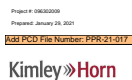


# ENG-SF21012-R1-FDR-redlines.pdf Markup Summary

1 (4)



**Subject:** Engineer  
**Page Index:** 1  
**Date:** 3/10/2021 1:39:20 PM  
**Author:** CFurchak  
**Color:** ■  
**Layer:**  
**Space:**  
**Page Label:** 1

Add PCD File Number: PPR-21-017



**Subject:** Stormwater Comments Color  
**Page Index:** 1  
**Date:** 3/10/2021 1:39:34 PM  
**Author:** CFurchak  
**Color:** ■  
**Layer:**  
**Space:**  
**Page Label:** 1



**Subject:** PCD Comment Legend  
**Page Index:** 1  
**Date:** 3/25/2021 5:25:56 PM  
**Author:** dsdrice  
**Color:** ■  
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**Space:**  
**Page Label:** 1



**Subject:** EPC ENG Review  
**Page Index:** 1  
**Date:** 3/25/2021 5:25:58 PM  
**Author:** dsdrice  
**Color:** ■  
**Layer:**  
**Space:**  
**Page Label:** 1

5 (6)



**Subject:** Text Box  
**Page Index:** 5  
**Date:** 3/25/2021 5:41:39 PM  
**Author:** dsdrice  
**Color:** ■  
**Layer:**  
**Space:**  
**Page Label:** 5


Address quantity and where offsite runoff from the north goes.



**Subject:** Callout  
**Page Index:** 5  
**Date:** 3/25/2021 5:41:39 PM  
**Author:** dsdrice  
**Color:** ■  
**Layer:**  
**Space:**  
**Page Label:** 5


inlet and storm drain system

**EXISTING SUB-BASIN DESCRIPTIONS**  
 The north basin flows north to south via what flow over vacant land  
 a description of the existing onsite sub-basin.  
 Sub-Basin EX-A  
 Sub-Basin EX-A consists of the entirety of the 15.39-acre multi-family  
 basin located along the north side of Constitution Ave. Drainage from the north  
 basin will be directed to design point 1 where it will connect to the  
 existing drainage channel that runs underneath Constitution Ave  
 with an area of 15.39 acres. The impervious value for this basin  
 is currently(?)  
**PROPOSED NATIONAL SUB-BASIN DESCRIPTIONS**  
 Sub-Basin B1 consists of a portion of the multi-family development

**Subject:** Callout  
**Page Index:** 5  
**Date:** 3/25/2021 5:41:39 PM  
**Author:** dsdrice  
**Color:**   
**Layer:**  
**Space:**  
**Page Label:** 5


Add the offsite basins

**EXISTING SUB-BASIN DESCRIPTIONS**  
 The north basin flows north to south via what flow over vacant land  
 a description of the existing onsite sub-basin.  
 Sub-Basin EX-A  
 Sub-Basin EX-A consists of the entirety of the 15.39-acre multi-family  
 basin located along the north side of Constitution Ave. Drainage from the north  
 basin will be directed to design point 1 where it will connect to the  
 existing drainage channel that runs underneath Constitution Ave  
 with an area of 15.39 acres. The impervious value for this basin  
 is currently(?)  
**PROPOSED NATIONAL SUB-BASIN DESCRIPTIONS**  
 Sub-Basin B1 consists of a portion of the multi-family development

**Subject:** Callout  
**Page Index:** 5  
**Date:** 3/25/2021 5:41:39 PM  
**Author:** dsdrice  
**Color:**   
**Layer:**  
**Space:**  
**Page Label:** 5


is currently(?)

the 5-year a  
 basin will be dir  
 Constitution  
 it runs under

**Subject:**  
**Page Index:** 5  
**Date:** 3/25/2021 5:41:47 PM  
**Author:** dsdrice  
**Color:**   
**Layer:**  
**Space:**  
**Page Label:** 5

will be


from the  
 e north side o  
 ge channel th  
 of 15.39 acre  
 Conditions Dr

**Subject:**  
**Page Index:** 5  
**Date:** 3/25/2021 5:41:58 PM  
**Author:** dsdrice  
**Color:**   
**Layer:**  
**Space:**  
**Page Label:** 5

channe

7 (1)


