# WASTEWATER TREATMENT SYSTEM DESIGN

KOA Sweetwater Sweetwater, TN

Electronically Filed in TPUC Docket Room on January 28, 2025 at 2:56 p.m.

EXCAVATION AND GRADING NOTES

The requirements listed below are intended to serve as an outline of general requirements. Additional requirements may be set forth in the project manual. Contractor is cautioned to consider all requirements of the project during the

Comply with local and state ordinances regarding disposal of debris. Do not burn debris on site without specific written approval of the local authority. Clear and grub for new construction as required.

Verify location of existing on—site utilities. Protect and maintain existing utilities as required. Establish and verify existing lines, grade and dimensions shown on the drawing. Report any errors or inconsistencies to the General Contractor, before commencement of work. Commencement of work with out notifiation will constitute acceptance of the site as is.

ground elevations. Topographic information shown herein shall be considered to have not more than the following plus or minus limits of accuracy: 0.10 Feet at benchmarks, 0.25 Feet at spot grades, 1.0 Feet at contour lines.

Contractor is cautioned that straight line interpolation between contours may not exactly reflect existing conditions. Areas of relatively quick changes in contours should not be allowed to unduly influence interpretation of contours. Report any errors or inconsistencies to the General Contractor, before commencement of work. Any error not so reported cannot be considered for

STRIPPING AND SPREADING TOPSOIL
Topsoil shall be stripped and temporarily stock piled for later reuse. If no stock pile area is noted on grading plan, stock pile shall be in such a place to avoid conflicts with proposed site features and other trades. If a conflict with proposed site features and or other trades, the grading contractor is to relocate the stock pile at no additinal fee to the owner. Particular attention shall be paid to finely textured topsoil that will be reused for landscaping purposes. General topsoil responding will be by grading contractor to a

purposes. General topsoil respreading will be by grading contractor to a minimum depth of 6" at any point except on slope of 2-1/2 to 1 or steeper where topsoil depth shall be 2" min. At any point not receiving sod.

All areas to receive new structural fill or other new construction shall be proof rolled with a 20 ton tandem dump truck in presence of soils testing agent before commencing any construction activity. All areas to be compacted shall receive 8 passes with compaction roller. Soil engineer shall notify GC, that all areas have passed proof roll inspection prior to commencement cut & fill of grading. Do not commence grading prior to such notification.

UNDERCUT-BACKFILL
Undercut shall mean excavation or other removal of unsuitable material below elevation of proposed final subgrade. In no case shall the term undercut be used to describe material occurring above final subgrade elevation. Extent of undercut of unsuitable materials, if any must be recommended by the soil engineer for the owner's approval. Soil engineer shall not have unilateral authority to direct undercut activities without approval of the owner's

retriority to direct undercut activities without approval of the owner's representative. Soil engineer's written field notes will be required to substantiate amounts of undercut. Backfill shall be of approved material only. Money for required testing shall be included in quoted prices concerning undercut and backfill.

contractor's base bid. Undercut & backfill shall not constitute an extra to the contract in unclassified contracts.

STRUCTURAL FILL

Structural fill shall be compacted as specified in excavation and grading schedule within -1% to +3% of optimum moisture content. Off site borrow areas shall be approved by Soils Eng.. Place fill and backfill in layers as specified in excavation

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The Contractor is specifically cautioned that the location and/or elevation

CAUTION - NOTICE TO CONTRACTOR

of existing utilities as shown on these plans is based on records of the various utility companies and, where possible, measurements taken in the field. The information is not to be relied on as being exact or complete. The Contractor must call the appropriate utility company at least 48 hours before any excavation to request exact field location of utilities. It shall be the responsibility of the contractor to relocate all existing utilities which

conflict with the proposed improvements shown on the plans.

EXISTING

approved by Soils Eng.. Place fill and backfill in layers as specified in excavation and grading notes. Use no deleterious material, organic, or rock larger than as required. In—situ soils may require additional water or may require additional drying

authority to direct undercut activities without approval of the owner's

Where terms of bidding call for an unclassified contract no payments for undercut/backfill will be considered. Such quotes shall be included in the

EXISTING TOPO ACCURACY

adjustment in contract pricé.

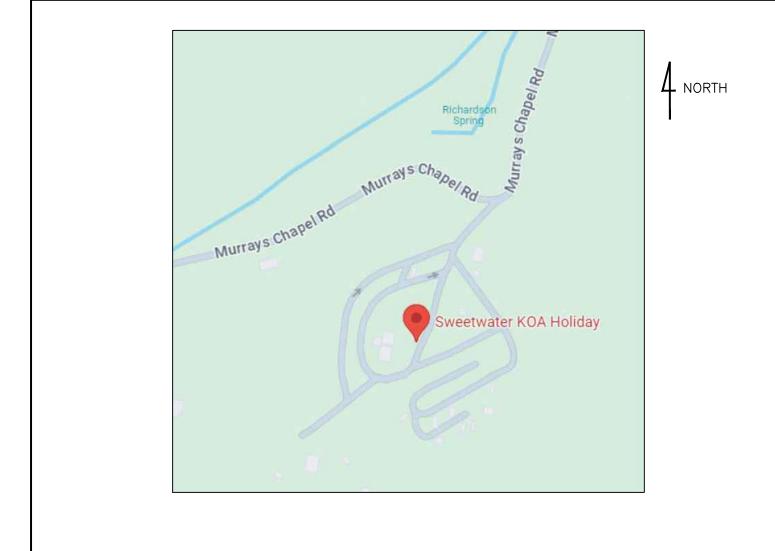
## PREPARED FOR OWNER:

Sweetwater Campground Holdings, LLC

## 312 W 2nd St. Casper, WY 82601

October 9, 2024

### 24-00084



VICINITY MAP

- C1.0 Survey/Topo Map
- C4.0 Process Flow Diagram
- C5.0 WWTP Details
- C7.0 Filter Building Details
- C8.0 Electrical Details
- C9.0 Elevation Details
- C10.0 Soil Map Overlay
- C11.0 Misc Details

#### DRAWING INDEX

C2.0 System Layout

C3.0 Treatment Plant Layout

C6.0 Drip Irrigation Details

These documents prepared by an Engineer are instruments of the Engineer's service.

specifications and other documents and will retain all common law, statutory and other

use solely with respect to this project. These documents shall not be used, copied or

reserved rights, in addition to the copyright. Documents prepared by the Engineer are for

retained without the specific written consent of the Engineer. Any violations of the above

rights of the Engineer shall be prosecuted to the maximum possible extent within the law.

Unless otherwise indicated, the Engineer shall be deemed the author of drawings,

# IWS.

REVISIONS

DESIGN DEVELOPMENT

PROJECT:

**KOA Expansion** 

Loudon County, TN

Sweetwater

Campground

Holdings, LLC

Casper, WY 82601

312 W 2nd St.

CONSTRUCTION BIDDING PHASE

CONSTRUCTION DOCUMENTS

#### **INNOVATIVE WASTEWATER SOLUTIONS, INC.**

3675 Brown Springs Rd Greeneville, TN 37743 (865) 776-8771

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SCALE GUIDE:	
DWG ISSUED:	October 09,2024
PROJ ADMIN:	KD
DRAWN BY:	JF
CHECKED BY:	KD
DRAWING TITLE:	

TITLE PAGE

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SAN MH - SANITARY SEWER MANHOLE GUY ANCHOR SIGN - STORM DRAIN MANHOLE ----- UGU ----- - UNDER GROUND UTILITY FIRE HYDRANT —— GAS —— - GAS LINE WATER VALVE ——— WL ——— – WATER LINE - UTILITY POLE — X — – FENCE LINE IRON ROD NEW - SAN - SANITARY SEWER LINE - IRON ROD OLD - CONCRETE — ST — - STORM SEWER LINE GAS VALVE - CONCRETE MONUMENT T - TELEPHONE BOX WATER METER - BENCHMARK

(P) - PROPOSED

LEGEND

GRADING TOLERANCE

Grading contractor shall bring subgrade to within an average of 1/10 of one foot of required elevation to obtain finished grade indicated on drawings except at locations where spot elevations are shown and where floor elevations are shown which shall be within 1/100 of 1 foot of required elevations. Final subgrade shall be spot checked by a licensed surveyor with not less than 1 shot per 35 SF and at each finished floor elevation and a drawing prepared and forwarded to ADS. for approval prior to commencing fine grade, paving or building construction. Grading Contractor shall be responsible for minor adjustments in grades as directed by the GC. Such changes shall be limited to 3,000 cubic yards total. No additional cost will be allowed for this work.

IMPORT/EXPORT OF SITE MATERIALS
All import and export materials needed to complete plan per specifications shall be the sole responsibility of site grading contractor. allowances will not be given for the removal of cut or fill material nor will allowances be given for the exporting or importing of cut or fill material. Any off site borrow or waste areas to be permitted by the site grading contractor prior to construction. All site testing of materials will be the sole responsibility of the site grading contractor.

The Grading Contractor shall include price of all required testing as set forth

herein to be performed by an independent qualified geotechnical testing agent suitable to the Developer. Test reports must use graphic location map at 1" =

100' scale for location of density tests. Original copies of all tests shall be forwarded directly to the General Contractor from the testing agent. All tests

Geotechnical specifications. Grading Contractor shall include in his base bid 10

WATER CONTROL
The Grading Contractor shall furnish all labor, materials and equipment necessary to keep the work free of water either from surface sources or from underground sources or both. Selection of equipment and methods shall be the sole responsibility of the Grading Contractor. The Grading Contractor shall be and is responsible for all damage incurred in handling water conditions. Additionally, the Grading Contractor shall provide means necessary to avoid direct run—off from this project onto adjacent property.

SEEDING
Seeding of all disturbed areas not paved or built upon shall be the responsibility of the grading contractor unless noted otherwise. Hardened soil shall be loosened to a depth of 6" and topsoil respread as noted before seeding. Respread topsoil shall be free of any debris and or gravel. Reseed per the listed seeding schedule. Sodding shall be as specified on the Landscape Plan.

EROSION CONTROL

Expose minimum amount of subgrade possible at one time to allow for efficient proceeding of the work. Grassing and other erosion control means shall be employed, maintained and reconstructed as required if destroyed by erosion. Sediment deposited on existing paving by construction activities and the control of the process of the pro

immediately. Temporary sediment fences shall be constructed and/or installed prior to stripping of topsoil. Provide and maintain inlet protection around drainage structures and to prevent siltation throughout construction. Re—topsoil or rework topsoil and reseed in areas that experience erosion during construction. Do not remove erosion control measures until entire site is stabilized.

Grading Contractor is required to perform an as—built survey of all storm water

quality control measures, including but not limited to the stormwater detention /

