LSC TRANSPORTATION CONSULTANTS, INC.
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ORTATION
TANTS, INC.

Gateway Trucking
Transportation Memorandum
(LSC #S214360)
May 20, 2021

1 Update to Transportation Memorandum and Road Conditions Report.

ffic Engineer's Statement

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

COLORADO LICENSED
JEFFREY C. HODSDON
31684
5-20-21
PROFESSIONAL ENGINEER

veloper's Statement

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

_____ _____
Date

2 Add "PCD File No. PPR-21-033"

LSC Responses to EPC PCD TIS Redline Comments

Page: 1

Number: 1 Author: dsdlaforce Subject: Callout Date: 8/31/2021 14:56:15 -06'00'

Update to Transportation Memorandum and Road Conditions Report.

Author: jchodsdon Subject: Sticky Note Date: 2/2/2022 18:06:01

LSC Response: Modified as requested.

Number: 2 Author: dsdlaforce Subject: Text Box Date: 8/31/2021 10:20:41 -06'00'

Add "PCD File No. PPR-21-033"

Author: jchodsdon Subject: Sticky Note Date: 2/2/2022 18:05:39

LSC Response: This has been added to the updated report.

Gateway Trucking

Transportation Memorandum

Update to Transportation Memorandum and Road Conditions Report. 1

Prepared for:
Cris Wilson
Gateway Trucking
235 Franceville Coal Mine Road
Colorado Springs, CO 80929

MAY 20, 2021

LSC Transportation Consultants
Prepared by: Jeffrey C. Hodsdon, P.E.

LSC #S214360

Page: 2

Number: 1 Author: dsdlaforce Subject: Callout Date: 8/31/2021 14:56:30 -06'00'

Update to Transportation Memorandum and Road Conditions Report.

Author: jchodsdon Subject: Sticky Note Date: 2/2/2022 18:06:15

LSC Response: Modified as requested.

Update these reference sections to matching the report contents. Example Identification of Road Deficiencies is within Section 6 not Section 1.1.

SECTION 1 – REPORT CONTENTS

1.1 - EXISTING CONDITIONS & IDENTIFICATION OF ROAD DEFICIENCIES

- Inclusion of the information contained in the previous LSC reports dated April 2, 2018 and February 8, 2016 The April 2, 2018 memo was primarily intended to directly address Item 2 of the Development Agreement.
- Description of the condition of Franceville Coal Mine Road from SH 94 to the entrance of the property and the identification of deficiencies.
- Percentage impact by Gateway Trucking based on traffic data.
- Developer's proportionate share based on current traffic volumes and proposed use.
- An analysis of current road segment use and traffic patterns, as required per **Item 5a** of the Development agreement.

1.2 - CDOT ACCESS PERMIT APPLICATION

- The CDOT Access Permit Application is necessary step for Item No. 3 of the Development Agreement. A copy is attached to this report.
- This report includes content from the previous LSC report dated February 8, 2016, which addressed future conditions.
- Updated evaluation and recommendations for the intersection of Franceville Coal Mine Road and SH 94.

1.3 - FUTURE CONDITIONS & ESCROW FOR ROAD SEGMENT IMPROVEMENTS

- This section addresses Items 5b, 5c, and 5d of the Development Agreement "Escrow for Road Segment Improvements."
- Estimate of future road segment use and traffic patterns, as required per Item 5b of the Development Agreement.
- An identification of future improvements to the road segment necessary to accommodate such future use and traffic patterns and the trigger event therefore, as required per Item 5c of the Development Agreement.
- An estimate of the cost of such future road improvements and the developer's proportionate share thereof, as required per Item 5d of the Development Agreement.

Page: 6

Number: 1 Author: dsdlaforce Subject: Callout Date: 8/31/2021 12:06:34 -06'00'

Update these reference sections to matching the report contents. Example Identification of Road Deficiencies is within Section 6 not Section 1.1.

Author: jchodsdon Subject: Sticky Note Date: 2/2/2022 18:06:32

LSC Response:
Revised as requested.

SECTION 3 – CURRENT ROADWAY AND TRAFFIC CONDITIONS & PRIOR DATA ANALYSIS

3.1 - AREA ROADWAYS

The area roadways in the site's vicinity are described below.

State Highway 94 (SH 94) is a two-lane highway extending east from US Highway 24 (US Hwy 24) through eastern El Paso County into Lincoln County. In the vicinity of the site, SH 94 is classified as a Non-Rural Principal Highway (NR-A) and has a posted speed limit of 65 miles per hour (mph). Access to SH 94 subject to ***2012 State Highway 94 Access Management Plan.***

update to "rural gravel local roadway"

Franceville Coal Mine Road is two-lane gravel roadway that extends south from SH 94 for about three miles. The posted speed limit is 35 mph. There are no auxiliary left- and right-turn lanes at the SH 94/Franceville Coal Mine Road intersection and the traffic control is two-way, stop-sign controlled. Additional information regarding road conditions on Franceville Road is contained later in this memo in the sub-section entitled "FRANCEVILLE COAL MINE ROAD – ROAD SEGMENT ANALYSIS"

3.2 - EXISTING (2021) TRAFFIC DATA

LSC has conducted current traffic counts for purposes of having current volumes as well as for comparison to total traffic volumes on SH 94 and Franceville Coal Mine Road to the prior reports.

