GRAND STRAND

WATER & SEWER AUTHORITY

J.L. SCHWARTZ WWTP

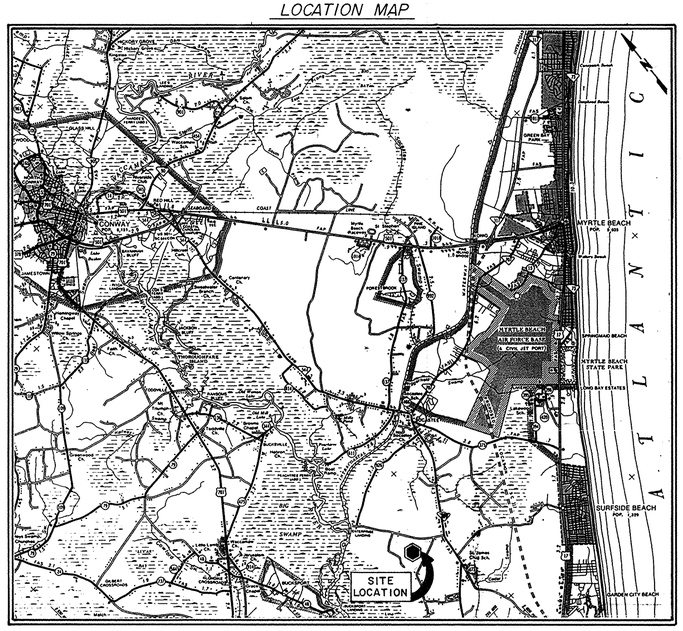
4.0 MGD ADDITION

HORRY COUNTY, SOUTH CAROLINA

DECEMBER, 1988

CONSTRUCTION DRAWINGS

LOCATION MAP



Rev. & Issued For Bids 10-12-89 H.D.W.
Rev. & Issued To DHEC 7-10-89 H.D.W.

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 4590 HAROLD JOE WILLSON

Harold Joe Willson

Issued To DHEC 12-15-89

SIRRINE ENVIRONMENTAL CONSULTANTS

Charleston, South Carolina

S.E.C. JOB NO. C-8202 COVER SHEET

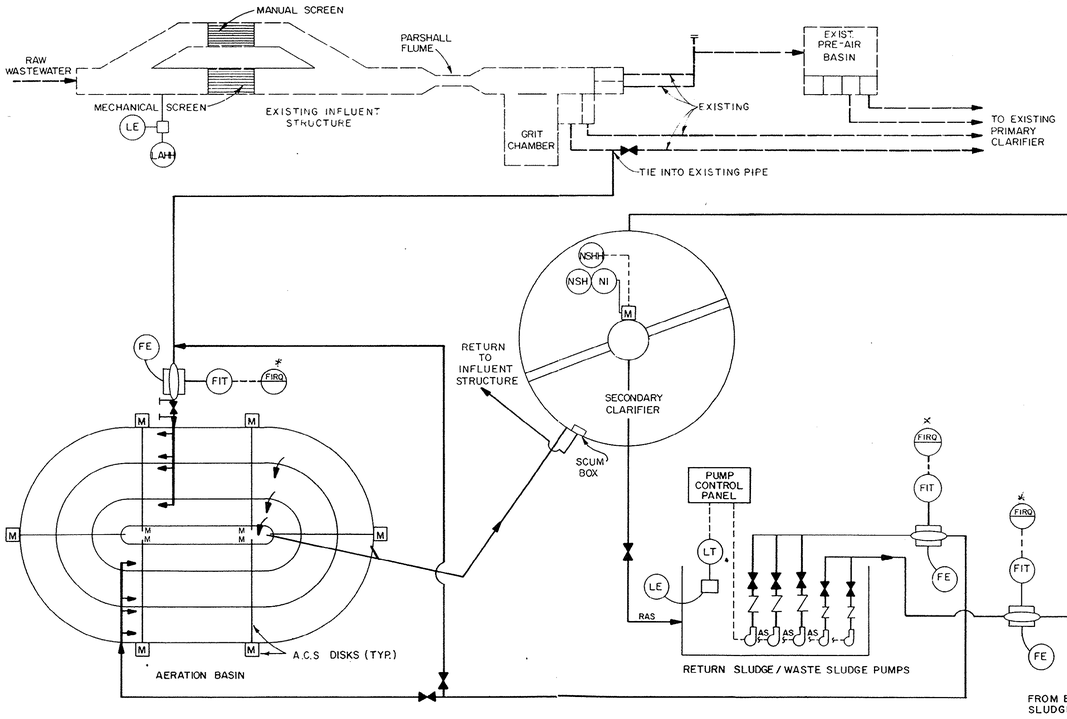
RECORD DRAWINGS 11-91

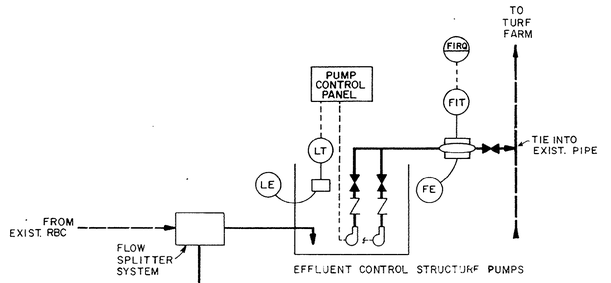
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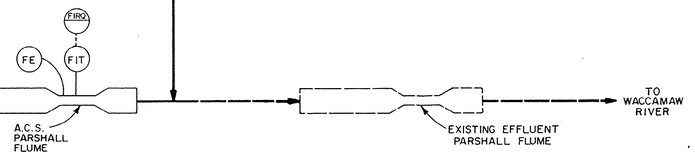
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C-2	Inlets & Roadway Details
C-3	Site Piping Plan
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C-7	Aeration Channel System - Influent Structure Plan & Sections
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S-16	Effluent Pump Station Plan & Sections
S-17	Effluent Pump Station Foundation Plan & Sections
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E-1	Electrical Site Plan
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E-9	Legend Schedules & Miscellaneous Details

RECORD DRAWING 11-91







* CHANGE ORDER NO. 1, ITEM "A" DELETED THE THREE (3) STRIP CHART RECORDERS ON THE STRAP-ON ULTRASONIC FLOW METERS.

LEGEND

A = ALARM
AS = ADJUSTABLE SPEED
C = CONTROLLER
E = ELEMENT
F = FLOW
H = HIGH
I = INDICATOR
I = INTERLOCK
L = LEVEL
M = MOTOR
N = TORQUE
P = PRESSURE
Q = TOTALIZER
R = RECORDER
S = SWITCH
T = TRANSMITTER
A.C.S. = AERATION CHANNEL SYSTEM
⊖ = PANEL MOUNTED

5-01-003 S

REVISIONS			
NO.	DATE	BY	DESCRIPTION
1	11-91	TEM	RE: [illegible]

SEAL

Harold Joe Williams
SIGNATURE

12-15-88
DATE

SIRRINE ENVIRONMENTAL CONSULTANTS
Charleston, South Carolina

GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

P&ID
PROCESS AND INSTRUMENT DRAWING

SHEET NUMBER	C8202 CIF-1
SIRRINE FILE NO.	C 8202
DESIGNED	J.C.B.
DRAWN	K.L.H. & D.E.B.
CHECKED	J.M.E.
APPROVED	H.J.W.
DATE	DEC. 1988

SIRRINE ASSOC., INC. CHARLESTON, S.C. (803) 571-1000

CONTRACTOR SHALL VERIFY DEPTH OF BURIED PIPING PARALLEL TO EXISTING DITCH BEFORE CONSTRUCTING NEW DITCH.

CONTRACTOR SHALL REMOVE FENCE BEFORE CONSTRUCTION OF DITCH AS NEEDED, THEN REPLACE, ADDING FABRIC TO COVER DITCH CROSS SECTION DOWN TO 2' ABOVE THE BOTTOM OF THE DITCH

PROPOSED DITCH I.E. 17.20'

EASEMENT

30'±

I.E.=17.22'

I.E.=17.25

0.05% SLOPE

I.E.=17.33'

PROPOSED DITCH I.E. 17.35'

FILL EXISTING DITCH TO MATCH ADJACENT GROUND WITHIN LIMITS OF CONSTRUCTION

FILL EXISTING DITCH TO MATCH ADJACENT GROUND WITHIN LIMITS OF CONSTRUCTION

EXISTING DITCH TO BE EXCAVATED TO NORTH CORNER OF PROPERTY @ 0.021% SLOPE TO ELEVATIONS SHOWN. SPOIL SHALL BE PLACED ON PLANT SIDE OF DITCH & AREA BETWEEN DITCH & FENCE GRADED SMOOTH TO ALLOW DRAINAGE.

3 18" TAPPING SLEEVE W/ 12" VALVE (18" O.D. PIPE REQ. SPECIAL SLEEVE)

2 CUT & CAP EX. LINE TIE IN NEW 6" DIGESTER LINE (SEE SHT. C-3)

PROPOSED DITCH I.E. 17.00'

2 NEW 6" DIGESTER LINE (SEE SHT. C-3)

3 NEW 12" C900

ROAD "E" 3+20.00= ROAD "F" 2+48.00

ROAD "D" 2+48.00= ROAD "E" 0+00

ROAD "B" 2+07.5= ROAD "C" 0+00

ROAD "C" 1+23.67

ROAD "C" H-25.67

HIGH POINT STA. 1+60

90° BEND

ROAD "E"

ROAD "F"

17.5'

98'

16'

0.5% SLOPE

CUT & PATCH TO MATCH EXIST. COND.

SEE "ORBAL WALL DETAIL" THIS SHEET

25' RADIUS (TYP.)

PROPOSED AERATION CHANNEL SYSTEM

SIDEWALK

PROPOSED RAS/WAS PUMP STATION

MONITOR WELL E-4

MONITOR WELL E-1

SOIL BORING E-5

SOIL BORING E-6

SOIL BORING E-3

SOIL BORING E-4

PROPOSED SECONDARY CLARIFIER

30" Ø EFFLUENT PIPE

5' RADIUS (TYP.)

HIGH POINT STA. 1+24

THIS AREA MAY BE USED FOR CONSTRUCTION TRAILERS & STORAGE OF MATERIAL BY THE CONTRACTOR.

CONTRACTOR SHALL CLEAN EXISTING DITCH BANKS AND INVERTS TO FENCE LINE

ELECTRICAL CONDUIT

ELEC. BOX

INSTALL 12 LF OF 15" Ø TYPE III RCP @ 0.3 % SLOPE. I.E. @ INLET = 1'

45°

CURB INLET SEE DETAIL SHEET C-2

ROAD "A" 7+00.00= IRON PIN

ROAD "A" 5+78.00= ROAD "F" 0+00

PRE - AERATION

THIS PORTION OF EXISTING 8" Ø WATER MAIN WAS NOT THERE AS SHOWN.

ROAD "A" 4+53.00 = RADIUS PT. OF CHANNEL

ROAD "A" 3+83.00= RADIUS POINT OF CHANNEL

ROAD "A" 2+58.00= ROAD "D" 0+00

ROAD "A" H-61.50= ℄ CLARIFIER

ROAD "A" 0+70.00= ROAD "B" 0+00

ROAD "A" ℄ (STATION) 0+00= IRON PIN

BENCH MARK: CHISELED MARK IN TOP OF CURB, "X-5" ELEV.=23.50

BENCH MARK: FLANGE BOLT TOWARD R.B.C. BLDG. ON FIRE HYDRANT. ELEV= 26.35'

ROAD "A"

ELEC. BOX

CB.

CB.

HEAD WALL

PROPOSED EFFLUENT CONTROL STRUCTURE

EFFLUENT FORCE MAIN

REORIENT PATH OF HYDROGEN PEROXIDE TANK

EFFLUENT PUMP STATION

CHLORINE BUILDING

R. B. C.

SECONDARY CLARIFIER NO. 1

SECONDARY CLARIFIER NO. 2

PRIMARY CLARIFIER NO. 1

PRIMARY CLARIFIER NO. 2

INFLUENT STRUCTURE

NEW 6" DIGESTER LINE (SEE SHEET C-3)

1 THE EXISTING HYDROGEN PEROXIDE TANK WAS SHIFTED APPROX. 30' EAST OF SHOWN LOCATION; SEE PLAN SHEET C-8202, C-3.

DISCHARGE TO RIVER

WETLAND DO NOT DISTURB 7

SCALE: 1" = 40'

0 5 10 20 30 40 60 80

STRAP

90° M.J. W/ RESTRAINTS

TURN 45° ALL Ø 20° TO FLOW W/ ORBAL FLOW DIRECTION

VARIES ±2.9'

EXIST. ORBAL CONC. WALL

2'-6ST3/STEEL BENT PLAT BAR W/CONC. ANCHORS FOR PIPE SUPPORT TO EXIST. WALL

FLOW

PROPOSED 12" C900 W/STD. M.J. BENDS & RESTRAINERS

2-45°'s

ORBAL WALL DETAIL.

N.T.S.

FENCE ALONG PROPERTY LINE

℄

SCALE: 1" = 6'

15' (TYP.)

DEPTH VARIES

2'

1'

2'

SECTION 1-1-1

LEGEND

- EXISTING STRUCTURE
- PROPOSED STRUCTURE/ IMPROVEMENTS
- FUTURE STRUCTURE
- 21 EXISTING CONTOURS
- 21 PROPOSED CONTOURS
- 25.00 PROPOSED SPOT ELEVATIONS IN GUTTER
- 0.5% SLOPE OF ROAD AND DIRECTION OF FLOW
- APPROXIMATE LOCATION OF KNOWN EXISTING PIPING
- EXISTING ASPHALT ROAD WITH REPAIR AREA
- PROPOSED ASPHALT ROAD
- EXISTING PERIMETER FENCE
- PROPOSED LOCATION OF SILT FENCE
- PROPOSED DITCH
- EXISTING DITCH
- WETLAND AREA
- 1 REFER TO NOTE INDICATED - TOP RIGHT

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NOTES

1. All Road Intersections are 90°.
2. Remove 36' of curb and gutter each side of road centerline and replacement valley gutter. See Detail 8-2-2
3. Construct silt fence 20' off road centerline prior to beginning of earth work and shall maintain fence throughout construction in accordance with specifications.
4. Remove approx. 55' of curb and gutter along edge of road and 22' at end of road. Remove asphalt as necessary and grade to new lines and elevations as shown.
5. Construct Ditch (See Section 1-1-1 below) remove spoil from site as ditch is constructed.
6. Construct V-shaped ditch from end of 15" RCP to existing ditch at 0.3% slope.
7. Taken from "Map of Wetlands area located within the Schwartz Sewer Treatment Plant Property, Socastee Township, Horry County, South Carolina surveyed for Grand Strand Water and Sewer Authority" By Coastal Land Surveying, Inc. of Conway, S.C. Dated October 25, 1988.
8. Remove and replace pavement as necessary for pipeline crossings.

REV. NO.	CODE CIRCLES	DATE	REV. BY	DESCRIPTION	S.E.C. APPV.
1		F I 11 TEM 91		RECORD DRAWINGS	
2		4 DRT 94		NEW 6" DIGESTER LINE	
3		5 DRT 95		ADDED 12" C900 LINE FROM 18" EFF. FM. TO ORBAL AERATION CHANNEL	

NOTE: CIRCLE ALL REVISIONS, IDENTIFY WITH DIAMOND, NUMBER AND ARROW. REMOVE ONLY CIRCLE AND ARROW BEFORE NEXT REVISION

ISSUE CODE			
A	PRELIMINARY	D	MAT'L PURC.
B	DESIGN	E	BIDS
C	MAT'L T.O.	F	CONST'N
		G	
		H	

SEAL

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 4590 HAROLD JOE WILLSON

Harold Joe Willson
SIGNATURE

12-15-99
DATE

SIRRINE ENVIRONMENTAL CONSULTANTS
Charleston, South Carolina

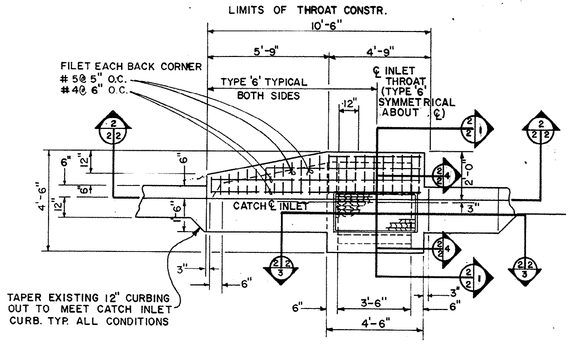
DSGN.	H.J.W. & R.E.L.	SCALE	AS SHOWN
DR.	K.L.H & J.B.P	DATE	1988
CK.	R.D.B.	S.E.C. FILE NUMBER	C8202
APPV.	H.J.W.		

DRAWING TITLE
GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

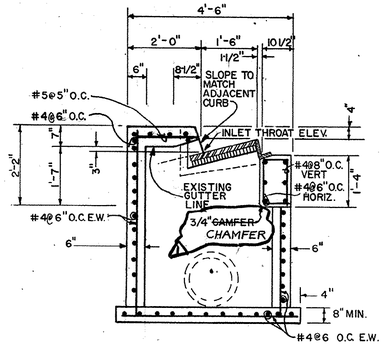
SITE LAYOUT & DRAINAGE PLAN

CLIENT DRAWING NUMBER
5-01-004 s

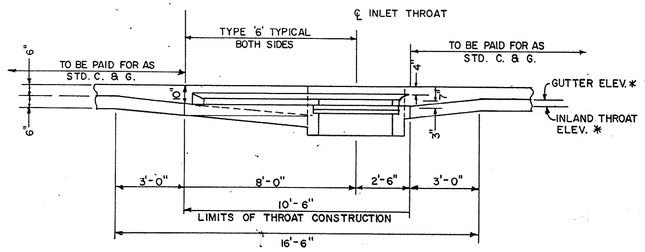
S.E.C. DRAWING NUMBER
C-8202



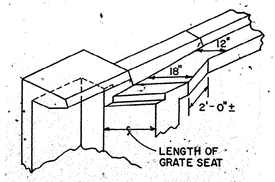
INLET THROAT
PLAN VIEW
N.T.S.



SECTION 1-2-2
N.T.S.

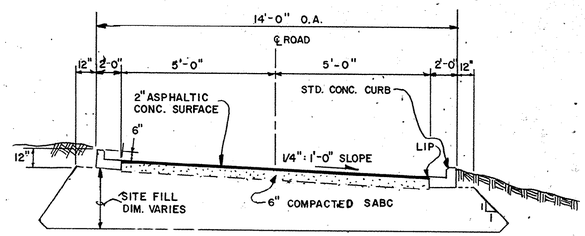


SECTION 2-2-2
N.T.S.



TYPICAL GRATE FRAME
RECESS DETAIL 5-2-2
N.T.S.

NOTE: TOP OF FINISHED PAV'T TO BE 1/4" MIN. ABOVE LIP OF CONC. CURB

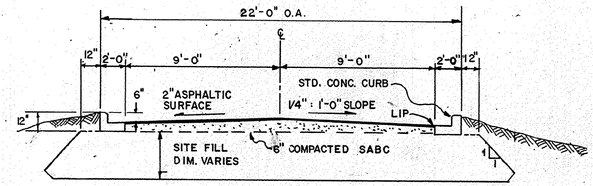


SECTION 2-1-2
TYPICAL SECTION 14'-0" PAVEMENT
WITH CURB - NO CROWN

—CURBING DIM. SHALL MATCH THOSE EXISTING
—GRADE AWAY FROM CURBING: MAX 2:1 SLOPE
—CHECK SPECS FOR COMPACTION DATA

N.T.S.

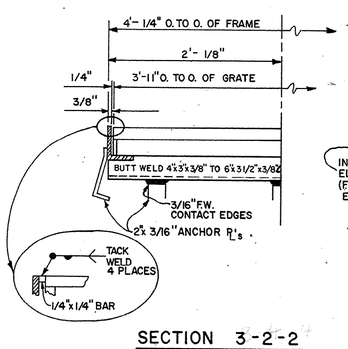
NOTE: TOP OF FINISED PAV'T TO BE 1/4" MIN. ABOVE LIP OF CONC. CURB



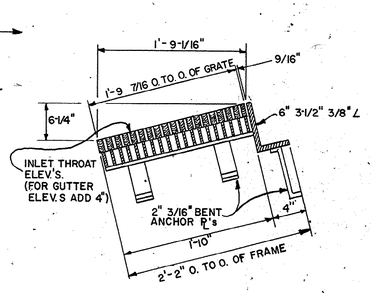
SECTION 3-1-2
TYPICAL SECTION 22'-0" PAVEMENT — WITH CURBING

—CURBING DIM. SHALL MATCH THOSE EXISTING
—CHECK SPECS FOR COMPACTION DATA

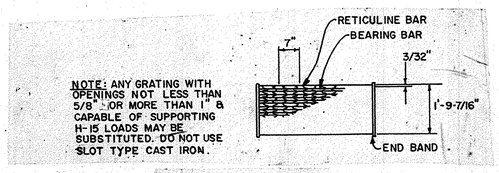
N.T.S.



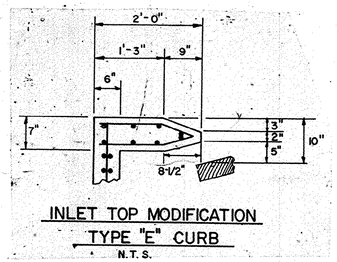
SECTION 3-2-2
N.T.S.



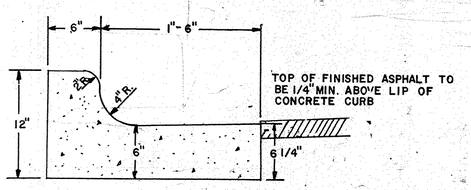
SECTION 4-2-2
N.T.S.



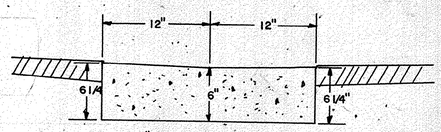
GRATE DETAIL 6-2-2
N.T.S.



INLET TOP MODIFICATION
TYPE "E" CURB
N.T.S.



CONCRETE CURB &
GUTTER DETAIL 7-2-2
N.T.S.



CONCRETE VALLEY GUTTER
DETAIL 8-2-2
N.T.S.

5-01-005 s

REVISIONS			
NO.	DATE	BY	DESCRIPTION
1	11-91	TEM	RECORD DRAWING

SEAL
SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 4590 HAROLD JOE WILLSON
Harold Joe Willson
SIGNATURE
12-15-88
DATE

SIRRINE ENVIRONMENTAL CONSULTANTS
Charleston, South Carolina

GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

INLETS AND
ROAD SECTION DETAILS

SHEET NUMBER	
C-8202	C-2
SIRRINE FILE NO.	C 8202
DESIGNED	H.J.WILLSON
DRAWN	K.HENDERSON
CHECKED	H.J.W. & R.E.L.
APPROVED	H.J.WILLSON
DATE	DEC. 1988

DUNCAN-PARNELL INC., CHARLESTON, S.C. (803) 577-9013

NOTE: SEE ATTACHED SHEETS FOR AS-BUILT ELEVATION DATA ON YARD PIPING WHICH VARIES SLIGHTLY FROM THE DESIGN ELEVATIONS.

18" EFFLUENT FORCE MAIN

TO TURF FARM

SEE PIPING DETAIL 3-3-3 (THIS SHEET)

FUTURE AERATION CHANNEL SYSTEM

NEW 12" C900 PVC F.M. (SEE SHT. C-1 FOR DETAILS)

FUTURE PRIMARY CLARIFIER

POSSIBLE FUTURE AEROBIC DIGESTER

FUTURE SECONDARY CLARIFIER

FUTURE SECONDARY CLARIFIER

FUTURE SECONDARY CLARIFIER

CONTRACTOR SHALL VERIFY LOCATION OF EXISTING PIPES

6" X 6" TEE W/ BLIND FLG.

INSTALL 6" TAPPING VALVE W/ TAPPING SLEEVE - FIELD LOCATE AND VERIFY IDENTIFICATION OF 6" W.A.S. FM BEFORE CONNECTING.

8" SS @ 0.57% B.F. 12'

8" P.S.W.

6" WAS F.M.

PLUG END INV. 20.45

PROPOSED AERATION CHANNEL SYSTEM

SEE PIPING DETAIL 2-3-3 (THIS SHEET)

1" WATER TO H.B.

PROPOSED RAS/WAS PUMP STATION

SEE SLUDGE PIPING DETAIL 2-3-14

20" D.I.P R.A.S. F.M.

20" D.I.P.

SEE PIPING DETAIL 1-3-3 (THIS SHEET)

PROPOSED SECONDARY CLARIFIER

30" D.I. EFFLUENT

2" PVC Cl2 SOLUTION PIPE TO CLARIFIER BAFFLES

16" D.I.P. DRAIN LINE

30" D.I.P RAS BY-PASS FM

30" D.I.P INFLUENT LINE

30" x 30" TEES W/ 30" Ø D.I. RESTRAINED PLUGS

30" Ø D.I. RESTRAINED PLUG

8" D.I. PLANT SERVICE WATER (TYP)

NEW 6" SLUDGE DIGESTER LINE

ELEC. BOX

SEE C.O.#5, ITEM "E" FOR CHANGE INFO. ON WATER MAIN

2½" @ PVC Cl_2 SOLUTION PIPING (EXISTING) 7'-9" OFF B.S. OF CURB @ EL. 19.50' T.O.P.

* SEE C.O.#5, ITEM "F" FOR INFO. ON 8" Ø D.I W.M. RELOCATION.

HEAD WALL

EXISTING ELEC. CONDUIT

ELEC. BOX

8" SS 143' @ 0.4%

8" D.I. SS @ 0.40%

1" WATER TO H.B.

30" x 20" TEE

CONNECT TO EXISTING

EXIST. 8" PLANT SERVICE WATER

TAP EXISTING 8" WATER

CONNECT TO EXISTING

CEMENT LINED 36" D.I.P. EFFLUENT LINE

RELOCATE 1½" PVC P.S.W. TO HYDROGEN PEROXIDE TANK

EXISTING Cl_2 SOLUTION PIPE

PROPOSED EFFLUENT CONTROL STRUCTURE

8" D.I. GRAVITY SS (TYP)

REMOVE EXIST. CLEANOUT AND CONNECT TO EXIST. 8" CROSS - FIELD VERIFY INVERT ELEV.

BENCH MARK - FLANGE BOLT TOWARD R.B.C. BLDG. ON F.H. ELEV. = 26.35

R.B.C.

PRE-AERATION

SEE C.O.#5, ITEM "C" FOR A/R VALVE I.S. 5'Ø M.H. INSTALLATION AT 22½° VERT. BEND.

NEW 6" DIGESTER LINE W/ 6" PLUG VALVE: CAP AND RESTR. OLD LINE.

SEE C.O.#5, ITEMS "A" & "B" FOR 8" G.V. & A/R VALVE I.S. 4'Ø M.H. INSTALLATION.

CLORINATION MH. 18" D.I.

CUT IN 18" TEE

TURN EXISTING HYDROGEN PEROXIDE TANK AND MOVE PIPING AS REQUIRED.

SECONDARY CLARIFIER NO.1

PRIMARY CLARIFIER NO.1

8" GRAVITY SANITARY SEWER (SS)

CUT IN 30" TEE AND PLUG VALVE - ROTATE TEE BRANCH 22-1/2° VERT. TO FIT. USE 30" CUTTING-IN SLEEVE

INFLUENT STRUCTURE

T.O.P. EL. 16.5'

36" Ø D.I.

CHLORINE BUILDING

CHLORINATION LINE

18" EFFLUENT FORCE MAIN

EXISTING CHLOR. LINE

EFFLUENT PUMP STATION

SECONDARY CLARIFIER NO.2

PRIMARY CLARIFIER NO.2

EXIST. 3" STL. AIR

EXIST. 4" PVC AIR

EXIST. 1" STL. AIR

1-30" X 8" TAPPING SLEEVE, ROTATE 8" UP 22-1/2° FROM HORZ.
1-8" TAP
1-8" 22-1/2° VERT. BEND
EXIST. 2" Ø PVC PIPE

PUMP STATION

8" FM

EXIST. ELEC. CONDUIT BANK (CONC. ENCASED)

T.O.P. EL. 21.63

1-8" X 8" M.J. TEE
1-8" CUTTING-IN SLEEVE
2-8" PLUG VALVES

EXISTING 1½" PVC SCH. 80 WATER LINE

DISCHARGE TO RIVER

SCALE: 1" = 40'

0 5' 10' 20' 30' 40' 60' 80'

PIPING DETAIL 3-3-3

NEW 6" CAP
VALVE STAYS CLOSED
NEW 6" 45° BEND
NEW 6" 22.5° BEND
NEW 6" DIGESTER LINE TO TURF FARM

PIPING DETAIL 1-3-3

NTS

22 1/2° BEND
8" SS
0.4%
16" D.I.P
2-22 1/2° VERT. BENDS
45° BEND
16" P.V.
20" x 12" 16" TEE
INV. 19.90
30" D.I.P
16" P.V.
8" SS
INV. 17.76
PROPOSED SECONDARY CLARIFIER
8" D.I. SS @ 5%
INV. 19.83
45° VERT. BEND
30" 20° TEE
8" SS
16" D.I.P

PIPING DETAIL 2-3-3

SCALE: 1" = 10'

0 5' 10' 20'

20" D.I.P
2-22-1/2° VERT. BENDS
22-1/2° BEND
36" P.S.W.
20" TEE-ROTATE TEE BRANCH TO FIT
30" D.I.P
15" 22-1/2° VERT. BEND
20" P.V.
45° BEND
20" P.V.
16" D.I.P
22-1/2° BEND
20" D.I.P

LEGEND

- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- FUTURE STRUCTURE
- FM — EXISTING FORCE MAIN
- FM — PROPOSED FORCE MAIN
- SS — PROPOSED SANITARY SEWER
- SS — EXISTING SANITARY SEWER
- W — EXISTING PLANT SERVICE WATER (P.S.W.)
- W — PROPOSED P.S.W.
- EXISTING MANHOLE
- PROPOSED MANHOLE
- PROPOSED FLOW/SENSOR MANHOLE
- EXISTING ELECTRICAL CONDUIT
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT W/ 6" LEAD & VALVE
- PROPOSED 1" WATER SERVICE TO HOSE BIB (H.B.)
- EXSISTING VALVE
- PROPOSED VALVE (SEE NOTE 7)
- EXISTING WATER VALVE
- EXISTING ASPHALT ROAD
- PROPOSED ASPHALT ROAD
- PIPE CENTERLINE ELEVATION
- W.A.S. WASTE ACTIVATED SLUDGE
- R.A.S. RETURN ACTIVATED SLUDGE
- B.F. BLIND FLANGE
- E PROPOSED ELECTRICAL CONDUIT

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NOTES

1. All force mains shall have restrained joints as required by the piping details on sheet C-4 .
2. All pipe fittings shall have restrained joints. All dead end piping shall have restrained plugs or blind flanges.
3. All site piping shall be Ductile Iron pipe unless otherwise specified.
4. Contractor shall verify the location and elevations of connection points to all existing facilities.
5. Known underground lines are shown on the drawings for information only. All existing lines may not be shown. The Contractor shall be responsible to locate all utilities near proposed piping prior to commencing pipe laying operations.
6. Field adjustments required in the actual location of pipeline facilities shall be made only with the approval of the Engineer. The locations of valves, hydrants, hose bibs, manholes and all other appurtenances located on the surface shall be so as to provide for adequate access and operation.
7. Valving for plant service water system shall be gate valves. All valving for wastewater piping shall be plug valves.
8. CONTRACTOR SHALL INSTALL RESTRAINED PUSH-ON JOINT PIPE FOR ALL PIPING UNDER STRUCTURES TO ALLOW FOR EXPANSION, CONTRACTION, AND OTHER MOVEMENT, EXCEPT THAT FLANGED PIPING MAY BE INDICATED AND ALLOWED AT FITTINGS AT THE BEGINING OF PIPE RUNS UNDER STRUCTURES. SEE ADDENDUM NO. 1, ITEM 13.0-A.

REV. NO.	BY	DATE	DESCRIPTION
5	DRT	95	ADDED 12" C900 LINE FROM 18" EFF. F.M. TO ORBAL AERATION CHANNEL
4	DRT	94	AS-BUILT NEW 6" DIGESTER LINE
3	F3 TEM	11 91	RECORD DRAWING
2	B2 H.J.W	6 89	SEE DETAIL 2-3-14 FOR REVISIONS
1	B1 H.J.W.	4-89	ADDED 8" BY-PASS FM FOR PLANT PUMP STATION & 6" X 6" TEE & FUTURE DIGESTER

NOTE: CIRCLE ALL REVISIONS, IDENTIFY WITH DIAMOND, NUMBER AND ARROW. REMOVE ONLY CIRCLE AND ARROW BEFORE NEXT REVISION

ISSUE CODE					
A	PRELIMINARY	C	MAT'L T.O.	F	CONST'N
B	DESIGN	D	MAT'L PURC.	G	
		E	BIDS	H	

SEAL

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 4590 HAROLD JOE WILLSON

Harold Joe Willson
SIGNATURE

12-15-88
DATE

SIRRINE ENVIRONMENTAL CONSULTANTS
Charleston, South Carolina

DSGN.	H.J.W. & J.M.E.	SCALE	AS SHOWN
DR.	K.L.H & J.B.P.	DATE	DEC. 1988
CK.	R.D.B.	S.E.C. FILE NUMBER	C8202
APPV.	H.J.W.		

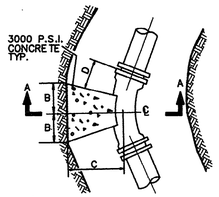
DRAWING TITLE
GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

SITE PIPING PLAN

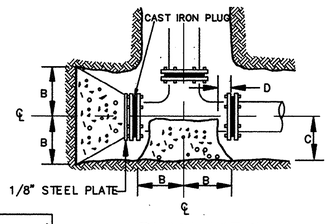
CLIENT DRAWING NUMBER
5-01-006 s

S.E.C. DRAWING NUMBER
C-8202 C-3

DUNCAN-PARNELL, INC. CHARLESTON, S.C. (803) 577-7411



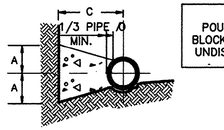
TYPICAL BEND PLAN



PLAN VIEW
DEAD END BLOCKING

MIN. THRUST BLOCKING DIMENSIONS											
PIPE SIZE	FITTING										
	90° BENDS		45° BENDS		22 1/2° BENDS		TEES AND 90° ELBOWS		ALL PLUGS		
	A	B	A	B	A	B	A	B	C	D	
2"	3.5"	5.0"	3.0"	3.5"	2.0"	2.5"	2.5"	5.0"	6.0"	3.0"	
3"	4.5"	8.5"	3.5"	6.0"	3.0"	3.5	3.5"	8.0"	6.0"	3.0"	
4"	6.5"	11.0"	5.0"	8.0"	4.0"	5.0"	5.0"	10.0"	7.0"	5.5"	
6"	9.5"	15.5"	7.5"	11.0"	5.0"	8.5"	7.5"	14.0"	8.5"	5.5"	
8"	13.0"	19.5"	10.0"	13.5"	6.0"	11.5"	10.0"	17.5"	9.5"	6.0"	
10"	16.0"	23.5"	12.5"	16.5"	7.0"	15.0"	13.0"	22.5"	11.0"	6.0"	
12"	19.0"	28.0"	15.0"	19.5"	8.0"	18.0"	15.0"	25.0"	12.0"	6.25"	

NOTE: THRUST BLOCKS SIMILAR TO THOSE SHOWN SHALL BE CONSTRUCTED AT ALL TEES, BENDS, DEAD ENDS, ETC. OF SUFFICIENT BEARING AREA TO RESIST PROBABLE MAXIMUM THRUST. SEE SPECIFICATIONS FOR DETAILS.
DIMENSIONS ABOVE ARE FOR SOILS WITH A BEARING CAPACITY OF AT LEAST 2000 PSF AND A WATER PRESSURE OF NOT MORE THAN 150 PSI. IF A LOWER SOIL BEARING CAPACITY OR A HIGHER WATER PRESSURE IS ANTICIPATED, THE CONTRACTOR SHALL REQUEST THAT THE ENGINEER RESIZE THE THRUST BLOCKING.
"D" DIMENSION PROVIDES FOR REMOVAL OF BOLTS ON MECHANICAL JOINT FITTINGS, EXCEPT FOR THE 2" & 3", AND MAY BE REDUCED FOR OTHER TYPE JOINTS.
JOINTS SHALL BE FREE OF CONCRETE AND CAPABLE OF BEING DISASSEMBLED WITHOUT DISTURBING THE THRUST BLOCK, REGARDLESS OF THE TYPE OF JOINT USED.

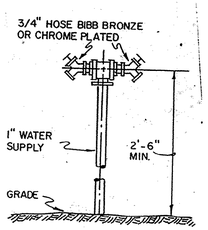


SECTION "A-A"

NOTE
POUR ALL THRUST BLOCKS AGAINST FIRM UNDISTURBED EARTH.

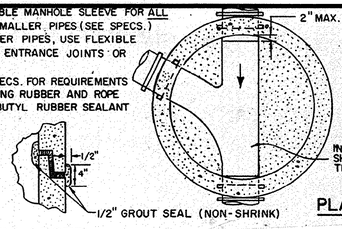
THRUST BLOCK DETAILS
NO SCALE

NOTE: U.S.TR FLEX RESTRAINED JOINT PIPE AND FITTINGS USED ON PROJECT IN MOST CASES TO ELIMINATE THE NEED OF THRUST BLOCK INSTALLATION.



HOSE BIBB DETAIL

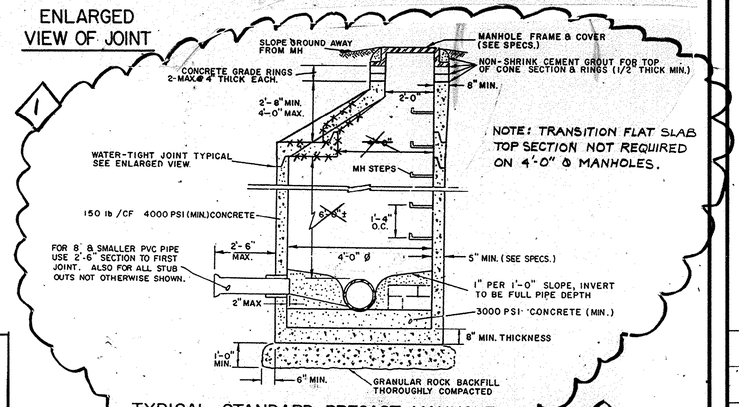
USE FLEXIBLE MANHOLE SLEEVE FOR ALL 16" AND SMALLER PIPES (SEE SPECS.) FOR LARGER PIPES, USE FLEXIBLE MANHOLE ENTRANCE JOINTS OR SLEEVES.
SEE SPECS. FOR REQUIREMENTS ON "O" RING RUBBER AND ROPE MASTIC BUTYL RUBBER SEALANT



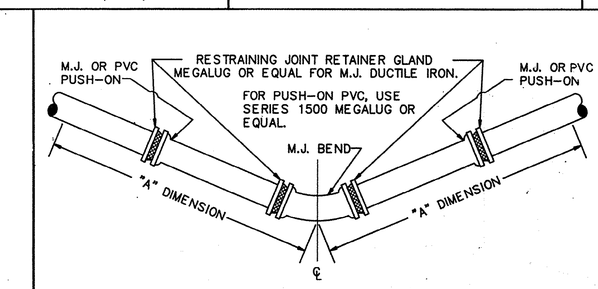
PLAN VIEW

NOTES:
1) RIM ELEVATION SHALL BE SET AS NOTED ON PROFILE, OR SHALL BE SET AT OR ABOVE EXISTING GRADE AS APPROVED BY THE ENGINEER.
2) MANHOLE INVERT SHALL BE 3000 PSI. CONRETE. CONCRETE BRICK MAY BE USED TO FORM CHANNEL BENCH ONLY. PLASTERED WITH A MIN. OF 1" OF CEMENT MORTAR 1:2 MIX (1 PART CEMENT TO 2 PARTS SAND.)
3) STEPS SHALL BE NO. 4 RE-BAR COVERED WITH POLYPROPYLENE OR APPROVED EQUAL, DRIVEN INTO PRE-FORMED HOLES

ENLARGED VIEW OF JOINT



TYPICAL STANDARD PRECAST MANHOLE



THRUST RESTRAINT SYSTEM
(USED FOR 4" & LARGER PIPE)

PLAN VIEW
N. T. S.

THRUST RESTRAINT DESIGN FOR DUCTILE IRON PIPE AND PVC PIPE TABLE B-6 *

SOIL TYPE: SAND-SILT*

SOIL PARAMETERS
ϕ = 30 Degrees
Cs = 0 psf
ɣ = 90 pcf
Sf = 1.5
* = 1984 DIPRA Publication

Values listed here are based on a 90 degree horizontal bend. Class 50 D.I.P. and an internal pressure of 100 psi

For other pressures, multiply by ratio to 100 psi.

For other horizontal bends, multiply by the following coefficients: 45°-0.414, 22 1/2°-0.199, 11 1/4°-0.098.

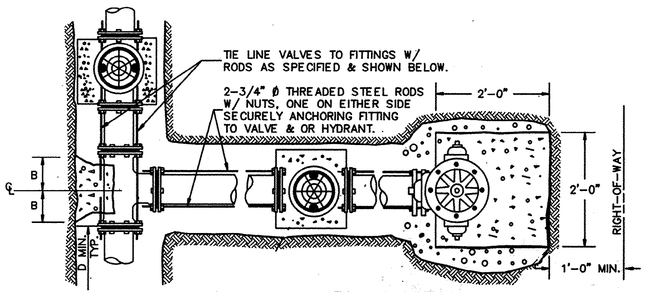
Use alternate method for other type fitting or dead end.

Values in parentheses are for pipe encased in polyethylene and for PVC pipe.

A21.50 – LAYING CONDITIONS

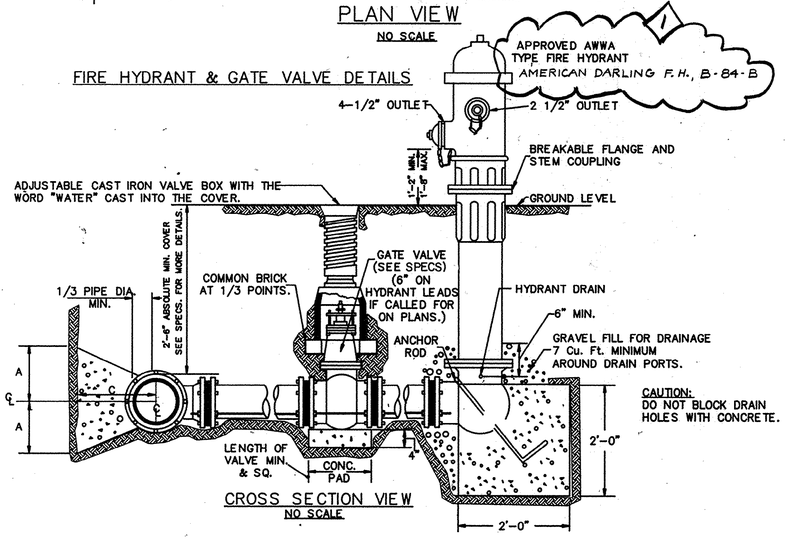
	2	3	4	5
fϕ =	0.50	0.75	0.75	0.75
fc =	0.00	0.00	0.00	0.00
Kn =	0.40	0.60	0.85	1.00

TABLE OF MIN. RESTRAINED LENGTH "A"					Use Condition 4 with sand-silt as pipe zone material	Use Condition 5 with aggregate to pipe centerline
SIZE IN.	DEPTH FT.	A21.50-LAYING CONDITIONS 2 RESTRAINED LENGTH, FT.	3 RESTRAINED LENGTH, FT.	4 RESTRAINED LENGTH, FT.		5 RESTRAINED LENGTH, FT.
6	2.5	34 (40)	22 (26)	18 (21)		17 (19)
6	3.0	29 (34)	19 (22)	16 (18)		14 (16)
6	4.0	22 (26)	15 (17)	12 (14)		11 (12)
6	6.0	15 (18)	10 (12)	8 (9)		7 (8)
6	8.0	12 (13)	8 (9)	6 (7)		6 (6)
6	10.0	9 (11)	6 (7)	5 (6)		5 (5)
8	2.5	44 (51)	29 (34)	24 (27)		21 (24)
8	3.0	37 (43)	24 (29)	20 (23)		18 (20)
8	4.0	29 (33)	19 (22)	15 (18)		14 (16)
8	6.0	20 (23)	13 (15)	11 (12)		10 (11)
8	8.0	15 (17)	10 (11)	8 (9)		7 (8)
8	10.0	12 (14)	8 (9)	7 (7)		6 (7)
18	2.5	84 (97)	55 (64)	45 (51)		40 (45)
18	3.0	72 (84)	48 (55)	39 (44)		35 (39)
18	4.0	57 (66)	37 (44)	31 (35)		28 (31)
18	6.0	40 (47)	26 (31)	22 (24)		19 (22)
18	8.0	31 (36)	20 (24)	17 (19)		15 (17)
18	10.0	25 (29)	17 (19)	14 (15)		12 (14)
20	2.5	91 (105)	60 (69)	49 (55)		44 (49)
20	3.0	79 (91)	52 (60)	42 (48)		38 (42)
20	4.0	62 (72)	41 (48)	33 (38)		30 (34)
20	6.0	44 (51)	29 (34)	24 (27)		21 (24)
20	8.0	34 (39)	22 (26)	18 (21)		17 (18)
20	10.0	28 (32)	18 (21)	15 (17)		13 (15)



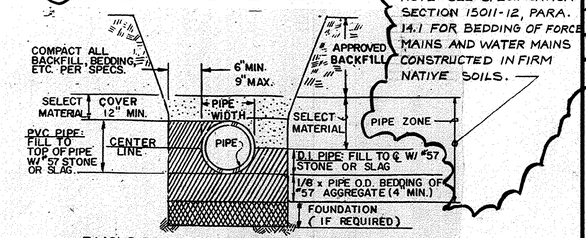
PLAN VIEW
NO SCALE

FIRE HYDRANT & GATE VALVE DETAILS

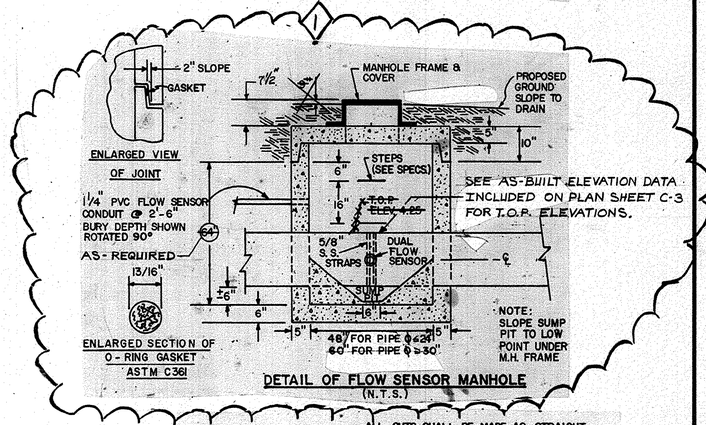


CROSS SECTION VIEW
NO SCALE

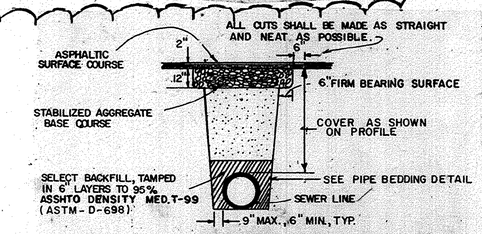
NOTE: SEE SPECIFICATION SECTION 15011-12, PARA. 14.1 FOR BEDDING OF FORCE MAINS AND WATER MAINS CONSTRUCTED IN FIRM NATIVE SOILS.



PVC & DI PIPE BEDDING DETAIL



DETAIL OF FLOW SENSOR MANHOLE
(N.T.S.)



PAVEMENT CUT AND REPAIR DETAIL

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NOTES

REV. NO.	CODE	CIRCLES	DATE	DESCRIPTION	S.E.C. APPV.
1	F	1	11	RECORD DRAWING	
	TEM	91			
REV. BY				NOTE: CIRCLE ALL REVISIONS, IDENTIFY WITH DIAMOND, NUMBER AND ARROW, REMOVE ONLY CIRCLE AND ARROW BEFORE NEXT REVISION	

ISSUE CODE					
A	PRELIMINARY	C	MAT'L T.O.	F	CONST'N
B	DESIGN	D	MAT'L PURC.	G	
		E	BIDS	H	

SEAL
SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 4590 HAROLD JOE WILSON

Harold Joe Willson
SIGNATURE

12-15-88
DATE

SIRRINE ENVIRONMENTAL CONSULTANTS
Charleston, South Carolina

DSGN.	H.J.W. & J.M.E.	SCALE	AS SHOWN
DR.	J.B.P.	DATE	1988
CK.	J.M.E	S.E.C. FILE NUMBER	C8202
APPV.	H.J.W.		

