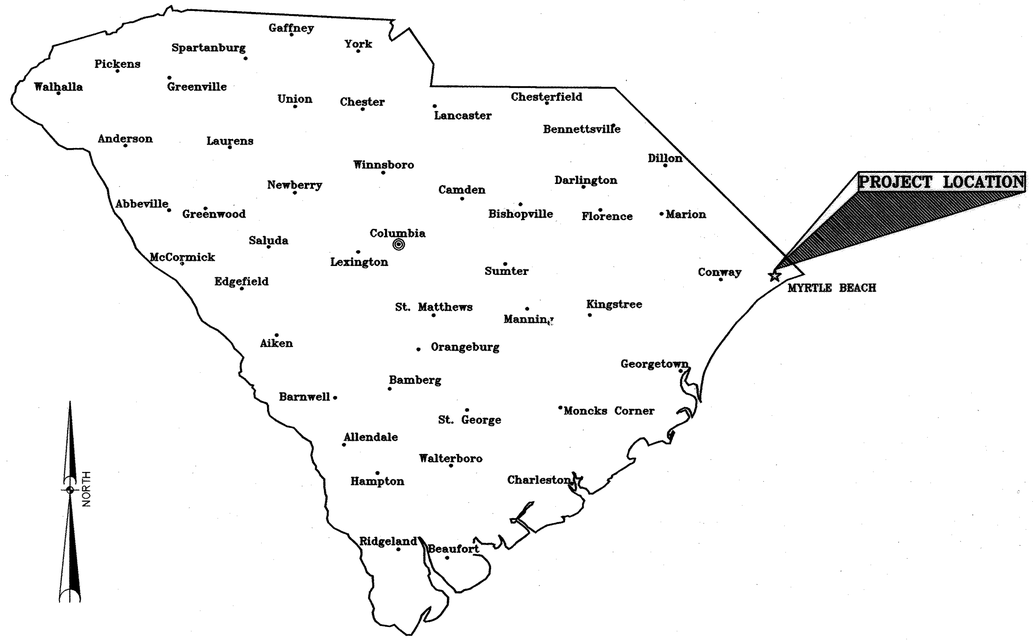
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

IMPROVEMENTS TO THE SURFACE WATER TREATMENT FACILITY ALUM SLUDGE HANDLING

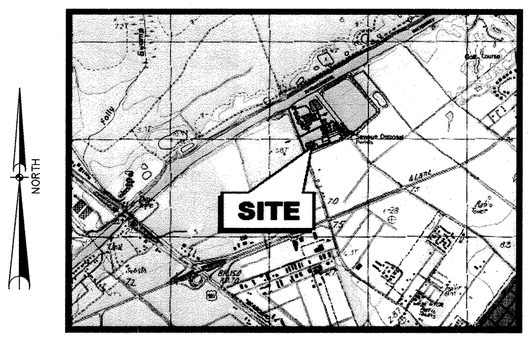
FOR

CITY OF MYRTLE BEACH, SOUTH CAROLINA

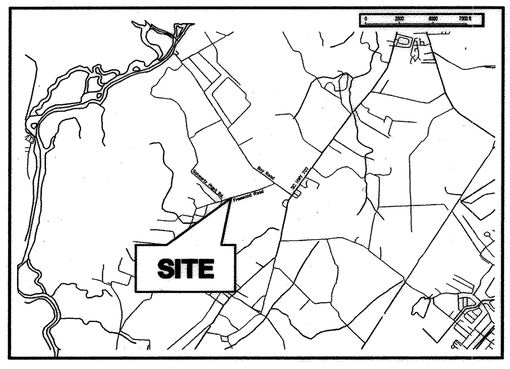
SRF PROJECT NO. 494-04



VICINITY MAP



WASTEWATER TREATMENT PLANT SITE
SCALE: 1" = 2,000'



DECHLORINATION FACILTY SITE
SCALE: 1" = 2,500'

CITY COUNCIL
HONORABLE MARK S. McBRIDE, MAYOR
SUSAN MEANS
WILSON CAIN
MICHAEL CHESTNUT
WAYNE GRAY
CHARLES W. MARTINO, JR.
JUDY RODMAN

HORRY COUNTY
SOUTH CAROLINA

RECORD DRAWINGS
DATE: SEPT., 2003

SOUTH CAROLINA B. P. BARBER & ASSOCIATES, INC. No. C00020 CERTIFICATE OF AUTHORIZATION — SEAL — DATE FEBRUARY, 2001

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 7973 THAN VICTOR THOMAS — SEAL — SIGNATURE

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 7039 GLEN T. SHEALY — SEAL — SIGNATURE

bpb

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS

2611 FOREST DRIVE SUITE 100 29204
P.O. BOX 1116
COLUMBIA, S.C. 29202-1116
(803) 254-4400

1524 S. SIESTA DRIVE 29205-6032
P.O. BOX 12518
FLORENCE, S.C. 29504-6032
(843) 665-9166

9601 GREENVILLE HIGHWAY
P.O. BOX 7709
SPARTANBURG, S.C. 29301-5226
(864) 949-1111

5300 INTERNATIONAL BOULEVARD
NORTH CHARLESTON, S.C. 29418
(843) 767-4602

FEBRUARY, 2001

PROJECT NO. 00149

FILE NO. 22-85-00

51-004-001 5

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CIVIL

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1 NEW DISTRIBUTION CHAMBER #5 SECTIONS	M16A
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1 NEW SECONDARY CLARIFIER #5 PLAN	M17A
~~NEW SECONDARY CLARIFIER #5 SECTION~~	~~M18~~
1 NEW SECONDARY CLARIFIER #5 SECTION	M18A
~~NEW SECONDARY CLARIFIER #5 SECTIONS~~	~~M19~~
1 NEW SECONDARY CLARIFIER #5 SECTIONS	M19A
~~NEW SECONDARY CLARIFIER #5 SECTIONS & DETAIL~~	~~M20~~
1 NEW SECONDARY CLARIFIER #5 SECTIONS & DETAIL	M20A
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1 NEW METER VAULT PLANS, SECTION AND SCHEDULE	M36A
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RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO	DESCRIPTION	DATE	BY
1	ALTERNATE NO. 1	2-01	RTH

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: MAB
DRAWN BY: JCR
CHECKED BY: TVT
APPROVED: JDP

NORTH CAROLINA PROFESSIONAL ENGINEER CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. C0500 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7873 REGISTERED THOMAS V. TYNER — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: DRAWING INDEX
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149G1
REF.
N.B. NO. 1731
PROJECT NO. 00149
SHEET G1 OF 2

FILE NO. 22-85-00

51-004-002 S

GENERAL SYMBOLS

EXISTING BUILDING

EXISITNG ASPHALT PAVEMENT

NEW ASPHALT PAVEMENT

EXISTING CONCRETE PAVEMENT W/CURB & GUTTER

NEW CONCRETE PAVEMENT

EXISTING STRUCTURE

NEW STRUCTURE

EXISTING SIDEWALK

NEW SIDEWALK

S849.42 W686.00 — COORDINATE LOCATION

+ 189.2 — EXISTING SPOT ELEVATION

x 189.45 — NEW SPOT ELEVATION

189 — EXISTING CONTOUR

189 — NEW CONTOUR

PP — EXISTING POWER POLE

PP — NEW POWER POLE

LP — EXISTING LIGHT POLE

NEW LIGHT POLE (TWO LIGHT FIXTURE)

NEW LIGHT POLE (FOUR LIGHT FIXTURE)

EMH — EXISTING ELECTRICAL MANHOLE

MH — EXISTING MANHOLE

MH — NEW MANHOLE

DI — EXISTING DROP INLET

DI — NEW DROP INLET

JB — EXISTING JUNCTION BOX

JB — NEW JUNCTION BOX

HW — EXISTING HEAD WALL

HW — NEW HEAD WALL

EXISTING FENCE

NEW FENCE

GENERAL SYMBOLS (CONT.)

FH — EXISTING FIRE HYDRANT

FH — NEW FIRE HYDRANT

YH — EXISTING YARD HYDRANT

YH — NEW YARD HYDRANT

CO — EXISTING CLEAN OUT

CO — NEW CLEAN OUT

EXISTING YARD PIPING

NEW YARD PIPING

SILT FENCE

EXISTING TREE LINE

CLEARING LIMITS

℄ — PROPERTY LINE

OHP — POWER LINE (OVERHEAD)

UGP — POWER LINE (UNDERGROUND)

T — TELEPHONE LINE

EXISTING DITCH LINE

TOP OF DITCH (EXISTING)

DETAIL REFERENCES

1 / M3 — DETAIL NUMBER; SHEET WHERE DETAIL APPEARS

1 / M3

DETAIL SCALE: 1/4" = 1'-0" — 1 / M2 — DETAIL NUMBER; SHEET WHERE DETAIL IS NOTED

OPH — USED TO INDICATE THAT DETAIL SHOWN IS OPPOSITE HAND.

SECTION REFERENCES

A / M6 — SECTION LETTER; SHEET WHERE SECTION APPEARS

SECTION SCALE: 1/4" = 1'-0" — A / M6 — SECTION LETTER; SHEET WHERE SECTION IS CUT

OPH — USED TO INDICATE THAT SECTION SHOWN IS OPPOSITE HAND.

MATERIALS

EARTH OR GRADE

GRANULAR FILL (ROCK/GRAVEL)

CONCRETE

CMU (CONCRETE MASONRY UNIT)

BRICK MASONRY

CHECKERED PLATE

STEEL

BAR GRATING

GROUT FILL

RIGID INSULATION

PIPING

EXISTING — NEW

N | 6 | DWS — N (NEW); E (EXISTING); LINE SIZE; PIPE IDENTIFIER

IDENTIFIER	DESCRIPTION
CW	COOLING WATER
AIR	AIR
CL	CHLORINE
CLS	CHLORINE SOLUTION
DWS	DEWATERED SLUDGE
DGSL	DIGESTED SLUDGE
DRN	DRAIN
DRSL	DRIED SLUDGE
DUCT	DUCT
EFF	EFFLUENT
FC	FERRIC CHLORIDE
1 INF	PLANT INFLUENT
LSD	LIME SOLUTION
LA	LIQUID ALUM
LPA	LOW PRESSURE AIR
MXL	MIXED LIQUOR
NG	NATURAL GAS
NPW	NONPOTABLE WATER
OVF	OVERFLOW
PIN	PLANT INFLUENT
PIN	PLANT INFLUENT
1 PLI	POLYMER
POS	POLYMER SOLUTION
PW	POTABLE WATER
RAS	RETURN ACTIVATED SLUDGE
RCP	RECIRCULATED POLYMER
REC	RECIRCULATED CHLORINE
RD	ROOF DRAIN
SAN	SANITARY SEWER
SBS	SODIUM BISULFITE SOLUTION
SCW	SCUM WASTE
SE	SECONDARY EFFLUENT

PIPING (CONT.)

IDENTIFIER	DESCRIPTION
SLF	SLUDGE FEED
SPFM	SUMP PUMP FORCE MAIN
SLG	SLUDGE
SD	STORM DRAIN
SMPL	SAMPLE LINE
SN	SUPERNATE
SPFM	SUMP PUMP FORCE MAIN
THR	THICKENED RETURN
TS	THICKENED SLUDGE
UDR	UNDER DRAIN
VNT	VENT
WAS	WASTE ACTIVATED SLUDGE

VALVE, GATE AND DAMPER ACTUATOR SYMBOLS

E — ELECTRIC

P — PNEUMATIC

S — SOLENOID

HW — MANUAL HANDWHEEL

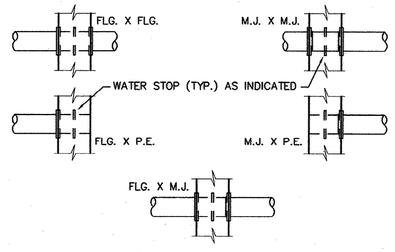
HW/EB — MANUAL HANDWHEEL W/EXTENDED BONNET

CW — MANUAL CHAINWHEEL

L — MANUAL LEVER

N — MANUAL OPERATING NUT

WALL PIPES



VALVES

CHECK BALL

BALL

GATE

SEALED PORT — PLUG

BUTTERFLY

SWING CHECK

MISCELLANEOUS SYMBOLS

SG — SLIDE GATE ELEVATION

SG — SLIDE GATE PLAN

LOUVER DAMPER

EXPANSION JOINT

EQUIPMENT DESIGNATION

NEW OWNER SUPPLIED, INSTALLED THIS CONTRACT

NEW PROVIDE AND INSTALLED THIS CONTRACT

EXISTING

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	CHANGE PER ADDENDUM #3	2-26	AR

APPROVALS: PROJECT ENG: RTH; DESIGNED BY: MAB; DRAWN BY: GS/MAB; CHECKED BY: TVT; APPROVED: JDP

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT — B.P. BARBER & ASSOCIATES, INC. — CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER — No. 7073 — THOMAS V. WILLIAMS — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: GENERAL CIVIL AND MECHANICAL LEGEND — DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 99127G2	SHEET G2
REF.	OF 2
N.B. NO. 1731	
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-003

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REVISIONS				APPROVALS	DATE	SIGNATURE	B. P. BARBER & ASSOCIATES, INC.	DATE: FEB., 2001 SCALE: AS SHOWN	PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I	DISK: OVERSITE	SHEET: C1 OF 17	FILE NO. 22-85-00
NO.	DESCRIPTION	DATE	BY	PROJECT ENG: RTH			ENGINEERS - PLANNERS - SURVEYORS	SHEET TITLE		REF:		
				DESIGNED BY: AMR			COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE			N.B. NO. 1731		
				DRAWN BY: AMR						PROJECT NO. 00149		
				CHECKED BY: TYT								
				APPROVED: JDP								

S
51-004-004

RECORD DRAWINGS
DATE: SEPT., 2003

GRAPHIC SCALE
0 100 200

PLANT NORTH

PLAN "A"
PLAN "B"
PLAN "C"

N03+98.62
E15+04.36

N07+12.99
E09+17.54

TEMP. BENCHMARK
PK NAIL
IN TREE
ELEV.=22.47

N06+92.33
E01+15.40

9+00N 10+00N 11+00N 12+00N 13+00N 14+00N

0+00E 1+00E 2+00E 3+00E 4+00E 5+00E 6+00E 7+00E 8+00E 9+00E 10+00E 11+00E 12+00E 13+00E 14+00E 15+00E 16+00E 17+00E 18+00E

0+00N 1+00N 2+00N 3+00N 4+00N 5+00N 6+00N 7+00N 8+00N

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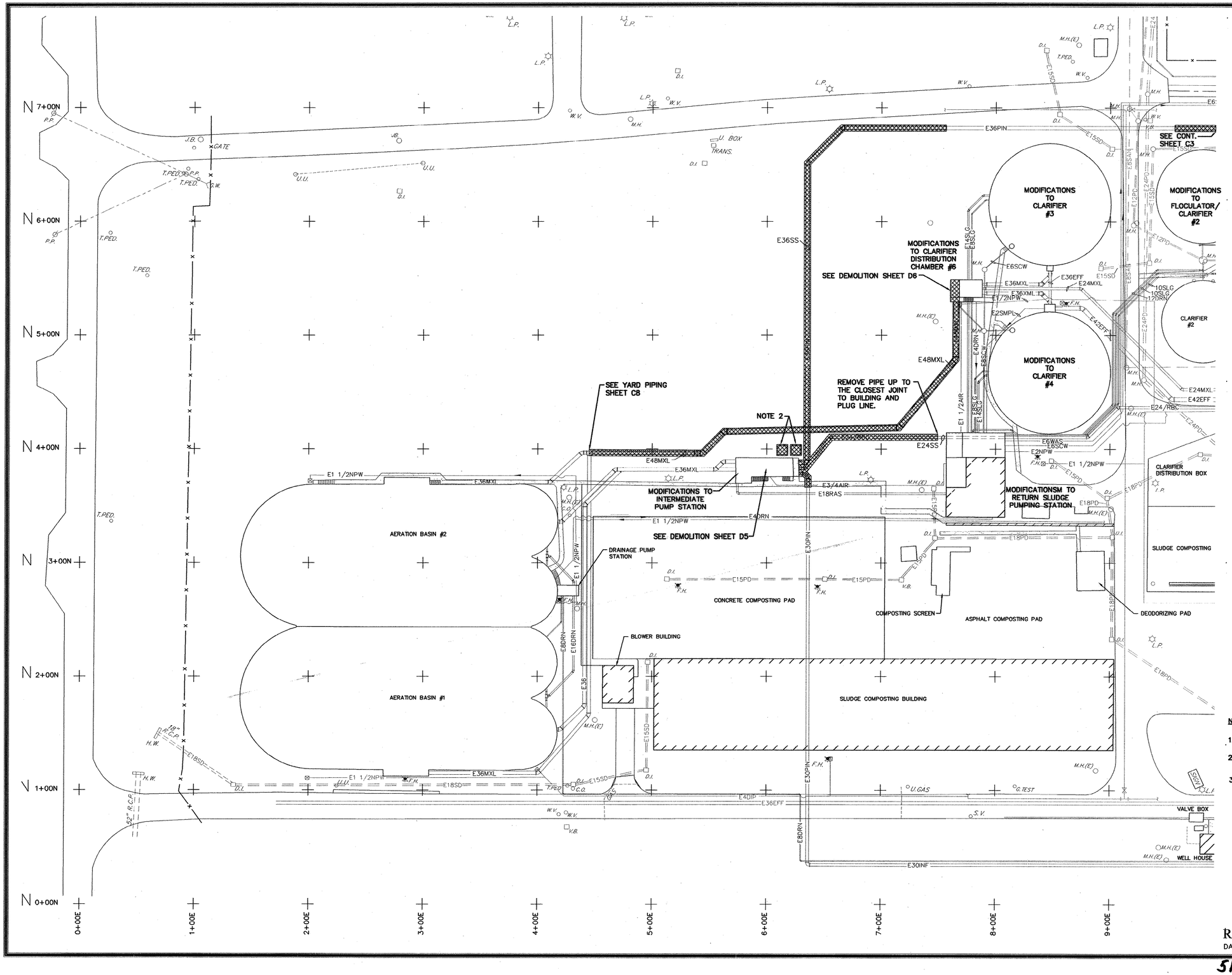

NOTES:

1. REMOVE PIPE AND DISPOSE OFF SITE.
2. SAVE CHEMICAL EQUIPMENT AND RETURN TO OWNER.
3. THE LOCATION AND SIZES OF EXISTING PIPING ARE SHOWN IN AN APPROXIMATE WAY BASED UPON AVAILABLE RECORDS. CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF PIPING.

0 40 80
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS	
PROJECT ENG:	RTH
DESIGNED BY:	AMR
DRAWN BY:	AMR
CHECKED BY:	TVT
APPROVED:	JDP

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL — B.P. BARBER & ASSOCIATES, INC. — CERTIFICATE OF AUTHORIZATION No. C0555 — DATE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL — No. 7673 — REGISTERED — THOMAS V. TAYLOR — SIGNATURE

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY
PHASE I

SHEET TITLE
DEMOLITION PLAN "A"
DATE: FEB., 2001 SCALE: AS SHOWN

bpb
B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

DISK	SHEET
SITEADEMO	C2
REF.	OF
N.B. NO. 1731	17
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-005

5

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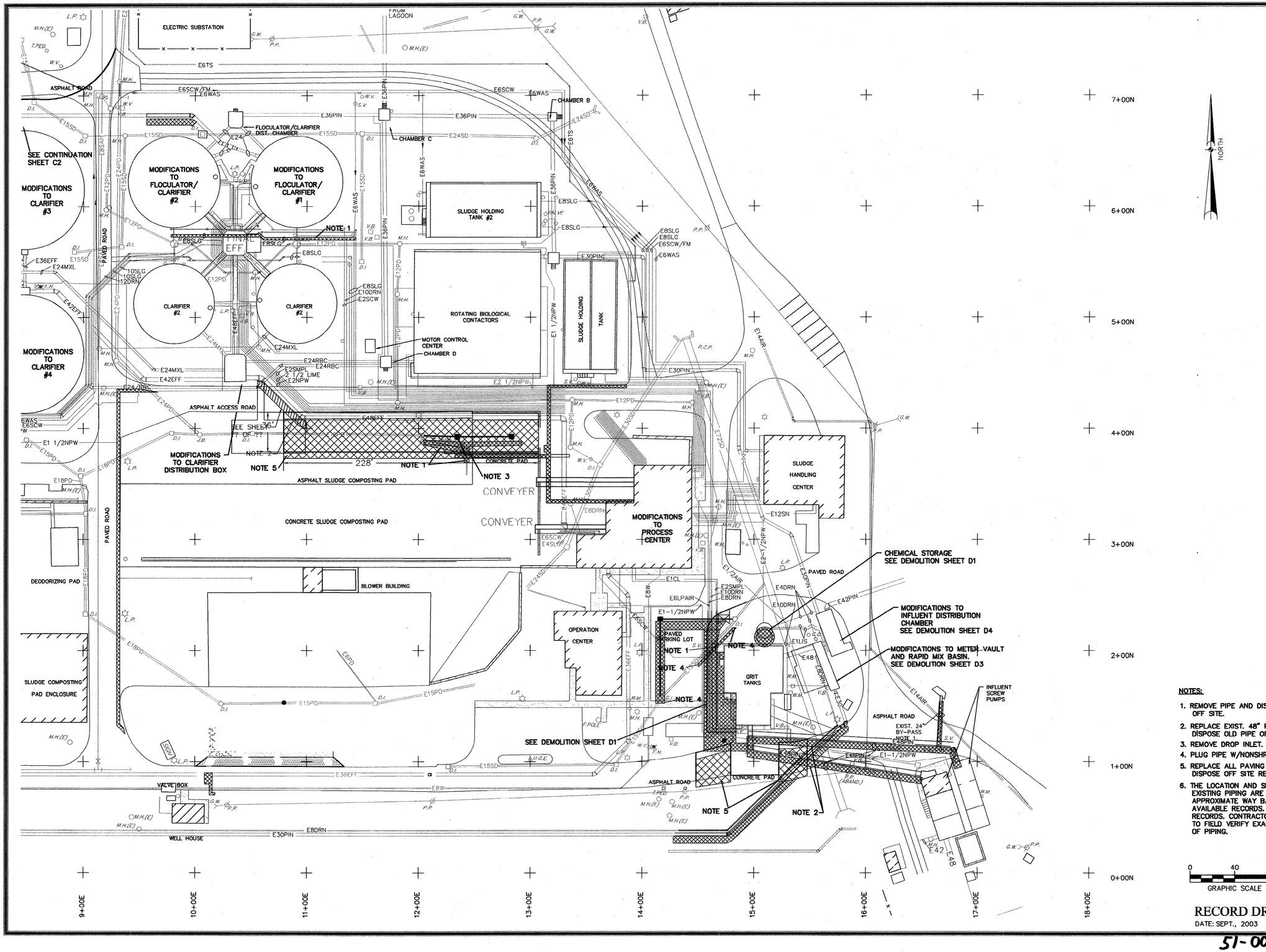

NOTES:

1. REMOVE PIPE AND DISPOSE OFF SITE.
2. REPLACE EXIST. 48" PIPE AND DISPOSE OLD PIPE OFF SITE.
3. REMOVE DROP INLET.
4. PLUG PIPE W/NONSHRINK GROUT
5. REPLACE ALL PAVING IN THIS AREA, DISPOSE OF SITE REMOVED PAVING.
6. THE LOCATION AND SIZES OF EXISTING PIPING ARE SHOWN IN AN APPROXIMATE WAY BASED UPON AVAILABLE RECORDS. CONTRACTOR RECORDS. CONTRACTOR TO TO FIELD VERIFY EXACT LOCATION OF PIPING.

0 40 80
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS	
PROJECT ENG:	RTH
DESIGNED BY:	AMR
DRAWN BY:	AMR
CHECKED BY:	TVT
APPROVED:	JDP

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION — B.P. BARBER & ASSOCIATES, INC. — No. COA000

DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER — REGISTERED — No. 7873 — THOMAS VERNON

SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: DEMOLITION PLAN "B"
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SITEBDEMO
REF.	
N.B. NO.	1731
PROJECT NO.	00149
SHEET	C3
OF	17
FILE NO.	22-85-00

51-004-006

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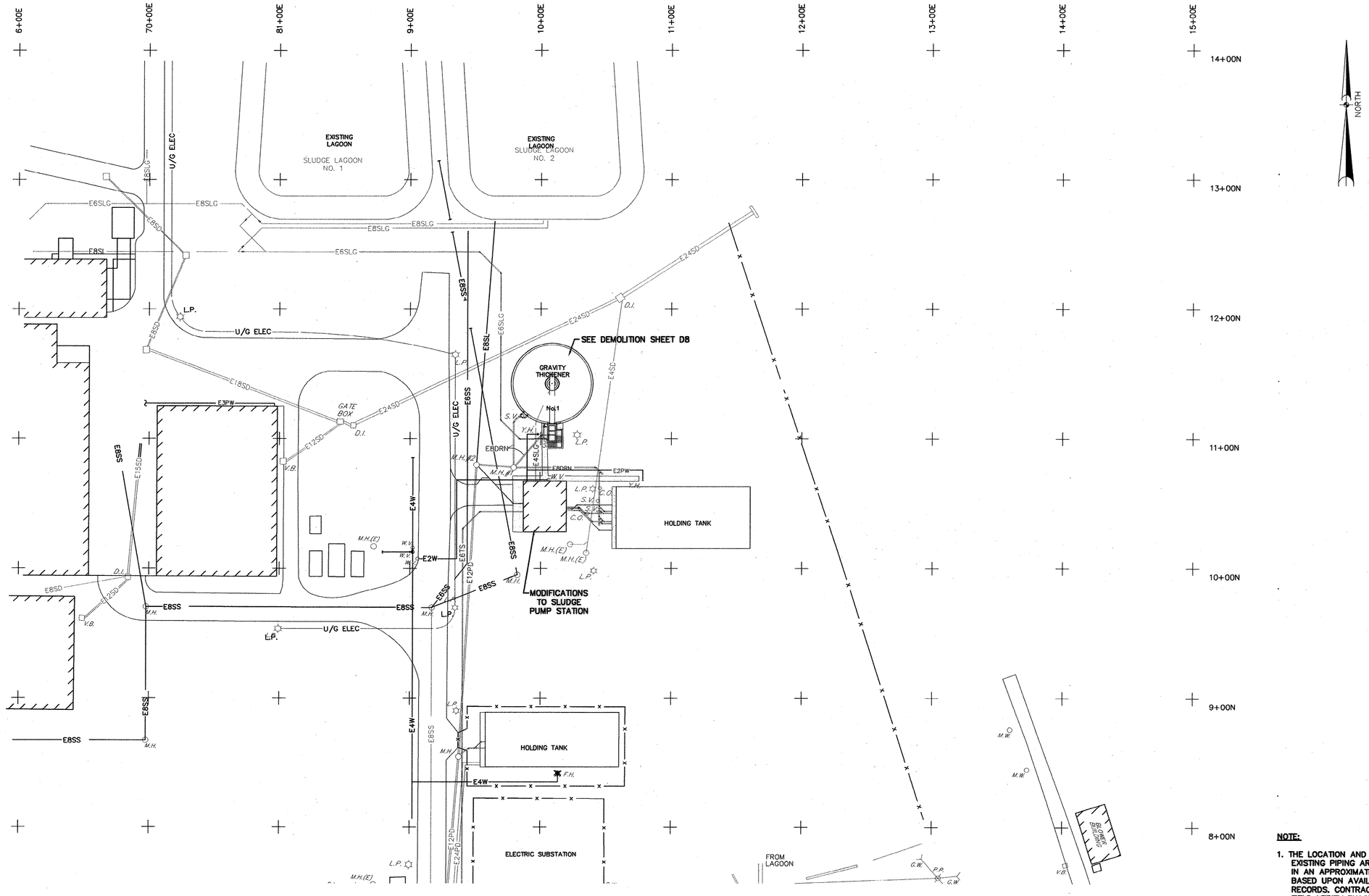

NOTE:

1. THE LOCATION AND SIZES OF EXISTING PIPING ARE SHOWN IN AN APPROXIMATE WAY BASED UPON AVAILABLE RECORDS. CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF PIPING.

0 40 80
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS	
PROJECT ENG:	RTH
DESIGNED BY:	AMR
DRAWN BY:	AMR
CHECKED BY:	TVT
APPROVED:	JDP

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT — B.P. BARBER & ASSOCIATES, INC. — CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER — No. 7073 — THOMAS VERNON TYLER — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: DEMOLITION PLAN "C"
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SITECDEMO
REF.	
N.B. NO.	1731
PROJECT NO.	00149
SHEET	C4
OF	17
FILE NO.	22-85-00

51-004-007 S

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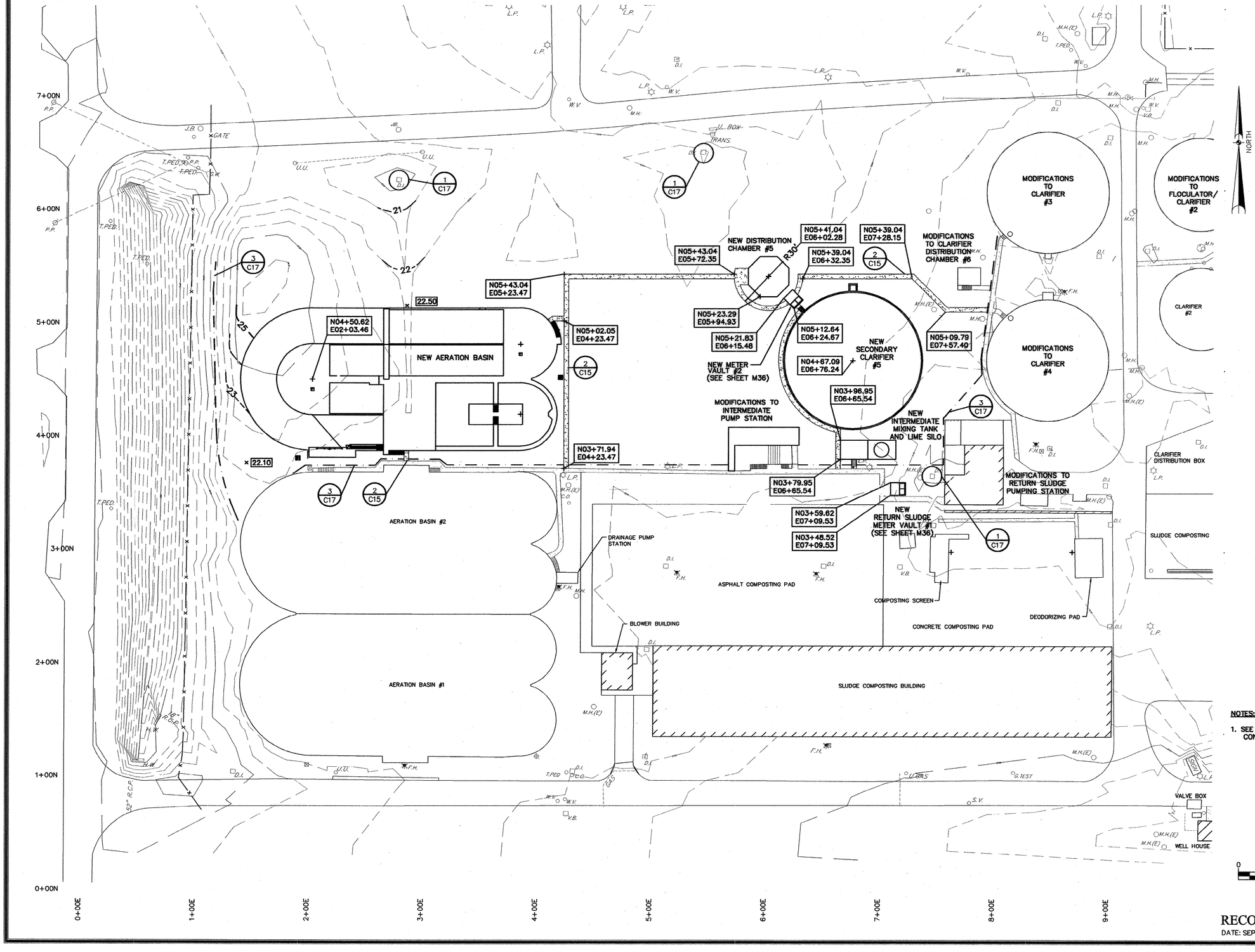

NOTES:

1. SEE SHEET C17 FOR EROSION CONTROL DETAILS AND NOTES.

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS	
PROJECT ENG:	RTH
DESIGNED BY:	AMR
DRAWN BY:	AMR
CHECKED BY:	TVT
APPROVED:	JDP

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL — R.P. BARBER & ASSOCIATES, INC. — No. 6003 — REGISTERED — DATE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL — No. 7673 — REGISTERED — THOMAS V. VERCH — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
STAKING, GRADING AND EROSION CONTROL PLAN "A"
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SITEASTK
REF.	
N.B. NO.	1731
PROJECT NO.	00149
SHEET	C5
OF	17
FILE NO.	22–85–00

51-004-008 S

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ELECTRIC SUBSTATION

NEW CHAMBER #3 — 17 C14 — N07+29.87 E09+93.00

NEW CHAMBER #2 — 16 C14 — N07+29.87 E10+01.00

N07+29.87 E11+65.29

N07+29.87 E11+73.29

CHAMBER B

CHAMBER C

FLOCULATOR/CLARIFIER DIST. CHAMBER

MODIFICATIONS TO FLOCULATOR/ CLARIFIER #2

MODIFICATIONS TO FLOCULATOR/ CLARIFIER #1

MODIFICATIONS TO CLARIFIER #3

MODIFICATIONS TO CLARIFIER #4

FINAL EFF.

CLARIFIER #2

CLARIFIER #2

SLUDGE HOLDING TANK #2

ROTATING BIOLOGICAL CONTACTORS

SLUDGE HOLDING TANK

MOTOR CONTROL CENTER

CHAMBER D

21.00

BOLLARD (3 TYP.) 5 C15

21.00

21.00

NOTE 2

N04+01.49 E12+25.25

N03+83.49 E12+25.25

NEW DEWATERING FACILITY

CONVEYER

CONVEYER

CONCRETE PAVEMENT

SLUDGE COMPOSTING PAD

13 C16

SLUDGE HANDLING CENTER

MODIFICATIONS TO PROCESS CENTER

3+00N

DEODORIZING PAD

BLOWER BUILDING

12+00E

9 C16 — N02+28.35 E14+16.23 IE: 26.45

N02+43.59 E14+93.00

NEW GRIT CHAMBER

NOTE 2

R20'

35.40

35.50

35.25

NOTE 4.

2 C15

36.25

30'-3"

N02+15.53 E14+78.00

NOTE 2

GRIT TANKS

22'

MODIFICATIONS TO INFLUENT DISTRIBUTION CHAMBER

MODIFICATIONS TO METER VAULT AND RAPID MIX BASIN.

INFLUENT SCREW PUMPS

OPERATION CENTER

2 C17

SLUDGE COMPOSTING PAD ENCLOSURE

N01+52.97 E10+79.72 — 10 C16

IE: 15.50

1 C17

NOTE 1 & 2

TW28.50

29.33

TW31.17

1 C17

30

TW31.17

10' (TYP.)

SIGN

CONCRETE PAVEMENT

NEW BAR SCREEN

NOTE 2

NEW CHAMBER #1 NOTE 2 — 15 C14

NEW CHLORINATION FACILITY

ASPHALT PAVEMENT

NEW CHLORINE INJECTION POINT VAULT

VALVE BOX

N01+09.28 E10+18.00

10 C16 — N01+18.85 E14+73.48 IE: 28.00

NEW GENERATOR BUILDING

WELL HOUSE

N00+84.34 E10+02.00

NEW SAMPLE POINT/ METER VAULT #3 (SEE SHEET M36) NOTE 1 & 2

N00+84.34 E10+15.00

N00+83.00 E12+04.83

N00+83.00 E12+15.83

N00+80.66 E14+48.18

N01+06.85 E14+95.50

7+00N

6+00N

5+00N

4+00N

3+00N

2+00N

1+00N

0+00N

9+00E

10+00E

11+00E

12+00E

13+00E

14+00E

15+00E

16+00E

17+00E

18+00E

NORTH

NOTES:

1. CONSTRUCT NEW MH. OVER EXIST. LINE
2. MATCH EXISTING ELEVATIONS.
3. SEE SHEET C17 FOR EROSION CONTROL GENERAL DETAILS AND NOTES
4. NEW SIDEWALK TO DRAIN AWAY FROM NEW STRUCTURES.

0 40 80
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

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REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS					
PROJECT ENG: RTH	DESIGNED BY:	DRAWN BY:	CHECKED BY: TVT	APPROVED: JDP	

SOUTH CAROLINA — B.P. BARBER & ASSOCIATES, INC. — No. C00000 — CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA — PROFESSIONAL ENGINEER — REGISTERED — No. 7073 — THOMAS VICTOR — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

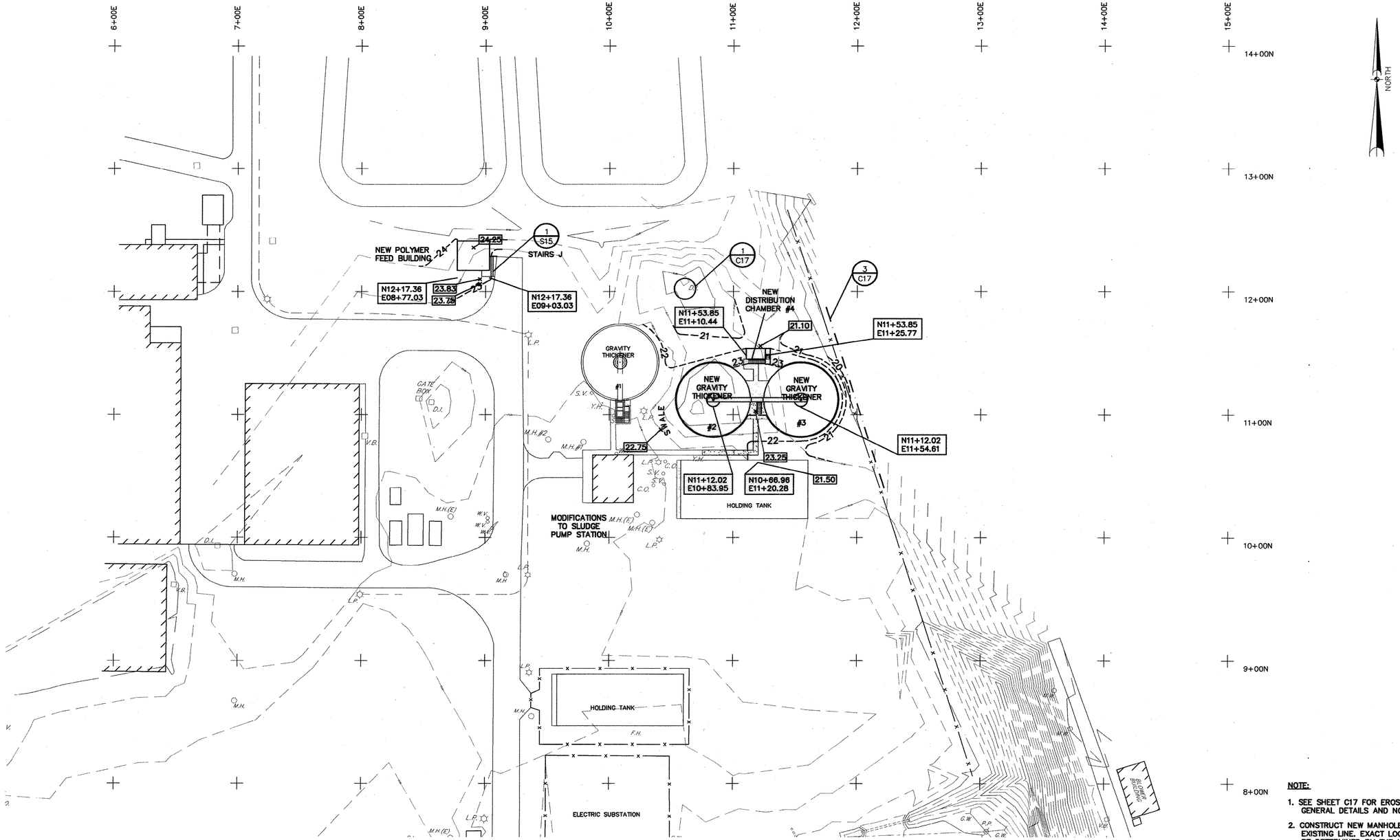
SHEET TITLE: STAKING, GRADING AND EROSION CONTROL PLAN "B"
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
SITEBSTK	C6
REF.	OF
N.B. NO. 1731	17
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-009 S



NOTE:

1. SEE SHEET C17 FOR EROSION CONTROL GENERAL DETAILS AND NOTES.
2. CONSTRUCT NEW MANHOLE OVER EXISTING LINE. EXACT LOCATION TO BE DETERMINED BY THE LOCATION OF THE POLYMER FEED BLDG. DRAIN LINE.

0 40 80
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS	
PROJECT ENG:	RTH
DESIGNED BY:	AMR
DRAWN BY:	AMR
CHECKED BY:	TVT
APPROVED:	JDP

NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 7073 THOMAS V. TAYLOR — DATE

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 19008 B.P. BARBER & ASSOCIATES, INC. — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: STAKING, GRADING AND EROSION CONTROL PLAN "C"
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SITECSTK
REF.	
N.B. NO.	1731
PROJECT NO.	00149
SHEET	C7
OF	17

FILE NO. 22-85-00

51-004-010-5

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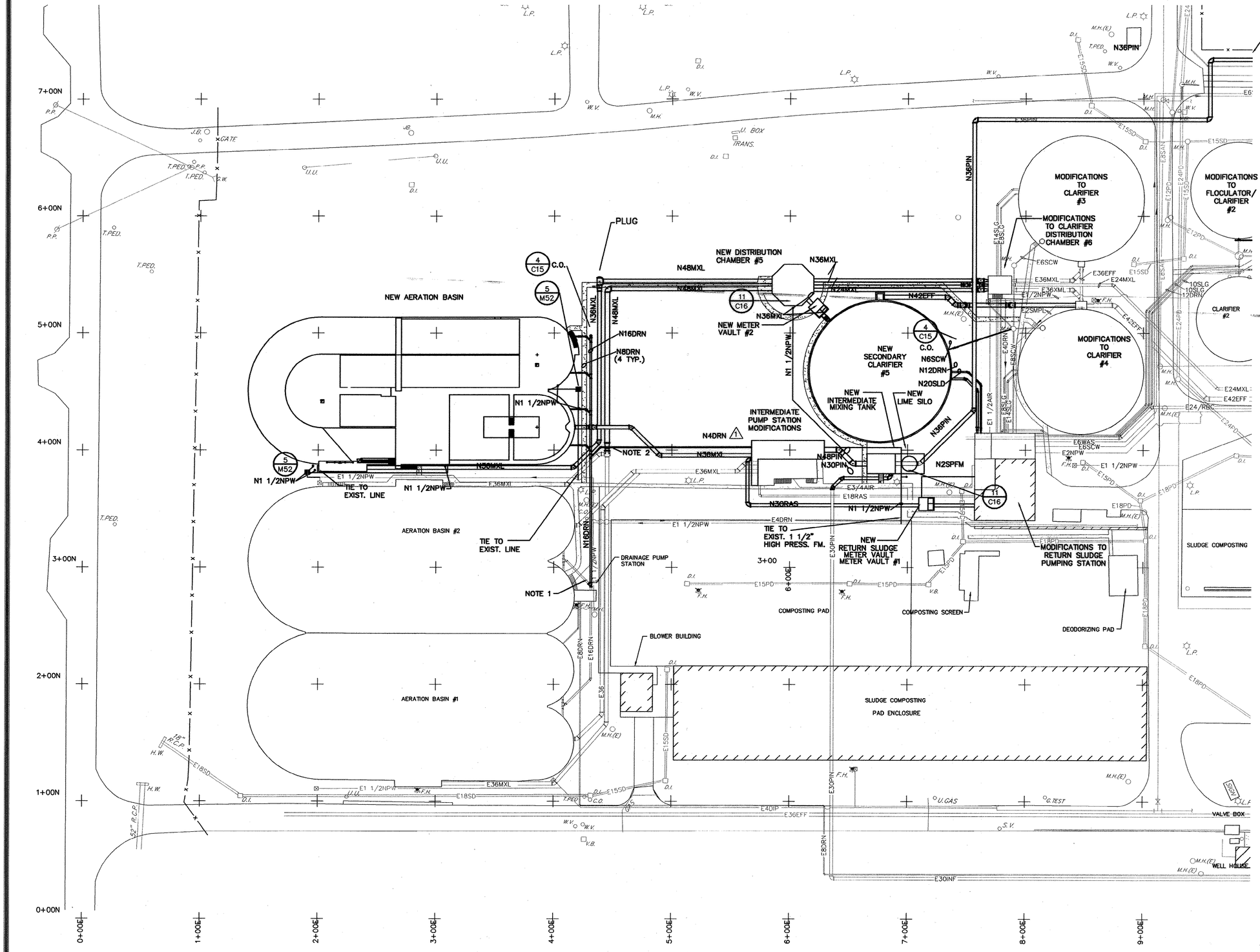

NOTES:

1. REPLACE 45° BEND WITH A WYE AND TIE NEW DRAIN LINE.
2. EXIST. TEE TO BE REMOVED AND RESET TO RECEIVE NEW 36"x48" REDUCER.
3. THE LOCATION AND SIZES OF EXISTING PIPING ARE SHOWN IN AN APPROXIMATE WAY BASED UPON AVAILABLE RECORDS. CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF PIPING.
4. SEE SHEET M17A FOR PIPING LAYOUT RELATED TO CLARIFIER #5 (ALTERNATE).

0 40 80
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	CHANGE PER	3-1	AR
2	ADDENDUM #4		

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: AMR
DRAWN BY: AMR
CHECKED BY: TVT
APPROVED: JDP

NORTH CAROLINA CERTIFICATE OF AUTHORIZATION B. P. BARBER & ASSOCIATES, INC. No. C-000350 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7673 REGISTERED THOMAS V. PETTIGREW — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: PIPING PLAN "A"
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SITEAPIPE
REF.	
N.B. NO.	1731
PROJECT NO.	00149
SHEET	C8
OF	17
FILE NO.	22-85-00

51-004-011 5

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ELECTRIC SUBSTATION
NEW CHAMBER #3
NEW CHAMBER #2
FROM LAGOON
CHAMBER B
CHAMBER C
CHAMBER D
FLOCULATOR/CLARIFIER DIST. CHAMBER
MODIFICATIONS TO FLOCULATOR/ CLARIFIER #2
MODIFICATIONS TO FLOCULATOR/ CLARIFIER #1
MODIFICATIONS TO CLARIFIER #3
MODIFICATIONS TO CLARIFIER #4
CLARIFIER #2
CLARIFIER #1
FINAL EFF
SLUDGE HOLDING TANK #2
SLUDGE HOLDING TANK
ROTATING BIOLOGICAL CONTACTORS
TIE TO EXIST. 2 1/2 NPW
TIE TO E6SLG
2 NEW 6" PLUG VALVE
PAVED SLUDGE COMPOSTING PAD
CONCRETE SLUDGE COMPOSTING PAD
NEW DEWATERING FACILITY
CONVEYER
SLUDGE HANDLING CENTER
MODIFICATIONS TO PROCESS CENTER
BLOWER BUILDING
OPERATION CENTER
NEW GRIT CHAMBER
GRIT TANKS
EXIST. SCREENS
PAVED PARKING LOT
NEW 48" BY-PASS
48" PLUG VALVE AND BOX
INFLUENT SCREW PUMPS
48" STUB OUT WITH MJ PLUG INV. 12.01
NEW CHLORINATION FACILITY
N2SPFM DISCHARGE TO GRADE
DISCHARGE TO GRADE
NEW CHLORINE INJECTION POINT VAULT
NEW BAR SCREEN NEW CHAMBER #1
NEW GENERATOR BUILDING
VALVE BOX
WELL HOUSE
NEW SAMPLE POINT/ VAULT #3
TIE TO EXIST. 8" LINE INSTALL:
1-8"x4" MJ TEE
1-4" MJ GATE VALVE
1-8" MJ GATE VALVE
CONCRETE THRUST BLOCK

NORTH

7+00N
6+00N
5+00N
4+00N
3+00N
2+00N
1+00N
0+00N
9+00E
10+00E
11+00E
12+00E
13+00E
14+00E
15+00E
16+00E
17+00E
18+00E

NOTE:

1. THE LOCATION AND SIZES OF EXISTING PIPING ARE SHOWN IN AN APPROXIMATE WAY BASED UPON AVAILABLE RECORDS. CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF PIPING.
1 2. BYPASSING OF FLOW FROM THE INFLUENT PUMP STATION TO THE LAGOON WILL BE REQUIRED FOR THE CONSTRUCTION OF THE 2-N48PLI AND NEW 48" BYPASS. PUMPING RATES WILL VARY DEPENDING ON THE TIME OF THE YEAR. MAXIMUM FLOW RATE 22,000 GPM.
1 3. WHERE ABANDONED UNDERNEATH THE GENERATOR BUILDING AND THE ACCESS ROAD, FILL THE EBDRN AND THE E30PLI WITH FLOWABLE CONCRETE FILL.

0 40 80
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

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REVISIONS

NO.	DESCRIPTION	DATE	BY
1	CHANGE PER ADDENDUM #4	3-1	AR

APPROVALS
PROJECT ENG: RTH
DESIGNED BY:
DRAWN BY:
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA PROFESSIONAL ENGINEER B.P. BARBER & ASSOCIATES, INC. CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7873 REGISTERED THOMAS VOTAW — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: PIPING PLAN "B"
DATE: FEB., 2001 SCALE: AS SHOWN

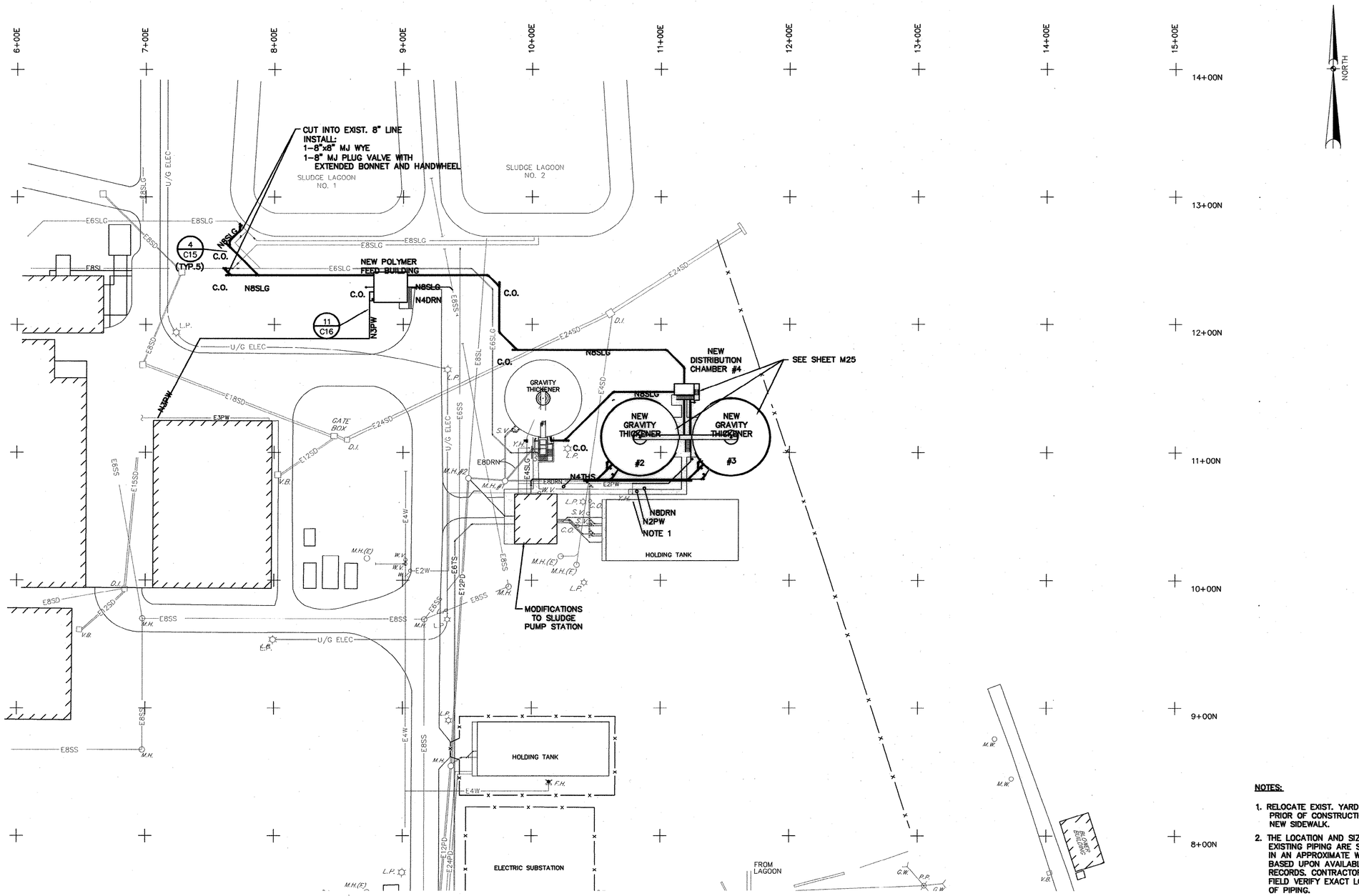
PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK: SITEBPIPE
REF.
N.B. NO. 1731
PROJECT NO. 00149

SHEET C9 OF 17

FILE NO. 22-85-00

51-004-012 5



NOTES:

1. RELOCATE EXIST. YARD HYDRANT PRIOR OF CONSTRUCTION OF NEW SIDEWALK.
2. THE LOCATION AND SIZES OF EXISTING PIPING ARE SHOWN IN AN APPROXIMATE WAY BASED UPON AVAILABLE RECORDS. CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF PIPING.

0 40 80
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS	
PROJECT ENG.	RTH
DESIGNED BY:	AMR
DRAWN BY:	AMR
CHECKED BY:	TVT
APPROVED:	JDP

NORTH CAROLINA PROFESSIONAL ENGINEERING CERTIFICATE OF AUTHORIZATION
B.P. BARBER & ASSOCIATES, INC.
No. C-0000

DATE

NORTH CAROLINA PROFESSIONAL ENGINEER
REGISTERED
No. 7673
THOMAS VICTOR

SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
PIPING PLAN "C"
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SITECPIPE
REF.	
N.B. NO.	1731
PROJECT NO.	00149

SHEET C10 OF 17

FILE NO. 22-85-00

51-004-013 5

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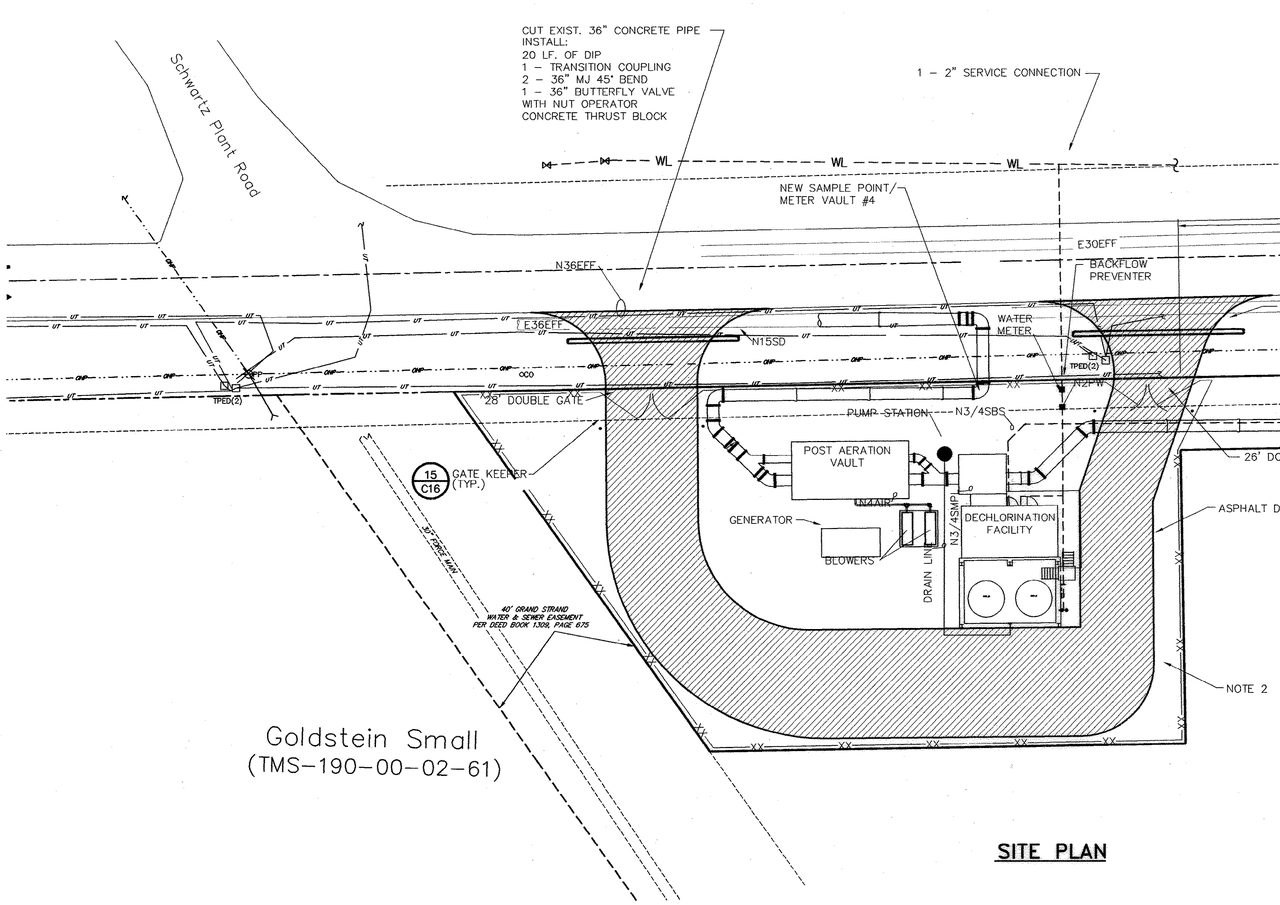
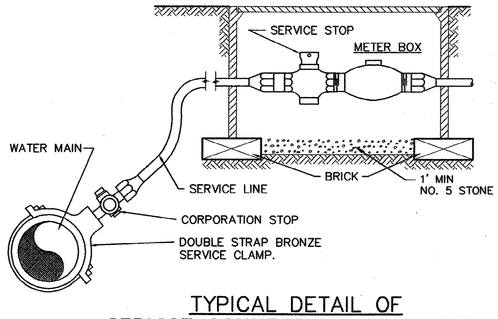
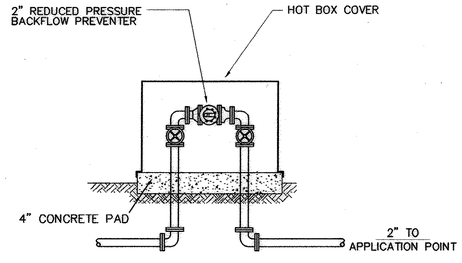


SITE PLAN



TYPICAL DETAIL OF SERVICE CONNECTION WITH METER

NOT TO SCALE



REDUCED ORESSURE BACKFLOW PREVENTER

NOT TO SCALE

NOTES:

1.) CONSTRUCT FROM 16 ga. ALUMINUM

2.) BACKGROUND SHALL BE WHITE AND SHALL BE PAINTED WITH THREE COATS OF ENAMEL PAINT.

3.) THE INSIDE BORDER SHALL BE IN BLACK.

4.) THE EMERGENCY TELEPHONE NUMBER SHALL BE IN RED.

5.) THE REMAINDER OF THE LETTERS SHALL BE IN BLACK.

6.) ALL LETTERING SHALL CONSIST OF TWO COATS OF THE APPROPRIATE ENAMEL.

7.) SIGN SHALL BE BOLTED TO THE GATE.

METAL SIGN DETAIL

NOT TO SCALE

NOTES:

1. SEE SHEET C17 FOR EROSION CONTROL, GENERAL DETAILS AND NOTES.
2. COVER ANY UNPAVED SURFACE WITH 4" OF #57 STONE OVER MIRAFI 600X FILTER FABRIC.
3. CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF UNDERGROUND UTILITIES.

