

November 8, 2019

City of Aurora  
Stephen Rodriguez  
15151 E. Alameda Pwky, Suite 2300  
Aurora, CO 80012

Re: **Third Submission Review – Porteos** (Infrastructure CSP)  
Application Number: **DA-1903-13**  
Case Number: **2019-6032-00**

Dear Mr. Rodriguez:

Thank you for taking the time to review our third submission of Porteos Powhaton ISP. We received your comments on October 31, 2019. Responses to comments have been provided below. Please feel free to reach out if you should have any questions and/or concerns at 303-892-1166 or [lvielehr@norris-design.com](mailto:lvielehr@norris-design.com).

Sincerely,  
Norris Design



Leanne Vielehr  
Senior Associate

## Third Submission Review

### SUMMARY OF KEY COMPONENTS FROM ALL DEPARTMENTS

- Address remaining comments from Engineering, Traffic Engineering (?), Life Safety, Aurora Water, and Real Property for the ISP and any other relevant documents.  
**Response: Noted.**
- See the attached letter provided from Xcel Energy. They are requesting a response.  
**Response: Response provided below.**

### PLANNING DEPARTMENT COMMENTS

#### 1. Landscape Design Issues

Kelly K. Bish PLA, LEED AP / [kbish@auroragov.org](mailto:kbish@auroragov.org) / (303) 739-7189 / PDF comments in teal.

1A. No additional comments.

**Response: Comment noted, thank you.**

### REFERRAL COMMENTS FROM OTHER DEPARTMENTS AND AGENCIES

#### 2. Engineering (Public Works)

Reviewed by: Kristin Tanabe 303-739-7306 / [ktanabe@auroragov.org](mailto:ktanabe@auroragov.org)

2A. ISP Sheet 1 - The site plan will not be approved by public works until the preliminary drainage letter/report is approved.

**Response: Acknowledged.**

2B. Add the following note: In locations where utility easements overlap drainage easements, only subsurface utilities shall be permitted within the portion of the utility easement that overlaps the drainage easement. Installation of above ground utilities within a drainage easement requires prior written approval by City Engineer.

**Response: The note has been added to the Cover Sheet per comment.**

2C. Sheet 6 – Access to the top of the outlet structure needs to be included in the drainage easement.

**Response: Access to outlet structure provided per comment.**

2D. 64th Ave ROW document – See comments regarding ROW dimensions.

**Response: Acknowledged. Team is working directly with Andy Niquette to address the comments.**

#### 3. Traffic Engineering

Reviewed by: Brianna Medema 303-739-7336 / [bmedema@auroragov.org](mailto:bmedema@auroragov.org)

3A. Contact Brianna Medema directly for comments. Comment redlines were not provided.

**Response: See redline responses on the Traffic Study.**

#### 4. Life Safety

Reviewed by: Mark Apodaca 303-739-7656 / [mapodaca@auroragov.org](mailto:mapodaca@auroragov.org)

4A. Sheets 9 - 12

- A clear space of 36" shall be maintained around the circumference of the fire hydrant.

**Response: The landscape has been revised to maintain a clear space of 36" has been maintained around the circumference of the fire hydrant.**

5. **Aurora Water**

Reviewed by: Casey Ballard 303-739-7296 / cballard@auroragov.org

5A. Sheet 4 – Advisory comment. On civil plans label pressure zones on each side of the PRV.

**Response: Acknowledged. Zone label has been added to civil plans.**

5B. Sheet 6 – Access needs to be provided to the top of the outlet structure. See Chapter 3.62(3) of the Storm Drainage Design & technical Criteria. The sheet is missing the full COA approval number.

**Response: Access to outlet structure has been added per comment.**

6. **Real Property**

Reviewed by: Maurice Brooks / mbrooks@auroragov.org / 303-739-7294 / PDF comment color is magenta.

6A. Start the process of the easement and Right of Way dedications. Contact Andy Niquette for the processes for those dedications. See the red line comments in the ISP.

**Response: Easement and Right of Way dedications process has begun. Andy Niquette was contacted on 11/5/2019.**

7. **Xcel Energy**

Donna George

Right of Way and Permits

Public Service Company of Colorado dba Xcel Energy

Office: 303-571-3306 – Email: donna.l.george@xcelenergy.com

7A. Public Service Company of Colorado's (PSCo) Right of Way & Permits Referral Desk has reviewed the third referral site plans for Porteos Infrastructure and reminds the property owner/developer/contractor to contact PSCo's Encroachment Team for development plan review and execution of a License Agreement in the area of the existing high pressure natural gas transmission pipeline facilities at:

[https://www.xcelenergy.com/working\\_with\\_us/builders/encroachment\\_requests](https://www.xcelenergy.com/working_with_us/builders/encroachment_requests) and click on Colorado if necessary. An engineer will then be in contact to request specific plan sheets.

The property owner/developer/contractor is also reminded to call the Utility Notification Center for utility locates prior to construction, particularly near the existing underground electric distribution facilities on the south side of East 64th Avenue. The depth of cover over these facilities is not to be altered.

Should the project require any new natural gas or electric service or modification to existing facilities, the property owner/developer/contractor must complete the application process via [xcelenergy.com/InstallAndConnect](https://www.xcelenergy.com/InstallAndConnect).

**Comment response requested.**

**Response: Acknowledged.**



# MEMORANDUM

**TO:** Chris Fellows, Velocity M  
**FROM:** Philip J. Dunham, PE  
**DATE:** August 27, 2019  
**SUBJECT:** **Porteos ISP Traffic Analysis**  
 (FHU No. 119296-01)

The purpose of this memorandum is to summarize the 2040 traffic volume projections for the 64th Avenue & Powhatan Road intersection. The memorandum compares the proposed roadway geometry recommendations compared to the development plans and recent transportation studies. The methodology outlined in the 6th Edition of the ITE Traffic Engineering Handbook (LOS) and 95th percentile queue lengths were used.

## 2040 Traffic Projections

Several studies were referenced in developing the 2040 traffic volume projections. The foundation studies used in this analysis is the NEATS Refresh. This study presented results of travel demand modeling for the area. Traffic impact studies prepared to consider specific impacts of a maximum build out scenario were also used to develop "blended" traffic forecasts. These traffic studies include:

- Porteos Master Traffic Impact Study Update
- Porteos PA-7 Groot Distribution Center
- Porteos PA-5 JAG Logistics Center

All of the Porteos traffic studies utilized the NEATS Refresh study to aid in determining traffic volumes. The Groot and JAG studies refined traffic forecasts for specific planning areas within the Porteos development area. These two studies were used primarily as the basis for determining traffic volumes on Powhatan Road.

New information from development plans indicate that 64th Avenue will not connect to Powhatan Road as previously assumed. As a result, background traffic volumes are expected to decrease compared to the NEATS study.

Figure I presents the final set of 2040 traffic volume projections for the intersection of 64th Avenue and Powhatan Road. Daily and peak hour traffic volumes on each approach are generally higher than previous Porteos studies, but they are generally higher than 2040 volumes presented in the NEATS study.

Comments 9.25.19:  
 A significant amount of previous comments were not addressed. They are as follows:  
 2) Explain more thoroughly what is meant by "blended" traffic forecasts? Was there a factor applied to each development? Were they added?  
 5) Provide justification for assumption of reduced volumes on 64th. Traffic Engineering has not received information that 64th extension to Monaghan Rd will not be completed.  
 6) Match NEATS Recommended Roadway network as identified in Figure ES-3 or otherwise produce a standard Traffic Impact Study with sufficient justification. NEATS is an approved area wide Transportation study that has been through a rigorous public process and deviations from this document would require a significant delay. This process has been requested for other areas of 64th and has resulted with a smaller section between only 2 roadways with a deferral of the additional laneage, and full ROW requirement.

### New comments

- 1) Based on review of other submitted Memos in the area, 60th Ave between Jackson Gap St & Powhatan Rd is not anticipated to be part of the future roadway network. Ensure the 6,200 ADT trips are appropriately reallocated (& auxiliary lane needs reviewed/updated).
- 2) See comments throughout.

← Explain

Response: There is now better development information to help refine forecasts as compared to the time when the Master Porteos traffic study was prepared. We used this update knowledge AND NEATS results to refine the numbers. We have added some language to the new memo.

Where is the new information?

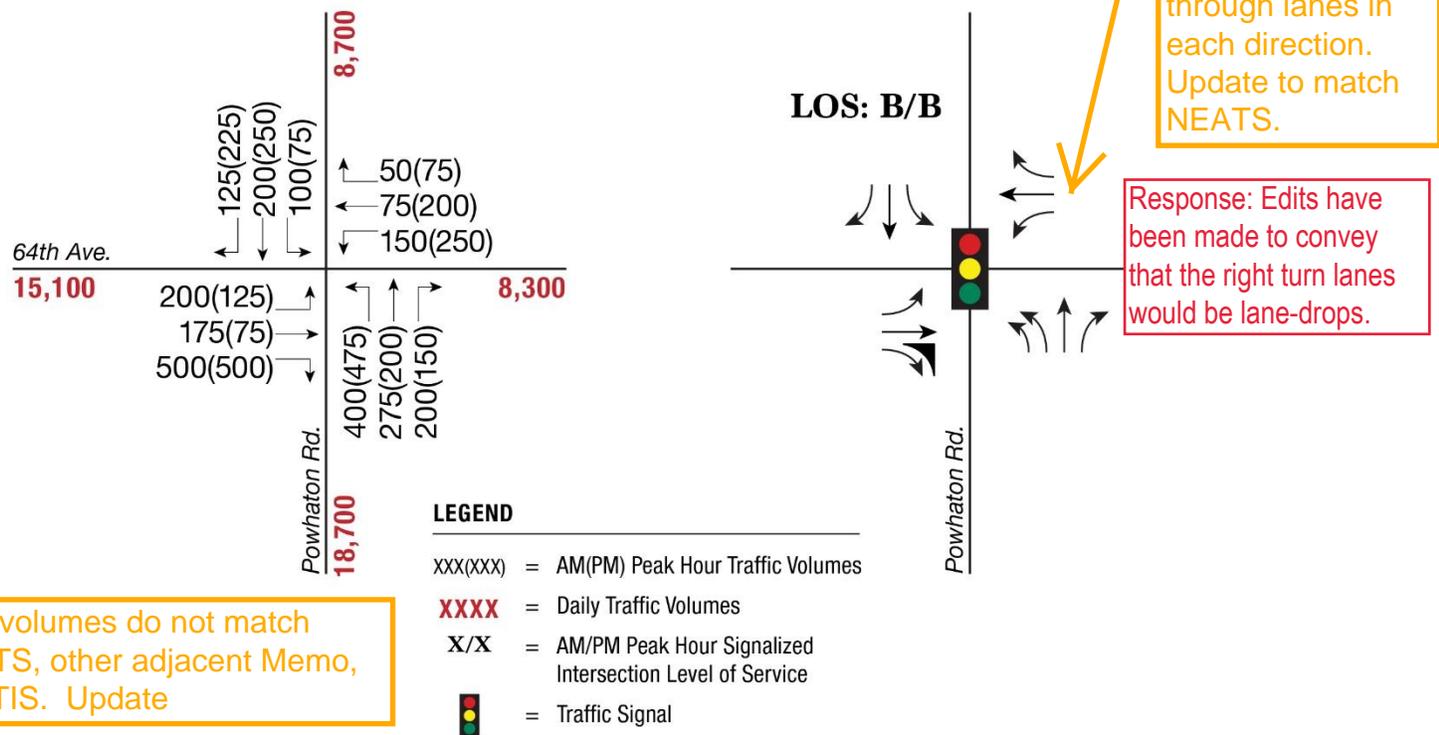
Response: Comment has been deleted.

