

JF Shields High School Lagoon System Upgrade

17688 SR-21 N
BEATRICE, AL 36425

SITE LOCATION

THE INTERSECTION OF
SR-21N AND 6TH AVE

SITE OWNER

MONROE COUNTY BOARD
OF EDUCATION



VICINITY MAP

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Jason B. Newton, P.E.
Ala. Reg. No. 26748

MCFADDEN ENGINEERING, INC
CIVIL AND ENVIRONMENTAL CONSULTANTS
2860 DAUPHIN ST., SUITE D
MOBILE, ALABAMA 36606
PH. 251-470-6870
FAX 251-470-6872



PROJECT NOTES

- 1) The contractor shall notify Paul Dean, Monroe County Board of Education, at 251-714-0530 at least 24-hours prior to beginning any work at the site.
- 2) The contractor shall be responsible for the safety, efficiency, and adequacy of his operation and shall initiate his own safety program.
- 3) Existing utility locations are approximate and are shown for informational purposes only. It will be the contractor's responsibility to determine if the locations shown are correct and to determine if there are additional utility lines that are not shown on the plans. Also, it will be the contractor's responsibility to protect all utility lines during construction with no additional compensation. The contractor shall notify the respective utility owner about any lines that may conflict with construction. For utility location service, the contractor shall call Alabama One Call (811) at least 48 hours before beginning construction. The engineer reserves the right to adjust project construction activities to avoid existing utilities.
- 4) The contractor shall provide the necessary signage and flagging to direct traffic in the construction zone, if required, to maintain a safe work site.
- 5) All disturbed streets and driveways, if damaged through the contractor and his equipment accessing the project site, shall be replaced in kind unless otherwise noted.
- 6) All property and right-of-way line locations are approximate. Required right-of-way lines shall be verified by the contractor as required.
- 7) Contractor shall maintain access to all buildings and facilities within J.F. Shields High School during construction.
- 8) All appropriate erosion control measures shall be implemented by contractor. The contractor shall adhere to the Alabama Handbook for Erosion Control, Sediment Control, and Stormwater Management for Construction Sites and Urban Areas by the Alabama Soil and Water Conservation Committee Volume 1 & 2, 2003 Edition, to prevent sediment laden runoff or eroded materials from leaving the construction site.

GENERAL SURVEY - DRAWING NOTES

- 1) Survey information provided by Civil Southeast from Andalusia, Alabama. The objective of the survey work was to provide a depiction of surface features and elevation information within the vicinity of a proposed lagoon upgrade project.
- 2) Locations of features presented by this plan drawing reference control points established by GPS Land surveying techniques. Datum is based on Geodetic GPS observations on Alabama West Zone State Plane Coordinate System via a CORS observation. This plan drawing does not represent a legal boundary or topographic survey and should be used for reference only. Elevations indicated by this plan drawing are in units of feet and decimals thereof.

GENERAL NOTES - ABBREVIATIONS

N.T.S : Not to Scale
 HDPE : High Density Polyethylene
 WTR : Water
 TYP : Typical
 SST : Stainless Steel 316

CONCRETE AND REINFORCEMENT STEEL

- 1) Concrete shall develop 2,000 psi compressive strength in 28 days unless noted otherwise.
- 2) Unless otherwise noted, reinforcing steel shall be deformed bars conforming to ASTM A615 S1, Grade 60.
- 3) Welded wire fabric shall conform to ASTM A185.
- 4) A 6 mil polyethylene vapor barrier is required under all slabs on grade, in enclosed areas.
- 5) A $\frac{1}{2}$ " bitumastic preformed expansion joint shall be placed at all locations noted on the drawings.
- 6) Design, material, and workmanship shall be in accordance with the current edition of the following standards unless noted otherwise:
 ACI 318 "Building Code Requirements for Reinforced Concrete"
 ACI 315 "Manual of Standard Practices for Detailing Reinforced Concrete Structures"
 ACI 301 "Specifications for Structural Concrete for Buildings"
- 7) All exposed edges of concrete shall have a $\frac{3}{4}$ " 45-degree chamfer.
- 8) All reinforcing hooks shall be standard ACI hooks unless otherwise noted.
- 9) Bar splices shall be staggered with a maximum of 50% of the bars spliced in any one location unless noted.
- 10) Unless noted otherwise, the minimum lap for bar splices and the minimum embedment for dowels shall be as follows:

BAR SIZE	SPLICE LENGTH OR EMBEDMENT
#3	1'-1"
#4	1'-3"
#5	1'-6"
#6	2'-1"
#7	2'-8"
#8	3'-6"
#9	4'-5"
#10	5'-8"
#11	6'-11"

CONTRACTOR NOTES

- 1) The latest edition of the ALDOT Standard Specifications for Highway Construction, Uniform Traffic Control Devices, and the Utility Manual shall be made part of this plan set.
- 2) The Contractor shall be solely responsible for maintaining a safe work place and shall comply with all applicable safety rules and regulations, as well as applicable ALDOT standard specifications.
- 3) If encasement pipe is required and used, the minimum cover for the encased pipe shall be 36". If the contractor discovers that existing conditions prevent these minimum cover requirements, the engineer shall be consulted immediately on the adequate cover for the section of pipe in question.
- 4) Backfill for all work in and around the roads associated with J.F. Shields High School shall be placed in accordance with the applicable provisions of the ALDOT Standard Specifications, latest edition.
- 5) Backfill for all excavation performed with 8' or less from the edge of pavement shall be placed at 95% of the AASHTO-T99.
- 6) Density requirements for backfill outside the roadway prism shall not be less than the density of the surrounding earth or 90% AASHTO-T99, whichever is greater.
- 7) The contractor is responsible to perform density tests and verify density requirements have been met.
- 8) Contractor shall be responsible for all erosion control measures as per ADEM and ALDOT requirements. Any fines levied as a result of non-compliance with erosion control requirement shall be paid by the contractor.
- 9) There shall be a minimum of 36" of cover over any force main.

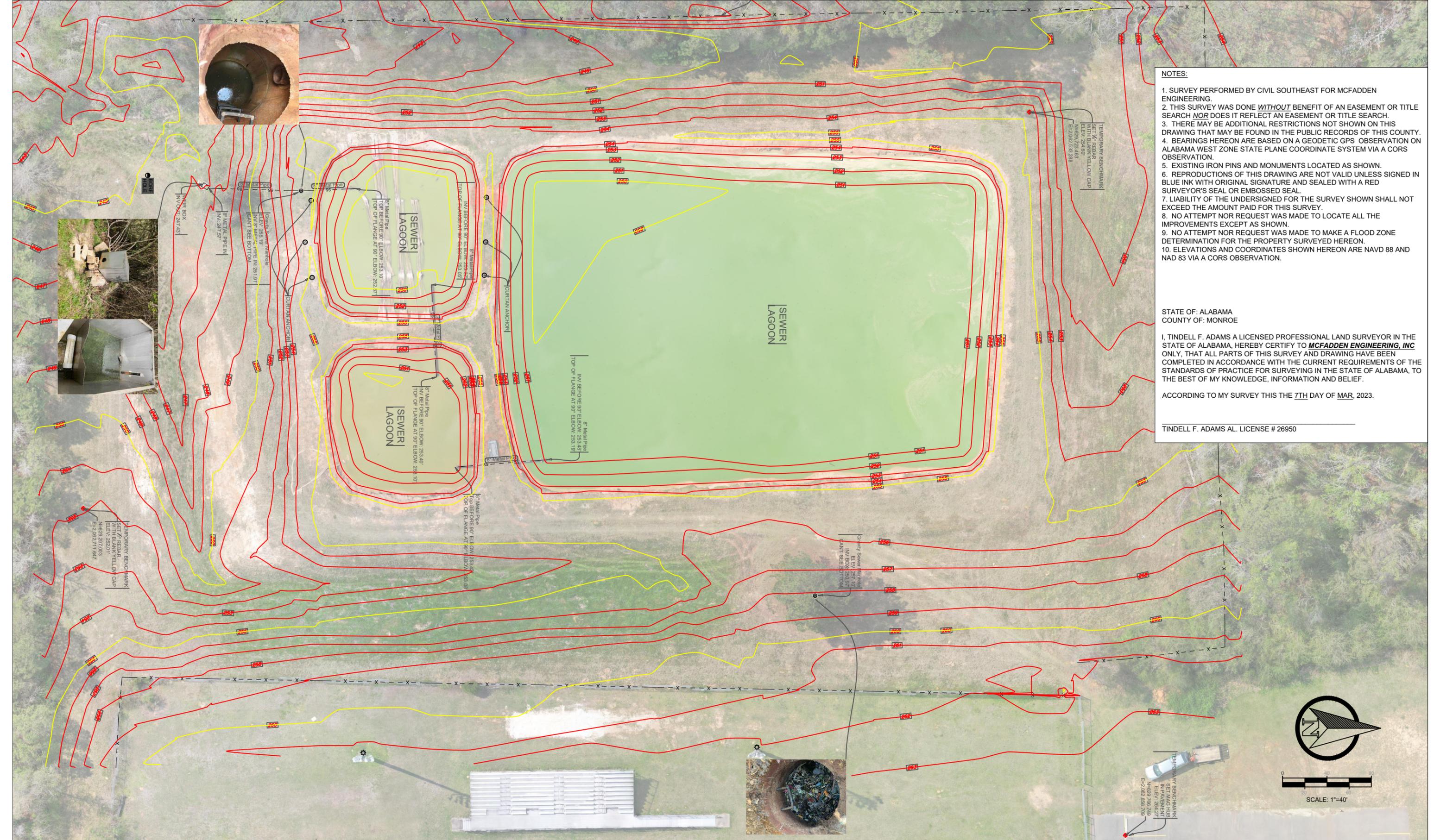
REVISION:	DESCRIPTION:	DATE:	McFadden Engineering, Inc. 2860 Dauphin Street, Suite D Mobile, Alabama 36606 www.mcfaddenengineering.com PHONE: (251) 470-6870 FAX: (251) 470-6872	SEAL:	JF Shields High School Lagoon System Upgrade	PROJECT No. MCBE004	DRAWING #:
					PATH: SERVER: \	SCALE: Not To Scale	DESCRIPTION: General Notes
					DESIGNED BY:	DRAWN BY:	CHECKED BY:
					APPROVED BY:	DATE CREATED:	SHEET #: 1



SUMMARY OF ESTIMATED QUANTITIES

Item Number	ALDOT Number	Description	Units	Quantity
1	205-A	Removal of Structure, Discharge Weir	Each	1
2	210-D	Borrow Excavation (For Lagoon Berm Rehab)	CY	9
3	600-A	Mobilization	Each	1
4	620-A	Miscellaneous Concrete	CY	4
5	----	Ares Aeration 750T Aerator	Each	4
6	----	1.5" Weighted Flexible Tubing	Feet	300
7	----	1.5" SS Barbed Fitting	Each	4
8	----	SS Aeration Manifold	Each	1
9	----	1.5" Full Port Ball Valve and Fittings	Each	4
10	----	SS Hose Mender	Each	1
11	----	Excelsior Blower System, Sutorbilt Legend 3MDSL Blower	Each	1
12	----	1.5" SS Air Supply Piping	Feet	170
13	----	Hexprotect AQUA Tiles	Area	2,380 ft ²
14	----	Seaman Corporation 6730 XR-5 Floating Baffle Curtain System	Each	1
15	----	Norweco Bio-Dynamic Tablet Feeders (Chlorination/Dechlorination)	Each	1
16	----	Remove and Land Apply Class B Settled Biosolids from the Lagoons	Gallons	18,200
17	----	Chlorine Contact Tank	Each	1
18	----	Aeration Tank	Each	1
19	----	Diffuser - Weighted Flexible Rope - 48" Length	Each	1
20	----	Secondary Blower - 1/3 HP, 120 VAC - for Aeration Tank	Each	1

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						DESIGNED BY: DRAWN BY: CHECKED BY: APPROVED BY:	DATE CREATED:	



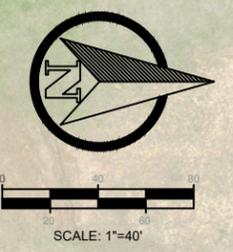
- NOTES:
1. SURVEY PERFORMED BY CIVIL SOUTHEAST FOR MCFADDEN ENGINEERING.
 2. THIS SURVEY WAS DONE *WITHOUT* BENEFIT OF AN EASEMENT OR TITLE SEARCH *NOR* DOES IT REFLECT AN EASEMENT OR TITLE SEARCH.
 3. THERE MAY BE ADDITIONAL RESTRICTIONS NOT SHOWN ON THIS DRAWING THAT MAY BE FOUND IN THE PUBLIC RECORDS OF THIS COUNTY.
 4. BEARINGS HEREON ARE BASED ON A GEODETIC GPS OBSERVATION ON ALABAMA WEST ZONE STATE PLANE COORDINATE SYSTEM VIA A CORS OBSERVATION.
 5. EXISTING IRON PINS AND MONUMENTS LOCATED AS SHOWN.
 6. REPRODUCTIONS OF THIS DRAWING ARE NOT VALID UNLESS SIGNED IN BLUE INK WITH ORIGINAL SIGNATURE AND SEALED WITH A RED SURVEYOR'S SEAL OR EMBOSSED SEAL.
 7. LIABILITY OF THE UNDERSIGNED FOR THE SURVEY SHOWN SHALL NOT EXCEED THE AMOUNT PAID FOR THIS SURVEY.
 8. NO ATTEMPT NOR REQUEST WAS MADE TO LOCATE ALL THE IMPROVEMENTS EXCEPT AS SHOWN.
 9. NO ATTEMPT NOR REQUEST WAS MADE TO MAKE A FLOOD ZONE DETERMINATION FOR THE PROPERTY SURVEYED HEREON.
 10. ELEVATIONS AND COORDINATES SHOWN HEREON ARE NAVD 88 AND NAD 83 VIA A CORS OBSERVATION.