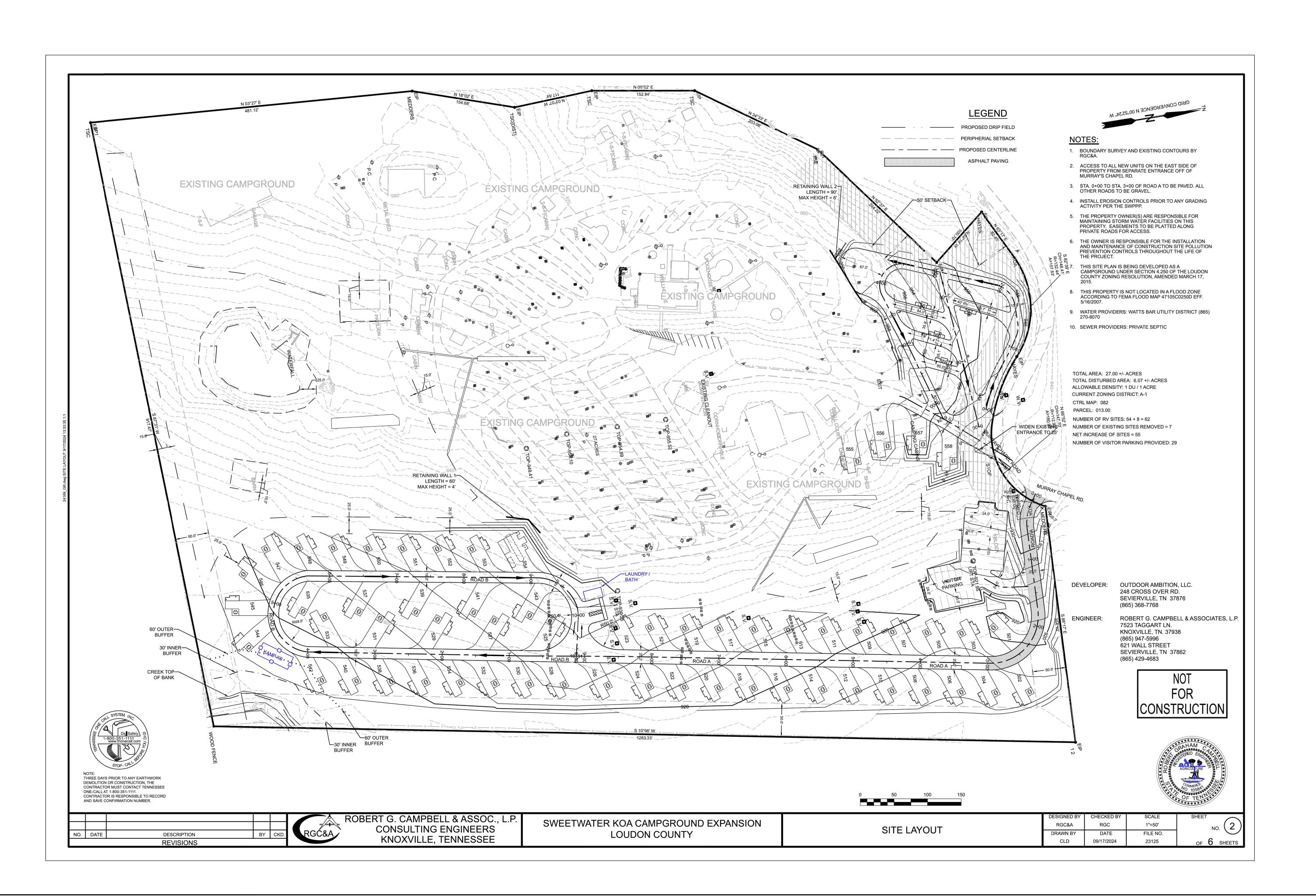
retention basin, water quality structures, and any other best management practices installed within this project. This survey shall be performed by a licensed surveyor within the state the project is constructed. As—built survey shall be submitted to A.D.S. for review and approval prior to completion of the project.

Grading Contractor shall pay all grading permit fees. Grading Contractor to post grading bond, if required.

(ten) soil compaction tests after completion of the work, located per General

shall specifically state that the test either passes or fails to meet the

CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING CONSTRUCTION



REV	REVISIONS			
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	✓ CONSTRUCTION DOCUMENTS			



CONSTRUCTION ADMINISTRATION

ADS PROJ. No.:

PROJECT:

KOA Expansion

Loudon County, TN

FOR:

Sweetwater Campground Holdings, LLC

312 W 2nd St. Casper, WY 82601



INNOVATIVE
WASTEWATER
SOLUTIONS, INC.
3675 Brown Springs Rd

Greeneville, TN 37743 (865) 776-8771

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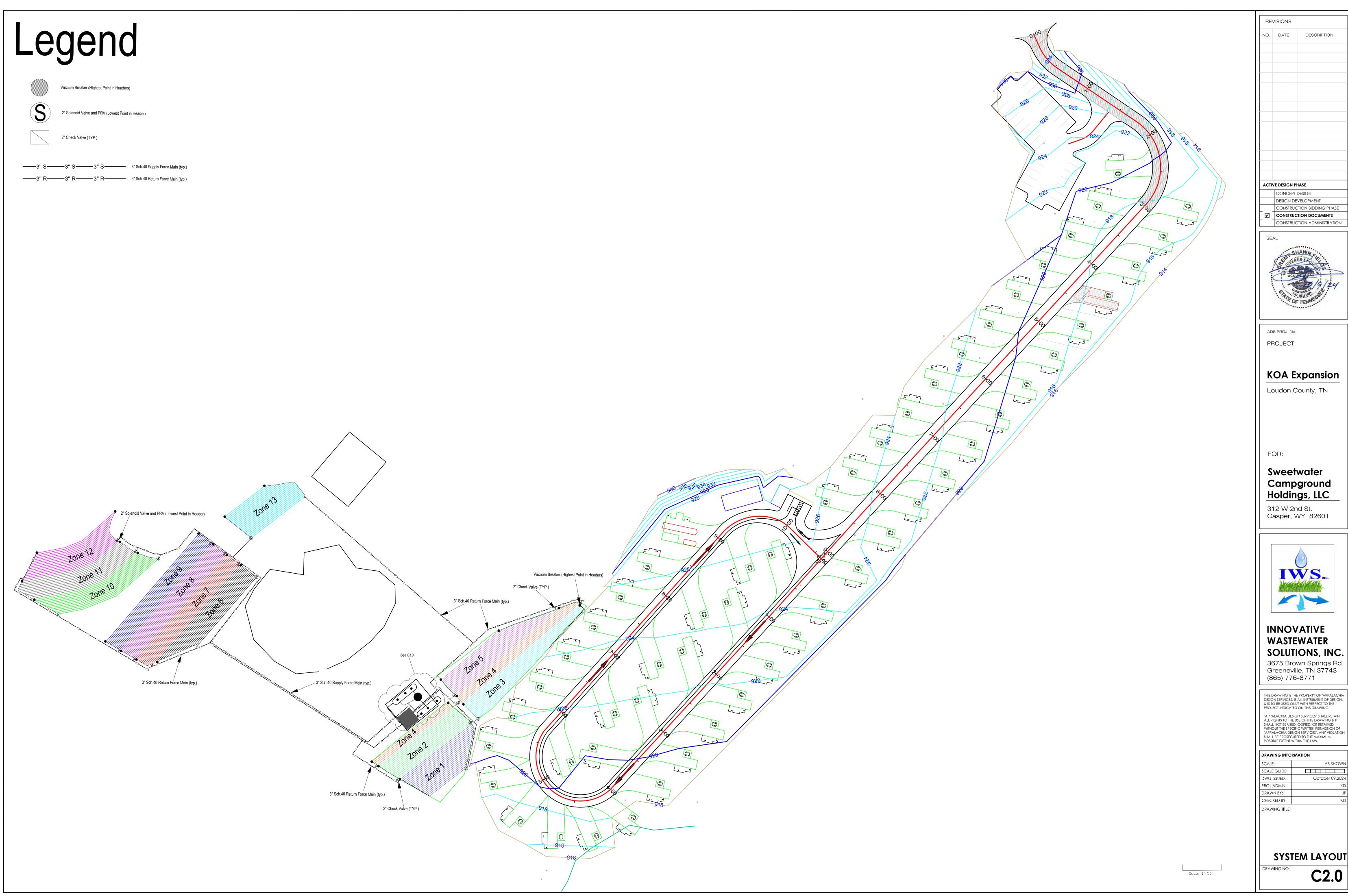
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DWG ISSUED:	October 09,2024	
PROJ ADMIN:	KD	
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SITE PLAN

C1.0



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CONCEPT DESIGN

CONSTRUCTION BIDDING PHASE ✓ CONSTRUCTION DOCUMENTS CONSTRUCTION ADMINISTRATION

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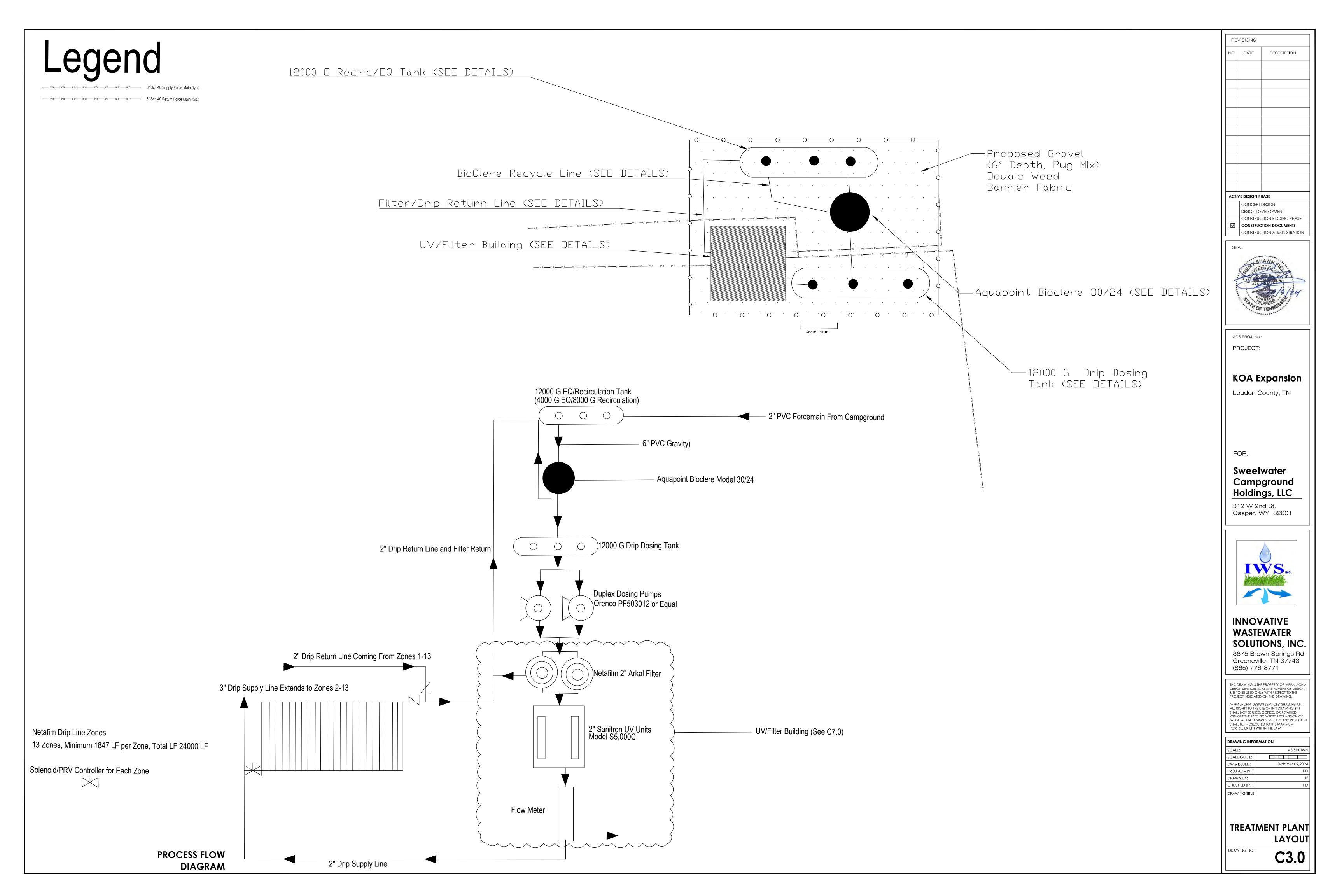