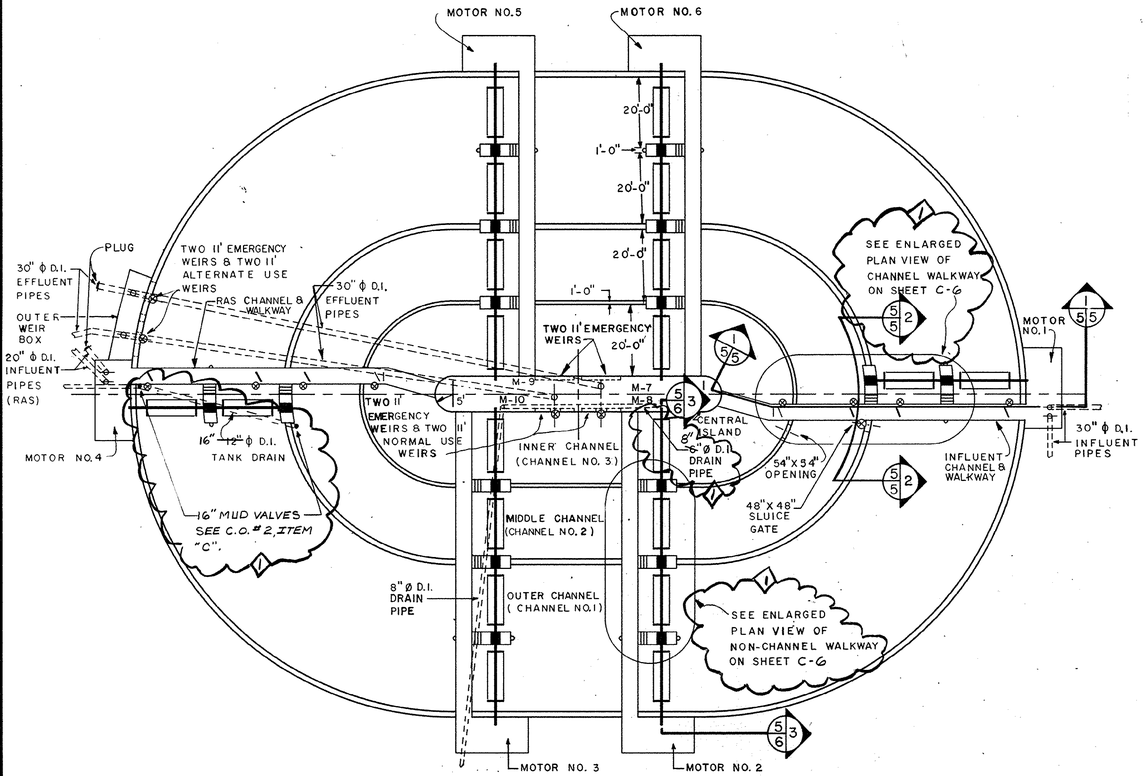
DRAWING TITLE
GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

PIPING INSTALLATION AND DETAILS

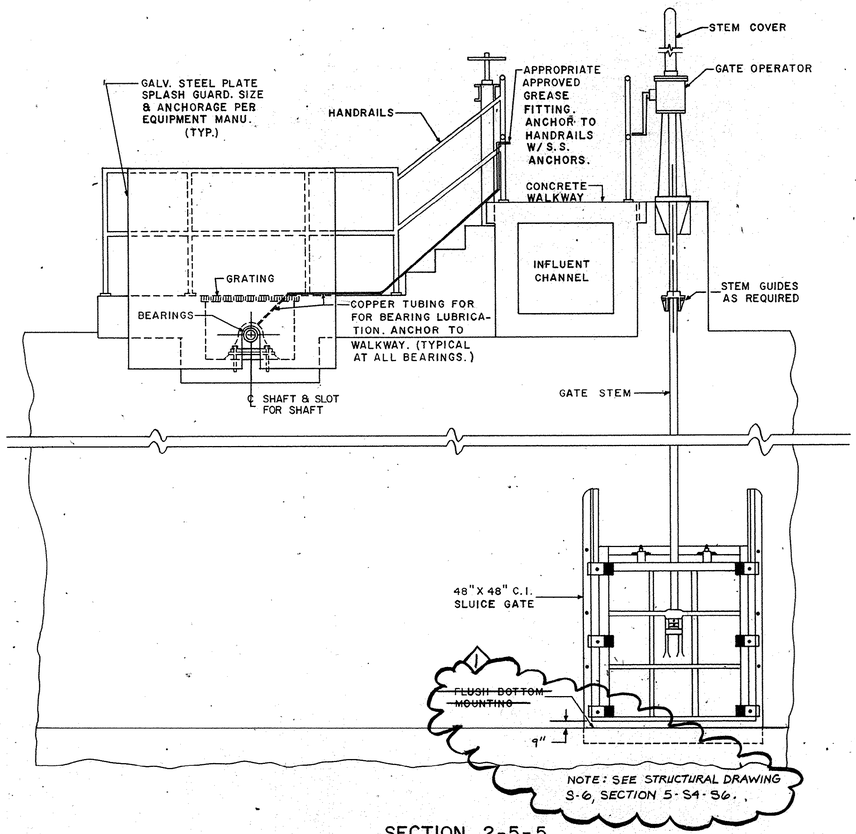
CLIENT DRAWING NUMBER
5-01-007 s

S.E.C. DRAWING NUMBER
C-8202 C-4

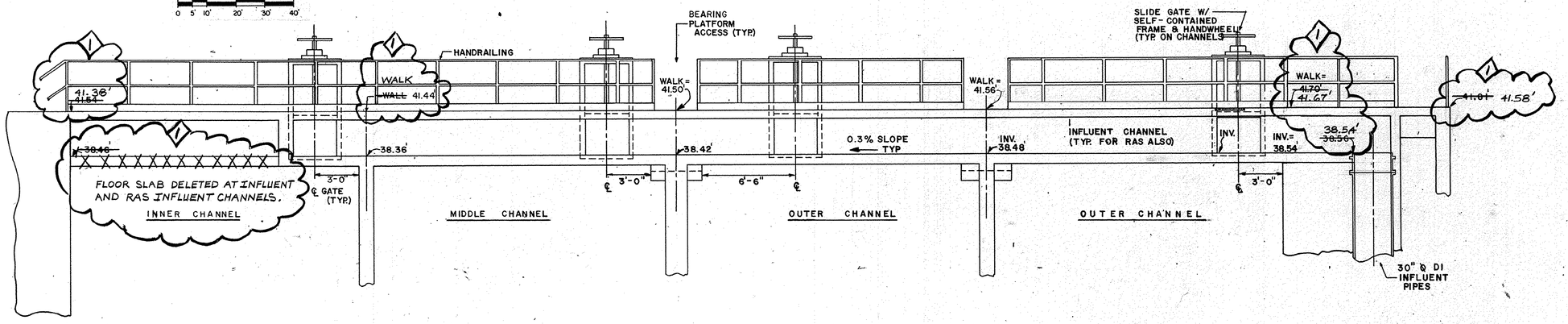
DUNCAN-PARNELL, INC. CHARLESTON, S.C. (803) 577-7211



AERATION CHANNEL SYSTEM
PLAN VIEW
SCALE: 1"=20'
0 5' 10' 20' 30' 40'



SECTION 2-5-5
SCALE: 1/2"=1'-0"
0 6" 1' 2' 3' 4'



SECTION 1-5-5
SCALE: 1/4"=1'-0"
0 6" 1' 2' 3' 4' 6' 8'

5-01-008 s

REVISIONS			
NO.	DATE	BY	DESCRIPTION
1	11-91	T.E.M.	RECORD DRAWING

SEAL
SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No. 4590 HAROLD JOE WILLSON

Harold Joe Willson
SIGNATURE

12-15-88
DATE

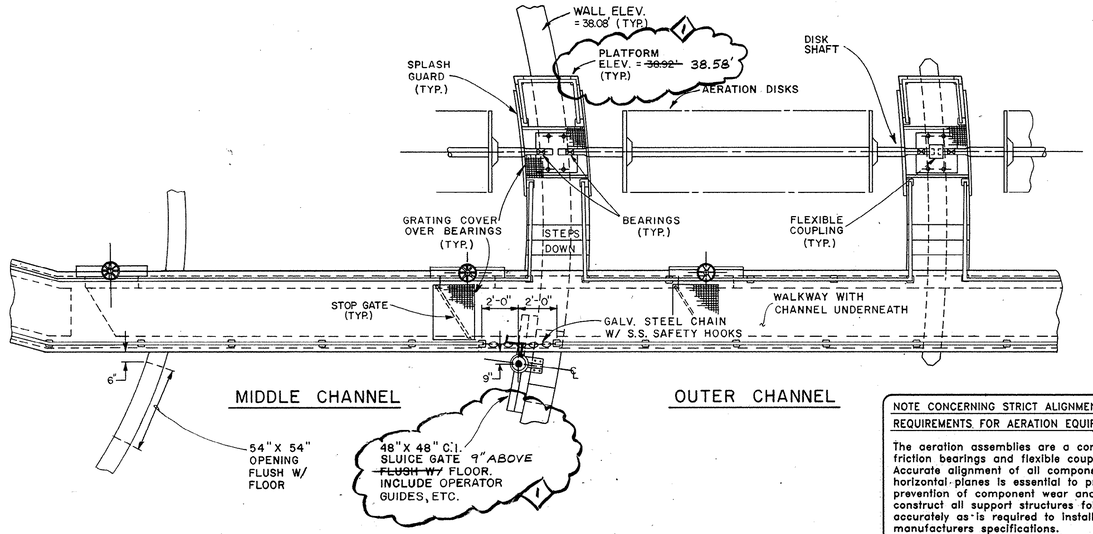
SIRRINE ENVIRONMENTAL CONSULTANTS
Charleston, South Carolina

GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

AERATION CHANNEL SYSTEM
PLAN & SECTIONS

SHEET NUMBER	
C-8202	C-5
SIRRINE FILE NO.	C8202
DESIGNED	H.J. WILLSON
DRAWN	D. BENJAMIN
CHECKED	H.J.W. & J.M.E.
APPROVED	H.J. WILLSON
DATE	DEC. 1988

DUNCAN-PARNELL, INC. CHARLESTON, S.C. (803) 571-1333

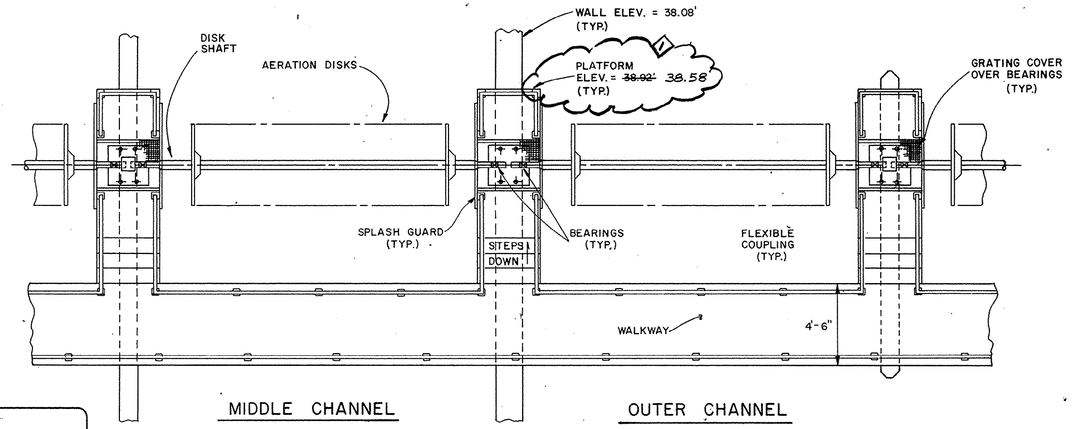


CHANNEL WALKWAY PLAN VIEW
(SEE SHEET C-5)

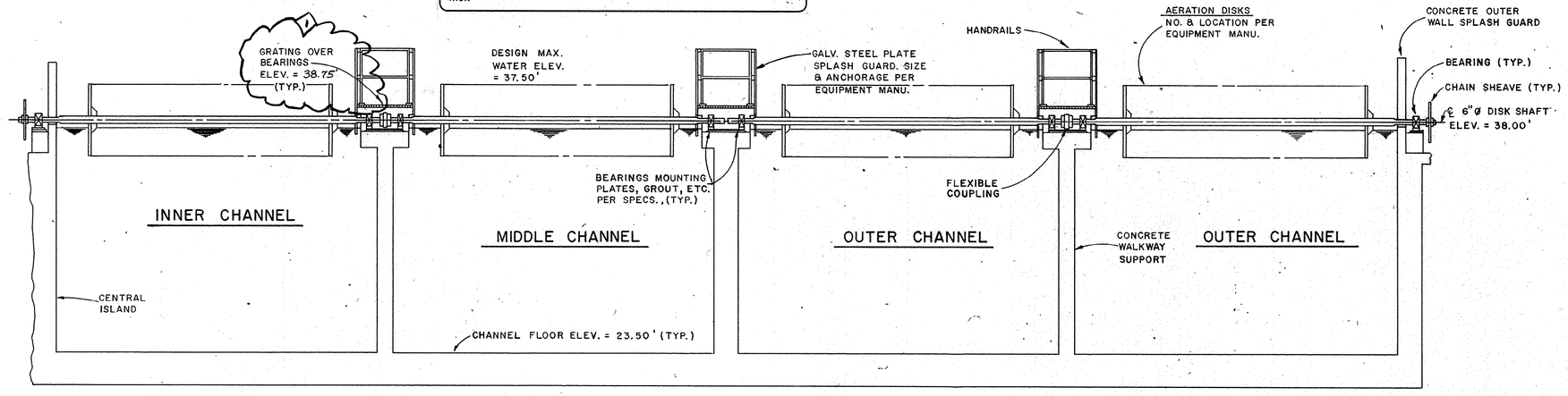
NOTE CONCERNING STRICT ALIGNMENT REQUIREMENTS FOR AERATION EQUIPMENT

The aeration assemblies are a combination of line shafting, anti-friction bearings and flexible couplings, with a common drive. Accurate alignment of all components in both the vertical and the horizontal planes is essential to proper operation and prevention of component wear and failure. The contractor shall construct all support structures for aeration equipment as accurately as is required to install the equipment within the manufacturers specifications.

It is essential and the contractor shall install and grout into place all bearing base plates true and within 0.03125" of specified design elevation. The contractor shall align all coupling halves to within 0.005" and horizontally align all shaft sections to within 0.03125". The contractor shall arrange to have the manufacturers representative check and verify to the engineer that the required accuracy has been achieved on the vertical, horizontal, and angular alignment of the shafting and bearing base plates prior to and after the grouting of these plates into position and shall verify that the required coupling halves and shaft section installation specifications have been met.



NON-CHANNEL WALKWAY PLAN VIEW
(SEE SHEET C-5)



SECTION 3-5-6

5-01-009 s

REVISIONS			
NO.	DATE	BY	DESCRIPTION
1	11-91	TEM	RECORD DRAWING

SEAL
SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 4590 HAROLD JOE WILLSON
Harold Joe Willson
SIGNATURE
12-15-88
DATE

SIRRINE ENVIRONMENTAL CONSULTANTS
Charleston, South Carolina

GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

AERATION CHANNEL SYSTEM
PLAN ENLARGEMENTS & SECTIONS

SHEET NUMBER C-8202 C-6

SIRRINE FILE NO.	C8202
DESIGNED	H.J. WILLSON
DRAWN	D. BENJAMIN
CHECKED	H.J.W. & J.M.E
APPROVED	H.J. WILLSON
DATE	1988

DUNCAN-PARNELL, INC. CHARLESTON, S.C. (803) 577-8833

24" WIDE GRATING TO ALLOW REMOVAL OF STOP GATE

39"± WIDE x 30" HIGH GASKETED STOP GATE W/HANDLE. CAST FRAME IN CONCRETE FLUSH WITH WALL & DIAGONAL AS SHOWN.

8" EMBEDDED TYPE ~~10" HIGH~~ GALV. STEEL SOCKET FOR PORTABLE WINCH TO REMOVE STOP GATE. LOCATE TO FACILITATE GATE REMOVAL. TYPICAL AT ALL STOP GATES.

CONTRACTOR SHALL PROVIDE ONE (1) APPROVED GALV. STEEL PIPE FRAME W/APPROVED WINCH FOR THIS PROJECT.

CHANNEL WALKWAY

℄ GATE

EDGE OF OPENING

36" WIDE x 30" HIGH GASKETED SLIDE GATE W/SELF-CONTAINED FRAME AND HANDWHEEL OPERATOR (TYP.)

EDGE OF OPENING

5'-1"

3'-9"

RADIAL CENTERLINE (℄) WALKWAY, SHAFT, & DRIVE AREA WALL ARE PARALLEL TO THIS ℄.

℄ SHAFT

OUTER AERATION CHANNEL

OUTER CONCRETE WALL OF AERATION CHANNEL

3'-0"

2'-8"

BEARING (TYP.)

COPPER GREASE TUBING W/GREASE GUN CONNECTION TO WALKWAY (TYP.)

CHAIN GUARD (TYP.)

DISC AERATOR DRIVE ASSEMBLY. SEE SPECS. FOR REQUIREMENTS. SUPPORT, MOUNT, AND ANCHOR PER MANUFACTURER'S APPROVED SHOP DRAWINGS

GEAR REDUCTION DRIVE UNIT (TYP.)

50 HP MOTOR (TYP.)

NOTE: MOTOR STOP/START SWITCHES INSTALLED AT ALUM. HANDRAILS; SEE ELECTRICAL DRAWING E-5.

3'-0" MIN.

MOTOR STOP/START SWITCH

4'-9"

3'-6" 3'-8"

1'-9" 1'-3½"

30" INFLUENT PIPE

1'-4½" 1'-3½"

32" x 32" OPENING W/GRATING & FRAME OVER PIPES (TYP.)

FILL FUTURE INFLUENT PIPE W/CLEAN WATER & PLUG OPENING W/FABRICATED, PAINTED AND EASY TO REMOVE 1/4" STEEL PLATE COVER

SLOPE FLOOR TO DRAIN

STAIRS DOWN

STAIRS DOWN

HANDRAIL (TYP.)

2'-0"

30" Ø ~~M.J.~~ PLUG (TR FLEX)

PLAN VIEW

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

0 6" 1' 2' 3' 4'

HANDRAIL (TYP.)

GUARD PLATE (TYP.)

OUTER CONCRETE WALL OF AERATION CHANNEL

SLOT FOR SHAFT

SPLASH GUARD CONCRETE WALL

NOTE: SPLASH GUARD CONCRETE WALLS RAISED TO ELEV. 42.00' (TYP.) FOR ADDITIONAL SPLASH PROTECTION TO EQUIPMENT; SEE C.O.# 3, ITEM "C".

DRIVE ASSEMBLY

CHAIN GUARD

MOTOR SWITCH

38¾"

FLG. JOINTS (TYP.)

3¼"

1⅝"

30" Ø D.I. INFLUENT PIPE

30" Ø D.I. INFLUENT PIPE (FUTURE INFLUENT)

2"

7'-0"

2"

PROPOSED GROUND LEVEL

PILING (TYP.)

RESTRAINED ~~MECH. JOINT~~ (TYP.) (TR FLEX)

~~M.J.~~ TR FLEX

~~M.J.~~ TR FLEX

30" Ø 90° BEND

SECTION 1-7-7

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

0 6" 1' 2' 3'

HANDWHEEL OF 36"x30" SLIDE GATE

HANDRAIL (TYP.)

EMBEDDED TYPE WINCH SOCKET

DISCHARGE PORT OPENING ℄

2'-6" (TYP.)

1'-6" 1'-6"

3'-0"

DESIGN MAX. WATER ELEV.= 37.50'

OUTER AERATION CHANNEL

30" Ø D.I. INFLUENT PIPE

SECTION 2-7-7

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

0 6" 1' 2' 3' 4'

5-01-010 s 7

REVISIONS			
NO.	DATE	BY	DESCRIPTION
1	11-91	TEM	RECORD DRAWING

SEAL

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 4590 HAROLD JOE WILLSON

Harold Joe Willson SIGNATURE

12-15-88 DATE

SIRRINE ENVIRONMENTAL CONSULTANTS

Charleston, South Carolina

GRAND STRAND WATER & SEWER AUTHORITY

J.L. SCHWARTZ WWTP

4.0 MGD ADDITION

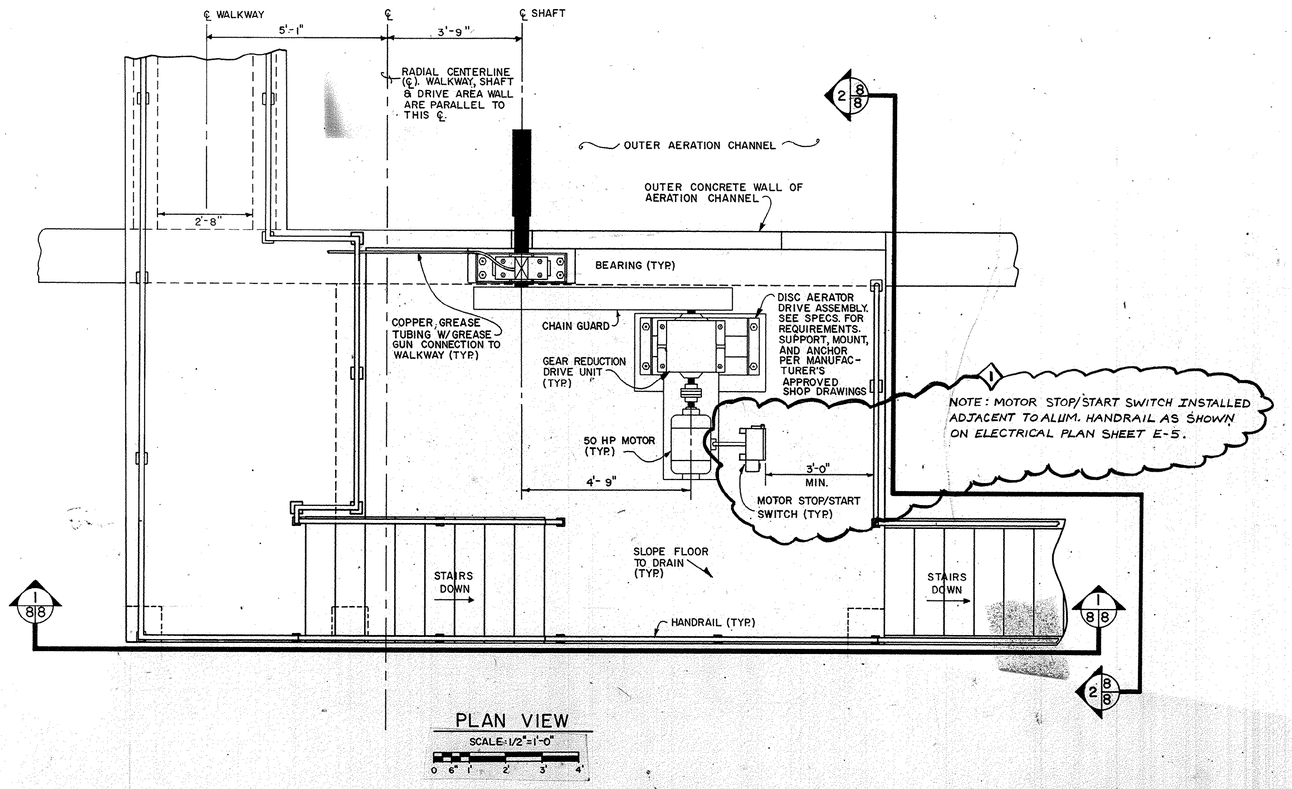
HORRY COUNTY, S.C.

AERATION CHANNEL SYSTEM INFLUENT STRUCTURE

PLAN AND SECTIONS

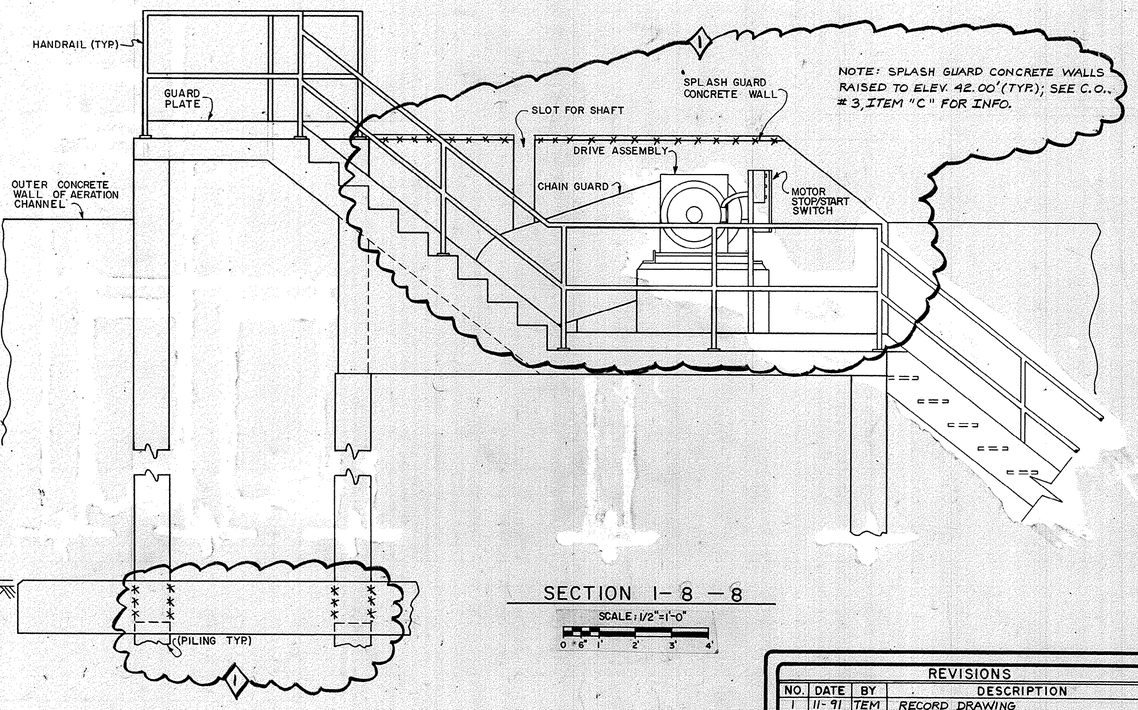
SHEET NUMBER	C-7
SIRRINE FILE NO.	C 8202
DESIGNED	H.J. WILLSON
DRAWN	K. HENDERSON
CHECKED	H.J.W. & R.E.L.
APPROVED	H.J. WILLSON
DATE	1988

DUNCAN-PARNELL, INC. CHARLESTON, S.C. 1988 REF: 1417-A33



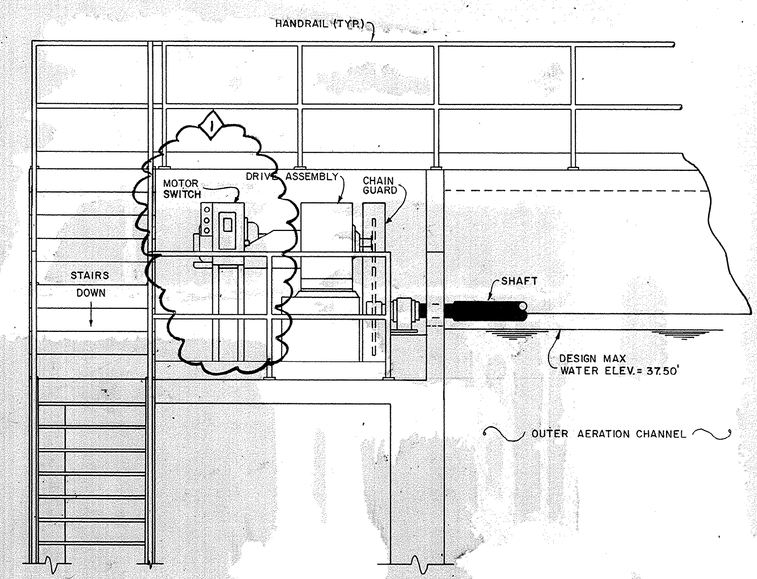
PLAN VIEW

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



SECTION 1-8-8

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



SECTION 2-8-8

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

5-01-011 s 8

REVISIONS			
NO.	DATE	BY	DESCRIPTION
1	11-91	TEM	RECORD DRAWING

SEAL

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 4590 HAROLD JOE WILLSON

Harold Joe Willson
SIGNATURE

12-15-88
DATE

SIRRINE ENVIRONMENTAL CONSULTANTS
Charleston, South Carolina

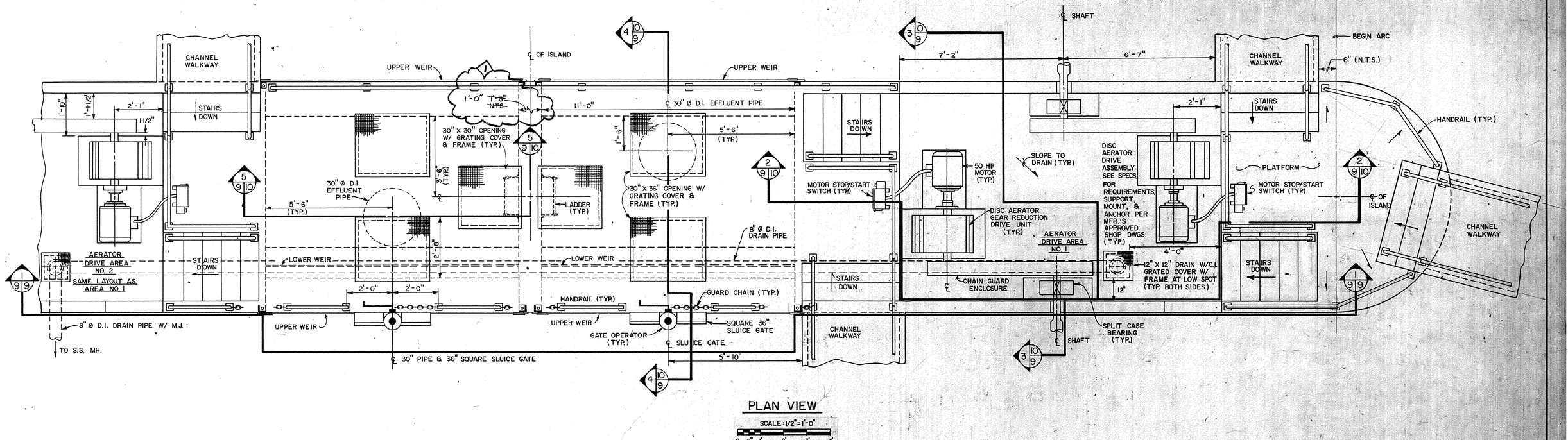
GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

AERATION CHANNEL SYSTEM

NON-INFLUENT WALKWAY ACCESS

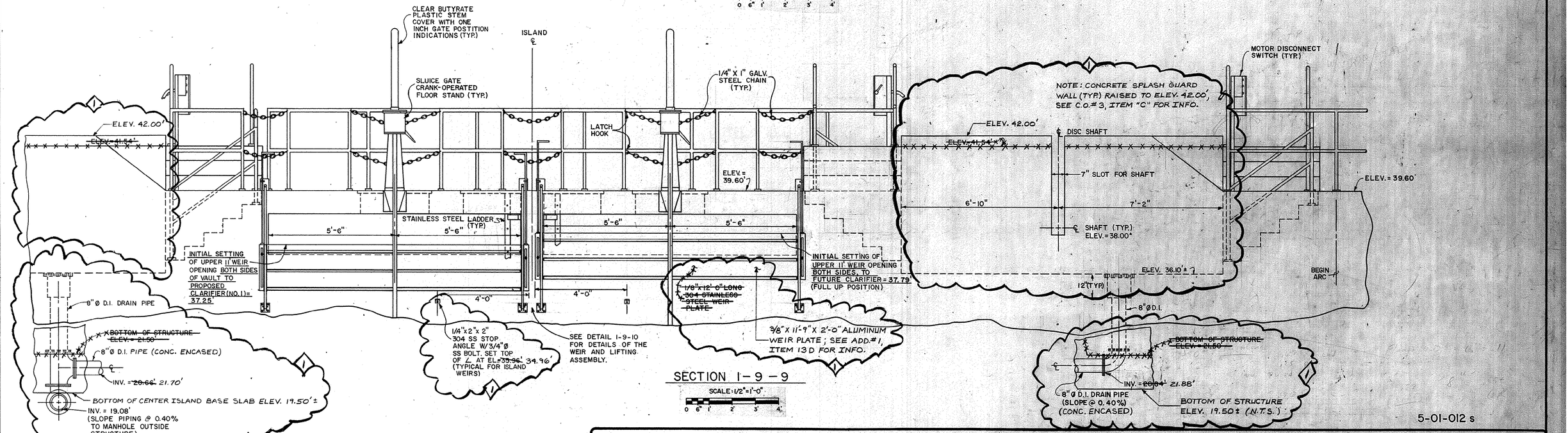
SHEET NUMBER	
C-8202	C-8
SIRRINE FILE NO.	C 8202
DESIGNED	H.J. WILLSON
DRAWN	K. HENDERSON
CHECKED	H.J.W. & R.E.L.
APPROVED	H.J. WILLSON
DATE	1988

DUNCAN-PARNELL, INC. CHARLESTON, S.C. 1-800-845-7447-8823



PLAN VIEW

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



SECTION 1-9-9

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

5-01-012 s

REVISIONS			
NO.	DATE	BY	DESCRIPTION
1	11-91	TEM	RECORD DRAWING

SEAL — REGISTERED PROFESSIONAL ENGINEER, SOUTH CAROLINA, No. 4590, HAROLD JOE WILLSON

Harold Joe Willson
SIGNATURE

12-15-88
DATE

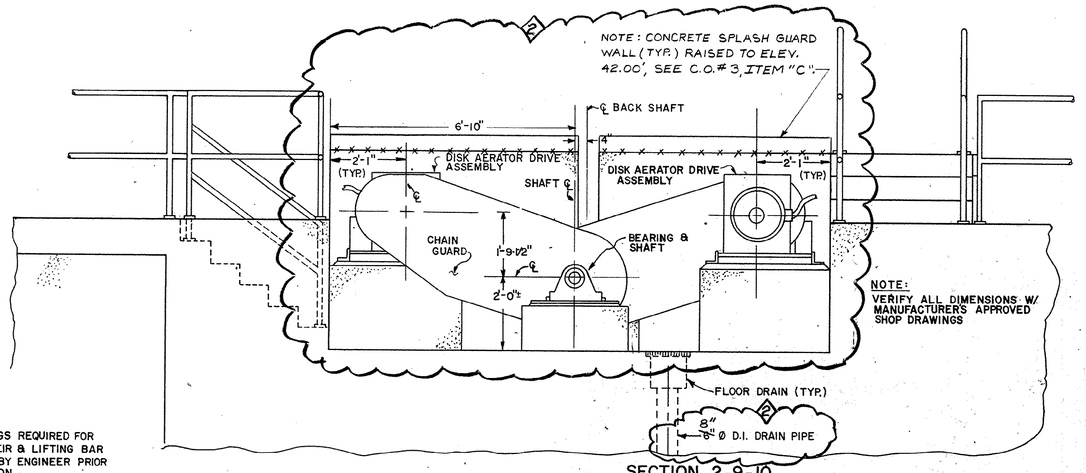
SIRRINE ENVIRONMENTAL CONSULTANTS
Charleston, South Carolina

GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

AERATION CHANNEL SYSTEM
ISLAND PLAN AND SECTION

SHEET NUMBER	
C-8202	C-9
SIRRINE FILE NO.	C8202
DESIGNED	H.J. WILLSON
DRAWN	D. BENJAMIN
CHECKED	H.J.W. & J.M.E.
APPROVED	H.J. WILLSON
DATE	DEC. 1988

SIRRINE-FARMELL, INC., CHARLESTON, S.C. (803) 577-0033



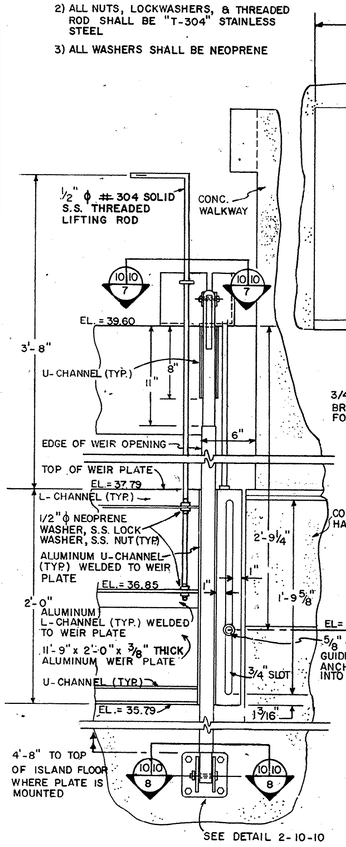
SECTION 2-9-10

SCALE 1/2" = 1'-0"

NOTE: 1) SHOP DRAWINGS REQUIRED FOR ADJUSTING WEIR & LIFTING BAR FOR REVIEW BY ENGINEER PRIOR TO FABRICATION

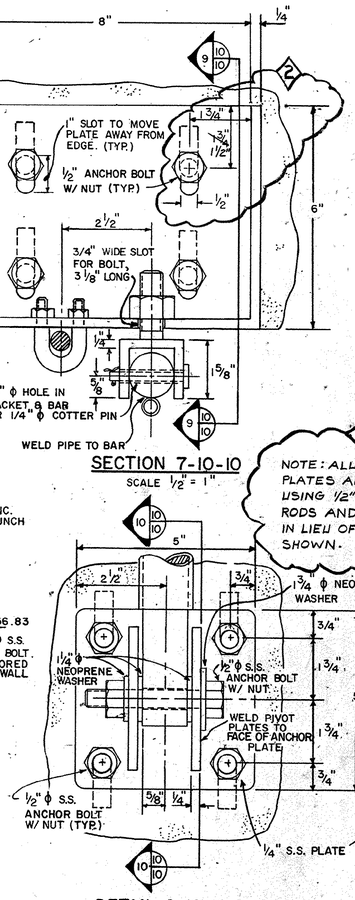
2) ALL NUTS, LOCKWASHERS, & THREADED ROD SHALL BE "T-304" STAINLESS STEEL

3) ALL WASHERS SHALL BE NEOPRENE



DETAIL 1-9-10

SCALE 1/8" = 1"



DETAIL 2-10-10

SCALE 1/2" = 1"

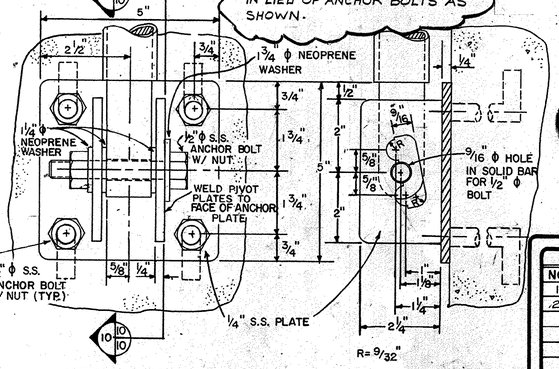
SECTION 7-10-10

SCALE 1/2" = 1"

SECTION 9-10-10

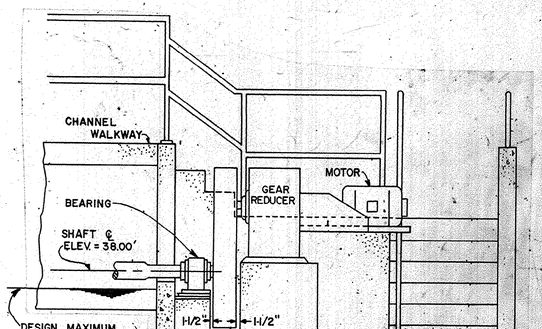
SCALE 1/2" = 1"

NOTE: ALUMINUM UPPER WEIR PLATES ANCHORED TO CONCRETE USING 1/2" ℄ S.S. ALL-THREAD RODS AND HILTI-HEA ADHESIVE IN LIEU OF ANCHOR BOLTS AS SHOWN.



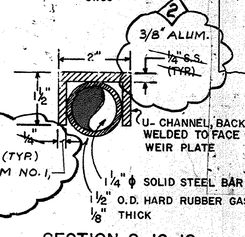
SECTION 10-10-10

SCALE 1/2" = 1"



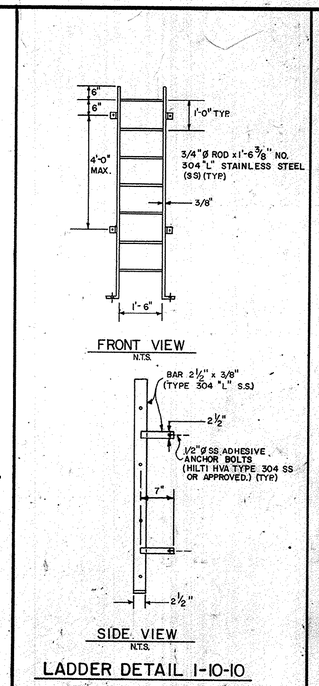
SECTION 3-9-10

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



SECTION 8-10-10

SCALE 1/2"=1"



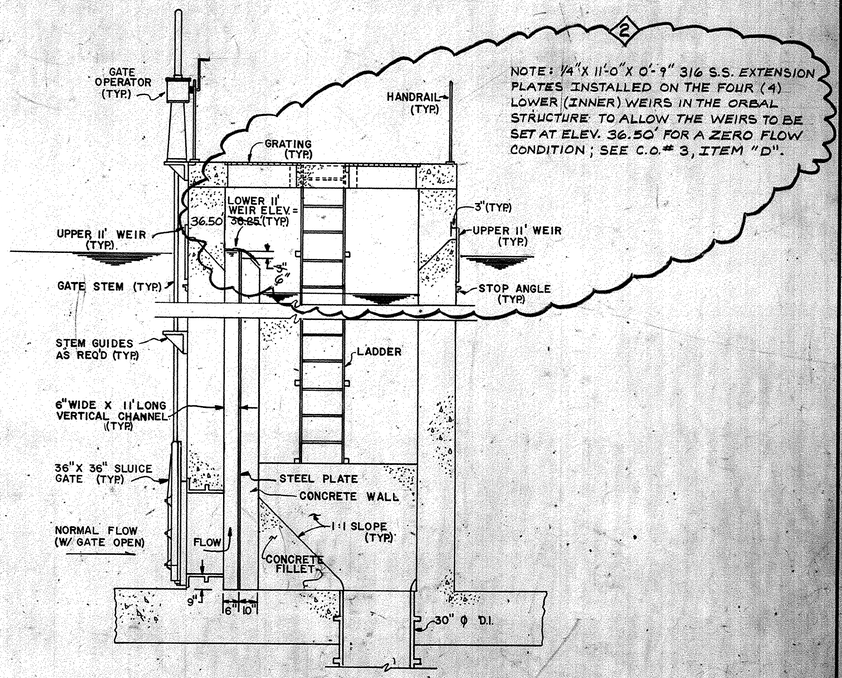
FRONT VIEW

N.T.S.

SIDE VIEW

N.T.S.

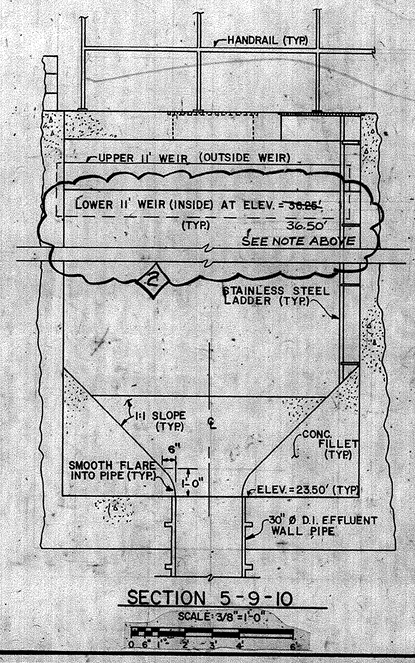
LADDER DETAIL 1-10-10



NOTE: 1/4" X 11'-0" X 0'-9" 316 S.S. EXTENSION PLATES INSTALLED ON THE FOUR (4) LOWER (INNER) WEIRS IN THE ORBAL STRUCTURE TO ALLOW THE WEIRS TO BE SET AT ELEV. 36.50' FOR A ZERO FLOW CONDITION; SEE C.O.# 3, ITEM "D".

SECTION 4-9-10

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



SECTION 5-9-10

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

5-01-013 s

REVISIONS			
NO.	DATE	BY	DESCRIPTION
1	10-4-88	HJW	ADDED DETAILS 1-9-10 & 2-10-10
2	11-91	TEM	RECORD DRAWING

SEAL

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 4590 HAROLD JOE WILLSON

Harold Joe Willson
SIGNATURE

12-15-88
DATE

SIRRINE ENVIRONMENTAL CONSULTANTS
Charleston, South Carolina

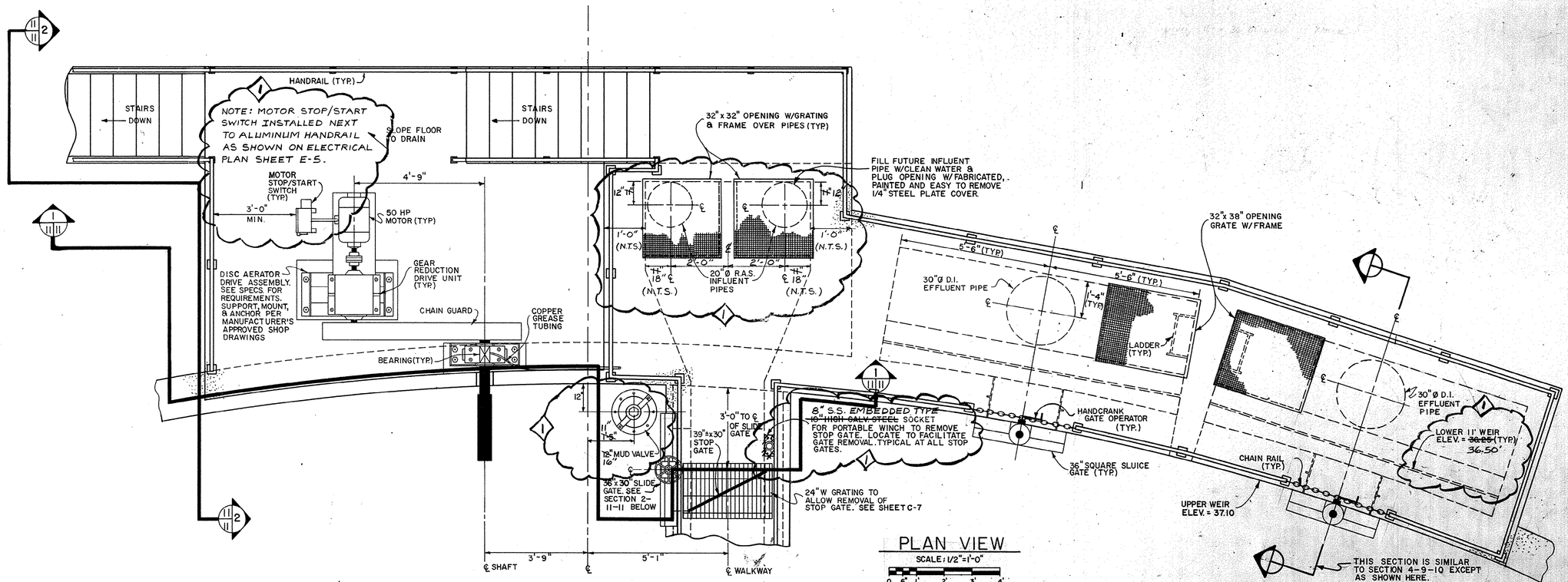
GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

AERATION CHANNEL SYSTEM
ISLAND SECTIONS

SHEET NUMBER C-8202 C-10

SIRRINE FILE NO.	C-8202
DESIGNED	H.J. WILLSON
DRAWN	W.D. HUNT
CHECKED	H.J. WILLSON
APPROVED	H.J. WILLSON
DATE	1988

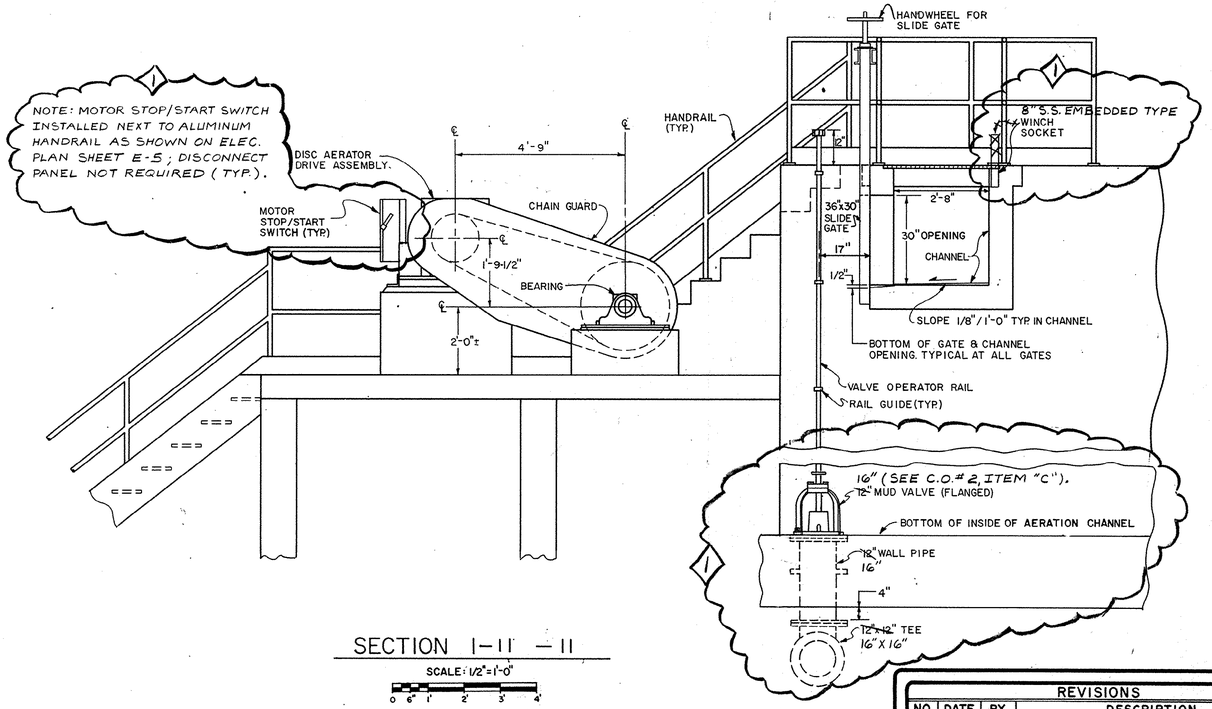
DUNCAN-PARNELL, INC., CHARLESTON, S.C. (864) 723-7411 (803)



PLAN VIEW

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

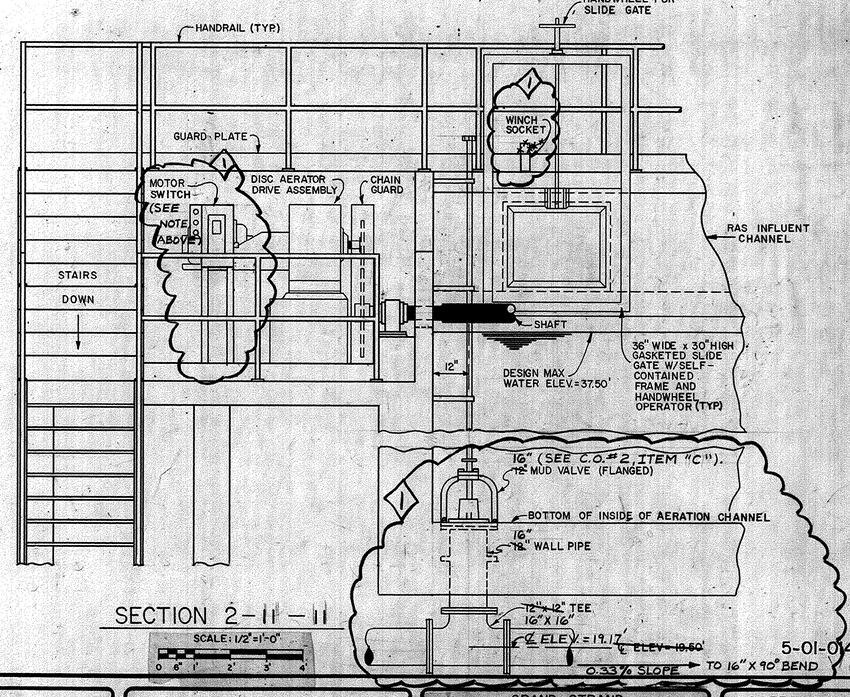
0 6" 1' 2' 3' 4'



SECTION 1-11 — 11

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

0 6" 1' 2' 3' 4'



SECTION 2-11-11

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

0 6" 1' 2' 3' 4'

5-01-014 S

REVISIONS			
NO.	DATE	BY	DESCRIPTION
1	11-91	TEM	RECORD DRAWING

SEAL — SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 4590 HAROLD JOE WILLSON

Harold Joe Willson
SIGNATURE

12-15-88
DATE

SIRRINE ENVIRONMENTAL CONSULTANTS
Charleston, South Carolina

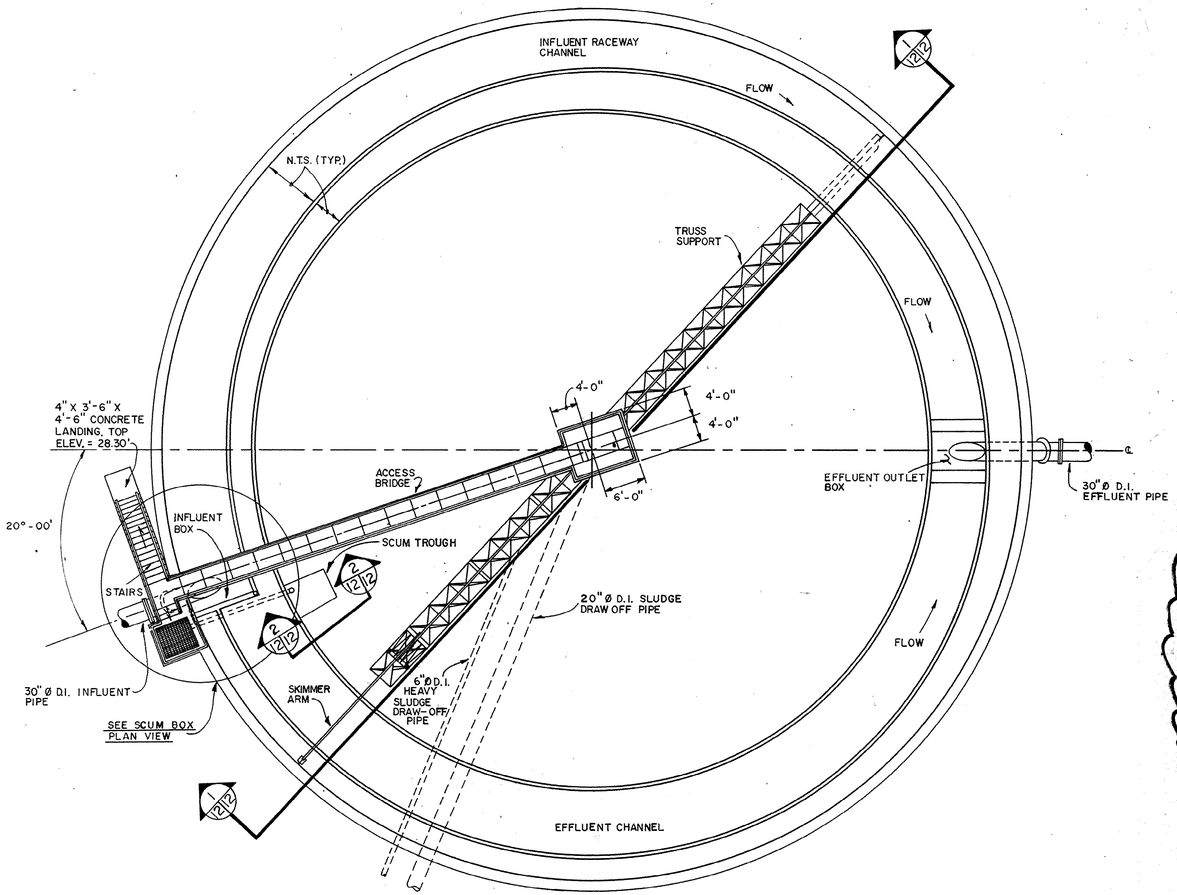
GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

AERATION CHANNEL SYSTEM
R.A.S. INFLUENT STRUCTURE
PLAN AND SECTIONS

SHEET NUMBER C-8202 C-11

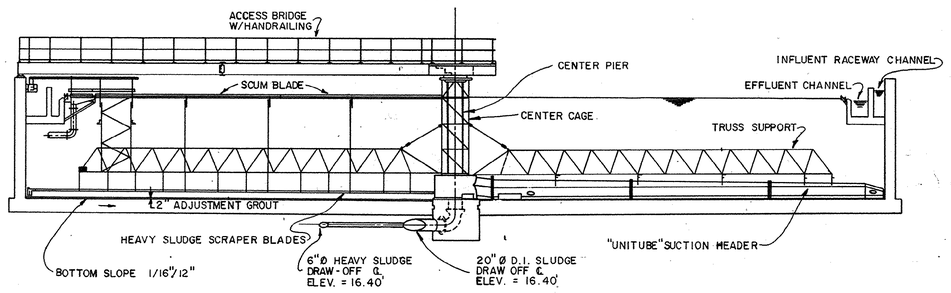
SIRRINE FILE NO.	C 8202
DESIGNED	H.J. WILLSON
DRAWN	K. HENDERSON
CHECKED	H.J.W. & R.E.L.
APPROVED	H.J. WILLSON
DATE	DEC. 1988

SIRRINE ENVIRONMENTAL CONSULTANTS, CHARLESTON, S.C. (803) 937-0900



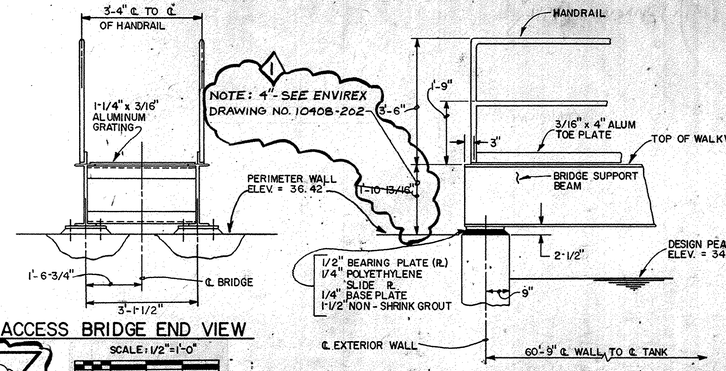
PLAN VIEW

SCALE: 1"=10'



SECTION 1-12-12

SCALE: 1"=10'

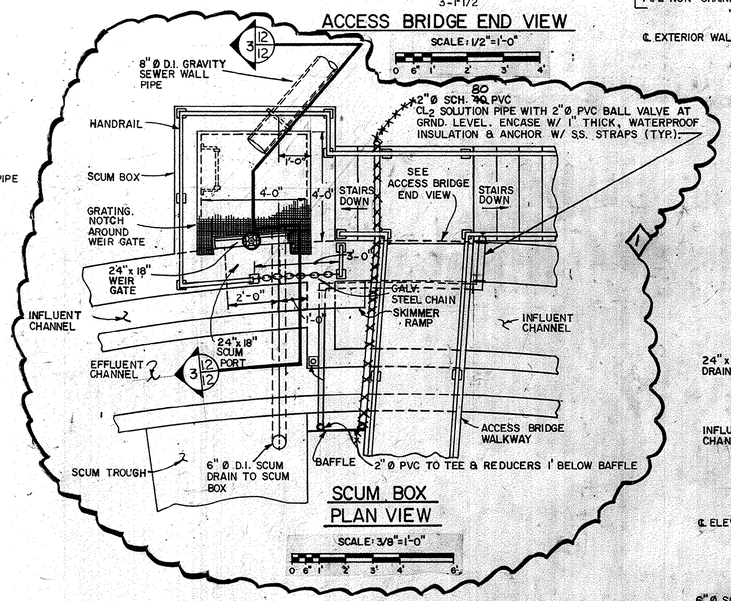


ACCESS BRIDGE END VIEW

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

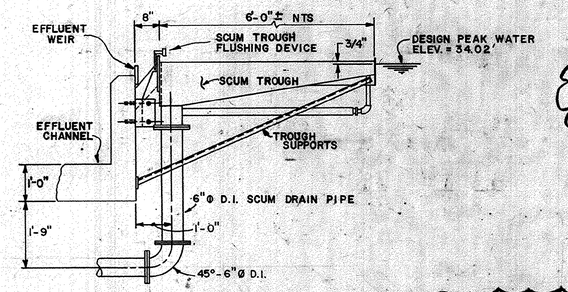
SIDE VIEW
DETAIL 5-12-12

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



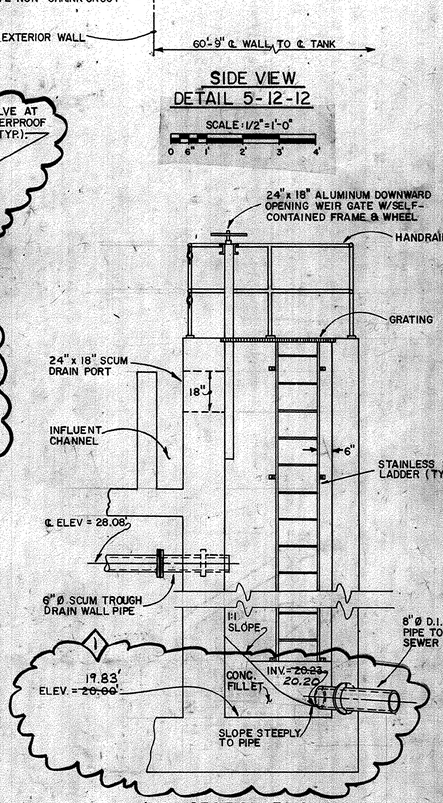
SCUM BOX PLAN VIEW

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



SCUM TROUGH SECTION-2-12-12

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



SECTION 3-12-12

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

NOTE: FOR SPECIFIC INFORMATION ON THE CLARIFIER EQUIPMENT SEE ENVIREX DRAWING NOS. 10408-201 THRU 10408-207, GENERAL ARRANGEMENT FOR (1) TWO H40HT, 120'-0" DIA. RIM FLO TOW BRO SECONDARY CLARIFIER; SUBMITTAL NO. 22.