STATE OF ALABAMA
 COUNTY OF: MONROE

I, TINDELL F. ADAMS A LICENSED PROFESSIONAL LAND SURVEYOR IN THE STATE OF ALABAMA, HEREBY CERTIFY TO **MCFADDEN ENGINEERING, INC** ONLY, THAT ALL PARTS OF THIS SURVEY AND DRAWING HAVE BEEN COMPLETED IN ACCORDANCE WITH THE CURRENT REQUIREMENTS OF THE STANDARDS OF PRACTICE FOR SURVEYING IN THE STATE OF ALABAMA, TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF.

ACCORDING TO MY SURVEY THIS THE 7TH DAY OF MAR, 2023.

TINDELL F. ADAMS AL. LICENSE # 26950



REVISION:	DESCRIPTION:	DATE:



McFadden Engineering, Inc.
 2860 Dauphin Street, Suite D
 Mobile, Alabama 36606
 www.mcfaddenengineering.com
 Phone: (251) 470-6870
 Fax: (251) 470-6872

SEAL:

PROJECT NAME: JF Shields High School Lagoon System Upgrade			
CADD NAME:			
DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED BY:

PROJECT No. MCBE004	DRAWING #:
SCALE: 11 x 17 - 1"= 40' 22 x 34 - 1"= 20'	TITLE: Existing Site Plan
DATE CREATED:	SHEET #: 3



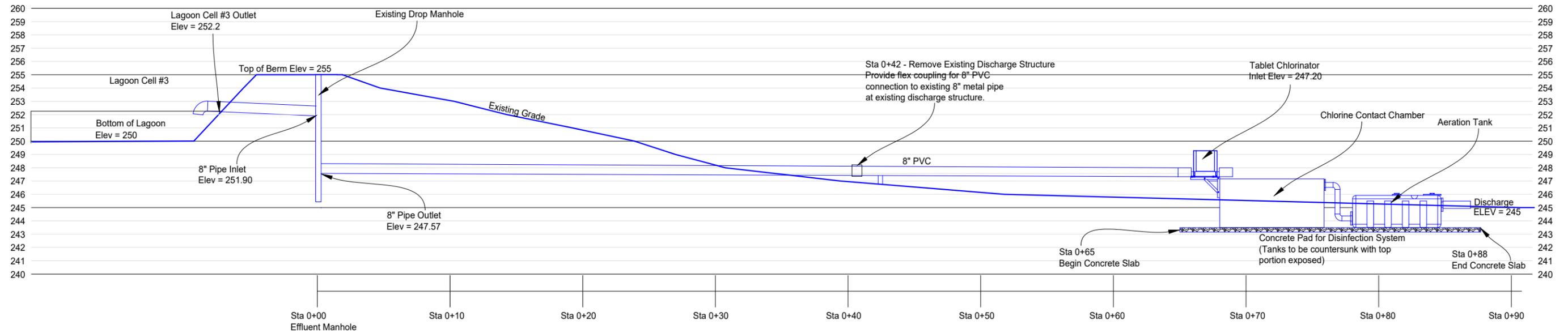
REVISION:	DESCRIPTION:	DATE:

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 www.mcfaddenengineering.com
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 FAX: (251) 470-6872



**JF Shields High School
 Lagoon System Upgrade**
 PATH:
 DESIGNED BY: DRAWN BY: CHECKED BY: APPROVED BY:

PROJECT NO. MCBE004	DRAWING #:
SCALE: 11 x 17 - 1" = 40' 22 x 34 - 1" = 20'	DESCRIPTION: Proposed Site Plan
DATE CREATED:	SHEET #: 4



REVISION:	DESCRIPTION:	DATE:

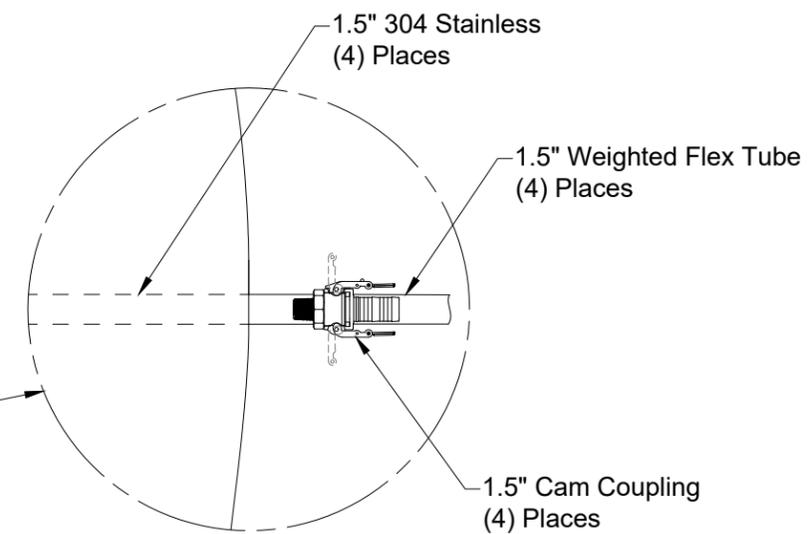
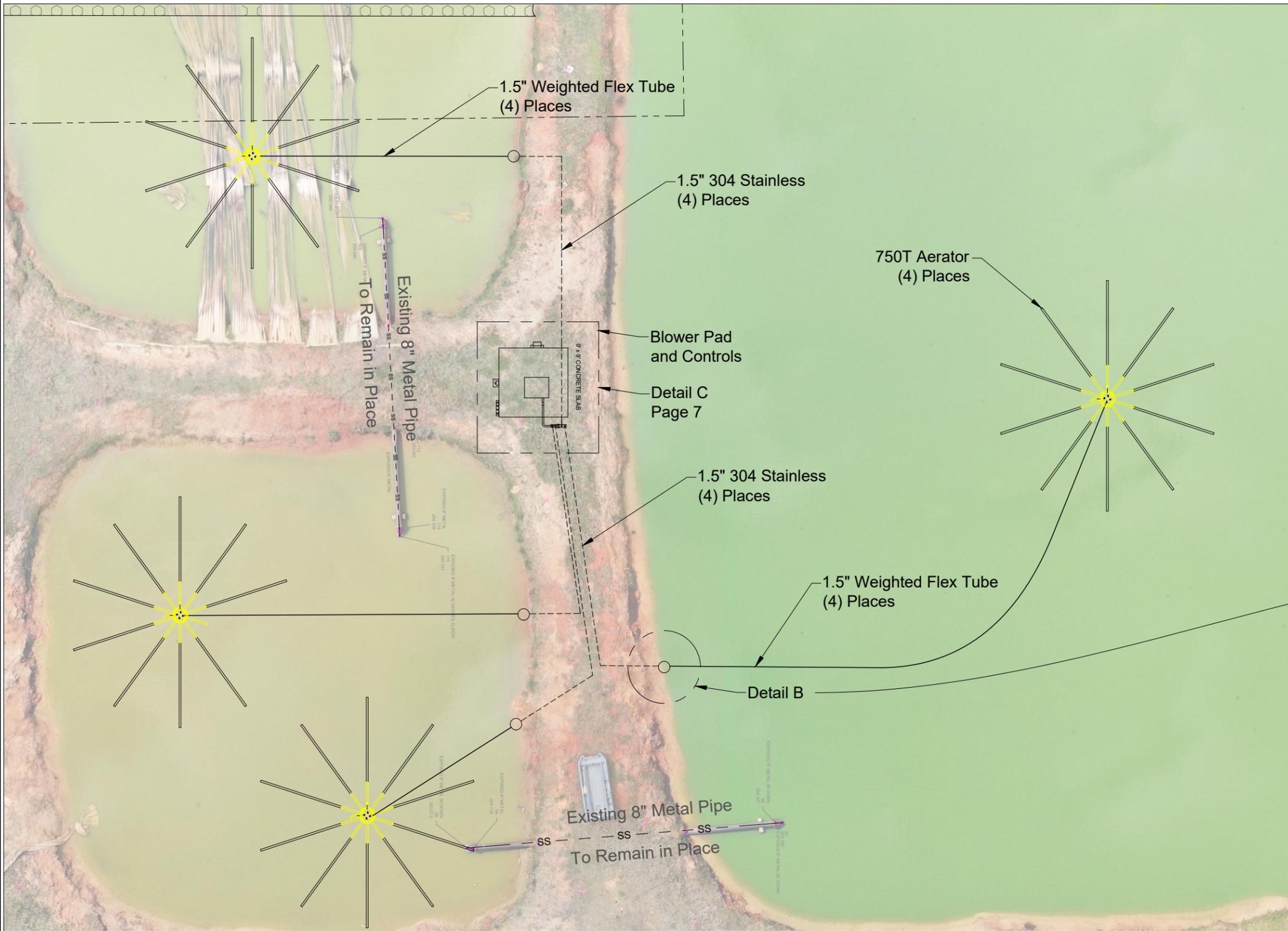
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 FAX: (251) 470-6872

SEAL:



JF Shields HS Profile View			
PATH:			
DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED BY:

PROJECT No. MCBE004	DRAWING #:
SCALE: 11 x 17 - 1"= 8" 22 x 34 - 1"= 4"	DESCRIPTION: Profile View
DATE CREATED:	SHEET #: 5



Detail A

SCALE: 1" = 15' 22 X 34
 SCALE: 1" = 30' 11 X 17

Detail B

SCALE: 1" = 1' 22 X 34
 SCALE: 1" = 2' 11 X 17

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SEAL:



JF Shields High School
 Lagoon System Upgrade

SERVER: \

DESIGNED BY: DRAWN BY: CHECKED BY: APPROVED BY:

PROJECT No.
 MCBE004

SCALE:
 AS SHOWN

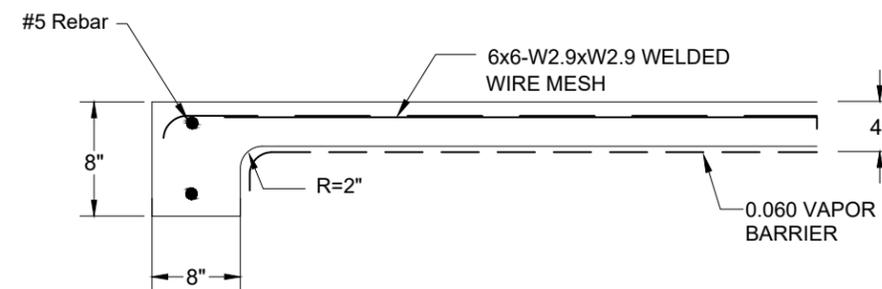
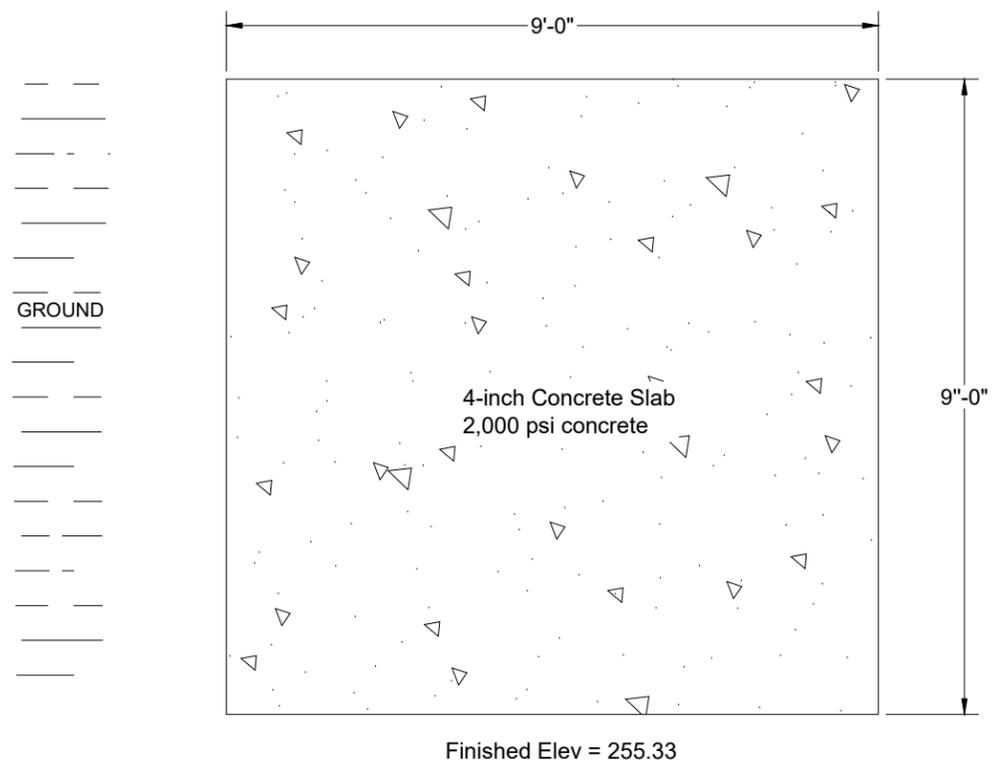
DATE CREATED:

DRAWING #:

DESCRIPTION:
 Ares System Details

SHEET #:
 6

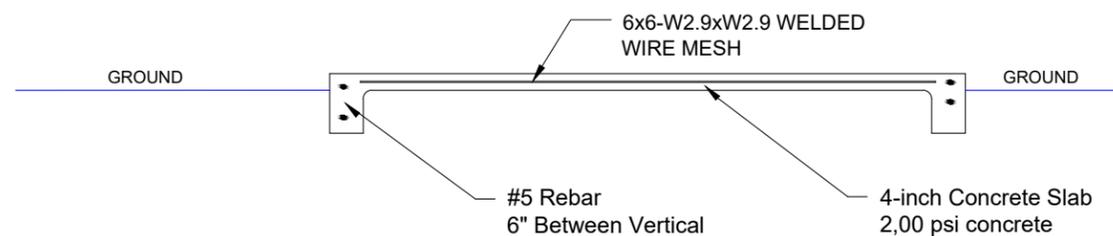
CONCRETE SLAB LAYOUT



TYPICAL SLAB SECTION AT PERIMETER
Not to Scale

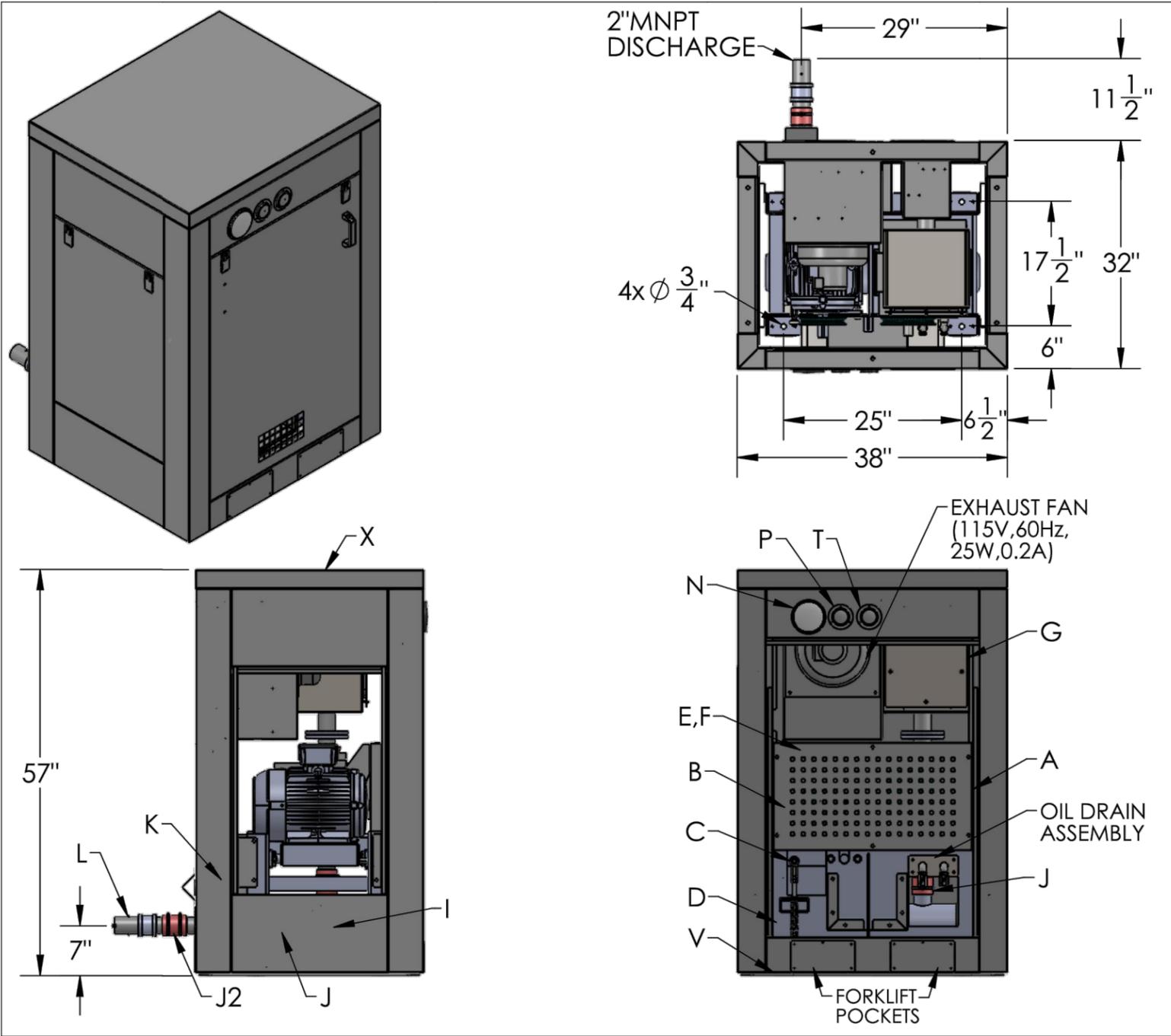
Notes:

- 1.) Reinforcing steel Shall be ASTM A615 Grade 60.
- 2.) Welded wire mesh fabric shall be ASTM A185.
- 3.) Concrete shall be proportioned to provide a 2,000 psi minimum 28 day compressive strength.
- 4.) Perimeter area around the slab shall be excavated 8" for perimeter footings.
- 5.) Area of footers shall be compacted to at least 95% of the soil's Modified Proctor maximum dry density as determined by ASTM D 1557, Method "A"
- 6.) Allowable flatness deviations depend on the distance of the measuring points:
 - distance 1.0 ft: allowable deviation 0.60 in
 - distance 4.0 ft: allowable deviation 0.39 in
 - distance 15 ft: allowable deviation 0.54 in
 - distance 35 ft: allowable deviation 0.63 in
 - distance 50 ft: allowable deviation 0.80 in.



SLAB SECTION

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						PATH: SERVER: \	SCALE: NOT TO SCALE	DESCRIPTION: Blower Slab Details 2		
					DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE CREATED:	SHEET #: 8



- A - BLOWER:
- B - MOTOR: 3 HP, 1800RPM, TEFC, T, 208-230/3/60
- C - MOTOR TILT BASE
- D - ELEVATED STEEL BASE
- E - V-BELT DRIVE
- BLOWER SHEAVE
- MOTOR SHEAVE
- BELTS: CD =
- F - BELT GUARD
- G - INLET FILTER SILENCER: 2"
- I - DISCHARGE SILENCER: 2"
- J - FLEXIBLE PIPE CONNECTOR: FLEX-FAB TYPE II
- J2- DISCHARGE FLEXIBLE PIPE CONNECTOR: FLEX-FAB TYPE II
- K - RELIEF VALVE:
- L - CHECK VALVE: F.H. 502-2"
- N - DIFFERENTIAL PRESSURE GAUGE: DWYER 2020, 0-20" WC
- P - PRESSURE GAUGE: WIKA 213.53, 2 1/2" 0-15PSIG
- T - TEMPERATURE GAUGE: WIKA TI-V25, 2 1/2", 30-300°F
- V - VIBRATION ISOLATION PADS: VMC CORK-RIBBED 1" THICK
- X - NOISE ENCLOSURE: ALUMINUM EXTERIOR W/ ACOUSTIC FOAM, 4 TILT-OUT LATCHING DOORS, LOUVERS, AND EXHAUST FAN W/ T-STAT

- ESTIMATED BLOWER PACKAGE WEIGHT: 800#
- BLOWER ROTATION: CCW
- MIN. SPEED: 60 HZ
- TOLERANCE: ± 1/2"
- DISCHARGE PIPING MUST BE INDEPENDENTLY SUPPORTED, SUPPORT DIRECTLY BELOW RELIEF VALVE.
- COMPONENTS J2, K & L WILL SHIP LOOSE.
- NOTE: ATTACH FORKLIFT POCKET COVERS AFTER PACKAGE IS INSTALLED.

REVISION:	DESCRIPTION:	DATE:

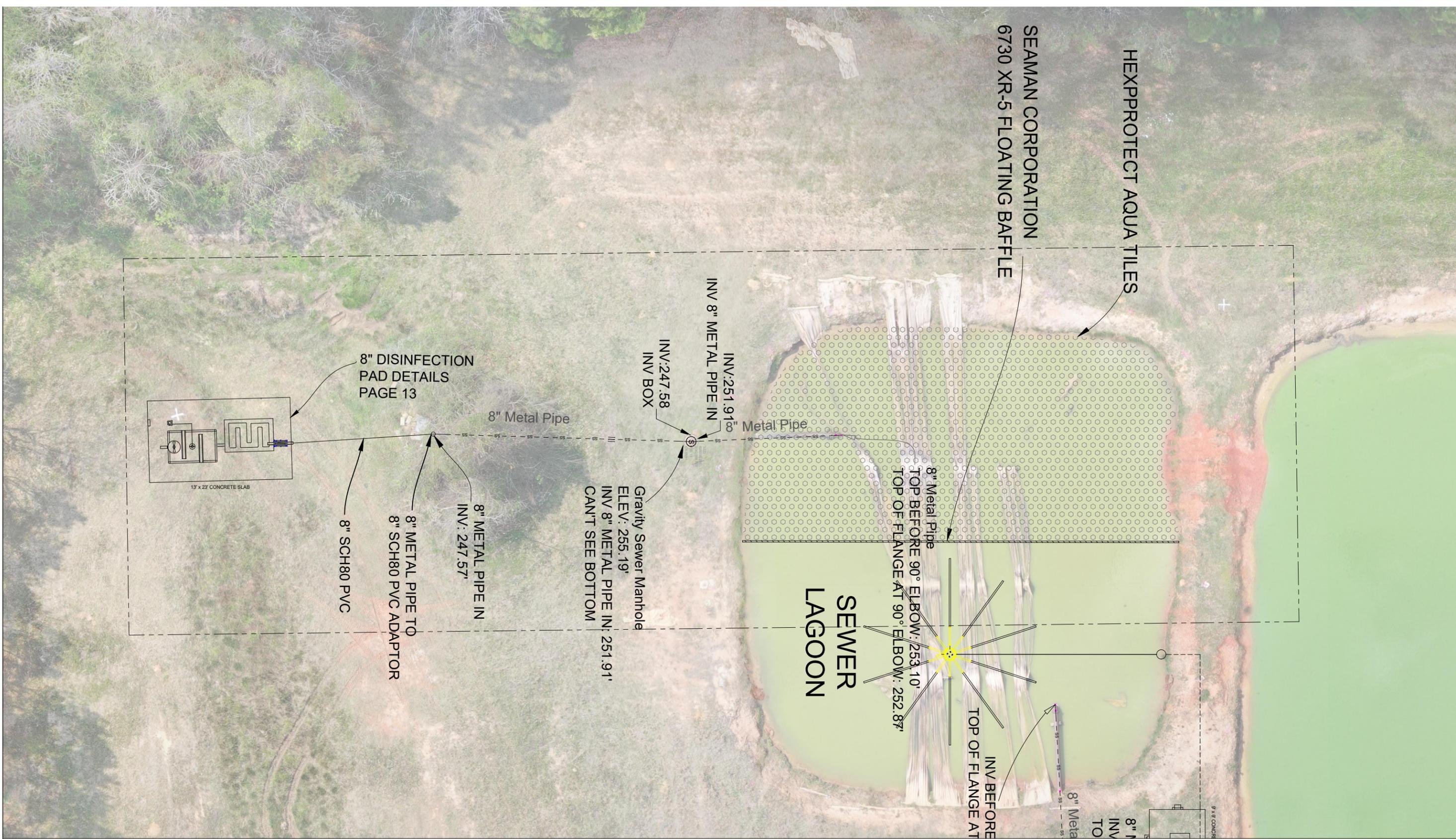
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 Mobile, Alabama 36606
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 PHONE: (251) 470-6870
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JF Sheilds High School Lagoon System Upgrade			
PATH: SERVER: \			
DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED BY:

PROJECT No. MCBE004	DRAWING #:
SCALE: NOT TO SCALE	DESCRIPTION: Blower Details
DATE CREATED:	SHEET #: 10

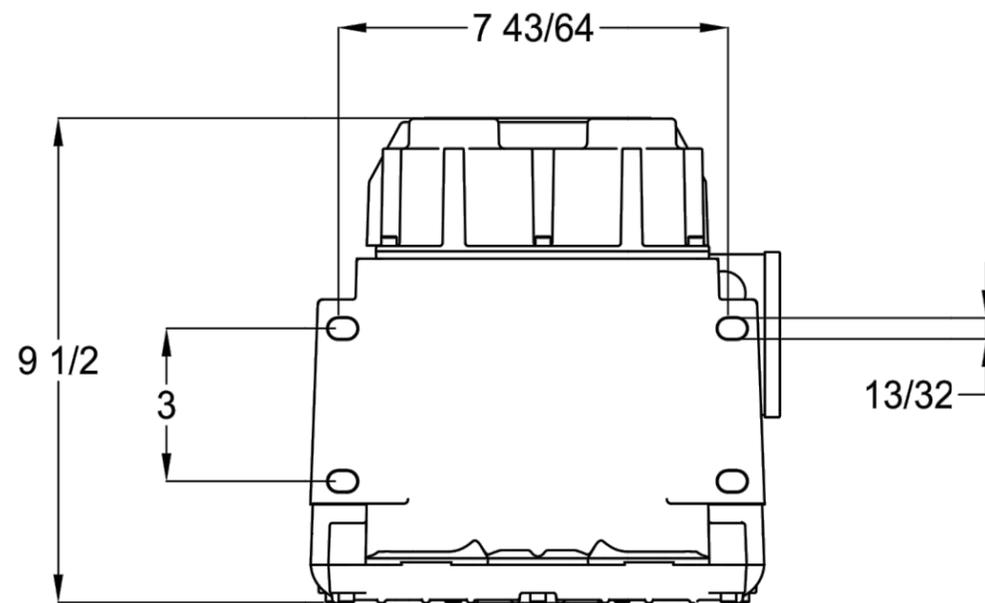
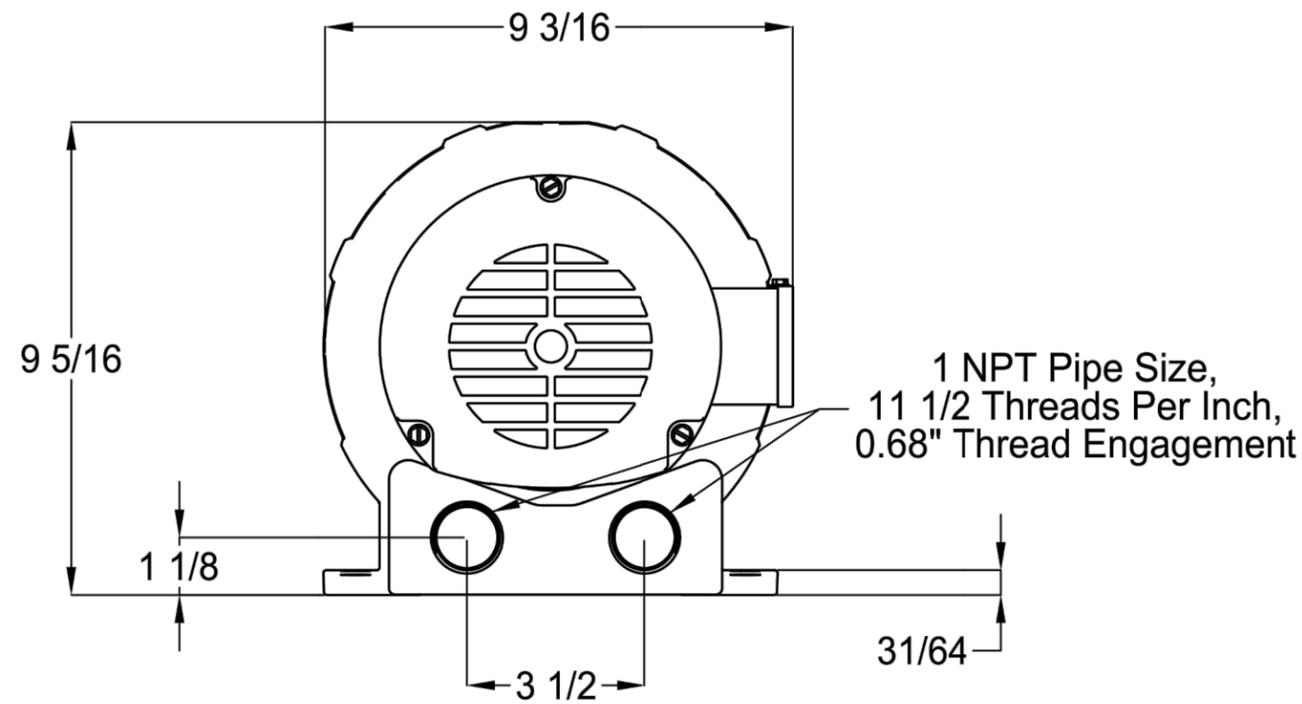
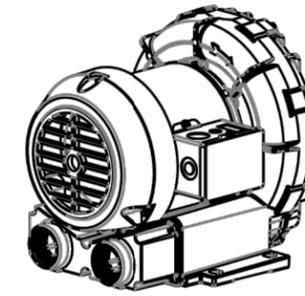


Detail E

SCALE: 11 x 17 - 1"= 10'
SCALE: 22 x 34 - 1"= 5'



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					PATH:	SCALE: 11 x 17 - 1"= 15' 22 x 34 - 1"= 7.5'	DESCRIPTION: Membrane Details	DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED BY:



Detail F

- NOTES:
1. SINGLE STAGE REGENERATIVE BLOWER
 2. 42 CFM @ 35" H2O
 3. 3.8 FLA @ 115 VAC
 4. 63 dBA
 5. 1/3 HP
 6. ALUMINUM HOUSING
 7. MCMaster-CARR 9960K52 OR APPROVED EQUAL

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						PATH:	SCALE: NOT TO SCALE				DESCRIPTION: DISINFECTION PAD
						DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE CREATED:	SHEET #: 14

Hexprotect AQUA Tiles

GENERAL DESCRIPTION

Description	Ballasted hexagonal tile
Construction	100% homogenous HDPE shell (no plugs or seals)
Diameter	220 mm
Average total weight (dry)	166-190g
Average total weight (installed)	266-290g
Number per sq. ft	2.62
Number per square meter	28
Wind resistant (up to) (1)	210 km/h (130 MPH)
Operating temperature range (1)	-50°C / + 80°C
Projected Life Expectancy	25+ years



RESIN AND BALLAST PROPERTIES

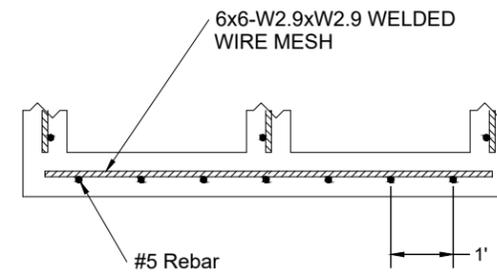
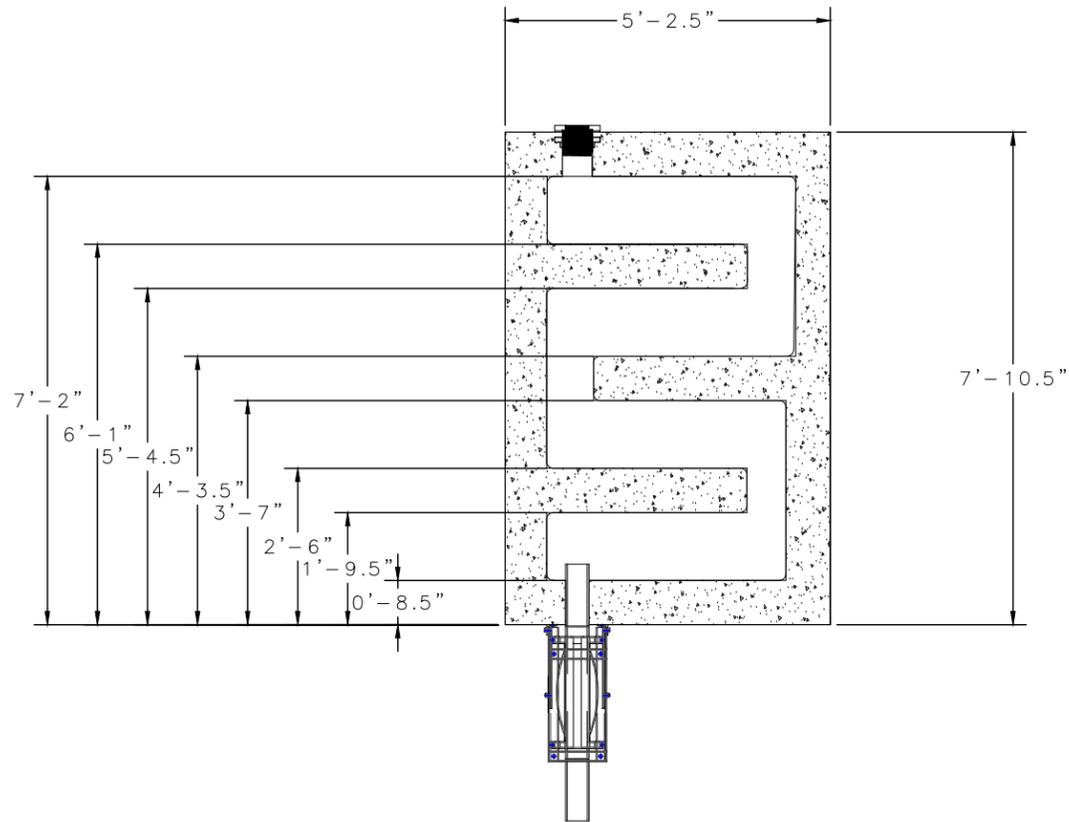
Shell Material	High Density injection Molding polyethylene
Melt Flow Index (190°C/2.16 kg)	0.35
Density	0.955
Melting Point, °F	264
Tensile Strength (PSI)	4000
Elongation at Break, %	600
Flexure Modulus (PSI)	200,000
Ballast filler	Drinking Water ballast
Additives / Color	Black, UV carbon Black



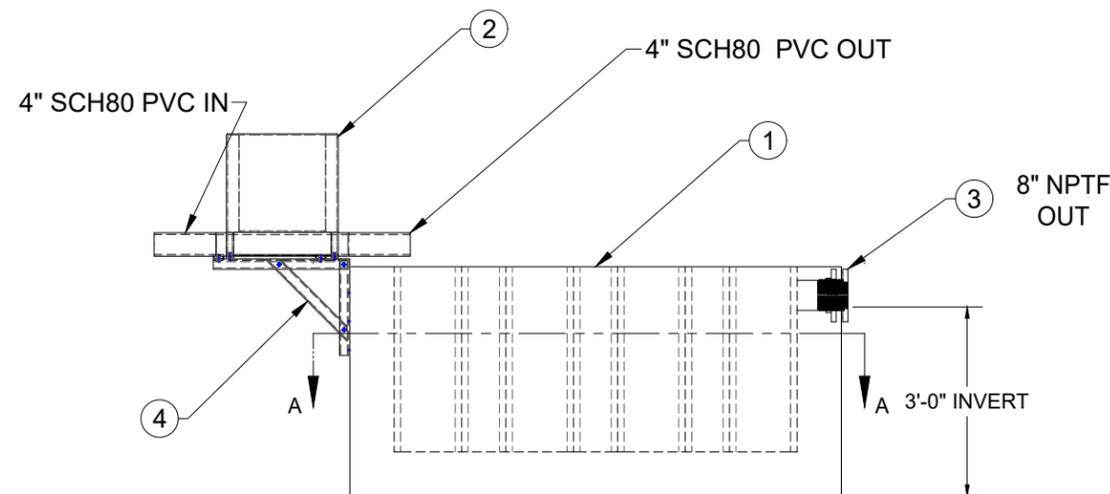
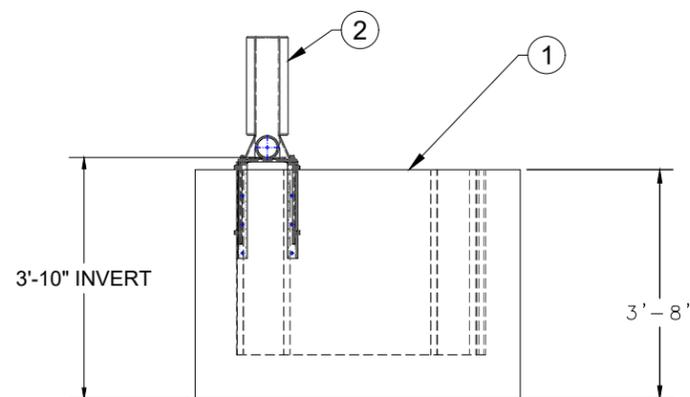
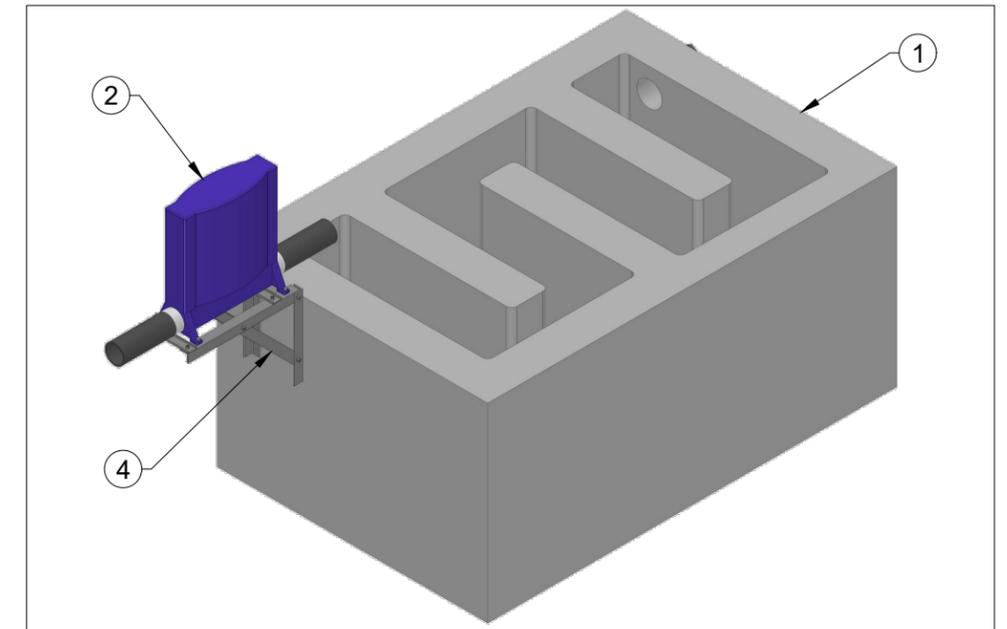
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						SERVER: \	SCALE: Not To Scale	DESCRIPTION: Third Cell Cover Details			
						DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE CREATED:	SHEET #: 15

BILL OF MATERIALS

ITEM	QTY	DESCRIPTION
1	1	CHEMICAL CONTACT TANK
2	1	TABLET CHEMICAL DISPENSER - BIO-DYNAMIC LF4000 OR APPROVED EQUAL
3	1	8" NPTF BULKHEAD FITTING
4	1	BRACKET ASSEMBLY - BIO-DYNAMIC SERIES 2000 OR APPROVED EQUAL



SECTION A-A



- Notes:
- 1.) Reinforcing steel Shall be ASTM A615 Grade 60.
 - 2.) Welded wire mesh fabric shall be ASTM A185.
 - 3.) Concrete shall be proportioned to provide a 3,000 psi minimum 28 day compressive strength.
 - 4.) The chemical dispenser shall be installed plumb and level
 - 5.) Concrete tank shall be coated on the inside with XYPEX Crystalline Waterproofing System at a rate of 6-7.2 sq. ft./lb.

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SEAL:



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 Lagoon System Upgrade

PATH:
 DESIGNED BY: DRAWN BY: CHECKED BY: APPROVED BY:

PROJECT No.
MCBE004

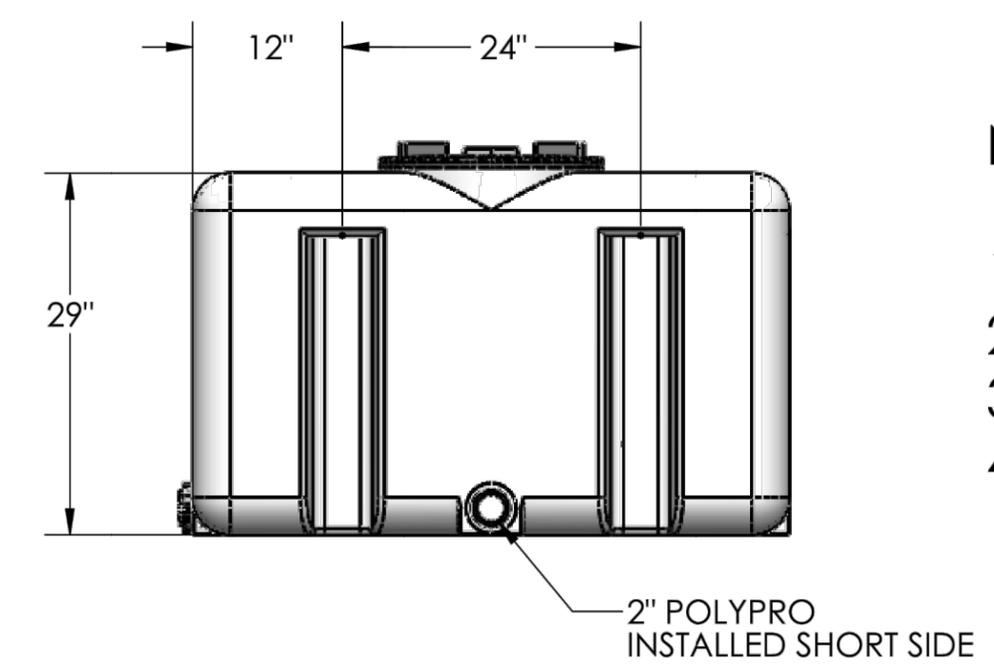
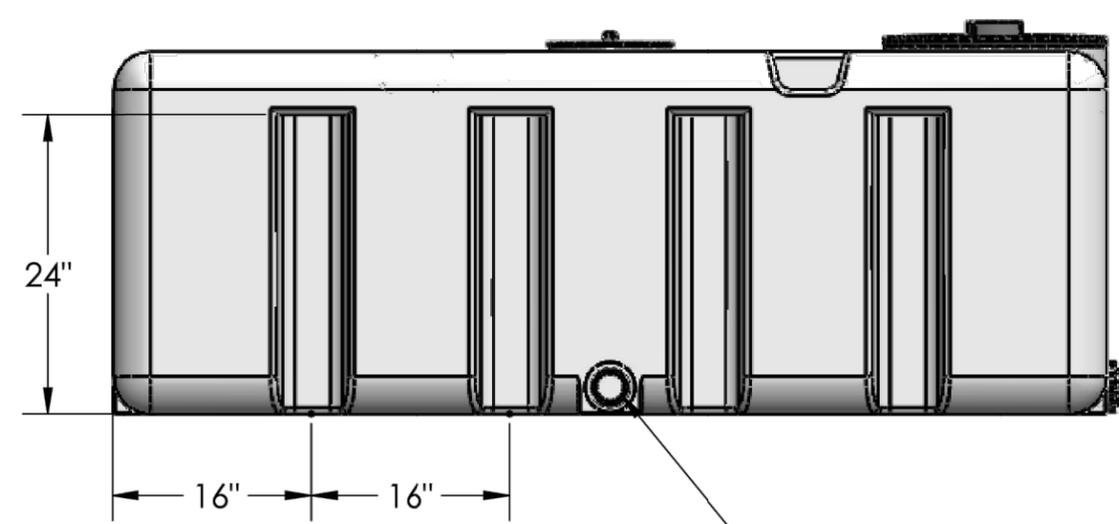
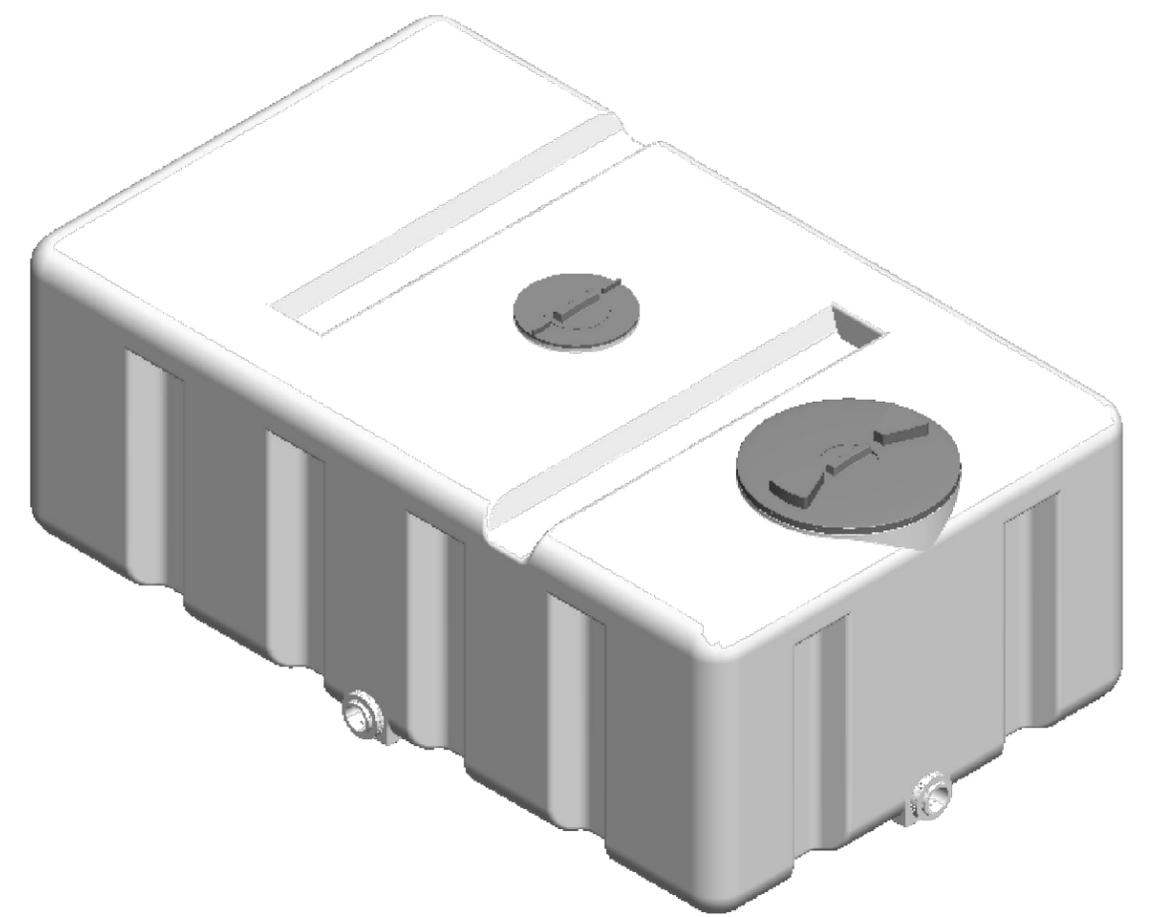
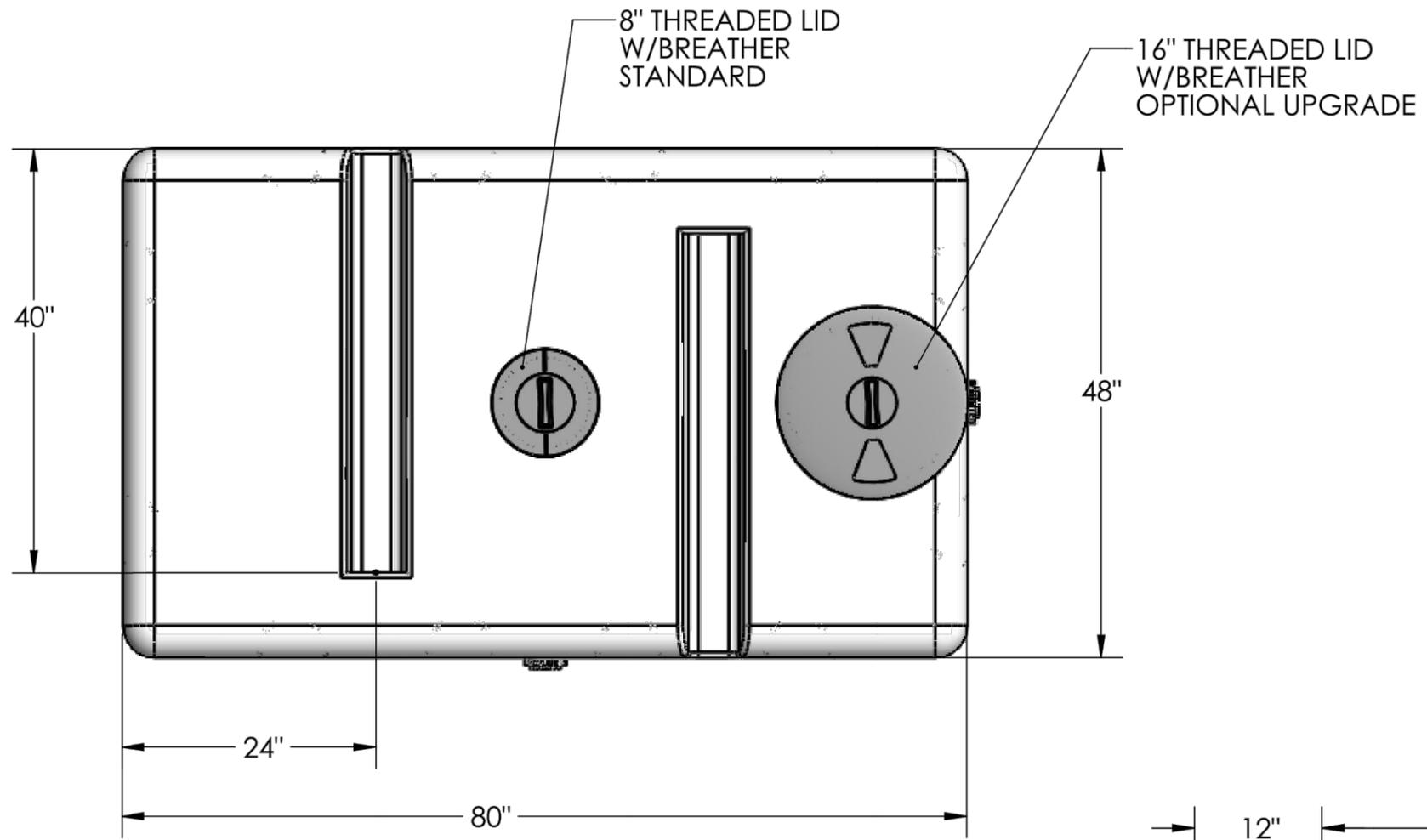
SCALE:
 11 x 17 - 1"= 3'
 22 x 34 - 1"= 1.5'

DATE CREATED:

DRAWING #:
 DESCRIPTION:
Disinfection System

SHEET #:

17



NOTES:

1. MATERIAL: HDPE
2. CAPACITY: 400 GALLONS
3. WEIGHT: 165 LBS.
4. SPECIFY SHORT OR LONG SIDE FOR FITTING PLACEMENT

REVISION:	DESCRIPTION:	DATE:	McFadden Engineering, Inc. 2860 Dauphin Street, Suite D Mobile, Alabama 36606 www.mcfaddenengineering.com PHONE: (251) 470-6870 FAX: (251) 470-6872	SEAL:		JF Shields High School Lagoon System Upgrade		PROJECT No. MCBE004	DRAWING #:
							PATH: DESIGNED BY: DRAWN BY: CHECKED BY: APPROVED BY:	SCALE: 11 x 17 - 1" = 3" 22 x 34 - 1" = 1.5"	DESCRIPTION: Aeration Tank

BUBBLEMAC BIOWEAVE DIFFUSER



NOTES:

1. SELF WEIGHTED AIR DIFFUSER HOSE
2. 4' LENGTH
3. $\frac{3}{8}$ " BARB CONNECTION AIR INLET
4. PLUGGED GARDEN HOSE CONNECTION
5. FLEXIBLE HOSE
6. SUPPLIED BY BUBBLEMAC AERATION PRODUCTS OR APPROVED EQUAL

REVISION:	DESCRIPTION:	DATE:	McFadden Engineering, Inc. 2860 Dauphin Street, Suite D Mobile, Alabama 36606 www.mcfaddenengineering.com PHONE: (251) 470-6870 FAX: (251) 470-6872	SEAL:		JF Sheilds High School Lagoon System Upgrade	PROJECT No. MCBE004	DRAWING #:
						PATH: DESIGNED BY: DRAWN BY: CHECKED BY: APPROVED BY:	SCALE: 11 x 17 - 1"= 3' 22 x 34 - 1"= 1.5'	DESCRIPTION: Aeration Tank
							DATE CREATED:	SHEET #: 20

AOC - 1	
LOCATION:	WEST BERM NEAR INTERSECTION WITH CENTER BERM LAGOON #1
LOW POINT ELEVATION:	254.18' msl
DISTANCE TO REFERENCE POINT:	41.5' S
ELEVATION OF REFERENCE POINT:	254.80' msl
CHANGE (Δ) ELEVATION:	-0.62
ESTIMATED FILL VOLUME (cu yds):	3.0

AOC - 3	
LOCATION:	WEST BERM ADJACENT TO #3 LAGOON
LOW POINT ELEVATION:	253.93' msl
DISTANCE TO REFERENCE POINT:	25.0' N
ELEVATION OF REFERENCE POINT:	254.80' msl
CHANGE (Δ) ELEVATION:	-0.87'
ESTIMATED FILL VOLUME (cu yds)	1.5

AOC - 4	
LOCATION:	SOUTH BERM ADJACENT TO #3 LAGOON
LOW POINT ELEVATION:	255.08' msl
DISTANCE TO REFERENCE POINT:	38.6' E
ELEVATION OF REFERENCE POINT:	255.55' msl
CHANGE (Δ) ELEVATION:	-0.47'
ESTIMATED FILL VOLUME (cu yds)	2.0

AOC - 2	
LOCATION:	CENTER BERM BETWEEN #1 AND #3 LAGOONS
LOW POINT ELEVATION:	255.03' msl
DISTANCE TO REFERENCE POINT:	25.0' W
ELEVATION OF REFERENCE POINT:	254.8' msl
CHANGE (Δ) ELEVATION:	+0.23
ESTIMATED FILL VOLUME (cu yds):	1.0

AOC - 5	
LOCATION:	SOUTH BERM ADJACENT TO #2 LAGOON
LOW POINT ELEVATION:	255.14' msl
DISTANCE TO REFERENCE POINT:	48.5' W
ELEVATION OF REFERENCE POINT:	255.55' msl
CHANGE (Δ) ELEVATION:	-0.41'
ESTIMATED FILL VOLUME (cu yds)	1.5



REVISION:	DESCRIPTION:	DATE:

McFadden Engineering, Inc.
 2860 Dauphin Street, Suite D
 Mobile, Alabama 36606
 www.mcfaddenengineering.com
 PHONE: (251) 470-6870
 FAX: (251) 470-6872

SEAL:



JF Shields High School
 Lagoon System Upgrade
 PATH:
 SERVER: \

DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED BY:
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PROJECT No.	MCBE004	DRAWING #:	
SCALE:	Not To Scale	DESCRIPTION:	Berm Rehabilitation Details
DATE CREATED:		SHEET #:	22

LEGEND

- WP SPECIFICATION GRADE WEATHER RESISTANT, DUPLEX RECEPTACLE - TAMPER PROOF WITH GROUND FAULT INTERRUPT.
- WP SPECIFICATION GRADE 20A-1P TOGGLE SWITCH, HEAVY DUTY, WEATHER PROOF ENCLOSURE.
- M 120V, 20AMP MOTOR RATED TOGGLE SWITCH, WITH LOCKING DEVICE.
- J JUNCTION BOX LOCATION MOUNTED AS NOTED ON DRAWING, SIZED AS REQUIRED BY EQUIPMENT BEING SERVED.
- DISCONNECT SWITCH, SIZE AND TYPE AS NOTED.
- HOME RUN CONDUIT, CIRCUIT NUMBER AS INDICATED ON DRAWINGS, HASHMARKS INDICATE HOT NEUTRAL AND GROUND.
- CONDUIT RUN IN GROUND OR SLAB.
- CONDUIT RUN EXPOSED

BASIS OF DESIGN

- 2020 NATIONAL ELECTRICAL CODE
- 2018 INTERNATIONAL ENERGY CONSERVATION CODE
- SERVICE CHARACTERISTICS: THESE DRAWINGS ARE FOR A METERED, UNDERGROUND SERVICE OF THREE PHASE, FOUR WIRE, 60 HERTZ.
- ALL CONDUCTORS SHALL BE COPPER, U.N.O. SERVICE ENTRANCE CONDUCTORS MAY BE ALUMINUM.
- ALL WIRE AND CABLES SHALL BE UNDERWRITERS LABORATORIES' LISTED, AND LABELED, AND CONFORM WITH APPLICABLE STANDARDS OF U.L. (44 AND 83), NEMA (WC-5 AND WC-7), IPECA (S-61-402 AND S-66-524), FEDERAL SPECIFICATIONS (J-C-30A1(1) AND HH-1-595C), ANSI, AND OTHER APPLICABLE INDUSTRY STANDARDS. CONNECTORS AND LUGS SHALL MEET U.L. PUBLICATION 486. ALL BRANCH CIRCUIT WIRING SHALL BE 600 VOLT, COPPER, 75 DEGREE C (MINIMUM), TYPE THHN/THWN WITH A MINIMUM SIZE OF #12 AWG UNLESS NOTED OTHERWISE. WIRE SIZES OF #8 AWG AND LARGER SHALL BE STRANDED. SERVICE AND FEEDER CABLES SHALL BE 600 VOLT, STRANDED COPPER, 75 DEGREE C (MINIMUM), TYPE XHHW. ALL CIRCUITS SHALL HAVE A SEPARATE GROUNDED CONDUCTOR. PROVIDE GREEN INSULATED GROUNDING CONDUCTOR IN ALL RACEWAYS, CABLE ASSEMBLIES, AND WHERE NOTED.
- ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND OF THE QUALITY INDICATED BY THE SPECIFIED BRAND NAMES. REMANUFACTURED, REPAIRED, AND RECONDITIONED EQUIPMENT ARE NOT ACCEPTABLE.
- ALL EQUIPMENT IS SCHEDULED WITHOUT SUBSTITUTIONS. HOWEVER, SUBSTITUTIONS OF MATERIAL OF EQUAL QUALITY BY OTHER MAJOR MANUFACTURERS OF COMMERCIAL EQUIPMENT MAY BE ACCEPTABLE PROVIDED A LIST OF SUCH SUBSTITUTIONS IS APPROVED BY THE OWNER, ARCHITECT, AND ENGINEER OF RECORD.
- PANEL BOARDS SHALL BE BOLT-ON CIRCUIT BREAKER TYPE, AS SHOWN ON THE PLANS. PANELS SHALL BE OF A PANEL BOARD CONSTRUCTION, 20 INCHES WIDE (MINIMUM), 5-3/4" TO 6-1/2" DEEP, U.L. LISTED, AND MEET U.L. 67, U.L. 50, AND FEDERAL SPECIFICATION W-P-115B AS TYPE 1, CLASS 1, WITH BOLT-ON CIRCUIT BREAKERS, COPPER BUS BARS, NEUTRAL BUS, GROUND BUS, AND A HINGED LOCKABLE DOOR. CABINETS SHALL BE CODE GAUGE, GALVANIZED STEEL, MOUNTED AS SHOWN.
- ALL JUNCTION BOXES, PULL BOXES, WIRE WAYS, ETC., SHALL BE SIZED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.
- ALL PRODUCTS AND EQUIPMENT SHALL BE LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY.
- ALL FURNISHED EQUIPMENT TERMINALS SHALL BE LISTED FOR USE AT 75 DEGREE C.
- NO CONDUIT SMALLER THAN 3/4" SHALL BE INSTALLED.
- SPLICING COPPER AND ALUMINUM CONDUCTORS SHALL NOT BE PERMITTED.

GENERAL NOTES

- NON-METALLIC SHEATHED (TYPE NM) CABLE IS NOT PERMITTED.
- ALL WIRING SHALL BE RUN IN CONDUIT.
- ALL WIRES SHALL BE TAGGED WITH PANEL AND CIRCUIT NUMBERS.
- FOR HOME RUNS ON 20 AMP CIRCUITS EXCEEDING FIFTY-FIVE (55) FEET FROM THE PANEL BOARD SHALL USE #10 AWG MINIMUM.
- AN ELECTRICALLY CONTINUOUS, EQUIPMENT GROUNDING CONDUCTOR SHALL BE RUN WITH EACH POWER AND LIGHTING CONDUIT. SIZE OF THE EQUIPMENT GROUNDING CONDUCTOR SHALL BE AS NOTED OR AS DETERMINED IN TABLE 250.122 OF THE N.E.C. IF NOT NOTED. EQUIPMENT GROUNDING CONDUCTOR SHALL BE INCLUDED REGARDLESS OF THE CONDUIT TYPE AND MATERIAL USED.
- ALL CIRCUITS SHALL HAVE AN INDIVIDUAL GROUNDED CONDUCTOR. NO MULTIWIRE CIRCUITS ARE PERMISSIBLE.
- CONDUCTORS SHALL COLOR CODED AS FOLLOWS. FOR CONDUCTORS SMALLER THAN #6 THE JACKET SHALL BE OF THE NOTED COLOR. FOR CONDUCTORS LARGER THAN #6, EACH END OF THE CONDUCTOR SHALL BE MARKED WITH TAPE FOR A MINIMUM OF FOUR (4) INCHES.

CONDUCTOR COLOR CODES					
	PHASE A	PHASE B	PHASE C	GROUNDED CONDUCTOR	GROUNDED CONDUCTOR
<= 240V	BLACK	RED	BLUE	WHITE	GREEN
> 240V	BROWN	ORANGE	YELLOW	GREY	GREEN

