the subject eastbound left-turn bay is filled with queued vehicles.

The CDOT comment memo dated May 5, 2023 indicated the following with respect to the auxiliary turn lanes on the northbound approach to the US Highway 24/Woodmen Road:

*"The site will require an access permit for the construction of the 4th leg of Woodman and the closure of Rio Lane. The applicant will be responsible for constructing improvements as described in the TIS, namely:*

- *EB to SB right turn deceleration lane.*
- *NB to EB right turn acceleration lane.*
- *Signalization of 4th leg of the intersection.*
- *Laneage as described in the TIS for the NB Woodmen movement."*

This request also includes an abbreviated southbound right-turn lane for the proposed right-in-only access (Deviation No. 2a). Please refer to that separate deviation request for details regarding the access, but to summarize, the proposed right-turn lane would be about 130 feet plus a 55-foot bay taper.

The proposed 365 foot spacing of the proposed right-in-only access south of US Highway 24 would be able to accommodate a right-turn bay to separate right-turning traffic from inbound through traffic (traffic that would enter the roundabout) on this section of Woodmen Road.

The proposed right-turn lane would have abbreviated lane and taper lengths. The ECM standard is 155-foot lane plus 160-foot taper, plus storage. Deviation Exhibit 3-2 shows the proposed lengths. The lane would be about 130 feet plus a 55-foot bay taper. The abbreviated length will be mitigated by the proposed 50-foot corner radius.


The larger-than-standard, 50-foot corner radius, would allow for right turns from Woodmen Road (extended) onto the internal access drive at a higher turning speed, which would result in a reduced speed differential between southbound (inbound) through traffic and inbound right-turning traffic. This will mitigate the shorter length of the taper and right-turn bay and provide for a much easier right-turn movement. Right-turn-lane stacking distance is not needed, as the turn off Woodmen Road (extended) will be a "free" movement (except for the infrequent need to yield to crossing pedestrians). The pedestrian crossing of this access should be clearly visible to upstream (entering) traffic on the segment of Woodmen Road entering the site. However, low pedestrian volumes are anticipated.

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Number: 1 Author: Jeff Rice - EPC Engineering Subject: Callout Date: 12/19/2023 4:03:06 PM

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will any cross-section or posted speed deviations be requested for Retail Row St.?

 Author: jchodsdon Subject: Sticky Note Date: 2/9/2024 11:49:22 AM  
LSC Response: Yes. A new Deviation No. 5 has been added to the set of deviations.

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The deviation will not adversely affect safety or operations.

The 2040 queueing analysis contained in the TIS indicates that the proposed left-turn lane lengths for the access points will be able to accommodate the projected queues. The turn-lane geometry for the left-turn lanes would be about 120 feet with about a 75-foot reverse curve taper for the access east of the roundabout and about **190 feet with about a 75-foot** reverse curve taper for the access west of the roundabout. These are as shown in the attached Deviation Exhibit 3-2. The projected 95<sup>th</sup> percentile queue length from the TIS is **25 feet** for both. The proposed turn-lane dimensions as explained above as elements of this deviation would work acceptably and would not adversely affect safety or operations. The tapers would be designed with the roundabout, its splitter islands, and exit lanes. However, the preliminary concept indicates bay-taper lengths of about 75 feet. These lengths would be appropriate for the situation and will not adversely affect safety or operations.

The 2040 queueing analysis contained in the TIS indicates that the proposed left-turn lane lengths for the northbound approach to the Woodmen Road/US Highway 24 intersection will be able to accommodate the projected queues.

 verify 3

The deviation will not adversely affect maintenance and its associated cost.

The deviation will not affect maintenance or maintenance costs as the placement and alignment will be typical. These turn bays are accommodated within the standard Non-Residential Collector cross section.

The deviation will not adversely affect aesthetic appearance.

The abbreviated turn bays will not affect the aesthetics as they will have typical geometrics and alignment.


The deviation meets the design intent and purpose of the ECM standards.

The proposed lane design will accommodate the projected queues between Woodmen and the roundabout intersection, which meets the intent and purpose of the ECM intersection spacing standard back from an arterial (in roadway).

The deviation meets the control measure requirements of Part I.E.3 and Part I.E.4 of the County's MS4 permit, as applicable.


The requested deviation meets control measure requirements of Part I.E.3 and Part I.E.4 of the MS4 Permit.


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 Number: 1 Author: Jeff Rice - EPC Engineering Date: 12/19/2023 4:08:41 PM  
190 feet with about a 75


 Author: jchodsdon Subject: Sticky Note Date: 2/9/2024 11:49:30 AM  
LSC Response: Revised.

