September 17, 2025

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

The latest FDR on file and referenced in other reports is November 28, 2018. Please reference the latest approved report on file with the Town.

. 1, Amendment No. 1

The purpose of this letter 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.

The drainage plan indicates that there are proposed storm runoff flows that are routed offsite and undetained. Please provide discussion that describes what percentage of the overall project site (applicable area of development) is undetained and further describe the percentage of impervious areas that these undetained sub-basins makeup.

Sub Basin IN5 consists of the northern portion of the access drive, northern parking areas, the northern portion and landscaping around the building and a portion of the landscaping north of the access drive. The runoff is directed to Inlet 5 (Type 13 Combination Inlet) located on the northwest curb of the northwest corner of the access drive. The inlet is connected to the existing storm sewer system that drains into the existing detention pond.

Sub Basin B is the northern landscaped portion of Lot 3A that is directed north this is due to the grading restraints between the two lots.

Sub Basin R consists of the roof that will be connected to roof drains that are connected to the proposed 18" RCP pipe along the western access drive. The pipe is connected to the existing storm sewer system that drains into the existing detention pond.

Sub Basin U1 consists of the west border of the site. This follows historic drainage patterns and flows into South Parker Road because this area contains an existing large gas line, telephone, fiber optic and electric lines the grading in this area in not able to be changed to be captured into the regional detention pond.
Sub Basin U2 consists of the northern half of the existing private drive to the south of the site named Napa Avenue, the existing sidewalk and a portion of the landscaping on the southern border of the site. The runoff follows historic paths and flows into South Parker Road.

The drainage plan indicates that there are proposed storm runoff flows that are routed offsite and undetained. Please see Section 7.2.3 of the SDECM and provide discussion of why all portions of the site are not able to be routed through the proposed detention facility. Compensatory storage will only be permitted in those cases where it is clearly impractical to route all runoff from the developed site through the detention facility.

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.

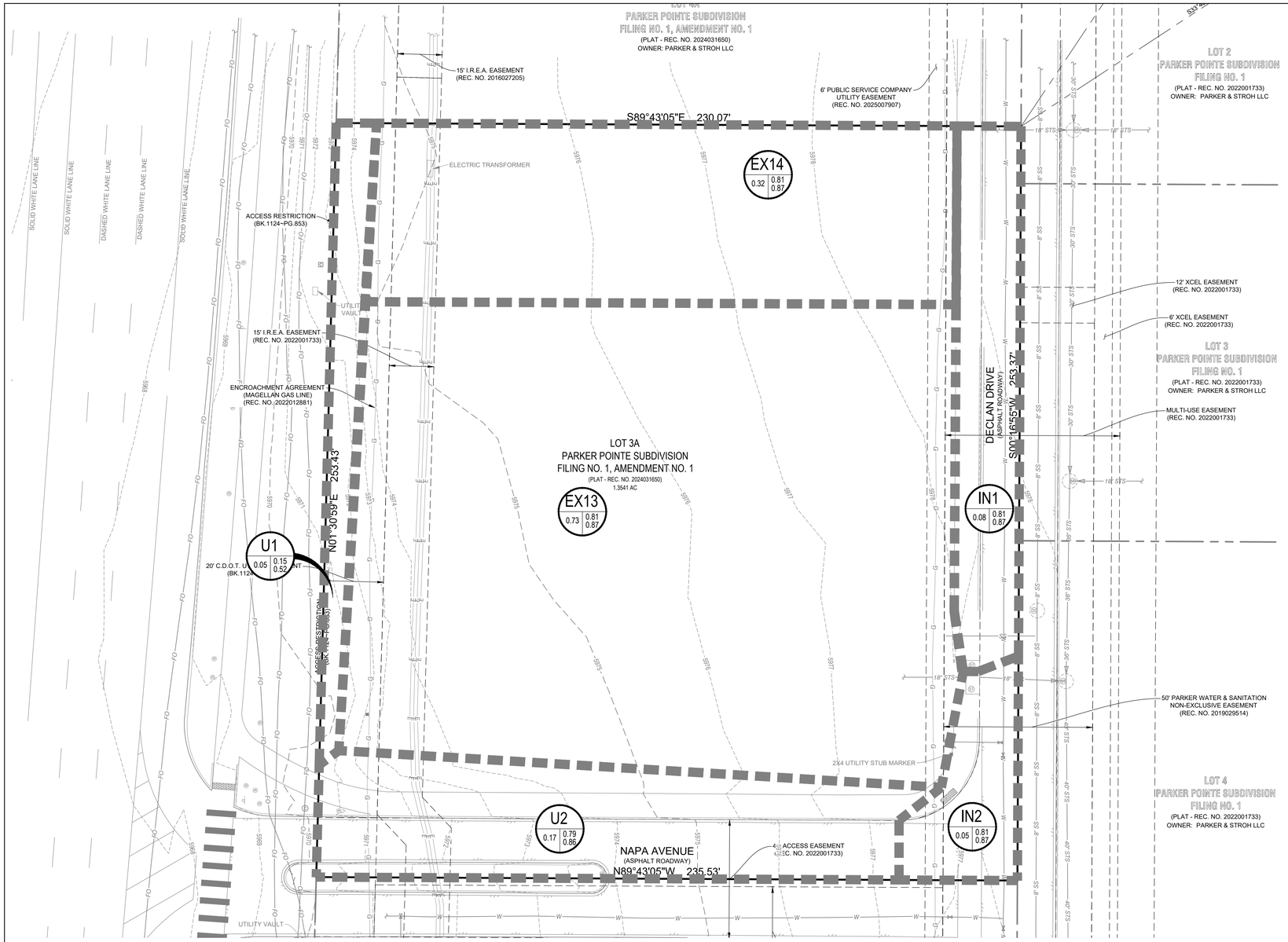
Runoff Comparison Table:

