

# EPC DPW Stormwater\_2026-06-10\_007 - Drainage Report Markup Summary

1 (2)

**LOCATED AT  
BENT GRASS MEADOWS I  
IN EL PASO COUNTY, CC**

PCD File No. PPR2615

**Subject:** Callout  
**Page Label:** 1

PCD File No. PPR2615

RESPONSE: ADDED

Prepared for:

**Subject:** Engineer  
**Page Label:** 1

Final

RESPONSE: ADDED TO REPORT TITLE

Final

**PRIMARY DRAINAGE  
EOD**

2 (2)

Joshua Palmer, P.E.  
County Engineer / I

J.

**Subject:** Callout  
**Page Label:** 2

J.

RESPONSE: UPDATED

**Subject:** Engineer  
**Page Label:** 2

Please move the maps to the end of the report.

Please move the maps to the end of the report.

RESPONSE: NOTED

4 (2)

... the 100 year storm ...  
... s Meadows Drive and are  
... drainage swale along the west  
... med to be bypassing through  
... and ultimately discharging  
... MDDP. The existing conditions  
... to be conveyed in the Bent  
... (30.3 cfs) are assumed to  
... through Bent Grass Pond 1.  
... Residential Filing No. 1  
... P. This site is not in the 100 o  
... Firmette in Appendix C.

Please indicate the specific MDDP you are referencing.

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Please indicate the specific MDDP you are referencing.

RESPONSE: UPDATED TO INDICATE MDDP REFERENCE

Service (NRCS) Web Soil  
... olumbine gravelly sandy loam,

es.  
tion in the Appendix G.  
n of the site include existing culverts at the  
rive and Meridian road to the east of the

The soils report completed with PUD06004 showed groundwater 9 ft below the ground on this site. Please discuss potential groundwater impacts and how they are being mitigated.

SINS  
N  
alcon Drainage Basin Planning Study,  
rpts from the Falcon Drainage Basin  
runoff for the subject site is 12.67 cfs of

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**RESPONSE: DESCRIPTION OF GROUNDWATER AND POTENTIAL IMPACTS. BUILDING IS SLAB ON GRADE AND WE DO NOT ANTICIPATE IMPACTS.**

The soils report completed with PUD06004 showed groundwater 9 ft below the ground on this site. Please discuss potential groundwater impacts and how they are being mitigated.

1

5 (2)

detention pond located in the southeast corner of the site.  
Drainage will generally be conveyed via sheet flow, grass swales, and curb and gutters to strategically placed inlets and will be routed southeast to the onsite detention pond in Basin A3. The discharge rates from the detention pond will not be allowed to exceed historical flow rate of 12.67 cfs as shown in the MHFD Detention Spreadsheet in Appendix E.

Hydrologic and hydraulic calculations have been provided with this drainage report. See Appendix D and E for calculation spreadsheets.

EXISTING SUB-BASIN DESCRIPTION

Please discuss existing off site basins in addition to the on site basins.

Basin EX1  
Basin EX1 consists of the western half of the site area. This basin consists of 4.96 acres of native grasses and weeds and has been analyzed with an imperviousness of 20%. Runoff surface flows to the southern portion of the basin where it collects in an existing sediment pond. Overflow from the sediment pond overtops a riprap overflow and then continues south.

Basin EX2  
Basin EX2 consists of the Northeast portion of the site. This basin consists of 2.05 acres of native grasses and weeds and has been analyzed with an imperviousness of 20%. Runoff surface flows to the southern portion of the basin where it collects in an existing depression. When flows overtop the depression, they flow to the southeast.

DESCRIPTION

stern half of the site area. This basin consists of 4.96  
eds and has been analyzed with an impervious of  
the southern portion of the basin where it collects in  
verflow from the sediment pond overtops a riprap  
south.

Please include Q5, Q100, and final outfall location with the basin descriptions

rtheast portion of the site. This basin consists of 2.05  
eds and has been analyzed with an impervious of  
the southern portion of the basin where it collects in  
flows overtop the depression, they flow to the

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**RESPONSE: OFFSITE BASINS INCLUDED**

Please discuss existing off site basins in addition to the on site basins.