5-01-015 s

REVISIONS			
NO.	DATE	BY	DESCRIPTION
1	11-91	TEM	RECORD DRAWING

SEAL

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 4590 HAROLD JOE WILLSON

Harold Joe Willson
SIGNATURE

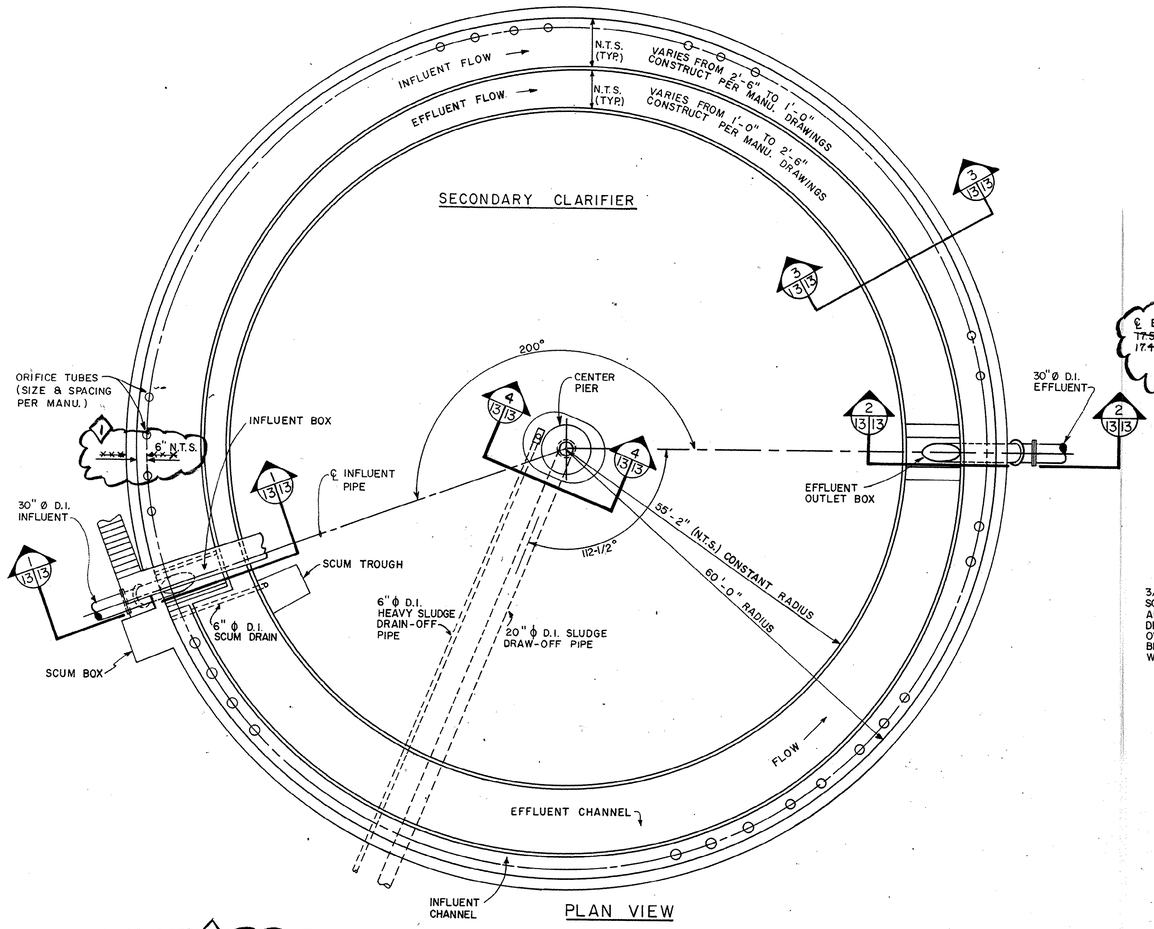
12-15-98
DATE

SIRRINE ENVIRONMENTAL CONSULTANTS
Charleston, South Carolina

GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

SECONDARY CLARIFIER
PLAN & SECTIONS

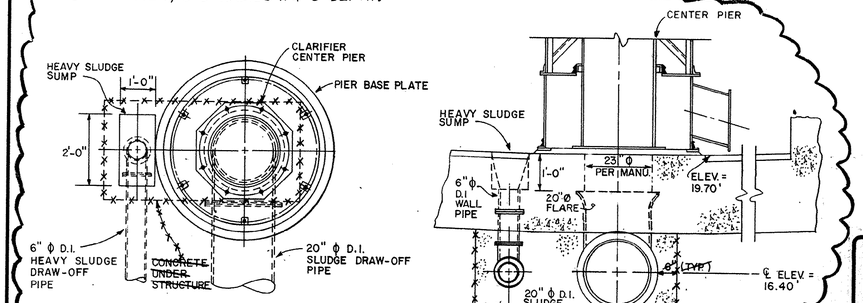
SHEET NUMBER	
C-8202	C-12
SIRRINE FILE NO.	C8202
DESIGNED	H.J. WILLSON
DRAWN	D. BENJAMIN
CHECKED	H.J.W. & J.M.E.
APPROVED	H.J. WILLSON
DATE	DEC. 1988



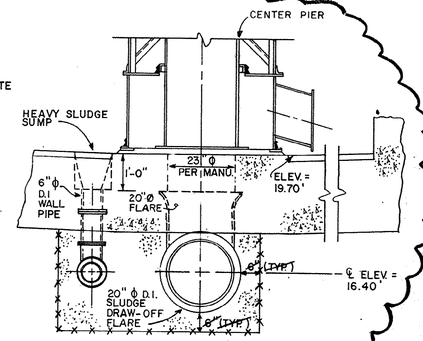
PLAN VIEW

SCALE: 1"=10'

NOTE: SEE STRUCTURAL PLAN SHEET S9, SECTION 2 FOR THICKENED CONCRETE BASE SLAB AT THE CLARIFIER CENTER PIER; 6'-6" RADIUS X 4'-6" DEPTH.



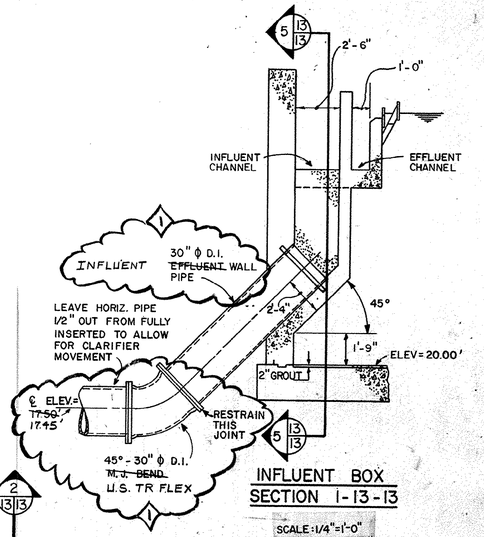
CENTER PIER
PLAN VIEW



CENTER
SECTION 4-13-13

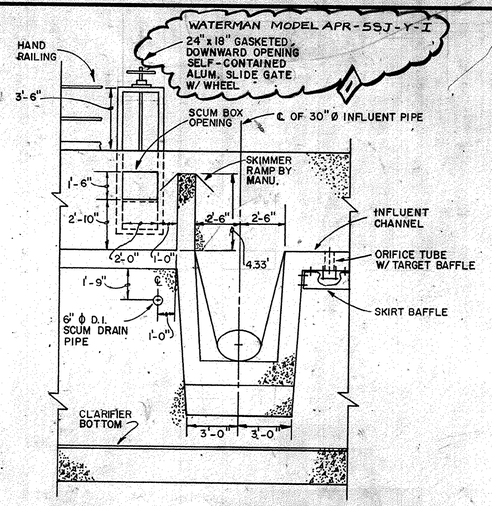
SCALE: 1/2"=1'-0"

NOTE: FOR SPECIFIC INFORMATION ON THE CLARIFIER EQUIPMENT SEE ENVIREX DRAWING NOS. 10408-201 THRU 10408-207, GENERAL ARRANGEMENT FOR (1) TWO HAOHT, 120'-0" DIA. RIM FLO TOW BRO SECONDARY CLARIFIER; SUBMITTAL NO. 22.



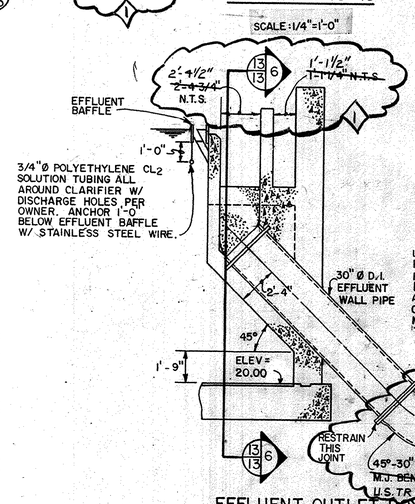
INFLUENT BOX
SECTION 1-13-13

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



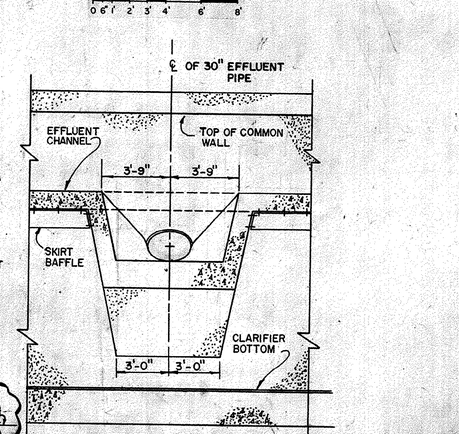
INFLUENT BOX
SECTION 5-13-13

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



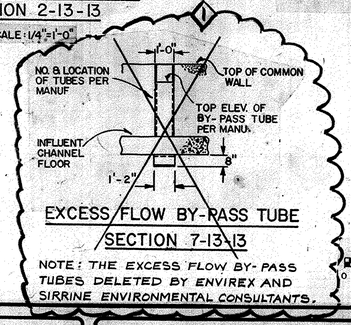
EFFLUENT OUTLET BOX
SECTION 2-13-13

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



EFFLUENT OUTLET BOX
SECTION 6-13-13

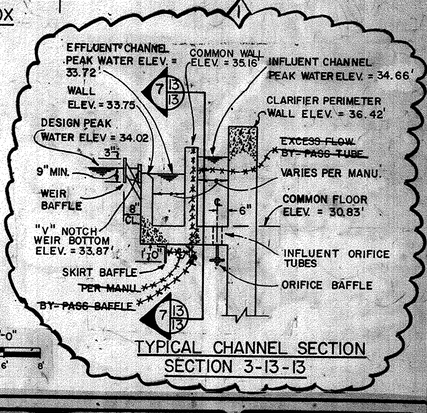
SCALE: 1/4"=1'-0"



EXCESS FLOW BY-PASS TUBE
SECTION 7-13-13

NOTE: THE EXCESS FLOW BY-PASS TUBES DELETED BY ENVIREX AND SIRRINE ENVIRONMENTAL CONSULTANTS.

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



TYPICAL CHANNEL SECTION
SECTION 3-13-13

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

REVISIONS			
NO.	DATE	BY	DESCRIPTION
1	11-91	TEM	RECORD DRAWING

SEAL
SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 4590 HAROLD JOE WILLSON

Harold Joe Willson
SIGNATURE

12-15-88
DATE

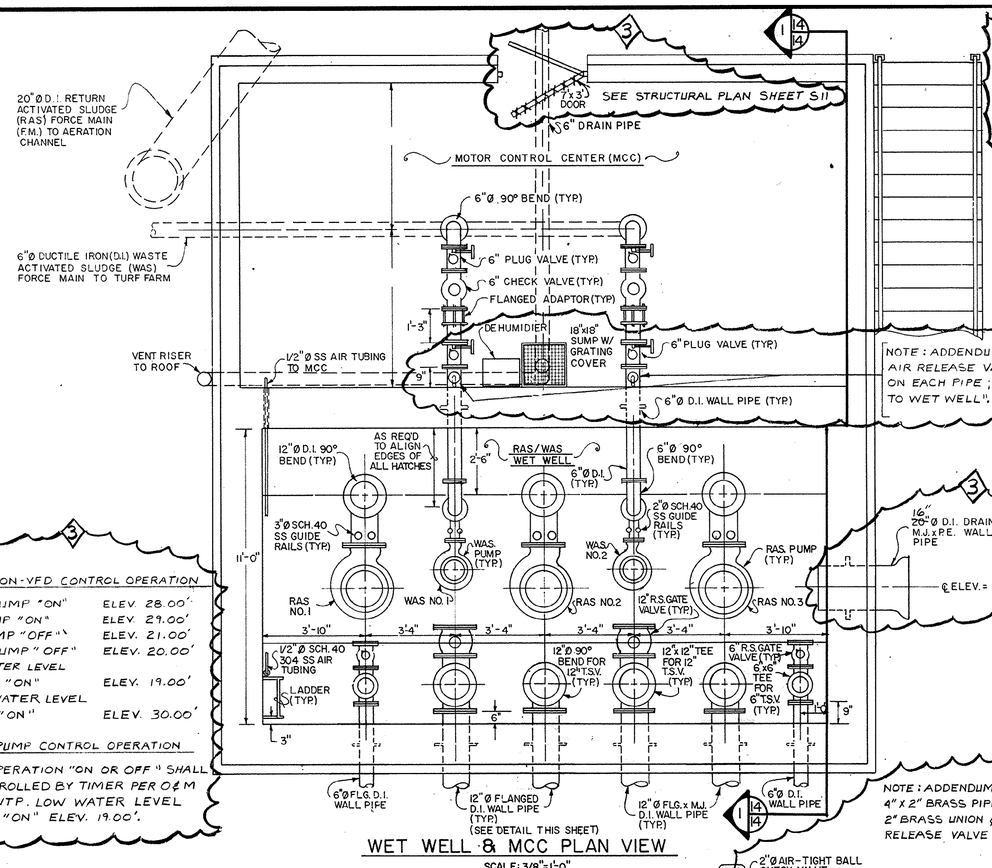
SIRRINE ENVIRONMENTAL CONSULTANTS
Charleston, South Carolina

GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

SECONDARY CLARIFIER
DETAILS

SHEET NUMBER	
C 8202	C-13
SIRRINE FILE NO.	C 8202
DESIGNED	H.J.W
DRAWN	D.E.B.Jr. & D.B.
CHECKED	H.J.W.
APPROVED	H.J.W.
DATE	DEC. 1988

5-01-016 s



WET WELL & MCC PLAN VIEW

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

RAS NON-VFD CONTROL OPERATION

LEAD PUMP "ON"	ELEV. 28.00'
LAG PUMP "ON"	ELEV. 29.00'
LAG PUMP "OFF"	ELEV. 21.00'
LEAD PUMP "OFF"	ELEV. 20.00'
LOW WATER LEVEL ALARM "ON"	ELEV. 19.00'
HIGH WATER LEVEL ALARM "ON"	ELEV. 30.00'

WAS PUMP CONTROL OPERATION

PUMP OPERATION "ON OR OFF" SHALL BE CONTROLLED BY TIMER PER O&M FOR WWTP. LOW WATER LEVEL ALARM "ON" ELEV. 19.00'.

NOTE: THE TOP 20"Ø D.I. 90° BEND INSTALLED ROTATED 90° TO A HORIZ. PLANE POINTING NORTH, ONE (1) EXTRA 20"Ø D.I. 90° BEND INSTALLED FOR THE VERTICAL DROP. THIS WAS DUE TO INTERFERENCE BY THE NEW U.G. ELECTRICAL CONDUIT, SEE ELEC./ DRAWING E-3, POWER PLAN.

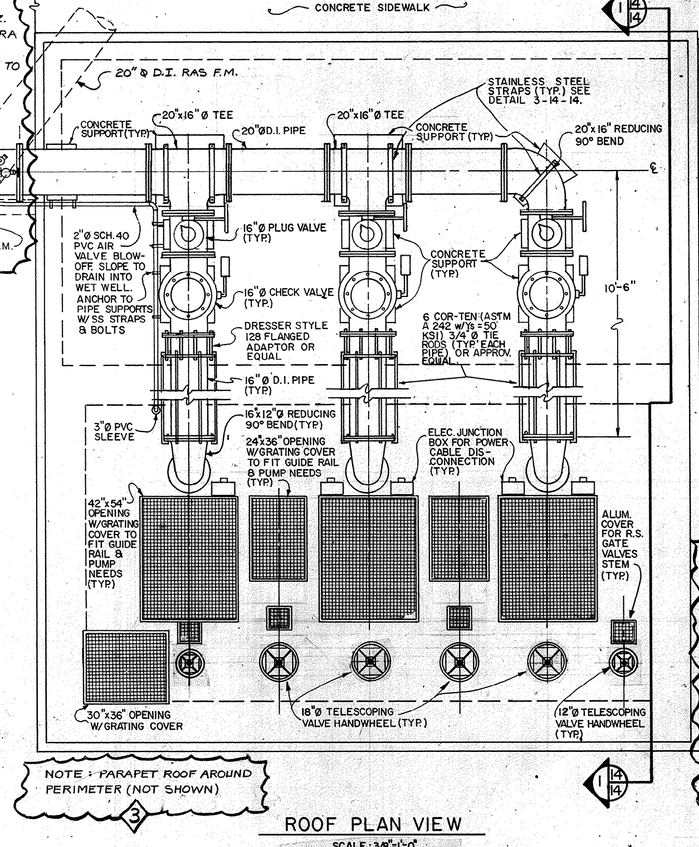
THREE ~~TWO~~ - 20"Ø D.I. 90° BENDS: UPPER = FLG. x FLG. TWO ONE LOWER = M.J. x M.J.

2"Ø AIR RELEASE VALVE W/ ACCESSORIES. SEE SPECS

6"Ø D.I. WAS F.M.

NOTE: ADDENDUM NO. 1, ITEM F1; "2" SEWAGE AIR RELEASE VALVES W/ APPURTENANCES" ON EACH PIPE; "1" Ø SCH. 40 PVC AIR VENT TO WET WELL".

NOTE: ADDENDUM NO. 1, ITEM F3; "4"Ø TAP W/ 4" X 2" BRASS PIPE REDUCER, 2" BRASS GATE VALVE, 2" BRASS UNION & BRASS PIPE, 2" SEWAGE AIR RELEASE VALVE".



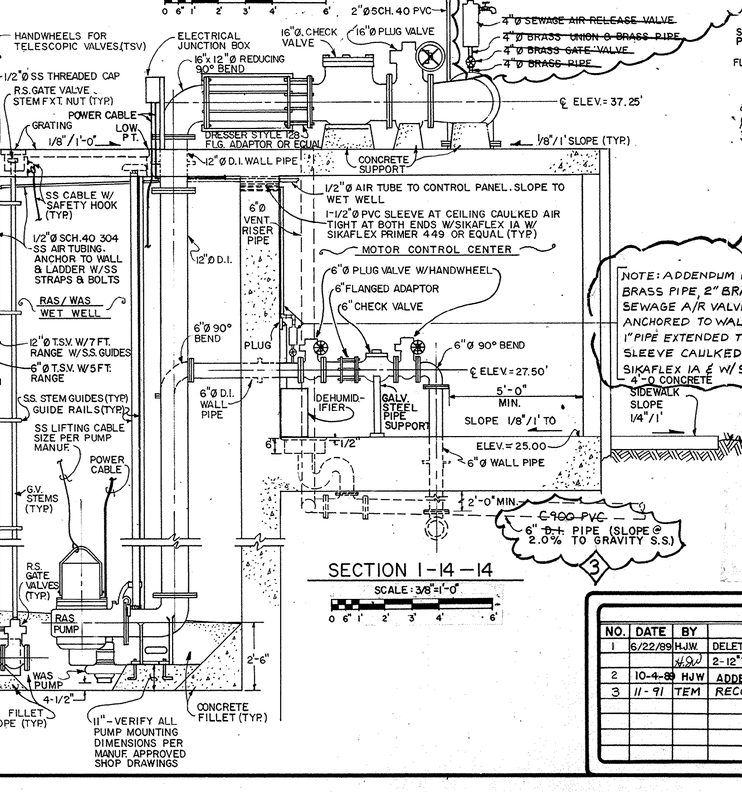
NOTE: PARAPET ROOF AROUND PERIMETER (NOT SHOWN)

ROOF PLAN VIEW

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

PARTIAL LIST OF EQUIPMENT & MANUFACTURERS

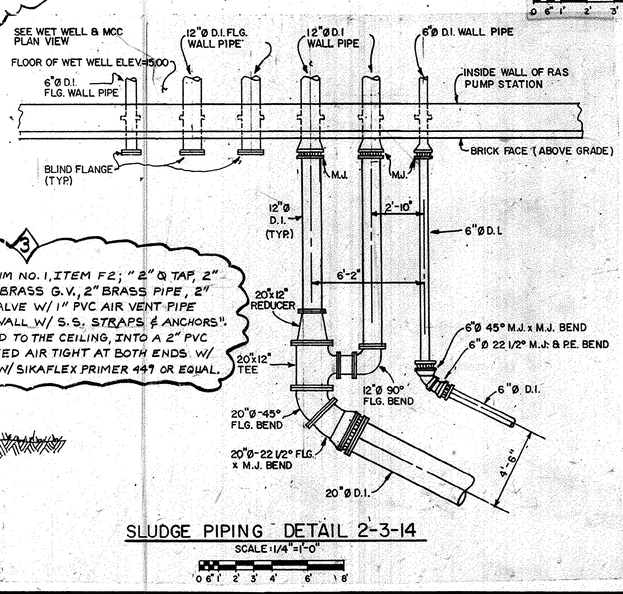
WAS PUMPS - C 3152	FLIGHT CORPORATION
RAS PUMPS - CP- 3201	FLIGHT CORPORATION
PLUG VALVES	DEZURIK
INTAKE LOUVER (OAL-2-F)	METAL AIRE INDUSTRIES, INC.
DEHUMIDIFIER (OASIS)	EBCO COMPANY
EXHAUST FAN (24P3B)	COOK
TELESCOPIC SLUDGE VALVE	ENVIREX, INC.
SWING CHECK VALVE (250-D)	G.A. INDUSTRIES, INC.
AIR RELEASE VALVE (921F)	G.A. INDUSTRIES, INC.
ULTRASONIC FLOWMETER	POLYSONICS
DOOR & FRAME (H.M.)	STEELCRAFT
FLANGED COUPLING ADAPTER	ROCKWELL
LIGHT FIXTURE (TYPE A & B)	USI LIGHTING
LOW VOLTAGE SWITCHGEAR	SQUARE D COMPANY



SECTION 1-14-14

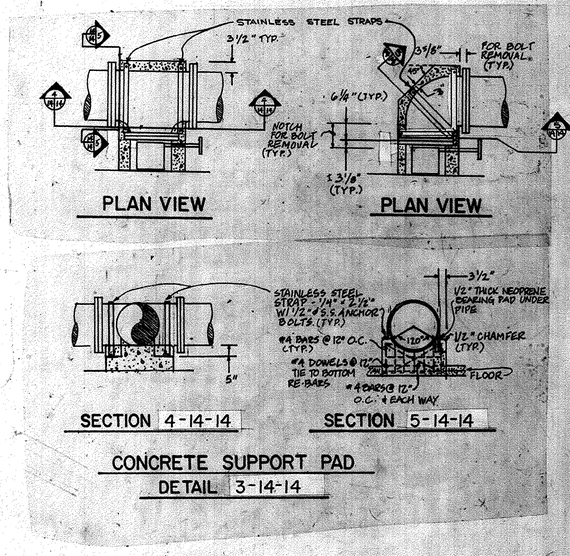
SCALE: 3/8"=1'-0"

NOTE: ADDENDUM NO. 1, ITEM F2; "2" Ø 2" BRASS PIPE, 2" BRASS G.V., 2" BRASS PIPE, 2" SEWAGE A/R VALVE W/ 1" PVC AIR VENT PIPE ANCHORED TO WALL W/ S.S. STRAPS & ANCHORS". 1" PIPE EXTENDED TO THE CEILING, INTO A 2" PVC SLEEVE CAULKED AIR TIGHT AT BOTH ENDS W/ SIKAFLEX IA & W/ SIKAFLEX PRIMER 449 OR EQUAL. 4'-0 CONCRETE



SLUDGE PIPING DETAIL 2-3-14

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



CONCRETE SUPPORT PAD DETAIL 3-14-14

5-01-017 s

REVISIONS			
NO.	DATE	BY	DESCRIPTION
1	6/22/89	HJW	DELETED MOTORIZED PLUG VALVE & ADDED 6" T.S.V. &
		HJW	2-12" T.S.V.s W/ PIPING & R.S. GATE VALVE DRAINS
2	10-4-89	HJW	ADDED RESTRAINING TIE RODS & STRAPS
3	11-91	TEM	RECORD DRAWING

SEAL — SOUTH CAROLINA — REGISTERED PROFESSIONAL ENGINEER — No. 4590 — HAROLD JOE WILLSON

Harold Joe Willson
SIGNATURE

12-15-88
DATE

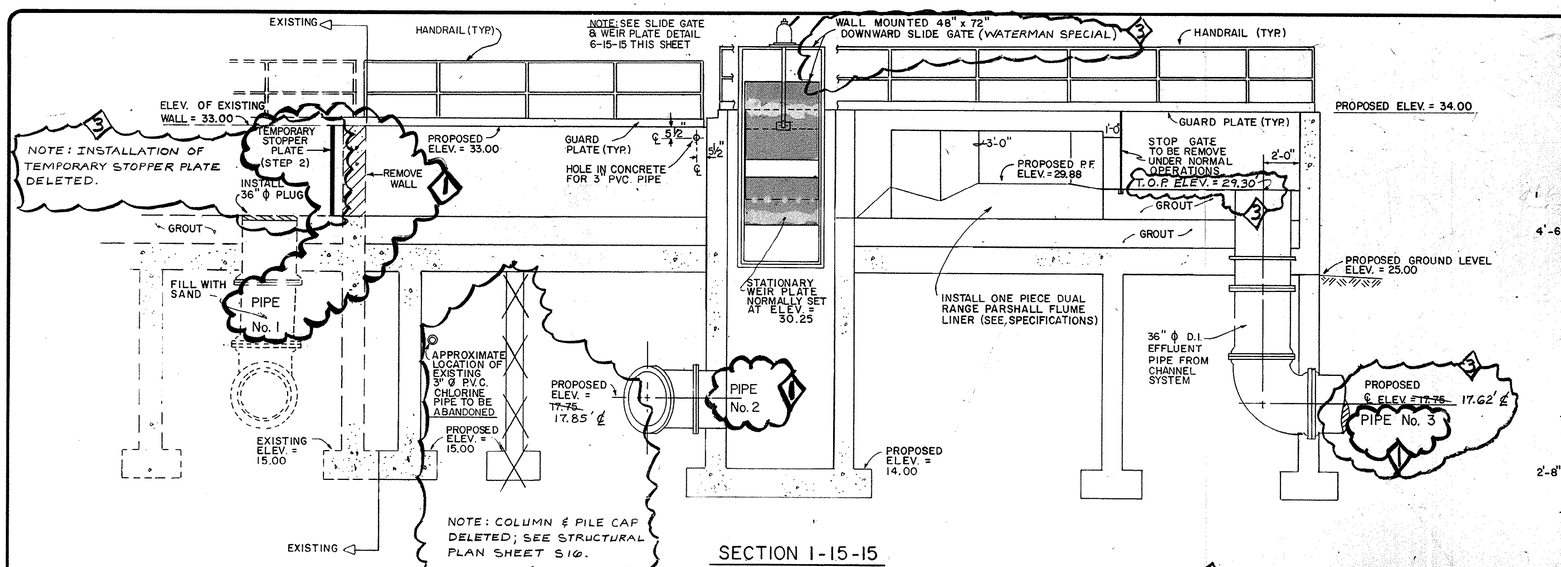
SIRRINE ENVIRONMENTAL CONSULTANTS
Charleston, South Carolina

GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

RETURN AND WASTE ACTIVATED SLUDGE PUMPING STATION

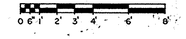
SHEET NUMBER	
C-8202	C-14
SIRRINE FILE NO.	C 8202
DESIGNED	H.J. WILLSON
DRAWN	K. HENDERSON
CHECKED	H.J.W. & R.E.L.
APPROVED	H.J. WILLSON
DATE	DEC. 1988

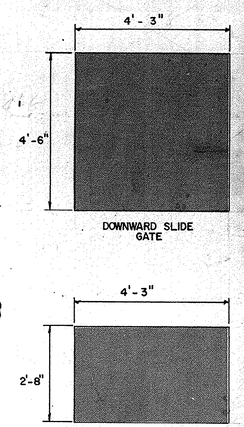
DUNCAN-PARNELL, INC. CHARLESTON, S.C. (803) 747-1033



SECTION 1-15-15

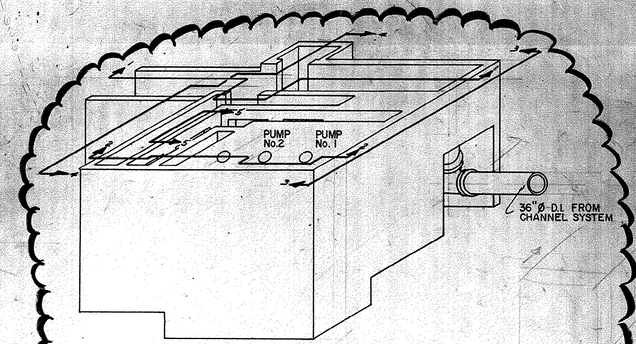
SCALE: 1/4"=1'-0"





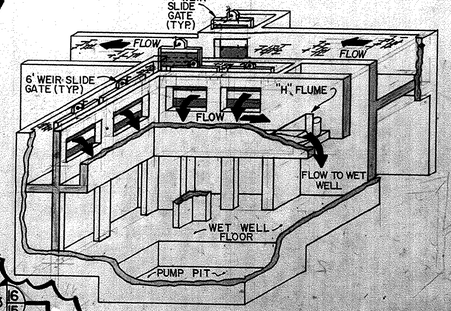
SLIDE GATE & WEIR PLATE DETAIL 6-15-15

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



EFFLUENT CONTROL STRUCTURE

SCALE: 3/32" = 1'



CUT VIEW EFFLUENT CONTROL STRUCTURE

SCALE: 3/32"=1'

NOTE: CHLORINATION SYSTEM PIPING WITHIN THE PARSHALL FLUME CHANNEL SHIFTED EASTWARD AS SHOWN TO REMOVE FROM BENEATH CONCRETE BEAM.

NOTE: SEE CHLORINATION SYSTEM DETAIL 7-15-15 THIS SHEET

EXISTING 3" ϕ PVC CHLORINATION LINE

INSTALL 3" PVC TEE & 2 - 3" Ø PVC VALVES W/ BOXES 2 PVC VALVES

INSTALL 3" PVC PIPE

INSTALL 3" Ø PLUG

ELEV. = 21.50 ±

4" ℄

4' WEIR SLIDE GATE (TYP.) WATERMAN SPECIAL

WATERMAN STOP GATE 7'-8" WIDE BY 4'-6" DEPTH TO BE REMOVED UNDER NORMAL OPERATIONS.

EXISTING

TEMPORARY STOPPER PLATE (STEP 2)

REMOVE WALL (STEP 15)

36" ϕ D.I. 45° BEND

EXISTING STEPS

2½" PVC 3"x2½"x2½" TEE (PVC)

FLOW

GRATING

STAFF GUAGE

3'-0"

FLOW

PIPE No. 3

INTEGRAL STILLING WELL

PARSHALL FLUME FLOW METER

FLOW

"H" FLUME FLOW METER

36" ϕ D.I. ORBAL EFFLUENT PIPE

"H" FLUME WITH INTEGRAL STILLING WELL

VALVE HOUSING VAULT

NOTE: ADDENDUM NO. 1, ITEM G; 2" Ø SCH. 40 PVC AIR VENT W/ 2" AIR-TIGHT BALL CHECK VALVE W/ S.S. ANC. STRAPS AIR RELEASE VALVE (27 Ø SEWAGE)

18 Ø TEE

18" Ø x 10" Ø REDUCING ELBOW

10" Ø PLUG VALVE

10" Ø BALL CHECK VALVE

10" Ø PLUG VALVE

10" Ø ELBOW

STAINLESS STEEL STRAPS (TYP.) SEE DETAIL 3-14-14.

DELETE

DELETE

FLOW TO RIVER

EXISTING

PIPE No. 1

PIPE No. 2 (STEP 4)

INSTALL PROPOSED 36" Ø D.I. PIPE AT REQUIRED LENGTH.

REMOVE EXISTING STEPS AND REINSTALL STEPS WITH PLATFORM AT PROPOSED LOCATION.

FLANGE OR PLUG

CUT OR DISCONNECT EXISTING PIPE AS REQUIRED TO INSTALL 45° BEND (STEP 6.)

EXISTING 3" Ø P.V.C. CHLORINATION LINE TO BE ABANDONED

INSTALL DRESSER COUPLING

INSTALL PROPOSED 36" ϕ D.I. PIPE AT 2' TO 4' LENGTH.

4' x 6'-8" PLATFORM

REMOVEABLE GRATING PANELS (TYP.)

6" Ø SURGE VALVE

3" Ø DRAIN W/ PLUG

8" Ø PLUG VALVE

8" Ø x 16" Ø CONCENTRIC REDUCER

18 Ø x 16 Ø TEE

16" Ø PLUG

16" Ø PLUG

18" Ø x 16" Ø CROSS

16" Ø PLUG VALVE

6 COR-TEN STEEL 3/4 Ø TIE RODS (TYP. EA. PIPE)

16" Ø SWING TYPE CHECK VALVE

16" Ø DRESSER COUPLER

16" Ø DRESSER COUPLER

3'-4"

3'-4"

CONTROL FLOAT RACK

LADDER

PUMP MOTORS

6"

3" Ø DRAIN WITH PLUG

EXISTING 36" ϕ D.I. PIPE ℄ ELEV. = 17.75 17.85

FROM EXISTING RBC SECONDARY CLARIFIER NO. 2

FROM EXISTING RBC SECONDARY CLARIFIER NO. 1

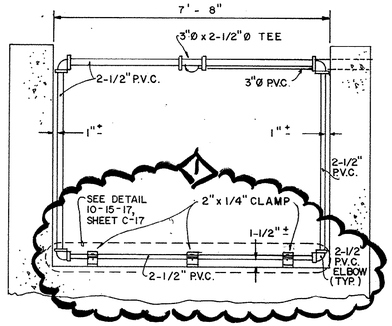
FLOW

FLOW

TIE EXISTING SIDEWALK TO STEP FOOTING AND SIDEWALK.

EFFLUENT CONTROL STRUCTURE PLAN

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



CHLORINATION SYSTEM DETAIL 7-15-15

NTS.

WWTP OPERATION PROCEDURES DURING CONSTRUCTION TIE-IN

IN ORDER TO MAINTAIN CONTINUITY OF WASTE TREATMENT AND TO EFFECT A TIE-IN OF THE ORBAL SYSTEM WITHOUT ANY INTERRUPTION OF FLOWS, A SEQUENCE OF CONSTRUCTION STEPS AS FOLLOWS IS PROPOSED: (SEE DRAWING C-8202 (5-15)

STEP 1. THE EXISTING FLOWS FROM THE RBC SECONDARY CLARIFIERS WILL CONTINUE TO DISCHARGE TO THE EFFLUENT CHANNEL THROUGH PIPE NO. 1.

STEP 2. PRIOR TO THE CONSTRUCTION OF THE EFFLUENT CONTROL STRUCTURE, A WATER-TIGHT STOPPER PLATE WILL BE INSTALLED AGAINST THE EXISTING CHANNEL END WALL.

STEP 3. CONSTRUCTION PROCEEDS ON ALL OTHER ELEMENTS OF THE ORBAL SYSTEM.

STEP 4. DURING CONSTRUCTION OF THE EFFLUENT CONTROL STRUCTURE, PIPE NO. 2 WILL BE LAID OUT, BUT STUBBED OFF CLOSE TO THE LOCATION OF THE 45° BEND.

STEP 5. UPON COMPLETION OF ALL CONSTRUCTION OF THE ORBAL SYSTEM, AND ALL PRELIMINARY TESTS HAVE BEEN MADE, ALL INFLUENT OF THE PLANT WILL BE DIVERTED TO THE ORBAL PROCESS TRAIN, WITH NO FURTHER FLOW TO THE EXISTING SYSTEM. CONTINUE OPERATION OF RBC UNITS.

STEP 6. AT THE PRESENT PLANT FLOW RATES, AND WITH AN ESTIMATED VOLUME OF 4.3 M GALLONS IN THE ORBAL STRUCTURES, IT WILL REQUIRE APPROXIMATELY 24 HOURS TO FILL THE ORBAL SYSTEM TO LEVELS AT WHICH FLOW WILL BEGIN AT PIPE NO. 3. DURING THIS TIME ALLOWED, THE FOLLOWING ACTIONS MUST BE ACCOMPLISHED:

A. PORTABLE PUMP WILL PUMP OUT PIPE NO. 1, DISCHARGING TO THE FLUME CHANNEL. THIS VOLUME IS NOT LARGE AND WILL NOT REQUIRE MUCH TIME.

B. CUT PIPE NO. 1, INSTALL THE 45° BEND, COMPLETE THE CONNECTION TO PIPE NO. 2. SEAL OFF PIPE NO. 1 WITH A FLANGE OR PLUG AT THIS POINT.

C. FILL THE VERTICAL SECTION OF PIPE NO. 1 WITH SAND, AND INSTALL THE PLUG TO THIS LINE IN THE CHANNEL FLOOR.

D. REMOVE THE ~~TEMPORARY STOPPER PLATE~~ AND THE END WALL SECTION.

STEP 7. PLACE EXISTING SYSTEM BACK IN SERVICE.

5-01-018s

REVISIONS			
NO.	DATE	BY	DESCRIPTION
1	5-26-89	J.C.B.	OPERATION PROCEDURES DURING CONSTRUCTION
			TIE-IN & "H"-FLUME WITH CHANNEL ADDITIONS
2	10-4-89	HJW	ADDED RESTRAINING TIE RODS & STRAPS
3	11-91	TEM	RECORD DRAWING

SEAL

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 4590 HAROLD JOE WILLSON

Harold Joe Willson
SIGNATURE

12-15-88
DATE

SIRRINE ENVIRONMENTAL CONSULTANTS
Charleston, South Carolina

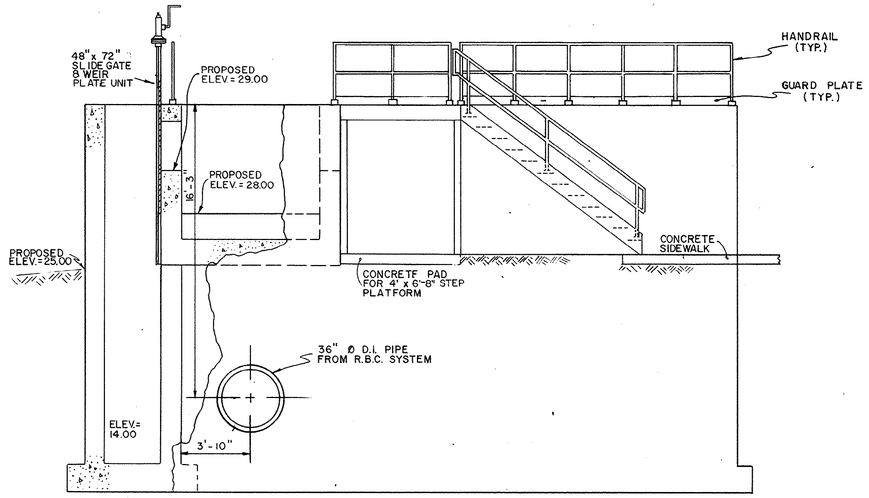
GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

EFFLUENT CONTROL STRUCTURE
PLAN & SECTION

SHEET NUMBER	
C-8202	C-15
SIRRINE FILE NO.	C 8202
DESIGNED	J.C. BAMERT
DRAWN	W.D.H. & P.G.S.
CHECKED	J.C. BAMERT
APPROVED	H.J. WILLSON
DATE	DEC. 1988

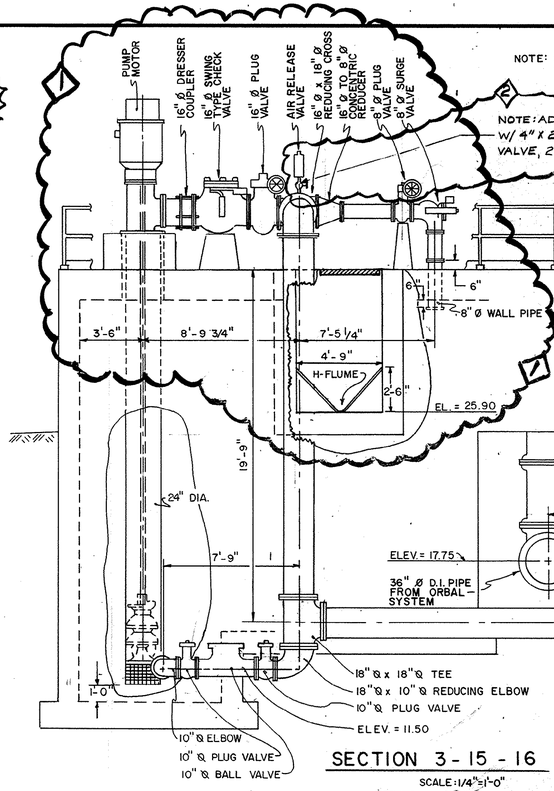
DOUGLAS PARRELL INC. CHARLESTON, S.C. 1-24-91 (4-1-92)

NOTE: THE 16" ⌀ PLUG VALVE HANDWHEEL STEMS INSTALLED VERTICALLY IN LIEU OF AS SHOWN.



SECTION 2 - 15 - 16

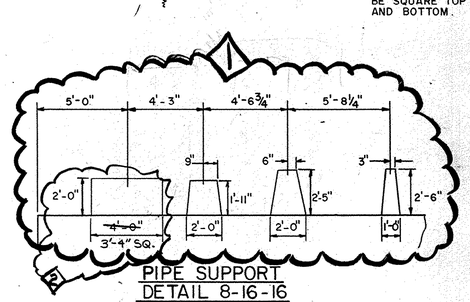
SCALE: 1/4" = 1'-0"



SECTION 3 - 15 - 16

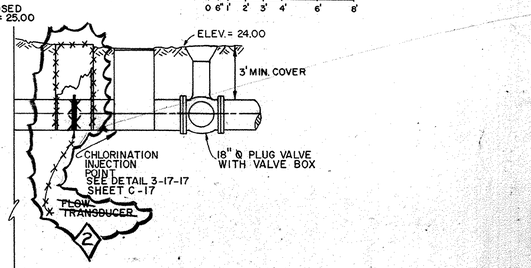
SCALE: 1/4" = 1'-0"

NOTE: ALL SUPPORTS WILL BE SQUARE TOP AND BOTTOM.



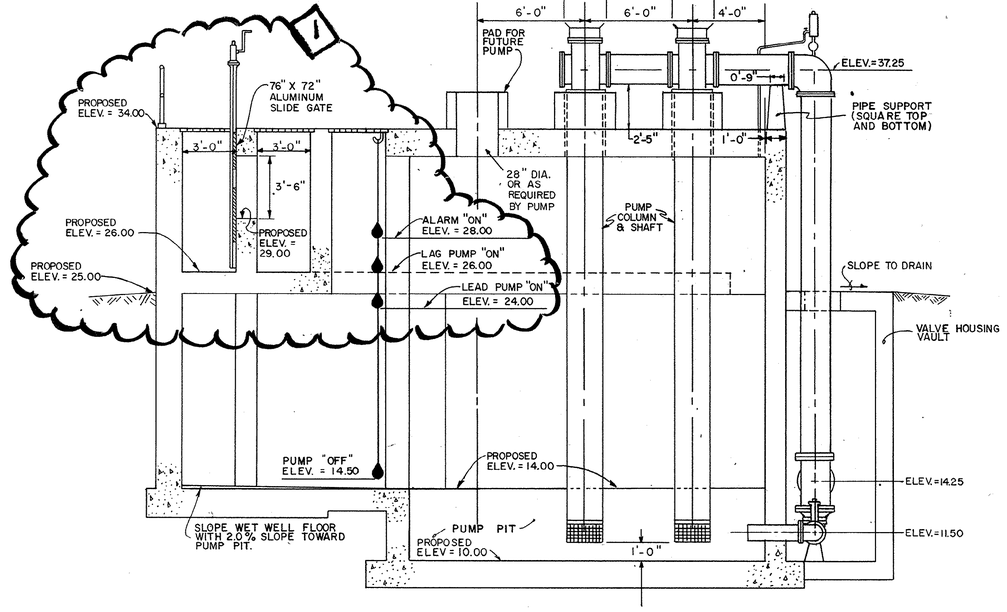
PIPE SUPPORT DETAIL 8-16-16

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



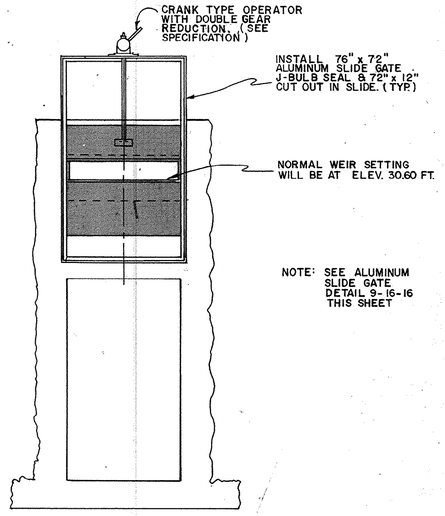
NOTE: PARTIAL EQUIPMENT LIST - EFFLUENT CONTROL STRUCTURE

EFFLUENT PUMPS	FAIRBANKS MORSE FIGURE 7000
EFFLUENT MOTORS	U.S ELECTRICAL MOTORS - 100 H.P.
PARSHALL FLUME	WARMINSTER FIBERGLASS
H-FLUME	PLASTI-FAB
OPEN-CHANNEL FLOW MEASUREMENT	DREXELBROOK
CHECK VALVE (SWING & BALL)	G.A. INDUSTRIES, INC.
SURGE VALVE	G.A. INDUSTRIES, INC.
SEWAGE AIR RELEASE VALVE	G.A. INDUSTRIES, INC.
PLUG VALVE	DEZURIK
STOP & SLIDE GATES	WATERMAN INDUSTRIES, INC.