## 2040 Traffic Analysis

Using peak hour projections from **Figure I**, intersection LOS were calculated to help identify appropriate lane geometry and are attached for reference. Additionally, the Colorado State Highway Access Code (CDOT SHAC) was referenced to determine the need for left-turn and right-turn storage lanes. The 95<sup>th</sup> percentile queue lengths associated with peak hour operations were used to inform storage lane length recommendations.

**Figure I** also displays peak hour traffic operations and geometry recommendations for the 64<sup>th</sup> Avenue & Powhatan Road. Traffic analysis worksheets are attached to this memorandum.

**Figure I. Year 2040 Traffic Conditions**



Response: The numbers have been updated and refined. NEATS plays a significant role in the new numbers, and results shown here fall between NEATS 2040 projections and NEATS Build out projections. There is not an exact match, but projections here are in line with NEATS, much more so than the older Master study. With each study having its own unique "focus", variations in projections will result.

at LOS B during both peak hours. Dedicated turn lanes should be on each approach. Dual left-turn lanes should be installed on the northbound approach. The southbound approach should have its own storage length with two exceptions; the northbound left-turn lanes should be continuous to allow transition to the eastbound approach (west of Powhatan Road and Powhatan Road south of 64<sup>th</sup> Avenue) (see Figure I for details). The eastbound right-turn lane should be channelized and given a storage length to create a free operating condition.

shown on **Figure I** and the anticipated peak hour operations in Year 2040. The intersection can be constructed as a two-lane road north of 64<sup>th</sup> Avenue and a four-lane road south of 64<sup>th</sup> Avenue.

**Table I** displays 2040 peak hour 95<sup>th</sup> percentile queue lengths and recommended storage lengths based on both the estimated queues and guidance contained in the CDOT SHAC using an NR-B classification. Heavy vehicle percentage is assumed at twenty-five percent for the purposes of determining queue length. These recommended storage lengths are chosen to contain the maximum anticipated peak hour queue length.

**Table I. Year 2040 95<sup>th</sup> Percentile Queue Lengths**

Approach	Movement	95 <sup>th</sup> Percentile Queue Length (ft) <sup>1</sup>		Recommended Storage Length based on 95 <sup>th</sup> Percentile	SCHAC Recommended Storage Length <sup>2</sup>
		AM	PM		
Eastbound	Left-Turn	83	70	100	300
	Through	95	50	Continuous	Continuous
	Right-Turn	0	0	Continuous	Continuous
Westbound	Left-Turn	65	128	125	375
	Through	38	130	Continuous	Continuous
	Right-Turn	25	43	75	125
Northbound	Left-Turn	65	88	100 (L) / Continuous (R)	350 (L) / Continuous (R)
	Through	128	88	Continuous	Continuous
	Right-Turn	70	50	75	300
Southbound	Left-Turn	40	33	75	150
	Through	108	155	Continuous	Continuous
	Right-Turn	55	135	150	350

<sup>1</sup> Calculations based on HCM methodology using a heavy vehicle percentage of 15 percent.

<sup>2</sup> Number shown is based on volume adjustments of 3 PCE per heavy vehicle

## Recommendation

City of Aurora *Traffic Impact Study Guidelines* indicate that the CDOT SHAC be used to determine storage and taper lengths. These values yield overly conservative results and provide storage well in excess 95<sup>th</sup> percentile queues (which already incorporates a heavy vehicle percentage), often by a factor of two to three. The SHAC procedures do not account for other conditions in the intersection such as a low opposing through movements if a left turn movement is in question. Rather, our recommendation is that the values in **Table I** corresponding to the 95<sup>th</sup> percentile lengths plus 144-foot tapers (to provide the required 12:1 taper for 12-foot lanes at 40 MPH for NR-B classification as identified in the CDOT SHAC) be incorporated in the design of the 64<sup>th</sup> Avenue & Powhaton Road intersection.

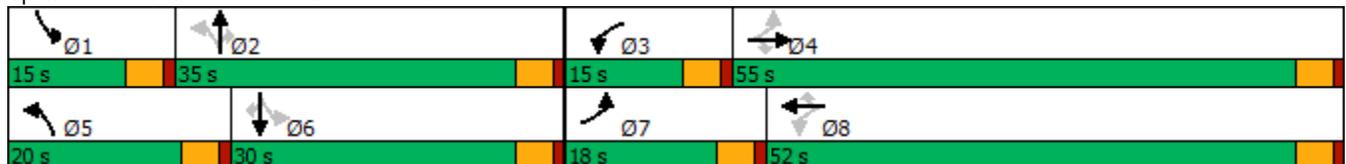
Timings  
1: Powhatan Rd & 64th Ave

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	200	175	500	150	75	50	400	275	200	100	200	125
Future Volume (vph)	200	175	500	150	75	50	400	275	200	100	200	125
Turn Type	pm+pt	NA	Perm									
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	18.0	55.0	55.0	15.0	52.0	52.0	20.0	35.0	35.0	15.0	30.0	30.0
Total Split (%)	15.0%	45.8%	45.8%	12.5%	43.3%	43.3%	16.7%	29.2%	29.2%	12.5%	25.0%	25.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	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 Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lag									
Lead-Lag Optimize?	Yes											
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Act Effct Green (s)	29.7	17.2	17.2	24.1	14.4	14.4	35.5	25.0	25.0	25.3	16.6	16.6
Actuated g/C Ratio	0.39	0.23	0.23	0.32	0.19	0.19	0.46	0.33	0.33	0.33	0.22	0.22
v/c Ratio	0.50	0.56	0.76	0.45	0.29	0.15	0.51	0.60	0.38	0.31	0.66	0.35
Control Delay	20.8	34.0	10.7	20.6	30.8	0.9	16.2	30.8	5.8	16.5	39.2	8.2
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	20.8	34.0	10.7	20.6	30.8	0.9	16.2	30.8	5.8	16.5	39.2	8.2
LOS	C	C	B	C	C	A	B	C	A	B	D	A
Approach Delay		17.6			19.8			18.4			24.7	
Approach LOS		B			B			B			C	

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 76.4	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 19.4	Intersection LOS: B
Intersection Capacity Utilization 61.0%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Powhatan Rd & 64th Ave



HCM 6th Signalized Intersection Summary  
1: Powhatan Rd & 64th Ave

Porteos ISP 64th/Powhatan  
08/27/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	200	175	500	150	75	50	400	275	200	100	200	125
Future Volume (veh/h)	200	175	500	150	75	50	400	275	200	100	200	125
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	1530	1530	1530	1530	1530	1530	1530	1530	1530	1530	1530	1530
Adj Flow Rate, veh/h	217	190	0	163	82	54	435	299	181	109	217	123
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, %	25	25	25	25	25	25	25	25	25	25	25	25
Cap, veh/h	459	264		370	207	175	842	427	362	331	296	251
Arrive On Green	0.16	0.17	0.00	0.12	0.14	0.14	0.16	0.28	0.28	0.08	0.19	0.19
Sat Flow, veh/h	1457	1530	1296	1457	1530	1296	2826	1530	1296	1457	1530	1296
Grp Volume(v), veh/h	217	190	0	163	82	54	435	299	181	109	217	123
Grp Sat Flow(s),veh/h/ln	1457	1530	1296	1457	1530	1296	1413	1530	1296	1457	1530	1296
Q Serve(g_s), s	6.4	6.1	0.0	4.8	2.5	1.9	5.7	9.1	6.0	3.0	6.9	4.4
Cycle Q Clear(g_c), s	6.4	6.1	0.0	4.8	2.5	1.9	5.7	9.1	6.0	3.0	6.9	4.4
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	459	264		370	207	175	842	427	362	331	296	251
V/C Ratio(X)	0.47	0.72		0.44	0.40	0.31	0.52	0.70	0.50	0.33	0.73	0.49
Avail Cap(c_a), veh/h	608	1493		489	1405	1190	1225	902	764	513	754	639
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.2	20.2	0.0	16.3	20.4	20.2	12.2	16.7	15.6	15.1	19.6	18.6
Incr Delay (d2), s/veh	0.8	3.7	0.0	0.8	1.2	1.0	0.5	2.1	1.1	0.6	3.5	1.5
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(95%),veh/ln	3.3	3.8	0.0	2.6	1.5	1.0	2.6	5.1	2.8	1.6	4.3	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.0	23.9	0.0	17.1	21.7	21.2	12.7	18.8	16.7	15.6	23.1	20.1
LnGrp LOS	B	C		B	C	C	B	B	B	B	C	C
Approach Vol, veh/h		407	A		299			915			449	
Approach Delay, s/veh		19.7			19.1			15.5			20.4	
Approach LOS		B			B			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.6	18.9	10.8	13.4	13.0	14.5	12.7	11.5				
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	10.5	30.5	10.5	50.5	15.5	25.5	13.5	47.5				
Max Q Clear Time (g_c+I1), s	5.0	11.1	6.8	8.1	7.7	8.9	8.4	4.5				
Green Ext Time (p_c), s	0.1	1.7	0.1	0.9	0.8	1.1	0.2	0.5				

