

Chatfield Campground Upgrades

RAS Engineering Solutions

- ▶ Robert Aunan, Civil Engineer
- ▶ Adam Lev, Environmental Engineer
- ▶ Sam Dumford, Environmental Engineer



Project Scope



Design Services

Design Location
Design Details
Construction Cost



Project Costs

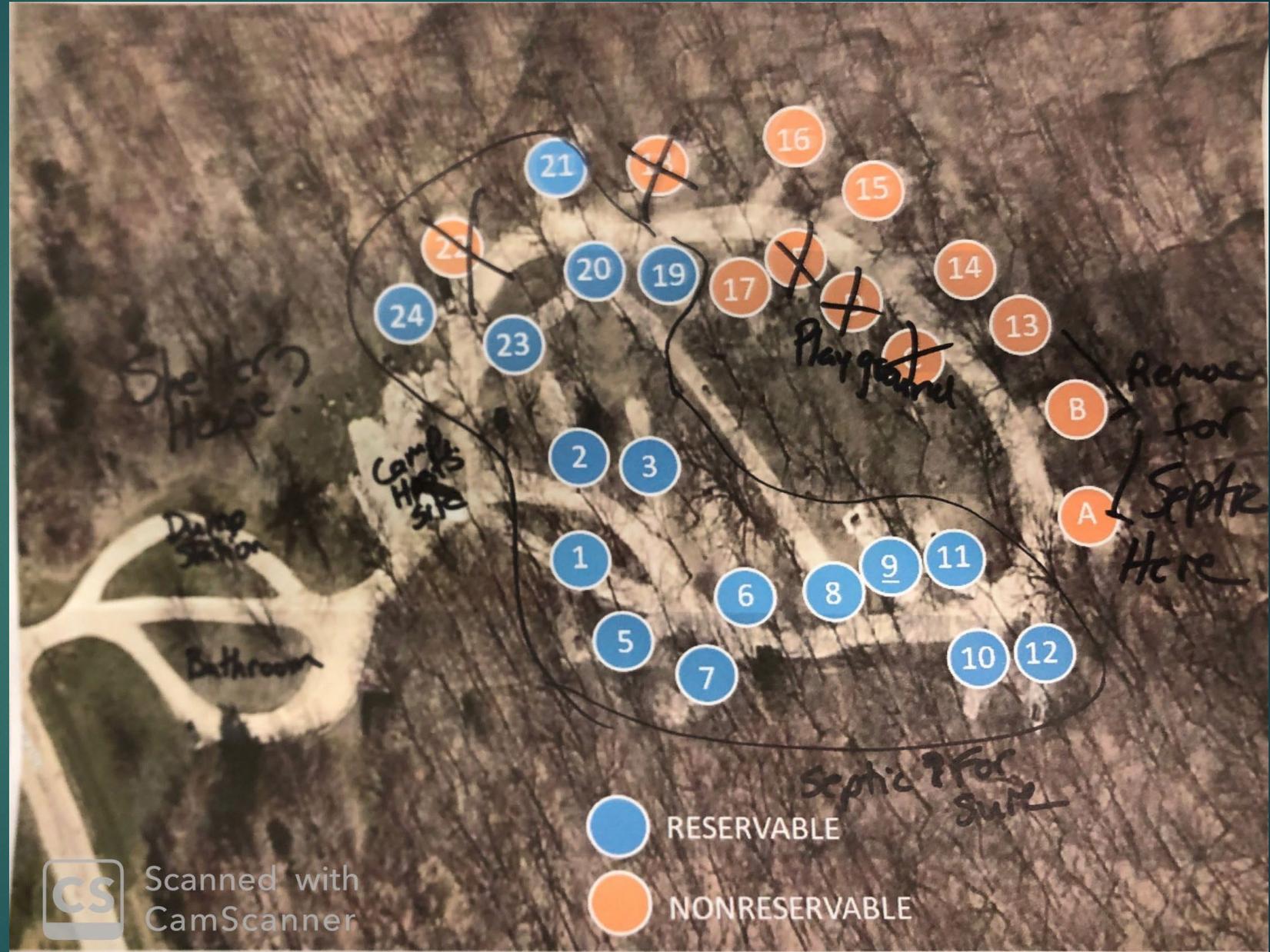


Project Phasing

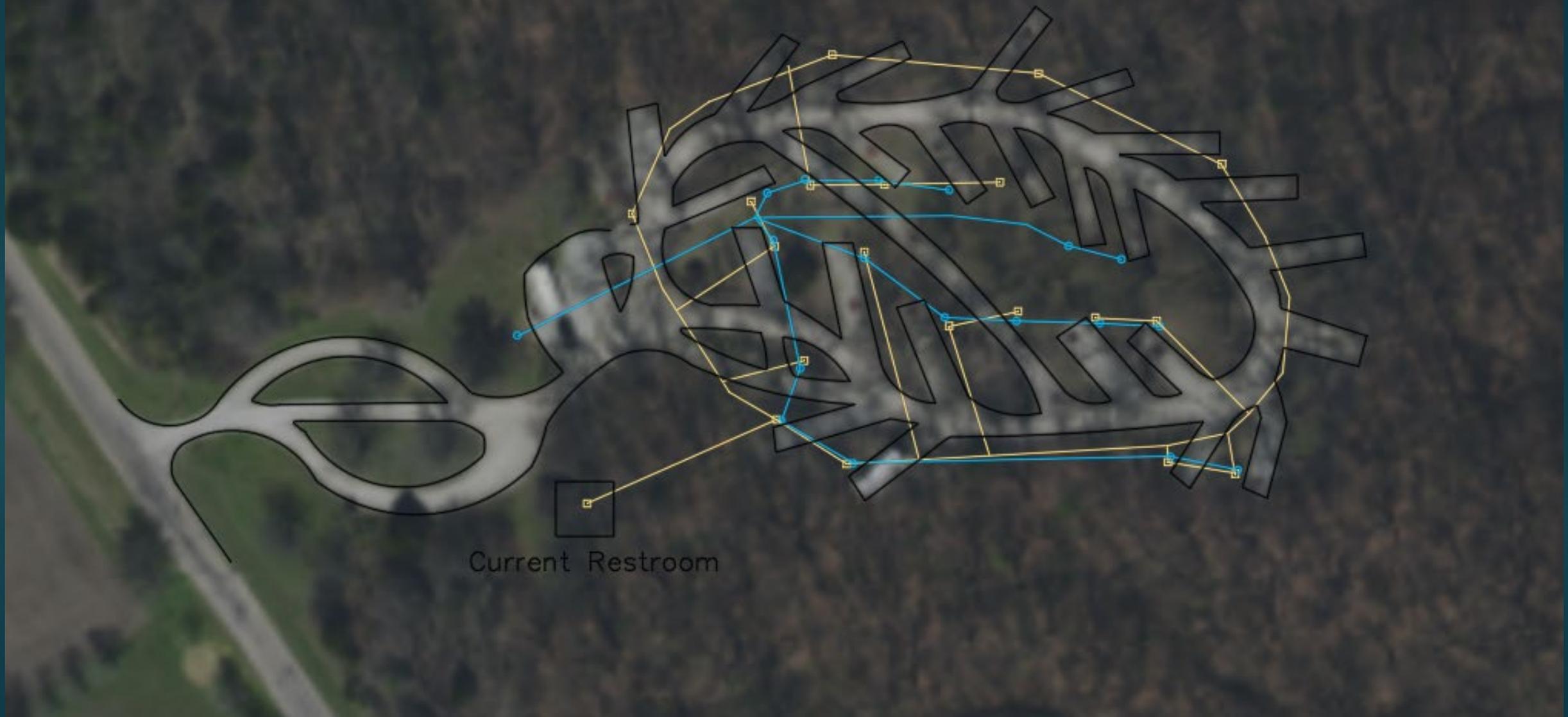
