
To: Jodie Wyman, City Administrator & Planning and Zoning Commission
From: Andrew Inhelder, PE, MSA Professional Services
Subject: Sacred Willows Site Plan Review
Date: February 22, 2022

The developer submitted a revision on February 22, 2022 to the originally approved site plan dated October 29, 2021 which lowers the finished floor elevation of the proposed building and affects grading on the site. MSA has reviewed the proposed revision along with a revised stormwater management plan.

All comments, except for those as noted below under *"outstanding approval items"*, have been addressed as requested. Therefore, the City Engineer recommends that the site plan, as submitted on October 29, 2021 and later revised on February 22, 2022, be approved by the City of Prairie City.

Outstanding Approval Items

Site Monument Sign

Site monument sign has not been submitted for review/approval. Developer is responsible for obtaining appropriate approval and meeting requirements prior to construction. Any revisions to plans due to obtaining approval shall be submitted to City for review of changes.

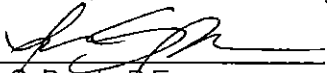
LIMITED STORMWATER REPORT

SACRED WILLOW FARMS
1120 Poplar Avenue
Jasper County
Prairie City, Iowa

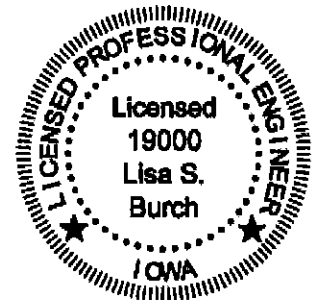
~~September 9, 2021~~
~~REVISED October 15, 2021~~
REVISED February 22, 2022

YTT Design Solutions Project No. 4921.017

I hereby declare that this plan, specification, or report was prepared by me or under by direct personal supervision, and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

 2/22/22
Lisa S. Burch, P.E. Date
Iowa License No. 19000
My License Renewal Date is December 31, 2023

Pages covered by this certification:
Report pages 1-5, Appendix A-D



Contents

I. Project Description	2
II. List of Appendices	5

I. Project Description

The project consists of the development of a 3.006 acre lot located at 1120 Poplar Avenue in Prairie City, Iowa. The project includes the construction of a new event center/wedding venue building with associated parking, drives, utilities, and landscaping. The site currently consists of agricultural row crops. The site has a soil hydrologic group of C/D. The site generally slopes from the north to the southeast with a section of the northern lot draining northerly towards the City ROW. A drainage ditch along the western side of the lot conveys any offsite drainage towards the southern lot line.

The site design and this report was revised February 2022 when the Owner requested to lower the FF Elev of the building approximately 2-feet.

The City of Prairie City requires that site stormwater runoff for the post-developed site does not exceed the pre-developed site for the 5-year, 10-year, and 100-year storms. Stormwater management will be achieved by converting pervious areas outside of the building and parking lot from agricultural row crops into improved soil / grass /lawn areas with a lower runoff factor. The post-developed site runoff is lower than the pre-developed site runoff for the 5-year, 10-year, and 100-year storms.

We analyzed the site for the pre- and post- developed conditions per the summary below in Table1 and Table 2:

Table 1. Existing Site Conditions

Parameter	Watershed #1
Total Site Area	3.006 acres
Row-crop Agriculture	3.006 acres (CN 90)
Woodland	0 acres
Natural	0 acres
Lawns or Open Spaces	0 acres
Impervious Surfaces	0 acres
Impervious %	0%
Weighted Curve Number	90
Time of Concentration	5 min.

Table 2. Post Development Site Conditions

Parameter	Watershed #1
Total Site Area	3.006 acres
Row-crop Agriculture	0 acres
Woodland	0 acres
Natural	0 acres
Lawns or Open Spaces	2.036 acres (CN 77)
Impervious Surfaces	0.97 acres (CN 98) [33,506 SF Parking Lot] [2,359 SF Sidewalk] [6,400 SF Building]
Impervious %	32%
Weighted Curve Number	84
Time of Concentration	5 min.

The pre-developed -vs- post-developed site runoff values are shown below in Table 3:

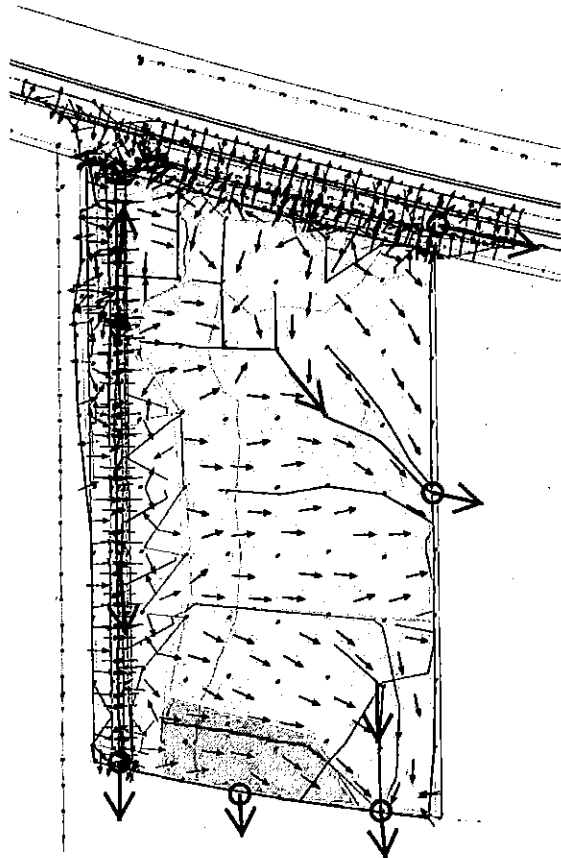
Table 3. Site Runoff Values

Storm Event	PRE	POST
	(cfs)	(cfs)
5-year	9.997	7.70
10-year	12.17	9.75
100-year	19.84	17.30

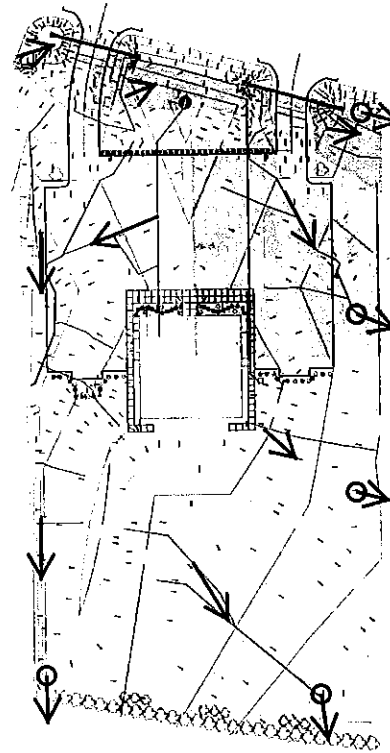
We analyzed the site drainage patterns for the pre- and post- developed conditions for impacts to downstream facilities. The drainage patterns are shown in the following Figure 1. The existing drainage paths consist mainly of a south-southeasterly flow with a small area draining to the north into the roadway grass ditch in the City ROW. The post development drainage paths are very similar to the existing drainage paths with mainly a south-southeasterly flow with a small area draining to the north into the roadway grass ditch in the City ROW. The southern border of the site consists of a drainage ditch that discharges southerly into the highway ROW.

Figure 1. Drainage Patterns Existing and Post-Development

Existing Site Conditions



Post Development Site Conditions



The post development grading will result in increased concentrated flow areas on site and at the discharge points off site versus the general runoff flow conditions of the existing agricultural site. To accommodate the concentrated flows at these locations these drainage paths will be reinforced with additional erosion control measures consisting of sod/grass/vegetative cover, erosion stone, and energy dissipation measures. These measures will mitigate potentially erosive stormwater flows from the site prior to discharge.

Although there is increased concentrated flow locations post development the overall runoff from the site for the post development condition is less than the existing site condition as shown in Table 3. The increased concentrated runoff will have negligible impact on downstream facilities.

Additionally, the Owner understands that any future expansions to the site will require additional stormwater calculations to verify post construction stormwater rates are less than or equal to existing stormwater rates and that additional stormwater management may be required at that time.

II. List of Appendices

- Appendix A Site Grading Plan – Sheet E.01
- Appendix B Soil Maps – pages 1-7
- Appendix C Hydrograph Modeling Input and Output – pages 1-4
- Appendix D NOAA Atlas 14 – pages 1-4

