

# JUDGE ORR PLANT

## Traffic Analysis

Add the following signature block after the cover sheet:

### Traffic Engineer's Statement

The attached traffic report and supporting information were prepared under my responsible charge and they comport with the standard of care. So far as is consistent with the standard of care, said report was prepared in general conformance with the criteria established by the County for traffic reports.

\_\_\_\_\_  
[Name, P.E. # \_\_\_\_\_ ]Date

### Developer's Statement

I, the Developer, have read and will comply with all commitments made on my behalf within this report.

\_\_\_\_\_  
[Name, Title]Date

[Business Name]

[Address]

Add "PCD File No. VA-19-002" in the cover sheet.

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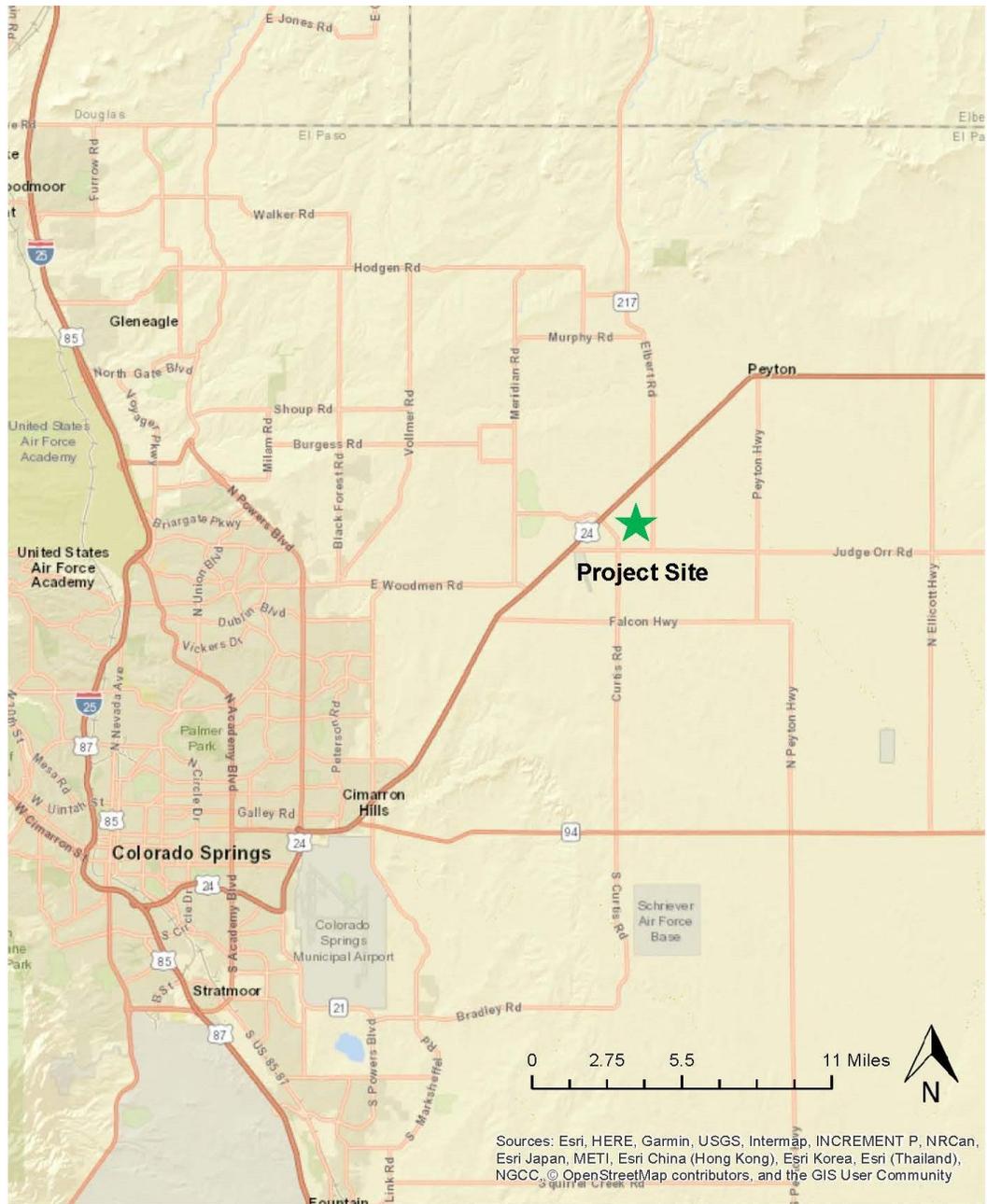
## 1. INTRODUCTION

