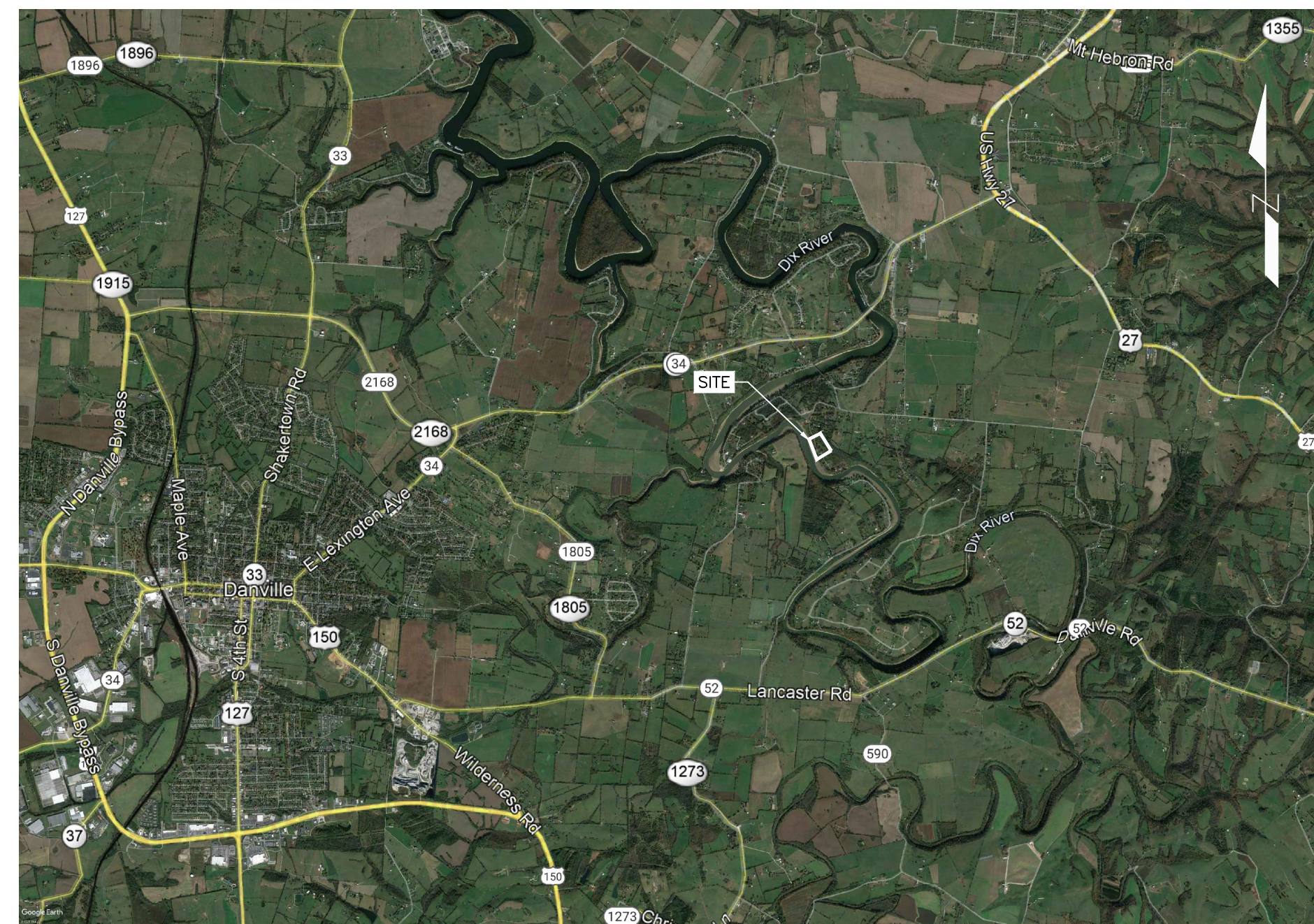


HERRINGTON HAVEN WWTF IN GARRARD COUNTY, KENTUCKY

PERMIT ISSUE: FEBRUARY 15, 2022
 BID ISSUE: _____, 2022
 CONSTRUCTION ISSUE: _____, 2022
 RECORD ISSUE: _____, 2022



VICINITY MAP

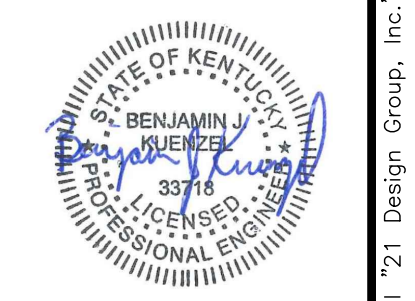
DRAWING LIST

- C01 TITLE/COVER
- C02 NOTES
- C03 EXISTING CONDITIONS
- C04 PROPOSED SITE PLAN
- C05 CIVIL (& PROCESS) DETAILS
- P1 PROCESS FLOW DIAGRAM
- P2 IFAS DIFFUSER CAGE WELDMENT AND SECTIONS



COVER SHEET
 HERRINGTON HAVEN WWTF IMPROVEMENTS
 HERRINGTON HAVEN DRIVE
 GARRARD, KENTUCKY

ENGINEERING CERTIFICATE OF
 AUTHORITY NO. 4804
 ENGINEERING LICENSE:
 BENJAMIN J. KUENZEL, PE33718



SEAL DATE: 2/15/2022
 DRAWN BY: KAR
 PROJ NUMBER: 542-19
 DATE: 2/15/2022
 DRAWING NO: C01

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General Notes and Construction Specifications

1. All water and sewer main construction shall be consistent with the local municipality requirements as well as all testing and disinfection requirements of Kentucky DEP.
2. The contractor shall obtain, erect, maintain and remove all signs, barricades, flagmen and other control devices as may be necessary for the purpose of regulating, warning or guiding traffic. Placement and maintenance of all traffic control devices shall be in accordance with the latest revision of the Manual on Uniform Traffic Control Devices.
3. Location of utilities shown on plans are approximate only, and are not necessarily complete. Contractor shall make his own investigations as to location of all existing underground structures, cables, utilities and pipe lines.
4. If existing utility lines of any nature are encountered which conflict in location with new construction, the contractor shall notify the engineer and owner so that the conflict may be resolved.
5. The contractor shall notify One Call at least 48 hours prior to construction so that each utility company can stake out any underground improvements that they may have which might interfere with the proposed construction.
6. The contractor shall be required to make arrangements for the proper bracing, shoring and other required protection of all roadways, structures, poles, cables and pipe lines, before construction begins. He shall be responsible for any damage to the streets or roadways and associated structures and shall make repairs as necessary to the satisfaction of the engineer and owner at his own expense.
7. The contractor shall be responsible for the protection of all private and public utilities even though they may not be shown on the plans. Any utility that is damaged during construction shall be repaired or replaced to the satisfaction of the engineer and owner by the contractor at his own expense.
8. The contractor shall examine the plans and specifications, visit the site of the work and inform himself/herself fully with the work involved, general and local conditions, all federal, state and local laws, ordinances, rules and regulations and all other pertinent items which may affect the cost and time of completion of this project before submitting a proposal.
9. All work and materials shall be in accordance with code requirements.
10. Prior to submitting his bid, the contractor shall call the attention of the engineer to any material or equipment he deems inadequate and to any item of work omitted on the plans.
11. Structures for valve vaults for water mains shall be in accordance with the improvement plans and the applicable municipality construction requirements. Where granular trench backfill is required around these structures, the cost shall be considered as incidental and shall be included in the contract unit price for the structure.
12. Frame and cover or grates for water main structures shall be as indicated within these improvement plans.
13. All final adjustments of casting will be accomplished by the use of precast concrete adjusting rings set in butyl rope joint sealant, mortar joints will not be allowed. Total height of adjusting rings used shall not exceed twelve (12") inches. cost for adjustment is considered incidental.
14. The contractor shall be responsible to place on grade and coordinate with other contractors all underground structure frames such as catch basins, inlets, manholes, hydrants, buffalo boxes, valves, etc. No additional compensation shall be paid and said adjustments shall be considered incidental to other items of construction.
15. The contractor shall restore any area disturbed to a condition equal to or better than its original use. This shall include finish grading, establishment of a vegetative cover (seeding or sod), general cleanup and pavement replacement.
16. All trenches caused by the construction of all utilities and the excavation around catch basins, manholes, inlets and other appurtenances which occur within the limits of existing or proposed pavements, sidewalks and curb and gutters or where the edge of the trench shall be within two (2') feet horizontally of said improvements shall be backfilled with compacted granular trench backfill or with approved suitable select material and properly compacted to 100% of maximum density as determined by the standard proctor dry density (ASTM d 698) compaction test. When granular material is required, the cost shall be considered incidental and shall be included in the contractors bid.
17. The depth of backfill shall be measured from the top of the pipe embedment to the finished subgrade or as noted on the plans.
18. The contractor shall be responsible for providing safe and healthful working