Intersection Summary

HCM 6th Ctrl Delay	17.9
HCM 6th LOS	B

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

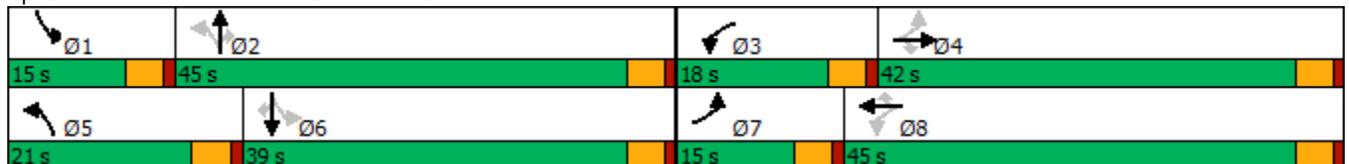
Timings  
1: Powhatan Rd & 64th Ave

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	75	500	250	200	75	475	200	150	75	250	225
Future Volume (vph)	125	75	500	250	200	75	475	200	150	75	250	225
Turn Type	pm+pt	NA	Perm									
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	15.0	42.0	42.0	18.0	45.0	45.0	21.0	45.0	45.0	15.0	39.0	39.0
Total Split (%)	12.5%	35.0%	35.0%	15.0%	37.5%	37.5%	17.5%	37.5%	37.5%	12.5%	32.5%	32.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	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 Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lag									
Lead-Lag Optimize?	Yes											
Recall Mode	None	Min	Min	None	Min	Min						
Act Effct Green (s)	26.5	16.6	16.6	33.2	19.9	19.9	42.2	32.2	32.2	29.1	20.9	20.9
Actuated g/C Ratio	0.31	0.19	0.19	0.39	0.23	0.23	0.49	0.37	0.37	0.34	0.24	0.24
v/c Ratio	0.41	0.28	0.84	0.64	0.62	0.20	0.62	0.38	0.28	0.22	0.74	0.49
Control Delay	22.3	33.0	18.3	27.8	38.5	1.8	19.0	26.1	5.6	16.7	44.5	7.7
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	22.3	33.0	18.3	27.8	38.5	1.8	19.0	26.1	5.6	16.7	44.5	7.7
LOS	C	C	B	C	D	A	B	C	A	B	D	A
Approach Delay		20.6			28.2			18.3			25.6	
Approach LOS		C			C			B			C	

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 86.2	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 22.5	Intersection LOS: C
Intersection Capacity Utilization 69.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Powhatan Rd & 64th Ave



HCM 6th Signalized Intersection Summary  
1: Powhatan Rd & 64th Ave

Porteos ISP 64th/Powhatan  
08/27/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	75	500	250	200	75	475	200	150	75	250	225
Future Volume (veh/h)	125	75	500	250	200	75	475	200	150	75	250	225
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	1530	1530	1530	1530	1530	1530	1530	1530	1530	1530	1530	1530
Adj Flow Rate, veh/h	136	82	0	272	217	82	516	217	127	82	272	232
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, %	25	25	25	25	25	25	25	25	25	25	25	25
Cap, veh/h	320	158		452	287	243	828	526	445	408	354	300
Arrive On Green	0.10	0.10	0.00	0.19	0.19	0.19	0.17	0.34	0.34	0.06	0.23	0.23
Sat Flow, veh/h	1457	1530	1296	1457	1530	1296	2826	1530	1296	1457	1530	1296
Grp Volume(v), veh/h	136	82	0	272	217	82	516	217	127	82	272	232
Grp Sat Flow(s),veh/h/ln	1457	1530	1296	1457	1530	1296	1413	1530	1296	1457	1530	1296
Q Serve(g_s), s	4.9	3.0	0.0	9.2	8.0	3.3	7.5	6.5	4.2	2.5	9.9	10.0
Cycle Q Clear(g_c), s	4.9	3.0	0.0	9.2	8.0	3.3	7.5	6.5	4.2	2.5	9.9	10.0
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	320	158		452	287	243	828	526	445	408	354	300
V/C Ratio(X)	0.43	0.52		0.60	0.76	0.34	0.62	0.41	0.29	0.20	0.77	0.77
Avail Cap(c_a), veh/h	425	963		507	1040	881	1117	1040	881	574	886	751
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.7	25.3	0.0	16.9	22.9	21.0	13.2	15.0	14.2	15.7	21.4	21.4
Incr Delay (d2), s/veh	0.9	2.6	0.0	1.6	4.1	0.8	0.8	0.5	0.3	0.2	3.5	4.3
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(95%),veh/ln	2.8	2.0	0.0	5.1	5.2	1.7	3.5	3.5	2.0	1.3	6.2	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.6	28.0	0.0	18.6	27.0	21.8	14.0	15.5	14.6	16.0	24.9	25.7
LnGrp LOS	C	C		B	C	C	B	B	B	B	C	C
Approach Vol, veh/h		218	A		571			860			586	
Approach Delay, s/veh		24.0			22.2			14.4			24.0	
Approach LOS		C			C			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.2	25.0	15.7	10.6	14.9	18.3	10.7	15.7				
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	10.5	40.5	13.5	37.5	16.5	34.5	10.5	40.5				
Max Q Clear Time (g_c+I1), s	4.5	8.5	11.2	5.0	9.5	12.0	6.9	10.0				
Green Ext Time (p_c), s	0.1	1.3	0.1	0.3	0.9	1.8	0.1	1.2				

Intersection Summary

HCM 6th Ctrl Delay	19.9
HCM 6th LOS	B

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



**SLOPE EASEMENT A DESCRIPTION:**

A SLOPE EASEMENT SITUATED WITHIN THE NORTHEAST QUARTER OF SECTION 8, TOWNSHIP 3 SOUTH, RANGE 65 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF AURORA, COUNTY OF ADAMS, STATE OF COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:  
 COMMENCING AT THE NORTHEAST CORNER OF SAID SECTION 8, TOWNSHIP 3 SOUTH, RANGE 65 WEST OF THE SIXTH PRINCIPAL MERIDIAN AND CONSIDERING THE EAST LINE OF THE NORTHEAST QUARTER OF SAID SECTION 8, BEING MONUMENTED ON THE NORTH END BY A FOUND 3-1/4 INCH ALUMINUM CAP SET BY PLS 19607 AND ON THE SOUTH END BY A FOUND 3-1/4 INCH ALUMINUM CAP SET BY PLS 19607, TO BEAR SOUTH 00°19'54" EAST, 2658.06 FEET WITH ALL BEARINGS CONTAINED HEREIN BEING RELATIVE THERETO;  
 THENCE SOUTH 28°35'37" WEST, A DISTANCE OF 192.28 FEET TO THE POINT OF BEGINNING;  
 THENCE SOUTH 00°19'54" EAST, A DISTANCE OF 288.53 FEET;  
 THENCE SOUTH 05°05'43" EAST, A DISTANCE OF 144.50 FEET;  
 THENCE SOUTH 00°19'54" EAST, A DISTANCE OF 1659.46 FEET;  
 THENCE SOUTH 89°56'59" WEST, A DISTANCE OF 0.88 FEET;  
 THENCE NORTH 02°51'00" WEST, A DISTANCE OF 1077.20 FEET;  
 THENCE NORTH 01°22'28" EAST, A DISTANCE OF 125.03 FEET;  
 THENCE NORTH 03°53'22" EAST, A DISTANCE OF 350.95 FEET;  
 THENCE NORTH 05°53'41" WEST, A DISTANCE OF 253.54 FEET;  
 THENCE NORTH 00°55'32" WEST, A DISTANCE OF 67.86 FEET;  
 THENCE NORTH 05°34'57" EAST, A DISTANCE OF 221.84 FEET;  
 THENCE NORTH 89°40'06" EAST, A DISTANCE OF 9.09 FEET TO THE POINT OF BEGINNING.  
 SAID PARCEL OF LAND CONTAINING A CALCULATED AREA OF 56,888 SQUARE FEET OR 1.306 ACRES, MORE OR LESS.  
 THE LINEAL UNIT USED IN THE PREPARATION OF THIS LEGAL DESCRIPTION IS THE U.S. SURVEY FOOT AS DEFINED BY THE UNITED STATES DEPARTMENT OF COMMERCE, NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY.

**SLOPE EASEMENT B DESCRIPTION:**

A SLOPE EASEMENT SITUATED WITHIN THE NORTHWEST QUARTER OF SECTION 9, TOWNSHIP 3 SOUTH, RANGE 65 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF AURORA, COUNTY OF ADAMS, STATE OF COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:  
 COMMENCING AT THE NORTHWEST CORNER OF SAID SECTION 9, TOWNSHIP 3 SOUTH, RANGE 65 WEST OF THE SIXTH PRINCIPAL MERIDIAN AND CONSIDERING THE WEST LINE OF THE NORTHWEST QUARTER OF SAID SECTION 9, BEING MONUMENTED ON THE NORTH END BY A FOUND 3-1/4 INCH ALUMINUM CAP SET BY PLS 19607 AND ON THE SOUTH END BY A FOUND 3-1/4 INCH ALUMINUM CAP SET BY PLS 19607, TO BEAR SOUTH 00°19'54" EAST, 2658.06 FEET WITH ALL BEARINGS CONTAINED HEREIN BEING RELATIVE THERETO;  
 THENCE SOUTH 00°19'54" EAST, A DISTANCE OF 168.30 FEET TO THE POINT OF BEGINNING;  
 THENCE NORTH 89°40'06" EAST, A DISTANCE OF 27.05 FEET;  
 THENCE SOUTH 02°35'10" EAST, A DISTANCE OF 441.29 FEET;  
 THENCE SOUTH 00°41'18" EAST, A DISTANCE OF 783.13 FEET;  
 THENCE SOUTH 00°57'30" WEST, A DISTANCE OF 868.69 FEET;  
 THENCE SOUTH 89°56'59" WEST, A DISTANCE OF 29.74 FEET;  
 THENCE NORTH 00°19'54" WEST, A DISTANCE OF 2092.39 FEET TO THE POINT OF BEGINNING.  
 SAID PARCEL OF LAND CONTAINING A CALCULATED AREA OF 86,762 SQUARE FEET OR 1.992 ACRES, MORE OR LESS.  
 THE LINEAL UNIT USED IN THE PREPARATION OF THIS LEGAL DESCRIPTION IS THE U.S. SURVEY FOOT AS DEFINED BY THE UNITED STATES DEPARTMENT OF COMMERCE, NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY.