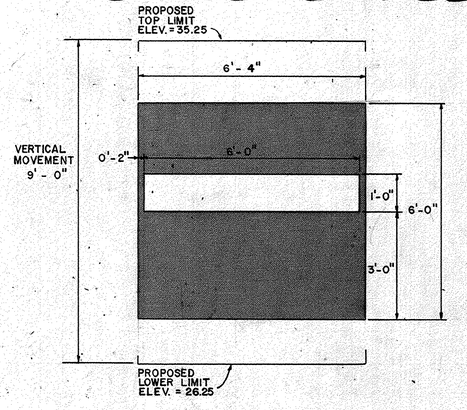
SECTION 4 - 15 - 16

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



SECTION 5 - 15 - 16

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



ALUMINUM SLIDE GATE DETAIL 9-16-16

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

5-01-019 s

REVISIONS			
NO.	DATE	BY	DESCRIPTION
1	5-26-89	J.C.B.	'H'-FLUME WITH CHANNEL ADDITIONS
2	11-91	T.E.M.	RECORD DRAWING

SEAL — REGISTERED PROFESSIONAL ENGINEER — SOUTH CAROLINA — No. 4590 — HAROLD JOE WILLSON

Harold Joe Willson
SIGNATURE

12-15-88
DATE

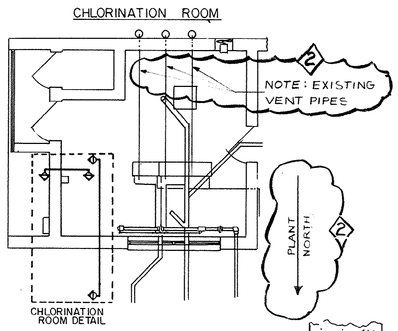
SIRRINE ENVIRONMENTAL CONSULTANTS
Charleston, South Carolina

GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

EFFLUENT CONTROL STRUCTURE
SECTIONS

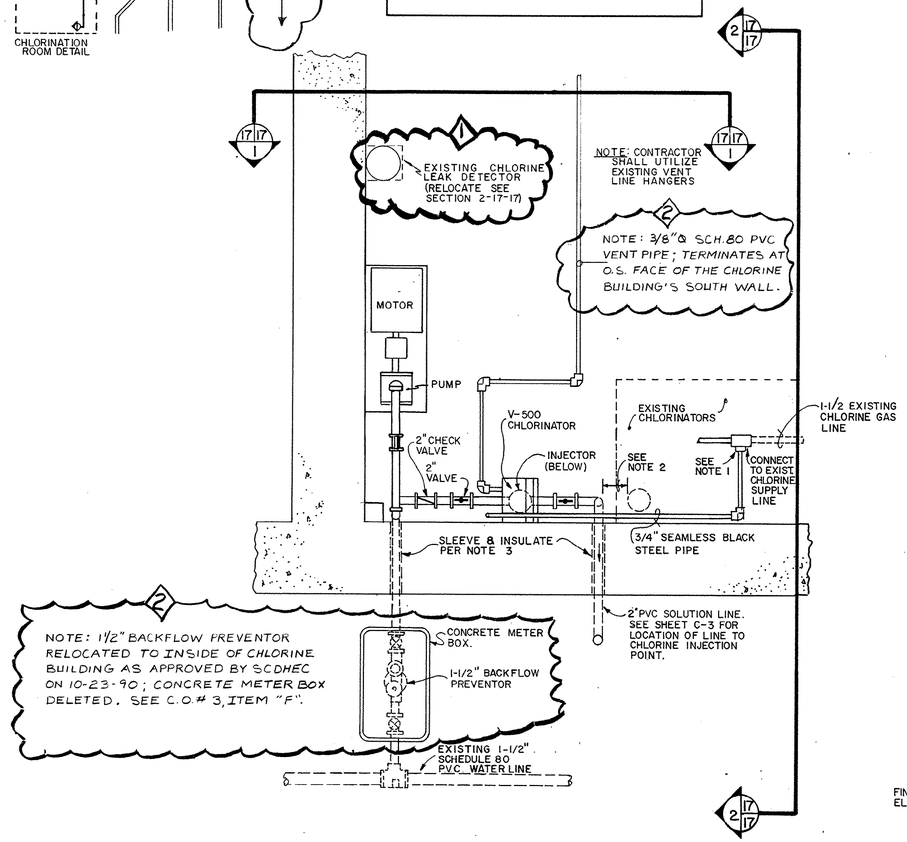
SHEET NUMBER	
C-8202	C-16
SIRRINE FILE NO.	C 8202
DESIGNED	J.C. BAMERT
DRAWN	P.G.S. & W.D.H.
CHECKED	J.C. BAMERT
APPROVED	H.J. WILLSON
DATE	DEC. 1988

DUNCAN-PARNELL, INC. CHARLESTON, S.C. (803) 577-9033



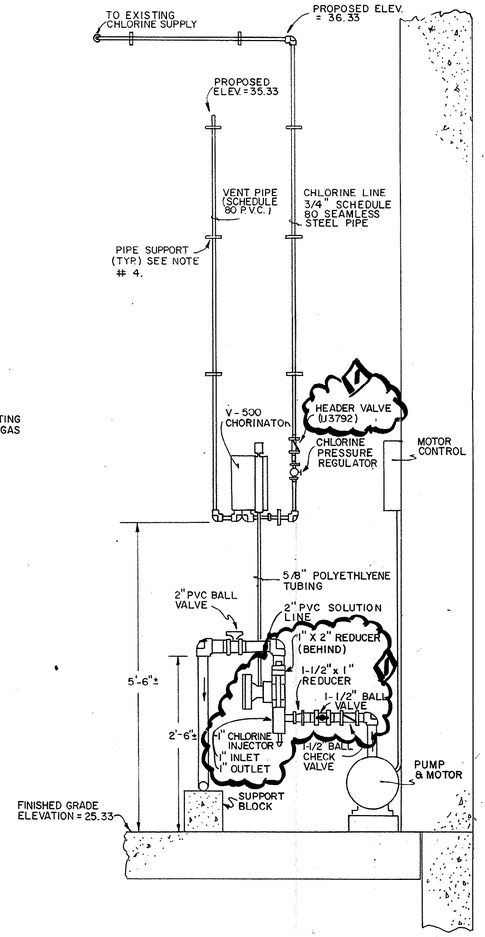
NOTES:

1. Contractor shall connect to existing gas supply line, routing to clear all existing lines as much as practical.
2. Contractor shall locate proposed injector and piping to obtain maximum clearance to existing injector; 3" minimum.
3. Core drill hole through brick wall for water supply and chlorine solution line. Provide 1½" thick insulation wrap around pipes through wall. Extend insulation for chlorine line 3 feet below ground. Insulate supply line to backflow preventer. Provide sealant at each wall face.
4. Pipe supports shall be of stainless steel with maximum spacing of 3 feet on vent and gas supply line.



CHLORINATION ROOM ADDITIONS

N.T.S.

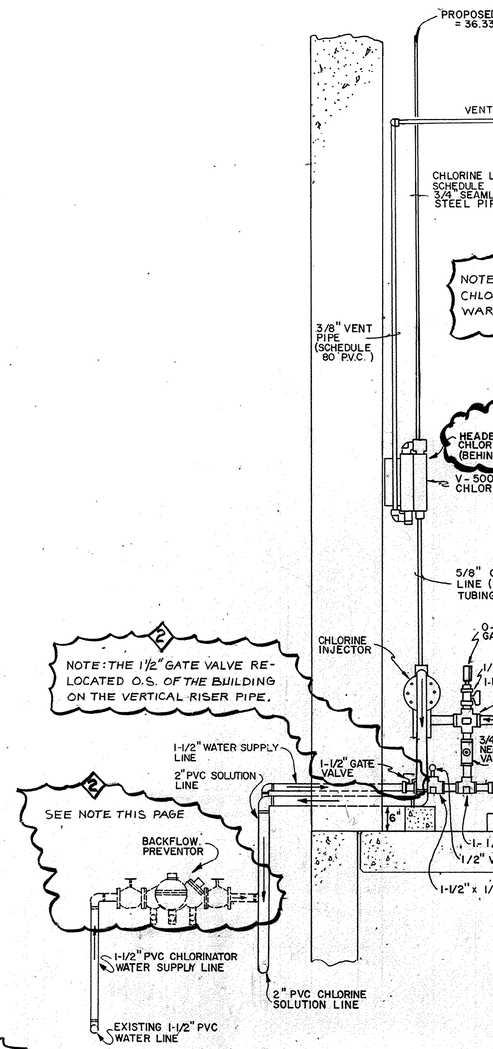


SECTION 1 - 17 - 17

N.T.S.

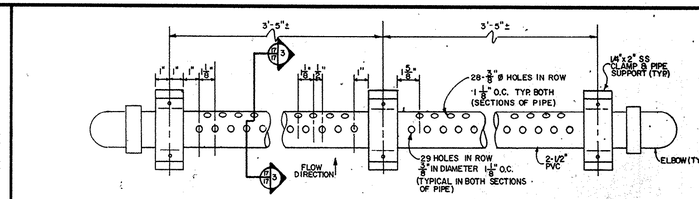
NOTE: PARTIAL LIST OF CHLORINATION EQUIPMENT & MANUFACTURERS

V-NOTCH CHLORINATOR (500)	WALLACE & TIERNAN, INC.
BOOSTER PUMP (15)	AURORA PUMP
BACKFLOW PREVENTER (909)	WATTS
SOLUTION INJECTOR (193J)	FISCHER PORTER
REGULATOR VALVE (500B)	FISCHER PORTER



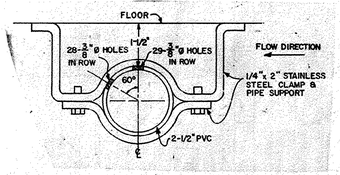
SECTION 2 - 17 - 17

N.T.S.



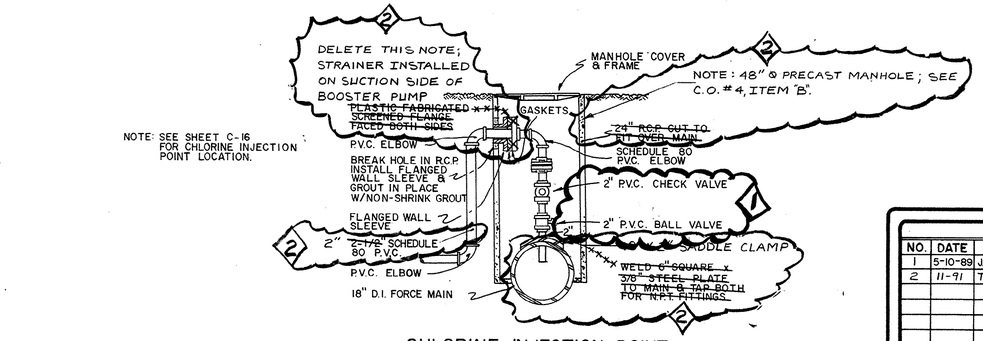
DETAIL OF BOTTOM CHLORINATION PIPE 10-15-17

N.T.S.



SECTION 3-17-17

N.T.S.



CHLORINE INJECTION POINT DETAIL 3-17-17

N.T.S.

5-01-020 s

REVISIONS			
NO.	DATE	BY	DESCRIPTION
1	5-10-89	J.C.B.	MINOR CHLORINATION CHANGES
2	11-91	TEM	RECORD DRAWING

SEAL — SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 4590 HAROLD JOE WILLSON

Harold Joe Willson
SIGNATURE

12-15-88
DATE

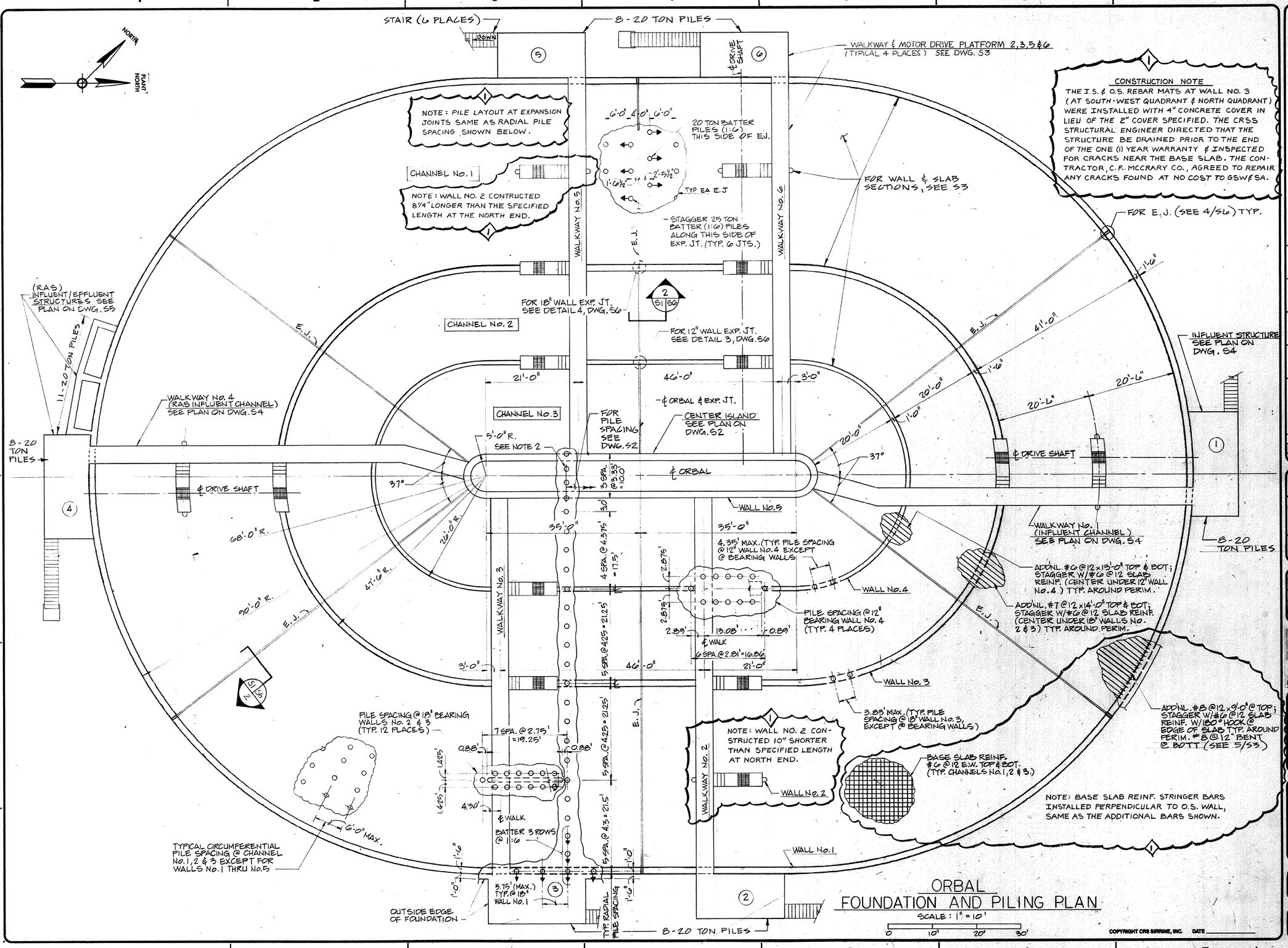
SIRRINE ENVIRONMENTAL CONSULTANTS
Charleston, South Carolina

GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

CHLORINATION SYSTEM ADDITIONS AND IMPROVEMENTS
PLAN AND SECTIONS

SHEET NUMBER	
C-8202	C-17
SIRRINE FILE NO.	C 8202
DESIGNED	A.M. BYRNES
DRAWN	W. DAVID HUNT
CHECKED	J.C. BAMERT
APPROVED	H.J. WILLSON
DATE	DEC. 1988

DUNCAN PARNELL, INC. CHARLESTON, S.C. (803) 571-4020



NOTES

1. PILE SPACING MAY BE REDUCED TO SUIT LAYOUT (DO NOT EXCEED MAXIMUM SPACING NOTED)
2. ALL PILES SUPPORTING CENTER ISLAND SHALL BE 25 TON.
3. FOR STD. DETAILS & NOTES SEE DWG. S1, S7 & S8.

REV. NO.	CODE CIRCLES	REV. BY	DATE	DESCRIPTION	CRSS APPV.
1	F I	TEM	11/91	RECORD DRAWING	
0	A	CHW	1/20/89	FOR REVIEW	

NOTE: CIRCLE ALL REVISIONS, IDENTIFY WITH DIAMOND, NUMBER AND ARROW. REMOVE ONLY CIRCLE AND ARROW BEFORE NEXT REVISION.

ISSUE CODE		C	MAT'L T.O.	F	CONST'N
A	APPROVAL	D	MAT'L PURC.	G	
B	DESIGN	E	BIDS	H	

SIGNATURE

DATE

SEAL — SOUTH CAROLINA — No. 9514 — PROFESSIONAL — ENGINEER — MELVIN R. FREESE

DR. H. WEAVER	DATE 12-2-88
DSGN. M. FREESE	
CK. M. Freese	FILE NUMBER
DPE	JOB NO. V-1509
CAD FILE NO.	

SIRRINE ENVIRONMENTAL CONSULTANTS
Charleston, South Carolina
CRS SIRRINE Savannah, Georgia

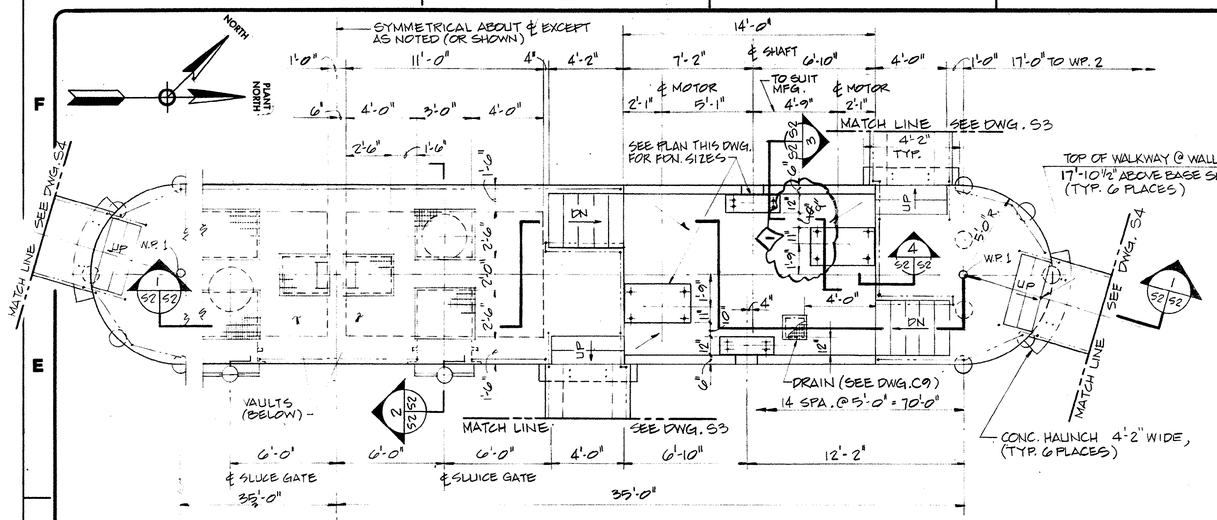
GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

DRAWING TITLE

ORBAL FOUNDATION & PILING PLAN

CLIENT DRAWING NUMBER
5-01-021 s

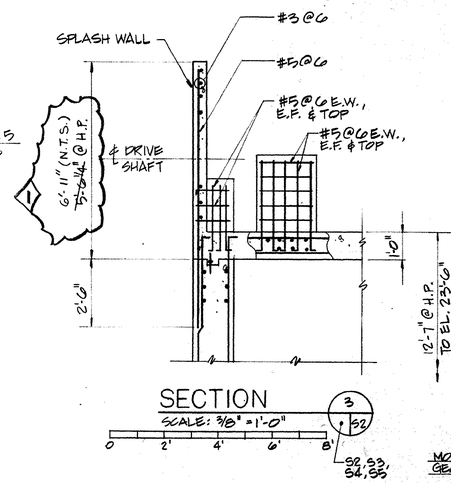
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C-8202- SI

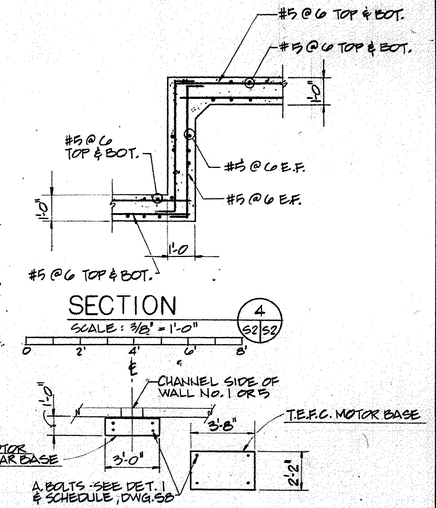


PLAN - CENTER ISLAND

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

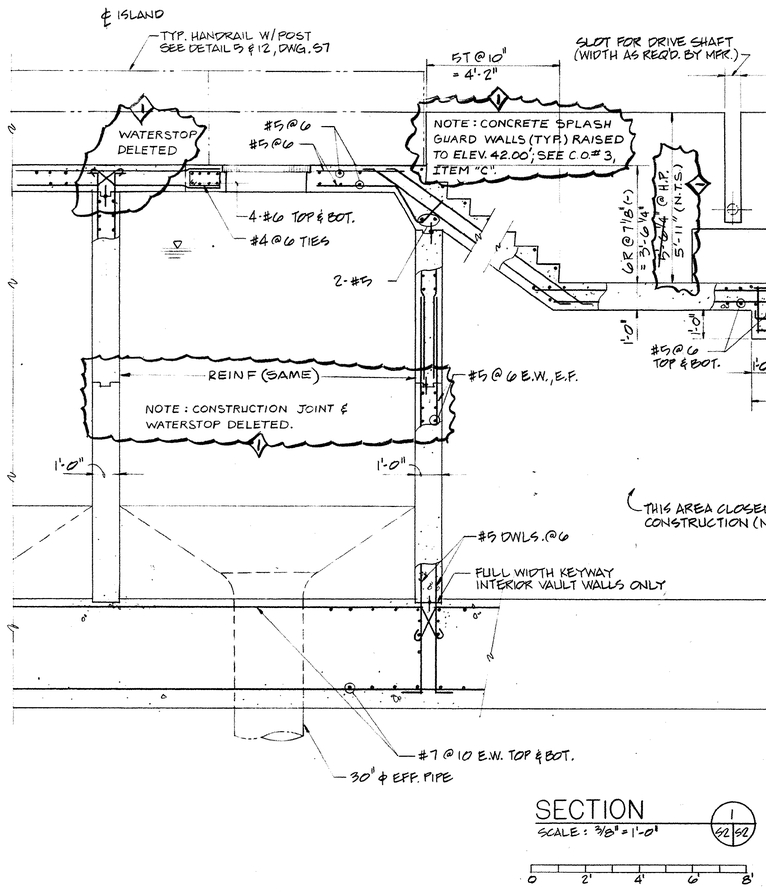
NOTE: 66 PILES @ CENTER ISLAND





PLAN - MOTOR/DRIVE FDN. PEDESTALS

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



SECTION

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

S2, S5

SECTION

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

S2, S5

NOTES

REV. NO.	CODE	CIRCLES	DATE	DESCRIPTION	ORIG. APPR.
1	F I	11		RECORD DRAWING	
	TEM	91			
0	A	1	20	FOR REVIEW	
	CHW		89		

NOTE: CIRCLE ALL REVISIONS, IDENTIFY WITH DIAMOND, NUMBER AND ARROW. REMOVE ONLY CIRCLE AND ARROW BEFORE NEXT REVISION.

ISSUE CODE			
A	APPROVAL	D	MAT'L PURC.
B	DESIGN	E	BIDS
C	MAT'L T.O.	F	CONST'N
		G	
		H	

SEAL

SIGNATURE

DATE

DR.	H. WEAVER	DATE	12-5-88
DSGN.	M. FREESE	FILE NUMBER	
CK.	M. Freese	JOB NO.	V-1509
DPE			
CAD FILE NO.			

SIRRINE ENVIRONMENTAL CONSULTANTS
Charleston, South Carolina
CRS SIRRINE Savannah, Georgia

GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

DRAWING TITLE
ORBAL CENTER ISLAND PLAN & SECTIONS

CLIENT DRAWING NUMBER
5-01-022 S

DRAWING NUMBER
C-8202 S2

COPYRIGHT CRS SIRRINE, INC. DATE

NOTE: WALL NO.5 IS 18" THICK @ PERIMETER WALL @ CENTER ISLAND

WALL No.4

WALL No. 3

WALL No. 2

WALL No. 1

BEARING SUPPORT PLATFORM (TYPICAL @ WALL NOS. 2, 3 & 4)

ANCHOR BOLTS

℄ DRIVE SHAFT

MATCH LINE - SEE DWG. S2

TOP OF WALKWAY 17'-11¼" ABOVE BASE SLAB

TOP OF WALKWAY 18'-0" ABOVE BASE SLAB

6" DIAPHRAM WALL (TYP.)

TOP OF WALKWAY 18'-0¾" ABOVE BASE SLAB

EXACT NO. & SIZE ANCHOR BOLTS TO BE DETERMINED BY MFG.

FOR REINF. SEE DETAIL 7, THIS DWG.

TOP OF WALL 16'-1¼" ABOVE BASE SLAB

SEE NOTE 1

SEE NOTE 2

SEE NOTE 3

CONC. HAUNCH

SLOPE 6"

SEE DETAIL 7, SIM.

COL. (3 PL.)

ADJUST TO SUIT MFG, TYP.

10'-6" 10'-6" 10'-7½" 10'-3" 11'-6"

NOTE: THE CONSTRUCTION JOINT & WATER-STOP DELETED AT WALL NOS. 1, 2, 3 & 5, 8'-0" ABOVE BASE SLAB; MONOLITHIC WALL POURS.

ORBAL WALKWAY PLAN

SCALE: ¼" = 1'-0"

0 4' 8' 12'

#5@10"

WALL NO. 1

WATERSTOP

#7@10

#8@6

VERIFY W/MFG. (TYPICAL)

1" EXP. JT. MTL.

ALUM. HANDRAIL - SEE DETAIL 5, DWG S7

CONC. STAIR - FOR REINF. SEE DETAIL 3, DWG. S7

GRATING SUPPORT - SEE DETAIL 4, DWG S7

CHAIN - SEE SPELS.

FOR REINF. SEE SECTION 2 THIS DWG.

ADDN'L. 7 #4

1½" AL. GRT'G.

5 EQUAL SPACE RISERS

7-#4

#5@6 #4@12

NOTCH 6" FOR WALKWAY ANCHOR

TYP. WALKWAY SEE SECTION 1 THIS DWG.

WALL No. 3 & 4

2'-8¼" @ WALL No. 4
2'-9" @ WALL No. 3
2'-9¾" @ WALL No. 2

TOP OF WALL PLATFORM

TOP OF WALL

W.S.

ADJUST TO SUIT MFG.

14'-7" TO EL. 23'-6"

SECTION 6 — SCALE: 3/8" = 1'-0" — S3|S3

0 2' 4' 6' 8'

#4 @ 12 TOP & BOT E.W.

#4 @ 12 E.F.

¼ ROUND DRIP EA. SIDE

TOP WALL

VARIES

14'-7" TO EL. 23'-6"

#4@8 E.W. CENTER

1'-0" (MAX.)

6 - #4 @ 4 6" WIDE DIAPHRAM LOCATE @ MID SPAN & SUPPORT WALK (SEE PLAN)

4'-0"

SECTION — SCALE: 3/4" = 1'-0" — S3|S3

0 1' 2' 3' 4'

SUPPORT PLATFORM (ABOVE)

#5@10

#6 & #5

#5

2'-2"

DETAIL 7 — SCALE: ½" = 1'-0" — S3|S3

0 1' 2' 3' 4' 5' 6'

℄ BRG. ℄ BRG.

WALL NO. 4

WALL NO. 3

WALL NO. 2

A. BOLTS - SEE DET. 1 & SCHEDULE, DWG. S6

FOR REINF. SEE SECTION 2

℄ DRIVE SHAFT

7-#4 TOP & BOT.

#5@6 TIES

#5@8 E.F.

#5@6 E.F.

#7@6 E.F.

#5@8 E.F.

#6@6 HORIZ. E.F.

#5@10 #5@6 E.F.

#8@6 E.F.

#8 DWLS @5

#7 DWLS@6

#6 E.W. SLAB REINF (SEE ORBAL PLAN)

ADDN'L #7 (STAGG.) (SEE ORBAL PLAN) ADDN'L #6@12 CONT.

ADDN'L #8 (STAGG.)

#6@6 HORIZ. E.F.

#8 DWLS @5

2-#6

1-#6

EL. 23'-6"

ADDN'L #6@12" CONT.

SECTION 2 — SCALE: 3/8" = 1'-0" — S3|S3

SECTION 3 — SCALE: 3/8" = 1'-0" — S3|S3

SECTION 4 — SCALE: 3/8" = 1'-0" — S3|S3

SECTION 5 — SCALE: 3/8" = 1'-0" — S3|S3

0 2' 4' 6' 8'

#4@6

TOP OF WALL

#5@6 E.F.

#5@8 E.F.

12" WALL

NOTE: FOR CONTINUATION SEE SECTION 2, THIS DWG.

SECTION 8 — SCALE: ½" = 1'-0" — S3|S3

#5@10"

TOP OF WALL

#6@6 E.F.

#7@10 E.F.

#8@10 E.F.

WATERSTOP

18" WALL

NOTE: FOR CONT. SEE SECTION 3, THIS DWG

SECTION 9 — SCALE: ½" = 1'-0" — S3|S3

1'-6" 1'-8"

3-#6

1'-0"

1-#5 E.F.

#4@8 TIES

PILASTER DETAIL 10 — SCALE: ¾" = 1'-0" — S3,S4,S5

0 1' 2' 3' 4'

NOTES

1. PILASTER (BELOW) SEE DETAIL 10 - THIS SHEET
2. MOTOR FOUNDATION PEDESTALS SEE PLAN - DWG. S2
3. FOR CONC. HAUNCH SIZE & REINF. SEE SECTION 1, DWG. S2.

REV. NO.	CODE CIRCLES REV. BY	DATE	DESCRIPTION	CRSS APPV.
1	F I TEM		RECORD DRAWING	
0	A CHW	3/30/89	FOR REVIEW	

NOTE: CIRCLE ALL REVISIONS, IDENTIFY WITH DIAMOND, NUMBER AND ARROW. REMOVE ONLY CIRCLE AND ARROW BEFORE NEXT REVISION.

ISSUE CODE		C	MAT'L T.O.	F	CONST'N
A	APPROVAL	D	MAT'L PURC.	G	
B	DESIGN	E	BIDS	H	

SEAL

SIGNATURE

DATE

DR.	H. WEAVER	DATE	12-6-88
DSGN.	M. FREESE	FILE NUMBER	
CK.	M. Freese	JOB NO.	V - 1509
DPE			
CAD FILE NO.			

SIRRINE ENVIRONMENTAL CONSULTANTS

Charleston, South Carolina

CRS SIRRINE Savannah, Georgia

GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

DRAWING TITLE

ORBAL WALKWAY PLAN & SECTIONS

CLIENT DRAWING NUMBER

5-01-023 s

DRAWING NUMBER

C-8202 S3

COPYRIGHT CRS SIRRINE, INC. DATE

NOTE: FOR SIMILAR BEARING SUPPORT PLATFORM & WALL DIMENSIONS, SECTIONS, DETAILS & REINF. SEE ORBAL WALKWAY PLAN ON DWG. S3

FOR CONC. HAUNCH SIZE & REINF. SEE SEC. 2, DWG S5

FOR ALUM. HAND RAIL CONNECTION SEE STR? DETAIL

WALL No. 1

WALL No. 2

WALL No. 3

WALL No. 4

DETAIL
N.T.S. (6 S4/S4)

℄ FRAME EMBED. 6"
ANCHORS
EDGE OPNG.
S.S. GUIDES (SIZE TO SUIT.)
REMOVEABLE ALUMINUM STOP GATE W/2 LIFT HANDLES IN TP ON TOP SIDE (SEE SPECS & DWG C7).
STIFFENERS

PLAN-INFLUENT STRUCTURE
SCALE: 1/4" = 1'-0"

0 4' 8' 12'

NOTE: CONCRETE SPLASH GUARD WALL (TYP.) RAISED TO ELEV. 42.00', SEE C.O. # 3, ITEM "C".

TOP OF 6" WALL IS 18'-1¼" ~~18'-6"~~ ABOVE BASE SLAB

PILASTER (BELOW) SEE DET. 10, DWG. S3

FOR MOTOR PDN. PEDESTALS SEE PLAN - DWG. S2

MOTOR DRIVE PLATFORM

SIM. (3 S4/S2)

3'x8' OPNG. (BELOW)

℄ 30" PIPES

℄ WEIR SLIDE GATE 3'-0"

℄ DRIVE SHAFT

℄ WEIR SLIDE GATE 4'-9"

8'-3"

℄ WEIR SLIDE GATE

ANCHOR BOLTS (TYP. @ WALL NO. 2 & 3)

5'-8" (TO SUIT MFG.)

4'-0"

6'-10"

2'-0"

2'-0"

2'-3"

2" FRAME 12"

#5@6 E.W., E.F.

W.P. 5

5'-4" LG. CONC HUNCH

3'-6" 3'-3"

11'-6"

FOR SOUTH END OF ORBAL @ INFL./EFF. STRUCTURE SEE DWG. S5

2 PC. 1½" ALUM. REMOVABLE GRTG.

INFLUENT CHANNEL (BELOW)

1½" ALUM. REMOVABLE GRATING CENTERED ABOVE STOP GATE (SEE CIVIL DWGS)

15'-0"

23'-6"

5'-0"

9'-6"

3'-0"

3'-0"

3" 3" 3" 3" 3" 3"

1'-6"

1'-8"

SECTION
SCALE: 3/4" = 1'-0" (1 S4/S4)

0 1' 2' 3' 4'

#4@8 #4@8

4-#4 EA. CORNER OF CHANNEL

¼ ROUND DRIP EA. SIDE

SLOPE SLOPE

7½" 7" 3'-2½" 3'-2½"

3" 8" #4@8

6-#4 E.F. EA. WALL

ADDNL #4@12 EA. SIDE

#4@8 #4@8 TOP & BOTT

4'-0"

WATERSTOP EA. SIDE

NOTE: THE INFLUENT CHANNEL'S FLOOR SLAB & WALLS POURED MONOLITHICLY, BOTTOM C.J. & W.S. DELETED

NOTES

1. W.P. 5 IS LOCATED @ ℄ INFLUENT CHANNEL @ INSIDE FACE OF ORBAL WALL No. 5
2. EXTEND DOWELS OR REBARS INTO OPPOSITE SIDE OF WALL OR SLAB AND TERMINATE W/ 90° HOOK IN COMPLIANCE W/ ACI. LAP DOWELS W/ CLASS 'C' LAP.
3. PROVIDE ADDITIONAL DIAGONAL BARS @ BASE OF ALL WALLS W/ WATER STOPS.
4. SEAL ALL JOINTS W/ SEALANT ON WATER SIDE OF JOINTS AND BOTH SIDES OF OTHER EXPOSED JOINTS.
5. SPLICE #4@8 W/ #5@8 (BOTTOM SLAB) OVER HAUNCH.

REV. NO.	CODE	CIRCLES	DATE	DESCRIPTION	CRS/S APPV.
	REV. BY			NOTE: CIRCLE ALL REVISIONS, IDENTIFY WITH DIAMOND, NUMBER AND ARROW. REMOVE ONLY CIRCLE AND ARROW BEFORE NEXT REVISION.	
1	TEM	F 1	11/91	RECORD DRAWING	
0	CHW	A 1	20/59	FOR REVIEW	

ISSUE CODE					
A	APPROVAL	C	MAT'L T.O.	F	CONST'N
B	DESIGN	D	MAT'L PURC.	G	
		E	BIDS	H	

SEAL

SIGNATURE

DATE

DR.	H. WEAVER	DATE	12-7-88
DSGN.	M. FREESE		
CK.	M. Freese	FILE NUMBER	
DPE		JOB NO.	V-1509
CAD FILE NO.			

SIRRINE ENVIRONMENTAL CONSULTANTS
Charleston, South Carolina
CRS SIRRINE Savannah, Georgia

GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

DRAWING TITLE
ORBAL INFLUENT STRUCTURE PLAN & SECTIONS

CLIENT DRAWING NUMBER
5-01-024 s

DRAWING NUMBER
C-8202 S4

SECTION
SCALE: 3/8" = 1'-0" (2 S4,S5/S4)

FOR REINF. SEE SECTION 3 THIS DWG.

8T. @ 10" = 6'-8"

FOR STAIR REINF. SEE DET. 3, DWG. S7

SLAB EL. @ L.P.

7½"

3'-8½"

3" ADDNL. #4 @12

8'

#5@6

#5@8

1'-0"

3"

18'-1"

14'-4½"

#5@6 E.W., E.F.

8'-0"

1'-0" 1'-0" 1'-0" 1'-0"

6'-6" 7'-0"

14'-0"

#6@8 E.W. TOP & BOT.

1'-6" 1'-6"

EL. 23'-6"

1'-6" 7'-0" 7'-6" 7'-6" 1'-6"

8'-0"

℄ D.I. PIPE (SEE 'C' DWGS.)

SECTION
SCALE: 3/8" = 1'-0" (2 S4,S5/S4)

18T. @ 10" = 15'-0" N.T.S.

TOP PERIMETER WALL

TOP CONN. SEE DETAIL 2, DWG. S7

9R @ 7½" = 5'-7"

18R. @ 7'-8" = 11'-3⅜"

12'-7" H.P. @ ORBAL WALL No. 1

12'-6" L.P. @ STAIRS

2'-0"

1½" EXP. JT. FILLER (TYP. @ WALLS & PIPES)

4" CONC. SLAB W/ CONTROL JTS @ 5'-10" O.C. REINF. W/ G.G. =W1.4 x W1.4 WWF (TYP. @ EXTERIOR PLATE. AREAS).

12"SQ. COL.

14'-0"

#6@8 E.W. TOP & BOT.

1'-0" (3)

1'-0"

1'-0"

1½"

1'-3"

5'

4" TYP.

BOT. CONN. SEE DETAIL 9, DWG. S7

WWF 6.0-W2.9 x W2.9

COMPACT GRANULAR FILL

4'-6" x 4'-0" CONC. PAD

SECTION
SCALE: 3/4" = 1'-0" (4 S3,S4/S5)

GRATING SUPPORT SEE DET. 4, DWG. S7

H.R.

¼ DRIP (TYP)

7½"

2'-0" x 2'-8" LG. SLOPE

4'-7"

W.P. 5 SLOPE

2'-8" x 7'-0" LG. 2-#5 BOT.

1'-0" 3'-0"

#4@8 E.W. T.&B.

#5@8 TOP & BOT.

#5@6 TOP & BOT.

1'-3½"

3'-9¼" ℄ OF CHANNEL

18'-2" @ W.P. 5

2'-6" SLOPE FLOOR

LEVEL FLOOR

2'-6" WIDE x 3'-0" LG. OPENING

FOR HAUNCH SIZE & REINF. SEE SECTION 1, DWG S2 (SEE NOTE 5 THIS DWG)

EL. 23'-6"

3'-8½" 2'-5" 3" 8" 6½" 14'-4½" 1'-0" 2'-0"

#5@6 E.W., E.F.

KEY 1'-0" WALL INTO 1'-0" WALL

2-#5 DWLS @ 12" UP WALL

3'-0" 2"

C.J.

8'-0"

TERMINATE KEY @ OPENING

ELEVATION
N.T.S. (6 S4/S4)

PILE SPA. SEE DWG. S1

EQ. SPA. EQ. SPA. 1'-0"

SECTION
SCALE: 3/8" = 1'-0" (3 S4,S5/S4)

0 2' 4' 6' 8'

1-#5 E.F. #3@10 3-#8 TOP

1'-0" 8"

3-#8 BOT. #3@10

1'-0" 3" 1/4" ROUND DRIP

12" SQ.

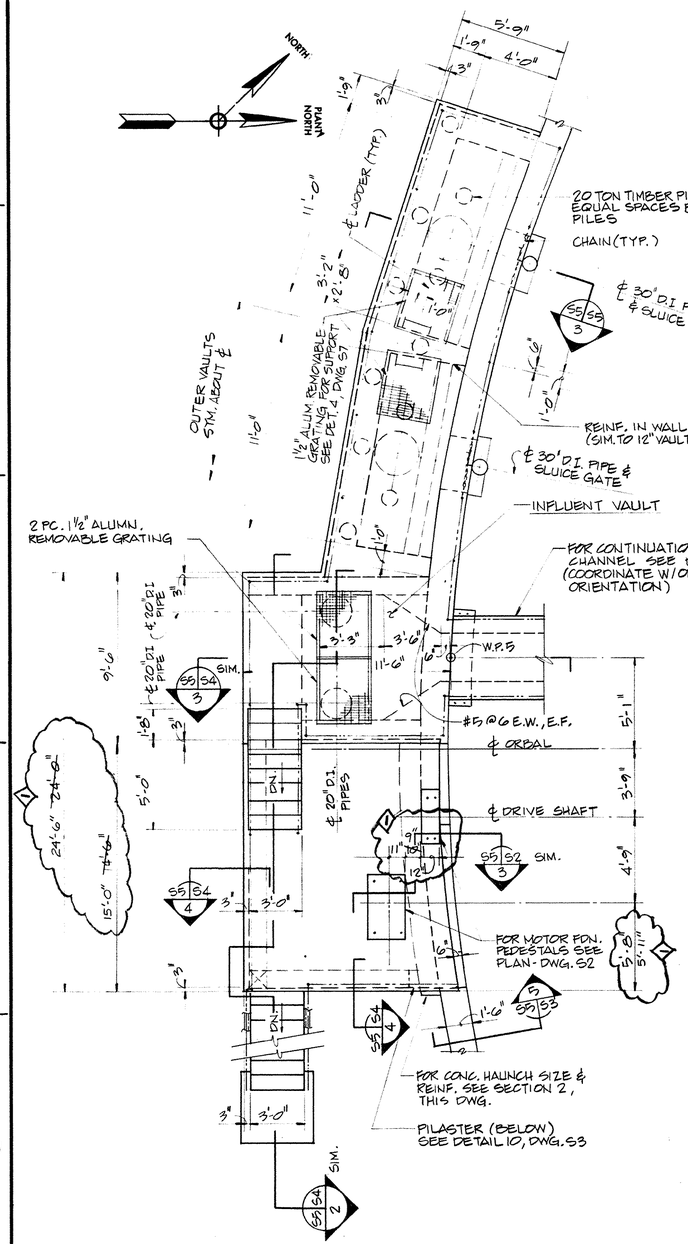
#3@8 TIES

5-#6 DWLS (SEE NOTE 2, THIS DWG.)

SECTION
SCALE: 3/4" = 1'-0" (5 S4/S4)

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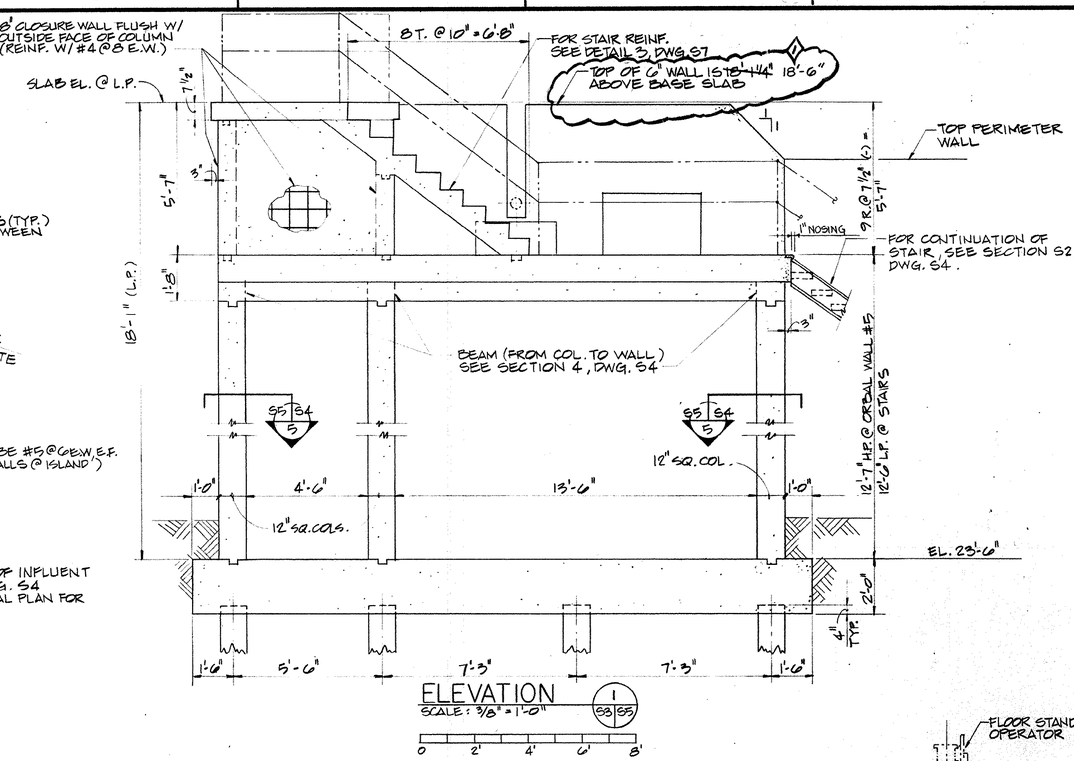
DATE S4,S5/S4



PLAN - INFLUENT / EFFLUENT STRUCTURES

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

0 4' 8' 12'

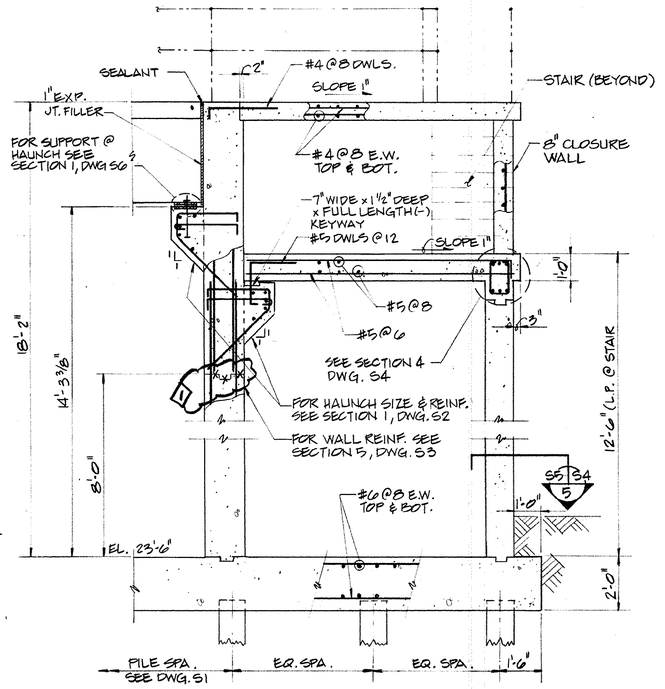


ELEVATION

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

S3/S5 1

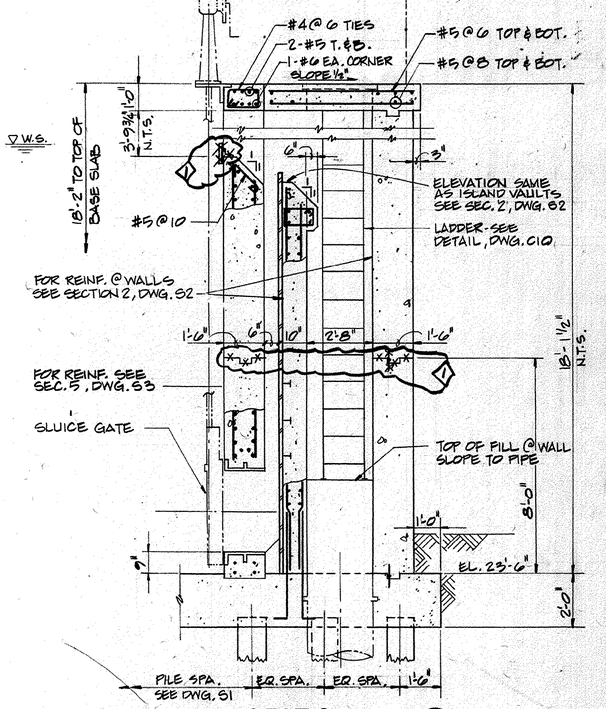
0 2' 4' 6' 8'



SECTION

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

S3/S5 2



SECTION

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

S5/S5 3

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NOTES

REV. NO.	CODE	CIRCLES	REV. BY	DATE	DESCRIPTION	CRSS APPV.
1	F	I	TEM		RECORD DRAWING	
0	A		CHW	12-8-88	FOR REVIEW	

NOTE: CIRCLE ALL REVISIONS, IDENTIFY WITH DIAMOND, NUMBER AND ARROW. REMOVE ONLY CIRCLE AND ARROW BEFORE NEXT REVISION.

ISSUE CODE			
A	APPROVAL	D	MAT'L PURC.
B	DESIGN	E	BIDS
C	MAT'L T.O.	F	CONST'N
		G	
		H	

SEAL

SIGNATURE

DATE

DR. H. WEAVER	DATE 12-8-88
DSGN. M. FREESE	FILE NUMBER
CK. M. Freese	
DPE	JOB NO. V-1509
CAD FILE NO.	

SIRRINE ENVIRONMENTAL CONSULTANTS

Charleston, South Carolina

CRS SIRRINE Savannah, Georgia

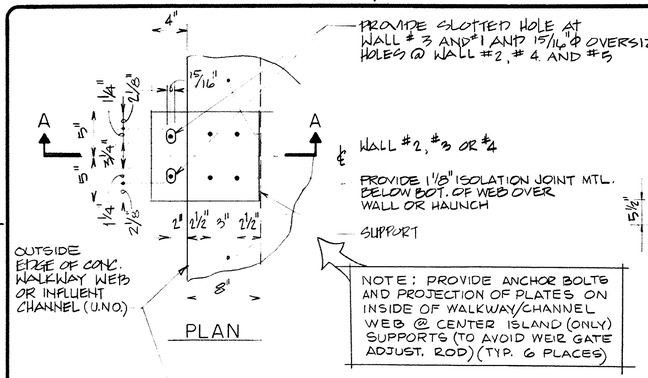
GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

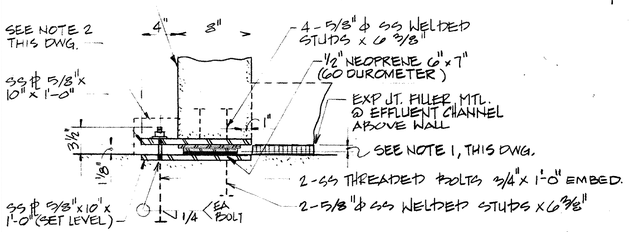
DRAWING TITLE

ORBAL INFLUENT / EFFLUENT STRUCTURES & MOTOR DRIVE PLATFORM - PLAN & SECTIONS

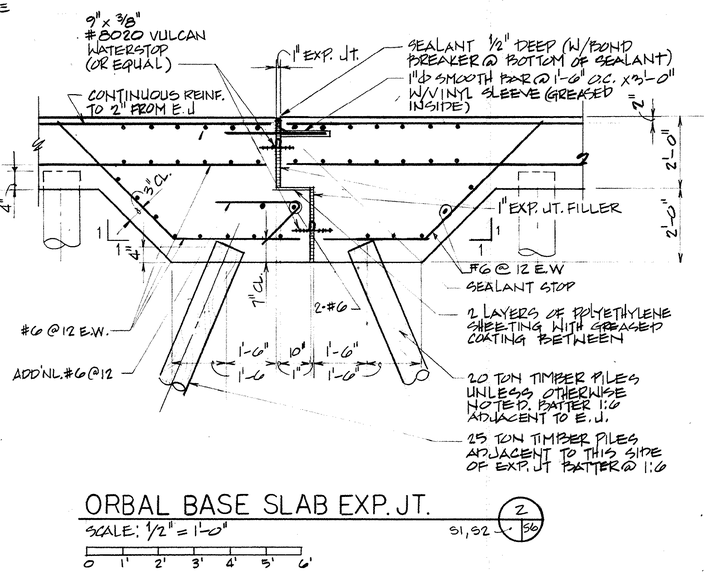
CLIENT DRAWING NUMBER: 5-01-025 s

DRAWING NUMBER: C-8202 S5



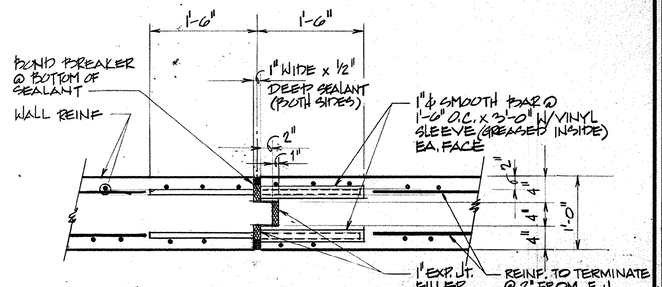


SECTION A-A



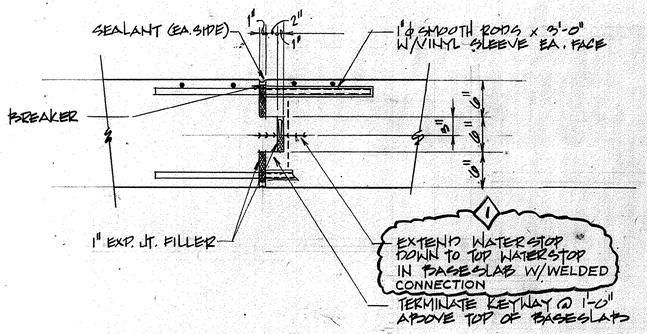
ORBAL BASE SLAB EXP. JT.

SCALE: ½" = 1'-0" — 51, 52 — 2/56



12" WALL VERTICAL EXP. JT. — 3/51/56

SCALE: 1" = 1'-0"

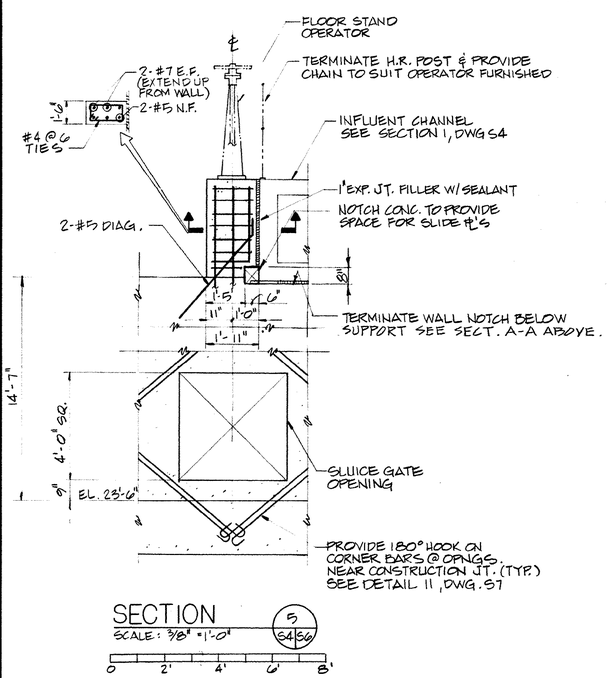


18" WALL VERTICAL EXP. JT. — 4/51/56

SCALE: 1" = 1'-0"

SLIDING SUPPORT DETAILS @ WALKWAY AND INFLUENT CHANNEL @ WALL Nos. 2, 3, 4 AND 5 (TYP. EA SIDE) — 52, 55 — 1/56

SCALE: 1½" = 1'-0"



SECTION — 5/54/56

SCALE: ⅜" = 1'-0"

NOTES

1. BOND S.S. 10 GA. PL 7" x 8" TO 3/32" FLUORGOLD TOP SLIDE PL 7" x 8" AND BOND 3/32" FLUORGOLD BOT. SLIDE PL 6" x 7" TO SS 5/16 PL 6" x 7" (TACK WELD 10 GA PL TO TOP 5/8" PL)
2. PROVIDE ISOLATION MATERIAL AROUND PLATES & BOLTS DURING CASTING SO FINAL INSTALLATION WILL BE FREE TO MOVE ½" @ SLOTTED HOLES & 3/16" @ OVERSIZED HOLES.

