

September 17, 2025

City of Parker
Engineering Department
20120 East Mainstreet
Parker, CO 80138

The latest FDR on file and referenced in Filing No. 1, Amendment No. 1 other reports is November 28, 2018. Please reference the latest approved report on file with the Town.

Text revised. It is to confirm that the proposed grading and drainage improvements associated with the above referenced property is in conformance with the “Final Drainage Report for Parker Pointe Parker, Colorado”, prepared by Perception Design Group Inc., and dated March 2020. (PDG report).

The Huntington Bank Parker project improvements include the construction of a new building with a drive-thru and parking lot on 1.3541 acres.

The subject land was broken into several basins for analysis as part of the PDG report including the Lots 14 and a portion of Lot 13 for future development. The subject land was included in the analysis of the overall Parker Pointe – Filing No. 1 Parker, Colorado in the PDG report as Basins of a portion of Lot 14, Lot 13, U1, U2, a portion of IN1 and a portion of IN2 for a total of 1.35 acres and assuming a future imperviousness value of 95% with all basins’ runoff directed to the existing detention pond on the northern boundary included in the ILC report.

Sub Basin IN1 consists of the existing eastern portion of Declan Drive. Runoff is directed to the Existing Inlet 1 (Type R Inlet) that will be relocated just north of the southern access drive to the site that is connected to the existing storm sewer system that drains into the existing detention pond.

Sub Basin IN2 consists of the southeast corner of the site located at the existing northwest corner of Declan Drive and Napa Avenue. The runoff is directed to the existing Inlet 2 (Type R Inlet) located at the southern end of Declan Drive along the western curb. The inlet is connected to the existing storm sewer system that drains into the existing detention pond.

Sub Basin IN3 consists of the southeast corner of the access drive, the southern parking areas and the drive-thru lanes. The runoff is directed to Inlet 3 (Type R Inlet) located along the southeast corner of the southern parking area. The inlet is connected to the existing storm sewer system that drains into the existing detention pond.

Sub Basin IN4 consists of the southwest corner of the access drive and a small portion of sidewalk. The runoff is directed to Inlet 4 (Type 13 Combination Inlet) located on the southwest curb of the southwest corner of the access drive. The inlet is connected to the existing storm sewer system that drains into the existing detention pond.

Runoff Comparison Table:

Basin	Area (Ac)	Imp. (%)	5 yr Coefficient	100 year Coefficient	5 yr Runoff (cfs)	100 yr Runoff (cfs)
PDG MASTER BASIN						
EX13	0.73	95.0	0.81	0.87	2.21	4.98
EX14	0.32	95.0	0.81	0.87	0.97	2.18
EXU1	0.05	20.00	0.15	0.52	0.03	0.20
EXU2	0.17	92.78	0.79	0.86	0.50	1.15
EXIN1	0.08	95.0	0.81	0.87	0.24	0.55
EXIN2	0.05	95.0	0.81	0.87	0.15	0.34
TOTAL	1.35	94.7	0.81	0.87	4.09	9.21
PDG Huntington BASIN						
IN1	0.09	95.00	0.81	0.87	0.27	0.61
IN2	0.05	95.00	0.81	0.87	0.15	0.34
IN3	0.34	73.19	0.61	0.77	0.77	2.05
IN4	0.04	91.68	0.78	0.85	0.12	0.27
IN5	0.34	73.00	0.61	0.72	0.77	1.92
B	0.06	20.00	0.15	0.52	0.03	0.24
R	0.07	95.00	0.81	0.87	0.21	0.48
U1	0.19	20.00	0.15	0.52	0.11	0.77
U2	0.17	77.72	0.65	0.79	0.41	1.05
TOTAL	1.35	67.79	0.56	0.74	2.86	7.76

As the tributary area to the pond is similar to assumptions in the PDG report, and the runoff and imperviousness is less, the site is deemed in compliance with the Parker Pointe – Filing No 1 report. No changes are required to the existing pond or the existing storm sewer system.

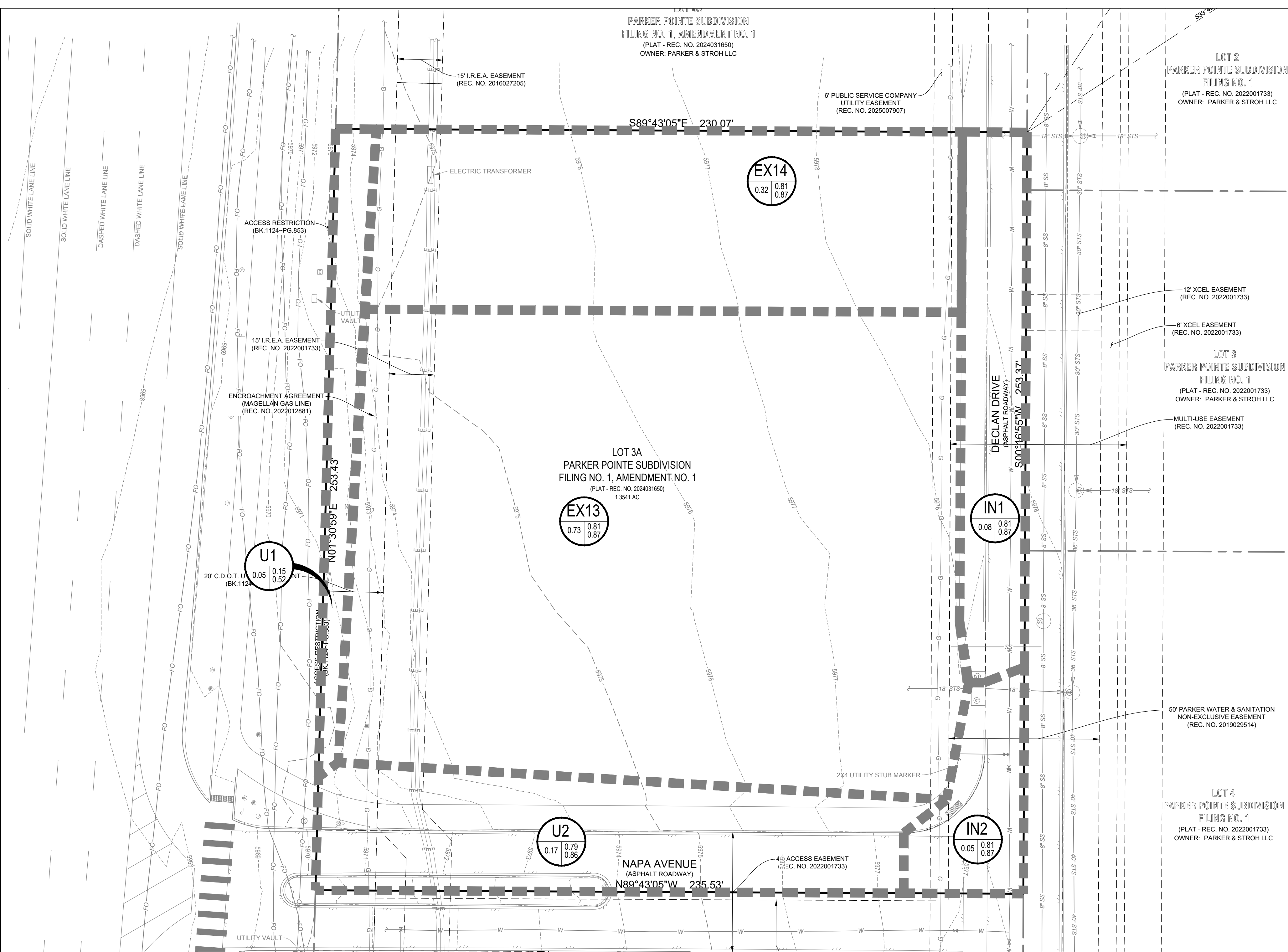
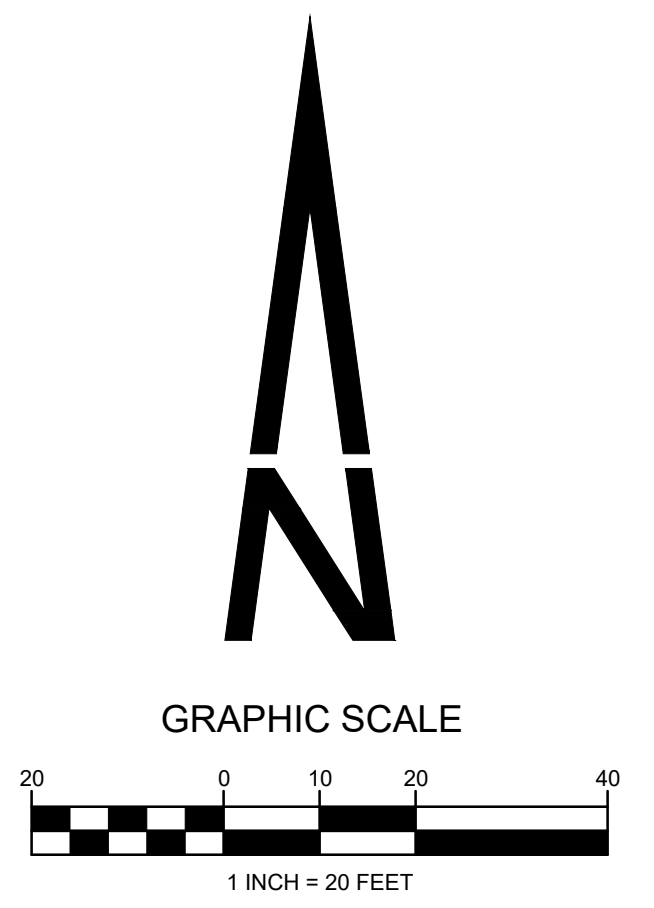
Sincerely,

Jerry W. Davidson, P.E.
 For and on Behalf of
 Perception Design Group, Inc.



