

DRAINAGE LETTER REPORT

for

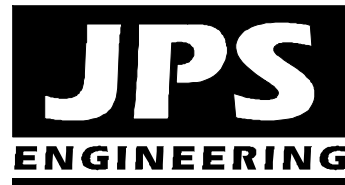
**1450 VALLEY STREET – WAREHOUSE BUILDING
LOT 2, BLOCK 2, CIMARRON INDUSTRIAL NO. 2**

Prepared for:

Hammers Construction Inc.
1411 Woolsey Heights
Colorado Springs, CO 80915

October 26, 2022
Revised January 20, 2023

Prepared by:



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**JPS Project No. 062201
PCD File No. PPR-22-058**

**1450 VALLEY STREET – WAREHOUSE BUILDING
LOT 2, BLOCK 2, CIMARRON INDUSTRIAL NO. 2
DRAINAGE REPORT STATEMENTS**

1. Engineer's Statement:

The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the County for drainage reports and said report is in conformity with the master plan for the drainage basin. I accept responsibility for liability caused by negligent acts, errors or omissions on my part in preparing this report:

John P. Schwab Colorado P.E. No. 29891

2. Developer's Statement:

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

By:

Printed Name: Phillip Holli-Arcus

Date

Title: Project Manger

Hammers Construction, Inc., 1411 Woolsey Heights, Colorado Springs, CO 80915

3. El Paso County Statement:

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

County Engineer / ECM Administrator

Date

Conditions:

1450 VALLEY STREET – LOT 2, BLOCK 2, CIMARRON INDUSTRIAL NO. 2
DRAINAGE REPORT
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I. INTRODUCTION

A. Property Location and Description

Carson Investment Properties LLC (Owner) is planning to construct a new 18,800 square-foot commercial warehouse building on the south side of the developed 2.6-acre lot at 1450 Valley Street in El Paso County. The property is platted as Lot 2, Block 1, Cimarron Industrial No. 2 (El Paso County Assessor's Parcel No. 54072-03-013), located along the west side of Valley Street, south of Omaha Boulevard. The property is currently developed with an existing manufacturing building on the north side of the site (Tumbleweed Tiny House Company) and existing asphalt parking and storage areas on the south side of the property.

The site is zoned Industrial (I-2), and the property adjoins developed commercial / industrial properties on all sides. Valley Street is a fully improved local public road along the east boundary of the site. An existing public drainage channel (Outlot B, Cimarron Industrial No. 2) adjoins the west boundary of the property. Existing commercial buildings are located along the north boundary of the site (Lot 1, Block 1, Cimarron Industrial No. 2) and the south boundary of the site (Lot 1, Boatman Subdivision).

The proposed Site Development Plan consists of a new 18,800 square-foot single-story Warehouse Building with associated parking and site improvements. Access will be provided by the existing driveway connections to Valley Street along the eastern site boundary of the site.

The total disturbed area associated with this project is approximately 0.97 acres. Recognizing that the land disturbance is under one acre, permanent water quality facilities are not required as the project is not classified as an "applicable construction activity" in accordance with Section I.6.1 of the El Paso County Engineering Criteria Manual (ECM).

B. Scope

In support of the Site Development Plan submittal to El Paso County, this report is intended to meet the requirements of a Drainage Letter Report in accordance with El Paso County drainage criteria. This report will provide a summary of site drainage issues impacting the proposed development. The report is based on the guidelines and criteria presented in the City of Colorado Springs and El Paso County "Drainage Criteria Manual."

C. References

City of Colorado Springs & El Paso County "Drainage Criteria Manual, Volumes 1 and 2," revised May, 2014.

El Paso County "Engineering Criteria Manual," December 13, 2016.

II. EXISTING AND PROPOSED DRAINAGE CONDITIONS

According to the Natural Resources Conservation Service (NRCS) Soil Survey for this site, on-site soils are comprised of “Blendon sandy loam” soils, and these well drained soils are classified as hydrologic soils group “B” (high infiltration rate; see Appendix A).

Existing Site Drainage Conditions

No subdivision drainage report was found on file for “Cimarron Industrial No. 2.” As shown on the enclosed “Existing Conditions Drainage Plan” (Figure EX1), the majority of the existing Lot 2 site has been delineated as Basin A (2.45 acres), and surface drainage from Basin A sheet flows southwesterly to Design Point #1 at the southwest corner of the property. The site is not impacted by any significant off-site drainage. Existing peak flows at Design Point #1 are calculated as $Q_5 = 9.0$ cfs and $Q_{100} = 17.2$ cfs.

Drainage at the southwest corner of the site (Design Point #1) is intended to flow into the adjoining concrete-lined public drainage channel along the west boundary of the property. As noted in the survey and visual inspection of the property, there is currently a significant eroded area in the southwest corner of the property, which needs to be repaired.

The east edge of the site has been delineated as Basin B (0.09 acres), and surface drainage from Basin B flows southeasterly into the existing curb and gutter along the west side of Valley Street (Design Point #2) at the southeast corner of the property. Existing peak flows at Design Point #2 are calculated as $Q_5 = 0.05$ cfs and $Q_{100} = 0.2$ cfs.

Proposed Site Drainage Conditions

As shown on the enclosed “Developed Drainage Plan” (Figure D1), the developed area of this project is limited to approximately 0.97 acres. Developed drainage from Basin A (2.22 acres) will continue to flow southwesterly across the site by sheet flow and drainage swales to Design Point #1 at the southwest corner of the property. The proposed grading for the new Warehouse building pad will provide positive drainage away from the new building, and a new concrete crossspan will convey developed flows westerly in the parking lot along the north face of the new building.

Recognizing that the proposed Warehouse building will be constructed over an existing paved parking area, there will be no net increase in the site impervious area within Basin A. Developed peak flows at Design Point #1 are calculated as $Q_5 = 8.9$ cfs and $Q_{100} = 16.7$ cfs, equivalent to the calculated existing condition peak flows.

A new 10-foot Type R Private Storm Inlet (Inlet A1) will be constructed to capture developed drainage in the southwest corner of the property, and new Private Storm Sewer A1 (18” HDPE) will convey the flow into the existing public drainage channel.

The proposed private inlet and storm sewer connection will restore a stable connection to the existing public drainage channel, providing a suitable outfall for the developed drainage from the majority of this site.

The east edge of the existing site, including the new parking area in the southeast corner of the property, has been delineated as Basin B (0.32 acres), and surface drainage from Basin B will flow southeasterly into Valley Street (Design Point #2) at the southeast corner of the property. Developed peak flows at Design Point #2 are calculated as $Q_5 = 1.0$ cfs and $Q_{100} = 1.9$ cfs. While the developed flow at DP2 increases in comparison to the existing flows at Design Point #2 (based on enlargement of Basin B), the developed flows remain negligible in comparison to the existing street capacity of Valley Street.

Valley Street provides an allowable street capacity of $Q_5 = 18.0$ cfs and $Q_{100} = 144.3$ cfs, providing a suitable outfall for drainage from the east side of this site.

Hydr A), a Please clarify with the addition of the developed flow from design point 2 there is still sufficient street capacity.

III. DRAINAGE PLANNING FOUR STEP PROCESS

El Paso County Drainage Criteria require drainage planning to include a Four Step Process for receiving water protection that focuses on reducing runoff volumes, treating the water quality capture volume (WQCV), stabilizing drainageways, and implementing long-term source controls. The Four Step Process has been implemented as follows in the planning of this project:

Step 1: Employ Runoff Reduction Practices

- **Minimize Impacts:** The proposed site development consists of a new commercial warehouse building on a previously platted and developed industrial lot which has been planned for full industrial development. The proposed warehouse building will be constructed within an existing asphalt-paved parking and storage area. This infill, re-development project will have minimal drainage impacts in comparison to new construction on an undeveloped site.

Step 2: Stabilize Drainageways

- An existing concrete-lined public drainage channel (Sand Creek Center Tributary Channel) adjoins the west boundary of this site.
- The drainage outfall at the southwest corner of this site will be improved with a new storm inlet and storm sewer pipe connection to the existing drainage channel, providing a stabilized connection to repair the existing erosion in the southwest corner of the property.