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.



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
- 5340 EXISTING CONTOUR
- 42 PROPOSED CONTOUR
- PROPOSED RETAINING WALL
- 1 DESIGN POINT
- R1 / 0.20 / 0.75 / 0.85 BASIN DESIGNATION, 5 YR RUNOFF COEFFICIENT, 100 YR RUNOFF COEFFICIENT, BASIN AREA (IN ACRES)
- BASIN BOUNDARY LINE
- FLOW DIRECTION
- E/T/G/FO EXISTING ELECTRIC/TELEPHONE/GAS/FIBER LINE
- ST 18"STS EXISTING STORM SEWER WITH MANHOLE
- S 8"SS EXISTING SANITARY SEWER WITH MANHOLE
- 6"WTR 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

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

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.

GRAPHIC SCALE
20 0 10 20 40
1 INCH = 20 FEET

PERCEPTION
DESIGN GROUP, INC.
6901 SOUTH PIERCE STREET, SUITE 315. LITTLETON, CO 80128 303-232-8068
WWW.PERCEPTIONDESIGNGROUP.COM

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	REVISIONS
08/17/25	1ST SUBMITTAL	

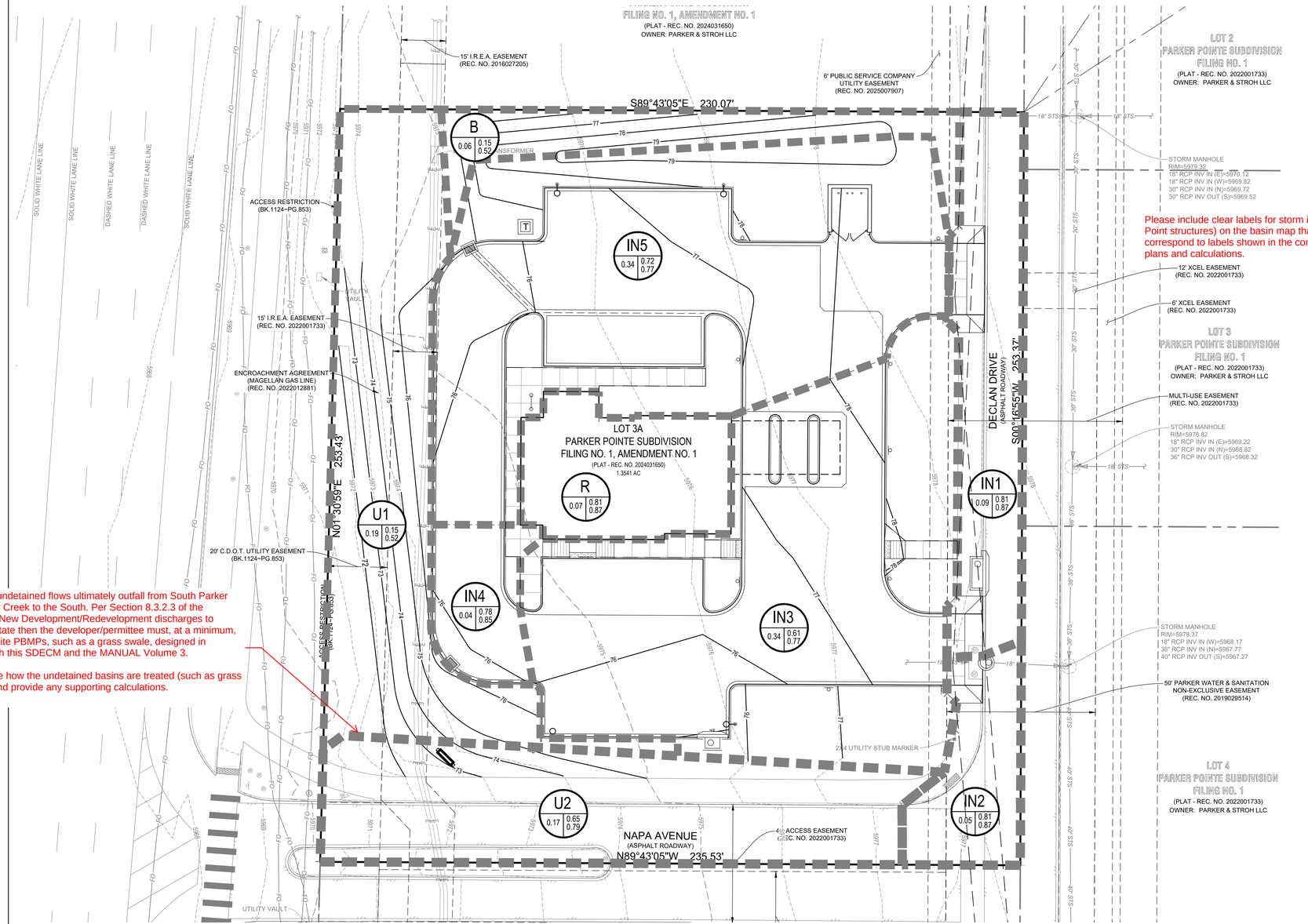
EXISTING DRAINAGE PLAN

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
1 OF 2



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

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.

LEGEND

- PROPERTY LINE
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- PROPOSED SIDEWALK
- PROPOSED HANDICAP RAMP
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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:_____

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

REVISIONS	DESCRIPTION	DATE
1	1ST SUBMITTAL	09/17/25

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

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

RAINFALL INTENSITIES

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 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

Perception Design Group, Inc.
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(303) 232-8088 Fax (303) 232-5255

Please include referenced NRCS Hydrologic soil group map and classification.

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

Project: Huntington Parker

COMPOSITE RUNOFF COEFFICIENTS - TYPE B SOIL

	ROOF	PAVEMENT	LANDSCAPING	GRAVEL	OPEN WATER	NATIVE GRASS	FUT. DEVELOP.			
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**

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

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

Project: Huntington Parker

COMPOSITE RUNOFF COEFFICIENTS - TYPE B SOIL

	ROOF	PAVEMENT	LANDSCAPING	GRAVEL	OPEN WATER	NATIVE GRASS			
Catchment	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%	(Ac.)	%	
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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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

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

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

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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

MHFD-Inlet, Version 6.00 (August 2025)

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, Qb (cfs)	N/A	N/A
Major Flow Bypassed Downstream, Qb (cfs)	N/A	N/A
Minor Flow Capture Percentage, C%	100%	100%
Major Flow Capture Percentage, C%	100%	100%

