

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

A deviation from the standards of or in Section **2.2.5.C.** of the Engineering Criteria Manual (ECM) is requested.

Identify the specific ECM standard which a deviation is requested:

2.2.5.C Urban Minor Arterial Access Criteria.

C. Urban Minor Arterial Access Criteria

Spacing of roads accessing an urban minor arterial that will result in a full movement intersection shall be planned at one-quarter mile. However, one parcel access shall be granted to each existing lot, if it does not create safety or operational problems. The parcel access will provide for right turns only. The access may allow for left turns in (three-quarters movement) if the addition of left turns will improve the operation at an adjacent full movement intersection and meet appropriate design standards.

State the reason for the requested deviation:

A deviation from the above is requested for the access located along Peterson Road. The absence of this access location would pose an undue hardship on the site primarily for safety and ease of access. Due to physical constraints on the site the drive aisle is proposed as shown. Without the access to Peterson Road vehicles will have to make multiple maneuvers to turn around on site which present more opportunity for accidents on site. Additionally, the convenient access to Peterson Road, as well as the signal at Peterson Road and Constitution Avenue, allows for some percentage of vehicles to avoid the unsignalized left turn on Constitution Avenue which improves safety for the local network.

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

The proposed alternative to no access is a right-in/right-out access (RIRO) to Peterson Road. The ECM and other standards provide exceptions to standards if the proposed alternative provides operational or safety benefits to the network or site. The proposed RIRO would provide both an on site safety benefit as well a network operational benefit. Specifically, a reduction of northbound left turn movements at Constitution Ave and Canada Drive as well as a reduction of out of the way travel for traffic coming south of the site.

Locally, full movement access is provided for the gas station and convenience across the street on Peterson Road. This access provides for all left turning movements and for a significantly higher trip generator. The proposed alternative for the subject site is therefore in character with the surrounding network and would not be out of place for local users.

LIMITS OF CONSIDERATION

(At least one of the conditions listed below must be met for this deviation request to be considered.)

- The ECM standard is inapplicable to the particular situation.
- Topography, right-of-way, or other geographical conditions or impediments impose an undue hardship and an equivalent alternative that can accomplish the same design objective is available and does not compromise public safety or accessibility.
- A change to a standard is required to address a specific design or construction problem, and if not modified, the standard will impose an undue hardship on the applicant with little or no material benefit to the public.

Provide justification:

A number of factors contribute to the justification of this request.

1. The access is proposed restricted to RIRO eliminating the majority of the conflict points related to this access.
2. The access is being located as far from the nearest intersection as possible considering the available frontage of the site and onsite constraints including location of the detention pond.
3. The proposed RIRO is located across from an existing access which will minimize perceived offset intersection conflicts although none exist due to the proposed access being restricted to RIRO.
4. No queueing at the nearby signal is anticipated to conflict with the proposed access as the northbound right lane operates as a free-flow with dedicated lane condition.
5. No queueing is anticipated at the proposed access and provides material benefit for on site traffic (reducing multiple movement turn arounds) as well as reduction of northbound lefts from Canada Drive to Constitution Avenue and fewer VMT for traffic from the south (vehicles can enter along Peterson Road and avoid multiple additional turns/conflicts to enter the site)

CRITERIA FOR APPROVAL

Per ECM section 5.8.7 the request for a deviation may be considered if the request is **not based exclusively on financial considerations**. The deviation must not be detrimental to public safety or surrounding property. The applicant must include supporting information demonstrating compliance with **all of the following criteria**:

The deviation will achieve the intended result with a comparable or superior design and quality of improvement.

The deviation will achieve the intended result with a comparable or superior design and quality of improvement. This is achieved by physically restricting the access movements to alleviate any safety concerns. Additionally, granting the access will likely increase safety on site and to the local network.

The deviation will not adversely affect safety or operations.

The deviation will not adversely affect safety or operations. Traffic memorandum suggests projected AM/PM peak hour trips to be 11/16 trips respectively. Site generated traffic will not adversely affect safety or operations. Development would not significantly impact surrounding roadways. Peak hour traffic to the access will likely be 1 trip in any direction as shown in Figure 3 of the attached TIS.

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

The deviation will not adversely affect maintenance and its associated cost. The proposed alternative represent no impact to maintenance or cost from the standard.

The deviation will not adversely affect aesthetic appearance.

The deviation will not adversely affect aesthetic appearance. The proposed alternative represents no impact to the aesthetic appearance from the standard. A full movement access exists along Peterson Road across the street and would be in character with the surrounding network.