THE TYPE, SIZE, LOCATION, AND NUMBER OF ALL KNOWN UNDERGROUND UTILITIES ARE APPROXIMATE WHEN SHOWN ON THE DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES ON THE SITE, AND OFFSITE IN WORK AREAS. LOCATION OF EXISTING UTILITIES SHALL BE VERIFIED BY CONTRACTOR PRIOR TO DATE OF CONSTRUCTION. FOR INFORMATION CONTACT: UTILITY NOTIFICATION CENTER OF COLORADO (UNCC) - 1-800-922-1987. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY SIZE AND HORIZONTAL AND VERTICAL LOCATIONS OF EXISTING FACILITIES PRIOR TO CONSTRUCTION AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING IMPROVEMENTS AND UTILITIES AND SHALL REPAIR ANY DAMAGE AT HIS EXPENSE.



LEGEND

- PROPERTY LINE
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- PROPOSED SIDEWALK
- PROPOSED HANDICAP RAMP
- PROPOSED CONCRETE PAVEMENT
- PROPOSED STORM SEWER
- STORM SEWER MANHOLE
- STORM SEWER INLET
- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED RETAINING WALL
- DESIGN POINT
- BASIN DESIGNATION
- 5 YR RUNOFF COEFFICIENT
- 100 YR RUNOFF COEFFICIENT
- BASIN AREA (IN ACRES)
- BASIN BOUNDARY LINE
- FLOW DIRECTION
- EXISTING ELECTRIC/TELEPHONE/GAS/FIBER LINE
- EXISTING STORM SEWER WITH MANHOLE
- EXISTING SANITARY SEWER WITH MANHOLE
- EXISTING WATERLINE WITH HYDRANT

PARKER WATER AND SANITATION DISTRICT

THE DISTRICT INSPECTOR MUST BE NOTIFIED AT LEAST 48 HOURS PRIOR TO START OF CONSTRUCTION. CALL PARKER WATER AND SANITATION DISTRICT AT 303-841-4627. THE DISTRICT WILL PROVIDE PERIODIC INSPECTIONS OF THE WORK. 24 HOUR NOTICE TO THE INSPECTOR IS REQUIRED FOR SCHEDULING INSPECTIONS. ANY WORK ACCOMPLISHED WITHOUT THE APPROVAL OF THE INSPECTOR WILL BE SUBJECT TO REJECTION. REVIEWED FOR CONFORMANCE TO PARKER WATER AND SANITATION DISTRICT STANDARDS.

BY: _____
(DISTRICT REPRESENTATIVE)

DATE: _____

APPROVED FOR CONSTRUCTION:
PARKER WATER AND SANITATION DISTRICT
BY: _____
(DISTRICT ENGINEER)

DATE: _____

ALL FIRE HYDRANTS SHALL BE INSTALLED ACCORDING TO WATER UTILITY STANDARDS. THE NUMBER AND LOCATION OF THE FIRE HYDRANTS AS SHOWN ON THE OVERALL UTILITY PLAN ARE CORRECT AS SPECIFIED BY THE TOWN OF PARKER, COMMUNITY DEVELOPMENT DEPARTMENT.

FIRE CODE OFFICIAL OR DESIGNATED REPRESENTATIVE
(NOTE - UNDERGROUND FIRE LINE (UFL) SUBMITTAL DOCUMENTS MUST MEET THE REQUIREMENTS OF NFPA 24 WHEN SUBMITTING FOR REVIEW.)

THE TOWN OF PARKER REVIEW CONSTITUTES GENERAL COMPLIANCE WITH THE TOWN'S STANDARDS AND APPROVED VARIANCES, SUBJECT TO THESE PLANS BEING STAMPED, SIGNED, AND DATED BY THE PROFESSIONAL ENGINEER OF RECORD. REVIEW BY THE TOWN DOES NOT CONSTITUTE APPROVAL OF THE PLAN DESIGN OR ACCURACY AND CORRECTNESS OF ENGINEERING CALCULATIONS. ERRORS IN THE DESIGN OR CALCULATIONS REMAIN THE RESPONSIBILITY OF THE REGISTERED PROFESSIONAL ENGINEER WHOSE STAMP AND SIGNATURE ARE AFFIXED TO THIS DOCUMENT.

THIS REVIEW DOES NOT CONSTITUTE APPROVAL OF ANY PRIVATE ON-SITE IMPROVEMENTS WHICH MAY BE SHOWN. CONSTRUCTION CANNOT COMMENCE UNTIL ALL REQUIRED DRAINAGE/TRAFFIC REPORT(S), FINAL DEVELOPMENT PLAN(S), SPECIAL REVIEW(S), GRADING PERMIT, AND/OR OTHER PERMITS ARE COMPLETE, APPROVED AND ON FILE WITH THE TOWN OF PARKER

TOWN OF PARKER, DIRECTOR OF ENGINEERING



PREPARED UNDER THE DIRECT SUPERVISION OF JERRY W. DAVIDSON, P.E. COLORADO REG # 30226 FOR AND ON BEHALF OF PERCEPTION DESIGN GROUP, INC.

NO.	DATE	DESCRIPTION
1	09/17/25	1ST SUBMITTAL

EXISTING DRAINAGE PLAN

HUNTINGTON NATIONAL BANK
LOT 3A: PARKER POINT SUBDIVISION FILING NO. 1, AMENDMENT NO. 1, LOCATED IN THE NORTHEAST 1/4 OF SECTION 3, TOWNSHIP 6 SOUTH, RANGE 68 WEST OF THE 6TH P.M., TOWN OF PARKER, COUNTY OF DOUGLAS, STATE OF COLORADO

Design By: CLN
Approved By: JWD
Project No.: 2025-005

SHEET
1 OF 2

PREPARED UNDER THE DIRECT SUPERVISION OF JERRY W. DAVIDSON, P.E. COLORADO REG # 30226 FOR AND ON BEHALF OF PERCEPTION DESIGN GROUP, INC.

NO.	DATE	DESCRIPTION
1	09/17/25	1ST SUBMITTAL

DRAINAGE MAP
HUNTINGTON NATIONAL BANK
LOT 3A PARKER POINTE SUBDIVISION FILING NO. 1, AMENDMENT NO. 1, LOCATED IN THE NORTHEAST 1/4 OF SECTION 3, TOWNSHIP 6 SOUTH, RANGE 66 WEST OF THE 6TH P.M., TOWN OF PARKER, COUNTY OF DOUGLAS, STATE OF COLORADO

Design By: CLN
Approved By: JWD
Project No.: 2025-005

SHEET
2 OF 2

LEGEND

- PROPERTY LINE
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- PROPOSED SIDEWALK
- PROPOSED HANDICAP RAMP
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- PROPOSED STORM SEWER
- STORM SEWER MANHOLE
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- EXISTING SANITARY SEWER WITH MANHOLE
- EXISTING WATERLINE WITH HYDRANT

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BY: _____
(DISTRICT REPRESENTATIVE)

DATE: _____

APPROVED FOR CONSTRUCTION:
PARKER WATER AND SANITATION DISTRICT

BY: _____
(DISTRICT ENGINEER)

DATE: _____

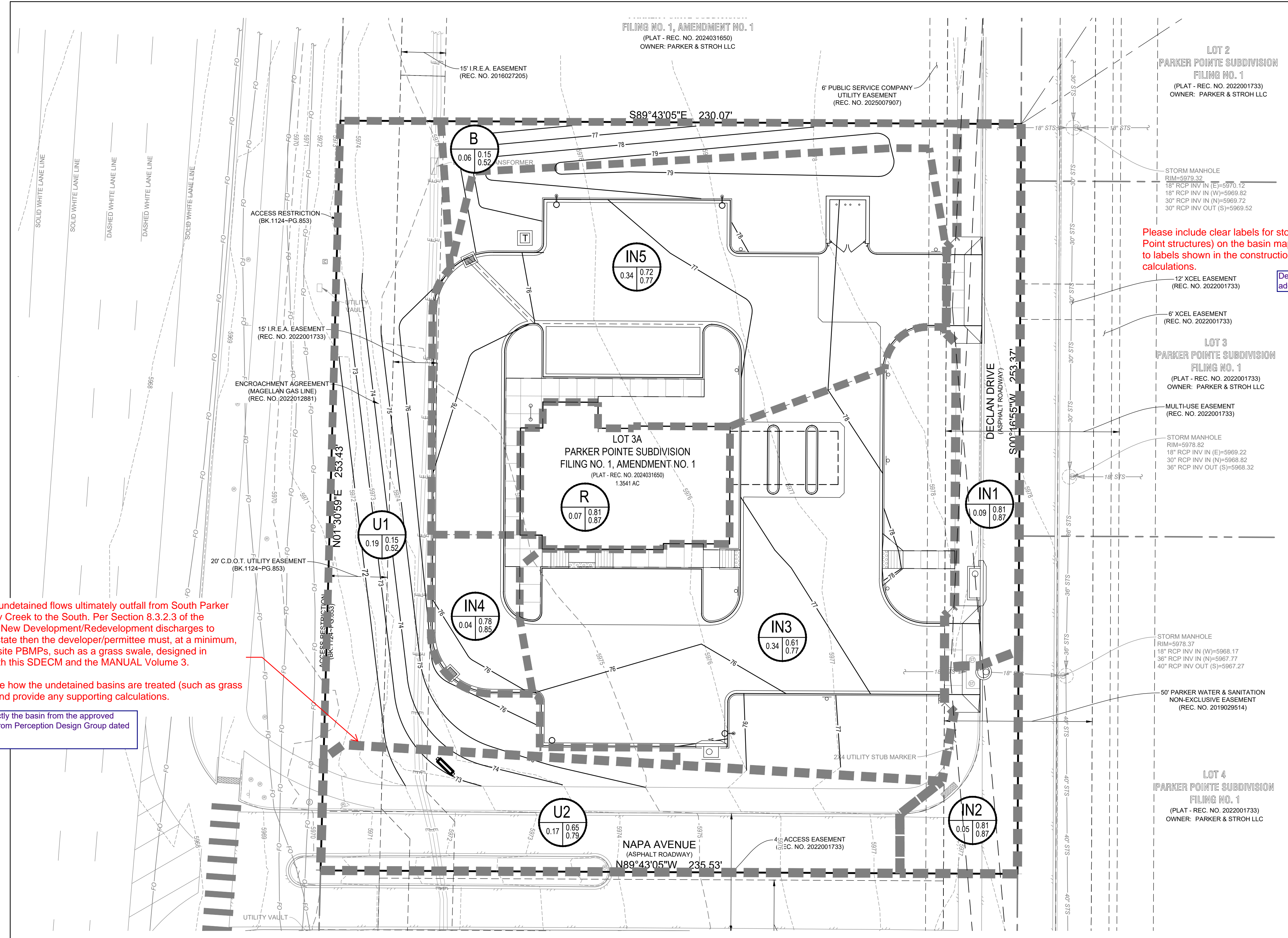
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TOWN OF PARKER, DIRECTOR OF ENGINEERING _____



Please include clear labels for storm inlets (Design Point structures) on the basin map that correspond to labels shown in the construction plans and calculations.