Step 3: Provide Water Quality Capture Volume (WQCV)

- This site is excluded from permanent Water Quality control measure requirements based on the disturbed area remaining under one acre.

Step 4: Consider Need for Industrial and Commercial BMPs

- The Owner is responsible for maintaining proper housekeeping practices and spill containment procedures.

IV. FLOODPLAIN IMPACTS

Floodplain limits in vicinity of this site are delineated in the applicable Flood Insurance Rate Map, FIRM Panel No. 08041C0752G dated December 7, 2018 (FIRM exhibit enclosed in Appendix A). The Sand Creek Center Tributary Channel flows south within the existing concrete-lined public drainage channel along the west boundary of this site. According to the FEMA floodplain map, the 100-year floodplain limits are contained within the existing channel.

V. STORMWATER DETENTION AND WATER QUALITY

No stormwater detention is required based on the limited impervious area impact of this re-development project. The proposed Warehouse Building will be constructed in an area of the site currently covered with asphalt pavement, so there will be no significant developed drainage impact associated with the project.

As previously discussed, this site is excluded from water quality control measure requirements based on the disturbed area being smaller than one acre.

VI. DRAINAGE BASIN FEES

The site lies within the Sand Creek Drainage Basin. No public drainage improvements are required for development of this project. Required drainage fees have been paid during the previous subdivision platting process, so there are no applicable drainage fees required with the Site Development Plan.

VII. SUMMARY

The developed drainage patterns associated with the proposed Warehouse Building project at 1450 Valley Street (Lot , Block 1, Cimarron Industrial No. 2) will remain consistent with the established drainage conditions for this subdivision. The proposed Warehouse Building project is a re-development of a part of the existing paved parking lot within this industrial lot, so there will be no significant impact on existing site drainage conditions.

The project will include construction of a new private storm inlet and storm sewer connection to the adjoining public drainage channel, which will restore proper functioning of the drainage outfall at the southwest corner of this property. Proper establishment and maintenance of positive drainage within the site, in conjunction with proper erosion control practices, will ensure that this developed site has no significant adverse impact on downstream or surrounding areas.

State the ultimate suitable downstream location for the developed flows. Where are flows from Design Point A and B ultimately collecting towards.

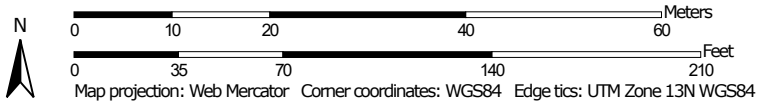
APPENDIX A
HYDROLOGIC CALCULATIONS

Hydrologic Soil Group—El Paso County Area, Colorado
(1450 Valley Street)



Soil Map may not be valid at this scale.

Map Scale: 1:772 if printed on A portrait (8.5" x 11") sheet.











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 1:24,000.

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: El Paso County Area, Colorado
 Survey Area Data: Version 20, Sep 2, 2022

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

Date(s) aerial images were photographed: Aug 19, 2018—Sep 23, 2018

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 |
|------------------------------------|---|--------|--------------|----------------|
| 10 | Blendon sandy loam, 0 to 3 percent slopes | B | 2.6 | 100.0% |
| Totals for Area of Interest | | | 2.6 | 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

Table 6-6. Runoff Coefficients for Rational Method
(Source: UDFCD 2001)

| Land Use or Surface Characteristics | Percent Impervious | Runoff Coefficients | | | | | | | | | | | |
|--|--------------------|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|---------|
| | | 2-year | | 5-year | | 10-year | | 25-year | | 50-year | | 100-year | |
| | | HSG A&B | HSG C&D | HSG A&B | HSG C&D | HSG A&B | HSG C&D | HSG A&B | HSG C&D | HSG A&B | HSG C&D | HSG A&B | HSG C&D |
| Business | | | | | | | | | | | | | |
| Commercial Areas | 95 | 0.79 | 0.80 | 0.81 | 0.82 | 0.83 | 0.84 | 0.85 | 0.87 | 0.87 | 0.88 | 0.88 | 0.89 |
| Neighborhood Areas | 70 | 0.45 | 0.49 | 0.49 | 0.53 | 0.53 | 0.57 | 0.58 | 0.62 | 0.60 | 0.65 | 0.62 | 0.68 |
| Residential | | | | | | | | | | | | | |
| 1/8 Acre or less | 65 | 0.41 | 0.45 | 0.45 | 0.49 | 0.49 | 0.54 | 0.54 | 0.59 | 0.57 | 0.62 | 0.59 | 0.65 |
| 1/4 Acre | 40 | 0.23 | 0.28 | 0.30 | 0.35 | 0.36 | 0.42 | 0.42 | 0.50 | 0.46 | 0.54 | 0.50 | 0.58 |
| 1/3 Acre | 30 | 0.18 | 0.22 | 0.25 | 0.30 | 0.32 | 0.38 | 0.39 | 0.47 | 0.43 | 0.52 | 0.47 | 0.57 |
| 1/2 Acre | 25 | 0.15 | 0.20 | 0.22 | 0.28 | 0.30 | 0.36 | 0.37 | 0.46 | 0.41 | 0.51 | 0.46 | 0.56 |
| 1 Acre | 20 | 0.12 | 0.17 | 0.20 | 0.26 | 0.27 | 0.34 | 0.35 | 0.44 | 0.40 | 0.50 | 0.44 | 0.55 |
| Industrial | | | | | | | | | | | | | |
| Light Areas | 80 | 0.57 | 0.60 | 0.59 | 0.63 | 0.63 | 0.66 | 0.66 | 0.70 | 0.68 | 0.72 | 0.70 | 0.74 |
| Heavy Areas | 90 | 0.71 | 0.73 | 0.73 | 0.75 | 0.75 | 0.77 | 0.78 | 0.80 | 0.80 | 0.82 | 0.81 | 0.83 |
| Parks and Cemeteries | 7 | 0.05 | 0.09 | 0.12 | 0.19 | 0.20 | 0.29 | 0.30 | 0.40 | 0.34 | 0.46 | 0.39 | 0.52 |
| Playgrounds | 13 | 0.07 | 0.13 | 0.16 | 0.23 | 0.24 | 0.31 | 0.32 | 0.42 | 0.37 | 0.48 | 0.41 | 0.54 |
| Railroad Yard Areas | 40 | 0.23 | 0.28 | 0.30 | 0.35 | 0.36 | 0.42 | 0.42 | 0.50 | 0.46 | 0.54 | 0.50 | 0.58 |
| Undeveloped Areas | | | | | | | | | | | | | |
| Historic Flow Analysis-- Greenbelts, Agriculture | 2 | 0.03 | 0.05 | 0.09 | 0.16 | 0.17 | 0.26 | 0.26 | 0.38 | 0.31 | 0.45 | 0.36 | 0.51 |
| Pasture/Meadow | 0 | 0.02 | 0.04 | 0.08 | 0.15 | 0.15 | 0.25 | 0.25 | 0.37 | 0.30 | 0.44 | 0.35 | 0.50 |
| Forest | 0 | 0.02 | 0.04 | 0.08 | 0.15 | 0.15 | 0.25 | 0.25 | 0.37 | 0.30 | 0.44 | 0.35 | 0.50 |
| Exposed Rock | 100 | 0.89 | 0.89 | 0.90 | 0.90 | 0.92 | 0.92 | 0.94 | 0.94 | 0.95 | 0.95 | 0.96 | 0.96 |
| Offsite Flow Analysis (when landuse is undefined) | 45 | 0.26 | 0.31 | 0.32 | 0.37 | 0.38 | 0.44 | 0.44 | 0.51 | 0.48 | 0.55 | 0.51 | 0.59 |
| Streets | | | | | | | | | | | | | |
| Paved | 100 | 0.89 | 0.89 | 0.90 | 0.90 | 0.92 | 0.92 | 0.94 | 0.94 | 0.95 | 0.95 | 0.96 | 0.96 |
| Gravel | 80 | 0.57 | 0.60 | 0.59 | 0.63 | 0.63 | 0.66 | 0.66 | 0.70 | 0.68 | 0.72 | 0.70 | 0.74 |
| Drive and Walks | 100 | 0.89 | 0.89 | 0.90 | 0.90 | 0.92 | 0.92 | 0.94 | 0.94 | 0.95 | 0.95 | 0.96 | 0.96 |
| Roofs | 90 | 0.71 | 0.73 | 0.73 | 0.75 | 0.75 | 0.77 | 0.78 | 0.80 | 0.80 | 0.82 | 0.81 | 0.83 |
| Lawns | 0 | 0.02 | 0.04 | 0.08 | 0.15 | 0.15 | 0.25 | 0.25 | 0.37 | 0.30 | 0.44 | 0.35 | 0.50 |

3.2 Time of Concentration

One of the basic assumptions underlying the Rational Method is that runoff is a function of the average rainfall rate during the time required for water to flow from the hydraulically most remote part of the drainage area under consideration to the design point. However, in practice, the time of concentration can be an empirical value that results in reasonable and acceptable peak flow calculations.

