



H:\PROJECT FILES\100392.02\_LAKE\_CITY\_SC\_-\_LAKE\_SWAMP\_WWTP\_UPGRADE\300\_DESIGN\355\_PRELIMINARY\_DRAWINGS\00\_GENERAL\G00.10\_TOC.DWG  
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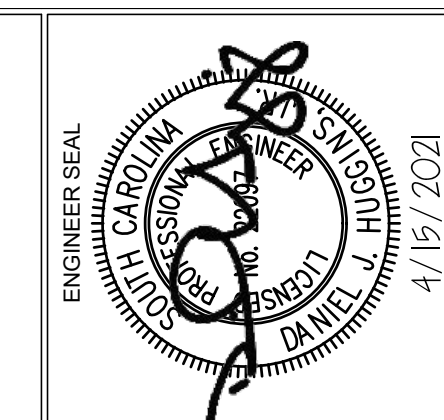
- H07.10 EXISTING BLOWER BUILDING IMPROVEMENTS PLAN & SECTION
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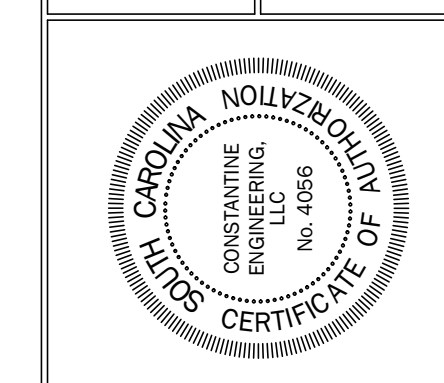
**NOTES:**

1. FIELD VERIFY EXISTING CONDITIONS INCLUDING ALL ELEVATIONS AND DIMENSIONS PRIOR TO CONSTRUCTION. NOTIFY ENGINEER IMMEDIATELY IF CONDITIONS VARY FROM THOSE SHOWN.
2. ALL HARDWARE, NUTS, BOLTS, ETC. TO BE 316 L STAINLESS STEEL.



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		DH	DH	DH	MB	JK

**DRAWING INDEX & GENERAL NOTES**  
  
**CITY OF LAKE CITY**  
**LAKE SWAMP WWTP UPGRADE**



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DWG.	G00.10

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### GENERAL SYMBOLS

DESCRIPTION	EXISTING	NEW
WATER VALVE		
WATER METER		
FIRE HYDRANT		
AIR RELEASE VALVE (BOX)		
GRAVITY SEWER LINE		
FORCE MAIN		
SEWER MANHOLE		
CLEAN OUT		
STORM DRAIN		
CATCH BASIN		
JUNCTION BOX		
GAS LINE		
GAS VALVE		
PAVED ROAD		
CURB & GUTTER		
DIRT/GRAVEL ROAD		
SIDEWALK		
GUARD RAIL		
FENCE LINE (LINK)		
FENCE LINE (WOOD)		
TREE LINE		
SIFT FENCE		
UNDERGROUND FIBER OPTIC		
POWER POLE		
SERVICE POLE		
LIGHT POLE		
CONCRETE MONUMENT		
BUILDING		
BENCHMARK		

### MATERIALS

	EXISTING	PROPOSED
EARTH OR GRADE		
CONCRETE		
ASPHALTIC PAVEMENT		
GRATING		
CRUSHED STONED PAVING		

### GENERAL SYMBOLS

	NEW MAIN THIS PROJECT
	SOIL BORING
	PIEZOMETER
	EXISTING CONTOUR
	NEW CONTOUR
	EXISTING SPOT ELEVATION
	NEW SPOT ELEVATION
	EXISTING STRUCTURES (TO BE MODIFIED)
	EXISTING STRUCTURES (TO BE REMOVED)
	FUTURE STRUCTURES
	TRANSMITTER
	FIRE EXTINGUISHER
	DOUBLE CHECK VALVE BACKFLOW PREVENTER
	REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER
	PRESSURE GAUGE

PIPE IDENTIFIER	DESCRIPTION	PIPE IDENTIFIER	DESCRIPTION
AIR	AIR	PW	POTABLE WATER
BYP	BYPASS	SCW	SCUM WASTE
DEC	DECANT	SPGW	SEPTAGE WASTE
DRN	DRAIN	SS	SANITARY SEWER
EFF	EFFLUENT	RAS	RETURN ACTIVATED SLUDGE
FM	FORCE MAIN	WAS	WASTE ACTIVATED SLUDGE
INF	INFLUENT		
MXL	MIXED LIQUOR		
NPW	NON-POTABLE WATER		

### GENERAL NOTES:

- SIMPLIFIED JOINT SYMBOL IS USED FOR ALL SINGLE LINE PIPING SHOWN ON THE INTERIOR AND EXTERIOR PIPING DRAWINGS.
- BOTH SIMPLIFIED AND COMPLEX JOINT REPRESENTATIONS MAY BE SHOWN ON THE DRAWINGS.
- UNLESS MODIFIED BY THE GENERAL PROJECT NOTES OR DETAILED ON THE LAYOUT AND SCHEMATIC DRAWINGS PIPE AND FITTING JOINT REQUIREMENTS FOR THE VARIOUS PIPE MATERIALS ARE DEFINED IN THE SPECIFICATIONS.

### VALVE, GATE, AND DAMPER ACTUATOR SYMBOLS

	MANUAL HANDWHEEL		ELECTRIC
	MANUAL HANDWHEEL W/ EXTENDED BONNET		SOLENOID
	MANUAL CHAINWHEEL		HYDRAULIC
	LEVER		PNEUMATIC
	MANUAL OPERATING NUT (W/ BOX FOR BURIED SERVICE)		

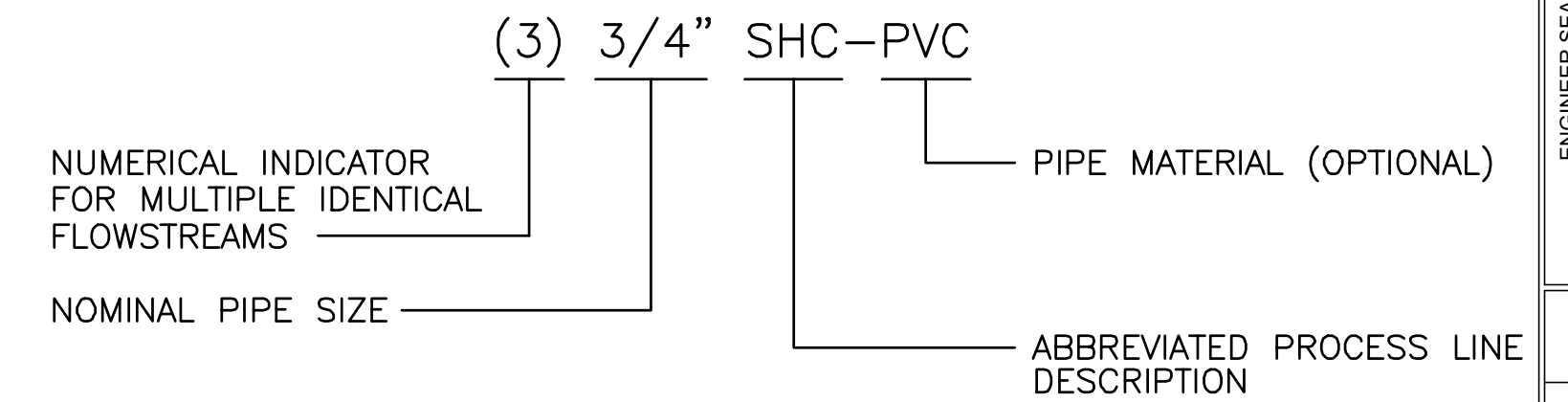
### PIPING SYMBOLOGY

DOUBLE LINE SYMBOL	SINGLE LINE SYMBOL	FEATURE
		FLANGED JOINT ADAPTER
		FLANGED JOINT SIMPLIFIED REPRESENTATION.
		FLANGED JOINT COMPLEX REPRESENTATION.
		MECHANICAL JOINT COMPLEX REPRESENTATION.
		DIRECTION OF FLOW
		RUBBER EXPANSION JOINT
		FLOW METER, GENERAL SYMBOL
		VENTURI FLOW METER

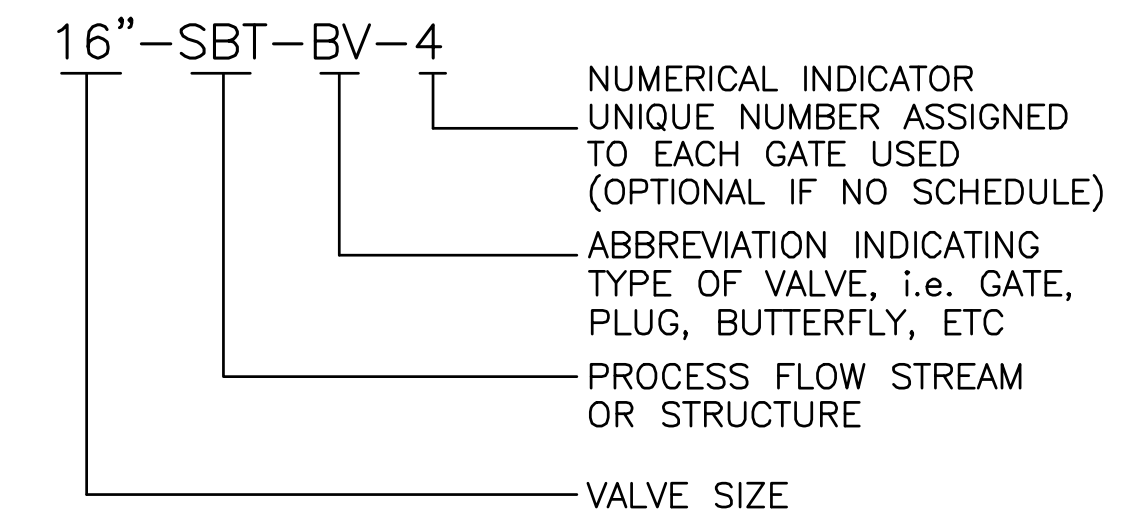
### VALVE SYMBOLOGY

SYMBOL	FEATURE
	UNCLASSIFIED, TYPE AS SHOWN ON THE DRAWINGS ADJACENT TO SYMBOL
	FLOW METER
	TELESCOPING VALVE
	GATE VALVE
	KNIFE GATE VALVE
	GLOBE VALVE
	BALL VALVE
	3-WAY BALL VALVE
	4-WAY BALL VALVE
	NEEDLE VALVE
	PINCH VALVE
	DIAPHRAGM VALVE
	BUTTERFLY VALVE
	PLUG VALVE
	CHECK VALVE
	BALL CHECK VALVE
	SOLENOID VALVE
	MOTOR OPERATED VALVE
	MUD VALVE
	FLOOR DRAIN
	CALIBRATION CYLINDER
	AIR RELEASE VALVE

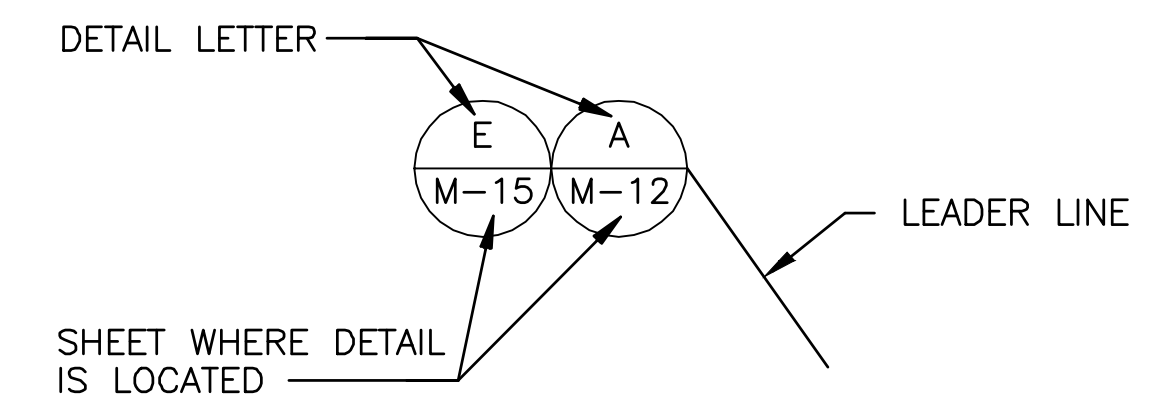
### PIPE TAG



### VALVE TAG (OPTIONAL)

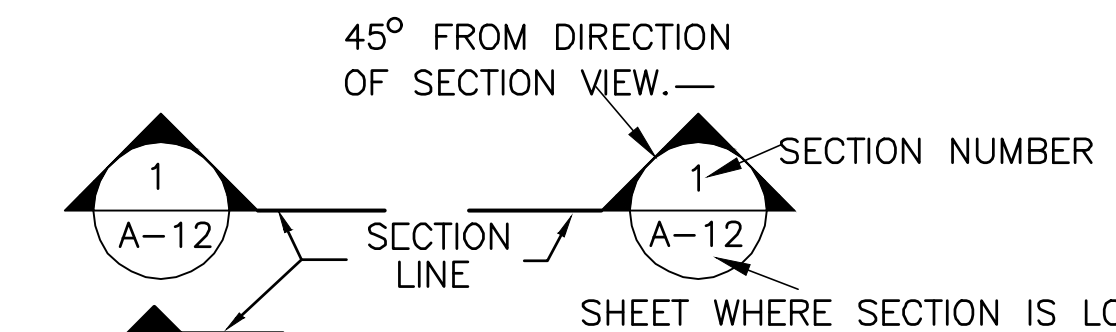


### DETAIL CALL OUT SYMBOLS



IF MULTIPLE DETAILS REFER TO THE SAME AREA OF THE DRAWING, THE BUBBLES SHOULD BE STACKED SIDE BY SIDE.

### SECTION CUT SYMBOLS



THIS SYMBOLOGY TO BE USED FOR SHORT SECTION CUTS ONLY.

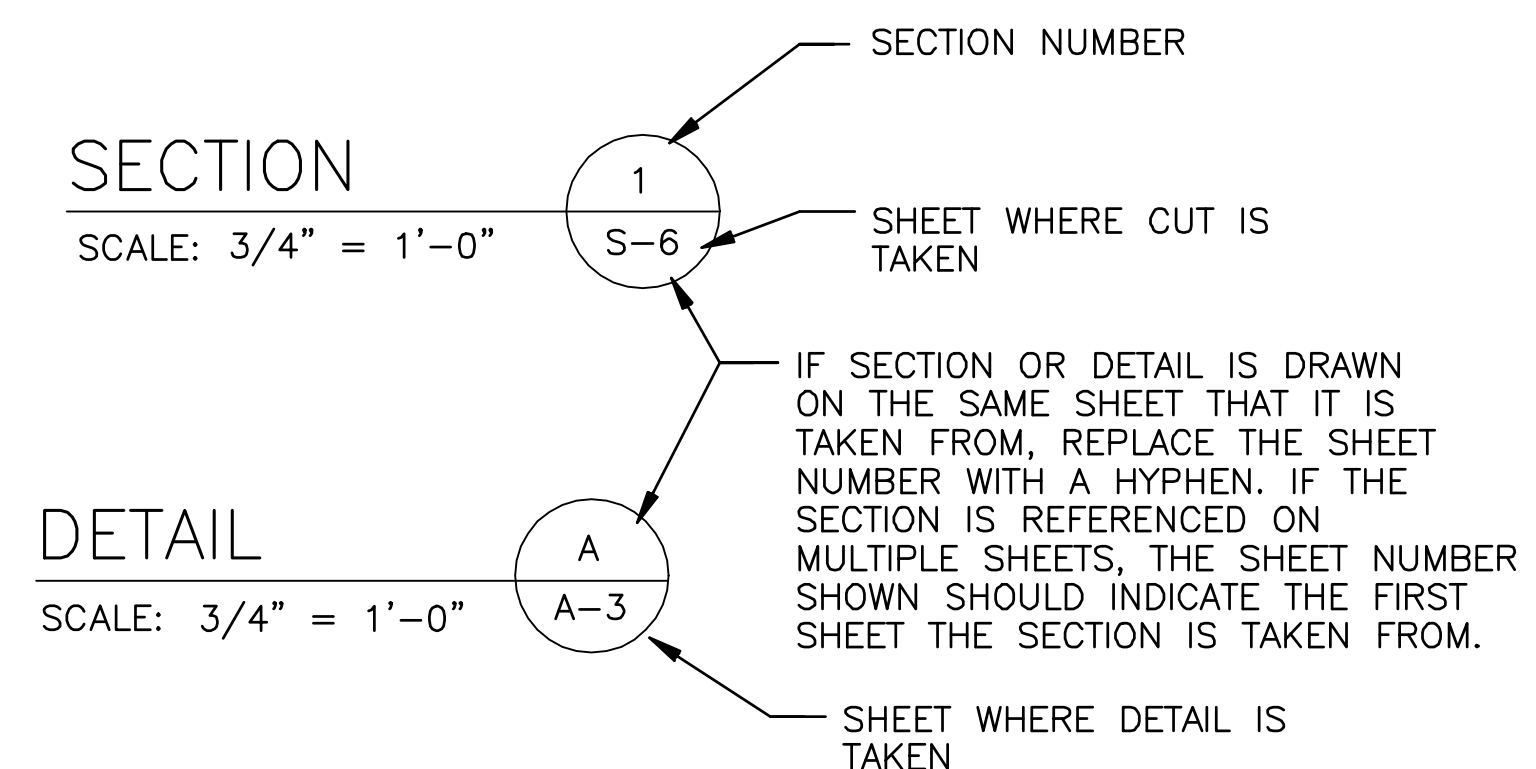
SHEET WHERE SECTION IS LOCATED IF THE SECTION IS SHOWN ON THE SAME SHEET IT IS CUT, THE SHEET NUMBER SHOULD BE REPLACED WITH A DASH.

### SUBTITLE OR DESCRIPTION (AS REQ'D)

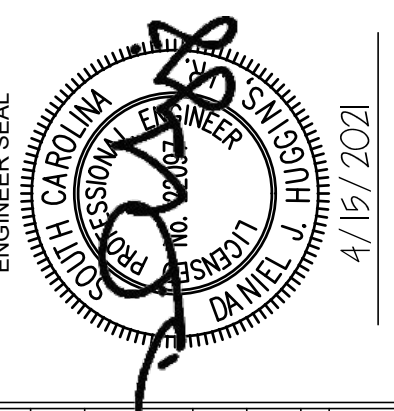
#### PLAN

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

### DRAWING, SECTION AND DETAIL TITLES



IF SECTION OR DETAIL IS DRAWN ON THE SAME SHEET THAT IT IS TAKEN FROM, REPLACE THE SHEET NUMBER WITH A HYPHEN. IF THE SECTION IS REFERENCED ON MULTIPLE SHEETS, THE SHEET NUMBER SHOWN SHOULD INDICATE THE FIRST SHEET THE SECTION IS TAKEN FROM.



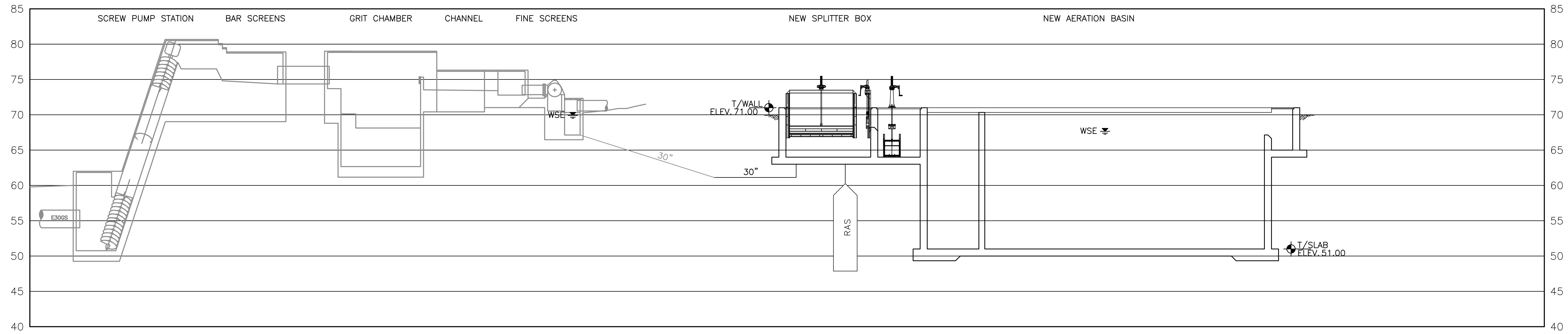
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GENERAL SYMBOLS  
 CITY OF LAKE CITY  
 LAKE SWAMP WWTP UPGRADE



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FINE SCREENS	
T/WALL	72.32
B/SCREEN CHANNEL	70.4
WSE	69.92

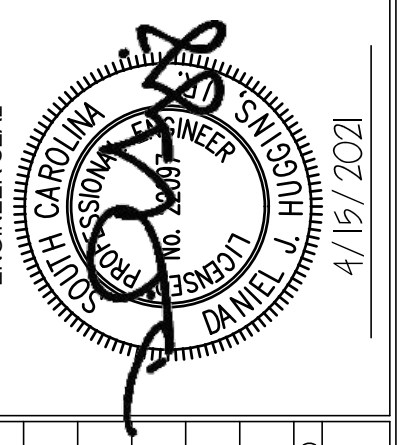
SPLITTER BOX	
T/WALL	71.00
T/WEIR	68.38
WSE	69.00

AERATION BASIN	
T/WALL	71.00
T/WEIR	67.49
WSE	67.67

**NOTES:**

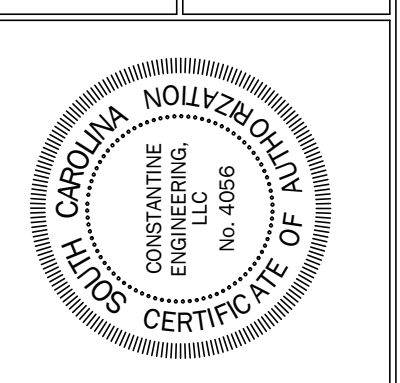
1. FLOW SPLIT BETWEEN THE NEW AERATION BASIN AND EXISTING AERATION BASIN IS 65/35.

LAKE SWAMP WWTP	
PLANT FLOWS	
DESIGN ADF	5.2 MGD
DESIGN PEAK	10.4 MGD
RAS	5.2 MGD




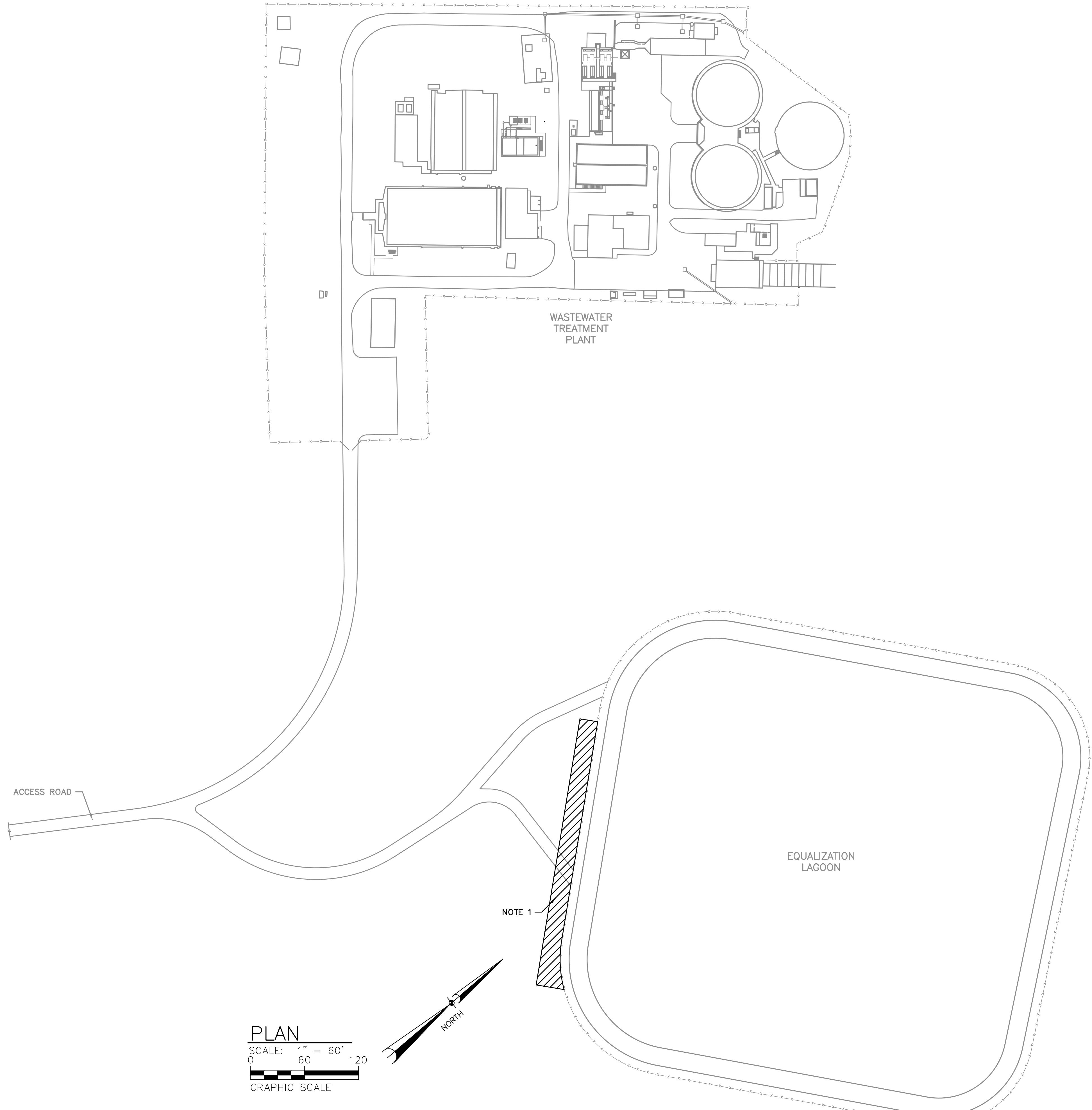
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		DH	DH		MB	JK

**HYDRAULIC PROFILE**  
**CITY OF LAKE CITY**  
**LAKE SWAMP WWTP UPGRADE**

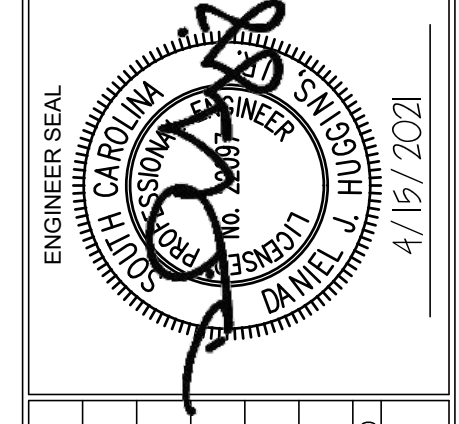


  
**Constantine**  
 Engineering  
 4000 FABER PLACE DRIVE, SUITE 330  
 NORTH CHARLESTON, SC 29405  
 PH. 843-628-3352

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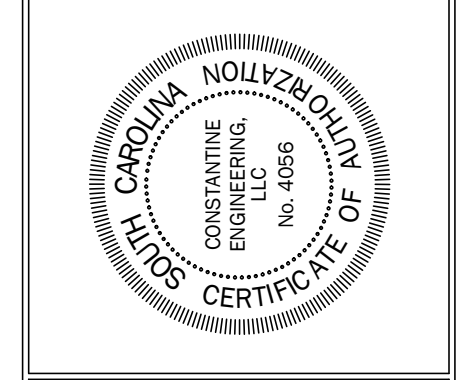


- NOTES:**
1. THE AREA ALONG THE NORTH SIDE OF THE EQUALIZATION BASIN CAN BE UTILIZED TO STOCKPILE SOLID WASTE REMOVED FROM THE PROCESS TANKS FOR DEWATERING (IN LIEU OF UTILIZING MECHANICAL DEWATERING DEVICES AS SPECIFIED). THE SOLID WASTE MUST STORED ON 6 MIL PLASTIC SHEETING AND BE LEGALLY DISPOSED OF ONCE DEWATERED. THE AREA AVAILABLE IS APPROXIMATELY 20'x300'.
  2. THE DOWNSTREAM SIDE PRIOR TO ENTERING THE BASIN SHALL HAVE SILT FENCE & STRAW BALES.



NO.	DATE	DESIGNED BY:	DH	DRAWN BY:	DH	REVISION	CHECKED BY:	MB	BY:	APPROVED BY:	JK
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OVERALL EXISTING  
 SITE PLAN  
 CITY OF LAKE CITY  
 LAKE SWAMP WWTP UPGRADE



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**BENCHMARK SCHEDULE**

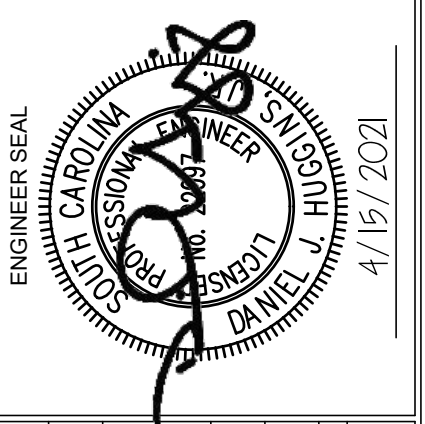
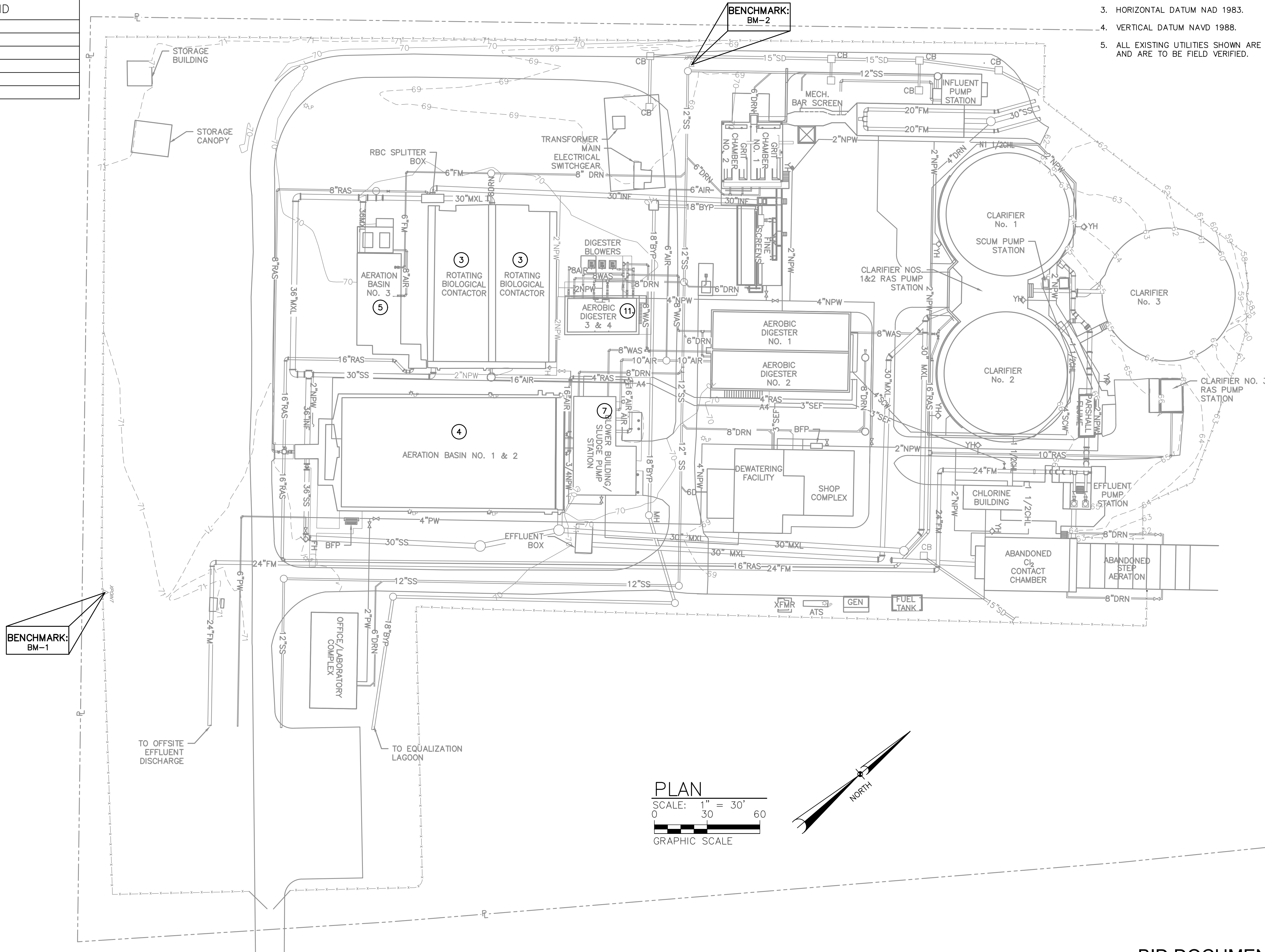
NAME	NORTHING	EASTING	ELEVATION	DESCRIPTION
BM-1	741149.36	2385362.35	71.28	5/8" REBAR W/ RED CAP
BM-2	741598.09	2385351.06	68.78	MAG NAIL IN PAVEMENT

**EXISTING FACILITY ID LEGEND**

ID NO.	FACILITY DESCRIPTION
3	ROTATING BIOLOGICAL CONTACTOR
4	AERATION BASIN NOS. 1 & 2
5	AERATION BASIN NO. 3
7	BLOWER BUILDING/SLUDGE PUMP STATION
11	AEROBIC DIGESTERS

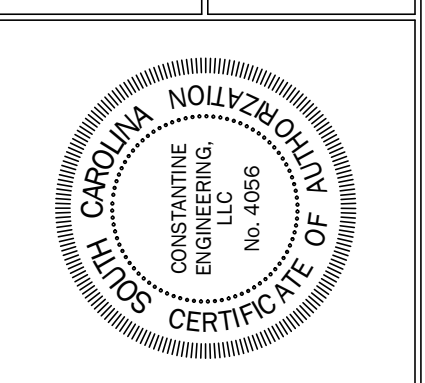
**NOTES:**

- CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE EXACT LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES WITHIN THE PROJECT LIMITS. CONTACT PALMETTO UTILITY PROTECTION SERVICES AT 1-888-721-7877 PRIOR TO CONSTRUCTION.
- EXISTING INFORMATION TAKEN FROM BP BARBER RECORD DRAWINGS DATED JUNE 1996, CONSTRUCTION DRAWINGS DATED MAY 1999, AND A PARTIAL SURVEY FROM HOWELL GEOSPATIAL SURVEYING, LLC.
- HORIZONTAL DATUM NAD 1983.
- VERTICAL DATUM NAVD 1988.
- ALL EXISTING UTILITIES SHOWN ARE APPROXIMATE AND ARE TO BE FIELD VERIFIED.



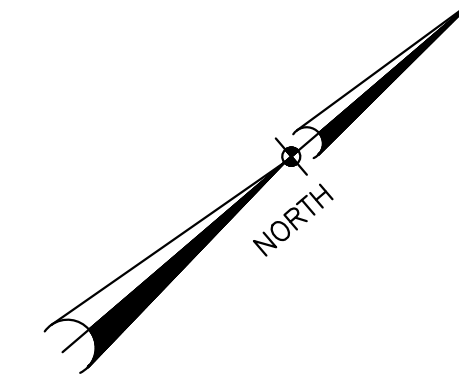
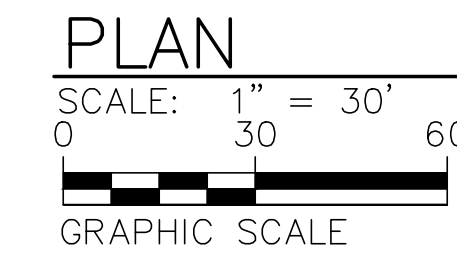
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**EXISTING SITE PLAN**  
**CITY OF LAKE CITY**  
**LAKE SWAMP WWTP UPGRADE**



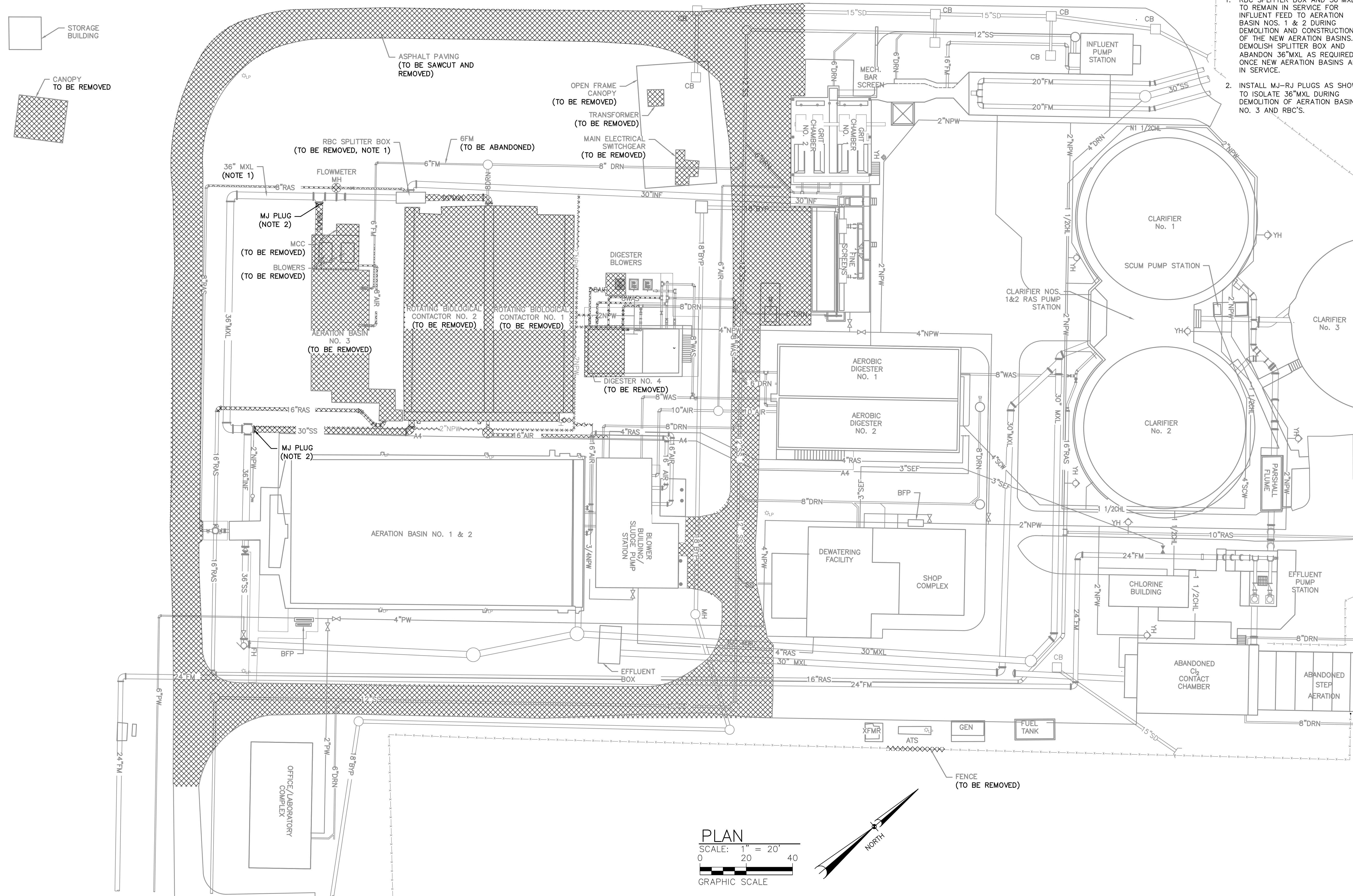
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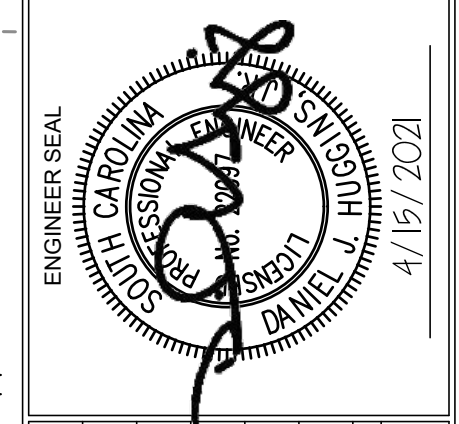


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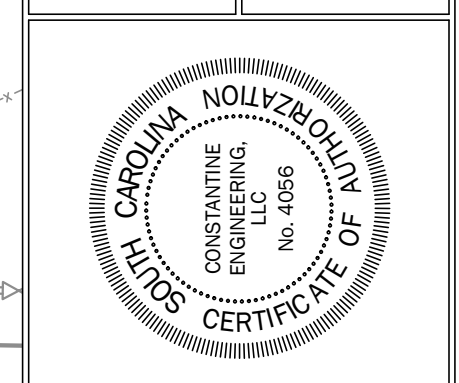


- NOTES:**
- RBC SPLITTER BOX AND 36"MXL TO REMAIN IN SERVICE FOR INFLUENT FEED TO AERATION BASIN NOS. 1 & 2 DURING DEMOLITION AND CONSTRUCTION OF THE NEW AERATION BASINS. DEMOLISH SPLITTER BOX AND ABANDON 36"MXL AS REQUIRED ONCE NEW AERATION BASINS ARE IN SERVICE.
  - INSTALL MJ-RJ PLUGS AS SHOWN TO ISOLATE 36"MXL DURING DEMOLITION OF AERATION BASIN NO. 3 AND RBC'S.

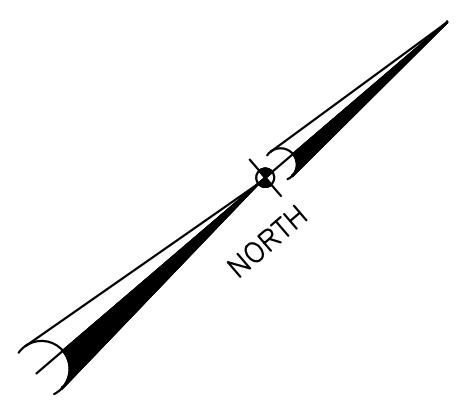
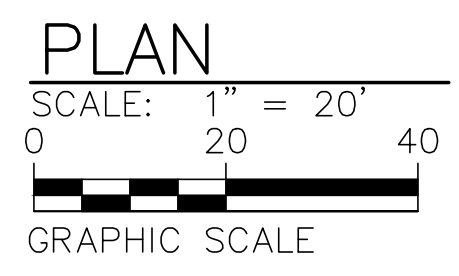


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		DH	DH	DH	MB	JK

**SITE DEMOLITION PLAN**  
**CITY OF LAKE CITY**  
**LAKE SWAMP WWTP UPGRADE**



4000 FABER PLACE DRIVE, SUITE 330  
 NORTH CHARLESTON, SC 29405  
 PH. 843-628-3352



**BID DOCUMENTS**

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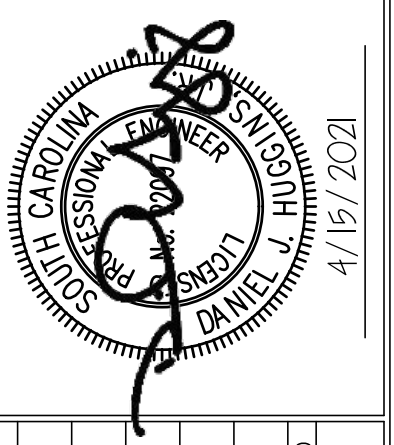
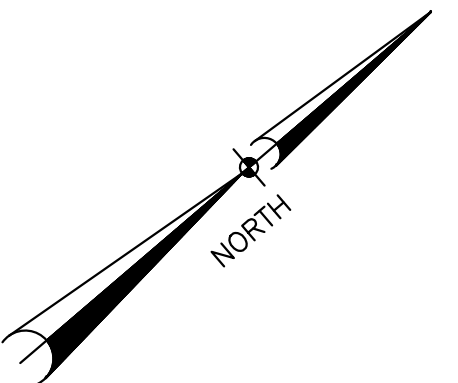
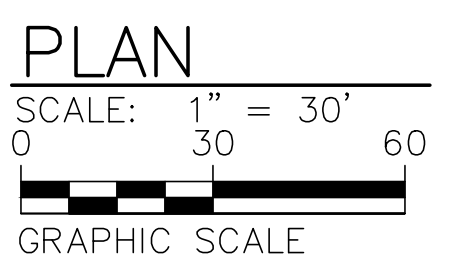
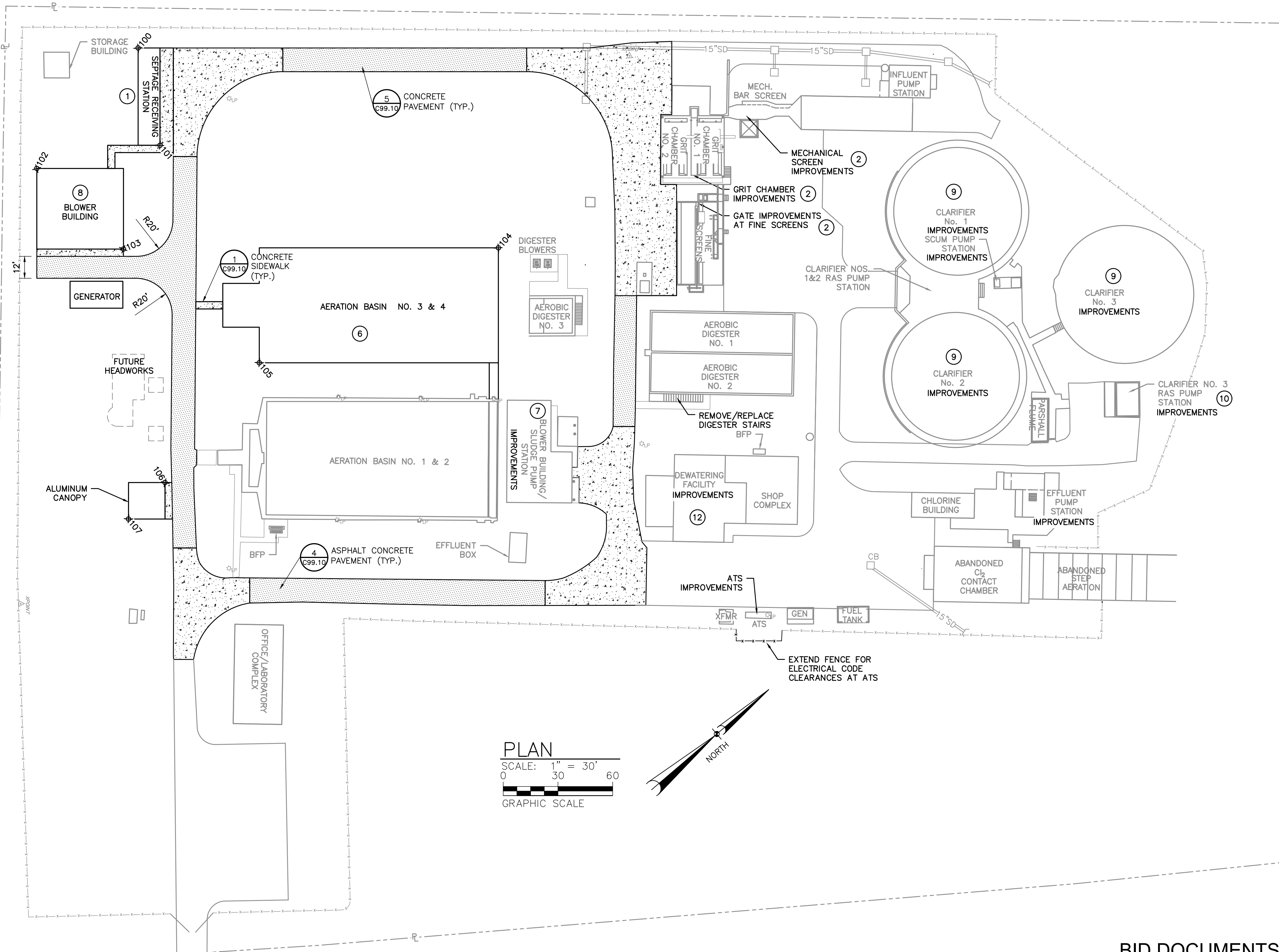
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FACILITY ID LEGEND	
ID NO.	FACILITY DESCRIPTION
1	SEPTAGE RECEIVING STATION
2	SCREENING AND GRIT STRUCTURE
6	AERATION BASIN NO. 3 & 4
7	BLOWER BUILDING/SLUDGE PUMP STATION
8	BLOWER BUILDING
9	CLARIFIERS
10	RAS PUMP STATION
12	DEWATERING FACILITY

SITE STAKING POINTS			
POINT NUMBER	NORTHING	EASTING	DESCRIPTION
100	741396.22	2385172.67	SEPTAGE CORNER
101	741370.67	2385221.00	SEPTAGE CORNER
102	741311.11	2385186.77	BLOWER BUILDING CORNER
103	741318.50	2385251.21	BLOWER BUILDING CORNER
104	741475.06	2385384.22	AERATION BASIN CORNER
105	741334.56	2385346.95	AERATION BASIN CORNER
106	741252.63	2385363.23	CANOPY CORNER
107	741224.43	2385365.43	CANOPY CORNER

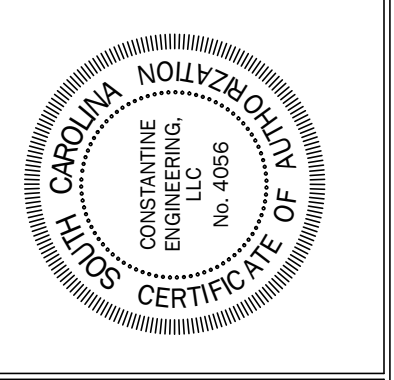
**NOTES:**

1. MATCH EXISTING PAVEMENT DIMENSIONS.



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		DH		DH	MB	JK

**STAKING & PAVING PLAN**  
**CITY OF LAKE CITY**  
**LAKE SWAMP WWTP UPGRADE**



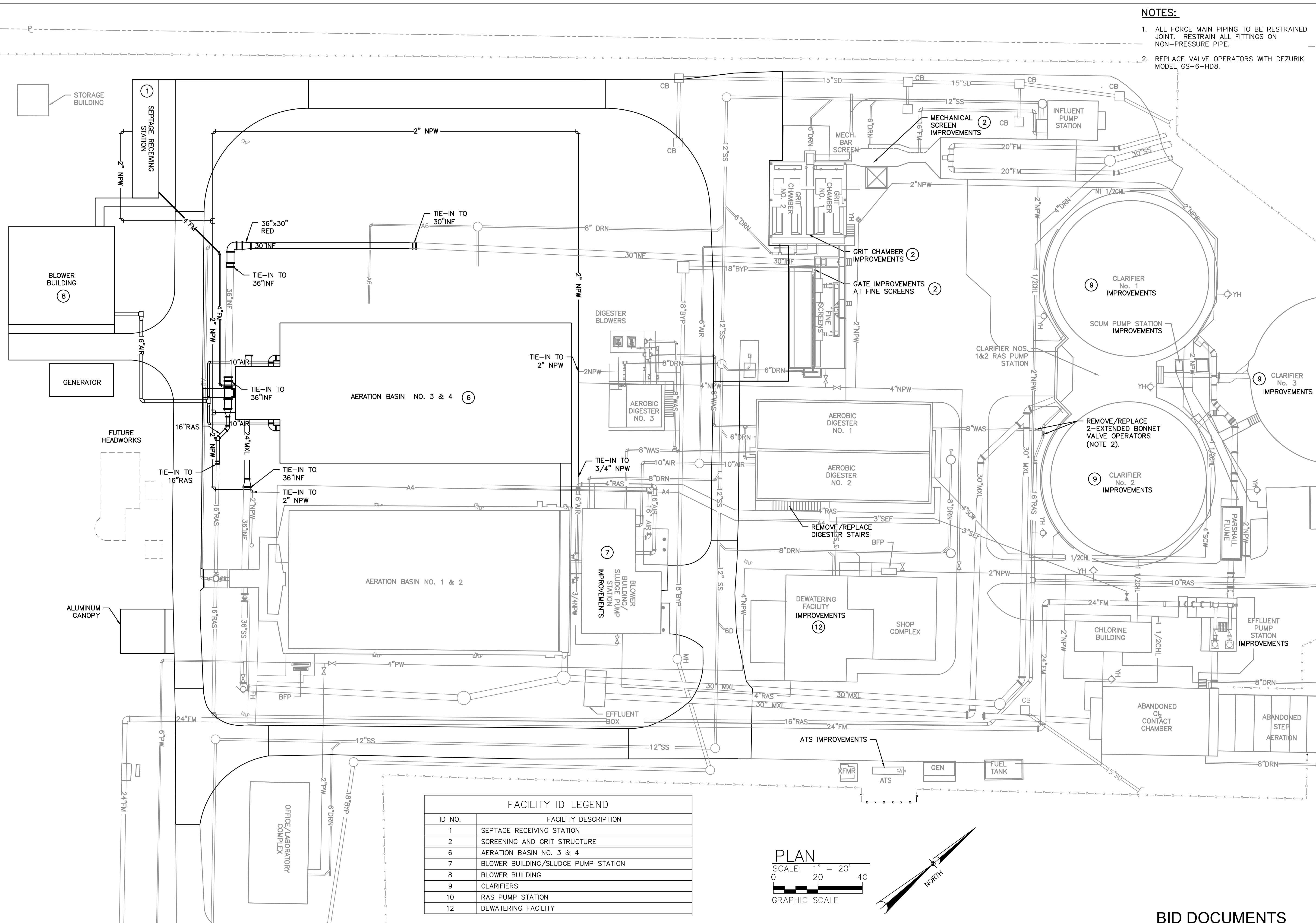
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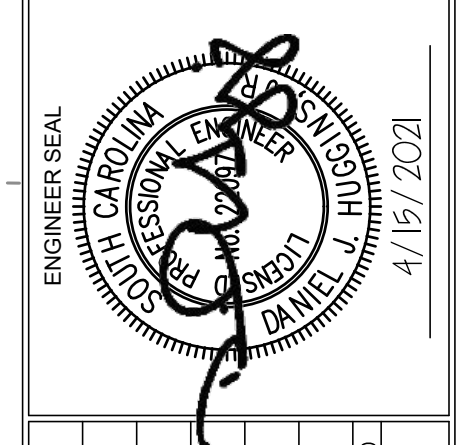


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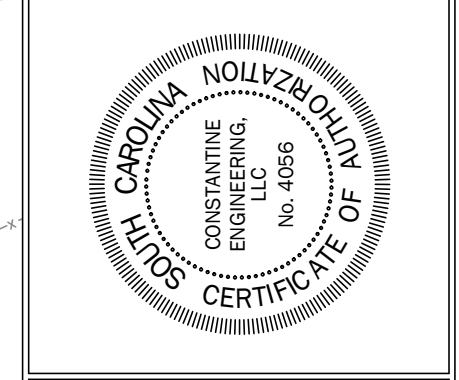


- NOTES:**
- ALL FORCE MAIN PIPING TO BE RESTRAINED JOINT. RESTRAIN ALL FITTINGS ON NON-PRESSURE PIPE.
  - REPLACE VALVE OPERATORS WITH DEZURIK MODEL GS-6-HDB.



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		DH	DH		MB	JK

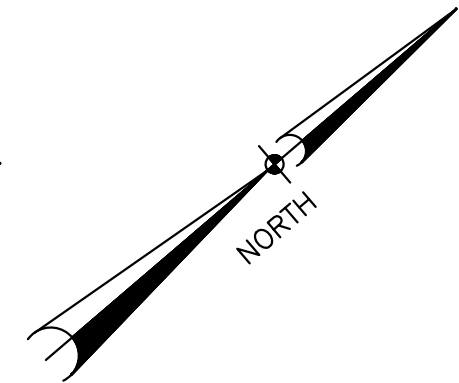
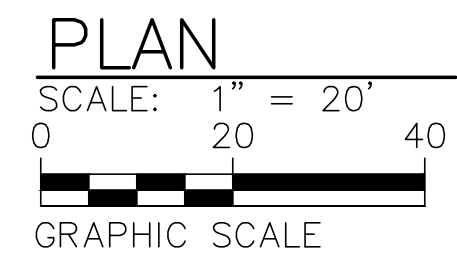
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**CITY OF LAKE CITY**  
**LAKE SWAMP WWTP UPGRADE**



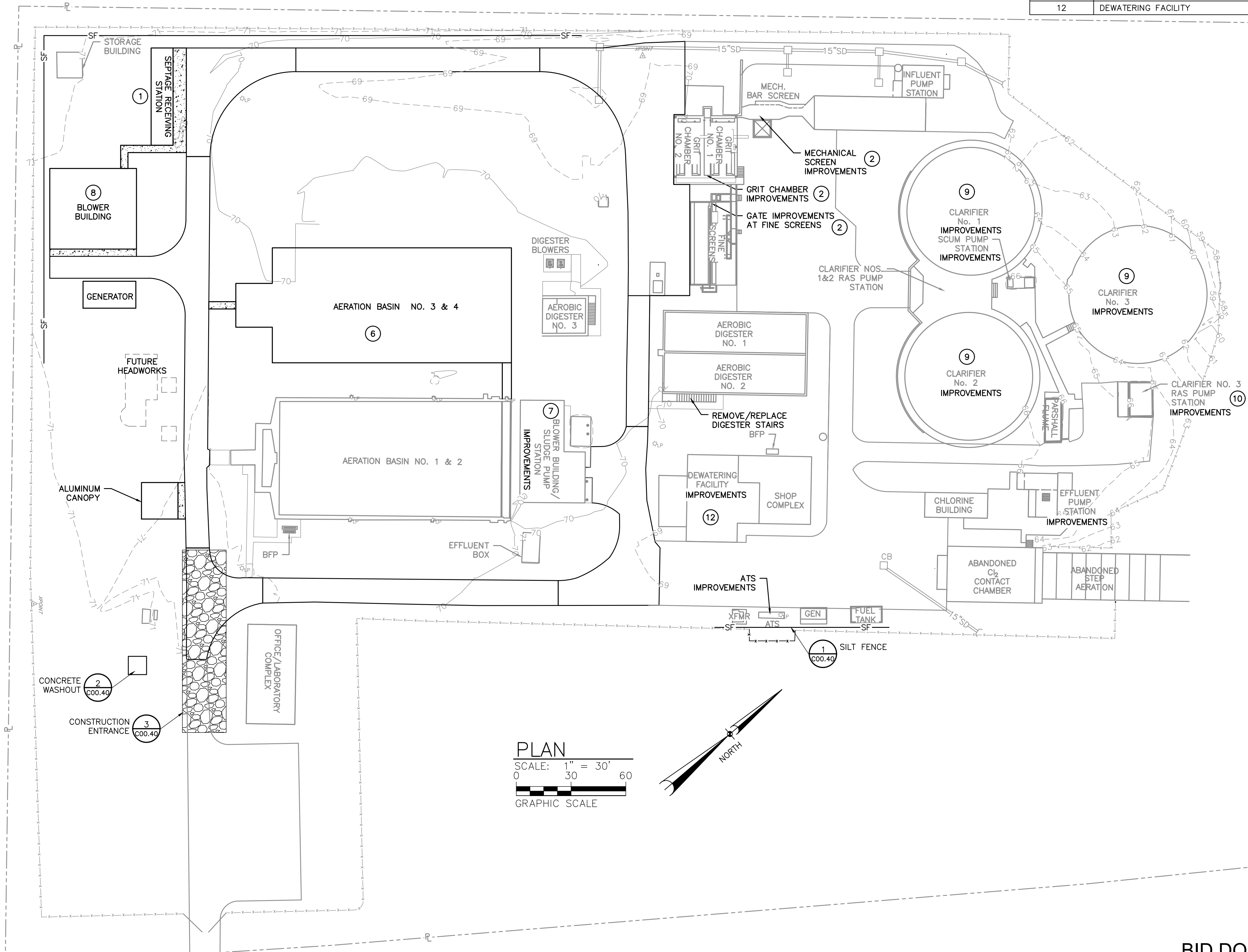
4000 FABER PLACE DRIVE, SUITE 330  
 NORTH CHARLESTON, SC 29405  
 PH. 843-628-3352

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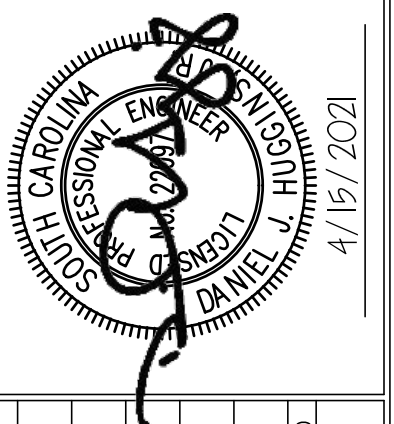
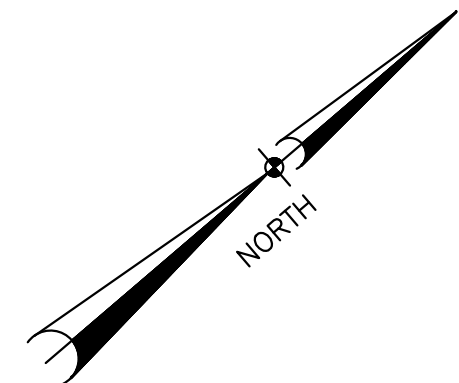
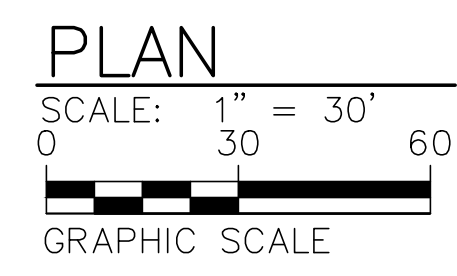
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**BID DOCUMENTS**

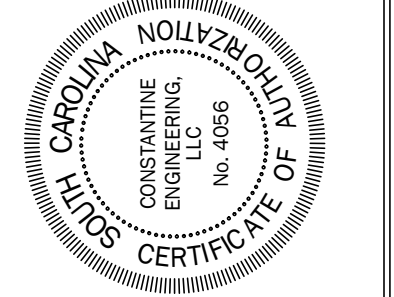


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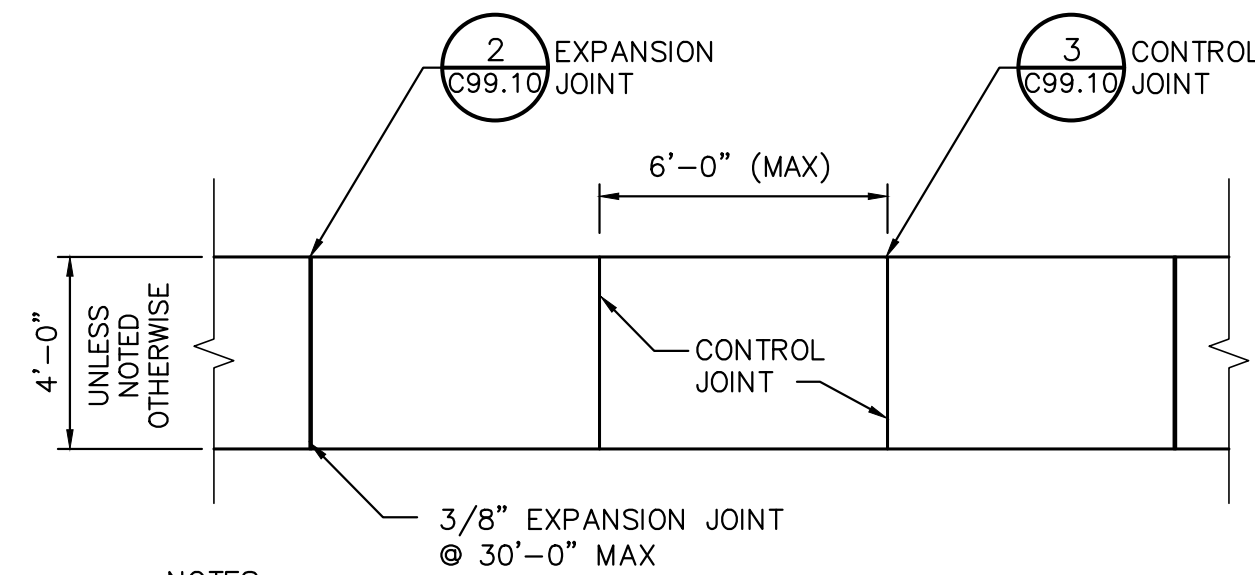


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		DH	DH		MB	JK

GRADING, DRAINAGE, AND  
 EROSION CONTROL PLAN  
 CITY OF LAKE CITY  
 LAKE SWAMP WWTP UPGRADE



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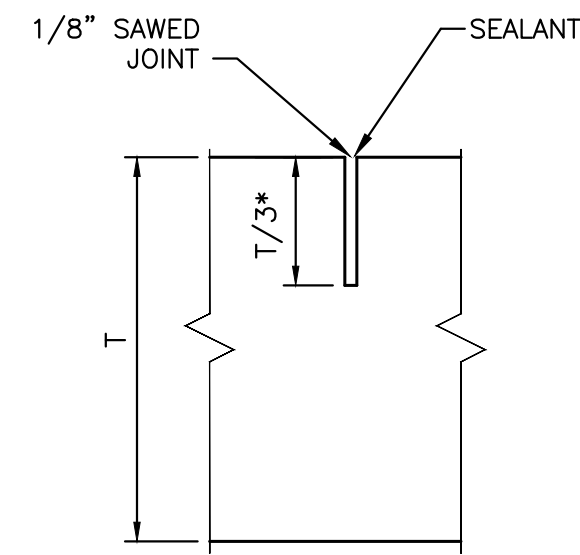


**NOTES:**

1. MINIMUM THICKNESS = 4".
2. PROVIDE EXPANSION JOINTS AT INTERSECTIONS OF WALKS AND WHERE WALK ABUTTS OTHER STRUCTURES.
3. 4000 PSI MINIMUM CONCRETE WITH FIBER REINFORCING.
4. SIDEWALKS TO HAVE LIGHT BROOM FINISH.
5. ALL JOINTS AND EDGES TO BE TOOLED.
6. CONTROL JOINTS TO BE TOOLED TO A MINIMUM DEPTH OF 1".
7. SMOOTH TROWEL 3" "PICTURE FRAME" EDGE.

**CONCRETE SIDEWALK**

**DETAIL 1**  
SCALE: NONE C99.10

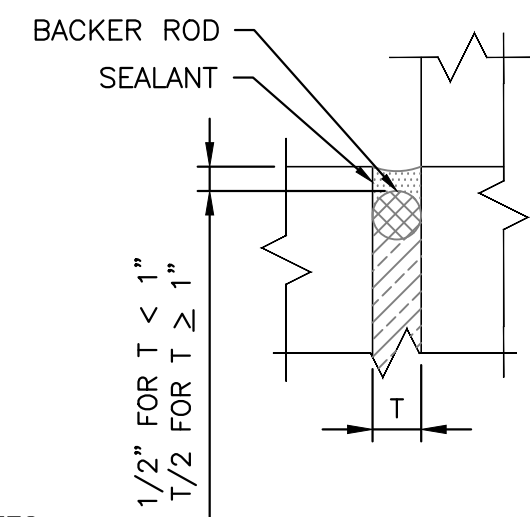


**NOTES:**

1. JOINTS SHALL BE LOCATED AS SHOWN ON THE PLANS OR 15'-0" OC EW (MAX).
2. JOINT DEPTH = 2-1/2" (MAX)

**CONTROL JOINT**

**DETAIL 2**  
SCALE: NONE C99.10

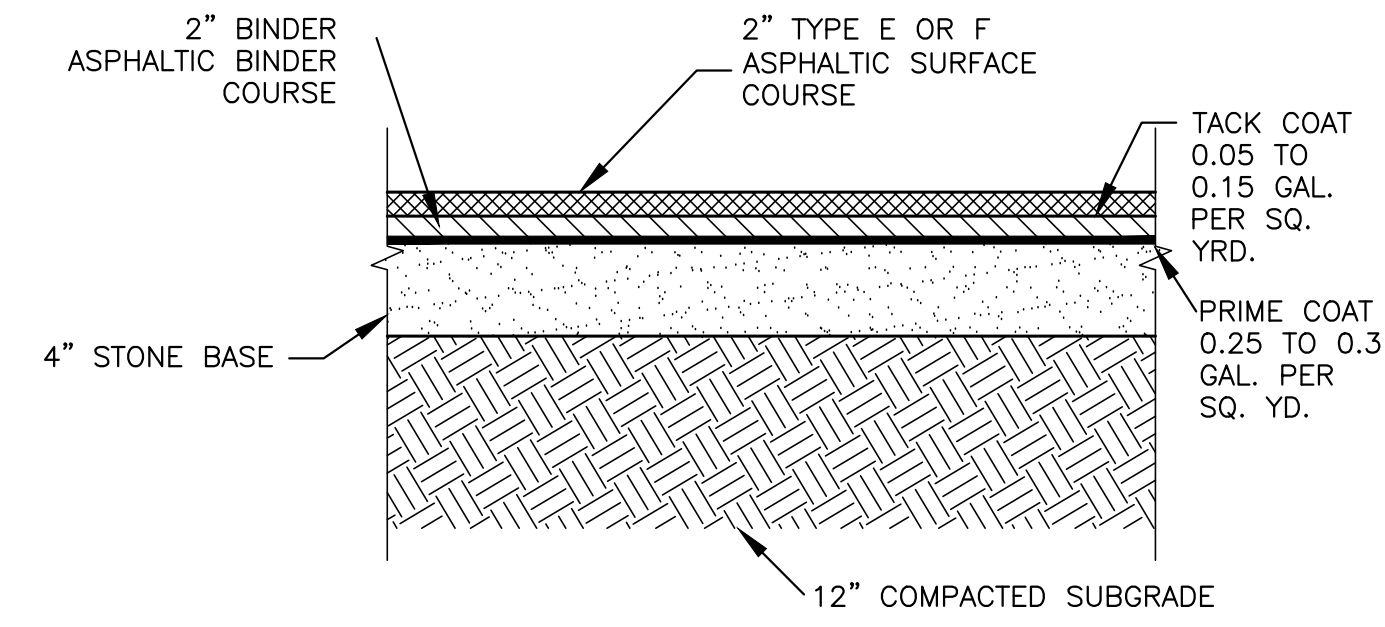


**NOTES:**

1. USE T=1" FOR NEW CONCRETE ADJACENT TO BUILDINGS OR EXISTING SAW-CUT PAVEMENT/CONCRETE.
2. PROVIDE 1/2" EXPANSION JOINT WHERE CONCRETE PAVING AND SIDEWALK ABUTS ADJACENT STRUCTURES AND DISSIMILAR SURFACES.
3. FOR PIPES THROUGH FLOOR, PROVIDE 1/2" EXPANSION JOINT.

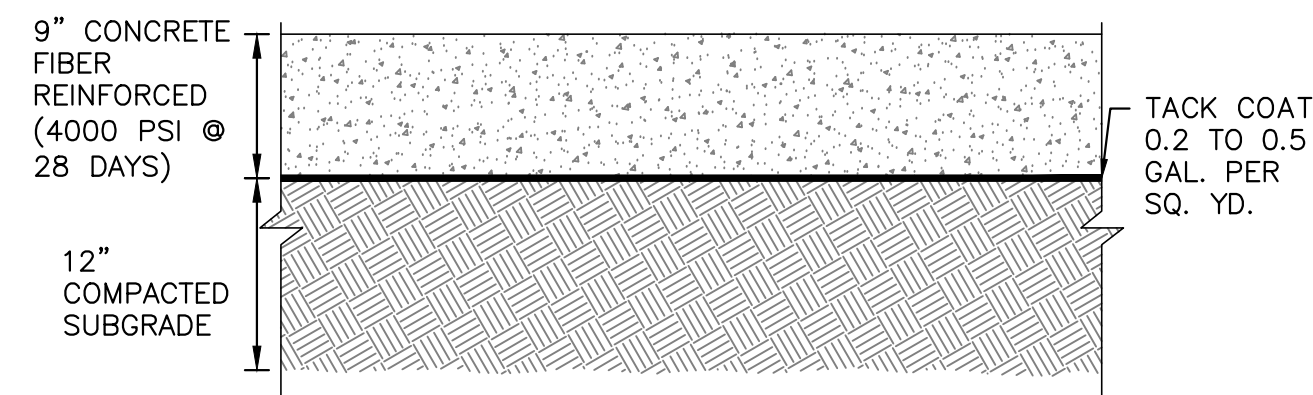
**EXPANSION JOINT**

**DETAIL 3**  
SCALE: NONE C99.10



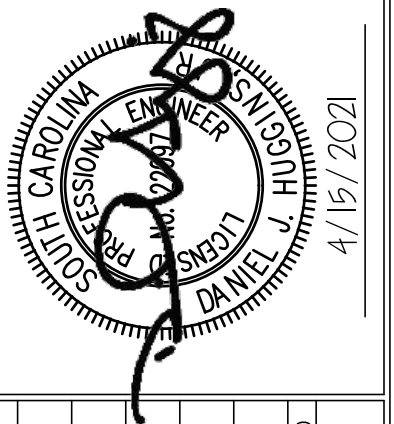
**ASPHALTIC CONCRETE PAVEMENT**

**DETAIL 4**  
SCALE: NONE C99.10



**CONCRETE PAVEMENT**

**DETAIL 5**  
SCALE: NONE C99.10

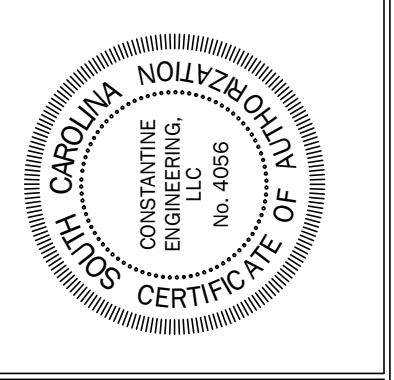


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MISCELLANEOUS DETAILS

CITY OF LAKE CITY

LAKE SWAMP WWTP UPGRADE



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## COMPREHENSIVE STORMWATER POLLUTION PREVENTION PLAN (C-SWPPP)

### I. RESPONSIBLE PARTIES:

- OWNER (PRIMARY PERMITTEE):  
COMPANY: CITY OF LAKE CITY  
CONTACT: RICKY SIMS  
ADDRESS: PO BOX 1329  
CITY OF LAKE CITY, SC 29560  
TELEPHONE: (843) 374-5027  
EMAIL: WWTP@CITYOFLAKECITY.ORG

### II. PROJECT NARRATIVE:

#### 1. EXISTING SITE CONDITIONS:

- 1.1. TOTAL PROPERTY AREA: 4.8 AC
- 1.2. USE: MUNICIPAL WASTEWATER TREATMENT PLANT
- 1.3. VEGETATIVE COVER: 1.12 AC IMP, 3.88 AC PERVIOUS
- 1.4. PERCENT OF AREA IMPERVIOUS: 23%
- 1.5. SLOPES: GENTLE AND FLAT
- 1.6. SOILS: PRIMARILY CONSIST OF COXVILLE FINE SANDY LOAM, 0-2% SLOPES, DUPLIN AND EXUM SOILS, 2 TO 6% SLOPES, AND VARINA LOAMY FINE SAND, 0 TO 2% SLOPES.
- 1.7. DISCHARGE INFORMATION:
  - 1.7.1. NEAREST RECEIVING WATER BODY (NRWB): LAKE SWAMP.
  - 1.7.2. DISTANCE TO NRW: 0.25 MILES
  - 1.7.3. IS THE NRW IMPAIRED? NO
  - 1.7.4. DOES THE PROJECT DISCHARGE STORMWATER TO AN MS4? NO.
  - 1.7.5. ARE THERE ANY EXISTING FLOODING PROBLEMS NEAR THE SITE? NONE KNOWN
  - 1.7.6. IS ANY PART OF THE SITE WITHIN A FLOODPLAIN? NO, REFERENCE FIRM 45041C0476E.

#### 2. PROPOSED SITE CONDITIONS:

- 2.1. TOTAL DISTURBED AREA: 0.32 AC
- 2.2. USE: MUNICIPAL WASTEWATER TREATMENT PLANT
- 2.3. VEGETATIVE COVER: PAVING, TANKS, EQUIPMENT, GRASS
- 2.4. PERCENT OF AREA IMPERVIOUS: 30%
- 2.5. SLOPES: SEE ITEM 1.1.5 ABOVE
- 2.6. SOILS: SEE ITEM 1.1.6. ABOVE
- 2.7. DISCHARGE INFORMATION:
  - 2.7.1. ARE THERE ANY SURFACE WATERS WITHIN 50 FEET OF YOUR CONSTRUCTION DISTURBANCES? NO.
  - 2.7.2. IF YES, WHAT IS THE REQUIRED BUFFER ZONE? N/A
  - 2.7.3. WHICH BUFFER COMPLIANCE OPTION IS PROPOSED FOR THE SITE? DOUBLE ROW SILT FENCE
  - 2.7.4. ARE THERE WETLAND IMPACTS AS PART OF THE PROPOSED SITE PLAN? NO WORK IS TO BE PERFORMED UNTIL ALL NECESSARY PERMITS HAVE BEEN OBTAINED.
3. ARE THERE ANY ONSITE SUPPORT FACILITIES (BATCH PLANTS, ETC.) THAT WILL BE USED DURING CONSTRUCTION ACTIVITIES? NO
4. ARE THERE KNOWN POTENTIAL SOURCES OF POLLUTION AS THE RESULT OF THE PRIOR USES OF THE PROPERTY? NO

### III. STORMWATER MANAGEMENT AND SEDIMENT CONTROLS

1. ARE THERE ANY STORMWATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY OTHER THAN FOR CONSTRUCTION ACTIVITIES? NO
2. PERIMETER CONTROLS:  
PERIMETER CONTROLS ARE CRUCIAL TO THE SWPPP. THESE BMPs SHALL BE INSTALLED PRIOR TO DEMOLITION, CLEARING, OR GRADING ACTIVITIES ON THE SITE. IF MINOR DEMOLITION IS REQUIRED FOR THE INSTALLATION OF THESE PERIMETER CONTROLS, THE DEMOLITION SHOULD BE LIMITED ONLY TO THE PORTIONS OF THE SITE REQUIRED FOR INSTALLATION OF THESE MEASURES.

- 2.1. SILT FENCE -  
SILT FENCE CONSISTS OF GEOTEXTILE FABRIC STRETCHED ACROSS STEEL POSTS. THE LOWER EDGE OF THE FENCE IS VERTICALLY TRENCHED INTO THE GROUND AND COVERED BY COMPACTED BACKFILL. STANDARD DETAIL FOR SILT FENCE CAN BE FOUND IN THE APPROVED CONSTRUCTION PLAN. ALL MATERIALS MUST CONFORM TO SCDOT SPECIFICATIONS

LOCATION: AS INDICATED ON THE APPROVED CONSTRUCTION PLANS. SILT FENCE SHALL BE CONSTRUCTED PERPENDICULAR TO FLOW DIRECTION. A DOUBLE ROW OF SILT FENCE IS REQUIRED IN DISTURBED AREAS THAT ARE WITHIN 50' OF A WETLAND. SILT FENCE MUST BE LOCATED AT LEAST TEN (10) FEET FROM ANY WETLANDS OR BODIES OF WATER.

INSTALLATION SCHEDULE: PERIMETER CONTROLS SHALL BE INSTALLED PRIOR TO ANY CLEARING, GRADING, OR DEMOLITION ACTIVITIES COMMENCE ON THE SITE.

INSPECTION: INSPECT EVERY 7 CALENDAR DAYS AND WITHIN 24-HOURS AFTER EACH RAINFALL EVENT THAT PRODUCES 1/2-INCHES OR MORE OF PRECIPITATION

MAINTENANCE: REPAIRS SHALL BE MADE IMMEDIATELY IF ANY TEARS, GAPS, OR DECOMPOSED AREAS ARE NOTED DURING INSPECTION. SEDIMENTS SHALL BE REMOVED WHEN ACCUMULATION HEIGHTS REACH ONE-THIRD (1/3) THE FENCE HEIGHT.

#### 2.2. SILT FENCE OUTLET-

SILT FENCE SHALL HAVE A STABILIZED OUTLET TO PREVENT FAILURE DUE TO PONDING WATER IN LOWER AREAS OF THE PROJECT SITE. THE MESH AND STONE OUTLET SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARD DETAIL PROVIDED ON THE APPROVED CONSTRUCTION PLANS.

LOCATION: AS INDICATED ON THE APPROVED CONSTRUCTION PLANS

INSTALLATION SCHEDULE: SHALL BE INSTALLED IN CONJUNCTION WITH THE SILT FENCE.

INSPECTION: INSPECT EVERY 7 CALENDAR DAYS AND WITHIN 24-HOURS AFTER EACH RAINFALL EVENT THAT PRODUCES 1/2-INCHES OR MORE OF PRECIPITATION

MAINTENANCE: SEDIMENTS SHALL BE REMOVED WHEN ACCUMULATION HEIGHTS REACH ONE-HALF (1/2) THE STONE DAM HEIGHT. STONE THAT HAVE BEEN CLOGGED OR DISLODGED SHALL BE REPLACED IMMEDIATELY.

#### 3. SEDIMENT TRACKING

DEPOSITING OF SOILS ONTO ADJACENT ROADWAYS SHALL BE REDUCED BY THE USE OF PERIMETER CONTROLS.

#### 3.1. CONSTRUCTION ENTRANCE EXIT -

A STABILIZED CONSTRUCTION ENTRANCE IS A TEMPORARY STONE-STABILIZED PAD LOCATED AT ALL POINTS OF VEHICULAR INGRESS AND EGRESS ON A CONSTRUCTION SITE TO REDUCE THE AMOUNT OF MUD, DIRT, AND ROCKS TRANSPORTED ONTO PUBLIC ROADS BY MOTOR VEHICLES EQUIPMENT AND RUNOFF.

LOCATION: AT ALL LOCATIONS WHERE CONSTRUCTION TRAFFIC WILL BE ENTERING AND EXITING THE PROJECT SITE.

INSTALLATION SCHEDULE: PERIMETER CONTROLS SHALL BE INSTALLED PRIOR TO ANY CLEARING, GRADING, OR DEMOLITION ACTIVITIES COMMENCE ON THE SITE.

INSPECTION: DAILY

MAINTENANCE: RESHAPE THE STONE PAD AS NEEDED FOR DRAINAGE AND RUNOFF CONTROL. WASH OR REPLACE STONES AS NEEDED WHENEVER THE ENTRANCE FAILS TO REDUCE MUD BEING CARRIED OFF SITE BY VEHICLES. THIS MAY REQUIRE PERIODIC TOPDRESSING WITH 2-INCH STONE. FREQUENT WASHING WILL EXTEND THE USEFUL LIFE OF STONE. IMMEDIATELY REMOVE ANY MUD AND SEDIMENT TRACKED OR WASHED ONTO PUBLIC ROADS BY BRUSHING OR SWEEPING. REPAIR ANY BROKEN PAVEMENT IMMEDIATELY.

#### 3.2. STREET SWEEPING -

STREET SWEEPING IS THE REMOVAL OF SEDIMENTS THAT HAVE BEEN TRACKED ONTO NEARBY PAVEMENTS BY EQUIPMENT EXITING THE SITE.

LOCATION: AT ALL AREAS WHERE CONSTRUCTION TRAFFIC EXITS THE DISTURBED AREAS OF THE PROJECT SITE.

INSTALLATION SCHEDULE: BEGIN SWEEPING OPERATIONS AT ON-SET OF ANY CONSTRUCTION ACTIVITIES.

INSPECTION: DAILY.

MAINTENANCE: SWEEP AS NECESSARY TO REMOVE TRACKING OF SEDIMENTS ON PAVEMENT.

#### 4. STOCKPILED SEDIMENT OR MATERIALS

LOCATION: AS INDICATED ON THE APPROVED CONSTRUCTION PLANS. CONTRACTOR MAY ADD ADDITIONAL STOCKPILE LOCATION TO FACILITATE RE-SPREADING AND REDUCE TRAFFIC. SELECT STOCKPILE LOCATION TO AVOID SLOPES, NATURAL DRAINAGE WAYS, AND TRAFFIC ROUTES. ALL STOCKPILES SHALL BE PROTECTED FROM EROSION WITH TEMPORARY STABILIZATION AND PERIMETER SILT FENCING PER THE APPROVED CONSTRUCTION PLANS.

INSTALLATION SCHEDULE: MATERIAL STOCKPILES MAY NOT BE INITIATED UNTIL AFTER ALL PERIMETER CONTROLS AND SEDIMENT TRAPS/BASINS ARE IN PLACE.

INSPECTION: INSPECT EVERY 7 CALENDAR DAYS AND WITHIN 24-HOURS AFTER EACH RAINFALL EVENT THAT PRODUCES 1/2-INCHES OR MORE OF PRECIPITATION

MAINTENANCE: IF RILLS APPEAR, RE-GRADE AND RE-STABILIZE IMMEDIATELY. STOCKPILES MAY BE COVERED WITH MATTING, SHEETING, OR OTHER MATERIALS TO MINIMIZE EROSION. MAINTAIN SILT FENCE IN ACCORDANCE WITH STANDARD SCDHEC NOTES AND DETAILS FROM CONSTRUCTION PLANS.

#### 5. MINIMIZE DUST

DUST CONTROL WILL BE IMPLEMENTED AS NEEDED ONCE SITE GRADING HAS BEGUN AND DURING WINDY CONDITIONS (FORECASTED OR ACTUAL WIND CONDITIONS OF 20 MPH OR GREATER) WHILE SITE GRADING IS

OCCURRING.

#### 5.1. DUST CONTROL -

LOCATION: ON DISTURBED AREAS THAT HAVE NOT BEEN STABILIZED WITH VEGETATION.

INSTALLATION SCHEDULE: AS REQUIRED BY WEATHER CONDITIONS. DUST CONTROL SHALL BE CONTINUED UNTIL FINAL STABILIZATION IS ACHIEVED.

INSPECTION: DAILY OBSERVATION OF CONDITIONS.

MAINTENANCE: REAPPLY EXPOSED SOILS WITH SCDHEC APPROVED DUST CONTROL AGENTS.

#### 6. TOPSOIL

PRESERVING AND USING TOPSOIL TO ENHANCE FINAL SITE STABILIZATION WITH VEGETATION.

LOCATION: STRIP TOPSOIL ONLY FROM THOSE AREAS THAT WILL BE DISTURBED BY EXCAVATION, FILLING, ROAD BUILDING, OR COMPACTION BY EQUIPMENT. A 4-6 INCH STRIPPING DEPTH IS COMMON, BUT DEPTH VARIES DEPENDING ON THE SITE. ALL TOPSOIL STOCKPILES MUST BE PROTECTED FROM EROSION AS DETAILED IN THE STANDARD STOCKPILE DETAIL INCLUDED IN THE APPROVED CONSTRUCTION PLANS.

INSTALLATION SCHEDULE: TOPSOILING MUST BEGIN ONLY AFTER PERIMETER CONTROLS, DIVERSION SWALES, AND SEDIMENT TRAPS ARE IN PLACE.

INSPECTION: INSPECT EVERY 7 CALENDAR DAYS AND WITHIN 24-HOURS AFTER EACH RAINFALL EVENT THAT PRODUCES 1/2-INCHES OR MORE OF PRECIPITATION

MAINTENANCE: INSPECT STOCKPILE FOR SIGNS OF EROSION. STOCKPILE MAY BE COVERED IF STORM EVENTS ARE ANTICIPATED.

#### 7. SOIL COMPACTION

CONTRACTOR SHALL MINIMIZE THE COMPACTION OF SOILS IN AREAS OUTSIDE OF THE PERMANENT IMPROVEMENTS. LIMIT THE USE OF HEAVY MACHINERY AND EQUIPMENT TO AREA OF PARKING AREAS AND STRUCTURAL PADS. DO NOT OPERATE COMPACTION EQUIPMENT IN LANDSCAPE OR BUFFER AREAS UNTIL PERMANENT IMPROVEMENTS ARE REQUIRED IN THAT AREA.

#### 8. DEWATERING PRACTICES

CONSTRUCTION DE-WATERING INVOLVES REMOVING STORM WATER OR GROUNDWATER FROM BORE PITS, TRENCHES, AND OTHER EXCAVATIONS ON A CONSTRUCTION SITE. TYPICALLY, THIS REMOVAL OF WATER INVOLVES THE PUMPING OF THE WATER TO AN APPROPRIATE RECEIVING AREA. DIRECT PUMPING TO LAKES, RIVERS, AND STREAMS IS ILLEGAL AND MUST BE AVOIDED. ALL DISCHARGES MUST BE TO AN ADEQUATELY SIZE SEDIMENT TRAP, DETENTION BASIN, OR THROUGH A DEWATERING BAG. CONTRACT SHALL REFERENCE TECHNICAL SPECIFICATION FOR DEWATERING AS INCLUDED IN THE CONSTRUCTION DOCUMENTS.

LOCATION: AT ALL EXCAVATION THAT REQUIRE DEWATERING.

INSTALLATION SCHEDULE: AS REQUIRED, BUT NOT PRIOR TO INSTALLATION OF PERIMETER CONTROLS.

INSPECTION: INSPECT EVERY 7 CALENDAR DAYS AND WITHIN 24-HOURS AFTER EACH RAINFALL EVENT THAT PRODUCES 1/2-INCHES OR MORE OF PRECIPITATION.

MAINTENANCE: ENSURE THAT EROSION DOES NOT OCCUR AT THE OUTLET OF THE HOSE FROM THE PUMP DUE TO HIGH CONCENTRATED FLOWS.

#### 9. SITE STABILIZATION

SITE STABILIZATION CAN BE EITHER TEMPORARY OR PERMANENT DEPENDING ON THE NEED FOR FURTHER CONSTRUCTION ACTIVITIES WITHIN THE AREA. SELECTION OF STABILIZATION METHOD SHALL BE CONSISTENT WITH THE APPROVED CONSTRUCTION PLANS. ALL STABILIZATION MEASURES SHALL BE RECORDED IN THE GRADING AND STABILIZATION LOG FOUND IN APPENDIX H. IT IS THE OPERATORS RESPONSIBILITY TO UPDATE THIS LOG AND MAINTAIN IT AS PART OF THE SWPPP.

#### 9.1. TEMPORARY STABILIZATION

TEMPORARY STABILIZATION IS REQUIRED WITHIN 14 DAYS AFTER CONSTRUCTION ACTIVITY IS COMPLETE UNLESS CONSTRUCTION ACTIVITY IS GOING TO RESUME WITHIN 21 DAYS. COVER SEEDED AREAS WITH AN APPROPRIATE MULCH TO PROVIDE PROTECTION FROM THE WEATHER. WHEN THE TEMPORARY VEGETATION DOES NOT GROW QUICKLY OR THICK ENOUGH TO PREVENT EROSION, RE-SEED AS SOON AS POSSIBLE. KEEP SEEDED AREAS ADEQUATELY MOIST. IRRIGATE THE SEEDED AREA IF NORMAL RAINFALL IS NOT ADEQUATE FOR THE GERMINATION AND GROWTH OF SEEDLINGS. WATER SEEDED AREAS AT CONTROLLED RATES THAT ARE LESS THAN THE RATE AT WHICH THE SOIL CAN ABSORB WATER TO PREVENT RUNOFF. RUNOFF OF IRRIGATION WATER WASTES WATER AND CAN CAUSE EROSION. SEED SELECTION IS BASED ON GEOGRAPHICAL LOCATION, SOIL TYPE AND THE

SEASON OF THE YEAR IN WHICH THE PLANTING IS TO BE DONE. SEEDING SHALL BE COMPLETED IN ACCORDANCE WITH THE SEEDING AND PLANTING SCHEDULE INCLUDED ON THE APPROVED CONSTRUCTION PLANS.

INSPECTION: INSPECT EVERY 7 CALENDAR DAYS AND WITHIN 24-HOURS AFTER EACH RAINFALL EVENT THAT PRODUCES 1/2-INCHES OR MORE OF PRECIPITATION.

MAINTENANCE: SUPPLY TEMPORARY SEEDING WITH ADEQUATE MOISTURE. SUPPLY WATER AS NEEDED, ESPECIALLY IN ABNORMALLY HOT OR DRY WEATHER OR ON ADVERSE SITES. RE-SEED AREAS WHERE THE PLANTS DO NOT GROW QUICK ENOUGH, THICK ENOUGH, OR ADEQUATELY ENOUGH TO PREVENT EROSION SHOULD BE RESEDED.

#### 9.2. PERMANENT STABILIZATION

ONCE ALL LAND-DISTURBING ACTIVITIES AT THE CONSTRUCTION SITE HAVE BEEN COMPLETED, ALL AREAS NOT COVERED BY PERMANENT STRUCTURES, MUST ESTABLISH FINAL STABILIZATION. FINAL STABILIZATION INCLUDES EITHER:

- A UNIFORM (E.G., EVENLY DISTRIBUTED, WITHOUT LARGE BARE AREAS) VEGETATIVE COVER WITH A DENSITY OF 70 PERCENT OF THE NATURAL BACKGROUND VEGETATIVE COVER HAS BEEN ESTABLISHED EXCLUDING AREAS WHERE NO NATURAL BACKGROUND VEGETATIVE COVER IS POSSIBLE (E.G., ON A BEACH), OR
  - EQUIVALENT PERMANENT STABILIZATION MEASURES (SUCH AS THE USE OF LANDSCAPING MULCH, RIPRAP, PAVEMENT, AND GRAVEL).
- THE PERMANENT STABILIZATION SHALL BE COMPLETED IN ACCORDANCE WITH THE PHASE III EROSION CONTROL PLAN INCLUDED IN THE APPROVED CONSTRUCTION DRAWINGS. PERMANENT VEGETATION SHALL BE COMPLETED IN ACCORDANCE WITH THE APPROVED LANDSCAPE PLANS AND SPECIFICATIONS OR SEEDING SCHEDULE AND TECHNICAL SPECIFICATIONS.

PERMANENT SEEDING WILL BE APPLIED IMMEDIATELY AFTER THE FINAL DESIGN GRADES ARE ACHIEVED ON PORTIONS OF THE SITE BUT NO LATER THAN 14 DAYS AFTER CONSTRUCTION ACTIVITIES HAVE PERMANENTLY CEASED. AFTER THE ENTIRE SITE IS STABILIZED, ANY SEDIMENT THAT HAS ACCUMULATED WILL BE REMOVED AND HAULLED OFF-SITE FOR DISPOSAL. CONSTRUCTION DEBRIS, TRASH AND TEMPORARY BMPs (INCLUDING SILT FENCES, MATERIAL STORAGE AREAS, SANITARY TOILETS, AND INLET PROTECTION) WILL ALSO BE REMOVED AND ANY AREAS DISTURBED DURING REMOVAL WILL BE SEEDED IMMEDIATELY.

- IN AREAS WHERE DISTURBANCE RESULTS IN SUBSOIL BEING THE FINAL GRADE SURFACE, TOPSOIL WILL BE SPREAD OVER THE FINISHED AREA AT MINIMUM DEPTH OF 2 TO 6 INCHES.

- THE SEEDED WILL BE FREE OF LARGE CLODS, ROCKS, WOODY DEBRIS AND OTHER OBJECTIONABLE MATERIALS.

- FERTILIZER AND LIME WILL BE APPLIED TO THE SEEDED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS OR SOIL TESTS (SOIL TESTS ARE OMITTED FROM THIS EXAMPLE SWPPP).

- THE TOP LAYER OF SOIL WILL BE LOOSENEED
- GRASS SELECTION SHALL COMPLY WITH THE APPROVED PLANS AND SPECIFICATIONS

- HYDROMULCH SHALL BE APPLIED IMMEDIATELY FOLLOWING SEEDING AT THE PUBLISHED APPLICATION RATE.

- IF VEGETATIVE COVER IS NOT ATTAINED, THE AREA SHALL BE RESEDED, FERTILIZED, AND MULCHED IMMEDIATELY.

### IV. SEQUENCE OF CONSTRUCTION :

- OBTAIN NPDES COVERAGE.
- PRE-CONSTRUCTION CONFERENCE.
- IMPLEMENT CONSTRUCTION EXIT AND PERIMETER CONTROLS.
- PERFORM SITE IMPROVEMENTS.
- IMPLEMENT FINAL SITE STABILIZATION.
- UPON FINAL SITE STABILIZATION WHICH INCLUDES ESTABLISHED IMPERVIOUS AREAS AND PERMANENT GRASS COVER THAT IS AT LEAST 70% AS DENSE AS EXISTING COVER, ALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES SHALL BE REMOVED.
- FILE NOTICE OF TERMINATION WITH SCDHEC.

