BAR IS ONE INCH ON OFFICIAL DRAWINGS. 0 1" IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.

TIMBERLAND WWTF
IN
MCCRACKEN COUNTY, KENTUCKY

PERMIT ISSUE: _____, 2020
CONSTRUCTION ISSUE: _____, 2020
RECORD ISSUE: _____, 2020

VICINITY MAP

DRAWING LIST

21 DESIGN GROUP INC.
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Washington, MO 63090
mail@21designgroup.net
P: 636-432-5029

Digitally signed by Digitally Signed by Benjamin J Kuenzel
DN: C=US, E=ben@21designgroup.net, O="21 Design Group, Inc.", OU=Benjamin J Kuenzel, CN=Digitally Signed by Benjamin J Kuenzel
Reason: I am the author of this document
Date: 2021.01.27 10:01:31-06'00'

BY	BJK
DATE	1/27/2021
REVISION	PERMIT SET
#	A

21 DESIGN GROUP INC.
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Washington, MO 63090
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COVER SHEET

TIMBERLAND WWTF
TIMBERLAND DRIVE
PADUCAH, KY

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

STATE OF KENTUCKY
BENJAMIN J. KUENZEL
33718
LICENSED PROFESSIONAL ENGINEER

SEAL DATE:	1/27/2021
DRAWN BY:	BJK
PROJ NUMBER:	542-19
DATE:	12/23/2020
DRAWING NO:	C01

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. 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 Polypropolene (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 polyethlyene 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 confirm 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.".

#	DATE	REVISION	BY
A	1/27/2021	PERMIT SET	BJK

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GENERAL NOTES

TIMBERLAND WWTF
TIMBERLAND DRIVE
PADUCAH, KY

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

STATE OF KENTUCKY
BENJAMIN J. KUENZEL
33718
LICENSED PROFESSIONAL ENGINEER

SEAL DATE:	1/27/2021
DRAWN BY:	BJK
PROJ NUMBER:	542-19
DATE:	12/23/2020
DRAWING NO:	C02

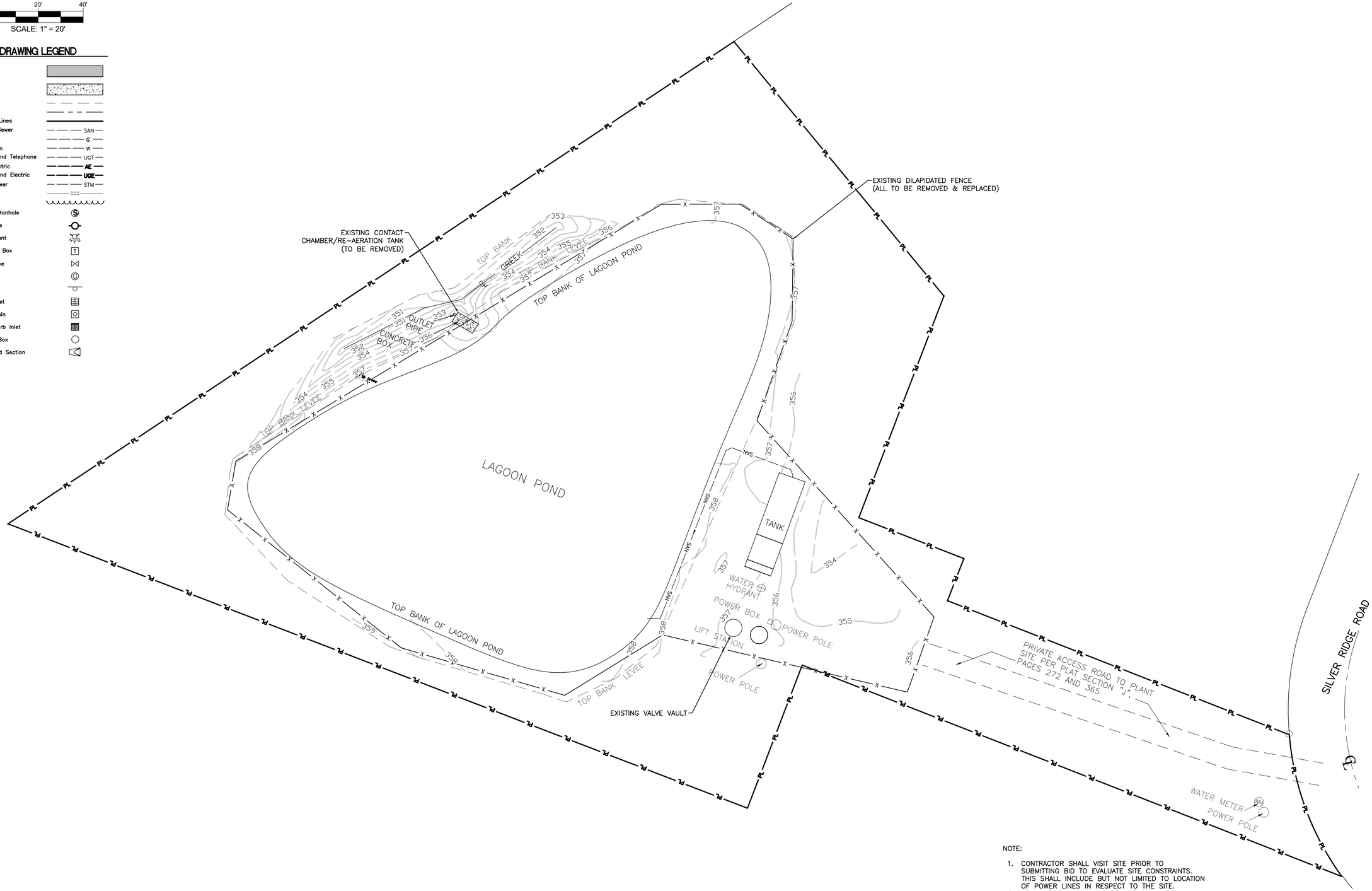
BAR IS ONE INCH ON OFFICIAL DRAWINGS. 0 1" IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.

0 20' 40'

SCALE: 1" = 20'

DRAWING LEGEND

- Asphalt
- Concrete
- Easement
- Setbacks
- Property Lines
- Sanitary Sewer — SAN —
- Gas Main — G —
- Water Main — W —
- Underground Telephone — UGT —
- Aerial Electric — AE —
- Underground Electric — UGE —
- Storm Sewer — STM —
- Contours
- Tree Line
- Sanitary Manhole
- Utility Pole
- Fire 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.

#	DATE	REVISION	BY
A	1/27/2021	PERMIT SET	BJK

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EXISTING CONDITIONS / DEMOLITION PLAN

TIMBERLAND WWTF
TIMBERLAND DRIVE
PADUCAH, KY

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

STATE OF KENTUCKY
BENJAMIN J. KUENZEL
33718
LICENSED PROFESSIONAL ENGINEER

SEAL DATE:	1/27/2021
DRAWN BY:	BJK
PROJ NUMBER:	542-19
DATE:	12/23/2020
DRAWING NO:	C03

BAR IS ONE INCH ON OFFICIAL DRAWINGS. 0 1" IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.

0 10' 20'

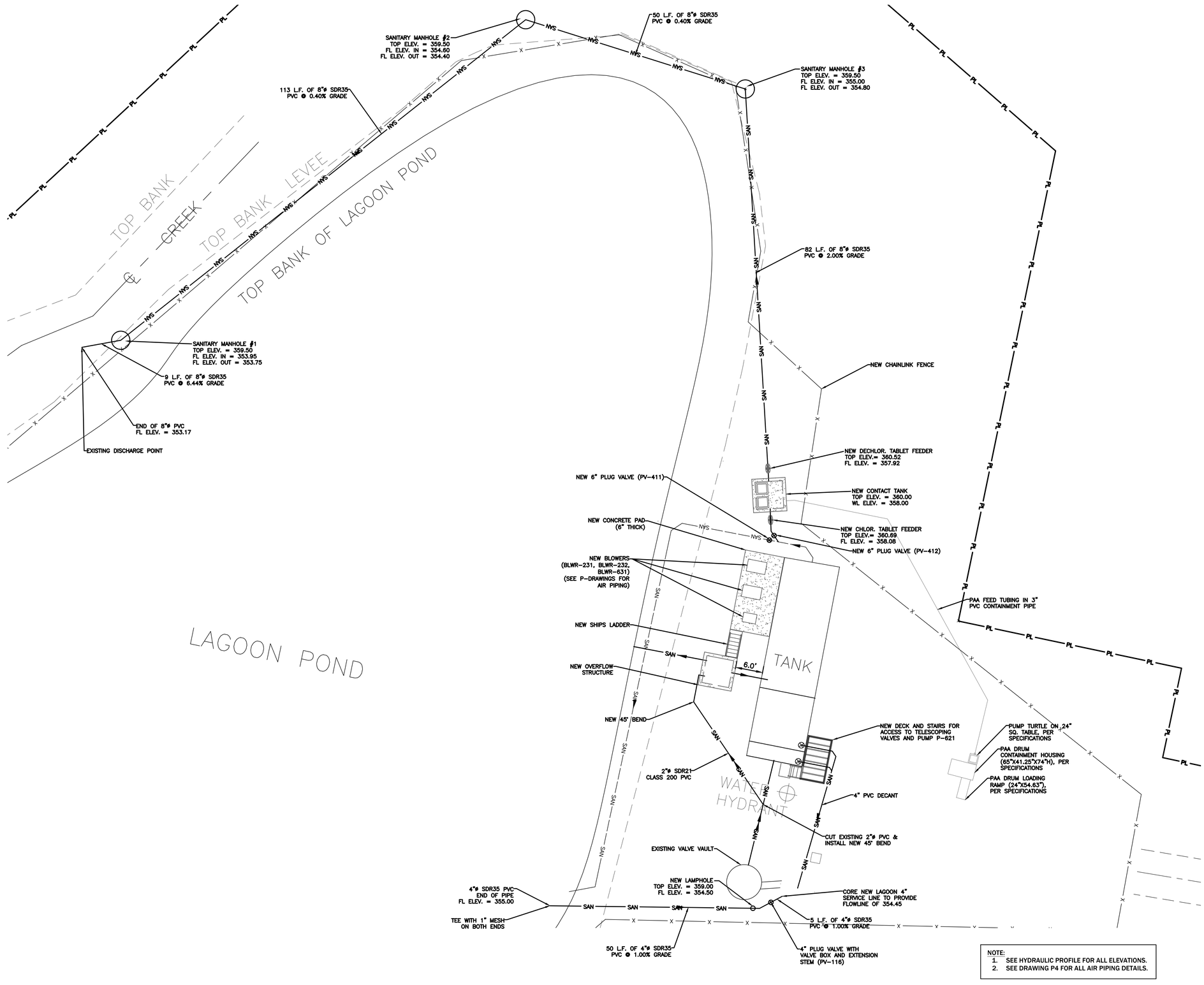
SCALE: 1" = 10'

DRAWING LEGEND

DESCRIPTION	EXISTING	PROPOSED
Easement		
Setbacks		
Property Lines		
Aerial Electric	AE	AE
Tree Line		
Sanitary Manhole	S	S
Utility Pole		
Fire Hydrant		
Telephone Box	T	T
Water Valve		
Gas Valve	G	G
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



NOTE:
1. SEE HYDRAULIC PROFILE FOR ALL ELEVATIONS.
2. SEE DRAWING P4 FOR ALL AIR PIPING DETAILS.

#	DATE	REVISION	BY
A	1/27/2021	PERMIT SET	BJK

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SITE/UTILITY PLAN

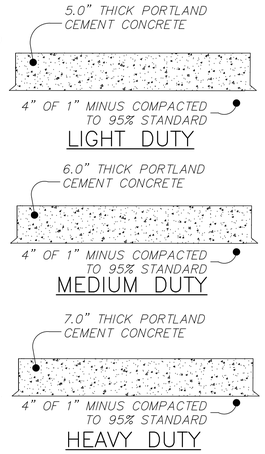
TIMBERLAND WWTF
TIMBERLAND DRIVE
PADUCAH, KY

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

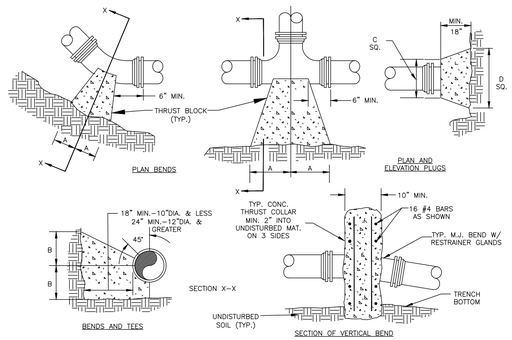
SEAL DATE:	1/27/2021
DRAWN BY:	BJK
PROJ NUMBER:	542-19
DATE:	12/23/2020
DRAWING NO:	C04

BAR IS ONE INCH ON OFFICIAL DRAWINGS. 0 1" IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.

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

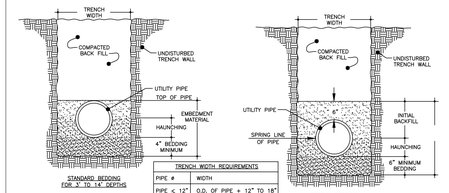


NOTES:
1. FOR VERT. BEND DOWN IN EXCESS OF 11 1/4° BEND, ANCHORAGE SHALL BE DESIGNED BY ENGINEER.
2. FOR VERT. BEND UPWARD, BLOCKING TO BE SIMILAR TO THAT FOR HORIZ. BEND.
3. GLANDS & BOLTS SHALL BE PROTECTED FROM CONC. BY PLASTIC SHEETING WHEN POURING THRUST BLOCKS.
4. ALL THRUST BLOCK & SUPPORT CONC. SHALL BE 3000 PSI READY MIX CONC.
5. THRUST BLOCKS WITH "B" DIMENSION GREATER THAN 30" SHALL HAVE THE RESTRAINED PIPE INSTALLED WITH A MINIMUM OF 4" OF COVER.

PRESSURE = 200 psi
BEARING = 2000 psf
FACTOR OF SAFETY = 1.5

PIPE SIZE	90° BEND		45° BEND		22 1/2° BEND		11 1/4° BEND		TEE		PLUG	
	A	B	A	B	A	B	A	B	A	B	C	D
4"	8"	12"	8"	8"	6"	6"	6"	6"	11"	9"	10"	6"
6"	18"	12"	8"	10"	8"	8"	8"	8"	11"	10"	12"	18"
8"	18"	13"	10"	10"	8"	8"	8"	8"	11"	12"	12"	24"
10"	20"	16"	12"	14"	8"	12"	8"	12"	14"	16"	16"	30"
12"	20"	16"	12"	14"	8"	12"	8"	12"	14"	16"	16"	30"
16"	26"	20"	16"	18"	11"	13"	11"	13"	18"	20"	20"	36"
24"	82"	42"	62"	30"	44"	22"	22"	16"	82"	42"	82"	42"
30"	185"	42"	100"	42"	52"	42"	40"	30"	185"	42"	185"	42"

THRUST BLOCK CONSTRUCTION
Not To Scale



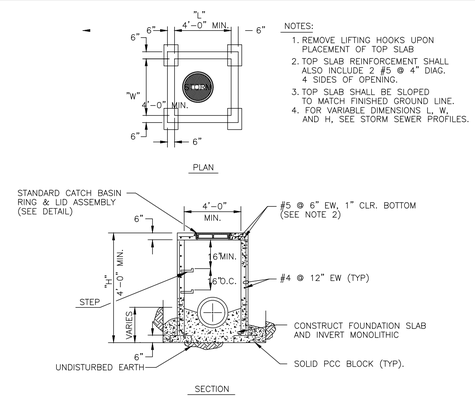
TRENCH WIDTH REQUIREMENTS	
PIPE #	WIDTH
PIPE ≤ 12"	O.D. OF PIPE + 12" TO 18"
PIPE > 12"	O.D. OF PIPE + 18"

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. HAUNCING SHALL BE WORKED AROUND THE PIPE BY HAND TO ELIMINATE ALL VOIDS.