For urban areas, the time of concentration (t_c) consists of an initial time or overland flow time (t_i) plus the travel time (t_r) in the storm sewer, paved gutter, roadside drainage ditch, or drainage channel. For non-urban areas, the time of concentration consists of an overland flow time (t_i) plus the time of travel in a concentrated form, such as a swale or drainageway. The travel portion (t_r) of the time of concentration can be estimated from the hydraulic properties of the storm sewer, gutter, swale, ditch, or drainageway. Initial time, on the other hand, will vary with surface slope, depression storage, surface cover, antecedent rainfall, and infiltration capacity of the soil, as well as distance of surface flow. The time of concentration is represented by Equation 6-7 for both urban and non-urban areas.

$$t_c = t_i + t_t \quad (\text{Eq. 6-7})$$

Where:

t_c = time of concentration (min)

t_i = overland (initial) flow time (min)

t_t = travel time in the ditch, channel, gutter, storm sewer, etc. (min)

3.2.1 Overland (Initial) Flow Time

The overland flow time, t_i , may be calculated using Equation 6-8.

$$t_i = \frac{0.395(1.1 - C_5)\sqrt{L}}{S^{0.33}} \quad (\text{Eq. 6-8})$$

Where:

t_i = overland (initial) flow time (min)

C_5 = runoff coefficient for 5-year frequency (see Table 6-6)

L = length of overland flow (300 ft maximum for non-urban land uses, 100 ft maximum for urban land uses)

S = average basin slope (ft/ft)

Note that in some urban watersheds, the overland flow time may be very small because flows quickly concentrate and channelize.

3.2.2 Travel Time

For catchments with overland and channelized flow, the time of concentration needs to be considered in combination with the travel time, t_t , which is calculated using the hydraulic properties of the swale, ditch, or channel. For preliminary work, the overland travel time, t_t , can be estimated with the help of Figure 6-25 or Equation 6-9 (Guo 1999).

$$V = C_v S_w^{0.5} \quad (\text{Eq. 6-9})$$

Where:

V = velocity (ft/s)

C_v = conveyance coefficient (from Table 6-7)

S_w = watercourse slope (ft/ft)

Table 6-7. Conveyance Coefficient, C_v

| Type of Land Surface | C_v |
|--------------------------------------|-------|
| Heavy meadow | 2.5 |
| Tillage/field | 5 |
| Riprap (not buried)* | 6.5 |
| Short pasture and lawns | 7 |
| Nearly bare ground | 10 |
| Grassed waterway | 15 |
| Paved areas and shallow paved swales | 20 |

* For buried riprap, select C_v value based on type of vegetative cover.

The travel time is calculated by dividing the flow distance (in feet) by the velocity calculated using Equation 6-9 and converting units to minutes.

The time of concentration (t_c) is then the sum of the overland flow time (t_i) and the travel time (t_t) per Equation 6-7.

3.2.3 First Design Point Time of Concentration in Urban Catchments

Using this procedure, the time of concentration at the first design point (typically the first inlet in the system) in an urbanized catchment should not exceed the time of concentration calculated using Equation 6-10. The first design point is defined as the point where runoff first enters the storm sewer system.

$$t_c = \frac{L}{180} + 10 \quad (\text{Eq. 6-10})$$

Where:

t_c = maximum time of concentration at the first design point in an urban watershed (min)

L = waterway length (ft)

Equation 6-10 was developed using the rainfall-runoff data collected in the Denver region and, in essence, represents regional “calibration” of the Rational Method. Normally, Equation 6-10 will result in a lesser time of concentration at the first design point and will govern in an urbanized watershed. For subsequent design points, the time of concentration is calculated by accumulating the travel times in downstream drainageway reaches.

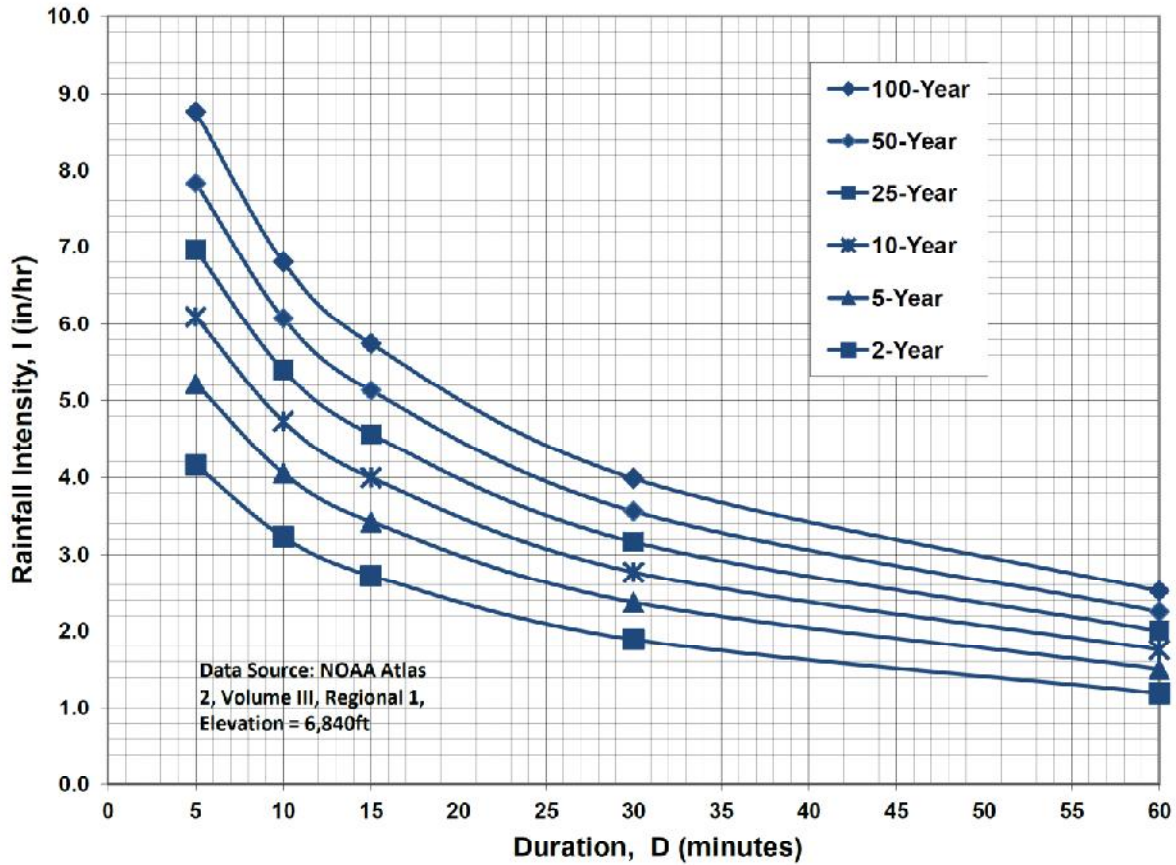
3.2.4 Minimum Time of Concentration

If the calculations result in a t_c of less than 10 minutes for undeveloped conditions, it is recommended that a minimum value of 10 minutes be used. The minimum t_c for urbanized areas is 5 minutes.