RECORD DRAWINGS
DATE: SEPT., 2003

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REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS

PROJECT ENG:	RTH
DESIGNED BY:	AMR
DRAWN BY:	AMR
CHECKED BY:	TVT
APPROVED:	JDP

NORTH CAROLINA
CERTIFICATE OF AUTHORIZATION
B.P. BARBER & ASSOCIATES, INC.
No. C00060
DATE

NORTH CAROLINA
PROFESSIONAL ENGINEER
No. 7670
THOMAS VICTOR
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW
DECHLORINATION
FACILITY
SITE PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

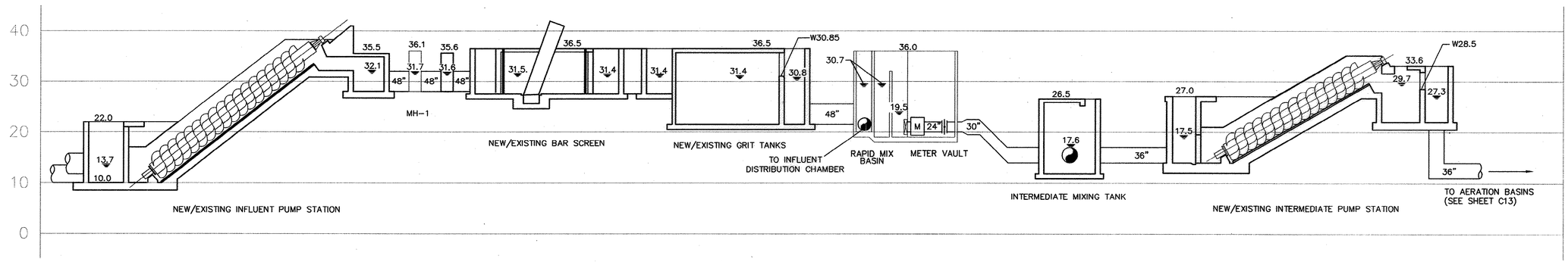
PROJECT
IMPROVEMENTS AND
EXPANSION FOR THE
WATER RECLAMATION
FACILITY
PHASE I

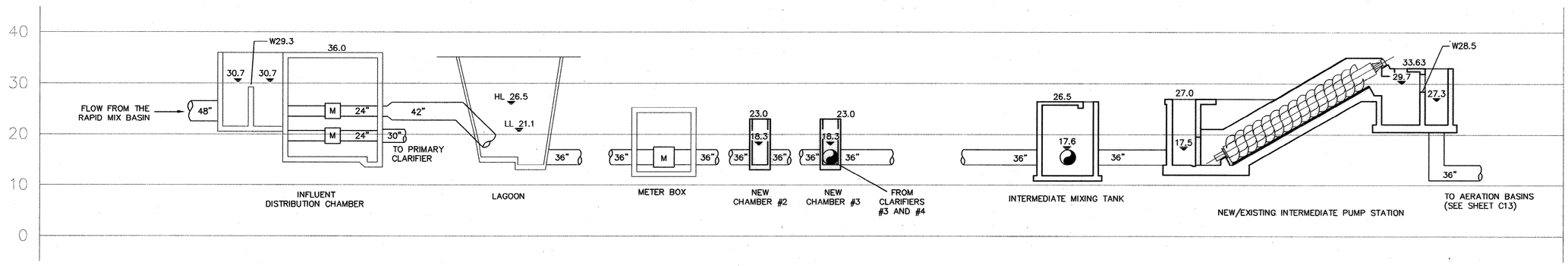
DISK	00149CFREV
REF.	
N.B. NO.	1731
PROJECT NO.	00149

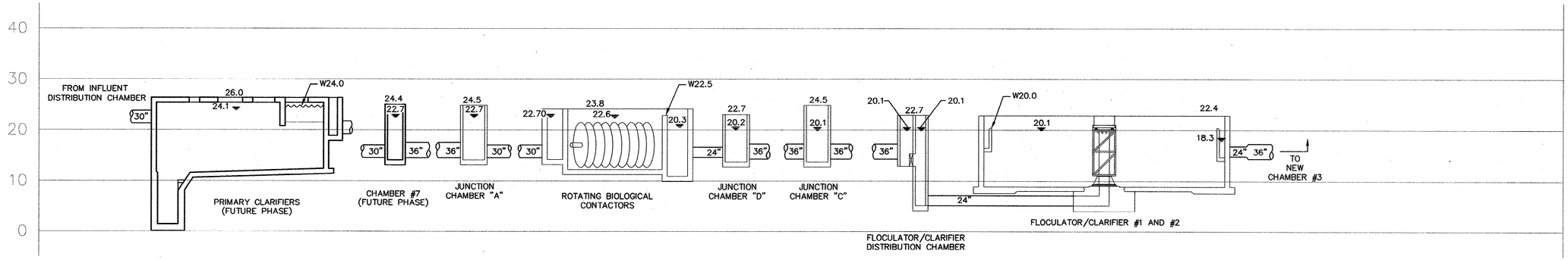
SHEET C11 OF 17

FILE NO. 22-85-00

37-004-014 S







RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS			
PROJECT ENG: RTH	DESIGNED BY:	DRAWN BY:	CHECKED BY: TVT
APPROVED: JDP			

NORTH CAROLINA PROFESSIONAL ENGINEERING FIRM B.P. BARBER & ASSOCIATES, INC. No. C00620 CERTIFICATE OF AUTHORIZATION — DATE

NORTH CAROLINA PROFESSIONAL ENGINEER REGISTERED THOMAS V. VICTOR No. 7973 — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: HYDRAULIC PROFILE
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149C12	C12
REF.	OF
N.B. NO. 1731	17
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-015 S

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RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS			
PROJECT ENG:	RTH	CHECKED BY:	TVT
DESIGNED BY:		DRAWN BY:	APPROVED: JPP

NORTH CAROLINA PROFESSIONAL ENGINEER CERTIFICATE OF AUTHORIZATION B. P. BARBER & ASSOCIATES, INC. No. C00020
DATE

NORTH CAROLINA PROFESSIONAL ENGINEER REGISTERED No. 7673 THOMAS VICTOR
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: HYDRAULIC PROFILE
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149C13	C13
REF.	OF
N.B. NO. 1731	17
PROJECT NO. 00149	

FILE NO. 22-85-00

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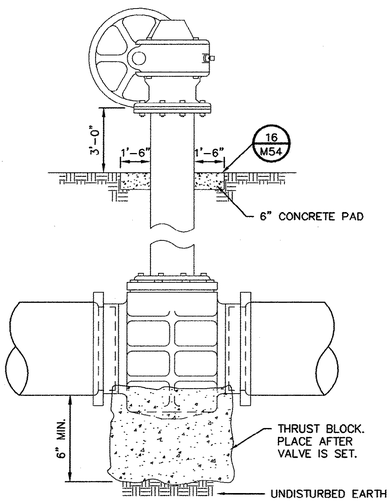
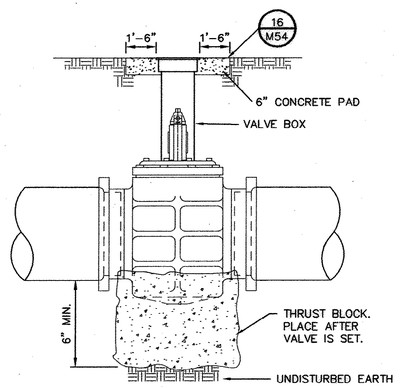


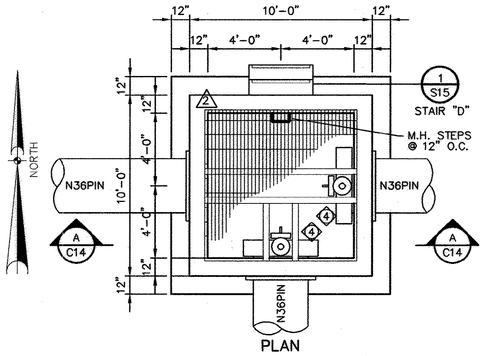
BURIED PLUG VALVE WITH EXTENDED BONNET

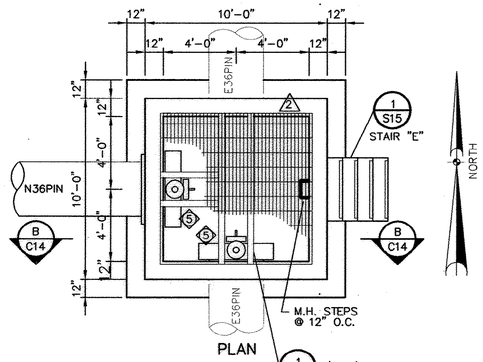
DETAIL 13 TYP — SCALE: NONE

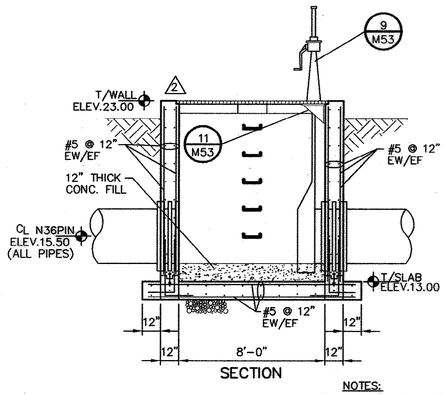


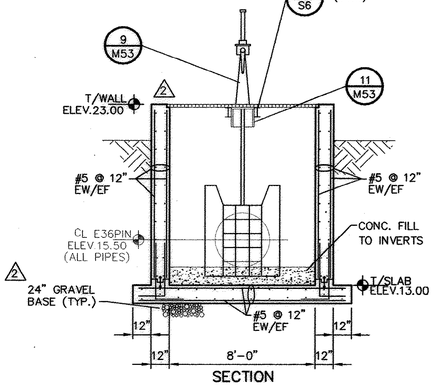
BURIED VALVE WITH NUT OPERATOR

DETAIL 18 TYP — SCALE: NONE









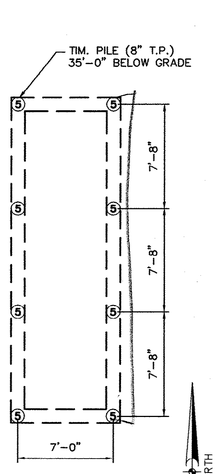
NOTES:
1. INTERCEPT E36MXL, INSTALL CHAMBER #3 CENTERED ON E36MXL.
2. SEE PIPING PLAN FOR ADDITIONAL INFORMATION.
3. SEE SHEET M52 FOR SLUICE GATE SCHEDULE.
4. INSTALL A SHORT SECTION OF DIP AND TRANSITION COUPLING TO CONNECT TO EXISTING PIPE. EXISTING PIPE MATERIAL NO KNOWN.

⚠1 CHAMBER #3

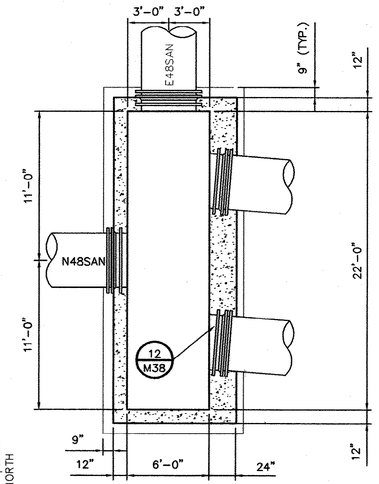
DETAIL 16 TYP — SCALE: NONE

CHAMBER #2 ⚠1

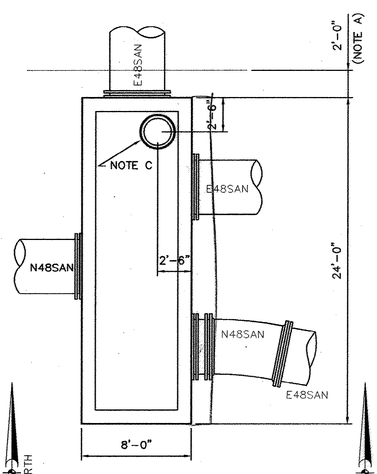
DETAIL 17 TYP — SCALE: NONE



PLAN



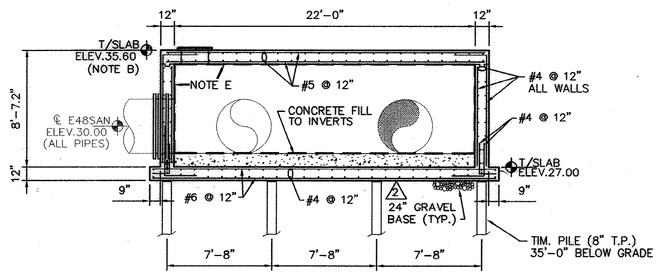
FOUNDATION PLAN



TOP PLAN

CHAMBER #1

DETAIL 15 TYP — SCALE: 3/16" = 1'-0"



SECTION

NOTES:
A. SET DISTRIBUTION CHAMBER #1 CENTERED ON E48SAN & 2'-0" OFF FACE OF EXISTING GRIT TANK.
B. MATCH EXIST. PAVING.
C. PROVIDE M.H. RIM & COVER.
D. SEE PIPING PLAN FOR ADDITIONAL INFORMATION.
E. FULLY LINE WITH MEMBRANE WATERPROOFING COATING.

0 3 6
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	CHANGE PER	2-26	AR
	ADDENDUM #3		
2	CHANGE PER	3-1	AR
	ADDENDUM #4		

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: MAB
DRAWN BY: GS
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA NOTICE OF REGISTRATION — B.P. BARBER & ASSOCIATES, INC. No. C000260 — CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER — No. 7073 — THOMAS V. PORTER — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: SITE DEVELOPMENT DETAILS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 99127CD	SHEET C14
REF.	OF 17
N.B. NO. 1731	
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-017 5

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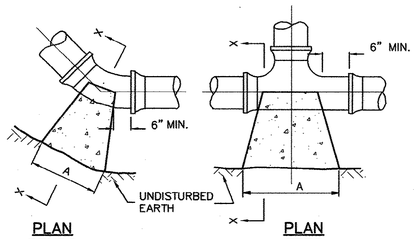
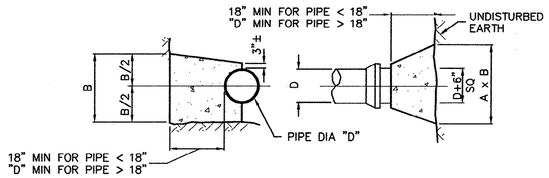


PLAN BENDS

PLAN TEES



SECTION X–X BENDS & TEES

PLAN & ELEVATION PLUGS

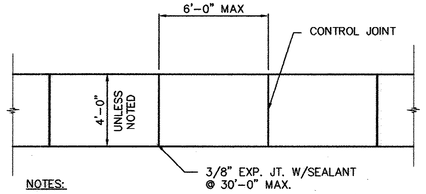
DESIGN PIPE PRESSURE = 150 PSI
ALLOWABLE SOIL BEARING PRESSURE = 2000 PSF

MIN. THRUST BLOCK BEARING AREAS (S.F.)

SIZE	90° BEND	45° BEND	22 1/2° BEND	TEES	PLUGS
	AxB	AxB	AxB	AxB	AxB
4	1.33	0.72	0.40	0.94	0.94
6	3.00	1.62	0.83	2.12	2.12
8	5.33	2.88	1.50	3.78	3.78
10	8.33	4.50	2.30	5.90	5.90
12	12.00	6.50	3.33	8.50	8.50
14	16.33	8.83	4.50	11.44	11.44
16	21.33	11.54	5.90	15.08	15.08
18	27.00	14.60	7.44	19.08	19.08
20	33.33	18.0	9.20	23.56	23.56
24	48.0	26.0	13.2	34.0	34.0
30	75.0	40.6	20.6	53.0	53.0
36	108.0	58.4	29.8	76.4	76.4
42	147.0	79.5	40.5	104.0	104.0
48	192.0	104.0	53.0	136.0	136.0

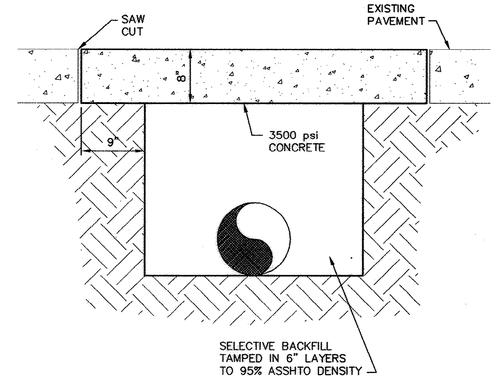
NOTES:
DIMENSIONS A & B SHALL BE DETERMINED IN THE FIELD AS REQUIRED TO PROVIDE THE GIVEN BEARING AREA AND TO MEET FIELD CONDITIONS.
SEE PIPING PLANS FOR THRUST BLOCK BEARING AREA (M.B.A.) FOR PIPES GREATER THAN 48" DIA.

THRUST BLOCK DETAIL (1 TYP)
SCALE: NONE

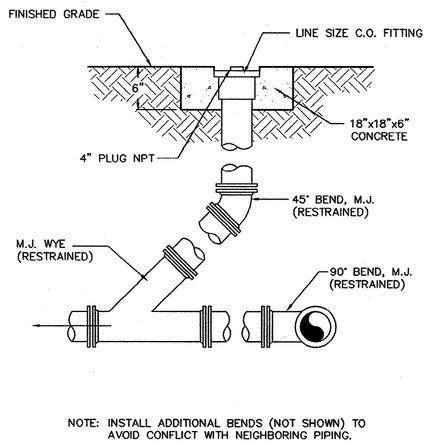


NOTES:
1. MIN. THICKNESS = 4".
2. PROVIDE EXPANSION JOINTS @ INTERSECTIONS OF WALKS AND WHERE WALK ABUTTS OTHER STRUCTURES OR AS SPECIFIED
3. 3000 PSI CONCRETE WITH FIBER REINFORCING AS SPECIFIED.
4. SIDEWALKS TO HAVE LIGHT BROOM FINISH.
5. ALL EDGES TO BE TOOLED.
6. CONTROL JOINTS TO BE TOOLED TO A MIN. DEPTH OF 1".

SIDEWALK DETAIL (2 TYP)
SCALE: NONE

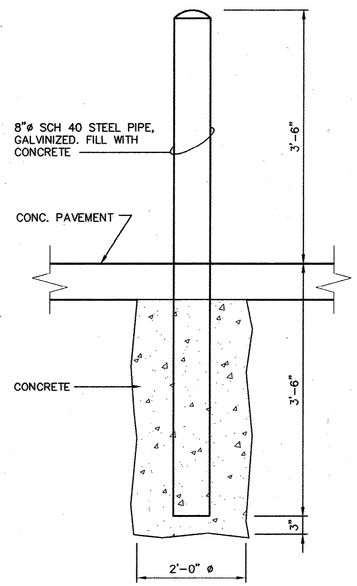


PAVEMENT REPLACEMENT DETAIL (3 TYP)
SCALE: NONE

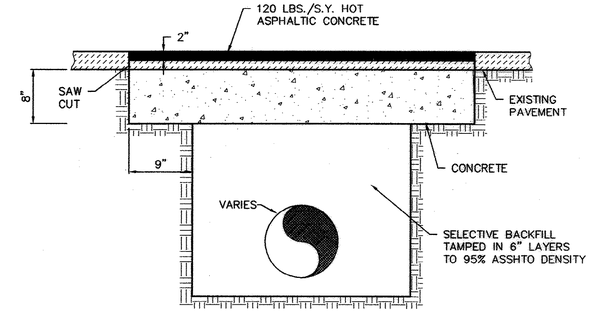


NOTE: INSTALL ADDITIONAL BENDS (NOT SHOWN) TO AVOID CONFLICT WITH NEIGHBORING PIPING.

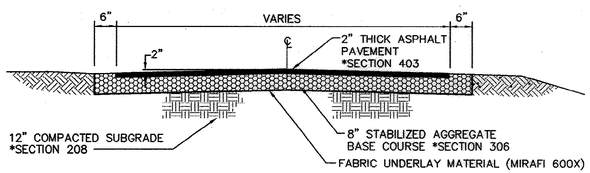
PRESSURE CLEANOUT TO GRADE DETAIL (4 TYP)
SCALE: NONE



PIPE BOLLARD DETAIL (5 TYP)
SCALE: NONE



PAVEMENT REPLACEMENT DETAIL (7 TYP)
SCALE: NONE



* REFER TO SOUTH CAROLINA STATE HIGHWAY DEPARTMENT STANDARD SPEC.

BITUMINOUS PAVING SECTION NORMAL CROWN DETAIL (8 TYP.)
SCALE: NONE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY:
DRAWN BY: JRC
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA — B. P. BARBER & ASSOCIATES, INC. — CERTIFICATE OF AUTHORIZATION NO. 000809 — DATE

SOUTH CAROLINA — REGISTERED PROFESSIONAL ENGINEER — No. 7973 — THOMAS V. TOTH — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: SITE DEVELOPMENT DETAILS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK: 99127CA
REF.
N.B. NO. 1731
PROJECT NO. 00149
SHEET C15 OF 17

FILE NO. 22–85–00

51-004-018 5

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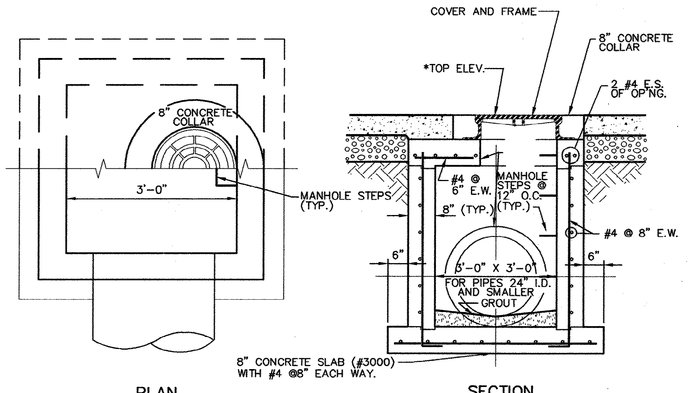
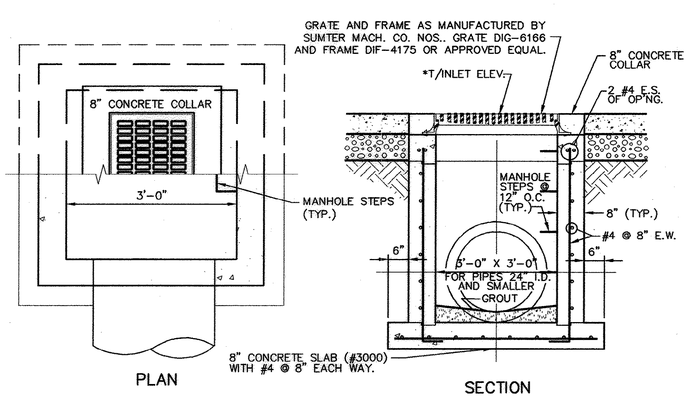


JUNCTION BOX DETAIL

SCALE: NONE — 9 TYP

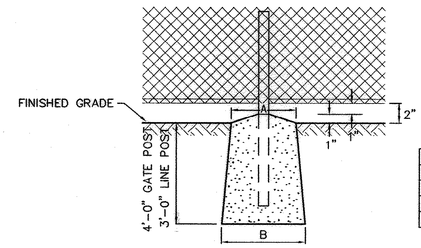
*ELEVATION FOR EACH STRUCTURE AS SHOWN IN DRAINAGE STRUCTURE SCHEDULE SHEET G6.



DROP INLET DETAIL

SCALE: NONE — 13 TYP

*ELEVATION FOR EACH STRUCTURE AS SHOWN IN DRAINAGE STRUCTURE SCHEDULE SHEET G6.

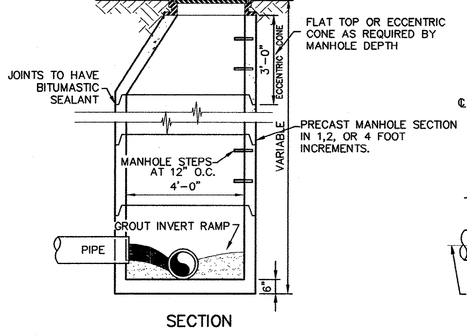


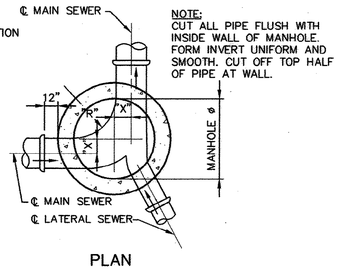
FENCE FOOTING DETAIL

SCALE: NONE — 14 TYP

FOOTING DIMENSIONS

	DIA "A"	DIA "B"
LINE POST	0'-10"	1'-2"
CORNER POST	1'-0"	1'-4"
GATE POST	1'-4"	2'-0"
GATE STOP	0'-10"	1'-2"
GATE KEEPER	0'-7"	0'-10"



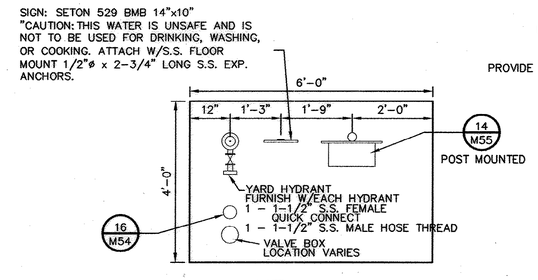


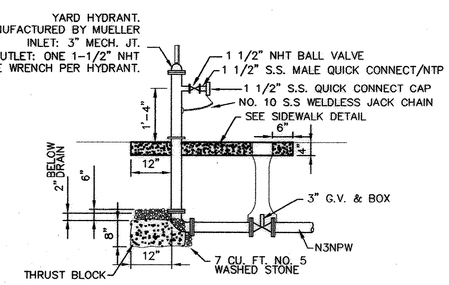
STANDARD MANHOLES SCHEDULE OF GOVERNING DIMENSIONS			
MANHOLE DIAMETER	ANGLE △	"R"	"X"
4'-0"	0° TO 90°	2'-0"	0"
5'-0"	0° TO 90°	2'-0"	6"
6'-0"	0° TO 60°	3'-0"	9"
6'-0	60° TO 90°	3'-0"	1'-2"
7'-0	0° TO 45°	4'-0"	6"
8'-0	45° TO 90°	3'-0"	1'-3"

SCHEDULE

STANDARD MANHOLE DETAIL

SCALE: NONE — 10 TYP

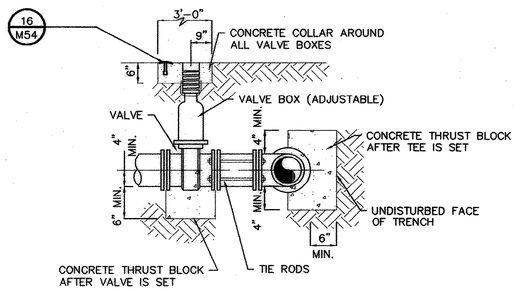




NOTE:
HOSE RACK MOUNTING POST MAY BE EXTENDED UP 12" TO ALLOW ATTACHMENT OF SIGN ABOVE HOSE RACK RATHER THAN A SEPARATE SIGN MOUNTING POST.

YARD HYDRANT STATION DETAIL

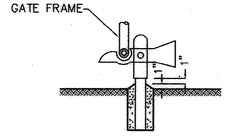
SCALE: NONE — 11 TYP



NOTE:
1.) WHERE THRUST BLOCKS CANNOT BE POURED AGAINST UNDISTURBED EARTH, COLLARS ARE TO BE PLACED AROUND BELLS AND CONNECTED BY 5/8"ø TIE RODS.
2.) ALL FITTINGS SHALL BE MECHANICAL JOINTS AT TEES, GATE VALVES & FIRE HYDRANTS.

VALVE & TEE SETTING DETAIL

SCALE: NONE — 12 TYP



GATE KEEPER DETAIL

SCALE: NONE — 15 TYP

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS: PROJECT ENG: RTH; DESIGNED BY: MAB; DRAWN BY: JRC; CHECKED BY: TVT; APPROVED: JDP

NORTH CAROLINA PROFESSIONAL ENGINEER — B.P. BARBER & ASSOCIATES, INC. No. C-0000 — CERTIFICATE OF AUTHORIZATION — DATE

NORTH CAROLINA PROFESSIONAL ENGINEER — No. 7973 — REGISTERED — THOMAS VICTOR — SIGNATURE

bpb — B. P. BARBER & ASSOCIATES, INC. — ENGINEERS – PLANNERS – SURVEYORS — COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: SITE DEVELOPMENT DETAILS — DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
99127CB	C16
REF.	OF
N.B. NO. 1731	17
PROJECT NO. 00149	

FILE NO. 22-85-00

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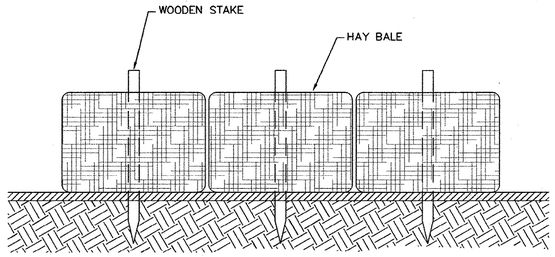
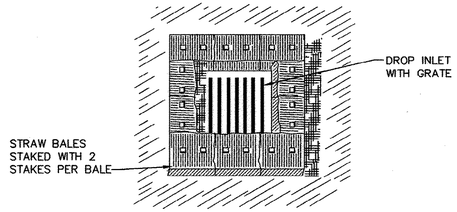


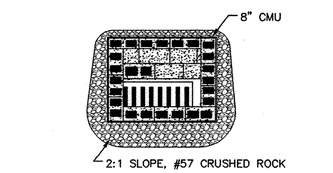
ELEVATION

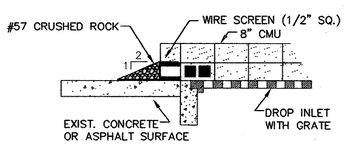


PLAN

STRAW BALE DROP INLET SEDIMENT FILTER

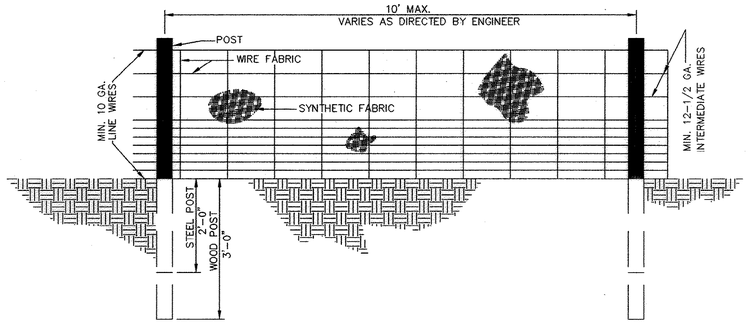
DETAIL (1 TYP)
SCALE: NONE

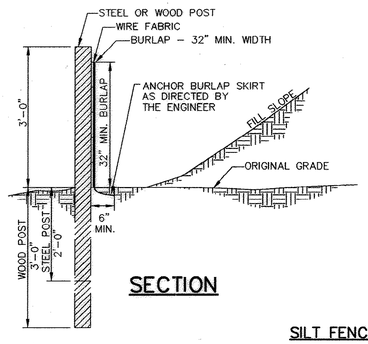




STORM INLET EROSION CONTROL DETAIL

DETAIL (2 TYP)
SCALE: NONE





SECTION

SILT FENCE WITH WIRE FABRIC DETAIL

DETAIL (3 TYP)
SCALE: NONE

NOTES:

1. FENCE FABRIC SHALL BE A MINIMUM OF 32" IN WIDTH AND SHALL HAVE A MINIMUM OF 6 LINE WIRES WITH 12" STAY SPACING.
2. BURLAP SHALL BE 7-1/2 OZ. WEIGHT AND A MINIMUM OF 32" WIDTH. BURLAP SHALL BE FASTENED ADEQUATELY TO THE FABRIC AS DIRECTED BY THE ENGINEER.
3. STEEL POSTS SHALL BE 5'-0" IN HEIGHT AND BE OF THE SELF-FASTENER ANGLE STEEL TYPE.
4. WOOD POSTS SHALL BE 6' TO 7' IN HEIGHT AND 3" TO 4" IN DIAMETER. WIRE FABRIC SHALL BE FASTENED TO WOODEN POST WITH NOT LESS THAN #9 WIRE STAPLES 1-1/2" LONG.
5. CONTRACTOR SHALL PERFORM INSPECTION AND MAINTENANCE OF SILT FENCES FOLLOWING ALL SIGNIFICANT RAINFALL EVENTS, INSURING FENCES ARE ERECT AND CLEAR, AND REPLACING ALL TORN FENCING.

SEDIMENT AND EROSION CONTROL NOTES

1. ALL AREAS DISTURBED BY CONSTRUCTION NOT COVERED BY STRUCTURES OR PAVEMENT SHALL BE FINE-GRADED, GRASSED AND FERTILIZE IN ACCORDANCE WITH THE CONTRACT DOCUMENT SPECIFICATIONS.

   1A. PROVIDE SILT FENCING AROUND ALL PILES OF LOOSE EXCAVATED MATERIALS.

   1B. PROVIDE TEMPORARY GRASSING IN ACCORDANCE WITH THE SPECIFICATIONS.

3. PLACE SILT FENCE BARRIERS AT LOCATIONS SHOWN ON THE DRAWINGS AND AS REQUIRED BY SPECIFICATIONS. SILT BARRIERS SHALL BE MAINTAINED IN PLACE AND GOOD CONDITION UNTIL GRASSING IS ESTABLISHED.
4. ALL SEDIMENT CONTROL MEASURES SHALL BE INSPECTED AT LEAST ONCE EVERY SEVEN CALENDER DAYS AND AFTER ANY STORM EVENT OF GREATER THAN 0.5 INCHES OF PERCIPITATION DURING ANT 24-HOUR PERIOD. ALL SEDIMENT CONTROL FEATURES SHALL BE MAINTAINED UNTIL FINAL STABILIZATION HAS BEEN OBTAINED. CONTRACTOR SHALL KEEP LOG BOOK OF ALL EROSION CONTROL MAINTENANCE AND INSPECTION ACTIVITIES.
4. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OE PERMANENTLY CEASED, UNLESS ACTIVITY IN THAT PORTION OF THE SITE WILL RESUME WITHIN 21 DAYS.
5. MAINTENANCE:

   PERIODICALLY AND AFTER EACH RAIN EVENT OF 1/2" OR MORE RAINFALL IN A 24 HOUR PERIOD CHECK EROSION CONTROL DEVICES AND CLEAN OR OTHERWISE REMOVE SILT BUILD-UP AS NECESSARY TO MAINTAIN THEM IN PROPER WORKING ORDER. MAINTAIN ON-SITE A LOG BOOK NOTING ALL INSPECTIONS OF EROSION CONTROL DEVICES. NOTE IN THE LOG THE DATES, CONDITION OF DEVICES AND CORRECTIVE ACTIONS TAKEN. THIS LOG SHALL BE MADE AVAILABLE FOR REVIEW UPON DEMAND TO THE OWNER, ENGINEER OR APPLICABLE REGULATORY AGENT.

6. ADDITIONAL CONTROL DEVICES MAY BE REQUIRED DURING CONSTRUCTION IN ORDER TO CONTROL EROSION AND/OR OFFSITE SEDIMENTATION.
7. THE CONTRACTOR MUST TAKE NECESSARY ACTION TO MINIMIZE TRACKING OF MUD ONTO THE PAVED ROADWAY FROM CONSTRUCTION AREAS. THE CONTRACTOR SHALL DAILY REMOVE MUD/SOIL FROM PAVEMENT, AS MAY BE REQUIRED.

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: AMR
DRAWN BY: JRC
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA NOVEMBER 30, 2000 B.P. BARBER & ASSOCIATES, INC. No. C00000 CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7973 REGISTERED THOMAS V. SHARKEY — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS - PLANNERS - SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: EROSION CONTROL, GENERAL DETAILS, & NOTES
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK: EROSION	SHEET: C17
REF.	OF: 17
N.B. NO.: 1731	
PROJECT NO.: 00149	

FILE NO. 22-85-00

51-004-020 S

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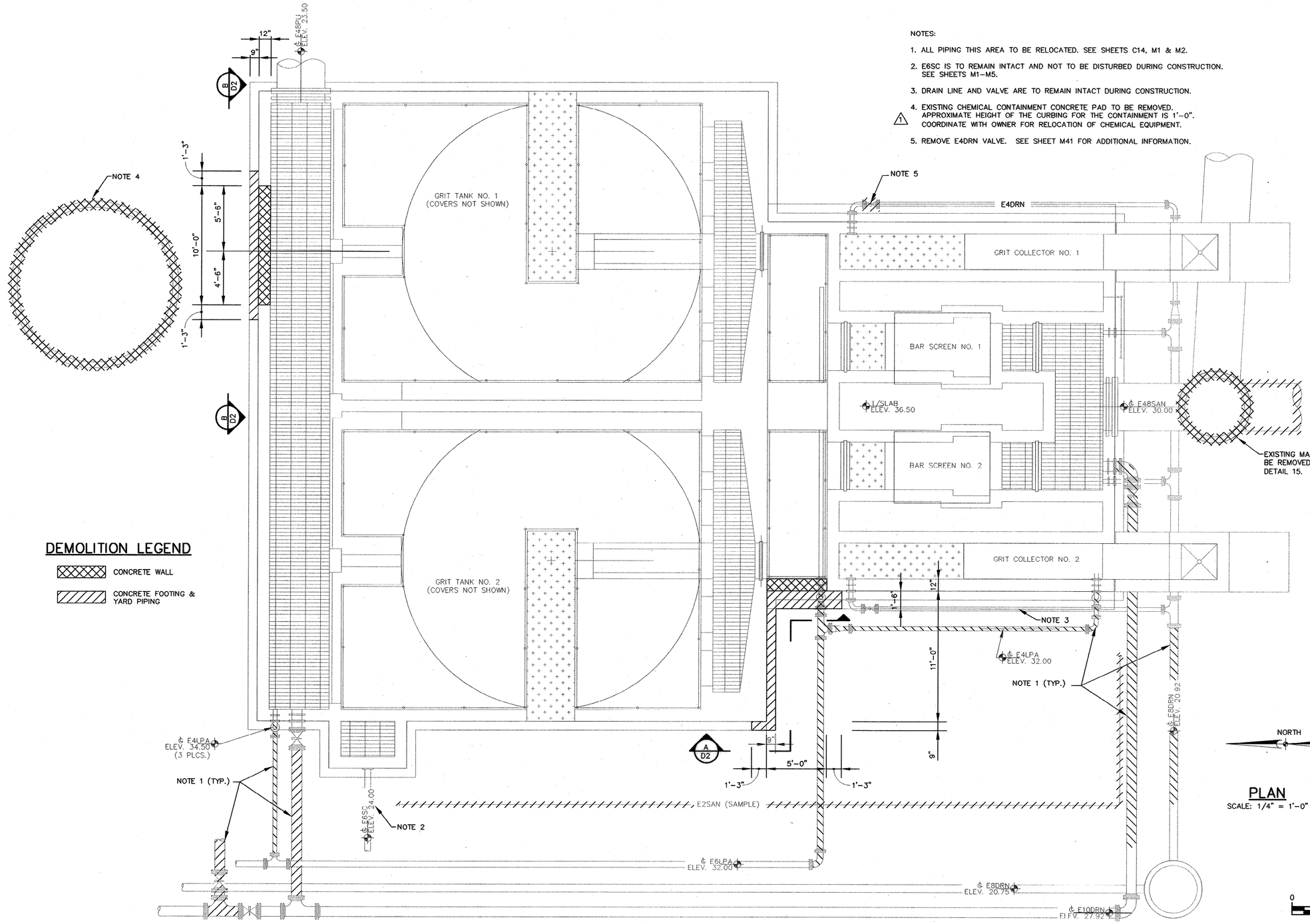

DEMOLITION LEGEND

- CONCRETE WALL
- CONCRETE FOOTING & YARD PIPING

PLAN

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

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	CHANGE PER ADDENDUM #4	3-1	AR

APPROVALS			
PROJECT ENG:	RTH	CHECKED BY:	TVT
DESIGNED BY:	MAB	APPROVED:	JDP
DRAWN BY:	AR		

SOUTH CAROLINA NOVEMBER 30, 2004 CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. 1731 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER REGISTERED No. 7873 THOMAS VICTOR — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: GRIT TANK AND BAR SCREEN DEMOLITION PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	00149DA
REF.	
N.B. NO.	1731
PROJECT NO.	00149

SHEET D1 OF 11

FILE NO. 22-85-00

51-004-021 S

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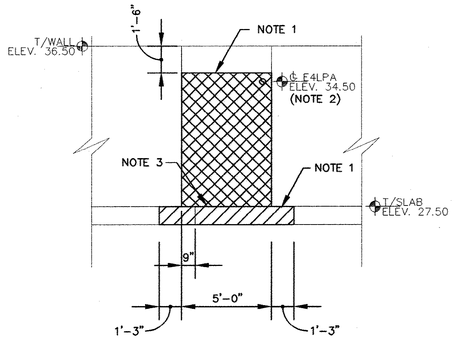
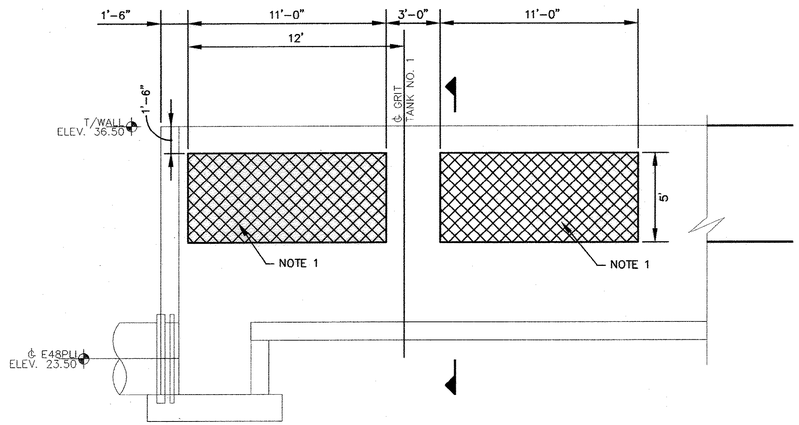


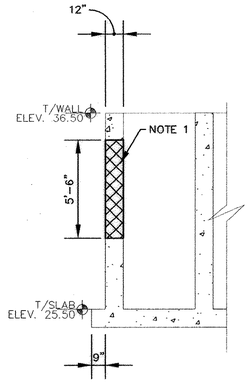
ELEVATION

DETAIL A/D1
SCALE: 1/4" = 1'-0"



ELEVATION

DETAIL B/D1
SCALE: 1/4" = 1'-0"



SECTION

NOTES:

1. CUT AND REMOVE CONCRETE SECTION/S AS SHOWN, DRILL ALL EXPOSED ENDS OF REBAR 1-1/2" DEEP AND PLUG WITH EPOXY GROUT.
2. SEE SHEET D1 FOR DEMOLISHING OF YARD PIPING.
3. MATCH EXISTING SLABS.

0 4 8
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS			
PROJECT ENG: RTH	DESIGNED BY: MAB	DRAWN BY: AR	CHECKED BY: TVT
APPROVED: JDP			

NORTH CAROLINA, NORTH DAKOTA, SOUTH DAKOTA CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. C-0555

DATE

NORTH CAROLINA PROFESSIONAL ENGINEER No. 9673 REGISTERED

SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
GRIT TANK AND BAR SCREEN DEMOLITION DETAILS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149DJ	D2
REF.	OF
N.B. NO. 1731	11
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-022 5

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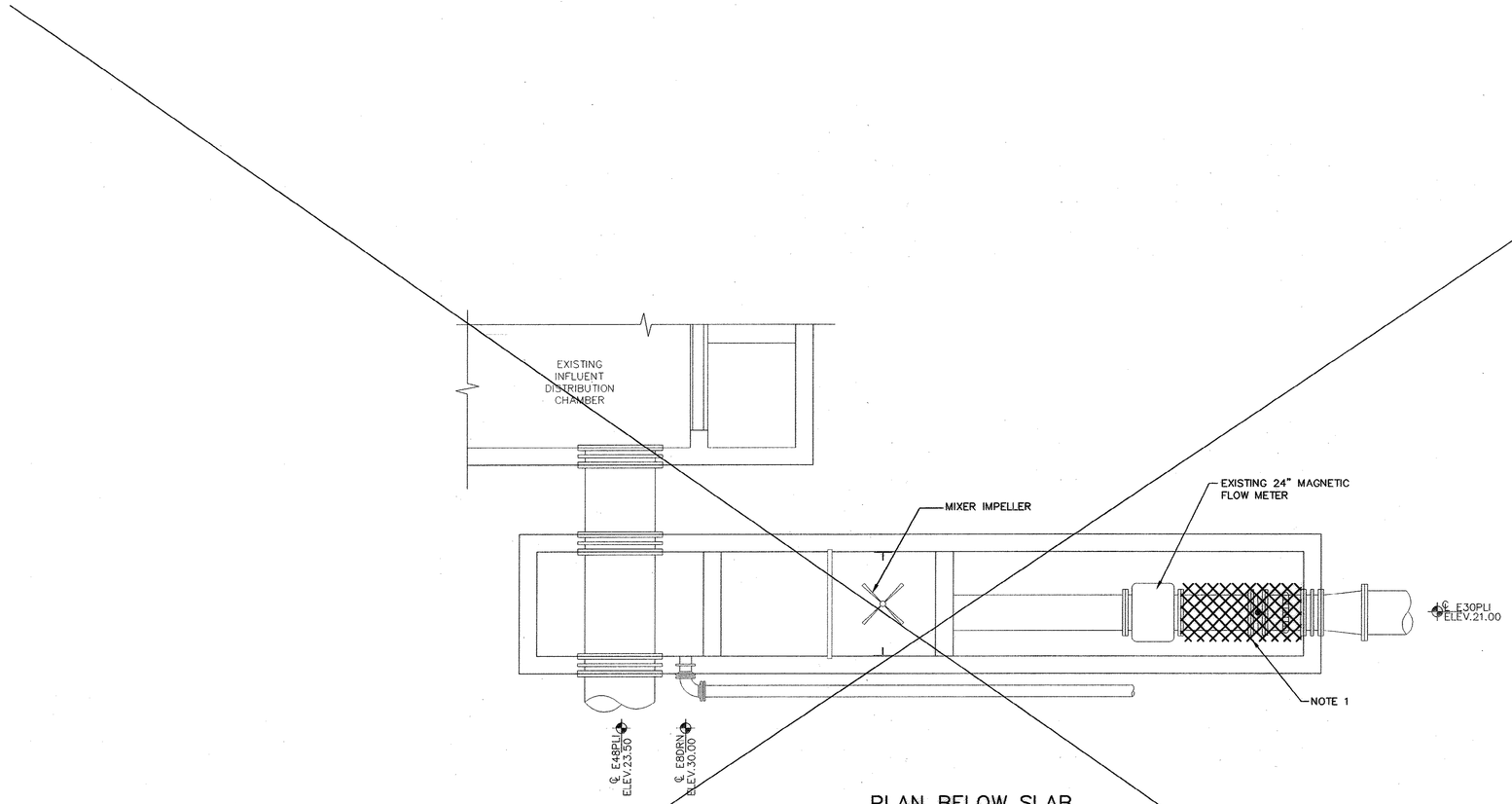

PLAN BELOW SLAB

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

NORTH

NOTES:

1. REMOVE EXISTING BUTTERFLY VALVE AND PIPING, CAP PNEUMATIC LINES, AND DELIVER TO OWNER.
2. EXISTING ELEVATIONS TAKEN FROM DRAWINGS PREPARED BY PRC CONSOER TOWNSEND CONSULTING ENGINEERS. VERIFY ELEVATIONS PRIOR TO CONSTRUCTION.

0 4 8

GRAPHIC SCALE

RECORD DRAWINGS

DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS

PROJECT ENG: RTH
DESIGNED BY: NTW
DRAWN BY: NTW
CHECKED BY: TVT
APPROVED: JDP

NORTH CAROLINA CERTIFICATE OF AUTHORIZATION
B.P. BARBER & ASSOCIATES, INC.
NAME OF CORP.

DATE

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER
No. 7873
TIMOTHY VERNON SWEATT

SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
RAPID MIX BASIN
DEMOLITION
PLAN

DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND
EXPANSION FOR THE
WATER RECLAMATION
FACILITY
PHASE I

DISK 99127DJ
REF.
N.B. NO. 1731
PROJECT NO. 00149

SHEET D3 OF 11

FILE NO. 22-85-00

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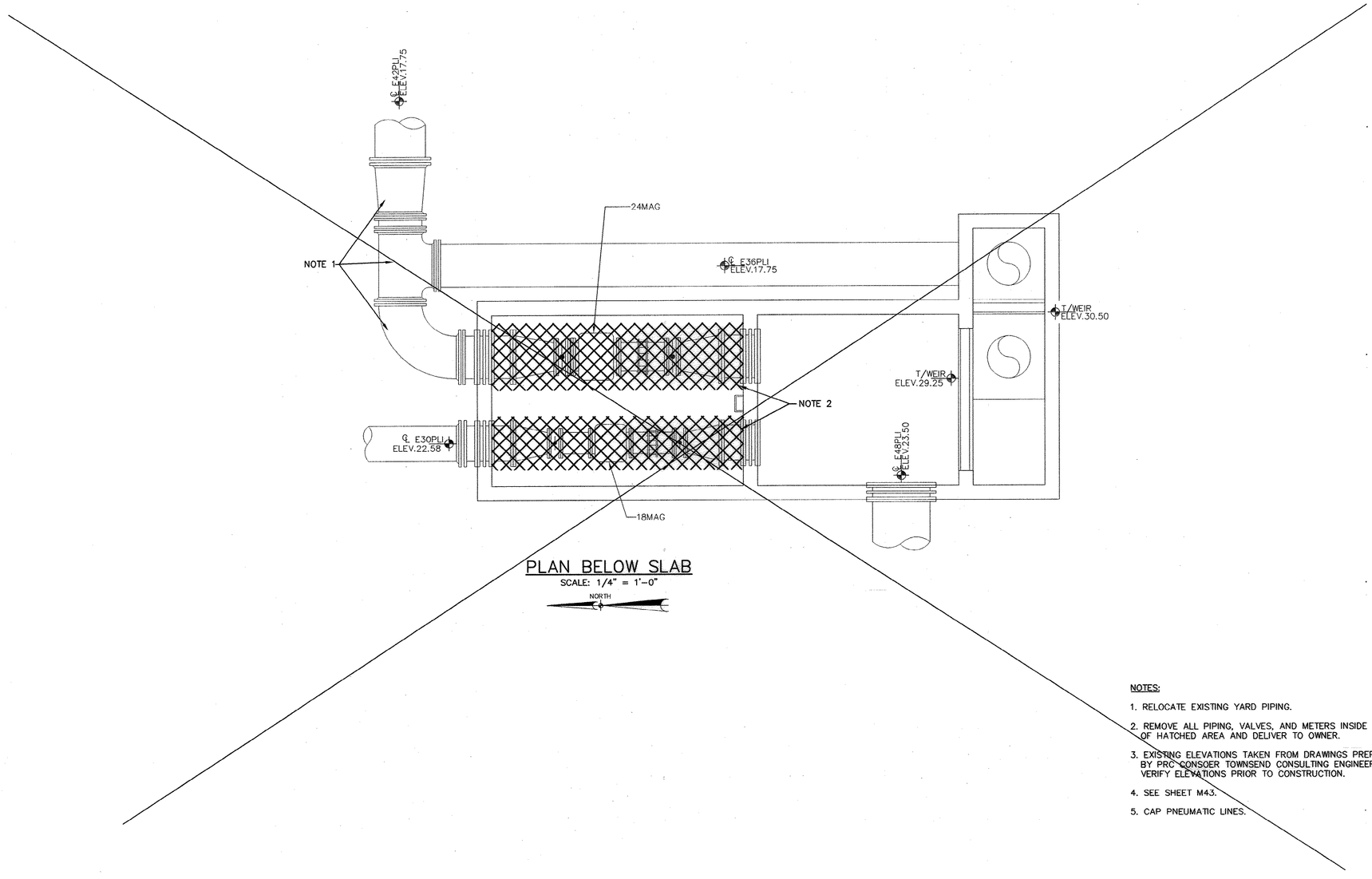

PLAN BELOW SLAB

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

NORTH

NOTES:

1. RELOCATE EXISTING YARD PIPING.
2. REMOVE ALL PIPING, VALVES, AND METERS INSIDE OF HATCHED AREA AND DELIVER TO OWNER.
3. EXISTING ELEVATIONS TAKEN FROM DRAWINGS PREPARED BY PRC CONSOER TOWNSEND CONSULTING ENGINEERS. VERIFY ELEVATIONS PRIOR TO CONSTRUCTION.
4. SEE SHEET M43.
5. CAP PNEUMATIC LINES.

0 4 8
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: NTW
DRAWN BY: NTW
CHECKED BY: TVT
APPROVED: JDP

NORTH CAROLINA NOVEMBER 19, 2003 CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. C000220
DATE

NORTH CAROLINA PROFESSIONAL ENGINEER REGISTERED No. 7973 THOMAS VICTOR
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
INFLUENT DISTRIBUTION CHAMBER DEMOLITION PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
99127DI	D4
REF.	OF
N.B. NO. 1731	11
PROJECT NO. 00149	

FILE NO. 22-85-00

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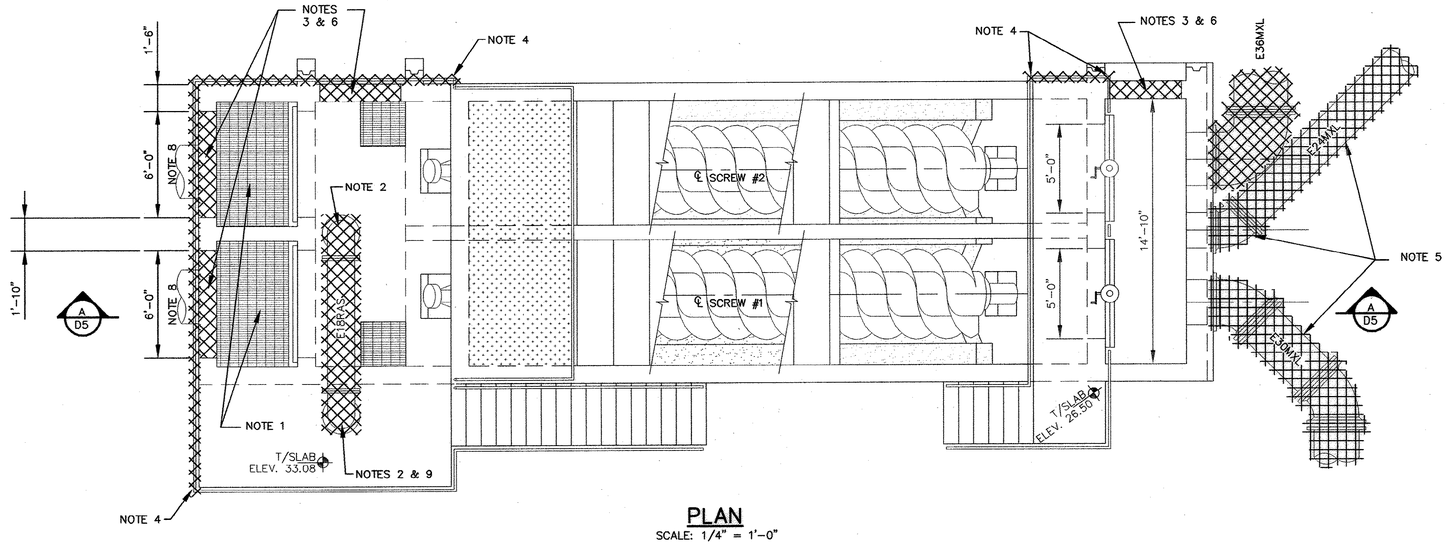
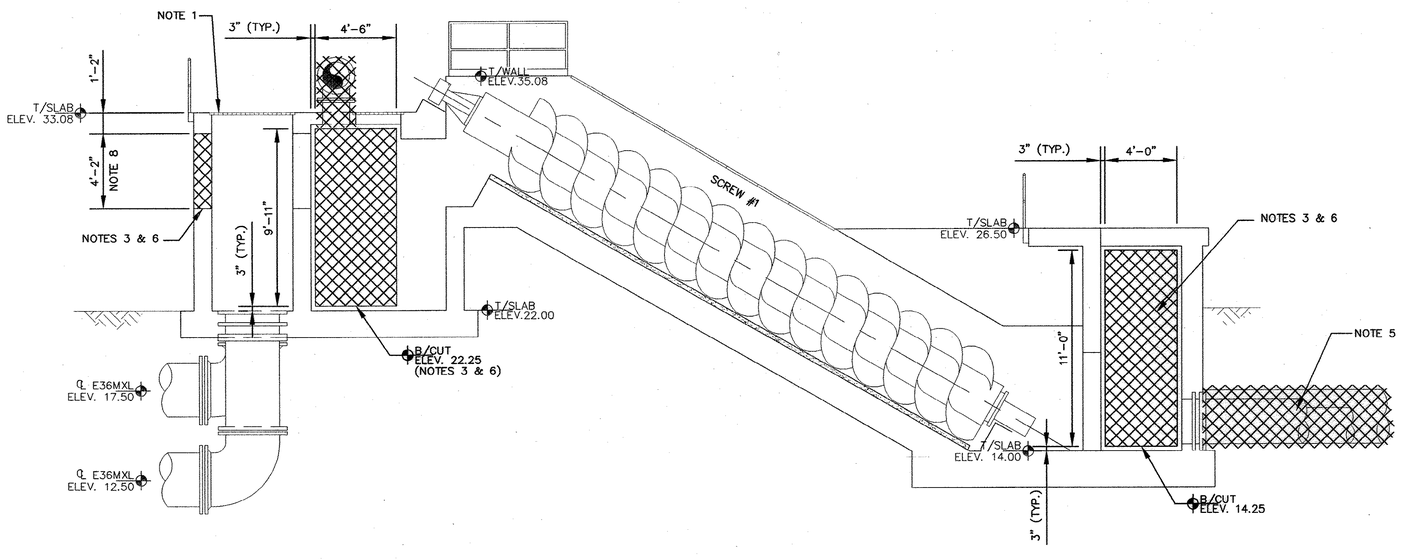


PLAN
SCALE: 1/4" = 1'-0"



SECTION
SCALE: 1/4" = 1'-0" (A D5)

NOTES:

1. REMOVE EXISTING GRATING.
2. REMOVE E18RAS, PATCH PENETRATIONS SMOOTH WITH NONSHRINK GROUT
3. SAW CUT.
4. REMOVE EXISTING HANDRAIL.
5. REMOVE EXISTING PIPING, INSTALL NEW M.J. PLUGS.
6. ALL EXPOSED REBAR TO BE DRILLED BACK 3" DEEP, THEN FILLED WITH EPOXY GROUT, FINISH FLUSH & SMOOTH.
7. REFER TO SHEET M8 FOR ADDITIONAL INFORMATION.
8. MATCH EXISTING OPENINGS, CONTRACTOR VERIFY.
9. DEMOLISH 2' BELOW GRADE, PLUG & REGRADE.

NORTH

0 4 8
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: MAB
DRAWN BY: JRC
CHECKED BY: TVT
APPROVED: JDP

NORTH CAROLINA ENGINEERING CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. C0000 — DATE

NORTH CAROLINA PROFESSIONAL ENGINEER REGISTERED THOMAS V. SMART No. 7973 — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
INTERMEDIATE PUMP STATION DEMOLITION PLAN & SECTION
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY
PHASE I

DISK	SHEET
99127DF	D5
REF.	OF
N.B. NO. 1731	11
PROJECT NO. 00149	

FILE NO. 22-85-00

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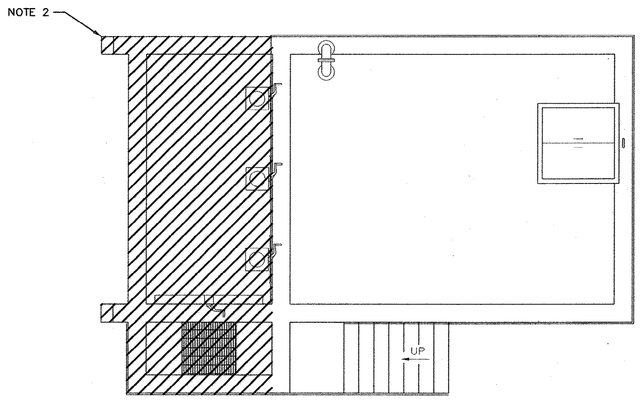
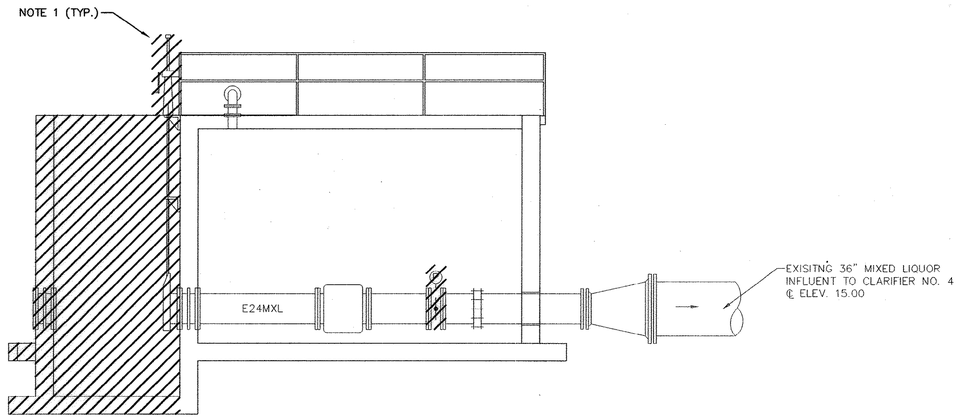


TOP PLAN
SCALE: 1/4" = 1'-0"



SECTION
SCALE: 1/4" = 1'-0"
A D6

PLAN @ ELEV. 18.00
SCALE: 1/4" = 1'-0"

NORTH

NOTES:

1. SAVE EQUIPMENT AND RETURN TO OWNER.
2. DEMOLISH STRUCTURE, DISPOSE OF AS DIRECTED BY THE ENGINEER.
3. CAP ALL PNEUMATIC LINES.