Vehicular turning-movement counts were conducted at the following intersection and dates:

- State Highway 94/Franceville Coal Mine Road
  - Wednesday, April 7, 2021 from 6:30 – 8:30 a.m.
  - Wednesday, April 7, 2021 from 3:30 – 5:30 p.m.

Figure 3 shows these turning-movement volumes, as well as the average weekday traffic volumes. This figure also shows the results of 2021 daily machine counts conducted on Franceville Coal Mine Road south of SH 94. Raw count data is attached.

Traffic volumes on Franceville Coal Mine Road have essentially not changed.

3.3 - 2016 & 2017 TRAFFIC DATA & ANALYSIS

Prior counts on Franceville Coal Mine Road are attached for reference and comparison. Please refer to Table 1 and Table 2 - the prior analysis of the traffic data and estimated relative impact by the developer's operation on the days counted.

Page: 8

Number: 1 Author: dsdlaforce Subject: Callout Date: 8/31/2021 12:08:32 -06'00'

update to "rural gravel local roadway"

Author: jchodsdon Subject: Sticky Note Date: 2/2/2022 18:06:50

LSC Response:
Revised as requested.

SECTION 6 – IDENTIFICATION OF ROAD DEFICIENCIES

6.1 - DEVELOPMENT AGREEMENT #2 LANGUAGE

2. Identification of Road Deficiencies. Within sixty (60) days of the Effective Date of this Agreement, Developer shall submit to County staff the following documents prepared by a professional engineer: a) a report describing the condition of Franceville Coal Mine Road from State Highway 94 to the entrance of the Property (the "Road Segment"), b) an estimate of the cost to repair any deficiency in the existing Road Segment, and c) a determination of Developer's proportionate share of such cost based upon existing traffic conditions and Developer's proposed use of the Property. Within thirty (30) days of approval of the above documents by the County Engineer, Developer shall pay his share of the cost to repair existing deficiencies in the Road Segment to the County. The acceptance of such funds by the County does not impose a duty to repair the Road Segment within a specified period of time.

6.2 - EXISTING CONDITIONS ANALYSIS - AS REQUIRED IN THE DEVELOPMENT AGREEMENT PART 2A

6.2.1 - Comparison to El Paso County Standard Gravel Road Criteria

It is our understanding that the developer is not being required to upgrade the entire road to County gravel road standards or higher standard such as a Rural Local or Rural Minor Collector, rather identify deficiencies in the existing road segment, identify mitigation measures, quantify the cost of mitigation, and estimate the applicant's fair share. The following design elements of a County standard gravel roadway are included for reference. The design speed prescribed in the *Engineering Criteria Manual* (*ECM*) for a County standard gravel roadway is 50 mph (45 mph posted) and some of the design elements include:

- Two 12-foot lanes plus four-foot shoulders (32-feet total widt
- Centerline grade of 1 percent to 8 percent;
- Intersection grade of 1 to 4 percent;
- A 12-foot clear zone;
- Please refer to standard cross section. (Note: the traveled way is shown as 34 feet, however the current ECM design table reflects a 32-foot traveled way);
- The standard ditch sections are shown in the ECM standard cross section; and
- **Design ADT of 200 vehicles per day.**

1 Remove the note. Standard detail SD_2-10 for Rural Gravel Local Roadway shows 32'.

Page: 18

Number: 1 Author: dsdlaforce Subject: Callout Date: 8/31/2021 12:56:39 -06'00'

Remove the note. Standard detail SD_2-10 for Rural Gravel Local Roadway shows 32'.

Author: jchodsdon Subject: Sticky Note Date: 2/2/2022 18:06:56

LSC Response:
Revised as requested.

1 Include some photographs of representative cross sections of the existing condition and deficiencies described below. Include a map exhibit showing the photograph locations

The following is based on field measurements by LSC.

- The shoulder width is narrower than the standard cross section. However, the speed limit is posted at 35 mph (compared to the standard 45 mph). AASHTO identifies a clear zone of 7 to 10 feet for a 40-mph design speed and an

2 Remove. The horizontal alignment is straight which does not require horizontal curves. A deficiency would be if the alignment change direction and the horizontal curvature does not meet minimum criteria.

- In general, the traveled way width of Franceville Coal I
combination of gravel shoulder and/or what appear
varying width. There do not appear to be any sec
cross-sectional width appears generally
elow under "deficiencies."

