BULLDOG ENGINEERING

February 25, 2026

Castle Rock Engineering Department
100 N. Wilcox St.
Castle Rock, CO 80104

RE: Drainage Report for 1070 Brookside Circle Site Improvements
Lot 3, Brookside Business Center Subdivision in Castle Rock, CO

To Whom it May Concern,

Attached is the Drainage Report and Plan for the Site Improvements at 1070 Brookside Circle in Castle Rock, Colorado (Lot 3, Brookside Business Center Subdivision). This report addresses both the on-site and off-site hydrology that affects or is affected by the proposed development.

If you have any further questions or comments regarding this matter, please contact this office.

Sincerely,

Mark Harris

Mark Harris P.E.
Owner/Principal

info@bulldogeng.com PO Box 114 - 1540 Main Street - Suite 218, Windsor, CO 80550 970-460-0089

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INTRODUCTION

General Location and Description:

The subject site is comprised of an existing development just East of the Brookside Circle & S Wilcox Street intersection in Castle Rock, CO (Parcel 2505-142-18-003). The site is also considered as 1070 Brookside Circle. The site is located within the northwest quarter of Section 14, Township 8 North, Range 67 West of the 6th Principal Meridian. The site is bordered on the West, North and West by vacant land that is currently native grass. The south side of the property is next to Brookside Circle. Please refer to the Vicinity Map.

The existing site is mostly developed and previously was used as a garden center with an existing structure, parking, and associated infrastructure. The soil on the site is classified as Loamy Alluvial Land. All the soil on the site is a Hydrologic group "C".

The proposed improvements associated with this project site include constructing additional pavements to complete a paved path around the existing building.

The original basin's imperviousness was compared to the imperviousness of the proposed to determine if further analysis would be required. The existing site consists of mostly gravel surface with a building a paved parking area, and all drainage is directed to an existing detention pond at the Northwest corner of the site. The existing detention pond was sized for the original design's overall composite percent imperviousness, which was determined to be 26% for the entire site.

The overall composite percent imperviousness of the proposed site is calculated to be 47%. Based on the calculations, an increase of the developed runoff is anticipated. Considering that the proposed development will increase the imperviousness of the site, and the existing detention pond is not currently designed for the proposed impervious area, the existing detention pond volume must be expanded. With this expansion, the grading within the site will be modified so that the entire developed area is conveyed to the expanded detention pond. Outside of this slight grading modification detailed in the construction documents, the intended drainage patterns will remain the same, so detailed analysis of the changes will not be required. Reference to the grading & drainage plan.

Runoff from the proposed improvements will be collected in either a gravel swale or an existing concrete pan and conveyed towards the expanded detention pond in the northwest corner of the site. The existing detention pond outlet structure and outfall will remain the same and will be released into an existing drainage way at the same rate as previously designed, matching the existing drainage pattern.

DRAINAGE BASINS AND SUB-BASINS

Major Basin Description

According to the Castle Rock Basin Master Plans this site is included in the Plum Creek Basin. This parcel is included on FEMA panel 08035C0301G. The site is within Zone X and is outside any area of flood risk.

Existing Drainage Basin Conditions

The entire area of improvements, which is a total area of 1.75-acres (76,339 square feet) will be fully developed and treated. The developed area historically slopes from south to northwest. The natural grade and development along the East, West, and North sides of the site will prevent offsite flow from entering the developed area. Any offsite flow from the south will be captured and treated.

Proposed Drainage Basin Conditions

The improved site will be designed to gather as much of the 1.75-acre developed area as possible and direct it to the expanded detention pond at the Northwest corner of the site. Additionally, any runoff from the South will be captured and treated to further improve the existing condition. The entire captured area is 47% impervious, and the expanded detention pond provided will meet the Town of Castle Rock MS4 requirements by providing the WQCV Standard for 100% of the developed area. Per the MS4 criteria, this development requires a water quality area, sized for all storm events and released within 120 hours, for flood control purposes. As such, the proposed detention pond is designed to meet the WQCV Standard.

DRAINAGE DESIGN CRITERIA

According to the Town of Castle Rock Basin Master Plans this site is included in the Plumb Creek Drainage Basin.

The Rational Method was used to calculate runoff and release rates. The expanded detention pond was sized using the Mile High Flood District (MHFD) Detention Basin Design Workbook. An extended detention basin is designed to release the water quality capture volume within a 40-hour period to maintain water quality and all strom events within 120 hours. The proposed on-site drainage conveyances were sized to convey the 100-year event to the expanded detention pond.

The runoff was calculated by inputting the area, imperviousness, soil type, one-hour precipitation values, slope, length of travel and conveyance into the peak runoff spreadsheet provided by the Mile High Flood District (MHFD).

DRAINAGE FACILITY DESIGN

Per Town of Castle Rock criteria, water quality will be provided for the MS4 requirement, and detention is provided to control the release rate of larger storm events. The minimum WQCV required for the site is 0.029 ac-ft. The invert of the pond is 6228.31, with the top of the expanded detention pond set at 6233. The expanded detention pond will utilize the existing outlet structure and outfall as it has already been designed to control the release rate per Castle Rock requirements. The detention pond volume will simply be expanded to provide capacity for the increased percent impervious of the development.

The top of pond will act as an earthen emergency spillway and is designed to allow on-site flows to leave the detention pond in the event that the pond outlet is clogged or overwhelmed in larger storm events. The emergency overflow/top of pond is provided at elevation 6233 and provides more than 1-foot of freeboard above the 100-year water surface elevation.

The proposed expanded detention pond has been designed to treat the runoff from the entire developed area.

See Tables 1 below for the parameters for the expanded detention pond and the associated development.

Table 1: Expanded Detention Pond Parameters

Parameter Description	Parameter Value	Unit
Invert Elevation	6,228.31	feet
Top of Pond Elevation	6,233.00	feet
Required WQ Volume	1,263	cubic-feet
Designed WQ Volume	2,087	cubic-feet
WQ-Surface Elevation	6,229.50	feet
Required 100-Year Storm Event Volume	6,839	cubic-feet
Designed 100-Year Storm Event Volume	8,284	cubic-feet
100-Year Storm Event	6,231.72	feet

The spreadsheets included in the report detail the physical requirements to provide adequate drainage conveyance. Please refer to the spreadsheets for the specific design.

Care should be taken to keep trash and debris out of conveyance elements to prevent excess water from building up on the site. If a complete blockage occurs in the detention pond outlet the water will be released through the emergency spillway. If blockages occur the blocked element should be immediately cleaned. All storm drainage pipes shall be kept clean to maintain full capacity.

Storm Water Quality Considerations

The entire captured area will meet the Castle Rock MS4 requirements by providing the WQCV Standard for 100% of the developed area. Per the MS4 criteria, this development requires a detention pond with water quality area, sized for all storm events and release within 120 hours at reduced rates per Town of Castle Rock criteria, for flood control purposes. The proposed pond meets these criteria and therefore the proposed expanded detention pond is designed to meet the MS4 WQCV Standard.

CONCLUSION

Developed storm water flows from the subject site will be controlled through an on- site detention pond. The allowable release rates from the detention pond area include a water quality release rate, 10-year release rate, and 100-year release rate that allows minor and major storm flows to release within a 40- hour time period. Off-site flows that drain toward the site are directed through the property and the water quality area.

This report and design will meet the Town of Castle Rock Code without any variances. This design should be more than adequate to prevent either on-site or off-site runoff flows from creating damage. Please see the reference sheet for a complete list of references used for this design and report.

