

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

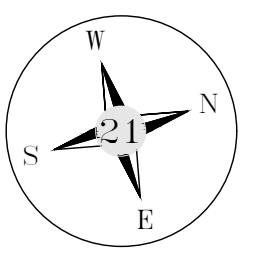
BROCKLYN W/MTF
 HAGER DRIVE
 RICHMOND, KY

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



SEAL DATE: 07/30/2020
 DRAWN BY: BJK
 PROJ NUMBER: 18-0475
 DATE: 07/30/2020
 DRAWING NO: C02

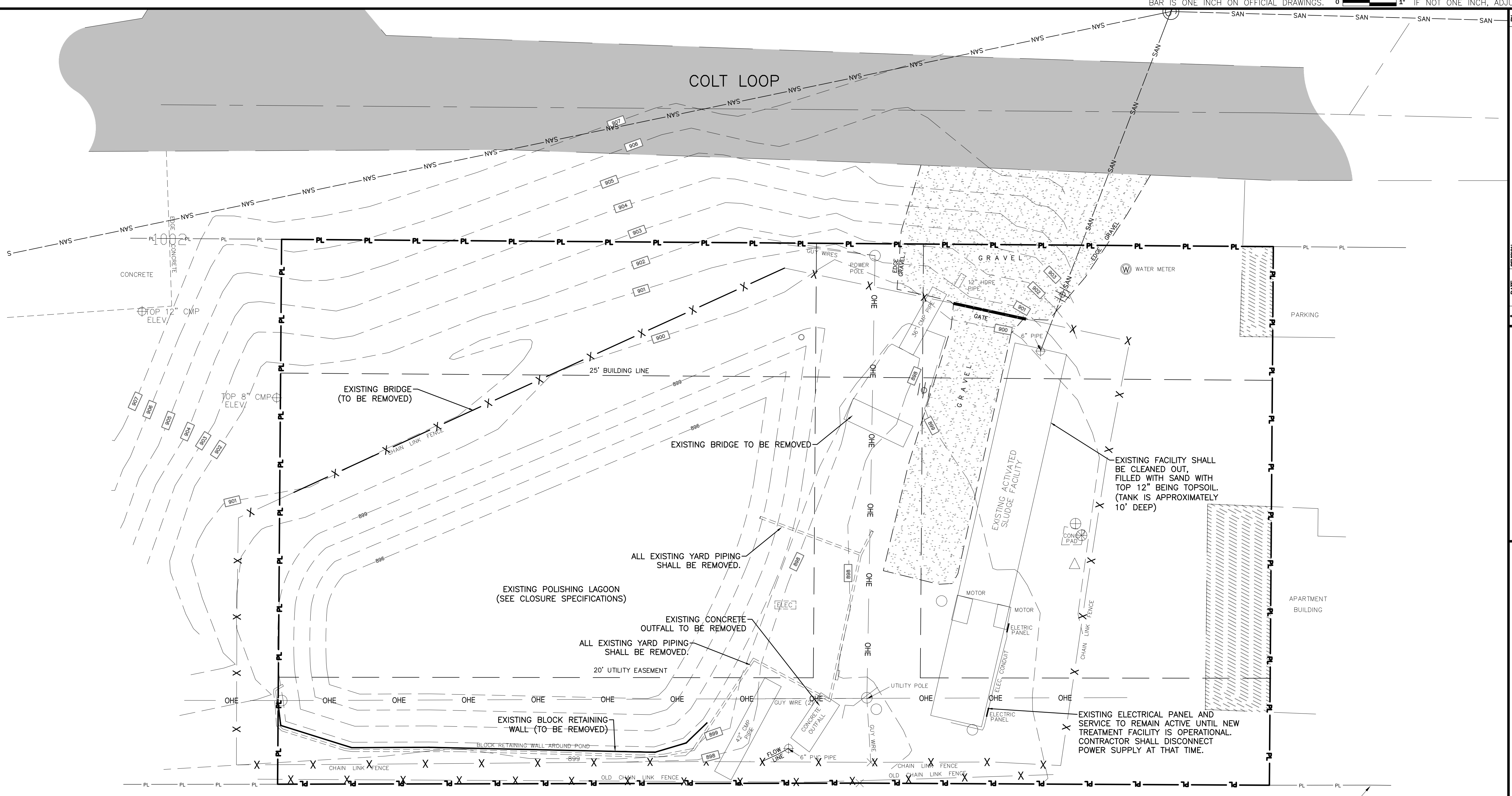
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SCALE: 1" = 10'

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	
Fire Hydrant	
Telephone Box	
Water Valve	
Gas Valve	
Sign	
Grated Inlet	
Catch Basin	
Grated Curb Inlet	
Junction Box	
Flared End Section	



DATE	7/30/2020
PERSON	PERMIT SET
A	

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EXISTING CONDITIONS / DEMOLITION PLAN

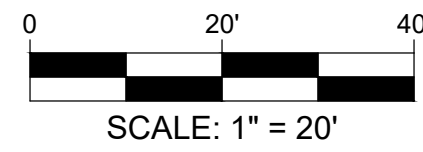
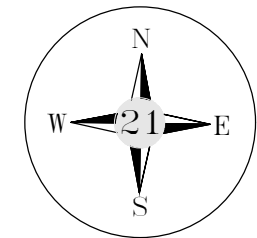
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SEAL DATE	07/30/2020
DRAWN BY	BJK
PROJ NUMBER	18-0475
DATE	07/30/2020
DRAWING NO.	C03

- NOTE:**
- 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.
 - 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.

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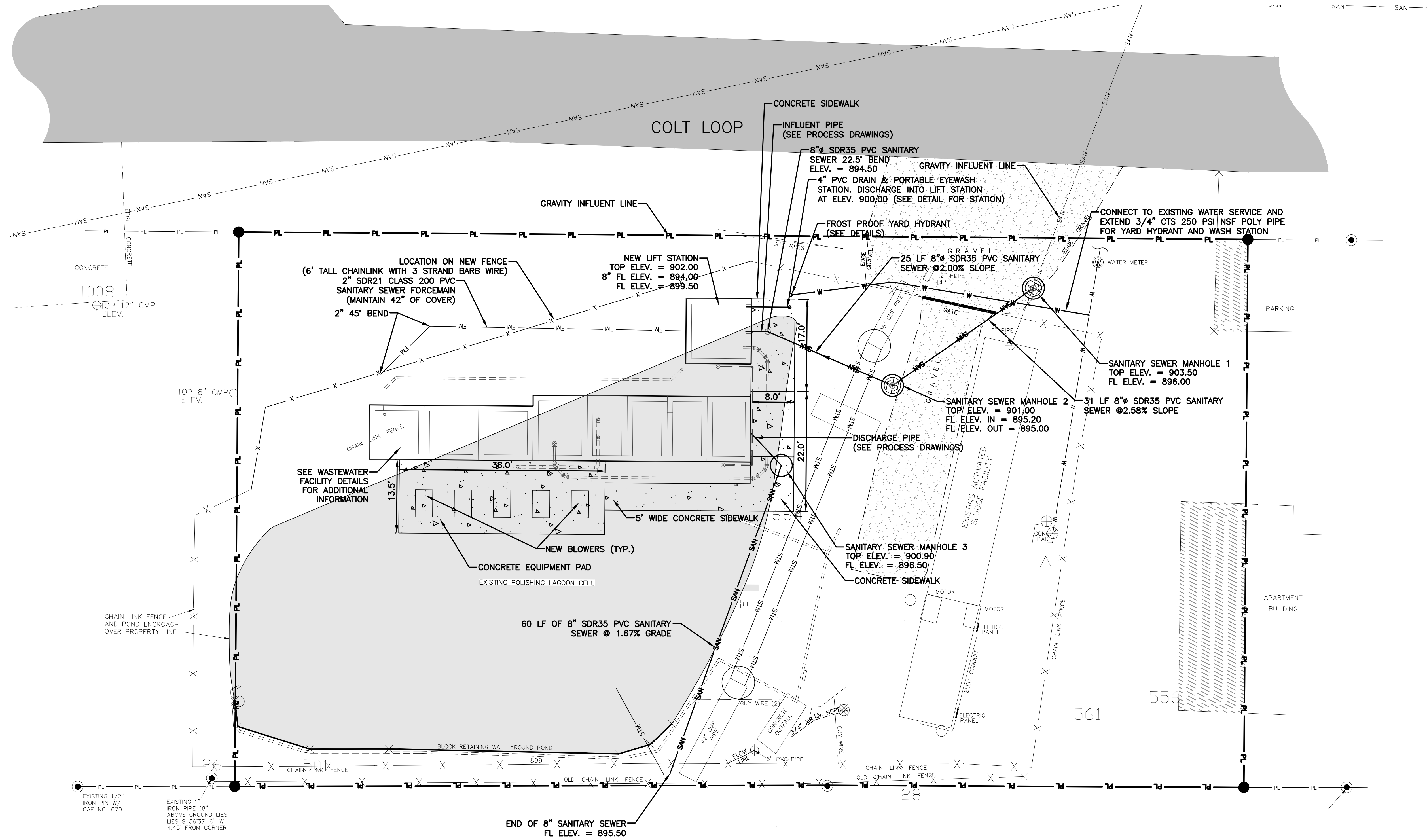
SCALE: 1" = 20'

DRAWING LEGEND

DESCRIPTION	EXISTING	PROPOSED
Easement	---	---
Setbacks	---	---
Property Lines	---	---
Aerial Electric	AE	AE
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		

PAVEMENT LEGEND

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



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SITE/UTILITY PLAN
BROCKLYN W/WTF
HAGER DRIVE
RICHMOND, KY

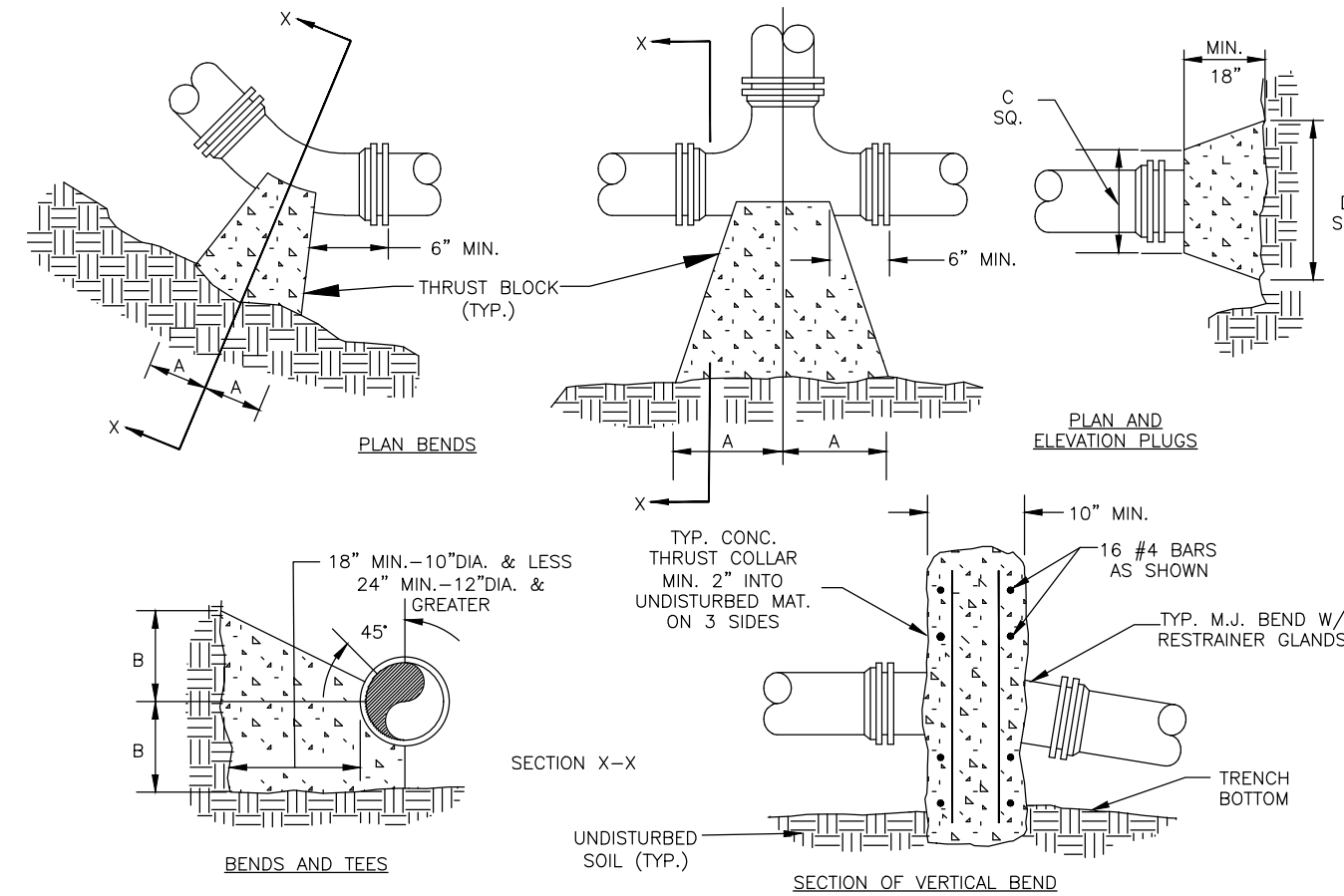
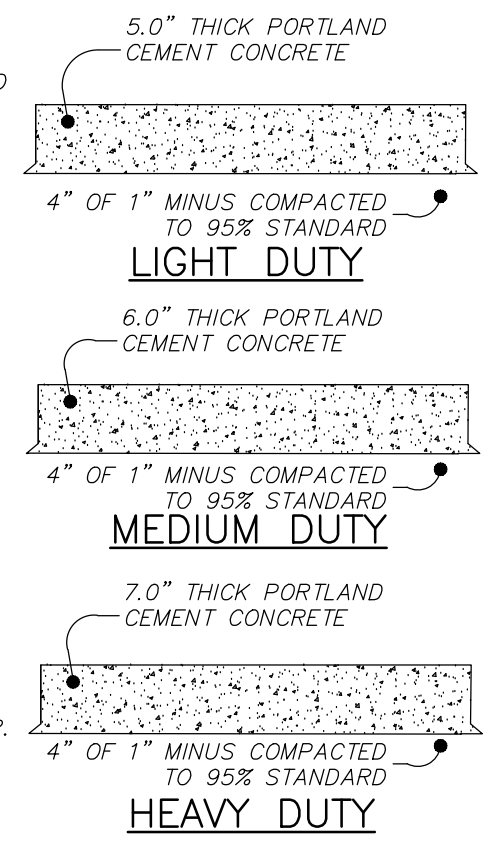
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- NOTES:
1. PORTLAND CEMENT CONCRETE SHALL COMPLY WITH CURRENT DOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. CONCRETE SHALL HAVE A 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI, AIR ENTRAINMENT OF 5 TO 7 PERCENT, AND SLUMP BETWEEN 1 TO 3 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 TANDUM 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.