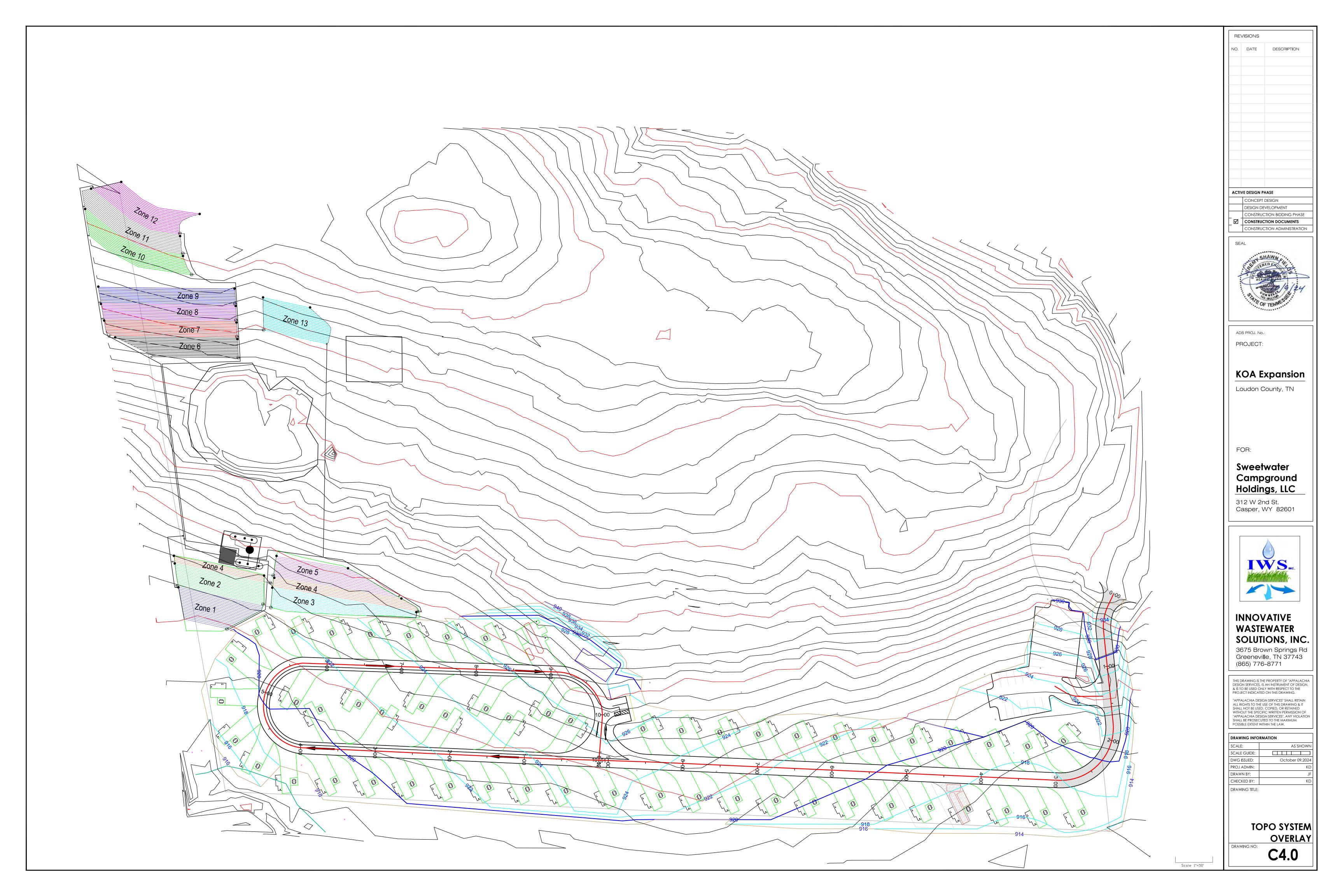
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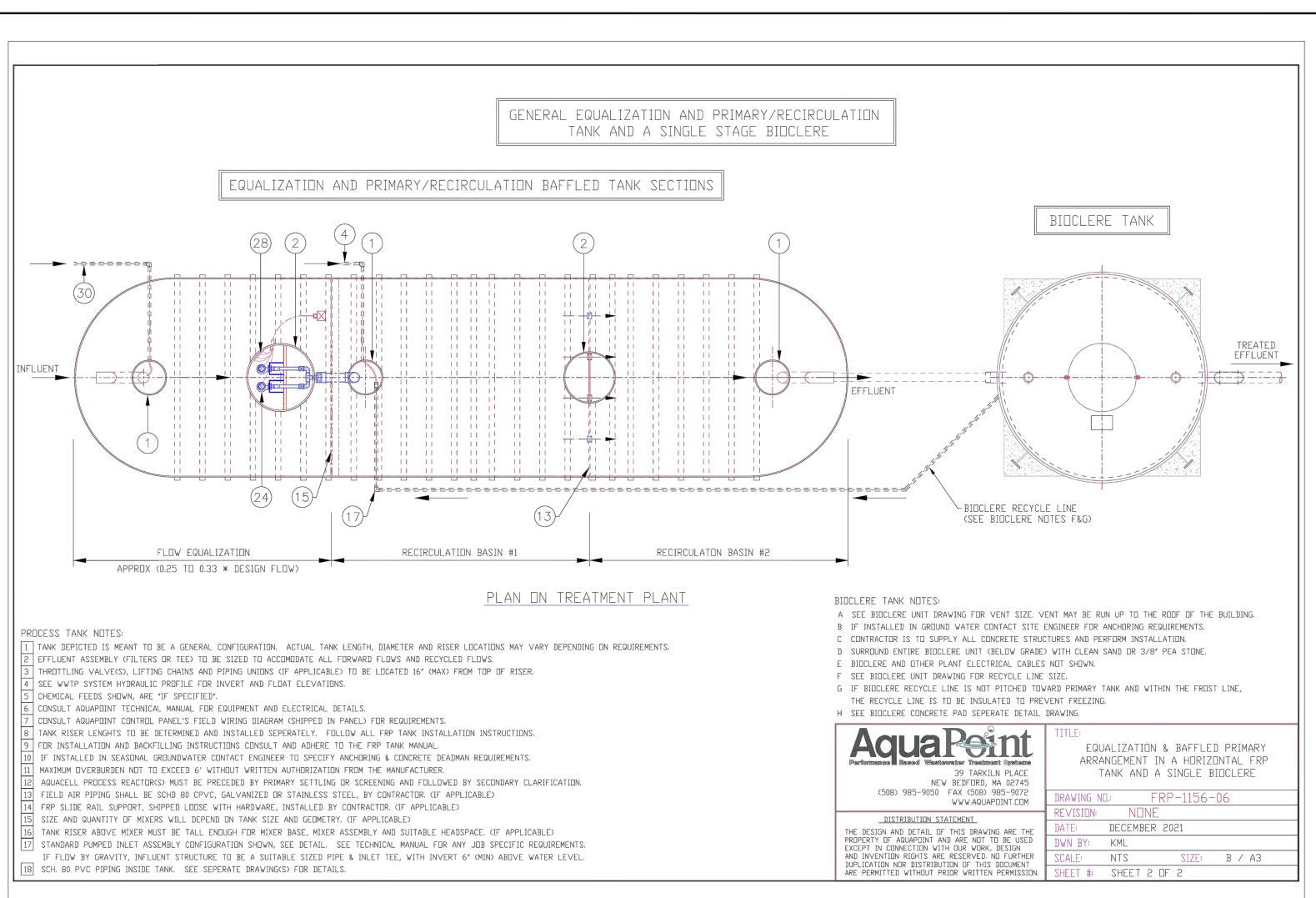
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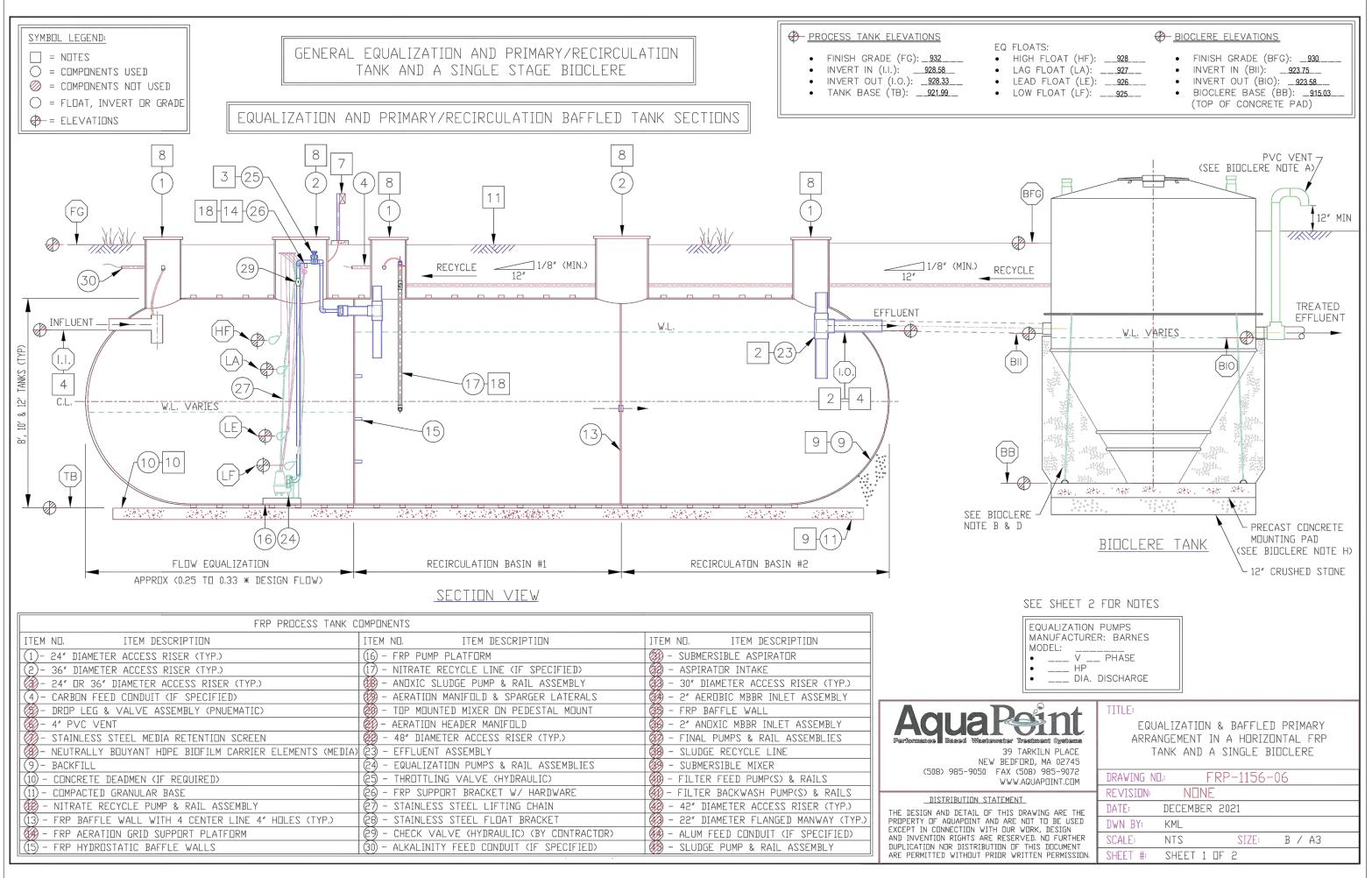
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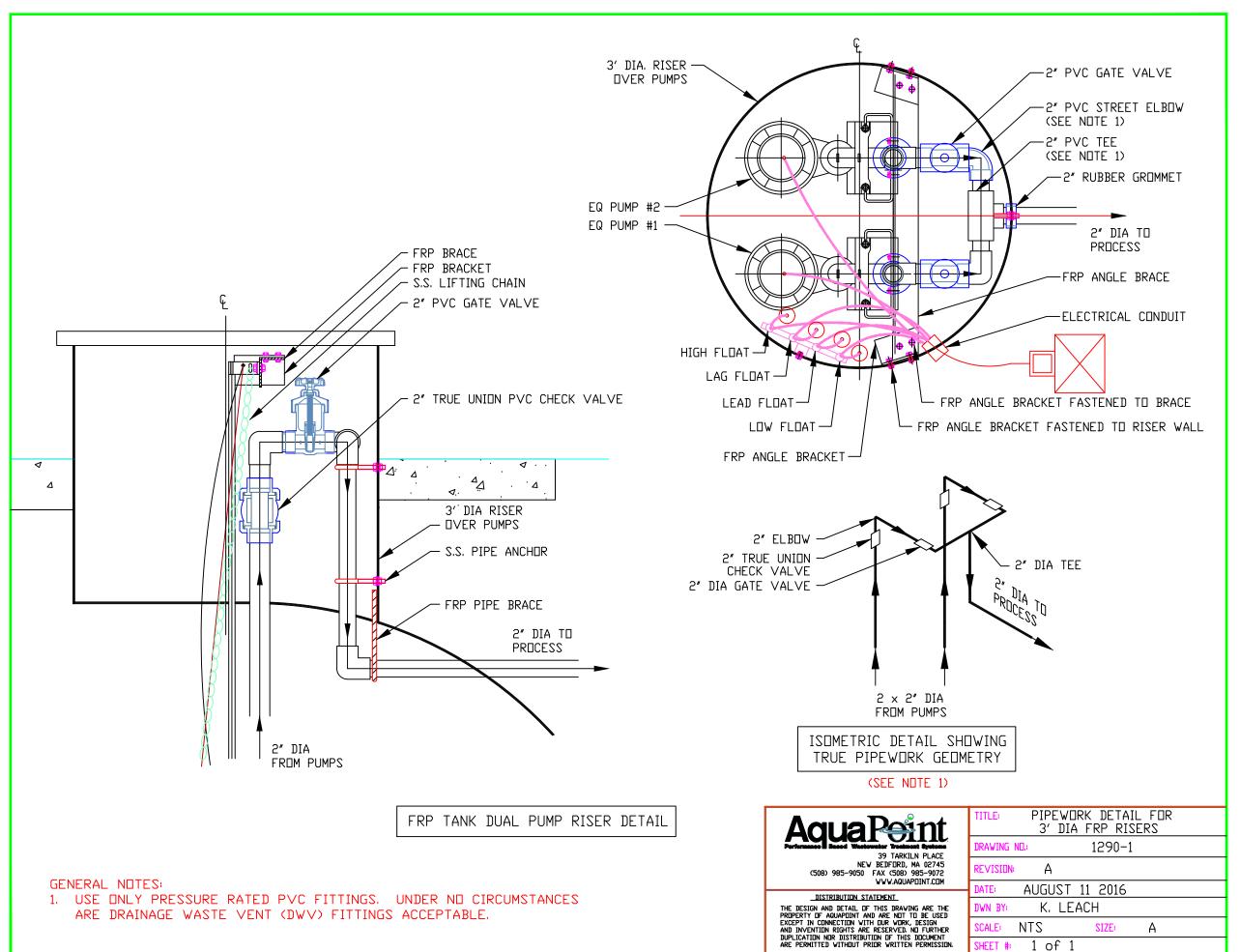
SYSTEM LAYOUT