### V. CONSTRUCTION-RELATED POLLUTANTS:

- THE FOLLOWING CONSTRUCTION-RELATED EQUIPMENT OR ACTIVITIES HAVE THE POTENTIAL TO BECOME POLLUTANT SOURCES:

- CONSTRUCTION EQUIPMENT THAT CONTAIN FLUIDS, FUELS, ETC;
- CONSTRUCTION MATERIALS, INCLUDING PAINTS, LUBRICANTS, FERTILIZERS, ETC. THAT ARE KEPT IN STOCKPILES, OR GENERALLY ONSITE;
- CONCRETE FORMS, ADMIXTURES, FORM LUBRICANTS, ETC.;
- SANITARY OR DOMESTIC WASTE FROM WORKERS;
- LANDSCAPING MATERIALS SUCH AS FERTILIZERS AND HERBICIDES.

- THE CONTRACTOR SHALL HAVE A PROJECT SPECIFIC SPILL PREVENTION CONTROL AND COUNTERMEASURE (SPCC) PLAN PRIOR TO CONSTRUCTION ACTIVITY. ANY SPILL MUST BE REPORTED TO THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE THE NECESSARY ACTIONS BASED ON THE SPCC.

- REFER TO 40 CFR 302.4, 40 CFR 117.21 AND 40 CFR 110.10 FOR QUANTITIES RELATING TO SPILLS OR RELEASES WHICH REQUIRE REPORTING. IF A REPORTABLE QUANTITY IS RELEASED, IMMEDIATELY NOTIFY:

- NATIONAL RESPONSE CENTER:  
PHONE: 1-800-424-8802
- SCDHEC EMERGENCY RESPONSE SECTION:  
PHONE: 803-253-6488

- A RELEASE INCIDENT WILL BE IMMEDIATELY EVALUATED BY THE CONTRACTOR TO DETERMINE IF NOTIFICATION UNDER OTHER REGULATIONS (CERCLA, SARA, RIGHT-TO-KNOW, RCRA, ETC.) WILL NEED TO BE MADE TO THE APPROPRIATE FEDERAL, STATE, OR LOCAL AGENCIES.

- THE SPILLS AND RELEASES LOG, A PART OF THIS SWPPP, SHALL BE UPDATED WITHIN 24-HOURS OF AN EVENT. THE SWPP MUST BE REVIEWED TO IDENTIFY MEASURES TO PREVENT THE REOCCURRENCE OF SUCH RELEASES AND TO RESPOND TO SUCH RELEASES. THE SWPPP MUST BE MODIFIED WITHIN 14 DAYS OF THE EVENT.

### VI. PRE-CONSTRUCTION, INSPECTION, AND CORRECTIVE ACTION

#### 1. PRE-CONSTRUCTION CONFERENCE:

A PRE-CONSTRUCTION CONFERENCE WILL BE HELD PRIOR TO CONSTRUCTION. ALL CONTRACTORS AND SUBCONTRACTORS THAT ARE RESPONSIBLE FOR LAND DISTURBING ACTIVITIES MUST BE IN ATTENDANCE.

#### 2. INSPECTION PERSONNEL AND PROCEDURES:

THE CONSTRUCTION SITE SHALL BE INSPECTED AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS BY INSPECTION FORMS:

THE INSPECTOR IS RESPONSIBLE FOR COMPLETING THE APPROVED INSPECTION FORM PROVIDED BY THE SWPPP PREPARER FOR EACH INSPECTION PERFORMED. ANY CHANGES TO THE FORM MUST BE APPROVED BY THE SWPPP PREPARER PRIOR TO USING THE FORM FOR REPORTING.

#### RECORD MAINTENANCE:

A COPY OF THE INSPECTION REPORT SHALL BE MAINTAINED ON THE SITE AND MADE AVAILABLE TO SCDHEC PERSONNEL UPON REQUEST. EACH INSPECTION SHALL BE LOGGED IN THE SWPPP INSPECTION LOG THAT HAS BEEN PROVIDED BY THE SWPPP PREPARER. ALL RECORDS SHALL BE MAINTAINED FOR THREE (3) YEARS.

#### RAINFALL REPORTING:

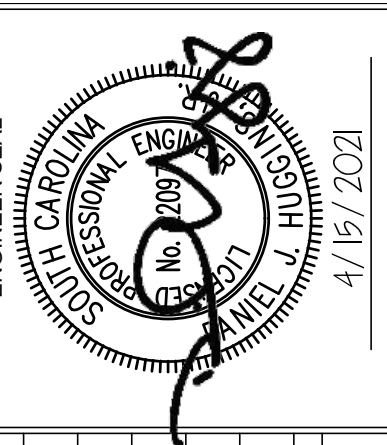
ALL RAIN EVENTS OF 0.5" OR GREATER OF CUMULATIVE RAINFALL, AS MEASURED FROM: A) A RAIN GAUGE KEPT ONSITE; B) A CERTIFIED WEATHER RECORD FROM A PERSONAL WEATHER STATION; C) NEARBY AIRPORT, SHALL BE RECORDED IN THE RAIN LOG PROVIDED BY THE SWPPP PREPARER. RAINFALL EVENTS FROM THE PRIOR WEEK PRIOR TO INSPECTION SHALL BE RECORDED ON THE INSPECTION REPORT.

#### 3. CORRECTIVE ACTION:

THE OPERATOR IS RESPONSIBLE FOR MAKING CORRECTIONS WITHIN 24 HOURS OF NOTIFICATION THAT CORRECTIVE ACTION IS NEEDED. CORRECTIVE ACTIONS SHOULD BE EXECUTED PRIOR TO THE NEXT RAINFALL EVENT IF PRACTICABLE. THE CORRECTIVE ACTION LOG PROVIDED BY THE SWPPP PREPARER SHALL BE USED TO DOCUMENT CORRECTIVE ACTIONS AND SHALL BE MAINTAINED AS PART OF THE SWPPP.

#### 4. SWPPP MODIFICATIONS:

NOTIFY THE SWPPP PREPARER IF SITE CONDITIONS WARRANT THE MODIFICATION OF THE SWPPP. MODIFICATIONS WILL BE AT THE DIRECTION OF THE SWPPP PREPARER. ALL MODIFICATIONS ARE TO BE RECORDED IN THE SWPPP MODIFICATION LOG. MODIFICATIONS INCLUDE, BUT ARE NOT LIMITED TO: THE ADDITION OF BMPs, REPLACEMENT OF FAILED BMPs, SIGNIFICANT CHANGES IN ACTIVITIES OR SCHEDULING, CHANGES IN PERSONNEL, CHANGES IN DESIGN OF THE SITE, ETC.



NO.	DATE DESIGNED BY:	REVISION	CHECKED BY:	APPROVED BY:
	DH	DH	MB	JK

EROSION & SEDIMENTATION CONTROL NOTES C-SWPPP

CITY OF LAKE CITY  
LAKE SWAMP WWTP UPGRADE



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BID DOCUMENTS

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 REUSE OF DOCUMENTS: THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CONSTANTINE ENGINEERING. HOWEVER, THIS SHALL NOT PROHIBIT THE REUSE OF THIS DOCUMENT BY THE CLIENT AS PROVIDED FOR BY THE CONTRACT.

**VII. STANDARD NOTES:**

1. IF NECESSARY, SLOPES WHICH EXCEED EIGHT (8) VERTICAL FEET SHOULD BE STABILIZED WITH SYNTHETIC OR VEGETATIVE MATS IN ADDITION TO HYDROSEEDING. IT MAY BE NECESSARY TO INSTALL TEMPORARY SLOPE DRAINS DURING CONSTRUCTION. TEMPORARY BERMS MAY BE NEEDED UNTIL THE SLOPE IS BROUGHT TO GRADE.
2. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN FOURTEEN (14) DAYS AFTER WORK HAS CEASED, EXCEPT AS STATED BELOW:
  - WHERE STABILIZATION BY THE 14TH DAY IS PRECLUDED BY SNOW COVER OR FROZEN GROUND CONDITIONS, STABILIZATION MEASURES MUST BE INITIATED AS SOON AS PRACTICABLE.
  - WHERE CONSTRUCTION ACTIVITY ON A PORTION OF THE SITE IS TEMPORARILY CEASED, AND EARTH-DISTURBING ACTIVITIES WILL BE RESUMED WITHIN 14 DAYS, TEMPORARY STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF THE SITE.
3. ALL SEDIMENT AND EROSION CONTROL DEVICES SHALL BE INSPECTED ONCE EVERY CALENDAR WEEK. IF PERIODIC INSPECTION OR OTHER INFORMATION INDICATES THAT A BMP HAS BEEN INSTALLED INAPPROPRIATELY, OR INCORRECTLY, THE PERMITTEE MUST ADDRESS THE NECESSARY REPLACEMENT OR MODIFICATION REQUIRED TO CORRECT THE BMP WITHIN 48 HOURS OF NOTIFICATION.
4. PROVIDE SILT FENCE AND/OR OTHER CONTROL DEVICES, AS MAY BE REQUIRED, TO CONTROL SOIL EROSION DURING UTILITY CONSTRUCTION. ALL DISTURBED AREAS SHALL BE CLEANED, GRADED, AND STABILIZED WITH GRASSING IMMEDIATELY AFTER THE UTILITY INSTALLATION. FILL, COVER, AND TEMPORARY SEEDING AT THE END OF EACH DAY IS RECOMMENDED. IF WATER IS ENCOUNTERED WHILE TRENCHING, THE WATER SHOULD BE FILTERED TO REMOVE SEDIMENT BEFORE BEING PUMPED BACK INTO ANY WATERS OF THE STATE.
5. ALL EROSION CONTROL DEVICES SHALL BE PROPERLY MAINTAINED DURING ALL PHASES OF CONSTRUCTION UNTIL THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES AND ALL DISTURBED HAVE BEEN STABILIZED. ADDITIONAL CONTROL DEVICES MAY BE REQUIRED DURING CONSTRUCTION IN ORDER TO CONTROL EROSION AND/OR OFFSITE SEDIMENTATION. ALL TEMPORARY CONTROL DEVICES SHALL BE REMOVED ONCE CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED.
6. THE CONTRACTOR MUST TAKE NECESSARY ACTION TO MINIMIZE THE TRACKING OF MUD ONTO PAVED ROADWAYS AND THE GENERATION OF DUST FROM CONSTRUCTION AREA.
7. TEMPORARY DIVERSION BERMS AND/OR DITCHES WILL BE PROVIDED AS NEEDED DURING CONSTRUCTION TO PROTECT WORK AREAS FROM UPSLOPE RUNOFF AND/OR TO DIVERT SEDIMENT-LADEN WATER TO APPROPRIATE STRIPS OR STABLE OUTLETS.
8. ALL WATERS OF THE STATE (WOS), INCLUDING WETLANDS, ARE TO BE FLAGGED OR OTHERWISE CLEARLY MARKED IN THE FIELD. A DOUBLE ROW OF SILT FENCE IS TO BE INSTALLED IN ALL AREAS WHERE A 50-FOOT BUFFER CAN'T BE MAINTAINED BETWEEN THE DISTURBED AREA AND ALL WOS. A 10-FOOT BUFFER SHOULD BE MAINTAINED BETWEEN THE LAST ROW OF SILT FENCE AND ALL WOS.
9. LITTER, CONSTRUCTION DEBRIS, OILS, FUELS, AND BUILDING PRODUCTS WITH SIGNIFICANT POTENTIAL FOR IMPACT (SUCH AS STOCKPILES OF FRESHLY TREATED LUMBER) AND CONSTRUCTION CHEMICALS THAT COULD BE EXPOSED TO STORM WATER MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE IN STORMWATER DISCHARGES.
10. A COPY OF THE SWPPP, INSPECTION RECORDS, AND RAINFALL DATA MUST BE RETAINED AT THE CONSTRUCTION SITE OR A NEARBY LOCATION EASILY ACCESSIBLE DURING NORMAL BUSINESS HOURS, FROM THE DATE OF COMMENCEMENT OF CONSTRUCTION ACTIVITIES TO THE DATE THAT FINAL STABILIZATION IS REACHED.
11. INITIATE STABILIZATION MEASURES ON ANY EXPOSED STEEP SLOPE (3H:1V OR GREATER) WHERE LAND DISTURBING ACTIVITIES HAVE PERMANENTLY OR TEMPORARILY CEASED, AND WILL NOT RESUME FOR A PERIOD OF 7 CALENDAR DAYS.
12. MINIMIZE SOIL COMPACTION AND, UNLESS INFEASIBLE, PRESERVE TOPSOIL.
13. MINIMIZE THE DISCHARGE OF POLLUTANTS FROM EQUIPMENT AND VEHICLE WASHING, WHEEL WASH WATER, AND OTHER WASH WATERS. WASH WATERS MUST BE TREATED IN A SEDIMENT BASIN OR ALTERNATIVE CONTROL THAT PROVIDES EQUIVALENT OR BETTER TREATMENT PRIOR TO DISCHARGE.
14. MINIMIZE THE DISCHARGE OF POLLUTANTS FROM DEWATERING OF TRENCHES AND EXCAVATED AREAS. THESE DISCHARGES ARE TO BE ROUTED THROUGH APPROPRIATE BMPS (SEDIMENT BASIN, FILTER BAG, ETC.).
15. THE FOLLOWING DISCHARGES FROM SITES ARE PROHIBITED:
  - WASTEWATER FROM WASHOUT OF CONCRETE, UNLESS

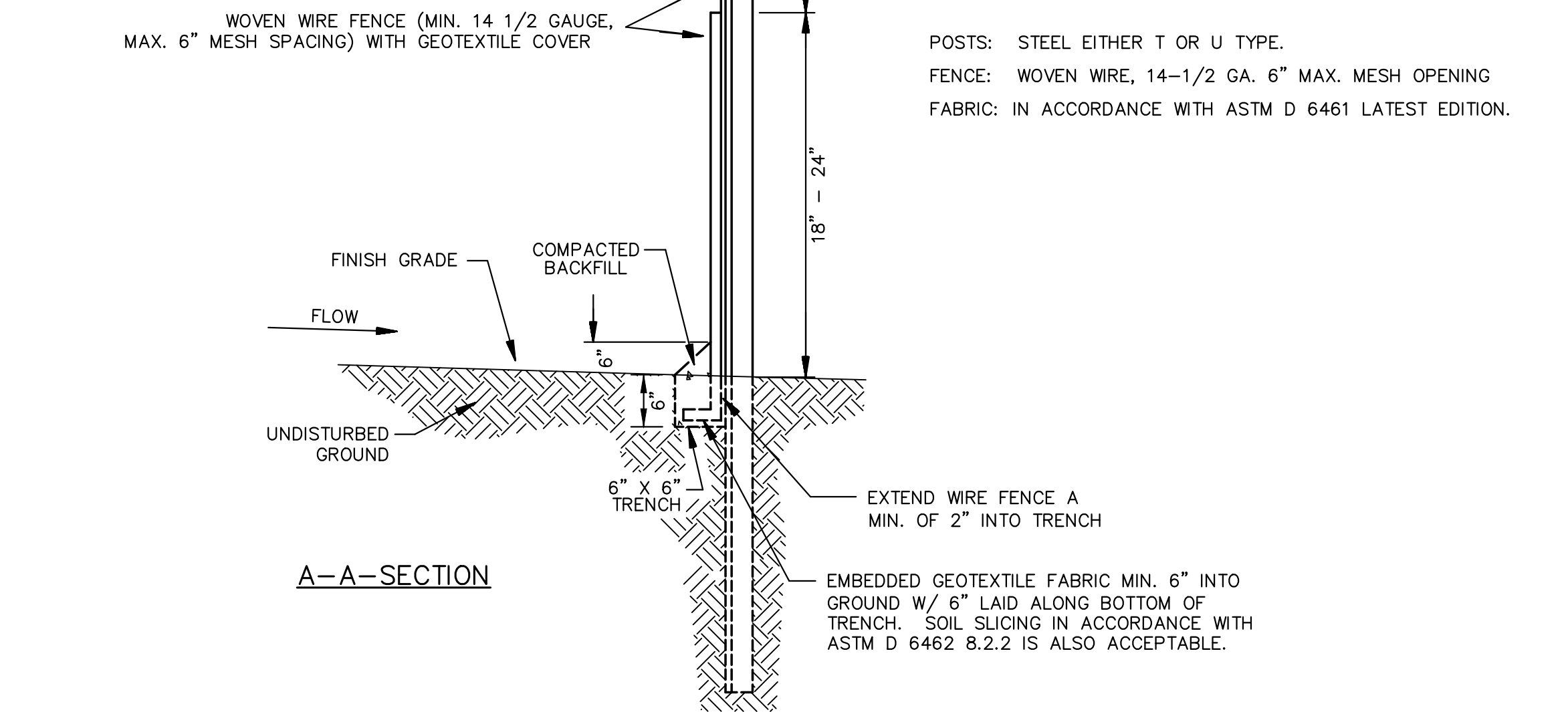
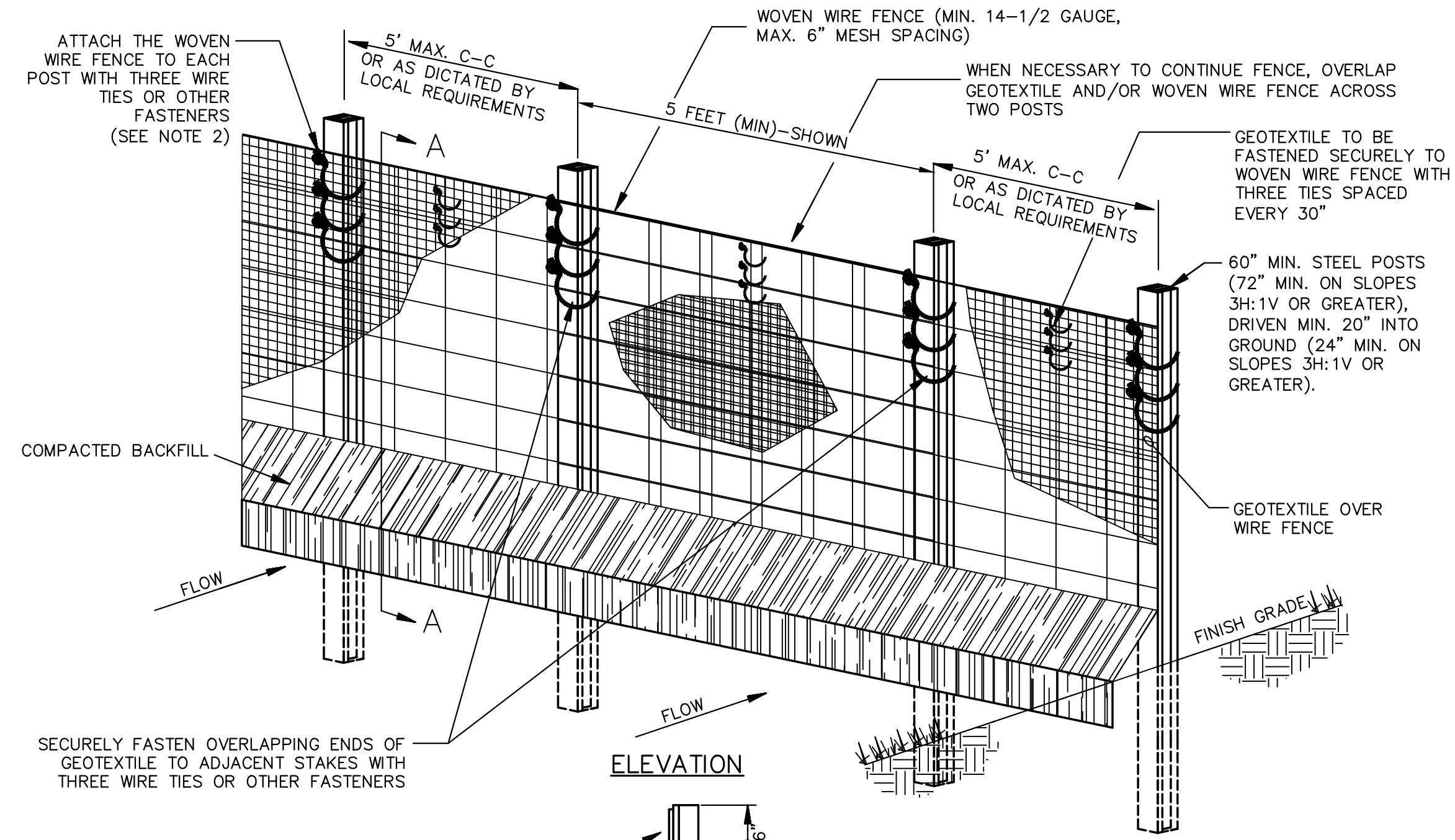
MANAGED BY APPROPRIATE CONTROL;

- WASTEWATER FROM WASHOUT AND CLEANOUT OF STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS, AND OTHER CONSTRUCTION MATERIALS;
- FUELS, OILS, OR OTHER POLLUTANTS USED IN VEHICLE AND EQUIPMENT OPERATIONS AND MAINTENANCE; AND
- SOAPS OR SOLVENTS USED IN VEHICLE AND EQUIPMENT WASHING.

17. AFTER CONSTRUCTION ACTIVITIES BEGIN, INSPECTIONS MUST BE CONDUCTED AND MINIMUM OF AT LEAST ONCE EVERY CALENDAR WEEK AND MUST BE CONDUCTED UNTIL FINAL STABILIZATION IS REACHED ON ALL AREAS OF THE CONSTRUCTION SITE.
18. IF EXISTING BMPS NEED TO BE MODIFIED OR IF ADDITIONAL BMPS ARE NECESSARY TO COMPLY WITH THE REQUIREMENTS OF THIS PERMIT AND/OR SC'S WATER QUALITY STANDARDS, IMPLEMENTATION MUST BE COMPLETED BEFORE THE NEXT STORM EVENT WHENEVER PRACTICABLE. IF IMPLEMENTATION BEFORE THE NEXT STORM EVENT IS IMPRACTICABLE, THE SITUATION MUST BE DOCUMENTED IN THE SWPPP AND ALTERNATIVE BMPS MUST BE IMPLEMENTED AS SOON AS REASONABLY POSSIBLE.
19. A PRE-CONSTRUCTION CONFERENCE MUST BE HELD FOR EACH CONSTRUCTION SITE WITH AN APPROVED ON-SITE SWPPP PRIOR TO THE IMPLEMENTATION OF CONSTRUCTION ACTIVITIES.

**VIII. SEEDING SCHEDULE :**

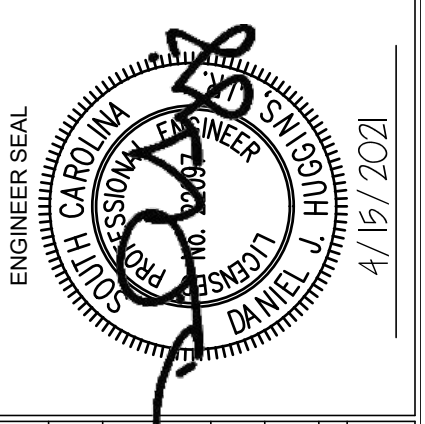
- A. MIXTURES OF DIFFERENT TYPES OF SEED FOR THE VARIOUS SCHEDULES SHALL BE WEIGHED AND MIXED IN THE PROPER PROPORTIONS IN THE PRESENCE OF THE OWNERS' REPRESENTATIVES
- B. SCHEDULE NO. 1 – MAY 1 TO AUGUST 31:
  - 1 POUND BROWN TOP MILLET
  - 2 POUNDS HULLED BERMUDA
  - 25 POUNDS 10-10-10 FERTILIZER
  - 75 POUNDS LIMESTONE
- C. SCHEDULE NO. 2 – SEPTEMBER 1 TO APRIL 30:
  - 2 POUNDS ANNUAL RYE GRASS
  - 0.5 POUNDS HULLED BERMUDA
  - 1.5 POUNDS UNHULLED BERMUDA
  - 25 POUNDS 10-10-10 FERTILIZER
  - 75 POUNDS OF LIMESTONE
- D. DOUBLE SEED ALL GRASSED SWALES AND WATER WAYS FROM TOP TO TOP OF BANK
- E. FILL, COVER, AND TEMPORARILY SEED AT THE END OF EACH DAY DURING UTILITY LINE CONSTRUCTION.



1. INSTALLATION SHALL COMPLY WITH ASTM D 6462 LATEST EDITION.
2. ATTACH THE WOVEN WIRE FENCE TO EACH POST AND THE GEOTEXTILE TO THE WOVEN WIRE FENCE (SPACED EVERY 30") WITH THREE WIRE TIES OR OTHER FASTENERS, ALL SPACED WITHIN THE TOP 8" OF THE FABRIC. ATTACH EACH TIE DIAGONALLY 45 DEGREES THROUGH THE FABRIC, WITH EACH PUNCTURE AT LEAST 1" VERTICALLY APART. ALSO, EACH TIE PLACED ON A POST SHOULD BE POSITIONED TO HANG ON A POST NIPPLE WHEN TIGHTENED TO PREVENT SAGGING.
3. WHEN TWO SECTIONS OF GEOTEXTILE ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED ACROSS TWO POSTS, 60" MIN. AS SHOWN.
4. MAINTENANCE SHALL BE PERFORMED AS NOTED IN THE SWPPP. DEPTH OF ACCUMULATED SEDIMENTS MAY NOT EXCEED 1/2 THE HEIGHT OF THE FENCE. MAINTENANCE CLEANOUT MUST BE CONDUCTED REGULARLY TO PREVENT ACCUMULATED SEDIMENTS FROM REACHING 1/2 THE HEIGHT OF THE FENCE FABRIC ABOVE GRADE.
5. WRAP APPROXIMATELY 6" OF FABRIC AROUND THE END POSTS AND SECURE WITH 3 TIES.
6. COMPACTING IS VITALLY IMPORTANT FOR EFFECTIVE RESULTS. COMPACT THE SOIL IMMEDIATELY NEXT TO THE SILT FENCE FABRIC WITH THE FRONT WHEEL OF THE TRACTOR, SKID STEER, OR ROLLER EXERTING AT LEAST 60 POUNDS PER SQ. INCH. COMPACT THE UPSTREAM SIDE FIRST, AND THEN EACH SIDE TWICE FOR A TOTAL OF FOUR TRIPS.
7. ADD POST CAPS AS NEEDED BASED ON SITE CONDITIONS AND APPLICABLE AGENCY REQUIREMENTS.
8. INSPECT SILT FENCE EVERY 7 DAYS AND AFTER EVERY RAIN EVENT.

**REINFORCED SILT FENCE**

DETAIL 1  
SCALE: NONE



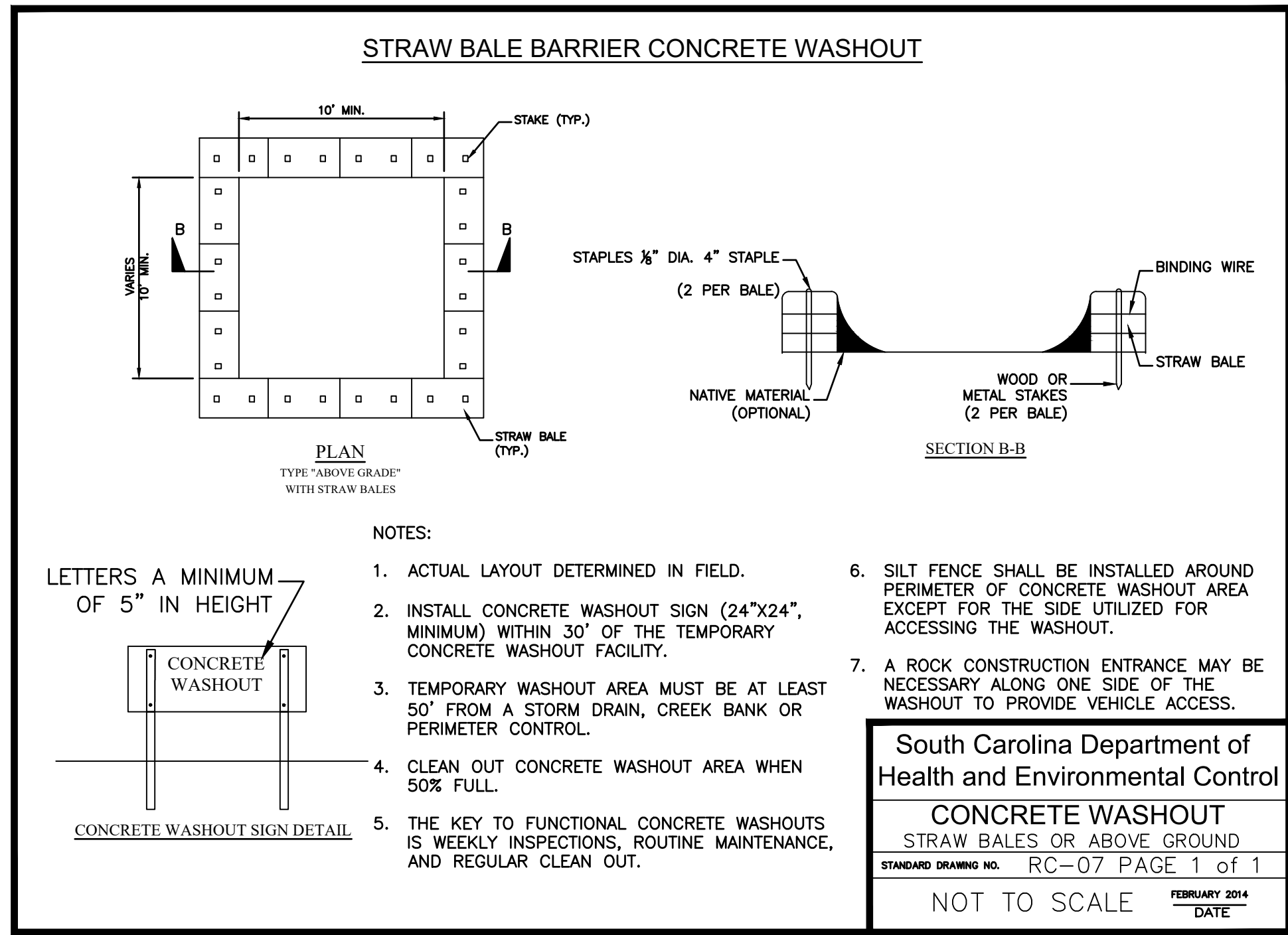
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APPROVED BY:	JK

**EROSION & SEDIMENTATION CONTROL NOTES & DETAIL**  
**C-SWPP**  
**CITY OF LAKE CITY**  
**LAKE SWAMP WWTP UPGRADE**



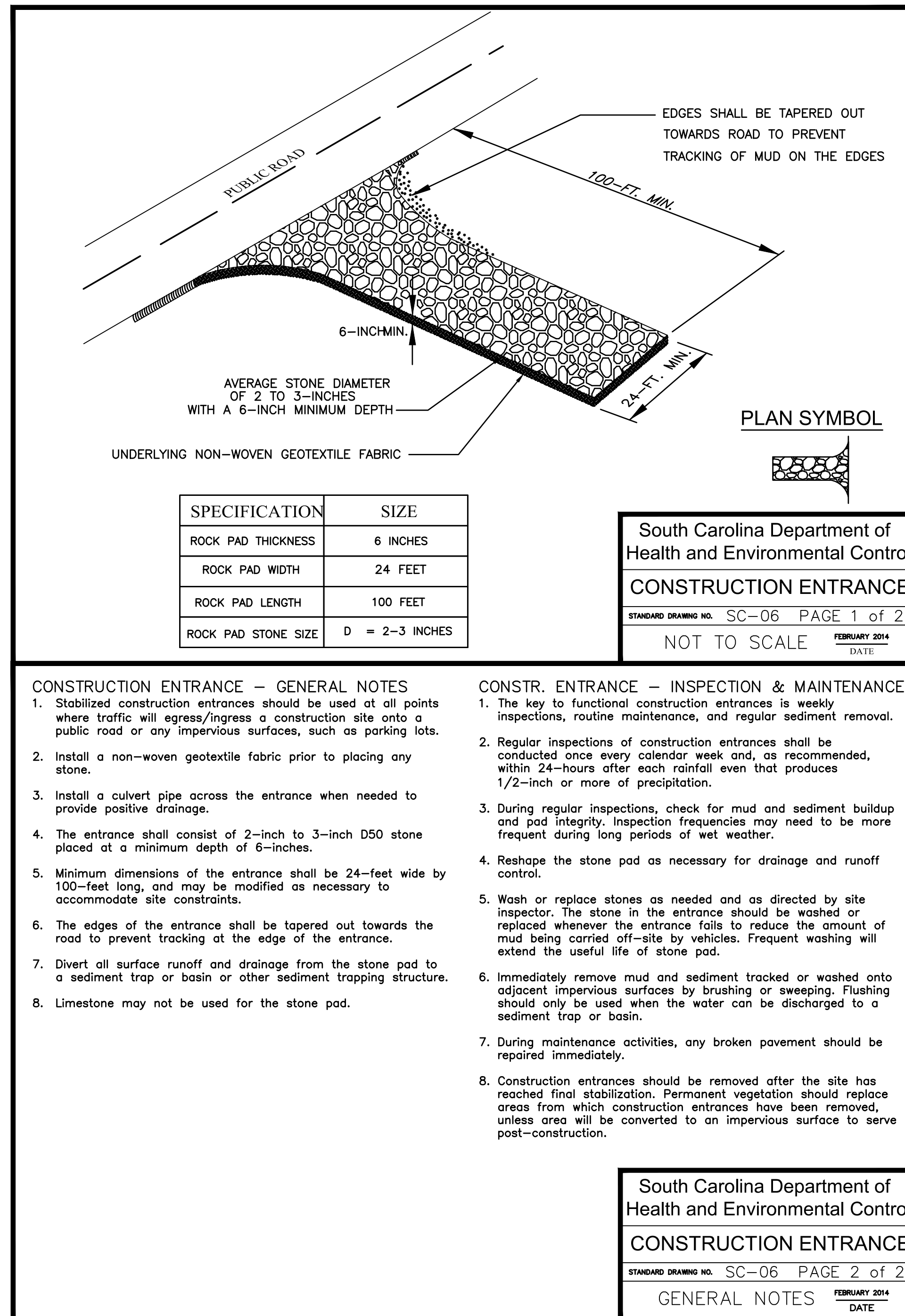
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### CONCRETE WASHOUT

**DETAIL** — 2 —  
 SCALE: NONE (C00.49)



#### CONSTRUCTION ENTRANCE — GENERAL NOTES

- Stabilized construction entrances should be used at all points where traffic will egress/ingress a construction site onto a public road or any impervious surfaces, such as parking lots.
- Install a non-woven geotextile fabric prior to placing any stone.
- Install a culvert pipe across the entrance when needed to provide positive drainage.
- The entrance shall consist of 2-inch to 3-inch D50 stone placed at a minimum depth of 6-inches.
- Minimum dimensions of the entrance shall be 24-feet wide by 100-feet long, and may be modified as necessary to accommodate site constraints.
- The edges of the entrance shall be tapered out towards the road to prevent tracking at the edge of the entrance.
- Divert all surface runoff and drainage from the stone pad to a sediment trap or basin or other sediment trapping structure.
- Limestone may not be used for the stone pad.

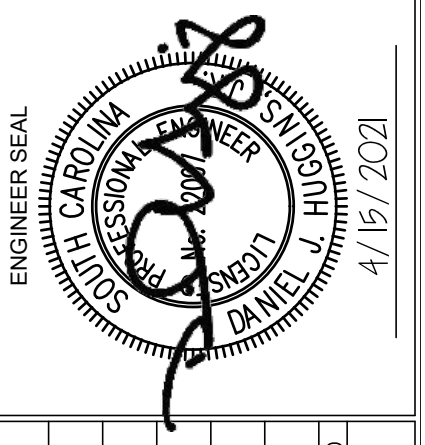
#### CONSTR. ENTRANCE — INSPECTION & MAINTENANCE

- The key to functional construction entrances is weekly inspections, routine maintenance, and regular sediment removal.
- Regular inspections of construction entrances shall be conducted once every calendar week and, as recommended, within 24-hours after each rainfall even that produces 1/2-inch or more of precipitation.
- During regular inspections, check for mud and sediment buildup and pad integrity. Inspection frequencies may need to be more frequent during long periods of wet weather.
- Reshape the stone pad as necessary for drainage and runoff control.
- Wash or replace stones as needed and as directed by site inspector. The stone in the entrance should be washed or replaced whenever the entrance fails to reduce the amount of mud being carried off-site by vehicles. Frequent washing will extend the useful life of stone pad.
- Immediately remove mud and sediment tracked or washed onto adjacent impervious surfaces by brushing or sweeping. Flushing should only be used when the water can be discharged to a sediment trap or basin.
- During maintenance activities, any broken pavement should be repaired immediately.
- Construction entrances should be removed after the site has reached final stabilization. Permanent vegetation should replace areas from which construction entrances have been removed, unless area will be converted to an impervious surface to serve post-construction.

South Carolina Department of Health and Environmental Control  
**CONSTRUCTION ENTRANCE**  
 STANDARD DRAWING NO. SC-06 PAGE 2 of 2  
 FEBRUARY 2014 DATE  
 GENERAL NOTES

### CONSTRUCTION ENTRANCE

**DETAIL** — 3 —  
 SCALE: NONE (C00.49)



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EROSION & SEDIMENTATION CONTROL DETAILS

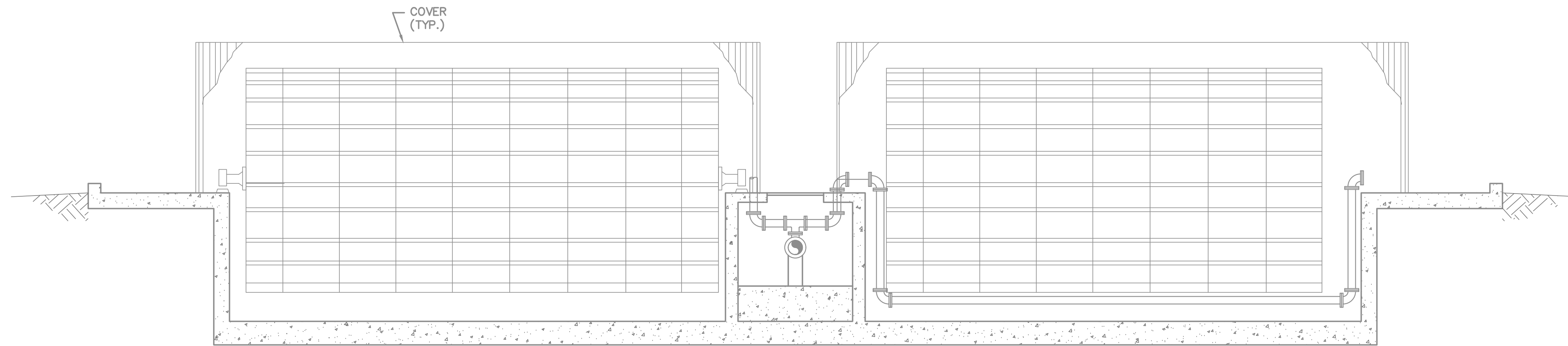
CITY OF LAKE CITY  
 LAKE SWAMP WWTP UPGRADE



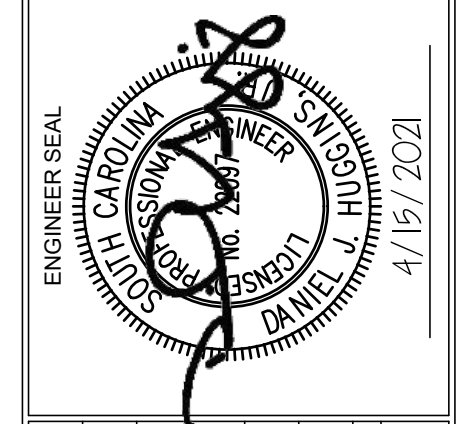
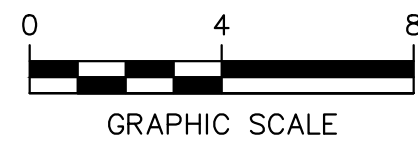
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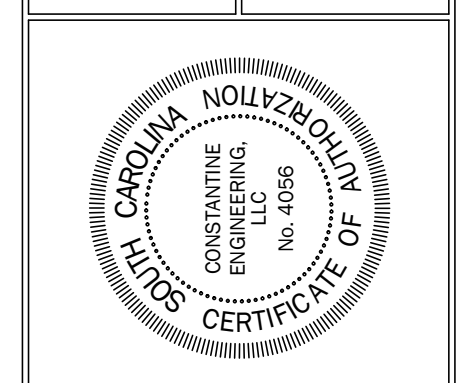


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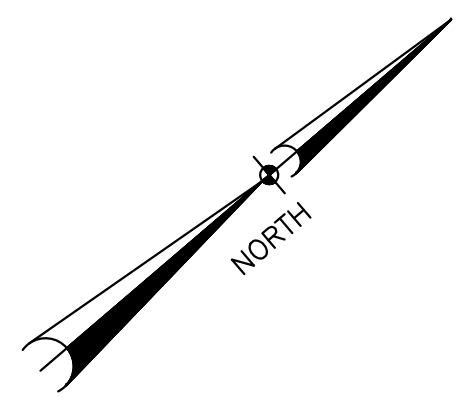
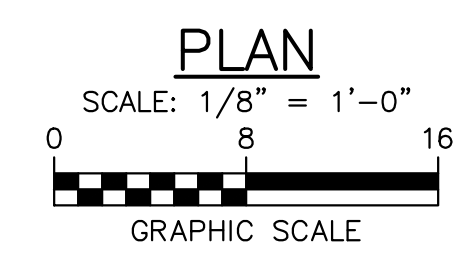
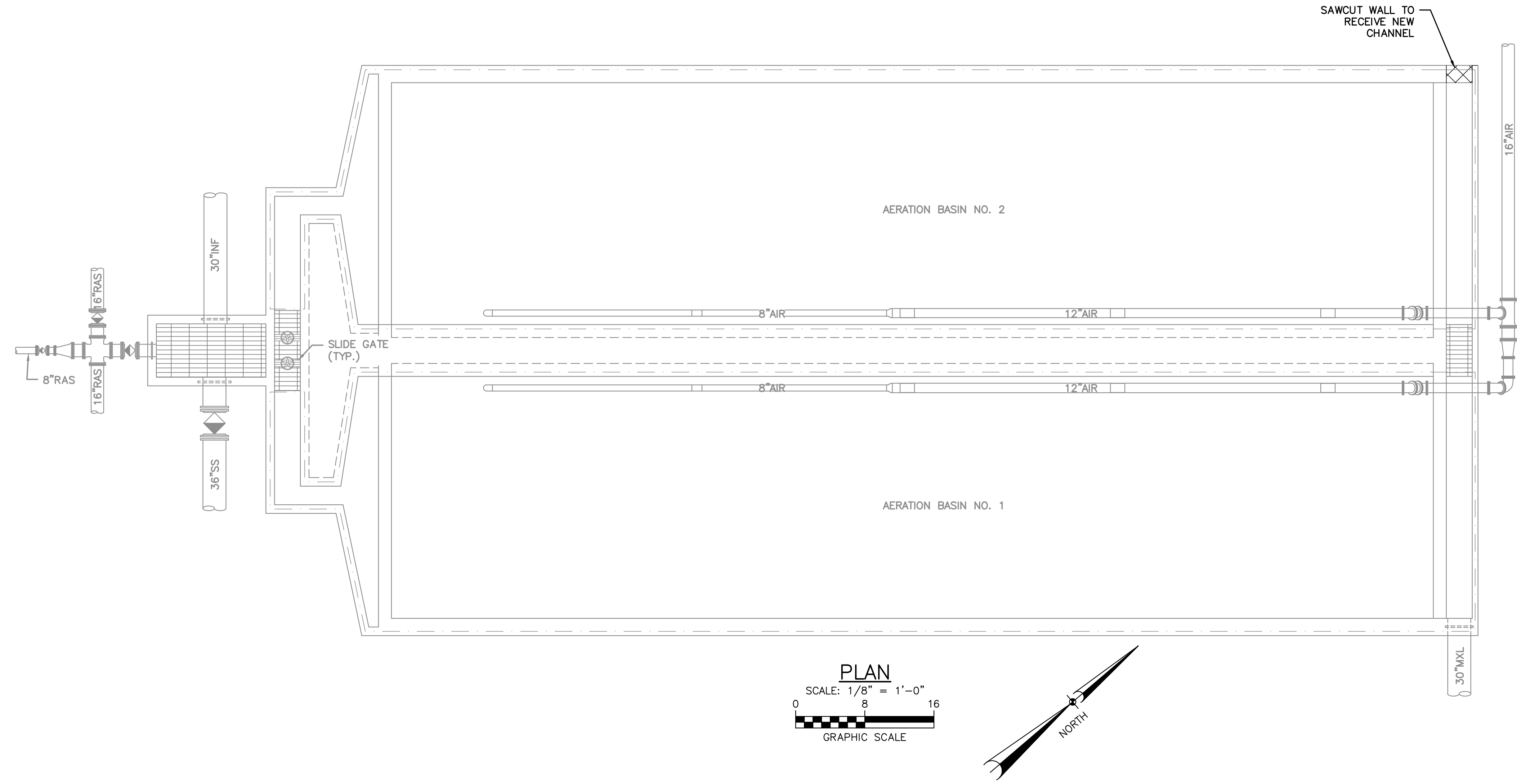
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EXISTING ROTATING BIOLOGICAL CONTACTOR DEMOLITION SECTION  
 CITY OF LAKE CITY  
 LAKE SWAMP WWTP UPGRADE

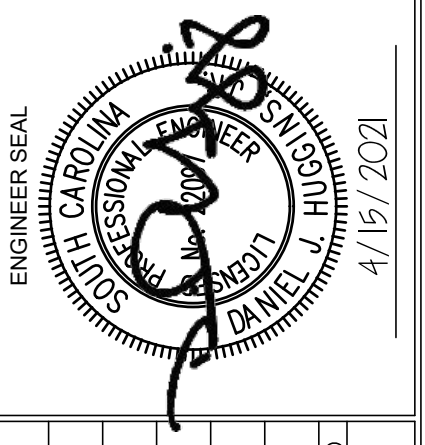


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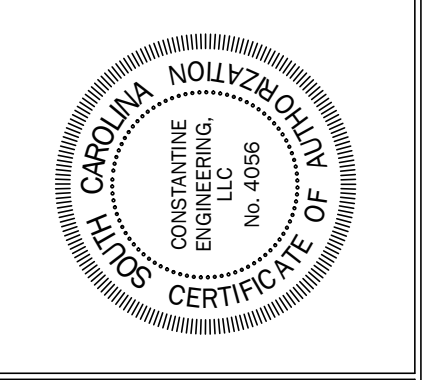
- NOTES:**
1. THE CITY WILL REMOVE ALL SOLID WASTE THAT CAN BE REMOVED VIA PUMPING OPERATIONS.
  2. CONTRACTOR TO REMOVE ALL REMAINING LIQUID AND SOLID WASTE FOR INSPECTION OF FINE BUBBLE DIFFUSERS. THE AERATION BASIN CURRENTLY CONTAINS APPROXIMATELY 2' OF SOLID WASTE AND IT IS ASSUMED 20% WILL REQUIRE REMOVAL BY THE CONTRACTOR.



NO.	DATE	DESIGNED BY:	DH	DRAWN BY:	DH	REVISION	CHECKED BY:	MB	APPROVED BY:	JK
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**EXISTING AERATION BASIN NO. 1 & 2  
 TOP DEMOLITION PLAN**

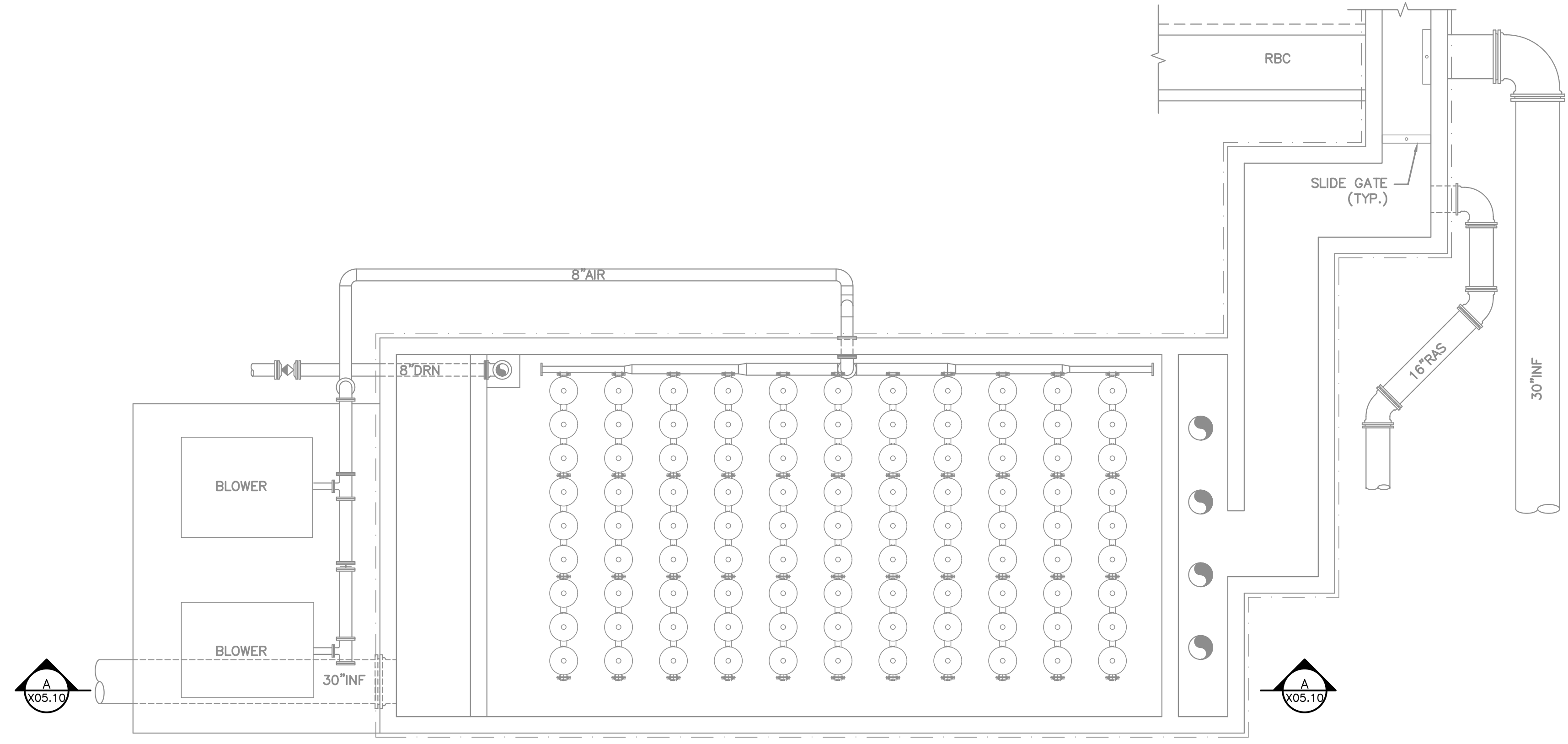
**CITY OF LAKE CITY  
 LAKE SWAMP WWTP UPGRADE**



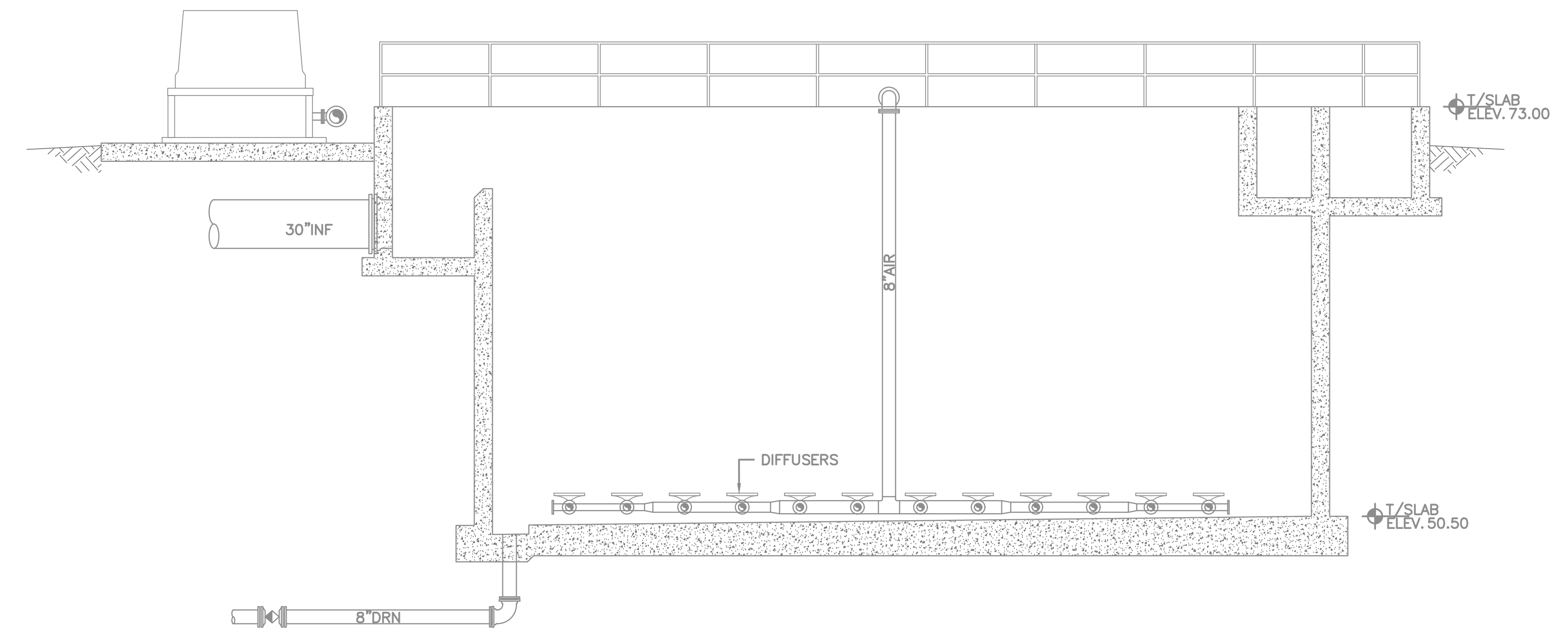
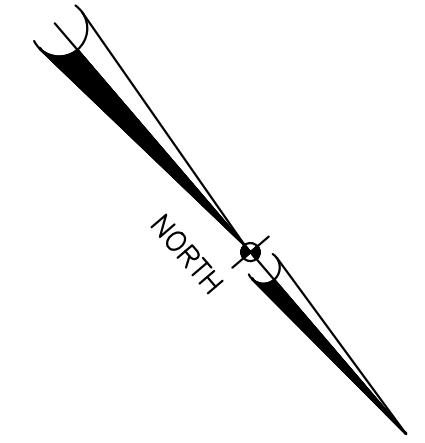
**Constantine**  
 Engineering

4000 FABER PLACE DRIVE, SUITE 330  
 NORTH CHARLESTON, SC 29405  
 PH. 843-628-3352

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VERIFY SCALE	BAR IS ONE INCH ON ORIGINAL DRAWING
DATE	MARCH 2021
PROJ.	100392.02
DWG.	X04.10



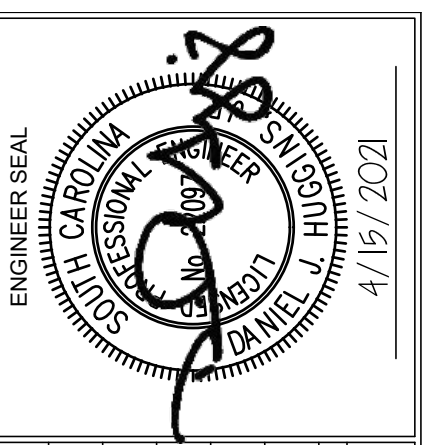
**TOP PLAN**  
SCALE: 3/16" = 1'-0"  
GRAPHIC SCALE



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

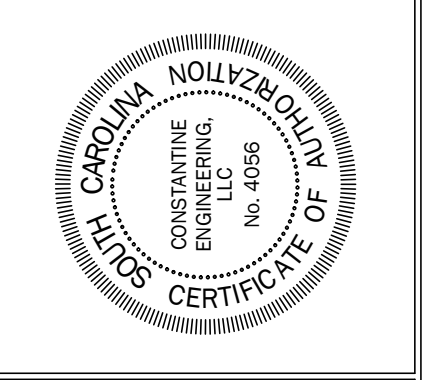
**NOTES:**

1. THE CITY WILL REMOVE ALL SOLID WASTE THAT CAN BE REMOVED VIA PUMPING OPERATIONS.
2. CONTRACTOR TO REMOVE ALL REMAINING LIQUID AND SOLID WASTE. THE BASIN CURRENTLY CONTAINS APPROXIMATELY 6' OF SOLID WASTE AND IT IS ASSUMED 20% WILL REQUIRE REMOVAL BY THE CONTRACTOR.
3. REMOVE STRUCTURE IN IT'S ENTIRETY INCLUDING ALL EQUIPMENT, PIPING, VALVES, ETC.
4. SEE DEMOLITION SITE PLAN FOR EXTENTS OF PIPING REMOVAL.
5. DIMENSIONS AND ELEVATIONS ARE APPROXIMATE. FIELD VERIFY EXISTING CONDITIONS.



NO.	DATE	DESIGNED BY:	DRAWN BY:	REVISION	CHECKED BY:	APPROVED BY:
		DH	DH		MB	JK

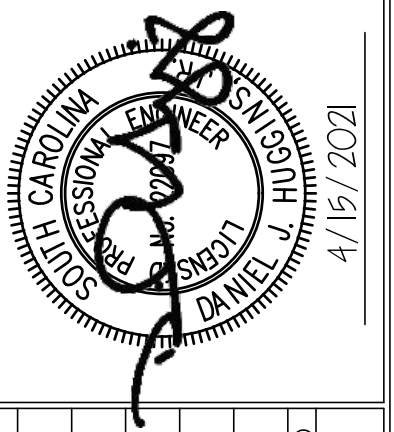
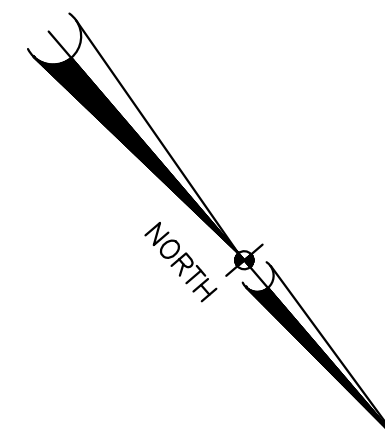
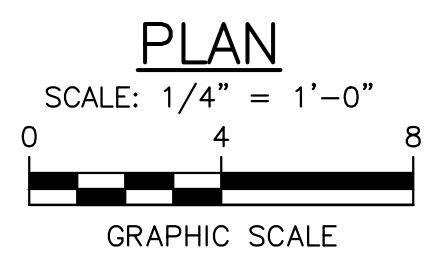
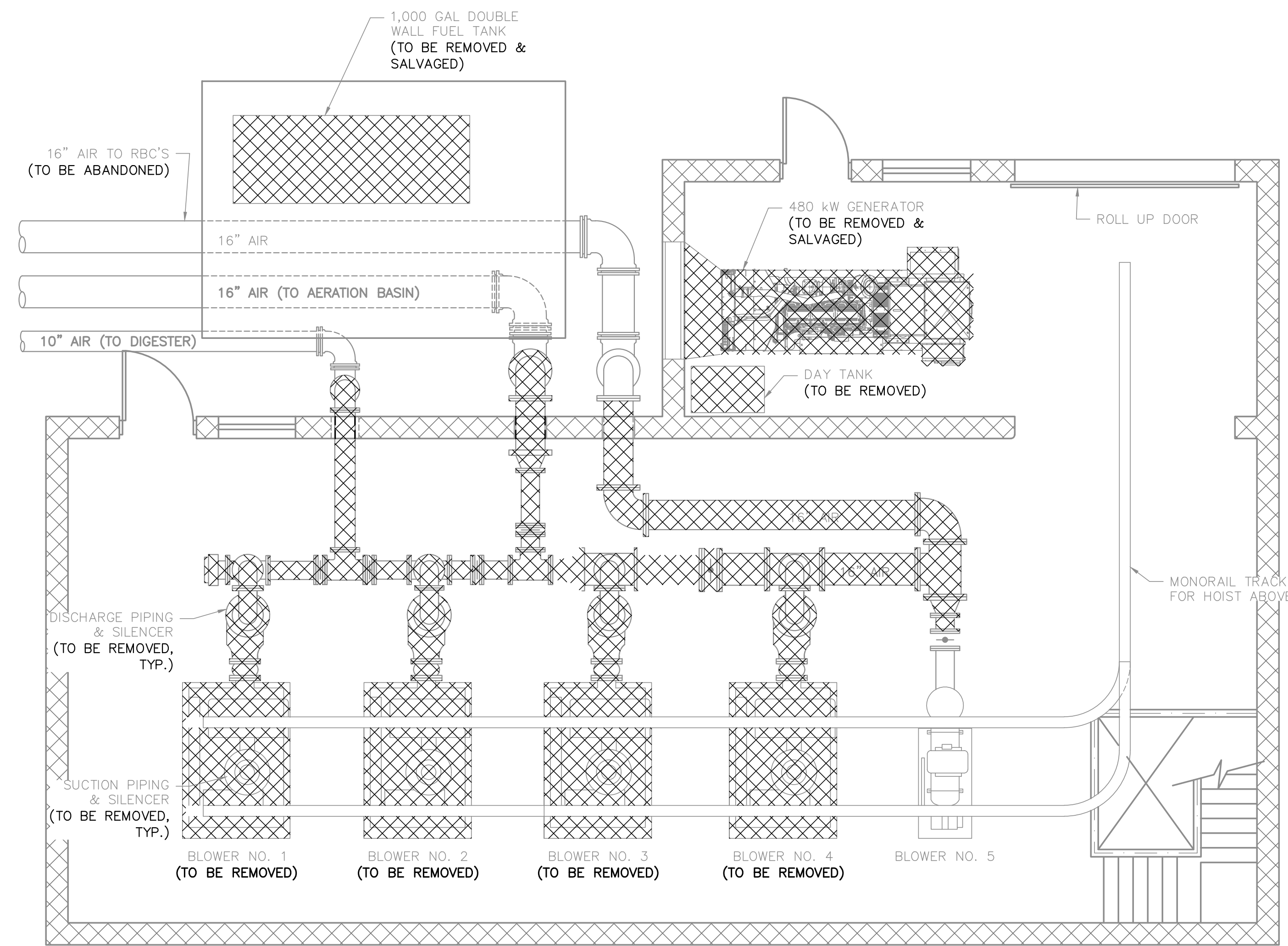
EXISTING AERATION BASIN NO. 3  
DEMOLITION PLAN & SECTION  
  
CITY OF LAKE CITY  
LAKE SWAMP WWTP UPGRADE



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DWG.	X05.10

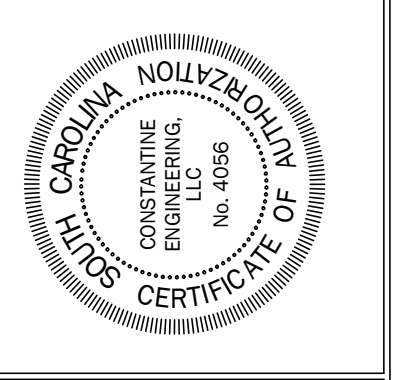
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 REUSE OF DOCUMENTS: THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CONSTANTINE ENGINEERING. HOWEVER, THIS SHALL NOT PROHIBIT THE REUSE OF THIS DOCUMENT BY THE CLIENT AS PROVIDED FOR BY THE CONTRACT.

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EXISTING BLOWER BUILDING  
 DEMOLITION PLAN  
 CITY OF LAKE CITY  
 LAKE SWAMP WWTP UPGRADE

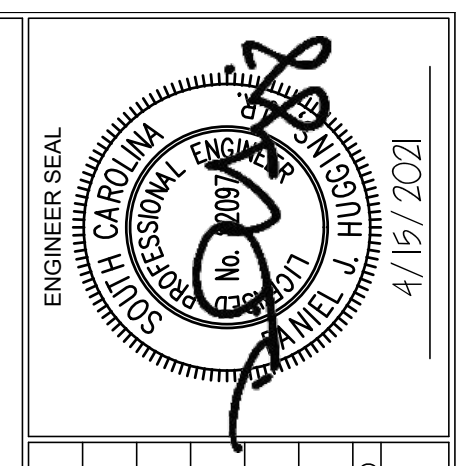
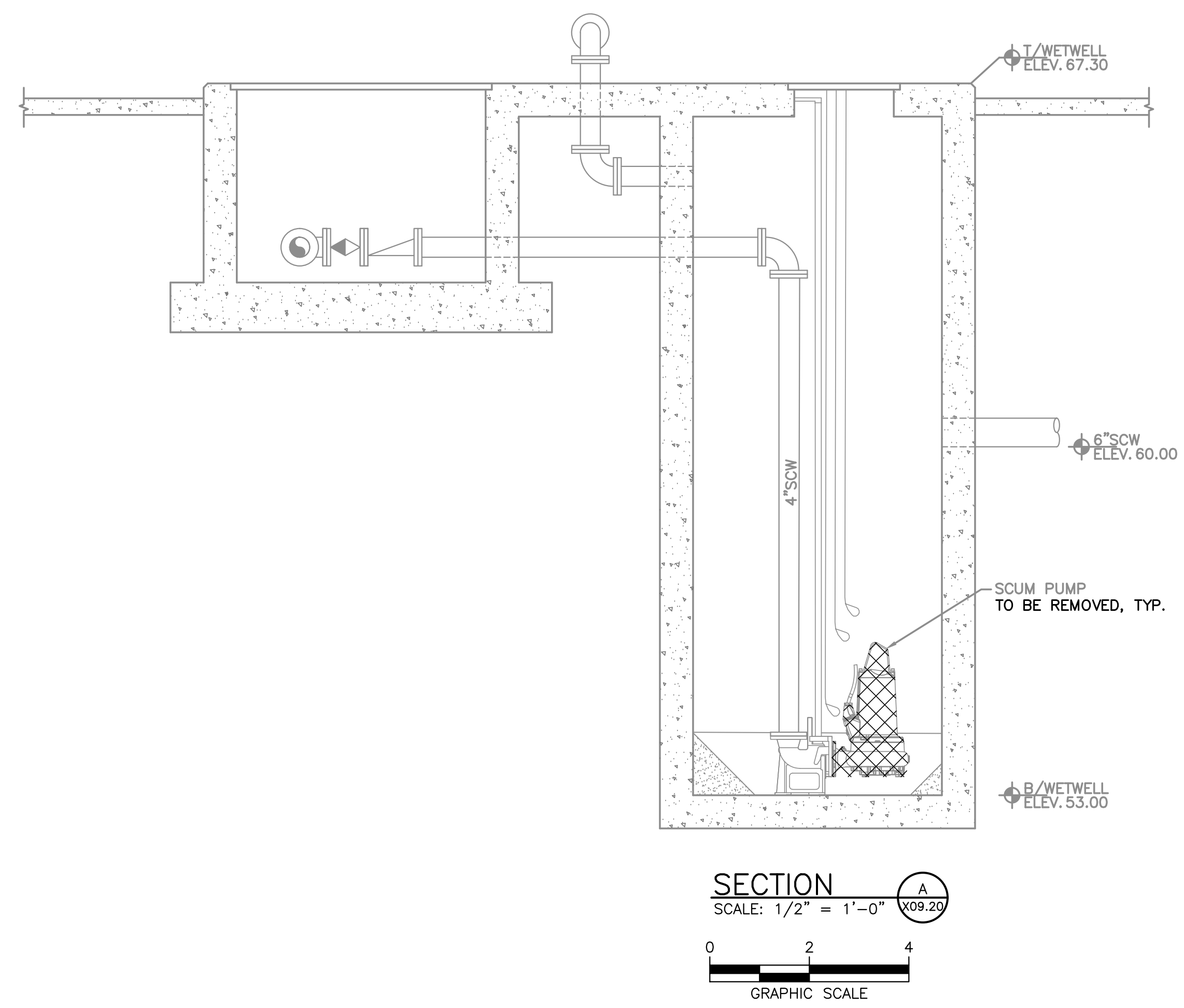
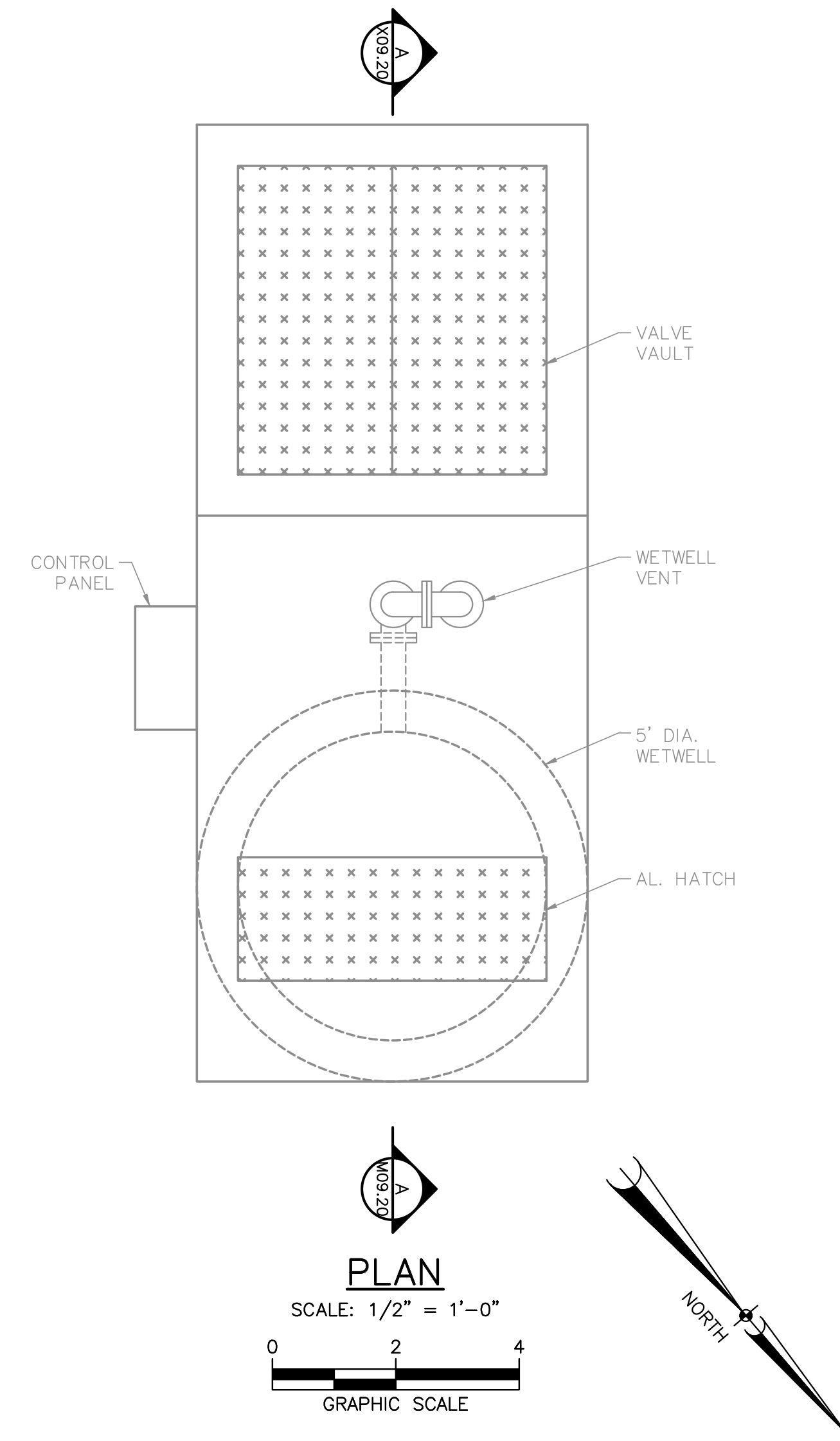


**Constantine**  
 Engineering  
 4000 FABER PLACE DRIVE, SUITE 330  
 NORTH CHARLESTON, SC 29405  
 PH. 843-628-3352

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PROJ.	100392.02
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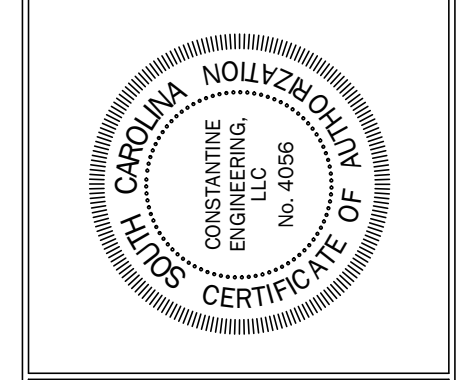
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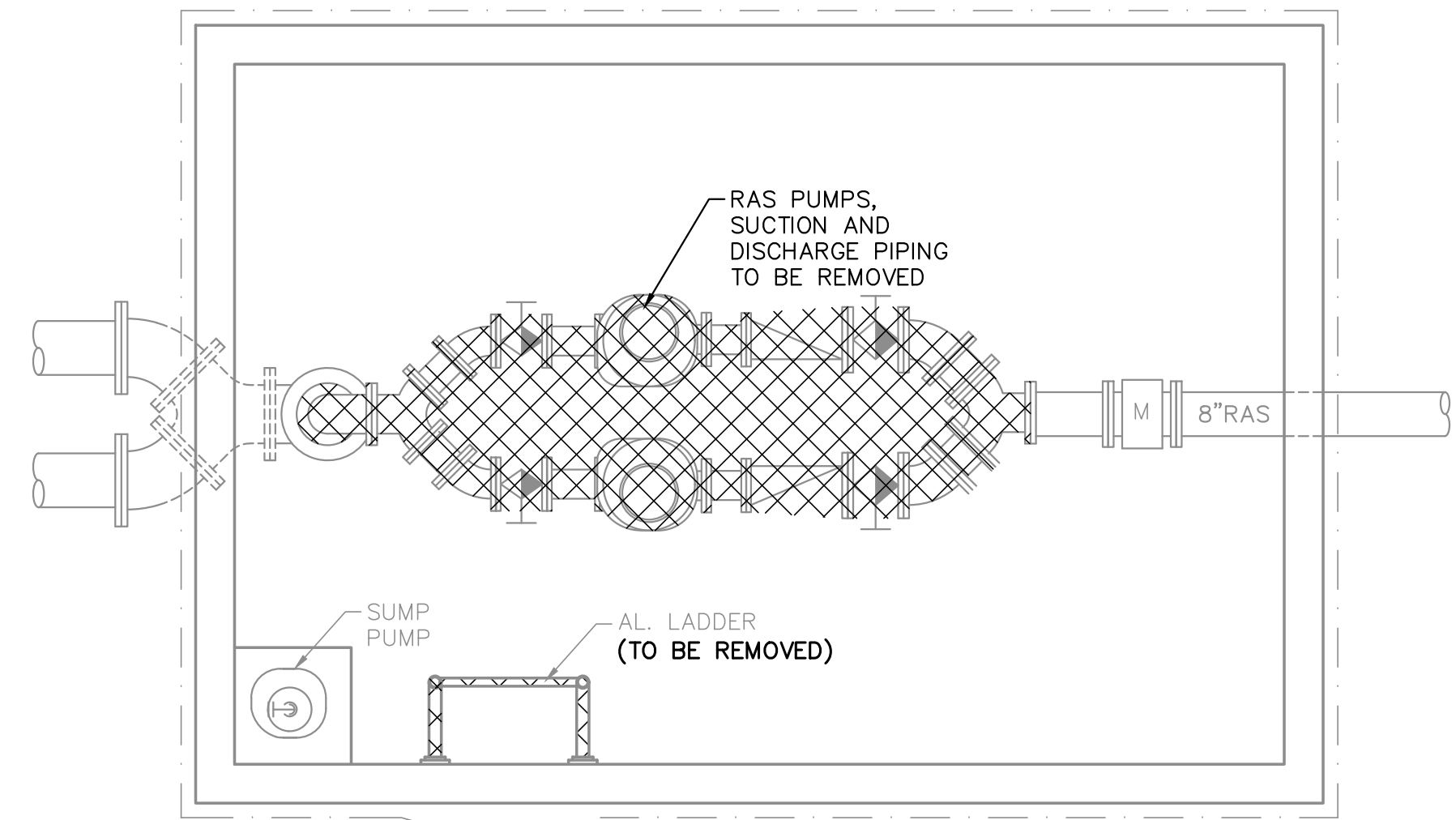
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		DH	DH		MB	JK

**EXISTING SCUM PUMP STATION  
 DEMOLITION  
 PLAN & SECTION**  
**CITY OF LAKE CITY  
 LAKE SWAMP WWTP UPGRADE**



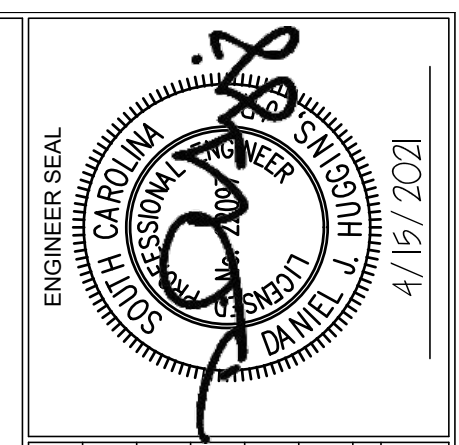
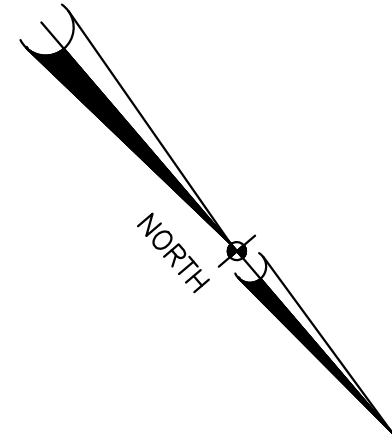
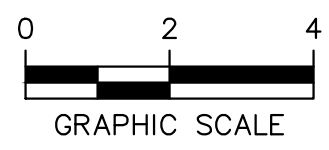
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DATE	MARCH 2021
PROJ.	100392.02
DWG.	X09.20

**BID DOCUMENTS**



**TOP PLAN**

SCALE: 3/8" = 1'-0"

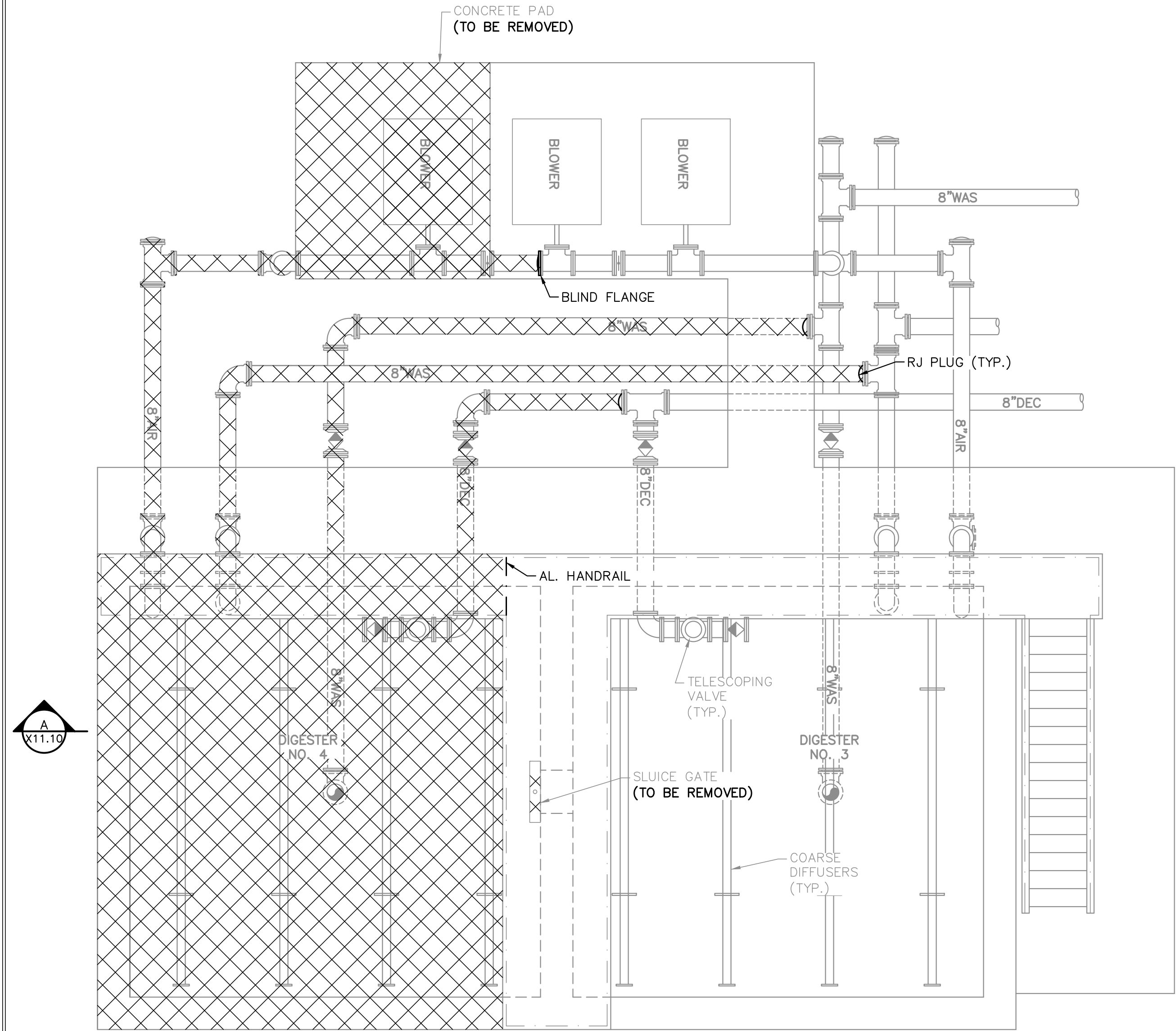


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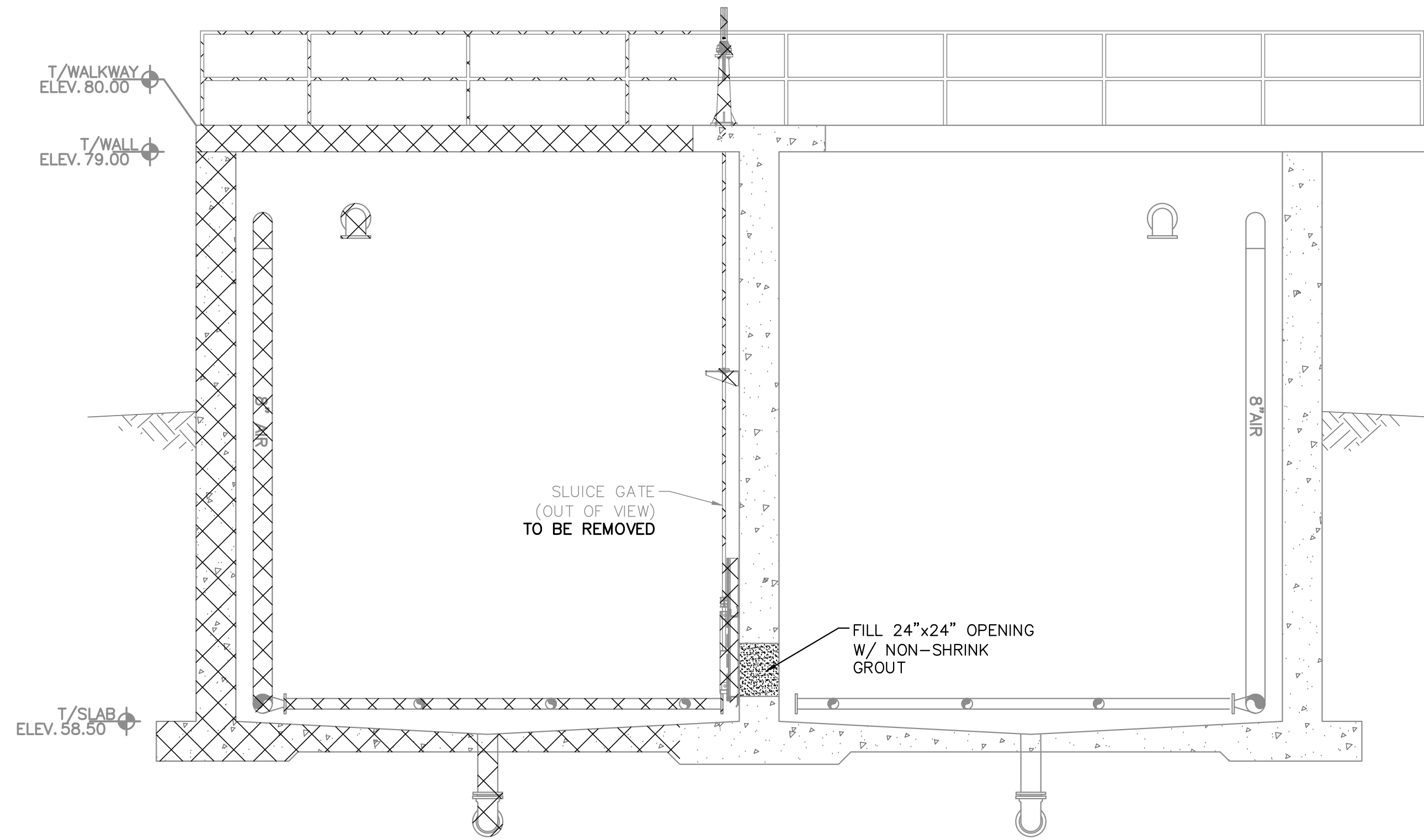
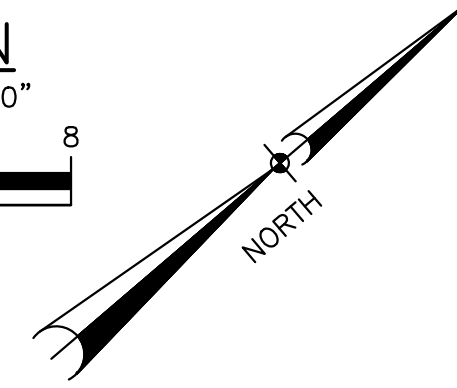
EXISTING CLARIFIER NO. 3 RAS  
 PUMP STATION  
 DEMOLITION PLAN  
 CITY OF LAKE CITY  
 LAKE SWAMP WWTP UPGRADE



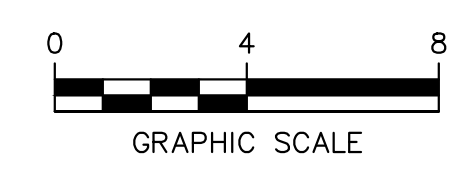
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DATE	MARCH 2021
PROJ.	100392.02
DWG.	X10.10



**TOP PLAN**  
SCALE: 1/4" = 1'-0"  
GRAPHIC SCALE

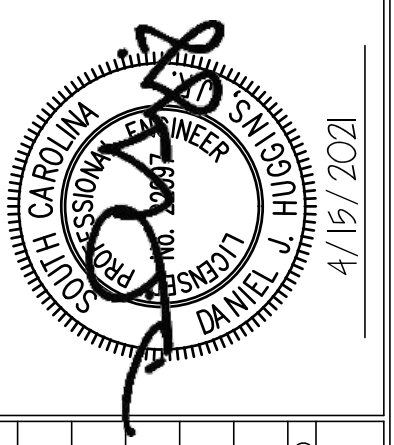


**SECTION A-A**  
SCALE: 1/4" = 1'-0"  
GRAPHIC SCALE



**NOTES:**

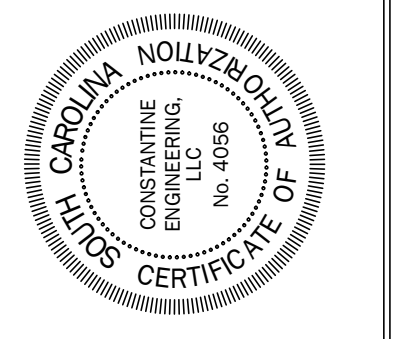
1. THE CITY WILL REMOVE ALL SOLID WASTE THAT CAN BE REMOVED VIA PUMPING OPERATIONS.
2. CONTRACTOR TO REMOVE ALL REMAINING LIQUID AND SOLID WASTE. THE DIGESTER CURRENTLY CONTAINS APPROXIMATELY 12' OF SOLID WASTE AND IT IS ASSUMED 20% WILL REQUIRE REMOVAL BY THE CONTRACTOR.
3. REMOVE DIGESTER NO. 4 IN IT'S ENTIRETY INCLUDING ALL EQUIPMENT, PIPING, VALVES, ETC.
4. DIMENSIONS AND ELEVATIONS ARE APPROXIMATE. FIELD VERIFY EXISTING CONDITIONS.



NO.	DATE	DESIGNED BY:	DRAWN BY:	REVISION	CHECKED BY:	APPROVED BY:
		DH	DH	DH	MB	JK

**EXISTING AEROBIC DIGESTER NOS. 3 & 4  
DEMOLITION PLAN & SECTION**

**CITY OF LAKE CITY  
LAKE SWAMP WWTP UPGRADE**



4000 FABER PLACE DRIVE, SUITE 330  
NORTH CHARLESTON, SC 29405  
PH. 843-628-3352

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DWG.	X11.10

REUSE OF DOCUMENTS: THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CONSTANTINE ENGINEERING. HOWEVER, THIS SHALL NOT PROHIBIT THE REUSE OF THIS DOCUMENT BY THE CLIENT AS PROVIDED FOR BY THE CONTRACT.

GENERAL NOTES:

- 1. CONSTRUCT THIS PROJECT IN ACCORDANCE WITH THE 2018 INTERNATIONAL BUILDING CODE AND ALL OTHER APPLICABLE BUILDING CODES HAVING JURISDICTION.
2. VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS AT THE PROJECT SITE PRIOR TO STARTING WORK. NOTIFY THE ENGINEER OF ANY DISCREPANCIES OR EXISTING CONDITIONS THAT ARE NOT CONSISTENT WITH THE DRAWINGS.
3. COORDINATE ALL WORK WITH THE SPECIFICATIONS, APPROVED SHOP DRAWINGS, AND DRAWINGS OF OTHER TRADES BEFORE STARTING WORK. NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES, INCONSISTENCIES OR CONFLICTS PRIOR TO STARTING FABRICATION OR CONSTRUCTION OF THE WORK.
4. REFER TO CIVIL, PROCESS, MECHANICAL, AND ELECTRICAL DRAWINGS AND APPROVED SHOP DRAWINGS FOR SIZES AND LOCATIONS OF OPENINGS, INSERTS, SLEEVES, CHASES, SLAB DEPRESSIONS, EMBEDDED ITEMS, ATTACHMENT OF FINISHES, AND OTHER NON-STRUCTURAL ITEMS. REFER TO ELECTRICAL AND MECHANICAL PLANS FOR SIZE AND LOCATION OF ALL OPENINGS FOR DUCTS, PIPING, CONDUITS, ETC. NOT SHOWN.
5. REFER TO SPECIFICATIONS, APPROVED SHOP DRAWINGS, OR DRAWINGS OF OTHER TRADES FOR THE DESIGN OF STEEL STAIRS, HANDRAILS, LADDERS, AND OTHER NON-STRUCTURAL ITEMS.
6. GENERAL ARRANGEMENT DRAWINGS AND/OR DRAWINGS OF OTHER TRADES SHALL BE REFERENCED FOR DIMENSIONS AND LOCATION OF NON-STRUCTURAL ITEMS INCLUDING BUT NOT LIMITED TO DOOR AND WINDOW OPENINGS, NON-LOAD BEARING PARTITION WALLS, FINISHES, MECHANICAL CURBS, AND MINOR FLOOR AND ROOF PENETRATIONS.
7. SUBMIT SHOP DRAWINGS TO ENGINEER FOR ALL STRUCTURAL COMPONENTS PRIOR TO FABRICATION. DO NOT REPRODUCE STRUCTURAL DRAWINGS FOR SHOP DRAWINGS OR ERECTION PLANS UNLESS APPROVED BY THE ENGINEER. USE OF REPRODUCED CONTRACT DRAWINGS IN PART OR IN WHOLE FOR SHOP DRAWING PREPARATION SHALL NOT RELIEVE THE CONTRACTOR OR SUPPLIER FROM THE REQUIREMENT TO ACCURATELY LAYOUT, DETAIL, AND PROVIDE THEIR PORTION OF THE WORK. SHOP DRAWINGS SHALL BE REVIEWED AND APPROVED BY THE CONTRACTOR FOR ALL DIMENSIONS, ELEVATIONS, AND ERECTION PROCEDURE PRIOR TO SUBMITTING TO THE ENGINEER. PROVIDE AMPLE TIME FOR SHOP DRAWING REVIEW TO TAKE PLACE. REFER TO THE PROJECT SPECIFICATIONS FOR OTHER SUBMITTAL REQUIREMENTS.
8. THE ENGINEER'S REVIEW OF SHOP DRAWINGS IS FOR OVERALL CONFORMANCE WITH THE DESIGN INTENT AND GENERAL COMPLIANCE WITH THE CONTRACT DOCUMENTS. THE ENGINEER'S APPROVAL OF SHOP DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY FOR DEVIATIONS, ERRORS, OR OMISSIONS FROM THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL REMAIN SOLELY RESPONSIBLE FOR COORDINATION OF DIMENSIONS, SIZES, AND DETAILS IN THE SHOP DRAWINGS.
9. IN CASE OF CONFLICT BETWEEN THE DRAWINGS AND SPECIFICATIONS, THE MORE STRINGENT REQUIREMENT SHALL GOVERN UNLESS OTHERWISE APPROVED BY THE ARCHITECT.
10. WHERE THERE IS A CONFLICT BETWEEN SPECIFIC DETAILS OR NOTES AND TYPICAL DETAILS OR GENERAL NOTES, THE SPECIFIC DETAILS AND NOTES SHALL TAKE PRECEDENCE UNLESS OTHERWISE INDICATED BY THE ENGINEER.
11. MEANS, METHODS, TECHNIQUES, PROCEDURES, SEQUENCES OF CONSTRUCTION, JOBSITE SAFETY, AND SUPERVISION OF THE WORK ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
12. PROVIDE AND INSTALL ALL TEMPORARY BRACING, SHORING, SHEETING, ETC. REQUIRED FOR SUPPORT AND STABILITY OF THE STRUCTURE OR EXCAVATIONS UNTIL ALL STRUCTURAL WORK IS COMPLETE. THE DESIGN, ERECTION, INSTALLATION, ADEQUACY, AND SAFETY OF TEMPORARY SHORING OR SUPPORT DURING CONSTRUCTION ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
13. DO NOT APPLY ANY CONSTRUCTION LOADS ON THE STRUCTURE THAT EXCEED THE SAFE LOAD CARRYING CAPACITY OF THE STRUCTURAL MEMBERS. NOTIFY STRUCTURAL ENGINEER OF ANY UNUSUAL OR EXCESSIVE LOADS OCCURRING DURING CONSTRUCTION. DO NOT APPLY CONSTRUCTION LOADS UNTIL STRUCTURAL COMPONENTS ARE PROPERLY CONNECTED AND ALL NECESSARY TEMPORARY BRACING IS IN PLACE.
14. PROTECT ALL EXISTING AND IN-PLACE WORK, STRUCTURES, AND UTILITIES FROM DAMAGE DURING CONSTRUCTION.
15. WORK NOT INDICATED ON THE DRAWINGS BUT REASONABLY IMPLIED TO BE SIMILAR TO THAT AT SIMILAR LOCATIONS SHALL BE REPEATED. UNLESS NOTED OTHERWISE, SECTIONS AND DETAILS SHOWN ON THESE DRAWINGS ARE TYPICAL AT SIMILAR LOCATIONS AND CONDITIONS.
16. USE THE DIMENSIONS INDICATED ON THE DRAWINGS; DO NOT SCALE THE DRAWINGS. DO NOT PULL UNLABELLED DIMENSIONS FROM ELECTRONIC DATA FILES UNLESS OTHERWISE APPROVED BY THE ARCHITECT.
17. WHERE DIMENSIONS OF EXISTING STRUCTURES ARE INDICATED, THEY ARE APPROXIMATE AND FOR INFORMATION ONLY. FIELD VERIFY DIMENSIONS, SIZES, AND LOCATIONS OF PERTINENT EXISTING STRUCTURES PRIOR TO STARTING CONSTRUCTION.