**UTILITY EASEMENT A DESCRIPTION:**

A UTILITY EASEMENT SITUATED WITHIN THE NORTHWEST QUARTER OF SECTION 9, TOWNSHIP 3 SOUTH, RANGE 65 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF AURORA, COUNTY OF ADAMS, STATE OF COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:  
 COMMENCING AT THE WEST QUARTER CORNER OF SAID SECTION 9, TOWNSHIP 3 SOUTH, RANGE 65 WEST OF THE SIXTH PRINCIPAL MERIDIAN AND CONSIDERING THE WEST LINE OF THE NORTHWEST QUARTER OF SAID SECTION 9, BEING MONUMENTED ON THE SOUTH END BY A FOUND 3-1/4 INCH ALUMINUM CAP SET BY PLS 19607 AND ON THE NORTH END BY A FOUND 3-1/4 INCH ALUMINUM CAP SET BY PLS 19607, TO BEAR NORTH 00°19'54" WEST, 2658.06 FEET WITH ALL BEARINGS CONTAINED HEREIN BEING RELATIVE THERETO;  
 THENCE NORTH 00°19'54" WEST, A DISTANCE OF 398.35 FEET TO THE POINT OF BEGINNING;  
 THENCE NORTH 00°19'54" WEST, A DISTANCE OF 16.00 FEET;  
 THENCE NORTH 89°36'25" EAST, A DISTANCE OF 210.00 FEET;  
 THENCE SOUTH 00°19'54" EAST, A DISTANCE OF 16.00 FEET;  
 THENCE SOUTH 89°36'25" WEST, A DISTANCE OF 210.00 FEET TO THE POINT OF BEGINNING.  
 SAID PARCEL OF LAND CONTAINING A CALCULATED AREA OF 3,360 SQUARE FEET OR 0.077 ACRES, MORE OR LESS.  
 THE LINEAL UNIT USED IN THE PREPARATION OF THIS LEGAL DESCRIPTION IS THE U.S. SURVEY FOOT AS DEFINED BY THE UNITED STATES DEPARTMENT OF COMMERCE, NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY.

**UTILITY EASEMENT B DESCRIPTION:**

A UTILITY EASEMENT SITUATED WITHIN THE NORTHWEST QUARTER OF SECTION 9, TOWNSHIP 3 SOUTH, RANGE 65 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF AURORA, COUNTY OF ADAMS, STATE OF COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:  
 COMMENCING AT THE WEST QUARTER CORNER OF SAID SECTION 9, TOWNSHIP 3 SOUTH, RANGE 65 WEST OF THE SIXTH PRINCIPAL MERIDIAN AND CONSIDERING THE WEST LINE OF THE NORTHWEST QUARTER OF SAID SECTION 9, BEING MONUMENTED ON THE SOUTH END BY A FOUND 3-1/4 INCH ALUMINUM CAP SET BY PLS 19607 AND ON THE NORTH END BY A FOUND 3-1/4 INCH ALUMINUM CAP SET BY PLS 19607, TO BEAR NORTH 00°19'54" WEST, 2658.06 FEET WITH ALL BEARINGS CONTAINED HEREIN BEING RELATIVE THERETO;  
 THENCE NORTH 00°19'54" WEST, A DISTANCE OF 398.35 FEET;  
 THENCE NORTH 89°40'06" EAST, A DISTANCE OF 210.00 FEET TO THE POINT OF BEGINNING;  
 THENCE NORTH 00°19'54" WEST, A DISTANCE OF 16.00 FEET;  
 THENCE NORTH 89°36'25" EAST, A DISTANCE OF 91.27 FEET;  
 THENCE SOUTH 00°19'54" EAST, A DISTANCE OF 16.00 FEET;  
 THENCE SOUTH 89°36'25" WEST, A DISTANCE OF 91.27 FEET TO THE POINT OF BEGINNING.  
 SAID PARCEL OF LAND CONTAINING A CALCULATED AREA OF 1,460 SQUARE FEET OR 0.034 ACRES, MORE OR LESS.  
 THE LINEAL UNIT USED IN THE PREPARATION OF THIS LEGAL DESCRIPTION IS THE U.S. SURVEY FOOT AS DEFINED BY THE UNITED STATES DEPARTMENT OF COMMERCE, NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY.

**UTILITY EASEMENT C DESCRIPTION:**

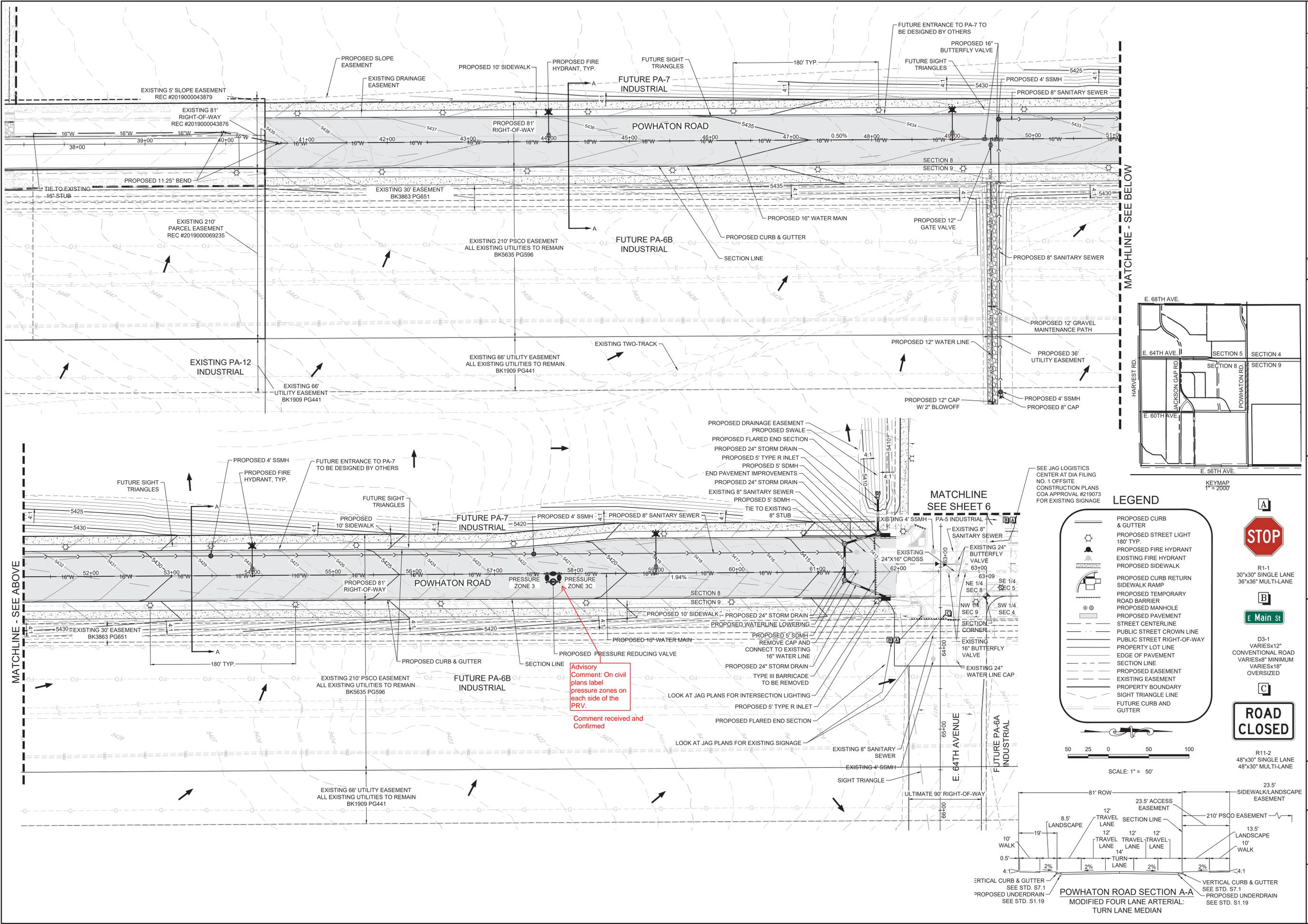
A UTILITY EASEMENT SITUATED WITHIN THE NORTHWEST QUARTER OF SECTION 9, TOWNSHIP 3 SOUTH, RANGE 65 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF AURORA, COUNTY OF ADAMS, STATE OF COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:  
 COMMENCING AT THE WEST QUARTER CORNER OF SAID SECTION 9, TOWNSHIP 3 SOUTH, RANGE 65 WEST OF THE SIXTH PRINCIPAL MERIDIAN AND CONSIDERING THE WEST LINE OF THE NORTHWEST QUARTER OF SAID SECTION 9, BEING MONUMENTED ON THE SOUTH END BY A FOUND 3-1/4 INCH ALUMINUM CAP SET BY PLS 19607 AND ON THE NORTH END BY A FOUND 3-1/4 INCH ALUMINUM CAP SET BY PLS 19607, TO BEAR NORTH 00°19'54" WEST, 2658.06 FEET WITH ALL BEARINGS CONTAINED HEREIN BEING RELATIVE THERETO;  
 THENCE NORTH 00°19'54" WEST, A DISTANCE OF 15.19 FEET TO THE POINT OF BEGINNING;  
 THENCE NORTH 00°19'54" WEST, A DISTANCE OF 16.00 FEET;  
 THENCE NORTH 89°59'34" EAST, A DISTANCE OF 210.00 FEET;  
 THENCE SOUTH 00°19'54" EAST, A DISTANCE OF 16.00 FEET;  
 THENCE SOUTH 89°59'34" WEST, A DISTANCE OF 210.00 FEET TO THE POINT OF BEGINNING.  
 SAID PARCEL OF LAND CONTAINING A CALCULATED AREA OF 3,360 SQUARE FEET OR 0.077 ACRES, MORE OR LESS.  
 THE LINEAL UNIT USED IN THE PREPARATION OF THIS LEGAL DESCRIPTION IS THE U.S. SURVEY FOOT AS DEFINED BY THE UNITED STATES DEPARTMENT OF COMMERCE, NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY.