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

The deviation meets the design intent and purpose of the ECM standards. Namely the access does not adversely effect safety or operations of the site or network and granting the deviation likely represents an improvement to both safety and operations.

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

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 2.2.5.C of the ECM is hereby denied.

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DISAPPROVED
Engineering Department
04/20/2023 9:58:31 AM
dotnikamp
**EPC Planning & Community
Development Department**

ECM ADMINISTRATOR COMMENTS/CONDITIONS:

At this time no hardship has been identified if this access is not approved. Adequate justification has not been presented. Additional left turns to exit the site does not inhibit the approved access location. The site can be designed to accommodate the allowable location of the proposed access.

Given the classification and the amount of traffic on Peterson we cannot recommend access at this location.

No justification was provided to suggest that a criteria change is required or needed.

1.1. PURPOSE

The purpose of this resource is to provide a form for documenting the findings and decision by the ECM Administrator concerning a deviation request. The form is used to document the review and decision concerning a requested deviation. The request and decision concerning each deviation from a specific section of the ECM shall be recorded on a separate form.

1.2. BACKGROUND

A deviation is a critical aspect of the review process and needs to be documented to ensure that the deviations granted are applied to a specific development application in conformance with the criteria for approval and that the action is documented as such requests can point to potential needed revisions to the ECM.

1.3. APPLICABLE STATUTES AND REGULATIONS

Section 5.8 of the ECM establishes a mechanism whereby an engineering design standard can be modified when if strictly adhered to, would cause unnecessary hardship or unsafe design because of topographical or other conditions particular to the site, and that a departure may be made without destroying the intent of such provision.

1.4. APPLICABILITY

All provisions of the ECM are subject to deviation by the ECM Administrator provided that one of the following conditions is met:

- The ECM standard is inapplicable to a particular situation.
- Topography, right-of-way, or other geographical conditions or impediments impose an undue hardship on the applicant, and an equivalent alternative that can accomplish the same design objective is available and does not compromise public safety or accessibility.
- A change to a standard is required to address a specific design or construction problem, and if not modified, the standard will impose an undue hardship on the applicant with little or no material benefit to the public.

1.5. TECHNICAL GUIDANCE

The review shall ensure all criteria for approval are adequately considered and that justification for the deviation is properly documented.

1.6. LIMITS OF APPROVAL

Whether a request for deviation is approved as proposed or with conditions, the approval is for project-specific use and shall not constitute a precedent or general deviation from these Standards.

1.7. REVIEW FEES

A Deviation Review Fee shall be paid in full at the time of submission of a request for deviation. The fee for Deviation Review shall be as determined by resolution of the BoCC.



TIS AND DEVIATION REQUEST

CONSTITUTION STORAGE DEVELOPMENT

El Paso County, Colorado

PREPARED FOR:
Johnson Development Associates, Inc.
100 Dunbar Street, Suite 400
Spartanburg, SC 29306

PREPARED BY:
Brian Horan, PE
Max Rusch, PE

DATE:
February 21, 2023

*PCD Filing No.: PPR-2224,
P-225*

Constitution Storage PCD No. P-225

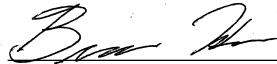
Traffic Impact Study (Memorandum) and Deviation Request Table of Contents

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Traffic Impact Studies

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.



Brian Horan P.E. #53042

2-21-23

Date

Developer's Statement

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



Brian Kearney, Senior Development Manager

Self-Storage Division

Johnson Development Associates, Inc.

101 N. Pacific Coast Hwy, Suite 308 El Segundo, CA 90245

2/21/23

Date



Traffic Impact Study (Memorandum):

Constitution Storage PCD No. P-225, PPR-2224

To: Elizabeth Nijkamp
Engineer Manager, El Paso County

From: Brian Horan, PE

Date: April 11, 2022
Revised: June 10, 2022
Revised: July 12, 2022
Revised: August 11, 2022
Revised: September 13, 2022
Revised: February 21, 2023

Re: **Constitution Storage: Traffic Memorandum;
PCD No. P-225, PPR-2224
El Paso County, CO**

INTRODUCTION

This memorandum provides the results of a traffic analysis performed in support of an approximately 3.72-acre lot located in El Paso County, Colorado. Generally, the site is located south of Constitution Avenue, east of Peterson Road, and west of Canada Drive. The site is further identified as El Paso County parcel number 5405218002 and is currently vacant. The site location is shown on Figure 1.

