




**DRAINAGE LETTER ADDENDUM FOR
ACADEMY GATEWAY SUBDIVISION NO. 1**

DRAINAGE LETTER STATEMENT

ENGINEER'S STATEMENT:

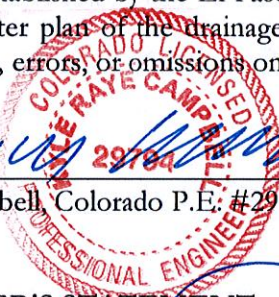
The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the El Paso County for drainage reports and said report is in conformity with the master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors, or omissions on my part in preparing this report.



Kyle R Campbell, Colorado P.E. #29794

9/21/17

Date



DEVELOPER'S STATEMENT:

I, the developer, have read and will comply with all of the requirements specified in this drainage report and plan.

Business Name: Academy Gateway II, LLC

By:  _____

Title: Manager

Address: 403 S. Tejon Street

Colorado Springs, CO 80903


EL PASO COUNTY ONLY:

Filed in accordance with the requirements of the Drainage Criteria Manual, Volumes 1 and 2, El Paso County Engineering Criteria Manual and Land Development Code as amended.

Jennifer Irvine, P.E.
County Engineer / ECM Administrator

Conditions:

Approved
Date
By: Jennifer Irvine, County Engineer
Date: 09/21/2017
El Paso County Department of Public Works





August 11, 2017

City of Colorado Springs
Engineering Development Review Division
30 South Nevada, Suite 401
Colorado Springs, CO 80903

ATTN: Mrs. Jennifer Irvine

RE: Drainage Letter Addendum for Academy Gateway Subdivision Filing No. 1

Dear Jennifer:

Please consider this the Drainage Letter Addendum for Academy Gateway Subdivision Filing No. 1 This letter is being written to further define the storm system required for Lot 1 and Lot 2.

This letter will update storm sewer routing inlet sizes and alignment for Academy Gateway Subdivision Filing No. 1 Lot 1 and Lot 2. More specifically Basin D. Please see the "Preliminary/Final Drainage Report for Academy Gateway Subdivision Filing No. 1" by CCES approved July 6, 2017 report for drainage information. All basins and drainage patterns from the original report remain the same as previously approved with the exception of Design Points 2 & 4 and Basins B & D on attached drainage map excerpt.

Design Point 2 ($Q_5 = 5$ cfs, $Q_{100} = 8$ cfs) is the proposed developed flow from Basin B which is predominately the paved surface of Academy Gate View. A proposed private 5' Type R sump inlet will intercept these flows in their entirety. Basin B area has increased from 0.99 acres to 1.08 acres with the addition of a high point in in the access roadway adjacent to Lot 1 and Lot 2. No impact to proposed inlet sizing or developed flows.

Design Point 4 and Basin D from the approved report is further broken down based upon future use of Lot 1 and Lot 2. Basin D is broken down into Basins D, D1, D2 D3 and D4 with associated Design Points 4 and 4A for inlet and pipe sizing. Design Point 4 ($Q_5 = 0.1$ cfs, $Q_{100} = 3$ cfs) consists of flows from Basin D4 which is private drive aisle. A proposed 5' Type-R inlet will intercept flows. Design Point 4A ($Q_5 = 0.1$ cfs, $Q_{100} = 3$ cfs) consists of flows from Basin D2 which is private drive aisle between Lots 1 and 2. A proposed 5' Type-R-at grade inlet will intercept flows. Basin D ($Q_5 = 4$ cfs, $Q_{100} = 6$ cfs) consists of future commercial use on Lot 1. Flows will be captured onsite and routed to a provided 18" storm sewer stub (Pipe 5). Basin D3 ($Q_5 = 2$ cfs, $Q_{100} = 3$ cfs) consists of future commercial use on Lot 1. Flows will be captured on site and

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Mrs. Jennifer Irvine
Drainage Letter Addendum for
Academy Gateway Subdivision Filing No. 1

routed to a provided 12" storm stub. Basin D1 ($Q_5 = 4$ cfs, $Q_{100} = 7$ cfs) consists of future commercial use on Lot 2. Flows will be captured onsite and routed to a provided 18" storm sewer stub (Pipe 3). All flows will be routed to the proposed Detention Facility A as previously designed. Per original report Basin Design Point 4 was ($Q_5 = 10$ cfs, $Q_{100} = 18$ cfs) and was routed to the detention facility in a proposed 24" Storm system. This is comparable to Pipe 6 ($Q_5 = 10$ cfs, $Q_{100} = 18$ cfs) in this addendum. No increase in developed flows is anticipated.