3.2.5 Post-Development Time of Concentration

As Equation 6-8 indicates, the time of concentration is a function of the 5-year runoff coefficient for a drainage basin. Typically, higher levels of imperviousness (higher 5-year runoff coefficients) correspond to shorter times of concentration, and lower levels of imperviousness correspond to longer times of

Figure 6-5. Colorado Springs Rainfall Intensity Duration Frequency



IDF Equations

$$I_{100} = -2.52 \ln(D) + 12.735$$

$$I_{50} = -2.25 \ln(D) + 11.375$$

$$I_{25} = -2.00 \ln(D) + 10.111$$

$$I_{10} = -1.75 \ln(D) + 8.847$$

$$I_5 = -1.50 \ln(D) + 7.583$$

$$I_2 = -1.19 \ln(D) + 6.035$$

Note: Values calculated by equations may not precisely duplicate values read from figure.

1450 VALLEY STREET
COMPOSITE RUNOFF COEFFICIENTS

EXISTING CONDITIONS

| 5-YEAR C-VALUES | | | | | | | | | | | |
|--------------------------------------|-----------------|-----------|-------------------------------|--------------------|-----------|-------------------------------|--------------------|-----------|-------------------------------|--------------------|----------------|
| BASIN | TOTAL AREA (AC) | AREA (AC) | SUB-AREA 1 DEVELOPMENT/ COVER | C | AREA (AC) | SUB-AREA 2 DEVELOPMENT/ COVER | C | AREA (AC) | SUB-AREA 3 DEVELOPMENT/ COVER | WEIGHTED C VALUE | |
| A | 2.45 | 1.93 | BUILDING / PAVEMENT | 0.90 | 0.52 | LANDSCAPE | 0.08 | | | 0.726 | |
| B | 0.09 | 0.005 | BUILDING / PAVEMENT | 0.90 | 0.09 | LANDSCAPE | 0.08 | | | 0.126 | |
| 100-YEAR C-VALUES | | | | | | | | | | | |
| BASIN | TOTAL AREA (AC) | AREA (AC) | SUB-AREA 1 DEVELOPMENT/ COVER | C | AREA (AC) | SUB-AREA 2 DEVELOPMENT/ COVER | C | AREA (AC) | SUB-AREA 3 DEVELOPMENT/ COVER | WEIGHTED C VALUE | |
| A | 2.45 | 1.93 | BUILDING / PAVEMENT | 0.96 | 0.52 | LANDSCAPE | 0.35 | | | 0.831 | |
| B | 0.09 | 0.005 | BUILDING / PAVEMENT | 0.96 | 0.09 | LANDSCAPE | 0.35 | | | 0.384 | |
| EXISTING CONDITIONS IMPERVIOUS AREAS | | | | | | | | | | | |
| BASIN | TOTAL AREA (AC) | AREA (AC) | SUB-AREA 1 DEVELOPMENT/ COVER | PERCENT IMPERVIOUS | AREA (AC) | SUB-AREA 2 DEVELOPMENT/ COVER | PERCENT IMPERVIOUS | AREA (AC) | SUB-AREA 3 DEVELOPMENT/ COVER | PERCENT IMPERVIOUS | WEIGHTED % IMP |
| A | 2.45 | 1.93 | BUILDING / PAVEMENT | 100 | 0.52 | LANDSCAPE | 0 | | | | 78.776 |
| B | 0.09 | 0.005 | BUILDING / PAVEMENT | 100 | 0.09 | LANDSCAPE | 0 | | | | 5.556 |

1450 VALLEY STREET
COMPOSITE RUNOFF COEFFICIENTS

DEVELOPED CONDITIONS

5-YEAR C-VALUES

| BASIN | TOTAL AREA (AC) | AREA (AC) | SUB-AREA 1 DEVELOPMENT/ COVER | C | AREA (AC) | SUB-AREA 2 DEVELOPMENT/ COVER | C | AREA (AC) | SUB-AREA 3 DEVELOPMENT/ COVER | C | WEIGHTED C-VALUE |
|-------|-----------------|-----------|-------------------------------|------|-----------|-------------------------------|------|-----------|-------------------------------|---|------------------|
| A | 2.22 | 1.89 | BUILDING / PAVEMENT | 0.90 | 0.33 | LANDSCAPE | 0.08 | | | | 0.778 |
| B | 0.32 | 0.21 | BUILDING / PAVEMENT | 0.90 | 0.11 | LANDSCAPE | 0.08 | | | | 0.618 |

100-YEAR C-VALUES

| BASIN | TOTAL AREA (AC) | AREA (AC) | SUB-AREA 1 DEVELOPMENT/ COVER | C | AREA (AC) | SUB-AREA 2 DEVELOPMENT/ COVER | C | AREA (AC) | SUB-AREA 3 DEVELOPMENT/ COVER | C | WEIGHTED C-VALUE |
|-------|-----------------|-----------|-------------------------------|------|-----------|-------------------------------|------|-----------|-------------------------------|---|------------------|
| A | 2.22 | 1.89 | BUILDING / PAVEMENT | 0.96 | 0.33 | LANDSCAPE | 0.35 | | | | 0.869 |
| B | 0.32 | 0.21 | BUILDING / PAVEMENT | 0.96 | 0.11 | LANDSCAPE | 0.35 | | | | 0.750 |

DEVELOPED CONDITIONS IMPERVIOUS AREAS

| BASIN | TOTAL AREA (AC) | AREA (AC) | SUB-AREA 1 DEVELOPMENT/ COVER | PERCENT IMPERVIOUS | AREA (AC) | SUB-AREA 2 DEVELOPMENT/ COVER | PERCENT IMPERVIOUS | AREA (AC) | SUB-AREA 3 DEVELOPMENT/ COVER | PERCENT IMPERVIOUS | WEIGHTED % IMP |
|-------|-----------------|-----------|-------------------------------|--------------------|-----------|-------------------------------|--------------------|-----------|-------------------------------|--------------------|----------------|
| A | 2.22 | 1.89 | BUILDING / PAVEMENT | 100 | 0.33 | LANDSCAPE | 0 | | | | 85.135 |
| B | 0.32 | 0.21 | BUILDING / PAVEMENT | 100 | 0.11 | LANDSCAPE | 0 | | | | 65.625 |

1450 VALLEY STREET
RATIONAL METHOD

EXISTING CONDITION FLOWS

| BASIN | DESIGN POINT | AREA (AC) | C | | Overland Flow | | | Channel flow | | | | TOTAL | | INTENSITY ⁽⁵⁾ | | PEAK FLOW | | |
|-------|--------------|-----------|--------|----------|---------------|---------------|--------------------------------------|---------------------|--------------------------|---------------|------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------|----------------|-------------------------|---------------------------|
| | | | 5-YEAR | 100-YEAR | LENGTH (FT) | SLOPE (FT/FT) | T _{CO} ⁽¹⁾ (MIN) | CHANNEL LENGTH (FT) | CONVEYANCE COEFFICIENT C | SLOPE (FT/FT) | SCS ⁽²⁾ VELOCITY (FT/S) | T _t ⁽³⁾ (MIN) | T _c ⁽⁴⁾ (MIN) | T _c ⁽⁴⁾ (MIN) | 5-YR (IN/HR) | 100-YR (IN/HR) | Q5 ⁽⁶⁾ (CFS) | Q100 ⁽⁶⁾ (CFS) |
| | | | | | | | | | | | | | | | | | | |
| A | 1 | 2.45 | 0.726 | 0.831 | 40 | 0.050 | 2.5 | 530 | 20 | 0.023 | 3.03 | 2.9 | 5.4 | 5.4 | 5.04 | 8.46 | 8.97 | 17.23 |
| B | 2 | 0.09 | 0.126 | 0.384 | 40 | 0.020 | 9.0 | 210 | 15 | 0.015 | 1.84 | 1.9 | 10.9 | 10.9 | 4.01 | 6.73 | 0.05 | 0.23 |