- conditions throughout the construction of the proposed improvements.
19. The engineer will be given forty-eight (48) hours notice for any staking that is to be done. The cost of stakeout is the responsibility of the contractor.
 20. The contractor shall inform the engineer and owner before work commences on each category of construction, i.e. water main, grading, pavement and drainage improvement. A twenty-four (24) hour notice shall be given for any item that requires final testing and inspection such as water mains or sanitary sewers.
 21. The engineer will furnish the contractor with lines and grades necessary to the proper prosecution and control of the work. The contractor shall call the attention of the engineer to any errors or discrepancies which may be suspected in lines and grades which are established by the engineer, and shall not proceed with the work until any lines and grades which are believed to be in error have been verified or corrected by the engineer or his representative.
 22. All survey monuments damaged or removed during construction of this project shall be replaced by the surveyor and said cost of replacement shall be paid by the contractor.
 23. The contractor will have in his possession on the job site a copy of the plans and specifications during construction.
 24. If approval for any items is required, the contractor shall contact the engineer for approval prior to ordering.
 25. Any drain and/or field tile encountered by the contractor during the installation of the improvements shall be returned to original condition. This work to be considered incidental to the contract.
 26. All road signs, street signs and traffic signs which need to be relocated or moved due to construction shall be taken down and stored by the contractor at his own expense, except those which are necessary for proper traffic control which shall be temporarily reset until completion of construction operations. After completion of the work, the contractor shall reset, at his expense, all said signs.
 27. The contractor shall dispose of all excess excavation, unsuitable and unusable materials offsite and at an approved location in a manner that public or private property will not be damaged or endangered. This work is considered as incidental to the cost of the project. Contractor to follow any local, state, and federal guidelines for disposing of material off site.
 28. No trench excavations will be permitted to remain open over any weekend, night, or any time site is left unattended.
 29. Band-seal style couplings shall be used when joining sewer pipes of dissimilar materials.
 30. As-built drawings shall be prepared by the contractor and submitted to the engineer as soon as the site improvements are completed. Any change in length, location or alignment shall be shown in red. As-builts will be performed by a licensed surveyor. It will include the tops and flowlines of all storm and sanitary structures.
 31. The contractor is responsible for coordinating any required inspections with the engineer and city or state agency.
 32. Special attention is drawn to the fact that the standard specifications requires the contractor to have a competent superintendent on the project site at all times, irrespective of the amount of work sublet. The superintendent shall be capable of reading and understanding the plans and municipality construction specifications, shall have full authority to execute orders to expedite the project, shall be responsible for scheduling and have control of all work as the agent of the contractor. Failure to comply with this provision will result in a suspension of work as provided in the contract documents.
 33. The engineer and owner are not responsible for the construction means, methods, techniques, sequences or procedures, time of performance, programs or for any safety precautions used by the contractor. The contractor is solely responsible for execution of his work in accordance with the contract documents and specifications.
 34. The utilities shown hereon were plotted from available information and do not necessarily reflect the actual existence, non-existence, size, type, or location of these or other utilities. The contractor shall be responsible for verifying the actual location of all utilities. All utilities shall be located in the field prior to any construction of improvements. These provisions shall in no way absolve any party from complying with the underground facility safety and damage prevention act.
 35. All materials and methods of construction to meet the specifications submitted for the construction permit.
 36. Construction should not commence until all permits have been received from all

- governing agencies.
37. No land disturbance activities can be completed until all land disturbance permitting has been acquired. It is the responsibility of the contractor to verify permits are in place prior to activities. Contractor will be responsible for any fines that are incurred due activities completed prior to having necessary permitting in place.
 38. All fill material shall be made of selected earth materials, free from broken masonry, rock, frozen earth, rubbish, organic material and debris.
 39. Grading contractor shall keep existing roadways clean of mud and debris at all times. If the city or owner has to clean the roads it will be at the expense of the contractor.
 40. All graded areas shall be protected from erosion by erosion control devices and/or seeding and mulching as required by all local and state agencies and permits.
 41. No grade shall exceed a 3:1 slope except where noted.
 42. Interim stormwater drainage control in the form of siltation control measures are required.
 43. Adequate temporary off-street parking shall be provided for construction employees. Parking on non-surfaced areas shall be prohibited in order to eliminate the condition whereby mud from construction and employee vehicles is tracked onto the pavement causing hazardous roadway and driving conditions.
 44. The contractor shall, at all times, contain mud and other spoils on the site. No vehicle, trailer or construction equipment is to deposit mud or any other material on public streets. Project will be stopped if streets are not cleaned immediately.
 45. Public roadways shall be kept open to traffic during all phases of construction of improvements. No driving lanes shall be closed without prior written permission from the governing agency.
 46. The contractor shall furnish, maintain, and remove traffic control devices for the purpose of regulating, warning, and directing traffic during construction in the public roadways. All flagmen, barricades, warning signs, etc. shall conform to the manual for uniform traffic control devices.
 47. No investigation has been performed by the engineer regarding hazardous waste, underground conditions or utilities affecting the tract of land shown herein.
 48. This plan is not a survey in any sort and shall not constitute a boundary survey.
 49. Onsite utilities have been shown based on documents obtained from public entities.
 50. See MEP/Arch. plans for site lighting and electrical design/layout.
 51. Contractor shall comply with all OSHA requirements for safety and construction.
 52. All utility trenches in paved areas shall be compacted to the requirements of the specific paving specification. Only granular material shall be used in utility trenches under paved areas.
 53. All unsurfaced areas shall receive a minimum of 6" of topsoil. Contractor shall seed, fertilize, mulch, and maintain all disturbed areas until stabilization is provided meeting the technical specifications and/or direction of the Engineer.
 54. The contractor is responsible for maintenance of sediment control bmps throughout the entire project.
 55. All sewer laterals shall have a 2% minimum slope.
 56. All storm sewer covers shall have the words "Storm Drain" cast in the top in letters three inches high. All sanitary sewer covers shall have "Sanitary Sewer" meeting same specification.
 57. All frames, grates and covers shall be ductile iron, conforming to ASTM A48, Class 30 and shall be designed for heavy duty traffic.
 58. Manhole steps shall be constructed of polypropylene conforming to ASTM D 4101 and shall meet current state and federal safety standards. Steps shall be Neenah R-1981-N or approved equal.
 59. Pre-cast manholes shall be at least 48" diameter and conform with ASTM C478 and to design dimensions. All lift hole shall be thoroughly wetted and completed filled with mortar and smoothed. Structures shall be free of fractures or cracks.

- All joints between pre-cast elements on manholes shall be made with an approved bitumastic material or an approved rubber gasket. Contractor shall submit shop drawings to engineer for approval prior to ordering.
60. All storm sewer 12" to 30" in diameter shall be Corrugated Polyethylene Pipe (CPP) or High Density Polypropylene (HDPP).
 - A. CPP pipe and fittings shall conform to ASTM F405 and F667 and shall have a circular cross-section and have a smooth wall interior.
 - B. End sections shall be polyethylene flared type with toe plates.
 - C. Joints shall be provided with neoprene or manufacturer's standard gaskets and meet ASTM F2881. Pipes up to shall be water tight according to D3212. Spigots shall have gaskets meeting the requirements of ASTM F477.
 - D. All CPP or HDPP shall be installed using embedment material meeting North Carolina Department of Transportation requirements.
 - E. Installation to conform to ASTM D2321 and pipe manufacturer's recommendations for backfill, bedding, installation, and minimum cover requirements.
 - F. Clean joints thoroughly, and coat bell, spigot and gasket with recommended lubricant before jointing.
 61. Dual wall and triple wall polypropylene pipe (HDPP) shall conform to the requirements of AASHTO M330 "Standard Specification for Polypropylene Pipe, ASTM F2736 (Dual wall) for sizes 12" to 30" and ASTM F2764 (Triple wall) for sizes 30" to 60". All polypropylene pipe shall be installed according with ASTM F2321 "Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications."



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GENERAL NOTES

HERRINGTON HAVEN WWTF IMPROVEMENTS
 HERRINGTON HAVEN DRIVE
 GARRARD, KENTUCKY

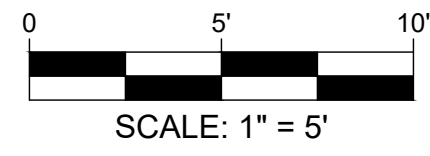
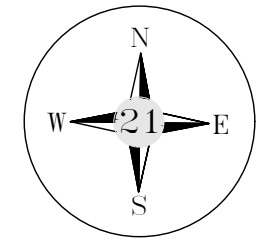
ENGINEERING CERTIFICATE OF AUTHORITY NO. 4804
 ENGINEERING LICENSE: BENJAMIN J. KUENZEL, PE33718



SEAL DATE: 2/15/2022
 DRAWN BY: KAR
 PROJ NUMBER: 542-19
 DATE: 2/15/2022

DRAWING NO: C02

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SCALE: 1" = 5'

DRAWING LEGEND

DESCRIPTION	EXISTING	PROPOSED
Easement	---	---
Setbacks	---	---
Property Lines	---	---
Aerial Electric	---	---
Tree Line	---	---
Sanitary Manhole		
Utility Pole		
Hydrant		
Telephone Box		
Water Valve		
Gas Valve		
Sign		
Grated Inlet		
Catch Basin		
Grated Curb Inlet		
Junction Box		
Flared End Section		

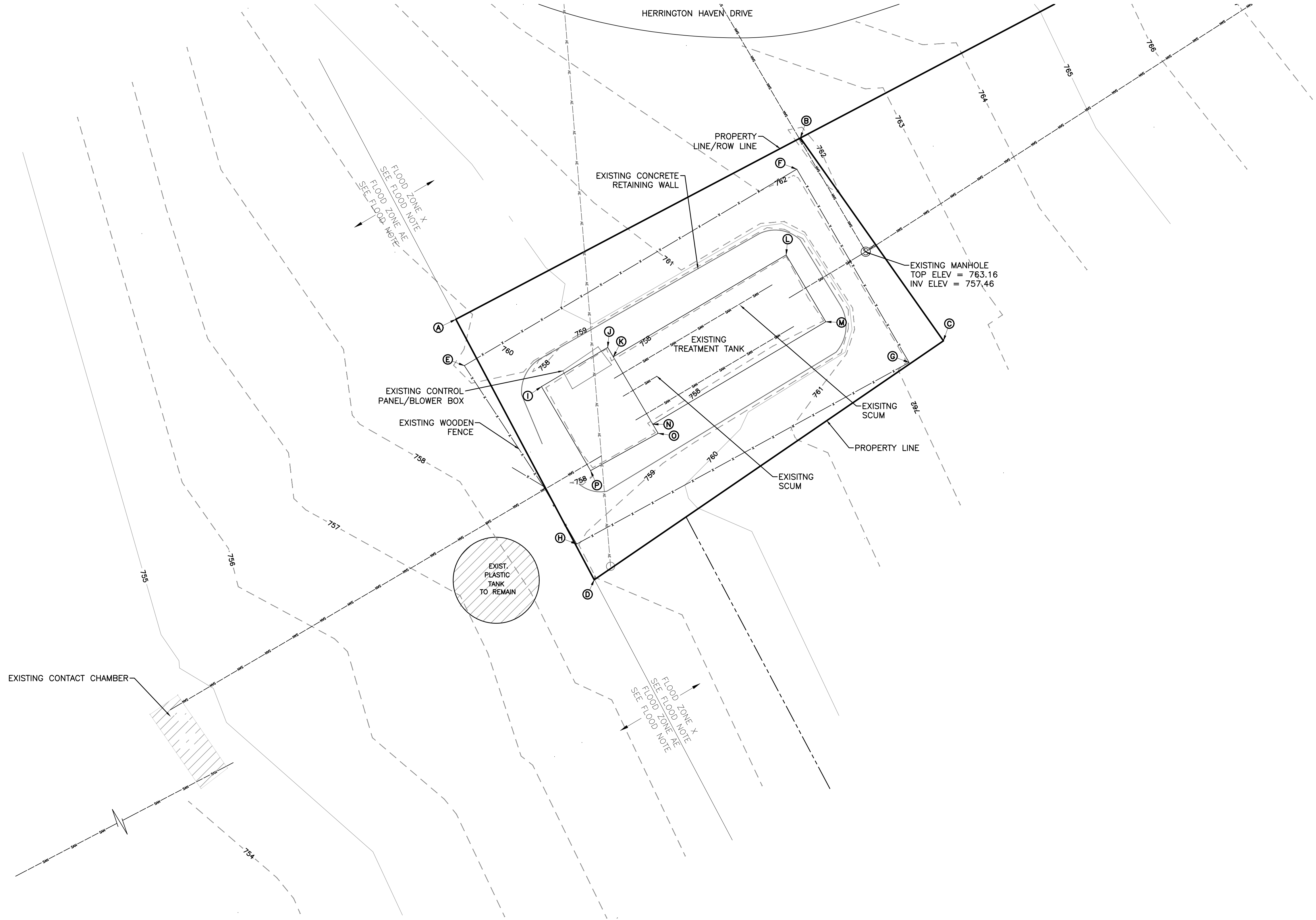
PAVEMENT LEGEND

Existing Asphalt	
Existing Concrete	
New Concrete	
New Standard Duty Asphalt	
New Heavy Duty Asphalt	
New Standard Duty Concrete	
New Heavy Duty Concrete	