Presentation Outline

Project Scope

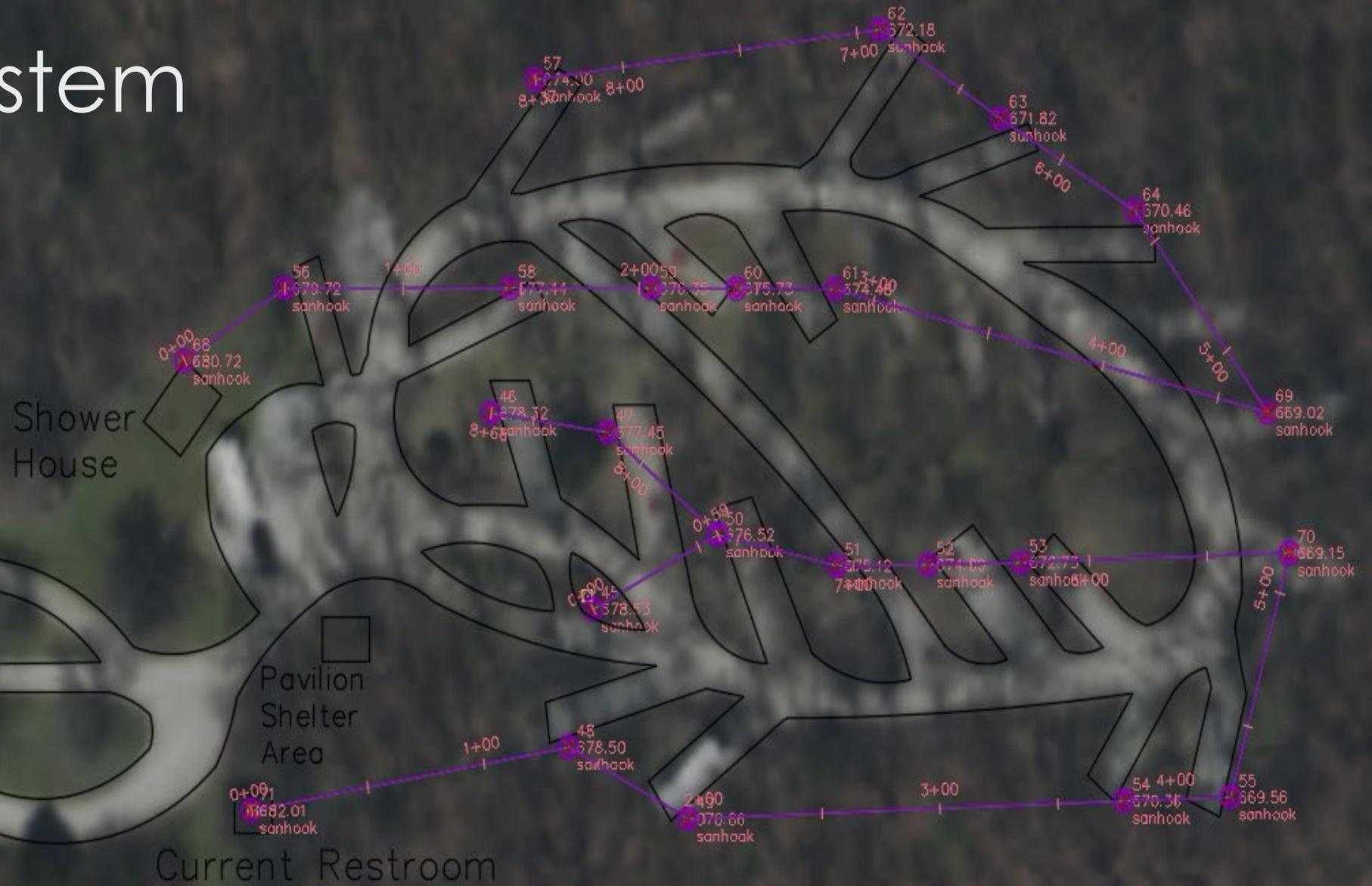
- Sanitary System Piping
- Septic Tank & Treatment
- Connecting Trail
- Shower-house/Restroom
- Pavilion Area Design
- Electric and Water to Designated Sites



Current Site Plan



Sanitary System



Sanitary System Design

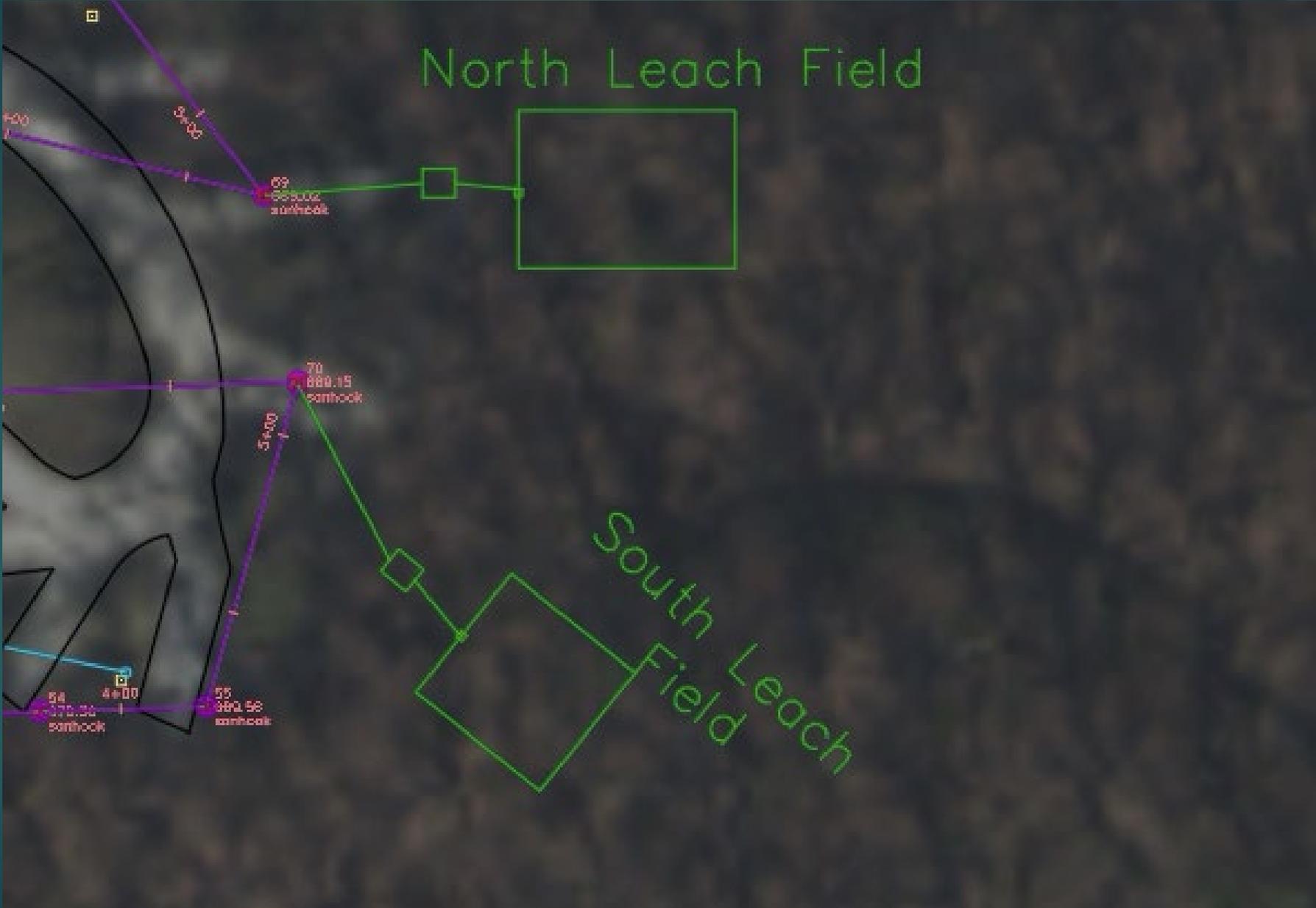
Maintain minimum depth below frost line (40")

