

DRAINAGE LETTER

5819 PALMER PARK BLVD.

PART OF LOT 1, POWERS CENTER, FILING NO. 3

September 27, 2018

Revised
November 23, 2018

Prepared for

John Nelson

Oliver E. Watts, Consulting Engineer, Inc.
Colorado Springs, Colorado

Add PCD File No. PPR1847

OLIVER E. WATTS, PE-LS
OLIVER E. WATTS, CONSULTING ENGINEER, INC.
CIVIL ENGINEERING AND SURVEYING
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COLORADO SPRINGS, COLORADO 80907
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Celebrating over 39 years in business

November 24, 2018

El Paso County D.O.T.
2880 International Circle
Suite 110
Colorado Springs, CO 80910

ATTN: Jennifer Irvine

SUBJECT: Drainage Letter
5810 Palmer Park Blvd.

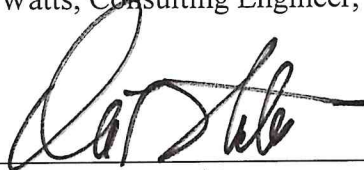
Gentlemen

Transmitted herewith for your review and approval is the drainage letter for 5819 Palmer Park Boulevard, which is part of Lot 1, Powers Center Filing No. 3. It is proposed to construct a Short Stop drive-in restaurant in an existing paved parking lot.

There will be no change in the approved runoff as a result of this subdivision. This report has been revised in accordance with your review of November 15, 2018. Please contact our office if we may provide any further information.

Oliver E. Watts, Consulting Engineer, Inc.

BY: _____


Oliver E. Watts, President

Encl:

Drainage Letter 2 pages
FEMA Flood Panel 08041C0752 F, March 17, 1997
Computations, 4 pages
Backup Information, 6 Pages
Soils Map and Interpretation sheet
Drainage Plan, Dwg No. 18-5237-02

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 applicable master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report.

Oliver E. Watts, Consulting Engineer, Inc.

Oliver E. Watts Colo. PE-LS No. 9853

2. OWNERS / DEVELOPER'S STATEMENT:

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

John Nelson, Architect

By: _____
1626 E. Pikes Peak Ave.
Colorado Springs, CO 80909

3. EL PASO COUNTY:

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

Jennifer Irvine date _____
County Engineer, ECM Administrator

Conditions:

4. LOCATION AND DESCRIPTION:

5819 Palmer Boulevard is located East of Powers Boulevard between Palmer Park Boulevard and Omaha Boulevard, as shown on the enclosed drainage plan. It is proposed that a Short Stop drive-in restaurant will be placed in a portion of the existing parking lot in Lot 1, Powers Center filing No. 3. The total lot will occupy just less than one-half acre, counting the parking required for the restaurant in the existing parking lot. The restaurant itself will occupy less than 3000 feet of the lot.

5. FLOOD PLAIN STATEMENT:

This subdivision is not within the limits of a designated flood plain or flood hazard area, as identified on FEMA panel no. 08041C0751 F, and 08041C0752 F, dated March 17, 1997, copies of which are enclosed for reference.

Review 1: Unresolved

Review 2: Provide the reference of the approved report (i.e. title, date, engineering company who created the report.)

6. DESCRIPTION OF RUNOFF:

As stated above, this Site was previously platted as Powers Center Filing no. 3. At that time a drainage report was submitted and approved by El Paso County, Colorado. The portion of the parking lot to be occupied by the restaurant is totally asphalt paved at this time. The construction of the drive in could arguably have less impervious cover than that of the existing parking, although for the sake of computations the impervious ratio is assumed to be 80% in keeping with the existing zoning. The entire lot area associated with the construction occupies 0.469 acre on an approximate slope of four percent. The runoff from the entire area is computed to be 2.0 cfs / 3.6 cfs, not including potential inflows from the north. This report is in full compliance with the above reference drainage report.

A sand filter basin is proposed to mitigate the placement of the restaurant, as required by County regulations. Based on the 2951 square foot footprint of the total disturbed area, the required storage is 90 cubic feet. The basin will be placed in an existing parking island in the southwest corner of the site, and is proposed to be constructed of vertical masonry walls with the sand filter floor of 32 square feet, as shown in the enclosed computations. A curb outlet will route the runoff into the basin.

Please revise the text to match what is designed per the drainage calculations and plan.

7. 4 STEP PROCESS

The following process has been followed to minimize adverse impacts of urbanization

Runoff Reduction: The scope of the development has been minimized consistent with zoning requirements to present the minimum footprint in providing a development. The undisturbed portions are to be landscaped or left alone to reduce the impervious percent.

Please delete the word "detention" or indicate sand filter basin

Treat and Slowly Release: The above described sand filter basin is to be provided to provide water quality treatment and a reduced rate of discharge from the development. The two year storm will be totally contained within the detention pond and released into the underlying soil cover. Runoffs in excess of that value will be cycled through the pond to the maximum extent possible.

Channel Stabilizing: The site will be graded to route the runoff over improved parking, street and curb installations to provide channel stabilizing in the natural erosive material over the site. Discharge from the site will be in accordance with the master drainage plan and previous

Please name these reports or remove this text.

Please explain this statement

subdivision drainage reports. There will be no adverse affect on downstream developments as a result of this subdivision

Source Controls: This is a minimum sized commercial site, so source control problems will be a minimum. During construction, standard site specific state of the art BMP's will be employed to minimize and mitigate erosive problems.

There will be no increase in runoff or damage to downstream structures as a result of this construction.

8. FEES:

This Site has been previously platted and there is no increase in the amount of impervious cover; therefore fees are not due.