0 4 8
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS	
PROJECT ENG: RTH	
DESIGNED BY: NTW	
DRAWN BY: NTW	
CHECKED BY: TVT	
APPROVED: JDP	

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL — B.P. BARBER & ASSOCIATES, INC. No. C-0500 — CERTIFICATE OF AUTHORIZATION — DATE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL — No. 7973 — REGISTERED — THOMAS V. VICTOR — SIGNATURE

bpb

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
CLARIFIER DISTRIBUTION CHAMBER #6 DEMOLITION PLANS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 99127DE	SHEET D6
REF.	OF 11
N.B. NO. 1731	
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-036

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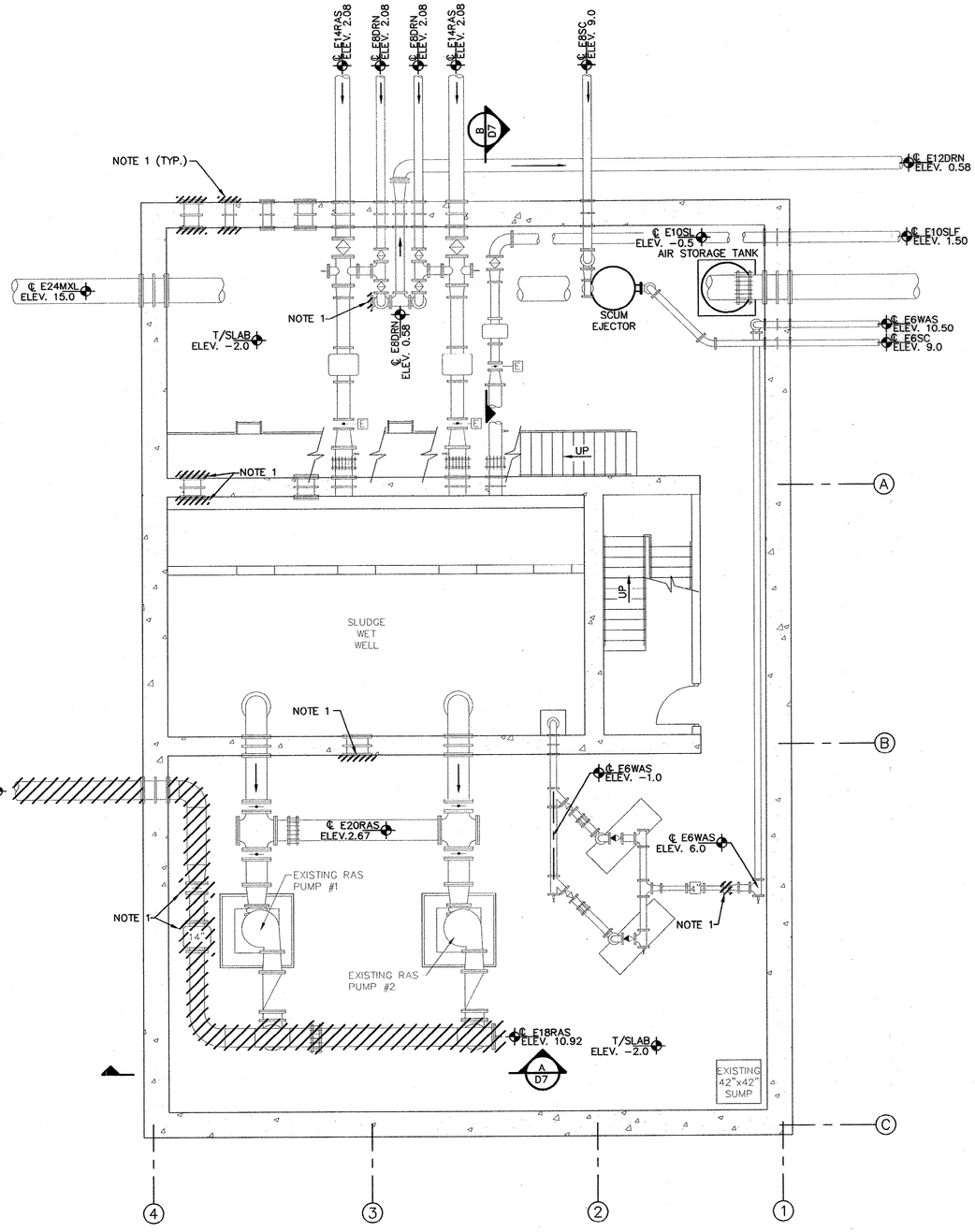
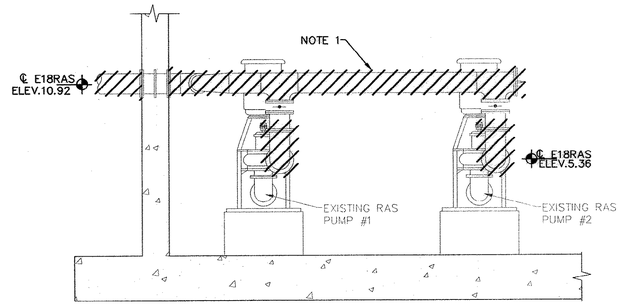


PLAN @ ELEV. 12.0

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



SECTION

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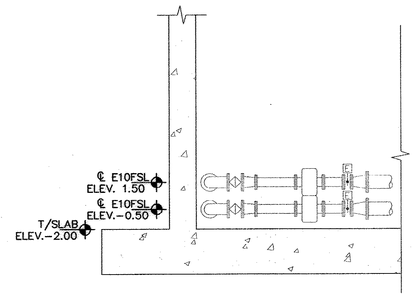

SECTION

SCALE: 3/16" = 1'-0" (B / D7)

NOTES:

1. REMOVE EXISTING BLIND FLANGES, BUTTERFLY VALVES, MAGNETIC FLOW METERS, AND PIPING AND DELIVER TO OWNER. SEE SHEET M47 FOR NEW EQUIPMENT.
2. EXISTING ELEVATIONS TAKEN FROM DRAWINGS PREPARED BY PRC CONSOER TOWNSEND CONSULTING ENGINEERS. VERIFY ELEVATIONS PRIOR TO CONSTRUCTION.
3. REMOVE PNEUMATIC LINES TO THE WALL AND CAP.

NORTH

0 3 6
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS	
PROJECT ENG:	RTH
DESIGNED BY:	NTW
DRAWN BY:	NTW
CHECKED BY:	TVT
APPROVED:	JDP

SOUTH CAROLINA NOVEMBER 2003 B.P. BARBER & ASSOCIATES, INC. CERTIFICATE OF AUTHORIZATION No. COA0080 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7873 REGISTERED — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
RETURN SLUDGE PUMPING STATION DEMOLITION PLAN & SECTION
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
99127DA	D7
REF.	OF
N.B. NO. 1731	11
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-027 S

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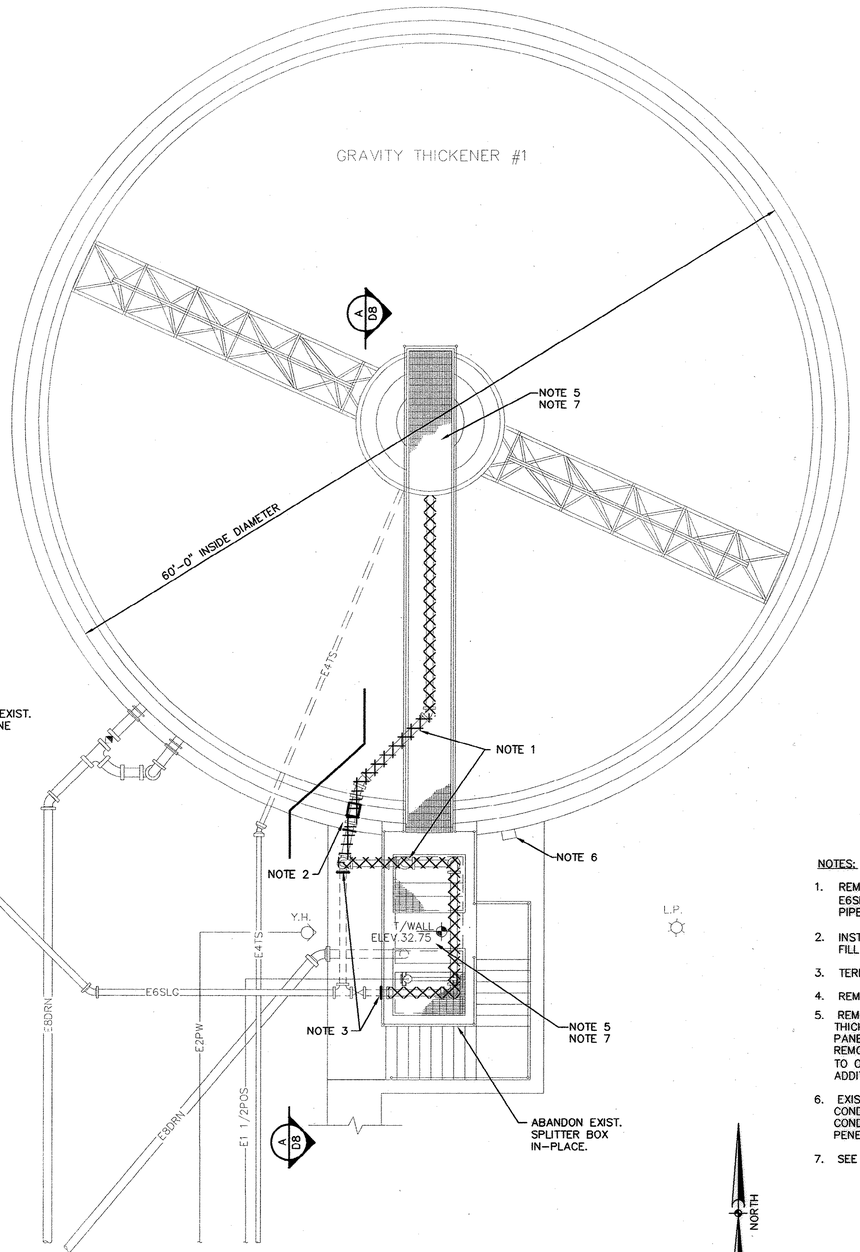
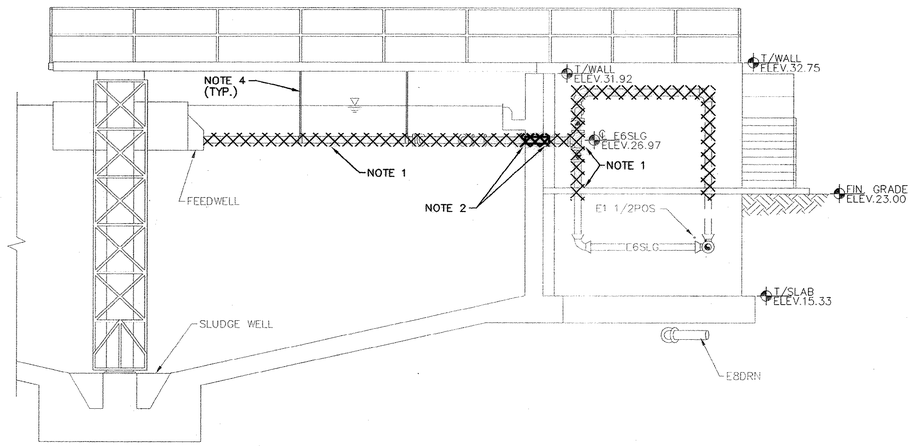


TOP PLAN
SCALE: 3/16"=1'-0"



SECTION
SCALE: 3/16" = 1'-0" A D8

NOTES:

1. REMOVE ALL EXPOSED E6SLG LINE FROM THICKENER AND SPLITTER BOX. E6SLG LINE TO CENTER FEED WELL NOT SHOWN FOR CLARITY. BURIED PIPE TO BE ABANDONED IN-PLACE 6" BELOW GRADE & PATCH SIDEWALK.
2. INSTALL 6" PLUG ON BOTH SIDES OF EXISTING THICKENER WALL PIPE, FILL WITH NONSHRINK GROUT PRIOR TO PLUGGING.
3. TERMINATE ALL ABANDONED PIPE WITH PLUG.
4. REMOVE PIPE HANGERS.
5. REMOVE ALL EXISTING CONDUIT AND CONDUCTORS FEEDING EXISTING MIXER THICKENER DRIVE MOTOR, AND RECEPTACLES. REMOVE EXISTING CONTROL PANEL. EXISTING THICKENER DRIVE DISCONNECT TO REMAIN IN PLACE. REMOVE EXISTING 3 HP MIXER MOTOR. TURN ALL USABLE EQUIPMENT OVER TO OWNER. DISPOSE OF ALL UNWANTED EQUIPMENT (OFF-SITE) AT NO ADDITIONAL COST TO OWNER.
6. EXISTING PULL BOX. REMOVE ALL EXISTING CONDUCTORS. REMOVE ALL CONDUITS ATTACHED TO PULL BOX THAT FEED THICKNER EQUIPMENT. CONDUIT BETWEEN PULL BOX AND MANHOLE TO REMAIN IN PLACE. SEAL ALL PENETRATIONS WATERTIGHT. PULL BOX TO BE REUSED.
7. SEE ELECTRICAL PLANS FOR MODIFICATIONS.

NORTH

0 3 6
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS			
PROJECT ENG: RTH	DESIGNED BY: DEF	DRAWN BY: GS	CHECKED BY: TVT	APPROVED: JDP

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL B.P. BARBER & ASSOCIATES, INC. No. 6003 — DATE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL No. 7873 REGISTERED — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: GRAVITY THICKENER DEMOLITION PLAN & SECTION
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
99127DH	D8
REF.	OF
N.B. NO. 1731	11
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-028 5

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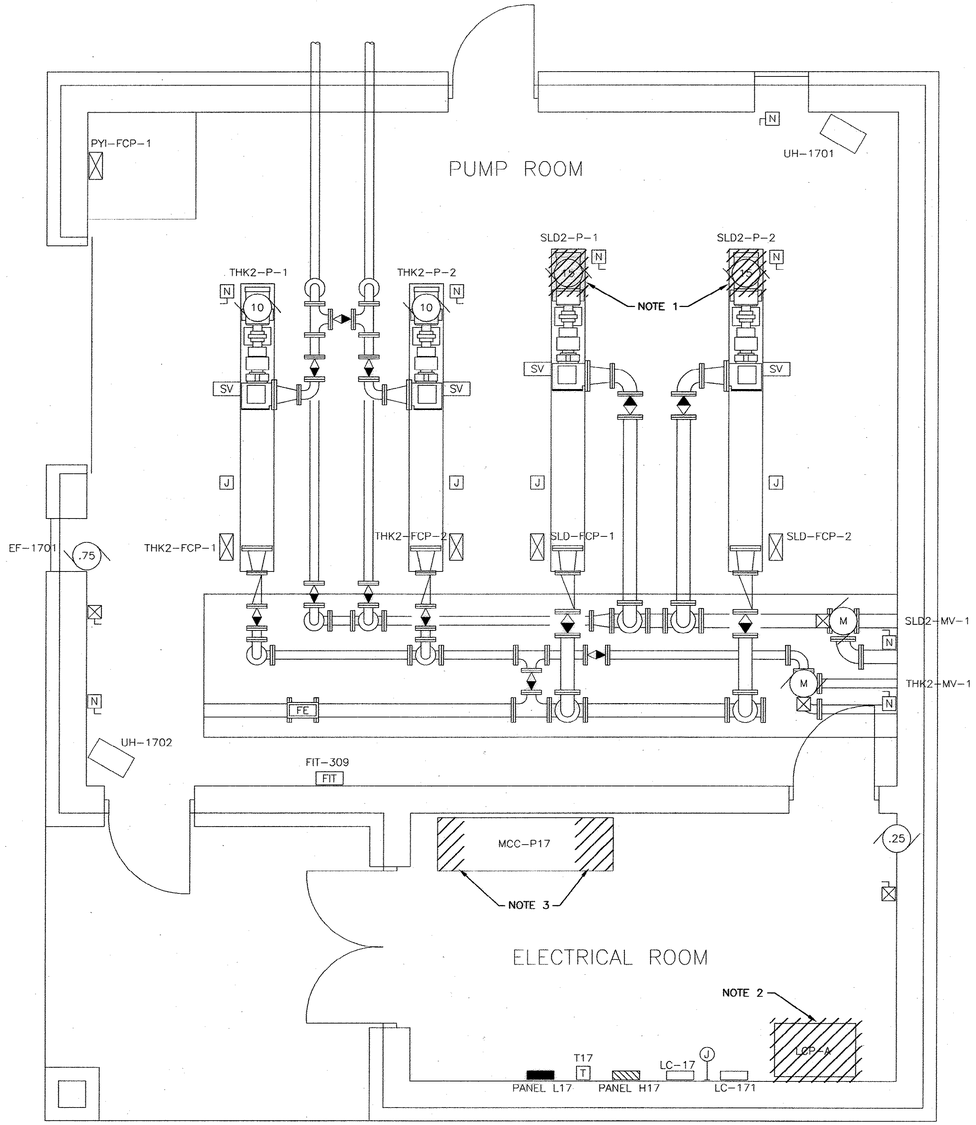

DEMOLITION PLAN

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

0 2 4

GRAPHIC SCALE

NORTH

DEMOLITION NOTES

1. REMOVE EXISTING VARIDRIVE, MOTOR, AND GEARBOX. RETURN EQUIPMENT TO OWNER.
2. REMOVE EXISTING CONTROL PANEL LCP-A – COORDINATE WITH OWNER. ALL EXISTING CONDUIT & CONDUCTORS TO BE RE-USED. USE CAUTION WHEN DISMANTLING. REFER TO ELECTRICAL PLAN FOR FURTHER DETAILS.
3. PARTIAL DEMOLITION THIS AREA. REFER TO ELECTRICAL PLAN FOR FURTHER DETAILS.

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: JMA
DRAWN BY: GS
CHECKED BY: TVT
APPROVED: JDP

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECTURAL FIRM CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. C00020
DATE

NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER THOMAS V. TAYLOR No. 7973
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
SLUDGE PUMP STATION DEMOLITION PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149DC
REF.
N.B. NO. 1731
PROJECT NO. 00149

SHEET D9 OF 11

FILE NO. 22-85-00

51-004-029 5

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00149MA0.dwg 11-16-00 1:45:26 pm EST

NOTES:

1. REMOVE EXISTING SLUDGE PUMPS (BFP2-P-1 & BFP2-P-2), MACERATORS AND PIPE STANDS (2 EACH), AND SUCTION AND DISCHARGE PIPING.
2. ~~REMOVE E41S LINE.~~
3. REMOVE EXISTING 550 GALLON POLYMER AGING TANK, CONCRETE BASE, AND ASSOCIATED POLYMER PIPING TO AND FROM AGING TANK.
4. REMOVE EXISTING LIME STORAGE HOPPER AND EQUIPMENT, LIME SLURRY RECIRCULATION PUMP, AND SUCTION AND DISCHARGE PIPING.
5. DELIVER THE FOLLOWING EQUIPMENT TO THE OWNER: MACERATORS, SLUDGE PUMPS, AGING TANK, LIME STORAGE EQUIPMENT AND PUMPS.
6. REMOVE EXISTING WALL MOUNTED 7.5 HORSEPOWER VARIABLE FREQUENCY DRIVE (VFD) AND FLOOR MOUNTED DRIVE ISOLATION TRANSFORMER. REMOVE CONDUCTORS BACK TO BFP2-P-1 AND BFP2-P-2. EXISTING MOTOR DISCONNECTS AND CONDUITS TO REMAIN AND BE USED TO SERVE NEW PUMP-MOTORS. SEE ELECTRICAL PLAN FOR FURTHER DETAILS.
7. EXIST. LIQUID ALUM AND FERRIC LINES TO BE REPLACED WITH PVC PIPING. PIPES TO BE REPLACED FROM CONNECTION POINT UP TOP TO DISCHARGE POINT AT NEW POLYMER TANKS.

BLENDING WELL
SLUDGE WELL
BLENDING WELL
SLUDGE WELL
SLD-P-5
SLD-P-4
SLD-P-3
BFP1-P-2
BFP2-P-2
BFP2-P-1
4" SLUDGE METERS
#4
#3
#2
#1
MACERATOR (TYP. 2)
SLUDGE PMP. (TYP.)
4" SUCT.
PUMP #3
PUMP #2
PUMP #1
30"
18"
E3POL
LIQUID POLYMER STORAGE TANK
POLYMER PUMP #1
POLYMER PUMP #2
PROCESSING MODULE
AGING TANK
AGING TANK
NOTE 3
NOTE 7
E2.5LA
E2.5FC
E2PW
LIME STORAGE HOPPER AND EQUIPMENT
FLOOR DRAIN (TYP.)
NOTE 4
LIME SLURRY RECIRCULATION PUMP
SCR PANELS
EXISTING BACKFLOW PREVENTER
T/WALL ELEV.13.00
VFD ROOM
NOTE 6
T/SLAB ELEV. 4.0
T/SLAB ELEV. 3.25
T/SLAB ELEV. 4.0
T/SLAB ELEV. 4.0
E12 (WALL PIPE) ELEV. 12.0
PLANT WATER PUMPS (4 TYP.)
RESIDUAL CHLORINE ANALYZER PUMP
THICKENER RECIRCULATION PUMP
24" MAGNETIC FLOW METER
PLANT EFFLUENT BOOSTER PUMP
SCUM EJECTOR
WASH WATER PUMP (BFP-2)
E6SCW ELEV. 13.5
E12VNT ELEV. 17.25
E10SUR ELEV. 13.0
E8WW ELEV. 7.36
E8DRN ELEV. -1.17
E8DRN ELEV. 0.0
E4SPRAY ELEV. 11.0
E18LPAIR ELEV. 13.5
E4PW ELEV. 14.5
E4PW ELEV. 3.5
E6SL ELEV. 24.50
E6SL ELEV. 16.08
E6SL ELEV. 6.83
E6SL ELEV. 5.50
E6SL ELEV. 5.50
E8SL ELEV. 8.67
E6LPAIR ELEV. 16.00
E6LPAIR ELEV. 14.33
E4AIR ELEV. 2.0
E6TS ELEV. 4.17
E6TS ELEV. 4.17
E6TS ELEV. 0.25
E8SL ELEV. 1.5
E41S
E41S
E24PW ELEV. -1
E6PW ELEV. 15.5
E8PW ELEV.15.5
E6SCW ELEV. 13.5
E8PW ELEV.15.5
E8PW ELEV.15.5
E24EFF ELEV. 6.50 (3 TYP.)
E8THR ELEV. 6.25
E8THR ELEV. 14.0
E8THR ELEV. 15.5
E36EFF ELEV. 13.0
E48EFF ELEV. 8.0
E6SCW ELEV. 12.0
E8PW ELEV.17.0
E36EFF ELEV. 13.0
A D11
A D11

PLAN
0 4 8
(IN FEET)
NORTH

RECORD DRAWINGS
DATE: SEPT., 2003

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REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	NOTE 7 ADDED	3-02	AR

APPROVALS
PROJECT ENG: RTH
DESIGNED BY:
DRAWN BY:
CHECKED BY: TVT
APPROVED: JDP

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT B.P. BARBER & ASSOCIATES, INC. CERTIFICATE # DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7873 REGISTERED THOMAS VICTOR SIGNATURE

bpb
B. P. BARBER & ASSOCIATES, INC.
ENGINEERS - PLANNERS - SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
PROCESS CENTER BASEMENT FLOOR DEMOLITION PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

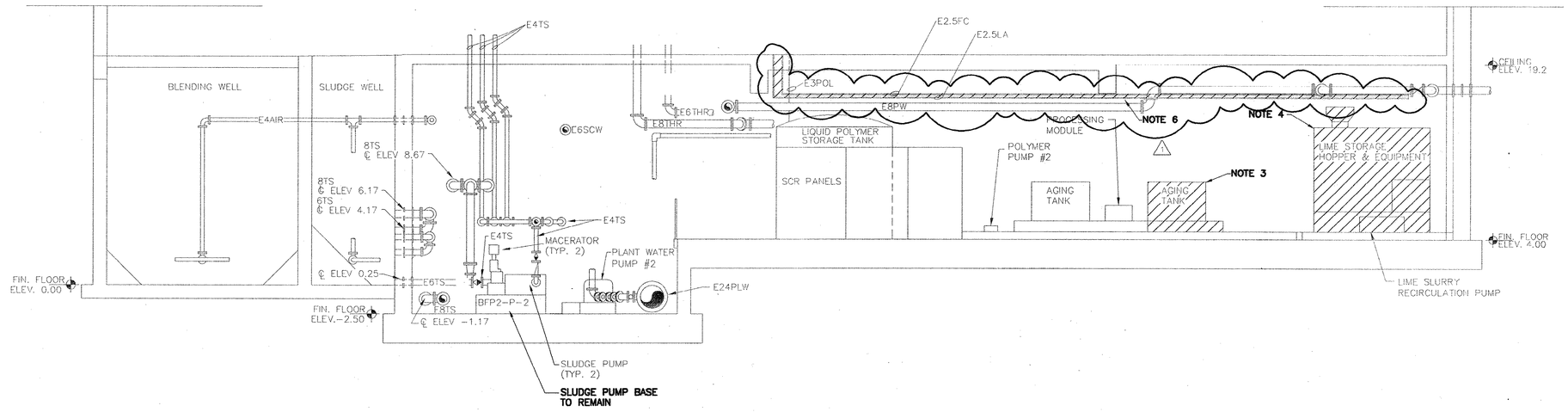
DISK: CH149D10REV.	SHEET: D10
REF.	OF: 11
N.B. NO.: 1731	
PROJECT NO.: 00149	

FILE NO. 22-85-00

51-004-030 5

NOTES:

1. ~~REMOVE EXISTING SLUDGE PUMPS (BFP2-P-1 & BFP2-P-2), MACERATORS AND PIPE STANDS (2 EACH), AND SUCTION AND DISCHARGE PIPING.~~
2. ~~REMOVE E4TS LINE.~~
3. REMOVE EXISTING 550 GALLON POLYMER AGING TANK, CONCRETE BASE, AND ASSOCIATED POLYMER PIPING TO AND FROM AGING TANK.
4. REMOVE EXISTING LIME STORAGE HOPPER AND EQUIPMENT, LIME SLURRY RECIRCULATION PUMP, AND SUCTION AND DISCHARGE PIPING.
5. DELIVER THE FOLLOWING EQUIPMENT TO THE OWNER: MACERATORS, SLUDGE PUMPS, AGING TANK, LIME STORAGE EQUIPMENT AND PUMPS.
6. EXIST. LIQUID ALUM AND FERRIC LINES TO BE REPLACED WITH PVC PIPING. PIPES TO BE REPLACED FROM CONNECTION POINT UP TOP TO DISCHARGE POINT AT NEW POLYMER TANKS.



SECTION A / D10

0 4 8
(IN FEET)

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	NOTE 6 ADDED	3-03	AR

APPROVALS
PROJECT ENG: RTH
DESIGNED BY:
DRAWN BY:
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
B.P. BARBER & ASSOCIATES, INC.
No. 4709

SOUTH CAROLINA PROFESSIONAL ENGINEER
REGISTERED
No. 7873
THOMAS V. MYRTLE

DATE

SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
PROCESS CENTER
BASEMENT FLOOR
DEMOLITION
SECTION

DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND
EXPANSION FOR THE
WATER RECLAMATION
FACILITY
PHASE I

DISK: CH149D11REV	SHEET: D11
REF.	OF: 11
N.B. NO. 1731	
PROJECT NO. 00149	

FILE NO. 22-85-00

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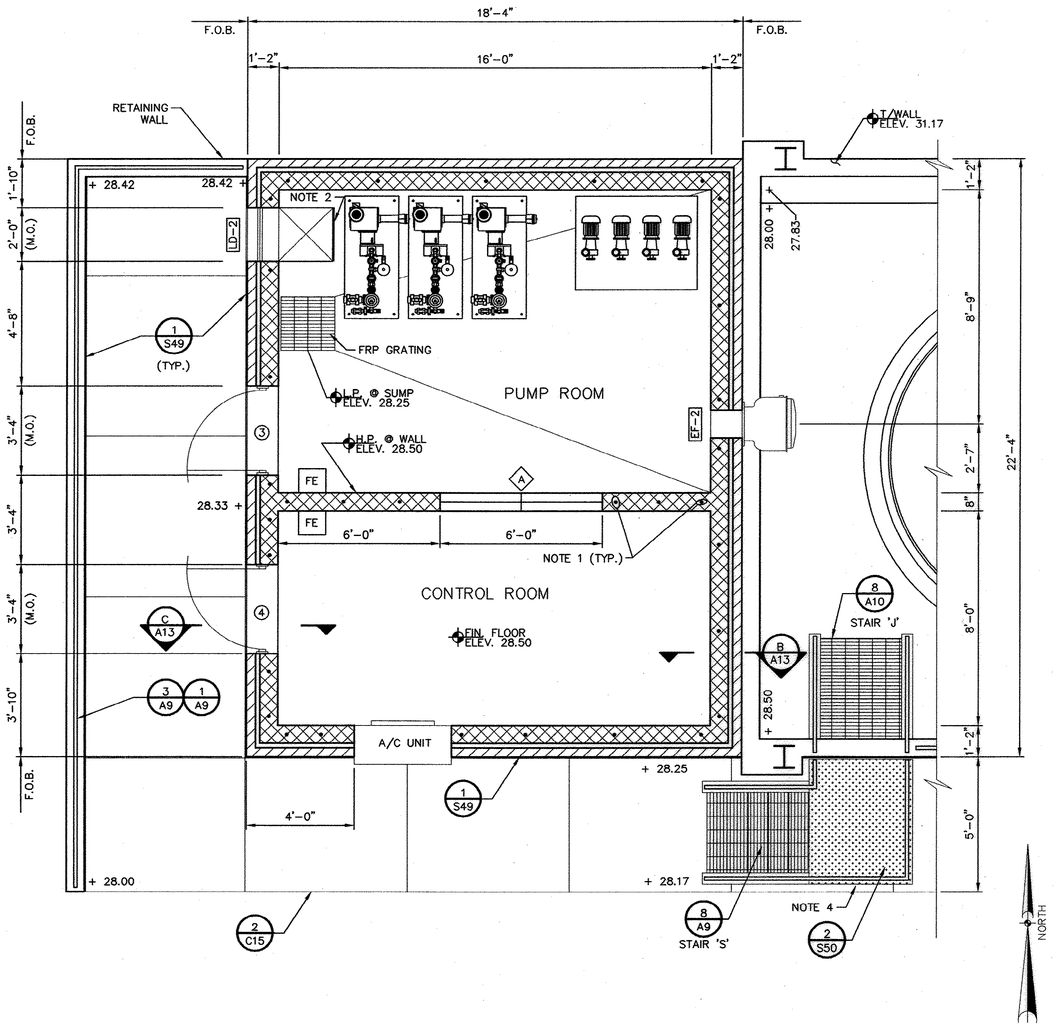
51-004-031

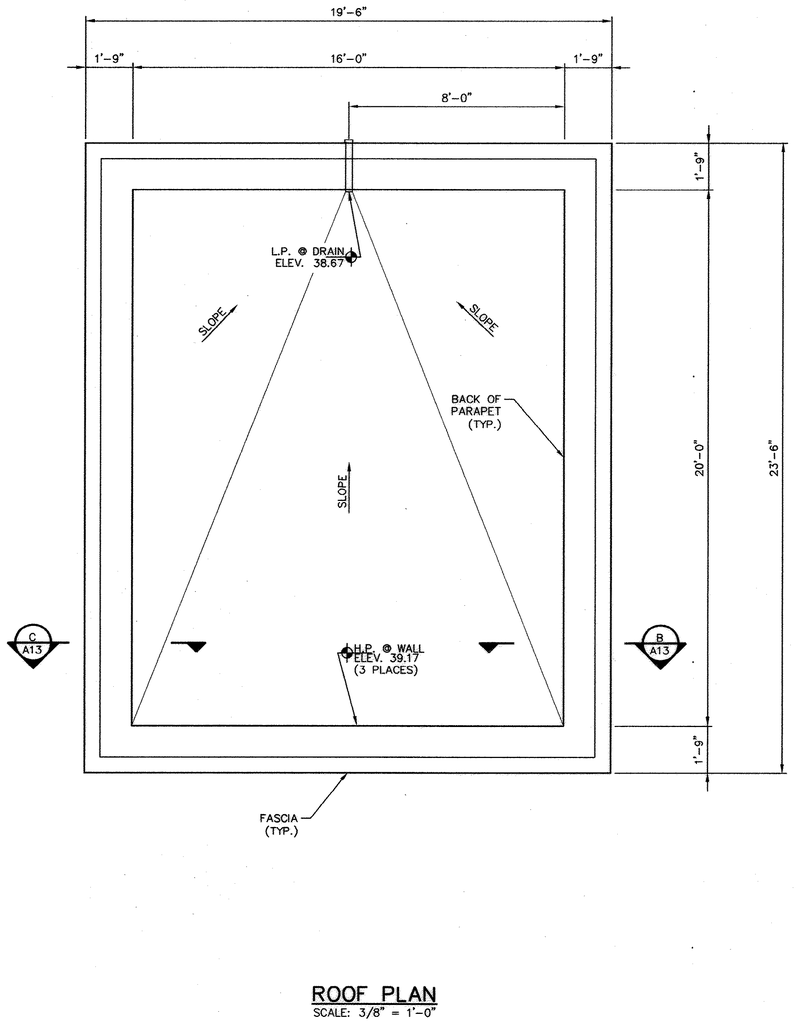
5



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

NOTES:

1. PROVIDE #5'S VERTICAL @ SIDES OF OPENINGS, CORNERS, INTERSECTIONS AND @ 48" ±O.C. (MAX.). GROUTS CELLS SOLID.
2. PROVIDE FRP GRILLE FOR FIBERGLASS DUCT WORK.
3. CONCRETE SIDEWALK BENEATH STAIRWAY.



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

0 2 4
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS	
PROJECT ENG	RTH
DESIGNED BY:	DEF
DRAWN BY:	DEF
CHECKED BY:	GTS
APPROVED:	JDP

SOUTH CAROLINA NOVEMBER OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. 000089 CERTIFICATE OF — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7030 — SIGNATURE

bpb

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW CHLORINATION FACILITY PLANS

DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	00149AK
REF.	
N.B. NO.	1731
PROJECT NO.	00149
SHEET	A1
OF	13

FILE NO. 22-85-00

51-004-032 5

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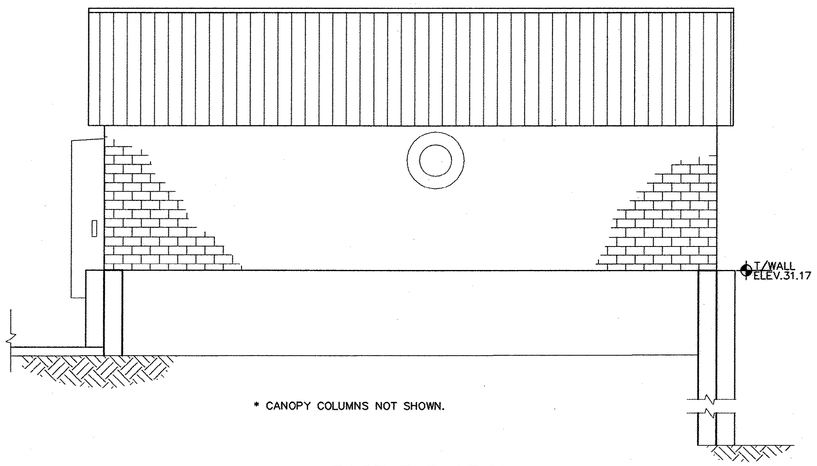
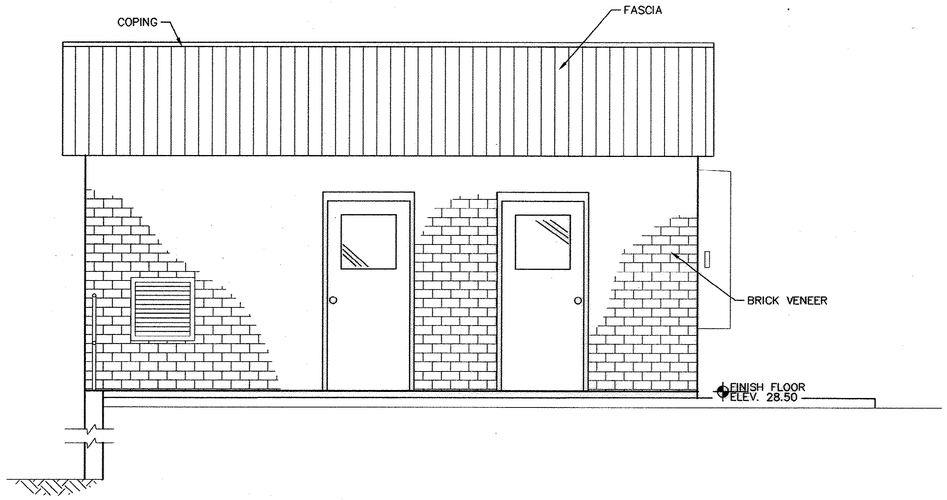


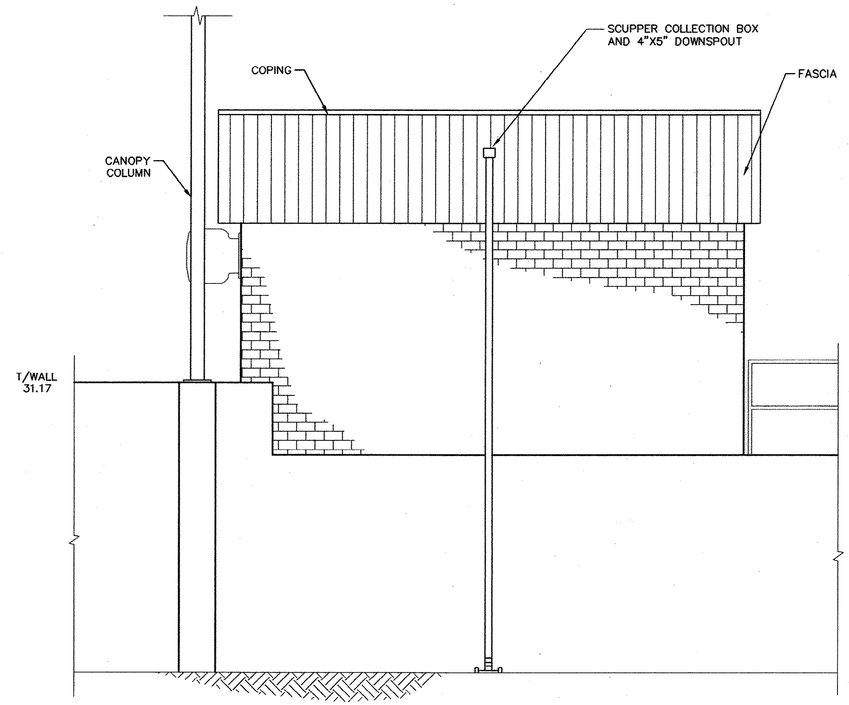
EAST ELEVATION

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



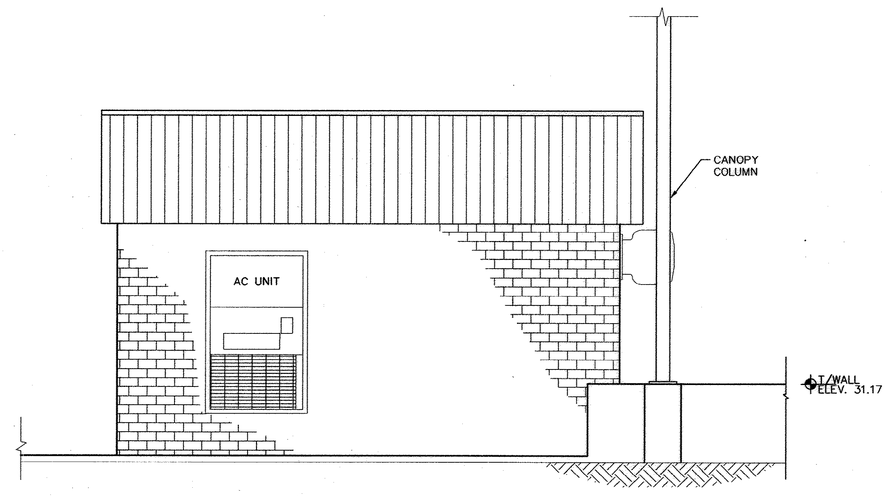
WEST ELEVATION

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



NORTH ELEVATION

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



SOUTH ELEVATION

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

NOTES:

1. STEPS NOT SHOWN FOR CLARITY.

0 2 4

GRAPHIC SCALE

RECORD DRAWINGS

DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS	
PROJECT ENG:	RTH
DESIGNED BY:	DEF
DRAWN BY:	SSJ
CHECKED BY:	GTS
APPROVED:	JDP

SOUTH CAROLINA NOVEMBER 19, 2003 B.P. BARBER & ASSOCIATES, INC. No. C00060 CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7039 REGISTERED GLEN T. SHEALY — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW CHLORINATION FACILITY ELEVATIONS

DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149AL	SHEET A2
REF.	OF 13
N.B. NO. 1731	
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-033 5

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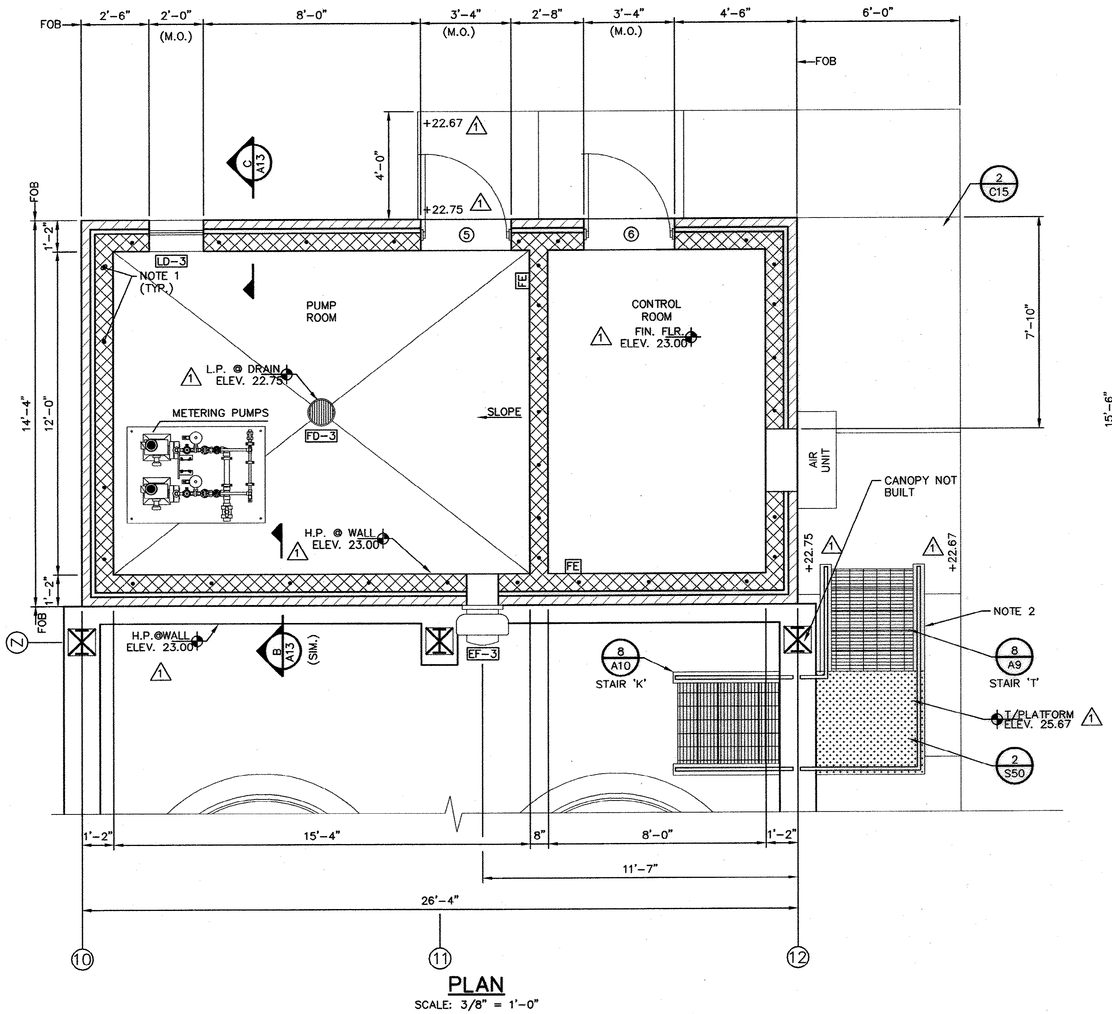
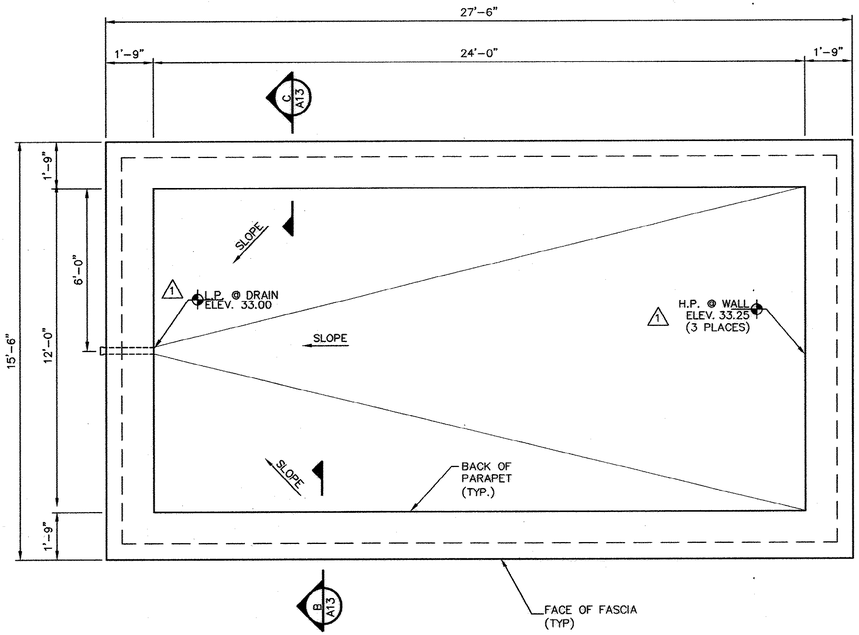


PLAN
SCALE: 3/8" = 1'-0"



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

NOTES:

1. PROVIDE #5'S VERTICAL @ SIDES OF OPENINGS, CORNERS, INTERSECTIONS, AND @ 48"± O.C. (MAX.). GROUT CELLS SOLID.
2. CONCRETE SIDEWALK BENEATH STAIRWAY.

NORTH

0 2 4

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	CHANGE PER ADDENDUM #4	3-1	AR

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: DLF
DRAWN BY: NTW
CHECKED BY: CTS
APPROVED: JDP

SOUTH CAROLINA REGISTRATION FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. C000320
DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7039 C. ERIC T. SHEPPARD
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW DECHLORINATION FACILITY PLANS
DATE: FEB, 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149AV	SHEET A3
REF.	OF 13
N.B. NO. 1731	
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-034 S

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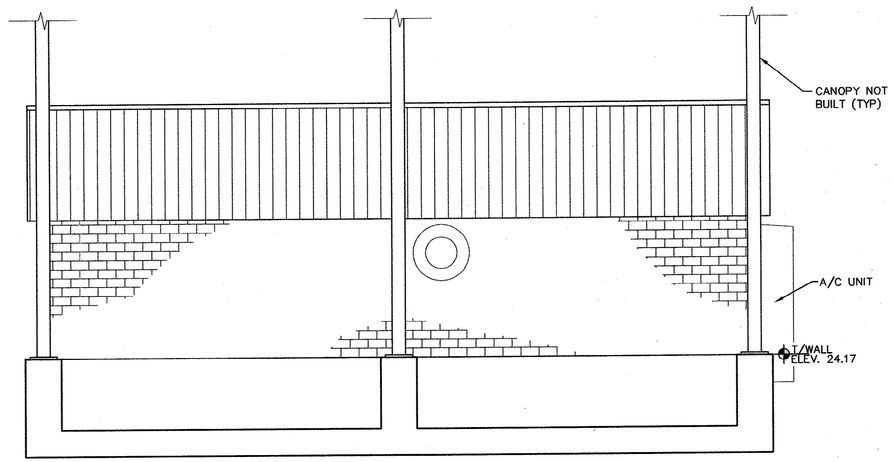
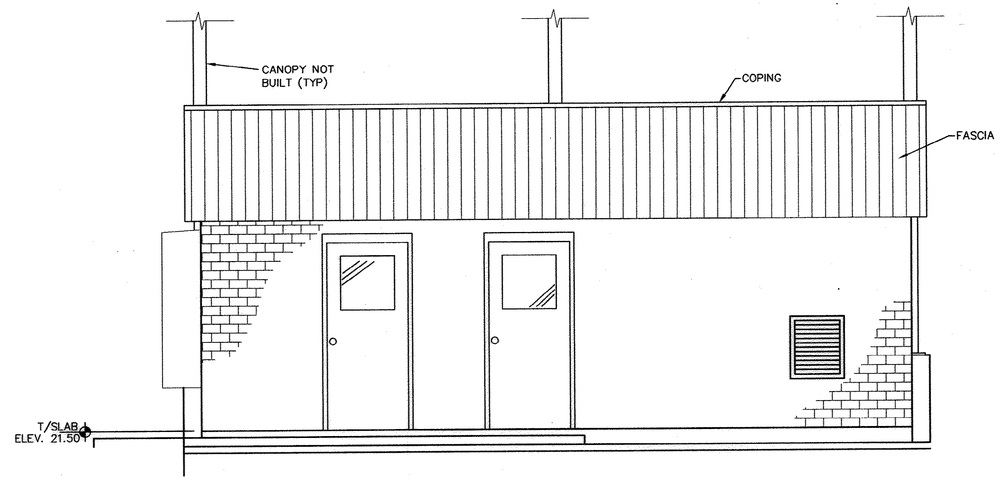
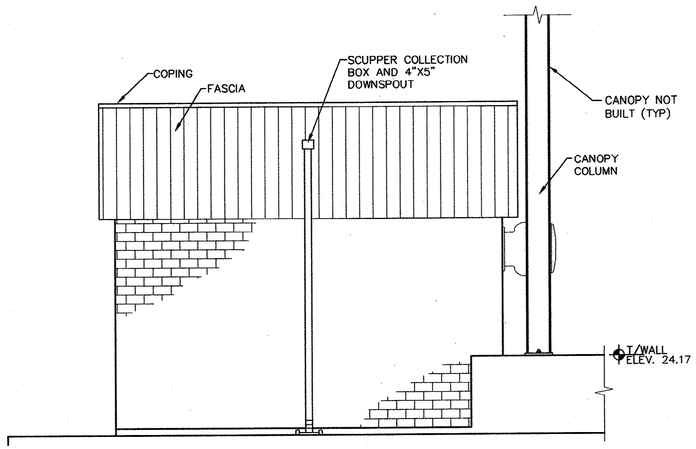


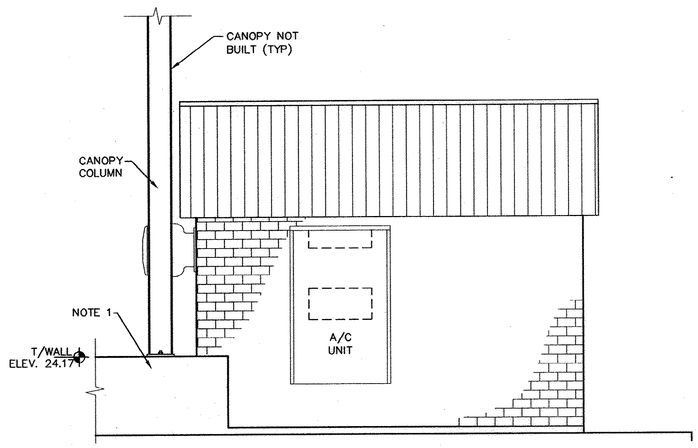
SOUTH ELEVATION
SCALE: 3/8"=1'-0"



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



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



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

NOTES:
1. STEPS NOT SHOWN FOR CLARITY.

0 2 4
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

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REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS

PROJECT ENG:	DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED:
RTH	DEF	NTW	GTS	JDP

NOTICE TO CONTRACTOR
SOUTH CAROLINA LAW REQUIRES NOTIFICATION OF ANY EXCAVATION
B. P. BARBER & ASSOCIATES, INC.
CERTIFICATE OF AUTHORIZATION
No. C00320
DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER
No. 7039
REGISTERED
GLEN T. SHEALY
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

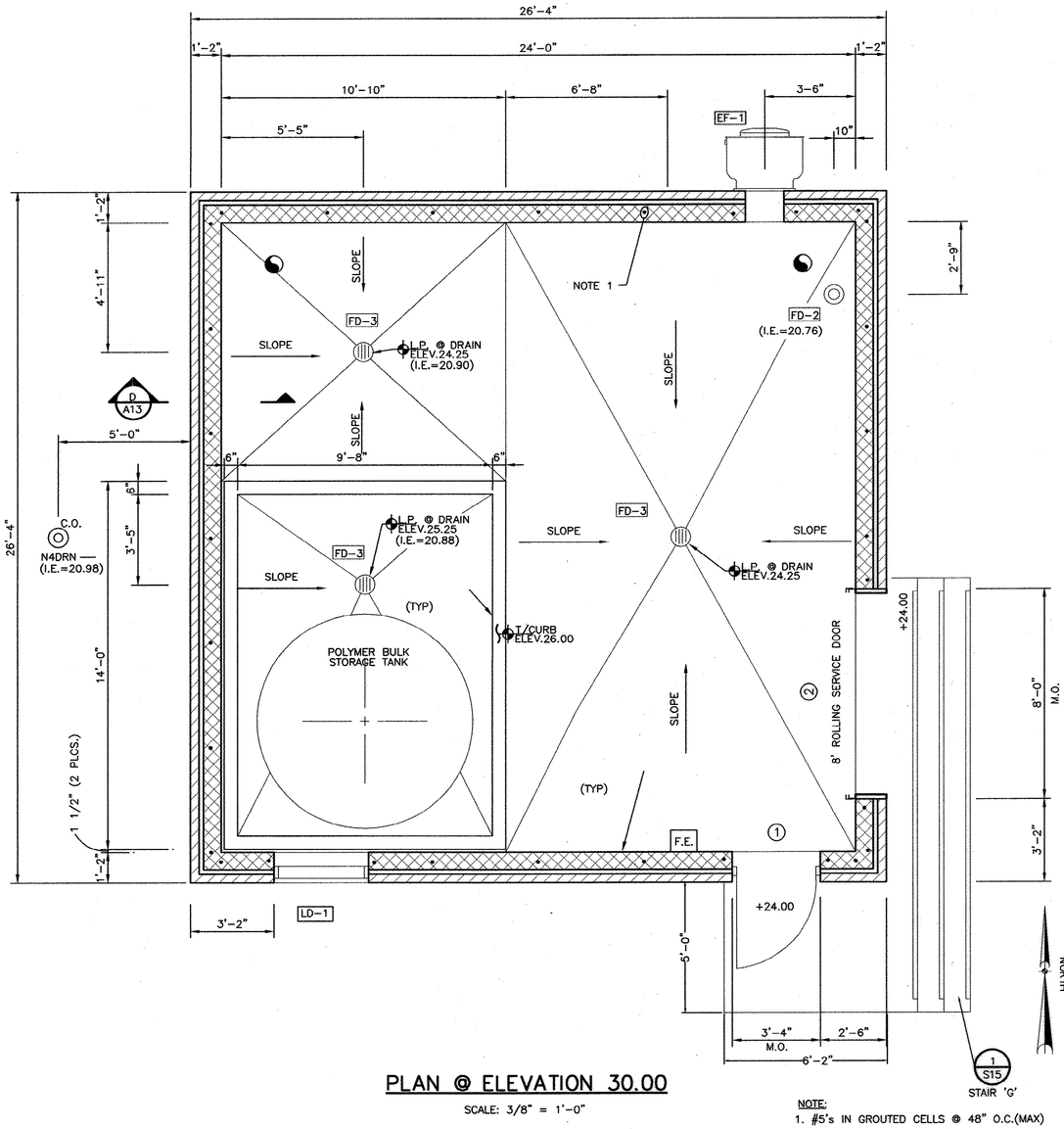
SHEET TITLE
NEW DECHLORINATION FACILITY ELEVATIONS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149AO	A4
REF.	OF
N.B. NO. 1731	13
PROJECT NO. 00149	

FILE NO. 22-85-00

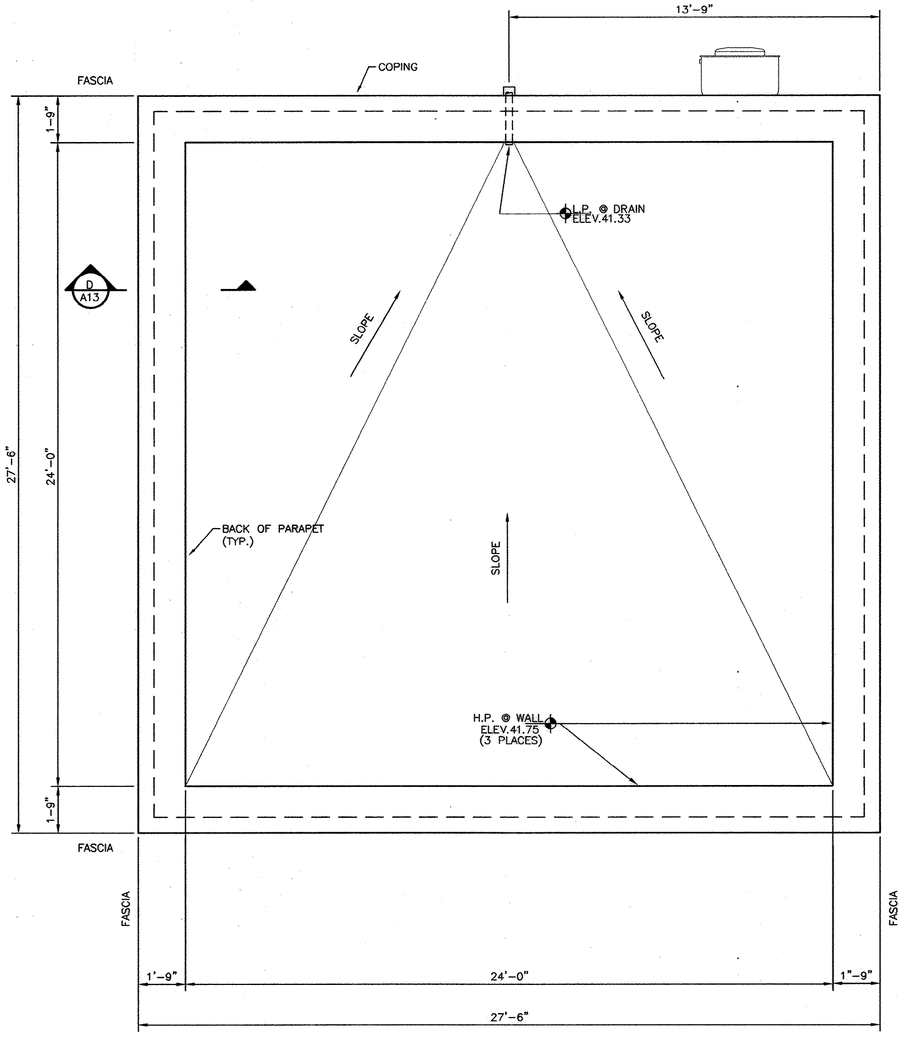
51-004-035 S



PLAN @ ELEVATION 30.00

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

NOTE:
1. #5's IN GROUTED CELLS @ 48" O.C.(MAX)



ROOF PLAN

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

NORTH

0 2 4
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS	
PROJECT ENG:	RTH
DESIGNED BY:	DEF
DRAWN BY:	ZES
CHECKED BY:	GTS
APPROVED:	JDP

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 7039 GLEN T. STEPHENS

DATE

SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW POLYMER BUILDING PLANS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY
PHASE I

DISK	00149AC
REF.	
N.B. NO.	1731
PROJECT NO.	00149

SHEET A5 OF 13

FILE NO. 22-85-00

51-004-036 5

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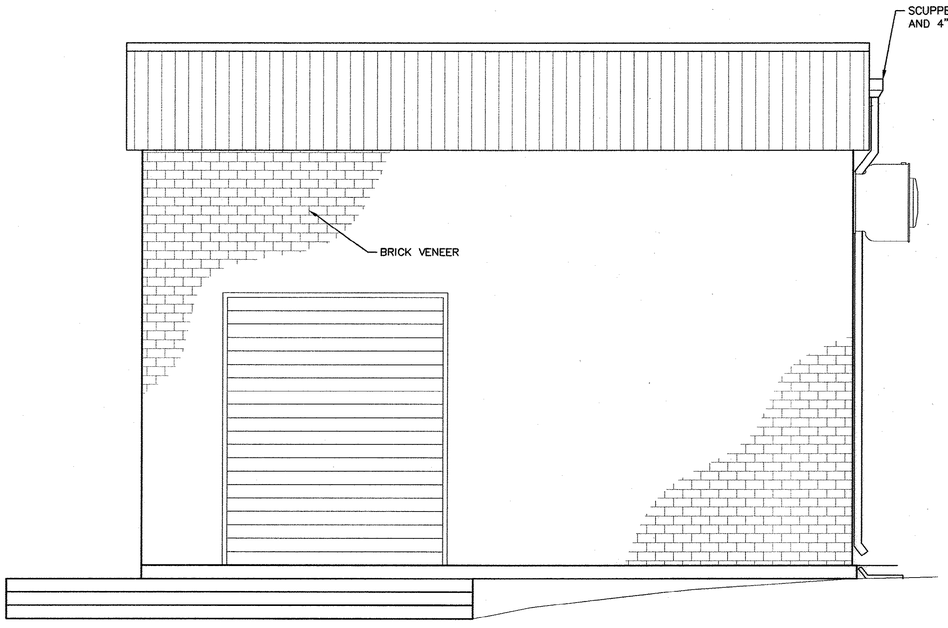
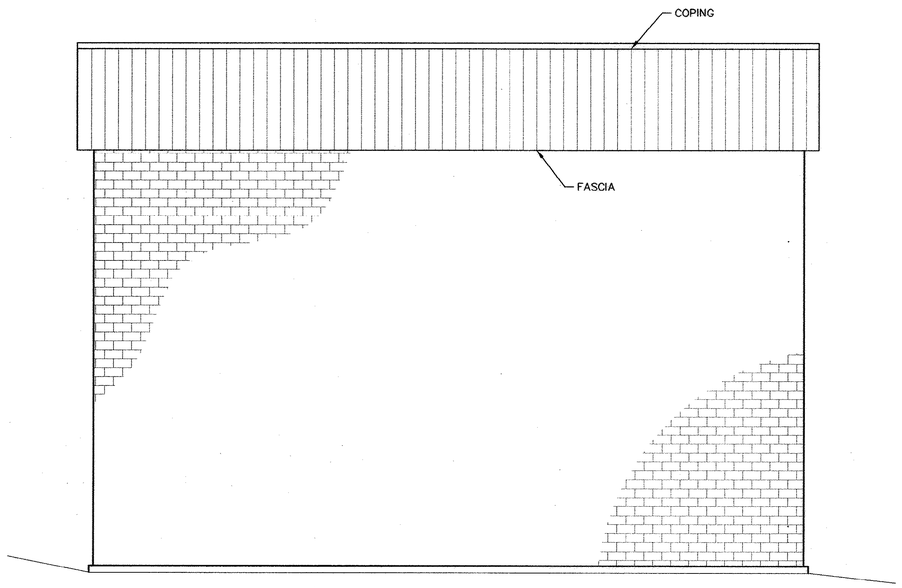
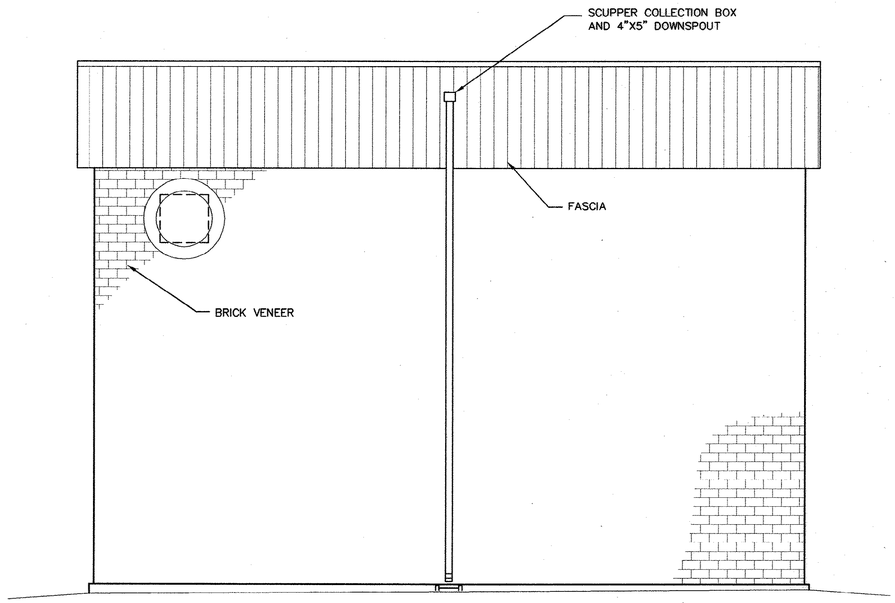


