FINAL DRAINAGE LETTER FOR
LOT 2 CLAREMONT BUSINESS PARK 2
FILING NO. 2
EL PASO COUNTY, COLORADO

Prepared for:

DTV Meadowbrook LLC
106 S. Kyrene Road #2
Chandler, AZ 85226
(480) 313-2724

Prepared by:

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February 2023

Project #10-025
PCD Filing No.: PPR2345

CIVIL CONSULTANTS, INC.

FINAL DRAINAGE LETTER FOR LOT 2 CLAREMONT BUSINESS PARK 2 FILING NO. 2 EL PASO COUNTY COLORADO

DRAINAGE PLAN STATEMENTS

ENGINEERS STATEMENT

The attached drainage plan and report was 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 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.

COLORADO REGISTERED PROFESSIONAL ENGINEER
VIRGIL A. SANCHEZ
37160
02-06-24

____
Virgil A. Sanchez, P.E. #37160
For and on Behalf of M&S Civil Consultants, Inc

DEVELOPER'S STATEMENT

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

BY:______________________________

TITLE: Manager DATE: 02-07-24

ADDRESS: Brian Zurek
106 S. Kryene Road
Chandler, AZ 85226

EL PASO COUNTY'S STATEMENT

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

BY:______________________________ DATE:____________________

Joshua Palmer, P.E.
County Engineer / ECM Administrator

CONDITIONS:

M&S CIVIL CONSULTANTS, INC.

FINAL DRAINAGE LETTER FOR CLAREMONT BUSINESS PARK 2 FILING NO. 2 EL PASO COUNTY COLORADO

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APPENDIX

CIVIL CONSULTANTS,INC.

FINAL DRAINAGE LETTER FOR LOT 2
CLAREMONT BUSINESS PARK 2 FILING NO. 2
EL PASO COUNTY COLORADO

Purpose

This Final Drainage Letter for Lot 2 Claremont Business Park 2 Filing No. 2 is in support of the commercial layout for the south half of Lot 2 and Construction Drawings of the subject site and to show the general conformance with the drainage patterns established by the **Final Drainage Report for Claremont Business Park 2 Filing No. 2** prepared by M&S Civil Consultants, Inc. This letter functions to identify the existing and proposed runoff patterns and recommend proposed drainage improvements which are intended to safely convey runoff through the proposed development, while minimizing impacts to downstream facilities and adjacent properties. The analysis has been prepared in accordance with the requirements set forth by El Paso County and remains in compliance with the Final Drainage Report for Claremont Business Park 2 Filing No. 2 by M&S Civil Consultants.

General Location and Description

The Lot 2 Claremont Business Park 2 Filing No.2 is the commercial layout for the south half of Lot 2 of Claremont Business Park 2 Filing No.2. The site is located in the Northeast ¼ of the Northeast ¼ of Section 8, and the Southeast ¼ of the Southeast ¼ of Section 5, Township 14 South, Range 65 West of the 6th P.M. in El Paso County, Colorado. The site is bordered to the northeast by N. Marksheffel Road, to the northwest by Meadowbrook Parkway, and to the south by Claremont Business Park 2 Filing No. 1 (Lots 1-7). See Vicinity Map in Appendix for details.

The site consists of 1.808 acres which is currently vacant land. The development project will connect with the existing drive entrance and construct a commercial building, drive thru, drive aisles, parking, landscaping and utilities through the south half of the site. The Claremont Business Park 2 Filing 2 site is currently zoned "CS" and the proposed principal use for the site will be neighborhood commercial and light industrial.

In addition to the construction of the commercial building, drive aisles and utilities, an existing storm sewer system was constructed that will function to collect runoff from the Lot 2 and route to an existing sand filter basin water quality pond 3 that will be provided to treat runoff from aforementioned improvements. Modifications are to be provided to the existing storm sewer, such as install a proposed 5' Type R inlet and remove sections of existing storm sewer to route Lot 2 runoff into the pond 3. The existing pond 3 will tie into an existing system near Meadowbrook Parkway, which ultimately conveys runoff southwest into the East Fork of Sand Creek.

Per Resolution 16-426 of the BoCC, on-site WQCV is required but on-site stormwater detention is not required. (Refer to appendix).

CIVIL CONSULTANTS,INC.

Individual drainage letter and/or report shall be required with the development of the north half of Lot 2.

Soils

The Natural Resources Conservation Service, United States Department of Agriculture, Web Soil Survey, indicates that the soils for this project are: Blakeland Loamy Sand (8), Blendon Sandy Loam (10) and Ellicott Loamy Coarse Sand (28). These soils have been characterized as having Hydrologic Soil Types "A" & "B". The soils classification used for this study is "B". Refer to the Soils Map located in the Appendix of this report

Previous Studies

The proposed site and surrounding existing drainage facilities have been included in multiple drainage letters and reports. The following is a list of existing documents that were pertinent to analyzing this site.

- Final Drainage Report for Claremont Business Park 2 Filing No. 1, by M&S Civil Consultants, approved 2/11/2021.
- Final Drainage Report for Claremont Business Park 2 Filing No. 2, by M&S Civil Consultants, approved 11/13/2023 PCD Filing No. VR233.
- Final Drainage Letter for Lot 5 of Claremont Business Park 2 Filing No.1, by M&S Civil Consultants, approved 03/03/2021.
- Final Drainage Letter for Lot 6 of Claremont Business Park 2 Filing No.1, by M&S Civil Consultants, approved 07/08/2021.

Drainage Criteria

As required by El Paso County, Colorado, this report has been prepared in accordance to the criteria set forth in the El Paso County Drainage Criteria Manual Volume 1 & 2 (DCM), the El Paso County Engineering Criteria Manual (ECM), and El Paso County Resolutions 15-042 and 19-245.

Design Event Frequency

The 100-year storm event was used as the major storm for the project, and the 5-year storm event was used as the minor storm.

Method of Analysis

The rational method was used to calculate peak flows as the tributary areas are less than 100 acres.

Where: $Q=C*i*A$

Q = Maximum runoff rate in cubic feet per second (cfs)

C = Runoff coefficient

i = Average rainfall intensity (inches per hour)

A = Area of drainage sub-basin (acres)

Runoff Coefficient

Rational Method coefficients from Table 6-6 of the Drainage Criteria Manual for developed land were utilized in the Rational Method calculations. Composite percent impervious and C values were calculated using roofs, commercial areas, asphalt drives, landscaped areas and parks found within the aforementioned table.

Time of Concentration

The time of concentration consists of the initial time of overland flow and the travel time (street or channel, etc) to a downstream structure or point of interest. A minimum time of concentrations of 5 minutes is utilized for urban areas.

Rainfall Intensity

The hypothetical rainfall depths for the 1-hour storm duration were taken from Table 6-2 of the Drainage Criteria Manual.

Project 1-Hour Rainfall Depth Storm Recurrence Interval Rainfall Depth (inches)
5-year 1.50”   100-year 2.52”

The rainfall intensity equation for the Rational Method was taken from Drainage Criteria Manual Volume 1 Figure 6-5.

Hydraulic Grade Line Analysis

StormCAD was utilized to analyze the proposed storm sewer system and determine the Hydraulic Grade Line (HGL’s) profiles for the major and minor storms. The standard method was used to calculate head loss in the system with K coefficients taken from Table 9-4 of the Colorado Springs DCM.

In addition to the DCM, The Mile High Flood District BMP Sizing (UD-BMPv.3.07) and Detention Design (MHFD Detention v4.06) worksheets were utilized to verify the existing water quality ponds still functions with the revised tributary areas and impervious values. The MFHD-Inlet v5.02 worksheet was utilized to calculate both the street capacities and evaluate inlet capacities.

Floodplain Statement

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Panel No. 08041C0756G, revised December 7, 2018. No portion of this site is located within the 100-year floodplain. See Appendix.

Existing Drainage Conditions

As the site has been graded previously with the development of Filing 1, the vegetation is sparse, consisting primarily of native grasses and weeds. Existing site terrain generally slopes from north to southwest at grade rates that vary between 1.2% and 2%. A soil retention wall runs along the eastside of the proposed site, next to U.S. Highway 24 and N. Marksheffel Road, and borders a large portion of the back of the proposed lot. An existing WQ Sand Filter Pond 3 has been constructed on the southwest corner and along the west edge of the site, which will serve as a singular water quality pond for Lot 2 and El Jefe Heights (private street). An existing 18"/24" ADS private storm drain has been constructed along the east side of Meadowbrook Parkway and into Claremont Business Park 2 Filing No.2 that extends to this existing WQ Sand Filter Pond 3.

The proposed project will construct a commercial building, drive thru, drive aisles, parking, landscaping and utilities through the south half of the site, the existing and proposed drainage analysis will be expanded to evaluate changes in drainage patterns to ensure no negative affects to downstream facilities. An existing conditions drainage map is included in the appendix of this report to accompany the following discussion.

Basins that have remained unchanged from the **Final Drainage Report for Claremont Business Park 2 Filing No. 2** prepared by M&S Civil Consultants, Inc., will herein be identified with ** within the report, rational sheets and drainage maps.

Existing Conditions Detailed Drainage Discussion

Design Point 1 (Q5 = 0.6 cfs, Q100 = 3.9 cfs) consists of runoff from undeveloped **Basins **C**, ****C1, D**, and **D1**. **Basins **C** and ****C1** are 0.12 and 0.17 acres of existing roadway embankment located generally between the subject site and existing Marksheffel Road. **Basins D** and **D1** are 0.77 and 0.63 acres of undeveloped portions of the subject site. Runoff from the four basins is conveyed to an existing 30" dome grate inline storm system, located south and west of the site at **DP1**. An existing 18" RCP (**Pipe Run 1** (**PR1**)) will outfall the captured flows into an existing WQ Sand Filter Pond 3, located at the southwest corner of the site.

Design Point 2 (Q5 = 2.2 cfs, Q100 = 6.9 cfs) consists of runoff from **Basin D2, Basin**E1, **E2** and **Design Point 1 (DP1)**. **Basin D2** is 0.15 acres of existing WQ Sand Filter Pond 3, **Basins **E1** and ****E2** consists 0.27 and 0.21 acres of existing El Jefe Heights (asphalt paving, curb and gutter and landscaped areas) and **DP1**. Runoff from these basins flow into an existing WQ Sand Filter Pond 3 via existing 18" RCP pipes from El Jefe Heights and from **DP1.** Runoff will be routed via an existing outfall structure and into the existing storm system which ultimately conveys runoff southwest into the East Fork of Sand Creek.

Four Step Process

The development will follow the "Four Step Process" as outlined below:

Step 1 - Employ Runoff Reduction Practices

The proposed development uses Low Impact Development (LID) practices to reduce runoff. When possible, runoff is to be directed to pervious areas to promote infiltration and limit directly connected impervious areas.

Step 2 - Stabilize Drainageways

There are no drainageways on-site to stabilize. The site is upstream of an existing 42"/48" RCP storm sewer system that discharges directly into the Sand Creek Channel via an outlet structure with wingwalls (privately owned and maintained by the Central Marksheffel Metropolitan District). The Claremont Business Park 2 Filing No.2 site has a Sand Filter Water Quality Facility, that will be constructed and/or concurrently constructed with development of this site, that will treat runoff prior to discharging to the existing storm sewer system. There will be no adverse effects on downstream developments as a result of the development of this subdivision.

Step 3 - Provide Water Quality Capture Volume

One (1) Sand Filter Basin Water Quality Facility is existing or will be constructed concurrently with the development of Lot 2 Claremont Business Park 2 Filing No.2 to provide WQCV at the time of the writing of this report.

Step 4 - Consider Need for Industrial and Commercial BMP's

This submittal provides a Preliminary Grading and Erosion Control plan. A Final GEC plan with BMPs in place shall be required with final approval of this report, Grading Plan and construction drawings. The proposed project will use silt fence, a vehicle tracking control pad, a concrete washout area, mulching and reseeding to mitigate the potential for erosion across the site.

Proposed Drainage Characteristics

General Concept Drainage Discussion

The "Final Drainage Report for Claremont Business Park 2 Filing No. 2", dated February 2023, by M&S Civil Consultants, Inc. indicated that flows discharged from the subject site were to be collected and conveyed to the East Fork of Sand Creek Channel via a storm system that was to parallel Meadowbrook Parkway. As a portion of the construction of Claremont Business Park 2 Filing No.2 the existing storm sewer system was extended along the eastern side of Meadowbrook Parkway to collect runoff from the Lots 1, 2 & 3 of Claremont Business Park 2 Filing No.2 re-plat and thus remain in compliance with the previous drainage plans and studies.

A permanent water quality pond (WQ Sand Filter Pond 3) has been constructed at the southwest corner of Lot 2 to provide treatment for the proposed roadway and Lot 2. An existing private 18" RCP has been installed to capture runoff from Lot 2 and outfalls into existing WQ Sand Filter Pond 3.

A proposed conditions drainage map is included in the Appendix of this report to accompany the following discussion.

Basins that have remained unchanged from the **Final Drainage Report for Claremont Business Park 2 Filing No. 2** prepared by M&S Civil Consultants, Inc., approved 11/13/2023, will herein be identified with ** within the report, rational sheets and drainage maps. Basins that have changed from the **Final Drainage Report for Claremont Business Park 2 Filing No. 2** prepared by M&S Civil Consultants, Inc., will herein be identified with # within the report, rational sheets and drainage maps. Basins, Design Points and Pipe Runs that are describing the ultimate build out (fully developed) of Lot 2, will herein be identified with *** within the report, rational sheets and drainage maps.

The ultimate build out models Lot 2 in the future should it get developed, showing the runoff coefficient for the 5- and 100-year events, as well as calculating proposed flows to the existing WQ Sand Filter Pond 3. The following Proposed Conditions Detailed Drainage Discussion Design Point 1, 2, and 3 describes the interim, where the interim includes only the proposed building shown in the Proposed Conditions Drainage Map and does not account for future development on Lot 2. The Design Point ***1 (Ultimate Build Out, 2 Ultimate Build Out (the same for interim and ultimate), and ***3 (Ultimate Build Out) models a proposed future development on Lot 2. There is no planned second development for Lot 2 at this time, however this Ultimate Build Out accounts for future development and proposed future flows to WQ Sand Filter Pond 3.

An individual drainage letter and/or report will be required with the development of the north half of Lot 2. The ultimate build out model is used to size and demonstrate the runoff routing and proposed storm system is designed properly if and when Lot 2 north gets developed. The drainage letter for the north half must demonstrate the same runoff routing and flow calculations or show the system still works if there are changes to this proposed design.

Proposed Conditions Detailed Drainage Discussion

Design Point 1 (Q5 = 0.3 cfs, Q100 = 1.6 cfs) consists of runoff from undeveloped **Basins #C** and partially developed **Basin #D**. **Basins #C** is 0.04 acres of existing roadway embankment located generally between the subject site and existing Marksheffel Road. **Basins #D** is 0.47 acres of partially developed land with asphalt roadway, a 5' Type R Inlet and curb and gutter, the majority of this basin is undeveloped. Runoff from these basins is routed to a proposed 5' Type R sump inlet. Runoff to this inlet will be conveyed via a proposed 15" PP pipe (**Pipe Run 1** (**PR1,** Q5 = 0.3 cfs, Q100 = 1.6 cfs)) to **Design Point 2 (DP2)** and eventually to existing WQ Sand Filter Pond 3.