NOTES:

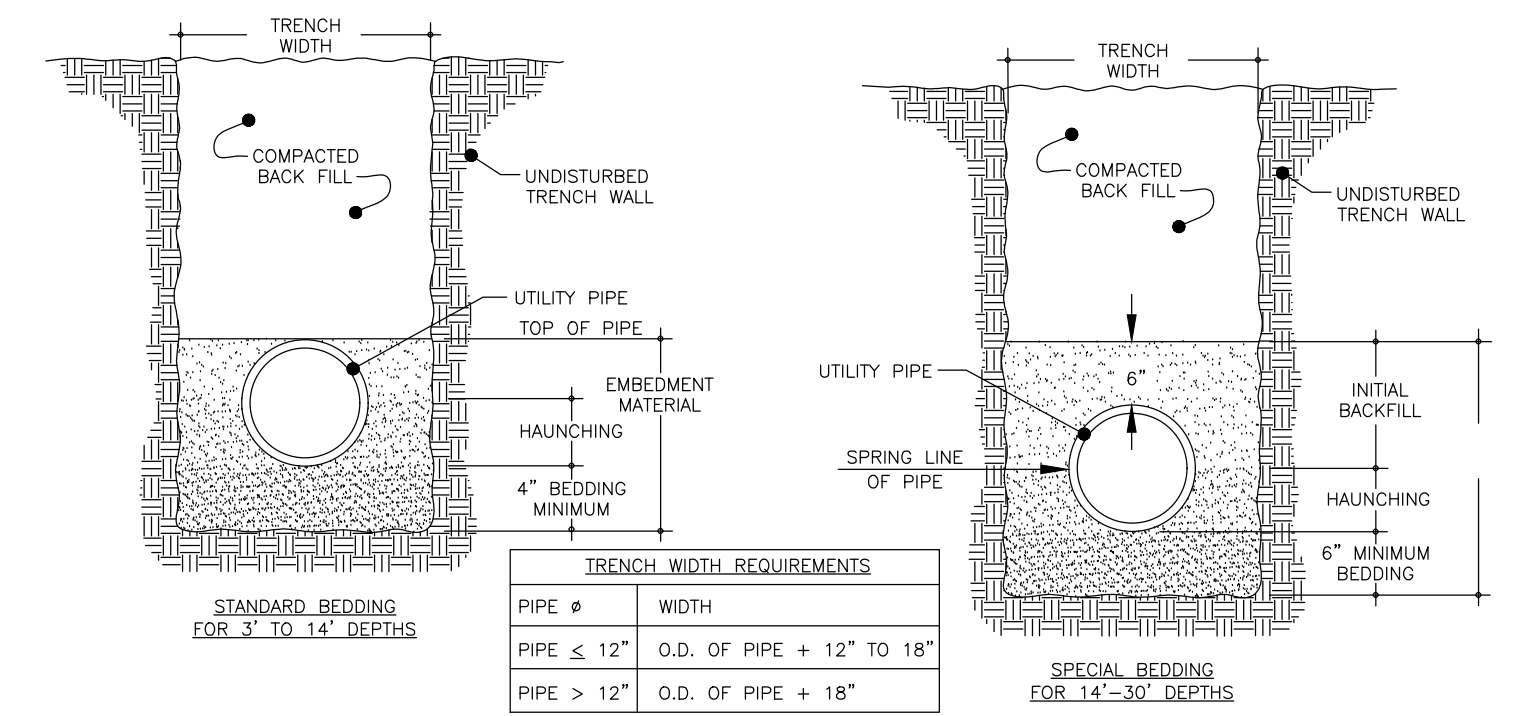
1. FOR VERT. BEND DOWN IN EXCESS OF 11 1/4" BEND, ANCHORAGE SHALL BE DESIGNED BY ENGINEER.
2. FOR VERT. BEND UPWARD, BLOCKING TO BE SIMILAR TO THAT FOR HORIZ. BEND.
3. GLANDS & BOLTS SHALL BE PROTECTED FROM CONC. BY PLASTIC SHEETING WHEN POURING THRUST BLOCKS.
4. ALL THRUST BLOCK & SUPPORT CONC. SHALL 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.

PIPE SIZE: 30" BEND, 45" BEND, 22 1/2" BEND, 11 1/2" BEND, TEE, PLUG

PIPE SIZE	30" BEND		45" BEND		22 1/2" BEND		11 1/2" 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"