EXISTING LOCATIONS

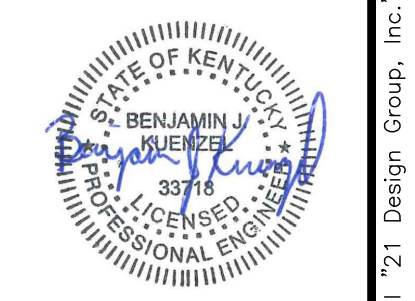
COORDINATE POINT	NORTHING	EASTING
A	3766110.9757	5228065.055
B	3766127.430	5228096.306
C	3766109.030	5228109.272
D	3766087.360	5228077.612
E	3766106.777	5228065.837
F	3766124.599	5228095.983
G	3766107.064	5228106.163
H	3766090.600	5228076.025
I	3766104.878	5228072.828
J	3766108.433	5228078.837
K	3766107.579	5228079.337
L	3766116.820	5228095.016
M	3766110.760	5228098.605
N	3766101.463	5228082.925
O	3766100.841	5228083.408
P	3766097.257	5228077.282

* NAD83 KENTUCKY STATE PLANES COORDINATES, SINGLE ZONE, US FOOT



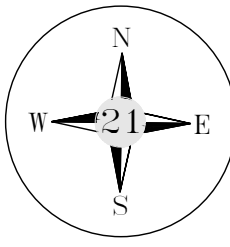
EXISTING CONDITIONS PLAN
 HERRINGTON HAVEN WWTF IMPROVEMENTS
 HERRINGTON HAVEN DRIVE
 GARRARD, KENTUCKY

ENGINEERING CERTIFICATE OF AUTHORITY NO. 4804
 ENGINEERING LICENSE: BENJAMIN J. KUENZEL, PE33718



SEAL DATE: 2/15/2022
 DRAWN BY: KAR
 PROJ NUMBER: 542-19
 DATE: 2/15/2022
 DRAWING NO: C03

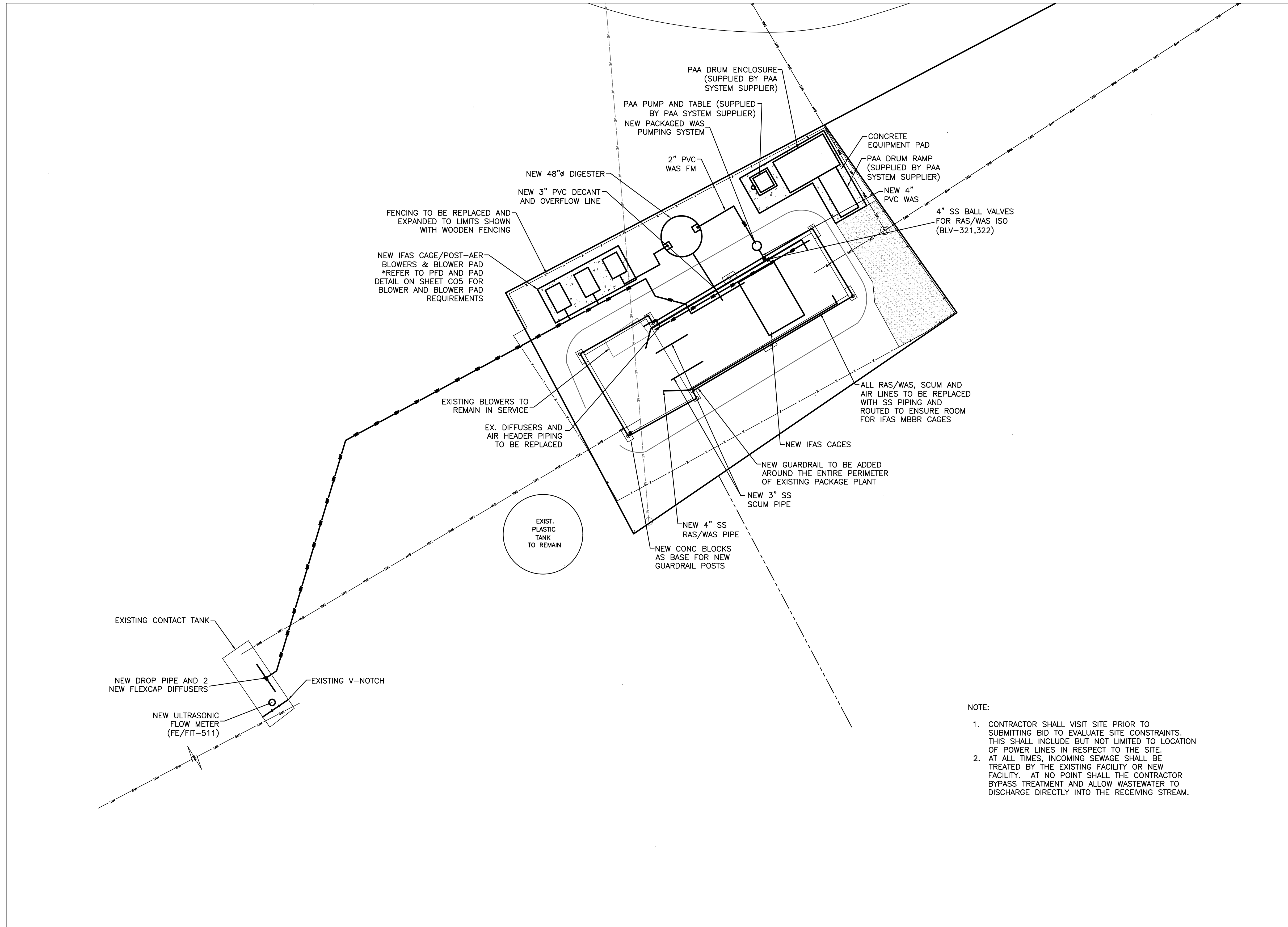
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0 5' 10'
SCALE: 1" = 5'

DRAWING LEGEND

Asphalt	
Concrete	
Easement	
Setbacks	
Property Lines	
Sanitary Sewer	
Gas Main	
Water Main	
Underground Telephone	
Aerial Electric	
Underground Electric	
Storm Sewer	
Contours	
Tree Line	
Sanitary Manhole	
Utility Pole	
Hydrant	
Telephone Box	
Water Valve	
Gas Valve	
Sign	
Grated Inlet	
Catch Basin	
Grated Curb Inlet	
Junction Box	
Flared End Section	



- NOTE:
1. CONTRACTOR SHALL VISIT SITE PRIOR TO SUBMITTING BID TO EVALUATE SITE CONSTRAINTS. THIS SHALL INCLUDE BUT NOT LIMITED TO LOCATION OF POWER LINES IN RESPECT TO THE SITE.
 2. AT ALL TIMES, INCOMING SEWAGE SHALL BE TREATED BY THE EXISTING FACILITY OR NEW FACILITY. AT NO POINT SHALL THE CONTRACTOR BYPASS TREATMENT AND ALLOW WASTEWATER TO DISCHARGE DIRECTLY INTO THE RECEIVING STREAM.

NO.	DATE	REVISION	PERMIT SET
1	2/15/2022		

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SITE PLAN
 HERRINGTON HAVEN WWTF IMPROVEMENTS
 HERRINGTON HAVEN DRIVE
 GARRARD, KENTUCKY