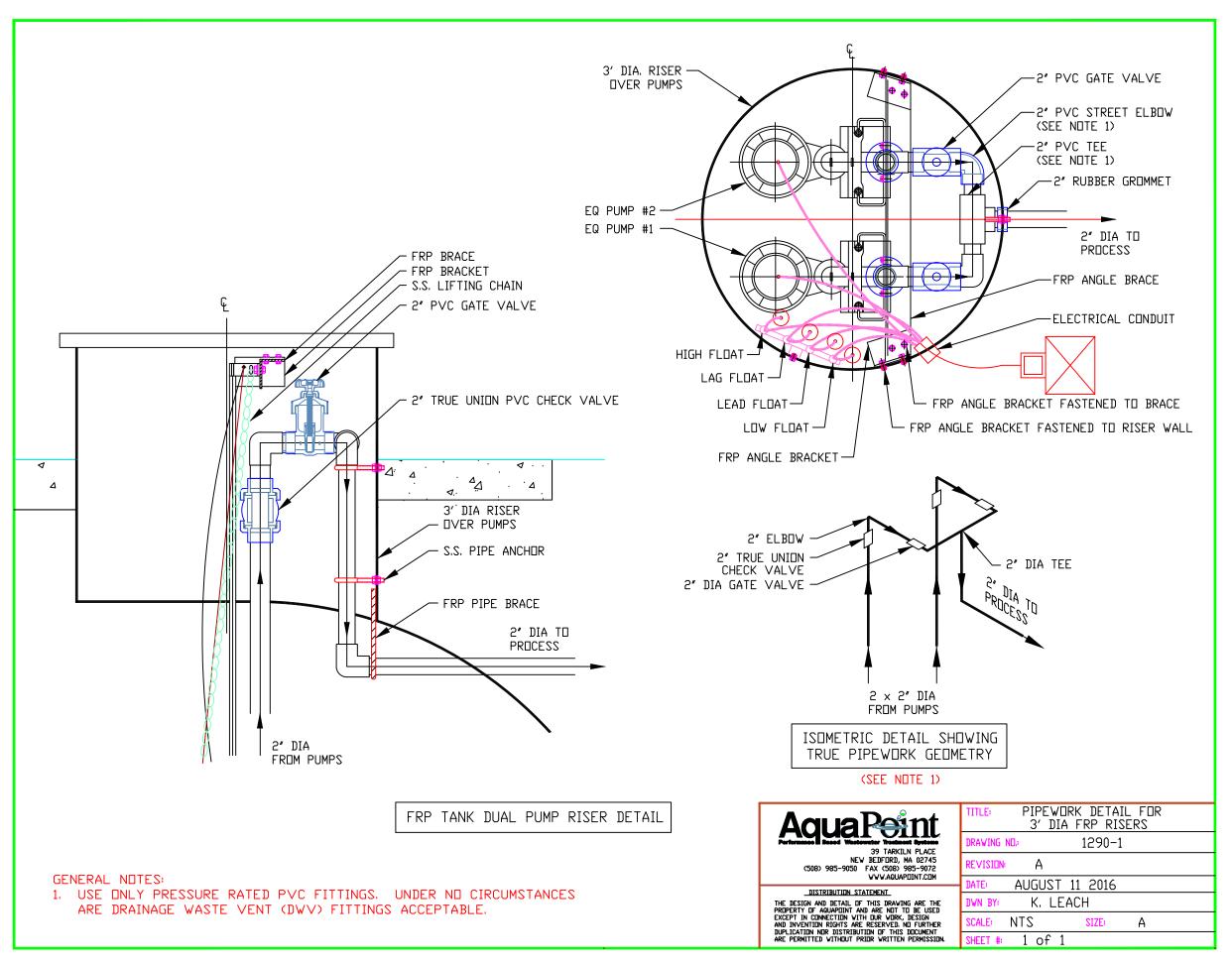


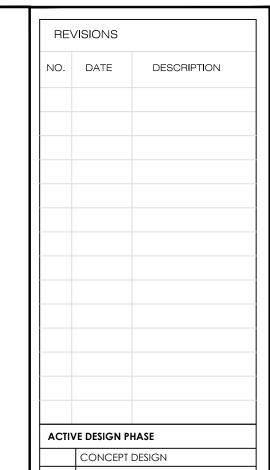








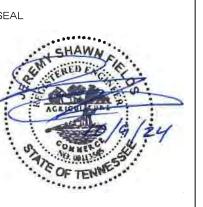




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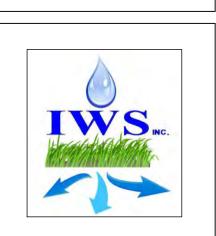
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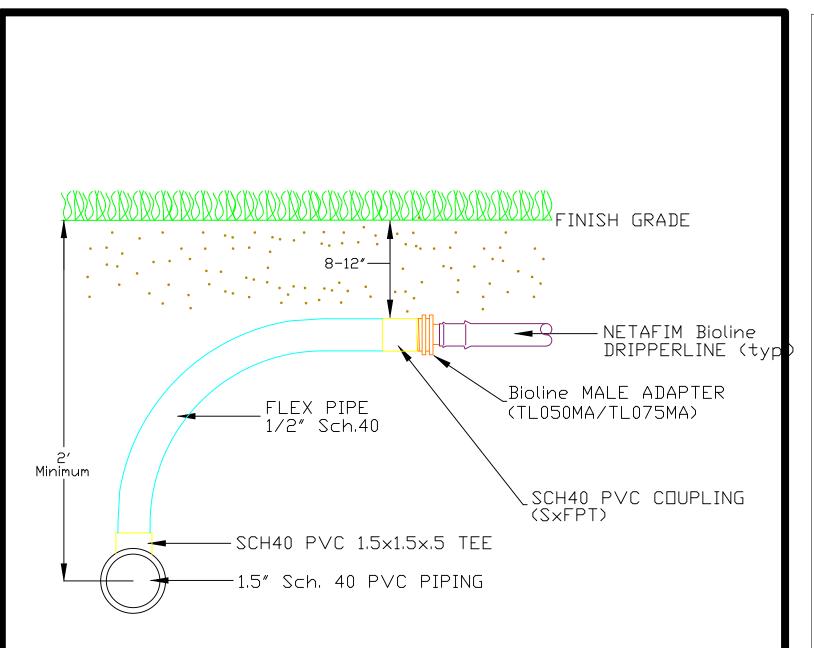
SHALL BE PROSECUTED TO THE MAXIMUM

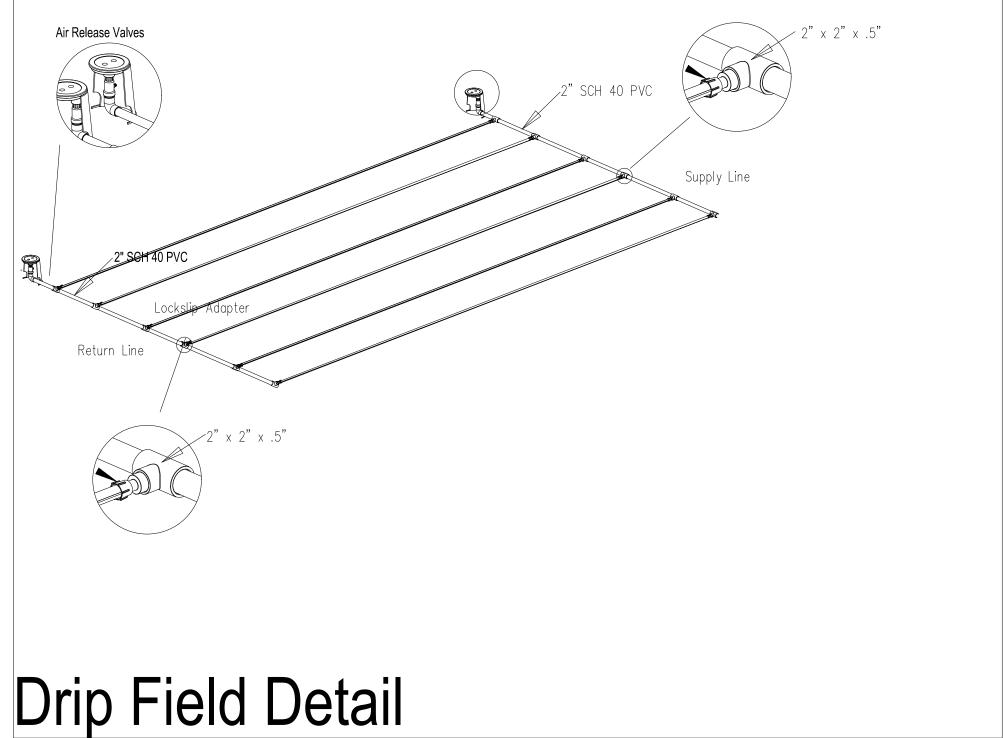
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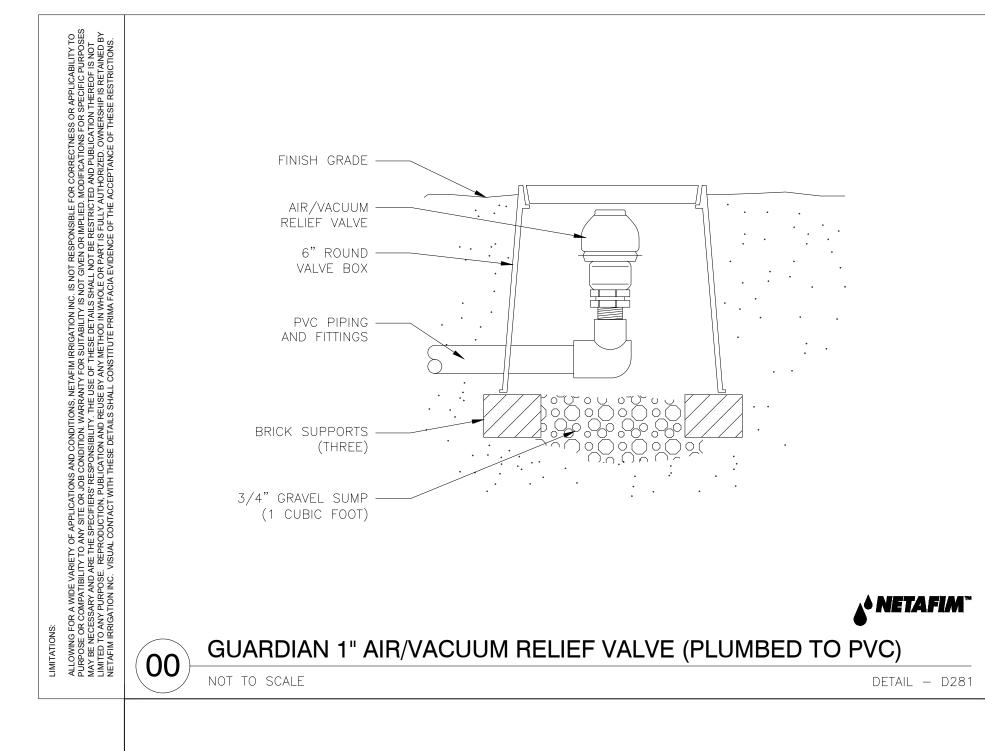
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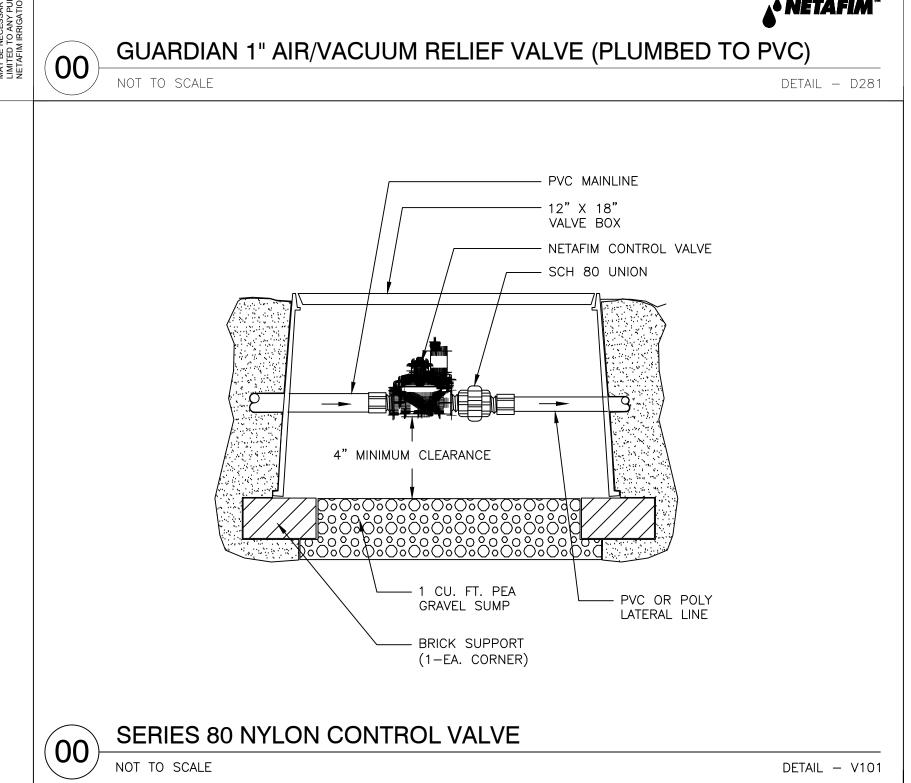
WWTP DETAILS