REV. NO.	CODE CIRCLES	REV. BY	DATE	DESCRIPTION	CRSS APPV.
1	F 1	TEM	11/91	RECORD DRAWING	
0	A 1	CHW	28/89	FOR REVIEW	

NOTE: CIRCLE ALL REVISIONS, IDENTIFY WITH DIAMOND, NUMBER AND ARROW. REMOVE ONLY CIRCLE AND ARROW BEFORE NEXT REVISION.

ISSUE CODE					
A	APPROVAL	D	MAT'L PURC.	G	
B	DESIGN	E	BIDS	H	
		C	MAT'L T.O.	F	CONST'N

SEAL

SIGNATURE

DATE

DR.	WEAVER/JACKSON	DATE	12-14-88
DSGN.	M. FREESE	FILE NUMBER	
CK.	M. Freese		
DPE		JOB NO.	V-1509
CAD FILE NO.			

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CRS SIRRINE Savannah, Georgia

GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

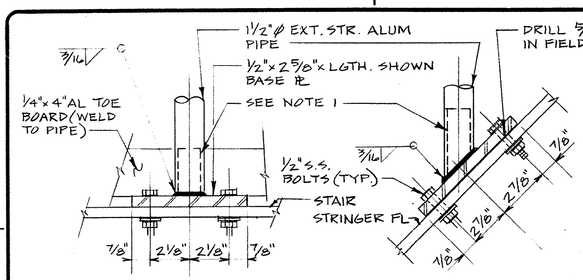
DRAWING TITLE

DETAILS - SHEET 1

CLIENT DRAWING NUMBER
5-01-026 s

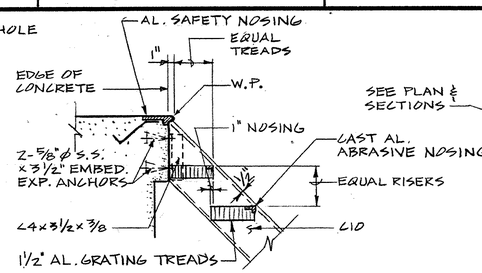
DRAWING NUMBER
C-8202 S6

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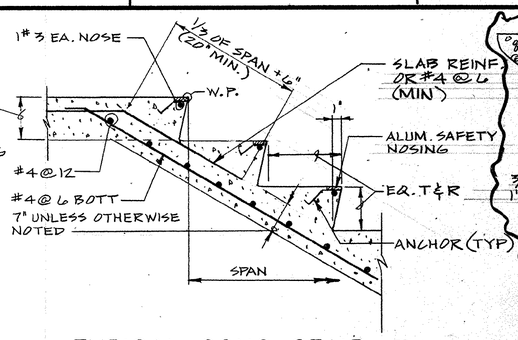


NOTES:
1. PROVIDE A SPECIAL CONNECTION FOR ALUMINUM THAT WILL DEVELOP FULL STRENGTH OF PIPE. SUBMIT TEST DATA ON SHOP DRAWINGS FOR REVIEW.
2. BASE PL SHALL MATCH HANDRAIL MATERIAL, PROVIDE PROTECTION FOR DISSIMILAR METALS AND CONCRETE PER SPECIFICATIONS.

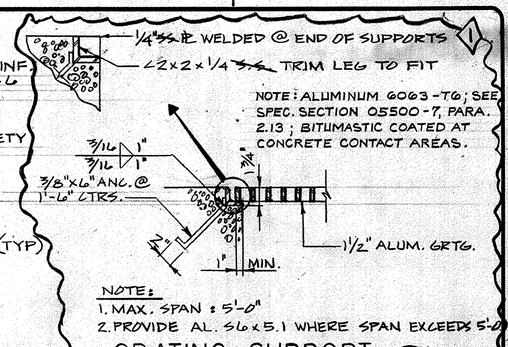
1/-S7 TYPICAL HANDRAIL POST AT STEEL CHANNEL
NOT TO SCALE



2/-S7 STAIR TOP CONN. @ CONC.
NOT TO SCALE

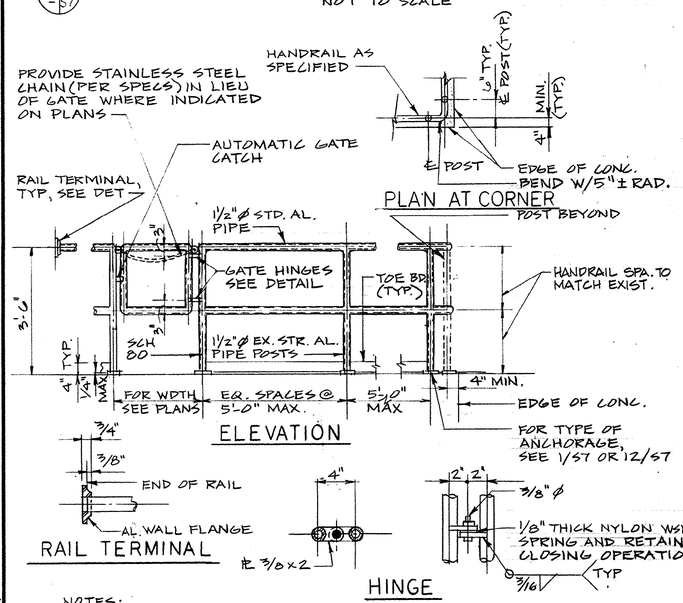


3/-S7 TYPICAL CONC. STAIR
NOT TO SCALE



NOTE:
1. MAX. SPAN = 5'-0"
2. PROVIDE AL. S6x5.1 WHERE SPAN EXCEEDS 5'-0"

4/-S7 GRATING SUPPORT
NOT TO SCALE



PLAN AT CORNER
POST BEYOND

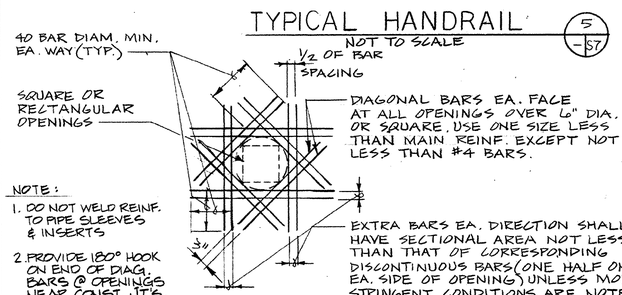
ELEVATION

RAIL TERMINAL

HINGE

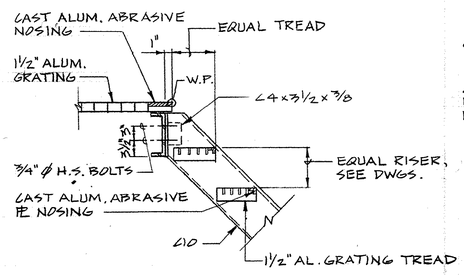
NOTES:
1. FASTEN RAIL TO WALL FLANGE PER MANUFACTURER'S RECOMMENDATIONS.
2. WALL FLG. TO BE MOUNTED TO WALL W/EXP. ANC. BOLTS

5/-S7 TYPICAL HANDRAIL
NOT TO SCALE

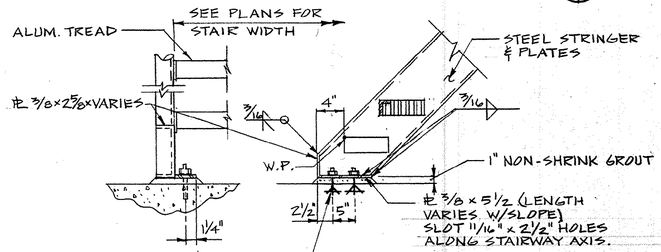


NOTE:
1. DO NOT WELD REINF. TO PIPE SLEEVES & INSERTS
2. PROVIDE 180° HOOK ON END OF DIAG. BARS @ OPENINGS NEAR CONST. JT'S. (SEE SECTION 5, DWG S6)

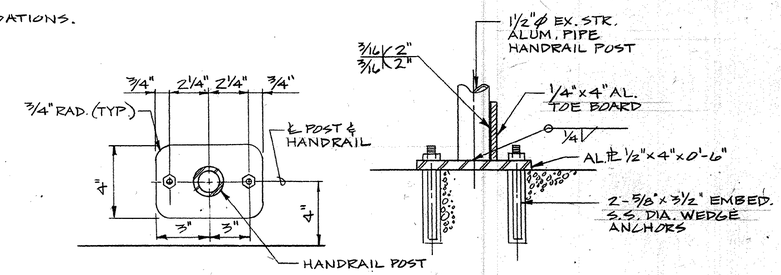
11/-S7 TYPICAL EXTRA BARS AT OPENING
NOT TO SCALE



6/-S7 STAIR TOP CONN. @ GRATING FLOOR
NOT TO SCALE



9/-S7 STAIR BOTTOM CONNECTION
NOT TO SCALE

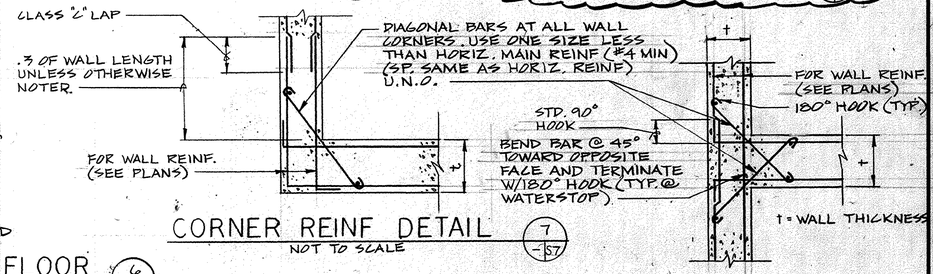


PLAN ELEVATION

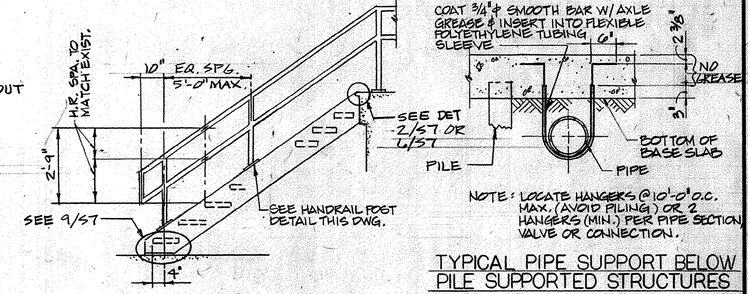
12/-S7 TYPICAL HANDRAIL POST AT CONCRETE
NOT TO SCALE

NOTE: BASE PL METAL SHALL MATCH HANDRAIL.

7/-S7 CORNER REINF. DETAIL
NOT TO SCALE



8/-S7 CORNER REINF. DETAIL
NOT TO SCALE

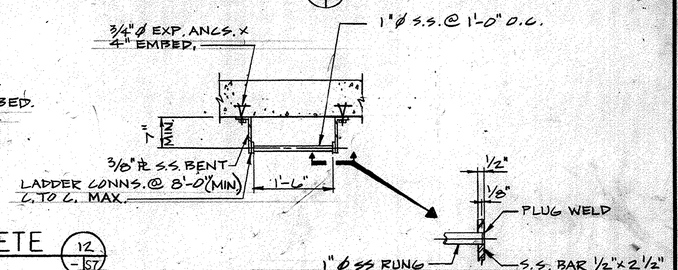


NOTE: LOCATE HANGERS @ 10'-0" O.C. MAX. (AVOID PILING) OR 2 HANGERS (MIN.) PER PIPE SECTION, VALVE OR CONNECTION.

TYPICAL PIPE SUPPORT BELOW PILE SUPPORTED STRUCTURES

DETAIL 14/-S7
N.T.S.

STAIR HANDRAIL 10/-S7
NOT TO SCALE



13/-S7 LADDER DETAIL
NOT TO SCALE

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NOTES

REV. NO.	CODE	CIRCLES	DATE	REV. BY	DESCRIPTION	CRSS APPV.
	F	1		TEM	RECORD DRAWING	
0	A	CHW	1/20/89		FOR REVIEW	

NOTE: CIRCLE ALL REVISIONS, IDENTIFY WITH DIAMOND, NUMBER AND ARROW. REMOVE ONLY CIRCLE AND ARROW BEFORE NEXT REVISION.

ISSUE CODE		C	MAT'L T.O.	F	CONST'N
A	APPROVAL	D	MAT'L PURC.	G	
B	DESIGN	E	BIDS	H	

SEAL

SIGNATURE

DATE

DR.	R. VAN HALL	DATE	12-7-88
DSGN.	M. FREESE	FILE NUMBER	
CK.		JOB NO.	V-1509
DPE			
CAD FILE NO.			

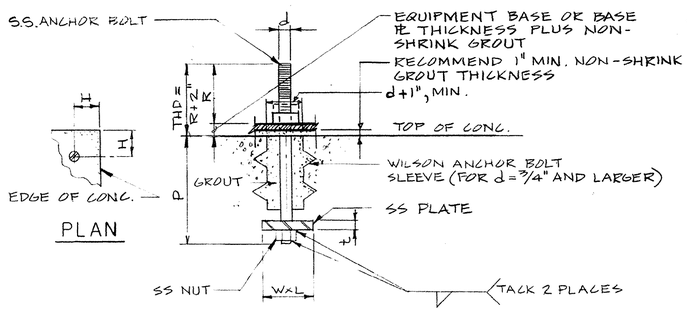
SIRRINE ENVIRONMENTAL CONSULTANTS
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GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

DRAWING TITLE
DETAILS - SHEET 2

CLIENT DRAWING NUMBER
5-01-027s

DRAWING NUMBER
C-8202 S7

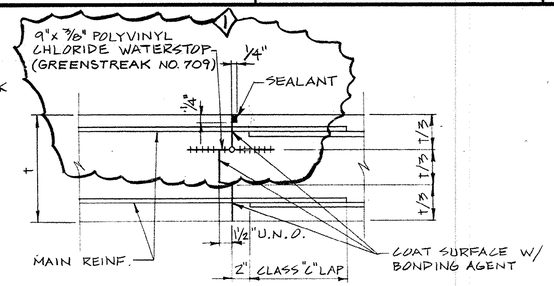


PLAN

TYPICAL ANCHOR BOLT

NOT TO SCALE

1 - S8



CONSTRUCTION JOINT (C J)

NOT TO SCALE

2 - S8

ANCHOR BOLT SCHEDULE ***

BOLT DIA. d (INCHES) *	P	PLATES W x L (INCHES)	PLATES t (IN.)	R (IN.) ONE NUT	R (IN.) TWO NUTS	MIN. H** (IN.)	ALLOW TENS. (KIPS)
1/2	0'-8"	STD. WASHER	STD. SIZE	2	2	3	2.8
5/8	0'-10"	STD. WASHER	STD. SIZE	2	2 1/2	3	4.9
3/4	1'-0"	3 x 3	1/2	2	2 1/2	4	6.3
7/8	1'-1"	3 x 3	1/2	2	3	4	8.6
1	1'-4"	4 x 4	1/2	2 1/2	3	4	11.3
1 1/8	1'-8"	4 x 4	1/2	2 1/2	3 1/2	5	14.3
1 1/4	1'-9"	4 x 4	3/4	3	4	5	17.7
1 3/8	2'-1"	5 x 5	3/4	3	4	5	21.4
1 1/2	2'-2"	5 x 5	3/4	3 1/2	4 1/2	5	25.4
1 3/4	2'-7"	6 x 6	1	4	5	5	34.6
2	2'-8"	7 x 7	1	4	5 1/2	6	45.2

* SIZE OF ANCHOR BOLT SHALL BE DETERMINED FROM CERTIFIED EQUIPMENT DRAWINGS, UNLESS INDICATED ON DWG.

** ABSOLUTE MINIMUM CLEARANCE @ EDGE OF CONCRETE (EXACT DIMENSION TO BE ESTABLISHED BY CONTRACTOR TO SUIT CERTIFIED EQUIPMENT ANCHOR BOLT LOCATIONS, SUBJECT TO OWNER'S REP. REVIEW)

*** ALL ANCHOR BOLTS, PLATES AND NUTS SHALL BE STAINLESS STEEL.

LIST OF COMPONENTS

ESTIMATED FINISHED WEIGHT

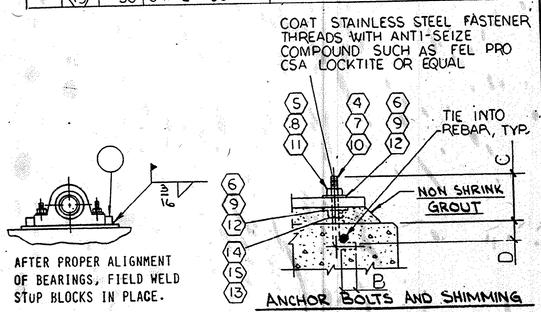
DRAWING NO. 10408-101

TITLE:

ALL LENGTHS ARE FINAL LENGTHS UNLESS OTHERWISE SPECIFIED

ORDER NO.

ADV. ORD.	REF. SYM.	QUANT.	PART NUMBER	DESCRIPTION
			ANCHORS FURNISHED BY ENVIREX (SET BY CONTRACTOR)	
	⟨1⟩		~~103-50369-1~~	~~1/2" DIA. x 7" LG. HOOK ANCHOR~~
	⟨2⟩		~~841-20825~~	~~1/2" DIA. HEX NUT~~
	⟨3⟩		~~841-21930~~	~~1/2" DIA. CUTWASHER~~
	⟨4⟩	40	10235-106-100	1 1/8" DIA X 1'-0 LG HOOK ANCHOR 304SS
	⟨5⟩	40	841-20604	1 1/8" DIA. HEX NUT 316 SS
	⟨6⟩	80	841-22237	1 1/8" DIA. CUTWASHER 18-8 SS
	⟨7⟩	48	103-50369-9	3/4" DIA x 9" LG. HOOK ANCHOR 304SS
	⟨8⟩	48	841-20385	3/4" DIA. HEX NUT 316 SS
	⟨9⟩	96	841-22090	3/4" DIA. CUTWASHER 18-8 SS
	⟨10⟩	56	103-50369-8	1" DIA. x 9" LG. HOOK ANCHOR 304 SS
	⟨11⟩	56	841-20565	1" DIA. HEX NUT 316 SS
	⟨12⟩	112	841-22220	1" DIA. CUTWASHER 18-8 SS
	⟨13⟩	40	841-21236	1 1/8" DIA JAM NUT 316 SS
	⟨14⟩	48	841-21085	3/4" DIA JAM NUT 316 SS
	⟨15⟩	56	841-21195	1" DIA JAM NUT 316 SS



ANCHOR BOLTS AND SHIMMING

DIA X LG ANCHOR	MAT'L	B	C PROJ.	D
3/4" X 9"	304 SS	4"	4"	5"
1" X 9"	"	"	4"	4"	5"
1 1/8" X 1' 0"	"	"	6"	4 1/2"	7 1/2"

MUM,

GENERAL NOTES:

1 MATCH EXISTING CONSTRUCTION UNLESS MORE STRINGENT CONDITIONS ARE SPECIFIED OR NOTED HEREIN.

2 CONTRACTOR SHALL VERIFY EXISTING FIELD CONDITIONS AND DIMENSIONS PRIOR TO FABRICATION.

3 CONFORM WITH ACI 318 AND ACI STANDARD FOR "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT."

4 CONCRETE COMPRESSIVE STRENGTH: 5000 PSI AT 28 DAYS, EXCEPT CONCRETE FILL MAY BE 3000 PSI AT 28 DAYS.

5 REINFORCING STEEL: ASTM A615, GRADE 60.

6 WELDED WIRE FABRIC: ASTM A185.

7 PILES SHALL BE TIMER, TREATED IN ACCORDANCE WITH SPECIFICATION AND HAVE AN 8 INCH MINIMUM TIP DIAMETER.

8 PILES SHALL BE DRIVEN TO A MINIMUM SAFE ALLOWABLE BEARING CAPACITY OF 20 TONS (PLAN DRIVING OBJECTIVE) AS CALCULATED BY FORMULAS SPECIFIED, EXCEPT 25 TON CAPACITY SHALL BE USED WHERE INDICATED ON DRAWINGS.

9 THE PLAN TIP ELEVATION IS MINUS 10 FEET (APPROXIMATELY 30 FEET BELOW EXISTING GRADE).

10 STRUCTURAL STEEL: _____ ASTM A36.

11 WELDING: AWS; E70XX ELECTRODES (FOR STEEL).

12 REINFORCING CONTINUOUS AROUND ALL CORNERS UNLESS SHOWN OTHERWISE.

13 REINFORCING CONTINUOUS THROUGH CONSTRUCTION JOINTS UNLESS SHOWN OTHERWISE.

14 TERMINATE ALL REINFORCING STEEL AT EXPANSION JOINTS UNLESS SHOWN OTHERWISE.

15 USE CLASS "C" LAPS ON REINFORCING BARS, UNLESS OTHERWISE DIMENSIONED.

16 EXPOSED CONCRETE CORNER CHAMFER: 1" UNLESS SHOWN OTHERWISE.

17 KEYWAY DIMENSIONS: DEPTH 1-1/2"; WIDTH ONE-THIRD THAT OF MEMBER UNLESS SHOWN OTHERWISE.

18 ALL CONSTRUCTION JOINTS SHALL HAVE KEYWAYS UNLESS SHOWN OTHERWISE.

19 COAT CONSTRUCTION JOINTS WITH BONDING AGENT PRIOR TO PLACING CONCRETE AGAINST THE JOINT.

20 CONSTRUCTION JOINTS AS SHOWN MAY BE VARIED TO SUIT PLACING SEQUENCE PROVIDED THE RELOCATION, ADDITION, OR DELETION OF CONSTRUCTION JOINTS IS APPROVED BY THE OWNER'S REPRESENTATIVE.

21 CONCRETE IN VERTICAL COLUMNS OR WALLS SHALL BE IN PLACE BETWEEN ONE AND TWO HOURS, OR UNTIL CONCRETE IS NO LONGER PLASTIC, BEFORE CONCRETE IS PLACED FOR HORIZONTAL SECTION AT TOP OF VERTICAL SECTION. REMOVE LAITANCE AND ROUGHEN SURFACE BEFORE PLACING CONCRETE FOR HORIZONTAL SECTION.

22 MAIN REINFORCING CONCRETE COVER UNLESS OTHERWISE SHOWN. 2"* WITH FOLLOWING EXCEPTIONS: 3" WHEN DEPOSITED AGAINST EARTH.

23 PROVIDE WATERSTOPS FOR ALL JOINTS IN WATER CONTAINMENT STRUCTURES.

24 SECURE WATERSTOPS TO PREVENT DISPLACEMENT OR FOLDING OVER DURING PLACEMENT OF CONCRETE.

25 ALL BARS INDICATED AS BEING BENT SHALL HAVE STANDARD 90° HOOKS UNLESS SHOWN OTHERWISE. 180° HOOKS ARE AN ACCEPTABLE ALTERNATE WHERE APPROVED BY OWNER'S REPRESENTATIVE.

26 CONSTRUCTION CRANE OR OTHER HEAVY ERECTION EQUIPMENT SHALL NOT BE PERMITTED ON SLABS.

27 PROVIDE SETTING TEMPLATES TO POSITION ANCHOR BOLTS PRIOR TO PLACING CONCRETE.

28 ALL METAL FABRICATION EMBEDDED IN CONCRETE, OTHER THAN REINFORCING, SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 AND ASTM A386 AS APPLICABLE, UNLESS STAINLESS STEEL IS SPECIFIED.

29 ANCHOR BOLTS FOR ALL MACHINERY OVER 30 HORSEPOWER SHALL HAVE TWO HEAVY HEX NUTS.

30 PROVIDE STAINLESS STEEL BOLTS AND PLATE WASHERS FOR SLOTTED CONNECTIONS. TIGHTEN THUMB-TIGHT AND TACK WELD NUT TO BOLT.

31 ALL TOE BOARD PLATES SHALL EXTEND A MINIMUM OF 4 INCHES ABOVE WALKING SURFACE AND HAVE 1/4" CLEARANCE AT JOINTS.

32 BUILDING CODE: STANDARD BUILDING CODE, LATEST EDITION AS PUBLISHED BY SOUTHERN BUILDING CODE CONGRESS INTERNATIONAL, INC.

33. ANCHOR BOLTS: STAINLESS STEEL.

CRS SIRRINE, INC. DATE _____

NOTES

REV. NO.	CODE	CIRCLES	DATE	REV. BY	DESCRIPTION	CRSS APPV.
1	F	I	11/11	TEM	RECORD DRAWING	
0	A		1/26/89	CHW	FOR REVIEW	

NOTE: CIRCLE ALL REVISIONS, IDENTIFY WITH DIAMOND, NUMBER AND ARROW. REMOVE ONLY CIRCLE AND ARROW BEFORE NEXT REVISION.

ISSUE CODE					
A	APPROVAL	D	MAT'L PURC.	G	
B	DESIGN	E	BIDS	H	
		C	MAT'L T.O.	F	CONST'N

SEAL

Melvin R. Freese
SIGNATURE

DATE

SOUTH CAROLINA REGISTERED No. 9014 PROFESSIONAL MELVIN R. FREESE

DR.	R VAN HALL	DATE	12-7-88
DSGN.	M. FREESE	FILE NUMBER	
CK.	M. Freese		
DPE		JOB NO.	V-1509
CAD FILE NO.			

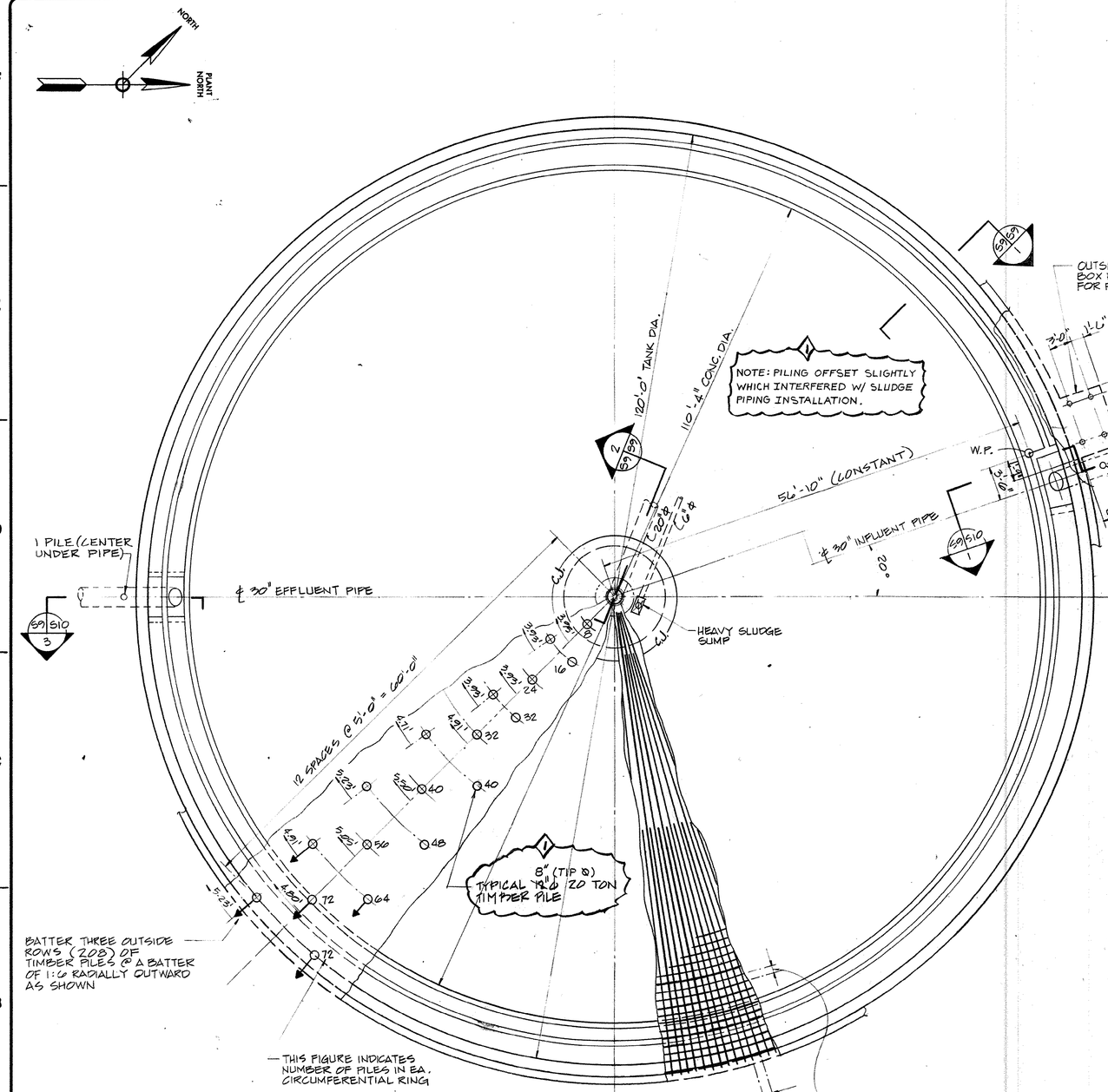
SIRRINE ENVIRONMENTAL CONSULTANTS
Charleston, South Carolina
CRS SIRRINE Savannah, Georgia

GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

DRAWING TITLE
DETAILS - SHEET 3

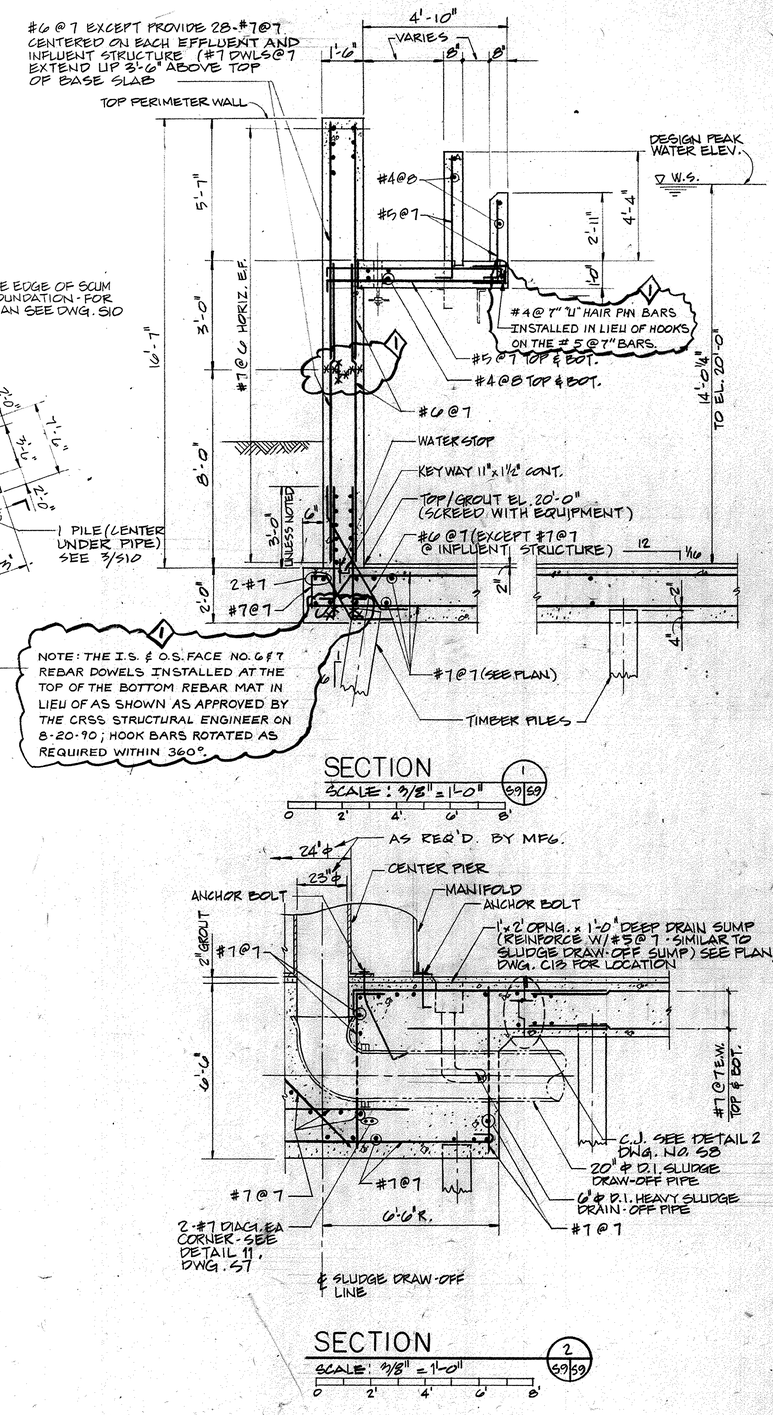
CLIENT DRAWING NUMBER
5-01-028 s

DRAWING NUMBER
C-8202 S8



CLAIRIFIER
FOUNDATION AND PILING PLAN

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



SECTION

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

1 / 59/S9

SECTION

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

2 / 59/S9

NOTES

REV. NO.	CODE CIRCLES	DATE	REV. BY	DESCRIPTION
1	F 1	11/91	TEM	RECORD DRAWING
0	A	1/20/89	CHW	FOR REVIEW

NOTE: CIRCLE ALL REVISIONS, IDENTIFY WITH DIAMOND, NUMBER AND ARROW. REMOVE ONLY CIRCLE AND ARROW BEFORE NEXT REVISION. CRSS APPV.

ISSUE CODE					
A	APPROVAL	D	MAT'L PURC.	G	
B	DESIGN	E	BIDS	H	
		C	MAT'L T.O.	F	CONST'N

SEAL

SIGNATURE

DATE

DR.	H. WEAVER	DATE	12-8-88
DSGN.	M. FREESE	FILE NUMBER	
CK.	M. Freese		
DPE		JOB NO.	V-1509
CAD FILE NO.			

SIRRINE ENVIRONMENTAL CONSULTANTS
Charleston, South Carolina
CRS SIRRINE Savannah, Georgia

GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

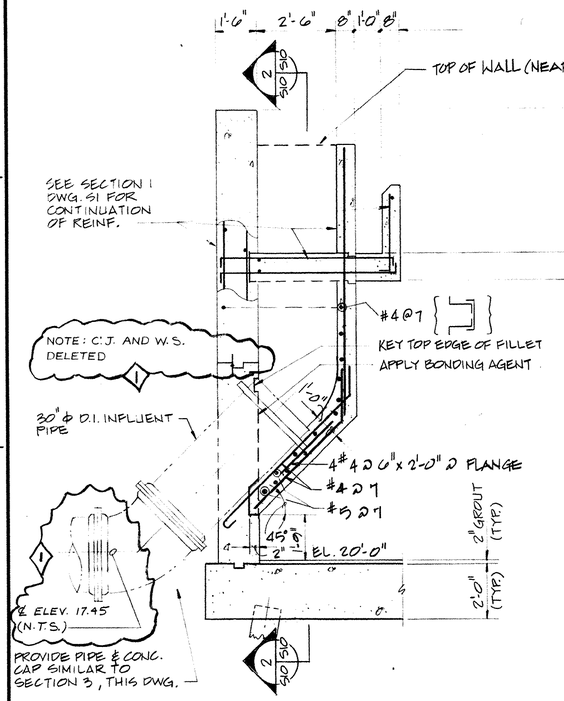
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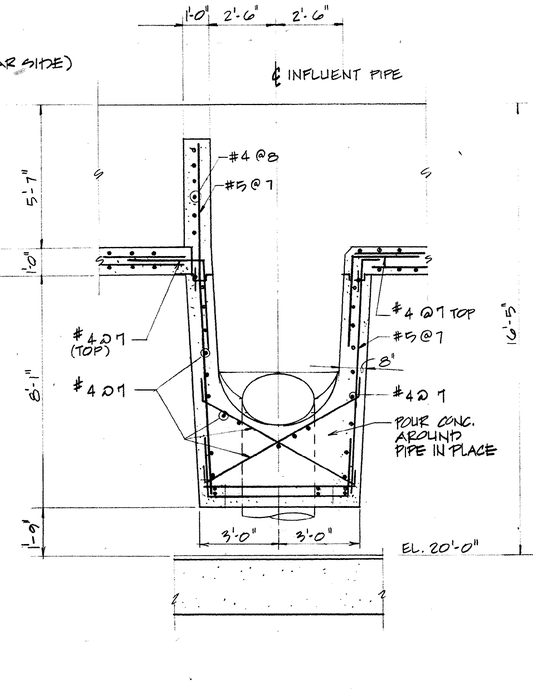
CLARIFIER FOUNDATION & PILING PLAN

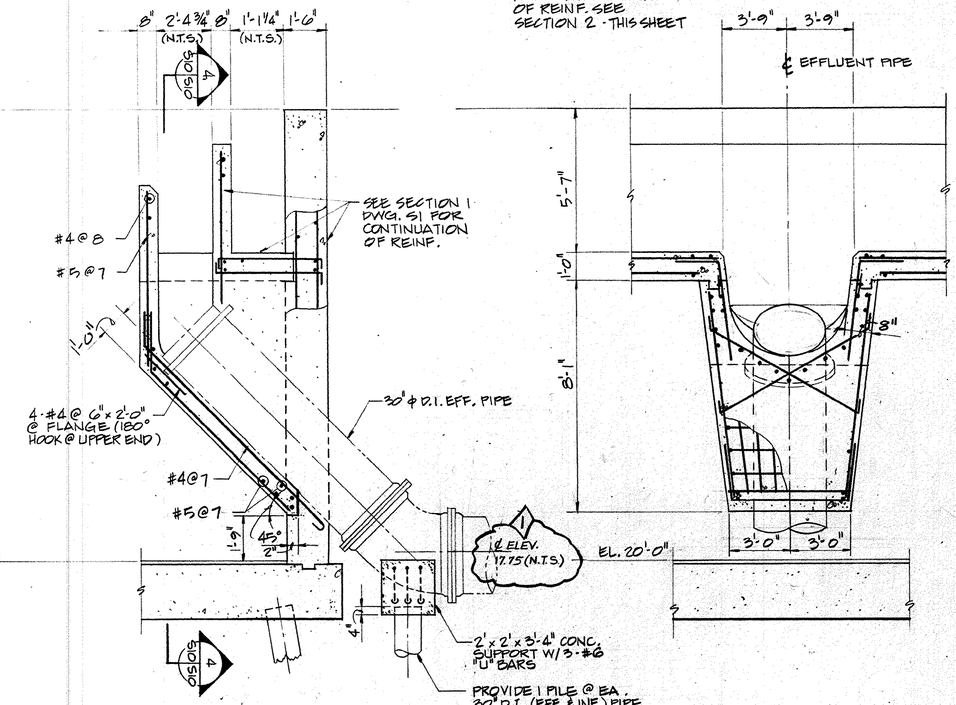
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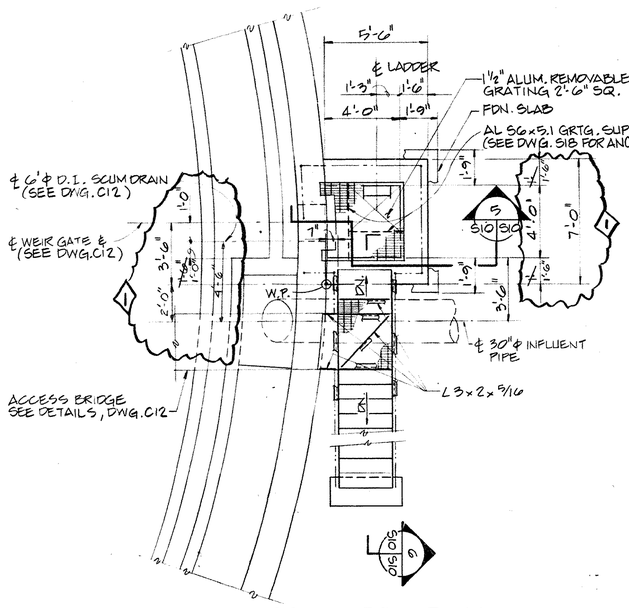
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C-8202 S9

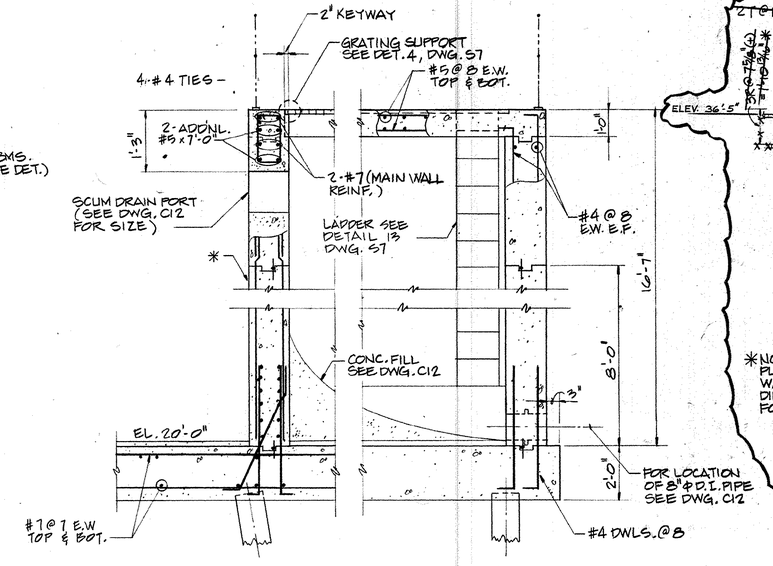
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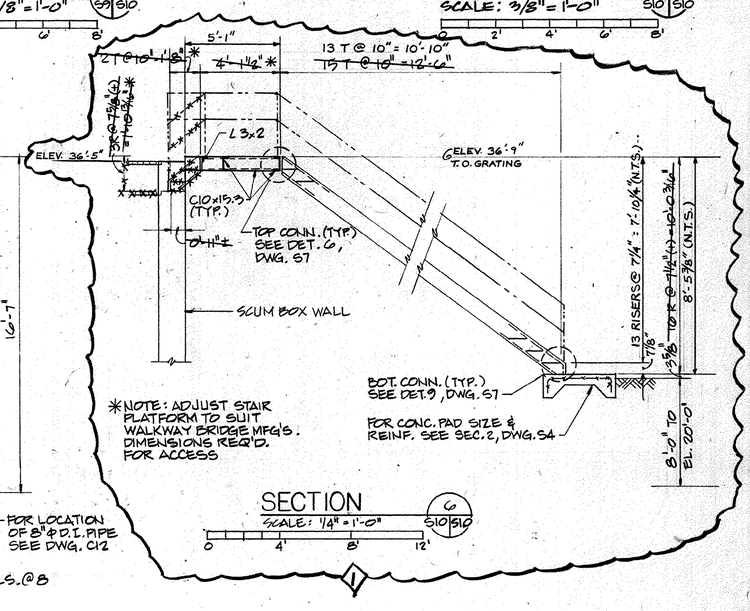












*NOTE: SEE DWG. S9 SECTION 1 FOR TYPICAL REINF, KEYWAY & WATERSTOP

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NOTES

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ISSUE CODE		C	MAT'L T.O.	F	CONST'N
A	APPROVAL	D	MAT'L PURC.	G	
B	DESIGN	E	BIDS	H	

SEAL

Melvin H. Weaver
SIGNATURE

DATE

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER MELVIN H. WEAVER

DR.	H. WEAVER	DATE	12-9-88
DSGN.	M. FREESE	FILE NUMBER	
CK.	M. Freese		
DPE		JOB NO.	V-1509
CAD FILE NO.			

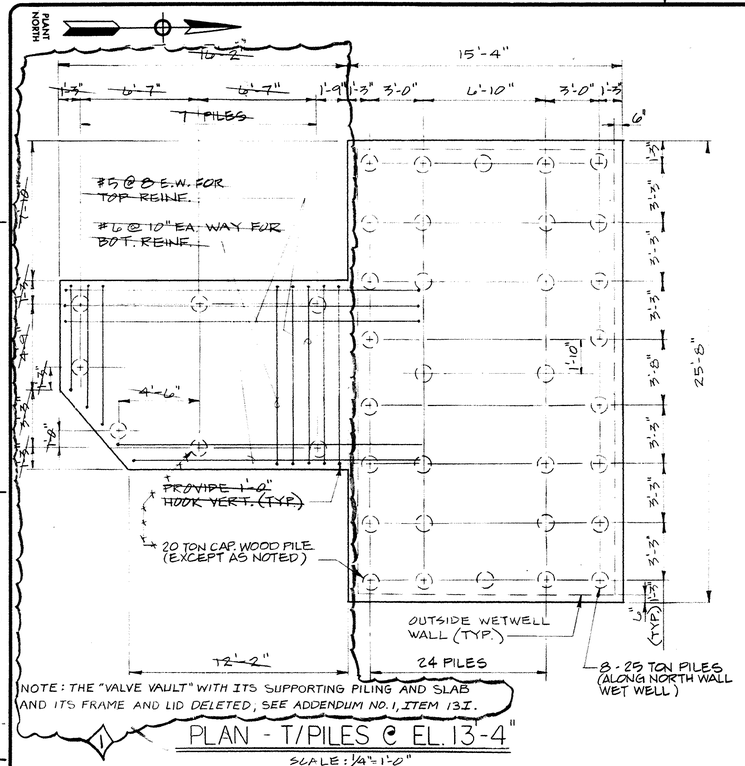
SIRRINE ENVIRONMENTAL CONSULTANTS
Charleston, South Carolina
CRS SIRRINE Savannah, Georgia

GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

DRAWING TITLE
CLARIFIER SCUM BOX PLAN & SECTIONS

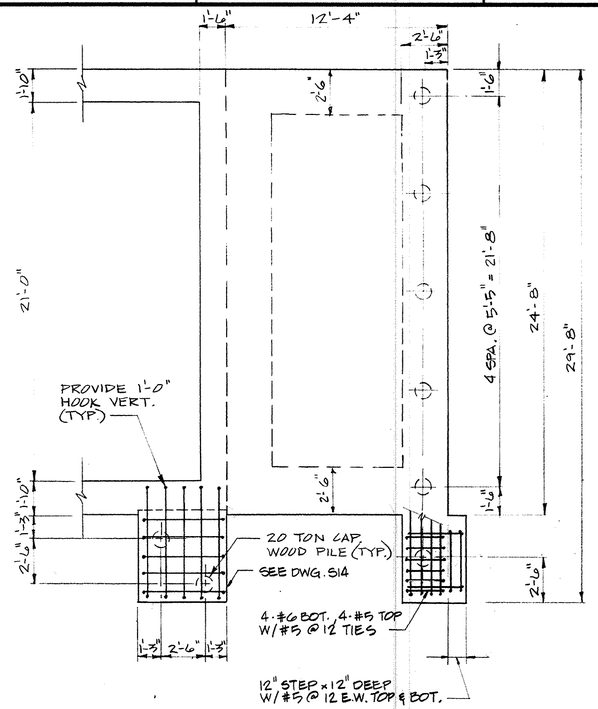
CLIENT DRAWING NUMBER
5-01-030 s

DRAWING NUMBER
C-8202 S10



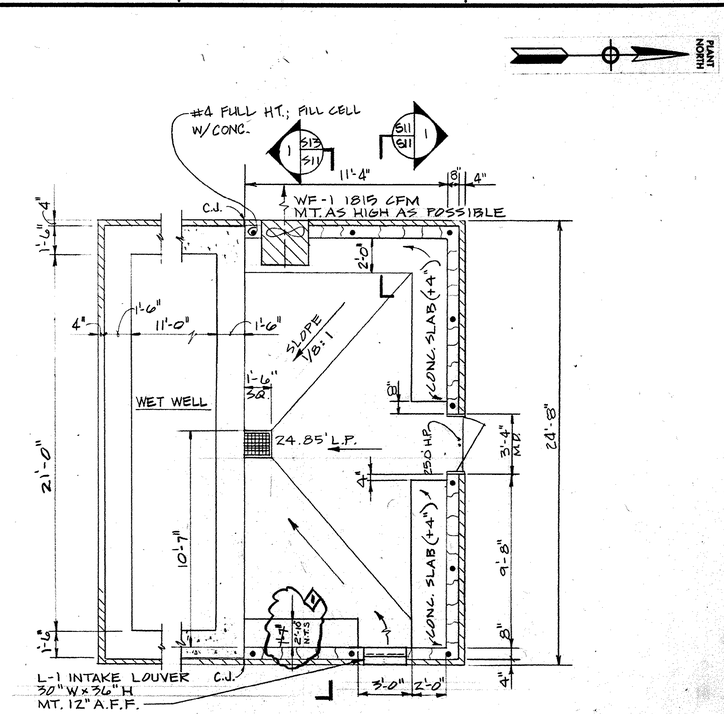
PLAN - T/PILES @ EL. 13-4"

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



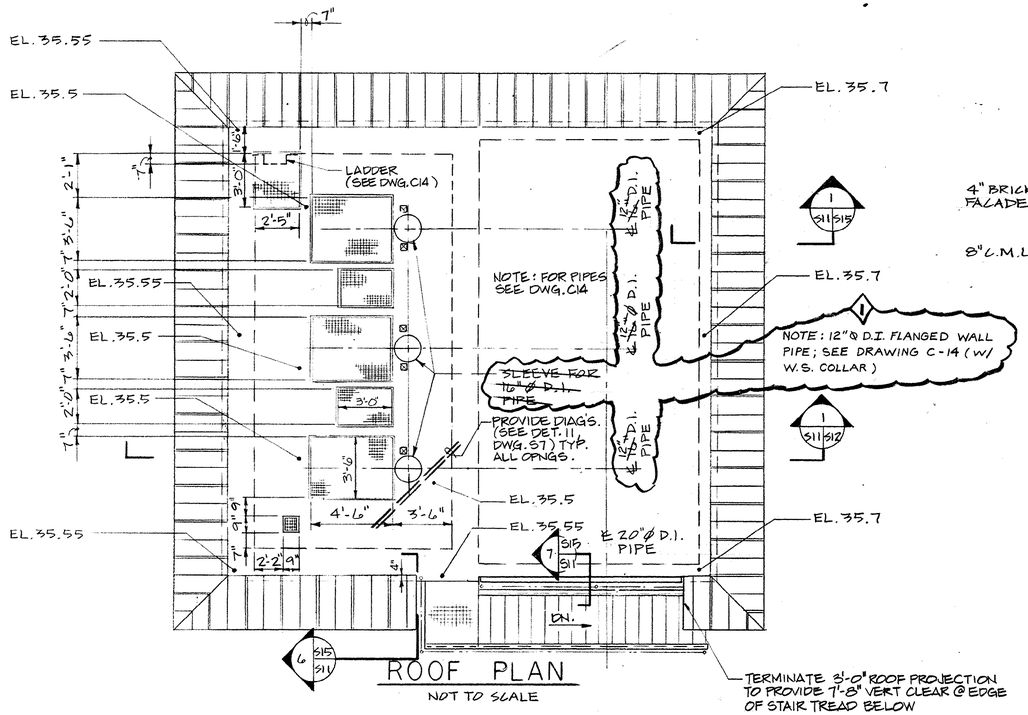
PLAN - T/PILES @ EL. 23'-4"

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



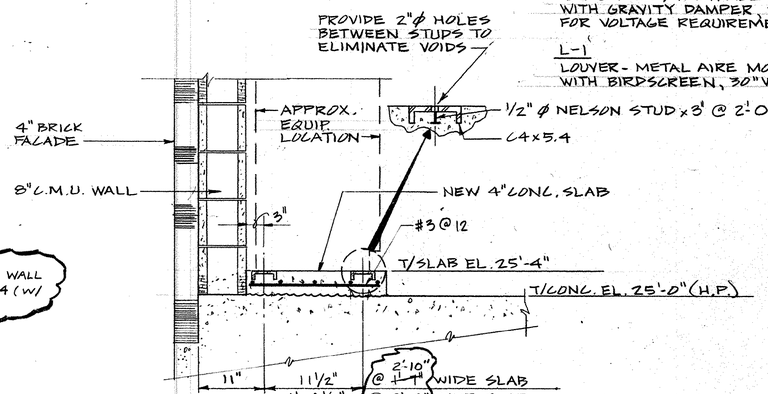
MCC ROOM PLAN - T.O.C. 25'-0" UNO

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



ROOF PLAN

NOT TO SCALE



NOTE:
CONTRACTOR TO UTILIZE EMBEDDED CHANNELS AS SCREED GUIDES WHEN POURING ELEVATED SLAB.

SECTION

SCALE: 1" = 1'-0"

WF-1
WALL FAN - LOREN COOK TYPE APB MODEL NO. 24F3B, 1/4 H.P., 805 R.P.M., 1815 CFM @ 1/4" S.P. ALL ALUMINUM CONSTRUCTION WITH GRAVITY DAMPER. SEE ELECTRICAL DWG'S FOR VOLTAGE REQUIREMENTS & CONTROLS.

L-1
LOUVER - METAL AIRE MODEL NO. 0AL-2-F WITH BIRDSCREEN, 30"W & 36"H.

NOTES

FOR DETAILS & NOTES SEE DWGS. S7 & S8.