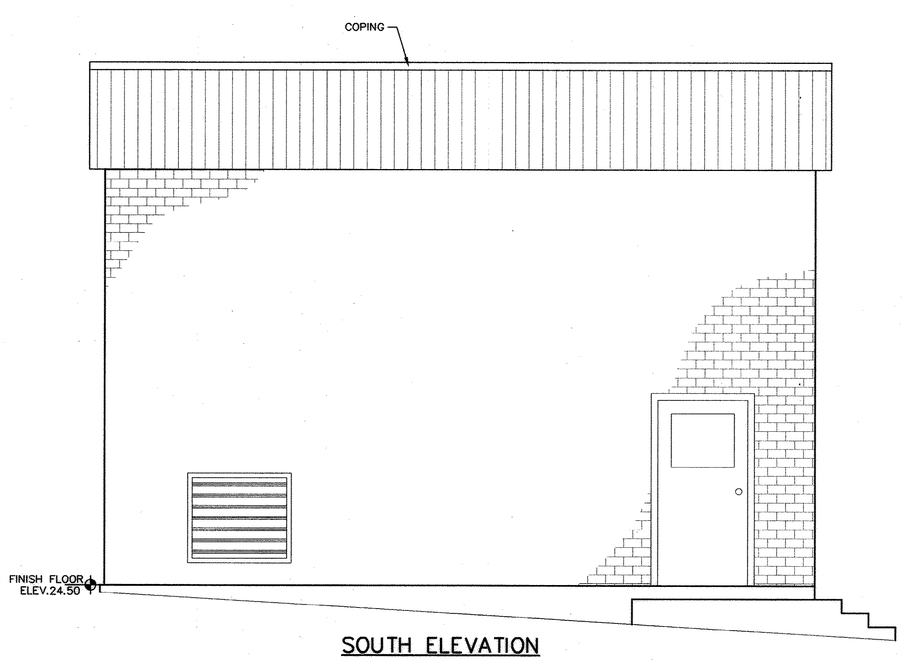
EAST ELEVATION
SCALE: 1/4" = 1'-0"



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



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



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

RECORD DRAWINGS
DATE: SEPT., 2003

51-004-037

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: DEF
DRAWN BY: ZES
CHECKED BY: GTS
APPROVED: JDP

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT
B.P. BARBER & ASSOCIATES, INC.
No. C0269
CERTIFICATE OF AUTHORIZATION
DATE

NORTH CAROLINA PROFESSIONAL ENGINEER
No. 7039
GLEN T. STEVENS
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW POLYMER BUILDING ELEVATIONS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY
PHASE I

DISK	SHEET
00149AF	A6
REF.	OF
N.B. NO. 1731	13
PROJECT NO. 00149	

FILE NO. 22-85-00

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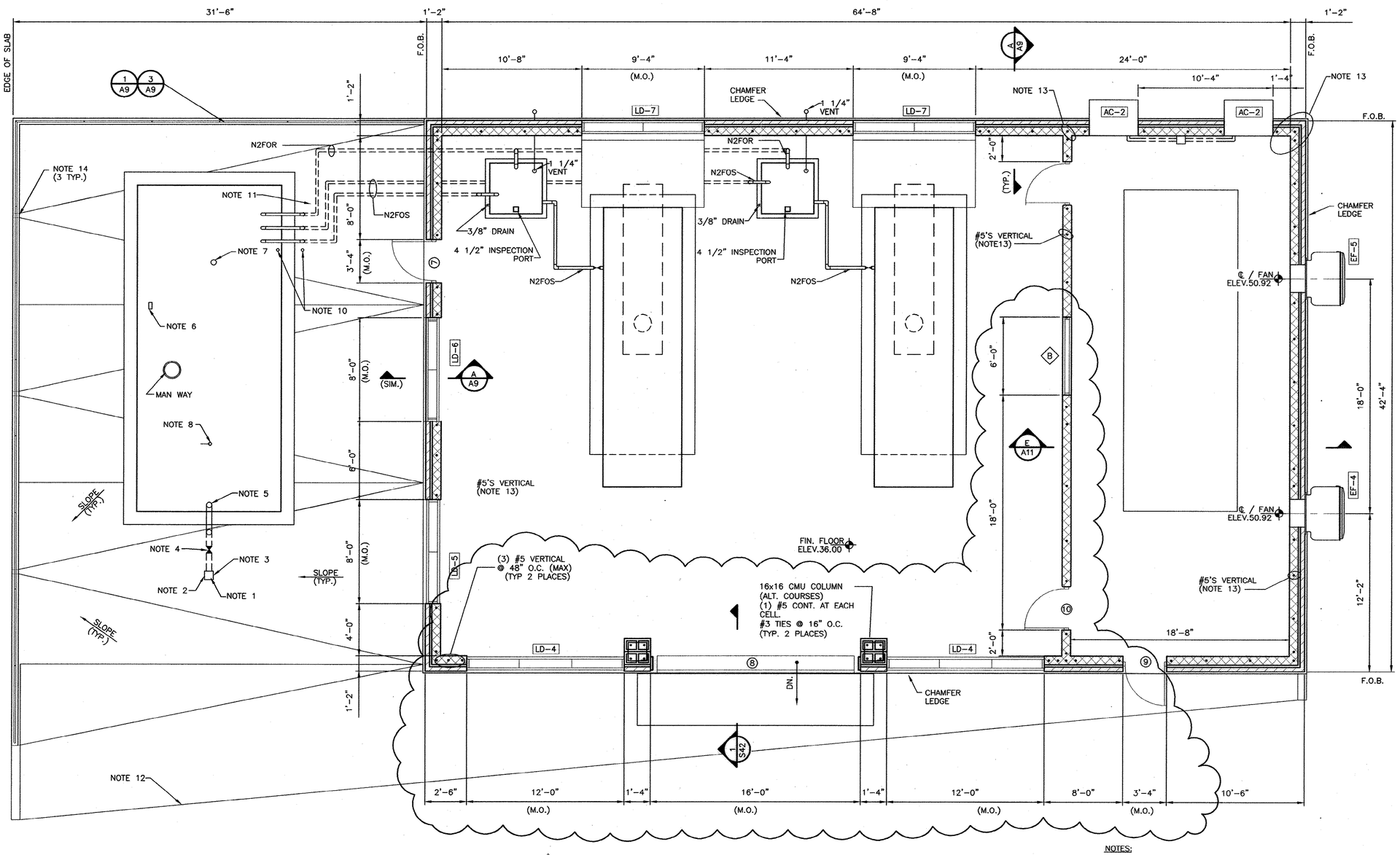

PLAN

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

0 4 8

NOTES:

1. REMOTE FILL SPILL CONTAINER O.P.W.
2. FILL ADAPTER
3. SWING CHECK VALVE
4. BALL VALVE
5. OVERFILL DROP TUBE
6. SITE GAUGE
7. 3" PRIMARY VENT
8. HIGH/LOW LEVER SWITCH
9. ANTISYPHON VALVE (TYP-2)
10. LEAK SWITCH (TANK/PIPING)
11. TRANSITION SUMP (O.P.W. PISCES CAT# PST-4536)
12. TIE CONCRETE TO EXISTING ROAD.
13. PROVIDE #5'S VERTICAL @ SIDES OF OPENINGS, CORNERS , INTERSECTIONS, AND @ 48"± O.C. (MAX) GROUT CELLS SOLID.
14. 3"ø DRAIN THRU CURB L.P. ELEV. 35.83 TYP. 3 PLACES.

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	WALLS REVISED	3-02	AR

APPROVALS	
PROJECT ENG:	RTH
DESIGNED BY:	GTS
DRAWN BY:	ZES
CHECKED BY:	GTS
APPROVED:	JDP

JDP

NORTH CAROLINA PROFESSIONAL ENGINEER CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. C-00500 — DATE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL No. 7039 REGISTERED GLEN T. SHEALY — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: GENERATOR BUILDING PLAN

DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	00149AU
REF.	
N.B. NO.	1731
PROJECT NO.	00149

SHEET A7 OF 13

FILE NO. 22-85-00

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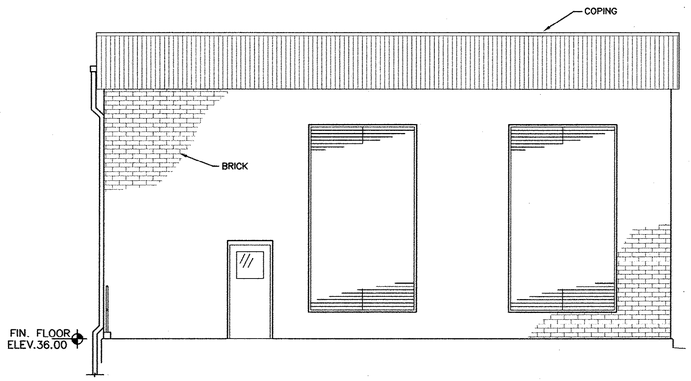
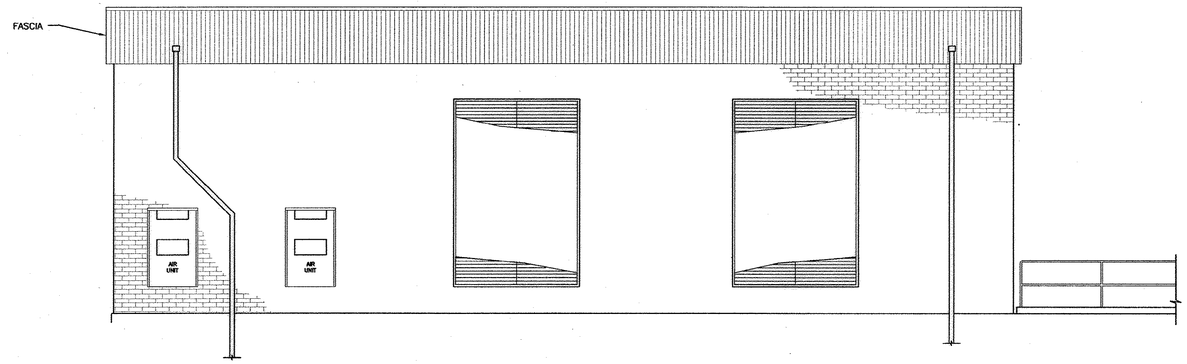
51-004-038 S



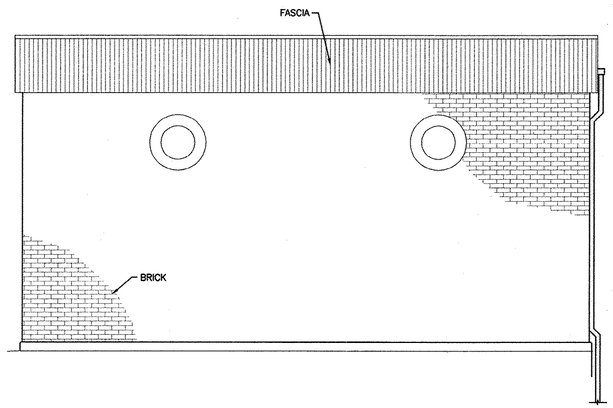
EAST ELEVATION

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



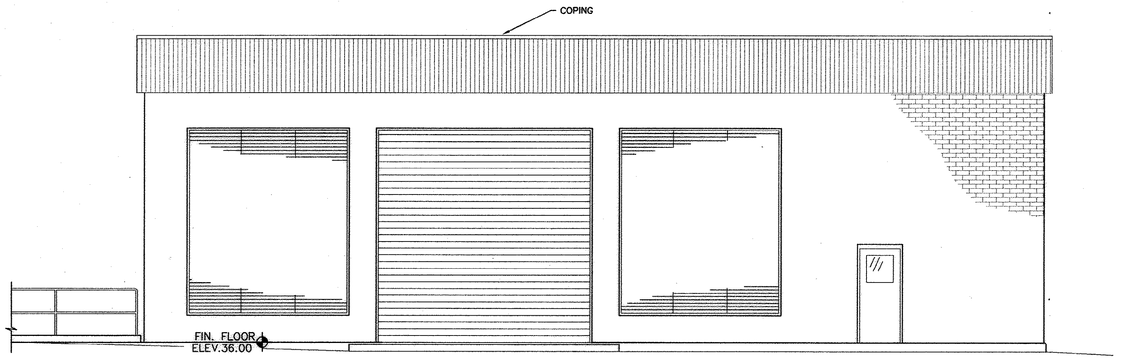
SOUTH ELEVATION

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



WEST ELEVATION

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



NORTH ELEVATION

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

0 3 6
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS			
PROJECT ENG: RTH	DESIGNED BY: GTS	DRAWN BY: GS	CHECKED BY: GTS
APPROVED: JDP			

JDP

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7030 CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. C000350

DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7030 REGISTERED G.R.H. T. SHEEN

SIGNATURE

bpb

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
GENERATOR BUILDING ELEVATIONS

DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149AS	SHEET A8
REF.	OF 13
N.B. NO. 1731	
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-039 S

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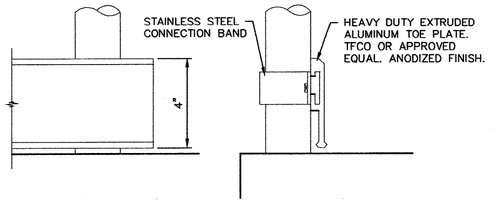
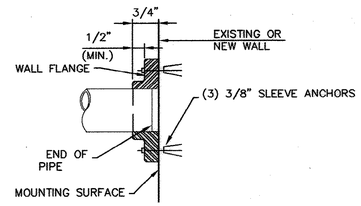


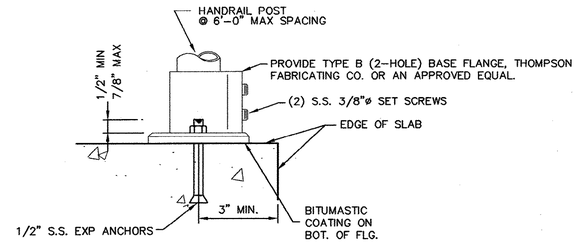
TOE PLATE DETAIL

SCALE: NONE — 1 TYP



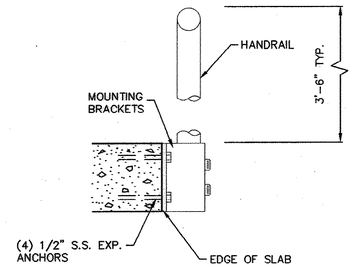
FACE MOUNT BRACKET DETAIL

SCALE: NONE — 2 TYP



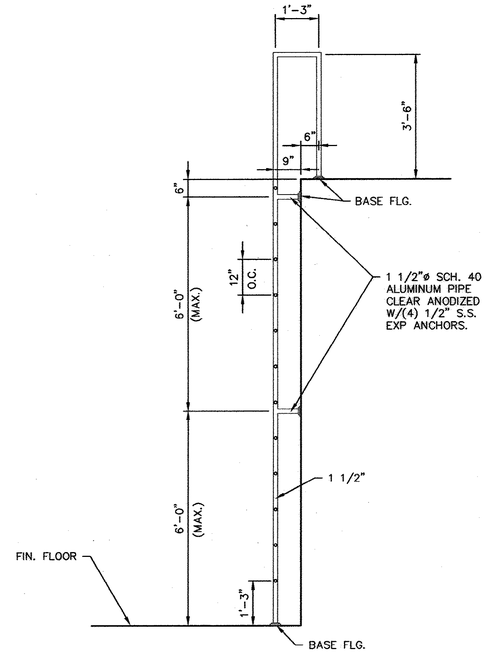
TOP MOUNT BRACKET DETAIL

SCALE: NONE — 3 TYP

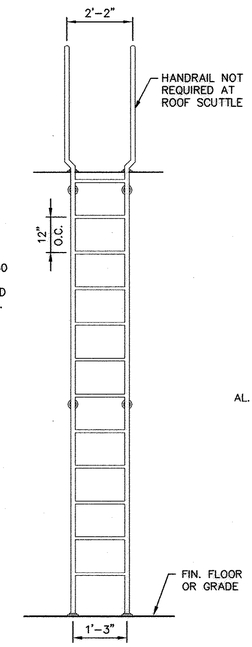


SIDE MOUNT BRACKET DETAIL

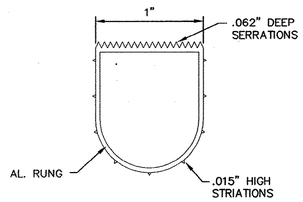
SCALE: NONE — 4 TYP



SIDE ELEVATION

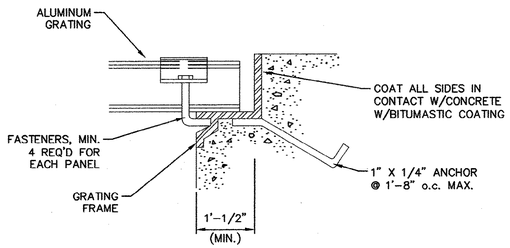


FRONT ELEVATION



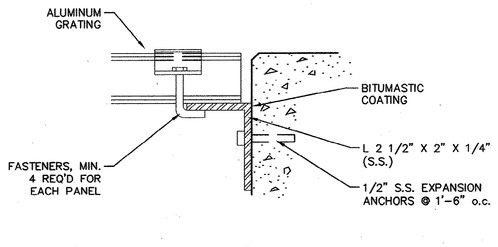
RUNG SECTION

ALUMINUM HANDRAIL



FLOOR CONNECTION DETAIL

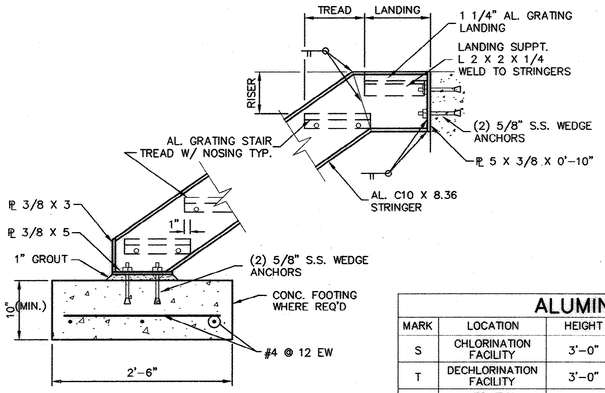
SCALE: NONE — 6 TYP



WALL CONNECTION DETAIL

SCALE: NONE — 7 TYP

ALUMINUM GRATING



ALUMINUM STAIR DETAIL

SCALE: NONE — 8 TYP

STAIR NOTES:
1. PROVIDE PROTECTION FOR DISSIMILAR METALS & CONC. AS SPECIFIED.
2. PROVIDE TOP MOUNTED HANDRAIL ATTACHED TO TOP FLANGE OF STAIR STRINGERS (NOT SHOWN)
3. PROVIDE FOOTING @ OUTDOOR STAIRS.
4. FOOTING WIDTH = STAIR WIDTH + 12"
5. BROOM FINISH TOP OF FTG.

* TWO STAIRS REQUIRED

ALUMINUM STAIR SCHEDULE

MARK	LOCATION	HEIGHT	RISERS	TREADS	WIDTH	LANDING	REMARKS
S	CHLORINATION FACILITY	3'-0"	5 @ 7.2"	4 @ 10"	3'-0"	10"	
T	DECHLORINATION FACILITY	3'-0"	5 @ 7.2"	4 @ 10"	3'-0"	10"	
U	AERATION BASIN	3'-2"	6 @ 6.33"	5 @ 12"	4'-0"	12"	
V	AERATION BASIN	3'-2"	6 @ 6.33"	5 @ 12"	4'-0"	12"	
W	CHLORINATION BUILDING	3'-4"	6 @ 6.66"	5 @ 11"	3'-0"	11"	
X	DIVISION BOX	13'-0" (TOTAL)	15 @ 7.43" 6 @ 7.43"	14 @ 10" 5@ 10"	3'-0"	10" 10"	
Y	GRAVITY THICKENER	9'-4 1/2"	15 @ 7 1/2"	14 @ 10"	3'-6"	10"	
Z	DEWATERING FACILITY	21'-0" (TOTAL)	20 @ 7"± 15 @ 7.5"±	19 @ 11" 14 @ 10"	3'-0"	11" 11"	

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS: PROJECT ENG: RTH; DESIGNED BY: MAB; DRAWN BY: JRC; CHECKED BY: GTS; APPROVED: JDP

NORTH CAROLINA — GLEN T. SHIRK — PROFESSIONAL ENGINEER — No. 7039 — SEAL/SIGNATURE

HANKS CERTIFICATE OF AUTHORIZATION — B.P. BARBER & ASSOCIATES, INC. — No. C0260 — DATE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: MISCELLANEOUS DETAILS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149AP; REF.; N.B. NO. 1731; PROJECT NO. 00149

SHEET A9 OF 13

FILE NO. 22-85-00

51-004-040 S

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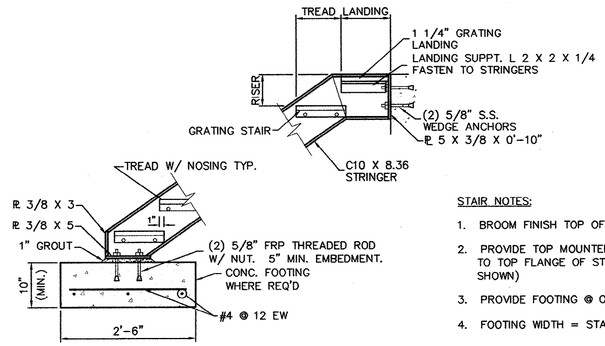


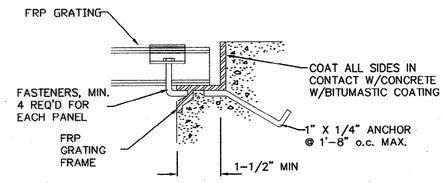
STAIR NOTES:

1. BROOM FINISH TOP OF FTG.
2. PROVIDE TOP MOUNTED HANDRAIL ATTACHED TO TOP FLANGE OF STAIR STRINGERS (NOT SHOWN)
3. PROVIDE FOOTING @ OUTDOOR STAIRS.
4. FOOTING WIDTH = STAIR WIDTH + 12"

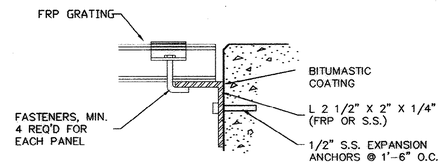
FRP STAIR SCHEDULE

MARK	LOCATION	HEIGHT	RISERS	TREADS	WIDTH	LANDING	REMARKS
J	CHLORINATION FACILITY	2'-9" (TOTAL)	5 @ 6.6"	4 @ 10"	3'-0"	10"	
K	DECHLORINATION FACILITY	2'-9" (TOTAL)	5 @ 6.6"	4 @ 10"	3'-0"	10"	

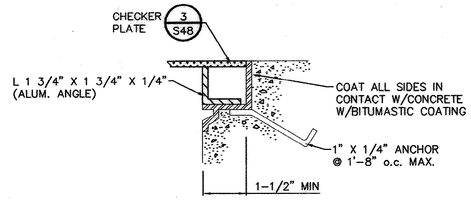
FRP STAIR
DETAIL 8 TYP
SCALE: NONE



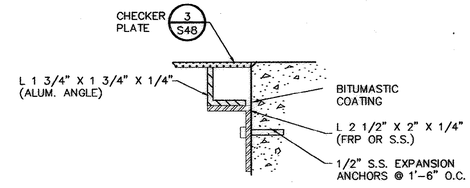
FRP GRATING
FLOOR CONNECTION
DETAIL 11 TYP
SCALE: NONE



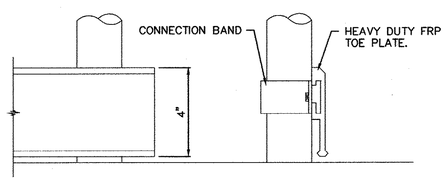
FRP GRATING
WALL CONNECTION
DETAIL 12 TYP
SCALE: NONE



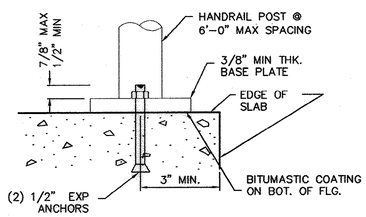
CHECKER PLATE
FLOOR CONNECTION
DETAIL 9 TYP
SCALE: NONE



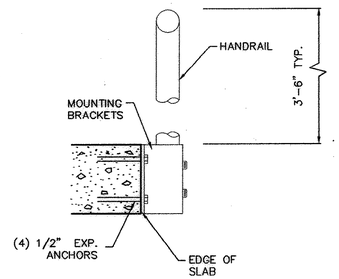
CHECKER PLATE
WALL CONNECTION
DETAIL 10 TYP
SCALE: NONE



FRP HANDRAIL
TOE PLATE
DETAIL 13 TYP
SCALE: NONE



FRP HANDRAIL
FLOOR MOUNTING BRACKET
DETAIL 14 TYP
SCALE: NONE



FRP HANDRAIL
SIDE MOUNT BRACKET
DETAIL 15 TYP
SCALE: NONE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: JRC
DRAWN BY: JRC
CHECKED BY: GTS
APPROVED: JDP

NORTH CAROLINA PROFESSIONAL ENGINEER CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. C0535 — DATE

NORTH CAROLINA PROFESSIONAL ENGINEER No. 7038 GLEN T. SHEALY — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: MISCELLANEOUS DETAILS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149AJ
REF.
N.B. NO. 1731
PROJECT NO. 00149

SHEET A10 OF 13

FILE NO. 22-85-00

51-004-041 S

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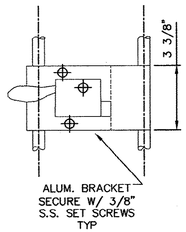
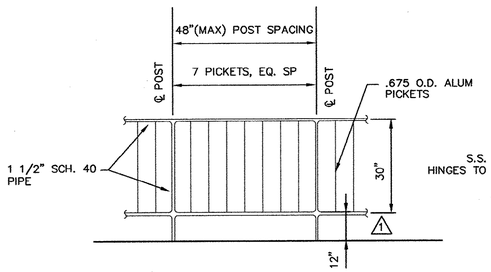


LATCH

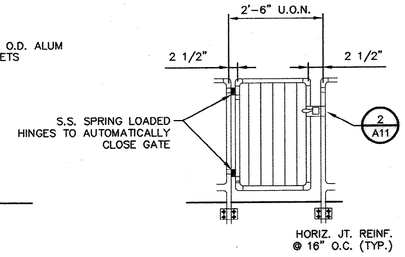
DETAIL 2/A11
SCALE: NONE



NOTE: TOP AND SIDE MOUNTED INSTALLATION APPLIES.

PICKET HANDRAIL

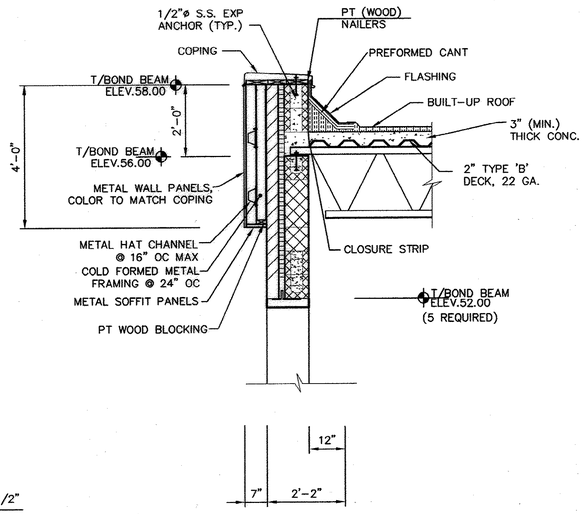
DETAIL 9/A11
SCALE: NONE



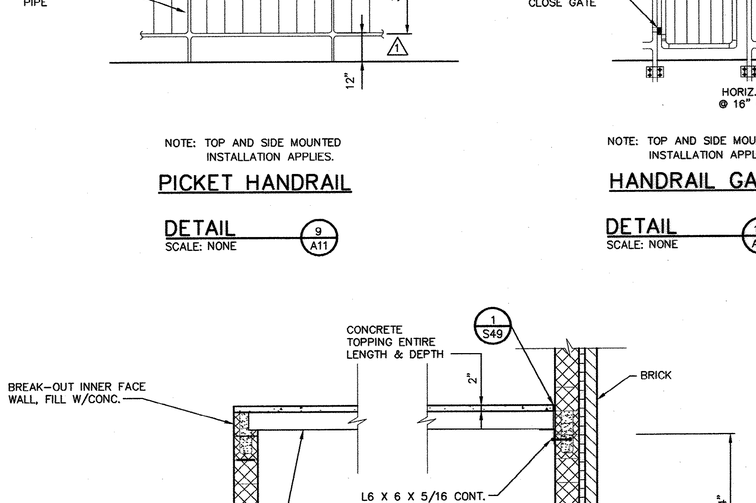
NOTE: TOP AND SIDE MOUNTED INSTALLATION APPLIES.

HANDRAIL GATE

DETAIL 10/A11
SCALE: NONE



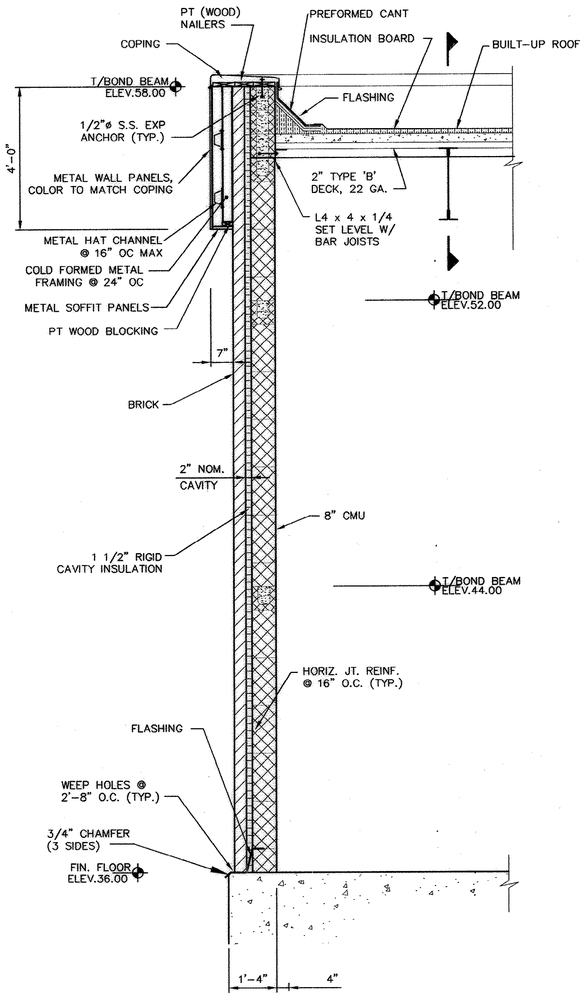
SECTION



WALL

SECTION E/A7
SCALE: NONE

NOTES:
1. #3 @ 48" BEYOND GROUTED INTO EACH KEYWAY BEYOND.



WALL

SECTION A/A11
SCALE: NONE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	CHANGE PER ADDENDUM #4	3-1	AR
2	DIMENSION REV.	3-02	AR

APPROVALS	
PROJECT ENG:	RTH
DESIGNED BY:	MAB
DRAWN BY:	JRC
CHECKED BY:	GTS
APPROVED:	JDP

NORTH CAROLINA PROFESSIONAL ENGINEER CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. C0555 — DATE

NORTH CAROLINA PROFESSIONAL ENGINEER No. 7109 REGISTERED GLEN T. SHEALY — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: MISCELLANEOUS DETAILS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149AW	SHEET A11
REF.	OF 13
N.B. NO. 1731	
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-0425

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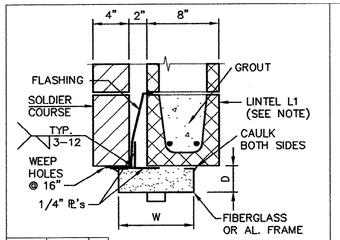
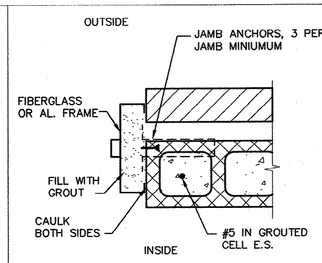
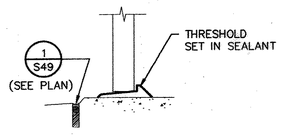


MAT'L	W	D
AL	6	2
FG	8 3/8	4

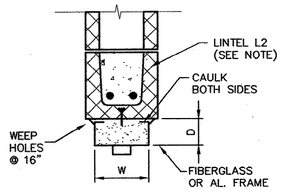
HEAD H-1



JAMB J-1

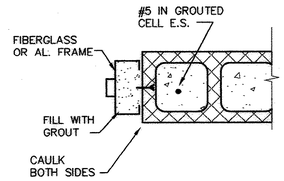


SILL S-1



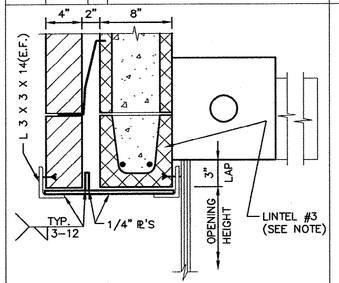
MAT'L	W	D
AL	6	2
FG	8 3/8	4

HEAD H-5

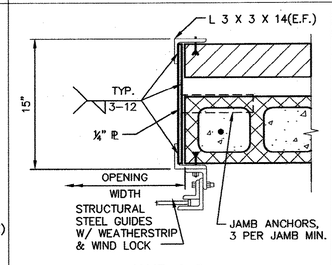


JAMB J-5

SILL S-5



HEAD H-2



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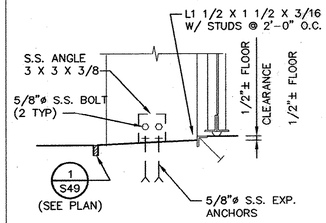

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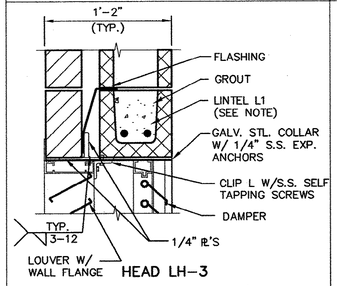
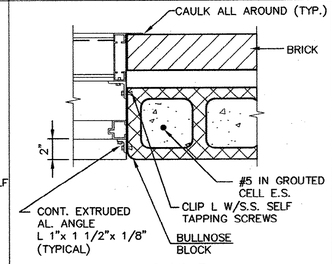
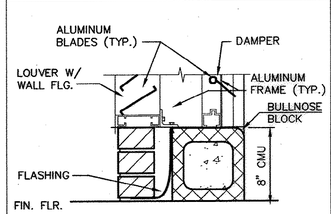


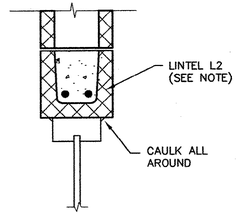
HEAD LH-3



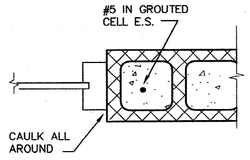
JAMB LJ-3



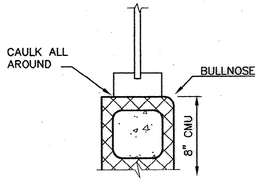
SILL LS-3



HEAD WH-4



JAMB WJ-4



SILL WS-4

DOOR, LOUVER & WINDOW DETAILS

SCALE: NONE

NOTE: SEE SHEET S49, DETAIL 4 FOR LINTEL DETAILS.

DOOR DETAIL

SCALE: NONE

DOOR SCHEDULE

MARK	OPENING SIZE W X H	DOOR SIZE W X H	MATERIAL	HDW SET	HEAD	JAMB	SILL	REMARKS
1	3'-4" X 7'-4"	3'-0" X 7'-0"	ALUMINUM	2	H-1	J-1	S-1	SEE NOTE 1.
2	8'-0" X 9'-4"	8'-2" X 9'-4"	ALUMINUM	1	H-2	J-2	S-2	ROLLING SERVICE DOOR
3	3'-4" X 7'-4"	3'-0" X 7'-0"	FIBERGLASS	2	H-1	J-1	S-1	SEE NOTE 1.
4	3'-4" X 7'-4"	3'-0" X 7'-0"	FIBERGLASS	2	H-1	J-1	S-1	SEE NOTE 1.
5	3'-4" X 7'-4"	3'-0" X 7'-0"	FIBERGLASS	2	H-1	J-1	S-1	SEE NOTE 1.
6	3'-4" X 7'-4"	3'-0" X 7'-0"	ALUMINUM	2	H-1	J-1	S-1	SEE NOTE 1.
7	3'-4" X 7'-4"	3'-0" X 7'-0"	ALUMINUM	2	H-1	J-1	S-1	SEE NOTE 1.
8	16'-0" X 16'-0"	16'-2" X 16'-0"	ALUMINUM	1	H-2	J-2	S-2	ROLLING SERVICE DOOR
9	3'-4" X 7'-4"	3'-0" X 7'-0"	ALUMINUM	2	H-1	J-1	S-1	SEE NOTE 1.
10	3'-4" X 7'-4"	3'-0" X 7'-0"	ALUMINUM	3	H-5	J-5	——	SEE NOTE 1.

1. GLASS TO BE SHATTERPROOF WITH MINIMUM THICKNESS 1/4" THICK.

LOUVER AND DAMPER SCHEDULE

MARK	NO. REQ'D.	OPENING SIZE W X H	HEAD HT.	HEAD	JAMB	SILL	REMARKS
LD-1	1	3'-6" X 3'-0"	4'-0"	LH-3	LJ-3	LS-3	SEE NOTE 2.
LD-2	1	2'-0" X 2'-0"	4'-0"	LH-3	LJ-3	LS-3	SEE NOTE 2, 3.
LD-3	1	2'-0" X 2'-0"	4'-0"	LH-3	LJ-3	LS-3	SEE NOTE 2, 3.
LD-4	2	12'-0" X 14'-0"	16'-0"	LH-3	LJ-3	LS-3	SEE NOTE 2.
LD-5	1	8'-0" X 14'-0"	16'-0"	LH-3	LJ-3	LS-3	SEE NOTE 2.
LD-6	1	7'-4" X 7'-4"	16'-0"	LH-3	LJ-3	LS-3	SEE NOTE 2.
LD-7	2	9'-4" X 14'-0"	16'-0"	LH-3	LJ-3	LS-3	SEE NOTE 2.

2. RUSKIN MODEL # ELC6375DAF OR AN APPROVED EQUAL.
3. PROVIDE DUCT WORK, RUN TO FLOOR.

WINDOW SCHEDULE

MARK	OP'NG SIZE W X H	WINDOW SIZE W X H	HEAD HEIGHT	TYPE	HEAD	JAMB	SILL
A	6'-0" X 4'-0"	5'-8" X 3'-8"	7'-4"	FIXED	WH-4	WJ-4	WS-4
B	6'-0" X 4'-0"	5'-8" X 3'-8"	7'-4"	FIXED	WH-4	WJ-4	WS-4

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS	
PROJECT ENG.	RTH
DESIGNED BY:	MAB
DRAWN BY:	JRC
CHECKED BY:	GTS
APPROVED:	JDP

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL B.P. BARBER & ASSOCIATES, INC. No. C00280 CERTIFICATE OF AUTHORIZATION — DATE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL No. 7038 GLEN T. SHEARER — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: MISCELLANEOUS DETAILS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	00149AB
REF.	
N.B. NO.	1731
PROJECT NO.	00149

SHEET A12 OF 13

FILE NO. 22-85-00

51-004-043 S

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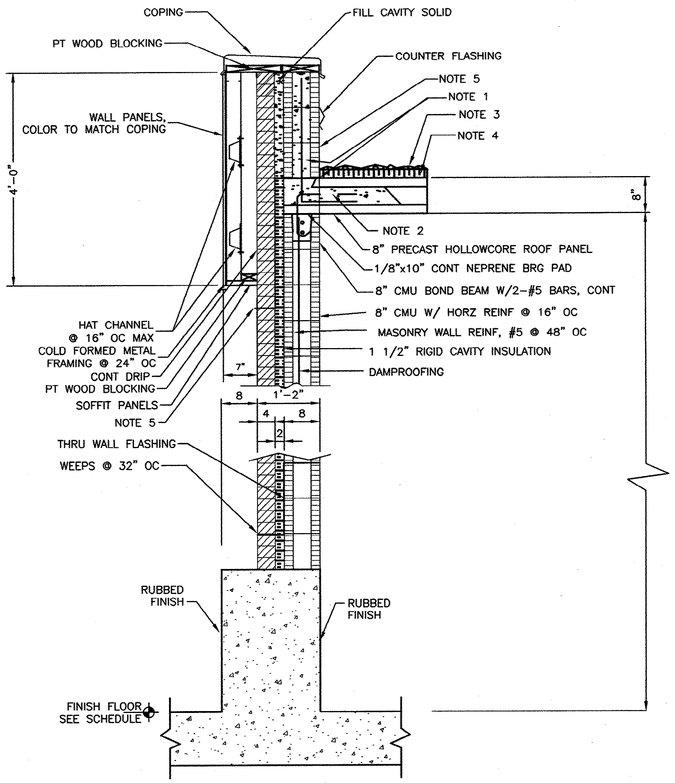
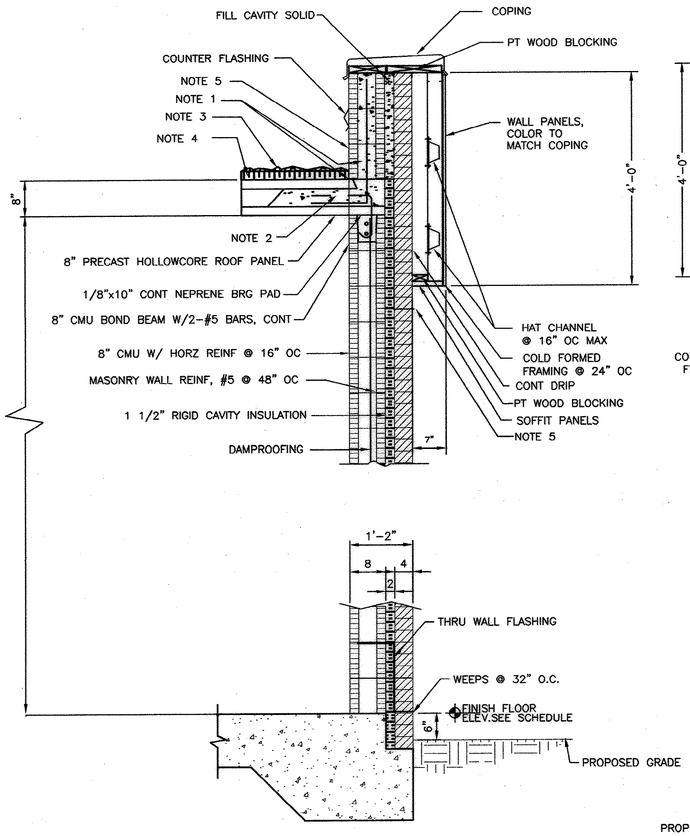
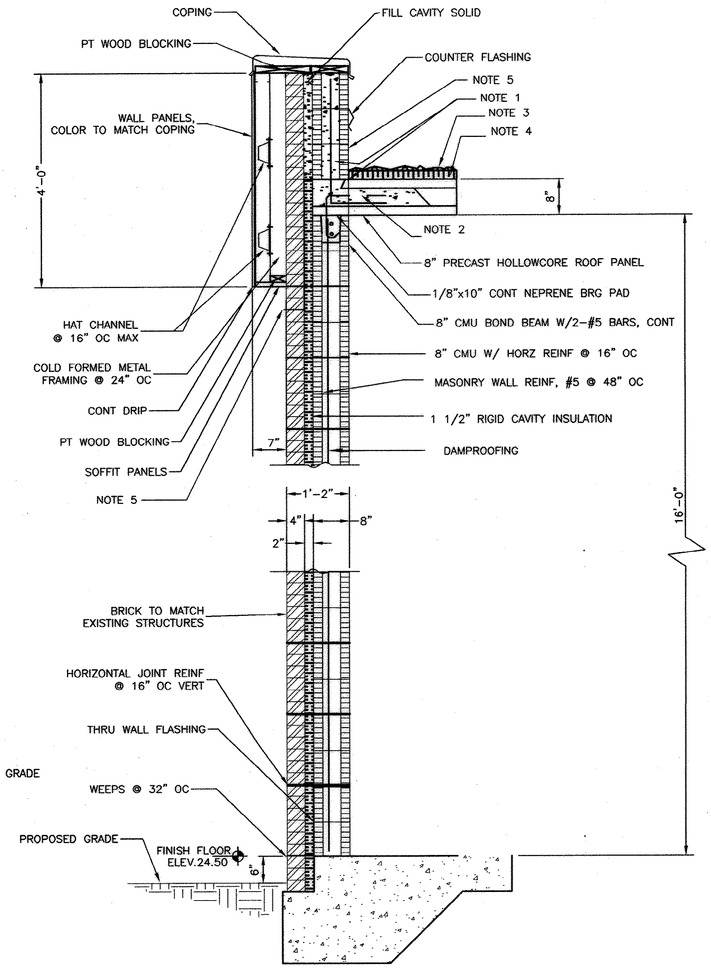


CHLORINATION/DECHLORINATION WALL



CHORINATION/DECHLORINATION WALL



POLYMER WALL

SECTION (D / A5)
SCALE: NONE

NOTES:

1. BREAK TOP OF HOLLOWCORE PANEL AND GROUT #5 @ 32" INTO VOIDS AS SHOWN
2. #3 @ 48" BEYOND GROUTED INTO EACH KEYWAY BEYOND
3. BUILT-UP BITUMINOUS ROOFING
4. TAPERED RIGID INSULATION , MIN 2" THICK
5. FLASHING CONFIGURED TO CREATE WEEPHOLE IN BRICK VENEER FACE UNDER SOFFIT

CHLORINATION/DECHLORINATION WALL SCHEDULE

	CHLORINATION BLDG.	DECHLORINATION BLDG.
FINISH FLOOR ELEVATION	28.50	23.00

1

FINISH SCHEDULE

LOCATION	FLOOR & EQUIP. PADS	INTERIOR WALLS	EXTERIOR WALLS	CEILING
POLYMER BUILDING	TROWEL FINISH FLOOR SEALER	PAINT CMU	SEALANT	PAINT HOLLOW CORE PANELS
CHLORINATION FACILITY BUILDING	TROWEL FINISH FLOOR SEALER	PAINT CMU & RUBBED CONC.	SEALANT	PAINT HOLLOW CORE PANELS
DECHLORINATION FACILITY BUILDING	TROWEL FINISH FLOOR SEALER	PAINT CMU & RUBBED CONC.	SEALANT	PAINT HOLLOW CORE PANELS
CHLORINATION FACILITY CANOPY		PAINT WHITE	MATCH EXISTING FASCIA PANELS	PAINT WHITE
DECHLORINATION FACILITY CANOPY		PAINT WHITE	MATCH EXISTING FASCIA PANELS	PAINT WHITE
GENERATOR BUILDING CONTROL ROOM	TROWEL FINISH FLOOR SEALER	PAINT CMU & RUBBED CONC.	SEALANT	PAINT HOLLOW CORE PANELS
GENERATOR BUILDING GENERATOR ROOM	TROWEL FINISH FLOOR SEALER	PAINT CMU & RUBBED CONC.	SEALANT	SEE NOTE 4

NOTES:
1. FIELD VERIFY SIZES OF ALL EXISTING OPENINGS.
2. SAW CUT AND CONSTRUCT NEW OPENING IN EXISTING WALL.
3. SEE SHT. S49 FOR LINTEL DETAILS.
4. CEILING & STRUCTURE TO BE PAINTED WHITE.

PLUMBING FIXTURE SCHEDULE

SYMBOL	ITEM	C.W.	H.W.	WASTE	DESCRIPTION
FD-1	FLOOR DRAIN	--	--	4"	SMITH, 2210, GALVANIZED C.I. BODY, NICKEL GALVANIZED BODY
FD-2	FLOOR DRAIN	--	--	4"	SMITH, 3510-F10 4" WITH INTERGRAL FUNNEL AND 8" ROUND STRAINER (NICKEL BRONZE FUNNEL AND STRAINER) & P-TRAP.
FD-3	FLOOR DRAIN	--	--	4"	SMITH, 2005-A (G), GALVANIZED C.I. BODY AND FLASHING COLLAR W/ NICKEL BRONZE ADJUSTABLE STRAINER HEAD W/ P-TRAP.
HB	HOSE BIBB	3/4"	--	--	MOUNT ALL HOSE BIBBS @ 5' A.F.F. WHEEL OPERATED, HOSE SAVER TYPE W/ VACUUM BREAKER

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO	DESCRIPTION	DATE	BY
1	CHANGE PER ADDENDUM #4	3-1	AR

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: DEF
DRAWN BY: ZES
CHECKED BY: GTS
APPROVED: JDP

SOUTH CAROLINA NOVEMBER 30, 2001 B.P. BARBER & ASSOCIATES, INC. No. C00353 CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 7038 GLEN T. SHEPPARD — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: WALL SECTIONS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149AX
REF.
N.B. NO. 1731
PROJECT NO. 00149
SHEET A13 OF 13
FILE NO. 22-85-00

51-004-0445

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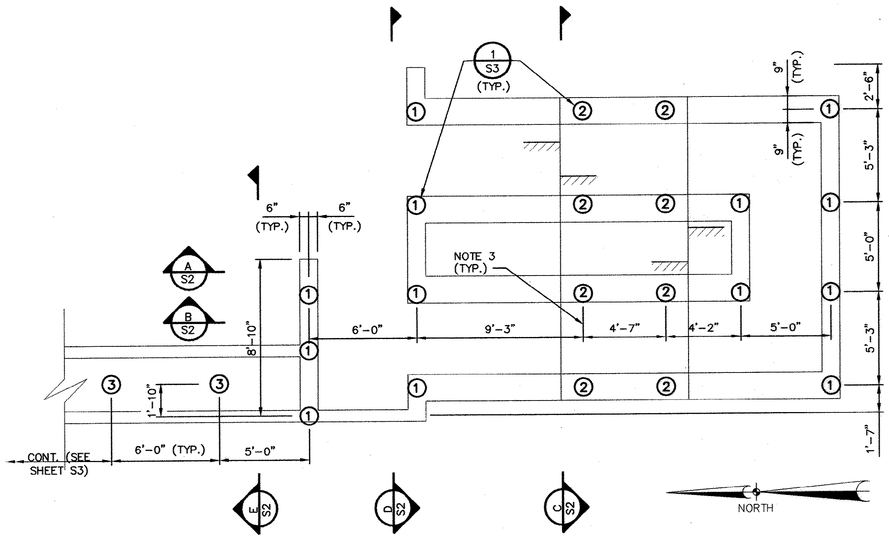


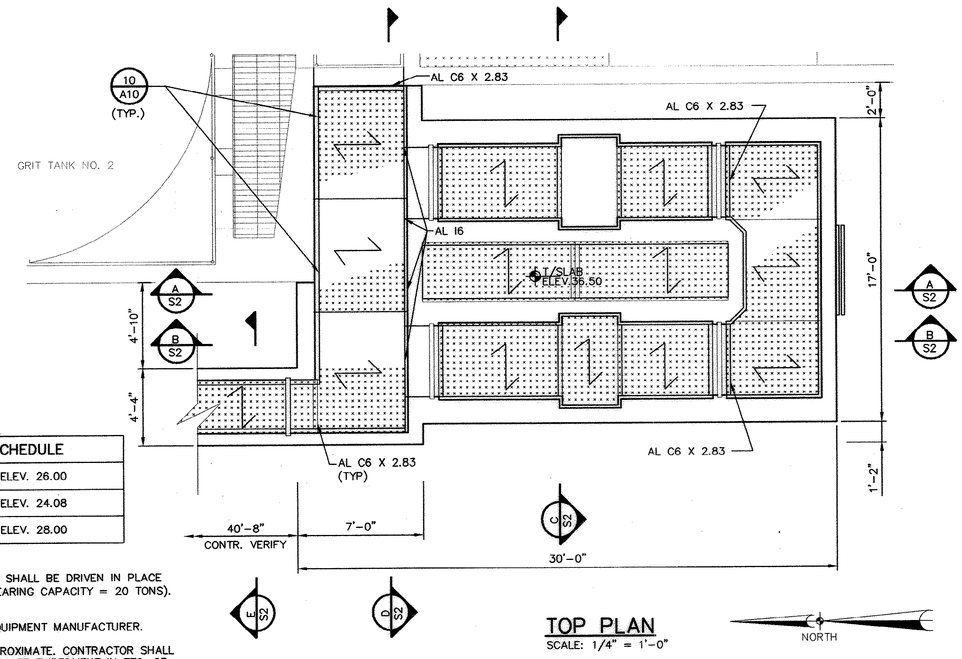
FOUNDATION PLAN

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

PILE CUT-OFF SCHEDULE	
①	ELEV. 26.00
②	ELEV. 24.08
③	ELEV. 28.00

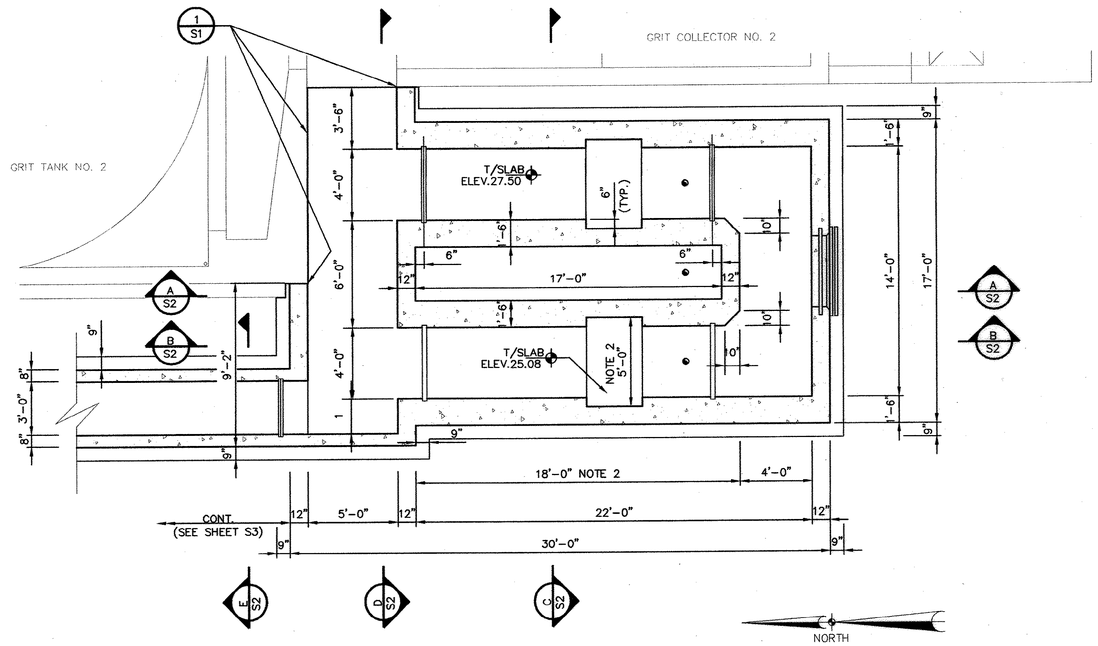
NOTE:

1. ALL PILES SHOWN ON THIS SHEET SHALL BE DRIVEN IN PLACE TIMBER (8"TIP) BEARING PILES (BEARING CAPACITY = 20 TONS).
2. DIMENSION TO BE VERIFIED BY EQUIPMENT MANUFACTURER.
3. DIMENSIONS TO ℄ PILES ARE APPROXIMATE. CONTRACTOR SHALL POSITION PILES SUCH THAT ADEQUATE EMBEDMENT IN FTG. OR SLAB CAN BE ACCOMPLISHED (SEE DETAIL 1, SHEET S3).



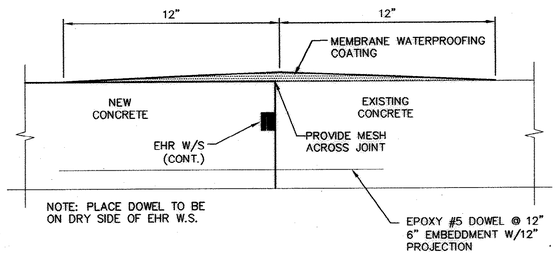
TOP PLAN

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



PLAN @ ELEV. 27.50

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



JOINT SEALANT

SLAB (SHOWN), WALL (SIM.)