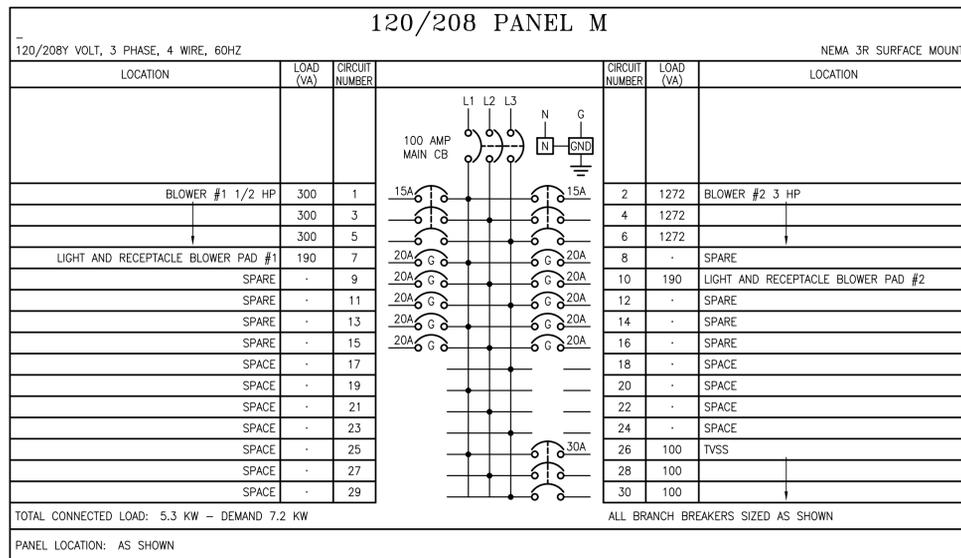
- ALL CIRCUIT BREAKERS, DISCONNECTS, AND OTHER PROTECTIVE DEVICES SHALL BE FULLY RATED TO WITHSTAND THE MAXIMUM AVAILABLE FAULT CURRENT AT THE SITE AS DETERMINED BY THE LOCAL UTILITY. E.C. SHALL COORDINATE WITH LOCAL UTILITY BEFORE STARTING WORK.
- GROUNDING ELECTRODES SHALL BE BONDED TOGETHER TO FORM A SINGLE GROUNDING ELECTRODE SYSTEM. GROUNDING SYSTEM SHALL COMPLY WITH N.E.C. ARTICLE 250
- LIGHT SWITCHES SHALL BE MOUNTED 18" A.F.F. U.N.O.
- RECEPTACLES SHALL BE MOUNTED 18" A.F.F. U.N.O.
- DISCONNECT SWITCHES SHALL BE FURNISHED, AS PART OF THIS PACKAGE, AND INSTALLED FOR EACH UNIT OF HVAC AND OTHER REQUIRED EQUIPMENT.
- PROVIDE NAMEPLATES FOR ALL PANEL BOARDS, CONTROLS, DISCONNECTS, AND OTHER ELECTRICAL EQUIPMENT. NAMEPLATES SHALL BE ENGRAVED PHENOLIC LABELS WITH WHITE LETTERING ON A BLACK BACKGROUND.
- PROVIDE TYPEWRITTEN CIRCUIT DIRECTORIES WITH CLEAR PLASTIC PROTECTORS IN ALL PANELS.
- OUTDOOR RECEPTACLES SHALL HAVE INSTALLED AN EXTRA HEAVY-DUTY WEATHER PROOF WHILE IN-USE RECEPTACLE COVER.
- ALL EMPTY AND UNUSED CONDUIT SHALL HAVE A #12 AWG PULL WIRE LEFT REMAINING
- DURING CONSTRUCTION, CONDUIT SHALL BE KEPT FREE OF ALL FOREIGN MATTER BY USE OF CAPPED BUSHINGS ON ALL TURNED-UP ENDS. PAPER OR WOOD PLUGS ARE NOT ACCEPTABLE FOR THIS PURPOSE.
- CONDUIT PLACED IN CONCRETE OR RUN UNDERGROUND SHALL BE PLASTIC COATED RIGID GALVANIZED CONDUIT OR PVC. IF PVC IS USED, ALL ELBOWS, SWEEPS AND STUB-UPS SHALL BE PLASTIC COATED RIGID GALVANIZED STEEL. ALL CONDUIT BENDS SHALL BE FREE FROM DENTS AND KINKS
- CONDUIT EXPOSED ABOVE GRADE SHALL BE RIGID SCREWED GALVANIZED PIPE CONDUIT.
- IF SHIELDED CABLE IS REQUIRED FOR CONTROL CIRCUITRY, IT SHALL BE TAN, GREY OR ANY NEUTRAL COLOR OTHER THAN THAT AS SPECIFIED FOR POWER DISTRIBUTION.
- WHERE CONNECTIONS ARE TO BE MADE BETWEEN CONDUIT TERMINATIONS AND MOTORS, EQUIPMENT, OR APPARATUS NECESSITATING FLEXIBLE CONNECTIONS, APPROVED FLEXIBLE CONDUIT SHALL BE USED. OUTDOOR CONNECTIONS TO FANS, HVAC UNITS, OR ROTATING EQUIPMENT SHALL BE MADE WITH HELICAL WOUND, LIQUID TIGHT, FLEXIBLE STEEL CONDUIT. EXPOSED CONDUIT SHALL BE SUITABLY SUPPORTED AT INTERVALS NOT TO EXCEED FIVE (5) FEET.
- ALL CIRCUITS ENTERING A JUNCTION BOX SHALL BE IDENTIFIED BY A MEANS ACCEPTABLE TO THE NATIONAL ELECTRICAL CODE
- ALL ELECTRICAL EQUIPMENT SHALL BE INSTALLED SO THAT ALL CODE REQUIRED AND MANUFACTURER RECOMMENDED SERVICING CLEARANCES ARE MAINTAINED.
- ALL FIRE BARRIER PENETRATIONS SHALL BE SEALED WITH APPROVED FIRE SEALANT. COORDINATE WITH ARCHITECTURAL PLANS FOR ALL RATED WALLS AND CEILINGS PRIOR TO BID SO AN UNDERSTANDING OF NUMBER OF SEALS REQUIRED, AND DETERMINE METHOD FOR MINIMIZING THE SEAL REQUIREMENTS.
- RECEPTACLES LOCATED AT LIGHT POLE TO BE MOUNTED 44" ABOVE FINISH CONCRETE PAD.

ABBREVIATIONS

- A OR AMP AMPERES
- ACT ABOVE COUNTER TOP (6")
- AF AMP FRAME
- AFF ABOVE FINISHED FLOOR
- AHU AIR HANDLING UNIT
- AIC AMPERE INTERRUPTING CAPACITY
- AM AMMETER
- APPROX APPROXIMATELY
- ASYM ASYMMETRICAL
- AT AMP TRIP
- ATS AUTOMATIC TRANSFER SWITCH
- AUX AUXILIARY
- AWG AMERICAN WIRE GAUGE
- BLDG BUILDING
- C CONDUIT
- C /C CONDUCTOR
- CB CIRCUIT BREAKER
- CKT CIRCUIT
- CLF CURRENT LIMITING FUSE
- CO COMPANY
- COL COLLUM
- CNTRL CONTROL
- CT CURRENT TRANSFORMER
- D DEPTH
- DIAM DIAMETER
- DIS OR DISC DISCONNECT SWITCH
- DWG(S) DRAWING(S)
- ELEC ELECTRIC, ELECTRICAL
- EMT EMERGENCY METALLIC TUBING
- ESTOP EMERGENCY STOP
- EX, EXIST. EXISTING
- EXP EXPLOSION PROOF
- EXH EXHAUST FAN
- EGG EQUIPMENT GROUND
- EGC EQUIPMENT GROUND CONDUCTOR
- EMS ENERGY MANAGEMENT SYSTEM
- ETC ET CETERA
- EXIST EXISTING
- FUSE FUSE
- FL, FLR FLOOR
- FT FEET
- G OR GND GROUND
- GA GAUGE
- GALV GALVANIZED
- GEN GENERATOR
- GF GROUND FAULT
- GFCI GROUND FAULT CIRCUIT INTERRUPT
- GFT GROUND FAULT INTERRUPTING
- H-O-A HAND-OFF-AUTOMATIC
- HP HORSEPOWER
- HVAC HEATING, VENTILATION & AIR
- IG ISOLATED GROUND
- ISBR INTRINSICALLY SAFE BARRIER RELAY
- INCH INCH
- IR INFRARED
- ISCA INSTANTANEOUS SHORT CIRCUIT AVAILABLE
- JB OR J JUNCTION BOX
- KV KILOVOLT - AMPS
- KVA KILOVOLTS
- KW KILOWATTS
- KWH KILOWATT-HOUR
- L LENGTH
- LA LIGHTNING ARRESTOR
- LFCM LIQUIDTIGHT FLEXIBLE METAL CONDUIT
- LTG LIGHTING
- MAX MAXIMUM
- MCB OR MB MAIN CIRCUIT BREAKER
- MCC MOTOR CONTROL CENTER
- MECH MECHANICAL
- MFR MANUFACTURER
- MH OR MTG MOUNTING HEIGHT
- MIN MINIMUM
- MLO MAIN LUGS ONLY
- MTD MOUNTED
- N NEUTRAL
- NC NORMALLY CLOSED
- NEMA NATIONAL ELECTRICAL MFRS ASSOCIATION
- NFPA NATIONAL FIRE PROTECTION ASSOCIATION
- NO NUMBER
- NO NORMALLY OPEN
- NTS NOT TO SCALE
- O.C. ON CENTER
- OCPD OVERCURRENT PROTECTIVE DEVICE
- O/F OVERFILL
- OHE OVERHEAD ELECTRICAL
- P POLE
- PERM PERMANENT
- PFC POWER FACTOR CAPACITOR
- PH PHASE
- PLC PROGRAMMABLE LOGIC CONTROLLER
- PNL PANEL
- PAR POLYVINYLCHLORIDE CONDUIT
- PVC POWER
- PWR REMOVE AND RELOCATE
- R&R RELOCATED
- RE RECEPTACLE
- REF REFERENCE
- RGS RIGID GALVANIZED STEEL
- RMS ROOT MEAN SQUARE
- SH SHIELDED
- SS STAINLESS STEEL
- SPD SURGE PROTECTION DEVICE
- SW SWITCH
- SWBD SWITCHBOARD
- SYM SYMMETRICAL
- TEL TELEPHONE
- TIWIS TWISTED INDIVIDUAL SHIELD
- TWOS TWISTED OUTER SHIELD
- TYP TYPICAL
- UG UNDERGROUND
- UL UNDERWRITER'S LABORATORIES
- UV ULTRAVIOLET
- V VOLTS
- VA VOLT AMPS
- VAC VOLTS ALTERNATING CURRENT
- VDC VOLTS DIRECT CURRENT
- VFD VARIABLE FREQUENCY DRIVE
- VM VOLTMETER
- W WATT
- W/ WITH
- W/O WITHOUT
- WM WATTMETER
- WP WEATHER PROOF
- U.N.O. UNLESS NOTED OTHERWISE
- XFMR TRANSFORMER

ELECTRICAL CONTRACTOR REQUIREMENTS

- PROVIDE ALL LABOR, MATERIAL, AND EQUIPMENT IN ACCORDANCE WITH THESE SPECIFICATIONS, AND THE ACCOMPANYING DRAWINGS TO PROVIDE A COMPLETE AND PROPERLY OPERATING ELECTRICAL SYSTEM.
- BIDDING CONTRACTORS MUST VISIT THE SITE, REVIEW ALL CONSTRUCTION DOCUMENTS, AND OBTAIN WRITTEN COPIES OF ALL REFERENCED CODES AND ORDINANCES PRIOR TO SUBMITTING BIDS. NO ALLOWANCE WILL BE MADE FOR ADVERSE CONDITIONS WHICH WERE ASCERTAINABLE PRIOR TO BID TIME.
- THE ELECTRICAL CONTRACTOR SHALL COORDINATE AND VERIFY THE ELECTRICAL SERVICE ARRANGEMENTS WITH THE LOCAL POWER COMPANY AND WITH OWNER SUPPLIED SITE PLAN. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY EQUIPMENT FOR A COMPLETE INSTALLATION.
- THE CONTRACTOR SHALL FURNISH AND INSTALL OF THE FOLLOWING MATERIAL AND EQUIPMENT, UNLESS NOTED OTHERWISE: PANEL BOARDS; LIGHTING FIXTURES; LAMPS; RACEWAYS; 600 VOLT WIRE AND CABLE; WIRING DEVICES; DEVICE PLATES; DEVICE, PULL, AND JUNCTION BOXES; SAFETY SWITCHES; MOTOR STARTERS; LIGHTING CONTROLS; CIRCUIT BREAKERS; FUSES; TIME CLOCKS; EQUIPMENT IDENTIFICATION (NAMEPLATES AND DIRECTORIES); WIRE AND CABLE TERMINATIONS; CONNECTIONS TO INDIVIDUAL UNITS OF EQUIPMENT. THIS REQUIREMENT INCLUDES DEVICES, CONDUCTORS, AND ETC. REQUIRED BY OTHER DISCIPLINES. THE ELECTRICAL CONTRACTOR SHALL REVIEW OTHER INSTALLATION PACKAGES TO INSURE EQUIPMENT NEEDED TO BE INSTALLED.
- THE ELECTRICAL CONTRACTOR SHALL OBTAIN AND REVIEW THE MECHANICAL AND SPECIAL EQUIPMENT SUBMITTALS PRIOR TO SUBMITTING THE ELECTRICAL SUBMITTALS. ANY ELECTRICAL EQUIPMENT, CONDUIT, AND WIRE SIZE CHANGES RESULTING FROM THIS REVIEW SHALL ALSO BE SUBMITTED FOR APPROVAL.
- ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL FITTINGS AND NECESSARY EQUIPMENT FOR LIGHT FIXTURE MOUNTING, AND INSTALLATION.
- ALL WORK SHALL BE PERFORMED BY SKILLED LICENSED ELECTRICIANS IN ACCORDANCE WITH THE BEST PRACTICES OF THE TRADE, MEETING THE REQUIREMENTS OF THE LATEST, ADOPTED, EDITION OF THE NATIONAL ELECTRICAL CODE, APPLICABLE FEDERAL, STATE AND LOCAL CODES, AND THE REQUIREMENTS OF THE ELECTRICAL UTILITY COMPANY FURNISHING THE SERVICES. ALL NECESSARY CONSTRUCTION PERMITS AND CERTIFICATES OF INSPECTION SHALL BE PURCHASED AND OBTAINED UNDER THIS CONTRACT
- FURNISH A GUARANTEE IN WRITING TO THE OWNER THAT ALL WORK EXECUTED UNDER THIS PACKAGE IS FREE FROM DEFECTS OF MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR FROM DATE OF FINAL ACCEPTANCE. IN ADDITION, DURING THE TERM OF THIS GUARANTEE, THE REPAIR AND/OR REPLACEMENT OF ANY DEFECTIVE WORK, AND ALL RESULTING DAMAGES SHALL BE MADE AT NO ADDITIONAL EXPENSE TO THE OWNER.



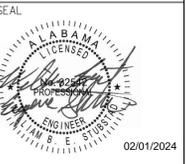
NOTE: CONTRACTOR SHALL VERIFY SHORT CIRCUIT RATING OF PANELBOARD/BREAKERS IS SUFFICIENT WITH UTILITY PRIOR TO PURCHASING EQUIPMENT.

INDICATES PROVIDE GFCI TYPE BREAKER FOR THIS CIRCUIT.