REV. NO.	CODE CIRCLES	DATE	REV. BY	DESCRIPTION	CRSS APPV.
1	F 1 TEM	11/91		RECORD DRAWING	
0	A CHW	1/88		FOR REVIEW	

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ISSUE CODE	C MAT'L T.O.	F. CONST'N	
A APPROVAL	D MAT'L PURC.	G.	
B DESIGN	E BIDS	H	

SEAL

SIGNATURE

DATE

DR.	R. VAN HALL	DATE	12-8-88
DSGN.	R.C. GRIM	FILE NUMBER	
CK.	M. Treece	JOB NO.	V-1509
DPE			
CAD FILE NO.			

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Charleston, South Carolina
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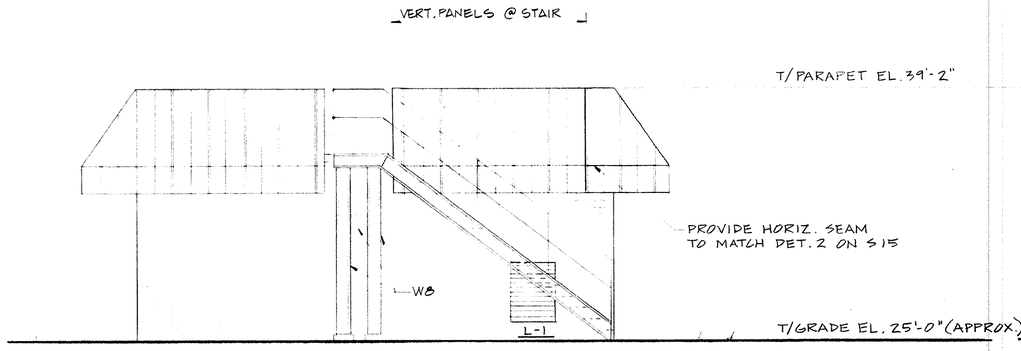
GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD. ADDITION
HORRY COUNTY, S.C.

DRAWING TITLE
SLUDGE PUMP STATION & MCC BLDG. PILING, FOUNDATION, ROOF & FIRST FLOOR PLAN

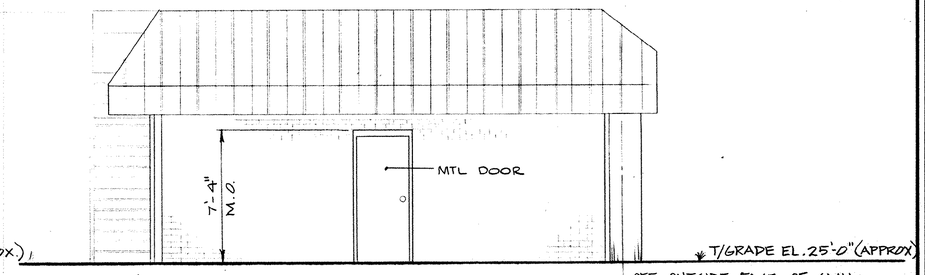
CLIENT DRAWING NUMBER
5-01-031 S

DRAWING NUMBER
C-8202- S11

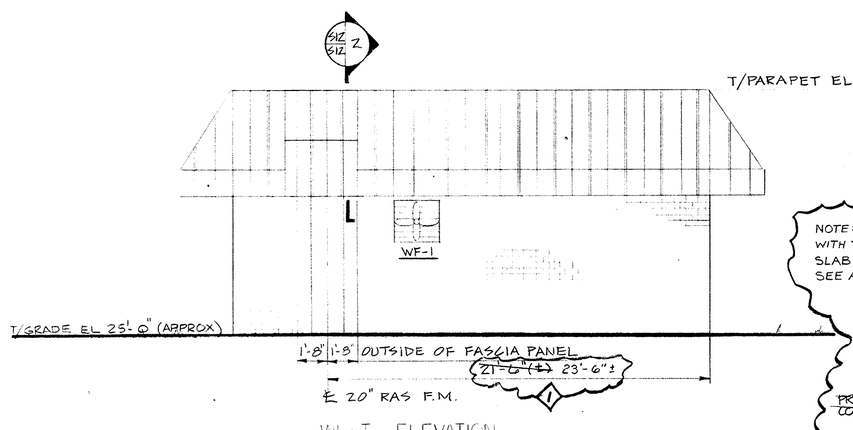
COPYRIGHT CRS SIRRINE, INC. DATE



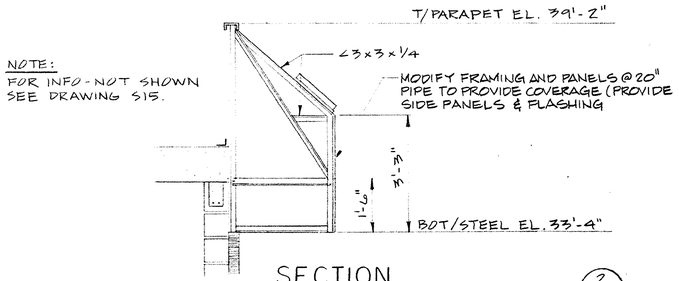
EAST ELEVATION
LOOKING WEST



NORTH ELEVATION
LOOKING SOUTH

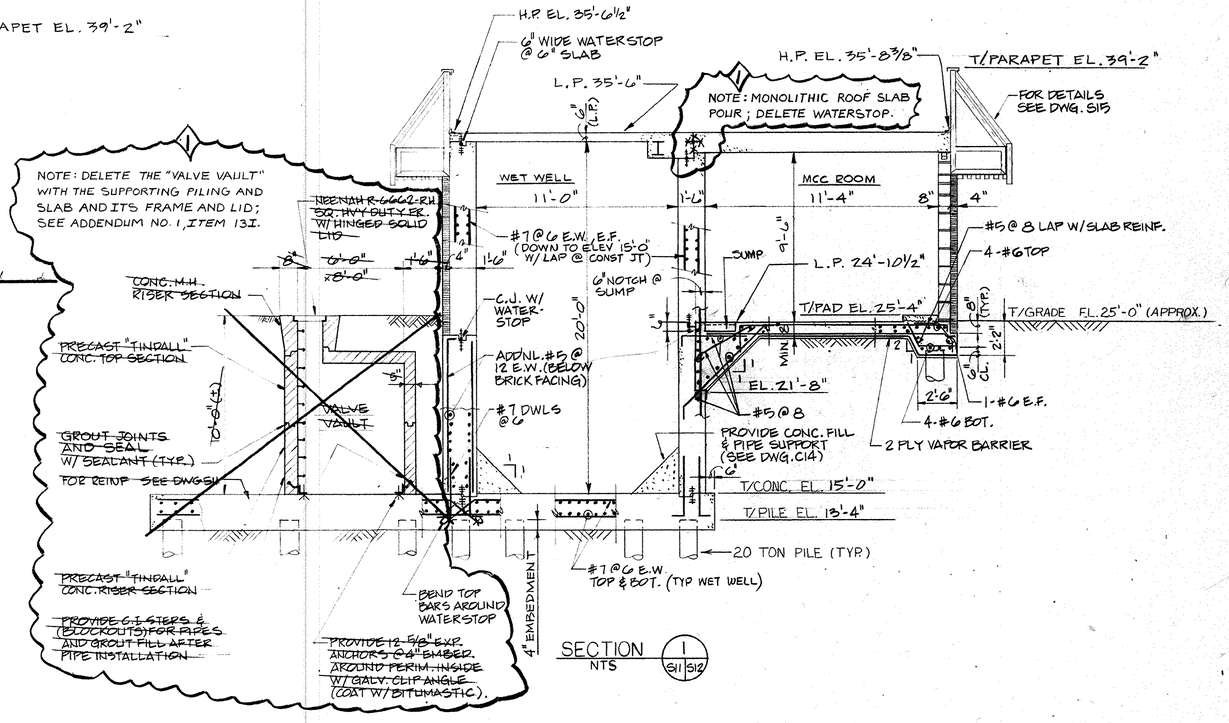


WEST ELEVATION
LOOKING EAST



SECTION
SCALE: 1/2" = 1'-0"
2 S12/S12

0 1' 2' 3' 4' 5' 6'



SECTION
NTS
1 S11/S12

COPYRIGHT CRS SIRRINE, INC. DATE

NOTES

1. PROVIDE 8" CMU BOND BEAMS OVER ALL WALL PENETRATIONS. BRICK LINTELS SHALL BE AS SHOWN ON DWG. S13.
2. ~~VALVE VAULT TO BE CENTERED OVER PLUG VALVE AS SHOWN ON DWG. C14.~~ DELETE; SEE ADDENDUM NO. 1, ITEM 13I (1)

REV. NO.	CODE	REV. BY	DATE	DESCRIPTION	CRSS APPV.
1	F I TEM		11/91	RECORD DRAWING	
0	A CHW		10/89	FOR REVIEW	

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ISSUE CODE					
A	APPROVAL	D	MAT'L PURC.	G	
B	DESIGN	E	BIDS	H	
		C	MAT'L T.O.	F	CONST'N

SIGNATURE Melvin R. Freese

DATE

SEAL: SOUTH CAROLINA REGISTERED NO. 9814 PROFESSIONAL ENGINEER MELVIN R. FREESE

DR.	R. VAN HALL	DATE	12-8-88
DSGN.	R.C. GRIM	FILE NUMBER	
CK.	M. Freese	JOB NO.	V-1509
DPE			
CAD FILE NO.			

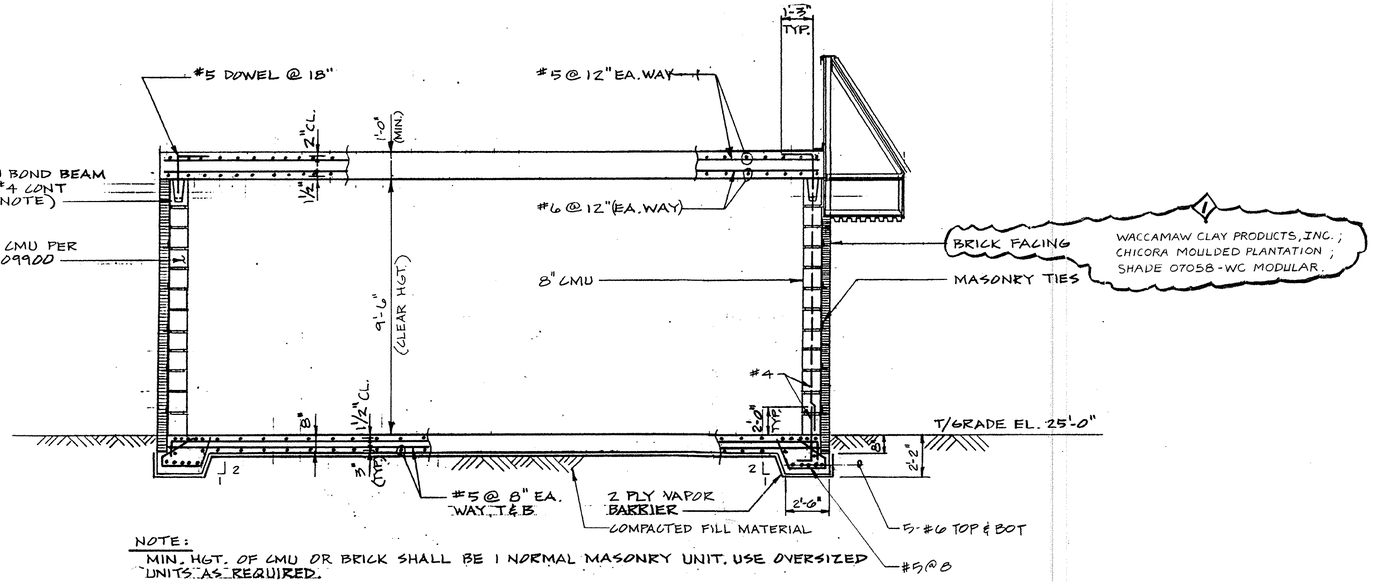
SIRRINE ENVIRONMENTAL CONSULTANTS
Charleston, South Carolina
Savannah, Georgia
CRS SIRRINE

GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

DRAWING TITLE
SLUDGE PUMP STATION & MCC BLDG. ELEVATIONS & SECTION

CLIENT DRAWING NUMBER
5-01-032 s

DRAWING NUMBER
C-8202 - S12



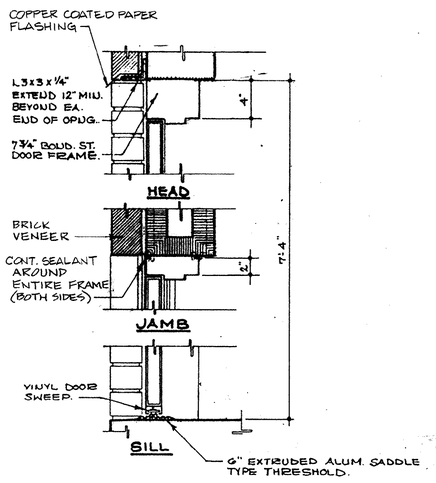
NOTE:
MIN. HGT. OF CMU OR BRICK SHALL BE 1 NORMAL MASONRY UNIT. USE OVERSIZED UNITS AS REQUIRED.

SECTION

1 S11513

0 2' 4' 6' 8'

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



DOOR DETAIL

NOT TO SCALE

DAMPROOFING

1. Heavy bodied bituminous compound suitable for brush or spray application and formulated to comply with FS-S-A-701. Examples: Tremer 461 Asphaltic Coating or equal applied per manufacturer's instructions.
2. Water Repellent coating for brick - Thompson's Water Seal No. 101 applied per manufacturer's instructions.
3. Apply two coats on outside face of all walls below finished grade from top of footings to finished grade.

FINISH HARDWARE

1. All door hardware shall match existing plant hardware and the door shall be keyed using the plant key system. (RUSWIN)

DOORS AND FRAMES

1. Door and frames shall be as manufactured by ~~Fenestra~~ STEELCRAFT or approved equal.
2. Door shall be made of 18 gage sheet steel and frame shall be made of 16 gage sheet steel.
3. Door shall be bonderized and receive one coat of manufacturer's primer. Frames shall be bonderized and receive one coat of backed on-metallic primer.
4. Door and frame shall be mortised, reinforced, drilled and tapped at the factory.
5. Installation shall be per manufacturer's printed instructions and utilizing good construction methods.

NOTES

1. W.R. MEADOWS, INC. SEALTIGHT DAMPPROOFING, SOLVENT TYPE.

REV. NO.	CODE CIRCLES	REV. BY	DATE	DESCRIPTION	CRSS. APPV.
1	F I TEM			RECORD DRAWING	
0	A CHW		1/26/89	FOR REVIEW	

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ISSUE CODE		C	MAT'L T.O.	F	CONST'N
A	APPROVAL	D	MAT'L PURC.	G	
B	DESIGN	E	BIDS	H	

SEAL

Melvin R. Freese
SIGNATURE

DATE

SOUTH CAROLINA REGISTERED NO. 6814 PROFESSIONAL ENGINEER MELVIN R. FREESE

DR.	R. VAN HALL	DATE	12-11-88
DSGN.	R.C. GRIM	FILE NUMBER	
CK.	M. Freese		
DPE	W.R. GALLAGHER	JOB NO.	V-1509
CAD FILE NO.			

SIRRINE ENVIRONMENTAL CONSULTANTS
Charleston, South Carolina
CRS SIRRINE Savannah, Georgia

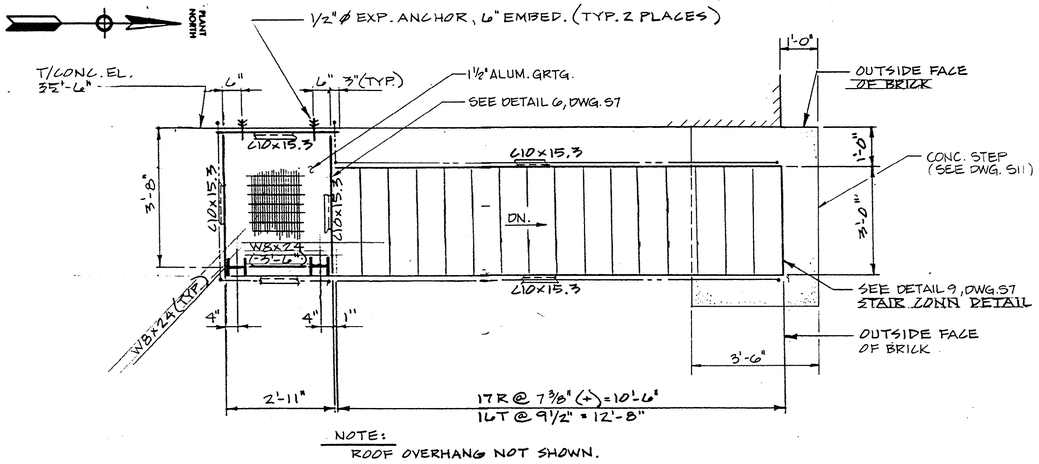
GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

DRAWING TITLE
SLUDGE PUMP STATION & MCC BLDG. SECTIONS

CLIENT DRAWING NUMBER
5-01-033 s

DRAWING NUMBER
C-8202- S13

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NOTE:
ROOF OVERHANG NOT SHOWN.

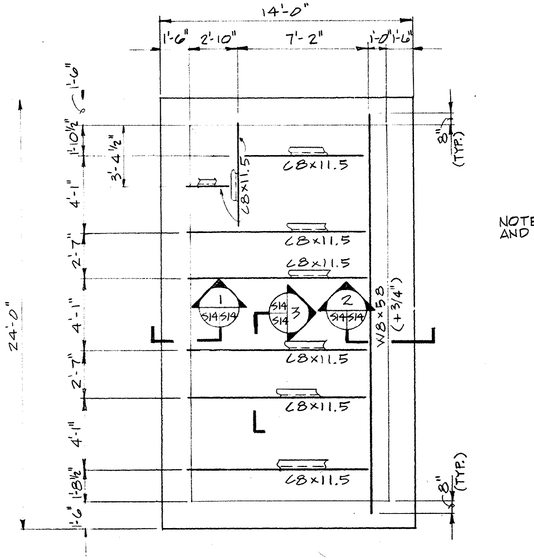
STAIR FRAMING PLAN – T/STEEL @ LANDING EL. 35'-5"

(T/GRATING EL. ±11½")

0 1' 2' 3' 4' 5' 6'

SCALE: ½"=1'-0"

SEE DWG. S7 FOR STAIR AND HANDRAIL DETAILS

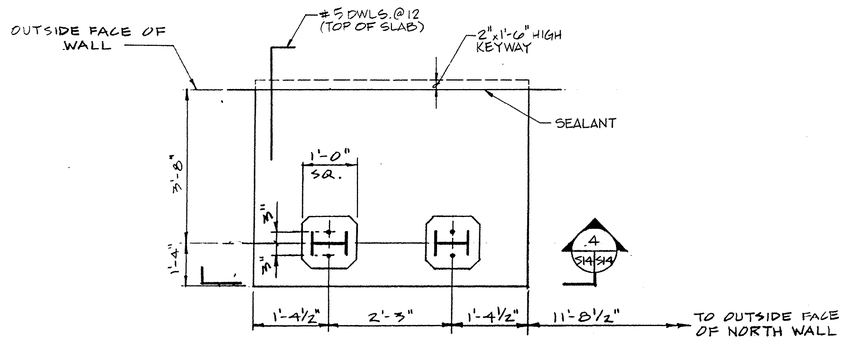


NOTE: FOR LOCATION OF GRATING AND CONC. OPNGS. SEE DWG. C14 & S11

FRAMING PLAN – WET WELL ROOF – @ T/STL. EL. 35'-2" U.N.O.

0 4' 8' 12'

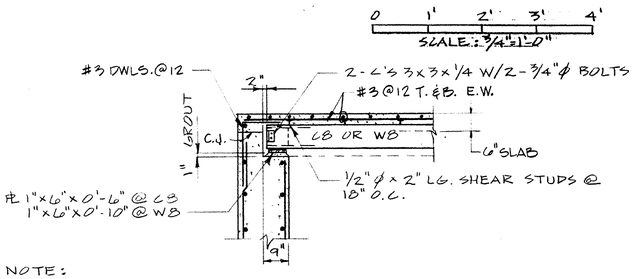
SCALE: ¼"=1'-0"



PLAN – STAIR SUPPORTS (T/CONC EL. 25'-0")

0 1' 2' 3' 4'

SCALE: ¾"=1'-0"



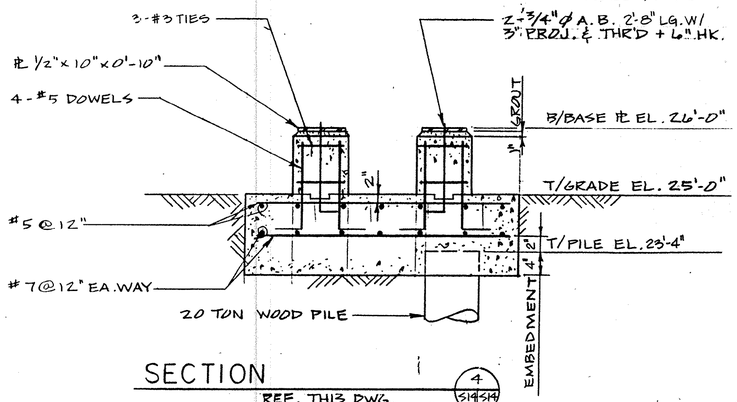
NOTE:
FILL POCKET W/CONC. WHEN ROOF SLAB IS POURED.

SECTION

REF. THIS DWG. 1 S14/S14

0 1' 2' 3' 4' 5' 6'

SCALE: ½"=1'-0"

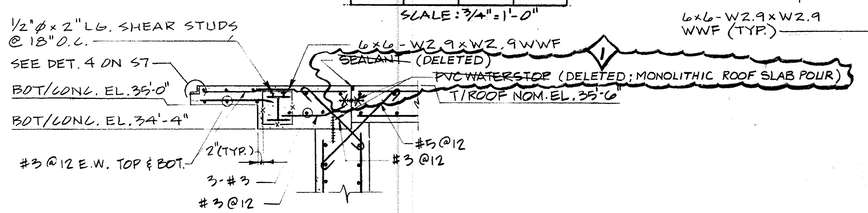


SECTION

REF. THIS DWG. 4 S14/S14

0 1' 2' 3' 4'

SCALE: ¾"=1'-0"

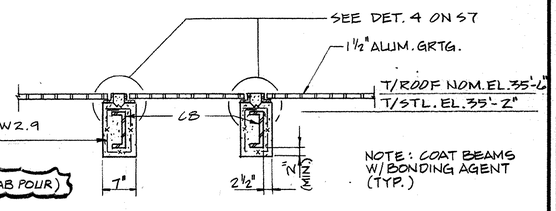


SECTION

REF. THIS DWG. 2 S14/S14

0 1' 2' 3' 4' 5' 6'

SCALE: ½"=1'-0"



SECTION

REF. THIS DWG. 3 S14/S14

0 1' 2' 3' 4'

SCALE: ¾"=1'-0"

COPYRIGHT CRS SIRRINE, INC. DATE _____

NOTES

REV. NO.	CODE CIRCLES	REV. BY	DATE	DESCRIPTION	CRSS APPV.
1	F 1	TEM	11/91	RECORD DRAWING	
0	A	CHW	9/91	FOR REVIEW	

NOTE: CIRCLE ALL REVISIONS, IDENTIFY WITH DIAMOND, NUMBER AND ARROW. REMOVE ONLY CIRCLE AND ARROW BEFORE NEXT REVISION.

ISSUE CODE					
A	APPROVAL	D	MAT'L PURC.	G	
B	DESIGN	E	BIDS	H	
C	MAT'L T.O.	F	CONST'N		

SEAL

SIGNATURE

DATE

SOUTH CAROLINA REGISTERED No. 9814 PROFESSIONAL ENGINEER WALTER R. FREES

DR.	R.VAN HALL	DATE	12-11-88
DSGN.	R.C. GRIM	FILE NUMBER	
CK.	M.R. Frees		
DPE		JOB NO.	V-1509
CAD FILE NO.			

SIRRINE ENVIRONMENTAL CONSULTANTS

Charleston, South Carolina

CRS SIRRINE Savannah, Georgia

GRAND STRAND
WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

DRAWING TITLE

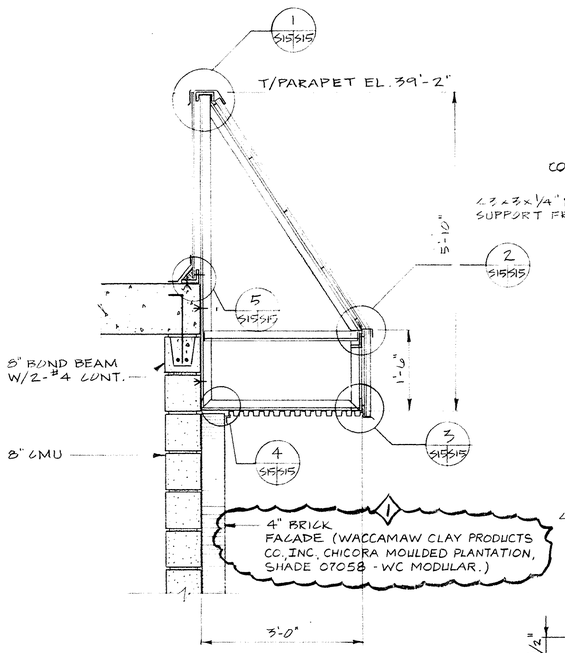
SLUDGE PUMP STATION & MCC BLDG.
FRAMING PLANS & SECTIONS

CLIENT DRAWING NUMBER

5-01-034 s

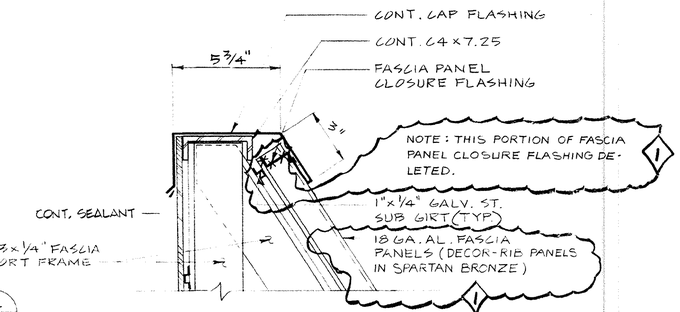
DRAWING NUMBER

C8202 S14

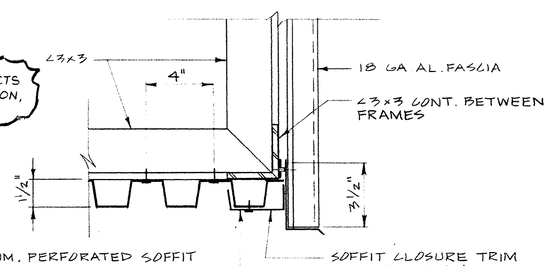


SECTION
SCALE: 3/4" = 1'-0"
1 S11/S15

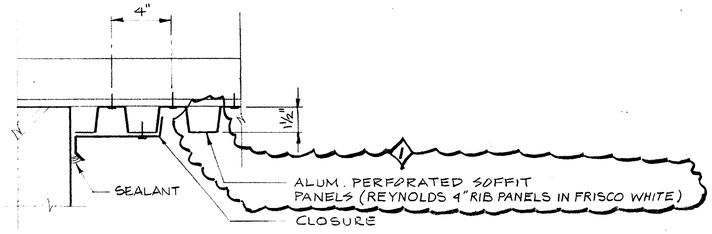
NOTE: OVERHANG SUPPORT FRAME OCCURS @ 4'-0" C/L AROUND PERIMETER OF BLDG. AS SHOWN ON DRAWING S11.



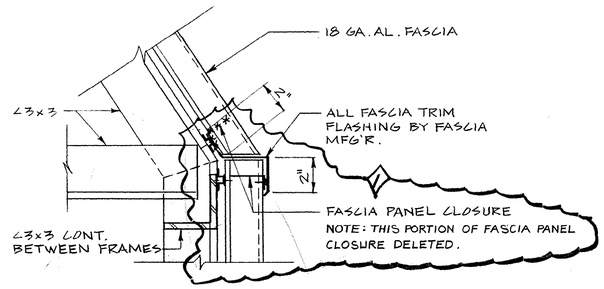
DETAIL
SCALE: 3" = 1'-0"
REF. THIS DWG.
1 S15/S15



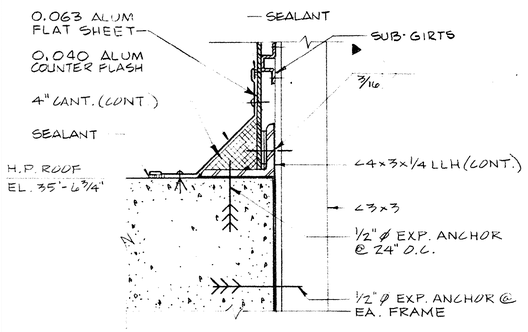
DETAIL
SCALE: 3" = 1'-0"
REF. THIS DWG.
3 S15/S15



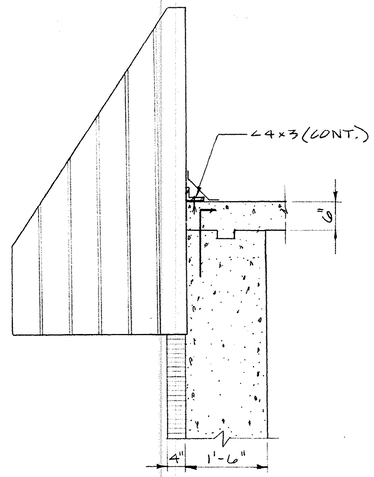
DETAIL
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REF. THIS DWG.
4 S15/S15



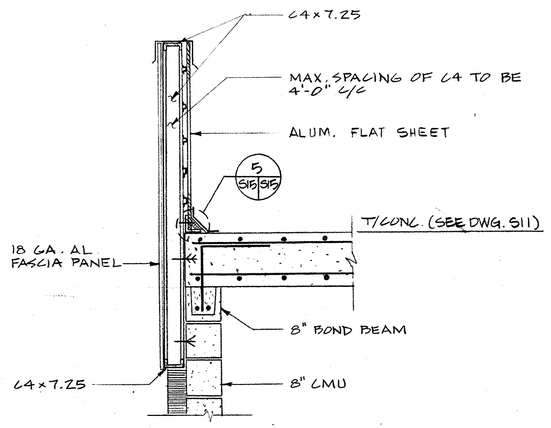
DETAIL
SCALE: 3" = 1'-0"
REF. THIS DWG.
2 S15/S15



DETAIL
SCALE: 3" = 1'-0"
REF. THIS DWG.
5 S15/S15



SECTION
SCALE: 3/4" = 1'-0"
6 S11/S15



SECTION
SCALE: 3/4" = 1'-0"
7 S11/S15

NOTE: SEE OTHER DETAILS ON THIS DRAWING FOR INFO. NOT SHOWN.

COPYRIGHT CRS SIRRINE, INC. DATE _____

NOTES

1. PARAPET CONSTRUCTION, PANELS, FINISH AND COLOR SHALL MATCH BEST OF EXIST. CONSTRUCTION.
2. PROVIDE MISCELLANEOUS FLASHING AND CLOSURES W/ SEALANT.
3. STEEL FRAME SHALL BE ALL WELDED CONSTRUCTION, U.N.O.

REV. NO.	CODE CIRCLES / REV. BY	DATE	DESCRIPTION	CRSS APPV.
1	F 1 / TEM	11/91	RECORD DRAWING	
0	A / CHW	1/20/91	FOR REVIEW	

NOTE: CIRCLE ALL REVISIONS, IDENTIFY WITH DIAMOND, NUMBER AND ARROW. REMOVE ONLY CIRCLE AND ARROW BEFORE NEXT REVISION.

ISSUE CODE					
A	APPROVAL	D	MAT'L PURC.	G	
B	DESIGN	E	BIDS	H	
C	MAT'L T.O.	F	CONST'N		

SEAL

SIGNATURE

DATE

SOUTH CAROLINA REGISTERED No. 9814 PROFESSIONAL ENGINEER MELVIN R. GRIM

DR.	R.VAN HALL	DATE	12-8-88
DSGN.	R.C. GRIM	FILE NUMBER	
CK.	M. Grim		
DPE	W.R. GALLAGHER	JOB NO.	V-1509
CAD FILE NO.			

SIRRINE ENVIRONMENTAL CONSULTANTS
Charleston, South Carolina
CRS SIRRINE Savannah, Georgia

GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

DRAWING TITLE
SLUDGE PUMP STATION & MCC BLDG
SECTIONS AND DETAILS

CLIENT DRAWING NUMBER
5-01-035s

CRSS DRAWING NUMBER
C-8202- S15

EFFLUENT PUMP STATION PLAN

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

SECTION

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

SECTION

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

SECTION

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

SECTION

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

NOTES

1. REINF. FOR CONC. PIERS TO BE #4 @ 6" E.F., TYP. (SEE DWG. 21C).
2. REINF. FOR CONC. MOTOR PADS TO BE #4 @ 6" E.W., E.F.
3. DRILL 1 1/4" ϕ HOLE x 6" MIN. LONG INTO EXIST. CONC. WALL. INSTALL #6 REBAR IN ROK-ROK ANCHORING CEMENT, (1'-6" O.C. VERT.).
4. PROVIDE 8" WIDE x 8" DEEP CURB AROUND NEW 2" D.I. PIPE. REINF. W/ 2-#4 CONT. @ TOP & #3 @ 6" TIES DWL. INTO SLAB. PROVIDE 240 AL. FLASHING & BOLTED CLAMP W/ SEALANT
5. EXTEND LADDER 6" ABOVE CONC. CURB AND 6" ABOVE VAULT FLOOR SLAB.
6. PROVIDE 8" WIDE x 8" DEEP CURB AROUND 2'-0" x 3'-0" OPNG. SEE NOTE 4 FOR REINF. (SIM.); SEAL ALL JNTS.

NEW NO.	CODE	CIRCLED	DATE	DESCRIPTION	CHKD APPV.
	F	2	11/91	RECORD DRAWING	
2	TEM		9/91		
	F	-	8/65	FINAL TOUCH-UP	
1	MRF		8/89	REVISIONS	
	A		1/65		
0	CHW		5/89	FOR REVIEW	
PREV. BY				NOTE: CIRCLE ALL REVISIONS, IDENTIFY WITH DASHING, NUMBER AND APPROVE. REMOVE ONLY CIRCLES AND APPROVE BEFORE NEXT REVISION.	

ISSUE CODE		C	MAT'L T.O.	F	CONST'N
A	APPROVAL	D	MAT'L PURC.	G	
B	DESIGN	E	BIDS	H	

SEAL

SIGNATURE

DATE 7-11-89

REV. #1: 8-25-89

DR.	R. VAN HALL	DATE	12-4-88
DRAWN	M. FREESE	FILE NUMBER	
CH.			
APR.	W. R. GALLAGHER	JOB NO.	V-1509
CAD FILE NO.			

SIRRINE ENVIRONMENTAL CONSULTANTS

Greenville, South Carolina

CLIENT

GRAND STRAND WATER & SEWER AUTHORITY

J.L. SCHMARR WWTP 4.0 MGD ADDITION

MYRTLE BEACH, S. C.

DRAWING TITLE

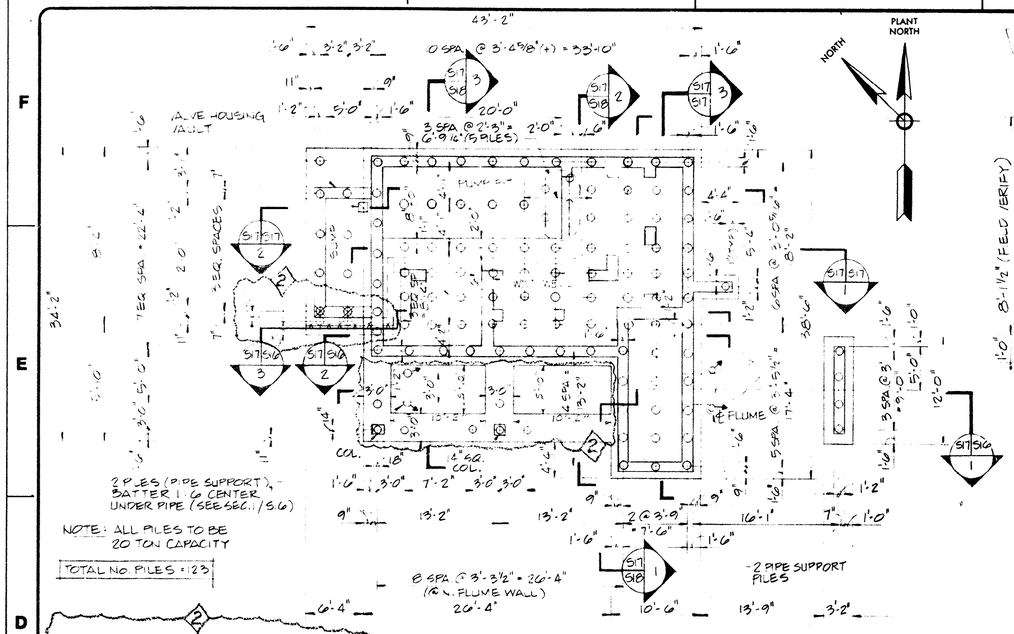
EFFLUENT PUMP STATION PLAN AND SECTIONS

CLIENT DRAWING NUMBER

5-01-036s

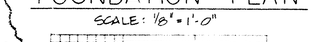
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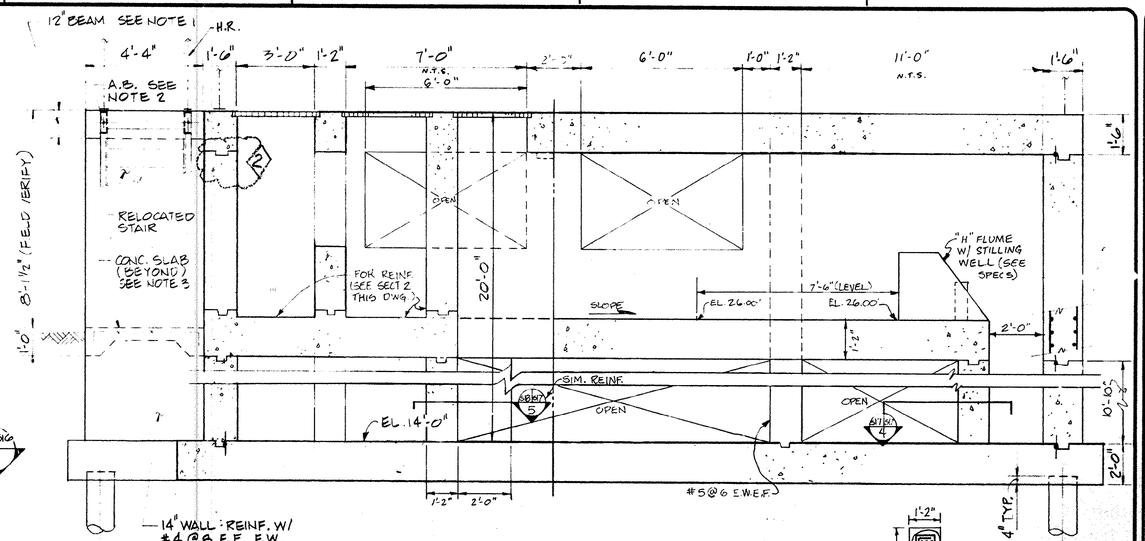
C-8202- 516



FOUNDATION PLAN

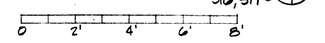
SCALE: 1/8" = 1'-0"



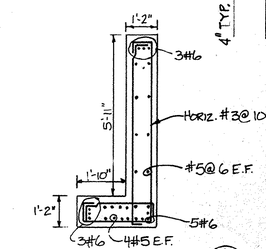


SECTION

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



S16, S17

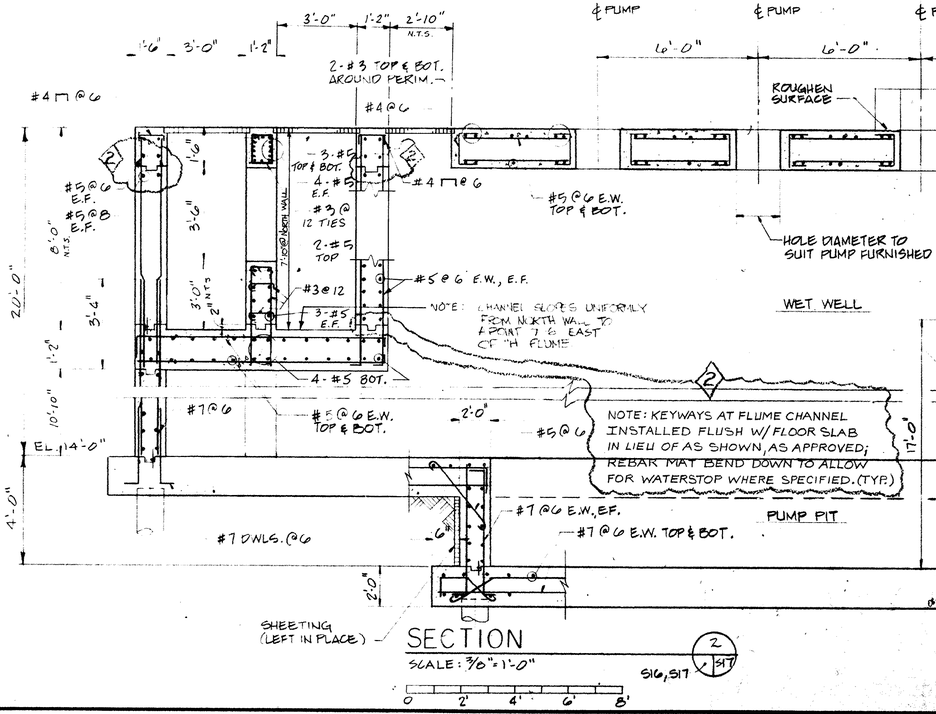


SECTION

SCALE 3/8" = 1'-0"

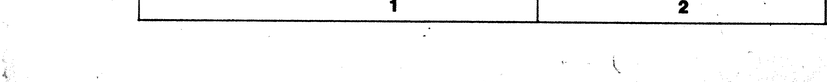
S17, S17

NOTE: TWO (2) PILES AT THE VALVE VAULTS SOUTH WALL INADVERTENTLY DRIVEN 12" SOUTH OF SHOWN LOCATION; BASE SLAB AND REBAR MATS LENGTHENED 12" DUE TO THIS, AS APPROVED. SEE ABOVE CHANGES.

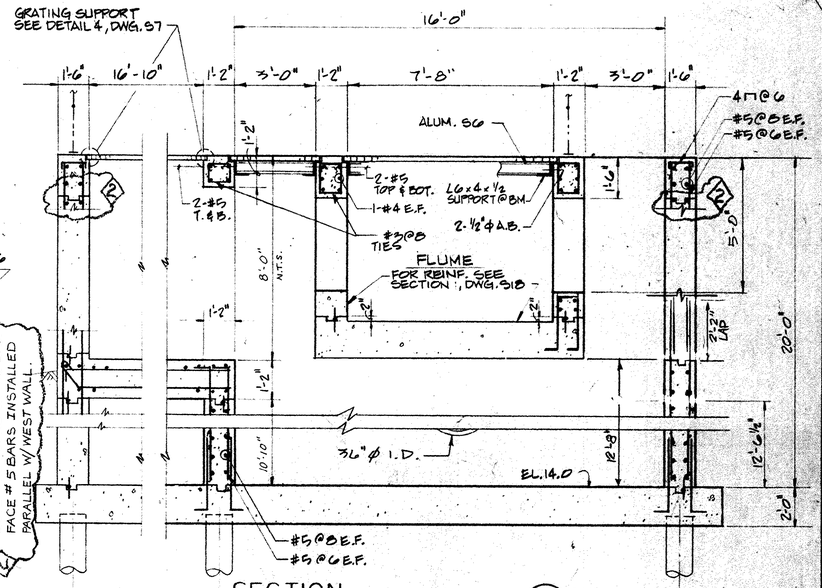


SECTION

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



S16, S17



SECTION

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

S16, S17

NOTES

1. REINF. BEAM W/ 2-#4 E.F. TOP & BOT. AND W/ 1-#4 E.F. & #3@8 TIES (DWL. TO WALLS).
2. ANCHOR STAIR W/ 3/4" ϕ BOLT EA. STRINGER W/ 10" EMBED. AND 3/8" LEG CLIP ANGLE.
3. 6'-0", 4'-4", 5" SLAB W/ THICKENED EDGE. REINF. W/ 1 LAYER OF 6x6-W2.9xW2.9 WWF.
4. CONC. PAD TO BE 3'-4" SQ. (HEIGHT TO BE SET BY CONTRACTOR TO SUIT PUMP MFG. REQUIREMENTS). PROVIDE S.S. ANCHOR BOLTS AS REQ'D. BY PUMP MFG. IN ACCORDANCE W/ DETAIL ON DWG. S8.
5. LOCATION OF WALL CONSTRUCTION JOINTS (SUBJECT TO REVIEW BY OWNER'S REP.) PROVIDE CLASS 'C' LAP ON DOWELS

REV. NO.	CODE	CIRCLES	REV. BY	DATE	DESCRIPTION
2	F	2	TEM	11/91	RECORD DRAWING
1	E/F	-	MRF	8/26/89	FINAL TOUCH-UP REVISIONS
0	A	1	CHW	7/20/89	FOR REVIEW

CRS APPV.

NOTE: CIRCLE ALL REVISIONS, IDENTIFY WITH DIAMOND, NUMBER AND ARROW. REMOVE ONLY CIRCLE AND ARROW BEFORE NEXT REVISION.

ISSUE CODE			
A	APPROVAL	D	MAT'L PURC.
B	DESIGN	E	BIDS
C	MAT'L T.O.	F	CONST'N
		G	
		H	

SEAL

SIGNATURE

7-11-89

DATE

REV. # 1 : 8-25-89

DR. R. VAN HALL	DATE 12-5-88
DSGN. M. FREESE	
CK. M. Freese	FILE NUMBER
DPE	JOB NO. V-1509
CAD FILE NO.	

SIRRINE ENVIRONMENTAL CONSULTANTS

Charleston, South Carolina

CRS SIRRINE Savannah, Georgia

GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

DRAWING TITLE

EFFLUENT PUMP STATION FOUNDATION PLAN & SECTIONS

CLIENT DRAWING NUMBER

5-01-037s

DRAWING NUMBER

C-8202- S17

COPYRIGHT CRS SIRRINE, INC. DATE

PLANT NORTH

NORTH

PROVIDE 2" CL. FROM OUTSIDE SLIDE GATE FRAME TO EDGE OF GRTG & EDGE OF S6 FLANGE (TYP.)

NOTE: MODIFIED GRATING SUPPORT PLAN TO ACCOMODATE SLIDE GATE; SEE C.O. #5 ITEM "D"

ALUM. L6×4×½, 0'-7"

2-½"ϕ S.S. A.B. @ 4"

ALUM. GRATING SUPPORTS (SEE DETAIL 4 ON S16)

ADDITIONAL S6 IF REQ'D

NEW S6 CUT S6×5.1 (ALUM.) ANGLE SUPPORT

ADJUSTED TO CLEAR GATE

GRATING SUPPORT PLAN

REF. DWG. NO. C-8202-S16

SCALE: ¼" = 1'-0"

0 4' 8' 12'

SECTION 4 / S18 — 3/8" = 1'-0" — S16, S18

18" 12" #3@6 4-#5 14" FOR REINF. SEE SEC. 3, THIS DWG.

SECTION 5 / S18 — 3/8" = 1'-0" — S16, S17, S18

3'-0" 3-#6 #3@10 3-#6 #3@10 (CORNER) 2'-6" 1'-2"

SECTION 6 / S18 — 3/8" = 1'-0" — S16, S18

24" 8-#5 (4 E.F.) #3@10 14"

SECTION 7 / S18 — 3/8" = 1'-0" — S18, S16

2'-2" 1'-2" 10-#6 #3@6 1'-2" (TYP. TWO PILASTERS

32'-6"

1'-6" 1'-0" 6'-0" 2'-0" 6'-0" 3'-0" 3'-0" 1'-2" 7'-8" 1'-2" 3'-0" 1'-6"

1½" ALUM. GRATING

SLIDE GATE OPNG. SLIDE GATE OPNG.

FLUME #3 □ @ 6 #5 @ 6 E.W., E.F.

#5 @ 6 E.W. TOP & BOT.

OPEN OPEN

WET WELL

EL. 14'-0"

FOR REINF. SEE SECTION 2, DWG. S16

FOR REINF. SEE SEC. 3, THIS DWG.

SECTION 1 / S18 — SCALE: 3/8" = 1'-0" — S16, S17

0 2' 4' 6' 8'

12'-5" TO OUTSIDE WALL 1'-2" 4'-9" 1'-2" 3'-0" 1'-2" 7'-8" 1'-2"

NOTE: ELEVATION VARIES (SEE NOTE ON SECTION 2-S17.

VARIES: 1'-4" TO 1'-2" "H" FLUME

8'-0" @ 4" FLUME N.T.S. 10'-10" @ 4" FLUME N.T.S.

2-#5 T&B #4 □ @ 6 (TYP.) 1-#4 E.F. #5 @ 8 TIES 2-#5 TOP 3-#5 E.F. #3@12 4-#5 #6@6 E.W., E.F. #5@6 E.W. TOP & BOT. #5@6 E.W., E.F. PARSHALL FLUME LINER CONC. FILL 4'-7½" 1'-4" 6'-0" N.T.S. 2'-0"

SEE SECT 3 (THIS DWG)

SECTION 2 / S18 — SCALE: 3/8" = 1'-0" — S16, S17

0 2' 4' 6' 8'

1'-6" 13'-10" N.T.S. REMV. (SEE PLAN) GRATING 3'-0" 1'-2" N.T.S. 3'-0" 1'-2" N.T.S. 7'-8" 1'-2"

#5 @ 6 E.W. TOP & BOT. 4'-9" FOR REINF. SEE SECTION 2-S18 8'-0" N.T.S. @ "H" FLUME 1'-2" #7 @ 6 E.W., E.F. SIM. S18 7 #5 @ 6 E.W., E.F. FLUME CONC. FILL #5 @ 6 TOP & BOT 6'-0" N.T.S. 1'-4" 12'-8"

20'-0"

S18 4 WET WELL SLOPE 1" TO SUMP

14" COLUMN FOR REINF. SEE SEC. 1, DWG. S16

EL. 14'-0" HIGH PT. #7 DWLS @ 6 E.F. 5'-10" 5-#7 T.&B. #5@8

PUMP PIT 2'-0" 6" 4'-0" 2'-0" SEE SECTION 2, DWG. S17 FOR REINF. 8'-0"

SECTION 3 / S18 — SCALE: 3/8" = 1'-0" — S16, S17

0 2' 4' 6' 8'

COPYRIGHT CRS SIRRINE, INC. DATE

NOTES

REV. NO.	CODE CIRCLES	REV. BY	DATE	DESCRIPTION	CRSS APPV.
2	F 2 TEM		11/ 7/ 89	RECORD DRAWING	
1	E - MRF		8/ 29/ 89	FINAL TOUCH-UP REVISIONS	
0	A CHW		7/ 28/ 89	FOR REVIEW	

NOTE: CIRCLE ALL REVISIONS, IDENTIFY WITH DIAMOND, NUMBER AND ARROW. REMOVE ONLY CIRCLE AND ARROW BEFORE NEXT REVISION.

ISSUE CODE			
A	APPROVAL	C	MAT'L T.O.
B	DESIGN	D	MAT'L PURC.
		E	BIDS
		F	CONST'N
		G	
		H	

SEAL

Melvin C. Freese
SIGNATURE

7-11-89
DATE
REV. #1: 8-25-89

DR.	R. VAN HALL	DATE	12-5-88
DSGN.	M. FREESE		
CK.	M. Freese	FILE NUMBER	
DPE		JOB NO.	V-1509
CAD FILE NO.			