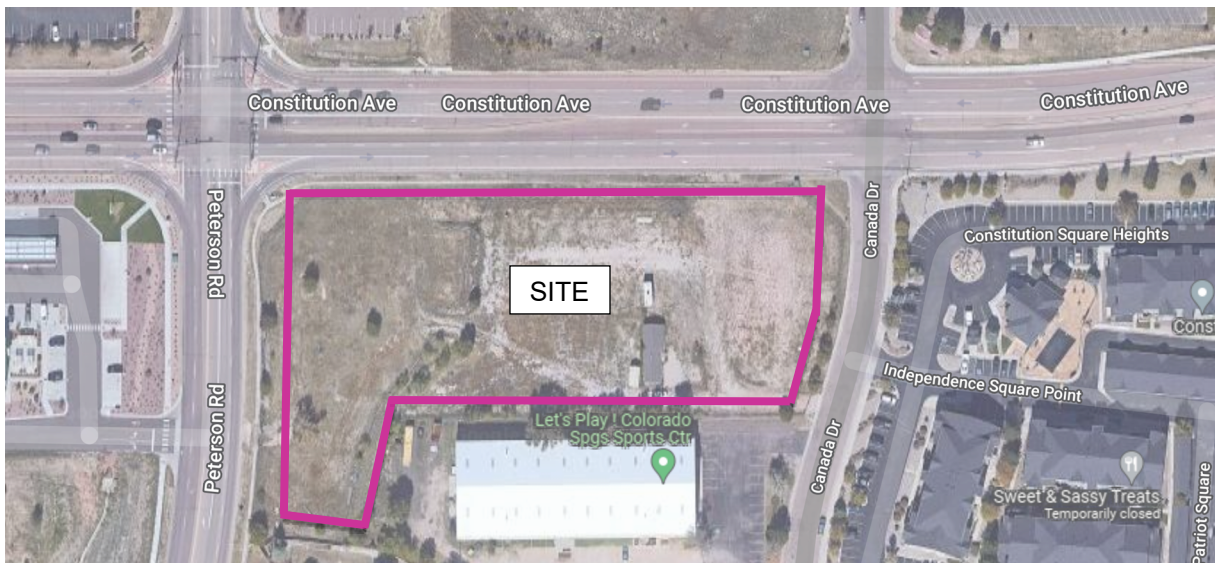


Figure 1 – Site Location

The Applicant, Johnson Development Associates, proposes to develop the site with a 109,033 square foot self-storage (mini warehouse) use with 944 storage units. A full-sized copy of the site plan is provided as Attachment I. The following memorandum has been prepared for the County of El Paso as requested. The purpose is to determine the traffic forecasted by the proposed project and potential impacts to the surrounding roadways. A narrative for the study area for adjacent roadways, intersection and accesses is provided in the existing conditions section below.



EXISTING CONDITIONS

As shown on the site plan provided as Attachment 1, the site is proposed to be accessed via one right-in/right-out (RIRO) movement access along Peterson Road and one full movement access along Canada Drive. Peterson Road and Constitution Avenue provide regional access to the property. No roadway improvements were identified in the area.

Constitution Avenue is constructed as a four-lane roadway divided by a raised median and auxiliary turn lanes provided at intersections. It is classified as an arterial by El Paso County and provides east-west connectivity throughout the region with a posted speed limit of 45 mph in the vicinity of the subject site. The intersection of Constitution Avenue/Peterson Road operates under signalized control and the intersection of Constitution Avenue/Canada Drive operates under unsignalized control.

Peterson Road is constructed as a four-lane roadway divided by a two way left turn (TWLT) lane. It is classified as a minor arterial by El Paso County and provides north-south connectivity throughout the region with a posted speed limit of 35 mph in the vicinity of the subject site. The intersection of Peterson Road/Constitution Avenue operates under signalized control.

Canada Drive is constructed as an undivided two-lane roadway. It is classified as a local roadway by El Paso County and primarily provides north-south access to a number of residential units in the region with a posted speed limit of 25 mph in the vicinity of the subject site. The intersection of Canada Drive/Constitution Avenue operates under unsignalized control. ADTs and peak hour traffic along this roadway are consistent with the roadway section and operates with additional capacity available.

The Major Transportation Corridor Plan (MTCP) was reviewed to determine if any roadway improvements were anticipated in the immediate study area. No such improvements were identified. Additionally, at the time of this writing, no improvements from area development were identified that would impact the proposed development.

Streetlight was used to generate turning movement counts at the intersection of Peterson Rd & Constitution Ave. Streetlight is a program that collects location records from smartphones as well as connected cars and trucks and can use this data to produce turning movement counts. The Streetlight turning movements were then balanced with ADT counts on the MS2 website, taken in 2021. Figure 2 shows the existing volumes at the intersection of Peterson Rd & Constitution Ave.