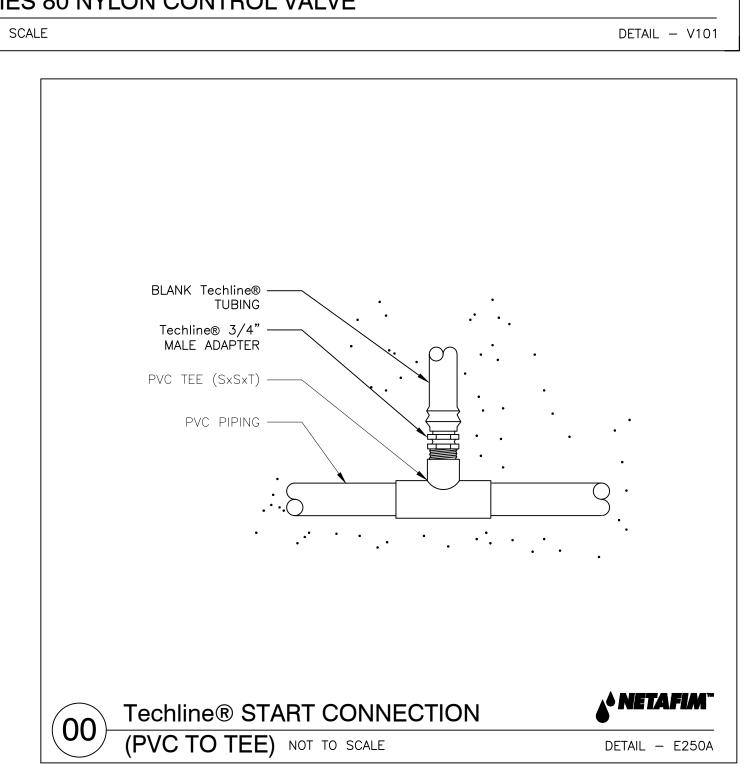
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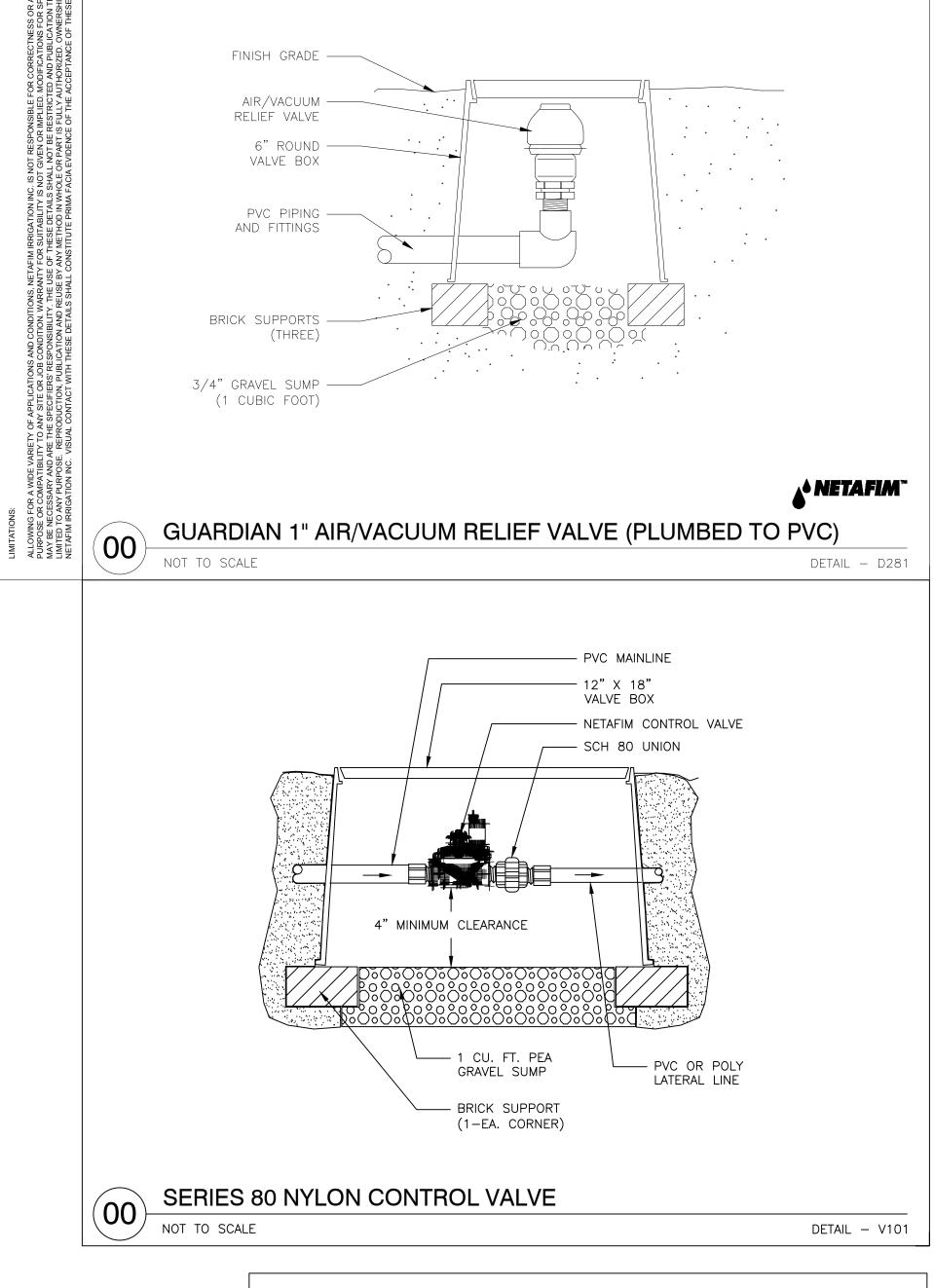


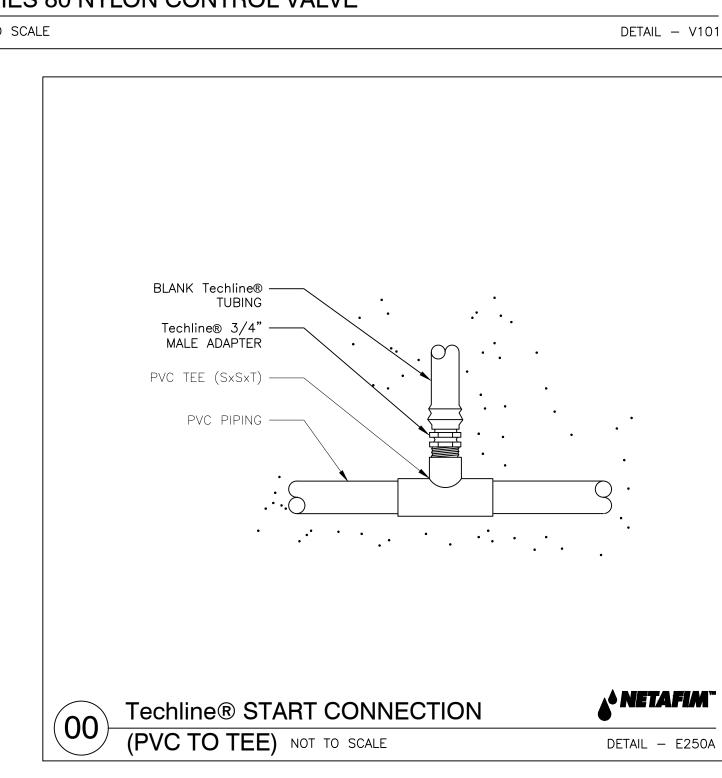














REVISIONS

**ACTIVE DESIGN PHASE** 

ADS PROJ. No.:

PROJECT:

FOR:

**KOA Expansion** 

Loudon County, TN

Sweetwater

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DESIGN DEVELOPMENT

✓ CONSTRUCTION DOCUMENTS

CONSTRUCTION BIDDING PHASE



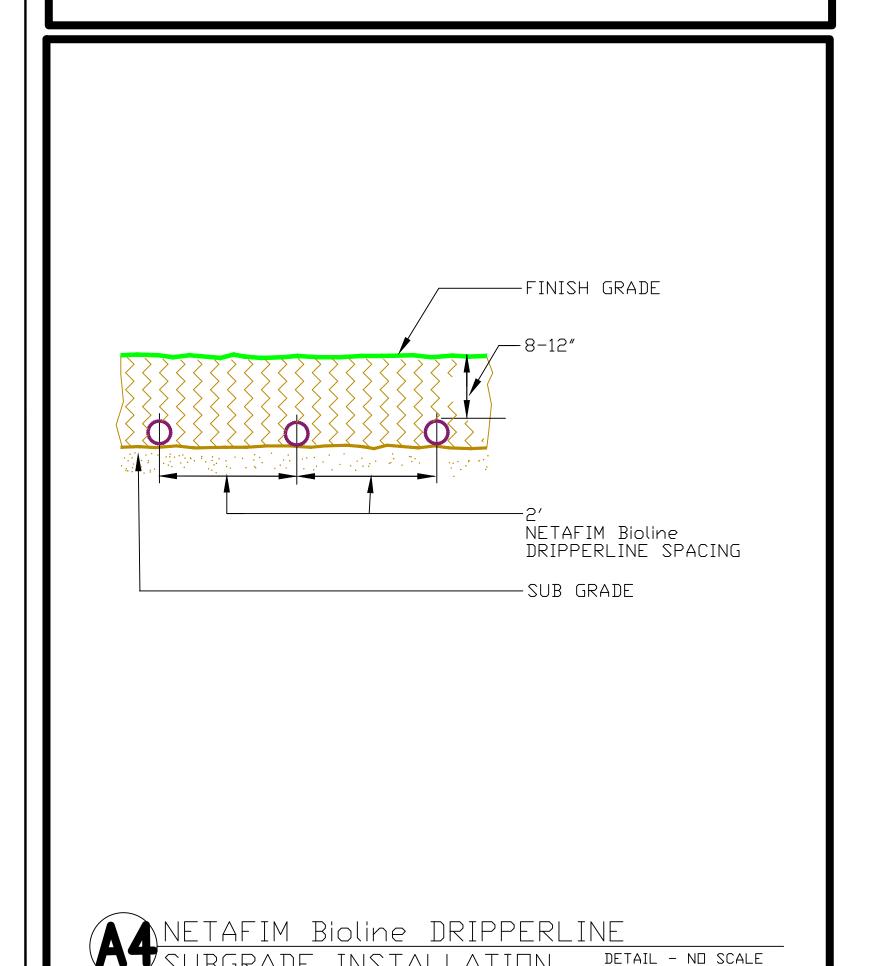
WASTEWATER SOLUTIONS, INC. 3675 Brown Springs Rd Greeneville, TN 37743 (865) 776-8771

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> DRIP IRRIGATION **DETAILS**

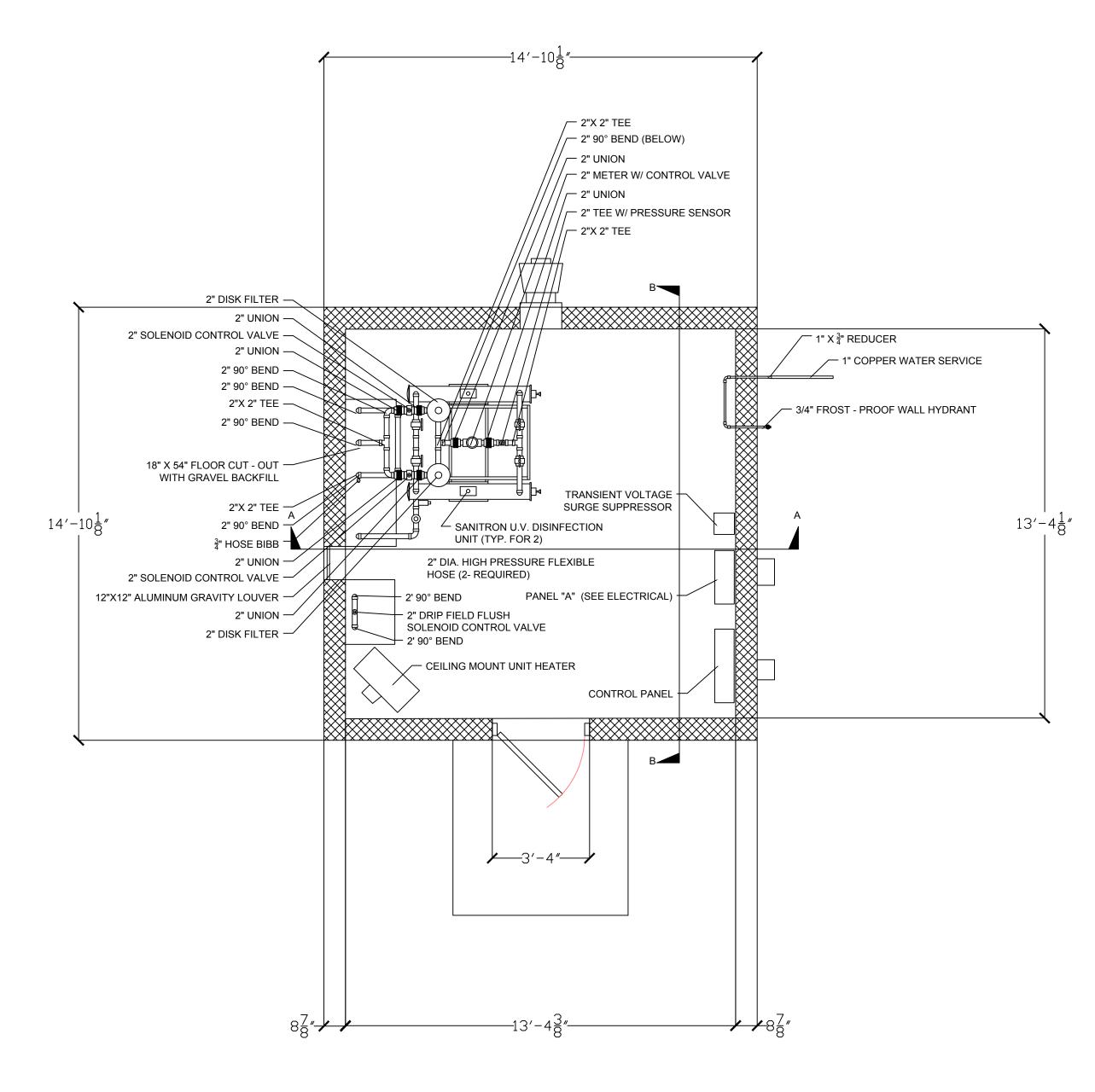
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NETAFIM Bioline DRIPPERLINE: End Feed START CONNECTION w/ FLEX PIPE DETAIL SCALE

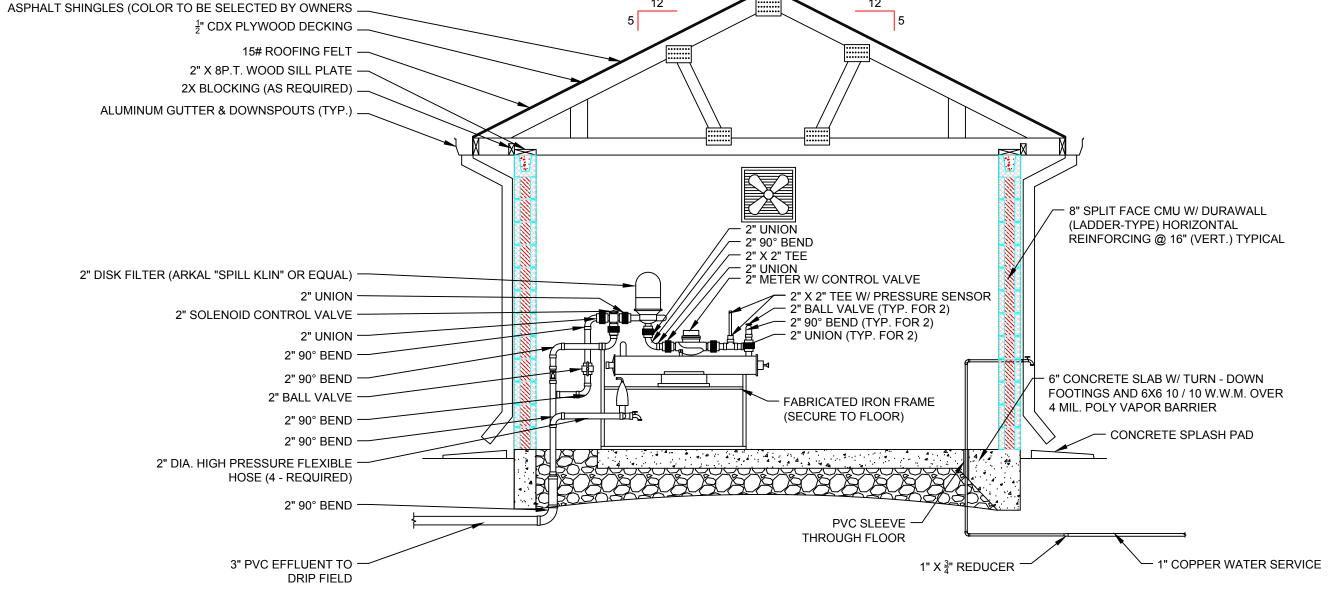
#### GENERAL NOTES

- 1. PIPING SHOWN IS FOR TWO PIPE INLET AND TWO U.V. UNITS. LAYOUT AND COMPONENTS FOR ADDITIONAL UNITS SHALL BE SIMILAR.
- 2. ALL BUILDING PRESSURE SEWER PIPING AND VALVES SHALL BE 2" SCH. 80 PVC.
- 3. CONTRACTOR SHALL LEAVE PIPE STUB OUTS IN BUILDING IF FUTURE U.V. DISINFECTION UNITS ARE PLANNED.
- ALLOW SUFFICIENT SPACE BETWEEN WALL AND END OF U.V. UNIT FOR REMOVAL OF BULB.
- 5. FILTER UNITS AND U.V. UNITS TO BE SUPPORTED BY CUSTOM MADE WELDED ANGLE IRON FRAME. FRAME TO BE PAINTED WITH TWO COATS BLACK ENAMEL. FRAME TO BE STURDY AND LEVEL.
- 6. STRUCTURAL CONCRETE TO HAVE COMPRESSIVE STRENGTH OF 4,000 psi @28 DAYS.

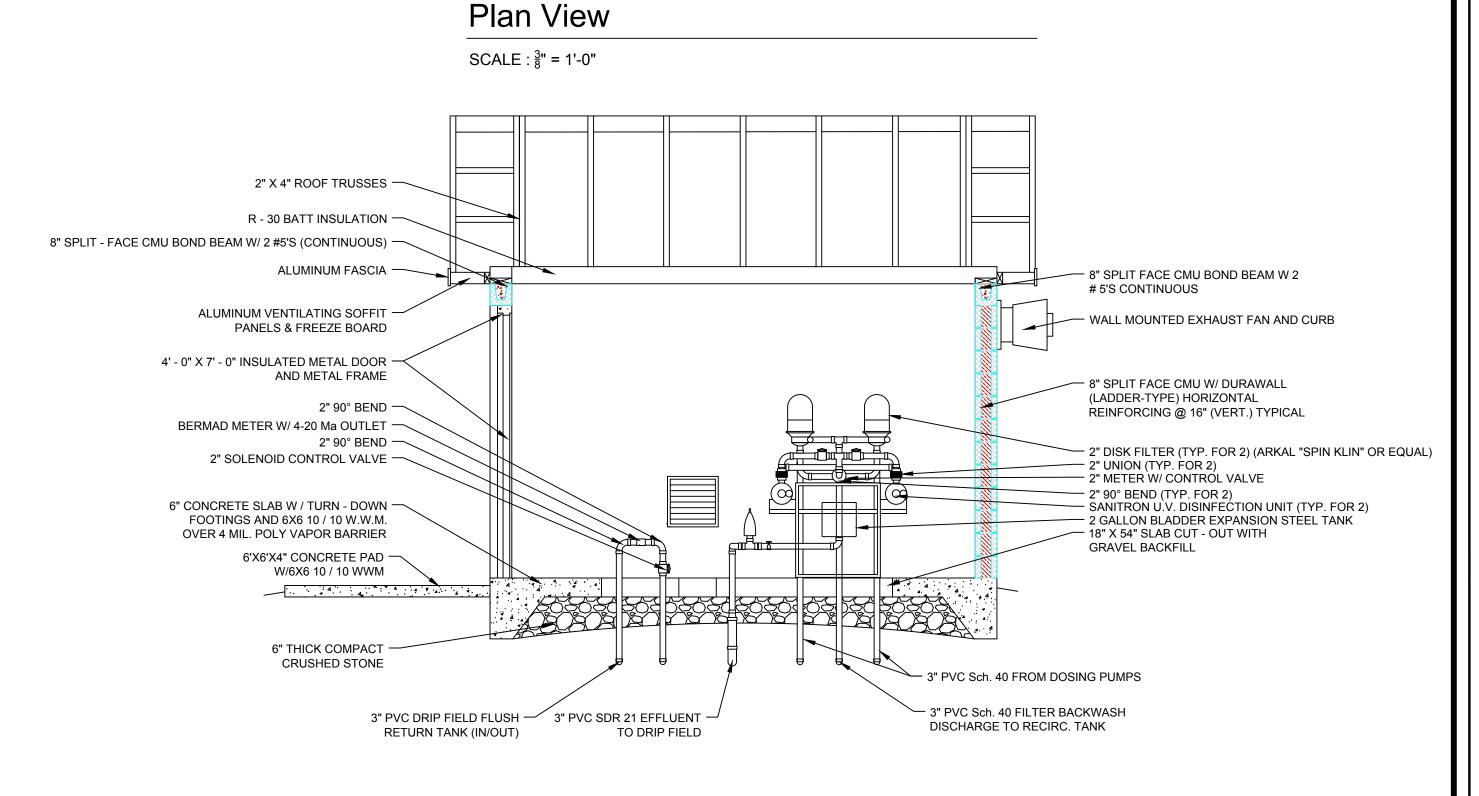


FLOOR PLAN

SCALE :  $\frac{3}{8}$ " = 1'-0"



ALUMINUM RIDGE VENT - CONTINUOUS -



Side View

SCALE :  $\frac{3}{8}$ " = 1'-0"

REVISIONS

NO. DATE DESCRIPTION

ACTIVE DESIGN PHASE

CONCEPT DESIGN

DESIGN DEVELOPMENT

CONSTRUCTION BIDDING PHASE

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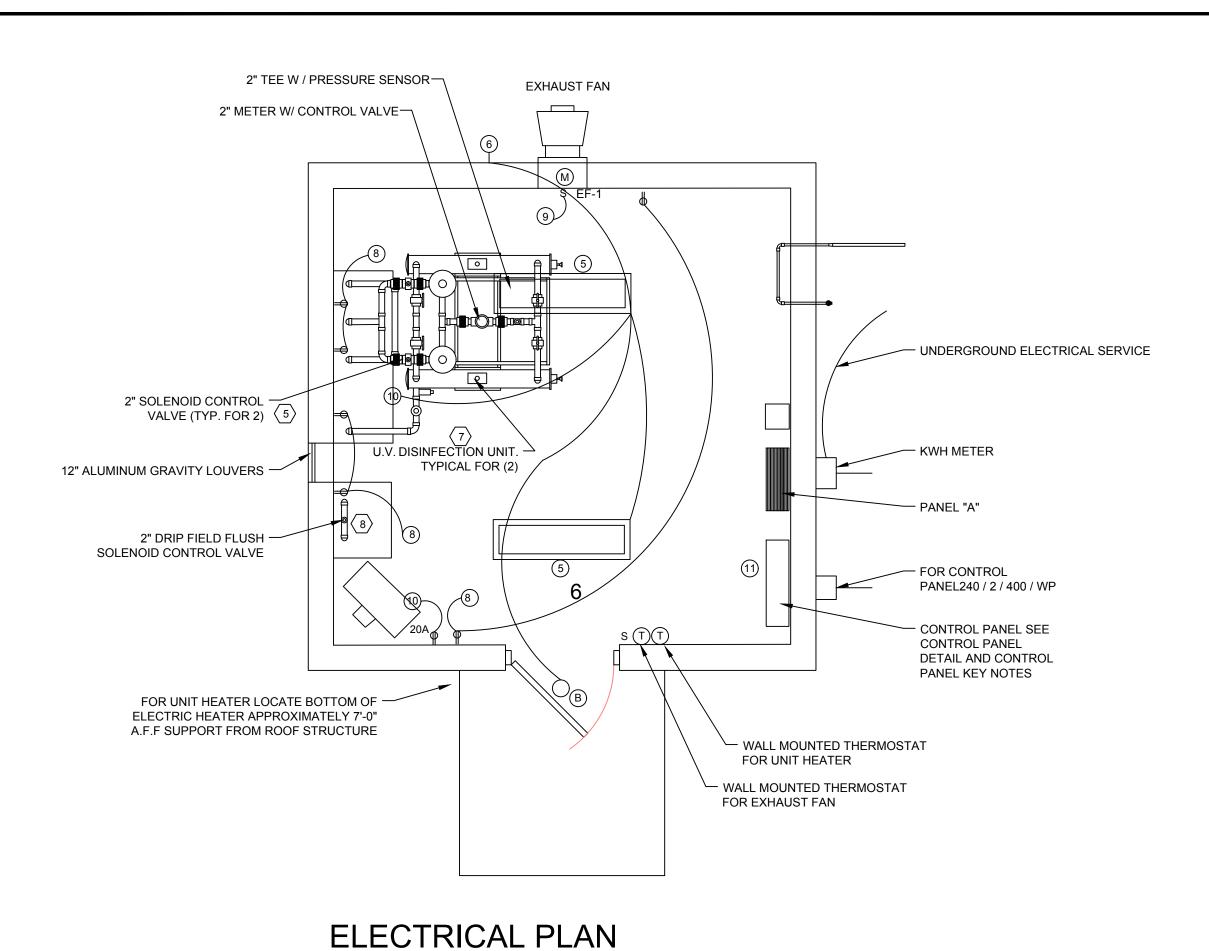
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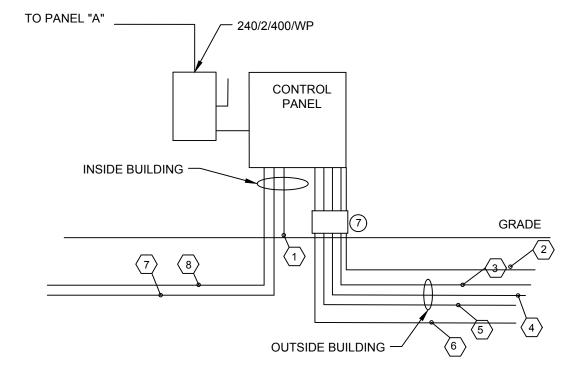
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FILTER BUILDING DETAILS

DRAWING NO:



SCALE: NTS



- (1)  $\frac{3}{4}$ " C, WITH (2) #14, 14G, TO DISCHARGE FLOW METER. (1) 1 1/4"C, ORENCO SERVICE PANEL.
- (1) 1 1/4"C, (8) #14, 14G and (4)#12, (2)12G TO RECIRC PUMPS AND FLOATS. (1) 1 1/4"C, (8) #14, 14G and (4)#12, (2)12G TO BIOCLERE.

(1) 1 1/4"C, (8) #14, 14G and (4)#12, (2)12G TO RECIRC PUMPS AND FLOATS.

- (1) 1 1/4"C, (8) #14, 14G and (4)#12, (2)12G TO DOSING PUMPS AND FLOATS.
- $\langle \overline{7} \rangle$  (2)  $\frac{3}{4}$  "C EACH WITH (2) #12, 12G TO DISINFECTION UNIT POWER
- (1) 3"C WITH (16) #16, 16G TO DRIP FIELD FLUSH SOLENOID CONTROL VALVES.

#### CONTROL PANEL DETAIL

SCALE: NTS

#### **Drawing Notes:**

- 1. Provide 4" Deep Concrete Pad as Indicated.
- 2. All electrical to comply with NFPA 70 (National Electric Code) and other state and local codes.
- 3. Provide Surge Protective Devices (SPD) at Panelboards where indicated. SPD to be rated for 160,000 AMPS.
- 4. Provide a 120/240 V Single Phase Panelboard with 400A Main Breaker Service. Panel should include (1) 100A,220V 2-Pole Breaker for Orenco Control Panel, (1) 30A 2-Pole breaker for SPD, (1)20A, 2 Pole Breaker for Unit Heater, (1) 15A, Single Pole Breaker for Exhaust Fan, (16)20A, Single Pole Breakers for Receptacles, Lights and Uv Units.
- 5. Interior Lighting Fixtures shall be Lithonia DM Series, 4 feet long.
- 6. Exterior Light shall be Lithonia VR2B Series and mounted 8' above floor with on fixture over door and behind the building.
- 7. Provide a weatherproof wireway for all conduits for pull box
- 8. Provide (2) #12, #12G in ¾" Conduit to 20A, Single pole Breaker in Main Panel
- 9. Provide (2) #12, #12G in ¾" Conduit to 15A, Single pole Breaker in Main Panel
- 10. Provide (3) #12, #12G in ¾" Conduit to 15A, Single pole Breaker in Main Panel
- 11. Provide (3) #3, #8G in 1 1/4 " Conduit from Control Panel to 100A, 240V, 2-Pole, Weatherproof Disconnect Mounted on exterior of Building.
- 12. Provide (3) #3, #8G in 1 1/4 " Conduit from 100A, 240V, 2-Pole, Weatherproof Disconnect to 100A, 2-Pole Breaker in Main Panel.
- 13. Provide (3) Ground Rods Arranged in a Triangle 20' apart with Exothermic Bonds.

NO. DATE DESCRIPTION **ACTIVE DESIGN PHASE** CONCEPT DESIGN DESIGN DEVELOPMENT CONSTRUCTION BIDDING PHASE CONSTRUCTION DOCUMENTS CONSTRUCTION ADMINISTRATION

REVISIONS



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#### DRAWING INFORMATION SCALE:

TO GENERATOR

#4 SERVICE ENTRANCE GROUND BONDED TO

BUILDING STEEL. COLD WATER LINE, DRIVEN

ELECTRODE AND TRIANGULAR GROUND RING.

GROUND ROD, CONCRETE ENCASED

	SCALE GUIDE:	
	DWG ISSUED:	October 09,2024
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**ELECTRICAL DETAILS** 