DETAIL 1 TYP

SCALE: 3" = 1'-0"

0 4 8

GRAPHIC SCALE

0 1 2

GRAPHIC SCALE

RECORD DRAWINGS

DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS			
PROJECT ENG:	RTH	DESIGNED BY:	GTS
DRAWN BY:	AR/JRC	CHECKED BY:	GTS
APPROVED:	JDP		

SOUTH CAROLINA PROFESSIONAL ENGINEER — B.P. BARBER & ASSOCIATES, INC. — CERTIFICATE OF AUTHORIZATION No. 000000 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER — No. 7009 — REGISTERED — GLEN T. SHEPPARD — SIGNATURE

bp

B. P. BARBER & ASSOCIATES, INC.

ENGINEERS — PLANNERS — SURVEYORS

COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW BAR SCREEN PLANS

DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	00149SCE
REF.	
N.B. NO.	1731
PROJECT NO.	00149

SHEET S1 OF 51

FILE NO. 22-85-00

51-004-045 S

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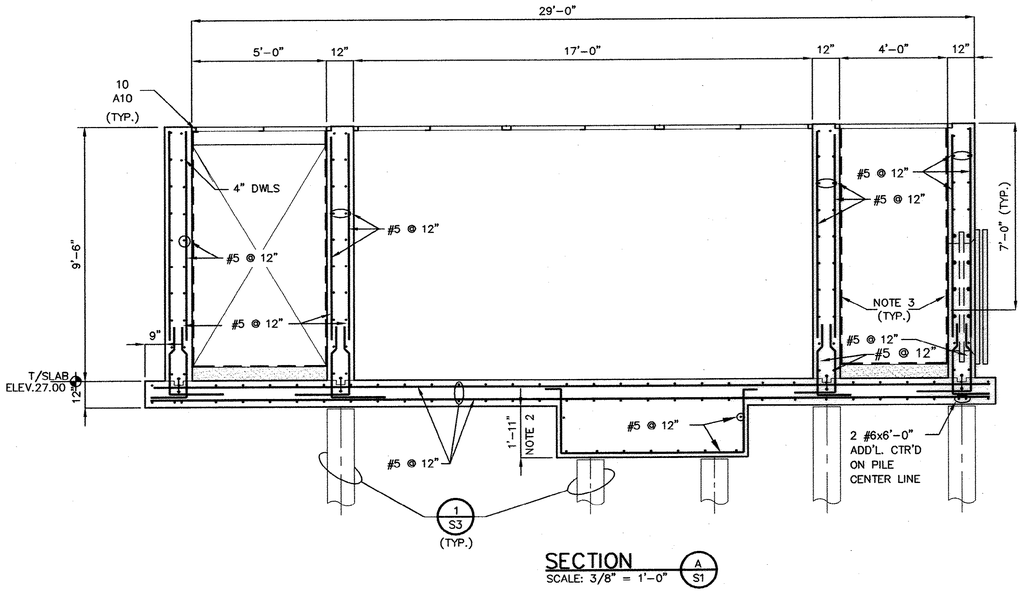
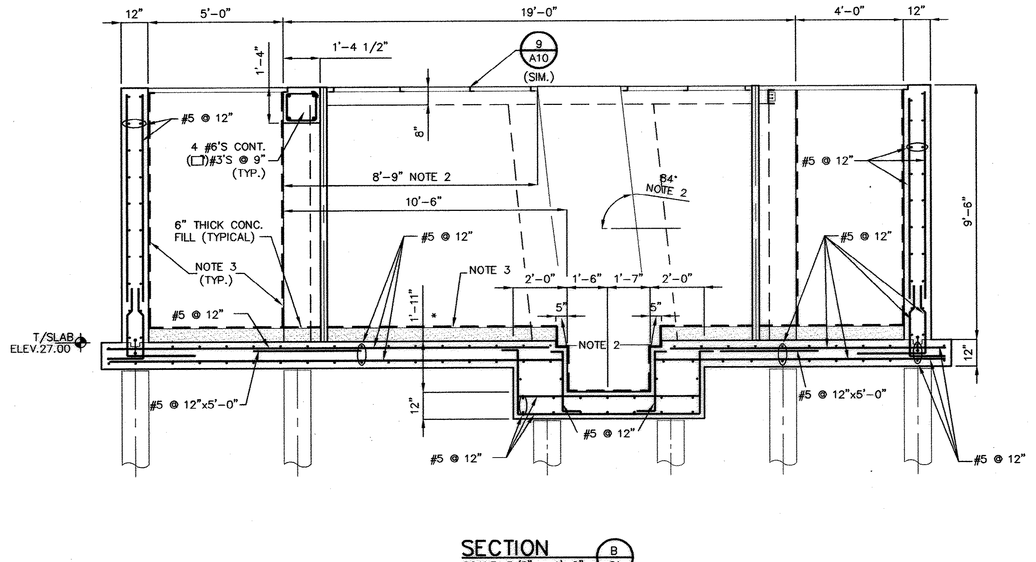


SECTION
SCALE: 3/8" = 1'-0"
A
S1

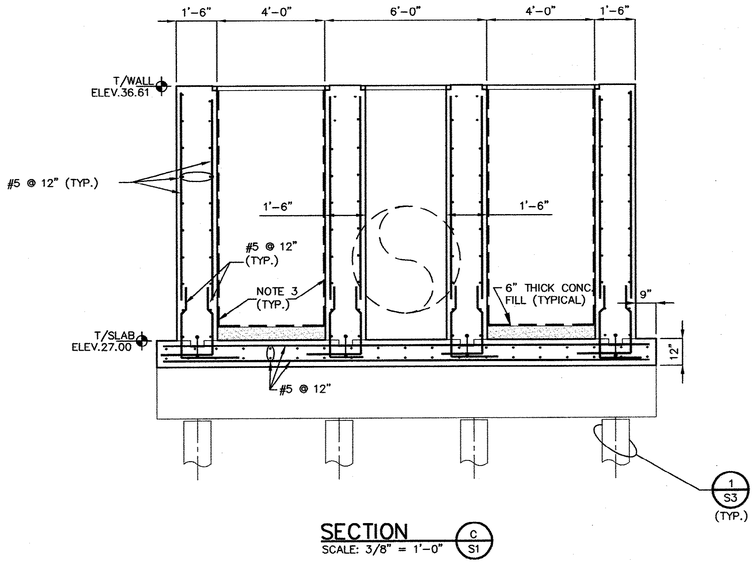


SECTION
SCALE: 3/8" = 1'-0"
B
S1

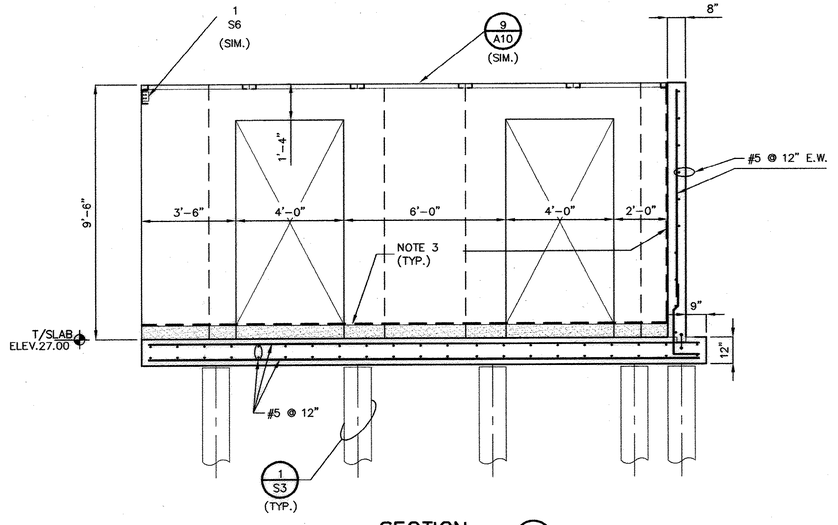
NOTES:

1. FOR GRAVEL BASE, SEE SHEET S49, DETAIL 8.
2. DIMENSION TO BE VERIFIED BY EQUPIMENT MANUFACTURER.
3. APPLY MEMBRANE WATERPROOFING COATING

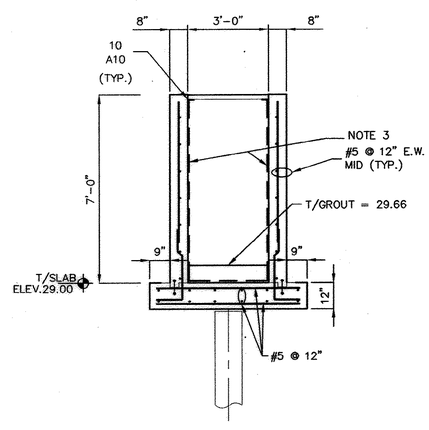
0 2 4
GRAPHIC SCALE



SECTION
SCALE: 3/8" = 1'-0"
C
S1



SECTION
SCALE: 3/8" = 1'-0"
D
S1



SECTION
SCALE: 3/8" = 1'-0"
E
S1

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: GTS
DRAWN BY: AR/JRC
CHECKED BY: GTS
APPROVED: JDP

SOUTH CAROLINA NOVEMBER 19, 2001 CERTIFICATE OF G. P. BARBER & ASSOCIATES, INC. No. COA0008 DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7039 GLEN T. SHEALY SIGNATURE

bpb
B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

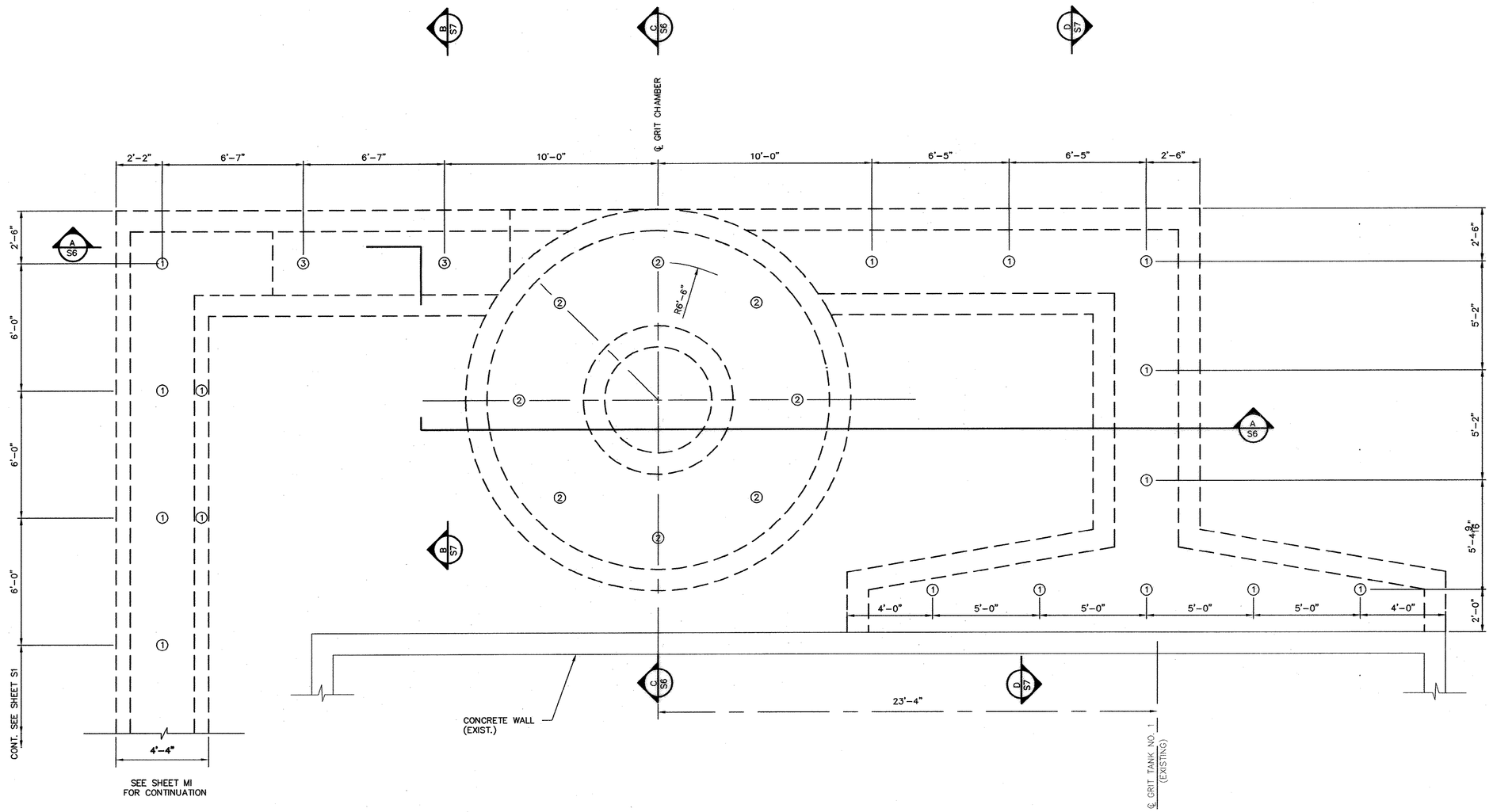
SHEET TITLE
NEW BAR SCREEN SECTIONS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 99127SCF	SHEET S2
REF.	OF 51
N.B. NO. 1731	
PROJECT NO. 00149	
FILE NO. 22-85-00	

51-004-046 S

N:\Projects\00149\dwg\RECORD DWG\99127SCF-RD.dwg, 11/21/2003 09:56:25 AM



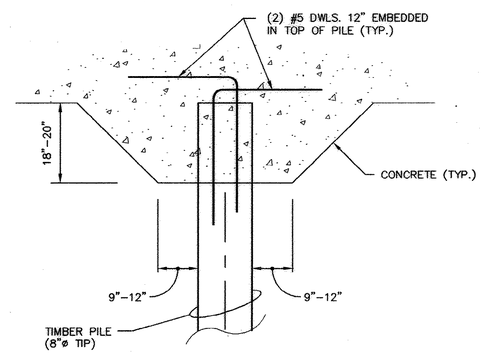
PLAN
SCALE: 3/8" = 1'-0"

0 2 4
GRAPHIC SCALE

PILE CUT-OFF SCHEDULE	
①	ELEV. 28.00
②	ELEV. 25.00
③	ELEV. 26.50

NOTE:

1. ALL PILES SHOWN ON THIS SHEET SHALL BE DRIVEN IN PLACE TIMBER (8"ø TIP) BEARING PILES (BEARING CAPACITY = 20 TON).
2. SEE NOTE 3 SHEET S1.



DETAIL
SCALE: NONE
1 TYP.

0 2
GRAPHIC :

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS

PROJECT ENG:	DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED:
RTH	GTS	MAB	GTS	JDP

NORTH CAROLINA ENGINEERING CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. NO. C-0555 — DATE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL No. 7038 REGISTERED GLEN T. SIMPSON — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW GRIT CHAMBER FOUNDATION PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

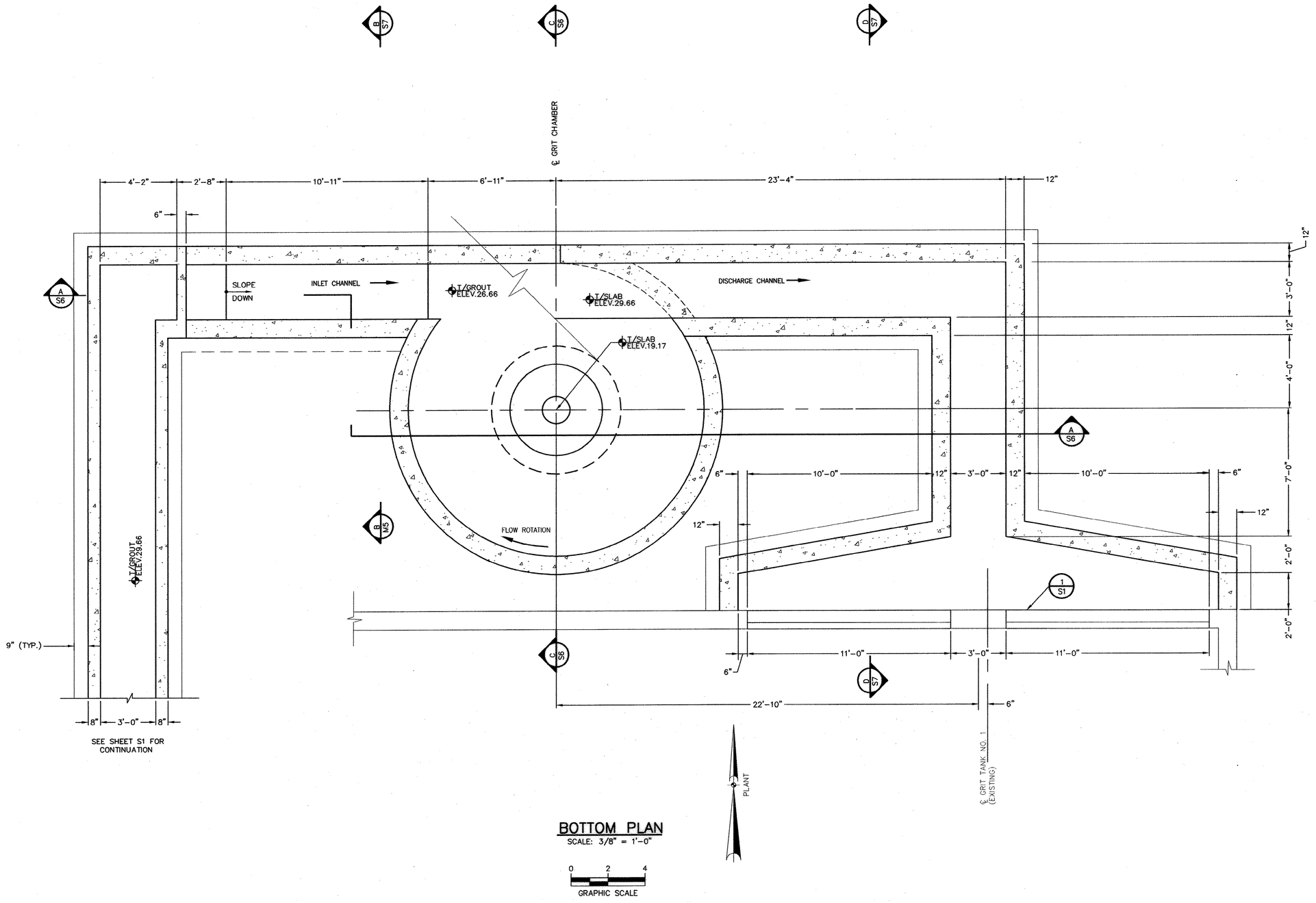
PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149SCG	S3
REF.	OF
N.B. NO. 1731	51
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-047 S

I:\Projects\00149\dwg\RECORD DWG\00149SC0-R0.dwg, 11/21/2003 10:44:30 AM



BOTTOM PLAN

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

0 2 4

GRAPHIC SCALE

RECORD DRAWINGS

DATE: SEPT., 2003

N:\Projects\00149\dwg\RECORD DWG\00149SCH-R0.dwg, 11/21/2003 10:45:01 AM

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS

PROJECT ENG: RTH
DESIGNED BY: GTS
DRAWN BY: MAB
CHECKED BY: GTS
APPROVED: JDP

NORTH CAROLINA PROFESSIONAL ENGINEER CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. C00620

DATE

NORTH CAROLINA PROFESSIONAL ENGINEER No. 7039 REGISTERED

SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE

NEW GRIT CHAMBER PLAN @ ELEV. 35.00

DATE: FEB., 2001 SCALE: AS SHOWN

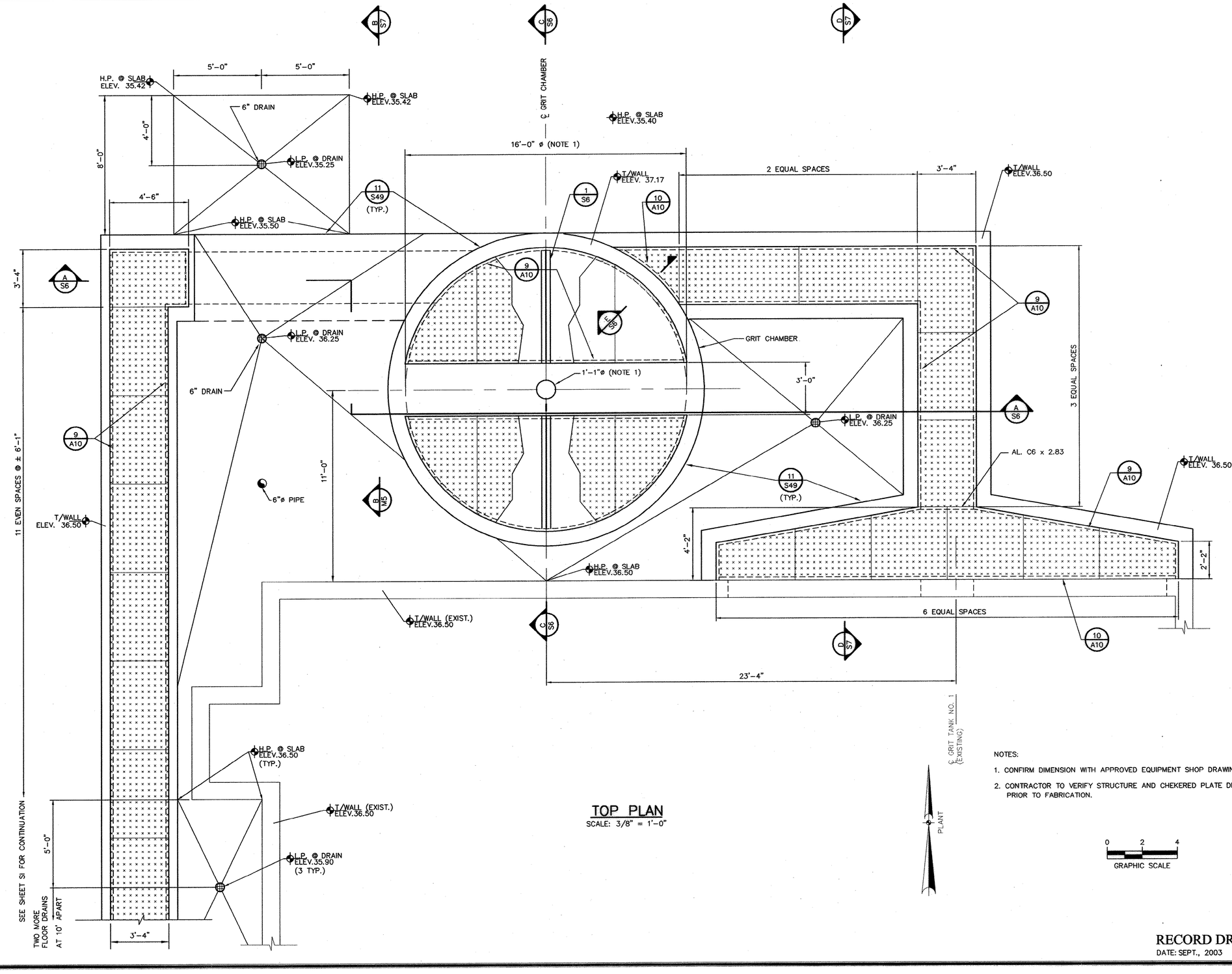
PROJECT

IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149SCH	S4
REF.	OF
N.B. NO. 1731	51
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-048 S



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

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS

PROJECT ENG:	R.T.H
DESIGNED BY:	G.T.S
DRAWN BY:	M.A.B
CHECKED BY:	G.T.S
APPROVED:	J.D.P

NORTH CAROLINA CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. C-0260 — DATE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL No. 11038 REGISTERED GLEN T. SIMS — SIGNATURE

bpb
B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW GRIT CHAMBER TOP PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	00149SCI
REF.	
N.B. NO.	1731
PROJECT NO.	00149

SHEET S5 OF 51

FILE NO. 22-85-00

51-004-0495

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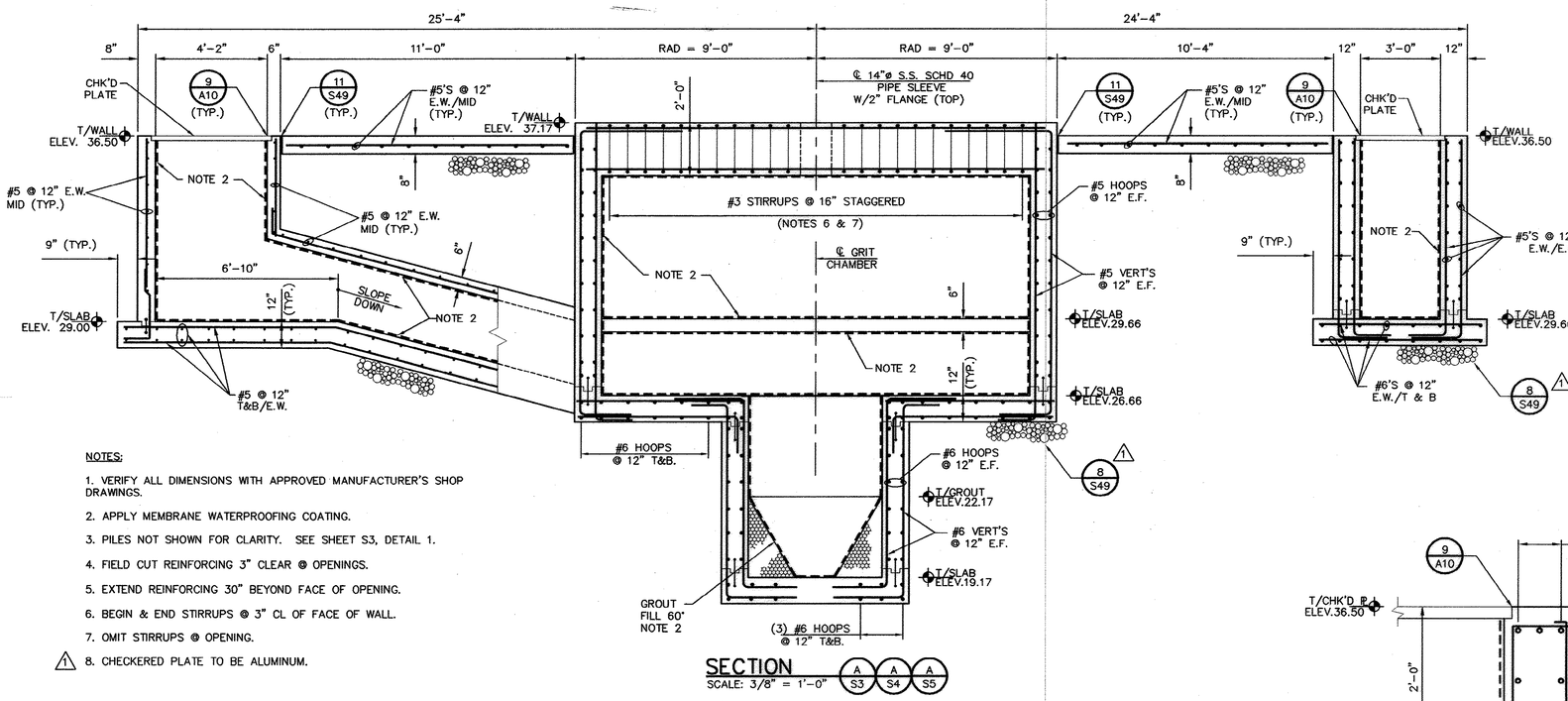
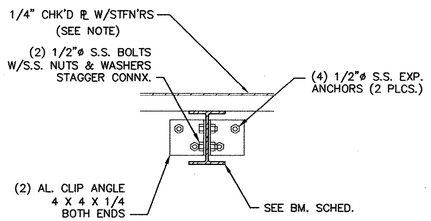
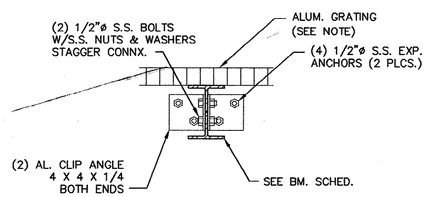


NOTES:

1. VERIFY ALL DIMENSIONS WITH APPROVED MANUFACTURER'S SHOP DRAWINGS.
2. APPLY MEMBRANE WATERPROOFING COATING.
3. PILES NOT SHOWN FOR CLARITY. SEE SHEET S3, DETAIL 1.
4. FIELD CUT REINFORCING 3" CLEAR @ OPENINGS.
5. EXTEND REINFORCING 30" BEYOND FACE OF OPENING.
6. BEGIN & END STIRRUPS @ 3" CL OF FACE OF WALL.
7. OMIT STIRRUPS @ OPENING.
8. CHECKERED PLATE TO BE ALUMINUM.



CHECKERED PL



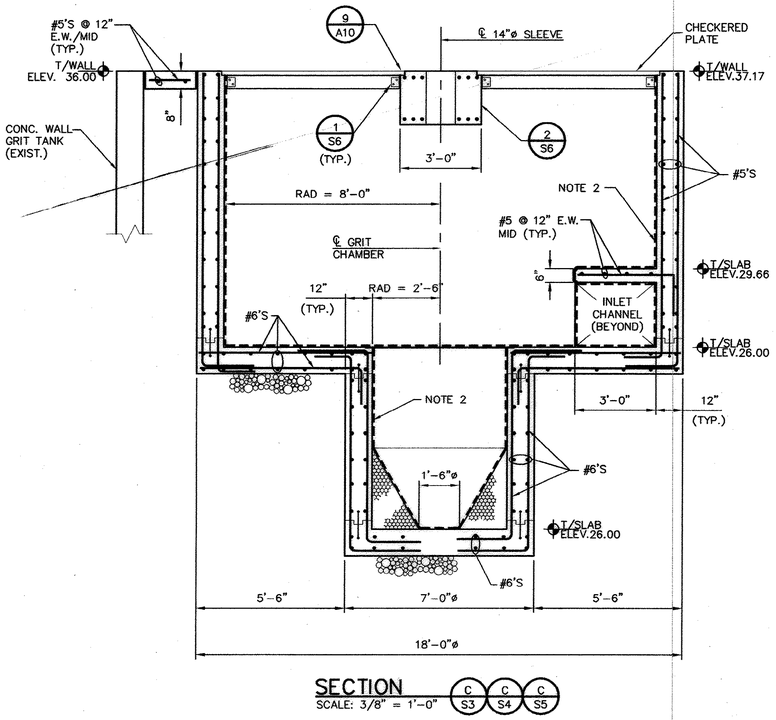
GRATING

BEAM SCHEDULE

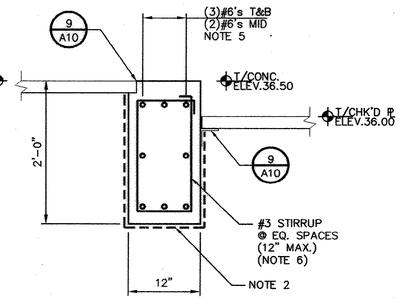
SPAN	MEMBER
4' – 6"	AL 6 X 3.92
6' – 8'	AL 8 X 6.12
8' – 10'	AL 10 X 9.83

DETAIL 1 TYP
SCALE: NONE
(2 REQUIRED AT EACH END)

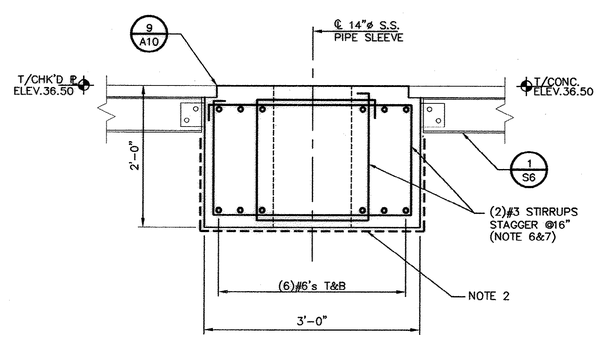
NOTE:
UNLESS OTHERWISE NOTED, TOP OF PLATE OR GRATING SHALL BE FLUSH WITH TOP OF CONC.



SECTION
SCALE: 3/8" = 1'-0"
C S3 C S4 C S5



SECTION
SCALE: 1" = 1'-0"
E S5



DETAIL 2 S6
SCALE: 1"=1'-0"

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	CHANGE PER ADDENDUM #4	3-1	AR

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: GTS
DRAWN BY: MAB
CHECKED BY: GTS
APPROVED: JDP

NORTH CAROLINA ENGINEERING CORPORATION CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. C00350 — DATE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL No. 7038 REGISTERED — SIGNATURE

bpb
B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW GRIT CHAMBER SECTION AND DETAIL
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149SCM	SHEET S6
REF.	OF 51
N.B. NO. 1731	
PROJECT NO. 00149	

FILE NO. 22-85-00

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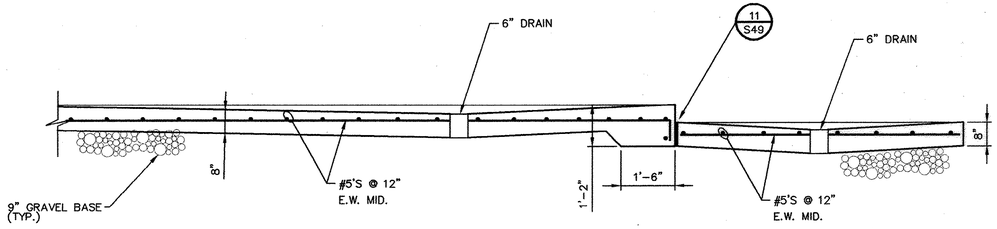
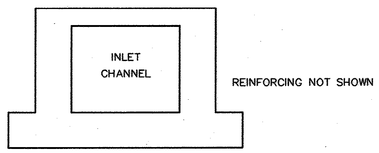
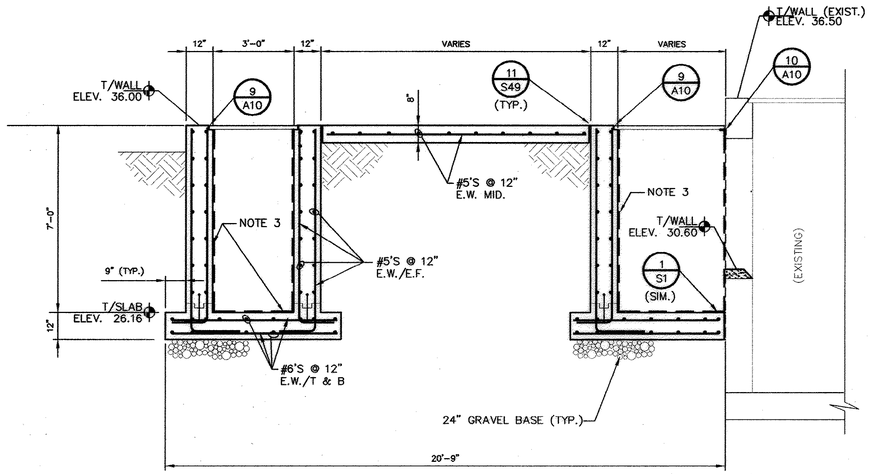
51-004-050 5





SECTION
SCALE: 1/2" = 1'-0"
B S3 B S4 B S5



SECTION
SCALE: 3/8" = 1'-0"
D S3 D S4 D S5

RECORD DRAWINGS
DATE: SEPT., 2003

N:\Projects\00149\dwg\RECORD DWG\00149SCK-10.dwg, 11/21/2003 10:46:05 AM

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS

PROJECT ENG:	DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED:
RTH	GTS	MAB	GTS	JDP

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT — B.P. BARBER & ASSOCIATES, INC. No. C00050 — CERTIFICATE OF AUTHORIZATION — DATE

NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER — GLEN T. SWEATMAN — No. 7030 — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW
GRIT CHAMBER
SECTIONS
DATE: FEB., 2001 SCALE: AS SHOWN

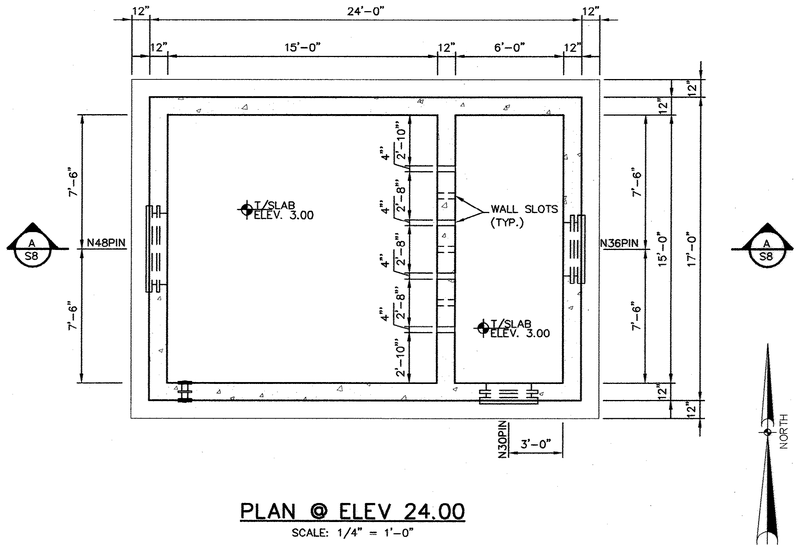
PROJECT
IMPROVEMENTS AND
EXPANSION FOR THE
WATER RECLAMATION
FACILITY
PHASE I

DISK 00149SCK
REF.
N.B. NO. 1731
PROJECT NO. 00149

SHEET S7 OF 51

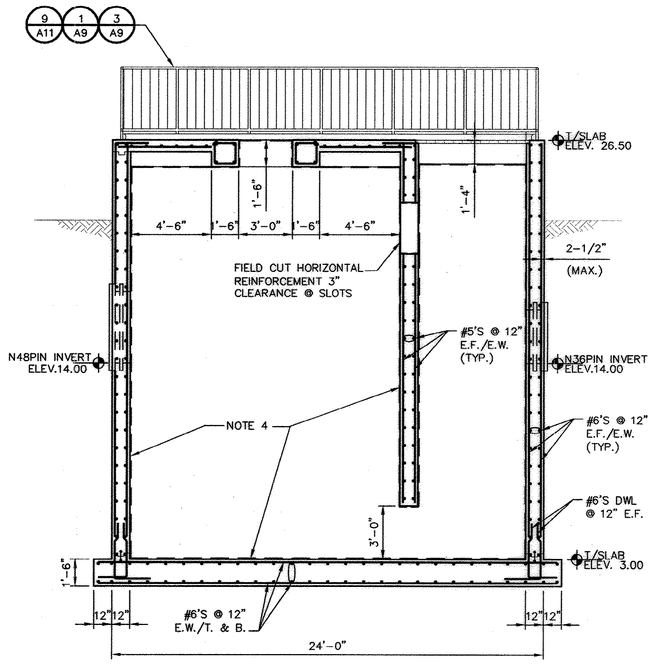
FILE NO. 22-85-00

51-004-0515



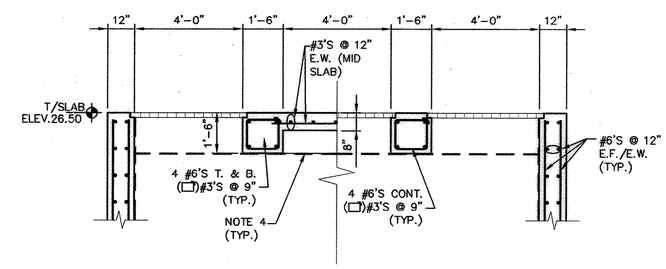
PLAN @ ELEV 24.00

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



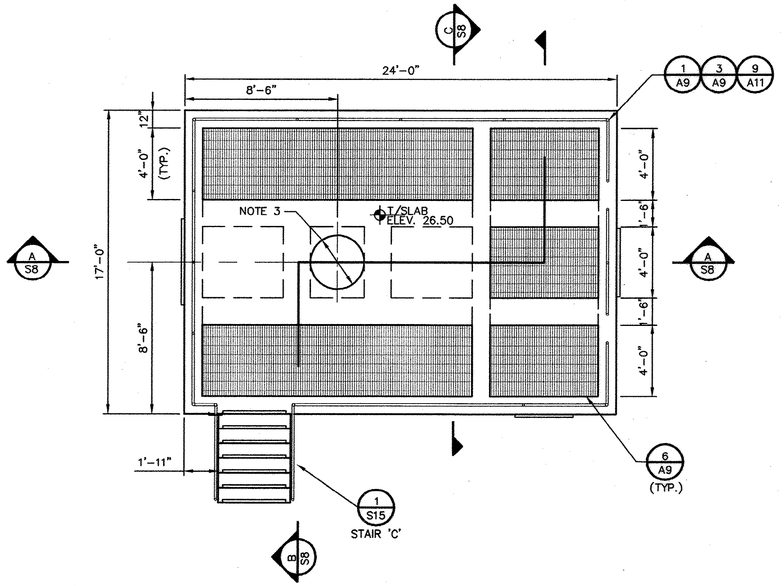
SECTION

SCALE: 1/4" = 1'-0" (A S8)



SECTION

SCALE: 3/8" = 1'-0" (B S8)



TOP PLAN

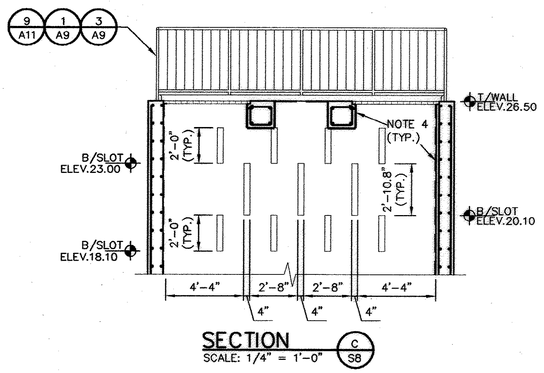
SCALE: 1/4" = 1'-0"

NOTES:

1. PROVIDE 24" GRAVEL BASE. SEE SHEET S49 DETAIL 8.
2. SEE SHEET M6 FOR ADDITIONAL INFORMATION.
3. MIXER MANUFACTURER TO VERIFY HOLE SIZE (REF. 3'-0" ø)
4. APPLY MEMBRANE WATERPROOFING COATING

0 2 4
GRAPHIC SCALE

0 4 8
GRAPHIC SCALE



SECTION

SCALE: 1/4" = 1'-0" (C S8)

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	CHANGE PER ADDENDUM #4	3-1	AR

APPROVALS					
PROJECT ENG: RTH	DESIGNED BY: JRC	DRAWN BY: JRC	CHECKED BY: GTS	APPROVED: JDP	

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT — B.P. BARBER & ASSOCIATES, INC. — No. 700000 — CERTIFICATE OF AUTHORIZATION — DATE

NORTH CAROLINA PROFESSIONAL ENGINEER — No. 7039 — GLEN T. SWINDELL — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW INTERMEDIATE MIXING TANK PLANS & SECTION

DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149SQ	S8
REF.	OF
N.B. NO. 1731	51
PROJECT NO. 00149	

FILE NO. 22-85-00

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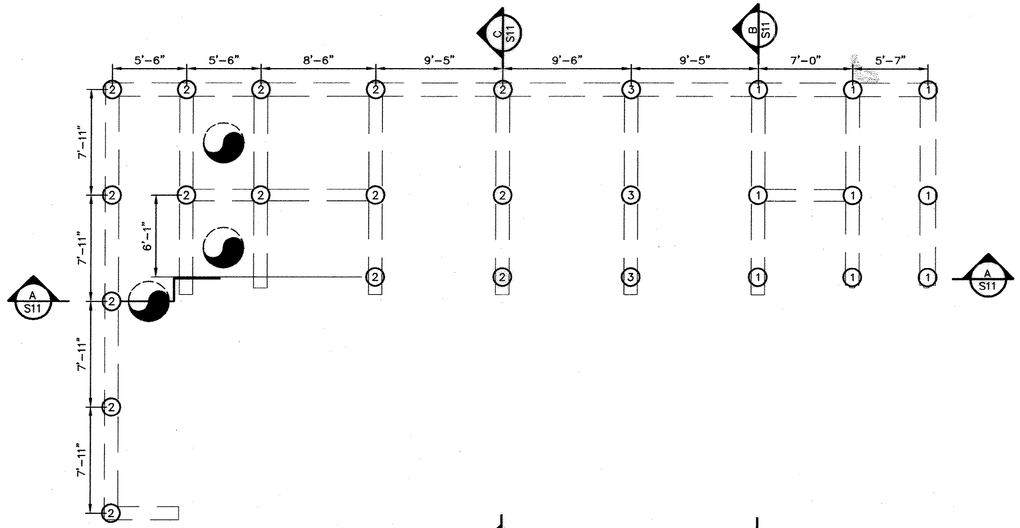
51-004-052 5



FOUNDATION PLAN

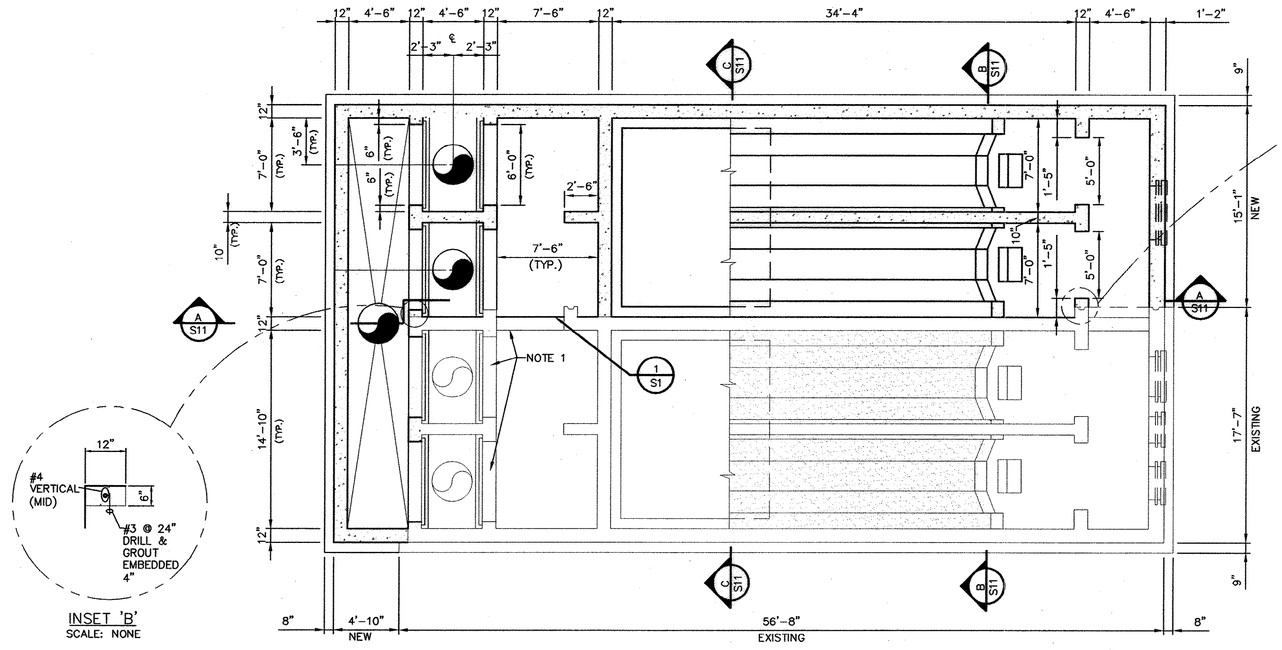
SCALE: 3/16" = 1'-0"

PILE CUT-OFF SCHEDULE	
①	ELEV. 12.00
②	ELEV. 20.50
③	ELEV. 17.00

NOTES:

SEE NOTE 3 SHEET S1.

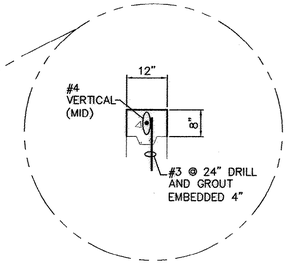
* DIMENSION TO BE DETERMINED BY EQUIPMENT MANUFACTURER.



BASE SLAB PLAN

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

INSET 'B'
SCALE: NONE



INSET 'A'
SCALE: NONE

NOTES:

1. REFER TO SHEET D5 FOR ADDITIONAL INFORMATION.

GRAPHIC SCALE 0 3 6

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: MAB
DRAWN BY: JRC
CHECKED BY: GTS
APPROVED: JDP

SOUTH CAROLINA BOARD OF ARCHITECTURAL EXAMINERS CERTIFICATE OF AUTHORIZATION B. P. BARBER & ASSOCIATES, INC. No. C000350 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7039 REGISTERED — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
INTERMEDIATE PUMP STATION FOUNDATION AND BASE SLAB PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

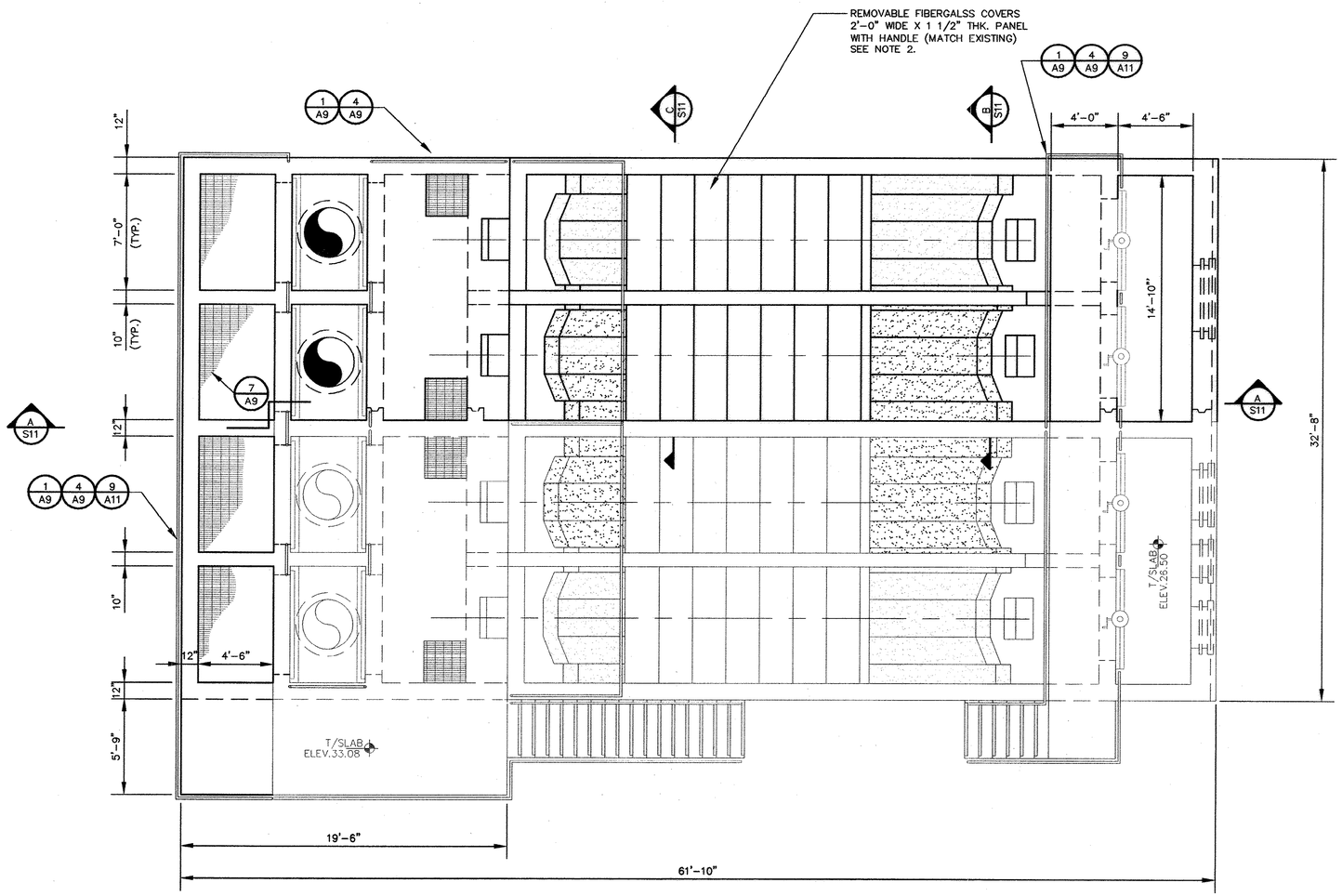
PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
99127SNA	S9
REF.	OF
N.B. NO. 1731	51
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-053 5

H:\Projects\00149\dwg\RECORD Dwgs\99127SNA-RD.dwg, 11/21/2003 09:28:41 AM



TOP PLAN

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

NOTES:

1. ALL NEW HANDRAIL NOT TAGGED IS TOP-MOUNTED, WITH TOE PLATE. SEE DETAILS 1, 3, & 4, SHEET A9.
2. COVERS TO BE ATLAC 400 CORROSION RESISTANT FIBERGLASS REINFORCED RESIN OR APPROVED EQUAL. COLOR TO MATCH EXISTING. DETAIL OF COVER SUPPORTS TO BE AS RECOMMENDED BY MANUFACTURER.

0 4 8
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS	
PROJECT ENG:	RTH
DESIGNED BY:	MAB
DRAWN BY:	JRC
CHECKED BY:	GTS
APPROVED:	JDP

NORTH CAROLINA ENGINEERING CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. C00360

NORTH CAROLINA PROFESSIONAL ENGINEER No. 7030 REGISTERED GLEN T. SHEALY

DATE

SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS - PLANNERS - SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
MODIFICATIONS TO INTERMEDIATE PUMP STATION TOP PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
99127SM	S10
REF.	OF
N.B. NO. 1731	51
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-0545

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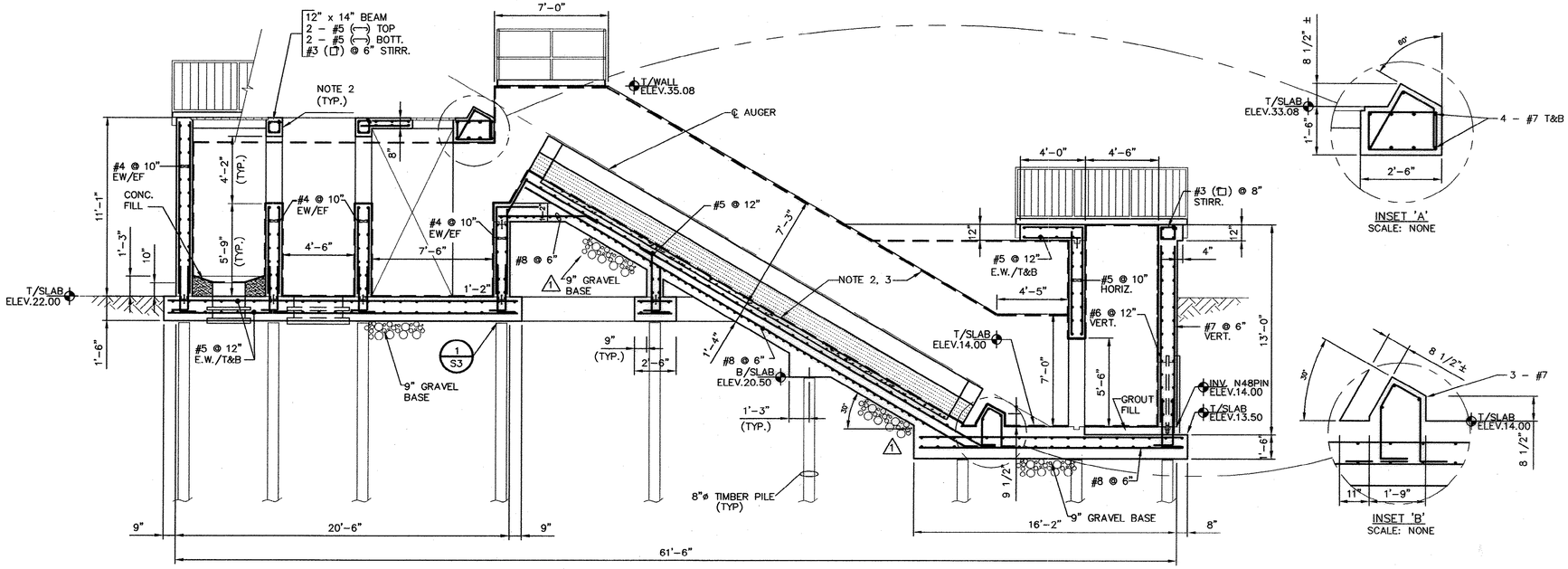
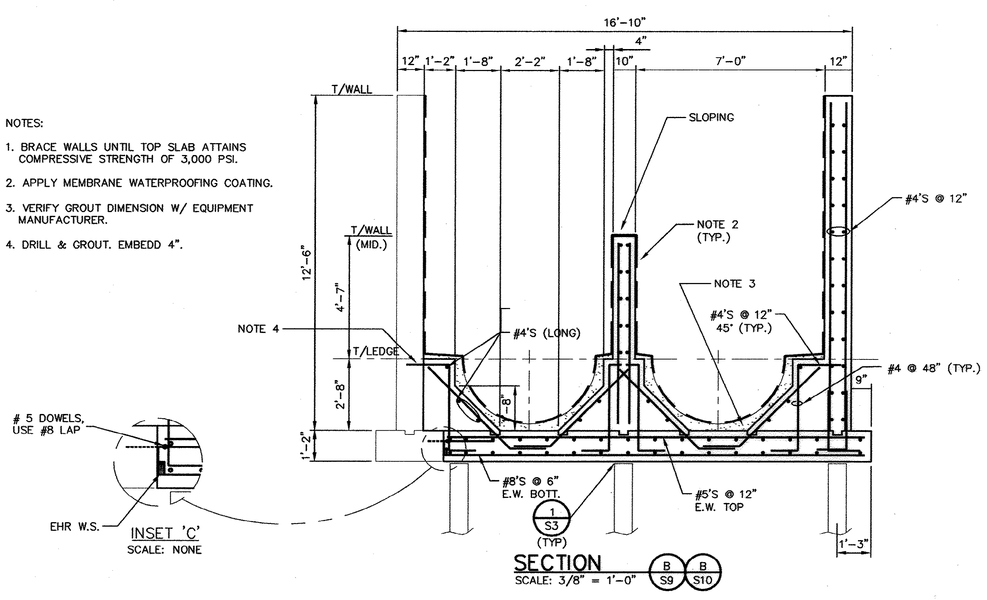


SECTION
SCALE: 1/4" = 1'–0"
A S9 A S10

0 4 8
GRAPHIC SCALE

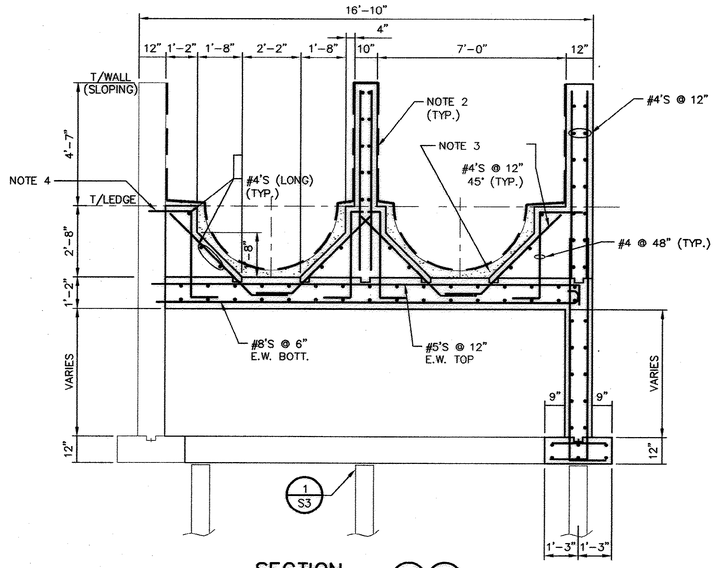
NOTES:

1. BRACE WALLS UNTIL TOP SLAB ATTAINS COMPRESSIVE STRENGTH OF 3,000 PSI.
2. APPLY MEMBRANE WATERPROOFING COATING.
3. VERIFY GROUT DIMENSION W/ EQUIPMENT MANUFACTURER.
4. DRILL & GROUT. EMBEDD 4".



SECTION
SCALE: 3/8" = 1'–0"
B S9 B S10

0 2 4
GRAPHIC SCALE



SECTION
SCALE: 3/8" = 1'–0"
C S9 C S10

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	CHANGE PER ADDENDUM #4	3–1	AR

APPROVALS		
PROJECT ENG:	RTH	
DESIGNED BY:	MAB	
DRAWN BY:	JRC	
CHECKED BY:	GTS	
APPROVED:	JDP	

NORTH CAROLINA B.P. BARBER & ASSOCIATES, INC. No. C-00500 CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7038 REGISTERED — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: MODIFICATIONS TO INTERMEDIATE PUMP STATION SECTIONS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 99127SAH	SHEET S11
REF.	OF 51
N.B. NO. 1731	
PROJECT NO. 00149	

FILE NO. 22–85–00

51-004-055 5

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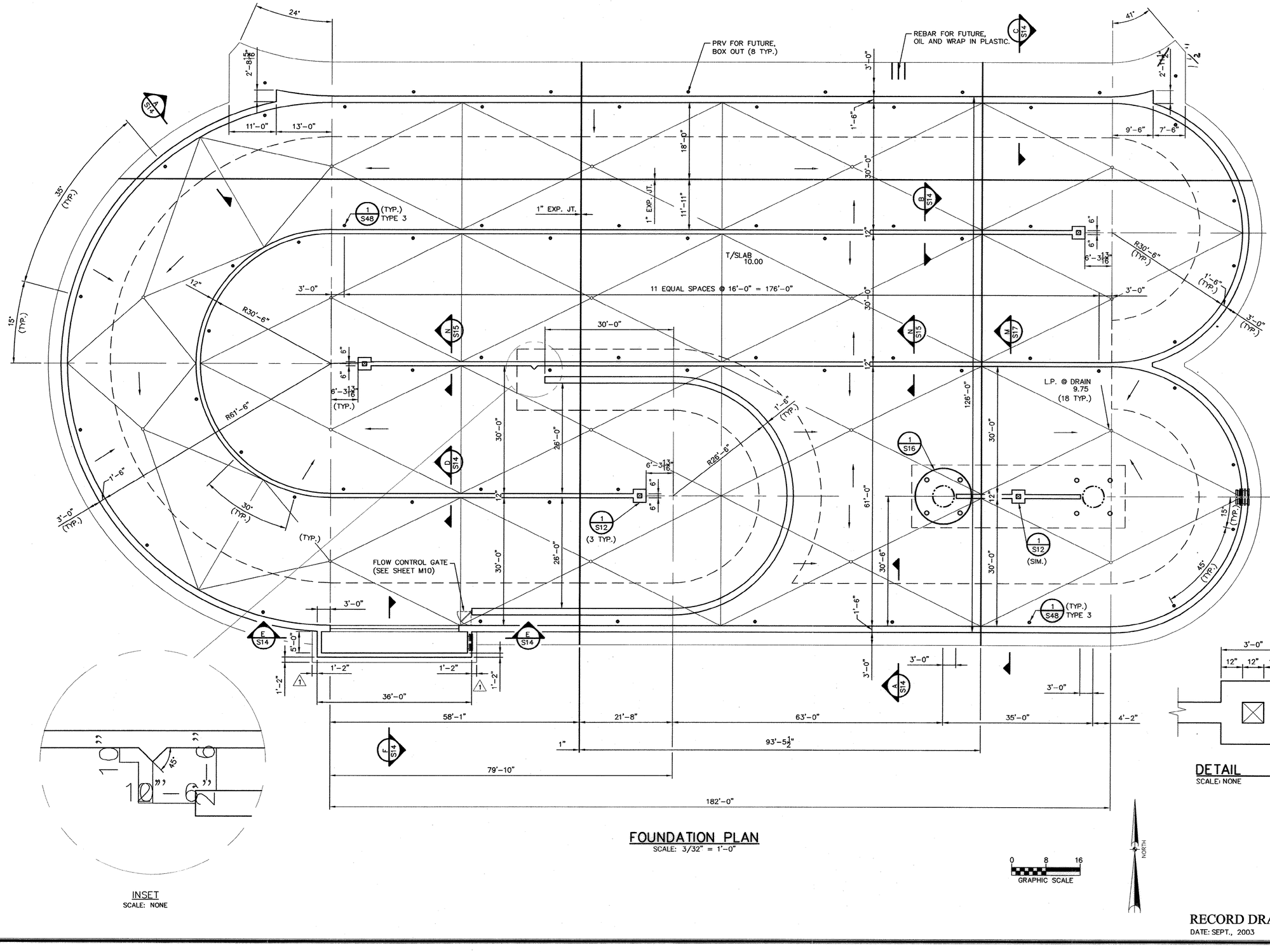

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	FNDN DIM	8/01	AMR

APPROVALS	
PROJECT ENG:	
BCWTH:	
DESIGNED BY:	
DRAWN BY: JRC	
CHECKED BY: GTS	
APPROVED: JDP	

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 7039 REGISTERED — ALEX T. SHEEN — SIGNATURE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL B. P. BARBER & ASSOCIATES, INC. No. 000000 — CERTIFICATE OF AUTHORIZATION — DATE

bpb

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW AERATION BASIN FOUNDATION PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
99127SAO	S12
REF.	OF
N.B. NO. 1731	51
PROJECT NO. 00149	

FILE NO. 22-85-00

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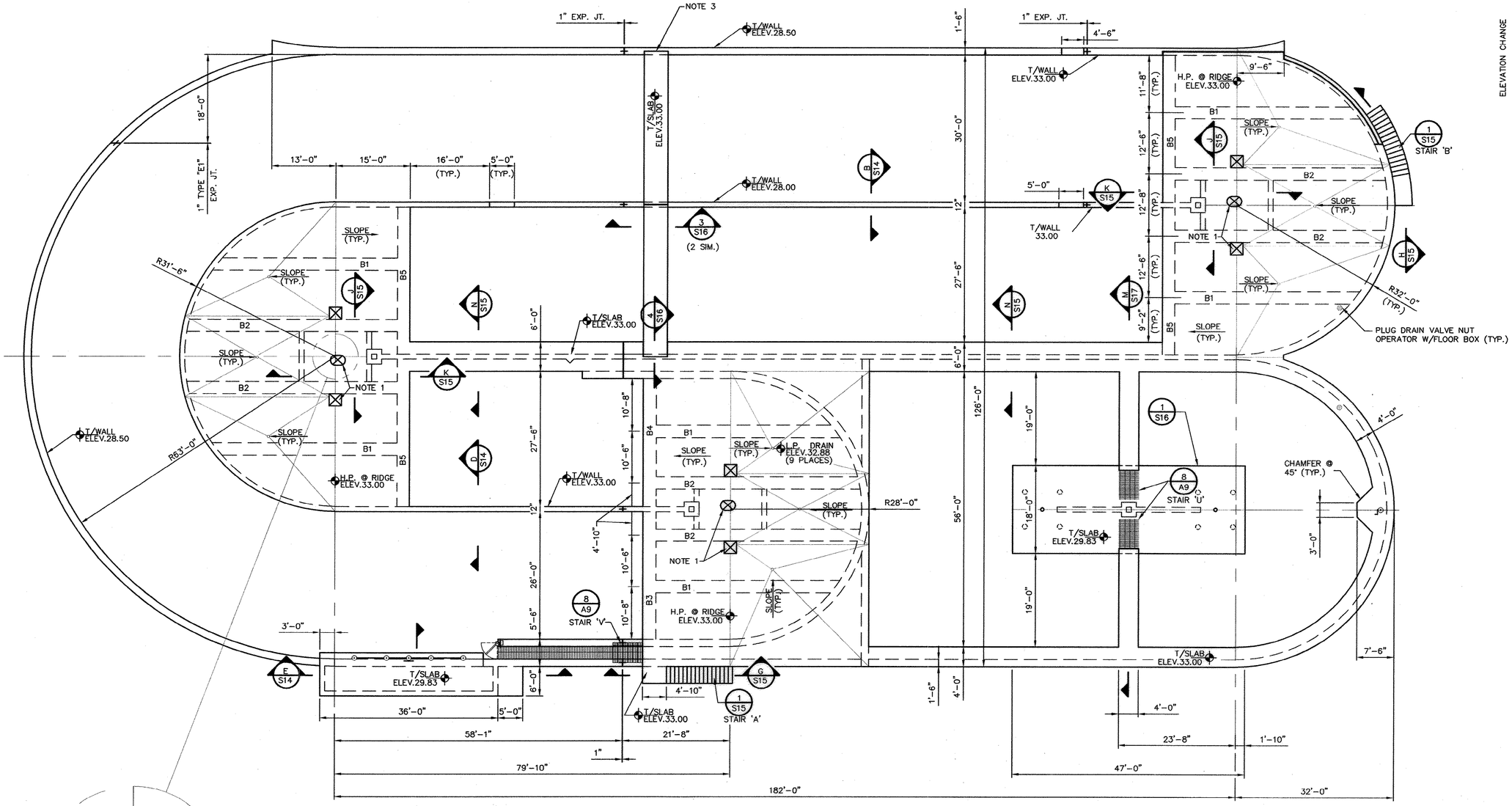
51-004-056 5



TOP PLAN
SCALE: 3/32" = 1'-0"

INSET
SCALE: NONE

NOTES:

1. AERATOR MANUFACTURER TO VERIFY SIZE & LOCATION.
2. HANDRAIL NOT SHOWN FOR CLARITY. SEE DETAIL 9, SHEET A11, AND SHEET M10.
3. PROVIDE FULL WIDTH EMBEDED PLATE FOR FUTURE TEE SEAT.
4. PROVIDE CRYSTALLINE WATER PROOFING ON INTERIOR FACE OF EXTERIOR WALLS AND BOTH FACES OF INTERIOR FROM FLOOR TO ELEVATION 27.00.
5. SEE SHEET S15 FOR BEAM & STAIR SCHEDULE.