FOUNDATIONS AND GEOTECHNICAL:

- 1. SUBGRADE PREPARATION, EXCAVATION, AND BACKFILL SHALL BE IN ACCORDANCE WITH THESE NOTES, THE DRAWINGS, PROJECT SPECIFICATIONS, AND THE GEOTECHNICAL REPORT OR WRITTEN GEOTECHNICAL RECOMMENDATIONS FOR THE PROJECT. IN CASE OF CONFLICT, THE MORE STRINGENT REQUIREMENTS SHALL APPLY, UNLESS APPROVED OTHERWISE BY THE ENGINEER.
2. THE FOUNDATION DESIGN IS BASED ON AN ALLOWABLE SOIL BEARING PRESSURE OF 2000 PSF.
3. THE CONTRACTOR SHALL ENGAGE A GEOTECHNICAL ENGINEER/ TESTING COMPANY TO VERIFY ADEQUATE FOUNDATION AND SLAB SUPPORT.
4. ALL FOOTINGS SHALL BEAR ON UNDISTURBED RESIDUAL SOIL OR PROPERLY COMPACTED STRUCTURAL FILL.
5. DO NOT PLACE FOOTINGS IN EXCAVATIONS HOLDING WATER OR ON FROZEN SUBGRADE.
6. FOOTINGS SHALL EXTEND DOWN TO A LOWER ELEVATION THAN INDICATED ON THE DRAWINGS IF NECESSARY TO REACH ADEQUATE BEARING MATERIAL.
7. BOTTOMS OF ALL FOOTINGS TO BE A MINIMUM OF 12" BELOW FINISHED GRADE UNLESS NOTED OTHERWISE.
8. SLOPE SIDES OF EXCAVATIONS, OR SHORE, SHEET, AND BRACE SIDE SLOPES TO ENSURE SLOPE STABILITY AND SAFETY. ADEQUATELY PROTECT ALL EXCAVATION SLOPES.
9. EXCAVATION SHORING, SHEETING, BRACING, ETC. SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, AND SHALL BE DESIGNED BY AN ENGINEER LICENSED IN THE PROJECT STATE, HIRED BY THE CONTRACTOR.
10. STRIP AND REMOVE ALL TOPSOIL AND ORGANIC MATERIAL TO A MINIMUM 4" DEPTH. STOCKPILE TOPSOIL IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS OR AS DIRECTED BY THE ENGINEER.
11. REMOVE ALL MATERIAL CONTAINING ROOTS, DEBRIS, ORGANIC MATTER, OR OTHER DELETERIOUS MATERIAL FROM THE SITE.
12. REMOVE ANY EXISTING FOUNDATIONS, RUBBLE, ABANDONED UTILITIES, UNDERGROUND TANKS, ETC. WITHIN STRUCTURE FOOTPRINTS, AND BACKFILL WITH COMPACTED SUITABLE SOIL OR CRUSHED STONE.
13. PLACE ALL FILL MATERIAL IN LIFTS NOT EXCEEDING 8" IN DEPTH, AND COMPACT TO THE FOLLOWING STANDARD PROCTOR DENSITIES IN ACCORDANCE WITH ASTM-D698:
UNDER BUILDING FOUNDATIONS: 98%
UNDER SLABS ON GRADE: 98%
OTHER AREAS OUTSIDE BLDG. FOOTPRINT: 95%
14. ALL FILL MATERIAL UNDER FOUNDATIONS AND SLABS SHALL BE SUITABLE GRANULAR MATERIAL AS APPROVED BY THE GEOTECHNICAL ENGINEER. SUITABLE ON SITE MATERIAL MAY BE USED AS BACKFILL IF APPROVED BY THE GEOTECHNICAL ENGINEER. SLOPE FILL MATERIAL FOR ADEQUATE DRAINAGE.
15. ALL UTILITY TRENCHES OR OTHER EXCAVATIONS WITHIN THE BUILDING FOOTPRINT SHALL BE BACKFILLED AND COMPACTED AS INDICATED HEREIN.
16. TEST ALL FILL FOR COMPACTION WITH ONE TEST PER EVERY 2500 SQUARE FEET OF FILL PER FOOT OF DEPTH. TEST LOCATIONS SHALL BE LOCATED RANDOMLY AT THE DISCRETION OF THE GEOTECHNICAL ENGINEER.
17. PROVIDE ADEQUATE DRAINAGE OR Dewatering TO ALLOW PROPER FINISHING OF EXCAVATIONS AND TO KEEP WATER FROM COLLECTING IN THE BOTTOM OF EXCAVATIONS. FOUNDATIONS SHALL BE PLACED IN THE DRY. DO NOT PLACE FOOTINGS IN WATER.
18. REMOVE WATER SOFTENED SOILS FROM FOOTING EXCAVATIONS AND REPLACE WITH COMPACTED FILL, GRAVEL, FLOWABLE FILL, OR CONCRETE, AS APPROVED BY THE ENGINEER, PRIOR TO PLACING CONCRETE.
19. FOUNDATION EXCAVATIONS AND BUILDING PADS SHALL BE INSPECTED BY A GEOTECHNICAL ENGINEER. PROVIDE NOTICE AND ALLOW SUFFICIENT TIME FOR FOOTING EXCAVATIONS TO BE INSPECTED PRIOR TO PLACING FOUNDATIONS.
20. COMPACT SOIL WITH HAND HELD TAMPERS WITHIN 10 FEET OF BASEMENT FOUNDATION, OR RETAINING WALLS. DO NOT OPERATE HEAVY EQUIPMENT WITHIN 10 FEET OF WALL.
21. DO NOT BACKFILL AGAINST BASEMENT WALLS THAT ARE TO BE SUPPORTED AT THE TOP OF THE WALL UNTIL THE FLOOR ABOVE IS CONSTRUCTED AND ADEQUATELY ATTACHED.
22. UNLESS NOTED OTHERWISE, PLACE BUILDING SLABS ON GRADE OVER A MINIMUM OF 6 INCHES OF GRANULAR FILL AND A MINIMUM 10 MIL THICK VAPOR BARRIER.
23. REFER TO GEOTECHNICAL REPORT BY ESP ASSOCIATES, INC. DATED OCTOBER 1 2020 FOR OTHER GEOTECHNICAL REQUIREMENTS AND RECOMMENDATIONS.

CONCRETE

- 1. ALL CONCRETE AND REBAR AND THEIR INSTALLATION SHALL COMPLY WITH THE STANDARDS OF ACI-318, ACI-301, ACI-350 LATEST EDITIONS.
2. SUBMITTALS: REINFORCING STEEL SHOP DRAWINGS PREPARED IN ACCORDANCE WITH THE ACI DETAILING MANUAL. CONCRETE MIX DESIGNS FOR EACH DIFFERENT CONCRETE MIX PREPARED IN COMPLIANCE WITH ACI 318 ARTICLE 5.3 OR 5.4. MANUFACTURER'S INFORMATION ON CONCRETE ADMIXTURES AND OTHER PROPRIETARY MATERIALS
3. CONCRETE TESTING: MAKE ONE SET OF FOUR TEST CYLINDERS FOR EACH 50 CUBIC YARDS, OR PORTION THEREOF, OF CONCRETE PLACED. A QUALIFIED TESTING LAB SHALL PERFORM ALL TESTING. FOR EACH SET OF CYLINDERS, BREAK 1 CYLINDER AT 7 DAYS, 2 CYLINDERS AT 28 DAYS, AND HOLD 1 RESERVE CYLINDER.
4. REINFORCING STEEL SHALL CONFORM TO ASTM A-615, GRADE 60. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A-1064. WHERE REINFORCING IS TO BE WELDED, IT SHALL CONFORM TO ASTM A-706 GRADE 60.
5. THE MINIMUM 28 DAY COMPRESSIVE STRENGTH OF CONCRETE SHALL BE AS FOLLOWS:
PIPE ENCASEMENT: 3000 PSI NORMAL WEIGHT
CONCRETE FILL: 3000 PSI NORMAL WEIGHT
ALL OTHER CONCRETE: 4000 PSI NORMAL WEIGHT

CONCRETE (CONTD):

- 6. CONCRETE MIXES SHALL BE DESIGNED IN ACCORDANCE WITH ACI 301 AND THE FOLLOWING:
MAX W/C RATIO SLUMP
4000 PSI 0.45 3" TO 5"
3000 PSI 0.53 3" TO 5"
CONCRETE SHALL BE READY MIXED IN ACCORDANCE WITH ASTM C-94. SUBMIT CONCRETE MIX DESIGNS TO THE ENGINEER FOR APPROVAL.
7. CONCRETE MATERIALS SHALL COMPLY WITH THE FOLLOWING SPECIFICATIONS:
PORTLAND CEMENT (U.N.O): ASTM C-150 TYPE I OR II
PORTLAND CEMENT (SCREEN, GRIT & SEPTAGE STRUCTURES): ASTM C-150 TYPE V
FLY ASH: ASTM C-618
AGGREGATE (NORMAL WT.): ASTM C-33
ADMIXTURES: ASTM C-494, C-260, C989, & C-1017
8. FLY ASH SHALL BE NOT MORE THAN 25% OF TOTAL CEMENTITIOUS MATERIALS. DO NOT USE ADMIXTURES CONTAINING CALCIUM CHLORIDE.
9. PROVIDE CRYSTALLINE CEMENTITIOUS ADMIXTURE TO THE CONCRETE MIX IN THE WALLS OF THE DIGESTER AND FLOW SPLITTER BOX AT A MINIMUM DOSAGE RATE OF 12#/CU.YD.
10. CONCRETE DENSITIES SHALL BE AS FOLLOWS:
NORMAL WEIGHT CONCRETE: 145 PCF
11. PEA GRAVEL MIX (WHERE INDICATED OR NECESSARY) TO BE NORMAL WEIGHT WITH 789 STONE COARSE AGGREGATE.
12. PROVIDE 5% ± 1% AIR ENTRAINMENT FOR ALL CONCRETE EXPOSED TO WEATHER OR EXTERIOR CONDITIONS, UNLESS NOTED OTHERWISE.
13. NO WATER SHALL BE ADDED TO THE CONCRETE AT THE SITE UNLESS APPROVED BY THE ENGINEER OR STRUCTURAL ENGINEER.
14. REINFORCEMENT SHALL BE ADEQUATELY SUPPORTED AND TIED IN PLACE PRIOR TO CONCRETE PLACEMENT. PROVIDE ANY STANDEES, CHAIRS, BOLSTERS, CARRYING BARS, OR ADDITIONAL BARS AS MAY BE NECESSARY TO ADEQUATELY SUPPORT THE REINFORCEMENT IN ITS PROPER POSITION.
15. SUPPORT ALL SLAB REINFORCING ON CONTINUOUS CHAIRS. REINFORCING FOR SLABS ON GRADE MAY BE SUPPORTED ON CONCRETE BRICK.
16. UNLESS NOTED OTHERWISE ON THE DRAWINGS, REINFORCING STEEL SHALL HAVE A MINIMUM CONCRETE COVER AS FOLLOWS:
CONCRETE CAST AGAINST EARTH: 3"
CONCRETE EXPOSED TO EARTH OR WEATHER: #5 BARS OR SMALLER: 1-1/2" #6 BARS AND LARGER: 2"
CONCRETE NOT EXPOSED TO EARTH OR WEATHER: SLABS, SHELLS, WALLS, AND JOISTS: 3/4" BEAMS AND COLUMNS: 1-1/2"
17. UNLESS NOTED OTHERWISE ON THE DRAWINGS, ALL REINFORCING SPLICES SHALL BE ACI CLASS B TENSION LAPS FOR TOP BARS OR OTHER BARS AS APPLICABLE. TOP BARS ARE TO BE ANY BAR PLACED SUCH THAT MORE THAN 12" OF FRESH CONCRETE IS PLACED IN THE MEMBER BELOW THE BAR, EXCEPT THAT HORIZONTAL BARS IN WALLS NEED NOT BE CONSIDERED AS TOP BARS. THE LAP LENGTH SHALL BE DETERMINED BY THE SIZE OF THE LARGER BAR PLACED.
18. UNLESS NOTED OTHERWISE ON THE DRAWINGS, DOWELS SHALL MATCH CORRESPONDING MAIN REINFORCING.
19. DOWEL BAR SUBSTITUTES AND MECHANICAL BAR SPLICING DEVICES THAT DEVELOP 125% OF THE REINFORCING YIELD STRENGTH ARE PERMITTED.
20. LAP WELDED WIRE FABRIC A MINIMUM OF 9".
21. ALL REINFORCEMENT SHALL BE CONTINUOUS THROUGH CONSTRUCTION JOINTS UNLESS NOTED OTHERWISE.
22. PROVIDE CORNER BARS AT ALL CORNERS AND INTERSECTIONS OF CONTINUOUS WALL FOOTINGS NOT OTHERWISE SHOWN ON THE DRAWINGS. LAP CORNER BARS WITH CLASS B LAP EACH LEG.
23. AT ALL RE-ENTRANT CORNERS PROVIDE #5 x 4'-0" LONG DIAGONAL BAR IN SLABS FOR CRACK CONTROL.
24. PROVIDE, CONSTRUCT AND ERECT ALL FORMWORK AND SHORING IN ACCORDANCE WITH ACI 347.
25. SHORING FOR ELEVATED SLABS AND/OR BEAMS SHALL REMAIN IN UNTIL CONCRETE HAS REACHED 75% OF ITS REQUIRED 28 DAY STRENGTH.
26. CONSTRUCTION JOINTS SHOWN ON THE DRAWINGS ARE REQUIRED AND MAY NOT BE OMITTED OR RELOCATED UNLESS OTHERWISE APPROVED BY THE ENGINEER.
27. LOCATION OF ADDITIONAL CONSTRUCTION JOINTS NOT SHOWN ON THE DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. CONSTRUCTION JOINTS SHALL BE INDICATED ON THE REINFORCING STEEL PLACING DRAWINGS, AND ALL NECESSARY REBAR SPLICES SHALL BE DETAILED ACCORDINGLY.
28. WHERE NEW CONCRETE IS CAST AGAINST EXISTING CONCRETE, CLEAN AND ROUGHEN THE ADJOINING SURFACE OF THE EXISTING CONCRETE PRIOR TO PLACING NEW CONCRETE AGAINST IT.
29. CONDUITS EMBEDDED IN CONCRETE SLABS SHALL HAVE A MAXIMUM OUTSIDE DIAMETER OF 40% OF THE SLAB THICKNESS OR FOR SLABS ON METAL DECK, 40% OF THE SLAB COVER OVER THE HIGH DECK RIBS. PARALLEL CONDUITS SHALL HAVE A CLEAR SPACING OF 4 X THE CONDUIT DIAMETER BUT NOT LESS THAN 4", EXCEPT THAT 2 CONDUITS MAY BE GROUPED TOGETHER (SIDE BY SIDE) IN A PAIR.
30. IN HOT WEATHER, PLACE CONCRETE IN ACCORDANCE WITH THE PROVISIONS OF ACI 305. IN COLD WEATHER PLACE CONCRETE ACCORDING TO ACI 306.
31. CONTINUOUSLY CURE CONCRETE FOR NOT LESS THAN 7 DAYS AFTER PLACEMENT BY MEANS OF A CONTINUOUS WET CURE, OR USE OF A SUITABLE CURING COMPOUND.
32. FINISH CONCRETE SURFACES IN ACCORDANCE WITH ACI 301. REFER TO SPECIFICATIONS FOR ADDITIONAL CONCRETE FINISHING REQUIREMENTS.
33. SAW CUT CONTROL JOINTS IN SLABS WHERE INDICATED AS SOON AS PRACTICAL AFTER PLACING SLABS.
34. SEE CIVIL, PROCESS, AND/OR MECHANICAL DRAWINGS FOR SIZE AND LOCATION OF EXTERIOR CONCRETE PADS. SEE CIVIL DRAWINGS FOR EXTERIOR CONCRETE SIDEWALKS, PAVEMENTS, AND CURBS.
35. PROVIDE 3/4" CHAMFER AT ALL EXPOSED EDGES OF CONCRETE WORK UNLESS NOTED OTHERWISE.

PRESTRESSED CONCRETE HOLLOW CORE SLABS:

- 1. COMPLY WITH THE CAST IN PLACE CONCRETE NOTES UNLESS NOTED OTHERWISE.
2. DESIGN, MANUFACTURE, FABRICATION, AND ERECTION, OF PRECAST CONCRETE SHALL COMPLY WITH ACI 318, PCI MAN-116 "MANUAL FOR QUALITY CONTROL FOR PLANTS AND PRODUCTION OF PRESTRESSED CONCRETE PRODUCTS", THE PCI "DESIGN HANDBOOK", AND ACI 318 LATEST EDITION.
3. THE PRECAST CONCRETE MANUFACTURING PLANT SHALL BE CERTIFIED BY THE PRECAST/PRESTRESSED CONCRETE INSTITUTE (PCI) CERTIFICATION PROGRAM.
4. ANY WELDING REQUIRED SHALL BE PERFORMED BY QUALIFIED WELDERS IN ACCORDANCE WITH AWS D1.1
5. SUBMIT THE FOLLOWING TO THE ENGINEER FOR REVIEW: ERECTION PLANS INCLUDING SLAB DIMENSIONS, LAYOUT, CONNECTION, AND SUPPORT DETAILS DESIGN LOADS, STRUCTURAL AND STRESS CALCULATIONS, CAMBER, AND DEFLECTION CALCULATIONS DETAILS AND MATERIAL DATA OF REINFORCING, PRESTRESSING STRAND AND CONCRETE DESIGN DRAWINGS AND CALCULATIONS SHALL BE PREPARED, SIGNED, AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF THE PROJECT LOCATION
6. CONCRETE FOR PRECAST SLABS SHALL BE NORMAL WEIGHT HAVING A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 5000 PSI.
7. PRESTRESSING STRAND SHALL BE UNCOATED 7 WIRE STRESS RELIEVED STRAND GRADE 270 K OR 250 K.
8. GROUT FOR GROUTING SLABS SHALL BE 5000 PSI PORTLAND CEMENT GROUT COMPLYING WITH ASTM C150 WITH FINE AGGREGATE (SAND) COMPLYING WITH ASTM C144.
9. PROVIDE HOLLOW CORE SLABS OF THE THICKNESS INDICATED ON THE DRAWINGS X 4'-0" NOMINAL WIDTH. (OTHER WIDTHS MAY BE PROVIDED WITH APPROVAL OF THE ENGINEER) UNITS SHALL BE DESIGNED WITHOUT CONCRETE TOPPING.
10. PROVIDE TRUE FLAT BEARING SURFACES. PROVIDE PLASTIC BEARING STRIPS AS REQUIRED.
11. PROPERLY ALIGN AND LEVEL SLABS AND ANCHOR SLABS AS REQUIRED BY THE MANUFACTURERS DESIGN. FILL ALL GROUT KEYS WITH GROUT.
12. DESIGN LOADS:
SUPERIMPOSED DEAD LOAD (ROOFS): 15 PSF
ROOF LIVE LOAD: 30 PSF
CONCENTRATED LIVE LOAD: 1200#
LOCATED ANYWHERE ALONG ROOF SLAB LENGTH (NON-CONCURRENT W/ OTHER LIVE LOADS)
13. THE MANUFACTURER SHALL PROVIDE FOR OPENINGS GREATER THAN 2" SQUARE OR ROUND. SMALLER OPENINGS MAY BE FIELD DRILLED OR CUT, AND SHALL BE LOCATED AS TO AVOID CUTTING OR DAMAGING THE PRESTRESSING STRAND.

WATERSTOPS:

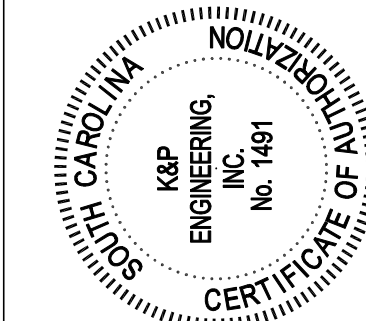
- 1. PVC WATERSTOP FOR CONSTRUCTION JOINTS SHALL BE 6" WIDE x MINIMUM 3/8" THICK PVC - VINYLEX R638, JP SPECIALTIES PVC637, GREENSTREAK 679, OR EQUAL.
2. PVC WATERSTOP FOR EXPANSION JOINTS SHALL BE 9" WIDE X MINIMUM 3/8" THICK PVC - VINYLEX RB938H, JP SPECIALTIES PVC938, GREENSTREAK 735, OR EQUAL.
3. JOINTS AND INTERSECTIONS OF PVC WATERSTOPS SHALL BE MADE WITH MANUFACTURER'S PREFORMED, PREFABRICATED FITTINGS.
4. HYDROPHILIC RUBBER WATERSTOP FOR CONSTRUCTION JOINTS SHALL BE 3/8"x3/4" NON-BENTONITE HYDROPHILIC RUBBER JP SPECIALTIES NB190 PROFILE A, SIKKA HYDROTITE CJ-1020-2K, ADEKA ULTRASEAL MC-2010M, OR EQUAL SET IN MANUFACTURER'S RECOMMENDED SEALANT.
5. RETROFIT WATERSTOP FOR JOINING EXPANSION JOINTS TO EXISTING CONSTRUCTION SHALL BE RETROFIT WATERSTOP JP SPECIALTIES JP320L, VINYLEX PETROSTOP KK611, GREENSTREAK #581, OR EQUAL, ATTACHED WITH MANUFACTURER PROVIDED STAINLESS STEEL CONTINUOUS BATTEN BAR WITH 1/2"x2 1/2" STAINLESS STEEL CONCRETE SCREWS @ 6" o.c. AND SET IN A BED OF EPOXY AGAINST EXISTING CONCRETE.
6. INSTALL ALL WATERSTOPS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

Table with 6 columns: BAR SIZE, TOP BARS, OTHER BARS, BAR SIZE, TOP BARS, OTHER BARS. Rows for 3, 4, 5, 6, 7, 8, 9, 10, 11 inch bar sizes.

DESIGN CRITERIA
RISK CATEGORY: III
DEAD LOADS: ACTUAL DEAD LOAD OF STRUCTURE
LIVE LOADS: ELEVATED WALKWAYS 100 P.S.F., OTHER FLOORS, U.N.O. 100 P.S.F., ROOFS 30 P.S.F.
SNOW LOADS: GROUND SNOW: 10 P.S.F.
WIND LOADS: BASIC WIND SPEED: 142 MPH, EXPOSURE: C, INTERNAL PRESSURE COEFFICIENT: 0.18 (ENCLOSED)
SEISMIC LOADS: IMPORTANCE FACTOR: 1.25, SITE CLASS: D, MAPPED SPECTRAL RESPONSE, Ss: 0.43, MAPPED SPECTRAL RESPONSE, S1: 0.14, Sps: 0.41, Sp1: 0.22, SEISMIC DESIGN CATEGORY: D, BLOWER BLDG., BASIC SEISMIC FORCE RESISTING SYSTEM: BEARING WALL: SPECIAL REINF. CMU SHEARWALLS, RESPONSE MODIFICATION FACTOR "R": 5.0, SEISMIC RESPONSE COEFFICIENT, Cs: 0.11, SEISMIC BASE SHEAR: 25 KIPS
ALL DESIGN CRITERIA PER ASCE 7-16

STRUCTURAL NOTES

CITY OF LAKE CITY LAKE SWAMP WWTP UPGRADE



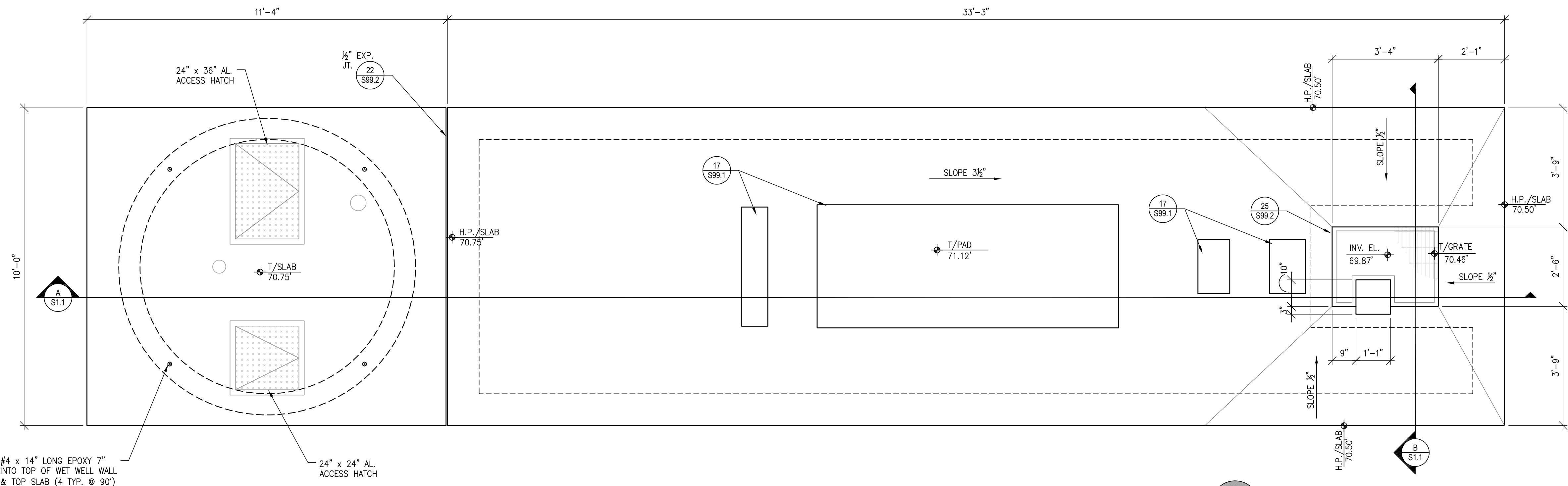
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BAR IS ONE INCH ON ORIGINAL DRAWING
DATE MARCH 2021
PROJ. 100392.02 (20-211)
DWG. S0.1

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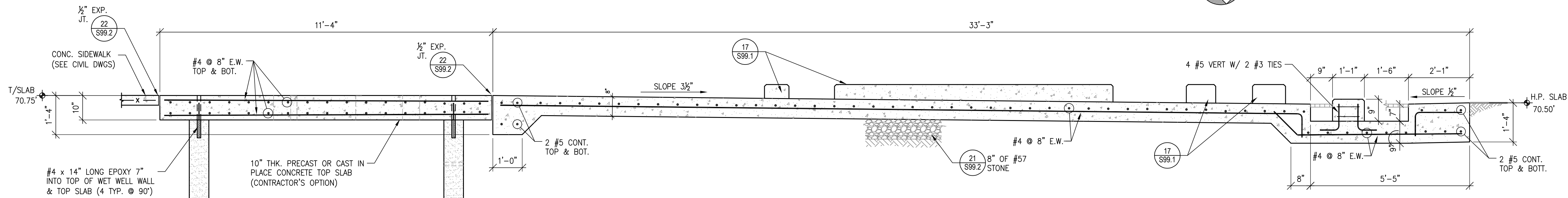




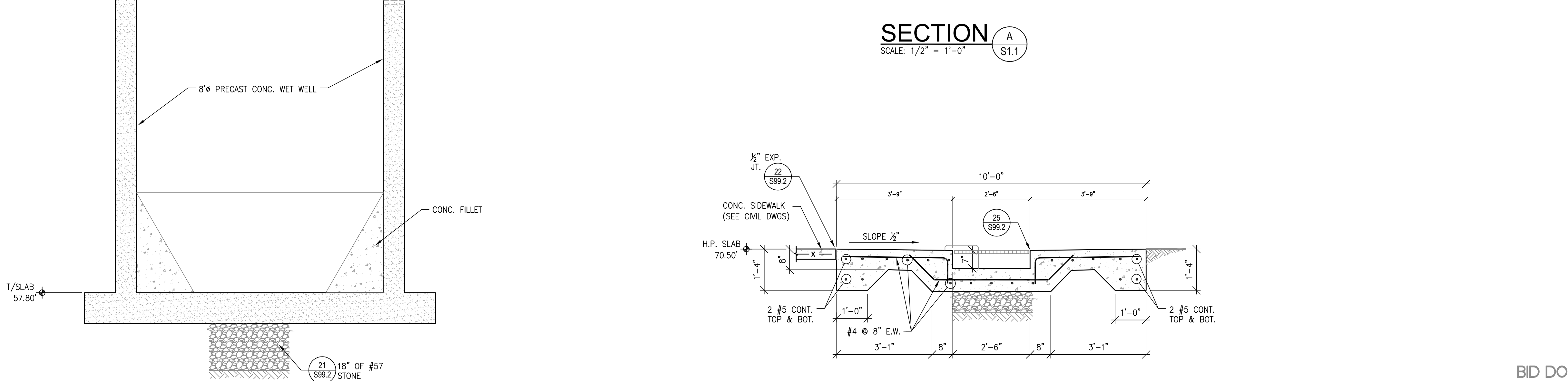
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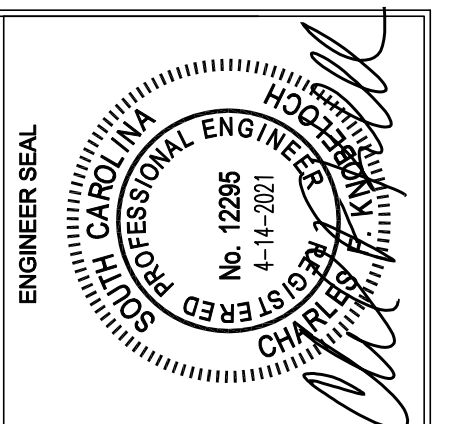
**SEPTAGE FOUNDATION PLAN**  
SCALE: 1/2" = 1'-0"



**SECTION A**  
SCALE: 1/2" = 1'-0"

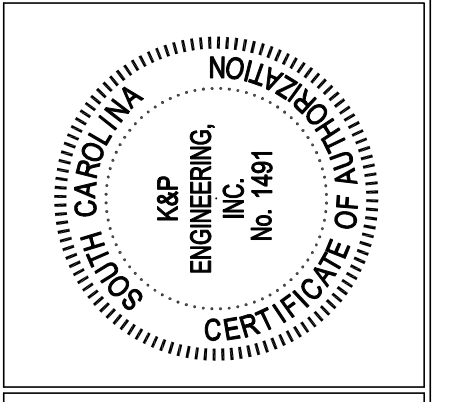


**SECTION B**  
SCALE: 1/2" = 1'-0"



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		CFK	MDH/CFK		CFK	JK

**SEPTAGE RECEIVING STATION**  
**CITY OF LAKE CITY**  
**LAKE SWAMP WWTP UPGRADE**



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FILE SEE LEFT

VERIFY SCALE

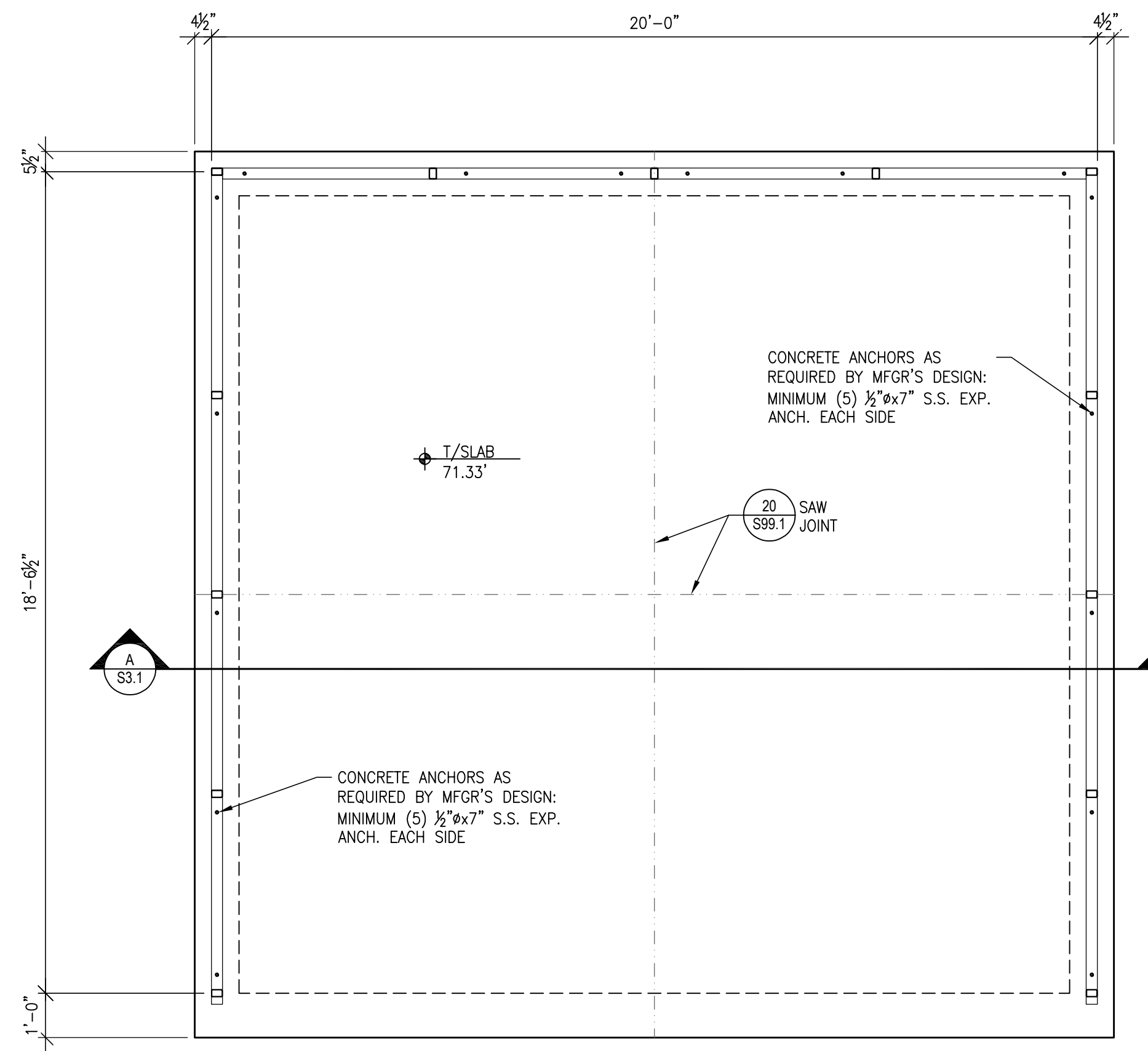
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DATE MARCH 2021

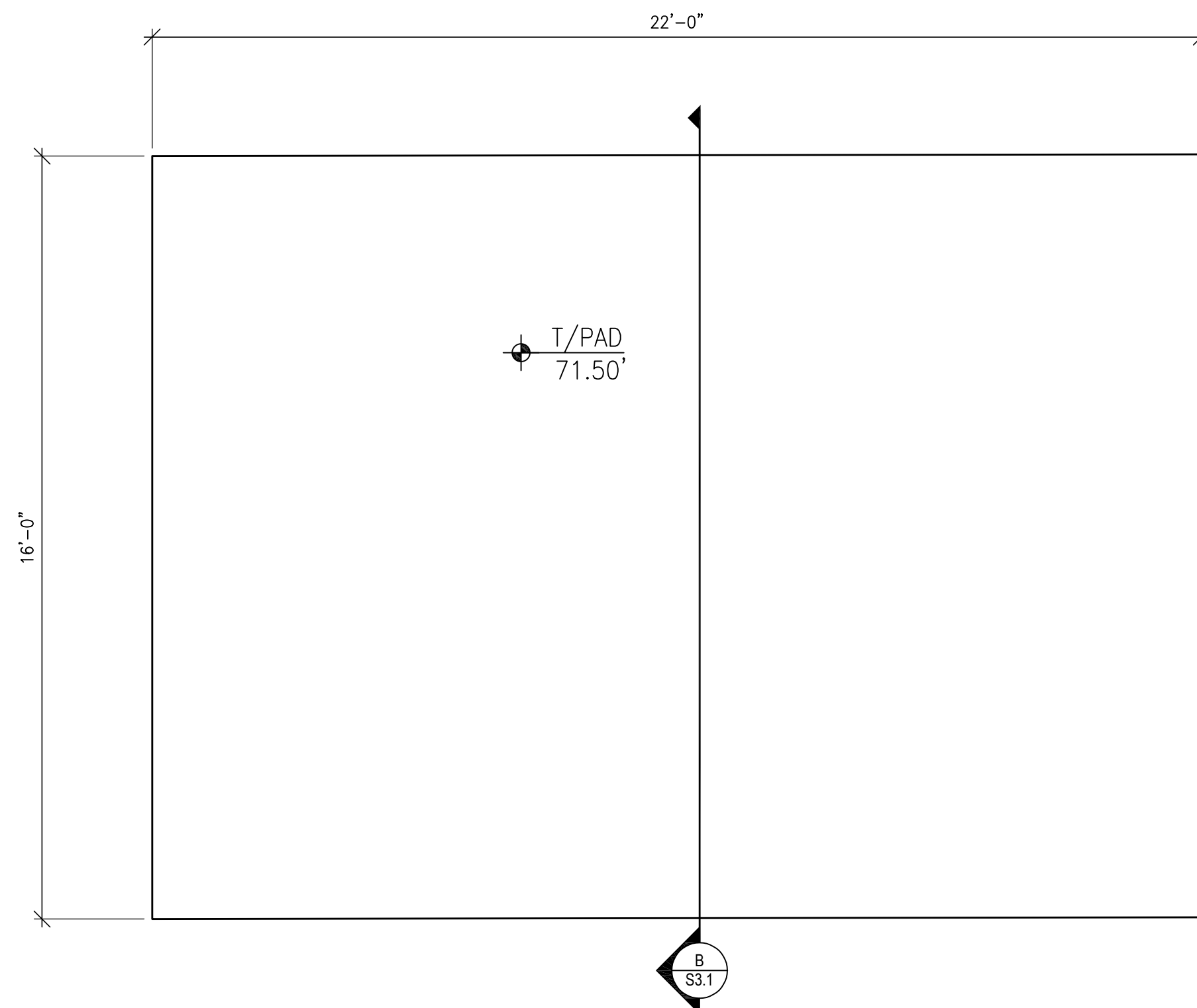
PROJ. 100392.02 (20-211)

DWG. **S1.1**

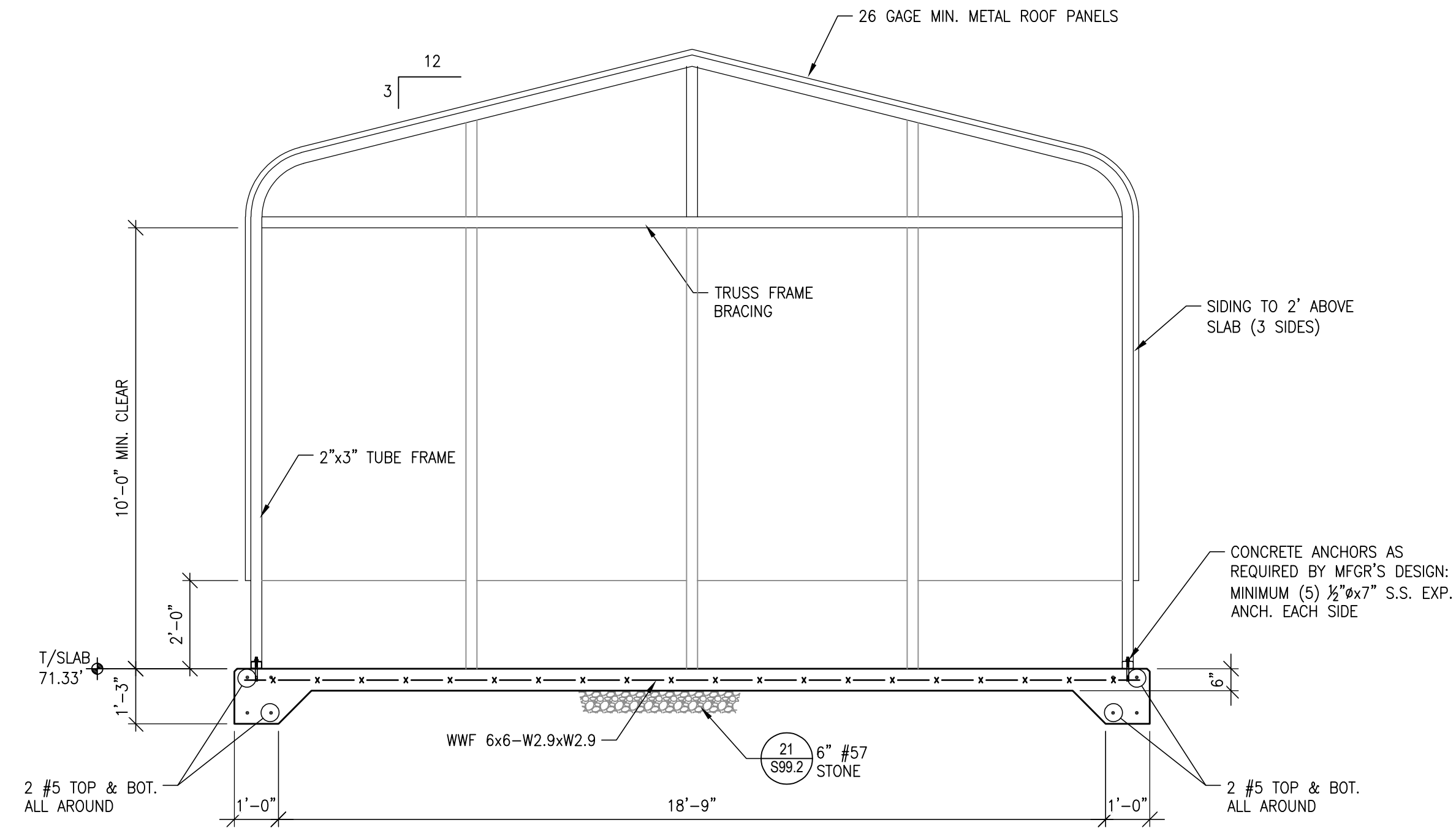
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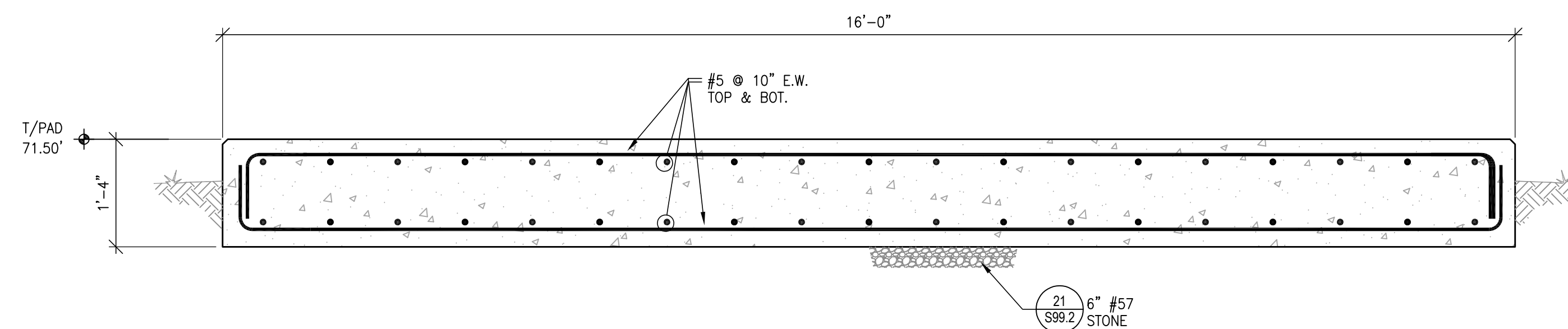
**EQUIPMENT SHED SLAB PLAN**  
SCALE: 3/8" = 1'-0"



(SEE CIVIL AND ELECTRICAL PLANS FOR LOCATION)  
**GENERATOR PAD PLAN**  
SCALE: 3/8" = 1'-0"

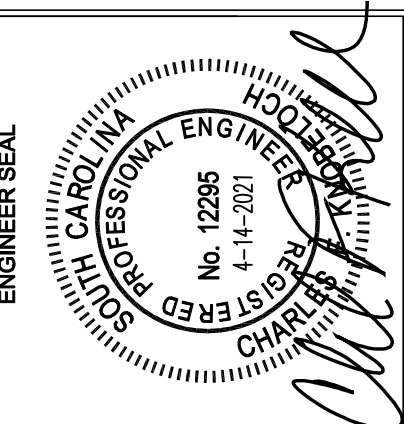


**SECTION A**  
SCALE: 3/8" = 1'-0"



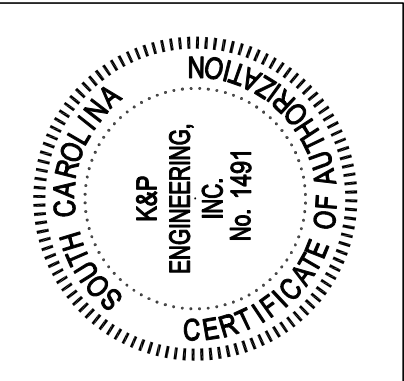
**SECTION B**  
SCALE: 3/8" = 1'-0"

- CANOPY/SHED NOTES:**
- EQUIPMENT SHED CANOPY SHALL BE NOMINAL 20'x20' PREFABRICATED CARPORT AS MANUFACTURED BY VERSATUBE BUILDING SYSTEMS OR EQUAL. SUBMIT CALCULATIONS AND SHOP DRAWINGS SIGNED AND SEALED BY AN ENGINEER LICENSED IN THE STATE OF SOUTH CAROLINA.
  - DESIGN LOADS:  
ROOF LIVE LOAD: 20 PSF  
WIND LOAD: 142 MPH EXPOSURE C (ULTIMATE ASCE 7-16)
  - SEE SHEET S0.1 FOR OTHER LOADING REQUIREMENTS.  
COLOR FOR METAL ROOFING AND TRIM TO BE AS SELECTED BY OWNER FROM MANUFACTURER'S STANDARD COLORS.



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			MDH/CFK		CFK	JK

**EQUIPMENT SHED & GENERATOR FOUNDATION**  
**CITY OF LAKE CITY**  
**LAKE SWAMP WWTP UPGRADE**

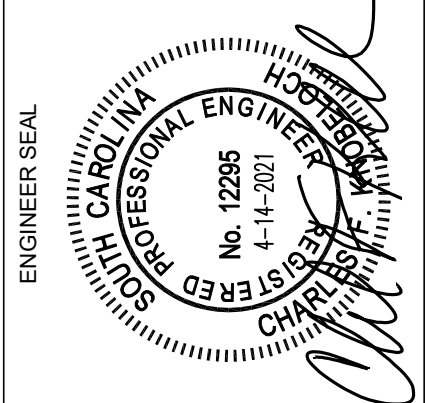
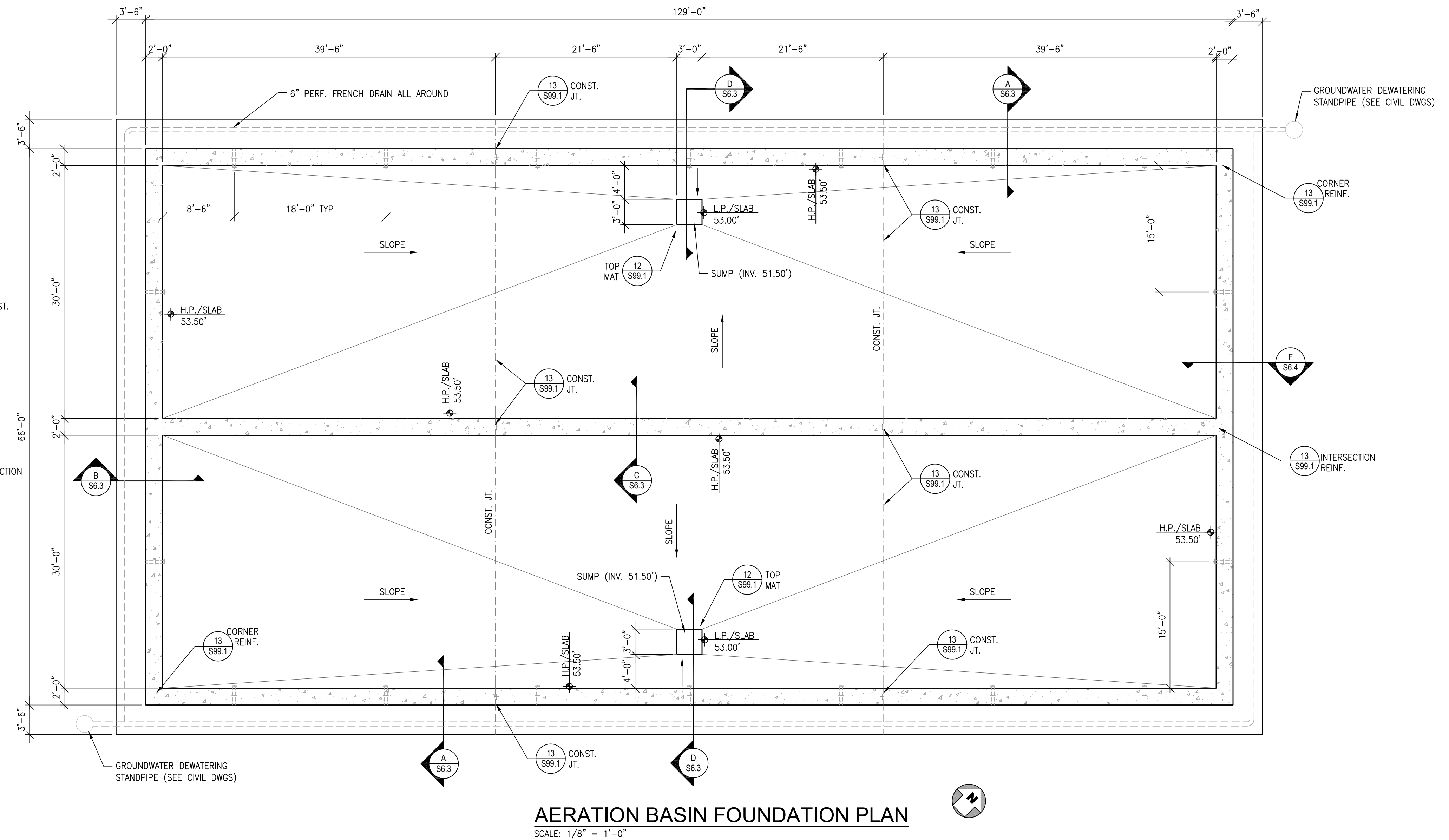
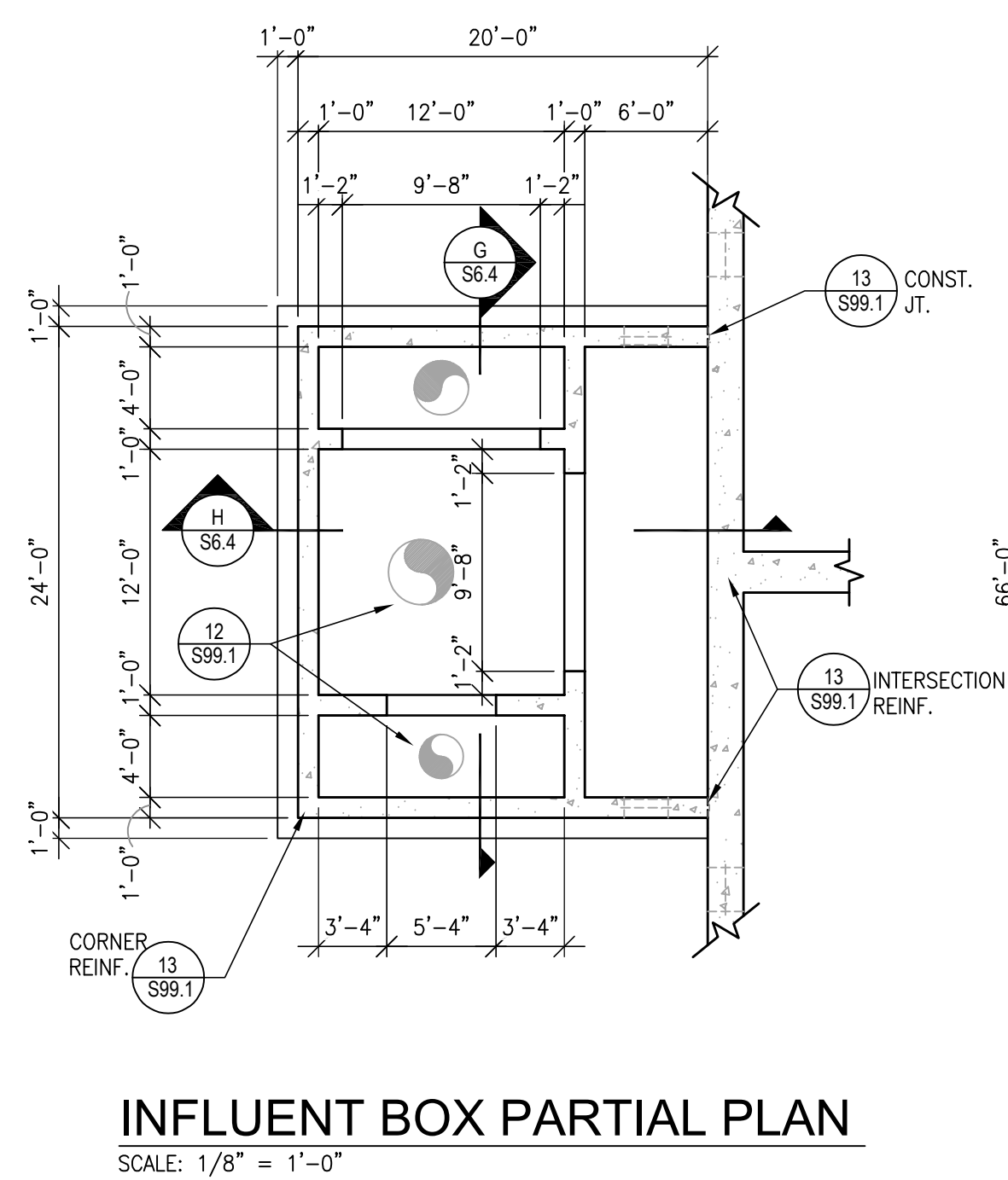


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DATE	MARCH 2021
PROJ.	100392.02 (20-211)
DWG.	S3.1

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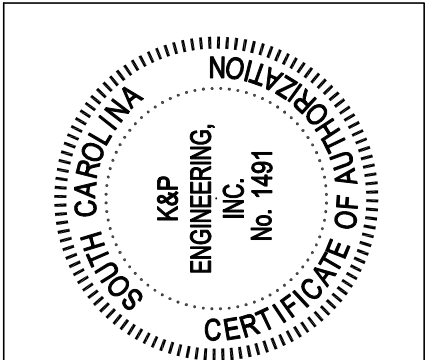
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		MDH/CFK	CFK	

**AERATION BASIN FOUNDATION PLAN**  
CITY OF LAKE CITY  
LAKE SWAMP WWTP UPGRADE



**Constantine Engineering**  
4000 FABER PLACE DR. STE. 300  
CHARLESTON, SC 29406  
PH. 843 628-3352

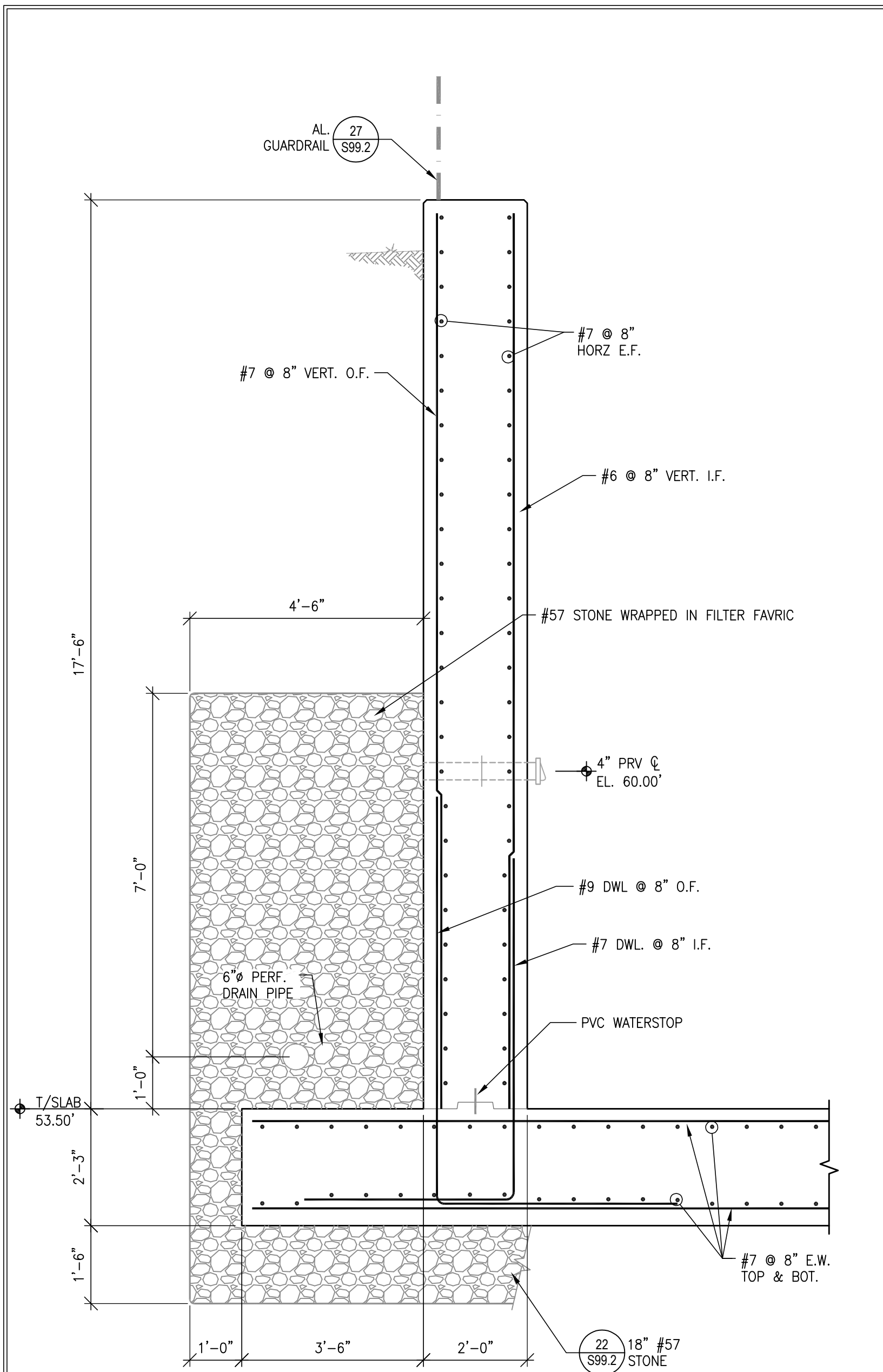
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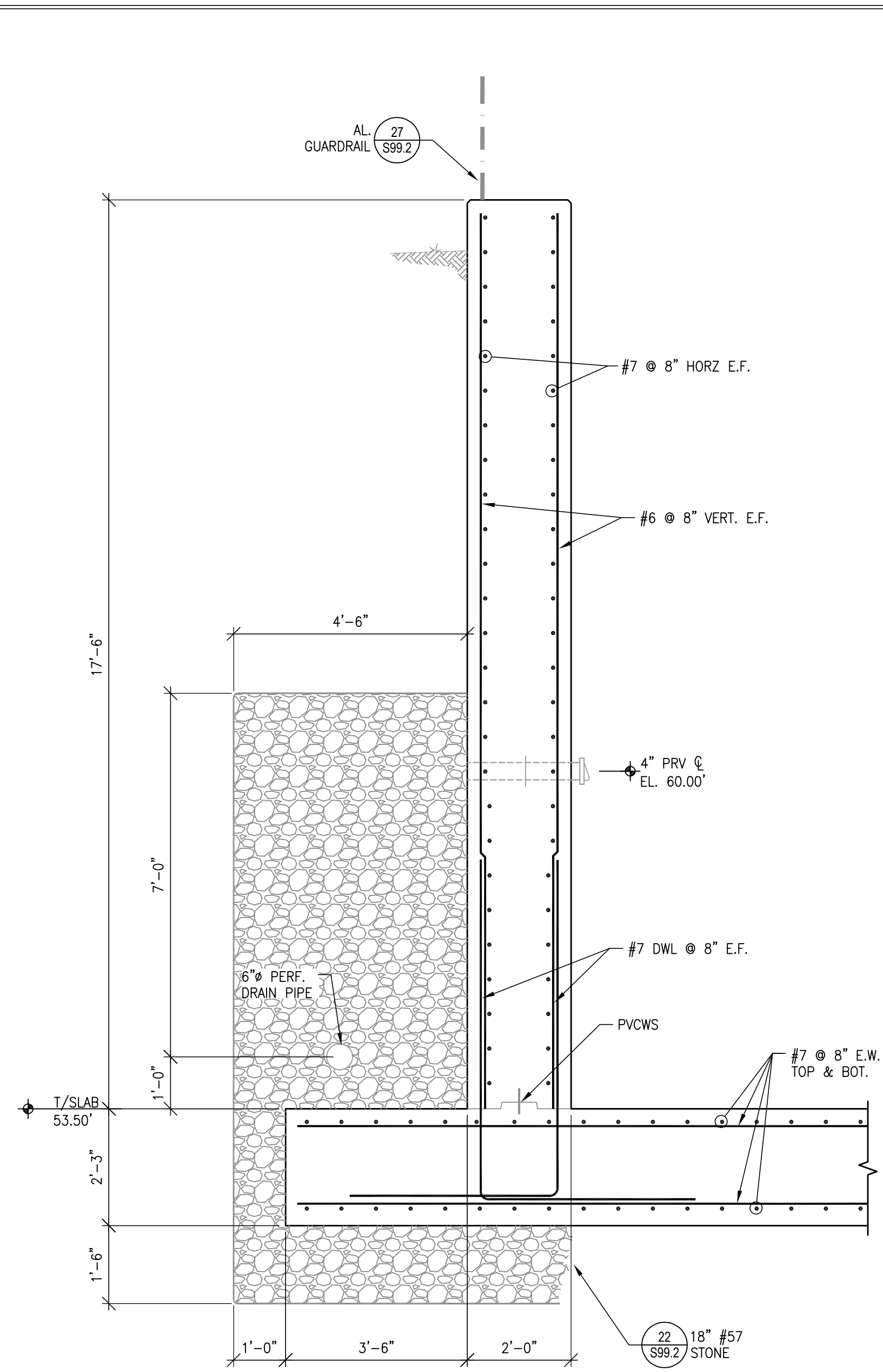
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DATE	MARCH 2021
PROJ.	100392.02 (20-211)
DWG.	S6.1



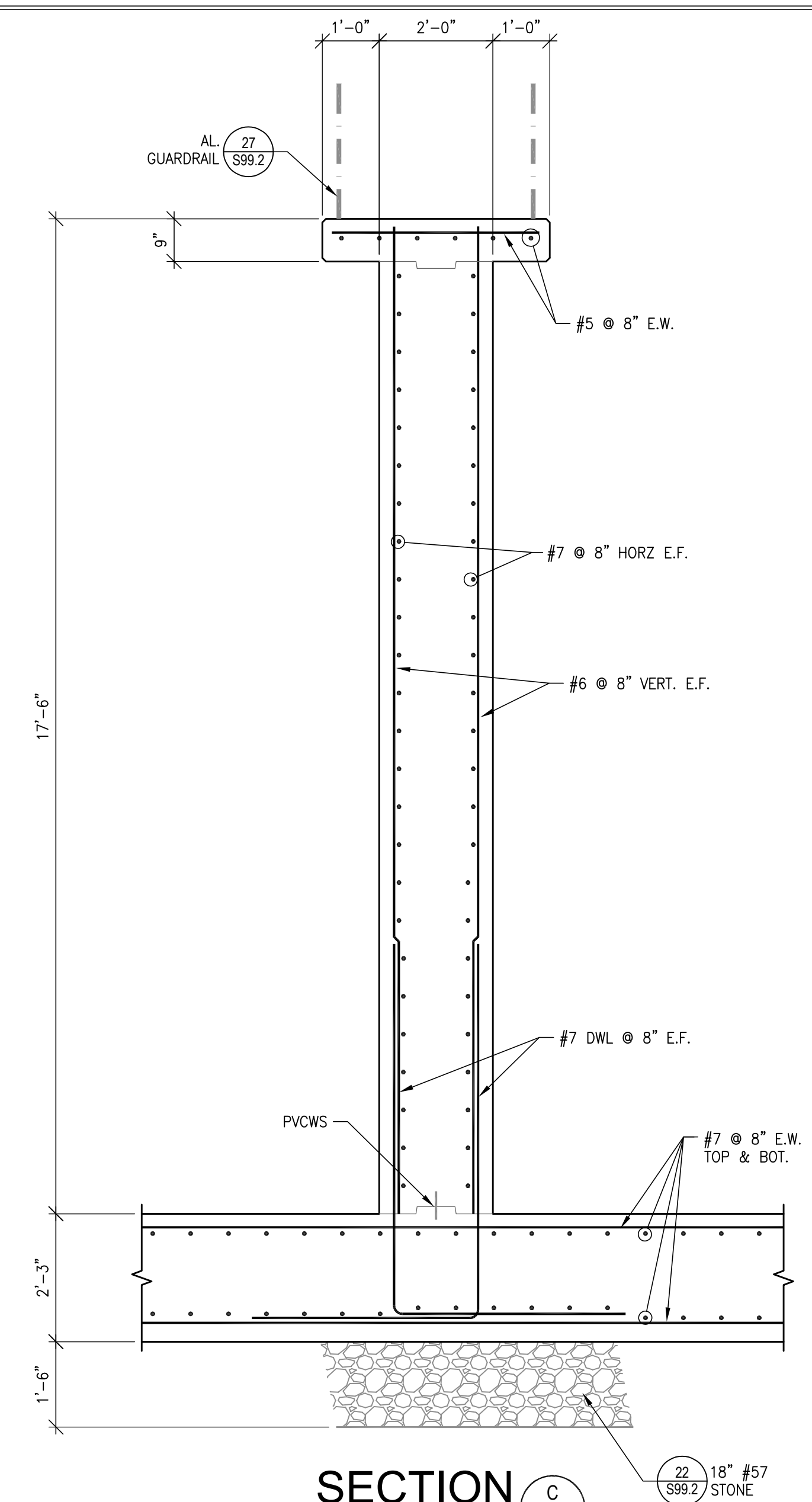
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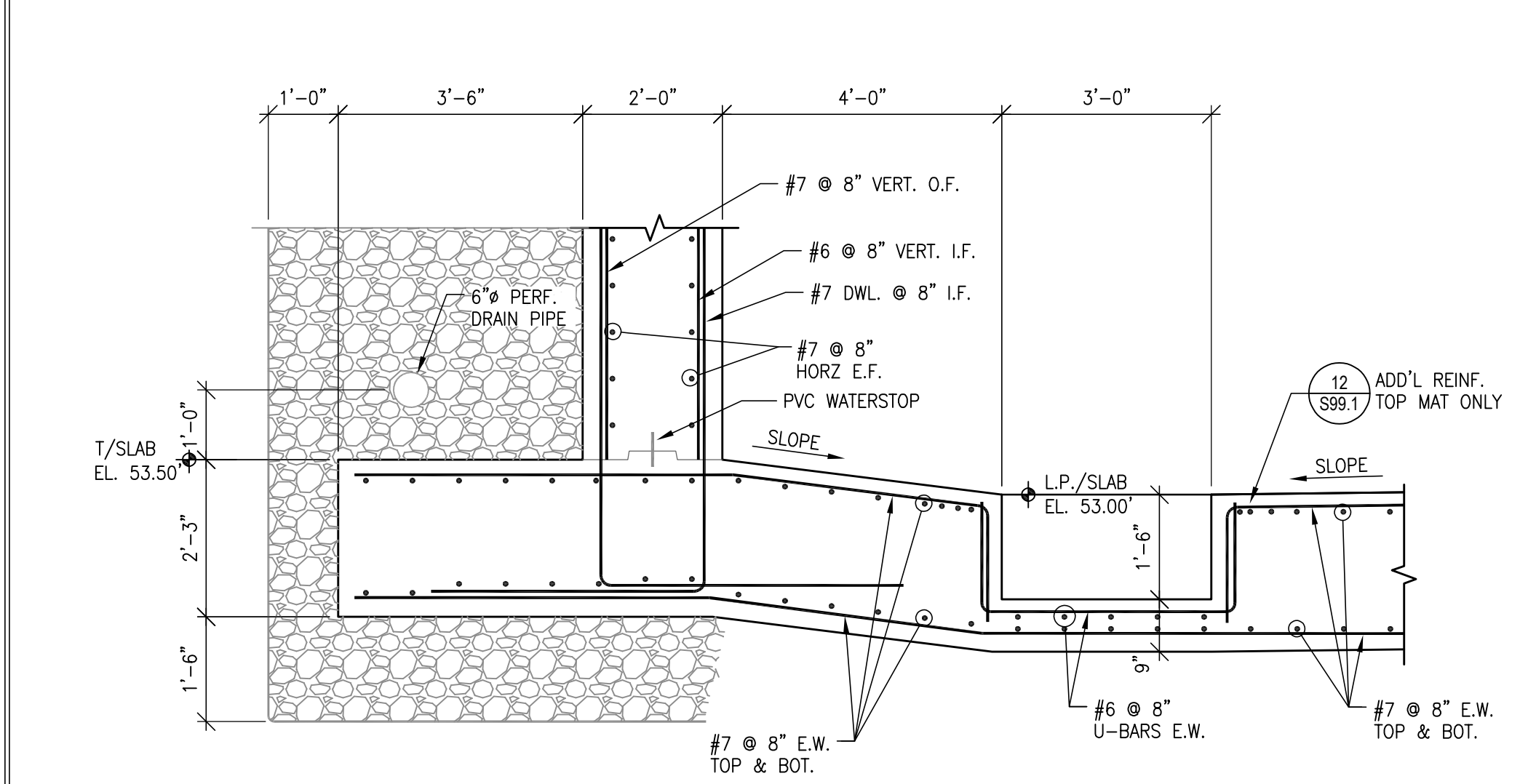
**SECTION A**  
SCALE: 1/2" = 1'-0"  
S6.1



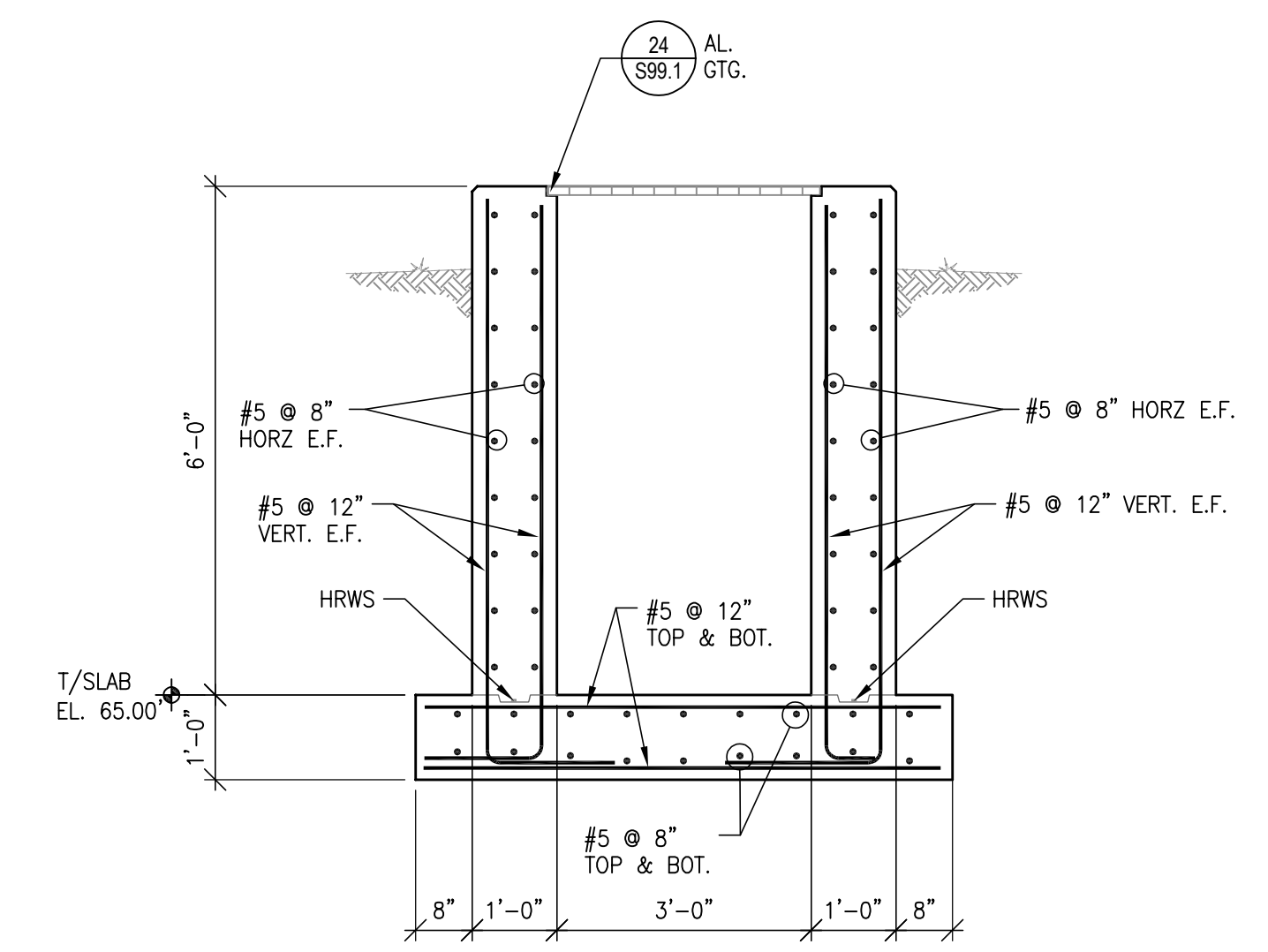
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SCALE: 1/2" = 1'-0"  
S6.1



**SECTION C**  
SCALE: 1/2" = 1'-0"  
S6.1



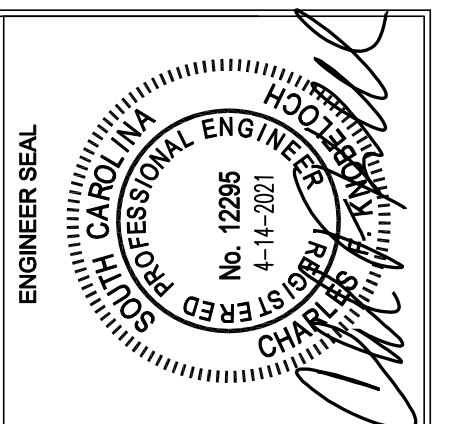
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S6.1



**SECTION E**  
SCALE: 1/2" = 1'-0"  
S6.1

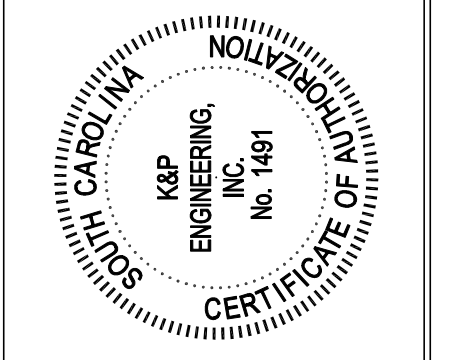
NOTE:  
HRWS = HYDROPHILIC RUBBER WATERSTOP  
PVCWS = PVC WATERSTOP

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**AERATION BASIN SECTIONS**  
CITY OF LAKE CITY  
LAKE SWAMP WWTP UPGRADE



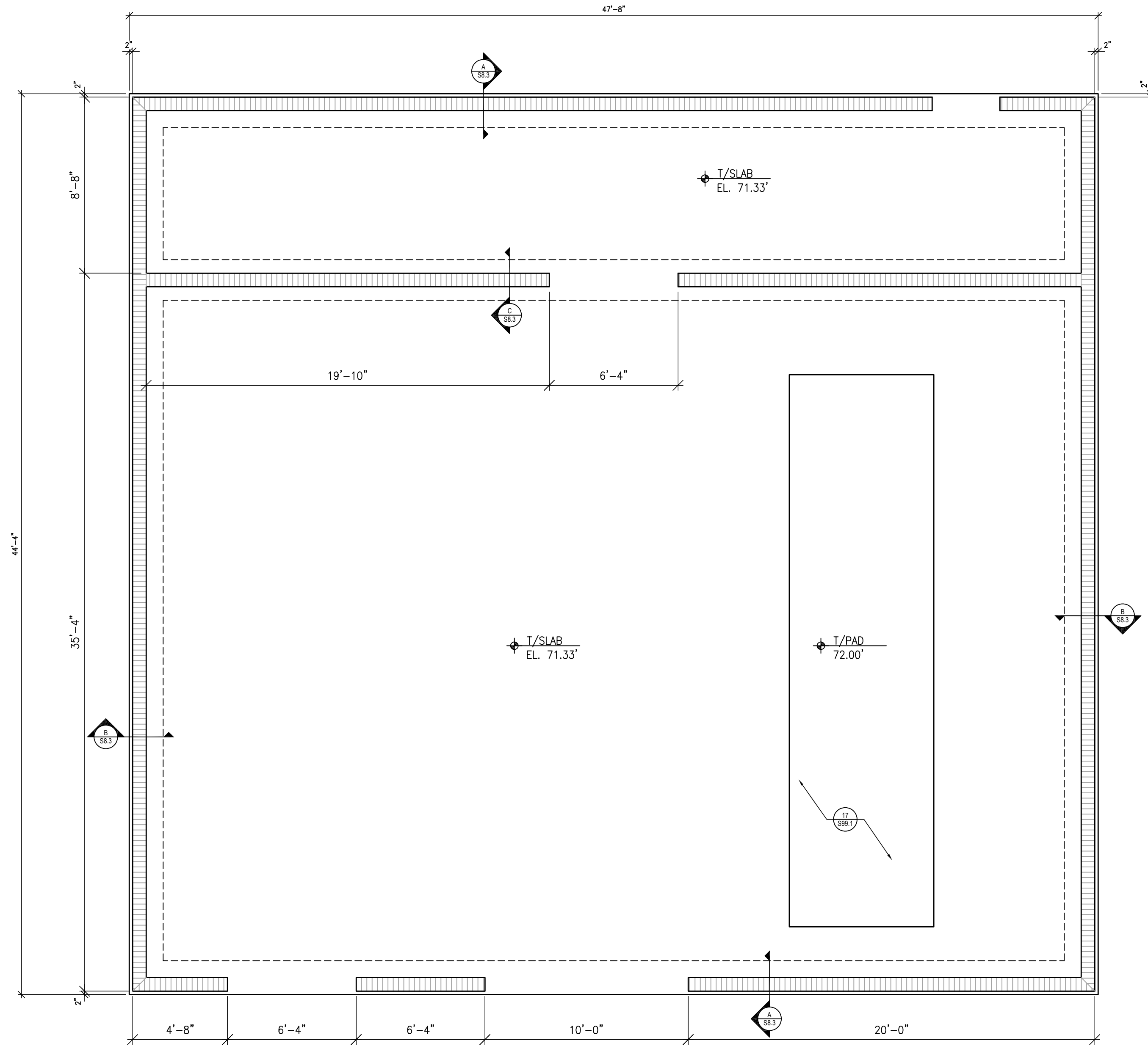
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DWG. S6.3

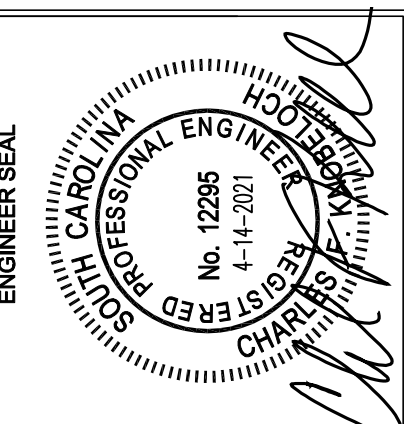
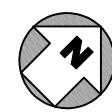
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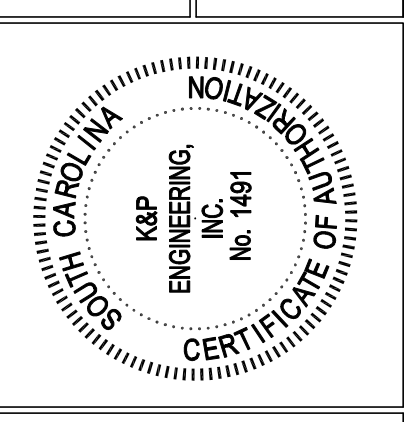


FOUNDATION/SLAB PLAN  
SCALE: 1/4" = 1'-0"



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CHECKED BY:			CFK
APPROVED BY:			JK

BLOWER BUILDING FOUNDATION PLAN  
CITY OF LAKE CITY  
LAKE SWAMP WWTP UPGRADE



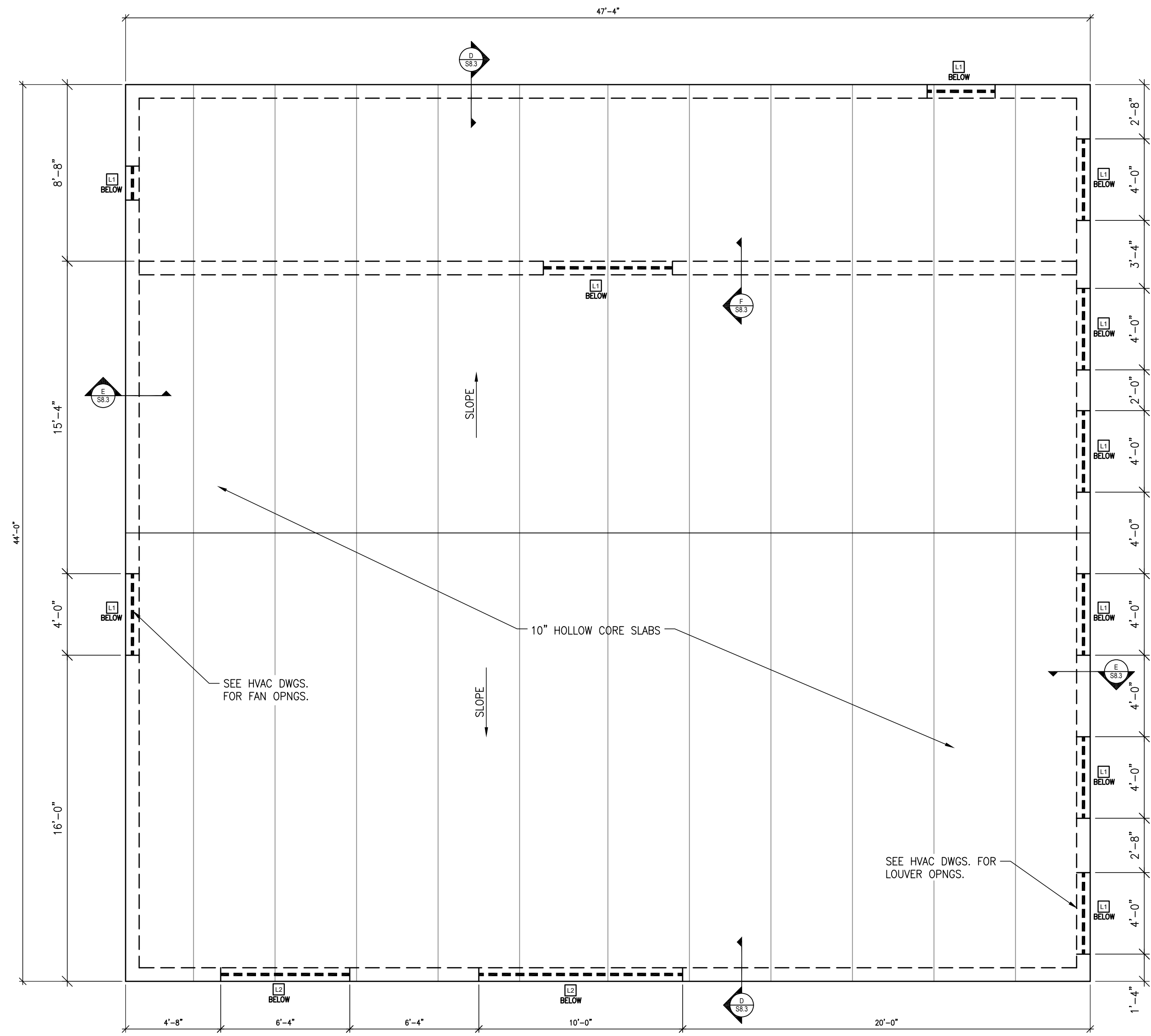
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Engineering  
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CHARLESTON, SC 29406  
PH. 843 628-3362

FILE	SEE LEFT
VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING	1"
DATE	MARCH 2021
PROJ.	100392.02 (20-211)
DWG.	S8.1

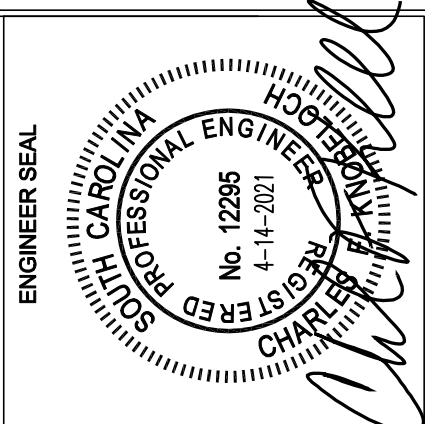
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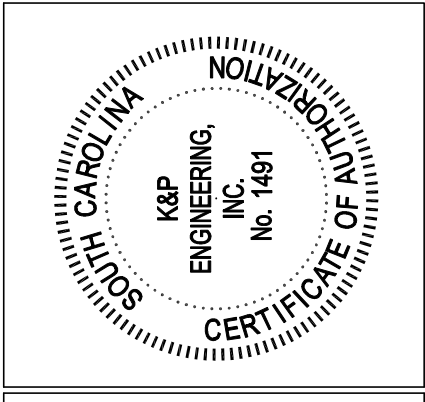


ROOF FRAMING PLAN  
SCALE: 3/8" = 1'-0"



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REVISION	DRAWN BY:	CHECKED BY:	CFK
	MDH/CFK	APPROVED BY:	JK
		BY:	AFVD

BLOWER BUILDING ROOF PLAN  
CITY OF LAKE CITY  
LAKE SWAMP WWTP UPGRADE



**Constantine**  
Engineering

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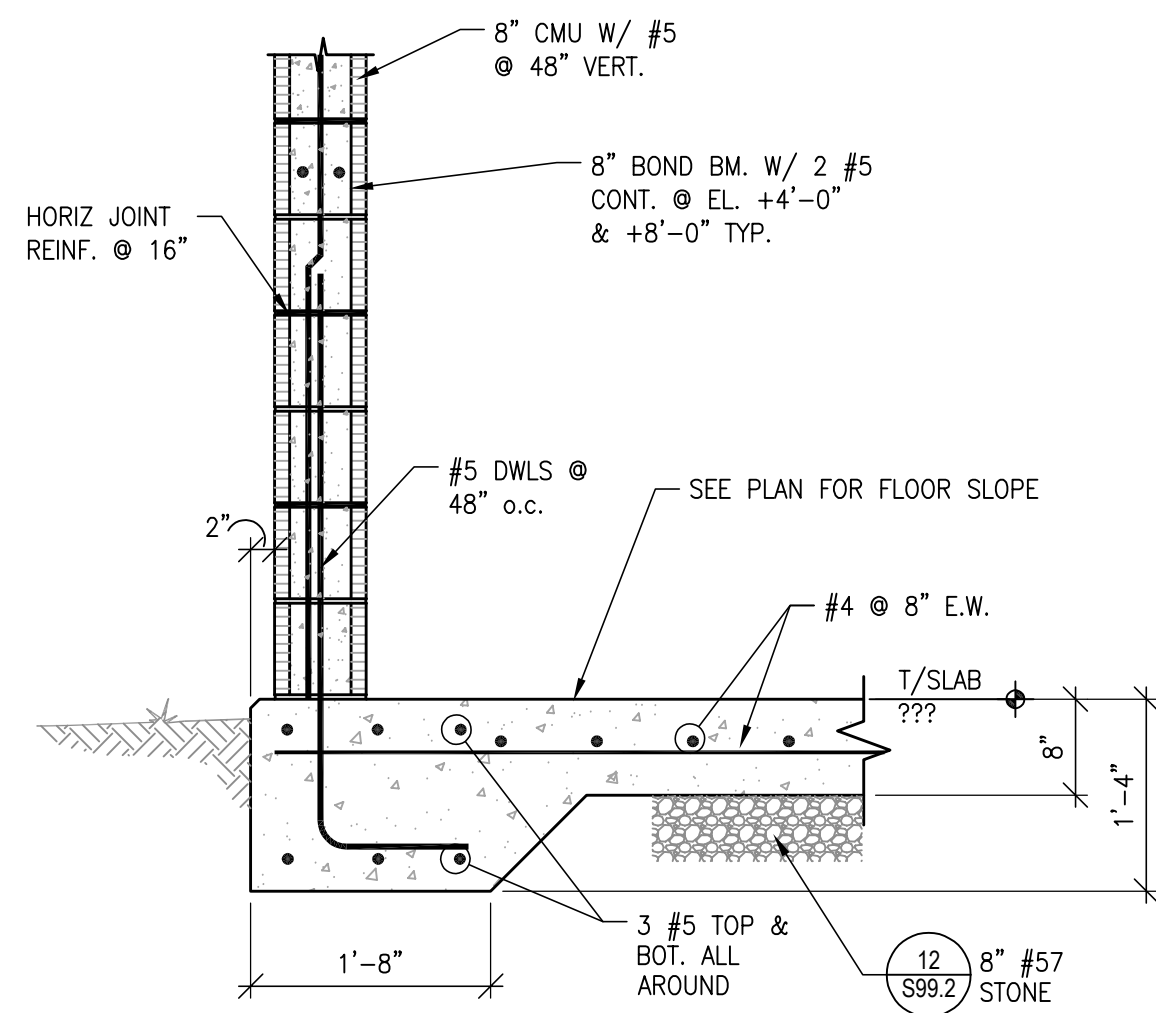
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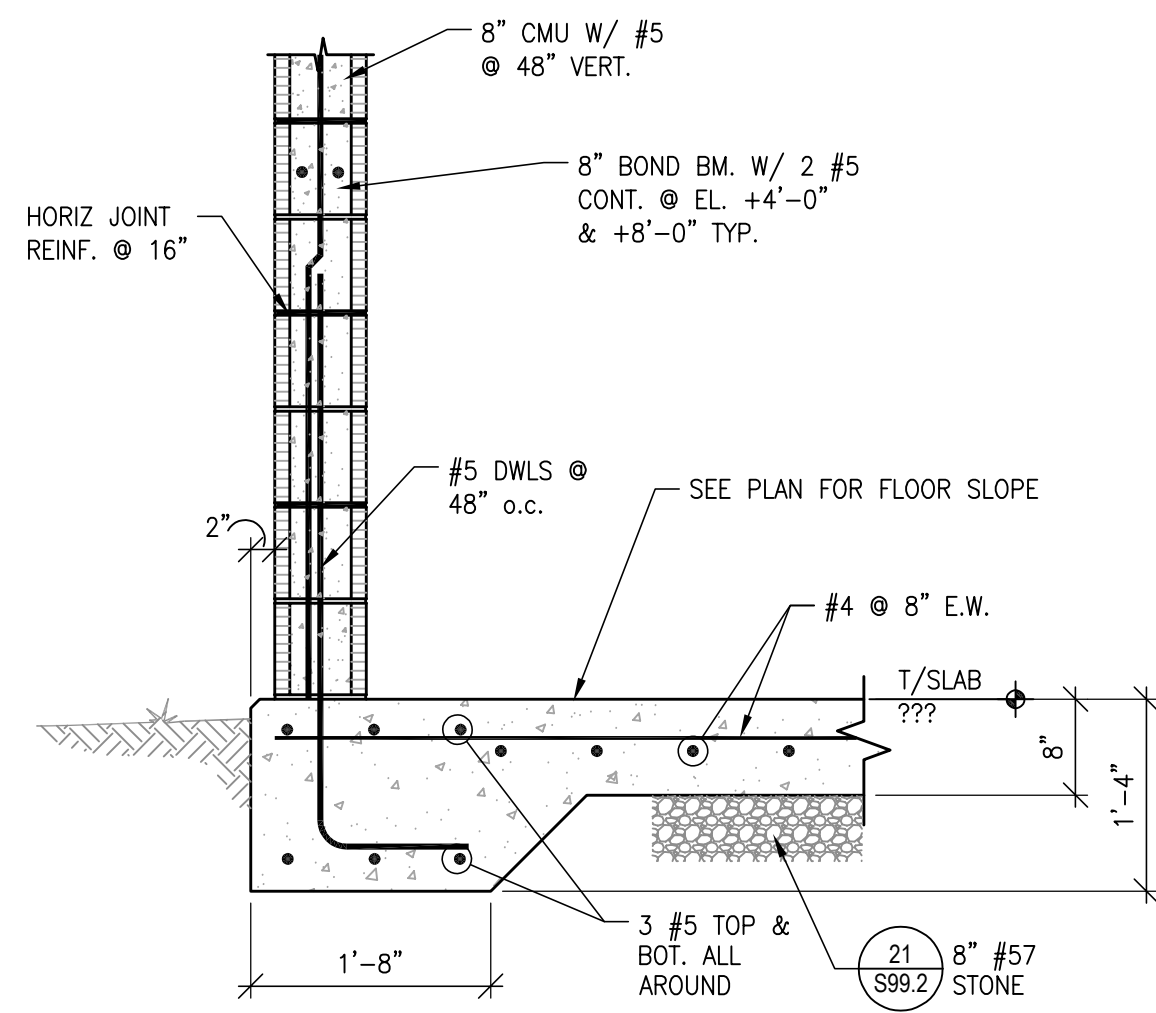
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DATE	MARCH 2021
PROJ.	100392.02 (20-211)
DWG.	S8.2