3 Coordinate with the civil engineer to include a typical cross section of the road based on the existing topography they obtained.Label the cross slopes and road side ditches side slopes

roadway segment has no horizontal curvature.

re pages from the *ECM* containing criteria for gravel roads. A geotechnical
of the gravel roadway surface/structure is forthcoming. At the date of this
gravel surface was not quite as smooth as a newly resurfaced gravel road. On the day of the site visit in April 2021, there appeared to be minimal dust generated.

- The foreslopes/ditch sections appeared to be well maintained and the roadway appeared to have a satisfactory crown. Confirmation from the project consulting civil/drainage engineer that the existing drainage infrastructure is adequate to convey stormwater from the roadway in accordance with County requirements may or may not be necessary.

- The vertical profile is generally level to rolling. LSC completed spot-checks of what appeared to be the steepest roadway grade between SH 94 and the site. Aside from the northbound approach to SH 94, the other grades appear to meet the County standard of eight percent. LSC spot-measured centerline roadway grades of 3 percent and 8 percent were recorded on the roadway segments south of the two significant drainage crossings.

- The field-measured spot roadway grades from SH 94 to the drainage located just south of Highway 94 are presented in Table 7. These measurements identify relatively steep roadway grades immediately south of the intersection with SH 94. As such, the intersection grades are further addressed in the Identification of Existing Deficiencies section of this report under the CDOT subsection of this report as this intersection is under the jurisdiction of CDOT.

Page: 19

Number: 1 Author: dsdlaforce Subject: Callout Date: 8/31/2021 13:08:34 -06'00'

Include some photographs of representative cross sections of the existing condition and deficiencies described below. Include a map exhibit showing the photograph locations

Author: jchodsdon Subject: Sticky Note Date: 2/2/2022 18:08:29

LSC Response:
Photographs have been included in Appendix A along with a location map index.

Number: 2 Author: dsdlaforce Subject: Callout Date: 2/2/2022 18:11:57

Remove. The horizontal alignment is straight which does not require horizontal curves. A deficiency would be if the alignment change direction and the horizontal curvature does not meet minimum criteria.

Author: jchodsdon Subject: Sticky Note Date: 2/2/2022 18:08:43

LSC Response:
Removed as requested.

Number: 3 Author: dsdlaforce Subject: Callout Date: 2/2/2022 14:38:18

Coordinate with the civil engineer to include a typical cross section of the road based on the existing topography they obtained.Label the cross slopes and road side ditches side slopes

Author: jchodsdon Subject: Sticky Note Date: 2/2/2022 18:13:16

LSC Response: LSC coordinated with JR Engineering, the team civil engineer. Please refer to Appendix B (attached). This paragraph has been modified as topo of the offsite portion of Franceville Coal Mine Road was not available. Cross section dimensions are included in bullets 1 and 2 above.

Provide an aerial exhibit showing the segment locations.

Table 7: Field-Measured Roadway Grades on Franceville Coal Mine Road

Segment	Feet from SH 94 Edge of Pavement	Percent Grade
1	10	11.6%
2	10	11.5%
3	10	10.4%
4	25	7.9%
5	25	7.5%
6	25	5.7%
7	25	3.8%
8	25	3.6%
9	25	2.5%
10	25	1.9%
11	25	1.0%
12	25	0.3%
13	25	0.0%

- There is one drainage crossing at which a guardrail has been installed and another crossing at which it appears that a guardrail is needed because the edges of the roadway above the culvert are within the clear zone. This is addressed in the Identification of Existing Deficiencies section.

6.3 - IDENTIFICATION OF EXISTING DEFICIENCIES OF FRANCEVILLE COAL MINE ROAD – EL PASO COUNTY

This section addresses DEVELOPMENT AGREEMENT PART 2a

- In general, the traveled way width of Franceville Coal Mine Road is at least 24 feet plus a or what appear to be recoverable foreslopes of r to be any sections significantly narrower than ears consistent.

Coordinate with your consulting team to provide their their analysis of the existing conditions and deficiencies based on their field of expertise.

Coordinate with your team on where best to incorporate their analysis. Either within this report or within their own report which will be identified by reference.

ated 1,700 feet south of SH 94 does not have lway is about three or four feet from the traveled is about 17 feet from the approximate roadway oadway is about 13 feet from the approximate op-offs at the edge of the roadway are hazards within the clear zone. Guardrails on each side should be added at this crossing location.

- As mentioned above, confirmation of the adequacy of the existing drainage and roadway surface infrastructure would need confirmation by the civil and geotechnical engineers,

Page: 20

Number: 1 Author: dsdlaforce Subject: Callout Date: 8/31/2021 13:08:05 -06'00'

Provide an aerial exhibit showing the segment locations.