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**RESPONSE: Q5 AND Q100 ADDED**

Please include Q5, Q100, and final outfall location with the basin descriptions

6 (7)

please list the size of the inlet

BASIN DESCRIPTION

es) is located to the northwest of the building including a  
ing roof. It consists of proposed drive aisles, landscaping,  
and has an impervious percentage of 52.7%. Runoff will  
flow southeast via landscape and gutters into Type R inlet  
n pipe also known as Design Point 2 ultimately dischargin  
The 10-yr and 100-yr flow produced from this basin are 1

**Subject:** Engineer  
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**RESPONSE: SIZES ADDED**

please list the size of the inlet

**Subject:** Engineer  
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DESUB-BASIN DESCRIPTION

confirm DP2, maps shows DP1

1 (1.03 acres) is located to the northwest of the buil  
of the building roof. It consists of proposed drive ais  
k, and roof and has an impervious percentage of 52.  
ly overland flow southeast via landscape and gutters  
ugh a Storm pipe also known as Design Point 2 ulti  
ntion pond. The 10-yr and 100-yr flow produced fro  
2.96 cfs respectively.

**RESPONSE: NOTED**

confirm DP2, maps shows DP1

ADDITIONAL DESCRIPTION

) is located to the northwest of the building including a  
g roof. It consists of proposed drive aisles, landscaping,  
and has an impervious percentage of 52.7%. Runoff will  
flow southeast via landscape and gutters into Type R inlet S1  
pipe also known as Design Point 2 ultimately discharging to  
the 10-yr and 100-yr flow produced from this basin are 1.56  
cfs and 2.60 cfs respectively. **please indicate if all flow is captured with the inlet, it  
appears that some flow would leave the basin as  
surface flow toward Basin A2**

) is located to the northeast of the building including a  
g roof. It consists of proposed drive aisles, landscaping,  
and has an impervious percentage of 46.0%. Runoff will  
flow east via landscape swales and gutters into Type R inlet S2  
pipe also known as Design Point 2 ultimately discharging to  
the 10-yr and 100-yr flow produced from this basin are 2.60  
cfs and 4.50 cfs respectively.

swales and gutters into Type R inlet S2  
Design Point 2 ultimately discharging to  
the 10-yr and 100-yr flow produced from this basin are 2.60  
cfs and 4.50 cfs respectively.

southeast of the building including a  
of proposed drive aisles, landscaping,  
area, and roof and has an impervious  
percentage of 52.7%. Runoff will  
generally flow southeast via a landscape swale  
from the east, into the detention pond and  
storm pipe also known as Design Point 3.  
The off-site storm system flowing east  
the 10-yr and 100-yr flow produced from this  
basin are 1.56 cfs and 2.60 cfs respectively.

please include size

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**RESPONSE: DESCRIPTION ADDED**

please indicate if all flow is captured with the inlet, it appears that some flow would leave the basin as surface flow toward Basin A2

**Subject:** Engineer  
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**RESPONSE: NOTED**

please include size

**Please list when storm pipes are public or private**

including a

generally flow southeast via a landscape swale  
from the east, into the detention pond and  
storm pipe also known as Design Point 3.  
The off-site storm system flowing east  
the 10-yr and 100-yr flow produced from this  
basin are 1.56 cfs and 2.60 cfs respectively. **please discuss the riprap  
rundowns shown on the map**

southwest of the building, including a  
portion of the proposed parking lot. It  
includes landscaping, sidewalk, trash enclosure,  
and has an impervious percentage of 65.3%. Runoff will generally flow  
southwest toward the detention pond and storm pipe.

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**RESPONSE: DESCRIPTION ADDED**

please discuss the riprap rundowns shown on the map

Assign a name/number to all PCMs and then update all submitted text and drawings accordingly with consistent labeling throughout (example: "Pond A" or "Pond 1").

PROPOSED SUB-BASIN

**Basin A1**  
Basin A1 (1.03 acres) portion of the building sidewalk, and roof and generally overland flow and through a Storm pipe to the detention pond. The 10-yr and 100-yr flow produced from this basin are 1.56 cfs and 2.60 cfs respectively.

**Subject:** SW - Textbox with Arrow  
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**RESPONSE: ADDED. THERE IS ONLY POND 1 AS A PCM. AREAS THAT DO NOT FLOW TO THE POND ARE EXCLUDED.**

Assign a name/number to all PCMs and then update all submitted text and drawings accordingly with consistent labeling throughout (example: "Pond A" or "Pond 1").