MHFD-Inlet, Version 6.00 (August 2025)

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 ypass 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)	

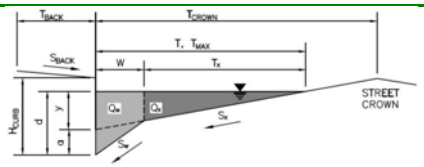
CALCULATED OUTPUT

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, Qb (cfs)	N/A
Major Flow Bypassed Downstream, Qb (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	T_{BACK} =		ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =		ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =		
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	42.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.040	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.000	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.013	

Per the Town of Parker SDECM Section 6.3.1 for Street Drainage use Mannings n for street=0.016 (Typical)

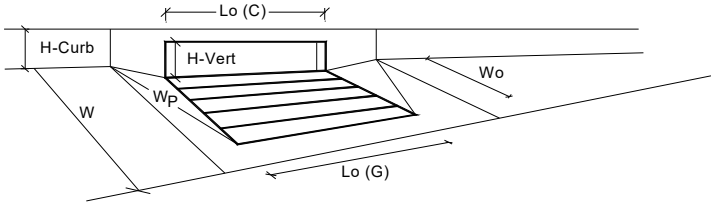
		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	42.0	42.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	6.0	inches
Check boxes are not applicable in SUMP conditions		☐	☐	

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

	Minor Storm	Major Storm	
Q_{allow} =	**SUMP**	**SUMP**	**cfs**

INLET IN A SUMP OR SAG LOCATION

MHFD-Inlet, Version 6.00 (August 2025)



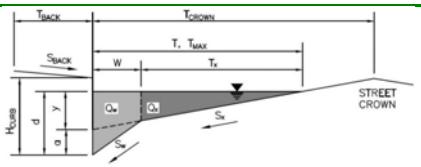
Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a' from above)	a_{local} =	2.00	2.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	1	1	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	6.0	6.0	inches
Grate Information		MINOR	MAJOR	☐ Override Depths
Length of a Unit Grate	L_o (G) =	3.00	3.00	feet
Width of a Unit Grate	W_o =	1.73	1.73	feet
Open Area Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	0.31	0.31	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	0.50	0.50	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	3.60	3.60	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	0.60	0.60	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	3.00	3.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.50	6.50	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	5.25	5.25	inches
Angle of Throat	Theta =	0.00	0.00	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.70	3.70	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.66	0.66	
Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	0.52	0.52	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.33	0.33	ft
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	0.94	0.94	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	N/A	N/A	
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	0.94	0.94	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**5.6**	**5.6**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)	$Q_{PEAK\ REQUIRED}$ =	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} =		ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =		ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =		
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	24.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.024	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.000	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.013	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	24.0	24.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	6.0	inches
Check boxes are not applicable in SUMP conditions		☐	☐	

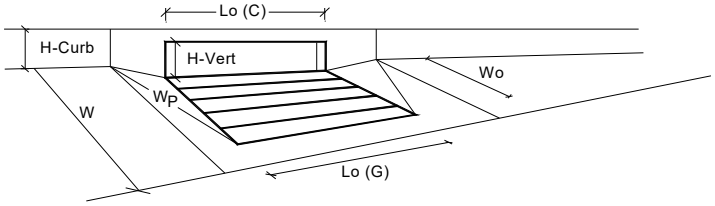
MINOR STORM Allowable Capacity is not applicable to Sump Condition

MAJOR STORM Allowable Capacity is not applicable to Sump Condition

	Minor Storm	Major Storm	
Q_{allow} =	**SUMP**	**SUMP**	**cfs**

INLET IN A SUMP OR SAG LOCATION

MHFD-Inlet, Version 6.00 (August 2025)