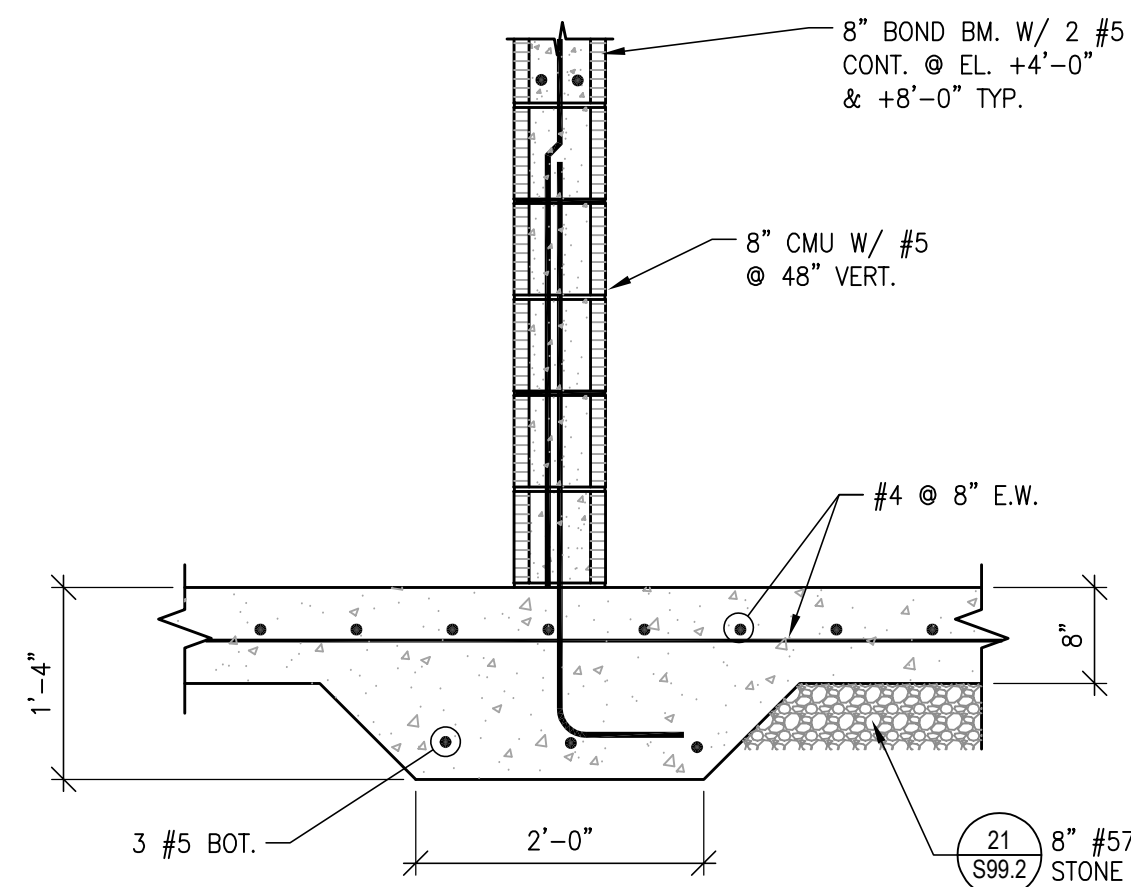
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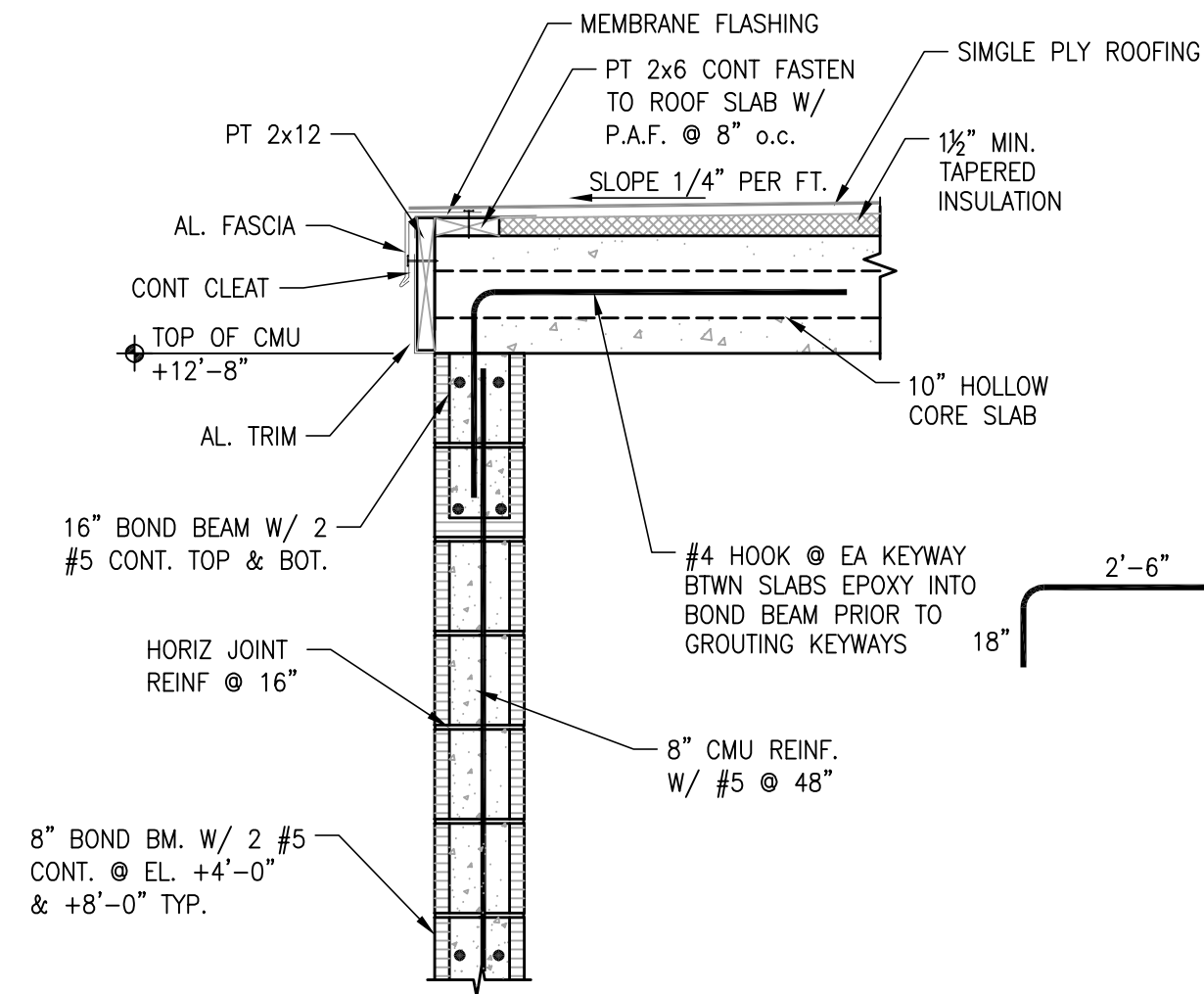
**SECTION A**  
SCALE: 3/4" = 1'-0" S2.1



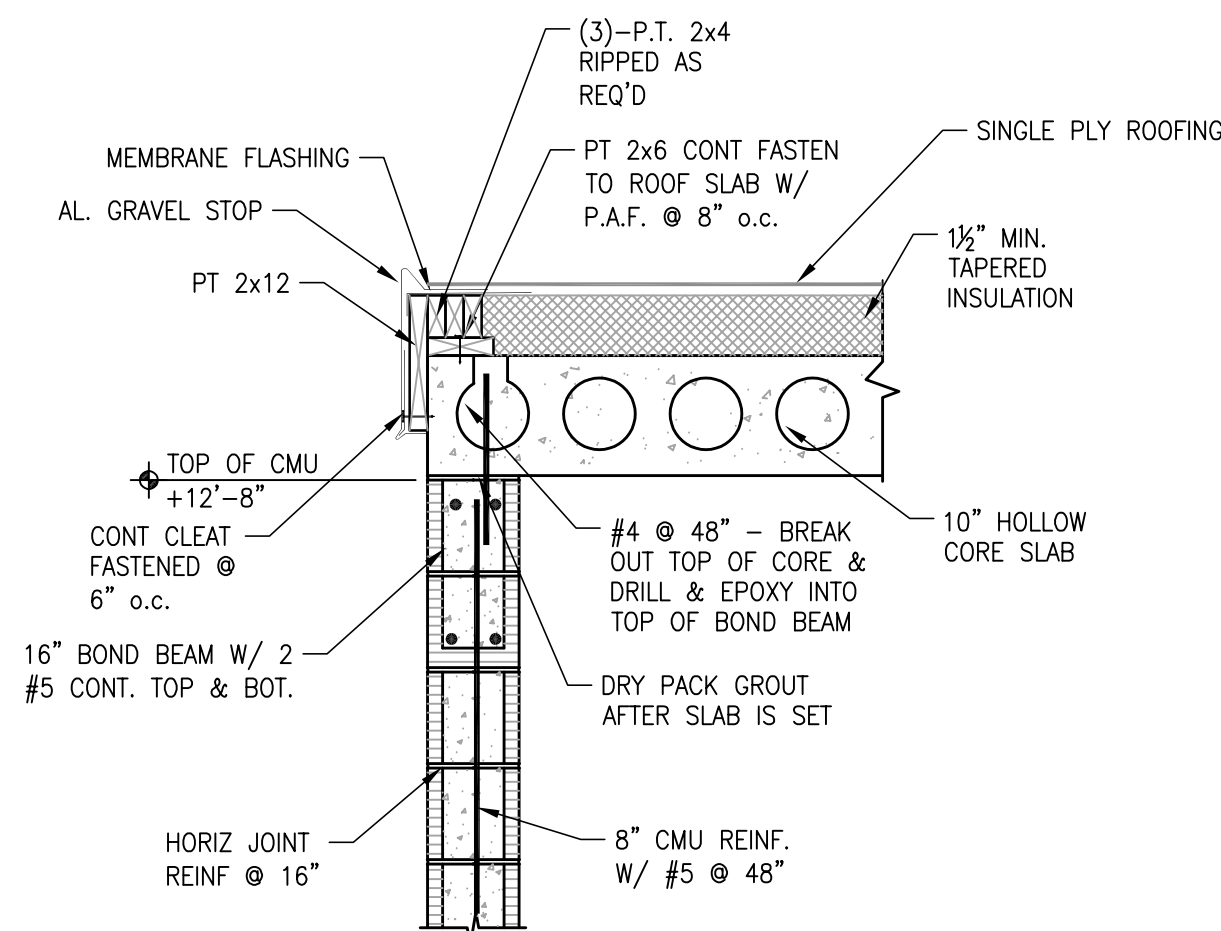
**SECTION B**  
SCALE: 3/4" = 1'-0" S2.1



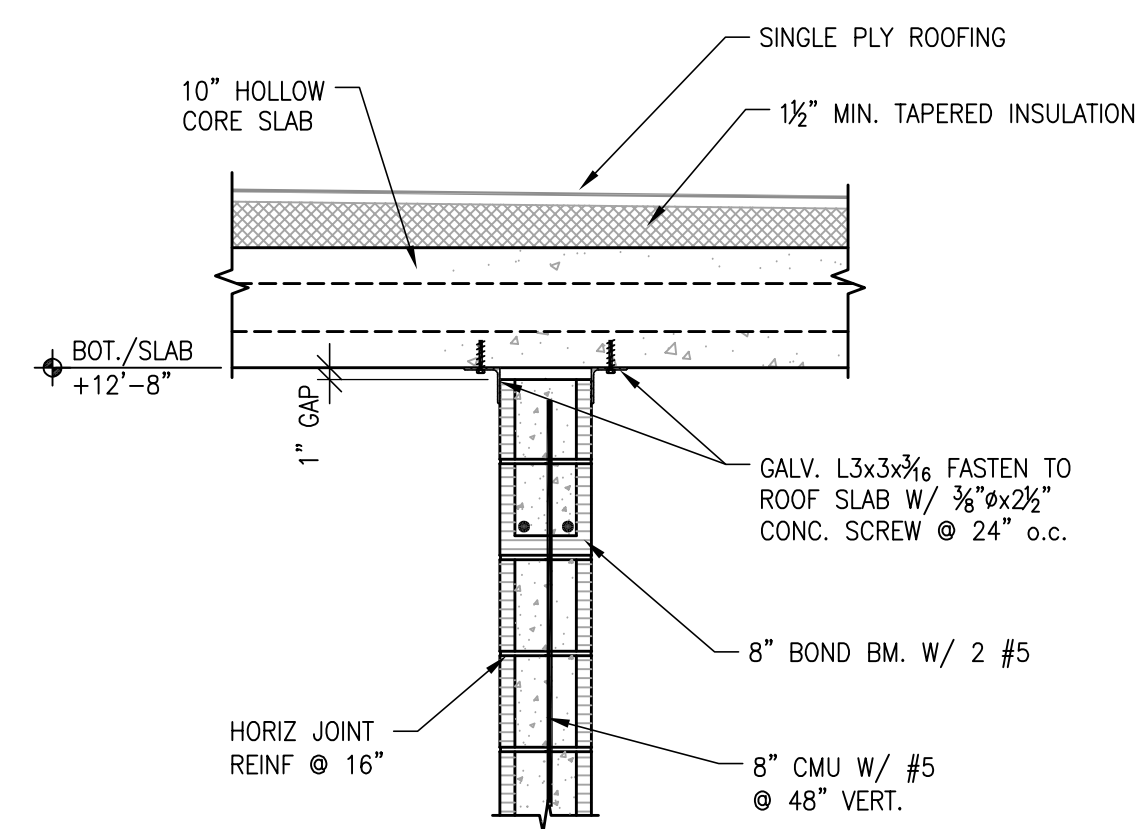
**SECTION C**  
SCALE: 3/4" = 1'-0" S2.1



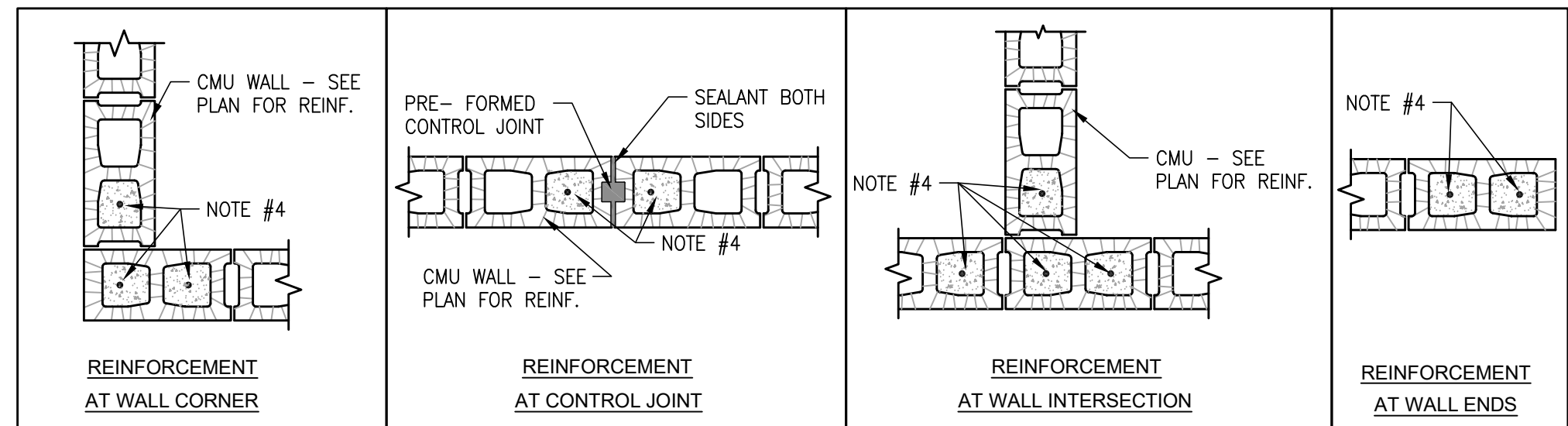
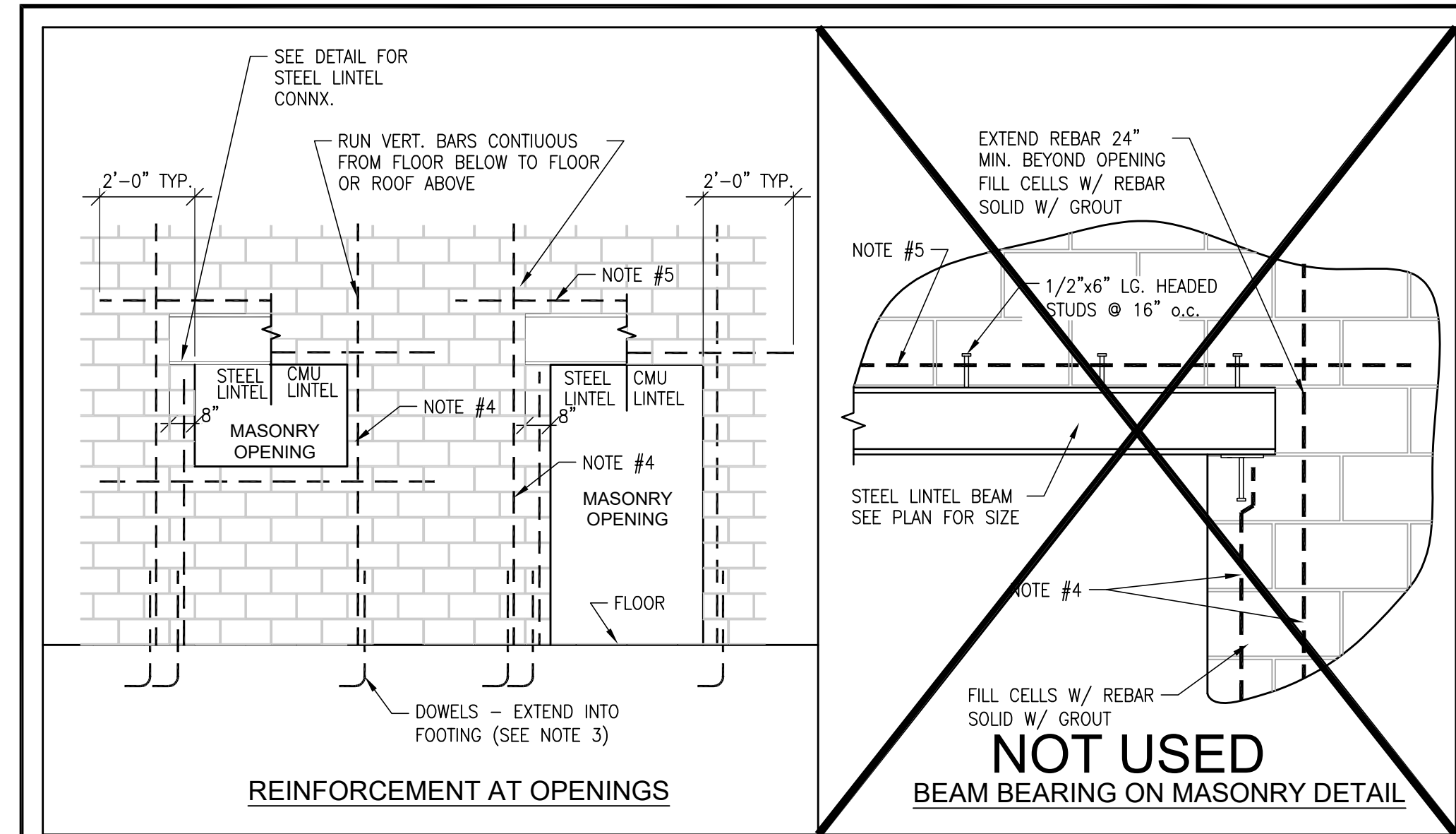
**SECTION D**  
SCALE: 3/4" = 1'-0" S2.2



**SECTION E**  
SCALE: 3/4" = 1'-0" S2.2



**SECTION F**  
SCALE: 3/4" = 1'-0" S2.2



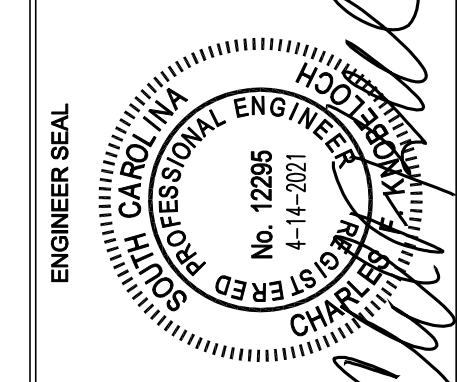
- NOTES:
1. PROVIDE DOWELS INTO FOOTING AT ALL VERTICAL BARS, UNLESS NOTED OTHERWISE.
  2. EXTEND WALL REBAR 6" MINIMUM INTO TOP BOND BEAM.
  3. ALL DOWELS TO HAVE STANDARD 90 DEGREE HOOK.
  4. VERTICAL REBAR TO BE SAME SIZE AS VERTICAL WALL REINF.
  5. ALL HORIZONTAL REBAR TO BE #5.

**TYPICAL MASONRY REINFORCEMENT DETAIL**

LINTEL SCHEDULE			
	LINTEL DESCRIPTION	MINIMUM BEARING	OPENING SIZES
MASONRY OPENINGS	L1 	8" MINIMUM	SEE PLAN FOR LOCATION FOR OPENINGS 1'-0" TO 5'-0" U.N.O.
	L2 	8" MINIMUM	SEE PLAN FOR LOCATION FOR OPENINGS 5'-1" TO 10'-6" U.N.O.

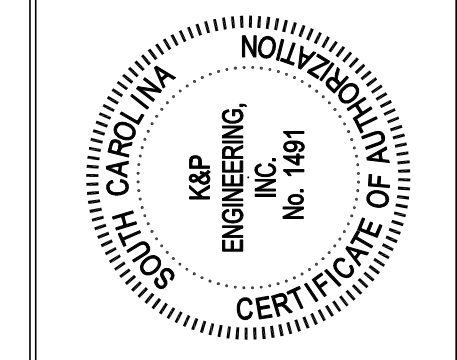
GENERAL LINTEL NOTES:

1. PROVIDE LINTELS OVER ALL OPENINGS IN ACCORDANCE WITH THE LINTEL SCHEDULE UNLESS NOTED OTHERWISE.
2. COORDINATE OPENING SIZES & LOCATIONS WITH ARCHITECTURAL AND MECHANICAL DRAWINGS.
3. SEE TYPICAL MASONRY OPENINGS DETAIL FOR VERTICAL REBAR PLACEMENT.
4. REBAR IN BOND BEAM TO EXTEND MINIMUM 2'-0" PAST OPENING.



NO.	DATE	DESIGNED BY:	CFK
REVISION	DRAWN BY:	MDH/CFK	
CHECKED BY:	APPROVED BY:	JK	

**BLOWER BUILDING SECTIONS & DETAILS**  
 CITY OF LAKE CITY  
 LAKE SWAMP WWTP UPGRADE

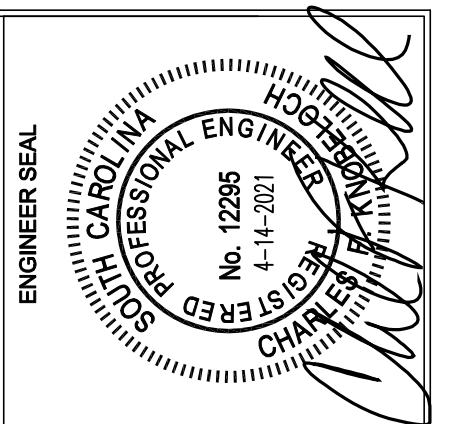
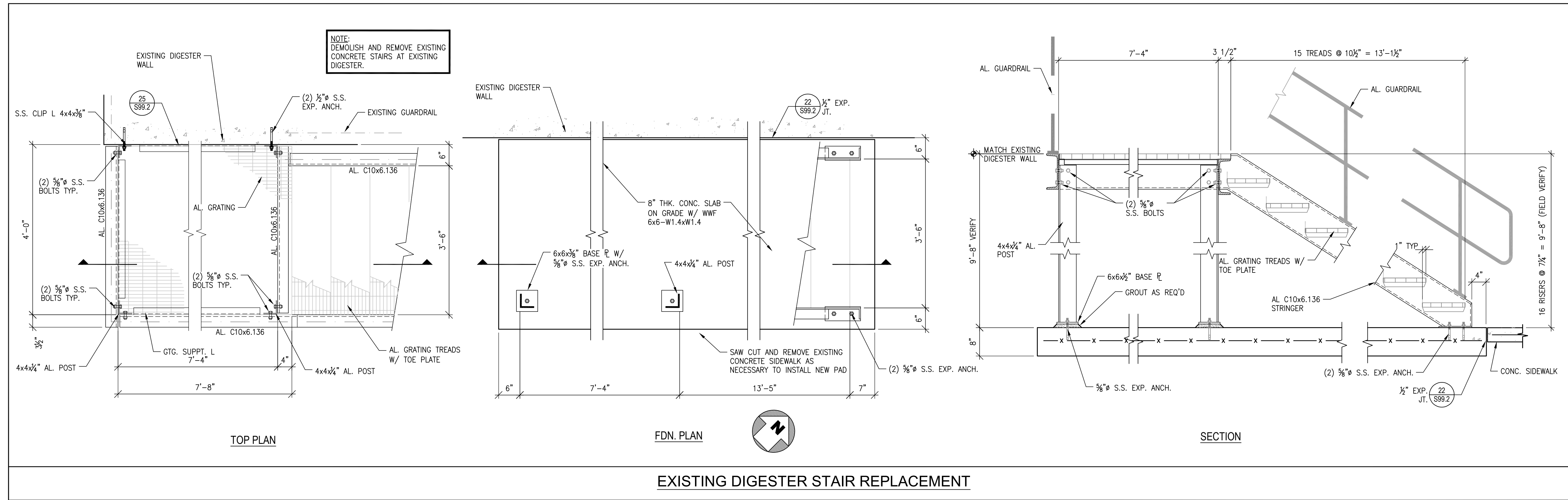


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DWG.	S8.3

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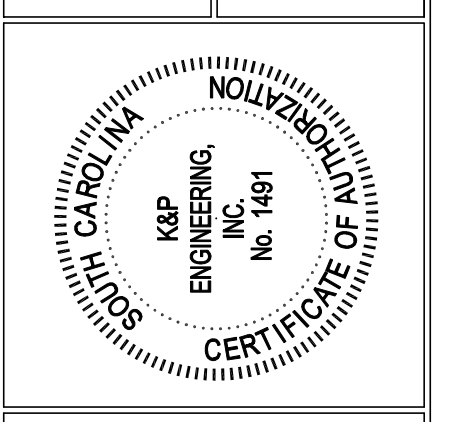


NO.	DATE	DESIGNED BY:	CFK
REVISION	DRAWN BY:	MDH/CFK	
CHECKED BY:	CFK		
APPROVED BY:	JK		

**EXISTING DIGESTER STAIR REPLACEMENT**

**CITY OF LAKE CITY**

**LAKE SWAMP WWTP UPGRADE**

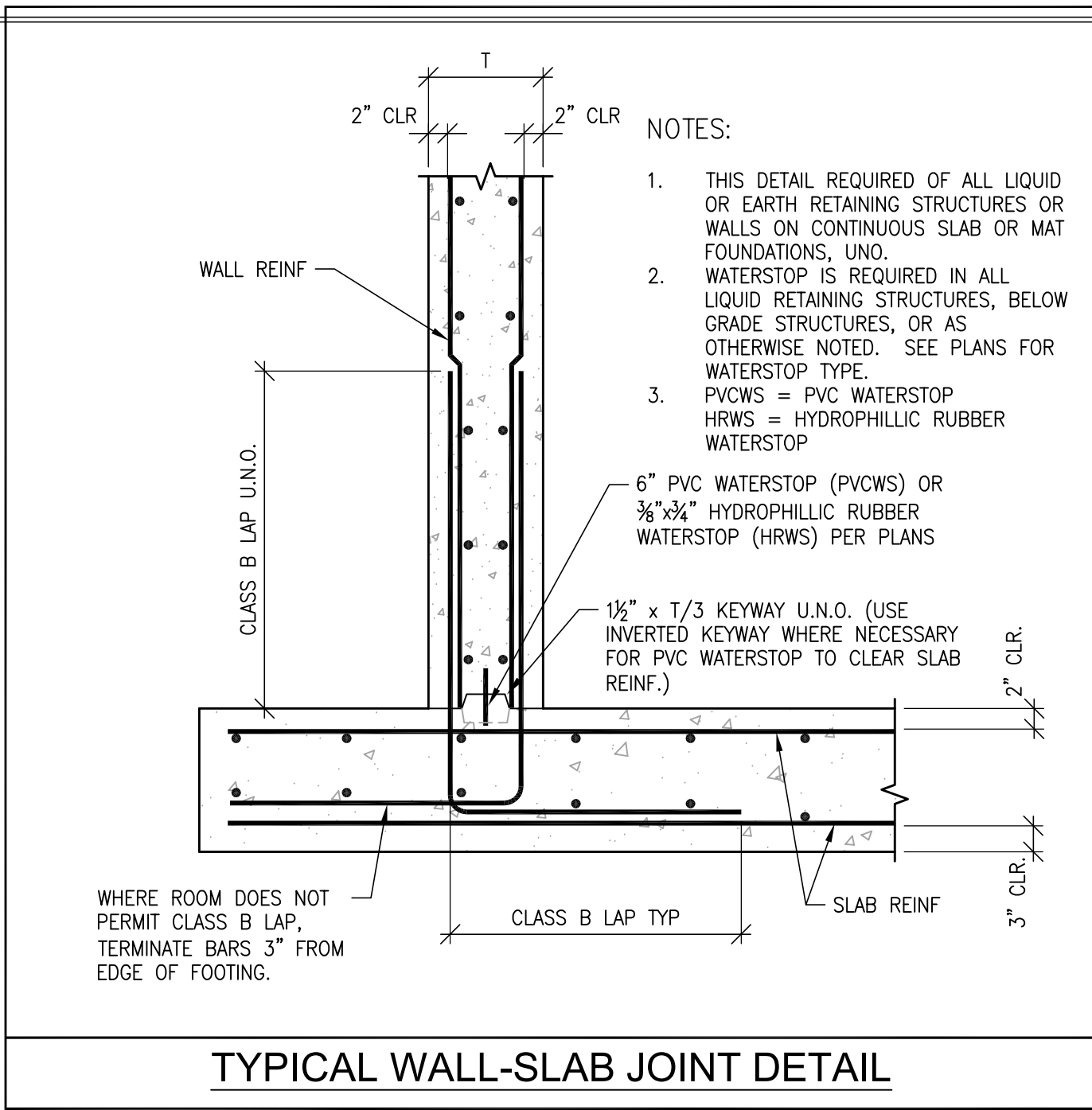


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VERIFY SCALE	
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DATE	MARCH 2021
PROJ.	100392.02 (20-211)
DWG.	S9.1

BID DOCUMENTS

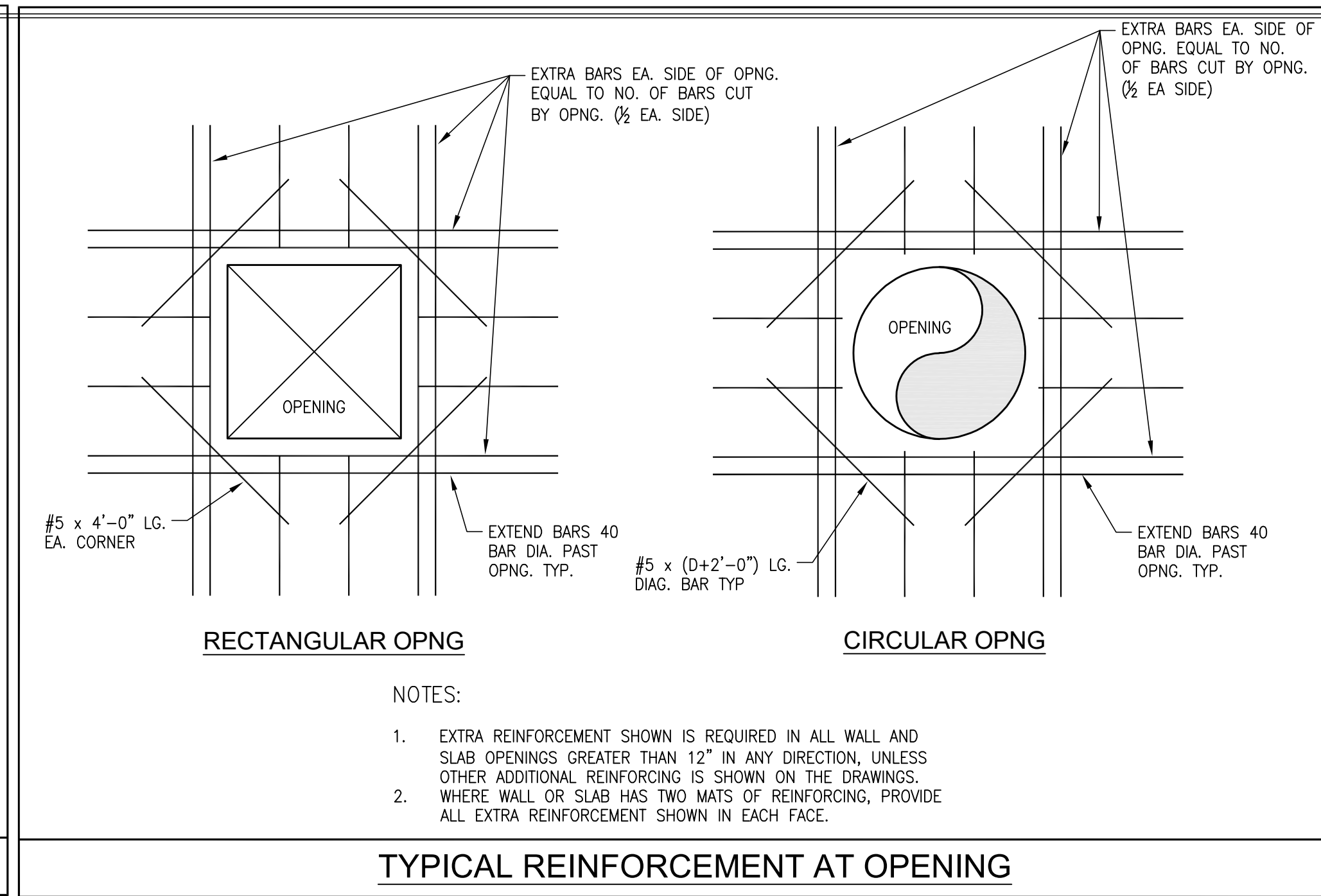
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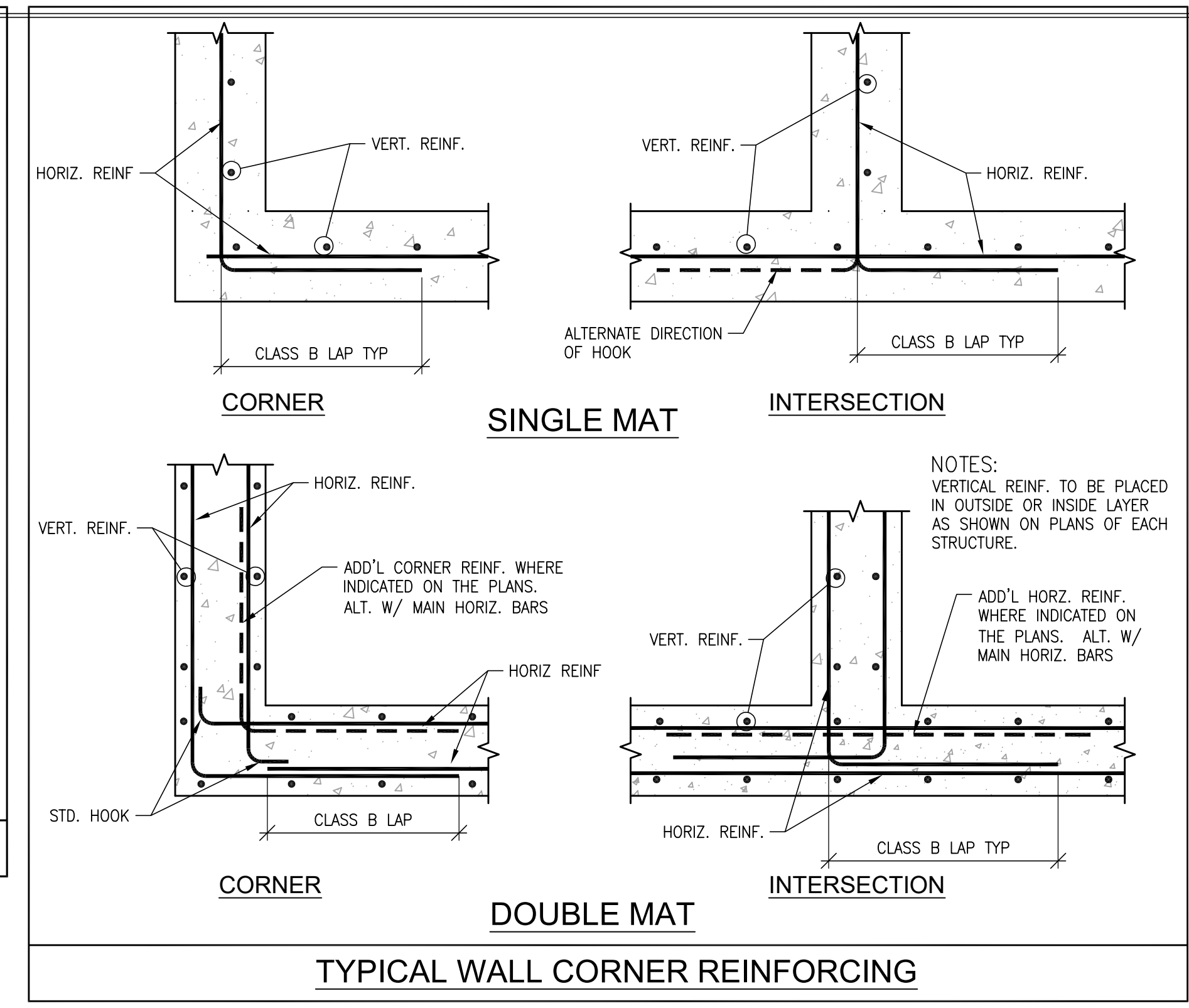
**TYPICAL WALL-SLAB JOINT DETAIL**

**DETAIL 11**  
SCALE: NONE  
TYP.



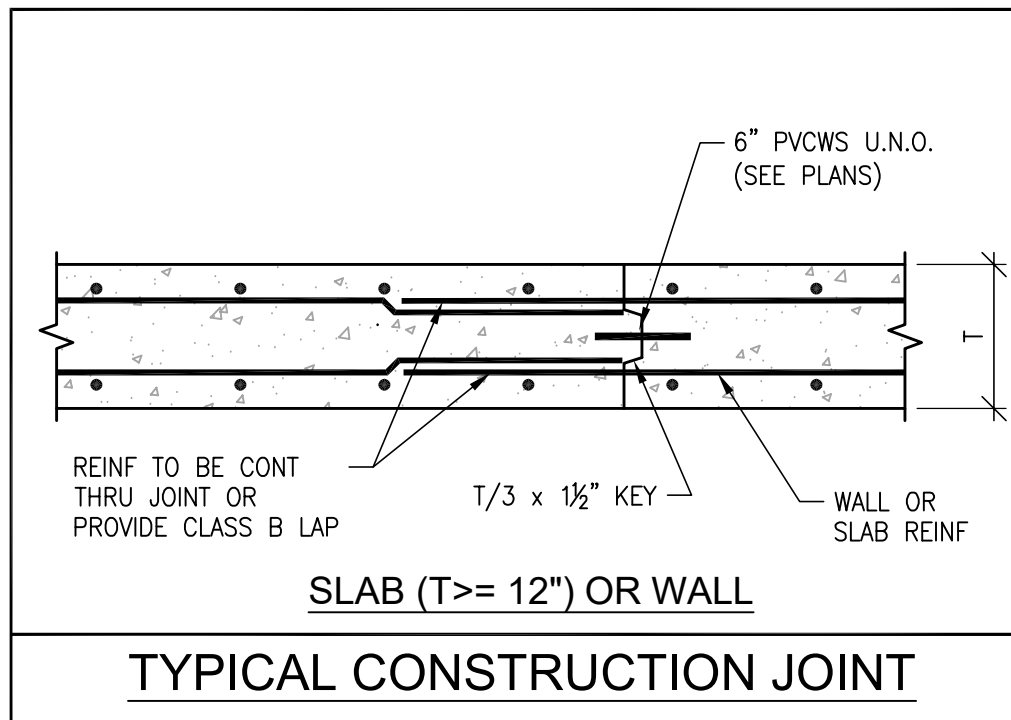
**TYPICAL REINFORCEMENT AT OPENING**

**DETAIL 12**  
SCALE: NONE  
TYP.



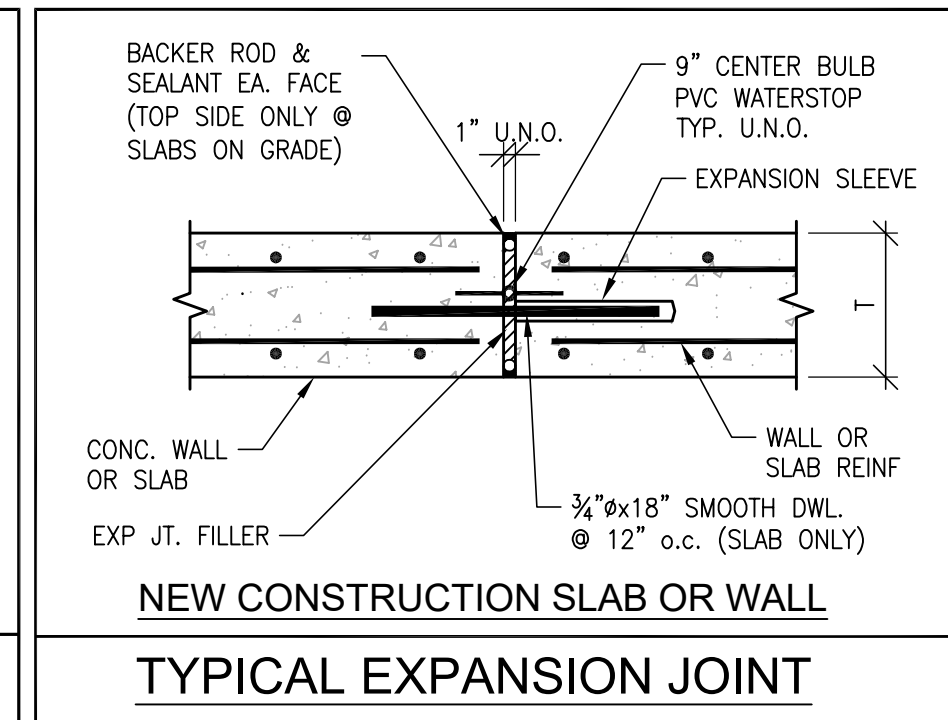
**TYPICAL WALL CORNER REINFORCING**

**DETAIL 13**  
SCALE: NONE  
TYP.



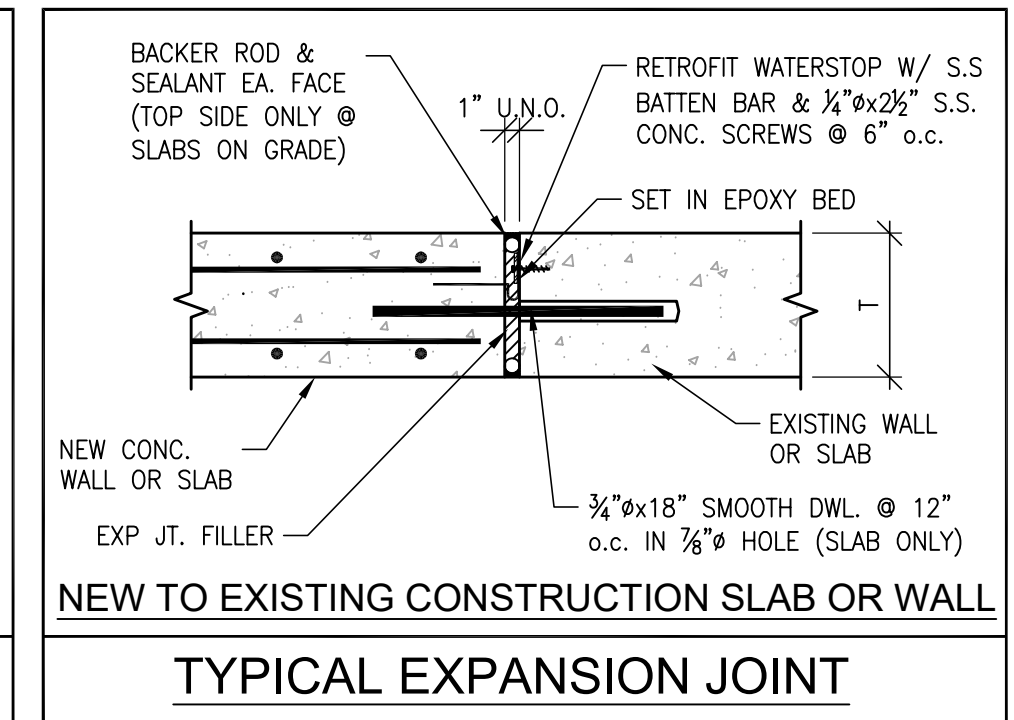
**TYPICAL CONSTRUCTION JOINT**

**DETAIL 14**  
SCALE: NONE  
TYP.



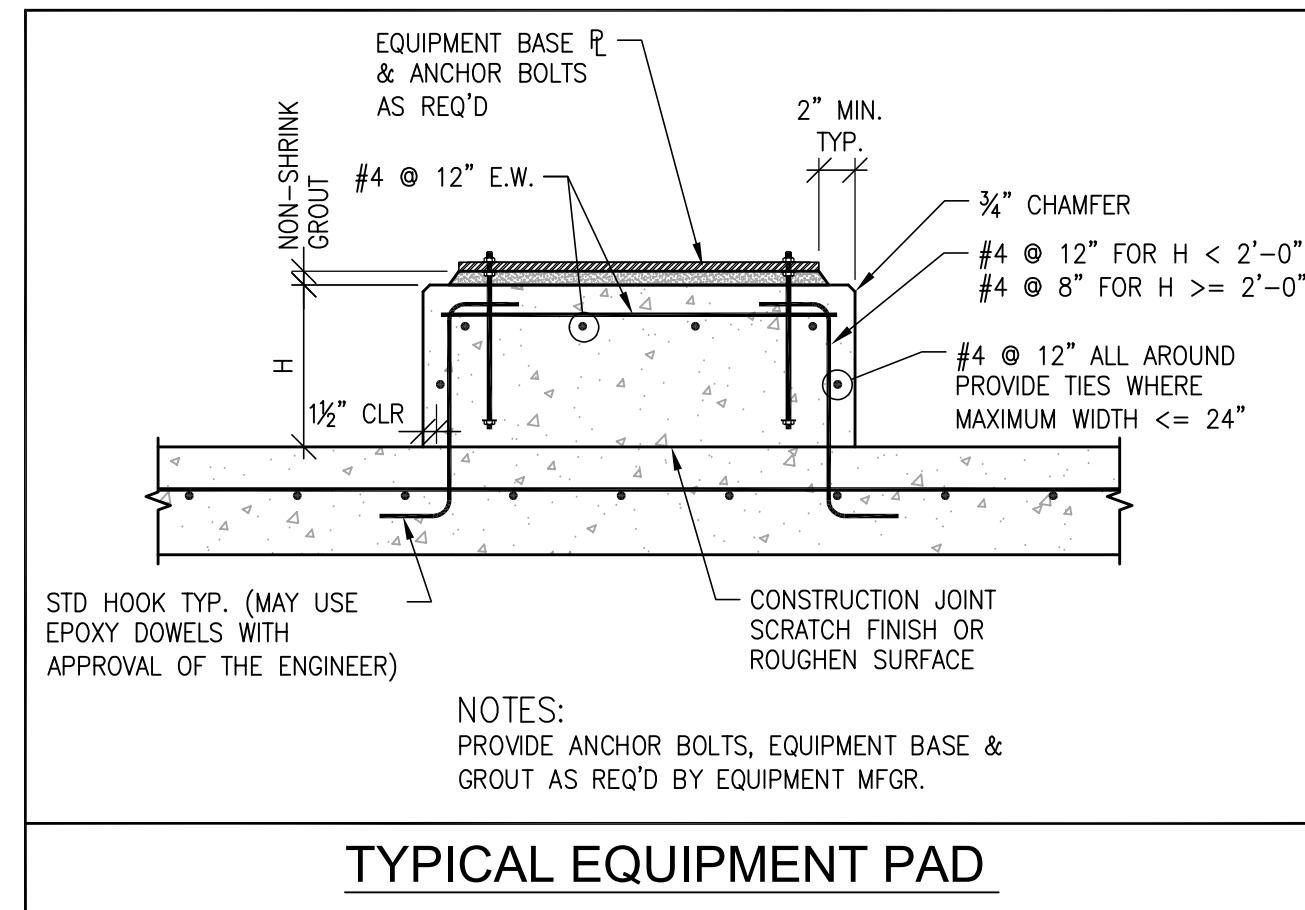
**TYPICAL EXPANSION JOINT**

**DETAIL 15**  
SCALE: NONE  
TYP.



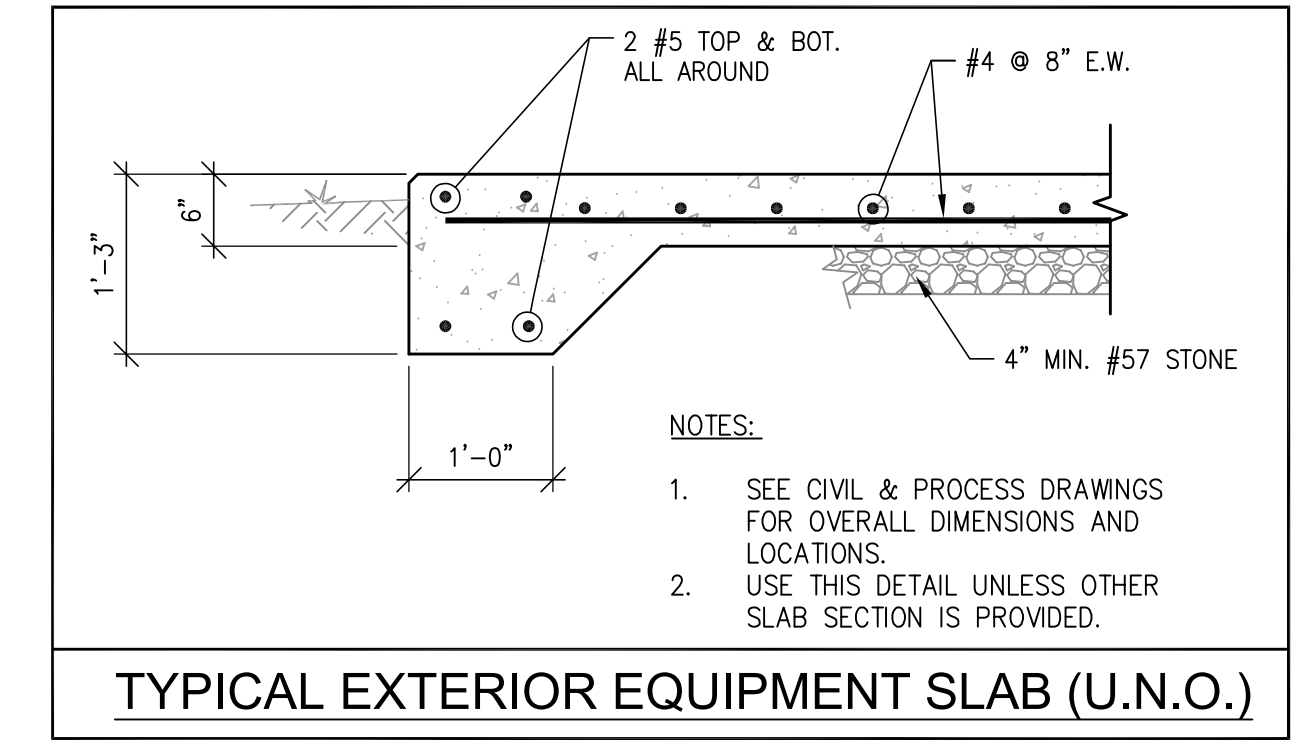
**TYPICAL EXPANSION JOINT**

**DETAIL 16**  
SCALE: NONE  
TYP.



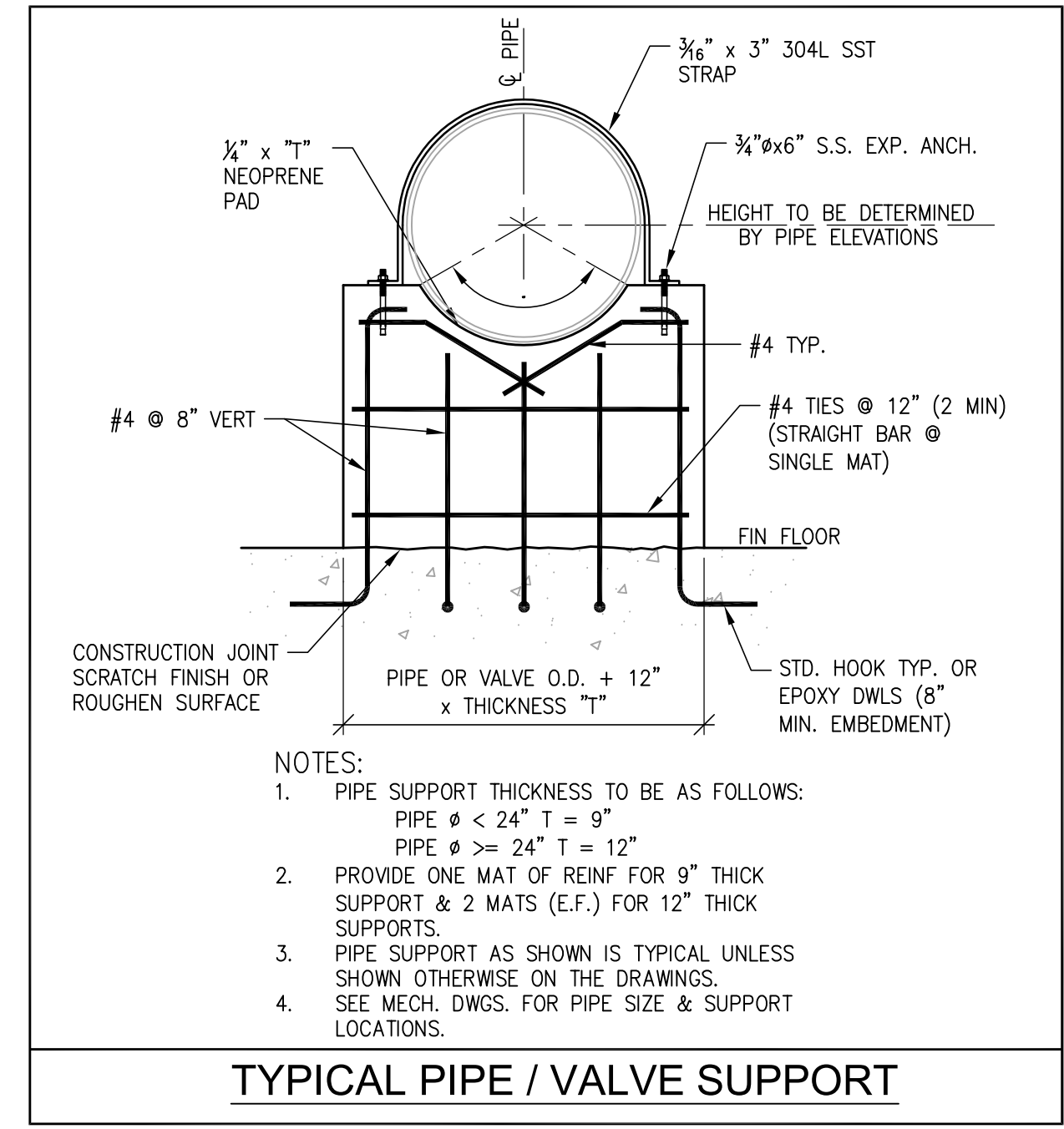
**TYPICAL EQUIPMENT PAD**

**DETAIL 17**  
SCALE: NONE  
TYP.



**TYPICAL EXTERIOR EQUIPMENT SLAB (U.N.O.)**

**DETAIL 18**  
SCALE: NONE  
TYP.

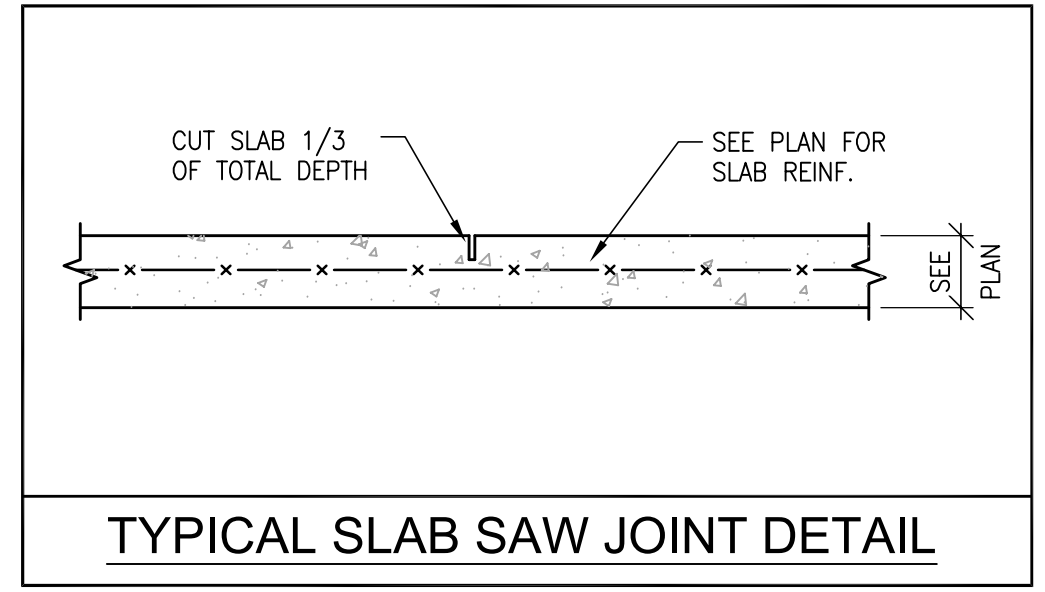


**TYPICAL PIPE / VALVE SUPPORT**

**DETAIL 19**  
SCALE: NONE  
TYP.

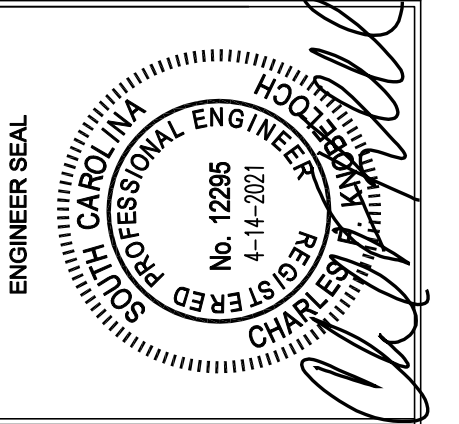
TENSION LAP SPLICE LENGTHS FOR GRADE 60 REINFORCING

BAR SIZE	3000 PSI CONCRETE				4000 PSI CONCRETE				
	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	
3	22	28	17	22	3	19	24	15	19
4	29	37	22	29	4	25	32	19	25
5	36	47	28	36	5	31	40	24	31
6	43	56	33	43	6	37	48	29	37
7	63	81	48	63	7	54	70	42	54
8	72	93	55	72	8	62	80	48	62
9	81	105	62	81	9	70	91	54	70
10	91	118	70	91	10	79	102	61	79
11	101	131	78	101	11	87	113	67	87



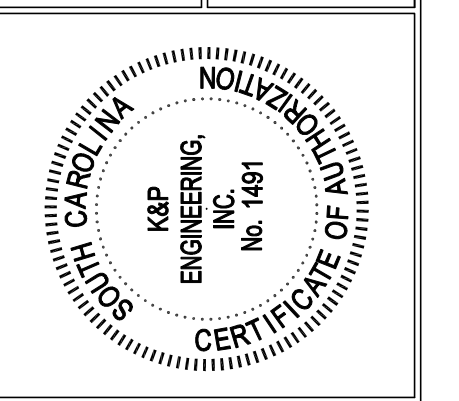
**TYPICAL SLAB SAW JOINT DETAIL**

**DETAIL 20**  
SCALE: NONE  
TYP.



NO. DESIGNED BY:	CFK
DATE:	
DRAWN BY:	MDH/CFK
REVISION:	
CHECKED BY:	CFK
APPROVED BY:	JK
BY:	
APVD:	

**TYPICAL DETAILS**  
  
**CITY OF LAKE CITY**  
  
**LAKE SWAMP WWTP UPGRADE**

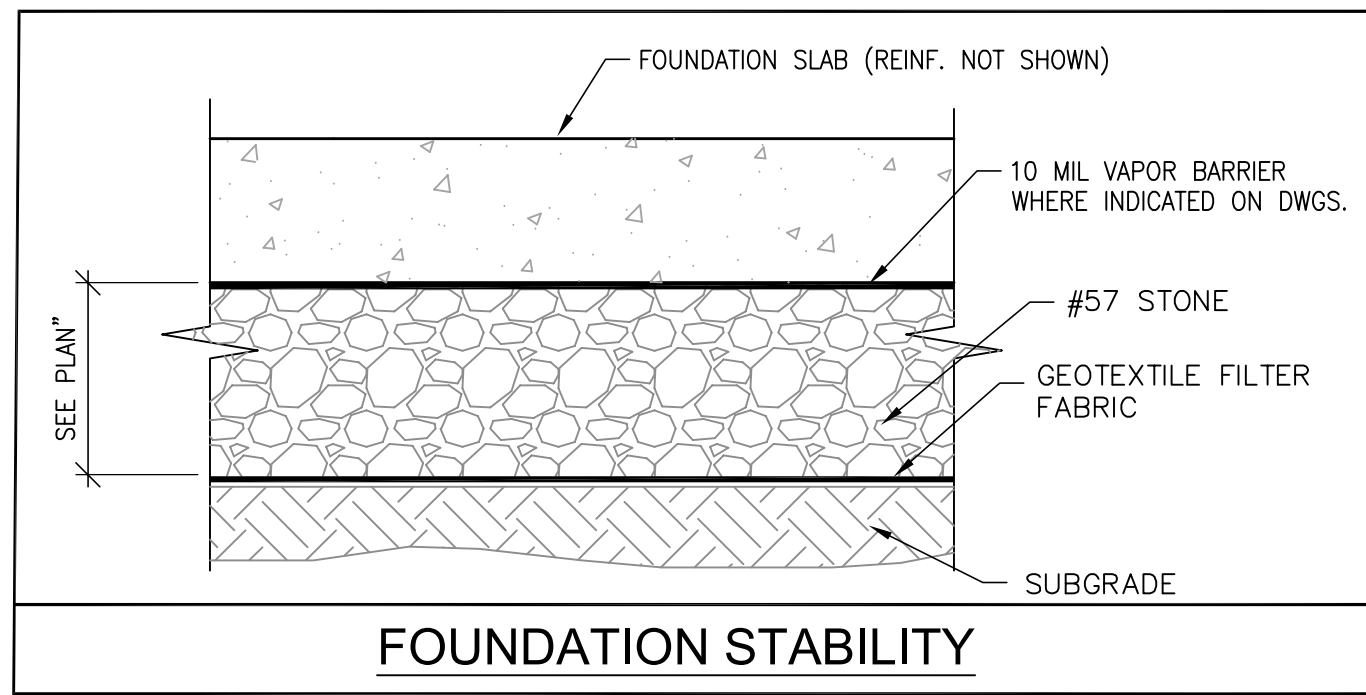


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VERIFY	SCALE
BAR	IS ONE INCH ON ORIGINAL DRAWING 1"
DATE	MARCH 2021
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DWG.	S99.1

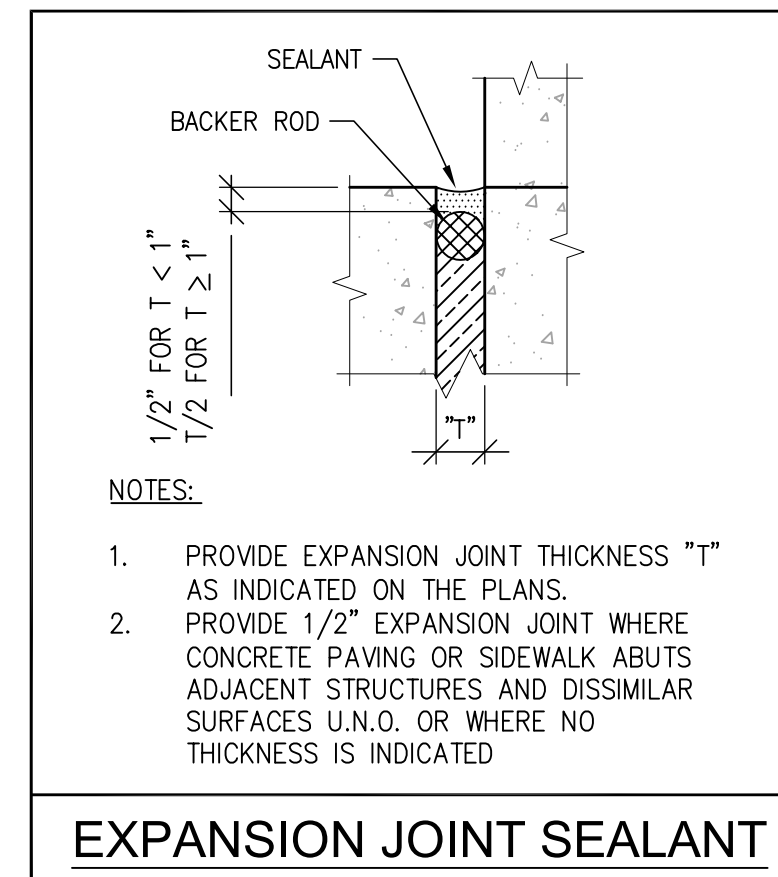
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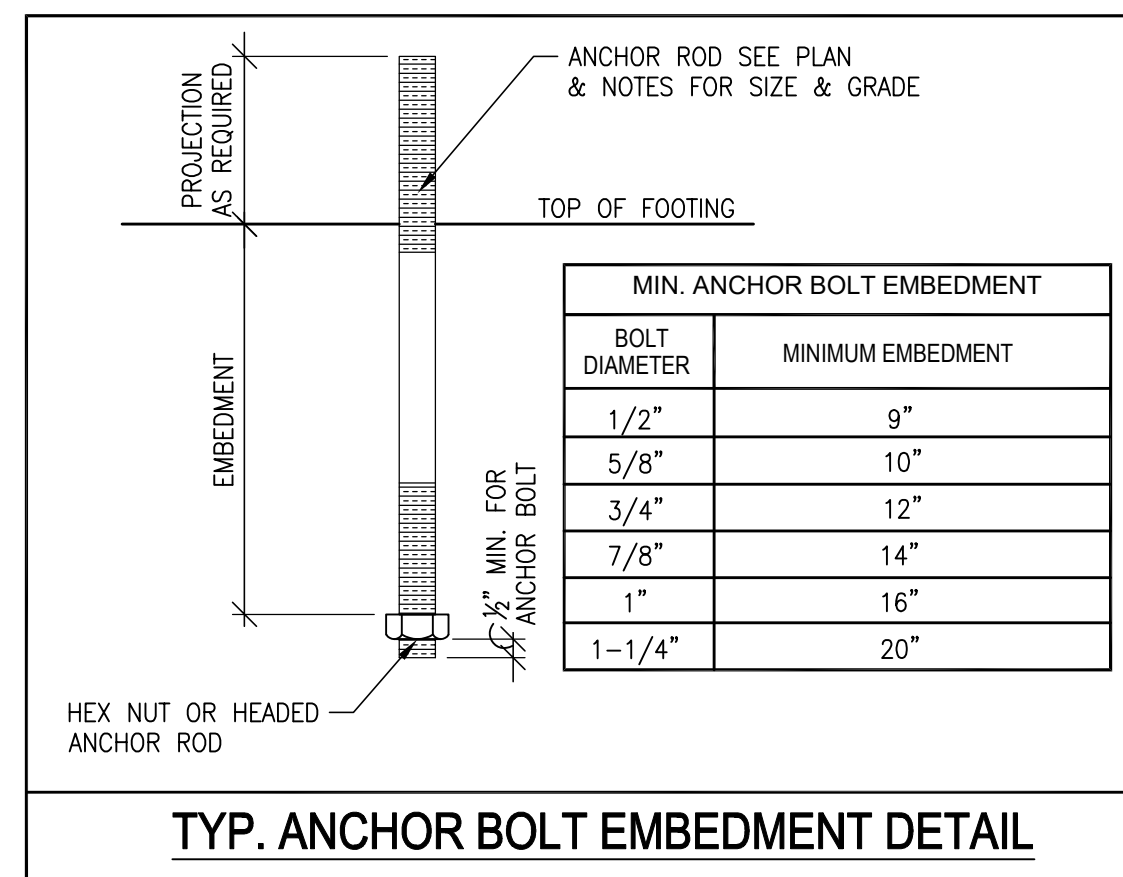
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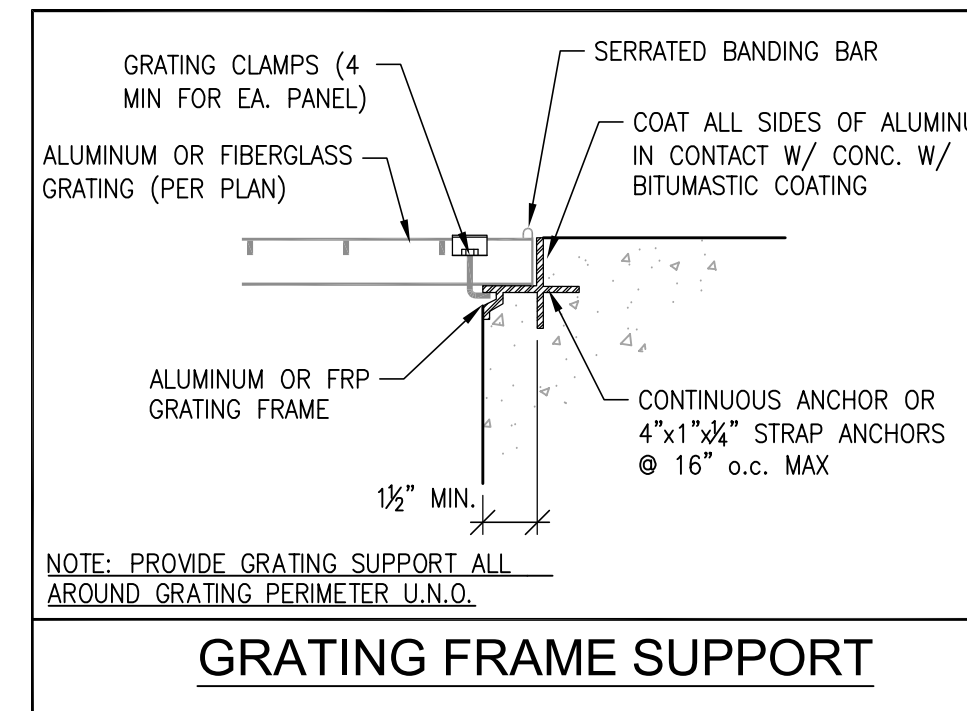
**DETAIL 21**  
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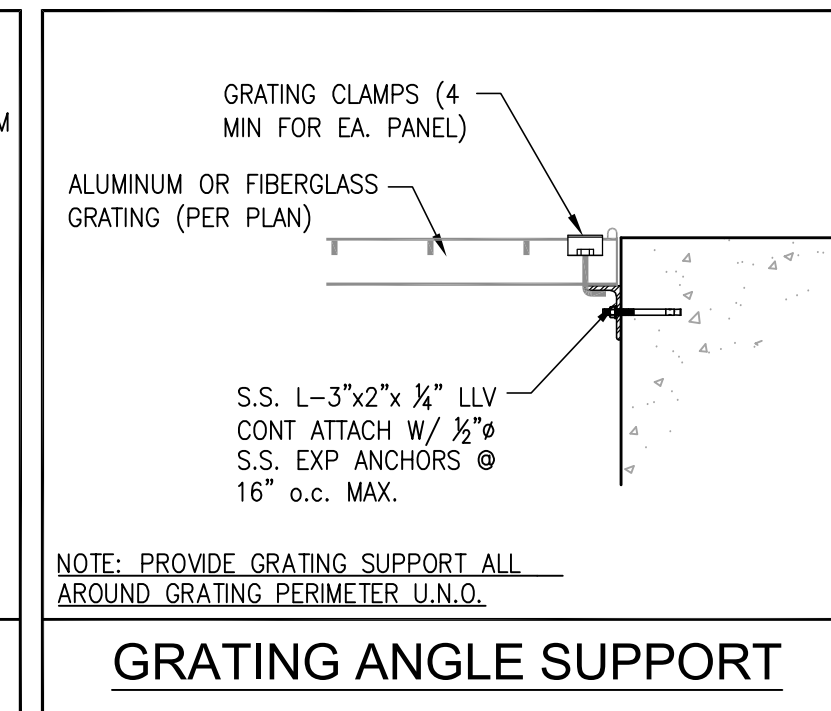
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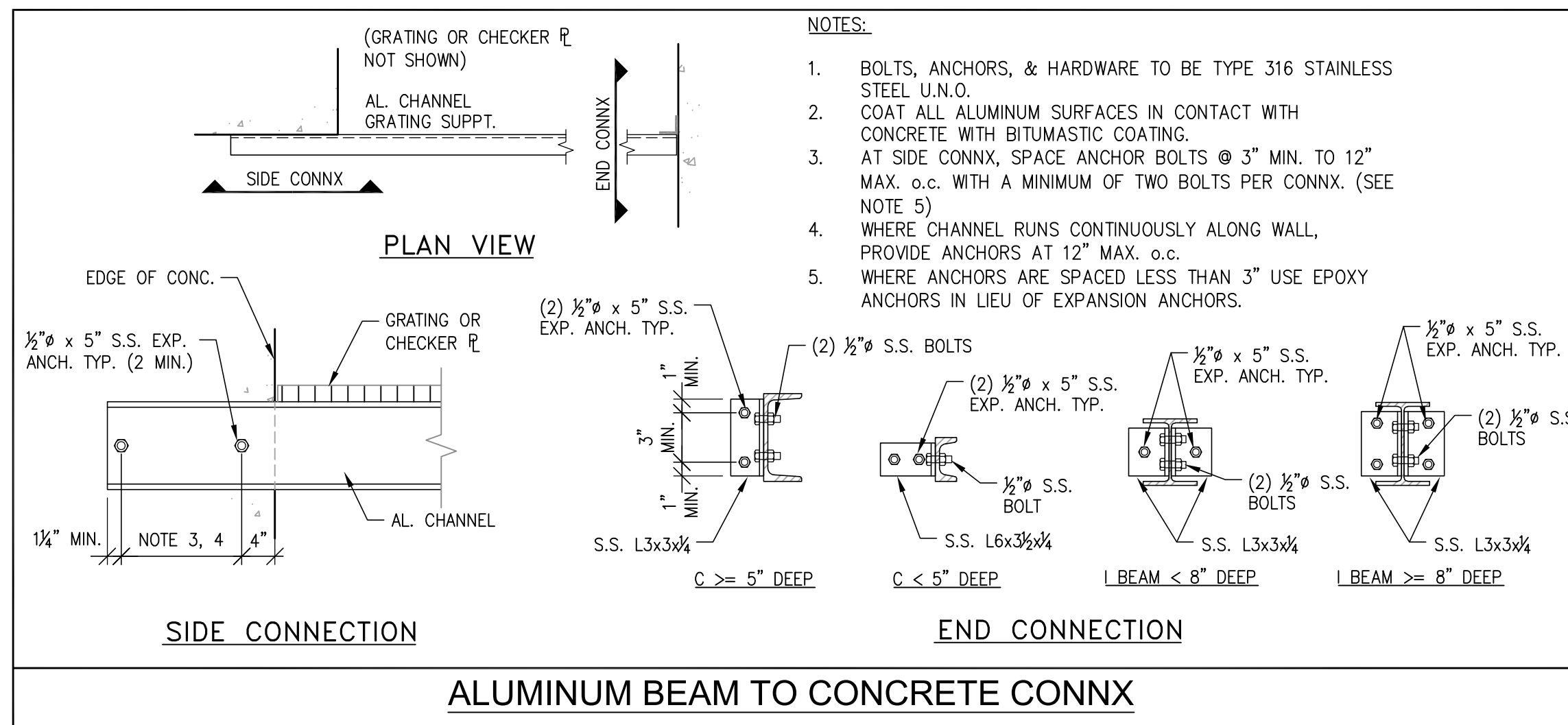
**DETAIL 23**  
SCALE: NONE TYP.



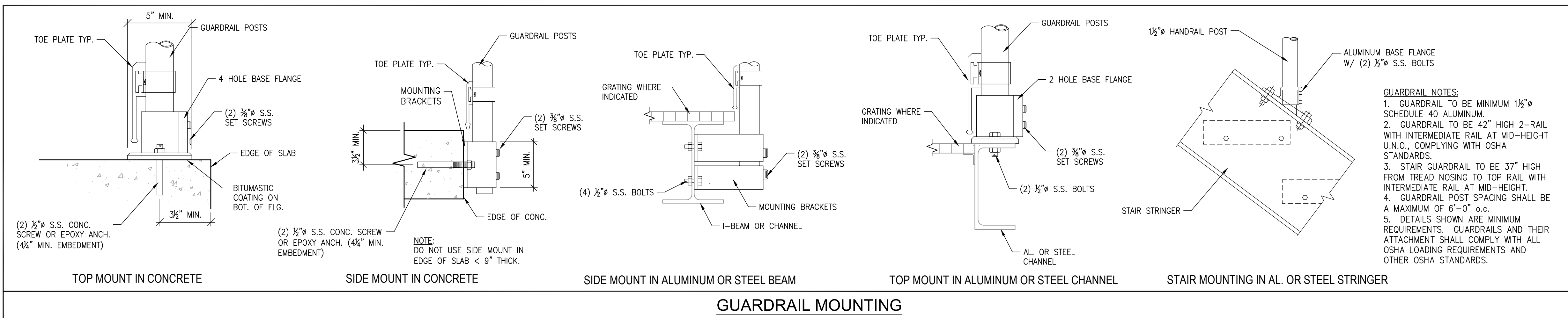
**DETAIL 24**  
SCALE: NONE TYP.



**DETAIL 25**  
SCALE: NONE TYP.



**DETAIL 26**  
SCALE: NONE TYP.



**DETAIL 27**  
SCALE: NONE TYP.

ENGINEER SEAL

SOUTH CAROLINA PROFESSIONAL ENGINEER

No. 12285

4-14-2021

APPROVED BY: JK

DESIGNED BY: CFK

CHECKED BY: CFK

REVISION

DRAWN BY: MDH/CFK

NO. DATE

TYPICAL DETAILS

CITY OF LAKE CITY

LAKE SWAMP WWTP UPGRADE

SOUTH CAROLINA PROFESSIONAL ENGINEER

K&P ENGINEERING, INC.

No. 1491

CERTIFICATE OF REGISTRATION

**Constantine** Engineering

4000 FABER PLACE DR. STE. 300

CHARLESTON, SC 29406

PH. 843 628-3352

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DATE MARCH 2021

PROJ. 100392.02 (20-211)

DWG. S99.2

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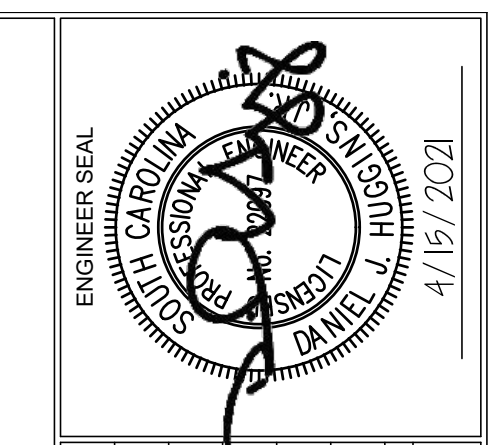
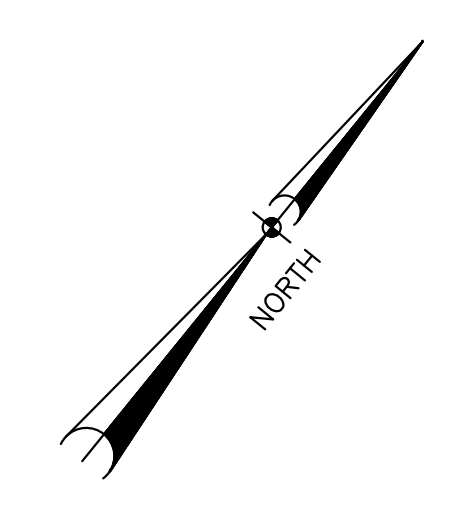
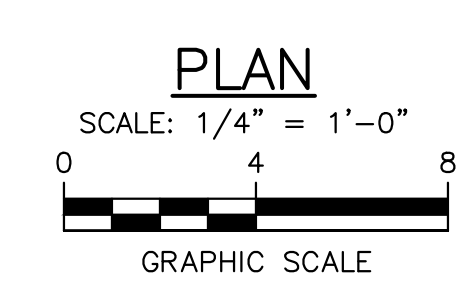
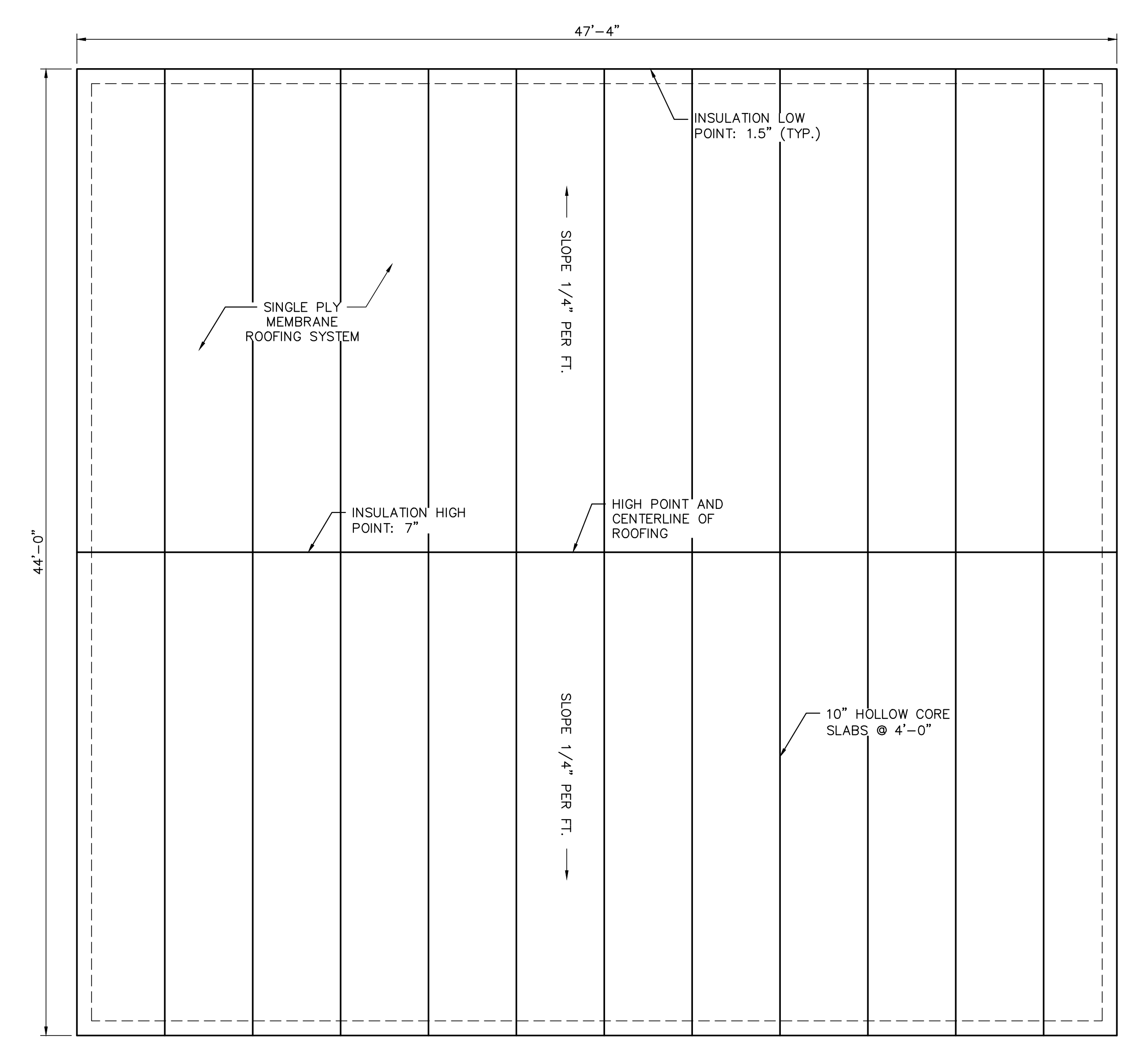
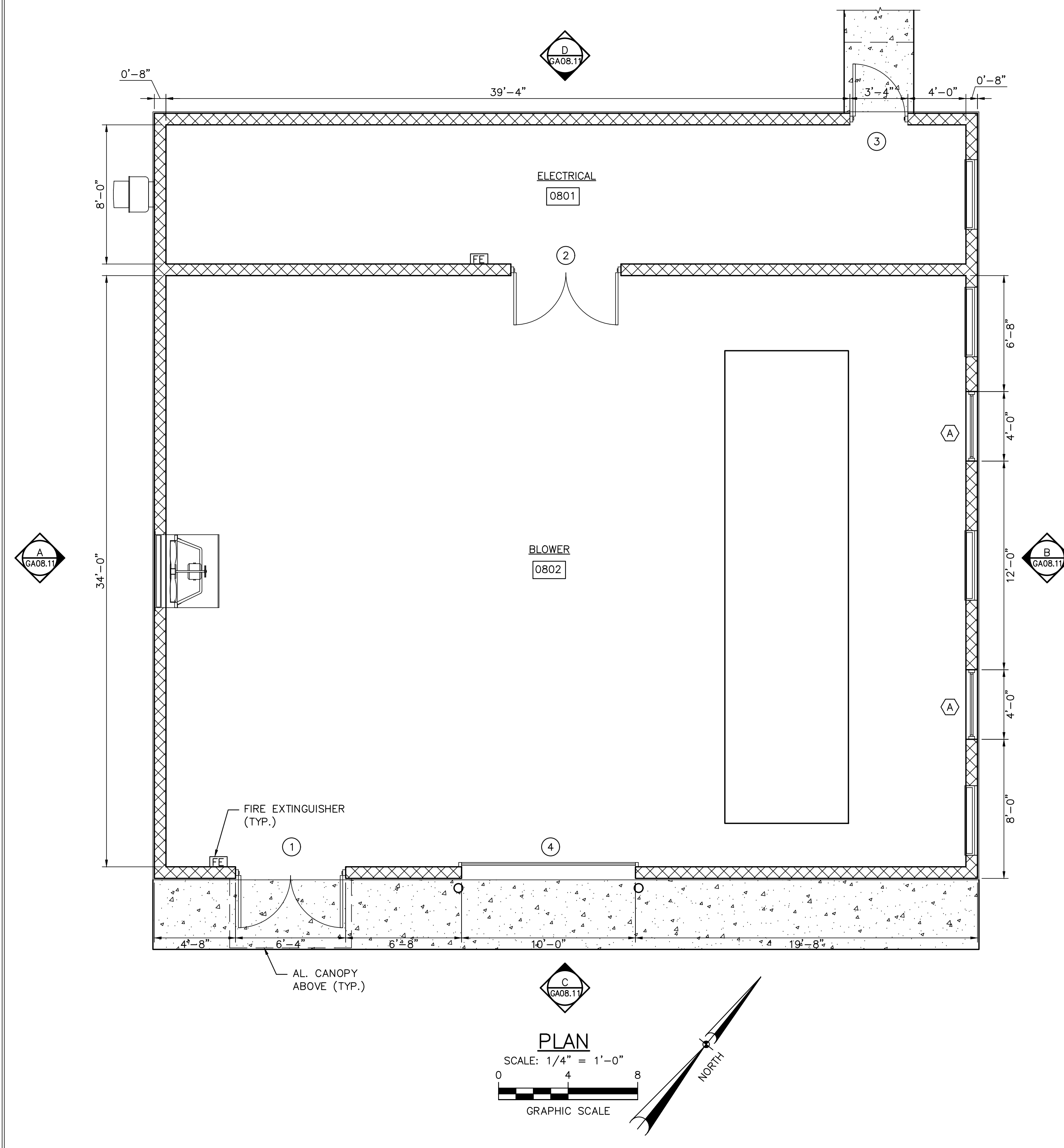
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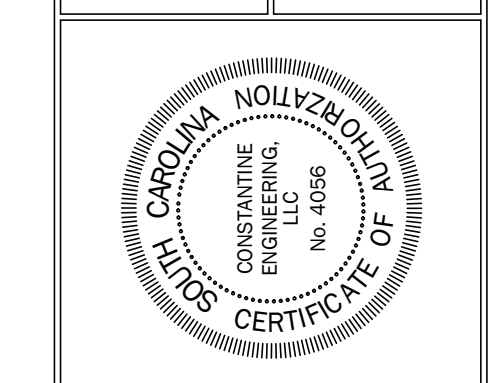
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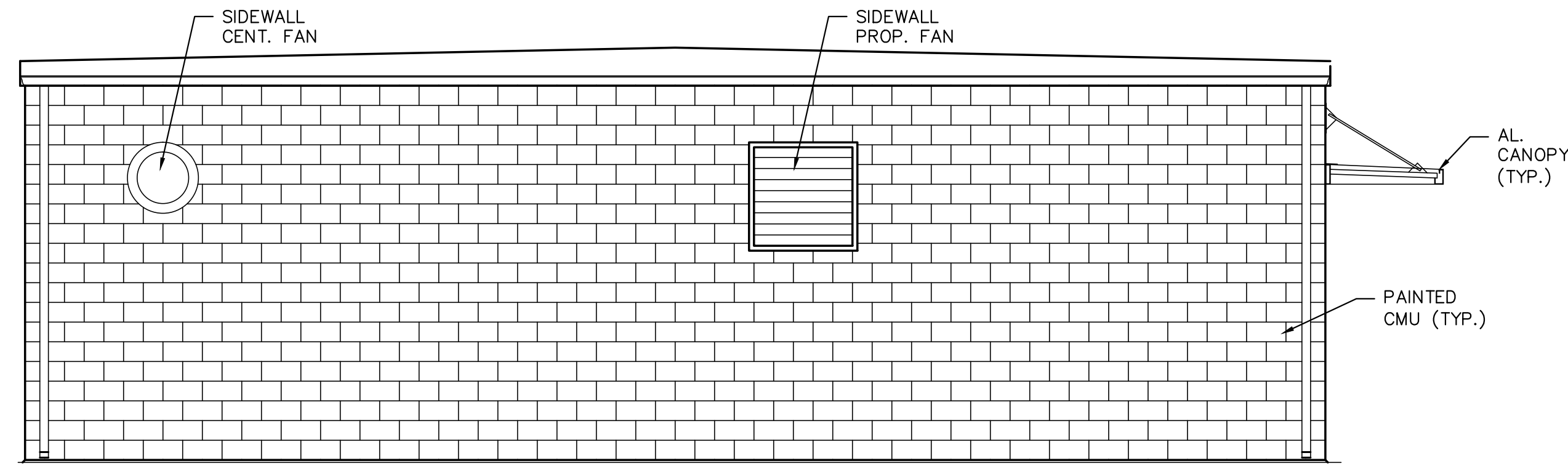
NO.	DATE	DESIGNED BY:	BY:	APPROVED BY:
		DH	DH	JK
		REVISION	CHECKED BY:	
		DH	MB	

**BLOWER BUILDING PLANS**  
**CITY OF LAKE CITY**  
**LAKE SWAMP WWTP UPGRADE**

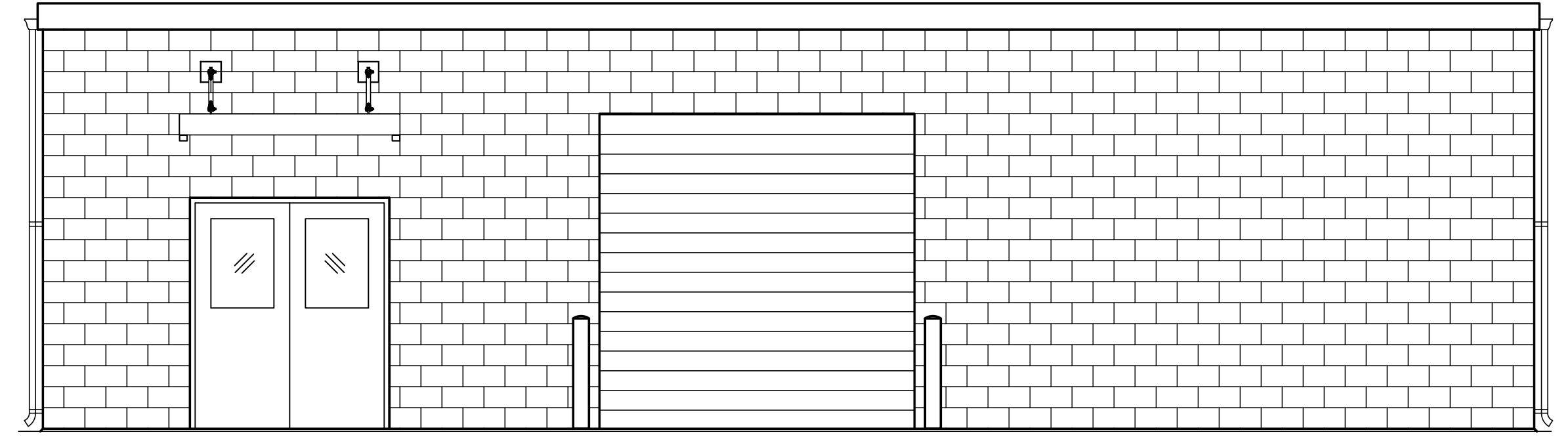


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DWG.	GA08.10

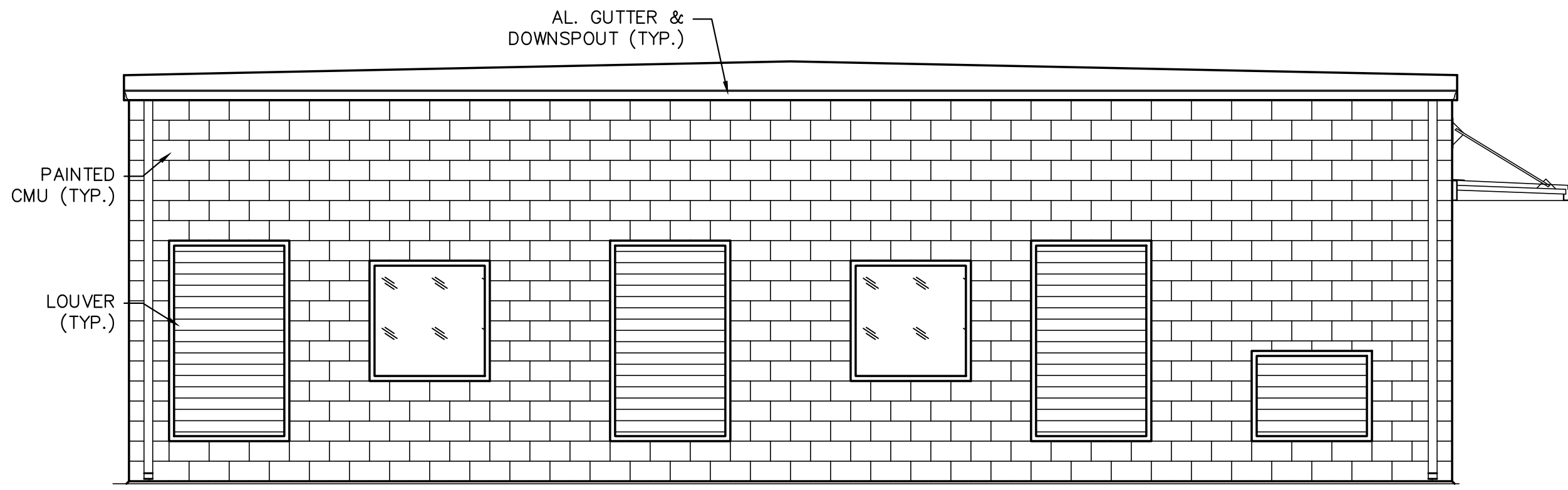
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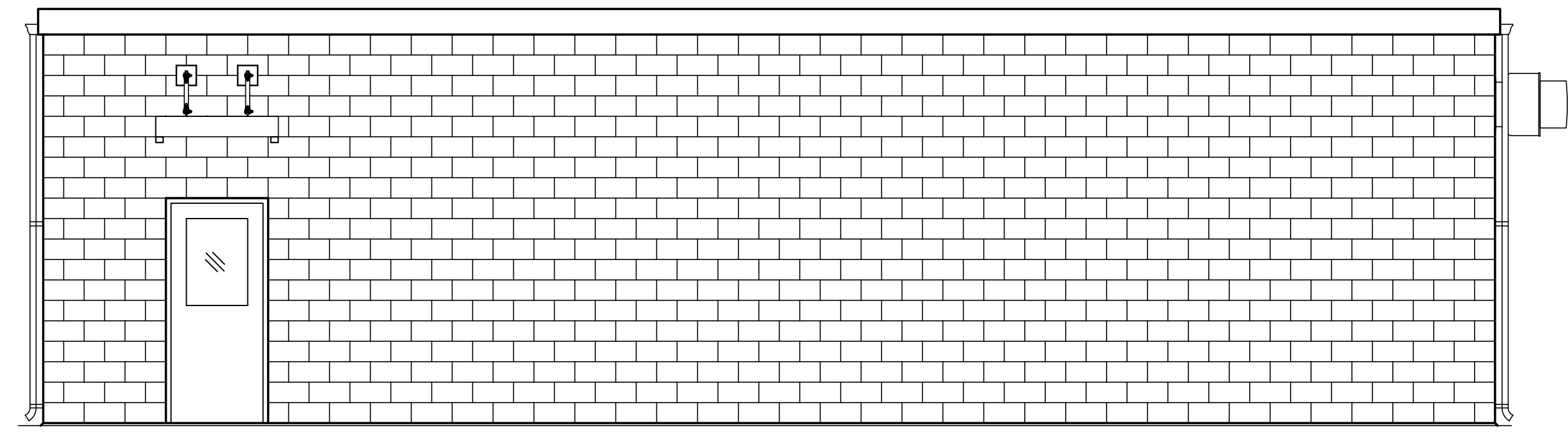
**ELEVATION A**  
 SCALE: 1/4" = 1'-0" GA08.11



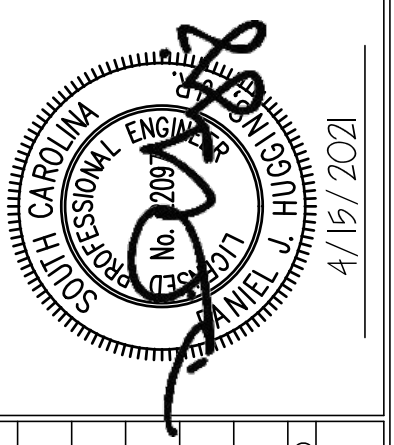
**ELEVATION C**  
 SCALE: 1/4" = 1'-0" GA08.11