Design Point 2 (Q5 = 3.7 cfs, Q100 = 7.2 cfs) consists of runoff from **Basin #C1** and developed **Basin #D1**. **Basin #C1** is 0.26 acres of existing roadway embankment located generally between the subject site and existing Marksheffel Road. **Basins #D1** is 0.93 acres of the developed portion of the subject site. Development includes connection with the existing drive entrance and construction of a commercial building, drive thru, drive aisles, parking, landscaping and utilities through the south half of the site. A small portion of the site is undeveloped. Runoff from these basins is routed to a proposed 5' Type R inlet.

Removal of approximately 12’ of existing 18” RCP will be required to install the proposed inlet. The inlet shall be installed with non-shrink cementitious grout to fill voids and fasten the inlet and pipe together. The remaining existing 18” RCP (**Pipe Run 2** (**PR2,** Q5 = 4.0 cfs, Q100 = 8.8 cfs)) will route the combined captured flows from **DP1** and **DP2** and will outfall into an existing WQ Sand Filter Pond 3, located at the southwest corner of the site. The flows routed to existing WQ Sand Filter Pond 3 from Lot 2 are less than the flows cited in the approved Claremont Business Park 2 Filing No.2 Final Drainage Report (**PR6A**, Q5 = 6.0 cfs, Q100 = 11.6 cfs), hence there will be no negative impact on the downstream storm system.

Design Point 3 (Q5 = 6.1 cfs, Q100 = 12.9 cfs) consists of runoff from **Basin #D2, Basin**E1, **E2** and **PR2**. **Basin D2** is 0.15 acres of existing WQ Sand Filter Pond 3, **Basins **E1** and **E2** consists 0.27 and 0.21 acres of existing El Jefe Heights (asphalt paving, curb and gutter and landscaped areas) and **PR2**. Runoff from these basins flow into an existing WQ Sand Filter Pond 3 via existing 18” RCP pipes from El Jefe Heights and from **PR2.** Runoff will be treated and routed via an existing outfall structure and into the existing storm system which ultimately conveys runoff southwest into the East Fork of Sand Creek. The flows routed to existing WQ Sand Filter Pond 3 are less than the flows cited in the approved Claremont Business Park 2 Filing No.2 Final Drainage Report (**DP6**, Q5 = 7.8 cfs, Q100 = 14.6 cfs), hence there will be no negative impact on the existing WQ Pond 3 and the downstream storm system.

Design Point ***1 (Ultimate Build Out) (Q5 = 1.8 cfs, Q100 = 3.4 cfs) consists of runoff from undeveloped **Basins #C** and future developed **Basin ***D**. **Basins #C** is 0.04 acres of existing roadway embankment located generally between the subject site and existing Marksheffel Road. **Basins ***D** has no current builder but has been assigned a commercial area runoff coefficient number (5-yr 0.81 and 100-yr 0.88) applied to it. **Basins ***D** is 0.47 acres of future developed land and will route flows to a 5’ Type R sump inlet. Runoff to this inlet will be conveyed via a proposed 15” PP pipe (**Pipe Run 1** (**PR1,** Q5 = 1.8 cfs, Q100 = 3.4 cfs)) to **Design Point 2 (DP2)** and eventually to existing WQ Sand Filter Pond 3.

Design Point 2 (Ultimate Build Out) (Q5 = 3.7 cfs, Q100 = 7.2 cfs) consists of runoff from **Basin #C1** and developed **Basin #D1**. **Basin #C1** is 0.26 acres of existing roadway embankment located generally between the subject site and existing Marksheffel Road. **Basins #D1** is 0.93 acres of the fully developed portion of the subject site. Development includes connection with the existing drive entrance and construction of a commercial building, drive thru, drive aisles, parking, landscaping and utilities through the south half of the site. Runoff from these basins is routed to a proposed 5’ Type R sump inlet. Removal of approximately 12’ of existing 18” RCP will be required to install the proposed inlet. The inlet shall be installed with non-shrink cementitious grout to fill voids and fasten the inlet and pipe together. The remaining existing 18” RCP (**Pipe Run ***2** (**PR***2,** Q5 = 5.5 cfs, Q100 = 10.6 cfs)) will route the combined captured flows from **DP1** and **DP2** and will outfall into an existing WQ Sand Filter Pond 3, located at the southwest corner of the site. The flows routed to existing WQ Sand Filter Pond 3 from Lot 2 are less than the flows cited in the Claremont Business Park 2 Filing No.2 Final Drainage Report (**PR6A**, Q5 = 6.0 cfs, Q100 = 11.6 cfs), hence there will be no negative impact on the downstream storm system.

Design Point*3** (Q5 = 7.3 cfs, Q100 = 14.6 cfs) consists of runoff from **Basin #D2, Basin**E1, **E2** and **PR***2**. **Basin #D2** is 0.15 acres of existing WQ Sand Filter Pond 3, **Basins **E1** and **E2** consists 0.27 and 0.21 acres of existing El Jefe Heights (asphalt paving, curb and gutter and landscaped areas) and

PR*2**. Runoff from these basins flow into an existing WQ Pond 3 via existing 18” RCP pipes from El Jefe Heights and from **PR***2.** Runoff will be treated and routed via an existing outfall structure and into the existing storm system which ultimately conveys runoff southwest into the East Fork of Sand Creek. The flows routed to existing WQ Sand Filter Pond 3 are equivalent to the flows cited in the approved Claremont Business Park 2 Filing No.2 Final Drainage Report (**DP6**, Q5 = 7.8 cfs, Q100 = 14.6 cfs), hence there will be no negative impact on the existing WQ Sand Filter Pond 3 and the downstream storm system.

Water Quality Provision and Maintenance

The subject site was previously analyzed within the Final Drainage Report for Claremont Business Park 2 Filing No. 2 prepared by M&S Civil Consultants, Inc. Per Resolution 16-426 of the BoCC, on-site WQCV is required but on-site stormwater detention is not required per the FDR for Claremont Business Park Filing 2. The water quality volume required for the site has been determined using the MHFD UD-Detention workbook per the guidelines set forth in the City of Colorado Springs/El Paso County Drainage Criteria Manual - Volume II.

As previously discussed, water quality for the site will be provided by an existing WQ Sand Filter Basin Pond 3, PCD Filing NO. VR233. WQ Sand Filter Pond 3 is to be constructed prior to development of Lot 2 or concurrently with development of Lot 2 and will function to treat runoff from the newly constructed improvements (roadway, sidewalks) and Lot 2 or approximately 2.32 acres at 80.3% imperviousness. WQ Sand Filter Pond 3 will provide 0.051 acre-feet of water quality storage and shall be maintained by the property owners. Flows tributary to the WQ Sand Filter Pond 3 are released through outlet structure into an existing storm sewer system located along Meadowbrook Parkway. Access shall be granted to the owner and El Paso County for access and maintenance of the private WQ Sand Filter Basin Pond 3 facility. A private maintenance agreement document shall accompany the final drainage report submittal with construction of the WQ Sand Filter Pond 3.

Erosion Control

It is the policy of the El Paso County that a grading and erosion control plan (GEC) with the drainage report. The GEC incorporates silt fence, vehicle traffic control, inlet and outlet controls, sediment basin and other best management practices (BMP’s) as identified in the DCM Volume 2.

Construction Cost Opinion

Private Drainage Facilities (**NON-Reimbursable**) Including Sand Filter WQ Pond 3:

Item	Description	Quantity		Unit Cost		Cost
1.	Remove 18" RCP & 30” Grate inline storm	12	LF	$50	/LF	$600.00
2.	15” PP	66	LF	$55	/LF	$3,630.00
3.	Type R 5’ Sump Inlet	1	EA	$6,500	/EA	$6,500.00
2.	Type R 5’ Sump Inlet connect to Ex. RCP	1	EA	$7,500	/EA	$7,500.00

		$18,230.00
	Engineering Costs (10%)	**$1,823.00**
	Total	**$20,053.00**

M & S Civil Consultants, Inc. (M & S) cannot and does not guarantee the construction cost will not vary from these opinions of probable costs. These opinions represent our best judgment as design professionals familiar with the construction industry and this development in particular. The above is only an estimate of the facility cost in 2023.

Drainage and Bridge Fees

This site is in the Sand Creek Drainage Basin. The site was previously subdivided into ten commercial lots as a portion of Claremont Business Park 2, Filing No.1. The proposed site has been re-platted as Claremont Business Park 2, Filing No.2.

<u>Drainage fees were paid at the time of the previous platting as Tract C of Claremont Business Park Filing No. 2 (Reception No. 207712506), therefore no additional Drainage Bridge and/or Pond fees are required.</u>

Summary

The proposed design meets the design assumptions utilized in the “Final Drainage Report for Claremont Business Park 2 Filing No. 2", by M&S Civil Consultants, Inc. The "Final Drainage Report for Claremont Business Park 2 Filing No. 2" calculated that DP 6 generated of (Q5=7.8 cfs and Q100=14.6). The proposed development (Lot 2, DP3) will generate Q5=6.1 cfs and Q100=12.9 which is less than what was anticipated by the Final Drainage Report for Claremont Business Park 2 Filing No. 2. Also, the ultimate build out of the proposed development (Lot 2, DP***3) will generate Q5=7.5 cfs and Q100=14.6 which is less than what was anticipated by the Final Drainage Report for Claremont Business Park 2 Filing No. 2. Therefore, the proposed development shall not have a negative impact on the downstream storm system and is adequately sized to convey the proposed generated flows. Thus, the development of Lot 2 Claremont Business Park 2 Filing No.2 shall not adversely affect the surrounding development. The proposed drainage facilities will adequately convey, detain and route runoff from the onsite & offsite flows to existing facilities. Owner/developer of the lot shall comply with this final drainage report that will be submitted. Care will be taken to accommodate overland emergency flow routes on site and temporary drainage conditions.

References

1. "El Paso County and City of Colorado Springs Drainage Criteria Manual".

2. "Urban Storm Drainage Criteria Manual"

3. Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at the following link: *http://websoilsurvey.sc.egov.usda.gov/*. Accessed: February 02, 2023.

4. Flood Insurance Rate Map (FIRM), Federal Emergency Management Agency, Effective dated December 7, 2018.

5. "Final Drainage Report for Claremont Business Park 2 Filing No. 1", by M&S Civil Consultants, approved 2/11/2021.

6. Final Drainage Report for Claremont Business Park 2 Filing No. 2, by M&S Civil Consultants, approved 11/13/2023.

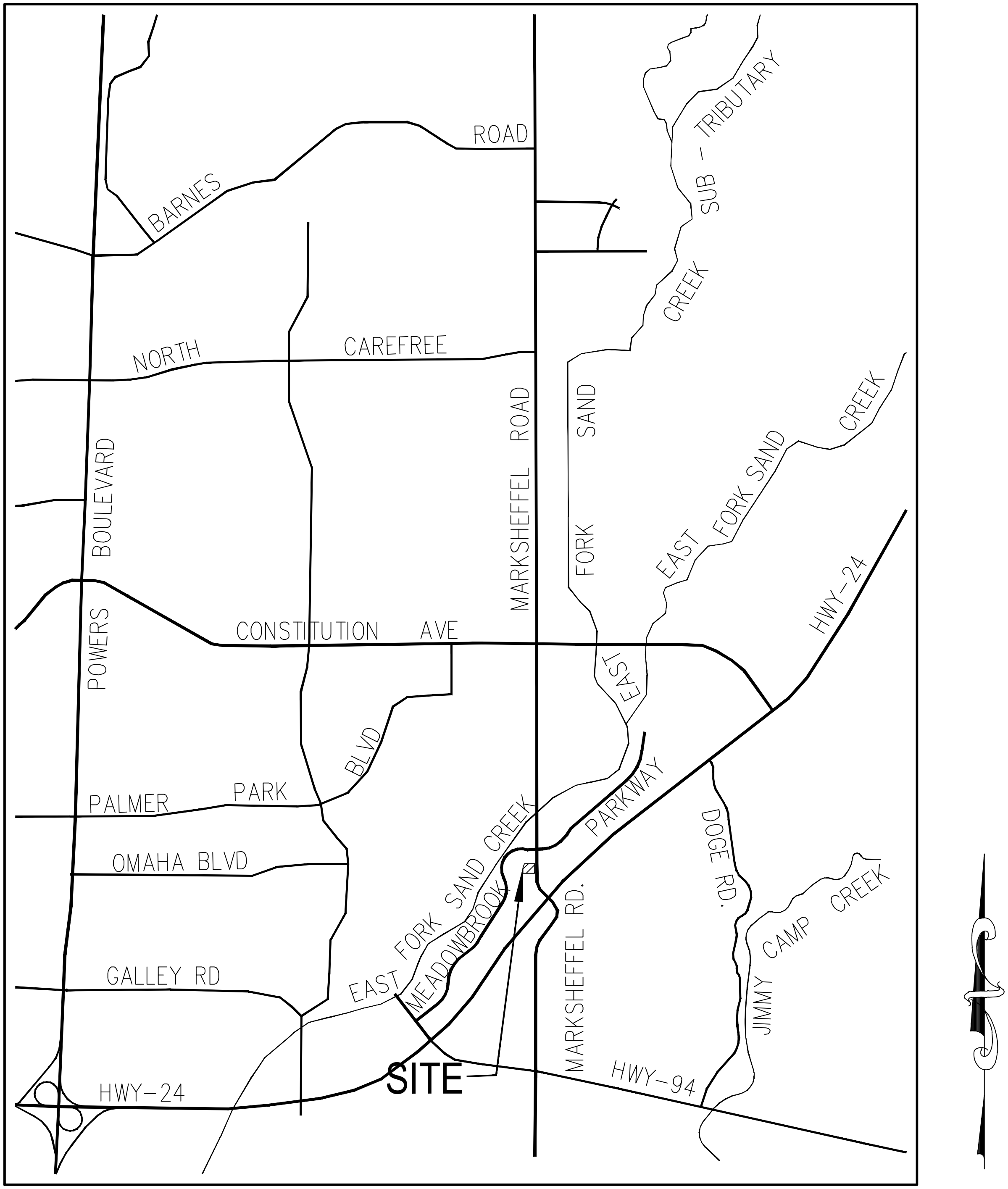
7. "Final Drainage Letter for Lot 5 of Claremont Business Park 2 Filing No.1", by M&S Civil Consultants, approved 03/03/2021.

8. "Final Drainage Letter for Lot 6 of Claremont Business Park 2 Filing No.1", by M&S Civil Consultants, approved 07/08/2021.

Appendix

CIVIL CONSULTANTS, INC.

Vicinity Map



VICINITY MAP

N.T.S.