1 pond. The 10-yr and 100-yr flow produced from this basin are 0.51 cfs and 4.19 cfs respectively.

ated along the north and eastern property lines of the vegetation and has an impervious percent of 20%. Runoff is collected and conveyed via Grass channel to the east and then to the curb and gutter along the north side of Bent Grass. The 10-yr and 100-yr flow produced from this basin are 0.61 cfs and 4.19 cfs respectively. **please include the size and type of inlet for the pipe and how it regulates flow to only overtop at the 100yr event**

ated along the south property line of the site. It consists of paved drive entrances, parking, landscaping, and sidewalk and has an impervious percent of 45.6%. Runoff will generally sheetflow to the south, into the curb and gutter along the north side of Bent Grass. The 10-yr and 100-yr flow produced from this basin are 0.51 cfs and 4.19 cfs respectively.

Basin A6 and A7 are not able to be captured/conveyed to the detention pond as still sized to store the necessary runoff for

entirely conveyed via Grass channel to the east and then to the curb and gutter along the north side of Bent Grass. The 10-yr and 100-yr flow produced from this basin are 0.61 cfs and 4.19 cfs respectively.

Basin A6 (1.28 acres) is located along the north and eastern property lines of the site. It consists of paved drive entrances, parking, landscaping, and sidewalk and has an impervious percent of 45.6%. Runoff will generally sheetflow to the south, into the curb and gutter along the north side of Bent Grass. The 10-yr and 100-yr flow produced from this basin are 0.61 cfs and 4.19 cfs respectively. **please assign a WQ exclusion to this basin. The WQCV design standard exclusion found in ECM Appendix I.6.3.A.1.A may be applied.**

six D for and E for calculations.

**DESIGN CRITERIA**  
The design has been prepared in general accordance with the Mile High Flood Protection Criteria Manual (USDCM), City of Colorado Springs County Drainage Criteria Manual, as revised in November 1991.

**Basin A6** (1.28 acres) is located along the north and eastern property lines of the site. It consists of paved drive entrances, parking, landscaping, and sidewalk and has an impervious percent of 45.6%. Runoff will generally sheetflow to the south, into the curb and gutter along the north side of Bent Grass. The 10-yr and 100-yr flow produced from this basin are 0.61 cfs and 4.19 cfs respectively.  
**Basin A7** (0.26 acres) is located along the south property line of the site. It consists of paved drive entrances, parking, landscaping, and sidewalk and has an impervious percent of 45.6%. Runoff will generally sheetflow to the south, into the curb and gutter along the north side of Bent Grass. The 10-yr and 100-yr flow produced from this basin are 0.51 cfs and 4.19 cfs respectively.

Basin A6 (1.28 acres) is located along the north and eastern property lines of the site. It consists of paved drive entrances, parking, landscaping, and sidewalk and has an impervious percent of 45.6%. Runoff will generally sheetflow to the south, into the curb and gutter along the north side of Bent Grass. The 10-yr and 100-yr flow produced from this basin are 0.61 cfs and 4.19 cfs respectively.

Basin A6 and A7 are not able to be captured/conveyed to the detention pond as still sized to store the necessary runoff for

six D for and E for calculations. **As mentioned above, this does not exclude these basins from WQ treatment. If you wish to over-size the pond anyways, clarify that it is not required by EPC and does not satisfy WQ treatment requirements for the basins. Also submit a second set of pond calculations with the true basin to show that it meets state drain times.**

**LOGIC CRITERIA**  
The site currently consists of approximately 8.98 acres. The site as proposed will consist of a proposed school building,

**Subject: Engineer**  
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**RESPONSE: DESCRIPTION ADDED**

please include the size and type of inlet for the pipe and how it regulates flow to only overtop at the 100yr event

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**RESPONSE: WQ EXCLUSION NOTED AND ASSIGNED**

Please assign a WQ exclusion to this basin. The WQCV design standard exclusion found in ECM Appendix I.6.3.A.1.A may be applied.

**Subject: SW - Textbox**  
**Page Label: 7**

**RESPONSE: NOTED. A6 HAS BEEN REMOVED FROM THE POND AND CONSIDERED AN EXCLUDED AREA THAT IS SELF TREATING LANDSCAPE.**

Oversizing the pond does not exclude Basin A6 from WQ treatment. Since the channel will be vegetated you could designate it as a "self-treating separate pervious area." If you choose to do so, state that here in the basin summary, on the PCM applicability form, and in any WQ map or table.

**Subject: SW - Textbox with Arrow**  
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**RESPONSE: NOTED. THE POND CALCULATIONS HAVE BEEN REVISED TO REMOVE BASIN A7 AND A6.**

As mentioned above, this does not exclude these basins from WQ treatment. If you wish to over-size the pond anyways, clarify that it is not required by EPC and does not satisfy WQ treatment requirements for the basins. Also submit a second set of pond calculations with the true basin to show that it meets state drain times.