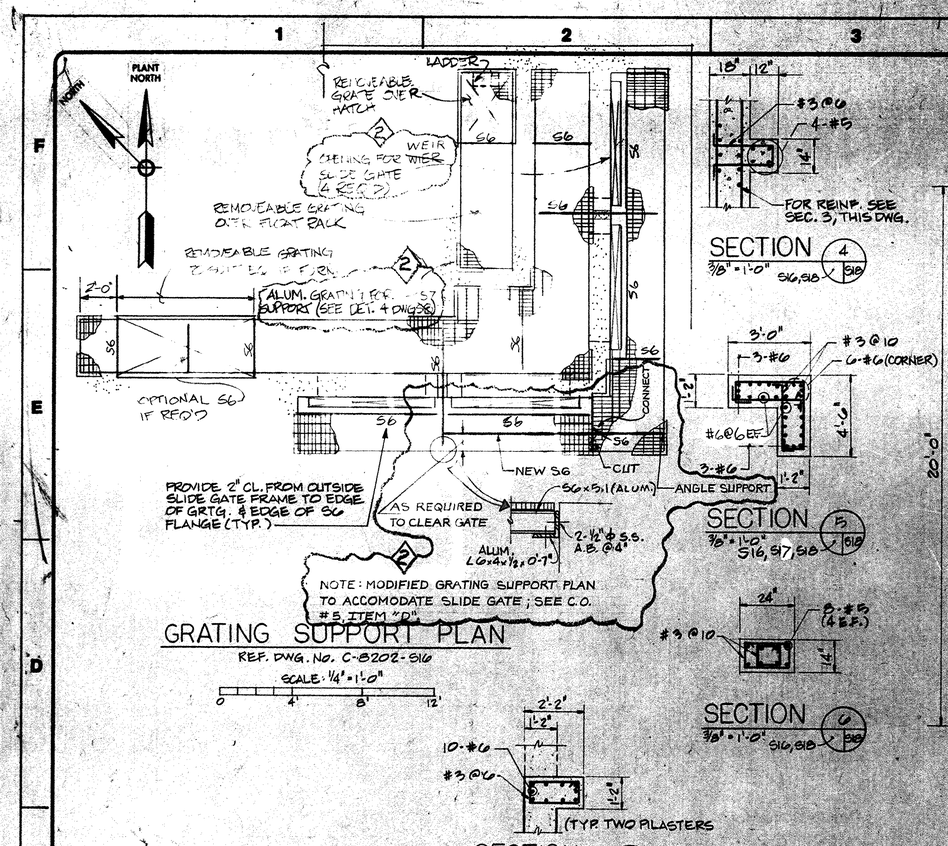
SIRRINE ENVIRONMENTAL CONSULTANTS
Charleston, South Carolina
CRS SIRRINE Savannah, Georgia

GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

DRAWING TITLE
EFFLUENT PUMP STATION SECTIONS

CLIENT DRAWING NUMBER
5-01-038 s

DRAWING NUMBER
C-8202- S18



NOTES

RECORD DRAWING

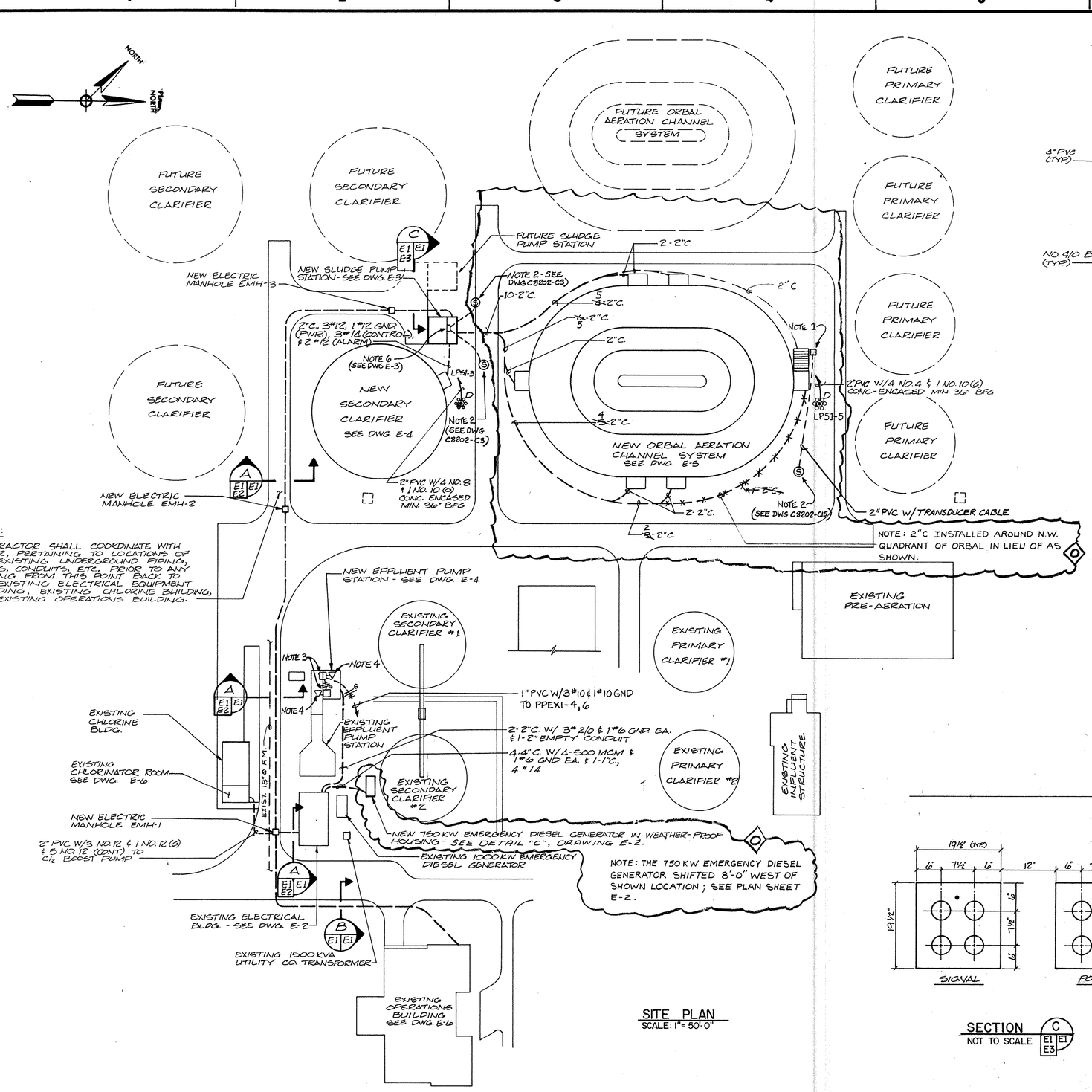
FINAL TOUCH-UP REVISIONS

FOR REVIEW

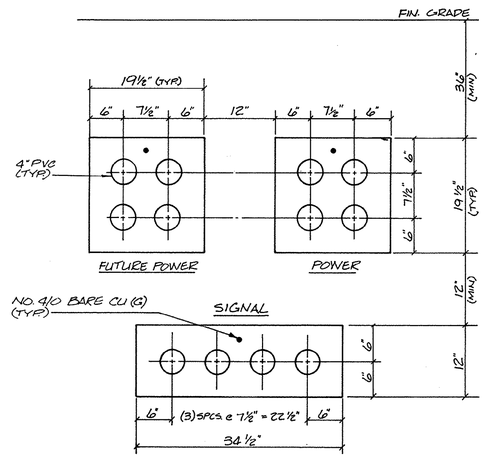
DRAWING TITLE
EFFLUENT PUMP STATION SECTIONS

CLIENT PROJECT NUMBER
5-01-0393

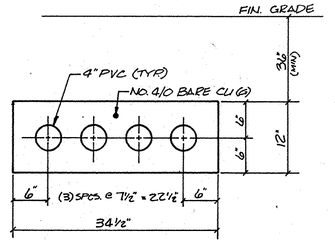
DRAWING NUMBER
S-16



SITE PLAN
SCALE: 1" = 50'-0"

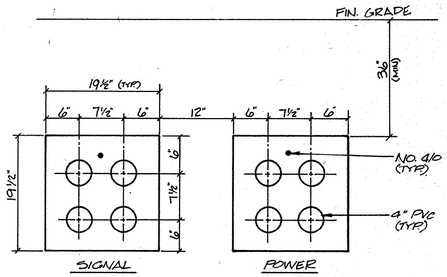


SECTION A
NOT TO SCALE



SIGNAL

SECTION B
NOT TO SCALE



SECTION C
NOT TO SCALE

NOTES

1. FLOW RECORDER/INDICATOR MOUNTED ON PIPE STAND 6'-0" TO TOP OF CABINET ABOVE FINISHED GRADE. SEE DRAWINGS C8202-E-5 FOR POWER REQUIREMENTS.
2. TRANSMITTER FOR THE FLOW METER MOUNTED IN MANHOLE. CONTRACTOR SHALL MOUNT FLOW METER PER MANUFACTURERS REQUIREMENTS.
3. FLOW RECORDER/INDICATOR MOUNTED ON PIPE STAND 6'-0" TO TOP OF CABINETS ABOVE FINISHED FLOOR OF STRUCTURE.
4. OPEN CHANNEL FLOWMETER. CONTRACTOR SHALL MOUNT FLOW METER PER MANUFACTURERS REQUIREMENTS. INSTALL 2" CONDUIT WITH TRANSDUCER CABLE FROM FLOW METER TO FLOW RECORDER/INDICATOR ON PIPE STAND ABOVE. (SEE NOTE 3.)
5. CONTRACTOR SHALL INSTALL, CALIBRATE, CHECKOUT AND TEST ALL INSTRUMENTATION TO INSURE EQUIPMENT OPERATES PER MANUFACTURERS SPECIFICATIONS AND OWNER'S REQUIREMENTS.
6. FLOW RECORDER/INDICATOR MOUNTED 6'-0" TO TOP OF CABINET ABOVE FINISHED FLOOR.

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REV. NO.	CODE · CIRCLES	DATE	DESCRIPTION
0	F O	11/91	RECORD DRAWING
	TEM		
	REV. BY		

NOTE: CIRCLE ALL REVISIONS, IDENTIFY WITH DIAMOND, NUMBER AND ARROW. REMOVE ONLY CIRCLE AND ARROW BEFORE NEXT REVISION.

CRSS APPV.

ISSUE CODE		C	MAT'L T.O.	F	CONST'N
A	APPROVAL	D	MAT'L PURC.	G	
B	DESIGN	E	BIDS	H	

SEAL

SIGNATURE

5-23-89
DATE

DR.	J. HAYNIE	DATE	12/12/88
DSGN.	M. DEUTSCH	FILE NUMBER	
CK.	H. CARTER		
DPE	H. CARTER	JOB NO.	V-1509
CAD FILE NO.			

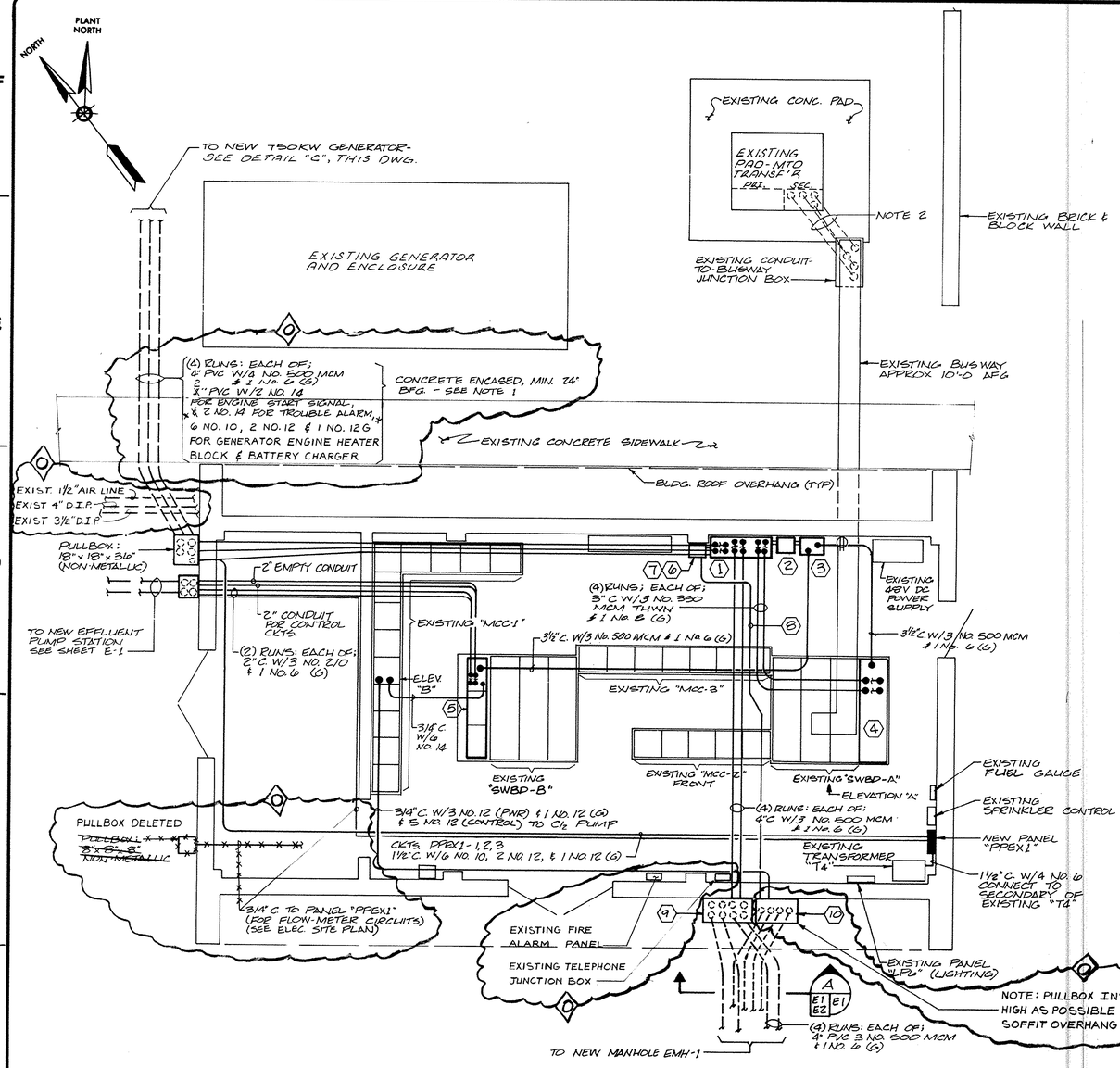
SIRRINE ENVIRONMENTAL CONSULTANTS
Charleston, South Carolina
CRS SIRRINE Savannah, Georgia

GRAND STRAND
WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

DRAWING TITLE
ELECTRICAL SITE PLAN

CLIENT DRAWING NUMBER
5-01-040 s

DRAWING NUMBER
C-8202 E-1

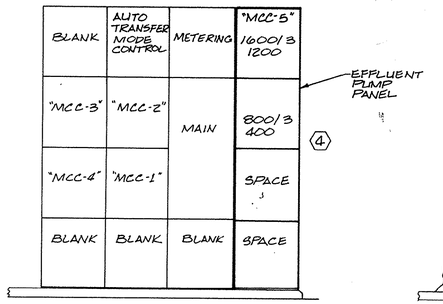


POWER PLAN - EXISTING ELECTRICAL EQUIPMENT ROOM

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

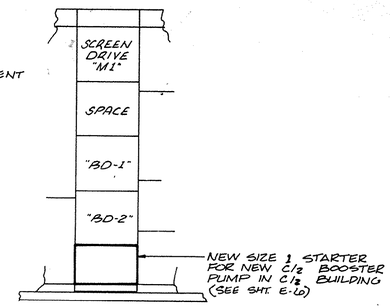
EQUIPMENT SCHEDULE

1. NEW AUTOMATIC TRANSFER SWITCH: 1200 AMP, THREE-POLE, NEMA 1.
2. NEW CIRCUIT BREAKER: 400/3 IN NEMA 1 ENCLOSURE.
3. NEW AUTOMATIC TRANSFER SWITCH: 400 AMP, THREE-POLE, NEMA 1.
4. NEW SWITCHBOARD SECTION:
   (1) 1600/3 FRAME BREAKER WITH TRIP SET AT 1200 AMPS;
   (1) 800/3 FRAME BREAKER WITH TRIP SET AT 400 AMPS;
   (2) THREE-POLE SPACES.
5. NEW EFFLUENT PUMP CONTROL PANEL.
6. NEW MAGNETIC CONTRACTOR: 2-POLE, 20 AMPS, 480 VOLTS.
7. NEW CIRCUIT BREAKER: 20/2, 480V, NEMA 1 ENCLOSURE.
8. 3/4" CONDUIT W/2 NO. 8 & 1 NO. 12 (G) TO "LOAD SEQUENCING PANEL" LOCATED IN NEW SLUDGE PUMP BUILDING.
9. PULLBOX: 36" X 36" X 18", NON-METALLIC, FOR POWER CIRCUITS.
10. PULLBOX: 36" X 30" X 18", NON-METALLIC, FOR SIGNAL CIRCUITS.



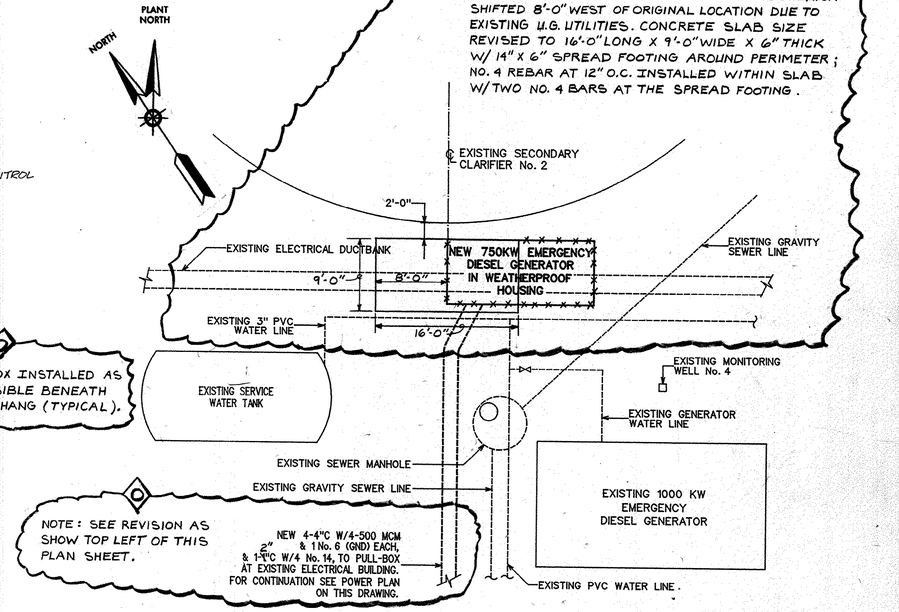
ELEVATION "A"

N. T. S.



ELEVATION "B"

N. T. S.



NOTE:

LOCATION OF EXISTING UNDERGROUND UTILITIES IS APPROXIMATE. CONTRACTOR SHALL FIELD-VERIFY LOCATIONS OF ALL EXISTING UNDERGROUND PIPING, DUCTS, CONDUIT, ETC., PRIOR TO COMMENCING DIGGING. CONTRACTOR SHALL EXERCISE CAUTION DURING EXCAVATION TO PREVENT DAMAGE TO EXISTING UNDERGROUND UTILITIES.

DETAIL "C" — PARTIAL PLAN, NEW 750KW GENERATOR

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

NOTES

1. ALL TRENCHING, IN THIS AREA, MUST BE HAND-DUG. COORDINATE WITH OWNER, FOR POSSIBLE UNDERGROUND OBSTRUCTIONS AND/OR CABLES, PRIOR TO ANY DIGGING. EXACT ROUTE OF NEW UNDERGROUND CONDUITS SHALL BE DETERMINED IN THE FIELD.
2. EXISTING UNDERGROUND CONDUIT: (4) 4" REMOVE EXISTING CONDUCTORS AND INSTALL NEW (5) NO. 500 MCM XHHW CONDUCTORS PER CONDUIT.

REV. NO.	CODE	CIRCLES	DATE	DESCRIPTION	CRSS APPV.
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ISSUE CODE					
A	APPROVAL	D	MAT'L PURC.	G	
B	DESIGN	E	BIDS	H	
		C	MAT'L T.O.	F	CONST'N

SEAL — SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER — No. 5452 — WILLIAM G. GODSEY, JR. — PIONEER

SIGNATURE: William G. Godsey Jr.

5-23-89
DATE

DR. J. HAYNIE	DATE 12/13/88
DSGN. LONG/DEUTSCH	
CK.	FILE NUMBER
DPE H. CARTER	JOB NO. V-1509
CAD FILE NO.	

SIRRINE ENVIRONMENTAL CONSULTANTS
Charleston, South Carolina
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GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

DRAWING TITLE

ELECTRICAL PLANS & DETAILS EXISTING ELECTRICAL BLDG.

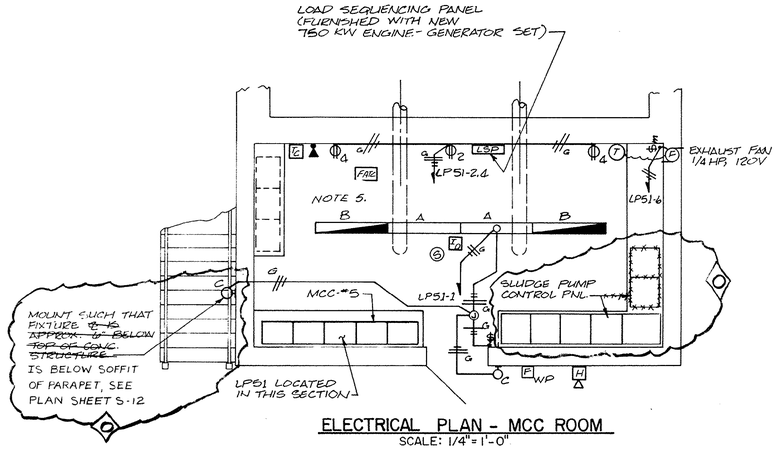
CLIENT DRAWING NUMBER

5-01-041 s

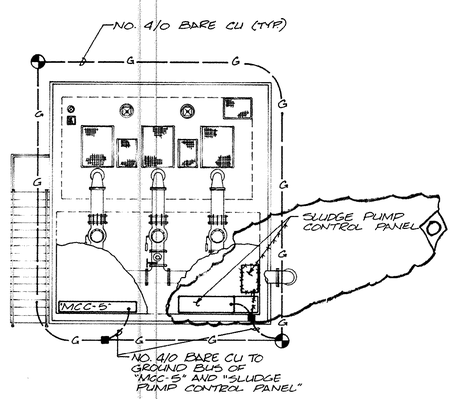
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C8202 E-2

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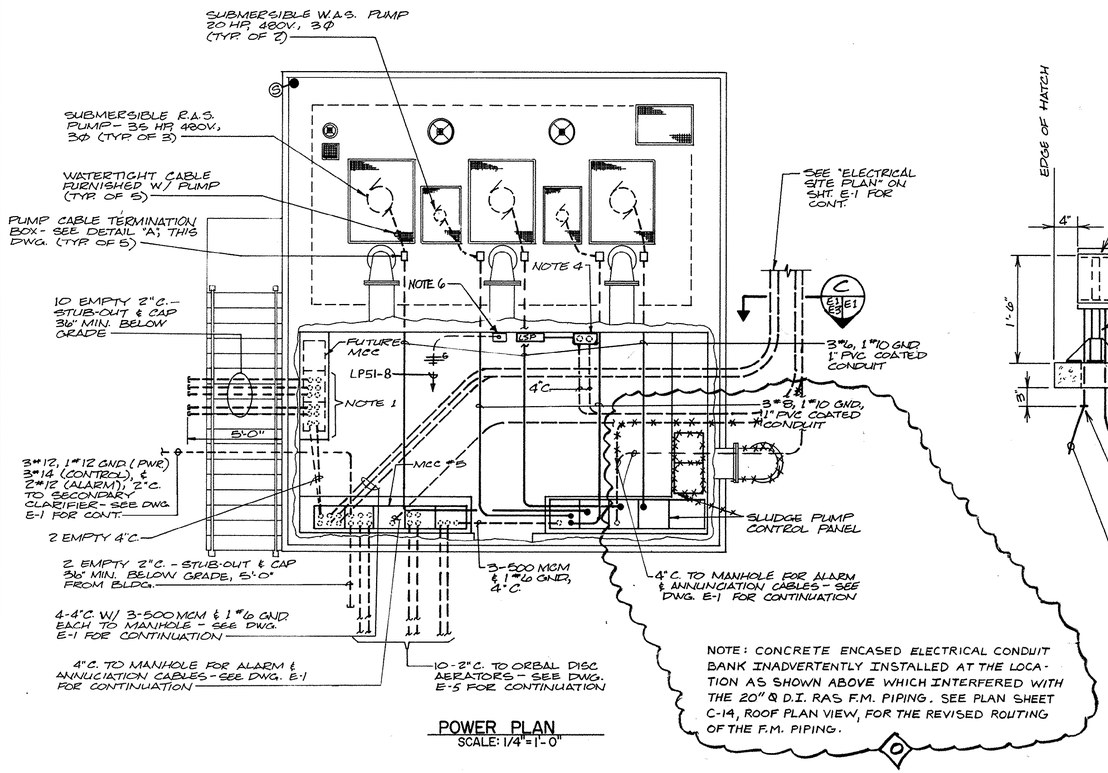
ELECTRICAL PLAN - MCC ROOM
SCALE: 1/4" = 1'-0"



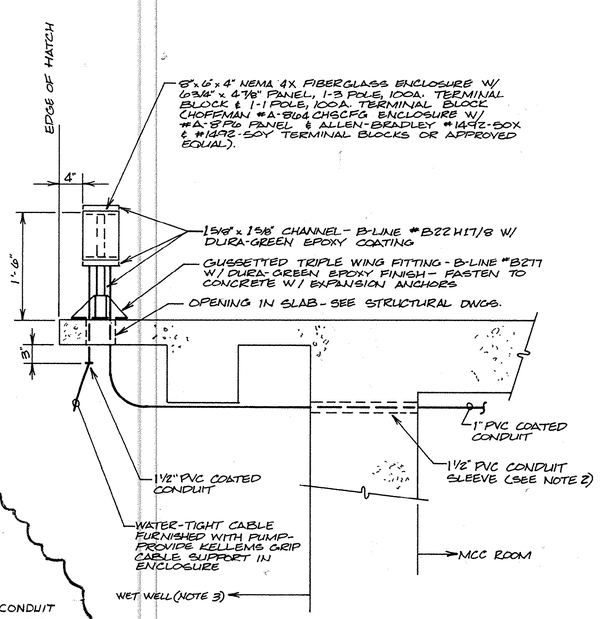
GROUNDING PLAN
SCALE: 1/8" = 1'-0"

SIZE 3 ORBAL DISC. AERATOR	SIZE 3 ORBAL DISC. AERATOR		SIZE 3 ORBAL DISC. AERATOR	SIZE 3 ORBAL DISC. AERATOR
SIZE 3 ORBAL DISC. AERATOR	SIZE 3 ORBAL DISC. AERATOR	30 CKT. 120/208V 3Ø, 4W PANEL LP-51	SIZE 3 ORBAL DISC. AERATOR	SIZE 1 SEC. CLAR. DRIVE
				SPARE SIZE 1
400A. C. B. FOR SLUDGE PUMP PANEL	SIZE 3 ORBAL DISC. AERATOR	30KVA XFMR & PRIMARY C. B.	SIZE 3 ORBAL DISC. AERATOR	SPARE SIZE 1
	SIZE 3 ORBAL DISC. AERATOR		INCOMING LINE 1200A. M. L. O.	INCOMING LINE 1200A. M. L. O.

FRONT ELEVATION - MCC NO. 5
SCALE: NONE



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



DETAIL "A"
SCALE: 1"=1'-0"

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NOTES

1. STUB CONDUITS UP 3" ABOVE TOP OF SLAB & CAP.
2. SEAL CONDUIT SLEEVE WATERTIGHT AT BOTH ENDS WITH DOW CORNING SILICONE RTV FOAM, OR APPROVED EQUAL.
3. ALL CONDUIT, FITTINGS, SUPPORTS, ETC. LOCATED WITHIN THE WET WELL SHALL BE EITHER PVC COATED STEEL OR FIBERGLASS.
4. PULLBOX: 20" X 20" X 10".
5. CO-ORDINATE ACTUAL LOCATIONS OF FIRE ALARM AND TELEPHONE DEVICES WITH OTHER EQUIPMENT INSTALLED IN THIS ROOM.
6. FLOW RECORDER/INDICATOR MOUNTED 6'-0" TO TOP OF CABINET ABOVE FINISHED FLOOR.

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0	F O TEM	RECORD DRAWING	11/91	

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ISSUE CODE					
A	APPROVAL	C	MAT'L T.O.	F	CONST'N
B	DESIGN	D	MAT'L PURC.	G	
		E	BIDS	H	

SEAL

SIGNATURE

5-23-89
DATE

SOUTH CAROLINA REGISTERED PROFESSIONAL No. 5452 ENGINEER WILLIAM G. GOOSEY, JR.

DR.	J.B. MINICK	DATE	12/9/88
DSGN.	LONG/DEUTSCH	FILE NUMBER	
CK.	H. CARTER	JOB NO.	V-1509
DPE	H. CARTER		
CAD FILE NO.			

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Charleston, South Carolina
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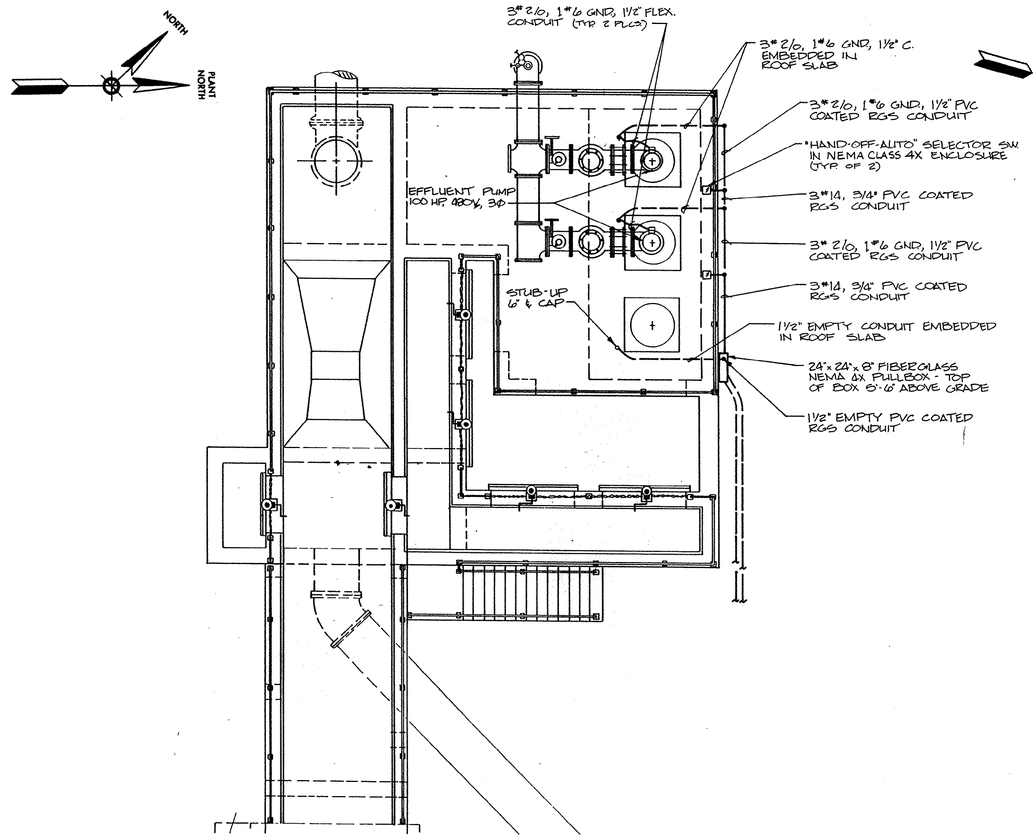
GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

DRAWING TITLE

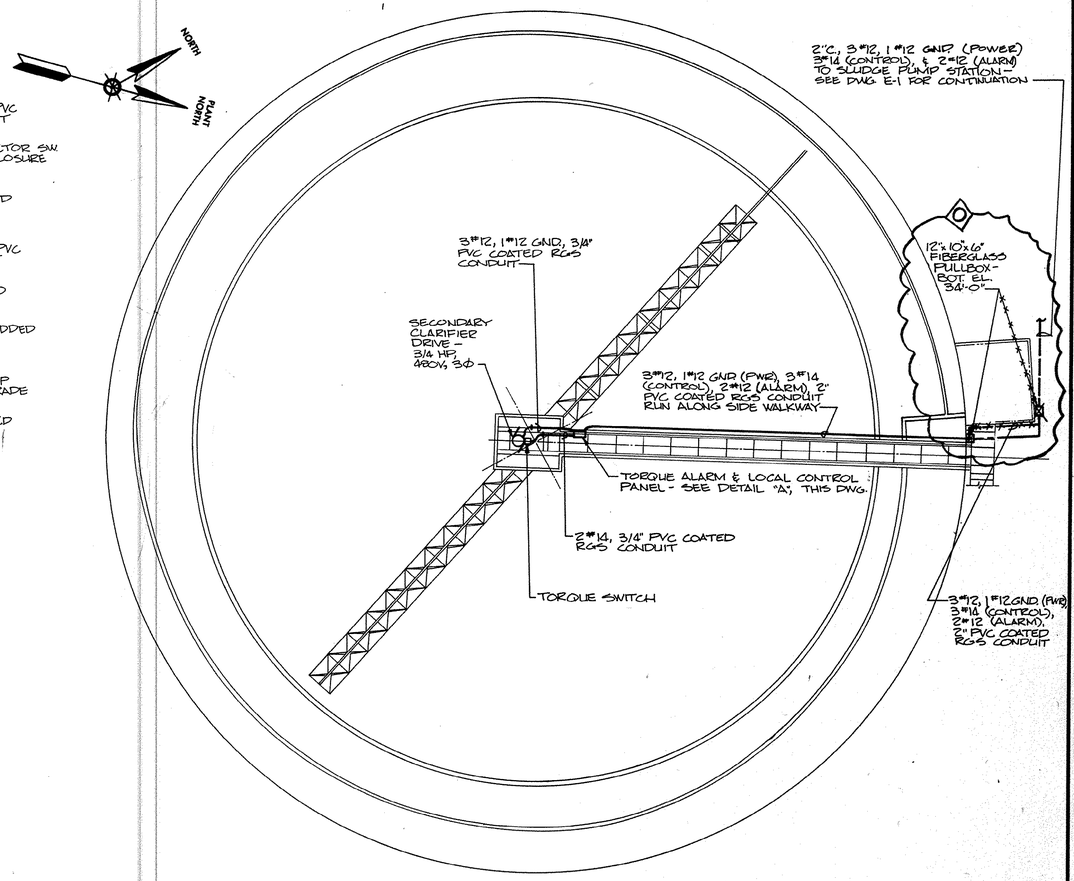
ELECTRICAL PLANS AND DETAILS SLUDGE PUMP STATION

CLIENT DRAWING NUMBER
5-01-042 s

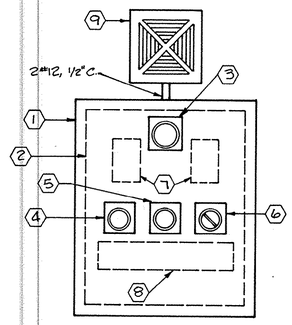
DRAWING NUMBER
C-8202 E-3



NEW EFFLUENT PUMP STATION PLAN
SCALE: 3/16" = 1'-0"



SECONDARY CLARIFIER PLAN
SCALE: 1" = 10'-0"



NOTE:
MOUNT ALARM/CONTROL PNL ON ALUMINUM CHANNEL FASTENED TO WALKWAY HANDRAIL, TOP OF PANEL 5'-6" ABOVE WALKWAY

DETAIL "A"
SCALE: 3" = 1'-0"

TORQUE ALARM/LOCAL CONTROL PNL. BILL OF MATERIAL

1. 12"H. X 10"W. X 6"D. NEMA 4X STAINLESS STEEL ENCLOSURE - HOFFMAN ENG. CO. #A-12106CHNFSS, OR APPROVED EQUAL.
2. 10-3/4"H. X 8-7/8"W., 12 GA. STEEL INTERIOR PANEL - HOFFMAN ENG. CO. #A-12P10, OR APPROVED EQUAL.
3. 120 VOLT, TRANSFORMER-TYPE, NEMA 4X RED INDICATING LIGHT WITH SPECIAL LEGEND PLATE ENGRAVED "HIGH TORQUE" - ALLEN-BRADLEY #800H-PR16R WITH #800H-W140 LEGEND PLATE, OR APPROVED EQUAL.
4. NEMA 4X MOMENTARY CONTACT PUSHBUTTON WITH 1 N.O. & 1 N.C. SET OF CONTACTS, BLACK OPERATOR, & SPECIAL LEGEND PLATE ENGRAVED "SILENCE" - ALLEN-BRADLEY #800H-R2A WITH #800H-W100 LEGEND PLATE, OR APPROVE EQUAL.
5. NEMA 4X MOMENTARY CONTACT PUSHBUTTON WITH 1 N.O. & 1 N.C. SET OF CONTACTS, BLACK OPERATOR, & STANDARD LEGEND PLATE ENGRAVED "RESET" - ALLEN-BRADLEY #800H-R2A WITH #800H-W121 LEGEND PLATE, OR APPROVED EQUAL.
6. NEMA 4X, TWO-POSITION, MAINTAINED CONTACT SELECTOR SWITCH WITH STANDARD LEGEND PLATE ENGRAVED "OFF-ON" - ALLEN-BRADLEY #800H-HR2A WITH #800H-W133 LEGEND PLATE, OR APPROVED EQUAL.
7. 10A., 3PDT, 120V., GENERAL PURPOSE, PLUG-IN RELAY AND 8-PIN OCTAL BASE - POTTER & BRUMFIELD #KRPA-14AG-120V. & #27B122 BASE, OR APPROVED EQUAL (MOUNT ON INTERIOR PANEL).
8. 12 POINT TERMINAL STRIP - ALLEN-BRADLEY #1492-CD8 (TERMINAL BLOCKS), #1492-N23 (END ANCHORS), & #1492-N1 (MOUNTING CHANNEL), OR APPROVED EQUAL (MOUNT ON INTERIOR PANEL).
9. 120 VOLT, WEATHER-PROOF ALARM HORN - EDWARDS #876-N5, OR APPROVED EQUAL.

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NOTES

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ISSUE CODE					
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B	DESIGN	D	MAT'L PURC.	G	
		E	BIDS	H	

SEAL
SIGNATURE
5-23-89
DATE
SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 5452 WILLIAM B. GODSEY JR.

DR. J. HAYNIE	DATE 12/12/88
DSGN. M. DEUTSCH	FILE NUMBER
CK.	
DPE H. CARTER	JOB NO. V-1509
CAD FILE NO.	

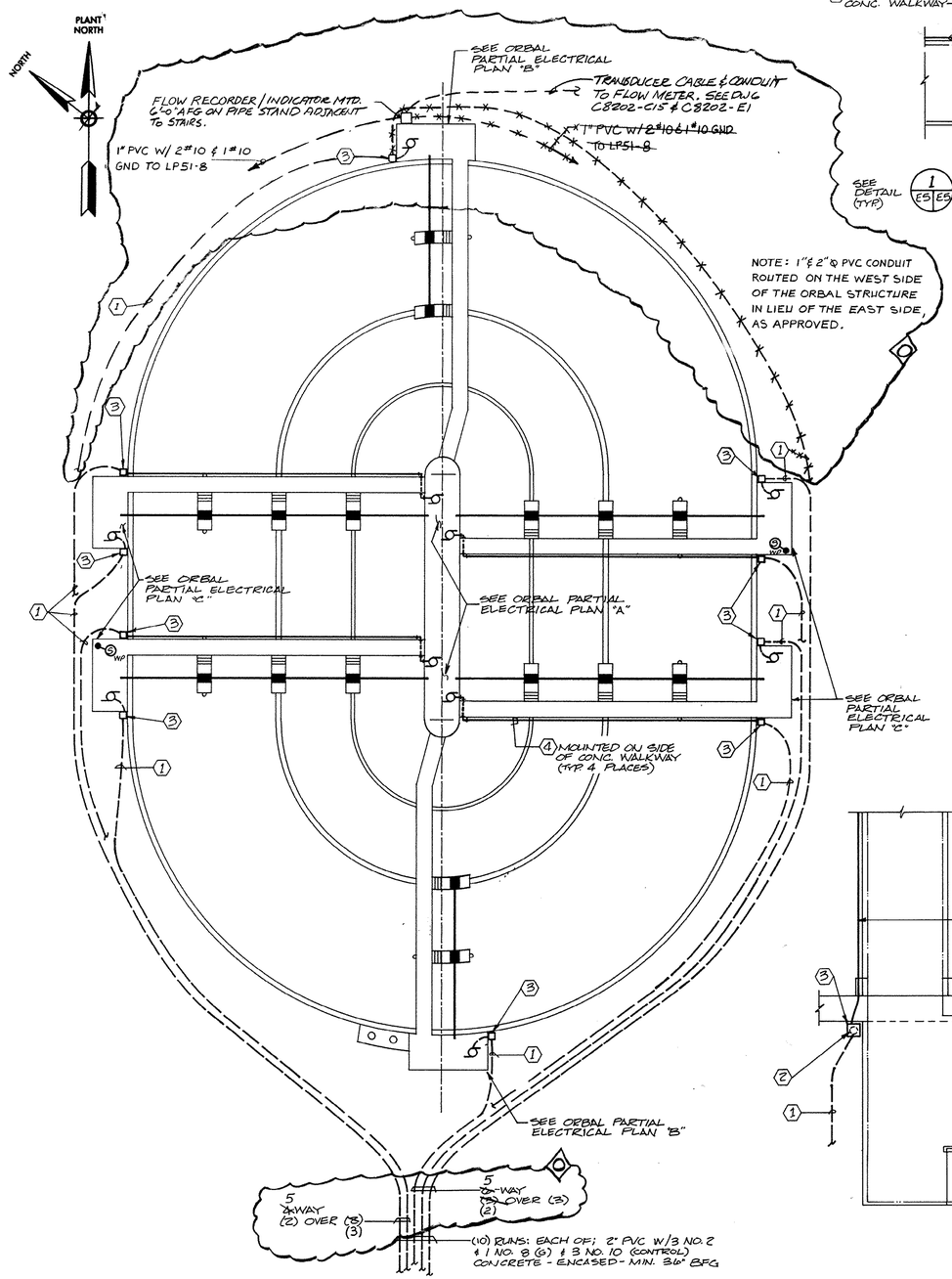
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HORRY COUNTY, S.C.

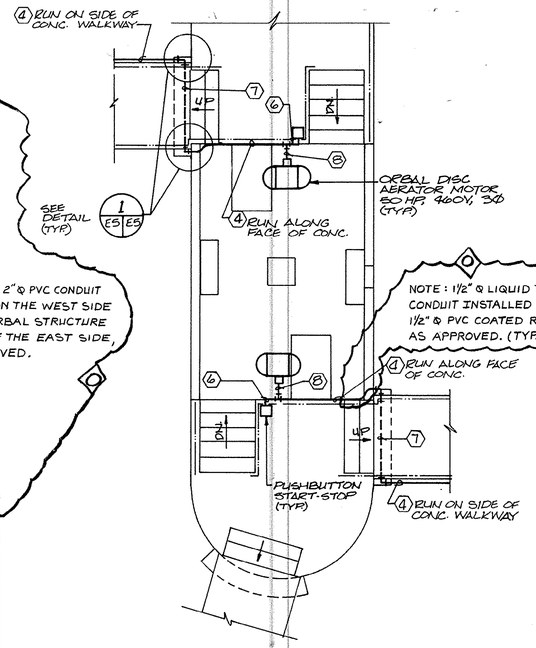
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ELECTRICAL PLANS & DETAILS EFFLUENT PUMP STATION AND SECONDARY CLARIFIER

CLIENT DRAWING NUMBER
5-01-043 s

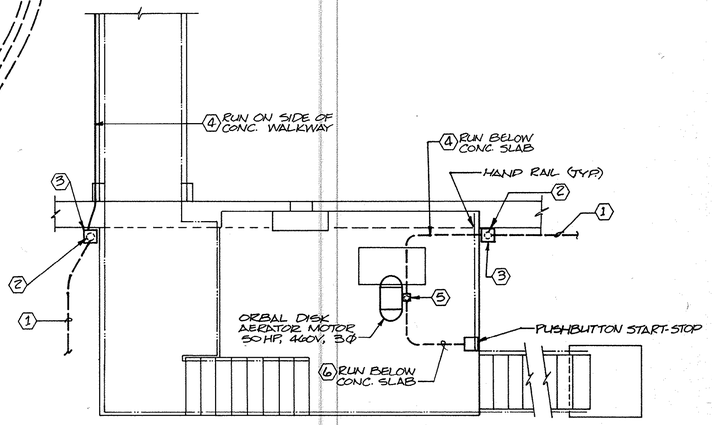
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C8202 E-4



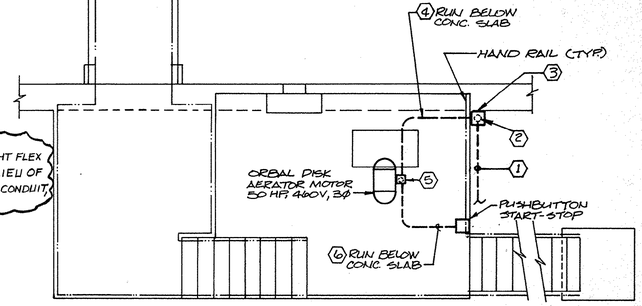
ELECTRICAL PLAN - ORBAL SYSTEM
SCALE: 1" = 20'-0"



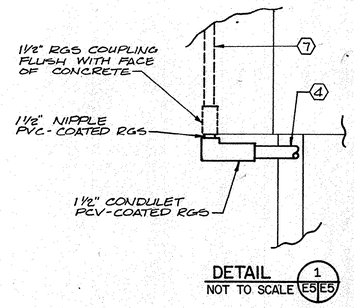
ORBAL PARTIAL ELECTRICAL PLAN "A"
NOT TO SCALE



ORBAL PARTIAL ELECTRICAL PLAN "C"
NOT TO SCALE



ORBAL PARTIAL ELECTRICAL PLAN "B"
NOT TO SCALE



DETAIL 1 E5 E5
NOT TO SCALE

NOTES

1. 3#2, 1#8 GND. (PWR) & 3#10 (CNTL.), 2" PVC CONDUIT, CONRETE ENCASED, 36" (MIN.) B.F.G.
2. 3#2, 1#8 GND. (PWR) & 3#10 (CNTL.), 2" PVC-COATED RGS CONDUIT.
3. 12" X 10" X 6" NON-METALLIC, NEMA 4X PULLBOX.
4. 3#2, 1#8 GND. (PWR.) & 3#10 (CNTL.), 1-1/2" PVC-COATED RGS CONDUIT.
5. TEE CONDULET BELOW SLAB-3#2, 1#8 GND., 1-1/2" PVC-COATED RGS CONDUIT.
6. 3#10, 3/4" PVC-COATED RGS CONDUIT.
7. 3#2, 1#8 GND. (PWR.) & 3#10 (CNTL.), 1-1/2" RGS CONDUIT EMBEDDED IN WALKWAY SLAB.
8. 3#2, 1#8 GND., 1-1/2" FLEX. CONDUIT.

REV. NO.	CODE CIRCLES	DATE	DESCRIPTION	CRSS APPV.
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ISSUE CODE					
A	APPROVAL	D	MAT'L PURC.	G	
B	DESIGN	E	BIDS	H	
		C	MAT'L T.O.	F	CONST'N

SEAL

SIGNATURE

5-23-89
DATE

DR. M. BARRY	DATE 12/12/88
DSGN. DEUTSCH/LONG	
CK. H. Carter	FILE NUMBER
DPE H. CARTER	JOB NO. V-1509
CAD FILE NO.	

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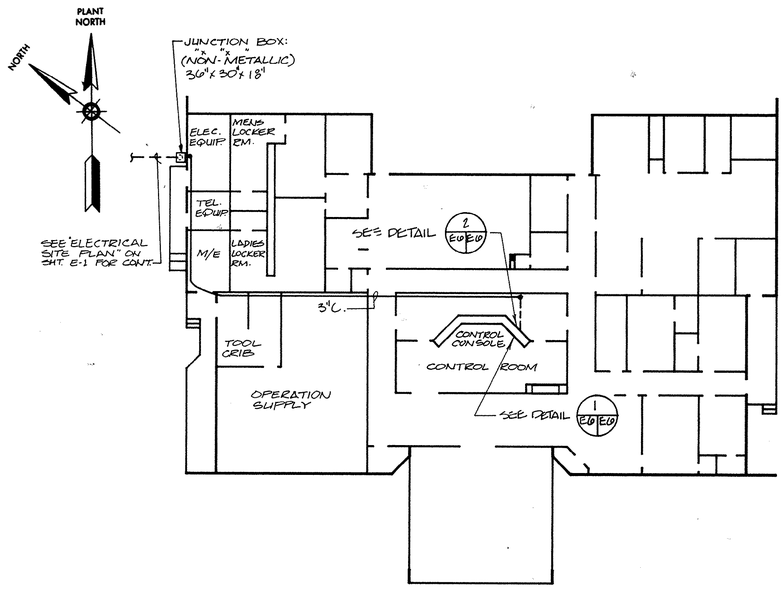
GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

DRAWING TITLE
ELECTRICAL PLANS & DETAILS ORBAL STRUCTURE

CLIENT DRAWING NUMBER
5-01-044 s

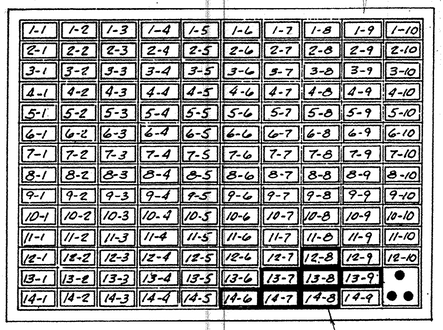
DRAWING NUMBER
C8202 E-5

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ELECTRICAL PLAN EXISTING OPERATIONS BUILDING

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

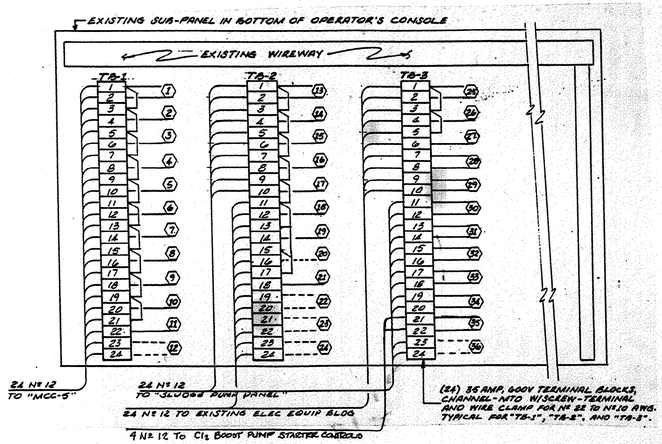


EXISTING SPARE ANNUNCIATOR WINDOW TO BE USED FOR NEW ALARMS - SEE ENGRAVING SCHEDULE (TYPICAL)

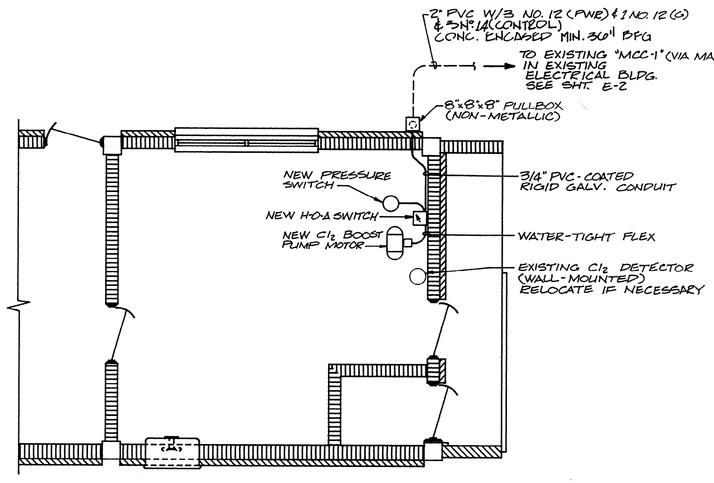
ENGRAVING SCHEDULE

POSITION	WINDOW ENGRAVING
12-8	EFFLUENT PUMP STATION TROUBLE
13-7	ORBAL DISC AERATOR SYSTEM TROUBLE
13-8	SLUDGE PUMP STATION WET WELL-HIGH LEVEL
13-9	750 KW GENERATOR TROUBLE
14-7	SECONDARY CLARIFIER OVERLOAD/HIGH TORQUE
14-8	SLUDGE PUMP STATION WET WELL-LOW LEVEL
14-6	Cl_2 BOOST PUMP FAILURE ALARM

DETAIL 1 E6 E6
NOT TO SCALE



DETAIL 2 E6 E6
NOT TO SCALE



POWER PLAN - CHLORINATOR ROOM (EXISTING Cl_2 BLDG.)

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

TERMINAL BLOCK SCHEDULE

MARK	DEVICE	NAMEPLATE
1	RUN LIGHT	ORBAL DISC AERATOR NO. 1
2	RUN LIGHT	ORBAL DISC AERATOR NO. 2
3	RUN LIGHT	ORBAL DISC AERATOR NO. 3
4	RUN LIGHT	ORBAL DISC AERATOR NO. 4
5	RUN LIGHT	ORBAL DISC AERATOR NO. 5
6	RUN LIGHT	ORBAL DISC AERATOR NO. 6
7	RUN LIGHT	ORBAL DISC AERATOR NO. 7
8	RUN LIGHT	ORBAL DISC AERATOR NO. 8
9	RUN LIGHT	ORBAL DISC AERATOR NO. 9
10	RUN LIGHT	ORBAL DISC AERATOR NO. 10
11	RUN LIGHT	SECONDARY CLARIFIER
12	SPARE	
13	RUN LIGHT	WAS/RAS PUMP NO. 1
14	RUN LIGHT	WAS/RAS PUMP NO. 2
15	RUN LIGHT	WAS/RAS PUMP NO. 3
16	RUN LIGHT	WAS/RAS PUMP NO. 4
17	RUN LIGHT	WAS/RAS PUMP NO. 5
18	RUN LIGHT	EFFLUENT PUMP NO. 1
19	RUN LIGHT	EFFLUENT PUMP NO. 2
20	RUN LIGHT	EFFLUENT PUMP NO. 3 (FUTURE)
21	RUN LIGHT	Cl_2 BOOST PUMP
22	SPARE	
23	SPARE	
24	SPARE	
25	INDICATOR LIGHT	GENERATOR NO. 2 NORM POWER
26	INDICATOR LIGHT	GENERATOR NO. 2 EMERG POWER
27	RUN LIGHT	GENERATOR NO. 2 RUNNING
28	ANNUNCIATOR	GENERATOR NO. 2 TROUBLE
29	ANNUNCIATOR	EFFLUENT PUMP STATION ALARM
30	ANNUNCIATOR	ORBAL DISC AERATOR SYSTEM ALARM
31	ANNUNCIATOR	SEC CLAR OVERLOAD/HI-TORQUE ALARM
32	ANNUNICATOR	WAS/RAS FAILURE ALARM
33	ANNUNICATOR	WAS/RAS HI-LEVEL ALARM
34	ANNUNICATOR	WAS/RAS LOW-LEVEL ALARM
35	ANNUNICATOR	Cl_2 BOOST PUMP FAILURE ALARM
36	SPARE	

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NOTES

REV. NO.	CODE CIRCLES	DATE	DESCRIPTION	CRSS APPV.
0	F O TEM	11/91	RECORD DRAWING	
	REV. BY		NOTE: CIRCLE ALL REVISIONS, IDENTIFY WITH DIAMOND, NUMBER AND ARROW. REMOVE ONLY CIRCLE AND ARROW BEFORE NEXT REVISION.	