Table 1

JDA - Constitution Storage

Site Trip Generation

Land Use	Land Use Code	Amount	Units	AM Peak Hour			PM Peak Hour			Average Daily Trips
				In	Out	Total	In	Out	Total	
<i>Proposed</i> ⁽¹⁾ Mini-Warehouse	151	944	UNITS	6	5	11	8	8	16	170

Note(s):

(1) Trip generation based on the Institute of Transportation Engineers' Trip Generation Manual, 11th Edition

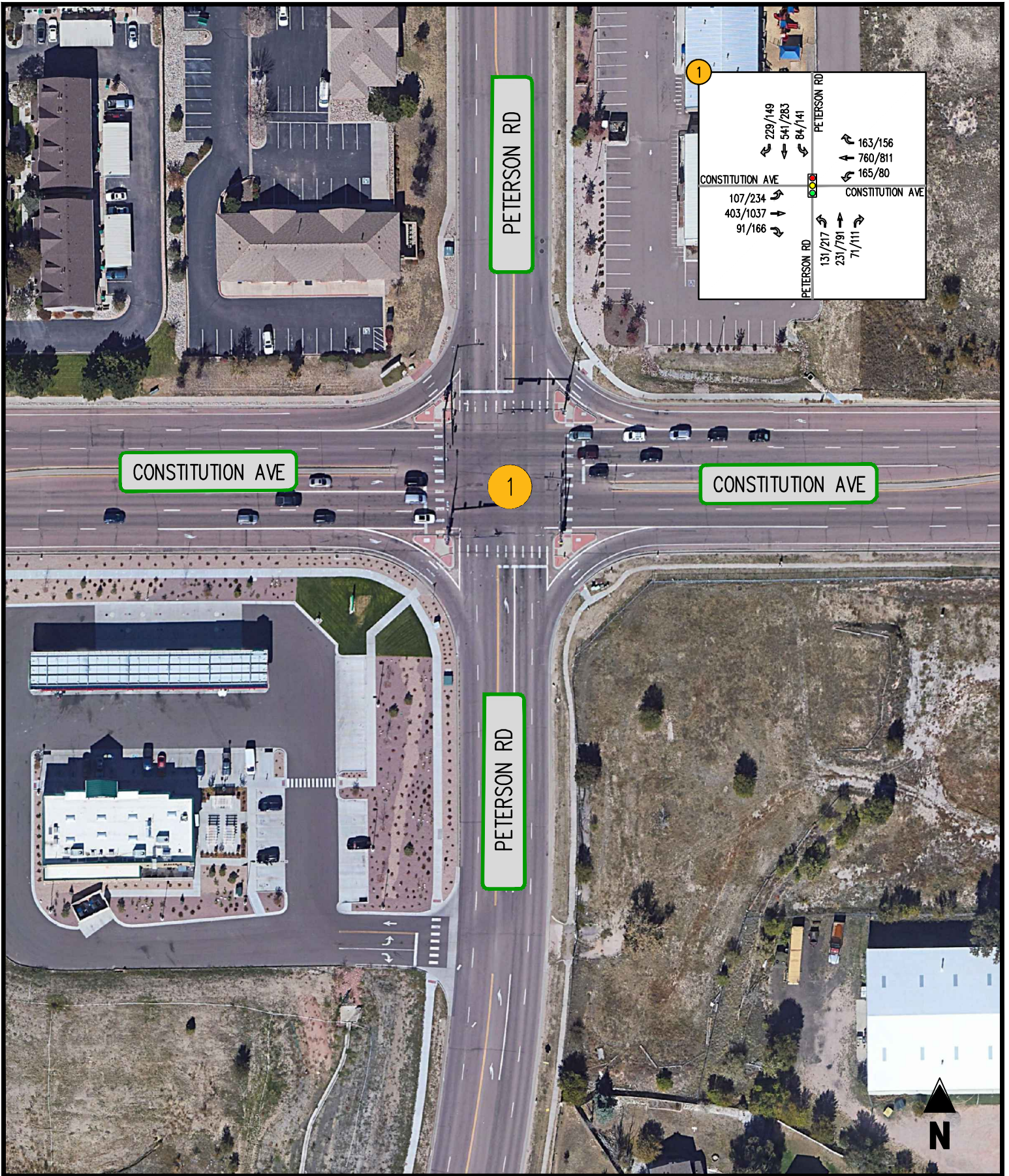





FIGURE 2
Existing Volumes

0000/0000 (AM PEAK HOUR/PM PEAK HOUR)

-  MOVEMENT
-  SIGNALIZED INTERSECTION
-  STOP SIGN
-  YIELD SIGN



TRIP GENERATION

Trip generation forecasts for the site were based on rates/equations published in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition and industry standard methodologies. The trip generation of the proposed development are provided in Table 1 below. The use is expected to generate 11 AM peak hour, 16 PM peak hour, and 170 average daily trips upon completion.