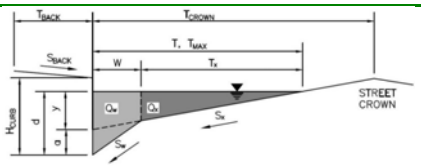


Design Information (Input)		MINOR	MAJOR	
Type of Inlet (Denver No. 16 Combination)	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a' from above)	a_{local} =	2.00	2.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	1	1	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	6.0	6.0	inches
Grate Information		MINOR	MAJOR	☐ Override Depths
Length of a Unit Grate	L_o (G) =	3.00	3.00	feet
Width of a Unit Grate	W_o =	1.73	1.73	feet
Open Area Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	0.31	0.31	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	0.50	0.50	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	3.60	3.60	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	0.60	0.60	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	3.00	3.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.50	6.50	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	5.25	5.25	inches
Angle of Throat	Theta =	0.00	0.00	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.70	3.70	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.66	0.66	
Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	0.52	0.52	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.33	0.33	ft
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	0.94	0.94	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	N/A	N/A	
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	0.94	0.94	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**5.6**	**5.6**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)	$Q_{PEAK\ REQUIRED}$ =	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} =		ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =		ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =		
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	24.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.018	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.000	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.013	

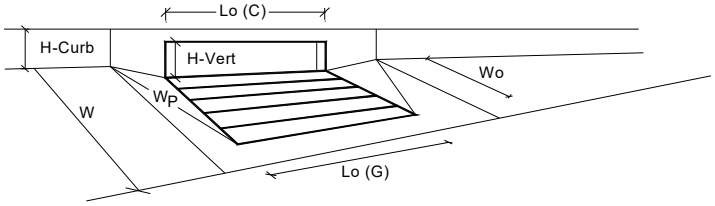
		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	24.0	24.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	6.0	inches
Check boxes are not applicable in SUMP conditions		☐	☐	

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

	Minor Storm	Major Storm	
Q_{allow} =	**SUMP**	**SUMP**	**cfs**

INLET IN A SUMP OR SAG LOCATION

MHFD-Inlet, Version 6.00 (August 2025)



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	Denver No. 16 Combination		
Local Depression (additional to continuous gutter depression 'a' from above)	a_{local} =	2.00	2.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	1	1	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	6.0	6.0	inches
Grate Information		MINOR	MAJOR	☐ Override Depths
Length of a Unit Grate	L_o (G) =	3.00	3.00	feet
Width of a Unit Grate	W_o =	1.73	1.73	feet
Open Area Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	0.31	0.31	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	0.50	0.50	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	3.60	3.60	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	0.60	0.60	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	3.00	3.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.50	6.50	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	5.25	5.25	inches
Angle of Throat	Theta =	0.00	0.00	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.70	3.70	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.66	0.66	
Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	0.52	0.52	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.33	0.33	ft
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	0.94	0.94	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	N/A	N/A	
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	0.94	0.94	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**5.6**	**5.6**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)	$Q_{PEAK\ REQUIRED}$ =	0.8	2.1	cfs

NOAA Atlas 14, Volume 8, Version 2
Location name: Parker, Colorado, USA*
Latitude: 39.4771°, Longitude: -104.759°
Elevation: 5960 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