Chapter 6 and Section 3.2. County Drainage Criteria 1

use 5-year

10-year and the 100-year Rational Method since the The Rational calculations

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**RESPONSE: UPDATED TO USE 5-YEAR**

use 5-year

e the 10-year and the 100-year recurrence  
; the Rational Method since the total project  
res. The Rational calculations are estimates  
s within the proposed basins. Refer to  
ions.

Please include a comparison of existing off site flow to proposed off site flow, ie compare DP3 and DP6 to an equivalent existing DP

DESIGN

alyzed for water quality treatment and the  
event and the 100-year major storm event as  
: Development MDDP and DBPS Amendment.  
lled by the detention pond outlet structure is  
l to detain the entire site area of 8.98 acres. The  
to the proposed detention pond via

l, which is in compliance with the Bent Grass

is surfaces as a result of the proposed  
the proposed onsite detention pond. The  
ion pond will be released from the southeast  
ed 30 inch pipe to carry it to the roadside  
f Meridian Road. MDDP depicts this culvert as requiring a  
42" RCP, please explain why this have  
been changed.

ral accordance with the Mile High Flood  
ia Manual (USDCM), City of Colorado  
teria Manual, as revised in November 1991  
ed Chapter 6 and Section 3.2.1 of Chapter 13  
iso County Drainage Criteria Manual as

the 10-year and the 100-year recurrence

9 (5)

me site ultimately discharging to the s  
system, including an off-site 30 inch p  
east and outlet to the north of the inter  
Meridian Road to the Roadside Drain;

The onsite detention pond shall be a fi  
quality (WQ), excess urban runoff vol  
1 will be WQ; Stage 2 will be EURV

The required WQ volume is 0.122 ac-  
with a release rate of 0.1 cfs. The WO

vements designed for this proposed development will provide  
r quality treatment for the project site 100-year event for on-  
equance of the 100-year storm event for off-site flows.

N  
age patterns will follow existing drainage patterns, with all of  
discharging to the southeast through proposed storm drain  
an off-site 30 inch pipe which runs approximately 2000 ft to the  
e north of the intersection of Bent Grass Meadows Drive and  
he Roadside Drainage. Please state if the pond if public or private  
and who will be responsible for maintenance

en pond shall be a full spectrum pond, which includes water  
ss urban runoff volume (EURV) and 100-year volume. Stage  
ge 2 will be EURV and Stage 3 will be the 100-year volume.

olume is 0.122 ac-ft and the provided volume is 0.122 ac-ft  
of 0.1 cfs. The WQ surface elevation is 6955.08 ft. The  
lume is 0.194 ac-ft (including WQ) and the provided volume is  
ase rate of 0.2 cfs. The EURV water surface elevation is  
quired 100-year volume is 0.564 ac-ft and the provided volume  
elease rate of 4.6 cfs. The 100-year water surface elevation is

..5) 1000.

1 18 inch RCP into a proposed 96 inch storm  
within Bent Grass Meadows. Runoff is then  
P along Bent Grass Meadows ultimately  
Grass Meadows into the roadside drainage  
Road. Please clarify if the pond overtops  
prior to the 100yr event.

**Subject: Engineer**  
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**RESPONSE: COMPARISON ADDED TO REPORT**

Please include a comparison of existing off site flow to proposed off site flow, ie compare DP3 and DP6 to an equivalent existing DP

**Subject: Engineer**  
**Page Label: 8**

**RESPONSE: ANALYSIS AND DESCRIPTION ADDED TO THE REPORT**

MDDP depicts this culvert as requiring a 42" RCP, please explain why this have been changed.

**Subject: Engineer**  
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**RESPONSE: NOTED**

onsite detention pond shall

**Subject: Engineer**  
**Page Label: 9**

**RESPONSE: ADDED**

please state if the pond if public or private and who will be responsible for maintenance

**Subject: Engineer**  
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**RESPONSE: POND DOES NOT OVERTOP THE EMERGENCY SPILLWAY PRIOR TO THE 100 YR EVENT. DESCRIPTION ADDED TO THE REPORT.**

Please clarify if the pond overtops prior to the 100yr event.