These trips would be divided among the two access points along Peterson Road and Canada Drive. This would represent less than 10 vehicles at any site entrance in or out of the site during the peak hour. As required by the County, an assessment of 20 year projections for this area would suggest minimal increase. Limited development or redevelopment options exist in the area that would increase traffic at the proposed entrances. It is anticipated that short and long range forecasts at the entrance would remain relatively consistent with existing conditions. A site trip figure has been provided as Figure 3.

As mentioned above, the Applicant is proposing one RIRO movement access to the site via Peterson Road and one full movement access to the site via Canada Drive. Currently, Constitution Avenue has auxiliary lanes in both the east and westbound directions at the Canada Drive intersection. Based on the trip generation contained herein, the proposed development would not significantly impact the surrounding corridor.

PROPOSED ACCESS LOCATIONS

As shown in Attachment I, the project proposes a full movement access along Canada Drive and a right-in/right-out access along Peterson Road. As shown in Table 1, the site would generate very few peak hour trips. Assuming some distribution of trips to the entrances, the accesses and surrounding intersections would experience fewer than 5 peak hour turning movements at any location. The access at Peterson Road was requested to be specifically addressed. Due to the low traffic to the proposed site the entrance would operate exceptionally during all times. No conflicts with the nearby signalized intersection at Peterson Road and Constitution Avenue would occur. The proposed right-in/right-out entrance would draw from the same lane as the northbound right at the signal.

The signal of Peterson Rd & Constitution Ave was modeled in Synchro using the volumes from Figure 2. The Synchro reports have been attached to this memo. The 95% queue for the northbound right turn movement, as reported by Synchro, will extend 2 feet in the AM peak hour and 36 feet in the PM peak hour. As the proposed access along Peterson Rd will be situated approximately 250 feet south of the signal, there is little chance of the northbound right turn queue blocking the access.

SAFETY

As requested by the County, accident data in the area was pulled as provided by the State. As shown in Figure 2 below, no accidents were reported in this area for the last 10 years. Due to the extremely low generation of trips the proposed use represents it is not anticipated to have an impact on safety to this area.

As requested by the County a discussion of the Peterson Road access is also provided. As shown on Figure 3, peak hour traffic using this entrance will be minimal. An auxiliary lane would not be warranted at this location and would not provide any meaningful benefit to access. The entrance operations are unrestricted and zero queues would be anticipated. Due to the RIRO and unrestricted flow into the site no queuing would be experienced on Peterson Road.