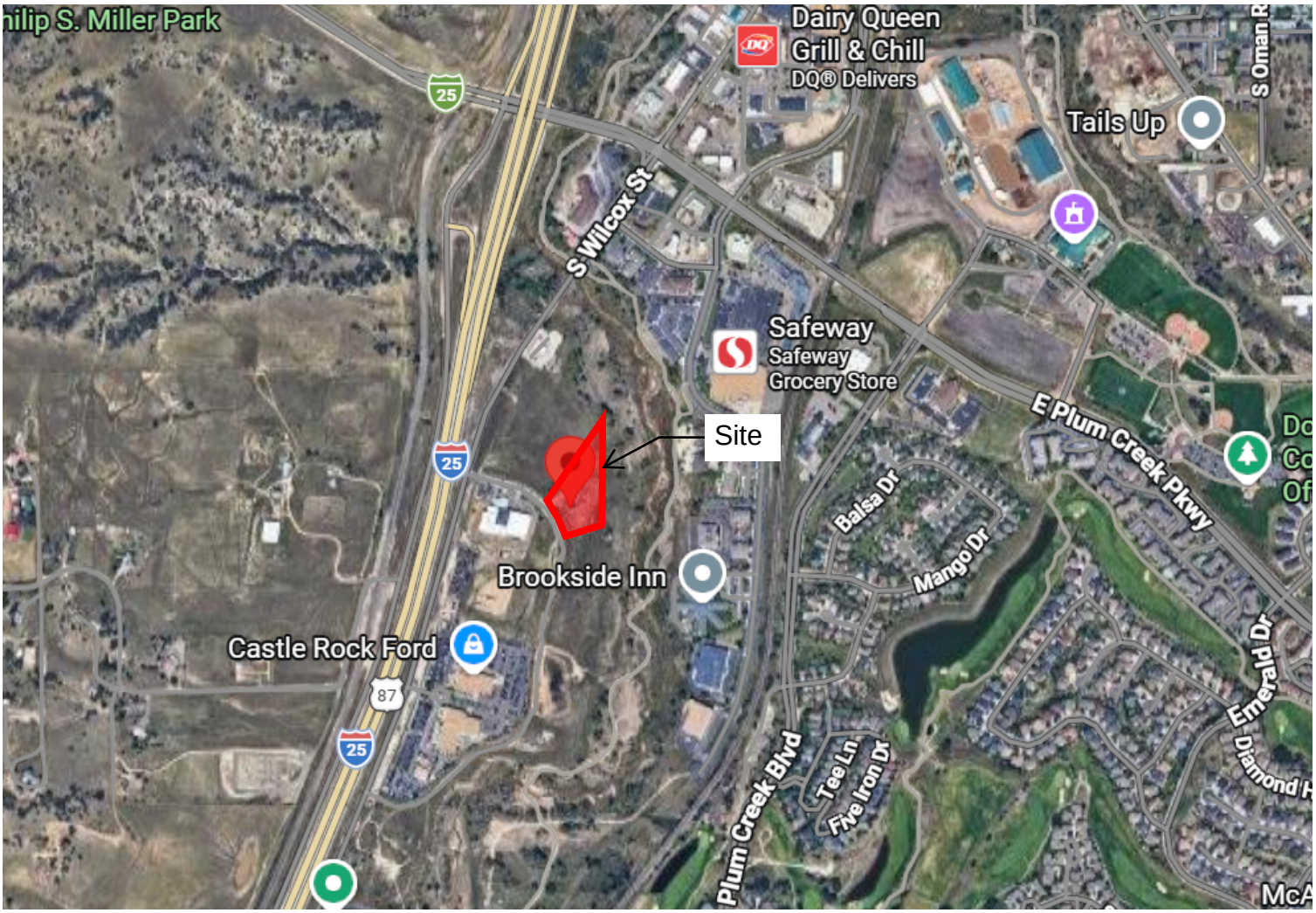
SITE MAINTENANCE

Drainage/ Site Maintenance Plan

1. At all times any erosion that may occur shall be corrected as soon as possible to mitigate the chance of erosion leaving the site.
2. All drainage facilities, including culverts and swales, shall be inspected regularly, and cleaned if necessary.
3. All swales shall be maintained and regraded, if necessary, to maintain the design depth and function of the swale.
4. Any disturbed areas that are seeded, and vegetation does not grow, shall be re-seeded and irrigated as necessary to establish permanent vegetation.
5. Snow is not to be piled in swales or near water quality area outlet.

REFERENCES

1. Urban Storm Drainage Criteria Manual, Volumes 1 (August 2018), 2 (September 2017) and 3 (November 2010/October 2019), Urban Drainage and Flood Control District, Denver, Colorado.
2. National Resources Conservation Service, Web Soil Survey, Weld County, Colorado, Southern Part, May 20, 2020.
3. msc.fema.gov website, FEMA Map 08035C0199G effective 03/16/2016, Firmette dated May 20, 2020.
4. Detention Basin Volume Estimating Workbook, Version 2.35, Released January 2015 by the Urban Drainage and Flood Control District, Denver, Colorado.
5. Peak Runoff Prediction by the Rational Method, Version 2.00, Released May 2017 by the Urban Drainage and Flood Control District, Denver, Colorado.
6. Hydraflow Express Extension, Autodesk Civil 3D Version 2020, May 22, 2020.



1070 Brookside Circle	Vicinity Map	BULLDOG ENGINEERING 970-460-0089 INFO@BULLDOGENG.COM

National Flood Hazard Layer FIRMette

FEMA

104°52'11"W 39°21'50"N



104°51'33"W 39°21'22"N

Feet

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

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR 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 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/25/2026 at 4:19 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.

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. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Castle Rock Area, Colorado



February 25, 2026

Custom Soil Resource Report
Soil Map



Map Scale: 1:1,210 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 15 30 60 90

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Castle Rock Area, Colorado
Survey Area Data: Version 18, Aug 29, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 1, 2023—Sep 1, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Lo	Loamy alluvial land	3.0	88.4%
Se	Sandy wet alluvial land	0.4	11.6%
Totals for Area of Interest		**3.4**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Castle Rock Area, Colorado

Lo—Loamy alluvial land

Map Unit Setting

National map unit symbol: jqzb
Elevation: 7,000 to 8,000 feet
Mean annual precipitation: 17 to 19 inches
Mean annual air temperature: 44 to 46 degrees F
Frost-free period: 115 to 120 days
Farmland classification: Not prime farmland

Map Unit Composition

Loamy alluvial land: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Loamy Alluvial Land

Setting

Landform: Flood plains, Swales
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

H1 - 0 to 20 inches: sandy loam
H2 - 20 to 40 inches: stratified loamy sand to clay loam
H3 - 40 to 60 inches: sand and gravel

Properties and qualities

Slope: 1 to 5 percent
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 6.00 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: Frequent
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C
Ecological site: R049XY036CO - Overflow
Hydric soil rating: No

Minor Components

Sampson

Percent of map unit: 7 percent
Hydric soil rating: No

Bresser

Percent of map unit: 7 percent

Hydric soil rating: No

Sandy alluvial land
Percent of map unit: 5 percent

Fluvaquentic haplustolls
Percent of map unit: 1 percent
Landform: Terraces
Hydric soil rating: Yes

Se—Sandy wet alluvial land

Map Unit Setting
National map unit symbol: jr04
Elevation: 5,500 to 6,600 feet
Mean annual precipitation: 15 to 19 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 120 to 135 days
Farmland classification: Not prime farmland

Map Unit Composition
Sandy wet alluvial land: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sandy Wet Alluvial Land

Setting
Landform: Major drainageways, Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Weathered alluvium derived from arkose

Typical profile
H1 - 0 to 6 inches: coarse sand
H2 - 6 to 60 inches: stratified coarse sand to sandy loam

Properties and qualities
Slope: 1 to 4 percent
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 0 to 24 inches
Frequency of flooding: Frequent
Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Loamy wet alluvial land
Percent of map unit: 9 percent
Hydric soil rating: No

Sandy alluvial land
Percent of map unit: 9 percent
Hydric soil rating: No

Fluventic haplaquolls
Percent of map unit: 2 percent
Landform: Terraces
Hydric soil rating: Yes