NORTH

GRAPHIC SCALE 0 8 16

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	CHANGE IN ELEVATION BY 6"	10/02	ZES

APPROVALS	
PROJECT ENG:	RTH
DESIGNED BY:	GTS
DRAWN BY:	JRC
CHECKED BY:	GTS
APPROVED:	JDP

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW AERATION BASIN TOP PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	99127SAP
REF.	
N.B. NO.	1731
PROJECT NO.	00149
SHEET	S13
OF	51
FILE NO.	22-85-00

51-004-057 5

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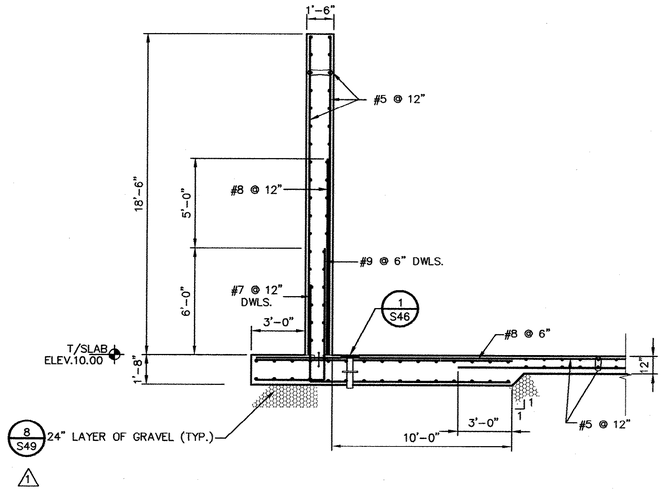
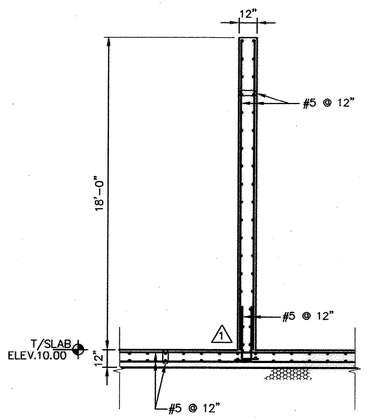
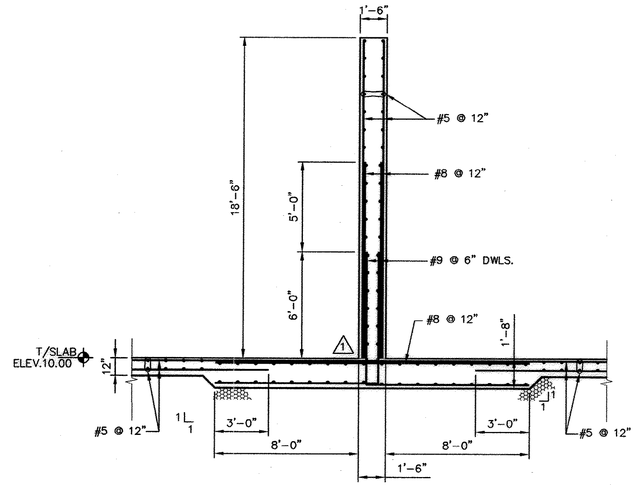


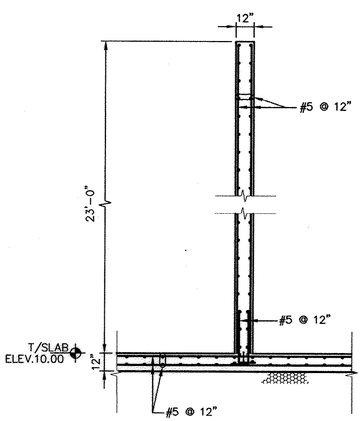
SECTION
SCALE: 1/4" = 1'-0" (A S12)



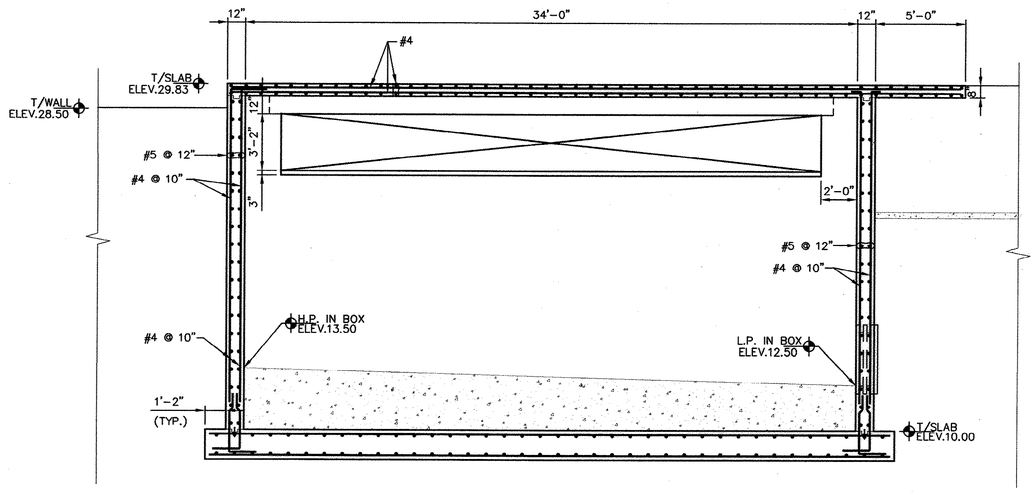
SECTION
SCALE: 1/4" = 1'-0" (B S12 / B S13)



SECTION
SCALE: 1/4" = 1'-0" (C S12)



SECTION
SCALE: 1/4" = 1'-0" (D S12 / D S13)

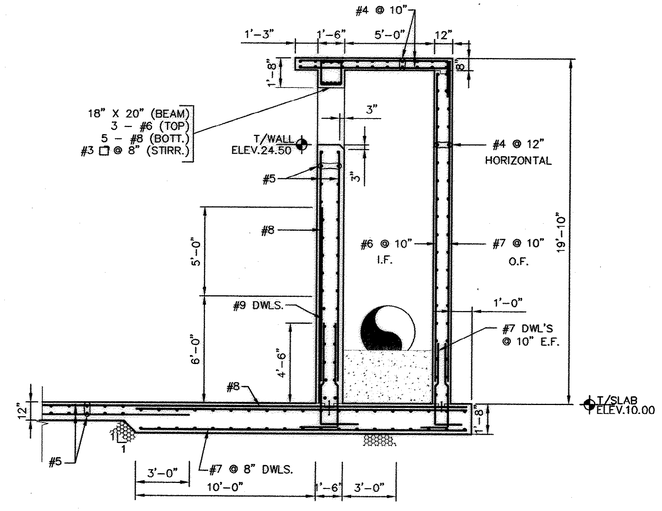


SECTION
SCALE: 1/4" = 1'-0" (E S12 / E S13)

0 4 8
GRAPHIC SCALE

NOTE:

1. HANDRAIL NOT SHOWN, SEE DETAIL 9, SHEET A11.
2. PROVIDE CRYSALLINE WATER PROOFING (SEE NOTE 4 SHEET S13).



SECTION
SCALE: 1/4" = 1'-0" (F S12 / F S13)

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	CHANGE PER ADDENDUM #4	3-1	AR
2	CHANGE IN VERTICAL DIMENSION AND TOP ELEVATION BY 6"	10/02	ZES

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: GTS
DRAWN BY: JRC
CHECKED BY: GTS
APPROVED: JDP

SOUTH CAROLINA NOTARY PUBLIC CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. C00350 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7039 REGISTERED — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW AERATION BASIN SECTIONS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 99127SJA	SHEET S14
REF.	OF 51
N.B. NO. 1731	
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-058 5

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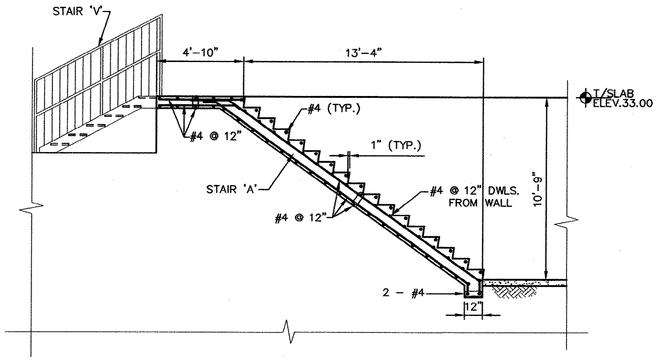
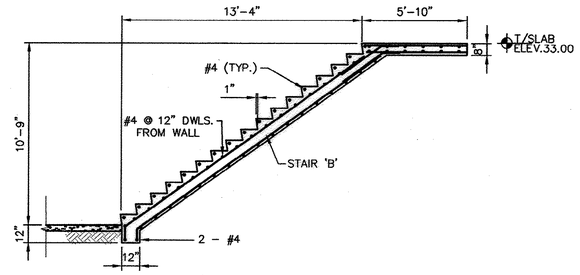
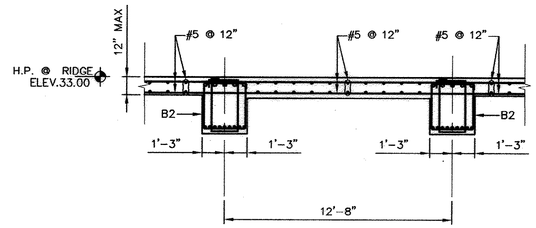


SECTION (G / S13)
SCALE: 1/4" = 1'-0"



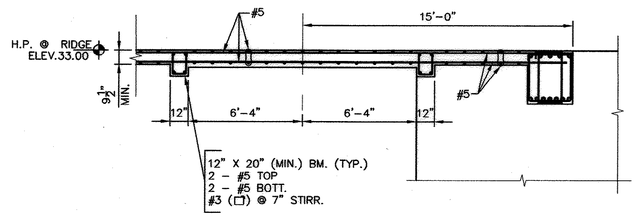
SECTION (H / S13)
SCALE: 1/4" = 1'-0"



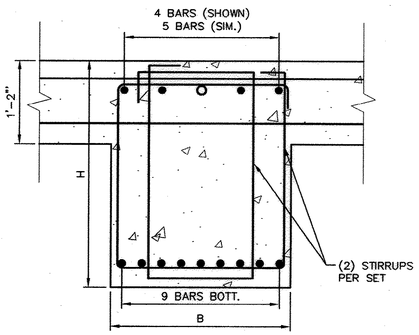
SECTION (J / S13)
SCALE: 1/4" = 1'-0"

NOTE:

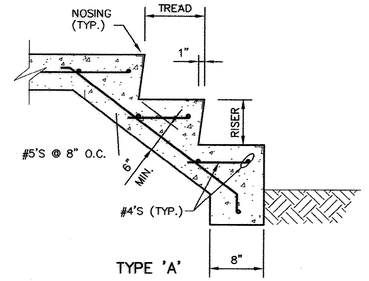
1. HANDRAIL NOT SHOWN, SEE DETAIL 9, SHEET A11.



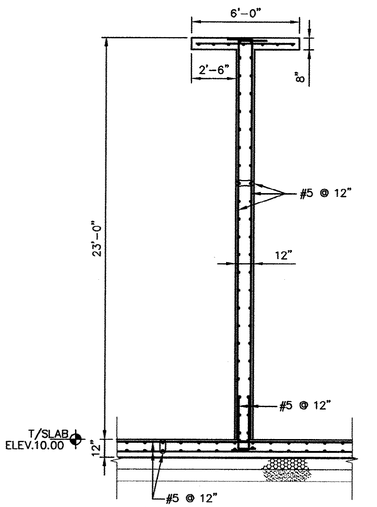
SECTION (K / S13)
SCALE: 1/4" = 1'-0"



BAR PLACEMENT DETAIL
NOT TO SCALE



TYPE 'A'

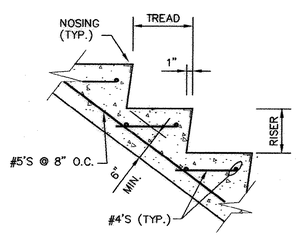


SECTION (N / S12 & N / S13)
SCALE: 1/4" = 1'-0"

CONCRETE STAIR SCHEDULE							
MARK	LOCATION	HEIGHT	RISERS	TREADS	WIDTH	LANDING	REMARKS
A	AERATION BASIN #3	10'-3"	17 @ 7.24"	16 @ 10"	3'-6"	10"	
B	AERATION BASIN #3	10'-3"	17 @ 7.24"	16 @ 10"	3'-6"	10"	
C	INTERMEDIATE MIXING TANK	4'-6"	8 @ 6.75"	7 @ 11.5"	3'-6"	11.5"	
D	DIST. CHAMBER #2	12"	2 @ 6"	1 @ 12"	3'-6"	12"	
E	DIST. CHAMBER #3	2'-0"	4 @ 6"	3 @ 12"	3'-6"	12"	
F*	DIST. CHAMBER #5	3'-6"	5 @ 7"	4 @ 12"	VARIES	11.2"	MASS CONCRETE
G	POLYMER BUILDING	1'-6"	3 @ 6"	2 @ 12"	16'-9"	12"	
H	SECONDARY CLARIFIER #5	3'-0"	5 @ 6"	4 @ 12"	3'-6"	12"	MASS CONCRETE

* SEE SHEET S20, SECTION 'A'.

BEAM SCHEDULE							
MARK	SIZE		REINFORCING		STIRRUP SETS		REMARKS
	B	H	BOTTOM	TOP	QTY - SIZE	SPACING EACH END	
B1	30"	40"	9 #10	4 #8 CONT.	28 #4	1 @ 3", 13 @ 16"	BOTT. ELEV. OF BEAMS = 29.67
B2	30"	40"	9 #11	5 #8 CONT.	32 #4	1 @ 6", 15 @ 16"	BOTT. ELEV. OF BEAMS = 29.67
B3	30"	40"	9 #9	4 #10 CONT.	50 #5	1 @ 3", 24 @ 7"	BOTT. ELEV. OF BEAMS = 29.67
B4	30"	40"	9 #9	4 #10 CONT.	50 #5	1 @ 3", 24 @ 7"	BOTT. ELEV. OF BEAMS = 29.67
B5	30"	40"	9 #9	5 #11 CONT.	50 #4	1 @ 3", 24 @ 7"	BOTT. ELEV. OF BEAMS = 29.67



TYPE 'B'

DETAIL (1 / TYP)
SCALE: NONE

NOTE:

1. SEE CONCRETE STAIR SCHEDULE THIS SHEET

0 4 8
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	CHANGE IN VERTICAL DIMENSION AND TOP ELEVATION BY 6"	10/02	ZES

APPROVALS			
PROJECT ENG:	RTH	CHECKED BY:	GTS
DESIGNED BY:	GTS	APPROVED:	JDP
DRAWN BY:	JRC		

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL No. 20008 B.P. BARBER & ASSOCIATES, INC. CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER SEAL No. 7030 GLEN T. SHEARIN — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS - PLANNERS - SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW AERATION BASIN SECTIONS, SCHEDULES AND DETAIL
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	00149SBZ
REF.	
N.B. NO.	1731
PROJECT NO.	00149
SHEET	S15
OF	51
FILE NO.	22-85-00

51-004-059 5

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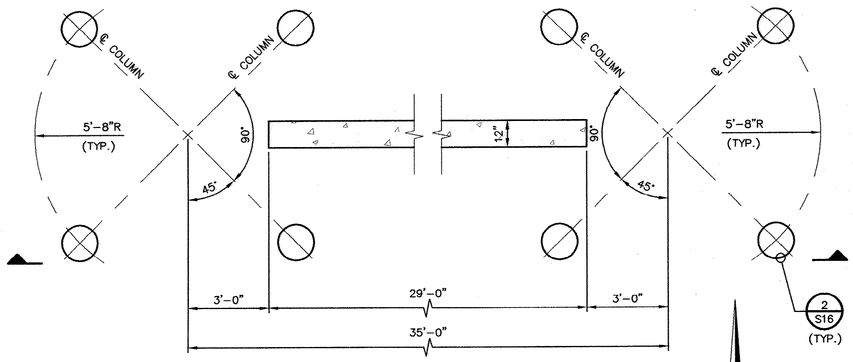
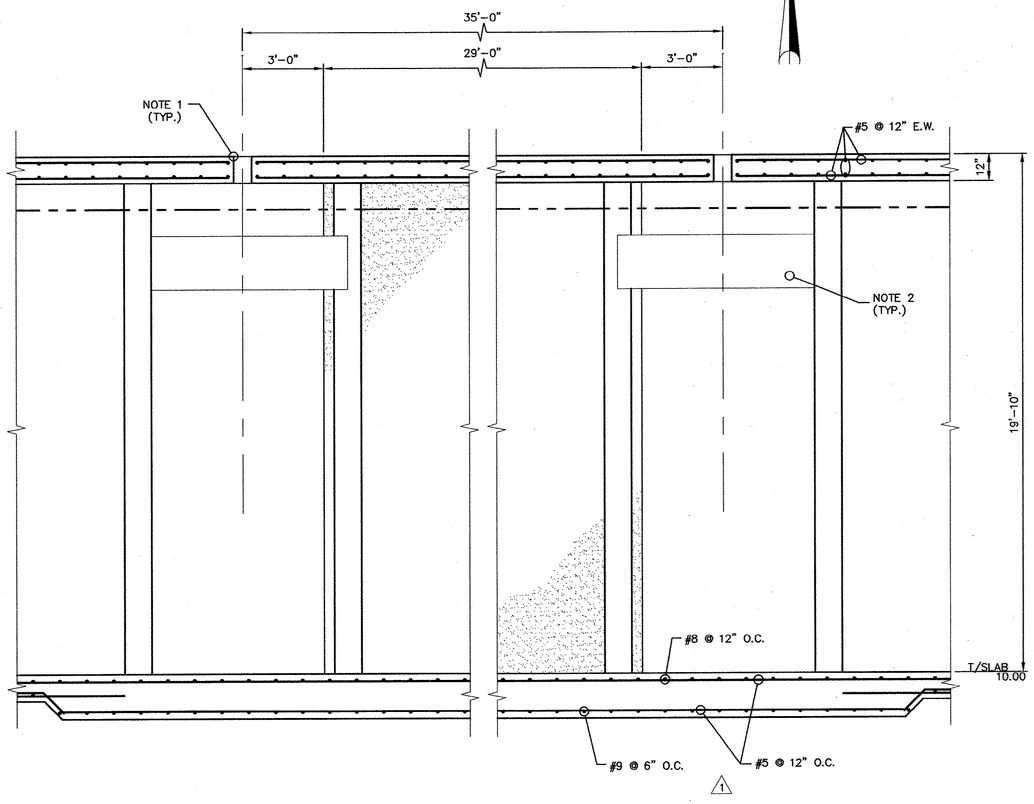


PLAN BELOW SLAB

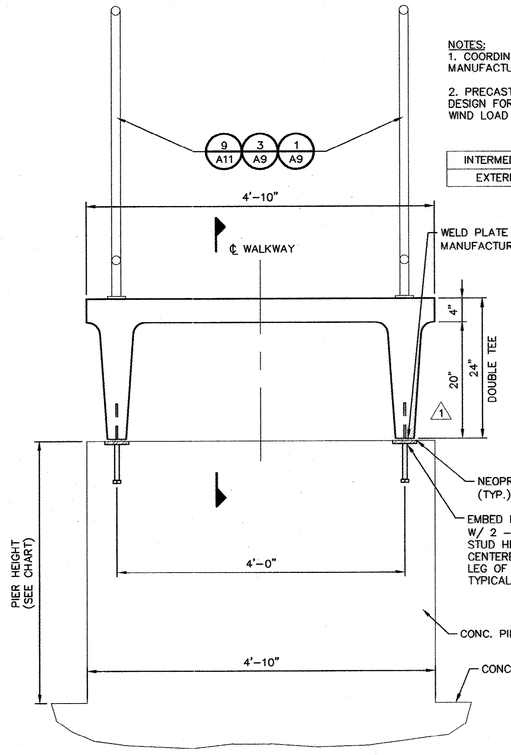


SECTION

DETAIL 1 S12 / 1 S13
SCALE: 3/8" = 1'-0"

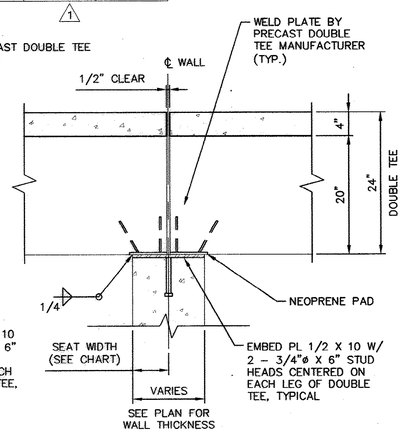
NOTES:

1. HOLE SIZE, LOCATION, ETC..., TO BE DETERMINED BY MIXER MANUFACTURER (SHOP DRAWING).
2. BAFFLE PLATE FASTENING MATERIAL TO BE DETERMINED BY MIXER MANUFACTURER (SHOP DRAWING).



NOTES:
1. COORDINATE WITH PRECAST DOUBLE TEE MANUFACTURER FOR ALL PLATE LOCATIONS.
2. PRECAST DOUBLE TEE MANUFACTURER PROVIDE DESIGN FOR A LIVE LOAD OF 100 PSF AND A WIND LOAD OF 30 PSF.

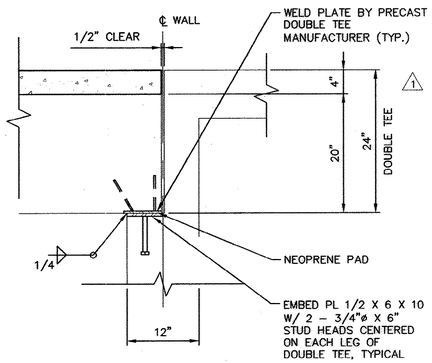
	PIER HEIGHT	SEAT WIDTH
INTERMEDIATE WALL	3'-0"	6"
EXTERIOR WALL	2'-6"	9"



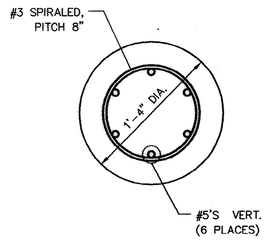
SECTION

ELEVATION

DETAIL 3 S13
SCALE: 1" = 1'-0"



DETAIL 4 S13
SCALE: 1" = 1'-0"



DETAIL 2 S16
SCALE: 1-1/2" = 1'-0"

(8 REQUIRED)

0 1 2
GRAPHIC SCALE

0 2 4
GRAPHIC SCALE

0 1 2
GRAPHIC SCALE

RECORD DRAWINGS
DATE

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	REBAR & DIMENSION REVISIONS	8/01	MWS
2	REBAR & DIMENSION REVISIONS	10/02	ZES

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: GTS
DRAWN BY: JRC
CHECKED BY: GTS
APPROVED: JDP

SOUTH CAROLINA NOVEMBER 19, 2002 B. P. BARBER & ASSOCIATES, INC. No. C00000 CERTIFICATE OF AUTHORIZATION
DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7039 GLEN T. SHEALY OWNER REGISTRATION
SIGNATURE

bpb
B. P. BARBER & ASSOCIATES, INC.
ENGINEERS - PLANNERS - SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW AERATION BASIN PLAN, SECTION, & DETAILS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 99127SAQ
REF.
N.B. NO. 1731
PROJECT NO. 00149

SHEET S16 OF 51

FILE NO. 22-85-00

51-004-060 5

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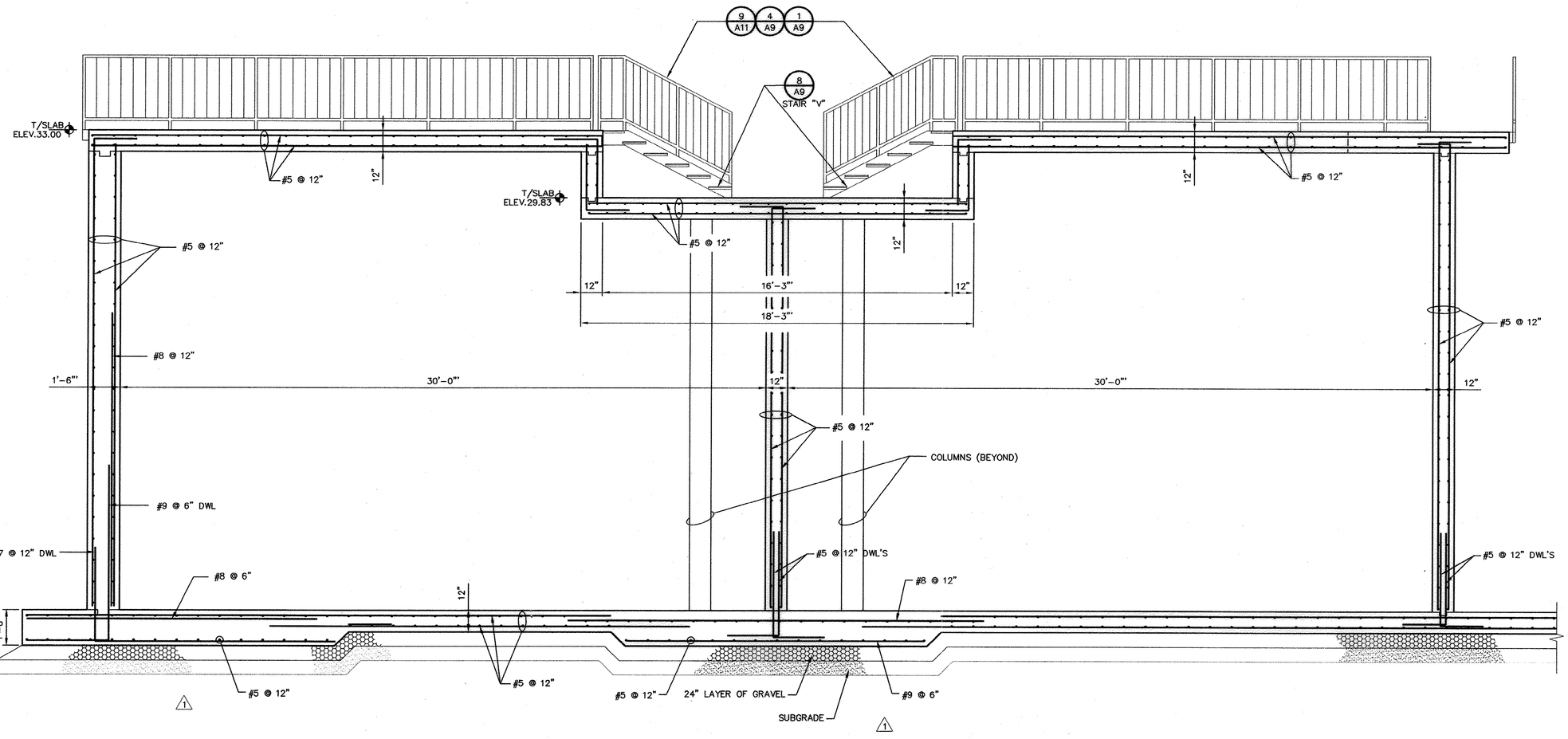

SECTION (M S12 / M S13)
SCALE: 3/8" = 1'-0"

0 2 4
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

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REVISIONS

NO.	DESCRIPTION	DATE	BY
1	REBAR REVISIONS	8/01	MWS
2	CHANGE IN ELEVATIONBY 6"	10/02	ZES

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: GTS
DRAWN BY: JRC
CHECKED BY: GTS
APPROVED: JDP

NORTH CAROLINA CERTIFICATE OF AUTHORIZATION
B.P. BARBER & ASSOCIATES, INC.
No. C00060
DATE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL
No. 7039
SIGNATURE

bpb
B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW AERATION BASIN SECTION
DATE: FEB., 2001 SCALE: AS SHOWN

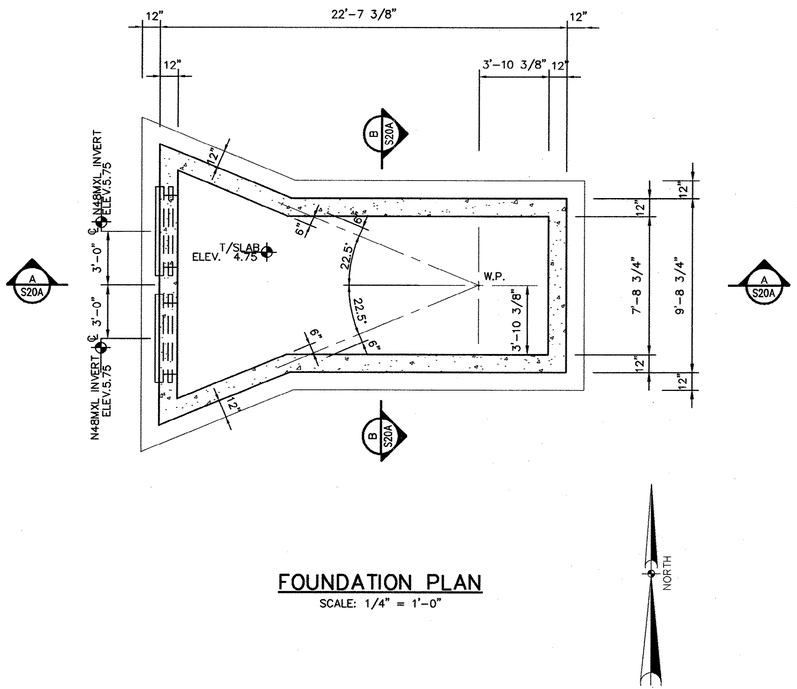
PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 99127SAR
REF.
N.B. NO. 1731
PROJECT NO. 00149

SHEET S17 OF 51

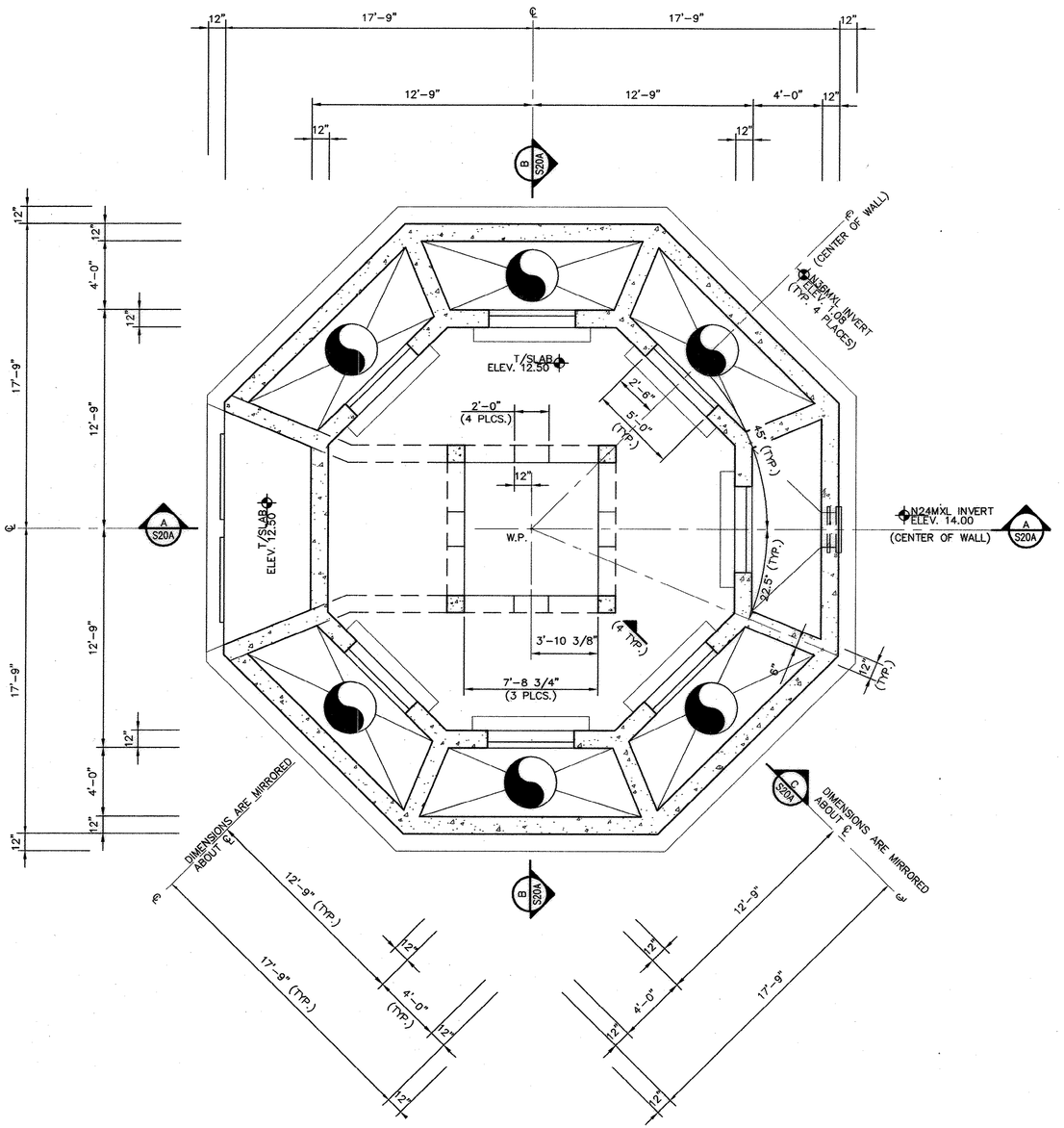
FILE NO. 22-85-00

51-004-061 S



FOUNDATION PLAN

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



PLAN @ ELEV. 15.00

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

NORTH

GRAPHIC SCALE 0 4 8

RECORD DRAWINGS

DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	ALTERNATE NO. 1	2-01	RTH

APPROVALS	
PROJECT ENG.	RTH
DESIGNED BY:	MAB
DRAWN BY:	MAB
CHECKED BY:	GTS
APPROVED:	JDP

SOUTH CAROLINA — NOVEMBER 19, 2003 — B. P. BARBER & ASSOCIATES, INC. — No. C00000 — CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA — PROFESSIONAL ENGINEER — No. 7009 — REGISTERED — GLEN T. SHEALY — SIGNATURE

bpb — B. P. BARBER & ASSOCIATES, INC. — ENGINEERS – PLANNERS – SURVEYORS — COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW DISTRIBUTION CHAMBER # 5 PLANS (ALTERNATE)

DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	00149SBV
REF.	
N.B. NO.	1731
PROJECT NO.	00149
SHEET	S18A
OF	51

FILE NO. 22-85-00

51-004-062 S

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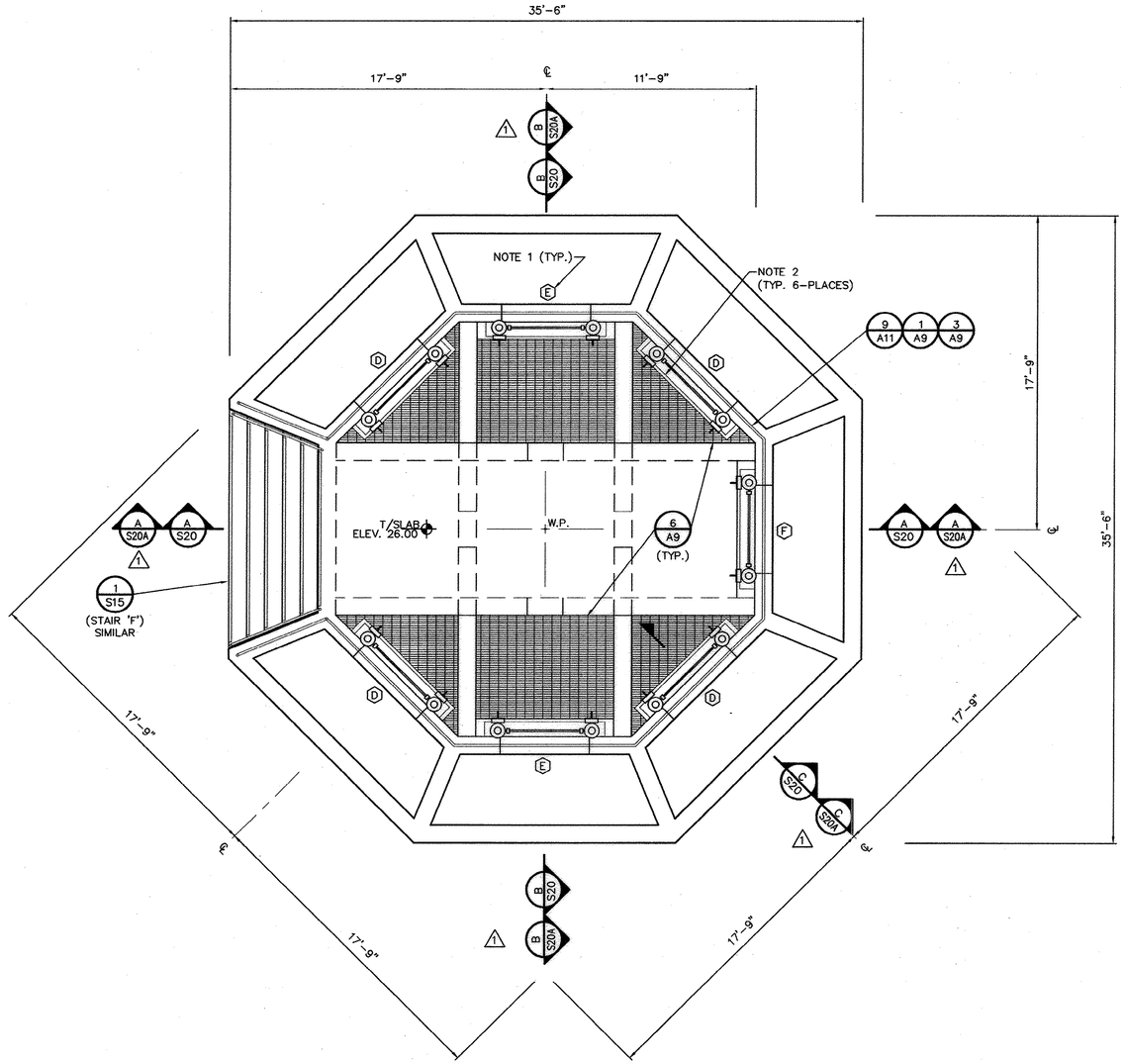


TOP PLAN

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

NOTE:

1. SEE GATE SCHEDULE, SHEET M52.
2. PROVIDE ALUM. L3 X 3 X 1/4 @ GATE FOR GRATING SUPPORT.

NORTH

0 4 8

GRAPHIC SCALE

RECORD DRAWINGS

DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	ALTERNATE NO. 1	2-01	RTH

APPROVALS	
PROJECT ENG:	RTH
DESIGNED BY:	GTS
DRAWN BY:	MAB
CHECKED BY:	GTS
APPROVED:	JDP

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL No. 7030 GLEN T. SHEPPARD

DATE

SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE

NEW DISTRIBUTION CHAMBER # 5 TOP PLAN

DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT

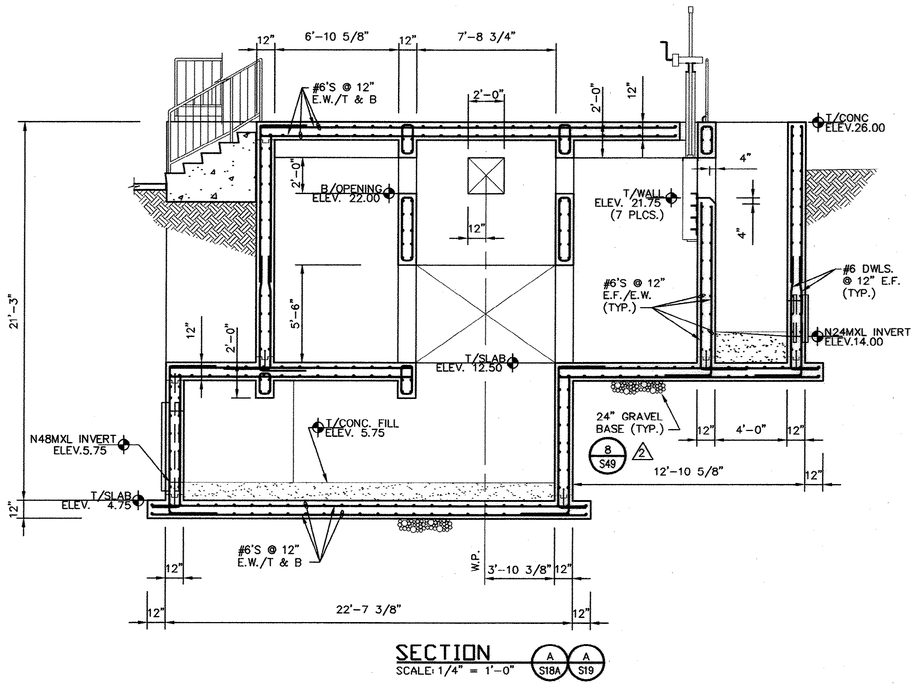
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	00149SBW
REF.	
N.B. NO.	1731
PROJECT NO.	00149
SHEET	S19
OF	51

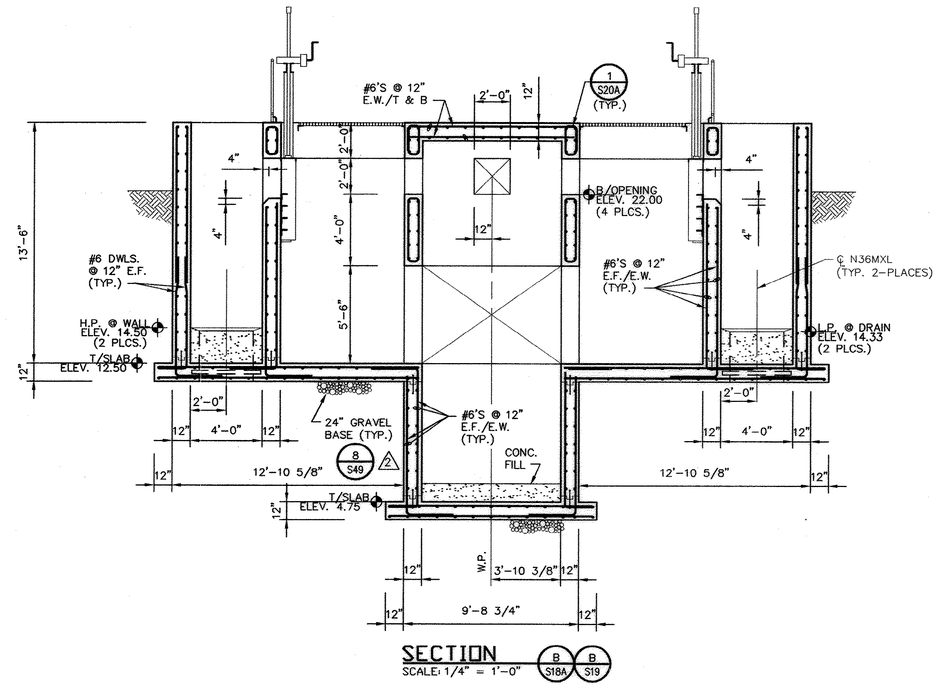
FILE NO. 22-85-00

51-004-063 5

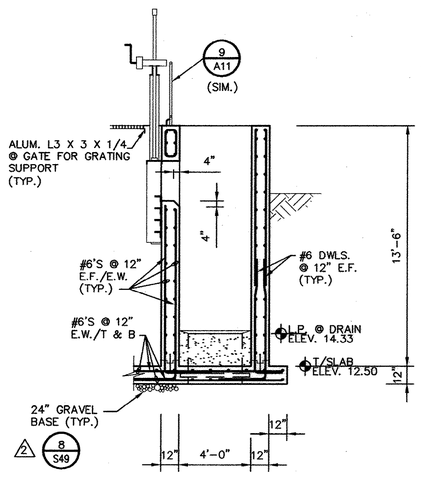
M:\projects\00149\dwg\RECORD\00149SBW#RD.dwg 11/21/2003 10:39:37 AM



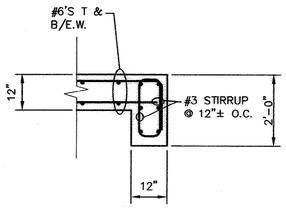
SECTION
SCALE: 1/4" = 1'-0" A S18A / A S19



SECTION
SCALE: 1/4" = 1'-0" B S18A / B S19



SECTION
SCALE: 1/4" = 1'-0" C S18A / C S19
(4 PLACES)



SECTION
SCALE: 1/2" = 1'-0" 1 S20A

0 4 8
GRAPHIC SCALE

0 2 4
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	ALTERNATE NO. 1	2-01	RTH
2	CHANGE PER ADDENDUM #4	3-1	AR

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: MAB
DRAWN BY: MAB
CHECKED BY: GTS
APPROVED: JDP

NORTH CAROLINA ENGINEERING CORPORATION CERTIFICATE OF AUTHORIZATION B. P. BARBER & ASSOCIATES, INC. No. C000350 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7039 REGISTERED — SIGNATURE

bpb
B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW DISTRIBUTION CHAMBER # 5 SECTIONS (ALTERNATE)
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149SBX	SHEET S20A
REF.	OF 51
N.B. NO. 1731	
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-064 5

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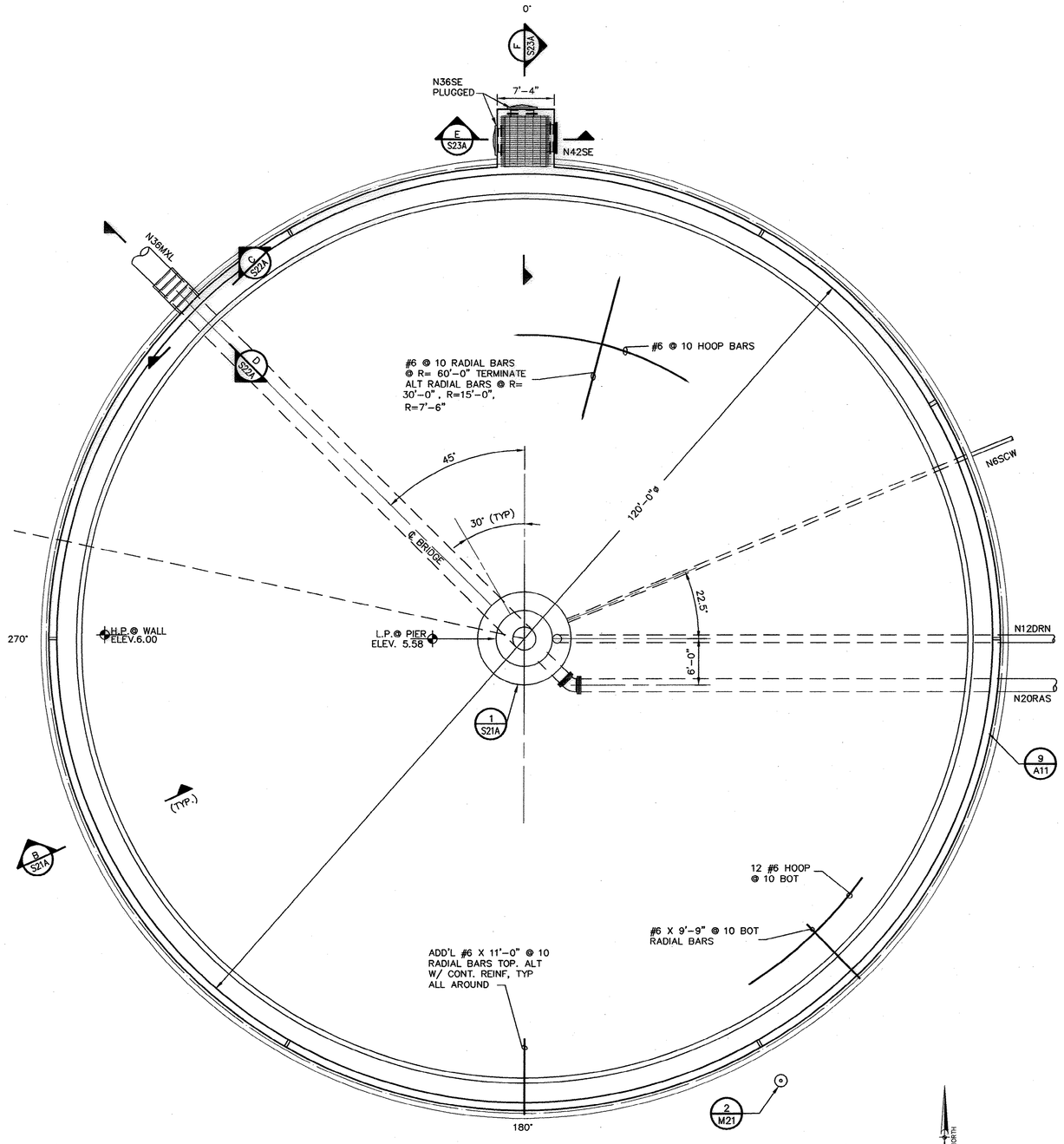
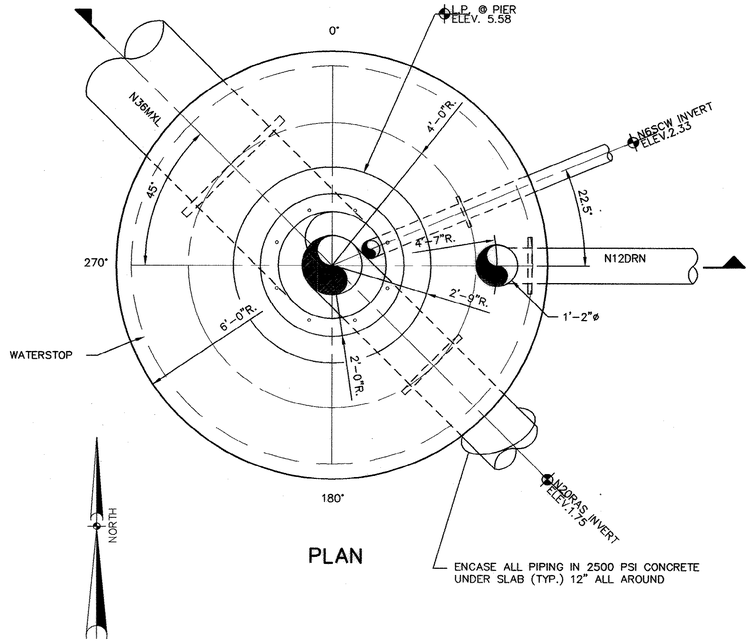
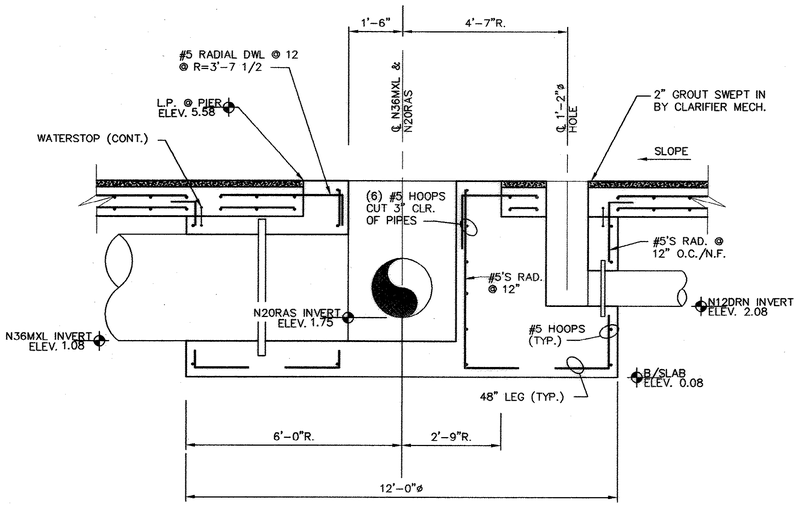


PLAN
SCALE: 1/8" = 1'-0"



PLAN

ENCASE ALL PIPING IN 2500 PSI CONCRETE UNDER SLAB (TYP.) 12" ALL AROUND



SECTION

NOTES:
1. SEE EQUIPMENT MANUFACTURERS DRAWINGS FOR CLARIFIER EQUIPMENT AND ANCHOR BOLT DETAILS. DIMENSIONS SHOWN BELOW ARE TO BE VERIFIED BY EQUIPMENT MANUFACTURER'S DRAWINGS.
2. CUT STEEL 12" CLR. OF WATERSTOP, 3" CLR. OF PIPES.