Design point labels added to the map.

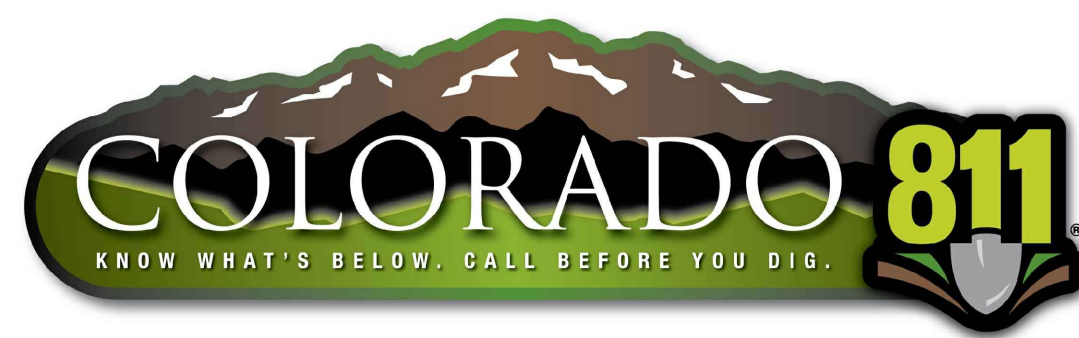
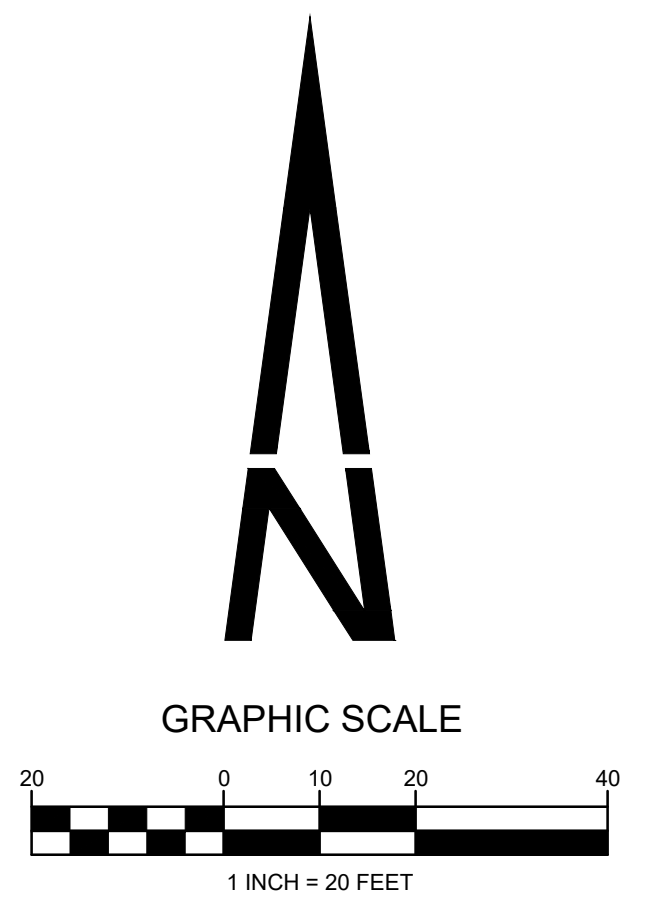
The proposed undetained flows ultimately outfall from South Parker Road to Kinney Creek to the South. Per Section 8.3.2.3 of the SDECM: If the New Development/Redevelopment discharges to waters-of-the-state then the developer/permittee must, at a minimum, implement on-site PBMPs, such as a grass swale, designed in accordance with this SDECM and the MANUAL Volume 3.

Please describe how the undetained basins are treated (such as grass buffer areas) and provide any supporting calculations.

U2 matches exactly the basin from the approved drainage report from Perception Design Group dated November 2018.

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Perception Design Group, Inc.
 6901 South Pierce Street, Suite 315
 Littleton, Colorado 80128
 (303) 232-8088 Fax (303) 232-5255

Designed by: JWD
 Date: 17-Sep-25
 Job Number: 2025-005

Project: Huntington Parker

Please use latest NOAA Atlas 14 point rainfall values for Town of Parker in Hydrology calculations and provide reference to the data used in this report. See latest SDECM, Section 5.2 on Intensity, Revised and adopted May 2025.

RAINFALL INTENSITIES

$$\text{RAINFALL INTENSITY, } I = (28.5 * P1) / [(10 + Tc)^{0.786}]$$

TIME OF CONCENTRATION, Tc =	5	MINUTES
2-YEAR ONE-HOUR RAINFALL, P1 =	0.83	INCHES
I (2-YEAR) =	2.81	INCHES/HOUR
5-YEAR ONE-HOUR RAINFALL, P1 =	1.10	INCHES
I (5-YEAR) =	3.73	INCHES/HOUR
10-YEAR ONE-HOUR RAINFALL, P1 =	1.35	INCHES
I (100-YEAR) =	4.58	INCHES/HOUR
100-YEAR ONE-HOUR RAINFALL, P1 =	2.31	INCHES
I (100-YEAR) =	7.84	INCHES/HOUR

These are using the NOAA Atlas point rainfall values for the site. The reference has been moved to right before this sheet to clear up any confusion.

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Please include referenced NRCS Hydrologic soil group map and classification.

Designed by: JWD
 Date: 17-Sep-25
 Job Number: 2025-005

Project: Huntington Parker

Soil report added to drainage letter including map and classification.

COMPOSITE RUNOFF COEFFICIENTS - TYPE B SOIL

	<u>ROOF</u>	<u>PAVEMENT</u>	<u>LANDSCAPING</u>	<u>GRAVEL</u>	<u>OPEN WATER</u>	<u>NATIVE GRASS</u>	<u>FUT. DEVELOP.</u>			
Catchment	Area (Ac.)	Area (Ac.)	Area (Ac.)	Area (Ac.)	Area (Ac.)	Area (Ac.)	Area (Ac.)	Catchment Area	Composite Imperviousness	Composite C
	Imperviousness = 95%	Imperviousness = 95%	Imperviousness = 20%	Imperviousness = 60%	Imperviousness = 100%	Imperviousness = 5%	Imperviousness = 95%	(Ac.)	%	
EX13 (5-Year)	0.00	0.00	0.00	0.00	0.00	0.00	0.73	0.73	95.00%	0.81
EX13 (100-Year)	0.00	0.00	0.00	0.00	0.00	0.00	0.73	0.73	95.00%	0.87
EX14 (5-Year)	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.32	95.00%	0.81
EX14 (100-Year)	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.32	95.00%	0.87
EXU1 (5-Year)	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.05	20.00%	0.15
EXU1 (100-Year)	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.05	20.00%	0.52
EXU2 (5-Year)	0.00	0.16	0.01	0.00	0.00	0.00	0.00	0.17	92.78%	0.79
EXU2 (100-Year)	0.00	0.16	0.01	0.00	0.00	0.00	0.00	0.17	92.78%	0.86
EXIN1 (5-Year)	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.08	95.00%	0.81
EXIN1 (100-Year)	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.08	95.00%	0.87
EXIN2 (5-Year)	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.05	95.00%	0.81
EXIN2 (100-Year)	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.05	95.00%	0.87
EX TOTAL (5-Year)	0.00	0.30	0.01	0.00	0.00	0.00	1.05	1.35	94.73%	0.81
EX TOTAL (100-Year)	0.00	0.30	0.01	0.00	0.00	0.00	1.05	1.35	94.73%	0.87

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Designed by: JWD
 Date: 25-Sep-25
 Job Number: 2025-005

Project: Huntington Parker

COMPOSITE RUNOFF COEFFICIENTS - TYPE B SOIL

Catchment	<u>ROOF</u>	<u>PAVEMENT</u>	<u>LANDSCAPING</u>	<u>GRAVEL</u>	<u>OPEN WATER</u>	<u>NATIVE GRASS</u>	Catchment Area (Ac.)	Composite Imperviousness %	Composite C
	Area (Ac.) Imperviousness = 95%	Area (Ac.) Imperviousness = 95%	Area (Ac.) Imperviousness = 20%	Area (Ac.) Imperviousness = 60%	Area (Ac.) Imperviousness = 100%	Area (Ac.) Imperviousness = 5%			
IN1 (5-Year)	0.00	0.09	0.00	0.00	0.00	0.00	0.09	95.00%	0.81
IN1 (100-Year)	0.00	0.09	0.00	0.00	0.00	0.00	0.09	95.00%	0.87
IN2 (5-Year)	0.00	0.05	0.00	0.00	0.00	0.00	0.05	95.00%	0.81
IN2 (100-Year)	0.00	0.05	0.00	0.00	0.00	0.00	0.05	95.00%	0.87
IN3 (5-Year)	0.00	0.24	0.10	0.00	0.00	0.00	0.34	73.19%	0.61
IN3 (100-Year)	0.00	0.24	0.10	0.00	0.00	0.00	0.34	73.19%	0.77
IN4 (5-Year)	0.00	0.04	0.00	0.00	0.00	0.00	0.04	91.68%	0.78
IN4 (100-Year)	0.00	0.04	0.00	0.00	0.00	0.00	0.04	91.68%	0.85
IN5 (5-Year)	0.00	0.24	0.10	0.00	0.00	0.00	0.34	73.00%	0.61
IN5 (100-Year)	0.00	0.24	0.10	0.00	0.00	0.00	0.34	73.00%	0.77
B (5-Year)	0.00	0.00	0.06	0.00	0.00	0.00	0.06	20.00%	0.15
B (100-Year)	0.00	0.00	0.06	0.00	0.00	0.00	0.06	20.00%	0.52
R (5-Year)	0.07	0.00	0.00	0.00	0.00	0.00	0.07	95.00%	0.81
R (100-Year)	0.07	0.00	0.00	0.00	0.00	0.00	0.07	95.00%	0.87
U1 (5-Year)	0.00	0.00	0.19	0.00	0.00	0.00	0.19	20.00%	0.15
U1 (100-Year)	0.00	0.00	0.19	0.00	0.00	0.00	0.19	20.00%	0.52
U2 (5-Year)	0.00	0.13	0.04	0.00	0.00	0.00	0.17	77.72%	0.65
U2 (100-Year)	0.00	0.13	0.04	0.00	0.00	0.00	0.17	77.72%	0.79
Total Site (5-Year)	0.07	0.79	0.49	0.00	0.00	0.00	1.35	67.76%	0.56
Total Site (100-Year)	0.07	0.79	0.49	0.00	0.00	0.00	1.35	67.76%	0.74

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Project: Huntington Parker

RUNOFF CALCULATIONS

(RATIONAL METHOD)

Design Storm: 5-Yr.