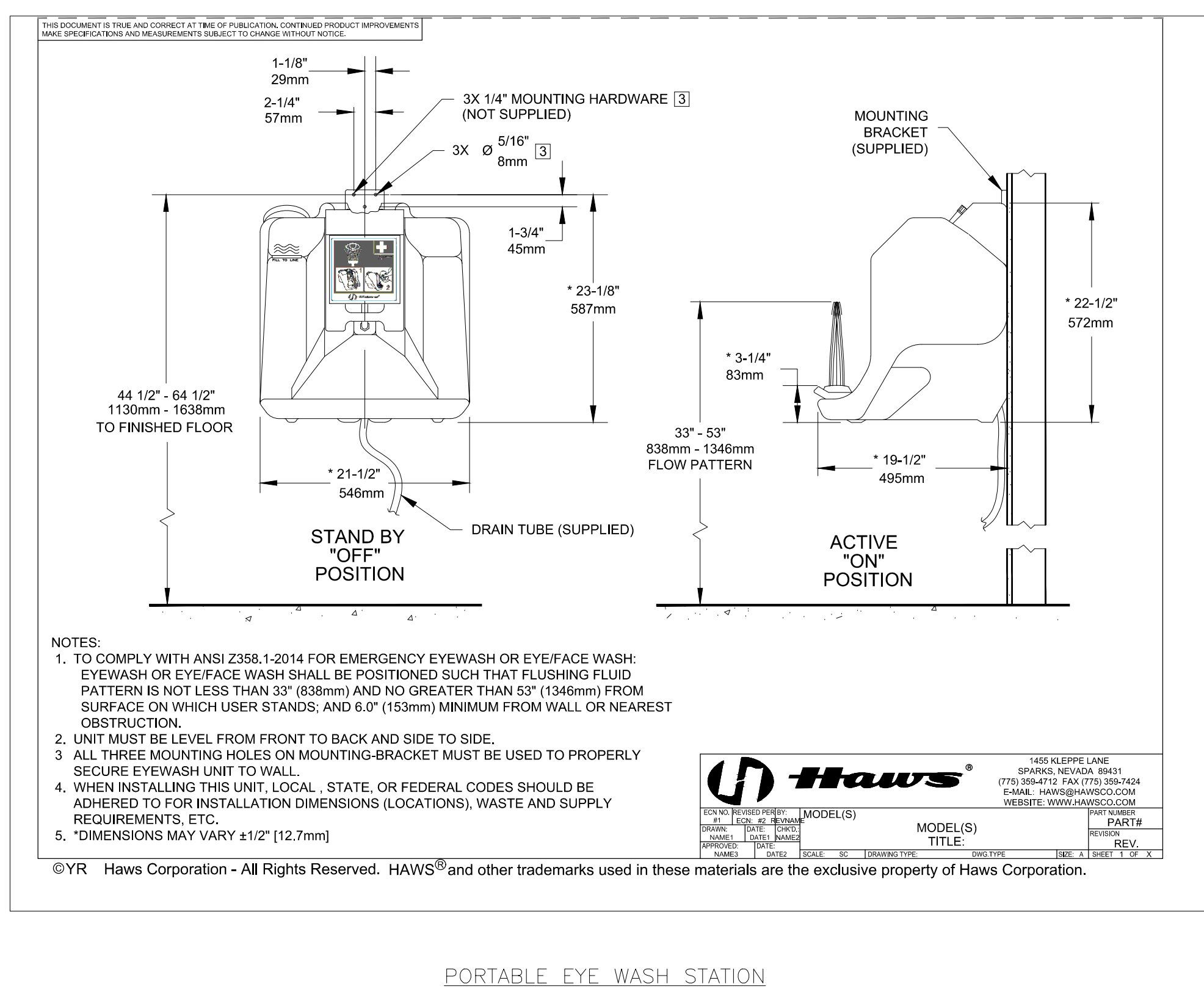
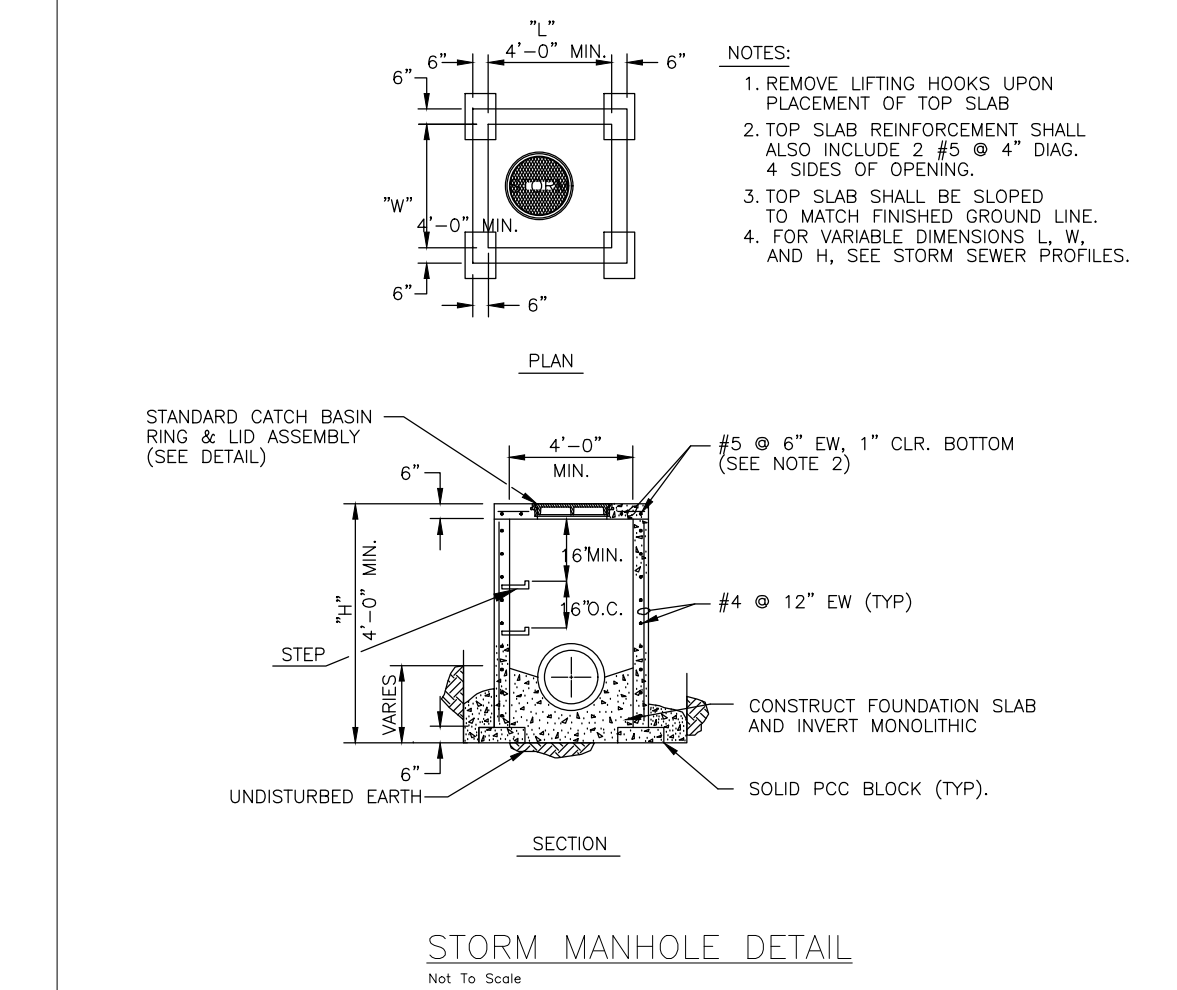
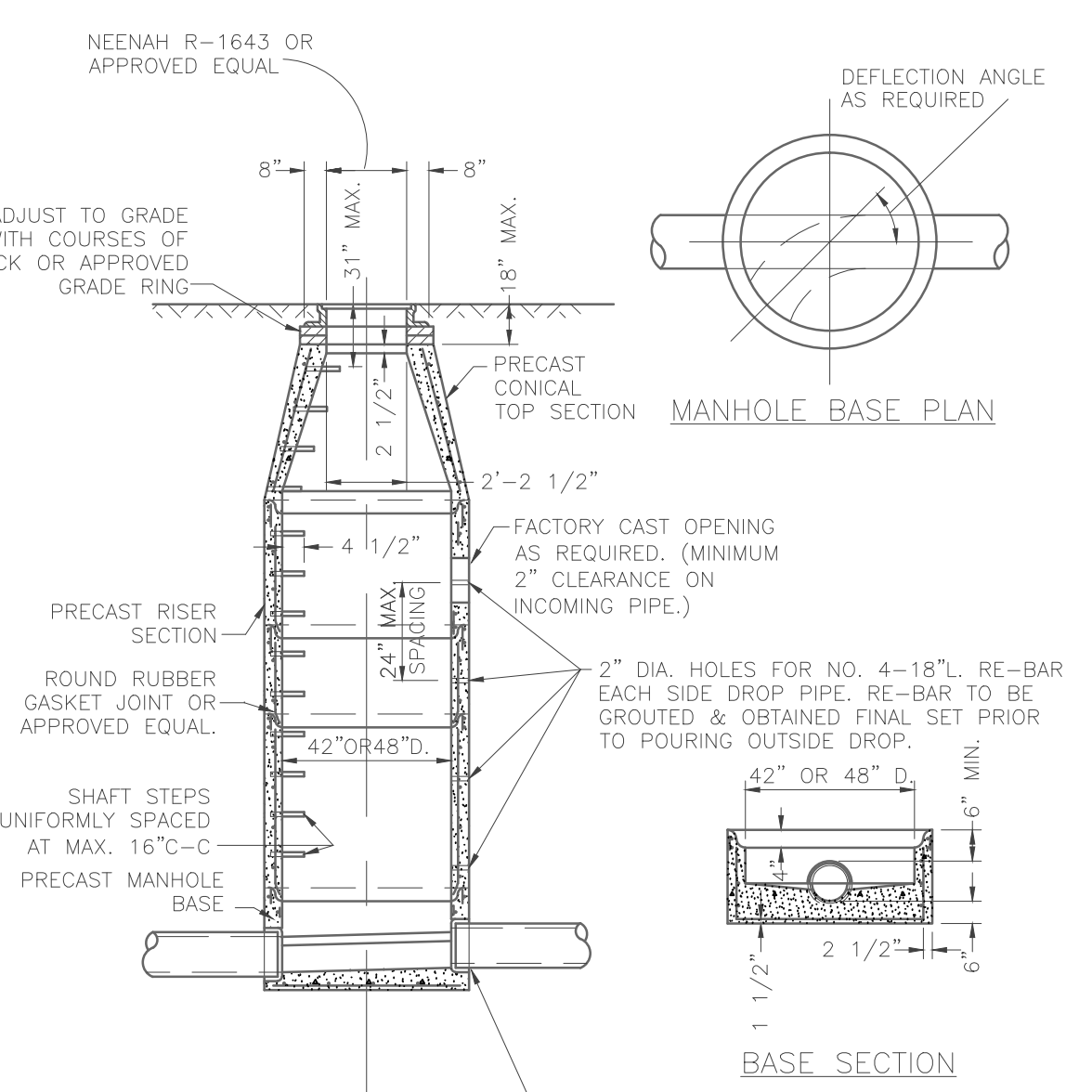
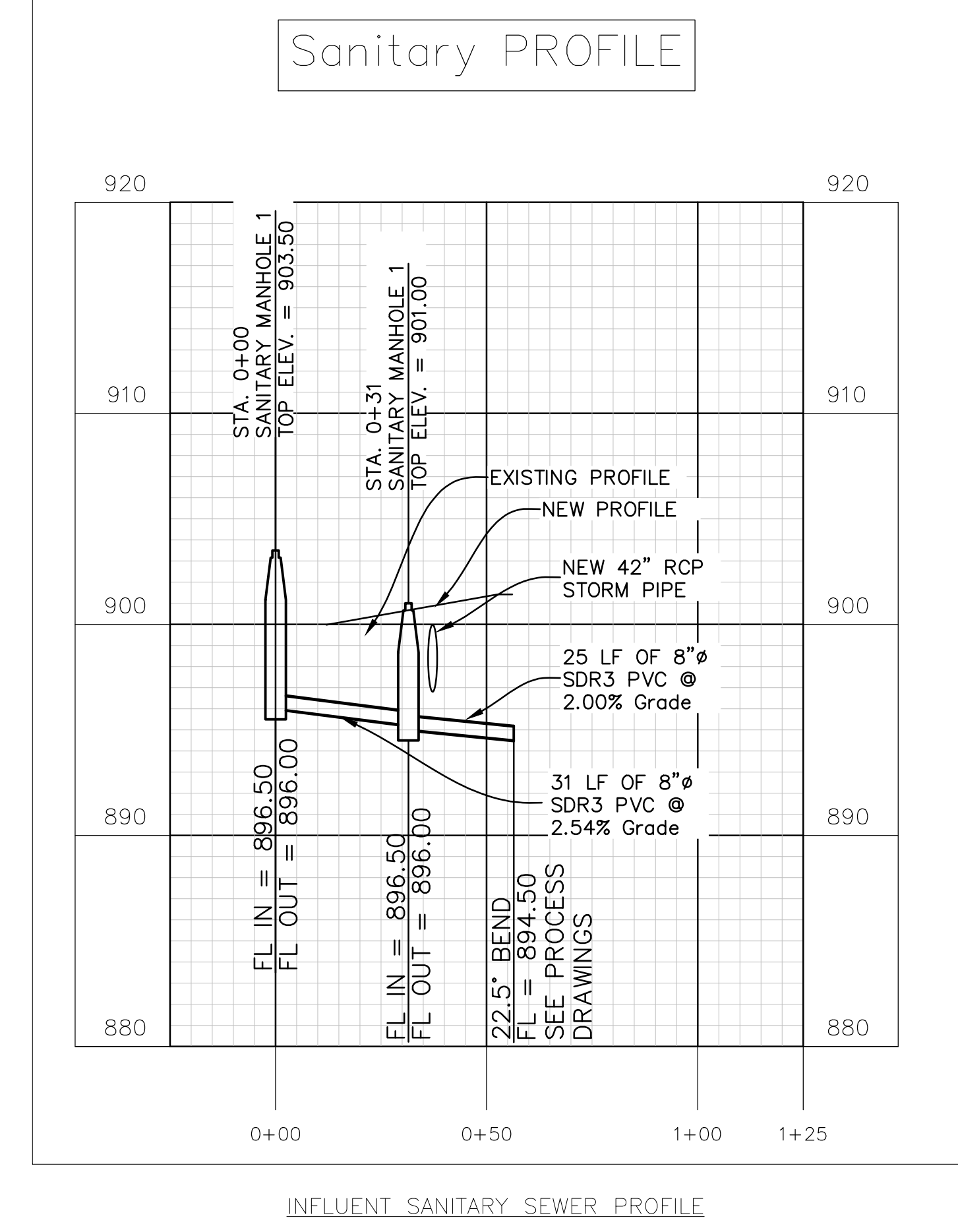
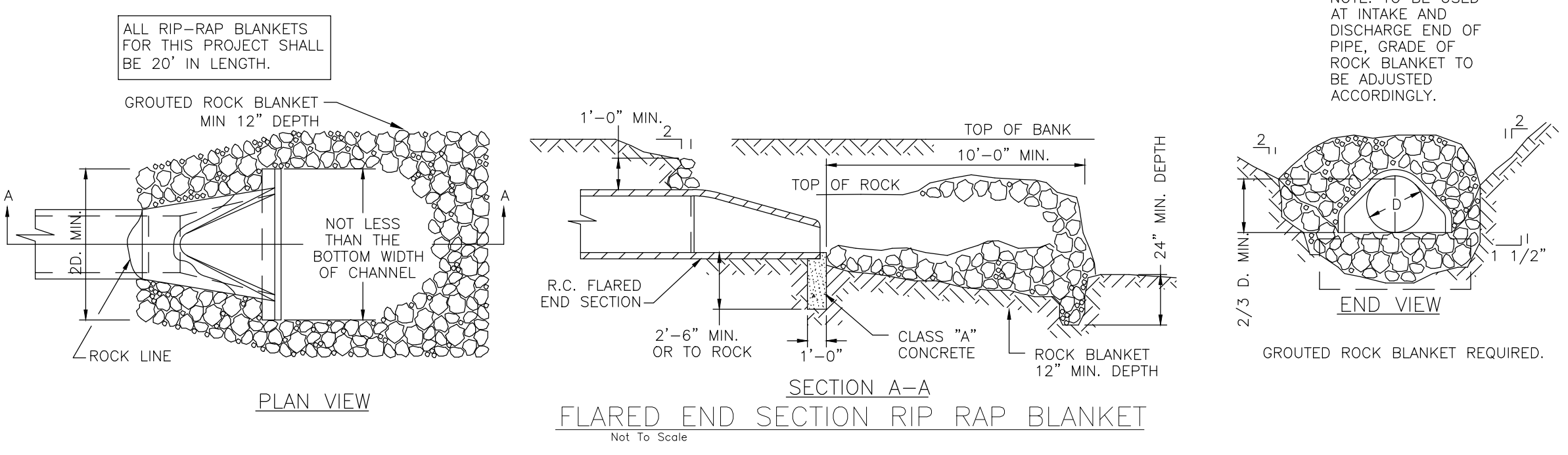
CONCRETE SECTION DETAILS
Not To Scale

