OWENS CROSS ROADS, AL
NEW 0.9 MGD SBR
WASTEWATER TREATMENT PLANT

ADEM SRF/ARPA PROJECT CS010972-01

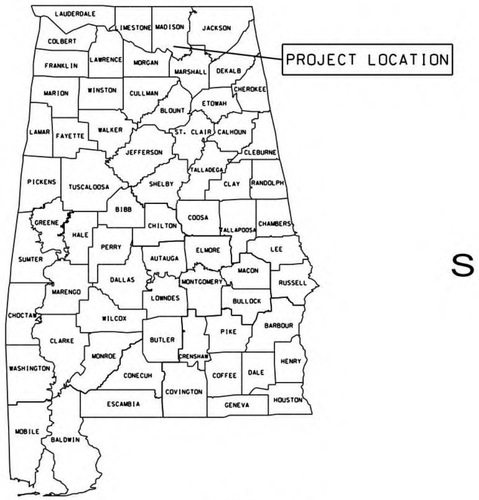
SNEED AVENUE

OWENS CROSS ROADS, AL 35763

MADISON COUNTY

OWNER:
CITY OF OWENS CROSS ROADS
HONORABLE MAYOR TONY K. CRAIG
9032 US HIGHWAY 431 SOUTH
OWENS CROSS ROADS, AL 35763
(256) 725-4163
TONY.K.CRAIG@OWENSCROSSROADSAL.GOV

CITY COUNCIL MEMBERS:
HONORABLE MAYOR TONY K. CRAIG
MR. SCOTT BAKER
MS. ELIZABETH CRAIG
MR. CLAUDE LANG
MR. JAMES MANN
MR. TERRY MANN



LOCATION MAP
NOT TO SCALE

Know what's **below.**
Call before you dig.

GEOTECHNICAL:
GTEC
MR. JOHN CORBELL
4890 UNIVERSITY SQUARE, SUITE 2
HUNTSVILLE, AL 35816
(256) 541-0165

STRUCTURAL:
ELM STRUCTURAL ENGINEERS
MR. WILL LINDSEY
2707 ARTIE STREET,BLDG. 100, SUITE 21
HUNTSVILLE, AL 35805
(256) 864-2542

CIVIL:
RGS CIVIL DESIGN LLC
MR. JAKE ROTH
1405 DRAKE AVENUE
HUNTSVILLE, AL 35802
(256) 503-9277

ELECTRICAL:
TOTAL DESIGN SOLUTIONS, INC.
MR. TYLER FARMER
3408 6TH AVENUE SW
HUNTSVILLE, AL 35805
(256) 539-8585

DRAWING INDEX

SUBMITTAL TABULATION

DATE	REV	REVISION DESCRIPTION
6/23/23		ISSUED FOR BID

GTEC Geotechnical Testing & Environmental Consultants

ELM Structural Engineers, Inc.

CIVIL R·G·S ENGINEERS

RGS CIVIL DESIGN LLC
1405 DRAKE AVENUE
HUNTSVILLE, AL 35802
(256) 503-9277

TOTAL DESIGN ENGINEERING
SPECIALIZING IN COMPLETE MEP DESIGN WORK SINCE 2006

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 34040 6/23/23 JACOB A. ROTH

JACOB A. ROTH, P.E.
ALABAMA LICENSE NO. 34040

06/23/2023
DATE

ISSUED FOR BID

I. SITEWORK

1. SCOPE & GENERAL NOTES

A. FURNISH ALL LABOR, MATERIALS, TOOLS, AND EQUIPMENT REQUIRED FOR CLEARING, GRUBBING, EROSION CONTROL AND GRADING, PAVING, DRAINAGE AND SEWERAGE SYSTEMS, UTILITY LINES, SOIL TREATMENT, ETC. IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS.

B. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH OWENS CROSS ROADS, MADISON COUNTY, AND HUNTSVILLE UTILITIES REQUIREMENTS, SPECIFICATIONS, ORDINANCES AND REGULATIONS.

C. CONTRACTOR SHALL BE RESPONSIBLE FOR THE LAYOUT OF THE PROPOSED IMPROVEMENTS AND CONSTRUCTION AS SHOWN THROUGHOUT THE PLANS.

D. CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROLS DURING CONSTRUCTION FOR PROTECTION OF ADJACENT PROPERTIES, ROADWAYS, AND WATERWAYS.

E. GROUND DISTURBANCE IS ANTICIPATED TO BE 0.83 ACRES. THE PROJECT SITE IS BELOW THE THRESHOLD FOR ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (ADEM) NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) CONSTRUCTION STORMWATER PERMIT. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING EROSION AND SEDIMENT CONTROL MEASURES ON SITE.

F. ALL MATERIAL, EQUIPMENT, DEBRIS, ETC. DESIGNATED TO BE REMOVED FROM THE SITE SHALL BE REMOVED AND DISPOSED OF ACCORDING TO CURRENT LAWS AND REGULATIONS.

G. CONTRACTOR SHALL MAINTAIN A SAFE, CLEAN WORK SITE, SHALL PROPERLY STORE MATERIALS AND EQUIPMENT AND REMOVE TRASH FROM THE WORK SITE DAILY.

H. FUEL TANKS SHALL NOT BE STORED ON THE R.O.W. OVERNIGHT. VEHICLES TRANSPORTING FUEL, CHEMICALS, FERTILIZERS, ETC. ONTO THE R.O.W. SHALL NOT BE LEFT UNATTENDED.

I. THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM EXISTING DRAWINGS AND SURVEY. THE ENGINEER MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE ENGINEER FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE.

J. THE CONTRACTOR SHALL VERIFY EXISTING DIMENSIONS, ELEVATIONS, AND SITE TOPOGRAPHY PRIOR TO CONSTRUCTION. IF CONFLICTS ARE FOUND THAT SHOULD ALTER THE PERFORMANCE OF THE WORK THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE CONSTRUCTION SUPERVISOR OR THE ENGINEER.

K. THE ENGINEER DOES NOT ACCEPT OR ASSUME ANY RESPONSIBILITY REGARDING THE MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES OF CONSTRUCTION SELECTED BY THE CONTRACTOR. IT IS THE INTENT OF THESE DRAWINGS TO SHOW THE COMPLETED PRODUCT OF WORK. FURTHER, THE ENGINEER IS NOT RESPONSIBLE FOR THE CONTRACTOR'S SAFETY PRECAUTIONS AND/OR PROGRAMS RELATING TO THE PERFORMANCE OF THE WORK UNDER THIS CONTRACT.

2. CLEARING & GRUBBING

A. GRASS, STUMPS AND ROOTS ARE TO BE STRIPPED FROM PROPOSED EXCAVATION, EMBANKMENT, PAVED AND BUILDING AREAS. CONTRACTOR SHALL REMOVE ALL STUMPS IN THEIR ENTIRETY AND SHALL REMOVE ROOTS GREATER THAN 2" IN DIAMETER TO A MINIMUM OF 18" BELOW ALL REQUIRED STRUCTURE AND PAVEMENT AREAS.

B. ALL TRASH, WEEDS, BRUSH AND ROOTS SHALL BE REMOVED FROM THE SITE.

C. ALL TOPSOIL SHALL BE STOCKPILED DURING GRADING OPERATIONS AND PLACED IN LANDSCAPE AREAS AS SHOWN ON THE PLANS.

3. GRADING OPERATIONS

A. PRIOR TO BEGINNING ANY EARTHWORK ON SITE, THE CONTRACTOR SHALL HAVE IN PLACE ALL REQUIRED EROSION CONTROL MEASURES NECESSARY TO PREVENT SILTATION FROM LEAVING THE SITE. THE WAYS, MEANS, AND METHODS FOR CONSTRUCTION ARE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR. THE OWNER AND ENGINEER WILL NOT BE RESPONSIBLE FOR THE CONTRACTOR'S LACK OR NON-MAINTENANCE OF EROSION CONTROL PRACTICES.

B. ALL SITE GRADING, EXCAVATION, FILL, COMPACTION AND EARTHWORK OPERATIONS SHALL BE PERFORMED IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEERING STUDY PROVIDED BY GTEC, DATED DECEMBER 13, 2022.

C. ALL TOPSOIL, VEGETATION, DEBRIS, POORLY COMPACTED OLD FILL AND NATIVE SOILS CONTAINING ORGANIC MATERIAL SHALL BE REMOVED FROM THE CONSTRUCTION SITE, OR, IF ACCEPTABLE, BE USED AS TOPSOIL ON GRADED AREAS. TOPSOIL SHALL BE STOCKPILED AND, WHEN EMBANKMENT IS COMPLETE, PLACED OVER THE GRADED AREA.

D. ALL STRUCTURAL FILL MATERIAL AT THE SITE SHALL BE FREE OF ORGANICS AND DEBRIS AND SHOULD BE OF LOW PLASTICITY (PI OF LESS THAN 30). FILL MATERIAL SHALL BE COMPACTED TO A MINIMUM 98 PERCENT OF MAXIMUM DRY DENSITY AS DETERMINED BY STANDARD PROCTOR ASTM D-698. LIFT THICKNESS FOR GENERAL FILLS SHALL BE LIMITED TO 8" LOOSE MEASURE. BACKFILLING IN LIMITED ACCESS AREAS SUCH AS UTILITY TRENCHES SHALL HAVE A LIFT THICKNESS LIMITED TO 6" LOOSE MEASURE.

E. ALL PROOFROLLING OPERATIONS SHALL BE OBSERVED BY A COMPETENT GEOTECHNICAL ENGINEER. THE GEOTECHNICAL ENGINEER CAN PROVIDE DIRECTION AS TO THE DEPTH AND EXTENT OF REQUIRED UNDERCUTTING. THE GEOTECHNICAL ENGINEER CAN ALSO PROVIDE ALTERNATIVES TO UNDERCUTTING WHERE APPROPRIATE.

F. AFTER STRUCTURES AND PAVEMENTS ARE COMPLETED AND ALL PIPING TRENCHES BACKFILLED, THE AREAS TO BE LANDSCAPED SHALL BE FINE GRADED AND PREPARED FOR TOPSOIL. TOPSOIL SHALL BE FREE OF ROOTS, STUMPS AND DEBRIS AND PLACED TO 4" DEPTH IN ALL LANDSCAPE AREAS.

G. LANDSCAPE AREAS SHALL INCLUDE ALL AREAS, EXCLUDING THE BUILDING, ROADWAY AND PARKING/GRAVEL AREAS, THAT WERE DISTURBED (GRADED, ETC.) DURING CONSTRUCTION. ALL LANDSCAPE AREAS SHALL RECEIVE A SUFFICIENT AMOUNT OF FERTILIZER INCORPORATED INTO THE SOIL AND SEED OR SOD TO INSURE A 100% VEGETATIVE COVER.

H. ALL TEMPORARY EROSION AND SEDIMENTATION CONTROL DEVICES USED BY THE CONTRACTOR SHALL BE REMOVED UPON COMPLETION OF THE PROJECT AND THE SITE SHALL BE CLEANED UP AND RESTORED TO THE SATISFACTION OF THE OWNER.

II. UTILITIES

1. SCOPE & GENERAL NOTES

A. CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, EQUIPMENT, FITTINGS, MISCELLANEOUS APPURTENANCES AND TESTING SERVICES NECESSARY FOR THE INSTALLATION OF ALL SITE UTILITIES WORK REQUIRED TO ACCOMPLISH THE CONTRACT.

B. ALL RULES AND REGULATIONS COVERING THE RESPECTIVE UTILITIES SHALL BE OBSERVED IN EXECUTING UTILITY INSTALLATION WORK. ACTIVE UTILITIES SHALL BE PROTECTED AS REQUIRED TO PERFORM CONTRACT. INACTIVE UTILITIES AND ABANDONED UTILITIES ENCOUNTERED IN EXCAVATING AND GRADING OPERATIONS SHALL BE REMOVED, PLUGGED, OR CAPPED AS REQUIRED.

C. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL PERMITS, TAP FEES, METER FEES, ETC. AS MAY BE REQUIRED BY THE UTILITY OWNER.

D. THE CONTRACTOR SHALL PHYSICALLY LOCATE AND VERIFY ALL UTILITY LOCATIONS PRIOR TO ANY EXCAVATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE IMMEDIATE REPAIR OF ANY AND ALL DAMAGES TO EXISTING UTILITY LINES CAUSED BY THE CONTRACTOR'S CONSTRUCTION AT NO ADDITIONAL COST TO THE PROJECT.

E. ANY DAMAGES TO EXISTING UTILITIES SHALL BE PROMPTLY REPAIRED BY THE CONTRACTOR OR AFFECTED UTILITY, AT THE CONTRACTOR'S EXPENSE.

F. ALL FILL/EMBANKMENT AREAS SHALL BE FILLED AND COMPACTED PRIOR TO EXCAVATION OF UTILITY TRENCHES.

G. CONTRACTOR SHALL PROVIDE ALL NECESSARY SAFETY PRECAUTIONS FOR THE VARIOUS TYPES OF CONSTRUCTION REQUIRED BY THIS PROJECT INCLUDING PRECAUTIONS ASSOCIATED WITH WORKING IN TRENCHES AND AROUND ACTIVE UTILITIES. THE PROJECT ENGINEER WILL NOT STAY ON THE JOB SITE TO SUPERVISE ANY WORK, SAFETY FEATURES, OR PRECAUTIONS.

2. WATER

A. ALL WATER UTILITY MATERIALS AND INSTALLATION, INCLUDING SERVICE LINES, METERS, BACKFLOW PREVENTION DEVICES, VALVES, ETC., SHALL BE IN ACCORDANCE WITH OWENS CROSS ROADS WATER AUTHORITY CONSTRUCTION SPECIFICATIONS.

B. ALL WATER MAINS SHALL HAVE A MINIMUM OF 12" CLEARANCE PROVIDED BETWEEN ALL STORM DRAINS, AND THE WATER MAIN SHALL BE BELOW THE STORM DRAIN UNLESS ADEQUATE COVER IS PROVIDED OVER THE MAIN. ALL SEWER CROSSINGS SHALL PROVIDE A MINIMUM CLEARANCE OF 18" FROM EDGE OF PIPE TO EDGE OF PIPE, WITH WATER MAIN OVER THE SEWER MAIN. NO JOINTS SHALL BE ALLOWED WITHIN 6' OF SEWER MAINS OR STORM MAINS ON EITHER SIDE OF THE CROSSINGS.

C. ALL SERVICE LINES, REGARDLESS OF SIZE, WHICH ARE INSTALLED UNDER STORM DRAINS SHALL BE ENCASED IN PLASTIC OR STEEL CASING FOR A MINIMUM LENGTH OF 5' BEYOND THE STORM DRAIN ON EITHER SIDE.

D. YARD HYDRANTS SHALL BE STAINLESS STEEL, FREEZELESS, WOODFORD IOWA HYDRANT, MODEL Y34SS OR APPROVED EQUIVALENT.

3. SANITARY SEWER

A. ALL SANITARY SEWER UTILITY MATERIALS AND INSTALLATION, INCLUDING SERVICE LINES, MANHOLES, CLEANOUTS, ETC., SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE CITY OF HUNTSVILLE ENGINEERING DEPARTMENT DESIGN AND ACCEPTANCE MANUAL FOR SANITARY SEWERS.

B. ALL PIPE TO MANHOLE CONNECTIONS SHALL USE PRE-FABRICATED FLEXIBLE CONNECTORS SUCH AS A-LOK, OR APPROVED EQUIVALENT. ALL PIPE TO MANHOLE CONNECTIONS AND GRADE ADJUSTMENT RINGS SHALL BE SEALED AND GROUTED WITH NON-SHRINK MATERIALS AS SPECIFIED IN THE CITY OF HUNTSVILLE SANITARY SEWER SPECIFICATIONS.

C. ALL NEW PUBLIC AND PRIVATE SANITARY SEWER LINES AND MANHOLES SHALL BE TESTED IN ACCORDANCE WITH THE CITY OF HUNTSVILLE SANITARY SEWER CONSTRUCTION SPECIFICATIONS. THE CONTRACTOR SHALL PROVIDE 72-HOUR NOTICE PRIOR TO TESTING. A REPRESENTATIVE FROM THE CITY MUST BE PRESENT DURING FINAL TESTING PROCEDURES. AN INDEPENDENT TESTING FIRM APPROVED BY THE CITY ENGINEERING AND/OR SEWER OPERATOR SHALL CONDUCT TESTING. THE CONTRACTOR SHALL PROVIDE ALL SEWER LINE AND MANHOLE TESTING INCLUDED IN THE COSTS OF MANHOLES AND PIPES. A COPY OF ALL TAPES AND LOGS ON TESTING RESULTS SHALL BE SUBMITTED TO THE OWNER.

D. ALL SANITARY SEWER LINES SHALL HAVE A MINIMUM COVER OF 36 INCHES.

E. ACCEPTABLE PIPE JOINING INCLUDES PUSH-IN SOCKET JOINTS, SUCH AS TYTON, BELL-TITE, AND FASTITE, MECHANICAL JOINTS, RESTRAINED JOINTS AND FLANGED JOINTS (ONLY FOR ABOVE GROUND).

F. ALL FITTINGS SHALL BE THE SAME MATERIAL AS THE PIPE; PRESSURE RATED THE SAME AS THE PIPE AT A MINIMUM, AND SHALL RECEIVE SAME INTERIOR AND EXTERIOR COATINGS AS THE PIPE.

G. ALL SEWER LINES SHALL HAVE LOCATOR TAPE INSTALLED 2 FEET BELOW GROUND SURFACE ALONG LENGTH OF THE PIPE.

H. DUCTILE IRON PIPE FOR BURIED SEWER MAINS AND LATERALS SHALL BE PRESSURE CLASS 350 PSI. ALL DUCTILE IRON PIPE SHALL HAVE AN INTERIOR CEMENT MORTAR LINING IN ACCORDANCE WITH AWWA C104. BURIED DUCTILE IRON PIPING SHALL BE ASPHALT COATED AND SHALL BE INSTALLED WITH POLYETHYLENE TUBE ENCASEMENT (POLYWRAP).

I. PLASTIC PIPE FOR SANITARY SEWER APPLICATIONS SHALL BE PVC, SDR 26, IN ACCORDANCE WITH HUNTSVILLE WATER POLLUTION CONTROL SPECIFICATIONS. PIPE SHALL BE MARKED WITH THE MANUFACTURER'S NAME OR TRADEMARK, PRODUCTION LOT NUMBER, ASTM DESIGNATION, PVC, SDR RATING, AND NOMINAL DIAMETER.

J. SANITARY SEWER FORCE MAIN PIPING SHALL BE HDPE, DR 17, UNLESS OTHERWISE NOTED.

K. PLASTIC PIPE FOR SLOTTED DRAIN APPLICATIONS SHALL MEET OR EXCEED STANDARDS FOR POLYETHYLENE PIPE FOR STORMWATER APPLICATIONS AND ASTM F 667. PLASTIC STORM PIPE SHALL BE ADS HDPE N-12 DUAL WALL PIPE, OR APPROVED EQUIVALENT.

L. ALL MANHOLES, WET WELLS, AND IMMERSED CONCRETE STRUCTURES SHALL BE PRECAST CONCRETE CONSTRUCTION AND SHALL BE COATED WITH CARBOLINE PLASITE 4500S EPOXY, RAVEN 405 ULTRA HIGH BUILD EPOXY, TNEMEC SERIES 436 PERMASHIELD FR, OR APPROVED EQUIVALENT, AT A MINIMUM THICKNESS OF 50 MIL. SURFACE PREPARATION AND PRIMER SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

III. CONCRETE

1. SCOPE & GENERAL NOTES

A. FURNISH ALL LABOR, MATERIALS, EQUIPMENT AND SERVICES NECESSARY FOR THE CONSTRUCTION OF ALL CONCRETE AND STEEL WORK REQUIRED TO ACCOMPLISH THE CONTRACT.

B. SEE DRAWINGS FOR LOCATION, SIZE, AND SHAPE OF CONCRETE WORK INCLUDING RETAINING WALLS, FOOTINGS, SLABS, SIDEWALKS, ETC.

2. CONCRETE MIX

A. PORTLAND CEMENT SHALL COMPLY WITH ASTM *C-150.

B. CONCRETE AGGREGATES SHALL COMPLY WITH ASTM *C-33.

C. WATER SHALL BE POTABLE.

D. REINFORCING BARS SHALL COMPLY WITH ASTM *A-615-83(S1), GRADE 60.

E. WELDED WIRE MESH REINFORCEMENT SHALL BE AS SHOWN ON THE PLANS AND SHALL COMPLY WITH ASTM *A-185-79.

F. READY MIXED CONCRETE SHALL COMPLY WITH ASTM *C-94 AND AS FOLLOWS:

a. ALL CONCRETE SHALL HAVE A 28-DAY COMPRESSIVE STRENGTH NOT LESS THAN 3,500 PSI AS DETERMINED BY ASTM *C-31 AND C-39.

b. CONCRETE SHALL CONTAIN AIR-ENTRAINING ADMIXTURE TO PROVIDE 3%-6% AIR CONTENT AND COMPLY WITH ASTM *C-260.

c. CONCRETE SHALL BE DELIVERED AT SITE WITH SLUMP BETWEEN 3" AND 4".

d. CONCRETE SHALL NOT HAVE MORE THAN ONE GALLON OF WATER PER C.Y. ADDED ON SITE. CONTRACTOR WILL KEEP DELIVERY TICKETS AND PROVIDE OWNER WITH COPIES AS NECESSARY.

e. TEMPERATURE OF CONCRETE AT TIME OF PLACEMENT SHALL NOT BE BELOW 50° F, NOR EXCEED 90° F.

3. TESTING

A. CONTRACTOR TO PROVIDE AND PAY COSTS FOR TEST REPORTS FOR CONCRETE USED IN RETAINING WALLS, FOOTINGS, SLABS, AND SIDEWALKS.

B. SAMPLES SHALL BE MADE AS PER ASTM *C-172 "METHOD OF SAMPLING FRESH CONCRETE."

4. PLACEMENT

A. CONCRETE SHALL BE THOROUGHLY CONSOLIDATED DURING PLACEMENT, AND SHALL BE WORKED AROUND REINFORCEMENT WITH MECHANICAL VIBRATORS.

B. EXTERIOR CONCRETE PAVING AND SIDEWALKS SHALL RECEIVE A NON-SLIP BROOM FINISH.

IV. GROUND PREPARATION, FERTILIZATION AND GRASSING

1. SCOPE & GENERAL NOTES

A. THE TOTAL DISTURBED AREA SHALL BE MACHINED TO A SMOOTH SURFACE MATCHING THE ADJACENT OR ADJOINING GROUND SURFACES AND THE GROUND PROFILE ON THE PLANS. THE GROUND PREPARATION BEFORE SEEDING/SODDING SHALL CONSIST OF CULTIVATION TO A LOOSE DEPTH OF APPROXIMATELY 4" MINIMUM AND THE APPLICATION OF LIME TO THE SOIL AT THE RATE OF 2 TONS PER ACRE. THE PLOWING, HARROWING, CULTIVATING AND ALL OTHER OPERATIONS SHALL BE PERFORMED WITH PROPER EQUIPMENT AND IN SUCH A MANNER AS TO BREAK UP ALL CLODS, LUMPS, OR EARTH BALLS, AND REMOVE ALL BOULDERS, STUMPS, LARGE ROOTS, OR OTHER PARTICLES WHICH WOULD INTERFERE WITH THE WORK AND WHICH WILL RESULT IN A SMOOTH UNIFORM, LOOSE, WELL BROKEN, AND FINE GRAINED SOIL; THUS PROVIDING A SUITABLE BED FOR SEED GRASS. THE GROUND SHALL BE PLOWED TO THE REQUIRED DEPTH THEN CULTIVATED WITH A ROTARY TILLER AND/OR DISC HARROW, IN BOTH DIRECTIONS, IF FEASIBLE, UNTIL APPROVED. IN SMALL OR INACCESSIBLE AREAS THE USE OF HAND TOOLS WILL BE PERMITTED. THE CONTRACTOR SHALL ADD SUFFICIENT WATER TO WET THE SOIL IN ORDER TO PREPARE THE GROUND TO BE SEEDED/SODDED. 920 POUNDS OF 13-13-13 COMMERCIAL GRADE FERTILIZER PER ACRES OF GROUND SHALL BE SPREAD UNIFORMLY INTO THE AREAS TO BE PLANTED. THE FERTILIZER SHALL BE WELL PULVERIZED AND FREE OF LUMPS WHEN APPLIED. IN NO CASE SHALL FULL STRENGTH FERTILIZER BE PERMITTED IN DIRECT CONTACT WITH THE SEEDS. WHEN FERTILIZERS ARE APPLIED HYDRAULICALLY THEY MUST BE DILUTED SUFFICIENTLY AS DIRECTED SO THAT NO DAMAGE IS DONE TO EITHER SEED OR ESTABLISHED GRASSES AND LEGUMES.

B. TEMPORARY SEEDING SHALL BE CONDUCTED AS NECESSARY TO PREVENT EROSION AND, AT A MINIMUM, ON ALL STOCKPILES AND GRADED AREAS NOT TO BE DISTURBED FOR A PERIOD OF NO LESS THAN FOURTEEN DAYS. PERMANENT SEEDING SHALL BE APPLIED IN ALL AREAS AFTER FINAL GRADING HAS BEEN COMPLETED.

C. SEEDING MIXTURES SHALL BE AS FOLLOWS:

a.	SEPTEMBER THROUGH MARCH	WINTER
	KENTUCKY BLUE GRASS	6 LBS/ACRE
	PENSACOLA BAHIA	20 LBS/ACRE
b.	RESEEDING WHITE CLOVER	30 LBS/ACRE
	KENTUCKY 31 FESCUE	20 LBS/ACRE
c.	APRIL THROUGH JUNE	SPRING
	PENSACOLA BAHIA	20 LBS/ACRE
d.	KENTUCKY 31 FESCUE	20 LBS/ACRE
	COMMON LESPEDEZA (VAR. TENN.)	10 LBS/ACRE
	BERMUDA GRASS	12 LBS/ACRE
e.	JUNE THROUGH AUGUST	SUMMER
	BERMUDA GRASS	6 LBS/ACRE
	PENSACOLA BAHIA	20 LBS/ACRE
	RESEEDING WHITE CLOVER	30 LBS/ACRE
	KENTUCKY 31 FESCUE	20 LBS/ACRE

D. SOWING OF SEED SHALL, IN GENERAL, FOLLOW PROMPTLY AFTER INCORPORATION OF FERTILIZER IN A UNIFORM MANNER AT THE RATES SPECIFIED FOR EACH SEED SPECIE. SOWING SHALL BE DONE BY APPROVED MECHANICAL SEEDERS. NO SOWING SHALL BE DONE DURING WINDY WEATHER, WHEN THE PREPARED SURFACE IS CRUSTED, OR WHEN THE GROUND IS FROZEN, WET, OR OTHERWISE IN A NON-TILLABLE CONDITION. UNLESS OTHERWISE DIRECTED, AFTER SEED HAS BEEN SOWN THE SEED BED SHALL BE COMPACTED IMMEDIATELY BY MEANS OF A CULTIPACKER, LIGHT ROLLER, OR APPROVED DRAG. THE AMOUNT OF WATER AND WHEN IT SHALL BE APPLIED SHALL BE THE CONTRACTOR'S RESPONSIBILITY UNTIL ACCEPTANCE OF THE PROJECT.

E. THE CONTRACTOR SHALL INSTALL A DOUBLE-NET EROSION CONTROL BLANKET ON ALL SLOPES STEEPER THAN 2:1. EROSION CONTROL BLANKET SHALL BE TENSAR, NORTH AMERICAN GREEN, ERONET S150 EROSION CONTROL BLANKET, OR APPROVED EQUIVALENT.

F. THE ACCEPTANCE OF DESIGNATED SEED AREA WILL BE BASED ON VERIFICATION OF A SATISFACTORY STAND OF GRASS IN THE SEASON FOR EACH SPECIE REQUIRED BY THE MIX DESIGNATED FOR USE. IF A SATISFACTORY STAND OF GRASS IS NOT ESTABLISHED THEN THE AREA SHALL BE RE-SEEDED AND/OR SODDED WITHOUT ADDITIONAL COST TO THE OWNER.

G. CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING A SATISFACTORY STAND OF GRASS AND LEGUMES IN ACCORDANCE WITH THE SPECIFICATION.

H. THE CONTRACTOR MAY, AT HIS OPTION, EMPLOY ADDITIONAL MEASURES (OTHER THAN THOSE SPECIFIED) TO PREVENT LOSS OF, OR DAMAGE TO, THE WORK RESULTING FROM THE EFFECTS OF WIND AND/OR WATER. NO ADDITIONAL COMPENSATION WILL BE MADE FOR THE EMPLOYMENT OF SUCH ADDITIONAL MEASURES.

I. THE EROSION CONTROL WORK SHALL COVER ALL DISTURBED AREAS WITHIN THE PROJECT BOUNDARY. EROSION CONTROL WORK SHALL INCLUDE ALL DISTURBED AREAS AS NECESSARY TO COMPLETE THE GRASSING OF THE PROJECT.

PLANS LEGEND

EXISTING BLDG.	
EXISTING ASPHALT PAVEMENT	
EXISTING GRAVEL ROAD	
EXISTING SIDEWALK	
EXISTING ELEVATION CONTOUR, MINOR	
EXISTING ELEVATION COUNTOR, MAJOR	
EXISTING PROPERTY/R-O-W LINE	
EXISTING CHAIN LINK FENCE	XX-XX-XX
EXISTING WATER MAIN	W
EXISTING SAN. SEWER MAIN	SS
EXISTING SAN. SEWER MANHOLE	S
EXISTING NATURAL GAS MAIN	G
EXISTING OVERHEAD ELECTRIC LINE	P
EXISTING UTILITY POLE	
EXISTING EXTERIOR LIGHT FIXTURE	
EXISTING BURIED FIBER OPTIC	FO
NEW CONSTRUCTION	
REQD ELEVATION CONTOUR MAJOR	
REQD ELEVATION CONTOUR MINOR	
REQD STORM DRAIN	
REQD SANITARY SEWER LINE	SS
REQD SANITARY SEWER MANHOLE	S
REQD WATER LINE	W
REQD ELECTRICAL LINE	
REQD NATURAL GAS LINE	G
SILT FENCE	
REQUIRED	REQD
CONCRETE	CONC
PAVEMENT	PVMNT
EXISTING	EXIST
BACK OF CURB	BC

ISSUED FOR BID

CIVIL
R·G·S
ENGINEERS
RGS CIVIL DESIGN LLC
1405 DRAKE AVE
HUNTSVILLE, AL 35802
(256) 503-9277

ALABAMA LICENSED No. 34040 PROFESSIONAL ENGINEER JACOB A. ROTH 6/23/23

REV #	DATE	DESCRIPTION

SITEWORK GENERAL NOTES, SPECIFICATIONS, & LEGEND

OWENS CROSS ROADS NEW 0.9 MGD SBR WWTP
SNEED AVENUE
OWENS CROSS ROADS, AL 35763

DRAWN: JAR
CHECKED: JAR
DATE: JUNE 23, 2023
PROJECT NUMBER: CS010972-01
SHEET NUMBER: C001

REQD CLASS I RIP RAP SLOPE STABILIZATION, SEE DETAIL, SHEET C201

REQD WWTP EXTERIOR WALL STRUCTURE N: 1487838.18 E: 466507.24

REQD WWTP EXTERIOR WALL STRUCTURE N: 1487852.29 E: 466660.59

EXIST FENCE

DEMO/REMOVE EXIST FENCE

216.93'

154.00'

4.00'

20.00'

92.80'

REQD DENSE GRADE BASE COURSE SURFACING, SEE DETAIL, SHEET C201

BASIN BOTTOM ELEV: 582.00
TOP BASIN WALL ELEV: 602.00
TOP SLAB ELEV: 603.00

REQD 8'x16' FIBERGLASS CONTROL BUILDING, MOUNT TO TOP OF BASIN SLAB, SEE SHEET C304

REQD 8' DIA PRECAST CONC PUMP STATION N: 1487840.62 E: 466672.99 SEE DETAIL, SHEET C200

REQD 5'x5' PRECAST CONC VALVE VAULT, SEE DETAIL, SHEET C200

6.00'

15.00'

PS

S

REQD 8" THICK CONC PAD FOR BACKUP DIESEL GENERATOR, SEE DETAIL, SHEET C201

REQD 6' CHAIN LINK SECURITY FENCE, TYP. SEE SHEET C202

REQD CLASS I RIP RAP SLOPE STABILIZATION, SEE DETAIL, SHEET C201

BASIN BOTTOM ELEV: 582.00
TOP BASIN WALL ELEV: 602.00

REQD OSHA COMPLIANT ALUMINUM EXTERIOR STAIR, SEE DETAIL, SHEET C306

NEW CONCRETE WWTP
4 TRAIN SBR SYSTEM
SEE STRUCTURAL DRAWINGS
FOR FOUNDATION AND WALL THICKNESS

REQD 6' DIA PRECAST CONC SS MANHOLE (MH02) N: 1487831.39 E: 466674.06

REQD 4' DIA PRECAST CONC SS MANHOLE (MH01) N: 1487818.55 E: 466675.42

81.50'

102.11'

REQD 4'x4'x4" THICK LIGHT DUTY CONC PAD, FIELD LOCATE

BASIN BOTTOM ELEV: 582.00
TOP BASIN WALL ELEV: 602.00

REQD DENSE GRADE BASE COURSE SURFACING, SEE DETAIL SHEET C201

REQD 6' CHAIN LINK SECURITY FENCE, TYP.

REQD 5'x5'x4" THICK LIGHT DUTY CONC PAD (CHEMICAL FEED STATION), FIELD LOCATE

REQD 74' LF x8' TALL ENDURO COMPOSITES FRP BAFFLE WALL, SEE DETAIL, SHEET C305

REQD 50 LF 8" HDPE SLOTTED PIPE DRAIN, SEE DETAIL, SHEET C201

REQD FREEZEPROOF YARD HYDRANT

REQD 5'x5'x4" THICK LIGHT DUTY CONC PAD (CHEMICAL FEED STATION), FIELD LOCATE

36.36'

42.93'

REQD 3'x3'x4" THICK LIGHT DUTY CONC PAD, FIELD LOCATE

74.00'

BASIN BOTTOM ELEV: 580.00
TOP BASIN WALL ELEV: 588.00

74.00'

17.00'

18.00'

5.00'

REQD 4' DIA PRECAST CONC SS MANHOLE (MH03) N: 1487742.03 E: 466497.75

REQD 8" THICK CONC PAD FOR WWTP DISK FILTER EQUIPMENT, SEE DETAIL, SHEET C201

REQD 4' DIA PRECAST CONC SS MANHOLE (MH05) N: 1487763.24 E: 466671.38

REQD 4'x8' PROJECT ACTIVITY SIGN, SEE ADEM SRF SUPPLEMENTAL GENERAL CONDITIONS PROJECT SIGN DETAIL

EXIST FIRE HYDRANT

EXIST WATER METER

REQD 10'x5'x4" THICK LIGHT DUTY CONC PAD, FIELD LOCATE

82.00'

18.00'

8.00'

64.67'

REQD 12" FLOWMETER IN JUMBO METER BOX, SEE DETAIL, SHEET C201

REQD 4'x4'x4" THICK LIGHT DUTY CONC PAD, FIELD LOCATE

REQD 20' DOUBLE-PANEL CHAIN LINK FENCE GATE

EXIST STEEL BEAM GATE

SNEED AVENUE

REQD 16' DOUBLE-PANEL CHAIN LINK FENCE GATE

EXIST SS MANHOLE

EXIST UTILITY POLE

SITE LAYOUT PLAN

SCALE: 1" = 10'

10 5 0 10 20

GRAPHIC SCALE: 1" = 10'

N

ISSUED FOR BID

CIVIL R·G·S ENGINEERS
RGS CIVIL DESIGN LLC
1405 DRAKE AVE
HUNTSVILLE, AL 35802
(256) 503-9277

ALABAMA LICENSED No. 34040 PROFESSIONAL ENGINEER 6/23/23 JACOB A. ROTH

REV #	DATE	DESCRIPTION

SITE LAYOUT PLAN

OWENS CROSS ROADS NEW 0.9 MGD SBR WWTP
SNEED AVENUE
OWENS CROSS ROADS, AL 35763

DRAWN:	JAR
CHECKED:	JAR
DATE:	JUNE 23, 2023
PROJECT NUMBER:	CS010972-01
SHEET NUMBER:	C100

BASIN BOTTOM ELEV: 582.00
TOP BASIN WALL ELEV: 602.00
TOP SLAB ELEV: 603.00

BASIN BOTTOM ELEV: 582.00
TOP BASIN WALL ELEV: 602.00

BASIN BOTTOM ELEV: 582.00
TOP BASIN WALL ELEV: 602.00

BASIN BOTTOM ELEV: 580.00
TOP BASIN WALL ELEV: 588.00

REQD CONC PAD

REQD 5'x5' PRECAST CONC VALVE VAULT

REQD 8' DIA PRECAST CONC PUMP STATION

REQD 6' DIA PRECAST CONC SS MANHOLE

REQD 4' DIA PRECAST CONC SS MANHOLE

REQD 4' DIA PRECAST CONC SS MANHOLE

REQD 18" PVC WWTP OUTFALL PIPE

REQD 4'x8' PROJECT ACTIVITY SIGN

SNEED AVENUE

584.00

584.50

585.60

585.50

SITE GRADING PLAN
SCALE: 1" = 10'

10 5 0 10 20

GRAPHIC SCALE: 1" = 10'

N

ISSUED FOR BID

CIVIL
R·G·S ENGINEERS
RGS CIVIL DESIGN LLC
1405 DRAKE AVE
HUNTSVILLE, AL 35802
(256) 503-9277

ABAM LICENSED No. 34040 PROFESSIONAL ENGINEER
6/23/23
JACOB A. ROTH

REV #	DATE	DESCRIPTION

SITE GRADING PLAN

OWENS CROSS ROADS NEW 0.9 MGD SBR WWTP
SNEED AVENUE
OWENS CROSS ROADS, AL 35763

DRAWN:	JAR
CHECKED:	JAR
DATE:	JUNE 23, 2023
PROJECT NUMBER:	CS010972-01
SHEET NUMBER:	C101

REQD 12" DI 90° ELBOW AND VERTICAL PIPE TO TOP OF WWTP ELEV (24' VERTICAL +/-)

REQD 132 LF 12" DIFORCE MAIN

REQD 6"x12" DIREDUCER

REQD 6" PLUG VALVE

REQD 6" DI 90° ELBOW

REQD 5'x5' PRECAST CONC VALVE VAULT, SEE DETAIL, SHEET C200

REQD 8' DIA PRECAST CONC PUMP STATION TOP EL: 587.50 BOTTOM EL: 563.66 SEE DETAIL, SHEET C200

REQD CONC PAD FOR BACKUP DIESEL GENERATOR

REQD 8'x16' FIBERGLASS CONTROL BUILDING, MOUNT TO TOP OF BASIN SLAB

REQD 3 LF 18" DUCTILE IRON SS PIPE INVERT IN: 568.60 INVERT OUT: 568.50 SLOPE: 3.33%

REQD 8 LF 18" DUCTILE IRON SS PIPE INVERT IN: 571.25 INVERT OUT: 570.50 SLOPE: 9.38%

REQD 6' DIA PRECAST CONC SS MANHOLE (MH02) TOP EL: 587.50 INVERT IN (S): 570.50 INVERT IN (SE): 568.69 INVERT IN (SW): 572.15 INVERT OUT (N): 568.60

REQD 4' DIA PRECAST CONC SS MANHOLE (MH01) TOP EL: 587.50 INVERT IN (S): 574.00 INVERT OUT (N): 571.25

REQD 64 LF 8" PVC BASIN FLOOR DRAIN INVERT IN: 576.09 INVERT OUT: 572.15 SLOPE: 6.15%

REQD 4' DIA PRECAST CONC SS MANHOLE (MH05) TOP EL: 583.95 INVERT IN (W 8"): 576.17 INVERT IN (W 4"): 576.86 INVERT OUT (W): 576.09

REQD 120 LF 18" DISS PIPE INVERT IN: 569.89 INVERT OUT: 568.69 SLOPE: 1.00%

REQD 69 LF 10" HDPE DR 17 FORCE MAIN

REQD 4'x8' PROJECT ACTIVITY SIGN

EXIST FIRE HYDRANT

REQD YARD HYDRANT

REQD 24 LF 3/4" POLYETHYLENE WATER SERVICE

10"x10"x10" CUT-IN TEE ON EXISTING LINE w/ VALVES AT NORTH AND WEST END OF TEE

EXIST WATER METER

EXIST STEEL BEAM GATE

EXIST SS MANHOLE TOP EL: 582.06 INVERT IN: 569.94 INVERT OUT: 569.89

BASIN BOTTOM ELEV: 582.00
TOP BASIN WALL ELEV: 602.00
TOP SLAB ELEVATION: 603.00

BASIN BOTTOM ELEV: 582.00
TOP BASIN WALL ELEV: 602.00

BASIN BOTTOM ELEV: 582.00
TOP BASIN WALL ELEV: 602.00

BASIN BOTTOM ELEV: 580.00
TOP BASIN WALL ELEV: 588.00

REQD (2) 12" DI 45° FITTINGS w/ SPOOL PIECE IN VERTICAL PLANE, SEE PROFILE, SHEET C104

REQD 12" FLOWMETER IN JUMBO METER BOX, SEE DETAIL, SHEET C201

3'x3'x4" THICK PAD FOR AUTOMATIC SAMPLER UNIT

REQD 4' DIA PRECAST CONC SS MANHOLE (MH03) TOP EL: 582.75 INVERT IN (E): 578.31 INVERT OUT (W): 579.31

REQD 242 LF 18" PVC SS PIPE INVERT IN: 579.31 INVERT OUT: 573.97 SLOPE: 2.20%

REQD 12" ELECTRIC PLUG VALVE

REQD 13 LF 12" DISS PIPE INVERT IN: 580.00 INVERT OUT: 578.31

REQD 8" FERNCO FITTING, CORRUGATED PIPE TO PVC CONNECTOR

REQD 50 LF 8" HDPE SLOTTED FLOOR DRAIN

REQD 8" MANUAL PLUG VALVE

REQD 89 LF 8" PVC CHLORINATION BASIN DRAIN INVERT IN: 578.84 INVERT OUT: 576.17 SLOPE: 3.00%

EXIST 3/4" WATER SERVICE LATERAL

EXIST 10" HDPE FORCE MAIN

EXIST 18" DI SS MAIN

EXIST UTILITY POLE, TYP.