**EXISTING SUB-BASIN DESCRIPTIONS**  
 The north basin flows north to south via what flow over vacant land  
 a description of the existing onsite sub-basin.  
 Sub-Basin EX-A  
 Sub-Basin EX-A consists of the entirety of the 15.39-acre multi-family  
 basin located along the north side of Constitution Ave. Drainage from the north  
 basin will be directed to design point 1 where it will connect to the  
 existing drainage channel that runs underneath Constitution Ave  
 with an area of 15.39 acres. The impervious value for this basin  
 is currently(?)  
**PROPOSED NATIONAL SUB-BASIN DESCRIPTIONS**  
 Sub-Basin B1 consists of a portion of the multi-family development

**Subject:** Text Box  
**Page Index:** 7  
**Date:** 3/25/2021 5:42:28 PM  
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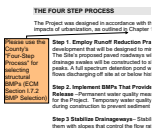
Address quantity and where offsite runoff from the north goes.


8 (3)

**EXISTING SUB-BASIN DESCRIPTIONS**  
 The north basin flows north to south via what flow over vacant land  
 a description of the existing onsite sub-basin.  
 Sub-Basin EX-A  
 Sub-Basin EX-A consists of the entirety of the 15.39-acre multi-family  
 basin located along the north side of Constitution Ave. Drainage from the north  
 basin will be directed to design point 1 where it will connect to the  
 existing drainage channel that runs underneath Constitution Ave  
 with an area of 15.39 acres. The impervious value for this basin  
 is currently(?)  
**PROPOSED NATIONAL SUB-BASIN DESCRIPTIONS**  
 Sub-Basin B1 consists of a portion of the multi-family development

**Subject:** Engineer  
**Page Index:** 8  
**Date:** 3/10/2021 1:33:07 PM  
**Author:** CFurchak  
**Color:**   
**Layer:**  
**Space:**  
**Page Label:** 8


Chapter 1 Section 4.0 of the Colorado Springs MANUAL.



**Subject:** Engineer  
**Page Index:** 8  
**Date:** 3/10/2021 1:33:19 PM  
**Author:** CFurchak  
**Color:**   
**Layer:**  
**Space:**  
**Page Label:** 8

Please use the County's "Four-Step Process" for selecting structural BMPs (ECM Section I.7.2 BMP Selection)




**Subject:** Callout  
**Page Index:** 8  
**Date:** 3/25/2021 5:42:48 PM  
**Author:** dsdrice  
**Color:**   
**Layer:**  
**Space:**  
**Page Label:** 8

Address downstream conveyances for 100-year flows and emergency conditions.


9 (3)



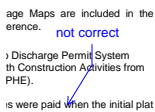
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**Page Index:** 9  
**Date:** 3/25/2021 5:43:02 PM  
**Author:** dsdrice  
**Color:**   
**Layer:**  
**Space:**  
**Page Label:** 9


Check with Classic to see if drainage credits will be allocated to this site. If not, drainage fees will be due.



**Subject:**  
**Page Index:** 9  
**Date:** 3/25/2021 5:43:07 PM  
**Author:** dsdrice  
**Color:**   
**Layer:**  
**Space:**  
**Page Label:** 9

There are no current drainage and fees for the Project as the fees were paid when the initial plat for the site was completed



**Subject:** Callout  
**Page Index:** 9  
**Date:** 3/25/2021 5:43:23 PM  
**Author:** dsdrice  
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**Layer:**  
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**Page Label:** 9

not correct

39 (1)



**Subject:** Highlight  
**Page Index:** 39  
**Date:** 3/25/2021 5:43:44 PM  
**Author:** dsdrice  
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**Layer:**  
**Space:**  
**Page Label:** 39

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41 (1)

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Provide calculations for offsite basins

**Subject:** Text Box  
**Page Index:** 41  
**Date:** 3/25/2021 5:43:54 PM  
**Author:** dsdrice  
**Color:** ■  
**Layer:**  
**Space:**  
**Page Label:** 41

Provide calculations for offsite basins

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45 (1)

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Provide calculations for offsite basins

04, Research Ridge at Westborough Ring No. 1 - Drainage Report  
14 Area Calculations  
03/25/2021

**Subject:** Text Box  
**Page Index:** 45  
**Date:** 3/25/2021 5:44:05 PM  
**Author:** dsdrice  
**Color:** ■  
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**Space:**  
**Page Label:** 45

Provide calculations for offsite basins

---

61 (1)

---

Ensure that culvert calculations include total flows for the contributing acreages.