		Direct Runoff						
Design	Basin	Area	Runoff	CA	Tc	I	Q	
Point	Desig.	(Acres)	Coefficient		(min)	(in/hr)	(cfs)	
	EX13	0.73	0.81	0.59	5.0	3.73	2.21	
	EX14	0.32	0.81	0.26	5.0	3.73	0.97	
	EXU1	0.05	0.15	0.01	5.0	3.73	0.03	
	EXU2	0.17	0.79	0.13	5.0	3.73	0.50	
	EXIN1	0.08	0.81	0.06	5.0	3.73	0.24	
	EXIN2	0.05	0.81	0.04	5.0	3.73	0.15	
	TOTAL	1.35	0.87	1.17	5.0	3.73	4.09	
5	IN1	0.09	0.81	0.07	5.0	3.73	0.27	
10	IN2	0.05	0.81	0.04	5.0	3.73	0.15	
4	IN3	0.34	0.61	0.21	5.0	3.73	0.77	
3	IN4	0.04	0.78	0.03	5.0	3.73	0.12	
1	IN5	0.34	0.61	0.21	5.0	3.73	0.77	
7	B	0.06	0.15	0.01	5.0	3.73	0.03	
2	R	0.07	0.81	0.06	5.0	3.73	0.21	
8	U1	0.19	0.15	0.03	5.0	3.73	0.11	
9	U2	0.17	0.65	0.11	5.0	3.73	0.41	
	Total	1.35	0.56	0.76	5.0	3.73	2.85	

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RUNOFF CALCULATIONS

(RATIONAL METHOD)

Design Storm: 100-Yr.

		Direct Runoff						
Design	Basin	Area	Runoff	CA	Tc	I	Q	
Point	Desig.	(Acres)	Coefficient		(min)	(in/hr)	(cfs)	
	EX13	0.73	0.87	0.64	5.0	7.84	4.98	
	EX14	0.32	0.87	0.28	5.0	7.84	2.18	
	EXU1	0.05	0.52	0.03	5.0	7.84	0.20	
	EXU2	0.17	0.86	0.15	5.0	7.84	1.15	
	EXIN1	0.08	0.87	0.07	5.0	7.84	0.55	
	EXIN2	0.05	0.87	0.04	5.0	7.84	0.34	
	TOTAL	1.35	0.87	1.17	5.0	7.84	9.21	
5	IN1	0.09	0.87	0.08	5.0	7.84	0.61	
10	IN2	0.05	0.87	0.04	5.0	7.84	0.34	
4	IN3	0.34	0.77	0.26	5.0	7.84	2.05	
3	IN4	0.04	0.85	0.03	5.0	7.84	0.27	
1	IN5	0.34	0.77	0.26	5.0	7.84	2.05	
7	B	0.06	0.52	0.03	5.0	7.84	0.24	
2	R	0.07	0.87	0.06	5.0	7.84	0.48	
8	U1	0.19	0.52	0.10	5.0	7.84	0.77	
9	U2	0.17	0.79	0.13	5.0	7.84	1.05	
	TOTAL	1.35	0.74	1.00	5.0	7.84	7.88	

Perception Design Group, Inc.
 6901 South Pierce Street, Suite 315
 Littleton, Colorado 80128
 (303) 232-8088 Fax (303) 232-5255

Designed by: JWD
 Date: 25-Sep-25
 Job Number: 2025-005

Project: Huntington Parker

STORM SEWER DESIGN -- MANNING'S EQUATION

5-YEAR STORM

Contributing Basins	Pipe Location Design Points	Q req'd (cfs)	Slope (%)	n	Diam (in)	Q calc (cfs)	V (Full Flow) (fps)	Friction Slope (%)	Normal Depth (ft)	V (Actual) (fps)	EGL V ² /2g
IN5	1	0.77	0.50	0.013	18	7.45	0.44	0.01	0.33	2.74	0.12
R	2	0.21	1.00	0.011	6	0.66	1.07	0.10	0.18	1.90	0.06
IN5+R	1-2	0.98	0.50	0.013	18	7.45	0.55	0.01	0.37	2.92	0.13
IN4+IN5+R	2-3	1.10	0.50	0.013	18	7.45	0.62	0.01	0.39	3.02	0.14
IN3+IN4+IN5+R	3-4	1.87	0.50	0.013	18	7.45	1.06	0.03	0.52	3.33	0.17
IN1	5-6	0.27	0.50	0.013	18	7.45	0.15	0.00	0.21	1.69	0.04
IN1+IN3+IN4+IN5+R	4-6	2.14	0.50	0.013	18	7.45	1.21	0.04	0.56	3.66	0.21

100-YEAR STORM

Contributing Basins	Pipe Location Design Points	Q req'd (cfs)	Slope (%)	n	Diam (in)	Q calc (cfs)	V (Full Flow) (fps)	Friction Slope (%)	Normal Depth (ft)	V (Actual) (fps)	EGL V ² /2g
IN5	1	2.05	0.50	0.013	18	7.45	1.16	0.04	0.53	3.55	0.20
R	2	0.48	1.00	0.011	6	0.66	2.44	0.52	0.26	2.39	0.09
IN5+R	1-2	2.53	0.50	0.013	18	7.45	1.43	0.06	0.59	3.78	0.22
IN4+IN5+R	2-3	2.80	0.50	0.013	18	7.45	1.58	0.07	0.62	3.87	0.23
IN3+IN4+IN5+R	3-4	4.85	0.50	0.013	18	7.45	2.74	0.21	0.87	4.47	0.31
IN1	5-6	0.61	0.50	0.013	18	7.45	0.35	0.00	0.30	2.18	0.07
IN1+IN3+IN4+IN5+R	4-6	5.46	0.50	0.013	18	7.45	3.09	0.27	0.95	4.59	0.33

INLET MANAGEMENT

Project: Huntington National Bank
Minor: _____
Major: _____

Worksheet Protected

INLET NAME	Inlet 3	Inlet 4
Inlet Application (Street or Area)	STREET	STREET
Hydraulic Condition	In Sump	In Sump
Inlet Type	Denver No. 16 Combination	Denver No. 16 Combination
Number of Inlet Units	1	1

USER-DEFINED INPUT

User-Defined Peak Flows

Minor Peak Flow, Q (cfs)	0.77	0.12
Major Peak Flow, Q (cfs)	2.05	0.27

Bypass (Carry-Over) Flow from Upstream

Inlets must be organized from upstream (left) to downstream (right) in order for by

Receive Bypass Flow from:		
Bypass Flow Description (Optional):		
Minor Bypass Flow Received, Q_b (cfs)		
Major Bypass Flow Received, Q_b (cfs)		

CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	0.77	0.12
Major Total Design Peak Flow, Q (cfs)	2.05	0.27
Minor Inlet Interception Capacity, Q_a (cfs)	5.56	5.56
Major Inlet Interception Capacity, Q_a (cfs)	5.56	5.56
Minor Flow Bypassed Downstream, Q_b (cfs)	N/A	N/A
Major Flow Bypassed Downstream, Q_b (cfs)	N/A	N/A
Minor Flow Capture Percentage, C%	100%	100%
Major Flow Capture Percentage, C%	100%	100%

INLET MANAGEMENT

Project: Huntington National Bank
Minor: _____
Major: _____

Worksheet Protected

INLET NAME	Inlet 5
Inlet Application (Street or Area)	STREET
Hydraulic Condition	In Sump
Inlet Type	Denver No. 16 Combination
Number of Inlet Units	1

USER-DEFINED INPUT

User-Defined Peak Flows

Minor Peak Flow, Q (cfs)	0.77
Major Peak Flow, Q (cfs)	2.05

Bypass (Carry-Over) Flow from Upstream

[Bypass flows to be linked.](#)

Receive Bypass Flow from:	
Bypass Flow Description (Optional):	
Minor Bypass Flow Received, Q_b (cfs)	
Major Bypass Flow Received, Q_b (cfs)	

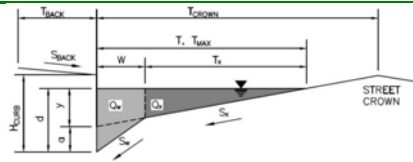
CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	0.77
Major Total Design Peak Flow, Q (cfs)	2.05
Minor Inlet Interception Capacity, Q_a (cfs)	5.56
Major Inlet Interception Capacity, Q_a (cfs)	5.56
Minor Flow Bypassed Downstream, Q_b (cfs)	N/A
Major Flow Bypassed Downstream, Q_b (cfs)	N/A
Minor Flow Capture Percentage, C%	100%
Major Flow Capture Percentage, C%	100%

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

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

Project: **Huntington National Bank**
 Inlet ID: **Inlet 3**



Gutter Geometry:
 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)

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

T _{BACK} =		ft
S _{BACK} =		ft/ft
n _{BACK} =		
H _{CURB} =	6.00	inches
T _{CROWN} =	42.0	ft
W =	2.00	ft
S _X =	0.040	ft/ft
S _W =	0.083	ft/ft
S _O =	0.000	ft/ft
n _{STREET} =	0.013	

Minor Storm Major Storm

T _{MAX} =	42.0	42.0	ft
d _{MAX} =	6.0	6.0	inches

Minor Storm Major Storm

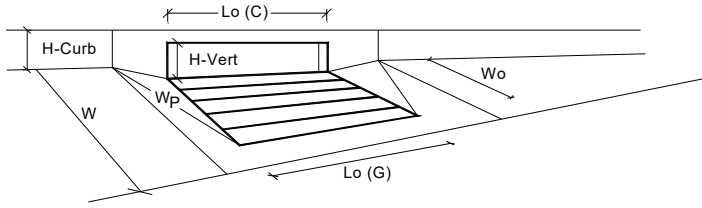
Q _{allow} =	SUMP	SUMP	cfs
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Per the Town of Parker SDECM Section 6.3.1 for Street Drainage use Mannings n for street=0.016 (Typical)

Mannings number revised to be 0.016 on all sheets.