SNEED AVENUE

MATCHLINE, SEE SHEET C103

SITE UTILITY PLAN

SCALE: 1" = 10'

10 5 0 10 20

GRAPHIC SCALE: 1" = 10'

N

ISSUED FOR BID

CIVIL
R·G·S ENGINEERS
RGS CIVIL DESIGN LLC
1405 DRAKE AVE
HUNTSVILLE, AL 35802
(256) 503-9277

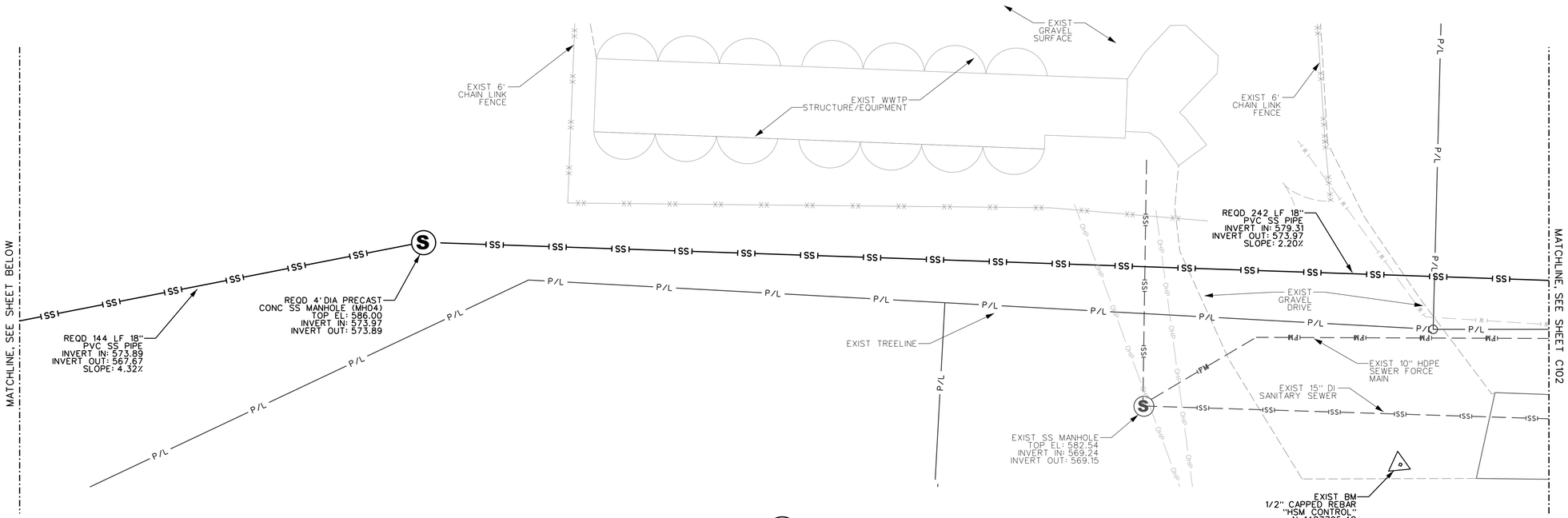
ABAM LICENSED No. 34040 PROFESSIONAL ENGINEER JACOB A. ROTH 6/23/23

REV #	DATE	DESCRIPTION

SITE UTILITY PLAN

OWENS CROSS ROADS NEW 0.9 MGD SBR WWTP
SNEED AVENUE
OWENS CROSS ROADS, AL 35763

DRAWN:	JAR
CHECKED:	JAR
DATE:	JUNE 23, 2023
PROJECT NUMBER:	CS010972-01
SHEET NUMBER:	C102

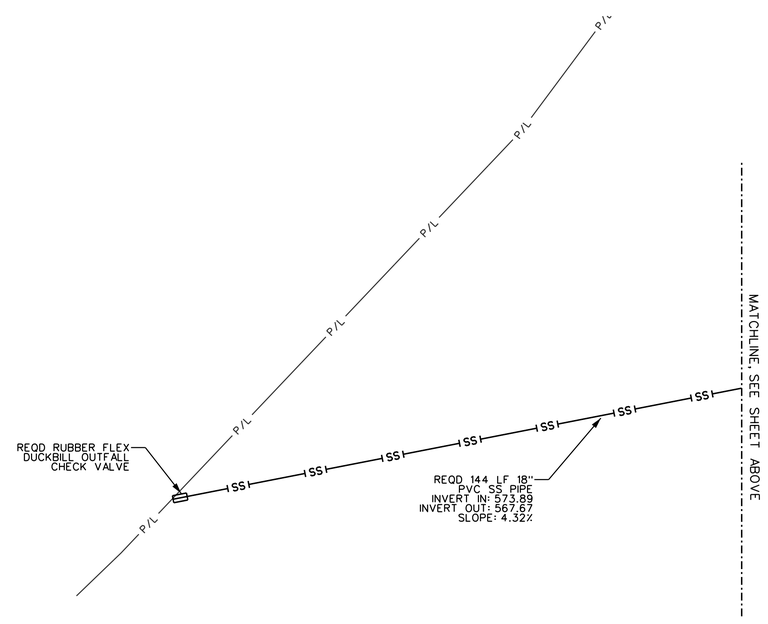


SITE UTILITY PLAN

SCALE: 1" = 10'

10 5 0 10 20

GRAPHIC SCALE: 1" = 10'



SITE UTILITY PLAN

SCALE: 1" = 10'

10 5 0 10 20

GRAPHIC SCALE: 1" = 10'

ISSUED FOR BID

CIVIL
R·G·S ENGINEERS
RGS CIVIL DESIGN LLC
1405 DRAKE AVE
HUNTSVILLE, AL 35802
(256) 503-9277

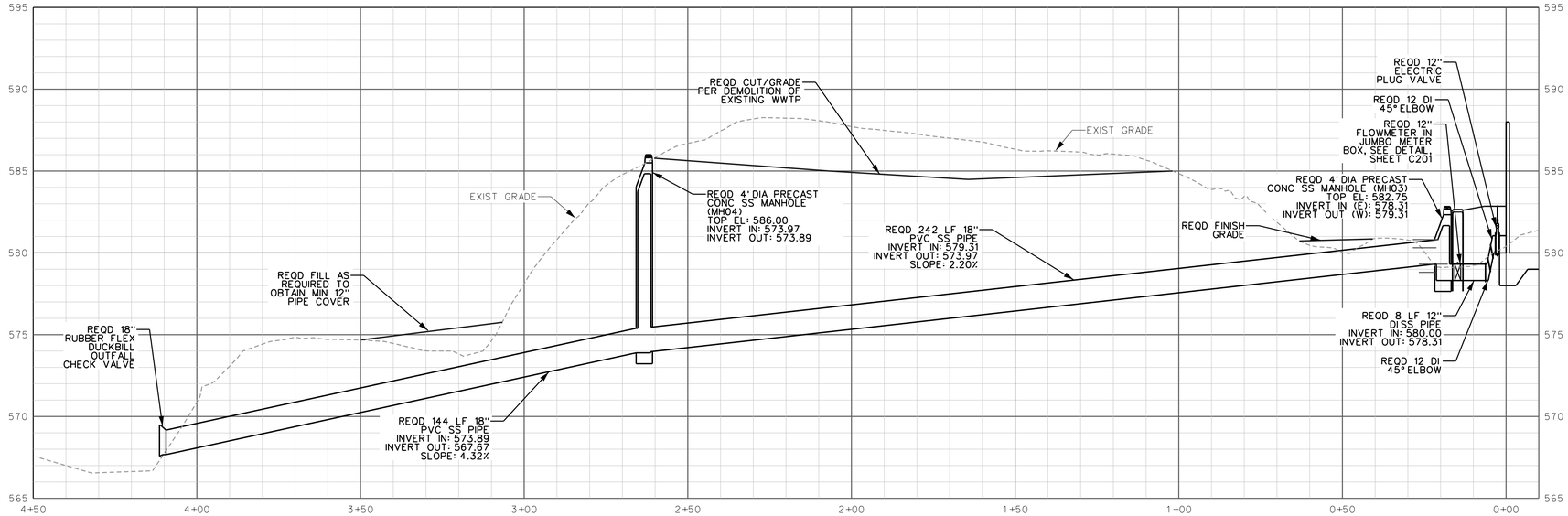
ALABAMA LICENSED No. 34040 PROFESSIONAL ENGINEER
6/23/23
JACOB A. ROTH

REV #	DATE	DESCRIPTION

SITE UTILITY PLAN

OWENS CROSS ROADS NEW 0.9 MGD SBR WWTP
SNEED AVENUE
OWENS CROSS ROADS, AL 35763

DRAWN:	JAR
CHECKED:	JAR
DATE:	JUNE 23, 2023
PROJECT NUMBER:	CS010972-01
SHEET NUMBER:	C103



EFFLUENT DISCHARGE PIPE PROFILE

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1/4" = 1'-0"

20 10 0 20 40

GRAPHIC SCALE: 1" = 20'

0 1 4 8 16

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

ISSUED FOR BID

CIVIL
R·G·S
ENGINEERS
RGS CIVIL DESIGN LLC
1405 DRAKE AVE
HUNTSVILLE, AL 35802
(256) 503-9277

ALABAMA LICENSED No. 34040 PROFESSIONAL ENGINEER JACOB A. ROTH 6/23/23

REV #	DATE	DESCRIPTION

WWTP EFFLUENT PIPE DISCHARGE PROFILE

OWENS CROSS ROADS NEW 0.9 MGD SBR WWTP
SNEED AVENUE
OWENS CROSS ROADS, AL 35763

DRAWN:	JAR
CHECKED:	JAR
DATE:	JUNE 23, 2023
PROJECT NUMBER:	CS010972-01
SHEET NUMBER:	C104

REQD SILT FENCE, TYP.

REQD SILT FENCE, TYP.

BASIN BOTTOM ELEV: 582.00
TOP BASIN WALL ELEV: 602.00
TOP SLAB ELEV: 603.00

BASIN BOTTOM ELEV: 582.00
TOP BASIN WALL ELEV: 602.00

BASIN BOTTOM ELEV: 582.00
TOP BASIN WALL ELEV: 602.00

BASIN BOTTOM ELEV: 580.00
TOP BASIN WALL ELEV: 588.00

REQD 8' DIA PRECAST CONC PUMP STATION

REQD 6' DIA PRECAST CONC SS MANHOLE

REQD 5'x5' PRECAST CONC VALVE VAULT

REQD CONC PAD FOR BACKUP DIESEL GENERATOR

CONC WASH

REQD CONC WASHOUT PIT

REQD 4' DIA PRECAST CONC SS MANHOLE

REQD 4' DIA PRECAST CONC SS MANHOLE

REQD 4' DIA PRECAST CONC SS MANHOLE

REQD CONC PAD

REQD CONC PAD

REQD CONC PAD

REQD CONC PAD

REQD STONE CONSTRUCTION EXIT

REQD SILT FENCE, TYP.

SNEED AVENUE

EROSION CONTROL PLAN
SCALE: 1" = 10'

10 5 0 10 20
GRAPHIC SCALE: 1" = 10'

N

ISSUED FOR BID

CIVIL
R·G·S ENGINEERS
RGS CIVIL DESIGN LLC
1405 DRAKE AVE
HUNTSVILLE, AL 35802
(256) 503-9277

ABAM LICENSED
No. 34040
PROFESSIONAL
6/23/23
ENGINEER
JACOB A. ROTH

REV #	DATE	DESCRIPTION

EROSION & SEDIMENT CONTROL PLAN

OWENS CROSS ROADS NEW 0.9 MGD SBR WWTP
SNEED AVENUE
OWENS CROSS ROADS, AL 35763

DRAWN:	JAR
CHECKED:	JAR
DATE:	JUNE 23, 2023
PROJECT NUMBER:	CS010972-01
SHEET NUMBER:	C105

LIFT STATION NOTES/SPECIFICATIONS

A. VALVE VAULT AND WET WELLS SHALL BE PRECAST CONCRETE. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL SHOWING REINFORCING DETAILS AND ANTI-FLOTATION COLLAR,AS NECESSARY, PRIOR TO FABRICATION.

B. ALL MANHOLES, WET WELLS, AND IMMERSED CONCRETE STRUCTURES SHALL BE PRECAST CONCRETE CONSTRUCTION AND SHALL BE COATED WITH CARBOLINE PLASITE 4500S EPOXY, RAVEN 405 ULTRA HIGH BUILD EPOXY, TNEMEC SERIES 436 PERMASHIELD FR, OR APPROVED EQUIVALENT, AT A MINIMUM THICKNESS OF 50 MIL. SURFACE PREPARATION AND PRIMER SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

C. WET WELL AND ACCESS VAULT COVERS/HATCHES SHALL BE ALUMINUM WITH 304 STAINLESS STEEL HARDWARE AND SHALL BE PROVIDED WITH RECESSED LOCKS AND OSHA COMPLIANT FALL PROTECTION.

D. ACCESS HATCH DIMENSIONS SHOWN ON PUMP STATION DETAILS ARE NOMINAL IN NATURE AND IDENTIFY THE MINIMUM REQUIRED CLEAR OPENING DIMENSIONS. CONTRACTOR SHALL SUBMIT FABRICATION DRAWINGS OF HATCH SIZES, CONFIGURATION, FALL PROTECTION, PANEL SWINGS, AND LOCKING MECHANISM FOR APPROVAL PRIOR TO FABRICATION.

E. ACCESS HATCHES SHALL BE DRAINABLE WITH A 1 1/2" THREADED DRAIN COUPLING LOCATED ON CORNER FRAME.

F. HATCH DOORS SHALL BE SUPPLIED WITH SPRING OPERATORS SUCH THAT THE MAXIMUM LIFTING EFFORT IS LESS THAN 25 POUNDS.

G. PUMPS AND ALL APPURTENANCES REQUIRED TO MAKE A COMPLETE AND USABLE CONSTRUCTION SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR.

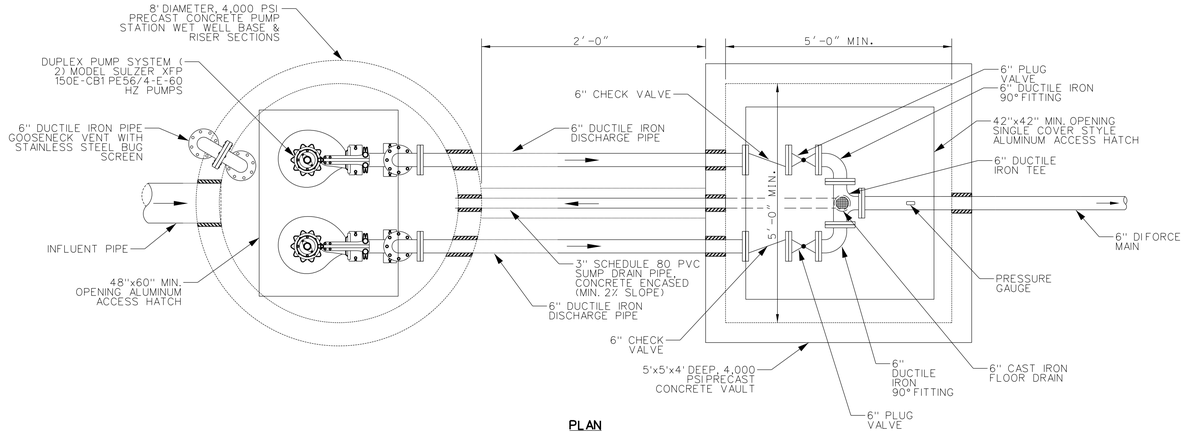
H. DUPLEX CONFIGURATION PUMPS SHALL BE SULZER, XFP 150E, CB1, 60 HZ, PE 56/4 WET PIT INSTALLATION AS SUPPLIED BY HYDRA SERVICE, INC. IN WARRIOR, ALABAMA.

I. THE CONTRACTOR SHALL ATTACH PUMP GUIDE RAILS IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.

J. EACH PUMP SHALL BE FITTED WITH A 316 STAINLESS STEEL LIFTING CHAIN OF ADEQUATE STRENGTH.

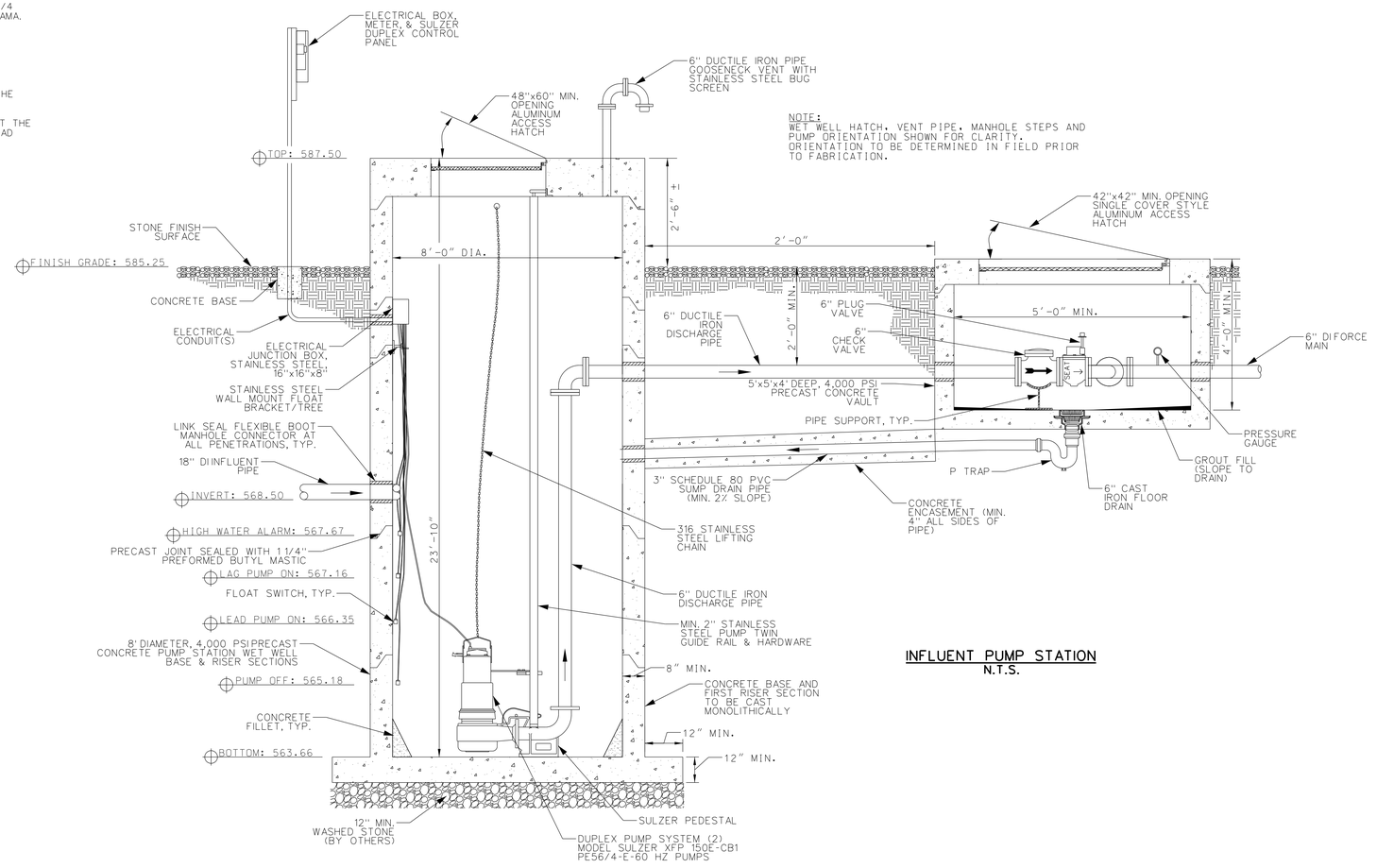
K. ALL CABLES SHALL BE CONTINUOUS WITHOUT SPLICES FROM THE MOTOR TO THE CONTROL PANEL.

L. THE CONTROL PANEL SHALL OPERATE TWO ELECTRICAL SUBMERSIBLE PUMPS AT THE POWER CHARACTERISTICS OUTLINED. THE CONTROL PANEL SHALL ALTERNATE LEAD PUMP POSITIONS AT THE END OF EACH CYCLE.



PLAN

INFLUENT PUMP STATION
N.T.S.



INFLUENT PUMP STATION
N.T.S.

ISSUED FOR BID

CIVIL R·G·S ENGINEERS
RGS CIVIL DESIGN LLC
1405 DRAKE AVE
HUNTSVILLE, AL 35802
(256) 503-9277

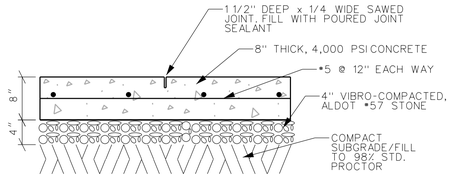
ALABAMA No. 34040 PROFESSIONAL ENGINEER 6/23/23 JACOB A. ROTH

REV #	DATE	DESCRIPTION

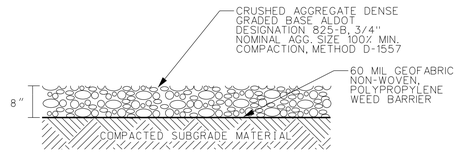
WWTP INFLUENT PUMP STATION DETAILS

OWENS CROSS ROADS NEW 0.9 MGD SBR WWTP
SNEED AVENUE
OWENS CROSS ROADS, AL 35763

DRAWN:	JAR
CHECKED:	JAR
DATE:	JUNE 23, 2023
PROJECT NUMBER:	CS010972-01
SHEET NUMBER:	C200

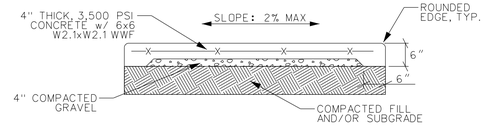


WWTP EQUIPMENT FOUNDATION CONCRETE PAD
N.T.S.

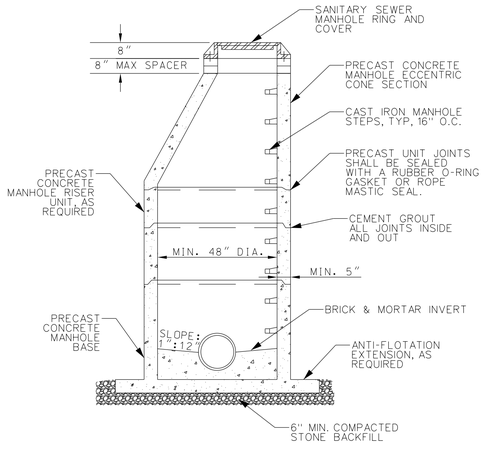


NOTES:
ASPHALT PAVING AND MATERIALS SHALL BE IN ACCORDANCE WITH THE "ALABAMA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 2022 EDITION"

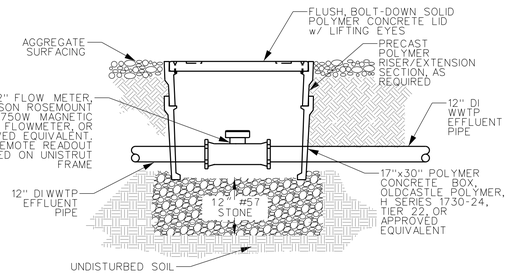
DENSE GRADED BASE SURFACE DETAIL
N.T.S.



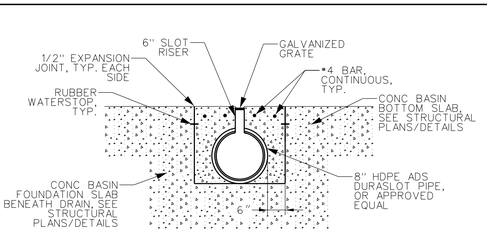
LIGHT DUTY CONCRETE PAD DETAIL
N.T.S.



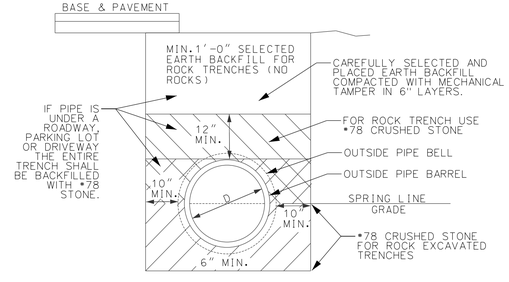
PRECAST CONCRETE SANITARY SEWER MANHOLE
N.T.S.



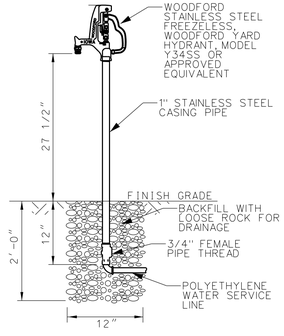
EFFLUENT METER BOX DETAIL
N.T.S.



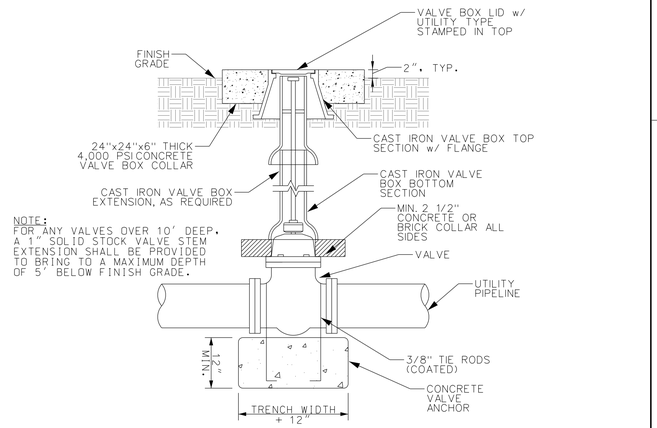
SLOTTED DRAIN DETAIL
N.T.S.



PLASTIC SEWER PIPE TRENCH DETAIL
N.T.S.



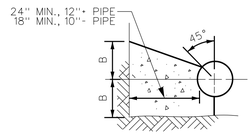
YARD HYDRANT DETAIL
N.T.S.



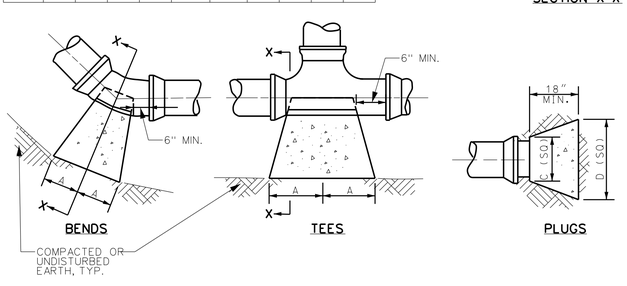
NOTE:
FOR ANY VALVES OVER 10' DEEP, A 1" SOLID STOCK VALVE STEM EXTENSION SHALL BE PROVIDED TO BRING TO A MAXIMUM DEPTH OF 5' BELOW FINISH GRADE.

VALVE & VALVE BOX INSTALLATION
N.T.S.

LINE SIZE	90° BEND		45° BEND		22.5° BEND		TEES		PLUGS	
	A	B	A	B	A	B	A	B	C	D
4"-6"	16"	10"	9"	10"	6"	8"	10"	12"	10"	21"
8"	22"	13"	12"	13"	8"	10"	13"	16"	12"	29"
10"	26"	17"	14"	17"	10"	13"	16"	20"	14"	36"
12"	29"	21"	16"	21"	11"	16"	18"	24"	16"	41"
14"	35"	24"	19"	24"	12"	20"	22"	27"	18"	48"
16"	38"	27"	21"	27"	12"	24"	24"	30"	20"	54"

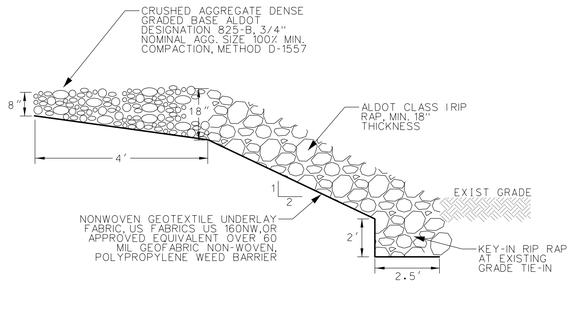


SECTION X-X

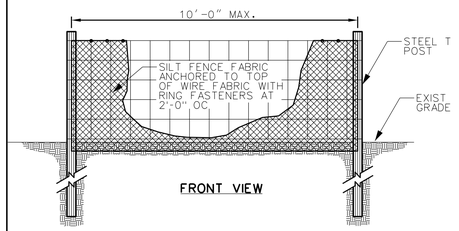


BENDS TEES PLUGS

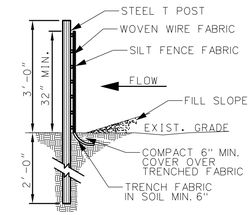
THRUST BLOCKING DETAILS
N.T.S.



RIP RAP SLOPE PROTECTION DETAIL
N.T.S.

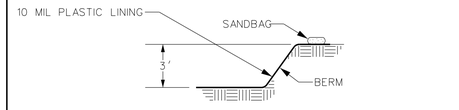


FRONT VIEW

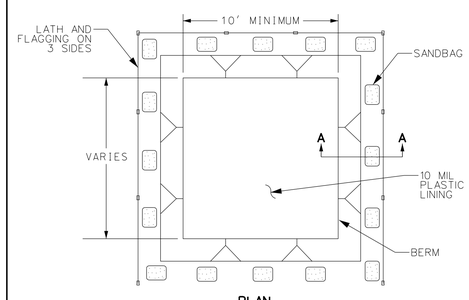


SIDE VIEW

SILT FENCE DETAIL
N.T.S.

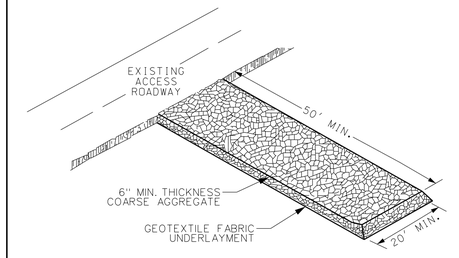


SECTION A-A



PLAN

CONCRETE WASHOUT PIT
N.T.S.



CRUSHED STONE CONSTRUCTION EXIT
N.T.S.

ISSUED FOR BID

CIVIL R·G·S ENGINEERS
RGS CIVIL DESIGN LLC
1405 DRAKE AVE
HUNTSVILLE, AL 35802
(256) 503-9277

ALABAMA No. 34040 PROFESSIONAL ENGINEER JACOB A. ROTH 6/23/23

REV #	DATE	DESCRIPTION

PROJECT SITE DETAILS

OWENS CROSS ROADS NEW 0.9 MGD SBR WWTP
SNEED AVENUE
OWENS CROSS ROADS, AL 35763

DRAWN: JAR
CHECKED: JAR
DATE: JUNE 23, 2023
PROJECT NUMBER: CS010972-01
SHEET NUMBER: C201

I. WASTEWATER TREATMENT PROCESS NOTES

1. SCOPE & GENERAL NOTES

A. FURNISH ALL LABOR, MATERIALS, TOOLS, AND EQUIPMENT REQUIRED FOR A COMPLETE AND USABLE INSTALLATION OF A NEW 0.90 MGD SEQUENCING BATCH REACTOR (SBR) WASTEWATER TREATMENT PLANT (WWTP) FOR THE CITY OF OWENS CROSS ROADS, ALABAMA IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS.

B. THE BASIS FOR DESIGN IS A FOUR-TRAIN SBR SYSTEM, EACH TRAIN CONSISTING OF AN ANAEROBIC BASIN, EQUALIZATION/ANOXIC BASIN, AND SBR AERATION BASIN AND ASSOCIATED EQUIPMENT PROVIDED BY CLEARSTREAM ENVIRONMENTAL, SANDY, UTAH, POC LAWSON CRAIG, (615) 969-7708, LAWSON@SOUTHERNWATER.COM.

C. ALTERNATIVE SBR WWTP DESIGN PROCESS SYSTEMS MAY BE APPROVED BY ENGINEER WITH SUFFICIENT EVALUATION DATA PROVIDED AND REVIEWED FOR ACCEPTANCE/EQUIVALENCY. ALTERNATE PROCESS SYSTEMS SHALL BE PRE-APPROVED PRIOR TO CONSRUCTION BIDDING.

D. CONTRACTOR SHALL BE ASSIGNED FULL RESPONSIBILITY FOR THE FUNCTIONAL OPERATION OF ALL SBR SYSTEM COMPONENTS TO A SINGLE SOURCE SUPPLIER. THIS SUPPLIER SHALL BE RESPONSIBLE FOR ALL ENGINEERING NECESSARY IN ORDER TO SELECT, FURNISH, AND INSPECT THE INSTALLING CONTRACTOR'S EQUIPMENT INSTALLATION AND CONNECTION, CALLIBRATE, AND PLACE INTO OPERATION WITHIN THE SBR SYSTEM ALONG WITH ALL OTHER EQUIPMENT AND ACCESSORIES IDENTIFIED HEREIN.

E. SBR PLANT DESIGN VALUES ARE:
INFLUENT:
AVERAGE DESIGN FLOW: 0.9 MDG
MAXIMUM DESIGN FLOW: 1.5 MGD
MOMENTARY PEAK FLOW: 1,000 GPM
EFFLUENT LIMITS:
$CBOD_5$: 5 MG/L
NH_3 N: 12 MG/L
MIN. DO: 6 MG/L

F. SBR PLANT PROCESS SHALL INCLUDE FOUR FLOW TRAINS WITH EACH TRAIN CONSISTING OF A CONSTANT LEVEL ANAEROBIC SELECTOR/DIGESTER BASIN FOLLOWED BY AN ANOXIC INFLUENT EQUILIZATION BASIN, FOLLOWED BY AN SBR BASIN. RAW WASTEWATER WILL BE FED TO THE SBR BASIN IN A SINGLE FILL PERIOD. EACH SBR BASIN WILL FILL COMPLETELY BEFORE FLOW IS SWITCHED TO OTHER BASINS. CONTROL SEQUENCES SHALL ALLOW TWO BASINS TO BE FILLED CONCURRENTLY DURING HIGH FLOW SITUATIONS. FOLLOWING DECANT FROM SBR, FLOW WILL CONTINUE THROUGH A CLOTH MEDIA FILTER AND A CHLORINATION/DECHLORINATION BASIN BEFORE DISCHARGE.

G. CLOTH MEDIA FILTER SHALL BE AQUADISK MODEL ADFSP-54x4E-PC PACKAGE FILTER w/ PAINTED STEEL TANK, OR APPROVED EQUIVALENT. FILTER SHALL BE 4-DISK MODEL WITH OPTIFIBER PES-14 CLOTH SET. FILTER SHALL CONSIST OF STAINLESS STEEL CONTROL PANEL, DRIVE SYSTEM, BACKWASH SYSTEM AND SHALL COME COMPLETE WITH ALL NECESSARY INSTRUMENTATION, PUMPS, VALVES, ETC. FOR A COMPLETE AND USABLE INSTALLATION.

H. CHLORINATION/DECHLORINATION BASIN SHALL INCLUDE BAFFLE WALL SYSTEM FOR MAXIMUM CONTACT TIME. BAFFLE WALLS SHALL BE ENDURO COMPOSITES, INC. D SERIES FIBERGLASS REINFORCED PLASTIC (FRP) PANEL WALL SYSTEM, OR APPROVED EQUIVALENT.

I. FASTENERS, ANCHORS, BOLTS, AND OTHER STRUCTURAL HARDWARE SHALL BE 316 STAINLESS STEEL.

J. CHLORINATION/DECHLORINATION BASIN SHALL BE EQUIPPED WITH A SLOTTED DRAIN DRAIN LINE FOR CLEANING.

K. THE CONTRACTOR SHALL PREPARE AND SUBMIT A COMMISSIONING PLAN FOR THE PROJECT TO INCLUDE PRE-COMMISSIONING OF INDIVIDUAL COMPONENTS, WET COMMISSIONING AND EQUIPMENT PERFORMANCE TESTING, PROCESS AND CONTROLS COMMISSIONING, PROCESS PERFORMANCE TESTING AND COMMISSIONING COMPLETION AND HANDOVER.

L. UPON COMPLETION OF THE INSTALLATION, ALL EQUIPMENT SHALL BE INSPECTED AND CERTIFIED BY AN AUTHORIZED REPRESENTATIVE OF THE MANUFACTURER AS BEING IN COMPLIANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS.

M. THE CONTRACTOR SHALL PROVIDE 1 SET OF ELECTRONIC DOCUMENTS AND 3 SETS OF HARDCOPIES OF OPERATIONS AND MAINTENANCE MANUALS FOR THE CONTROL AND OPERATION OF THE WWTP. THIS DOCUMENTATION SHALL INCLUDE, AT A MINIMUM, AS-BUILT DRAWINGS, CONTROL AND WIRING DIAGRAMS, ERECTION DRAWINGS, AND CUT SHEETS FOR ALL EQUIPMENT ITEMS INCLUDED IN THE PROJECT.

N. THE DECISION TO ACCEPT OR REJECT ALTERNATE MANUFACTURER'S AND/OR MATERIALS SHALL BE SOLELY AT THE DISCRETION OF THE ENGINEER AND OWNER.

2. TREATMENT EQUIPMENT SUMMARY

A. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PURCHASE, INSTALLATION, TESTING, COMMISSIONING AND TURNOVER OF ALL EQUIPMENT, HARDWARE, FITTINGS AND NECESSARY APPURTENANCES FOR A COMPLETE AND USABLE TREATMENT PROCESS SYSTEM TO INCLUDE ALL ELEMENTS IDENTIFIED BELOW.

B. ONE 304 SS DISTRIBUTION/SPLITTER TANK COMPLETE WITH INFLUENT INLET, FOUR SBR OUTLETS, AND FLOW DIRECTION VALVES. DISTRIBUTION TANK SHALL BE DESIGNED BY WWTP SBR EQUIPMENT SUPPLIER.

C. FOUR CLEARFLO MODEL BDM150JA8 JER AERATION HEADERS. HEADERS WILL COMPRISE A 10" LIQUID MANIFOLD, 6" AIR MANIFOLD, AND EIGHT MODEL 150 JET AERATORS.

D. FOUR VERTICAL SUBMERSIBLE MOTIVE LIQUID/FILL PUMPS. PUMP WILL BE RATED FOR 1400 GPM AT A TOTAL HEAD OF 24 FEET, AND BE FURNISHED COMPLETE WITH DISCHARGE CONNECTION, RETRIEVAL ASSEMBLY, GUIDE BARS, ALL ACCESSORIES, AND A 15 HP CLASS 1, DIVISION 1 EXPLOSION PROOF SUBMERISLBE MOTOR.

E. FOUR ROTARY POSITIVE DISPLACEMENT BLOWERS. BLOWERS SHALL BE SIZED TO DELIVER 432 SCFM AT A TOTAL DISCHARGE PRESSURE OF 9.06 PSIG. BLOWERS SHALL BE FURNISHED COMPLETE WITH AN INLET FILTER, INLET SILENCER, DISCHARGE SILENCER, PRESSURE RELIEF VALVE, CHECK VALVE, INLET AND DISCHARGE FLEXIBLE CONNECTORS, PRESSURE GAUGE, BLOWER OIL, AND A 30 HP TEFC HORIZONTAL MOTOR, WITH MANUAL VARIABLE FREQUENCY DRIVE. BLOWER PACKAGES WILL BE FACTORY ASSEMBLED ON A STEEL TABLE BASE.

F. FOUR 6" PNEUMATIC BACKFLUSH SYSTEMS. THE BACKFLUSH SYSTEMS SHALL BE FURNISHED COMPLETE WITH ALL NECESSARY PIPING, VALVES AND SUPPORTS.

G. FOUR CLEARFLO MODEL FED1200 FIXED SOLIDS EXCLUDING EFFLUENT DECANTER. DECANTERS SHALL BE RATED FOR A DESIGN FLOW RATE OF 1,200 GPM.

H. FOUR DO/ORP/PH MONITORING AND CONTROL SYSTEMS, INCLUDING PROBE ANALYZER AND TRANSMITTER AND MOUNTING RETRIEVAL POLE.

I. FIVE CONTROL FLOATS PER BASIN. (TOTAL OF 20).

J. TWO PRESSURE TRANSDUCERS WITH 304 SS STILLING WELLS PER BASIN. (TOTAL OF 8). ALL IN-BASIN AIR AND LIQUID SCHEDULE 10 304 SS PIPING AND SUPPORTS SHALL BE INCLUDED.

K. EIGHT INFLUENT UNDERFLOW BAFFLES.

L. FOUR 4" WAS COLLECTION MANIFOLDS.

M. TWO 10" OVERFLOW/RECYCLE WEIRS PER BASIN. (TOTAL OF 8). THE OVERFLOW WEIR SHALL ALLOW FLOW FROM THE SBR COMPARTMENT TO FLOW BACK TO THE INFLUENT EQUALIZATION TANK DURING THE INTERACT CYCLE. THE WEIR SHALL ALSO PROVIDE SCUM SKIMMING OF THE SBR TANK AND FLOW DIFFUSION DURING PERIODS OF HIGH FLOW.

N. ONE PRE-PROGRAMMED PROCESS CONTROL PANEL. THE MICROPROCESSOR-BASED PROCESS CONTROL PANEL WILL BE CAPABLE OF CONTROLLING ALL THE NORMAL OPERATING REQUIREMENTS OF THE SBR WWTP SYSTEM BASED ON LIQUID LEVEL, DISSOLVED OXYGEN CONCENTRATION, AND TIME.