ENGINEERING CERTIFICATE OF AUTHORITY NO. 4804
 ENGINEERING LICENSE:
 BENJAMIN J. KUENZEL, PE33718

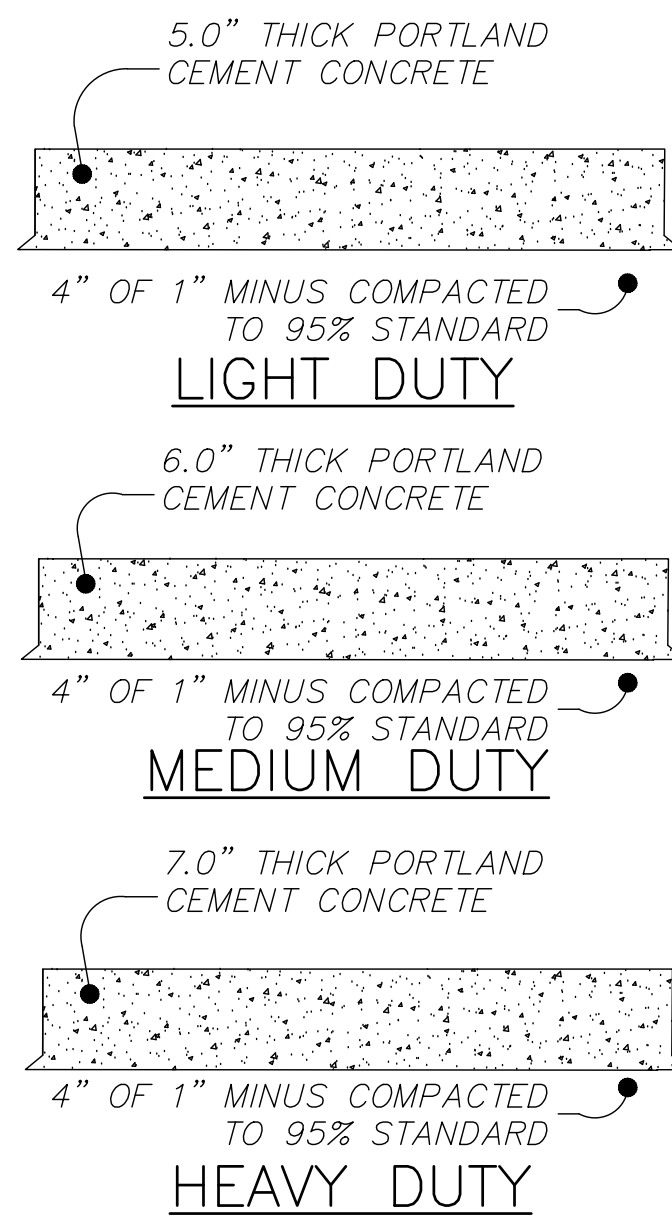


SEAL DATE	2/15/2022
DRAWN BY	KAR
PROJ NUMBER	542-19
DATE	2/15/2022
DRAWING NO.	C04

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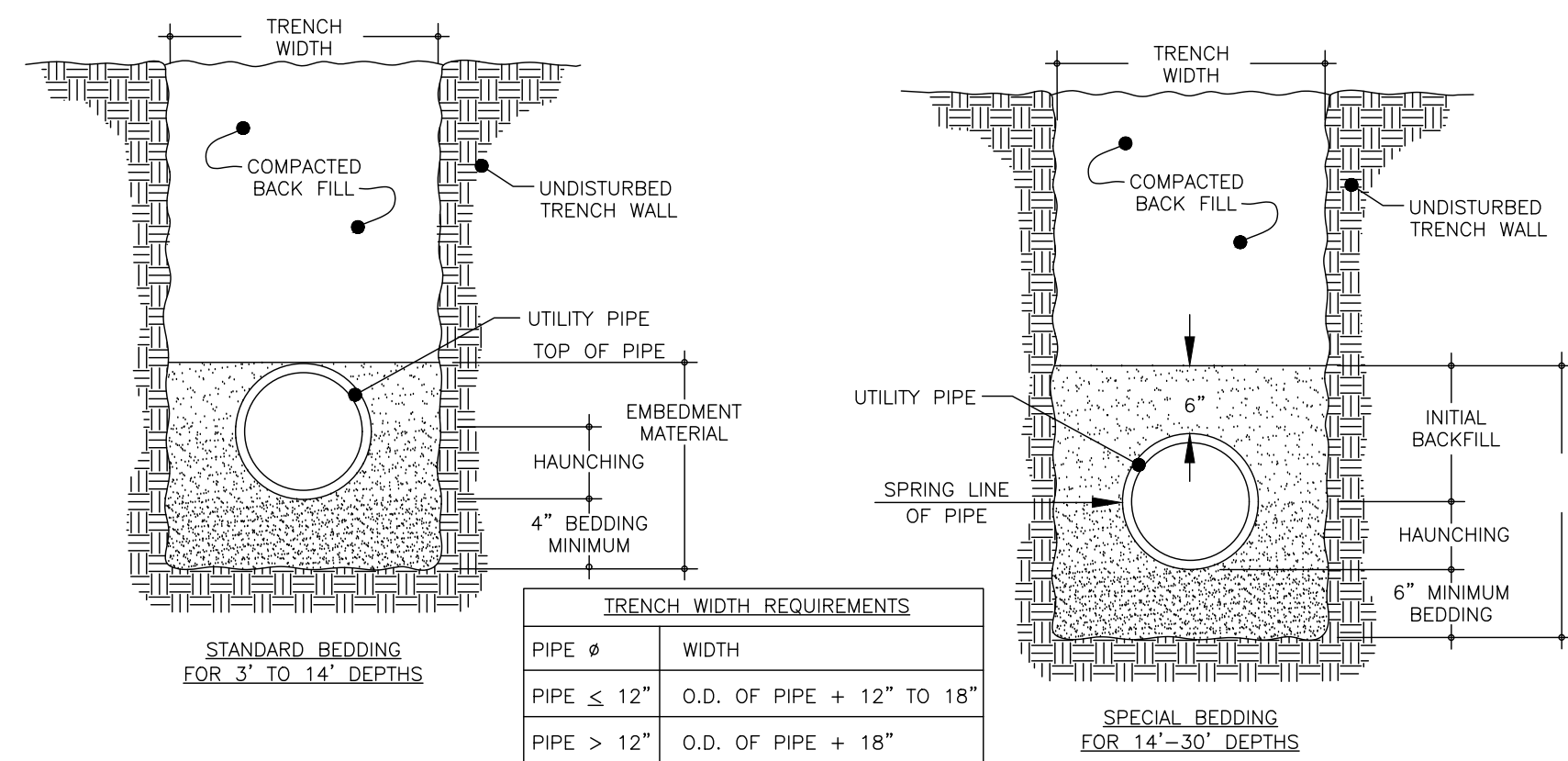
NOTES:

1. PORTLAND CEMENT CONCRETE SHALL COMPLY WITH CURRENT DOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. CONCRETE SHALL HAVE A 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI, AIR ENTRAINMENT OF 5 TO 7 PERCENT, AND SLUMP BETWEEN 1 TO 3 INCHES.
2. SUBGRADE SHALL BE COMPACTED TO A DENSITY OF NO LESS THAN 95% OF STANDARD PROCTOR (PER ASTM D-698)
3. SEE GEOTECHNICAL REPORT FOR PAVEMENT SPECIFICATION REQUIREMENTS.
4. MAXIMUM JOINT SPACING SHALL BE 24 TIMES THE CONCRETE THICKNESS WITH SLABS BE NO GREATER THAN 2:1 LENGTH TO WIDTH.
5. NON-REINFORCED CONCRETE PAVING. CONTRACTOR TO USE SMOOTH DOWELS AT CONSTRUCTION JOINTS.
6. SEE GEOTECHNICAL REPORT FOR ALL COMPACTION, POURING, AND MATERIAL REQUIREMENTS. IF A CONFLICT EXISTS, THE GEOTECHNICAL REPORT GOVERNS.
7. PROOF ROLL SUBGRADE DOUBLE TANDOM AXLE TRUCK PRIOR TO PLACING ROCK BASE MATERIAL.
8. CONCRETE CURING SHALL BE PROVIDED PER ASTM C-309 OR MODOT SPECIFICATIONS, WHICHEVER IS GREATER.
9. JOINT SEALER PER MODOT SPECIFICATIONS.
10. WEATHER PROVISIONS SHALL COMPLY TO MODOT STANDARD CONSTRUCTION REQUIREMENTS.



CONCRETE SECTION DETAILS

Not To Scale



TRENCH WIDTH REQUIREMENTS	
PIPE Ø	WIDTH
PIPE ≤ 12"	O.D. OF PIPE + 12" TO 18"
PIPE > 12"	O.D. OF PIPE + 18"

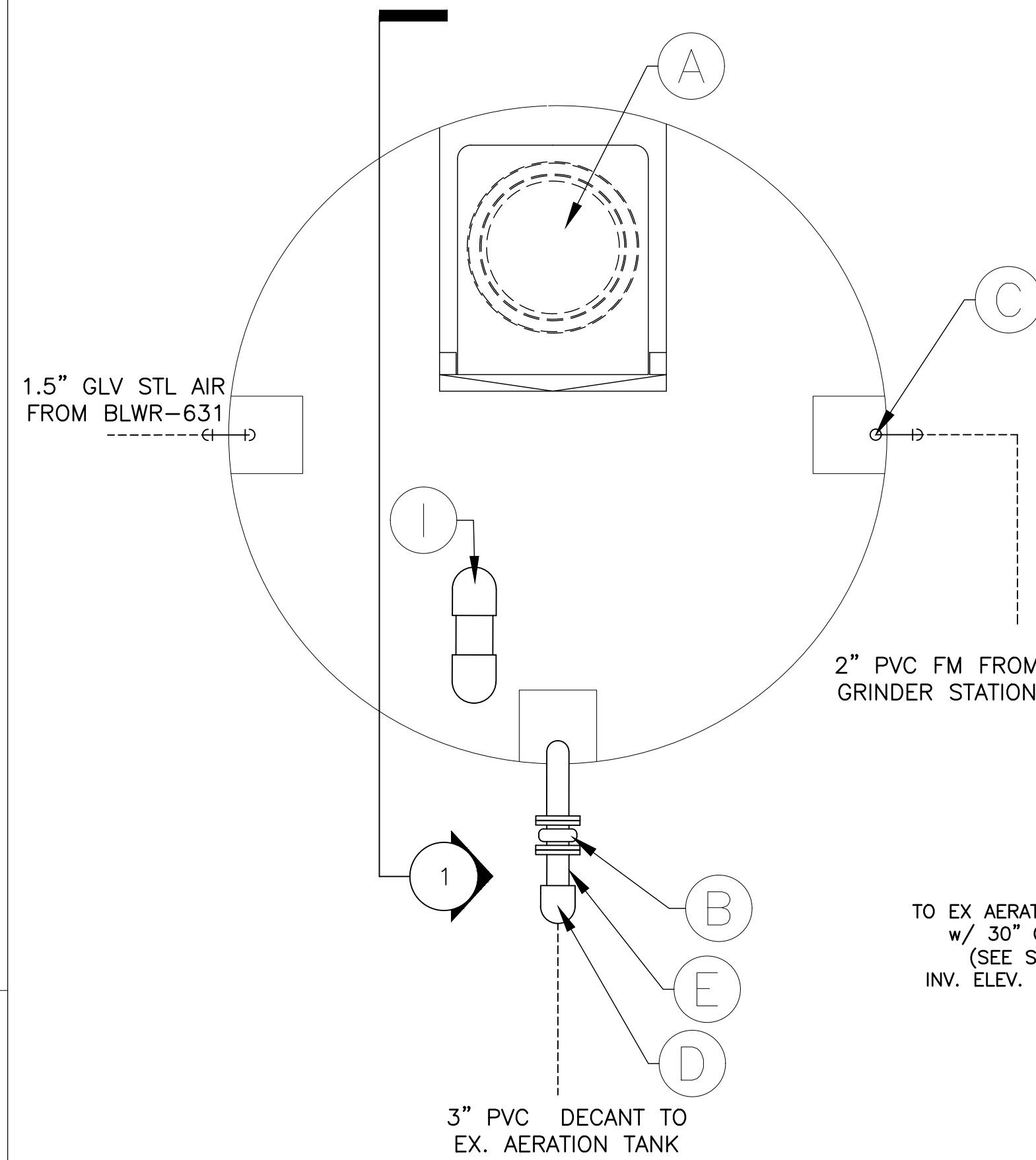
TRENCH DEPTH REQUIREMENTS	
UTILITY	MIN DEPTH
GAS	SEE UTILITY CO.
WATER	42"
ELECTRIC	24"
SANITARY	36"