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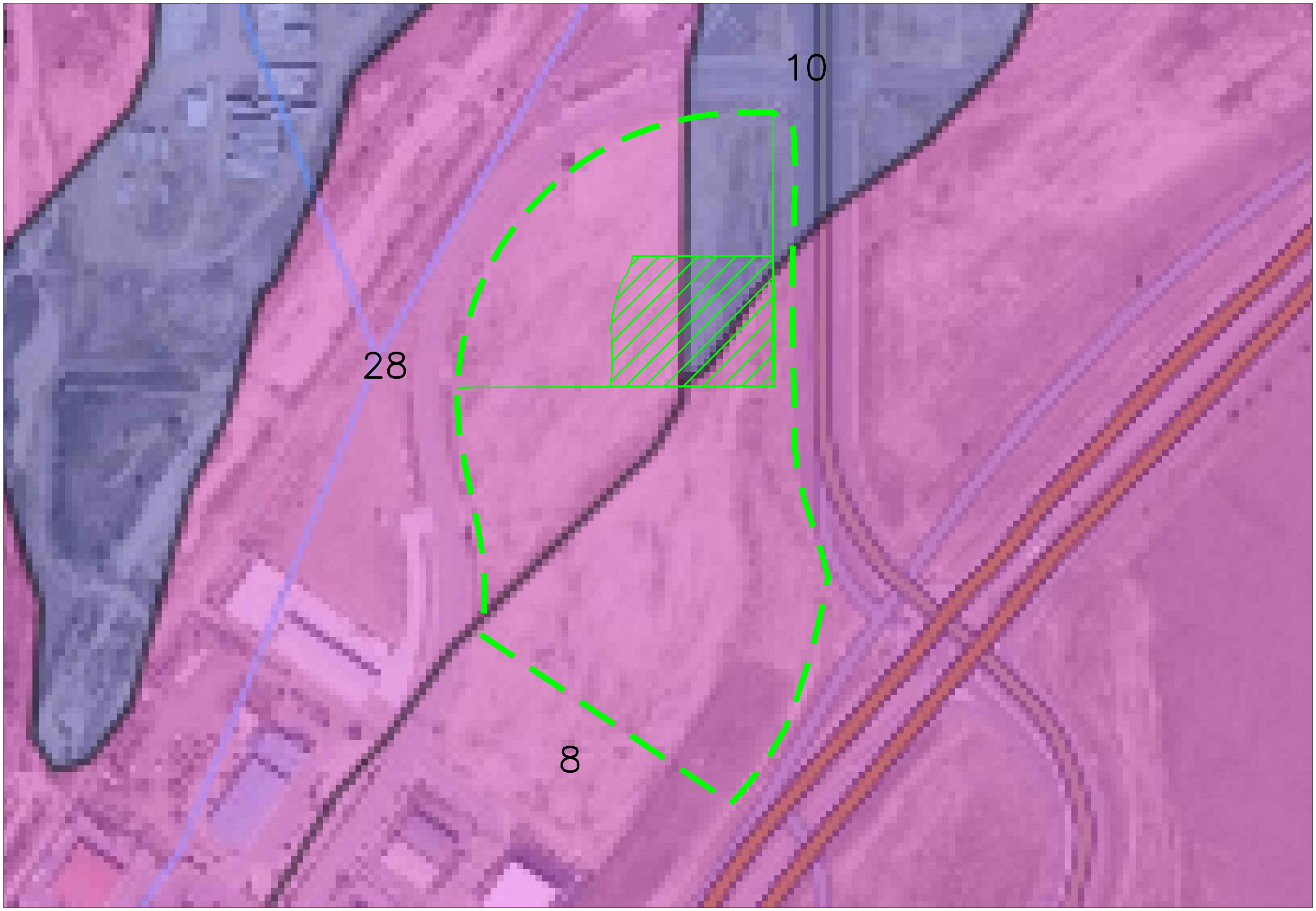
Soils Map

LOT 2 CLAREMONT BUSINESS PARK 2 FILING NO. 2



HYDROLOGIC TYPE A SOILS

HYDROLOGIC TYPE B SOILS

WATERSHED BOUNDARY

SITE BOUNDARY

1" = 300'

0 75 150 300 600

Scale in Feet

Map unit symbol	Map unit name	Rating
8	Blakeland loamy sand, 1 to 9 percent slopes	A
10	Blendon sandy loam, 0 to 3 percent slopes	B
28	Ellicott loamy coarse sand, 0 to 5 percent slopes	A

SOILS MAP

CIVIL CONSULTANTS, INC.
212 N. WAHSATCH AVE., STE 305
COLORADO SPRINGS, CO 80903
PHONE: 719.955.5485

FEMA FIRM Panel

LEGEND

SITE BOUNDARY

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR DRAFT FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR* Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X* Future Conditions 1% Annual Chance Flood Hazard *Zone X* Area with Reduced Flood Risk due to Levee See Notes *Zone X* Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN Area of Minimal Flood Hazard *Zone X* Effective LOMRs Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Levee, Dike, or Floodwall
OTHER FEATURES	20.2 Cross Sections with 1% Annual Chance 17.5 Water Surface Elevation 8 Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature 513 Base Flood Elevation Line (BFE) Limit of Study Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at https://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates, refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Basemap information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). The basemap shown is the USGS National Map: Orthoimagery. Last refreshed October, 2020.

This map was exported from FEMA's National Flood Hazard Layer (NFHL) on 12/27/2022 3:40 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time. For additional information, please see the Flood Hazard Mapping Updates Overview Fact Sheet at https://www.fema.gov/media-library/assets/documents/118418

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards. This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date.

SCALE

Map Projection:
GCS, Geodetic Reference System 1980;
Vertical Datum: NAVD88
For information about the specific vertical datum for elevation features, datum conversions, or vertical monuments used to create this map, please see the Flood Insurance Study (FIS) Report for your community at https://msc.fema.gov

N

1 inch = 500 feet 1:6,000

0 250 500 1,000 1,500 2,000 Feet

0 50 100 200 300 400 Meters

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

PANEL 756 OF 1275

Panel Contains:

COMMUNITY	NUMBER	PANEL
EL PASO COUNTY	080059	0756
CITY OF COLORADO SPRINGS	080060	0756

MAP NUMBER
08041C0756G
EFFECTIVE DATE
December 07, 2018

1" = 500'

0 250 500 1000

Scale in Feet

FIRM MAP

LOT 2 CLAREMONT BUSINESS PARK 2 FILING NO. 2

M&S CIVIL CONSULTANTS, INC.

HYDROLOGIC CALCULATIONS

FINAL DRAINAGE REPORT FOR LOT 2 CLAREMONT BUSINESS PARK 2 FILING NO.2
EXISTING DRAINAGE CALCULATIONS
(Area Runoff Coefficient Summary)

			ROOFS 0.73-0.81 ASPHALT DRIVES 0.90-0.96			*PARKS 0.12-0.39 GRAVEL STORAGE YARD 0.30-0.50 LIGHT INDUST AREAS 0.59-0.70 COMMERCIAL AREAS 0.81-0.88*			*GREENBELTS/AGRI. 0.09-0.36*			*WEIGHTED*	
BASIN	**TOTAL AREA** *(SF)*	**TOTAL AREA** *(Acres)*	**AREA** *(Acres)*	C_5	C_{100}	**AREA** *(Acres)*	C_5	C_{100}	**AREA** *(Acres)*	C_5	C_{100}	C_5	C_{100}
*****C***	*5372.3*	**0.12**	0.00	0.90	0.96	0.00	0.12	0.39	0.12	0.09	0.36	***0.09***	***0.36***
*****C1***	*7457.3*	**0.17**	0.00	0.90	0.96	0.00	0.12	0.39	0.17	0.09	0.36	***0.09***	***0.36***
D	*33587.9*	**0.77**	0.00	0.90	0.96	0.03	0.12	0.39	0.74	0.09	0.36	***0.09***	***0.36***
D1	*27332.4*	**0.63**	0.00	0.90	0.96	0.15	0.12	0.39	0.48	0.09	0.36	***0.10***	***0.37***
D2	*6696.0*	**0.15**	0.00	0.90	0.96	0.03	0.12	0.39	0.12	0.09	0.36	***0.10***	***0.37***
*****E1***	*11683.7*	**0.27**	0.22	0.90	0.96	0.05	0.81	0.88	0.00	0.09	0.36	***0.88***	***0.95***
*****E2***	*9082.0*	**0.21**	0.17	0.90	0.96	0.04	0.81	0.88	0.00	0.09	0.36	***0.88***	***0.95***

**~ Claremont Business Park 2 Filing No.2 FDR, prepared by MS Civil Consultants, Inc.

Calculated by: GT
Date: 8/2/2023
Checked by: VAS

FINAL DRAINAGE REPORT FOR LOT 2 CLAREMONT BUSINESS PARK 2 FILING NO.2
EXISTING DRAINAGE CALCULATIONS
(Area Drainage Summary)

From Area Runoff Coefficient Summary				*OVERLAND*				*STREET / CHANNEL FLOW*				*Time of Travel (T_t)*		*INTENSITY **		*TOTAL FLOWS*	
BASIN	**AREA TOTAL** *(Acres)*	**C_5** *From DCM Table 5-1*	**C_{100}**	**C_5**	**Length** *(ft)*	**Height** *(ft)*	**T_C** *(min)*	**Length** *(ft)*	**Slope** *(%)*	**Velocity** *(fps)*	**T_t** *(min)*	***TOTAL** *(min)*	**CHECK** *(min)*	**I_5** *(in/hr)*	**I_{100}** *(in/hr)*	**Q_5** *(c.f.s.)*	**Q_{100}** *(c.f.s.)*
*****C***	0.12	0.09	0.36	0.09	40	16.0	3.4	0	0.0%	0.0	0.0	5.0	10.2	5.2	8.7	***0.1***	***0.4***
*****C1***	0.17	0.09	0.36	0.09	60	22.0	4.3	0	0.0%	0.0	0.0	5.0	10.3	5.2	8.7	***0.1***	***0.5***
D	0.77	0.09	0.36	0.09	60	1.2	11.2	250	1.6%	1.9	2.2	13.4	11.7	3.9	6.5	***0.3***	***1.8***
D1	0.63	0.10	0.37	0.10	60	1.2	11.2	250	1.6%	1.9	2.2	13.4	11.7	3.9	6.5	***0.2***	***1.5***
D2	0.15	0.10	0.37	0.10	15	6.0	2.1	63	0.5%	0.7	1.5	5.0	10.4	5.2	8.7	***0.1***	***0.5***
*****E1***	0.27	0.88	0.95	0.88	30	0.6	1.7	280	2.0%	2.8	1.6	5.0	11.7	5.2	8.7	***1.2***	***2.2***
*****E2***	0.21	0.88	0.95	0.88	30	0.6	1.7	280	2.0%	2.8	1.6	5.0	11.7	5.2	8.7	***1.0***	***1.7***

* Intensity equations assume a minimum travel time of 5 minutes.

**~ Claremont Business Park 2 Filing No.2 FDR, prepared by MS Civil Consultants, Inc.

Calculated by: GT
Date: 8/2/2023
Checked by: VAS

FINAL DRAINAGE REPORT FOR LOT 2 CLAREMONT BUSINESS PARK 2 FILING NO.2
EXISTING DRAINAGE CALCULATIONS
(Basin Routing Summary)

From Area Runoff Coefficient Summary				***OVERLAND***				***PIPE / CHANNEL FLOW***				***Time of Travel (T_t)***	***INTENSITY ****		***TOTAL FLOWS***		
DESIGN POINT	**CONTRIBUTING BASINS** *DPS AND/OR PIPES*	CA_5	CA_{100}	C_5	**Length** *(ft)*	**Height** *(ft)*	T_C *(min)*	**Length** *(ft)*	**Slope** *(%)*	**Velocity** *(fps)*	T_t *(min)*	***TOTAL** *(min)*	I_5 *(in/hr)*	I_{100} *(in/hr)*	Q_5 *(c.f.s.)*	Q_{100} *(c.f.s.)*	COMMENTS
1	****C, **C1, D, D1**	0.16	0.61	Basin D Tc used + Basin D1 routing								12.3	3.8	6.4	***0.6***	***3.9***	Existing 30" Dome Grate
							11.7	56	1.0%	1.5	0.6						
2	**D2, **E1, **E2, DP1**	0.59	1.12	DP1 Tc used + Basin D2 routing								13.8	3.6	6.1	***2.2***	***6.9***	Existing WQ Pond 3
							12.3	63	0.5%	0.7	1.5						

* Intensity equations assume a minimum travel time of 5 minutes.

**~ Claremont Business Park 2 Filing No.2 FDR, prepared by MS Civil Consultants, Inc.

Calculated by: GT
Date: 8/2/2023
Checked by: VAS

FINAL DRAINAGE REPORT FOR LOT 2 CLAREMONT BUSINESS PARK 2 FILING NO.2

EXISTING DRAINAGE CALCULATIONS

(Storm Sewer Routing Summary)

PIPE RUN	*Contributing Pipes/Design Points*	*Equivalent CA_5*	*Equivalent CA_{100}*	*Maximum T_C*	*Intensity**		*Flow*		*Pipe Size*
					I_5	*I_{100}*	*Q_5*	*Q_{100}*	
1	**DP1**	0.16	0.61	12.3	3.8	6.4	***0.6***	***3.9***	**EX 18" RCP**

* Intensity equations assume a minimum travel time of 5 minutes.

DP - Design Point

PR - Pipe Run

FB- Flow By from Design Point

INT- Intercepted Flow from Design Point

Calculated by: GT

Date: 8/2/2023

Checked by: VAS

FINAL DRAINAGE REPORT FOR LOT 2 CLAREMONT BUSINESS PARK 2 FILING NO.2
PROPOSED DRAINAGE CALCULATIONS
(Area Runoff Coefficient Summary)

			ROOFS 0.73-0.81 ASPHALT DRIVES 0.90-0.96			*PARKS 0.12-0.39 LANDSCAPED AREAS 0.16-0.41 GRAVEL STORAGE YARD 0.30-0.50 LIGHT INDUST AREAS 0.59-0.70 COMMERCIAL AREAS 0.81-0.88*			*GREENBELTS/AGRI. 0.09-0.36*			*WEIGHTED*	
BASIN	**TOTAL AREA** *(SF)*	**TOTAL AREA** *(Acres)*	**AREA** *(Acres)*	**C_5**	**C_{100}**	**AREA** *(Acres)*	**C_5**	**C_{100}**	**AREA** *(Acres)*	**C_5**	**C_{100}**	**C_5**	**C_{100}**
#C	*1664.0*	**0.04**	0.00	0.90	0.96	0.00	0.16	0.41	0.04	0.09	0.36	***0.09***	***0.36***
#C1	*11176.5*	**0.26**	0.00	0.90	0.96	0.00	0.16	0.41	0.26	0.09	0.36	***0.09***	***0.36***
#D	*20496.0*	**0.47**	0.03	0.90	0.96	0.07	0.12	0.39	0.37	0.09	0.36	***0.15***	***0.40***
******D***	*20496.0*	**0.47**	0.00	0.90	0.96	0.47	0.81	0.88	0.00	0.09	0.36	***0.81***	***0.88***
#D1	*40410.0*	**0.93**	0.00	0.90	0.96	0.93	0.81	0.88	0.00	0.09	0.36	***0.81***	***0.88***
#D2	*6696.0*	**0.15**	0.00	0.90	0.96	0.15	0.12	0.39	0.00	0.09	0.36	***0.12***	***0.39***
*****E1***	*11683.7*	**0.27**	0.22	0.90	0.96	0.05	0.81	0.88	0.00	0.09	0.36	***0.88***	***0.95***
*****E2***	*9082.0*	**0.21**	0.17	0.90	0.96	0.04	0.81	0.88	0.00	0.09	0.36	***0.88***	***0.95***

**~ Claremont Business Park 2 Filing No.2 FDR Prepared by MS Civil Consultants, Inc.
#~ Basin area revised from Claremont Business Park 2 Filing No.2 FDR Prepared by MS Civil Consultants, Inc.
***~ Ultimate build out. Development of Lot 2 (North half)

Calculated by: GT
Date: 2/2/2024
Checked by: VAS

FINAL DRAINAGE REPORT FOR LOT 2 CLAREMONT BUSINESS PARK 2 FILING NO.2
PROPOSED DRAINAGE CALCULATIONS
(Area Drainage Summary)