O. PROJECT VALVE SUMMARY INCLUDES WWTP PLANT VALVES AND EXTERIOR SITE VALVES REQUIRED FOR PROJECT OPERATION.

#	VALVE TYPE	SIZE	LOCATION/DESCRIPTION
4	ELECTRIC PLUG VALVE	8"	INFLUENT ISOLATION
1	ELECTRIC PLUG VALVE	12"	CHLORINATION BASIN EFFLUENT
1	MANUAL PLUG VALVE	8"	CHLORINATION BASIN DRAIN
5	MANUAL PLUG VALVE	12"	FILTER BYPASS, INFLUENT CUTOFF
1	MANUAL PLUG VALVE	10"	FILTER ISOLATION
2	MANUAL PLUG VALVE	10"	EXTERIOR FORCE MAIN
4	MANUAL PLUG VALVE	6"	BACKFLUSH SYSTEM
3	MANUAL PLUG VALVE	6"	PUMP STATION VALVE VAULT
4	MANUAL PLUG VALVE	4"	WAS/SLUDGE
4	MOTOR OP BUTTERFLY VALVE	12"	DECANT LINE
4	AIR VALVE	6"	
4	CHECK VALVE	10"	
2	CHECK VALVE	6"	PUMP STATION VALVE VAULT
1	DUCKBILL CHECK VALVE	18"	WWTP OUTFALL
4	ELECTRIC BALL VALVE	2"	WAS/RECIRCULATION
2	ELECTRIC BALL VALVE	2"	FILTER BACKWASH/WASTE
1	MANUAL GATE VALVE	3"	FILTER BACKWASH DRAIN VALVE
1	MANUAL BALL VALVE	3"	FILTER BOTTOM DRAIN VALVE
4	MANUAL BALL VALVE	2"	WAS/RECIRCULATION
4	SOLENOID VALVE	1"	DECANT AIR RELEASE

3. PIPING

A. ALL PIPING DIRECTLY EXPOSED TO RAW WASTEWATER WITHIN THE WWTP SHALL BE STAINLESS STEEL. ALL OTHER ABOVE GROUND PIPING WITHIN THE WWTP SHALL BE DUCTILE IRON.

B. STEEL PIPING SHALL BE SCHEDULE 40 316 STAINLESS STEEL PIPE.

C. ALL EXPOSED DUCTILE IRON PIPING SHALL BE PRESSURE CLASS 350 PSIFLANGED PIPE UNLESS OTHERWISE IDENTIFIED ON THE PLANS.

D. ALL DUCTILE IRON PIPE SHALL HAVE AN INTERIOR CEMENT MORTAR LINING IN ACCORDANCE WITH AWWA C104.

E. ALL EXPOSED DUCTILE IRON PIPE SHALL HAVE A 3M SCOTCHKOTE 134 FUSION BONDED EPOXY, MIN. 40 DFT, OR APPROVED EQUIVALENT, APPLIED PER MANUFACTURER'S INSTRUCTIONS.

4. CLOTH MEDIA FILTER

A. CLOTH MEDIA FILTER SHALL BE AQUADISK MODEL ADFSP-54x4E-PC PACKAGE FILTER AS MANUFACTURED BY AQUA-AEROBIC SYSTEMS, INC, OF LOVES PARK, IL, OR ENGINEER APPROVED EQUIVALENT. FILTER SHALL BE FACTORY TESTED AND READY FOR OPERATION. EACH UNIT SHALL BE SHIPPED FULLY ASSEMBLED AND WIRED FROM THE FACTORY COMPLETE WITH ALL STANDARD EQUIPMENT, PIPING, VALVES, PUMPS, ETC. FOR A COMPLETE AND USABLE INSTALLATION.

B. ALL MOTORS AND PUMPS SHALL BE RATED FOR CONTINUOUS DUTY AND LONG OPERATING LIFE IN A HIGH HUMIDITY ATMOSPHERE. ALL MOTORS AND PUMPS SHALL BE 460 VOLT, 60 HZ, 3 PHASE.

C. THE FILTER SUPPLIER SHALL HAVE A MINIMUM OF 10 YEARS EXPERIENCE IN THE MANUFACTURE OF CLOTH MEDIA FILTERS FOR THE WASTEWATER INDUSTRY AND SHALL BE ABLE TO DEMONSTRATE A MINIMUM OF 50 INSTALLATIONS WITHIN THE UNITED STATES IN MUNICIPAL WASTEWATER APPLICATIONS WITH CLOTH MEDIA.

D. THE FILTER MANUFACTURER SHALL PROVIDE A FACTORY TRAINED REPRESENTATIVE FOR INSTALLATION INSPECTION, INITIAL OPERATION AND COMMISSIONING OF THE EQUIPMENT.

E. THE MANUFACTURER SHALL PROVIDE A WRITTEN WARANTY AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE THE FILTER IS COMPLETE AND PUT INTO SERVICE.

F. DISK FILTER TANK ASSEMBLY SHALL BE PAINTED STEEL WITH A 10 GAUGE MINIMUM THICKNESS. TANK SHALL HAVE A ROUNDED BOTTOM TO ENSURE SOLID DEPOSITS DO NOT OCCUR IN THE CORNERS OF THE TANK. TANK INTERIOR SHALL BE BLASTED PER SSPC-10 AND COATED WITH ONE COAT OF EPOXY BASECOAT AND ONE COAT OF EPOXY TOPCOAT WITH A TOTAL DFT OF 8-12 MILS. TANK EXTERIOR SHALL BE BLASTED PER SSPC-6 AND COATED WITH TWO EPOXY BASECOATS AND ONE POLYURETHANE TOPCOAT FOR A TOTAL DFT OF 8-12 MILS. EPOXY COATING SHALL BE TNEMIC OR SHERWIN WILLIAMS PRODUCT RATED FOR USE IN CORROSIVE ENVIRONMENTS. COLOR SHALL BE SAFETY BLUE.

G. FILTER SHALL INCLUDE DRIVE ASSEMBLY WITH GEARBOX, NYLON DRIVE SPROCKET, ACETAL DRIVE CHAIN WITH 304 STAINLESS STEEL LINK PINS, AND A 304 STAINLESS STEEL CHAIN GUARD.

H. FILTER ASSEMBLY SHALL INCLUDE TANK ASSEMBLY, DRIVE ASSEMBLY, CENTERTUBE ASSEMBLY, 4 CLOTH FILTER DISKS WITH FILTER MEDIA, BACKWASH SYSTEM INCLUDING PUMPS, PIPING, VALVES, PRESSURE TRANSMITTER, FLOAT SWITCH, VACUUM TRANSMITTER, AND ELECTRIC CONTROL PANEL WITH INTERNAL COMPONENTS.

I. FILTER CONTROL SYSTEM SHALL BE FURNISHED FULLY ASSEMBLED, WIRED AND PRE-PROGRAMMED IN A UL 508A CERTIFIED INDUSTRIAL CONTROL PANEL. THE CONTROL PROGRAM SHALL BE WRITTEN IN-HOUSE BY THE FILTER MANUFACTURER.

J. THE CONTROL PANEL SHALL INCLUDE A FLEETZOOM, FZ100 CELLULAR AUTO-DIALER TIED TO THE OVERFLOW FLOAT SWITCH. AUTO DIALER SHALL BE PROGRAMMED WITH A NAME/EQUIPMENT DESCRIPTION THAT IDENTIFIES THE UNIQUE FILTER LOCATION AND CONTACTS THE OWENS CROSS ROADS SEWER DEPARTMENT UPON ALARM.

K. FILTER CONTROL SYSTEM SHALL BE PROVIDED WITH AN LCD TOUCH SCREEN DISPLAY USER INTERFACE ALLOWING THE USER TO INITIATE BACKWASH, OPERATE ELECTRONICALLY CONTROLLED VALVES, DISPLAY BACKWASH HISTORY, WATER LEVEL, AND ALARM HISTORY, AT A MINIMUM.

L. LCD TOUCH SCREEN DISPLAY SHALL BE MOUNTED ON THE FRONT OF THE CONTROL PANEL AND SHALL INCLUDE A 304 STAINLESS STEEL SUNSHIELD MOUNTED AND HINGED SUCH THAT IT PROVIDES FULL PROTECTION OVER THE DISPLAY SCREEN AND ALLOWS VISIBILITY OF OPERATOR SCREEN DURING USE.

5. HEAT TRACE SYSTEM

A. EXPOSED WWTP CLOTH MEDIA FILTER PIPING (FILTER DRAIN AND BACKWASH PIPING) SHALL BE PROVIDED WITH HEAT TRACE SYSTEM WIRING TO PREVENT FREEZING IN WINTER MONTHS.

B. HEAT TRACE SYSTEM SHALL BE SELF REGULATING SYSTEM, INCLUDING CONTROLLER, HEATING WIRE AND PIPE AND VALVE CONNECTION IN ACCORDANCE WITH STANDARDS AND INSTRUCTIONS AND REGULATIONS PROVIDED BY THE MANUFACTURER.

5. HEAT TRACE SYSTEM CON'T

C. HEAT TRACE SYSTEM SHALL BE SELF REGULATING HEATING CABLE, DREXEN ENERGY SYSTEMS, MULTITRACE, 16 AWG HEAT TRACE WIRE, OR APPROVED EQUIVALENT. INPUT VOLTAGE SHALL BE 120 V.

D. HEATING CABLE SHALL BE ATTACHED TO STEEL PIPE WITH GLASS TAPE AT MINIMUM 12 INCHES ON CENTER.

E. HEAT TRACE CABLE SHALL BE CUT TO LENGTH IN THE FIELD WITH ALL CONNECTION COMPONENTS FIELD INSTALLED.

F. HEAT TRACE SYSTEM SHALL BE CONTROLLED WITH A FIXED SET POINT THERMOSTAT. THE THERMOSTAT MAY BE EITHER AMBIENT OR LINE SENSING.

6. ACCESS HATCHES

A. WWTP ACCESS HATCHES SHALL BE SERIES S1S GASKETED ALUMINUM HATCH w/ STAINLESS STEEL HARDWARE AS MANUFACTURED BY HALLIDAY PRODUCTS, OR APPROVED EQUIVALENT.

B. HATCH SHALL BE STAINLESS STEEL COMPRESSION SPRING ASSIST, HAVING 316 STAINLESS STEEL HOLD-OPEN ARMS WITH RELEASE HANDLE w/ STAINLESS STEEL HINGES AND ATTACHING HARDWARE AND STAINLESS STEEL SLAM LOCK WITH REMOVABLE KEY.

C. HATCH SHALL BE 42"x42" OPENING WITH ALUMINUM 1/4" THICK ALUMINUM DIAMOND PATTERN COVER PLATE. HATCH ASSEMBLY SHALL BE SINGLE LEAF CONSTRUCTION WITH 300 PSF LOAD RATING.

7. BAFFLE WALLS

A. BAFFLE WALLS SHALL BE ENDURO COMPOSITES, INC. D SERIES FIBERGLASS REINFORCED PLASTIC (FRP) PANEL WALL SYSTEM, OR APPROVED EQUIVALENT.

B. FRP PANELS SHALL HAVE THE FOLLOWING CHARACTERISTICS:
a. TENSILE STRENGTH: 40,000 PSI
b. FLEXURAL STRENGTH: 33,000 PSI
c. FLEXURAL MODULUS: 1,037,000 PSI
d. IZOD IMPACT (NOTCHED): 15
e. WATER ABSORPTION: .20% MAX

C. FRP BAFFLE PANELS SHALL BE RIBBED PROFILE IN 4" DEPTH AND SHALL BE 1/8" THICK.

D. FRP PANELS SHALL HAVE TOP HORIZONTAL RIBS THAT SLOPE DOWNWARD LESS THAN 10° TO MINIMIZE SEDIMENT BUILD UP.

E. FRP ANGLES SHALL BE A MINIMUM OF 3/8" THICK.

F. MANUFACTURER SHALL FACTORY ATTACH FRP ANGLES TO FRP COLUMNS.

G. COLUMN BASE PLATES SHALL BE 316 STAINLESS STEEL.

H. FASTENERS, ANCHORAGE, AND OTHER STRUCTURAL HARDWARE SHALL BE 316 STAINLESS STEEL.

8. AUTOMATIC INFLUENT/EFFLUENT SAMPLER

A. THE CONTRACTOR SHALL PROVIDE AUTOMATIC SAMPLERS AT THE INFLUENT SPLITTER BOX, MOUNTED TO THE CONCRETE BASIN TOP AND AT THE EFFLUENT MANHOLE, INSTALLED ON A CONCRETE PAD.

B. AUTOMATIC SAMPLERS SHALL BE TELEDYNE ISCO 5800 REFRIGERATED SAMPLER, OR ENGINEER APPROVED ALTERNATE.

C. SAMPLER SHALL ACCOMODATE COMPOSITE OR SEQUENTIAL SAMPLING OPERATIONS AND SHALL BE OPERATION THROUGH A TEMPERATURE RANGE OF -20°F TO 120°F.

D. SAMPLER SHALL BE CAPABLE OF PROVIDING DIGITAL ALARM OUTPUT AND 20mA AND DC PULSE FLOWMETER INPUT.

E. SAMPLER SHALL INCLUDE 3/8" x 25 FOOT LONG VINYL SUCTION LINE WITH STANDARD WEIGHTED POLYPROPYLENE STRAINER AND TUBING COUPLERS FOR SAMPLE COLLECTION.

F. SAMPLER SHALL INCLUDE A BOTTLE CONFIGURATION FOR EACH SAMPLER THAT INCLUDES ONE POLYETHYLENE 2.5-GALLON (10 L) ROUND BOTTLE, LOCATING BASE, ONE CAP AND TWO DISCHARGE TUBES.

9. METERED CHEMICAL FEED PUMP

A. THE CONTRACTOR SHALL PROVIDE TWO METERED CHEMICAL FEED PUMPS DESIGNED TO BE CONTROLLED VIA THE WWTP MAIN CONTROL PANEL AND CONNECTED TO THE EFFLUENT ELECTRONIC VALVE OPEN/CLOSE MECHANISM BASED ON FEED QUANTITY AND TIMING.

B. CHEMICAL FEED PUMPS SHALL BE QDOS 60 CHEMICAL METERING PUMP BY WATSON MARLOW PUMPS, OR APPROVED EQUIVALENT.

C. CHEMICAL FEED PUMPS SHALL BE INSTALLED ON CONCRETE HOUSEKEEPING PAD AT THE CHLORINATION/DECHLORINATION BASIN.

D. PUMPS SHALL BE CAPABLE OF METERING FLOW RATES OF 0.1 TO 1,000 ML/MIN AT UP TO 7 BAR WITH A MAXIMUM OPERATING SPEED OF 125 RPM AND PRESSURE OF 100 PSI.

II. SUBSTITUTIONS, SUBMITTALS AND ADDITIONAL PURCHASE REQUIREMENTS

1. PRODUCT AND EQUIPMENT SUBSTITUTIONS

A. PRODUCT SUBSTITUTIONS FOR SPECIFICALLY IDENTIFIED EQUIPMENT SUPPLIERS, MODELS AND DESCRIPTIONS HEREIN MUST BE PRE-APPROVED BY THE ENGINEER PRIOR TO BID PROPOSAL SUBMITTAL. ENGINEER REQUIRES TWO WEEKS FOR EVALUATION AND APPROVAL OF ALTERNATE PRODUCT OR PROCESS SUBMITTAL(S).

B. ALTERNATE PRODUCT SUBMITTALS FOR APPROVAL SHALL BE EQUIVALENT TO SPECIFIED PRODUCTS IN EVERY MEANINGFUL WAY, REGARDLESS OF THE INCLUSION OF ALL PRODUCT SPECIFICATIONS, TESTS, AND PERFORMANCE STANDARDS IN THE PROJECT PLAN NOTES AND SPECIFICATIONS.

SUBMITTAL REQUIREMENTS

A. CONTRACTOR SHALL PROVIDE SHOP DRAWING SUBMITTALS FOR THE LAYOUT AND INSTALLATION OF ALL EQUIPMENT REQUIRED FOR WASTEWATER TREATMENT OPERATION. SUBMITTAL SHOP DRAWINGS SHALL INCLUDE EQUIPMENT SPECIFICATIONS, MODEL NUMBERS, LOCATIONS, ELEVATIONS, ATTACHMENT DETAILS, CONNECTIONS, PIPING, SUPPORTS, AND ALL NECESSARY APPURTENANCES REQUIRED FOR A COMPLETE AND USABLE INSTALLATION.

B. SUBMITTALS FOR PROCESS PLANT EQUIPMENT SHALL BE DRAWN TO SCALE AND FOR THE SPECIFIC INSTALLATION IN OWENS CROSS ROADS, CONFORMING TO THE STRUCTURAL, SITE AND GENERAL ARRANGEMENTS PROVIDED HEREIN.

C. CONTRACTOR SHALL PROVIDE A CONTROL PANEL AND CONTROL SEQUENCE DRAWING AND DIAGRAM LOGIC FOR REVIEW AND APPROVAL OF THE PLANT SYSTEM TO INCLUDE CLOTH FILTER AND ALL ELECTRONICALLY ACTUATED EQUIPMENT.

D. CONTRACTOR SHALL SUBMIT A LETTER FROM TREATMENT PROCESS SUPPLIER VERIFYING AND COMMITTING TO WASTEWATER TREATMENT PROCESS EQUIPMENT'S ABILITY TO MEET PRESCRIBED EFFLUENT LIMITS AT DISCHARGE.

E. CONTRACTOR SHALL PROVIDE SUBMITTALS FOR ALL PIPING, VALVES, FITTINGS, PUMPS, MANHOLES, VAULTS, HATCHES, METERS, STEEL FABRICATION, GUARDRAILS, STAIRS, AND CONCRETE.

F. SUBMITTALS SHALL BE SUBMITTED ELECTRONICALLY TO ENGINEER FOR REVIEW AND APPROVAL.

3. ADDITIONAL PURCHASE REQUIREMENTS

A. AS A PART OF THE CONSTRUCTION CONTRACT, THE CONTRACTOR SHALL SUPPLY ADDITIONAL, RESERVE PRODUCT/EQUIPMENT AS SPECIFIED HEREIN FOR FUTURE USE IN MAINTENANCE/REPLACEMENT OF TREATMENT PLANT EQUIPMENT.

B. CONTRACTOR SHALL PROVIDE A SINGLE ADDITIONAL EXTERIOR PUMP STATION WET WELL PUMP.

C. CONTRACTOR SHALL PROVIDE A SINGLE ADDITIONAL TREATMENT PROCESS SUBMERSIBLE MOTIVE LIQUID/FILL PUMP.

D. CONTRACTOR SHALL PROVIDE A SINGLE ADDITIONAL TREATMENT PROCESS DO PROBE AND SENSOR SET.

E. CONTRACTOR SHALL PROVIDE A SINGLE ADDITIONAL ELECTRICAL POSITIVE DISPLACEMENT BLOWER UNIT TO INCLUDE MOTOR AND FRAME.

F. CONTRACTOR SHALL PROVIDE A SINGLE ADDITIONAL ELECTRONIC VALVE OPERATOR.

G. CONTRACTOR SHALL PROVIDE A SINGLE ADDITIONAL REFRIGERATED AUTOMATIC SAMPLER AND ASSOCIATED TUBING AND BOTTLE.

H. CONTRACTOR SHALL PROVIDE A SINGLE ADDITIONAL CHEMICAL FEED PUMP.

I. CONTRACTOR SHALL PROVIDE A SET OF FOUR ADDITIONAL CLOTH MEDIA FILTER FRAMES AND CLOTH MEDIA SETS.

J. CONTRACTOR SHALL DELIVER ALL ADDITIONAL PURCHASED EQUIPMENT TO THE PROJECT SITE AND TURNOVER TO THE CITY DURING COMMISSIONING OF THE PLANT. THE CONTRACTOR SHALL COORDINATE AND PLAN FOR STORAGE OF ALL ADDITIONAL EQUIPMENT UNTIL TURNOVER AND ACCEPTANCE BY THE CITY.

ISSUED FOR BID

CIVIL R·G·S ENGINEERS
RGS CIVIL DESIGN LLC
1405 DRAKE AVE
HUNTSVILLE, AL 35802
(256) 503-9277

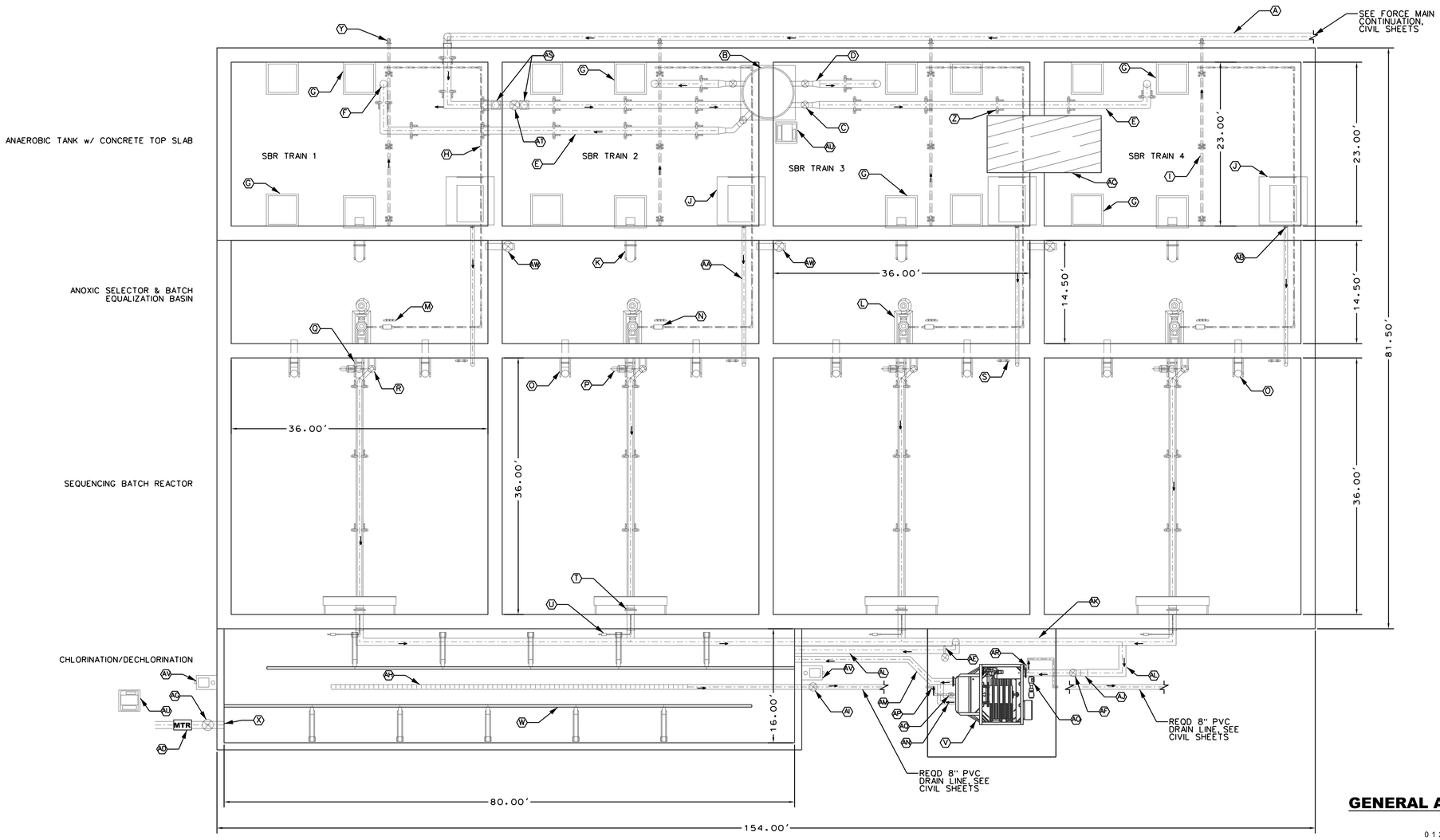
ALABAMA No. 34040 PROFESSIONAL ENGINEER JACOB A. ROTH 6/23/23

REV #	DATE	DESCRIPTION

WWTP EQUIPMENT NOTES & SPECIFICATIONS

OWENS CROSS ROADS NEW 0.9 MGD SBR WWTP
SNEED AVENUE
OWENS CROSS ROADS, AL 35763

DRAWN: JAR
CHECKED: JAR
DATE: JUNE 23, 2023
PROJECT NUMBER: CS010972-01
SHEET NUMBER: C300



GENERAL ARRANGEMENT DRAWING

SCALE: 1/8" = 1'-0"

0 1 2 8 16 24

GRAPHIC SCALE: 1/8" = 1'-0"

LABEL	NAME	SIZE	NOTES
A	DI FORCE MAIN	12"	MIN. DEPTH 36"
B	SS 304 SPLITTER BOX		
C	ELECTRONIC PLUG VALVE	8"	INFLUENT ISOLATION/DIRECTIONAL CONTROL
D	DI REDUCER	8"x12"	
E	DI INFLUENT PIPING	12"	
F	DI 90° ELBOW INTO BASIN	12"	
G	ACCESS HATCH	42"x42"	
H	2" WAS	2"	
I	4" WAS COLLECT MANIFOLD	4"	
J	ROTARY POS DISP BLOWER		432 SCFM @ 9.06 PSIG
K	INFLUENT w/ UNDRFLW BAFFLE	12"	
L	SUBMERISBLE PUMP	15 HP	1400 GPM @ 24' HEAD
M	CONTROL FLOATS		3 PER BASIN (FIELD LOCATE)
N	ELEC RECIRC CONTROL VALVE	2"	
O	RECIRCULATION PIPING	10"	
P	BACKFLUSH	6"	
Q	INFLUENT	10"	

LABEL	NAME	SIZE	NOTES
R	AIR	6"	
S	DIF. PRESSURE TRANSMITTER		1 PER BASIN (FIELD LOCATE)
T	DECANT	12"	1200 GPM DESIGN FLOW
U	DECANT VENT	1"	
V	CLOTH DISC FILTER		PAINTED CARBON STEEL TANK
W	BAFFLE WALL	74' (2)	ENDURO COMPOSITES FRP WALL SYSTEM
X	DISCHARGE	12"	
Y	MANUAL PLUG VALVE	4"	SLUDGE STORAGE SYSTEM
Z	ADJST SADDLE PIPE SUPPORT	12"	10' O.C.
AA	6" SS AIR MANIFOLD PIPE	6"	
AB	6" AIR VALVE	6"	
AC	FIBERGLASS CONTROL BLDG	8'x16'	
AD	EFFLUENT FLOW METER	12"	
AE	FILTER BYPASS VALVE	12"	12" MANUAL PLUG VALVE
AF	FILTER ISOLATION VALVE	10"	10" MANUAL PLUG VALVE
AG	ELECTRIC PLUG VALVE	12"	DISCHARGE REGULATION VALVE
AH	CHLORINATION BASIN DRAIN	8"	CORRUGATED SLOTTED DRAIN

LABEL	NAME	SIZE	NOTES
AI	MANUAL PLUG VALVE	8"	
AJ	DI REDUCER	10"x12"	
AK	12" DI EFFLUENT HEADER	12"	MOUNT ON SUPPORTS ALONG BASIN WALL
AL	12" DI PIPE	12"	
AM	10" DI PIPE	10"	
AN	10" DI FILTER OVERFLOW	10"	CONNECT TO FILTER OVERFLOW WEIR
AO	FILTER BACKWASH PUMP	2 HP	
AP	FILTER BOTTOM DRAIN	3"	STAINLESS STEEL PIPING, DROP INTO 8" PVC DRAIN
AQ	FILTER DRAIN VALVE	3"	BALL VALVE
AR	BACKWASH DRAIN PIPING	3"	STAINLESS STEEL PIPING, DROP INTO 8" PVC DRAIN
AS	DI TEE w/ BLIND FLANGE	12"x12"	
AT	MANUAL PLUG VALVE	12"	INFLUENT FLOW CUTOFF VALVE
AU	AUTOMATIC SAMPLER	N/A	ONE INFLUENT, ONE EFFLUENT
AV	CHEMICAL FEED PUMP	N/A	TWO PUMPS, FIELD LOCATED
AW	BASIN TRANSFER PIPE/VALVE	12"	12" DI PIPE w/ 12" MANUAL GATE VALVE, SS T-HANDLE

ISSUED FOR BID

CIVIL R·G·S ENGINEERS
RGS CIVIL DESIGN LLC
1405 DRAKE AVE
HUNTSVILLE, AL 35802
(256) 503-9277

ALABAMA LICENSED No. 34040 PROFESSIONAL ENGINEER JACOB A. ROTH 6/23/23

REV #	DATE	DESCRIPTION

WWTP GENERAL ARRANGEMENT DRAWING

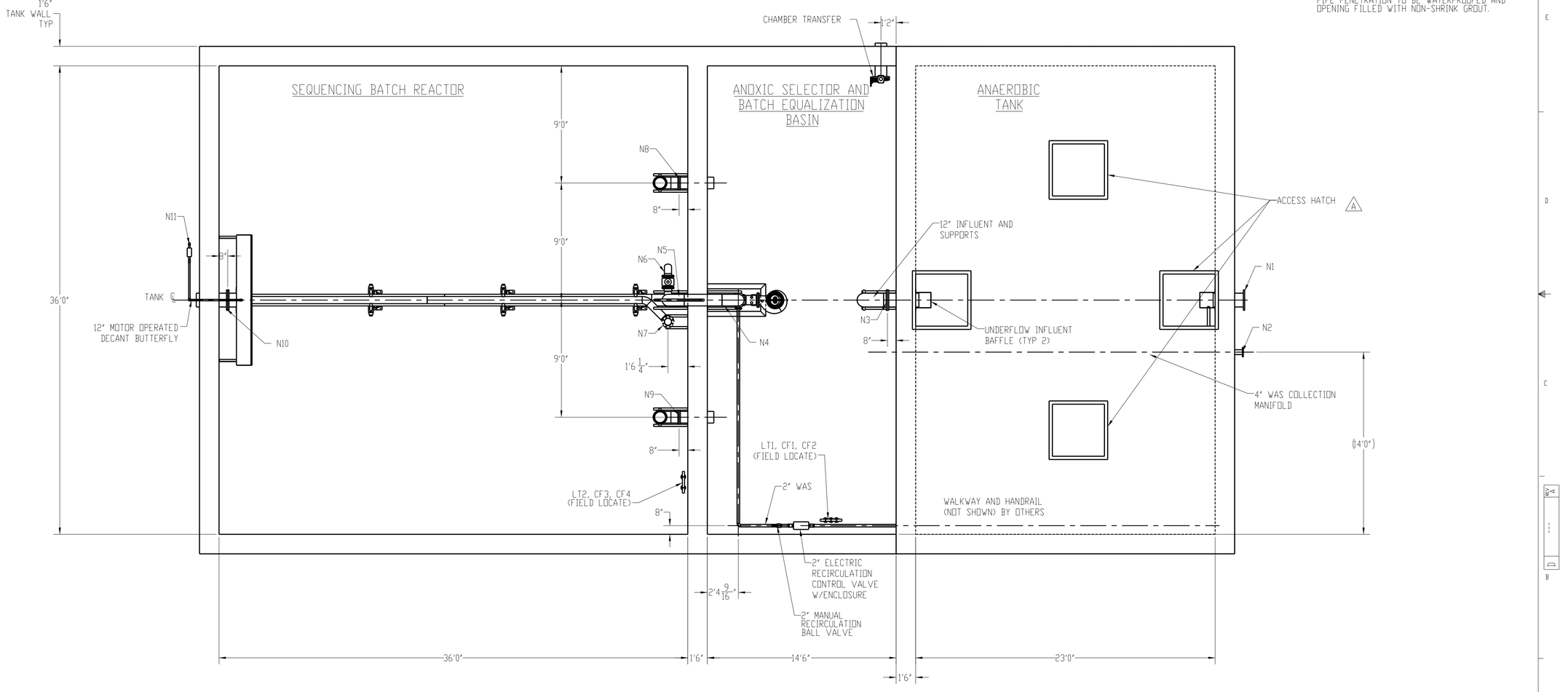
OWENS CROSS ROADS NEW 0.9 MGD SBR WWTP
SNEED AVENUE
OWENS CROSS ROADS, AL 35763

DRAWN: JAR
CHECKED: JAR
DATE: JUNE 23, 2023
PROJECT NUMBER: CS010972-01
SHEET NUMBER: C301

APPURTENANCE TABLE					
NOZZLE LABEL	NAME	SIZE	PROJECTION	ELEVATION	NOTES
N1	INFLUENT	12"	8"		FF #150 FLANGE
N2	WAS COLLECTION MANIFOLD	4"	8"		FF #150 FLANGE
N3	INFLUENT	12"	8"		FF #150 FLANGE
N4	DISCHARGE	10"	8"		FF #150 FLANGE
N5	INFLUENT	10"	8"		FF #150 FLANGE
N6	BACK FLUSH	6"	NA		FF #150 FLANGE
N7	AIR	6"	NA		FF #150 FLANGE
N8	RECIRCULATION	10"	8"		FF #150 FLANGE
N9	RECIRCULATION	10"	8"		FF #150 FLANGE
N10	DECANT	12"	8"		FF #150 FLANGE
N11	DECANT VENT	1"	NA		FNPT
N12	EFFLUENT	6"	8"		FF #150 FLANGE

NOTE: ALL FLANGES 2-HOLED ON VERTICAL ℄

NOTE: ALL WALL PENETRATIONS HAVE EXISTING HOLES IN CONCRETE LARGE ENOUGH TO SLIDE FLANGED PIPE THROUGH THE WALL. PIPE PENETRATION TO BE WATERPROOFED AND OPENING FILLED WITH NON-SHRINK GROUT.



REV.	DESCRIPTION	DRAWN	APPROV.	DATE
A	ADDED TWO ACCESS HATCHES	TDN	JHE	3/6/2024
0	INITIAL RELEASE	TDN	JHE	10/23

ClearStream ENVIRONMENTAL
9090 SOUTH 300 WEST
SANDY, UT 84070
OFFICE: (801) 676-1890
FAX: (801) 676-1893

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
WEIGHTS ARE IN LBS
TOLERANCES (U.N.O. AWS D1.1, ASSC CODE OF STD PRACTICE)
FRACTIONAL: ±1/8"
HOLE LOCATION: ±1/32"
MATERIAL: N/A
WEIGHT EACH: N/A
NUMBER OF MECHANISMS: 4
TOTAL WEIGHT: N/A

DO NOT SCALE DRAWING

	NAME	DATE
DRAWN	TDN	10/23
CHECKED	ADG	10/23
ENG APPR.	JHE	10/23
FAB INSP.		

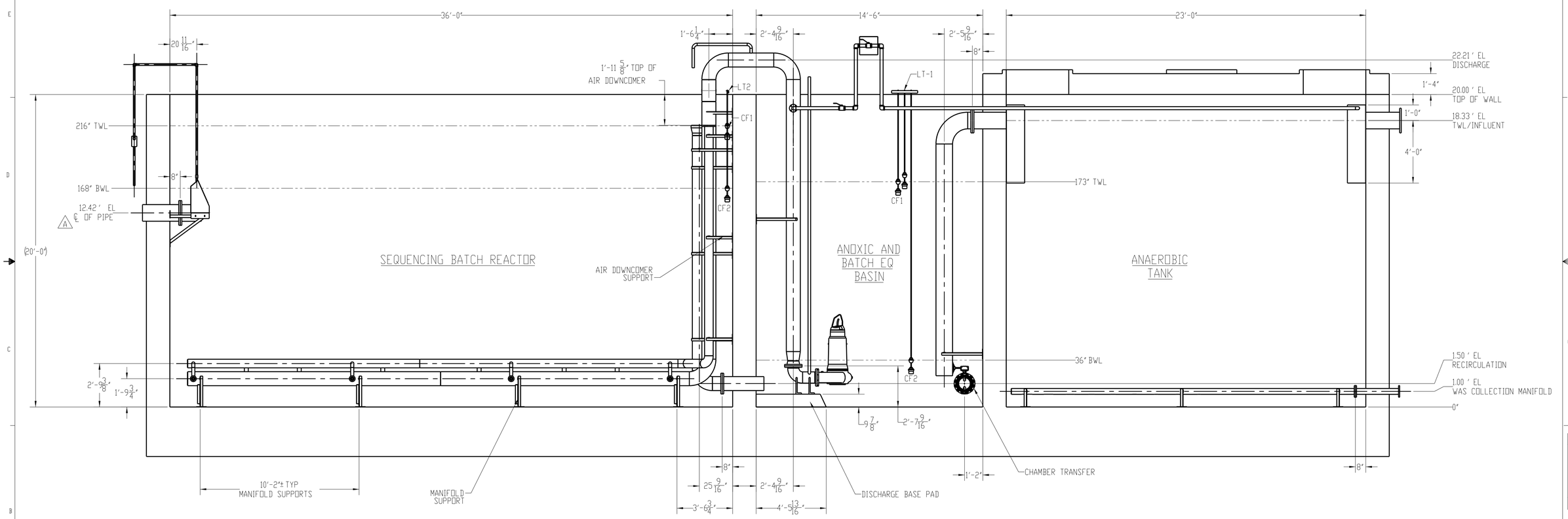
MODEL NUMBER: SBR.036
DESIGNATION: FW00.S0.AR

OWENS CROSS ROADS

TITLE: GENERAL ARRANGEMENT

SIZE: D | DWG. / PART NO.: 100 | REV: A

SCALE: 1:48 | SHEET 1 OF 3



REV.	DESCRIPTION	DRAWN	APPRDV.	DATE
A	ADJUSTED DECANT PIPE ELEVATION UP 2"	TDN	JHE	3/6/2024
0	INITIAL RELEASE	TDN	JHE	10/23

ClearStream ENVIRONMENTAL
9090 SOUTH 300 WEST
SANDY, UT 84070
OFFICE: (801) 676-1890
FAX: (801) 676-1893

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
WEIGHTS ARE IN LBS
TOLERANCES (EAV ANSI B11, ASSC CODE OF STD PRACTICE):
FRACTIONAL ± 1/8"
HOLE LOCATION ±1/32"

MATERIAL: N/A

WEIGHT EACH: N/A

NUMBER OF MECHANISMS: 1

TOTAL WEIGHT: N/A

	NAME	DATE
DRAWN	TDN	10/23
CHECKED	ADG	10/23
ENG. APPR.	JHE	10/23
FAB INSP.		