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

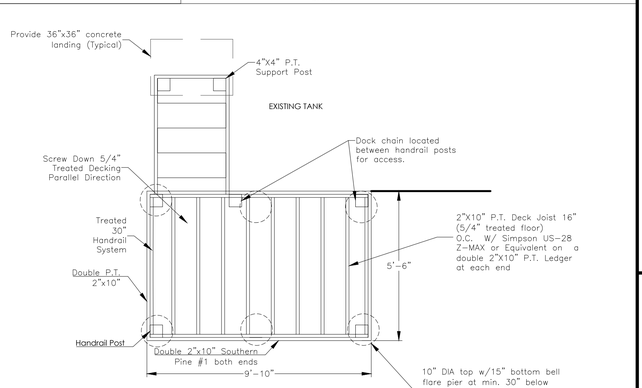
PIPE REQUIREMENTS				
UTILITY	0' TO 3'	3' TO 16'	16' TO 30'	> 30'
GAS	SEE UTILITY COMPANY			
WATER	DUCTILE	CLASS 200	DUCTILE	N/A
ELECTRIC	PVC	PVC	N/A	N/A
STORM	CONCRETE	HDPE	CONCRETE	CONCRETE
SANITARY	DUCTILE	CLASS 200	DUCTILE	N/A

UTILITY TRENCHING & BEDDING DETAIL
Not To Scale

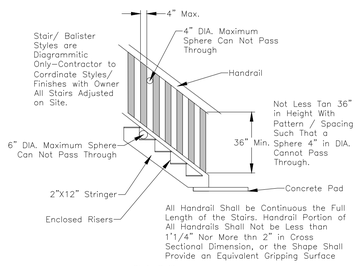


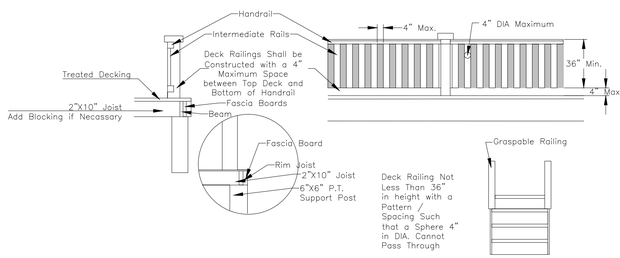
NOTES:
1. REMOVE LIFTING HOOKS UPON PLACEMENT OF TOP SLAB
2. TOP SLAB REINFORCEMENT SHALL ALSO INCLUDE 2 #5 @ 4" DIAG. 4 SIDES OF OPENING.
3. TOP SLAB SHALL BE SLOPED TO MATCH FINISHED GROUND LINE.
4. FOR VARIABLE DIMENSIONS L, W, AND H, SEE STORM SEWER PROFILES.

STORM MANHOLE DETAIL
Not To Scale



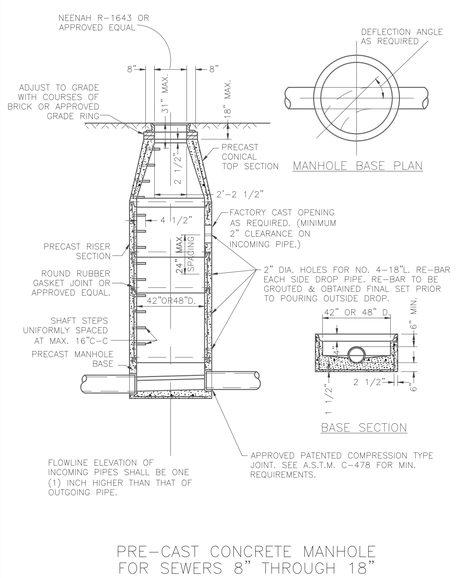
ACCESS DECK PLAN
Not To Scale



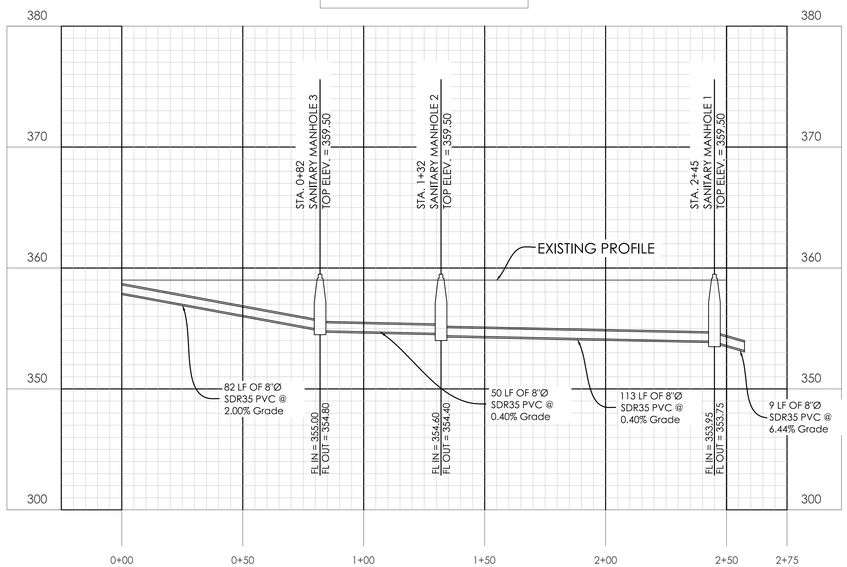


WOOD DECK AND STAIR DETAIL
(TVL-681,682 AND P-621 ACCESS PLATFORM)

Deck and Railing Detail
Handrail Support Post
Detail #1



PRE-CAST CONCRETE MANHOLE FOR SEWERS 8" THROUGH 18"
Not To Scale



EFFLUENT SANITARY SEWER PROFILE

BY	BJK																					
REVISION	PERMIT SET																					
DATE	1/27/2021																					
#	A																					

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Washington, MO 63090
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DETAIL SHEET

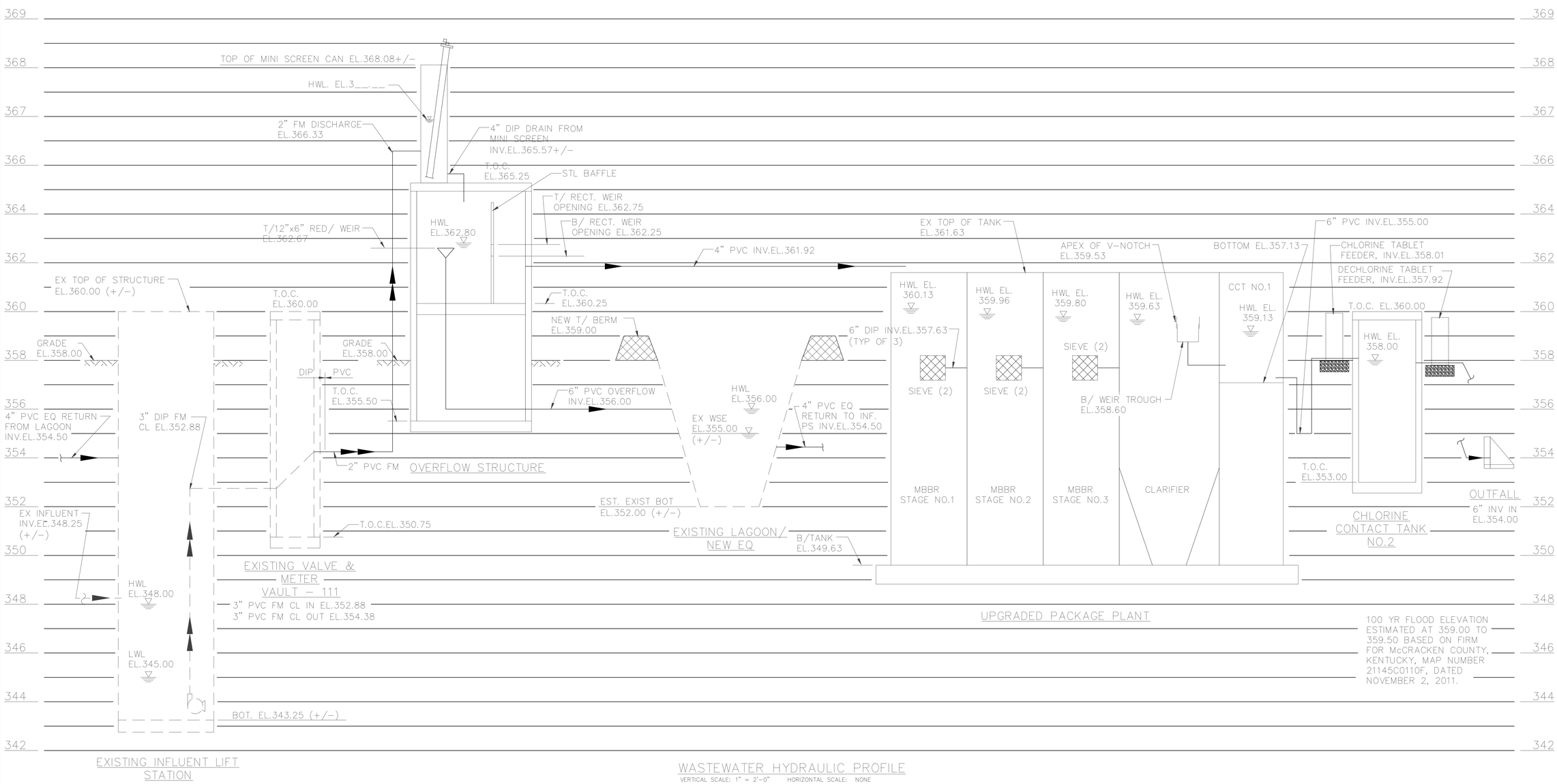
TIMBERLAND WWTF
TIMBERLAND DRIVE
PADUCAH, KY

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

COMMONWEALTH OF KENTUCKY
BENJAMIN J. KUENZEL
33718
LICENSED PROFESSIONAL ENGINEER

SEAL DATE:	1/27/2021
DRAWN BY:	BJK
PROJ NUMBER:	542-19
DATE:	12/23/2020
DRAWING NO:	C05

BAR IS ONE INCH ON OFFICIAL DRAWINGS. 0 1" IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.



WASTEWATER HYDRAULIC PROFILE

VERTICAL SCALE: 1" = 2'-0" HORIZONTAL SCALE: NONE

#	DATE	REVISION	BY
A	1/27/2020	PERMIT SET	B.K.

21 DESIGN GROUP INC.
1351 Jefferson, Suite 301
Washington, MO 63090
mail@21designgroup.net
P: 636-432-3029

HYDRAULIC PROFILE

TIMBERLAND WWTF
6500 US 60 WEST
PADUCAH, KY

ENGINEERING CERTIFICATE OF AUTHORITY NO. 4808
ENGINEERING LICENSE: BENJAMIN J. KUENZEL, PE33718

STATE OF KENTUCKY
BENJAMIN J. KUENZEL
33718
LICENSED PROFESSIONAL ENGINEER

SEAL DATE:	1/27/2021
DRAWN BY:	DDG
PROJ NUMBER:	0542j-19
DATE:	12/23/2020
DRAWING NO:	P1

BAR IS ONE INCH ON OFFICIAL DRAWINGS. 0 1" IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.

DESIGN CRITERIA:

RAW INFLUENT FLOW AND INFLUENT PUMP STATION
ADF Q= 25,000 GPD
PDF Q= 75,000 GPD
PHF Q= 100,000 GPD

MBBR INFLUENT FLOW (DOWNSTREAM EQUALIZATION)
25,000 GPD
50,000 GPD
50,000 GPD

EXISTING INFLUENT PUMP STATION
DIMENSIONS: 4' DIA x 3' OPERATING RANGE
P-111 – 69.4 GPM @ 17 FT TDH
P-112 – 69.4 GPM @ 17 FT TDH

OVERFLOW STRUCTURE
DIMENSIONS: 6'x6'x7'
MBBR INFLUENT RECTANGULAR WEIR 3" WIDE, INV. EL.362.75, TOP OF OPENING EL.363.25.
OVERFLOW WEIR (TO LAGOON) AT EL.363.17

MBBRS
DIMENSIONS: (3) EA OF 6'x11.25'x10.17' (AVG WATER DEPTH)
TOTAL VOLUME: 15,400 GAL.
HRT @ ADF: 14.8 HRS.
HRT @ PDF: 7.4 HRS
MEDIA FILL: 30%
TOTAL SURF AEREA: 8,745 M_2

AEROBIC DIGESTER NO.1
DIMENSIONS: 12'x11.25'x10.33' (HWL)
TOTAL VOLUME: 10,431 GAL.
VOL/ POP. EQ.: 6.6 CF/PE
EST. SRT.: 70 DAYS
SCFM: 42 SCFM (AT 30 SCFM/1,000 CF)

AEROBIC DIGESTER NO.2
DIMENSIONS: 3.25'x11.25'x10.17' (HWL)
TOTAL VOLUME: 2,825 GAL.
VOL/ POP. EQ.: 1.8 CF/PE
EST. SRT.: 41 DAYS
SCFM: 11 SCFM (AT 30 SCFM/ 1,000 CF)

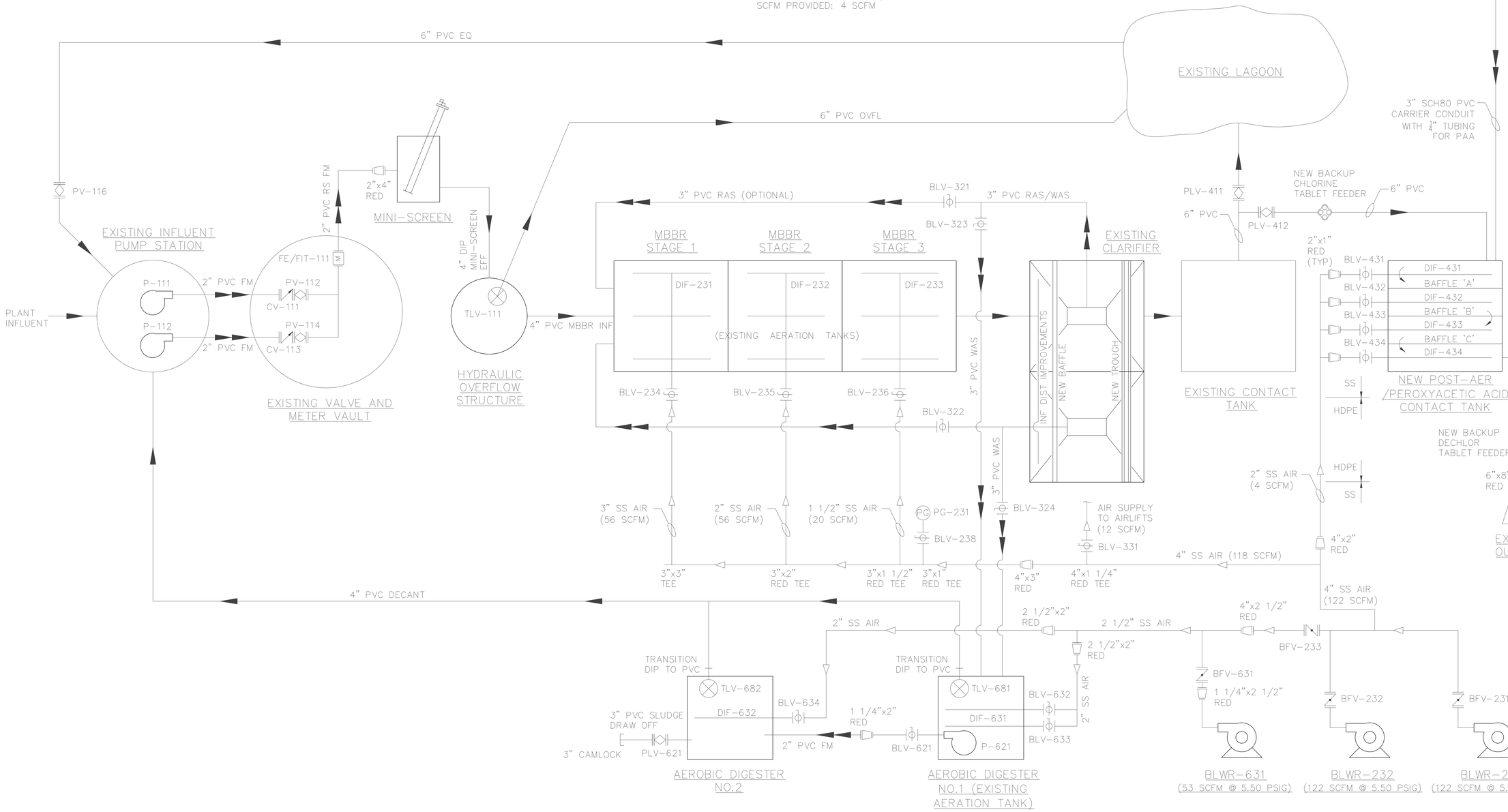
CLARIFIERS:
DIMENSIONS: (2) EA OF 5.5'x7.7'x10' WATER DEPTH
SURFACE AREA: 85 SQ SF
SOR @ PDF: 590 GPD/SF
SOR @ PHF: 590 GPD/SF
WEIR LENGTH: 22.3 FT.
WEIR OVERFLOW RATE: @ PHF: 2,239 GPD/FT.