**ELEVATION B**  
 SCALE: 1/4" = 1'-0" GA08.11

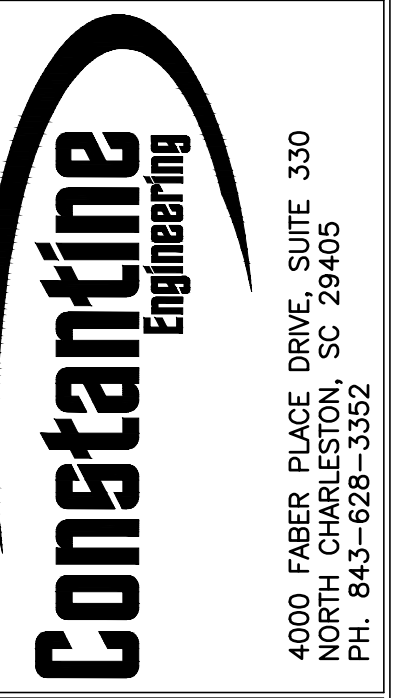
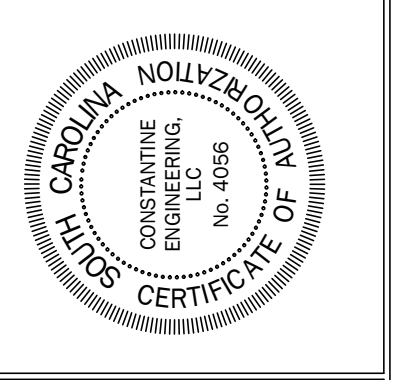


**ELEVATION D**  
 SCALE: 1/4" = 1'-0" GA08.11



NO.	DATE	DESIGNED BY:	DH	DRAWN BY:	DH	REVISION	CHECKED BY:	MB	APPROVED BY:	JK
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**BLOWER BUILDING ELEVATIONS**  
**CITY OF LAKE CITY**  
**LAKE SWAMP WWTP UPGRADE**



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VERIFY SCALE	
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DATE	MARCH 2021
PROJ.	100392.02
DWG.	GA08.11

**BID DOCUMENTS**

ROOM FINISH SCHEDULE

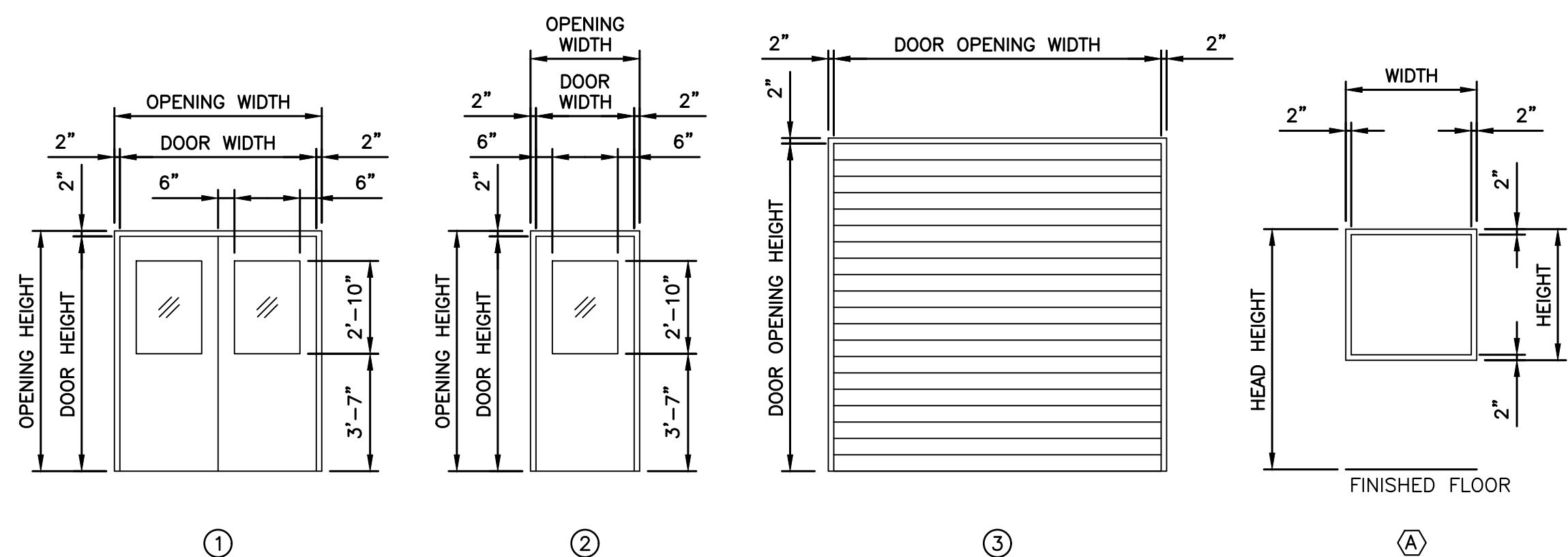
ROOM NO.	ROOM NAME	FLOOR	BASE	WALLS	CEILING		REMARKS
					MATERIAL	HEIGHT	
0801	ELECTRICAL ROOM	SEALED CONC	N/A	PAINTED CMU	PAINTED PRECAST CONCRETE	12'-8"	
0802	BLOWER ROOM	SEALED CONC	N/A	PAINTED CMU	PAINTED PRECAST CONCRETE	12'-8"	

DOOR AND FRAME SCHEDULE

MARK	DOOR			ELEV	MATL	FRAME			HARDWARE SET NO.	REMARKS
	WIDTH	HEIGHT	THK			HEAD	JAMB	SILL		
1	6'-0"	7'-2"	1-3/4"	1	ALUM	H-1	J-1	S-1	1	3'-0" PAIR
2	6'-0"	7'-2"	1-3/4"	1	ALUM	H-1	J-1	S-1	2	3'-0" PAIR
3	3'-0"	7'-2"	1-3/4"	2	ALUM	H-1	J-1	S-1	3	
4	10'-0"	10'-0"		3	ALUM	H-2	J-2	S-2	4	ROLLING SERVICE DOOR

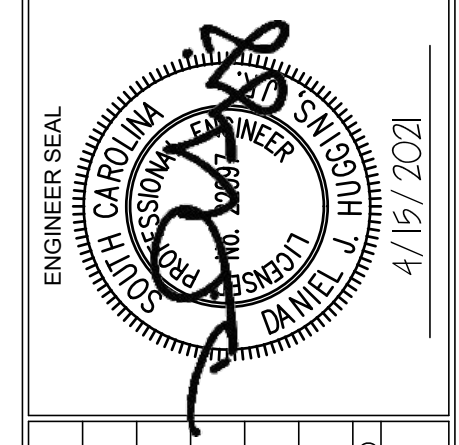
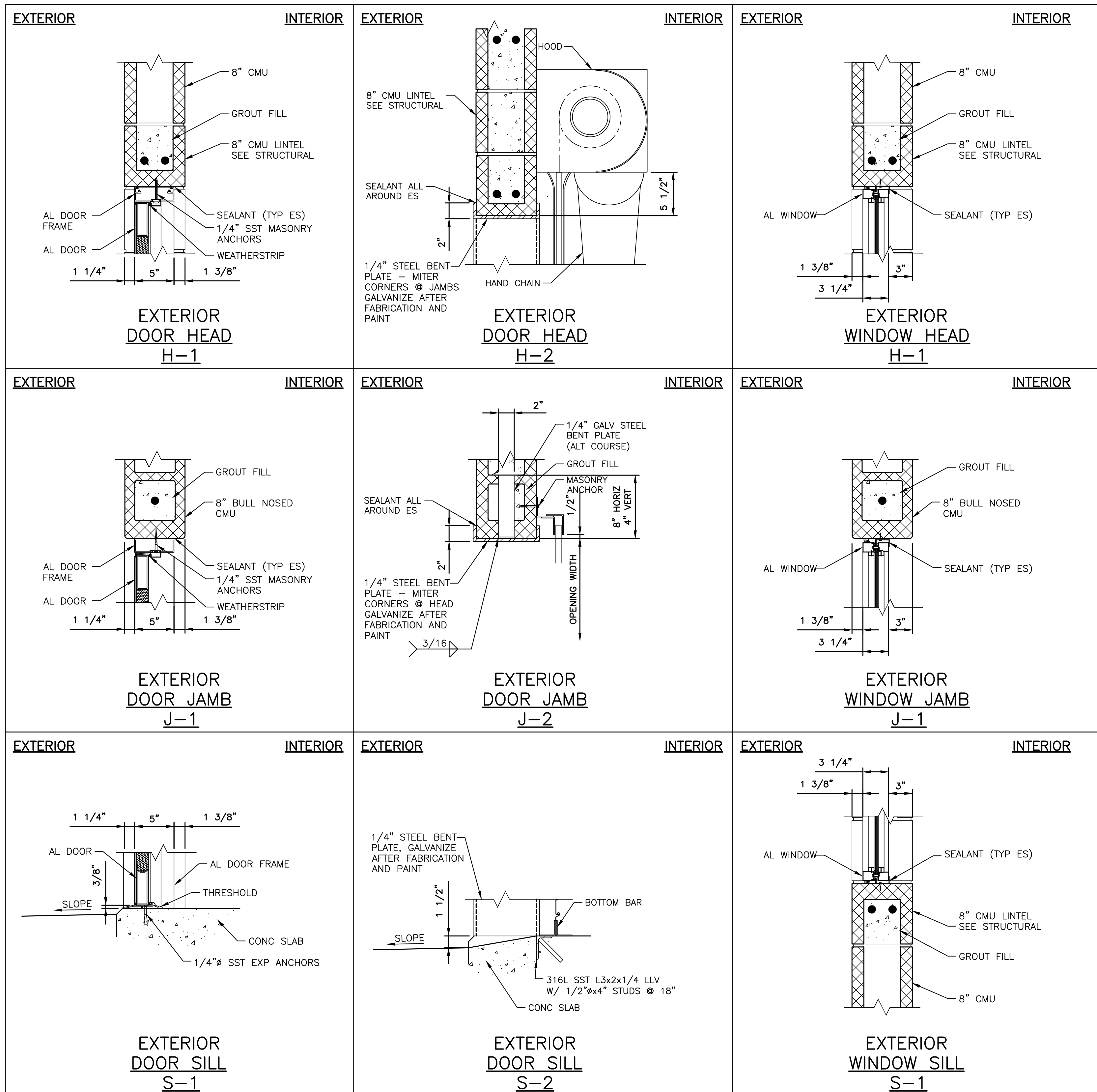
WINDOW SCHEDULE

MARK	OPENING SIZE		TYPE	DETAILS			ELEV	HEAD HEIGHT	REMARKS
	WIDTH	HEIGHT		HEAD	JAMB	SILL			
A	4'-0"	4'-0"	FIXED PANE	H-1	J-1	S-1	1	7'-4" AFF	



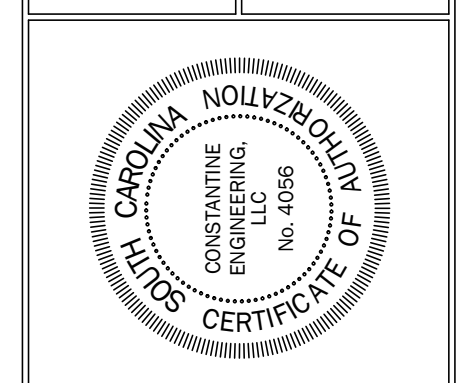
DOOR ELEVATIONS

WINDOW ELEVATION



NO.	DATE	DESIGNED BY:	DH
REVISION	CHECKED BY:	MB	
BY:	APPROVED BY:	JK	

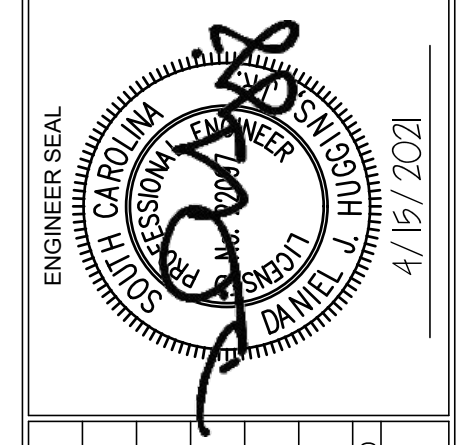
MISCELLANEOUS DETAILS  
 CITY OF LAKE CITY  
 LAKE SWAMP WWTP UPGRADE



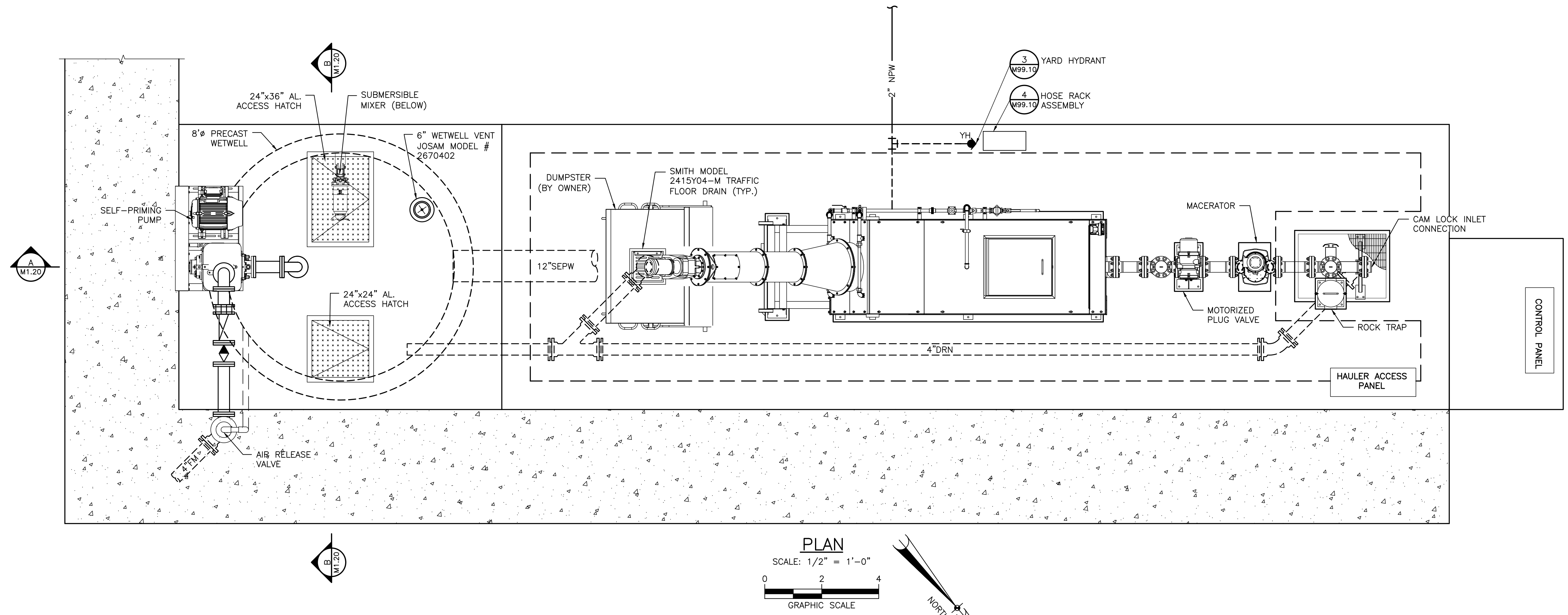
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VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING	
DATE	MARCH 2021
PROJ.	100392.02
DWG.	GA99.10

H:\PROJECT FILES\100392.02\_LAKE\_CITY\_SC\_LAKE\_SWAMP\_WWTP\_UPGRADE\300\_DESIGN\MECH\M1.1\_SEPTAGE\_RECEIVING.DWG  
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 4/15/2021 2:34 PM

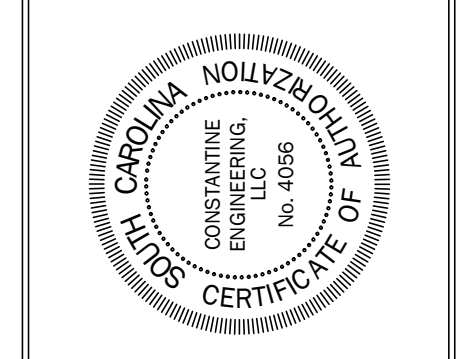
**NOTES:**  
 1. INSULATE EXPOSED WATER SERVICE PIPING.



NO.	DATE	DESIGNED BY:	DATE	DESIGNED BY:
		DH		DH
REVISION	BY:	CHECKED BY:	DATE	APPROVED BY:
		DH		JK



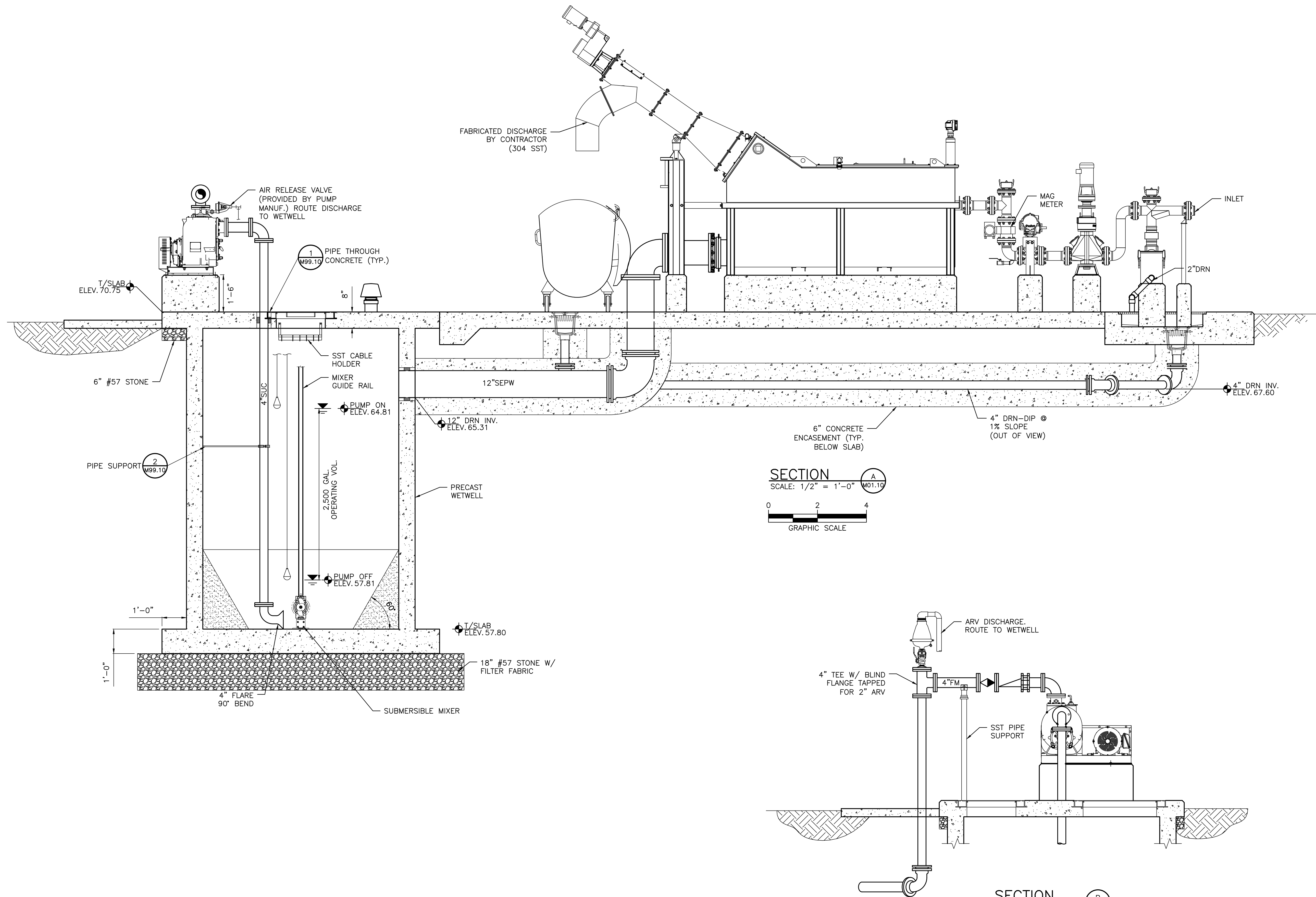
SEPTAGE RECEIVING STATION PLAN  
 CITY OF LAKE CITY  
 LAKE SWAMP WWTP UPGRADE



FILE	SEE LEFT
VERIFY SCALE	BAR IS ONE INCH ON ORIGINAL DRAWING
DATE	MARCH 2021
PROJ.	100392.02
DWG.	M01.10

BID DOCUMENTS



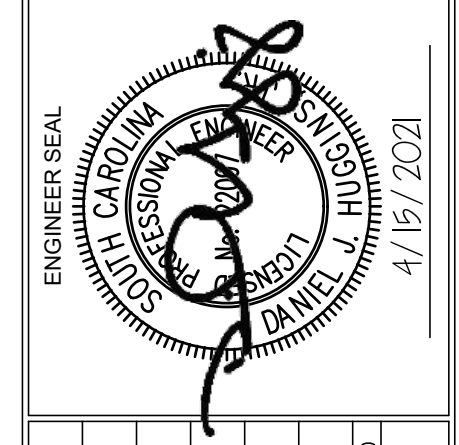


**SECTION A**  
SCALE: 1/2" = 1'-0"  
W01.10

GRAPHIC SCALE

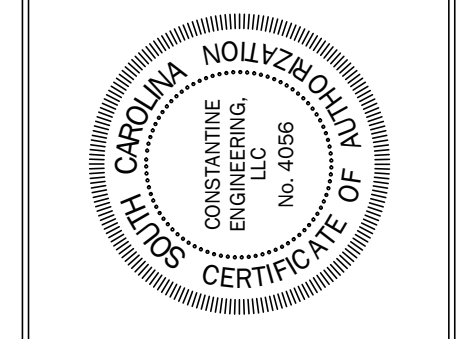
**SECTION B**  
SCALE: 1/2" = 1'-0"  
W01.10

GRAPHIC SCALE



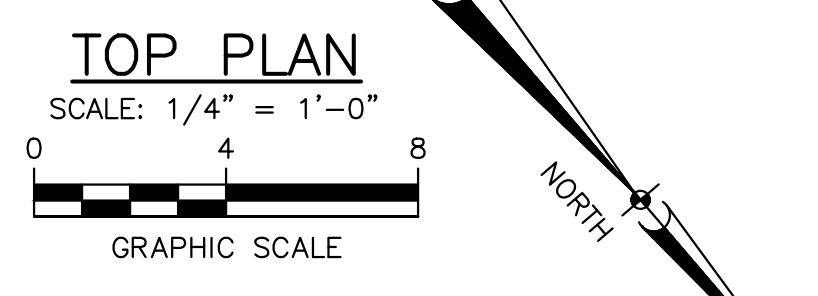
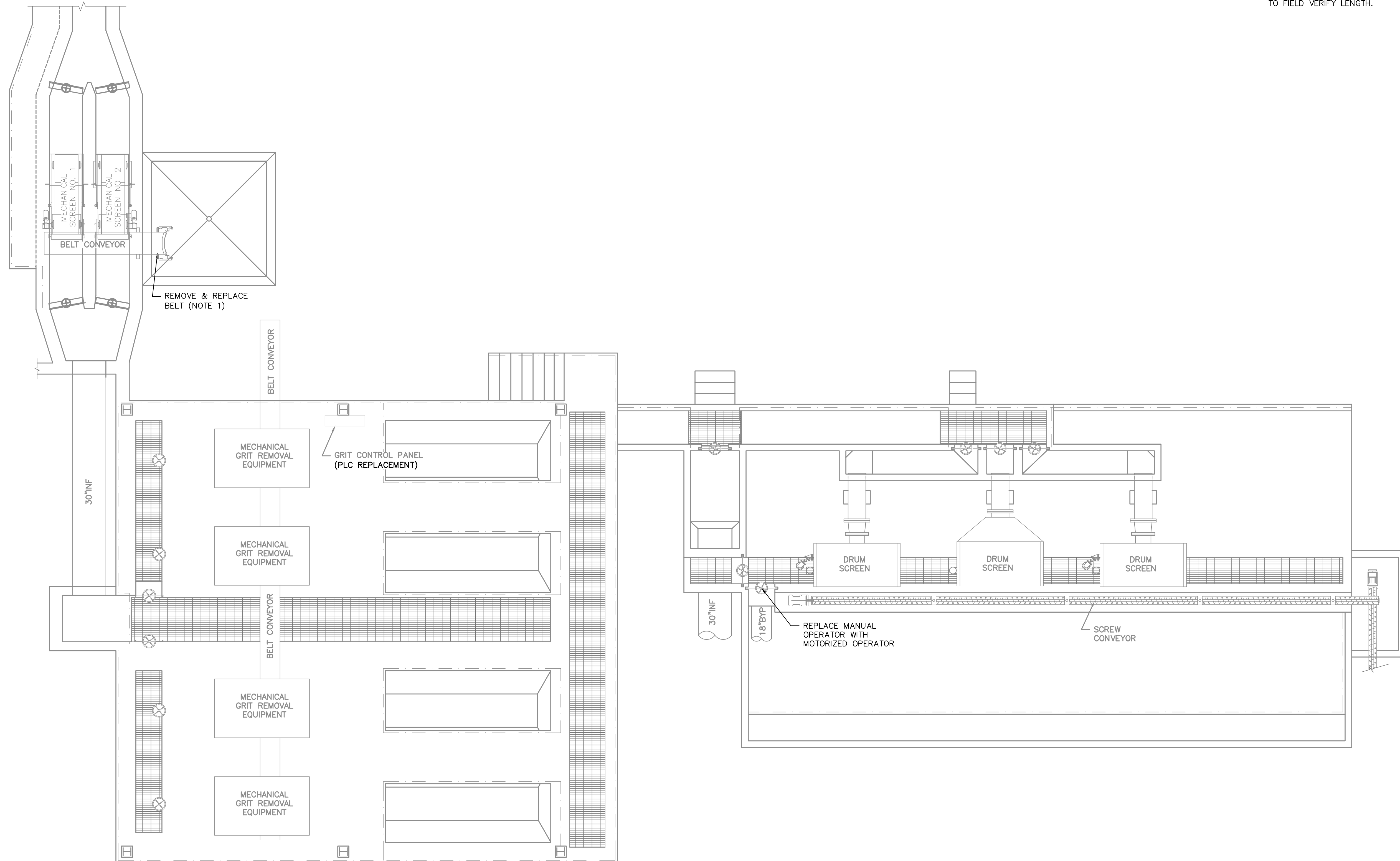
NO.	DATE	DESIGNED BY:	DH
REVISION	DRAWN BY:	CHECKED BY:	MB
BY:	APPROVED BY:	JK	

SEPTAGE RECEIVING STATION SECTIONS  
CITY OF LAKE CITY  
LAKE SWAMP WWTP UPGRADE

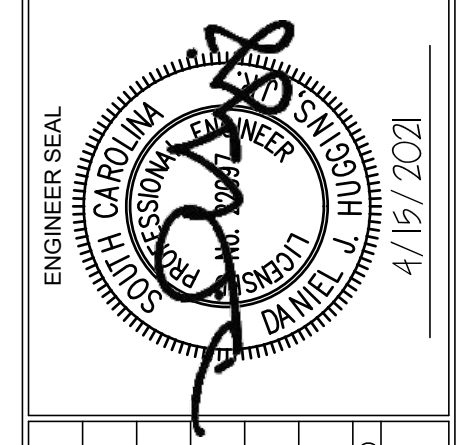


FILE	SEE LEFT
VERIFY SCALE	BAR IS ONE INCH ON ORIGINAL DRAWING
DATE	MARCH 2021
PROJ.	100392.02
DWG.	M01.20

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- NOTES:**
1. NEW BELT TO BE 4-PLY, 220 CROSS RIDGED BELT WITH SST LACE KIT. ORIGINAL BELT WAS 43'-3" LONG, AND 18" WIDE. CONTRACTOR TO FIELD VERIFY LENGTH.

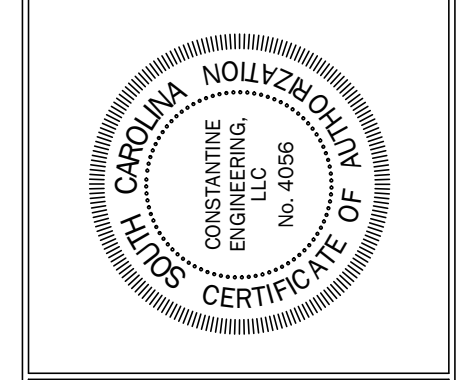


NO.	DATE	DESIGNED BY:	DRAWN BY:	REVISION	CHECKED BY:	APPROVED BY:
	DH		DH		DH	JK
					MB	

**EXISTING SCREENING & GRIT STRUCTURE IMPROVEMENTS PLAN**

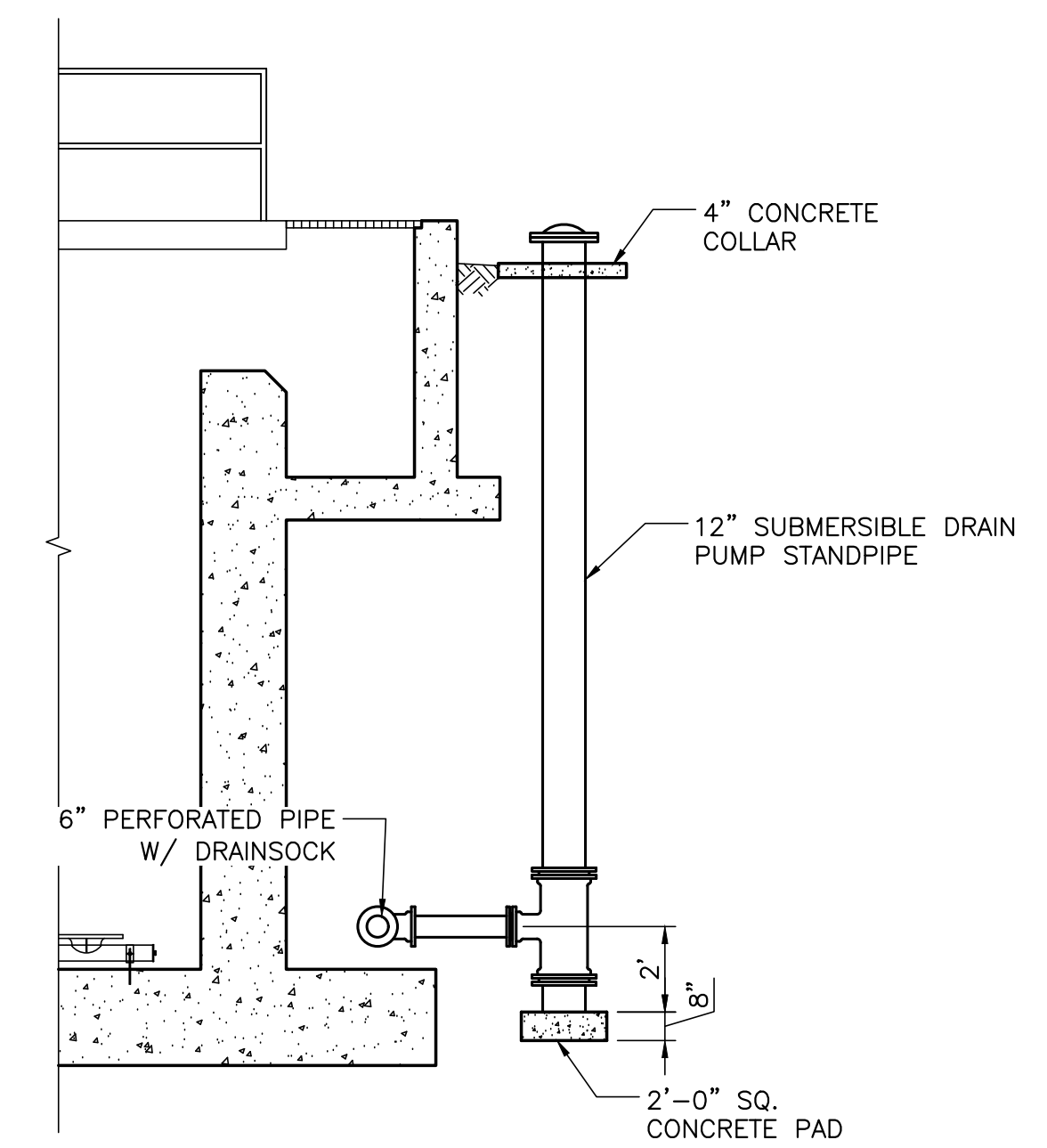
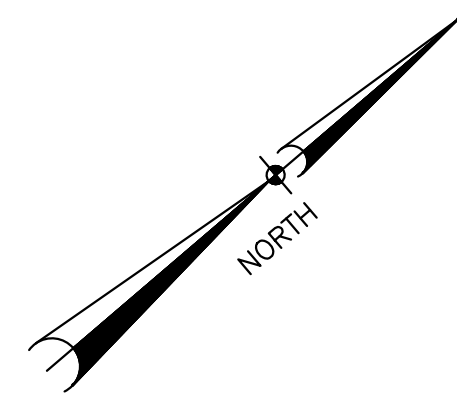
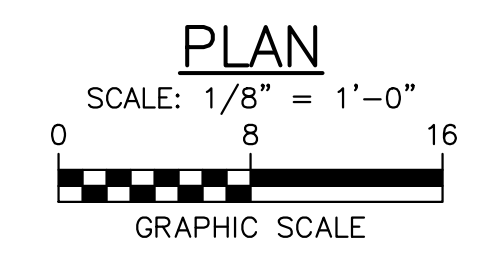
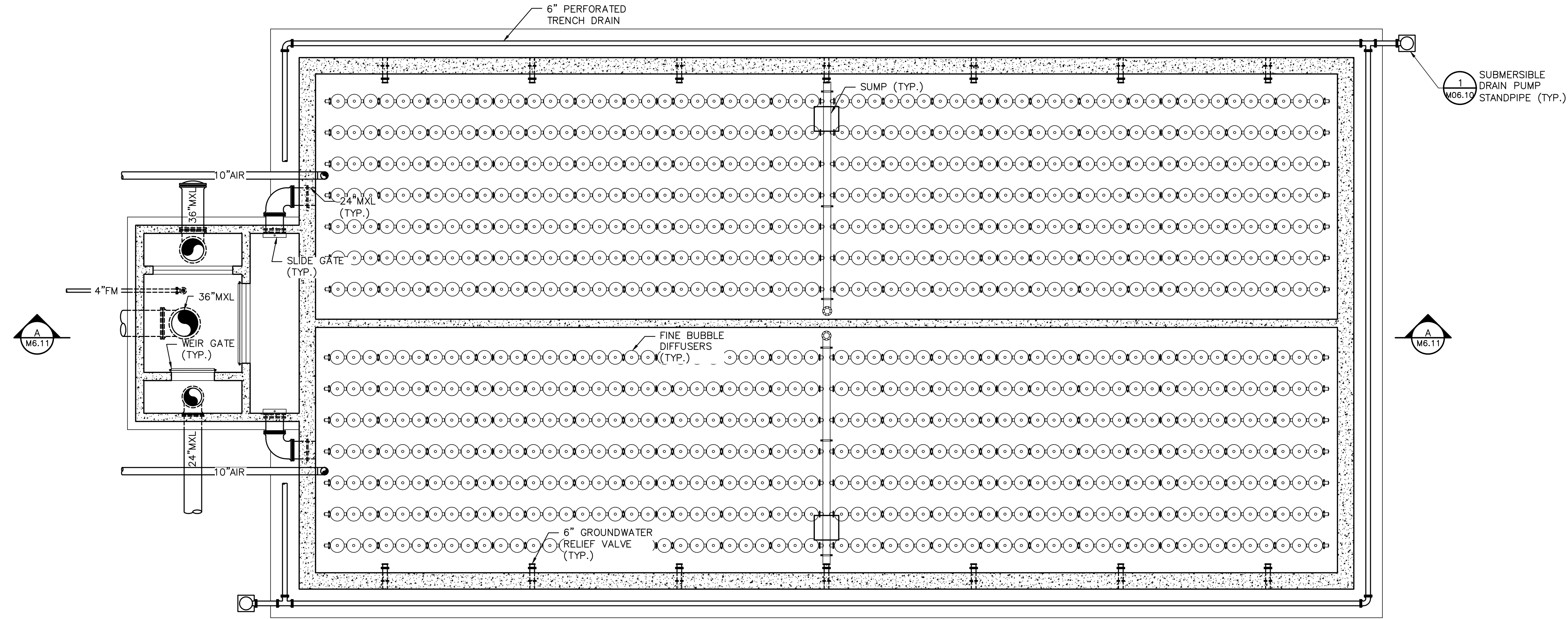
**CITY OF LAKE CITY**

**LAKE SWAMP WWTP UPGRADE**



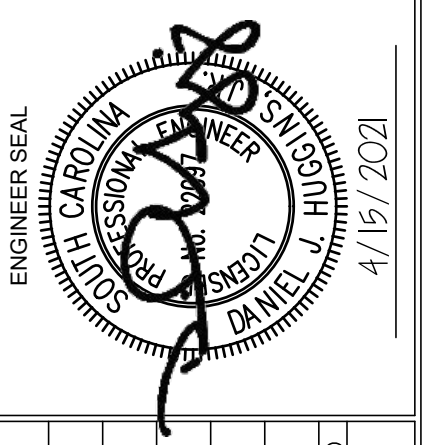
FILE	SEE LEFT
	VERIFY SCALE
	BAR IS ONE INCH ON ORIGINAL DRAWING
DATE	MARCH 2021
PROJ.	100392.02
DWG.	M02.10

**BID DOCUMENTS**



SUBMERSIBLE DRAIN PUMP STANDPIPE

DETAIL SCALE: 1/4" = 1'-0" M06.10



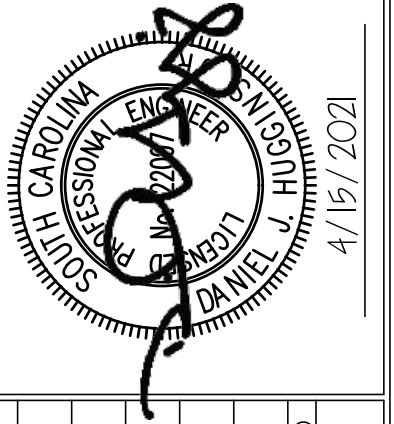
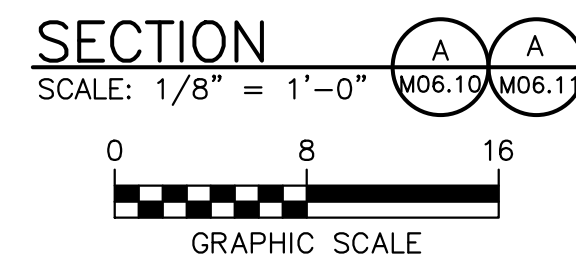
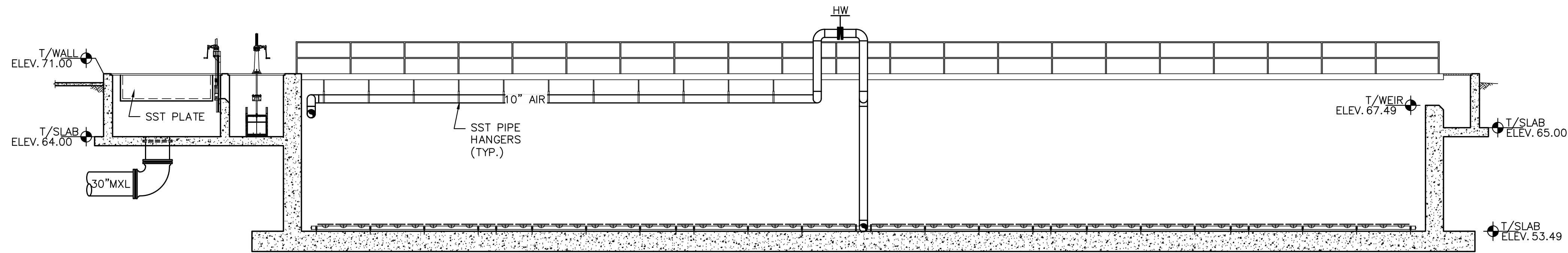
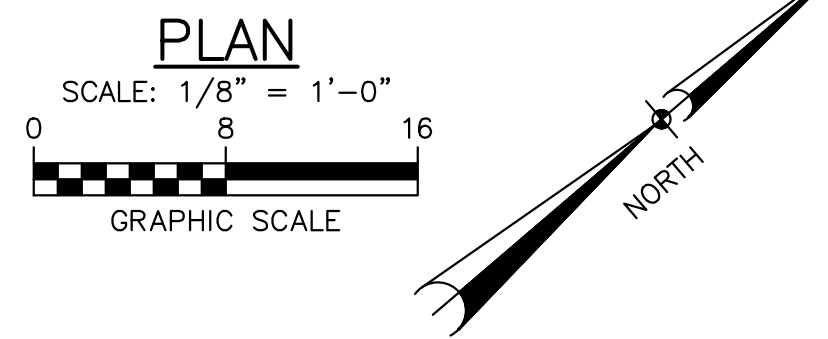
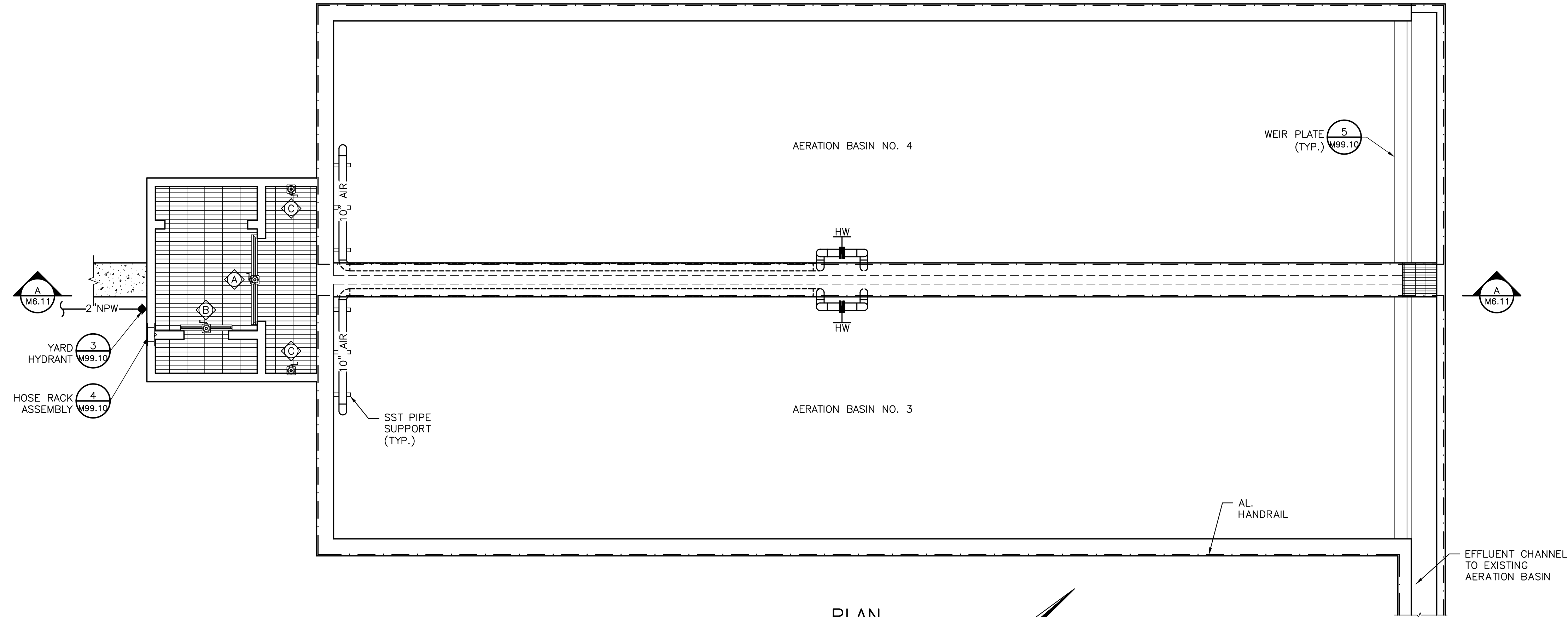
NO.	DATE	DESIGNED BY:	DRAWN BY:	REVISION	CHECKED BY:	APPROVED BY:
		DH	DH		MB	JK

AERATION BASIN BOTTOM PLAN  
CITY OF LAKE CITY  
LAKE SWAMP WWTP UPGRADE



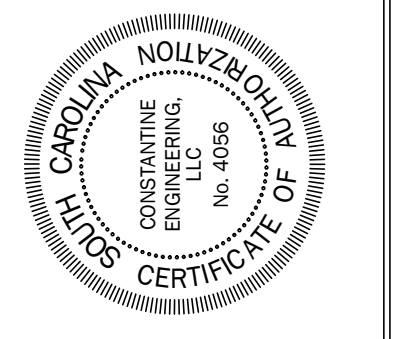
FILE	SEE LEFT
VERIFY SCALE	BAR IS ONE INCH ON ORIGINAL DRAWING
DATE	MARCH 2021
PROJ.	100392.02
DWG.	M06.10

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**AERATION BASIN TOP PLAN & SECTION**  
  
**CITY OF LAKE CITY**  
**LAKE SWAMP WWTP UPGRADE**

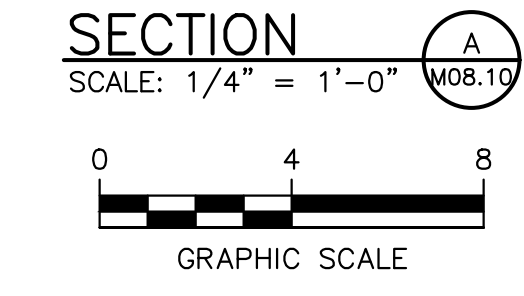
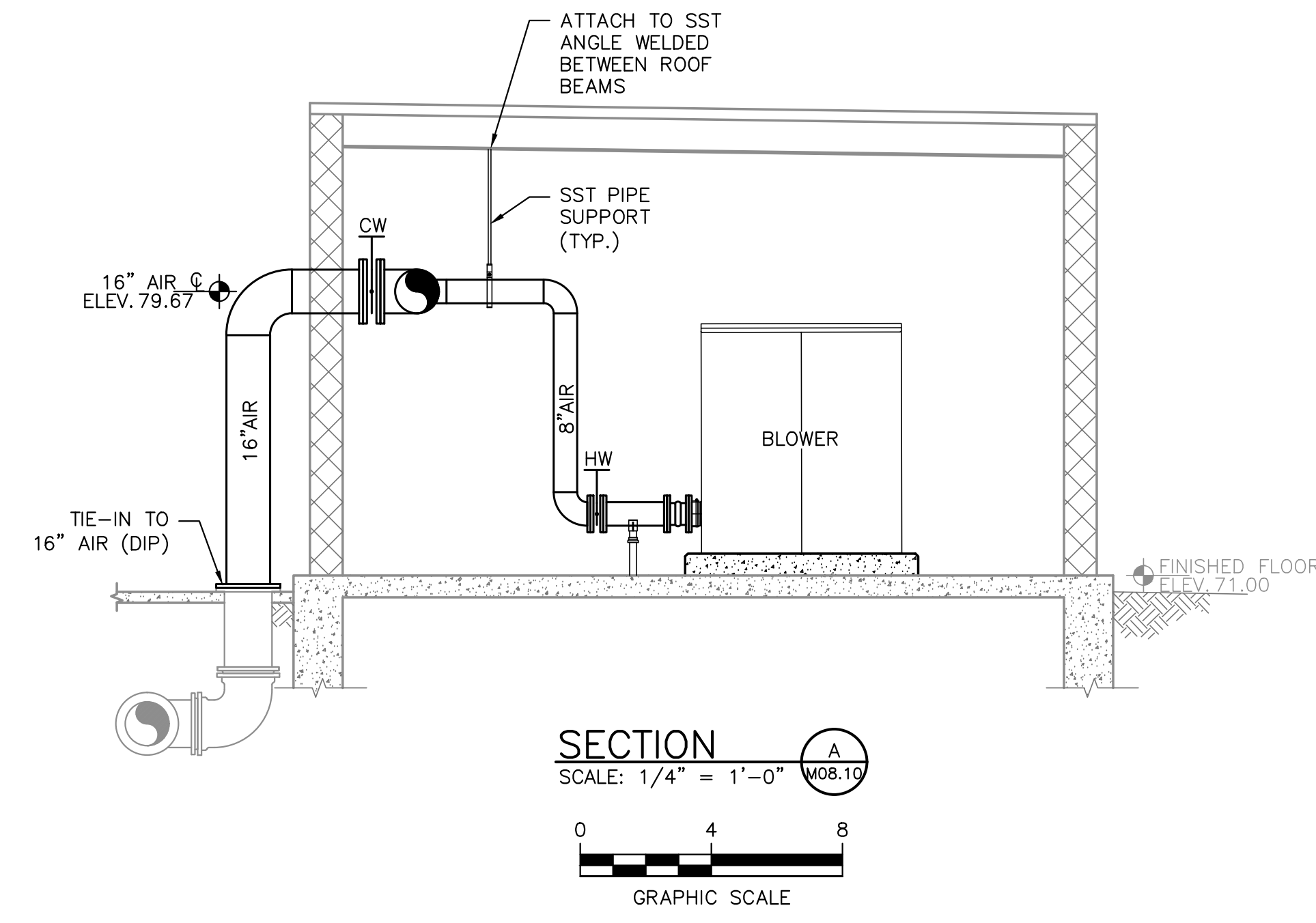
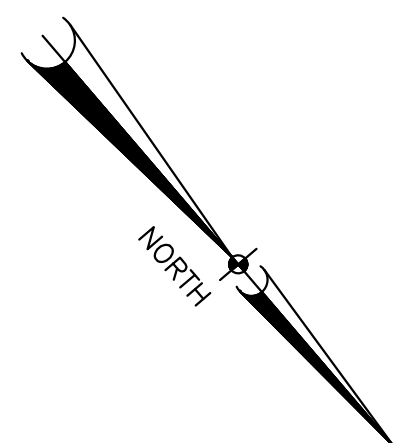
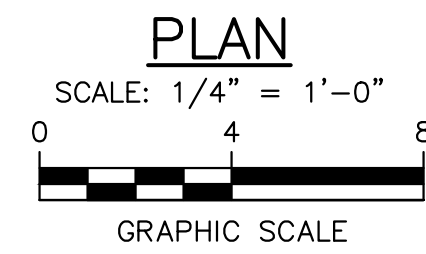
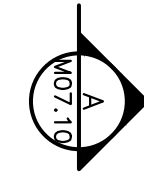
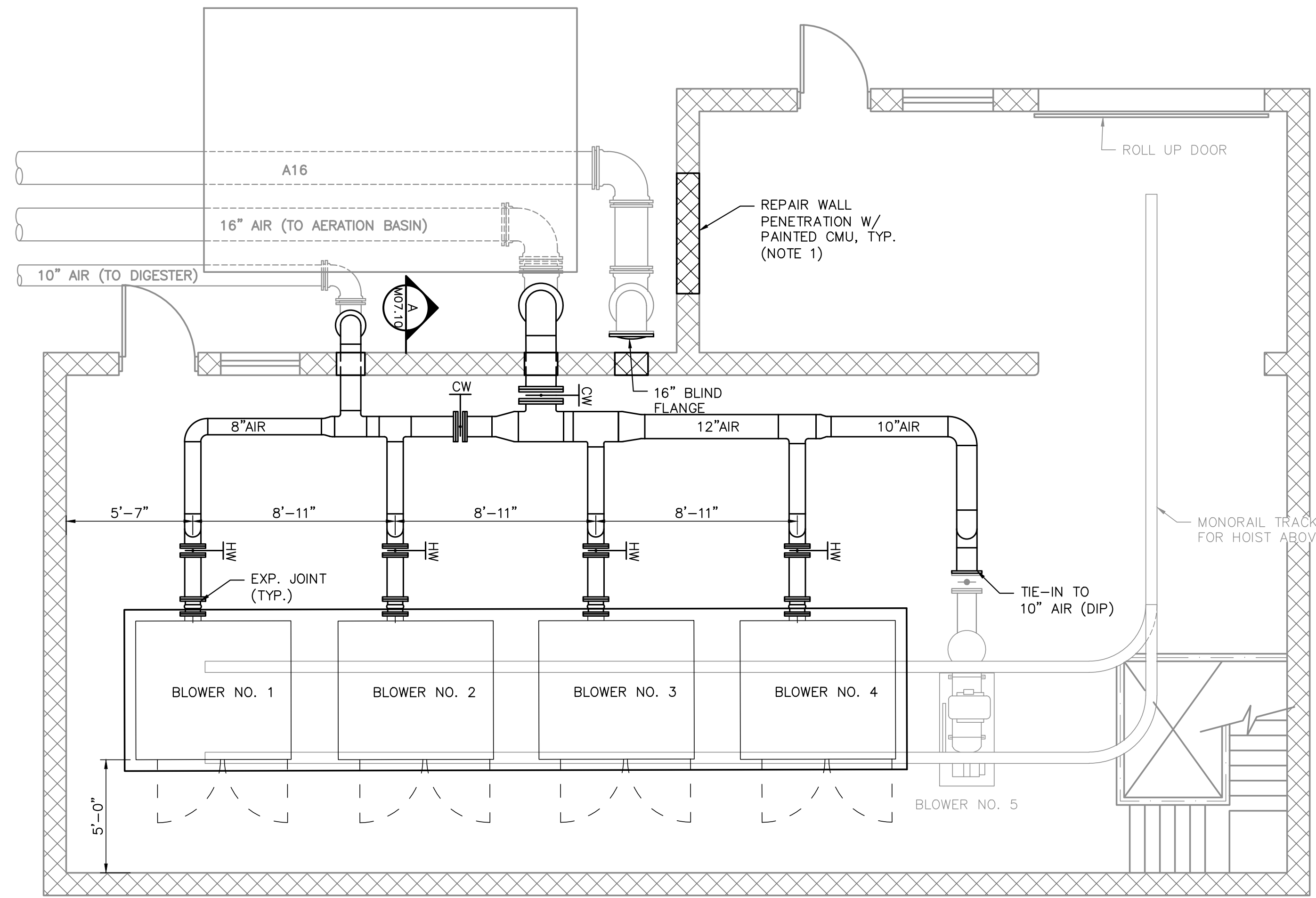


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DATE	MARCH 2021
PROJ.	100392.02
DWG.	M06.11

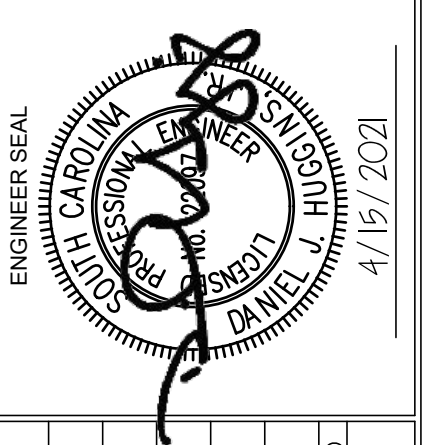
BID DOCUMENTS

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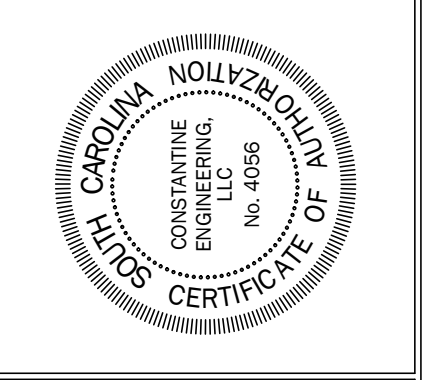


**NOTES:**  
1. PATCH ALL WALL PENETRATIONS FOR DEMOLISHED EQUIPMENT OR PIPING.



NO.	DATE	DESIGNED BY:	DH	DRAWN BY:	DH	REVISION	CHECKED BY:	MB	APPROVED BY:	JK
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**EXISTING BLOWER BUILDING  
IMPROVEMENTS  
PLAN & SECTION**  
  
**CITY OF LAKE CITY  
LAKE SWAMP WWTP UPGRADE**

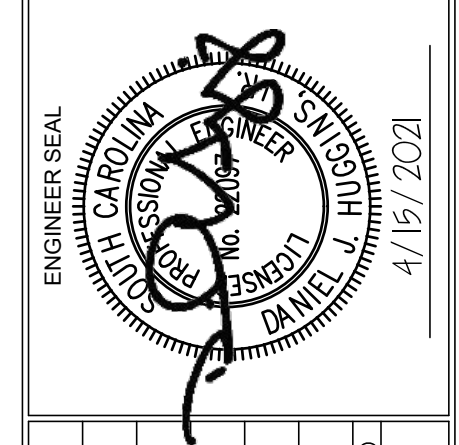
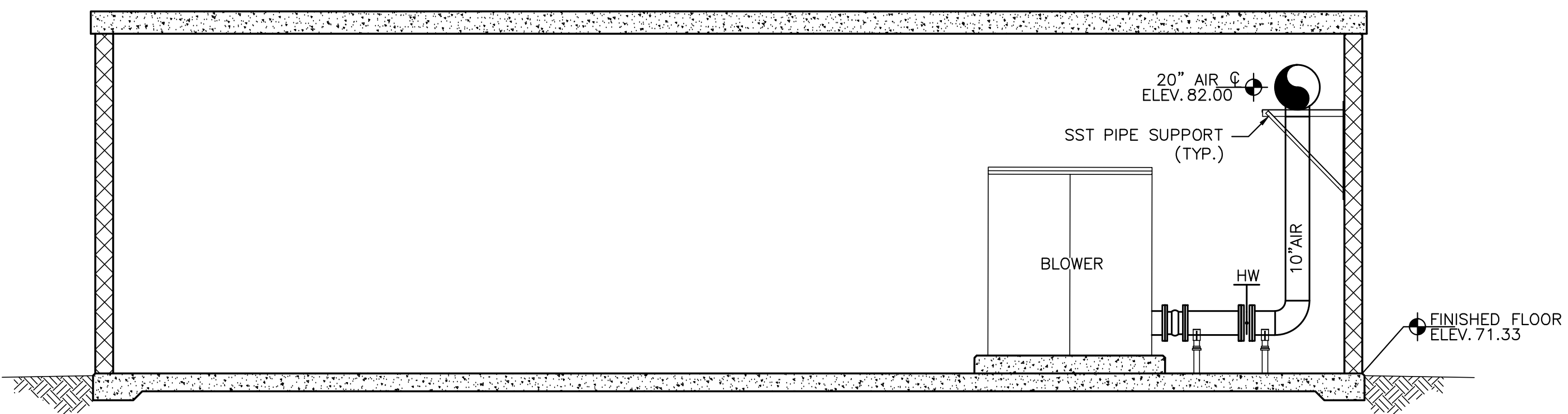
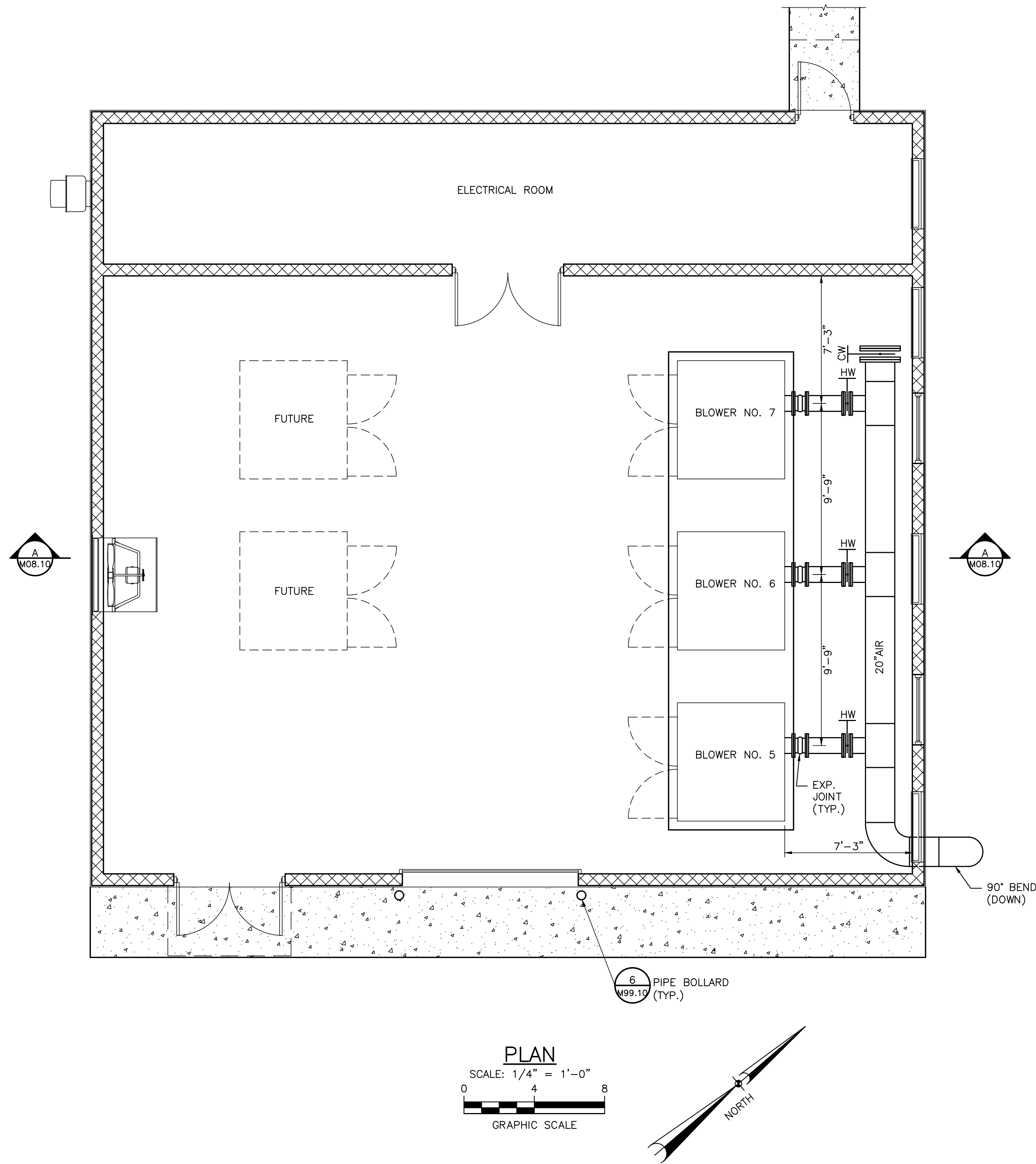


**Constantine**  
 Engineering  
 4000 FABER PLACE DRIVE, SUITE 330  
 NORTH CHARLESTON, SC 29405  
 PH. 843-628-3352

FILE	SEE LEFT
VERIFY SCALE	BAR IS ONE INCH ON ORIGINAL DRAWING
DATE	MARCH 2021
PROJ.	100392.02
DWG.	M07.10

BID DOCUMENTS

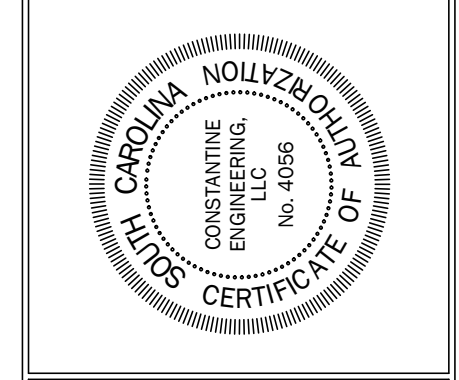
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			DH	DH	MB	JK

**BLOWER BUILDING  
 PLAN & SECTION**

**CITY OF LAKE CITY  
 LAKE SWAMP WWTP UPGRADE**

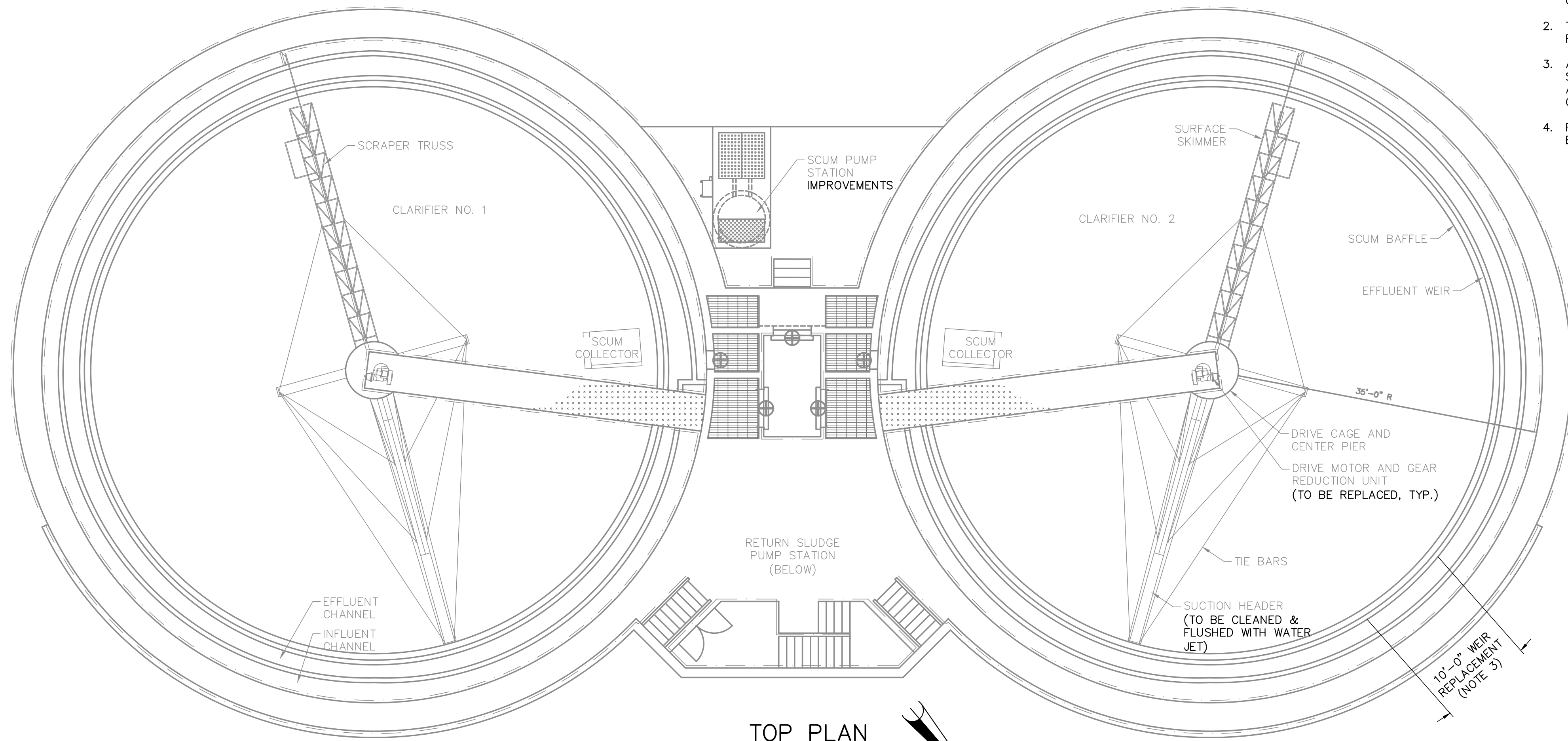


**Constantine Engineering**

4000 FABER PLACE DRIVE, SUITE 330  
 NORTH CHARLESTON, SC 29405  
 PH. 843-628-3352

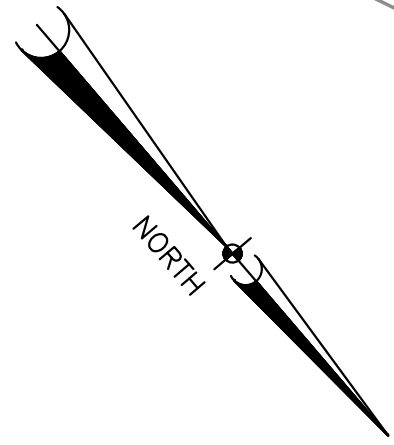
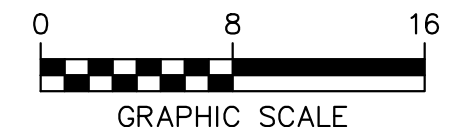
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DATE	MARCH 2021
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DWG.	M08.10

**BID DOCUMENTS**

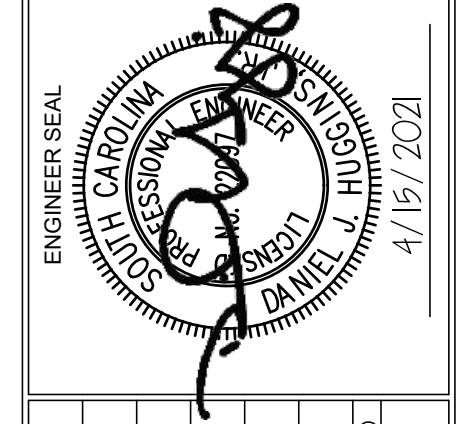


TOP PLAN

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

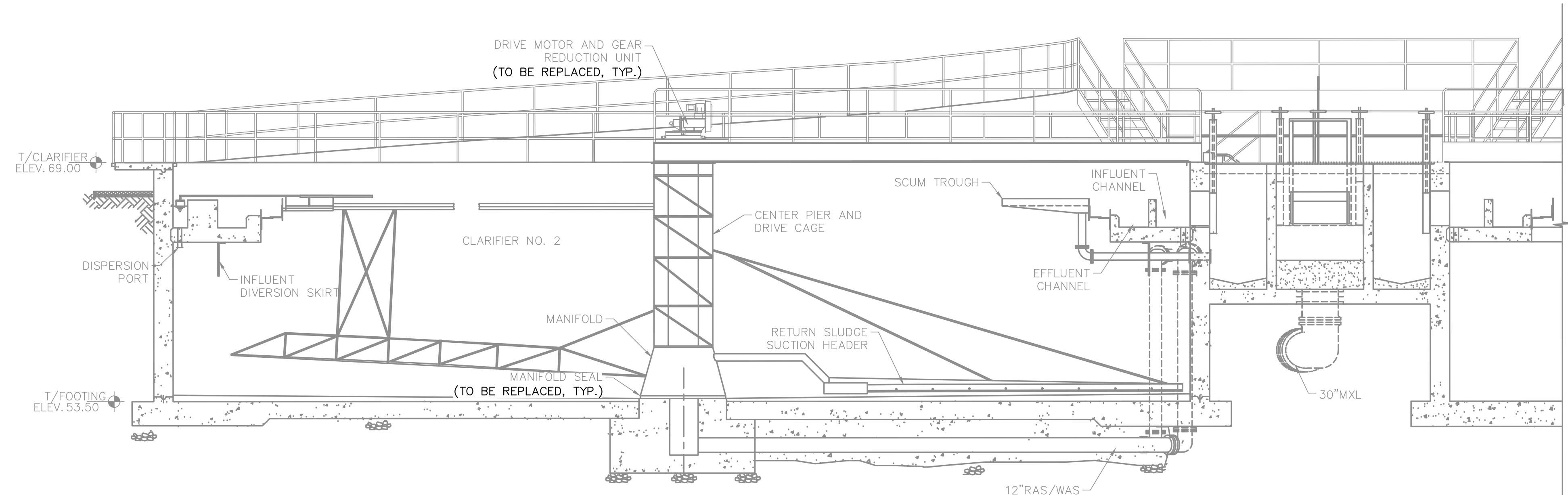


- NOTES:**
1. THE CITY WILL REMOVE ALL SOLID WASTE THAT CAN BE REMOVED VIA PUMPING OPERATIONS.
  2. THERE IS NO CLARIFIER DRAIN. CONTRACTOR TO REMOVE ALL REMAINING LIQUID AND SOLID WASTE.
  3. ALL CARBON STEEL CLARIFIER EQUIPMENT TO BE SANDBLASTED AND PAINTED. SUCTION HEADER AND SCUM BLADE ARE GALVANIZED STEEL. ALL OTHER COMPONENTS ARE PAINTED CARBON STEEL.
  4. REPLACE EXISTING FRP V-NOTCH WEIR. MATCH EX. WEIR SIZE AND V-NOTCH SPACING.



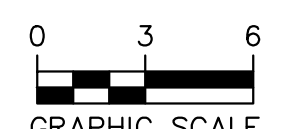
NO.	DATE	DESIGNED BY:	DH	DRAWN BY:	DH	REVISION	CHECKED BY:	MB	APPROVED BY:	JK
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EXISTING CLARIFIER NOS. 1 & 2  
IMPROVEMENTS  
PLAN & SECTION  
CITY OF LAKE CITY  
LAKE SWAMP WWTP UPGRADE

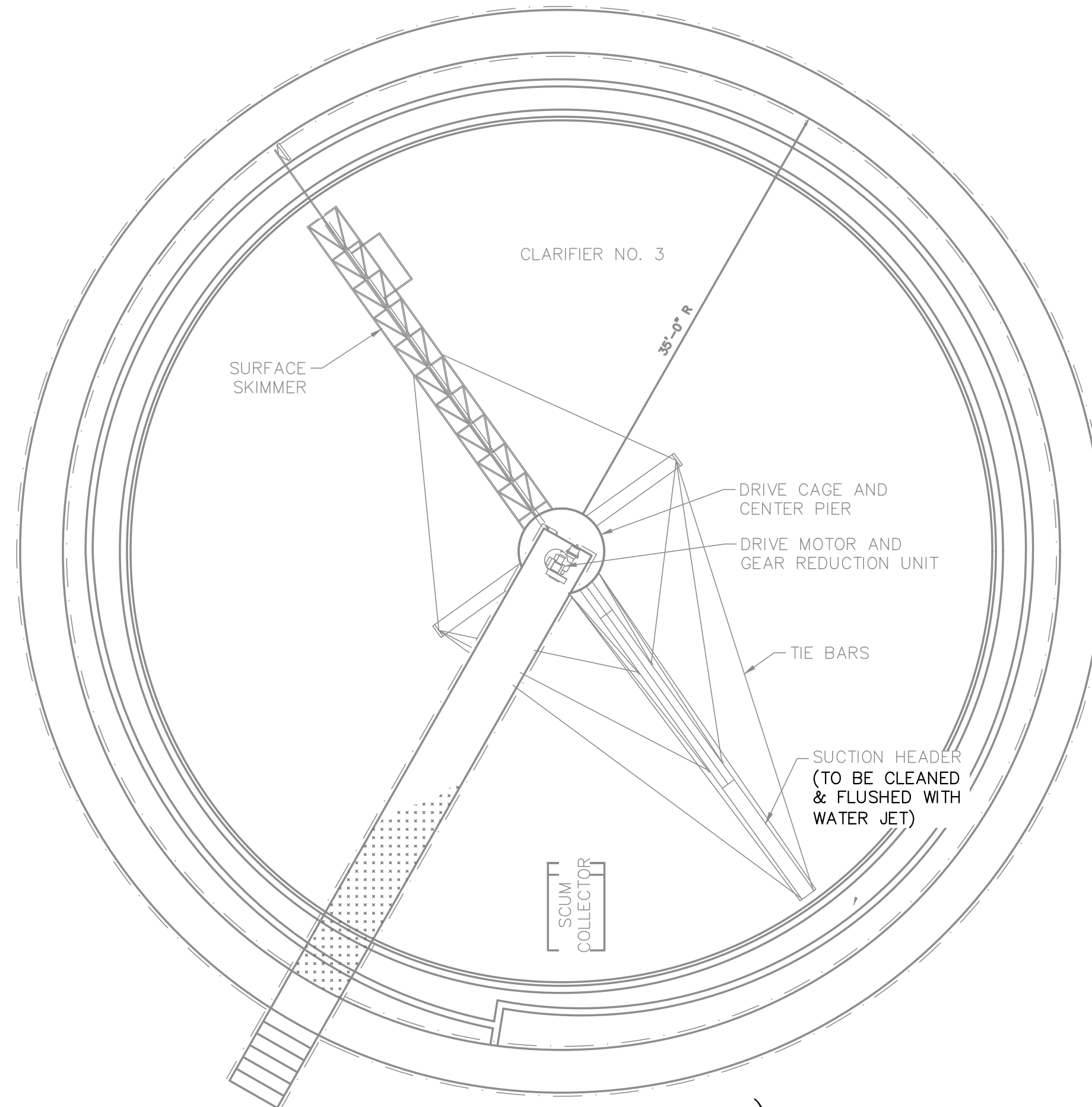


SECTION

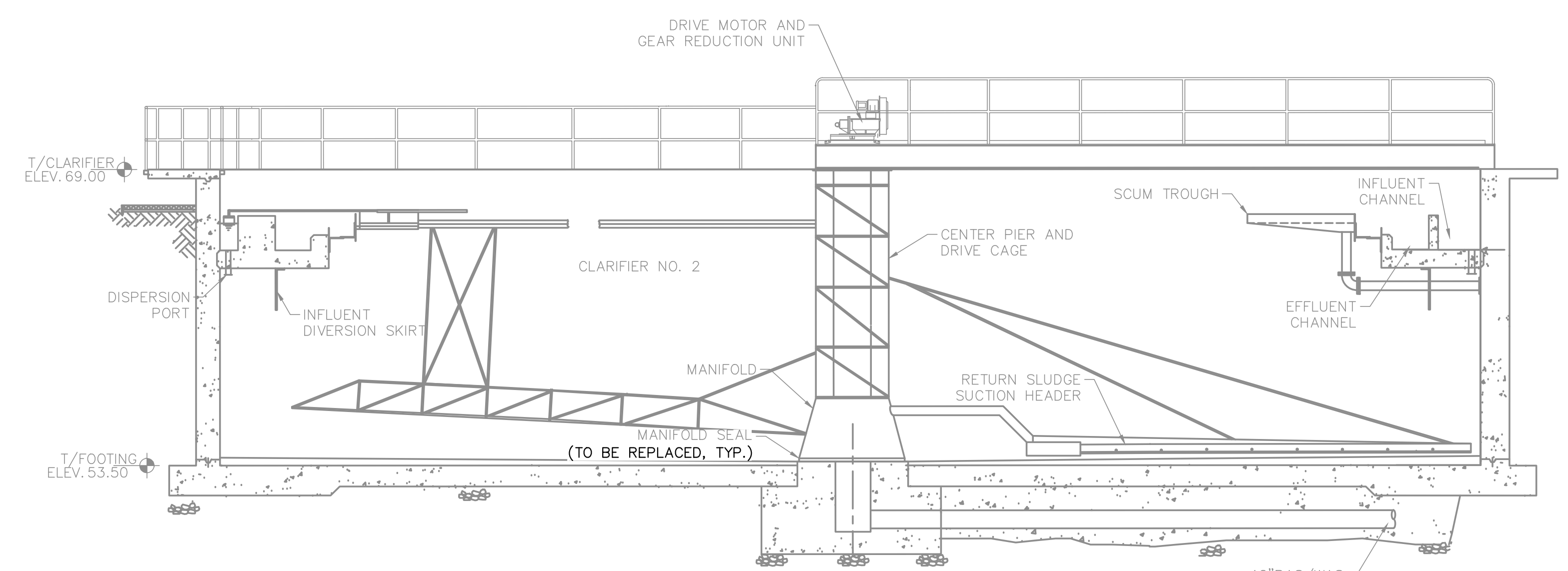
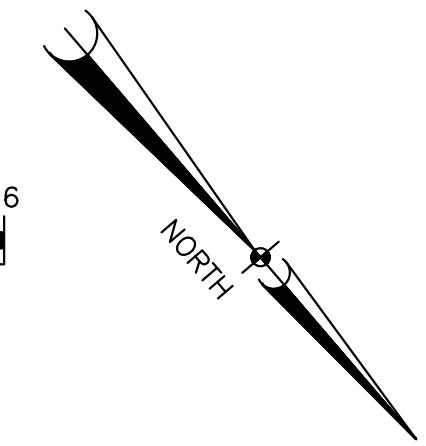
SCALE: 3/16" = 1'-0"



FILE	SEE LEFT
VERIFY SCALE	BAR IS ONE INCH ON ORIGINAL DRAWING
DATE	MARCH 2021
PROJ.	100392.02
DWG.	M09.10



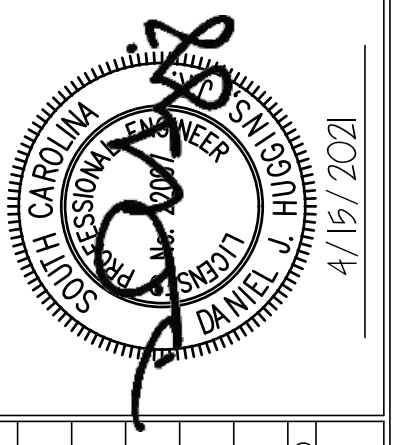
**TOP PLAN**  
SCALE: 1/8" = 1'-0"  
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GRAPHIC SCALE



**SECTION**  
SCALE: 3/16" = 1'-0"  
0 3 6  
GRAPHIC SCALE

**NOTES:**

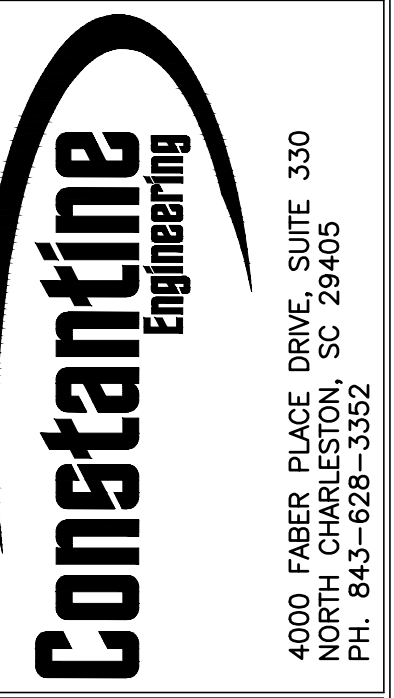
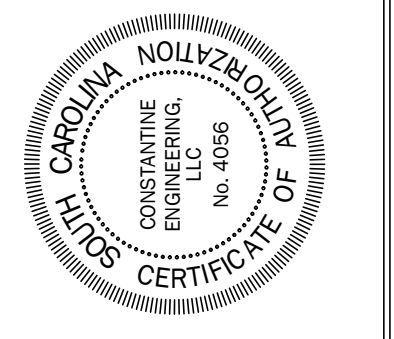
1. THE CITY WILL REMOVE ALL SOLID WASTE THAT CAN BE REMOVED VIA PUMPING OPERATIONS.
2. THERE IS NO CLARIFIER DRAIN. CONTRACTOR TO REMOVE ALL REMAINING LIQUID AND SOLID WASTE.
3. ALL CARBON STEEL CLARIFIER EQUIPMENT TO BE SANDBLASTED AND PAINTED. SUCTION HEADER AND SCUM BLADE ARE GALVANIZED STEEL. ALL OTHER COMPONENTS ARE PAINTED CARBON STEEL.



NO.	DATE	DESIGNED BY:	DRAWN BY:	REVISION	CHECKED BY:	APPROVED BY:
		DH	DH		MB	JK

**EXISTING CLARIFIER NO. 3  
IMPROVEMENTS  
PLAN & SECTION**

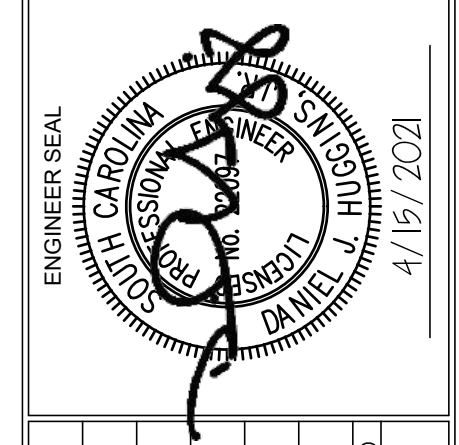
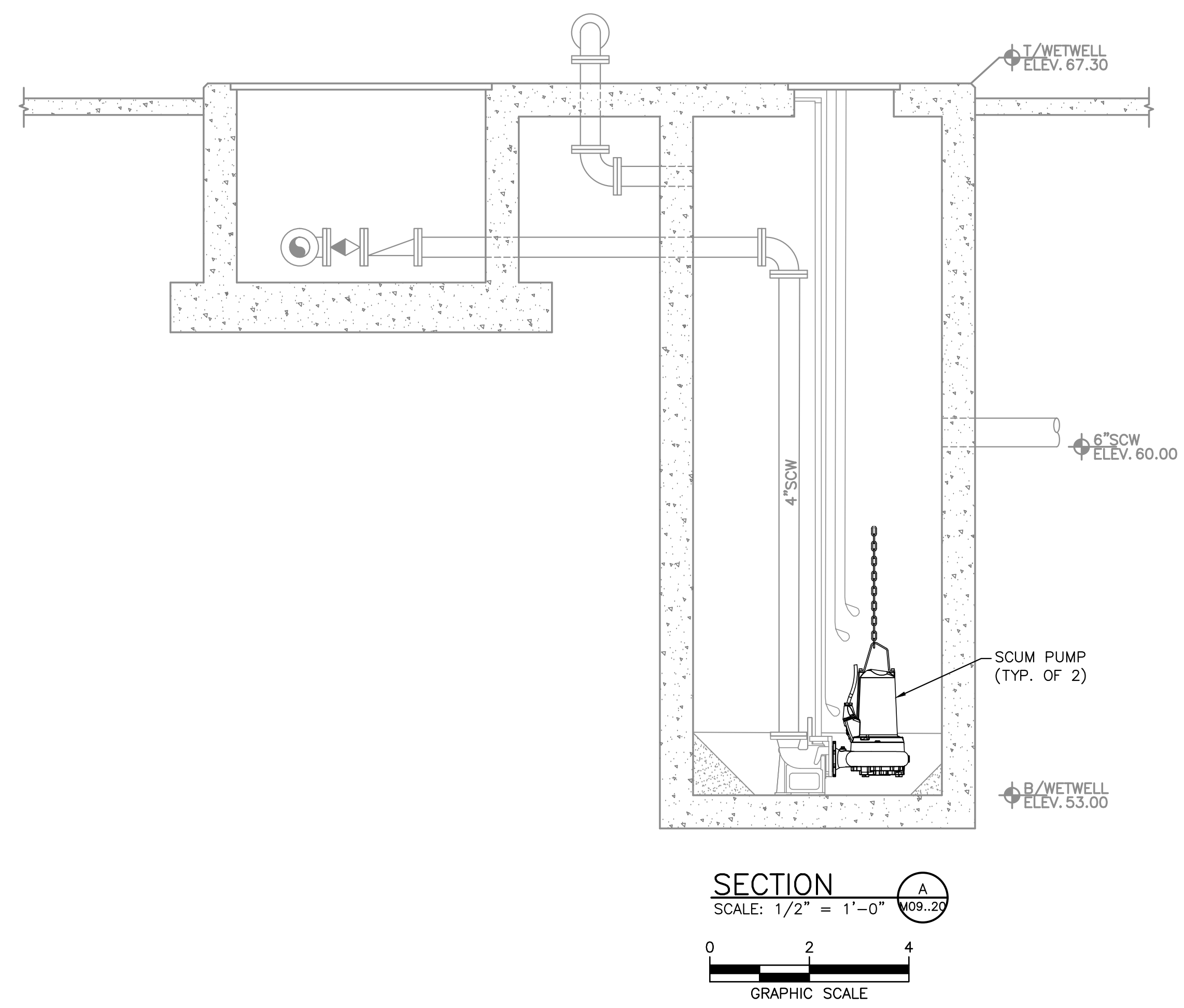
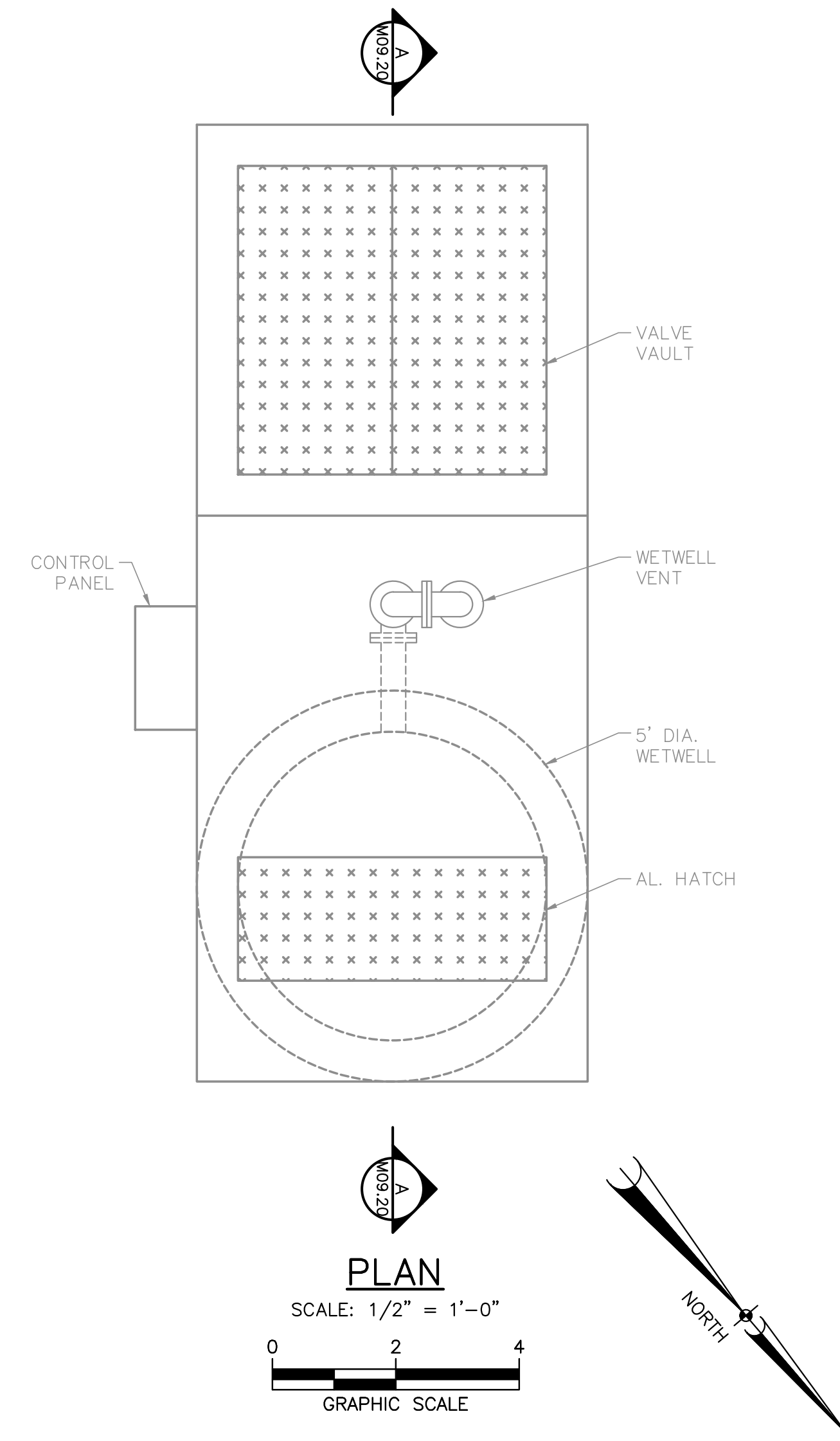
**CITY OF LAKE CITY  
LAKE SWAMP WWTP UPGRADE**



FILE	SEE LEFT
VERIFY SCALE	BAR IS ONE INCH ON ORIGINAL DRAWING
DATE	MARCH 2021
PROJ.	100392.02
DWG.	M09.11

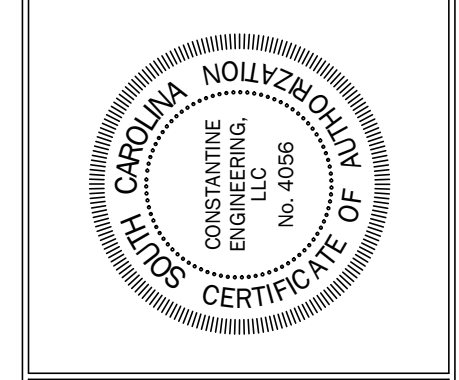


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 4/15/2021 2:27 PM



NO.	DATE	DESIGNED BY:	DRAWN BY:	REVISION	CHECKED BY:	APPROVED BY:
		DH	DH		MB	JK

**EXISTING SCUM PUMP STATION  
 IMPROVEMENTS  
 PLAN & SECTION**  
**CITY OF LAKE CITY  
 LAKE SWAMP WWTP UPGRADE**



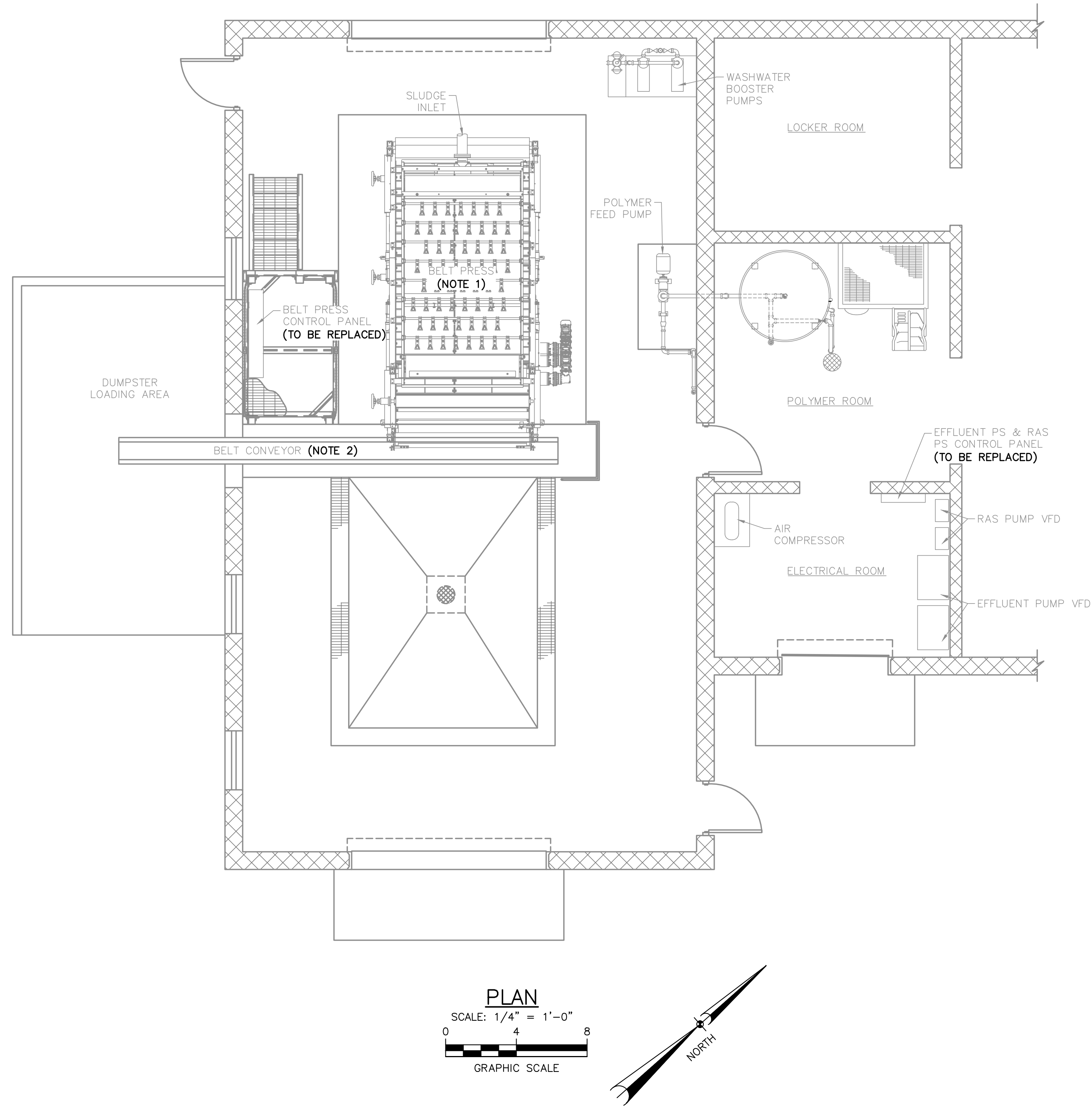
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VERIFY SCALE	BAR IS ONE INCH ON ORIGINAL DRAWING
DATE	MARCH 2021
PROJ.	100392.02
DWG.	M09.20

**BID DOCUMENTS**



H:\PROJECT FILES\100392.02\_LAKE\_CITY\_SC\_LAKE\_SWAMP\_WWTP\_UPGRADE\300\_DESIGN\355\_PRELIMINARY\_DRAWINGS\02\_PROCESS\_MECH\M12.1\_EX\_DEWATERING\_BLDG.DWG 4/15/2021 2:28 PM

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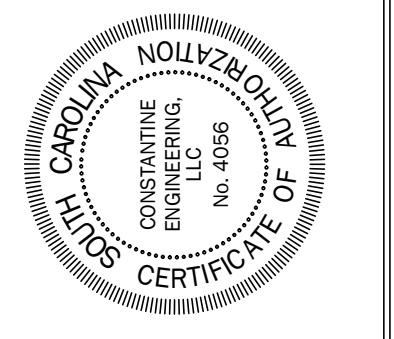
**NOTES:**

1. REPLACE BELT, 2-KILL SWITCHES, 3-LIMIT SWITCHES, AND 4-AIR BELLOWS ON BELT PRESS. BELT WILL BE PROVIDED BY THE OWNER.
2. REPLACE KILL SWITCH FOR BELT CONVEYOR.