APPROXIMATE SCALE IN FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM FLOOD INSURANCE RATE MAP
 EL PASO COUNTY,
 COLORADO AND
 INCORPORATED AREAS

PANEL 751 OF 1300
 (SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:	NUMBER	PANEL	SUFFIX
COMMUNITY			
COLORADO SPRINGS, CITY OF	080900	0751	F
EL PASO COUNTY, UNINCORPORATED AREAS	080250	0751	F

6819 PALMER PARK BLVD.
 FEMA MAP PANEL
 1"=500'

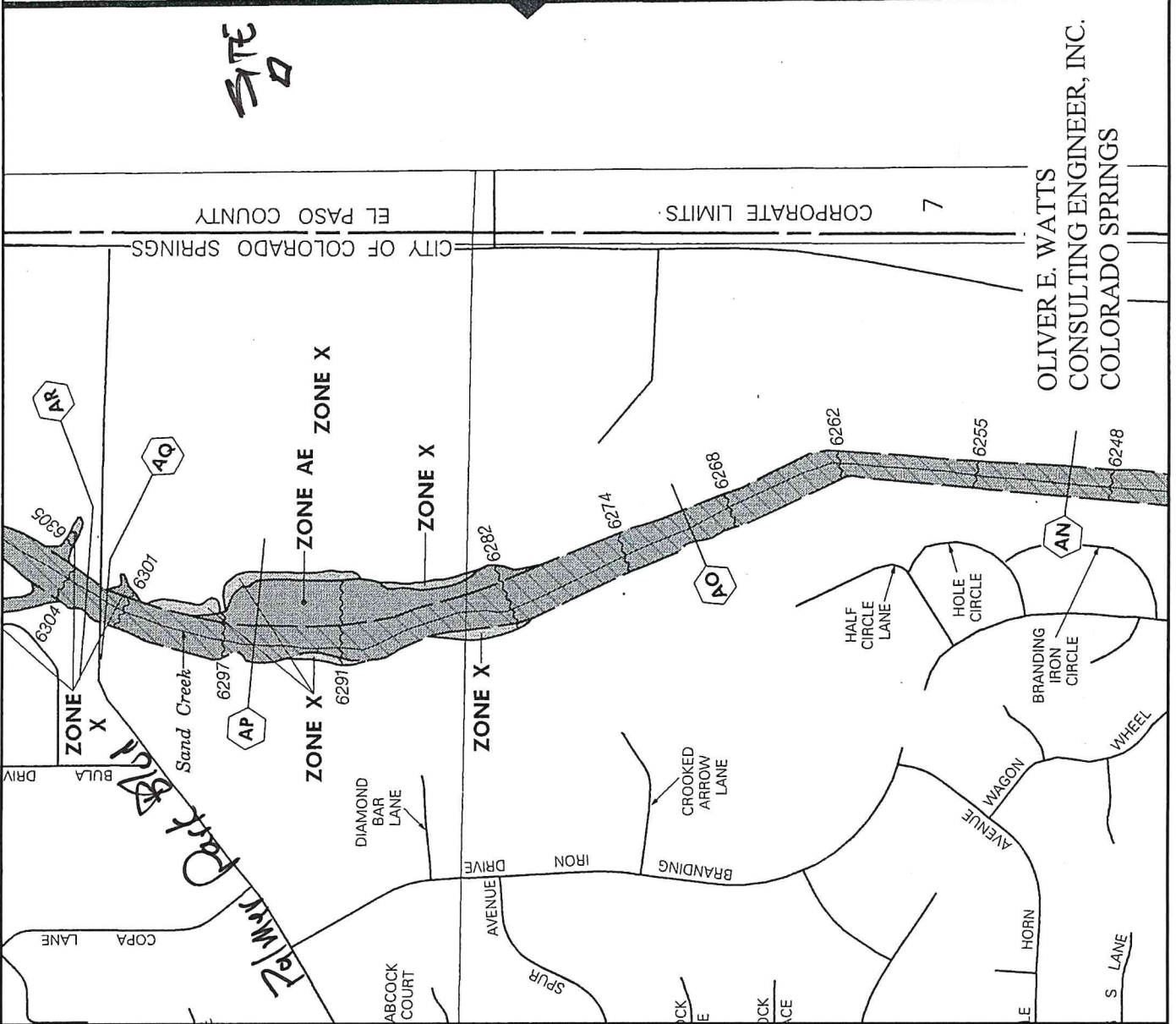
MAP NUMBER
 08041C0751 F

EFFECTIVE DATE:
 MARCH 17, 1997



Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEIMA Flood Map Store at www.msc.fema.gov



OLIVER E. WATTS
 CONSULTING ENGINEER, INC.
 COLORADO SPRINGS

EL PASO COUNTY
UNINCORPORATED AREAS
080059

APPROXIMATE SCALE IN FEET




NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP
EL PASO COUNTY,
COLORADO AND
INCORPORATED AREAS

PANEL 752 OF 1300
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS: COMMUNITY	NUMBER	PANEL	SUFFIX
EL PASO SPRINGS, CITY OF	080050	0752	F
EL PASO COUNTY UNINCORPORATED AREAS	080059	0752	F