DEVELOPED FLOWS

| BASIN | DESIGN POINT | AREA (AC) | C | | Overland Flow | | | Channel flow | | | | TOTAL | | INTENSITY ⁽⁵⁾ | | PEAK FLOW | | |
|-------|--------------|-----------|--------|----------|---------------|---------------|--------------------------------------|---------------------|--------------------------|---------------|------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------|----------------|-------------------------|---------------------------|
| | | | 5-YEAR | 100-YEAR | LENGTH (FT) | SLOPE (FT/FT) | T _{CO} ⁽¹⁾ (MIN) | CHANNEL LENGTH (FT) | CONVEYANCE COEFFICIENT C | SLOPE (FT/FT) | SCS ⁽²⁾ VELOCITY (FT/S) | T _t ⁽³⁾ (MIN) | T _c ⁽⁴⁾ (MIN) | T _c ⁽⁴⁾ (MIN) | 5-YR (IN/HR) | 100-YR (IN/HR) | Q5 ⁽⁶⁾ (CFS) | Q100 ⁽⁶⁾ (CFS) |
| | | | | | | | | | | | | | | | | | | |
| A | 1 | 2.22 | 0.778 | 0.869 | 40 | 0.050 | 2.2 | 530 | 20 | 0.023 | 3.03 | 2.9 | 5.1 | 5.1 | 5.14 | 8.63 | 8.88 | 16.65 |
| B | 2 | 0.32 | 0.618 | 0.750 | 40 | 0.020 | 4.4 | 210 | 15 | 0.015 | 1.84 | 1.9 | 6.3 | 6.3 | 4.81 | 8.08 | 0.95 | 1.94 |

1) OVERLAND FLOW T_{CO} = (0.395^(1,1) * (1 - RUNOFF COEFFICIENT) * (OVERLAND FLOW LENGTH^(0.5)) / (SLOPE^(0.333))

2) SCS VELOCITY = C * ((SLOPE(FT/FT))^{0.5})

C = 2.5 FOR HEAVY MEADOW

C = 5 FOR TILLAGE/FIELD

C = 7 FOR SHORT PASTURE AND LAWNS

C = 10 FOR NEARLY BARE GROUND

C = 15 FOR GRASSED WATERWAY

C = 20 FOR PAVED AREAS AND SHALLOW PAVED SWALES

3) MANNING'S CHANNEL TRAVEL TIME = L/V (WHEN CHANNEL VELOCITY IS KNOWN)

4) T_c = T_{CO} + T_t

*** IF TOTAL TIME OF CONCENTRATION IS LESS THAN 5 MINUTES, THEN 5 MINUTES IS USED

5) INTENSITY BASED ON I-D-F EQUATIONS IN CITY OF COLORADO SPRINGS DRAINAGE CRITERIA MANUAL

$$I_5 = -1.5 * \ln(T_c) + 7.583$$

$$I_{100} = -2.52 * \ln(T_c) + 12.735$$

6) Q = C * I * A

APPENDIX B
HYDRAULIC CALCULATIONS

1450 VALLEY STREET
STORM INLET SIZING SUMMARY

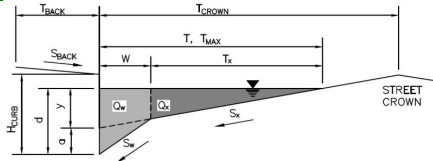
| INLET | BASIN FLOW | | | INLET FLOW | | | INLET CONDITION / TYPE | INLET SIZE (FT) | INLET CAPACITY (CFS) |
|-------|------------|---------------|-----------------|-----------------------|---------------|-----------------|------------------------|-----------------|----------------------|
| | DP | Q5 FLOW (CFS) | Q100 FLOW (CFS) | INLET FLOW % OF BASIN | Q5 FLOW (CFS) | Q100 FLOW (CFS) | | | |
| A1 | 1 | 8.9 | 16.7 | 100 | 8.9 | 16.7 | SUMP TYPE R | 10' | 25.5 |
| | | | | | | | | | |
| | | | | | | | | | |

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

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

Project:
Inlet ID:

1450 Valley Street - Inlet A1
Inlet A1



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb
 Side Slope Behind Curb (leave blank for no conveyance credit behind curb)
 Manning's Roughness Behind Curb (typically between 0.012 and 0.020)
 Height of Curb at Gutter Flow Line
 Distance from Curb Face to Street Crown
 Gutter Width
 Street Transverse Slope
 Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)
 Street Longitudinal Slope - Enter 0 for sump condition
 Manning's Roughness for Street Section (typically between 0.012 and 0.020)

| | | |
|-----------------------|--|--------------------------|
| T _{BACK} = | 4.0 | ft |
| S _{BACK} = | 0.020 | ft/ft |
| n _{BACK} = | 0.020 | |
| H _{CURB} = | 6.00 | inches |
| T _{CROWN} = | 50.0 | ft |
| W = | 2.00 | ft |
| S _x = | 0.020 | ft/ft |
| S _w = | 0.083 | ft/ft |
| S _D = | 0.000 | ft/ft |
| n _{STREET} = | 0.016 | |
| T _{MAX} = | Minor Storm: 50.0 Major Storm: 50.0 | ft |
| d _{MAX} = | Minor Storm: 7.0 Major Storm: 12.0 | inches |
| | <input type="checkbox"/> | <input type="checkbox"/> |

Warning 02

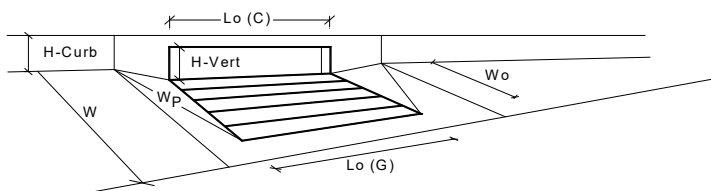
Max. Allowable Spread for Minor & Major Storm
 Max. Allowable Depth at Gutter Flowline for Minor & Major Storm
 Check boxes are not applicable in SUMP conditions

MINOR STORM Allowable Capacity is based on Depth Criterion
MAJOR STORM Allowable Capacity is based on Depth Criterion

| | | |
|----------------------|--|-----|
| Q _{allow} = | Minor Storm: SUMP Major Storm: SUMP | cfs |
|----------------------|--|-----|

INLET IN A SUMP OR SAG LOCATION

Version 4.05 Released March 2017



| Design Information (Input) | MINOR | MAJOR | |
|--|--------------------------|-------|---|
| Type of Inlet | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a' from above) | 3.00 | 3.00 | inches |
| Number of Unit Inlets (Grate or Curb Opening) | 1 | 1 | |
| Water Depth at Flowline (outside of local depression) | 7.0 | 12.0 | inches |
| Grate Information | MINOR | MAJOR | <input checked="" type="checkbox"/> Override Depths |
| Length of a Unit Grate | N/A | N/A | feet |
| Width of a Unit Grate | N/A | N/A | feet |
| Area Opening Ratio for a Grate (typical values 0.15-0.90) | N/A | N/A | |
| Clogging Factor for a Single Grate (typical value 0.50 - 0.70) | N/A | N/A | |
| Grate Weir Coefficient (typical value 2.15 - 3.60) | N/A | N/A | |
| Grate Orifice Coefficient (typical value 0.60 - 0.80) | N/A | N/A | |
| Curb Opening Information | MINOR | MAJOR | |
| Length of a Unit Curb Opening | 10.00 | 10.00 | feet |
| Height of Vertical Curb Opening in Inches | 6.00 | 6.00 | inches |
| Height of Curb Orifice Throat in Inches | 6.00 | 6.00 | inches |
| Angle of Throat (see USDCM Figure ST-5) | 63.40 | 63.40 | degrees |
| Side Width for Depression Pan (typically the gutter width of 2 feet) | 2.00 | 2.00 | feet |
| Clogging Factor for a Single Curb Opening (typical value 0.10) | 0.10 | 0.10 | |
| Curb Opening Weir Coefficient (typical value 2.3-3.7) | 3.60 | 3.60 | |
| Curb Opening Orifice Coefficient (typical value 0.60 - 0.70) | 0.67 | 0.67 | |
| Low Head Performance Reduction (Calculated) | MINOR | MAJOR | |
| Depth for Grate Midwidth | N/A | N/A | ft |
| Depth for Curb Opening Weir Equation | 0.42 | 0.83 | ft |
| Combination Inlet Performance Reduction Factor for Long Inlets | 0.66 | 1.00 | |
| Curb Opening Performance Reduction Factor for Long Inlets | 0.99 | 1.00 | |
| Grated Inlet Performance Reduction Factor for Long Inlets | N/A | N/A | |
| Total Inlet Interception Capacity (assumes clogged condition) | MINOR | MAJOR | |
| Inlet Capacity IS GOOD for Minor and Major Storms(>Q PEAK) | 12.2 | 25.5 | cfs |
| Q PEAK REQUIRED = | 8.8 | 16.6 | cfs |

