PHASE I DRAINAGE REPORT

PDP21-0002

Auburn Heights

OCTOBER 2026

PREPARED FOR:

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PREPARED BY: Westwood

Westwood

Phase I Drainage Report

Auburn Heights, PDP21-0002

Town of Castle Rock, Douglas County, Colorado

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Date: October 2026

CERTIFICATION PAGE

"I affirm that this report and plan for the Phase I drainage design of Auburn Heights was prepared by me (or under my direct supervision) in accordance with the provisions of the Town of Castle Rock Drainage Design and Technical Criteria for the owners thereof. I understand that the Town of Castle Rock does not and will not assume liability for drainage facilities designed by others."

_____

Asfund Yar Khan

Registered Professional Engineer

State of Colorado No. 0058639

“Auburn Ventures II, LP hereby certifies that the drainage facilities for Auburn Heights shall be constructed according to the design presented in this report. I understand that the Town of Castle Rock does not and will not assume liability for the drainage facilities designed and/or certified by my engineer and that the Town of Castle Rock reviews drainage plans pursuant to the Municipal Code; but cannot, on behalf of Auburn Heights, guarantee that final drainage design review will absolve Auburn Ventures II, LP and/or their successors and/or assigns of future liability for improper design.”

_____

Name of Developer

_____

Authorized Signature

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1.0 General Location and Description

A. Site Location

The Auburn Heights development is located in a portion of the south half of section 3, Township 8 South, Range 67 West of the 6th principal meridian in the Town of Castle Rock, Douglas County, Colorado. The site is bounded by Omni Gulch to the northwest, Auburn Ridge Apartments to the northeast, Auburn Drive to the southeast, and Castle Highlands Filing No. 2 to the southwest. Five multifamily residential buildings, a clubhouse, and free-standing garages are planned for this site.

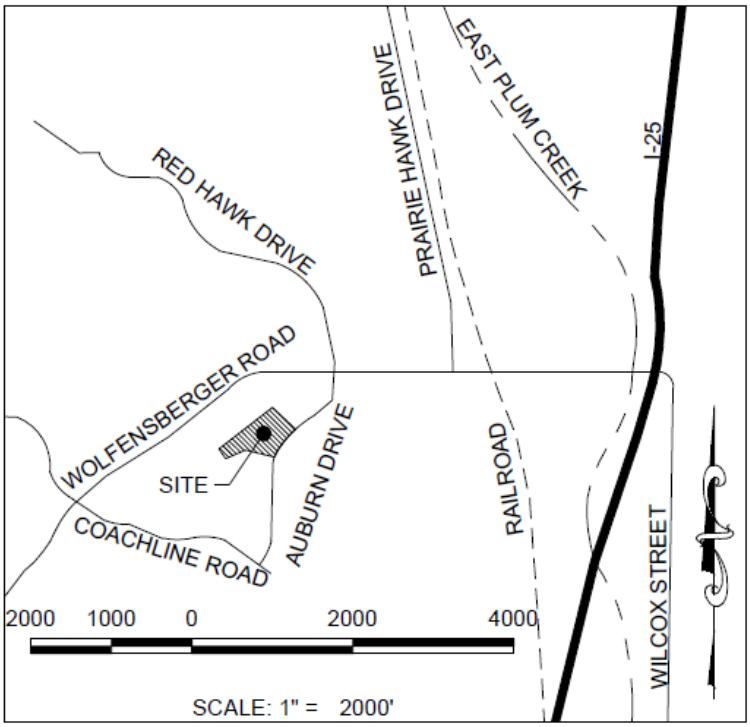


FIGURE 1: VICINITY MAP

B. Description of Property

Auburn Heights is a multifamily development and is approximately 6.1 acres of disturbed land. The existing ground generally slopes to the north and northeast where majority of the site's existing drainage pattern sheet-flows to Omni Gulch. The site contains slopes ranging from 2% to 25%. The Auburn Heights site contains an existing water quality pond developed during the Auburn Villas project.

The site lies within shaded Zone X outside the 100-year floodplain per FEMA Flood Insurance Rate Map number 08035C0169G, dated March 16, 2016.

The onsite soil consists of Bresser-Truckton sandy loams with 5 to 25 percent slopes and Newlin gravelly sandy loam with 8 to 30 percent slopes. These soils are both classified as group B soils, meaning the soils have a high infiltration rate when thoroughly wet. Please refer to the Appendix for a copy of the NRCS soils map.

2.0 Drainage Basins and Sub-Basins

A. Major Drainage Basins

Majority of the site currently drains to the northwest towards Omni Gulch, an open channel. Within the limits of this project boundary, an existing water quality pond is located in the northwest corner that had been designed and constructed in association with Auburn Ridge Phase I. Approximately 1.5 acres of the project site sheet flows into the water quality pond in the existing state.

B. Minor Drainage Basins

The existing topography associated with this project site is divided into five on-site drainage basins and four off-site drainage basins. Please refer to the Appendix for the Historic Drainage map for basin locations.

Historic Basin E1 is 0.02 acres and includes a small portion of the southwest corner of the site. E1 has a 5-year runoff coefficient of 0.01 and a 100-year runoff coefficient of 0.44. Stormwater flows from east to west, to design point 1e.

Historic Basin E2 is 2.71 acres and includes the southwest of the site where runoff sheet flows north. E2 has a 5-year runoff coefficient of 0.05 and a 100-year runoff coefficient of 0.46. Stormwater flows from the southwest to the existing Omni Gulch channel, to design point 2e.

Historic Basin E3 is 0.69 acres that contains a large portion of the eastern side of the site that flows to Auburn Drive. E3 has a 5-year runoff coefficient of 0.01 and a 100-year runoff coefficient of 0.44. Stormwater flows from southwest to northeast, to design point 3e.

Historic Basin E4 is 1.18 acres that contains a small portion of the site located at the center of the site and sheet flows toward Auburn Ridge Apartments. E4 has a 5-year runoff coefficient of 0.01 and a 100-year runoff coefficient of 0.44. Stormwater flows from south to northeast, to design point 4e.

Historic Basin E5 is 1.53 acres that covers the central portion of the site and drains to the existing water quality pond in the northwest portion of the site. E7 has a 5-year runoff coefficient of 0.01 and a 100-year runoff coefficient of 0.44. Stormwater flows from southwest to northeast, to design point 5e.

Historic Basin OS-1, as delineated by Manhard Consulting in association with the original Auburn Villas project, is 0.19 acres that consists of an existing building located north of the project site. OS-1 has a 5-year runoff coefficient of 0.71 and a 100-year runoff coefficient of 0.81.

Historic Basin OS-2, as delineated by Manhard Consulting in association with the original Auburn Villas project, is 0.67 acres that consists of an existing building, paved areas and landscaping, located north of the project site. OS-2 has a 5-year runoff coefficient of 0.76 and a 100-year runoff coefficient of 0.81.

Historic Basin OS-3 is 0.97 acres and includes residential offsite area southwest of the site that sheet flows north to Basin E2. OS-3 has a 5-year runoff coefficient of 0.15 and a 100-year runoff coefficient of 0.52. Stormwater flows from southwest to north ultimately to the Omni Gulch channel.

Historic Basin OS-3 is 0.13 acres and includes residential offsite area south of the site that sheet flows north to Basin E3. OS-4 has a 5-year runoff coefficient of 0.36 and a 100-year runoff coefficient of 0.64. Stormwater flows from southwest to northeast ultimately to Auburn Drive.

The developed site consists of thirty-five (35) on-site drainage basins as well as the two offsite basins. Please refer to the Summary table below:

TABLE 1: DEVELOPED DRAINAGE BASIN SUMMARY

Basin ID	Area (AC)	Impervious (%)	C5	C100	Inlet Type	Emergency Overflow to Basin
D1	0.44	5.0	0.03	0.45	Offsite	Offsite
D2	0.67	60.1	0.47	0.69	Type 13	D3
D3	0.65	62.2	0.47	0.69	Type 13	D2 & D4
D4	1.68	59.5	0.51	0.71	15' Type R	D3 & D5
D5	1.11	73.9	0.65	0.78	15' Type R	D4 & Pond
D6	0.31	16.6	0.14	0.51	Nyloplast 12” Dome	D4
D7	0.07	95.0	0.76	0.84	Roof Drain	D6 & D4
D8	0.07	95.0	0.76	0.84	Roof Drain	D23 & D24
D9	0.07	95.0	0.76	0.84	Roof Drain	D25 & D26
D10	0.07	95.0	0.76	0.84	Roof Drain	D26 & D27
D11	0.23	95.0	0.76	0.84	Roof Drain	D28 & D29
D12	0.23	95.0	0.76	0.84	Roof Drain	D29 & D30
D13	0.23	95.0	0.76	0.84	Roof Drain	D5 & D21
D14	0.12	95.0	0.76	0.84	Roof Drain	D34 & D 33
D15	0.12	95.0	0.76	0.84	Roof Drain	D4 & D33
D16	0.16	95.0	0.86	0.89	Stub	D5
D17	0.03	95.0	0.86	0.89	Stub	D5
D18	0.11	95.0	0.76	0.84	Roof Drain	D22 & D 32
D19	0.13	95.0	0.76	0.84	Roof Drain	D35 & D5
D20	0.08	38.8	0.34	0.62	Offsite	Offsite
D21	0.35	26.7	0.15	0.51	Pond	Offsite
D22	0.11	13.2	0.11	0.49	Offsite	Offsite
D23	0.02	50.0	0.45	0.67	Nyloplast 8” Dome	D24
D24	0.01	50.0	0.45	0.67	Nyloplast 8” Dome	D23
D25	0.01	5.0	0.03	0.45	Nyloplast 8” Dome	D26
D26	0.01	5.0	0.03	0.45	Nyloplast 8” Dome	D25 & D27

D27	0.04	5.0	0.03	0.45	Nyloplast 8" Dome	D28
D28	0.02	5.0	0.03	0.45	Nyloplast 8" Dome	D27 & D29
D29	0.01	5.0	0.03	0.45	Nyloplast 8" Dome	D28 & D30
D30	0.02	5.0	0.03	0.45	Nyloplast 8" Dome	D29 & D31
D31	0.01	5.0	0.03	0.45	Nyloplast 8" Dome	D4
D32	0.05	41.0	0.36	0.63	Nyloplast 8" Dome	D2 & D33
D33	0.02	50.0	0.45	0.67	Nyloplast 8" Dome	D34 & D16
D34	0.03	35.0	0.31	0.60	Nyloplast 8" Dome	D4
D35	0.04	5.0	0.03	0.45	Nyloplast 8" Dome	D16 & D17
OS-1	0.19	95.0	0.76	0.84	Pond	Pond
OS-2	0.69	78.0	0.69	0.80	Pond	Pond
TOTAL	8.21	63.1	0.52	0.71	-	-

Please note that the totals include all offsite areas tributary to the pond and site. Only 6.1 acres of this will be developed, disturbed land for the proposed project.

3.0 Design Criteria

A. Regulations

This drainage study is prepared in conformance with the Town of Castle Rock *Storm Drainage and Technical Criteria Manual* as revised February 2025, and per the Mile High Flood District Manuals 1-3, latest editions.

Town criteria require that full-spectrum detention be provided for the site. However, due to stormwater detention provided immediately upstream of the site, only water quality treatment is required for the proposed development. This detention pond is referred to as Pond A in the Castle Highlands Filing No. 2 Phase II Drainage Study. Both the narrative and calculations pertaining to the design of Pond A from this study by JR Engineering are included in Appendix F. The existing outlet structure will be modified to provide EURV and to comply with Section 13.3.12 for orifice plate sizing. Updated outlet structure calculations will be provided in the Phase II and III Drainage Reports.

B. Drainage Studies, Master Plans, Site Constraints

The previous drainage studies impacting the site are the following:

- Castle Highlands Filing No. 2 Phase II Drainage Study by JR Engineering dated August 21, 2001.
- The Floodplain Modification Study for Omni Tributary Channel Stabilization Project by Wright Waters Engineers dated May 2018.
- The Auburn Villas Lot 2, Auburn Ridge Phase II Drainage Report by Manhard Consulting LTD dated May 2016.
- Auburn Ridge Drainage Details As-builts dated March 10, 2013.

There is an existing water quality pond in the northeast corner of the site that was constructed with the Auburn Ridge project engineered by Vermilion Peak Engineering. This water quality pond collects water from the central portion of the site, provides water quality treatment, then releases into Omni

Gulch. As there is an existing pond, this pond will be modified with this report to ensure a 40-hour WQCV release time for the developed site. Please see drainage map exhibit for existing and preliminary modified conditions for the water quality pond. Details will be finalized in the Phase III Drainage Report. Per the Castle Highlands Filing No. 2 Phase II Drainage Study, "Pond A" upstream of the site will be modified to provide EURV and only water quality treatment is required prior to release into Omni Gulch.

Castle Highlands Filing No. 2 Phase II Drainage report by JR Engineering dated August 21, 2001, accounts for the required detention for Basin KK within the upstream detention pond. Both basins JJ and KK are located within this project site. Basins JJ and KK were determined to have a 100-year flow of 25.8 and 31.5 cfs, respectively (refer to the Appendix for referenced drainage basins and SF-form). The drainage basins to the water quality pond for the proposed site encompasses less area than Basins JJ and KK combined, along with a lower overall runoff for both the 5- and 100-year events. The difference in 100-year flow is due to the current site plan having a lower percent impervious and lower runoff coefficients. Please refer to Table 1 which outlines the current site plan parameters for all basins. Please refer to Table 2 below which shows the comparison of Basins JJ and KK with the weighted averages of the proposed basins.

Outflow into the pond for all onsite flow is 9.7 cfs and 23.6 cfs at Design Point DJ in the 5 and 100-year events respectively. With additional flow from all offsite and pond basins (Basins OS-1, OS-2, D1, D20, D21, and D22), the total runoff from the site is 12.7 cfs and 31.4 cfs in the 5 and 100-year events respectively. See calculations for runoff routing in Appendix B.

TABLE 2: MASTER DRAINAGE COMPARISON

Basin ID	Area	Impervious (%)	C5	C100	Q5 (CFS)	Q100 (CFS)
JJ	3.8	70	0.65	0.8	11.0	25.8
KK	4.63	70	0.65	0.8	13.4	31.5
Proposed Basins	8.21	63.1	0.52	0.71	12.7	31.4

Total runoff from the proposed site is less than values assumed previously for Basins JJ and KK for both the 5 and 100-year storm events.

As the volume of the existing water quality pond and the design of the existing outlet structure was designed per assumptions of developed flows for this project site, the outlet structure has been redesigned to drain the water quality capture volume within forty (40) hours.

C. Hydrology

The Town of Caste Rock requires the following return frequencies for the minor and major storms.

Minor Storm: 5-year
Major Storm: 100-year

As the site is only a couple acres, the Rational Method was used to calculate the runoff for the historic and developed conditions. The historic and developed runoff coefficients were calculated by using the most recent Mile High Flood District Criteria manuals (Table 6-5) included in the Appendix.

D. Storage and Water Quality Enhancement

The existing water quality pond has been designed to drain the Water Quality Capture Volume in 40 hours. The existing outlet structure will be modified for this new development to ensure the drain time remains 40 hours given the existing pond size.

4.0 Stormwater Management Facility Design

A. Stormwater Conveyance Facilities

This site contains five multifamily residential buildings, a clubhouse, and free-standing garages. The drive aisles will include concrete pans in an inverted-crown street cross section to capture and direct stormwater to the water quality pond in the northeast corner of the site.

Inlets and storm pipes will also capture and direct water to the water quality pond.

B. Stormwater Storage Facilities

There is an existing water quality pond in the northeast corner of the site constructed during Auburn Ridge. This water quality pond collects water from the majority of the existing site, provides water quality treatment, then releases into Omni Gulch. Per the Castle Highlands Filing No. 2 Phase II Drainage Study, “Pond A” upstream of the site provides the required 100-year and 10-year detention for this lot. The existing outlet structure will be modified to include EURV treatment in place of the 10-year. The existing outlet weir height will be updated as well as the orifice sizing to incorporate a minimum of 2 square inch openings per Section 13.3.12, draining the WQCV in 40 hours. As the existing Pond A will be updated to provide EURV for the proposed site, only water quality treatment is required prior to release in Omni Gulch.

The existing outlet structure of the onsite water quality pond will also be modified to adequately drain the Water Quality Capture Volume in 40 hours for the proposed development. The water from the pond will be released into Omni Gulch which ultimately flows to East Plum Creek approximately one mile north of the site.

C. Water Quality Enhancement Control Measures

Employ Runoff Reduction Practices:

Reducing the peak runoff volumes is an important best management practice (BMP) to not overwhelm existing infrastructure or receiving bodies of water with developed stormwater flows. The existing water quality pond is designed to drain the Water Quality Capture Volume in forty (40) hours to reduce the release rate of major storm events.

Implement BMPs that Provide a Water Quality Capture Volume (WQCV) with Slow Release:

The water quality pond is designed to drain the WQCV in forty (40) hours to promote suspended solids to settle before discharging into Omni Gulch. Water draining from paved areas to the provided landscaping helps reduce runoff volume as it can infiltrate into the ground.

Stabilize Drainageways:

The adjacent channel, Omni Gulch located northwest of the project site, is being modified and stabilized through the Floodplain Modification Study completed by Wright Water Engineers in conjunction with the previous project, Auburn Villas. Approximately 360 feet of the existing channel will be stabilized with four cutoff wall grade control structures and drop structures.

Implement Site Specific and Other Source Control BMPs:

An existing overflow weir has been provided with the construction of the existing water quality pond. The overflow weir was considered with the redesign of the outlet structure to ensure a foot of freeboard is provided for flood control. As the pond is designed to treat water quality, any larger storm events will activate the overflow weir. The weir will direct flow in higher rainfall events to the Omni Gulch and ensure that the proposed and adjacent site infrastructure are not negatively impacted. The existing outlet structure will also be modified to drain the WQCV in forty (40) hours given the proposed improvements related to this project. Modifications include reducing the number of orifice holes from 16 to 3 to minimize clogging in the system. The proposed pond outlet design will incorporate trash racks and grating to further prevent the structure from becoming clogged by debris such as leaves and trash.