From Area Runoff Coefficient Summary				*OVERLAND*				*STREET / CHANNEL FLOW*				*Time of Travel (T_t)*		*INTENSITY **		*TOTAL FLOWS*	
BASIN	**AREA TOTAL**	**C_5**	**C_{100}**	**C_5**	**Length**	**Height**	**T_C**	**Length**	**Slope**	**Velocity**	**T_t**	***TOTAL**	**CHECK**	**I_5**	**I_{100}**	**Q_5**	**Q_{100}**
	(Acres)	*From DCM Table 5-1*			*(ft)*	*(ft)*	*(min)*	*(ft)*	*(%)*	*(fps)*	*(min)*	*(min)*	*(min)*	*(in/hr)*	*(in/hr)*	*(c.f.s.)*	*(c.f.s.)*
#C	0.04	0.09	0.36	0.09	40	16.0	3.4	0	0.0%	0.0	0.0	5.0	10.2	5.2	8.7	***0.0***	***0.1***
#C1	0.26	0.09	0.36	0.09	60	22.0	4.3	0	0.0%	0.0	0.0	5.0	10.3	5.2	8.7	***0.1***	***0.8***
#D	0.47	0.15	0.40	0.15	60	2.0	9.0	215	3.0%	2.6	1.4	10.3	11.5	4.1	6.8	***0.3***	***1.3***
******D***	0.47	0.81	0.88	0.81	40	1.5	2.1	268	2.6%	3.2	1.4	5.0	11.7	5.2	8.7	***2.0***	***3.6***
#D1	0.93	0.81	0.88	0.81	30	2.0	1.5	250	1.4%	2.4	1.8	5.0	11.6	5.2	8.7	***3.9***	***7.1***
#D2	0.15	0.12	0.39	0.12	15	6.0	2.0	63	0.5%	1.4	0.7	5.0	10.4	5.2	8.7	***0.1***	***0.5***
*****E1***	0.27	0.88	0.95	0.88	30	0.6	1.7	280	2.0%	2.8	1.7	5.0	11.7	5.2	8.7	***1.2***	***2.2***
*****E2***	0.21	0.88	0.95	0.88	30	0.6	1.7	280	2.0%	2.8	1.7	5.0	11.7	5.2	8.7	***1.0***	***1.7***

* Intensity equations assume a minimum travel time of 5 minutes.
**~ Claremont Business Park 2 Filing No.2 FDR Prepared by MS Civil Consultants, Inc.
#~ Basin area revised from Claremont Business Park 2 Filing No.2 FDR Prepared by MS Civil Consultants, Inc.
***~ Ultimate build out. Development of Lot 2 (North half)

Calculated by: GT
Date: 2/2/2024
Checked by: VAS

FINAL DRAINAGE REPORT FOR LOT 2 CLAREMONT BUSINESS PARK 2 FILING NO.2
PROPOSED DRAINAGE CALCULATIONS
(Basin Routing Summary)

From Area Runoff Coefficient Summary				*OVERLAND*				*PIPE / CHANNEL FLOW*				*Time of Travel (T_t)*	*INTENSITY **		*TOTAL FLOWS*		
DESIGN POINT	**CONTRIBUTING BASINS**	**CA_5**	**CA_{100}**	**C_5**	**Length**	**Height**	**T_C**	**Length**	**Slope**	**Velocity**	**T_t**	***TOTAL**	**I_5**	**I_{100}**	**Q_5**	**Q_{100}**	COMMENTS
	DPS AND/OR PIPES				*(ft)*	*(ft)*	*(min)*	*(ft)*	*(%)*	*(fps)*	*(min)*	*(min)*	*(in/hr)*	*(in/hr)*	*(c.f.s.)*	*(c.f.s.)*	
1	**#C, #D**	0.07	0.20	Basin #C Tc + Basin D routing used								6.4	4.8	8.1	***0.3***	***1.6***	Proposed 5' Type R Inlet
							5.0	215	3.0%	2.6	1.4						
******1*	**#C, ***D**	0.38	0.43	Basin #C Tc + Basin ***D routing used								6.4	4.8	8.1	***1.8***	***3.4***	Proposed 5' Type R Inlet
							5.0	268	2.6%	3.2	1.4						
2	**#C1, #D1**	0.77	0.91	Basin #C1 Tc used + Basin #D1 routing								6.8	4.7	7.9	***3.7***	***7.2***	Proposed 5' Type R Inlet
							5.0	250	1.4%	2.4	1.8						
3	**#D2, PR2, **E1, **E2**	1.29	1.62	DP2 Tc used								6.8	4.7	7.9	***6.1***	***12.9***	Existing WQ Pond 3
******3*	**#D2, ***PR2, **E1, **E2**	1.60	1.85	DP2 Tc used								6.8	4.7	7.9	***7.5***	***14.6***	Existing WQ Pond 3

* Intensity equations assume a minimum travel time of 5 minutes.

**~ Claremont Business Park 2 Filing No.2 FDR Prepared by MS Civil Consultants, Inc.

#~ Basin area revised from Claremont Business Park 2 Filing No.2 FDR Prepared by MS Civil Consultants, Inc.

***~ Ultimate build out. Development of Lot 2 (North half)

Calculated by: GT
Date: 2/2/2024
Checked by: VAS

FINAL DRAINAGE REPORT FOR LOT 2 CLAREMONT BUSINESS PARK 2 FILING NO.2
PROPOSED DRAINAGE CALCULATIONS
(Storm Sewer Routing Summary)

PIPE RUN	Contributing Pipes/Design Points	Equivalent CA_5	Equivalent CA_{100}	Maximum T_C	Intensity*		Flow		Pipe Size
					I_5	I_{100}	Q_5	Q_{100}	
1	DP1	0.07	0.20	6.4	4.8	8.1	0.3	1.6	PROP 15" PP
***1	***DP1	0.38	0.43	6.4	4.8	8.1	1.8	3.4	PROP 15" PP
2	DP2, PR1	0.85	1.11	6.8	4.7	7.9	4.0	8.8	EX 18" RCP
***2	DP2, ***PR1	1.16	1.34	6.8	4.7	7.9	5.5	10.6	EX 18" RCP

* Intensity equations assume a minimum travel time of 5 minutes.

DP - Design Point
PR - Pipe Run

FB- Flow By from Design Point
INT- Intercepted Flow from Design Point

Calculated by: GT
Date: 2/2/2024
Checked by: VAS

***Ulitmate build out. Development of Lot 2 (north half)

HYDRAULIC CALCULATIONS / SFB WQCV CALCULATIONS

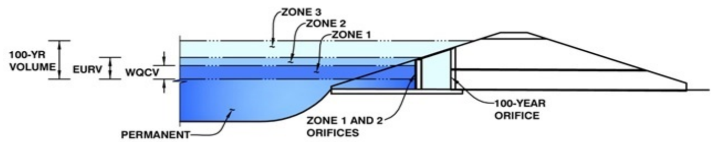
CIVIL CONSULTANTS,INC.

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.06 (July 2022)

Project: Claremont Business Park 2 Filing No. 2

Basin ID: Lot 2 - Pond 3 (EX WQ SAND FILTER POND 3 DESIGNED AND CONSTRUCTED WITH PCD FILING NO. VR 233)



Example Zone Configuration (Retention Pond)

Watershed Information

Selected BMP Type =	**SF**	
Watershed Area =	2.32	acres
Watershed Length =	383	ft
Watershed Length to Centroid =	150	ft
Watershed Slope =	0.036	ft/ft
Watershed Imperviousness =	80.30%	percent
Percentage Hydrologic Soil Group A =	70.0%	percent
Percentage Hydrologic Soil Group B =	30.0%	percent
Percentage Hydrologic Soil Groups C/D =	0.0%	percent
Target WQCV Drain Time =	12.0	hours
Location for 1-hr Rainfall Depths =	User Input	

After providing required inputs above including 1-hour rainfall depths, click 'Run CUHP' to generate runoff hydrographs using the embedded Colorado Urban Hydrograph Procedure.

			Optional User Overrides	
Water Quality Capture Volume (WQCV) =	0.051	acre-feet		acre-feet
Excess Urban Runoff Volume (EURV) =	0.234	acre-feet		acre-feet
2-yr Runoff Volume (P1 = 1.19 in.) =	0.161	acre-feet	1.19	inches
5-yr Runoff Volume (P1 = 1.5 in.) =	0.208	acre-feet	1.50	inches
10-yr Runoff Volume (P1 = 1.75 in.) =	0.249	acre-feet	1.75	inches
25-yr Runoff Volume (P1 = 2 in.) =	0.297	acre-feet	2.00	inches
50-yr Runoff Volume (P1 = 2.25 in.) =	0.341	acre-feet	2.25	inches
100-yr Runoff Volume (P1 = 2.52 in.) =	0.393	acre-feet	2.52	inches
500-yr Runoff Volume (P1 = 3.14 in.) =	0.506	acre-feet		inches
Approximate 2-yr Detention Volume =	0.162	acre-feet		
Approximate 5-yr Detention Volume =	0.211	acre-feet		
Approximate 10-yr Detention Volume =	0.255	acre-feet		
Approximate 25-yr Detention Volume =	0.294	acre-feet		
Approximate 50-yr Detention Volume =	0.316	acre-feet		
Approximate 100-yr Detention Volume =	0.339	acre-feet		

Define Zones and Basin Geometry

Zone 1 Volume (WQCV) =	0.051	acre-feet
Zone 2 Volume (100-year - Zone 1) =	0.288	acre-feet
Select Zone 3 Storage Volume (Optional) =		acre-feet
Total Detention Basin Volume =	0.339	acre-feet
Initial Surcharge Volume (ISV) =	N/A	ft^3
Initial Surcharge Depth (ISD) =	N/A	ft
Total Available Detention Depth (H_{total}) =	user	ft
Depth of Trickle Channel (H_{TC}) =	N/A	ft
Slope of Trickle Channel (S_{TC}) =	N/A	ft/ft
Slopes of Main Basin Sides (S_{main}) =	user	H:V
Basin Length-to-Width Ratio ($R_{L/W}$) =	user	

Depth Increment = ft

6370.35

Stage - Storage Description	Stage (ft)	Optional Override Stage (ft)	Length (ft)	Width (ft)	Area (ft^2)	Optional Override Area (ft^2)	Area (acre)	Volume (ft^3)	Volume (ac-ft)
Media Surface	--	0.00	--	--	--	1,045	0.024		
	--	0.65	--	--	--	1,487	0.034	823	0.019
	--	1.65	--	--	--	2,280	0.052	2,706	0.062
	--	2.65	--	--	--	3,273	0.075	5,483	0.126
	--	3.65	--	--	--	3,616	0.083	8,927	0.205
	--	4.65	--	--	--	3,890	0.089	12,680	0.291
	--	5.65	--	--	--	4,175	0.096	16,713	0.384
	--	6.20	--	--	--	4,780	0.110	19,176	0.440
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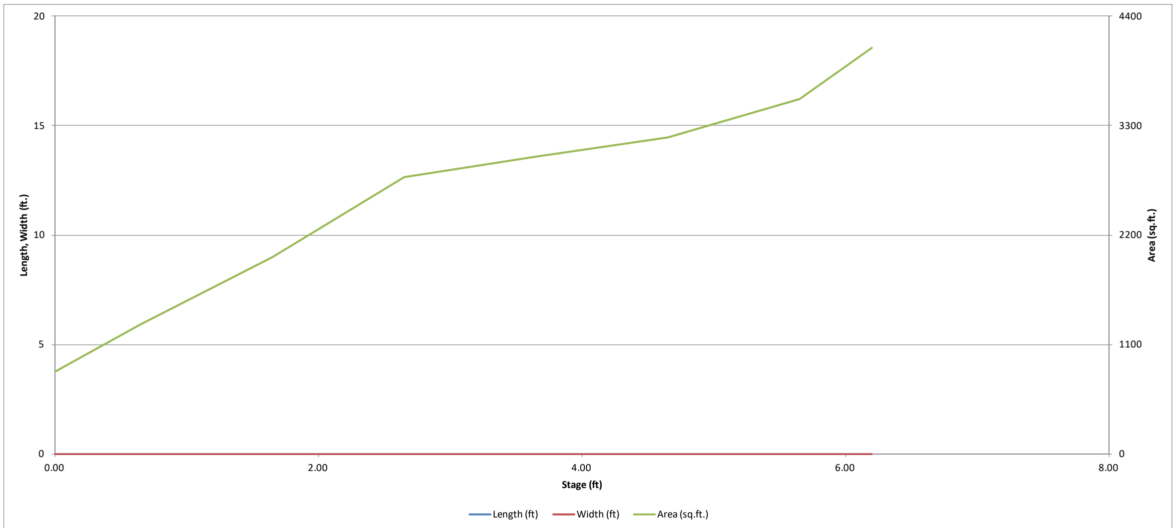
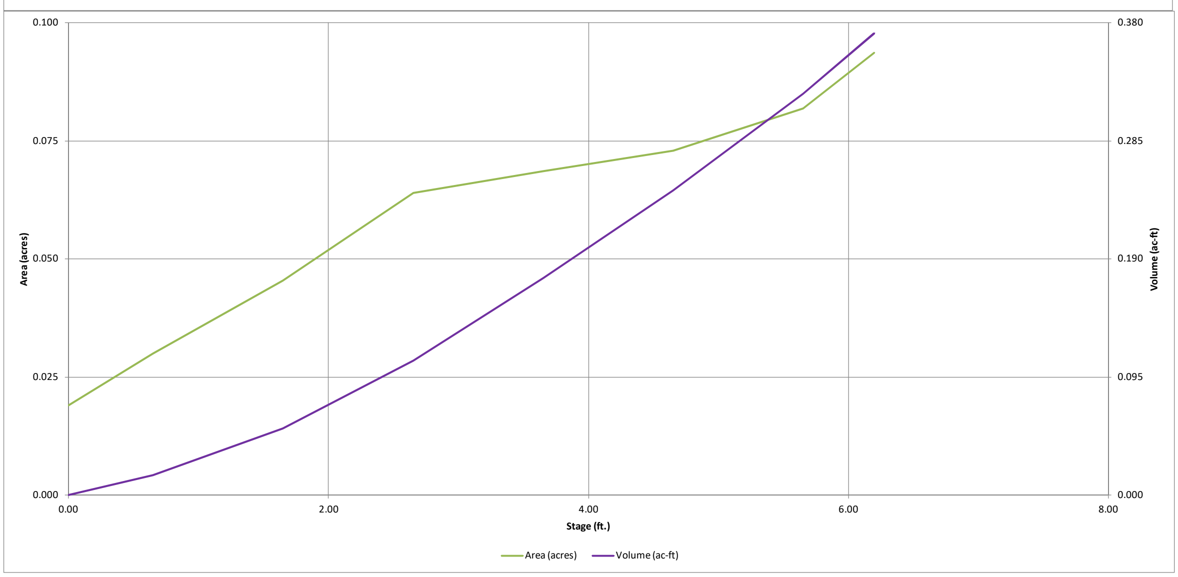
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.06 (July 2022)



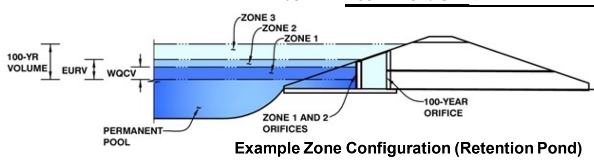


DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.06 (July 2022)

Project: Claremont Business Park 2 Filing No. 2

Basin ID: Lot 2 - Pond 3 (EX WQ SAND FILTER POND 3 DESIGNED AND CONSTRUCTED WITH PCD FILING NO. VR 233)