DETAIL 1 / M17A
SCALE: NONE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS			
PROJECT ENG: RTH	DESIGNED BY: MAB	DRAWN BY: MAB	CHECKED BY: CTS	APPROVED: JDP

SOUTH CAROLINA B.P. BARBER & ASSOCIATES, INC. CERTIFICATE OF AUTHORIZATION No. 000260 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7639 GLEN T. SHEEHY REGISTERED — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW SECONDARY CLARIFIER #5 PLAN & SECTIONS (ALTERNATE)
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149SBY	S21A
REF.	OF
N.B. NO. 1731	51
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-0655

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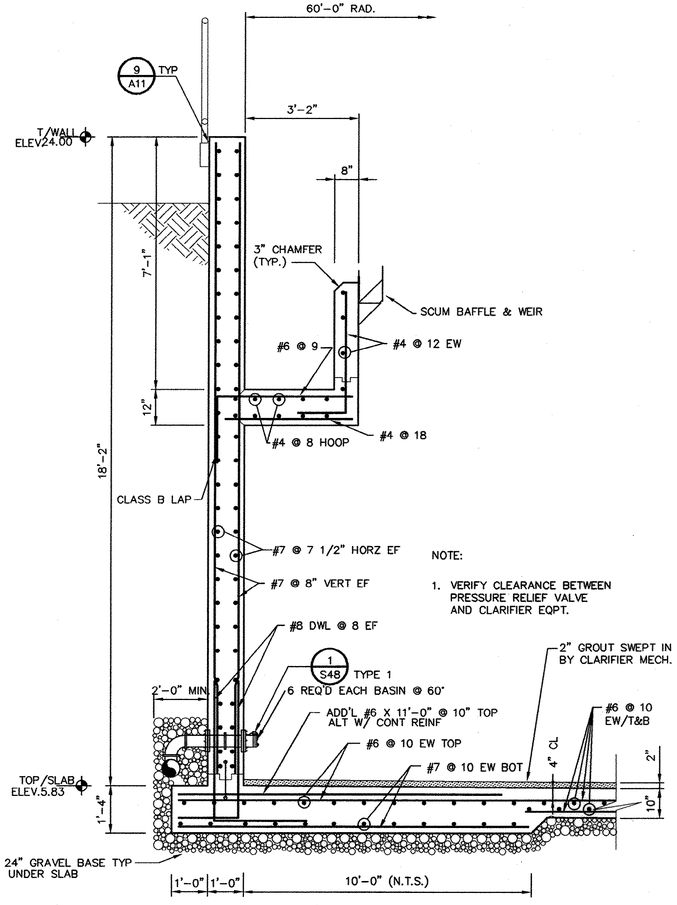
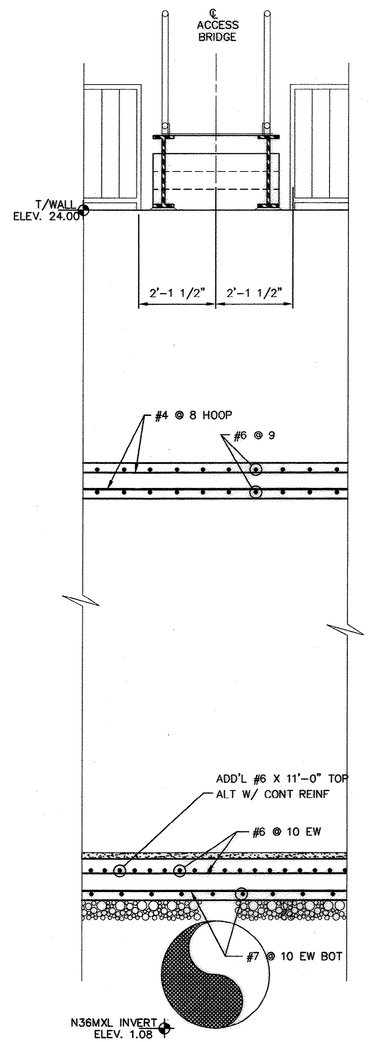
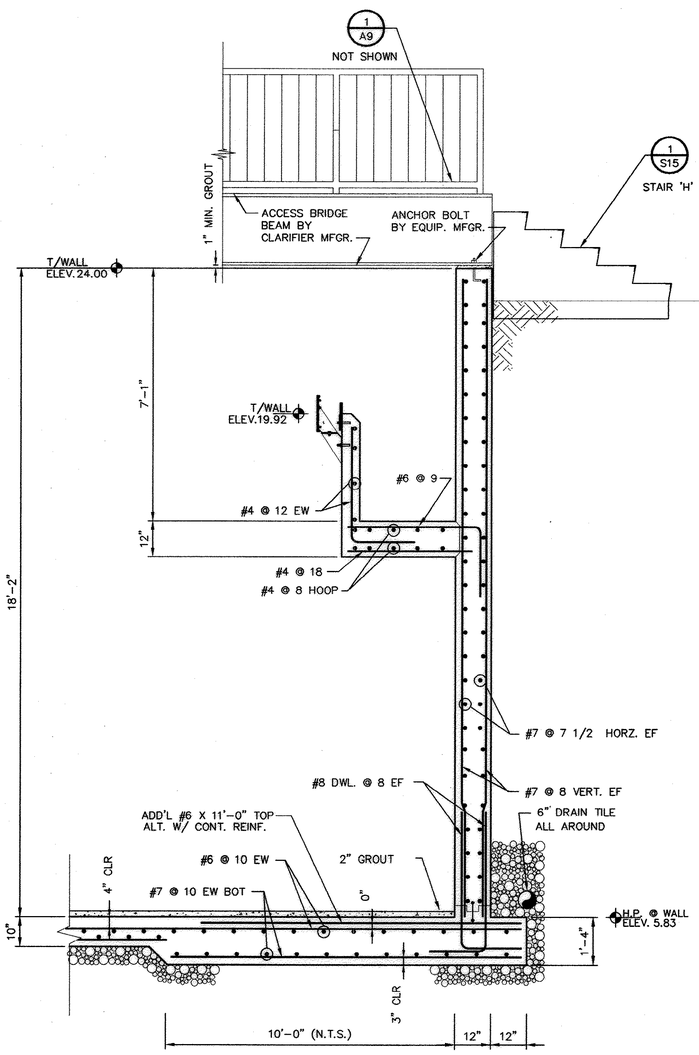


SECTION B S21A
SCALE: 1/2" = 1'-0"



SECTION C S21A
SCALE: 1/2" = 1'-0"



SECTION D S21A
SCALE: 1/2" = 1'-0"

0 2 4
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS			
PROJECT ENG: RTH	DESIGNED BY: MAB	DRAWN BY: MAB	CHECKED BY: GTS	APPROVED: JDP

SOUTH CAROLINA PROFESSIONAL ENGINEER
CERTIFICATE OF AUTHORIZATION
B. P. BARBER & ASSOCIATES, INC.
No. C000030
DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER
No. 7030
GLEN T. SHEALY
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW SECONDARY CLARIFIER #5 SECTIONS (ALTERNATE)
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149SCA	S22A
REF.	OF
N.B. NO. 1731	51
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-066 5

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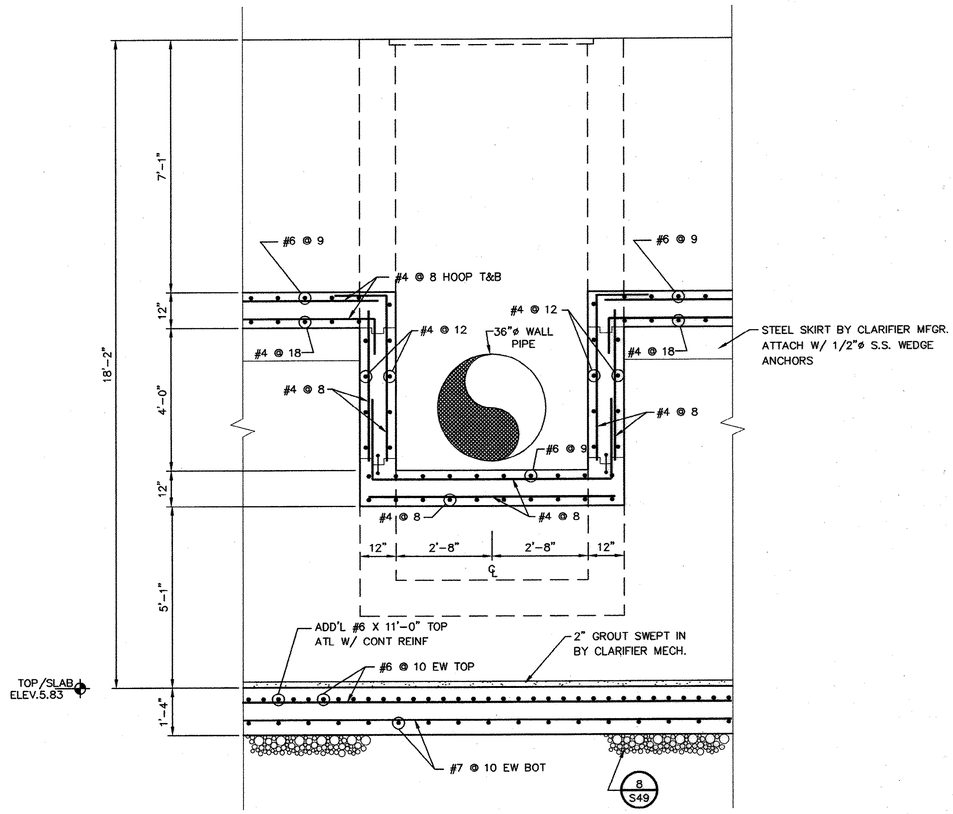
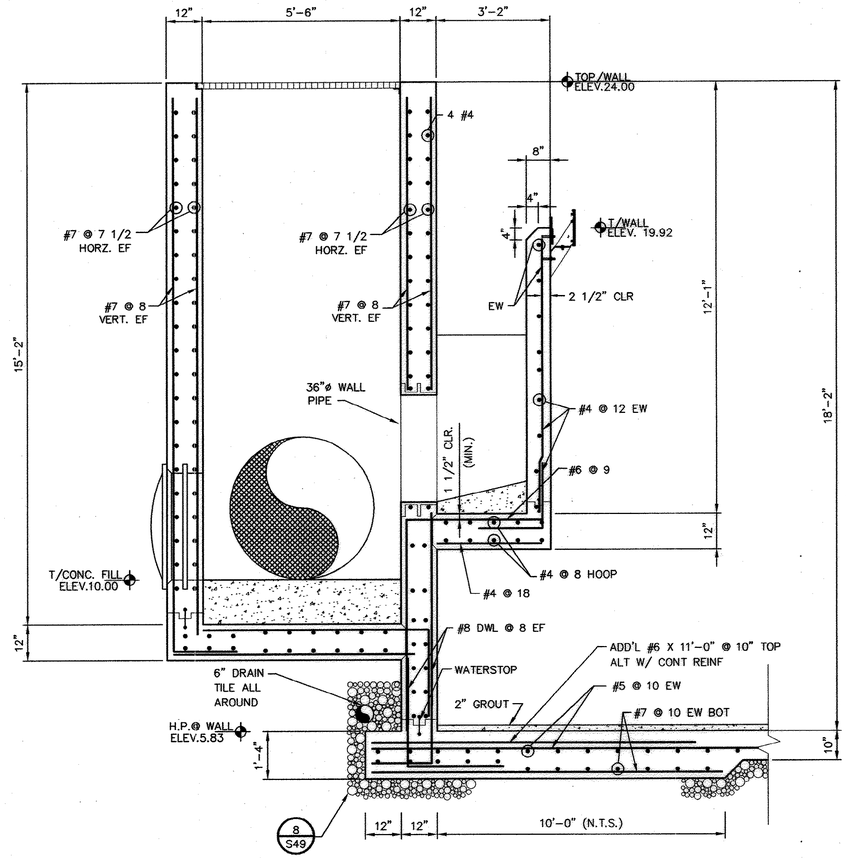


SECTION
SCALE: 1/2" = 1'-0"
E
S21A



SECTION
SCALE: 1/2" = 1'-0"
F
S21A

0 2 4
GRAPHIC SCALE

NOTES:

1. VERIFY DIMENSIONS WITH SHOP DRAWINGS.
2. H.R. NOT SHOWN IN SECTIONS.

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS	
PROJECT ENG:	RTH
DESIGNED BY:	GTS
DRAWN BY:	MAB
CHECKED BY:	GTS
APPROVED:	JDP

SOUTH CAROLINA NOVEMBER 20, 2003 B.P. BARBER & ASSOCIATES, INC. No. C00000 CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7039 GLEN T. SHEALY CERTIFIED — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW SECONDARY CLARIFIER #5 SECTIONS (ALTERNATE)
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149SCB	S23A
REF.	OF
N.B. NO. 1731	51
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-067 S

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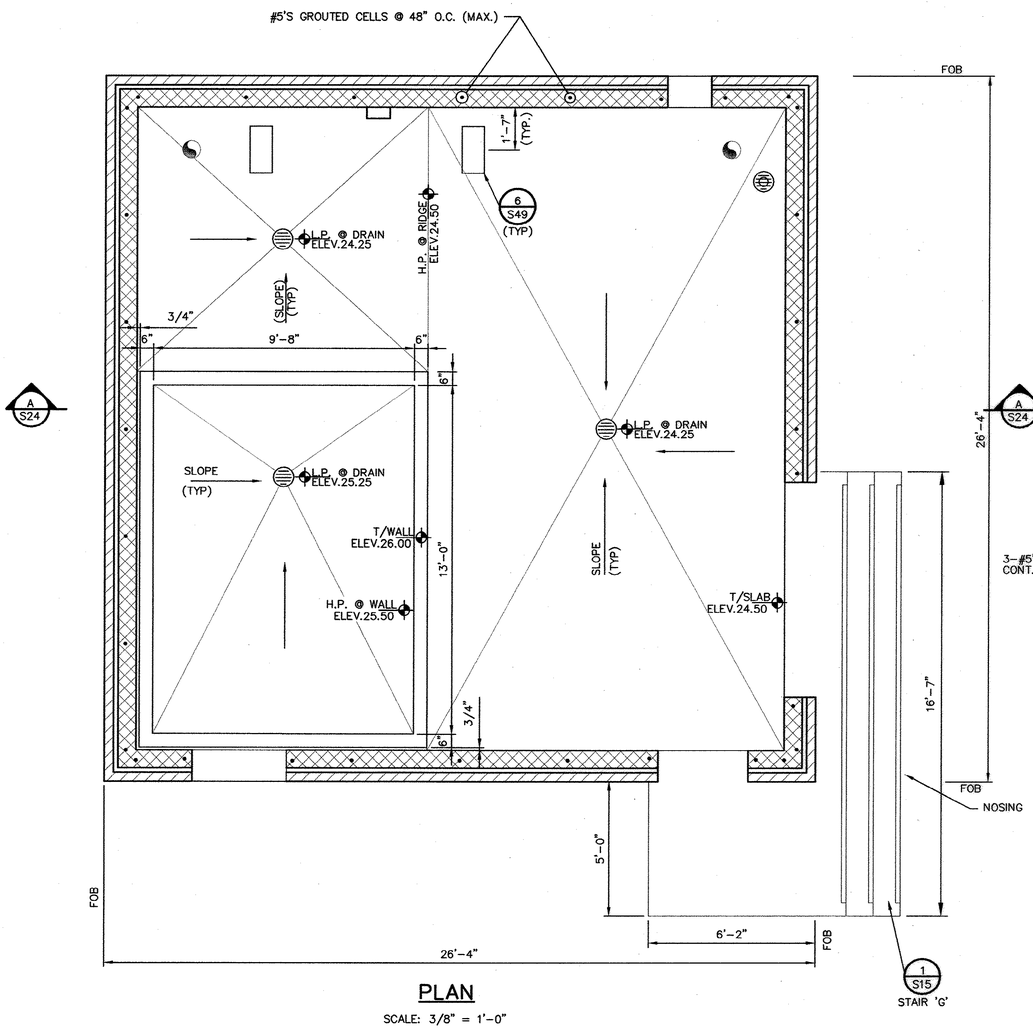
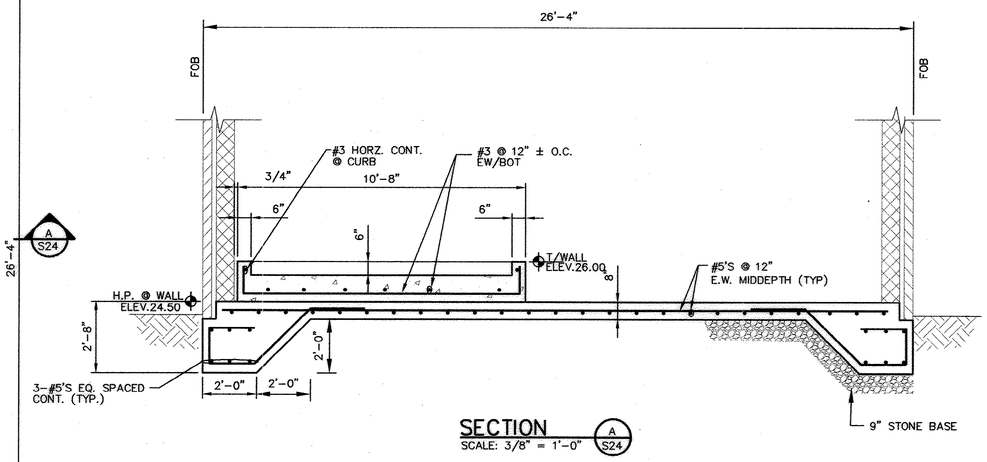


PLAN

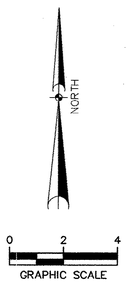
SCALE: 3/8" = 1'-0"



SECTION

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

A
S24



RECORD DRAWINGS

DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS	
PROJECT ENG: RTH	APPROVED: JDP
DESIGNED BY: DEF	
DRAWN BY: JRC	
CHECKED BY: GTS	

SOUTH CAROLINA NOVEMBER 30, 2001 B. P. BARBER & ASSOCIATES, INC. No. C00000 CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7039 REGISTERED GLEN T. SHEALY — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW POLYMER BUILDING PLAN, SLAB @ GRADE

DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149SBJ	S24
REF.	OF
N.B. NO. 1731	51
PROJECT NO. 00149	

FILE NO. 22-85-00

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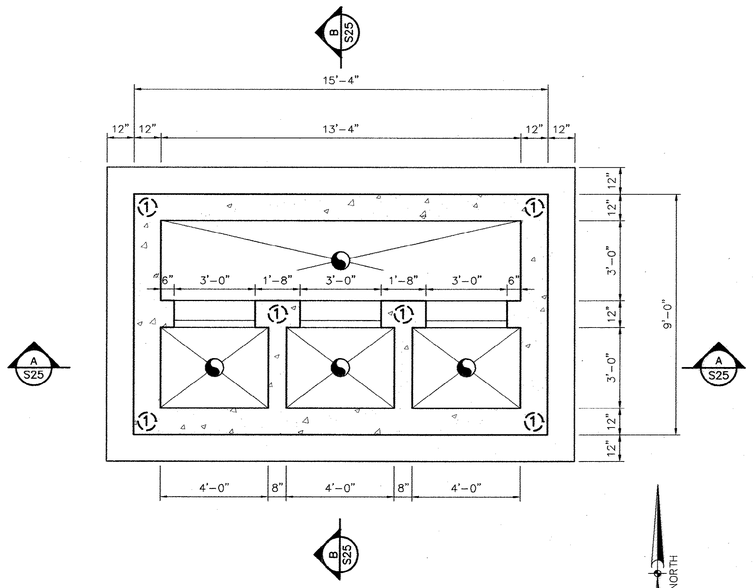
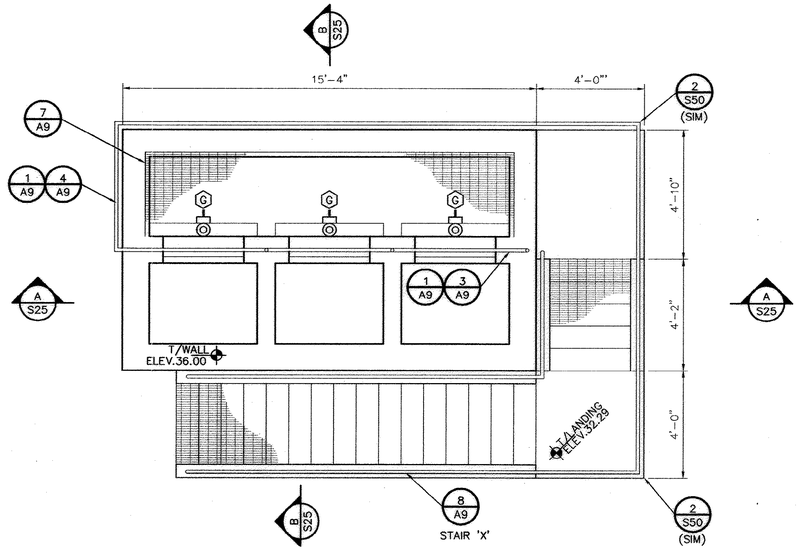
51-004-068- 5



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

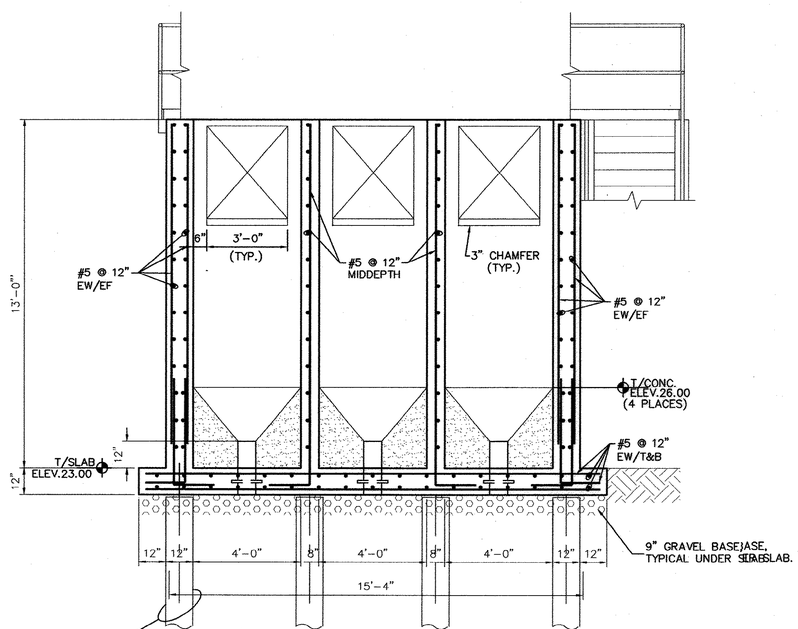


TOP PLAN
SCALE: 3/8"=1'-0"

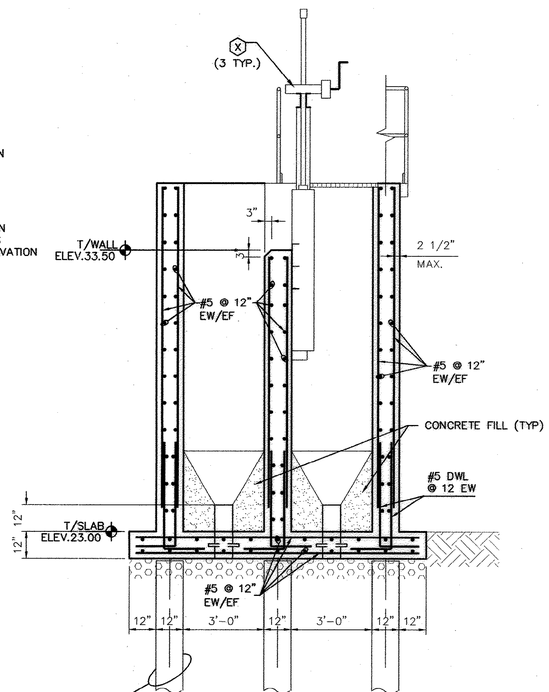
PILE CUT-OFF SCHEDULE	
1	ELEV. 22.00

NOTES:

1. ALL PILES SHOWN ON THIS SHEET SHALL BE DRIVEN IN PLACE TIMBER (8" TIP) BEARING PILES (BEARING CAPACITY = 20 TONS).
2. SEE NOTE 3 SHEET S1.
3. PROVIDE CRYSTALLINE CEMENTIOUS WATERPROOFING ON INTERIOR FACE OF EXTERIOR WALLS AND BOTH FACES OF INTERIOR WALLS FROM BOTTOM ELEVATION TO ELEVATION 34.00.



SECTION
SCALE: 3/8" = 1'-0" A S25



SECTION
SCALE: 3/8" = 1'-0" B S25

0 2 4
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: DEF
DRAWN BY: DEF/GS
CHECKED BY: GTS
APPROVED: JDP

SOUTH CAROLINA NOTWITHSTANDING STATE'S CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. 000000 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER GLEN T. SHEFFIELD No. 7639 — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW DISTRIBUTION CHAMBER #4 PLANS AND SECTIONS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 99127SAU
REF.
N.B. NO. 1731
PROJECT NO. 00149
SHEET S25 OF 51
FILE NO. 22-85-00

51-004-069 5

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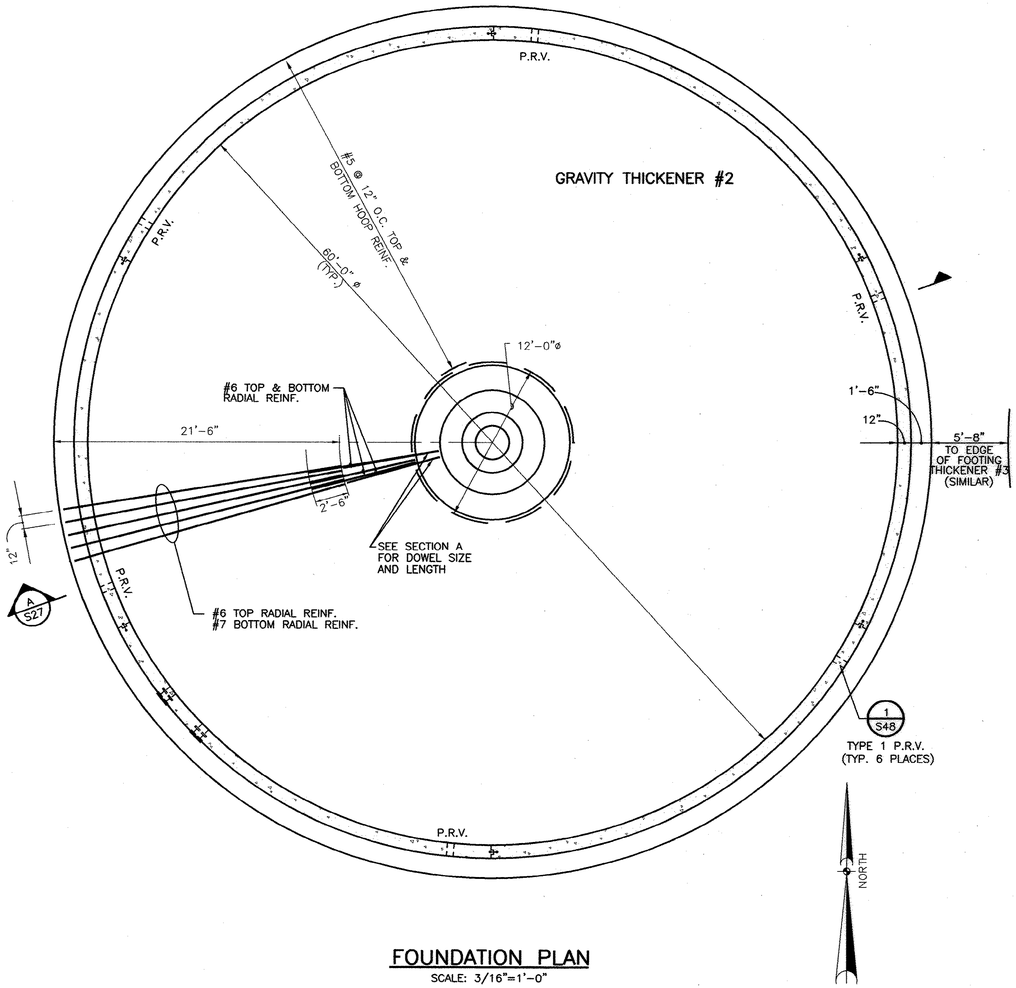
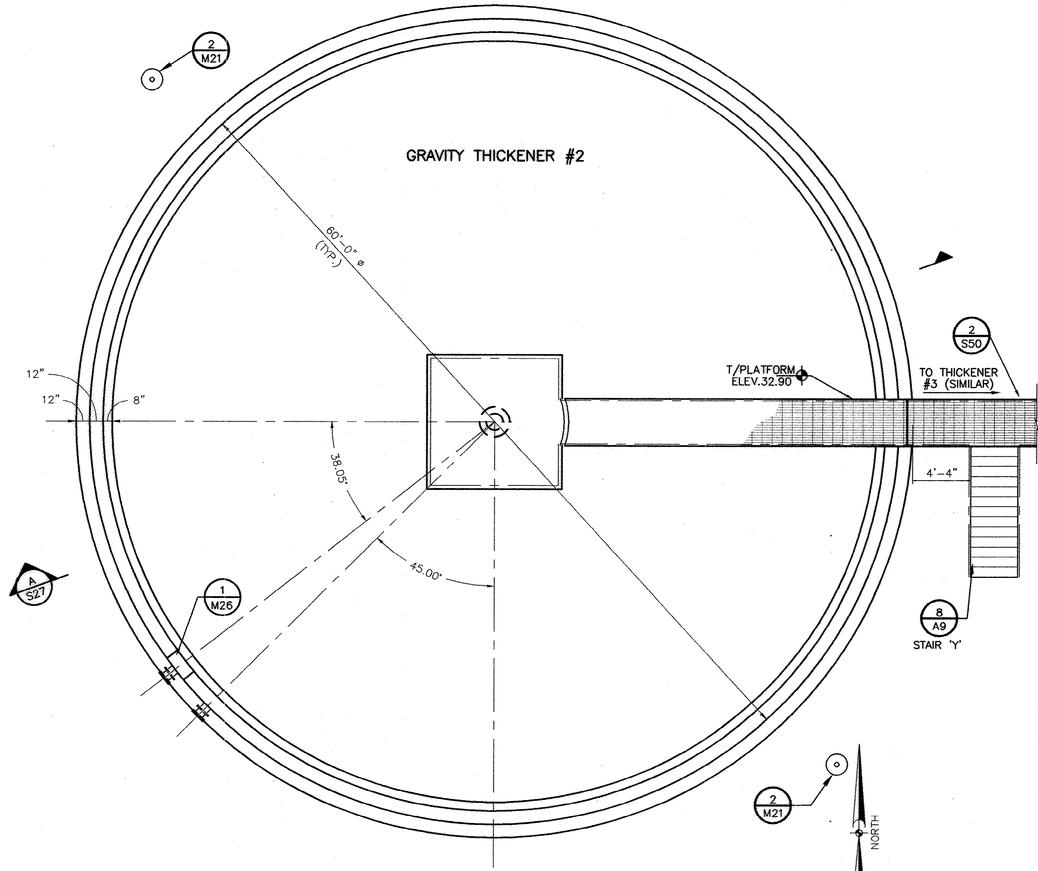


FOUNDATION PLAN

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



TOP PLAN

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

0 3 6
GRAPHIC SCALE

NOTE:
1. PLAN TYPICAL FOR GRAVITY THICKENERS #2 AND #3.

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS	
PROJECT ENG: RTH	DESIGNED BY: GTS
DRAWN BY: GS	CHECKED BY: GTS
APPROVED: JDP	

NORTH CAROLINA PROFESSIONAL ENGINEER CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. C000260
DATE

NORTH CAROLINA PROFESSIONAL ENGINEER No. 7039 GLEN T. SHEARIN
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW GRAVITY THICKENER #2 FOUNDATION & TOP PLANS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
99127SR	S26
REF.	OF
N.B. NO. 1731	51
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-070 5

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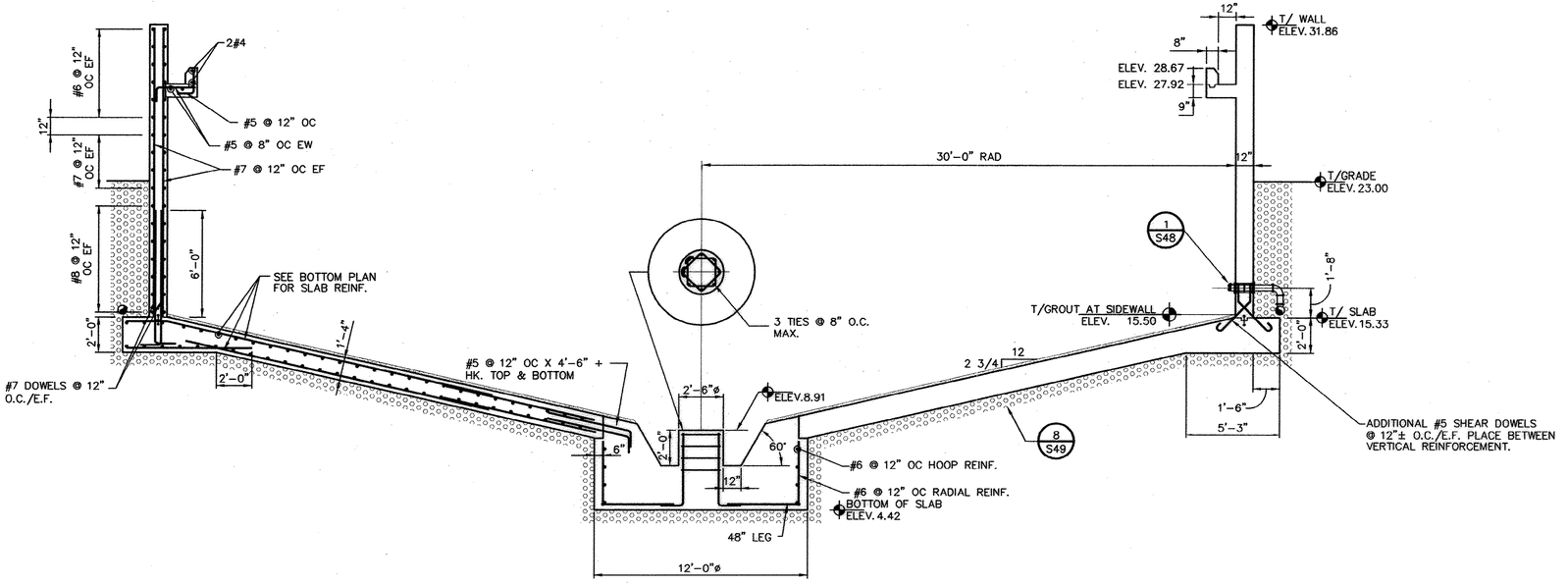


SECTION
SCALE: 1/4"=1'-0" (A S26)

0 4 8
GRAPHIC SCALE

NOTES:
1. THIS SECTION TYPICAL FOR GRAVITY THICKENERS #2 AND #3.

RECORD DRAWINGS
DATE: SEPT., 2003

N:\Projects\00149\dwg\RECORD DWG\99127SS-R0.dwg, 11/21/2003 09:55:37 AM

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS

PROJECT ENG:	DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED:
RTH	GTS	GS	GTS	JDP

SOUTH CAROLINA NOVEMBER 1, 2003 B.P. BARBER & ASSOCIATES, INC. No. 000000 CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7039 GLEN T. SHEARER — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

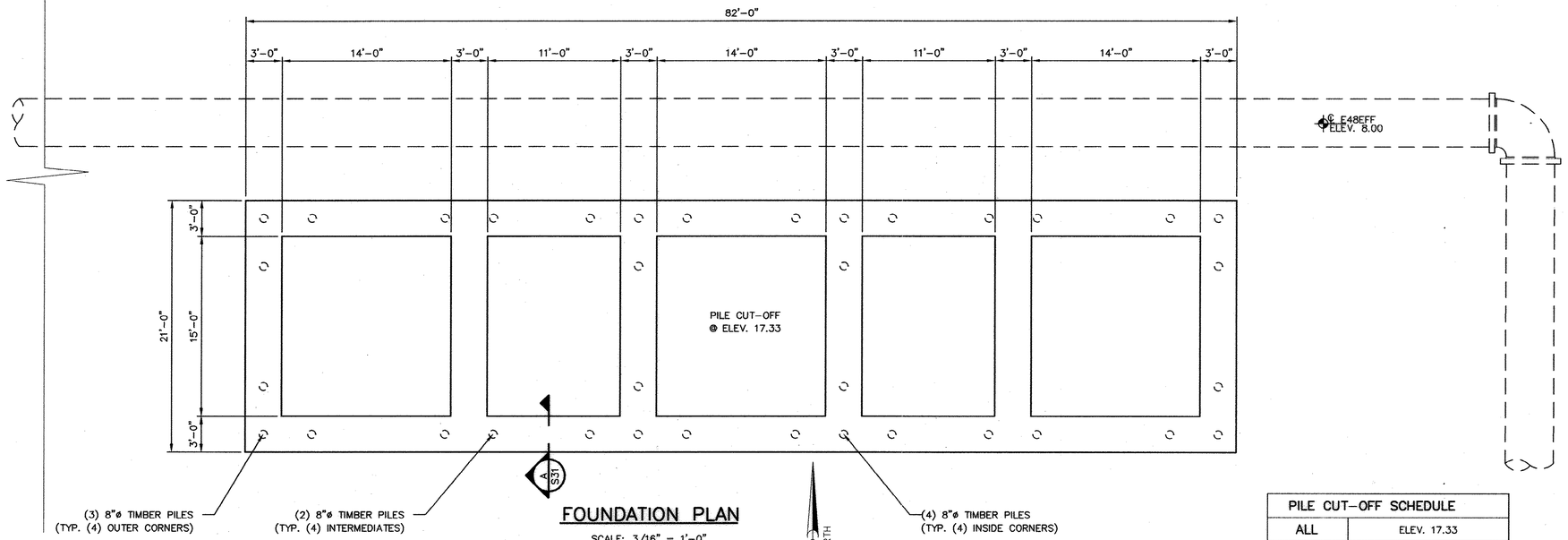
SHEET TITLE
NEW GRAVITY THICKENER #2 SECTION
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
99127SS	S27
REF.	OF
N.B. NO. 1731	51
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-071 S



FOUNDATION PLAN

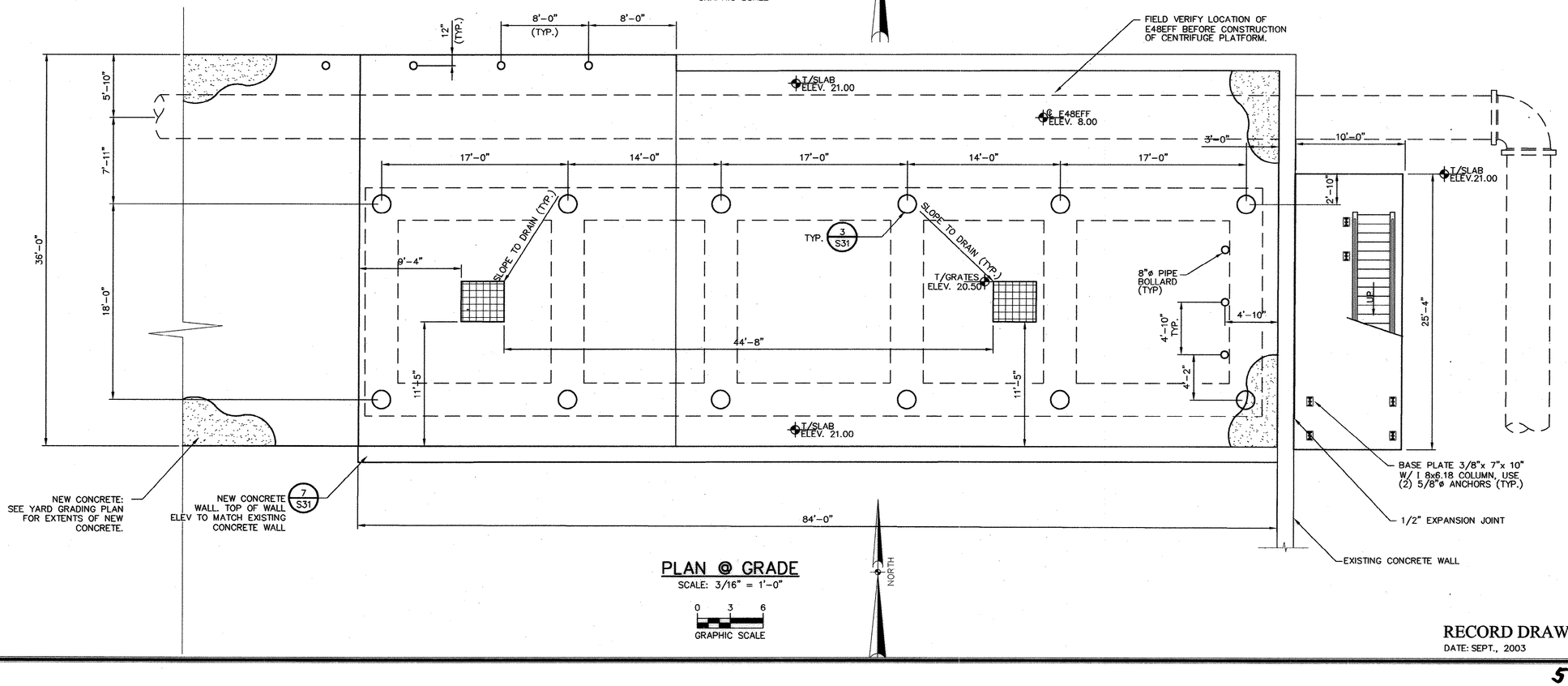
SCALE: 3/16" = 1'-0"

GRAPHIC SCALE 0 3 6

NORTH

PILE CUT-OFF SCHEDULE	
ALL	ELEV. 17.33

SEE NOTE 3 SHEET S1.



PLAN @ GRADE

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

GRAPHIC SCALE 0 3 6

NORTH

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS			
PROJECT ENG: RTH	DESIGNED BY: CHS	DRAWN BY: AB	CHECKED BY: CTS	APPROVED: JDP

SOUTH CAROLINA REGISTERED LANDSCAPE ARCHITECT
CERTIFICATE OF AUTHORIZATION
B.P. BARBER & ASSOCIATES, INC.
No. C000000
DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER
No. 7039
GLEN T. SHEALY, JR.
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW DEWATERING FACILITY
FOUNDATION & GRADE PLANS
DATE: FEB., 2001 SCALE: AS SHOWN

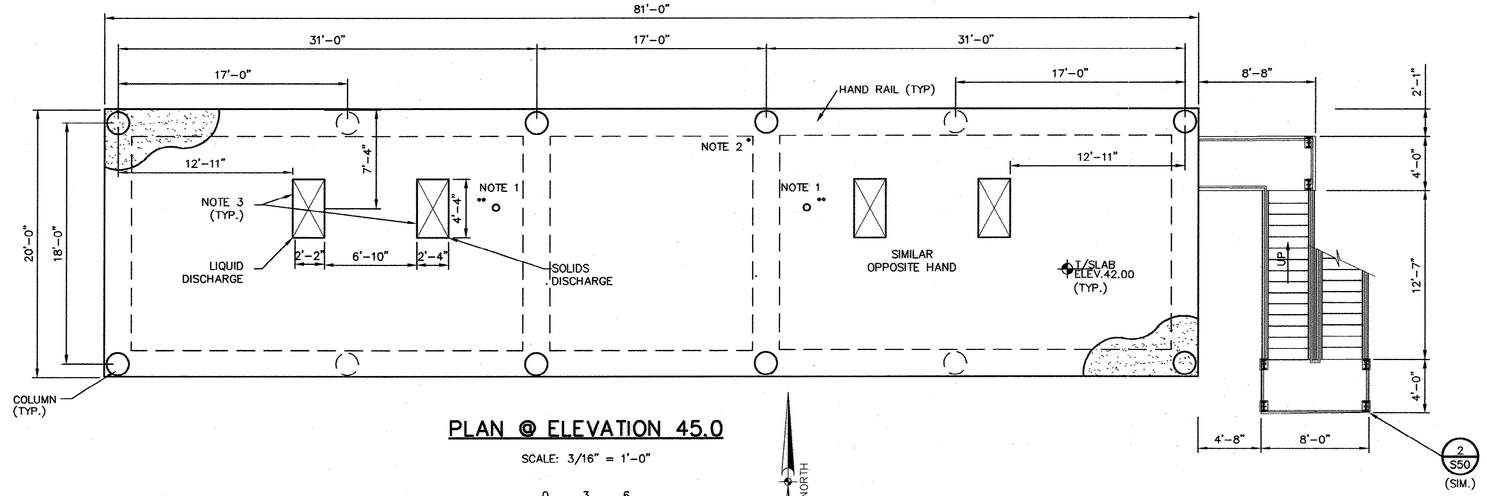
PROJECT
IMPROVEMENTS AND EXPANSION FOR THE
WATER RECLAMATION FACILITY
PHASE I

DISK	SHEET
CH149S28	S28
REF.	OF
N.B. NO. 1731	51
PROJECT NO. 00149	

FILE NO. 22-85-00

N:\Projects\00149\dwg\RECORD DWG\CH149S28-RD.dwg, 11/21/2003 10:50:14 AM

51-004-072 5

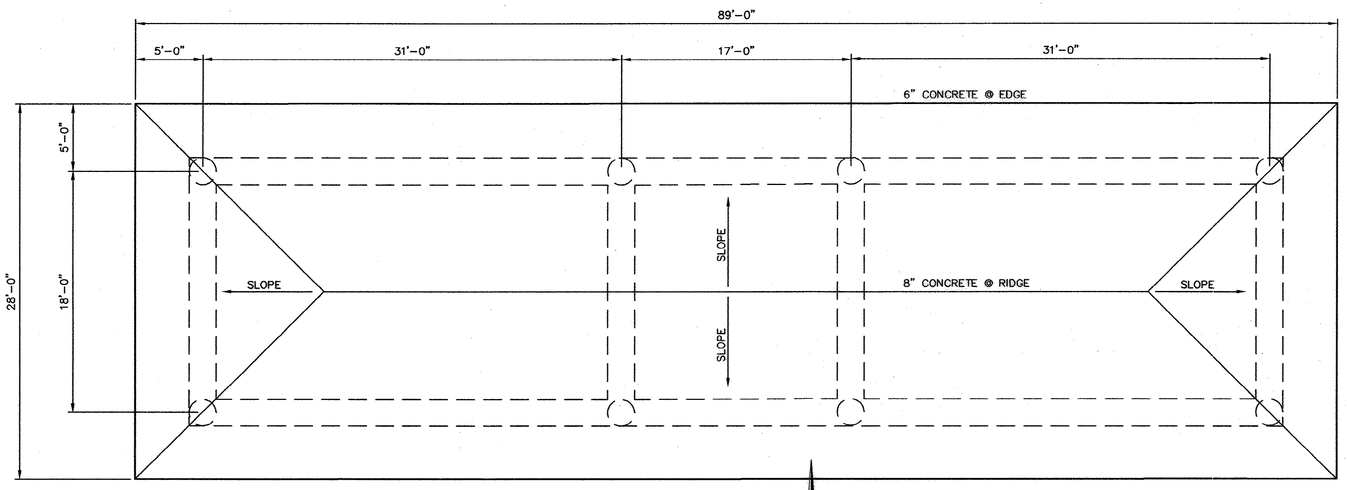


PLAN @ ELEVATION 45.0

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

0 3 6
GRAPHIC SCALE

NORTH



ROOF PLAN

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

0 3 6
GRAPHIC SCALE

NORTH

NOTES:

1. PROVIDE OPENINGS FOR N6TS, N2POS AND N2NPW. FIELD VERIFY OPENING LOCATIONS WITH SHOP DRAWINGS.
2. PROVIDE 2" OPENING FOR N3/4NPW.
3. FIELD VERIFY OPENING SIZE AND LOCATION WITH SHOP DRAWINGS.

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY:
DRAWN BY: JEB
CHECKED BY: CTS
APPROVED: JDP

SOUTH CAROLINA NOTARY PUBLIC
B.P. BARBER & ASSOCIATES, INC.
CERTIFICATE OF AUTHORITY
No. C00089
DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER
No. 7039
REGISTERED
GLEN T. SHEARER
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW DEWATERING FACILITY
INTERMADIATE FLOOR & ROOF PLANS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY
PHASE I

DISK CH149S29	SHEET S29
REF.	OF 51
N.B. NO. 1731	
PROJECT NO. 00149	
FILE NO. 22-85-00	

51-004-073 S

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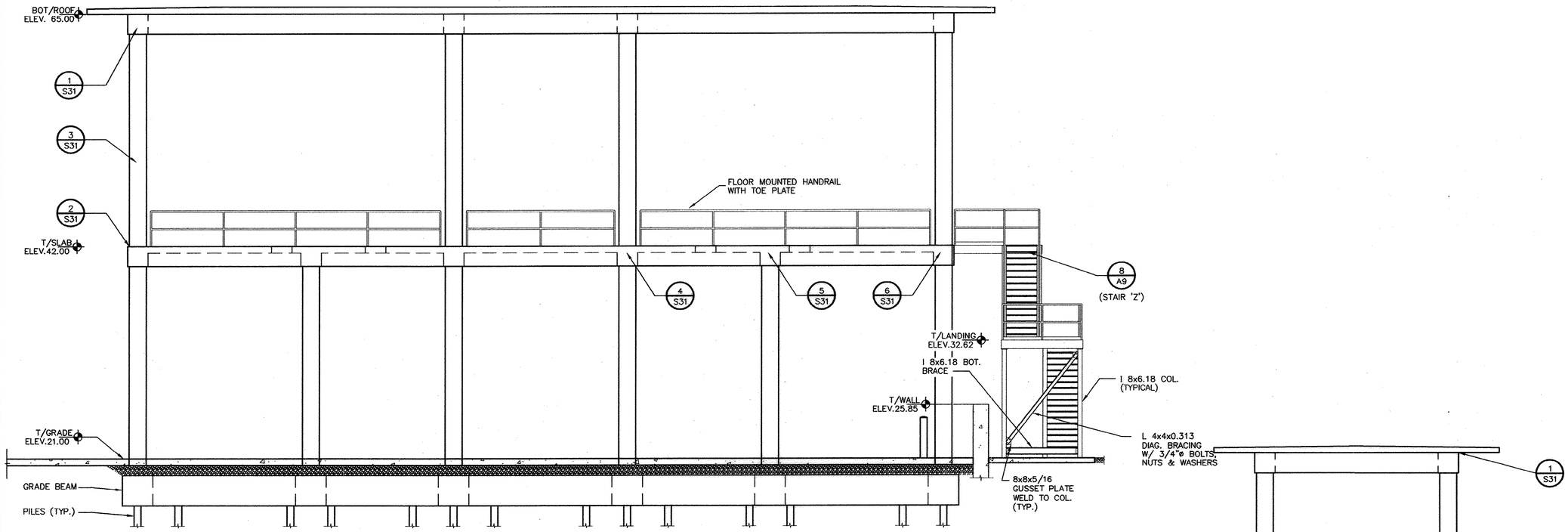
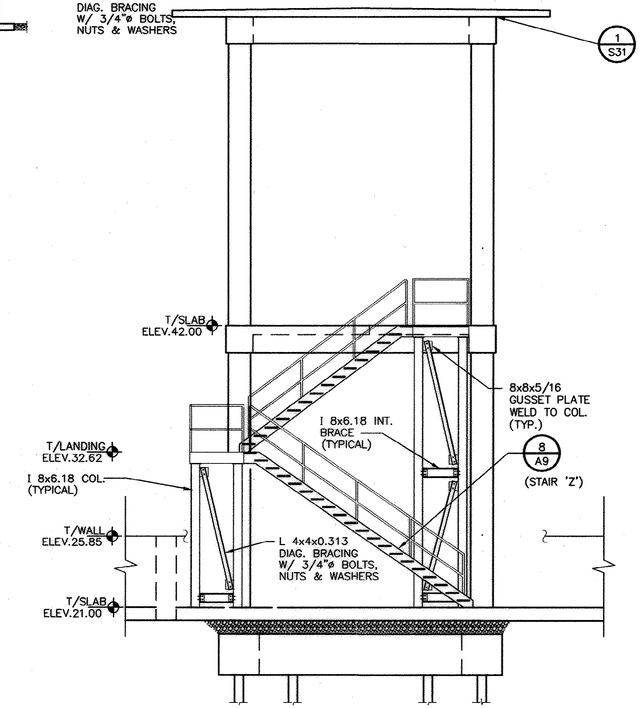


SOUTH ELEVATION

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

0 3 6
GRAPHIC SCALE



EAST ELEVATION

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

0 3 6
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: CHS
DRAWN BY: JEB
CHECKED BY: GTS
APPROVED: JDP

SOUTH CAROLINA PROFESSIONAL ENGINEER
B.P. BARBER & ASSOCIATES, INC.
CERTIFICATE OF AUTHORIZATION
No. C00260
DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER
GLEN T. SHEETS
No. 7039
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW DEWATERING FACILITY ELEVATIONS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK CH149S30
REF.
N.B. NO. 1731
PROJECT NO. 00149

SHEET S30 OF 51

FILE NO. 22-85-00

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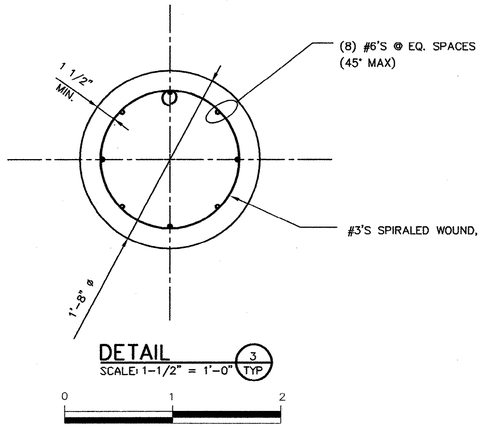
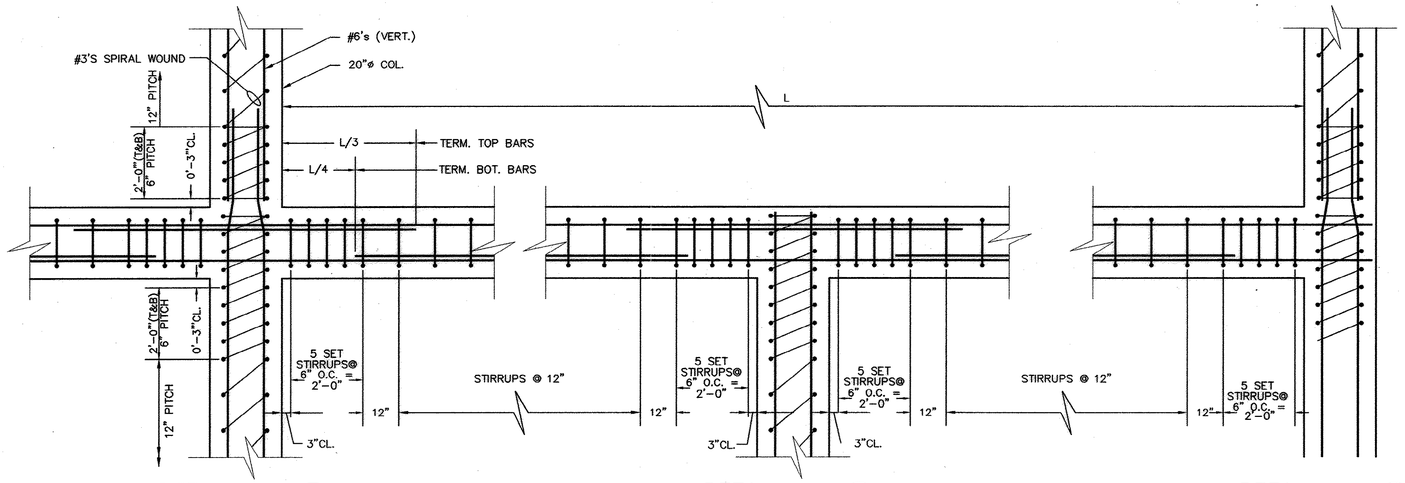
51-004-074 5



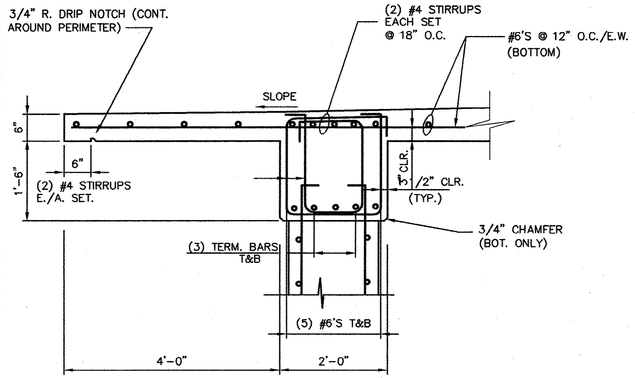
DETAIL 3 TYP
SCALE: 1-1/2" = 1'-0"



DETAIL 4 S30
SCALE: NONE

DETAIL 5 S30
SCALE: NONE

DETAIL 6 S30
SCALE: NONE



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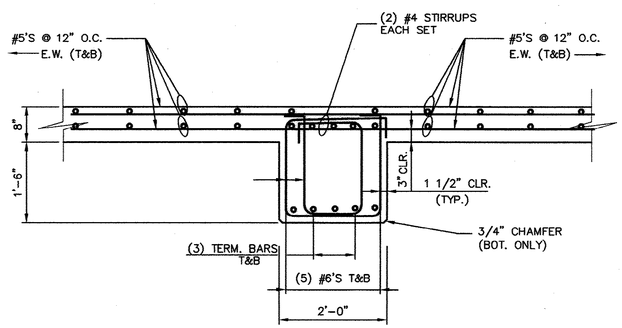
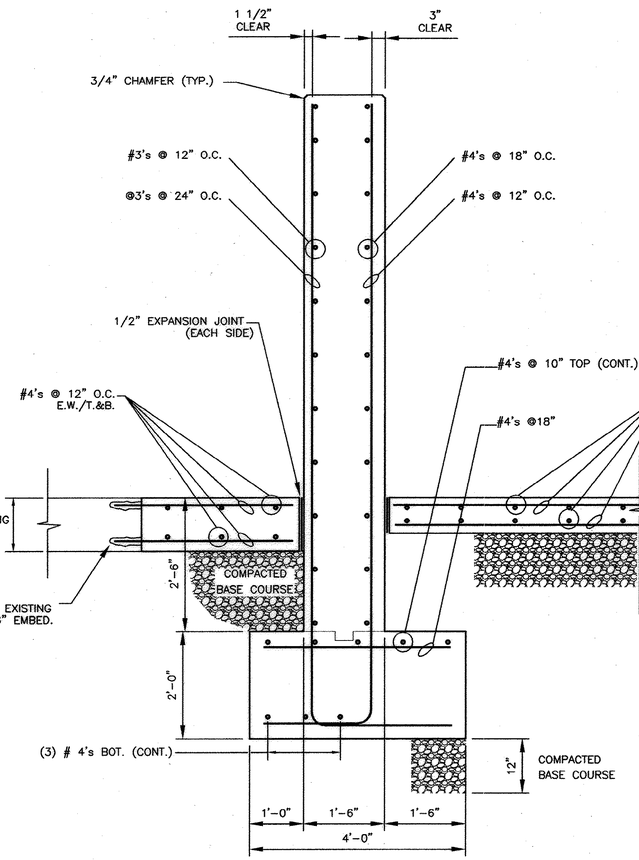
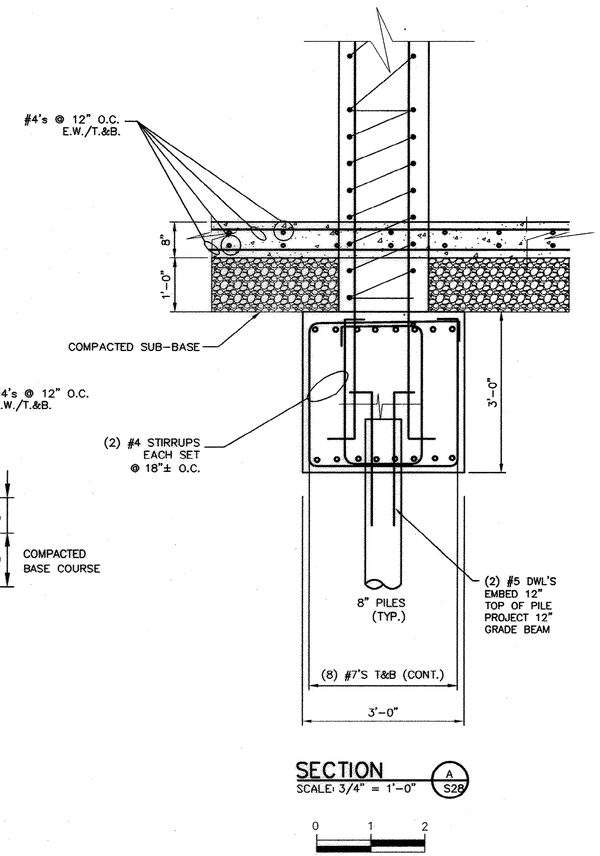


DETAIL 2 S30
SCALE: 3/4" = 1'-0"



DETAIL 7 S28
SCALE: 3/4" = 1'-0"



SECTION A S28
SCALE: 3/4" = 1'-0"

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS	
PROJECT ENG:	PTH
DESIGNED BY:	CTS
DRAWN BY:	JEB
CHECKED BY:	GTS
APPROVED:	JDP

SOUTH CAROLINA ENGINEERING CERTIFICATE OF AUTHORIZATION
B. P. BARBER & ASSOCIATES, INC.
No. C00000
DATE

NORTH CAROLINA PROFESSIONAL ENGINEER
No. 7008
GLEN T. SHEALY
REGISTERED
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW DEWATERING FACILITY STRUCTURAL DETAILS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
CH149S31	S31
REF.	OF
N.B. NO. 1731	51
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-075 S

N:\Projects\00149\dwg\RECORD DWG\CH149S31-R0.dwg, 11/21/2003 10:31:10 AM

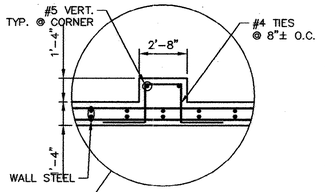
PILE CUT-OFF SCHEDULE	
①	ELEVATION 27.51
②	ELEVATION 27.33
③	ELEVATION 27.15
④	ELEVATION 27.11
⑤	ELEVATION 24.50
⑥	ELEVATION 19.50

* SEE NOTE 3 SHEET S1

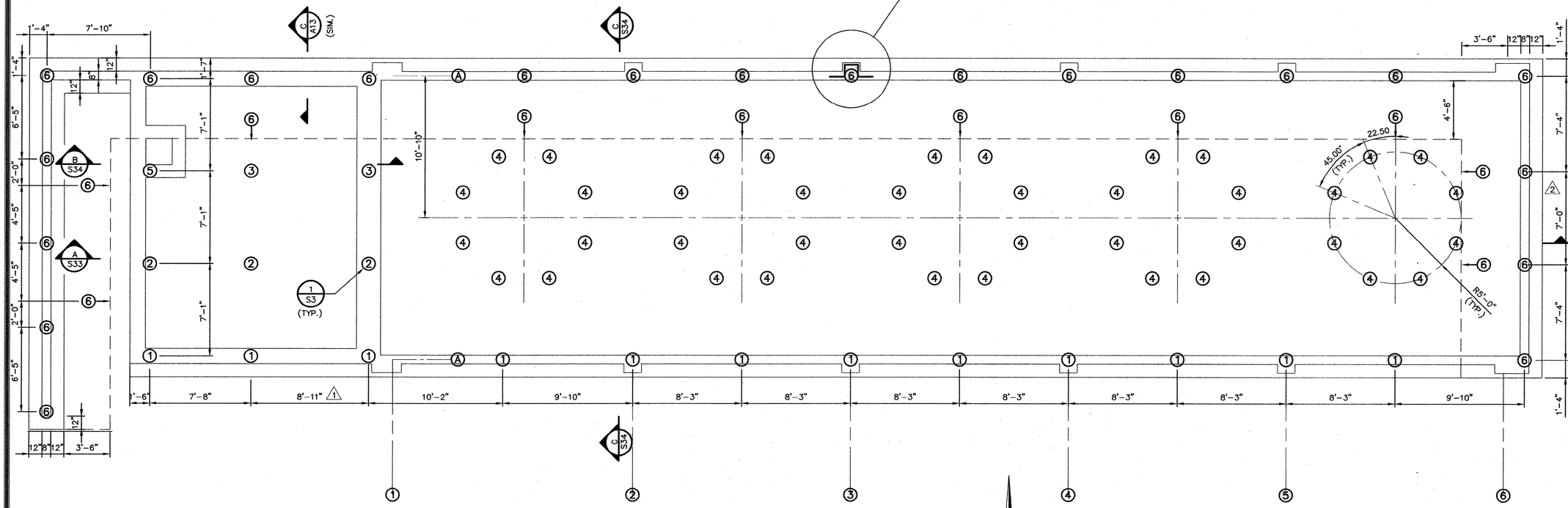
LEGEND

⑥ PILE NUMBER

⑥ BATTER PILE



TYP. PIER
SCALE: NONE



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

NORTH

0 4 8
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	FNDN DIM	8/01	MWS
2	FNDN DIM	8/01	AMR

APPROVALS	
PROJECT ENG:	RTH
DESIGNED BY:	JRC
DRAWN BY:	JRC
CHECKED BY:	GTS
APPROVED:	JDP

NORTH CAROLINA BOARD OF EXAMINERS FOR ENGINEERS AND SURVEYORS CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. C0350 — DATE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL No. 7038 GLEN T. SHEPHERD — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: CHLORINATION FACILITY FOUNDATION PLAN

DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	00149SBG
REF.	
N.B. NO.	1731
PROJECT NO.	00149
SHEET	S32
OF	51