Mandatory 18" depth separating sewer from water (12.5.8.3)

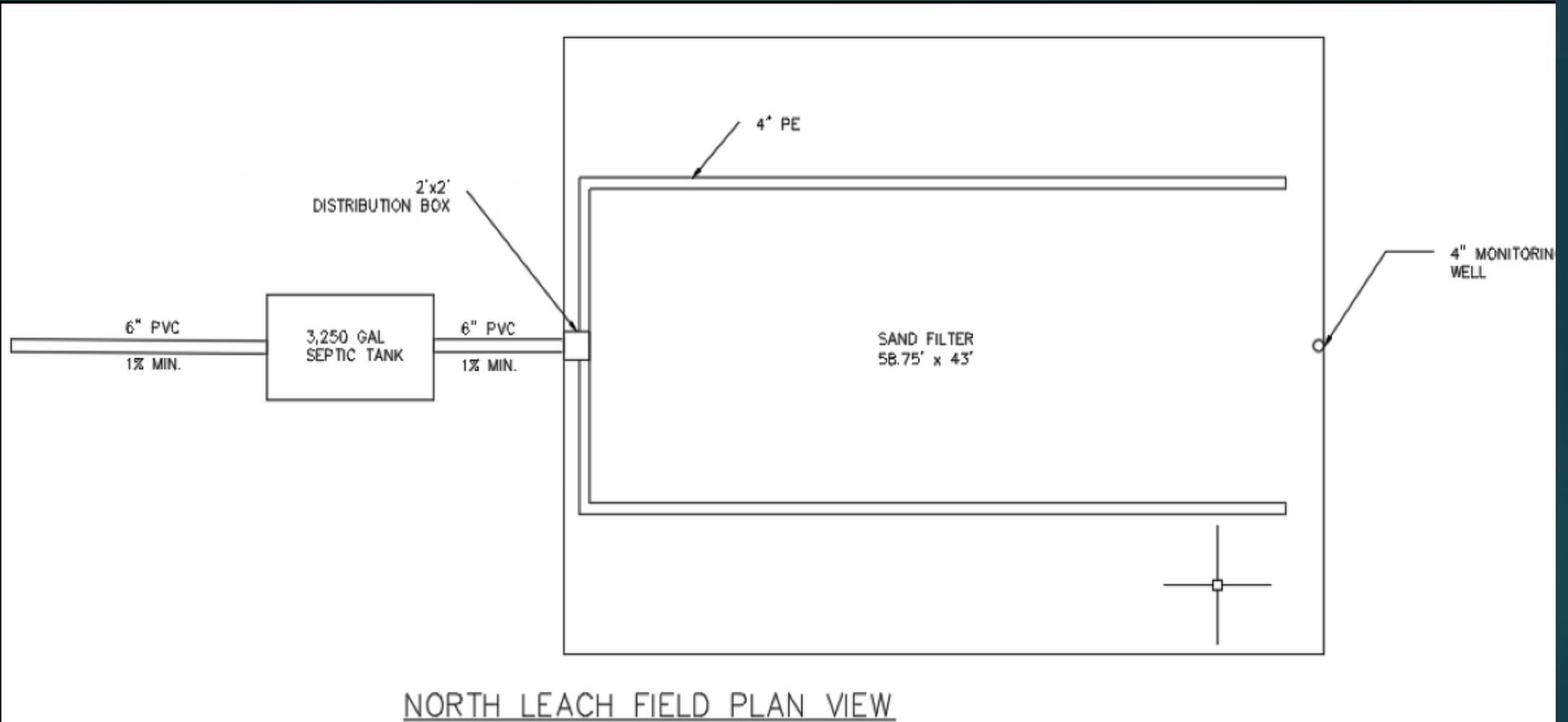
Slope range from 1% to 5%



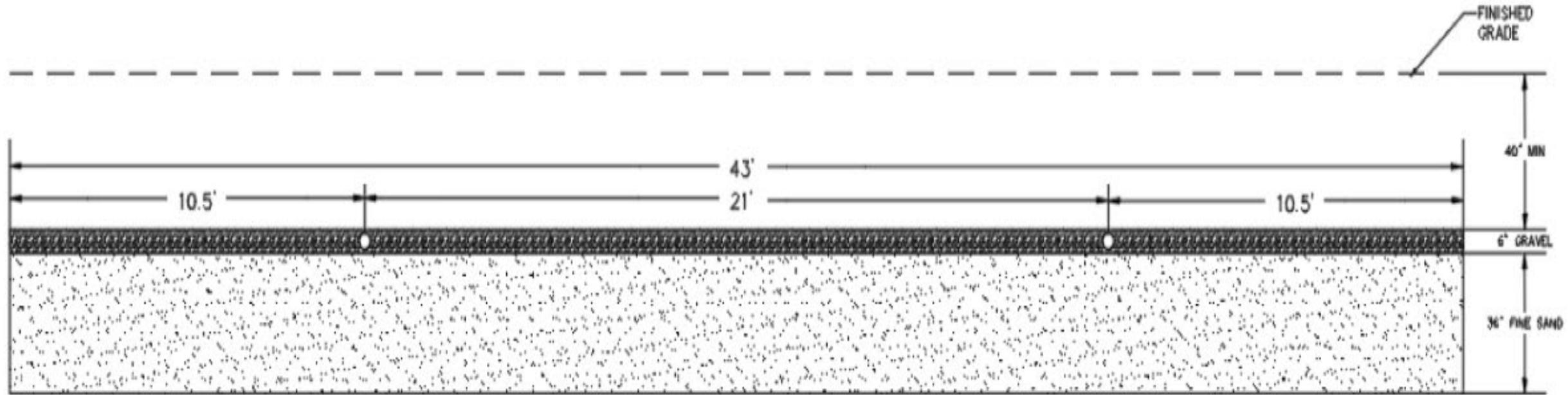
Septic Tank and Leach Fields



North Septic Tank & Leach Field

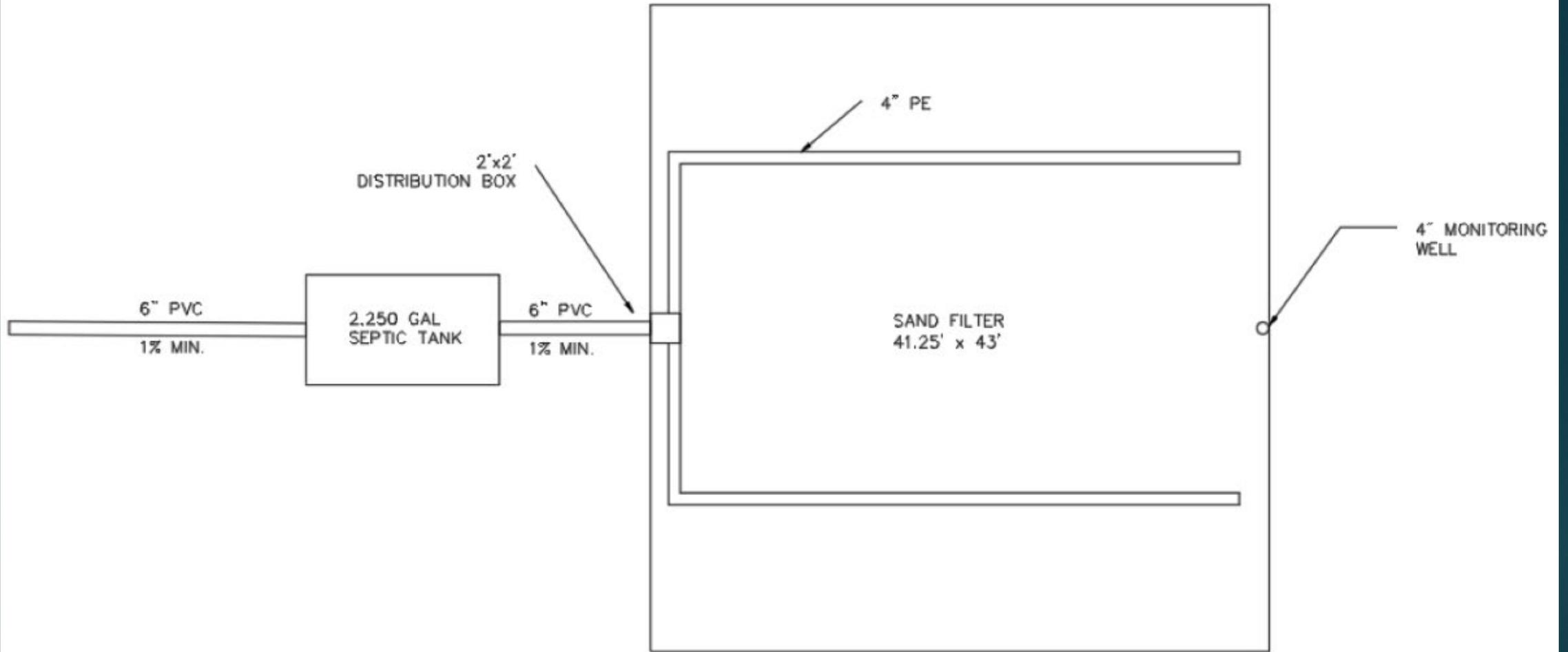


North Septic Tank & Leach Field



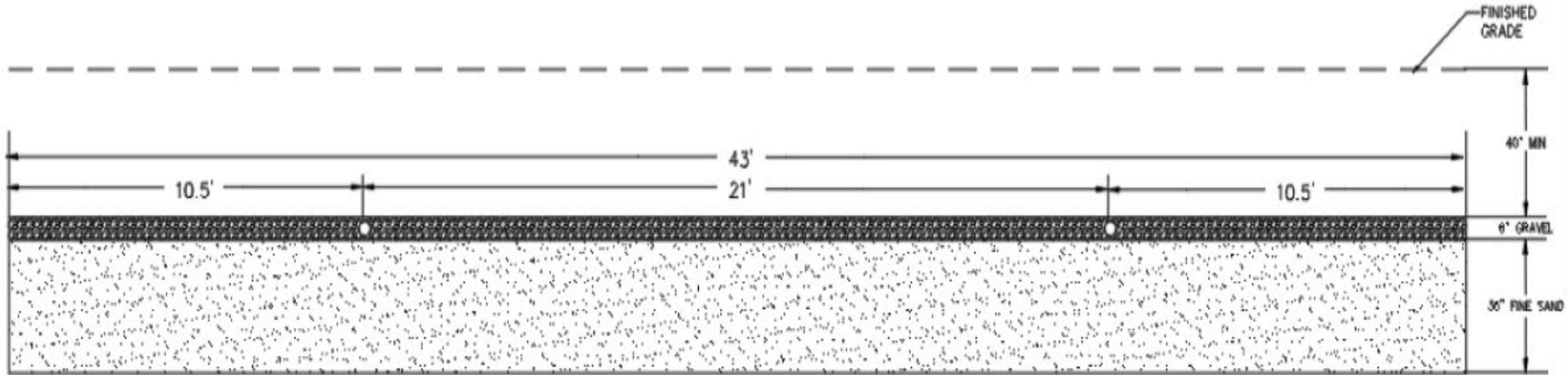
NORTH LEACH FIELD SECTION VIEW

South Septic Tank & Leach Field



SOUTH LEACH FIELD PLAN VIEW

South Septic Tank & Leach Field



SOUTH LEACH FIELD SECTION VIEW

Septic Tank and Leach Field Design

Iowa Administrative Code (IAC) Chapter 69 Private Sewage Disposal Systems

Required distance from groundwater table, lake, and drinking water lines.

Minimum Tank volume of twice the daily maximum flow rate

Adequate detention time for adequate water treatment to meet NPDES General Permit No. 4 effluent values.



Sanitary System with Leach fields
and Septic Tanks Construction Cost
Estimate:



\$51,500

Trail and Culvert Design

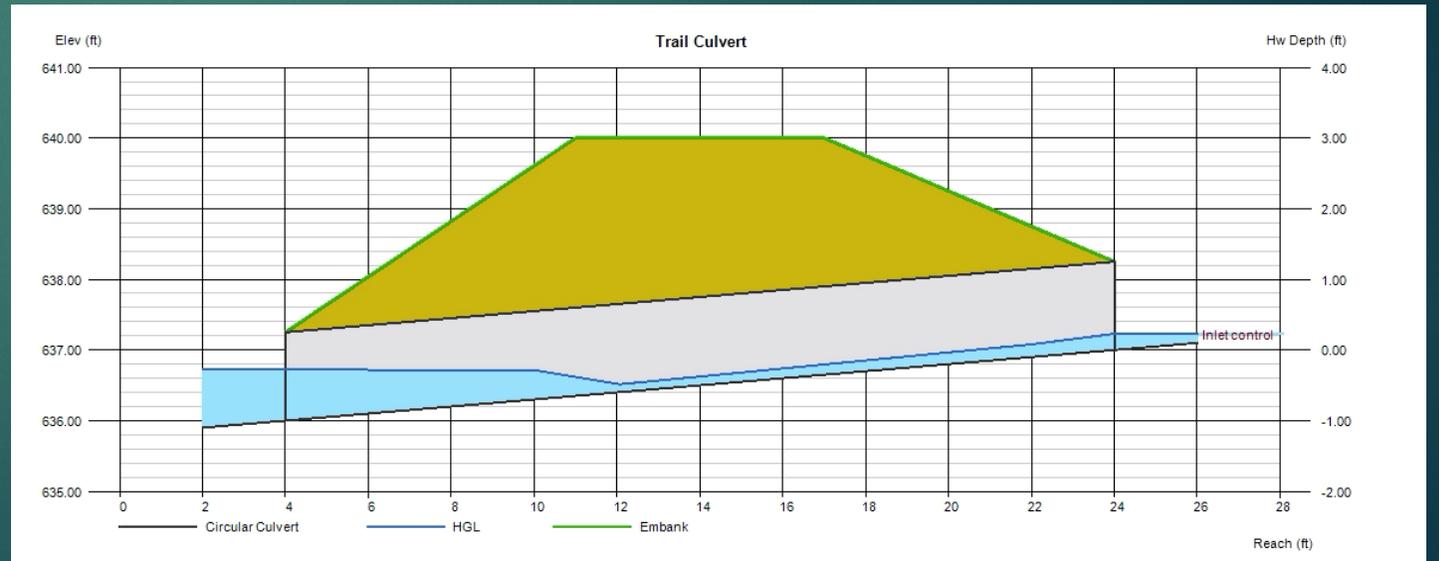
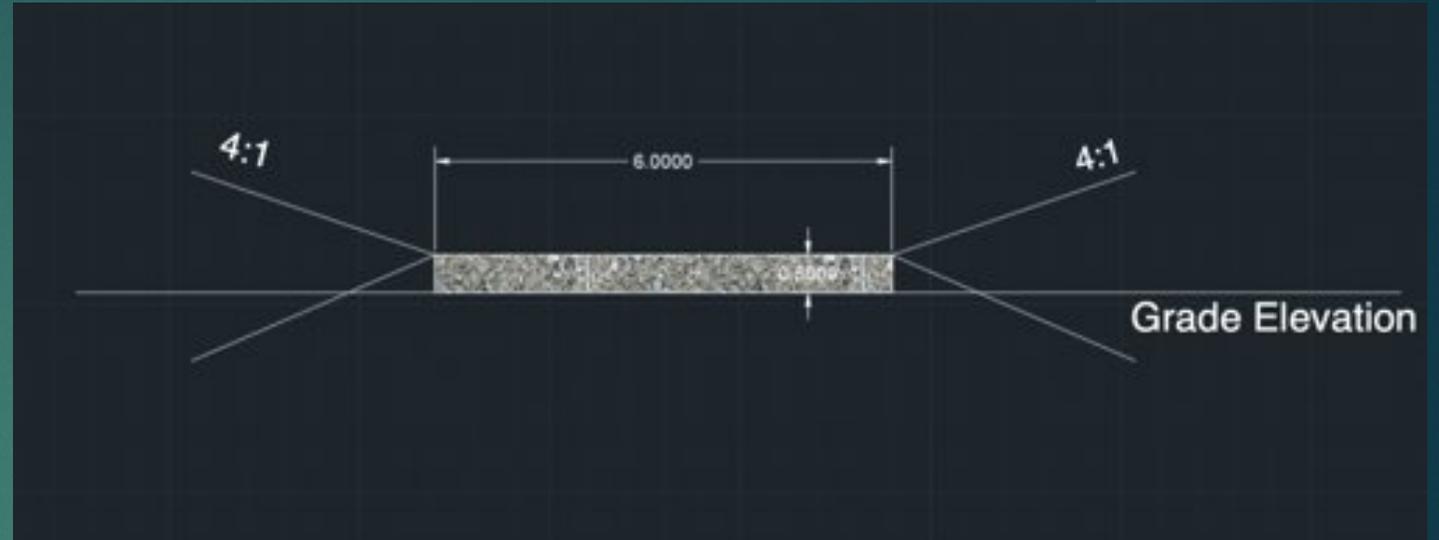


Trail and Culvert Design

Trail design following the National Parks Services Standards for Trail Construction for Rural Natural Trails

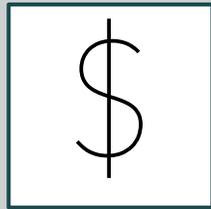
Culvert design following Iowa Statewide Urban Design Specifications (SUDAS)

Culvert specifications: 15 in diameter circular concrete culvert with square edge entrance with a headwall



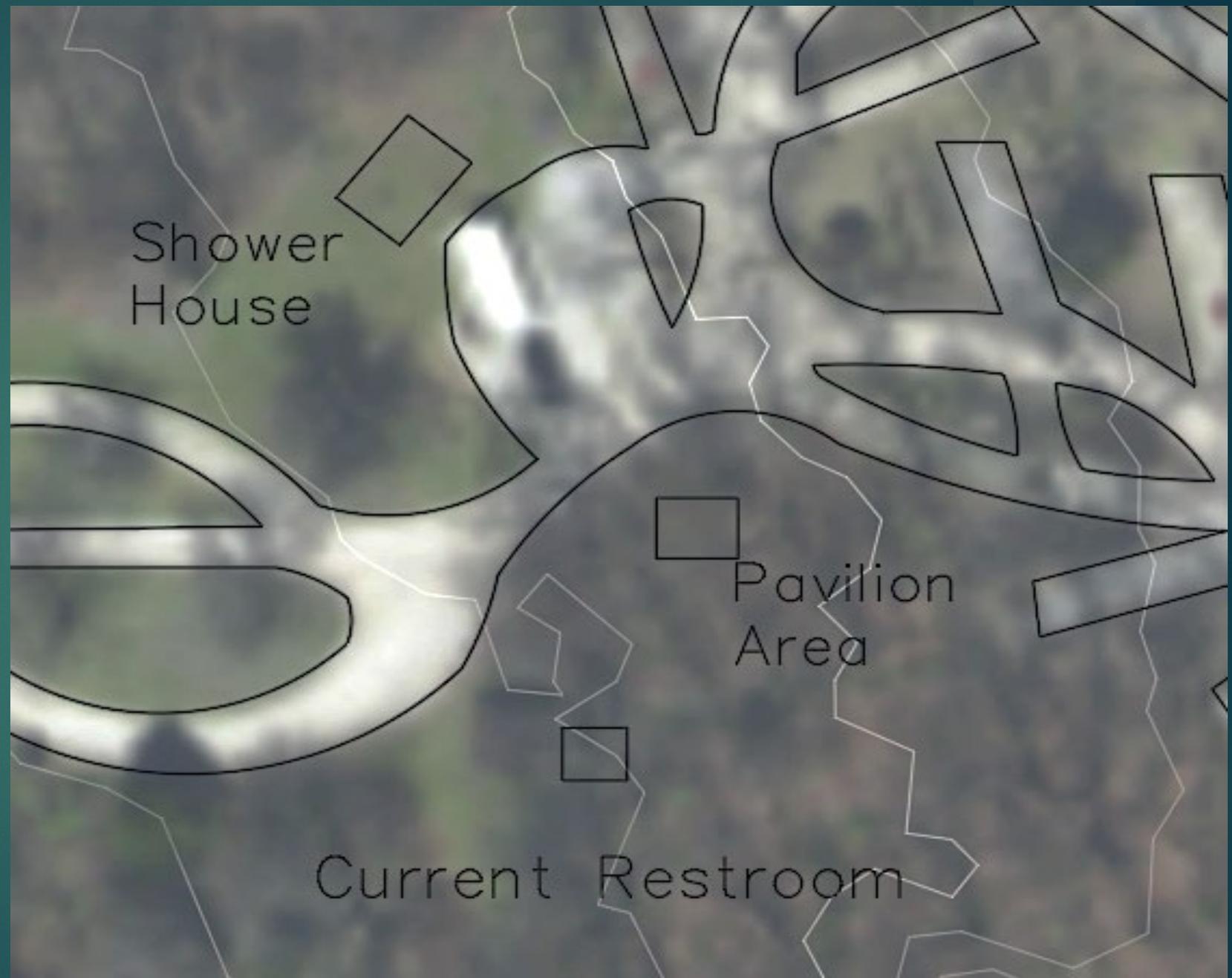


Trail and Culvert Construction Cost Estimation:



\$89,000

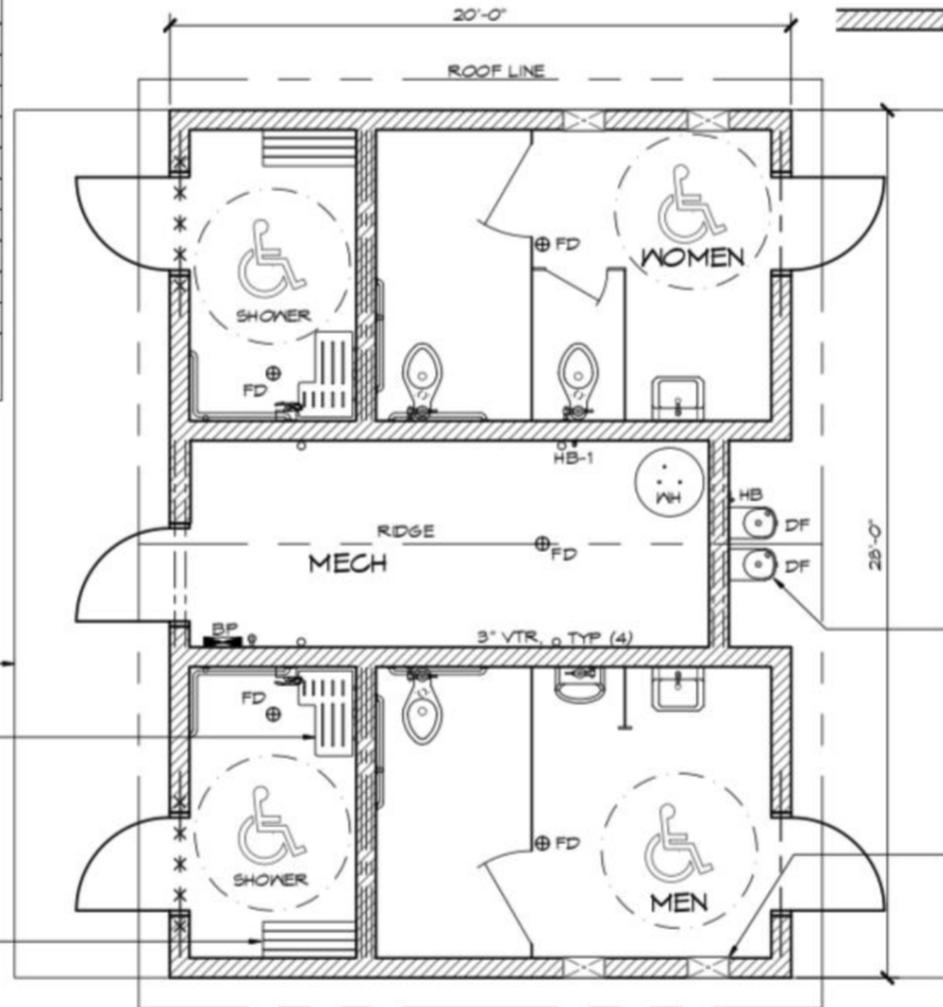
Shower House and Pavilion Area



Shower House

LEGEND		
SYMBOL	DESCRIPTION	AREA/ QUANTITY
----	GABLE VENT	2
-----	LOUVERED GABLE VENT	2
----	RIDGE VENT	4
≡≡≡	2x8 WOOD FILLER WALL	2
	EXTERIOR WALL LIGHTS	6
	INTERIOR WALL LIGHTS	4
	INTERIOR CEILING LIGHTS	1
⊙	FLOOR DRAIN	5
⊕	ELECTRICAL OUTLET	1
⊕ _{HB-1}	WALL FAUCET	1
⊕ _{HD}	WALL HYDRANT	1
⊕	16" x 24" KICKPROOF WALL VENT	4

WALL TYPE SCHEDULE	
	8" REINFORCED CONCRETE MASONRY BLOCK WALL WITH MORTAR JOINTS, GROUTED SOLID ALL CELLS RUNNING BOND PATTERN.



CONCRETE WALK (BY INSTALLER)

PHENOLIC FOLD-UP SHOWER BENCH, TYP 2

ROMTEC SHOWER BENCH STEEL FRAME WITH CEDAR SLATS, TYP 2

DRINKING FOUNTAINS (OPTIONAL NOT INCLUDED)

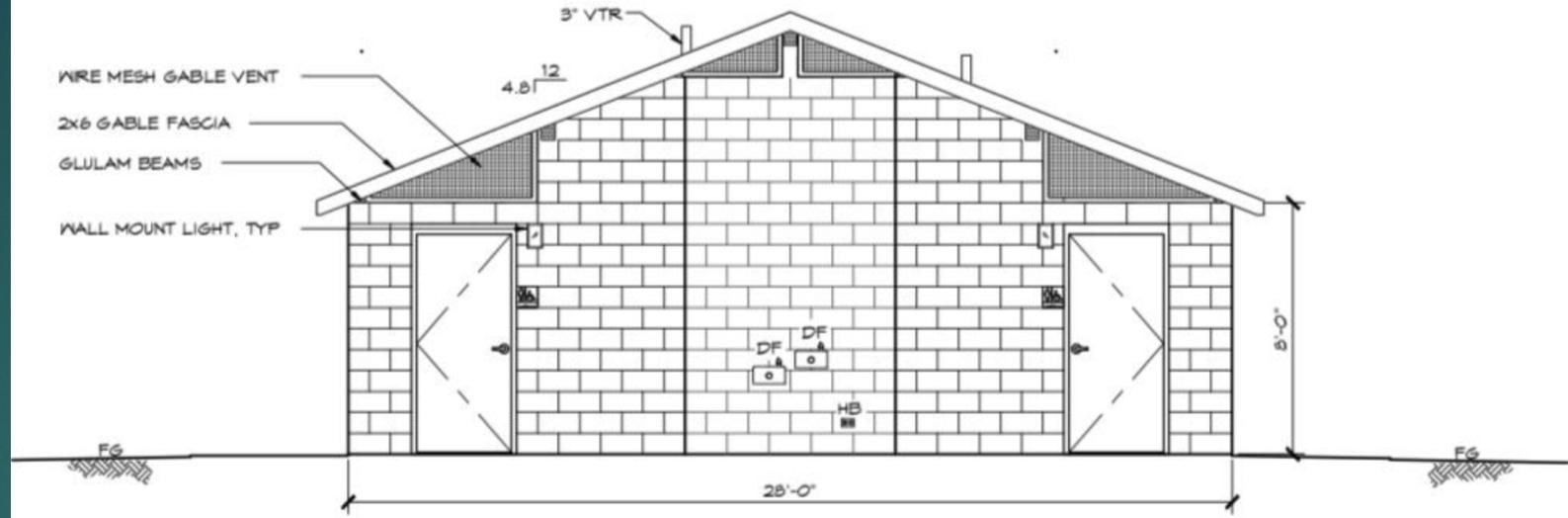
16" x 24" KICK RESISTANT VENT, TYP 4

1 FLOOR PLAN
SCALE: 1/4" = 1'-0"

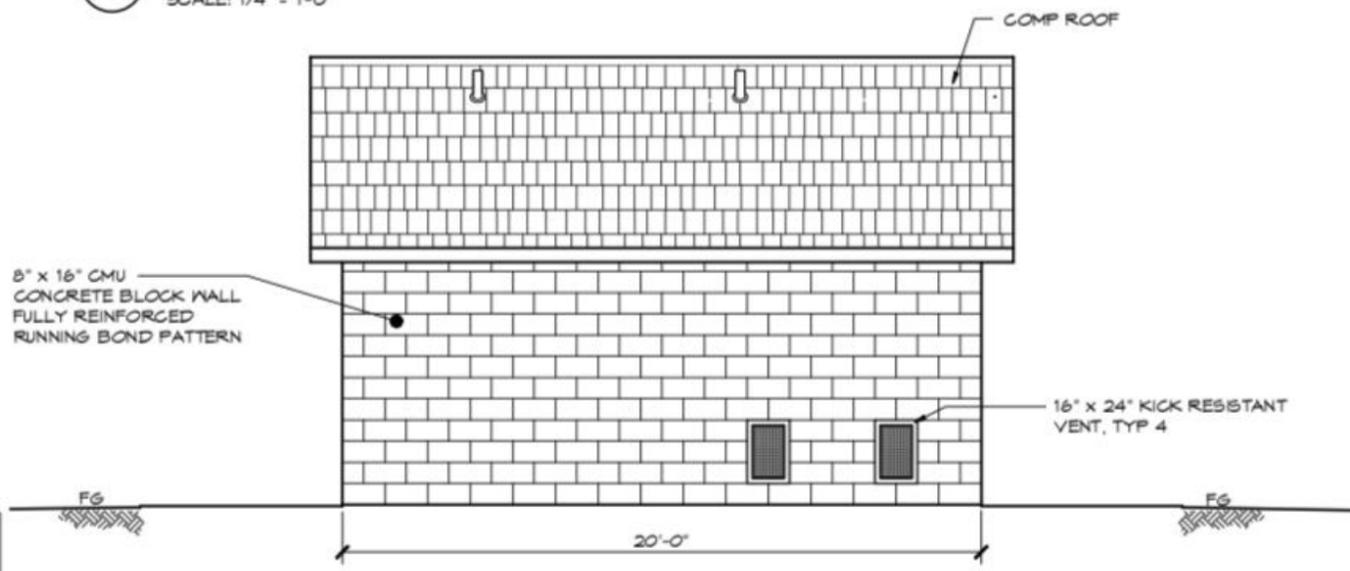
THESE PLAN VIEW AND ELEVATION DRAWINGS ARE A PRELIMINARY ARCHITECTURAL REPRESENTATION OF THE BUILDING. ALL DIMENSIONS, FEATURES AND COMPONENTS SHOWN ON THESE PRELIMINARY DRAWINGS MAY OR MAY NOT BE PART OF THE QUOTE. PLEASE REFER TO THE "SCOPE OF SUPPLY AND SERVICES" LETTER PROVIDED WITH YOUR QUOTE FOR ROMTEC'S PROPOSED SCOPE OF SUPPLY.