INLET IN A SUMP OR SAG LOCATION

MHFD-Inlet, Version 6.00 (August 2025)

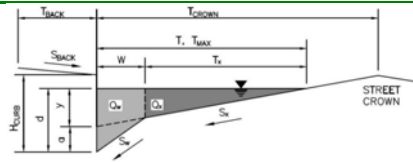


Design Information (Input)	MINOR	MAJOR	
Type of Inlet	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a' from above)	2.00	2.00	inches
Number of Unit Inlets (Grate or Curb Opening)	1	1	
Water Depth at Flowline (outside of local depression)	6.0	6.0	inches
Grate Information			
Length of a Unit Grate	3.00	3.00	feet
Width of a Unit Grate	1.73	1.73	feet
Open Area Ratio for a Grate (typical values 0.15-0.90)	0.31	0.31	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	0.50	0.50	
Grate Weir Coefficient (typical value 2.15 - 3.60)	3.60	3.60	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	0.60	0.60	
Curb Opening Information			
Length of a Unit Curb Opening	3.00	3.00	feet
Height of Vertical Curb Opening in Inches	6.50	6.50	inches
Height of Curb Orifice Throat in Inches	5.25	5.25	inches
Angle of Throat	0.00	0.00	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)	3.70	3.70	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	0.66	0.66	
Low Head Performance Reduction (Calculated)			
Depth for Grate Midwidth	0.52	0.52	ft
Depth for Curb Opening Weir Equation	0.33	0.33	ft
Grated Inlet Performance Reduction Factor for Long Inlets	0.94	0.94	
Curb Opening Performance Reduction Factor for Long Inlets	N/A	N/A	
Combination Inlet Performance Reduction Factor for Long Inlets	0.94	0.94	
Total Inlet Interception Capacity (assumes clogged condition)			
Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)	5.6	5.6	cfs
Q PEAK REQUIRED	0.8	2.1	cfs

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

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

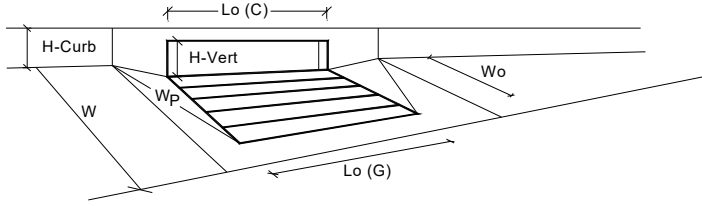
Project: **Huntington National Bank**
 Inlet ID: **Inlet 4**



Gutter Geometry:					
Maximum Allowable Width for Spread Behind Curb	$T_{BACK} =$ <input type="text"/> ft				
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	$S_{BACK} =$ <input type="text"/> ft/ft				
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	$n_{BACK} =$ <input type="text"/>				
Height of Curb at Gutter Flow Line	$H_{CURB} =$ <input type="text"/> 6.00 inches				
Distance from Curb Face to Street Crown	$T_{CROWN} =$ <input type="text"/> 24.0 ft				
Gutter Width	$W =$ <input type="text"/> 2.00 ft				
Street Transverse Slope	$S_x =$ <input type="text"/> 0.024 ft/ft				
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	$S_w =$ <input type="text"/> 0.083 ft/ft				
Street Longitudinal Slope - Enter 0 for sump condition	$S_o =$ <input type="text"/> 0.000 ft/ft				
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	$n_{STREET} =$ <input type="text"/> 0.013				
Max. Allowable Spread for Minor & Major Storm	$T_{MAX} =$ <table border="1"><tr><th>Minor Storm</th><th>Major Storm</th></tr><tr><td><input type="text"/> 24.0</td><td><input type="text"/> 24.0</td></tr></table> ft	Minor Storm	Major Storm	<input type="text"/> 24.0	<input type="text"/> 24.0
Minor Storm	Major Storm				
<input type="text"/> 24.0	<input type="text"/> 24.0				
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	$d_{MAX} =$ <table border="1"><tr><th>Minor Storm</th><th>Major Storm</th></tr><tr><td><input type="text"/> 6.0</td><td><input type="text"/> 6.0</td></tr></table> inches	Minor Storm	Major Storm	<input type="text"/> 6.0	<input type="text"/> 6.0
Minor Storm	Major Storm				
<input type="text"/> 6.0	<input type="text"/> 6.0				
Check boxes are not applicable in SUMP conditions	<input type="checkbox"/> <input type="checkbox"/>				
MINOR STORM Allowable Capacity is not applicable to Sump Condition					
MAJOR STORM Allowable Capacity is not applicable to Sump Condition					
$Q_{allow} =$	<table border="1"><tr><th>Minor Storm</th><th>Major Storm</th></tr><tr><td><input type="text"/> SUMP</td><td><input type="text"/> SUMP</td></tr></table> cfs	Minor Storm	Major Storm	<input type="text"/> SUMP	<input type="text"/> SUMP
Minor Storm	Major Storm				
<input type="text"/> SUMP	<input type="text"/> SUMP				

INLET IN A SUMP OR SAG LOCATION

MHFD-Inlet, Version 6.00 (August 2025)

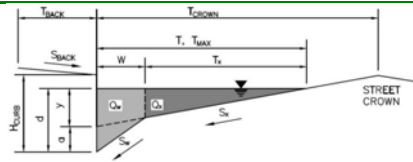


Design Information (Input)	MINOR	MAJOR	
Type of Inlet	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a' from above)	2.00	2.00	inches
Number of Unit Inlets (Grate or Curb Opening)	1	1	
Water Depth at Flowline (outside of local depression)	6.0	6.0	inches
Grate Information			
Length of a Unit Grate	3.00	3.00	feet
Width of a Unit Grate	1.73	1.73	feet
Open Area Ratio for a Grate (typical values 0.15-0.90)	0.31	0.31	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	0.50	0.50	
Grate Weir Coefficient (typical value 2.15 - 3.60)	3.60	3.60	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	0.60	0.60	
Curb Opening Information			
Length of a Unit Curb Opening	3.00	3.00	feet
Height of Vertical Curb Opening in Inches	6.50	6.50	inches
Height of Curb Orifice Throat in Inches	5.25	5.25	inches
Angle of Throat	0.00	0.00	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)	3.70	3.70	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	0.66	0.66	
Low Head Performance Reduction (Calculated)			
Depth for Grate Midwidth	0.52	0.52	ft
Depth for Curb Opening Weir Equation	0.33	0.33	ft
Grated Inlet Performance Reduction Factor for Long Inlets	0.94	0.94	
Curb Opening Performance Reduction Factor for Long Inlets	N/A	N/A	
Combination Inlet Performance Reduction Factor for Long Inlets	0.94	0.94	
Total Inlet Interception Capacity (assumes clogged condition)			
Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)	5.6	5.6	cfs
Q PEAK REQUIRED	0.1	0.3	cfs

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

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

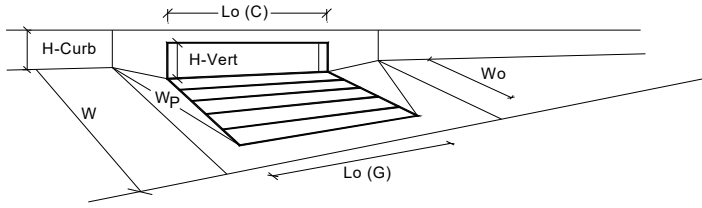
Project: **Huntington National Bank**
 Inlet ID: **Inlet 5**



Gutter Geometry:					
Maximum Allowable Width for Spread Behind Curb	$T_{BACK} =$ <input type="text"/> ft				
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	$S_{BACK} =$ <input type="text"/> ft/ft				
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	$n_{BACK} =$ <input type="text"/>				
Height of Curb at Gutter Flow Line	$H_{CURB} =$ <input type="text"/> 6.00 inches				
Distance from Curb Face to Street Crown	$T_{CROWN} =$ <input type="text"/> 24.0 ft				
Gutter Width	$W =$ <input type="text"/> 2.00 ft				
Street Transverse Slope	$S_x =$ <input type="text"/> 0.018 ft/ft				
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	$S_w =$ <input type="text"/> 0.083 ft/ft				
Street Longitudinal Slope - Enter 0 for sump condition	$S_o =$ <input type="text"/> 0.000 ft/ft				
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	$n_{STREET} =$ <input type="text"/> 0.013				
Max. Allowable Spread for Minor & Major Storm	$T_{MAX} =$ <table border="1"><tr><th>Minor Storm</th><th>Major Storm</th></tr><tr><td><input type="text"/> 24.0</td><td><input type="text"/> 24.0</td></tr></table> ft	Minor Storm	Major Storm	<input type="text"/> 24.0	<input type="text"/> 24.0
Minor Storm	Major Storm				
<input type="text"/> 24.0	<input type="text"/> 24.0				
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	$d_{MAX} =$ <table border="1"><tr><th>Minor Storm</th><th>Major Storm</th></tr><tr><td><input type="text"/> 6.0</td><td><input type="text"/> 6.0</td></tr></table> inches	Minor Storm	Major Storm	<input type="text"/> 6.0	<input type="text"/> 6.0
Minor Storm	Major Storm				
<input type="text"/> 6.0	<input type="text"/> 6.0				
Check boxes are not applicable in SUMP conditions	<input type="checkbox"/> <input type="checkbox"/>				
MINOR STORM Allowable Capacity is not applicable to Sump Condition					
MAJOR STORM Allowable Capacity is not applicable to Sump Condition					
	$Q_{allow} =$ <table border="1"><tr><th>Minor Storm</th><th>Major Storm</th></tr><tr><td><input type="text"/> SUMP</td><td><input type="text"/> SUMP</td></tr></table> cfs	Minor Storm	Major Storm	<input type="text"/> SUMP	<input type="text"/> SUMP
Minor Storm	Major Storm				
<input type="text"/> SUMP	<input type="text"/> SUMP				