PIPE REQUIREMENTS				
UTILITY	0" TO 3'	3' TO 16'	16' TO 30'	> 30'
GAS	SEE UTILITY COMPANY			
WATER	DUCTILE	CLASS 200	DUCTILE	N/A
ELECTRIC	PVC	PVC	N/A	N/A
STORM	CONCRETE	HDPE	CONCRETE	CONCRETE
SANITARY	DUCTILE	CLASS 200	DUCTILE	N/A

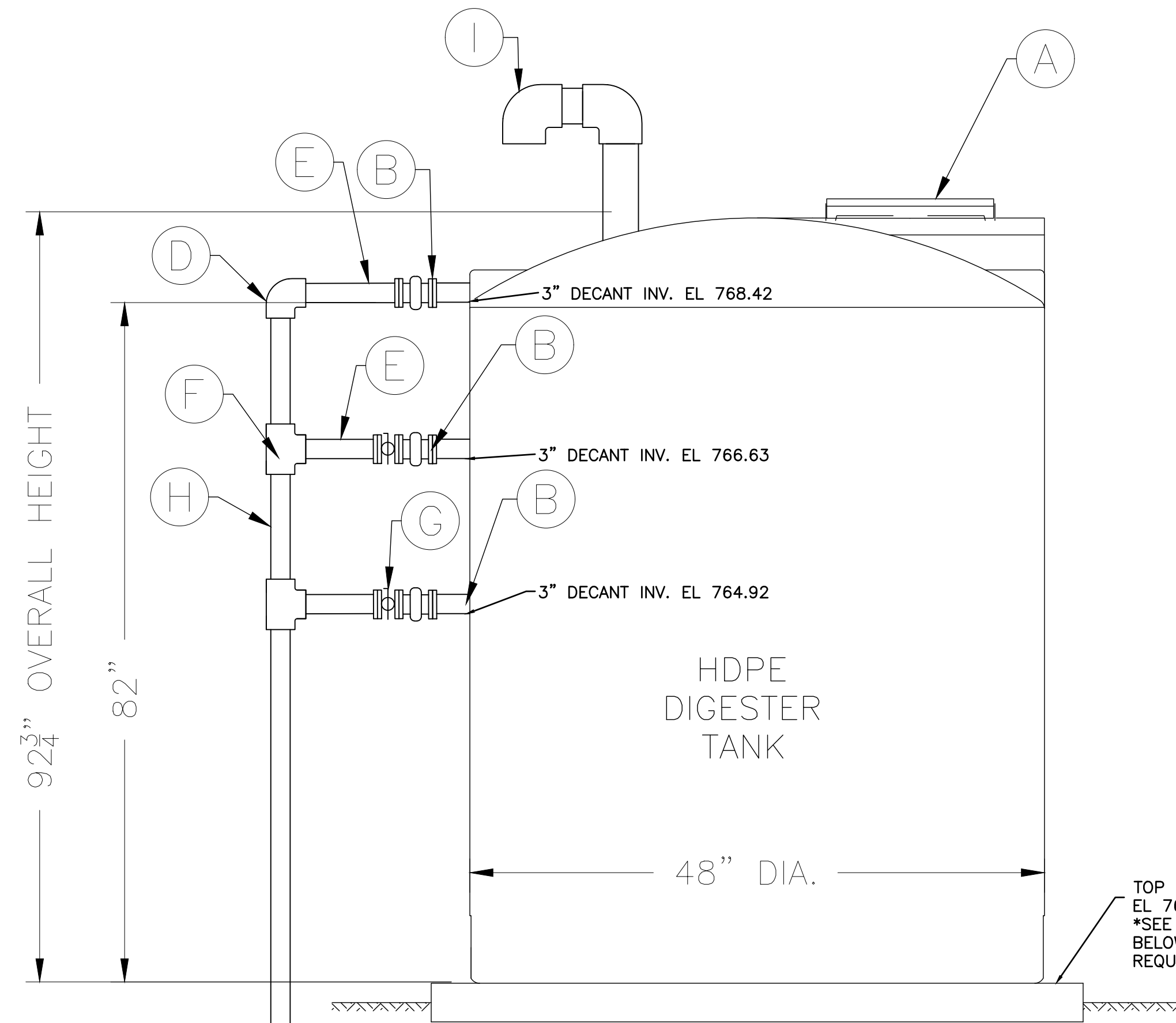
- NOTES:**
1. EMBEDMENT MATERIAL MUST BE 1" MINUS GRANULAR BACKFILL.
 2. EMBEDMENT MATERIAL SHALL BE COMPACTED TO A MINIMUM 95% STANDARD PROCTOR DENSITY.
 3. STANDARD BEDDING SHALL BE UTILIZED FOR ALL CASES WHERE TRENCH BOTTOMS ARE UNSTABLE DUE TO SOIL TYPE OR MOISTURE CONDITIONS.
 4. TRENCH EXCAVATION SHALL CONFORM TO ALL OSHA CONSTRUCTION REQUIREMENTS.
 5. ANY TRENCHING UNDER PAVED AREAS SHALL BE BACKFILLED WITH 1" MINUS AND COMPACTED TO 95% STANDARD PROCTOR DENSITY.
 6. CONTRACTOR IS RESPONSIBLE FOR TRENCH SETTLEMENT.
 7. IN AREAS OF ROCK CUT, TRENCHES SHALL BE BACKFILLED WITH WELL GRADED GRANULAR MATERIAL TO 6" ABOVE THE TOP OF PIPE.
 8. ALL UTILITY INSTALLATION SHALL CONFORM TO THE PIPE MANUFACTURER.
 9. HAUNCHING SHALL BE WORKED AROUND THE PIPE BY HAND TO ELIMINATE ALL VOIDS.

UTILITY TRENCHING & BEDDING DETAIL

Not To Scale



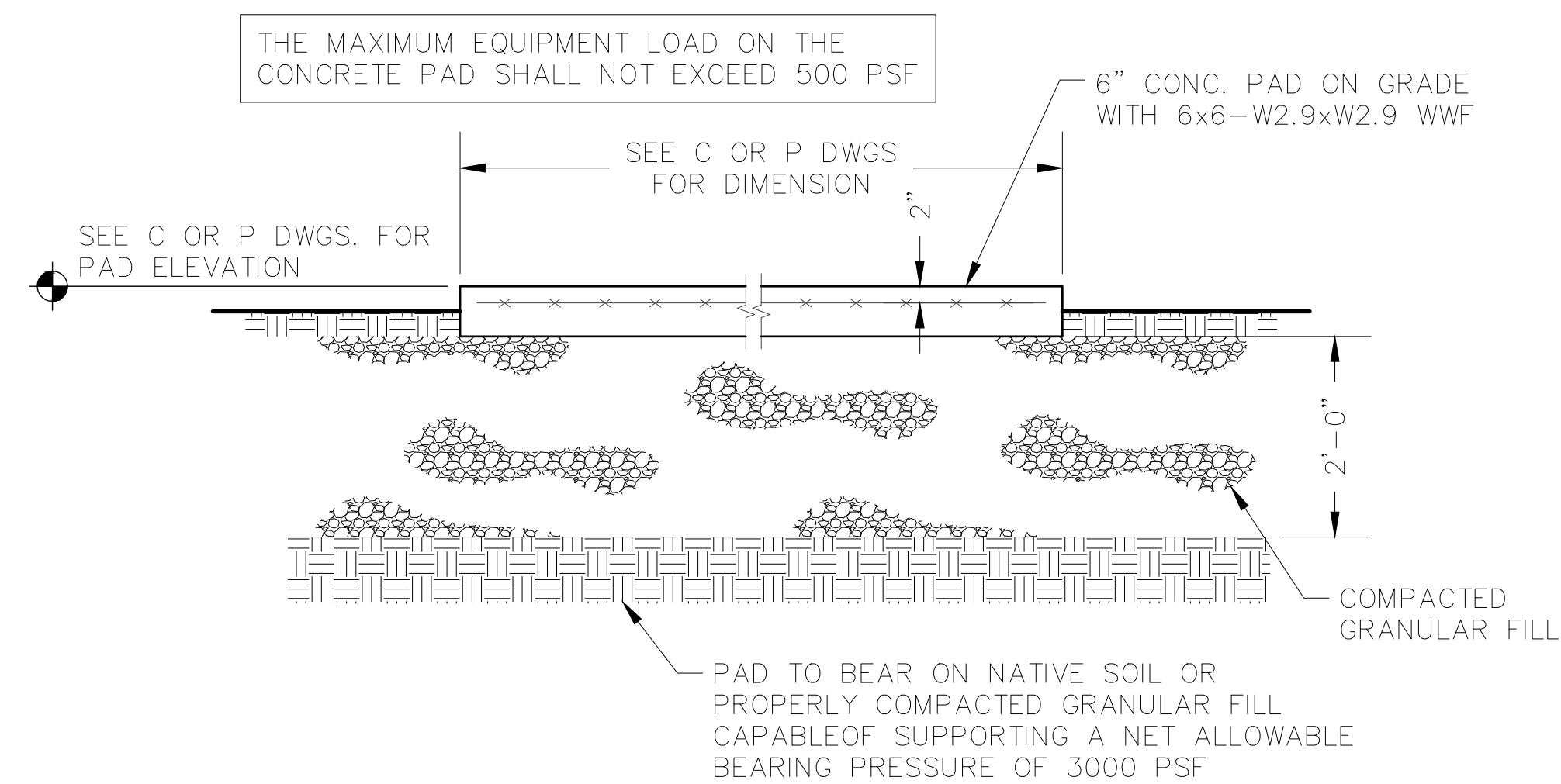
TO EX AERATION TANK
w/ 30" OF COVER
(SEE SITE PLAN)
INV. ELEV. = 758.25



SECTION 1

A	16" MANYWAY W/ LEVER LOCK COVER
B	3" PVC FL (FL EXP JT PROVIDED AND INSTALLED BY CONTRACTOR)
C	2" PVC BULKHEAD FTG, FLANGE ADAPTER INFLUENT FM
D	3" PVC 90 DEG BEND (SOC)
E	3" FL ADPT & PVC SPOOL (PEXPE)
F	3" PVC TEE (SOC)
G	3" PVC FULL PORT BALL VALVE (FL)
H	3" PVC SPOOL (PEXPE)
I	6" PVC VENT

AEROBIC DIGESTER TANK DECANT/OVERFLOW PIPE DETAIL
Not to Scale



TYPICAL EXTERIOR EQUIPMENT PAD ON GRADE

SCALE: N.T.S.