Shower House

- Strip Footing Design



B ELEVATION VIEW
SCALE: 1/4" = 1'-0"

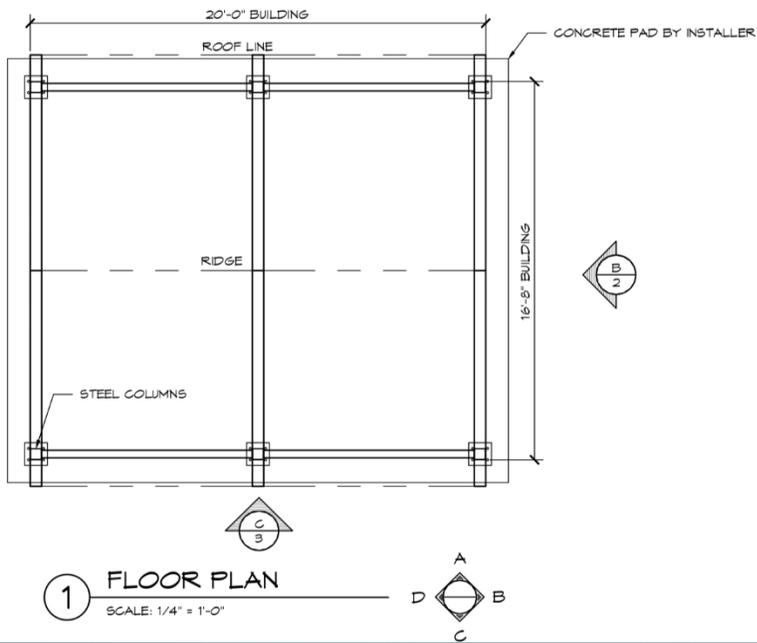


C ELEVATION VIEW
SCALE: 1/4" = 1'-0"

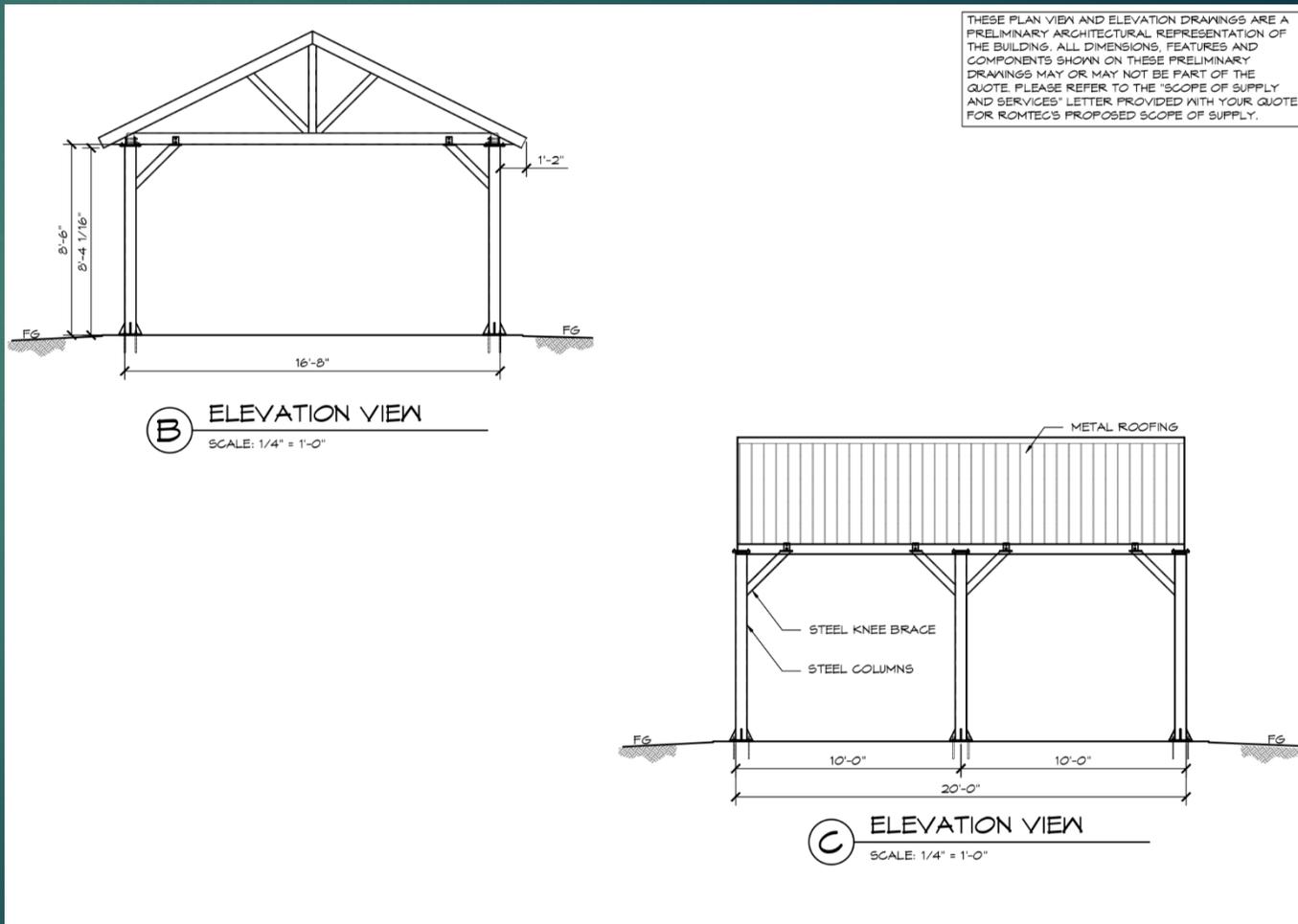
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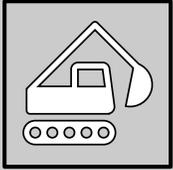
Pavilion Area

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Engineered column to slab connection

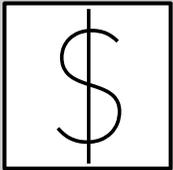




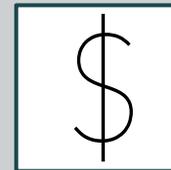
Shower-House
Construction Cost
Estimation:



Pavilion Construction
Cost Estimation:



\$ 104,500



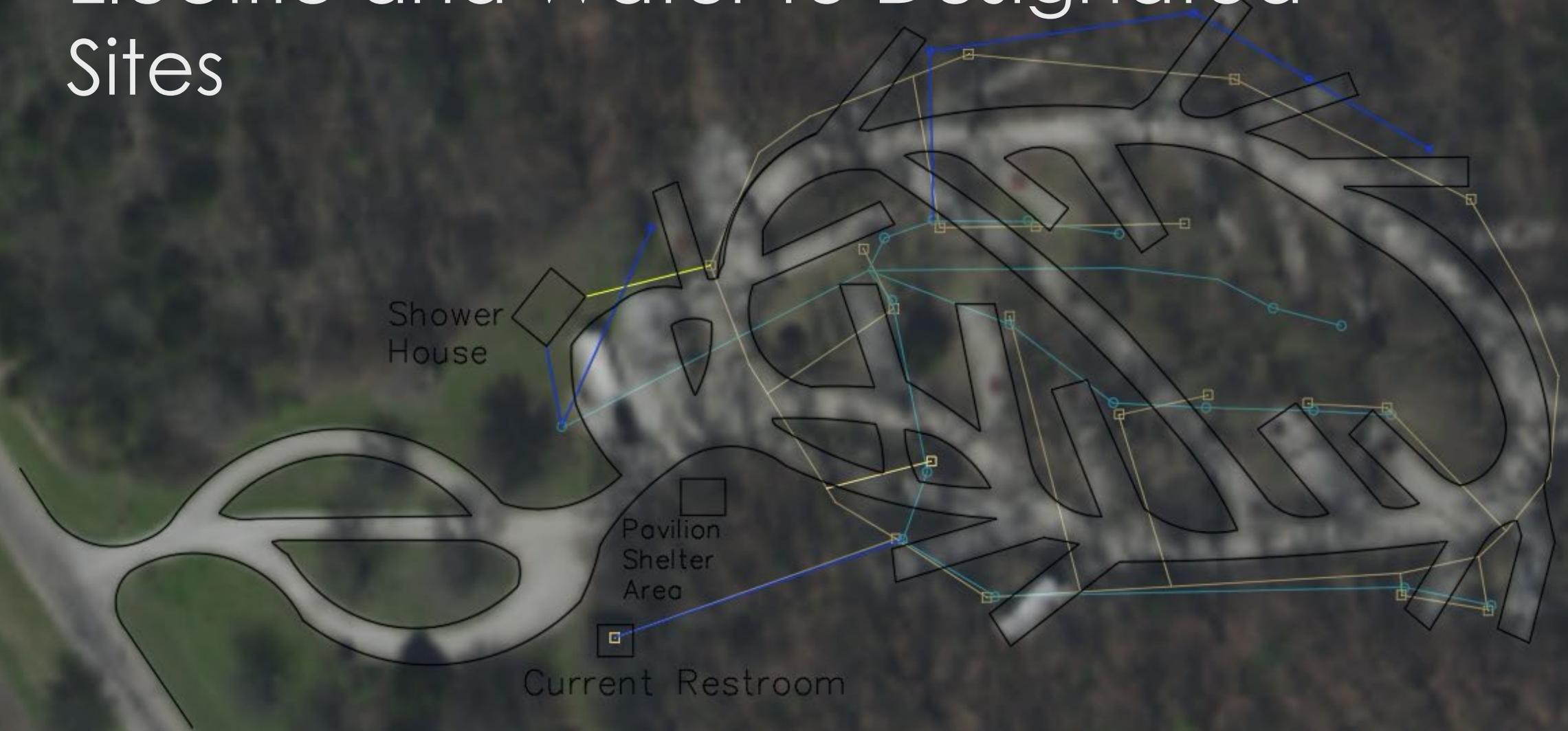
\$ 27,500

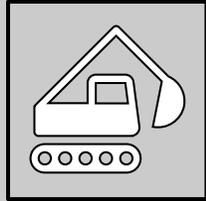
Electric and Water to Designated Sites

Shower House

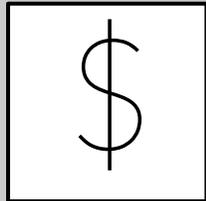
Pavilion Shelter Area

Current Restroom





Added Electric and Water
Construction Cost Estimation

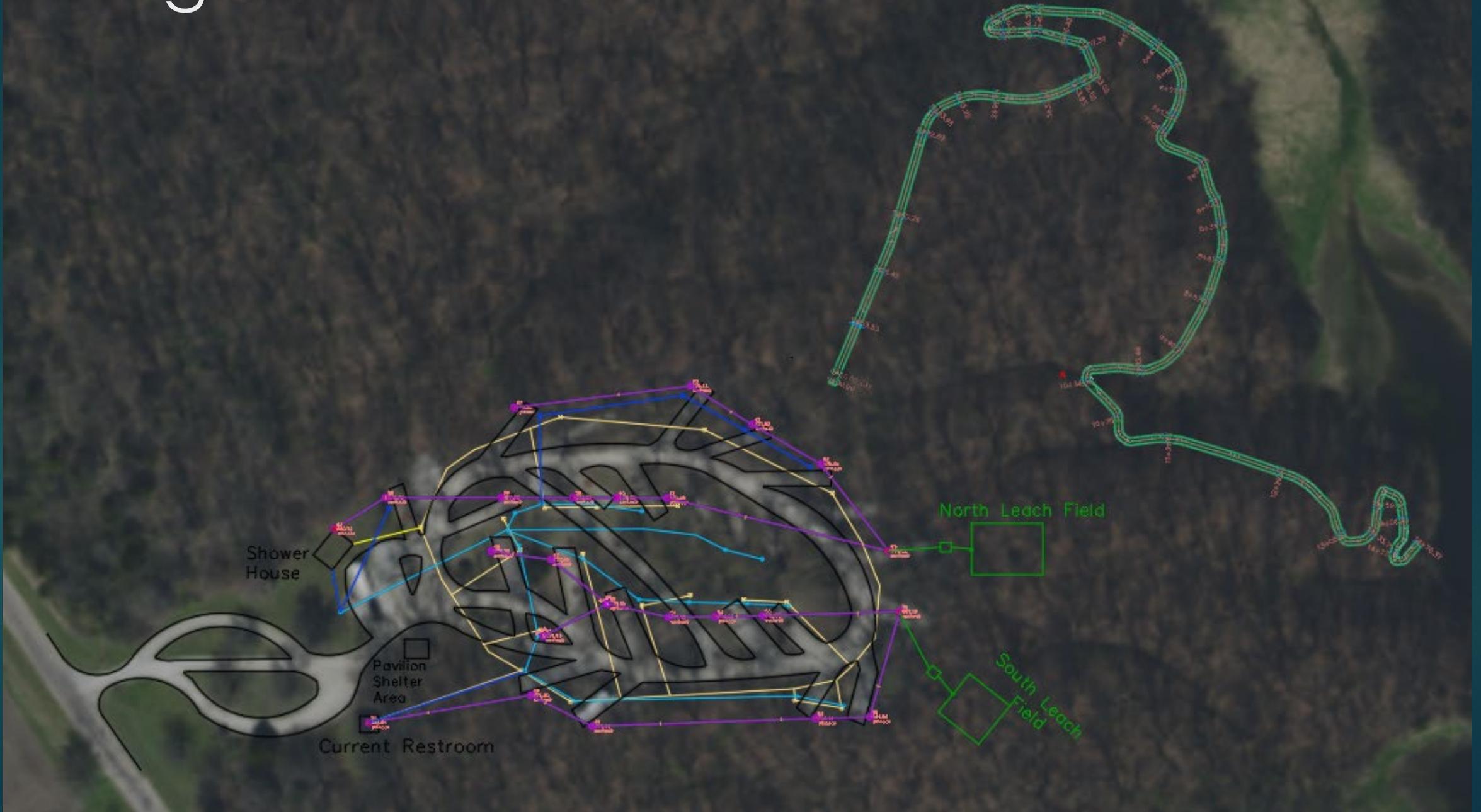


\$3,050

Chatfield Campground Upgrades Total Project Cost

Sanitary Collection & Septic	\$51,500
Trail & Culvert	\$89,000
Shower-house	\$104,500
Pavillion	\$27,500
Electric & Water Update	\$3,050
TOTAL COST	\$275,550

Phasing



Conclusion

Design Tasks Completed:

- ▶ Sanitary System with Septic Tanks and Leach Fields
- ▶ Trail and Culvert
- ▶ Shower-House
- ▶ Pavilion
- ▶ Electric and Water to Designated Sites

Questions