**1450 VALLEY STREET
STORM SEWER SIZING SUMMARY**

| PIPE FLOW | | | | PIPE CAPACITY | | |
|-----------|-------|---------------|-----------------|---------------|-----------------|--------------------------|
| PIPE | INLET | Q5 FLOW (CFS) | Q100 FLOW (CFS) | PIPE SIZE | MIN. PIPE SLOPE | FULL PIPE CAPACITY (CFS) |
| A1 | A1 | 8.9 | 16.7 | 18 | 4.1% | 16.7 |
| | | | | | | |
| | | | | | | |

ASSUMPTIONS:

1. STORM DRAIN PIPE ASSUMED TO BE RCP OR HDPE

Hydraulic Analysis Report

Project Data

Project Title: Project - 1450 Valley Street - SD
Designer: JPS
Project Date: Tuesday, October 25, 2022
Project Units: U.S. Customary Units
Notes:

Channel Analysis: SD-A1

Notes:

Input Parameters

Channel Type: Circular
Pipe Diameter: 1.5000 ft
Longitudinal Slope: 0.0410 ft/ft
Manning's n: 0.0130
Depth: 1.0000 ft

Result Parameters

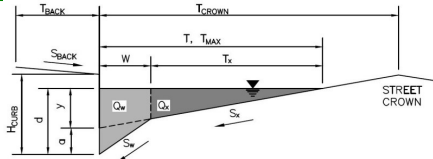
Flow: 16.6729 cfs
Area of Flow: 1.2515 ft²
Wetted Perimeter: 2.8659 ft
Hydraulic Radius: 0.4367 ft
Average Velocity: 13.3222 ft/s
Top Width: 1.4142 ft
Froude Number: 2.4957
Critical Depth: 1.4348 ft
Critical Velocity: 9.5803 ft/s
Critical Slope: 0.0219 ft/ft
Critical Top Width: 0.61 ft
Calculated Max Shear Stress: 2.5584 lb/ft²
Calculated Avg Shear Stress: 1.1172 lb/ft²

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

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

Project:
Inlet ID:

Valley Street - Urban Local Street Capacity
Valley Street Capacity



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

T_{BACK} = 10.0 ft
 S_{BACK} = 0.020 ft/ft
 n_{BACK} = 0.020

Height of Curb at Gutter Flow Line
Distance from Curb Face to Street Crown
Gutter Width
Street Transverse Slope
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)
Street Longitudinal Slope - Enter 0 for sump condition
Manning's Roughness for Street Section (typically between 0.012 and 0.020)

H_{CURB} = 6.00 inches
 T_{CROWN} = 20.0 ft
 W = 2.00 ft
 S_x = 0.020 ft/ft
 S_W = 0.083 ft/ft
 S_D = 0.017 ft/ft
 n_{STREET} = 0.016

Max. Allowable Spread for Minor & Major Storm
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm
Allow Flow Depth at Street Crown (leave blank for no)

| | Minor Storm | Major Storm | |
|-----------|--------------------------|-------------------------------------|-------------|
| T_{MAX} | 20.0 | 20.0 | ft |
| d_{MAX} | 6.0 | 12.0 | inches |
| | <input type="checkbox"/> | <input checked="" type="checkbox"/> | check = yes |

MINOR STORM Allowable Capacity is based on Depth Criterion
MAJOR STORM Allowable Capacity is based on Depth Criterion

| | Minor Storm | Major Storm | |
|-------------|-------------|-------------|-----|
| Q_{allow} | 18.0 | 144.3 | cfs |

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'
Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

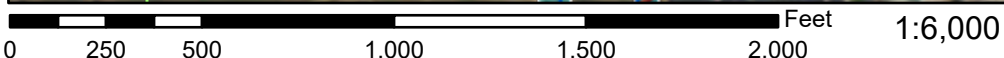
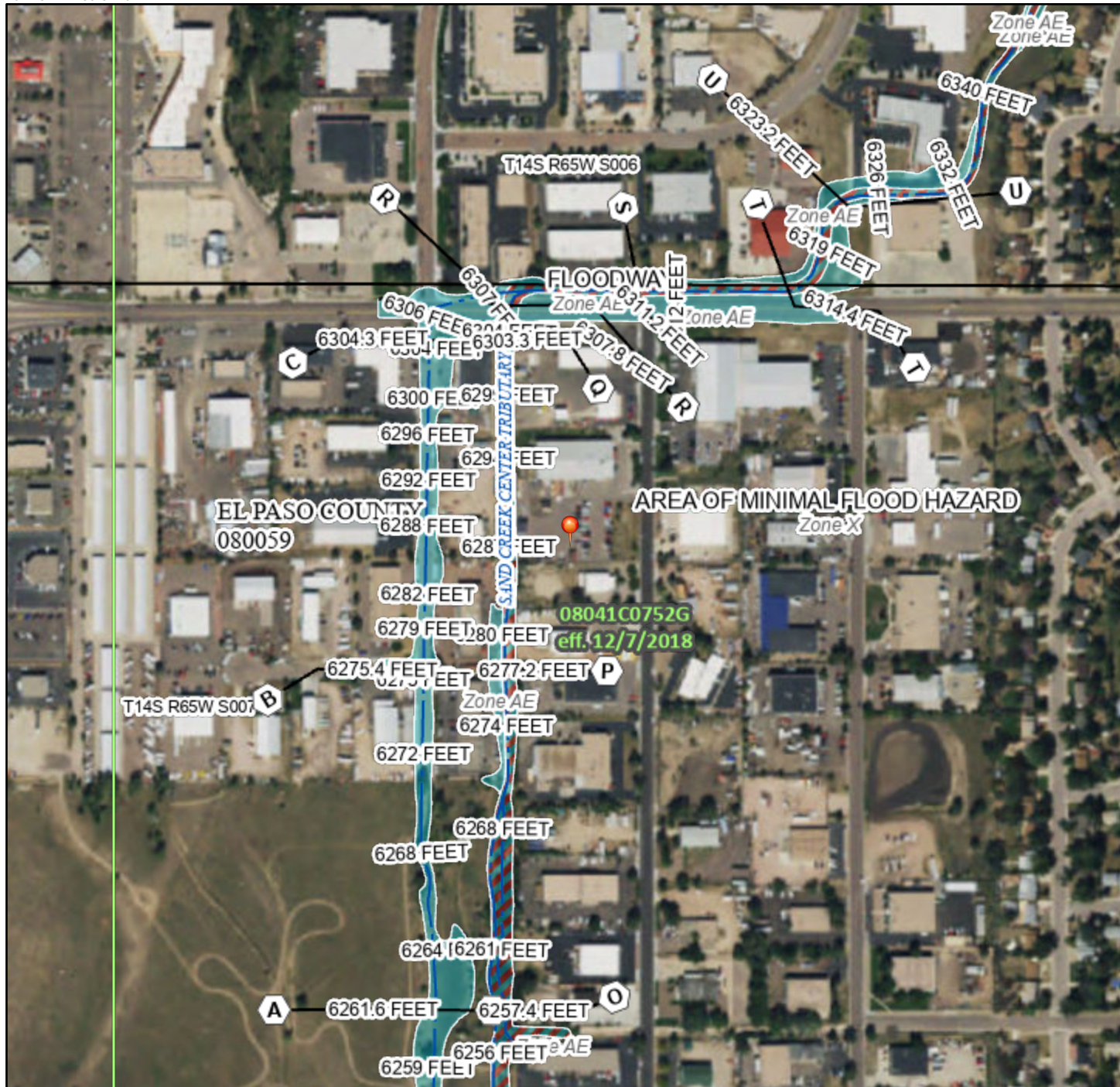
APPENDIX C