Example Zone Configuration (Retention Pond)

	Estimated Stage (ft)	Estimated Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	1.44	0.051	Filtration Media
Zone 2 (100-year)	5.18	0.288	Weir&Pipe (Restrict)
Zone 3			
	Total (all zones)	0.339	

User Input: Orifice at Underdrain Outlet (typically used to drain WQCV in a Filtration BMP)

Underdrain Orifice Invert Depth =	2.50	ft (distance below the filtration media surface)
Underdrain Orifice Diameter =	0.84	inches

Calculated Parameters for Underdrain

Underdrain Orifice Area =	0.0	ft^2
Underdrain Orifice Centroid =	0.04	feet

User Input: Orifice Plate with one or more orifices or Elliptical Slot Weir (typically used to drain WQCV and/or EURV in a sedimentation BMP)

Centroid of Lowest Orifice =	N/A	ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Orifice Plate =	N/A	ft (relative to basin bottom at Stage = 0 ft)
Orifice Plate: Orifice Vertical Spacing =	N/A	inches
Orifice Plate: Orifice Area per Row =	N/A	sq. inches

Calculated Parameters for Plate

WQ Orifice Area per Row =	N/A	ft^2
Elliptical Half-Width =	N/A	feet
Elliptical Slot Centroid =	N/A	feet
Elliptical Slot Area =	N/A	ft^2

User Input: Stage and Total Area of Each Orifice Row (numbered from lowest to highest)

	Row 1 (optional)	Row 2 (optional)	Row 3 (optional)	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)
Stage of Orifice Centroid (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Orifice Area (sq. inches)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

	Row 9 (optional)	Row 10 (optional)	Row 11 (optional)	Row 12 (optional)	Row 13 (optional)	Row 14 (optional)	Row 15 (optional)	Row 16 (optional)
Stage of Orifice Centroid (ft)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Orifice Area (sq. inches)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

User Input: Vertical Orifice (Circular or Rectangular)

	Not Selected	Not Selected	
Invert of Vertical Orifice =			ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Vertical Orifice =			ft (relative to basin bottom at Stage = 0 ft)
Vertical Orifice Diameter =			inches

Calculated Parameters for Vertical Orif

	Not Selected	Not Selected
Vertical Orifice Area =		
Vertical Orifice Centroid =		

User Input: Overflow Weir (Dropbox with Flat or Sloped Grate and Outlet Pipe OR Rectangular/Trapezoidal Weir and No Outlet Pipe)

	Zone 2 Weir	Not Selected	
Overflow Weir Front Edge Height, Ho =	1.45		ft (relative to basin bottom at Stage = 0 ft)
Overflow Weir Front Edge Length =	3.00		feet
Overflow Weir Grate Slope =	0.00		H:V
Horiz. Length of Weir Sides =	3.00		feet
Overflow Grate Type =	Type C Grate		
Debris Clogging % =	70%		%

Calculated Parameters for Overflow W

	Zone 2 Weir	Not Selected
Height of Grate Upper Edge, H_t =	1.45	
Overflow Weir Slope Length =	3.00	
Grate Open Area / 100-yr Orifice Area =	17.58	
Overflow Grate Open Area w/o Debris =	6.26	
Overflow Grate Open Area w/ Debris =	1.88	

User Input: Outlet Pipe w/ Flow Restriction Plate (Circular Orifice, Restrictor Plate, or Rectangular Orifice)

	Zone 2 Restrictor	Not Selected	
Depth to Invert of Outlet Pipe =	2.75		ft (distance below basin bottom at Stage = 0 ft)
Outlet Pipe Diameter =	18.00		inches
Restrictor Plate Height Above Pipe Invert =	4.60		inches

Calculated Parameters for Outlet Pipe w/ Flow Restriction Pla

	Zone 2 Restrictor	Not Selected
Outlet Orifice Area =	0.36	
Outlet Orifice Centroid =	0.23	
Half-Central Angle of Restrictor Plate on Pipe =	1.06	N/A

User Input: Emergency Spillway (Rectangular or Trapezoidal)

Spillway Invert Stage=	4.90	ft (relative to basin bottom at Stage = 0 ft)
Spillway Crest Length =	18.00	feet
Spillway End Slopes =	4.00	H:V
Freeboard above Max Water Surface =	1.00	feet

Calculated Parameters for Spillway

Spillway Design Flow Depth=	0.19	feet
Stage at Top of Freeboard =	6.09	feet
Basin Area at Top of Freeboard =	0.11	acres
Basin Volume at Top of Freeboard =	0.43	acre-ft

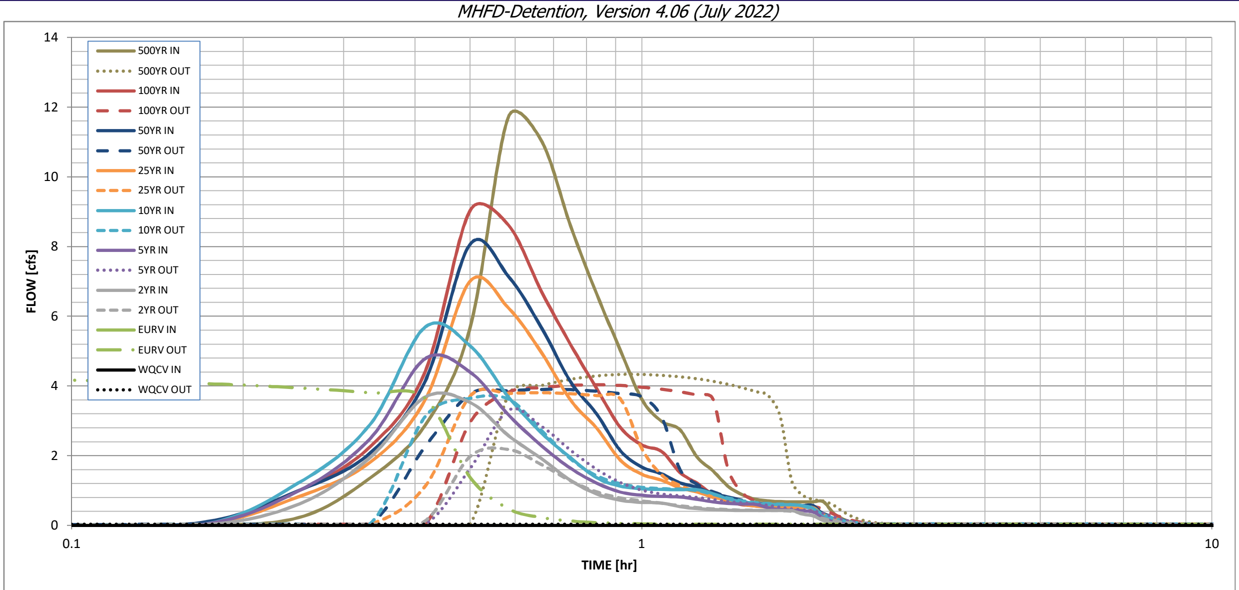
Routed Hydrograph Results

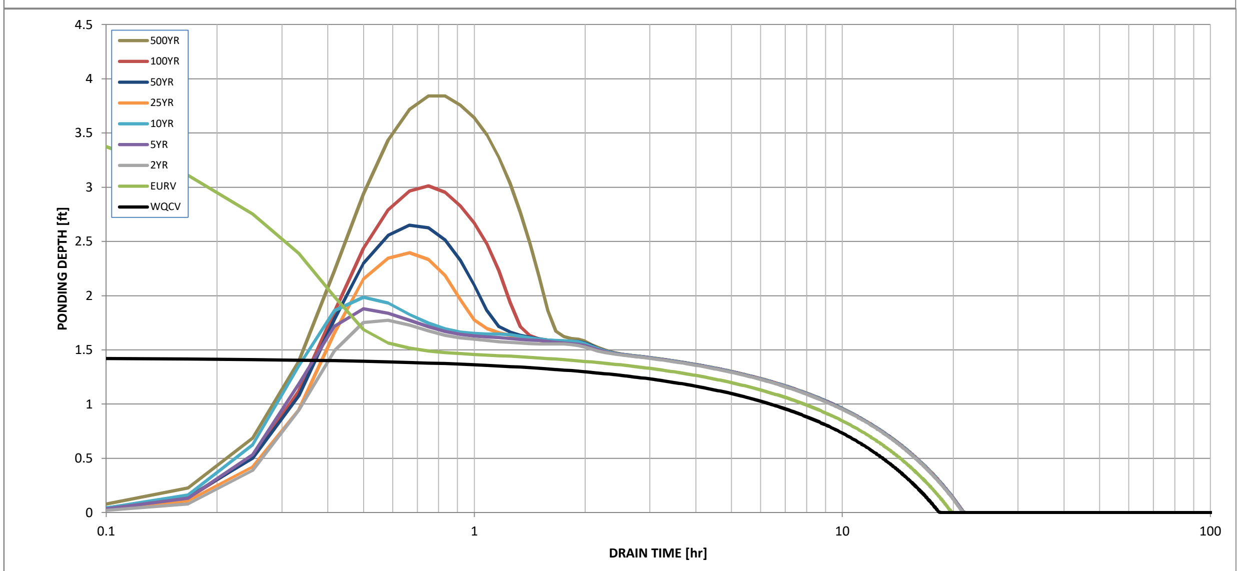
The user can override the default CUHP hydrographs and runoff volumes by entering new values in the Inflow Hydrographs table (Columns W through A

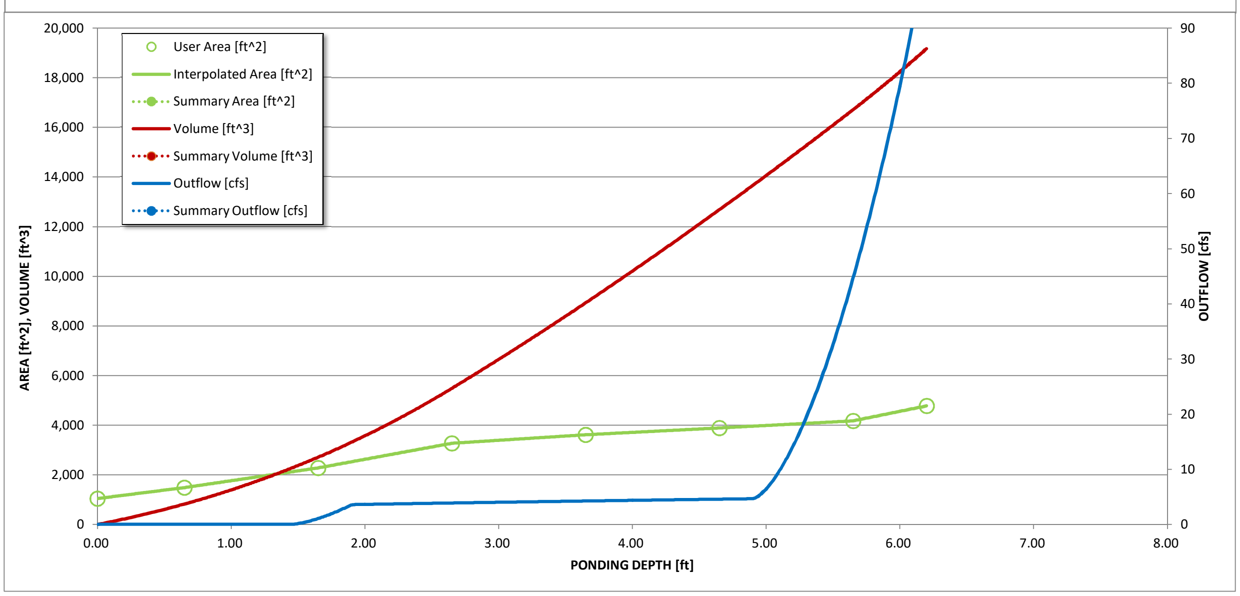
Design Storm Return Period =	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year
One-Hour Rainfall Depth (in) =	N/A	N/A	1.19	1.50	1.75	2.00	2.25	2.52
CUHP Runoff Volume (acre-ft) =	0.051	0.234	0.161	0.208	0.249	0.297	0.341	0.393
Inflow Hydrograph Volume (acre-ft) =	N/A	N/A	0.161	0.208	0.249	0.297	0.341	0.393
CUHP Predevelopment Peak Q (cfs) =	N/A	N/A	0.0	0.1	0.5	1.4	2.0	2.8
OPTIONAL Override Predevelopment Peak Q (cfs) =	N/A	N/A						
Predevelopment Unit Peak Flow, q (cfs/acre) =	N/A	N/A	0.02	0.03	0.20	0.61	0.86	1.20
Peak Inflow Q (cfs) =	N/A	N/A	3.7	4.8	5.7	7.0	8.1	9.0
Peak Outflow Q (cfs) =	0.0	4.3	2.2	3.3	3.6	3.8	3.9	4.0
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	N/A	49.0	7.8	2.7	2.0	1.4
Structure Controlling Flow =	Filtration Media	Outlet Plate 1	Overflow Weir 1	Overflow Weir 1	Outlet Plate 1	Outlet Plate 1	Outlet Plate 1	Outlet Plate 1
Max Velocity through Grate 1 (fps) =	N/A	0.69	0.34	0.5	0.6	0.6	0.6	0.6
Max Velocity through Grate 2 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Time to Drain 97% of Inflow Volume (hours) =	18	17	19	19	18	18	17	17
Time to Drain 99% of Inflow Volume (hours) =	**18**	19	21	21	20	20	20	20
Maximum Ponding Depth (ft) =	1.43	4.00	1.77	1.88	1.98	2.39	2.65	3.01
Area at Maximum Ponding Depth (acres) =	0.05	0.09	0.06	0.06	0.06	0.07	0.07	0.08
Maximum Volume Stored (acre-ft) =	0.051	0.234	0.069	0.074	0.081	0.107	0.125	0.153

DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.06 (July 2022)







S-A-V-D Chart Axis Override	X-axis	Left Y-Axis	Right Y-Axis
minimum bound			
maximum bound			

DETENTION BASIN OUTLET STRUCTURE DESIGN

Outflow Hydrograph Workbook Filename:

Inflow Hydrographs

The user can override the calculated inflow hydrographs from this workbook with inflow hydrographs developed in a separate program.