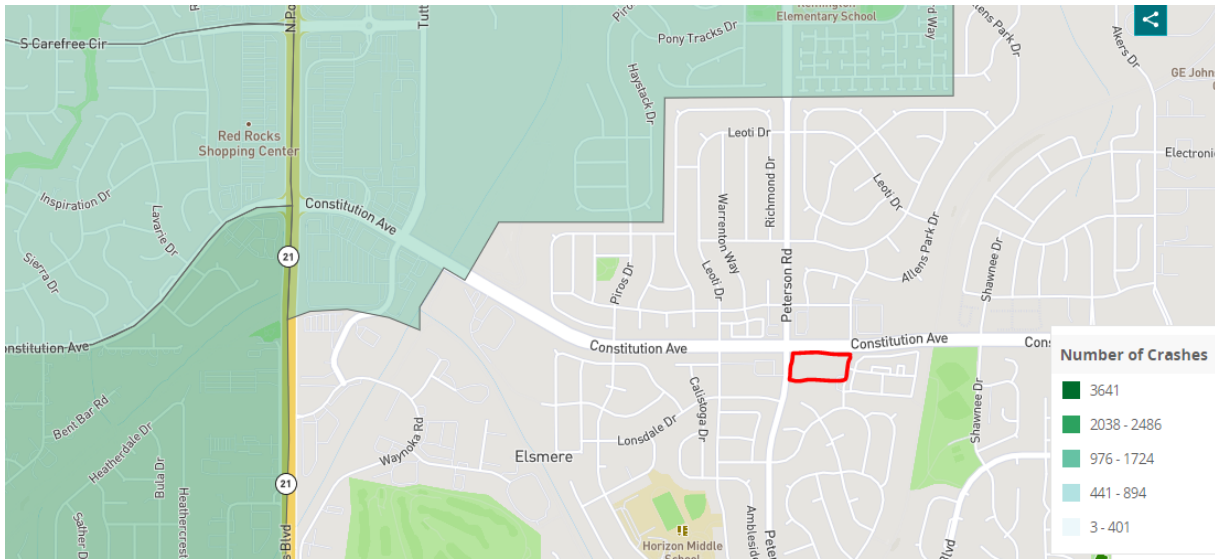


Figure 2 – Police Accident Data Map 2016-2022

Considerations for sight distance were also made at the proposed access along Peterson Road. Sight distance triangles are provided in Attachment 1. As shown on Attachment 1, sight distance at the intersection is available well beyond the required length due to the gradual curve in the roadway. No safety concerns are anticipated with the approval of the access along Peterson Road.

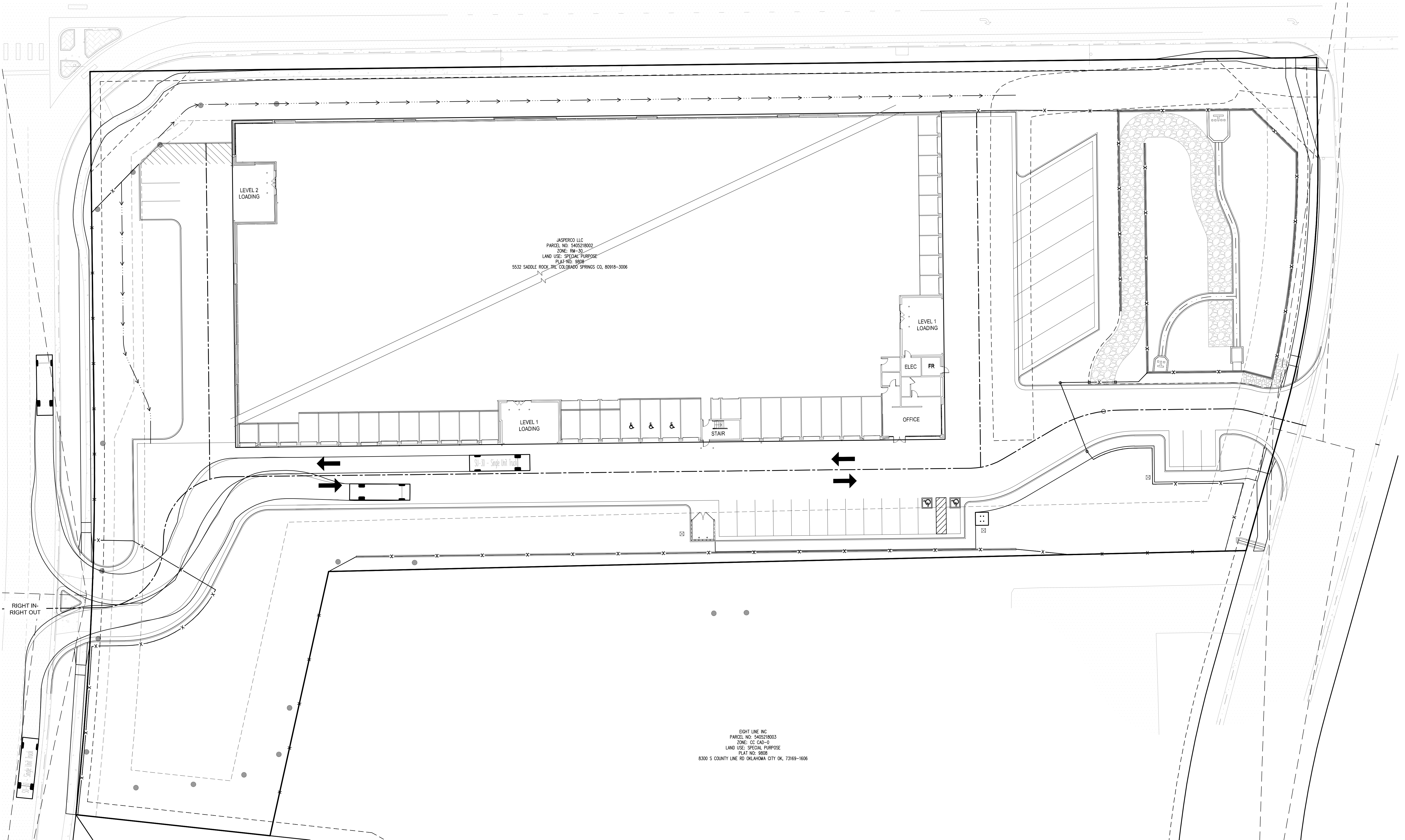
An autoturn analysis is also provided in Attachment 1. A SU-30 Single Unit Truck, as requested by the County, was utilized for this analysis. As shown, the vehicle can enter and exit the site without tracking into the neighboring through lane.