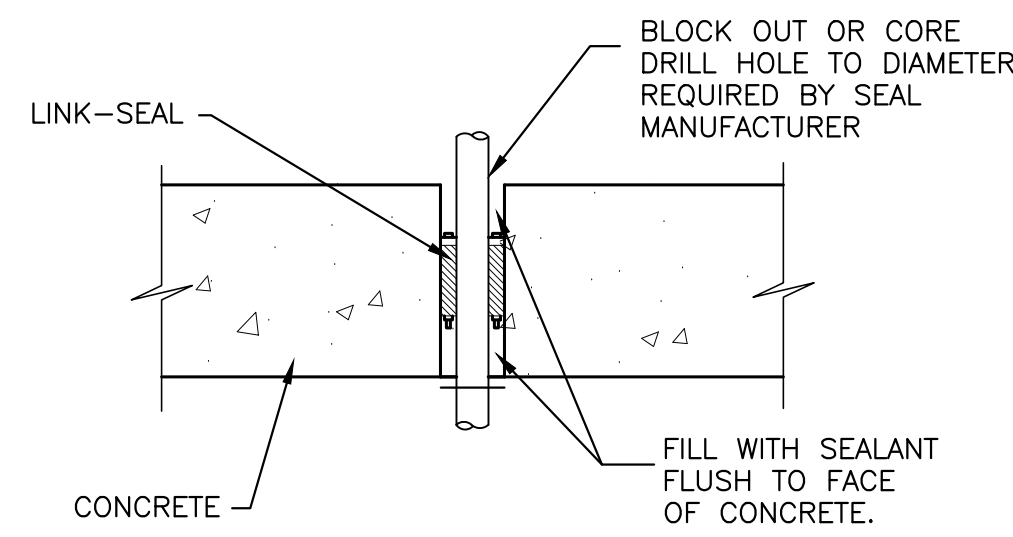
NO.	DATE	DESIGNED BY:	DH	DRAWN BY:	DH	REVISION	CHECKED BY:	MB	APPROVED BY:	JK
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**EXISTING DEWATERING BUILDING IMPROVEMENTS PLAN**  
**CITY OF LAKE CITY**  
**LAKE SWAMP WWTP UPGRADE**

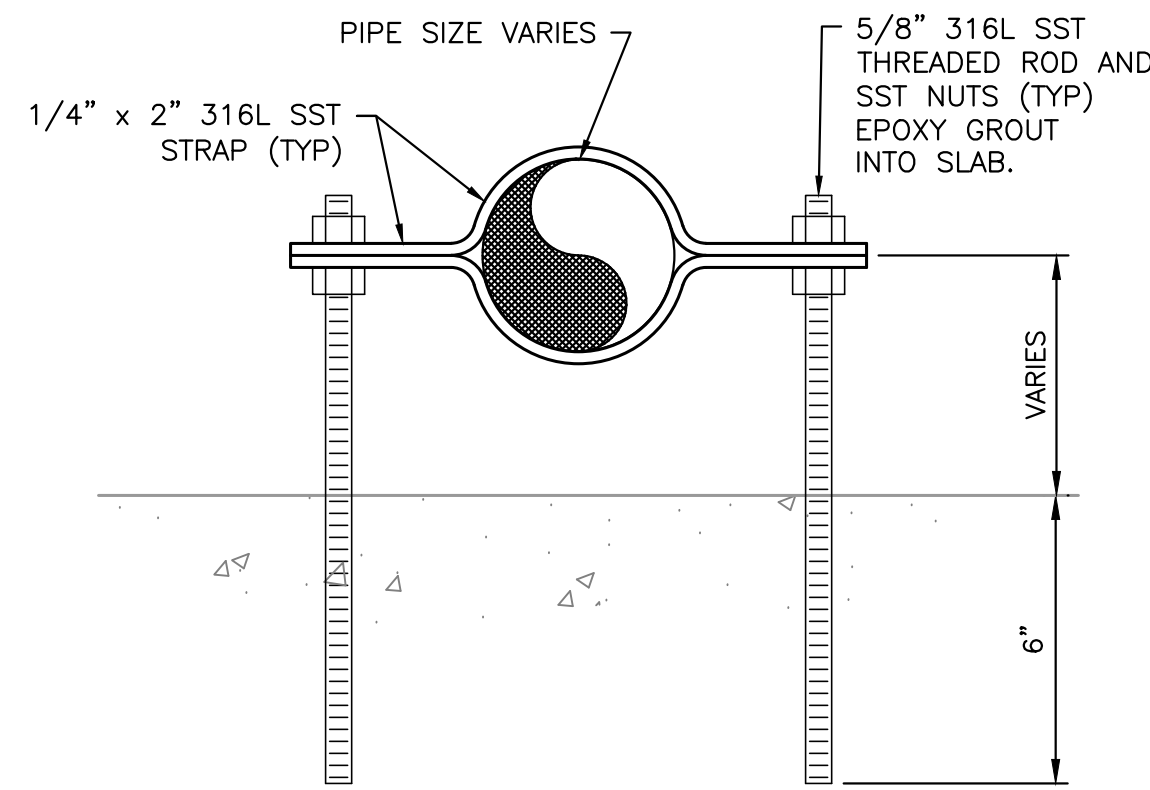


FILE	SEE LEFT
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DATE	MARCH 2021
PROJ.	100392.02
DWG.	M12.10

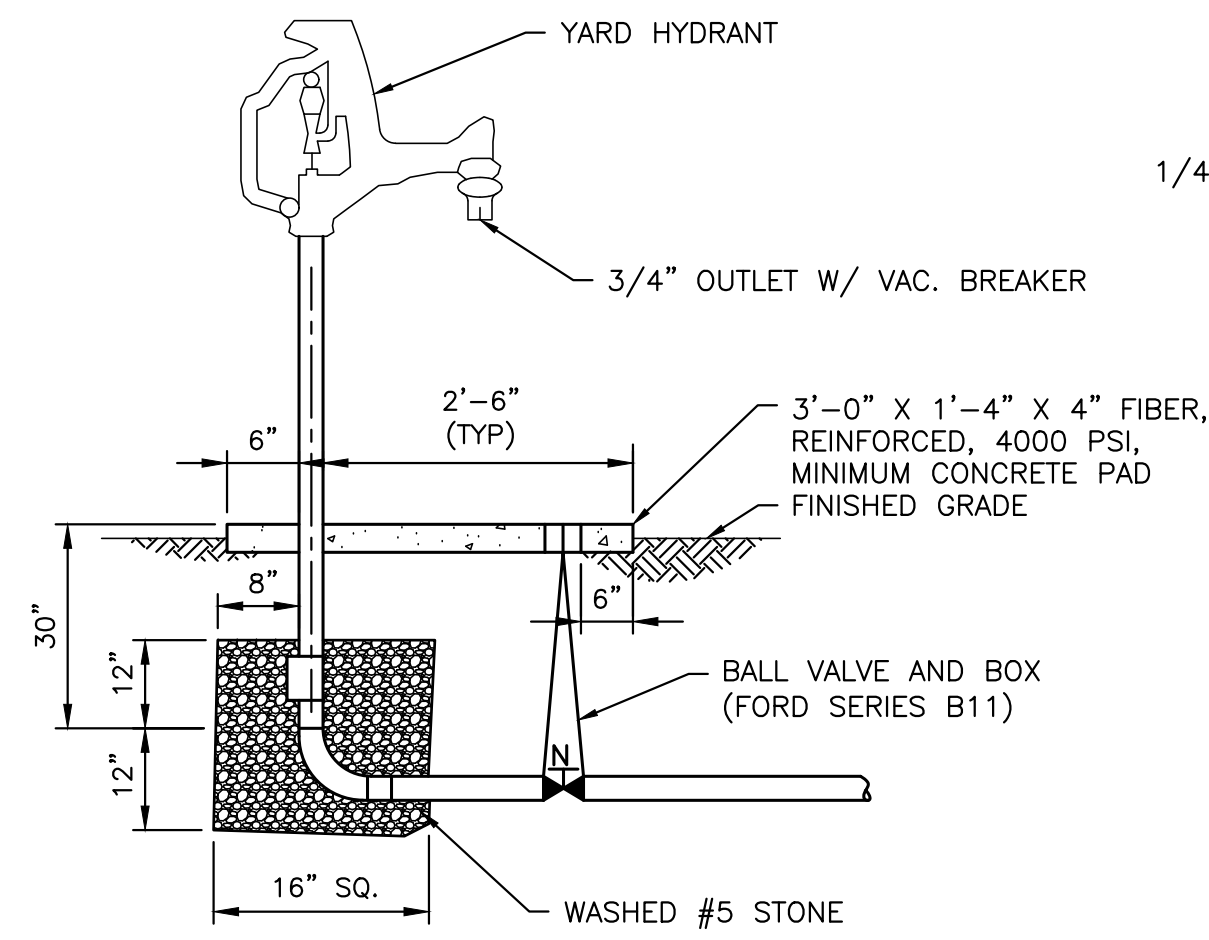
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 4/15/2021 2:29 PM  
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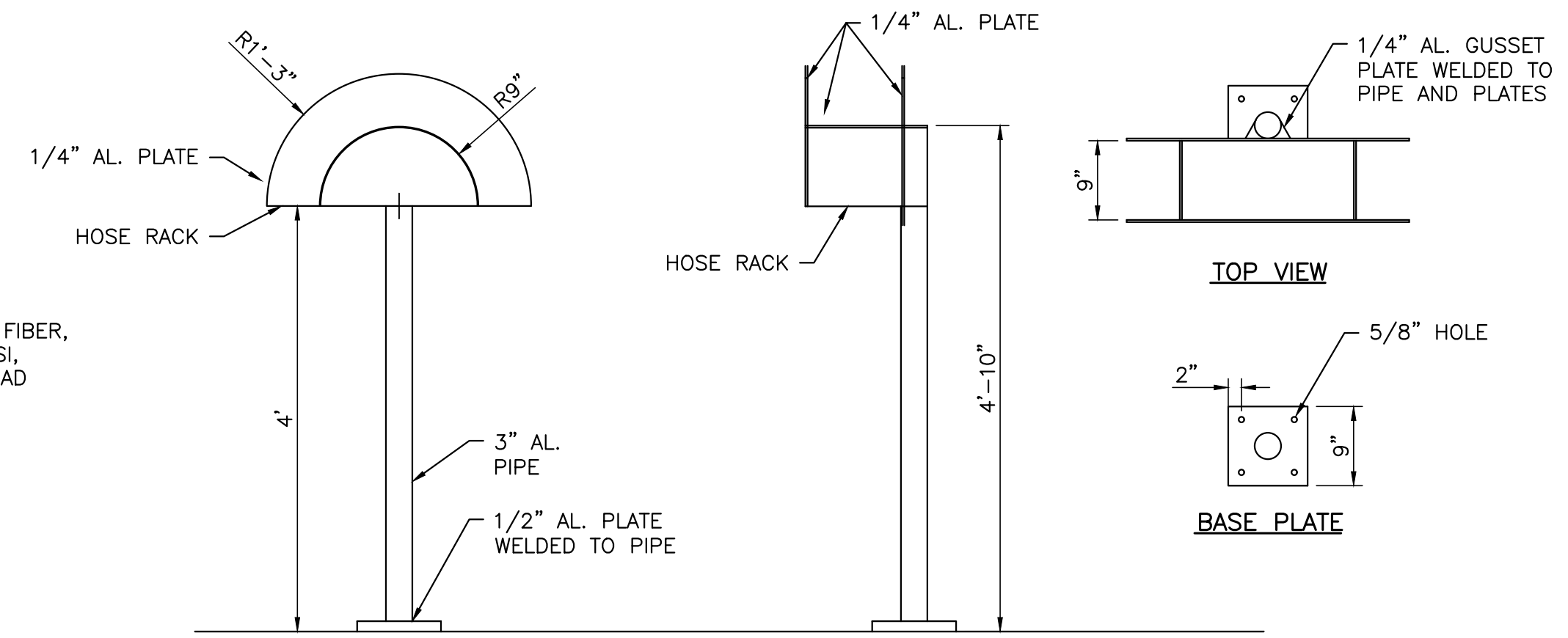
**PIPE THROUGH CONCRETE**  
 DETAIL 1  
 SCALE: NONE



**PIPING SUPPORT**  
 DETAIL 2  
 SCALE: NONE



**YARD HYDRANT**  
 DETAIL 3  
 SCALE: NONE

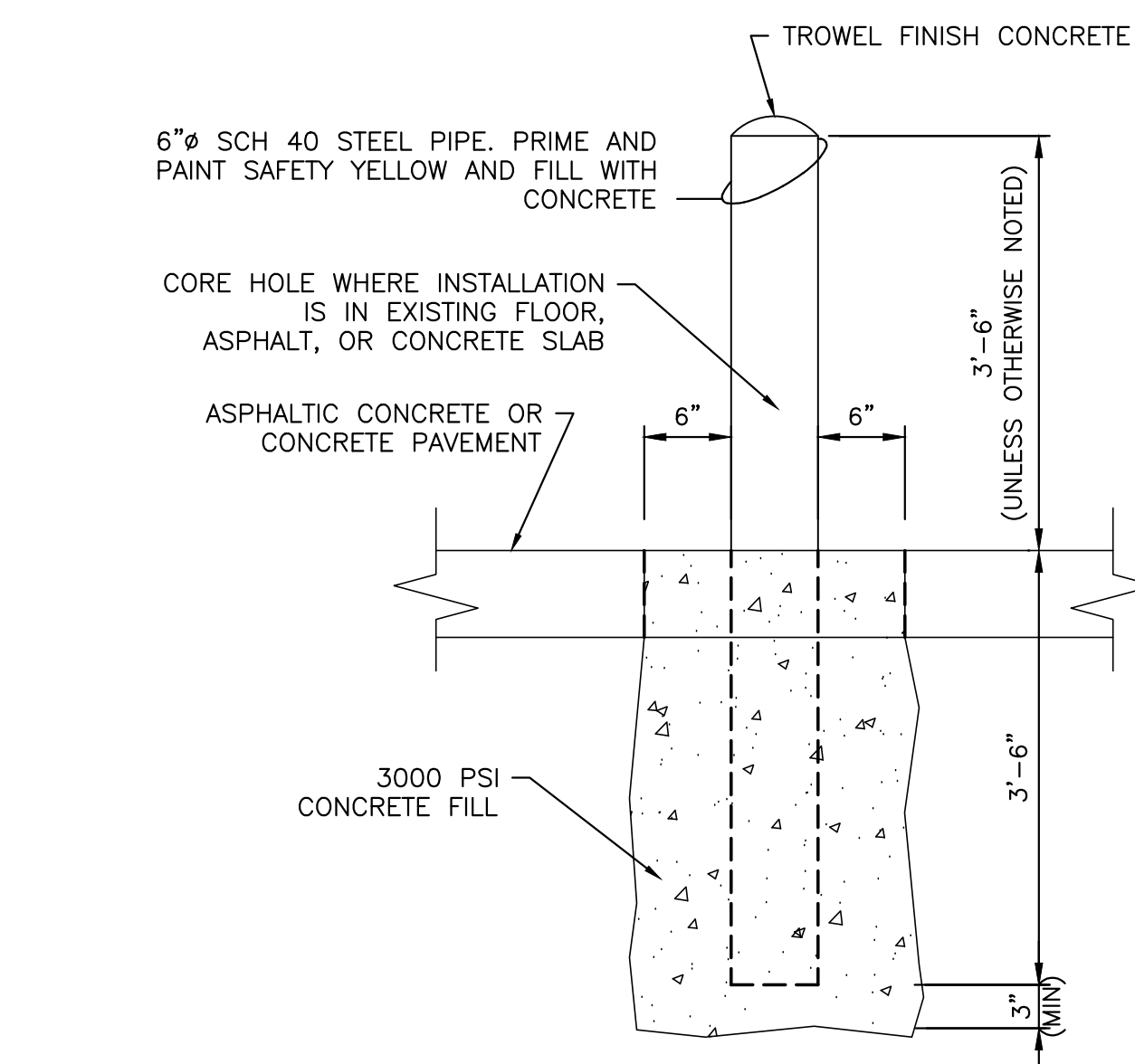


**HOSE RACK ASSEMBLY**  
 DETAIL 4  
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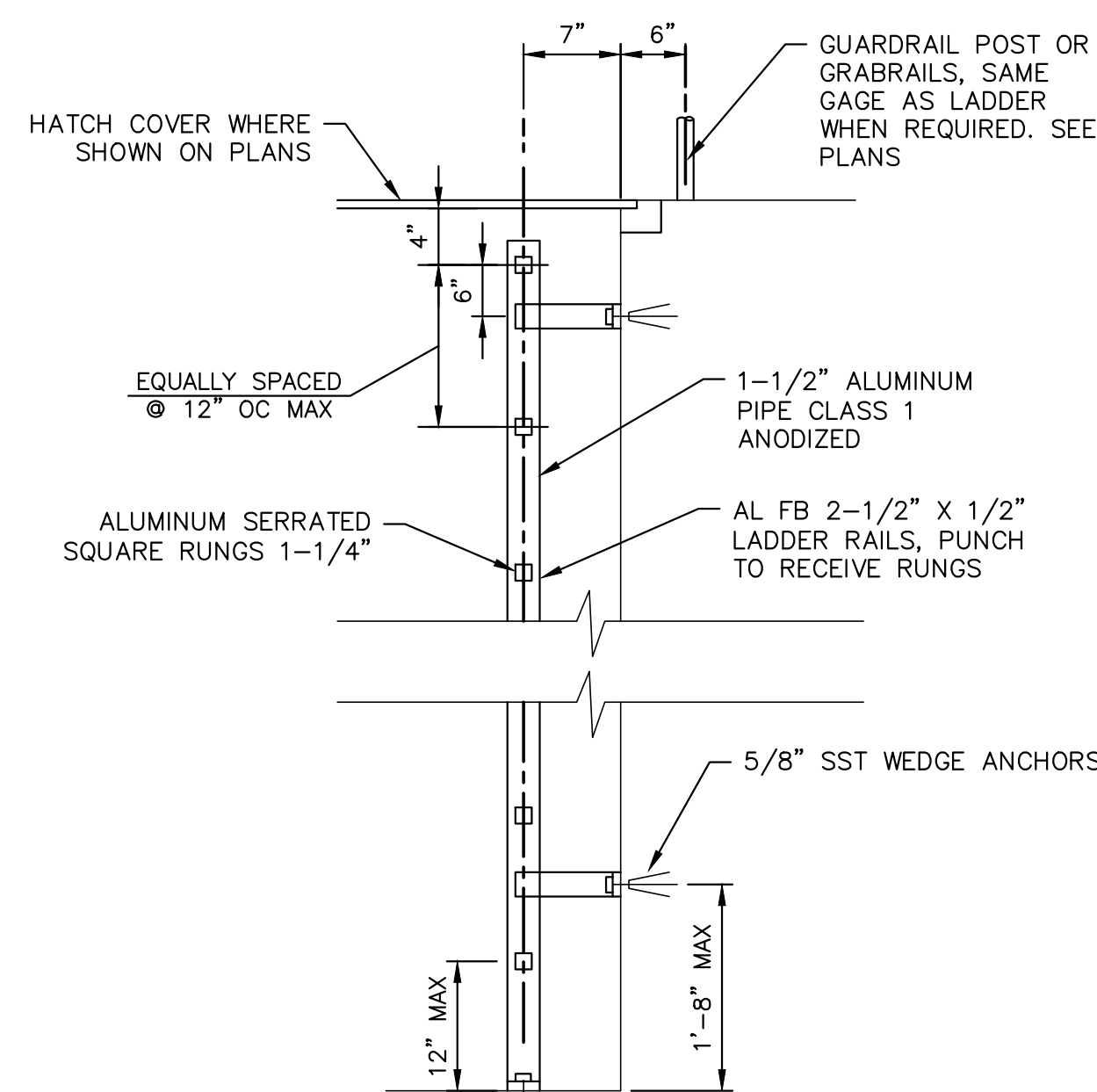
WEIR GATE SCHEDULE									
MARK	NO.	LOCATION	SIZE (W x H)	OPERATING ELEVATIONS		TYPE	TYPE LIFT	MATERIAL OF CONSTRUCTION	COMMENTS
				LOW	HIGH				
A	1	AERATION BASIN SPLITTER BOX	117" x 30"	68.38	70.82	SELF-CONTAINED	CRANK OPERATED FRAME MOUNTED	316L STAINLESS STEEL	NOTES 1, 2
B	1	AERATION BASIN SPLITTER BOX	63" x 30"	68.38	70.82	SELF-CONTAINED	CRANK OPERATED FRAME MOUNTED	316L STAINLESS STEEL	NOTES 1, 2

SLIDE GATE SCHEDULE										
MARK	NO.	LOCATION	SIZE (W x H)	HEADS		FRAME TYPE	WALL THIMBLE	TYPE LIFT	MATERIAL OF CONSTRUCTION	COMMENTS
				SEATING	UNSEATING					
C	2	AERATION BASIN SPLITTER BOX	24" x 24"	7'	7'	NON SELF-CONTAINED	FLG X MJ	CRANK OPERATED FLOOR STAND	316L STAINLESS STEEL	

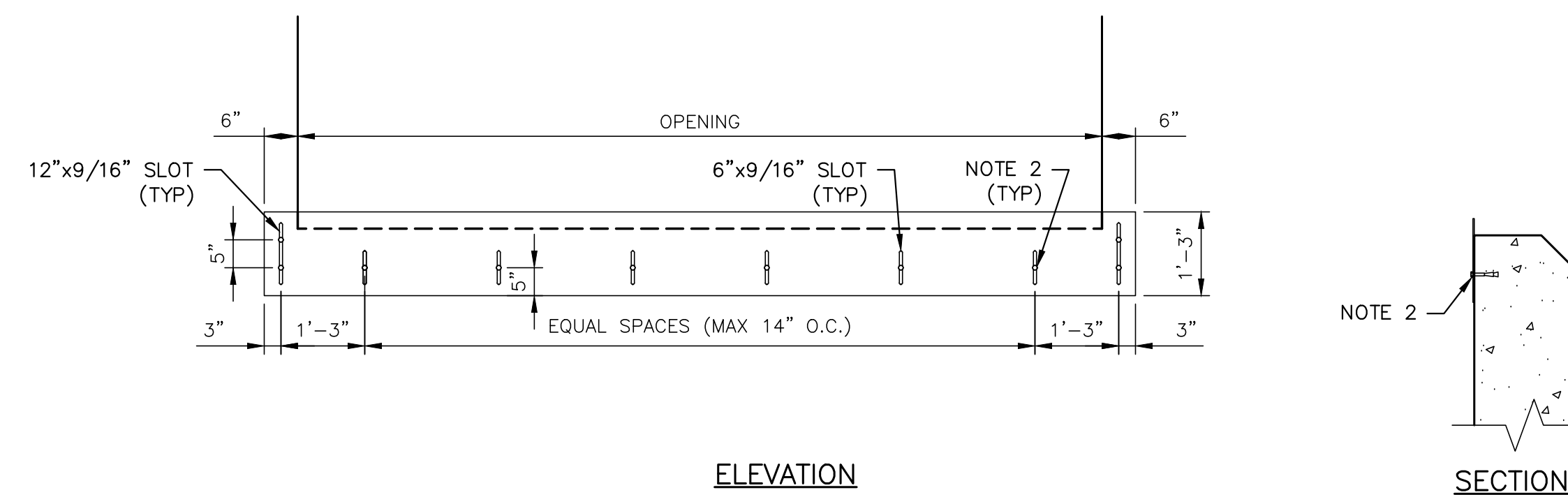
- GATE NOTES:**
- SET ALL FRAME MOUNTED OPERATORS 3'-6" ABOVE THE (WORKING) SLAB ELEVATION, UNLESS NOTED OTHERWISE.
  - PROVIDE A SEATING HEAD OF 2.5' AND UNSEATING HEAD OF 2.5' ON ALL WEIR GATES.



**PIPE BOLLARD**  
 DETAIL 6  
 SCALE: NONE

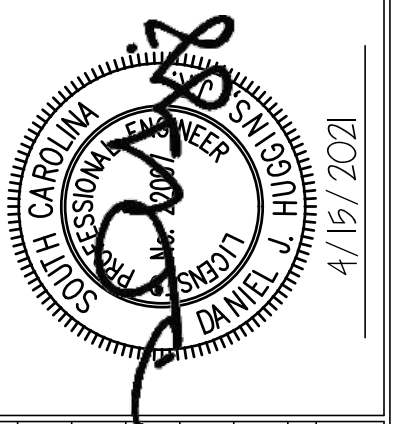


**VAULT LADDER**  
 DETAIL 7  
 SCALE: NONE



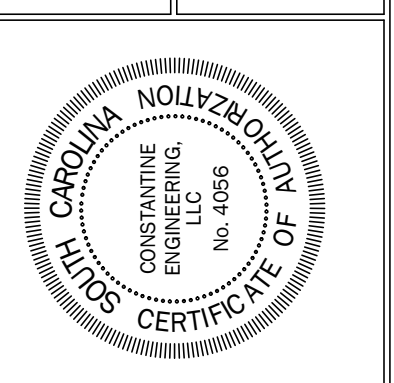
- NOTES:**
- PROVIDE 3/8" 304L SST PLATE WITH 3/16" BEVEL ON DOWNSTREAM SIDE. PROVIDE SEALANT BETWEEN PLATE AND WALL.
  - PROVIDE 1/2" 316 SST EXPANSION ANCHORS AND WASHERS (4" MIN EMBEDMENT).

**WEIR PLATE**  
 DETAIL 5  
 SCALE: 1/2" = 1'-0"  
 GRAPHIC SCALE



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		DH	DH		MB	JK

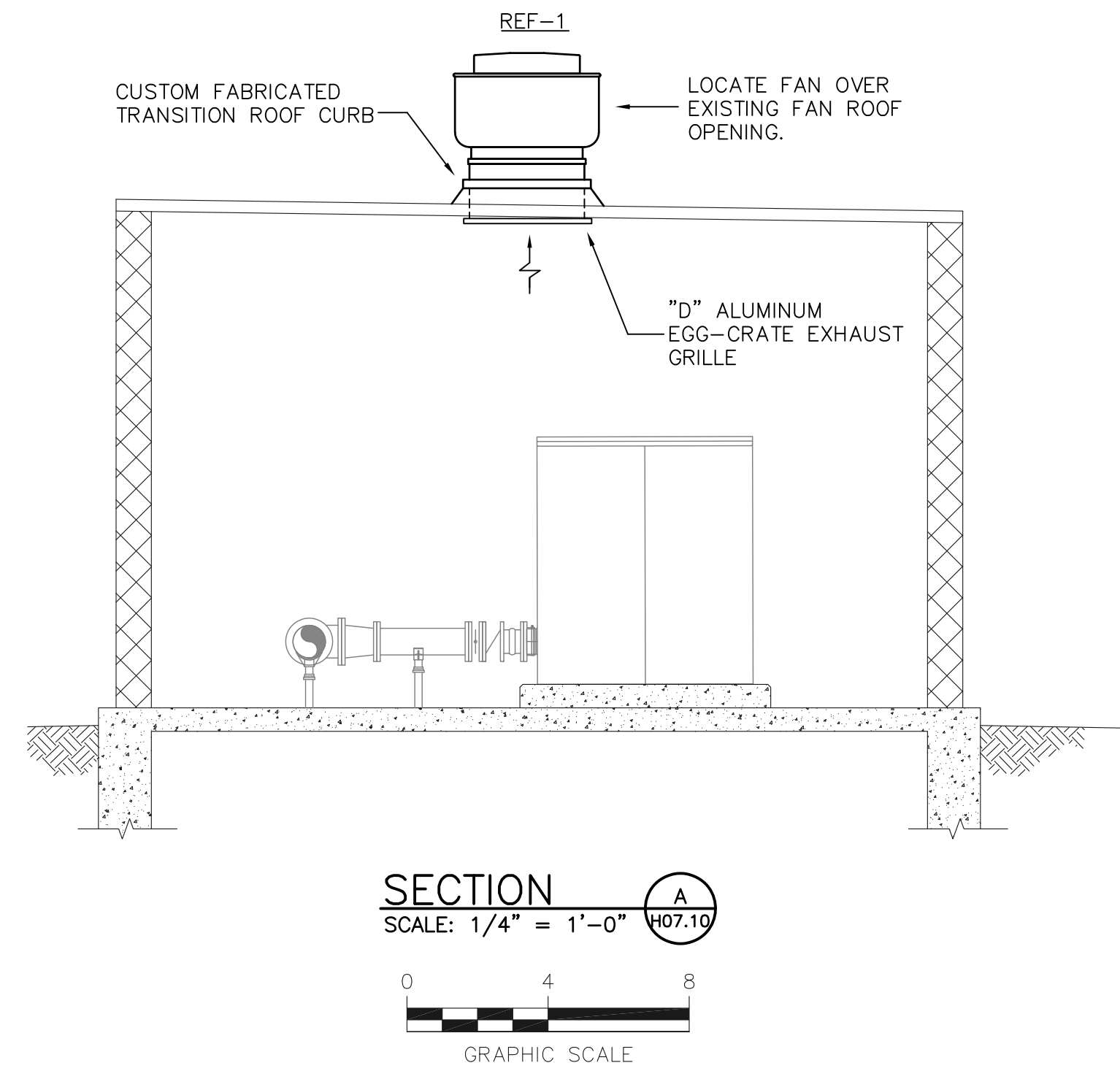
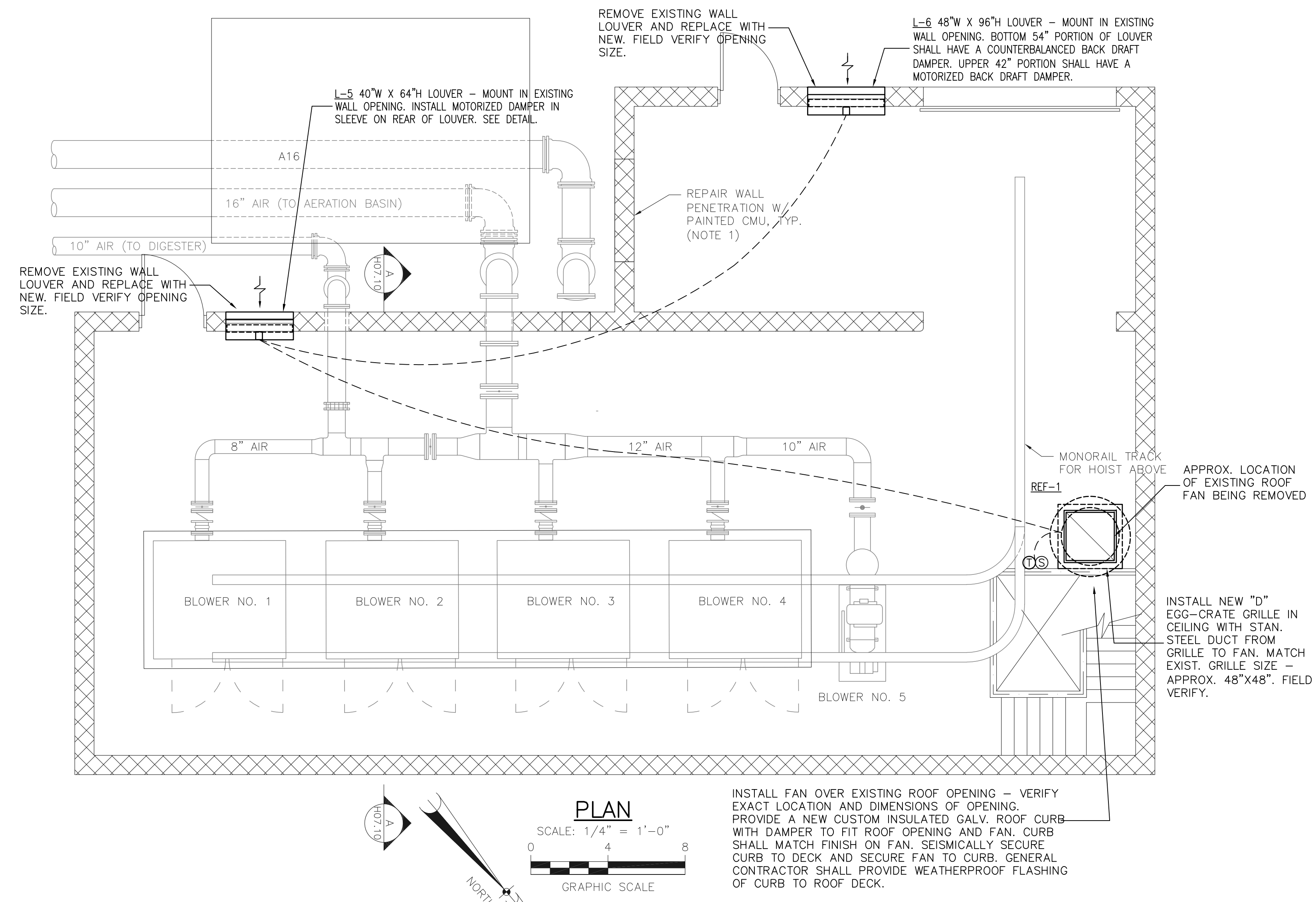
MISCELLANEOUS DETAILS  
 CITY OF LAKE CITY  
 LAKE SWAMP WWTP UPGRADE



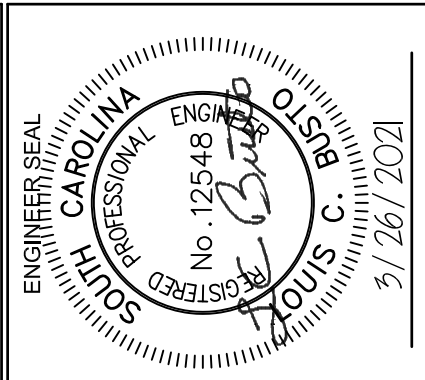
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DATE	MARCH 2021
PROJ.	100392.02
DWG.	M99.10

C:\DRAWINGS - CURRENT\21-09 LAKE CITY LAKE SWAMP WWTP\ARCH\1-27-2021 UPDATED PLANS\MT.1 EX BLOWER BUILDING.DWG  
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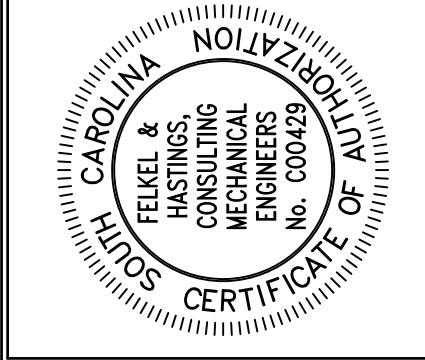


**NOTES:**  
 1. PATCH ALL WALL PENETRATIONS FOR DEMOLISHED EQUIPMENT OR PIPING.



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		JHK	JHK		JHK	LCB
						LCB

**EXISTING BLOWER BUILDING IMPROVEMENTS PLAN & SECTION**  
**CITY OF LAKE CITY**  
**LAKE SWAMP WWTP UPGRADE**



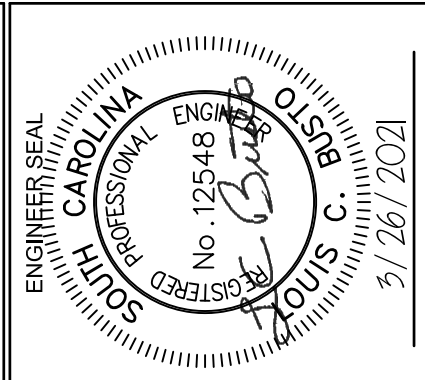
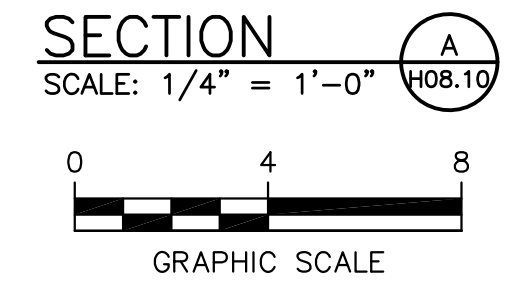
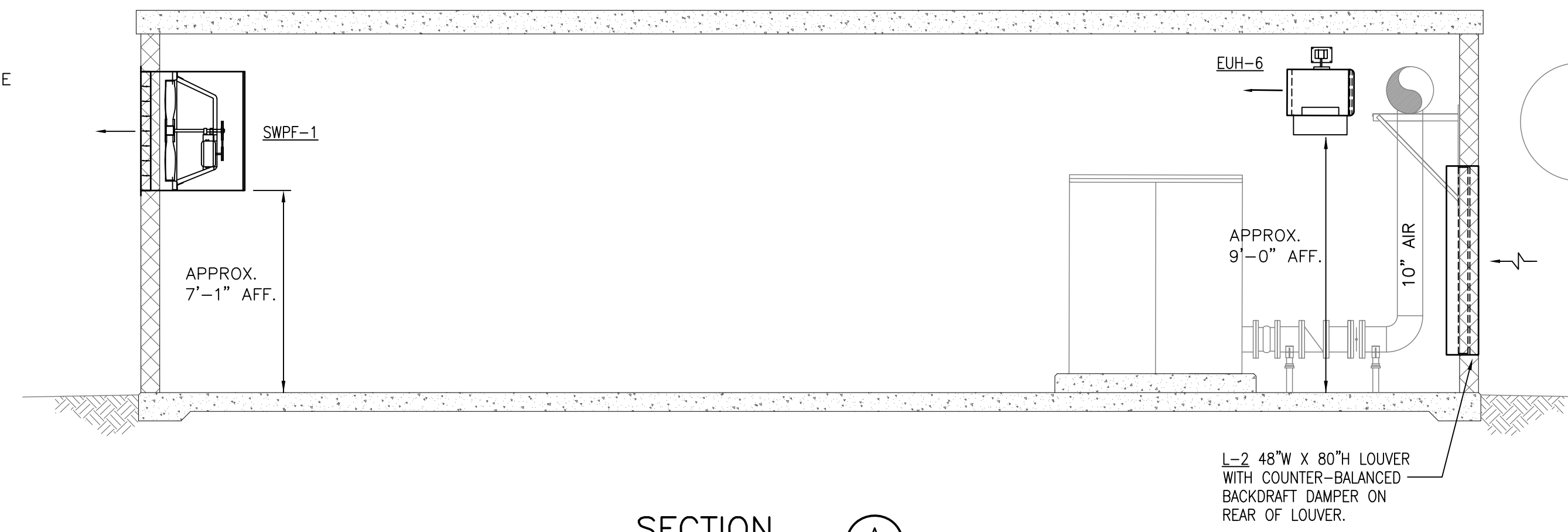
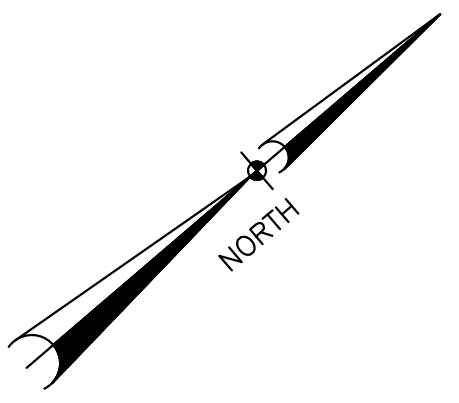
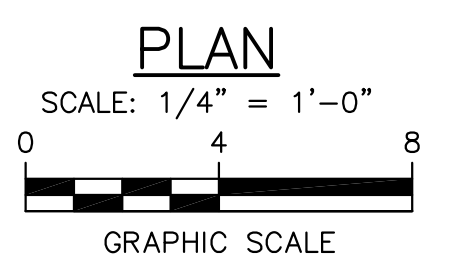
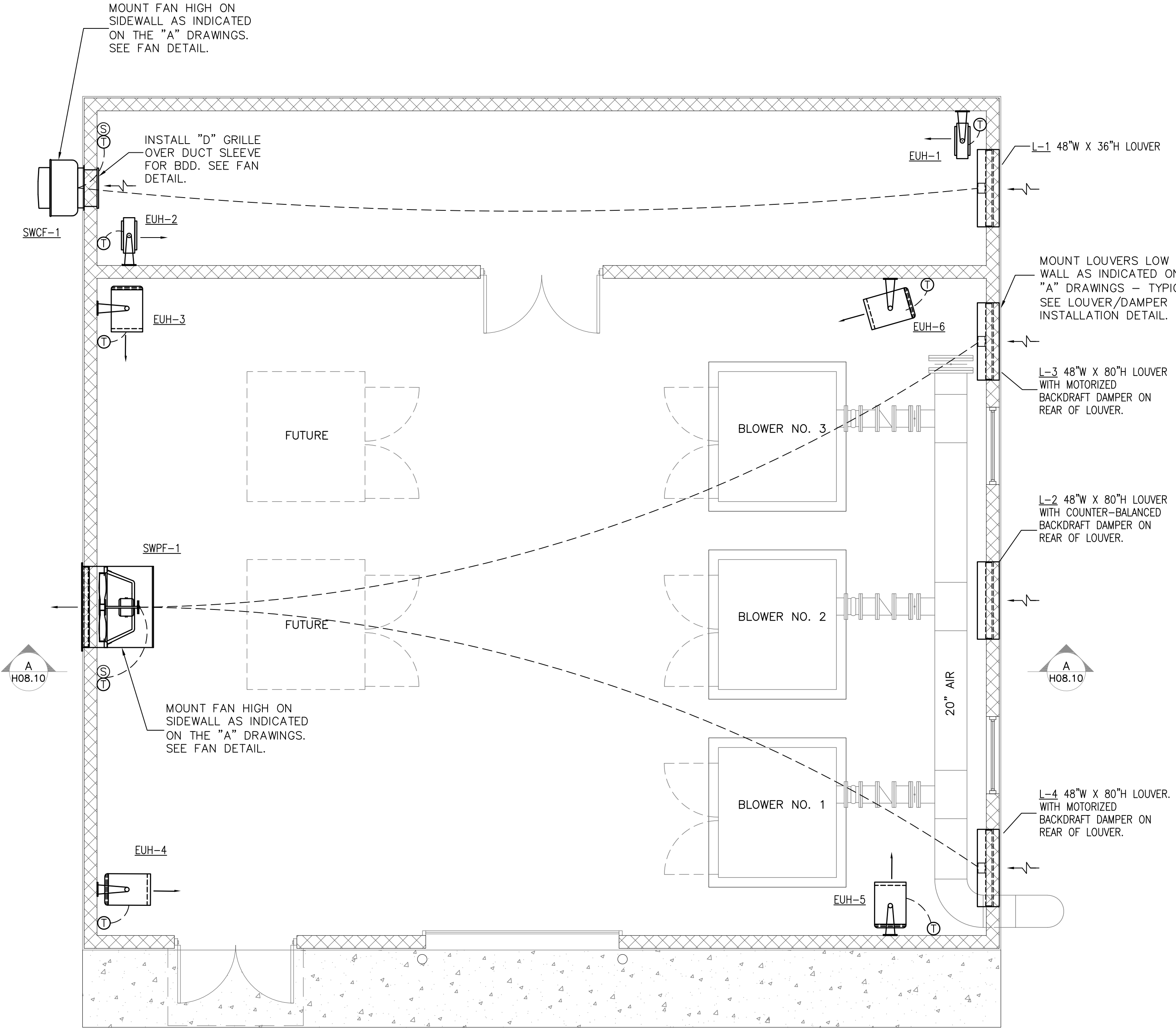
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DATE	JANUARY 2021
PROJ.	100392.02
DWG.	H07.10

**FELKEL & HASTINGS**  
 Mechanical Engineers  
 2725 Cypress Street  
 Columbia, S.C. 29205  
 Comm. No.: 21-09 Date: 03-26-21

**BID DOCUMENTS**

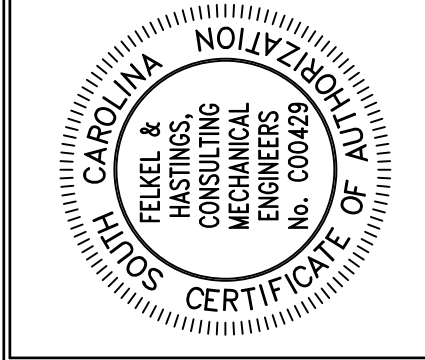
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CHECKED BY:			LCB
APPROVED BY:			LCB

**BLOWER BUILDING  
PLAN & SECTION**  
  
**CITY OF LAKE CITY  
LAKE SWAMP WWTP UPGRADE**



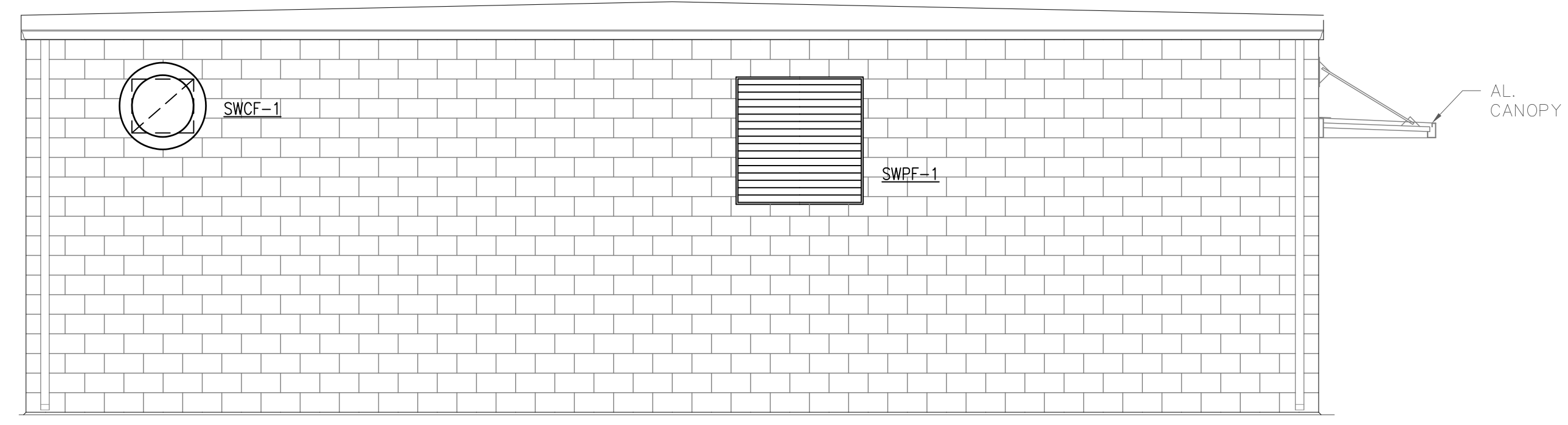
**Constantine  
Engineering**  
 4000 FABER PLACE DRIVE, SUITE 330  
 NORTH CHARLESTON, SC 29405  
 PH. 843-628-3352

**FELKEL & HASTINGS**  
 Mechanical Engineers  
 2725 Cypress Street  
 Columbia, S.C. 29205  
 Comm. No.: 21-09 Date: 03-26-21

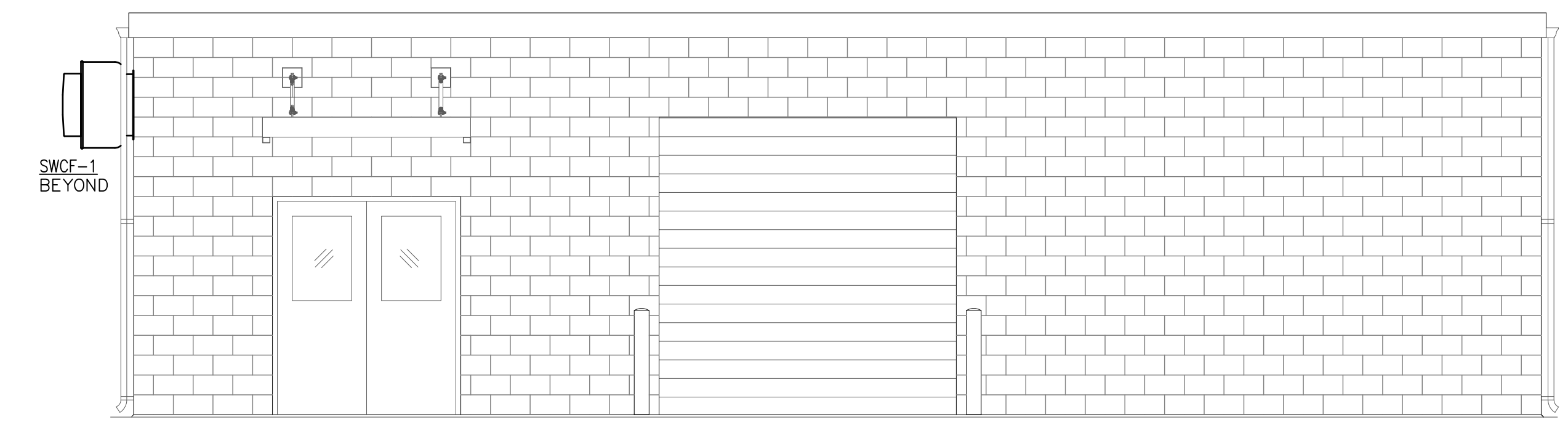
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PROJ.	100392.02
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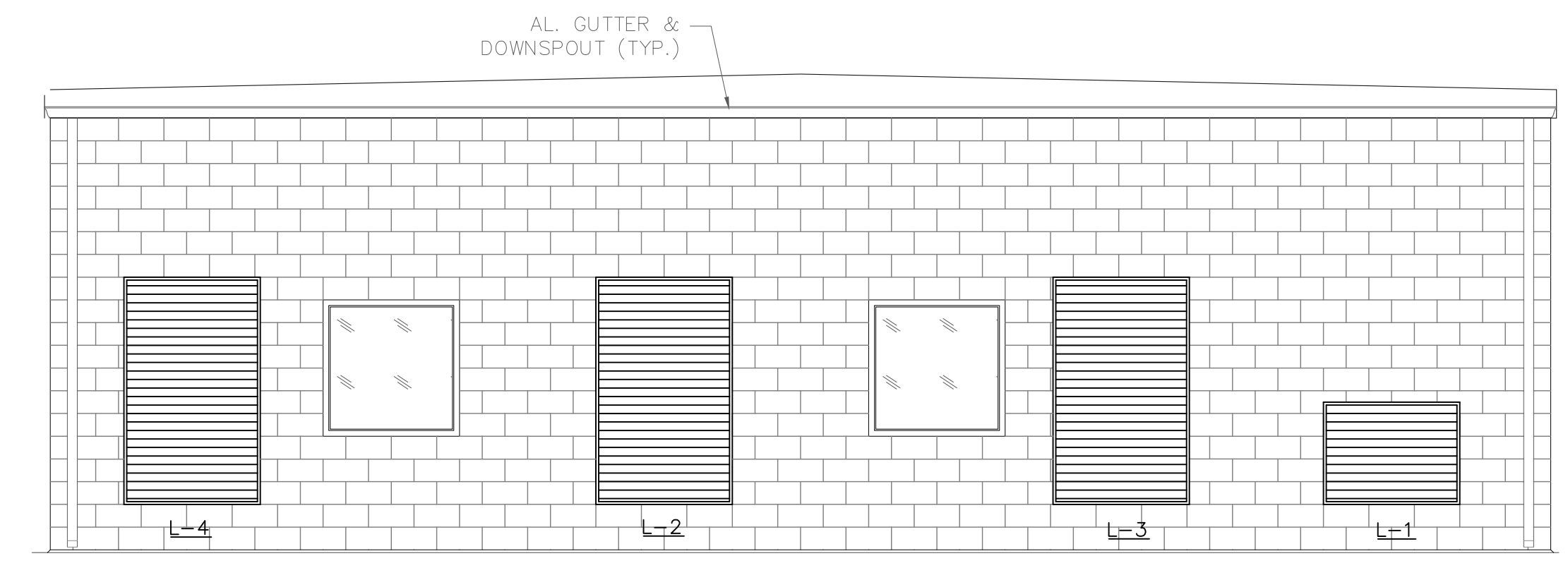
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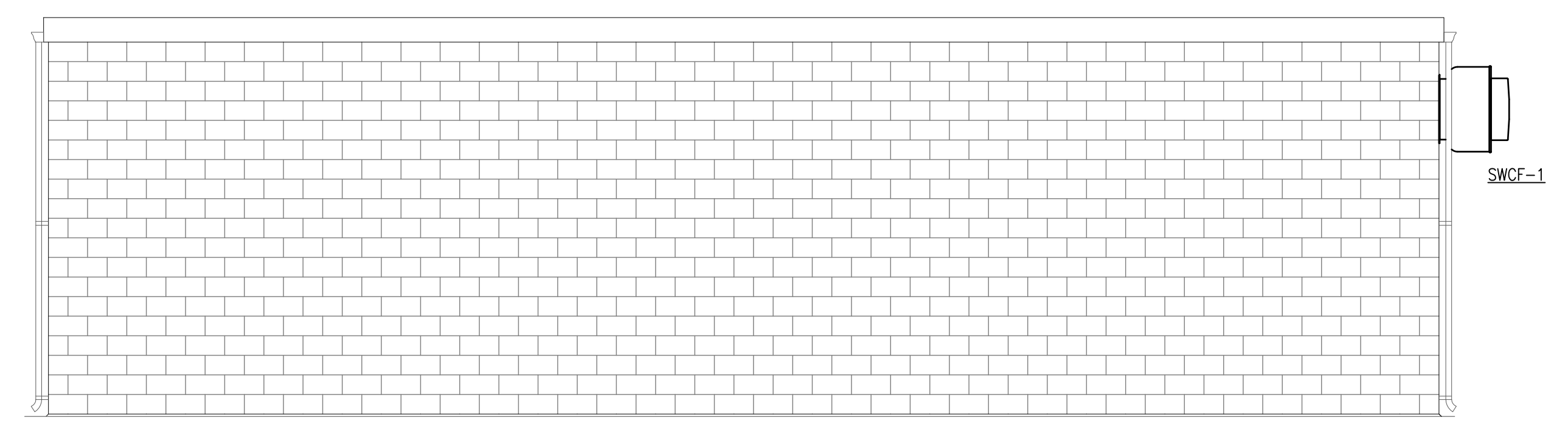
**ELEVATION A**  
 SCALE: 1/4" = 1'-0" CA08.10



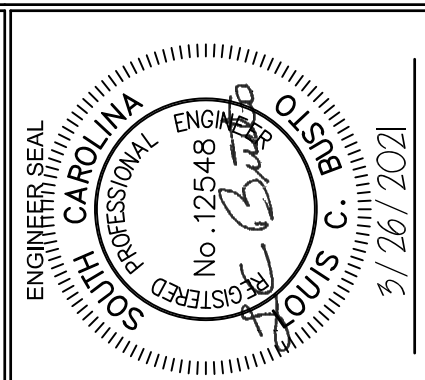
**ELEVATION C**  
 SCALE: 1/4" = 1'-0" CA08.10



**ELEVATION B**  
 SCALE: 1/4" = 1'-0" CA08.10

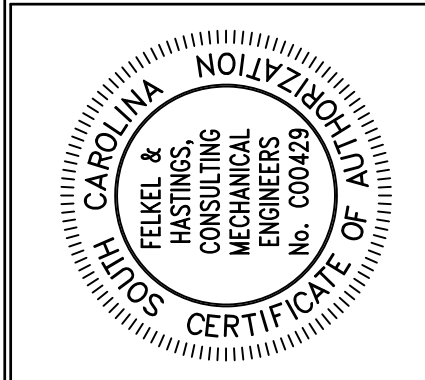


**ELEVATION D**  
 SCALE: 1/4" = 1'-0" CA08.10



NO.	DATE	DESIGNED BY:	DRAWN BY:	REVISION	CHECKED BY:	APPROVED BY:
		JHK	JHK		LCB	LCB

**BLOWER BUILDING  
 PLAN & ELEVATIONS**  
**CITY OF LAKE CITY  
 LAKE SWAMP WWTP UPGRADE**



**FELKEL & HASTINGS**  
 Mechanical Engineers  
 2725 Cypress Street  
 Columbia, S.C. 29205  
 Comm. No.: 21-09 Date: 03-26-21

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VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING	
DATE	JANUARY 2021
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DWG.	H08.11

**BID DOCUMENTS**

### VENTILATING EQUIPMENT SCHEDULE

SYMBOL	MFR.	MODEL NO.	FAN				MOTOR			CAPACITY			SPACES SERVED	TYPE FAN	CONTROLS	WEIGHT (LBS)	REMARKS
			TYPE	DIA.	RPM	MAX. SONES	NO. OF SPEEDS	HP OR AMPS	VOLTAGE CHAR.	CFM	E.S.P. (IN)	TOT. S.P. (IN)					
SWCF-1	GREENHECK	CUE-180-VG	CENT.	18"	1152	16.0	1	2 HP	460-3-60	3,600	0.25	0.703	NEW ELECTRICAL ROOM	SIDEWALL CENT. FAN	T'STAT & SWITCH	103	1, 2, 3, 6, 7
SWPF-1	GREENHECK	SBE-2L42-50	PROP.	42"	594	28.0	1	5 HP	460-3-60	18,700	0.25	0.456	NEW BLOWER ROOM	SIDEWALL PROP. FAN	T'STAT & SWITCH	445	1, 2, 3, 4, 5, 7
REF-1	GREENHECK	CUBE-300-20	CENT.	30"	639	17.2	1	2 HP	460-3-60	9,500	0.25	0.319	EXISTING BLOWER BLDG	ROOF CENT. FAN	T'STAT & SWITCH	200	1, 2, 3, 6, 7, 8

- |  |  |
|--|--|
| 1. FURNISH WITH DISCONNECT.<br>2. FURNISH WITH GRAVITY BACKDRAFT DAMPER.<br>3. FURNISH ENTIRE FAN ASSEMBLY WITH 'HI-PRO POLY' OR 'HI-PRO Z' FINISH AS APPLICABLE IN A SPECIAL COLOR SELECTED BY THE ARCHITECT. | 4. FURNISH WITH WALL HOUSING.<br>5. FURNISH WITH MOTOR SIDE GUARD.<br>6. FURNISH WITH BIRD SCREEN.<br>7. FURNISH WITH WALL MTD. COOLING THERMOSTAT.<br>8. FURNISH WITH CUSTOM TRANSITON ROOF CURB. |
|--|--|

### LOUVER SCHEDULE

SYMBOL	LOCATION	MFR.	MODEL NO.	TYPE LOUVER	TYPE BLADES	NOMINAL OVERALL WIDTH	NOMINAL OVERALL HEIGHT	APPROX. FREE AREA (SF)	APPROX. CFM PER LOUVER	APPROX. VELOCITY	MAX P.D. (W.G.)	RUSKIN BACKDRAFT DAMPER		USE	REMARKS
												MODEL NUMBER	P.D. (W.G.)		
L-1	NEW ELECTRICAL ROOM	RUSKIN	ELF-375DX	HORZ. STATIONARY	DRAINABLE	48"	36"	6.08	3,600	593 FPM	0.07"	CD35-PB	< 0.02"	INTAKE	1, 2, 3, 4, 5, 6, 7
L-2	NEW BLOWER ROOM	RUSKIN	ELF-375DX	HORZ. STATIONARY	DRAINABLE	48"	80"	14.93	10,000	670 FPM	0.09"	CBD6	< 0.02"	INTAKE	1, 2, 4, 5, 6, 7, 8
L-3	NEW BLOWER ROOM	RUSKIN	ELF-375DX	HORZ. STATIONARY	DRAINABLE	48"	80"	14.93	9,350	626 FPM	0.08"	CD35-PB	< 0.02"	INTAKE	1, 2, 3, 4, 5, 6, 7
L-4	NEW BLOWER ROOM	RUSKIN	ELF-375DX	HORZ. STATIONARY	DRAINABLE	48"	80"	14.93	9,350	626 FPM	0.08"	CD35-PB	< 0.02"	INTAKE	1, 2, 3, 4, 5, 6, 7
L-5	EXIST. BLOWER BLDG	RUSKIN	ELF-375DX	HORZ. STATIONARY	DRAINABLE	40"	64"	9.71	6,000	618 FPM	0.08"	CD35-PB	< 0.02"	INTAKE	1, 2, 3, 4, 5, 6, 7
L-6	EXIST. BLOWER BLDG	RUSKIN	ELF-375DX	HORZ. STATIONARY	DRAINABLE	48"	96"	18.11	7,780	430 FPM	0.05"	CD35-PB AND CBD6	< 0.02"	INTAKE	1, 2, 3, 4, 5, 6, 7, 8

- |   |  |   |
|---|--|---|
| 1. FURNISH WITH KYNAR 500 FINISH.<br>2. CONFIRM ALL DIMENSIONS WITH "A" DRAWINGS.<br>3. FURNISH WITH MOTORIZED BACKDRAFT DAMPER ON REAR OF LOUVER WITH KYNAR 500 FINISH TO MATCH LOUVER.<br>4. FURNISH WITH BIRDSCREEN WITH KYNAR 500 FINISH. | 5. PROVIDE HEAVY GAUGE ALUMINUM SLEEVE FOR LOUVER AND DAMPER - SLEEVE TO HAVE KYNAR 500 FINISH TO MATCH LOUVER AND DAMPER.<br>6. FURNISH WITH ALUMINUM EXPANDED METAL GUARD ON REAR OF LOUVER/DAMPER ASSEMBLY. FURNISH WITH KYNAR 500 FINISH.<br>7. VERIFY FRAME TYPE, FLANGED OR CHANNEL, WITH GENERAL CONTRACTOR BEFORE ORDERING LOUVER. | 8. FURNISH WITH COUNTERBALANCE GRAVITY BACKDRAFT DAMPER ON LOWER PORTION OF LOUVER WITH KYNAR 500 FINISH TO MATCH LOUVER. |
|---|--|---|

### AIR DISTRIBUTION EQUIPMENT SCHEDULE

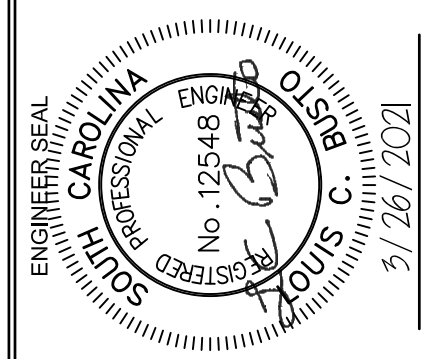
SYMBOL	MOUNTING	PRICE MODEL NO.	METAL-AIRE MODEL NO.	TITUS MODEL NO.	FRAME SIZE (IN)	FACE TYPE	NECK	FINISH (FACE/INT)	USE	MATERIAL	REMARKS
A	LAY-IN	APDC	7000-6	PCS-AA	24X24	PERFORATED	ROUND	WHT/WHT	SUPPLY	ALUMINUM	1, 2
B	LAY-IN	APDDR	7000R-6	PAR-AA	24X24	PERFORATED	ROUND	WHT/WHT	RET/EXH	ALUMINUM	-
C	SURFACE/CEILING	APDC	7000-1	PCS-AA	NECK + 6	PERFORATED	SQUARE	WHT/WHT	SUPPLY	ALUMINUM	1, 2, 3
D	SURFACE	80	CC5	50 F	NECK + 2	1/2" CUBE CORE	SQUARE	WHITE	EXHAUST	ALUMINUM	-
E	LAY-IN	80	CC5 TB	50 F	24X24	1/2" CUBE CORE	SQUARE	WHITE	EXHAUST	ALUMINUM	-

1. FURNISH WITH OPPOSED BLADE DAMPER.
2. FURNISH WITH SQUARE TO ROUND NECK ADAPTER
3. FURNISH WITH PLASTER FRAME.

### ELECTRIC UNIT HEATER SCHEDULE

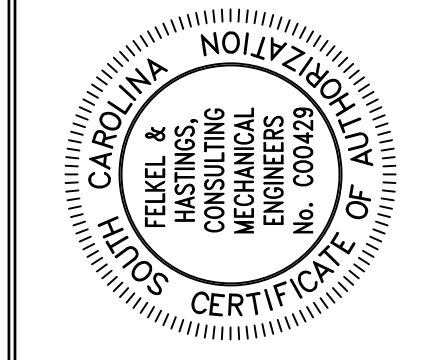
SYMBOL	BUILDING LOCATION	MFR.	TYPE UNIT HEATER	MODEL NO.	INPUT KW	HEATER OUTPUT MBH	VOLTAGE CHAR.	STAGE	CFM	WEIGHT (LBS.)	REMARKS
EUH-1	NEW ELECTRICAL ROOM	MARKEL	HEAVY DUTY	5100	5	17.1	460-3-60	1	400	30	1, 2, 4, 5, 6
EUH-2	NEW ELECTRICAL ROOM	MARKEL	HEAVY DUTY	5100	5	17.1	460-3-60	1	400	30	1, 2, 4, 5, 6
EUH-3	NEW BLOWER ROOM	MARKEL	WASHDOWN	5500	20	68.2	460-3-60	1	1400	95	1, 2, 3, 4, 5
EUH-4	NEW BLOWER ROOM	MARKEL	WASHDOWN	5500	20	68.2	460-3-60	1	1400	95	1, 2, 3, 4, 5
EUH-5	NEW BLOWER ROOM	MARKEL	WASHDOWN	5500	20	68.2	460-3-60	1	1400	95	1, 2, 3, 4, 5
EUH-6	NEW BLOWER ROOM	MARKEL	WASHDOWN	5500	20	68.2	460-3-60	1	1400	95	1, 2, 3, 4, 5

- |   |   |
|---|---|
| 1. FURNISH WITH INTEGRAL DISCONNECT.<br>2. FURNISH WITH HEAVY DUTY 24 VOLT WALL THERMOSTAT.<br>3. FURNISH WITH STAINLESS STEEL WALL MOUNTING BRACKET.<br>4. FURNISH WITH SEISMIC RESTRAINT DEVICES. | 5. FURNISH WITH 24 VOLT CONTROL TRANSFORMER.<br>6. FURNISH WITH POWDER COATED STEEL MOUNTING BRACKET. |
|---|---|



DATE DESIGNED BY: JHK	DATE DRAWN BY: JHK	DATE CHECKED BY: LCB	DATE APPROVED BY: LCB
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HVAC SCHEDULES  
 CITY OF LAKE CITY  
 LAKE SWAMP WWTP UPGRADE



FILE	SEE LEFT
VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING	
DATE	JANUARY 2021
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DWG.	H99.10

FELKEL & HASTINGS  
 Mechanical Engineers  
 2725 Cypress Street  
 Columbia, S.C. 29205  
 Comm. No.: 21-09 Date: 03-26-21

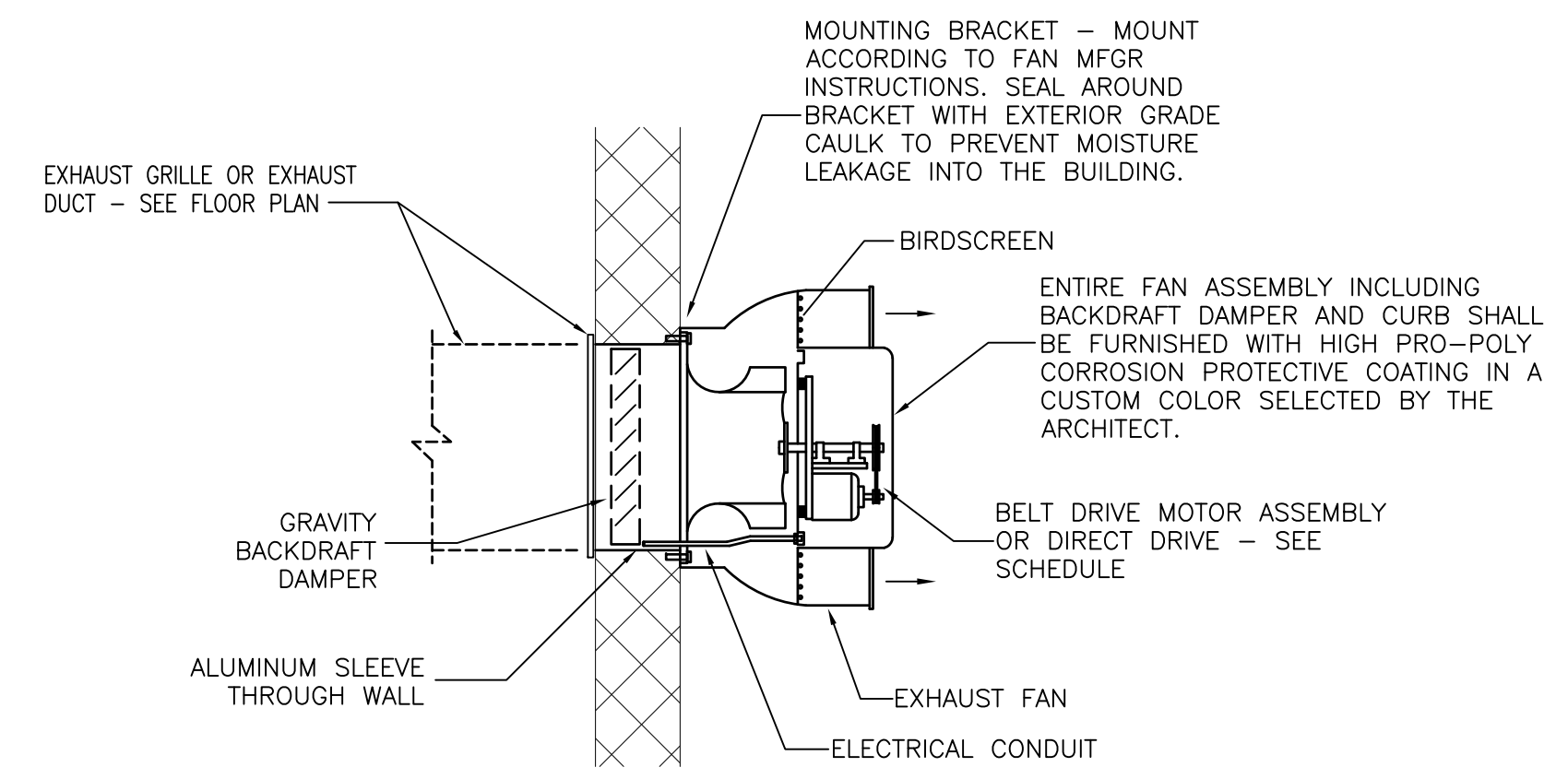
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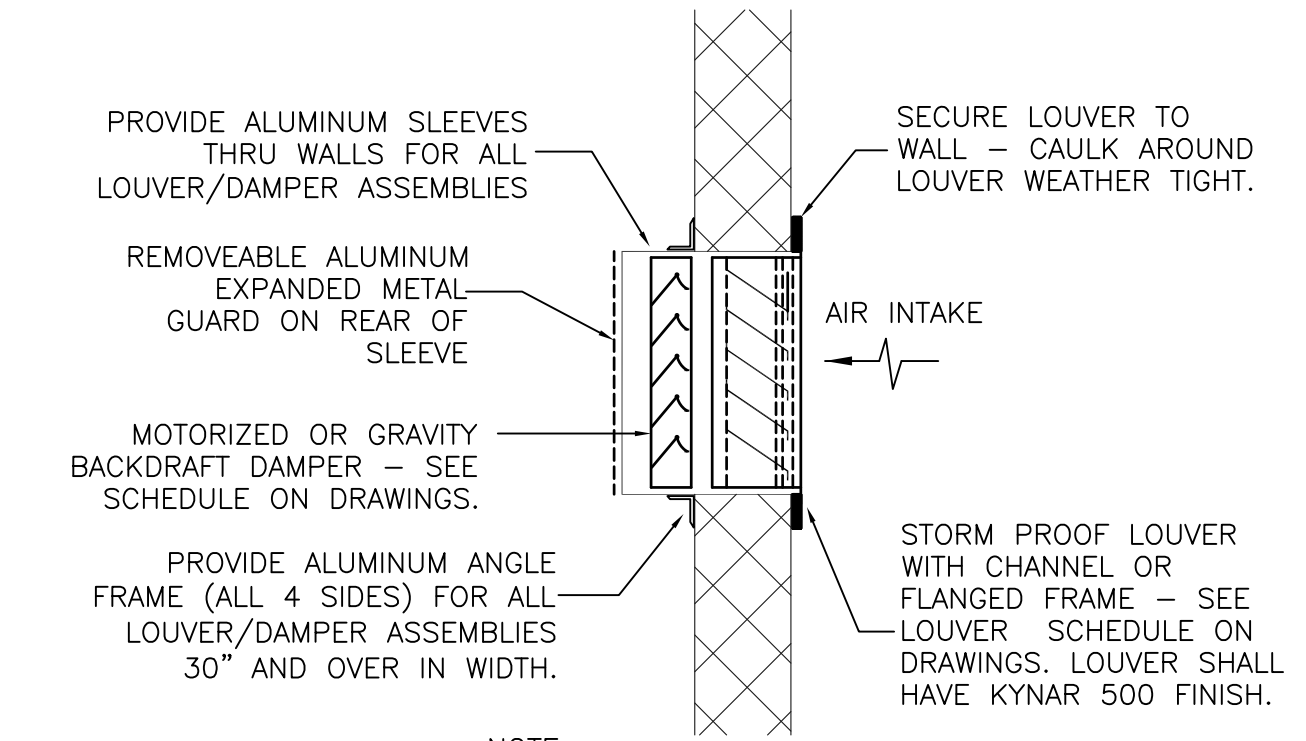
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# H V A C G E N E R A L N O T E S

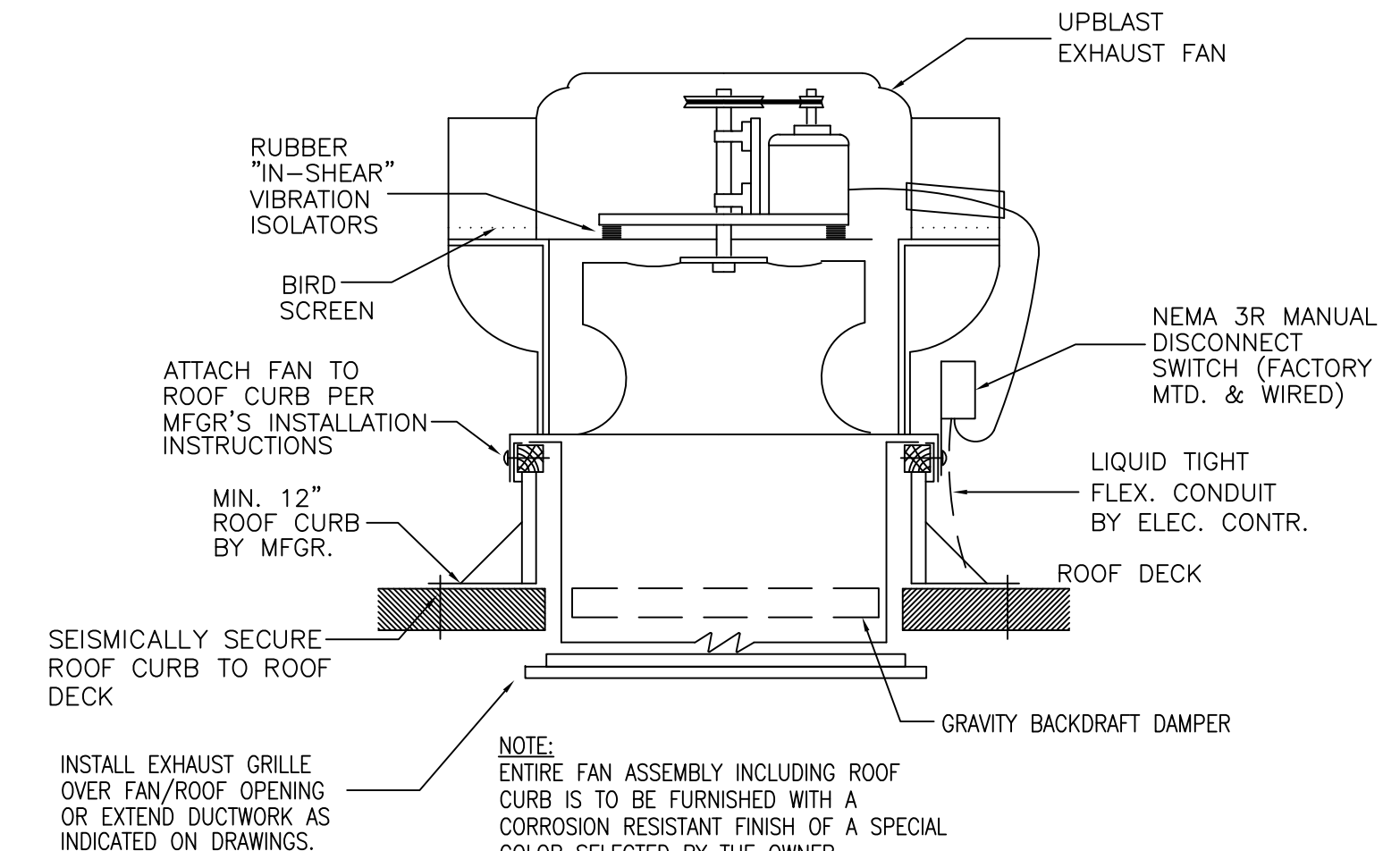
- REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF ALL CEILING MOUNTED AIR DISTRIBUTION DEVICES. IF A PARTICULAR ITEM IS NOT SHOWN ON THE REFLECTED CEILING PLANS, COORDINATE ITS LOCATION WITH ALL DISCIPLINES.
- ALL ROOF MOUNTED EQUIPMENT REQUIRING SERVICE SHALL BE LOCATED A MINIMUM OF 10 FT. FROM THE EDGE OF THE ROOF. COORDINATE WITH STRUCTURAL CONTRACTOR THE EXACT LOCATION OF ALL ROOF, WALL, AND FLOOR PENETRATIONS ALONG WITH ANY ADDITIONAL STEEL REQUIREMENTS FOR ALL ROOF MOUNTED EQUIPMENT CURBS. AVOID PENETRATING ANY STRUCTURAL MEMBERS UNLESS NOTED ON THE STRUCTURAL PLANS. WHERE CONFLICTS ARISE, THE MECHANICAL CONTRACTOR SHALL SUBMIT A DRAWING TO THE ENGINEER SHOWING HIS PROPOSED SOLUTION.
- ALL OPEN ENDED DUCTS SHALL BE REINFORCED WITH 1-1/2" x 1-1/2" x 1/8" STAINLESS STEEL (TYPE 304) ANGLES BOLTED OR RIVETED 6" ON CENTER (MAX.) ALL AROUND EXTERIOR PERIMETER OF DUCT, AND THE END OF THE DUCT SHALL BE COVERED WITH STAINLESS STEEL (TYPE 304) HARDWARE CLOTH.
- TRANSITION RECTANGULAR DUCTWORK ON BOTTOM AND SIDES. MAINTAIN TOP OF DUCTWORK LEVEL AND AS HIGH AS POSSIBLE.
- FLEXIBLE DUCT RUNOUTS TO CEILING DIFFUSERS SHALL BE FREE OF SAGS AND KINKS AND SHALL BE THE SAME SIZE AS THE DIFFUSER INLET UNLESS OTHERWISE NOTED. MAXIMUM LENGTH = 12 FEET.
- ALL DUCT TRANSITIONS FROM SQUARE TO ROUND SHALL BE SMOOTH AND TAPERED SQUARE TO ROUND TRANSITIONS. SPIN-IN FITTINGS AT THE END OF CAPPED DUCTS ARE NOT ACCEPTABLE.
- DUCT DIMENSIONS SHOWN ARE INSIDE CLEAR DIMENSIONS.
- VERIFY ALL THERMOSTAT AND FAN LOCATIONS WITH THE ONSITE ENGINEER.
- ROUTE ALL CONDENSATE LINES AS SHOWN ON PLANS. CONDENSATE LINES SHALL BE TRAPPED AND SLOPED 1/8" PER FOOT IN HORIZONTAL RUNS.
- ALL 2x2 DIFFUSERS SHALL HAVE 4-WAY AIR FLOW PATTERNS & ALL SLOT DIFFUSERS SHALL HAVE 2-WAY AIR FLOW PATTERNS UNLESS INDICATED OTHERWISE ON DRAWINGS.
- MOUNT ALL THERMOSTATS 54" ABOVE FINISHED FLOOR.
- REFER TO ARCHITECTURAL ELEVATIONS FOR ALL LOUVER HEIGHTS.
- REFER TO ARCHITECTURAL DRAWINGS FOR ACTUAL BUILDING CONFIGURATION, DIMENSIONS, ETC.
- RISE DUCTWORK UP BETWEEN JOISTS AND TRUSSES WHEN NECESSARY FOR TWO DUCTS TO CROSS.
- USE SPIN-IN AND TWIST LOCK FITTINGS WITH QUADRANT AND EXTRACTOR IN ALL ROUND DUCT TAKE-OFFS FROM RECTANGULAR DUCTWORK. PROVIDE A MANUAL DAMPER IN ALL RUNOUTS TO DIFFUSERS. (THIS IS IN ADDITION TO ODB AT DIFFUSER.)
- ALL FIRE DAMPERS SHALL BE RATED TO MATCH WALL, CEILING, OR PARTITION RATING AS SPECIFIED ON ARCHITECTURAL PLANS. INSTALL FIRE DAMPERS ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
- IF EQUIPMENT TO BE SUPPLIED BY CONTRACTOR IS DIFFERENT THAN THAT SPECIFIED IN PLANS OR SPECIFICATION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH ALL DISCIPLINES ANY CHANGES NEEDED BECAUSE OF UNIT SIZE, ROOF OPENING SIZE, WEIGHT, LOCATION, ELECTRICAL SERVICE, ETC.
- DUCT SMOKE DETECTORS (WHEN REQUIRED) SHALL BE FURNISHED AND WIRED BY THE MECHANICAL CONTRACTOR.
- COORDINATE VOLTAGE OF ALL MECHANICAL EQUIPMENT WITH ELECTRICAL CONTRACTOR BEFORE SUBMITTING SHOP DRAWINGS OR ORDERING EQUIPMENT. ALL POWER AND CONTROL WIRING TO DAMPER MOTORS, VALVE MOTORS, SWITCHES, TIME CLOCKS, AND ALL OTHER CONTROL COMPONENTS IS TO BE PROVIDED BY THE MECHANICAL CONTRACTOR. IT IS HIS RESPONSIBILITY TO COORDINATE WITH HIS SUBCONTRACTORS TO ENSURE THAT THIS PRICE IS INCLUDED IN THE OVERALL MECHANICAL PRICE.
- THE VENTILATION RATE PROCEDURE HAS BEEN USED TO ASSIGN ACCEPTABLE INDOOR AIR QUALITY PER ASHRAE 62-2007. THIS DESIGN SHOULD BE RE-EVALUATED, IF AT A LATER TIME, SPACE USE CHANGES OCCUR OR IF CONTAMINANTS ARE TO BE INTRODUCED OR UNUSUALLY STRONG SOURCES OF SPECIFIC CONTAMINANTS ARE TO BE INTRODUCED INTO THE SPACE.
- COORDINATE WITH THE GENERAL CONTRACTOR TO DETERMINE IF DUCT ROUTING AND SIZE AS PROPOSED IS FEASIBLE GIVEN THE ACTUAL ROOF TRUSS FRAMING SYSTEM TO BE USED. IF NOT, THE MECHANICAL CONTRACTOR SHALL SUBMIT HIS SUGGESTED CHANGE PRIOR TO ANY DUCT FABRICATION.



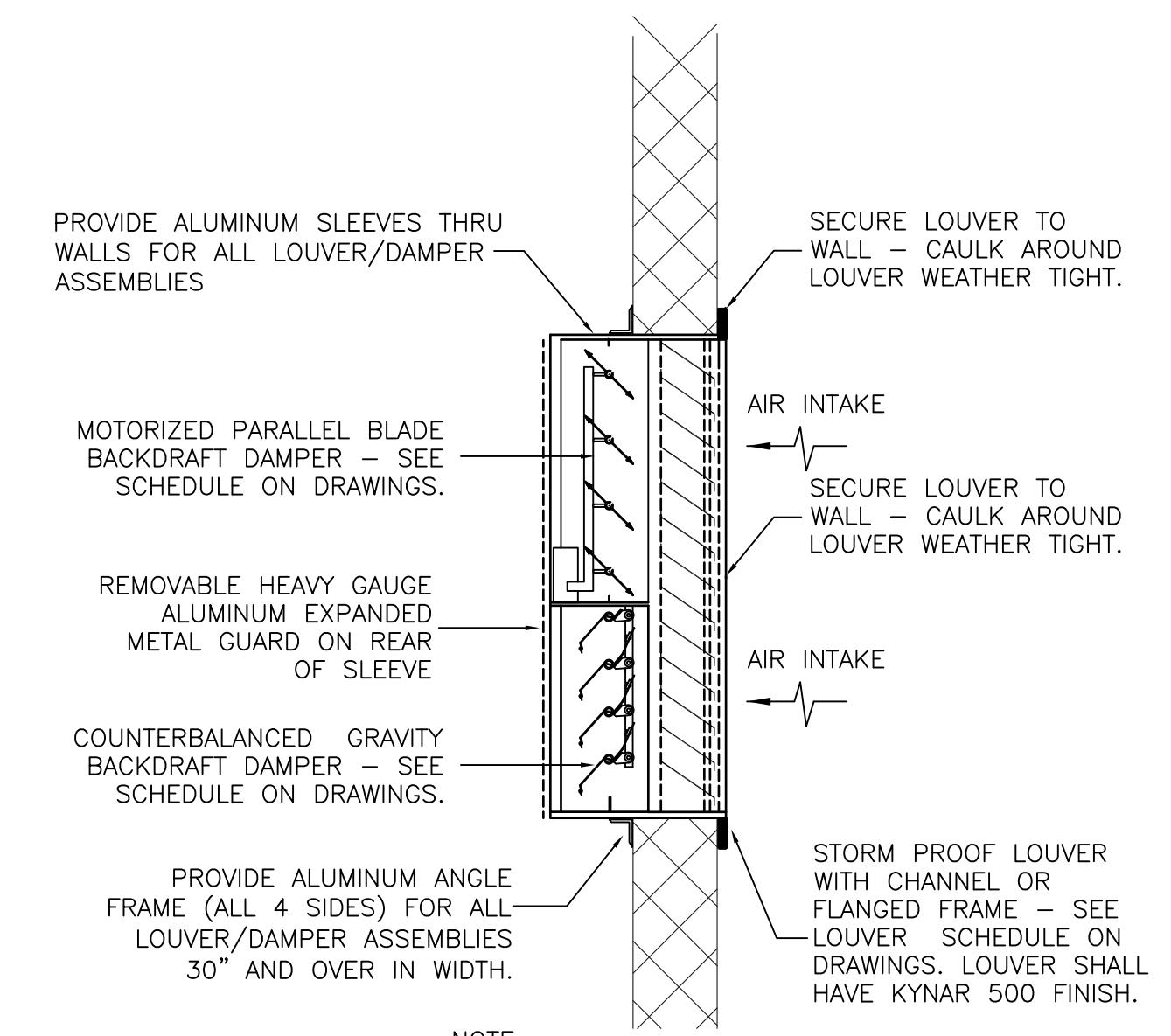
**SIDEWALL CENTRIFUGAL FAN DETAIL**  
NOT TO SCALE



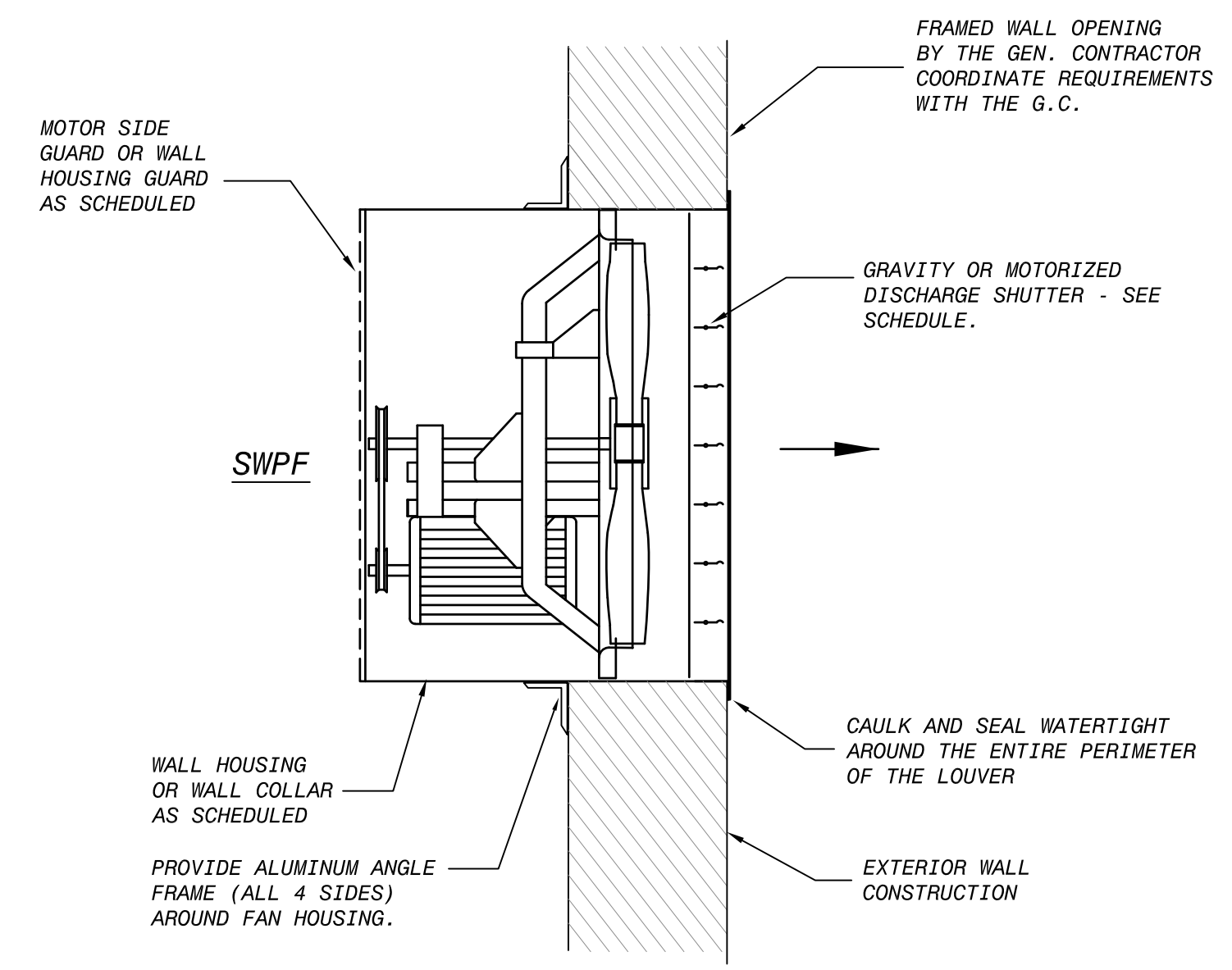
**LOUVER/DAMPER INSTALLATION DETAIL**  
NOT TO SCALE



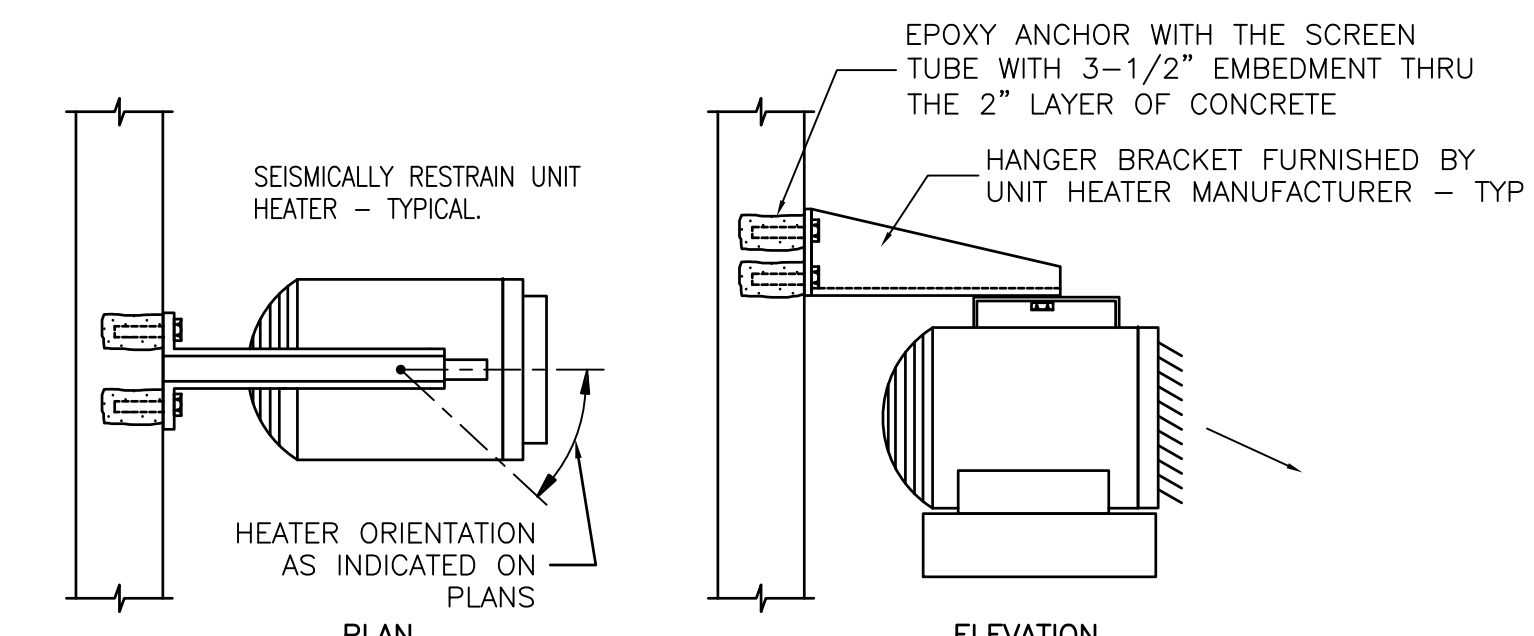
**UPBLAST FAN DETAIL**  
NOT TO SCALE



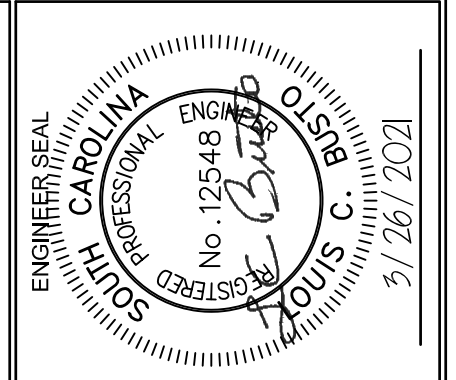
**COMBINATION MOTORIZED/GRAVITY DAMPER/LOUVER INSTALLATION DETAIL**  
NOT TO SCALE



**SIDEWALL EXHAUST FAN DETAIL**  
NOT TO SCALE



**ELECTRIC UNIT HEATER DETAIL**  
NOT TO SCALE



DESIGNED BY:	JHK
DATE:	
DRAWN BY:	JHK
CHECKED BY:	LCB
APPROVED BY:	LCB

**HVAC DETAILS & NOTES**  
 CITY OF LAKE CITY  
 LAKE SWAMP WWTWP UPGRADE



**Constantine Engineering**  
 Mechanical Engineers  
 4000 FABER PLACE DRIVE, SUITE 330  
 NORTH CHARLESTON, SC 29405  
 PH: 843-628-3352

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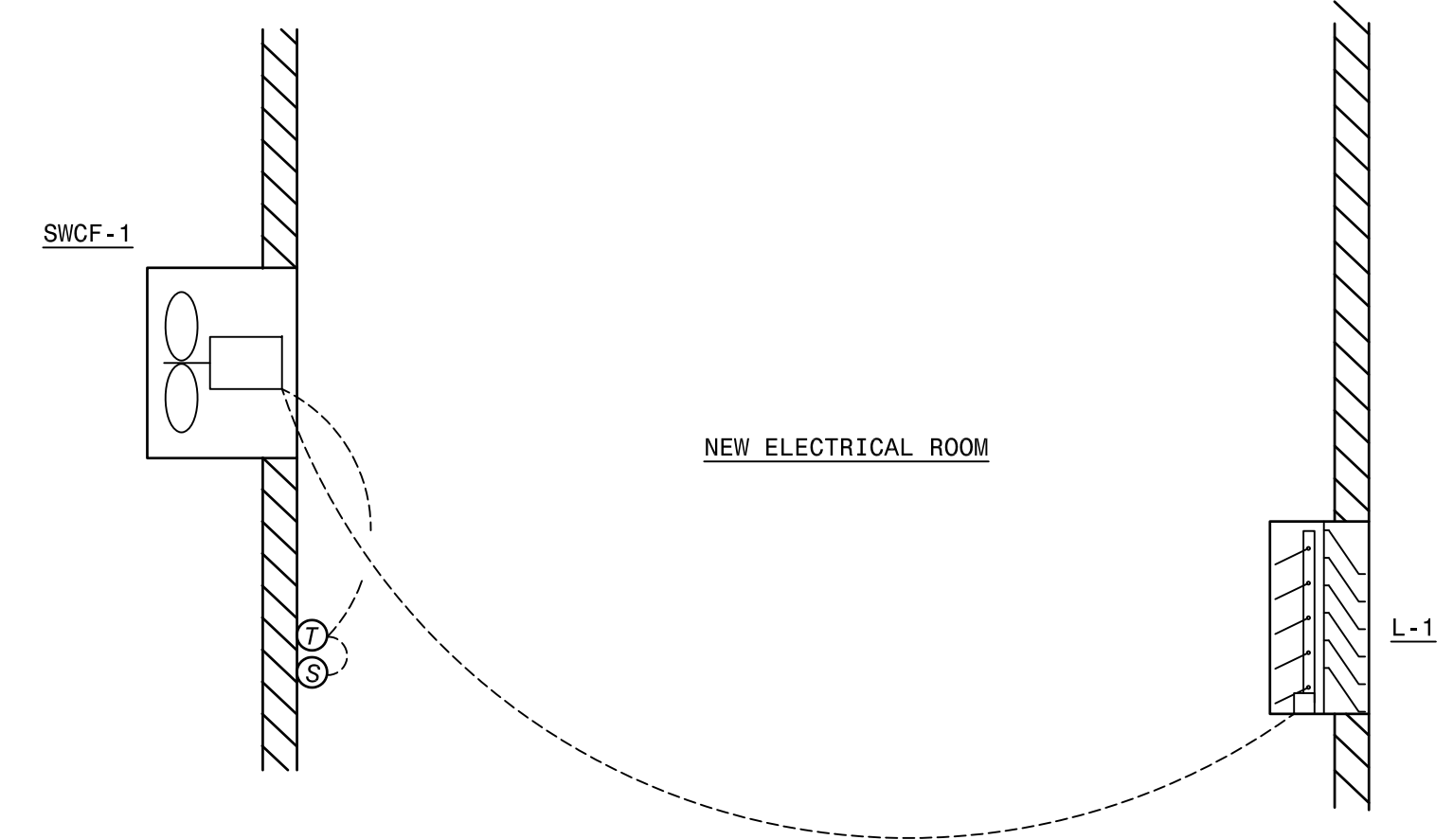
FELKEL & HASTINGS  
 Mechanical Engineers  
 2725 Cypress Street  
 Columbia, S.C. 29205  
 Comm. No.: 21-09 Date: 03-26-21

**BID DOCUMENTS**

C:\DRAWINGS - CURRENT\21-09 LAKE CITY LAKE SWAMP WWTP\ARCH\1-26-2021 UPDATED PLANS\M8.1 BLOWER BUILDING.DWG  
 3/26/2021 10:35 AM  
 REUSE OF DOCUMENTS: THIS DOCUMENT AND THE IDEAS AND DESIGN INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CONSTANTINE ENGINEERING. HOWEVER, THIS SHALL NOT PROHIBIT THE REUSE OF THIS DOCUMENT BY THE CLIENT AS PROVIDED FOR BY THE CONTRACT.