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DETAIL SHEET
HERRINGTON HAVEN WWTF IMPROVEMENTS
HERRINGTON HAVEN DRIVE
GARRARD, KENTUCKY

ENGINEERING CERTIFICATE OF AUTHORITY NO. 4804
ENGINEERING LICENSE: BENJAMIN J. KUENZEL, PE33718



SEAL DATE: 2/15/2022
DRAWN BY: KAR
PROJ NUMBER: 542-19
DATE: 2/15/2022
DRAWING NO:

C05

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DESIGN CRITERIA:

PLANT INFLUENT FLOW

Q_{ADF} = 9,800 GPD
 Q_{PDF} = 29,400 GPD
 Q_{PHF} = 39,200 GPD

BOD = 225 MG/L
 TSS = 225 MG/L
 TKN = 40 MG/L

EXTENDED AERATION

NO OF AERATION TANKS: 1
 DIMENSIONS: (1) 7.00'x17.50'x8' SWD
 TOTAL VOLUME: 7,330 GALLONS
 HRT @ ADF: 17.95 HRS

IFAS (CAGES)

NO. OF IFAS CAGES: 1
 DIMENSIONS: 4'x6'x10' (SWD)
 TOTAL CAGE VOLUME = 1,795 GALLONS
 INF. BOD = 225 MG/L, 18.4 LBS/D
 EFF. BOD TARGET = 68 MG/L, 5.5 LBS/DAY
 HRT @ ADF = 3.5 HRS
 MEDIA SURFACE RQD. = 367 M²
 MEDIA VOLUME RQD. (W/650 M²/M³ MEDIA) = 20 CF
 MEDIA VOLUME PROPOSED: 58 CF
 MEDIA FILL % = 30 %
 SCFM RQD. = 24 SCFM

CONTACT TANKS

NO. OF TANKS: 2
 TANK 1 DIMENSIONS 2.5'x8'x9' EXISTING, W/IN PACKAGE PLANT
 TANK 2 DIMENSIONS 3'x8'x8' EXISTING CONTACT TANK
 VOLUME: 2,783 GAL
 HRT @ PHF: 102 MINUTES

POST-AERATION

NO. OF TANKS: 1
 DIMENSIONS: 3'x8'x8' EXISTING CONTACT TANK
 TWO FLEXCAP DIFFUSERS USED FOR AIR FLOW
 RATE: 20 SCFM/1,000 CF
 SCFM PROVIDED: 6.0 SCFM

AEROBIC DIGESTER

VOLUME OF EACH DIGESTER: = 625 GALLONS
 VSS CONCENTRATION OF WAS: = 75%
 VSS DESTROYED = 45%
 DIGESTED SLUDGE PRODUCTION = 4.9 LBS.DS/DAY
 DIGESTED SLUDGE PRODUCTION = 38.9 GPD @ 15,000 MG/L TSS
 SOLIDS RETENTION TIME = 16 DAYS

BLOWERS FOR EXT. AERATION, AIRLIFTS (2), POST-AIR:

BLWR 231, 232 (EXISTING BLOWERS TO CONTINUE TO BE USED)
 SCFM REQUIRED FOR EXTENDED AERATION (W/IFAS CAGE) = 29 SCFM
 SCFM REQUIRED FOR RAS/WAS AND SCUM AIRLIFTS = 12 SCFM
 SCFM REQUIRED FOR POST-AERATION = 6 SCFM
 TOTAL SCFM: 47 SCFM
 DISCHARGE PRESSURE RQD: 4.44 PSIG
 NO. OF OPERATING BLOWERS: 1
 TOTAL NO. OF BLOWERS: 2

BLOWERS FOR AEROBIC DIGESTION

BLWR 631 (NEW BLOWER)
 SCFM REQUIRED DIGESTER: 8 SCFM
 TOTAL SCFM: 8 SCFM
 DISCHARGE PRESSURE REQUIRED: 3.95 PSIG

BLOWERS FOR IFAS AERATION

BLWR 233, 234 (NEW BLOWERS)
 SCFM REQUIRED MBRR: 24 SCFM
 TOTAL SCFM: 24 SCFM
 DISCHARGE PRESSURE REQUIRED: 4.45 PSIG
 NO. OF OPERATING BLOWERS: 1
 TOTAL NO. OF BLOWERS: 2

PAA FEED PUMP

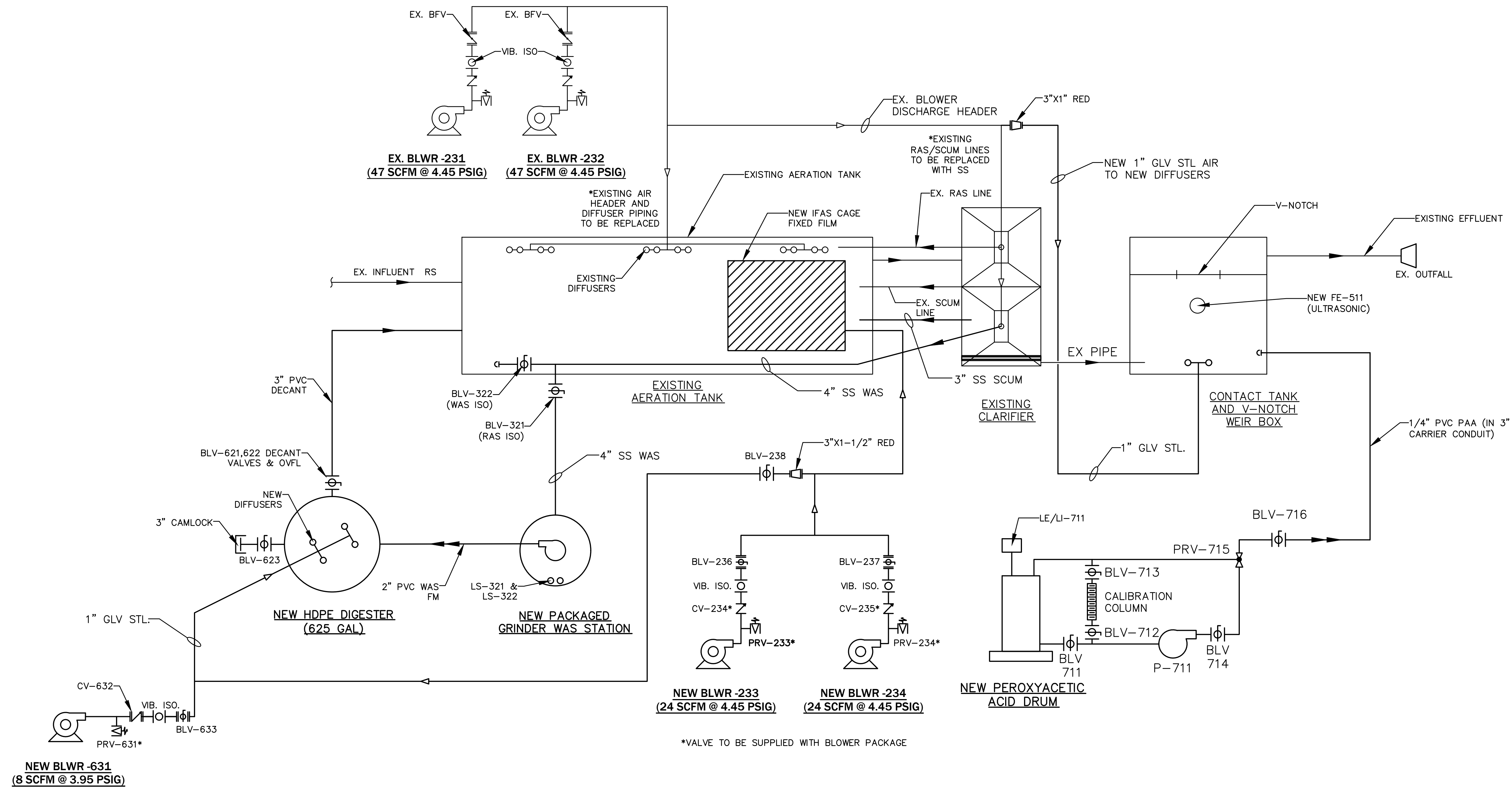
AVERAGE PUMPING RATE REQUIRED: 0.005 GPH
 MAXIMUM PUMPING RATE REQUIRED (AT Q = 39,200 GPD): 0.054 GPH
 PUMP TYPE: DIAPHRAGM METERING PUMP
 NO. OF PUMPS (1 OPERATING, 1 SHELF STANDBY)
 PROPOSED PUMP MINIMUM RATE: 0.002 GPH
 PROPOSED PUMP MAXIMUM RATE: 0.21 GPH
 PROPOSED MAXIMUM DISCHARGE PRESSURE: 50 PSIG

PAA STORAGE

STORE W/55 GAL: 438.5 DAYS
 ESTIMATED (ASSUMES 2 PPM AS PAA OR 12.8 PPM AS PROXITANE IS REQUIRED DOSAGE).
 SECONDARY CONTAINMENT VOLUME: 132 GAL.