EXISTING CONTACT TANK NO.1
DIMENSIONS: 3'x11.25'x3.17' (HWL)
TOTAL VOLUME: 800 GAL.
HRT: 23 MINUTES
CT NO.1 TO BE USED AS BACKUP.

NEW CONTACT TANK NO.2/ POST-AERATION
DIMENSIONS: 6'x6'x5' (HWL)
TOTAL VOLUME: 1,346 GAL.
HRT: 39 MINUTES
CT NO.2 USED FOR POST-AERATION/PEROXYACETIC ACID DISINFECTION
CHLORINE AND DECHLORINATION TABLET FEEDERS TO BE USED FOR BACKUP DISINFECTION ONLY
AIR FLOW RATE: 20 SCFM/1,000 CF
SCFM PROVIDED: 4 SCFM

PAA FEED PUMP
MINIMUM PUMPING CAPACITY FOR 5 PPM AS PAA (X.X GPD)
PUMP CAPACITY PROPOSED: 15.1 GPD
W/PERISTALTIC PUMP

PAA STORAGE
STORE W/55 GAL DRUM: ESTIMATED (ASSUMES 2 PPM AS PAA OR 12.8 PPM AS PROXITANE IS REQUIRED DOSAGE).



BY	REVISION	DATE
B.K.	PERMIT SET	1/27/2020
A		

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PROCESS FLOW DIAGRAM

TIMBERLAND WWTF
6500 US 60 WEST
PADUCAH, KY

ENGINEERING CERTIFICATE OF AUTHORITY NO. 4808
ENGINEERING LICENSE: BENJAMIN J. KUENZEL, PE33718

STATE OF KENTUCKY · BENJAMIN J. KUENZEL · 33718 · LICENSED PROFESSIONAL ENGINEER

SEAL DATE:	1/27/2021
DRAWN BY:	DDQ
PROJ NUMBER:	0542j-19
DATE:	12/23/2020
DRAWING NO:	P2

BAR IS ONE INCH ON OFFICIAL DRAWINGS. 0 1" IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.

FOUNDATION NOTES:

1. THE FOUNDATION DESIGN IS BASED ON THE GEOTECHNICAL REPORT. CONTRACTOR WILL BE FURNISHED WITH GEOTECHNICAL REPORT FOLLOWING WRITTEN REQUEST.
2. ALL SOIL SUPPORTED FOOTINGS SHALL BE FOUNDED UPON UNDISTURBED NATURAL SUBGRADE WITH A MINIMUM ALLOWABLE BEARING CAPACITY OF 3,000 PSF AS FIELD VERIFIED AND APPROVED BY THE CONTRACTOR'S SOIL TESTING LABORATORY. FINAL, EXACT ELEVATIONS AND SOIL BEARING CAPACITIES SHALL E FIELD DETERMINED AND VERIFIED BY THE CONTRACTOR'S SOIL TESTING LABORATORY AND REVIEWED BY THE ENGINEER DURING CONSTRUCTION.
3. SHOULD UNACCEPTABLE SOIL BE FOUND AT THE BEARING ELEVATION, THE SOIL SHOULD BE REMOVED TO A LEVEL OF ACCEPTABLE MATERIAL. THE OVER EXCAVATION WIDTH SHALL EXTEND LATERALLY AT LEAST 12" BEYOND THE FOUNDATION EDGE FOR EACH 12" OF OVER EXCAVATION DEPTH. THE OVER EXCAVATION SHALL BE BACKFILLED WITH COMPACTED GRANULAR FILL AND TESTED BY THE CONTRACTOR'S TESTING AGENCY.
4. SOIL SUBGRADE FOR ALL FOOTINGS AND SLABS SHALL BE INSPECTED AND APPROVED BY THE CONTRACTOR'S SOIL TESTING LABORATORY PRIOR TO PLACING FOUNDATION CONCRETE OR CONCRETE MUD SUBS.
5. ALL FOOTING SUBGRADES AS REQUIRED AND ALL SLAB SUBGRADES INCLUDING PIT SLABS SHALL BE COMPACTED TO 95 PERCENT OF MAXIMUM DENSITY AT OPTIMUM MOISTURE CONTENT BASED ON LABORATORY DESIGNED ASTM D1557. ALL BACKFILL AROUND AND ABOVE ALL FOUNDATION ELEMENTS, FOOTINGS, SLABS AND PITS SHALL BE COMPACTED TO 90 PERCENT OF MAXIMUM DENSITY AT OPTIMUM MOISTURE CONTENT BASED ON LABORATORY DESIGNATION ASTM D1557.
6. ALL ORGANIC AND/OR OTHER UNSUITABLE MATERIALS SHALL BE REMOVED FROM SUBGRADE AND BACKFILL AREAS AND BACKFILLED WITH ACCEPTABLE GRANULAR FILL, COMPACTED TO 95 PERCENT O MAXIMUM DENSITY. FILL SHALL BE PLACED IN LIFTS NOT TO EXCEED 12 INCHES IN LOOSE THICKNESS.
7. DO NOT BACKFILL AGAINST BASEMENT WALLS UNTIL GROUND FLOOR AND LOWER LEVEL SLABS AVE BEEN PLACED AND THE CONCRETE HAS ATTAINED FULL DESIGN STRENGTH.
8. NO MUD SLABS, FOOTINGS OR SLABS SHALL BE PLACED INTO OR AGAINST SUBGRADE CONTAINING FREE WATER, FROST OR ICE. SHOULD WATER OR FROST ENTER A FOOTING EXCAVATION AFTER SUBGRADE APPROVAL THE SUBGRADE SHALL BE RE-INSPECTED BY THE CONTRACTOR'S SOIL TESTING LABORATORY AFTER REMOVAL OF WATER OR FROST.
9. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY MEASURES TO PREVENT ANY FROST OR ICE FROM PENETRATING ANY FOOTING OR SLAB SUBGRADE BEFORE AND AFTER PLACING OF CONCRETE AND UNTIL SUCH SUBGRADES ARE FULLY PROTECTED BY THE PERMANENT BUILDING STRUCTURE.
10. THE CONCRETE FOR EACH ISOLATED FOOTING SHALL BE PLACED IN ONE (1) CONTINUOUS PLACEMENT.
11. ALL SLAB AND FOOTING MUD SLABS SHALL BE THOROUGHLY CLEANED IMMEDIATELY PIOR TO THE FOUNDATION CONCRETE PLACEMENT.
12. ALL SLABS-ON-GRADE SHALL BE PLACED OVER A MINIMUM OF 6 INCH COMPACTED GRANULAR FILL MATERIAL OVER COMPACTED SOIL SUBGRADE.
13. THE ANTICIPATED GROUND WATER ELEVATION IS APPROXIMATELY 896.50. THE CONTRACTOR IS RESPONSIBLE FOR ALL DEWATERING. THE VERY LOOSE TO LOOSE GRANULAR SOILS SHOULD BE DENSIFIED AFTER DEWATERING, AS PER THE DIRECTIVE OF THE SOILS TESTING AGENCY.

CONCRETE NOTES:

1. ALL CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF ACI 318, ACI 301, AND ACI 350. THESE DOCUMENTS SHALL BE AVAILABLE IN THE FIELD OFFICE.
2. EXCEPT WHERE OTHERWISE INDICATED, CONCRETE TYPES AND MINIMUM 28-DAY COMPRESSIVE STRENGTHS SHALL BE 4000 PSI.
3. CEMENT SHALL CONFORM TO ASTM C150 TYPE 1. USE ONLY ONE BRAND OF CEMENT PER ALL EXPOSED TO VIEW CONCRETE. NO CALCIUM CHLORIDE SHALL BE USED IN ANY CONCRETE.
4. ALL CONCRETE SHALL BE AIR ENTRAINED (4 - 6%) WITH A WATER CEMENT RATIO OF 0.4 (MAX) AND MAY CONTAIN A SUPER PLAST AGENT.
5. REINFORCING BARS SHALL CONFORM TO ASTM A515, GRADE 60.
6. ALL CONCRETE REINFORCEMENT SHALL BE DETAILED, FABRICATED, LABELED, SUPPORTED AND SPACED IN FORMS AND SECURED IN ACCORDANCE WITH THE PROCEDURES AND REQUIREMENTS OUTLINED IN THE LATEST EDITION OF THE 'MANUAL OF STANDARD PRACTICE FROM DETAILING REINFORCED CONCRETE STRUCTURES', ACI 315. BAR SUPPORTS IN CONTACT WITH EXPOSED SURFACES SHALL BE PLASTIC TIPPED.
7. CHECKED SHOP DRAWINGS SHOWING REINFORCING DETAILS, INCLUDING STEEL SIZES, SPACING AND PLACEMENT SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO FABRICATION.
8. THE CONTRACTOR SHALL SUBMIT DETAILED DRAWINGS SHOWING THE LOCATIONS OF ALL CONSTRUCTION JOINTS, REVEALS, CURBS, SLAB DEPRESSIONS, SLEEVES, OPENINGS, ETC. ALONG WITH THE CONCRETE POUR SEQUENCE SCHEDULES. THE MAXIMUM DISTANCE BETWEEN JOINTS SHALL BE 40 FT.
9. ALL REINFORCING SPLICES SHALL CONFORM TO THE REQUIREMENTS OF ACI 318, LATEST EDITION, BUT IN NO CASE SHALL BE LESS THAN 36 BAR DIAMETERS, UNLESS NOTED OTHERWISE. ALL WELDED WIRE FABRIC SHALL BE LAPPED TWO (2) FULL MESH PANELS AND TIED SECURELY. WHERE REQUIRED, DOWELS SHALL MATCH SIZE AND NUMBER OF MAIN REINFORCING, UNLESS NOTED OTHERWISE. THE LOCATION OF SPLICES FOR HORIZ. BARS SHALL BE STAGGERED BY A MIN. OF 3 FT. WITHIN THE SECTION. SPLICES SHALL NOT LINE UP WITHING ANY 4 ADJACENT ROWS.
10. CONCRETE TESTING WILL BE PERFORMED BY THE CONTRACTOR'S TESTING LABORATORY IN ACCORDANCE WITH ACI 301 EXCEPT AS FOLLOWS: FOR COMPRESSIVE STRENGTH TEST, TAKE ONE SET OF THREE (3) SPECIMENS FOR FOR EACH 50 CUBIC YARDS OR FRACTION THEREOF OF EACH CONCRETE CLASS PLACED IN ANY ONE DAY. TEST ONE (1) SPECIMEN AT 7 DAYS, ONE (1) SPECIMIN AT 28 DAYS, AND KEEP ONE (1) IN RESERVE.
11. PROVIDE SHEAR KEY AND WATERSTOP AT ALL CONSTRUCTION & CONTRACTION JOINTS.
12. PROVIDE CONTROL/CONSTRUCTION JOINTS IN SLABS ON GRADE NO FURTHER THAN 15 FEET APART
13. FOLLOW ACI GUIDELINES FOR BOTH HOT & COLD WEATHER CONCRETING.

MISCELLANEOUS NOTES:

1. NO CHANGE IN SIZE OR DIMENSION OF STRUCTURAL MEMBERS SHALL BE MADE WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER.
2. REFER TO ARCHITECTURAL, MECHANICAL, PROCESSING OR MANUFACT. DRAWINGS FOR LOCATIONS AND DIMENSIONS OF OPENINGS. PROVIDE REINFORCING AROUND OPENINGS PER TYPICAL DETAILS.
3. THE CONTRACTOR IS RESPONSIBLE FOR LIMITING THE AMOUNT OF CONSTRUCTION LOAD IMPOSED UPON STRUCTURAL FRAMING. CONSTRUCTION LOADS SHALL NOT EXCEED THE CAPACITY OF THE FRAMING AT THE TIME THE LOADS ARE IMPOSED. BACKFILLING SHALL NOT BE ALLOWED UNTIL WALLS REACH DESIGN STRENGTH.
4. BACKFILL SHALL NOT BE PLACED AGAINST WALLS UNTIL FLOOR SLABS ARE INSTALLED AND HAVE REACHED 75% STRENGTH (MIN.).
5. THE STRUCTURE IS DESIGNED TO FUNCTION AS A UNIT UPON COMPLETION. THE CONTRACTOR SHALL FURNISH ALL TEMPORARY BRACING AND/OR SUPPORTS REQUIRED AS THE RESULT OF THE CONTRACTOR'S CONSTRUCTION METHODS AND/OR SEQUENCES.
6. DO NOT SCALE THESE DRAWINGS, USE DIMENSIONS.
7. THE CONTRACTOR SHALL INFORM THE ENGINEER IN WRITING OF ANY DEVIATION FROM THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL NOT BE RELIEVED OF THE RESPONSIBILITY FOR SUCH DEVIATION BY THE ENGINEERS APPROVAL OF SHOP DRAWINGS, PRODUCT DATA, ETC. UNLESS THE CONTRACTOR HAS SPECIFICALLY INFORMED THE ENGINEER OF SUCH DEVIATION AT THE TIME OF SUBMISSION, AND THE ENGINEER HAS GIVEN WRITTEN APPROVAL TO THE SPECIFIC DEVIATION.
8. ALL THINGS WHICH, IN THE OPINION OF THE CONTRACTOR, APPEAR TO BE DEFICIENCIES, OMISSIONS, CONTRADICTIONS AND AMBIGUITIES IN THE PLANS AND SPECIFICATIONS, SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER. PLANS AND/OR SPECIFICATIONS WILL BE CORRECTED, OR A WRITTEN INTERPRETATION OF THE ALLEGED DEFICIENCY, OMISSION, CONTRADICTION OR AMBIGUITY WILL BE MADE BY THE ENGINEER BEFORE THE AFFECTED WORK PROCEEDS.
9. THESE DRAWINGS AND GENERAL NOTES ARE TO BE USED IN CONJUNCTION WITH WRITTEN SPECIFICATIONS PROVIDED. SEE SPECIFICATIONS FOR FURTHER REQUIREMENTS.
10. REMOVE ALL LOOSE AND UNSTABLE MATERIAL BELOW STRUCTURES. ALL AREAS TO BE REVIEWED BY OWNERS TESTING AGENCY PRIOR TO COMMENCEMENT OF WORK. PROVIDE A MINIMUM OF 12" COMPACTED GRANULAR FILL BELOW ALL STRUCTURES.
11. PROVIDE GUARDRAILS AT ALL PITS, WALKWAYS AND SLAB EDGES SEE C & P DRAWINGS FOR FURTHER INFORMATION.
12. PROVIDE HYDROPHILIC RUBBER WATERSTOP AT ALL NEW TO EXISTING CONDITIONS.
13. ALL FILL SHALL BE PLACED IN APPROPRIATE LIFTS AND COMPACTED PER GEOTECHNICAL REPORT IN ORDER TO OBTAIN A BEARING CAPACITY OF 300 PSF. ALL FILL SHALL BE TESTED BY THE CONTRACTOR'S TESTING AGENCY.