### HVAC GENERAL LEGEND

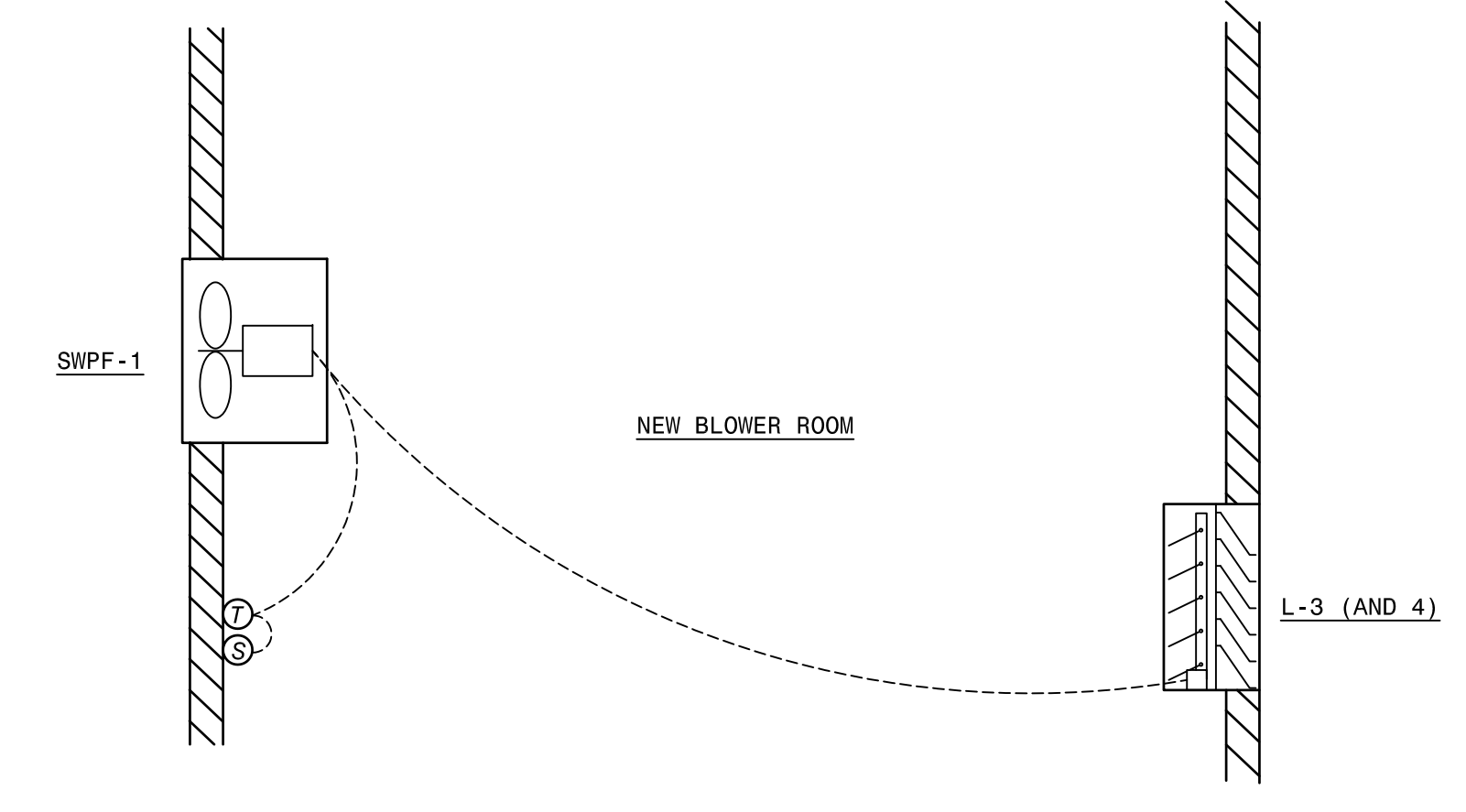
- DIRECTION OF AIR FLOW
- HUMIDITY SENSOR OR HUMIDISTAT
- WALL SWITCH
- STARTER
- TEMPERATURE SENSOR OR THERMOSTAT
- GAS DETECTOR OR SENSOR
- AIR FLOW SWITCH
- SWEF-1 SIDEWALL EXHAUST FAN NO. 1
- SWPF-1 SIDEWALL PROP FAN NO. 1
- ILF-1 INLINE FAN NO. 1
- REF-1 ROOF EXHAUST FAN NO. 1
- CPF-1 CEILING PROP FAN NO. 1
- EUH-1 ELECTRIC UNIT HEATER NO. 1
- EWH-1 ELECTRIC WALL HEATER NO. 1
- AH-1 AIR HANDLER UNIT NO. 1
- CU-1 CONDENSING UNIT NO. 1
- MUA-1 MAKEUP AIR UNIT NO. 1
- L-1 WALL LOUVER NO. 1
- AI-1 ROOF AIR INTAKE VENT NO. 1
- BDD BACKDRAFT DAMPER
- A.D. ACCESS DOOR
- C.O. CLEANOUT
- M.D. MANUAL BALANCING DAMPER
- A.F.F. ABOVE FINISHED FLOOR
- PITCH ARROW - PITCH 1/8"/FT. IN DIRECTION OF ARROW
- NATURAL GAS LINE
- CONDENSATE DRAIN LINE
- REFRIGERANT PIPING (SUCTION AND LIQUID)
- MANUAL DAMPER -M.D.
- TYPE "C" GRILLE (SEE SCHEDULE)
- 6"Ø ROUND NECK
- C-6-60 60 CFM
- VERTICAL MOUNTED FIRE DAMPER
- CEILING RADIATION DAMPER W/BLANKET
- SQUARE TO ROUND TRANSITION
- ROUND FLEXIBLE DUCTWORK
- 90 DEGREE ELBOW WITH TURNING VANES



#### SEQUENCE OF OPERATION

##### SIDEWALL FAN SWCF-1 AND LOUVER/DAMPER L-1:

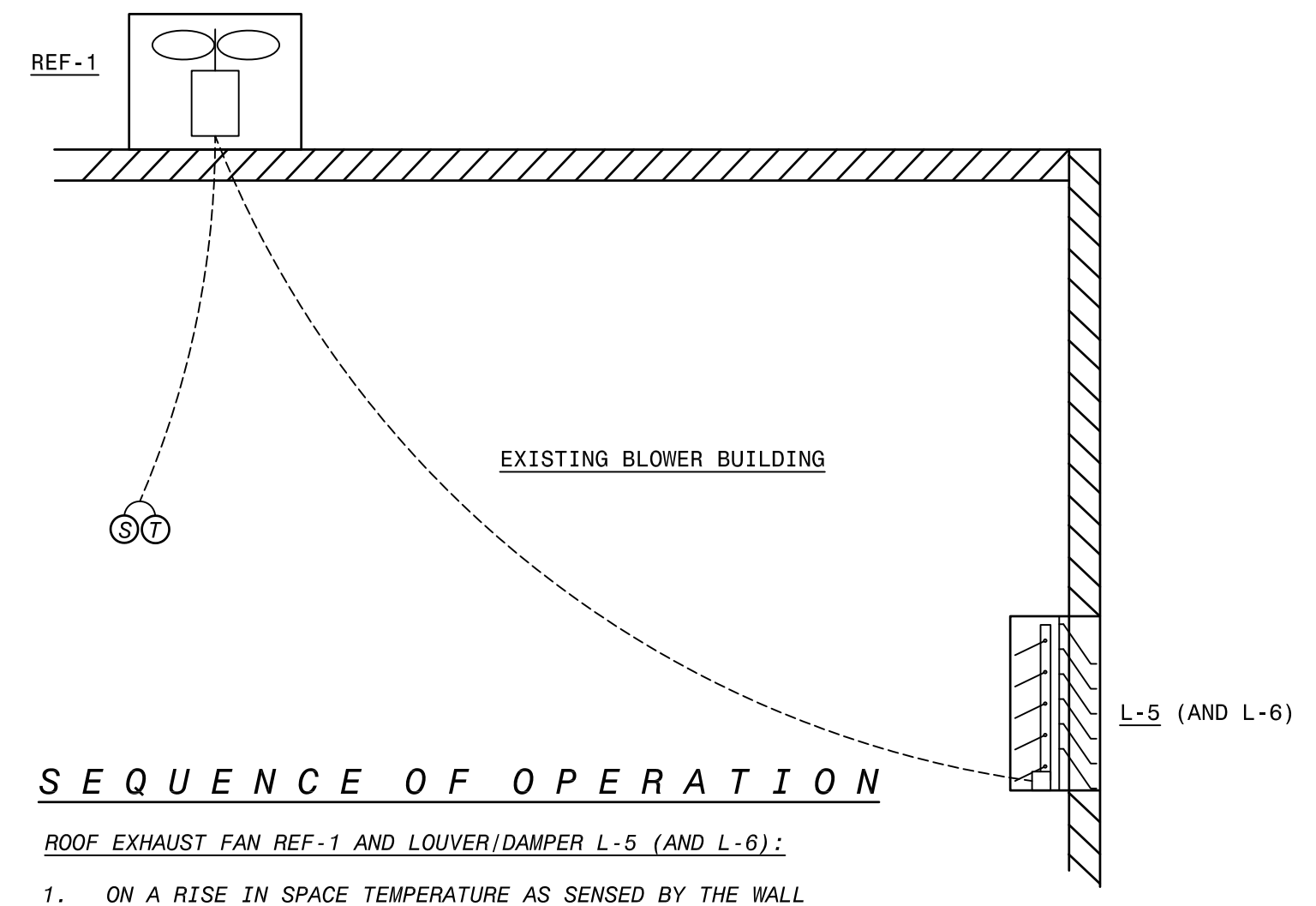
1. ON A RISE IN SPACE TEMPERATURE AS SENSED BY THE WALL COOLING THERMOSTAT THE FAN SHALL BE ENERGIZED. ONCE THE SPACE TEMPERATURE DROPS BELOW THE THERMOSTAT COOLING SETPOINT THE FAN SHALL BE TURNED OFF.
2. THE FAN CAN BE MANUALLY TURNED ON FROM THE WALL SWITCH WIRED IN PARALLEL WITH THE THERMOSTAT. THE WALL SWITCH MUST BE TURNED BACK OFF FOR AUTOMATIC FAN OPERATION FROM THE COOLING THERMOSTAT.
3. MOTORIZED DAMPER ACTUATOR ON THE REAR OF THE WALL LOUVER SHALL BE INTERLOCKED TO OPEN THE DAMPER COMPLETELY WHENEVER THE FAN IS ENERGIZED FROM THE THERMOSTAT OR WALL SWITCH. DAMPER SHALL CLOSE WHEN FAN IS TURNED OFF.
4. ALL POWER AND CONTROL INTERLOCK WIRING BETWEEN FAN, DAMPER ACTUATOR, THERMOSTAT, SWITCH AND STARTER (WHEN APPLICABLE) SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.



#### SEQUENCE OF OPERATION

##### SIDEWALL FAN SWPF-1 AND LOUVER/DAMPER L-3 (AND L-4):

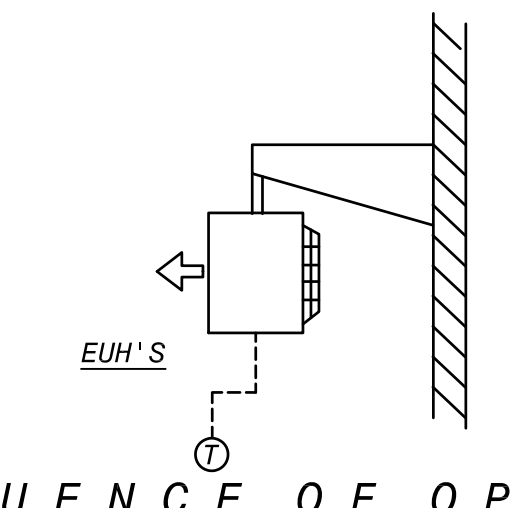
1. ON A RISE IN SPACE TEMPERATURE AS SENSED BY THE WALL COOLING THERMOSTAT THE FAN SHALL BE ENERGIZED. ONCE THE SPACE TEMPERATURE DROPS BELOW THE THERMOSTAT COOLING SETPOINT THE FAN SHALL BE TURNED OFF.
2. THE FAN CAN BE MANUALLY TURNED ON FROM THE WALL SWITCH WIRED IN PARALLEL WITH THE THERMOSTAT. THE WALL SWITCH MUST BE TURNED BACK OFF FOR AUTOMATIC FAN OPERATION FROM THE COOLING THERMOSTAT.
3. MOTORIZED DAMPER ACTUATORS ON THE REAR OF WALL LOUVERS L-3 & L-4 SHALL BE INTERLOCKED TO OPEN THE DAMPER COMPLETELY WHENEVER THE FAN IS ENERGIZED FROM THE THERMOSTAT OR WALL SWITCH. DAMPERS SHALL CLOSE WHEN FAN IS TURNED OFF.
4. ALL POWER AND CONTROL INTERLOCK WIRING BETWEEN FAN, DAMPER ACTUATORS, THERMOSTAT, SWITCH AND STARTER (WHEN APPLICABLE) SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.



#### SEQUENCE OF OPERATION

##### ROOF EXHAUST FAN REF-1 AND LOUVER/DAMPER L-5 (AND L-6):

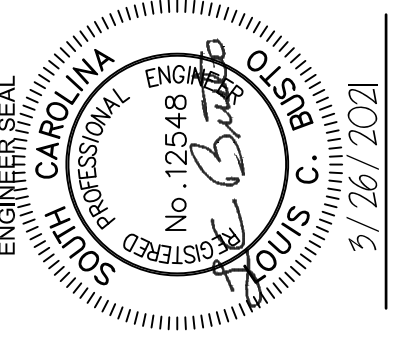
1. ON A RISE IN SPACE TEMPERATURE AS SENSED BY THE WALL COOLING THERMOSTAT THE FAN SHALL BE ENERGIZED. ONCE THE SPACE TEMPERATURE DROPS BELOW THE THERMOSTAT COOLING SETPOINT THE FAN SHALL BE TURNED OFF.
2. THE FAN CAN BE MANUALLY TURNED ON FROM THE WALL SWITCH WIRED IN PARALLEL WITH THE THERMOSTAT. THE WALL SWITCH MUST BE TURNED BACK OFF FOR AUTOMATIC FAN OPERATION FROM THE COOLING THERMOSTAT.
3. MOTORIZED DAMPER ACTUATORS ON THE REAR OF WALL LOUVERS L-5 & L-6 SHALL BE INTERLOCKED TO OPEN THE DAMPER COMPLETELY WHENEVER THE FAN IS ENERGIZED FROM THE THERMOSTAT OR WALL SWITCH. DAMPERS SHALL CLOSE WHEN FAN IS TURNED OFF.
4. ALL POWER AND CONTROL INTERLOCK WIRING BETWEEN FAN, DAMPER ACTUATORS, THERMOSTAT, SWITCH AND STARTER (WHEN APPLICABLE) SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.



#### SEQUENCE OF OPERATION

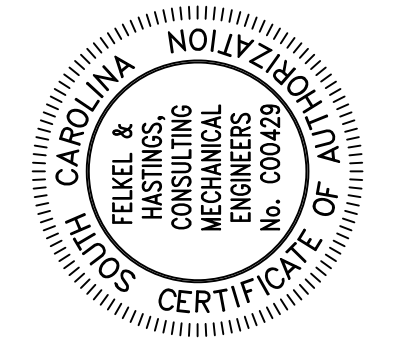
##### ELECTRICAL AND BLOWER ROOMS ELECTRIC UNIT HEATERS EUH-1, EUH-2, EUH-3, EUH-4, EUH-5 AND EUH-6:

1. THE ELECTRIC UNIT HEATER SHALL BE CONTROLLED FROM A WALL MOUNTED 24 VOLT HEATING THERMOSTAT. IF THE SPACE TEMPERATURE DROPS BELOW THE HEATING SET POINT (50 DEGREES F. - ADJUSTABLE) THE ELECTRIC RESISTANCE HEATING ELEMENT AND FAN SHALL BE ENERGIZED. ONCE THE SPACE TEMPERATURE HAS RISEN ABOVE THE HEATING SET POINT THE HEATER SHALL BE DE-ENERGIZED.
2. THERMOSTAT 24 VOLT WIRING AND CONDUIT SHALL BE PROVIDED BY THE MECHANICAL CONTRACTOR. ALL POWER WIRING AND CONDUIT SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.



NO.	DATE	DESIGNED BY:	DRAWN BY:	REVISION	CHECKED BY:	APPROVED BY:
		JHK	JHK		LCB	LCB

**HVAC SEQUENCES OF OPERATION & DETAILS**  
**CITY OF LAKE CITY**  
**LAKE SWAMP WWTP UPGRADE**



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PROJ.	100392.02
DWG.	H99.30

FELKEL & HASTINGS  
 Mechanical Engineers  
 2725 Cypress Street  
 Columbia, S.C. 29205  
 Comm. No.: 21-09 Date: 03-26-21

**BID DOCUMENTS**

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## GENERAL ELECTRICAL NOTES

- CONTRACTOR WILL BE HELD RESPONSIBLE FOR HAVING VISITED THE SITE AND BEING FAMILIARIZED WITH THE EXISTING CONDITIONS PRIOR TO SUBMITTING BID.
- CONSULT APPROVED MANUFACTURER'S WIRING AND CONNECTION DIAGRAMS AND SHOP DRAWINGS IN DETAIL FOR EXACT CONNECTION REQUIREMENTS TO EQUIPMENT PROVIDED BY OTHER TRADES.
- DO NOT SCALE THESE DRAWINGS. ALL ROUGHING TO BE DONE FROM DIMENSIONS ON LAYOUT, ARCHITECTURAL, MECHANICAL, STRUCTURAL DRAWINGS AND SITE INVESTIGATION.
- CONSULT LAYOUT, MECHANICAL AND STRUCTURAL DRAWINGS FOR ADDITIONAL DETAILS CONCERNING EQUIPMENT LOCATIONS AND REQUIREMENTS.
- ALL CONTROL, STATUS AND SIGNAL CABLES/WIRING SHALL BE VERIFIED BY THE EQUIPMENT SUPPLIERS AND/OR SYSTEM INTEGRATOR. ANY CHANGES OR ADDITIONS TO THE SYSTEM INDICATED ON THESE ELECTRICAL DRAWINGS THAT ARE REQUIRED TO ACCOMMODATE A SPECIFIC MANUFACTURER'S EQUIPMENT OR INTEGRATOR'S SYSTEM SHALL BE COVERED BY THE SUPPLIER OR INTEGRATOR.
- ALL CONTROL, STATUS AND SIGNAL CABLES/WIRING SHALL BE IDENTIFIED AT EACH TERMINATION AND IN PULL BOXES BY COLOR CODE OR NUMBERING SYSTEM. PROVIDE SCHEDULE FOR CONNECTIONS BEING MADE UNDER OTHER DIVISIONS.
- CONTRACTOR'S RECORD DRAWINGS SHALL SHOW EXACT LOCATIONS OF UNDERGROUND CONDUITS AND DUCT BANKS.
- CONNECTIONS TO MOTORS AND EQUIPMENT MADE WITH WATERTIGHT FLEXIBLE CONDUIT (WFC) SHALL BE PROPERLY SUPPORTED AND CLAMPED.
- ALL EXPOSED CONDUIT SHALL BE INSTALLED USING SPECIFIED CLAMPS PROVIDING MINIMUM OF 1/2" SPACE BETWEEN CONDUIT AND MOUNTING SURFACE.
- ALL WIRING PULLS SHALL BE WITHIN CABLE MANUFACTURER'S RECOMMENDED CABLE PULL TENSIONS. VERIFY WITH MANUFACTURER AND FIELD RECORD TENSIONS FOR SUBMITTAL TO ENGINEER.
- ALL CONDUIT JOINTS IN UNDERGROUND RUNS FEEDING EQUIPMENT LOCATED LEVEL WITH OR BELOW CONDUIT ELEVATIONS SHALL BE SEALED WITH COPPER BASE CONDUCTIVE COUPLING COMPOUND AFTER WHICH A SEALANT WITH A PVC TAPE WRAP (1/2" OVERLAP) SHALL BE APPLIED TO EXTERIOR OF COUPLING. EXTEND WRAP 6" BEYOND COUPLING ON BOTH SIDES. THIS SHALL BE IN ADDITION TO CONDUIT COATING AS SPECIFIED.
- ANY COATED MATERIAL THAT HAS FINISH DAMAGED, BROKEN OR CUT DURING INSTALLATION SHALL BE CLEANED AND COATED WITH A REPAIR KIT.
- ALL SUPPORT FRAMING HARDWARE, BOLTS, ANCHORS, ETC. SHALL BE PROVIDED IN ACCORDANCE WITH SPECIFICATIONS.
- CONSULT YARD PIPING PLANS FOR NEW AND EXISTING UTILITIES. ACCURACY OF PLANS CANNOT BE GUARANTEED, BUT IT IS ASSUMED THE UTILITIES ARE DENOTED AS CLOSELY AS POSSIBLE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE, MAINTAIN AND PROTECT ANY EXISTING UTILITIES DURING NEW WORK AND REPAIR ANY AND ALL DAMAGED.
- ALTERNATE ROUTING OF YARD CONDUITS FROM THAT INDICATED MAY BE CONSIDERED BUT MUST FIRST BE APPROVED BY ENGINEER.
- ALL FLOOR SAW CUTTING AND CHASING, WALL AND FLOOR CORING AND CHASING OF EXISTING CONSTRUCTION TO ACCOMMODATE ELECTRICAL INSTALLATION SHALL BE PROVIDED UNDER ELECTRICAL CONTRACT. REPAIR OF SUCH FOR A WATERTIGHT INSTALLATION SHALL BE UNDER GENERAL CONTRACT.
- REMOVE ALL EXISTING ELECTRICAL EQUIPMENT, FIXTURES, CONDUIT AND WIRING DEEMED USELESS AND/OR WHERE REMAINING IN VIEW AFTER RENOVATIONS.
- ALL CONTROL AND SIGNAL CABLES/WIRING SHALL BE CONTINUOUS FROM POINT OF ORIGATION TO POINT OF TERMINATION AND PULLED THRU PULL BOXES. NO SPLICES WILL BE ALLOWED.
- UNLESS OTHERWISE NOTED PULL AND JUNCTION BOXES SHALL BE PER SPECIFICATIONS AND SIZED PER CODE AND/OR AS CONDITIONS DICTATE.
- MINIMUM RACEWAY SIZE SHALL BE 3/4".
- LEAVE SUFFICIENT SLACK IN ALL WIRING AND CABLES TO REACH FINAL TERMINATION POINTS. VERIFY FROM APPROVED EQUIPMENT DRAWINGS AND WIRING DIAGRAMS.
- ANY POWER INTERRUPTION SHALL BE SCHEDULED WITH OWNER IN WRITING 72 HOURS PRIOR TO SHUTDOWN. SHUTDOWNS MAY BE LIMITED TO OFF-PEAK HOURS (LATE NIGHT).
- SUSPENDED CONDUITS SHALL BE SUPPORTED WITH PROPERLY INSTALLED TRAPEZE HANGERS AND CONDUIT CLAMPS. INSTALL ALL NECESSARY HARDWARE FOR HANGER RODS.
- ROUTING OF RACEWAYS IS ONLY A SUGGESTION BUT SHOULD BE FOLLOWED AS CLOSELY AS POSSIBLE. HOWEVER, ALTERNATE ROUTING WILL BE CONSIDERED WHERE BROUGHT TO THE ATTENTION OF THE ENGINEER AND SHOWN TO BE MORE FEASIBLE. WHERE EXACT ROUTING IS NOT INDICATED, RACEWAYS SHALL BE ROUTED CONCEALED IN SLAB OR STRUCTURE IN THE MOST PRUDENT MANNER.
- TERMINATE ALL METALLIC WIRING AT CONTROL/SCADA/CCTV PANELS AND PROCESS INSTRUMENTATION IN ACCORDANCE WITH MANUFACTURER'S APPROVED WIRING DIAGRAMS.
- COORDINATE EXACT LOCATIONS OF LIGHT FIXTURES TO CLEAR WORK OF OTHER TRADES.
- SPD'S ARE SHOWN ON ONE LINE DIAGRAMS AND INDICATED IN EQUIPMENT SCHEDULES. FIELD COORDINATE LOCATIONS AND CONNECTIONS WHERE EXTERNAL TO EQUIPMENT.
- EXISTING CONDUITS MAY BE RE-USED WHERE CLEANED BY PULLING THROUGH A SWAB FOLLOWED BY A MANDREL 85% OF THE CONDUIT INSIDE DIAMETER.

## HAZARDOUS LOCATION NOTES

HAZARDOUS LOCATIONS EXIST THROUGHOUT THE PLANT. THESE LOCATIONS ARE IDENTIFIED ON EACH PLAN SHEET. WHERE FEASIBLE, IT IS INTENDED TO INSTALL ALL ELECTRICAL EQUIPMENT ABOVE AND BEYOND HAZARDOUS AREAS. WHERE EQUIPMENT IS INSTALLED WITHIN OR CONDUIT PASSES THROUGH THESE AREAS, THE INSTALLATION AND EQUIPMENT SHALL COMPLY WITH ARTICLE 500 OF THE NATIONAL ELECTRICAL CODE.

INSTALL SEAL-OFFS IN CLASSIFIED AREAS AS NOTED BELOW:

- INSTALL SEAL WITHIN 18" OF ANY DEVICE THAT MIGHT PRODUCE ARCS, SPARKS OR HIGH TEMPERATURES OR IN CONDUITS 2" OR LARGER.
- INSTALL SEAL-OFF IN EACH CONDUIT RUN CROSSING A CLASS1, DIV. 1 BOUNDARY. SEALING FITTING SHALL BE LOCATED WITHIN 10' OF THE BOUNDARY AND MAY BE LOCATED ON EITHER SIDE OF THE BOUNDARY.
- INSTALL SEAL-OFF IN EACH CONDUIT RUN CROSSING A CLASS 1, DIV. 2 BOUNDARY. SEALING FITTING MAY BE LOCATED ON EITHER SIDE OF THE BOUNDARY.
- THERE SHALL BE NO UNION, COUPLING, BOX OR FITTING IN THE CONDUIT BETWEEN THE SEALING FITTING AND THE POINT AT WHICH THE CONDUIT LEAVES THE CLASSIFIED AREA EXCEPT FOR EXPLOSION-PROOF REDUCERS AT THE SEALING FITTING.
- WHERE EXISTING CONDUIT WITH SEALS ARE TO BE RE-USED AND WIRING IS TO BE REPLACED (SUCH THAT INTEGRITY OF THE SEAL CANNOT BE MAINTAINED), RETROFIT TYPE SEALS MAY BE USED.

## SEQUENCING NOTES

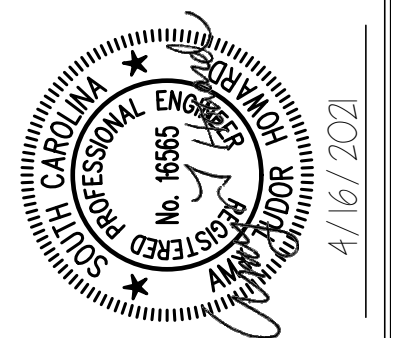
- ALL OUTAGES SHALL BE SCHEDULED WITH OWNER 72 HOURS IN ADVANCE AND SHALL NOT EXCEED 8 HOURS. DURING THE OUTAGE POWER SHALL BE ABLE TO BE RESTORED WITHIN 30 MINUTES AT THE OWNER'S REQUEST.
- OUTAGES SHALL BE SCHEDULED DURING NON-PEAK HOURS AND TO AVOID CERTAIN WEATHER EVENTS AS DIRECTED BY OWNER.
- A SPECIFIC PLAN OF ACTION SHALL BE SUBMITTED FOR EACH OUTAGE.
- SEE PLAN SHEETS FOR ADDITIONAL REQUIREMENTS.

## DEMOLITION NOTES

- REMOVE CONDUIT AND WIRING NO LONGER IN USE AT COMPLETION OF WORK.
- WHERE CONDUIT ASSOCIATED WITH AN ITEM IS IN AN INACCESSIBLE AREA (SUCH AS ENCASED IN CONCRETE), ABANDON INACCESSIBLE CONDUIT IN PLACE AND CAP OR SEAL.
- WHERE SUCH INACCESSIBLE CONDUIT ENDS OR MUST BE TERMINATED IN FINISHED SURFACE OF WALL, CEILING OR FLOOR, CUT OFF FLUSH AND FILL VOID WITH NON-SHRINKING GROUT AND FINISH TO MATCH SURROUNDING SURFACES.
- MATERIALS THAT MAY BE SALVAGED NOT LISTED ABOVE ARE TO BE TURNED OVER TO THE OWNER. UNWANTED MATERIALS SHALL BE DISPOSED OF BY THIS CONTRACTOR.

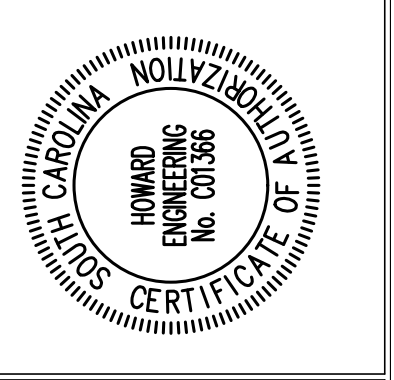
## ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
	WALL MOUNTED TYPE LUMINAIRE - "A" REFERS TO LIGHTING FIXTURE SCHEDULE DESIGNATION, "3" REFERS TO THE CIRCUIT NUMBER, "EM" INDICATES LUMINAIRE SHALL BE PROVIDED WITH PROVISIONS FOR POWERING FROM A SEPARATE DC CIRCUIT DURING LOSS OF NORMAL BUILDING POWER. CONNECT TO NEAREST EMERGENCY LIGHTING UNIT.
	SURFACE/PENDANT MOUNTED FLUORESCENT LUMINAIRE - "A" REFERS TO LIGHTING FIXTURE SCHEDULE DESIGNATION, "3" REFERS TO THE CIRCUIT NUMBER, "B" REFERS TO SWITCH CONTROL IF NECESSARY.
	SITE LIGHT - "A" REFERS TO LIGHTING FIXTURE SCHEDULE DESIGNATION, "3" REFERS TO THE CIRCUIT NUMBER, "S" REFERS TO SWITCH CONTROL IF NECESSARY.
	WALL SWITCH - MOUNT AT 48" AFF. 20 AMP. RATED. SINGLE POLE UNLESS NOTED 3-WAY OR 4-WAY. "a" INDICATES LIGHT FIXTURE CONTROLLED.
	HOMERUN - EXTEND FEEDER TO THE DESIGNATED PANELBOARD OR DEVICE. WHERE MORE THAN TWO, CROSSHATCHED LINES INDICATE THE QUANTITY OF CURRENT CARRYING CONDUCTORS NOT INCLUDING THE GROUND CONDUCTOR. CIRCUITS SHARING A COMMON NEUTRAL SHALL BE CONNECTED TO DIFFERENT PHASES REGARDLESS OF THE NUMBERING. ALL CIRCUITS SHALL BE PROVIDED WITH A GREEN CODE SIZE EQUIPMENT GROUND CONDUCTOR. BOND TO GROUND BUS BAR IN PANELBOARD
	RACEWAY RUN EXPOSED. NOTATIONS SAME AS ABOVE.
	RACEWAY RUN UNDERGROUND OR UNDERFLOOR. NOTATIONS SAME AS ABOVE.
	DUPLEX RECEPTACLE - 120-VOLT, 20-AMP. MOUNT 18" AFF TO CENTERLINE, UNLESS OTHERWISE NOTED. "3" REFERS TO THE CIRCUIT NUMBER.
	GROUND FAULT CIRCUIT INTERRUPTING DUPLEX RECEPTACLE - 120-VOLT, 20-AMP WITH GFCI PROTECTION IN THE RECEPTACLE. MOUNT 18" AFF TO CENTERLINE, UNLESS OTHERWISE NOTED. "3" REFERS TO THE CIRCUIT NUMBER. "WP" INDICATES RECEPTACLE SHALL BE WEATHERPROOF AND PROVIDE WITH CONTINUOUS-USE COVER.
	GROUND FAULT RECEPTACLE ABOVE COUNTER. 42" UP TO CENTERLINE - VERIFY.
	TWO DUPLEX RECEPTACLES MTD. IN QUAD BOX. 42" UP TO CENTERLINE UNLESS NOTED OTHERWISE.
	SURFACE JUNCTION BOX OR PULL BOX. SEE SPECIFICATIONS FOR TYPE. A-ANALOG SIGNALS, D-DIGITAL SIGNALS, P-120V OR 480V POWER
	TELEPHONE OUTLET - MOUNT BOX AT 48" AFF. EXTEND 3/4" CONDUIT WITH PULL CORD BACK TO TELEPHONE BOARD. PROVIDE BLANK COVERPLATE.
	DATA OR COMBINATION TELEPHONE/DATA OUTLET, MOUNTING HEIGHT 18 AFF UNLESS NOTE OTHERWISE. EXTEND 3/4" CONDUIT UP ABOVE CEILING AND INSTALL BUSHING. PROVIDE QUAD BOX FOR TELEPHONE DATA OUTLETS BY INSTALLER.
	SPECIAL PURPOSE RECEPTACLE (STOVE - 50 AMP, NEMA 14-50, COORDINATE WITH EQUIPMENT SUPPLIER.
	CONTROL STATION. SEE DESCRIPTION ON PLANS.
	NEMA 4X, 120 VOLT MANUAL MOTOR SWITCH (PROVIDE 1P DEVICE FOR 120V. CIRCUITS, 2P DEVICE FOR 208/240V CIRCUITS, 3P DEVICE FOR 3Ø CIRCUITS). PROVIDE CAST ALUMINUM BOX AND CAST ALUMINUM COVER. ALL SCREWS TO BE STAINLESS STEEL.
	NEMA 4, 120 VOLT MAGNETIC MOTOR STARTER (PROVIDE 1P DEVICE FOR 120V. CIRCUITS, 3P DEVICE FOR 3Ø CIRCUITS).
	HANDHOLE. SEE SPECIFICATIONS.
	600V. HEAVY DUTY SAFETY SWITCH. "XXX/Y/ZZ/FAAA". "XXX" INDICATES FRAME SIZE; "Y" INDICATES NUMBER OF POLES; "ZZ" INDICATES ENCLOSURE NEMA RATING ("1" = NEMA 1, "3R" = NEMA 3R, "4X" = NEMA 4X); AND "FAAA" INDICATES FUSE SIZE ("FPM" = FUSE PER MANUFACTURER REQUIREMENTS), NO TEXT INDICATES NON-FUSED DISCONNECT SWITCH.
	NEMA SIZE 1, 480 VOLT, 3P COMBINATION STARTER WITH H-O-A, CPT AND RED RUN LIGHT IN NEMA 4X SST ENCLOSURE UNLESS NOTED OTHERWISE.
	20 AMP, 1P WALL SWITCH FOR CONTROL OF FAN.
	SINGLE FACE CEILING MOUNTED ILLUMINATED EXIT SIGN. EXIT SIGN SHALL HAVE A FACE (SHADED AREA). PROVIDE WITH A BATTERY PACK FOR OPERATION OF TWO LAMPS DURING LOSS OF NORMAL BUILDING POWER. BATTERY PACK SHALL BE UN-SWITCHED EXCEPT FOR THE CIRCUIT BREAKER. SEE LIGHTING FIXTURE SCHEDULE.
	EMERGENCY LIGHTING UNIT. SEE LIGHTING FIXTURE SCHEDULE.
	INDUCTION MOTOR, DESIGNATION: HORSEPOWER.
	EMERGENCY LIGHTING UNIT REMOTE HEAD. SEE LIGHTING FIXTURE SCHEDULE.
	PHOTOCELL
	CAMERA BY OTHERS. "FF" DENOTES FIXED FRAME, "PTZ" DENOTES PAN, TILT ZOOM
	SOLENOID VALVE, BY OTHERS.
	MOTOR OPERATED VALVE ACTUATOR, BY OTHERS.
	LIMIT SWITCH, BY OTHERS. (H-HIGH, L-LOW)
	FLOW INDICATING TRANSMITTER, BY OTHERS. (FE-FLOW ELEMENT)
	LEVEL INDICATING TRANSMITTER, BY OTHERS. (LE-LEVEL ELEMENT)
	NEMA 4X ALARM HORN/LIGHT (RED, 120V). EDWARDS SIGNAL OR EQUAL.



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REVISION:	HH
CHECKED BY:	AH
APPROVED BY:	JK

ELECTRICAL LEGEND AND GENERAL NOTES  
 CITY OF LAKE CITY  
 LAKE SWAMP WWTP UPGRADE

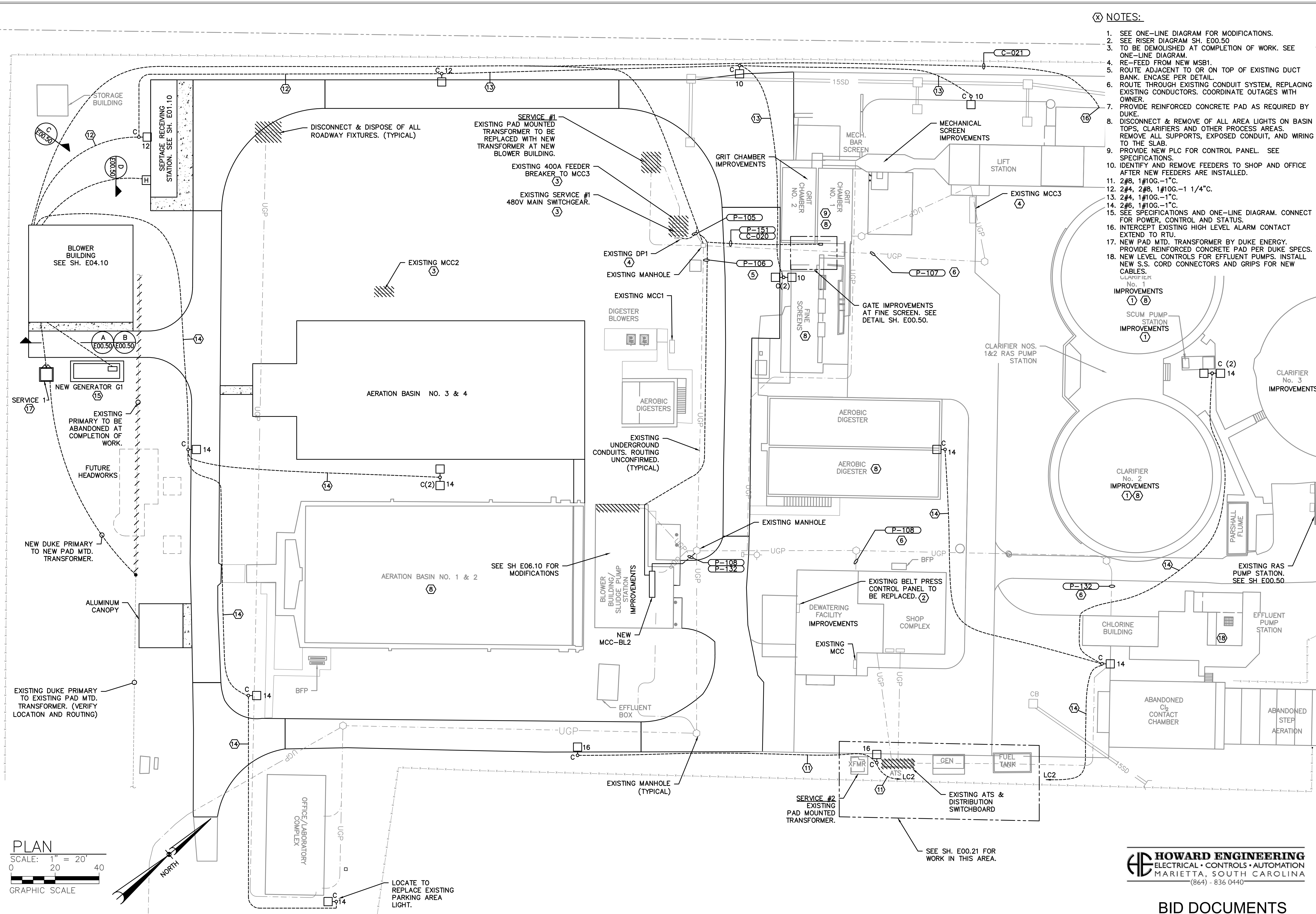


Constantine Engineering  
 4000 FABER PLACE DRIVE, SUITE 330  
 NORTH CHARLESTON, SC 29405  
 PH. 843-628-3352

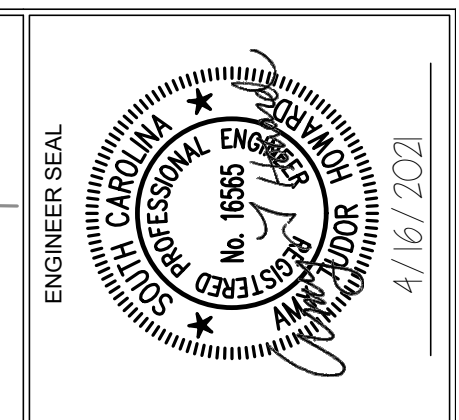
**HOWARD ENGINEERING**  
 ELECTRICAL • CONTROLS • AUTOMATION  
 MARIETTA, SOUTH CAROLINA  
 (864) - 836 0440

BID DOCUMENTS

FILE	SEE LEFT
VERIFY SCALE	BAR IS ONE INCH ON ORIGINAL DRAWING
DATE	MARCH 2021
PROJ.	100392.02
DWG.	E00.10

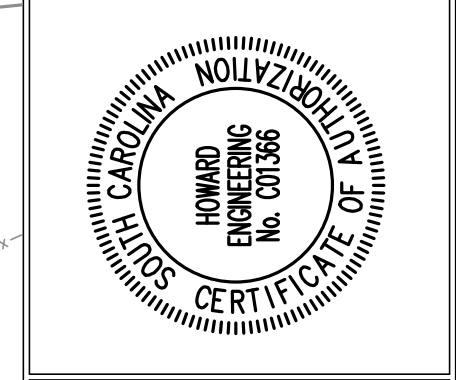


- ⊗ NOTES:
- SEE ONE-LINE DIAGRAM FOR MODIFICATIONS.
  - SEE RISER DIAGRAM SH. E00.50
  - TO BE DEMOLISHED AT COMPLETION OF WORK. SEE ONE-LINE DIAGRAM.
  - RE-FEED FROM NEW MSB1.
  - ROUTE ADJACENT TO OR ON TOP OF EXISTING DUCT BANK. ENCASE PER DETAIL.
  - ROUTE THROUGH EXISTING CONDUIT SYSTEM, REPLACING EXISTING CONDUCTORS. COORDINATE OUTAGES WITH OWNER.
  - PROVIDE REINFORCED CONCRETE PAD AS REQUIRED BY DUKE.
  - DISCONNECT & REMOVE OF ALL AREA LIGHTS ON BASIN TOPS, CLARIFIERS AND OTHER PROCESS AREAS. REMOVE ALL SUPPORTS, EXPOSED CONDUIT, AND WIRING TO THE SLAB.
  - PROVIDE NEW PLC FOR CONTROL PANEL. SEE SPECIFICATIONS.
  - IDENTIFY AND REMOVE FEEDERS TO SHOP AND OFFICE AFTER NEW FEEDERS ARE INSTALLED.
  - 2#8, 1#10G-1"C.
  - 2#4, 2#8, 1#10G-1 1/4"C.
  - 2#4, 1#10G-1"C.
  - 2#6, 1#10G-1"C.
  - SEE SPECIFICATIONS AND ONE-LINE DIAGRAM. CONNECT FOR POWER, CONTROL AND STATUS.
  - INTERCEPT EXISTING HIGH LEVEL ALARM CONTACT EXTEND TO RTU.
  - NEW PAD MTD. TRANSFORMER BY DUKE ENERGY. PROVIDE REINFORCED CONCRETE PAD PER DUKE SPECS.
  - NEW LEVEL CONTROLS FOR EFFLUENT PUMPS. INSTALL NEW S.S. CORD CONNECTORS AND GRIPS FOR NEW CABLES.

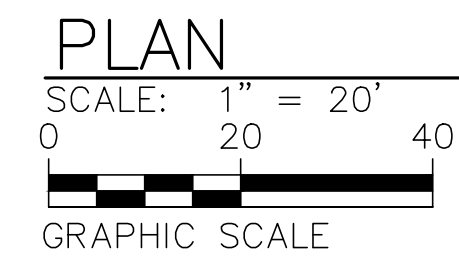


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		AH	AH	HH	AH	JK

ELECTRICAL SITE PLAN  
CITY OF LAKE CITY  
LAKE SWAMP WWTP UPGRADE



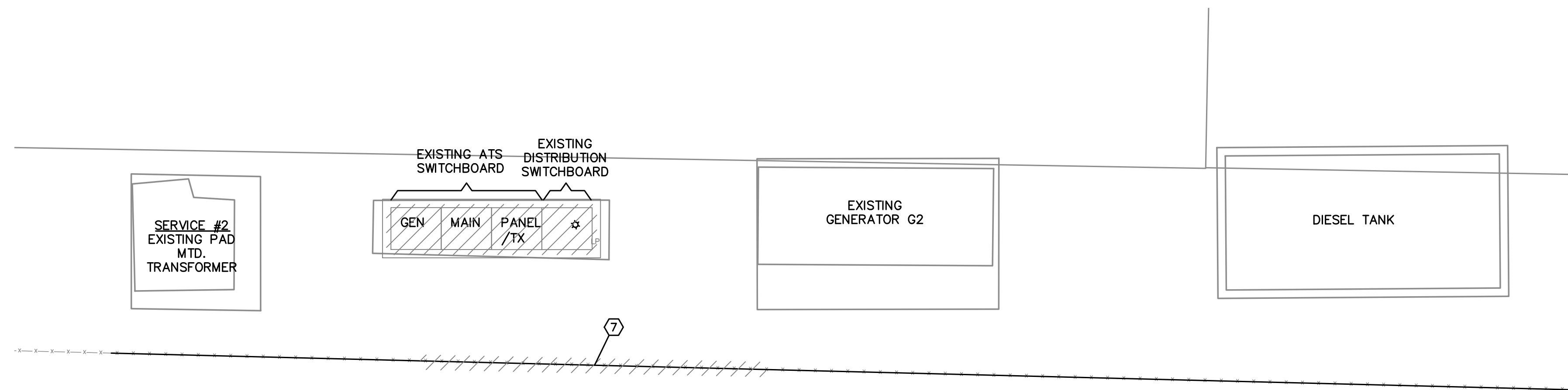
**Constantine Engineering**  
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**HOWARD ENGINEERING**  
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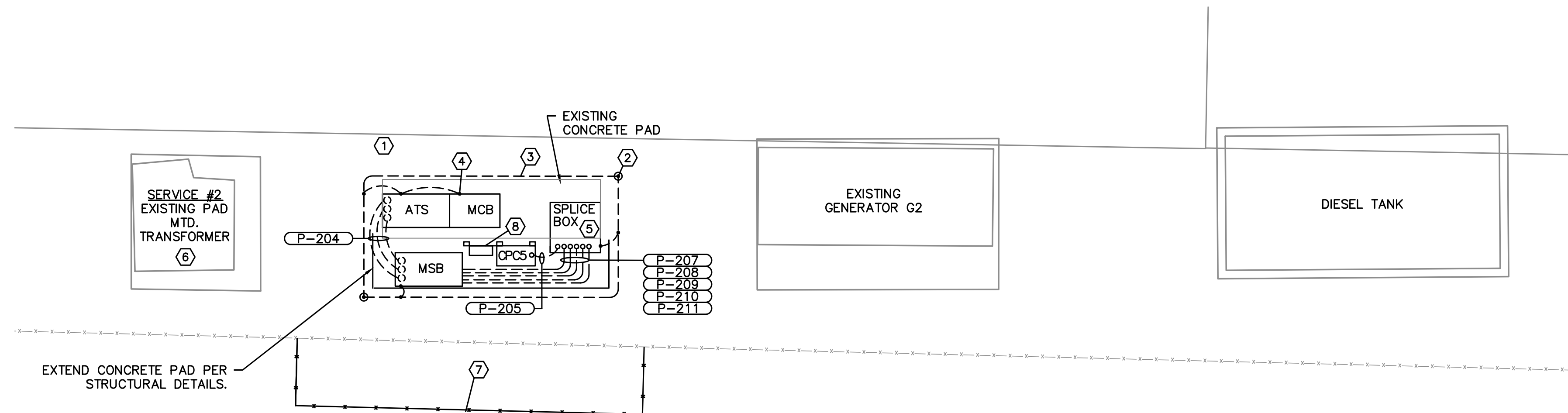
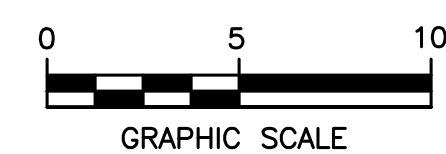
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 \\HE-2-SERVER\DATA\PROJECTS\A1961-F\DRAWINGS\A1961-E00.21-PARTIAL ELECTRICAL SITE PLAN.DWG  
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**PARTIAL ELECTRICAL SITE PLAN**

**DEMOLITION**

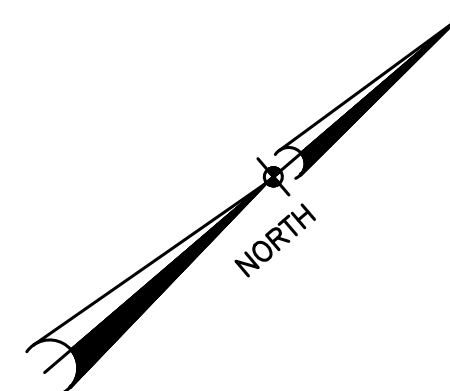
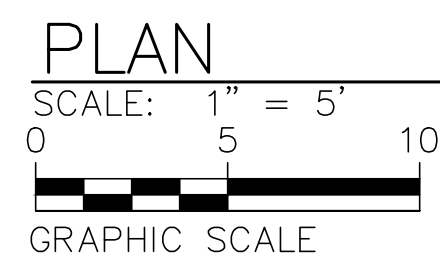
SCALE: 1" = 5'-0"



**PARTIAL ELECTRICAL SITE PLAN**

**NEW WORK**

SCALE: 1" = 5'-0"

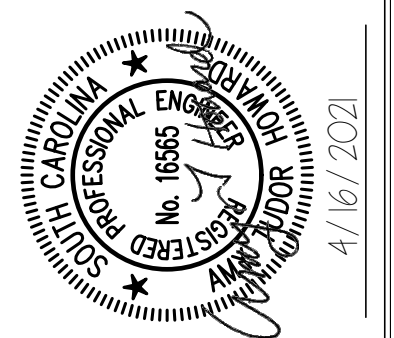


**SEQUENCING NOTES:**

1. PRIOR TO BEGINNING WORK, THE CONTRACTOR IS RESPONSIBLE FOR SUBMITTING A DETAILED PLAN OF ACTION AS NOTED IN GENERAL SEQUENCING NOTES. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL DETAILS OF THIS WORK AND ENSURING ALL COMPONENTS ARE ON SITE TO COMPLETE THE SWITCHOVER IN THE TIME ALLOCATED. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING BUS EXTENSIONS FOR MAIN AND GENERATOR FIELD CONNECTIONS IF NECESSARY TO CONNECT TO EXISTING CONDUCTORS.
2. INSTALL NEW CONDUIT FOR NEW ATS, MSB AND SPLICE BOX.
3. MODIFY EXISTING CONCRETE PAD AS REQUIRED TO ACCEPT NEW EQUIPMENT.
4. INSTALL NEW CPC5 AND LC2. PROVIDE TEMPORARY 480V FEED FROM DISTRIBUTION SWITCHBOARD. INTERCEPT EXISTING 120/208 V BRANCH CIRCUITS IN PANELBOARD SECTION OF SWITCHBOARD AND EXTEND TO CPC5 BRANCH BREAKERS. INSTALL N4X JUNCTION BOX AS NECESSARY.
5. PROVIDE TEMPORARY CABLE TO POWER EXISTING DISTRIBUTION SWITCHBOARD FROM EXISTING GENERATOR.
6. AFTER COORDINATING OUTAGE WITH OWNER, DE-ENERGIZE DISTRIBUTION SWITCHBOARD AND CONNECT TEMPORARY CABLES SUCH THAT THE SWITCHBOARD IS POWERED FROM THE STANDBY GENERATOR.
7. DISCONNECT AND REMOVE THE EXISTING ATS SWITCHBOARD AND INSTALL NEW MCB AND ATS, CONNECTING TO NEW AND EXISTING CABLES.
8. STARTUP AND COMMISSION NEW MCB AND ATS. PROVIDE TEMPORARY CABLES FROM ATS TO EXISTING DISTRIBUTION SWITCHBOARD.
9. INSTALL AND ENERGIZE NEW SWITCHBOARD FROM ATS. EXTEND EXISTING FEEDERS FROM EXISTING TO NEW SWITCHBOARD. FEEDERS SHALL BE DE-ENERGIZED ONE AT A TIME TO MINIMIZE OUTAGES.
10. AFTER ALL FEEDERS ARE FED FROM NEW EQUIPMENT, REMOVE EXISTING SWITCHBOARD AND INSTALL SPLICE BOX.
11. ALTERNATE METHODS WILL BE CONSIDERED BASED ON CONTRACTOR'S RECOMMENDATIONS AFTER REVIEWING EXISTING CONDITIONS.

**NOTES:**

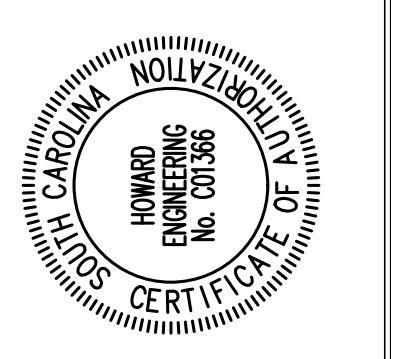
1. SEE ONE-LINE DIAGRAM FOR 480 VOLT WIRING.
2. 3/4" DIA. X 10' COPPERCLAD GROUND ROD.
3. #4/0 BARE COPPER GROUND, 30" DEEP.
4. EXOTHERMIC WELD.
5. NEW SCREW COVER STAINLESS STEEL SPLICE BOX.
6. COORDINATE OUTAGES WITH DUKE ENERGY.
7. REMOVE AND REPLACE 2 SECTIONS OF FENCE TO ALLOW CODE CLEARANCE AROUND NEW GEAR.
8. LIGHTING CONTACTOR "LC2" IN N4X S.S. ENCLOSURE (30A, 4P WITH H-0-A). MOUNT PHOTOCELL ON EQUIPMENT RACK.



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PARTIAL ELECTRICAL SITE PLAN  
SERVICE #2

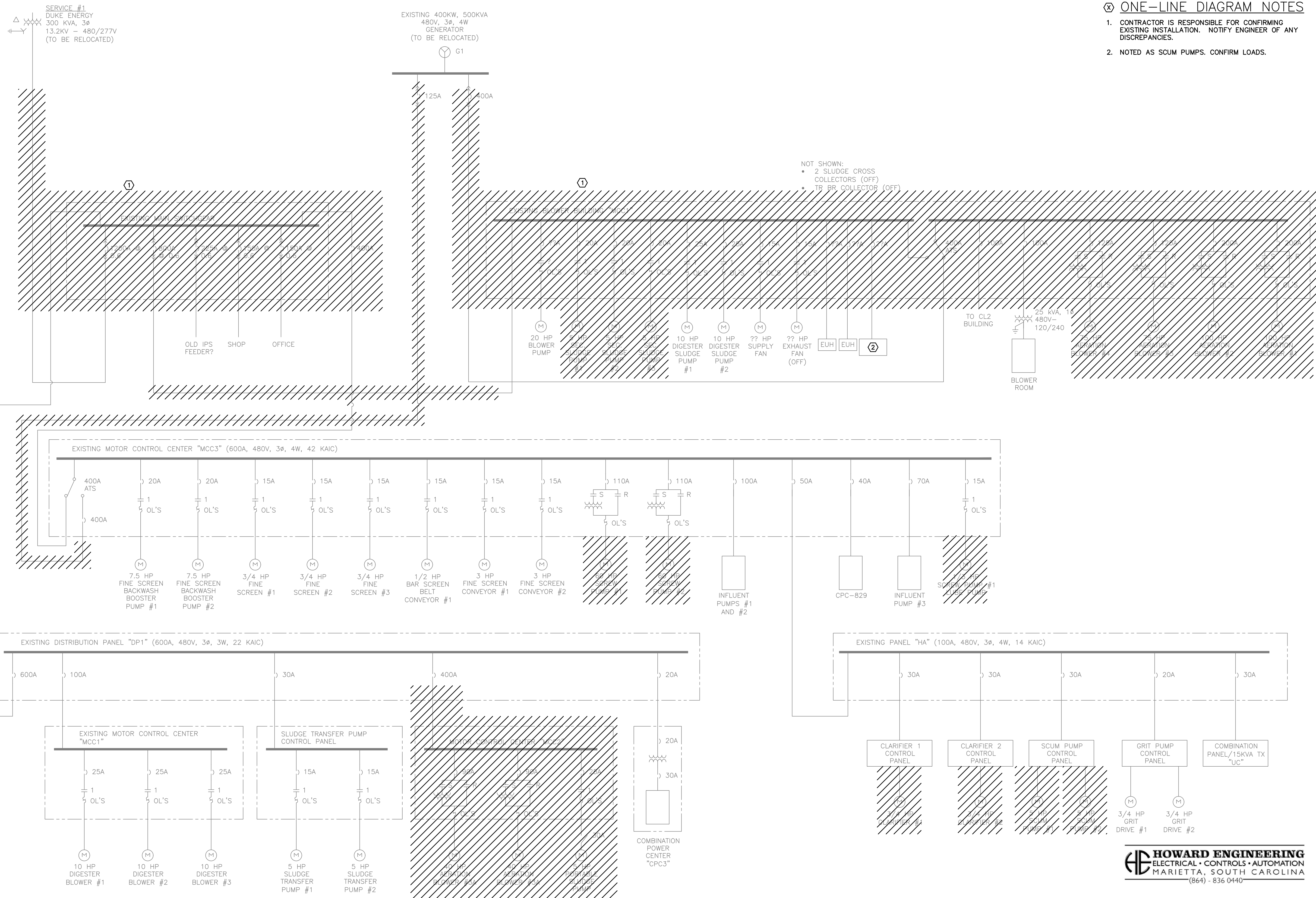
CITY OF LAKE CITY  
LAKE SWAMP WWTP UPGRADE



FILE	SEE LEFT
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DATE	MARCH 2021
PROJ.	100392.02
DWG.	E00.21

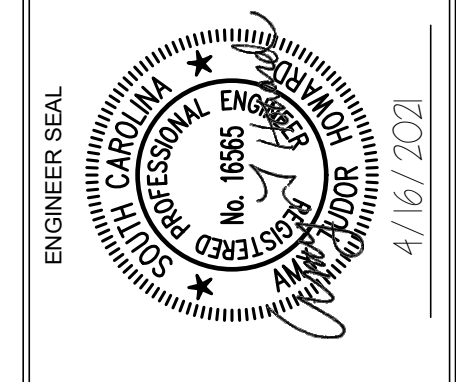
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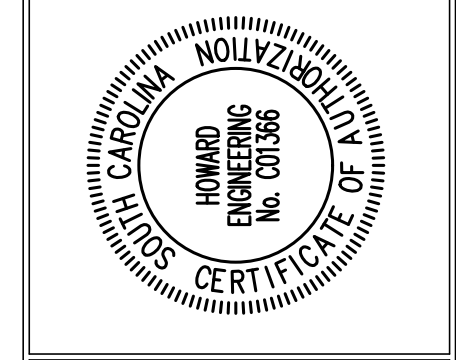
⊗ ONE-LINE DIAGRAM NOTES

1. CONTRACTOR IS RESPONSIBLE FOR CONFIRMING EXISTING INSTALLATION. NOTIFY ENGINEER OF ANY DISCREPANCIES.
2. NOTED AS SCUM PUMPS. CONFIRM LOADS.



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		AH	AH	HH	AH	JK

SERVICE #1 ONE-LINE DIAGRAM  
 (DEMOLITION)  
 CITY OF LAKE CITY  
 LAKE SWAMP WWTP UPGRADE



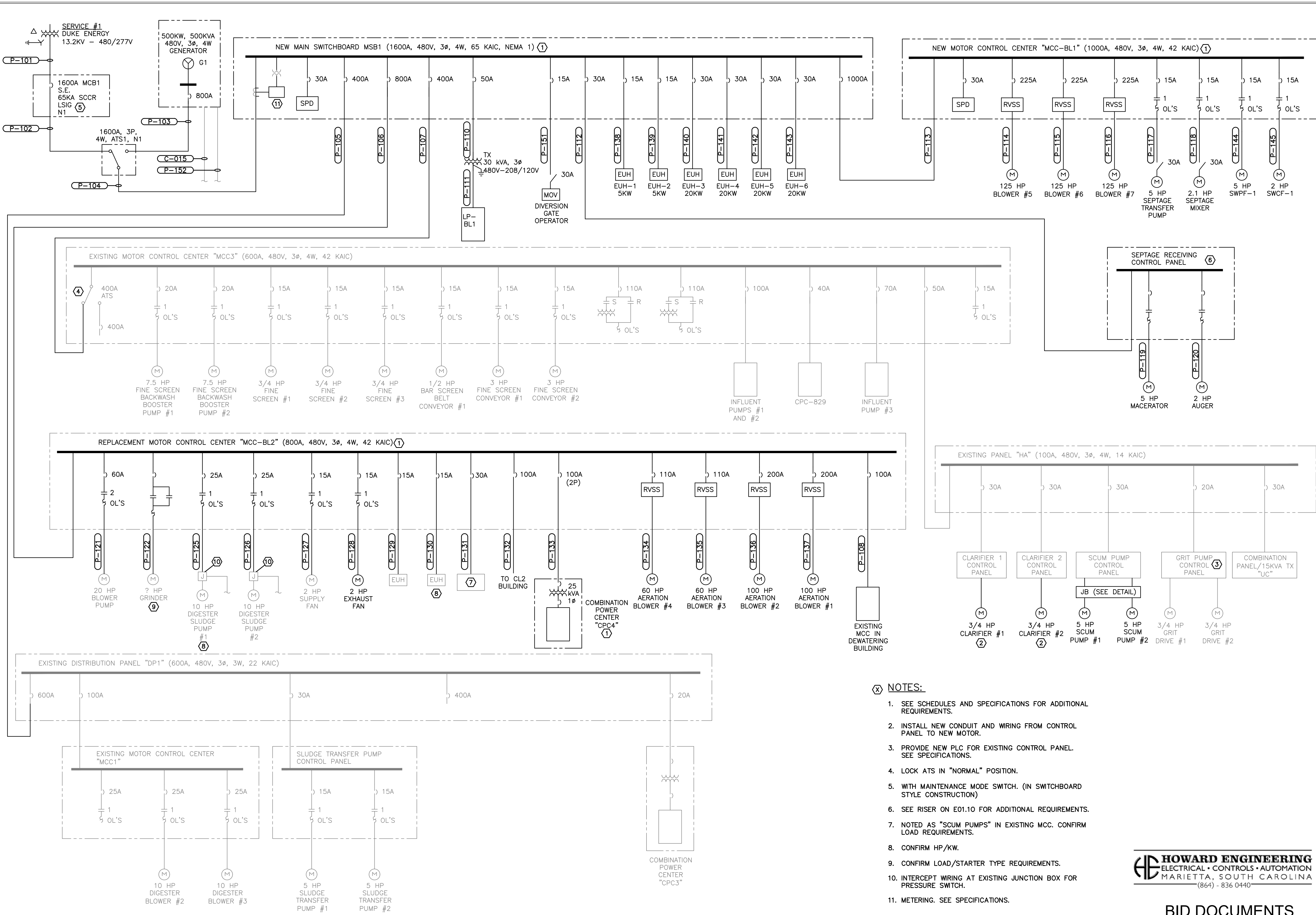
4000 FABER PLACE DRIVE, SUITE 330  
 NORTH CHARLESTON, SC 29405  
 PH. 843-628-3352

FILE	SEE LEFT
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DATE	MARCH 2021
PROJ.	100392.02
DWG.	E00.30

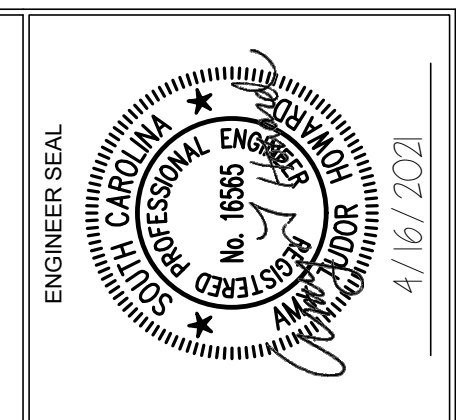
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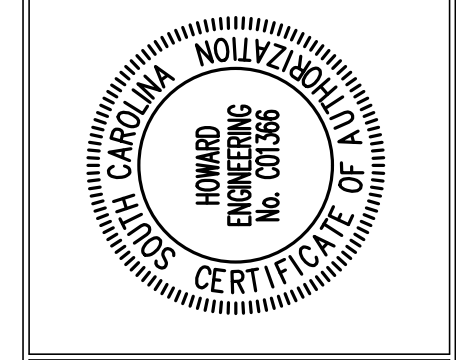


- ⊗ NOTES:
- SEE SCHEDULES AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
  - INSTALL NEW CONDUIT AND WIRING FROM CONTROL PANEL TO NEW MOTOR.
  - PROVIDE NEW PLC FOR EXISTING CONTROL PANEL. SEE SPECIFICATIONS.
  - LOCK ATS IN "NORMAL" POSITION.
  - WITH MAINTENANCE MODE SWITCH. (IN SWITCHBOARD STYLE CONSTRUCTION)
  - SEE RISER ON E01.10 FOR ADDITIONAL REQUIREMENTS.
  - NOTED AS "SCUM PUMPS" IN EXISTING MCC. CONFIRM LOAD REQUIREMENTS.
  - CONFIRM HP/KW.
  - CONFIRM LOAD/STARTER TYPE REQUIREMENTS.
  - INTERCEPT WIRING AT EXISTING JUNCTION BOX FOR PRESSURE SWITCH.
  - METERING. SEE SPECIFICATIONS.



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		AH	AH	HH	AH	JK

**SERVICE #1 ONE-LINE DIAGRAM**  
**CITY OF LAKE CITY**  
**LAKE SWAMP WWTP UPGRADE**

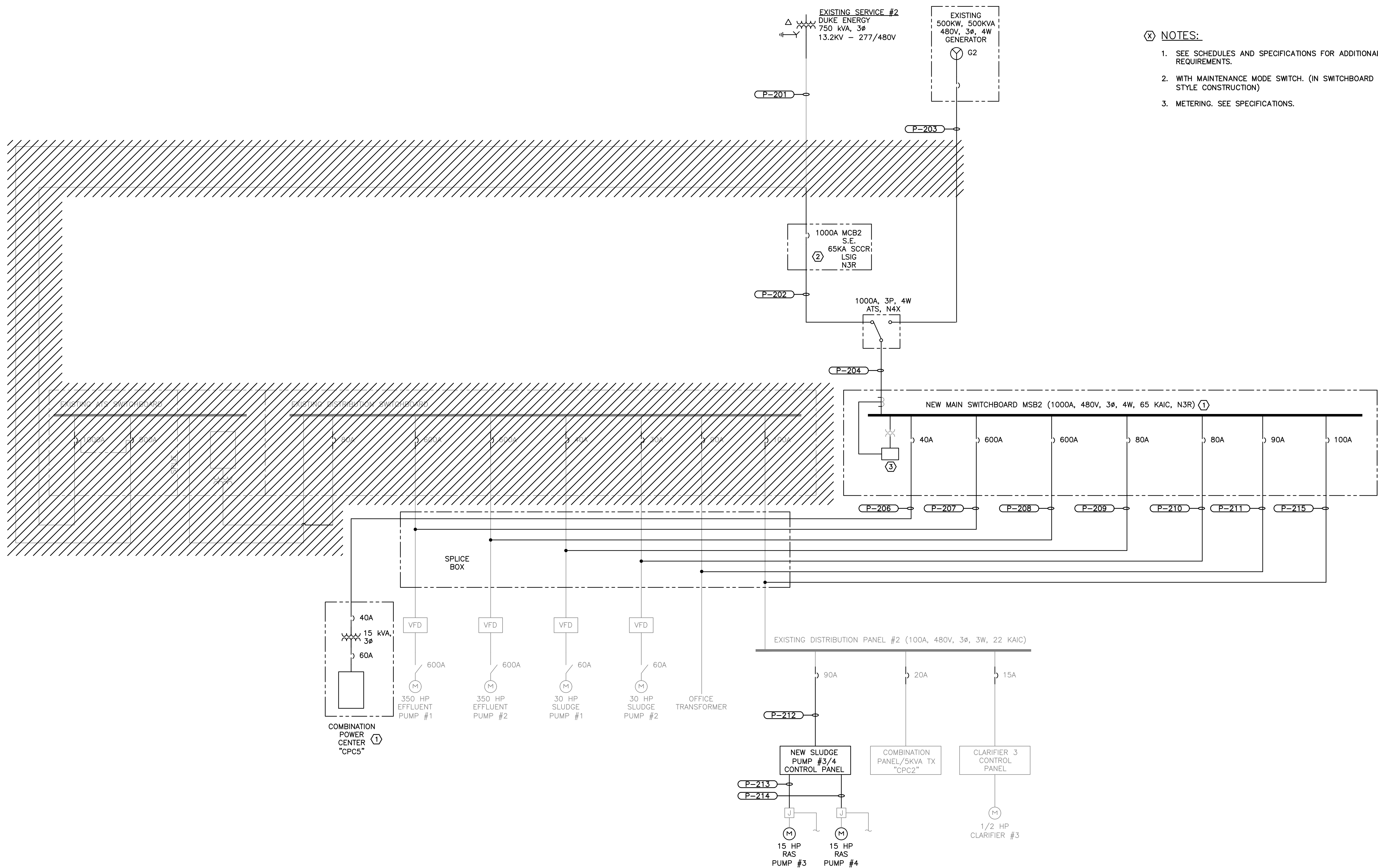


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DATE	MARCH 2021
PROJ.	100392.02
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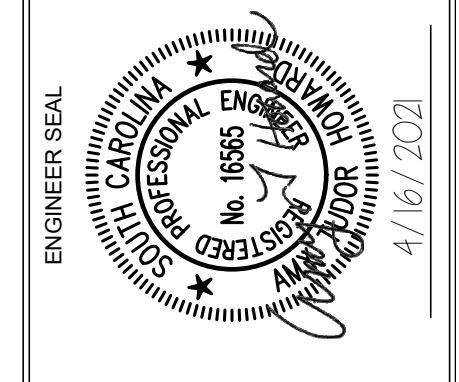


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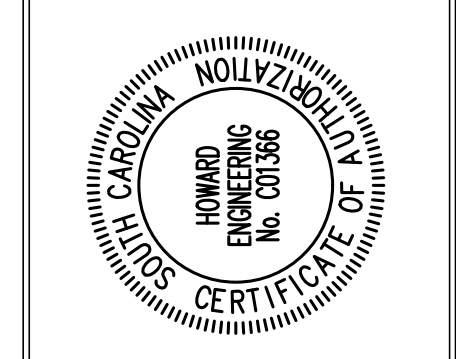
- ⊗ NOTES:
- SEE SCHEDULES AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
  - WITH MAINTENANCE MODE SWITCH. (IN SWITCHBOARD STYLE CONSTRUCTION)
  - METERING. SEE SPECIFICATIONS.



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SERVICE #2 ONE-LINE DIAGRAM

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LAKE SWAMP WWTP UPGRADE



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DWG.	E00.32

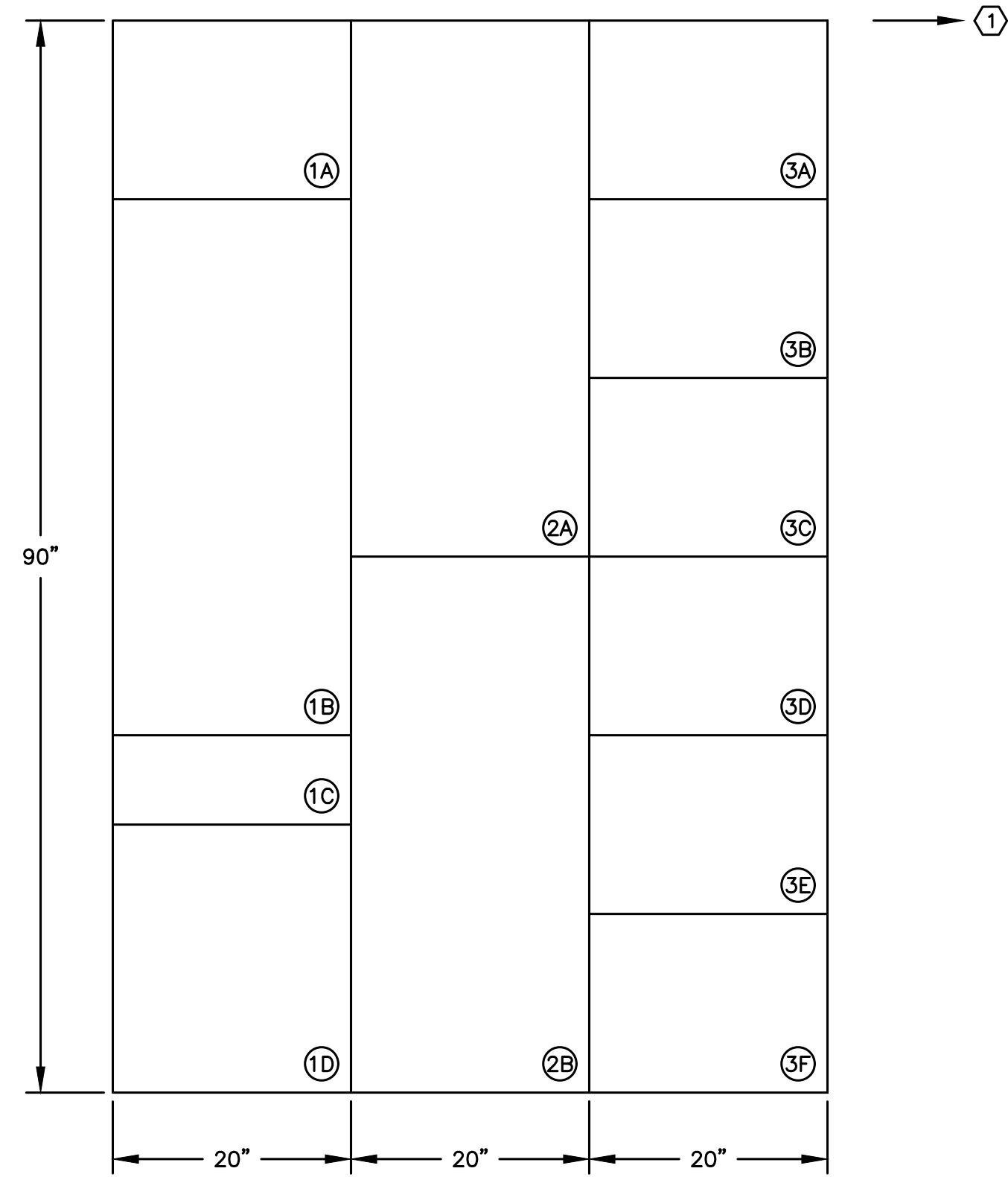
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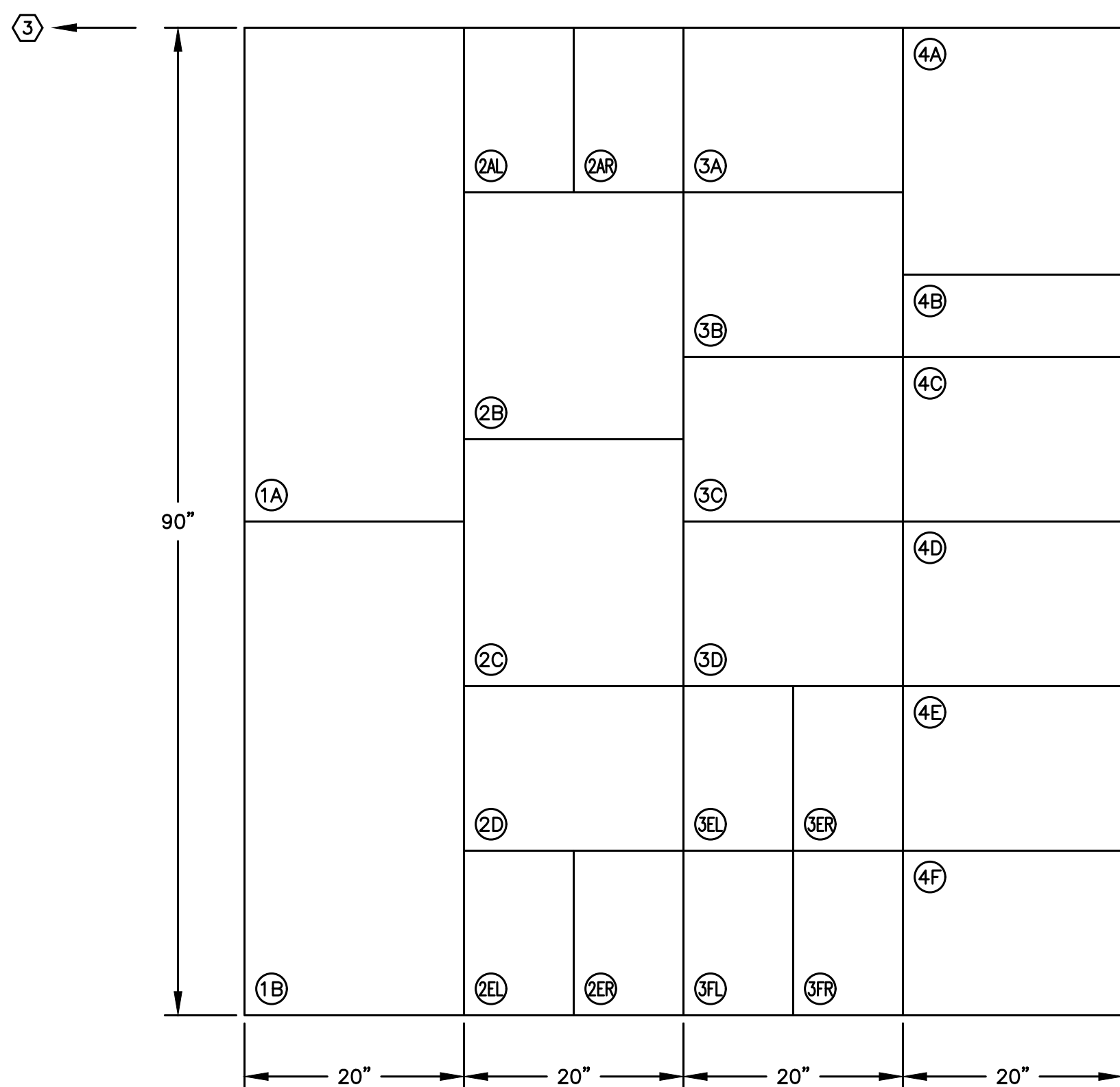




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MCC-BL1 ②



MCC-BL2 ②

⊗ NOTES:

1. FUTURE EXTENSION TO THE RIGHT.
2. LAYOUT WILL VARY BASED ON MANUFACTURE.
3. FUTURE EXTENSION TO THE LEFT.

MOTOR CONTROL CENTER "MCC-BL1" SCHEDULE

MAIN BUSS 1000 AMPS, VERTICAL BUS 600 AMPS  
 SERVICE VOLTAGE 480, 3 PHASE, 4 WIRE, BUS BRACING 42000 RMS SYMMETRICAL AMPERES  
 WIRING - NEMA CLASS 1, TYPE B ENCLOSURE - NEMA 1 GASKETED NON WALK-IN

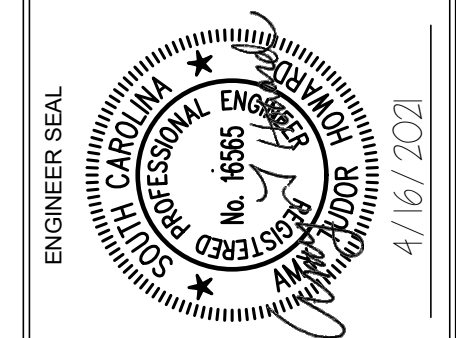
UNIT NO.	SERVICE DESIGNATION	HP	STARTER		CURCUIT BREAKER		MODIFICATIONS				FLA	REMARKS/OTHER MODIFICATIONS	
			SIZE	FUNCTION	POLES	TRIP	PB	SEL. SW.	PILOT LIGHT	AUX. CONTACTS N.O.			N.C.
1A	SPD												
1B	BLOWER #5	125		RVSS	3	225		1	3	2	2	156	SEE CONTROL DIAGRAM
1C	SPARE					50							FEEDER BREAKER
1D	MAIN LUGS												
2A	BLOWER #6	125		RVSS	3	225		1	3	2	2	156	SEE CONTROL DIAGRAM
2B	BLOWER #7	125		RVSS	3	225		1	3	2	2	156	SEE CONTROL DIAGRAM
3A	TRANSFER PUMP	5	1	FVNR	3	15		1	2	2	2	7.6	SEE CONTROL DIAGRAM
3B	MIXER	2.1	1	FVNR	3	15		1	2	2	2	3.4	SEE CONTROL DIAGRAM
3C	SWPF-1	5	1	FVNR	3	15		1	1	1	1	7.6	SEE CONTROL DIAGRAM
3D	SWCF-1	2	1	FVNR	3	15		1	1	1	1	3.4	SEE CONTROL DIAGRAM
3E	PREPARED SPACE												
3F	PREPARED SPACE												

MOTOR CONTROL CENTER "MCC-BL2" SCHEDULE

MAIN BUSS 800 AMPS, VERTICAL BUS 300 AMPS  
 SERVICE VOLTAGE 480, 3 PHASE, 4 WIRE, BUS BRACING 42000 RMS SYMMETRICAL AMPERES  
 WIRING - NEMA CLASS 1, TYPE B ENCLOSURE - NEMA 1 GASKETED NON WALK-IN

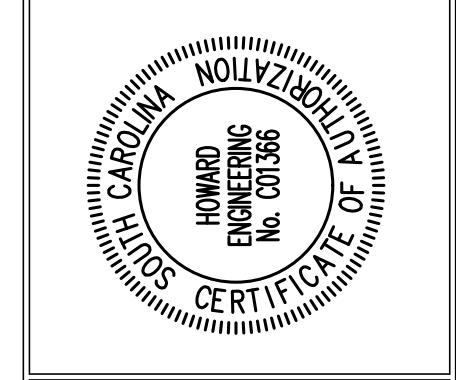
UNIT NO.	SERVICE DESIGNATION	HP	STARTER		CURCUIT BREAKER		MODIFICATIONS				FLA	REMARKS/OTHER MODIFICATIONS	
			SIZE	FUNCTION	POLES	TRIP	PB	SEL. SW.	PILOT LIGHT	AUX. CONTACTS N.O.			N.C.
1A	AERATION BLOWER #1	100		RVSS	3	200		1	3	2	2	124	SEE CONTROL DIAGRAM
1B	AERATION BLOWER #2	100		RVSS	3	200		1	3	2	2	124	SEE CONTROL DIAGRAM
2AL	ELUH				3	15							FEEDER BREAKER
2AR	ELUH				3	15							FEEDER BREAKER
2B	AERATION BLOWER #3	60		RVSS	3	110						77	
2C	AERATION BLOWER #4	60		RVSS	3	110						77	
2D	SPACE					100							
2EL	CPC4				2	100							FEEDER BREAKER
2ER	SPARE				3	50							FEEDER BREAKER
3A	DIGESTER PUMP #1 *	10	1	FVNR	3	25		1	2	2	2	14	SEE CONTROL DIAGRAM
3B	DIGESTER PUMP #2 *	10	1	FVNR	3	25		1	2	2	2	14	SEE CONTROL DIAGRAM
3C	SUPPLY FAN *	2	1	FVNR	3	15		1	1	1	1		
3D	EXHAUST FAN	2	1	FVNR	3	15		1	1	1	1	3.4	SEE CONTROL DIAGRAM
3EL	EXISTING MCC *				3	100							SEE CONTROL DIAGRAM
3ER	SPARE				3	30							FEEDER BREAKER
3FL	SPARE				3	100							FEEDER BREAKER
3FR	CL2 BUILDING				3	100							FEEDER BREAKER
4A	MAIN LUGS												
4B	SPD												
4C	BLOWER MOTOR *	20	2	FVNR	3	60		1	2	2	2	27	
4E	SPARE	5	1	FVNR	3	15		1	2	2	2	7.6	
4F	SPACE												

\* EXISTING EQUIPMENT. CONFIRM HP/KW PRIOR TO TRANSMITTING SUBMITTALS.



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		AH	JK
REVISION	CHECKED BY:	DATE	BY:
	AH		JK

EQUIPMENT SCHEDULES  
 CITY OF LAKE CITY  
 LAKE SWAMP WWTP UPGRADE



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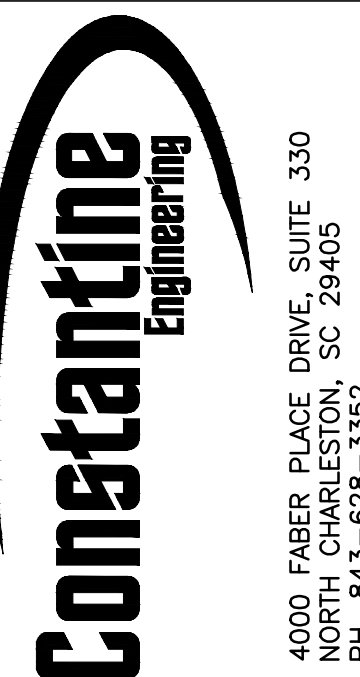
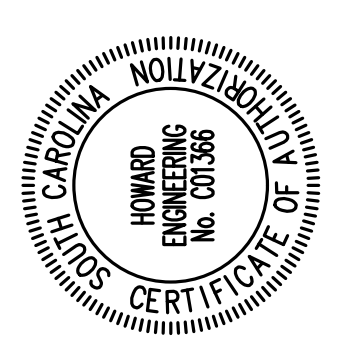
CONDUIT NO.	SIZE	FROM	TO	CONDUCTORS	NOTES
P-101	5-4"	DUKE ENERGY SERVICE #1	MCB1	3#400, 1#250 KCM N.	
P-102	5-3"	MCB1	ATS1	3#400 KCM, 1#250 KCM N., 1#4/0G.	
P-103	2-4"	G1	ATS1	3#500 KCM, 1#250 KCM N., 1#1/0G.	
P-104	5-3"	ATS1	MSB1	3#400 KCM, 1#4/0G.	
P-105	4"	MSB1	DP1	3#500 KCM, 1#1/0 N., 1#2G.	
P-106	3-4"	MSB1	MCC-BL2	3#400 KCM, 1#250 KCM N., 1#250G.	
P-107	4"	MSB1	MCC3	3#500 KCM, 1#1/0 N., 1#2G.	PULLED THRU EXISTING DUCT BANK
P-108	2"	MCC-BL2	SHOP	4#1, 1#6G.	PULLED THRU EXISTING DUCT BANK
P-109		NOT USED			
P-110	1 1/4"	MSB1	TRANSFORMER	3#6, 1#10G.	
P-111	2"	TRANSFORMER	LP-BL1	4#1, 1#8G.	
P-112	1"	MSB1	SEPTAGE RECEIVING CONTROL PANEL	3#10, 1#10G.	
P-113	3-3"	MSB1	MCC-BL2	3#400 KCM, 1#3/0 N., 1#2/0G.	
P-114	2 1/2"	MCC-BL1	BLOWER #5	3#4/0, 1#4G.	
P-115	2 1/2"	MCC-BL1	BLOWER #6	3#4/0, 1#4G.	
P-116	2 1/2"	MCC-BL1	BLOWER #7	3#4/0, 1#4G.	
P-117	1"	MCC-BL1	SEPTAGE TRANSFER PUMP	3#12, 1#12G.	
P-118	1"	MCC-BL1	SEPTAGE MIXER	3#12, 1#12G., 4#14	
P-119	3/4"	SEPTAGE RECEIVING CONTROL PANEL	MACERATOR	3#12, 1#12G., 2#14	
P-120	3/4"	SEPTAGE RECEIVING CONTROL PANEL	AUGER	3#12, 1#12G., 2#14	
P-121	1 1/4"	MCC-BL2	BLOWER PUMP	3#4, 1#10G.	
P-122	3/4"	MCC-BL2	GRINDER	3#12, 1#12G., 2#14	CONFIRM TO MATCH
P-123		NOT USED			
P-124		NOT USED			
P-125	3/4"	MCC-BL2	DIGESTER SLUDGE PUMP #1	3#10, 1#10G., 2#14	CONFIRM PRESSURE SWITCH
P-126	3/4"	MCC-BL2	DIGESTER SLUDGE PUMP #2	3#10, 1#10G., 2#14	CONFIRM PRESSURE SWITCH
P-127	3/4"	MCC-BL2	SUPPLY FAN	3#12, 1#12G.	
P-128	3/4"	MCC-BL2	EXHAUST FAN	3#12, 1#12G., 2#14	
P-129	3/4"	MCC-BL2	EUH	3#12, 1#12G.	
P-130	3/4"	MCC-BL2	EUH	3#12, 1#12G.	
P-131	3/4"	MCC-BL2	SCUMPUMPS	3#10, 1#10G.	
P-132	2"	MCC-BL2	CL2 BUILDING	4#1, 1#6G.	PULLED THRU EXISTING DUCT BANK
P-133	1 1/4"	MCC-BL2	CPC4	2#4, 1#8G.	
P-134	1 1/2"	MCC-BL2	BLOWER #4	3#1, 1#6G.	
P-135	2"	MCC-BL2	BLOWER #3	3#1, 1#6G.	
P-136	2"	MCC-BL2	BLOWER #2	3#3/0, 1#6G.	
P-137	1 1/2"	MCC-BL2	BLOWER #1	3#3/0, 1#6G.	
P-138	3/4"	MSB1	EUH-1	3#12, 1#12G.	
P-139	3/4"	MSB1	EUH-2	3#12, 1#12G.	
P-140	3/4"	MSB1	EUH-3	3#10, 1#10G.	
P-141	3/4"	MSB1	EUH-4	3#10, 1#10G.	
P-142	3/4"	MSB1	EUH-5	3#10, 1#10G.	
P-143	3/4"	MSB1	EUH-6	3#10, 1#10G.	
P-144	3/4"	MCC-BL1	SWPF-1	3#12, 1#12G.	
P-145	3/4"	MCC-BL1	SWCF-1	3#12, 1#12G.	
P-146	3/4"	JUNCTION BOX (P)	SEPTAGE RECEIVING CONTROL PANEL	4#12, 1#12G.	
P-147	3/4"	PLUG VALVE	JUNCTION BOX (P)	2#12, 1#12G.	
P-148	3/4"	FLOW TRANSMITTER	JUNCTION BOX (P)	2#12, 1#12G.	
P-149	3/4"	SEPTAGE RECEIVING CONTROL PANEL	HAULER ACCESS CONTROL STATION	2#12, 1#12G.	
P-150	3/4"	SEPTAGE RECEIVING CONTROL PANEL	HEAT TRACE	2#12, 1#12G.	
P-151	1"	MSB1	DIVERSION VALVE AT SCREENS	3#10, 1#10G.	
P-152	1 1/2"	LP-BL1	GENERATOR G1	4#4, 1#10G.	SHORE POWER
P-153	3/4"	LP-BL1	CELLULAR RTU	2#12, 1#12G.	
P-154	3/4"	CPC2	RAS FLOW TRANSMITTER	2#12, 1#12G.	