: 20' long and have a water depth of +/-  
ity was calculated by assuming a  
ment peak flows across the site for the  
ation is 6956.83 and the top of the  
ect. **please describe the  
overflow path**  
inch RCP into a proposed 96 inch storm  
in Bent Grass Meadows. Runoff is then  
ing Bent Grass Meadows ultimately  
s Meadows into the roadside drainage

**Subject:** Engineer  
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please describe the overflow  
path

**RESPONSE: OVERFLOW PATH  
DESCRIPTION ADDED**

red WQ volume is 0.122 ac-ft and the provided volume is 0.12  
ease rate of 0.1 cfs. The WQ surface elevation is 6955.08 ft. TI  
EURV volume is 0.194 ac-ft (including WQ) and the provided  
t at a release rate of 0.2 cfs. The EURV water surface elevation  
i. The required 100-year volume is 0.564 ac-ft and the provide  
c-ft at a release rate of 4.6 cfs. The 100-year water surface elev  
i.

**Subject:** SW - Textbox with Arrow  
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Calcs unclear on when spillway  
is activated

**RESPONSE: CLARIFICATION ADDED**

**Calcs unclear on when spillway is activated**  
will have an emergency overflow spillway for a plugged outlet  
or for a storm event greater than the 100-year event. The eme  
spillway has been designed to be 20' long and have a water de  
s. The runoff through the spillway was calculated by assuming  
outlet and summing post development peak flows across the sit  
eme case. The spillway crest elevation is 6956.83 and the top o  
detention pond will be 6957.33 feet.

10 (4)

overtop the channel into  
l sidewalk. The sidewalk is  
y the 33.2 cfs to the  
DDP. **please include a statement that  
the roadway can accept this  
volume of flow per DCM Table 6-1**  
ded with the proposed  
ond contains an orifice  
he development site.

**Subject:** Engineer  
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please include a statement that  
the roadway can accept this  
volume of flow per DCM Table  
6-1

**RESPONSE: ANALYSIS PROVIDED PER  
MEETING WITH COUNTY**

and the water quality

**Subject:** Engineer  
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Please include more detail on  
the spillway, riprap, grass lined,  
width, and shape. Can flow be  
routed under the sidewalk for  
safety? Please define how the  
flow is routed into the culvert and  
how the flow is directed into the  
culvert.

**RESPONSE: ADDITIONAL DETAIL AND  
CALCULATIONS ADDED**

**Please include more detail on the spillway, riprap, grass lined, width,  
and shape. Can flow be routed under the sidewalk for safety? Please  
define how the flow is routed into the culvert and how the flow is  
directed into the culvert.**

The 100-year overflow spillway for the off-site flows to overtop the channel  
Bent Grass Meadows drive and spills over the proposed sidewalk. The side  
graded to provide a depth of 0.34 feet of flow to convey the 33.2 cfs to the  
roadway following existing drainage patterns per the MDDP.

C. STORMWATER QUALITY  
Water quality for the subject development will be provided with the propose  
extended detention pond. The outlet structure for the pond contains an orifi  
plate to limit the release and provide water quality for the development site.

The required water quality capture volume is 0.12 ac-ft and the water qualin

on of drainage ways: All drainage ways are stabilized with  
andscaping where possible.

**Subject:** SW - Textbox  
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Discuss areas not draining to the  
pond and how they are excluded  
from WQ treatment

Stormwater Quality Capture Volume (WQCV) proposed:  
on-site runoff is collected and diverted to the proposed exte  
pond, which releases at a pre-determined rate to ensure WQ  
are met. **Discuss areas not draining to the pond and  
how they are excluded from WQ treatment**

**RESPONSE: NOTED**

est Management Practices (BMP's) to be used to control  
and commercial pollutants: Refer to prepared SWMP and C  
proposed BMP's as well as maintenance and care thereof.

at the MDDP.

cut will be provided with the proposed structure for the pond contains an orifice meter quality for the development site.

me is 0.12 ac-ft and the water elevation of 6955.08 ft. The 100-year event volume

shall be regularly inspected at 1 time every six months. A log for the date, items in the drainage system, Maintenance of the structure. Maintenance HFD, Volume III.

measures will be addressed in accordance with Urban Drainage Volume 2 and will provide more detail on BMPs.

Should future development not be able to release flows into Bent Grass Meadows Drive, a 42" RCP would be able to convey the flows of DP BG 15n (Q100=40.9 cfs, Q5=8.8 cfs) to the northwest corner of the Bent Grass Meadows Drive and Meridian Road Intersection. Analysis for this culvert sizing has been included in the appendix.