THRUST BLOCK CONSTRUCTION
Not To Scale



- 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



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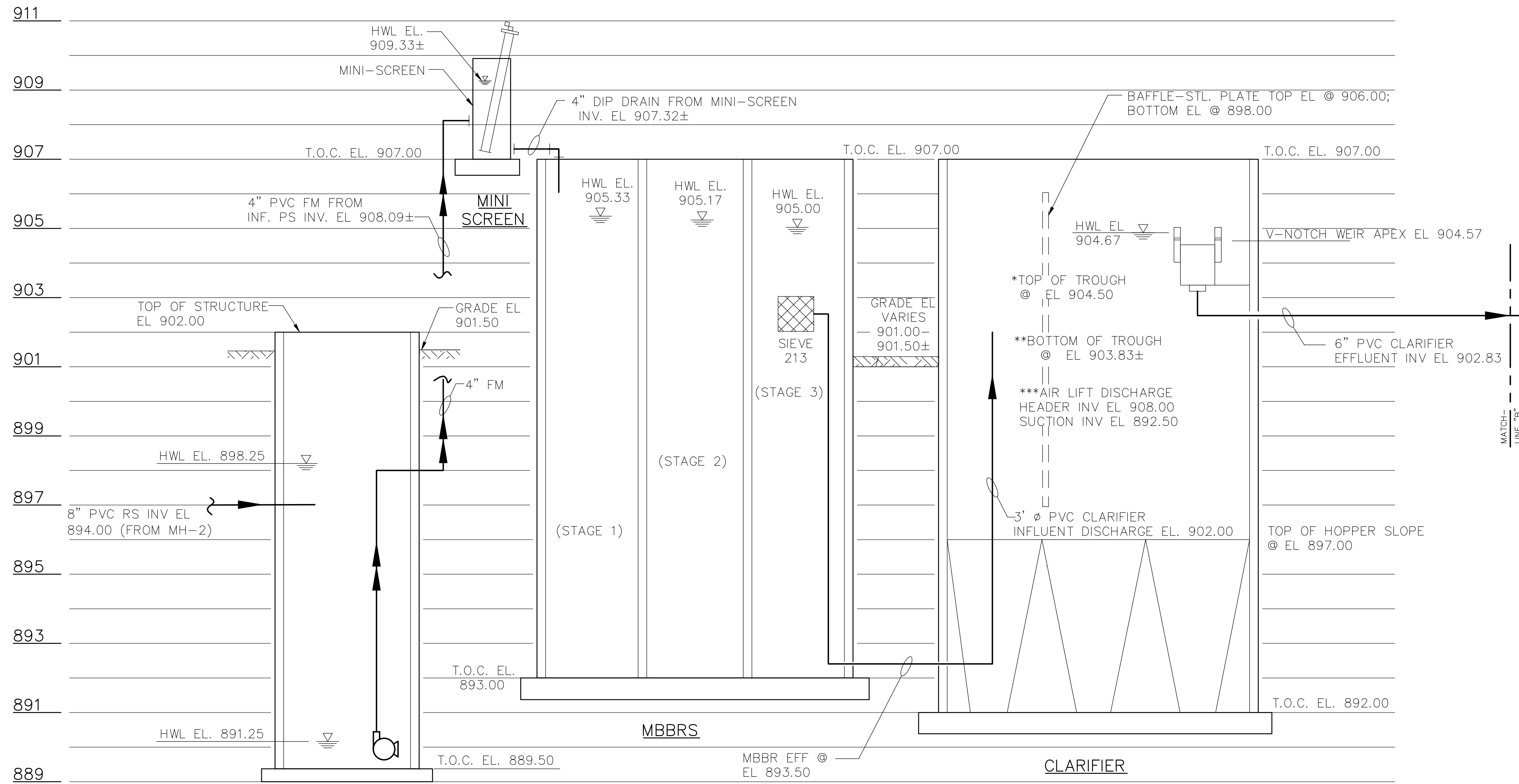
DETAIL SHEET

BROOKLYN W/TF
HAGER DRIVE
RICHMOND, KY

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

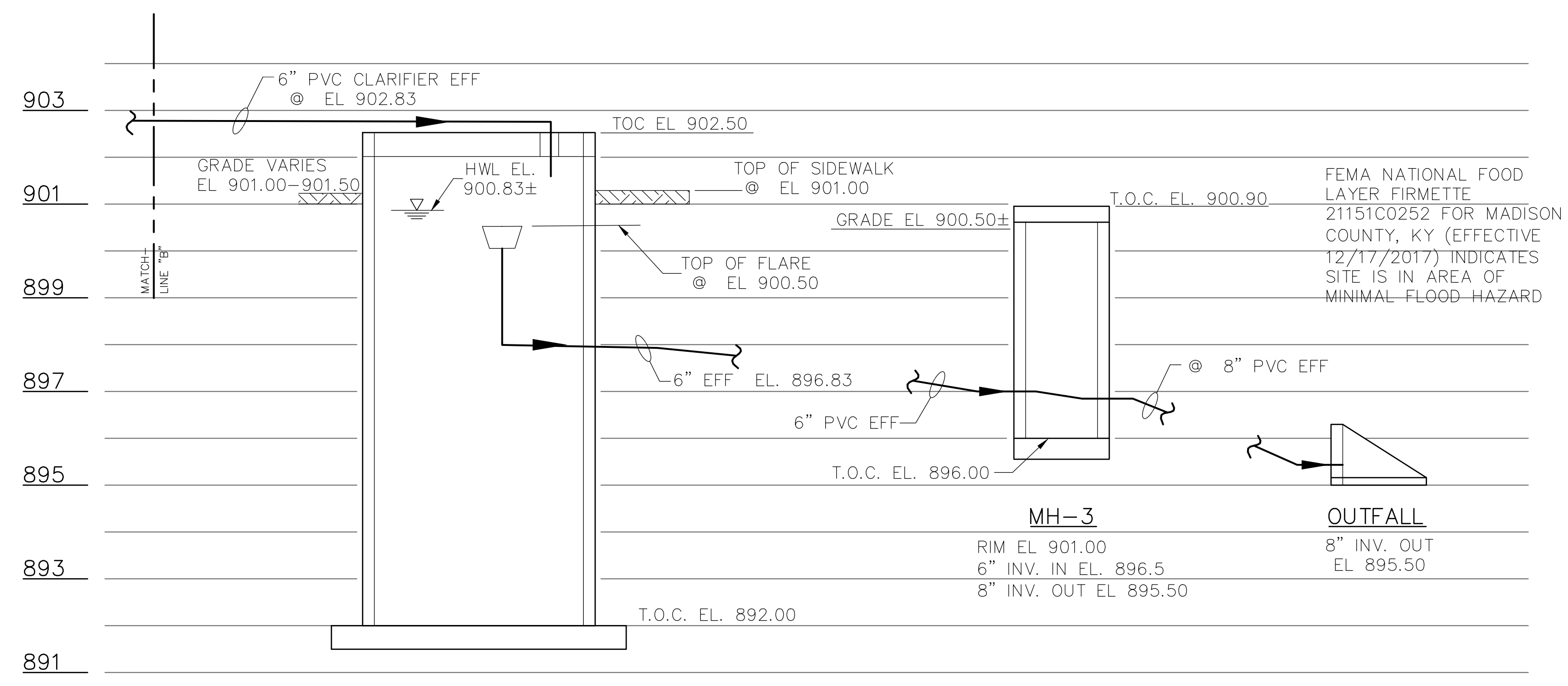
STATE OF ARKANSAS
Professional Engineer
No. 17357
BENJAMIN KUENZEL

SEAL DATE: 07/30/2020
DRAWN BY: BJK
PROJ NUMBER: 18-0475
DATE: 07/30/2020
DRAWING NO: C06



INFLUENT PUMP STA./EQ/PRE-AERATION

WASTEWATER HYDRAULIC PROFILE
VERTICAL SCALE: 1" = 5'-0" HORIZONTAL SCALE: NONE



CONTACT TANK / POST-AERATION

WASTEWATER HYDRAULIC PROFILE
VERTICAL SCALE: 1" = 5'-0" HORIZONTAL SCALE: NONE

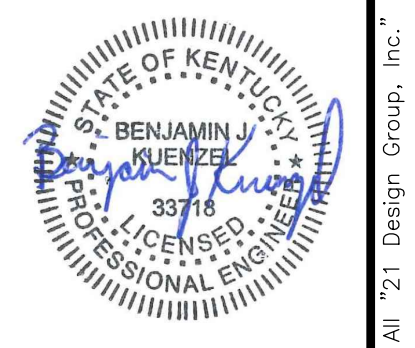
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HYDRAULIC PROFILE

BROCKLYN WWTF
HAGER DRIVE
RICHMOND, KY

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



SEAL DATE	07/30/2020
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PROJ NUMBER	0542-19
DATE	07/30/2020
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DESIGN CRITERIA:

PLANT INFLUENT FLOW

Q_{ADF} = 40,000 GPD
 Q_{PDF} = 160,000 GPD
 Q_{PHF} = 240,000 GPD

MBBR INFLUENT FLOW

140,000 GPD
 140,000 GPD
 200,000 GPD

INF. PS/EQ

DIMENSIONS: 10'X10'X9'
 TOTAL VOLUME: 6,732 GAL.
 HRT @ ADF: 4 HRS.
 HRT @ PDF: 1.2 HRS
 MIXING AIR: 20 SCFM/1,000 CF
 P-111 - 30 GPM @ 20-FT TDH
 P-112 - 110 GPM @ 20-FT TDH
 P-113 - 110 GPM @ 20-FT TDH

MBBRS

DIMENSIONS: 8'X8'X12.17' (AVG WATER DEPTH)
 TOTAL VOLUME: 17,478 GAL.
 HRT @ ADF: 10.5 HRS.
 HRT @ PDF: 3.0 HRS
 MEDIA FILL: 4.3%
 TOTAL SURF AREA: 13,894 M²

CLARIFIERS:

DIMENSIONS: 10'X 20' X 12'-10"
 SURFACE AREA: 200 SF
 SOR @ PDF: 700 GPD/SF
 SOR @ PHF: 1,000 GPD/SF
 WEIR LENGTH: 20 FT.
 WEIR OVERFLOW RATE: @ PHF: 10,000 GPD/FT.

CONTACT TANK/POST AERATION

DIMENSIONS: 10'X6'X8.83'
 TOTAL VOLUME: 3,964 GAL.
 HRT @ PDF: 41- MINUTES
 (W/OUT INCLUDING EFFLUENT PIPE HRT.)

POST AERATION

MIXING AIR : 15 SCFM/1,000 CF

PAA FEED PUMP

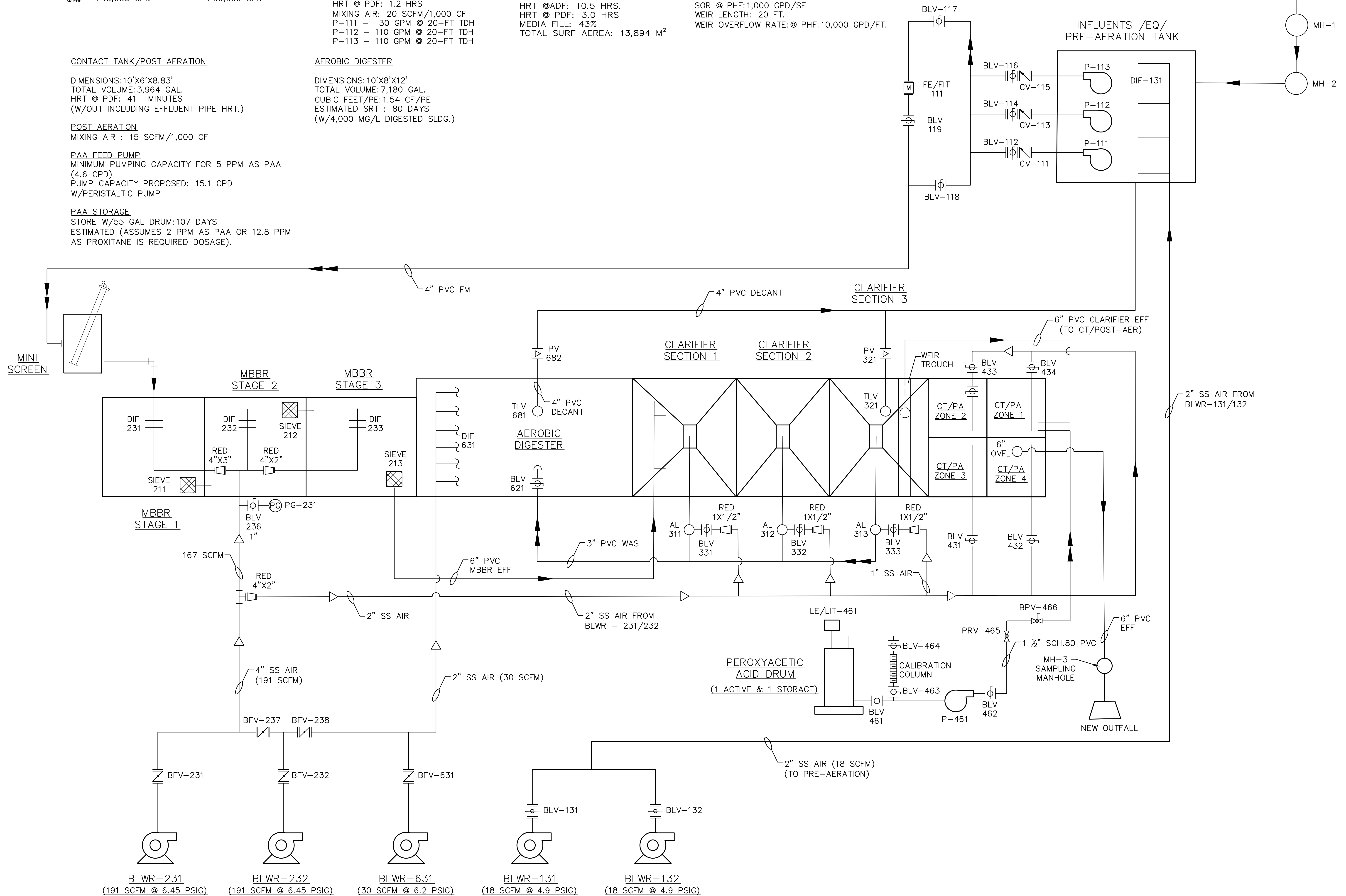
MINIMUM PUMPING CAPACITY FOR 5 PPM AS PAA (4.6 GPD)
 PUMP CAPACITY PROPOSED: 15.1 GPD
 W/PERISTALTIC PUMP

PAA STORAGE

STORE W/55 GAL DRUM: 107 DAYS
 ESTIMATED (ASSUMES 2 PPM AS PAA OR 12.8 PPM AS PROXITANE IS REQUIRED DOSAGE).