DO NOT SCALE DRAWING

MODEL NUMBER: SBR.036

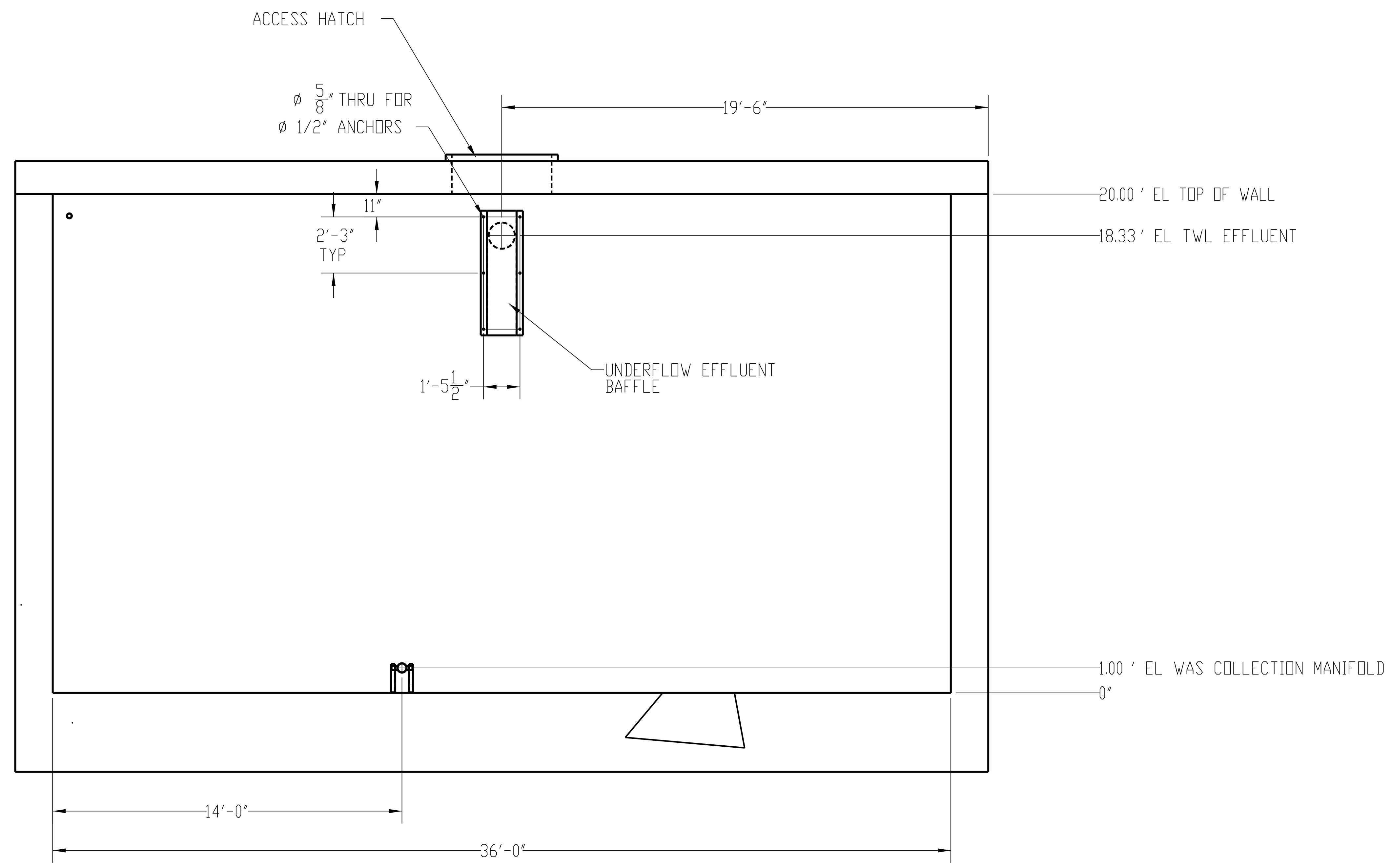
DESIGNATION: FW00.S0.AR

OWENS CROSS ROADS

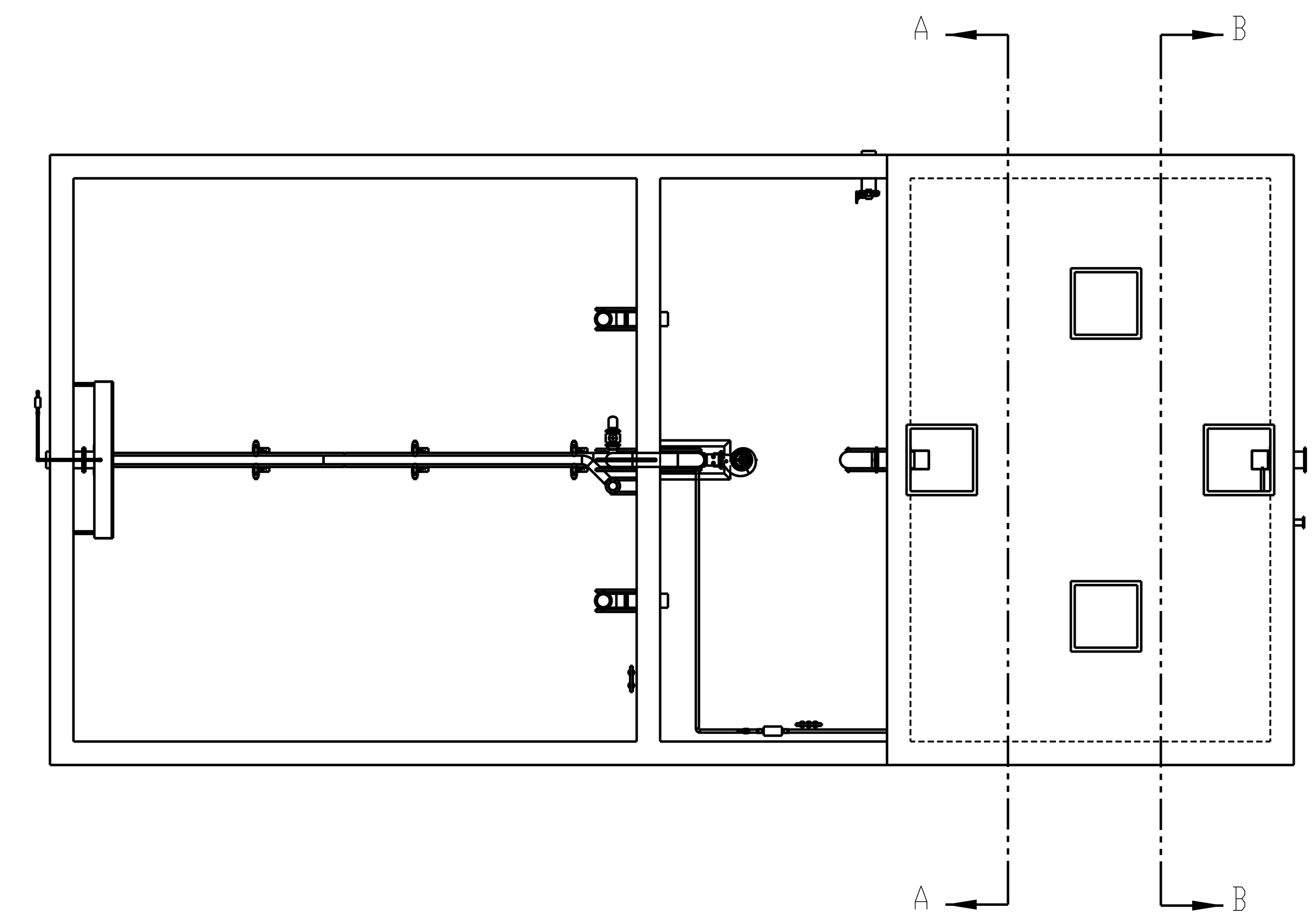
TITLE: GENERAL ARRANGEMENT ELEVATION

SIZE: D | DWG. / PART NO.: 101 | REV: A

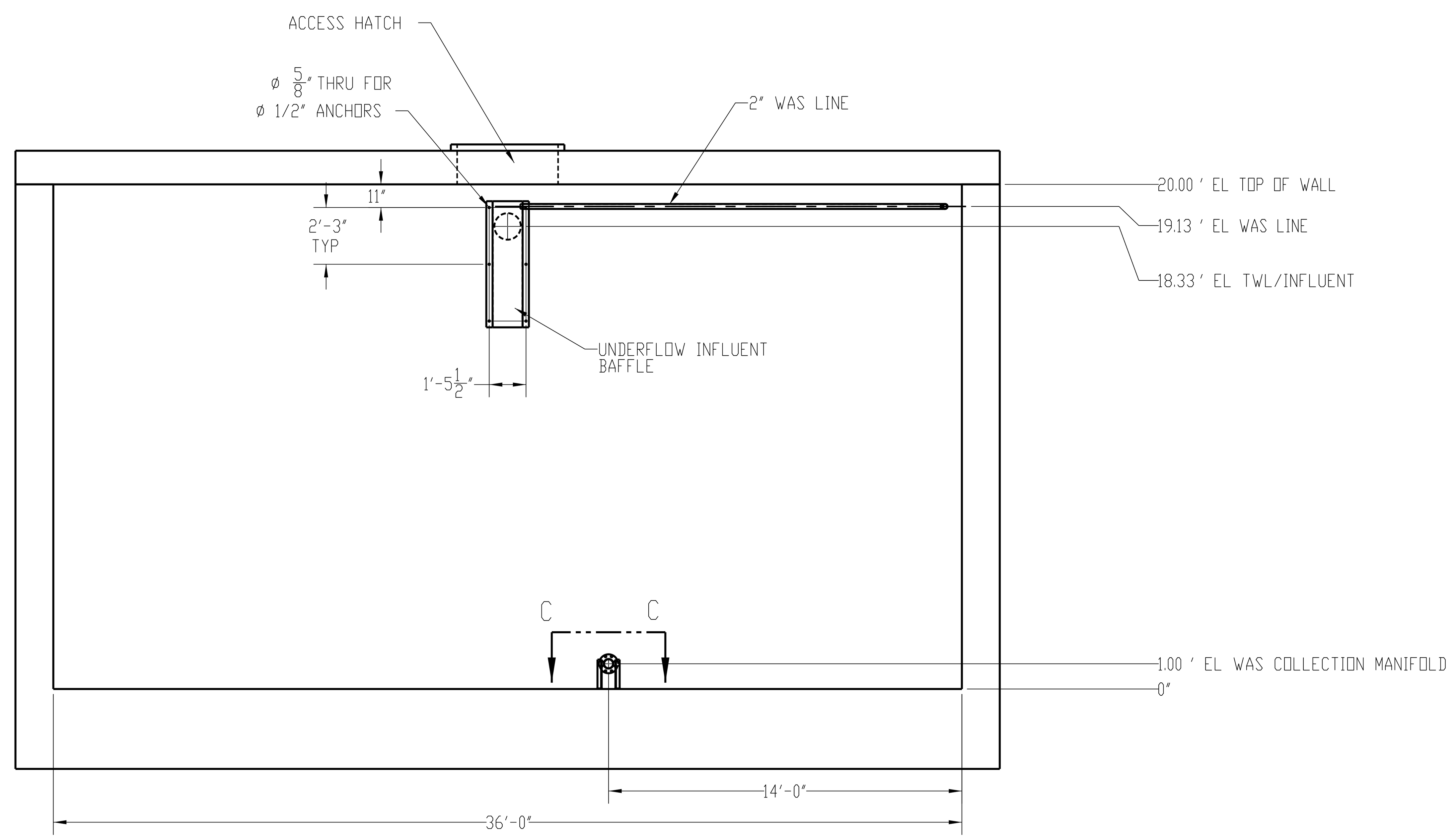
SCALE: 1:36 | SHEET 1 OF 1



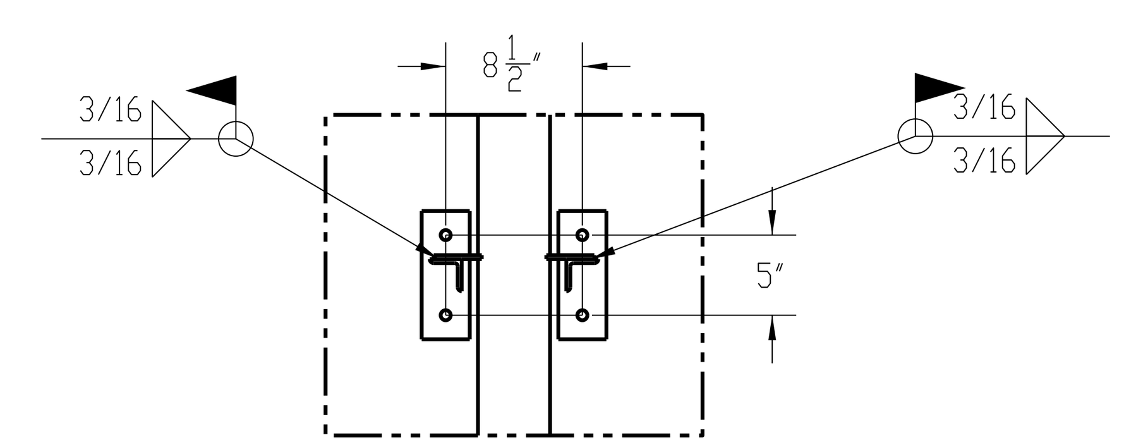
SECTION A-A



TOP VIEW



SECTION B-B



SECTION C-C
SCALE 1 : 12

REV.	DESCRIPTION	DRAWN	APPROV.	DATE
0	INITIAL RELEASE	TON	JHE	10/23

ClearStream ENVIRONMENTAL
9090 SOUTH 300 WEST
SANDY, UT 84070
OFFICE: (801) 676-1890
FAX: (801) 676-1893

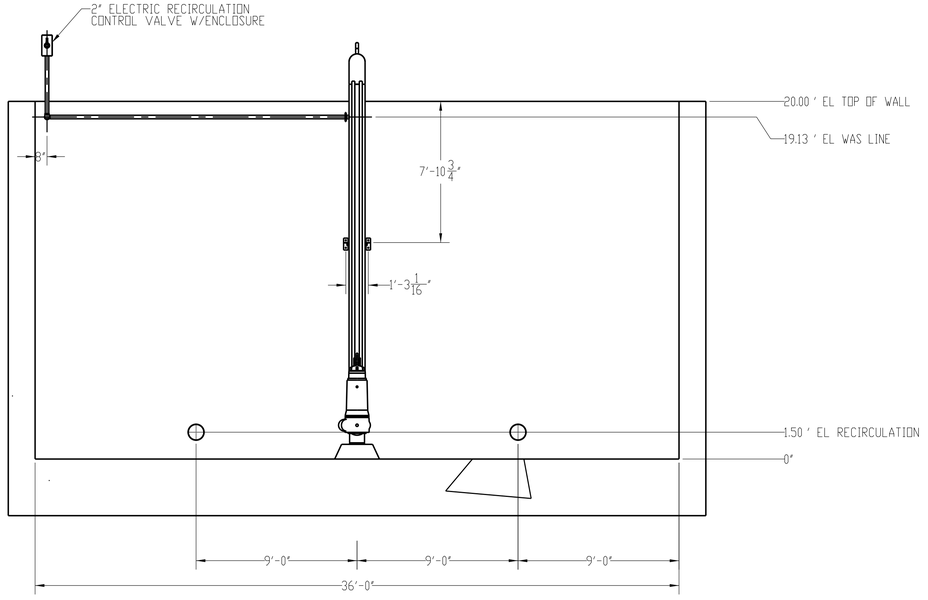
UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
WEIGHTS ARE IN LBS
TOLERANCES (I.A.W. AWS D1.1, AISC CODE OF STD PRACTICE):
FRACTIONAL: ±1/8"
HOLE LOCATION: ±1/32"

MATERIAL: N/A
WEIGHT EACH: N/A
NUMBER OF MECHANISMS: 1
TOTAL WEIGHT: N/A

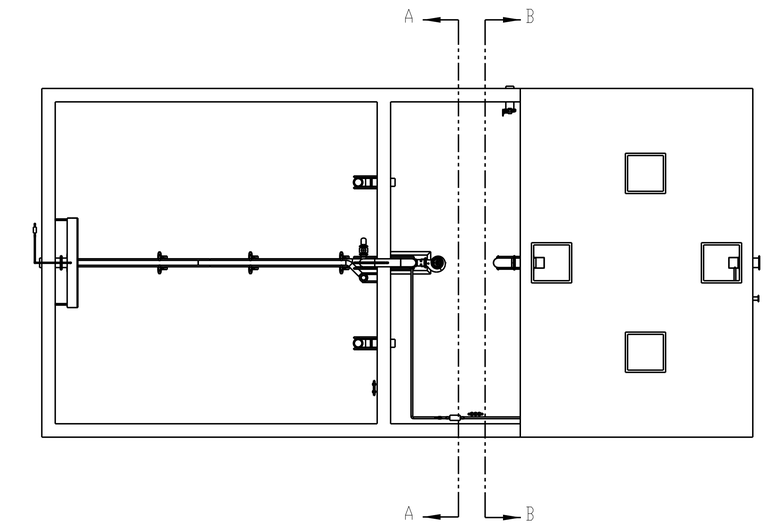
	NAME	DATE
DRAWN	TON	10/23
CHECKED	AOG	10/23
ENG APPR.	JHE	10/23
FAB INSP.		

DO NOT SCALE DRAWING
MODEL NUMBER: SBR.036
DESIGNATION: FW00.S0.AR

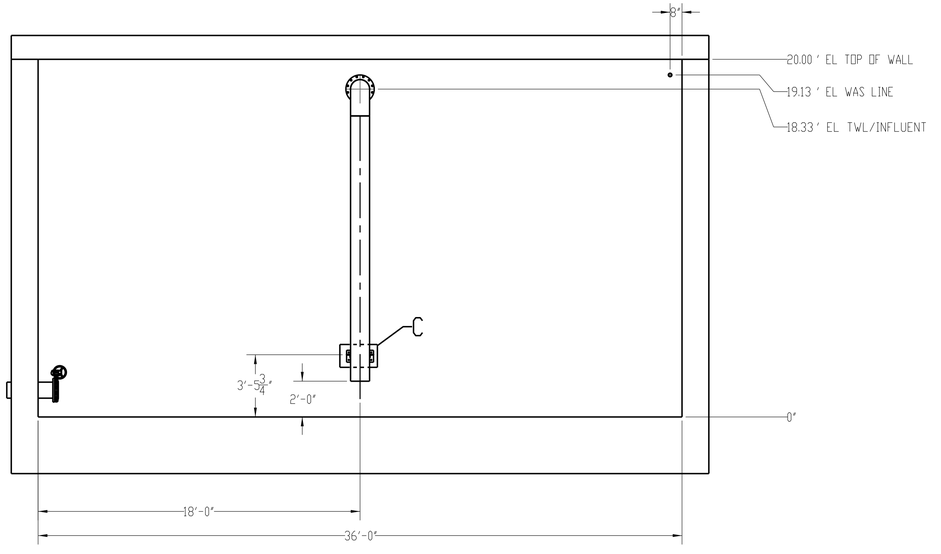
OWENS CROSS ROADS
TITLE: ANAEROBIC TANK DETAIL
SIZE: D
DWG. / PART NO.: 102
REV: 0
SCALE: 1:48
SHEET 1 OF 1



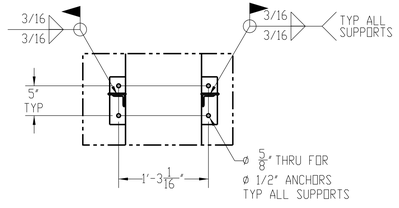
SECTION A-A



TOP VIEW



SECTION B-B



DETAIL C
SCALE 1 : 12

REV.	DESCRIPTION	DRAWN	APPROV.	DATE
0	INITIAL RELEASE	TDN	JHE	10/23

ClearStream ENVIRONMENTAL
9090 SOUTH 300 WEST
SANDY, UT 84070
OFFICE: (801) 676-1890
FAX: (801) 676-1893

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
WEIGHTS ARE IN LBS
TOLERANCES (U.N.F. ANS B11, ASSC CODE OF STD PRACTICE)
FRACTIONAL: ±1/8"
HOLE LOCATION: ±1/32"

MATERIAL: N/A

WEIGHT EACH: N/A

NUMBER OF MECHANISMS: 1

TOTAL WEIGHT: N/A

	NAME	DATE
DRAWN	TDN	10/23
CHECKED	ADG	10/23
ENG APPR.	JHE	10/23
FAB INSP.		

DO NOT SCALE DRAWING

MODEL NUMBER: SBR.036

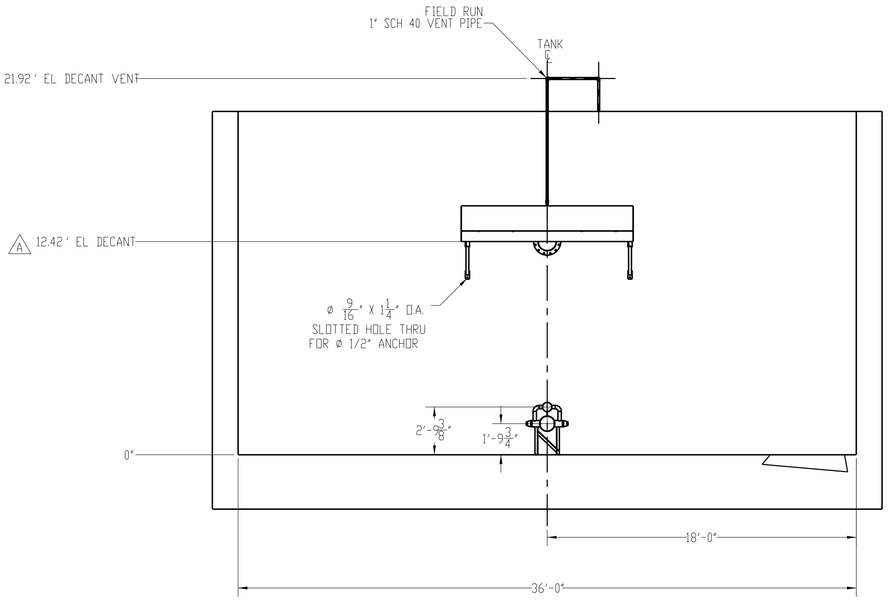
DESIGNATION: FW00.S0.AR

OWENS CROSS ROADS

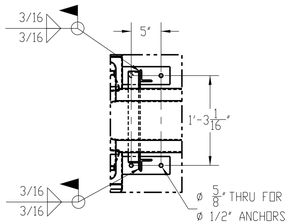
TITLE: ANOX BASIN DETAIL

SIZE	DWG. / PART NO.	REV
D	103	0

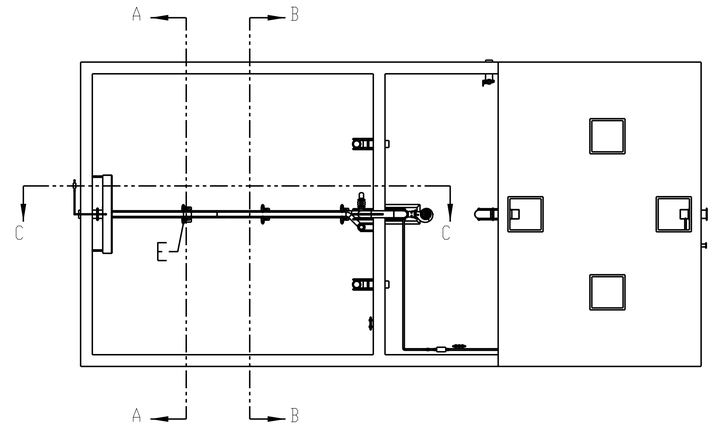
SCALE: 1:48 SHEET 1 OF 1



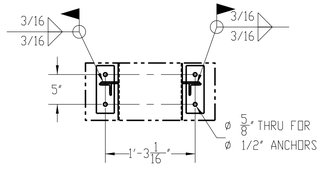
SECTION A-A



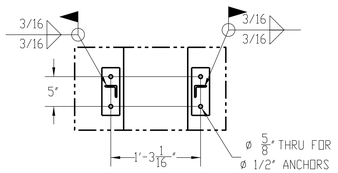
DETAIL E
SCALE 1 : 12



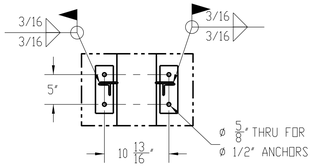
TOP VIEW



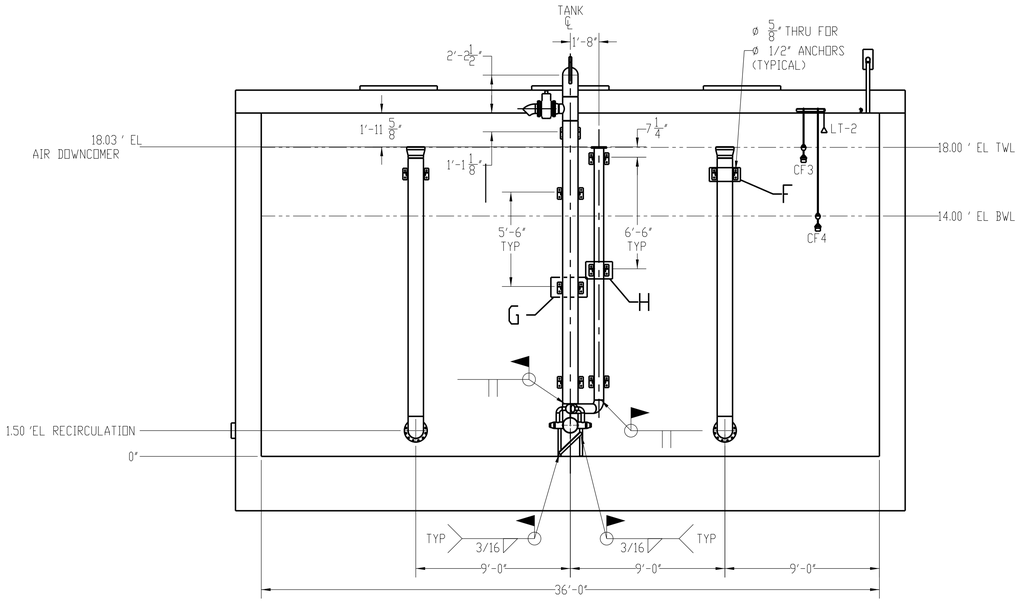
DETAIL F
SCALE 1 : 12



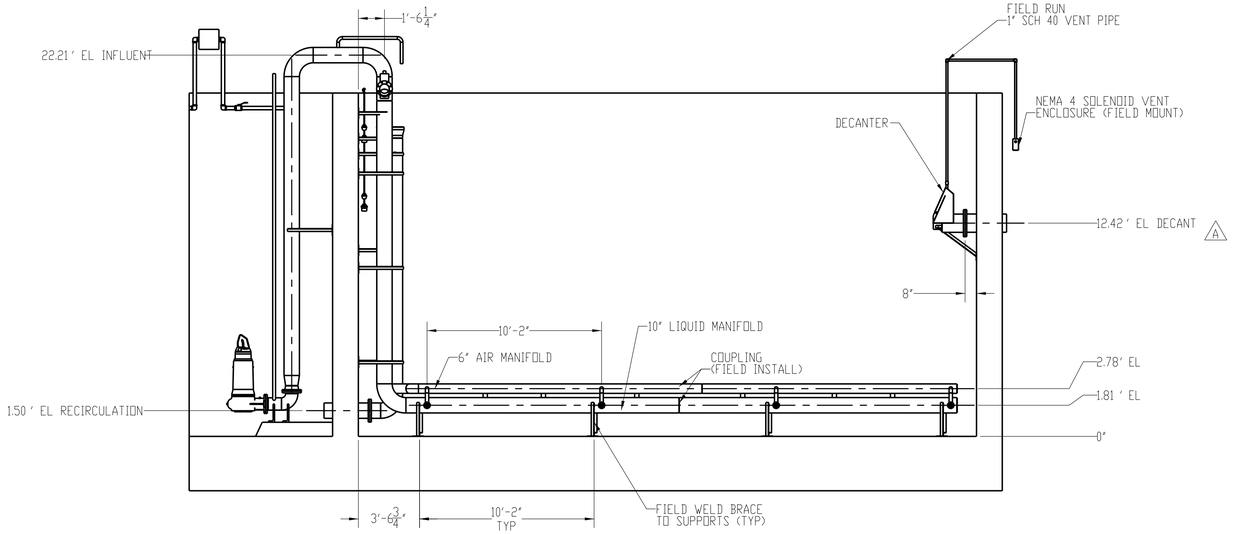
DETAIL G
SCALE 1 : 12



DETAIL H
SCALE 1 : 12



SECTION B-B



SECTION C-C

REV.	DESCRIPTION	DRAWN	APPRDV.	DATE
A	UPDATED DECANT PIPE ELEVATION UP 2'	TDN	JHE	3/6/2024
0	INITIAL RELEASE	DRG	JHE	3/4/2021

CLEARSTREAM ENVIRONMENTAL
9098 SOUTH 300 WEST
SANDY, UT 84070
OFFICE: (801) 676-1890
FAX: (801) 676-1893

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
WEIGHTS ARE IN LBS
TOLERANCES (I.A.W. AWS D11, ASSC CODE OF STD PRACTICE)
FRACTIONAL: ±1/8"
HOLE LOCATION: ±1/32"
MATERIAL: N/A
WEIGHT EACH N/A
NUMBER OF MECHANISMS: 1
TOTAL WEIGHT: N/A

DO NOT SCALE DRAWING

	NAME	DATE
DRAWN	TDN	10/23
CHECKED	ADG	10/23
ENG APPR.	JHE	10/23
FAB INSP.		

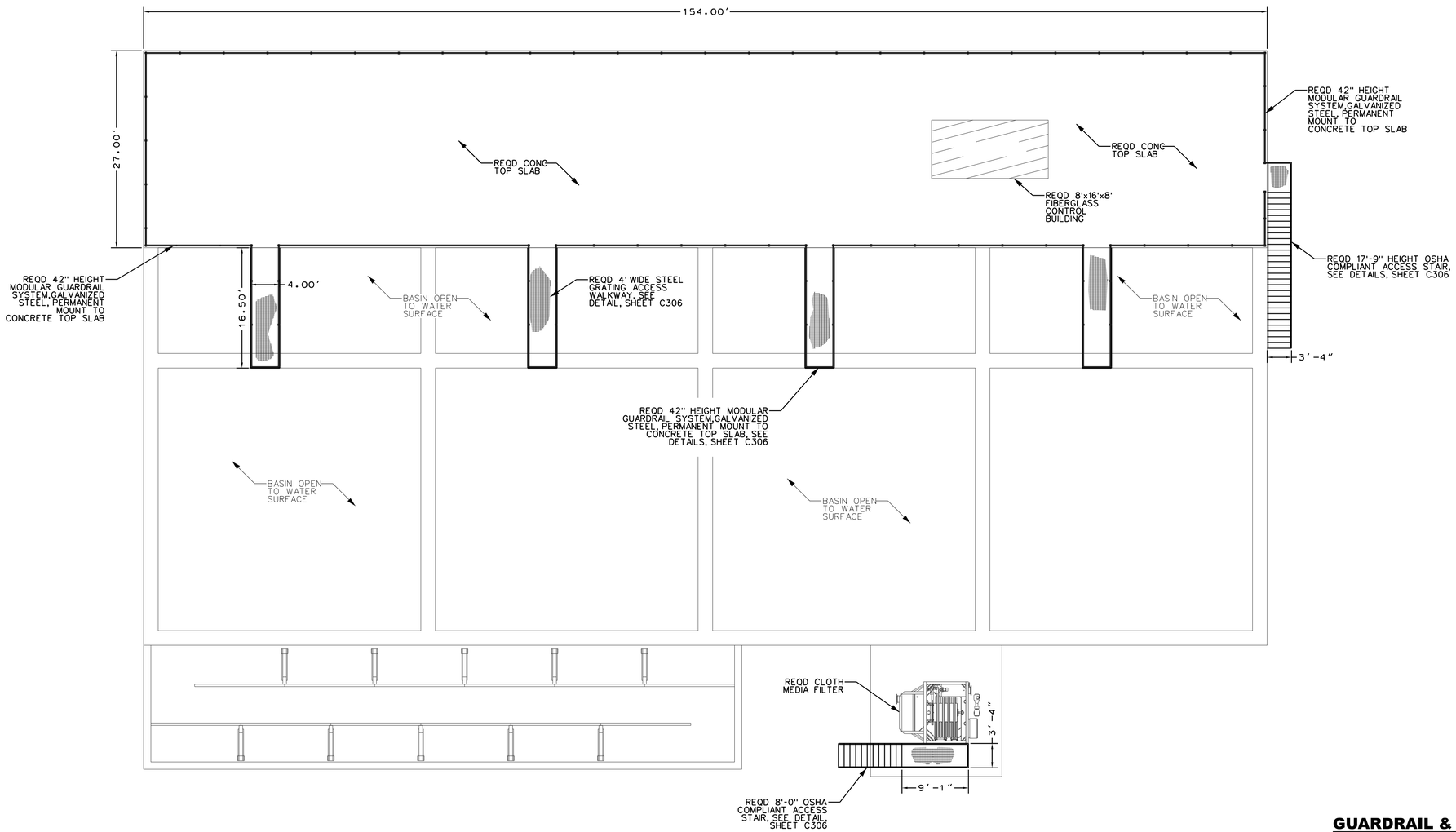
MODEL NUMBER: SBR.036
DESIGNATION: FWOO.S0.AR

OWENS CROSS ROADS

TITLE: SBR BASIN DETAILS

SIZE: D | DWG. / PART NO.: 104 | REV: A

SCALE: 1:50 | SHEET 1 OF 1



GUARDRAIL & ACCESS PLAN

SCALE: 1/8" = 1'-0"

0 1 2 8 16 24

GRAPHIC SCALE: 1/8" = 1'-0"

GUARDRAIL NOTES/SPECIFICATIONS

A. GUARDRAIL SHALL BE INSTALLED AROUND ENTIRE PERIMETER OF WALKABLE SURFACE ALONG THE SBR BASIN TOP SLAB AND ACCESS WALKWAYS.

B. GUARDRAIL SHALL MEET ALL OSHA STANDARDS AND REQUIREMENTS AND BE INDEPENDENTLY TESTED AND CERTIFIED COMPLIANT WITH 29 CFR 1910.29 AND 29 CFR 1926.502.

C. GUARDRAIL SYSTEM SHALL BE CONSTRUCTED OF 1 1/2" NOMINAL DIAMETER ALUMINUM ALLOY TUBING, FREE OF SHARP EDGES AND SNAG POINTS.

D. GUARDRAIL SHALL BE PERMANENTLY MOUNTED TO WALKING SURFACE AND SHALL EXTEND TO A HEIGHT OF 42" ABOVE WALKING SURFACE.

E. GUARDRAIL SHALL BE EQUIPPED WITH A TOP AND MID-RAIL, WITH SUPPORT POSTS SPACED NO GREATER THAN SIX FEET APART.

F. GUARDRAIL AND ALL COMPONENTS SHALL BE CAPABLE OF SUPPORTING A LOAD OF 200 POUNDS, MINIMUM, IN ANY DIRECTION.

G. GUARDRAIL SHALL BE KEE LITE SAFETY RAIL SYSTEM PERMANENT MODULAR ALUMINUM GUARDRAIL, BY KEE SAFETY, INC., OR APPROVED EQUIVALENT.

ACCESS LADDER NOTES/SPECIFICATIONS

A. ALUMINUM ACCESS LADDERS SHALL COMPLY WITH OSHA 1910.27 MINIMUM STANDARDS FOR LADDERS.

B. LADDER SHALL BE OF ALUMINUM CONSTRUCTION, MANUFACTURED BY A A FIRM EXPERIENCED IN PRODUCTION OF METAL LADDERS.

C. ALUMINUM LADDERS SHALL BE MILL FINISH, WITH CLEAR ANODIC FINISH COAT HAVING A MINIMUM THICKNESS OF 18 MILLIMETERS. PAINT SHALL BE URETHANE PAINT OVER CHEMICALLY PRETREATED SUBSTRATE. COLOR: BLACK

D. LADDER RUNGS SHALL BE DESIGNED TO WITHSTAND A 1,500 POUND LOAD WITHOUT DEFORMATION OR FAILURE.

E. LADDER SIDE RAILS SHALL BE A MINIMUM OF 1/8 INCH THICK ALUMINUM STOCK.

ISSUED FOR BID

CIVIL
R·G·S ENGINEERS
RGS CIVIL DESIGN LLC
1405 DRAKE AVE
HUNTSVILLE, AL 35802
(256) 503-9277

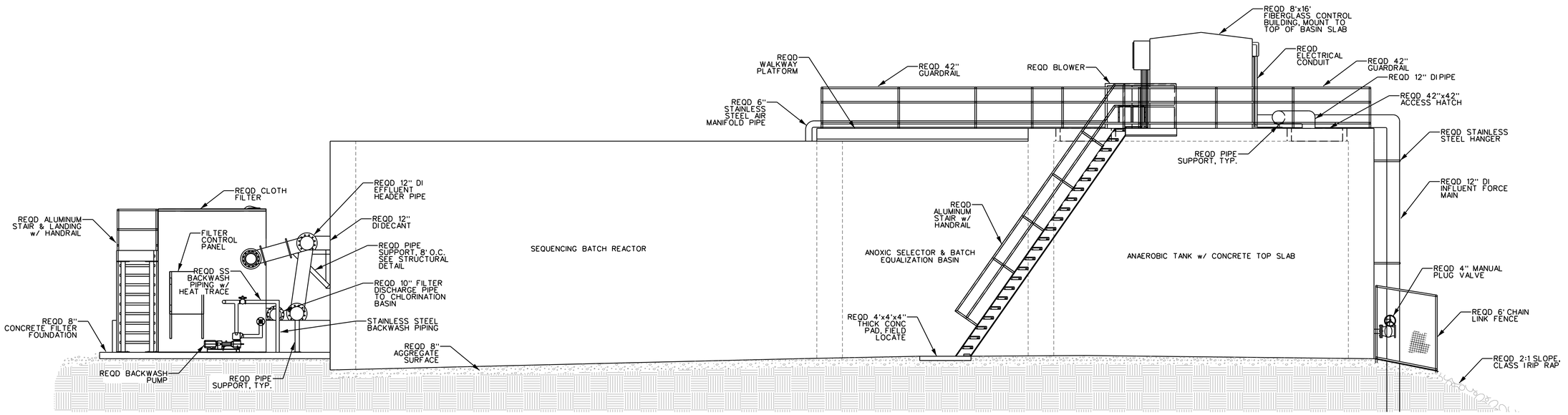
ALABAMA LICENSED No. 34040 PROFESSIONAL ENGINEER JACOB A. ROTH 6/23/23

REV #	DATE	DESCRIPTION

WW'TP GUARDRAIL, ACCESS STAIR & WALKWAY PLAN

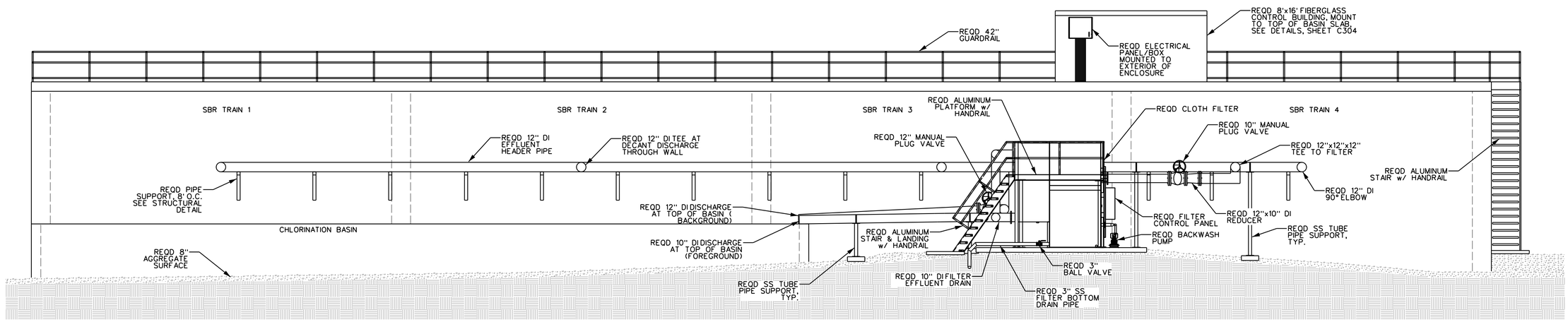
OWENS CROSS ROADS NEW 0.9 MGD SBR WWTP
SNEED AVENUE
OWENS CROSS ROADS, AL 35763

DRAWN: JAR
CHECKED: JAR
DATE: JUNE 23, 2023
PROJECT NUMBER: CS010972-01
SHEET NUMBER: C302



WWTP EAST ELEVATION

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



WWTP SOUTH ELEVATION

SCALE: 3/16" = 1'-0"

0 1 5 10 15

GRAPHIC SCALE: 3/16" = 1'-0"

0 1 4 8 16

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

ISSUED FOR BID

CIVIL
R·G·S ENGINEERS
RGS CIVIL DESIGN LLC
1405 DRAKE AVE
HUNTSVILLE, AL 35802
(256) 503-9277

ABAM LICENSED No. 34040 PROFESSIONAL ENGINEER JACOB A. ROTH 6/23/23

REV #	DATE	DESCRIPTION

WWTP ELEVATIONS

OWENS CROSS ROADS NEW 0.9 MGD SBR WWTP
SNEED AVENUE
OWENS CROSS ROADS, AL 35763

DRAWN: JAR
CHECKED: JAR
DATE: JUNE 23, 2023
PROJECT NUMBER: CS010972-01
SHEET NUMBER: C303

PREFABRICATED CONTROL ENCLOSURE NOTES

A. CONTROL BUILDING SHALL BE PREFABRICATED FIBERGLASS ENCLOSURE, SINGLE PIECE SHELTER MANUFACTURED BY OPENCHANNEL FLOW, ATLANTA, GA 855-481-1118, OR APPROVED EQUIVALENT.

B. SHELTER SHALL BE 8'-0" WIDE BY 16'-0" LENGTH, WITH A 7'-6" MAXIMUM HEIGHT AND SHALL BE CONSTRUCTED OF FIBERGLASS REINFORCED PLASTIC LAMINATE HAVING A SINGLE PIECE MOLDED CONSTRUCTION WITH AN EXTERIOR GEL COAT.

C. SHELTER SHALL INCLUDE STAINLESS STEEL LIFTING MOUNTS WITH A MINIMUM EYE OPENING OF 4 INCHES.

D. SHELTER CONSTRUCTION SHALL INCLUDE INTEGRATED CONNECTION FLANGE WITH PRE-DRILLED HOLES FOR BOLTED CONNECTION TO CONCRETE SURFACE.

E. SHELTER CONSTRUCTION AND ATTACHMENT SHALL BE DESIGNED FOR 135 MPH WIND SPEED AND 45 PSF SNOW LOAD HAVING A TYPE III/U OCCUPATION GROUP.

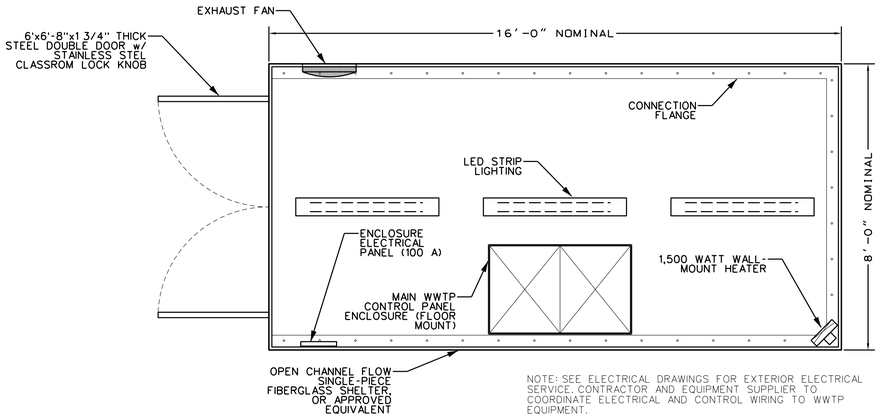
F. SHELTER DOOR SHALL BE DOUBLE-DOOR CONFIGURATION WITH CANE BOLTS AND CENTER ASTRAGAL AND SHALL BE 6'-0" WIDE OPENING AND 6'-8" IN HEIGHT. DOOR SHALL BE 1 3/4" THICK, MOUNTED WITH STAINLESS STEEL STRAP HINGES. EDPM EDGE GRIP DOOR SEALS SHALL BE PROVIDED ALONG THE FULL PERIMETER OF THE DOOR OPENING.

G. DOOR HARDWARE SHALL BE STAINLESS STEEL KNOB LOCKSET, CLASSROOM STYLE.

H. SHELTER SHALL INCLUDE ELECTRICAL LOAD CENTER, ELECTRICAL CONDUIT, POWER AND SWITCH CONTROL FOR INTEGRATED LED LIGHTING AND OTHER ASSOCIATED EQUIPMENT TO BE PROVIDED BY SHELTER MANUFACTURER.

I. SHELTER SHALL INCLUDE A SINGLE WALL-MOUNT 1,500 WATT ELECTRIC HEAT UNIT WITH INTEGRAL THERMOSTAT.

J. SHELTER SHALL INCLUDE A 585 CFM EXHAUST FAN w/ FIBERGLASS HOOD AND INSECT SCREEN.

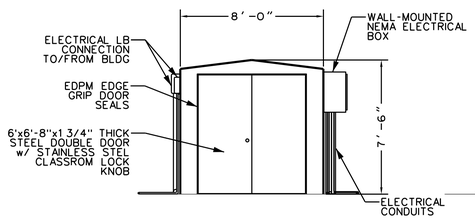


NOTE: SEE ELECTRICAL DRAWINGS FOR EXTERIOR ELECTRICAL SERVICE. CONTRACTOR AND EQUIPMENT SUPPLIER TO COORDINATE ELECTRICAL AND CONTROL WIRING TO WWTP EQUIPMENT.