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**RESPONSE: ADDITIONAL ANALYSIS AND DETAIL ADDED**

Should future development not be able to release flows into Bent Grass Meadows Drive, a 42" RCP would be able to convey the flows of DP BG 15n (Q100=40.9 cfs, Q5=8.8 cfs) to the northwest corner of the Bent Grass Meadows Drive and Meridian Road intersection. Analysis for this culvert sizing has been included in the appendix.

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**RESPONSE: OFFSITE BASINS INCLUDED**

Include offsite basins.

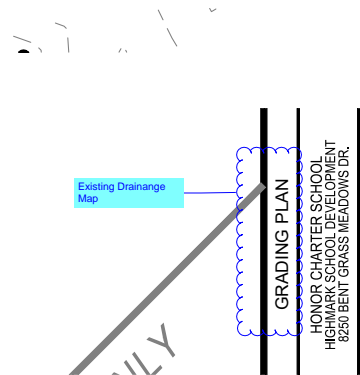
Include offsite basins.

**Subject:** Callout  
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**RESPONSE: DESIGN POINTS ADDED**

Add design points to exhibit.

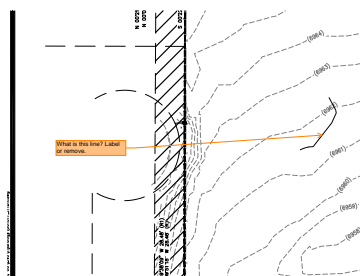
Add design points to exhibit.



**Subject:** Cloud+  
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**RESPONSE: TITLE UPDATED**

Existing Drainage Map



**Subject:** SW - Textbox with Arrow  
**Page Label:** 16

**RESPONSE: REMOVED**

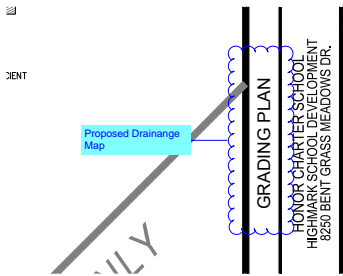
What is this line? Label or remove.

**Subject:** Callout  
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Include offsite basins.

RESPONSE: INCLUDED

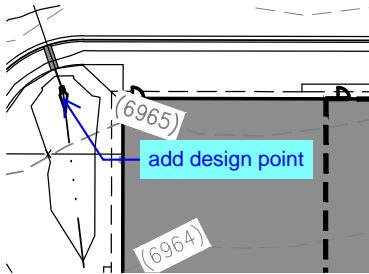
Include offsite basins.