**Subject:** Text Box  
**Page Index:** 61  
**Date:** 3/25/2021 5:44:13 PM  
**Author:** dsdrice  
**Color:** ■  
**Layer:**  
**Space:**  
**Page Label:** 61

Ensure that culvert calculations include total flows for the contributing acreages.

---

65 (1)

---

e - 3.1 cfs

**Subject:**  
**Page Index:** 65  
**Date:** 3/25/2021 5:44:26 PM  
**Author:** dsdrice  
**Color:** ■  
**Layer:**  
**Space:**  
**Page Label:** 65

Ensure that swale calculations include total flows for the contributing acreages.

---

68 (1)

---

Ensure that swale calculations include total flows for the contributing acreages.

Swale 02 - 100-yr

Location	Flow
at Inlet	100
at Outlet	100
at	100
at	100

**Subject:** Text Box  
**Page Index:** 68  
**Date:** 3/25/2021 5:44:40 PM  
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**Color:** ■  
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**Page Label:** 68

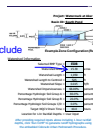
Ensure that swale calculations include total flows for the contributing acreages.

---

83 (3)

---

Needs to include the total contributing acreage



**Subject:** Callout  
**Page Index:** 83  
**Date:** 3/25/2021 5:45:07 PM  
**Author:** dsdrice  
**Color:** ■  
**Layer:**  
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**Page Label:** 83

Needs to include the total contributing acreage

Slope =	0.015	ft/ft
iness =	68.00%	per
up A =	80.0%	per
up B =	20.0%	per

**Subject:** Highlight  
**Page Index:** 83  
**Date:** 3/25/2021 5:45:07 PM  
**Author:** dsdrice  
**Color:** ■  
**Layer:**  
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**Page Label:** 83



**Subject:** Callout  
**Page Index:** 83  
**Date:** 3/25/2021 5:45:07 PM  
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**Layer:**  
**Space:**  
**Page Label:** 83

match previous values? (pdf pg 39)

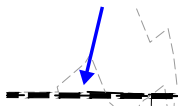
85 (1)



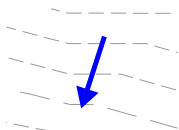
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**Page Index:** 85  
**Date:** 3/11/2021 4:56:12 PM  
**Author:** CFurchak  
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**Page Label:** 85

Ratio should be less than or equal to 1.

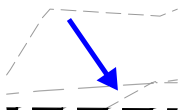
89 (8)



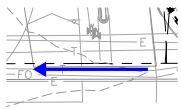
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**Page Index:** 89  
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**Author:** dsdrice  
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**Page Label:** [1] Existing Drainage Map



**Subject:** Arrow  
**Page Index:** 89  
**Date:** 3/25/2021 5:45:40 PM  
**Author:** dsdrice  
**Color:** ■  
**Layer:**  
**Space:**  
**Page Label:** [1] Existing Drainage Map



**Subject:** Arrow  
**Page Index:** 89  
**Date:** 3/25/2021 5:45:40 PM  
**Author:** dsdrice  
**Color:** ■  
**Layer:**  
**Space:**  
**Page Label:** [1] Existing Drainage Map

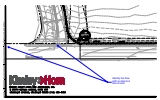


**Subject:** Arrow  
**Page Index:** 89  
**Date:** 3/25/2021 5:45:40 PM  
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**Space:**  
**Page Label:** [1] Existing Drainage Map



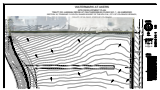
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**Page Index:** 89  
**Date:** 3/25/2021 5:45:40 PM  
**Author:** dsdrice  
**Color:** ■  
**Layer:**  
**Space:**  
**Page Label:** [1] Existing Drainage Map

See  
<https://epcdevplanreview.com/Public/ProjectDetails/110809>

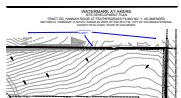


**Subject:** Callout  
**Page Index:** 89  
**Date:** 3/25/2021 5:45:40 PM  
**Author:** dsdrice  
**Color:** ■  
**Layer:**  
**Space:**  
**Page Label:** [1] Existing Drainage Map

Identify the flow path to inlet and size of inlet



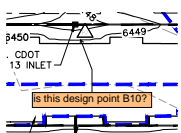
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**Page Index:** 89  
**Date:** 3/25/2021 5:45:40 PM  
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**Page Label:** [1] Existing Drainage Map