AEROBIC DIGESTER

DIMENSIONS: 10'X8'X12'
 TOTAL VOLUME: 7,180 GAL.
 CUBIC FEET/PE: 1.54 CF/PE
 ESTIMATED SRT : 80 DAYS
 (W/4,000 MG/L DIGESTED SLDG.)



PROCESS FLOW DIAGRAM

BROCKLYN WWTF
 HAGER DRIVE
 RICHMOND, KY

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



SEAL DATE: 07/30/2020
 DRAWN BY: MZ
 PROJ NUMBER: 0542-19
 DATE: 07/30/2020
 DRAWING NO: P2

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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 BE 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, CAPS, MATS 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 OF 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 PRIOR 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 WITHIN 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 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) SPECIMEN AT 28 DAYS, AND KEEP ONE (1) IN RESERVE.
11. PROVIDE SHEAR KEY AND WATERSTOP AT ALL CONSTRUCTION & CONSTRUCTION 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 ENGINEER'S 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.

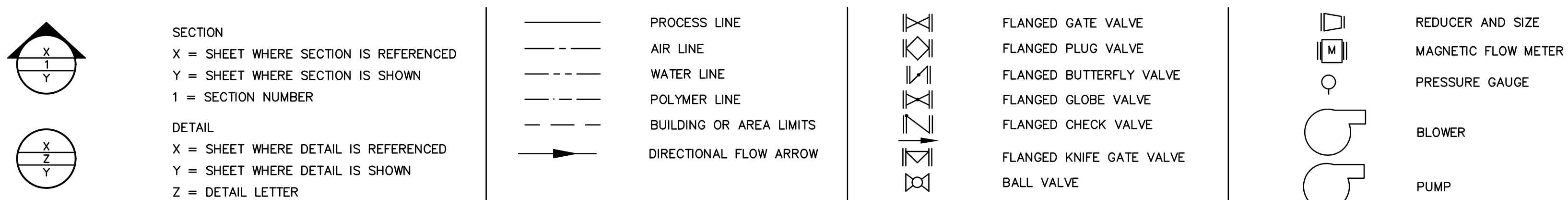
DESIGN LOADS:

Table listing design loads: FLOOR LIVE LOADS - 150 PSF, WALKWAY - 100 PSF, ROOF LIVE LOAD - 30 PSF, ROOF SNOW LOADS - Pg = 25 PSF, Pf = 18 PSF, Ce = 1.0, C1 = 1.0, L = 1.1, WIND DESIGN DATA - MIN 28 DAY COMPRESSIVE STRENGTH: 5,000 PSI, ENTRAINED AIR: 6 ± 1%, W/C (MAX) 0.40, EARTH QUAKE DESIGN DATA - OCCUPANCY CATEGORY = II, Ie = 1.25, Ss = 0.178 g, S1 = 0.083 g, SITE CLASSIFICATION = D, Sps = 0.204 g, SD1 = 0.133 g, SEISMIC DESIGN CATEGORY = C

ABBREVIATIONS:

Table listing abbreviations: A ARCHITECTURAL, GALL GALLON, PSI POUNDS PER SQUARE INCH, ABON ABANDONED, GALV GALVANIZED, PT POINT, AC TO BE ABANDONED, CAP OPEN END, GEN GENERATOR, POLY VINYL CHLORIDE, ADF AVERAGE DAILY FLOW, GLDIP GLASS LINED DUCTILE IRON PIPE, PVC 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, GRD GRADING, AL ALUMINUM, AIR LIFT, GRNDR GRINDER, ALUM ALUMINUM SULFATE, GRTG GRATING, GATE VALVE, ALT ALTERNATE, GY GATE VALVE, APPROX APPROXIMATE(LY), H HIGH, PSI POUNDS PER SQUARE INCH, AR AIR RELEASE, HB HOSE BIBB, POINT POINT, ARV AIR RELEASE VALVE, HDG HOT DIP GALVANIZED, PV PLUG VALVE, ASPH ASPHALT, HOPE HIGH DENSITY POLYETHYLENE, POLY VINYL CHLORIDE, AVG AVERAGE, HDR HEADER, REDUCER REDUCING, REF REFERENCE, B/ BOTTOM OF, HGT HEIGHT, REVD REQUIRED, CEV CHECK VALVE, HH HANDHOLE, REVISION, BF BLIND FLANGE, HORIZ HORIZONTAL, RJ RESTRAINED JOINT, BFP BELT FILTER PRESS, HP HIGH POINT; HORSE POWER, RAILING, BFV BUTTERFLY VALVE, HR HOUR, RM ROOM, BITUM BITUMINOUS, HRV HYDRAULIC RETENTION TIME, RND ROUND, BLDG BUILDING, HVAC HEATING, VENTILATION & AIR CONDITIONING, BLV BALL VALVE, HW HOT WATER; HANDWHEEL, RS RAW SEWAGE, BLWR BLOWER, HWL HIGH WATER LEVEL, RWSPS RAW SEWAGE PUMP STATION, BENCH BENCHMARK, ID INSIDE DIAMETER, RW RAW WATER, BYP BYPASS, IN INCH, RWGV RESILIENT WEDGE GATE VALVE, BW BACKWASH, INF INFILTRANT, SAN SOUTH; STAIRS; STRUCTURAL, CB CATCH BASIN; CURB BOX, INSTR INSTRUMENT(ATION), SC SCUM; SCREW CONVEYOR, CC CENTER TO CENTER, INSUL INSULATION, SCFM STANDARD CUBIC FEET/ MINUTE, CEB CONCRETE EQUIPMENT BASE, INVERT INVERT, SCH SCHEDULE, CF CUBIC FEET; COMPRESSION FITTING, IP IRON PIPE, SCRN SCREEN, CL2 CHLORINE, JT JOINT, SEC SECTION, CL2G CHLORINE (GAS), LAB LABORATORY, SF SQUARE FEET, CL2L CHLORINE (LIQUID), LAD LADDER, SFP SLUDGE FEED PUMP, CL2S CHLORINE (SOLUTION), LAT LATERAL, SLUICE GATE, CL2V CAST IRON, LAV LAVATORY, SM STATIC MIXER, CISP CAST IRON SOIL PIPE, LB POUND, SMH SANITARY MANHOLE, CL, CLEAR, LBS POUNDS, SUP SUPPLEMENT, CMP CORRUGATED METAL PIPE, CP LOCAL CONTROL PANEL, SOR SURFACE OVERFLOW RATE, CMU CONCRETE MASONRY UNIT, LD LEVEL TRANSDUCER, SP SPACE(D); SAMPLE PORT, CONC CONCRETE, CONCENTRIC, LE LEVEL ELEMENT, SPEC SPECIFICATION, SPECIFIED, CO CONC, LF LINEAR FEET, SPL SAMPLE; SAMPLE LINE, CON COUPLING, LONG, SQ SQUARE, CPG CORRUGATED POLYVINYLCHLORIDE PIPE, LIT LEVEL INDICATING TRANSMITTER, SLUICE RETURN, CSP CORUGATED STEEL PIPE, LM LEVEL TRANSMITTER, SS STAINLESS STEEL, CT CONTACT TANK (PAA), LW LONG RADIUS, SSK SERVICE SINK, CW CLOSE TO WALL, LS LUMP SUM, LEVEL SWITCH, ST STATION, CU COPPER; CUBIC, LSH LEVEL SWITCH HIGH, STA STANDARD, CUP CUPPER PIPE, LSL LEVEL SWITCH LOW, STL STEEL, CV CHECK VALVE (SWING TYPE), LT LIGHT, SW SOLVENT WELDED, CW CHAINWHEEL CLOCKWISE, LWL LOW WATER LEVEL, SWK SIDEWALK, SYP SQUARE YARDS, CY CUBIC YARDS, M MATERIAL, MECHANICAL; METER, MAX MAXIMUM, T TANK; TELEPHONE, D DEMO, MBBR MOVING BED BIOLOGICAL REACTOR, DET DETAIL, MBS MANUAL BAR SCREEN, DI DUCTILE IRON, MCC MOTOR CONTROL CENTER, DIA DIAMETER, MECH MECHANICAL, DIFFUSER, MFM MAGNETIC FLOW METER, DIP DUCTILE IRON PIPE, MFR MANUFACTURER, DISCH DISCHARGE, MFT MAGNETIC FLOW TRANSMITTER, DN DOWN, MGD MILLION GALLONS PER DAY, DISSOLVED OXYGEN, MH MANHOLE, MIN MINIMUM, DP DEEP, DR DRAIN, MISC MISCELLANEOUS, DS DIGESTED SLUDGE, MJ MECHANICAL JOINT, DV DIAPHRAGM VALVE, MLSS MIXED LIQUOR SUSPENDED SOLIDS, DWG DRAWING, MON MONUMENT, MTD MOUNTED, MV MUD VALVE, N NORTH, UN UNIT HEATER, NAOL SODIUM CHLORIDE, ULTS ULTRASONIC LEVEL SENSOR, EFF EFFLUENT, SODIUM HYDROXIDE, ULT ULTRASONIC LEVEL TRANSDUCER, EJ EXPANSION JOINT, NC NORMALLY CLOSED, UN UNION, EL ELEVATION, NO NORMALLY OPEN; NUMBER, UNO UNLESS NOTED OTHERWISE, ENG ENGINEER, NPT NATIONAL PIPE THREAD (TAPER), UV ULTRAVIOLET, EOP EDGE OF PAVEMENT, NPW NON-POTABLE WATER, NRS NON-RISING STEM, EQ EQUAL(LY), NTS NOT TO SCALE, NWL NORMAL WATER LEVEL, EQPM EQUIPMENT, ES EXTENDED STEM, ESMT EASEMENT, EXH EXHAUST, OD OUTSIDE DIAMETER; OXIDATION DITCH, EXH EXISTING, OE OVERHEAD ELECTRIC, EXP EXPANSION, OPNG OPENING, VCP VITRIFIED CLAY PIPE, VERT VERTICAL, FBW FILTER BACKWASH, FCE FINAL CLARIFIER EFFLUENT, VFD VARIABLE FREQUENCY DRIVE, FCO FLOOR CLEANOUT, OPNG OXYGEN REDUCTION POTENTIAL, VF VFIELD, VFD OVERHEAD UTILITY, VLF VALVE, VOL VOLUME, FDC FIRE DEPARTMENT CONNECTION, OU OVERFLOW, VSD VARIABLE SPEED DRIVE, FDN FOUNDATION, OVF OVERFLOW, VT VENT, FDS FLOW DIVERSION STRUCTURE, P PUMP, VTR VENT THROUGH ROOF, FE FLOW ELEMENT, PAA PEROXYACETIC ACID, W WINDOW; WIDE; WEST, FF FLARED END SECTION, PC POINT OF CURVE, WITH, FES FINISH FLOOR, PCC PORTLAND CEMENT CONCRETE, W/O WITHOUT, PD PUMP DISCHARGE, PE PEAK DAILY FLOW, WAS WASTE ACTIVATED SLUDGE, PFI FINISH(ED), PERF PERFORATED, WC WATER CLOSET, FIN FINISH(ED), PERFD PROCESS FLOW DIAGRAM, WH WATER HEATER, FIT FLOW INDICATING TRANSMITTER, FLG FLANGE(D); FLUSHING CONNECTION, PFU POLYMER FEED UNIT, WJ WELDED JOINT, FL FLEXIBLE FLOOR, PG PRESSURE GAUGE, WM WATER LEVEL, FLR FLOOR, PHF PEAK HOURLY FLOW, WTP WATER MAIN, FM FORCEMAIN; FLOW METER, PHOS PHOSPHATE, WT WEIGHT, FNPT FINE NATIONAL PIPE THREAD, PI PRESSURE INDICATOR, WTR WATER TREATMENT PLANT, FIRE PROTECTION, PL PLATE; PROPERTY LINE, NW WASTEWATER, FP FIBERGLASS REINFORCED PLASTIC, PLC PROGRAMMABLE LOGIC CONTROLLER, WWTP WASTEWATER TREATMENT PLANT, FS FLOW SWITCH/FLOAT SWITCH, POLY POLYMER, XFER TRANSFER, FT FOOT/FEET, PP POWER POLE, YD YARD, FTG FOOTING, PR PROCESS, YH YARD HYDRANT, FUT FUTURE, PROP PROPOSED, YV YARD VALVE, G NATURAL GAS; GATE; GENERAL, PS PUMP STATION, PSY SQUARE YARDS