6819 PALMER PARK BLVD.
FEMA MAP PANEL
1"=500'

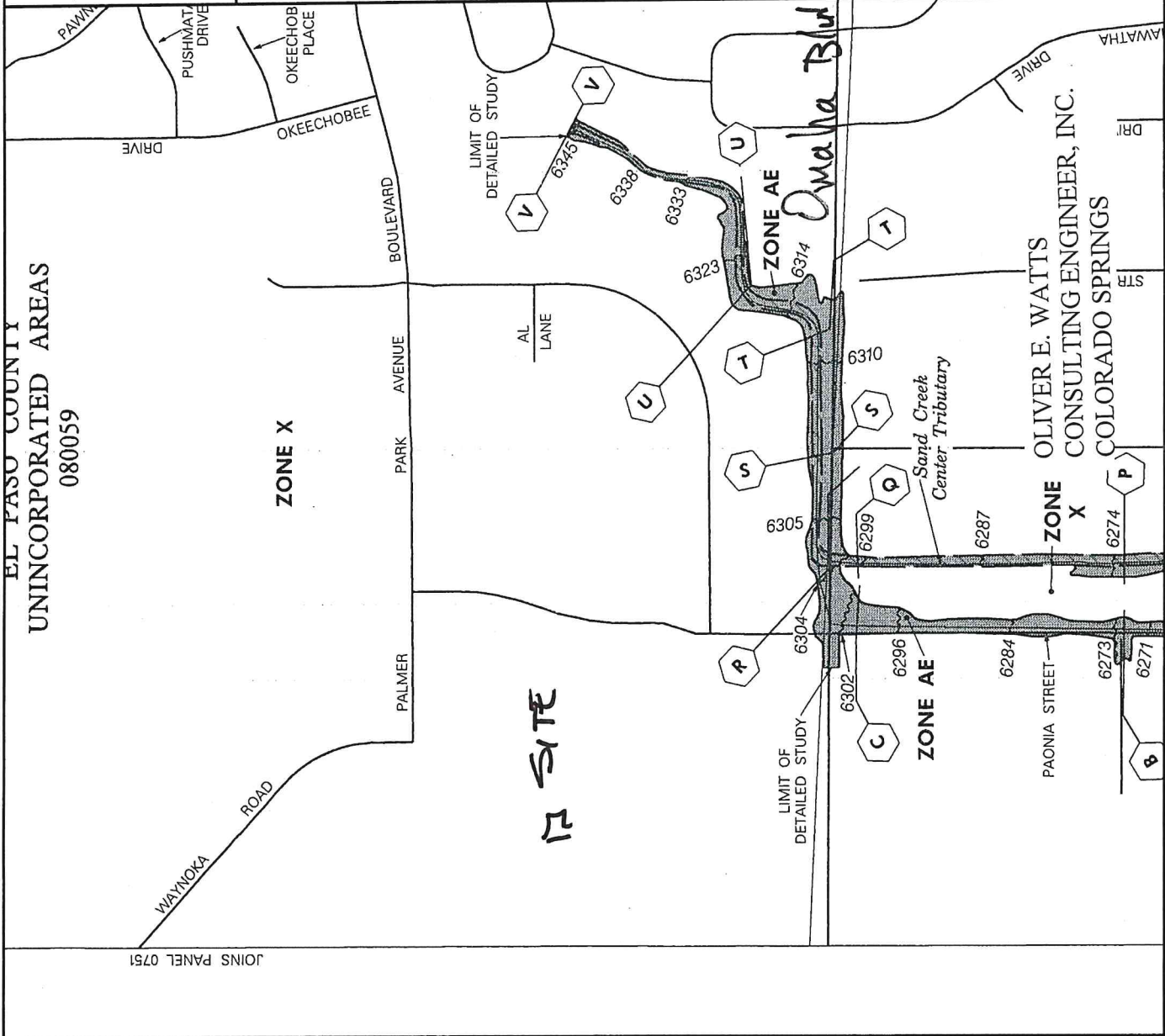
MAP NUMBER
0804100752 F

EFFECTIVE DATE:
MARCH 17, 1997



Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



JOINS PANEL 0751

17 SITE

STREET AND STORM SEWER CALCULATIONS

STREET	LOCATION	DISTANCE	ELEVATION & SLOPE	TOTAL RUNOFF	STREET FLOW / CAPACITY	PIPE FLOW	TYPE PIPE, CATCH BASIN & SLOPE %
PRIVATE	BASIN A		2.4%	2.0/3.6		2.0	4' CURB OUTLET
							SAND FILTER BASIN SEE ATTACHED

STREET AND STORM SEWER CALCULATIONS
PROJECT: 5819 PALMER PARK BLVD.
BY: O.E. WATTS

DATE: November 24, 2018
OLIVER E. WATTS, CONSULTING ENGINEER, INC.
 614 ELKTON DRIVE COLORADO SPRINGS, CO 80907

Design Procedure Form: Sand Filter (SF)

UD-BMP (Version 3.06, November 2016)

Sheet 1 of 2

Designer: O.E. Watts
Company: OEW Cons. Engr. Inc
Date: September 27, 2018 November 24, 2018
Project: 5819 Palmer Park
Location: _____

3/4

<p>1. Basin Storage Volume</p> <p>A) Effective Imperviousness of Tributary Area, I_a (100% if all paved and roofed areas upstream of sand filter)</p> <p>B) Tributary Area's Imperviousness Ratio ($i = I_a/100$)</p> <p>C) Water Quality Capture Volume (WQCV) Based on 12-hour Drain Time $WQCV = 0.8 * (0.91 * i^3 - 1.19 * i^2 + 0.78 * i)$</p> <p>D) Contributing Watershed Area (including sand filter area)</p> <p>E) Water Quality Capture Volume (WQCV) Design Volume $V_{WQCV} = WQCV / 12 * Area$</p> <p>F) For Watersheds Outside of the Denver Region, Depth of Average Runoff Producing Storm</p> <p>G) For Watersheds Outside of the Denver Region, Water Quality Capture Volume (WQCV) Design Volume</p> <p>H) User Input of Water Quality Capture Volume (WQCV) Design Volume (Only if a different WQCV Design Volume is desired)</p>	<p>$I_a =$ <u>80.0</u> %</p> <p>$i =$ <u>0.800</u></p> <p>WQCV = <u>0.26</u> watershed inches</p> <p>Area = <u>2,951</u> sq ft</p> <p>$V_{WQCV} =$ <u>65</u> cu ft</p> <p>$d_b =$ <u>0.60</u> in</p> <p>$V_{WQCV\ OTHER} =$ <u>90</u> cu ft</p> <p>$V_{WQCV\ USER} =$ _____ cu ft</p>
<p>2. Basin Geometry</p> <p>A) WQCV Depth</p> <p>B) Sand Filter Side Slopes (Horizontal distance per unit vertical, 4:1 or flatter preferred). Use "0" if sand filter has vertical walls.</p> <p>C) Minimum Filter Area (Flat Surface Area)</p> <p>D) Actual Filter Area</p> <p>E) Volume Provided</p>	<p>$D_{WQCV} =$ <u>2.0</u> ft</p> <p>$Z =$ <u>0.00</u> ft / ft</p> <p>$A_{Min} =$ <u>30</u> sq ft</p> <p>$A_{Actual} =$ <u>45</u> sq ft</p> <p>$V_T =$ <u>90</u> cu ft</p>
<p>3. Filter Material</p>	<p>Choose One _____</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <input checked="" type="radio"/> 18" CDOT Class B or C Filter Material </div> <p><input type="radio"/> Other (Explain): _____</p> <p>_____</p> <p>_____</p>
<p>4. Underdrain System</p> <p>A) Are underdrains provided?</p> <p>B) Underdrain system orifice diameter for 12 hour drain time</p> <p style="margin-left: 20px;">i) Distance From Lowest Elevation of the Storage Volume to the Center of the Orifice</p> <p style="margin-left: 20px;">ii) Volume to Drain in 12 Hours</p> <p style="margin-left: 20px;">iii) Orifice Diameter, 3/8" Minimum</p>	<p>Choose One _____</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <input type="radio"/> YES <input checked="" type="radio"/> NO </div> <p>$y =$ <u>N/A</u> ft</p> <p>$Vol_{12} =$ <u>N/A</u> cu ft</p> <p>$D_o =$ <u>N/A</u> in</p>