Source Control Measures:

The property owner and/or property management team shall implement appropriate source control measures to minimize pollutants entering the storm drainage system and protect receiving water quality. These measures shall include proper snow and ice management, using deicing materials only as needed and at appropriate application rates; applying fertilizers in accordance with manufacturer recommendations and avoiding application immediately before rainfall or irrigation; collecting and properly disposing of leaves, grass clippings, and other landscape debris rather than placing them in streets, gutters, or storm drains; promptly collecting and disposing of pet waste; and prohibiting vehicle washing, equipment cleaning, and the discharge of wash water to streets, storm drains, or other drainage facilities. Chemicals, fertilizers, oils, and other potentially hazardous materials shall be stored securely, spills shall be promptly contained and cleaned up, and all waste shall be disposed of properly. Dumping of trash, chemicals, or other pollutants into the storm drainage system is prohibited.

D. Floodplain Modification

Stream channel improvements are required along Omni Tributary immediately adjacent to Auburn Heights as per Town of Castle Rock Storm Drainage Criteria. A floodplain modification study was completed in conjunction with the Auburn Villas proposed site by Wright Water Engineers in May 2018. This floodplain modification study analyzed the stabilization of 360 feet of existing channel. The channel experiences erosion occurring intermittently along its length. There is a 100-year floodplain in the subject reach of the Omni Channel delineated in the Omni Industrial and Westfield Watersheds

Flood Hazard Delineation (FHAD) report, dated April 2013. However, the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), Map Number 09035C0169G, Effective March 16, 2016 (FEMA, 2016), shows the channel in the Project site being designated as shaded Zone X floodplain (i.e., approximate floodplain with no Base Flood Elevation determined). See Appendix for FEMA map.

E. Operation and Maintenance

The operation and maintenance of the water quality pond and storm drains will be owned and maintained by Auburn Ventures II, LP.

The water quality pond shall be regularly mowed and trimmed to keep vegetation under control, and the side slopes of the pond will be maintained to ensure stabilization. The Pond will be kept clear of trash and debris. Inspections of the outlet structure will occur annually, and the necessary repairs will be addressed immediately by the owner to maintain the function of the water quality pond. Storm drains and storm inlets need to be maintained regularly for sediment build up or clogged inlets. All storm infrastructure shall be inspected after major rain events.

The storm drainpipes and water quality enhancement control measures will be privately owned and maintained. The Town of Castle Rock will be granted easements over the private infrastructure for the Town's access in case the owner fails to maintain stormwater infrastructure.

Refer the Appendix D for Mile High Flood District best management practices for upkeeping stormwater infrastructure.

F. Additional Permitting Requirements

No additional permitting requirements are anticipated with this project.

G. General

The general runoff of the site directs runoff to the concrete pans located in the middle of the drive aisles. The concrete pans convey the stormwater to Type 13 inlets that ultimately convey the stormwater to the water quality pond in the northwest corner of the site.

The existing water quality pond was analyzed and re-designed by using the Mile High Flood District Detention spreadsheet. When inputting the as-built elevations and volumes in the stage storage, and putting in the existing outlet structure plate criteria, the WQCV was not being captured within forty hours and was overtopping the weir. To mediate this issue, the outlet structure plate will need to be modified by raising the grate elevation and using a flat top instead of slope of 4:1. By doing so, this allows the WQCV water surface elevation to be below the grate, meaning it will go through the orifice holes and into the outlet pipe.

Proposed inlets throughout the site will route flow to the water quality pond in the northeast corner of the site before discharging to the Omni Gulch channel. Stormwater infrastructure is analyzed for the 5 and 100-year storm events for the site. The orifice plate will be modified to have a total of two orifice holes, to drain the WQCV in forty hours. As one of the orifice holes is smaller than 2 square

inches, a variance is requested in Section 5.b of this report and the pond design will be finalized in Phase II and Phase III Drainage Reports.

5.0 Conclusions

A. Compliance with Standards

This drainage study complies with the Mile High Flood District standards and the Town of Castle Rock Standards for drainage facilities.

B. Variances

A water quality exclusion is required for land disturbance for land to remain undeveloped per SDDTCM Section 13.1.5 and includes Basins D1, D20, and D22. Please refer to the Appendix for the water quality compliance summary.

A variance is required from Town of Castle Rock Storm Drainage Design and Technical Criteria Manual Section 13.3.12 for the minimum orifice area as the proposed pond requires a smaller orifice to meet a 40-hour WQCV drain time. Please refer to the Appendix for orifice sizes and UD-Detention calculations.

C. Drainage Concept

The proposed development is a total of 6.1 acres of disturbed land that will consist of five multi-unit buildings, a club house, covered parking, a pool, volleyball court, landscaping and paved areas which will ultimately increase the overall imperviousness of the project site, therefore, increasing stormwater runoff from its pre-construction characteristics. To mitigate this outcome, the existing water quality basin in the northwest corner of the site has been evaluated to capture the project site, as well as two offsite basins from Auburn Ridge and offsite areas just south of the site and drain the Water Quality Capture Volume (WQCV) in forty hours. Upstream of this project is an extended detention basin (EDB) that has been sized for the 10 and 100-year events. The outlet structure will be modified to treat the EURV stormwater event, therefore the pond was only sized for WQCV before discharging into the adjacent channel, Omni Gulch.

6.0 References

1. Town of Castle Rock Standards and Specifications

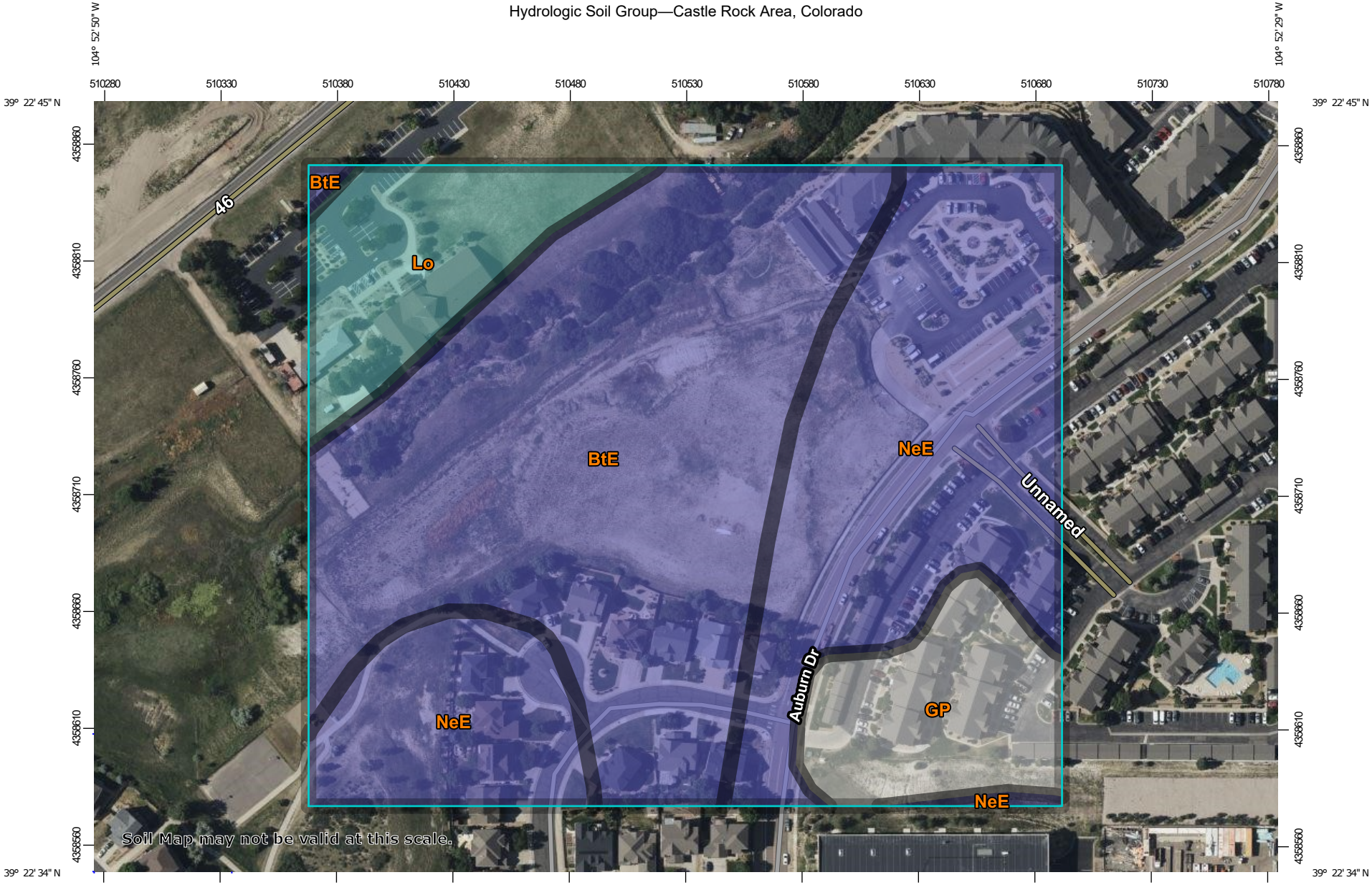
2. Urban Storm Drainage Criteria Manual, Vol 1, 2, & 3

3. Web Soil Survey

4. FIRM, Flood Insurance Rate Map

APPENDIX A

Maps: Soils Map, FIRM, &
Historic/Developed Drainage Basins



Map Scale: 1:2,330 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 30 60 120 180

Feet
0 100 200 400 600

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 Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

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 19, Sep 1, 2026

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BtE	Bresser-Truckton sandy loams, 5 to 25 percent slopes	B	10.0	45.2%
GP	Pits, gravel		2.1	9.3%
Lo	Loamy alluvial land	C	2.1	9.7%
NeE	Newlin gravelly sandy loam, 8 to 30 percent slopes	B	7.9	35.8%
Totals for Area of Interest			**22.0**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

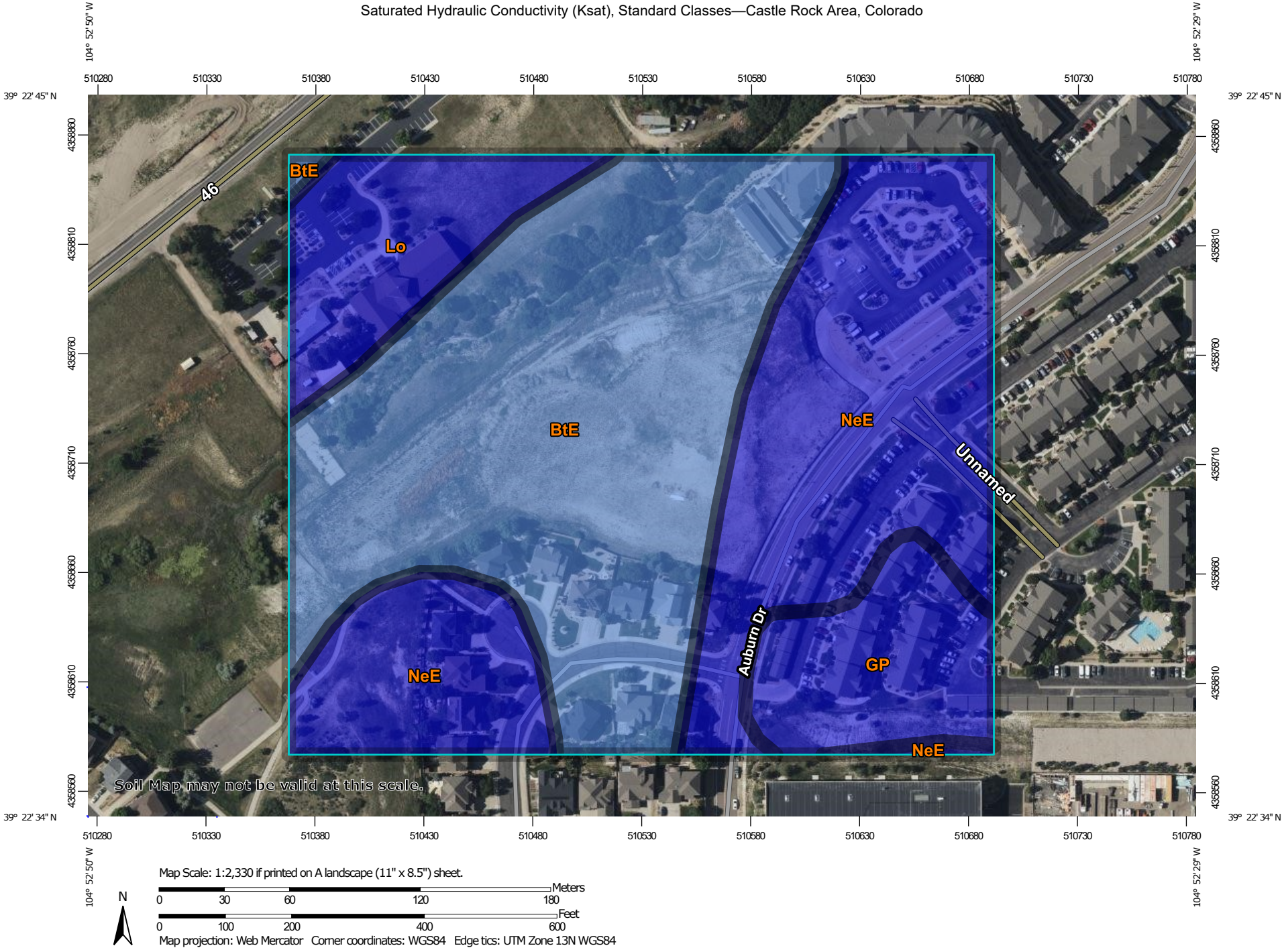
If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher



Map Scale: 1:2,330 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 30 60 120 180

Feet
0 100 200 400 600

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 Rating Polygons
- Very Low (0.0 - 0.01)
- Low (0.01 - 0.1)
- Moderately Low (0.1 - 1)
- Moderately High (1 - 10)
- High (10 - 100)
- Very High (100 - 705)
- Not rated or not available

Soil Rating Lines
- Very Low (0.0 - 0.01)
- Low (0.01 - 0.1)
- Moderately Low (0.1 - 1)
- Moderately High (1 - 10)
- High (10 - 100)
- Very High (100 - 705)
- Not rated or not available

Soil Rating Points
- Very Low (0.0 - 0.01)
- Low (0.01 - 0.1)
- Moderately Low (0.1 - 1)
- Moderately High (1 - 10)
- High (10 - 100)
- Very High (100 - 705)
- Not rated or not available

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 19, Sep 1, 2026

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.

Saturated Hydraulic Conductivity (Ksat), Standard Classes

Map unit symbol	Map unit name	Rating (micrometers per second)	Acres in AOI	Percent of AOI
BtE	Bresser-Truckton sandy loams, 5 to 25 percent slopes	44.7321	10.0	45.2%
GP	Pits, gravel	360.0000	2.1	9.3%
Lo	Loamy alluvial land	153.8504	2.1	9.7%
NeE	Newlin gravelly sandy loam, 8 to 30 percent slopes	273.4305	7.9	35.8%
Totals for Area of Interest			**22.0**	**100.0%**

Description

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity is considered in the design of soil drainage systems and septic tank absorption fields.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

The numeric Ksat values have been grouped according to standard Ksat class limits. The classes are:

Very low: 0.00 to 0.01

Low: 0.01 to 0.1

Moderately low: 0.1 to 1.0

Moderately high: 1 to 10

High: 10 to 100

Very high: 100 to 705

Rating Options

Units of Measure: micrometers per second

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Fastest

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables shown on this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Floodway Data table shown on this FIRM.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 13. The **horizontal datum** was NAD 83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713- 3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was provided by the Douglas County GIS Department and the Town of Castle Rock GIS Department. Additional input was provided by the City of Lone Tree and Town of Parker. These data are current as of 2010.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **profile baselines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the **profile baseline**, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

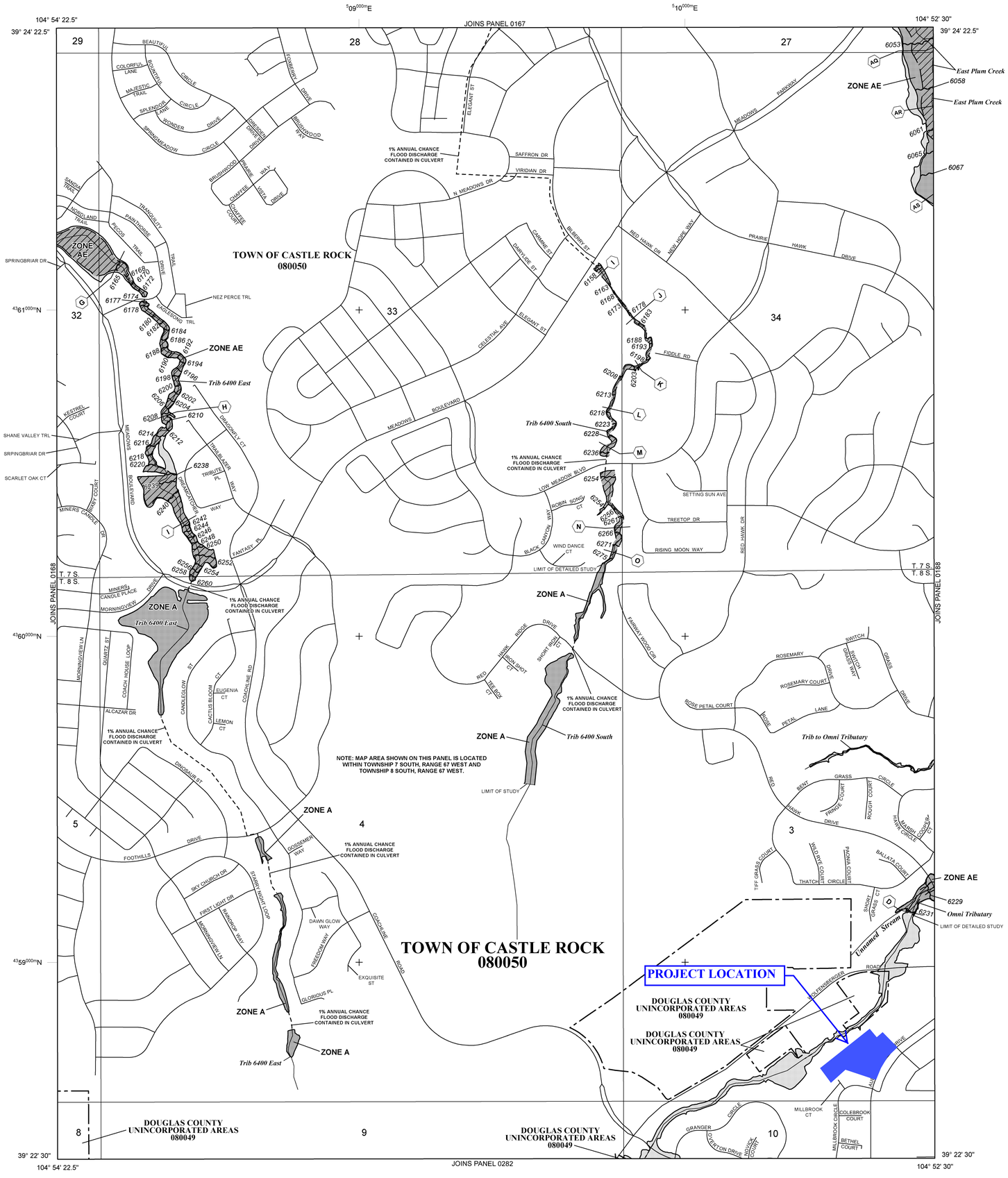
Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables for multiple streams in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on the map. Also, the road to floodplain relationships for unrevised streams may differ from what is shown on previous maps.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information on available products associated with this FIRM visit the **Map Service Center (MSC)** website at http://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 MSC website.