PRECAST NOTES:

1. THE PRECAST MANUFACTURER SHALL BE RESPONSIBLE FOR THE DESIGN OF ALL PRECAST CONCRETE ELEMENTS AND CONNECTIONS. THIS DESIGN SHALL MEET THE LOAD AND MATERIAL CRITERIA PRESENTED IN THE PLANS AND SPECIFICATIONS. DETAILS SHOWN ARE SCHEMATIC ONLY. FINAL DESIGN OF ELEMENTS AND CONNECTIONS SHALL BE MADE BY THE PRECAST MANUFACTURER. IN ADDITION, THE DESIGN SHALL BE PERFORMED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF KENTUCKY. SIGNED & SEALED DRAWINGS AND CALCULATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.
2. THE PRECAST ERECTOR SHALL BE RESPONSIBLE TO ADEQUATELY BRACE THE STRUCTURE DURING CONSTRUCTION.
3. THE PRECAST ERECTOR SHALL BE RESPONSIBLE FOR THE PROPER HANDLING OF PRECAST ELEMENTS SO THAT THESE MEMBERS ARE NOT DAMAGED DUE TO HANDLING, BRACING, ALIGNING OR OTHER FORCES.
4. MINIMUM CONCRETE REQUIREMENTS:

MIN 28 DAY COMPRESSIVE STRENGTH:	5,000 PSI
ENTRAINED AIR:	6 ± 1%
W/C (MAX)	0.40

5. PRECAST SUPPLIER SHALL PROVIDE ADDITIONAL REINFORCING AROUND EMBEDDED CONNECTION ITEMS TO SUPPORT ANY VERTICAL OR HORIZONTAL LOADINGS WHICH MAY DEVELOP INCLUDING THOSE FROM ERECTION.
6. PRECAST SHOP DRAWINGS SHALL BE REVIEWED AND APPROVED BY ELECTRICAL, HEATING AND PLUMBING SUBCONTRACTORS TO COORDINATE LOCATION OF SUPPORT INSERTS, BLOCKOUTS, CONDUITS, ETC.
7. ALL INSERTS IN PRECAST ELEMENTS SHALL BE PROVIDED BY PRECAST SUPPLIER.
8. PRECAST BEAMS SUPPORTING MASONRY SHALL HAVE A DEFLECTION LIMITATION OF L/600 AND 0.3 INCHES FOR LIVE LOAD PLUS SUPERIMPOSED DEADLOAD.
9. PROVIDE 1 LAYER WIRE MESH IN CONCRETE TOPPING.
10. PRECAST CONCRETE CEILINGS SHALL BE AIR TIGHT AT LOCATIONS NOTED.

STRUCTURAL STEEL NOTES:

1. ALL STRUCTURAL STEEL PLATES, SHAPES AND BARS SHALL CONFORM TO ASTM A572 GR 50, UNLESS NOTED OTHERWISE. COLD FORMED TUBING SHALL CONFORM TO ASTM A500 GRADE B. PIPES SHALL CONFORM TO ASTM A53 TYPE E OR S. ANCHOR BOLTS SHALL CONFORM TO ASTM A307 OR ASTM A36.
2. ALL BOLTS (OTHER THAN ANCHOR BOLTS), NUTS AND WASHERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A325. BOLTS USED IN LATERAL LOAD RESISTING CONNECTIONS SHALL BE SLIP CRITICAL TYPE, DESIGNED FOR INDICATED FORCES WITHOUT STRESS INCREASES.
3. ALL WELDING SHALL BE DONE BY QUALIFIED WELDERS AND SHALL CONFORM TO AWS D1.1 'STRUCTURAL WELDING CODE', LATEST EDITION. ALL WELDING ELECTRODES SHALL BE E70XX.
4. ALL CONNECTIONS SHALL BE DESIGNED AND DETAILED BY THE FABRICATOR. THE CONNECTIONS SHALL BE DESIGNED BY, OR UNDER THE SUPERVISION OF, A LICENSED STRUCTURAL ENGINEER IN THE STATE OF KENTUCKY. DETAILING SHALL BE PERFORMED USING RATIONAL ENGINEERING DESIGN AND STANDARD PRACTICE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE GENERAL DETAILS SHOWN ON THE DRAWINGS ARE CONCEPTUAL ONLY AND DO NOT INDICATE THE REQUIRED NUMBER OF BOLTS OR WELD SIZES, UNLESS SPECIFICALLY NOTED. ADVISE THE ENGINEER IMMEDIATELY IF THE INFORMATION ON THE DRAWINGS IS NOT SUFFICIENT FOR COMPLETE DESIGN OF CONNECTIONS.
5. THE FABRICATOR / ERECTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW, ENGINEERED AND CHECKED DRAWINGS SHOWING SHOP FABRICATION DETAILS, FIELD ASSEMBLY DETAILS AND ERECTION DIAGRAMS FOR ALL STRUCTURAL STEEL. WITH EACH SUBMITTAL OF SHOP DRAWINGS, THE FABRICATOR'S ENGINEER SHALL CERTIFY THAT THE CONNECTIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AISC SPECIFICATIONS AND THE CONTRACT DOCUMENTS. CERTIFIED MILL TEST REPORTS SHALL ALSO BE SUBMITTED.
6. MINIMUM SHEAR CAPACITIES: CONNECTIONS SHALL BE DESIGNED FOR THE BEAM REACTIONS INDICATED. IN CASES WHERE REACTIONS ARE NOT INDICATED, PROVIDE AT LEAST ONE HALF OF THE UNIFORM LOAD CARRYING CAPACITY OF THE BEAM WITH THE ASSUMPTION OF FULLY BRACED COMPRESSION FLANGE.
7. THE DEPTH OF A SIMPLE SHEAR CONNECTION SHALL NOT BE LESS THAN ONE HALF OF THE NOMINAL DEPTH OF THE BEAM. THE MINIMUM NUMBER OF BOLTS PER CONNECTION SHALL BE TWO (2).
8. ALL BEAMS SHALL BE FABRICATED WITH THE NATURAL CAMBER UP. PROVIDE CAMBER, OR SHORING AS INDICATED ON THE DRAWINGS.
9. AFTER FABRICATION, ALL STEEL SHALL BE CLEANED OF ALL RUST, LOOSE MILL SCALE AND OTHER FOREIGN MATERIALS. STRUCTURAL STEEL SHALL BE HOT DIPPED GALVANIZED PER ASTM SPECIFICATIONS.
10. THERE SHALL BE NO FIELD CUTTING OF STRUCTURAL STEEL MEMBERS FOR THE WORK OF OTHER TRADES WITHOUT THE PRIOR APPROVAL OF THE ENGINEER..

DESIGN LOADS:

FLOOR LIVE LOADS - 150 PSF
WALKWAY - 100 PSF
ROOF LIVE LOAD - 30 PSF

ROOF SNOW LOADS -

P_g = 25 PSF

P_f = 18 PSF

C_e = 1.0

C_t = 1.0

I = 1.1

WIND DESIGN DATA -

BASIC WIND SPEED (3-SECOND GUST) = 90 MPH
ASCE 7-05
I_e = 1.15

EXPOSURE B
COMPONENTS & CLADDING = 25 PSF

EARTH QUAKE DESIGN DATA

OCCUPANCY CATEGORY = II
I_e = 1.25
S_S = 0.178 g

S_1 = 0.083 g

SITE CLASSIFICATION = D
S_{DS} = 0.204 g

S_{D1} = 0.133 g

SEISMIC DESIGN CATEGORY = C

ABBREVIATIONS:

A	ARCHITECTURAL	GAL	GALLON	PSI	POUNDS PER SQUARE INCH
ABBREV	ABBREVIATION	GALV	GALVANIZED	PT	POINT
ABDN	ABANDONED	GBT	GRAVITY BELT THICKENER	PV	PLUG VALVE
AC	TO BE ABANDONED, CAP OPEN END	GEN	GENERATOR	PVC	POLYVINYL CHLORIDE
ADF	AVERAGE DAILY FLOW	GLDIP	GLASS LINED DUCTILE IRON PIPE	PVMT	PAVEMENT
AE	ANALYZER ELEMENT	GND	GROUND	PVRV	PRESSURE VACUUM RELIEF VALVE
AFF	ABOVE FINISH FLOOR	GPM	GALLONS PER MINUTE	PW	POTABLE WATER
AGG	AGGREGATE	GPD	GALLONS PER DAY		
AIT	ANALYZER INDICATING TRANSMITTER	GRD	GRADE	R	RADIUS
AL	ALUMINUM, AIR LIFT	GRNDR	GRINDER	ROW	RIGHT-OF-WAY
ALUM	ALUMINUM SULFATE	GRTG	GRATING	RAS	RETURN ACTIVATED SLUDGE
ALT	ALTERNATE	GV	GATE VALVE	RCP	REINFORCED CONCRETE PIPE
APPROX	APPROXIMATE(LY)			RD	ROOF DRAIN
AR	AIR RELEASE	H	HIGH	RED	REDUCER; REDUCING
ARV	AIR RELEASE VALVE	HB	HOSE BIBB	REF	REFERENCE
ASPH	ASPHALT	HDG	HOT DIP GALVANIZED	REQD	REQUIRED
AVG	AVERAGE	HDPE	HIGH DENSITY POLYETHYLENE	REV	REVISION
		HDR	HEADER	RJ	RESTRAINED JOINT
B/	BOTTOM OF	HGT	HEIGHT	RLG	RAILING
BCV	BALL CHECK VALVE	HH	HANDHOLE	RM	ROOM
BF	BLIND FLANGE	HORIZ	HORIZONTAL	RND	ROUND
BFP	BELT FILTER PRESS	HP	HIGH POINT; HORSE POWER	RR	RAILROAD
BFV	BUTTERFLY VALVE	HR	HOUR	RS	RAW SEWAGE
BITUM	BITUMINOUS	HRT	HYDRAULIC RETENTION TIME	RSPS	RAW SEWAGE PUMP STATION
BLDG	BUILDING	HVAC	HEATING, VENTILATION & AIR CONDITIONING	RW	RAW WATER
BLV	BALL VALVE	HW	HOT WATER; HANDWHEEL	RWGV	RESILIENT WEDGE GATE VALVE
BLWR	BLOWER	HWL	HIGH WATER LEVEL		
BM	BENCHMARK				
BYP	BYPASS	ID	INSIDE DIAMETER	S	SOUTH; STAIRS; STRUCTURAL
BPV	BACK PRESSURE VALVE	IN	INCH	SAN	SANITARY
BW	BACKWASH	INF	INFLUENT	SC	SCUM; SCREW CONVEYOR
		INSTR	INSTRUMENT(ATION)	SCFM	STANDARD CUBIC FEET/ MINUTE
CB	CATCH BASIN; CURB BOX	INSUL	INSULATION	SCH	SCHEDULE
CC	CENTER TO CENTER	INV	INVERT	SCRN	SCREEN
CEB	CONCRETE EQUIPMENT BASE	IP	IRON PIPE	SEC	SECTION
CF	CUBIC FEET; COMPRESSION FITTING			SF	SQUARE FEET
CL2	CHLORINE	JT	JOINT	SFP	SLUDGE FEED PUMP
CL2G	CHLORINE (GAS)			SG	SLUICE GATE
CL2L	CHLORINE (LIQUID)	LAB	LABORATORY	SHT	SHEET
CL2S	CHLORINE (SOLUTION)	LAD	LADDER	SJ	SOLDERED JOINT; SWEATED JOINT
CL2V	CHLORINE VENT	LAT	LATERAL	SL	SLUDGE
CI	CAST IRON	LAV	LAVATORY	SLG	SLIDE GATE
CISP	CAST IRON SOIL PIPE	LB	POUND	SM	STATIC MIXER
CL, ℄	CENTER LINE	LBS	POUNDS.	SMH	SANITARY MANHOLE
CLR	CLEAR	LCP	LOCAL CONTROL PANEL	SN	SUPERNATANT
CMP	CORRUGATED METAL PIPE	LD	LEVEL TRANSDUCER	SOR	SURFACE OVERFLOW RATE
CMU	CONCRETE MASONRY UNIT	LE	LEVEL ELEMENT	SP	SPACE(D); SAMPLE PORT
CO	CLEANOUT	LF	LINEAR FEET	SPEC	SPECIFICATION, SPECIFIED
CONC	CONCRETE, CONCENTRIC	LG	LONG	SPL	SAMPLE; SAMPLE LINE
CPLG	COUPLING	LIT	LEVEL INDICATING TRANSMITTER	SQ	SQUARE
CPVC	CHLORINATED POLYVINYLCHLORIDE PIPE	LM	LEVEL TRANSMITTER	SR	SLUDGE RETURN
CSP	CORRUGATED STEEL PIPE	LP	LOW POINT	SS	STAINLESS STEEL
CT	CONTACT TANK (PAA)	LR	LONG RADIUS	SSK	SERVICE SINK
CTW	CLOSE TO WALL	LS	LUMP SUM, LEVEL SWITCH	ST	STORM
CU	COPPER; CUBIC	LSH	LEVEL SWITCH HIGH	STA	STATION
CUP	COPPER PIPE	LSL	LEVEL SWITCH LOW	STD	STANDARD
CV	CHECK VALVE (SWING TYPE)	LT	LIGHT	STL	STEEL
CW	CHAINWHEEL; CLOCKWISE	LWL	LOW WATER LEVEL	SW	SOLVENT WELDED
CY	CUBIC YARDS			SWK	SIDEWALK
		M	MOTOR; MECHANICAL; METER	SWP	SCREENINGS WASHING PRESS
D	DOOR	MATL	MATERIAL	SY	SQUARE YARDS
DEMO	DEMOLITION	MAX	MAXIMUM	T	TANK; TELEPHONE
DET	DETAIL	MBBR	MOVING BED BIOLOGICAL REACTOR	T/	TOP OF
DI	DUCTILE IRON	MBS	MANUAL BAR SCREEN	TBLV	TRUE UNION BALL VALVE
DIA	DIAMETER	MCC	MOTOR CONTROL CENTER	T&B	TOP AND BOTTOM
DIF	DIFFUSER	MECH	MECHANICAL	TD	TRENCH DRAIN
DIP	DUCTILE IRON PIPE	MFM	MAGNETIC FLOW METER	TE	TEMPERATURE ELEMENT
DISCH	DISCHARGE	MFR	MANUFACTURER	TEL	TELEPHONE
DN	DOWN	MFT	MAGNETIC FLOW TRANSMITTER	TEMP	TEMPERATURE; TEMPORARY
DO	DISSOLVED OXYGEN	MGD	MILLION GALLONS PER DAY	TIT	TEMPERATURE INDICATING TRANSMITTER
DP	DEEP	MH	MANHOLE	TF	TERTIARY FILTER
DR	DRAIN	MIN	MINIMUM	TP	TRANSFER PUMP
DS	DIGESTED SLUDGE	MISC	MISCELLANEOUS	THD	THREAD(ED)
DV	DIAPHRAGM VALVE	MJ	MECHANICAL JOINT	THK	THICK(NESS)
DWG	DRAWING	MLSS	MIXED LIQUOR SUSPENDED SOLIDS	TLV	TELESCOPING VALVE
		MON	MONUMENT	TOC	TOP OF CONCRETE
E	ELECTRIC(AL); EAST	MTD	MOUNTED	TWAS	THICKENED WASTE ACTIVATED SLUDGE
EA	EACH	MV	MUD VALVE	TYP	TYPICAL
ECC	ECCENTRIC				
EFF	EFFLUENT	N	NORTH	UH	UNIT HEATER
EJ	EXPANSION JOINT	NACL	SODIUM CHLORIDE	ULS	ULTRASONIC LEVEL SENSOR
EL	ELEVATION	NAOH	SODIUM HYDROXIDE	ULT	ULTRASONIC LEVEL TRANSDUCER
ENG	ENGINEER	NC	NORMALLY CLOSED	UN	UNION
EO	ELECTRIC OPERATOR	ND	NORMALLY OPEN; NUMBER	UNO	UNLESS NOTED OTHERWISE
EOP	EDGE OF PAVEMENT	NPT	NATIONAL PIPE THREAD (TAPER)	UV	ULTRAVIOLET
EQ	EQUAL(LY)	NPW	NON-POTABLE WATER		
EQPM	EQUIPMENT	NRS	NON-RISING STEM	V	VALVE
ES	EXTENDED STEM	NTS	NOT TO SCALE	VAC	VACUUM
ESMT	EASEMENT	NWL	NORMAL WATER LEVEL	VAR	VARIOUS; VARIABLE
EXH	EXHAUST			VB	VALVE BOX
EX	EXISTING	OC	ON CENTER	VCP	VITRIFIED CLAY PIPE
EXP	EXPANSION	OD	OUTSIDE DIAMETER; OXIDATION DITCH	VERT	VERTICAL
		OE	OVERHEAD ELECTRIC	VFD	VARIABLE FREQUENCY DRIVE
FBW	FILTER BACKWASH	OPNG	OPENING	VIF	VERIFY IN FIELD
FCE	FINAL CLARIFIER EFFLUENT	ORP	OXYGEN REDUCTION POTENTIAL	VLV	VALVE
FCO	FLOOR CLEANOUT	OU	OVERHEAD UTILITY	VOL	VOLUME
FD	FLOOR DRAIN	OVF	OVERFLOW	VSD	VARIABLE SPEED DRIVE
FDC	FIRE DEPARTMENT CONNECTION			VT	VENT
FDN	FOUNDATION	P	PUMP	VTR	VENT THROUGH ROOF
FDS	FLOW DIVERSION STRUCTURE	PAA	PEROXYACETIC ACID		
FE	FLOW ELEMENT	PC	POINT OF CURVE	W	WINDOW; WIDE; WEST
FES	FLARED END SECTION	PCC	PORTLAND CEMENT CONCRETE	W/	WITH
FF	FINISHED FLOOR	PCCP	PRESSURE CONCRETE CYLINDER PIPE	W/O	WITHOUT
FH	FIRE HYDRANT	PD	PUMP DISCHARGE	WAS	WASTE ACTIVATED SLUDGE
FIN	FINISH(ED)	PDF	PEAK DAILY FLOW	WC	WATER CLOSET
FIT	FLOW INDICATING TRANSMITTER	PE	PLAIN END	WH	WATER HEATER
FL	FLANGE(D); FLUSHING CONNECTION	PERF	PERFORATED	WJ	WELDED JOINT
FLD	FLOOD	PFD	PROCESS FLOW DIAGRAM	WL	WATER LEVEL
FLEX	FLEXIBLE	PFU	POLYMER FEED UNIT	WM	WATER MAIN
FLR	FLOOR	PG	PRESSURE GAUGE	WT	WEIGHT
FM	FORCEMAIN; FLOW METER	PHF	PEAK HOURLY FLOW	WTP	WATER TREATMENT PLANT
FNPT	FINE NATIONAL PIPE THREAD	PHOS	PHOSPHATE	WW	WASTEWATER
FP	FIRE PROTECTION	PI	PRESSURE INDICATOR	WWTP	WASTEWATER TREATMENT PLANT
FRP	FIBERGLASS REINFORCED PLASTIC	PL	PLATE; PROPERTY LINE		
FS	FLOW SWITCH/FLOAT SWITCH	PLC	PROGRAMMABLE LOGIC CONTROLLER	XFER	TRANSFER
FT	FOOT/FEET	POLY	POLYMER		
FTG	FOOTING	PP	POWER POLE	YD	YARD
FUT	FUTURE	PR	PROCESS	YH	YARD HYDRANT
		PROP	PROPOSED	YV	YARD VALVE
G	NATURAL GAS; GATE; GENERAL	PRV	PRESSURE RELIEF VALVE		
		PS	PUMP STATION		