Design Procedure Form: Sand Filter (SF)

Sheet 2 of 2

Designer: O.E. Watts
Company: OEW Cons. Engr. Inc
Date: September 27, 2018 November 24, 2018
Project: 5819 Palmer Park
Location: _____

4/4

5. Impermeable Geomembrane Liner and Geotextile Separator Fabric

A) Is an impermeable liner provided due to proximity of structures or groundwater contamination?

Choose One _____

YES NO

6-7. Inlet / Outlet Works

A) Describe the type of energy dissipation at inlet points and means of conveying flows in excess of the WQCV through the outlet

Notes: _____

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													
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													
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													
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													
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_t) 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_t) 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.

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

Where:

t_c = time of concentration (min)

t_i = overland (initial) flow time (min)

t_r = 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_r , which is calculated using the hydraulic properties of the swale, ditch, or channel. For preliminary work, the overland travel time, t_i , 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_o) 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 drainage reaches.

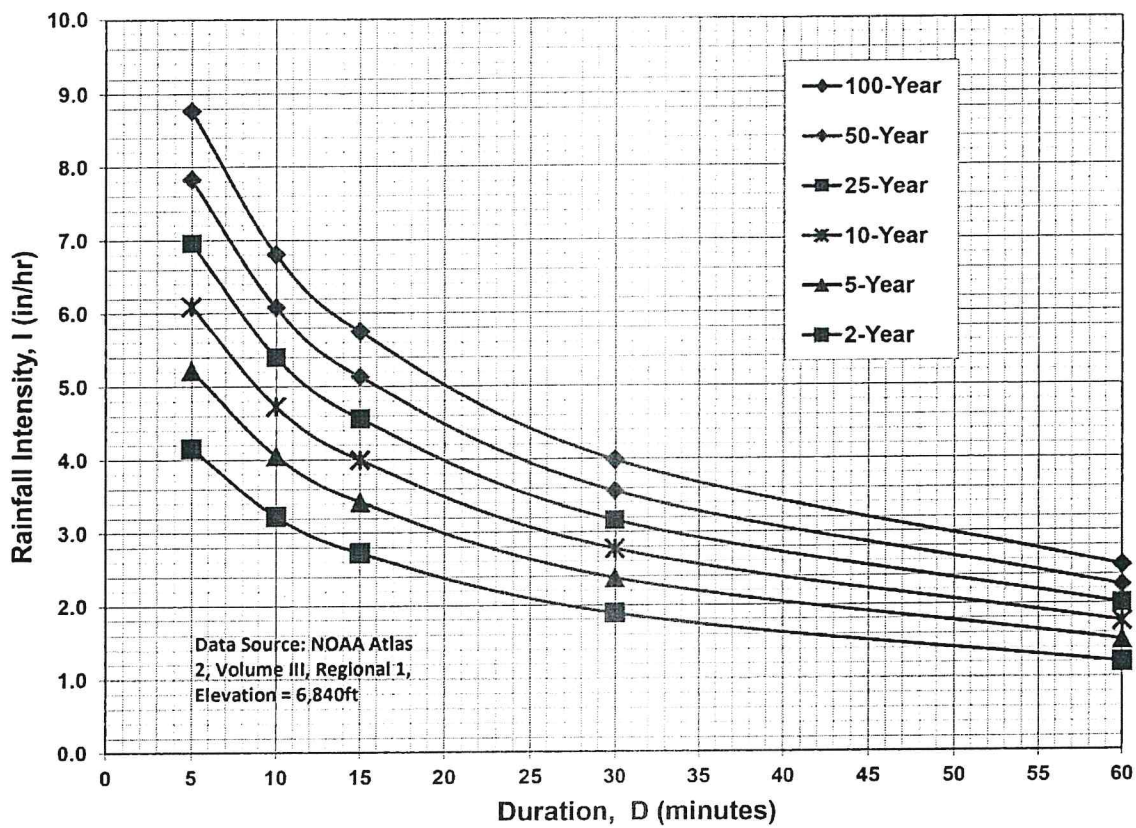
3.2.4 Minimum Time of Concentration