Type of Load	VA LOAD PER PHASE			Calculations		
	A	B	C	Total VA	MULTIPLIER	VA LOAD
O Other Loads	100	100	100	300	1.25	375
ON Other Load Non Cont	-	-	-	-	1	-
R Receptacles	-	-	-	-	1	-
Receptacles > 10,000	-	-	-	-	0.5	-
K Kitchen	-	-	-	-	0.65	-
E Existing Load	-	-	-	-	1.25	-
L Lighting	190	190	-	380	1.25	475
H Heating Only	-	-	-	-	1	-
C Cooling Only	-	-	-	-	1	-
M Motors	1,572	1,572	1,572	4,716	1	4,716
Total Load (VA)	1,862	1,862	1,672			
Balance	35%	35%	31%			
Largest Motor				6,861	0.25	1,715
Total Load (VA)				5,396		7,281
Current (Amps)				15		20



DATE	ISSUED FOR CONSTRUCTION	DESCRIPTION
2/1/24	0	

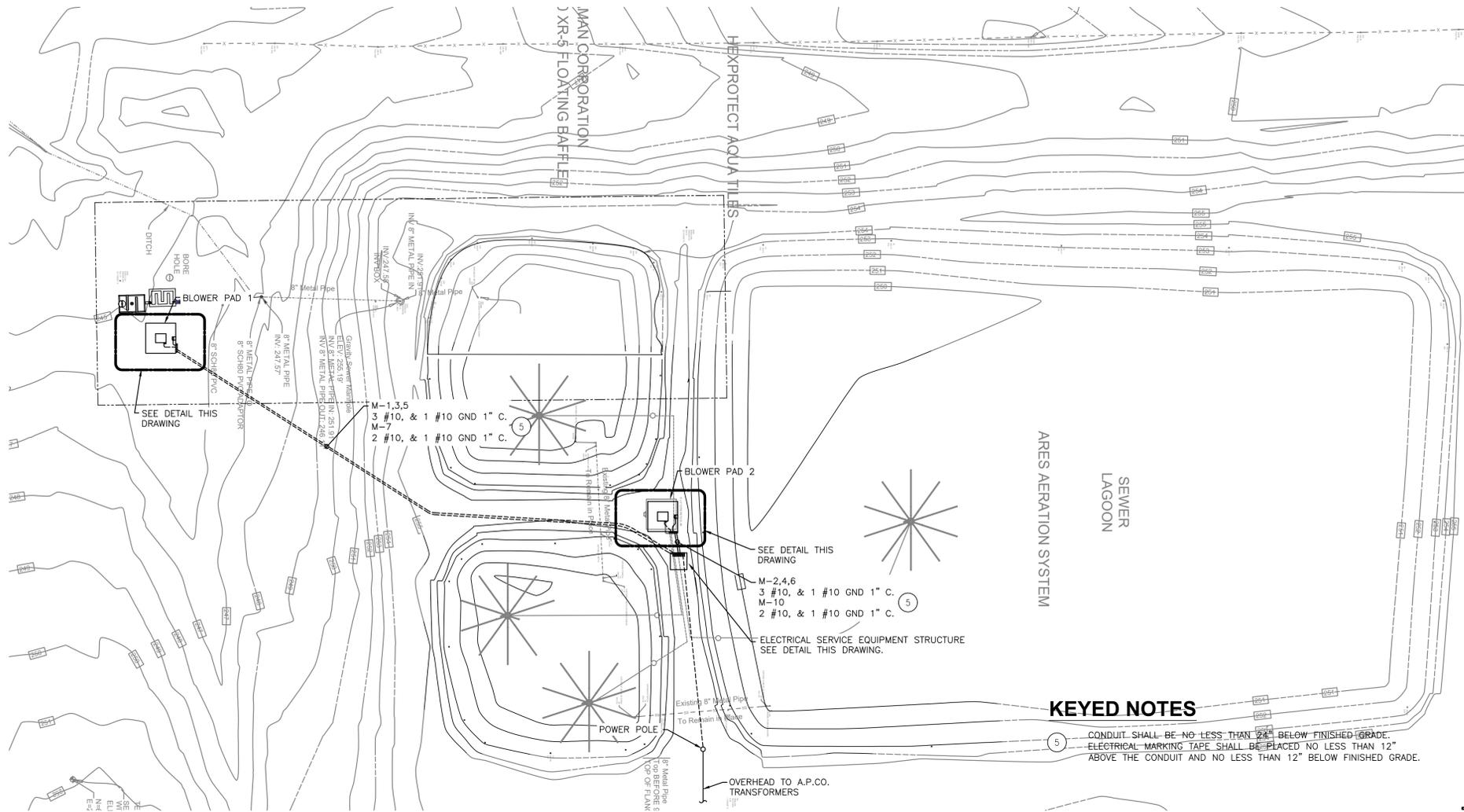


JF SHIELDS HIGH SCHOOL LAGOON SYSTEM UPGRADE LEGEND, NOTES AND PANEL SCHEDULE

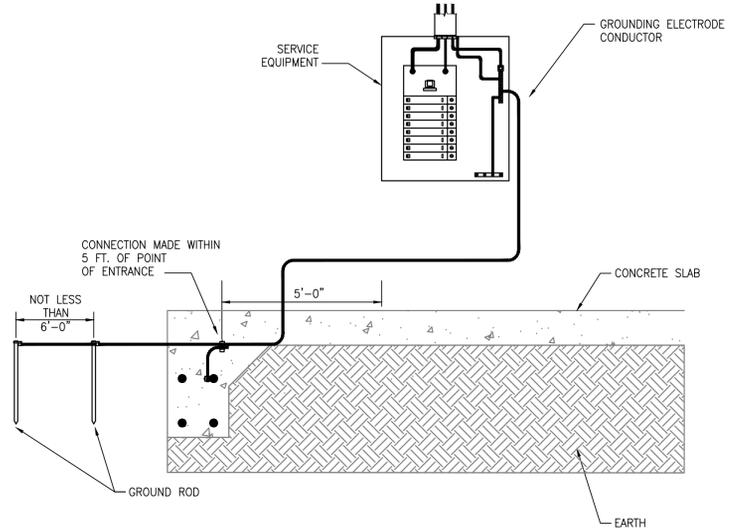
DATE: 2/1/24

SCALE: E1.1

REVISION: 0



ELECTRICAL SITE PLAN
SCALE: 1"=20'

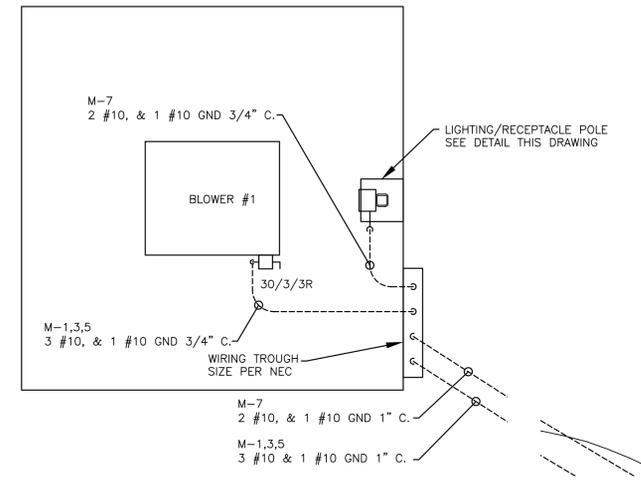


LIFE SAFETY GROUNDING DETAIL
SCALE: NONE

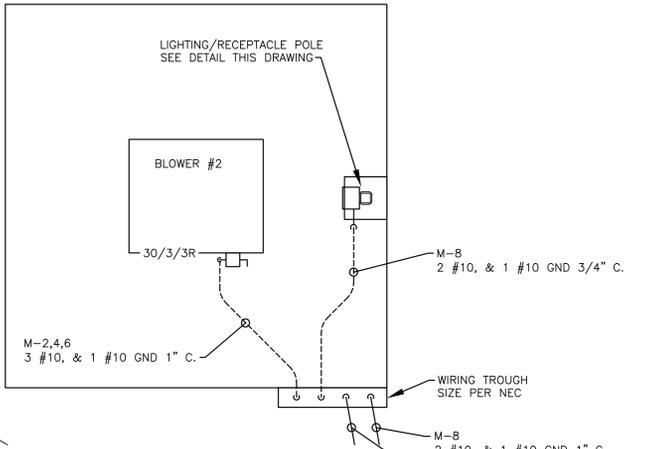
NOTE:
PER NEC ARTICLE 250 SECTION III 250.50 ALL GROUNDING ELECTRODES AS DESCRIBED IN 250.52(A)(1) THROUGH (A)(6) THAT ARE AT EACH BUILDING OR STRUCTURE SERVED SHALL BE BONDED TOGETHER TO FORM THE GROUNDING ELECTRODE SYSTEM. WHERE NONE OF THESE GROUNDING ELECTRODES EXIST, ONE OR MORE OF THE GROUNDING ELECTRODES SPECIFIED IN 250.52(A)(4) THROUGH (A)(7) SHALL BE INSTALLED AND USED. ALL WELDS ARE TO BE CAD WELD UNLESS OTHERWISE SPECIFIED.

KEYED NOTES

- 5 CONDUIT SHALL BE NO LESS THAN 24" BELOW FINISHED GRADE. ELECTRICAL MARKING TAPE SHALL BE PLACED NO LESS THAN 12" ABOVE THE CONDUIT AND NO LESS THAN 12" BELOW FINISHED GRADE.

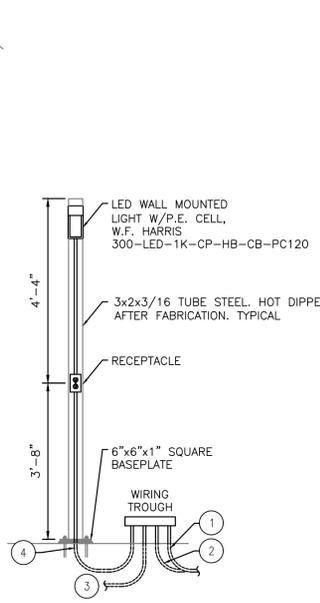


BLOWER PAD 1
SCALE: 1/2"=1'-0"



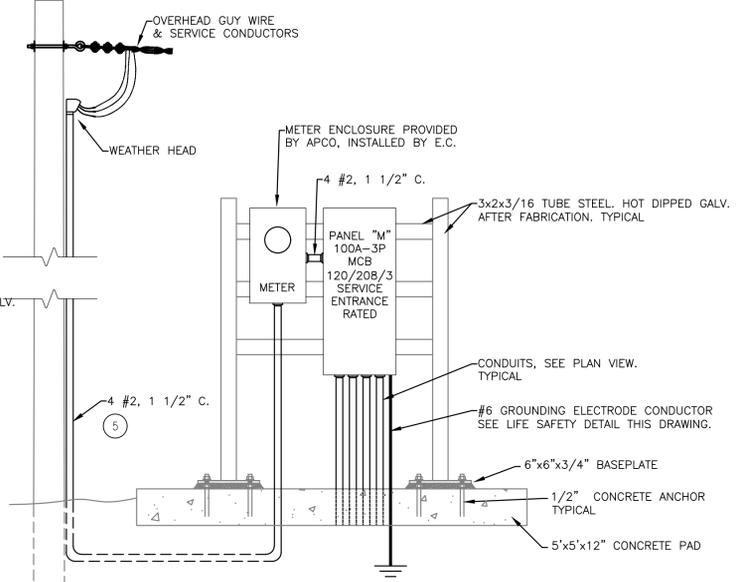
BLOWER PAD 2
SCALE: 1/2"=1'-0"

NOTES:
1. PROVIDE CONDUIT SLEEVES FOR A CONDUIT PENETRATIONS THRU CONCRETE PADS.



LIGHTING POLE
SCALE: 1/2"=1'-0"

- 1 1" C. TO PANEL "M" FOR BLOWER MOTOR.
- 2 1" C. TO PANEL "M" FOR LIGHT AND RECEPTACLE
- 3 3/4" C. TO BLOWER MOTOR
- 4 3/4" C. TO LIGHT AND RECEPTACLE

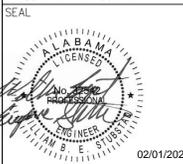


SERVICE ELECTRICAL EQUIPMENT STRUCTURE

NOTES:
1. SIZE AS REQUIRED BY EQUIPMENT ARRANGEMENT
2. ALL COMPONENTS OF THIS DETAIL ARE PROVIDED AND INSTALLED BY E.C., INCLUDING SERVICE POLE.
3. ALTERNATE: USE 4 x 4 TREATED POSTS AND TREATED PLYWOOD FOR THE BACKPLATE IN LIEU OF HOT DIPPED GALV. STEEL STRUCTURE.

COORDINATE WITH ALABAMA POWER FOR EXACT REQUIREMENTS OF POLE, CONDUIT, AND CONDUCTOR. SEE ALABAMA POWER CO. DRAWING A-C-02-5 AS A REFERENCE.

REV	DATE	DESCRIPTION
0	2/1/24	ISSUED FOR CONSTRUCTION
SS	WBS	CHECKED BY
SS	WBS	DRAWN BY



**JF SHIELDS HIGH SCHOOL
LAGOON SYSTEM UPGRADE
POWER PLAN**

DATE:	SCALE:	APPROVED:
2/1/24	NOTED	WBS
DRAWING NUMBER:	REVISION:	
E2.1	0	