**Subject:** Callout  
**Page Index:** 89  
**Date:** 3/25/2021 5:45:40 PM  
**Author:** dsdrice  
**Color:** ■  
**Layer:**  
**Space:**  
**Page Label:** [1] Existing Drainage Map

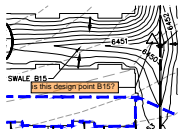
show and address all contributing sub-basins

90 (15)



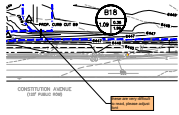
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**Page Index:** 90  
**Date:** 3/10/2021 4:28:52 PM  
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**Color:** ■  
**Layer:**  
**Space:**  
**Page Label:** [1] Proposed Drainage Map

is this design point B10?



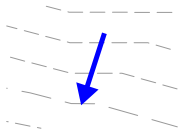
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**Page Index:** 90  
**Date:** 3/10/2021 4:29:04 PM  
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**Space:**  
**Page Label:** [1] Proposed Drainage Map

is this design point B15?

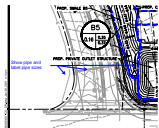


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**Page Index:** 90  
**Date:** 3/11/2021 4:57:05 PM  
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**Page Label:** [1] Proposed Drainage Map

these are very difficult to read, please adjust font

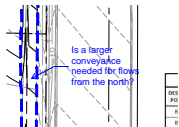


**Subject:** Arrow  
**Page Index:** 90  
**Date:** 3/25/2021 5:45:55 PM  
**Author:** dsdrice  
**Color:** ■  
**Layer:**  
**Space:**  
**Page Label:** [1] Proposed Drainage Map



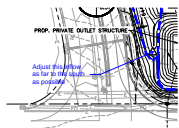
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**Page Index:** 90  
**Date:** 3/25/2021 5:45:55 PM  
**Author:** dsdrice  
**Color:** ■  
**Layer:**  
**Space:**  
**Page Label:** [1] Proposed Drainage Map

Show pipe and label pipe sizes



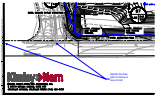
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**Page Index:** 90  
**Date:** 3/25/2021 5:45:55 PM  
**Author:** dsdrice  
**Color:** ■  
**Layer:**  
**Space:**  
**Page Label:** [1] Proposed Drainage Map

Is a larger conveyance needed for flows from the north?



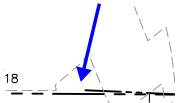
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**Date:** 3/25/2021 5:45:55 PM  
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**Page Label:** [1] Proposed Drainage Map

Adjust this inflow as far to the south as possible

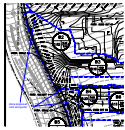


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**Date:** 3/25/2021 5:45:55 PM  
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**Page Label:** [1] Proposed Drainage Map

Identify the flow path to inlet and size of inlet

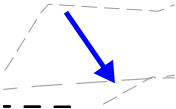


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**Space:**  
**Page Label:** [1] Proposed Drainage Map

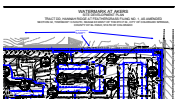


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**Date:** 3/25/2021 5:45:55 PM  
**Author:** dsdrice  
**Color:** ■  
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**Space:**  
**Page Label:** [1] Proposed Drainage Map

show proposed curb and gutter

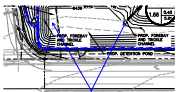


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**Page Index:** 90  
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**Page Label:** [1] Proposed Drainage Map

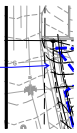
show and address all contributing sub-basins



**Subject:** Callout  
**Page Index:** 90  
**Date:** 3/25/2021 5:45:55 PM  
**Author:** dsdrice  
**Color:** ■  
**Layer:**  
**Space:**  
**Page Label:** [1] Proposed Drainage Map

show all pond features





label the crossspan

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**Subject:** Callout  
**Page Index:** 90  
**Date:** 3/25/2021 5:45:55 PM  
**Author:** dsdrice  
**Color:** ■  
**Layer:**  
**Space:**  
**Page Label:** [1] Proposed Drainage Map

label the crossspan



PROP. PRIVATE OL

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**Subject:**  
**Page Index:** 90  
**Date:** 3/25/2021 5:45:55 PM  
**Author:** dsdrice  
**Color:** ■  
**Layer:**  
**Space:**  
**Page Label:** [1] Proposed Drainage Map