CONCLUSIONS

1. The subject site is a standalone project in the County of El Paso, Colorado.
2. The proposed project is forecasted to generate 11 new AM trips, 16 new PM trips, and 170 new daily trips on average.
3. Auxiliary lanes current exists in both the east and westbound directions on Constitution Avenue at Canada Drive.
4. Based on the trip generation contained herein, the proposed mini warehouse use development would not significantly impact the surrounding roadways. Short and long range forecasts for the access locations would remain generally consistent with existing conditions.
5. No improvements are required or recommended above and beyond what is required on site for the construction of the use.
6. No safety concerns are anticipated with the approval of the access locations as shown.
7. Road Impact Fees will be due by the Applicant at the last land use approval consistent with the use and Impact Fee schedule.

We trust that the information contained herein satisfy the request of the County of El Paso, Colorado. If you have any questions or need further information, please contact Brian Horan at BrianHoran@GallowayUS.com or 303-770-8884.

Attachment I
Site Plan
Synchro Reports



CONSTITUTION STORAGE

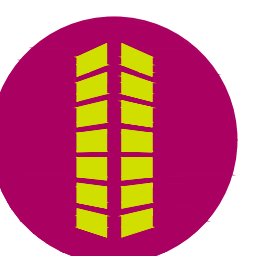


Johnson Development Associates

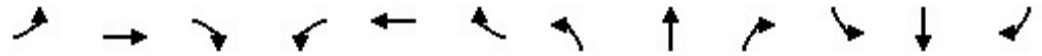
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SITE PLAN

02.16.2022



Existing AM
Peterson Rd & Constitution Ave



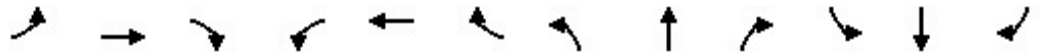
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	116	438	99	179	826	177	142	251	77	91	588	249
v/c Ratio	0.29	0.35	0.15	0.31	0.63	0.25	0.55	0.29	0.16	0.23	0.74	0.58
Control Delay	16.0	29.6	2.2	15.7	33.6	4.6	33.4	36.9	0.9	25.8	49.3	29.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.0	29.6	2.2	15.7	33.6	4.6	33.4	36.9	0.9	25.8	49.3	29.4
Queue Length 50th (ft)	41	130	0	66	273	0	74	82	0	46	224	103
Queue Length 95th (ft)	80	175	17	118	342	46	113	115	2	77	271	179
Internal Link Dist (ft)		691			661			589			420	
Turn Bay Length (ft)	250			250			230		50	160		50
Base Capacity (vph)	404	1253	648	576	1312	698	277	897	502	503	958	500
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.35	0.15	0.31	0.63	0.25	0.51	0.28	0.15	0.18	0.61	0.50

Intersection Summary

Existing AM
Peterson Rd & Constitution Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	107	403	91	165	760	163	131	231	71	84	541	229
Future Volume (veh/h)	107	403	91	165	760	163	131	231	71	84	541	229
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	116	438	0	179	826	0	142	251	0	91	588	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	441	1630		624	1689		235	795		344	710	
Arrive On Green	0.10	0.46	0.00	0.11	0.48	0.00	0.08	0.22	0.00	0.06	0.20	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	116	438	0	179	826	0	142	251	0	91	588	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	3.7	9.1	0.0	5.7	19.1	0.0	7.5	7.1	0.0	4.8	19.0	0.0
Cycle Q Clear(g_c), s	3.7	9.1	0.0	5.7	19.1	0.0	7.5	7.1	0.0	4.8	19.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	441	1630		624	1689		235	795		344	710	
V/C Ratio(X)	0.26	0.27		0.29	0.49		0.60	0.32		0.26	0.83	
Avail Cap(c_a), veh/h	441	1630		624	1689		294	814		521	962	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	14.2	20.1	0.0	12.7	21.5	0.0	35.5	38.9	0.0	35.2	46.0	0.0
Incr Delay (d2), s/veh	1.5	0.4	0.0	1.2	1.0	0.0	2.5	0.2	0.0	0.4	4.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	3.7	0.0	2.3	7.7	0.0	3.4	3.1	0.0	2.1	8.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.7	20.5	0.0	13.9	22.5	0.0	38.0	39.1	0.0	35.6	50.6	0.0
LnGrp LOS	B	C		B	C		D	D		D	D	
Approach Vol, veh/h		554	A		1005	A		393	A		679	A
Approach Delay, s/veh		19.5			21.0			38.7			48.5	
Approach LOS		B			C			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.1	31.4	18.0	59.5	14.0	28.5	16.0	61.5				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	18.5	27.5	13.5	42.5	13.5	32.5	11.5	44.5				
Max Q Clear Time (g_c+I1), s	6.8	9.1	7.7	11.1	9.5	21.0	5.7	21.1				
Green Ext Time (p_c), s	0.1	1.4	0.2	2.8	0.1	2.9	0.1	5.5				
Intersection Summary												
HCM 6th Ctrl Delay			30.4									
HCM 6th LOS			C									
Notes												
Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