FIGURES

National Flood Hazard Layer FIRMMette



104°43'11"W 38°51'20"N



Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

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

- | | |
|---|--|
| <p>SPECIAL FLOOD HAZARD AREAS</p> | <ul style="list-style-type: none"> Without Base Flood Elevation (BFE) <i>Zone A, V, A99</i> With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i> Regulatory Floodway |
| <p>OTHER AREAS OF FLOOD HAZARD</p> | <ul style="list-style-type: none"> 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone X</i> Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i> Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i> Area with Flood Risk due to Levee <i>Zone D</i> |
| <p>OTHER AREAS</p> | <ul style="list-style-type: none"> NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i> Effective LOMRs Area of Undetermined Flood Hazard <i>Zone D</i> |
| <p>GENERAL STRUCTURES</p> | <ul style="list-style-type: none"> Channel, Culvert, or Storm Sewer Levee, Dike, or Floodwall |
| <p>OTHER FEATURES</p> | <ul style="list-style-type: none"> B 20.2 Cross Sections with 1% Annual Chance Water Surface Elevation 17.5 Coastal Transect Base Flood Elevation Line (BFE) Limit of Study Jurisdiction Boundary Coastal Transect Baseline Profile Baseline Hydrographic Feature |
| <p>MAP PANELS</p> | <ul style="list-style-type: none"> Digital Data Available No Digital Data Available Unmapped |



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

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **10/24/2022 at 5:09 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

C:\Users\Owner\Desktop\psproject\062201\hammers-1450-valley\dwg\incoming\EX1.dwg Oct. 26, 2022 - 12:38pm

RW PROPERTIES
1485 PAONIA ST
PARCEL NO: 54072-06-001
ZONE: 1-2 CAD-0
USE: WAREHOUSE/ STORAGE

BBP FAMILY PARTNERSHIP LLP
1435 PAONIA ST
PARCEL NO: 54072-06-002
ZONE: 1-2 CAD-0
USE: OFFICES

GERALD RUSSEL WELING LIV TRUST
1335 PAONIA ST
PARCEL NO: 54072-06-005
ZONE: 1-2 CAD-0
USE: INDUSTRIAL CONDOMINIUMS

ACTION HOLDINGS LLC
1490 VALLEY ST.
PARCEL NO: 54072-03-012
ZONE: 1-2 CAD-0
USE: WAREHOUSE/ STORAGE

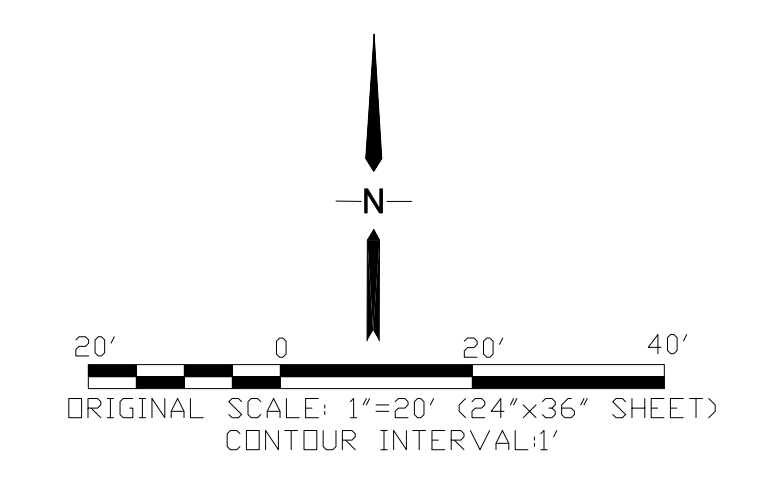
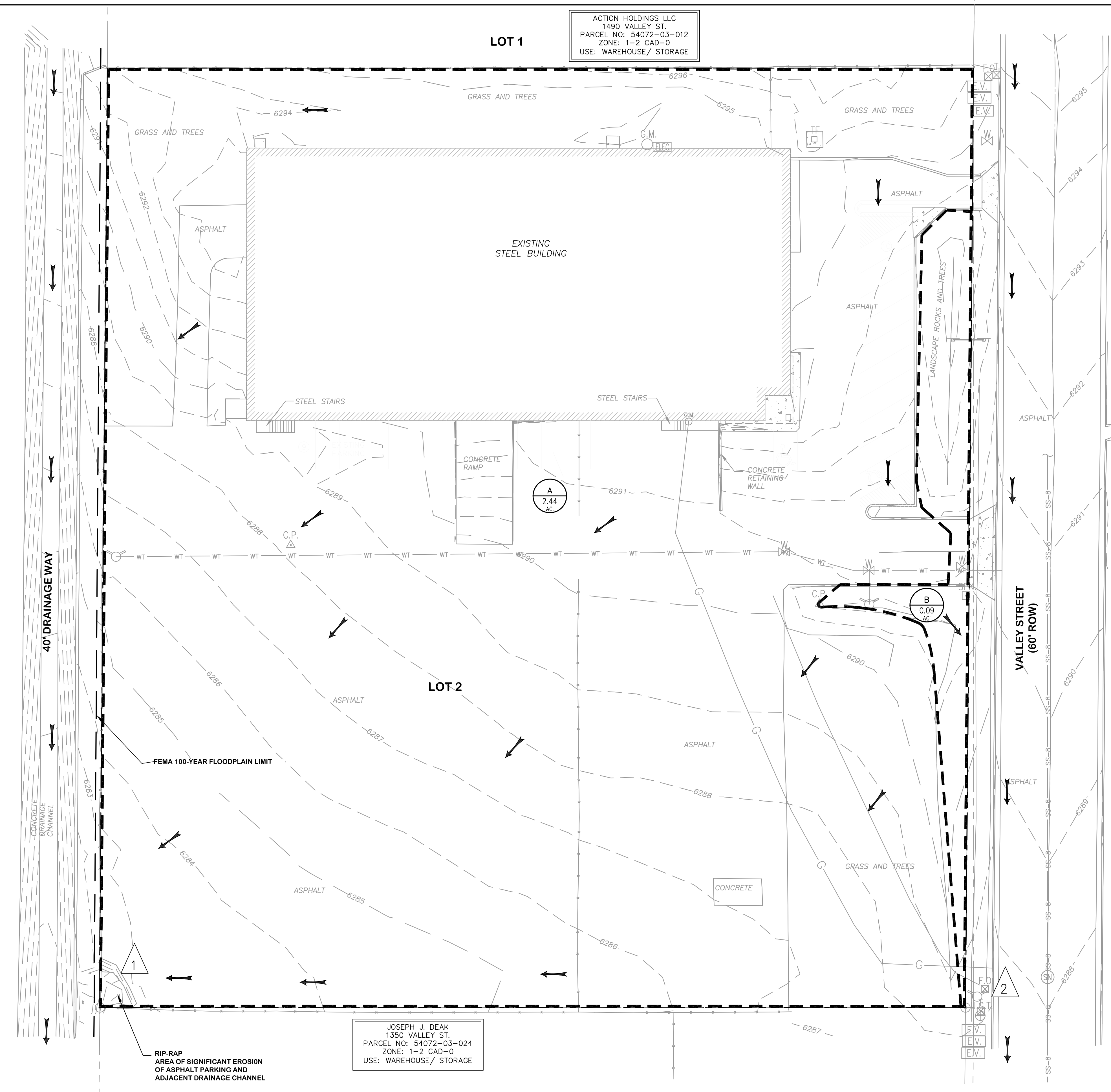
OTTER ROCK LEASING LLC
6125 OMAHA BLVD
PARCEL NO: 54072-03-035
ZONE: 1-2 CAD-0
USE: WAREHOUSE/ STORAGE

1425 VALLEY STREET LLC
1425 VALLEY ST.
PARCEL NO: 54072-02-029
ZONE: 1-2 CAD-0
USE: WAREHOUSE/ STORAGE

1355 VALLEY STREET LLC
1355 VALLEY ST.
PARCEL NO: 54072-02-023
ZONE: 1-2 CAD-0
USE: WAREHOUSE/ STORAGE

JOSEPH J. DEAK
1350 VALLEY ST.
PARCEL NO: 54072-03-024
ZONE: 1-2 CAD-0
USE: WAREHOUSE/ STORAGE

BENCHMARK:
BM#1
FIMS MONUMENT F81, LOCATED ON THE NORTH SIDE OF EAST PLAT AVE. 50' WEST OF FORD STREET.
ELEV.=6275.86' (NAVD88)
BM#2
CONTROL POINT 101
ELEV.=6292.09' (NAVD88)