SUMMARY

The original drainage report for Academy Gateway Subdivision Filing No. 1 calculations and report details remain the same. This letter further defines the storm sewer system for Lot 1 and Lot 2 from the previous report.

If you have any questions or comments regarding this drainage, please do not hesitate to call.

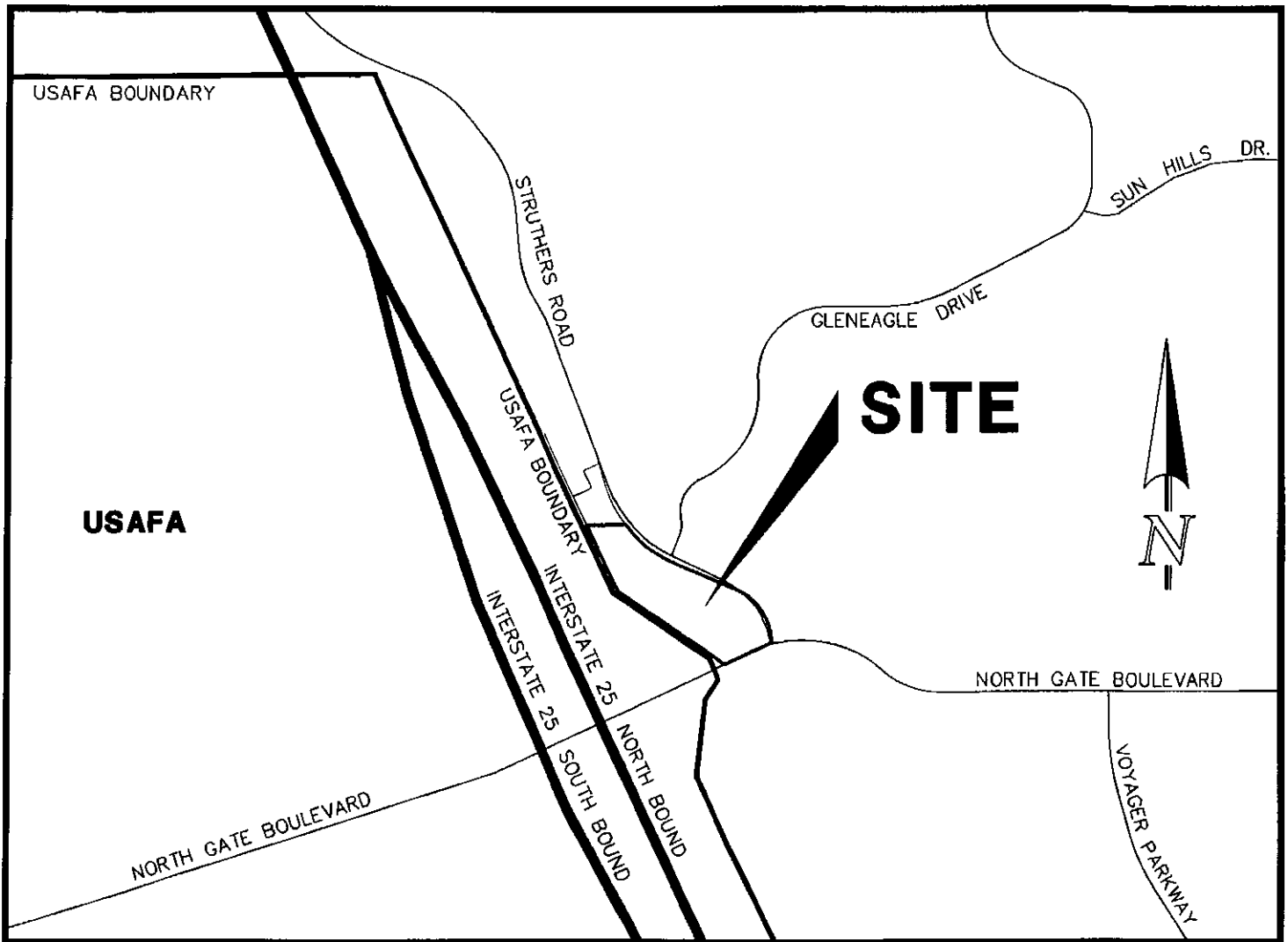
Respectfully submitted,

David L. Gibson, P.E.
Project Engineer

dlg/250700/drainage letter addendum.doc



VICINITY MAP



VICINITY MAP
NOT TO SCALE



REVISED CALCULATIONS

JOB NAME: Academy Gateway Subd. Fil. No. 1

JOB NUMBER: 2507.00

DATE: 08/11/17

CALCULATED BY: KRC

FINAL DRAINAGE REPORT ~ BASIN RUNOFF COEFFICIENT SUMMARY - INTERIM

BASIN	TOTAL AREA (AC)	IMPERVIOUS AREA / STREETS			LANDSCAPE/UNDEVELOPED AREAS			WEIGHTED		WEIGHTED CA			
		AREA (AC)	C(2)	C(5)	C(100)	AREA (AC)	C(2)	C(5)	C(100)	CA(5)	CA(100)		
B	1.08	0.99	0.89	0.90	0.96	0.09	0.02	0.08	0.35	0.83	0.91	0.90	0.98
D	0.77	0.77	0.89	0.90	0.96	0.00	0.02	0.08	0.35	0.90	0.96	0.69	0.74
D1	0.87	0.87	0.89	0.90	0.96	0.00	0.02	0.08	0.35	0.90	0.96	0.78	0.84