References

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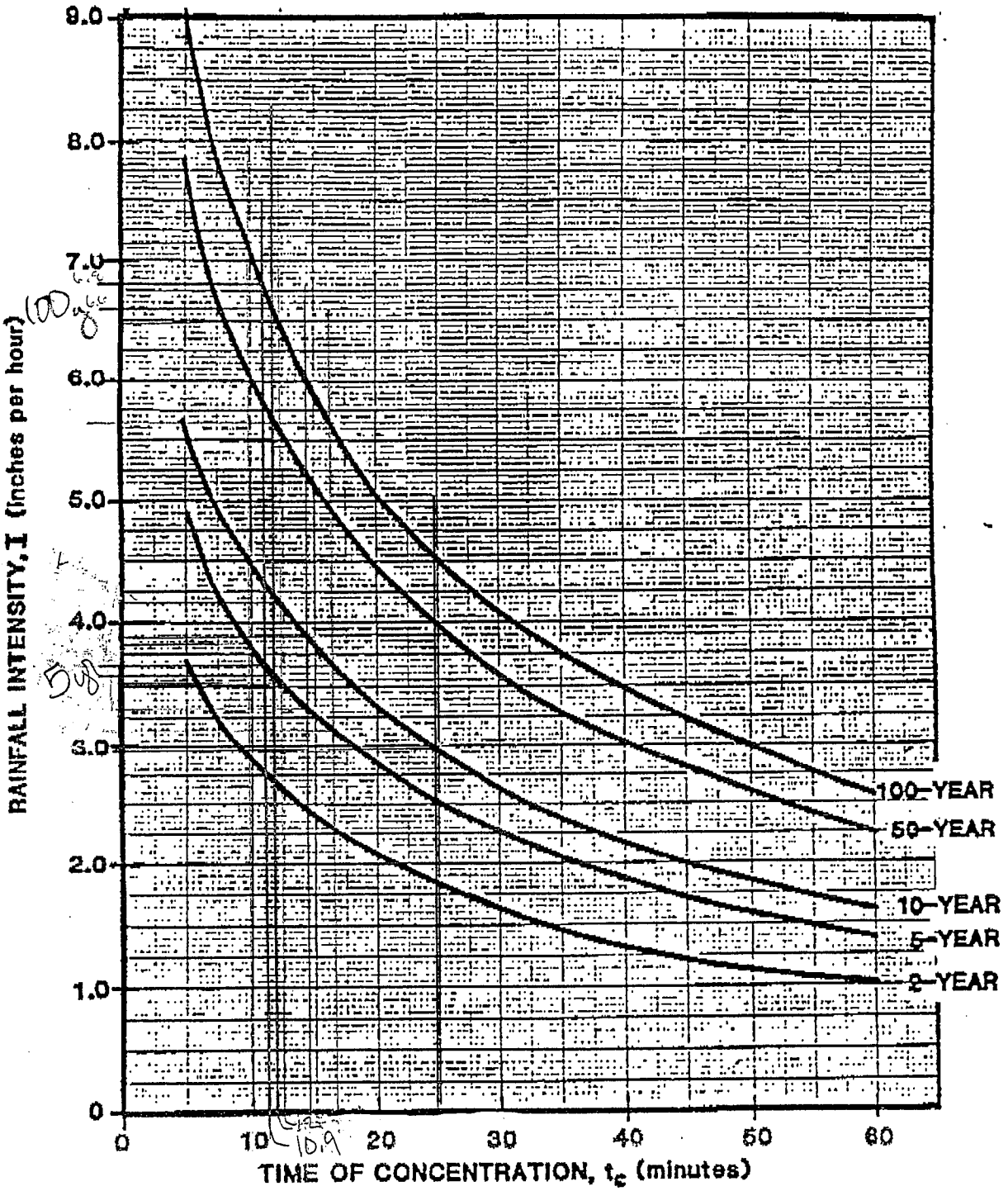
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DURATION →		5 MIN		10 MIN		15 MIN		30 MIN		60 MIN	
DURATION FACTORS →		0.29		0.45		0.57		0.79		1.00	
ZONE	FREQ.	DEPTH (IN)	INTEN. (IN/HR)	DEPTH (IN)	INTEN. (IN/HR)	DEPTH (IN)	INTEN. (IN/HR)	DEPTH (IN)	INTEN. (IN/HR)	DEPTH (IN)	INTEN. (IN/HR)
I	2-YR	0.31	3.72	0.48	2.88	0.60	2.40	0.84	1.68	1.06	1.06
	5-YR	0.41	4.92	0.64	3.84	0.82	3.28	1.13	2.26	1.43	1.43
	10-YR	0.48	5.76	0.75	4.50	0.95	3.80	1.31	2.62	1.66	1.66
	50-YR	0.66	7.92	1.02	6.12	1.29	5.16	1.79	3.58	2.26	2.26
	100-YR	0.75	9.05	1.17	7.02	1.48	5.93	2.05	4.11	2.60	2.60

NOTE: Depth at each duration = one hour rainfall depth x respective duration factor

DRAWN BY: RBD
APPROVED BY:
DATE: 10/1/98
TOWN OF CASTLE ROCK
PUBLIC WORKS
TIME – INTENSITY – FREQUENCY
TABULATION
STD. DWG NO.
TABLE 403

A-10



DRAWN BY: RBD	TOWN OF CASTLE ROCK PUBLIC WORKS	STD. DWG NO.
APPROVED BY:	TIME–INTENSITY– FREQUENCY CURVES ZONE 1	FIGURE 402A
DATE: 10/1/98		

Percent Imperviousness w/ Areas in Square Feet							
Basin	Buildings (90% Imp.)	Gravel (40%)	Paved (100% Imp.)	Walks (96% Imp.)	Open Space (0% Imp.)	Total Area	Percent Imperviousness.
Existing Design	2,880	16,425	6,863	2,806	47,365	76,339	26%
Proposed Imrovements	3,865	29,457	15,159	5,517	22,341	76,339	47%

BULLDOG ENGINEERING
970-460-0089 INFO@BULLDOGENG.COM

Calculation of Peak Runoff using Rational Method

Designer: Mark Harris
Company: Bulldog Engineering
Date: 2/25/2026
Project: 1070 Brookside Circle
Location: Castle Rock

Version 2.00 released May 2017

Cells of this color are for required user-input
Cells of this color are for optional override values
Cells of this color are for calculated results based on overrides

$$t_i = \frac{0.395(1.1 - C_5)\sqrt{L_i}}{S_i^{0.33}}$$

$$t_t = \frac{L_t}{60K\sqrt{S_t}} = \frac{L_t}{60V_t}$$

$$\text{Computed } t_c = t_i + t_t$$

$$\text{Regional } t_c = (26 - 17i) + \frac{L_{rt}}{60(14i + 9)\sqrt{S_t}}$$

$t_{minimum}$ = 5 (urban)
$t_{minimum}$ = 10 (non-urban)

$$\text{Selected } t_c = \max\{t_{minimum}, \min(\text{Computed } t_c, \text{Regional } t_c)\}$$

Select UDFCD location for NOAA Atlas 14 Rainfall Depths from the pulldown list OR enter your own depths obtained from the NOAA website (click this link)

	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr
1-hour rainfall depth, P1 (in) =	1.06	1.43	1.66	1.88	2.26	2.60	
	a	b	c				
Rainfall Intensity Equation Coefficients =	28.50	10.00	0.786				

$$I(in/hr) = \frac{a * P_1}{(b + t_c)^c}$$

$$Q(cfs) = CIA$$

Subcatchment Name	Area (ac)	NRCS Hydrologic Soil Group	Percent Imperviousness	Runoff Coefficient, C							Overland (Initial) Flow Time					Channelized (Travel) Flow Time								Time of Concentration			Rainfall Intensity, I (in/hr)							Peak Flow, Q (cfs)						
				2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr	Overland Flow Length L_i (ft)	U/S Elevation (ft) (Optional)	D/S Elevation (ft) (Optional)	Overland Flow Slope S_i (ft/ft)	Overland Flow Time t_i (min)	Channelized Flow Length L_t (ft)	U/S Elevation (ft) (Optional)	D/S Elevation (ft) (Optional)	Channelized Flow Slope S_t (ft/ft)	NRCS Conveyance Factor K	Channelized Flow Velocity V_t (ft/sec)	Channelized Flow Time t_t (min)	Computed t_c (min)	Regional t_c (min)	Selected t_c (min)	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr
Lot 3	1.75	C	47.0	0.36	0.42	0.48	0.58	0.63	0.68	0.74	163.00			0.010	15.72	314.00			0.005	20	1.41	3.70	19.42	22.76	19.42	2.12	2.86	3.32	3.76	4.51	5.19		1.32	2.09	2.77	3.83	4.94	6.15	