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 Number: 2 Author: Jeff Rice - EPC Engineering Date: 12/19/2023 4:08:56 PM  
25 f

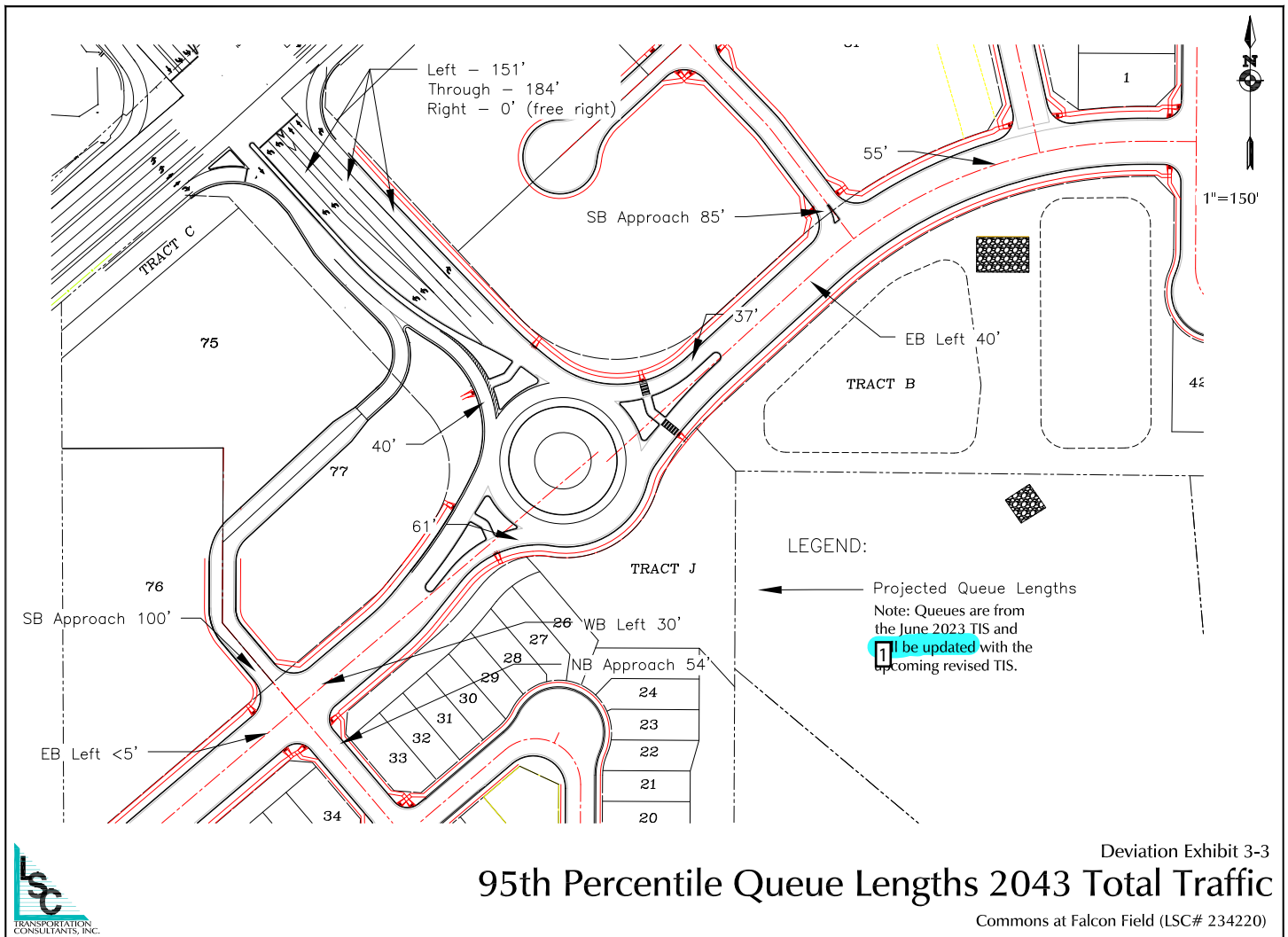
 Author: jchodsdon Subject: Sticky Note Date: 2/9/2024 11:49:36 AM  
LSC Response: Revised.

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 Number: 3 Author: Jeff Rice - EPC Engineering Subject: Callout Date: 12/19/2023 4:09:43 PM

[verify](#)


 Author: jchodsdon Subject: Sticky Note Date: 2/9/2024 11:50:24 AM  
LSC Response: Verified. Confirming statement added.



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 Number: 1      Author: Jeff Rice - EPC Engineering      Date: 12/19/2023 4:07:35 PM

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 Author: jchodsdon    Subject: Sticky Note    Date: 2/9/2024 11:50:33 AM  
LSC Response: This note has been removed.

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