**Subject:** Cloud+  
**Page Label:** 17

Proposed Drainage Map

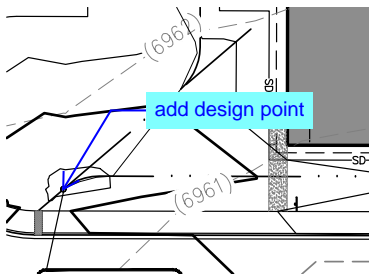
RESPONSE: TITLE UPDATED



**Subject:** Callout  
**Page Label:** 17

add design point

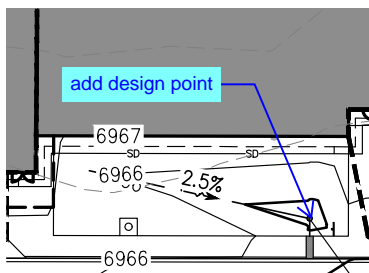
RESPONSE: ADDED



**Subject:** Callout  
**Page Label:** 17

add design point

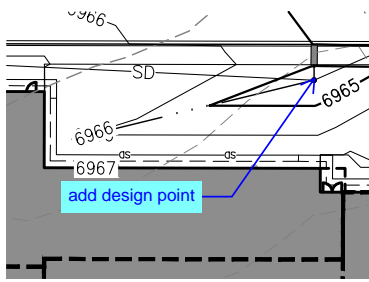
RESPONSE: ADDED



**Subject:** Callout  
**Page Label:** 17

add design point

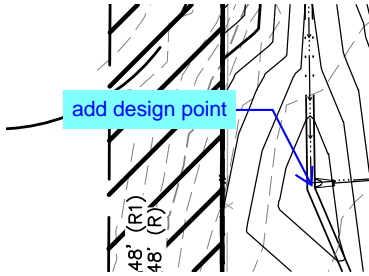
RESPONSE: ADDED



**Subject:** Callout  
**Page Label:** 17

add design point

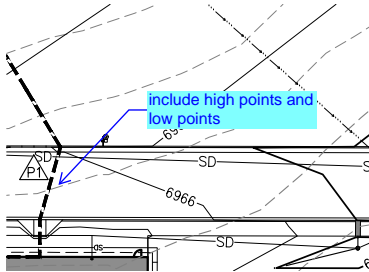
RESPONSE: ADDED



**Subject:** Callout  
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add design point

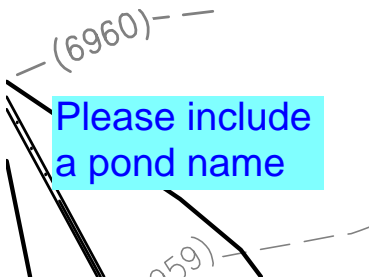
RESPONSE: ADDED



**Subject:** Engineer  
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include high points and low points

RESPONSE: ADDED



**Subject:** Engineer  
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Please include a pond name

RESPONSE: ADDED

To clarify how water quality treatment is being addressed, please provide a WQ map or table. For the map use hatching to show the area tributary to the pond, and hatching for each different exclusions utilized on AND off-site. For the table see an example attached below.

**Subject:** SW - Textbox  
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RESPONSE: TABLE INCLUDED IN REPORT

To clarify how water quality treatment is being addressed, please provide a WQ map or table. For the map use hatching to show the area tributary to the pond, and hatching for each different exclusions utilized on AND off-site. For the table see an example attached below.

**Subject:** Image  
**Page Label:** 17

**RESPONSE:** TABLE ADDED

Basin ID	Total Area (sq ft)	Total Impervious Area (sq ft)	Impervious Area Breakdown (sq ft)				Impervious Area Exclusion (sq ft)	Impervious Area (sq ft)
			Residential	Commercial	Industrial	Other		
A	1,100	400	300	100	0	0	400	
B	1,100	1,100	0	0	0	0	1,100	
C	1,100	400	300	100	0	0	400	
D	1,100	1,100	0	0	0	0	1,100	
E	1,100	400	300	100	0	0	400	
F	1,100	1,100	0	0	0	0	1,100	
G	1,100	400	300	100	0	0	400	
H	1,100	1,100	0	0	0	0	1,100	
I	1,100	400	300	100	0	0	400	
J	1,100	1,100	0	0	0	0	1,100	
K	1,100	400	300	100	0	0	400	
L	1,100	1,100	0	0	0	0	1,100	
M	1,100	400	300	100	0	0	400	
N	1,100	1,100	0	0	0	0	1,100	
O	1,100	400	300	100	0	0	400	
P	1,100	1,100	0	0	0	0	1,100	
Q	1,100	400	300	100	0	0	400	
R	1,100	1,100	0	0	0	0	1,100	
S	1,100	400	300	100	0	0	400	
T	1,100	1,100	0	0	0	0	1,100	
U	1,100	400	300	100	0	0	400	
V	1,100	1,100	0	0	0	0	1,100	
W	1,100	400	300	100	0	0	400	
X	1,100	1,100	0	0	0	0	1,100	
Y	1,100	400	300	100	0	0	400	
Z	1,100	1,100	0	0	0	0	1,100	

**Subject:** SW - Textbox with Arrow  
**Page Label:** 17

Is this the hatching on the building? Add hatching to all impervious areas or revise legend.

**RESPONSE:** REMOVED. N/A

- PROPOSED
- EXISTING
- BASIN LIM
- LIMIT OF FLOW PAT
- IMPERVIOUS

Is this the hatching on the building? Add hatching to all impervious areas or revise legend.



19 (1)

**Subject:** Cloud+  
**Page Label:** 19

Per Chapter 6, Section 3.2 in the Volume 1 update of the DCM, the overland flow length is 100 ft max in urban areas. Revise calculation.

**RESPONSE:** UPDATED

Per Chapter 6, Section 3.2 in the Volume 1 update of the DCM, the overland flow length is 100 ft max in urban areas. Revise calculation.

20 (2)

**Subject:** SW - Textbox with Arrow  
**Page Label:** 20

See comments on "over-treating"

**RESPONSE:** A6 AND A7 HAVE BEEN REMOVED

See comments on "over-treating"

**Subject:** SW - Textbox with Arrow  
**Page Label:** 20

impervious percentage of tributary basins is roughly 50%

**RESPONSE:** REVISED

impervious percentage of tributary basins is roughly 50%

22 (1)

(relative to basin bottom at Stage = 0  
et  
v  
et

Please provide spillway values

**Subject:** SW - Textbox  
**Page Label:** 22

Please provide spillway values

RESPONSE: PROVIDED

the default CUHP hydrographs and ru

EURV	2 Year
------	--------

26 (5)

APPENDIX E

HYDRAULIC COMPUTATIONS

Provide hydraulic computations for swale along western side of parcel.