Author: jchodsdon Subject: Sticky Note Date: 2/2/2022 19:57:21

LSC Response:
This table has been clarified.
This is not a table of the entire Franceville Coal Mine Road, rather the first 280 feet south of the south edge of SH 94. the distances are the lengths of the segments. The first three segments are 10' each. Given the clarification of the short distance reflected in the table, our judgement was that an aerial exhibit woudn't overly helpful. We can provide if still requested.

Number: 2 Author: dsdlaforce Subject: Callout Date: 8/31/2021 13:21:25 -06'00'

Coordinate with your consulting team to provide their their analysis of the existing conditions and deficiencies based on their field of expertise. Coordinate with your team on where best to incorporate their analysis. Either within this report or within their own report which will be identified by reference.

Author: jchodsdon Subject: Sticky Note Date: 2/2/2022 18:18:30

LSC Response:
This paragraph has been updated and refers to Appendix A and Appendix B.

SECTION 7 – ESCROW FOR ROAD SEGMENT IMPROVEMENTS (El Paso County)

7.1 - DEVELOPMENT AGREEMENT #2 LANGUAGE

> 5. Escrow for Road Segment Improvements. Within one (1) year of the Effective Date, Developer shall provide to County staff a traffic report prepared by a professional engineer containing the following: a) an analysis of current Road Segment use and traffic patterns, b) an estimate of future Road Segment use and traffic patterns, c) an identification of future improvements to the Road Segment necessary to accommodate such future use and traffic patterns and the trigger event therefor, and d) an estimate of the cost of such future road improvements and Developer's proportionate share thereof. Within thirty (30) days of approval of such traffic report by the County Engineer, Developer shall tender to El Paso County, in the form of cash or a letter of credit, his proportionate share of the cost of future improvements to the Road Segment. Such funds shall be kept separate from all other County funds and used only at such time as the need for the identified improvements to the Road Segment has been triggered and the County intends to construct or require construction of such improvements. If the County does not formally initiate construction of improvements to the Road Segment within fifteen (15) years of the Effective Date, either by entering into a contract for such construction or requiring such construction as part of a land use approval, the escrowed funds shall be returned to Developer with any accrued interest.

7.2 - FUTURE ANALYSIS – (ADDRESSES PART 5 OF THE DEVELOPMENT AGREEMENT)

7.2.1 - Analysis of current Road Segment use and traffic patterns

7.2.1.1 - 2021 Traffic Data

Figure 3 shows recorded April 2021 data and roadway usage.

Error! Reference source not found. below shows the 2021 classification volume count data and percent trucks.

Fix reference. [1]

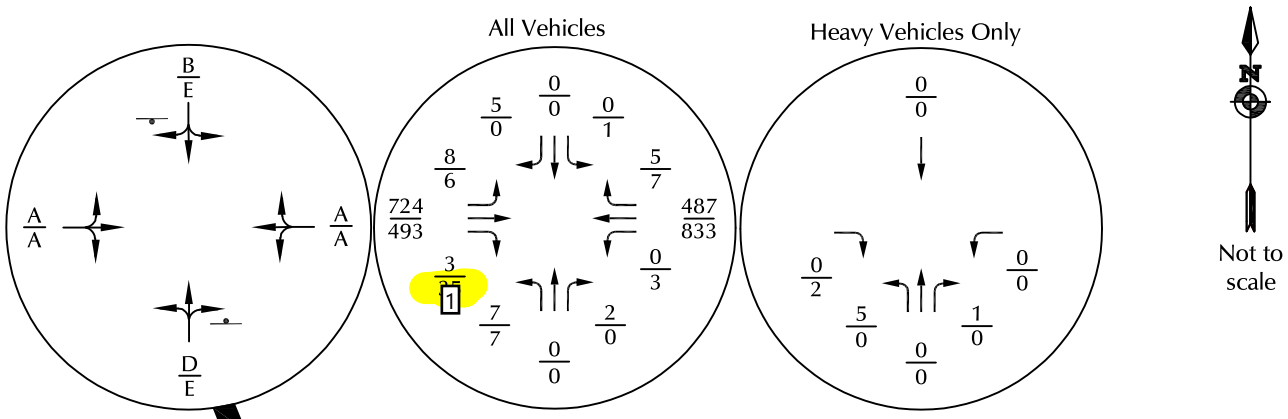
Page: 23

Number: 1 Author: dsdlaforce Subject: Callout Date: 8/31/2021 13:50:32 -06'00'