BULLDOG ENGINEERING
970-460-0089
info@bulldogeng.com

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Feb 25 2026

Gravel Swale - 1/2 100 Pear Peak Runoff from Entire Lot

Triangular

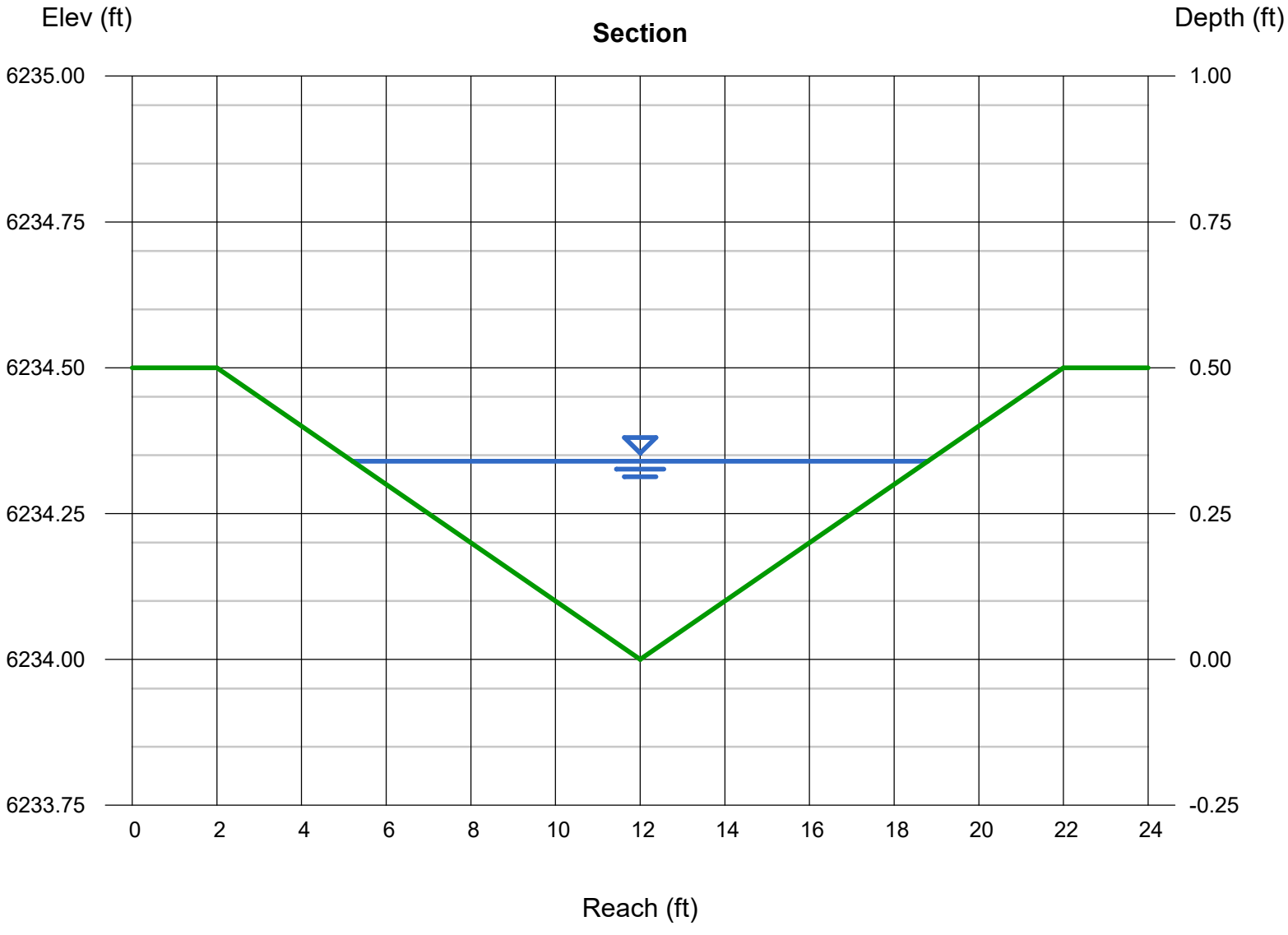
Side Slopes (z:1)	= 20.00, 20.00
Total Depth (ft)	= 0.50
Invert Elev (ft)	= 6234.00
Slope (%)	= 0.50
N-Value	= 0.023

Calculations

Compute by:	Known Q
Known Q (cfs)	= 3.08

Highlighted

Depth (ft)	= 0.34
Q (cfs)	= 3.080
Area (sqft)	= 2.31
Velocity (ft/s)	= 1.33
Wetted Perim (ft)	= 13.62
Crit Depth, Yc (ft)	= 0.28
Top Width (ft)	= 13.60
EGL (ft)	= 0.37

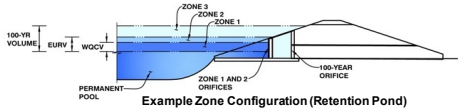


DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.07 (June 2025)

Project: 1070 Brookside Circle

Basin ID: Expanded Detention Pond



Example Zone Configuration (Retention Pond)

Watershed Information

Selected SCM Type =	**EDB**	
Watershed Area =	1.75	acres
Watershed Length =	320	ft
Watershed Length to Centroid =	155	ft
Watershed Slope =	0.011	ft/ft
Watershed Imperviousness =	47.00%	percent
Percentage Hydrologic Soil Group A =	0.0%	percent
Percentage Hydrologic Soil Group B =	0.0%	percent
Percentage Hydrologic Soil Groups C/D =	100.0%	percent
Target WQCV Drain Time =	40.0	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) =	0.029	acre-feet	acre-feet
Excess Urban Runoff Volume (EURV) =	0.077	acre-feet	acre-feet
2-yr Runoff Volume (P1 = 1.06 in.) =	0.072	acre-feet	1.06 inches
5-yr Runoff Volume (P1 = 1.43 in.) =	0.118	acre-feet	1.43 inches
10-yr Runoff Volume (P1 = 1.66 in.) =	0.149	acre-feet	1.66 inches
25-yr Runoff Volume (P1 = 1.69 in.) =	0.159	acre-feet	inches
50-yr Runoff Volume (P1 = 2.26 in.) =	0.240	acre-feet	2.26 inches
100-yr Runoff Volume (P1 = 2.6 in.) =	0.294	acre-feet	2.60 inches
500-yr Runoff Volume (P1 = 3.14 in.) =	0.373	acre-feet	inches
Approximate 2-yr Detention Volume =	0.061	acre-feet	
Approximate 5-yr Detention Volume =	0.098	acre-feet	
Approximate 10-yr Detention Volume =	0.111	acre-feet	
Approximate 25-yr Detention Volume =	0.108	acre-feet	
Approximate 50-yr Detention Volume =	0.133	acre-feet	
Approximate 100-yr Detention Volume =	0.157	acre-feet	

Define Zones and Basin Geometry

Zone 1 Volume (WQCV) =	0.029	acre-feet
Zone 2 Volume (10-year - Zone 1) =	0.082	acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	0.045	acre-feet
Total Detention Basin Volume =	0.157	acre-feet
Initial Surcharge Volume (ISV) =	user	ft^3
Initial Surcharge Depth (ISD) =	user	ft
Total Available Detention Depth (H_{total}) =	user	ft
Depth of Trickle Channel (H_{TC}) =	user	ft
Slope of Trickle Channel (S_{TC}) =	user	ft/ft
Slopes of Main Basin Sides (S_{main}) =	user	H:V
Basin Length-to-Width Ratio ($R_{L/W}$) =	user	

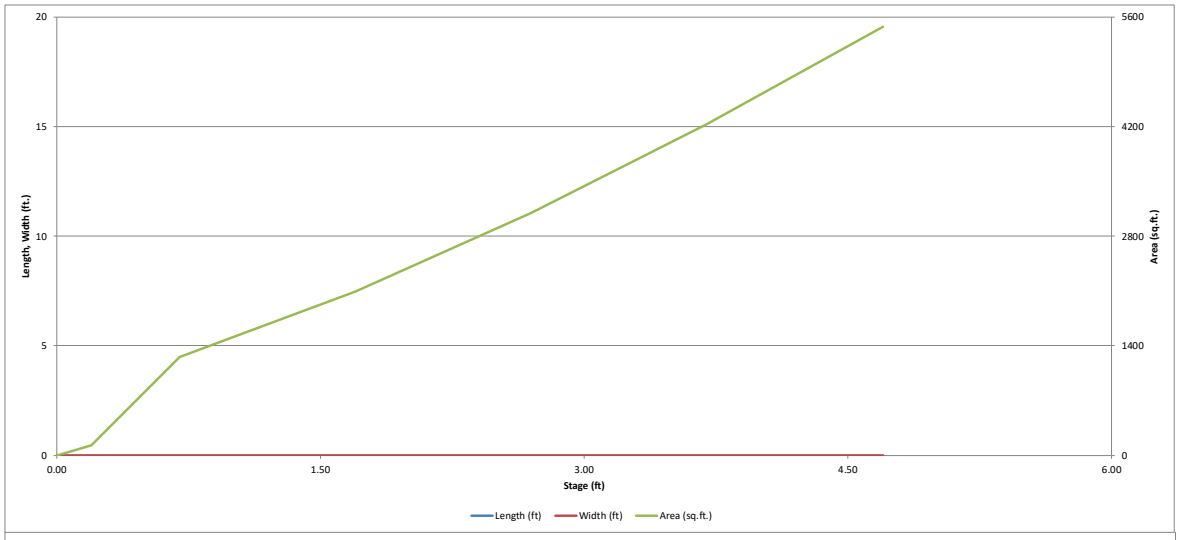
Initial Surcharge Area (A_{ISV}) =	user	ft^2
Surcharge Volume Length (L_{ISV}) =	user	ft
Surcharge Volume Width (W_{ISV}) =	user	ft
Depth of Basin Floor (H_{FLOOR}) =	user	ft
Length of Basin Floor (L_{FLOOR}) =	user	ft
Width of Basin Floor (W_{FLOOR}) =	user	ft
Area of Basin Floor (A_{FLOOR}) =	user	ft^2
Volume of Basin Floor (V_{FLOOR}) =	user	ft^3
Depth of Main Basin (H_{MAIN}) =	user	ft
Length of Main Basin (L_{MAIN}) =	user	ft
Width of Main Basin (W_{MAIN}) =	user	ft
Area of Main Basin (A_{MAIN}) =	user	ft^2
Volume of Main Basin (V_{MAIN}) =	user	ft^3
Calculated Total Basin Volume (V_{total}) =	**user**	acre-feet