CONDUIT NO.	SIZE	FROM	TO	CONDUCTORS	NOTES
P-201	3-3"	DUKE ENERGY SERVICE #2	MCB2	3#400 KCM, 1#3/0 N.	
P-202	3-3"	MCB2	ATS2	3#400 KCM, 1#3/0 N., 1#2/0G.	
P-203	2-4"	G2	ATS2	3#500 KCM, 1#3/0 N., 1#1/0G.	
P-204	3-3"	ATS2	MSB2	3#400 KCM, 1#3/0 N., 1#2/0G.	
P-205	2"	CPC5	SPLICE BOX	3#6, 12#10, 1#8G.	EXISTING LOADS, CONFIRM
P-206	1"	MSB2	CPC5	3#8, 1#10G.	
P-207	2-3"	MSB2	EFFLUENT PUMP #1	3#350 KCM, 1#1G.	
P-208	2-3"	MSB2	EFFLUENT PUMP #2	3#350 KCM, 1#1G.	
P-209	1 1/4"	MSB2	SLUDGE PUMP #1	3#2, 1#8G.	
P-210	1 1/4"	MSB2	SLUDGE PUMP #2	3#2, 1#8G.	
P-211	1 1/2"	MSB2	OFFICE TRANSFORMER	3#1, 1#8G.	
P-212	1 1/2"	EXISTING DISTRIBUTION PANEL #2	SLUDGE PUMP CONTROL PANEL	3#1, 1#8G.	
P-213	1 1/4"	SLUDGE PUMP CONTROL PANEL	SLUDGE PUMP #3	3#4, 1#8G.	
P-214	1 1/4"	SLUDGE PUMP CONTROL PANEL	SLUDGE PUMP #4	3#4, 1#8G.	
P-215	1 1/2"	MSB2	DISTRIBUTION PANEL #2	3#1/0, 1#6G., 4#14	

CONDUIT NO.	SIZE	FROM	TO	CONDUCTORS	NOTES
C-001	1"	SEPTAGE RECEIVING CONTROL PANEL	CELLULAR RTU	2#14, 1#14G.	
C-002	3/4"	SPRAY WASH	JUNCTION BOX (D)	2#14, 1#14G.	
C-003	3/4"	SPRAY WASH	JUNCTION BOX (D)	2#14, 1#14G.	
C-004	3/4"	SEPTAGE WETWELL FLOATS	MCC-BL1	4#14, 1#14G.	INTRINSICALLY SAFE WIRING
C-005	3/4"	JUNCTION BOX (D)	JUNCTION BOX (D)	4#14, 1#14G.	
C-006	3/4"	LEVEL TRANSMITTER	SEPTAGE RECEIVING CONTROL PANEL	2/C SH, 1#14G.	
C-007	3/4"	FLOW TRANSMITTER	JUNCTION BOX (A)	2-2/C SH, 1#14G.	
C-008	3/4"	JUNCTION BOX (A)	SEPTAGE RECEIVING CONTROL PANEL	3-2/C SH, 1#14G.	
C-009	3/4"	PLUG VALVE MOV	JUNCTION BOX (D)	6#14, 1#14G.	
C-010	3/4"	JUNCTION BOX (D)	SEPTAGE RECEIVING CONTROL PANEL	10#14, 1#14G.	
C-011	3/4"	PLUG VALVE MOV	JUNCTION BOX (A)	2/C SH, 1#14G.	
C-012	3/4"	HAULER'S ACCESS CONTROL STATION	SEPTAGE RECEIVING CONTROL PANEL	CAT 6 CABLE, 1#14G.	
C-013	3/4"	HAULER'S ACCESS CONTROL STATION	SEPTAGE RECEIVING CONTROL PANEL	6#14, 1#14G.	
C-014	3/4"	SEPTAGE TRANSFER PUMP	HANDHOLE AT SEPTAGE RECEIVING	2#12, 2#14 1#14G.	
C-015	1"	ATS	GENERATOR G2	2#14, 1#14G.	
C-016	2"	HANDHOLE AT SEPTAGE RECEIVING	MCC-BL1	12#14, 1#14G.	
C-017	1"	GENERATOR	CELLULAR RTU	6#14, 1#14G.	
C-018	3/4"	RAS PUMP CONTROL PANEL	T'STAT	2#14, 1#14G.	
C-019	3/4"	RAS PUMP CONTROL PANEL	T'STAT	2#14, 1#14G.	
C-020	1"	DIVERSION GATE MOV	CELLULAR RTU	4#14, 1#14G.	
C-021	1"	INFLUENT PUMP STATION CONTROL PANEL	CELLULAR RTU	6#14, 1#14G.	
C-022	2"	MCC-BL1	CELLULAR RTU	2#14, 1#14G.	COMMON ALARM
C-023	2"	MCC-BL2	CELLULAR RTU	2#14, 1#14G.	COMMON ALARM
C-024	1"	RTU JUNCTION BOX	CELLULAR RTU	2#14, 1#14G.	
C-025	2"	SEPTAGE RECEIVING CONTROL PANEL	RTU JB	EMPTY WITH PULL STRING	
C-026	1"	RAS FLOW METER	RAS FLOW TRANSMITTER	INSTALL CABLE BY MFR.	
C-027	3/4"	RAS FLOW TRANSMITTER	SLUDGE PUMP 3/4 CONTROL PANEL	2/C SH, 1#14G.	

CABLE SCHEDULES

CITY OF LAKE CITY  
 LAKE SWAMP WWTP UPGRADE

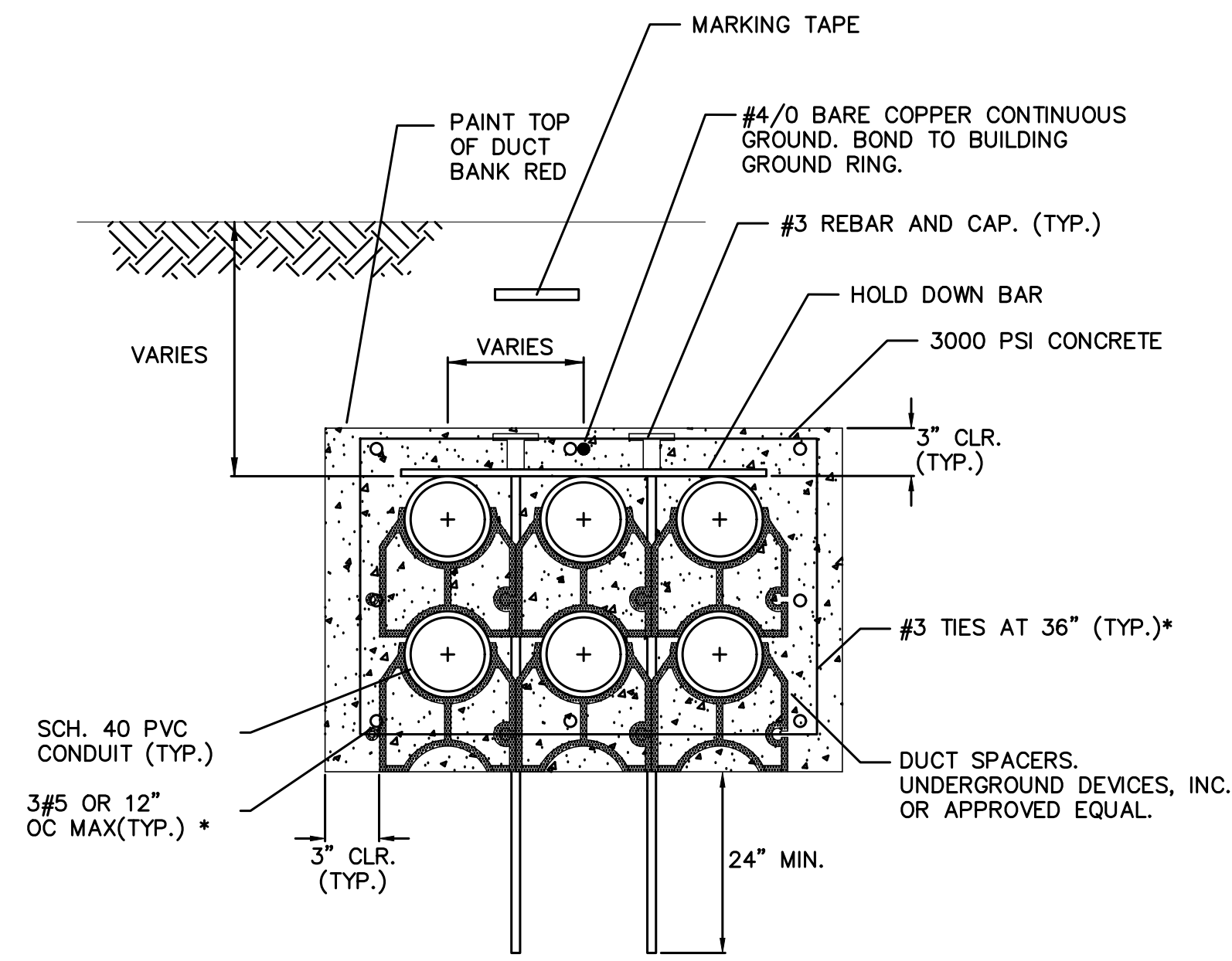


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PROJ.	100392.02
DWG.	E00.42



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4/15/2021 3:51 PM  
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 REUSE OF DOCUMENTS: THIS DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CONSTANTINE ENGINEERING. HOWEVER, THIS SHALL NOT PROHIBIT THE REUSE OF THIS DOCUMENT BY THE CLIENT AS PROVIDED FOR BY THE CONTRACT.

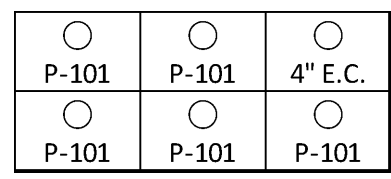


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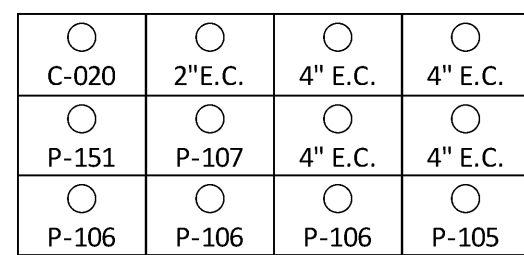
- DETAIL SHOWN AS A GUIDE AND TO ESTABLISH MINIMUM STANDARDS. REFER TO PLANS FOR SIZE AND QUANTITY OF CONDUITS.
  - INSTALL DUCT SPACERS, REBAR AND HOLD DOWN BAR EVERY 10'-0".
- \* REINFORCEMENT REQUIRED AT ROAD CROSSINGS ONLY

**TYPICAL DUCT BANK CONSTRUCTION**

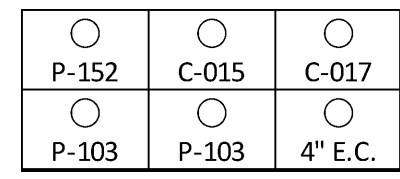
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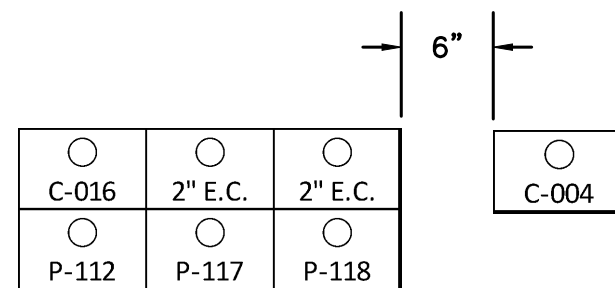
**DUCT BANK SECTION A**  
 SCALE: NONE  
 E00.50  
 #4/0 BARE COPPER GROUND NOT REQUIRED IN ENCASEMENT. (THIS SECTION ONLY)



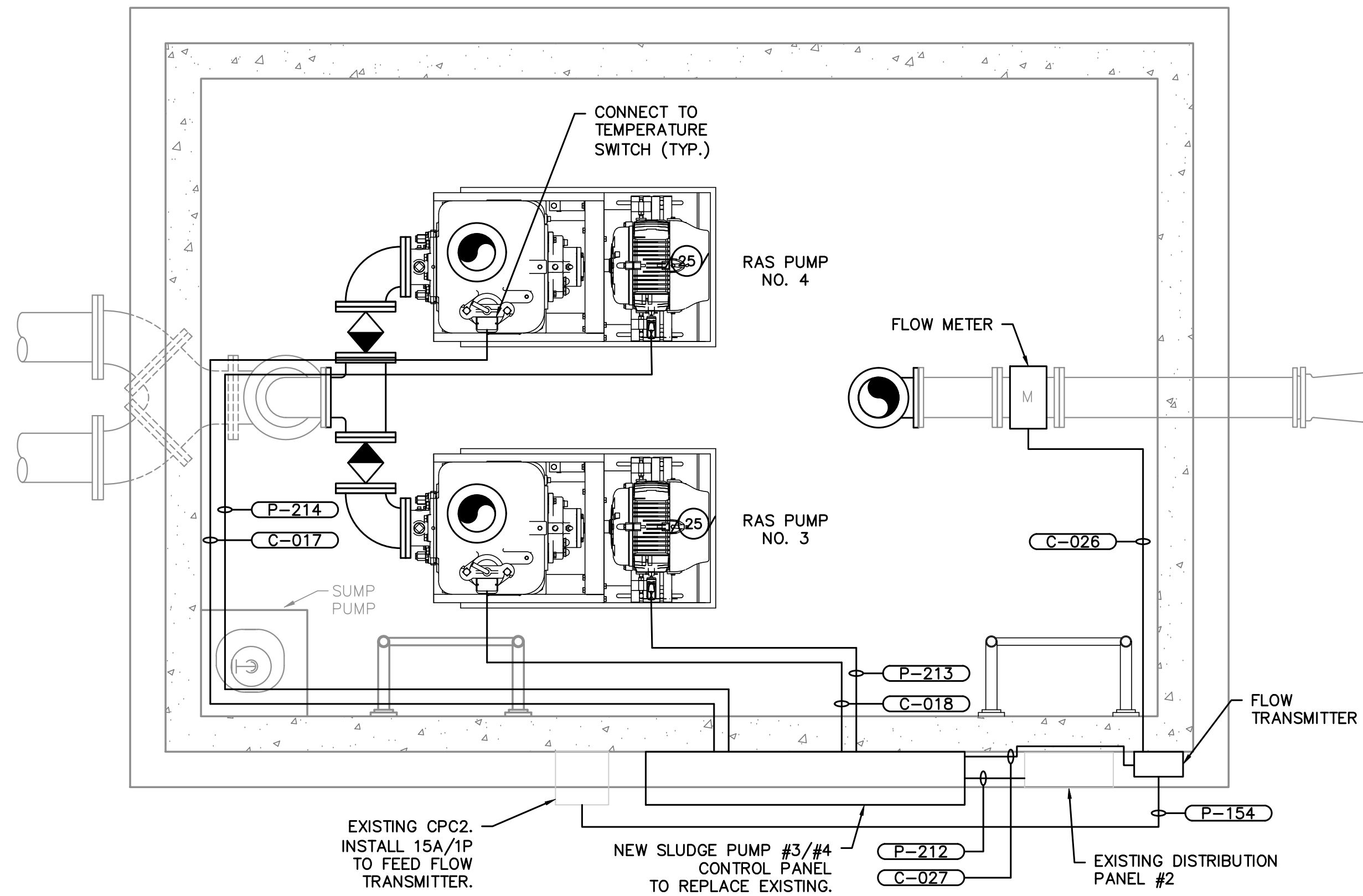
**DUCT BANK SECTION C**  
 SCALE: NONE  
 E00.50



**DUCT BANK SECTION B**  
 SCALE: NONE  
 E00.50

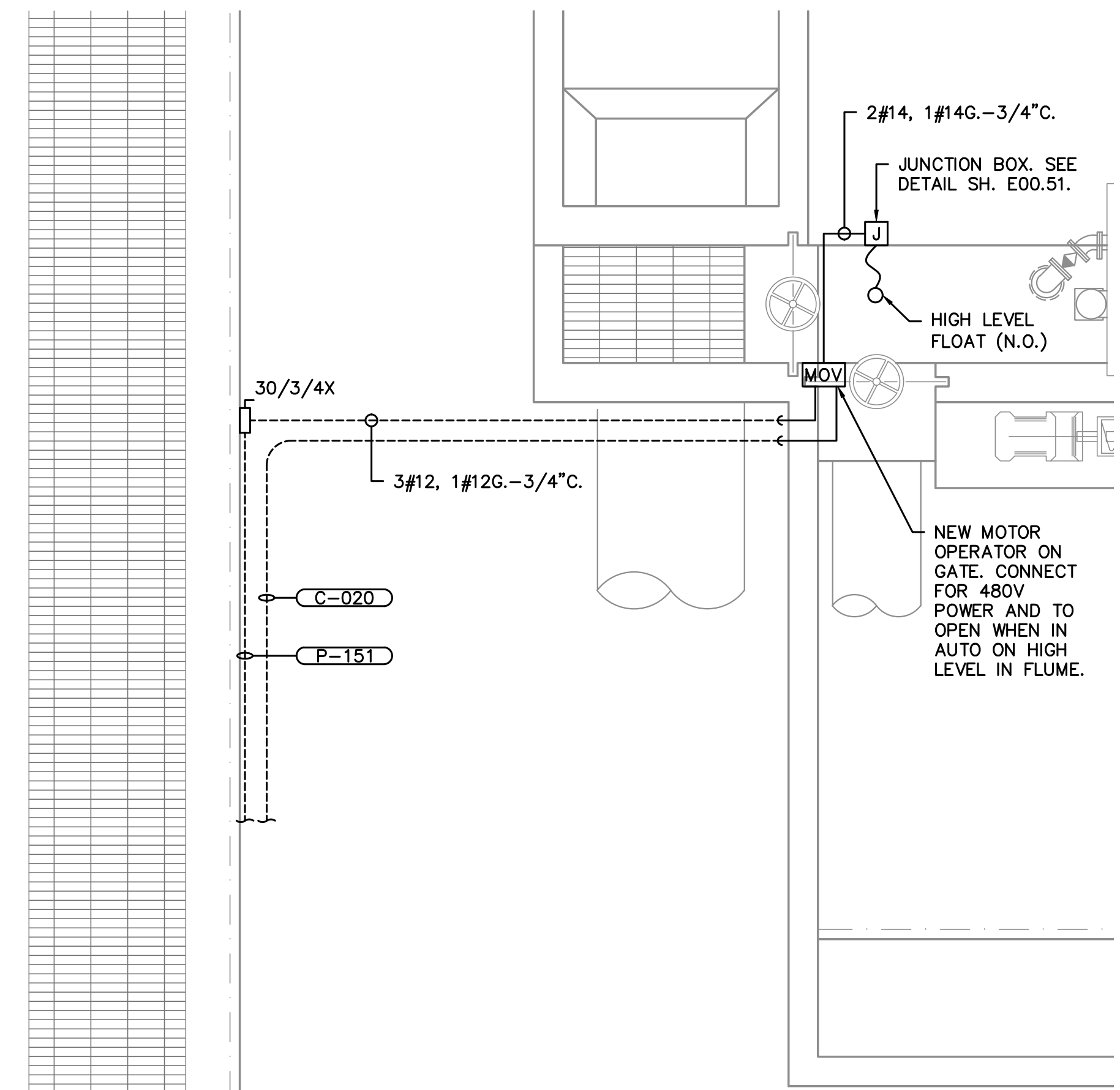
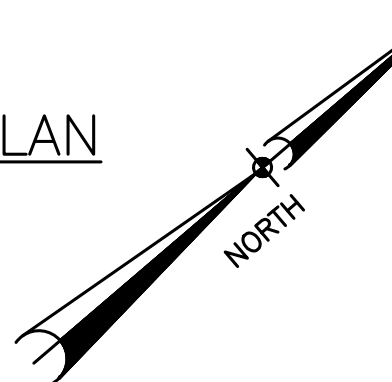


**DUCT BANK SECTION D**  
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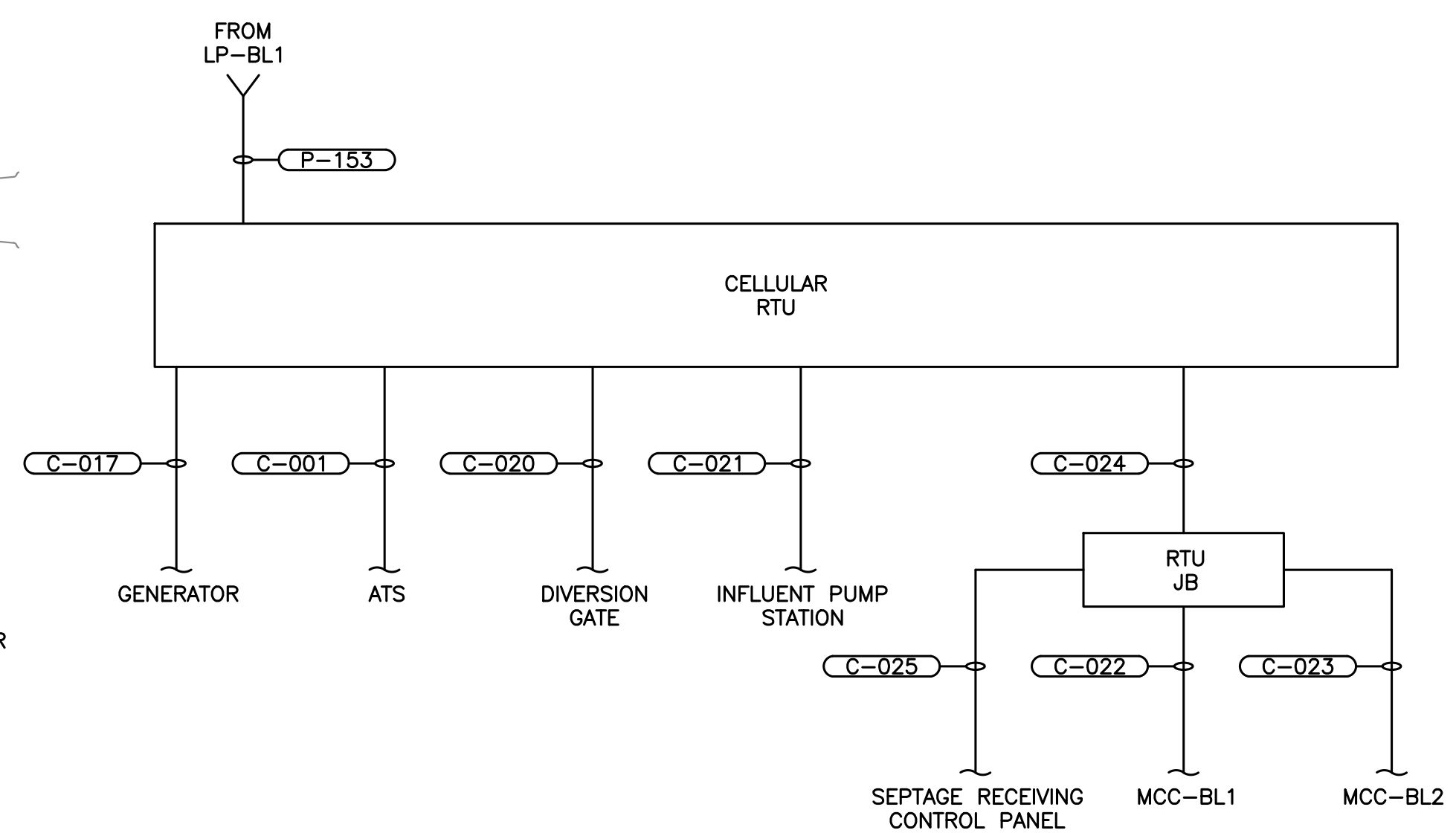
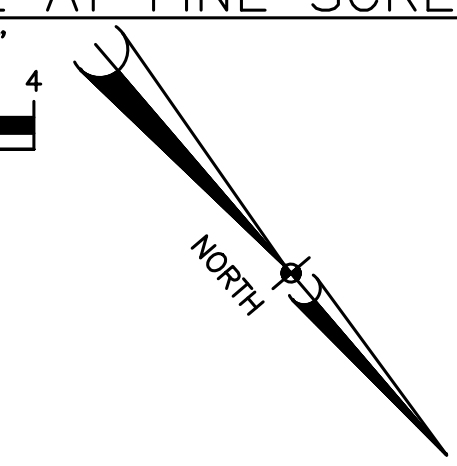
**RAS PUMP STATION ELECTRICAL PLAN**

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



**NEW MOTOR OPERATOR GATE AT FINE SCREEN**

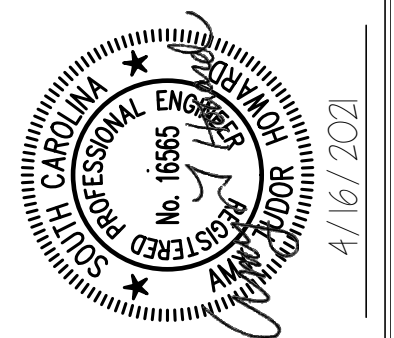
SCALE: 1/2" = 1'-0"  
 GRAPHIC SCALE



**CELLULAR RTU RISER DIAGRAM**

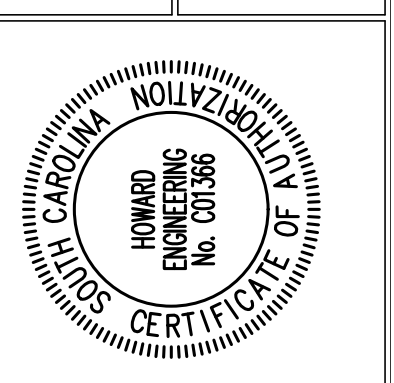
**CELLULAR RTU INPUTS**

DIGITAL INPUTS	NOTES
1 GENERATOR FAILURE	
2 GENERATOR ON	
3 POWER FAILURE	
4 DIVERSION GATE OPEN	
5 INFLUENT PUMP STATION HIGH LEVEL	
6 COMMON ALARM	
7 SPARE	
8 SPARE	
ANALOG INPUTS	
1 SPARE	
2 SPARE	
3 SPARE	
4 SPARE	
5 SPARE	
6 SPARE	



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REVISION		DRAWN BY:	AAH
CHECKED BY:		APPROVED BY:	JK

**ELECTRICAL DETAILS**  
**CITY OF LAKE CITY**  
**LAKE SWAMP WWTP UPGRADE**

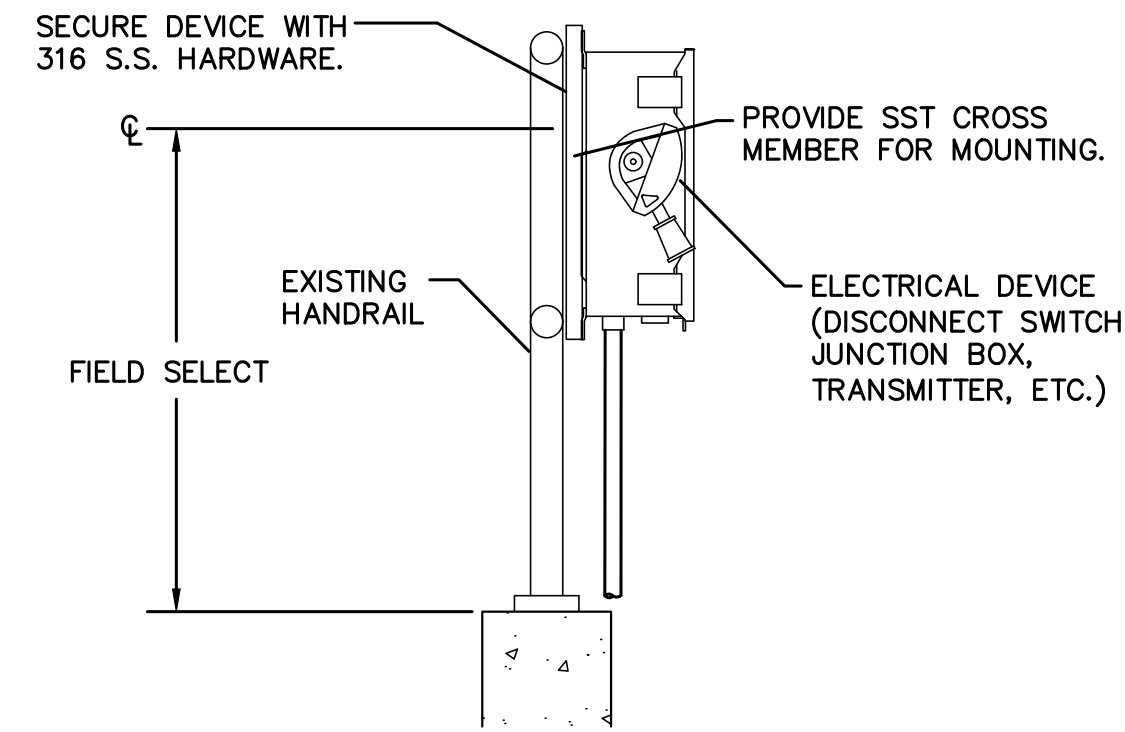


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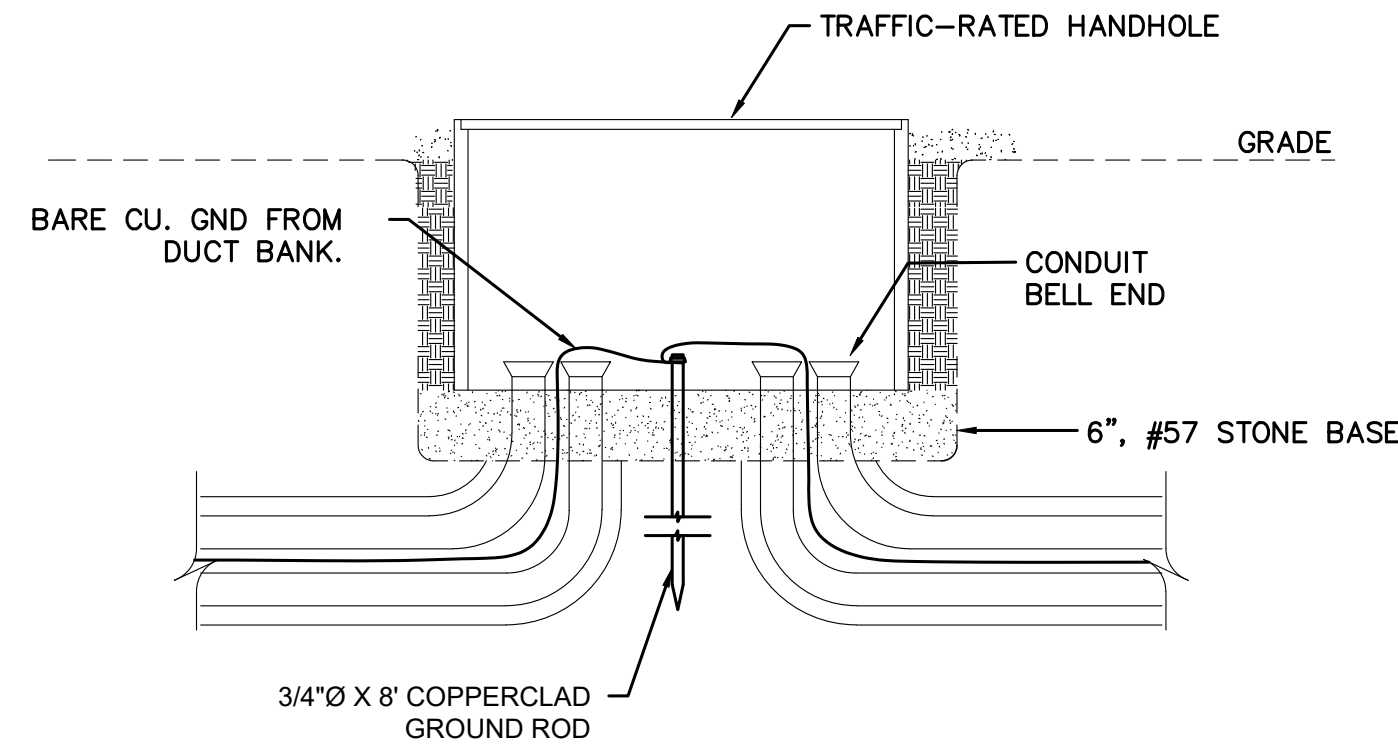
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HANDRAIL MOUNT - DEVICE

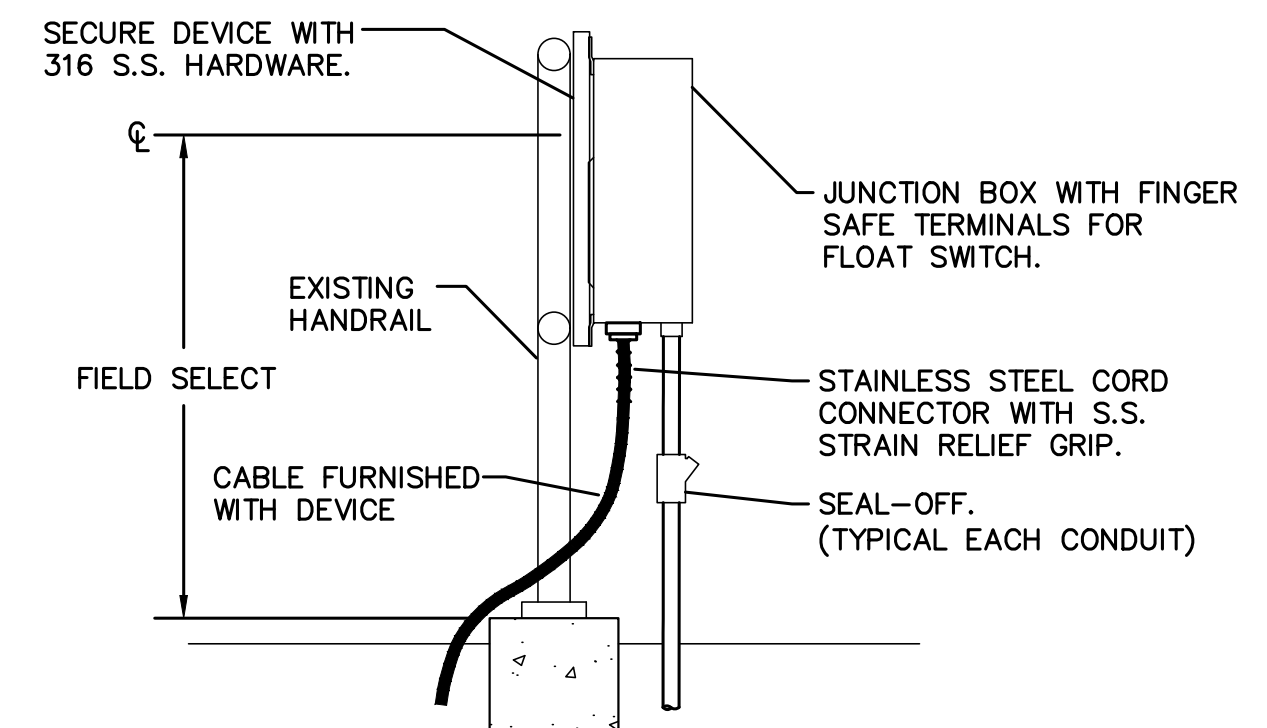
DETAIL SCALE: NONE 2 TYP



HANDHOLE DETAIL

DETAIL SCALE: NONE 3 TYP

NOTES:  
 PROVIDE QUAZITE PULL BOXES OF STYLE "PC" WITH A TOP SIZE OF 12"x18" (OR 30"x48" FOR LARGER HANDHOLES) AT A DEPTH AS REQUIRED TO MAINTAIN SPECIFIED CONDUIT COVER DEPTH AND SLOPE. INCLUDE STANDARD LOGO LABELED "ELECTRICAL"

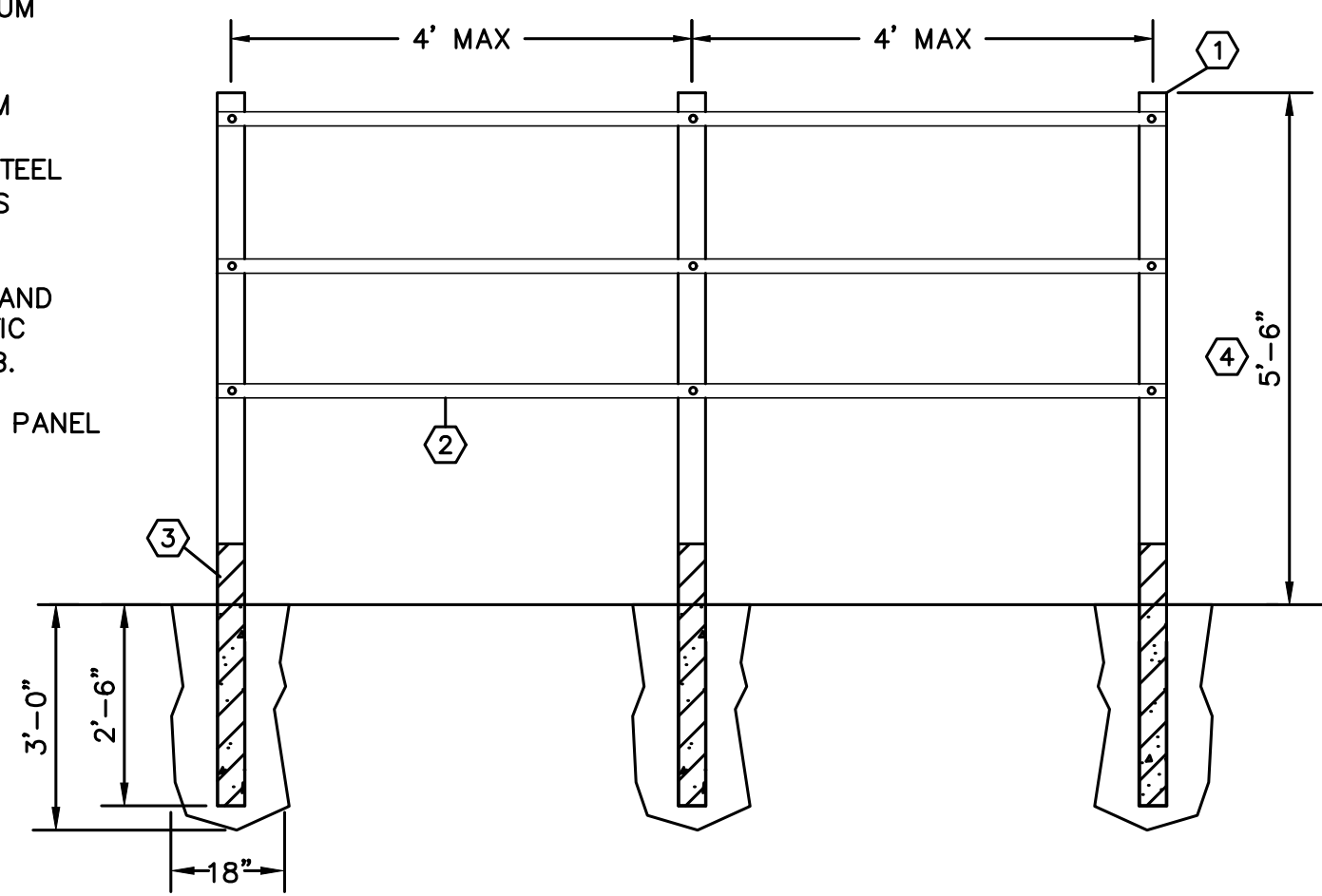


LEVEL DEVICE JUNCTION BOX DETAIL

DETAIL SCALE: NONE 4 TYP

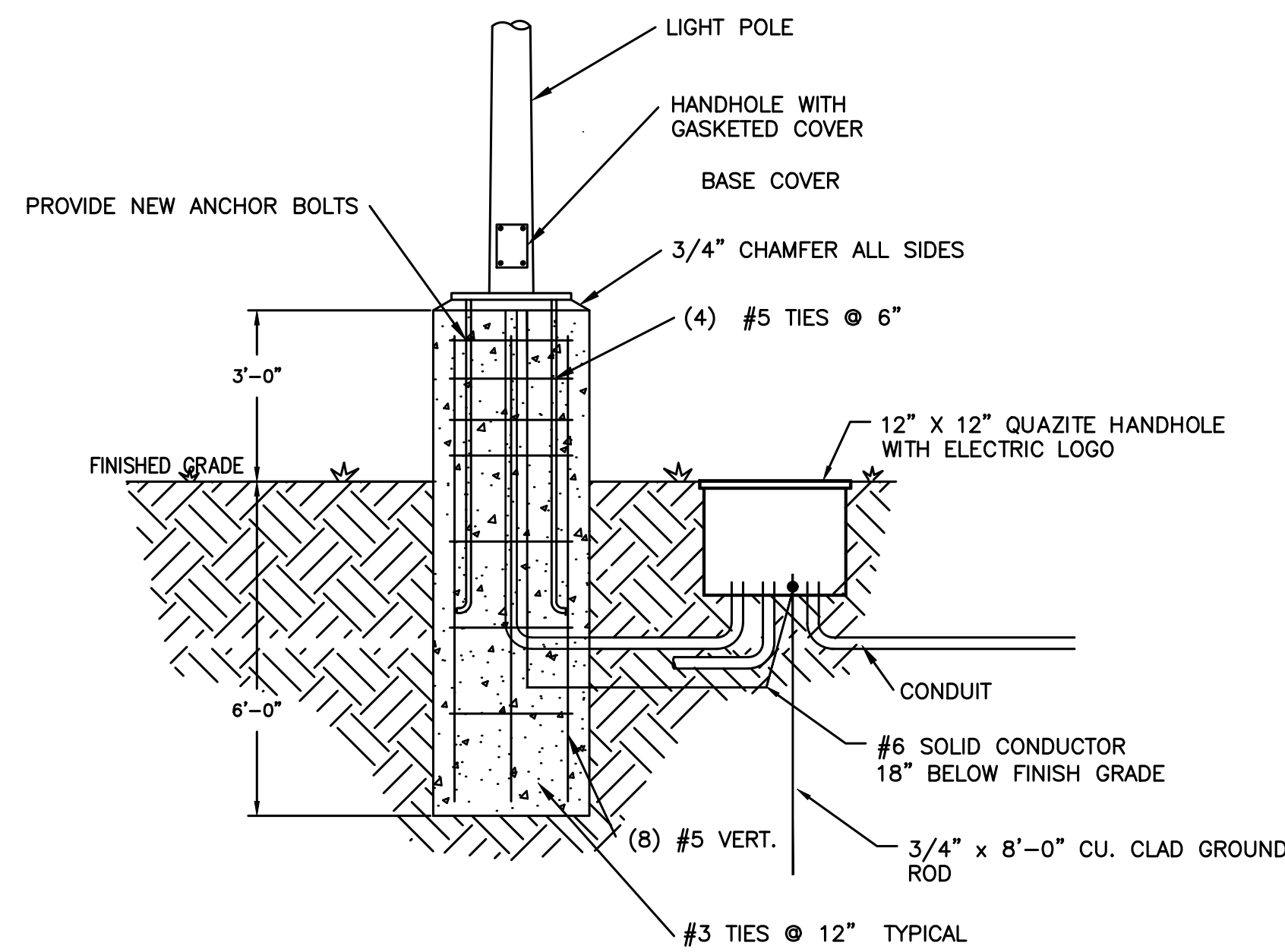
**(X) EQUIPMENT RACK**  
 DETAIL NOTES

- 4"x6"x1/4" 6061 ALUMINUM TUBING WITH END CAP.
- 1-1/2"x1-1/2" ALUMINUM PRE-DRILLED MOUNTING CHANNEL W/STAINLESS STEEL HARDWARE. (QUANTITY AS REQUIRED)
- COAT ALUMINUM TUBING AND CONDUITS WITH BITUMASTIC PAINT TO 6" ABOVE SLAB.
- FIELD VERIFY BASED ON PANEL SIZES.



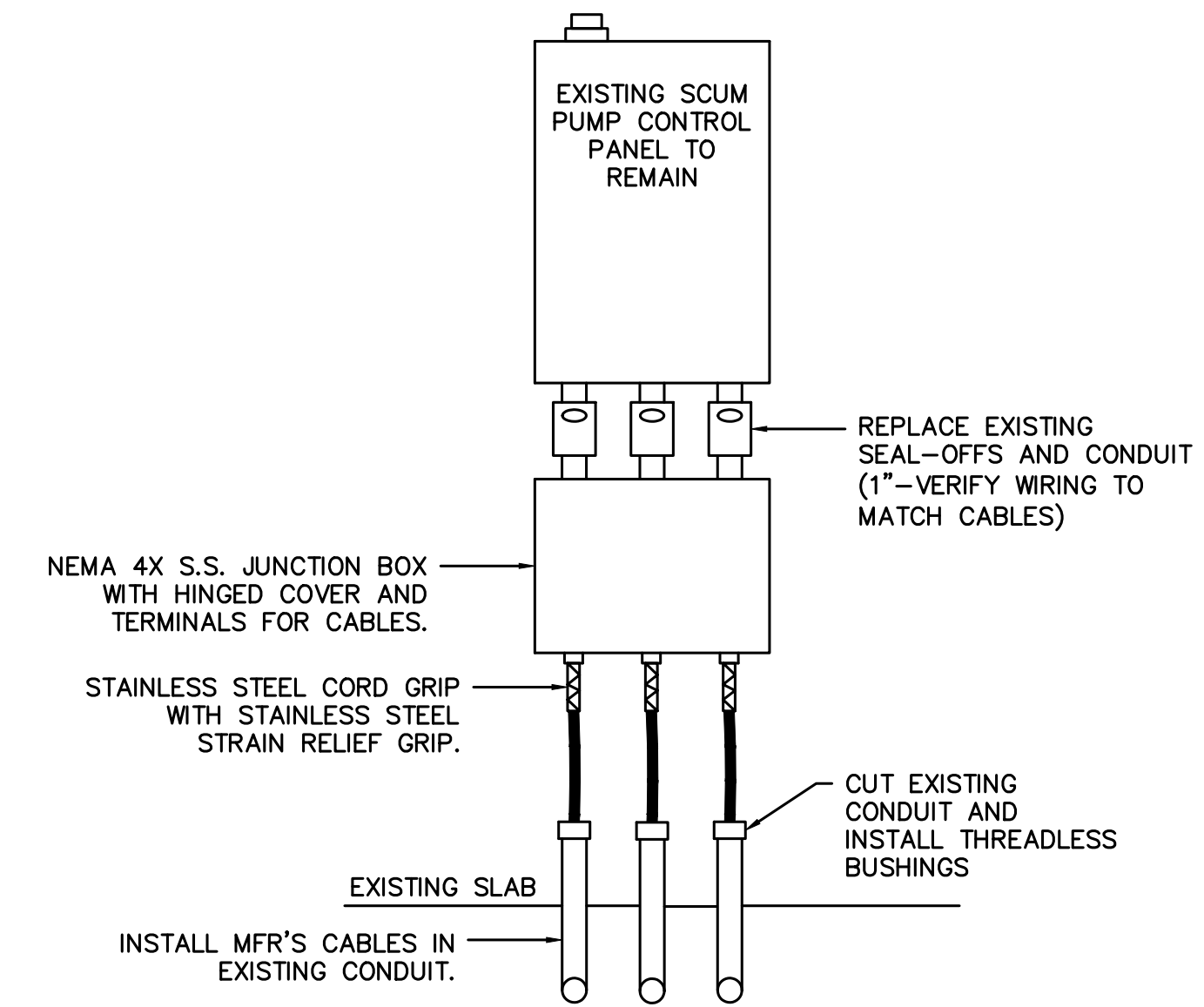
EQUIPMENT RACK DETAIL

DETAIL SCALE: NONE 5 TYP



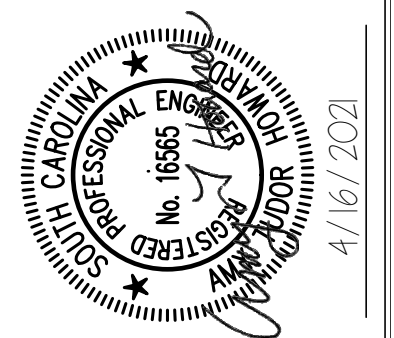
POLE BASE DETAIL

DETAIL SCALE: NONE 6 TYP



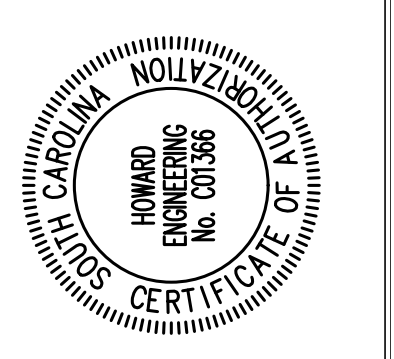
SCUM PUMP CONTROL PANEL

DETAIL SCALE: NONE 7 TYP



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	HH	AH	
			JK

ELECTRICAL DETAILS  
 CITY OF LAKE CITY  
 LAKE SWAMP WWTP UPGRADE

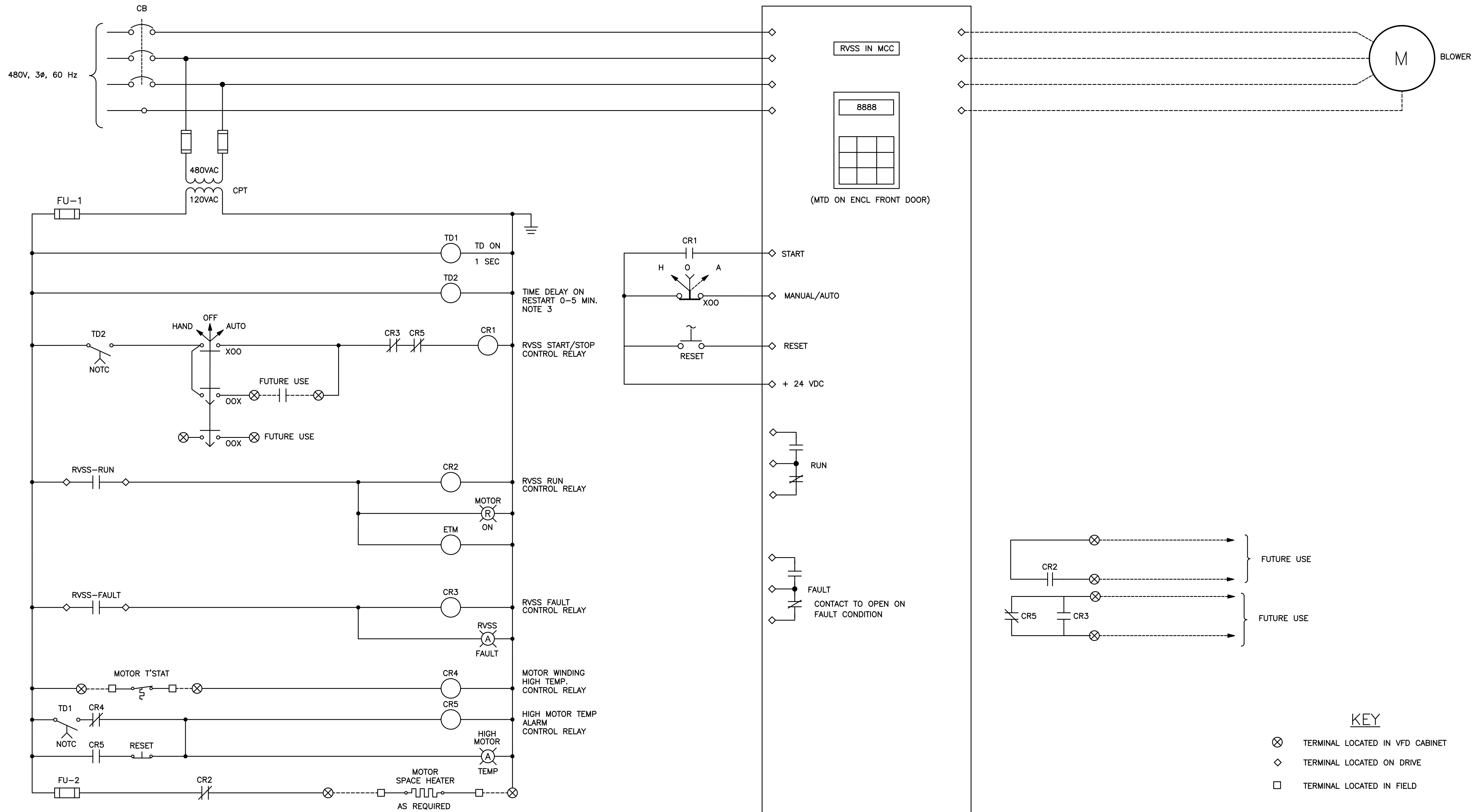


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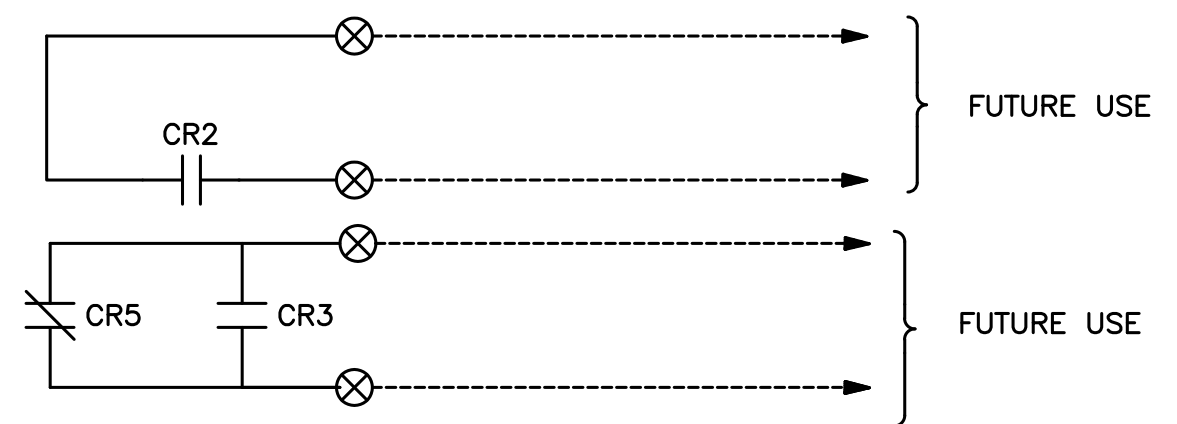
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 ELECTRICAL • CONTROLS • AUTOMATION  
 MARIETTA, SOUTH CAROLINA  
 (864) - 836 0440

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**BLOWERS  
 CONTROL DIAGRAM**  
 COORDINATE WITH EQUIPMENT SUPPLIER

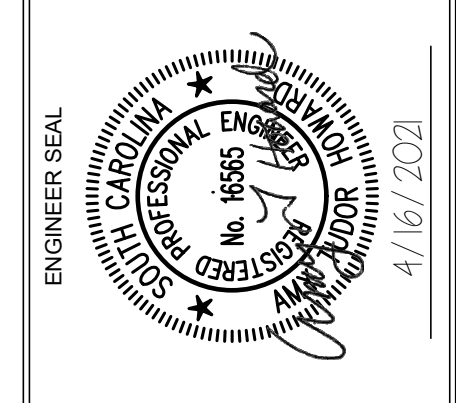


- KEY**
- ⊗ TERMINAL LOCATED IN VFD CABINET
  - ◇ TERMINAL LOCATED ON DRIVE
  - TERMINAL LOCATED IN FIELD

- NOTES:**
- EQUIPMENT SHALL BE DESIGNED SUCH THAT ON A LOSS OF POWER WHEN POWER RETURNS THE EQUIPMENT SHALL RETURN TO A READY STATE. WHEN THE EQUIPMENT MAIN CB IS OPEN NO ALARM SHALL BE GIVEN VIA RELAY STATUS TO REMOTE MONITORING SYSTEM.
  - SCHEMATIC DIAGRAM INDICATES PRINCIPAL OPERATION ONLY. MANUFACTURER TO ADJUST SCHEMATIC TO MEET FUNCTIONAL AND OPERATIONAL NEEDS AS OUTLINED IN THE CONTRACT DOCUMENTS.
  - ADJUST TIMER SUCH THAT BLOWER STARTS ARE STAGGERED.

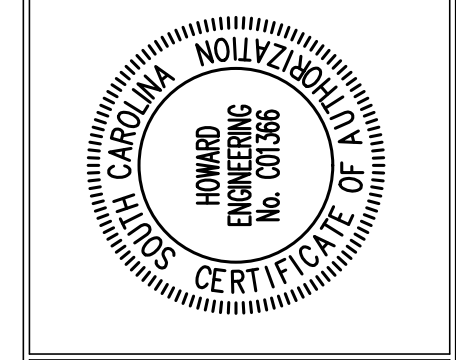
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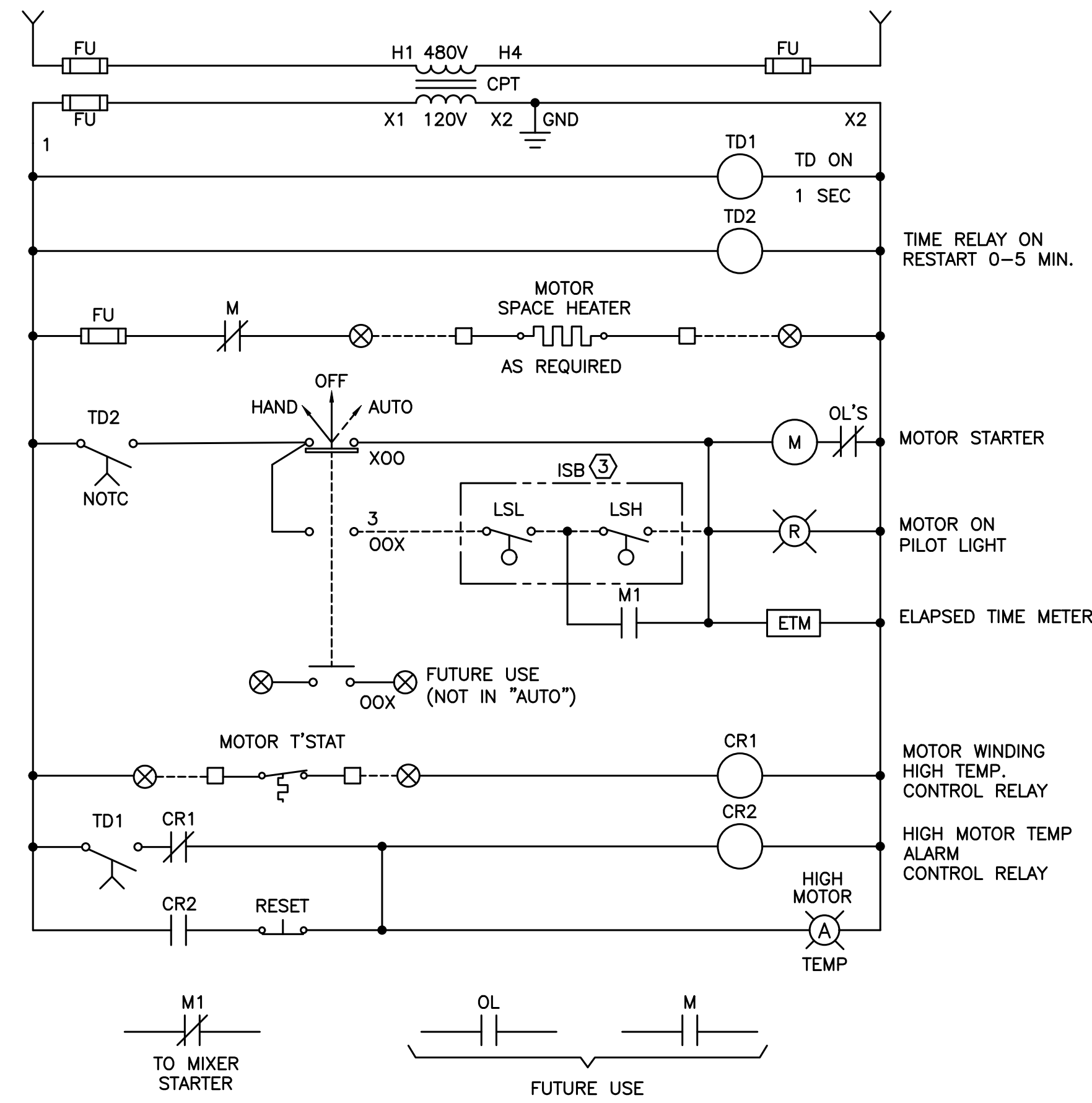
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		AH	AH	HH	AH	JK

**CONTROL DIAGRAMS**  
**CITY OF LAKE CITY**  
**LAKE SWAMP WWTP UPGRADE**

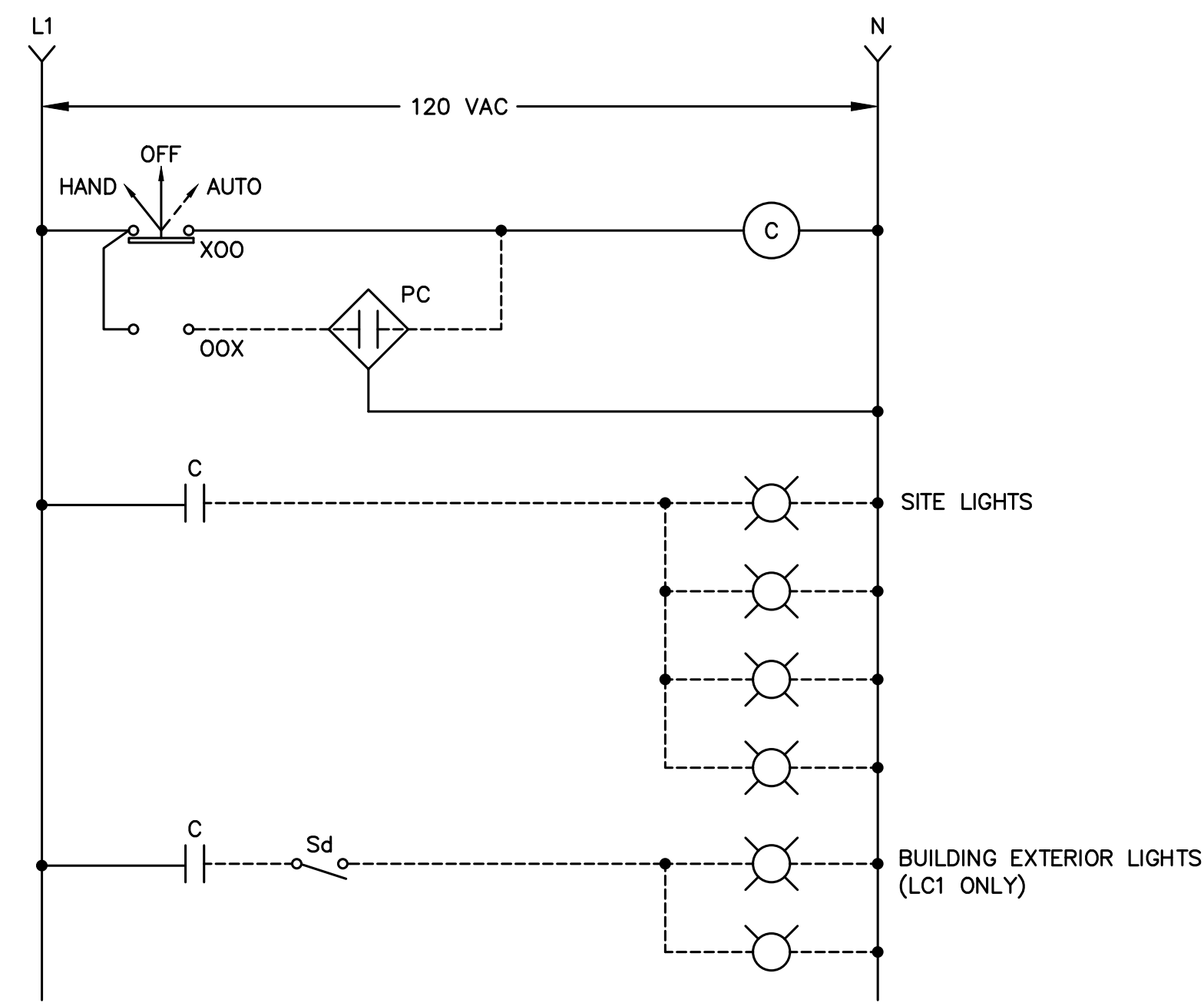


**Constantine Engineering**  
 4000 FABER PLACE DRIVE, SUITE 330  
 NORTH CHARLESTON, SC 29405  
 PH. 843-628-3352

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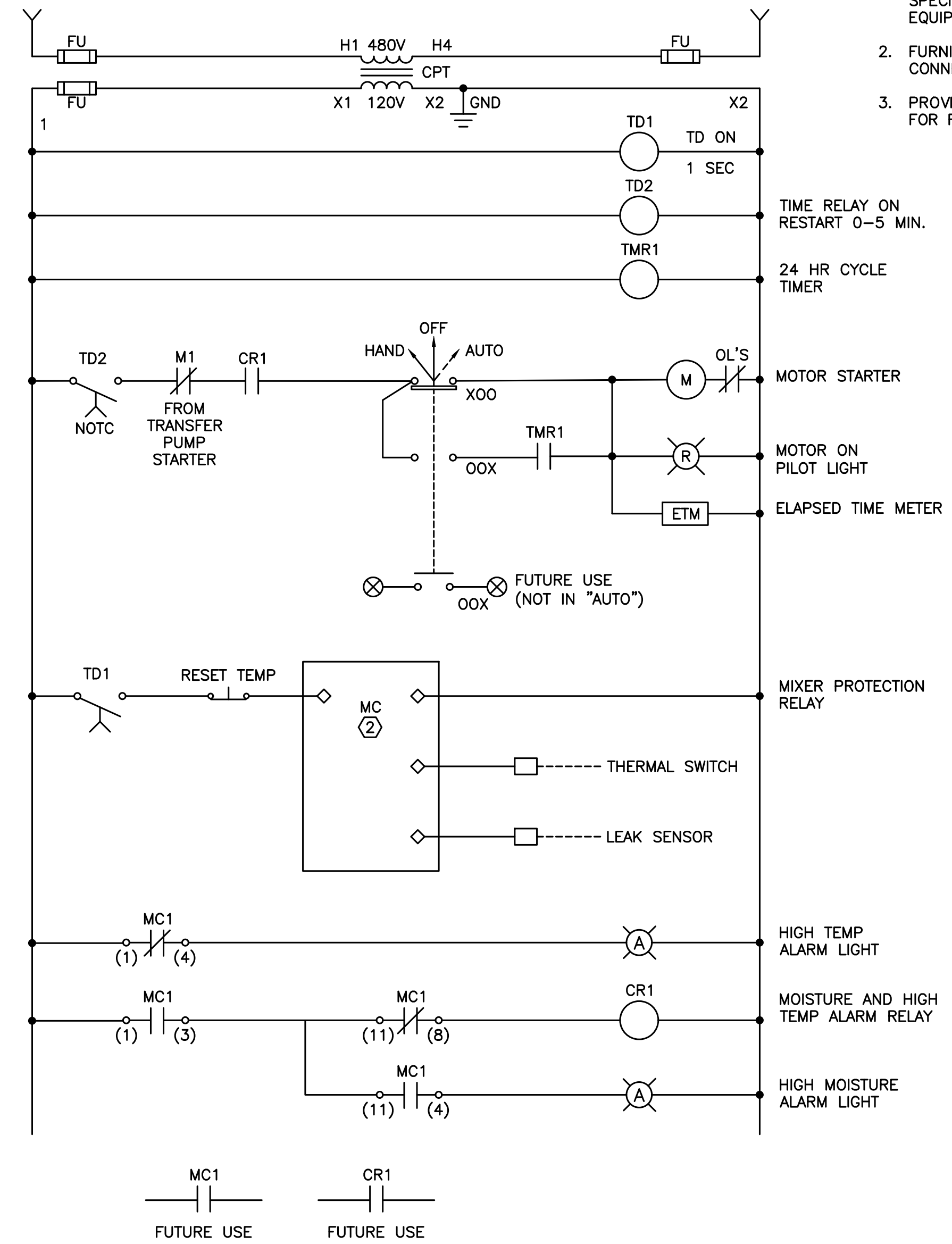
SEPTAGE TRANSFER PUMP CONTROL DIAGRAM



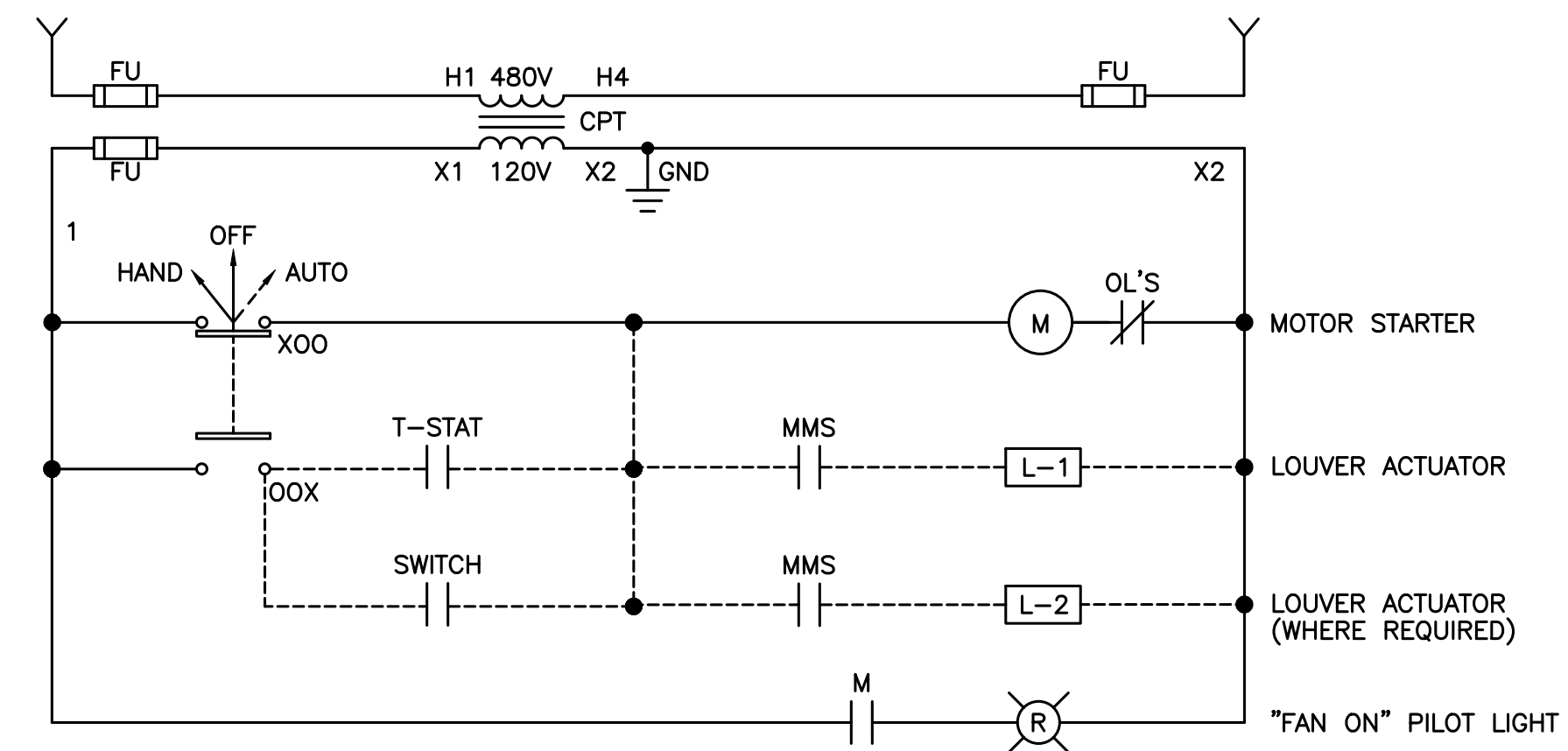
C = 120V, 4P LIGHTING CONTACTOR IN NEMA 1 (NEMA 4X FOR LC2) ENCLOSURE WITH H-O-A SWITCH.

PC = 120V SWIVEL MOUNT PHOTOCELL LED COMPATIBLE. COORDINATE MOUNTING LOCATION WITH OWNER.

LIGHTING CONTROLS (LC1 AND LC2)



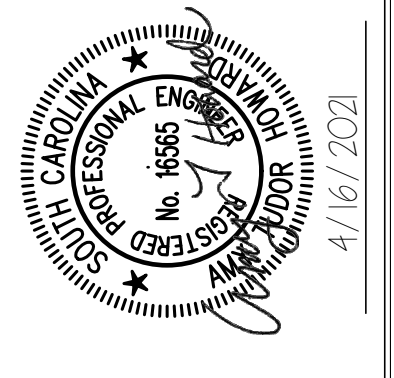
SEPTAGE MIXER CONTROL DIAGRAM



FAN CONTROL DIAGRAM COORDINATE WITH MECHANICAL CONTRACTOR

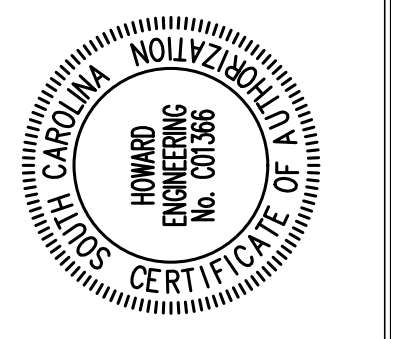
NOTES:

- ALL CONTROLS SHALL CONFORM WITH SPECIFICATIONS AND BE COORDINATED WITH EQUIPMENT SUPPLIER.
- FURNISHED BY MIXER SUPPLIER. COORDINATE CONNECTION REQUIREMENTS.
- PROVIDE INTRINSICALLY SAFE BARRIER RELAYS FOR FLOATS.



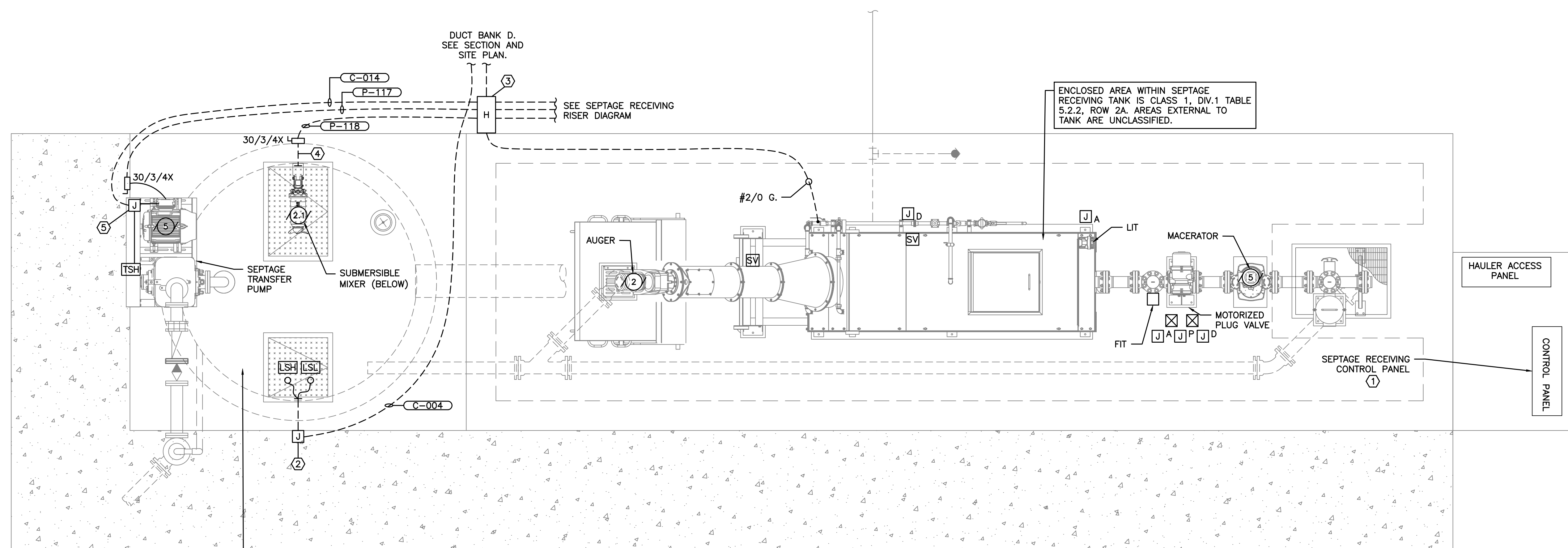
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CONTROL DIAGRAMS  
 CITY OF LAKE CITY  
 LAKE SWAMP WWTP UPGRADE

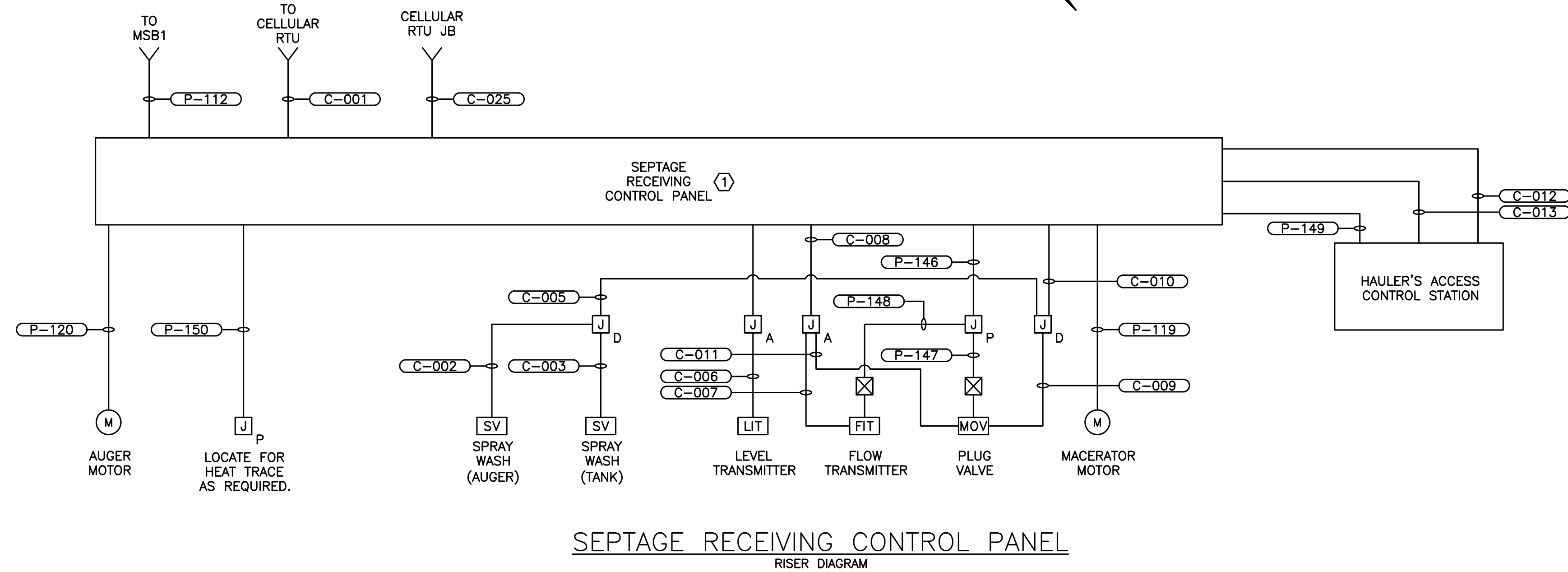
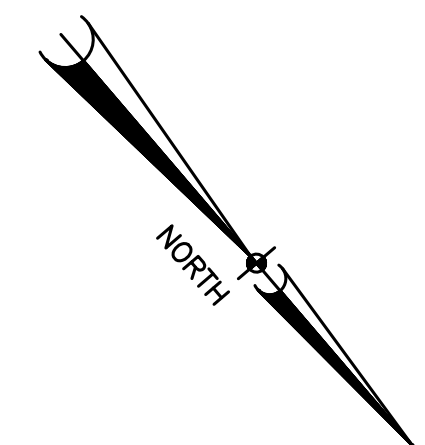


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DATE	MARCH 2021
PROJ.	100392.02
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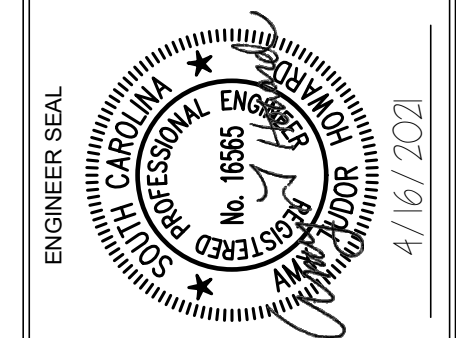
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THE HAZARDOUS AREA FOR THE PUMP STATION INCLUDES AREA WITHIN WETWELL AND AREA WITHIN A 3' RADIUS OF THE VENT IN ACCORDANCE WITH NFPA 820, TABLE 4.2.2, ROW 14A. USE CLASS 1, DIV. 1, GROUP D WIRING METHODS IN THIS LOCATION. THE AREA WITHIN 3' TO 5' RADIUS OF VENT AND 3' HORIZONTALLY FROM HATCH AND 18' ABOVE THE TOP OF THE WETWELL IS CLASSIFIED AT CLASS 1, DIV. 2. INSTALL NO ELECTRICAL EQUIPMENT WITHIN THESE AREAS UNLESS LISTED FOR SUCH USE.

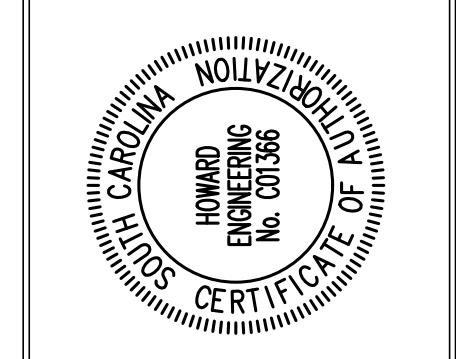


- (X) NOTES:
1. CONFIRM ALL CONNECTIONS FROM SUPPLIER'S APPROVED SHOP DRAWINGS.
  2. SEE DETAIL FOR JUNCTION BOX REQUIREMENTS.
  3. SEE DETAIL.
  4. STUB CONDUIT INTO WETWELL. SEE FLOAT JUNCTION BOX DETAIL FOR SIMILAR INSTALLATION.
  5. CONNECT TO TEMPERATURE SWITCH AND SPACE HEATER (2#14, 1#14G.-3/4"C., 2#12, 1#12G.-3/4"C.)



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SEPTAGE RECEIVING STATION  
ELECTRICAL PLAN  
CITY OF LAKE CITY  
LAKE SWAMP WWTP UPGRADE  
C-008



**Constantine**  
Engineering

4000 FABER PLACE DRIVE, SUITE 330  
NORTH CHARLESTON, SC 29405  
PH. 843-628-3352

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DATE	MARCH 2021
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DWG.	E01.10

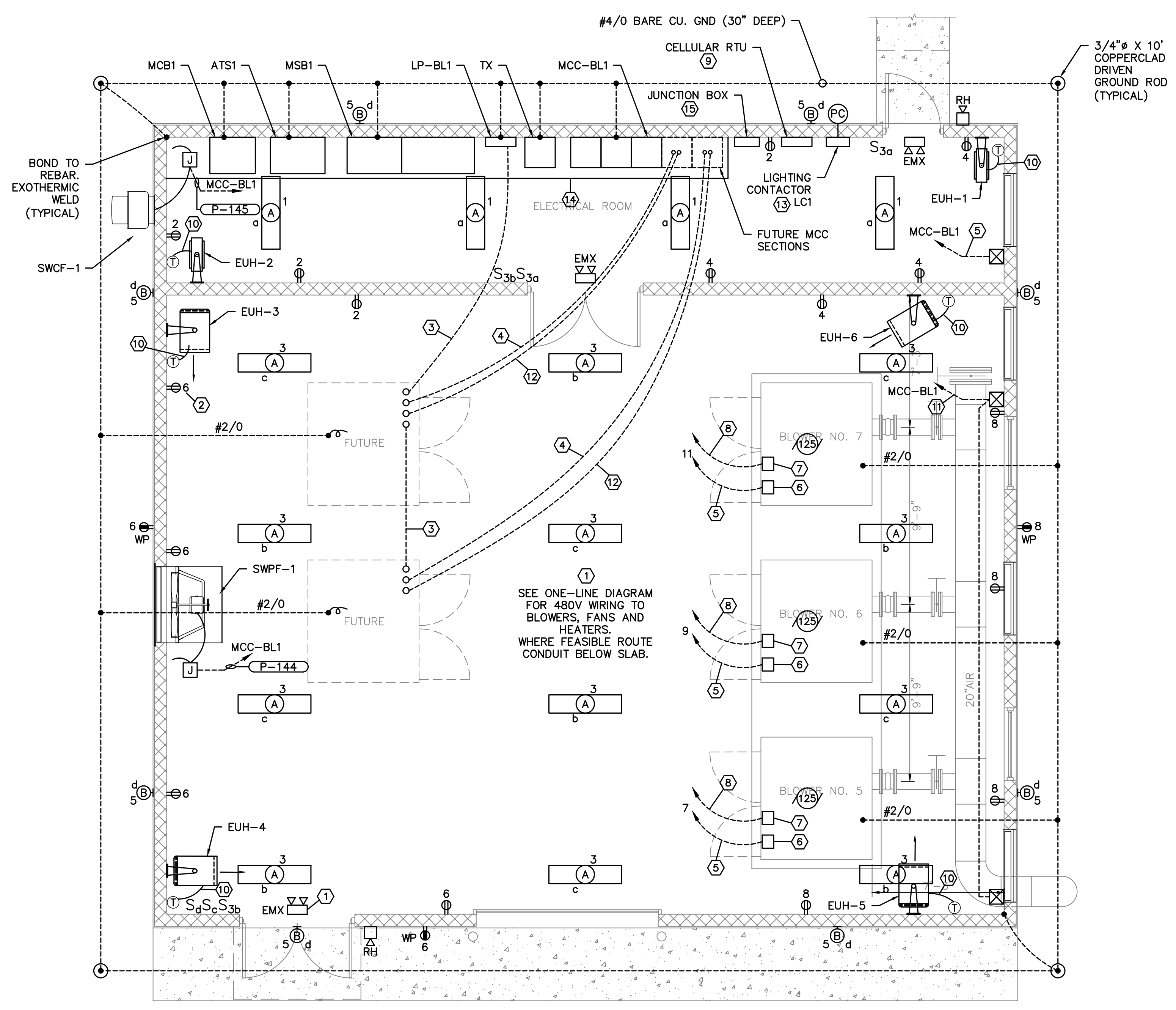
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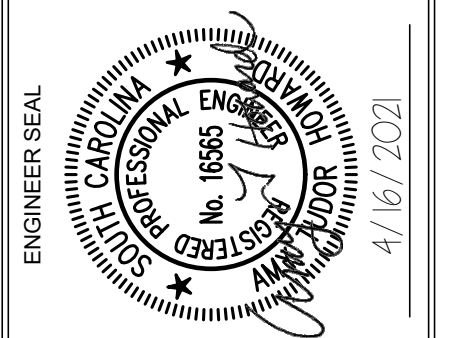
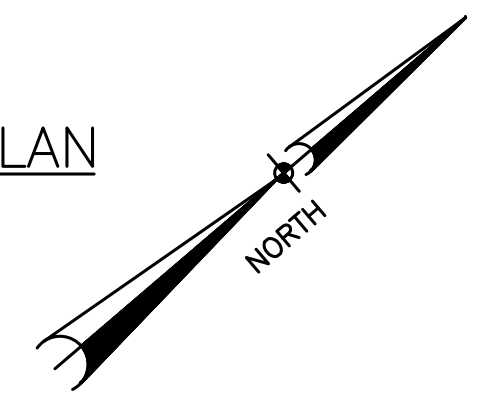
H:\HE12-SERVER\DATA\PROJECTS\A1961-F\DRAWINGS\A1961-E04.10 BLOWER BUILDING.DWG  
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**NOTES:**

1. CONNECT ON LIGHT CIRCUIT AHEAD OF SWITCH. (TYPICAL ALL EMERGENCY FIXTURES)
2. DENOTES CIRCUIT IN PANEL LP-BL1
3. 3/4" E.C. FOR FUTURE 120V ENCLOSURE FAN.
4. 2 1/2" E.C. FOR FUTURE 480V BLOWERS.
5. 2#12, 1#12G.-3/4"C. (120VAC)
6. ENCLOSURE FAN CONTROL PANEL CONNECT FOR 120V.
7. N.C. TEMPERATURE SWITCH. CONNECT TO SHUTDOWN BLOWER. SEE CONTROL DIAGRAM.
8. 2#14, 1#14G.-3/4"C. TO MCC-BL1.
9. SEE RISER DIAGRAM.
10. 2#14, 1#14G.-3/4"C.
11. 4#12, 1#12G.-3/4"C. (120VAC)
12. 3/4"C. FOR FUTURE TEMPERATURE SWITCHES.
13. 30A, 4P LIGHTING CONTACTOR IN N1 ENCLOSURE WITH H-O-A. SEE CONTROL DIAGRAM.
14. 4" TH. REINFORCED CONCRETE HOUSEKEEPING PAD.
15. 24"SQ X 8"D. N12 HINGED COVER JUNCTION BOX. LOCATE NEAR RTU.

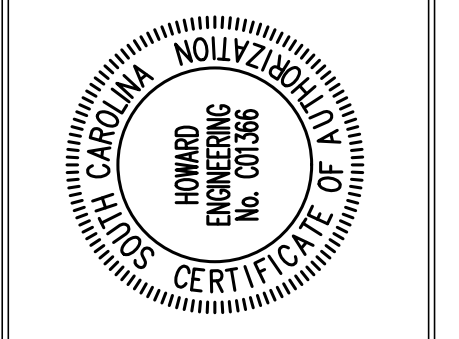


**ELECTRICAL PLAN**  
 SCALE: 1/4" = 1'-0"  
 GRAPHIC SCALE



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		AH	HH	AH	JK

**BLOWER BUILDING  
 ELECTRICAL PLAN**  
**CITY OF LAKE CITY**  
**LAKE SWAMP WWTP UPGRADE**



  
**Constantine Engineering**  
 4000 FABER PLACE DRIVE, SUITE 330  
 NORTH CHARLESTON, SC 29405  
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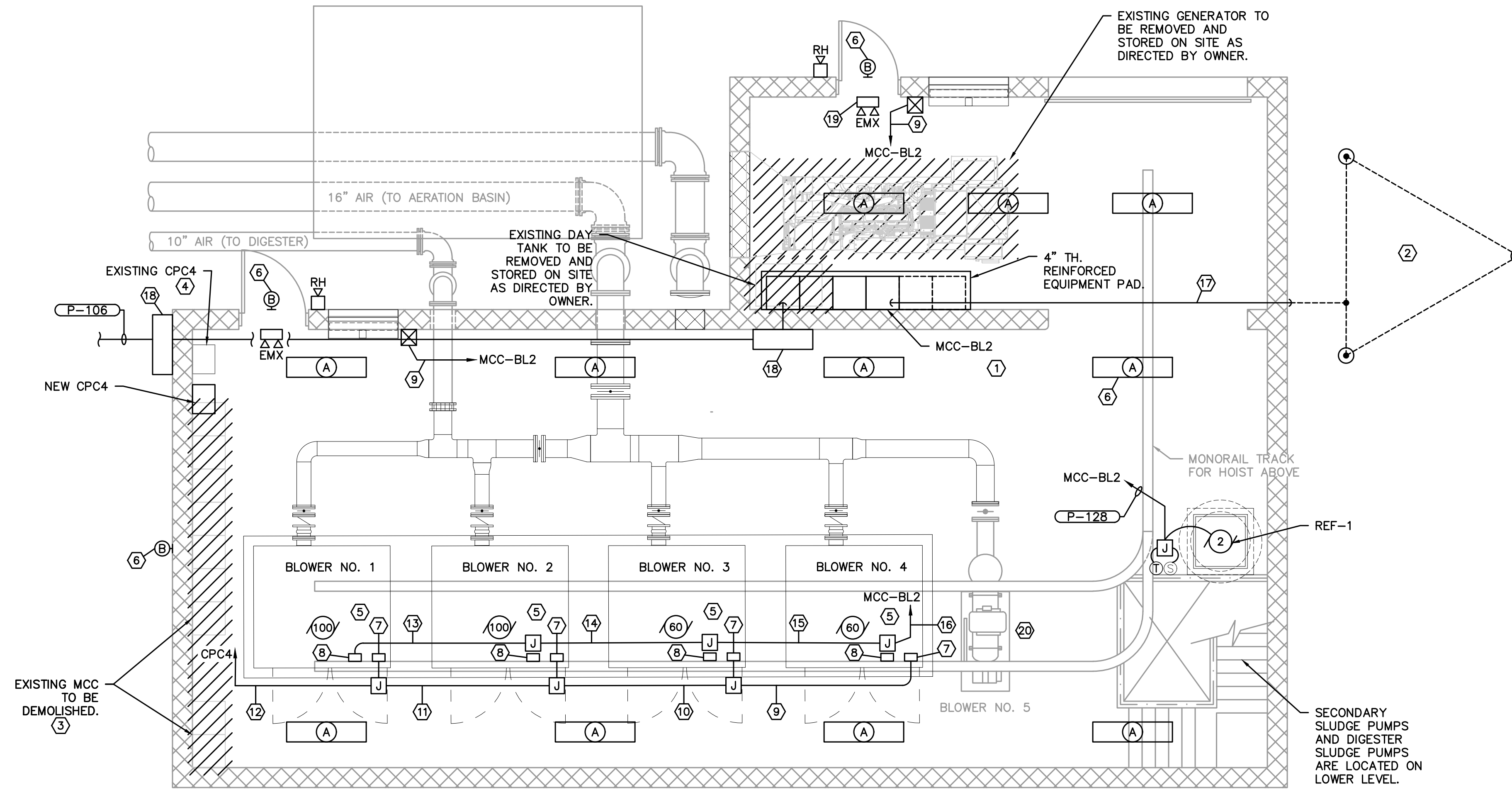
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DWG.	E04.10

**BID DOCUMENTS**

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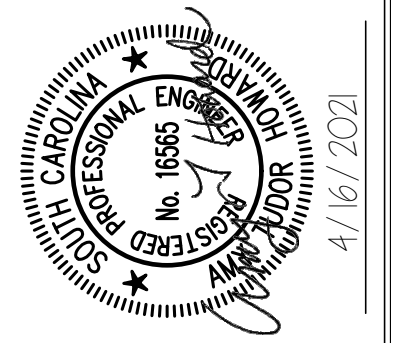
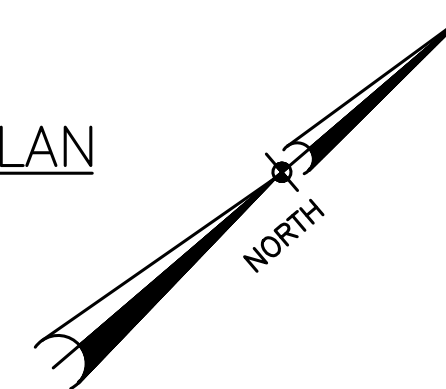
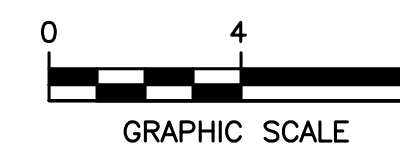
**NOTES:**

1. SEE ONE-LINE DIAGRAM FOR 480 VOLT WIRING.
2. GROUNDING ELECTRODE SYSTEM CONSISTING OF #4/0 GND AND THREE 3/4" DIA. X 10' COPPERCLAD GROUND RODS SPACED IN A 10' TRIANGLE. FIELD COORDINATE LOCATION.
3. AFTER NEW/EXISTING LOADS ARE FED FROM NEW MCC, DISCONNECT AND REMOVE EXISTING MCC. CAP UN-USED CONDUITS.
4. AFTER NEW MCC IS OPERATIONAL, INSTALL NEW CPC4 AND CONVERT EXISTING COMBINATION POWER CENTER TO JUNCTION BOX. INTERCEPT EXISTING WIRING AND EXTEND IN CONDUIT TO NEW CPC4.
5. DISCONNECT & REMOVE WIRING TO EXISTING BLOWERS. INSTALL NEW CONDUIT AND WIRING AS SHOWN IN ONE-LINE DIAGRAM.
6. DISCONNECT AND REMOVE EXISTING LIGHTS. CONNECT NEW LIGHTS TO EXISTING CIRCUITS, EXTENDING CONDUIT AND WIRING TO NEW LOCATIONS.
7. ENCLOSURE FAN CONTROL PANEL. CONNECT FOR 120V.
8. N.C. TEMPERATURE SWITCH. CONNECT TO SHUTDOWN BLOWER. SEE CONTROL DIAGRAM.
9. 2#12, 1#12G.-3/4"C.
10. 4#12, 1#12G.-3/4"C.
11. 6#12, 1#12G.-3/4"C.
12. 8#12, 1#12G.-3/4"C.
13. 2#14, 1#14G.-3/4"C.
14. 4#14, 1#14G.-3/4"C.
15. 6#14, 1#14G.-3/4"C.
16. 8#14, 1#14G.-3/4"C.
17. #4/0 BARE COPPER GND IN 1 1/2" SCH. 80 PVC CONDUIT.
18. INSTALL S.S. OR ALUMINUM CODE GAUGE PULL BOX WITH SCREW COVER (~36"SQ .X 12"D.)
19. DISCONNECT AND REMOVE EXISTING EMERGENCY LIGHTS AND REPLACE WITH NEW. (TYPICAL)
20. EXISTING BLOWER. DISCONNECT AND RECONNECT FROM NEW MCC.



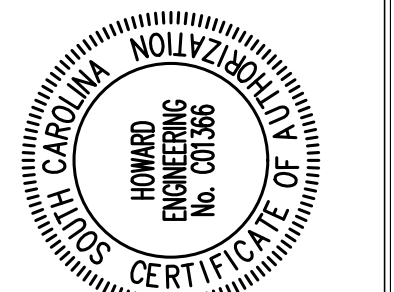
**ELECTRICAL PLAN**

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



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**EXISTING BLOWER BUILDING  
ELECTRICAL PLAN**  
**CITY OF LAKE CITY  
LAKE SWAMP WWTP UPGRADE**



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