The proposed Trans Colorado Concrete site is to be located East of SH 24, on the Northeast Corner of Judge Orr Road and Curtis Road in El Paso County, Colorado. **Figure 1-1** shows the general location of the project site.

This traffic report is intended to document findings of a traffic analysis performed for the proposed development and is organized into six chapters, as described below:

1. **Introduction** – Describes the purpose and organization of the report.
2. **Project Description** – Describes the vision and plans for the redevelopment.
3. **Existing Conditions** – Describes the existing transportation system including the current performance of the surrounding roadway network.
4. **Project Traffic** – Describes the number of trips the proposed land use is expected to generate and identifies the likely routes the project traffic will use to access the site.
5. **Auxiliary Lane Evaluation** – Evaluates the need for acceleration and deceleration lanes at the intersection of proposed site driveway and Judge Orr Road.
6. **Conclusions** – Describes the conclusions of the analysis.

Figure 1-1:  
Project Site Map



## 2. PROJECT DESCRIPTION

This traffic analysis consists of an auxiliary turn lane assessment to examine the effects of project generated traffic on the roadway system for the proposed development of the site located at Northeast Corner of Judge Orr Road and Curtis Road in El Paso County, Colorado. The analysis includes impacts of the projected build-out year.

Update Project Description to include the following:

1. Description of the proposed project and include the type of land use/size of the proposed project.
2. Is this expected to be a phased project?
3. Discuss applicability of accommodating pedestrian and bicycle travel. Are there sidewalks bike path system that needs to be continued through the project site?

### 3. EXISTING CONDITIONS

#### ROADWAYS

Judge Orr Road provides direct access to the site and regional connectivity. The posted speed limit on Judge Orr Road is 45 miles per hour (mph) west of Stapleton Drive and 55 miles per hour (mph) east of Stapleton Drive in the vicinity of the site. According to the 2040 Major Transportation Corridor Plan of El Paso County, the functional classification for Judge Orr Road is Minor Arterial. As per Section 2.3.7.D of El Paso County Engineering Criteria Manual 2016, the warrant for left turn lanes at Judge Orr Rd will be based on State Highway Access Code Designation R-B for rural roads. The functional classification of Stapleton Drive is Principal Arterial and the warrant for left turn lanes will be based on State Highway Access Code Designation R-A for rural highways.

#### INTERSECTIONS

In this study, two access plans have been analyzed. In the first plan, the Potential Access is via Judge Orr Rd. In the second plan, the Proposed Access is via Stapleton drive. Therefore, the analysis evaluates the need for auxiliary turn lanes at the intersection of Judge Orr Rd & Potential Access and the intersection of Stapleton Drive & Proposed Access.

Provide a narrative for Stapleton Drive similar to the one provided for Judge Orr Road.

Extend the study area to US24/Stapleton intersection. Are the existing turn lanes at the US24/Stapleton intersection sufficient with the addition of the project?

## 4. PROJECT TRAFFIC

### TRIP GENERATION

Since the proposed development does not conform to any land uses published in the Institute of Transportation Engineers' (ITE) trip generation manual, Pete Lien and Sons provided the estimates of traffic entering and exiting the site. The trip estimates are summarized in **Appendix A**.

Based on trip estimates, the site will generate approximately 55 ready mix truck trips and 35 delivery truck trips on an average day to ship out concrete loads and 20 passenger car trips due to employees arriving and departing. As per the data provided by Pete Lien and Sons, the employees start arriving at 5:00 am on a typical day over a window of 2 hours from 5:00 am to 7:00 am. However, the standard AM peak period is from 7:00 am to 9:00 am. So the Morning analysis period in the table below does not necessarily represent the AM peak period. However, this was analyzed to exhibit the worst case scenario.