Existing PM
Peterson Rd & Constitution Ave



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	254	1127	180	87	882	170	236	860	121	153	308	162
v/c Ratio	0.73	0.76	0.24	0.44	0.74	0.26	0.55	0.87	0.22	0.71	0.36	0.31
Control Delay	35.5	33.8	4.5	23.8	39.9	4.8	29.8	52.2	5.1	44.7	38.8	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.5	33.8	4.5	23.8	39.9	4.8	29.8	52.2	5.1	44.7	38.8	5.8
Queue Length 50th (ft)	118	384	4	34	316	0	122	330	0	75	104	0
Queue Length 95th (ft)	#242	470	47	62	394	44	186	412	36	#152	146	44
Internal Link Dist (ft)		691			661			589			420	
Turn Bay Length (ft)	250			250			230		50	160		50
Base Capacity (vph)	350	1483	763	198	1188	649	441	1017	552	219	880	526
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.76	0.24	0.44	0.74	0.26	0.54	0.85	0.22	0.70	0.35	0.31

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Existing PM
Peterson Rd & Constitution Ave

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	234	1037	166	80	811	156	217	791	111	141	283	149
Future Volume (veh/h)	234	1037	166	80	811	156	217	791	111	141	283	149
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	254	1127	0	87	882	0	236	860	0	153	308	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	401	1586		251	1290		438	955		227	834	
Arrive On Green	0.14	0.45	0.00	0.05	0.36	0.00	0.11	0.27	0.00	0.08	0.23	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	254	1127	0	87	882	0	236	860	0	153	308	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	9.6	30.9	0.0	3.6	25.2	0.0	11.7	28.0	0.0	7.7	8.7	0.0
Cycle Q Clear(g_c), s	9.6	30.9	0.0	3.6	25.2	0.0	11.7	28.0	0.0	7.7	8.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	401	1586		251	1290		438	955		227	834	
V/C Ratio(X)	0.63	0.71		0.35	0.68		0.54	0.90		0.68	0.37	
Avail Cap(c_a), veh/h	401	1586		251	1290		464	1022		242	880	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	21.5	26.9	0.0	23.6	32.4	0.0	28.6	42.3	0.0	33.8	38.5	0.0
Incr Delay (d2), s/veh	7.4	2.7	0.0	3.8	3.0	0.0	1.1	10.4	0.0	6.7	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	12.9	0.0	1.7	10.9	0.0	5.1	13.4	0.0	3.7	3.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.9	29.7	0.0	27.4	35.3	0.0	29.7	52.7	0.0	40.5	38.8	0.0
LnGrp LOS	C	C		C	D		C	D		D	D	
Approach Vol, veh/h		1381	A		969	A		1096	A		461	A
Approach Delay, s/veh		29.5			34.6			47.8			39.3	
Approach LOS		C			C			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.2	36.8	11.0	58.1	18.3	32.7	21.0	48.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	10.7	34.5	6.5	50.3	15.5	29.7	16.5	40.3				
Max Q Clear Time (g_c+I1), s	9.7	30.0	5.6	32.9	13.7	10.7	11.6	27.2				
Green Ext Time (p_c), s	0.0	2.2	0.0	7.1	0.1	1.8	0.3	4.6				
Intersection Summary												
HCM 6th Ctrl Delay			37.1									
HCM 6th LOS			D									
Notes												
Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

Deviation Request:

Constitution Storage PCD No. P-225, PPR 2224