INLET IN A SUMP OR SAG LOCATION

MHFD-Inlet, Version 6.00 (August 2025)



Design Information (Input)	MINOR	MAJOR	
Type of Inlet	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a' from above)	2.00	2.00	inches
Number of Unit Inlets (Grate or Curb Opening)	1	1	
Water Depth at Flowline (outside of local depression)	6.0	6.0	inches
Grate Information			
Length of a Unit Grate	3.00	3.00	feet
Width of a Unit Grate	1.73	1.73	feet
Open Area Ratio for a Grate (typical values 0.15-0.90)	0.31	0.31	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	0.50	0.50	
Grate Weir Coefficient (typical value 2.15 - 3.60)	3.60	3.60	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	0.60	0.60	
Curb Opening Information			
Length of a Unit Curb Opening	3.00	3.00	feet
Height of Vertical Curb Opening in Inches	6.50	6.50	inches
Height of Curb Orifice Throat in Inches	5.25	5.25	inches
Angle of Throat	0.00	0.00	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)	3.70	3.70	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	0.66	0.66	
Low Head Performance Reduction (Calculated)			
Depth for Grate Midwidth	0.52	0.52	ft
Depth for Curb Opening Weir Equation	0.33	0.33	ft
Grated Inlet Performance Reduction Factor for Long Inlets	0.94	0.94	
Curb Opening Performance Reduction Factor for Long Inlets	N/A	N/A	
Combination Inlet Performance Reduction Factor for Long Inlets	0.94	0.94	
Total Inlet Interception Capacity (assumes clogged condition)			
Total Inlet Interception Capacity	5.6	5.6	cfs
Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)	0.8	2.1	cfs



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffrey Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aerials](#)

PF tabular

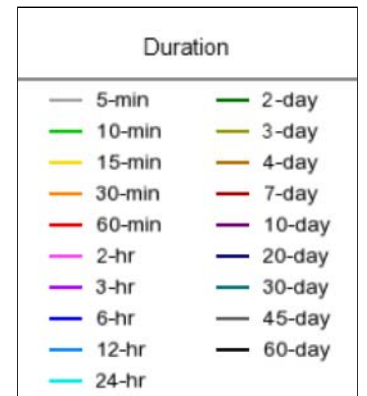
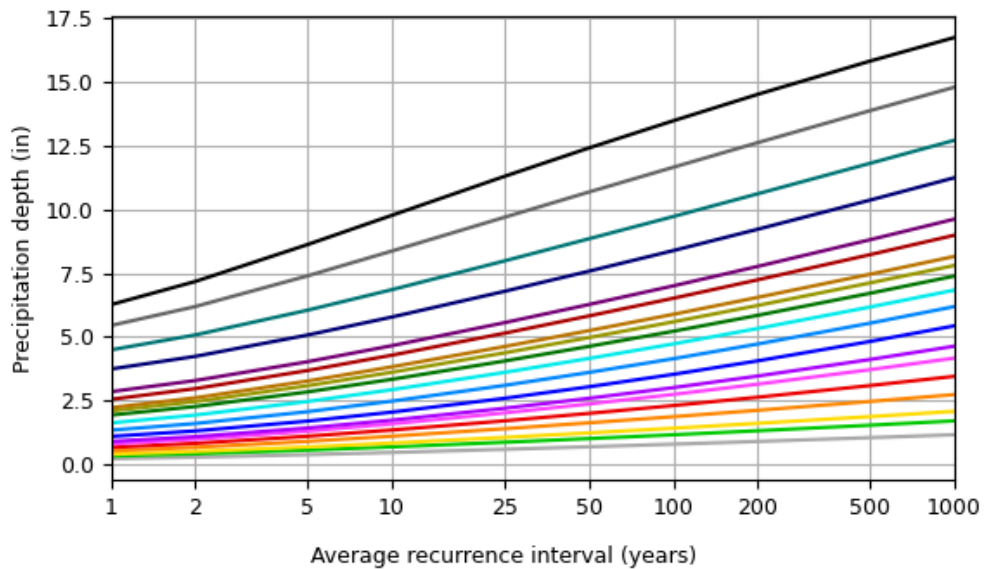
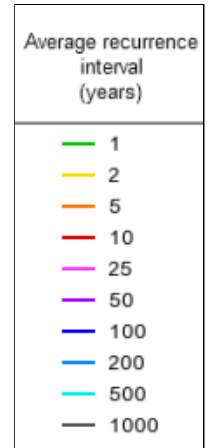
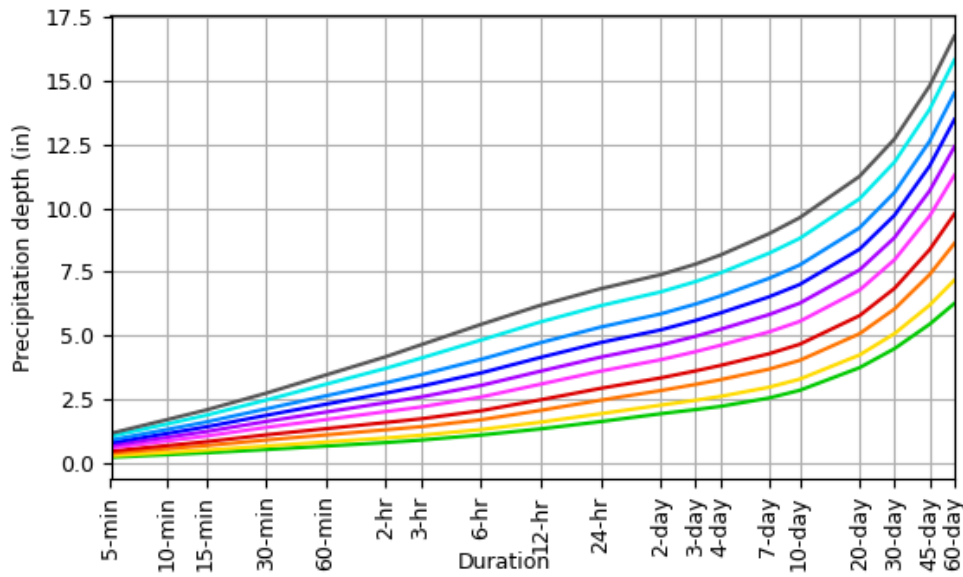
PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.225 (0.186-0.276)	0.284 (0.234-0.348)	0.384 (0.315-0.471)	0.469 (0.383-0.579)	0.593 (0.468-0.759)	0.692 (0.532-0.896)	0.794 (0.588-1.05)	0.902 (0.638-1.22)	1.05 (0.712-1.46)	1.16 (0.768-1.64)
10-min	0.330 (0.272-0.404)	0.416 (0.343-0.509)	0.562 (0.461-0.689)	0.687 (0.561-0.847)	0.868 (0.685-1.11)	1.01 (0.778-1.31)	1.16 (0.861-1.54)	1.32 (0.934-1.79)	1.54 (1.04-2.14)	1.71 (1.12-2.40)
15-min	0.402 (0.332-0.492)	0.507 (0.418-0.621)	0.685 (0.563-0.841)	0.838 (0.684-1.03)	1.06 (0.835-1.36)	1.24 (0.949-1.60)	1.42 (1.05-1.88)	1.61 (1.14-2.19)	1.87 (1.27-2.61)	2.08 (1.37-2.93)
30-min	0.530 (0.437-0.648)	0.669 (0.552-0.819)	0.904 (0.743-1.11)	1.11 (0.904-1.36)	1.40 (1.10-1.79)	1.63 (1.25-2.11)	1.87 (1.38-2.48)	2.12 (1.50-2.88)	2.47 (1.67-3.43)	2.74 (1.80-3.85)
60-min	0.667 (0.551-0.816)	0.827 (0.682-1.01)	1.10 (0.907-1.36)	1.35 (1.10-1.66)	1.71 (1.35-2.20)	2.00 (1.54-2.60)	2.31 (1.71-3.06)	2.64 (1.87-3.58)	3.09 (2.10-4.31)	3.45 (2.28-4.86)
2-hr	0.804 (0.667-0.977)	0.985 (0.817-1.20)	1.30 (1.08-1.59)	1.59 (1.31-1.95)	2.02 (1.61-2.58)	2.37 (1.84-3.06)	2.74 (2.05-3.62)	3.15 (2.25-4.26)	3.71 (2.54-5.15)	4.17 (2.77-5.82)
3-hr	0.902 (0.751-1.09)	1.09 (0.906-1.32)	1.43 (1.18-1.73)	1.74 (1.43-2.11)	2.20 (1.76-2.81)	2.59 (2.02-3.34)	3.01 (2.26-3.96)	3.47 (2.49-4.68)	4.11 (2.83-5.68)	4.64 (3.09-6.44)
6-hr	1.10 (0.920-1.32)	1.31 (1.10-1.58)	1.70 (1.41-2.05)	2.05 (1.70-2.48)	2.59 (2.09-3.29)	3.04 (2.39-3.89)	3.53 (2.67-4.62)	4.06 (2.94-5.44)	4.82 (3.34-6.61)	5.43 (3.65-7.49)
12-hr	1.34 (1.13-1.60)	1.60 (1.35-1.92)	2.07 (1.73-2.47)	2.48 (2.06-2.98)	3.10 (2.50-3.88)	3.60 (2.84-4.56)	4.14 (3.15-5.36)	4.72 (3.43-6.26)	5.54 (3.86-7.51)	6.19 (4.18-8.47)
24-hr	1.63 (1.38-1.93)	1.94 (1.64-2.30)	2.47 (2.08-2.93)	2.93 (2.45-3.50)	3.60 (2.93-4.46)	4.15 (3.28-5.20)	4.72 (3.60-6.04)	5.33 (3.89-6.99)	6.17 (4.32-8.29)	6.83 (4.65-9.27)
2-day	1.93 (1.64-2.28)	2.27 (1.93-2.67)	2.84 (2.41-3.35)	3.34 (2.81-3.95)	4.05 (3.30-4.97)	4.62 (3.68-5.74)	5.22 (4.00-6.62)	5.85 (4.30-7.59)	6.71 (4.73-8.93)	7.38 (5.06-9.94)
3-day	2.10 (1.79-2.46)	2.46 (2.10-2.89)	3.08 (2.62-3.62)	3.61 (3.05-4.26)	4.37 (3.57-5.32)	4.97 (3.96-6.13)	5.59 (4.30-7.04)	6.23 (4.60-8.05)	7.11 (5.04-9.41)	7.80 (5.37-10.4)
4-day	2.22 (1.90-2.60)	2.61 (2.23-3.05)	3.27 (2.78-3.83)	3.83 (3.24-4.50)	4.62 (3.78-5.60)	5.24 (4.19-6.44)	5.88 (4.54-7.39)	6.55 (4.84-8.42)	7.45 (5.29-9.82)	8.16 (5.63-10.9)
7-day	2.55 (2.19-2.96)	2.97 (2.55-3.45)	3.68 (3.15-4.28)	4.28 (3.64-5.01)	5.14 (4.23-6.20)	5.82 (4.67-7.10)	6.51 (5.05-8.12)	7.24 (5.38-9.25)	8.22 (5.87-10.8)	8.99 (6.24-11.9)
10-day	2.85 (2.46-3.30)	3.29 (2.83-3.81)	4.02 (3.45-4.67)	4.66 (3.97-5.42)	5.55 (4.58-6.67)	6.27 (5.05-7.62)	7.00 (5.45-8.70)	7.76 (5.79-9.88)	8.81 (6.31-11.5)	9.62 (6.71-12.7)
20-day	3.74 (3.24-4.29)	4.24 (3.67-4.87)	5.07 (4.37-5.84)	5.78 (4.96-6.68)	6.78 (5.63-8.07)	7.57 (6.14-9.12)	8.38 (6.57-10.3)	9.22 (6.92-11.6)	10.4 (7.48-13.4)	11.2 (7.90-14.7)
30-day	4.49 (3.90-5.13)	5.08 (4.41-5.81)	6.04 (5.23-6.93)	6.85 (5.90-7.88)	7.97 (6.63-9.42)	8.84 (7.19-10.6)	9.72 (7.63-11.9)	10.6 (7.99-13.3)	11.8 (8.55-15.1)	12.7 (8.97-16.6)
45-day	5.44 (4.75-6.20)	6.19 (5.39-7.05)	7.39 (6.42-8.43)	8.37 (7.22-9.58)	9.68 (8.06-11.3)	10.7 (8.69-12.7)	11.6 (9.17-14.1)	12.6 (9.52-15.7)	13.9 (10.1-17.7)	14.8 (10.5-19.2)
60-day	6.26 (5.47-7.10)	7.17 (6.26-8.14)	8.62 (7.50-9.80)	9.77 (8.45-11.2)	11.3 (9.40-13.1)	12.4 (10.1-14.6)	13.5 (10.6-16.2)	14.5 (11.0-17.9)	15.8 (11.5-20.0)	16.7 (11.9-21.6)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