PROCESS AND SHEET LEGEND:

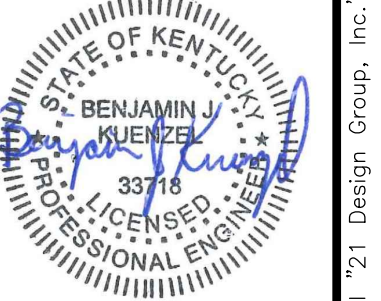


PROCESS NOTES, ABBREVIATIONS AND LEGENDS



1351 Jefferson, Suite 301, Washington, MO 63090, mail@designgroup.net, Phone: 636-262-2627

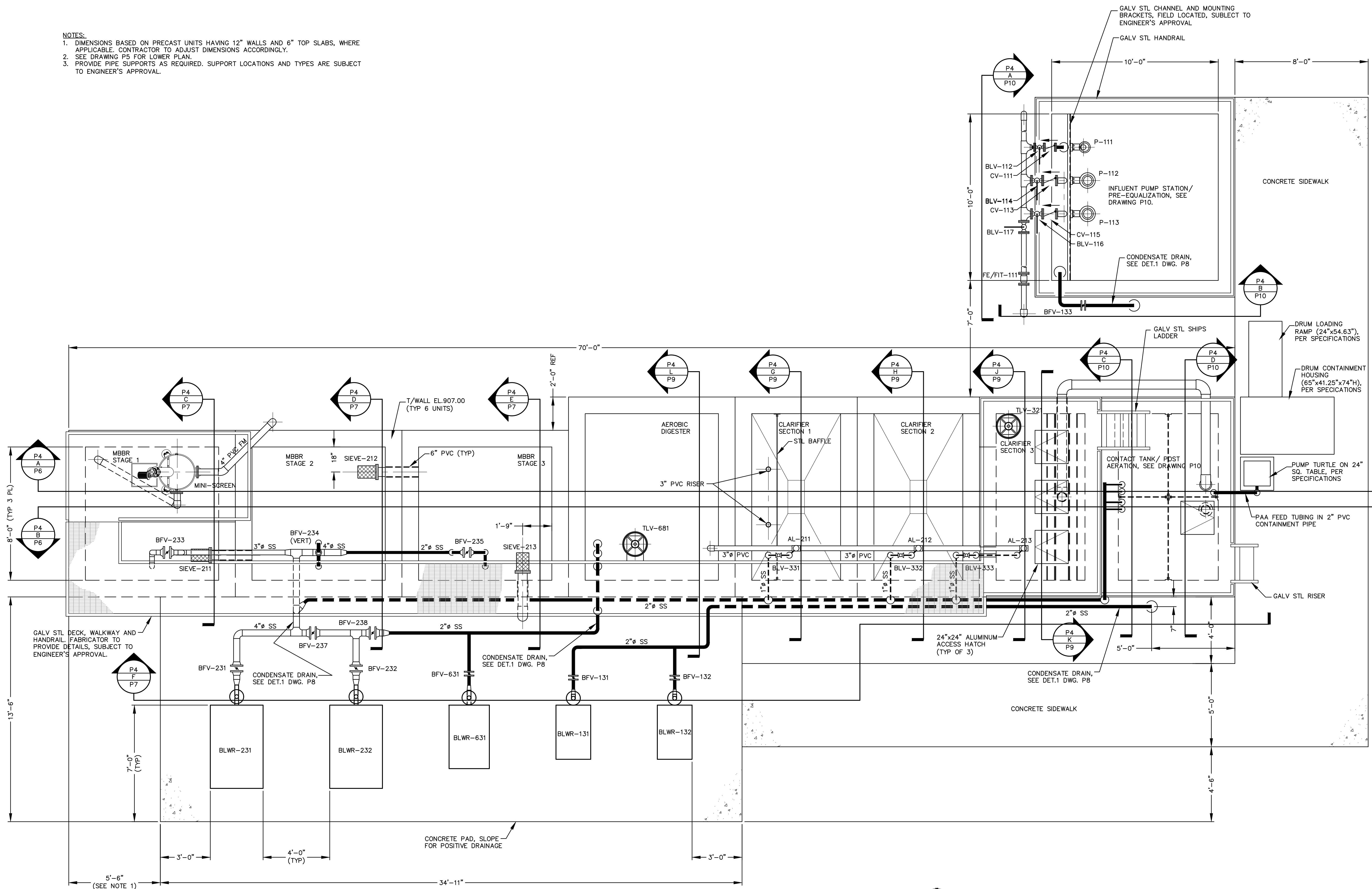
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SEAL DATE: 07/30/2020, DRAWN BY: DDG, PROJ NUMBER: 0542-9, DATE: 07/25/2020, DRAWING NO: P3

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- NOTES:
1. DIMENSIONS BASED ON PRECAST UNITS HAVING 12" WALLS AND 6" TOP SLABS, WHERE APPLICABLE. CONTRACTOR TO ADJUST DIMENSIONS ACCORDINGLY.
 2. SEE DRAWING P5 FOR LOWER PLAN.
 3. PROVIDE PIPE SUPPORTS AS REQUIRED. SUPPORT LOCATIONS AND TYPES ARE SUBJECT TO ENGINEER'S APPROVAL.



PROCESS UPPER PLAN (ABOVE EL. 901.00)
SCALE: 3/8" = 1'-0"

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PROCESS UPPER PLAN (ABOVE EL.901.00)

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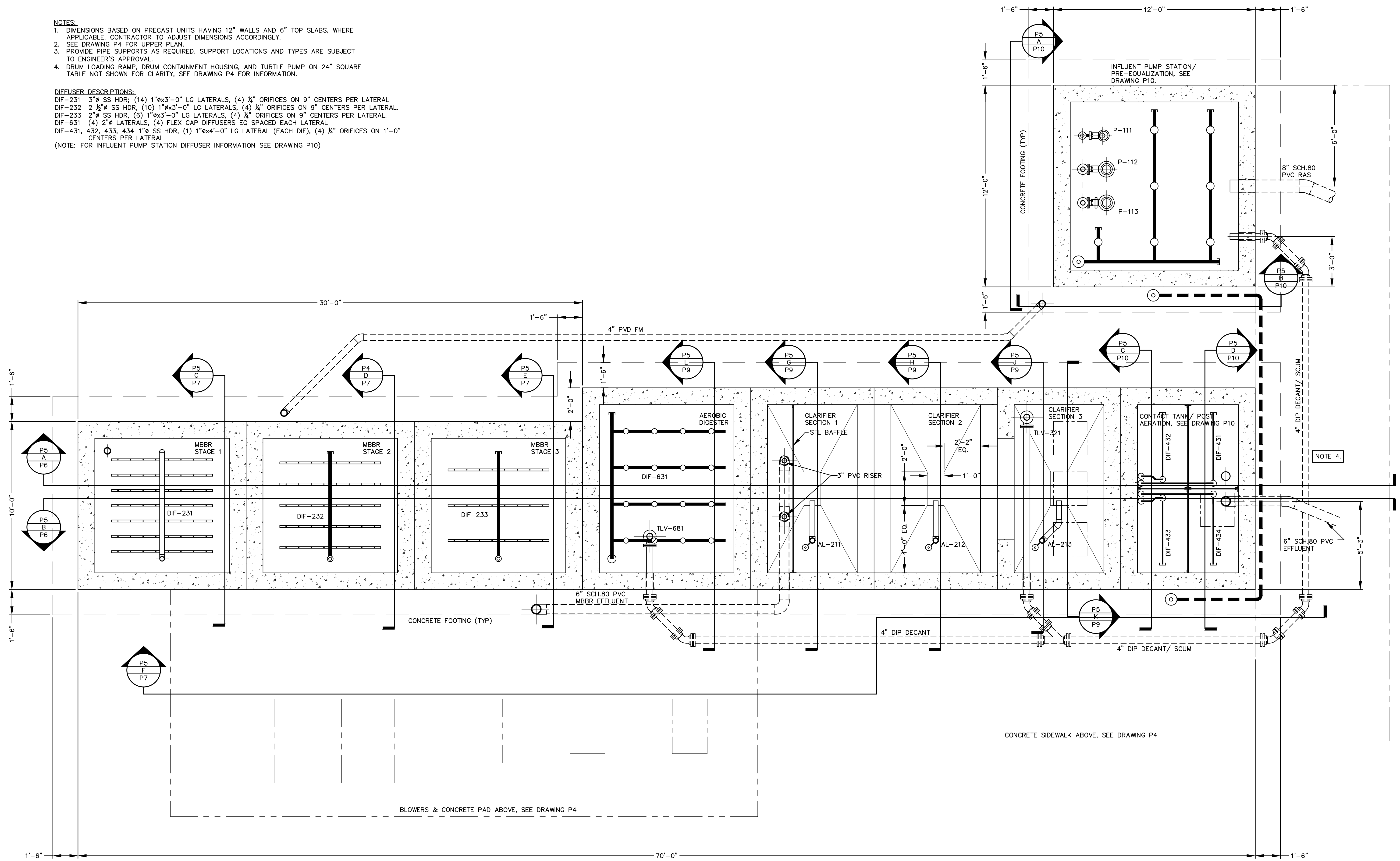


SEAL DATE: 07/30/2020
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PROJ NUMBER: 0542-19
DATE: 07/23/2020
DRAWING NO: P4

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- NOTES:
- DIMENSIONS BASED ON PRECAST UNITS HAVING 12" WALLS AND 6" TOP SLABS, WHERE APPLICABLE. CONTRACTOR TO ADJUST DIMENSIONS ACCORDINGLY.
 - SEE DRAWING P4 FOR UPPER PLAN.
 - PROVIDE PIPE SUPPORTS AS REQUIRED. SUPPORT LOCATIONS AND TYPES ARE SUBJECT TO ENGINEER'S APPROVAL.
 - DRUM LOADING RAMP, DRUM CONTAINMENT HOUSING, AND TURTLE PUMP ON 24" SQUARE TABLE NOT SHOWN FOR CLARITY, SEE DRAWING P4 FOR INFORMATION.