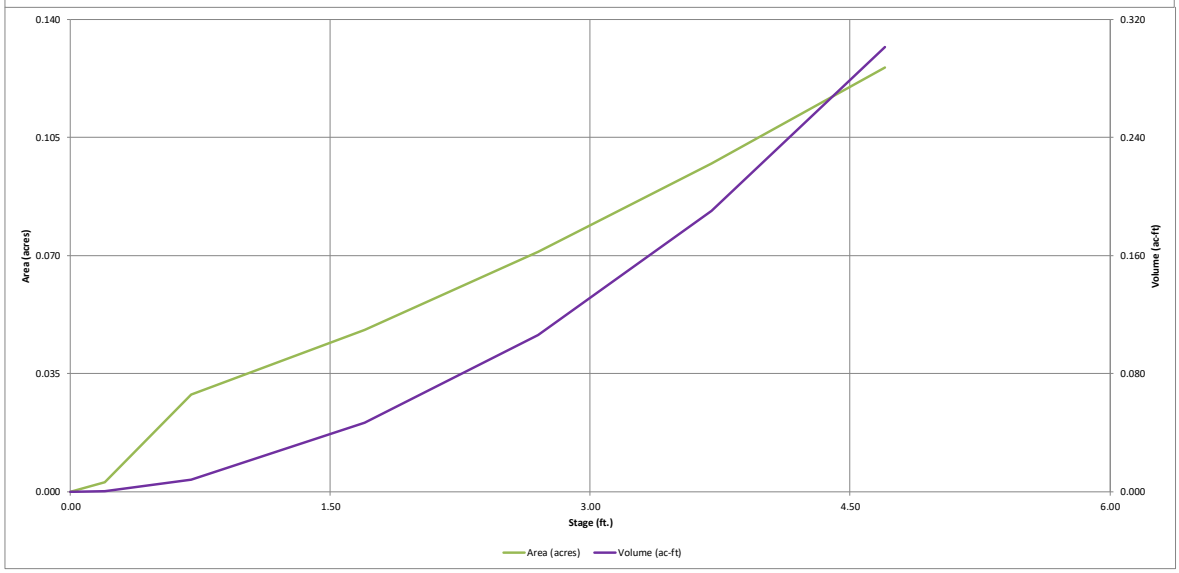
Depth Increment = ft

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)
Top of Micropool	--	0.00	--	--	--	1	0.000		
	--	0.20	--	--	--	121	0.003	12	0.000
	--	0.70	--	--	--	1,258	0.029	357	0.008
	--	1.70	--	--	--	2,087	0.048	2,029	0.047
	--	2.70	--	--	--	3,094	0.071	4,620	0.106
100-Year WSEL	--	3.70	--	--	--	4,234	0.097	8,284	0.190
Top of Pond	--	4.70	--	--	--	5,478	0.126	13,140	0.302

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.07 (June 2025)





Release Rate Basin A + Basin B = 1.54ac

For Soil Group C:	10-year: 0.3 cfs/acre =	0.46
	100-year: 1.0 cfs/arce =	1.54

Calculation of the allowable release rates for Q100 and Q10

Since basin B will not have any detention due to the grading of the site, the proposed condition flow from basin B shall be subtracted from total historical flow to find the allowable release rate for the detention pond.

Q100 = Q100(historical) - Q100(basin B)(proposed conditions) = 1.54 - 0.88 = **0.66 cfs**

Q10 = Q10(historical) - Q10(basin B)(proposed conditions) = 0.46 - 0.14 = **0.32 cfs**

SELLARDS & GRIGG, INC.
143 Union Blvd., Suite 700
Lakewood, Colorado 80228
(303) 986-1444
FAX (303) 986-0994

JOB 1999574-21
SHEET NO. A-6 OF
CALCULATED BY HKG DATE 5/8/00
CHECKED BY DATE
SCALE

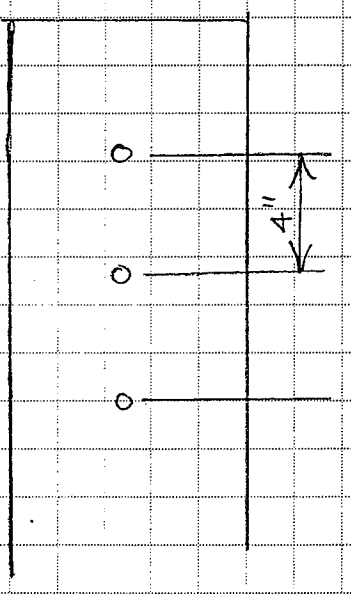
Riser pipe

$V_{wq} = 0.017$ ac-ft

$D_{wq} = 30.12 - 29 = 1.12$

Area/row = $0.11 in^2$ – figure 1407A

use 3/8" diameter holes 1/row = $0.11 in^2$
(1 column)



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SHEET NO. A-8 OF
CALCULATED BY HKG DATE 5/8/00
CHECKED BY DATE 6/14/00
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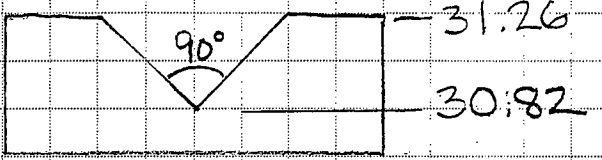
determine 10-yr V-notch weir

$Q = 2.5 \tan(\theta/2) H^{5/2} = 0.32$ (allowable release)

$\theta = 90°$

$Q = 2.5(1) H^{5/2} \Rightarrow H = \frac{Q^{2/5}}{2.5^{3/5}} = \frac{Q^{2/5}}{1.44}$

$\Rightarrow H = 0.44$



---

determine 100-yr orifice size

$Q = CA(2gh)^{1/2} = 0.66$ (allowable release)

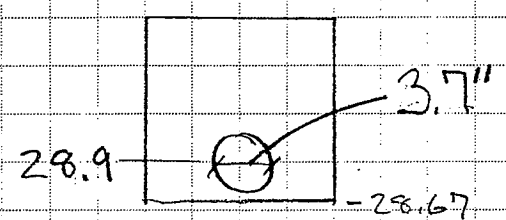
$A = \frac{Q}{C(2gh)^{1/2}} = \frac{0.66}{0.65(2 \times 32.2 \times 2.98^{*})^{1/2}}$

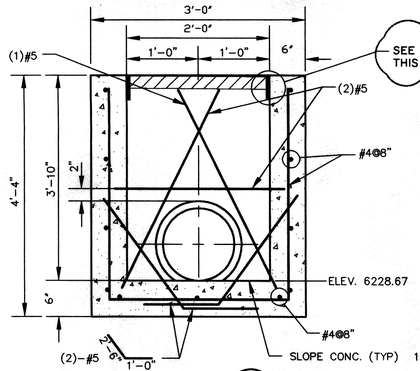
* 31.88 − 28.9 = 2.98'

= 0.673 ft

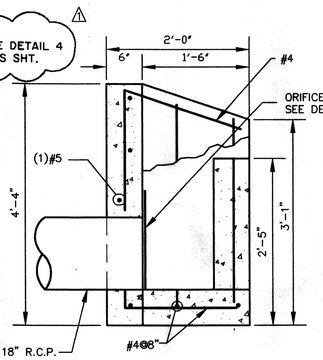
diameter = $(4A/\pi)^{1/2}$ = 0.31'

= 3.7"

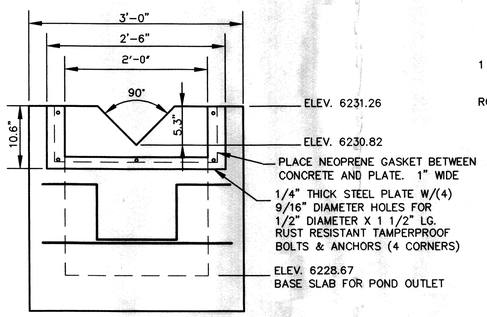




SECTION F
SCALE: N.T.S.

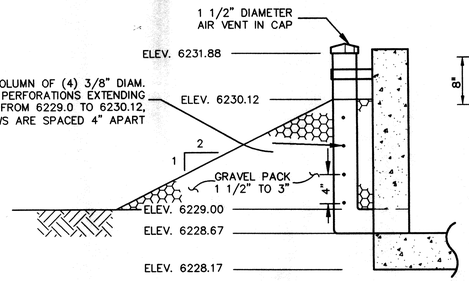


SECTION G
SCALE: N.T.S.



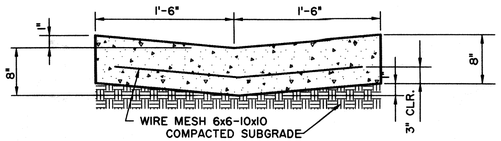
NOTE:
SECTION H SHOWS REINFORCEMENT FOR POND OUTLET END WALL ONLY.

SECTION H
SCALE: N.T.S.

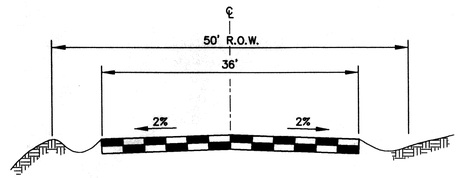


NOTE:
RISER PIPE TO BE 4" SCHEDULE 40 GALVANIZED STEEL.

RISER PIPE DETAIL
SECTION M
SCALE: N.T.S.

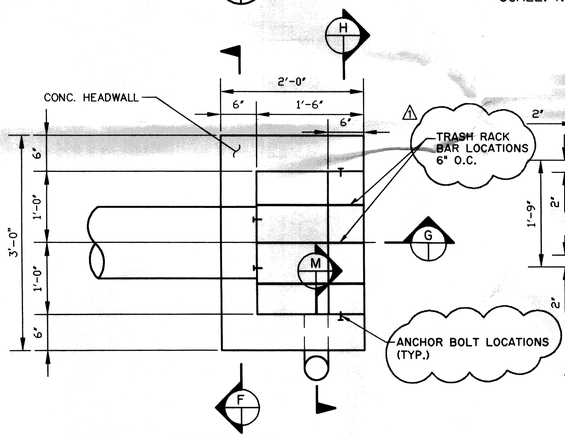


SECTION
CROSS PAN DETAIL
SCALE: N.T.S.



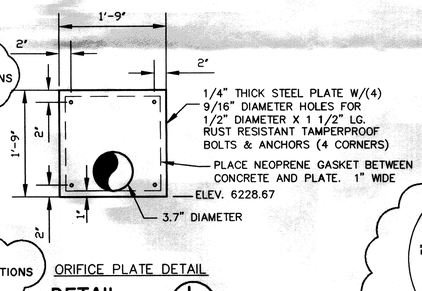
EXISTING SECTION
ON BROOKSIDE CIRCLE

SECTION A
SCALE: HORIZ. 1" = 10' C-01 C-03
VERT. N.T.S.



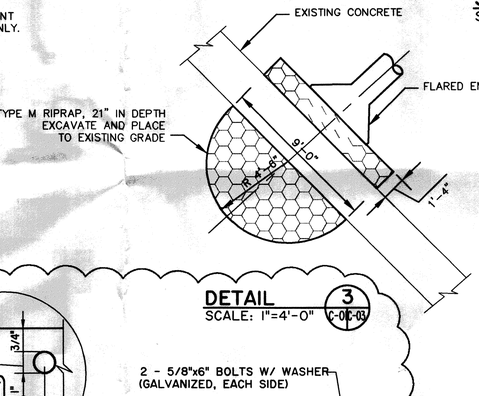
TYPE 2 OUTLET

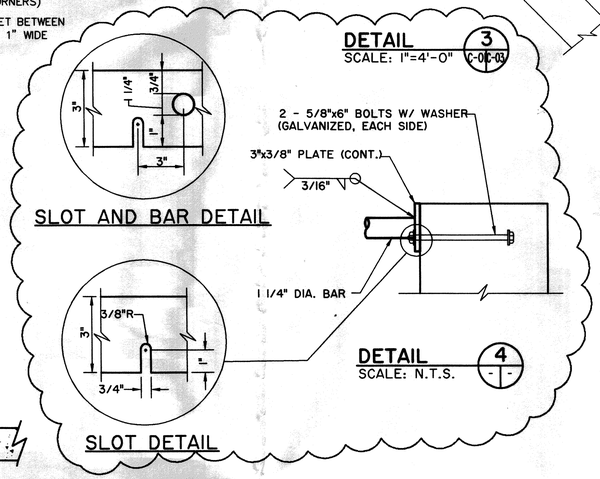
DETAIL K
SCALE: 1"=1'-0"



ORIFICE PLATE DETAIL

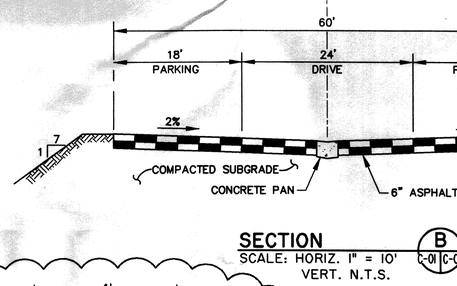
DETAIL L
SCALE: N.T.S.





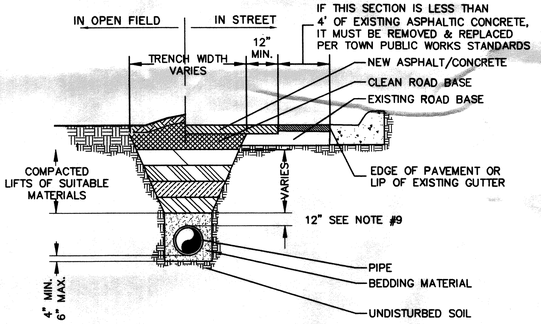
DETAIL 3
SCALE: 1"=4'-0"

DETAIL 4
SCALE: N.T.S.



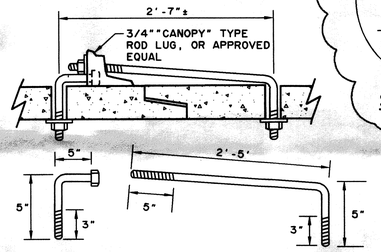
SECTION
RIPRAP TRICKLE CHANNEL
SCALE: N.T.S.

SECTION B
SCALE: HORIZ. 1" = 10' C-01 C-03
VERT. N.T.S.



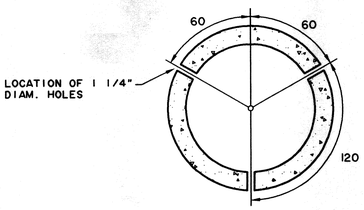
NOTES:
1. ALL TRENCHES SHALL BE BACKFILLED IN ACCORDANCE WITH THE ABOVE DETAIL UNLESS OTHERWISE SPECIFIED BY THE TOWN.
2. PRIOR TO PLACEMENT OF ASPHALT/CONCRETE, PAVEMENT EDGE SHALL BE SAW CUT TO A CLEAN, VERTICAL & STRAIGHT EDGE.
3. 1-SAC SAND/CEMENT SLURRY MAY BE SUBSTITUTED FOR BACKFILL MATERIAL.
4. TRENCH WIDTH SHALL NOT BE MORE THAN 16" NOR LESS THAN 12" WIDER THAN THE DIAMETER OF THE PIPE.
5. USE #4 REBAR AT 2' CENTERS ALONG THE PERIMETER OF CONCRETE REPLACEMENT SECTIONS.
6. 95% COMPACTION IS REQUIRED ON ALL TRENCHING ZONES, BOTH IMPROVED & UNIMPROVED AREAS.
7. IN UNIMPROVED AREAS, ALL DISTURBED AREAS SHALL BE REGRADED, SEEDED & MULCHED.
8. IN CONCRETE ROADWAYS, A MINIMUM OF 1/2 PANEL WIDTH OR 10' x 5' SECTION WILL BE ALLOWED TO REMAIN, OTHERWISE THE ENTIRE CONCRETE PANEL MUST BE REPLACED.
9. BEDDING MATERIAL DEPTH WHEN INSTALLING STORM SEWER SHALL BE UP TO SPRING LINE, EXCEPT IN AREAS OF UNSUITABLE BACKFILL, THEN BEDDING MATERIAL SHALL BE 12" ABOVE PIPE.

TRENCH DETAIL
SCALE: N.T.S.

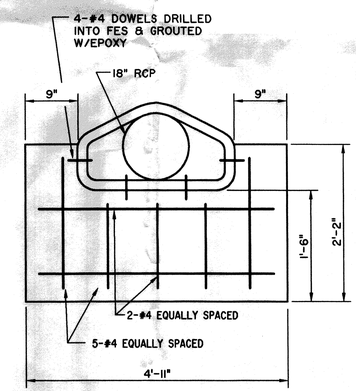


NOTES:
3/4" GALVANIZED ANCHOR BOLTS, NUTS AND WASHERS, MILD STEEL, ASTM A 307. ROD LUG SHALL BE COATED WITH COAL-TAR EPOXY PAINT OR APPROVED EQUAL.

2. DO NOT PLACE "CANOPY" TYPE ROD LUG ON OR ACROSS THE PIPE JOINT.

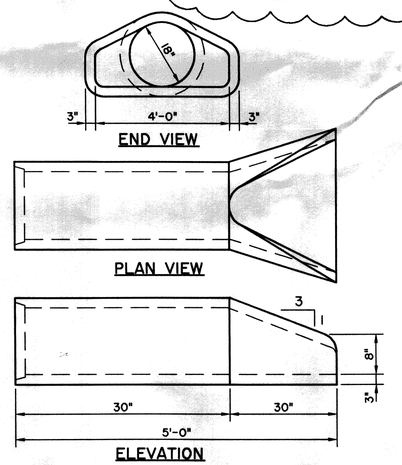


RCP JOINT FASTENER
SCALE: N.T.S.



NOTE: WALL THICKNESS = 1 FT.

CUTOFF WALL DETAIL
SCALE: N.T.S.



ELEVATION

STYLE Y FLARED END SECTION DETAIL
SCALE: N.T.S.

COLORADO LAW (SENATE BILL 93-155)
REQUIRES PERSONS TO NOTIFY THE UTILITY NOTIFICATION CENTER OF COLORADO
2 BUSINESS DAYS PRIOR TO MAKING OR BEGINNING AN EXCAVATION.
NOTIFICATION MAY BE MADE BY CALLING
1-800-922-1987

STANDARD APPROVAL BLOCK

TOWN OF CASTLE ROCK APPROVALS
THESE PLANS ARE HEREBY APPROVED FOR ONE YEAR FROM DATE OF PUBLIC WORKS DIRECTOR APPROVAL

ENGINEER DIVISION _____ DATE _____

APPROVED BY:

PUBLIC WORKS DIRECTOR _____ DATE _____

CONSULTANT ENGINEER CERTIFICATION

I HEREBY AFFIRM THAT THESE FINAL CONSTRUCTION PLANS WERE PREPARED UNDER MY DIRECT SUPERVISION, IN ACCORDANCE WITH ALL APPLICABLE TOWN OF CASTLE ROCK AND STATE OF COLORADO STANDARDS AND STATUTES, RESPECTIVELY; AND THAT I AM FULLY RESPONSIBLE FOR ALL DESIGN AND REVISIONS RELATIVE TO SAID PLANS.

SIGNATURE AND STAMP _____ DATE _____

Sellards & Grigg, Inc.
CONSULTING CIVIL ENGINEERS / LAND SURVEYORS
143 Union Boulevard Suite 700 Lakewood, Colorado 80228
Phone: 303-986-1444
FAX: 303-986-0994
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PHONE: 720-688-8370
FAX: 720-688-8372
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COLORADO REGISTERED PETER L. NEWTON PROFESSIONAL ENGINEER

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CASTLE ROCK GARDEN, LLC
NEW GREENHOUSE AND GIFT SHOP
1070 BROOKSIDE CIRCLE
CASTLE ROCK, CO 80104

ISSUE RECORD:

05-31-00	BUILDING PERMIT
05-31-00	PUBLIC WORKS

SITE DETAILS II

HKG | PLN/TWR

PROJECT NUMBER: 9901.02/99574-21

ISSUE DATE: 05-31-00 ISSUED FOR BUILDING PERMIT PUBLIC WORKS

SHEET NUMBER: **C-03**

Maintenance Plan

Owner to maintain the detention pond per Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3.

Inspection

Inspect the EDB at least twice annually, observing the amount of sediment in the forebay and checking for debris at the outlet structure.

Debris and Litter Removal

Remove debris and litter from the detention area as required to minimize clogging of the outlet.

Mowing and Plant Care

When starting from seed, mow native/drought tolerant grasses only when required to deter weeds during the first three years. Following this period, mowing of native/drought tolerant grass may stop or be reduced to maintain a height of no less than 6 inches (higher mowing heights are associated with deeper roots and greater drought tolerance). In general, mowing should be done as needed to maintain appropriate height and control weeds. Mowing of manicured grasses may vary from as frequently as weekly during the summer, to no mowing during the winter. See Section 4 of this chapter for additional recommendations from the CSU Extension.

Aeration

For EDBs with manicured grass, aeration will supply the soil and roots with air and increase infiltration. It reduces soil compaction and helps control thatch while helping water move into the root zone. Aeration is done by punching holes in the ground using an aerator with hollow punches that pull the soil cores or "plugs" from the ground. Holes should be at least 2 inches deep and no more than 4 inches apart. Aeration should be performed at least once per year when the ground is not frozen. Water the turf thoroughly prior to aeration. Mark sprinkler heads and shallow utilities such as irrigation lines and cable TV lines to ensure those lines will not be damaged. Avoid aerating in extremely hot and dry conditions. Heavy traffic areas may require aeration more frequently.

Mosquito Control

Although the design provided in this manual implements practices specifically developed to deter mosquito breeding, some level of mosquito control may be necessary if the BMP is located in close proximity to outdoor amenities. The most effective mosquito control programs include weekly inspection for signs of mosquito breeding with treatment provided when breeding is found. These inspections can be performed by a mosquito control service and typically start in midMay and extend to mid-September. Treatment should be targeted toward mosquito larvae. Mosquitoes are more difficult to control when they are adults. This typically requires neighborhood fogging with an insecticide. The use of larvicidal briquettes or "dunks" may be appropriate. These are typically effective for about one month and perform best when the basin has a hard bottom (e.g., concrete lined micropool).

Irrigation Scheduling and Maintenance

Adjust irrigation throughout the growing season to provide the proper irrigation application rate to maintain healthy vegetation. Less irrigation is typically needed in early summer and fall, with more irrigation needed during July and August. Native grass and other drought tolerant plantings should not require irrigation after establishment. Check for broken sprinkler heads and repair them, as needed. Completely drain the irrigation system before the first winter freeze each year. Upon reactivation of the irrigation system in the spring, inspect all components and replace damaged parts, as needed.

Sediment Removal from the Forebay, Trickle Channel, and Micropool

Remove sediment from the forebay and trickle channel annually. If portions of the watershed are not developed or if roadway or landscaping projects are taking place in the watershed, the required frequency of sediment removal in the forebay may be as often as after each storm event. The forebay should be maintained in such a way that it does not provide a significant source of resuspended sediment in the stormwater runoff. Sediment removal from the micropool is required about once every one to four years, and should occur when the depth of the pool has been reduced to approximately 18 inches. Small micropools may be vacuumed and larger pools may need to be pumped in order to remove all sediment from the micropool bottom. Removing sediment from the micropool will benefit mosquito control. Ensure that the sediment is disposed of properly and not placed elsewhere in the basin.

Sediment Removal from the Basin Bottom

Remove sediment from the bottom of the basin when accumulated sediment occupies about 20% of the water quality design volume or when sediment accumulation results in poor drainage within the basin. The required frequency may be every 15 to 25 years or more frequently in basins where construction activities are occurring.

Erosion and Structural Repairs

Repair basin inlets, outlets, trickle channels, and all other structural components required for the basin to operate as intended. Repair and vegetate eroded areas as needed following inspection.

NOTE:
THE 100-YEAR FLOODPLAIN IN THIS AREA IS AT ELEVATION = 6223. IT IS LOCATED APPROXIMATELY 320 FT EAST OF THE EAST PROPERTY LINE.

NORTH

1"=20'

20 0 20 40
scale feet

CONTOUR INTERVAL = 1'

BOTH LOT 3 AND LOT 5 HAVE THE SAME OWNER

LOT 3

LOT 5

LOT 2

PROPOSED ONE STORY BUILDING – 2880 SF
FINISHED FLOOR ELEV. = 6236.71

DRAINAGE EASEMENT

OUTLET STRUCTURE SEE DETAIL K SHT. C-03

8" SAN SEWER

WATERMAIN CROSSING
TOP OF WATERMAIN @ 6222.7

SANITARY SEWER CROSSING, SEWER INVERT @ 6219.6

47 LF OF 18" RCP @ 0.3%

TYPE M RIPRAP, SEE DETAIL 3 SHT C-03

INVERT 6228.53 FLARED END SECTION, SEE DETAILS SHT. C-03

425 SF TYPE M RIPRAP, SEE DETAIL SHEET C-03

EXISTING CONCRETE

20' DRAINAGE AND UTILITY EASEMENT

AGGREGATE BASE COURSE

4" ASPHALT

EXISTING 12" WATER LINE

EXISTING 8" SAN SEWER

30' ACCESS EASEMENT

BROOKSIDE CIRCLE

EXISTING 12" WATER LINE

A 0.89 0.45 10.66

B 0.64 0.22 10.53

C-06-00

BASIN
B
0.64 0.22
10.53
5 YEAR RUNOFF COEFFICIENT
100 YEAR RUNOFF COEFFICIENT
CONTRIBUTING AREA

B CRITICAL POINT OF FLOW FOR THE BASIN

DESIGN POINT	CONTRIBUTING AREA (ACRES)	RUNOFF 5 yr (CFS)	PEAK 100 yr (CFS)
A	0.89	1.65	4.20
B	0.64	0.45	1.93

LEGEND

CONCRETE

CDOT CLASS 6 AGGREGATE BASE COURSE COMPACT SUBGRADE TO 95% STANDARD PROCTOR

BASIN BOUNDARY
PROPERTY LINE
LIMITS OF CONSTRUCTION
FUTURE GAS LINE
FUTURE TELEPHONE CONDUIT
FUTURE ELECTRICAL CONDUIT
PROPOSED GAS LINE
PROPOSED TELEPHONE CONDUIT
PROPOSED ELECTRICAL CONDUIT
EXISTING WATER LINE
EXISTING SEWER LINE
PROPOSED INDEX CONTOUR
PROPOSED CONTOUR
PROPOSED SPOT ELEVATION
EXISTING INDEX CONTOUR
EXISTING CONTOUR
EXISTING MANHOLE
EXISTING HYDRANT
VALVE COVER

STANDARD APPROVAL BLOCK

TOWN OF CASTLE ROCK APPROVALS
THESE PLANS ARE HEREBY APPROVED FOR ONE YEAR FROM DATE OF PUBLIC WORKS DIRECTOR APPROVAL

ENGINEER DIVISION DATE

APPROVED BY:

PUBLIC WORKS DIRECTOR DATE

CONSULTANT ENGINEER CERTIFICATION

I HEREBY AFFIRM THAT THESE FINAL CONSTRUCTION PLANS WERE PREPARED UNDER MY DIRECT SUPERVISION, IN ACCORDANCE WITH ALL APPLICABLE TOWN OF CASTLE ROCK AND STATE OF COLORADO STANDARDS AND STATUTES, RESPECTIVELY; AND THAT I AM FULLY RESPONSIBLE FOR ALL DESIGN AND REVISIONS RELATIVE TO SAID PLANS.

SIGNATURE AND STAMP DATE

COLORADO LAW (SENATE BILL 93-155) REQUIRES PERSONS TO NOTIFY THE UTILITY NOTIFICATION CENTER OF COLORADO 2 BUSINESS DAYS PRIOR TO MAKING OR BEGINNING AN EXCAVATION. NOTIFICATION MAY BE MADE BY CALLING:

1-800-922-1987

Sellards & Grigg, Inc.
CONSULTING CIVIL ENGINEERS / LAND SURVEYORS
143 Union Boulevard
Suite 700
Lakewood, Colorado 80228
Phone: 303-986-1444
FAX: 303-986-0994
E-MAIL sandginc@earthlink.net

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CTS ARCHITECTS
300 PERRY STREET, SUITE 300
CASTLE ROCK, COLORADO 80104
PHONE/FAX: 303-688-0202
E-MAIL CTS@QWEST

COLORADO REGISTERED PROFESSIONAL ENGINEER

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CASTLE ROCK GARDEN, LLC
NEW GREENHOUSE AND GIFT SHOP
1070 BROOKSIDE CIRCLE
CASTLE ROCK, CO 80104

ISSUE RECORD:

05-31-00	BUILDING PERMIT
05-31-00	PUBLIC WORKS

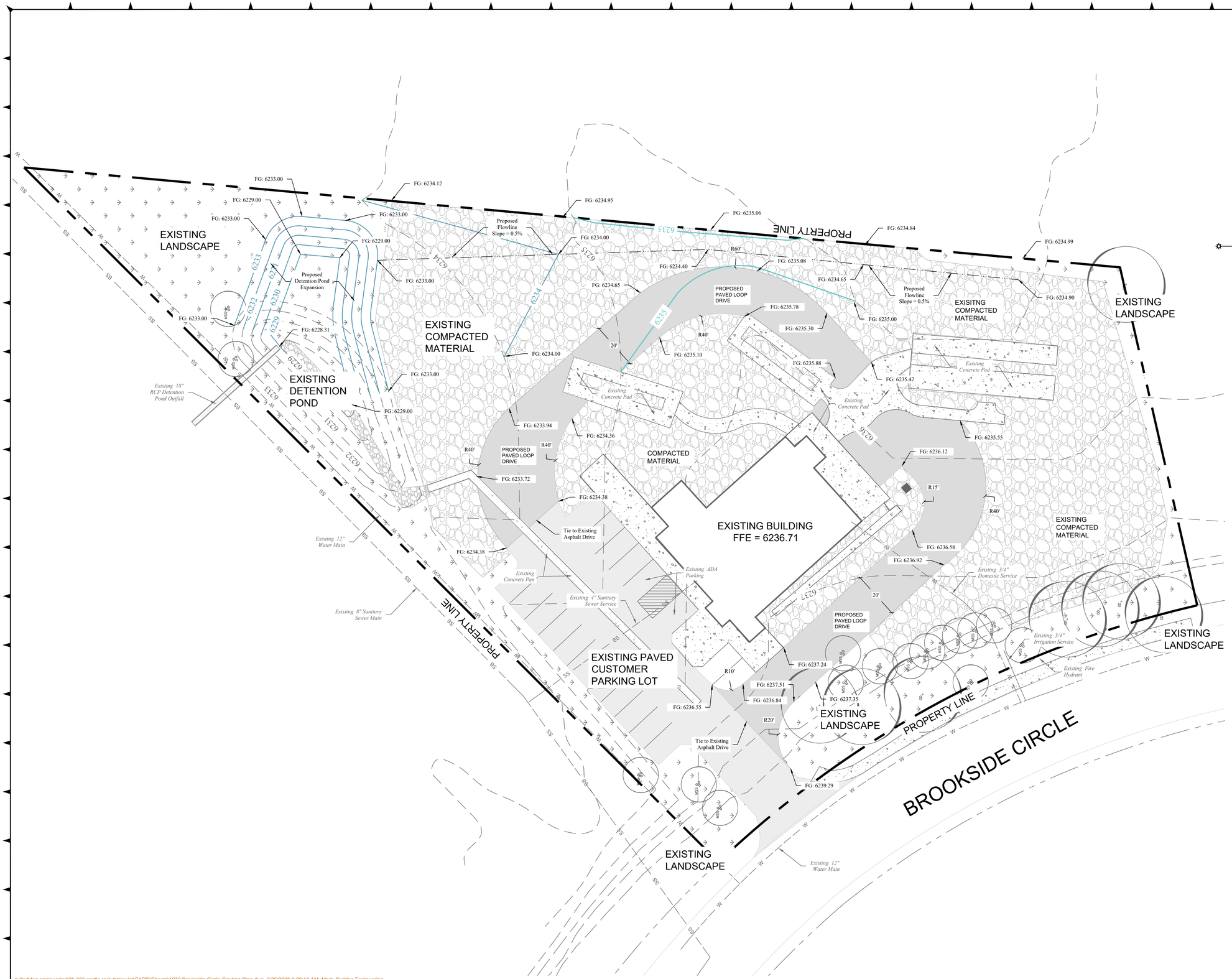
GRADING & UTILITY PLAN

HKG | TWR

PROJECT NUMBER: 9901.02/99574-21

ISSUE DATE: 05-31-00 ISSUED FOR BUILDING PERMIT PUBLIC WORKS

SHEET NUMBER: **C-01**



0 20 40

Scale: 1" = 20'

Legend

Existing	Proposed
Property Line	
Easement	
	Setback
	Flowline
Fence	Fence
GAS Gas	GAS
W Potable Water	W
F Fire Line	F
SS Sanitary Sewer	SS
ST Storm	ST
E Electric	E
FO Fiber Optic	FO
Pavement	
Concrete	

Number of Parking Spaces #

BULLDOG ENGINEERING
mark@bulldogeng.com
970-502-6444

PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER 25-008

DATE 2/25/2026

BULLDOG ENGINEERING, LLC ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS (HORIZONTAL OR VERTICAL). THE EXISTING UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS HOWEVER THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATION OF ALL THE UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES.

COLORADO 811 KNOW WHAT'S BELOW CALL BEFORE YOU DIG.

REV. NUMBER	DATE	REVISION DESCRIPTION
A	2/25/2026	For Review

Site Improvements
Construction Documents

Grading & Drainage Plan
1070 Brookside Circle
Castle Rock, CO

SHEET NUMBER C4