D2	0.07	0.07	0.89	0.90	0.96	0.00	0.02	0.08	0.35	0.90	0.96	0.06	0.07
D3	0.35	0.35	0.89	0.90	0.96	0.00	0.02	0.08	0.35	0.90	0.96	0.32	0.34
D4	0.10	0.10	0.89	0.90	0.96	0.00	0.02	0.08	0.35	0.90	0.96	0.09	0.10

JOB NAME: Academy Gateway Subd. Fil. No. 1
 JOB NUMBER: 2507.00
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FINAL DRAINAGE REPORT ~ BASIN RUNOFF COEFFICIENT SUMMARY - ULTIMATE

BASIN	TOTAL AREA (AC)	IMPERVIOUS AREA / STREETS			LANDSCAPE/UNDEVELOPED AREAS			WEIGHTED			WEIGHTED CA				
		AREA (AC)	C(2)	C(5)	C(100)	AREA (AC)	C(2)	C(5)	C(100)	C(2)	C(5)	C(100)	CA(5)	CA(100)	
B	1.08	0.99	0.89	0.90	0.96	0.09	0.02	0.08	0.35	0.82	0.83	0.91	0.88	0.90	0.98
D	0.77	0.77	0.89	0.90	0.96	0.00	0.02	0.08	0.35	0.89	0.90	0.96	0.69	0.69	0.74
D1	0.87	0.87	0.89	0.90	0.96	0.00	0.02	0.08	0.35	0.89	0.90	0.96	0.77	0.78	0.84
D2	0.07	0.07	0.89	0.90	0.96	0.00	0.02	0.08	0.35	0.89	0.90	0.96	0.06	0.06	0.07
D3	0.35	0.35	0.89	0.90	0.96	0.00	0.02	0.08	0.35	0.89	0.90	0.96	0.31	0.32	0.34
D4	0.10	0.10	0.89	0.90	0.96	0.00	0.02	0.08	0.35	0.89	0.90	0.96	0.09	0.09	0.10