[Back to Top](#)

PF graphical

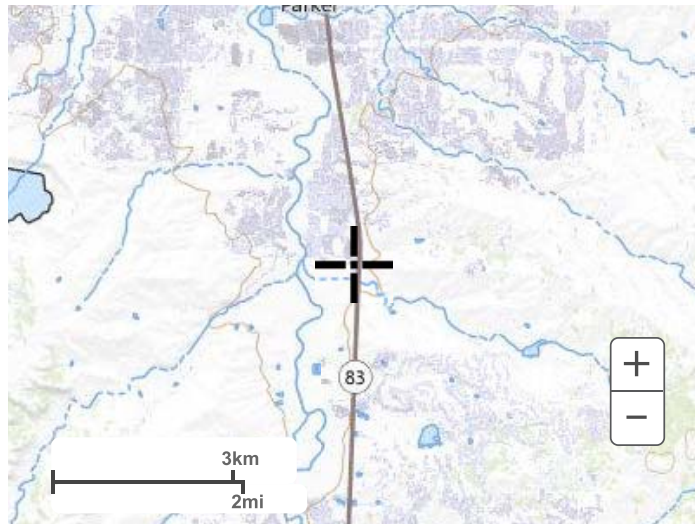
PDS-based depth-duration-frequency (DDF) curves
 Latitude: 39.4771°, Longitude: -104.7590°



[Back to Top](#)

Maps & aerials

Small scale terrain



Large scale terrain



Large scale map



Large scale aerial



[Back to Top](#)

[US Department of Commerce](#)
[National Oceanic and Atmospheric Administration](#)
[National Weather Service](#)
[National Water Center](#)
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Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

[Disclaimer](#)

Perception Design Group, Inc.
 6901 South Pierce Street, Suite 315
 Littleton, Colorado 80128
 (303) 232-8088 Fax (303) 232-8088

Designed by: JWD
 Checked by: JWD
 Date: 18-Sep-17
 2015-015

Project: Parker Pointe

Please include hydraulic calculations for pipe sizing and HGL's for the minor and major storm events. (See Section 6.3.3.4 of the SDECM for Hydraulic Design Requirements)

**RUNOFF CALCULATIONS
 (RATIONAL METHOD)**

Design Storm: 5-Yr.

Design Point	Direct Runoff						Tc (min)		
	Basin Desig.	Area (Acres)	Runoff Coefficient	CA					
	H1	10.52	0.09	0.95	26.0				
	L1	0.71	0.81	0.58	5.0				
	L2	0.50	0.81	0.41	5.0				
	L2A	0.19	0.81	0.15	5.0	4.70	0.72		
	L3	0.43	0.81	0.35	5.0	4.70	1.64		
	L3A	0.16	0.81	0.13	5.0	4.70	0.61		
	L4	0.63	0.81	0.51	5.0	4.70	2.40		
	L4A	0.24	0.81	0.19	5.0	4.70	0.91		
	L5	0.63	0.81	0.51	5.0	4.70	2.40		
	L5A	0.24	0.81	0.19	5.0	4.70	0.91		
	L6	0.78	0.81	0.63	5.0	4.70	2.97		
	L7	0.68	0.81	0.55	5.0	4.70	2.59		
	L8	0.87	0.81	0.70	5.0	4.70	3.31		
	L9	0.71	0.81	0.58	5.0	4.70	2.70		
	L10	0.88	0.81	0.71	5.0	4.70	3.35		
	L11A	0.50	0.81	0.41	5.0	4.70	1.90		
	L11B	0.42	0.81	0.34	5.0	4.70	1.60		
	L12	0.56	0.81	0.45	5.0	4.70	2.13		
	L13	0.73	0.81	0.59	5.0	4.70	2.78		
	L14	0.73	0.81	0.59	5.0	4.70	2.78		
	L15	0.72	0.81	0.58	5.0	4.70	2.74		
	IN1	0.26	0.90	0.23	5.0	4.70	1.10		
	IN2	0.53	0.90	0.48	5.0	4.70	2.24		
	IN3	0.11	0.9	0.10	5.0	4.70	0.47		
	SR1	3.75	0.18	0.68	22.4	2.60	1.76		
	SR2	0.32	0.87	0.28	5.0	4.70	1.31		
	PR1	0.42	0.77	0.32	5.0	4.70	1.52		
	PR2	0.91	0.96	0.87	5.0	4.70	4.11		
	U1	1.37	0.09	0.12	5.0	4.70	0.58		
	U2	0.3	0.74	0.22	5.0	4.70	1.04		
	U3	0.17	0.09	0.02	5.0	4.70	0.07		
	U4	0.23	0.58	0.13	5.0	4.70	0.63		
	OS1	23.34	0.13	3.03	25.5	2.50	7.59		

This sheet is from the original report the pipe sizing and HGLs for the proposed pipes are under the table called Mannings. Report revised to be cleared what is from the original report.

Perception Design Group, Inc.
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Designed by: JWD
 Checked by: JWD
 Date: 18-Sep-17
 Job Number: 2015-015

Project: Parker Pointe

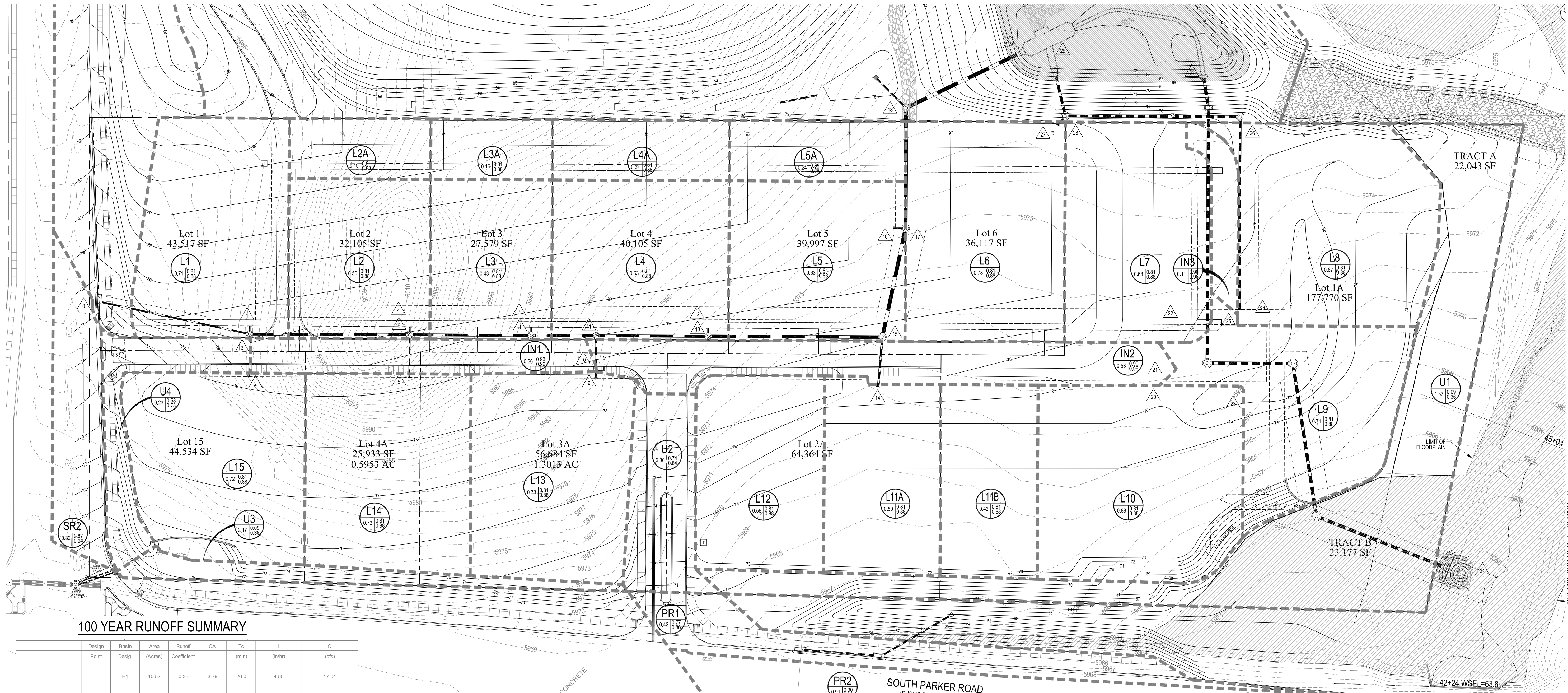
RUNOFF CALCULATIONS
(RATIONAL METHOD)