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

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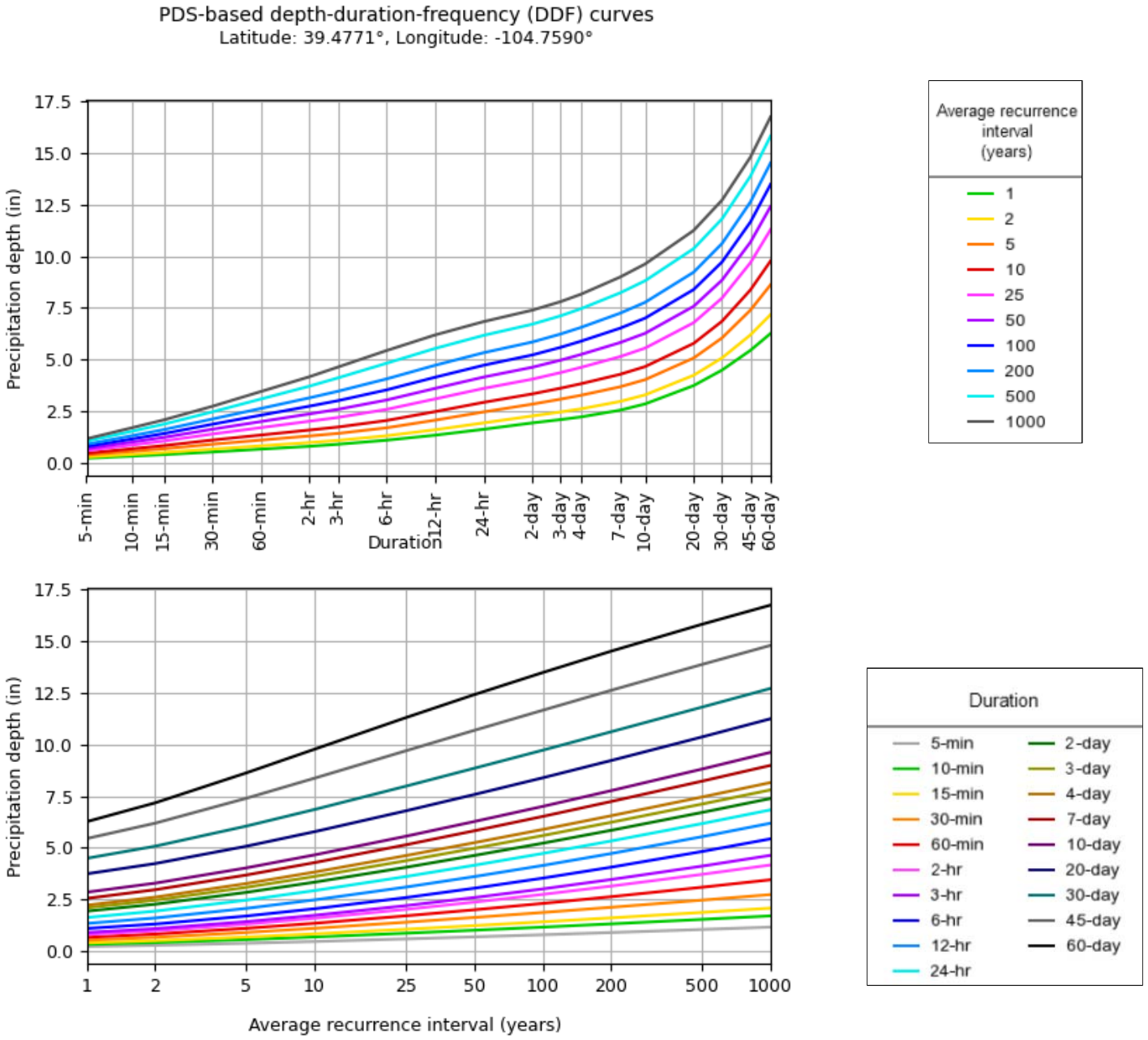
PF graphical



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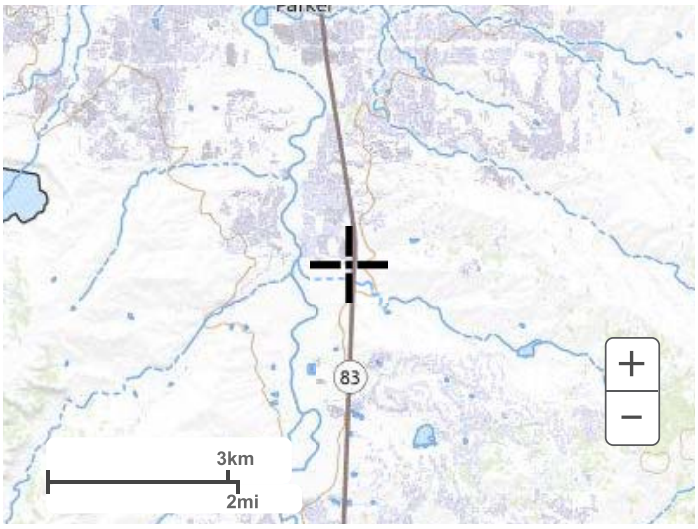
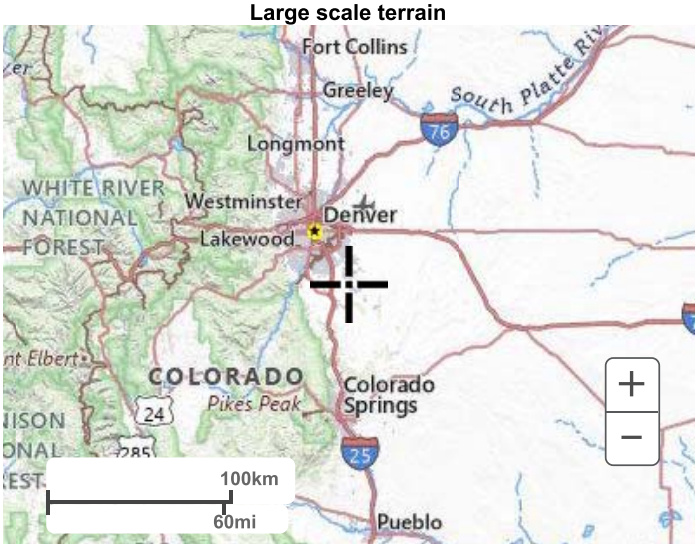
Maps & aerials