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FINAL DRAINAGE REPORT ~ BASIN RUNOFF SUMMARY - INTERIM

BASIN	WEIGHTED			OVERLAND			STREET / CHANNEL FLOW			Tc (min)	INTENSITY			TOTAL FLOWS			
	CA(2)	CA(5)	CA(100)	C(5)	Length (ft)	Height (ft)	Tc (min)	Length (ft)	Slope (%)		Velocity (fps)	I(2) (in/hr)	I(5) (in/hr)	I(100) (in/hr)	Q(2) (cfs)	Q(5) (cfs)	Q(100) (cfs)
B	0.88	0.90	0.98	0.08	0	0	5.0	0	0.0%	0.0	0.0	4.12	5.17	8.68	4	5	9
D	0.69	0.69	0.74	0.08	0	0	5.0	0	0.0%	0.0	0.0	4.12	5.17	8.68	3	4	6
D1	0.77	0.78	0.84	0.08	0	0	5.0	0	0.0%	0.0	0.0	4.12	5.17	8.68	3	4	7
D2	0.06	0.06	0.07	0.08	0	0	5.0	0	0.0%	0.0	0.0	4.12	5.17	8.68	0	0	1
D3	0.31	0.32	0.34	0.08	0	0	5.0	0	0.0%	0.0	0.0	4.12	5.17	8.68	1	2	3
D4	0.09	0.09	0.10	0.08	0	0	5.0	0	0.0%	0.0	0.0	4.12	5.17	8.68	0	0	1

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FINAL DRAINAGE REPORT ~ BASIN RUNOFF SUMMARY - ULTIMATE

BASIN	WEIGHTED			OVERLAND			STREET / CHANNEL FLOW			Tc (min)	INTENSITY			TOTAL FLOWS			
	CA(2)	CA(5)	CA(100)	C(5)	Length (ft)	Height (ft)	Tc (min)	Length (ft)	Slope (%)		Velocity (fps)	I(2) (in/hr)	I(5) (in/hr)	I(100) (in/hr)	Q(2) (cfs)	Q(5) (cfs)	Q(100) (cfs)
B	0.88	0.89	0.95	0.08	0	0	5.0	0	0.0%	0.0	0.0	4.12	5.17	8.68	4	5	8
D	0.69	0.69	0.74	0.08	0	0	5.0	0	0.0%	0.0	0.0	4.12	5.17	8.68	3	4	6
D1	0.77	0.78	0.84	0.08	0	0	5.0	0	0.0%	0.0	0.0	4.12	5.17	8.68	3	4	7
D2	0.06	0.06	0.07	0.08	0	0	5.0	0	0.0%	0.0	0.0	4.12	5.17	8.68	0	0	1
D3	0.31	0.32	0.34	0.08	0	0	5.0	0	0.0%	0.0	0.0	4.12	5.17	8.68	1	2	3
D4	0.09	0.09	0.10	0.08	0	0	5.0	0	0.0%	0.0	0.0	4.12	5.17	8.68	0	0	1

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FINAL DRAINAGE REPORT ~ SURFACE ROUTING SUMMARY INTERIM								
Design Point(s)	Contributing Basins	Equivalent CA(5)	Equivalent CA(100)	Maximum Tc	Intensity		Flow	
					I(5)	I(100)	Q(5)	Q(100)
2	B	0.89	0.95	5.0	5.17	8.68	5	8
4	D4	0.09	0.10	5.0	5.17	8.68	0.5	1
4A	D2	0.06	0.07	5.0	5.17	8.68	0.3	1

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FINAL DRAINAGE REPORT ~ SURFACE ROUTING SUMMARY - ULTIMATE								
Design Point(s)	Contributing Basins	Equivalent CA(5)	Equivalent CA(100)	Maximum Tc	Intensity		Flow	
					I(5)	I(100)	Q(5)	Q(100)
2	B	0.89	0.95	5.0	5.17	8.68	5	8
4	D4	0.09	0.10	5.0	5.17	8.68	0.5	1
4A	D2	0.06	0.07	5.0	5.17	8.68	0.3	1

JOB NAME: Academy Gateway Subd. Fil. No. 1

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* PIPES ARE LISTED AT MAXIMUM SIZE REQUIRED TO ACCOMMODATE Q100 FLOWS AT MINIMUM GRADE.
REFER TO INDIVIDUAL PIPE SHEETS FOR HYDRAULIC INFORMATION.