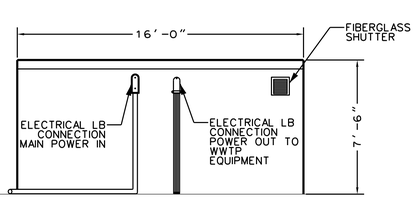
CONTROL BUILDING FLOOR PLAN
SCALE: 1/2" = 1'-0"

0 .5 1 2 4 8

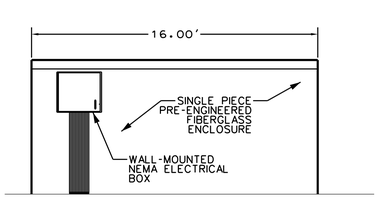
GRAPHIC SCALE: 1/2" = 1'-0"



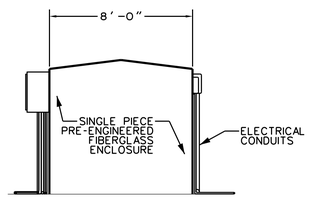
CONTROL BUILDING WEST ELEVATION
SCALE: 1/4" = 1'-0"



CONTROL BUILDING SOUTH ELEVATION
SCALE: 1/4" = 1'-0"



CONTROL BUILDING NORTH ELEVATION
SCALE: 1/4" = 1'-0"



CONTROL BUILDING EAST ELEVATION
SCALE: 1/4" = 1'-0"

CONTROL BUILDING ELEVATIONS
SCALE: 1/4" = 1'-0"

0 1 4 8 16

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

ISSUED FOR BID

CIVIL R·G·S ENGINEERS
RGS CIVIL DESIGN LLC
1405 DRAKE AVE
HUNTSVILLE, AL 35802
(256) 503-9277

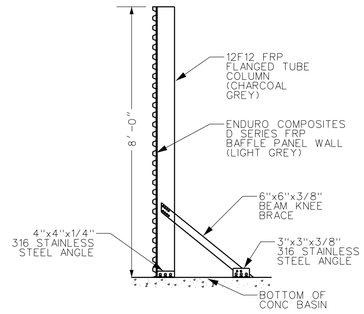
ALABAMA LICENSED No. 34040 PROFESSIONAL ENGINEER JACOB A. ROTH 6/23/23

REV #	DATE	DESCRIPTION

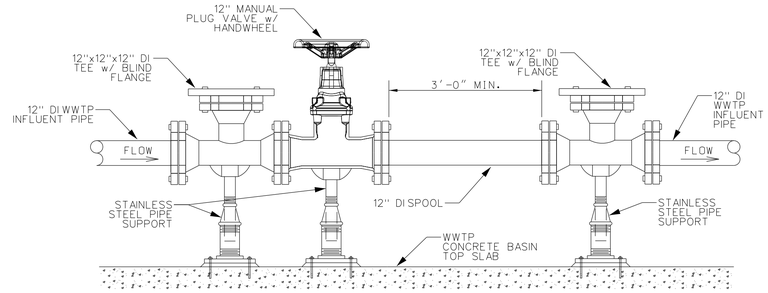
CONTROL BUILDING PLAN, SPECS AND ELEVATIONS

OWENS CROSS ROADS NEW 0.9 MGD SBR WWTP
SNEED AVENUE
OWENS CROSS ROADS, AL 35763

DRAWN:	JAR
CHECKED:	JAR
DATE:	JUNE 23, 2023
PROJECT NUMBER:	CS010972-01
SHEET NUMBER:	C304



BAFFLE WALL DETAIL
N.T.S.

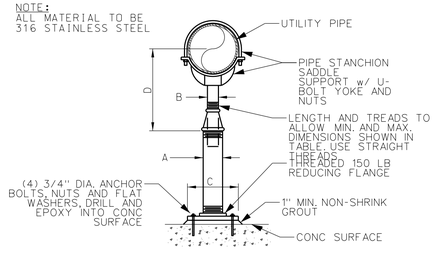


WWTP INFLUENT TEE/VALE SET DETAIL
N.T.S.

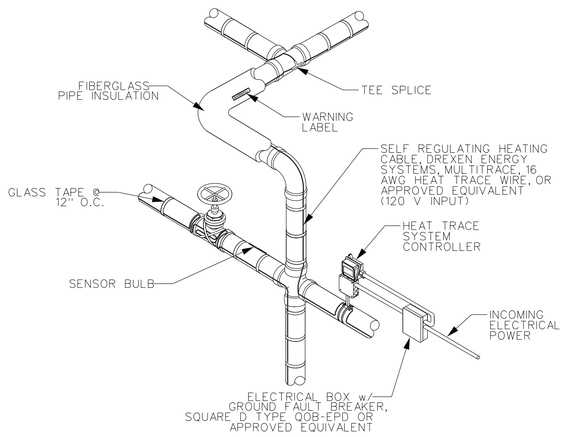
PIPE SIZE	A	B	C	D MIN.	D MAX.
4"	3"	2.5"	9"	9.5"	14"
6"	3"	2.5"	9"	10.5"	15.5"
8"	3"	2.5"	9"	11.5"	16.5"
10"	3"	2.5"	9"	13.5"	18.5"
12"	3"	2.5"	9"	15"	19.5"
14"	4"	3"	11"	16.5"	20.5"

PIPE SIZE	A	B	C	D MIN.	D MAX.
16"	4"	3"	11"	17.5"	22.5"
18"	6"	3.5"	13.5"	19.5"	24"
20"	6"	3.5"	13.5"	21"	25.5"
24"	6"	4"	13.5"	23.5"	28.5"
30"	6"	4"	13.5"	27"	31.5"
36"	6"	4"	13.5"	30.5"	34.5"

NOTE:
ALL MATERIAL TO BE 316 STAINLESS STEEL



ADJUSTABLE STANCHION PIPE SUPPORT DETAIL
N.T.S.



PIPE HEAT TRACE SYSTEM DETAIL
N.T.S.

ISSUED FOR BID

CIVIL
R·G·S
ENGINEERS
RGS CIVIL DESIGN LLC
1405 DRAKE AVE
HUNTSVILLE, AL 35802
(256) 503-9277

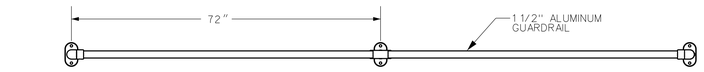
ALABAMA LICENSED No. 34040 PROFESSIONAL ENGINEER JACOB A. ROTH
6/23/23

REV #	DATE	DESCRIPTION

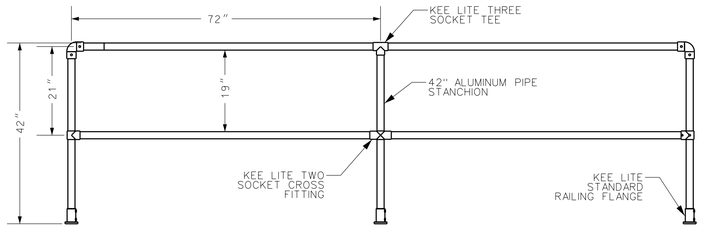
WWTP DETAILS

OWENS CROSS ROADS NEW 0.9 MGD SBR WWTP
SNEED AVENUE
OWENS CROSS ROADS, AL 35763

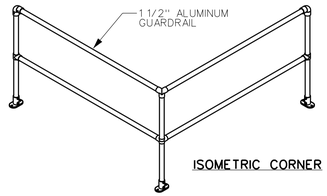
DRAWN: JAR
CHECKED: JAR
DATE: JUNE 23, 2023
PROJECT NUMBER: CS010972-01
SHEET NUMBER: C305



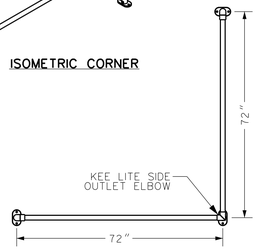
STRAIGHT SECTION PLAN



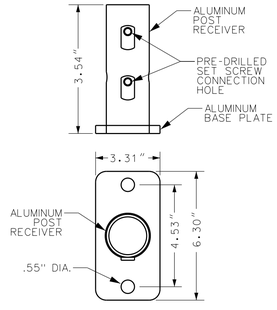
STRAIGHT SECTION ELEVATION



ISOMETRIC CORNER

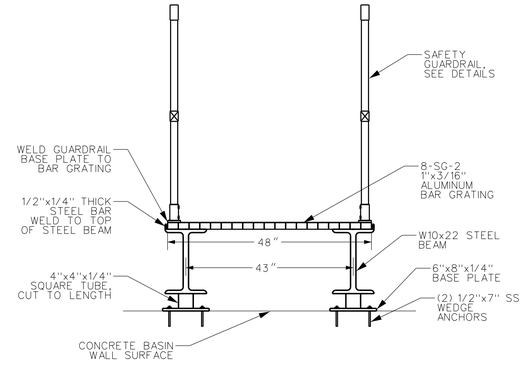


CORNER SECTION ELEVATION

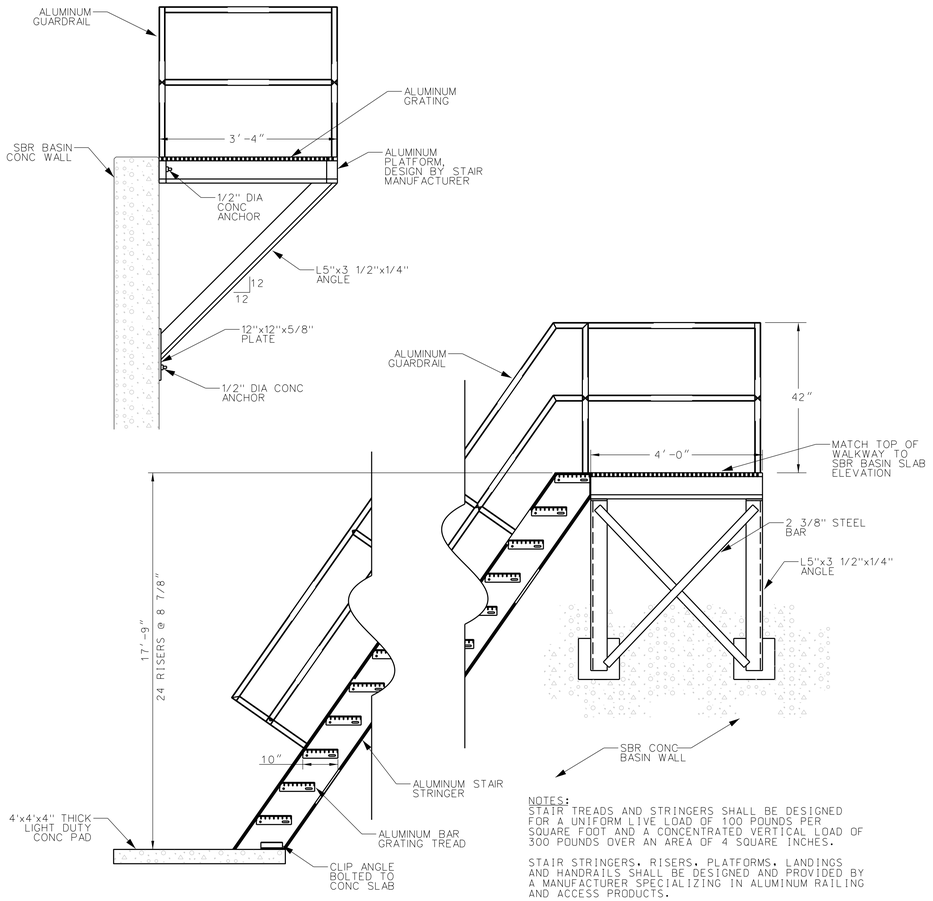


BRACKET DETAILS

MODULAR GUARDRAIL SYSTEM DETAILS
N.T.S.



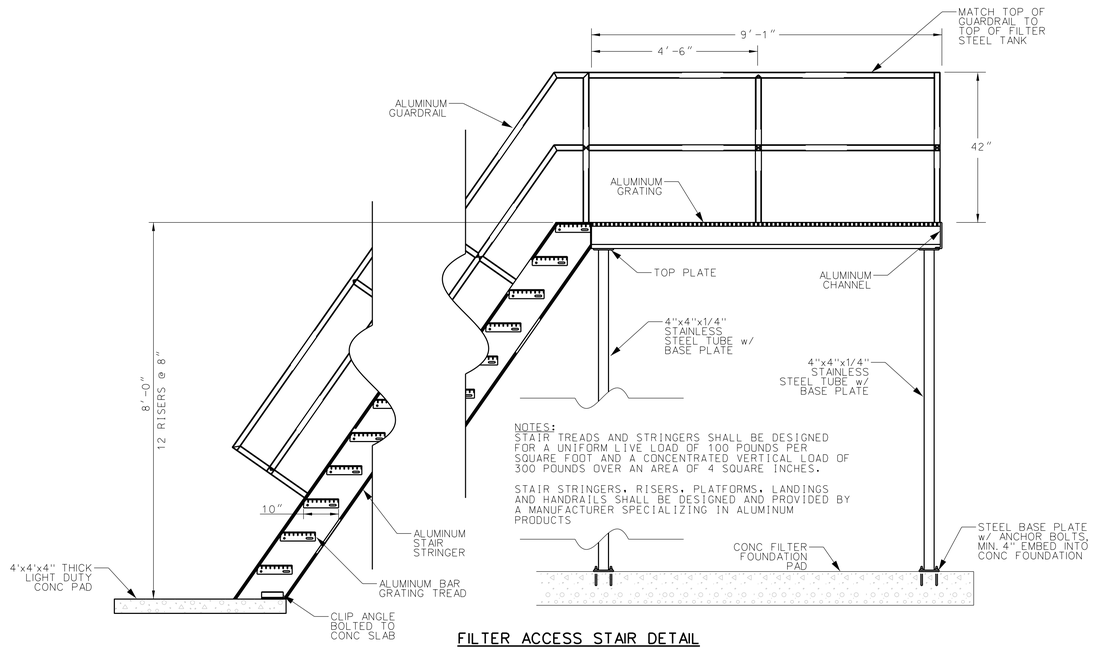
WALKWAY PLATFORM DETAIL
N.T.S.



NOTES:
STAIR TREADS AND STRINGERS SHALL BE DESIGNED FOR A UNIFORM LIVE LOAD OF 100 POUNDS PER SQUARE FOOT AND A CONCENTRATED VERTICAL LOAD OF 300 POUNDS OVER AN AREA OF 4 SQUARE INCHES.

STAIR STRINGERS, RISERS, PLATFORMS, LANDINGS AND HANDRAILS SHALL BE DESIGNED AND PROVIDED BY A MANUFACTURER SPECIALIZING IN ALUMINUM RAILING AND ACCESS PRODUCTS.

SBR BASIN ACCESS STAIR DETAIL
N.T.S.



NOTES:
STAIR TREADS AND STRINGERS SHALL BE DESIGNED FOR A UNIFORM LIVE LOAD OF 100 POUNDS PER SQUARE FOOT AND A CONCENTRATED VERTICAL LOAD OF 300 POUNDS OVER AN AREA OF 4 SQUARE INCHES.

STAIR STRINGERS, RISERS, PLATFORMS, LANDINGS AND HANDRAILS SHALL BE DESIGNED AND PROVIDED BY A MANUFACTURER SPECIALIZING IN ALUMINUM PRODUCTS

FILTER ACCESS STAIR DETAIL
N.T.S.

ISSUED FOR BID

CIVIL
R·G·S
ENGINEERS
RGS CIVIL DESIGN LLC
1405 DRAKE AVE
HUNTSVILLE, AL 35802
(256) 503-9277

ALABAMA LICENSED No. 34040 PROFESSIONAL ENGINEER JACOB A. ROTH 6/23/23

REV #	DATE	DESCRIPTION

WWTP GUARDRAIL AND ACCESS PLATFORM DETAILS

OWENS CROSS ROADS NEW 0.9 MGD SBR WWTP
SNEED AVENUE
OWENS CROSS ROADS, AL 35763

DRAWN:	JAR
CHECKED:	JAR
DATE:	JUNE 23, 2023
PROJECT NUMBER:	CS010972-01
SHEET NUMBER:	C306

WWTP DEMOLITION NOTES

A. UPON INSTALLATION, COMMISSIONING AND ACCEPTANCE OF, AND WITHIN THE FIRST THREE MONTHS OF OPERATIONAL USE OF THE NEW OWENS CROSS ROADS 0.9 MDG WWTP, THE CONTRACTOR SHALL BEGIN DEMOLITION OF THE EXISTING WWTP SITE.

B. THE CONTRACTOR SHALL DEMO AND REMOVE ALL EXISTING WWTP EQUIPMENT, SHALL CUT AND CONCRETE CAP ALL UTILITIES AS INDICATED, REMOVE EXISTING SUPPORTING INFRASTRUCTURE AND SHALL GRADE THE SITE TO A SMOOTH, CLEAN GRADE AS INDICATED ON THE PLAN.

C. THE CONTRACTOR SHALL DISCONNECT ELECTRICAL POWER SERVICES AND DEWATER ALL BASINS, FILTERS, PUMP STATIONS, ETC. AND PROPERLY DISPOSE OF ALL WASTE PRIOR TO BEGINNING MECHANICAL DEMOLITION PROCEDURES.

D. THE CONTRACTOR SHALL NOT RELEASE RESIDUAL WASTEWATER OR SOLIDS FROM THE WTTP TO THE GROUND OR SURFACE WATERS. RESIDUAL WASTEWATER MAY BE COLLECTED AND RELEASED, OR PUMPED, INTO THE OPERATING PLANT PRIOR TO DEMOLITION. SLUDGES AND OTHER SOLIDS SHALL BE COLLECTED AND SENT TO AN APPROVED AND PERMITTED SOLID WASTE DISPOSAL FACILITY THAT WILL ACCEPT THE WASTE.

E. ALL ABOVE GROUND PIPING, VALVES, EQUIPMENT, MATERIAL, ETC. FOR USE IN OPERATING THE WWTP SYSTEM SHALL BE DEMOLISHED AND REMOVED FROM THE SITE.

F. THE CONTRACTOR MAY SALVAGE/SELL OFF ANY EQUIPMENT THAT IS IN GOOD CONDITION AND/OR SELL FOR SCRAP ALL REMAINING METAL MATERIAL.

G. ALL CONCRETE BASINS AND TANKS SHALL BE DEMOLISHED AND REMOVED IN THEIR ENTIRETY TO INCLUDE CONCRETE FOUNDATION STRUCTURE.

H. ALL PUMP STATION WET WELLS, MANHOLES, AND OTHER UNDERGROUND STRUCTURES SHALL HAVE BOTTOM SLAB PUNCTURED, WALLS BE CUT OFF MIN. 3 FEET BELOW FINISH GRADE, BE FILLED WITH NATIVE MATERIAL TO WITHIN 12 INCHES OF FINISH GRADE, THEN TOPSOILED AND GRASSED.

I. THE CONTRACTOR SHALL COORDINATE FORCE MAIN VALVE CLOSURE AND SEWER CONNECTION CLOSURE AT MANHOLE ALONG SNEED AVENUE AT NEW WWTP WITH OWENS CROSS ROADS SEWER OPERATOR.

J. ALL ABOVE-GRADE SITE INFRASTRUCTURE TO INCLUDE CHAIN LINK FENCING, GATES, MISC. EQUIPMENT ENCLOSURES, ETC. SHALL BE DEMOLISHED AND REMOVED FROM THE SITE.

K. SITE GRADING INCLUDES SIGNIFICANT CUT/EXCAVATION TO ACHIEVE DESIGN FINISH GRADE ELEVATION. CONTRACTOR SHALL REMOVE ALL MATERIAL FROM THE SITE AND SHALL PROVIDE SMOOTH AND EVEN FINAL GRADE. CUT SLOPES SHALL BE MAX. 3:1 AND SHALL BE SEEDED WITH MEDIUM DUTY, DOUBLE NET EROSION CONTROL BLANKET OR SODDED IF GRASS CANNOT BE SUFFICIENTLY ESTABLISHED ALONG THE SLOPE. REMAINING DISTURBED AREA SHALL BE SEEDED AND STRAWED.

SITE DEMOLITION PLAN
SCALE: 1" = 10'

10 5 0 10 20
GRAPHIC SCALE: 1" = 10'

ISSUED FOR BID

CIVIL
R·G·S ENGINEERS
RGS CIVIL DESIGN LLC
1405 DRAKE AVE
HUNTSVILLE, AL 35802
(256) 503-9277

ALABAMA No. 34040 PROFESSIONAL ENGINEER JACOB A. ROTH
6/23/23

REV #	DATE	DESCRIPTION

WWTP DEMOLITION PLAN

OWENS CROSS ROADS NEW 0.9 MGD SBR WWTP
SNEED AVENUE
OWENS CROSS ROADS, AL 35763

DRAWN: JAR
CHECKED: JAR
DATE: JUNE 23, 2023
PROJECT NUMBER: CS010972-01
SHEET NUMBER: C400

DESIGN CRITERIA:

1. BUILDING CODES AND STANDARDS:
   A. INTERNATIONAL BUILDING CODE 2018
   B. AMERICAN SOCIETY OF CIVIL ENGINEERS, ASCE 7
   C. AMERICAN CONCRETE INSTITUTE, ACI 318, ACI 350
   D. AMERICAN INSTITUTE OF STEEL CONSTRUCTION, AISC
   E. AMERICAN WELDING SOCIETY, AWS

2. GRAVITY DESIGN LIVE LOADS:
   A. ANAEROBIC CAP.....100 PSF

3. GRAVITY DESIGN SNOW LOADS:
   A. GROUND SNOW LOAD (Pg) = 10 PSF
   B. SNOW EXPOSURE FACTOR (Ce) = 1.0
   C. SNOW LOAD IMPORTANCE FACTOR (Is) = 1.0
   D. THERMAL FACTOR (Ct) = 1.0

4. LATERAL DESIGN LOADS:
   A. WIND - PER INTERNATIONAL BUILDING CODE
   B. EARTHQUAKE - PER INTERNATIONAL BUILDING CODE

5. ALLOWABLE DEFLECTIONS: CLADDING SYSTEMS, ARCHITECTURAL SYSTEMS AND ANY OTHER NON-STRUCTURAL SYSTEMS THAT ATTACH DIRECTLY OR INDIRECTLY TO THE STRUCTURAL ELEMENTS SHOWN SHALL BE DESIGNED & DETAILED TO ACCOMMODATE THE FOLLOWING ANTICIPATED MAXIMUM STRUCTURAL DEFLECTIONS (WHERE "L" REPRESENTS THE LENGTH OR HEIGHT OF THE STRUCTURAL ELEMENT BEING CONSIDERED):

A. BEAMS & SLABS NOT SUPPORTING MASONRY:	L/240 FOR TOTAL LOAD (VERTICAL) L/360 FOR LIVE LOAD (VERTICAL)
B. WIND BEAMS & COLUMNS NOT BACKING MASONRY:	L/360 FOR WIND LOAD (LATERAL)

SPECIAL INSPECTIONS AND TESTING NOTES

1. PER THE INTERNATIONAL BUILDING CODE (2018 ed.) SPECIAL INSPECTIONS AND TESTING ARE REQUIRED PER THESE NOTES AND THE SCHEDULE OF SPECIAL INSPECTIONS.

2. THE OWNER OR REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE ACTING AS AN OWNER'S AGENT AS ALLOWED BY THE IBC, SHALL ENGAGE A SPECIAL INSPECTOR, WHICH MEETS THE QUALIFICATIONS OF THE BUILDING OFFICIAL, FOR SPECIAL INSPECTION SERVICES REQUIRED BY THE BUILDING CODE AND AS DEFINED IN THE CONTRACT DOCUMENTS.

3. THE SPECIAL INSPECTOR SHALL PROVIDE SPECIAL INSPECTIONS, TESTING, AND PROCEDURES IN ACCORDANCE WITH CHAPTER 17 OF THE IBC. THESE INSPECTIONS SHALL BE IN ADDITION TO THOSE SPECIFIED IN IBC SECTION 110.

4. THE SPECIAL INSPECTOR SHALL BE QUALIFIED IN ACCORDANCE WITH THE IBC.

5. DUTIES OF THE SPECIAL INSPECTOR INCLUDE, BUT ARE NOT LIMITED TO:

5.1. PROVIDE THE INSPECTION SERVICES DEFINED IN THE IBC.
5.2. OBSERVE THE WORK FOR CONFORMANCE WITH THE APPROVED CONTRACT DOCUMENTS AND SPECIFICATIONS, BRINGING ANY DISCREPANCIES TO THE IMMEDIATE ATTENTION OF THE GENERAL CONTRACTOR FOR CORRECTION. IF UNCORRECTED, THE ENGINEER AND BUILDING OFFICIAL ARE TO BE NOTIFIED.
5.3. REPORTING FOR SPECIAL INSPECTIONS AND TESTING SHALL BE COMPLETED AT THE END OF EACH WEEK. A FINAL REPORT SHALL BE COMPILED AT THE END OF THE PROJECT. REPORTS ARE TO BE SUBMITTED TO THE BUILDING OFFICIAL, CLIENT, AND DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE.
5.4. THE SPECIAL INSPECTOR IS TO KEEP A DISCREPANCY LOG, DOCUMENTING ITEMS THAT DID NOT MEET APPROVED CONTRACT DOCUMENT REQUIREMENTS, AND HOW/WHEN IT WAS CORRECTED. LOG SHALL BE SUBMITTED WITH THE INSPECTION REPORTS.

6. DUTIES OF THE GENERAL CONTRACTOR OR CONSTRUCTION MANAGER INCLUDE, BUT ARE NOT LIMITED TO:

6.1. NOTIFY SPECIAL INSPECTOR THAT WORK IS READY FOR INSPECTION PRIOR TO WORK BEING PERFORMED.
6.2. COOPERATE WITH SPECIAL INSPECTOR BY PROVIDING ACCESS TO WORK, MATERIAL FOR SAMPLES, AND TIME FOR INSPECTIONS.
6.3. PROVIDE SPECIAL INSPECTOR WITH ACCESS TO APPROVED CONTRACT DOCUMENTS AND SPECIFICATIONS AT THE JOB SITE.
6.4. MAINTAIN JOB SITE COPIES OF ALL REPORTS SUBMITTED BY THE SPECIAL INSPECTOR.

7. DEFINITIONS:

7.1. CONTINUOUS SPECIAL INSPECTION - SPECIAL INSPECTION BY THE SPECIAL INSPECTOR WHO IS PRESENT WHEN AND WHERE THE WORK TO BE INSPECTED IS BEING PERFORMED.
7.2. PERIODIC SPECIAL INSPECTION - SPECIAL INSPECTION BY THE SPECIAL INSPECTOR WHO IS INTERMITTENTLY PRESENT WHERE THE WORK TO BE INSPECTED HAS BEEN OR IS BEING PERFORMED. (ALL ITEMS NOTED IN THE IBC AS "PERIODIC" ARE REQUIRED TO BE FULLY INSPECTED. HOWEVER, THESE INSPECTIONS MAY BE PERFORMED AFTER A CERTAIN AMOUNT OF THE WORK HAS BEEN PERFORMED, BUT PRIOR TO THE WORK BEING CONCEALED OR CONFINED BY ON-GOING CONSTRUCTION.)
7.3. ONCE - THE SINGLE TIME OBSERVATION OF WORK REQUIRING SPECIAL INSPECTION BY AN APPROVED SPECIAL INSPECTOR WHO IS PRESENT IN THE AREA WHERE THE WORK HAS BEEN OR IS BEING PERFORMED.

8. SPECIAL INSPECTIONS AND TESTING ARE REQUIRED PER THESE NOTES AND PER CHAPTER 17 OF THE IBC FOR THE FOLLOWING PORTIONS OF CONSTRUCTION:
   SHOP FABRICATIONS
   CONCRETE CONSTRUCTION
   SOILS
   PIER FOUNDATIONS
   SPECIAL CASES
      EPOXY ANCHORS — (SEE "POST-INSTALLED ANCHORS"
      EXPANSION BOLTS — GENERAL NOTES ON THIS SHEET)
      SCREW ANCHORS

9. INSPECTION OF FABRICATORS IS NOT REQUIRED WHERE THE FABRICATOR IS APPROVED IN ACCORDANCE WITH THE IBC.

10. AT PROJECT COMPLETION, EACH SUB-CONTRACTOR SHALL PROVIDE A LETTER CONFIRMING CONSTRUCTION IS PER THE CONTRACT DOCUMENTS AND SPECIFICATIONS.

SHOP DRAWINGS & SUBMITTALS:

1. STRUCTURAL DRAWINGS INDICATE TYPICAL AND CERTAIN SPECIFIC CONDITIONS ONLY. ALL CONDITIONS SHALL BE DETAILED ON THE SHOP DRAWINGS IN ACCORDANCE WITH SPECIFIED STANDARDS AND THE SPECIFIC REQUIREMENTS OF THIS PROJECT AS INDICATED ON THE DRAWINGS.

2. IF SUBMITTALS CONTAIN ANY REPRODUCTIONS OF CONTRACT STRUCTURAL DRAWINGS (FROM CAD OR OTHERWISE) WITHOUT THE PRIOR PURCHASE OF EITHER A CAD OR BIM MODEL LICENSE, THEY WILL BE REJECTED AND RETURNED WITHOUT ENGINEER REVIEW.

3. THE GENERAL CONTRACTOR SHALL REVIEW ALL SUBMITTALS AND STAMP WITH APPROVAL PRIOR TO SUBMISSION TO ARCHITECT/ ENGINEER. SHOP DRAWINGS RECEIVED BY THE ARCHITECT/ENGINEER THAT HAVE NOT BEEN CHECKED AND COORDINATED BY THE CONTRACTOR WILL BE RETURNED WITHOUT ARCHITECT/ENGINEER'S REVIEW.

4. BY APPROVING AND SUBMITTING SHOP DRAWINGS, PRODUCT DATA AND SIMILAR SUBMITTALS, THE GENERAL CONTRACTOR REPRESENTS THAT THE CONTRACTOR HAS DETERMINED AND VERIFIED MATERIALS, FIELD MEASUREMENTS AND FIELD CONSTRUCTION CRITERIA RELATED THERETO, AND HAS CHECKED AND COORDINATED THE INFORMATION CONTAINED WITHIN THE SUBMITTAL WITH THE REQUIREMENTS OF THE WORK AND OF THE CONTRACT DOCUMENTS.

5. THE GENERAL CONTRACTOR SHALL SUBMIT SHOP DRAWINGS IN ELECTRONIC (PDF) FORMAT ONLY (INSTEAD OF PAPER COPIES). THESE WILL BE REVIEWED AND RETURNED BY THE STRUCTURAL ENGINEER IN PDF FORMAT ONLY. ALLOW TWO WEEKS FOR THE REVIEW OF EACH SUBMITTAL. WHERE MULTIPLE STRUCTURAL SUBMITTALS ARE SUBMITTED WITHIN A BRIEF TIME FRAME, ELM RESERVES THE RIGHT TO INCREASE THE TWO WEEK REVIEW ALLOWANCE AT OUR DISCRETION. TO MINIMIZE DISRUPTION TO THE PROJECT SCHEDULE, ELM RECOMMENDS THAT THE GENERAL CONTRACTOR DEVELOP AND SUBMIT A SCHEDULE OF SUBMITTALS FOR ARCHITECT/ENGINEER REVIEW AND COMMENT.

6. ELM's REVIEW OF SUBMITTALS SHALL BE FOR GENERAL CONFORMANCE WITH THE INFORMATION GIVEN AND DESIGN CONCEPT EXPRESSED IN THE STRUCTURAL CONTRACT DOCUMENTS. ELM'S REVIEW OF SUBMITTALS IS NOT CONDUCTED FOR THE PURPOSE OF DETERMINING THE ACCURACY AND COMPLETENESS OF OTHER DETAILS SUCH AS DIMENSIONS AND QUANTITIES, OR FOR SUBSTANTIATING PERFORMANCE OF SYSTEMS DESIGNED BY THE CONTRACTOR, ALL OF WHICH REMAIN THE RESPONSIBILITY SOLELY OF THE GENERAL CONTRACTOR.

7. THE GENERAL CONTRACTOR SHALL NOT BE RELIEVED OF RESPONSIBILITY FOR DEVIATIONS FROM REQUIREMENTS OF THE CONTRACT DOCUMENTS BY ELM's APPROVAL OF SUBMITTALS UNLESS THE CONTRACTOR HAS SPECIFICALLY INFORMED ELM IN WRITING OF SUCH DEVIATION AT THE TIME OF SUBMITTAL AND ELM HAS GIVEN WRITTEN APPROVAL TO THE SPECIFIC DEVIATION. THE GENERAL CONTRACTOR SHALL NOT BE RELIEVED OF RESPONSIBILITY FOR ERRORS OR OMISSIONS IN A SUBMITTAL BY ELM's APPROVAL OF THE SUBMITTAL.

GENERAL NOTES:

1. CONTRACTOR SHALL COORDINATE BETWEEN ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL AND OTHER DRAWINGS. ANY DISCREPANCIES OR CONFLICTS (INCLUDING DIMENSIONAL CONFLICTS) BETWEEN DRAWINGS OF DIFFERENT DISCIPLINES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT. CONTRACTOR SHALL NOT PROCEED WITH SHOP DRAWING PREPARATION OR ANY CONSTRUCTION UNTIL THE ARCHITECT HAS GIVEN DIRECTION OF RESOLUTION OF THE DISCREPANCY OR CONFLICT.

2. CONSTRUCTION METHODS, SEQUENCES AND PROCEDURES ARE THE CONTRACTOR'S RESPONSIBILITY. THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PROTECT AND MAINTAIN THE STRUCTURAL INTEGRITY OF ALL NEW AND EXISTING CONSTRUCTION AT ALL STAGES. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE SAFETY AND ERECTION REQUIREMENTS OF ALL GOVERNING PUBLIC AGENCIES DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING THE ADJACENT PROPERTY AND ROADWAYS WITH SHORING OR OTHER NECESSARY MEANS.

3. CONTRACTOR SHALL COORDINATE WITH THE ARCHITECTURAL, MECHANICAL, PLUMBING, CIVIL AND ELECTRICAL DRAWINGS AND VERIFY THE LOCATIONS AND SIZES OF CHASES, INSERTS, OPENINGS, SLEEVES, FINISHES, DEPRESSIONS AND OTHER PROJECT REQUIREMENTS.

4. USE MANUFACTURER'S CERTIFIED DRAWINGS, DETAILS AND SPECIFICATIONS FOR EQUIPMENT ANCHORAGE AND INSTALLATION.

5. ALL CONSTRUCTION JOINTS SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE INCORPORATED INTO THE STRUCTURE. ADDITIONAL CONSTRUCTION JOINTS TO FACILITATE CONSTRUCTION SHALL BE LOCATED AND DETAILED ON THE SHOP DRAWINGS FOR REVIEW.

6. STRUCTURAL MEMBERS & CONNECTIONS SHOWN, HAVE BEEN DESIGNED TO CARRY IN PLACE DESIGN LOADS ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SUPPORT OF ANY ADDITIONAL LOADS AND FORCES IMPOSED DURING CONSTRUCTION, TRUCKING, ERECTING AND HANDLING.

7. THE CONTRACTOR SHALL ENSURE THAT CONSTRUCTION LOADS DO NOT EXCEED THE DESIGN LIVE LOADS INDICATED ON THE STRUCTURAL DRAWINGS AND THAT THESE LOADS ARE NOT PUT ON THE STRUCTURAL MEMBERS PRIOR TO THE TIME THAT THE CONCRETE REACHES THE FULL SPECIFIED DESIGN STRENGTH, STEEL MEMBERS & THEIR CONNECTIONS ARE FULLY BOLTED AND / OR WELDED, AND ALL OTHER FRAMING MEMBERS AND THEIR CONNECTIONS ARE IN PLACE.

8. CONTRACTOR SHALL BRACE ALL BASEMENT-TYPE WALLS RETAINING EARTH UNTIL RESTRAINING SLABS & STRUCTURAL ELEMENTS ARE IN PLACE AND REACH REQUIRED DESIGN STRENGTH.

9. ALL THE CONTRACTOR'S PROPOSED SUBSTITUTIONS MUST BE APPROVED BY ARCHITECT/ENGINEER PRIOR TO FABRICATION OR ANY PERTINENT WORK.

10. THE DETAILS DESIGNATED AS "TYPICAL DETAILS" SHOWN ON S00X SERIES SHEETS, AND THE SECTIONS SHOWN ON S30X SERIES SHEETS, APPLY GENERALLY TO THE DRAWINGS IN AREAS WHERE CONDITIONS ARE SIMILAR TO THOSE DESCRIBED OR DEPICTED, UNLESS SPECIFICALLY NOTED OTHERWISE.

11. ALL DIMENSIONS SHOWN TAKE PRECEDENCE OVER SCALE SHOWN ON PLANS, SECTIONS, AND DETAILS. DO NOT SCALE THE DRAWINGS.

12. ALL SECONDARY STRUCTURAL ELEMENTS AND NON-STRUCTURAL ELEMENTS THAT ARE NOT SPECIFICALLY DETAILED IN THE CONTRACT DOCUMENTS SHALL BE DESIGNED BY THE CONTRACTOR, UNDER THE DIRECT SUPERVISION OF A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF ALABAMA, TO MEET ALL APPLICABLE BUILDING CODE REQUIREMENTS. EXAMPLES OF THESE ELEMENTS MAY INCLUDE BUT ARE NOT LIMITED TO: LIGHT-GAGE FRAMING, EQUIPMENT SUPPORT ABOVE THE PRIMARY ROOF STRUCTURE, ELEVATOR SUPPORT RAILS AND BEAMS, RACK STORAGE SYSTEMS, STAIRS & HANDRAILS, LADDERS, LIGHT POLE FOUNDATIONS AND RETAINING WALLS INDEPENDENT OF THE PRIMARY BUILDING.

13. THE CONTRACTOR SHALL FIELD-VERIFY ALL RELEVANT EXISTING CONDITIONS & DIMENSIONS PRIOR TO PERFORMING ANY PERTINENT WORK. THIS INFORMATION SHALL BE INCORPORATED INTO THE SHOP DRAWINGS PRIOR TO ARCHITECT/ENGINEER REVIEW.

SITE AND FOUNDATION:

1. STRIP THE BUILDING PAD OF ALL PAVEMENT, ORGANIC MATERIALS AND TOPSOIL. EXCAVATE, WHERE REQUIRED, TO BUILDING AND STRUCTURE SUBGRADE.

2. PROOF-ROLL THE AREA UNDER THE BUILDING PAD, PLUS 10'-0" ON ALL SIDES, WITH A LOADED DUMP TRUCK TO LOCATE SOFT AREAS, WHILE MONITORED BY THE GEOTECHNICAL ENGINEER. UNDERCUT ALL SOFT AREAS AS DIRECTED BY THE GEOTECHNICAL ENGINEER. BACKFILL TO FINISH SUBGRADE WITH COMPACTED ENGINEERED FILL. PROPERLY PREPARE SLAB SUBGRADE WITHIN THE BUILDING FOOTPRINT TO PROVIDE A MODULUS OF SUBGRADE REACTION (k) OF 100 PCI (MINIMUM).

3. ACCEPTABLE FILL MATERIAL SHALL BE FREE OF ORGANICS, AND HAVE A P.I. OF LESS THAN 25, L.L. OF LESS THAN 50, MAXIMUM STONE SIZE OF 3" AND A MAXIMUM DRY DENSITY OF GREATER THAN 100 PCF.

4. FILL, WHERE REQUIRED, IS TO BE PLACED IN 8" LOOSE LIFTS AND COMPACTED TO 98% STANDARD PROCTOR (ASTM D-698), WITHIN ±2% OF OPTIMUM MOISTURE CONTENT. PERFORM FIELD DENSITY TESTING FOR EACH 2500 SQUARE FEET PER FOOT OF FILL.

5. BACKFILL FOUNDATION AND RETAINING WALLS WITH CRUSHED STONE MEETING THE REQUIREMENTS OF A.H.D. No. 57 STONE PLACED IN A 45 DEGREE WEDGE EXTENDING FROM THE BASE OF THE WALL. PLACE STONE IN 12" LIFTS & COMPACT WHILE MONITORED BY THE GEOTECHNICAL ENGINEER.

6. FOUNDATIONS SHALL BEAR ON MATERIAL (IMPROVED BY AGGREGATE PIERS) CAPABLE OF SUPPORTING A MINIMUM OF 4000 PSF. THE GEOTECHNICAL ENGINEER SHALL VERIFY ALL FOOTING EXCAVATIONS.

7. GEOTECHNICAL REPORT: FOUNDATION DESIGN IS BASED ON THE GEOTECHNICAL REPORT BY GTEC, PROJECT NO. 0668 AND DATED 12/13/2022 WITH ADDENDUM DATED FEBRUARY 15, 2023. THE GENERAL CONTRACTOR SHALL OBTAIN A COPY OF THE GEOTECHNICAL REPORT AND SUBSEQUENT ADDENDUM AND SHALL ADHERE TO ALL REQUIREMENTS AND RECOMMENDATIONS THEREIN.

8. ALL FOUNDATION BEARING SURFACES SHALL BE REVIEWED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACING CONCRETE TO ENSURE THEIR COMPLIANCE WITH THE BEARING PRESSURES AND SLAB SUBGRADE REQUIREMENTS NOTED. ALL FOUNDATION BEARING ELEVATIONS ARE ESTIMATED AND MAY BE ADJUSTED IN THE FIELD BY THE GEOTECHNICAL ENGINEER AS REQUIRED.

CONCRETE:

1. CONCRETE SCHEDULES

ITEM	28 DAY COMPRESSIVE STRENGTH
A. ALL CONCRETE	4500 PSI NORMAL WEIGHT

2. CONCRETE COVER OVER REINFORCING (U.N.O.)

A. CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH:	3 IN.
B. EXPOSED TO EARTH, LIQUID, WEATHER, OR BEARING ON WORK MAT OR SLABS SUPPORTING EARTH COVER:	
SLABS AND JOISTS:	2 IN.
BEAMS AND COLUMNS:	
STIRRUPS, SPIRALS, AND TIES:	2 IN.
PRIMARY REINFORCEMENT:	2 1/2 IN.
WALLS:	2 IN.
FOOTINGS AND BASE SLABS:	
FORMED SURFACES:	2 IN.
TOP OF FOOTINGS AND BASE SLABS:	2 IN.

3. CONCRETING OPERATIONS SHALL COMPLY WITH ACI 117 AND ACI 301.

4. ALL CONSTRUCTION JOINTS SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE INCORPORATED INTO THE STRUCTURE. ADDITIONAL CONSTRUCTION JOINTS TO FACILITATE CONSTRUCTION SHALL BE LOCATED AND DETAILED ON THE SHOP DRAWINGS FOR REVIEW.

5. LOCATE HORIZONTAL JOINTS IN WALLS AND COLUMNS AT UNDERSIDE OF FLOOR STRUCTURE (BOTTOM OF BEAMS, JOISTS & GIRDERS, OR BOTTOM OF SLABS IN FRAMING SYSTEMS THAT DO NOT INCLUDE BEAMS) AND AT THE TOP OF FOOTINGS OR FLOOR SLABS.