DIFFUSER DESCRIPTIONS:
 DIF-231 3" SS HDR, (14) 1" x 3'-0" LG LATERALS, (4) 1/4" ORIFICES ON 9" CENTERS PER LATERAL
 DIF-232 2 1/2" SS HDR, (10) 1" x 3'-0" LG LATERALS, (4) 1/4" ORIFICES ON 9" CENTERS PER LATERAL
 DIF-233 2" SS HDR, (6) 1" x 3'-0" LG LATERALS, (4) 1/4" ORIFICES ON 9" CENTERS PER LATERAL
 DIF-631 (4) 2" LATERALS, (4) FLEX CAP DIFFUSERS EQ SPACED EACH LATERAL
 DIF-431, 432, 433, 434 1" SS HDR, (1) 1" x 4'-0" LG LATERAL (EACH DIF), (4) 1/4" ORIFICES ON 1'-0" CENTERS PER LATERAL
 (NOTE: FOR INFLUENT PUMP STATION DIFFUSER INFORMATION SEE DRAWING P10)



PROCESS LOWER PLAN (BELOW EL. 901.00)
 SCALE: 3/8" = 1'-0"

DATE	07/30/2020
DESIGNER	DDG
PERMIT SET	

21 DESIGN GROUP INC.
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 Washington, MO 63096
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PROCESS LOWER PLAN (BELOW EL.901.00)

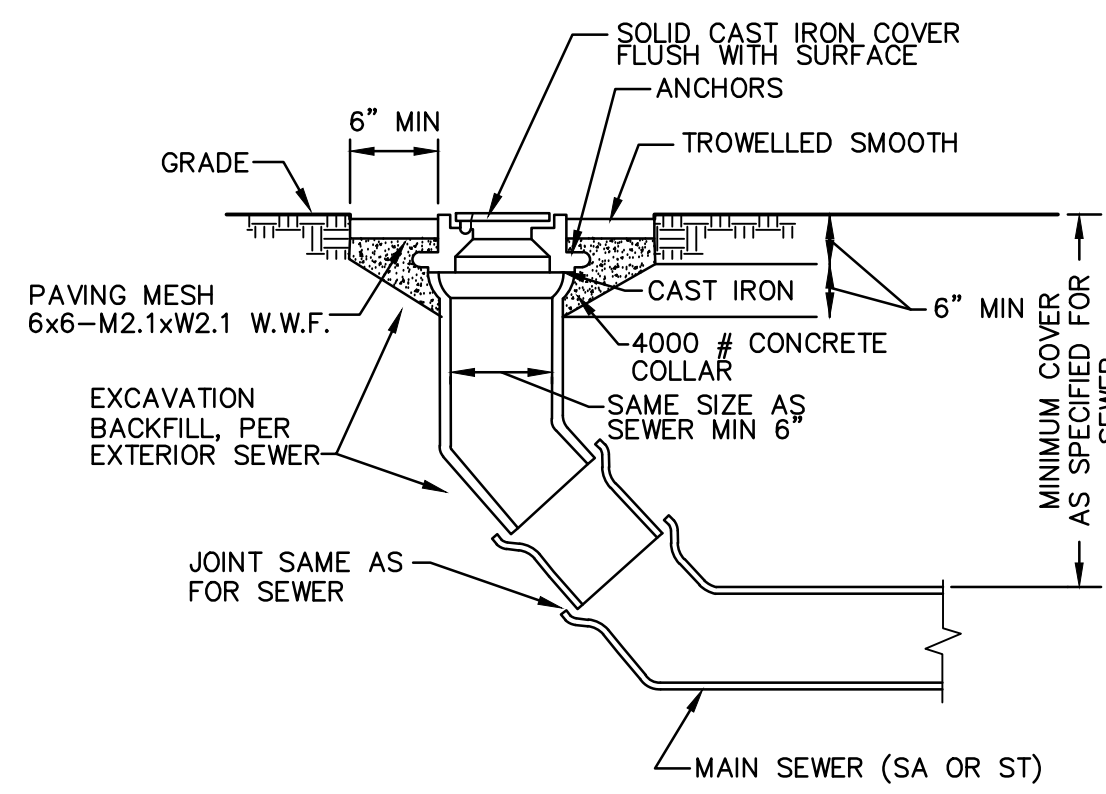
BROOKLYN WWTF
 HAGER DRIVE
 RICHMOND, KY

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



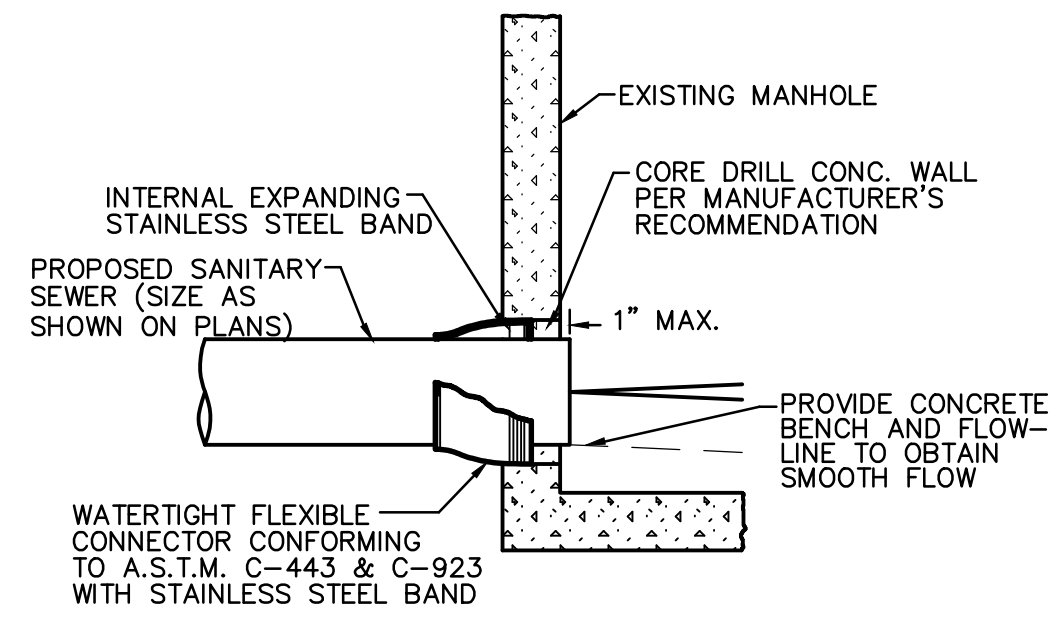
SEAL DATE	07/30/2020
DRAWN BY	DDG
PROJ NUMBER	0542-19
DATE	07/23/2020
DRAWING NO.	P5

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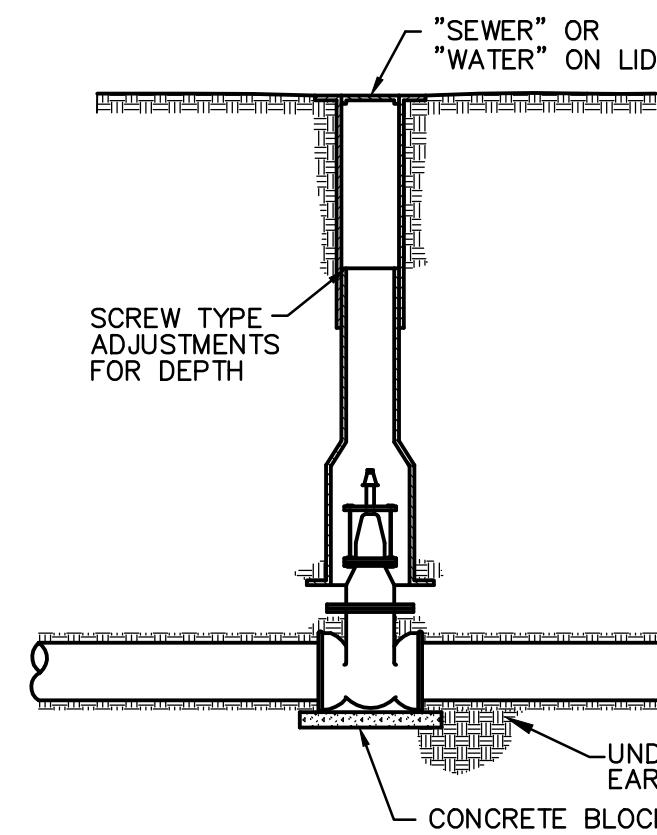
TYPICAL YARD CLEANOUT

SCALE: N.T.S.



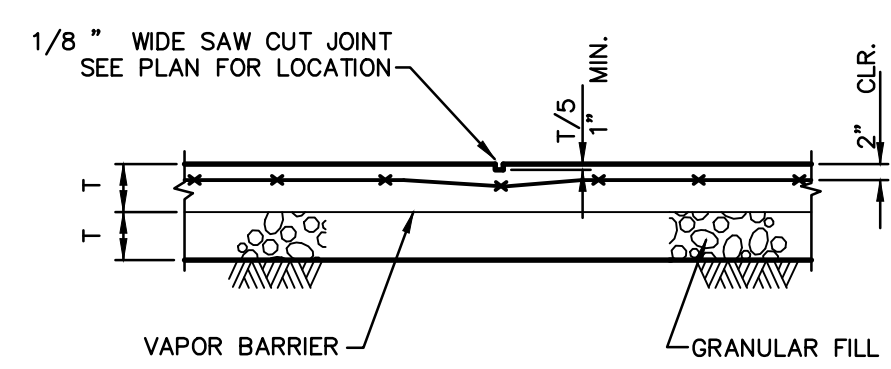
PIPE TO MANHOLE CONNECTION

SCALE: N.T.S.



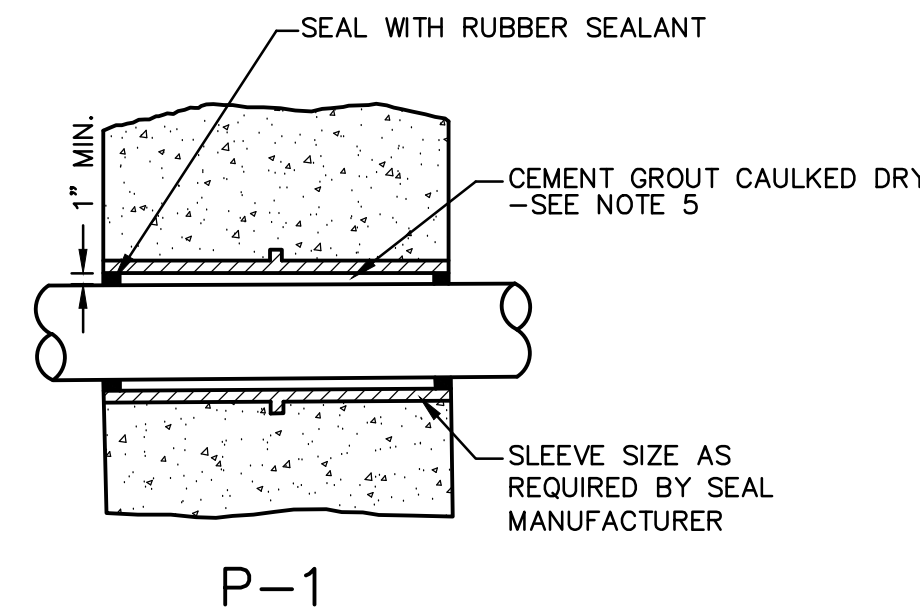
TYPICAL VALVE BOX INSTALLATION

SCALE: N.T.S.

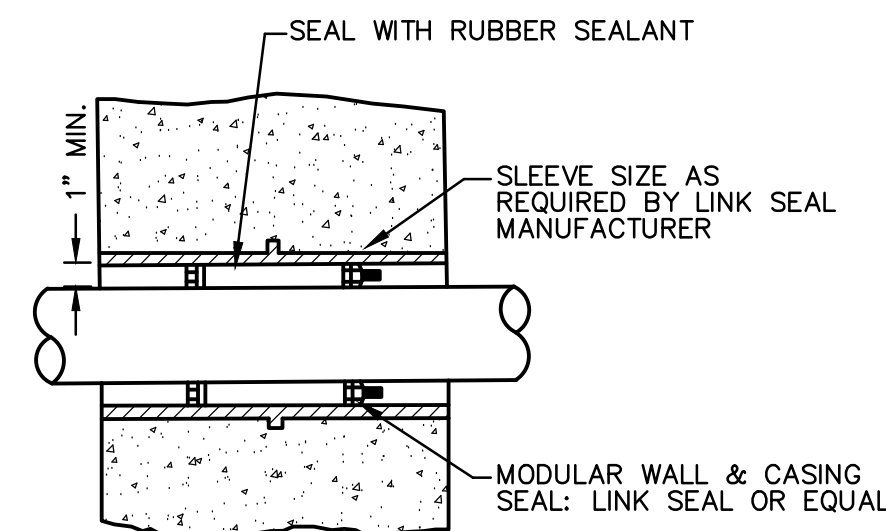


TYPICAL SLAB ON GRADE CONTROL JOINT

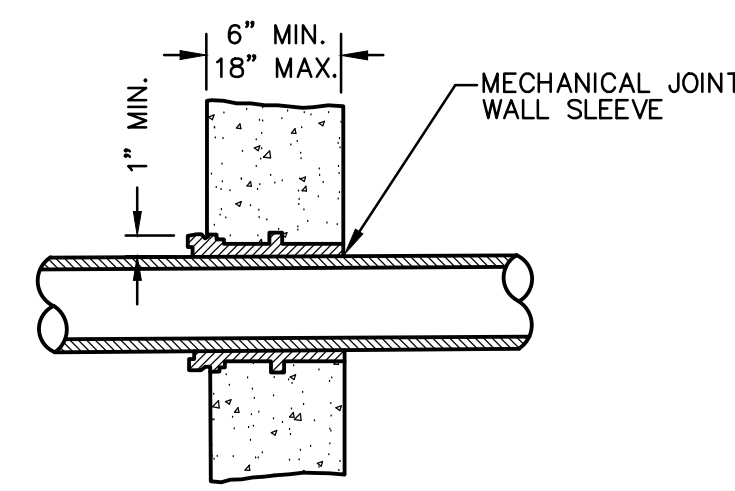
SCALE: N.T.S.