EFFLUENT PARAMETERS

BOD: 30 MG/L
 TSS: 30 MG/L
 NH₃-N: 20 MG/L
 E-COLI: 130 MPN/ML
 TOTAL RESIDUAL CHLORINE: 0.011 MG/L
 MIN. DISSOLVED OXYGEN: 2.0 MG/L



*VALVE TO BE SUPPLIED WITH BLOWER PACKAGE

NEW BLWR-631
 (8 SCFM @ 3.95 PSIG)



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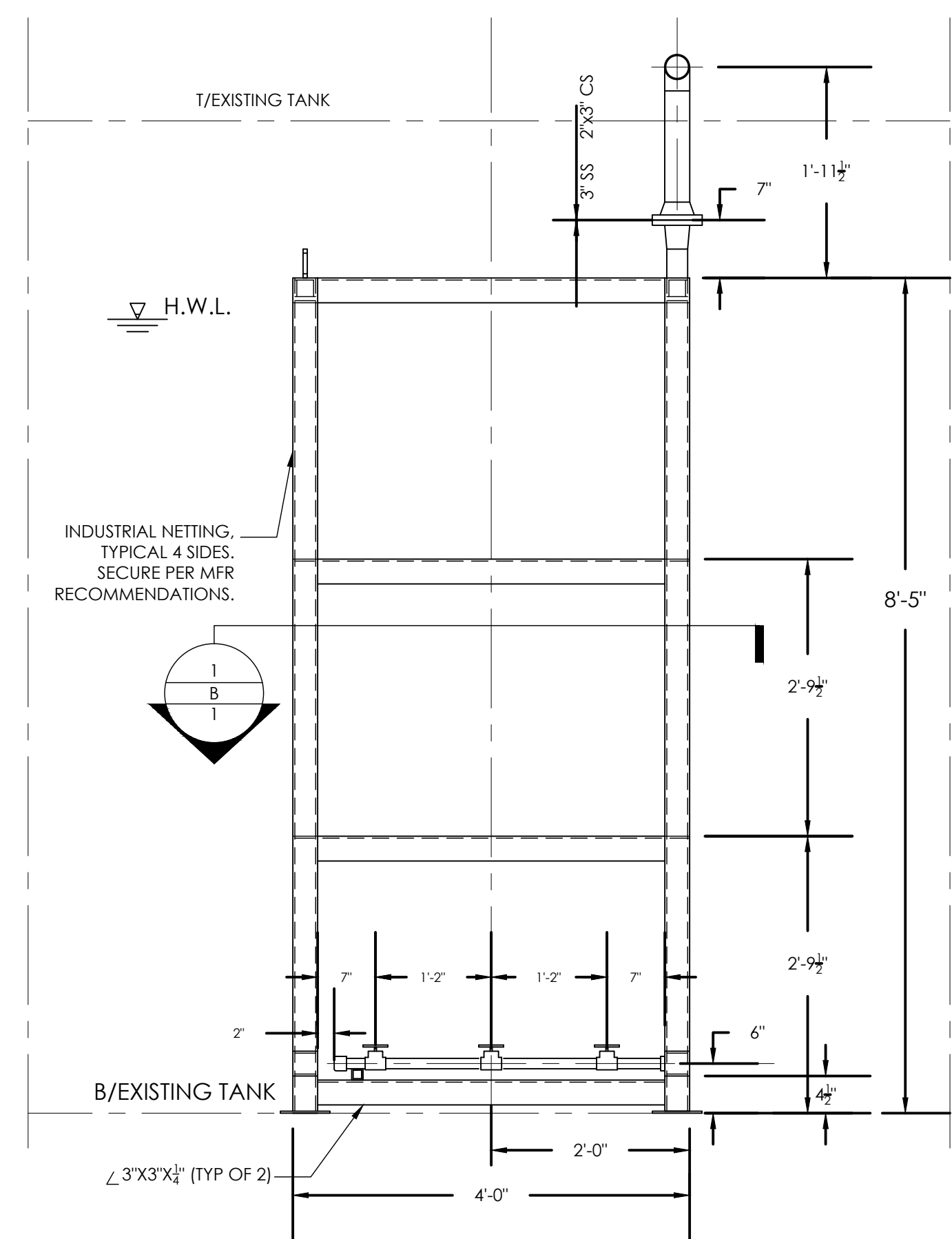
PROCESS FLOW DIAGRAM
 HERRINGTON HAVEN WHITE IMPROVEMENTS
 HERRINGTON HAVEN ROAD
 GARRARD, KENTUCKY