**Table 4-1** summarizes the trips by vehicle type on an average day.

include in the report.

**Table 4-1:  
Trip Generation Estimates (Average Day)**

Analysis Period	Passenger Car Trips		Ready Mix Truck Trips		Delivery Truck Trips		Total Passenger Car Trips	
	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	(1 Ready Mix Truck = 2 Passenger Cars, 1 Delivery Truck = 3 Passenger Cars)*	
							Inbound	Outbound
Daily	20	20	55	55	35	35	235	235
Morning	20	0	0	20	0	0	20	40
PM Peak	0	20	20	0	0	0	40	20

\* As recommended in Section 2.3 (4) (e) of the Colorado State Highway Access Code 2002

Per ECM Appendix B Section B.3.3. when data is not available for the proposed land use, the applicant must conduct a local trip generation study of similar use following procedures prescribed in the ITE and provide sufficient justification for the proposed generation rate.

The narrative has not given sufficient justification.

Additionally, the site plan submitted shows 62 office parking stalls and 35 mixer truck parking which is significantly larger than the 20 employees and 15 mixer trucks identified in the report and operations plan.

**Table 4-2** summarizes the trips by vehicle type on a peak day.

**Table 4-2: Trip Generation Estimates (Peak Day)**

Analysis Period	Passenger Car Trips		Ready Mix Truck Trips		Delivery Truck Trips		Total Passenger Car Trips	
	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	(1 Ready Mix Truck = 2 Passenger Cars, 1 Delivery Truck = 3 Passenger Cars)*	
							Inbound	Outbound
Daily	30	30	118	118	74	74	488	488
Morning	30	0	0	30	0	0	30	60
PM Peak	0	30	30	0	0	0	60	30

\* As recommended in Section 2.3 (4) (e) of the Colorado State Highway Access Code 2002

is this supposed to be east?

**TRIP DISTRIBUTION**

A review of the site’s geographical location in relation to it’s surrounding area indicates that a majority of the trips will originate from or be destined to the west. Based on this understanding, an 80% from SH 24 (Judge Orr Rd west of Curtis and Stapleton Drive) and 20% from other roads (Judge Orr Rd west of Curtis Rd & Curtis Rd) trip distribution was assumed for this study. Since the traffic in the Morning period does not represent the AM peak period, the evaluation of auxiliary lanes was carried out based on the PM peak period traffic.

**Figure 4-1** shows the distribution of PM trips based on the trip generation and trip distribution assumptions for an average day according to Concept 1.

Analysis needs to provide existing horizon to provide a base line.

FYI: Based on the MTCP Roadway Improvement Projects, Staple Drive is anticipated to be an Urban 4In Principal Arterial which includes a raised median. There is a potential that the access may restricted in the long term to a RI/RO.

Per ECM Table 2-6 and ECM Section 2.2.4.B.2 no direct parcel access is allowed. Therefore submit a deviation request.

In the report list all deviation request for the Criteria that the applicant is applying for and include supporting information, together with a signed and stamped deviation request form.

FYI: See Resolution No. 14-472 (attached)

The figures provided below appears to only be Site Generated Trips. Figures provided should include:

1. Primary trip distribution percentages
2. Existing trips
3. Site Generated Trips
4. Existing + Site Generated Trips

Provide LOS information

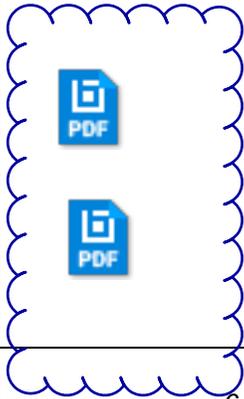


Figure 4-1: Average Day PM Trips – Concept 1



Figure 4-2 shows the distribution of PM trips based on the trip generation and trip distribution assumptions for a peak day according to Concept 1.

Figure 4-2: Peak Day PM Trips – Concept 1



Figure 4-3 shows the distribution of PM trips based on the trip generation and trip distribution assumptions for an average day according to Concept 2.

Figure 4-3: Average Day PM Trips – Concept 2



Figure 4-4 shows the distribution of PM trips based on the trip generation and trip distribution assumptions for a peak day according to Concept 2.