6. HORIZONTAL CONSTRUCTION JOINTS SHALL NOT BE PERMITTED IN BEAMS, SLABS, JOISTS, FOOTINGS OR WALLS, UNLESS SHOWN ON THE STRUCTURAL DRAWINGS.

7. CONSTRUCTION JOINTS IN CONCRETE BEAMS, FOOTINGS, JOISTS & SLABS SHALL BE AT OR NEAR MIDSPAN, WITH VERTICAL BULKHEAD AND HORIZONTAL KEYS, UNLESS SHOWN OTHERWISE.

8. ALL EXPOSED CONCRETE EDGES SHALL BE CHAMFERED. CONTRACTOR SHALL COORDINATE WITH ARCHITECTURAL DRAWINGS FOR REVEALS, FORM TIES, STEPS, NOTCHES AND LOCATIONS OF CONSTRUCTION JOINTS IN EXPOSED CONCRETE.

9. EPOXY ANCHORS SHALL BE "HIT-HY 200" BY HILTI, OR "SET-XP" BY SIMPSON. SCREW-TYPE ANCHORS SHALL BE "KWIK HUS-EZ" BY HILTI, OR "TITEN-HD" BY SIMPSON. DO NOT USE EXPANSION BOLTS WHERE EPOXY ANCHORS OR SCREW ANCHORS ARE INDICATED.

10. ALUMINUM MATERIAL SHALL NOT BE EMBEDDED IN CONCRETE UNLESS THE MATERIAL IS FIRST SUFFICIENTLY COATED TO PREVENT ALUMINUM-CONCRETE REACTION OR ELECTROLYTIC REACTIONS.

11. HORIZONTAL CONDUITS SHALL NOT BE PERMITTED IN BEAMS OR SLABS WITHOUT PRIOR WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD.

REINFORCING:

1. ALL REINFORCING SHALL CONFORM TO THE LATEST REVISION OF ASTM SPECIFICATION A615, GRADE 60, UNLESS NOTED OTHERWISE.

2. ALL REINFORCING SHALL BE DETAILED IN ACCORDANCE WITH A.C.I. STANDARD 315, OF LATEST REVISION. SUBMIT FABRICATION & PLACEMENT DRAWINGS FOR REVIEW.

3. NO REINFORCING BAR SHALL BE WELDED IN ANY MANNER, UNLESS SPECIFICALLY SHOWN OR NOTED ON THE DRAWINGS. IF ALLOWED, ALL WELDING SHALL COMPLY WITH AWS D1.4, AND REINFORCING BARS SHALL BE ASTM A706 WELDABLE REBAR ONLY.

4. PROVIDE FULL EMBEDMENT FOR ALL DOWELS. IF NOT OTHERWISE SPECIFIED, DOWEL SIZE AND SPACING SHALL BE THE SAME AS MAIN REINFORCING, AND SHALL BE TERMINATED WITH ACI STANDARD HOOKS.

5. PROVIDE CORNER BARS IN FOOTINGS, WALLS, TURNDOWN SLABS & BOND BEAMS TO MATCH THE SIZE AND SPACING OF THE HORIZONTAL REINFORCING. LEG LENGTH SHALL BE EQUIVALENT TO A CLASS "A" LAP SPLICE UNLESS NOTED OTHERWISE.

6. ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185, SHALL BE LAPPED A MINIMUM OF 6" FOR PLAIN WIRE (OR 8" FOR DEFORMED WIRE) AND SHALL BE FURNISHED IN SHEETS ONLY (NO ROLLS).

7. ALL WALL AND/OR SLAB OPENINGS SHALL BE DETAILED ON THE SHOP DRAWINGS FOR ARCHITECT/ENGINEER REVIEW, INCLUDING ADDED REINFORCEMENT AS SHOWN IN TYPICAL DETAILS. UNLESS NOTED OTHERWISE, AT OPENINGS LARGER THAN 12" IN CONCRETE WALLS AND FLOOR SLABS PROVIDE 2#5 BARS AT FOUR SIDES AND FOUR CORNERS OF THE OPENING. EXTEND BARS 2'-0" BEYOND CORNERS OF OPENING.

8. SPLICES FOR REINFORCING ARE SHOWN SPECIFICALLY ON STRUCTURAL DRAWINGS. ADDITIONAL SPLICES TO FACILITATE CONSTRUCTION SHALL BE CLASS "B" TENSION LAP SPLICES, AND SHALL BE DETAILED ON THE SHOP DRAWINGS FOR REVIEW.

9. CONCRETE BEAM LONGITUDINAL REINFORCING BARS MAY BE SPLICED ONLY AS SHOWN ON THE DRAWINGS EXCEPT THE REINFORCING DESIGNATED AS "CONTINUOUS" SHALL HAVE A CLASS "B" LAP SPLICE. THE LAP SPLICES SHALL BE MADE OVER SUPPORTS FOR BOTTOM & INTERMEDIATE BARS AND AT MID-SPAN FOR TOP BARS. HOOK TOP & BOTTOM BARS AT EXTERIOR SUPPORTS & TERMINATIONS. TOP & BOTTOM BAR HOOKS AND INTERMEDIATE BARS SHALL EXTEND TO WITHIN 2" OF THE EXTERIOR FACE OF CONCRETE.

POST-INSTALLED ANCHORS & EPOXY DOWELS:

1. POST-INSTALLED ANCHORS OR DOWELS SHALL NOT BE USED WHERE CAST-IN-PLACE ANCHORS ARE INDICATED, UNLESS APPROVED BY THE STRUCTURAL ENGINEER FOR SPECIFIC INSTANCES. THE GENERAL CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ANY INCREASE IN COST DUE TO THE SUBSTITUTION OR TO THE ADDITIONAL MONITORING, TESTING AND RE-TESTING REQUIRED PER THE NOTES BELOW.

2. SCREW-TYPE ANCHORS SHALL BE "KWIK HUS-EZ" BY HILTI, OR "TITEN-HD" BY SIMPSON. ALL SUBSTITUTIONS MUST BE APPROVED BY THE STRUCTURAL ENGINEER. MINIMUM EMBEDMENT DEPTHS SHALL BE 6 1/4" EMBED FOR 3/4"Ø, OR 4 1/4" EMBED FOR 1/2" SCREW ANCHORS, UNLESS NOTED DIFFERENTLY ON THE DRAWINGS.

3. EXPANSION ANCHORS SHALL BE "KWIK-BOLT 3" BY HILTI OR "STRONG BOLT 2" BY SIMPSON. EMBEDMENT DEPTHS SHALL BE 6" EMBED FOR 3/4"Ø, OR 4" EMBED FOR 1/2"Ø EPOXY ANCHORS, UNLESS NOTED DIFFERENTLY ON THE DRAWINGS.

4. EPOXY ANCHORS SHALL BE "HIT-HY 200 WITH HIT-Z ROD" BY HILTI, OR "SET-XP" BY SIMPSON WITH ASTM A193, GRADE B7 ROD (OR AISI TYPE 316 STAINLESS STEEL WHERE REQUIRED BY DRAWINGS). FOR EPOXY ANCHORS, THREADED ROD AND REBAR EMBEDMENT SHALL BE 12 x DIAMETER OF ROD OR BAR, UNLESS NOTED DIFFERENTLY ON THE DRAWINGS, BUT NOT MORE THAN (MEMBER THICKNESS - 2").

5. AT BRICK OR CMU WALLS, ANCHORS MAY NOT BE INSTALLED IN OR WITHIN 1 1/4" OF VERTICAL OR HORIZONTAL MORTAR JOINTS. RE-SPACE TO MAINTAIN TOTAL QUANTITY.

6. ALL POST-INSTALLED ANCHORS AND DOWELS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S MOST RECENT INSTALLATION INSTRUCTIONS AND RECOMMENDATIONS. IF THE MANUFACTURER'S RECOMMENDATIONS CONFLICT WITH THE CONTRACT DRAWINGS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN.

7. THE GENERAL CONTRACTOR SHALL MAINTAIN ON-SITE (FOR REFERENCE BY THE INSTALLER, THE TESTING AGENT/SPECIAL INSPECTOR AND THE BUILDING OFFICIAL) THE FOLLOWING INFORMATION FOR EACH SPECIFIC POST-INSTALLED ANCHOR PRODUCT: MANUFACTURER'S MOST RECENT INSTALLATION INSTRUCTIONS, PERFORMANCE DATA AND ICC-ES EVALUATION REPORTS.

8. ALL POST-INSTALLED ANCHORS AND DOWELS SHALL BE INSTALLED UNDER THE DIRECT MONITORING OF THE TESTING AGENT, AND SHALL BE COORDINATED BY THE GENERAL CONTRACTOR. THE TESTING AGENT MUST VERIFY AND INCLUDE IN THEIR REPORTS ALL OF THE FOLLOWING ITEMS FOR EACH ANCHOR/DOWEL:
   A. LOCATION OF THE ANCHOR VERSUS EDGE DISTANCE AND SPACING REQUIREMENTS
   B. DRILL BIT TYPE AND SIZE
   C. HOLE DEPTH
   D. HOLE CLEANING TECHNIQUE (VERY IMPORTANT)
   E. ANCHOR/DOWEL TYPE
   F. ANCHOR/DOWEL SIZE
   G. ANCHOR/DOWEL EMBEDMENT
   H. ANCHOR/DOWEL INSTALLATION PROCEDURE, INCLUDING EXPIRATION DATE & PROPER DISPENSING FOR ADHESIVES, BASE MATERIAL TEMPERATURE AND MINIMUM TORQUES FOR MECHANICAL ANCHORS IF APPLICABLE

9. POST-INSTALLED ANCHORS AND DOWELS THAT ARE INSTALLED WITHOUT DIRECT MONITORING AS DESCRIBED ABOVE SHALL BE CONSIDERED AS NON-CONFORMING WORK AND WILL BE REJECTED, UNLESS THE OWNER'S TESTING AGENT CAN SUCCESSFULLY DEMONSTRATE THE TENSION CAPACITY OF THE ANCHORS/DOWELS USING APPROPRIATE ASTM STANDARD TEST METHODS. AS A MINIMUM, 25% OF THE INSTALLED ANCHORS/DOWELS IN QUESTION SHALL BE CHOSEN AT RANDOM FOR PROOF LOADING. IF ANY ANCHOR/DOWEL FAILS, 100% OF THE ANCHORS/DOWELS SHALL THEN BE TESTED. FAILED ANCHORS MUST BE RE-INSTALLED AND RE-TESTED UNTIL LISTED TENSION LOAD IS ACHIEVED. THESE ANCHORS SHALL BE TESTED FOR A TENSION FORCE NOT LESS THAN 125% OF THE THE MANUFACTURER'S LISTED ALLOWABLE TENSION LOAD FOR THE SPECIFIED EMBEDMENT. TO BE DEEMED ACCEPTABLE, ANCHORS/DOWELS MUST HAVE NO VISIBLE INDICATIONS OF MOVEMENT DURING OR AFTER THE APPLICATION OF THE PROOF LOAD. THE GENERAL CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE COST OF PROOF TESTING, RE-INSTALLATIONS AND DAMAGE REPAIR.

10. ANCHORS SHALL BE INSTALLED PERPENDICULAR TO THE FACE OF THE CONCRETE RECEIVING THE ANCHOR. THE MAXIMUM ALLOWABLE DEVIATION FROM PERPENDICULAR SHALL BE 10 DEGREES. ALL ANCHORS INSTALLED OUTSIDE OF THIS TOLERANCE SHALL BE DEEMED UNACCEPTABLE.

11. ALL UNUSED HOLES DRILLED IN CONCRETE SHALL BE FILLED WITH NON-SHRINK EPOXY GROUT.

PRE-ENGINEERED BUILDING:

1. DESIGN, FABRICATE AND ERECT PRE-FABRICATED BUILDING IN ACCORDANCE WITH INTERNATIONAL BUILDING CODE.

2. THE BUILDING DESIGNER'S ENGINEER SHALL BE REGISTERED IN THE STATE OF ALABAMA, AND SHALL BE THE DELEGATED DESIGN ENGINEER RESPONSIBLE FOR THE DESIGN OF THE BUILDING SYSTEM, THE INDIVIDUAL BUILDING COMPONENTS, THEIR CONNECTIONS TO EACH OTHER, AND THE BUILDING'S CONNECTION TO THE PROVIDED CONCRETE.

3. BEFORE BUILDING ANCHORING, ANCHOR EMBEDMENT LENGTHS MUST BE VERIFIED TO ENSURE COVERAGE REQUIREMENTS HAVE NOT BEEN VIOLATED IN THE CONCRETE.

4. THE DETAILS AND DESIGN SHOWN ON THE STRUCTURAL DRAWINGS IS BASED ON ESTIMATED LOADING AND FOR BID PURPOSES ONLY. WHEN THE BUILDING SUPPLIER HAS BEEN SELECTED AND THE FINAL DESIGN FOR THE BUILDING AND ITS ATTACHMENT IS COMPLETED, THE BUILDING SUPPLIER SHALL FURNISH FINAL DESIGN LOADS, BUILDING REACTIONS AND NECESSARY DETAILS TO ELM FOR REVIEW AND MODIFICATION OF THE SUPPORT STRUCTURE (IF REQUIRED) PRIOR TO REBAR FABRICATION AND FORMWORK INSTALLATION. ALL DESIGN INFORMATION SUBMITTED SHALL BEAR THE SEAL OF THE BUILDING SUPPLIER'S ENGINEER.

5. THE BUILDING AND COMPONENTS SHALL BE DESIGNED IN ACCORDANCE WITH THE GRAVITY AND LATERAL DESIGN LOAD REQUIREMENTS OF THE BUILDING CODE IN EFFECT FOR THE PROJECT SITE.

6. ANCHOR BOLT SIZE, GRADE, LENGTH AND LOCATION SHALL BE DESIGNED AND SPECIFIED BY THE BUILDING SUPPLIER. HORIZONTAL FORCE TRANSFER FROM METAL BUILDING BASE TO CONCRETE SHALL ALSO BE DESIGNED & DETAILED BY THE BUILDING SUPPLIER. COORDINATE WITH THE STRUCTURAL DRAWINGS FOR CONCRETE STRENGTHS AND EMBEDMENT RESTRICTIONS.

ELM Echols, Lindsey & Moore
Structural Engineers, Inc.
2707 Artie Street Building 100 Suite 21 Huntsville, AL 35805
Phone: 256.864.2542
Project No. 22246

ISSUED FOR BID

CIVIL
R·G·S
ENGINEERS
RGS CIVIL DESIGN LLC
2622 TRELLIS POST COURT
OWENS CROSS ROADS, AL 35763
(256) 503-9277

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 35621 6/23/23 WILL L. LINDSEY

REV #	DATE	DESCRIPTION

GENERAL NOTES

OWENS CROSS ROADS NEW 0.9 MGD SBR WWTP
SNEED AVENUE
OWENS CROSS ROADS, AL 35763

DRAWN:	ELM
CHECKED:	WLL
DATE:	JUNE 23, 2023
PROJECT NUMBER:	220202
SHEET NUMBER:	S001

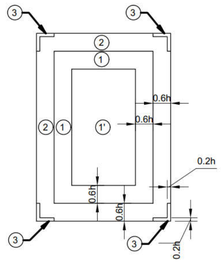
STRUCTURAL ALUMINUM:

1. DESIGN, FABRICATE AND INSTALL STRUCTURAL ALUMINUM IN ACCORDANCE WITH ALUMINUM ASSOCIATION SPECIFICATIONS.
2. SHOP DRAWINGS FOR ALL STRUCTURAL ALUMINUM MEMBERS, CONNECTIONS & ATTACHMENTS TO THE PRIMARY STRUCTURE SHALL BE SUBMITTED FOR REVIEW AND SHALL BEAR THE SEAL OF A PROFESSIONAL ENGINEER, REGISTERED IN THE STATE OFALABAMA, WHO SHALL BE RESPONSIBLE FOR THE DESIGN. SUBMITTALS THAT DO NOT BEAR THE ENGINEER'S SEAL OR ARE OTHERWISE SUBSTANTIALLY INCOMPLETE WILL BE REJECTED WITHOUT REVIEW.
3. MEMBER SIZES WHERE SHOWN ON DRAWINGS ARE SCHEMATIC. ACTUAL ALUMINUM SIZES ARE TO BE SHOWN ON THE SHOP DRAWINGS, BASED UPON DESIGN CALCULATIONS.
4. ALUMINUM STAIRS, GRATING AND PLATFORM FRAMING SHALL BE DESIGNED TO SUPPORT 200 PSF LIVE LOAD PLUS THE WEIGHT OF THE ATTACHED EQUIPMENT AND PIPING, EXCEPT WHERE GREATER LOADING VALUES HAVE BEEN SHOWN OR SPECIFIED.
5. LIVE LOAD DEFLECTION OF GRATING & PLATFORM SUPPORT MEMBERS SHALL BE LIMITED TO THE LESSER OF L/360 OR 1/4".
6. ATTACHMENT OF ALUMINUM GRATING TO SUPPORTING MEMBERS SHALL NOT EXCEED 2'-0" O.C. MAX. SPACING OR MANUFACTURER'S RECOMMENDATIONS, WHICHEVER IS MORE RESTRICTIVE.
7. STRUCTURAL ALUMINUM SHALL BE 6061-T6 OR 6063-T6 ALLOY.
8. ALL BOLTED CONNECTIONS SHALL BE MINIMUM 3/4" DIAMETER, 2024-T4 ALUMINUM BOLTS.
9. ALL ATTACHMENTS OF ALUMINUM STRUCTURE TO PRIMARY STRUCTURE SHALL USE ALUMINUM BOLTS, HOT-DIP GALVANIZED STEEL BOLTS OR POST-INSTALLED CONCRETE ANCHORS. THE ALUMINUM SUPPLIER SHALL COORDINATE WITH THE STRUCTURAL DRAWINGS FOR CONCRETE STRENGTHS AND EMBEDMENT RESTRICTIONS.
10. ALL WELDING SHALL CONFORM TO AWS D1.2. THICKNESS OF WELDS SHALL BE AS SHOWN, SPECIFIED OR REQUIRED.
11. ALUMINUM SURFACES IN CONTACT WITH CONCRETE OR DISSIMILAR METALS SHALL BE COATED WITH BITUMINOUS PAINT.

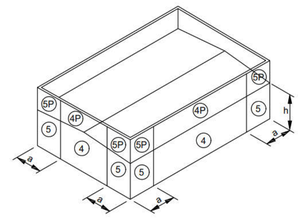
TENSION LAP SPLICE LENGTHS

BAR SIZE	f' = 4500 PSI			
	TOP BARS		OTHER BARS	
	CLASS "A"	**CLASS "B"**	CLASS "A"	CLASS "B"
#3	18"	24"	14"	19"
#4	24"	32"	18"	24"
#5	30"	39"	23"	30"
#6	35"	46"	27"	36"
#7	51"	67"	40"	52"
#8	59"	77"	45"	59"
#9	66"	86"	51"	67"
#10	74"	97"	57"	75"
#11	82"	107"	64"	84"

1. TOP BARS ARE HORIZONTAL REINFORCING WITH MORE THAN 12" OF CONCRETE CAST BELOW THE REINFORCING.



ROOF ZONES
FLAT/HIP/GABLE ROOF 0° - 7°



WALL ZONES

COMPONENTS & CLADDING DESIGN WIND PRESSURES (PSF)

ZONE	EFFECTIVE WIND AREA							
	2 SF	10 SF	20 SF	50 SF	100 SF	200 SF	500 SF	1000 SF
1'	+16 -25	+16 -25	+16 -25	+16 -25	+16 -25	+16 -22	+16 -17	+16 -16
1	+16 -44	+16 -44	+16 -41	+16 -37	+16 -34	+16 -32	+16 -28	+16 -28
2	+16 -58	+16 -58	+16 -55	+16 -50	+16 -46	+16 -42	+16 -37	+16 -37
3	+16 -79	+16 -79	+16 -72	+16 -62	+16 -55	+16 -47	+16 -37	+16 -37
4	+28 -30	+28 -30	+26 -29	+25 -27	+24 -26	+22 -25	+21 -23	+21 -23
5	+28 -37	+28 -37	+26 -35	+25 -31	+24 -29	+22 -26	+21 -23	+21 -23

ZONE LAYOUT DIAGRAMS

NOTES:
1. PLUS AND MINUS SIGNS DENOTE PRESSURES ACTING TOWARD AND AWAY FROM BUILDING SURFACES.
2. PRESSURE ZONE LOCATIONS ARE IN ACCORDANCE WITH ASCE 7.
3. FOR HIP ROOFS < 25°, ZONE 3 SHALL BE TREATED AS ZONE 2e AND 2r.
4. PRESSURES ARE STRENGTH-LEVEL. ONE-THIRD STRESS INCREASE IS NOT ALLOWED.

ELM Echols, Lindsey & Moore
Structural Engineers, Inc.
2707 Artie Street Building 100 Suite 21 Huntsville, AL 35805
Phone: 256.864.2542
Project No. 22246

ISSUED FOR BID

CIVIL
R·G·S
ENGINEERS
RGS CIVIL DESIGN LLC
2622 TRELLIS POST COURT
OWENS CROSS ROADS, AL 35763
(256) 503-9277

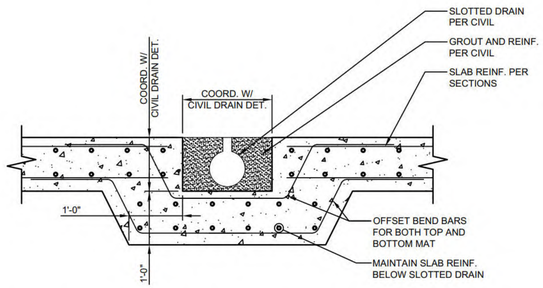
ALABAMA LICENSED PROFESSIONAL ENGINEER
No. 39021
6/23/23
WILL L. LINDSEY

REV #	DATE	DESCRIPTION

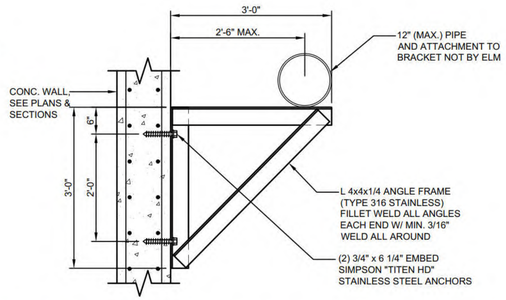
GENERAL NOTES

OWENS CROSS ROADS NEW 0.9 MGD SBR WWTP
SNEED AVENUE
OWENS CROSS ROADS, AL 35763

DRAWN: **ELM**
CHECKED: **WLL**
DATE: **JUNE 23, 2023**
PROJECT NUMBER: **220202**
SHEET NUMBER: **S002**

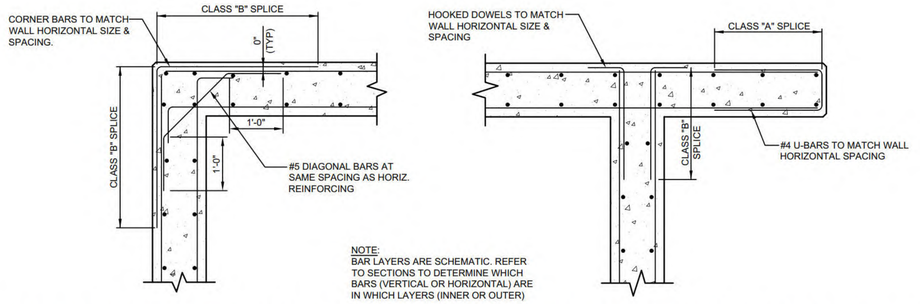


TYPICAL SLOTTED DRAIN TRENCH DETAIL

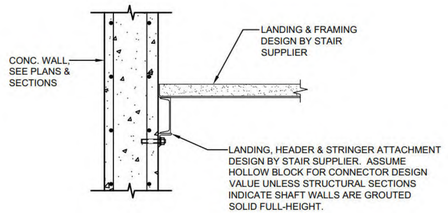


TYPICAL PIPE SUPPORT DETAIL

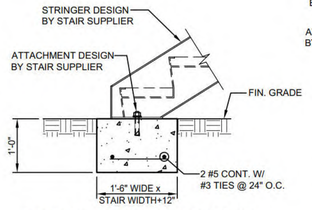
NOTES :
1. SEE CIVIL FOR PIPE DESIGN/LAYOUT AND CONNECTIONS TO STAINLESS FRAMING.
2. WELDING ELECTRODES OF STAINLESS STEEL SHALL BE E308XX (AWS D1.6).
3. GC SHALL PROVIDE PROTECTION AGAINST CORROSION PER LATEST CODE RECOMMENDATIONS WHERE PIPE AND PIPE ATTACHMENT BRACKETS CONTACT STAINLESS STEEL, INCLUDING BUT NOT LIMITED TO PRESSURE TAPES, COATINGS OR ISOLATORS.
4. BRACKET SPACING SHALL NOT EXCEED 8'-0" ON CENTER OR THE MAXIMUM ACCEPTABLE SPAN OF A FULL 12" DUCTILE IRON PIPE, WHICHEVER IS LESS.



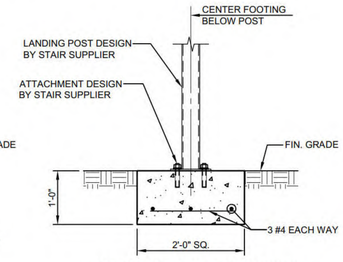
TYPICAL CORNER, INTERSECTION & END DETAILS AT CONCRETE WALLS



ATTACHMENT TO CONCRETE WALLS



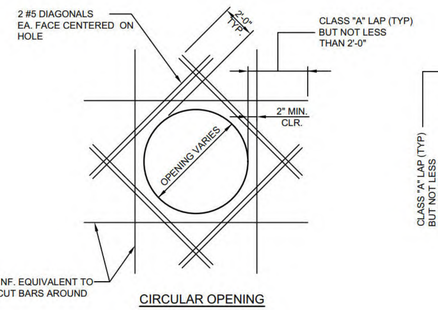
THICKENED SLAB BELOW STRINGERS



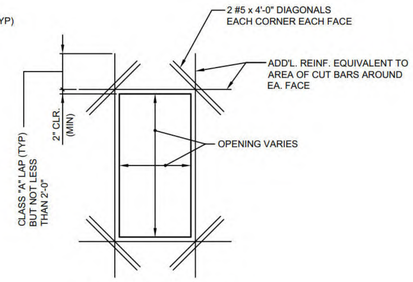
FOOTING BELOW LANDING POSTS

TYPICAL EXTERIOR METAL STAIR SUPPORT DETAILS

NOTES :
1. METAL STAIR DESIGN NOT BY ELM STRUCTURAL ENGINEERS. SEE ARCH'T DRAWINGS & SPECS FOR REQUIREMENTS OF ENGINEERED STAIR SHOP DRAWINGS.
2. COORD. THICKENED SLAB LOCATIONS & EXTENTS W/ APPROVED STAIR SHOP DRAWINGS
3. WHERE LANDINGS ARE HUNG FROM FLOOR FRAMING, HANGERS SHALL BE LOCATED AT CENTERLINE OF SUPPORTING BEAMS, OR STAIR SUPPLIER SHALL OTHERWISE PROVIDE KICKERS, STIFFENERS, ETC. TO MITIGATE BEAM TORSION RESULTING FROM ECCENTRIC HANGER FORCES.



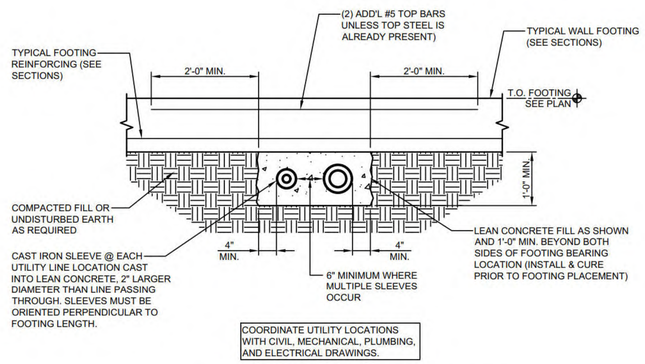
CIRCULAR OPENING



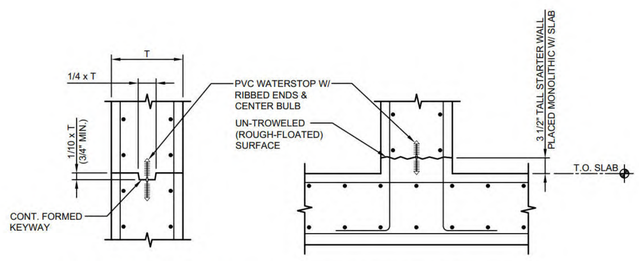
RECTANGULAR OPENING

TYPICAL DETAILS OF ADDITIONAL REINFORCING AROUND OPENINGS IN CONCRETE SLABS & WALLS

NOTES:
1. BAR SIZE MAY BE INCREASED FROM CUT BAR SIZE TO REDUCE CONGESTION
2. COORD. W/ MECH. & EQUIPMENT DWGS. FOR ALL OPENING SIZES & LOCATIONS
3. THIS DETAIL IS NOT REQUIRED AT OPENINGS WHERE SIMILAR BAR ARRANGEMENTS HAVE BEEN SPECIFICALLY NOTED ON THE PLAN.



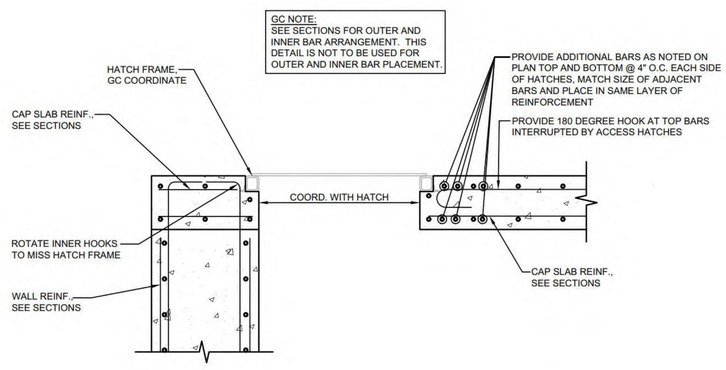
TYPICAL DETAIL AT PIPES PASSING BELOW FOOTINGS



WALL JOINT OR SLAB JOINT

SLAB-TO-WALL JOINT

TYPICAL CONSTRUCTION JOINT DETAILS



TYPICAL HATCH OPENING REINF. DETAIL

ELM Echols, Lindsey & Moore Structural Engineers, Inc.
2707 Artie Street Building 100 Suite 21 Huntsville, AL 35805
Phone: 256.864.2542
Project No. 22246

ISSUED FOR BID

CIVIL R·G·S ENGINEERS
RGS CIVIL DESIGN LLC
2622 TRELLIS POST COURT
OWENS CROSS ROADS, AL 35763
(256) 503-9277

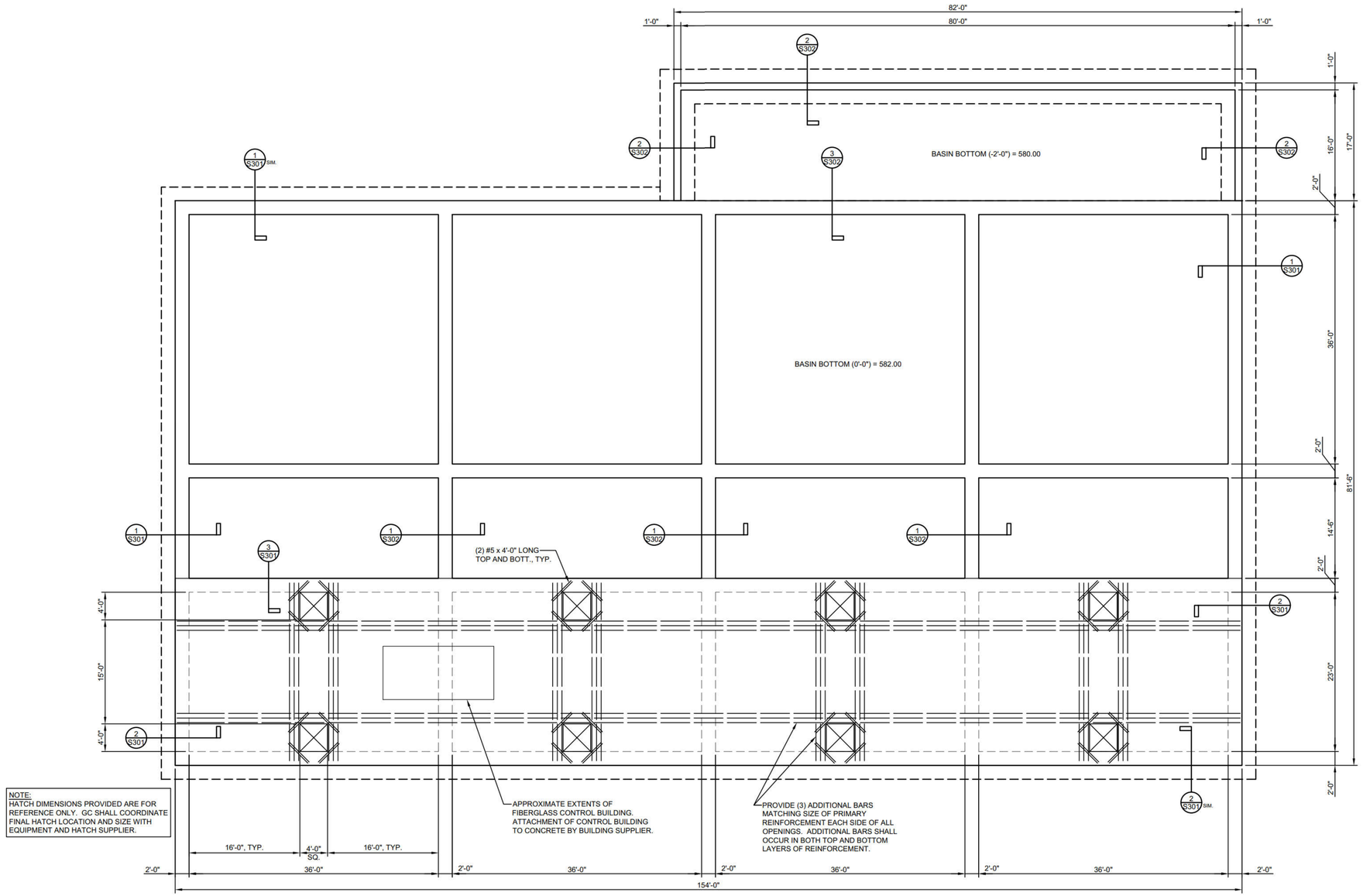
ALABAMA LICENSED PROFESSIONAL ENGINEER No. 29021 6/23/23 WILL L. LINDSEY

REV #	DATE	DESCRIPTION

TYPICAL DETAILS

OWENS CROSS ROADS NEW 0.9 MGD SBR WWTP
SNEED AVENUE
OWENS CROSS ROADS, AL 35763

DRAWN: ELM
CHECKED: WLL
DATE: JUNE 23, 2023
PROJECT NUMBER: 220202
SHEET NUMBER: **S003**



SBR PLAN

1/8" = 1'-0"

ISSUED FOR BID

CIVIL
R·G·S
ENGINEERS
RGS CIVIL DESIGN LLC
2622 TRELLIS POST COURT
OWENS CROSS ROADS, AL 35763
(256) 503-9277

ALABAMA LICENSED PROFESSIONAL ENGINEER No. 29021 6/23/23 WILL L. LINDSEY

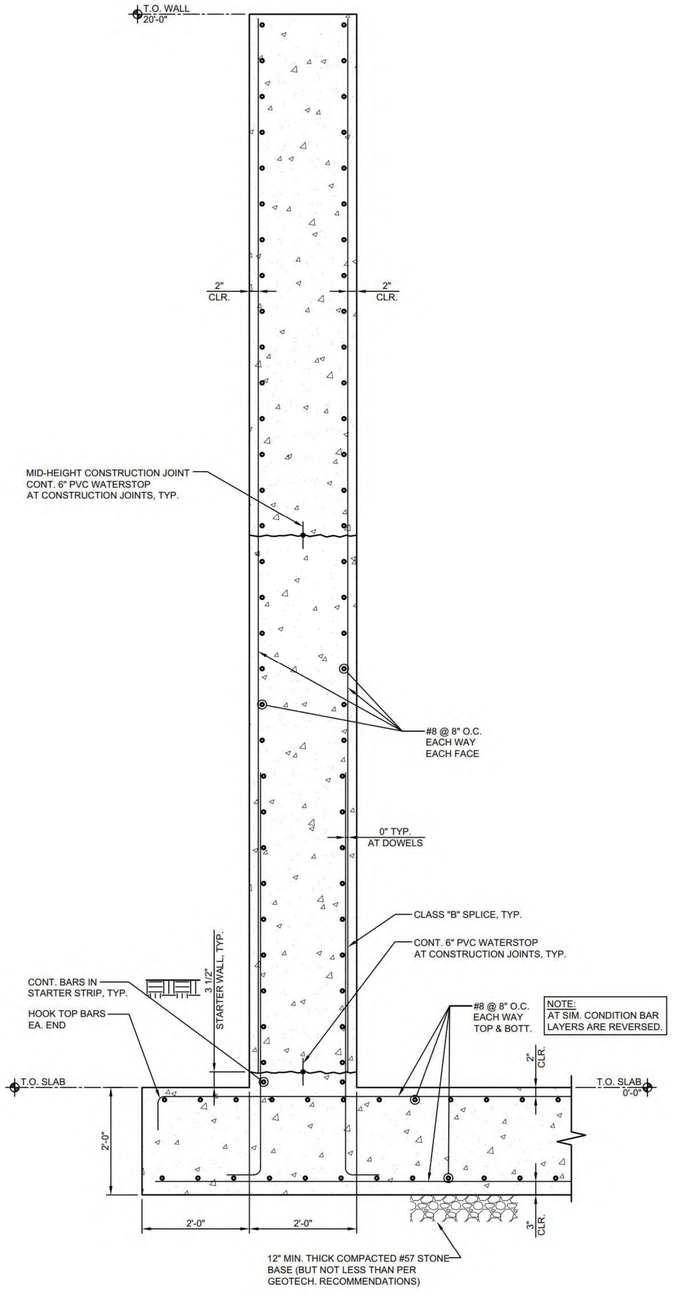
REV #	DATE	DESCRIPTION

PLAN

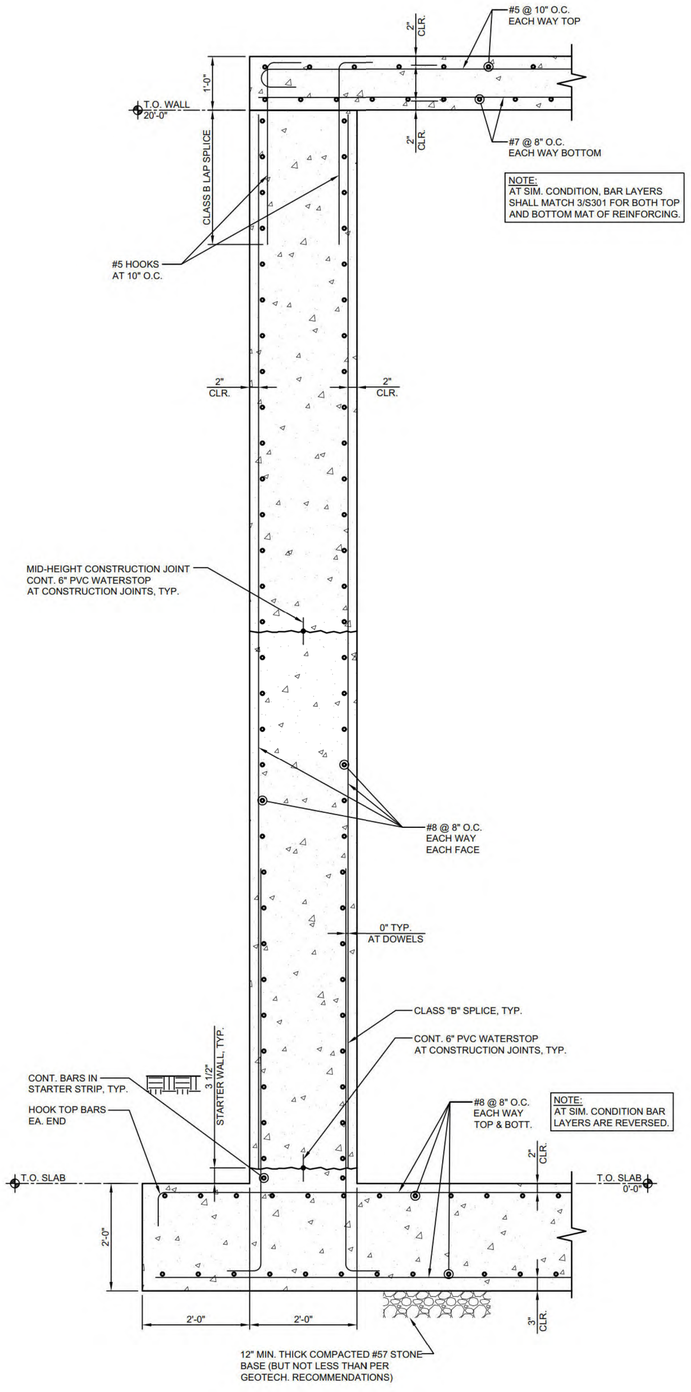
OWENS CROSS ROADS NEW 0.9 MGD SBR WWTP
SNEED AVENUE
OWENS CROSS ROADS, AL 35763