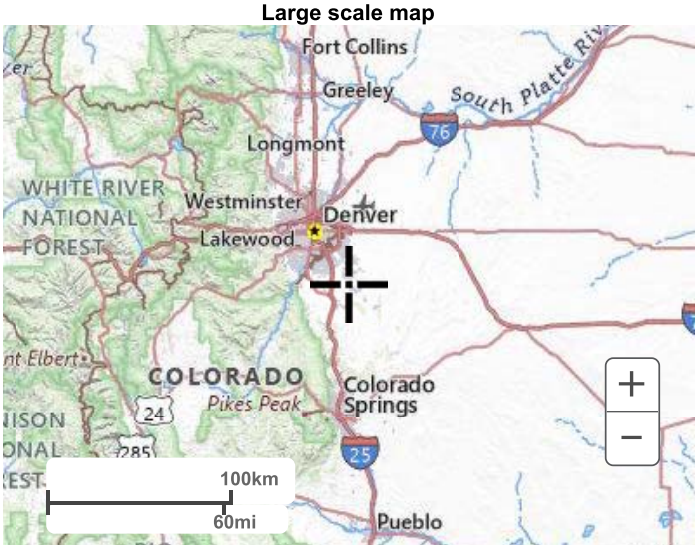
Small scale terrain



Large scale terrain



Large scale map



Large scale aerial

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

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

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)

Project: Parker Pointe

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)
		H1	10.52	0.09	0.95	26.0	2.30	2.18
		L1	0.71	0.81	0.58	5.0	4.70	2.70
		L2	0.50	0.81	0.41	5.0	4.70	1.90
		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

Perception Design Group, Inc.
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(303) 232-8088 Fax (303) 232-5255