PROCESS AND SHEET LEGEND:

SECTION
X = SHEET WHERE SECTION IS REFERENCED
Y = SHEET WHERE SECTION IS SHOWN
1 = SECTION NUMBER

DETAIL
X = SHEET WHERE DETAIL IS REFERENCED
Y = SHEET WHERE DETAIL IS SHOWN
Z = DETAIL LETTER

PROCESS LINE
AIR LINE
WATER LINE
POLYMER LINE
BUILDING OR AREA LIMITS
DIRECTIONAL FLOW ARROW

FLANGED GATE VALVE
FLANGED PLUG VALVE
FLANGED BUTTERFLY VALVE
FLANGED GLOBE VALVE
FLANGED CHECK VALVE
FLANGED KNIFE GATE VALVE
BALL VALVE

REDUCER AND SIZE
MAGNETIC FLOW METER
PRESSURE GAUGE
BLOWER
PUMP

#	DATE	REVISION	BY
A	1/27/2020	PERMIT SET	B.M.

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PROCESS NOTES, ABBREVIATIONS AND LEGENDS

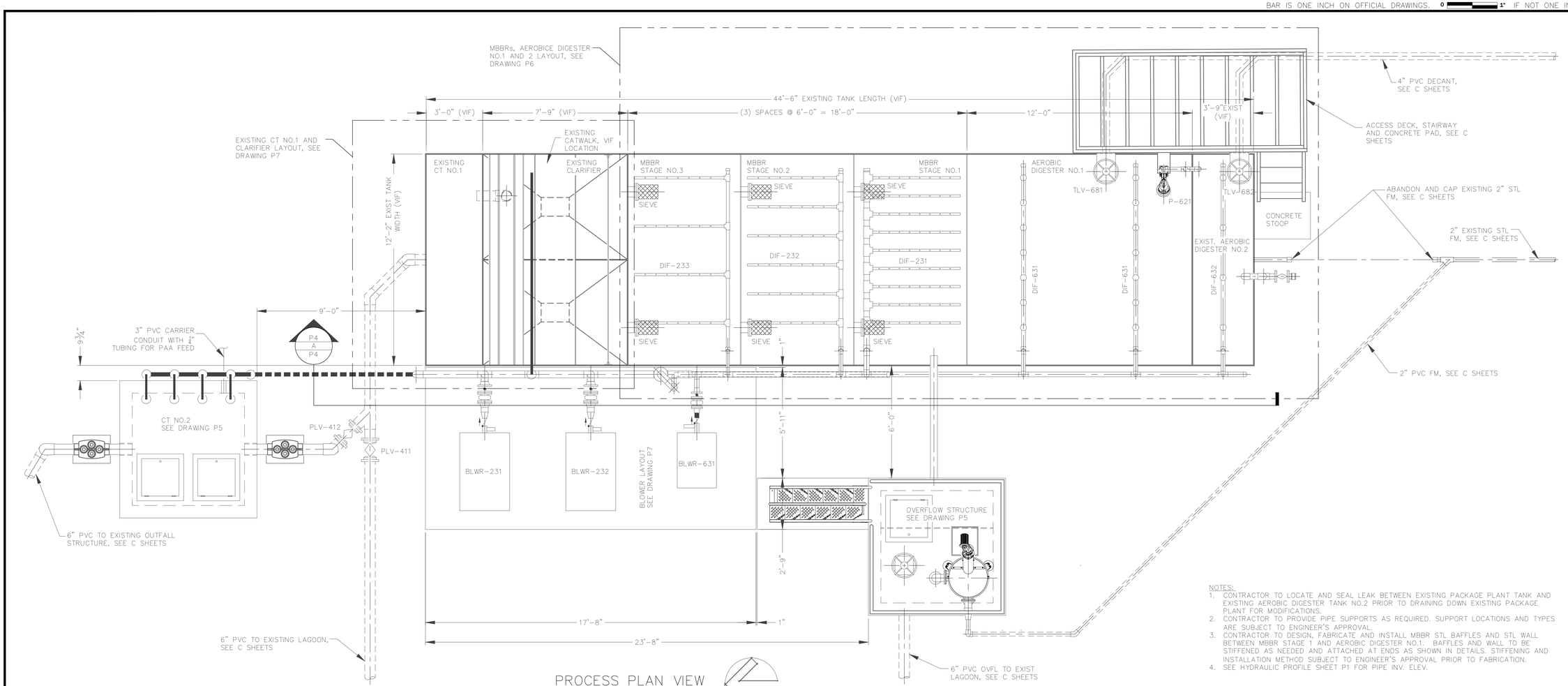
TIMBERLAND WWTF
6500 US 60 WEST
PADUCAH, KY

ENGINEERING CERTIFICATE OF AUTHORITY NO. 4808
ENGINEERING LICENSE:
BENJAMIN J. KUENZEL, PE33718

COMMONWEALTH OF KENTUCKY
BENJAMIN J. KUENZEL
33718
LICENSED PROFESSIONAL ENGINEER

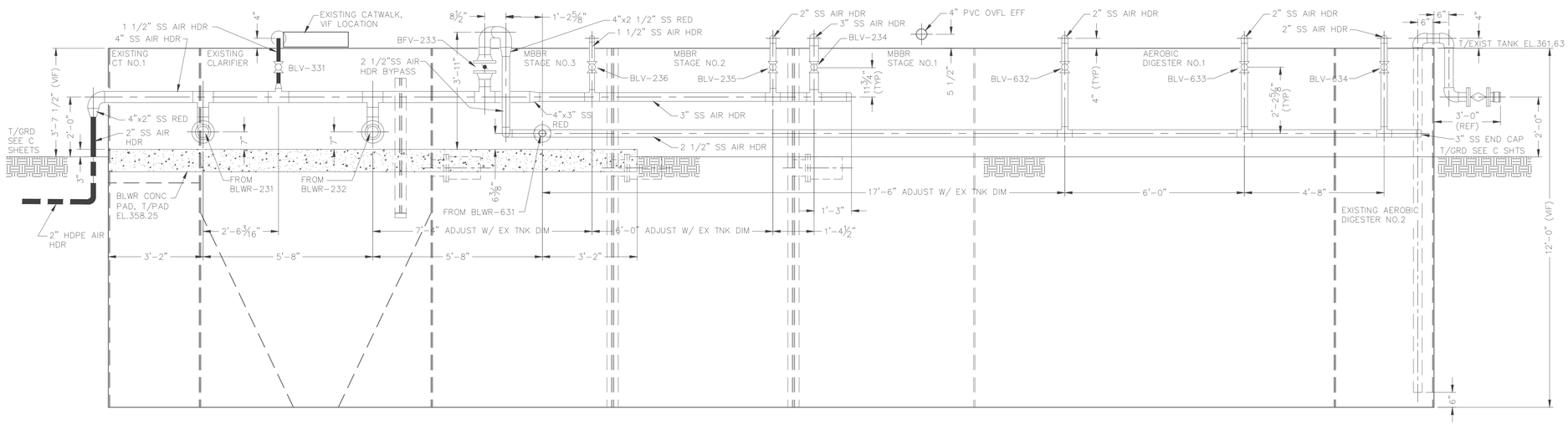
SEAL DATE:	1/27/2021
DRAWN BY:	DDG
PROJ NUMBER:	0542j-19
DATE:	12/23/2020
DRAWING NO:	P3

BAR IS ONE INCH ON OFFICIAL DRAWINGS. 0 1" IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.



PROCESS PLAN VIEW
SCALE: 3/8" = 1'-0"

NOTES:
1. CONTRACTOR TO LOCATE AND SEAL LEAK BETWEEN EXISTING PACKAGE PLANT TANK AND EXISTING AEROBIC DIGESTER TANK NO.2 PRIOR TO DRAINING DOWN EXISTING PACKAGE PLANT FOR MODIFICATIONS.
2. CONTRACTOR TO PROVIDE PIPE SUPPORTS AS REQUIRED. SUPPORT LOCATIONS AND TYPES ARE SUBJECT TO ENGINEER'S APPROVAL.
3. CONTRACTOR TO DESIGN, FABRICATE AND INSTALL MBBR STL BAFFLES AND STL WALL BETWEEN MBBR STAGE 1 AND AEROBIC DIGESTER NO.1. BAFFLES AND WALL TO BE STIFFENED AS NEEDED AND ATTACHED AT ENDS AS SHOWN IN DETAILS. STIFFENING AND INSTALLATION METHOD SUBJECT TO ENGINEER'S APPROVAL PRIOR TO FABRICATION.
4. SEE HYDRAULIC PROFILE SHEET P1 FOR PIPE INV. ELEV.



AIR HEADER ELEVATION
SCALE: 1/2" = 1'-0"

P4 A P4

BY	REVISION	DATE
B.K.	PERMIT SET	1/27/2020
A		

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PROCESS PLAN VIEW

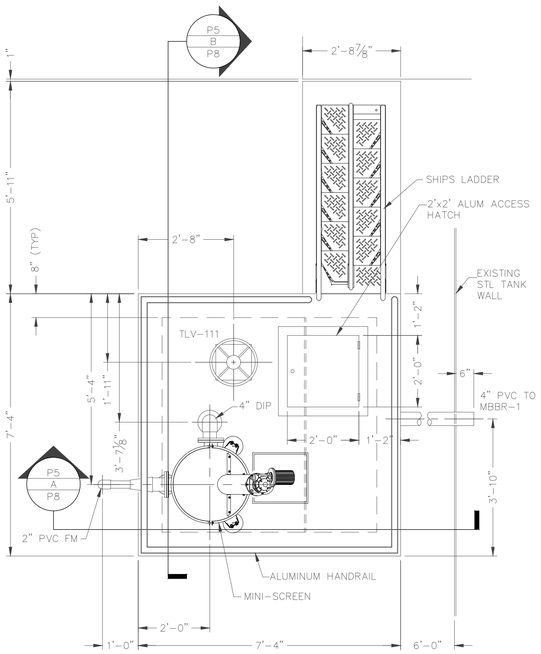
TIMBERLAND WWTF
6500 US 60 WEST
PADUCAH, KY

ENGINEERING CERTIFICATE OF AUTHORITY NO. 4808
ENGINEERING LICENSE:
BENJAMIN J. KUENZEL, PE33718

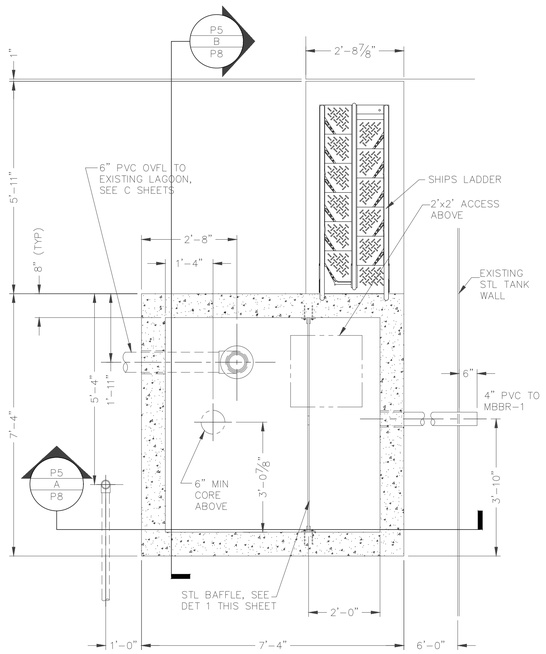
STATE OF KENTUCKY
BENJAMIN J. KUENZEL
33718
LICENSED PROFESSIONAL ENGINEER

SEAL DATE:	1/27/2021
DRAWN BY:	DDG
PROJ NUMBER:	0542j-19
DATE:	12/23/2020
DRAWING NO:	P4

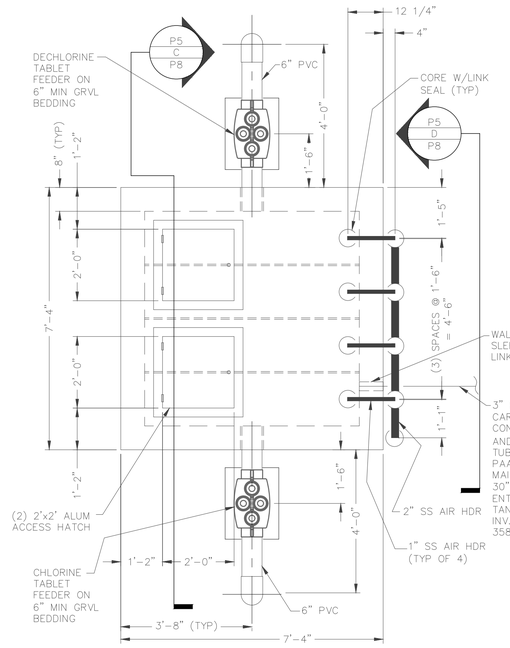
BAR IS ONE INCH ON OFFICIAL DRAWINGS. 0 1" IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.