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

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

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

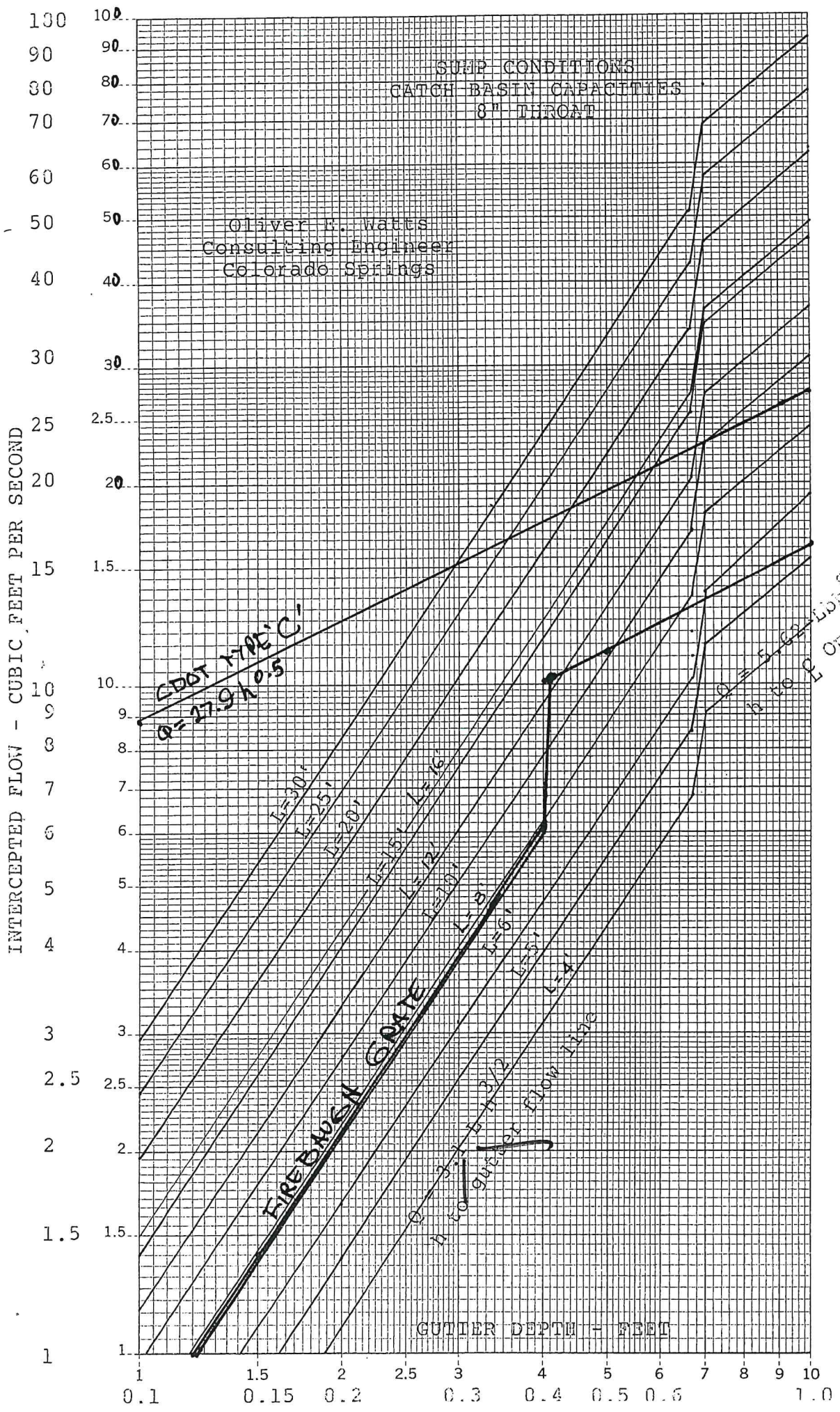
$$I_{25} = -2.00 \ln(D) + 10.111$$

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

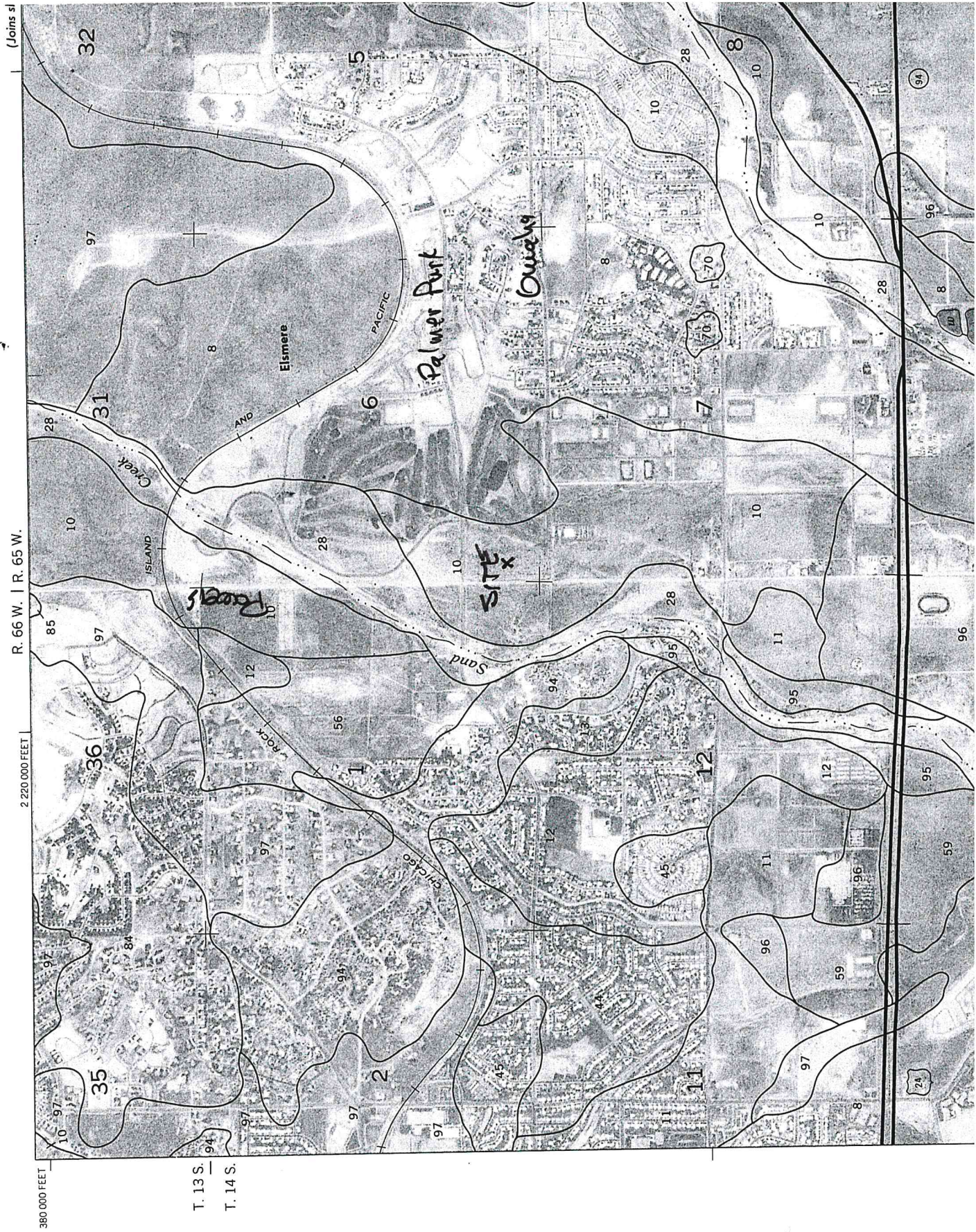
$$I_5 = -1.50 \ln(D) + 7.583$$

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

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



U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE



OLIVER E. WATTS
CONSULTING ENGINEER, INC.
COLORADO SPRINGS

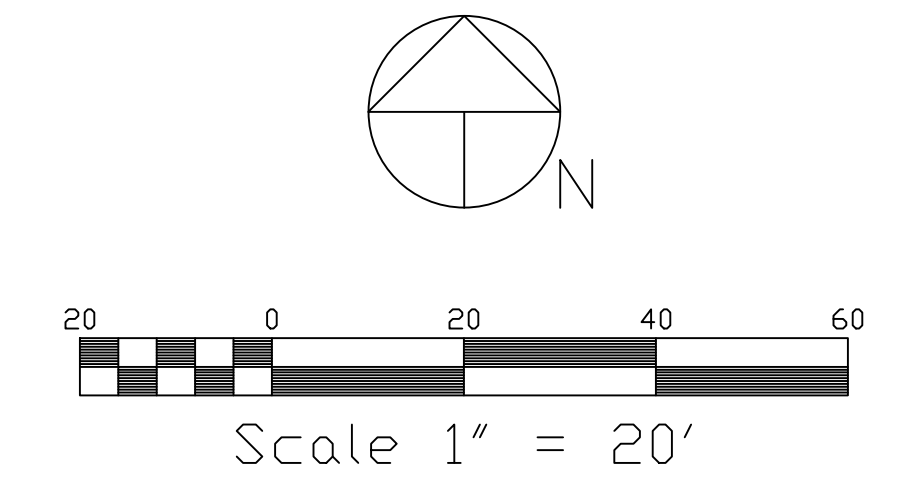
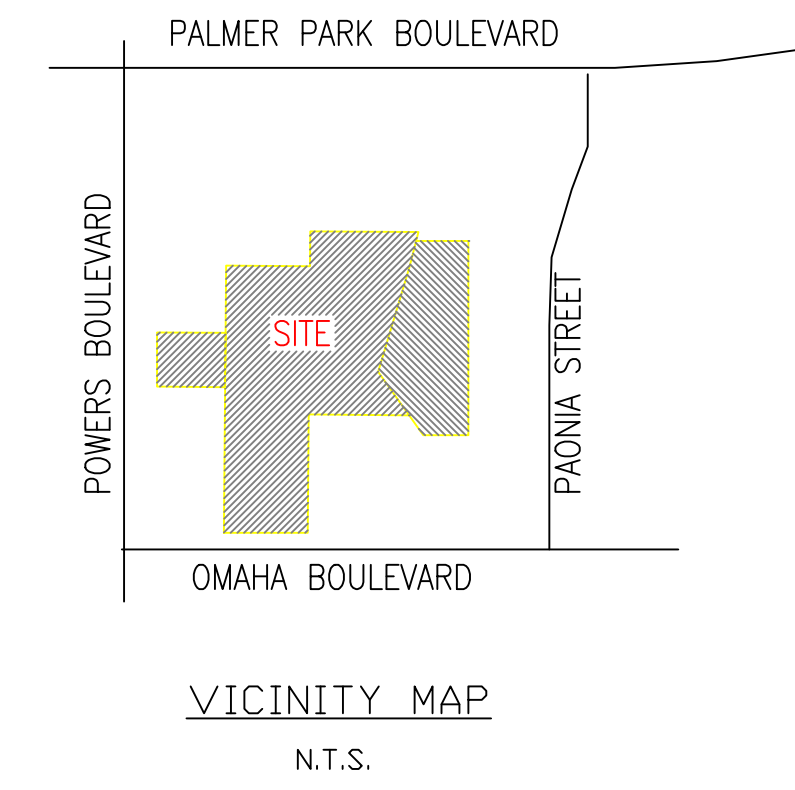
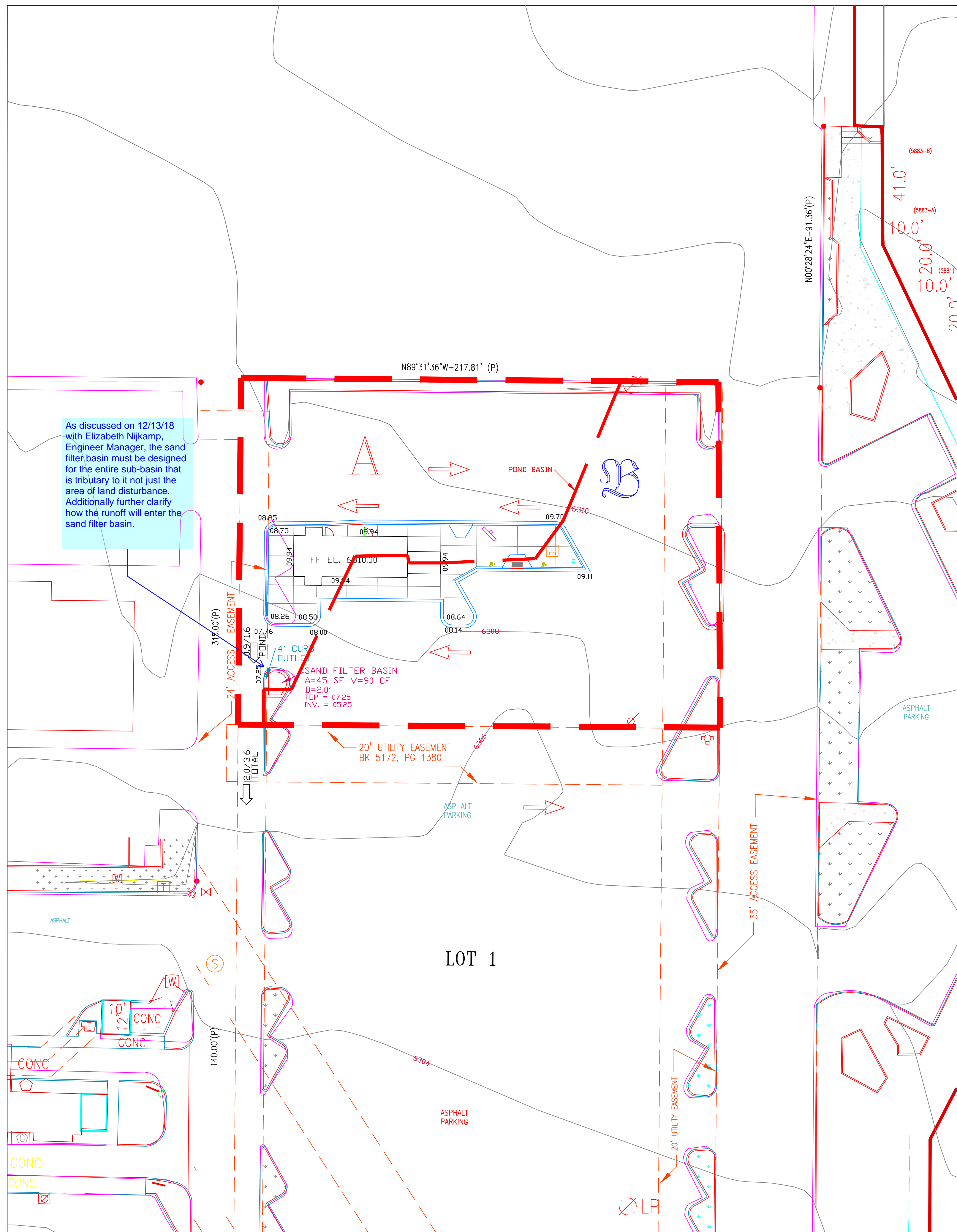
6819 PALMER PARK BLVD
SCS SOILS MAP
1"=2000'