DRAWN:	ELM
CHECKED:	WLL
DATE:	JUNE 23, 2023
PROJECT NUMBER:	220202
SHEET NUMBER:	S101

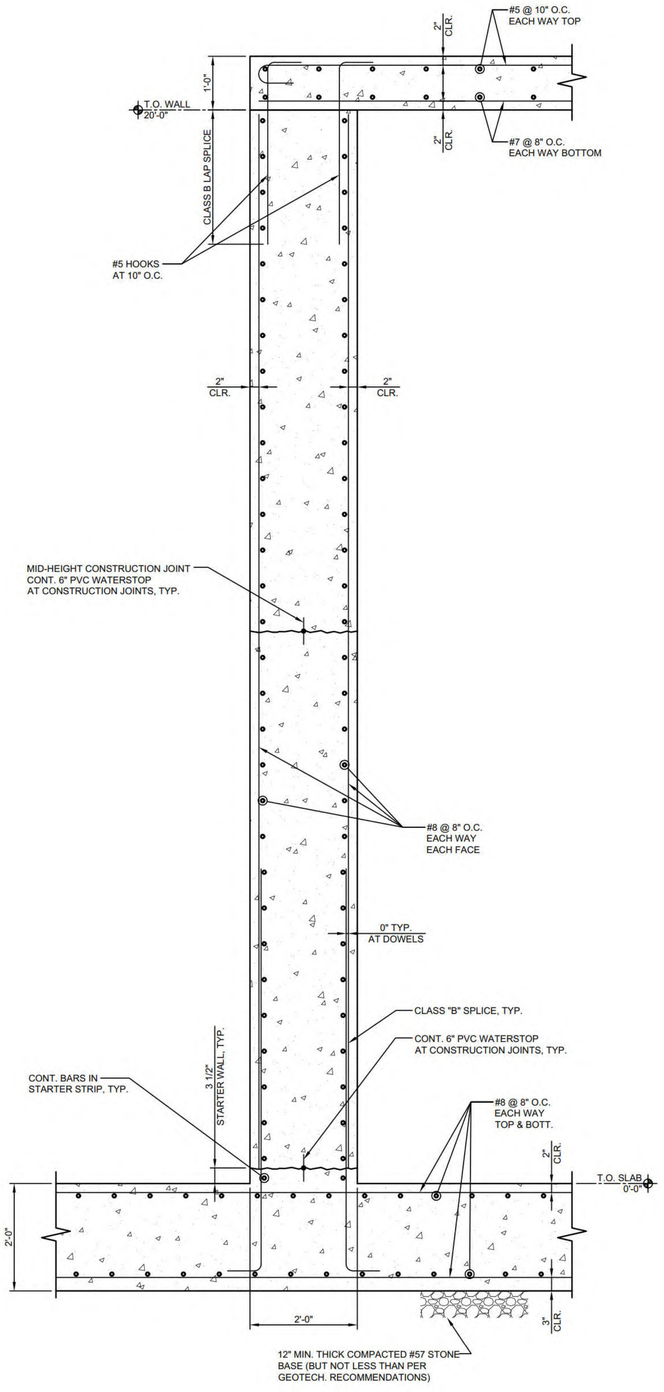
ELM Echols, Lindsey & Moore Structural Engineers, Inc.
2707 Artie Street Building 100 Suite 21 Huntsville, AL 35805
Phone: 256.864.2542
Project No. 22246



1 S301 SECTION
3/4" = 1'-0"



2 S301 SECTION
3/4" = 1'-0"



3 S301 SECTION
3/4" = 1'-0"

ISSUED FOR BID

CIVIL
R·G·S
ENGINEERS
RGS CIVIL DESIGN LLC
2622 TRELLIS POST COURT
OWENS CROSS ROADS, AL 35763
(256) 503-9277

ALABAMA
No. 29021
PROFESSIONAL
6/23/23
ENGINEER
WILL L. LINDSEY

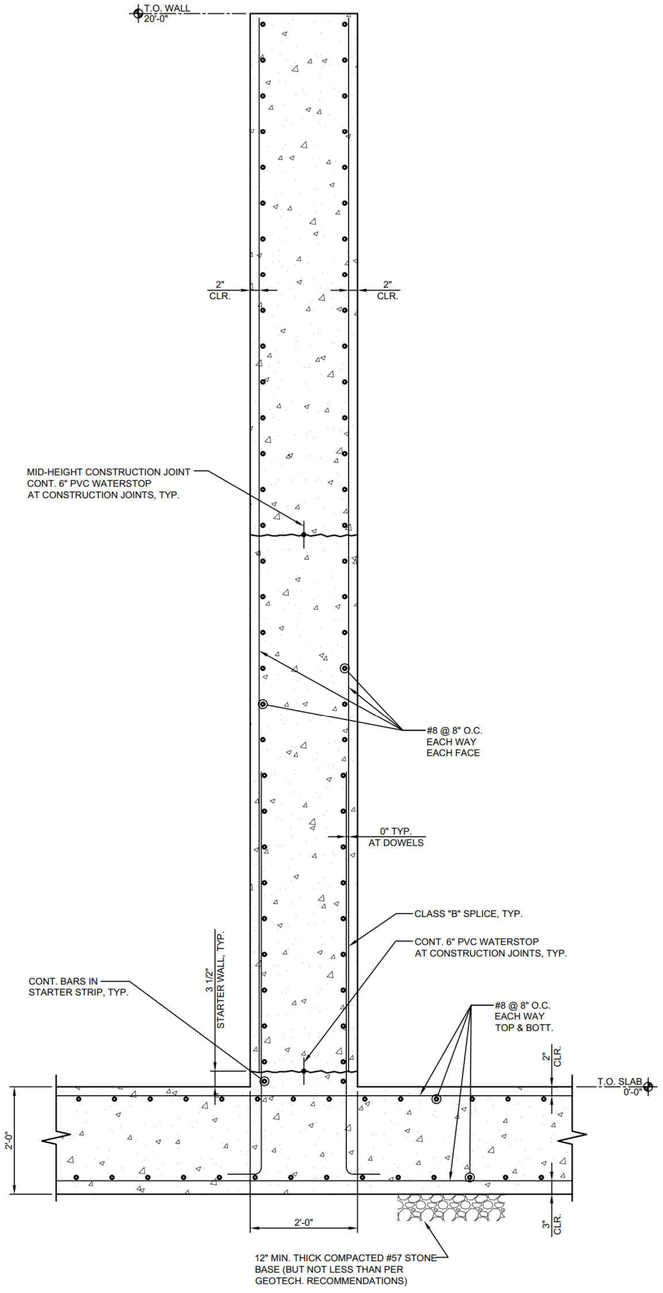
REV #	DATE	DESCRIPTION

SECTIONS

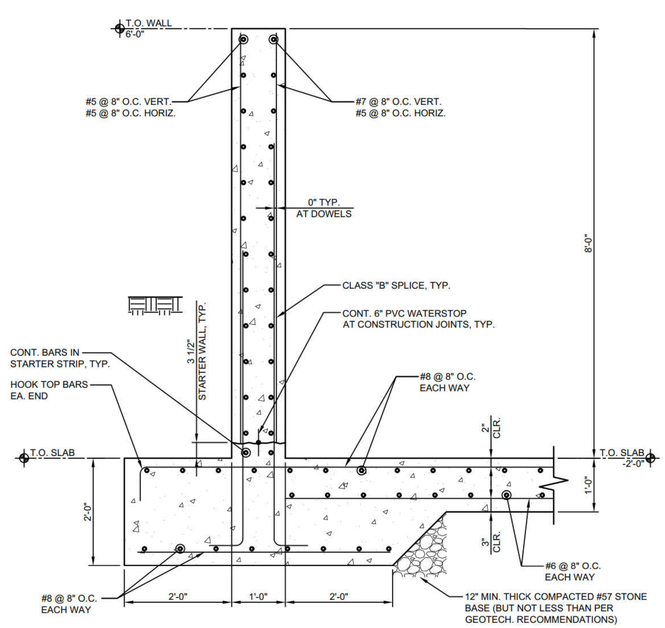
OWENS CROSS ROADS NEW 0.9 MGD SBR WWTP
SNEED AVENUE
OWENS CROSS ROADS, AL 35763

DRAWN: ELM
CHECKED: WLL
DATE: JUNE 23, 2023
PROJECT NUMBER: 220202
SHEET NUMBER: S301

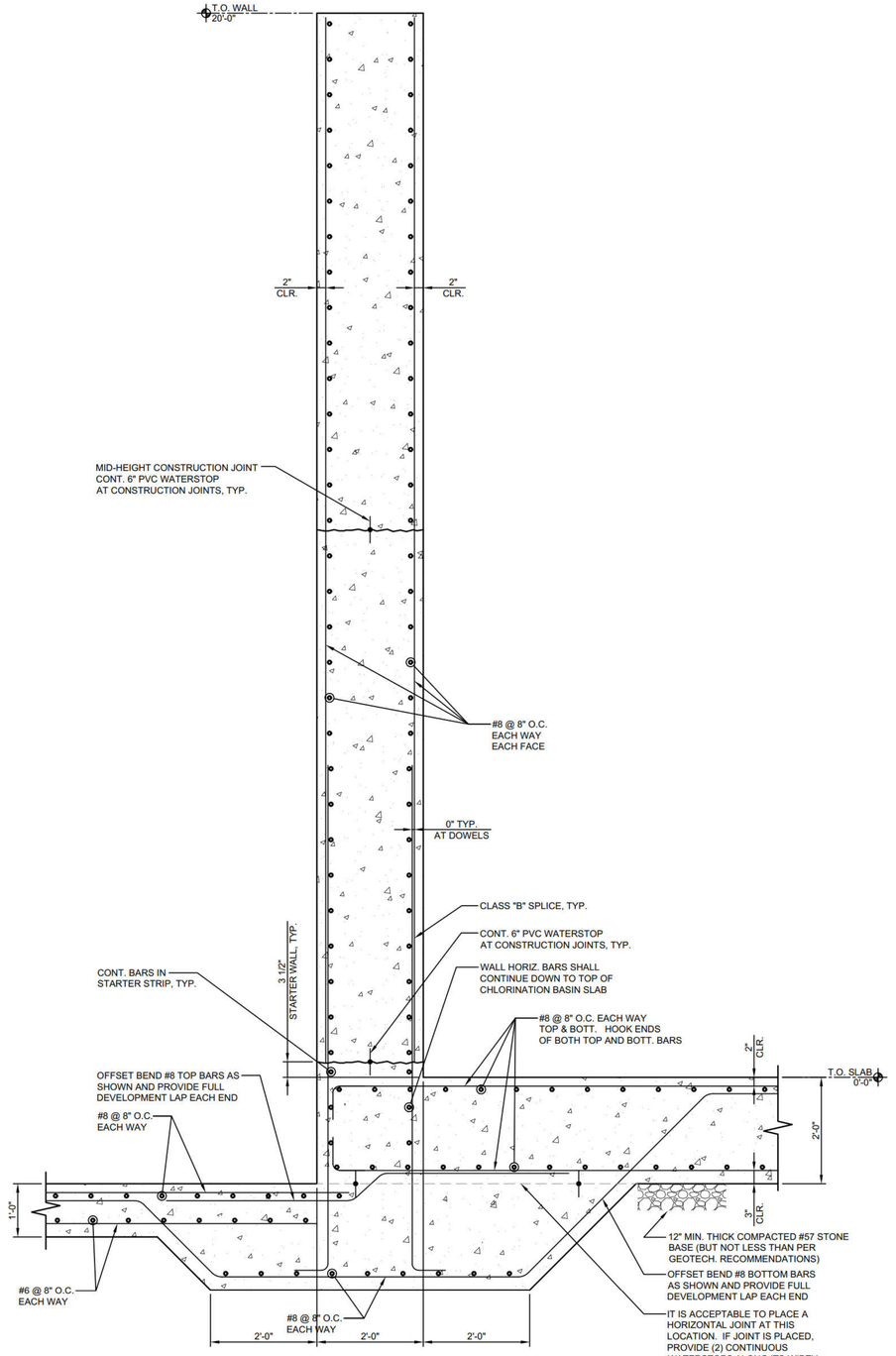
ELM Echols, Lindsey & Moore
Structural Engineers, Inc.
2707 Artie Street Building 100 Suite 21 Huntsville, AL 35805
Phone: 256.864.2542
Project No. 22246



1 S302 SECTION
3/4" = 1'-0"



2 S302 SECTION
3/4" = 1'-0"



3 S302 SECTION
3/4" = 1'-0"

ELM Echols, Lindsey & Moore
Structural Engineers, Inc.
2707 Artie Street Building 100 Suite 21 Huntsville, AL 35805
Phone: 256.864.2542
Project No. 22246

ISSUED FOR BID

CIVIL
R·G·S
ENGINEERS
RGS CIVIL DESIGN LLC
2622 TRELLIS POST COURT
OWENS CROSS ROADS, AL 35763
(256) 503-9277

ALABAMA
No. 29021
PROFESSIONAL
6/23/23
ENGINEER
WILL L. LINDSEY

REV #	DATE	DESCRIPTION

SECTIONS

OWENS CROSS ROADS NEW 0.9 MGD SBR WWTP
SNEED AVENUE
OWENS CROSS ROADS, AL 35763

DRAWN: ELM
CHECKED: WLL
DATE: JUNE 23, 2023
PROJECT NUMBER: 220202
SHEET NUMBER: S302

BASIC ELECTRICAL REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Basic Electrical Requirements specifically applicable to Division 16 Sections, in addition to Division 1 - General Requirements.

1.02 QUALIFICATIONS OF ELECTRICAL CONTRACTOR

A. The Electrical Contractor shall have as his primary business electrical contracting and shall have completed at least three projects of the same size and scope within the past five years. The owner reserves the right to reject the bid of any contractor not meeting the above requirements.

1.03 REFERENCES

A. ANSI/NFPA 70 - National Electrical Code.
B. 2015 International Building Code.

1.04 SCOPE OF WORK

A. The work consist of, but is not limited to, the following:
1. General wiring of power and lighting circuits.
2. Installation of all panelboards, fixtures, devices, etc.
3. Coordination with local Utility Company for Service as indicated.
4. Coordination with local Telephone Company for service to the building.

1.05 SUBMITTALS

A. Submit under provisions of Section 01300.
B. Submit shop drawings and product data grouped to include complete submittals of related systems, products, and accessories in a single submittal. Each submittal shall be accompanied by a cover sheet listing the contents of the submittal and a space for the Engineer's review stamp.
C. Mark dimensions and values in units to match those specified.

1.06 SUBSTITUTIONS

A. Where three (3) or more manufacturers and part numbers are specified then no substitutions will be considered.
B. Where the term "approved equal" appears then substitutions of equal quality, workmanship etc. will be considered. Provide engineer with a cut sheet with appropriate data required to determine equality. This data must be received and approved prior to bidding.
C. Where the term "or equal" appears the substitution of equality, workmanship etc. will be allowed. This item will not require prior approval but must meet engineering approval prior to purchase.

1.07 REGULATORY REQUIREMENTS

A. Electrical: Conform to NFPA 70 and all local codes and ordinances.
B. Obtain permits, and request inspections from authority having jurisdiction.

1.08 COORDINATION OF THE WORK

A. Construct Work in sequence under provisions of Section 01010.
B. The contractor shall coordinate all work with other trades. It is the contractors responsibility to coordinate with shop drawings of other trades prior to rough in to determine voltage, wattage, connection required, etc. Conflicts between drawings and shop drawings of other trades shall be brought to the attention of the engineer for immediate action.

1.09 ELECTRICAL CONNECTIONS TO EQUIPMENT SPECIFIED UNDER OTHER SECTIONS

A. Heating and Cooling Units
1. Provide disconnect sized for FLA of equipment
2. Provide flexible connection to Unit
3. Provide power connection to Unit. All other internal connections by Mechanical

B. Exhaust fans
1. Provide power connection to all exhaust fans. Disconnects for roof mounted units provided by Mechanical unless specified otherwise.
2. Provide flexible connection to all vibrating equipment.
3. Provide disconnect sized for HP of fan for wall mounted units. Starters furnished by Mechanical unless noted otherwise. Control of fans by Mechanical.

C. Kitchen Hoods
1. Provide electrical connection to exhaust and supply fans per item B. above.
2. Provide 120 volt electrical connection to hood for lighting and controls
3. Provide connection to Fire Alarm System if extinguishing system is provided.

D. Plumbing
1. Water Heaters, Provide disconnect sized for the amperage of the heating element.
2. Provide power and disconnect to all pumps. Starters and controls by Mechanical

E. Kitchen Equipment
1. Provide connection to all kitchen equipment. See equipment schedule. Coordinate receptacle configuration with equipment actually supplied prior to roughing. Installation must comply with all local health codes.
2. Conflicts between scheduled equipment and that actually supplied must be reported to the Engineer prior to roughing.

1.10 DOCUMENTS

A. Refer to all projects drawings, including Architectural, Electrical, Mechanical, Structural and project specifications.
B. The drawings indicate the relation of wiring and connections and must not be scaled for exact locations.
C. Verify construction dimensions at the project and make changes necessary to conform to the building as constructed. Work improperly installed due to lack of construction verification shall be corrected at the contractors expense.

1.11 FINAL REVIEW

A. At the time of final review of electrical work, demonstrate the operation of electrical systems. Furnish labor, apparatus and equipment required for the demonstration.

BUILDING WIRE AND CABLE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Building wire and cable.
B. Wiring connectors and connections.

1.02 RELATED SECTIONS

A. Section 16111 - Conduit.
B. Section 16130 - Boxes.
C. Section 16195 - Identification.

1.03 REFERENCES

A. ANSI/NFPA 70 - National Electrical Code.

1.04 PROJECT CONDITIONS

A. Verify that field measurements are as shown on Drawings.
B. Conductor sizes are based on copper unless indicated as aluminum or "AL".
C. Wire and cable routing shown on Drawings is approximate unless dimensioned. Route wire and cable as required to meet Project Conditions
D. Where wire and cable routing is not shown, and destination only is indicated, determine exact routing and lengths required.
E. Install wire in condiut as shown on the drawings. Combining runs of wire shall be permitted only where the contractor has de-rated the ampacity of the wire per the National Electrical Code.

Example:
- 10ea. current carring conductors in 3/4" conduit
- Circuit rating of 15 amps. per conductor
- Per Article 220-3 min. circuit rating =15 X 1.25 = 18.75 amps.
- Per Table 310-16 note 8 conductors must be de-rated 50% for 10 conductors in one conduit
- 18.75 amps / 50% = 37 amps. (minimum current rating of conductor)
- Per table 310-16 conductor must be #8

PART 2 PRODUCTS

2.01 COPPER BUILDING WIRE

A. Description: Single conductor insulated wire.
B. Conductor: Copper.
C. Insulation Voltage Rating: 600 volts.
D. Insulation: ANSI/NFPA 70, Type RHW, THHN/THWN, XHHW .
E. Conductors #10 AWG and smaller may be solid, #8 and larger conductors to be stranded

2.02
ALUMINUM BUILDING WIRE

A. Description: Single conductor insulated wire.
B. Conductor: Aluminum.
C. Insulation Voltage Rating: 600 volts.
D. 250 mcm and larger (only where indicated on the drawings)
E. Terminate with compression fittings, mechanical connections not allowed

2.03 MC CABLE

A. Description: Type MC Metal Clad cable assembly
B. Conductor: Copper.
C. Insulation Voltage Rating: 600 volts.
D. Insulation: ANSI/NFPA 70, Type RHW, THHN/THWN, XHHW .
E. Conductors #12 AWG & #10 AWG(only where indicated on the drawings)

2.03 TRAY CABLE

A. Description: Type TC Multi-conductor Cable with a PVC overall shield
B. Conductor: Copper.
C. Insulation Voltage Rating: 600 volts.
D. Insulation: ANSI/NFPA 70, Type RHW, THHN/THWN, XHHW .
E. Color Code: Method 1 Table E-1

2.04 COLOR CODE

PHASE	208Y120 VOLT	480Y277 VOLT
A	BLACK	BROWN
B	RED	ORANGE
C	BLUE	YELLOW
NEUTRAL	WHITE	WHITE
GROUND	GREEN	GREEN

PART 3 EXECUTION

3.01 INSTALLATION

A. Install products in accordance with manufacturers instructions.
B. Use solid or stranded conductor for feeders and branch circuits 12 AWG and smaller, stranded conductors 10 AWG and larger.
C. Use conductor not smaller than 12 AWG for power and lighting circuits.
D. Pull all conductors into raceway at same time.
E. Use suitable wire pulling lubricant for building wire 4 AWG and larger.
F. Neatly train and lace wiring inside boxes, equipment, and panelboards.
G. Clean conductor surfaces before installing lugs and connectors.
H. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
I. Use split bolt connectors for copper conductor splices and taps, 8 AWG and larger. Tape uninsulated conductors and connector with electrical tape to 150 percent of insulation rating of conductor.
J. Use solderless pressure connectors with insulating covers for copper conductor splices and taps, 10 AWG and smaller.
K. Type MC cable to be run parallel or perpendicular to framing and bundled in a neat manner.
L. Aluminum conductors to be terminated using compression fittings only (mechanical connections not allowed)

3.02 INTERFACE WITH OTHER PRODUCTS

A. Identify wire and cable under provisions of Section 16195.
B. Identify each conductor with its circuit number or other designation indicated on Drawings.

BOXES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wall and ceiling outlet boxes.
B. Floor boxes.
C. Pull and junction boxes.

1.02 RELATED SECTIONS

A. Section 16141 - Wiring Devices: Floor box service fittings , access floor boxes , fire-rated poke- through fittings and mounting heights of wiring device outlets.

1.03 PROJECT CONDITIONS

A. Verify field measurements are as shown on Drawings.
B. Verify locations of floor boxes and outlets in finished areas prior to rough-in.
C. Electrical boxes are shown on Drawings in approximate locations unless dimensioned. Install at location required for box to serve intended purpose. [Include installation within 10 feet of location shown.]

PART 2 PRODUCTS

2.01 OUTLET BOXES

A. Sheet Metal Outlet Boxes: 4" sq. with plaster ring, galvanized steel.
1. Luminaire and Equipment Supporting Ceiling Boxes: Rated for weight of equipment supported; include 1/2 inch male fixture studs where required.
2. Flush mounted wall devices, coordinate depth of plaster ring with wall materials.
3. Use gang boxes where required, Sectional boxes are not acceptable.
B. Masonry Boxes
1. Flush mounted wall devices. Use gang boxes where required, Sectional boxes are not acceptable.
C. Cast Boxes: Cast Boxes: NEMA FB 1, Type FD , aluminum or cast feralloy. Provide gasketed cover by box manufacturer. Provide threaded hubs.
1. Surface mounted boxes interior or exterior. Use where exposed conduit shown on the drawings.

2.02 FLOOR BOXES

A. Floor Boxes: ANSI/NEMA OS 1, semi- adjustable.
B. Material: Formed steel.
C. Shape: Rectangular.
D. Conform to regulatory requirements for concrete-tight floor boxes.
E. Floor boxes shall be equal to Hubbell 3SFBSS. Mount flush with finished floor and coordinate with floor covering installer to provide floor covering on top of box. Coordinate with owner for telephone and computer connections required.
F. Unfinished areas and gym floors: Equal to Hubbell #B-4314 with flush cover.

2.03 PULL AND JUNCTION BOXES

A. Sheet Metal Boxes: NEMA OS 1, galvanized steel.
B. Surface-Mounted Cast Metal Box: NEMA 250, Type 4; flat-flanged, surface-mounted junction box.
1. Material: Cast aluminum.
2. Cover: Furnish with ground flange, neoprene gasket, and stainless steel cover screws.
C. In-Ground Cast Metal Box: NEMA 250, Type 6, outside flanged, recessed cover box for flush mounting.
1. Material: Cast aluminum.
2. Cover: Smooth cover with neoprene gasket and stainless steel cover screws.
3. Cover Legend: ELECTRIC.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install electrical boxes as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections and compliance with regulatory requirements.
B. Install electrical boxes to maintain headroom and to present neat mechanical appearance.
C. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.
D. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches from ceiling access panel or from removable recessed luminaire.
E. Install boxes to preserve fire resistance rating of partitions and other elements, using materials and methods approved by U.L.
F. Align adjacent wall-mounted outlet boxes for switches, thermostats, and similar devices with each other.
G. Use flush mounting outlet boxes in finished areas.
H. Do not install flush mounting boxes back-to-back in walls; provide minimum 6 inch separation. Provide minimum 24 inches separation in acoustic rated walls.
I. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.
J. Use stamped steel bridges to fasten flush mounting outlet box between studs.
K. Install flush mounting box without damaging wall insulation or reducing its effectiveness.
L. Use adjustable steel channel fasteners for hung ceiling outlet box.
M. Do not fasten boxes to ceiling support wires.
N. Support boxes independently of conduit , except cast box that is connected to two rigid metal conduits both supported within 12 inches of box.
O. Use gang box where more than one device is mounted together. Do not use sectional box.
P. Use gang box with plaster ring for single device outlets.
Q. Use cast outlet box in exterior locations exposed to the weather and wet locations.
R. Set floor boxes level.
S. Large Pull Boxes: Boxes larger than 100 cubic inches in volume or 12 inches in any dimension.
1. Interior Dry Locations: Use hinged enclosure.
2. Other Locations: Use surface-mounted cast metal box.

3.02 INTERFACE WITH OTHER PRODUCTS

A. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.
B. Coordinate mounting heights and locations of outlets mounted above counters, benches and backsplashes.
C. Position outlet boxes to locate luminaries as shown on reflected ceiling plan.

3.03 ADJUSTING

A. Adjust floor box flush with finish flooring material.
B. Adjust flush-mounting outlets to make front flush with finished wall material.
C. Install knockout closure in unused box opening.

3.04 LABELING

A. Label all junction box covers with circuit numbers and panel designation. Markings shall be made with black permanent marker on outside of cover. If box is not concealed by suspended ceiling or located in a room such as a mechanical or electrical room, the marking shall be on the inside of the cover.

B. Fire Alarm Junction boxes: all covers shall be painted red, where boxes are concealed above suspended ceilings or in mechanical and electrical rooms, so that the boxes can be easily identified..

WIRING DEVICES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wall switches.
B. Wall dimmers.
C. Receptacles.
D. Device plates and decorative box covers.

1.02 RELATED SECTIONS

A. Section 16130 - Boxes.

1.03 REFERENCES

A. NEMA WD 1 - General Purpose Wiring Devices.

1.04 REGULATORY REQUIREMENTS

A. Conform to requirements of ANSI/NFPA 70.
B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

PART 2 PRODUCTS

2.01 WALL SWITCHES

A. Manufacturers:
1. Hubbell.
2. Leviton.
3. Pass and Seymour.
4. Bryant
B. Description: NEMA WD 1, general-duty, AC only general-use snap switch. Equal to Hubbell 1221 Series
C. Device Body: Ivory plastic with toggle handle.
D. Indicator Light: Lighted handle type switch; red handle .
E. Voltage Rating: 120-277 volts, AC.
F. Current Rating: 20 amperes.

2.02 WALL DIMMERS

A. Description: NEMA WD 1, semiconductor dimmer for incandescent lamps, type as indicated on Drawings.
B. Device Body: Ivory plastic with linear slide.
C. Voltage: 120 volts.
D. Power Rating: 2000 Watts. unless indicated otherwise
E. Manufacturers:
1. Prescolite: Model P20.
2. Lightolier: Model M2000.

2.03 RECEPTACLES

A. Manufacturers:
1. Hubbell.
2. Leviton.
3. Pass & Seymour.
4. Bryant
B. Description: NEMA WD 1; heavy-duty general-use receptacle.
C. Device Body: Ivory plastic.
D. Configuration: NEMA WD 6; type as specified and indicated.
E. Single Receptacle, 20 Amp. 125 Volt
Nema 5-20R - Equal to Hubbell 5361I
Coordinate mounting with equipment being served. Mount directly under water coolers.
F. Convenience Duplex Receptacle, 15 Amp. 125 Volt:
Nema 5-15R - Equal to Hubbell 5262I
G. Quadraplex Receptacle, 15 Amp. 125 Volt
Nema 5-15R - Equal to Bryant 1254-I
H. GFCI Receptacle: Convenience receptacle with integral ground fault circuit interrupter to meet regulatory requirements. Equal to Hubbell GF5262I
I. Single Receptacle, 30 Amp. 250 Volt
Nema 6-30R - Equal to Hubbell 9330
Coordinate configuration with equipment being served.
J. Single Receptacle, 50 Amp. 250 Volt
Nema 6-50R - Equal to Hubbell 9360
Coordinate configuration with equipment being served.

2.04 WALL PLATES

A. Decorative Cover Plate: 302/304 Stainless Steel.
B. Weatherproof Cover Plate: Gasketed cast metal with hinged gasketed device cover.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify outlet boxes are installed at proper height.
B. Verify wall openings are neatly cut and will be completely covered by wall plates.
C. Verify floor boxes are adjusted properly.
D. Verify branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

3.02 PREPARATION

A. Provide extension rings to bring outlet boxes flush with finished surface.
B. Clean debris from outlet boxes.

3.03 INSTALLATION

A. Install products in accordance with manufacturer's instructions.
B. Install devices plumb and level.
C. Install switches with OFF position down.
D. Install wall dimmers to achieve full rating specified and indicated after derating for ganging as instructed by manufacturer.
E. Do not share neutral conductor on load side of dimmers.
F. Install receptacles with grounding pole on bottom.
G. Connect wiring device grounding terminal to outlet box with bonding jumper.
H. Install decorative plates on switch, receptacle, and blank outlets in finished areas.
I. Connect wiring devices by wrapping conductor around screw terminal.
J. Use jumbo size plates for outlets installed in masonry walls.
K. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface mounted outlets.
L. Install protective rings on active flush cover service fittings.

3.04 INTERFACE WITH OTHER PRODUCTS

A. Coordinate locations of outlet boxes provided under Section 16130 to obtain mounting heights specified and indicated on Drawings.
B. Install wall switch 48 inches above finished floor.
C. Install convenience receptacle 18 inches above finished floor.
D. Install convenience receptacle 2 inches above backsplash of counter.
E. Install dimmer 48 inches above finished floor.
F. Install telephone jack 18 inches above finished floor.
G. Install telephone jack for wall telephone 54 inches above finished floor.

3.05 FIELD QUALITY CONTROL

A. Inspect each wiring device for defects.
B. Operate each wall switch with circuit energized and verify proper operation.
C. Verify that each receptacle device is energized.
D. Test each receptacle device for proper polarity.
E. Test each GFCI receptacle device for proper operation.

STATE OF ALABAMA LICENSED 06/23/2023 No. 50365 PROFESSIONAL ENGINEER ANDREW MINOR

TOTAL DESIGN ENGINEERING
3408 6th AVENUE SW
HUNTSVILLE, ALABAMA 35805
PHONE: 256-539-8555, FAX: 256-539-8508
EMAIL: AMINOR@TOTALDESIGNENGINEERING.COM

WWTP
SNEED AVEENUE
OWENS CROSS ROADS, AL 35763

GENERAL SPECS

DRAWN	CHECKED	DATE
TDF	AHM	06/23/2023

SHEET NO:	JOB NO:
E-1 of 6	TSK-23-062

REVISIONS

PANELBOARDS (1000 AMPS AND SMALLER)

PART 1 GENERAL

1.01 WORK INCLUDED

A. Service and power panelboards (600 AMP to 1000 AMP).
B. Lighting and appliance branch circuit panelboards. (600 AMP and less)
C. Load centers. (100 AMP and less)

1.02 SUBMITTALS

A. Submit shop drawings for equipment and component devices under provisions of Section 16010.
B. Include outline and support point dimensions, voltage, main bus ampacity, integrated short circuit ampere rating, and circuit breaker arrangement and sizes.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURES

A. Square "D"
B. Cutler-Hammer
C. General Electric
D. Siemens.
E. Physical sizing of the equipment is based on Square-D equipment, other manufacturers must coordinate the size of their equipment with the size of the room or space available.

2.02 SERVICE AND POWER PANELBOARDS (600 AMP to 1000 AMP)

A. Panelboards: NEMA PB 1; circuit breaker type. Type I, Class 1.
B. Enclosure: NEMA PB 1; Type 1.
C. Provide cabinet front with concealed trim clamps and hinged door with flush lock. Finish in manufacturer's standard gray enamel.
D. Provide panelboards with aluminum bus, ratings as scheduled on Drawings. Provide copper ground bus in all panelboards.
E. Minimum Integrated Short Circuit Rating: 22K amperes rms. symmetrical for 240 volt panelboards; 18K amperes rms. symmetrical for 480 volt panelboards.
F. Provide Circuit Labels (laminated name plate permanently attached) for each circuit breaker. Provide blank nameplates for unused spaces.
G. Molded Case Circuit Breakers: NEMA AB 1; provide circuit breakers with integral thermal and instantaneous magnetic trip in each pole. Provide circuit breakers UL listed as Type HACR for air conditioning equipment branch circuits.

2.03 BRANCH CIRCUIT PANELBOARDS (600 AMP and less)

A. Lighting and Appliance Branch Circuit Panelboards: NEMA PB1; circuit breaker type.
B. Enclosure: NEMA PB 1; Type 1.
C. Cabinet Size: 6 inches deep; 20 inches wide.
D. Provide flush or surface cabinet front with concealed trim clamps, concealed hinge and flush lock all keyed alike. Finish in manufacturer's standard gray enamel. Provide directory pocket and permanent circuit numbering. ADHESIVE NUMBERS WILL NOT BE ACCEPTED.
E. Provide panelboards with aluminum bus, ratings as scheduled on Drawings. Provide copper ground bus in all panelboards.
F. Minimum Integrated Short Circuit Rating: 22,000 amperes rms symmetrical for 240 volt panelboards; 18,000 amperes rms. symmetrical for 480 volt panelboards , or as shown on Drawings.
G. Molded Case Circuit Breakers: NEMA AB 1; bolt-on type thermal magnetic trip circuit breakers, with common trip handle for all poles. Provide circuit breakers UL listed as Type SWD for lighting circuits. Provide UL Class A ground fault interrupter circuit breakers where scheduled on Drawings.

2.04 LOAD CENTERS (100 AMP and less)

A. Load Centers: Circuit breaker load center. Type I, Class 2.
B. Enclosure: General Purpose or Rainproof, as scheduled.
C. Provide flush or surface box, with door, with lock on door. Finish in manufacturer's standard gray enamel.
D. Provide load centers only as scheduled on Drawings.
E. Minimum Integrated Short Circuit Rating: 10,000 amperes rms. symmetrical.
F. Molded Case Circuit Breakers: NEMA AB 1; plug-on type thermal magnetic trip circuit breakers, with common trip handle for all poles. Provide circuit breakers UL listed as Type SWD for lighting circuits. Provide UL Class A ground fault interrupter circuit breakers where scheduled on Drawings.
G. Do not use tandem circuit breakers.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install panelboards plumb, in conformance with NEMA PB 1.1.
B. Height: 6 ft. (Top of Panel)
C. Provide filler plates for unused spaces in panelboards.
D. Provide typed circuit directory for each branch circuit panelboard. Revise directory to reflect circuiting changes required to balance phase loads.
E. Stub 5 empty one inch conduits to accessible location above ceiling out of each recessed panelboard.
F. Breaker numbering using adhesive numbering strips will not be accepted. All numbering must be permanent.

3.02 IDENTIFICATION

A. Provide engraved name plate indicating NAME, VOLTAGE, SOURCE
B. Provide "ARC FLASH WARNING " label on front of panelboard

3.03 FIELD QUALITY CONTROL

A. Measure steady state load currents at each panelboard feeder. Should the difference at any panelboard between phases exceed 20 percent, rearrange circuits in the panelboard to balance the phase loads within 20 percent. Take care to maintain proper phasing for multi-wire branch circuits.
B. Visual and Mechanical Inspection: Inspect for physical damage, proper alignment, anchorage, and grounding. Check proper installation and tightness of connections for circuit breakers, fusible switches, and fuses.

DISCONNECT SWITCHES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fusible switches.
B. Nonfusible switches.
C. Manual Disconnect Switches
D. Fuses.

1.02 REFERENCES

A. NEMA KS 1 - Enclosed Switches.
B. NFPA 70 - National Electrical Code.
C. UL 198C - High-Interrupting Capacity Fuses; Current Limiting Type.
D. UL 198E - Class R Fuses.

1.03 SUBMITTALS

A. Product Data: Provide switch ratings and enclosure dimensions.
B. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of Product.

1.04 QUALITY ASSURANCE

A. Perform Work in accordance with NECA Standard of Installation.

1.05 REGULATORY REQUIREMENTS

A. Conform to requirements of NFPA 70.
B. Furnish products listed and classified by UL as suitable for purpose specified and shown.

1.06 EXTRA MATERIALS

A. Provide three of each size and type fuse installed.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Square "D".
B. Westinghouse.
C. General Electric.
D. Cutler Hammer.

2.02 DISCONNECT SWITCHES

A. Fusible Switch Assemblies: NEMA KS 1, Type HD load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position. Handle lockable in OFF position. Fuse clips: Designed to accommodate Class R fuses.
B. Non fusible Switch Assemblies: NEMA KS 1, Type HD load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position. Handle lockable in OFF position.
C. Manual Toggle Disconnects: Equal to Square "D" class 2510.
D. Enclosures: NEMA KS 1.
1. Interior Dry Locations: Type 1.
2. Exterior Locations: Type 3R.

2.03 FUSES

A. Description: Dual element, current limiting, time delay, one-time fuse, 250 or 600 volt, UL 198E, Class RK 5.
B. Interrupting Rating: 200,000 rms amperes.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install disconnect switches where indicated.
B. Install fuses in fusible disconnect switches.
C. Provide adhesive label on inside door of each switch indicating UL fuse class and size for replacement.

GROUNDING AND BONDING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Grounding electrodes and conductors.
B. Equipment grounding conductors.
C. Bonding.

1.02 REFERENCES

A. ANSI/NFPA 70 - National Electrical Code.

1.03 GROUNDING ELECTRODE SYSTEM

A. Existing Metal underground water pipe.
B. Metal frame of the building.
C. Rod electrode.

1.04 PERFORMANCE REQUIREMENTS

A. Grounding System Resistance: 25 ohms.

1.05 REGULATORY REQUIREMENTS

A. Conform to requirements of ANSI/NFPA 70.
B. Furnish products listed and classified by underwriters Laboratories, Inc. as suitable for purpose specified and shown.

PART 2 PRODUCTS

2.01 ROD ELECTRODE

A. Material: Copper-clad steel.
B. Diameter: 5/8 inch.
C. Length: 8 feet

2.02 MECHANICAL CONNECTORS

A. U-bolt clamp equal to Thompson No. 493
B. Material: Bronze.

2.03 WIRE

A. Material: Stranded copper.
B. Foundation Electrodes: 2 AWG.
C. Grounding Electrode Conductor: Size to meet NFPA 70 requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that final backfill and compaction has been completed before driving rod electrodes.

3.02 INSTALLATION

A. Install Products in accordance with manufacturer's instructions.
B. Provide additional rod electrodes as required to achieve specified resistance to ground.
C. Provide bonding to meet Regulatory Requirements.
D. Bond together metal siding not attached to grounded structure; bond to ground.
E. Provide isolated grounding conductor for circuits supplying computers.
F. Branch circuit grounding provided by metallic conduit, Provide code size grounding conductor in all non metallic raceways.

3.03 FIELD QUALITY CONTROL

A. Inspect grounding and bonding system conductors and connections for tightness and proper installation.
B. Use suitable test instrument to measure resistance to ground of system. Perform testing in accordance with test instrument manufacturer's recommendations using the fall-of-potential method.

ELECTRICAL IDENTIFICATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Nameplates and labels.
B. Wire and cable markers.
C. Conduit markers.

1.02 REFERENCES

A. ANSI/NFPA 70 - National Electrical Code.

1.03 REGULATORY REQUIREMENTS

A. Conform to requirements of ANSI/NFPA 70.
B. Furnish products listed and classified by Underwriters Laboratories, Inc..

PART 2 PRODUCTS

2.01 NAMEPLATES AND LABELS

A. Nameplates:
1.Engraved, three-layer laminated plastic, black letters on white background.
2.Indicate Panel Identification and Voltage rating
B.Locations:
1. Service Entrance Equipment
Indicate voltage, main amps and IAC rating
2. Distribution panels and panelboards
Indicate voltage, main amps and source of power
3. Equipment Disconnects
Indicate equipment served, voltage and source of power
C. Letter Size:
1. Use 1/8 inch letters for identifying individual equipment and loads.

2.02 WIRE MARKERS

A. Description: Cloth , tape, split sleeve, or tubing type wire markers.
B. Locations: Each conductor at panelboard gutters, outlet and junction boxes, and each load connection.
C. Computer cables at each end of cable, indicate a) Building, b) room no. and c) outlet no.

2.03 LEGEND

A. Power and Lighting Circuits: Branch circuit or feeder number indicated on drawings.
B. Control Circuits: Control wire number indicated on schematic and interconnection diagrams on drawings.

2.04 UNDERGROUND WARNING TAPE

A. Description: 6 inch wide Metallic tape, colored, yellow, with suitable warning legend describing buried electrical lines.

PART 3 EXECUTION

3.01 PREPARATION

A. Degrease and clean surfaces to receive nameplates and labels.

3.02 APPLICATION

A. Install nameplate parallel to equipment lines.
B. Secure nameplate to equipment front using screws or rivets.
C. Secure nameplate to inside surface of door on panelboard that is recessed in finished locations.
D. Identify underground conduits using underground warning tape. Install one tape per trench at 3 inches below finished grade.

STATE OF ALABAMA LICENSED 06/23/2023 No. 50365 PROFESSIONAL ENGINEER ANDREW MINOR

TOTAL DESIGN ENGINEERING
3408 6th AVENUE SW
HUNTSVILLE, ALABAMA 35805
PHONE: 256-539-9555, FAX: 256-539-8508
EMAIL: AMINOR@TOTALDESIGNENGINEERING.COM

WWTP
SNEED AVEENUE
OWENS CROSS ROADS, AL 35763

GENERAL SPECS

REVISIONS

SHEET NO: E-2 of 6

DRAWN TDF

CHECKED AHM

DATE 06/23/2023

JOB NO: TSK-23-062

ENGINE GENERATOR

1. General

1.1. Description of System & Site

1.1.1. Provide a 900 kW standby power system to supply electrical power at 480 Volts, 60 Hertz, 3 Phase. The generator shall consist of a liquid cooled, natural gas driven engine, a synchronous AC alternator and system controls with all necessary accessories for a complete operating system, including but not limited to the items as specified hereinafter.

1.1.2. The site is an NEC ordinary location with no specific harsh environment requirements.
1.1.3. The genset shall be applied at the listed ambient and elevation. Bidders to submit the generators rated power output at 104 ambient (˚F) and 3500 elevation (Ft).
1.1.4. Bidders are to submit the genset's sound level in dBA at 23 ft based on the configuration specified.

1.2. Requirements of Regulatory Agencies

1.2.1. An electric generating system, consisting of a prime mover, generator, governor, coupling and all controls, must have been tested, as a complete unit, on a representative engineering prototype model of the equipment to be sold.