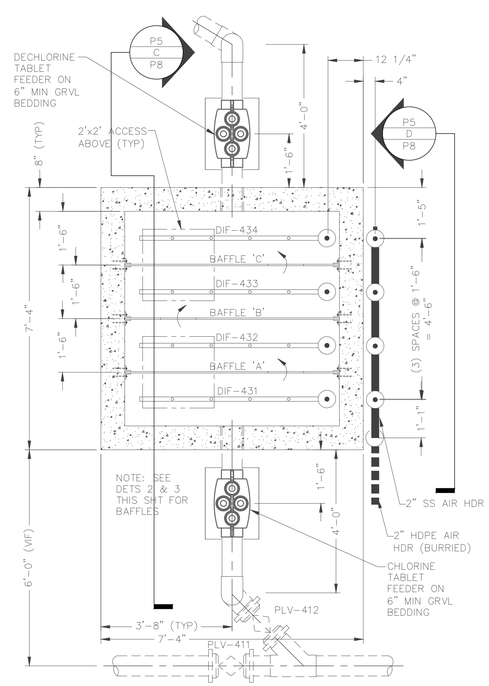
OVERFLOW STRUCTURE UPPER PLAN
SCALE: 1/2" = 1'-0"



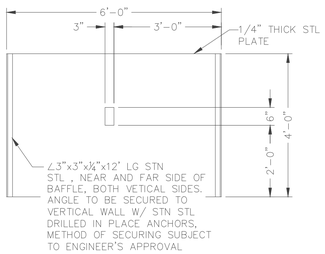
OVERFLOW STRUCTURE LOWER PLAN
SCALE: 1/2" = 1'-0"



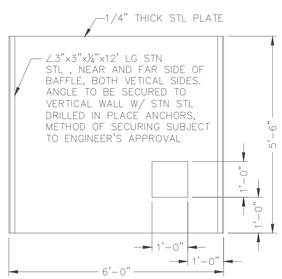
CONTACT TANK NO.2 UPPER PLAN
SCALE: 1/2" = 1'-0"



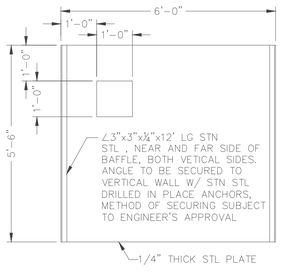
CONTACT TANK NO.2 LOWER PLAN
SCALE: 1/2" = 1'-0"



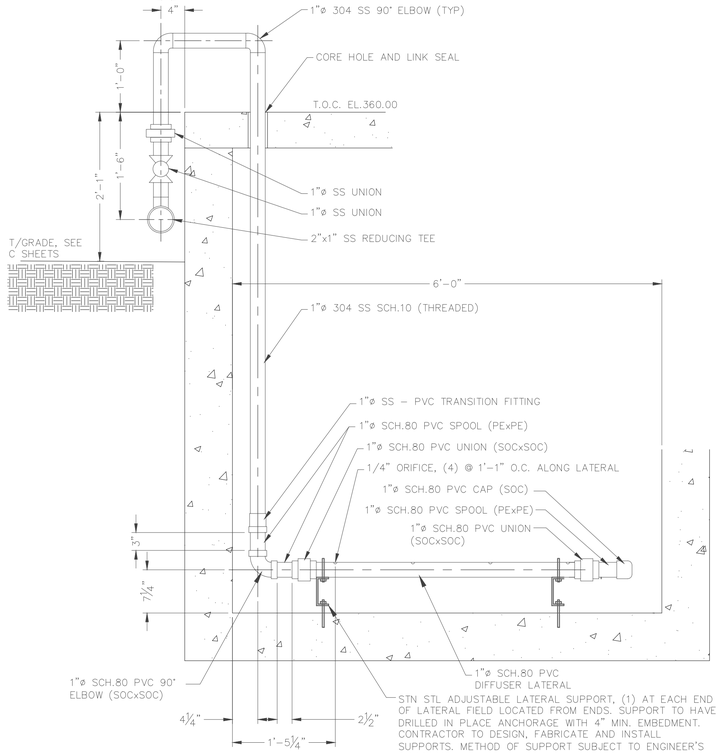
OVFL STRUCTURE BAFFLE
SCALE: 1/2" = 1'-0"
P5 / 1 / P5



CT NO.2 BAFFLE A & C
SCALE: 1/2" = 1'-0"
P5 / 2 / P5



CT NO.2 BAFFLE B
SCALE: 1/2" = 1'-0"
P5 / 3 / P5



CT NO.2 DIFFUSER DETAIL (DIF-431 THRU 434)
SCALE: 1" = 1'-0"

DIFFUSER DESCRIPTIONS:
DIF-431 1"ø CPVC AIR LATERAL (4'-4" MIN LENGTH); (4) 1/4"ø ORIFICES ON 13" CENTERS.
DIF-432 1"ø CPVC AIR LATERAL (4'-4" MIN LENGTH); (4) 1/4"ø ORIFICES ON 13" CENTERS.
DIF-433 1"ø CPVC AIR LATERAL (4'-4" MIN LENGTH); (4) 1/4"ø ORIFICES ON 13" CENTERS.
DIF-434 1"ø CPVC AIR LATERAL (4'-4" MIN LENGTH); (4) 1/4"ø ORIFICES ON 13" CENTERS.

NOTES:
1. DIMENSIONS ARE BASED ON PRECAST UNITS HAVING 8" WALLS AND 6" TOP SLABS, WHERE APPLICABLE. CONTRACTOR TO ADJUST DIMENSIONS ACCORDINGLY.
2. CONTRACTOR TO PROVIDE PIPE SUPPORTS AS REQUIRED. SUPPORT LOCATIONS AND TYPES ARE SUBJECT TO ENGINEER'S APPROVAL.
3. CONTRACTOR TO DESIGN AND FABRICATE STN STL BAFFLE W/ STN STL ANGLE SUPPORTS. PROVIDE NEOPRENE GASKETS WHERE ANGLE IS IN CONTACT W/ CONCRETE AND SUPPLY STN STL DRILLED IN PLACE ANCHORS W/ 3" MIN EMBEDMENT. BAFFLE ANCHORING SYSTEM SUBJECT TO ENGINEER'S APPROVAL.
4. SEE DRAWING P9 FOR PIPE PENETRATION DETAILS AND REQUIREMENTS.
5. SEE HYDRAULIC PROFILE SHEET P1 FOR PIPE INV. ELEVATIONS.

#	DATE	REVISION	BY
A	9/27/2020	PERMIT SET	B.M.

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CONTACT TANK NO. 2 AND OVERFLOW STRUCTURE PLANS, SECTIONS AND DETAILS

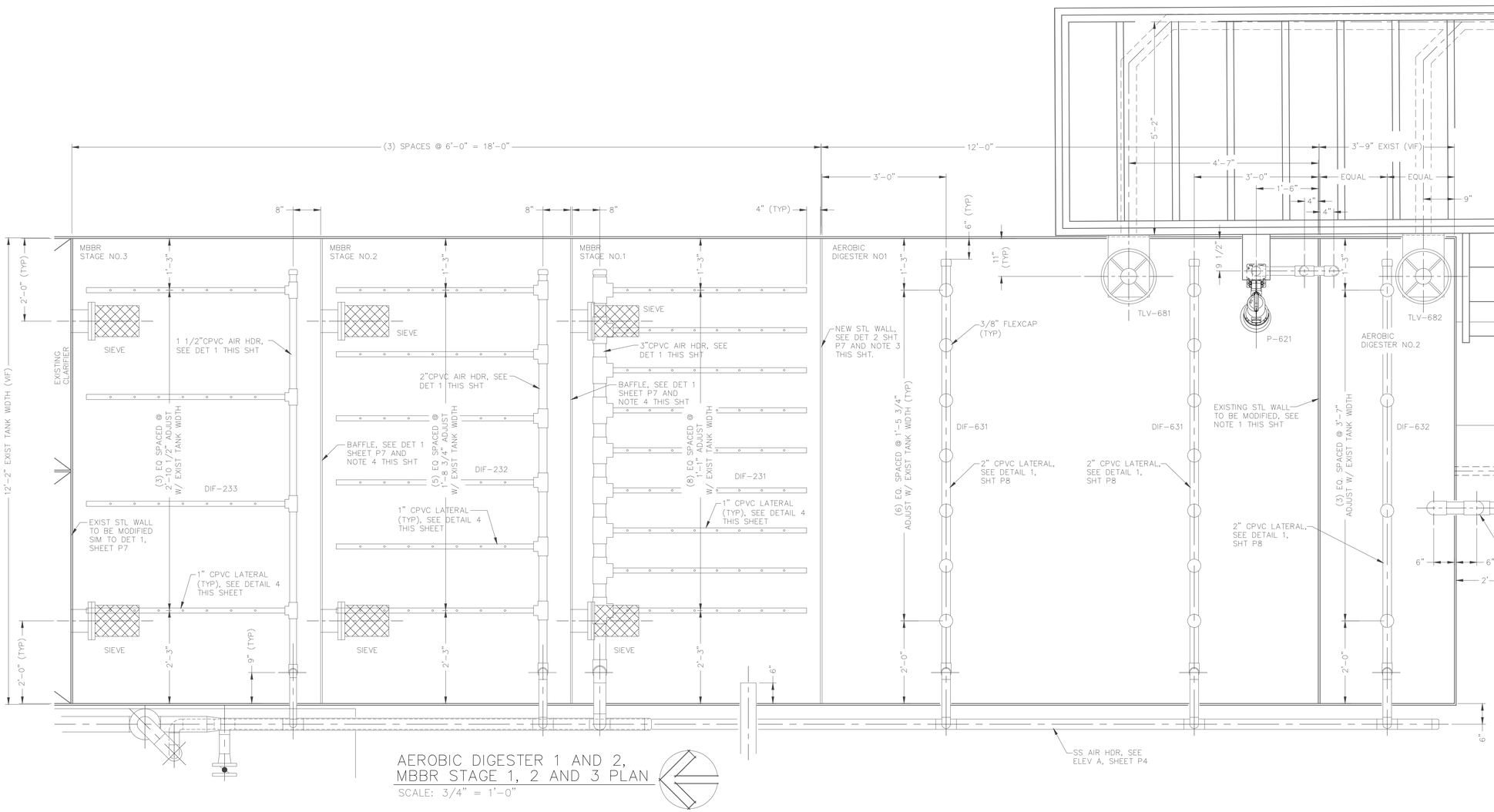
TIMBERLAND WWTF
6500 US 60 WEST
PADUCAH, KY

ENGINEERING CERTIFICATE OF AUTHORITY NO. 4808
ENGINEERING LICENSE:
BENJAMIN J. KUENZEL, PE33716

STATE OF KENTUCKY · BENJAMIN J. KUENZEL · 33716 · LICENSED PROFESSIONAL ENGINEER

SEAL DATE:	1/27/2021
DRAWN BY:	DDG
PROJ NUMBER	0542-19
DATE:	12/23/2020
DRAWING NO:	P5

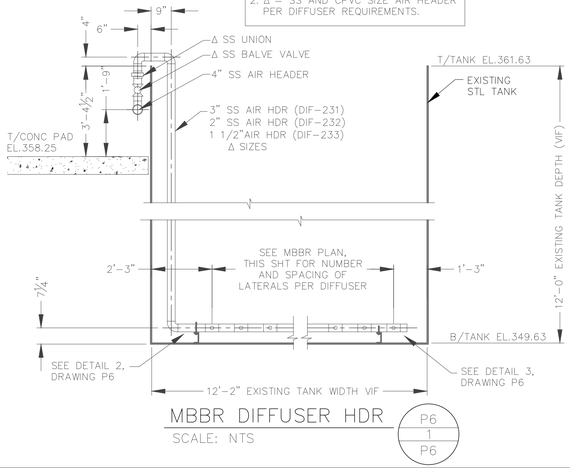
BAR IS ONE INCH ON OFFICIAL DRAWINGS. 0 1" IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.



AEROBIC DIGESTER 1 AND 2, MBBR STAGE 1, 2 AND 3 PLAN

SCALE: 3/4" = 1'-0"

NOTE:
1. TREATMENT BAFFLE NOT SHOWN FOR CLARITY.
2. Δ = SS AND CPVC SIZE AIR HEADER PER DIFFUSER REQUIREMENTS.

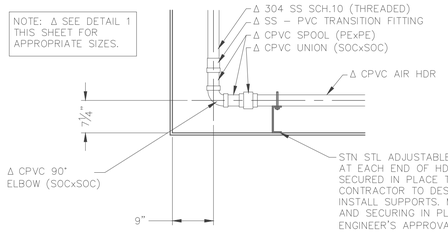


MBBR DIFFUSER HDR

SCALE: NTS

P6 / 1 / P6

NOTE: Δ SEE DETAIL 1 THIS SHEET FOR APPROPRIATE SIZES.

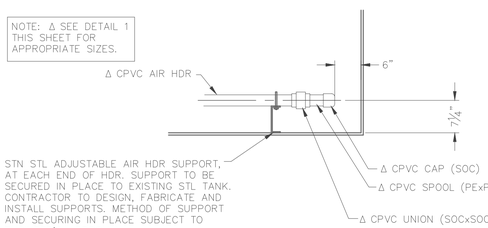


MBBR DIFFUSER HDR

SCALE: NTS

P6 / 2 / P6

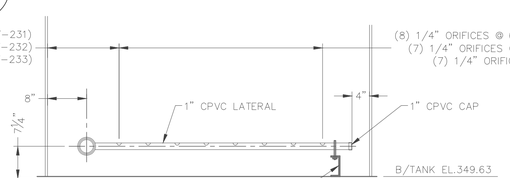
NOTE: Δ SEE DETAIL 1 THIS SHEET FOR APPROPRIATE SIZES.



MBBR DIFFUSER HDR

SCALE: NTS

P6 / 3 / P6



MBBR LATERAL

SCALE: NTS

P6 / 4 / P6

DIFFUSER DESCRIPTIONS:

DIF-231 3" CPVC HEADER, (9) 1"ø CPVC AIR LATERALS (4'-4" MIN LENGTH); (8) 1/4"ø ORIFICES ON 6 1/2" CENTERS EACH LATERAL.

DIF-232 2" CPVC HEADER, (6) 1"ø CPVC AIR LATERALS (4'-4" MIN LENGTH); (7) 1/4"ø ORIFICES ON 7" CENTERS EACH LATERAL.

DIF-233 1 1/2" CPVC HEADER, (4) 1"ø CPVC AIR LATERAL (4'-4" MIN LENGTH); (7) 1/4"ø ORIFICES ON 7" CENTERS EACH LATERAL

DIF-631 (2) 2"ø CPVC AIR LATERAL (LENGTH AS SHOWN); (7) 3/8"ø FLEX CAP ON 1'-4" CENTERS.