Figure 4-4: Peak Day PM Trips – Concept 2



## 5. AUXILIARY LANE EVALUATION

The State of Colorado's State Highway Access Code, 2002 provides guidelines to evaluate the need for auxiliary lanes based on the access control classification for the roadway along which an access is being requested.

### CONCEPT 1: ACCESS TO JUDGE ORR RD

The CDOT access control classification for Judge Orr Rd is R-B (Rural Highway) in the vicinity of the site. According to descriptions and conditions provided in Section 3.9(8) of the Access Code:

- A left turn deceleration lane with taper and additional storage length is required for any access with a projected peak hour left ingress turning volume greater than 10 vph.
- A right turn deceleration lane with taper is required for any access with a projected peak hour right ingress turning volume greater than 25 vph.
- A right turn acceleration lane with taper is required for any access with a projected peak hour right turning volume greater than 50 vph when the posted speed on the highway is 45 mph or greater and the highway has only one lane for through traffic in the direction of the right turn.
- A left turn acceleration lane with taper may be required if it would be a benefit to the safety and operation of the roadway.

The analysis shows that Trans Colorado Concrete site will generate volumes that warrant a left turn deceleration lane but not a right turn deceleration lane or a left or right acceleration lane.

The posted speed limit on Judge Orr Rd is 55 mph east of Stapleton Drive. According to the recommendations provided in Tables 4-6 and 4-8 of the Access Code, the left turn deceleration lane should provide a deceleration length of 600' plus a storage length of 40'. However, the proposed site will be served by trucks and hence the storage lane should be designed to accommodate a truck with a wheel base of 65' as recommended in the American Association of State Highway and Transportation Officials' (AASHTO) "A Policy on Geometric Design of Highways and Streets". It is recommended that the deceleration lane be designed with a storage length of 75' to accommodate the trucks likely to access the site using this driveway.

### CONCEPT 2: ACCESS TO STAPLETON DRIVE

The CDOT access control classification for Stapleton Drive is R-A (Regional Highway) in the vicinity of the site. According to descriptions and conditions provided in Section 3.8(5) of the Access Code:

- A left turn deceleration lane with taper and additional storage length is required for any access with a projected peak hour left ingress turning volume greater than 10 vph.
- A right turn deceleration lane with taper is required for any access with a projected peak hour right ingress turning volume greater than 25 vph.

- A right turn acceleration lane with taper is required for any access with a projected peak hour right turning volume greater than 50 vph when the posted speed on the highway is 40 mph or greater and the highway has only one lane for through traffic in the direction of the right turn.
- A left turn acceleration lane with taper may be required if it would be a benefit to the safety and operation of the roadway.

The analysis shows that Trans Colorado Concrete site will generate volumes that warrant a left turn deceleration lane (for average day and peak day traffic) and also a right turn deceleration lane (for peak day traffic).

The posted speed limit on Stapleton Drive is 45 mph. According to the recommendations provided in Tables 4-6 and 4-8 of the Access Code, the left turn deceleration lane should provide a deceleration length of 435' plus a storage length of 40'. The right turn deceleration lane should provide a deceleration length of 435' plus a storage length of 50'. However, the proposed site will be served by trucks and hence the storage lane should be designed to accommodate a truck with a wheel base of 65' as recommended in the American Association of State Highway and Transportation Officials' (AASHTO) "A Policy on Geometric Design of Highways and Streets". It is recommended that the deceleration lanes be designed with a storage length of 75' to accommodate the trucks likely to access the site using this driveway.

Provide the sight distance analysis in the report. Identify the required sight distance and state whether it can be met. If it cannot be met, state the required modifications so that it can be met. Provide an exhibit.

## 6. CONCLUSIONS

For both concepts, the peak hour trips for proposed Trans Colorado Concrete site will not exceed the thresholds established in the Access Code to warrant a right turn deceleration lane. However, a left turn deceleration lane is warranted based on the guidelines provided in the Access Code. According to the recommendations provided in Tables 4-6 and 4-8 of the Access Code, the recommended left/right turn deceleration lengths and storage lengths are as follows:

For Concept 1 – Access to Judge Orr Rd, the left turn deceleration lane should provide a deceleration length of 600' plus a storage length of 75'.