**C8.0** 

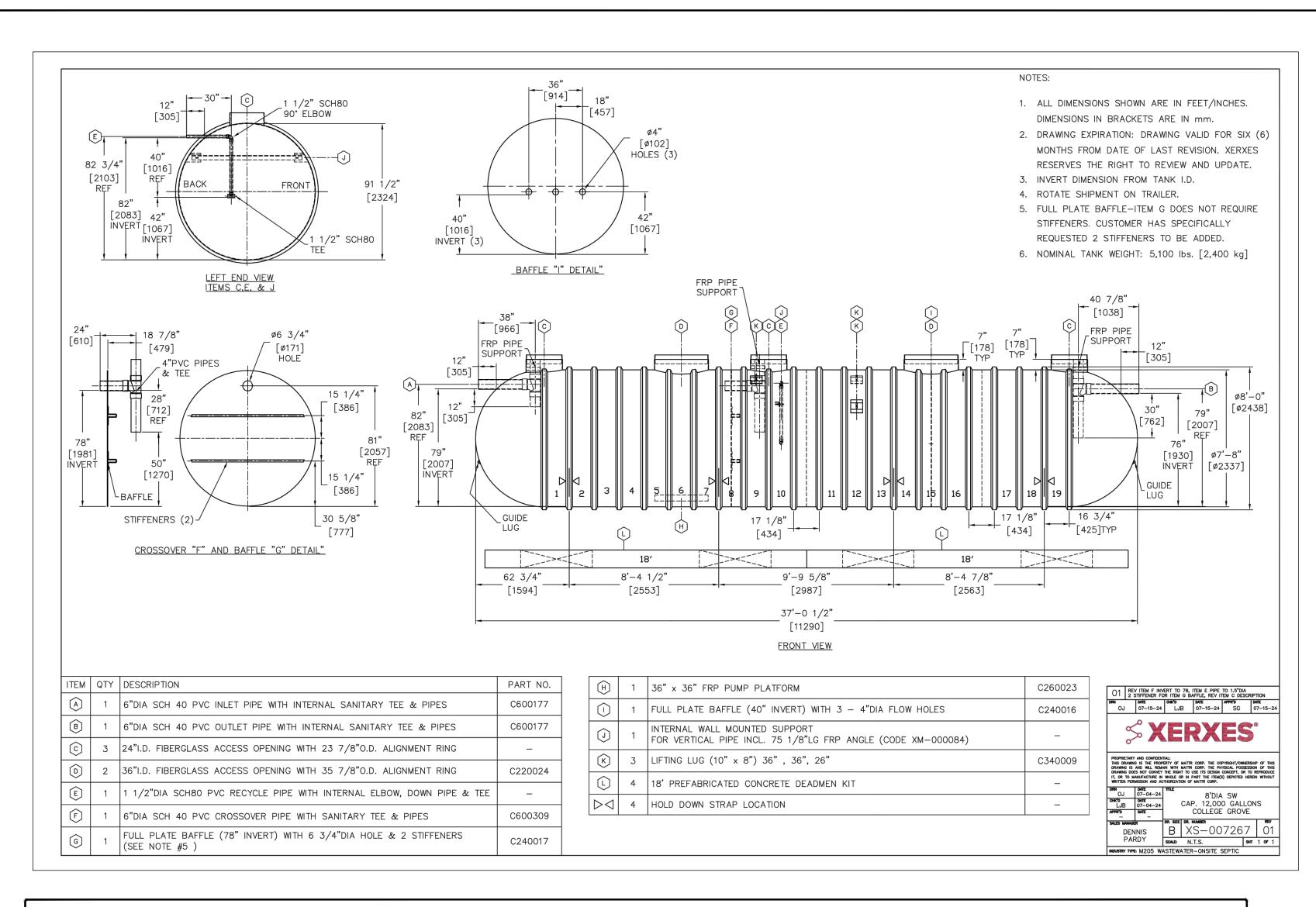
POWER RISER DIAGRAM

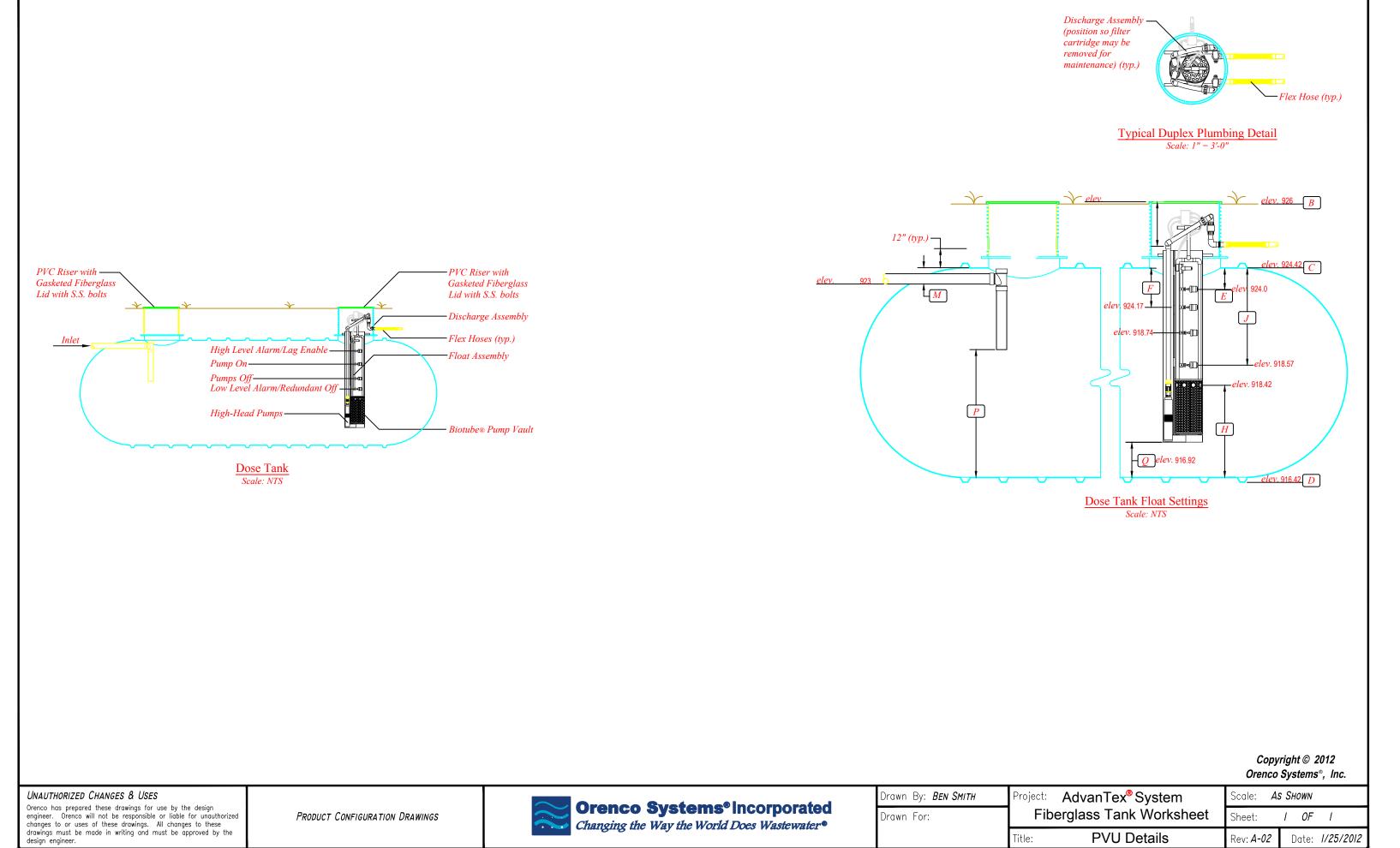
SCALE: NTS

KWH METER -

3 #3 / 0, 2"C

TO TRANSFORMER
UTILITY COMPANY









#### **INNOVATIVE** WASTEWATER SOLUTIONS, INC. 3675 Brown Springs Rd

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(865) 776-8771

Greeneville, TN 37743

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DRAWING INFO	DRAWING INFORMATION	
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SCALE GUIDE:		
DWG ISSUED:	October 09,2024	
PROJ ADMIN:	KD	
DRAWN BY:	JF	
CHECKED BY:	KD	
DRAWING TITLE:		

**DRIP DOSE TANK DETAILS** 

C9.0

WATER POLLUTION CONTROL SOILS MAP FOR WWTP & DRIP IRRIGATION DESIGN KOA SWEETWATER EXPANSION Portion of 269 Murrays Chapel Road Sweetwater, TN

Civil District: 04, Loudon County, TN

For: Eric Kelch

		ABSORPTION RATE (KSAT)	RESTRICTING LAYERS (INCHES)	NOTES/ PERC STATUS
Dewey-Dunmore Complex, 0-2 0-15%	)-20"	.25 gpd/sq.ft.	>48"	These soils are generally deep (>48" to limestone bedrock) and well structured. Some areas have pinnacle rock at depths below $40$ ". Subsoils are clayey and somewhat plastic in places with red and yellow mottling at depths below $36$ inches
Minvale, 0-15% 0-2	)-20"	.25 gpd/sq.ft.	>48"	Minvale soils are a product of deep alluvial deposits washed from landscapes located higher in the watershed and dominated by limestone residual soils.
Gullied/Rough Land NA	NA	NA	NA	This area has been badly gullied in the past and is not usable for drip irrigation due to the dissected landscape.





WPC SOILS MAP BY: Kevin Davis IWS Inc. 3675 Brown Springs Road Greeneville, TN 37743 (865) 776-8771 IF THESE SOILS ARE DISTURBED (CUT, FILLED OR COMPACTED) AFTER THE DATE SHOWN BELOW, THIS SOILS MAP WILL BE VOID!

I Kevin Davis, affirm that this soil map meets the standards established in the Regulations to Govern Subsurface Sewage Disposal, The Soils Handbook and Soil Taxonomy. No other warranties are

made or implied.

03/25/2024

Signature of Soils Consultant does not constitute approval of lot by TDEC.

Map Legend

lot corner o

Soil Description • 1

drain (25' setbacks)

drain (15' setbacks)

gully (15' setbacks)

cut bank

drive

rock outcrop

vu

doline bottom

culvert

fence

perc hole

Pink Flag

ACTIVE DESIGN PHASE

CONCEPT DESIGN

DESIGN DEVELOPMENT

CONSTRUCTION BIDDING PHASE

CONSTRUCTION DOCUMENTS

REVISIONS



ADS PROJ. No.:
PROJECT:

#### KOA Expansion

Loudon County, TN

FOR:

#### Sweetwater Campground Holdings, LLC

312 W 2nd St. Casper, WY 82601



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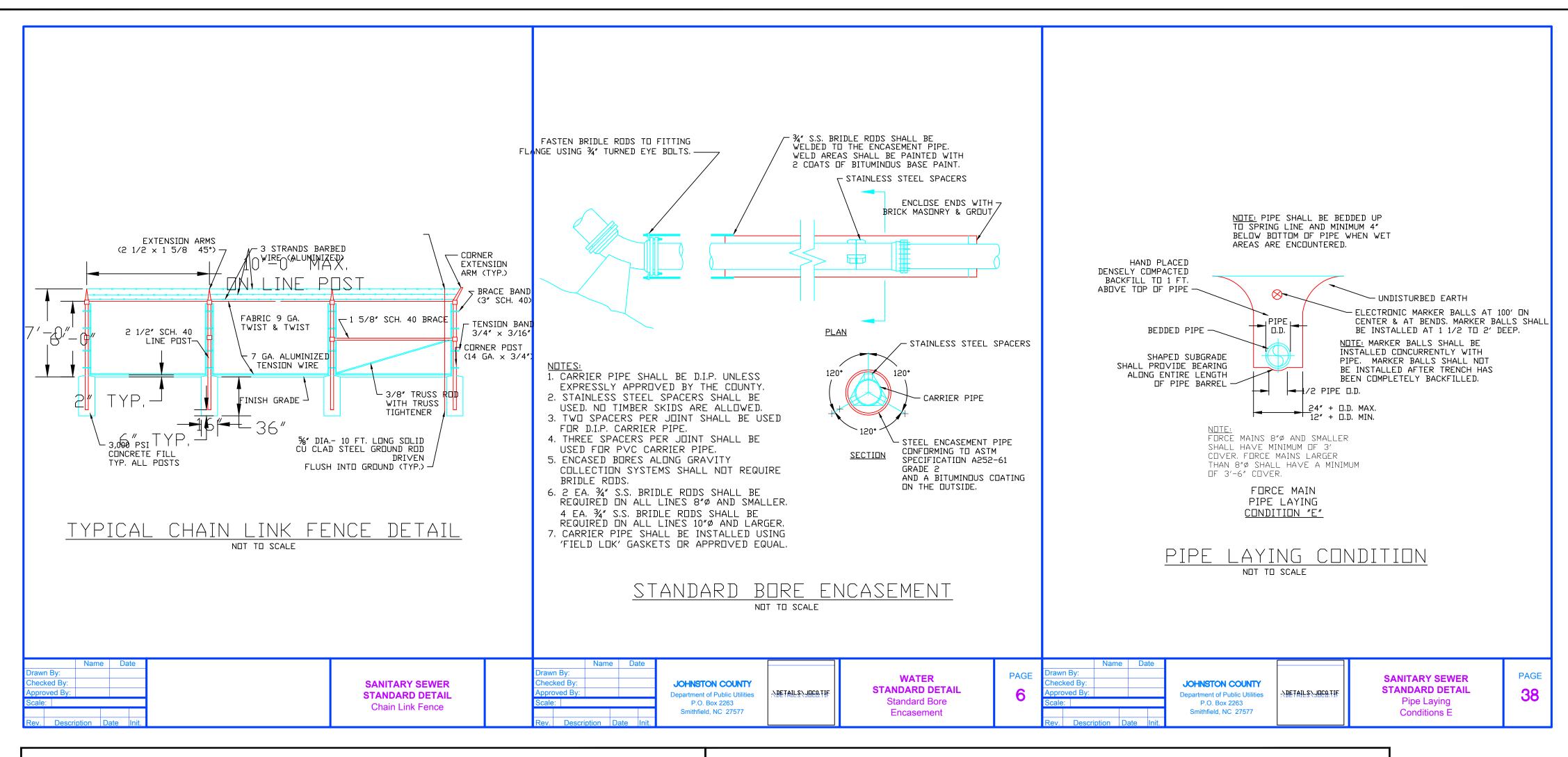
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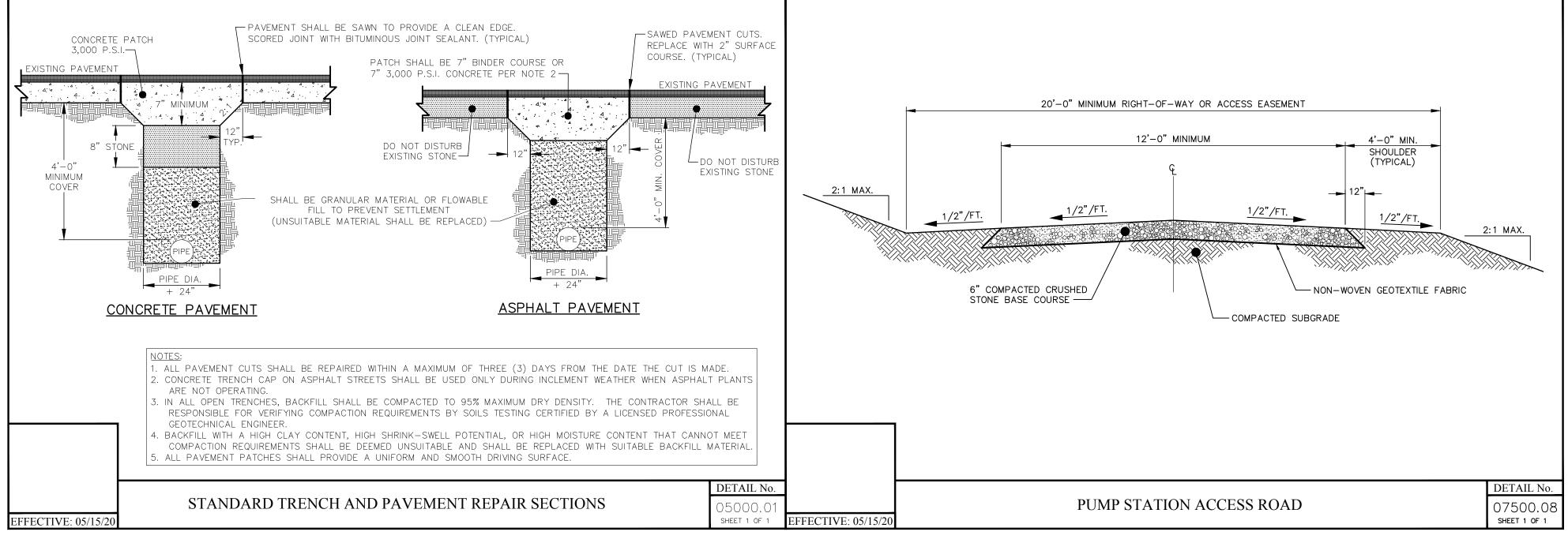
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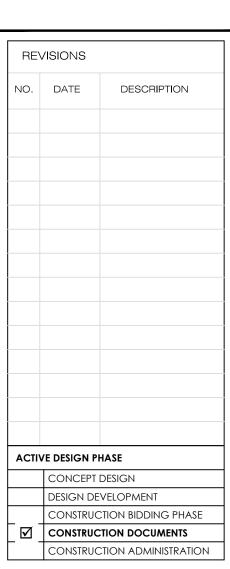
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SOIL MAP OVERLAY NG NO: C10.0









ADS PROJ. No.:
PROJECT:

#### KOA Expansion

Loudon County, TN

FOI

#### Sweetwater Campground Holdings, LLC

312 W 2nd St. Casper, WY 82601



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Misc. Details

NO: **~11**