TABLE 16.--SOIL AND WATER FEATURES

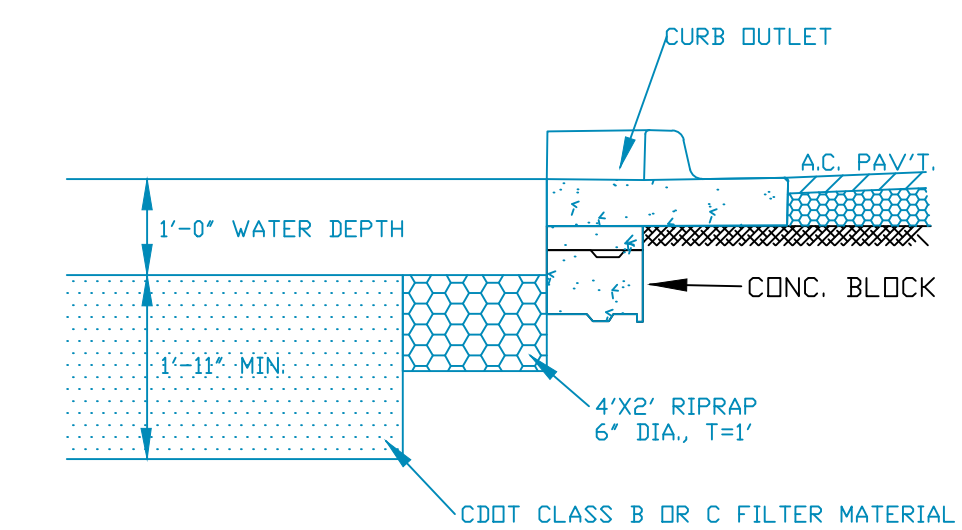
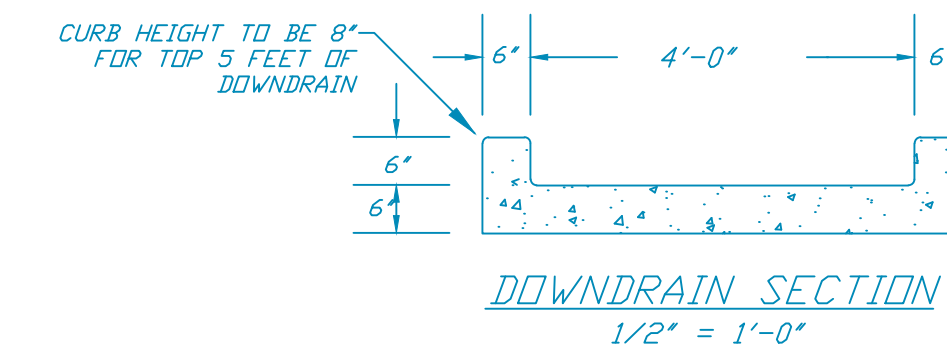
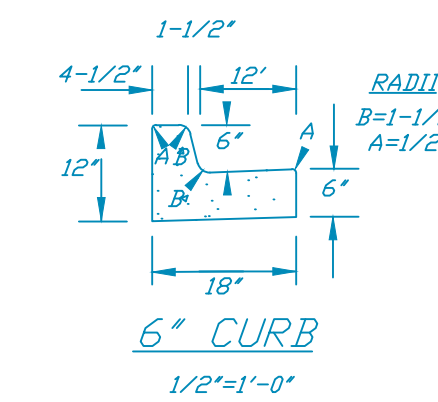
[Absence of an entry indicates the feature is not a concern. See "flooding" in Glossary for definition of terms as "rare," "brief," and "very brief." The symbol > means greater than]

