TECHNICAL MEMO

DATE 3/19/25

TIME 12:58 PM

PROJECT 2024006635-000

TO Mick Michel

FROM Bryce Achen, P.E.

SUBJECT 2nd Avenue Multifamily Drainage Summary

Mr. Michel,

This memorandum summarizes the drainage conditions for the 2nd Avenue Multifamily development, located at 1520 2nd Avenue SE, Dyersville, IA 52040. The purpose of this memo is to evaluate the existing and proposed drainage characteristics and confirm compliance with local stormwater regulations and requirements.

The existing 1.79-acre project site features one retail structure, an asphalt parking lot, and a small retaining wall. The site generally drains from Northwest to Southeast, collecting in an open throat curb intake via an 8"x20" opening in the retaining wall. Drainage is carried offsite by a 12" reinforced concrete pipe to 17th Street SE. A small ditch captures runoff from 2nd Avenue SE and conveys flow Southeast to the boundary between the project site and 1626 2nd Avenue SE, where the ditch ends. The existing site is 1.59-acres impervious and 0.20-acres pervious.

The proposed project features two (2) – four (4) unit and two (2) – six (6) unit row homes, a private access driveway, and utility infrastructure to service the proposed units. The project will utilize existing drainage patterns by utilizing the ditch along 2nd Avenue SE and natural grading of the site to convey stormwater safely away from structures and/or sensitive infrastructure. See appendix B for the proposed grading plan.

Stormwater draining from the front yards of the proposed structures will be conveyed in the ditch along 2nd Avenue SE and travel to a proposed swale between lot 20 and lot 21 in the proposed subdivision. The drainage will then be captured in an area intake and travel through a closed pipe to the existing intake where it will flow offsite. Stormwater captured in the rear yards of the proposed structures will flow Northeast to curb and gutter, where it will be directed Southeast to the opening in the retaining wall. The proposed development includes 1.07-acres impervious and 0.72-acres pervious.

The rational method was used to calculate the existing and proposed stormwater runoff from the project site as a whole. The rational method utilizes the area, runoff coefficient, and rainfall intensity to calculate stormwater runoff. The runoff coefficient used for this analysis is a composite value derived from the percentage of impervious to pervious area on the project site. Baseline coefficients are based on Table C3-S4-1 of the Iowa Stormwater Management Manual for drives, walks, and roofs and Lawns with 75% or more grass coverage. Calculations can be found in appendix A.

The findings of this analysis show that due to the reduced impervious area in the proposed development, the runoff from the site decreases in the proposed state. For the 100-year storm, the runoff rate in the existing conditions is 18.53 cubic feet per second (CFS) and in the proposed state it is 14.54 CFS. Likewise for smaller storms such as the 2-year, the drops from 7.67 CFS in the existing state to 5.96 CFS in the proposed state.

Due to the reduction in peak runoff from the site, it can be reasonably assumed that there will not be adverse impacts from stormwater runoff in the proposed conditions. Additional measures have been taken to convey stormwater to appropriate collection points by installing a swale, intake, and curb and gutter.

For questions or clarifications, please notify Bryce Achen for further information.

Bryce Achen P.E.
Project Manager

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LICENSED PROFESSIONAL ENGINEER
BRYCE J. ACHEN P29498
IOWA

I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.

Bryce Achen 03/19/2025
BRYCE ACHEN, PE NO. P29498 DATE:

MY LICENSE RENEWAL DATE IS DECEMBER 31, 2026

PAGES OR SHEETS COVERED BY THIS SEAL:
Pages 1-3

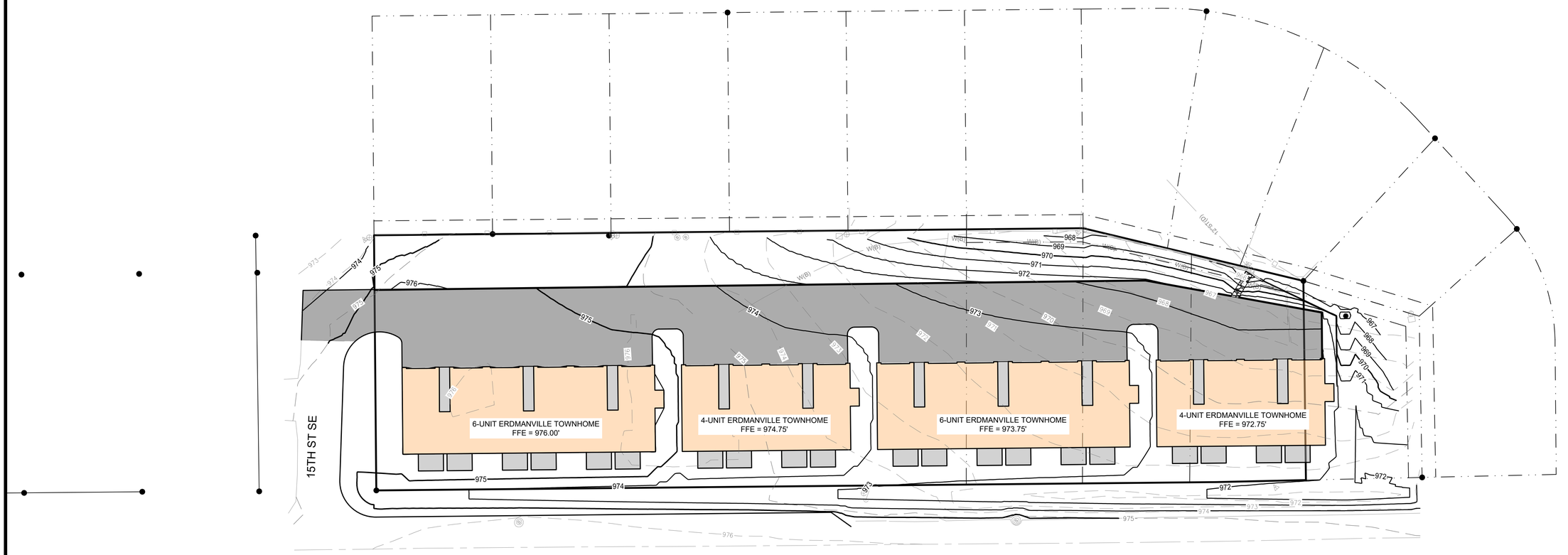
Exhibit A

Project: 2nd Avenue Multifamily
McClure Project Number: 2024006635-000
Date: 2/24/2025
Engineer: Bryce Achen

	Total Area (A)	Impervious Area	Pervious Area	Tc	Baseline Runoff Coefficients		Composite Coefficient (C)	Rainfall Intensity (i)	Runoff (Q=CiA)
	(acres)	(acres)	(acres)	(min.)	Impervious	Pervious		(inches)	(CFS)
2-Year Reoccurance Interval									
EXISTING	1.79	1.59	0.2	5	0.85	0.25	0.78	5.47	**7.67**
PROPOSED	1.79	1.07	0.72	5	0.85	0.25	0.61	5.47	**5.96**
5-Year Reocurrance Interval									
EXISTING	1.79	1.59	0.2	5	0.85	0.25	0.78	6.76	**9.47**
PROPOSED	1.79	1.07	0.72	5	0.85	0.25	0.61	6.76	**7.37**
10-Year Reocurrance Interval									
EXISTING	1.79	1.59	0.2	5	0.9	0.25	0.83	7.86	**11.64**
PROPOSED	1.79	1.07	0.72	5	0.9	0.25	0.64	7.86	**8.98**
100-Year Reocurrance Interval									
EXISTING	1.79	1.59	0.2	5	0.95	0.3	0.88	11.8	**18.53**
PROPOSED	1.79	1.07	0.72	5	0.95	0.3	0.69	11.8	**14.54**

*Rainfall intensities per ISWMM Table C3-S2-4, Section 3 - Northeast Iowa

Exhibit B



LEGEND

- 499 — EXISTING 1' CONTOUR
- 500 — EXISTING 5' CONTOUR
- 499 — PROPOSED 1' CONTOUR
- 500 — PROPOSED 5' CONTOUR

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IOWA CERTIFICATE OF AUTHORITY NO. 26887

30 15 0 30

REVISIONS

PROJECT INFO
2024006635

ENGINEER	DRAWN BY	CHECKED BY
BA	OF	BA

2ND AVENUE MULTIFAMILY
1520 2ND AVENUE SE
DYERSVILLE, IA 52040

GRADING PLAN

T:\2024006635-000\04-DRAWINGS\CIVIL\CONSTRUCTION DOCUMENTS\2024006635 GRAD.DWG

DRAWING NO.
04 OF 04