DIF-632 (1) 2"ø CPVC AIR LATERAL (LENGTH AS SHOWN); (4) 3/8"ø FLEX CAP ON 2'-8" CENTERS..

NOTES:
1. CONTRACTOR TO LOCATE AND SEAL LEAK BETWEEN EXISTING PACKAGE PLANT TANK AND EXISTING AEROBIC DIGESTER TANK NO.2 PRIOR TO DRAINING DOWN EXISTING PACKAGE PLANT FOR MODIFICATIONS.
2. CONTRACTOR TO PROVIDE PIPE SUPPORTS AS REQUIRED. SUPPORT LOCATIONS AND TYPES ARE SUBJECT TO ENGINEER'S APPROVAL.
3. CONTRACTOR TO DESIGN, FABRICATE AND INSTALL NEW STL WALL BETWEEN MBBR STAGE 1 AND AEROBIC DIGESTER NO.1. WALL TO BE STIFFENED AS NEEDED AND ATTACHED AT ENDS AS SHOWN IN DETAIL. STIFFENING AND INSTALLATION METHOD SUBJECT TO ENGINEER'S APPROVAL PRIOR TO FABRICATION.
4. CONTRACTOR TO DESIGN, FABRICATE AND INSTALL MBBR STL BAFFLES. BAFFLES TO BE STIFFENED AS NEEDED AND ATTACHED AT ENDS AS SHOWN IN DETAIL.STIFFENING AND INSTALLATION METHOD SUBJECT TO ENGINEER'S APPROVAL PRIOR TO FABRICATION.
5. SEE HYDRAULIC PROFILE SHEET P1 FOR PIPE INV. ELEV.

BY	DATE	REVISION
B.K.		
A	1/27/2020	PERMIT SET

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AEROBIC DIGESTER 1 AND 2 AND MBBR STAGE 1, 2 AND 3 PLAN, SECTIONS AND DETAILS

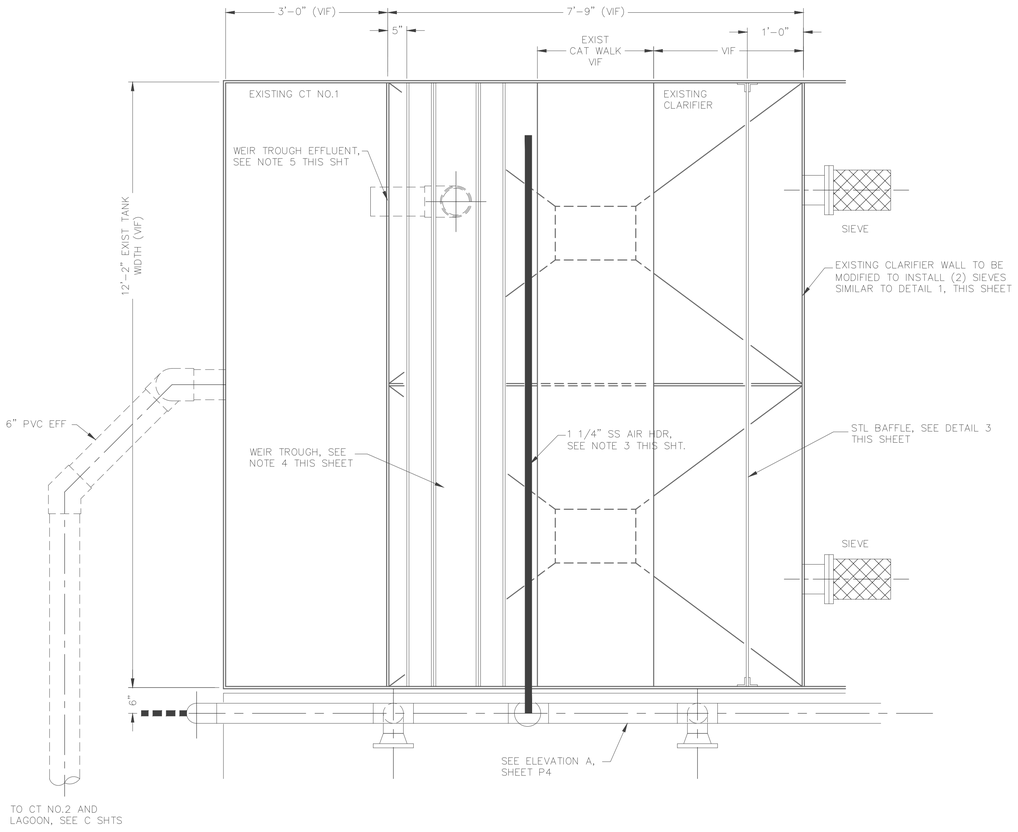
TIMBERLAND WWTF
6500 US 60 WEST
PADUCAH, KY

ENGINEERING CERTIFICATE OF AUTHORITY NO. 4808
ENGINEERING LICENSE:
BENJAMIN J. KUENZEL, PE33718

STATE OF KENTUCKY
BENJAMIN J. KUENZEL
33718
LICENSED PROFESSIONAL ENGINEER

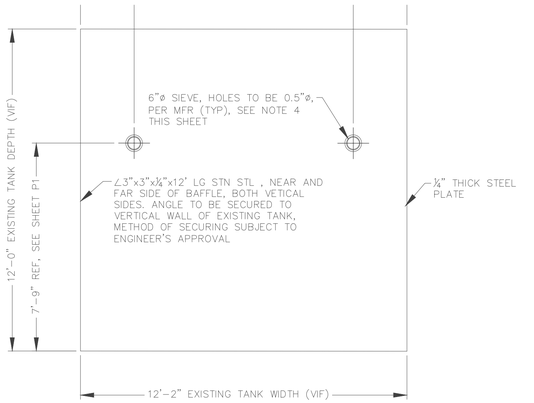
SEAL DATE:	1/27/2021
DRAWN BY:	DDG
PROJ NUMBER:	0542-19
DATE:	12/23/2020
DRAWING NO:	P6

BAR IS ONE INCH ON OFFICIAL DRAWINGS. 0 1" IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.

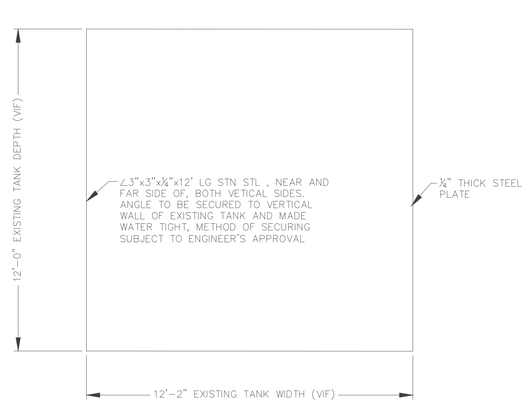


CONTACT TANK NO.1 AND CLARIFIER PLAN
SCALE: 3/4" = 1'-0"

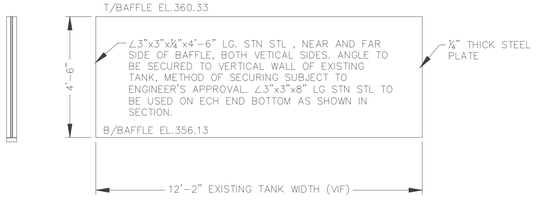
NOTES:
1. CONTRACTOR TO PROVIDE PIPE SUPPORTS AS REQUIRED. SUPPORT LOCATIONS AND TYPES ARE SUBJECT TO ENGINEER'S APPROVAL.
2. CONTRACTOR TO DESIGN, FABRICATE AND INSTALL NEW STL BAFFLE IN CLARIFIER. BAFFLE TO BE STIFFENED AS NEEDED AND ATTACHED AT ENDS AS SHOWN IN DETAIL. STIFFENING AND INSTALLATION METHOD SUBJECT TO ENGINEER'S APPROVAL PRIOR TO FABRICATION.
3. CONTRACTOR TO FIELD LOCATE AND SUPPORT AIR SUPPLY STN STL HEADER AND TUBNG SUPPLYING AIR TO EXISTING AIRLIFTS IN CLARIFIER, UTILIZING THE EXISTING CATWALK. METHOD OF CONNECTION TO EXISTING AIRLIFTS IS TO BE IN-KIND WITH EXISTING. ROUTING OF HEADER AND TUBING AS WELL AS SUPPORTS ARE SUBJECT TO ENGINEER'S APPROVAL.
4. SEE HYDRAULIC PROFILE SHEET P1 FOR PIPE INV. ELEV. AND WEIR TROUGH ELEV.
5. LOCATION OF WEIR TROUGH EFFLUENT LINE TO EXISTING CCT NO.1 TO BE FIELD LOCATED BASED ON AN EXISTING OPENING IN CCT NO.1 WALL BETWEEN CLARIFIER AND CCT NO.1. ONCE OPENING'S LOCATION IS DETERMINED, INSTALL TROUGH PIPE THROUGH EXISTING OPENING. ONCE INSTALLED, OPENING TO BE SEALED AROUND PIPE. ROUTING, PIPE LOCATION AND METHOD OF SEALING WALL AROUND PIPE IS SUBJECT TO ENGINEER'S APPROVAL.



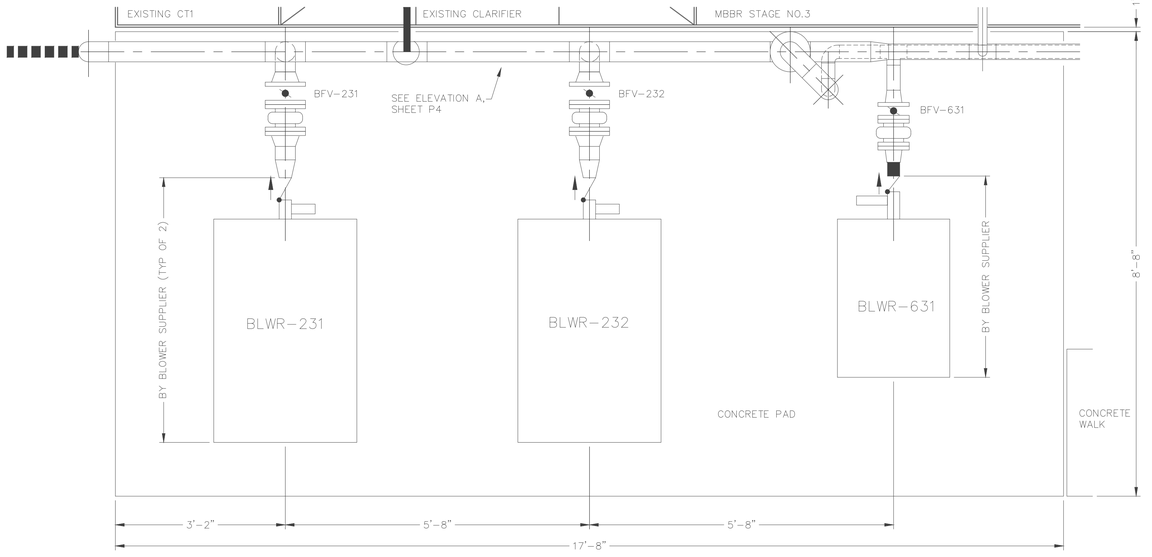
MBBR BAFFLE (P6 / 1 / P7)
SCALE: 3/8" = 1'-0"



AD1 INTERNAL WALL (P6 / 2 / P7)
SCALE: 3/8" = 1'-0"



CLARIFIER BAFFLE (P7 / 3 / P7)
SCALE: 3/8" = 1'-0"



BLOWER PLAN
SCALE: 3/4" = 1'-0"

BY	REVISION	DATE
B.M.	PERMIT SET	1/27/2020
A		

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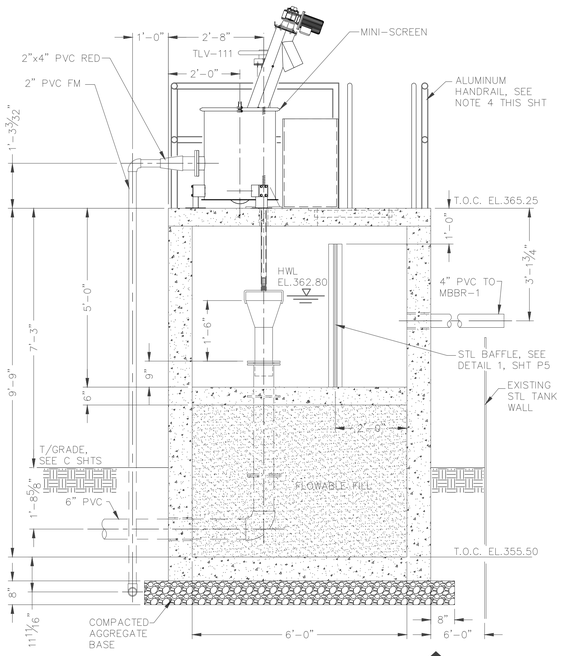
CONTACT TANK NO.1, CLARIFIER PLAN AND BLOWER PLAN, SECTIONS AND DETAILS

TIMBERLAND WWTF
6500 US 60 WEST
PADUCAH, KY

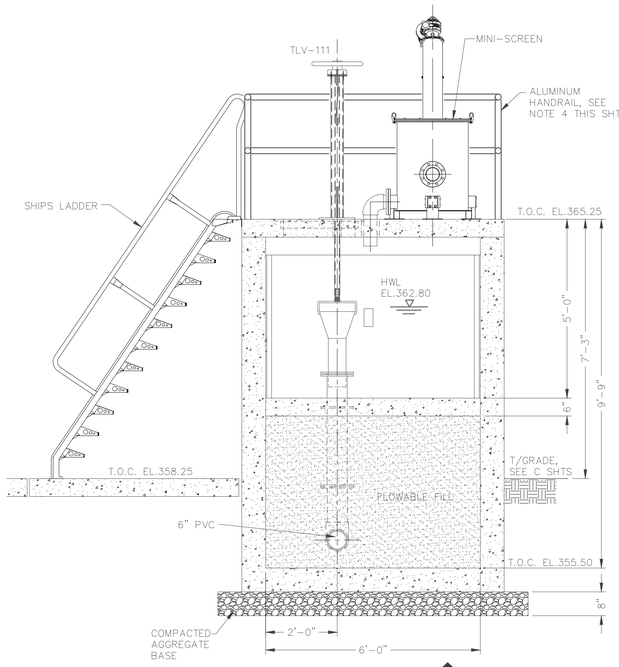
ENGINEERING CERTIFICATE OF AUTHORITY NO. 4808
ENGINEERING LICENSE:
BENJAMIN J. KUENZEL, PE33718

STATE OF KENTUCKY · BENJAMIN J. KUENZEL · 33718 · LICENSED PROFESSIONAL ENGINEER

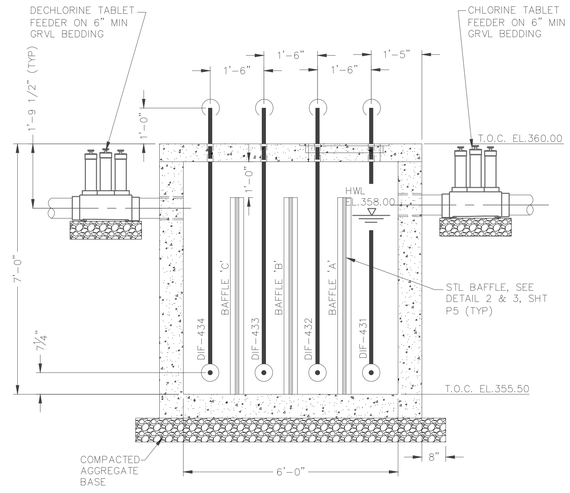
SEAL DATE:	1/27/2021
DRAWN BY:	DDG
PROJ NUMBER:	0542-19
DATE:	12/23/2020
DRAWING NO:	P7