For Concept 2 – Access to Stapleton Drive, the left turn deceleration lane should provide a deceleration length of 435' plus a storage length of 75'. The right turn deceleration lane should also provide a deceleration length of 435' plus a storage length of 75'.

Access to the site via Stapleton Drive would have less impact on the intersection of Judge Orr Road and Stapleton Drive due to approximately 80% of the project traffic is projected to travel to/from SH 24. In addition, if the property develops west of the ready mix concrete plant, it is likely that a westbound right-turn deceleration lane will be required on Judge Orr Road and will impact the Wetland Avoidance Area.

Since the proposed access will be used by trucks to access the Trans Colorado site, it is also recommended that adequate sight distance be verified.

Provide an exhibit for the recommended offsite improvement

Submit a deviation request as a separate submittal item in the online application (edarp). Deviation Request Form template



Expand the narrative for the recommended improvement. Based on the aerial, it appears a redirect taper would be required to accommodate the SBLT and additional ROW to maintain sufficient clear zone.

Provide an exhibit showing the recommended roadway improvements (include dimension labels). Potential concern: Additional ROW may be needed from the property to the north.

On the narrative identify who will be responsible for constructing these off-site public improvements and state whether or not any improvements affected by the project are reimbursable under the current MTCP.

1. State whether the MTCP or other approved corridor study such as the Stapleton Access Management Plan calls for the construction of improvements in the immediate area.
2. For each road identify the existing ROW width, the standard ROW width for the given classification and the additional ROW needs from the property. The additional ROW will need to be identified in the site plan as a preservation line.
3. Add a reference section listing reports and studies within the project vicinity and state whether or not the current study is consistent with these reports.

## **APPENDIX A: TRIP GENERATION ESTIMATES**

## CONCEPT 1: ACCESS TO JUDGE ORR RD

### MORNING TRAFFIC (AVERAGE DAY)

Mode / Direction from Curtis and Judge Orr Intersection	North Leg		South Leg		East Leg		West Leg	
	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
Car Trips	8		2		2		8	
Truck Trips		10		1		1		8
Total Passenger Car Trips (1 Ready Mix Truck = 2 Passenger Cars)	8	20	2	2	2	2	8	16
Mode / Direction from Access Road and Judge Orr Intersection					East Leg		West Leg	
Total Passenger Car Trips (1 Ready Mix Truck = 2 Passenger Cars)					2	2	18	38

### MORNING TRAFFIC (PEAK DAY)

Mode / Direction from Curtis and Judge Orr Intersection	North Leg		South Leg		East Leg		West Leg	
	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
Car Trips	12		3		3		12	
Truck Trips		14		2		2		12
Total Passenger Car Trips (1 Ready Mix Truck = 2 Passenger Cars)	12	28	3	4	3	4	12	24
Mode / Direction from Access Road and Judge Orr Intersection					East Leg		West Leg	
Total Passenger Car Trips (1 Ready Mix Truck = 2 Passenger Cars)					3	4	27	56

### PM PEAK HOUR TRAFFIC (AVERAGE DAY)

Mode / Direction from Curtis and Judge Orr Intersection	North Leg		South Leg		East Leg		West Leg	
	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
Car Trips		8		2		2		8
Truck Trips	10		1		1		8	
Total Passenger Car Trips (1 Ready Mix Truck = 2 Passenger Cars)	20	8	2	2	2	2	16	8
Mode / Direction from Access Road and Judge Orr Intersection					East Leg		West Leg	
Total Passenger Car Trips (1 Ready Mix Truck = 2 Passenger Cars)					2	2	38	18

### PM PEAK HOUR TRAFFIC (PEAK DAY)

Mode / Direction from Curtis and Judge Orr Intersection	North Leg		South Leg		East Leg		West Leg	
	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
Car Trips		12		3		3		12
Truck Trips	14		2		2		12	
Total Passenger Car Trips (1 Ready Mix Truck = 2 Passenger Cars)	28	12	4	3	4	3	24	12
Mode / Direction from Access Road and Judge Orr Intersection					East Leg		West Leg	
Total Passenger Car Trips (1 Ready Mix Truck = 2 Passenger Cars)					4	3	56	27

## CONCEPT 2: ACCESS TO STAPLETON DRIVE

### MORNING TRAFFIC (AVERAGE DAY)

Mode / Direction from Curtis and Judge Orr Intersection	North Leg		South Leg		East Leg		West Leg	
	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
Car Trips	8		2		2		8	
Truck Trips		10		1		1		8
Total Passenger Car Trips (1 Ready Mix Truck = 2 Passenger Cars)	8	20	2	2	2	2	8	16
Mode / Direction from Access Road and Staple Drive Intersection	North Leg		South Leg					
Total Passenger Car Trips (1 Ready Mix Truck = 2 Passenger Cars)	8	20	12	20				

### MORNING TRAFFIC (PEAK DAY)

Mode / Direction from Curtis and Judge Orr Intersection	North Leg		South Leg		East Leg		West Leg	
	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
Car Trips	12		3		3		12	
Truck Trips		14		2		2		12
Total Passenger Car Trips (1 Ready Mix Truck = 2 Passenger Cars)	12	28	3	4	3	4	12	24
Mode / Direction from Access Road and Staple Drive Intersection	North Leg		South Leg					
Total Passenger Car Trips (1 Ready Mix Truck = 2 Passenger Cars)	12	28	18	32				

### PM PEAK HOUR TRAFFIC (AVERAGE DAY)

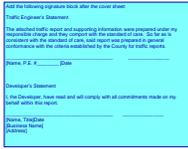
Mode / Direction from Curtis and Judge Orr Intersection	North Leg		South Leg		East Leg		West Leg	
	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
Car Trips		8		2		2		8
Truck Trips	10		1		1		8	
Total Passenger Car Trips (1 Ready Mix Truck = 2 Passenger Cars)	20	8	2	2	2	2	16	8
Mode / Direction from Access Road and Staple Drive Intersection	North Leg		South Leg					
Total Passenger Car Trips (1 Ready Mix Truck = 2 Passenger Cars)	20	8	20	12				

### PM PEAK HOUR TRAFFIC (PEAK DAY)

Mode / Direction from Curtis and Judge Orr Intersection	North Leg		South Leg		East Leg		West Leg	
	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
Car Trips		12		3		3		12
Truck Trips	14		2		2		12	
Total Passenger Car Trips (1 Ready Mix Truck = 2 Passenger Cars)	28	12	4	3	4	3	24	12
Mode / Direction from Access Road and Staple Drive Intersection	North Leg		South Leg					
Total Passenger Car Trips (1 Ready Mix Truck = 2 Passenger Cars)	28	12	32	18				

# Markup Summary

dsdlaforce (16)



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Add the following signature block after the cover sheet:

Traffic Engineer's Statement

The attached traffic report and supporting information were prepared under my responsible charge and they comport with the standard of care. So far as is consistent with the standard of care, said report was prepared in general conformance with the criteria established by the County for traffic reports.

\_\_\_\_\_  
[Name, P.E. # \_\_\_\_\_ ]Date

Developer's Statement

I, the Developer, have read and will comply with all commitments made on my behalf within this report.

\_\_\_\_\_  
[Name, Title]Date  
[Business Name]  
[Address]

October 30, 2018

Add "PCD File No. VA-19-002" in the cover sheet.

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Add "PCD File No. VA-19-002" in the cover sheet.



002 is this supposed to be east?

area indicates that a majority of the trips j, an 80% from SH 24 (Judge Orr Rd west Rd west of Curtis Rd & Curtis Rd) trip period does not represent the AM peak neak period traffic.

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is this supposed to be east?



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Submit a deviation request as a separate submittal item in the online application (edarp). Deviation Request Form template

FEHR \* PEERS

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Submit a deviation request as a separate submittal item in the online application (edarp). Deviation Request Form template

an average day to ship out concrete per the data provided by Pete Lien ar of 2 hours from 5:00 am to 7:00 am Morning analysis period in the table analyzed to exhibit the worst case sc

Table 4-1 summarizes the trips by vi  
 include in the report.

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include in the report.

2. PROJECT DESCRIPTION

This traffic analysis consists of an analysis to assess the effects of project generation traffic on the roadway system for the proposed development of the site located at Stapleton Drive in West and Early Road in El Paso County, Colorado. The analysis includes impacts of the proposed build-out plan.

Update Project Description to include the following:

1. Description of the proposed project and include the type of land use/size of the proposed project.
2. Is this expected to be a phased project?
3. Discuss applicability of accommodating pedestrian and bicycle travel. Are there sidewalks bike path system that needs to be continued through the project site?

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Update Project Description to include the following:

1. Description of the proposed project and include the type of land use/size of the proposed project.
2. Is this expected to be a phased project?
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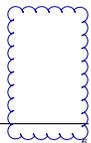
Judge Dr Road provides direct access to the site and regional connectivity. The project would build on Judge Dr Road to the north and south of the site. The project would build on Judge Dr Road to the north and south of the site. The project would build on Judge Dr Road to the north and south of the site.

Provide a narrative for Stapleton Drive similar to the one provided for Judge Orr Road.

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Provide a narrative for Stapleton Drive similar to the one provided for Judge Orr Road.

Extend the study area to US24/Stapleton intersection. Are the existing turn lanes at the US24/Stapleton intersection sufficient with the addition of the project?



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Application was submitted for this study. Once the staff in the following permit does not represent the 2019 permit the information of existing conditions shall not be used in the final permit study.

Figure 4-1 shows the distribution of PM TSP based on the top generation and the distribution characteristics for the roadway improvement project.

Permittee needs to provide existing horizon to provide a base line.

21) Based on the MTCP Roadway Improvement Project, Staple Drive is anticipated to be an Urban 4In Principal Arterial which includes a raised median. There is a potential that the access may be restricted in the long term to a RI/RO.

The ECM Table 2-6 and ECM Section 2.2.4.B.2 no direct parcel access is allowed. Therefore submit a deviation request.

In the report list all deviation request for the Criteria that the applicant is applying for and include supporting information, together with a signed and stamped deviation request form.

21) See Resolution No. 14-472 (attached)

The figures provided below appears to only be Site Generated Trips. Figures provided should include:

1. Primary trip distribution percentages
2. Existing trips
3. Site Generated Trips
4. Existing + Site Generated Trips

Provide LOS information

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Analysis needs to provide existing horizon to provide a base line.

FYI: Based on the MTCP Roadway Improvement Projects, Staple Drive is anticipated to be an Urban 4In Principal Arterial which includes a raised median. There is a potential that the access may be restricted in the long term to a RI/RO.

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3. Site Generated Trips
4. Existing + Site Generated Trips

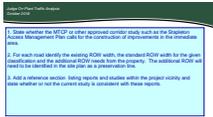
Provide LOS information

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Expand the narrative for the recommended improvement. Based on the aerial, it appears a redirect taper would be required to accommodate the SBLT and additional ROW to maintain sufficient clear zone.

Provide an exhibit showing the recommended roadway improvements (include dimension labels). Potential concern: Additional ROW may be needed from the property to the north.

On the narrative identify who will be responsible for constructing these off-site public improvements and state whether or not any improvements affected by the project are reimbursable under the current MTCP.



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1. State whether the MTCP or other approved corridor study such as the Stapleton Access Management Plan calls for the construction of improvements in the immediate area.

2. For each road identify the existing ROW width, the standard ROW width for the given classification and the additional ROW needs from the property. The additional ROW will need to be identified in the site plan as a preservation line.

3. Add a reference section listing reports and studies within the project vicinity and state whether or not the current study is consistent with these reports.

APPENDIX A  
TRIP GENERATION ESTIMATES

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Per ECM Appendix B Section B.3.3. when data is not available for the proposed land use, the applicant must conduct a local trip generation study of similar use following procedures prescribed in the ITE and provide sufficient justification for the proposed generation rate.

The narrative has not given sufficient justification.

Additionally, the site plan submitted shows 62 office parking stalls and 35 mixer truck parking which is significantly larger than the 20 employees and 15 mixer trucks identified in the report and operations plan.



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Provide the sight distance analysis in the report.

Identify the required sight distance and state whether it can be met. If it cannot be met, state the required modifications so that it can be met.

Provide an exhibit.



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