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

Project: Parker Pointe

RUNOFF CALCULATIONS

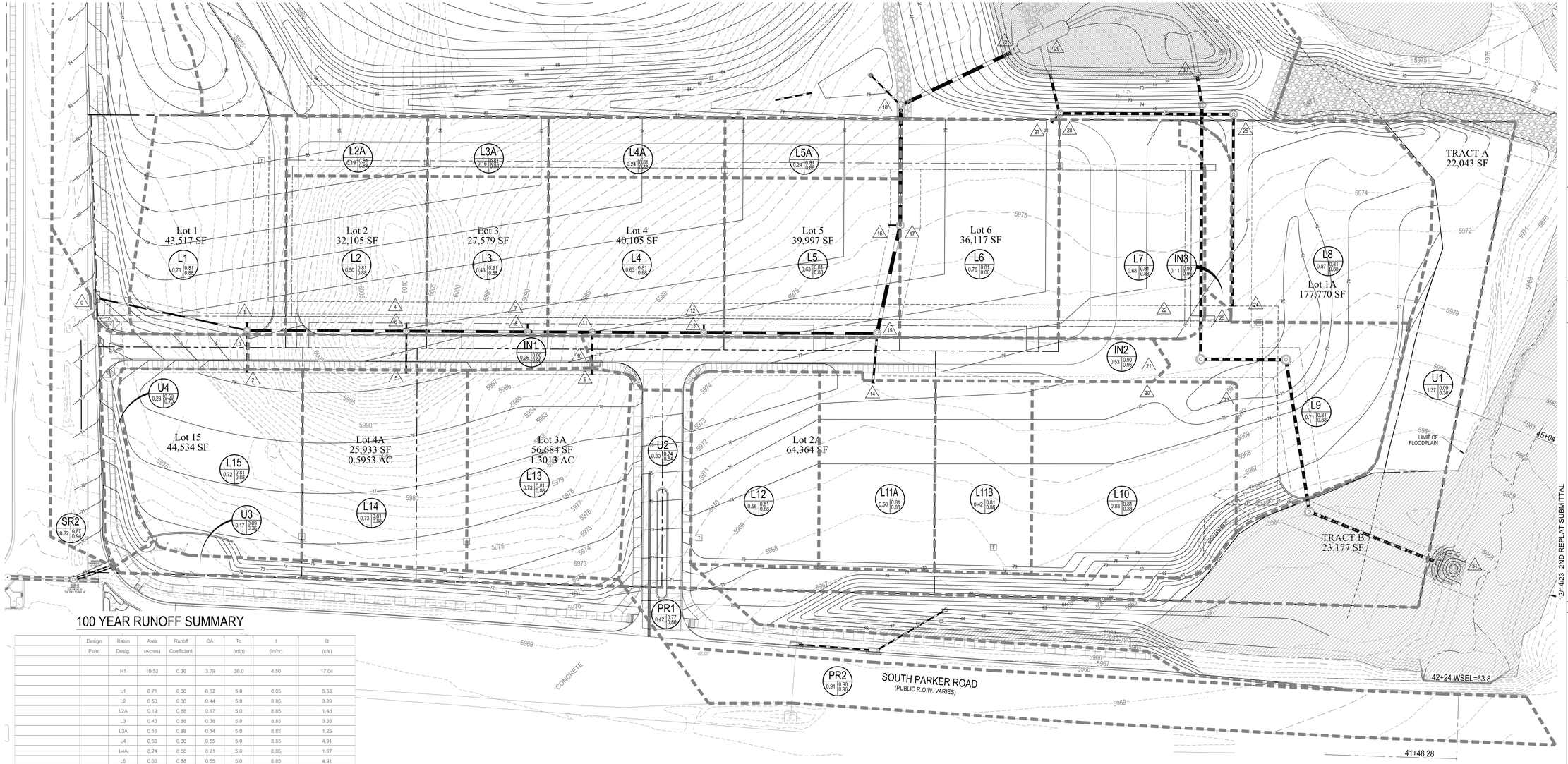
(RATIONAL METHOD)

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	0.78	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

DETENTION SUMMARY

ZONE	VOLUME	ELEVATION	RELEASE RATE
WQCV	0.566 AC-FT		41 HOURS
EURV+WQCV	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 / 0.20 / 0.75 / 0.83 — BASIN DESIGNATION; 5 YR RUNOFF COEFFICIENT; 100 YR RUNOFF COEFFICIENT; BASIN AREA
- BASIN BOUNDARY LINE
- 1 — DESIGN POINT

GRAPHIC SCALE

40 0 20 40 80

(IN FEET)
1 inch = 40 ft.

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 83)
ELEVATION: 5970.79 FEET (NAVD 1988 DATUM)

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.

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TOWN OF PARKER, DIRECTOR OF ENGINEERING — DATE

PERCEPTION
DESIGN GROUP, INC.
6901 SOUTH PIERCE STREET, SUITE 315 . LITTLETON, CO 80128 . 303-232-8868
WWW.PERCEPTIONDESIGNGROUP.COM

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 REPLAT SUBMITTAL
06/01/23	SECOND CDOT NTP SUBMITTAL
04/21/23	CDOT NTP SUBMITTAL / RE-PLAT SUBMITTAL
04/15/22	RESUBMITTAL
11/01/18	SIXTH SUBMITTAL
08/31/18	FOURTH SUBMITTAL
05/25/18	THIRD SUBMITTAL
10/24/17	INITIAL SUBMITTAL

REVISIONS

DRAINAGE PLAN WEST

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

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

date: 10/01/17

SHEET
DP2