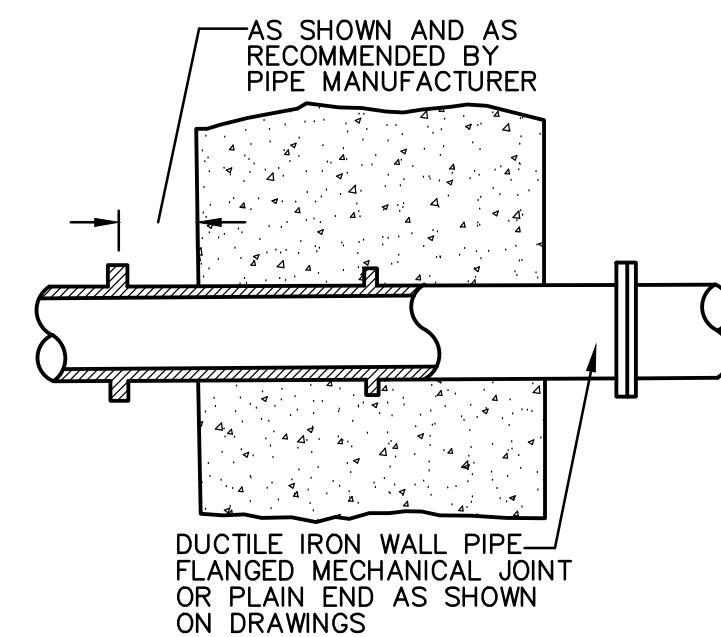
P-1



P-2



P-3



P-4

CONDITION	PIPE MATERIAL			
	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.

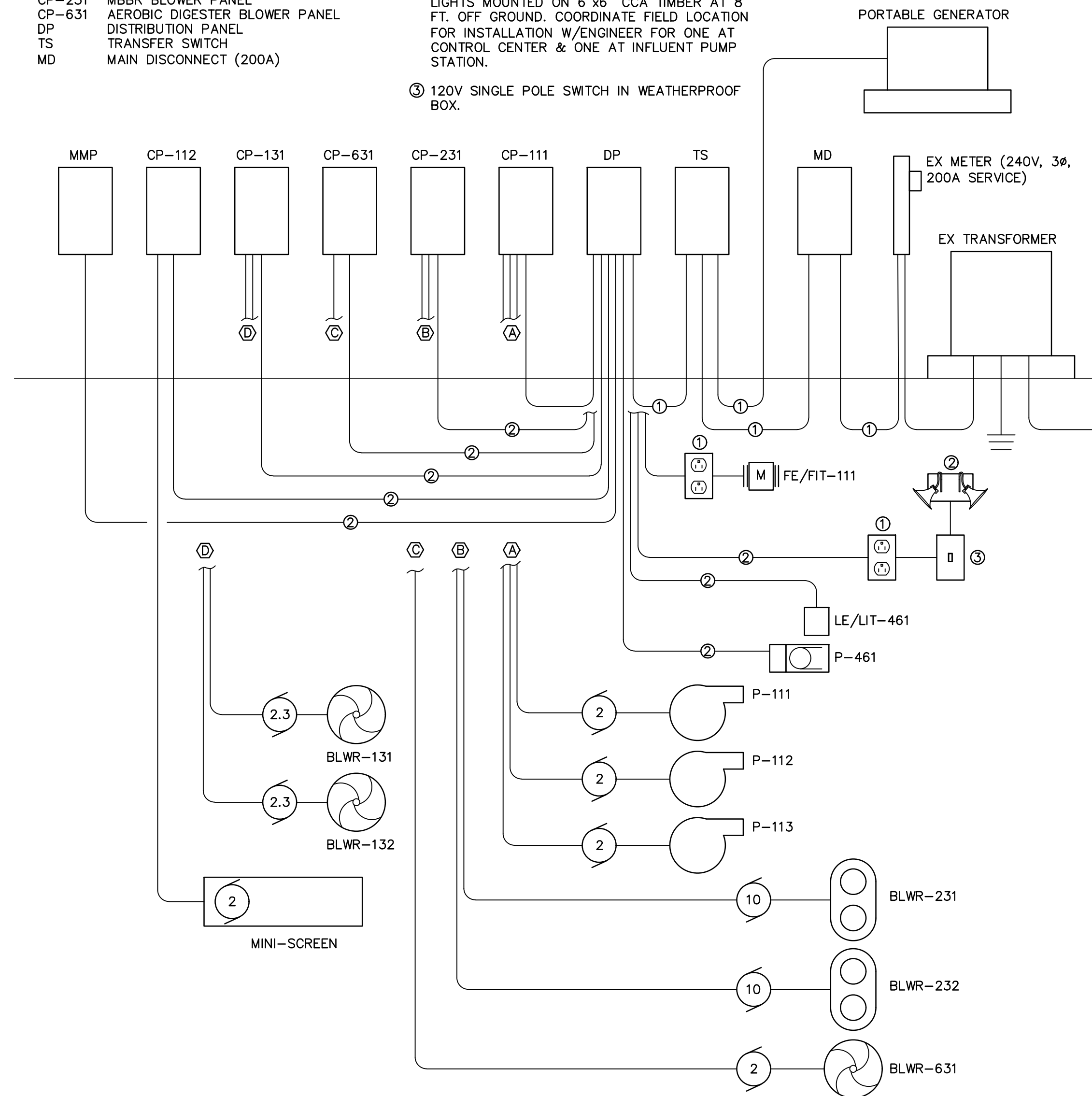
NOTES:

- 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.
- PASSAGE SHALL MEAN ANY ROOM, GALLERY, TUNNEL OR SIMILAR ENCLOSED SPACE IN WHICH PIPES RUN.
- ALL SLEEVES SHALL BE CAST IRON UNLESS OTHERWISE NOTED.
- FLANGES MAY BE INSTALLED FLUSH WITH WALL AND TAPPED FOR STUDS.
- CEMENT GROUT CAULKING MAY BE ELIMINATED FOR PASSAGE TO PASSAGE PENETRATIONS.
- LIQUID SHALL MEAN AN ELEVATION 1'-6" ABOVE MAXIMUM WATER ELEVATION.

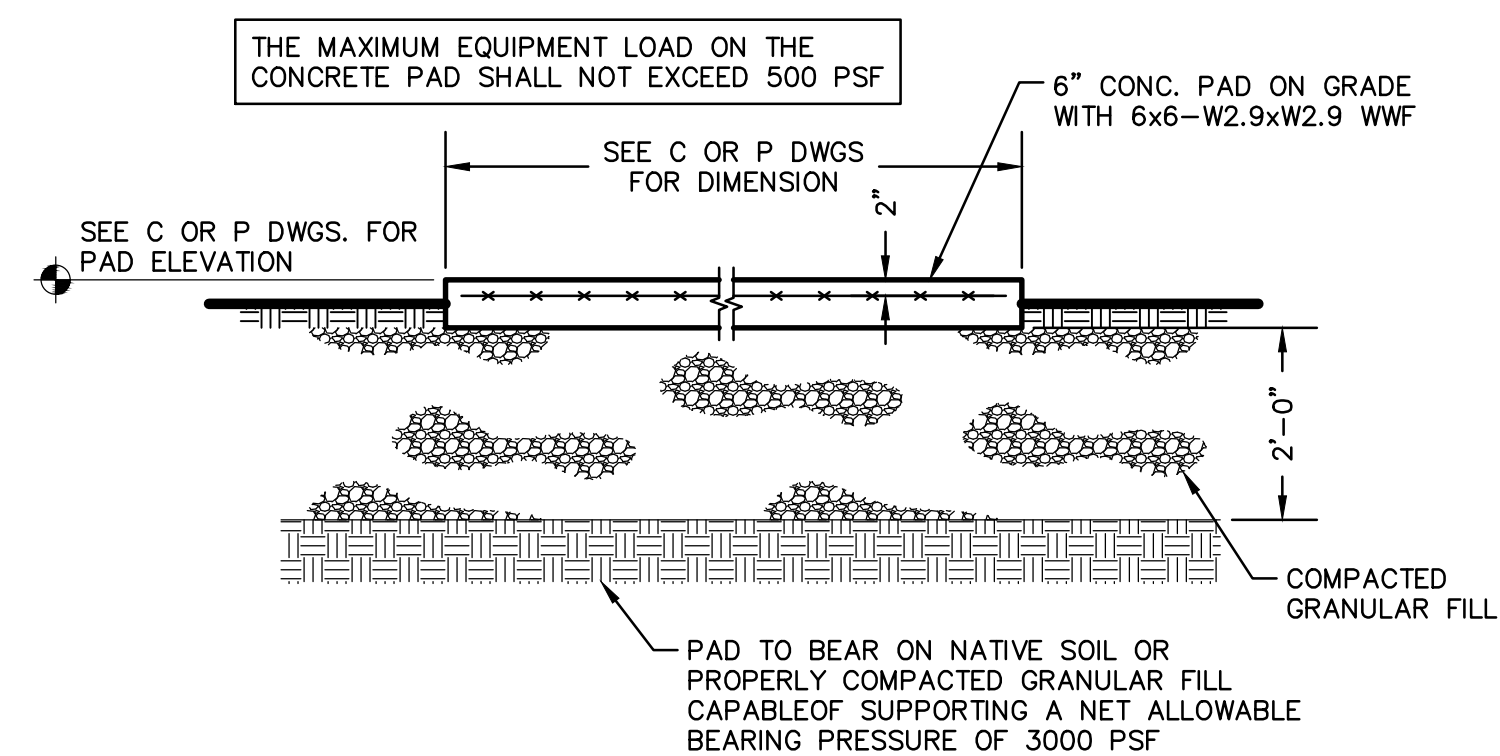
PIPE THROUGH WALLS DETAILS

SCALE: N.T.S.

- MMP MISSION MONITORING WELL
CP-111 INFLUENT PUMP STATION CONTROL PANEL
CP-112 MINI-SCREEN CONTROL PANEL
CP-131 PRE-AERATION BLOWER PANEL
CP-231 MBR BLOWER PANEL
CP-631 AEROBIC DIGESTER 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



TYPICAL EXTERIOR EQUIPMENT PAD ON GRADE

SCALE: N.T.S.

- ELECTRICAL RISER DIAGRAM NOTES:**
- CONTRACTOR IS REQUIRED TO INSPECT EXISTING ELECTRICAL SYSTEM, VERIFY EXISTING METER SIZE, AND VERIFY WIRE, CONDUCTOR AND CONDUIT SIZING REQUIREMENTS PRIOR TO SUBMITTING BID.
 - CONTRACTOR TO SUBMIT ELECTRICAL LAYOUT AND DESIGN TO ENGINEER FOR APPROVAL PRIOR TO ORDERING MATERIALS.
 - IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSTALL ALL ELECTRICAL EQUIPMENT NECESSARY FOR THE ENTIRE PROJECT INCLUDING ANY TRANSFORMER NEEDS.
 - IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSTALL ALL INSTRUMENTATION AND CONTROL PANELS NECESSARY FOR THE ENTIRE PROJECT.
 - UNISTRUT TO BE PROVIDED AS NEEDED TO INSTALL ALL ELECTRICAL AND CONTROL PANEL EQUIPMENT.
 - 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.
 - ALL WIRE AND CONDUCTORS SHALL BE ENCLOSED IN CONDUIT.
 - 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).

- DIGITAL INPUTS
 - P-111 RUN; P-111 FAIL
 - P-112 RUN; P-112 FAIL
 - P-113 RUN; P-113 FAIL
 - P-461 RUN; P-461 FAIL
 - BLWR-231 RUN; BLWR-231 FAIL
 - BLWR-232 RUN; BLWR-232 FAIL
- ANALOGUE INPUTS
 - LE/LIT-461 LEVEL (PAA STORAGE LEVEL)
 - FE/FIT-111 FLOW (INFLUENT METER)
 - BLWR-231 SPEED
 - BLWR-232 SPEED



**CONTACT TANK/ POST AERATION
PLAN AND SECTIONS**
BROCKLYN WWTF
HAGER DRIVE
RICHMOND, KY

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



SEAL DATE: 07/30/2020
DRAWN BY: DDG
PROJ NUMBER: 0542-9
DATE: 07/23/2020
DRAWING NO: