

PROJECT DESCRIPTION
THIS PROJECT IS FOR THE CONSTRUCTION OF A MOUND SANITARY WASTE DISPOSAL SYSTEM AT WAPSIPINICON STATE PARK.



PLANS OF PROPOSED IMPROVEMENT ON THE
WAPSIPINICON STATE PARK
IOWA DEPARTMENT OF
NATURAL RESOURCES
SEPTIC MOUND SYSTEM

Project: Wapsipinicon State Park Mound System Construction

LOCATED IN SECTION 11 OF T84N, R4W JONES COUNTY

Project No. 25-06-53-02

Project: Wapsipinicon State Park Septic Mound System

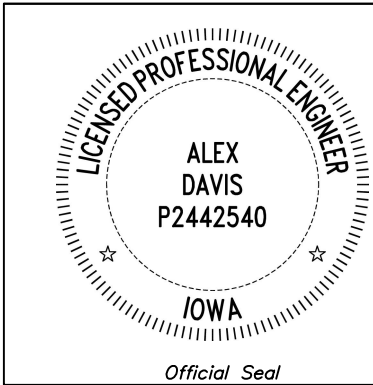
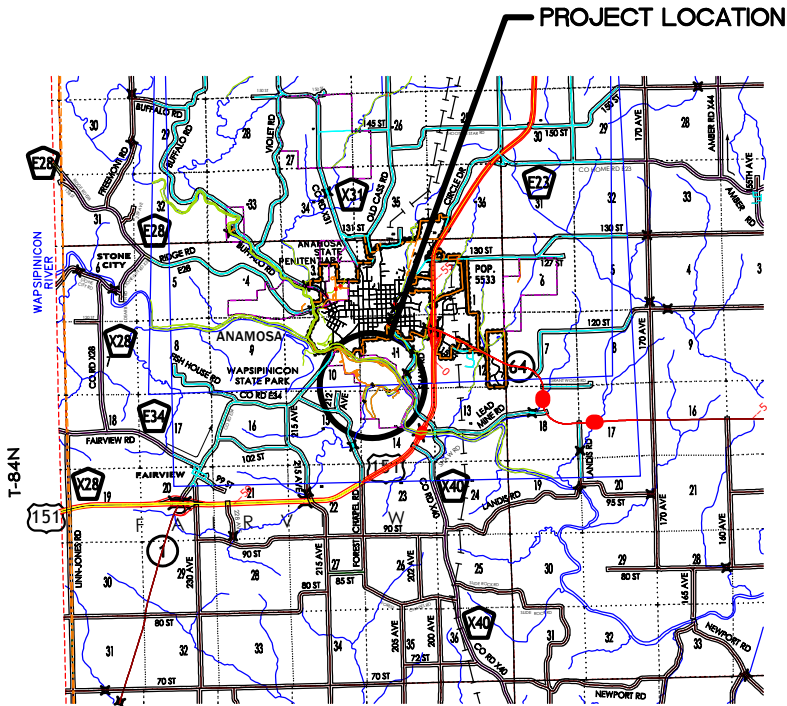
INDEX OF SHEETS		TOTAL SHEETS
Description		6
No.	Description	
1	TITLE SHEET	
2	GENERAL & MISCELLANEOUS NOTES AND SPECIFICATIONS	
3	SITE LOCATION	
4	SITE PLAN VIEW	
5	MOUND SYSTEM LAYOUT AND DETAILS	

AUTHORIZATION TO BID	
AUTHORIZATION-PARKS/WILDLIFE/FISHERIES/LAW ENFORCEMENT/FORESTRY	DATE
ENGINEERING BUREAU CHIEF	DATE

DIRECTORY			
PROJECT MANAGER		CONSTRUCTION INSPECTOR	
COMPANY	IOWA DEPARTMENT OF NATURAL RESOURCES	COMPANY	IOWA DEPARTMENT OF NATURAL RESOURCES
ADDRESS	2658 AMANA ROAD	ADDRESS	6200 PARK AVE
CITY, STATE, ZIP	SWISHER, IA 52338	CITY, STATE, ZIP	DES MOINES, IA 50321
CONTACT	MICHAEL DUFOE	CONTACT	BRUCE FLIPPIN, P.E.
TELEPHONE	515-985-9196	TELEPHONE	515-689-8009
FAX		FAX	
EMAIL	michael.dufae@dnr.iowa.gov	EMAIL	bruce.flippin@dnr.iowa.gov



DO NOT SCALE



I hereby certify that this engineering document was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Alex Davis 8/26/2026
Alex M. Davis, P.E. Date
Endeavor Civil Engineering Inc.
My license renewal date is December 31, 2027
Pages or sheets covered by this seal:
ALL SHEETS IN SET

GENERAL NOTES

The contractor shall visit the site prior to bidding in order to be familiar with the conditions and how they will be able to access the project.

The contractor shall not disturb desirable grass areas and desired trees outside the project limits. The contractor will not be permitted to park or service vehicles and equipment or use these areas for storage of materials. Storage, parking, and service areas will be subject to the approval of the project engineer. In the case that any areas are disturbed by the contractor outside of the project limits, these areas shall be repaired to the satisfaction of the project engineer at no cost to the Iowa Department of Natural Resources.

Project is to install a septic and mound system as outlined on sheets 5 and 6 of these plans.

Proposed mound system is based off a design peak flow rate of 800 gallons per day with a soil loading rate of 0.4 gallons/sf/day.

Before any fill is placed on areas where fill is required, all sod, debris, etc. shall be removed, and ground shall be tilled in accordance with Chapter 69 of Iowa Code. This shall be incidental to the installation of new mound system bid item.

Care shall be taken to keep any soil runoff to areas outside the project site to a minimum.

The contractor is to provide all fill material and a site to dispose of all waste material off site. No waste material shall be deposited in any floodway.

Where utilities and fixtures are shown as existing on the plans or encountered within the construction area, it shall be the responsibility of the contractor to notify the project engineer of those utilities prior to the beginning of construction. The contractor shall be afforded access to these facilities for necessary modification of services. Underground facilities, structures, and utilities have been plotted from available surveys and records and therefore their locations must be considered approximate only. It is possible there may be others, the existence of which is presently not known or shown. It is the contractor's responsibility to determine their existence and exact location, and avoid damage thereto. No claims for additional compensation will be allowed to the contractor for any interference or delay caused by such work.

The contractor shall verify all locations, and elevations with the project engineer before any work commences.

All work shall conform to and be performed in accordance with all applicable codes and ordinances, most notably Chapter 69 of Iowa Code.

Any damage to areas outside the project limits shall be repaired to the satisfaction of the Iowa Department of Natural Resources at the contractor's expense.

Final seeding, fertilizing, and mulching of disturbed areas on this project shall be incidental to construction.

SEPTIC TANK

Septic tank for project shall meet all requirements as outlined in Chapter 69 of Iowa Code including the following requirements:

- Tank size to be 2,000 gallons
- Maximum liquid holding depth shall not exceed 6'–6"
- Interior of tank shall not be less than 5 feet and shall be at least 1.5 times the width.
- Tank interior compartments shall not have an inside width of less than 2 feet.
- Tank shall have two interior compartments, one for influent, and one for effluent.
- Contractor shall submit shop drawings of the proposed tank to the Iowa DNR for approval.

Main vent pipe of tank shall be painted grey to improve visual aesthetics of the system in the park.

DOSING CHAMBER

Chamber with pump to distribute effluent to treatment system shall have the following requirements as well as meet all construction guides as outlined in Chapter 69 of Iowa Code.

- Tank size shall water tight with a minimum capacity of 1,000 gallons.
- Tank shall contain a two pump system, a primary, and a back up pump. Pump sizes shall be of adequate power of the minimum capabilities: pump shall have a minimum flow rate of 43.5 gpm, and a minimum head of 46.0 feet to distribute effluent throughout each zone of the system and be capable of maintaining a squirt height of three feet above the pipe at the ends of the distribution lines as outlined in Chapter 69 of Iowa Code. Minimum pump head is based off assumption of a dosing tank depth of 60 inches, ground elevation rise of 12.7 feet with a 3 foot squirt height, loss through valves at 2 feet, and loss through piping at 16 feet. Head is to be increased if depth of pump in proposed tank is greater than 60 inches, or higher head loss than 2 feet through valves is anticipated based off manufacturers specifications.
- Pump is to be fitted with screen to keep debris larger than 1⁄8" out of distribution system that may enter the dosing chamber
- Chamber shall be fitted with a high water alarm system where the alarm shall be mounted on the back of the restroom back wall.

Contractor shall submit spec sheets and shop drawings of chamber, pump, and alarm systems for approval.

MOUND FILL MATERIAL

A mound shall be constructed using clean, medium–textured sand (a.k.a. concrete sand). The snad size shall be such that:

- At least 25 percent by weight shall have a diameter between 2.0 and 0.25 millimeter (mm)
- Less than 35 percent by weight, a diameter between 0.25 and 0.05 mm; and
- Less tha 5 percent by weight, a diameter between 0.05 and 0.002 mm

Rock fragments larger than 1⁄16 inch (2.0 mm) shall not exceed 15 percent by weight of the material used for mound fill.

MOUND GRAVEL MATERIAL

Gravel used as bedding under and around distribution pipes shall comply with section requirements specified in Iowa Code 69.5(2)"a".

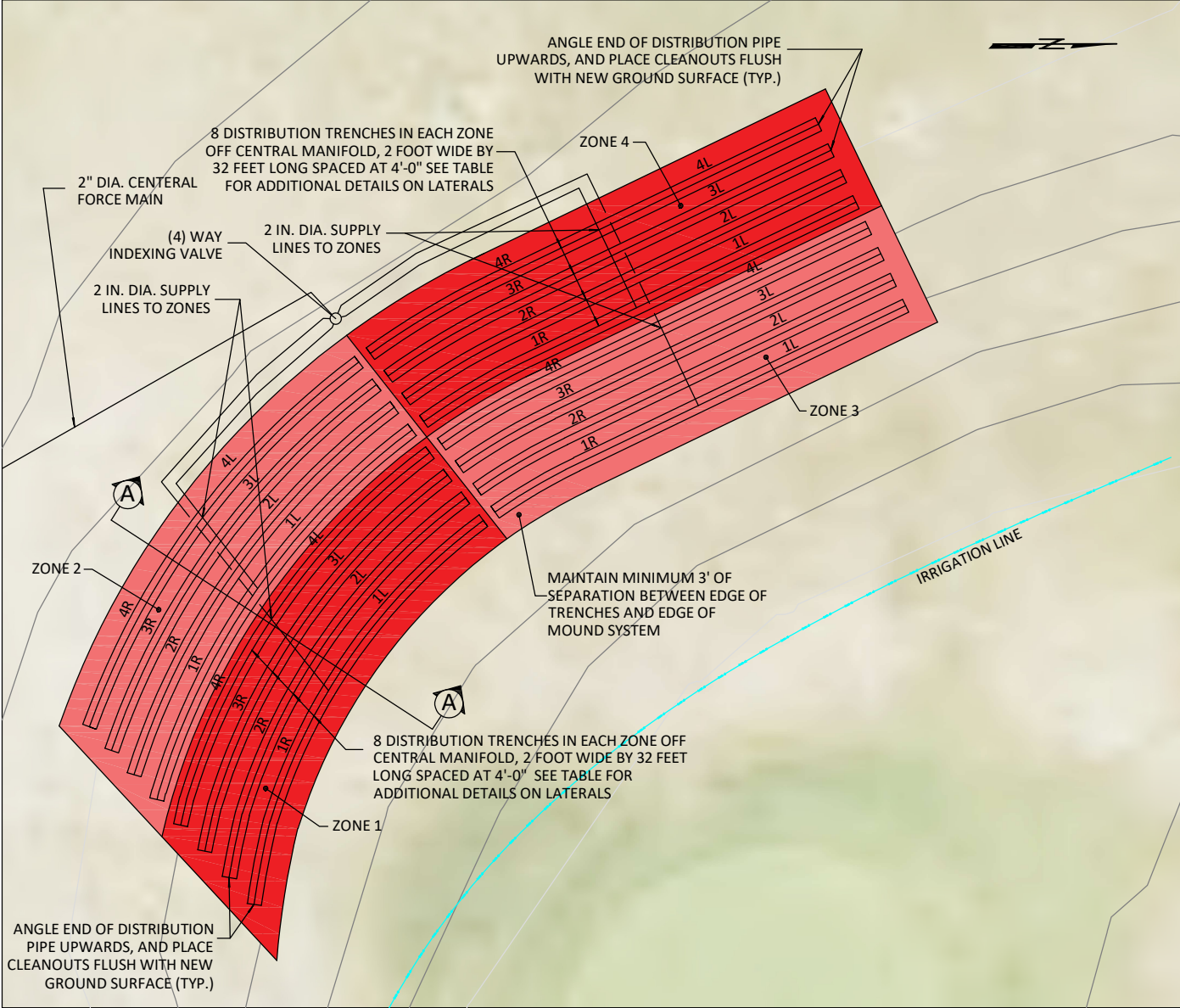
SEPTIC REPLACEMENT
Located at Wapsipinicon State Park
GENERAL & MISCELLANEOUS NOTES
AND SPECIFICATIONS



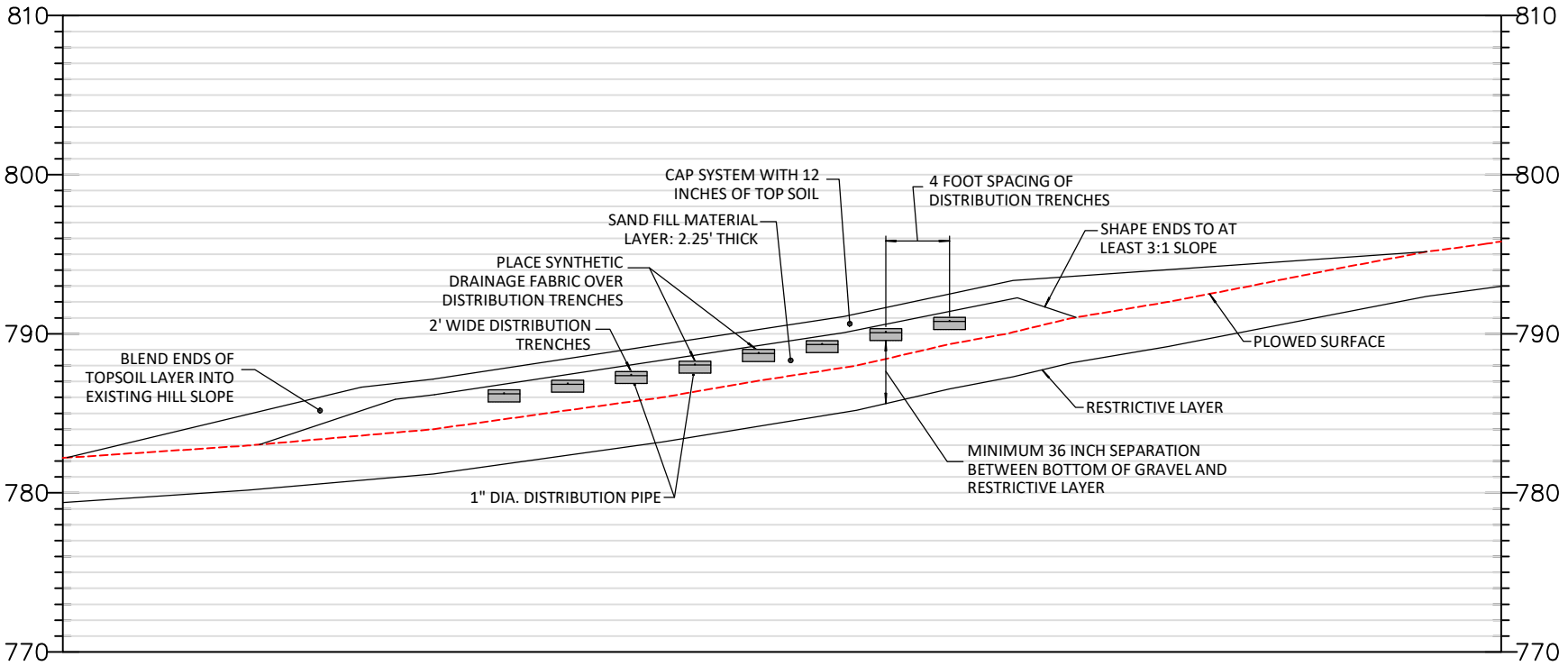
SEPTIC REPLACEMENT
Located at Wapsipinicon State Park

SITE LOCATION





MOUND DISTRIBUTION SYSTEM PLAN VIEW



SECTION A-A (TYPICAL SECTION)

LATERAL INFORMATION TABLE						
ZONE	LATERAL NO.	ELEVATION OF PIPE	PIPE DIAMETER (IN)	LENGTH (FT)	PERFORATION DIAMETER (IN)	PERFORATION SPACING (FT)
1	1L	790.77	1	32	1/8	2.0
	1R	790.77	1	32	1/8	2.0
	2L	790.07	1	32	1/8	2.3
	2R	790.07	1	32	1/8	2.3
	3L	789.32	1	32	1/8	2.5
	3R	789.32	1	32	1/8	2.5
	4L	788.76	1	32	1/8	2.7
2	4R	788.76	1	32	1/8	2.7
	1L	788.03	1	32	1/8	2.0
	1R	788.03	1	32	1/8	2.0
	2L	787.37	1	32	1/8	2.3
	2R	787.37	1	32	1/8	2.3
	3L	786.83	1	32	1/8	2.5
	3R	786.83	1	32	1/8	2.5
3	4L	786.22	1	32	1/8	2.7
	4R	786.22	1	32	1/8	2.7
	1L	790.77	1	32	1/8	2.0
	1R	790.77	1	32	1/8	2.0
	2L	790.07	1	32	1/8	2.3
	2R	790.07	1	32	1/8	2.3
	3L	789.32	1	32	1/8	2.5
4	3R	789.32	1	32	1/8	2.5
	4L	788.76	1	32	1/8	2.7
	4R	788.76	1	32	1/8	2.7
	1L	788.03	1	32	1/8	2.0
	1R	788.03	1	32	1/8	2.0
	2L	787.37	1	32	1/8	2.3
	2R	787.37	1	32	1/8	2.3

- NOTES:
- GRAVEL IN DISTRIBUTION TRENCHES SHALL BE PLACED A MINIMUM OF 6 INCHES BELOW THE DISTRIBUTION PIPE, AND A MINIMUM OF 2 INCHES ABOVE THE DISTRIBUTION PIPE.
- MATERIAL UTILIZED IN DISTRIBUTION TRENCHES SHALL COMPLY WITH SPECS AS OUTLINED IN SHEET 2 OF THESE PLANS AND CHAPTER 69 OF IOWA CODE.
- FILL SAND UTILIZED SHALL COMPLY WITH MATERIAL SPECS FOUND ON SHEET 2 OF THESE PLANS, AND CHAPTER 69 OF IOWA CODE.
- AREA OF MOUND SYSTEM SHALL BE STRIPPED OF VEGETATION BEFORE CONSTRUCTION WITH THE TOP LAYER BEING PLOWED TO A DEPTH OF 8 INCHES.
- TOP SOIL UTILIZED SHALL CONSIST OF QUALITY NATIVE SOIL FROM THE AREA HAULED IN BY CONTRACTOR
- MOUND SYSTEM SHALL BE SPLIT INTO FOUR EQUAL ZONES WITH AN INDEXING VALVE. EACH ZONE SHALL RECEIVE A QUARTER OF THE TOTAL DESIGN FLOW OF 800 GALLONS PER DAY (200 GALLONS MAX/ZONE/DAY). EACH ZONE CONSISTS OF 8 LATERALS OF 32 FEET IN LENGTH BRANCHING OFF A 2 INCH DIAMETER CENTER MANIFOLD
- INDEXING VALVE SHALL BE PLACED IN MAINTENANCE VAULT AS DESCRIBED ON PAGE 4. TOP OF VAULT SHALL BE PAINTED GREEN AND PLACED FLUSH OR SLIGHTLY BELOW SURFACE TO NOT DISTURB GOLF COURSE OPERATIONS. IF INSTALLED BELOW SURFACE, AN IRON PIN OR OTHER MEANS OF DETECTION SHALL BE PLACED IN THE LID SO IT MAY BE EASILY FOUND BY MAINTENANCE WORKERS.
- SEE LATERAL INFORMATION TABLE FOR PIPE DIAMETER, PERFORATION SIZE, AND SPACING.
- DOSING OF EACH ZONE TO BE A MINIMUM 35 GALLONS BUT NOT TO EXCEED 50 GALLONS PER DOSING.
- CLEANOUTS ON ENDS OF DISTRIBUTION RUNS SHALL BE INSTALLED FLUSH WITH THE GROUND SURFACE TO PROVIDE MINIMAL DISTURBANCE TO THE GOLF COURSE. CAPS SHALL HAVE A THREADED CAP WITH GREEN LID SUITABLE FOR GOLF COURSE MOWING OPERATIONS TO PROVIDE MINIMAL DISTURBANCE TO NORMAL OPERATIONS.

SEPTIC REPLACEMENT
Located at Wapsipinicon State Park

MOUND SYSTEM LAYOUT AND DETAILS