FINAL DRAINAGE REPORT ~ PIPE ROUTING SUMMARY

Pipe Run	Contributing Basins	Equivalent CA(5)	Equivalent CA(100)	Maximum Tc	Intensity		Flow		Pipe Size*
					I(5)	I(100)	Q(5)	Q(100)	
1	BASIN D3	0.32	0.34	5.00	5.17	8.68	2	3	12" STORM
2	PIPE 1 DP 4A	0.38	0.40	5.00	5.17	8.68	2	3	18" STORM
3	BASIN D1	0.78	0.84	5.00	5.17	8.68	4	7	18" STORM
4	PIPE 2 & PIPE 3	1.16	1.24	5.00	5.17	8.68	6	11	24" STORM
5	BASIN D	0.69	0.74	5.00	5.17	8.68	4	6	18" STORM
6	PIPE 4, PIPE 5 & DP 4	1.94	2.07	5.00	5.17	8.68	10	18	24" STORM

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DESIGN POINT 4

Total Flow: $Q_5 = \frac{0}{1} \text{ cfs}$
 $Q_{100} = \frac{1}{1} \text{ cfs}$

Maximum allowable ponding depth at sump:

$$D_5 = 0.50$$
$$D_{100} = 1.00 \text{ (dmax)}$$
$$Q_i = 1.7(Li + 1.8(W))(dmax + w/12)^{1.85}$$

Clogging Factor = 1.25
 $Li (1.25) = \text{Length of inlet opening}$

5-Year Event: 4 foot inlet required

100-Year Event: 4 foot inlet required

INSTALL A PUBLIC 4 FT D-10-R INLET TO ACCEPT BOTH 5YR & 100 YR DEVELOPED FLOWS AT THIS DESIGN POINT.

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DESIGN POINT	4A	100 YEAR FLOW			
Q(100)	1	I(100)	8.7		
DEPTH	0.20	Fr	1.83	Inlet size ? L(i) =	5
SPREAD	3.5	L(1)	4.9	If L1 < L(2) then Qi =	1
CROSS SLOPE	2.0%	L(2)	3.0	If L1 > L(2) then Qi =	0.4
STREET SLOPE	4.0%	L(3)	10.5	FB =	0
				CA(eqv.) =	0.00

5 YEAR FLOW					
Q(5)	0.3	I(5)	5.2		
DEPTH	0.20	Fr	1.87	Inlet size ? L(i) =	5
SPREAD	3.8	L(1)	5.4	If L1 < L(2) then Qi =	0
CROSS SLOPE	2.0%	L(2)	3.2	If L1 > L(2) then Qi =	0
STREET SLOPE	4.0%	L(3)	11.6	FB =	0
				CA(eqv.) =	0.00



DRAINAGE MAP

LEGEND

- EXISTING GROUND CONTOUR 5910
- PROPOSED FINISHED CONTOUR 5910
- SUBDIVISION BOUNDARY
- LOT LINE
- PROPOSED BASIN BOUNDARY
- DIRECTION OF DRAINAGE
- EXISTING STORM SEWER
- PROPOSED PRIVATE STORM SEWER
- PROPOSED STORM INLET
- BASIN IDENTIFIER AREA IN ACRES
- PIPE RUN
- DESIGN POINT

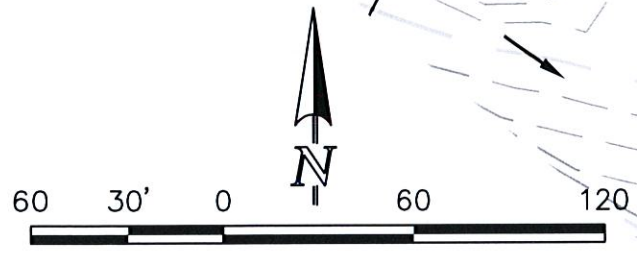


PROPOSED FUTURE
EPC STORM PIPE
(TO BE INSTALLED W/
SITE DEVELOPMENT)

ACADEMY GATEWAY SUB. FIL 1
ADDENDUM
JOB NO. 2507.00
AUGUST 9, 2017
SHEET 1 OF 1



619 N. Cascade Avenue, Suite 200
Colorado Springs, Colorado 80903
(719)785-0790
(719)785-0799 (Fax)



SCALE: 1" = 60'