ISSUE CODE					
A	APPROVAL	D	MAT'L PURC.	G	
B	DESIGN	E	BIDS	H	
		C	MAT'L T.O.	F	CONST'N

SEAL

SIGNATURE

5-23-89
DATE

SOUTH CAROLINA REGISTERED PROFESSIONAL No. 5452 WILLIAM C. GODSEY, JR.

DR.	J. HAYNIE	DATE	1/12/89
DSGN.	M. DEUTSCH		
CK.	H. Carter	FILE NUMBER	
DPE	H. CARTER	JOB NO.	V-1509
CAD FILE NO.			

SIRRINE ENVIRONMENTAL CONSULTANTS
Charleston, South Carolina
CRS SIRRINE Savannah, Georgia

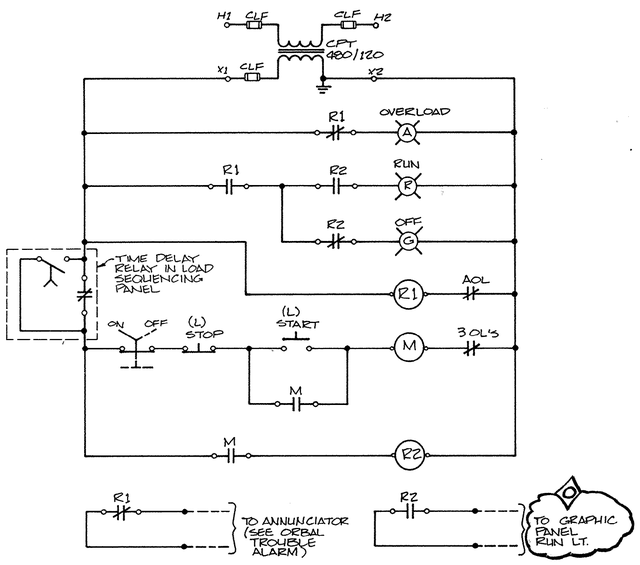
GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

DRAWING TITLE
EXIST. OPERATIONS BLDG.
EXIST. CHLORINE BLDG.
MISC. DETAILS

CLIENT DRAWING NUMBER
5-01-045 s

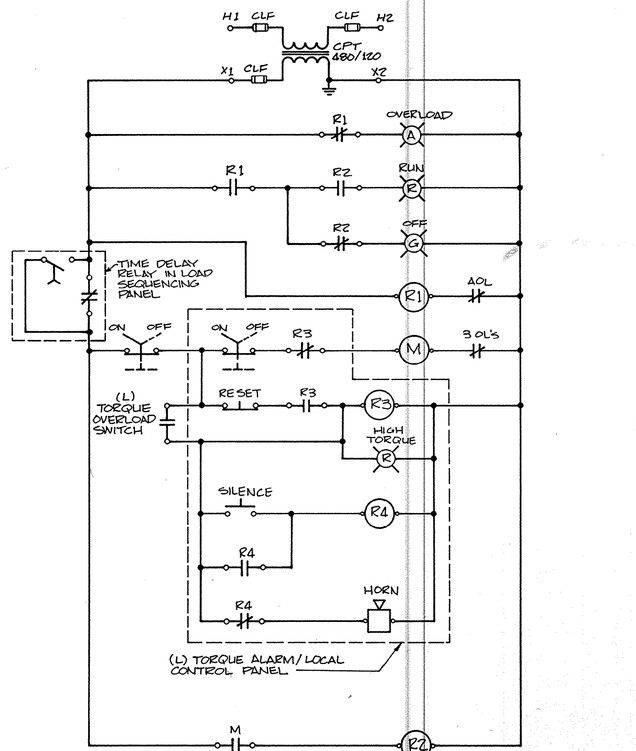
DRAWING NUMBER
C8202 E-6

V1509

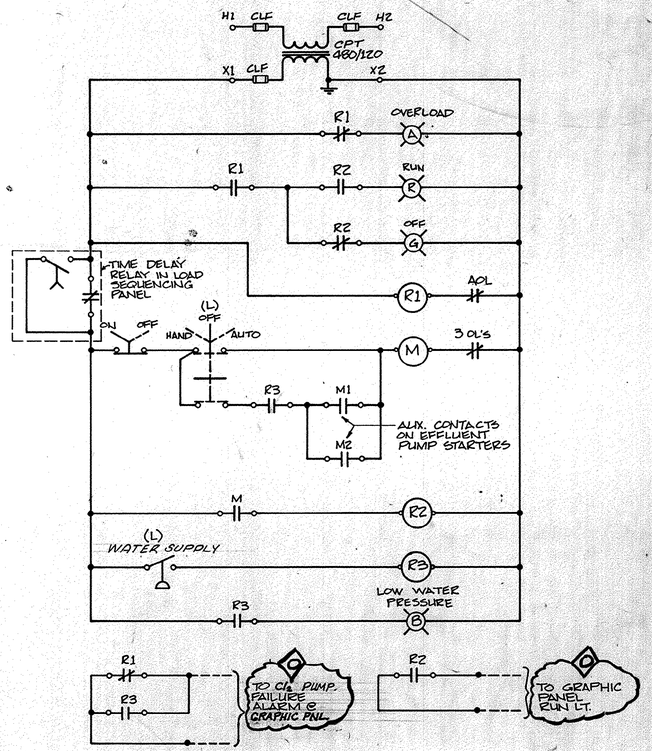


TYPICAL ORBAL DISC AERATOR DRIVE

(TYPICAL FOR 10)

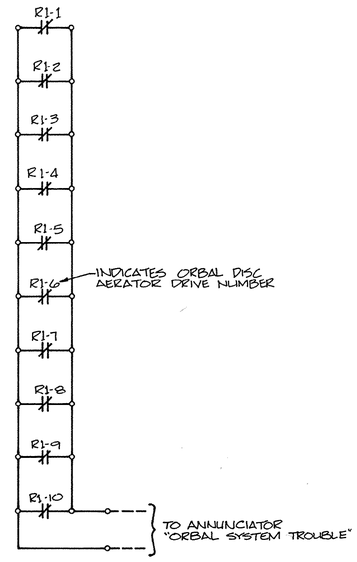


SECONDARY CLARIFIER DRIVE

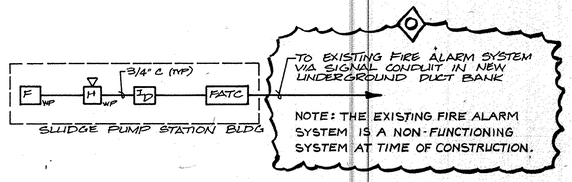


Cl_2 BOOSTER PUMP

NOTE: THE GRAPHIC PANEL IS A FUTURE ITEM.

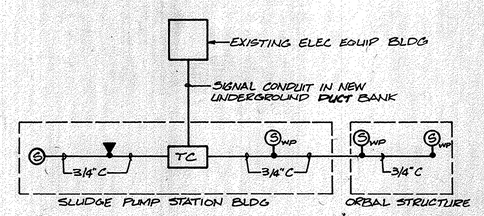


ORBAL TROUBLE ALARM



FIRE ALARM RISER DIAGRAM

NOT TO SCALE



TELEPHONE RISER DIAGRAM

NOT TO SCALE

NOTES

1. ALL DEVICES ARE LOCATED AT THE MOTOR STARTER, UNLESS NOTED OTHERWISE.
2. (L) INDICATES DEVICE LOCATED AT MOTOR.
3. "AOL" INDICATES AUXILIARY OVERLOAD RELAY.

REV. NO.	CODE CIRCLES	DATE	DESCRIPTION	CRSS APPV.
0	F O	11/91	RECORD DRAWING	
	TEM.		NOTE: CIRCLE ALL REVISIONS, IDENTIFY WITH DIAMOND, NUMBER AND ARROW. REMOVE ONLY CIRCLE AND ARROW BEFORE NEXT REVISION.	
	REV. BY			

ISSUE CODE		C	MAT'L T.O.	F	CONST'N
A	APPROVAL	D	MAT'L PURC.	G	
B	DESIGN	E	BIDS	H	

SEAL

SIGNATURE

5-23-89

DATE

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 5452 WILLIAM G. GODSEY, JR.

DR. J. HAYNIE	DATE 1/5/89
DSGN. M. DEUTSH	FILE NUMBER
CK. H. Carter	JOB NO. V-1509
DPE H. CARTER	
CAD FILE NO.	

SIRRINE ENVIRONMENTAL CONSULTANTS

Charleston, South Carolina

CRS SIRRINE Savannah, Georgia

GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

DRAWING TITLE

MOTOR ELEMENTARY DIAGRAMS

CLIENT DRAWING NUMBER

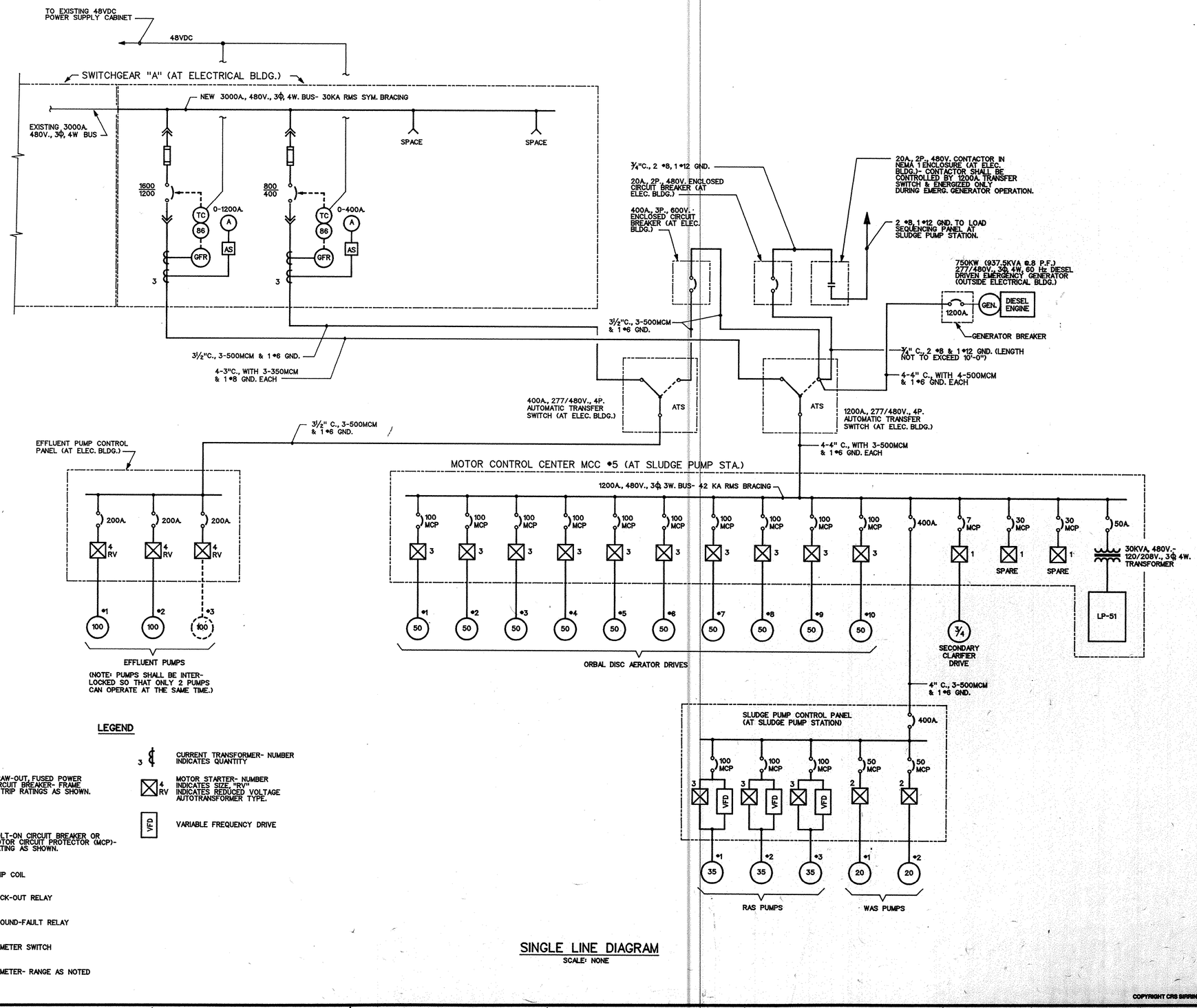
5-01-046.s

DRAWING NUMBER

C8202 E-7

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V-1509



SINGLE LINE DIAGRAM

SCALE: NONE

COPYRIGHT CRS SIRRINE, INC. DATE

NOTES

REV. NO.	CODE	CIRCLES	DATE	REV. BY	DESCRIPTION	CRSS APPV.
0	F	O	11/91	TEM	RECORD DRAWING	

NOTE: CIRCLE ALL REVISIONS, IDENTIFY WITH DIAMOND, NUMBER AND ARROW. REMOVE ONLY CIRCLE AND ARROW BEFORE NEXT REVISION.

ISSUE CODE					
A	APPROVAL	D	MAT'L PURC.	G	
B	DESIGN	E	BIDS	H	
C	MAT'L T.O.	F	CONST'N		

SEAL

SIGNATURE

5-23-89
DATE

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 5452 WILLIAM G. GODSEY, JR.

DR. M. BARRY	DATE 1/13/89
DSGN. M. DEUTSCH	FILE NUMBER
CK.	
DPE H. CARTER	JOB NO. V-1509
CAD FILE NO.	

SIRRINE ENVIRONMENTAL CONSULTANTS
Charleston, South Carolina
CRS SIRRINE Savannah, Georgia

GRAND STRAND WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
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HORRY COUNTY, S.C.

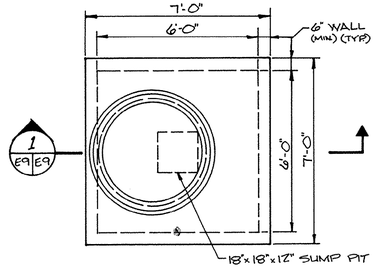
DRAWING TITLE

SINGLE LINE DIAGRAM

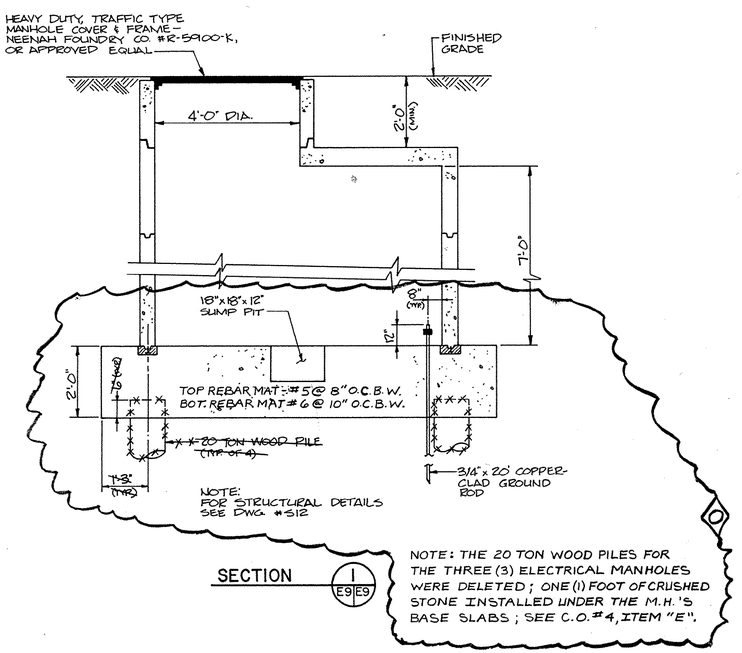
CLIENT DRAWING NUMBER
5-01-047s

DRAWING NUMBER
C8202 E-8

E-8



PLAN



SECTION 1 E9 E9

NOTE: THE 20 TON WOOD PILES FOR THE THREE (3) ELECTRICAL MANHOLES WERE DELETED; ONE (1) FOOT OF CRUSHED STONE INSTALLED UNDER THE M.H.'S BASE SLABS; SEE C.O. #4, ITEM "E".

TYPICAL MANHOLE DETAIL

SCALE: NONE

LIGHTING FIXTURE SCHEDULE

TYPE	MANUFACTURER & CATALOG NO.	LAMPS NO.	LAMPS TYPE	REMARKS
A	~~LITHONIA DV240AR120GWGLR~~ KEYSTONE LIGHTING LU240WL-DR-GVR	2	F40/RS	SURFACE/CEILING-MTD
B	~~LITHONIA DV240AR120GWGLR-EL~~ KEYSTONE LIGHTING LU240WL-DR-GVR-EM	2	F40/RS	SURFACE/CEILING-MTD
C	HOLOPHANE ~~WP1A07HP12BZP~~ WP2A0TNHP12BZ-D	1	70W HPS	SURFACE/WALL-MTD
D	HOLOPHANE (FIXTURE) EMSTC10HP12S1	6	1000W HPS	100' POLE W/FIXTURE LOWERING DEVICE
	HOLOPHANE (POLE) POLE NO. H-4532 HMS-100-H3426-GALV-6-LD5-3-LDP-120-SS-FAA-2-120-LA-LR	2	69A21/T5 (120V)	FAA OBSTRUCTION LIGHT (RED) (SEE FOOTING DETAIL BELOW)

PANELBOARD SCHEDULE

CKT No	EQUIP. SERVED	CKT WATTS	TRIP/POLE	LOAD (KW) ØA	ØB	ØC	TRIP/POLE	CKT WATTS	EQUIP. SERVED	CKT No
1	ENGINE BLOCK HTR 1	1330	20/3	2.66	—	—	20/3	1330	ENGINE BLOCK HTR 2	2
		1330		—	2.66	—		1330		
		1330		—	—	2.66		1330		
3	BATTERY CHARGER	500	15/1	0.70	—	—	20/1	200	FLOW METER	4
5	SPARE		15/1	—	0.20	—	20/1	200	FLOW METER	6
7	SPARE		15/1	—	—	0.20	20/1	200	SPARE	8
				—	—	—				
				—	—	—				
				—	—	—			

NOTES:

1) REMOVE EXISTING 10' x 20' CONCRETE SLAB AND DISPOSE OF OFF SITE OR AS DIRECTED BY OWNER.

2) CONTRACTOR SHALL CLOSE THE EXISTING UNDERGROUND STORAGE TANK (UST) IN ACCORDANCE WITH SCDHEC AND EPA'S REQUIREMENTS FOR CLEAN CLOSURES OF USTS BY PHYSICAL REMOVAL. THE TANK, PIPING AND VALVES SHALL BE REMOVED. THE CONTRACTOR SHALL PURGE AND CLEAN THE INSIDE OF THE TANK ACCORDING TO APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS. THE TANK SHALL BE REMOVED IN ACCORDANCE WITH API PUBLICATION NO. 1604, RECOMMENDED PRACTICE FOR ABANDONMENT OR REMOVAL OF USED UNDERGROUND SERVICE STATION TANKS. THE REMOVED UST SHALL BE CUT INTO SECTIONS AND DISPOSED OF AS SCRAP. ALL PERTINENT PERMITS, CLOSURE REPORTS, TRANSPORTATION RECORDS AND DISPOSAL RECORDS SHALL BE PROVIDED TO THE ENGINEER AND OWNER. REMOVAL AND DISPOSAL OF EXCAVATED SOIL SHALL BE IN AN ENVIRONMENTALLY SOUND MANNER BASED ON THE CONSULTANTS SAMPLING AND ANALYTICAL RESULTS. CONTRACTOR SHALL INSTALL AND PROPERLY COMPACT APPROVED UNCONTAMINATED FILL MATERIAL, EXISTING NATIVE AND/OR IMPORTED, INTO THE EXCAVATION LEFT BY THE REMOVAL OF THE TANK. THE FILL MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY AS DETERMINED BY THE MODIFIED PROCTOR METHOD (ASTM D-1557) IN 6 INCH LOOSE LAYERS. FILL MATERIAL SHALL BE "SAND-CLAY" WHICH IS IN COMPLIANCE WITH THE SOUTH CAROLINA HIGHWAY SPECIFICATION, SECTION 303. CONTRACTOR SHALL HAVE FOUR (4) IN-PLACE DENSITY TESTS PERFORMED AND THE RESULTS SUBMITTED TO THE ENGINEER.

3) REMOVE EXISTING FUEL DISPENSER AND PIPING; INSTALL NEW PUMP DISPENSER AT LOCATION SHOWN (A DISTANCE OF 50 FT. FROM SOUTH EDGE OF TANK) AND INSTALL PIPING AS SHOWN. MOUNT FUEL DISPENSER ON 3'-0"x3'-0"x8" CONCRETE SLAB. ELECTRICAL SERVICE TO BE 2#12/1#12 GND (THWN) IN 3/4" CONDUIT BURIED 36" MINIMUM.

4) CONSTRUCT 14'-8" x 34'-8" CONCRETE RUPTURE BASIN PER ATTACHED DRAWINGS; PROVIDE AND INSTALL 8'Ø x 27' LONG DIESEL FUEL TANK. THE TANK SHALL BE CONSTRUCTED OF CARBON STEEL AND BE U.L. 142 LABLED. THREE (3) STEEL SADDLES SHALL BE PROVIDED BY THE TANK SUPPLIER AND INSTALLED BY THE CONTRACTOR. THE TANK AND STEEL SADDLES SHALL BE PAINTED PER NOTE 9 ON SHEET 2 OF 3.

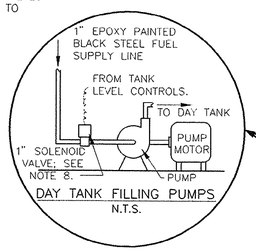
5) PIPING ALONG WALL SHALL BE SUPPORTED BY BRACKETS PROVIDED BY CONTRACTOR. BRACKETS SHALL BE ANCHORED PER CONTRACT SPECIFICATIONS. PIPES SHALL BE SECURED TO BRACKET WITH STAINLESS STEEL CLAMPS, BOLTS, NUTS, AND WASHERS. (SEE DETAIL 1-3-2 ON PLAN SHEET 3 OF 3).

6) THE PROPOSED GENERATOR SUPPLY PIPING SHALL TRAVERSE ELECTRICAL BUILDING ON BRACKETS (SEE DETAIL 1-3-2 ON PLAN SHEET 3 OF 3) ABOVE EXISTING ELECTRICAL BUSS CONDUIT AND BELOW BUILDING SOFFIT. PIPING TO EXISTING GENERATORS SHALL CROSS FROM ELECTRICAL BUILDING SUPPORTED BY PIPE GROUND SUPPORTS (SEE DETAIL 1-3-4) AND ENTER GENERATOR ENCLOSURE IN SAME LOCATION AS FORMER SUPPLY LINE.

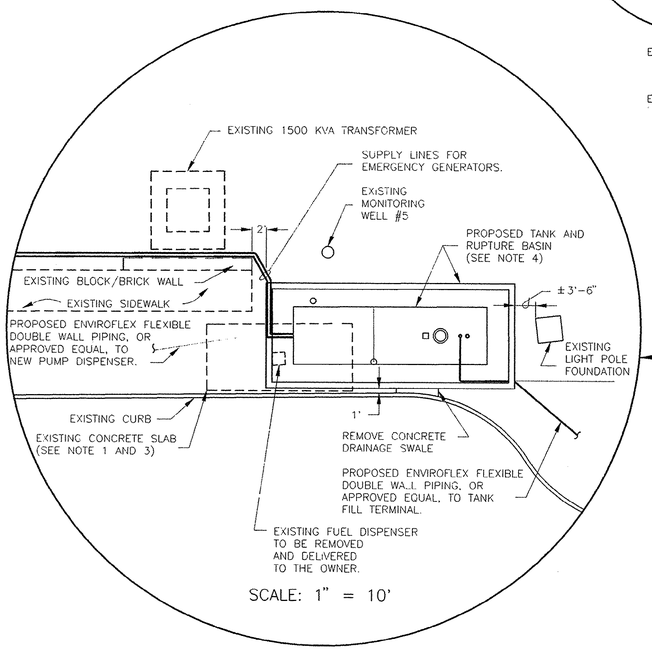
7) CONDUIT FROM THE FUEL PUMP DISPENSER TO 36" BELOW GROUND SHALL BE APPROVED RIGID METALLIC TYPE; PROVIDE CLASS 1 DIVISION 1 SEALS AS REQUIRED BY NFPA 30, NEC AND LOCAL CODES. RIGID NON-METALLIC CONDUIT MAY BE USED IN HORIZONTAL RUNS 36" BELOW GROUND. EXISTING CONDUIT MAY BE USED IF UNDAMAGED. CONDUCTORS SHALL BE CONTINUOUS (NO SPLICES PERMITTED) FROM DISPENSER AND SOLENOID VALVE TO PANEL BOARD. ALL CONDUIT LOCATED ABOVE GROUND SHALL BE RIGID METALLIC TYPE. INSTALLATION NEAR VENTS, DISPENSER, PUMPS ETC. SHALL COMPLY WITH NFPA 30A TABLE 6, AND NFPA 30 TABLE 5-3.5.3. ELECTRICAL EQUIPMENT AND WIRING SHALL BE OF A TYPE SPECIFIED BY AND INSTALLED IN ACCORDANCE WITH NFPA 70, NATIONAL ELECTRICAL CODE.

8) THE CONTRACTOR SHALL FURNISH AND INSTALL A 1" SOLENOID VALVE IN THE SUPPLY LINE TO EACH DAY TANK FILLING PUMP. THE VALVE(S) SHALL BE NORMALLY CLOSED, PACKLESS CONSTRUCTION, APPROVED FOR CLASS 1 GROUP D (GASOLINE\DIESEL FUEL) UL LISTED AND SUITABLE FOR OUTDOOR INDUSTRIAL INSTALLATION. THE VALVES SHALL BE A GOULD TYPE 0330 OR APPROVED EQUAL. ELECTRICAL CONNECTION SHALL BE MADE TO EXISTING DAY TANK LEVEL SYSTEM TO OPEN WHILE FILLING PUMP IS IN OPERATION.

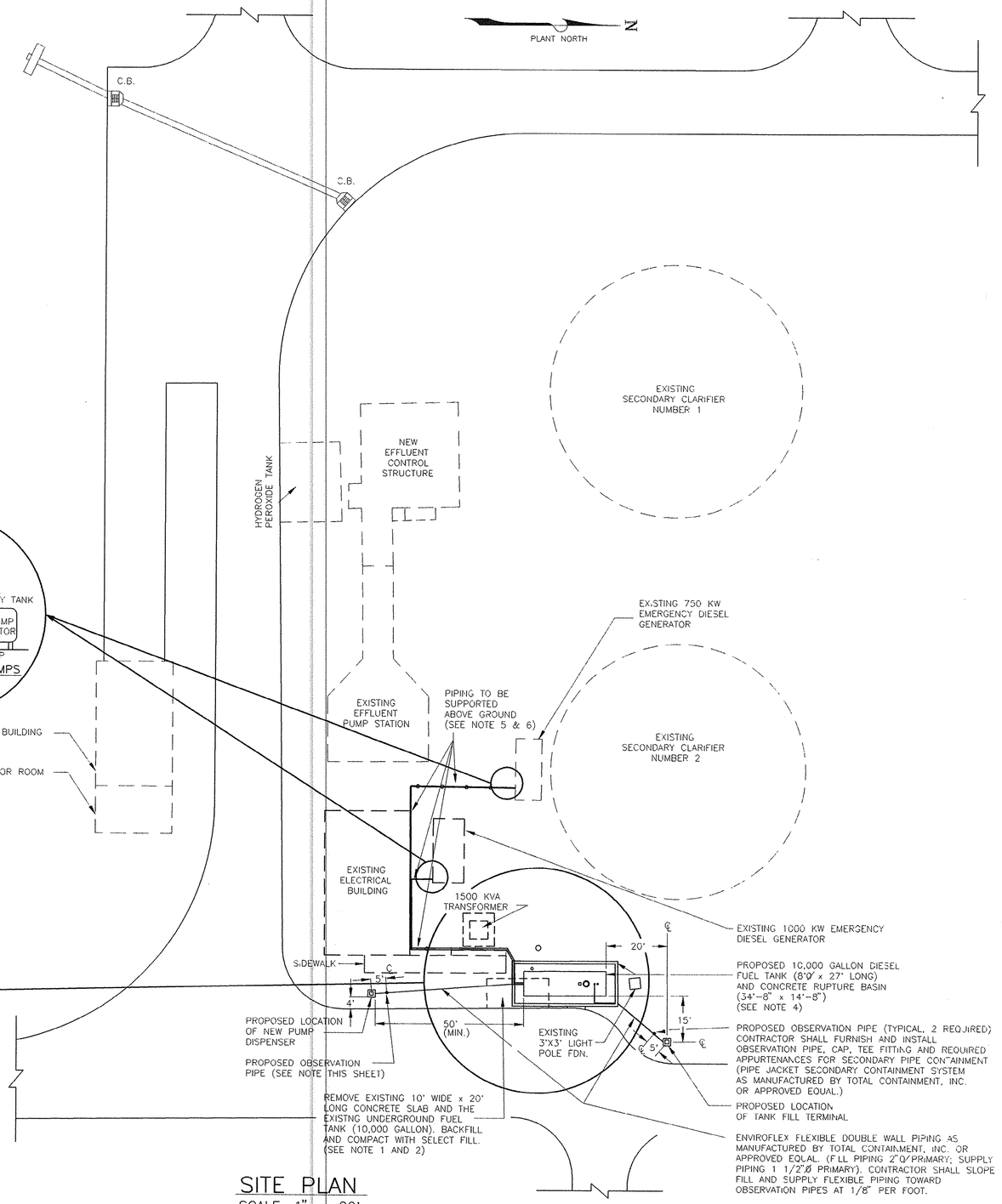
9) A U.L. 142 TENT TYPE CONTAINMENT MAY BE SUBMITTED FOR APPROVAL IN LIEU OF CONSTRUCTING THE CONTAINMENT CONCRETE WALLS IF ACCEPTABLE TO THE OWNER.



DAY TANK FILLING PUMPS
N.T.S.



SCALE: 1" = 10'



SITE PLAN
SCALE: 1" = 20'

DWG: 9309NP01
DATE: 05-28-92

REV. NO.	CODE	CIRCLES	DATE	DESCRIPTION	S.E.C. APPV.
				NOTE: CIRCLE ALL REVISIONS, IDENTIFY WITH DIAMOND, NUMBER AND ARROW. REMOVE ONLY CIRCLE AND ARROW BEFORE NEXT REVISION	

ISSUE CODE			
A	PRELIMINARY	D	MAT'L PURC.
B	DESIGN	E	BIDS
C	MAT'L T.O.	F	CONST'N

SEAL

SIGNATURE

DATE

SEC DONOHUE
Environment and Infrastructure

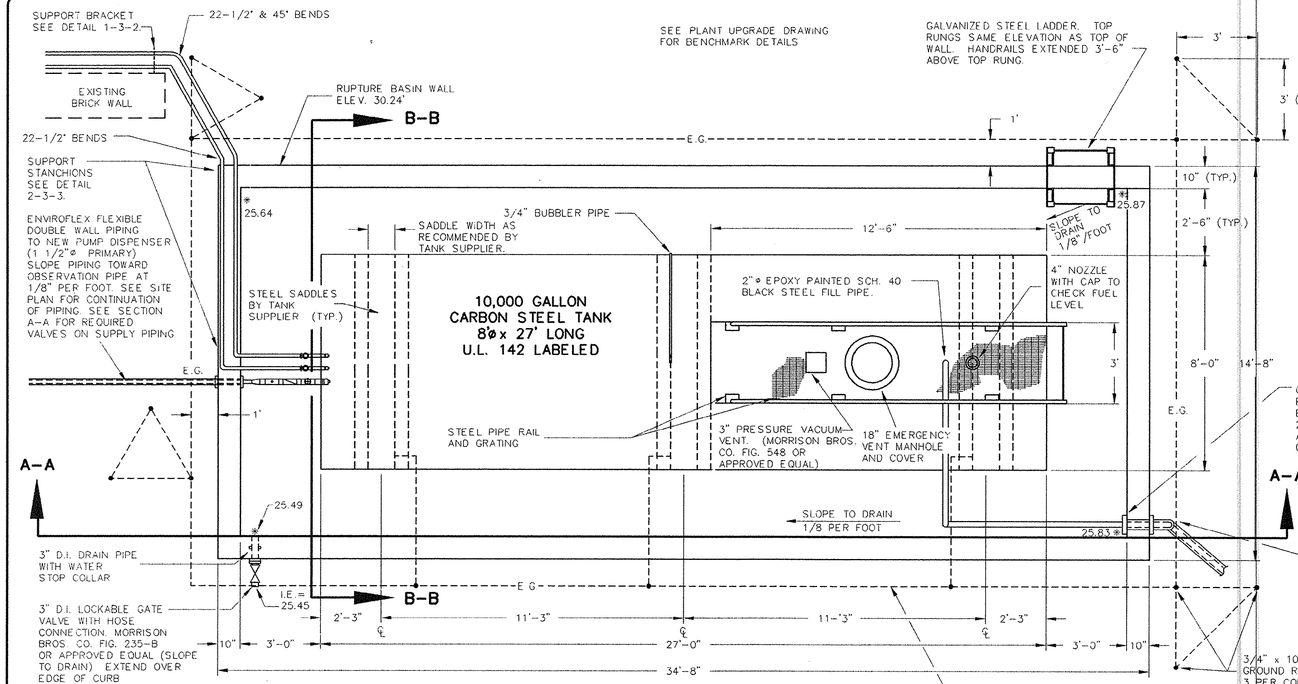
DSGN.	T. E. M. / C. J. F.	SCALE	1"=20'
DR.	W. D. H.	DATE	MAY 1992
CK.	C. J. F.	SIRRINE FILE NUMBER	C9309
APPV.	H. J. W.		

GRAND STRAND
WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

TANK REPLACEMENT
SITE PLAN

CLIENT DRAWING NUMBER
5-01-049 s

SIRRINE DRAWING NUMBER
C9309-1 of 3

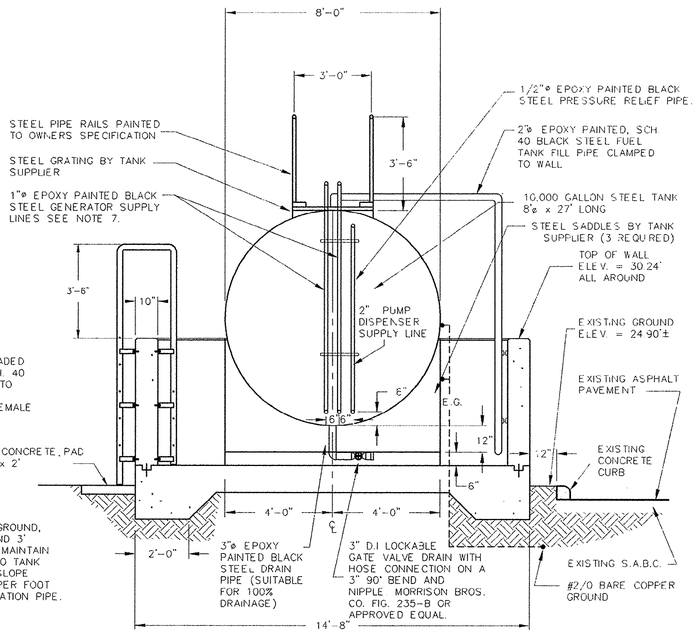


DIESEL FUEL TANK PLAN VIEW

SCALE: 3/8" = 1'

NOTES:

1) DISPENSER PUMP SHALL BE GILBARCO PUMP MODEL NO. 625-1 OR APPROVED EQUAL AND SHALL BE LISTED TO DISPENSE CLASS 1 LIQUIDS PER NFPA 30A 4-2.2 THE HOSE SHALL BE NFPA LISTED 3/4"ø x14' AND HAVE A NFPA LISTED EMERGENCY BREAK-AWAY DEVICE
2) THE PUMP DISPENSER PIPING SHALL HAVE A NFPA LISTED 52 VALVE THAT CUTS OFF THE FLOW OF LIQUID WHEN THE PUMP IS NOT OPERATING (TOKHEIM MANUFACTURING CO. MODEL 52 VALVE OR APPROVED EQUAL.)
3) THE DISPENSER SHALL BE LABELED TO IDENTIFY THE PRODUCT IN ACCORDANCE WITH NFPA 30 3-8.
4) CONTROLS ON THE DISPENSER SHALL COMPLY WITH NFPA 30A 4-2.3.
5) DISPERSING NOZZLE SHALL BE LISTED AND EQUIPPED WITH A HOLD OPEN DEVICE PER NFPA 30A 8-1.1 AND 8-5.6.
6) OPERATING AND EMERGENCY INSTRUCTIONS SHALL BE POSTED IN ACCORDANCE WITH NFPA 30A 8-5.4 AND 8-5.5.
7) WARNING SIGNS SHALL BE POSTED PER NFPA 30A 8-9.
8) CONNECT FUEL PUMP PIPING AS RECOMMENDED BY MANUFACTURER

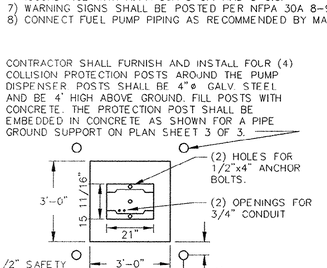


SECTION B-B

SCALE: 3/8" = 1'

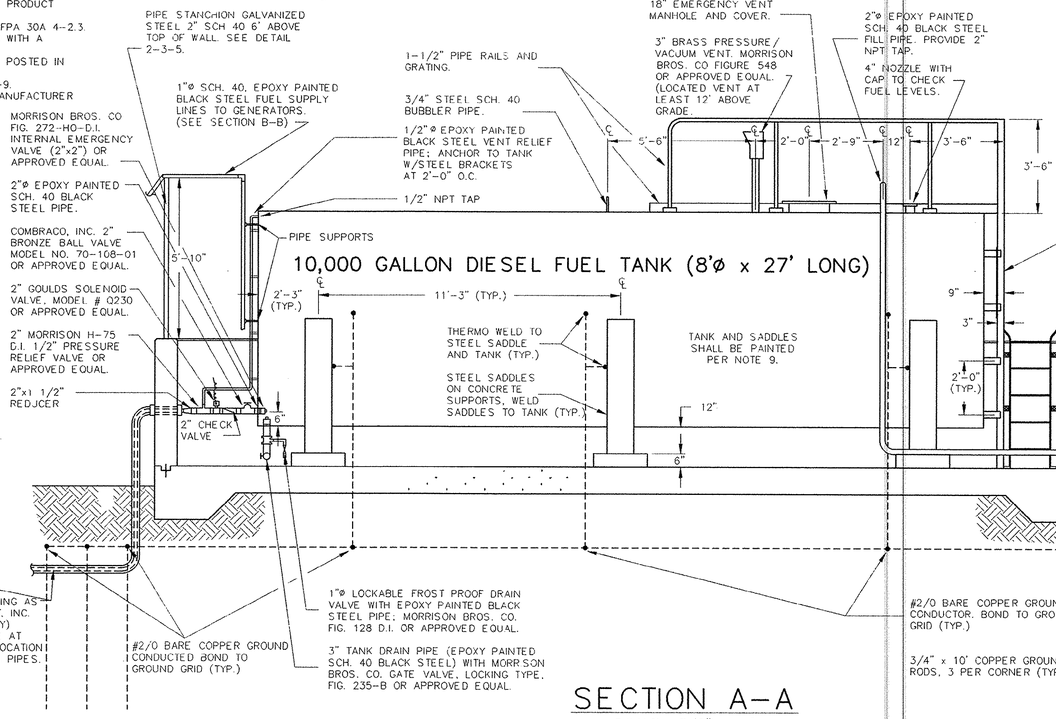
NOTES:

1) CONCRETE SPILL CONTAINMENT SUMP SHALL BE CONSTRUCTED AND SEALED LIQUID TIGHT.
2) TANK FIL. TERMINAL SHALL BE LABELED TO IDENTIFY THE PRODUCT IN ACCORDANCE WITH NFPA 30 3-8



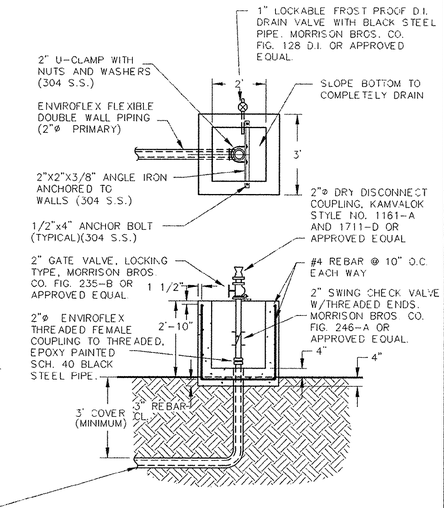
FUEL DISPENSER PLAN & PROFILE

SCALE: 3/8" = 1'



SECTION A-A

SCALE: 3/8" = 1'



TANK FILL TERMINAL PLAN & PROFILE

SCALE: 3/8" = 1'

NOTES:

1) CONTRACTOR SHALL RECONNECT EACH EXISTING FUEL LEVEL INDICATOR TO THE NEW TANK; REROUTE THE EXISTING PIPING AND INSTALL NEW PIPING, AS REQUIRED.
2) CONTRACTOR SHALL FURNISH & INSTALL FOUR (4) NFPA PLACARDS APPROPRIATE FOR NO. 2 DIESEL FUEL. EACH PLACARD SHALL BE ANCHORED TO THE O.S. FACE OF THE RUPTURE BASIN WALL WITH FOUR (4) 3/16" ø S.S. EXPANSION BOLTS, ONE PLACARD AT EACH SIDE, CENTERED.
3) CONTRACTOR SHALL FURNISH AND INSTALL ONE LIQUID LEVEL CONTROL SYSTEM (LC 1000 SERIES ALARM CONSOLE AND PNEUMERCATOR MODEL LS-600 LIQUID LEVEL FLOAT SWITCH) AS MANUFACTURED BY SOUTHERN PUMP AND TANK COMPANY, OR APPROVED EQUAL. MOUNT CONSOLE TO O.S. FACE OF CONCRETE STRUCTURE AT THE TANK FILL TERMINAL WITH FOUR (4) 1/4" ø S.S. EXPANSION BOLTS. PROVIDE CONDUIT AND WIRING FOR 120 VOLT ELECTRICAL SERVICE. ALSO CONDUIT AND WIRING FROM FLOAT SWITCH TO THE CONSOLE AND TO ALARM HORN LOCATION. (SEE SHEET 1 REGARDING CONDUIT) AS RECOMMENDED BY THE MANUFACTURER. PROVIDE 2" ø N.P.T. TAP AT TANK FOR THE FLOAT SWITCH.
4) UNDERWRITER LABORATORIES, INC. LISTING MARK SHALL BE CLEARLY STAMPED ON THE FUEL TANK. THE CONTRACTOR SHALL TEST TANK, PIPING AND CONNECTIONS IN ACCORDANCE WITH NFPA 30A SECTION 2-7.3.
5) CONTRACTOR SHALL CLEARLY LABEL THE TANK AS TO THE CONTENT AND VOLUME.
6) CONTRACTOR SHALL FURNISH AND INSTALL ONE (1) NFPA LISTED FIRE EXTINGUISHER HAVING A MIN. CLASSIFICATION OF 20 B:C LOCATED AS DIRECTED BY THE OWNER.
7) INSTALL 1" SPATCO "APOLLO" #82-105 BALL SHUT OFF VALVES AND MORRISON INTERNAL EMERGENCY VALVES IN EACH GENERATOR SUPPLY LINE.
8) THE SYSTEM PIPING SHALL BE TESTED IN ACCORDANCE WITH NFPA 30 3-7 AND NFPA 30A 3-5.
9) ALL FERROUS METALS TO BE PAINTED SHALL BE CLEANED PER SSPC-SP1-63 AND COATED WITH TWO (2) COATS OF TNEMEC SERIES 66-1255 H-BUILD EPOXOLINE OR APPROVED EQUAL. OWNER SHALL SPECIFY COLOR.

SEAL

SIGNATURE

DATE

SEC DONOHUE
Environment and Infrastructure

DSGN.	T.E.M./C.J.F.	SCALE	AS SHOWN
DR	W.D.H./D.E.B.	DATE	MAY 1992
CK.	C.J.F.	SIRRINE FILE NUMBER	C9309
APPV.	H.J.W.		

GRAND STRAND
WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

TANK VIEWS

CLIENT DRAWING NUMBER
5-01-050 s

SIRRINE DRAWING NUMBER
C9309-2 of 3

DWG: 9309ND02
PLT DATE: 05-28-92

NOTES

1) REINFORCING STEEL: ASTM A615, GRADE 60, DEFORMED BARS, UNCOATED FINISH.

2) CONCRETE USED SHALL BE 5,000 P.S.I. AT 28 DAYS.

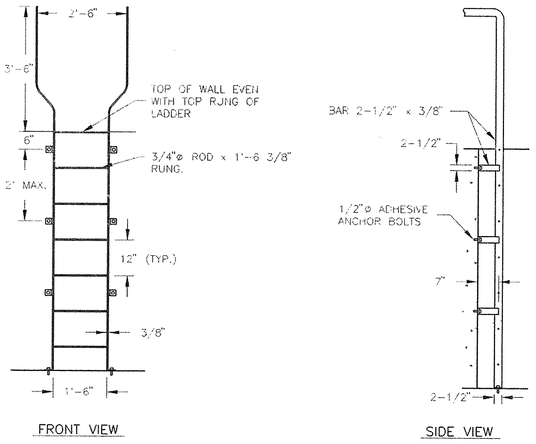
3) POLYVINYL CHLORIDE WATERSTOP SHALL BE VULCAN #8033, 3/8" x 6" AND SHALL BE CONTINUOUS.

4) ALL EDGES SHALL HAVE 3/4" CHAMFER.

5) COMPACT EARTH BENEATH RUPTURE BASIN TO 95% OF THE SOILS MAXIMUM DENSITY.

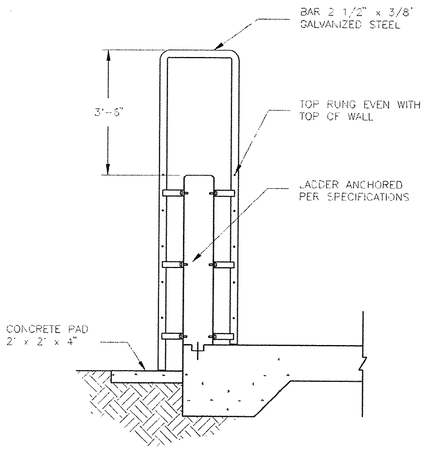
6) CONCRETE BASIN SHALL BE WATER TIGHT. CONTRACTOR SHALL FILL BASIN PRIOR TO TANK INSTALLATION. BASIN SHALL HOLD WATER FOR 24 HOURS WITHOUT VISIBLE LEAKAGE.

7) BRACKET SHALL BE GRINNELL OR APPROVED EQUAL. SUGGESTED BRACKET TO BE MOUNTED USING BACKING PLATE FOR WEIGHT DISTRIBUTION. PIPES CLAMPED USING ONE HOLE CLAMPS. STAINLESS STEEL BOLTS, NUTS, AND WASHERS.



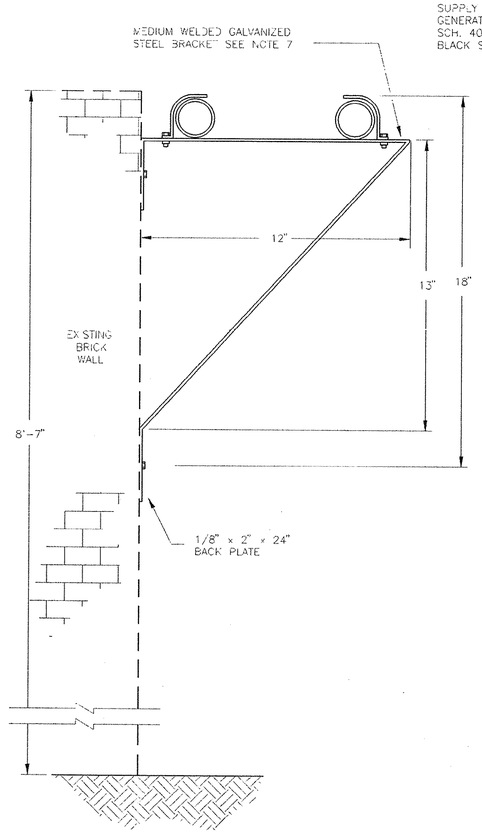
FRONT VIEW

SIDE VIEW



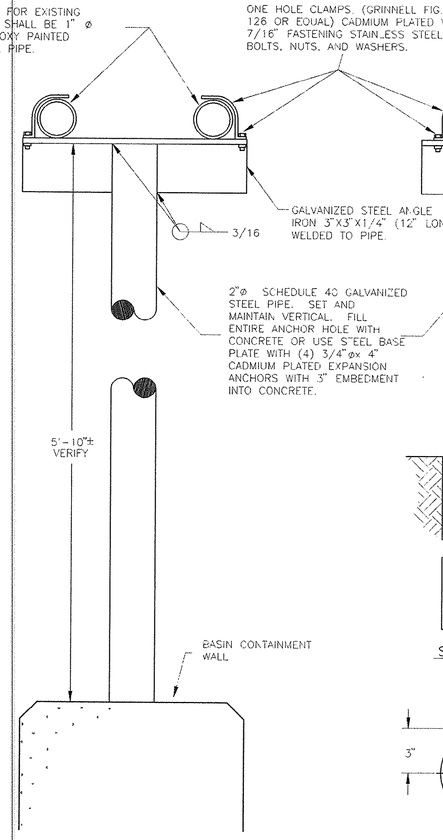
LADDER DETAIL
DETAIL 2-3-1

N.T.S.

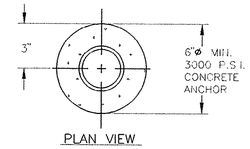


PIPE BRACKET SUPPORT
DETAIL 1-3-2

N.T.S.



SECTION VIEW



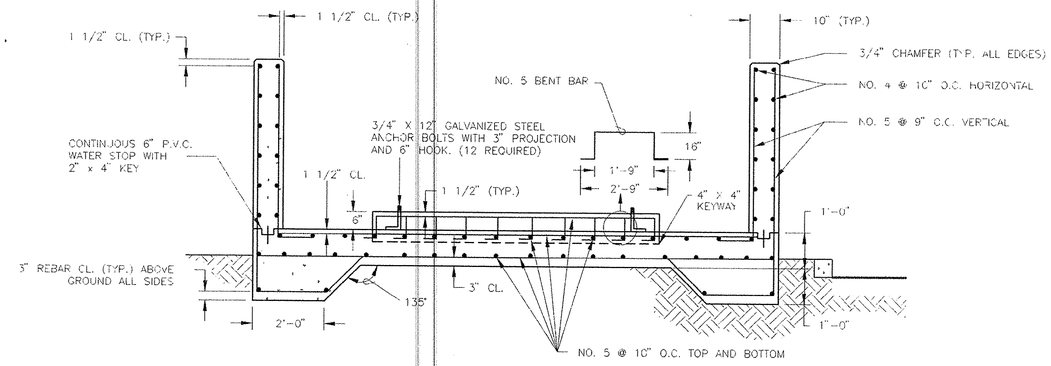
PLAN VIEW

PIPE WALL STANCHION
DETAIL 2-3-3

N.T.S.

PIPE GROUND SUPPORT
DETAIL 1-3-4

N.T.S.



STRUCTURAL DETAILS
SECTION B-B

SCALE: 1/2" = 1'

DWG: 9309ND03
PLOT DATE: 05-28-92

REV. NO.	CODE CIRCLES	DATE	DESCRIPTION	SIRRINE APPV.
			NOTE: ON CYCLE ALL REVISIONS (EX. TAB) WITH DIAMOND, NUMBER AND ARROW. REMOVE ONLY CIRCLE AND ARROW BEFORE NEXT REVISION.	

ISSUE CODE			
A	PRELIMINARY	C	MAT'L T.C.
B	DESIGN	D	MAT'L PURC.
		E	BIDS
		F	CONSTN.

SEAL

SIGNATURE

DATE

SEC DONOHUE
Environment and Infrastructure

DSGN.	C.J.F. / T.E.M.	SCALE	AS SHOWN
DR.	W.D.H.	DATE	MAY 1992
CK.	C.J.F.	SIRRINE FILE NUMBER	C9309
APPV.	H.J.W.		

GRAND STRAND
WATER & SEWER AUTHORITY
J.L. SCHWARTZ WWTP
4.0 MGD ADDITION
HORRY COUNTY, S.C.

DETAIL SHEET

CLIENT DRAWING NUMBER
5-01-051 s

SIRRINE DRAWING NUMBER
C9309-3 of 3