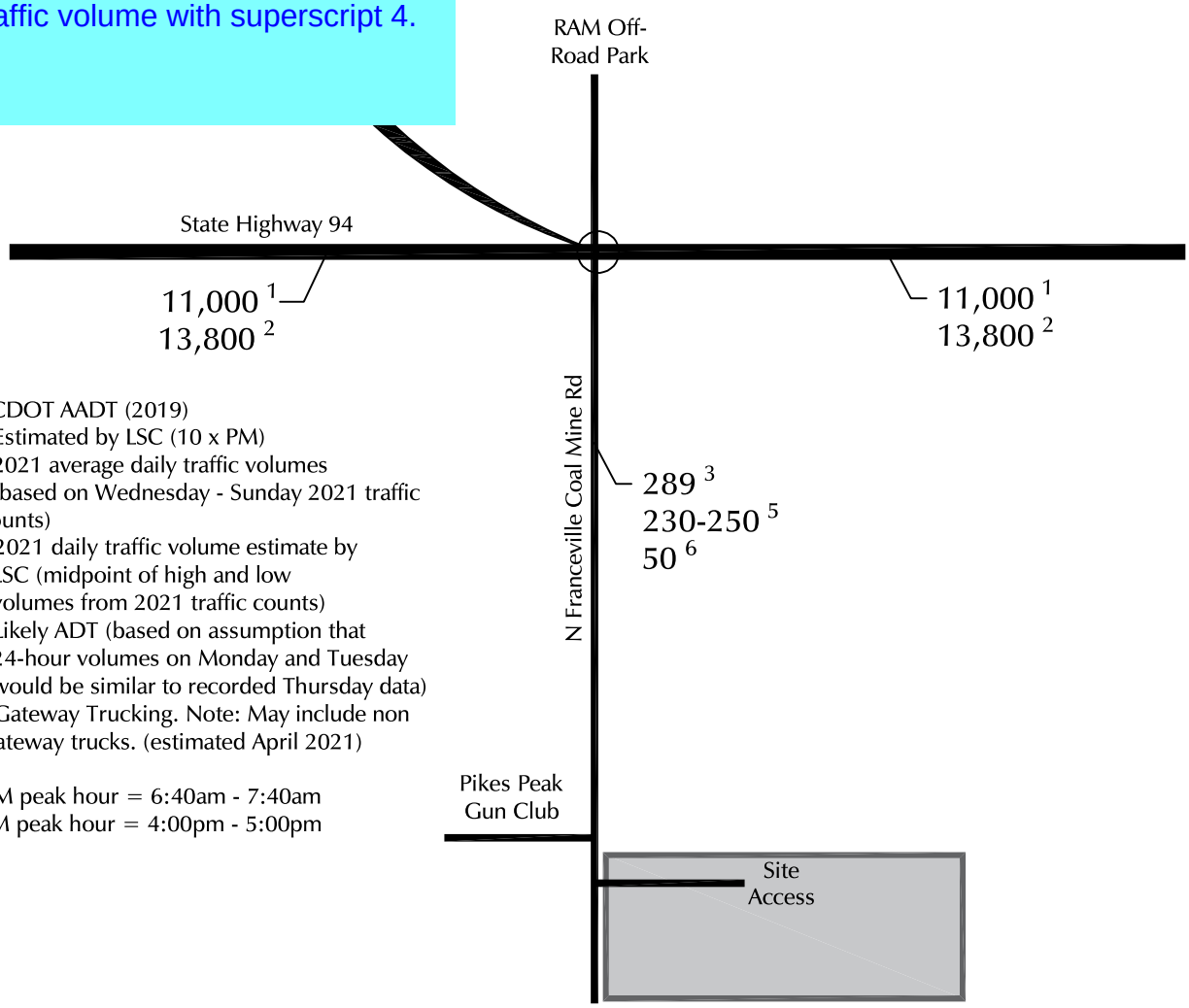
Fix reference.

Author: jchodsdon Subject: Sticky Note Date: 2/2/2022 18:18:55

LSC Response:
Fixed as requested.



Update the exhibit to include the traffic volume with superscript 4. 2



[1] CDOT AADT (2019)
[2] Estimated by LSC (10 x PM)
[3] 2021 average daily traffic volumes (based on Wednesday - Sunday 2021 traffic counts)
[4] 2021 daily traffic volume estimate by LSC (midpoint of high and low volumes from 2021 traffic counts)
[5] Likely ADT (based on assumption that 24-hour volumes on Monday and Tuesday would be similar to recorded Thursday data)
[6] Gateway Trucking. Note: May include non Gateway trucks. (estimated April 2021)

AM peak hour = 6:40am - 7:40am
PM peak hour = 4:00pm - 5:00pm

Counts by LSC (April 2021)

	=	Stop Sign
X/X	=	AM Individual Movement Peak-Hour LOS / PM Individual Movement Peak-Hour LOS
XX/XX	=	AM Weekday Peak-Hour Traffic (Veh/Hour) / PM Weekday Peak-Hour Traffic (Veh/Hour)
X,XXX	=	Average Daily Traffic (Vehicles/Day)

LSC TRANSPORTATION CONSULTANTS, INC.

Figure 3

Existing Traffic, Lane Geometry, Traffic Control, and LOS

Gateway Trucking (LSC # S214360)

Page: 37

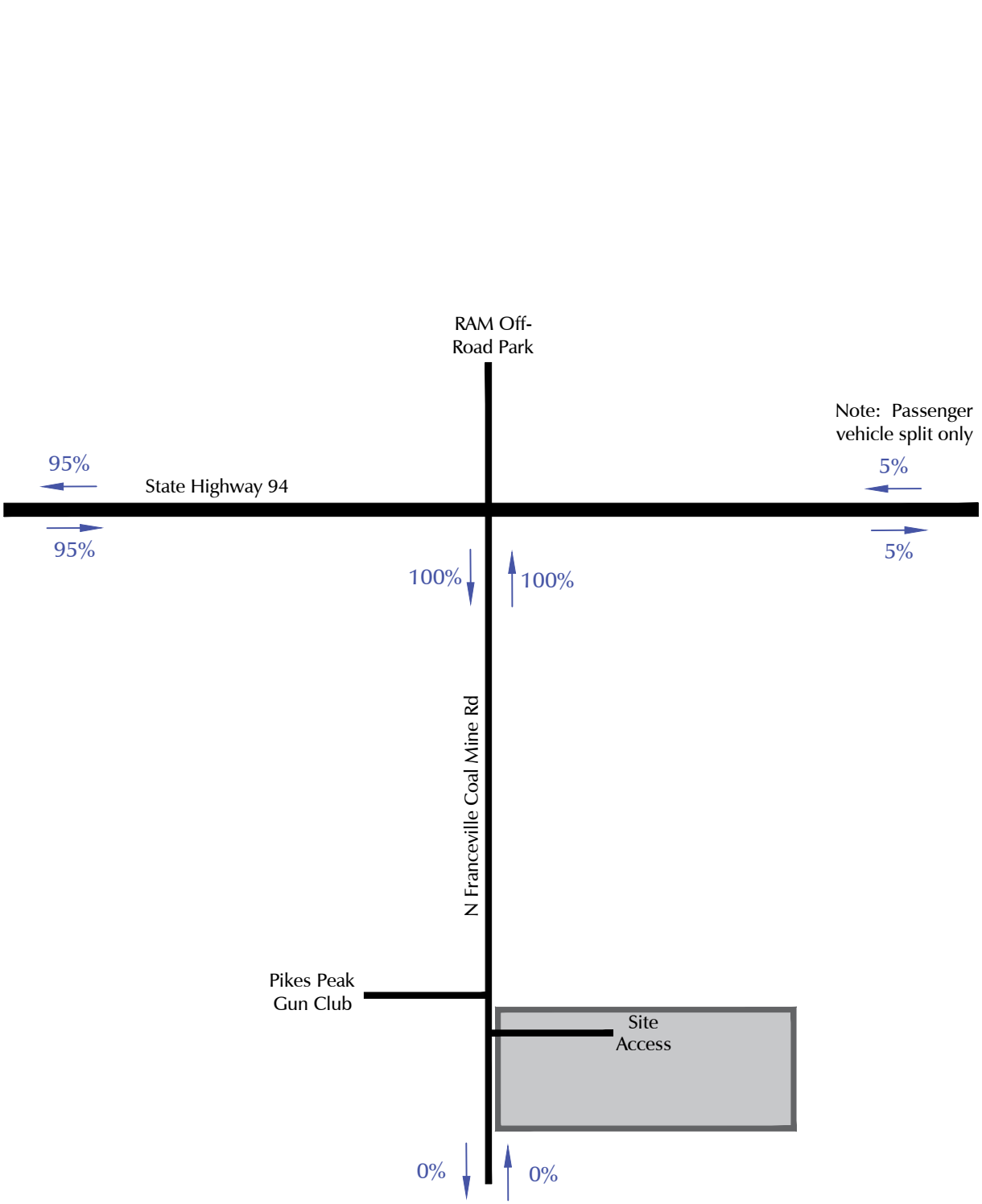
Number: 1 Author: dsdlaforce Subject: Highlight Date: 8/31/2021 12:21:20 -06'00'

Number: 2 Author: dsdlaforce Subject: Callout Date: 2/2/2022 14:45:21

Update the exhibit to include the traffic volume with superscript 4.

Author: jchodsdon Subject: Sticky Note Date: 2/2/2022 18:19:09

LSC Response:
Updated as requested.



TRANSPORTATION CONSULTANTS, INC.