Time Interval	TIME	WQCV [cfs]	EURV [cfs]	2 Year [cfs]	5 Year [cfs]	10 Year [cfs]	25 Year [cfs]	50 Year [cfs]	100 Year [cfs]	500 Year [cfs]
SOURCE		CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP
5.00 min	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.01	0.22
	0:15:00	0.00	0.00	0.61	0.99	1.22	0.82	1.00	0.99	1.35
	0:20:00	0.00	0.00	1.94	2.48	2.89	1.80	2.07	2.25	2.87
	0:25:00	0.00	0.00	3.68	4.78	5.69	3.59	4.13	4.41	5.68
	0:30:00	0.00	0.00	3.52	4.40	5.15	7.01	8.07	9.04	11.71
	0:35:00	0.00	0.00	2.58	3.17	3.69	6.24	7.15	8.62	11.03
	0:40:00	0.00	0.00	1.91	2.29	2.66	4.96	5.68	6.71	8.58
	0:45:00	0.00	0.00	1.29	1.64	1.94	3.59	4.12	5.18	6.63
	0:50:00	0.00	0.00	0.90	1.21	1.37	2.78	3.20	3.92	5.03
	0:55:00	0.00	0.00	0.72	0.95	1.13	1.87	2.14	2.81	3.61
	1:00:00	0.00	0.00	0.66	0.86	1.05	1.46	1.67	2.31	2.98
	1:05:00	0.00	0.00	0.64	0.83	1.03	1.29	1.47	2.12	2.74
	1:10:00	0.00	0.00	0.54	0.81	1.03	1.07	1.22	1.52	1.95
	1:15:00	0.00	0.00	0.48	0.74	1.03	0.96	1.09	1.21	1.56
	1:20:00	0.00	0.00	0.45	0.67	0.91	0.80	0.91	0.88	1.12
	1:25:00	0.00	0.00	0.44	0.63	0.76	0.72	0.81	0.69	0.88
	1:30:00	0.00	0.00	0.43	0.61	0.68	0.61	0.68	0.59	0.74
	1:35:00	0.00	0.00	0.43	0.60	0.63	0.55	0.62	0.56	0.70
	1:40:00	0.00	0.00	0.43	0.50	0.61	0.52	0.59	0.54	0.68
	1:45:00	0.00	0.00	0.43	0.45	0.60	0.51	0.57	0.54	0.67
	1:50:00	0.00	0.00	0.43	0.43	0.60	0.50	0.56	0.54	0.67
	1:55:00	0.00	0.00	0.33	0.41	0.57	0.50	0.56	0.54	0.67
	2:00:00	0.00	0.00	0.27	0.38	0.49	0.50	0.56	0.54	0.67
	2:05:00	0.00	0.00	0.14	0.20	0.26	0.26	0.29	0.28	0.35
	2:10:00	0.00	0.00	0.07	0.10	0.13	0.14	0.15	0.15	0.18
	2:15:00	0.00	0.00	0.03	0.05	0.06	0.06	0.07	0.07	0.09
	2:20:00	0.00	0.00	0.01	0.02	0.02	0.02	0.03	0.03	0.03
	2:25:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:20:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:25:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:20:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:25:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:20:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:25:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

MHFD-Inlet, Version 5.02 (August 2022)

INLET MANAGEMENT

Worksheet Protected

INLET NAME	Inlet 1 (DP1)	Inlet 1 (DP1) Ultimate	Inlet 2 (DP2) Ultimate
Site Type (Urban or Rural)	URBAN	URBAN	URBAN
Inlet Application (Street or Area)	STREET	STREET	STREET
Hydraulic Condition	In Sump	In Sump	In Sump
Inlet Type	CDOT Type R Curb Opening	CDOT Type R Curb Opening	CDOT Type R Curb Opening

USER-DEFINED INPUT

User-Defined Design Flows

Minor Q_{Known} (cfs)	0.3	1.8	3.7
Major Q_{Known} (cfs)	1.6	3.4	7.2

Bypass (Carry-Over) Flow from Upstream

Inlets must be organized from upstream (left) to downstream (right) in order for bypass flows to be linked.

Receive Bypass Flow from:	No Bypass Flow Received	No Bypass Flow Received	No Bypass Flow Received
Minor Bypass Flow Received, Q_b (cfs)	0.0	0.0	0.0
Major Bypass Flow Received, Q_b (cfs)	0.0	0.0	0.0

Watershed Characteristics

Subcatchment Area (acres)			
Percent Impervious			
NRCS Soil Type			

Watershed Profile

Overland Slope (ft/ft)			
Overland Length (ft)			
Channel Slope (ft/ft)			
Channel Length (ft)			

Minor Storm Rainfall Input

Design Storm Return Period, T_r (years)			
One-Hour Precipitation, P_1 (inches)			

Major Storm Rainfall Input

Design Storm Return Period, T_r (years)			
One-Hour Precipitation, P_1 (inches)			

CALCULATED OUTPUT

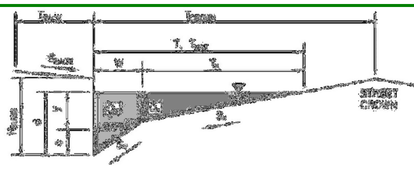
Minor Total Design Peak Flow, Q (cfs)	**0.3**	**1.8**	**3.7**
Major Total Design Peak Flow, Q (cfs)	**1.6**	**3.4**	**7.2**
Minor Flow Bypassed Downstream, Q_b (cfs)	N/A	N/A	N/A
Major Flow Bypassed Downstream, Q_b (cfs)	N/A	N/A	N/A

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Lot 2 Claremont Business Park 2 Filing 2 (Proposed Conditions)

Inlet ID: Inlet 1 (DP1)



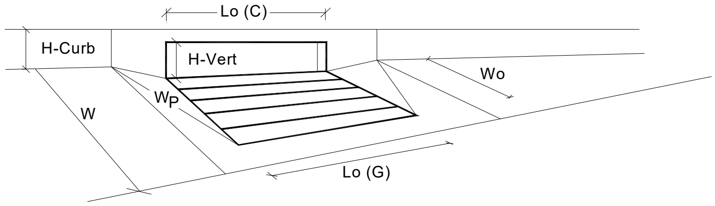
Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	7.5		ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020		ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.020		
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00		inches
Distance from Curb Face to Street Crown	T_{CROWN} =	18.0		ft
Gutter Width	W =	2.00		ft
Street Transverse Slope	S_X =	0.020		ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083		ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.000		ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.015		
		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	15.8	18.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.6	8.0	inches
Check boxes are not applicable in SUMP conditions		☐	☐	

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is not applicable to Sump Condition MAJOR STORM Allowable Capacity is not applicable to Sump Condition	**Q_{allow} =**	**SUMP**	**SUMP**	**cfs**

INLET IN A SUMP OR SAG LOCATION

MHFD-Inlet, Version 5.02 (August 2022)



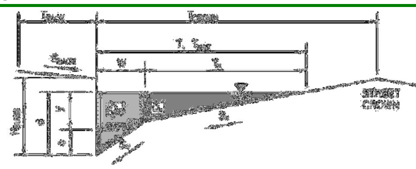
		MINOR	MAJOR	
Design Information (Input) CDOT Type R Curb Opening				
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)	a_{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	1	1	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	4.6	8.0	inches
Grate Information		MINOR	MAJOR	☑ Override Depths
Length of a Unit Grate	L_o (G) =	N/A	N/A	feet
Width of a Unit Grate	W_o =	N/A	N/A	feet
Open Area Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	N/A	N/A	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.67	0.67	
Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.22	0.50	ft
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	N/A	N/A	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	1.00	1.00	
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	N/A	N/A	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**2.8**	**9.3**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)	$Q_{PEAK\ REQUIRED}$ =	0.3	1.6	cfs

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Lot 2 Claremont Business Park 2 Filing 2 (Proposed Conditions)

Inlet ID: Inlet 1 (DP1) Ultimate



Gutter Geometry:

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	7.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.020	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	18.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.000	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.015	

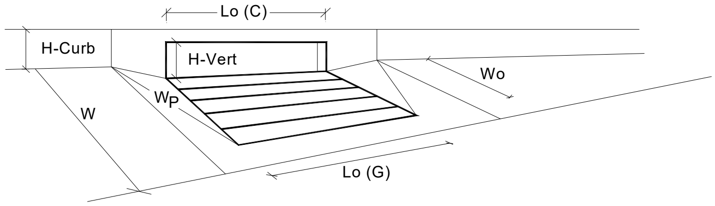
		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	15.8	18.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.6	8.0	inches
Check boxes are not applicable in SUMP conditions		☐	☐	

MINOR STORM Allowable Capacity is not applicable to Sump Condition
MAJOR STORM Allowable Capacity is not applicable to Sump Condition

	Minor Storm	Major Storm	
Q_{allow} =	**SUMP**	**SUMP**	**cfs**

INLET IN A SUMP OR SAG LOCATION

MHFD-Inlet, Version 5.02 (August 2022)



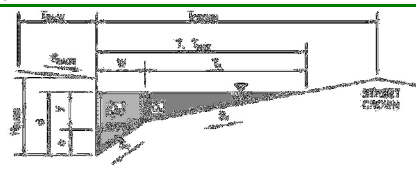
		MINOR	MAJOR	
Design Information (Input) CDOT Type R Curb Opening				
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)	a_{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	1	1	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	4.6	8.0	inches
Grate Information		MINOR	MAJOR	☑ Override Depths
Length of a Unit Grate	L_o (G) =	N/A	N/A	feet
Width of a Unit Grate	W_o =	N/A	N/A	feet
Open Area Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	N/A	N/A	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.67	0.67	
Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.22	0.50	ft
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	N/A	N/A	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	1.00	1.00	
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	N/A	N/A	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**2.8**	**9.3**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)	$Q_{PEAK\ REQUIRED}$ =	1.8	3.4	cfs

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Lot 2 Claremont Business Park 2 Filing 2 (Proposed Conditions)

Inlet ID: Inlet 2 (DP2) Ultimate



Gutter Geometry:

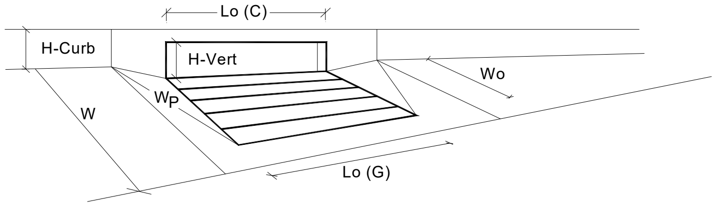
Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	7.8	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.020	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	18.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.000	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.015	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	15.8	18.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.6	8.0	inches
Check boxes are not applicable in SUMP conditions		☐	☐	

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is not applicable to Sump Condition				
MAJOR STORM Allowable Capacity is not applicable to Sump Condition	**Q_{allow} =**	**SUMP**	**SUMP**	**cfs**

INLET IN A SUMP OR SAG LOCATION

MHFD-Inlet, Version 5.02 (August 2022)



Design Information (Input)	CDOT Type R Curb Opening		MINOR	MAJOR	
Type of Inlet		Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)		a_{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)		No =	1	1	
Water Depth at Flowline (outside of local depression)		Ponding Depth =	5.5	8.0	inches
Grate Information			MINOR	MAJOR	☑ Override Depths
Length of a Unit Grate		L_o (G) =	N/A	N/A	feet
Width of a Unit Grate		W_o =	N/A	N/A	feet
Open Area Ratio for a Grate (typical values 0.15-0.90)		A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)		C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)		C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)		C_o (G) =	N/A	N/A	
Curb Opening Information			MINOR	MAJOR	
Length of a Unit Curb Opening		L_o (C) =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches		H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches		H_{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)		Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)		W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)		C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)		C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)		C_o (C) =	0.67	0.67	

Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.29	0.50	ft
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	N/A	N/A	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	1.00	1.00	
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	N/A	N/A	

		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**4.4**	**9.3**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)	$Q_{PEAK\ REQUIRED}$ =	3.7	7.2	cfs

Worksheet for East Swale Q100=0.2cfs

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.030
Channel Slope	0.007 ft/ft
Left Side Slope	3.000 H:V
Right Side Slope	3.000 H:V
Discharge	0.20 cfs

Results

Normal Depth	3.1 in
Flow Area	0.2 ft²
Wetted Perimeter	1.6 ft
Hydraulic Radius	1.5 in
Top Width	1.54 ft
Critical Depth	2.3 in
Critical Slope	0.031 ft/ft
Velocity	1.02 ft/s
Velocity Head	0.02 ft
Specific Energy	0.27 ft
Froude Number	0.501
Flow Type	Subcritical

GVF Input Data

Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data

Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	3.1 in
Critical Depth	2.3 in
Channel Slope	0.007 ft/ft
Critical Slope	0.031 ft/ft

Worksheet for North Swale Q100=0.4cfs

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.030
Channel Slope	0.083 ft/ft
Constructed Depth	15.0 in
Constructed Top Width	25.00 ft
Discharge	0.40 cfs

Results

Normal Depth	0.8 in
Flow Area	0.2 ft²
Wetted Perimeter	5.6 ft
Hydraulic Radius	0.5 in
Top Width	5.59 ft
Critical Depth	0.9 in
Critical Slope	0.035 ft/ft
Velocity	1.72 ft/s
Velocity Head	0.05 ft
Specific Energy	0.11 ft
Froude Number	1.481
Flow Type	Supercritical

GVF Input Data

Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data

Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.8 in
Critical Depth	0.9 in
Channel Slope	0.083 ft/ft
Critical Slope	0.035 ft/ft

Parabolic West Swale Q100 = 0.2 cfs

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.030
Channel Slope	0.038 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	30.00 ft
Discharge	0.20 cfs

Results

Normal Depth	0.6 in
Flow Area	0.2 ft^2
Wetted Perimeter	5.6 ft
Hydraulic Radius	0.4 in
Top Width	5.59 ft
Critical Depth	0.6 in
Critical Slope	0.040 ft/ft
Velocity	1.03 ft/s
Velocity Head	0.02 ft
Specific Energy	0.07 ft
Froude Number	0.973
Flow Type	Subcritical

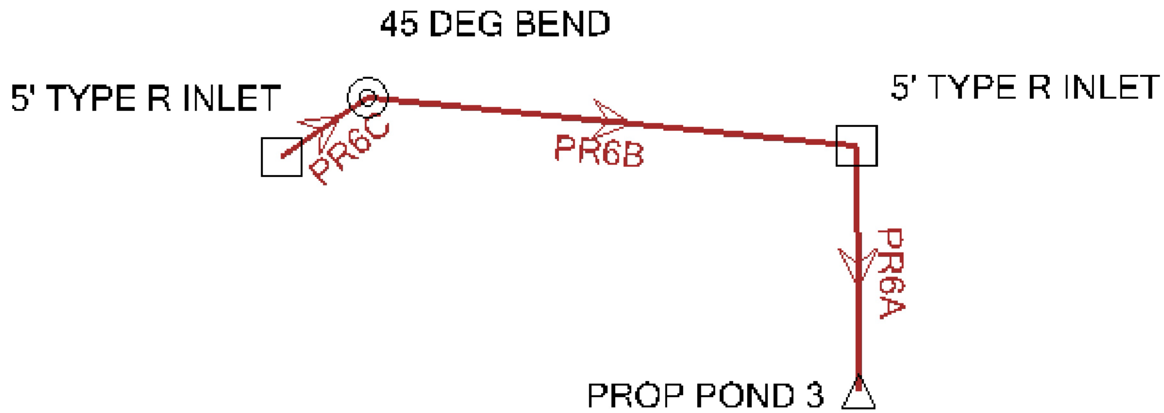
GVF Input Data

Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data

Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.6 in
Critical Depth	0.6 in
Channel Slope	0.038 ft/ft
Critical Slope	0.040 ft/ft