**UTILITY EASEMENT D DESCRIPTION:**

A UTILITY EASEMENT SITUATED WITHIN THE NORTHWEST QUARTER OF SECTION 9, TOWNSHIP 3 SOUTH, RANGE 65 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF AURORA, COUNTY OF ADAMS, STATE OF COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:  
 COMMENCING AT THE WEST QUARTER CORNER OF SAID SECTION 9, TOWNSHIP 3 SOUTH, RANGE 65 WEST OF THE SIXTH PRINCIPAL MERIDIAN AND CONSIDERING THE WEST LINE OF THE NORTHWEST QUARTER OF SAID SECTION 9, BEING MONUMENTED ON THE SOUTH END BY A FOUND 3-1/4 INCH ALUMINUM CAP SET BY PLS 19607 AND ON THE NORTH END BY A FOUND 3-1/4 INCH ALUMINUM CAP SET BY PLS 19607, TO BEAR NORTH 00°19'54" WEST, 2658.06 FEET WITH ALL BEARINGS CONTAINED HEREIN BEING RELATIVE THERETO;  
 THENCE NORTH 00°19'54" WEST, A DISTANCE OF 14.00 FEET;  
 THENCE NORTH 89°40'06" EAST, A DISTANCE OF 210.00 FEET TO THE POINT OF BEGINNING;  
 THENCE NORTH 00°19'54" WEST, A DISTANCE OF 16.00 FEET;  
 THENCE NORTH 89°59'31" EAST, A DISTANCE OF 71.09 FEET;  
 THENCE SOUTH 00°00'14" EAST, A DISTANCE OF 16.00 FEET;  
 THENCE SOUTH 89°59'34" WEST, A DISTANCE OF 71.00 FEET;  
 SAID PARCEL OF LAND CONTAINING A CALCULATED AREA OF 1,137 SQUARE FEET OR 0.026 ACRES, MORE OR LESS.  
 THE LINEAL UNIT USED IN THE PREPARATION OF THIS LEGAL DESCRIPTION IS THE U.S. SURVEY FOOT AS DEFINED BY THE UNITED STATES DEPARTMENT OF COMMERCE, NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY.

SHEET NUMBER	2	DRAWN BY: KKJS	CHECKED BY: JB	DATE: JULY 3, 2019	SCALE:	AS SHOWN	FILE NO.:	8130249709
					PORTEOS - PHASE 5 INFRASTRUCTURE SITE PLAN NOTES			
ACP DIA 1287 INVESTORS, LLC 4530 E. SHEA BLVD., SUITE 100 PHOENIX, AZ 85028 ATTN: BILL WICHTERMAN P: 602.494.7800					 NORRIS DESIGN Planning   Landscape Architecture   Project Photographer Norris Design 1101 Bannock Street Denver, CO 80204 P: 303.692.1166 www.norrisdesign.com			
No.					Revisions			
No.					No.			
					Date			
					Appr.			
					Date			
					8/27/2019 CB			
					8/27/2019 KK			





### LEGEND

- PROPOSED CURB & GUTTER
- PROPOSED STREET LIGHT 180' TYP.
- PROPOSED FIRE HYDRANT
- EXISTING FIRE HYDRANT
- PROPOSED SIDEWALK
- PROPOSED CURB RETURN SIDEWALK RAMP
- PROPOSED TEMPORARY ROAD BARRIER
- PROPOSED MANHOLE
- PROPOSED PAVEMENT
- STREET CENTERLINE
- PUBLIC STREET CROWN LINE
- PUBLIC STREET RIGHT-OF-WAY
- PROPERTY LOT LINE
- EDGE OF PAVEMENT
- SECTION LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT
- PROPERTY BOUNDARY
- SIGHT TRIANGLE LINE
- FUTURE CURB AND GUTTER

R1-1  
30"x30" SINGLE LANE  
36"x36" MULTI-LANE

E Main St

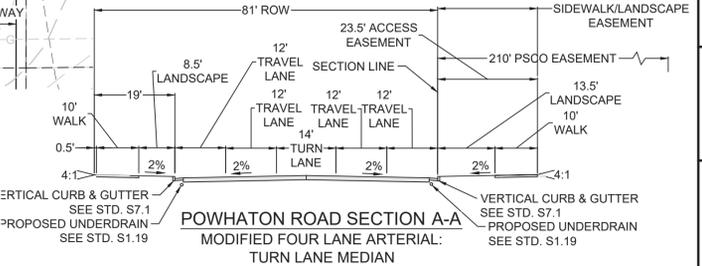
R11-2  
48"x30" SINGLE LANE  
48"x30" MULTI-LANE

SCALE: 1" = 50'

50 25 0 50 100

Advisory Comment: On civil plans label pressure zones on each side of the PRV.

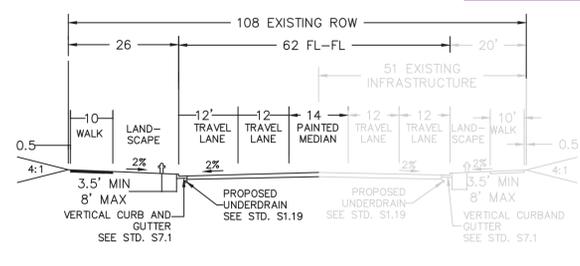
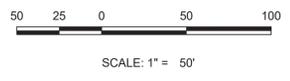
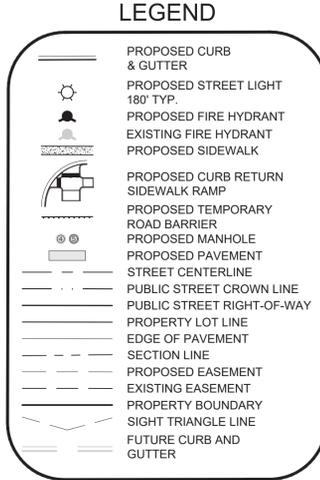
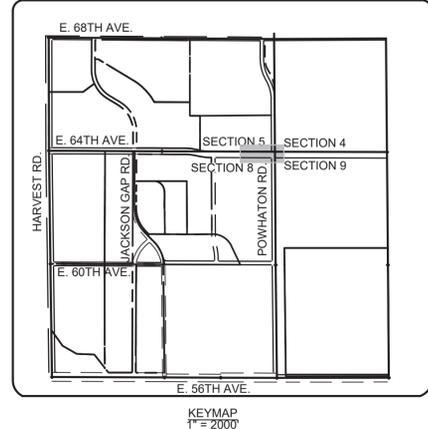
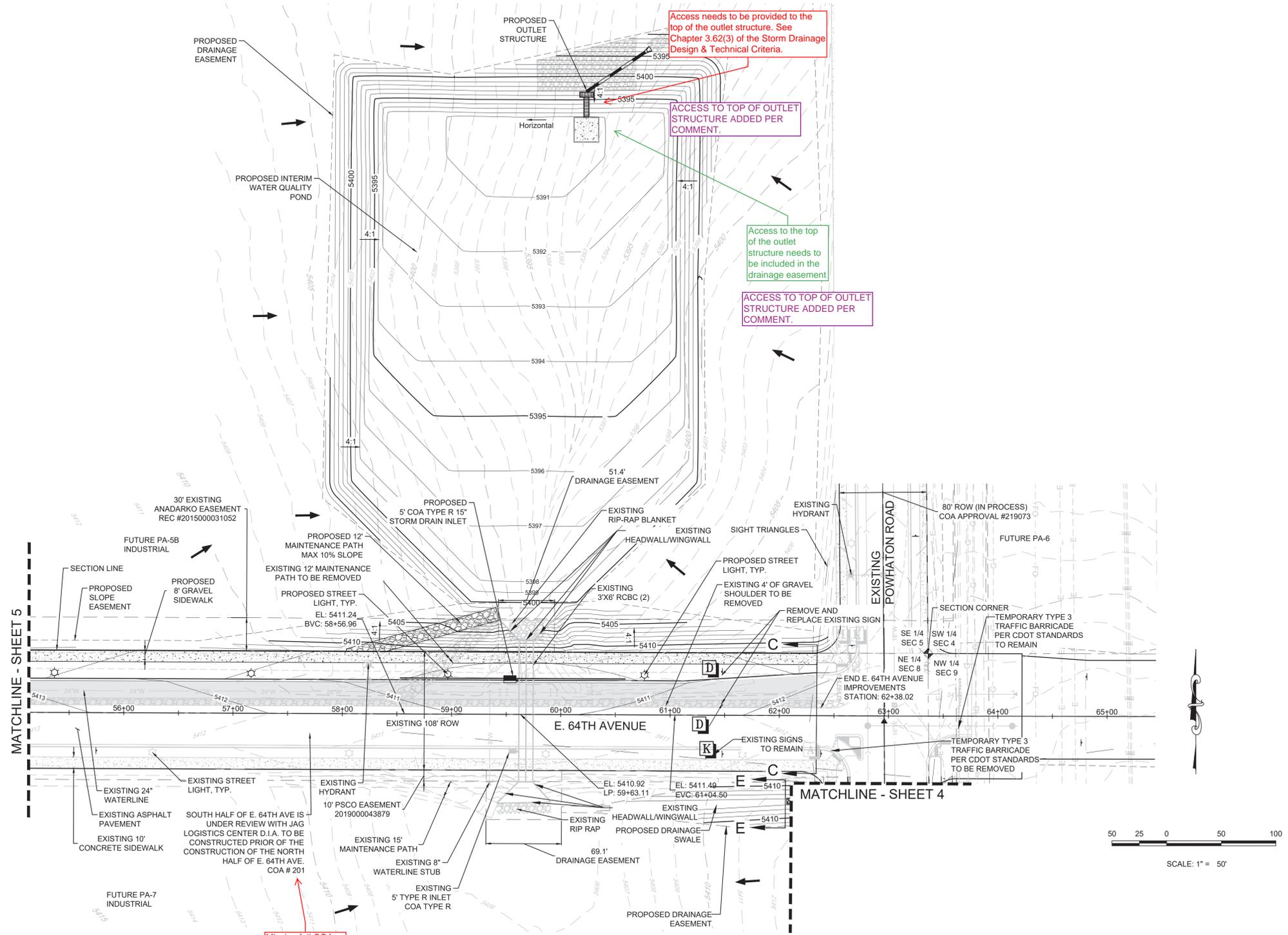
Comment received and Confirmed



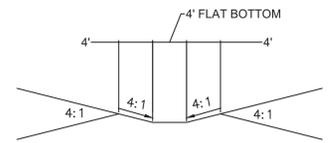
NO.	Date	Appr.	Date
REVISIONS	Date	Appr.	Date
10333 E. Dry Creek Rd. Suite 240 Englewood, CO 80112 Tel: (720) 482-9538 Fax: (720) 482-9546			
<b>PORTES - PHASE 5</b> <b>INFRASTRUCTURE SITE PLAN</b> <b>POWATHAN ROAD PLAN VIEW</b>			
SCALE:	AS SHOWN	FILE NO:	8130249709
DRAWN BY:	WSC	CHECKED BY:	JFF
DATE:	OCTOBER 2019		
SHEET NUMBER	4		