XX% / XX% 1 A.M. Peak Hour % Distribution / P.M. Peak Hour % Distribution

Figure 4

Directional Distribution

Gateway Trucking (LSC # S214360)

Page: 38

Number: 1 Author: AutoCAD SHX Text Date: Indeterminate

=

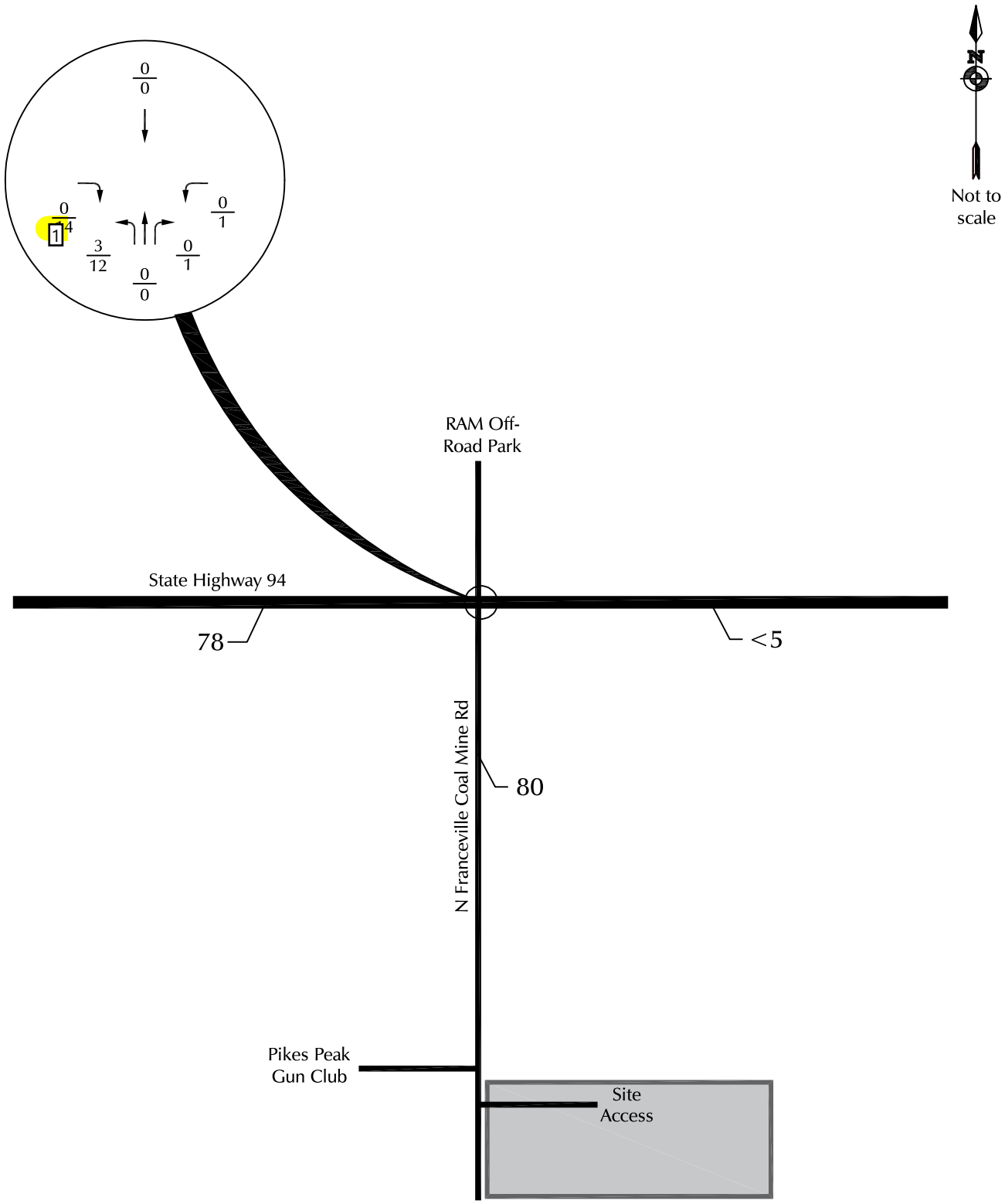


Figure 6

Site-Generated Gatewat Trucking Traffic "Maximum"

Gateway Trucking (LSC # S214360)