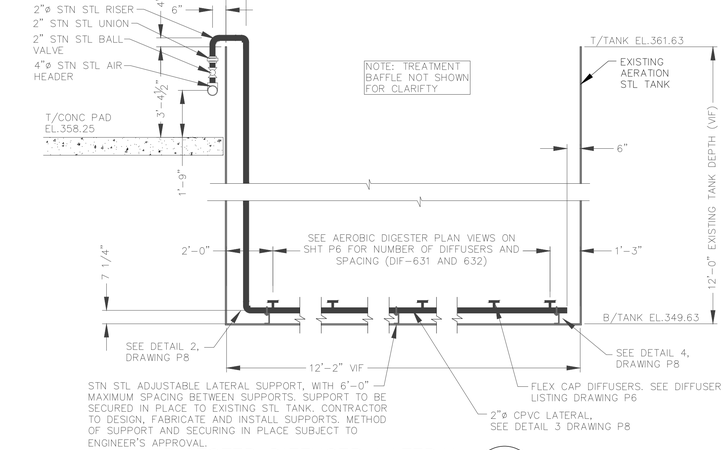
OVERFLOW STRUCTURE SECTION
SCALE: 1/2" = 1'-0"
P5 A P8



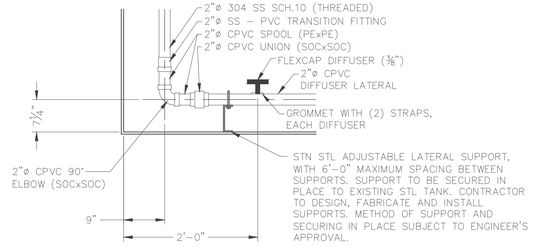
OVERFLOW STRUCTURE SECTION
SCALE: 1/2" = 1'-0"
P5 B P8



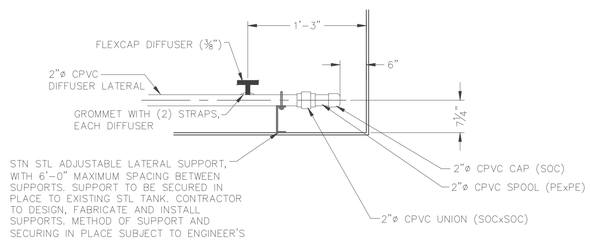
CT NO.2 SECTION
SCALE: 1/2" = 1'-0"
P5 C P8



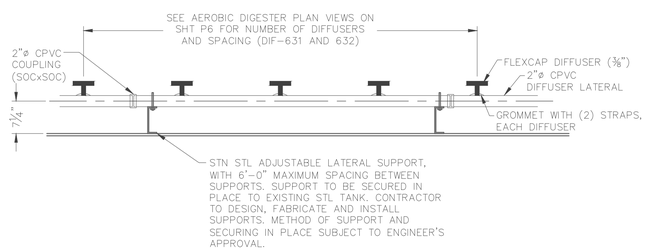
DIGESTER DIFFUSER LATERAL
SCALE: NTS
P6 1 P8



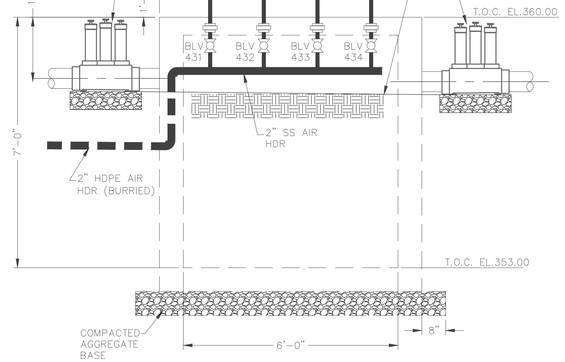
DIGESTER DIFFUSER LATERAL
SCALE: NTS
P6 2 P8



DIGESTER DIFFUSER LATERAL
SCALE: NTS
P6 4 P8



DIGESTER DIFFUSER LATERAL
SCALE: NTS
P6 3 P8



CT NO.2 SECTION
SCALE: 1/2" = 1'-0"
P5 D P8

NOTES:
1. DIMENSIONS ARE BASED ON PRECAST UNITS HAVING 8" WALLS AND 6" TOP SLABS, WHERE APPLICABLE. CONTRACTOR TO ADJUST DIMENSIONS ACCORDINGLY.
2. CONTRACTOR TO PROVIDE PIPE SUPPORTS AS REQUIRED. SUPPORT LOCATIONS AND TYPES ARE SUBJECT TO ENGINEER'S APPROVAL.
3. CONTRACTOR TO DESIGN AND FABRICATE STN STL BAFFLE W/ STN STL ANGLE SUPPORTS. PROVIDE NEOPRENE GASKETS WHERE ANGLE IS IN CONTACT W/ CONCRETE AND SUPPLY STN STL DRILLED IN PLACE ANCHORS W/ 3" MIN EMBEDMENT. BAFFLE ANCHORING SYSTEM SUBJECT TO ENGINEER'S APPROVAL
4. CONTRACTOR TO PROVIDE AND INSTALL A DOUBLE SAFETY CHAIN AT HANDRAIL ATOP SHIPS LADDER ACCESS POINT COMPLETE WITH HARDWARE AND DISCONNECT CLAMPS..
5. SEE DRAWING P9 FOR PIPE PENETRATION DETAILS AND REQUIREMENTS.
6. SEE HYDRAULIC PROFILE SHEET P1 FOR PIPE INV. ELEV.

BY	DATE	REVISION
B.M.		
A	1/27/2020	PERMIT SET

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PROCESS SECTIONS

TIMBERLAND WWTF
6500 US 60 WEST
PADUCAH, KY

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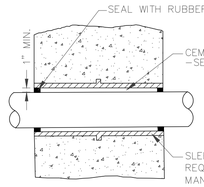
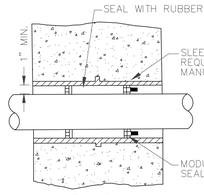
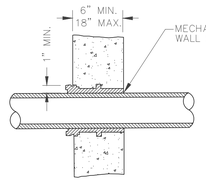


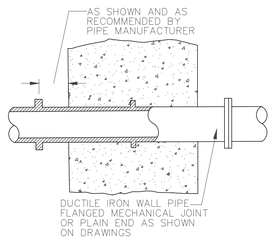
P-1



P-2



P-3



P-4

PIPE MATERIAL

CONDITION	STEEL	COPPER	PVC	IRON
EARTH TO PASSAGE	N/A	P-1	P-2	P-3
LIQUID TO PASSAGE	P-2	N/A	P-2	P-4
LIQUID TO EARTH	P-2	N/A	P-2	P-4
PASSAGE TO PASSAGE	P-1	P-1	P-1	P-1
LIQUID TO LIQUID	P-2	N/A	P-2	P-4

P-2 MAY BE USED IN LIEU OF P-1 AND P-3.

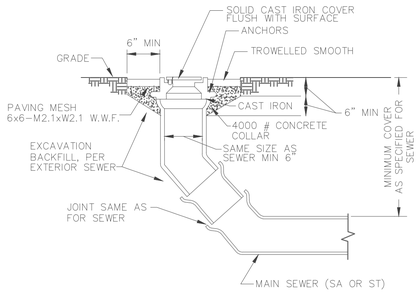
P-4 MAY BE USED IN LIEU OF P-3 AND IF CALLED FOR ON THE DRAWINGS P-4 SHALL BE USED IN LIEU OF P-3.

NOTES:

1. WHERE PIPES PASS THROUGH WALLS, FLOORS, OR CEILINGS, THE METHOD USED SHALL CONFORM TO THE STANDARD DETAILS AS SHOWN ON THIS DRAWING, EXCEPT WHERE SPECIAL DETAILS ARE SHOWN.
2. PASSAGE SHALL MEAN ANY ROOM, GALLERY, TUNNEL OR SIMILAR ENCLOSED SPACE IN WHICH PIPES RUN.
3. ALL SLEEVES SHALL BE CAST IRON UNLESS OTHERWISE NOTED.
4. FLANGES MAY BE INSTALLED FLUSH WITH WALL AND TAPPED FOR STUDS.
5. CEMENT GROUT CAULKING MAY BE ELIMINATED FOR PASSAGE TO PASSAGE PENETRATIONS.
6. LIQUID SHALL MEAN AN ELEVATION 1'-6" ABOVE MAXIMUM WATER ELEVATION.

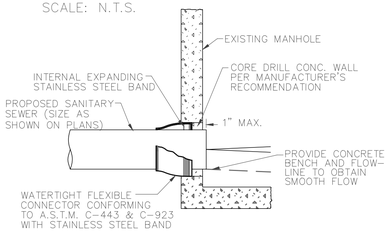
PIPE THROUGH WALLS DETAILS

SCALE: N.T.S.



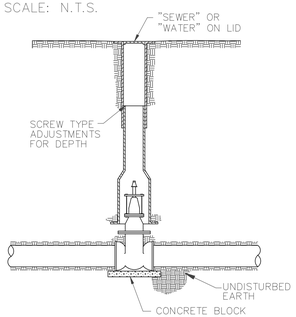
TYPICAL YARD CLEANOUT

SCALE: N.T.S.



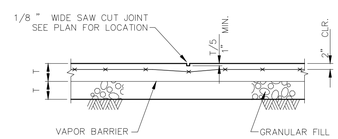
PIPE TO MANHOLE CONNECTION

SCALE: N.T.S.



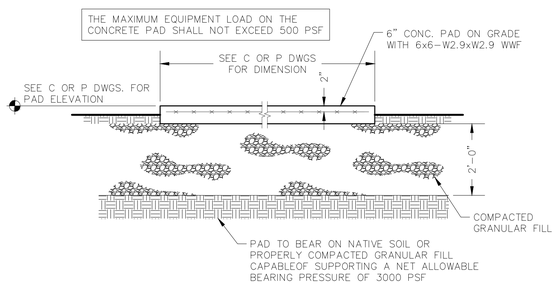
TYPICAL VALVE BOX INSTALLATION

SCALE: N.T.S.



TYPICAL SLAB ON GRADE CONTROL JOINT

SCALE: N.T.S.



TYPICAL EXTERIOR EQUIPMENT PAD ON GRADE

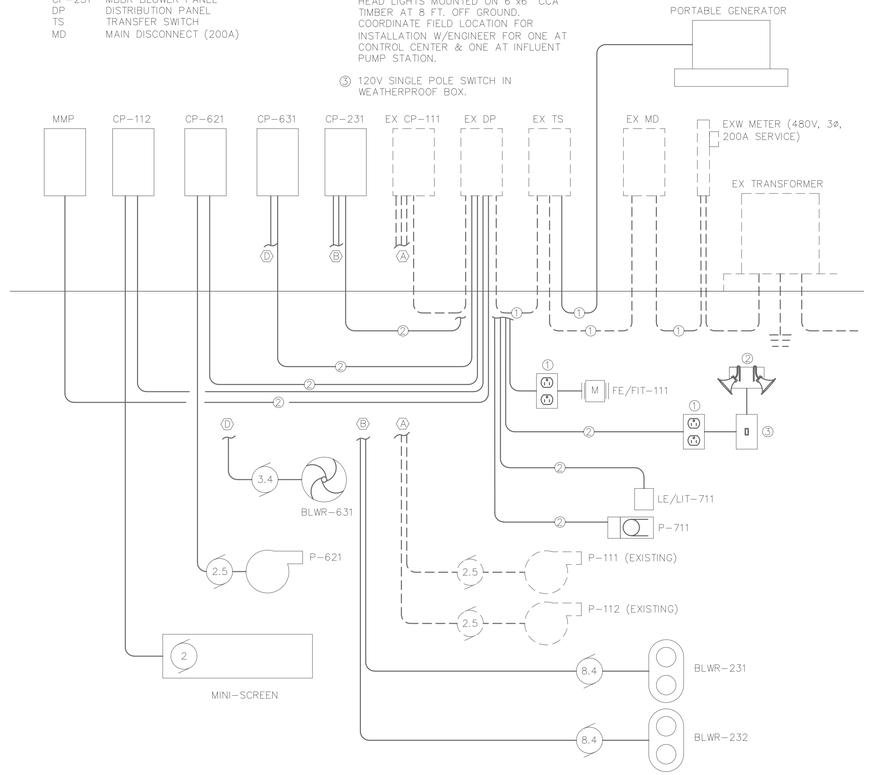
SCALE: N.T.S.

MMP MISSION MONITORING PANEL
CP-111 INFLUENT PUMP STATION CONTROL PANEL
CP-621 DIGESTED SLUDGE TRANSFER PUMP STATION
CP-231 MBBR BLOWER PANEL
DP DISTRIBUTION PANEL
TS TRANSFER SWITCH
MD MAIN DISCONNECT (200A)

① 120V GFCI RECEPTACLE IN WEATHERPROOF BOX ON UNISTRUT.

② TWO SETS OF LED DOUBLE ADJUSTABLE HEAD LIGHTS MOUNTED ON 6"x6" CCA TIMBER AT 8 FT. OFF GROUND. COORDINATE FIELD LOCATION FOR INSTALLATION W/ENGINEER FOR ONE AT CONTROL CENTER & ONE AT INFLUENT PUMP STATION.

③ 120V SINGLE POLE SWITCH IN WEATHERPROOF BOX.



ELECTRICAL RISER DIAGRAM

ELECTRICAL RISER DIAGRAM NOTES:

1. CONTRACTOR IS REQUIRED TO INSPECT EXISTING ELECTRICAL SYSTEM, VERIFY EXISTING METER SIZE, AND VERIFY WIRE, CONDUCTOR AND CONDUIT SIZING REQUIREMENTS PRIOR TO SUBMITTING BID.
2. CONTRACTOR TO SUBMIT ELECTRICAL LAYOUT AND DESIGN TO ENGINEER FOR APPROVAL PRIOR TO ORDERING MATERIALS.
3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSTALL ALL ELECTRICAL EQUIPMENT NECESSARY FOR THE ENTIRE PROJECT INCLUDING ANY TRANSFORMER NEEDS.
4. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSTALL ALL INSTRUMENTATION AND CONTROL PANELS NECESSARY FOR THE ENTIRE PROJECT.
5. UNISTRUT TO BE PROVIDED AS NEEDED TO INSTALL ALL ELECTRICAL AND CONTROL PANEL EQUIPMENT.
6. ALL CONDUIT SHALL BE SIZED AND PROVIDED BY CONTRACTOR. CONDUIT AND CONDUIT SIZING SHALL MEET ALL NEC CODE REQUIREMENTS FOR ABOVE AND BELOW GRADE INSTALLATION.
7. ALL WIRE AND CONDUCTORS SHALL BE ENCLOSED IN CONDUIT.
8. ALL WIRE SHALL BE COPPER EXCEPT ALUMINUM WILL BE ALLOWED UP TO THE DISTRIBUTION PANEL.

REMOTE WIRELESS MONITORING AND CONTROL REQUIREMENTS:

REMOTE WIRELESS MONITORING UNIT SHALL BE M850 SERIES UNIT PROVIDED BY MISSION COMMUNICATIONS (SALES REPRESENTATIVE IS JEFF CLARKE WITH HYDRO-KINETICS; 314-647-6104).

1. DIGITAL INPUTS
   a. P-111 RUN; P-111 FAIL
   b. P-112 RUN; P-112 FAIL
   c. P-621 RUN; P-621 FAIL
   d. P-461 RUN; P-461 FAIL
   e. P-711 RUN; P-711 FAIL
   f. BLWR-631 RUN; BLWR-631 FAIL
   g. BLWR-232 RUN; BLWR-232 FAIL
2. ANALOGUE INPUTS
   a. FE/FIT-111 FLOW (INFLUENT METER)
   b. LE/LIT-711 (PAA STORAGE LEVEL)
   c. BLWR-631 SPEED
   d. BLWR-231 SPEED
   e. BLWR-232 SPEED

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PROCESS DETAILS AND ELECTRICAL RISER DIAGRAM

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