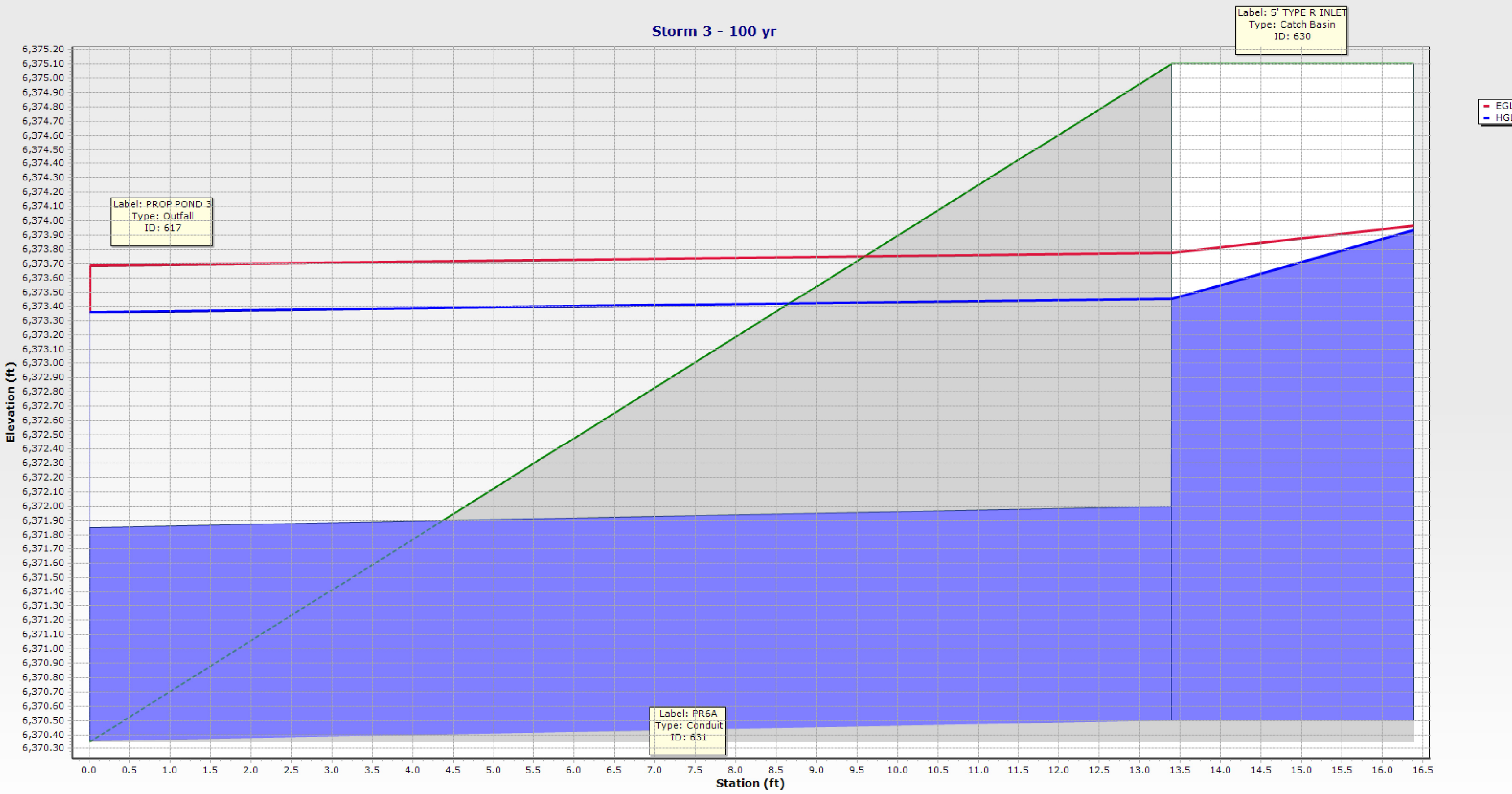
STORM 3 & LAT 1 INDEX MAP

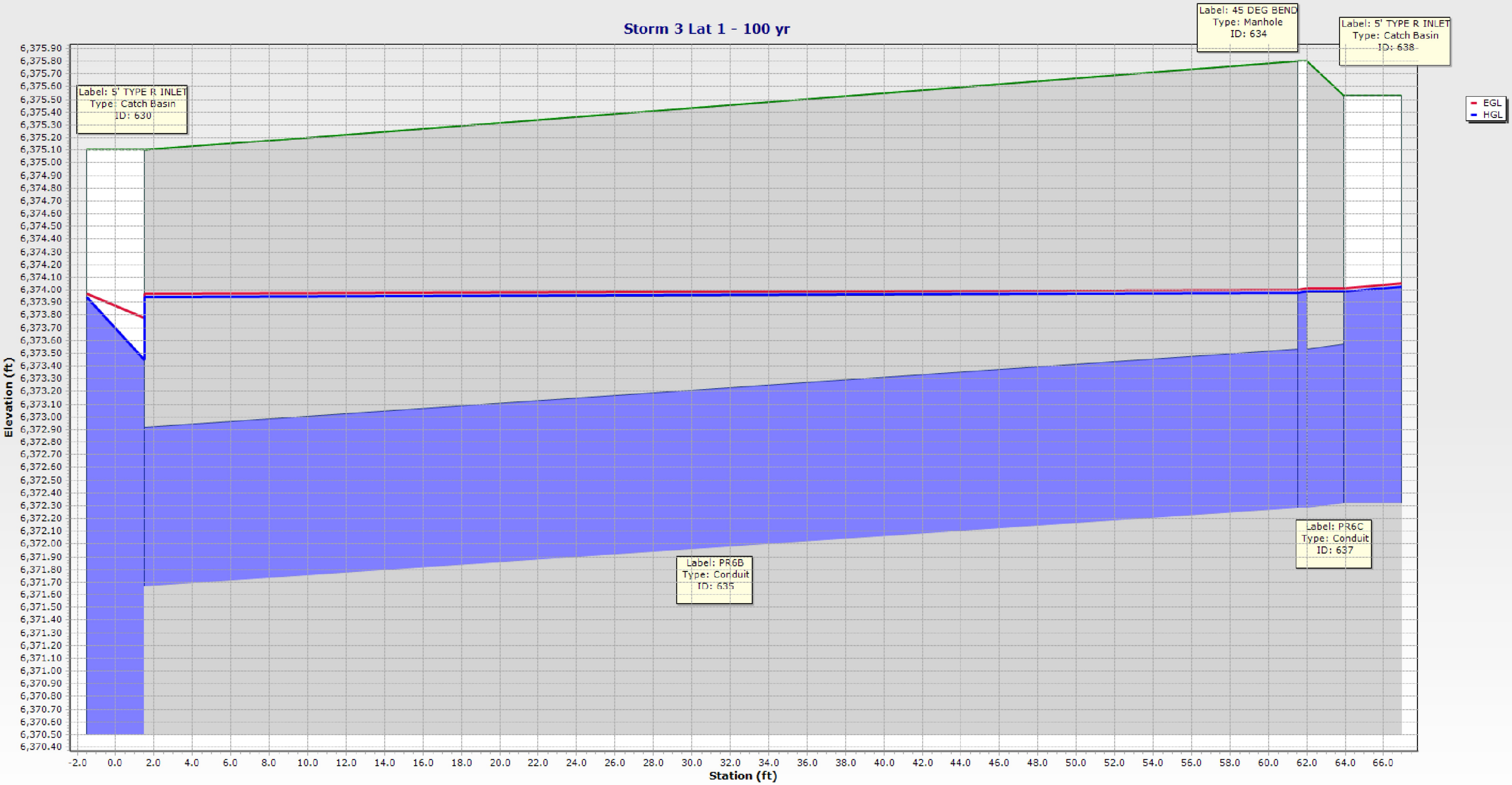


FlexTable: Conduit Table

Label	ID	Upstream Structure	Flow (cfs)	Length (Unified) (ft)	Velocity (ft/s)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)
PR6A	631	5' TYPE R INLET	8.80	14.9	4.98	6,373.85	6,373.75	6,373.46	6,373.36
PR6B	635	45 DEG BEND	1.60	61.8	1.30	6,374.11	6,374.07	6,374.08	6,374.04
PR6C	637	5' TYPE R INLET	1.60	3.7	1.30	6,374.12	6,374.12	6,374.09	6,374.09

Headloss (ft)	Upstream Structure Energy Grade Line (In) (ft)	Upstream Structure Headloss Coefficient	Upstream Structure Headloss (ft)	Invert (Start) (ft)	Invert (Stop) (ft)	Manning's n	Friction Slope (ft/ft)	Slope (Calculated) (ft/ft)	Conduit Description
0.10	6,374.07	1.500	0.58	6,370.35	6,370.50	0.013	0.007	-0.010	Circle - 18.0 in
0.04	6,374.12	0.400	0.01	6,371.67	6,372.28	0.013	0.001	-0.010	Circle - 15.0 in
0.00	6,374.16	1.500	0.04	6,372.28	6,372.32	0.013	0.001	-0.011	Circle - 15.0 in


Storm 3 - 100 yr
Label: 5' TYPE R INLET
Type: Catch Basin
ID: 630
Label: PROP POND 3
Type: Outfall
ID: 617
Label: PR6A
Type: Conduit
ID: 631
EGL
HGL
Elevation (ft)
Station (ft)
6,375.20
6,375.10
6,375.00
6,374.90
6,374.80
6,374.70
6,374.60
6,374.50
6,374.40
6,374.30
6,374.20
6,374.10
6,374.00
6,373.90
6,373.80
6,373.70
6,373.60
6,373.50
6,373.40
6,373.30
6,373.20
6,373.10
6,373.00
6,372.90
6,372.80
6,372.70
6,372.60
6,372.50
6,372.40
6,372.30
6,372.20
6,372.10
6,372.00
6,371.90
6,371.80
6,371.70
6,371.60
6,371.50
6,371.40
6,371.30
6,371.20
6,371.10
6,371.00
6,370.90
6,370.80
6,370.70
6,370.60
6,370.50
6,370.40
6,370.30
0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5 10.0 10.5 11.0 11.5 12.0 12.5 13.0 13.5 14.0 14.5 15.0 15.5 16.0 16.5



Storm 3 Lat 1 - 100 yr
Label: 5' TYPE R INLET
Type: Catch Basin
ID: 630
Label: 45 DEG BEND
Type: Manhole
ID: 634
Label: 5' TYPE R INLET
Type: Catch Basin
ID: 638
Label: PR6B
Type: Conduit
ID: 635
Label: PR6C
Type: Conduit
ID: 637
EGL
HGL
Elevation (ft)
Station (ft)

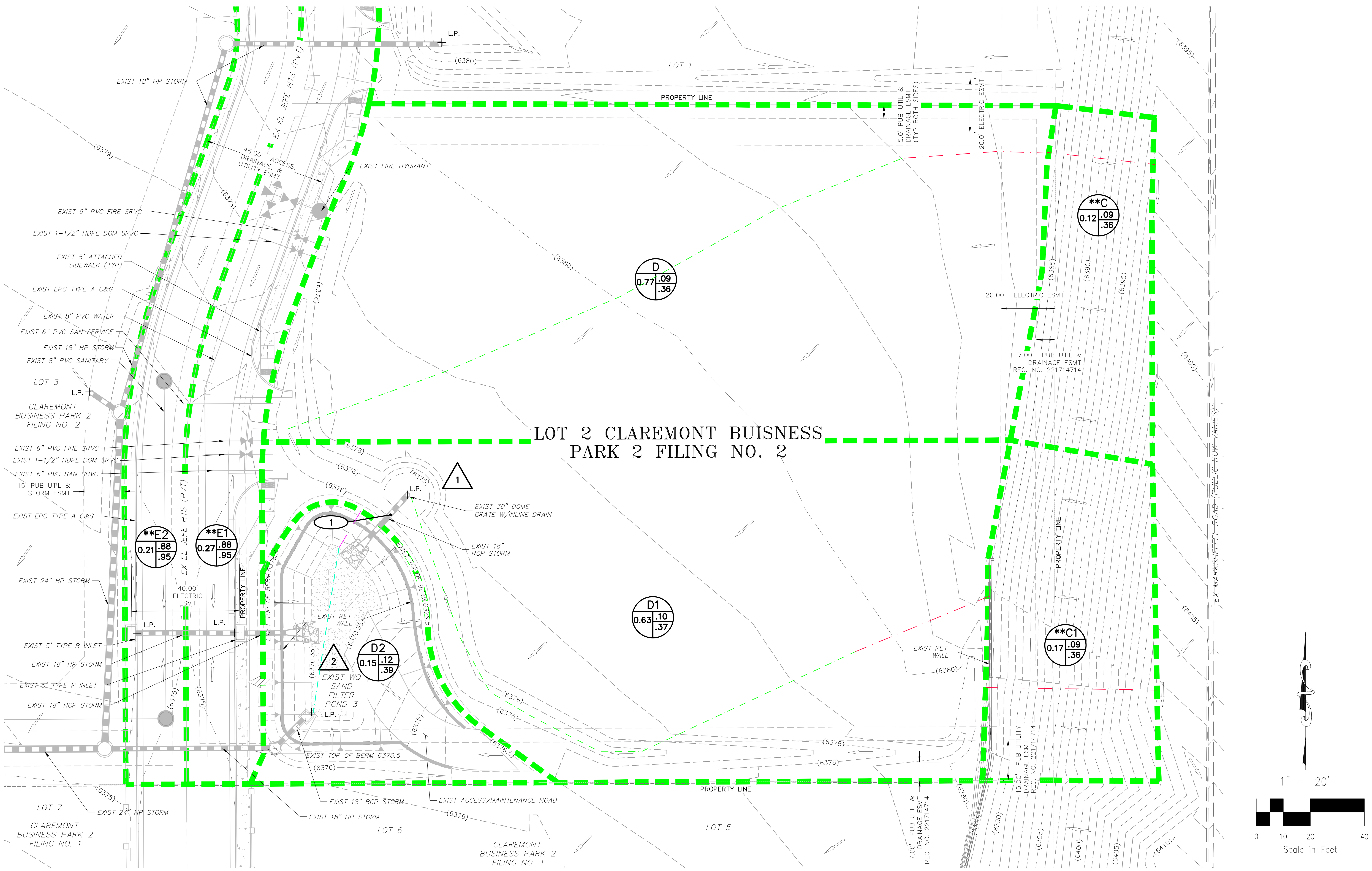
EXISTING DRAINAGE MAP

FINAL DRAINAGE REPORT FOR
LOT 2 CLAREMONT BUSINESS PARK 2 FILING NO.2

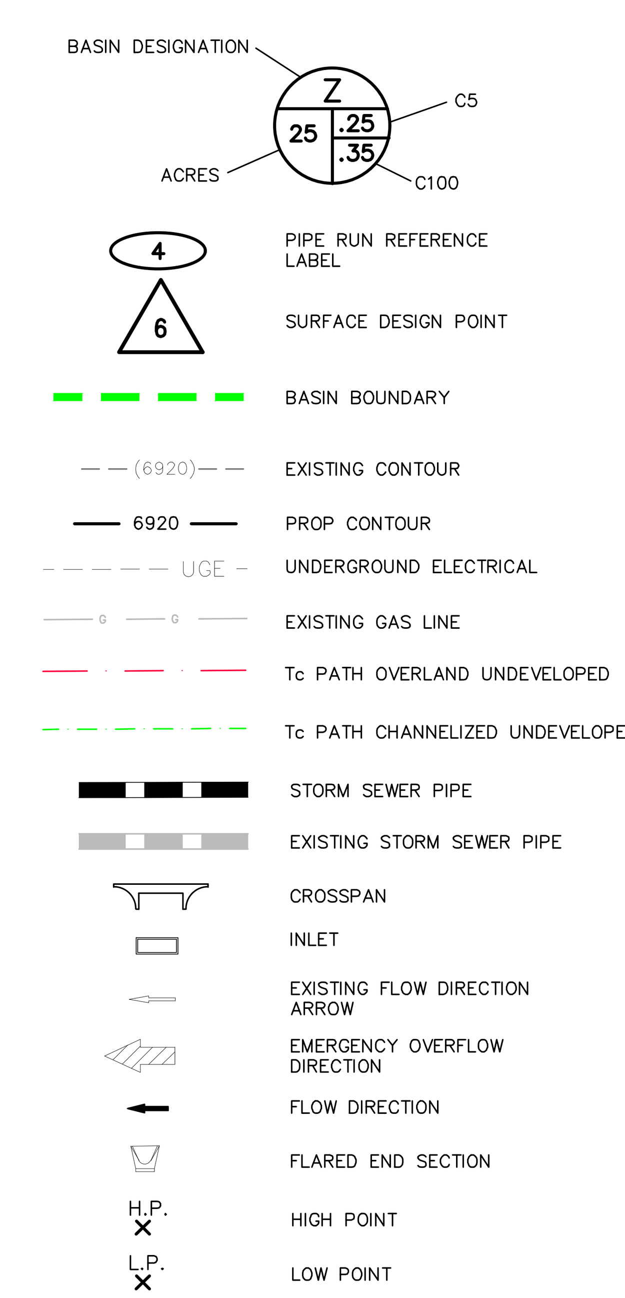
COUNTY OF EL PASO, STATE OF COLORADO

EXISTING CONDITIONS DRAINAGE MAP

FEBRUARY 2024



LEGEND



BASIN SUMMARY

BASIN	AREA (ACRES)	Q_5	Q_{100}
**C	0.12	0.1	0.4
**C1	0.17	0.1	0.5
D	0.77	0.3	1.8
D1	0.63	0.2	1.5
D2	0.15	0.1	0.5
**E1	0.27	1.2	2.2
**E2	0.21	1.0	0.1