LEGEND

- FEMA 100-YEAR FLOODWAY
- FEMA 100-YR FLOODPLAIN
- PROPERTY LINE
- DRAINAGE BASIN BOUNDARY
- 6255 PROPOSED CONTOUR
- 6255 EXISTING CONTOUR
- FLOWLINE
- FLOW DIRECTION ARROW
- △ DESIGN POINT
- BASIN DESIGNATION
- BASIN AREA (ACRES)

IMPERVIOUS AREA CALCULATIONS:

TOTAL SITE AREA = 2.54 AC.

| SURFACE TYPE | AREA |
|------------------------------|------------------|
| EXISTING BUILDING | 20,120 SF |
| ASPHALT / PAVEMENT | 64,011 SF |
| TOTAL IMPERVIOUS AREA | 84,131 SF |

= 1.93 AC
= **76.0%**

SUMMARY HYDROLOGY TABLE

| DESIGN POINT | Q5 (CFS) | Q100 (CFS) |
|--------------|----------|------------|
| 1 | 9.0 | 17.2 |
| 2 | 0.05 | 0.2 |

NEW WAREHOUSE BUILDING - 1450 VALLEY STREET
LOT 2, BLOCK 1, CIMARRON INDUSTRIAL NO. 2

JPS ENGINEERING

19 E. Willamette Ave.
Colorado Springs, CO 80903
PH: 719-477-9429
FAX: 719-471-0766
www.jpsengr.com

CALL UTILITY NOTIFICATION CENTER OF COLORADO
1-800-922-1987
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

| No. | REVISION | BY | DATE |
|-----|----------|----|------|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |

EXISTING CONDITIONS DRAINAGE PLAN

HORZ. SCALE: 1"=20'
VERT. SCALE: N/A
SURVEYED: N/A
CREATED: 10/05/22
PROJECT NO: 062201

DRAWN: PV
DESIGNED: JPS
CHECKED: JPS
LAST MODIFIED: 10/26/22
MODIFIED BY: PV

EX1

BNV PROPERTIES
1485 PAVONIA ST
PARCEL NO: 54072-06-001
ZONE: 1-2 CAD-0
USE: WAREHOUSE/ STORAGE

BBP FAMILY PARTNERSHIP LLLP
1435 PAVONIA ST
PARCEL NO: 54072-06-002
ZONE: 1-2 CAD-0
USE: OFFICES

J. RUSSEL WELING LIV TRUST
1355 VALLEY ST.
PARCEL NO: 54072-06-005
ZONE: 1-2 CAD-0
INDUSTRIAL CONDOMINIUMS

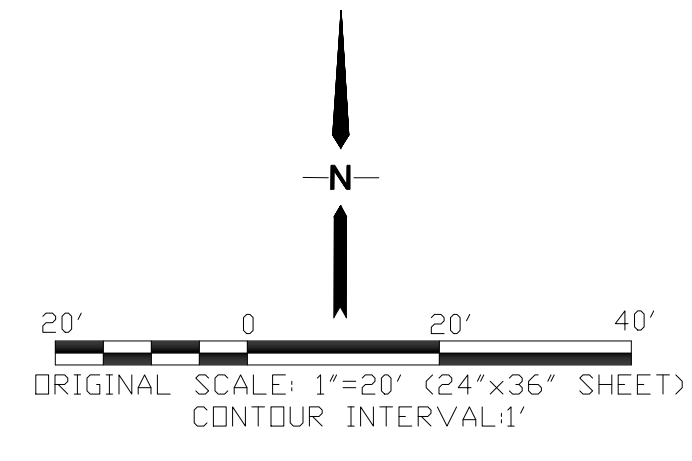
ACTION HOLDINGS LLC
1490 VALLEY ST.
PARCEL NO: 54072-03-012
ZONE: 1-2 CAD-0
USE: WAREHOUSE/ STORAGE

OTTER ROCK LEASING LLC
6125 OMAHA BLVD
PARCEL NO: 54072-02-035
ZONE: 1-2 CAD-0
USE: WAREHOUSE/ STORAGE

1425 VALLEY STREET LLC
1425 VALLEY ST.
PARCEL NO: 54072-02-029
ZONE: 1-2 CAD-0
USE: WAREHOUSE/ STORAGE

1355 VALLEY STREET LLC
1355 VALLEY ST.
PARCEL NO: 54072-02-023
ZONE: 1-2 CAD-0
USE: WAREHOUSE/ STORAGE

JOSEPH J. DEAK
1350 VALLEY ST.
PARCEL NO: 54072-03-024
ZONE: 1-2 CAD-0
USE: WAREHOUSE/ STORAGE



LEGEND

- FEMA 100-YEAR FLOODWAY
- FEMA 100-YR FLOODPLAIN
- PROPERTY LINE
- DRAINAGE BASIN BOUNDARY
- 6255 PROPOSED CONTOUR
- 6255 EXISTING CONTOUR
- FLOWLINE
- FLOW DIRECTION ARROW
- △ DESIGN POINT
- BASIN DESIGNATION
- BASIN AREA (ACRES)

IMPERVIOUS AREA CALCULATIONS:

TOTAL BASIN SITE AREA = 2.54 AC.

| SURFACE TYPE | AREA |
|------------------------------|---------------------------|
| EXISTING BUILDING | 20,120 SF |
| PROPOSED BUILDING | 18,800 SF |
| ASPHALT / PAVEMENT | 52,589 SF |
| TOTAL IMPERVIOUS AREA | 91,509 SF = 2.1 AC |
| | = 82.7% |

SUMMARY HYDROLOGY TABLE

| DESIGN POINT | Q5 (CFS) | Q100 (CFS) |
|--------------|----------|------------|
| 1 | 8.9 | 16.7 |
| 2 | 1.0 | 1.9 |

**NEW WAREHOUSE BUILDING - 1450 VALLEY STREET
LOT 2, BLOCK 1, CIMARRON INDUSTRIAL NO. 2**

**DEVELOPED
DRAINAGE PLAN**

**JPS
ENGINEERING**

19 E. Willamette Ave.
Colorado Springs, CO 80903

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FAX: 719-471-0766
www.jpsegr.com

CALL UTILITY NOTIFICATION
CENTER OF COLORADO
1-800-922-1987
CALL 2-BUSINESS DAYS IN ADVANCE
BEFORE YOU DIG, GRADE, OR EXCAVATE
FOR THE MARKING OF UNDERGROUND
MEMBER UTILITIES.

| No. | DATE | BY | REVISION |
|-----|------|----|----------|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |

HORZ. SCALE: 1"=20'
VERT. SCALE: N/A
SURVEYED: RIDGELINE
CREATED: 10/05/22
PROJECT NO: 062201
SHEET:

DRAWN: PV
DESIGNED: JPS
CHECKED: JPS
LAST MODIFIED: 01/20/23
MODIFIED BY: PV

D1

BENCHMARK:

BM#1
FIMS MONUMENT F81, LOCATED ON THE NORTH SIDE OF EAST PLAT AVE. 50' WEST OF FORD STREET.
ELEV.=6275.86' (NAVD88)

BM#2
CONTROL POINT 101
ELEV.=6292.09' (NAVD88)

Calculations indicate a 10" Type R Inlet and a 18" connection. Please revise drainage map and verify consistency with civil plans.

Label as private

PROPOSED 6" TYPER STORM INLET W/ 18 LF 12" HDPE CONNECTION TO EXISTING CONCRETE CHANNEL

Provide analysis for curb chase verifying it is adequate to handle the flow through it.

Please note:
- EPC Staff is conducting additional research into alternatives for curb chases to protect asphalt from eroding between the curb and curb chase due to concentrated flows.
- EPC Staff may require the proposed curb chase to be removed. A final decision will be made and you will be informed possibly through a condition of approval.

LOT 2
111,024 SF

LIMIT OF DISTURBANCE
(A=0.97 AC)

40' DRAINAGE WAY

VALLEY STREET
(60' ROW)