ENGINEERING CERTIFICATE OF AUTHORITY NO. 4804
 ENGINEERING LICENSE: BENJAMIN J. KUENZEL, PE33718

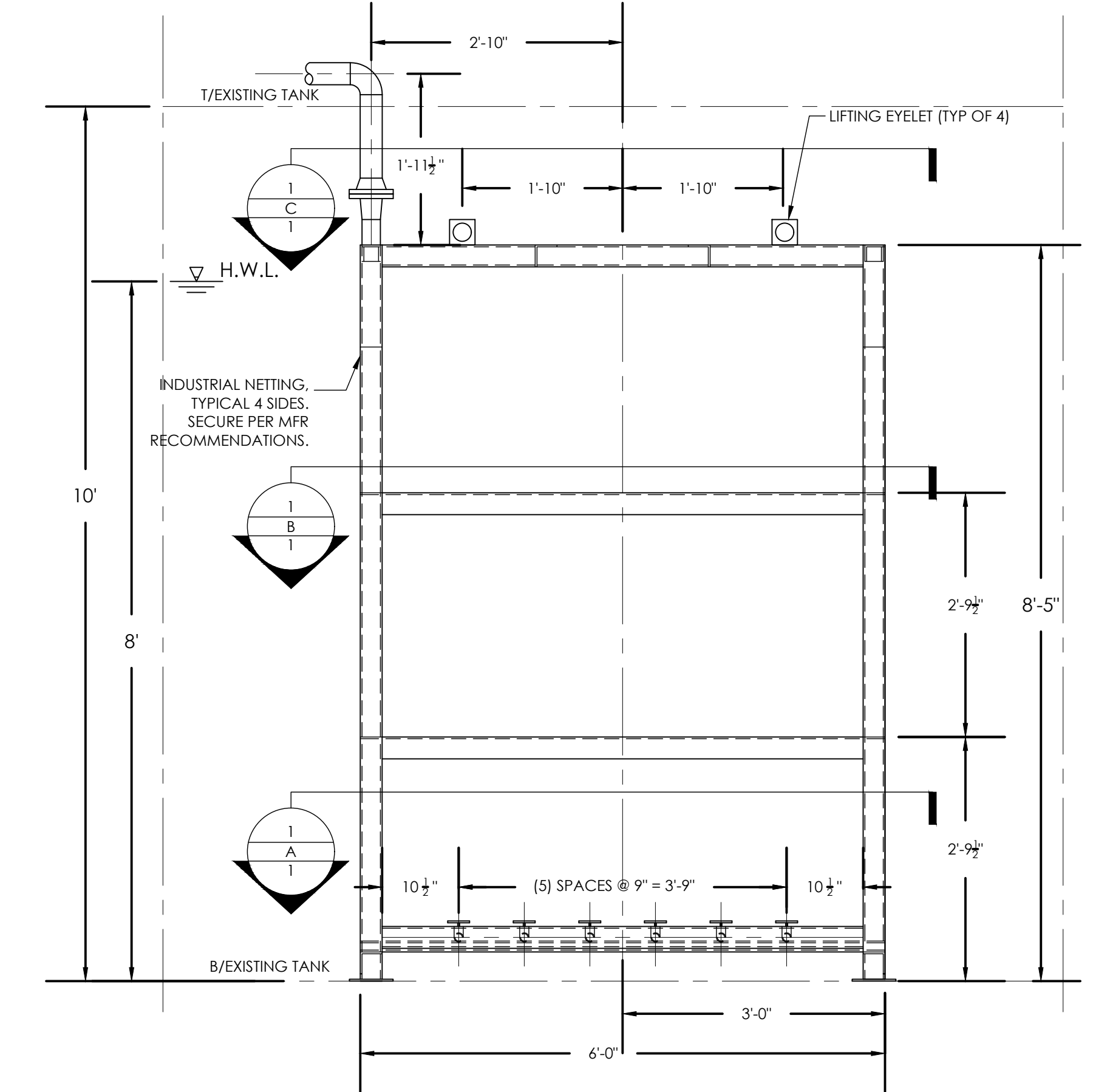


SEAL DATE: 2/15/2022
 DRAWN BY: KAR
 PROJ NUMBER: 0542-9
 DATE: 2/15/2022
 DRAWING NO: P1

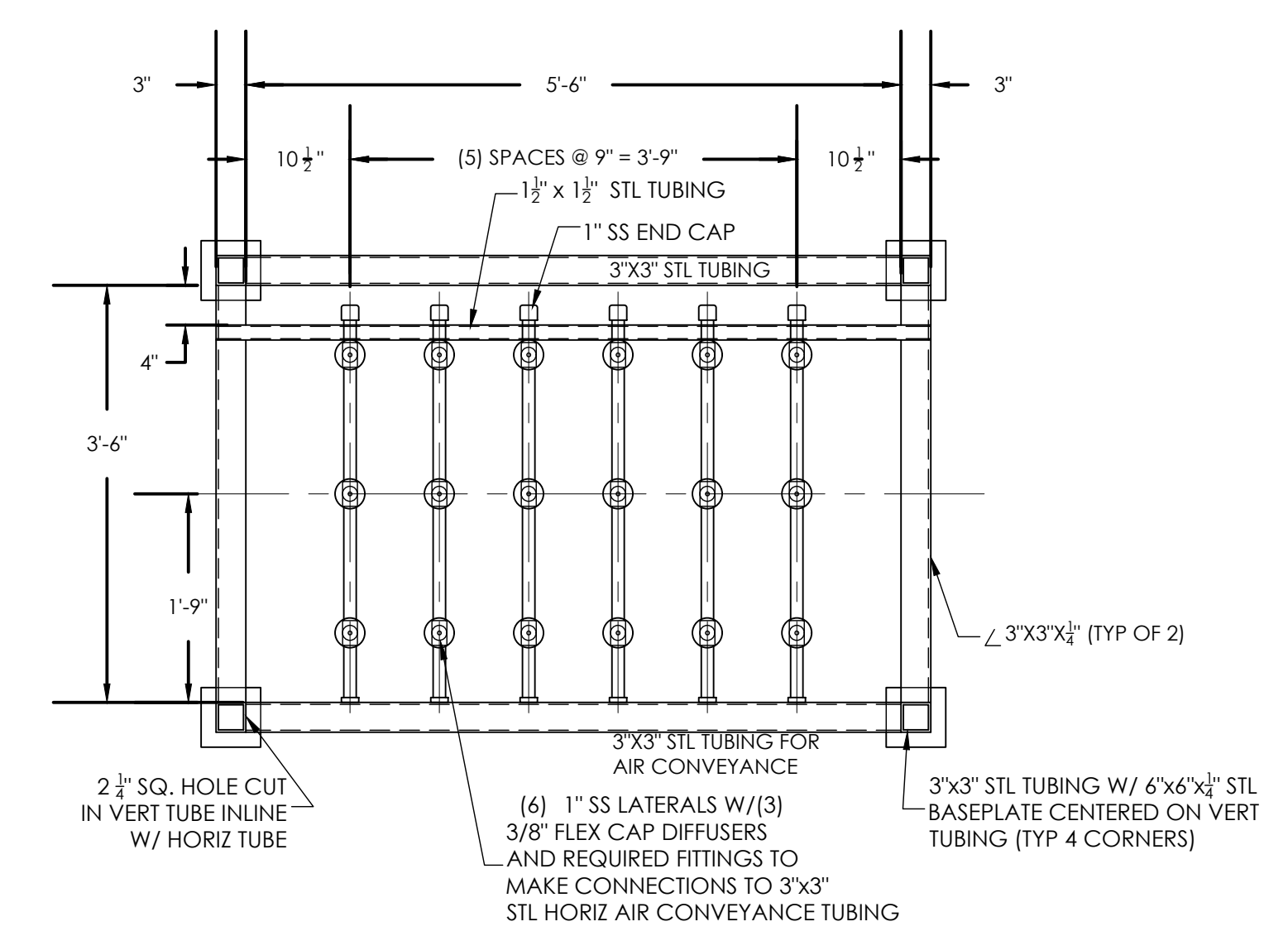
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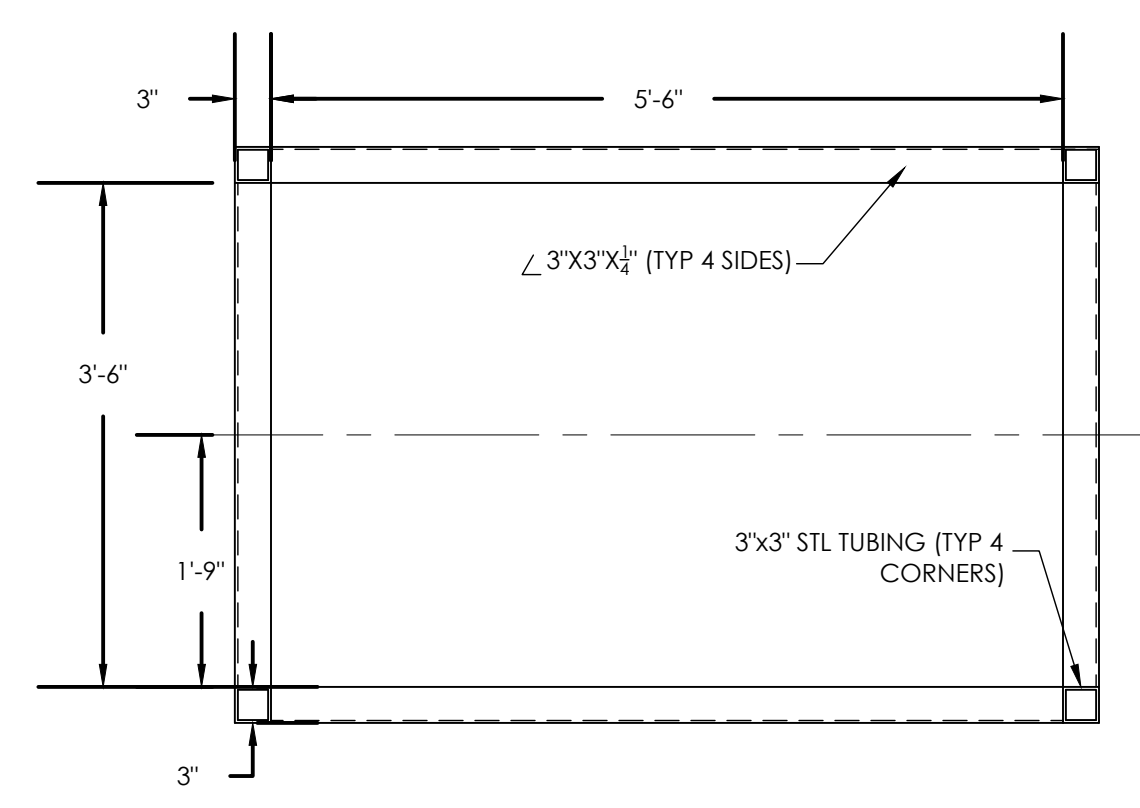
IFAS CAGE NO. 1
FRONT ELEVATION - AIR HDR SIDE
SCALE: 3/4" = 1'-0"



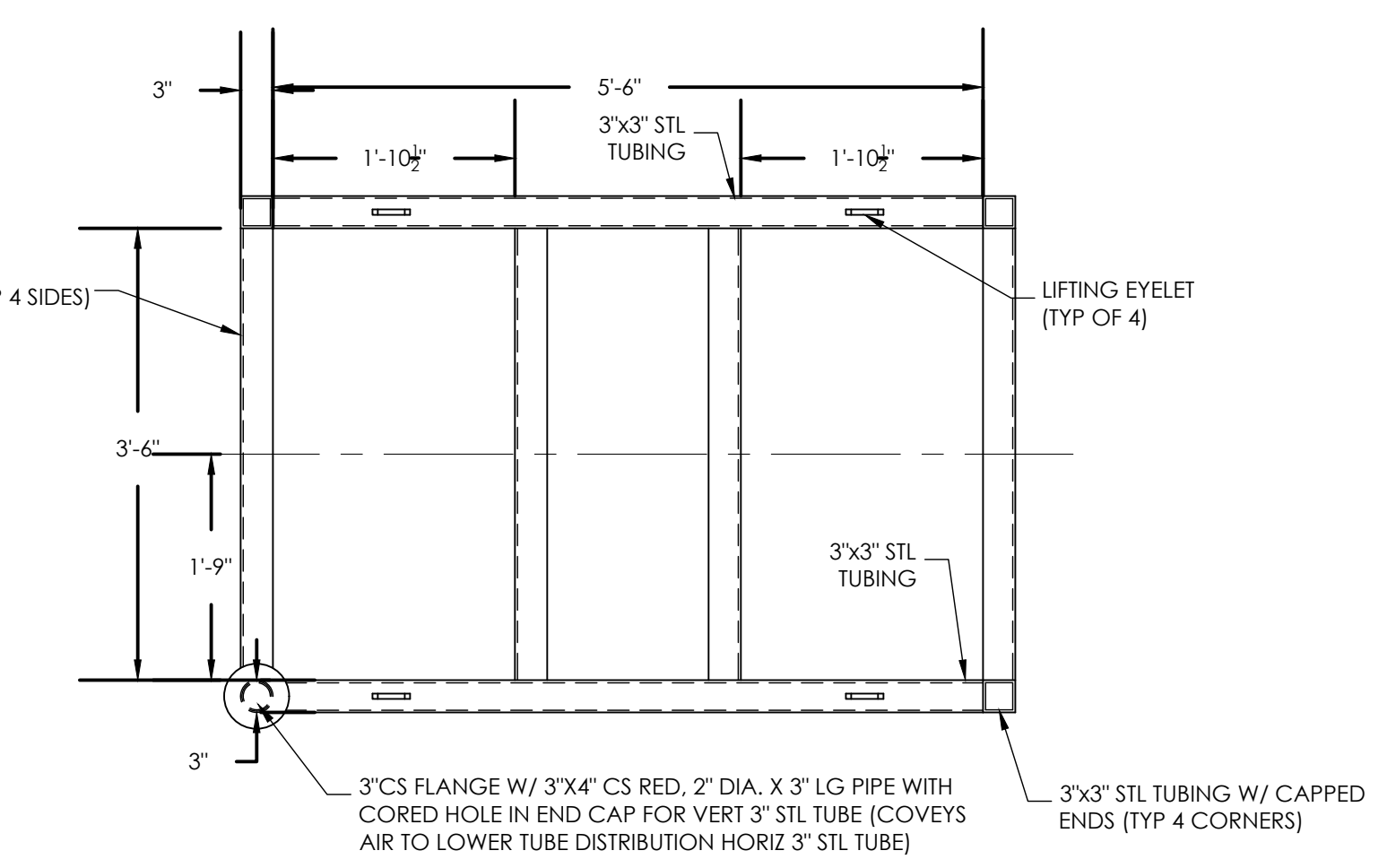
IFAS CAGE NO. 1
SIDE ELEVATION
SCALE: 3/4" = 1'-0"



IFAS CAGE NO. 1
LOWER PLAN
SCALE: 3/4" = 1'-0"



IFAS CAGE NO. 1
MIDDLE PLAN
SCALE: 3/4" = 1'-0"



IFAS CAGE NO. 1
UPPER PLAN
SCALE: 3/4" = 1'-0"

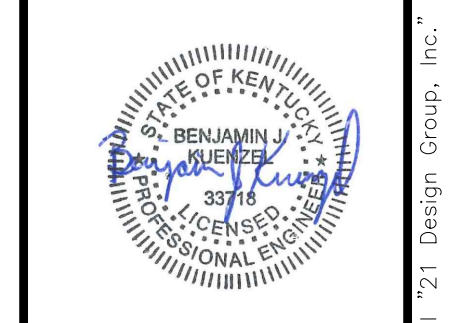
- NOTE:
1. ALL WELDS ON 3"x3" TUBING TO BE AIR/WATER TIGHT.
 2. INSULATION GASKET TO BE USED BETWEEN 3" CS FLANGE AND 3" SS WELD NECK FLANGE ON AIR SUPPLY LINE CONNECTION.
 3. INDUSTRIAL NETTING TO BE INSTALLED ON ALL 4 SIDES OF DIFFUSER CAGE(S) AND BE SECURED TO STEEL FRAME PER NETTING MFR RECOMMENDATIONS.
 4. ALL WELDING ON IMBR DIFFUSER CAGE(S) IS TO BE PER BEST PRACTICES, APPLICABLE CODES AND AS REQUIRED FOR THE MATERIAL AND MATERIAL THICKNESS USED.

REV	DATE	DESCRIPTION
1	2/15/2022	PERMIT SET

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IFAS DIFFUSER CAGE WELDMENT AND SECTIONS
 HERRINGTON HAVEN WHITE IMPROVEMENTS
 HERRINGTON HAVEN DRIVE
 GARRARD, KENTUCKY

ENGINEERING CERTIFICATE OF AUTHORITY NO. 4804
 ENGINEERING LICENSE: BENJAMIN J. KUENZEL, PE33718



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DRAWN BY	KAR
PROJ NUMBER	0542-19
DATE	2/15/2022

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