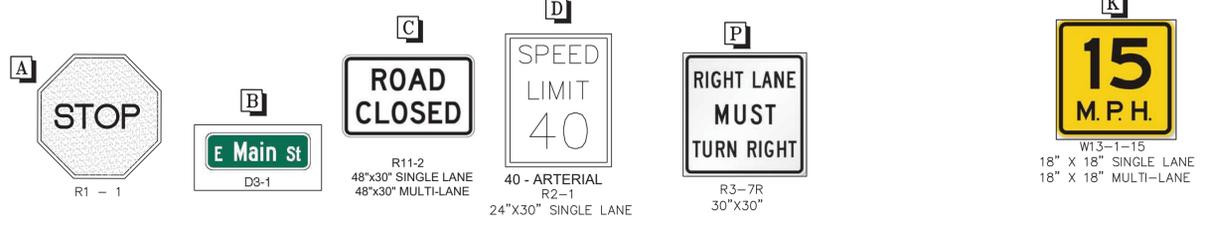
N:\PROJECTS\PORTER\PORTER\CONNECTION\ENGINEERING\SHEET SET\SUSP\NORTH HALF 64TH AVE.DWG, NELL, 10/09/19



**CROSS SECTION C-C**  
TRAVELING EASTERLY ON 64TH AVE



**CROSS SECTION E-E**

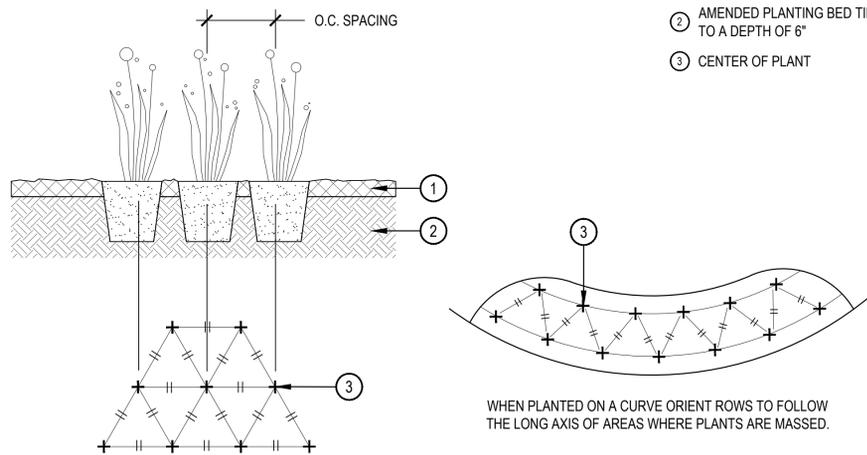


SHEET NUMBER	<b>6</b>		
	DRAWN BY: JRG	CHECKED BY: JFF	DATE: OCTOBER 2019
SCALE:	AS SHOWN		
	FILE NO:	8130249709	
<b>PORTEOS - PHASE 5</b> <b>INFRASTRUCTURE SITE PLAN</b> E. 64TH AVENUE PLAN VIEW			
10333 E. Dry Creek Rd. Suite 240 Englewood, CO 80112 Tel: (720) 482-9536 Fax: (720) 482-9546			
No.	Revisions	Date	Appr.

# LANDSCAPE NOTES

- THE DEVELOPER, HIS SUCCESSORS AND ASSIGNS, SHALL BE RESPONSIBLE FOR INSTALLATION, MAINTENANCE AND REPLACEMENT OF ALL LANDSCAPING MATERIALS SHOWN OR INDICATED ON THE APPROVED SITE PLAN ON FILE IN THE PLANNING DEPARTMENT.
- ALL CROSSINGS OR ENCROACHMENTS BY PRIVATE LANDSCAPE IRRIGATION LINES OR SYSTEMS INTO EASEMENTS AND STREET RIGHTS-OF-WAY OWNED BY THE CITY OF AURORA ARE ACKNOWLEDGED BY THE OWNER AS BEING SUBJECT TO CITY OF AURORA'S USE AND OCCUPANCY OF THE SAID EASEMENTS OR RIGHTS-OF-WAY. THE OWNER, THEIR SUCCESSORS AND ASSIGNS, HEREBY AGREE TO INDEMNIFY THE CITY OF AURORA FOR ANY LOSS, DAMAGE OR REPAIR TO CITY FACILITIES THAT MAY RESULT FROM THE INSTALLATION, OPERATION, OR MAINTENANCE OF SAID PRIVATE IRRIGATION LINES OR SYSTEMS.
- ANY MAJOR CHANGES FROM THE APPROVED PLANS, REQUIRED BECAUSE OF VARIATIONS IN THE FIELD CONDITIONS SHALL REQUIRE AN APPROVED AMENDMENT TO THE CSP, PRIOR TO COMMENCING ANY CONSTRUCTION ACTIVITIES THAT WOULD SUPPORT THIS CHANGE.
- IRRIGATION CONTROLLERS SHALL BE EQUIPPED WITH AUTOMATIC RAIN SHUT OFF SENSORS.
- SHRUB BEDS ARE TO BE CONTAINED BY GREEN 1/8" X 4" INTERLOCKING TYPE STEEL EDGER. IT IS NOT REQUIRED WHEN BED IS ADJACENT TO CURBS, WALLS, FENCES, OR WALKS.
- ALL SHRUB BEDS ARE TO BE MULCHED WITH 3" DEPTH, 1 1/2" LOCAL RIVER ROCK MULCH. WEED CONTROL FABRIC IS REQUIRED IN ALL SHRUB BEDS.
- ALL GROUND COVER AND PERENNIAL BEDS ARE TO BE MULCHED WITH 3" DEPTH SHREDDED WOOD BARK MULCH. NO WEED CONTROL FABRIC IS REQUIRED IN GROUND COVER BEDS. ALL SOD AND TURF TYPE SEEDING AREAS ARE TO HAVE SOIL PREPARATION PER CITY OF AURORA, UTILITIES DEPARTMENT, OFFICE OF WATER CONSERVATION, REGULATIONS FOR OBTAINING NEW SOD/SEED PERMITS. (MINIMUM RATE OF 4.0 CU. YDS. OF COMPOST PER 1000 S.F.).
- ALL AREAS TO BE SEEDED WITH DRYLAND GRASSES, NATIVE TYPE GRASSES, NATURALIZED GRASSES, OR RESTORATIVE GRASSES SHALL COMPLY WITH ARTICLE 14 OF THE CITY OF AURORA ZONING CODE, "LANDSCAPE ORDINANCE", SEC. 146-1429. THESE AREAS WILL COMPLY WITH REGULATIONS OUTLINED IN THIS CODE FOR SOIL AMENDMENTS AND IRRIGATION.
- THE COVER CROP SHOWN IN THE SEED MIXTURE MAY BE CHANGED OR RATES ADJUSTED BASED ON THE TIME OF YEAR IN WHICH THE SEEDING IS TO OCCUR.
- CONTRACTOR TO RE-ESTABLISH VEGETATION IN AREAS OF DISTURBANCE.
- A SOILS ANALYSIS SHALL BE PERFORMED, BY AN INDEPENDENT TESTING LABORATORY, FOR ALL AREAS TO BE LANDSCAPED PRIOR TO ISSUING CONSTRUCTION DRAWINGS. THE SOILS ANALYSIS WILL BE USED TO JUSTIFY THE SEEDING RATE, QUANTITY OF COMPOST, NEED FOR IRRIGATION, AND RECOMMENDED AMOUNT OF WATER TO BE APPLIED TO SEEDED AREAS. THE SEED MIXTURE, IRRIGATION SYSTEM, AND COMPOST RATES SHOWN ON PLANS MAY BE MODIFIED TO OPTIMIZE THE PERFORMANCE AND EXPEDITE THE RESTORATION OF THESE AREAS.
- THE DEVELOPER, HIS SUCCESSORS AND ASSIGNS SHALL BE RESPONSIBLE FOR THE ESTABLISHMENT OF DRYLAND GRASSES, NATIVE TYPE GRASSES, NATURALIZED GRASSES, OR RESTORATIVE GRASSES, FOR A PERIOD NOT TO EXCEED THREE FULL GROWING SEASONS. TEMPORARY IRRIGATION SYSTEMS MAY BE NECESSARY TO FACILITATE GERMINATION AND ESTABLISHMENT. THE AREA SHALL BE MAINTAINED AS WEED FREE AS POSSIBLE, DURING THE ENTIRE ESTABLISHMENT PERIOD. MOWING, PULLING, AND CHEMICAL METHODS MAY BE USED TO CONTROL WEEDS AND PREVENT REDEVELOPMENT OF SEED HEADS ON THE WEED PLANT.
- PERFORMANCE OF SEEDED AREAS SHALL BE EVALUATED FOR INITIAL ACCEPTANCE, AT THE END OF THE FIRST FULL GROWING SEASON, BY BOTH THE CITY OF AURORA AND THE DEVELOPER'S REPRESENTATIVE. THE INSPECTION WILL BE DETERMINE COMPLIANCE WITH SUBSECTION C (1 AND 2), OF ARTICLE 14, SECTION 146-1429
- AFTER EACH FULL GROWING SEASON, FOR A PERIOD NOT TO EXCEED THREE YEARS, THE GRASS STAND SHALL BE EVALUATED FOR UNIFORMITY IN APPEARANCE, COVERAGE, AND PRESENCE OF WEEDS. UPON AGREEMENT FROM THE DEVELOPER'S REPRESENTATIVE AND THE CITY AURORA, THE TEMPORARY IRRIGATION SYSTEM WILL BE PERMANENTLY DEACTIVATED OR REMOVED.
- SIX INCHES OF THE ORIGINAL TOP SOIL, SHALL BE SALVAGED FROM THE SITE, PRIOR TO OVERLOT GRADING AND REDISTRIBUTED OVER AREAS TO RECEIVED DRYLAND GRASSES, NATIVE TYPE GRASSES, NATURALIZED GRASSES, OR RESTORATIVE GRASSES, IN ACCORDANCE WITH PART 3 OF SUBSECTION I, OF ARTICLE 14, SECTION 146-1429.
- TREES SHALL NOT BE LOCATED IN DRAINAGE SWALES, OR DRAINAGE AREAS.
- THE DEVELOPER, HIS SUCCESSORS AND ASSIGNS ARE RESPONSIBLE FOR IMPLEMENTING EROSION CONTROL MEASURES ON SEEDED SLOPES EXCEEDING 3:1.
- SIGHT TRIANGLES SHALL REMAIN UNOBSTRUCTED BY PLANT MATERIAL, OR ANY OTHER VISUAL OBSTACLE, OVER 26" IN HEIGHT. VISIBILITY MUST REMAIN 75% OPEN FOR THE VERTICAL AREA FROM 2 TO 3 FEET HEIGHT AS IDENTIFIED IN THE ROADWAY DESIGN & SPECIFICATIONS MANUAL SECTION 4.04.2.10.
- ANY TREE LOCATED WITH IN A SIGHT TRIANGLE MUST BE PRUNED TO PROVIDE NO OBSTRUCTION BELOW 7' IN ACCORDANCE WITH THE SIGHT TRIANGLE DETAIL IN COA ROADWAY DESIGN MANUAL.
- ALL AREAS SHALL BE GRADED TO ACHIEVE POSITIVE DRAINAGE, UNLESS IDENTIFIED AS A DETENTION OR RETENTION POND.
- DO NOT DISTURB THE EXISTING PAVING, LIGHTING, LANDSCAPING, OR IRRIGATION THAT EXISTS ADJACENT TO THE SITE UNLESS OTHERWISE NOTED ON PLAN.
- LANDSCAPE MATERIAL PLACEMENT SHALL NOT BE PLACED OR KEPT NEAR FIRE HYDRANTS, FIRE DEPARTMENT INLET CONNECTIONS OR FIRE PROTECTION CONTROL VALVES IN A MANNER THAT WOULD PREVENT SUCH EQUIPMENT OR FIRE HYDRANTS FROM BEING IMMEDIATELY DISCERNIBLE. THE FIRE DEPARTMENT SHALL NOT BE DETERRED OR HINDERED FROM GAINING IMMEDIATE ACCESS TO FIRE PROTECTION EQUIPMENT OR HYDRANTS.
- A 5-FOOT CLEAR SPACE SHALL BE MAINTAINED AROUND THE CIRCUMFERENCE OF FIRE HYDRANTS.
- LANDSCAPING MATERIAL SHOWN WITHIN THE SITE PLAN CANNOT ENCROACH INTO ROADWAYS THAT ARE DEDICATED (OR DESIGNATED) AS FIRE LANE EASEMENTS (OR CORRIDORS).
- ALL LANDSCAPED AREAS AND PLANT MATERIAL, EXCEPT FOR NON-IRRIGATED NATIVE, RESTORATIVE, AND DRYLAND GRASS AREAS THAT COMPLY WITH REQUIREMENTS FOUND IN SEC. 146-1429, MUST BE WATERED BY AN AUTOMATIC UNDERGROUND IRRIGATION SYSTEM. IRRIGATION SYSTEM DESIGN, INSTALLATION, OPERATION, AND MAINTENANCE SHALL CONFORM TO REQUIREMENTS FOUND IN THE CITY OF AURORA IRRIGATION ORDINANCE.
- ALL FIRE HYDRANTS SHALL BE LOCATED NOT LESS THAN 3'6" AND NOT MORE THAN 8' MAXIMUM FROM THE BACK OF THE CURB TO THE CENTER OF THE HYDRANT AND SHALL BE UNOBSTRUCTED ON THE STREET SIDE.
- PRIOR TO ISSUANCE OF THE FINAL CERTIFICATE OF OCCUPANCY (CO) FOR PLANNING AREA 12, DEVELOPER WILL COMPLETE INSTALLATION OF THE LANDSCAPING. IF ROADWAY AND HARDSCAPE CONSTRUCTION IS COMPLETED AFTER OCTOBER 15TH, A TEMPORARY CERTIFICATE OF OCCUPANCY (TCO) MAY BE ISSUED, AND THE LANDSCAPING WILL BE REQUIRED TO BE COMPLETED WITHIN 90 DAYS FROM THE FOLLOWING APRIL 15TH.
- ADJUSTMENTS IN THE PLANT MATERIAL LOCATIONS WILL BE NECESSARY TO ACCOMMODATE FUTURE DRIVEWAY/CURB CUTS ASSOCIATED WITH PLANNING AREA 12.
- FIRE HYDRANTS MUST BE PLACED AT LEAST ONE (1) FOOT IN FRONT OR BEHIND A SIDEWALK WHILE STILL MEETING THE MINIMUM BACK OF CURB CLEARANCE REQUIREMENTS.