Design Storm: 100-Yr.

		Direct Runoff						
Design	Basin	Area	Runoff	CA	Tc	I	Q	
Point	Desig.	(Acres)	Coefficient		(min)	(in/hr)	(cfs)	
	H1	10.52	0.36	3.79	26.0	4.50	17.04	
	L1	0.71	0.88	0.62	5.0	8.85	5.53	
	L2	0.50	0.88	0.44	5.0	8.85	3.89	
	L2A	0.19	0.88	0.17	5.0	8.85	1.48	
	L3	0.43	0.88	0.38	5.0	8.85	3.35	
	L3A	0.16	0.88	0.14	5.0	8.85	1.25	
	L4	0.63	0.88	0.55	5.0	8.85	4.91	
	L4A	0.24	0.88	0.21	5.0	8.85	1.87	
	L5	0.63	0.88	0.55	5.0	8.85	4.91	
	L5A	0.24	0.88	0.21	5.0	8.85	1.87	
	L6	0.78	0.88	0.69	5.0	8.85	6.07	
	L7	0.68	0.88	0.60	5.0	8.85	5.30	
	L8	0.87	0.88	0.77	5.0	8.85	6.78	
	L9	0.71	0.88	0.62	5.0	8.85	5.53	
	L10	0.88	0.88	0.77	5.0	8.85	6.85	
	L11A	0.50	0.88	0.44	5.0	8.85	3.89	
	L11B	0.42	0.88	0.37	5.0	8.85	3.27	
	L12	0.56	0.88	0.49	5.0	8.85	4.36	
	L13	0.73	0.88	0.64	5.0	8.85	5.69	
	L14	0.73	0.88	0.64	5.0	8.85	5.69	
	L15	0.72	0.88	0.63	5.0	8.85	5.61	
	IN1	0.26	0.96	0.25	5.0	8.85	2.21	
	IN2	0.53	0.96	0.51	5.0	8.85	4.50	
	IN3	0.11	0.96	0.11	5.0	8.85	0.93	
	SR1	3.75	0.42	1.58	22.4	4.90	7.72	
TOTAL FLOW TO FOREBAY								103.45
	OS1	23.34	0.39	9.10	25.5	4.50	40.96	
TOTAL TO POND		39.30					144.41	
	U1	1.37	0.36	0.49	25.5	4.50	2.22	
	U2	0.3	0.84	0.25	25.5	4.50	1.13	
	U3	0.17	0.36	0.06	25.5	4.50	0.28	
	U4	0.23	0.73	0.17	25.5	4.50	0.76	
UN-CAPTURED SITE RUNOFF								4.38
	SR2	0.32	0.94	0.30	5.0	8.85	2.66	
	PR1	0.42	0.86	0.36	5.0	8.85	3.20	
	PR2	0.91	0.96	0.87	5.0	8.85	7.73	

SEE SHEET DP3

STROH ROAD



100 YEAR RUNOFF SUMMARY

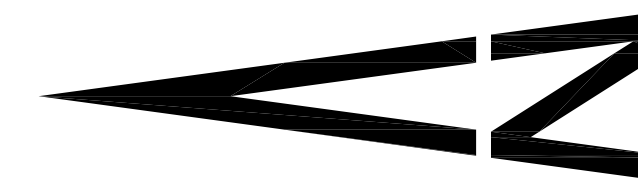
Design Point	Basin Desig.	Area (Acres)	Runoff Coefficient	CA	Tc (min)	I (in/hr)	Q (cfs)
	H1	10.52	0.36	3.79	26.0	4.50	17.04
	L1	0.71	0.88	0.62	5.0	8.85	5.53
	L2	0.50	0.88	0.44	5.0	8.85	3.89
	L2A	0.19	0.88	0.17	5.0	8.85	1.48
	L3	0.43	0.88	0.38	5.0	8.85	3.35
	L3A	0.16	0.88	0.14	5.0	8.85	1.25
	L4	0.63	0.88	0.55	5.0	8.85	4.91
	L4A	0.24	0.88	0.21	5.0	8.85	1.87
	L5	0.63	0.88	0.55	5.0	8.85	4.91
	L5A	0.24	0.88	0.21	5.0	8.85	1.87
	L6	0.76	0.88	0.69	5.0	8.85	6.07
	L7	0.68	0.88	0.60	5.0	8.85	5.30
	L8	0.87	0.88	0.77	5.0	8.85	6.78
	L9	0.71	0.88	0.62	5.0	8.85	5.53
	L10	0.88	0.88	0.77	5.0	8.85	6.85
	L11A	0.50	0.88	0.44	5.0	8.85	3.89
	L11B	0.42	0.88	0.37	5.0	8.85	3.27
	L12	0.56	0.88	0.49	5.0	8.85	4.36
	L13	0.73	0.88	0.64	5.0	8.85	5.69
	L14	0.73	0.88	0.64	5.0	8.85	5.69
	L15	0.72	0.88	0.63	5.0	8.85	5.61
	IN1	0.26	0.96	0.25	5.0	8.85	2.21
	IN2	0.53	0.96	0.51	5.0	8.85	4.50
	IN3	0.11	0.96	0.11	5.0	8.85	0.93
	SR1	3.75	0.42	1.58	22.4	4.90	7.72
TOTAL FLOW TO FOREBAY							103.45
	OS1	23.34	0.39	9.10	25.5	4.50	40.96
TOTAL TO POND							144.41
	U1	1.37	0.36	0.49	25.5	4.50	2.22
	U2	0.31	0.84	0.25	25.5	4.50	1.13
	U3	0.17	0.36	0.06	25.5	4.50	0.28
	U4	0.23	0.73	0.17	25.5	4.50	0.76
UN-CAPTURED SITE RUNOFF							4.38
	SR2	0.32	0.94	0.30	5.0	8.85	2.66
	PR1	0.42	0.86	0.36	5.0	8.85	3.20
	PR2	0.91	0.96	0.87	5.0	8.85	7.73

DETENTION SUMMARY

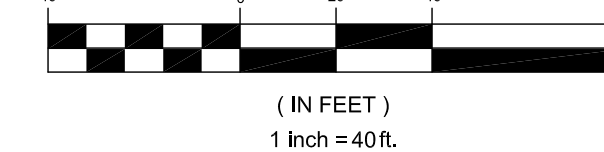
ZONE	VOLUME	ELEVATION	RELEASE RATE
WOCV	0.566 AC-FT		41 HOURS
EURV+WOCV	1.472 AC-FT	5968.03	70 HOURS
100 YEAR	2.753 AC-FT	5970.05	36.7 CFS

LEGEND

- 5340 --- EXISTING CONTOUR
- 42 --- PROPOSED CONTOUR
- R1** BASIN DESIGNATION
- 0.20 0.75 0.83 5 YR RUNOFF COEFFICIENT
- 100 YR RUNOFF COEFFICIENT
- BASIN AREA
- BASIN BOUNDARY LINE
- △ DESIGN POINT



GRAPHIC SCALE



BENCHMARK

BENCHMARK: DOUGLAS COUNTY SURVEY CONTROL MONUMENT TT15A - 3" DIAMETER DOUGLAS COUNTY GIS ALUMINUM CAP AT THE NE CORNER OF STROH ROAD AND SOUTH PARKER ROAD (US HIGHWAY 63)
ELEVATION: 5970.79 FEET (NAVD 1988 DATUM)

DRAINAGE PLAN WEST

design by: JWD
approved by: JWD
project no.: 2015-015

date: 10/01/17

SHEET

DP2

PREPARED UNDER THE DIRECT SUPERVISION OF JERRY W. DAVIDSON, P.E. COLORADO REG # 30226 FOR AND ON BEHALF OF PERCEPTION DESIGN GROUP, INC.

DATE	DESCRIPTION
12/14/23	2ND REPEAT SUBMITTAL
08/01/23	SECOND CDOT NTP SUBMITTAL
04/21/23	CDOT NTP SUBMITTAL / RE-PLAY SUBMITTAL
04/11/22	RESUBMITTAL
11/01/18	SIXTH SUBMITTAL
08/31/18	FOURTH SUBMITTAL
05/25/18	THIRD SUBMITTAL
10/24/17	INITIAL SUBMITTAL

PARKER POINTE
LOTS 1 THRU 15 AND TRACTS A AND B, PARKER POINTE FILING NO. 1
SOUTHEAST CORNER PARKER ROAD AND STROH ROAD
PARKER, COLORADO

TOWN OF PARKER, DIRECTOR OF ENGINEERING

DATE