**~CLAREMONT BUSINESS PARK 2 FILING NO.2 FDR PREPARED BY MS CIVIL CONSULTANTS, INC.

DESIGN POINT SUMMARY

DESIGN POINT	Q_5	Q_{100}	BASIN	STRUCTURE
1	0.6	3.9	**C, **C1, D, D1	EX 30" DOME GRATE
2	2.2	6.9	D2, **E1, **E2, DP1	EX WQ SAND FILTER POND 3

STORM SEWER SUMMARY

PIPE RUN	Q_5	Q_{100}	PIPE SIZE	CONTRIBUTING DP/BASIN/PIPES
1	0.6	3.9	EX 18"	DP1

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CALL 1-800-922-1987

CIVIL CONSULTANTS, INC.
212 N. WAHSATCH AVE., STE 305
COLORADO SPRINGS, CO 80903
PHONE: 719.955.5485

LOT2 CLAREMONT BUSINESS PARK 2 FIL.NO.2			
EXISTING CONDITIONS DRAINAGE MAP			
PROJECT NO. 10-025A	FILE: \dwg\Eng Exhibits\10025 EDM.dwg		
DESIGNED BY: GT DRAWN BY: DLM CHECKED BY: VAS	SCALE HORIZ: 1"=20' VERT: N/A	DATE: 02-02-2024 SHEET 1 OF 1	EDM01

File: O:\10025A-CBP2 - Lot 2\Brian Zurek\Drainage\Drainage Map\10025 EDM.dwg Plotstamp: 2/6/2024 9:51 AM

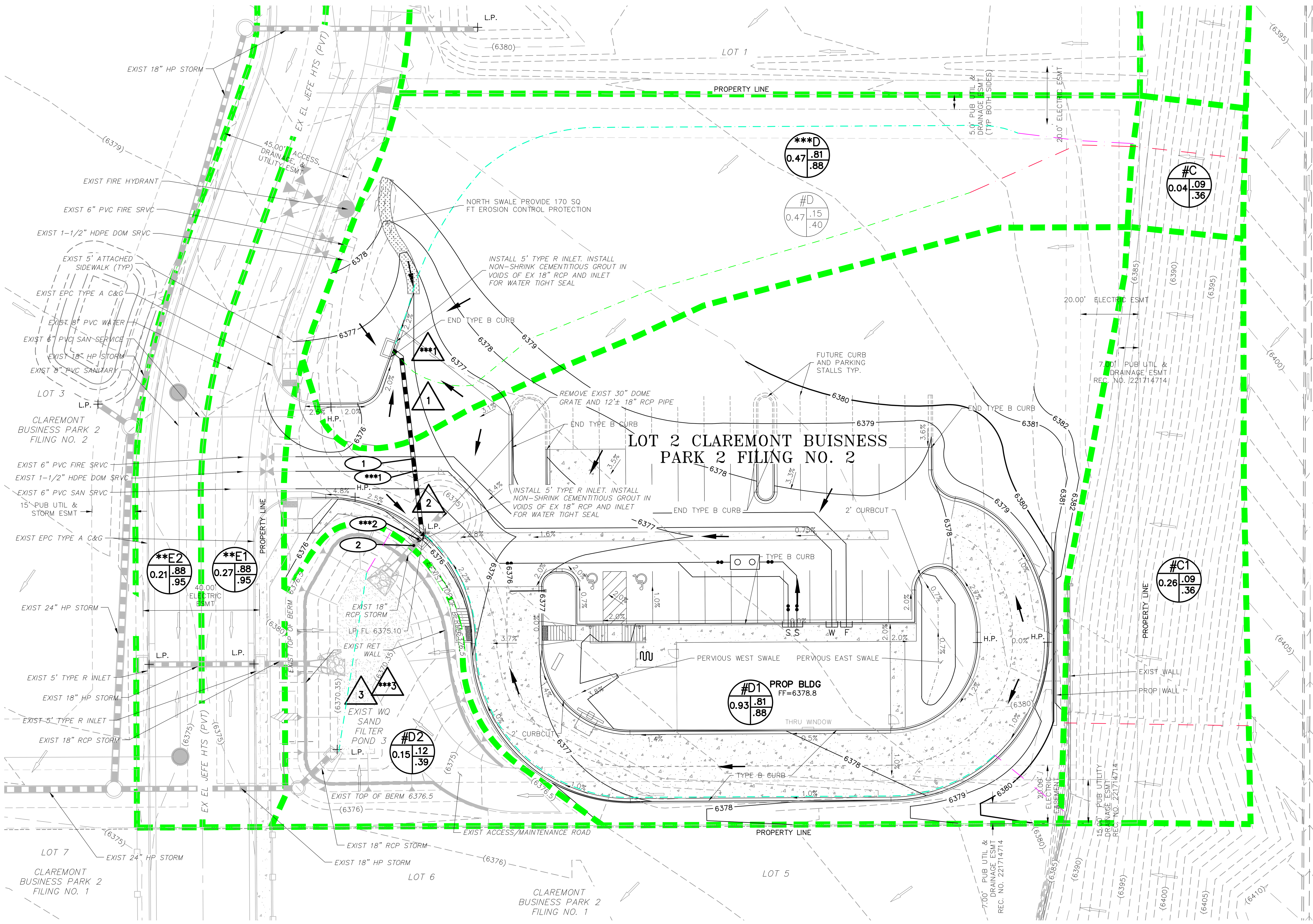
PROPOSED DRAINAGE MAP

FINAL DRAINAGE REPORT FOR
LOT 2 CLAREMONT BUSINESS PARK 2 FILING NO.2

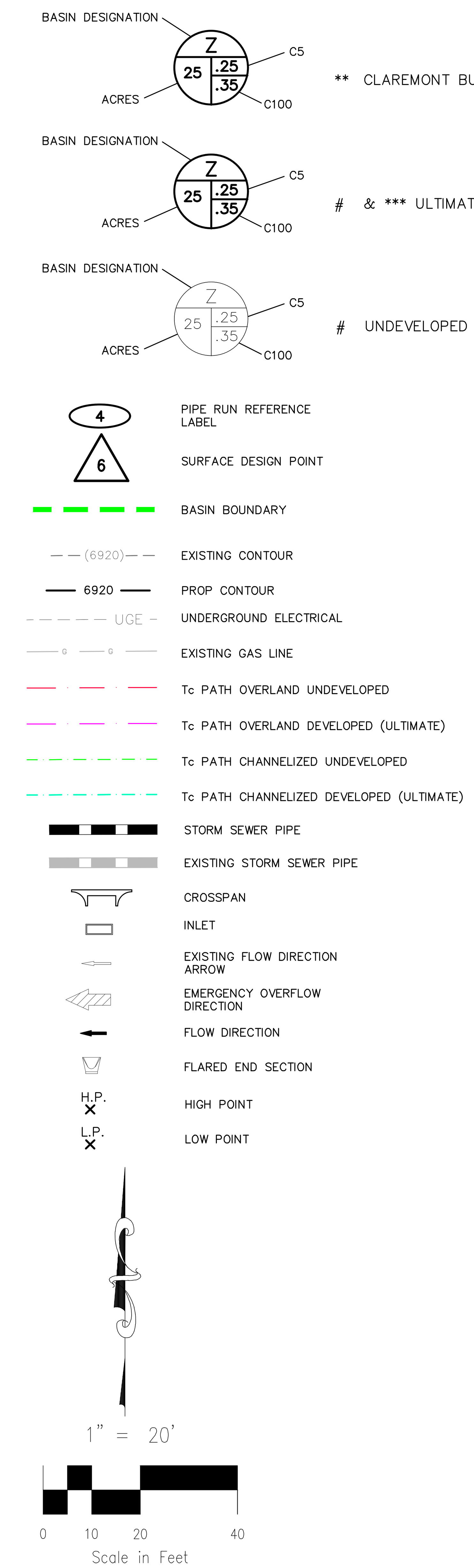
COUNTY OF EL PASO, STATE OF COLORADO

PROPOSED CONDITIONS DRAINAGE MAP

FEBRUARY 2024



LEGEND



BASIN SUMMARY			
BASIN	AREA (ACRES)	Q_5	Q_{100}
#C	0.4	0.0	0.1
#C1	0.26	0.1	0.8
#D	0.47	0.3	1.3
***D	0.47	2.0	3.6
#D1	0.93	3.9	7.1
#D2	0.15	0.1	0.5
**E1	0.27	1.2	2.2
**E2	0.21	1.0	1.7

**~CLAREMONT BUSINESS PARK 2 FILING NO.2 FDR PREPARED BY MS CIVIL CONSULTANTS, INC.
#~BASIN AREA REVISED FROM CLAREMONT BUSINESS PARK 2 FILING NO. 2 FDR PREPARED BY MS CIVIL CONSULTANTS, INC.
***~ULTIMATE BUILD OUT. FULL DEVELOPMENT OF LOT 2.

DESIGN POINT SUMMARY				
DESIGN POINT	Q_5	Q_{100}	BASIN	STRUCTURE
1	0.3	1.6	#C, #D	PROP 5' TYPE R INLET
***1	1.8	3.4	#C, ***D	PROP 5' TYPE R INLET
2	3.7	7.2	#C1, #D1	PROP 5' TYPE R INLET
3	6.1	12.9	#D2, PR2, **E1, **E2	EX WQ SAND FILTERPOND 3
***3	7.5	14.6	#D2, ***PR2, **E1, **E2	EX WQ SAND FILTER POND 3

STORM SEWER SUMMARY				
PIPE RUN	Q_5	Q_{100}	PIPE SIZE	CONTRIBUTING DP/BASIN/PIPES
1	0.3	1.6	PROP 15" PP	DP1
***1	1.8	3.4	PROP 15" PP	***DP1
2	4.0	8.8	EX 18" RCP	DP2, PR1
***2	5.5	10.6	EX 18" RCP	***DP2, ***PR1

EX POND 3 SAND FILTER DETENTION BASIN DATA

WQ WATER SURFACE EL = 6371.78
WQ VOLUME=0.051 AC-FT
100-YR WATER SURFACE EL=6373.36
100-YR VOLUME=0.153 AC-FT
SPILLWAY CREST EL=6375.30
TOP OF EMBANKMENT EL=6376.55
RATIONAL 100-YR INFLOW=14.8 CFS
MHFD 100-YR INFLOW = 9.0 CFS
MHFD 100-YR RELEASE = 4.0 CFS

POND DESIGN FROM CLAREMONT BUSINESS PARK 2 FILING NO. 2 FDR PREPARED BY MS CIVIL CONSULTANTS, INC. APPROVED 11/13/2023
PCD FILING NO. VR 233

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212 N. WAHSATCH AVE., STE 305
COLORADO SPRINGS, CO 80903
PHONE: 719.955.5485

LOT2 CLAREMONT BUSINESS PARK 2 FIL.NO.2
PROP. CONDITIONS DRAINAGE MAP

PROJECT NO. 10-025A	FILE: \dwg\Eng Exhibits\10025 PDM.dwg	
DESIGNED BY: GT DRAWN BY: GT CHECKED BY: VAS	SCALE HORIZ: 1"=20' VERT: N/A	DATE: 02-02-2024 SHEET 1 OF 1 PDM01

File: O:\10025A-CBP2 - Lot 2\Brian Zurek\Drainage\Drainage Map\10025 PDM.dwg Plotstamp: 2/7/2024 10:01 AM

BOCC RESOLUTION 16-426

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Chuck Broerman El Paso County, CO
11/28/2016 11:50:04 AM
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Rec $0.00 Pages 216137149

RESOLUTION NO. 16- 426

BOARD OF COUNTY COMMISSIONERS
COUNTY OF EL PASO, STATE OF COLORADO

Resolution Denying an Appeal by Hammers Construction LLC (APP-16-002) of the Administrative Determination made by the Planning and Community Development Department Executive Director regarding the requirement for permanent/post construction Water Quality (permanent stormwater quality best management practices or BMP's).

WHEREAS, pursuant to §§30-11-101(1)(e) and 30-11-107(1)(e), C.R.S., the Board of County Commissioners of El Paso County, Colorado (hereinafter "Board) has the legislative authority to manage the concerns of El Paso County when deemed by the Board to be in the best interests of the County and its inhabitants; and

WHEREAS, after consultation with the County Attorney's Office, the Executive Director of Planning and Community Development on August 4, 2016 issued an administrative determination finding made an administrative determination that all undeveloped lots within the Claremont Business Park are subject to installation of permanent stormwater management best management practices (BMP's) associated with development, and that the terms of a 2008 approved deviation relieving the developer of the requirements have not been met.; and

WHEREAS, an appeal of the administrative determination was filed by Hammers Construction on August 10, 2016, and a hearing date was set for September 27, 2016 to hear the appeal; and

WHEREAS, the hearing was continued to a date certain of November 22, 2016; and

WHEREAS, at the Applicant's appeal hearing on November 22, 2016, testimony from the Applicant and the Applicant's representatives was heard by the Board in favor of the appeal, testimony from representatives of Planning and Community Development Department and was presented, and such testimony and associated evidence was weighed by the Board; and

WHEREAS, the Board, having reviewed the testimony and evidence, hereby finds and determines that the requested appeal of the administrative determination by the Planning and Community Development Executive Director by the Applicant did not satisfy the criteria of approval to overturn the administrative determination.

NOW, THEREFORE, BE IT RESOLVED that the Board of County Commissioners of El Paso County, Colorado, hereby denies the appeal of the administrative determination by Hammers Construction and determines that permanent stormwater management best management practices (BMP's) are required with new development within the Claremont Business Park: and

BE IT **FURTHER RESOLVED** that Sallie Clark, duly elected, qualified member and Chair of the Board of County Commissioners, or Darryl Glenn, duly elected, qualified member and Vice Chair of the Board of County Commissioners, be and is hereby authorized on behalf of the Board to execute any and all documents necessary to carry out the intent of the Board as described herein.

DONE THIS 22nd day of November, 2016, at Colorado Springs Colorado.

BOARD OF COUNTY COMMISSIONERS
EL PASO COUNTY, COLORADO

By: ______________________
Chair of the Board

ATTEST: ______________________
County Clerk & Recorder