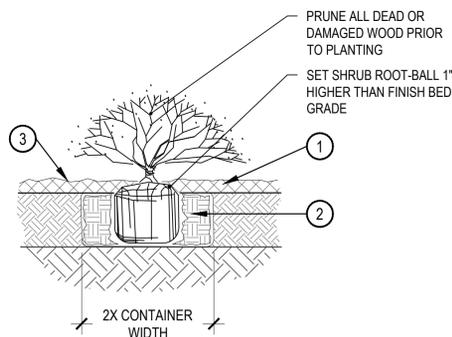
- ① SPECIFIED MULCH
- ② AMENDED PLANTING BED TILLED TO A DEPTH OF 6"
- ③ CENTER OF PLANT



## 1 PERENNIAL PLANT LAYOUT

SCALE: 1" = 1'-0"

- ① SPECIFIED MULCH
- ② AMENDED SOIL IN PLANTING BED PER SPECIFICATIONS. TILL SOIL TO A DEPTH OF EIGHT INCHES.
- ③ FINISH GRADE (TOP OF MULCH)



## 2 SHRUB PLANTING

SCALE: 1-1/2" = 1'-0"

- NOTE:
- 1. BROKEN OR CRUMBLING ROOT-BALLS WILL BE REJECTED
- 2. CARE SHOULD BE TAKEN NOT TO DAMAGE THE SHRUB OR ROOT-BALL WHEN REMOVING IT FROM ITS CONTAINER
- 3. ALL JUNIPERS SHOULD BE PLANTED SO THE TOP OF THE ROOT-BALL OCCURS ABOVE THE FINISH GRADE OF THE MULCH LAYER
- 4. DIG PLANT PIT TWICE AS WIDE AND HIGH AS THE CONTAINER

## STANDARD RIGHT OF WAY LANDSCAPE REQUIREMENTS

ROW DESCRIPTION	BUFFER WIDTH	BUFFER LENGTH	BUFFER REDUCTION FEATURES	# OF TREES REQUIRED	# OF TREES PROVIDED	# OF SHRUBS REQUIRED	# OF SHRUBS PROVIDED
<b>64TH AVENUE</b>							
STREET FRONTAGE (1 TREE / 40 FT.)	N/A	4,242 L.F.	N/A	107	107	N/A	275 SHRUBS 252 GRASSES TOTAL:527 SHRUBS
<b>POWHATON ROAD</b>							
STREET FRONTAGE (1 TREE / 40 FT.)	N/A	4,597 L.F.	N/A	115	112'	N/A	322 SHRUBS 277 GRASSES TOTAL:599 SHRUBS

\*DUE TO THE UTILITY EASEMENTS, UTILITY ROUTING CONFLICTS, AND FUTURE DRIVES, STREET TREES CANNOT BE PLANTED IN SOME AREAS. WHERE POSSIBLE THESE REQUIRED TREES HAVE BEEN RELOCATED TO OTHER AREAS.

### NOTE:

- STREET BUFFER REQUIREMENTS: 1 TREE AND 10 SHRUBS PER 40 LINEAR FEET, WITH 50% OF TREES BEING EVERGREEN, ARE NOT PROVIDED WITH THESE PLANS. STREET BUFFER PLANTINGS WILL BE PROVIDED WITH ON-SITE IMPROVEMENTS OF DEVELOPMENT ADJACENT TO ROADWAY INFRASTRUCTURE IMPROVEMENTS.
- FUTURE DRIVES HAVE BEEN REMOVED FROM THE OVERALL LANDSCAPE CALCULATIONS

### NOTES:

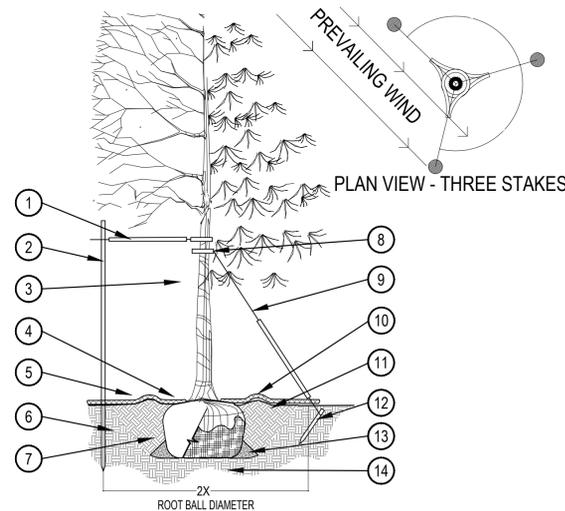
- 10 (#5 CONTAINER) SHRUBS EQUALS ONE TREE EQUIVALENT (TE)
- 30 (#1 CONTAINER) GRASSES EQUALS ONE TREE EQUIVALENT (TE)
- 30 (#1 CONTAINER) PERENNIALS EQUALS ONE TREE EQUIVALENT (TE)

### PRUNING NOTES:

- ALL PRUNING SHALL COMPLY WITH ANSI A300 STANDARDS.
- DO NOT HEAVILY PRUNE THE TREE AT PLANTING. PRUNE ONLY CROSSOVER LIMBS, CO-DOMINANT LEADERS AND BROKEN BRANCHES. SOME INTERIOR TWIGS AND LATERAL BRANCHES MAY BE PRUNED. HOWEVER, DO NOT REMOVE THE TERMINAL BUDS OF BRANCHES THAT EXTEND TO THE EDGE OF THE CROWN.

### STAKING NOTES:

- STAKE TREES PER FOLLOWING SCHEDULE, THEN REMOVE AT END OF FIRST GROWING SEASON.
  - 1-1/2" CALIPER SIZE - MIN. 1 STAKE ON SIDE OF PREVAILING WIND (GENERALLY N.W. SIDE)
  - 1-3/4" - 3" CALIPER SIZE - MIN. 2 STAKES - ONE ON N.W. SIDE, ONE ON S.W. SIDE (OR PREVAILING WIND SIDE AND 180° FROM THAT SIDE)
  - 3" CALIPER SIZE AND LARGER - 3 STAKES PER DIAGRAM
- WIRE OR CABLE SHALL BE MIN. 12 GAUGE, TIGHTEN WIRE OR CABLE ONLY ENOUGH TO KEEP FROM SLIPPING. ALLOW FOR SOME TRUNK MOVEMENT. NYLON STRAPS SHALL BE LONG ENOUGH TO ACCOMMODATE 1-1/2" OF GROWTH AND BUFFER ALL BRANCHES FROM WIRE.