AM peak hour = 6:40am - 7:40am
PM peak hour = 4:00pm - 5:00pm

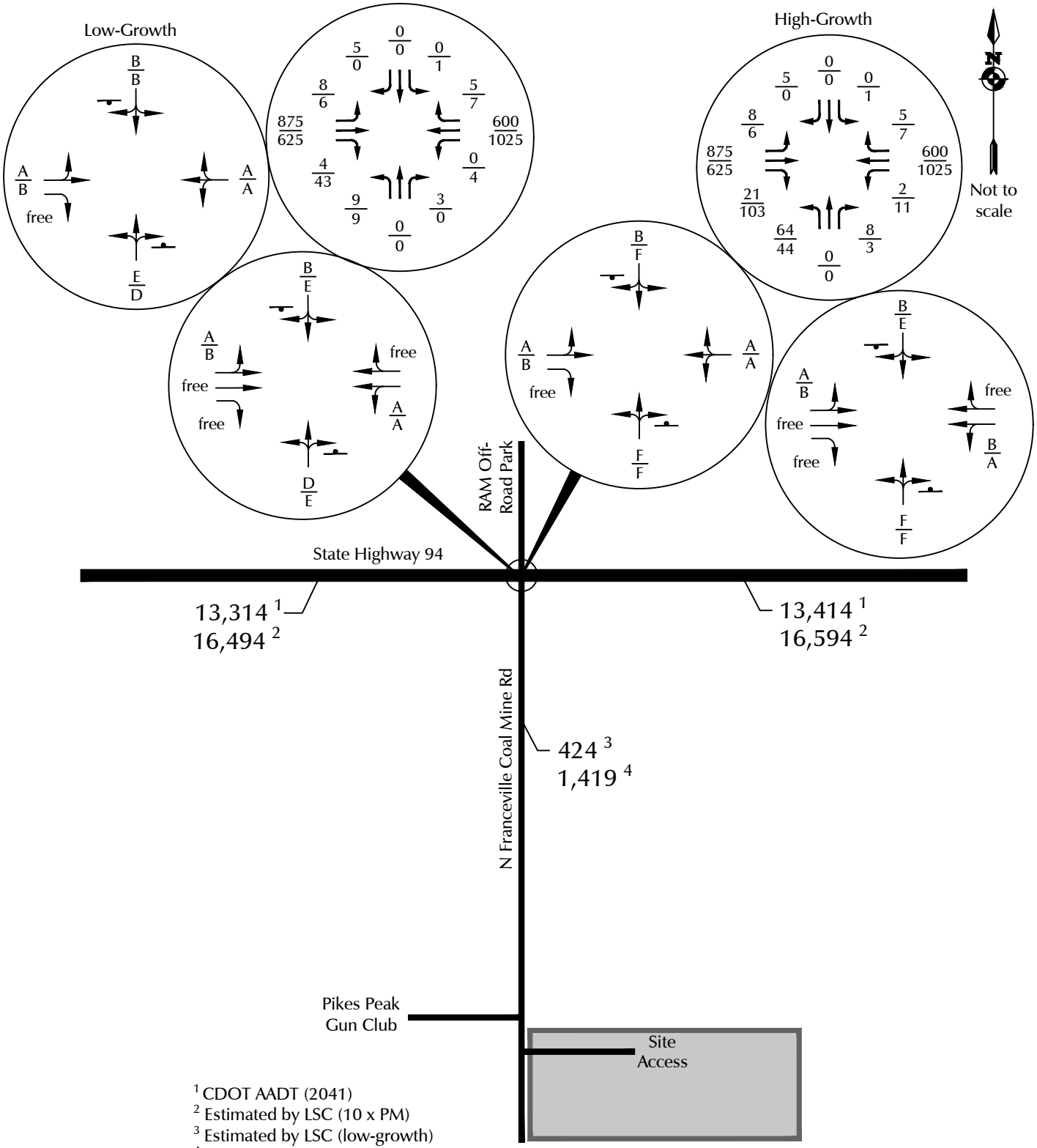
XX/XX = AM Weekday Peak-Hour Traffic (Veh/Hour) / PM Weekday Peak-Hour Traffic (Veh/Hour)

X,XXX = Average Daily Traffic (Vehicles/Day)

LSC TRANSPORTATION CONSULTANTS, INC.

Page: 40

Number: 1 Author: dsdlaforce Subject: Highlight Date: 8/31/2021 12:48:49 -06'00'



[1] CDOT AADT (2041)
[2] Estimated by LSC (10 x PM)
[3] Estimated by LSC (low-growth)
[4] Estimated by LSC (high-growth)

AM peak hour = 6:40am - 7:40am
PM peak hour = 4:00pm - 5:00pm

1 Stop Sign

2 X/X AM Individual Movement Peak-Hour LOS / PM Individual Movement Peak-Hour LOS

3 XX/XX AM Weekday Peak-Hour Traffic (Veh/Hour) / PM Weekday Peak-Hour Traffic (Veh/Hour)

4 X,XXX Average Daily Traffic (Vehicles/Day)

LSC TRANSPORTATION CONSULTANTS, INC.

Figure 8

2041 Background Traffic, Lane Geometry, Traffic Control, and LOS

Gateway Trucking (LSC # S214360)

Page: 42

Number: 1 Author: AutoCAD SHX Text Date: Indeterminate

=

Number: 2 Author: AutoCAD SHX Text Date: Indeterminate

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Number: 3 Author: AutoCAD SHX Text Date: Indeterminate

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Number: 4 Author: AutoCAD SHX Text Date: Indeterminate

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