**Subject:** Callout  
**Page Label:** 26

Provide hydraulic computations for swale along western side of parcel.

RESPONSE: CALCULATIONS ADDED

APPENDIX E

HYDRAULIC COMPUTATIONS

Provide calculations for the 5-year storm event in addition to the 100-year storm event.

**Subject:** Callout  
**Page Label:** 26

Provide calculations for the 5-year storm event in addition to the 100-year storm event.

RESPONSE: CALCULATIONS ADDED

HYDRAULIC COMPUTATIONS

Provide all riprap sizing calculations anywhere riprap is called for

**Subject:** Engineer  
**Page Label:** 26

Provide all riprap sizing calculations anywhere riprap is called for

RESPONSE: CALCULATIONS ADDED

Provide spread calculation for flow being sent to Bent Grass Meadows Dr to indicate if the road can handle the flow or if the culvert needs to be sized to carry more flow to the channel along Meridian.

**Subject:** Engineer  
**Page Label:** 26

Provide spread calculation for flow being sent to Bent Grass Meadows Dr to indicate if the road can handle the flow or if the culvert needs to be sized to carry more flow to the channel along Meridian.

RESPONSE: CALCULATIONS AND EXHIBIT ADDED TO SHOW SPREAD OF FLOW

Subject: SW - Textbox  
Page Label: 26

Provide trickle channel  
calculations for each stretch

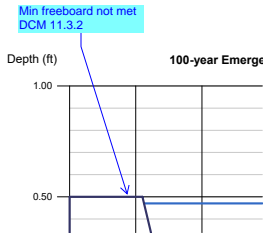
RESPONSE: CALCULATIONS ADDED

Provide trickle channel calculations for each stretch

36 (1)

Subject: Engineer  
Page Label: 36

Min freeboard not met DCM  
11.3.2



RESPONSE: ADJUSTED TO MEET MIN FREEBOARD.  
NOTE THAT THE SHOWN WATER SURFACE  
ELEVATION IS ONLY APPLICABLE IF A STORM  
GREATER THAN THE 100-YEAR STORM OR IF  
CLOGGING OCCURS AND THE 100-YEAR SURFACE  
IS BELOW THE BOTTOM OF THIS WEIR.

37 (2)

Subject: Callout  
Page Label: 37

Max side slopes for grass-lined  
channels is 4:1. Revise design  
and calculations.

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Max side slopes for grass-lined channels is 4:1. Revise design and calculations.	
<b>Highlighted</b>	
Depth (ft)	= 1.
Q (cfs)	= 72
Area (sqft)	= 34
Velocity (ft/s)	= 2.
Wetted Perim (ft)	= 24
Crit Depth, Yc (ft)	= 0.
Top Width (ft)	= 22

RESPONSE: PER DISCUSSION WITH THE  
COUNTY, THIS CHANNEL WILL BE HAVE  
MAINTENANCE AGREEMENTS DRAFTED  
AND WILL BE MAINTAINED BY THE  
SCHOOL. 3:1 SIDE SLOPE WAS  
DETERMINED TO BE ACCEPTABLE IN  
THIS CASE.

wetted Perim (ft) = 24  
Crit Depth, Yc (ft) = 0.  
Top Width (ft) = 22  
EGL (ft) = 2.

Subject: Callout  
Page Label: 37

Provide Froude number.

Provide Froude number.

RESPONSE: PROVIDED

38 (1)

wetted Perim (ft) = 24  
Crit Depth, Yc (ft) = 0.  
Top Width (ft) = 22  
EGL (ft) = 2.

Subject: Callout  
Page Label: 38

Provide Froude number.

Provide Froude number.

RESPONSE: PROVIDED

**Subject:** Engineer  
**Page Label:** 40

CDs show this culvert as an elliptical culvert, please update

) CDs show this culvert as an elliptical culvert, please update

RESPONSE: HYDRAFLOW DOES NOT ALLOW AN ELLIPTICAL PIPE BUT IT SHOULD BE HYDRAULICALLY SIMILAR TO THE 36" CIRCULAR SINCE THE PIPE CALLED OUT IS A 36" EQUIVALENT PIPE. THE FULL CAPACITY HAS BEEN ADDED TO SHOW IT WOULD EXCEED THE REQUIRED FLOW AT THAT SECTION.