1.2.2. The generator set must conform to applicable NFPA requirements.

1.2.3. The generator set must be available with the Underwriters Laboratories listing (UL2200) for a stationary engine generator assembly.

1.2.4. The generator set must be factory certified to meet EPA federal emission requirements for stationary standby. On-site emission testing & certification will not be acceptable for standby applications.

1.3. Manufacturer Qualifications

1.3.1. This system shall be supplied by an original equipment manufacturer (OEM) who has been regularly engaged in the production of engine-alternator sets, automatic transfer switches, and associated controls for a minimum of 25 years, thereby identifying one source of supply and responsibility. Approved suppliers are Generac Industrial Power or an approved equal.

1.3.2. The manufacturer shall have printed literature and brochures describing the standard series specified, not a one of a kind fabrication. Custom designed solutions using site specific PLC programs and site specific schematics are not acceptable.

1.3.3. Manufacturer's authorized service representative shall meet the following criteria:
1.3.3.1. Certified, factory trained, industrial generator technicians
1.3.3.2. Service support 24/7
1.3.3.3. Service location within 200 miles
1.3.3.4. Response time of 4 hours
1.3.3.5. Service & repair parts in-stock at performance level of 95%

1.4. Submittals

1.4.1. Engine Generator specification sheet
1.4.2. Controls specification sheet(s)
1.4.3. Installation / Layout dimensional drawing
1.4.4. Wiring schematic
1.4.5. Sound data
1.4.6. Emission certification
1.4.7. Warranty statement

2. Engine

2.1. Engine Rating and Performance

2.1.1. The prime mover shall be a liquid cooled, spark-ignited, 4-cycle engine. It will have adequate horsepower to achieve rated kW output.

2.1.2. The engine shall support a 100% load step.

2.1.3. The system shall be sized and sequenced to allow emergency system loads as defined by NEC 700 to be transferred onto the generator(s) within 10 seconds. Non-emergency system loads will be sequenced onto the generator(s) as generator capacity comes on-line.

2.2. Engine Oil System

2.2.1. Full pressure lubrication shall be supplied by a positive displacement lube oil pump. The engine shall have a replaceable oil filter(s) with internal bypass and replaceable element(s).

2.2.2. The engine shall operate on mineral based oil. Synthetic oils shall not be required.The oil shall be cooled by an oil cooler which is integrated into the engine system.

2.3. Engine Cooling System

2.3.1. The engine is to be cooled with a unit mounted radiator, fan, water pump, and closed coolant recovery system. The coolant system shall include a coolant fill box which will provide visual means to determine if the system has adequate coolant level. The radiator shall be designed for operation in 122 degrees F, (50 degrees C) ambient temperature.

2.3.2. The engine shall have (a) unit mounted, thermostatically controlled water jacket heater(s) to aid in quick starting. The wattage shall be as recommended by the manufacturer.

2.3.3. Engine coolant and oil drain extensions, equipped with pipe plugs and shut-off valves, must be provided to the outside of the mounting base for cleaner and more convenient engine servicing.

2.3.4. A radiator fan guard must be installed for personnel safety that meets UL and OSHA safety requirements.

2.4. Engine Starting System

2.4.1. Starting shall be by a solenoid shift, DC starting system.

2.4.2. The engine's cranking batteries shall be lead acid. The batteries shall be sized per the manufacturer's recommendations. The batteries supplied shall meet NFPA 110 cranking requirements of 90 seconds of total crank time. Battery specifications (type, amp-hour rating, cold cranking amps) to be provided in the submittal.

2.4.3. The genset shall have an engine driven, battery charging alternator with integrated voltage regulation.

2.4.4. The genset shall have an automatic dual rate, float equalize, 10 amp battery charger. The charger must be protected against a reverse polarity connection. The chargers charging current shall be monitored within the generator controller to support remote monitoring and diagnostics. The battery charger is to be factory installed on the generator set. Due to line voltage drop concerns, a battery charger mounted in the transfer switch will be unacceptable.

2.5. Engine Fuel System
2.5.1. The engine shall be configured to operate on pipe line grade natural gas.
2.5.2. The engine shall utilize a fuel system inclusive of carburetor, gas regulator, low gas pressure switch, and fuel shut-off solenoid. Generators larger than 80 kW are to include air-fuel-ratio control.

The engines internal fuel connections shall be terminated to the generator frame via an NPT fitting for easy installation

2.6. Engine Controls

2.6.1. Engine speed shall be controlled with an integrated isochronous governor function with no change in alternator frequency from no load to full load. Steady state regulation is to be 0.25%.

2.6.2. To support EPA emission requirements, gensets larger than 80 kW will incorporate an active air-fuel-ratio controller. The air-fuel-ratio controller shall be integrated into the generator controller to ensure security of settings and to support monitoring and remote diagnostics. External air-fuel-ratio controllers are not acceptable.

2.6.3. Engine sensors used for monitoring and control are to be conditioned to a 4-20ma signal level to enhance noise immunity.

2.6.4. All engine sensor connections shall be sealed to prevent corrosion and improve reliability.

2.7. Engine Exhaust & Intake

2.7.1. The engine exhaust emissions shall meet the EPA emission requirements for stationary emergency power generation.

2.7.2. For generators larger than 80 kW, the engine will incorporate a 3-way catalytic convertor to meet EPA emission requirements.

2.7.3. The manufacturer shall supply its recommended stainless steel, flexible connector to couple the engine exhaust manifold to the exhaust system. A rain cap will terminate the exhaust pipe after the silencer. All components must be properly sized to assure operation without excessive back pressure when installed.

2.7.4. The manufacturer shall supply an internally mounted exhaust silencer as standard. For applications with site specific sound requirements (reference section 1.1), the silencer shall be selected to achieve site sound levels.

2.7.5. For gensets in a weather or sound attenuated enclosure, all exhaust piping from the turbo-charger discharge to the silencer shall be thermally wrapped to minimize heat dissipation inside the enclosure.

2.7.6. The engine intake air is to be filtered with engine mounted, replaceable, dry element filters.

3. Alternator

3.1. The alternator shall be the voltage and phase configuration as specified in section 1.1.1.

3.2. The alternator shall be a 4-pole, revolving field, stationary armature, synchronous machine. The excitation system shall utilize a brushless exciter with a three phase full wave rectifier assembly protected against abnormal transient conditions by a surge protector. Photo-sensitive components will not be permitted in the rotating exciter.

3.3. The alternator shall include a permanent magnet generator (PMG) for excitation support. The system shall supply a minimum short circuit support current of 300% of the rating (250% for 50Hz operation) for 10 seconds.

3.4. The alternator shall support 490 skVA with a maximum voltage dip of 35%.

3.5. Three phase alternators shall be 12 lead, broad range capable of supporting voltage reconnection. Single phase alternators shall be four lead and dedicated voltage designs (600v) shall be six lead. All leads must be extended into a NEMA 1 connection box for easy termination. A fully rated, isolated neutral connection must be included by the generator set manufacturer.

3.6. The alternator shall use a single, sealed bearing design. The rotor shall be connected to the engine flywheel using flexible drive disks. The stator shall be direct connected to the engine to ensure permanent alignment.

3.7. The alternator shall meet temperature rise standards of UL2200 (120 degrees C). The insulation system material shall be class "H" capable of withstanding 150 degrees C temperature rise.
The alternator shall be protected against overloads and short circuit conditions by advanced control panel protective functions. The control panel is to provide a time current algorithm that protects the alternator against short circuits. To ensure precision protection and repeatable trip characteristics, these functions must be implemented electronically in the generator control panel -- thermal magnetic breaker implementation are not acceptable.

4. Controls

4.1. The generator control system shall be a fully integrated microprocessor based control system for standby emergency engine generators meeting all requirements of NFPA 110 level 1.

4.2. The generator control system shall be a fully integrated control system enabling remote diagnostics and easy building management integration of all generator functions. The generator controller shall provide integrated and digital control over all generator functions including: bi-fuel control, engine protection, alternator protection, speed governing, voltage regulation and all related generator operations. The generator controller must also provide seamless digital integration with the engine's electronic engine control module (ECM) if so equipped. Generator controller's that utilize separate voltage regulators and speed governors or do not provide seamless integration with the engine management system are considered less desirable.

4.3. Communications shall be supported with building automation via the Modbus protocol without network cards. Optional internet and intranet connectivity shall be available.

4.4. The control system shall provide an environmentally sealed design including encapsulated circuit boards and sealed automotive style plugs for all sensors and circuit board connections. The use of non-encapsulated boards, edge cards, and pc ribbon cable connections are considered unacceptable.

4.5. Circuit boards shall utilize surface mount technology to provide vibration durability. Circuit boards that utilize large capacitors or heat sinks must utilize encapsulation methods to securely support these components.

4.6. A predictive maintenance algorithm that alarms when maintenance is required. The controller shall have the capability to call out to the local servicing dealer when maintenance is required.

4.7. Diagnostic capabilities should include time-stamped event and alarm logs, ability to capture operational parameters during events, simultaneous monitoring of all input or output parameters, callout capabilities, support for multi-channel digital strip chart functionality and .2 msec data logging capabilities.

4.8. In addition to standard NFPA 110 alarms, the application loads should also be protected through instantaneous and steady state protective settings on system voltage, frequency, and power levels.

4.9. The control system shall provide pre-wired customer use I/O: 4 relay outputs (user definable functions), communications support via RS232 and RS485. Additional I/O must be an available option.

4.10. Customer I/O shall be software configurable providing full access to all alarm, event, data logging, and shutdown functionality. In addition, custom ladder logic functionality inside the generator controller shall be supported to provide application support flexibility. The ladder logic function shall have access to all the controller inputs and customer assignable outputs.

4.11. The control panel will display all user pertinent unit parameters including: engine and alternator operating conditions; oil pressure and optional oil temperature; coolant temperature and level alarm; fuel level (where applicable); engine speed; DC battery voltage; run time hours; generator voltages, amps, frequency, kilowatts, and power factor; alarm status and current alarm(s) condition per NFPA 110 level 1.

5. Engine / Alternator Packaging
5.1. The engine/alternator shall be isolated from the generator frame with rubber isolators. The packaging shall not require the addition of external spring isolators.
5.2. A mainline, thermal magnetic circuit breaker carrying the UL mark shall be factory installed. The breaker shall be rated between 100 to 125% of the rated ampacity of the genset.
5.3. The generator shall include a unit mounted auxiliary power load center. All ancillary AC devices (block heater, battery charger, alternator strip heater, etc) shall have a dedicated breaker within the load center.Enclosure

5.4.1. The genset shall be packaged with a weather protective enclosure.

5.4.2. The enclosure shall be made of steel with a minimum thickness of 16 gauge. The enclosure is to have hinged, removable doors to allow access to the engine, alternator and control panel. The hinges shall allow for door fit adjustment. Hinges and all exposed fasteners will be stainless steel or Sermagard coated. The use of pop-rivets weakens the paint system and not allowed on external painted surfaces. Each door will have lockable hardware with identical keys.

5.4.3. The enclosure shall be coated with electrostatic applied powder paint, baked and finished to manufacturer's specifications. The color will be manufacturer's standard.
The enclosure shall utilize an upward discharging radiator hood. Due to concerns relative to radiator damage, circulating exhaust, and prevailing winds, equipment without a radiator discharge hood will not be acceptable.

5.4.5. The genset silencer shall be mounted on the discharge hood of the enclosure. Due to architectural concerns, silencers mounted on the top of the generator enclosure are not acceptable. Gensets with silencers mounted inside the main generator compartment are acceptable only if the silencer is thermally wrapped to minimize heat stress on the surrounding components.

6. Loose Items
Supplier to itemize loose parts that require site mounting and installation. Preference will be shown for gensets that factory mount items like mufflers, battery chargers, etc.

6.2. Provide an NFPA 110/99 compliant alarm annunciator panel for remote indication. The panel shall have an ALARM switch that when moved to the OFF position silences the audible alarm. A TEST/RESET switch must be included to verify the lights are functional and reset any condition after if has cleared. The annunciator shall be controlled using RS485 communications from the generator controller. Annunciators requiring individual contacts and wires per indication point are not preferred.

7. Additional project requirements
7.1. Factory testing

7.1.1. Before shipment of the equipment, the engine-generator set shall be tested under rated load for performance and proper functioning of control and interfacing circuits. Tests shall include:

7.1.1.1. Verify voltage & frequency stability.
7.1.1.2. Verify transient voltage & frequency dip response.
7.1.1.3. Load test the generator for 30 minutes.

7.2. Manuals

7.2.1. Three (3) sets of owner's manuals specific to the product supplied must accompany delivery of the equipment. General operating instruction, preventive maintenance, wiring diagrams, schematics and parts exploded views specific to this model must be included.

7.3. Installation

7.3.1. Contractor shall install the complete electrical generating system including all external fuel connections in accordance with requirements of NEC, NFPA, and the manufacturer's recommendations as reviewed by the Engineer.

7.4. Service

7.4.1. Supplier of the genset and associated items shall have permanent service facilities in this trade area. These facilities shall comprise a permanent force of factory trained service personnel on 24 hour call, experienced in servicing this type of equipment, providing warranty and routine maintenance service to afford the owner maximum protection. Delegation of this service responsibility for any of the equipment listed herein will not be considered fulfillment of these specifications. Service contracts shall also be available.

7.5. Warranty

7.5.1. The standby electric generating system components, complete genset and instrumentation panel shall be warranted by the manufacturer against defective materials and factory workmanship for a period of two (2) years. Such defective parts shall be repaired or replaced at the manufacturer's option, free of charge for parts, labor and travel.

7.5.2. The warranty period shall commence when the standby power system is first placed into service. Multiple warranties for individual components (engine, alternator, controls, etc.) will not be acceptable. Satisfactory warranty documents must be provided. Also, in the judgment of the specifying authority, the manufacturer supplying the warranty for the complete system must have the necessary financial strength and technical expertise with all components supplied to provide adequate warranty support.

7.6. Startup and Commissioning

7.6.1. The supplier of the electric generating plant and associated items covered herein shall provide factory trained technicians to inspect the completed installation and to perform an initial startup inspection to include:

7.6.1.1. Ensuring the engine starts (both hot and cold) within the specified time.

7.6.1.2. Verification of engine parameters within specification.

7.6.1.3. Verify no load frequency and voltage, adjusting if required.

7.6.1.4. Test all automatic shutdowns of the engine-generator.

7.6.1.5. Perform a load test of the electric plant, ensuring full load frequency and voltage are within specification by using building load.

7.6. Training

7.6.1. Training is to be supplied by the start-up technician for the end-user during commissioning. The training should cover basic generator operation and common generator issues that can be managed by the end-user.

7.6.2. Training is to include manual operation of system.

UTILITY SERVICE ENTRANCE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Arrangement with Utility Company for permanent electric service , including payment of Utility Company charges for service (AID TO CONSTRUCTION).
B. Underground service entrance.
C. Metering equipment.

1.02 REFERENCES

A. ANSI/NFPA 70 - National Electrical Code.

1.03 SYSTEM DESCRIPTION

A. Utility Company: Alabama Power
B. System Characteristics: 208/y120 3 phase, 4 wire

1.04 QUALITY ASSURANCE

A. Perform Work in accordance with Utility Company written requirements.

1.05 REGULATORY REQUIREMENTS

A. Conform to requirements of NEC and IBC 015.
B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

PART 2 PRODUCTS

2.01 UTILITY METERS

A. Meters will be furnished by Utility Company.

2.02 UTILITY METER BASE

A. Manufacturers: Supply meter bases as required by serving Utility.

PART 3 EXECUTION

3.01 PREPARATION

A. Make arrangements with Utility Company to obtain permanent electric service to the Project. Provide conduit, open trenches, close trenches, provide pads, etc. as required by the local Utility Company.
B. Coordinate location of Utility Company's facilities to ensure proper access is available.

3.02 INSTALLATION

A. Underground SERVICE: Install service entrance conduits as noted on the drawings. Provide meterbase, conduits and wiring required by the Local Utility.

STATE OF ALABAMA
LICENSED
06/23/2023
No. 50365
PROFESSIONAL
ENGINEER
ANDREW MINOR

TOTAL DESIGN ENGINEERING
3408 6th AVENUE SW
HUNTSVILLE, ALABAMA 35805
PHONE: 256-539-8585, FAX: 256-539-8508
EMAIL: AMINOR@TOTALDESIGNENGINEERING.COM

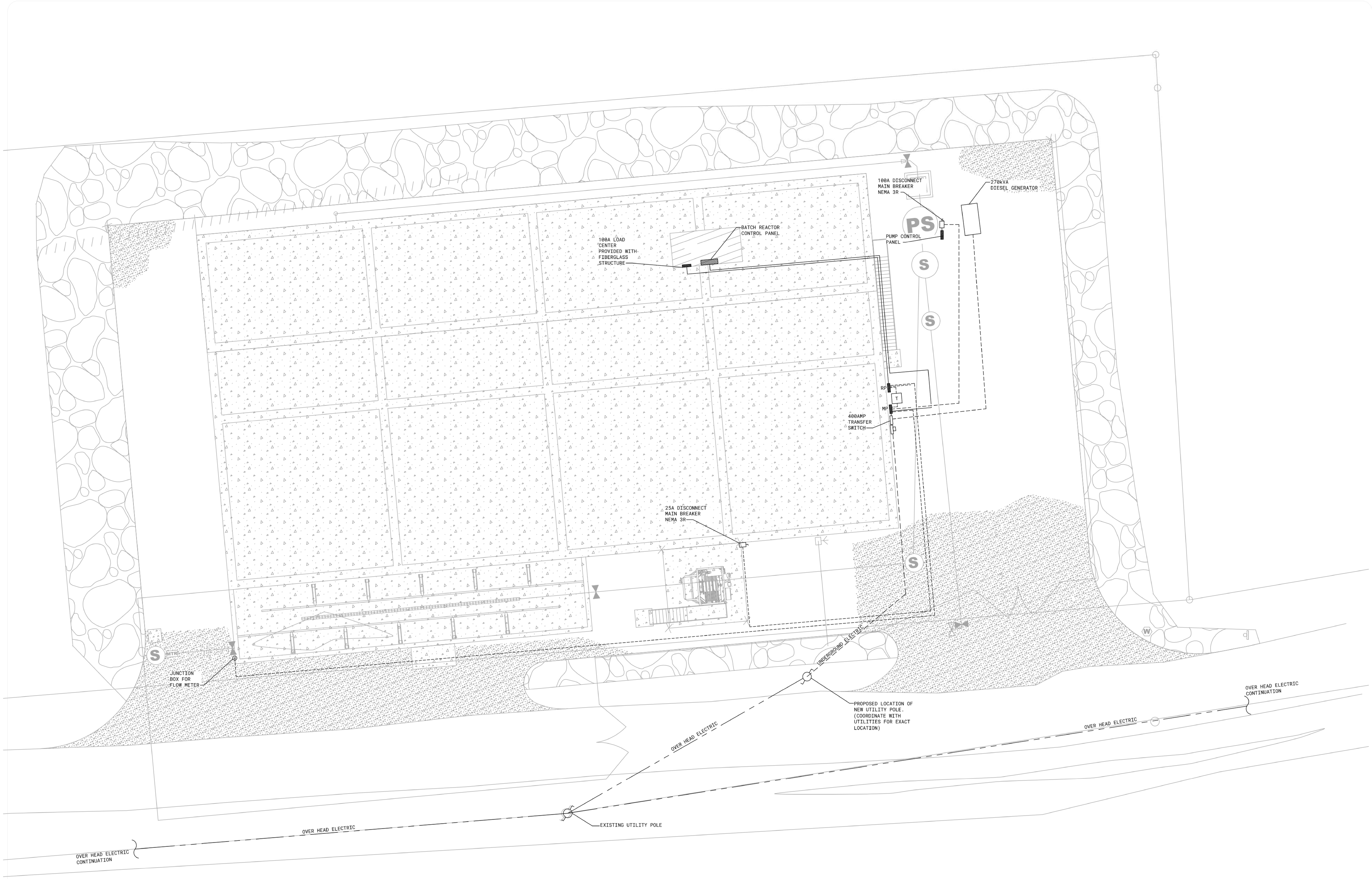
WWTP
SNEED AVEENUE
OWENS CROSS ROADS, AL 35763

GENERAL SPECS

DRAWN: TDF
CHECKED: AHM
DATE: 06/23/2023

SHEET NO: E-3 of 6
JOB NO: TSK-23-062

REVISIONS



SITE POWER PLAN

SCALE: 1" = 10'-0"

ALABAMA LICENSED 06/23/2023 No. 50365 PROFESSIONAL ENGINEER ANDREW MINOR

TOTAL DESIGN ENGINEERING
3408 6th AVENUE SW
HUNTSVILLE, ALABAMA 35805
PHONE: 256-539-8555, FAX: 256-539-8508
EMAIL: AMINOR@TOTALDESIGNENGINEERING.COM

WWTP
SNEED AVEENUE
OWENS CROSS ROADS, AL 35763

SITE POWER PLAN

DRAWN	CHECKED	DATE
TDF	AHM	06/23/2023

SHEET NO: E-4 of 6

JOB NO: TSK-23-062

REVISIONS

ELECTRICAL NOTES

1. ALL NECESSARY NEW ELECTRICAL EQUIPMENT REQUIRED FOR THE WORK PROPOSED SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNLESS NOTED OTHERWISE AS BEING PROVIDED BY OWNER.
2. THE CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS OF APPLICABLE FEDERAL, STATE AND LOCAL CODES, ORDINANCES AND REGULATIONS.
3. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS AND CERTIFICATES OF INSPECTION FOR ALL WORK.
4. WIRING WHICH PENETRATES FIRE RESISTANT WALLS SHALL BE ENCLOSED IN ELECTRICAL METALLIC TUBING (EMT), UNLESS UL LISTED FOR USE IN THROUGH PENETRATION SYSTEMS. EMT SHALL BE FIRE STOPPED USING APPROVED SEALANTS, CAULKING MATERIALS OR FOAM TO MAINTAIN FIRE RESISTANCE RATING. SEAL ALL ROOF PENETRATIONS WEATHER TIGHT PER LOCAL CODE. REQUEST INSPECTION BEFORE AND AFTER ANY THROUGH FIRE WALL PENETRATIONS.
5. METAL CLAD TYPE MC WIRING (WITH GALV. OR ALUMINUM ARMOR) MAY BE USED ABOVE CEILING AREAS PER N.E.C. ARTICLE 330.
6. LOCATION OF ELECTRICAL EQUIPMENT IS DIAGRAMMATIC AND SHOWS THE DESIGN INTENT ONLY. CONTRACTOR SHALL COORDINATE WITH PLANS OF ALL OTHER DISCIPLINES AND THEIR INSTALLERS FOR THE EXACT LOCATION OF ALL EQUIPMENT. PULL BOXES OR J-BOXES, THOUGH NOT SHOWN ON PLANS, SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR.
7. ALL ITEMS INCIDENTAL AND OR REQUIRED TO COMPLETE THE INSTALLATION SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR.
8. ALL ELECTRICAL EQUIPMENT, INCLUDING CONDUIT AND WIRING SHALL BE NEW AND UNUSED UNLESS NOTED OTHERWISE.
9. RECESSED FIXTURES SHALL MAINTAIN A 3" MINIMUM CLEARANCE TO ADJACENT COMBUSTIBLE MATERIALS UNLESS LABELED AS 'IC RATED'.
10. ALL CIRCUIT RUNS SHALL BE IDENTIFIED WITHIN EACH J-BOX WITH THE PROPER CIRCUIT NUMBER/DESCRIPTION OF EACH CIRCUIT ENTERING THE J-BOX. LABEL J-BOXES AND CONDUITS WITH PANDUIT CORP. INSTA-CODE PIPE MARKERS OR AN ENGINEER APPROVED EQUIVALENT.
11. PROVIDE CIRCUIT I.D. ON THE INSIDE OF ALL RECEPTACLES, CONSISTENT WITH EXISTING METHODS.
12. FITTINGS TO BE SET SCREW STEEL TYPE UTILIZING AN INSULATED THROAT.
13. THE CONTRACTOR SHALL RECORD ON AS-BUILT DRAWINGS ALL SIZES, MATERIAL, ELEVATIONS AND/OR LOCATIONS OF ALL ELECTRICAL EQUIPMENT THAT DEVIATE FROM THESE DRAWINGS.
14. REPAIR AREAS DAMAGED DURING CONSTRUCTION TO MATCH ADJACENT AREAS WITH RESPECT TO BOTH COLOR AND FINISH.
15. IDENTIFY BRANCH CIRCUITS AT THE PANEL AND AT THE LOAD OUTLET, RECEPTACLE AND SWITCH. IDENTIFY THE PURPOSE OF INDIVIDUAL CIRCUIT BREAKERS, AND SAFETY SWITCHES BY MEANS OF NAMEPLATES.
16. MAINTAIN SERVICE CLEARANCE AROUND PANELBOARDS PER N.E.C. ARTICLES 110.26 AND 110.34.
17. PROVIDE CIRCUIT BREAKERS WITH UL LISTED INTERRUPTING RATINGS (RMS SYMMETRICAL AMPERES) GREATER THAN THE AVAILABLE FAULT CURRENT SHOWN ON ELECTRICAL ONE LINE DIAGRAM OR EQUAL RATING AS ELECTRICAL PANEL.
18. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ELECTRICAL POWER CONNECTIONS TO ALL OWNER FURNISHED FIXTURES.
19. PROVIDE AND CONNECT ALL CONTROL WIRING REQUIRED FOR THE PROPER OPERATION OF THE MECHANICAL SYSTEMS, EXCEPT WHERE SPECIFICALLY SHOWN OTHERWISE ON THE DRAWINGS OR SPECIFIED. REFER TO MECHANICAL DRAWING CONTROL DIAGRAMS AND MECHANICAL EQUIP. SHOP DRAWINGS.
20. PROVIDE ALL TEMPORARY POWER AND LIGHTING DURING CONSTRUCTION.
21. AT THE TIME OF SHOP DRAWINGS SUBMITTAL CLEARLY MARK ALL DISCREPANCIES BETWEEN SHOP DRAWINGS AND BID DOCUMENTS.
22. WWTP PROCESS SUPPLIER AND CONTRACTOR TO COORDINATE WIRING REQUIREMENTS FROM CONTROL PANEL TO ALL EQUIPMENT THAT IS FEED FROM CONTROL PANEL. CONTRACTOR TO SUPPLY ALL REQUIRED MATERIAL TO COMPLETE INSTALL.

ABBREVIATIONS

1PH	SINGLE PHASE	GFCI	GROUND FAULT CIRCUIT INTERRUPTER
3PH	THREE PHASE	G	GROUND
3W	THREE WIRE	JBOX	JUNCTION BOX
4W	FOUR WIRES	KV	KILOVOLT
A.F.F.	ABOVE FINISHED FLOOR	KVA	KILOVOLT AMPERE
AIC	AMPERE INTERRUPTING CAPACITY	M.B.	MAIN BREAKER
AMP	AMPERE	M.L.O.	MAIN LUG ONLY
BKR	CIRCUIT BREAKER	REC	RECEPTACLE
C	CONDUIT	WP	WEATHERPROOF
CU	COPPER	XFMR	TRANSFORMER
DISC	DISCONNECT SWITCH		
FC	FOOT CANDLE		
GA	GAGE		

CONDUIT & CONDUCTORS

(solid line)	CONDUIT, EXPOSED ON WALL OR CEILING
(solid arc)	CONDUIT, CONCEALED IN WALL OR CEILING
(dashed arc)	CONDUIT, INSTALLED BELOW SLABS OR BELOW GRADE
(arc with arrow)	HOMERUN TO PANEL, 2 #12 1/2"C AS SHOWN

10 / B-3,5
- HOMERUN TO PANEL, 3 #10 3/4"C AS SHOWN
- INDICATES NO. AND SIZE OF CONDUCTORS
- INDICATES HOMERUN TO PANEL
- INDICATES PANEL AND CIRCUIT NO. (PANEL LP-B CKT 3 AND 5)

1. SHORT HASH MARKS INDICATE NUMBER OF HOT & SWITCH LEG CONDUCTORS.
2. LONG HASH MARKS INDICATE NUMBER OF NEUTRAL CONDUCTORS.
3. SIZE CONDUIT PER N.E.C. LATEST EDITION UNLESS NOTED OTHERWISE.
4. PROVIDE N.E.C. LATEST EDITION GROUND CONDUCTOR SIZE IN ALL CONDUIT RUNS.
5. CONDUIT USED FOR AREAS ON BUILDING EXTERIOR SHALL BE RIGID GALVANIZED STEEL CONDUIT ONLY. UNDERGROUND SHALL BE PVC SCH. 40 OR SCH. 80 UNLESS OTHERWISE NOTED ON DRAWING.
6. ALL WIRE SHALL BE SOLID COPPER, #12 AWG MINIMUM TYPE THHN/THWN INSULATION RATED 75°C MIN, 600 VOLTS UNLESS OTHERWISE NOTED.
7. WIRE SIZES LARGER THAN #12 AWG TO BE STRANDED COPPER.
8. ALL CIRCUITS TO INCLUDE GROUND WIRES.
9. PROVIDE A PULL STRING IN ALL EMPTY DATA OUTLET CONDUITS OF NYLON, BRAIDED POLYESTER OR PROPYLENE (100# TEST), INSTALLED WITH 12" SLACK AT EACH END OF THE CONDUIT RUN.
10. INSTALL AN INSULATED EQUIPMENT GROUNDING CONDUCTOR IN EACH RACEWAY OR CONDUIT. SIZE EQUIPMENT GROUNDING CONDUCTOR IN ACCORDANCE WITH N.E.C. TABLE 250.66.
11. CONDUITS SHALL BE ROUTED PARALLEL OR PERPENDICULAR TO WALLS AND/OR CEILING WHEREVER POSSIBLE. ROUTE NO CONDUITS DIRECTLY BENEATH AND PARALLEL TO MECHANICAL PIPING.
12. VOLTAGE DROP: FOR 20A CIRCUITS OVER 100 FEET AND LESS THAN 175 FEET USE #10 CONDUCTORS. FOR 20A CIRCUITS OVER 175 FEET AND LESS THAN 275 FEET, USE #8 CONDUCTORS.

ELECTRICAL SYMBOLS

$	TOGGLE SWITCH, SINGLE POLE, 125/277 VOLT 20 AMP.
(symbol)	WEATHERPROOF DUPLEX OUTLET, GFCI TYPE, NEMA 5-15R, 125V,15AMP. HUBBELL #GF5262A OR EQUAL.
(symbol)	NON-FUSED DISCONNECT, AMP OR HP RATED, SEE FLOOR PLAN.
(symbol)	ELECTRICAL PANEL (SEE SCHEDULE)

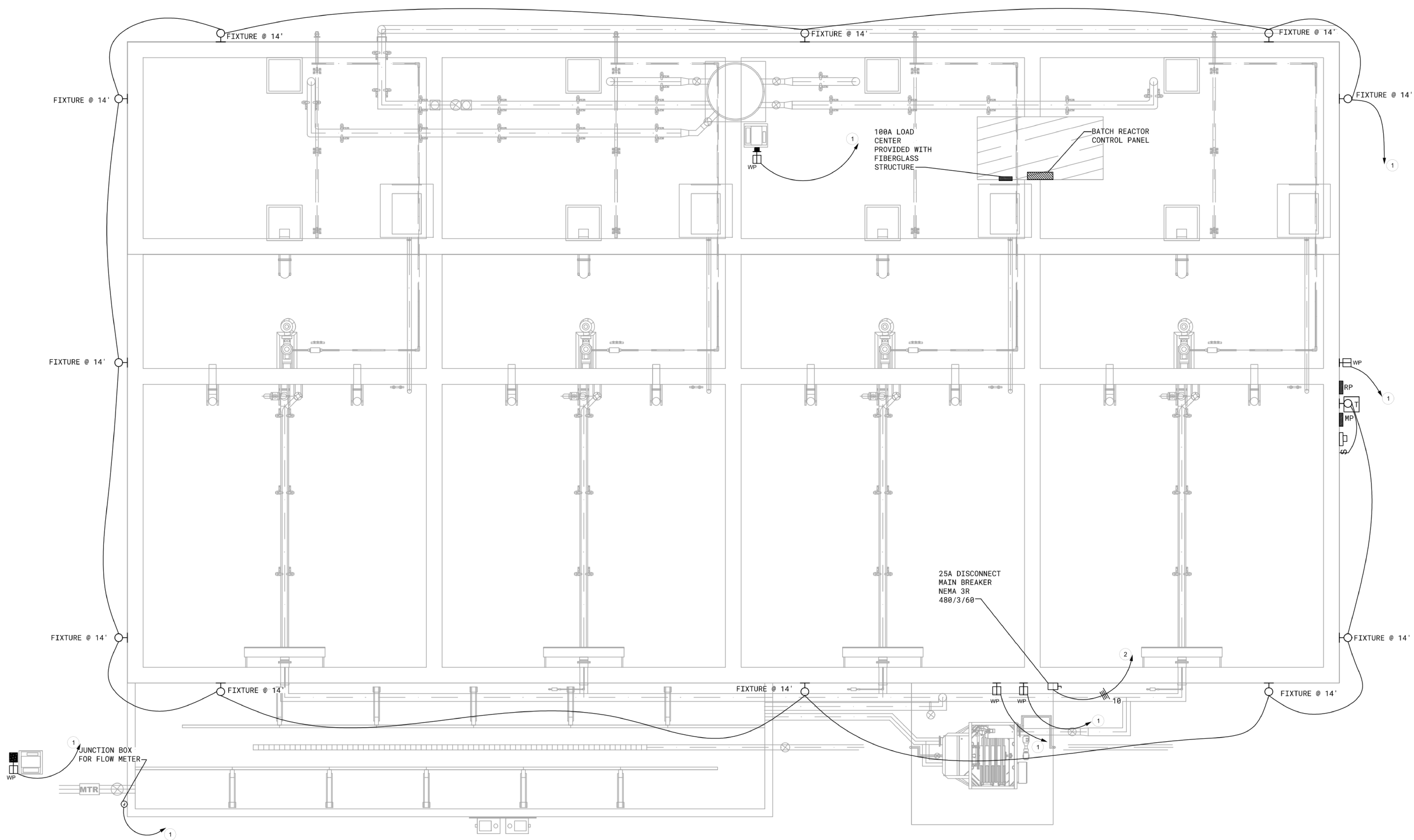
NOTES:
1. FINISH FOR ALL SWITCHES, RECEPTACLES, PLATES AND OTHER DEVICES TO BE COORDINATED WITH OWNER AND ARCHITECT.

LIGHTING LEGEND

MARK	DESC.			
(symbol)	LED WALL PACK			
MFG/MODEL		LUMENS	COLOR	WATTS
LITHONIA LIGHTING TWP LED ALO 50K		4888	50K	45
		MOUNT:	WALL	
NOTES:				

NOTES

1. APPROVED EQUAL BY COLUMBIA, COOPER, OR BELL & MCCOY.
2. COORDINATE ALL COLOR OPTIONS WITH OWNER & ARCHITECT, PRIOR TO ORDERING.
3. VERIFY EXACT MOUNTING REQUIREMENTS IN FIELD. COORDINATE WITH ARCHITECT & OWNER FOR EXACT ELEVATION PRIOR TO INSTALLATION.
4. VERIFY FINAL LOCATIONS OF LIGHT FIXTURES WITH OWNER PRIOR TO INSTALLATION.
5. COORDINATE LOCATION OF LIGHT FIXTURES WITH ALL TRADES AS REQUIRED.



ELECTRICAL POWER PLAN

SCALE: 1/8" = 1'-0"

ELECTRICAL POWER PLAN KEYED NOTES:

1. PROVIDE A 2-#12, 1#12(CU)G, 1/2"C RUN TO A 20AMP BREAKER IN PANEL "RP"
2. PROVIDE A 3-#10, 1#10(CU)G, 1/2" RUN TO A 25AMP BREAKER IN PANEL "MP"

ALABAMA LICENSED 06/23/2023 No. 50365 PROFESSIONAL ENGINEER ANDREW MINOR

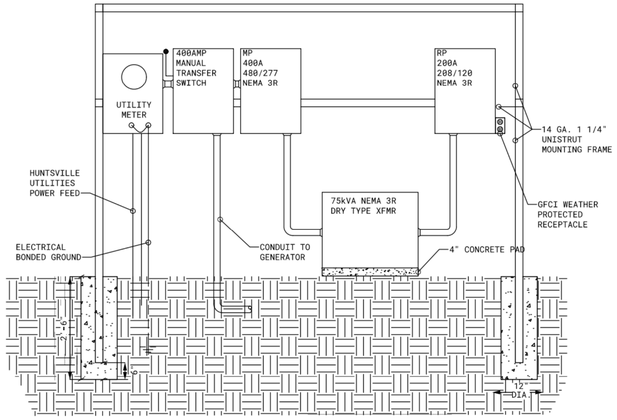
TOTAL DESIGN ENGINEERING
3408 6th AVENUE SW
HUNTSVILLE, ALABAMA 35805
PHONE: 256-539-8585, FAX: 256-539-8508
EMAIL: AMINOR@TOTALDESIGNENGINEERING.COM

WWTP
SNEED AVEENUE
OWENS CROSS ROADS, AL 35763

ELECTRICAL POWER PLAN

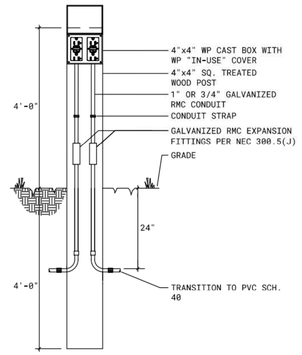
DRAWN: TDF
CHECKED: AHM
DATE: 06/23/2023
SHEET NO: E-5 of 6
JOB NO: TSK-23-062

REVISIONS



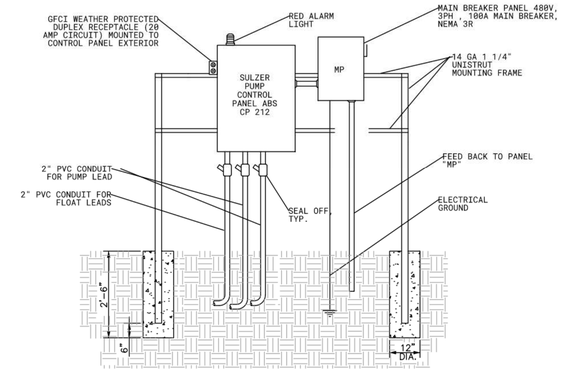
UNITSRUT PANEL MOUNTING DETAIL

NOT TO SCALE



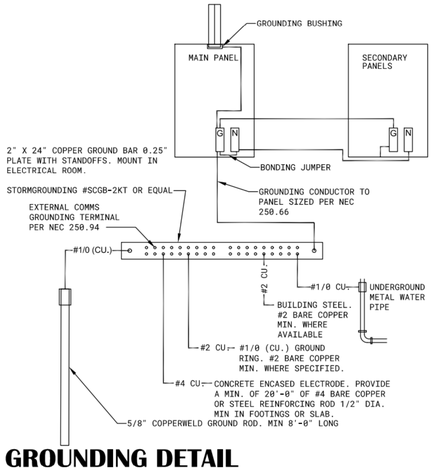
TYPICAL POST RECEPTACLE DETAIL

NOT TO SCALE



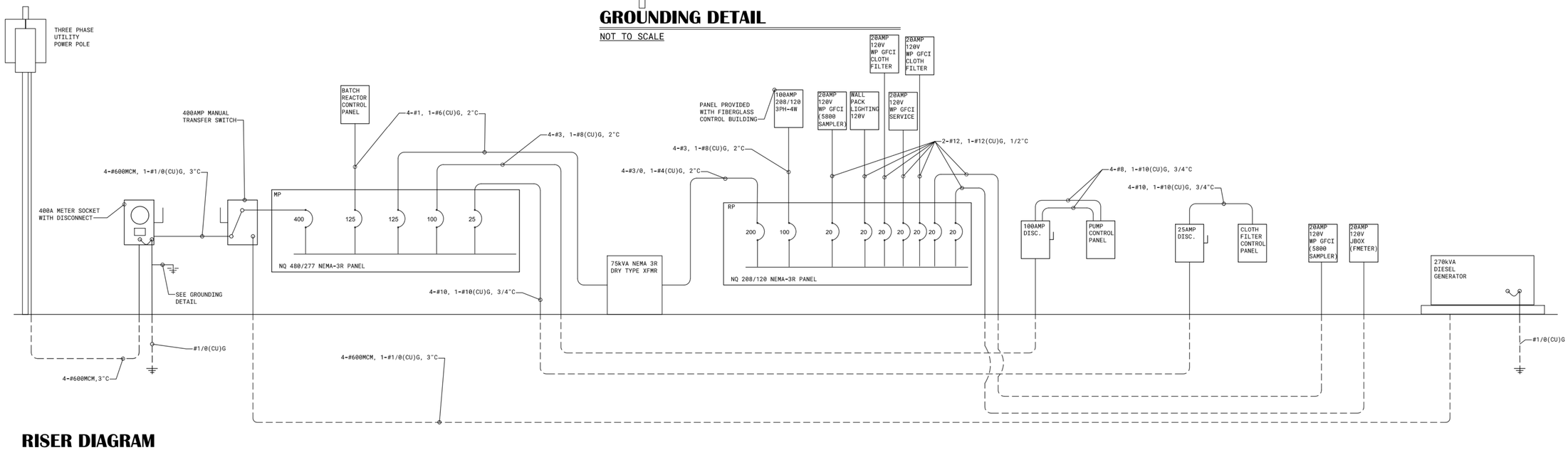
PUMP STATION UNITSTUR MOUNTING DETAIL

NOT TO SCALE



GROUNDING DETAIL

NOT TO SCALE



RISER DIAGRAM

NOT TO SCALE

ALABAMA LICENSED
06/23/2023
No. 50365
PROFESSIONAL
ENGINEER
ANDREW MINOR

TOTAL DESIGN ENGINEERING
3408 6th AVENUE SW
HUNTSVILLE, ALABAMA 35805
PHONE: 256-539-5565, FAX: 256-539-5505
EMAIL: AMINOR@TOTALDESIGNENGINEERING.COM

WWTP

SNEED AVEENUE
OWENS CROSS ROADS, AL 35763

ELECTRICAL DIAGRAMS & DETAILS

DRAWN: TDF
CHECKED: AHM
DATE: 06/23/2023
SHEET NO: E-6 OF 6
JOB NO: TSK-23-062

REVISIONS