If you have **questions about this map,** how to order products, or the National Flood Insurance Program in general, please call the **FEMA Map Information eXchange (FMIX)** at **1-877-FEMA-MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% Annual Chance Floodplain Boundary
	0.2% Annual Chance Floodplain Boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

A — A	Cross section line
23 — 23	Transect line
45° 02' 08", 93° 02' 12"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere
$^{4}88^{000m}$N	1000-meter Universal Transverse Mercator grid values, zone 13
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP

SEPTEMBER 30, 2005

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

MARCH 16, 2016: to update corporate limits, to change base flood elevations, to add base flood elevations, to add special flood hazard areas, to update map format, to add roads and road names, to reflect updated topographic information, to incorporate previously issued letters of map revision.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in 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.

MAP SCALE 1" = 500'

250 0 500 1000 FEET
150 0 150 300 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0169G

FIRM
FLOOD INSURANCE RATE MAP
DOUGLAS COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 169 OF 495
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

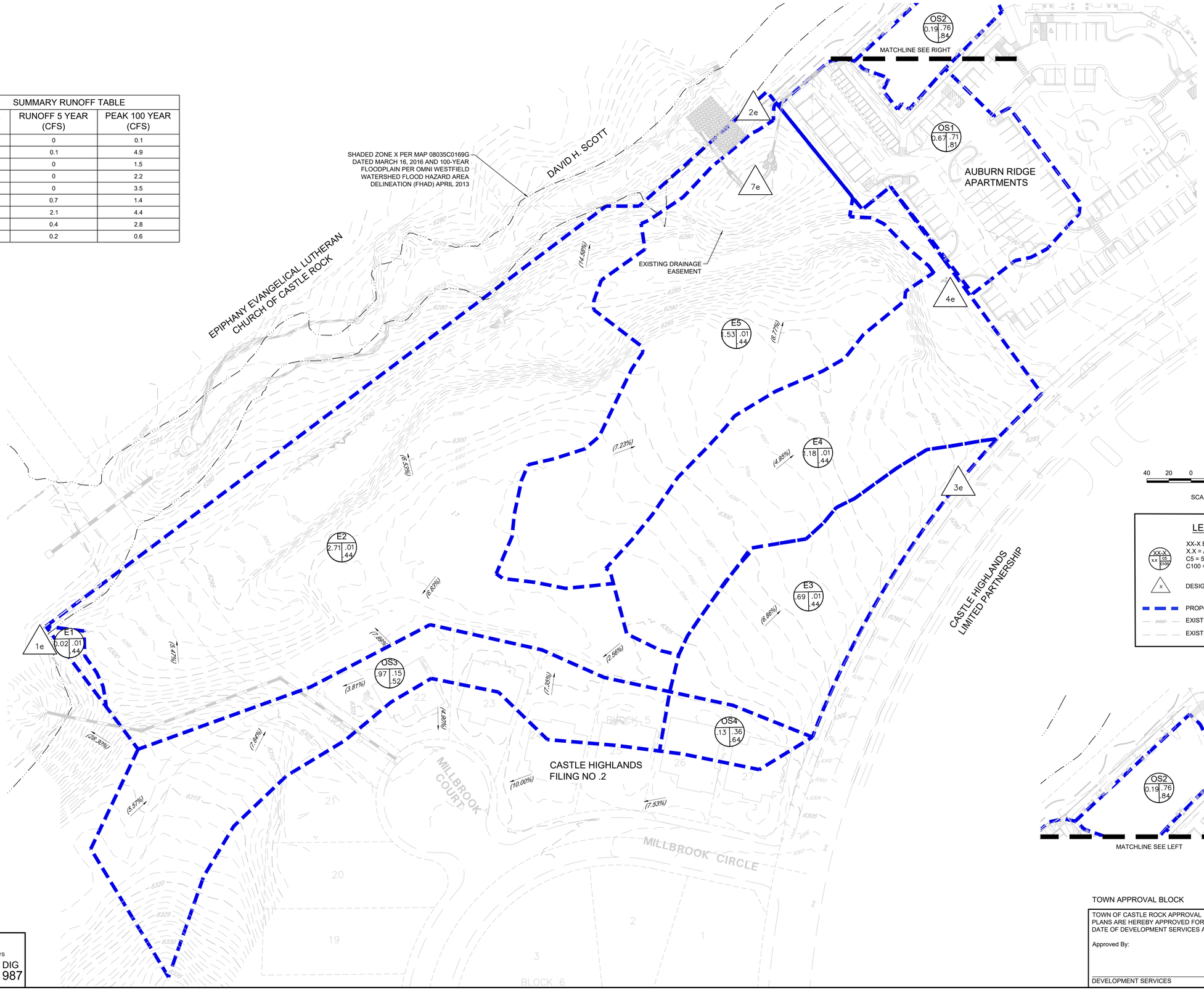
COMMUNITY	NUMBER	PANEL	SUFFIX
CASTLE ROCK, TOWN OF	080050	0169	G
DOUGLAS COUNTY	080049	0169	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
08035C0169G
MAP REVISED
MARCH 16, 2016

Federal Emergency Management Agency

SUMMARY RUNOFF TABLE		
ONSITE BASIN	RUNOFF 5 YEAR (CFS)	PEAK 100 YEAR (CFS)
E1	0	0.1
E2	0.1	4.9
E3	0	1.5
E4	0	2.2
E5	0	3.5
OS1	0.7	1.4
OS2	2.1	4.4
OS3	0.4	2.8
O4	0.2	0.6



40 20 0 40 80

SCALE: 1" = 40'

LEGEND

- XX-X BASIN DESIGNATION
- X.X = AREA IN ACRES
- C5 = 5-YR RUNOFF COEFFICIENT
- C100 = 100-YR RUNOFF COEFFICIENT
- DESIGN POINT
- PROPOSED BASIN BOUNDARY
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR

TOWN APPROVAL BLOCK

TOWN OF CASTLE ROCK APPROVAL
PLANS ARE HEREBY APPROVED FOR ONE YEAR FROM DATE OF DEVELOPMENT SERVICES APPROVAL

Approved By:

DEVELOPMENT SERVICES Date

CALL 811
TWO WORKING DAYS
BEFORE YOU DIG
1-800-922-1987
UNCC UTILITY NOTIFICATION CENTER OF COLORADO

N:\0078965.0005 SERVICE GROUP\SHWATER RESOURCES\05 FINAL\04 EXHIBITS\HISTORIC DRAINAGE MAP.DWG, GREHM, 10/29/2026 9:56 AM

No.	Revisions	Date	Init.	Appr.	Date

Westwood
10333 E DRY CREEK RD.
SUITE 400
ENGLEWOOD, CO 80112
TEL: 720.482.9526
Westwoodps.com
Westwood Professional Services, Inc.

AUBURN VENTURES II, LP
ATTN: JOHN CICHON
15957 N 81ST STREET
SUITE 101
SCOTTSDALE, ARIZONA, 85260

AUBURN HEIGHTS
DRAINAGE MAP
HISTORIC

SCALE:	PROJECT NO:
AS SHOWN	R0031207.00

DRAWN BY:	CHECKED BY:	DATE:
GR	AYK	JULY 2026

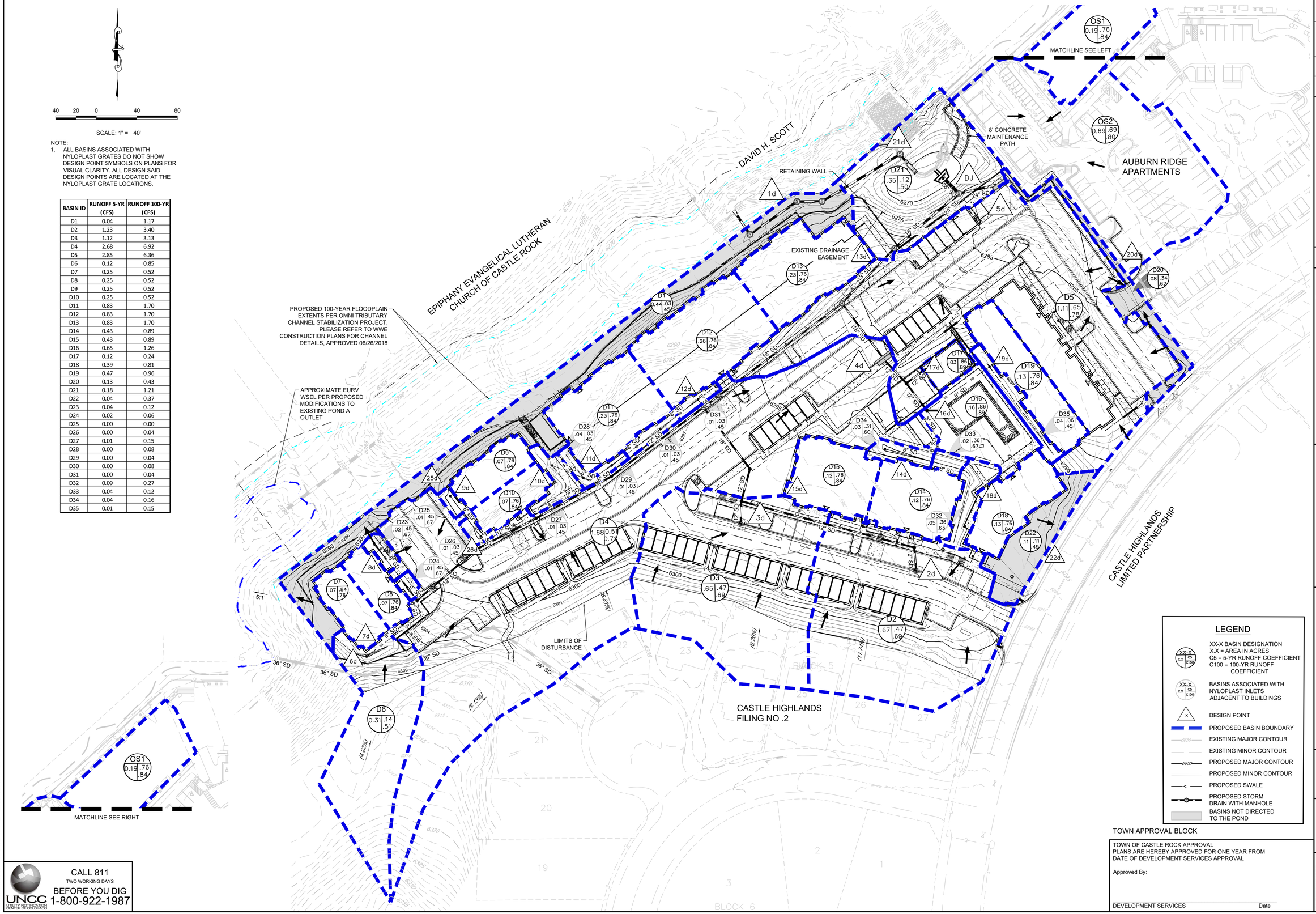
SHEET NUMBER DR-1

40 20 0 40 80

SCALE: 1" = 40'

NOTE:
1. ALL BASINS ASSOCIATED WITH NYLOPLAST GRATES DO NOT SHOW DESIGN POINT SYMBOLS ON PLANS FOR VISUAL CLARITY. ALL DESIGN SAID DESIGN POINTS ARE LOCATED AT THE NYLOPLAST GRATE LOCATIONS.

BASIN ID	RUNOFF 5-YR (CFS)	RUNOFF 100-YR (CFS)
D1	0.04	1.17
D2	1.23	3.40
D3	1.12	3.13
D4	2.68	6.92
D5	2.85	6.36
D6	0.12	0.85
D7	0.25	0.52
D8	0.25	0.52
D9	0.25	0.52
D10	0.25	0.52
D11	0.83	1.70
D12	0.83	1.70
D13	0.83	1.70
D14	0.43	0.89
D15	0.43	0.89
D16	0.65	1.26
D17	0.12	0.24
D18	0.39	0.81
D19	0.47	0.96
D20	0.13	0.43
D21	0.18	1.21
D22	0.04	0.37
D23	0.04	0.12
D24	0.02	0.06
D25	0.00	0.00
D26	0.00	0.04
D27	0.01	0.15
D28	0.00	0.08
D29	0.00	0.04
D30	0.00	0.08
D31	0.00	0.04
D32	0.09	0.27
D33	0.04	0.12
D34	0.04	0.16
D35	0.01	0.15



LEGEND

- XX-X BASIN DESIGNATION
  X.X = AREA IN ACRES
  C5 = 5-YR RUNOFF COEFFICIENT
  C100 = 100-YR RUNOFF COEFFICIENT
- BASINS ASSOCIATED WITH NYLOPLAST INLETS ADJACENT TO BUILDINGS
- DESIGN POINT
- PROPOSED BASIN BOUNDARY
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED SWALE
- PROPOSED STORM DRAIN WITH MANHOLE
- BASINS NOT DIRECTED TO THE POND

TOWN APPROVAL BLOCK

TOWN OF CASTLE ROCK APPROVAL
PLANS ARE HEREBY APPROVED FOR ONE YEAR FROM DATE OF DEVELOPMENT SERVICES APPROVAL

Approved By:

DEVELOPMENT SERVICES Date

CALL 811
TWO WORKING DAYS
BEFORE YOU DIG
UNCC UTILITY NOTIFICATION CENTER OF COLORADO 1-800-922-1987

N:\0070986.0005 SERVICE GROUP\SWATER RESOURCES\05 FINAL\04 EXHIBITS\DEVELOPED DRAINAGE MAP.DWG, GREHM, 10/29/2026 10:26 AM

No.	Revisions	Date	Init.	Appr.	Date

Westwood
10333 E DRY CREEK RD.
SUITE 400
ENGLEWOOD, CO 80112
TEL: 720.482.9526
Westwoodps.com
Westwood Professional Services, Inc.

AUBURN VENTURES II, LP
ATTN: JOHN CICHON
15957 N 81ST STREET
SUITE 101
SCOTTSDALE, ARIZONA, 85260

AUBURN HEIGHTS
DRAINAGE MAP
DEVELOPED

SCALE: AS SHOWN
PROJECT NO: R0031207.00
DRAWN BY: GR
CHECKED BY: AYK
DATE: JULY 2026
SHEET NUMBER: DR-2

APPENDIX E

Summary of Water Quality
Conformance to MS4 Permit

Summary of Water Quality Conformance to MS4 Permit

The purpose of this worksheet is to document conformance with the Town of Castle Rock's MS4 permit with regard to permanent water quality on land disturbance projects.

Project Name Auburn Heights

Project Owner Auburn Ventures II, LP

Project Location South half of section 3, Township 8 South, Range 67 West of the 6th P.M.

ToCR Project Number PDP21-0002

Total Site Area 6.1 **acres**

Total Size of Common Plan of Development 6.1 **acres**

Check all that apply:

- ☑ **Project within Plum Creek Basin**
- ☐ **Project within Cherry Creek Basin**

Estimated construction completion date MAY 2027

---

1. The water quality control measure(s) for applicable development sites shall meet one of the following base design standards as per the SDDTCM Section 14.4. Please select all design standards that were applied to meet conformance with the MS4 on this site.

   - ☑ WQCV standard
   - ☐ Pollutant removal standard
   - ☐ Runoff reduction standard
   - ☐ Applicable site draining to regional WQVC control measure (accepts drainage prior to discharging to WOTS)
   - ☑ Applicable site draining to regional WQVC control facility (with receiving pervious area control measure upstream of WOTS)
   - ☐ Constrained redevelopment sites standard
     - Imperviousness of existing site _____/_____(Imp. Ac/Site Ac) =____%
     - Variance required TCV No. _____
   - ☐ Existing control measure with WQCV per previous criteria standards
     - Reference Construction Permit No. _____
   - ☐ Cherry Creek Basin only, choose one: ☐ Tier 1 ☐ Tier 2 ☐ Tier 3
   - ☐ No control measures provided (See Permanent WQ Worksheet for applicability)

Summary of Water Quality Conformance to MS4 Permit

2. Was an exclusion to water quality applied as per SDDTCM Section 13.1.5? ☑ Yes ☐ No

   i. If yes, please select all that apply, provide total excluded impervious area(s) and submit variance, as applicable: TCV No. 1

   ☐ Pavement management site

   Excluded impervious area: _____ acres

   ☐ Excluded roadway redevelopment

   Excluded impervious area: _____ acres

   ☐ Excluded existing roadway areas

   Excluded impervious area: _____ acres

   ☐ Above ground and below ground utilities

   ☐ Large lot single family home

   ☐ Non-residential and non-commercial infiltration

   Excluded impervious area: _____ acres

   ☑ Land disturbance for land to remain undeveloped

   Excluded impervious area: 0.63 acres

   ☐ Stream Stabilization Sites

   Excluded impervious area: _____ acres

   ☐ Trails

   Excluded impervious area: _____ acres

   ☐ Oil and Gas Exploration

3. For Development and Redevelopment sites, following any exclusions claimed above, was any portion of the site excluded up to 20% of the site and not to exceed one acre? ☑ Yes ☐ No

   If yes, complete the following:

   Excluded area: 0.63 acres

   Total Site area: 7.12 acres, 8.8 % site excluded

4. For Constrained sites, was any portion of the site excluded up to 50% of the site and not to exceed 50% of the impervious area? ☐ Yes ☑ No

   If yes, complete the following:

   Excluded area: _____ acres

   Excluded impervious area: _____ acres

   Total Site area: _____ acres, _____ % site excluded

   Total Impervious area: _____ acres, _____ % impervious excluded

APPENDIX F

Referenced Information

From Reference 4

CASTLE HIGHLANDS FILING NO. 2
PHASE III DRAINAGE STUDY

Prepared for:

CASTLE ROCK EQUITIES, L.L.C.
6950 East Belleview Avenue, Suite 301
Englewood Colorado, 80111
Contact: Sam N. Perry

Prepared by:

JR ENGINEERING
6020 Greenwood Plaza Boulevard
Englewood, Colorado 80111
303.740.9393
Contact: Mr. James Fitzmorris

Project Number 2316.05

August 23, 1999
Revised: December 10, 1999

Project Number 14695.00

Revised: August 21, 2001

X:\1460000.all\1469500\Reports\drainage.doc

D-26

Project: Castle Highlands Filing No. 2
Date: August 21, 2001

ENGINEER'S STATEMENT:

The enclosed drainage report, and exhibits, were prepared by me, or under my direct supervision, and are correct to the best of my knowledge and belief. Said drainage report has been prepared in accordance with applicable Town of Castle Rock criteria and is in conformance with the master plan of drainage for the effected area. I accept responsibility for any liability causes by negligent acts, errors or omissions on my part in preparing this report.

No signatures on Town copy

James P. Fitzmorris, P.E.
Colorado Registered Professional Engineer No. 28211
For and On Behalf of JR Engineering, Ltd.

OWNER/ DEVELOPER'S STATEMENT:

As Owner/Developer of land(s) identified within this report; I agree to proceed, implement and comply with all recommendations and requirements outlined herein.

Owner Name and Signature

TOWN OF CASTLE ROCK APPROVALS:

ENGINEERING DIVISION **DATE**

PUBLIC WORKS DIRECTOR **DATE**

General Location and Description

Location

Castle Highlands Filing No. 2 consists of 75.0 acres and is located in portions of Section 3 and 10, Township 8 South, Range 67 West of the Sixth Principal Meridian, Town of Castle Rock, Douglas County, Colorado (Figure 1). The site is bounded on the north and northwest by Wolfensberger Road, by Cedar Hill Cemetery on the east and by undeveloped land on the remaining sides.

Description of Property

Soils on the site consist of Bresser-Truckton sandy loam and Newlin gravelly sandy loam (Figure 2). Vegetation consists of native grasses, cacti, and stands of scrub oak. The site slopes northeasterly in direction at grades varying from one to thirty percent.

The site is undeveloped and is currently pastureland for livestock. The proposed development will include 31.9 acres of single family development, 8.5 acres of multi-family development, and 4.5 acres of commercial development. 8.8 acres will be dedicated as public right-of-way and 21.3 acres will remain as open space. The entire site will be overlot graded and temporary and permanent seeding will be used to minimize erosion.

Drainage Basins and Sub-Basins

Major Basin Description

Castle Highlands Filing No. 2 is within the East Plum Creek drainage basin. Plum Creek is located approximately one mile downstream of this site. The site is not within a 100-year flood plain as shown on FIRM maps 080049-0285c and 080049-0170c dated September 30, 1987. The Soil Conservation Service (figure 2) classifies the on-site soils as Hydrologic Group B.

Sub-Basin Description

The site slopes northeasterly in direction at grades varying from one to thirty percent. Approximately two-thirds of the site historicaly drains into an existing channel that outfalls into an existing on-stream detention pond. The pond outlets to the northeast into the continuation of said channel. A portion of the site drains into the channel downstream of the detention pond. The channel conveys flows under Wolfensberger Road via an existing 42" CMP and an existing 48" CMP which discharges in an existing channel on the north side of the road. The channel continues northeasterly in direction for approximately one mile where it outfalls into East Plum Creek.

The remaining one-quarter of the site also drains northeasterly. This area is routed to an existing channel along the south side of Wolfensberger Road. The channel along the south side of Wolfensberger Road continues easterly in direction for approximately thirteen hundred feet where it ties into a tributary of East Plum Creek.

This site accepts off-site flows from an undeveloped area to the southwest. A majority of this basin will remain as open space. Any developed portions will provide detention ponds that will not release at rates higher than historic. This site will release detained flows at historic rates as required by the Town of Castle Rock.

Drainage Design Criteria

Regulations

This report was prepared to meet the regulatory requirements of the Town of Castle Rock, Colorado. This report was prepared following guidelines and regulations within the "Town of Castle Rock Public Works Regulations" (TCRPWR, October 1, 1998) the Douglas County Storm Drainage Design and Technical Criteria (DCSDDTC) and the "Urban Storm Drainage Criteria Manual", (USDCM, 1992).

Development Criteria

This site was addressed in an approved preliminary drainage report by JR Engineering titled "Castle Highlands Preliminary Drainage Study" (September 1, 1994). This study identified historic flows for this site and upstream of this site. It defined required detention volumes and release rates. This site encompasses a majority of the area addressed in this study. The only area excluded from this filing is the multi-family site east of Auburn Drive. This study is in compliance with the preliminary study.

Hydrologic Criteria

This report analyzes the 5-year and 100-year storms for storm water conveyance systems and 10-year and 100-year storms for the detention requirements. All on-site runoff calculations utilized the Rational Method to determine runoff quantities. Runoff from the major offsite basin and it's continuation through this project was evaluated using the Colorado Urban Hydrograph Procedure (CUHP). Detention and release values were calculated using the CUHP runs from the Preliminary Study and the Empirical Formula, $V = KA$, where $K_{100} = (1.78I - 0.002I^2 - 3.56) / 1000$ and $K_{10} = (0.95I - 1.90) / 1000$. In this formula, "V" represents the required volume for the100-year or 10-year storm (acre-feet), "I" represents the developed basin imperviousness (%), and "A" represents the tributary area (acres).

Hydraulic Criteria

Open channel flow calculations utilized Manning's equation. Storm sewer capacities, hydraulic grades and energy grades were also calculated using Manning's equation. Pond release rates were calculated using standard weir and orifice equations.

Drainage Facility Design

General Concept

Conveyance of flood peaks within the Castle Highlands Subdivision will be handled through the use of storm sewers, streets and channelization. Both of the single-family areas drain into the

proposed detention pond (the modified existing pond, shown as "Pond A" on map). This detention pond has been sized to retain the increased runoff from the site and pass through historic off-site flows.

The future multi-family site (Lot 2, Block 7) will drain undetained into the existing channel downstream of "Pond A". The release rate from "Pond A" has been reduced to account for these undetained releases. On-site water quality facilities are recommended for the future multi-family site when it is developed. The Commercial site will be required to construct a detention/water quality pond to account for increased runoff. This pond will be designed and incorporated into the layout of the commercial site with the land development process for this parcel.

The off-site runoff through this site from Basin OS1 was obtained from the Castle Highlands Preliminary Drainage Study (Reference 6). The CUHP run shows the 100-year flow to be 485 cfs. This flow will be conveyed under Coachline Road with two 72-inch RCP pipes into a junction box. This box also receives the on-site flows from basins A-J, OS1A, OS1B, OS2, and OS3 through a 48-inch storm sewer located in Coachline Road. The flow from this box will be conveyed by a 72-inch RCP to an outlet point 950 feet downstream to the existing natural channel. The outlet of this pipe will be protected from erosion by riprap. Upstream of this outlet, the 72-inch pipe will pick up additional flow from an existing 29"x42" arch pipe under Wolfensberger Road. This pipe will connect to a new manhole on the south side of the road. A new 36-inch RCP will be extended to a manhole on the 72-inch pipe. The flow through this system was designed by using the CUHP run from the Preliminary Study, which determined the peak flow from both offsite and onsite basins to be 528 cfs. (Reference 6). The calculations are provided in Appendix B.

Beyond the end of the 72-inch pipe outlet, approximately 400 feet of the channel will remain in its natural condition other than the addition of riprap slope protection. This channel will lead directly to a drop structure into detention "Pond A". The detention pond outlet structure is designed to detain the water quality volume and 10-year storage volume. The release structure and a weir handle the 100-year release. Due to the volume of the release through the weir, a sloping boulder drop structure is incorporated at this point as well.

Specific Details

Most of the storm sewer system was designed to carry the 5-year runoff. The lines in Coachline Road west of the high point and basin A were designed to convey the 100-year storm. If the easterly inlet in basin A at design point 1 on this line were to overflow onto Coachline, the runoff would proceed easterly down Coachline instead of to the west and into "Pond A". All of the inlets at design points 1, 2, 3 and 5, in sump conditions, have an emergency overflow swale to convey runoff into Coachline in the event of inlet blockage.

The existing drainage channel will be improved by the installation of pipe, outlet protection and riprap slope protection. The channel improvements begin at the southwest corner of the site at "Drop A". A twin 72-inch RCP culvert will carry flows under the proposed Coachline Road. A single 72-inch RCP then continues in a northeasterly direction for approximately 950 feet. Bank improvements will be required at the 72-inch pipe outlet. The natural channel then continues through "Drop E" and into the on-stream detention pond "A". Downstream of the pond the

channel continues, unimproved, to an existing culvert at Wolfensberger Road . The channel calculations are provided in Appendix B.

Detention "Pond A" was designed in accordance with the preliminary study for this parcel (Reference 6). The CUHP run for the off-site basin shows peak flows of 485 cfs and 71 cfs for the 100-year and 10-year storms respectively at the southwest property line. The runoff from the future multi-family site west of Auburn Drive will be captured in "Pond A" via a swale located between lots 21 & 22.

The release structure is a three-stage structure consisting of a water quality riser, 10-year orifice and a 100-year weir with one-foot of freeboard. The required water quality volume is 48,000 cubic feet (CF) and the pond provides 51,700 CF of water quality storage. The water quality riser was designed to drain this volume over a 40 hour time period. The 10-year required storage volume is 104,100 CF and the pond provides 108,900 CF of storage. The outlet structure utilizes a 36" RCP (ref. 5, page 97, table 4). The pipe opening does not require an orifice plate since the calculated orifice diameter was 36". The100-year required volume is 442,950 CF per the CUHP runs performed with the preliminary drainage study. The pond provides 447,600 CF of storage at an elevation of 6292.4. The 100-year release is accommodated by the 36" RCP conveying 110 cfs and 389.1 cfs flowing through the weir at a depth of 1.7'. The top of weir elevation is 6290.7 and the top of berm elevation is 6294.0, which provides 1.6' of freeboard. A drop structure has been designed on the back side of this weir to reduce channel velocity to acceptable levels before resuming the natural stream configuration.

EROSION CONTROL

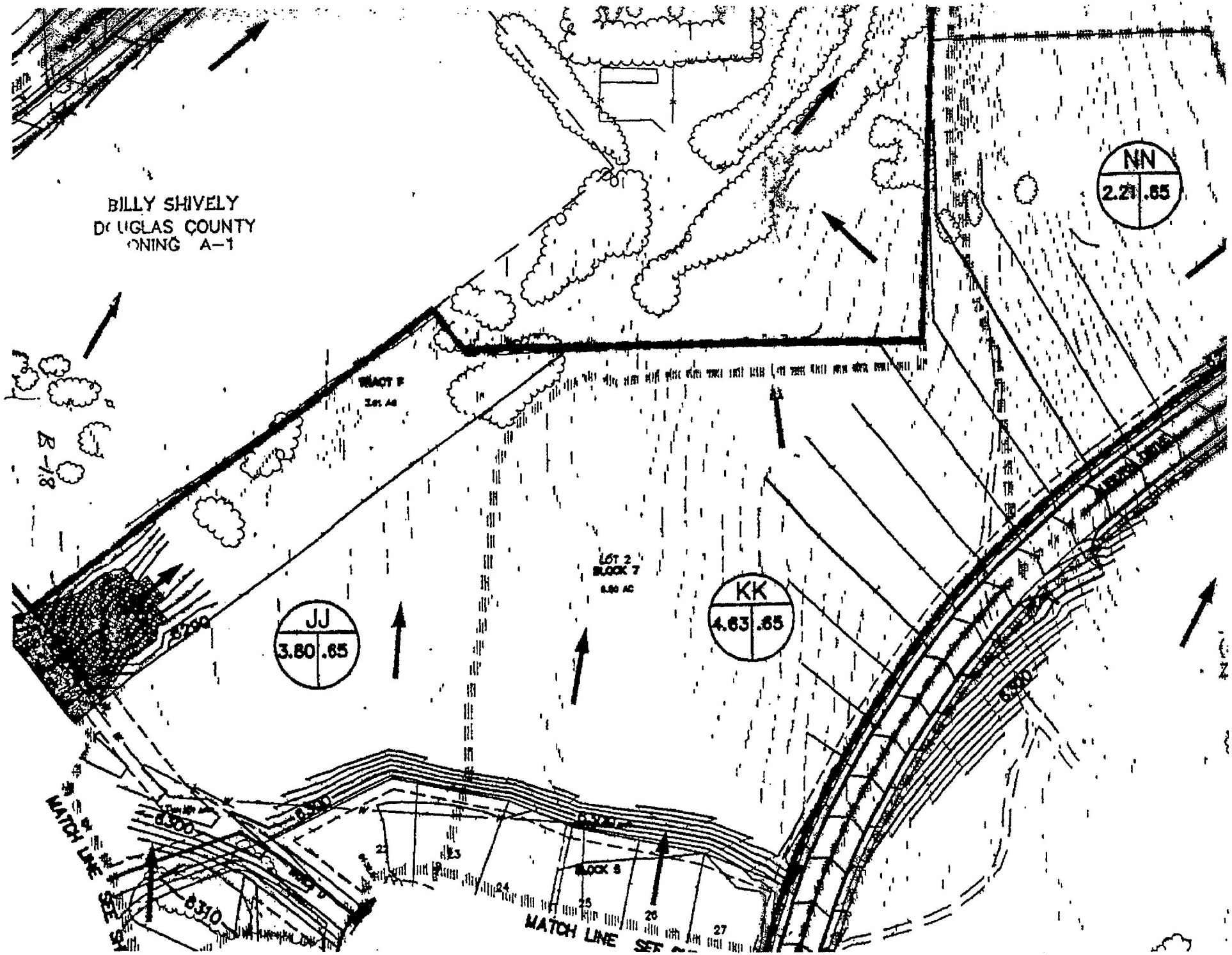
An erosion control plan has been provided to meet the requirements of the Town of Castle Rock. Specifically, the plan(s) address:

1. Overall Erosion Control measures.
2. Rip-rap dissipation devices at all storm drain outlets.
3. Criteria to mitigate erosion potential in all swales/channels.
4. Temporary and permanent erosion control measures for all improvements to off-site channels.

Calculations are provided in Appendix C.

CONCLUSIONS

The storm water conveyance system for Castle Highlands includes a storm sewer network, channel system and street system. Design calculations show the level of protection provided for the minor and major storm. Detention will be provided in an on-stream detention pond that will be located on site. Final design calculations for the storm sewer, detention ponds and channel improvements are provided in Appendix B.


BILLY SHIVELY
DOUGLAS COUNTY
ZONING A-1
NN
2.21 .65
JJ
3.80 .65
KK
4.63 .65
LOT 2
BLOCK 7
6.80 AC
MATCH LINE
MATCH LINE
BLOCK 8
6300
6310
6290
6280

Detention (V=KA)

Pond A

DETENTION REQUIREMENTS - ONSITE BASINS

Subdivision: Castle Highlands Filing No. 2
Location: Southwest of Auburn Drive and Wolfensberger Road

Project Name: Castle Highlands Filing No. 2
Project No. 2316.05
By: rdc
Checked By: [signature]
Date: 6/21/99

SOIL GROUP B

Q10R= 0.23
Q100R= 0.85

Total Required Pond Volumes

BASIN/LAND USE	DRAINAGE AREA (AC.)	% IMPERV.	V_{10} (AC.FT.)	V_{100} (AC.FT.)	Q_{10R} (CFS)	Q_{100R} (CFS)
Onsite Basins A through KK	84.02	32	2.39	4.31	19.32	71.42
SUM			2.395	4.315	19.3	71.4

DETENTION PONDING FORMULAS:

$V_{100} = K_{100} \times A$ $\quad K_{100} = (1.78I - 0.002I2 - 3.56)/1000$ $\quad Q_{100R} = 1.00 \times A$

$V_{10} = K_{10} \times A$ $\quad K_{10} = (0.95I - 1.90)/1000$ $\quad Q_{10R} = 0.24 \times A$

D-30

Pond Volume (FAA Method)

Pond A1

Subdivision Castle Highlands Filing No. 2
Location Southwest of Auburn Drive and Wolfensberger Road

Project Name: Castle Highlands Filing No. 2
Project No. 2316.05
By: rdc
Checked By:
Date: 6/21/99

Volume=1/3 x Depth x (A+B+(A*B)^0.5)
A - Upper Surface
B - Lower Surface

POND A

Elevation	Surface Area (square feet)	A+B+(A*B)^0.5	1/3	Depth (feet)	Volume (cubic feet)	CumulativeVolume (cubic feet)
6283.00	0					
6284.00	2000	2000.00	666.67	1.00	667	667
6286.00	29600	39294.15	13098.05	2.00	26196	26863
6286.70	41731	106476.95	35492.32	0.70	24845	51707
6287.90	53974	143164.73	47721.58	1.20	57266	108973
6288.00	64260	177127.28	59042.43	0.10	5904	114878
6290.00	75400	209267.50	69755.83	2.00	139512	254389
6292.00	84100	239131.28	79710.43	2.00	159421	413810
6292.40	84880	253469.10	84489.70	0.40	33796	447606
6294.00	88000	259305.92	86435.31	1.60	138296	585902

D-31

REQUIRED WATER QUALITY VOLUME = 48,800 CUBIC FEET
PROVIDED VOLUME = 51,700 CF @ WSE=6286.7

REQUIRED 10-YEAR VOLUME= 104,100 CUBIC FEET
PROVIDED VOLUME= 108,900 CF @ WSE=6287.9

REQUIRED 100-YEAR VOLUME= 442,950 CUBIC FEET
PROVIDED VOLUME= 447,600 CF @ WSE=6292.4

Total Provided Pond Volumes

STANDARD FORM SF-3

STORM DRAINAGE SYSTEM DESIGN

(RATIONAL METHOD PROCEDURE)

Subdivision Castle Highlands Filing No. 2
Location Southwest of Auburn Drive and Wolfensberger Road
Design Storm 100 Year

Project Name: Castle Highlands Filing No. 2
Project No. 2316.05
Calculated By: rdc
Checked By:
Date: 1/6/99

STREET	Design Point	DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			
		Area Desig.	Area (Ac)	Runoff Coeff.	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Tc (min)	C*A (Ac)	I (in/hr)	Q (cfs)	Slope (%)	Street Flow (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	Tt (min)	
		JJ	3.80	0.80	6.5	3.04	8.50	25.8													
		KK	4.63	0.80	6.4	3.70	8.50	31.5													
		LL	1.03	0.93	6.6	0.96	8.50	8.1													
		PP	0.90	0.93	5.0	0.84	9.20	7.7													
		MM	1.05	0.93	6.6	0.98	8.50	8.3													
		NN	2.21	0.89	6.3	1.97	8.50	16.7													
		OO	4.33	0.89	5.1	3.85	9.20	35.5													
		RR	1.31	0.93	5.5	1.22	8.80	10.7													

JR Engineering

CLIENT _____ JOB NO. 2316.05

PROJECT CASTLE HIGHLANDS #2 BY RDC CHK. BY RJF DATE 10/14/94

SUBJECT DETENTION POND A DESIGN SHEET NO. ____ OF ____

DETENTION POND A IS AN ON-STREAM POND WITH LARGE OFF-SITE FLOWS OF 510 cfs. THIS POND WILL DETAIN RUNOFF FOR BASINS A - KK. THE RELEASE STRUCTURE IS DESIGNED TO ENSURE THAT THE 10 + 100 YEAR VOLUMES AS WELL AS THE WATER QUALITY VOLUME IS DETAINED IN THE PERTINENT EVENTS. IN THE 10-YEAR + 100 YEAR DESIGN STORMS, THE ON-SITE BASINS HAVE A SHORTER TIME OF CONCENTRATION AND THE REQUIRED VOLUMES ARE STORED WITH THE APPROPRIATE RELEASE RATES. WHEN THE OFF-SITE FLOWS REACH THE POND IN THE 100-YEAR STORM, EXCESS FLOWS ARE ROUTED OVER THE WEIR IN THE POND BANK ABOVE THE OUTLET PIPE.

JR Engineering

CLIENT _____ JOB NO. 2316.05

PROJECT CASTLE HIGHLANDS #2 BY RDC CHK. BY JH DATE 10/14/99

SUBJECT DETENTION POND RELEASE SHEET NO. ____ OF ____

FROM "CASTLE HIGHLANDS PRELIMINARY DRAINAGE STUDY" SEPT. 1, 1994, JR ENGINEERING

OFFSITE 100 YEAR PEAK = 485 cfs

OFFSITE 10 YEAR PEAK = 71 cfs

10-YEAR RELEASE

71 cfs + (I=KA basins A-KK) − (UNDETAINED Basins JJ+KK)

71 cfs + 193 cfs − (13.7+16.7) = 529 cfs ←

100-YEAR RELEASE

485 cfs + 714 cfs − (25.8+31.5) = 499.1 cfs ←

JR Engineering

CLIENT _____ JOB NO. 2316.05

PROJECT _____ BY _____ CHK. BY JPS DATE 10/14/99

SUBJECT 100-YEAR RELEASE SHEET NO. ____ OF ____

100 YEAR RELEASE = 499.1 cfs

USE WEIR OVERTOP OF POND

100 YEAR WSE = 6392.4

FLOW THROUGH 10-YEAR WEIR

$Q = (0.65)(7.07)(2 \times 32.2 \times 8.9')^{1/2} = 110.0$ cfs

WEIR Q = 499.1 − 110.0 = 389.1 cfs

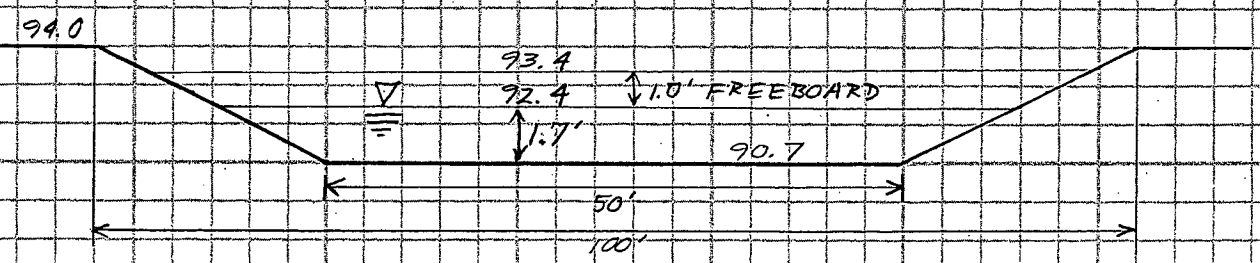
$Q = CL(H)^{3/2}$

$389.1 = (3.4)(50')(H)^{3/2}$

$2.29 = H^{3/2}$

$H = 1.73'$ ←

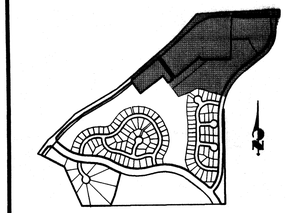
WEIR EL = 6392.4 − 1.7' = 6390.7



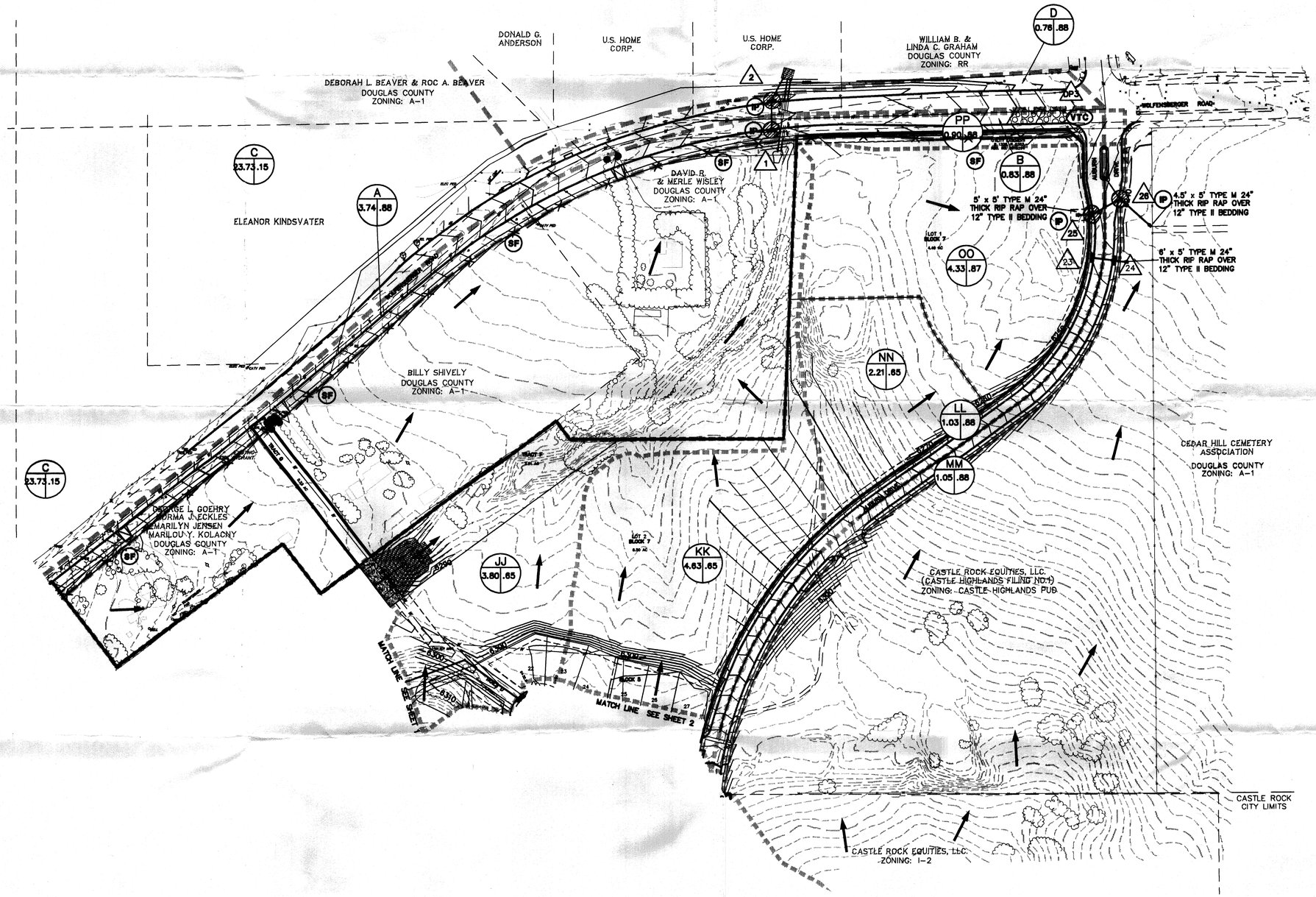
Impervious Area Calulation

Basin	Area	% Impervious	Area x % Imp.
A	3.59	0%	0.00
B	3.41	0%	0.00
C	5.47	0%	0.00
D	1.43	100%	1.43
E	1.16	22%	0.26
F	1.62	22%	0.36
G	1.86	22%	0.41
H	2.33	22%	0.51
I	0.36	100%	0.36
J	0.57	100%	0.57
K	0.54	41%	0.22
L	1.36	41%	0.56
M	2.29	41%	0.94
N	2.32	41%	0.95
O	1.24	100%	1.24
P	1.09	41%	0.45
Q	3.30	41%	1.35
R	3.30	41%	1.35
S	1.86	41%	0.76
T	1.59	41%	0.65
U	1.02	41%	0.42
V	8.07	0%	0.00
W	6.68	0%	0.00
X	0.98	100%	0.98
Y	0.23	100%	0.23
Z	1.80	41%	0.74
AA	0.99	0%	0.00
BB	0.23	100%	0.23
CC	1.05	100%	1.05
DD	0.98	100%	0.98
EE	2.12	41%	0.87
FF	1.86	41%	0.76
GG	1.81	41%	0.74
HH	2.20	0%	0.00
II	4.88	41%	2.00
JJ	3.80	70%	2.66
KK	4.63	70%	3.24
Total	**84.02**		**0.32**

PHASE III DRAINAGE MAP
CASTLE HIGHLANDS FILING NO. 2
A PORTION OF SECTION 3 AND SECTION 10, TOWNSHIP 8 SOUTH, RANGE 67 WEST OF THE 6TH PRINCIPAL MERIDIAN TOWN OF CASTLE ROCK, COUNTY OF DOUGLAS, STATE OF COLORADO



KEY MAP
1"=1000'



LEGEND

- 5665 — EXISTING CONTOUR
- 5665 — PROPOSED CONTOUR
- DRAINAGE DIRECTION
- A / B C — A – BASIN DESIGNATION; B – BASIN AREA; C – 5-YEAR RUNOFF COEFFICIENT
- N — N – DESIGN POINT

100 50 0 100 200

SCALE: 1" = 100'

PHASE III DRAINAGE MAP
CASTLE HIGHLANDS FILING NO. 2
JOB NO. 2316.05
JULY 23, 1999 REV. 12/10/99
SHEET 2 OF 2

JR Engineering, Ltd.
6020 Greenwood Plaza Blvd.
Englewood, Colorado 80111
Tel. (303) 740-9393
FAX (303) 721-9019

ENGINEERING/PLANNING/SURVEYING

X:\1460000.all\1460500\Drawings\Ch05d302.dwg Wed Aug 22 12:41:32 2001

POND VOLUME CALCULATIONS

SUBDIVISION **AUBURN VILLAS (AUBURN RIDGE LOT 2)**

CALCULATED BY **AMA** DATE **1/12/2016**

POND	ELEV	AREA (ft^2)	VOLUME (ft^3)	$VOLUME_{sum}$ (ft^3)	METHOD
Proposed WQ Basin	6269	0	0	0	prismoidal
	6270	554	184.73	184.73	
	6271	1509	992.56	1,177.30	
	6272	2470	1,970.05	3,147.35	
	6273	3779	3,101.66	6,249.01	
	6274	4582	4,173.96	10,422.97	
	6275	5600	11,789.84	14,937.19	

$V_{WQ}(ft^3)$= 7,492.32 By Interpolation **$Elev_{WQ}$(ft)= 6273.30**

Spillway

Project Description

Solve For	Headwater Elevation

Input Data

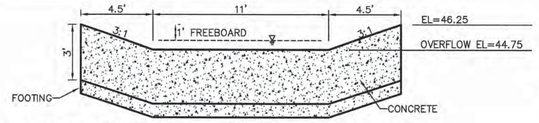
Discharge	39.45	ft³/s
Crest Elevation	6273.30	ft
Tailwater Elevation	0.00	ft
Weir Coefficient	3.00	US
Crest Length	18.00	ft

Results

Headwater Elevation	6274.11	ft
Headwater Height Above Crest	0.81	ft
Tailwater Height Above Crest	-6273.30	ft
Equal Side Slopes	0.25	ft/ft (H:V)
Flow Area	14.77	ft²
Velocity	2.67	ft/s
Wetted Perimeter	19.67	ft
Top Width	18.41	ft

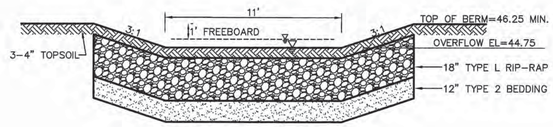
DOCUMENT CONTROL	DATE
PERMIT SET: APPROVED FOR CONSTRUCTION	2/28/13

FIGURE 14-9
CONCEPT FOR INTEGRAL FOREBAY AT END SECTION
LOT 1

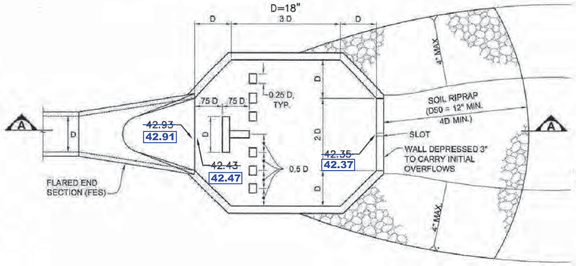


NOTE: THIS CUT-OFF WALL SHALL BE DESIGNED BY A STRUCTURAL ENGINEER

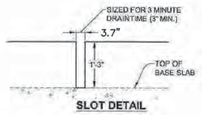
LOT 1
CUT-OFF WALL



LOT 1
EMERGENCY OVERFLOW WEIR

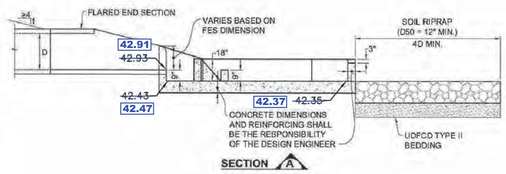


PLAN

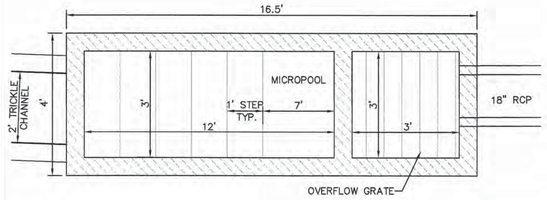


SLOT DETAIL

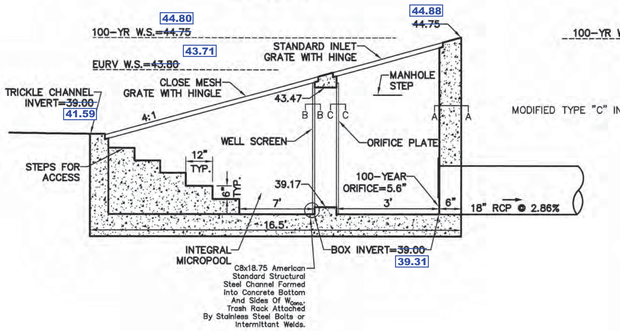
NOTES:
1. DIMENSIONS SHOWN ARE MINIMUMS AND APPLY TO FOREBAYS WITHIN MODIFIED EXTENDED DETENTION BASINS. FOREBAYS IN STANDARD EXTENDED DETENTION BASINS SHALL BE SIZED BASED ON UDFCD CRITERIA.
2. FOR D > 2.5FEET, FOREBAY REQUIRES RAMP INTO BOTTOM AND ACCESS ROAD LEADING TO STREET.



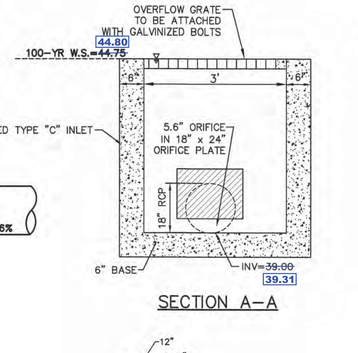
SECTION A

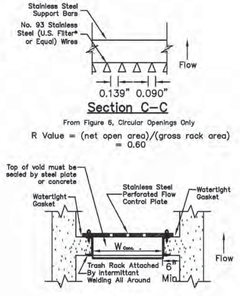


TOP VIEW



SECTION A-A





Section C-C

From Figure 6, Circular Openings Only

R Value = (net open area)/(gross rack area) = 0.60

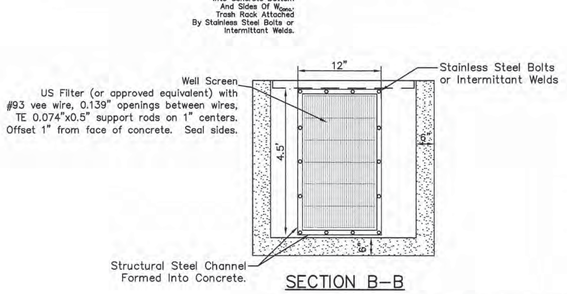
Section B-B - Plan View

From Figure 6, Circular Openings Only

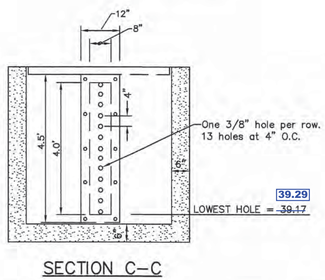
Limits for this Standardized Design:

1. All outlet plate openings are circular.
2. Maximum diameter of opening = 2 inches.

*U.S. Filter, St. Paul, Minnesota, USA



SECTION B-B



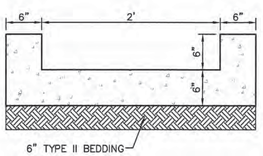
SECTION C-C

WQCV Trash Racks:

1. Well-screen trash racks shall be stainless steel and shall be attached by intermittant welds along the edge of the mounting frame.
2. Bar grate trash racks shall be aluminum and shall be bolted using stainless steel hardware.
3. Trash Rack widths are for specified trash rack material. Finer well-screen or mesh size than specified is acceptable, however, trash rack dimensions need to be adjusted for materials having a different open area/gross area ratio (R value)
4. Structural design of trash rack shall be based on full hydrostatic head with zero head downstream of the rack.

TRASH RACK DETAIL

WATER QUALITY FACILITY OUTLET STRUCTURE
LOT 1



NOTE: PROVIDE CONTROL JOINT EVERY TEN (10) FEET.

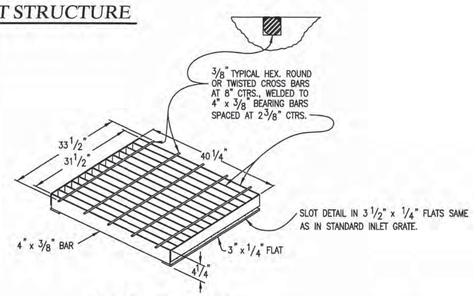
2' TRICKLE CHANNEL

NTS

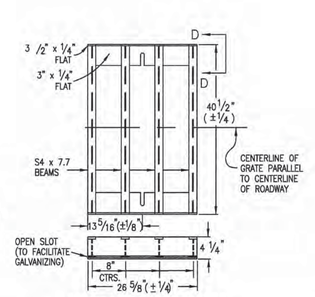
THE ASBUILT INFORMATION SHOWN HERON, WAS MADE UNDER MY SUPERVISION, AND REPRESETS MEASUREMENTS MADE IN THE FIELD ON 12-1-2014

COLORADO REGISTERED 12/2/14 37066 PROFESSIONAL LAND SURVEYOR

DOUGLAS ORT, PLS
ACCURATE ENGISURV
A MANHARD CONSULTING DIVISION

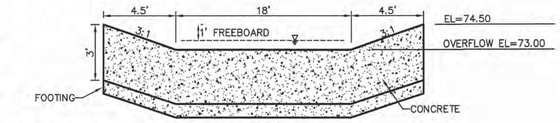


CLOSE MESH GRATE



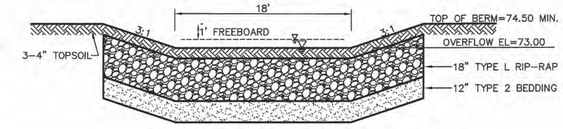
STANDARD INLET GRATE

FIGURE 14-9
CONCEPT FOR INTEGRAL FOREBAY AT END SECTION
LOT 2

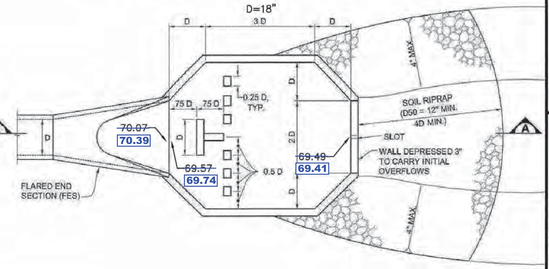


NOTE: THIS CUT-OFF WALL SHALL BE DESIGNED BY A STRUCTURAL ENGINEER

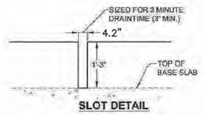
LOT 2
CUT-OFF WALL



LOT 2
EMERGENCY OVERFLOW WEIR

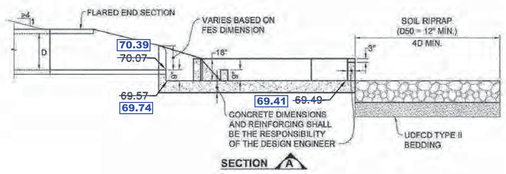


PLAN

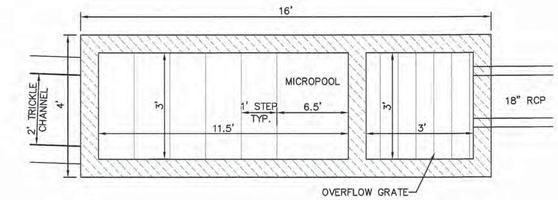


SLOT DETAIL

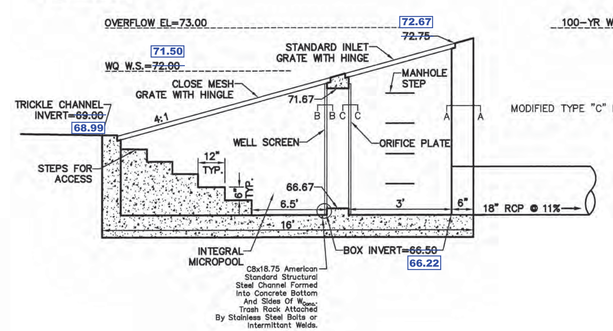
NOTES:
1. DIMENSIONS SHOWN ARE MINIMUMS AND APPLY TO FOREBAYS WITHIN MODIFIED EXTENDED DETENTION BASINS. FOREBAYS IN STANDARD EXTENDED DETENTION BASINS SHALL BE SIZED BASED ON UDFCD CRITERIA.
2. FOR D > 2.5FEET, FOREBAY REQUIRES RAMP INTO BOTTOM AND ACCESS ROAD LEADING TO STREET.



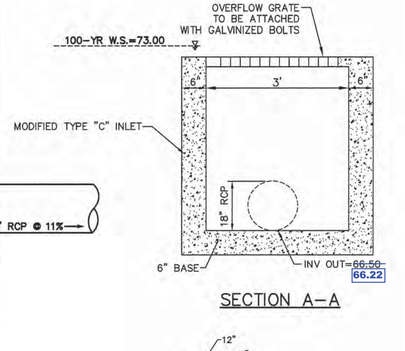
SECTION A

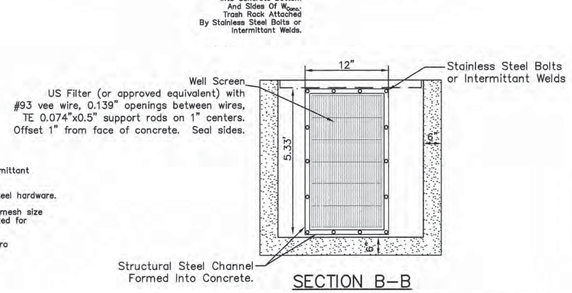


TOP VIEW

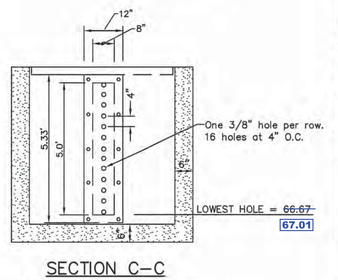


SECTION A-A





SECTION B-B



SECTION C-C

DETENTION FACILITY OUTLET STRUCTURE
LOT 2

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.

3/5/13
DATE

BRIAN KROMBEIN, PE, PLS
COLORADO NO. 34294
FOR AND ON BEHALF OF
VERMILION PEAK ENGINEERING LLC

COLORADO REGISTERED BRIAN KROMBEIN 34294 P.E. & PLS

TOWN OF CASTLE ROCK APPROVALS

THESE PLANS ARE HEREBY APPROVED FOR ONE YEAR FROM DATE OF DEVELOPMENT SERVICES APPROVAL

RECOMMEND APPROVAL BY:
ENGINEERING DIVISION — DATE

Approved Development Services
MAR 1 0 2013

APPROVED BY:
DEVELOPMENT SERVICES — DATE

Town of Castle Rock

UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE REVIEWING AGENCIES, VERMILION PEAK ENGINEERING APPROVES THEM FOR CONSTRUCTION ONLY FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.

PREPARED FOR
AUBURN VENTURES, LP
15957 NO. 81ST STREET #101
SCOTTSDALE, AZ 85260
480-256-0506

Vermilion Peak Engineering
Civil Engineering & Land Surveying
9801 Chadwick Way / Highlands Ranch, CO 80129
303-264-9516 / www.vermilionpeak.com

No.	REVISION	BY	DATE
1	CD12-0020 APPROVED FOR CONSTRUCTION	BK	2/28/13

H-SCALE AS SHOWN
V-SCALE
DATE 2/28/13
DESIGNED BY BK
DRAWN BY BK
CHECKED BY

AUBURN RIDGE

DRAINAGE DETAILS

SHEET C11 OF 14

JOB NO. 12014

Table 6-5. Runoff coefficients, *c*

Total or Effective % Impervious	NRCS Hydrologic Soil Group A						
	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year	500-Year
2%	0.01	0.01	0.01	0.01	0.04	0.13	0.27
5%	0.02	0.02	0.02	0.03	0.07	0.15	0.29
10%	0.04	0.05	0.05	0.07	0.11	0.19	0.32
15%	0.07	0.08	0.08	0.1	0.15	0.23	0.35
20%	0.1	0.11	0.12	0.14	0.2	0.27	0.38
25%	0.14	0.15	0.16	0.19	0.24	0.3	0.42
30%	0.18	0.19	0.2	0.23	0.28	0.34	0.45
35%	0.21	0.23	0.24	0.27	0.32	0.38	0.48
40%	0.25	0.27	0.28	0.32	0.37	0.42	0.51
45%	0.3	0.31	0.33	0.36	0.41	0.46	0.54
50%	0.34	0.36	0.37	0.41	0.45	0.5	0.58
55%	0.39	0.4	0.42	0.45	0.49	0.54	0.61
60%	0.43	0.45	0.47	0.5	0.54	0.58	0.64
65%	0.48	0.5	0.51	0.54	0.58	0.62	0.67
70%	0.53	0.55	0.56	0.59	0.62	0.65	0.71
75%	0.58	0.6	0.61	0.64	0.66	0.69	0.74
80%	0.63	0.65	0.66	0.69	0.71	0.73	0.77
85%	0.68	0.7	0.71	0.74	0.75	0.77	0.8
90%	0.73	0.75	0.77	0.79	0.79	0.81	0.84
95%	0.79	0.81	0.82	0.83	0.84	0.85	0.87
100%	0.84	0.86	0.87	0.88	0.88	0.89	0.9
Total or Effective % Impervious	**NRCS Hydrologic Soil Group B**						
	2-Year	**5-Year**	**10-Year**	**25-Year**	**50-Year**	**100-Year**	**500-Year**
2%	0.01	0.01	0.07	0.26	0.34	0.44	0.54
5%	0.03	0.03	0.1	0.28	0.36	0.45	0.55
10%	0.06	0.07	0.14	0.31	0.38	0.47	0.57
15%	0.09	0.11	0.18	0.34	0.41	0.5	0.59
20%	0.13	0.15	0.22	0.38	0.44	0.52	0.61
25%	0.17	0.19	0.26	0.41	0.47	0.54	0.63
30%	0.2	0.23	0.3	0.44	0.49	0.57	0.65
35%	0.24	0.27	0.34	0.47	0.52	0.59	0.66
40%	0.29	0.32	0.38	0.5	0.55	0.61	0.68
45%	0.33	0.36	0.42	0.53	0.58	0.64	0.7
50%	0.37	0.4	0.46	0.56	0.61	0.66	0.72
55%	0.42	0.45	0.5	0.6	0.63	0.68	0.74
60%	0.46	0.49	0.54	0.63	0.66	0.71	0.76
65%	0.5	0.54	0.58	0.66	0.69	0.73	0.77
70%	0.55	0.58	0.62	0.69	0.72	0.75	0.79
75%	0.6	0.63	0.66	0.72	0.75	0.78	0.81
80%	0.64	0.67	0.7	0.75	0.77	0.8	0.83
85%	0.69	0.72	0.74	0.78	0.8	0.82	0.85
90%	0.74	0.76	0.78	0.81	0.83	0.84	0.87
95%	0.79	0.81	0.82	0.85	0.86	0.87	0.88
100%	0.84	0.86	0.86	0.88	0.89	0.89	0.9

PUBLIC IMPROVEMENT CONSTRUCTION PLANS
CASTLE HIGHLANDS FILING NO. 2
TOWN OF CASTLE ROCK, COLORADO

PHASE 1
AS-BUILT

THESE AS-BUILT PLANS HAVE BEEN PREPARED BASED ON INFORMATION COMPILED AND FURNISHED BY OTHERS. THE TOWN OF CASTLE ROCK HAS NOT VERIFIED THE ACCURACY OF THIS INFORMATION AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED INTO THESE AS-BUILT PLANS.

RECORD ENGINEER STATEMENT

THIS ORIGINAL SET OF APPROVED CONSTRUCTION PLANS HAVE BEEN "AS-BUILTED" BY ME OR BY THOSE UNDER MY DIRECT SUPERVISION IN CONFORMANCE WITH CURRENT TOWN STANDARDS FOR AS-BUILT PLANS.

(Civil Engineer Signature) 10/25/01 DATE

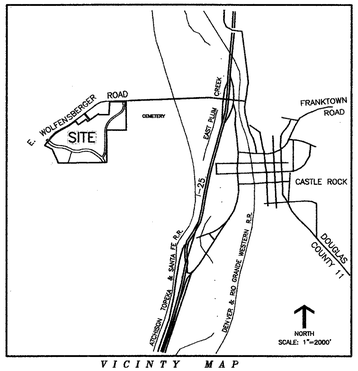
COLORADO REGISTERED JAMES P. FITZMORRIS 28211 PROFESSIONAL ENGINEER

GENERAL NOTES

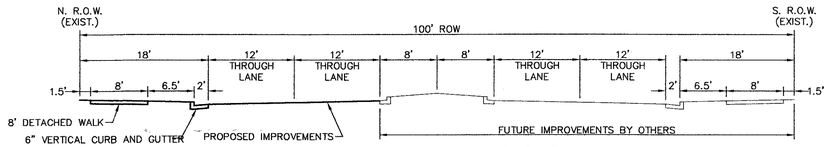
1. ALL MATERIALS, WORKMANSHIP, AND CONSTRUCTION OF PUBLIC IMPROVEMENTS SHALL MEET OR EXCEED THE STANDARDS AND SPECIFICATIONS SET FORTH IN THE CASTLE ROCK PUBLIC WORKS REGULATIONS, AND APPLICABLE STATED AND FEDERAL REGULATIONS. WHERE THERE IS CONFLICT BETWEEN THESE PLANS AND THE SPECIFICATIONS, OR ANY APPLICABLE STANDARDS, THE HIGHER QUALITY STANDARD SHALL APPLY. ALL WORK SHALL BE INSPECTED AND APPROVED BY THE TOWN OF CASTLE ROCK (TCR) PUBLIC WORKS INSPECTOR.
2. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES, AS SHOWN ON THESE PLANS, IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED UPON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE LOCAL UTILITY LOCATION CENTER AT LEAST 48 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF THE UTILITIES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL VERIFY PERTINENT LOCATIONS AND ELEVATIONS, ESPECIALLY AT CONNECTION POINTS AND AT POTENTIAL UTILITY CONFLICTS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES THAT CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THESE PLANS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR ALL APPLICABLE AGENCIES. THE CONTRACTOR SHALL NOTIFY THE TCR PUBLIC WORKS INSPECTOR AT LEAST 48 HOURS PRIOR TO THE START OF ANY EARTH DISTURBING ACTIVITY, OR CONSTRUCTION ON ANY AND ALL PUBLIC IMPROVEMENTS.
4. THE CONTRACTOR SHALL COORDINATE AND COOPERATE WITH THE TOWN, AND ALL UTILITY COMPANIES INVOLVED, WITH REGARD TO RELOCATIONS OR ADJUSTMENTS OF EXISTING UTILITIES DURING CONSTRUCTION, AND TO ASSURE THAT THE WORK IS ACCOMPLISHED IN A TIMELY FASHION AND WITH A MINIMUM DISRUPTION OF SERVICE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL PARTIES AFFECTED BY ANY DISRUPTION OF ANY UTILITY SERVICE.
5. THE CONTRACTOR SHALL HAVE ONE (1) SIGNED COPY OF THE APPROVED PLANS, ONE (1) COPY OF THE APPROPRIATE STANDARDS AND SPECIFICATIONS, AND A COPY OF ANY PERMITS AND EXTENSION AGREEMENTS NEEDED FOR THE JOB, ON-SITE AT ALL TIMES.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ASPECTS OF SAFETY INCLUDING, BUT NOT LIMITED TO, EXCAVATION, TRENCHING, SHORING, TRAFFIC CONTROL, AND SECURITY.
7. IF, DURING THE CONSTRUCTION PROCESS, CONDITIONS ARE ENCOUNTERED WHICH COULD INDICATE A SITUATION THAT IS NOT IDENTIFIED IN THE PLANS OR SPECIFICATIONS, THE CONTRACTOR SHALL CONTACT THE TCR PUBLIC WORKS INSPECTOR IMMEDIATELY.
8. ALL REFERENCES TO ANY PUBLISHED STANDARDS SHALL REFER TO THE LATEST REVISION OF SAID STANDARD, UNLESS SPECIFICALLY STATED OTHERWISE.
9. THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN, IN ACCORDANCE WITH MUTCD, TO THE APPROPRIATE RIGHT-OF-WAY AUTHORITY, (TOWN, COUNTY OR STATE), FOR APPROVAL, PRIOR TO ANY CONSTRUCTION ACTIVITIES WITHIN, OR AFFECTING, THE RIGHT-OF-WAY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ANY AND ALL TRAFFIC CONTROL DEVICES AS MAY BE REQUIRED BY THE CONSTRUCTION ACTIVITIES.
10. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL LABOR AND MATERIALS NECESSARY FOR THE COMPLETION OF THE INTENDED IMPROVEMENTS, SHOWN ON THESE DRAWINGS, OR DESIGNATED TO BE PROVIDED, INSTALLED, OR CONSTRUCTED, UNLESS SPECIFICALLY NOTED OTHERWISE.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING ROADWAYS FREE AND CLEAR OF ALL CONSTRUCTION DEBRIS AND DIRT TRACKED FROM THE SITE.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RECORDING AS-BUILT INFORMATION ON A SET OF RECORD DRAWINGS KEPT ON THE CONSTRUCTION SITE, AND AVAILABLE TO THE TCR PUBLIC WORKS INSPECTOR AT ALL TIMES.
13. DIMENSIONS FOR LAYOUT AND CONSTRUCTION ARE NOT TO BE SCALED FROM ANY DRAWING. IF PERTINENT DIMENSIONS ARE NOT SHOWN, CONTACT THE CONSULTANT ENGINEER FOR CLARIFICATION, AND ANNOTATE THE DIMENSION ON THE AS-BUILT RECORD DRAWINGS.
14. THE CONTRACTOR SHALL COMPLY WITH ALL TERMS AND CONDITIONS OF THE COLORADO PERMIT FOR STORM-WATER DISCHARGE, THE STORM WATER MANAGEMENT PLAN, AND THE EROSION CONTROL PLAN.
15. ALL STRUCTURAL EROSION CONTROL MEASURES SHALL BE INSTALLED, AT THE LIMITS OF CONSTRUCTION, PRIOR TO ANY OTHER GROUND-DISTURBING ACTIVITY. ALL EROSION CONTROL MEASURES SHALL BE MAINTAINED IN GOOD REPAIR BY THE CONTRACTOR, UNTIL SUCH TIME AS THE ENTIRE DISTURBED AREAS IS STABILIZED WITH HARD SURFACE OR LANDSCAPING.
16. THE CONTRACTOR SHALL SEQUENCE INSTALLATION OF UTILITIES IN SUCH A MANNER AS TO MINIMIZE POTENTIAL UTILITY CONFLICTS. IN GENERAL, STORM SEWER AND SANITARY SEWER SHOULD BE CONSTRUCTED PRIOR TO INSTALLATION OF THE WATER LINES AND DRY UTILITIES.
17. THERE SHALL BE NO SITE CONSTRUCTION ACTIVITIES ON SATURDAYS, UNLESS SPECIFICALLY APPROVED BY THE TCR PUBLIC WORKS INSPECTOR, AND NO SITE CONSTRUCTION ACTIVITIES ON SUNDAYS OR HOLIDAYS, UNLESS THERE IS PRIOR WRITTEN APPROVAL BY THE PUBLIC WORKS DIRECTOR.
18. BASIS OF BEARING IS THE SOUTH LINE OF THE SOUTHWEST ONE-QUARTER OF THE SOUTHEAST ONE-QUARTER OF SAID SECTION 3, TOWNSHIP 8 SOUTH, RANGE 67 WEST OF THE SIXTH PRINCIPAL MERIDIAN, BEING MONUMENTED AS SHOWN HEREON WITH THE LINE CONSIDERED TO BEAR N89°54'22"W.

OWNER

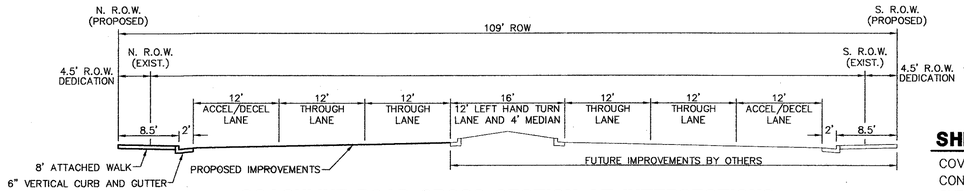
CASTLE ROCK EQUITIES, LLC
6950 EAST BELLEVIEW AVENUE, SUITE 301
ENGLEWOOD, COLORADO 80111
PHONE: (303) 740-9788
CONTACT: SAM N. PERRY



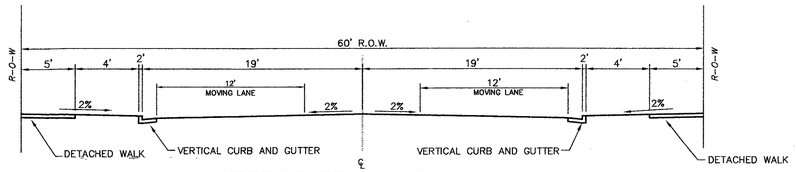
VICINTY MAP



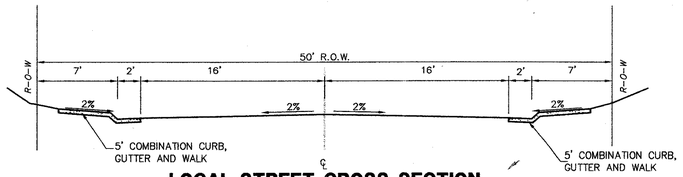
COACHLINE ROAD CROSS SECTION
FACING EAST



COACHLINE ROAD CROSS SECTION AT INTERSECTIONS
FACING EAST



AUBURN DRIVE CROSS SECTION
N.T.S.



LOCAL STREET CROSS SECTION
N.T.S.

LIST OF ABBREVIATIONS

A	AGRICULTURE	HOA	HOME OWNERS ASSOCIATION	QUAN.	QUANTITY
A.D.	ALGEBRIC DIFFERENCE	ht.	HEIGHT	R	RANGE
AC	ACRE	INC.	INCORPORATED	R	RIGHT
ACCEL	ACCELERATION	INV	INVERT	RCP	REINFORCED CONCRETE PIPE
B & B	BALLED AND BURLAPED	L	LEFT	R.O.W.	RIGHT OF WAY
BLVD	BOULEVARD	L	LENGTH	R.R.	RAILROAD
C	COMMERCIAL	LB.	POUND	S	SOUTH
C	CURVE	LF	LINEAR FEET	SAN	SANITARY
cal.	CALIBER	LLC	LIMITED LIABILITY COMPANY	SF	SINGLE-FAMILY
CATV	CABLE TELEVISION	MAX.	MAXIMUM	SF	SQUARE FEET
CDOT	COLORADO DEPARTMENT OF TRANSPORTATION	MF	MULTI-FAMILY	SL	STREET LIGHT
		MH	MANHOLE	STA	STATION
CL	CENTERLINE	MIN.	MINIMUM	STM	STORM
CLR	CLEARANCE	MKR	MARKER	SY	SQUARE YARD
CMP	CORRUGATED METAL PIPE	MUTCD	MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES	SYM.	SYMBOL
CONC	CONCRETE			T.	TOWNSHIP
CORP.	CORPORATION	N	NORTH	TEL.	TELEPHONE
CT	COURT	NA	NOT APPLICABLE	TW	TOP OF WALL
DECEL	DECELERATION	NO.	NUMBER	TYP.	TYPICAL
DIA.	DIAMETER	N.T.S.	NOT TO SCALE	UD	UTILITIES DEDICATION
DIP	DUCTILE IRON PIPE	O.C.	ON CENTER	U.E.	UTILITY EASEMENT
DU	DWELLING UNIT	OSD	OPEN SPACE DEDICATION	VC	VERTICAL CURVE
E	EAST	PC	POINT OF CURVE	VPC	VERTICAL POINT OF CURVE
ELEC.	ELECTRIC	PCR	POINT OF CURB RETURN	VPI	VERTICAL POINT OF INTERSECTION
EL	ELEVATION	PD	PLANNED DEVELOPMENT	VPT	VERTICAL POINT OF TANGENTCY
ELEV	ELEVATION	PED	PEDESTAL	W	WEST
EOA	EDGE OF ASPHALT	PLD	PUBLIC LAND DEDICATION	W	WATER
EQUIV.	EQUIVALENT	PLS	PURE LIVE SEED	WL	WATER LINE
EXIST.	EXISTING	P.M.	PRINCIPAL MERIDIAN	WSE	WATER SURFACE ELEVATION
EX	EXISTING	PO	POST OFFICE	YR	YEAR
FES	FLARED END SECTION	PT	POINT OF TANGENTCY		
FL	FLOWLINE	PUD	PLANNED UNIT DEVELOPMENT		
gal.	GALLON	P.U.E.	PUBLIC UTILITY EASEMENT		
GALV.	GALVANIZED	PVC	POLYVINYL CHLORIDE		
HC	HANDICAP				

SHEET INDEX

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CONSTRUCTION NOTES	2
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OVERLOT GRADING PLAN	GR1-GR7
EROSION CONTROL PLAN	EC1-EC3
STREET PLAN AND PROFILE	S1-S12
~~ACCESS ROAD PLAN AND PROFILE~~	~~AR1~~
STREET DETAILS	SID1-SID2
TRAFFIC SIGNING AND PAVEMENT MARKINGS	SS1-SS2
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STORM SEWER PLAN AND PROFILE	SHEET 1 OF 1
DRAINAGE CHANNEL STRUCTURAL PLANS	CS1-CS2

INDEMNIFICATION AND ADHERENCE TO STANDARDS STATEMENTS

THESE PLANS HAVE BEEN REVIEWED BY THE TOWN OF CASTLE ROCK FOR CONCEPT ONLY. THE REVIEW DOES NOT IMPLY RESPONSIBILITY BY THE REVIEWING DEPARTMENT, THE TOWN ENGINEER, OR THE TOWN OF CASTLE ROCK FOR ACCURACY AND CORRECTNESS OF THE CALCULATIONS. FURTHERMORE, THE REVIEW DOES NOT IMPLY THAT QUANTITIES OF ITEMS ON THE PLANS ARE THE FINAL QUANTITIES REQUIRED. THE REVIEW SHALL NOT BE CONSTRUED FOR ANY REASON AS ACCEPTANCE OF FINANCIAL RESPONSIBILITY BY THE TOWN FOR ADDITIONAL QUANTITIES OF ITEMS SHOWN THAT MAY BE REQUIRED DURING THE CONSTRUCTION PHASE.

ALL WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE TOWN OF CASTLE ROCK "STANDARD CONSTRUCTION SPECIFICATIONS FOR PUBLIC WORKS" AND/OR OTHER TOWN-APPROVED APPLICABLE STANDARDS.

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

RECOMMEND APPROVAL BY:
ENGINEERING DIVISION — DATE 7-27-00

APPROVED BY:
PUBLIC WORKS DIRECTOR — DATE 8/3/00

BENCHMARK

DOUGLAS COUNTY BENCHMARK 3.011025. BENCHMARK IS WITNESSED BY A BROWN CARSONITE POST AND IS LOCATED APPROXIMATELY 230 FEET FROM THE WEST END OF ATCHISON COURT ALONG A DIRT ACCESS ROAD. EL=6351.35

ENGINEER'S STATEMENT

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JAMES P. FITZMORRIS, P.E. — 7/24/00
COLORADO NO. 28211
FOR AND ON BEHALF OF JR ENGINEERING

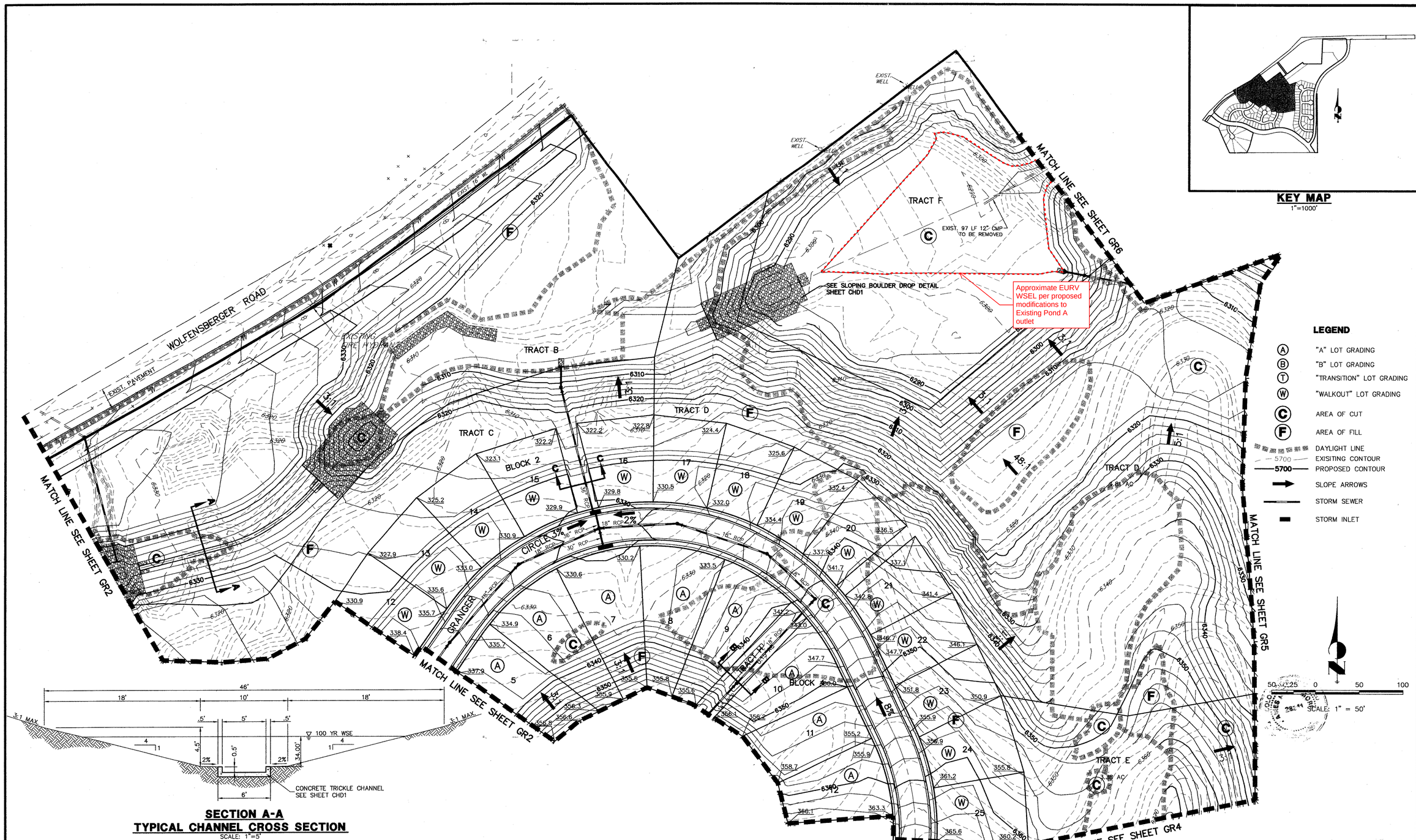
COVER SHEET
CASTLE HIGHLANDS FILING NO. 2
JOB NO. 2316.05
DATE: 7/23/99 REV. 7/12/00
SHEET NO. 1 OF ~~64~~ 63

JR Engineering, Ltd.
6020 Greenwood Plaza Blvd.
Englewood, Colorado 80111
Tel. (303) 740-9393
FAX (303) 721-9019

ENGINEERING/PLA

MA03C041
Castle Highlands Filing 2
JR Engineering
10/25/01
63 Sheets

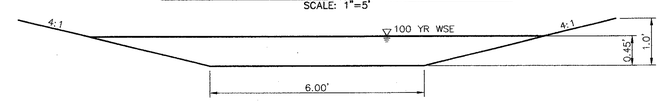
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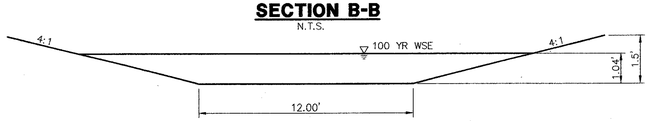
LEGEND

- (A) "A" LOT GRADING
- (B) "B" LOT GRADING
- (T) "TRANSITION" LOT GRADING
- (W) "WALKOUT" LOT GRADING
- (C) AREA OF CUT
- (F) AREA OF FILL
- DAYLIGHT LINE
- 5700 EXISITING CONTOUR
- 5700 PROPOSED CONTOUR
- SLOPE ARROWS
- STORM SEWER
- STORM INLET

SECTION A-A
TYPICAL CHANNEL CROSS SECTION
SCALE: 1"=5'



SECTION B-B
N.T.S.



SECTION C-C
N.T.S.

BENCHMARK

DOUGLAS COUNTY BENCHMARK 3.011025. BENCHMARK IS WITNESSED BY A BROWN CARSONITE POST AND IS LOCATED APPROXIMATELY 230 FEET FROM THE WEST END OF ATCHISON COURT ALONG A DIRT ACCESS ROAD. EL=6351.35

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COLORADO REGISTERED JAMES P. FITZMORRIS 28211 PROFESSIONAL ENGINEER

7/24/00

JAMES P. FITZMORRIS, P.E.
COLORADO NO. 28211
FOR AND ON BEHALF OF JR ENGINEERING

TOWN OF CASTLE ROCK APPROVALS
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RECOMMEND APPROVAL BY:

ENGINEERING DIVISION — DATE 7/27/00

APPROVED BY:

PUBLIC WORKS DIRECTOR — DATE 8/3/00

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Tel (303) 740-9393
FAX (303) 721-9019

No.	REVISION	BY	DATE
1	PER TOWN COMMENTS	WRL	10/21/99
2	PER TOWN COMMENTS	WRL	12/10/99
3	REVISED PHASING	JEL	7/12/00

SCALE	1"=50'		
DATE	7/23/99		
DES. BY	RDC	CHK. BY	JPF
		DWN. BY	SJS

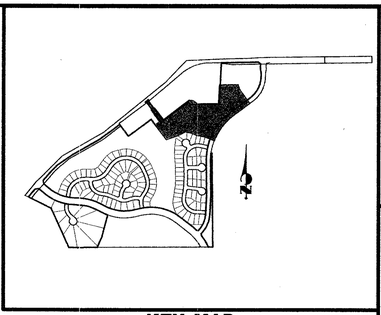
PREPARED FOR
CASTLE ROCK EQUITIES, L.L.C.

CASTLE HIGHLANDS FILING NO. 2
OVERLOT GRADING PLAN

SHEET GR3 OF 7

JOB NO. 2316.05

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KEY MAP
1"=1000'

MATCH LINE SEE SHEET GR7

PHASE I

MATCH LINE SEE SHEET GR7

MATCH LINE SEE SHEET GR5

MATCH LINE SEE SHEET GR3

TRACT G
3.23 AC

TRACT F
3.61 AC

LOT 2
BLOCK 7
8.50 AC

EXISTING FENCE (TYP.)

SEE SHEET CHD1

NOTE:
CONTRACTOR TO VERIFY DEPTH OF EXISTING WATER LINE PRIOR TO GRADING SWALE. A MINIMUM OF 4.5' OF COVER SHALL BE MAINTAINED.

Approximate EURV WSEL per proposed modifications to Existing Pond A outlet

"WATER" MIN.

30" RCP

6280 6290 6300 6310 6320

5.3%

4.0%

283.0
285.5
280.4
288.7
290.9
285.6

LAUBURN DRIVE

50 25 0 50 100
SCALE: 1" = 50'

LEGEND

- (A) "A" LOT GRADING
- (B) "B" LOT GRADING
- (T) "TRANSITION" LOT GRADING
- (W) "WALKOUT" LOT GRADING
- (C) AREA OF CUT
- (F) AREA OF FILL
- DAYLIGHT LINE
- 5700 EXISITING CONTOUR
- 5700 PROPOSED CONTOUR
- SLOPE ARROWS
- STORM SEWER
- STORM INLET

PHASE 1 AS-BUILT

RECORD ENGINEER STATEMENT

THIS SET OF APPROVED CONSTRUCTION PLANS HAVE BEEN "AS-BUILT" BY ME OR BY PERSONS UNDER MY DIRECT SUPERVISION IN CONFORMANCE WITH CURRENT TOWN STANDARDS FOR AS-BUILT PLANS

JAMES F. FITZMORRIS, P.E.
COLORADO NO. 28211
FOR AND ON BEHALF OF JR ENGINEERING

1/14/02
DATE

BENCHMARK

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JAMES F. FITZMORRIS, P.E.
COLORADO NO. 28211
FOR AND ON BEHALF OF JR ENGINEERING

7/24/00

TOWN OF CASTLE ROCK APPROVALS
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RECOMMEND APPROVAL BY:

ENGINEERING DIVISION — DATE 7/27/00

APPROVED BY:

PUBLIC WORKS DIRECTOR — DATE 8/3/00

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1	PER TOWN COMMENTS	WRL	10/21/99
2	PER TOWN COMMENTS	WRL	12/10/99
3	REVISED PHASING	JEL	7/12/00

SCALE	1" = 50'
DATE	7/23/99
DES. BY	RDC
CHK. BY	JMF
DWN. BY	SJS

CASTLE HIGHLANDS FILING NO. 2

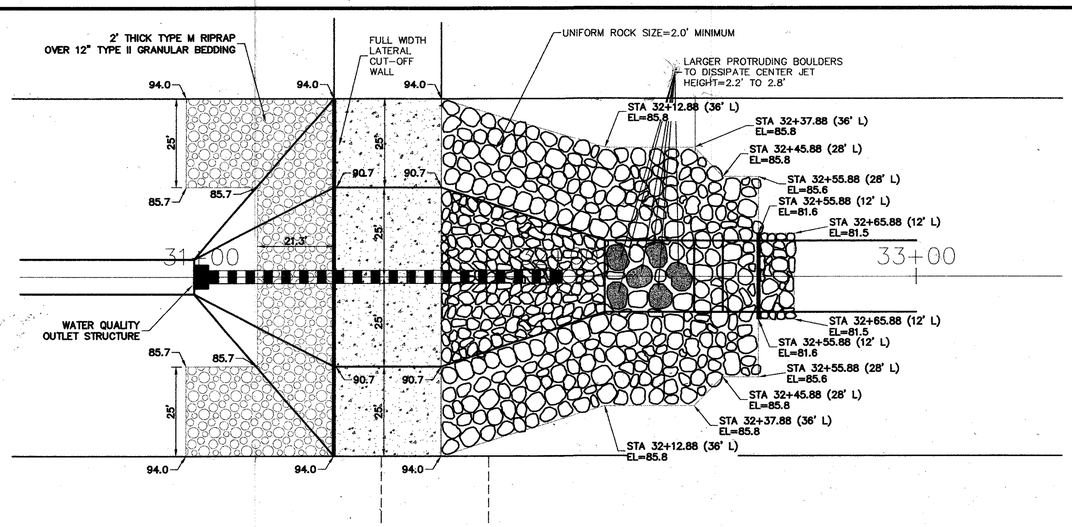
OVERLOT GRADING PLAN

PREPARED FOR
CASTLE ROCK EQUITIES, L.L.C.

SHEET GR6 OF 7

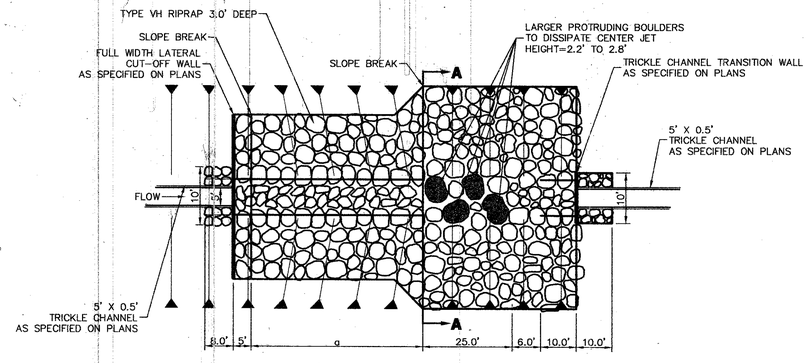
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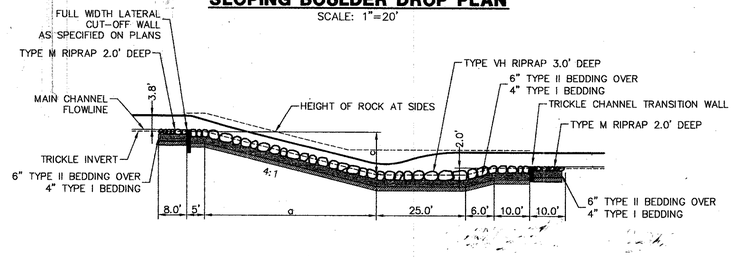


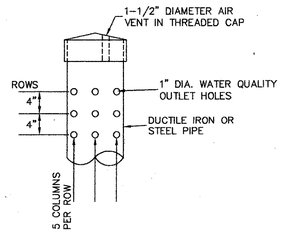
DETENTION POND A OVERFLOW STRUCTURE DETAIL
SCALE: 1"=20'

DROP STRUCTURE TABLE	DROP A	DROP B	DROP C	DROP D	DROP E	DROP F
a	47.40'	48.00'	48.00'	51.66	69.97	45.74'
b	10.00'	10.00'	10.00'	10.00'	10.00'	8.00'
c	11.84'	12.00'	12.00'	12.91'	17.49'	11.43'



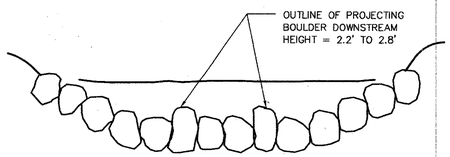
SLOPING BOULDER DROP PLAN
SCALE: 1"=20'



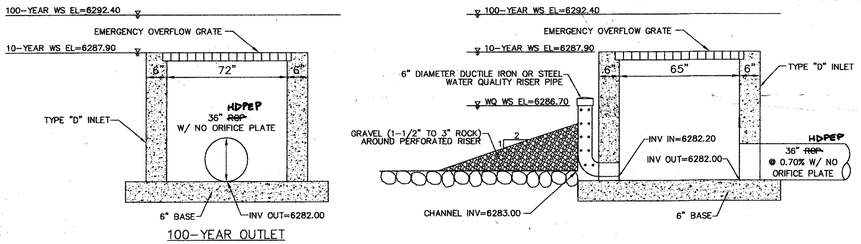


WATER QUALITY RISER PIPE

SLOPING BOULDER DROP PROFILE
SCALE: 1"=20'



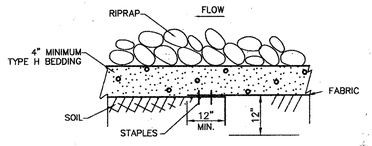
SECTION A-A
SCALE: N.T.S.



100-YEAR OUTLET

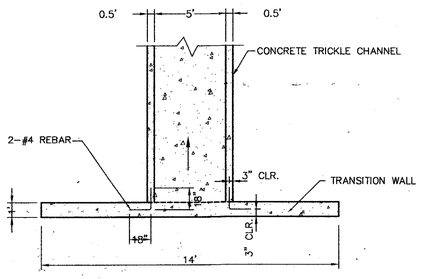
WATER QUALITY OUTLET STRUCTURE
N.T.S.

NOTES:
1. ALWAYS PLACE FABRIC STARTING DOWNSTREAM AND WORK UPSTREAM
2. ALL FILTER FABRIC TO BE INSTALLED SHALL COMPLY WITH URBAN DRAINAGE.
3. FILTER FABRIC LAP SHALL INCLUDE A 12" VERTICAL CUTOFF WHEREIN THE UPSTREAM END OF THE DOWNSTREAM PIECE IS FOLDED VERTICALLY 12" INTO THE GROUND AND THE UPSTREAM PIECE IS LAID OVER THE TOP WITH A 12" LAP.

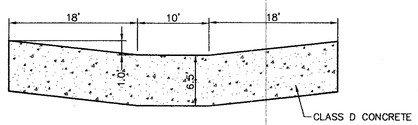


PROFILE SECTION

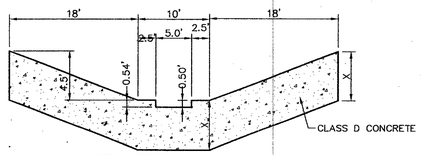
TYPICAL LAP DETAIL AND FILTER FABRIC PLACEMENT
SCALE: 1"=5'



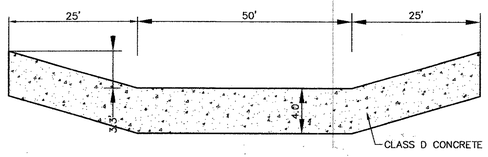
TRICKLE CHANNEL & TRANSITION WALL REBAR PLACEMENT TYPICAL
SCALE: 1"=5'



CUT-OFF WALL DETAIL DROP A
SCALE: N.T.S.

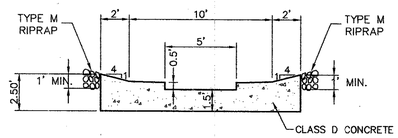


CUT-OFF WALL DETAIL DROPS B,C,D AND E
SCALE: N.T.S.

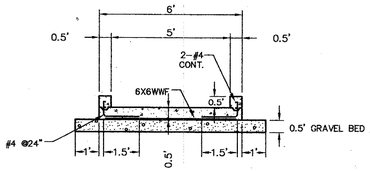


CUT-OFF WALL DETAIL DROP F
SCALE: N.T.S.

CUT-OFF WALL TABLE	DROP B	DROP C	DROP D	DROP E
X	6.0'	6.0'	6.5'	9.0



TYPICAL TRICKLE CHANNEL TRANSITION WALL
SCALE: 1"=5'



CONCRETE TRICKLE CHANNEL
SCALE: 1"=3'

ENGINEER'S STATEMENT

THESE DETAILS SHOWN WERE REVIEWED ONLY AS TO THEIR APPLICATION ON THIS PROJECT

JAMES P. FITZMORRIS, P.E.
COLORADO NO. 28211
FOR AND ON BEHALF OF JR ENGINEERING, LTD.

7/24/00

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No.	REVISION	BY	DATE
1	PER TOWN OF CASTLE ROCK COMMENTS	AHK	11/08/99
2	PER TOWN COMMENTS	WRL	12/10/99
3	REVISED PHASING	JEL	7/12/00

SCALE AS SHOWN | DES. BY | CHK. BY | DWN. BY
DATE 7/24/99 | RDC | JPF | WBH

CASTLE HIGHLANDS FILING NO. 2

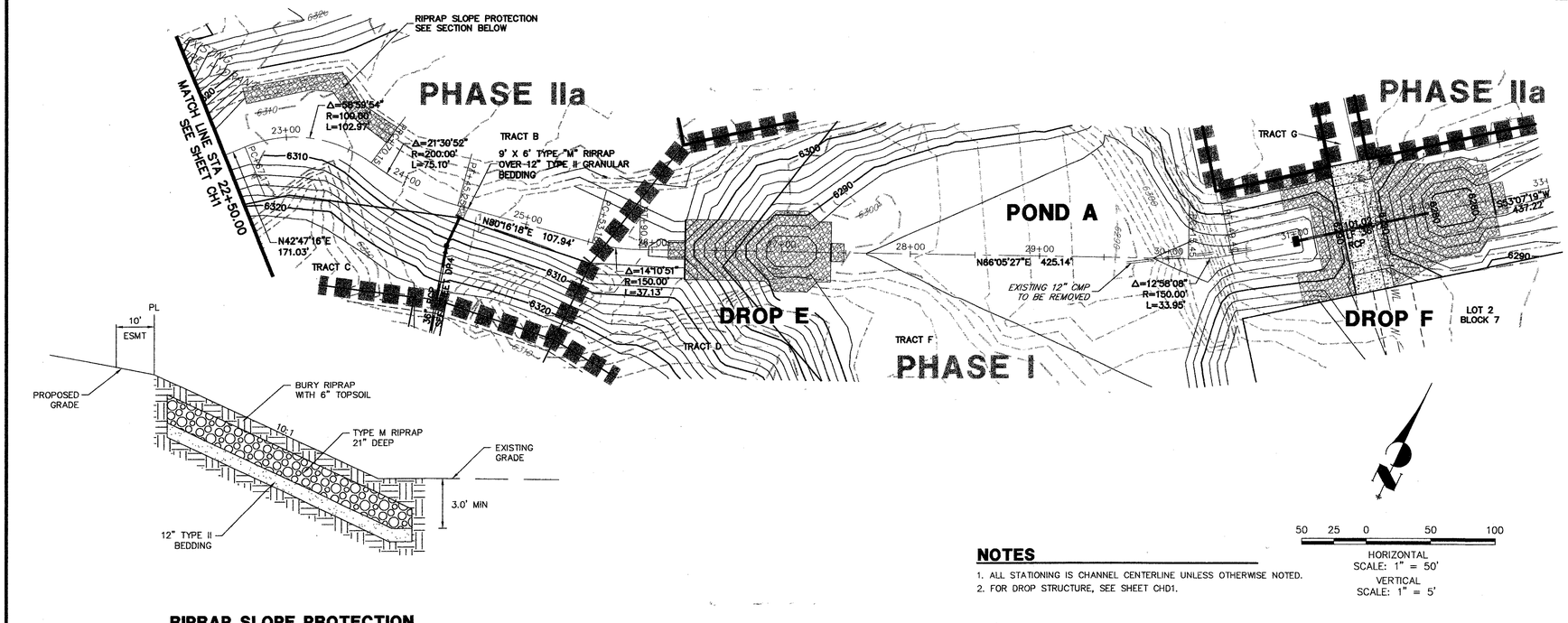
DRAINAGE CHANNEL DETAILS

CASTLE ROCK EQUITIES, L.L.C.
PREPARED FOR

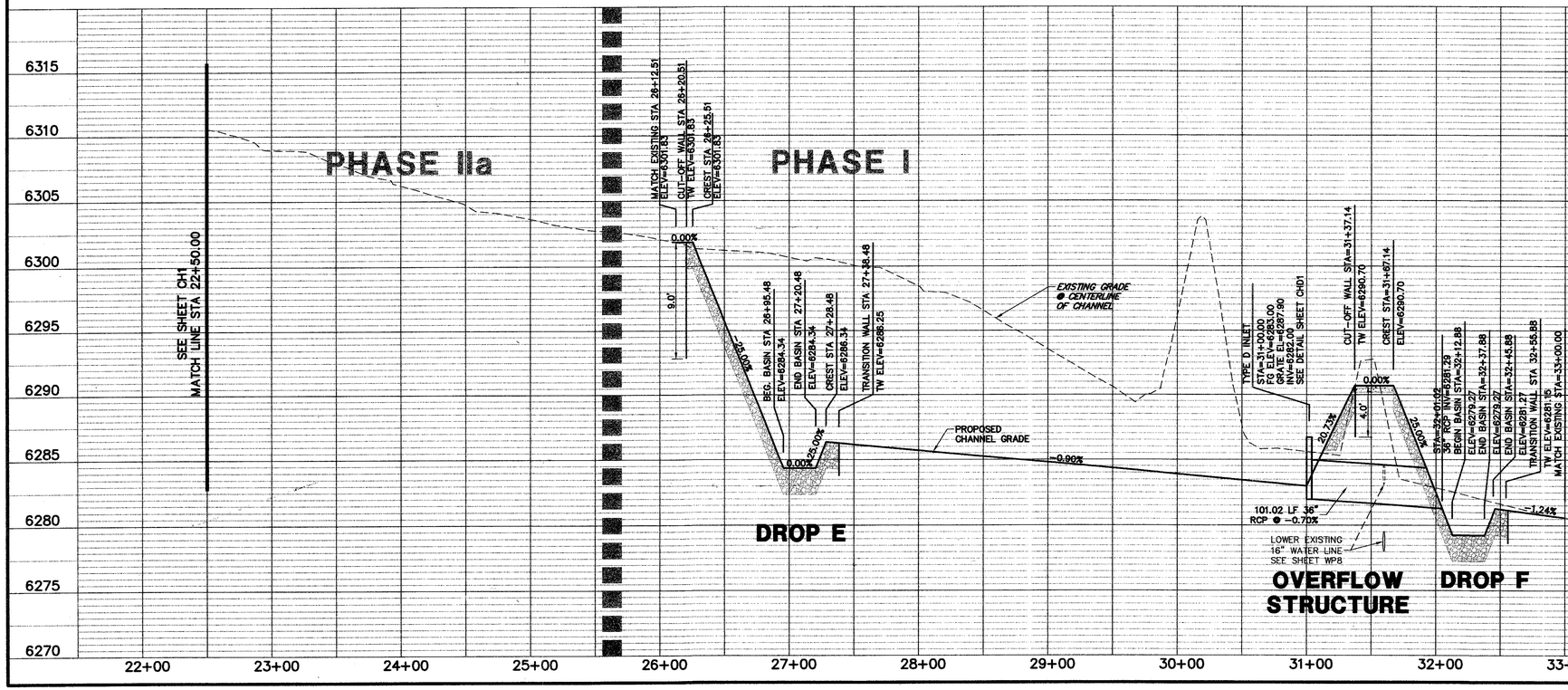
SHEET CHD1 OF 1

JOB NO. 2316.05

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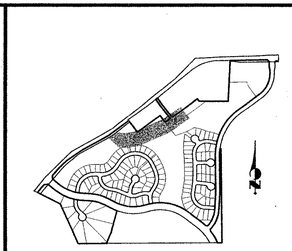


RIPRAP SLOPE PROTECTION



LEGEND

- 5700 — PROPOSED CONTOUR
- 5700 — EXISTING CONTOUR
- PROPOSED STORM SEWER
- DROP STRUCTURE



KEY MAP

1"=1000'

BENCHMARK

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JAMES R. FITZMORRIS, P.E.
COLORADO NO. 28211
FOR AND ON BEHALF OF JR ENGINEERING

7/24/00

NOTES

1. ALL STATIONING IS CHANNEL CENTERLINE UNLESS OTHERWISE NOTED.
2. FOR DROP STRUCTURE, SEE SHEET CHD1.

50 25 0 50 100

HORIZONTAL
SCALE: 1" = 50'
VERTICAL
SCALE: 1" = 5'

TOWN OF CASTLE ROCK APPROVALS
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ENGINEERING DIVISION — DATE 7/25/00

APPROVED BY:
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SCALE 1"=50' | DATE 7/22/99 | DES. BY RDC | CHK. BY JRF | DWN. BY WBH

CASTLE HIGHLANDS FILING NO. 2
DRAINAGE CHANNEL PLAN & PROFILE
CASTLE ROCK EQUITITES, L.L.C.

SHEET CH2 OF 2
JOB NO. 2316.05

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