Soil name and map symbol	Hydro-logic group	Flooding			Bedrock		Potential frost action
		Frequency	Duration	Months	Depth	Hardness	
Alamosa: 1-----	C	Frequent-----	Brief-----	May-Jun	In >60	---	High.
Ascalon: 2, 3-----	B	None-----	---	---	>60	---	Moderate.
Badland: 4-----	D	---	---	---	---	---	---
Bijou: 5, 6, 7-----	B	None-----	---	---	>60	---	Low.
Blakeland: 8-----	A	None-----	---	---	>60	---	Low.
19: Blakeland part-----	A	None-----	---	---	>60	---	Low.
Fluvaquentic Haplaquolls part-----	D	Common-----	Very brief----	Mar-Aug	>60	---	High.
Blendon: 10-----	B	None-----	---	---	>60	---	Moderate.
Bresser: 11, 12, 13-----	B	None-----	---	---	>60	---	Low.
Brussett: 14, 15-----	B	None-----	---	---	>60	---	Moderate.
Chaseville: 16, 17-----	A	None-----	---	---	>60	---	Low.
118: Chaseville part-----	A	None-----	---	---	>60	---	Low.
Midway part-----	D	None-----	---	---	10-20	Rippable	Moderate.
Columbine: 19-----	A	None to rare	---	---	>60	---	Low.
Connerton: 20: Connerton part-----	B	None-----	---	---	>60	---	High.
Rock outcrop part-----	D	---	---	---	---	---	---
Cruckton: 21-----	B	None-----	---	---	>60	---	Moderate.
Cushman: 22, 23-----	C	None-----	---	---	20-40	Rippable	Moderate.
124: Cushman part-----	C	None-----	---	---	20-40	Rippable	Moderate.
Kutch part-----	C	None-----	---	---	20-40	Rippable	Moderate.
Elbeth: 25, 26-----	B	None-----	---	---	>60	---	Moderate.
127: Elbeth part-----	B	None-----	---	---	>60	---	Moderate.

See footnote at end of table.



- LEGEND:**
- 10.5/20.4 RUNOFF IN CFS 5-YEAR/100-YEAR
 - A LIMIT OF DRAINAGE BASIN AND DESIGNATION
 - PROPOSED STORM SEWER AS LABELED
 - B LIMIT OF SOILS TYPE AND GROUP



DRAWN BY: O.E. WATTS DATE: 9-27-18 DWG. NO.: 18-5237-02 TOPOGRAPHY BY: CITY FMS BASE PLAN BY: JOHN NELSON	APPROVED BY: PROJ. NO.: DWG.:	REVISIONS 11-24-18 CITY REVIEW COMMENTS DEW	OLIVER E. WATTS CONSULTING ENGINEER COLORADO SPRINGS	PROJECT 5819 PALMER PARK BLVD. LOT 1, POWERS CENTER FIL. NO. 3 EL PASO COUNTY	SHEET NO. DRAINAGE PLAN 1 OF 1
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Markup Summary

Daniel Torres (10)

PROJECT, INC.
PRADO

Add PCD File No. PPR1847

Subject: Text Box
Page Label: 1
Lock: Unlocked
Author: Daniel Torres
Date: 12/12/2018 7:35:06 AM
Color: ■

Add PCD File No. PPR1847

The runoff from the entire area is computed to be 2.0 cfs / 3.0 cfs, not
years from the north. This report is in full compliance with the above
it.

posed to mitigate the placement of the restaurant, as required by County
be 2951 square foot footprint of the total disturbed area, the required storage
area will be placed in an existing parking island in the southwest corner of
The construction of vertical masonry walls with the sand filter floor of 22
the enclosed compartments. A curb outlet will route the runoff into the
Please revise the text to match what is
designed per the drainage calculations
and plans.

has been followed to minimize adverse impacts of urbanization
scope of the development has been minimized consistent with zoning
the minimum footprint in providing a development. The undisturbed
caped or left alone to reduce the impervious percent.

ge: The above described sand filter basin is to be provided to provide water
reduced rate of discharge from the development. The two year storm will

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Author: Daniel Torres
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Please revise the text to match what is
designed per the drainage calculations
and plan.

4. LOCATION AND DESCRIPTION:
The Project is located at the corner of Pecos Boulevard and Paseo del Prado, in the
City of Albuquerque, New Mexico. The site is bounded by Pecos Boulevard to the
north, Paseo del Prado to the east, and the existing parking lot to the south and
west. The site is approximately 0.25 acres in size. The proposed development
consists of a restaurant and a parking lot.

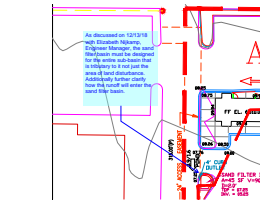
5. FLOOD PLAN STATEMENT:
The site is located in a flood plain area. The site is bounded by Pecos Boulevard to the
north, Paseo del Prado to the east, and the existing parking lot to the south and
west. The site is approximately 0.25 acres in size. The proposed development
consists of a restaurant and a parking lot.

6. DESCRIPTION OF DEVELOPMENT:
The development consists of a restaurant and a parking lot. The restaurant
will be approximately 2,000 square feet in size. The parking lot will be
approximately 1,000 square feet in size. The development will be bounded
by Pecos Boulevard to the north, Paseo del Prado to the east, and the
existing parking lot to the south and west. The site is approximately 0.25
acres in size. The proposed development consists of a restaurant and a
parking lot.

The above described sand filter basin is to be provided to provide water
reduced rate of discharge from the development. The two year storm will

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Review 1: Unresolved
Review 2: Provide the reference of the
approved report (i.e. title, date,
engineering company who created the
report.)



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As discussed on 12/13/18 with Elizabeth
Nijkamp, Engineer Manager, the sand
filter basin must be designed for the entire
sub-basin that is tributary to it not just the
area of land disturbance. Additionally
further clarify how the runoff will enter the
sand filter basin.

oped to mitigate the placement of the restaurant, as required by County
be 2951 square foot footprint of the total disturbed area, the required storage
area will be placed in an existing parking island in the southwest corner of
The construction of vertical masonry walls with the sand filter floor of 22
the enclosed compartments. A curb outlet will route the runoff into the
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and plans.

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scope of the development has been minimized consistent with zoning
the minimum footprint in providing a development. The undisturbed
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reduced rate of discharge from the development. The two year storm will

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Author: Daniel Torres
Date: 12/13/2018 4:25:44 PM
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in

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Please delete the word "detention" or
indicate sand filter basin

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and parking, street and
over the site.
and previous

Please explain this
statement

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Please explain this statement

and released into the underlying soil cover. Runoff
the pond to the maximum extent possible.

to route the runoff over improved parking, street and
in the natural erosive material over the site.
with the **master drainage plan and previous**

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of that value will be cycled through the pond to the maximum

Stabilizing: The site will be graded to route the runoff over in
tallations to provide channel stabilizing in the natural erosive
ge from the site will be in accordance with the master drainage

Please name these
reports or remove this
text.

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