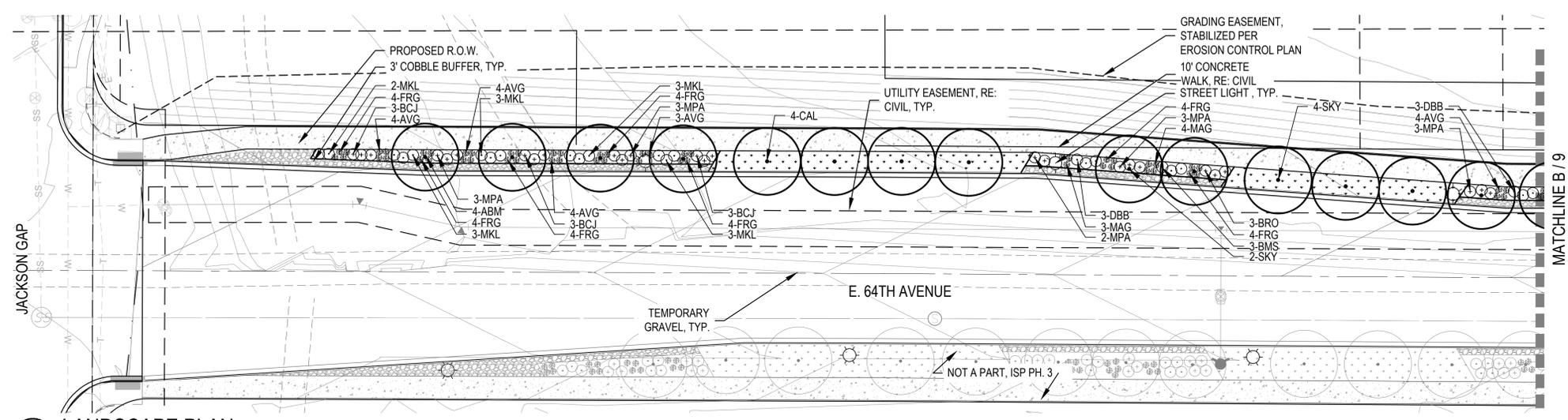
## 3 TREE PLANTING DETAIL

SCALE: 3/16" = 1'-0"

## WATER USE TABLE

AREA DESCRIPTION	WATER CONSERVING IRRIGATION (NON-SOD)	NON-WATER CONSERVING IRRIGATION (SOD)
STREET FRONTAGE	66,364 S.F.	N/A

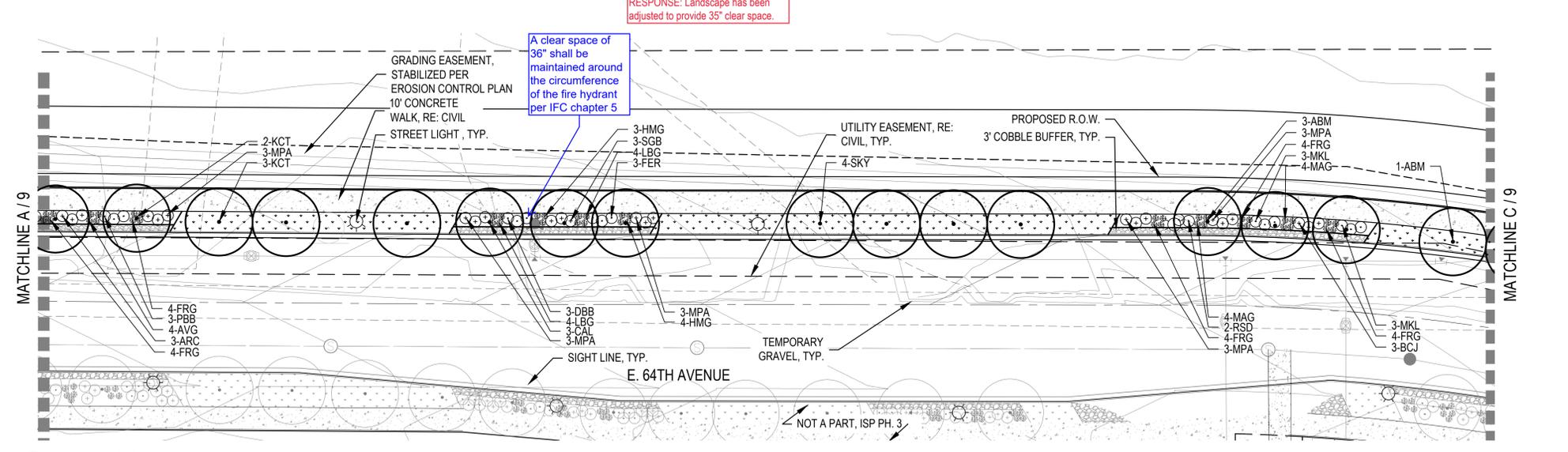




**A** LANDSCAPE PLAN SCALE: 1" = 30'

### LEGEND

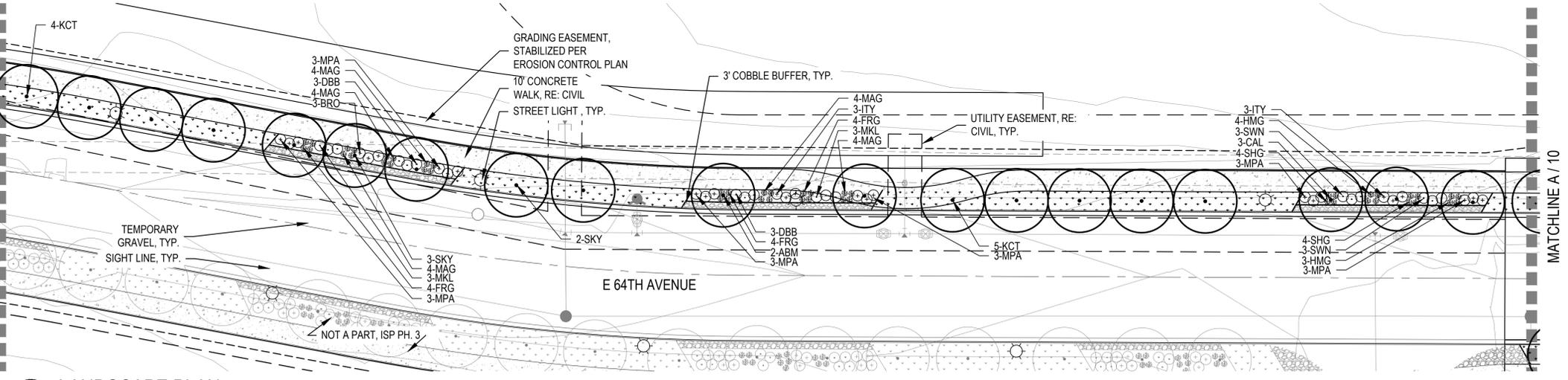
- CANOPY TREE
- DECIDUOUS SHRUBS
- EVERGREEN SHRUBS
- ORNAMENTAL GRASSES
- ENHANCED NATIVE SEED MIX
- 4"-6" ROCK COBBLE
- STEEL EDGER
- STREET LIGHT
- FIRE HYDRANT
- PROPOSED CONTOURS - MAJOR
- PROPOSED CONTOURS - MINOR
- EXISTING CONTOURS



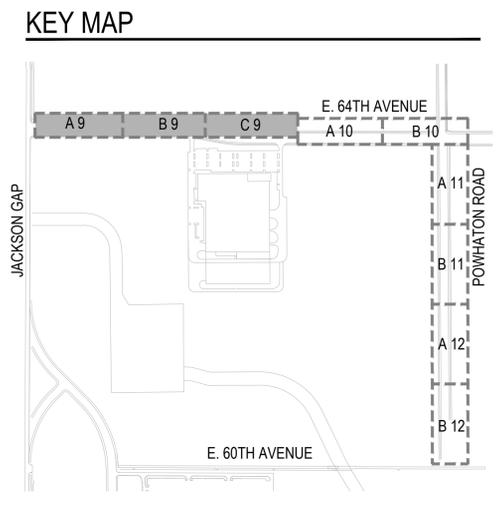
**B** LANDSCAPE PLAN SCALE: 1" = 30'

**RESPONSE:** Landscape has been adjusted to provide 35" clear space.

A clear space of 36" shall be maintained around the circumference of the fire hydrant per IFC chapter 5



**C** LANDSCAPE PLAN SCALE: 1" = 30'



P:\PORTEOS - 0068-01-0000\PORTEOS POWHATON ISP - 0808-01-2057\DRAWINGS\SUBMITTAL\PLAN\PORTEOS-LANDSCAPE\_LAND.DWG, CBRESNAHAN, 10/9/19

SHEET NUMBER	9																
	NO.	NO.															
DRAWN BY:	KKJS																
	CHECKED BY:	JB															
DATE:	JULY 3, 2019																
	SCALE:	AS SHOWN															
FILE NO.:	8130249709																
	ACPDIA 1287 INVESTORS, LLC 4530 E. SHEA BLVD., SUITE 100 PHOENIX, AZ 85028 ATTN: BILL WICHTERMAN P: 602.494.7800																
PORTEOS - PHASE 5 INFRASTRUCTURE SITE PLAN LANDSCAPE PLAN																	
<table border="1"> <tr> <td>No.</td> <td>Revisions</td> <td>Date</td> <td>Init.</td> <td>Appr.</td> </tr> <tr> <td>1</td> <td>RESUBMITTAL</td> <td>10/20/19</td> <td>CB</td> <td></td> </tr> <tr> <td>2</td> <td>RESUBMITTAL</td> <td>8/27/2019</td> <td>KK</td> <td></td> </tr> </table>			No.	Revisions	Date	Init.	Appr.	1	RESUBMITTAL	10/20/19	CB		2	RESUBMITTAL	8/27/2019	KK	
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Norris Design 1101 Bannock Street Denver, CO 80204 P: 303.692.1166 www.norrisdesign.com <b>NORRIS DESIGN</b> Planning   Landscape Architecture   Project Forensics																	