FILE NO. 22-85-00

51-004-076 5

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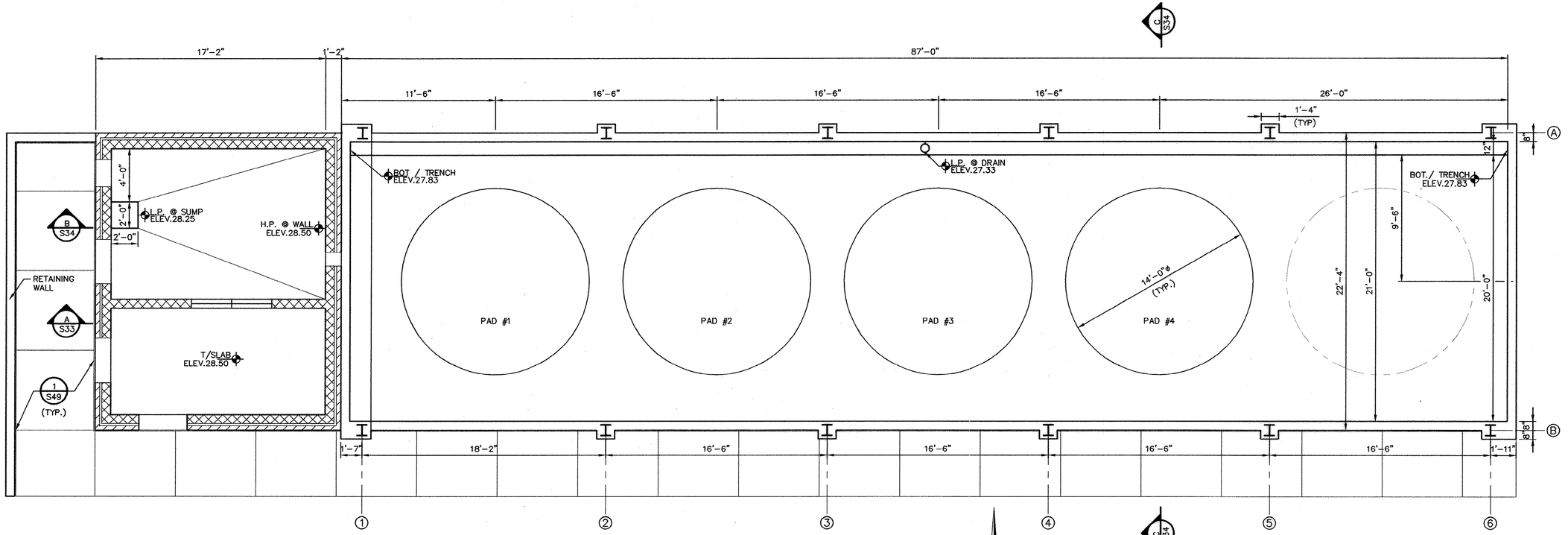
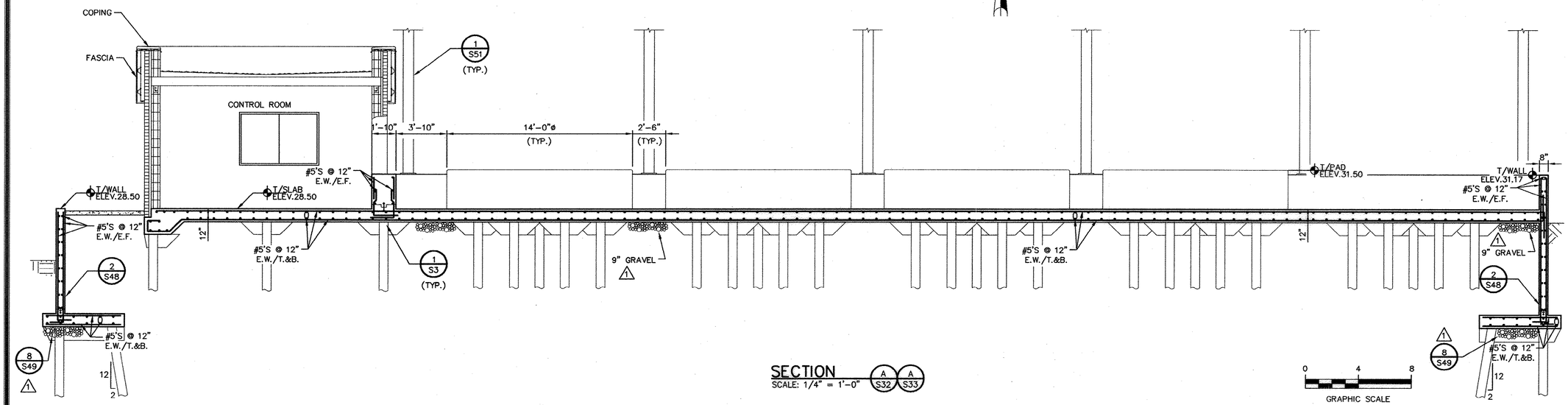


PLAN @ ELEVATION 39.50

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



SECTION

SCALE: 1/4" = 1'-0" A S32 / A S33

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	CHANGE PER ADDENDUM #4	3-1	AR

APPROVALS	
PROJECT ENG: RTH	DATE
DESIGNED BY: JRC	
DRAWN BY: JRC	
CHECKED BY: GTS	
APPROVED: JDP	

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER — R. T. SHEAR, No. 7039 — SIGNATURE

SOUTH CAROLINA — CERTIFICATE OF AUTHORIZATION — B. P. BARBER, INC. — REGISTERED No. C000030 — DATE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW CHLORINATION FACILITY PLAN & SECTION
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149SBE	S33
REF.	OF
N.B. NO. 1731	51
PROJECT NO. 00149	

FILE NO. 22-85-00

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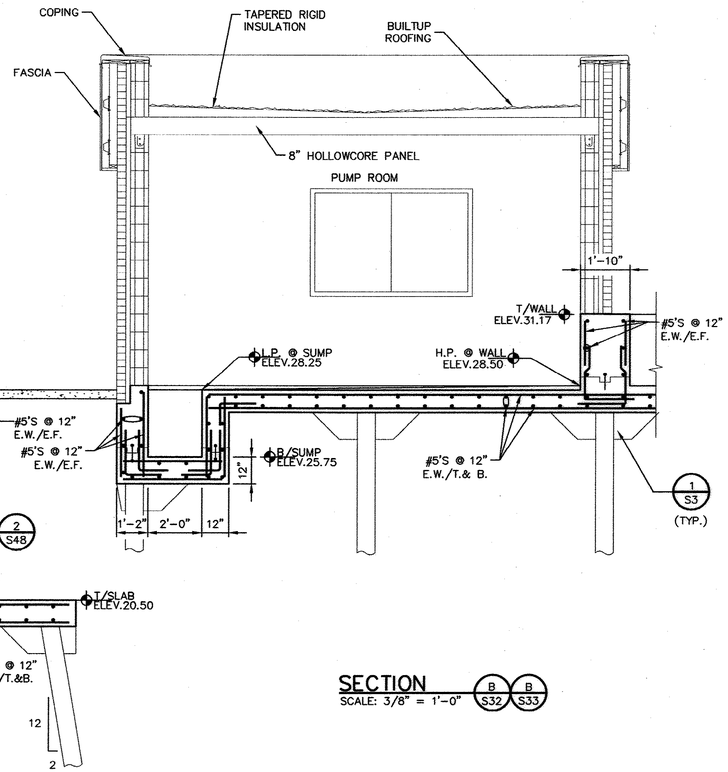
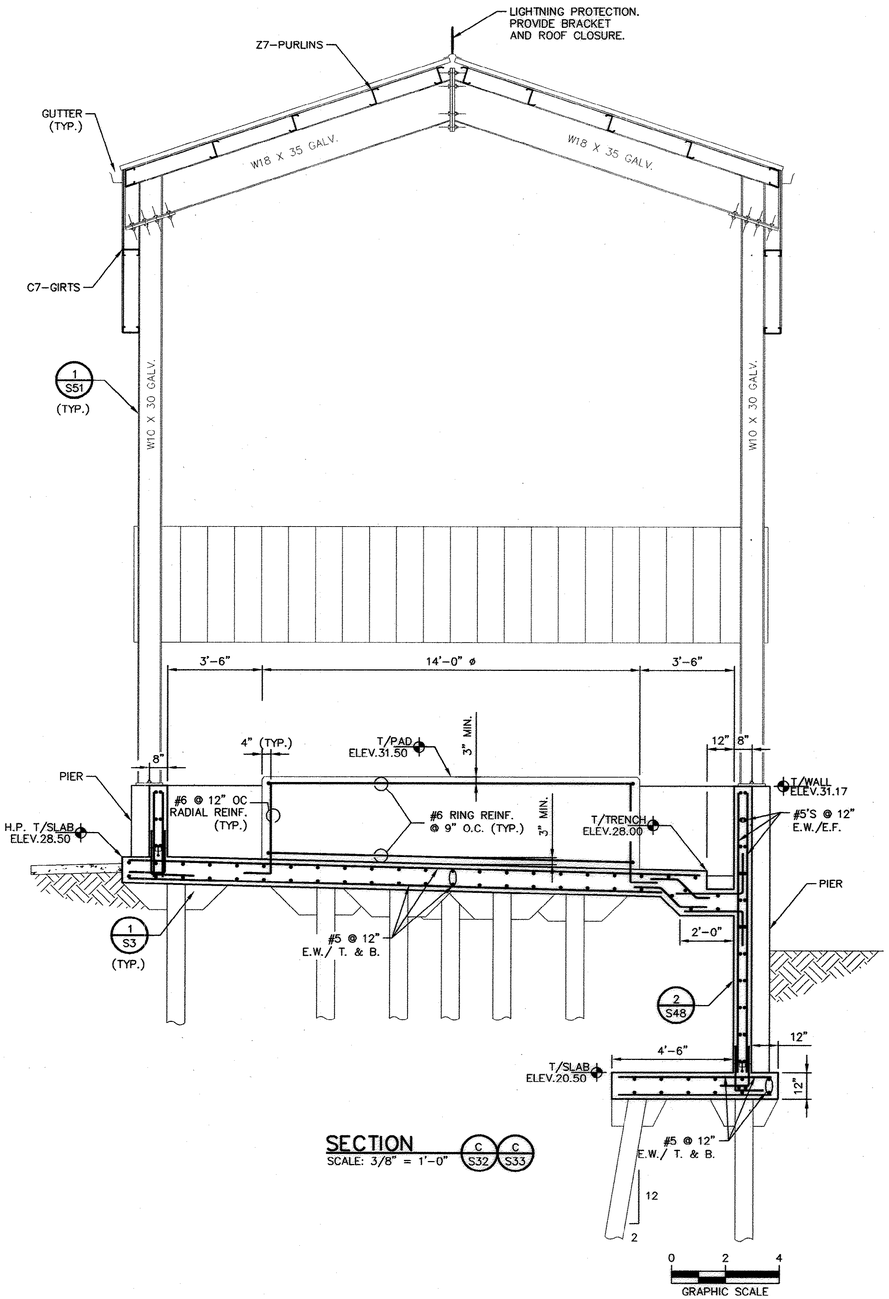
51-004-077 5



SECTION B B
SCALE: 3/8" = 1'-0" S32 S33



SECTION C C
SCALE: 3/8" = 1'-0" S32 S33

RECORD DRAWINGS
DATE: SEPT., 2003

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REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS

PROJECT ENG.	DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED:
RTH	JRC	JRC	GTS	JDP

SOUTH CAROLINA REGISTERED LANDSCAPE ARCHITECT G.P. BARBER No. 000000 CERTIFICATE OF AUTHORIZATION DATE

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 7033 GLEN T. SHEEK SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS - PLANNERS - SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

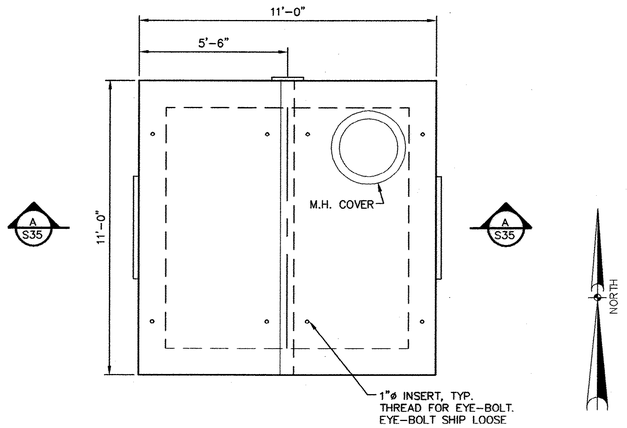
SHEET TITLE
NEW CHLORINATION FACILITY SECTIONS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

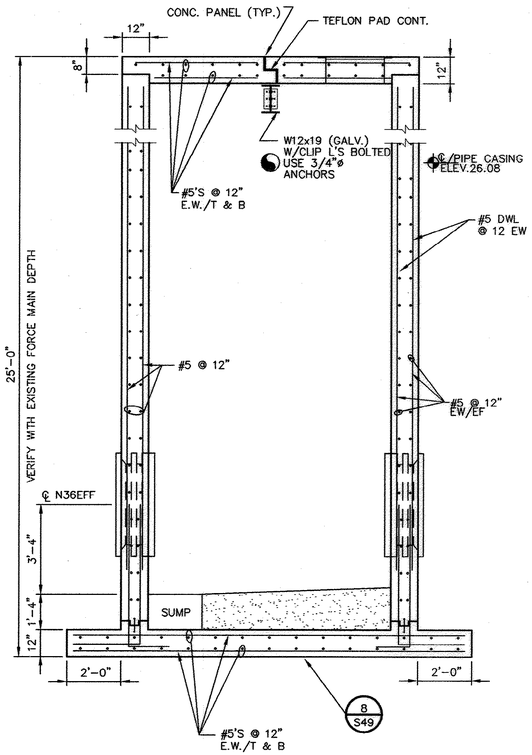
DISK	SHEET
00149SBF	S34
REF.	OF
N.B. NO. 1731	51
PROJECT NO. 00149	

FILE NO. 22-85-00

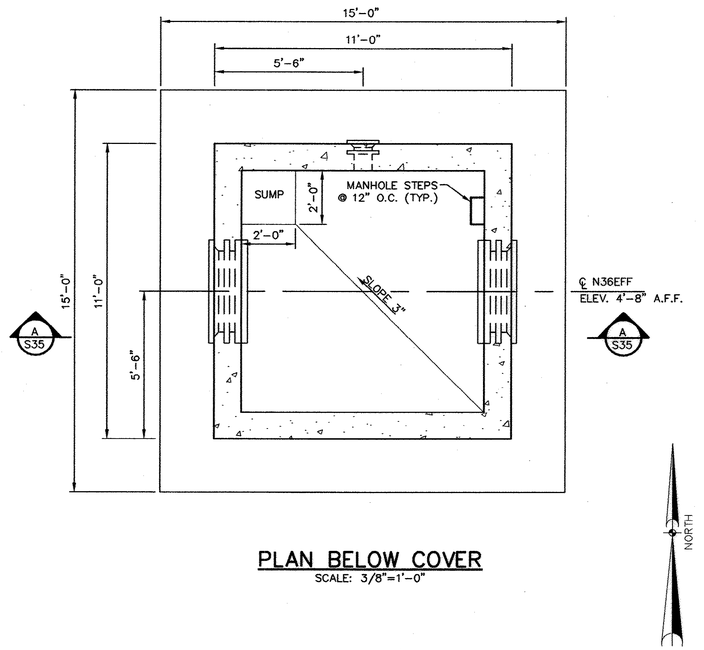
51-004-078 5



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



SECTION
SCALE: 3/8" = 1'-0"
A S35



PLAN BELOW COVER
SCALE: 3/8"=1'-0"

0 2 4
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS	
PROJECT ENG:	RTH
DESIGNED BY:	MAB
DRAWN BY:	JRC
CHECKED BY:	GTS
APPROVED:	JDP

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL B.P. BARBER & ASSOCIATES, INC. No. 7633 REGISTERED
CERTIFICATE OF AUTHORIZATION
DATE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL No. 7633 REGISTERED GLEN T. SWEARINGEN
SIGNATURE

bpb
B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW CHLORINE INJECTION POINT VAULT PLANS AND SECTION
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	00149SBC
REF.	
N.B. NO.	1731
PROJECT NO.	00149
SHEET	S35
OF	51

FILE NO. 22-85-00

51-004-079 5

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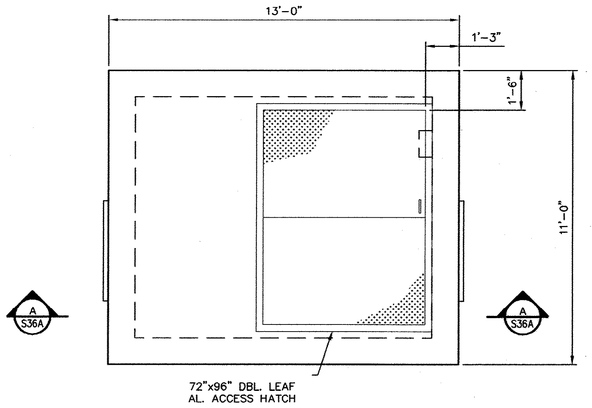
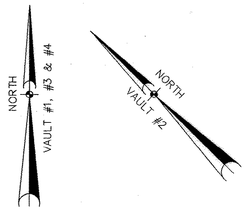
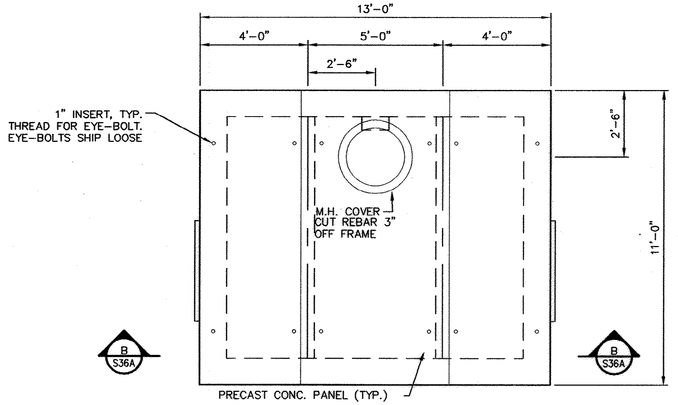
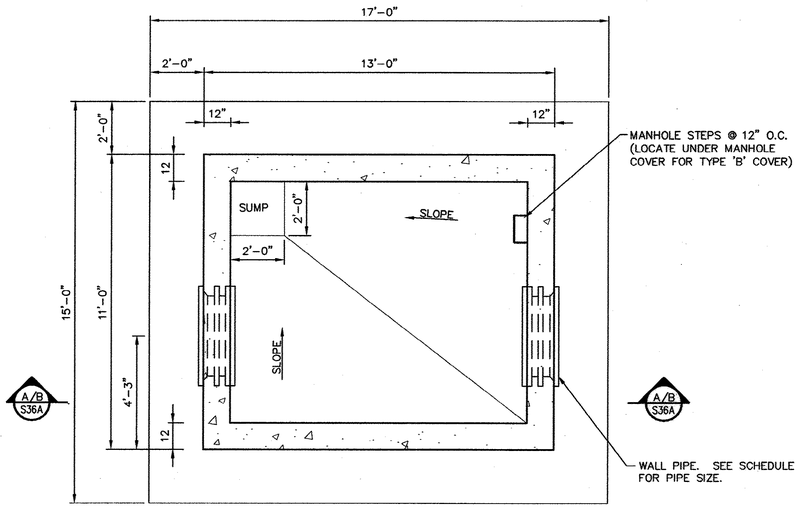


TYPE 'A' COVER
TOP PLAN
SCALE: 3/8"=1'-0"

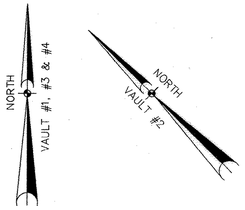




TYPE 'B' COVER
TOP PLAN
SCALE: 3/8"=1'-0"

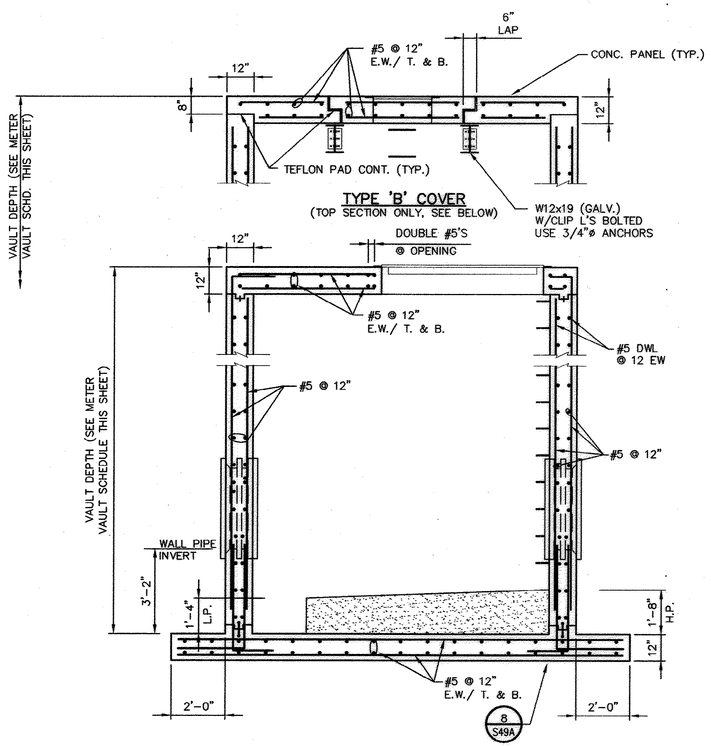


PLAN BELOW COVER
SCALE: 3/8"=1'-0"



METER VAULT SCHEDULE					
	VAULT NO.	LOCATION	VAULT DEPTH	LINE SIZE & INVERT	VAULT COVER TYPE
NOTES 1 & 2	1	RETURN SLUDGE PS	13'-8"	30" I.E.=11.00	A
NOTE 1	2	CLARIFIER NO. 5	24'-1"	36" I.E.=1.08	A
NOTE 1	3	CHLORINATION FACILITY	25'-2"	36" I.E.=11.00	B
NOTE 1	4	DECHLORINATION FACILITY	12'-7"	36" I.E.=11.83	A

NOTES: 1. VERIFY VAULT DEPTH WITH PIPING INVERTS.
2. PIPING FOR 30" NOT SHOWN, 36" SHOWN.



0 2 4
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	ALTERNATE NO. 1	2-01	RTH

APPROVALS							
PROJECT ENG: RTH	DESIGNED BY: MAB	DRAWN BY: JRC	CHECKED BY: GTS	APPROVED: JDP			

SOUTH CAROLINA NOTIFICATION
CERTIFICATE OF AUTHORIZATION
B.P. BARBER & ASSOCIATES, INC.
No. C000350
DATE

SOUTH CAROLINA
PROFESSIONAL ENGINEER
No. 7039
GLEN T. SWEEP
REGISTERED
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS - PLANNERS - SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW METER VAULT PLANS, SECTION AND SCHEDULE (ALTERNATE)
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149SCD	S36A
REF.	OF
N.B. NO. 1731	51
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-080

5

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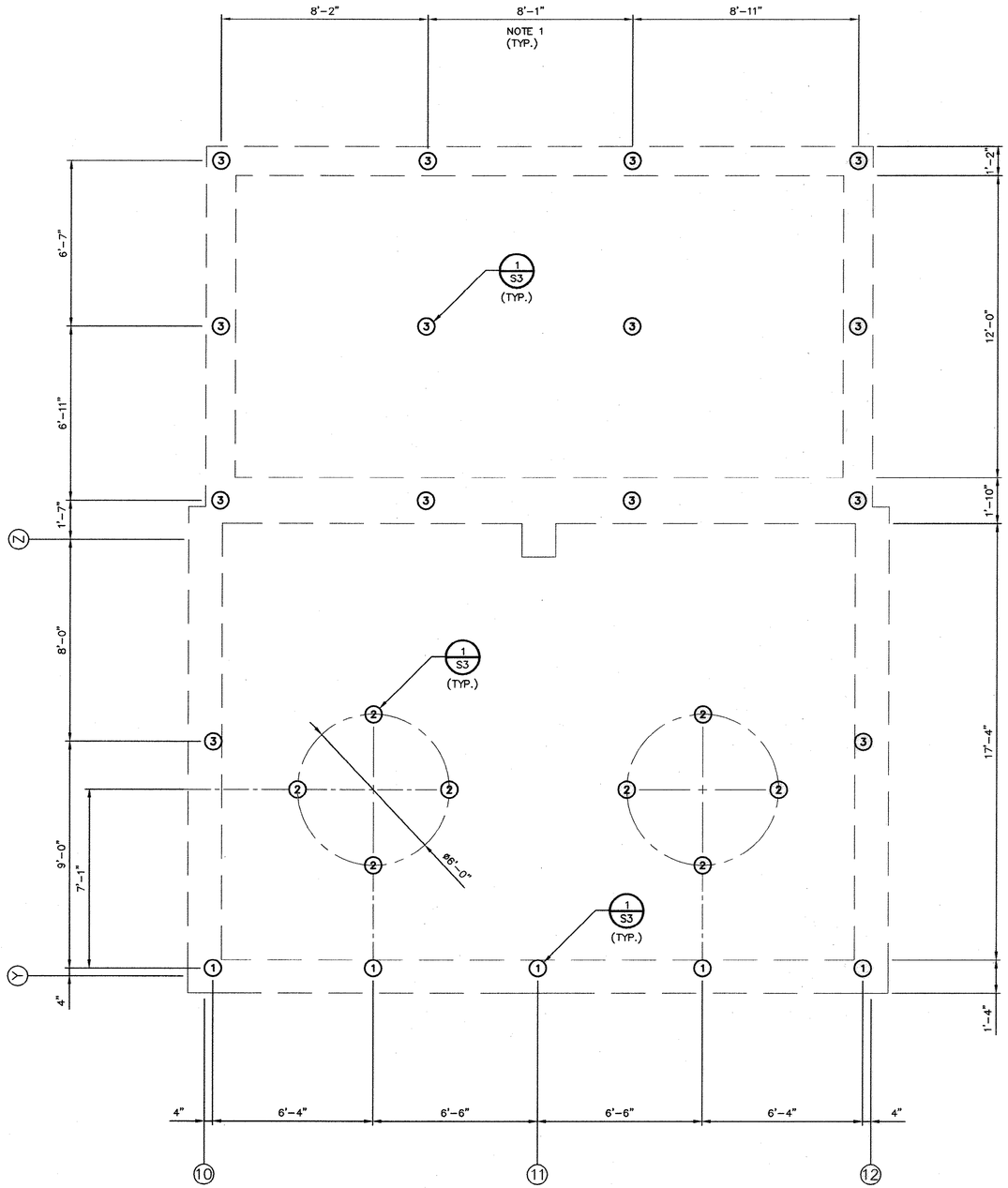

FOUNDATION PLAN

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

0 2 4

GRAPHIC SCALE

PILE CUT-OFF SCHEDULE	
①	ELEVATION 20.83
②	ELEVATION 21.33
③	ELEVATION 22.50

NOTE:

1. SEE NOTE 3 SHEET S1.

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: PTH
DESIGNED BY: DEP
DRAWN BY: JRC
CHECKED BY: GTS
APPROVED: JDP

SOUTH CAROLINA BOARD OF ARCHITECTURAL EXAMINERS
B. P. BARBER & ASSOCIATES, INC.
No. 000000
CERTIFICATE OF AUTHORIZATION
DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER
No. 7030
REGISTERED
GLEN T. SHEPP
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW DECHLORINATION FACILITY FOUNDATION PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149SBL
REF.
N.B. NO. 1731
PROJECT NO. 00149
SHEET S37 OF 51
FILE NO. 22-85-00

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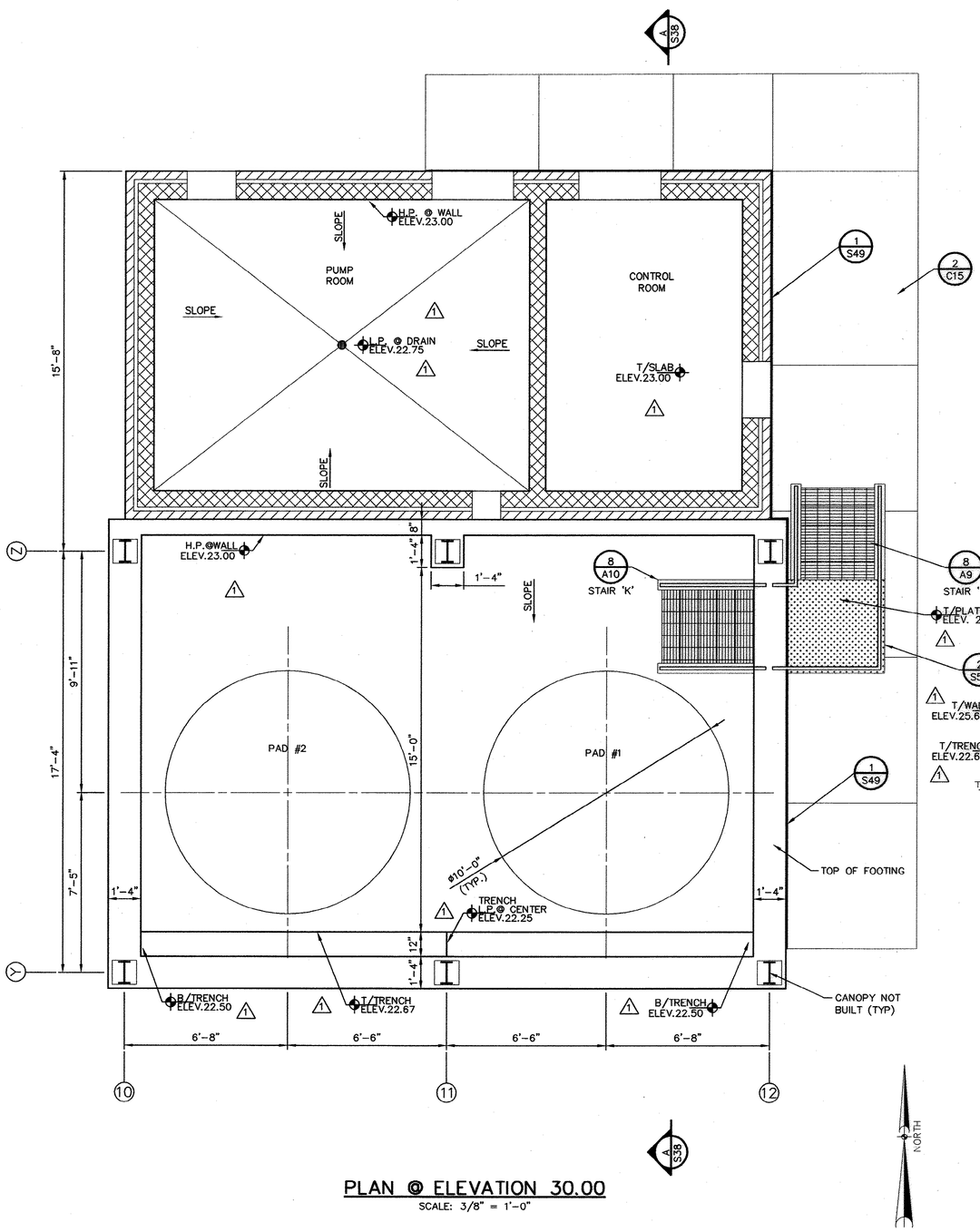
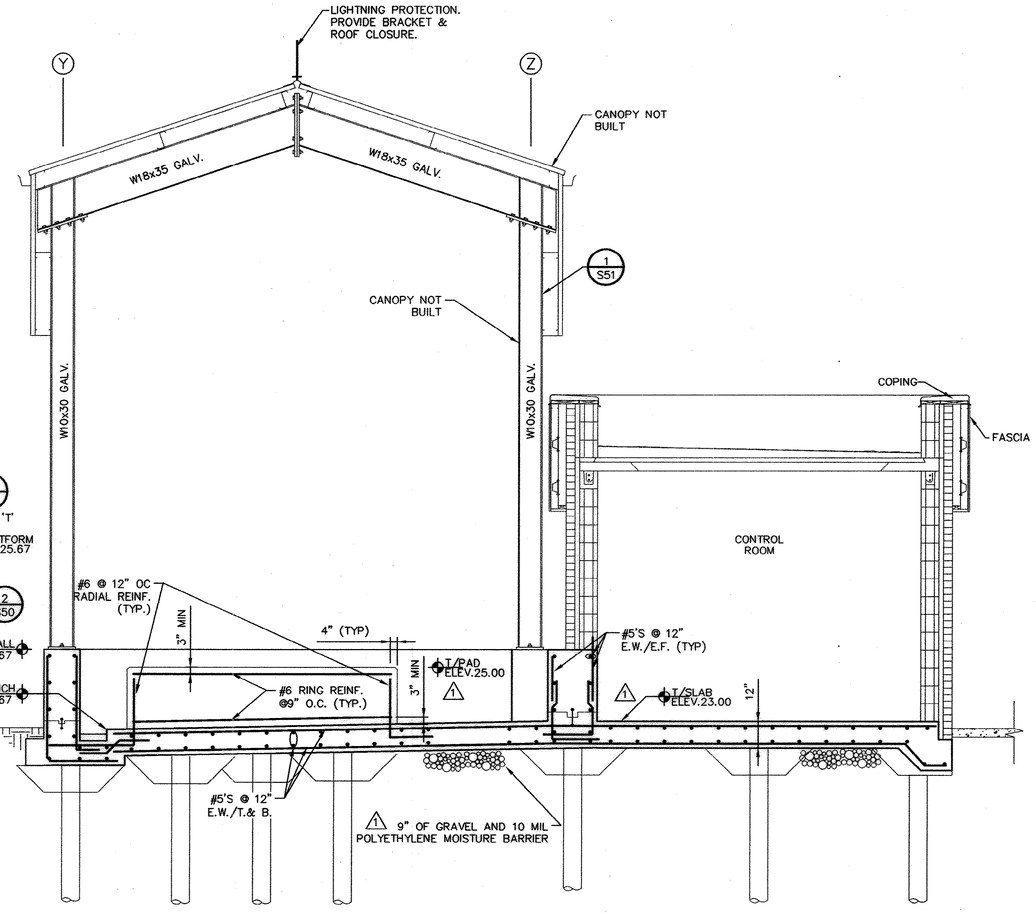
51-004-081 5



PLAN @ ELEVATION 30.00

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



SECTION

SCALE: 3/8" = 1'-0" (A S38)

0 2 4

GRAPHIC SCALE

RECORD DRAWINGS

DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	CHANGE PER ADDENDUM #4	3-1	AR

APPROVALS

PROJECT ENG. RTH | DESIGNED BY: DEP | DRAWN BY: MR | CHECKED BY: CTS | APPROVED: JDP

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER — Ralph Thomas Hayden, Jr. No. 000000 — CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER — No. 7439 — GLEN T. SHEPP — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW DECHLORINATION FACILITY PLAN & SECTION

DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149SBIA | REF. | N.B. NO. 1731 | PROJECT NO. 00149

SHEET S38 OF 51

FILE NO. 22-85-00

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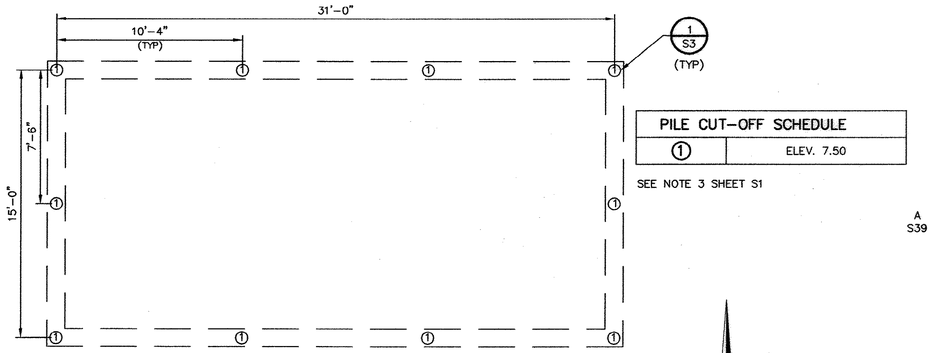
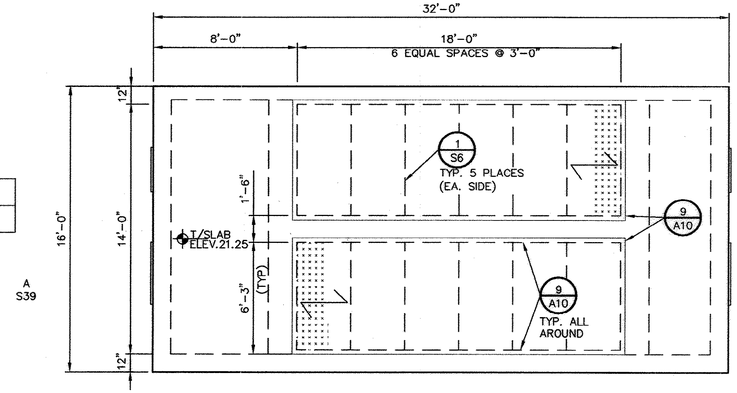
51-004-082 5



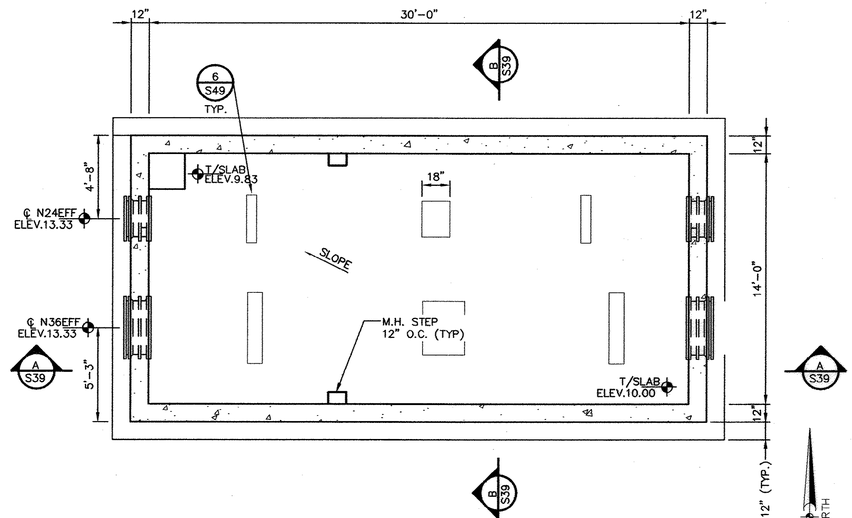
PILE CUT-OFF SCHEDULE	
1	ELEV. 7.50

SEE NOTE 3 SHEET S1

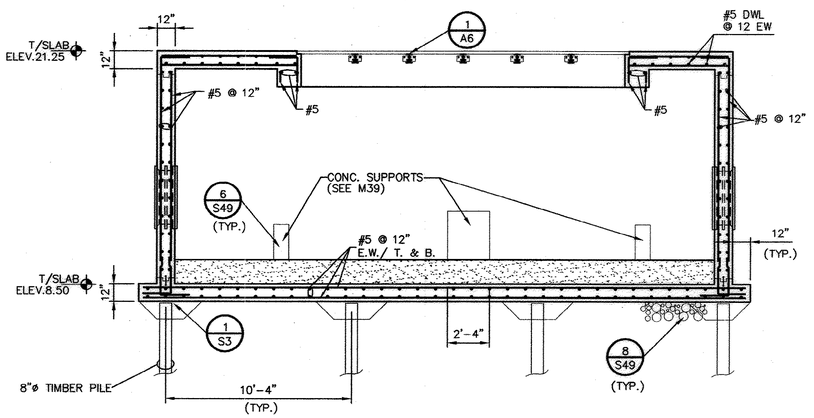
FOUNDATION PLAN
SCALE: 1/4" = 1'-0"



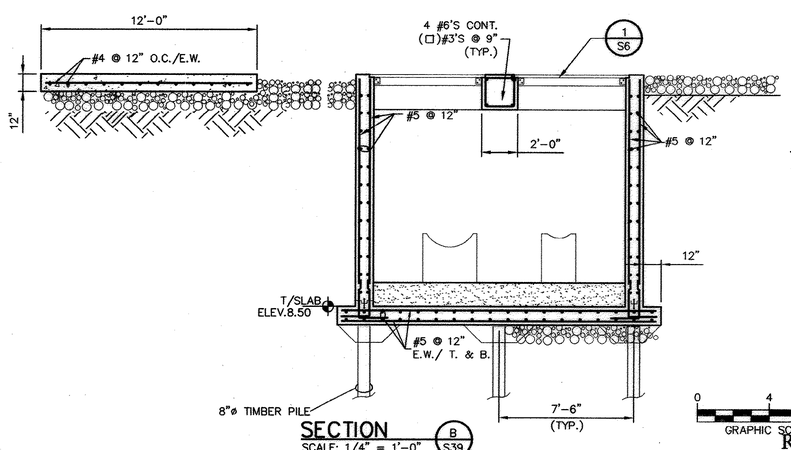
TOP PLAN
SCALE: 1/4" = 1'-0"



PLAN @ ELEV. 18.00
SCALE: 1/4" = 1'-0"



SECTION
SCALE: 1/4" = 1'-0"
A S39



SECTION
SCALE: 1/4" = 1'-0"
B S39

NORTH

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS		
PROJECT ENG:	JDP	
DESIGNED BY:	MAB	
DRAWN BY:	ZES	
CHECKED BY:	GTS	
APPROVED:	JDP	

SOUTH CAROLINA PROFESSIONAL ENGINEER — B. P. BARBER & ASSOCIATES, INC. — No. C000350 — CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER — No. 7039 — REGISTERED — J. T. SHEALY — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW POST AERATION VAULT PLANS & SECTION

DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149SBP	S39
REF.	OF
N.B. NO. 1731	51
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-083 5

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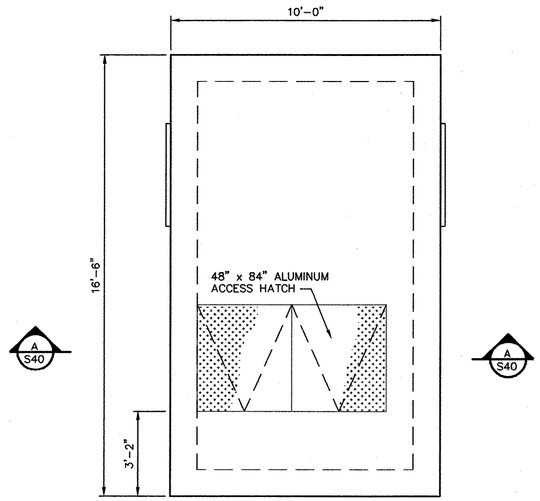
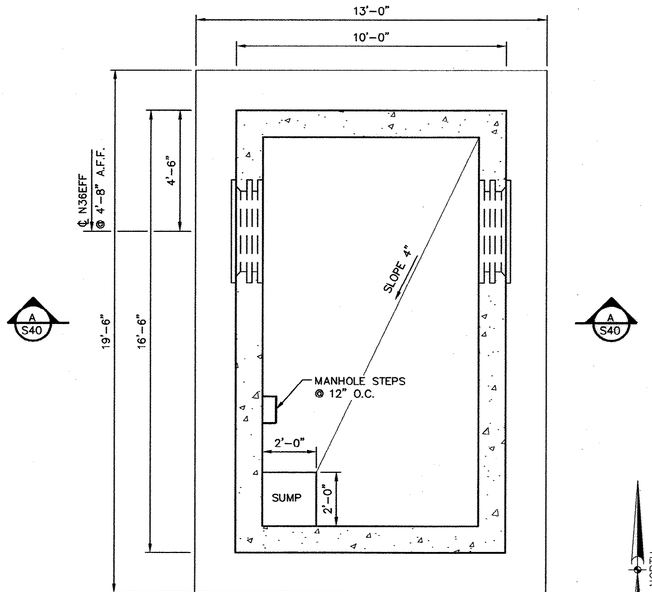
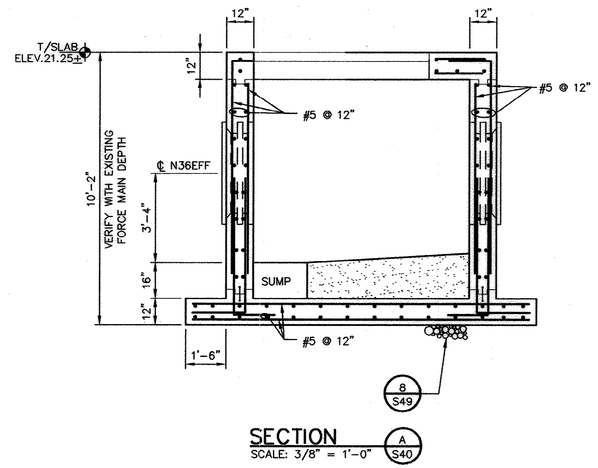


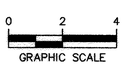
TOP PLAN
SCALE: 3/8" = 1'0"



PLAN @ ELEV. 19.00
SCALE: 3/8" = 1'0"



SECTION
SCALE: 3/8" = 1'-0" A S40



RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: MAB
DRAWN BY: ZES
CHECKED BY: CS
APPROVED: JDP

N. CAROLINA PROFESSIONAL ENGINEER SEAL No. 7039 GLEN T. SHEARIN
SIGNATURE

N. CAROLINA REGISTERED LANDSCAPE ARCHITECT SEAL No. 000260 B.P. BARBER & ASSOCIATES, INC.
DATE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW SODIUM BISULFITE INJECTION VAULT PLANS & SECTION
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149SBQ	SHEET S40
REF.	OF 51
N.B. NO. 1731	
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-084 S

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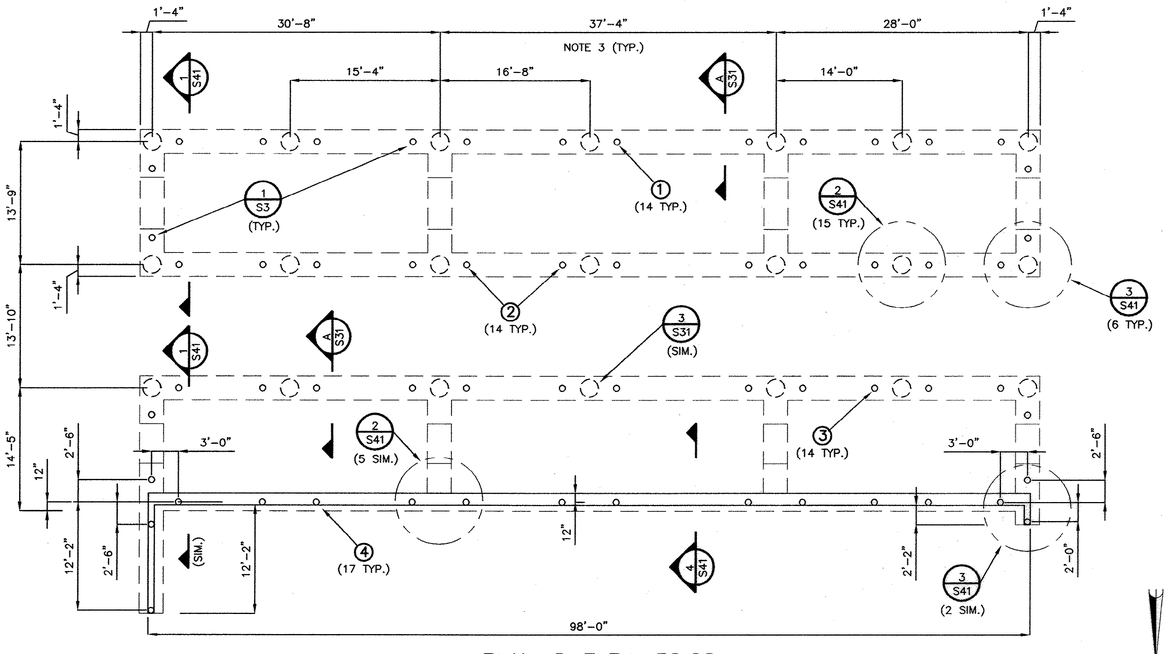
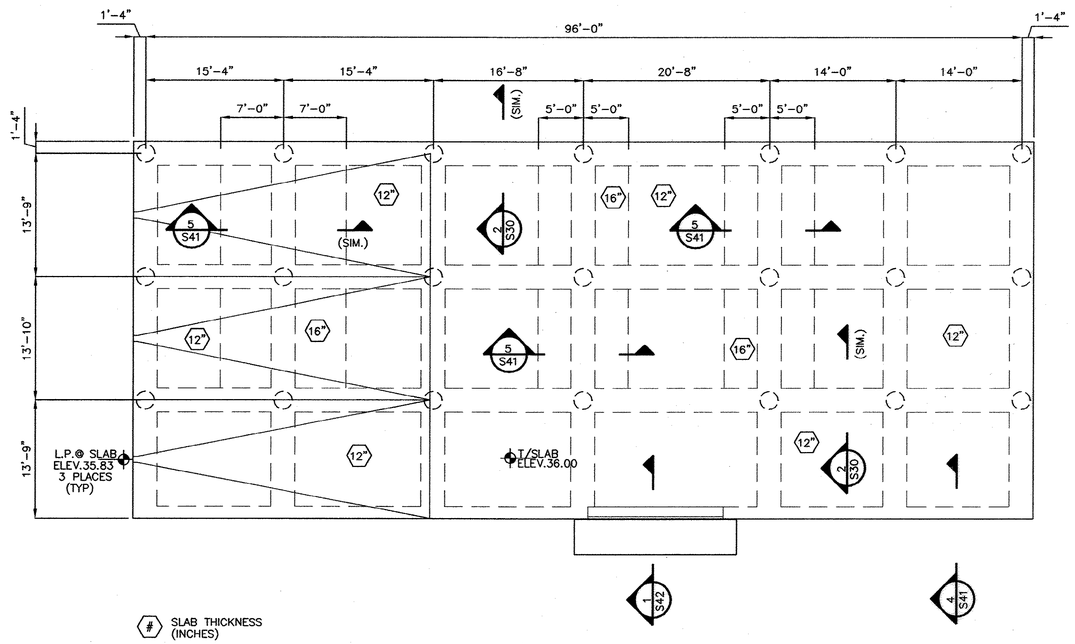


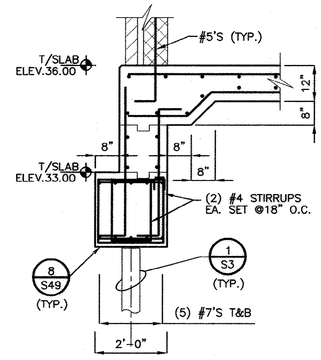
PLAN @ ELEV. 30.00

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



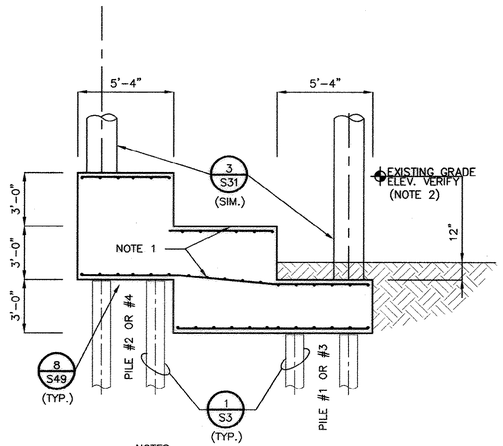
PLAN @ ELEV. 36.00

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



DETAIL

SCALE: NONE



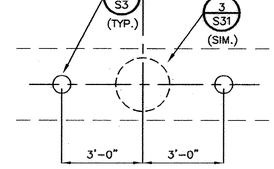
NOTES:

1. SEE SECTION 'A' SHEET S31, FOR DIMENSIONS (WIDTH & DEPTH) & REINFORCING.
2. SET TOP OF SLAB 12" BELOW EXISTING GRADE.
3. PROVIDE 9" GRAVEL AND 10 MIL POLYETHYLENE MOISTURE BARRIER BENEATH FLOOR SLAB.

DETAIL

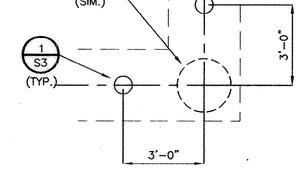
SCALE: NONE

(2 REQUIRED)



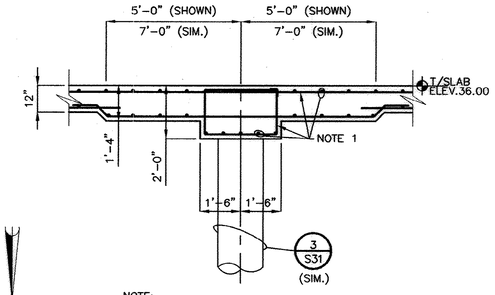
DETAIL

SCALE: NONE



DETAIL

SCALE: NONE



NOTE:

1. SEE SECTION 'A' SHEET S31, FOR DIMENSIONS (WIDTH & DEPTH) & REINFORCING.

DETAIL

SCALE: NONE

PILE CUT-OFF SCHEDULE	
①	ELEV. 21.00
②	ELEV. 22.40
③	ELEV. 26.17
④	30.77

NOTES:

1. ALL PILES SHOWN ON THIS SHEET SHALL BE DRIVEN IN PLACE TIMBER (8" TIP) BEARING PILES (BEARING CAPACITY = 20 TONS).
2. PILE ELEVATIONS TO BE DETERMINED BY EXISTING GRADE. CONTRACTOR TO VERIFY.
3. SEE NOTE 3, SHEET S1.
4. PROVIDE 9" GRAVEL AND 10 MIL POLYETHYLENE MOISTURE BARRIER BENEATH FLOOR SLAB.

GRAPHIC SCALE 0 8 16

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	CHANGE PER ADDENDUM #4	3-1	AR

APPROVALS
PROJECT ENG.: RTH
DESIGNED BY: CTS
DRAWN BY: ZS
CHECKED BY: CTS
APPROVED: JDP

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT
CERTIFICATE OF AUTHORIZATION
No. C0000
DATE

NORTH CAROLINA PROFESSIONAL ENGINEER
No. 7039
SEAL
R. T. SHEARER
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS - PLANNERS - SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW GENERATOR BUILDING PLANS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149SAF	S41
REF.	OF
N.B. NO. 1731	51
PROJECT NO. 00149	

FILE NO. 22-85-00

JDP

51-004-085 5

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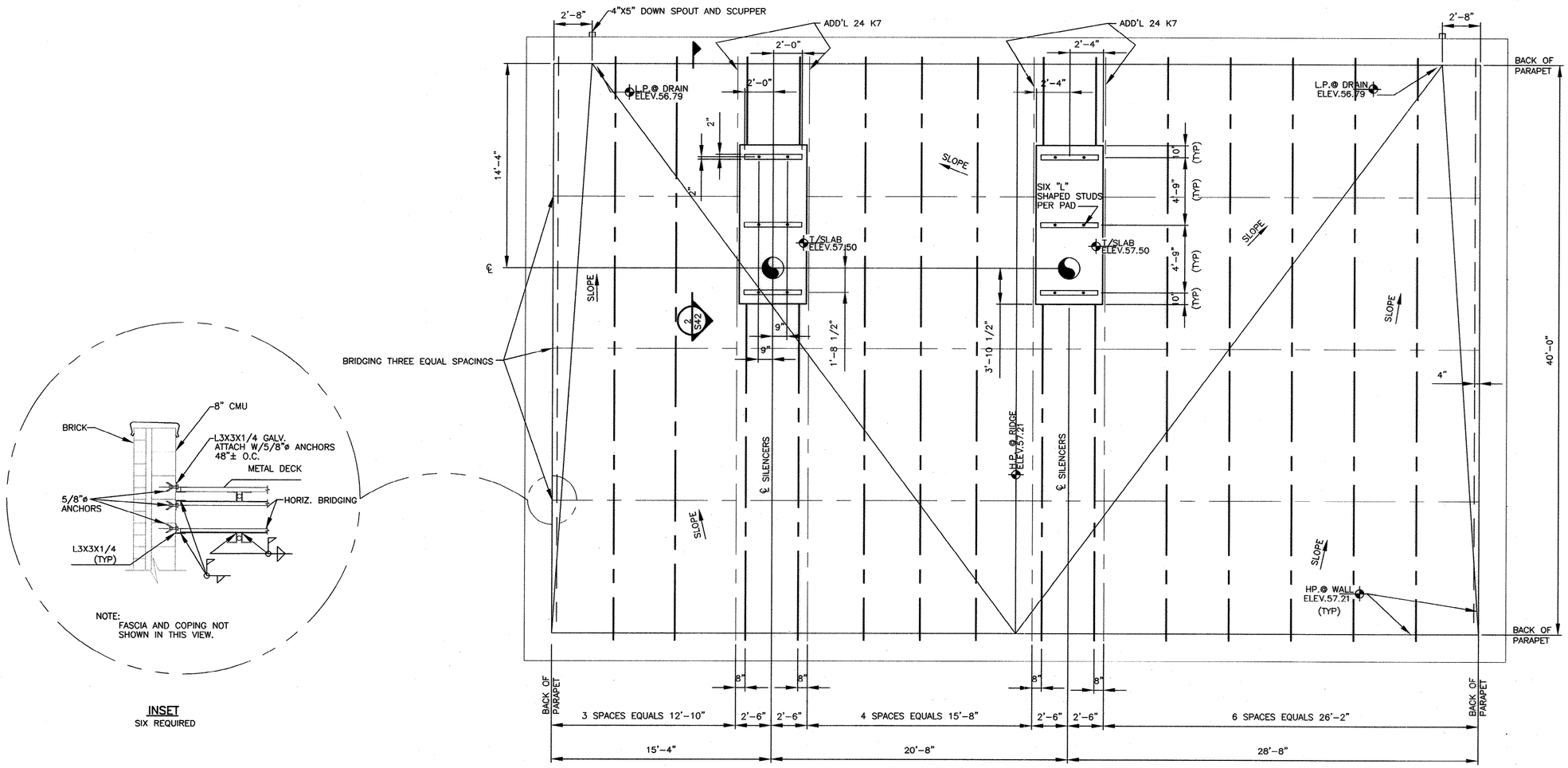
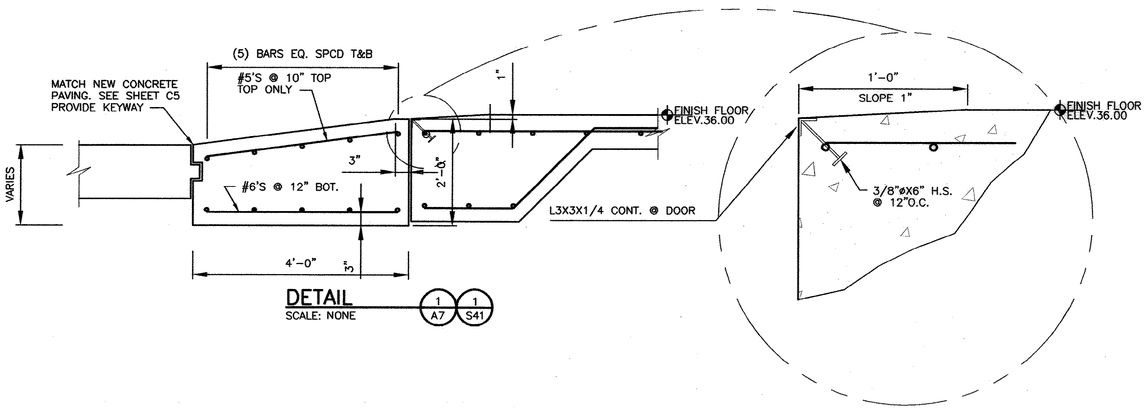


NOTE:
FASCIA AND COPING NOT SHOWN IN THIS VIEW.

INSET
SIX REQUIRED

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

0 4 8
GRAPHIC SCALE



DETAIL
SCALE: NONE
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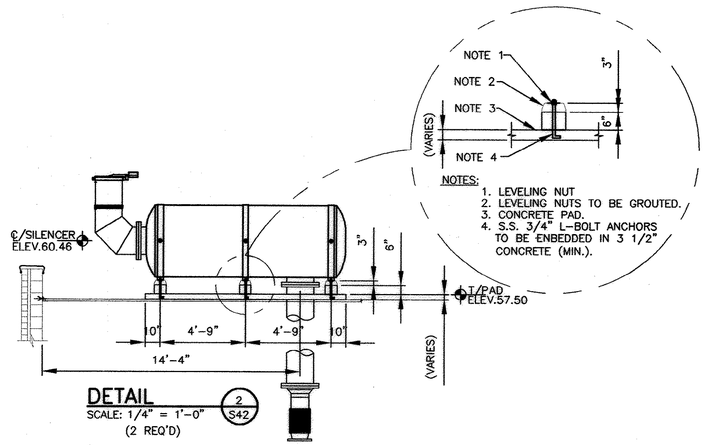

NOTES:
1. LEVELING NUT
2. LEVELING NUTS TO BE GROUTED.
3. CONCRETE PAD.
4. S.S. 3/4" L-BOLT ANCHORS TO BE ENBEDDED IN 3 1/2" CONCRETE (MIN.).

DETAIL
SCALE: 1/4" = 1'-0"
(2 REQ'D)
2 S42

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS		
PROJECT ENG: RTH	DESIGNED BY: GTS	APPROVED: JDP
	DRAWN BY: ZES	
	CHECKED BY: GTS	

JDP

SOUTH CAROLINA PROFESSIONAL ENGINEER — R.P. BARBER JR. REGISTERED No. 000000 — CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER — No. 7039 — GLEN T. SHEALY — SIGNATURE

bpb
B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
GENERATOR ROOF PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149SAG	S42
REF.	OF
N.B. NO. 1731	51
PROJECT NO. 00149	

FILE NO. 22-85-00

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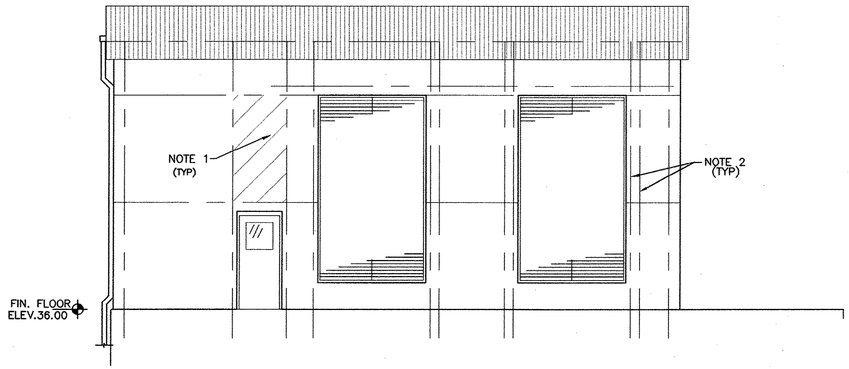
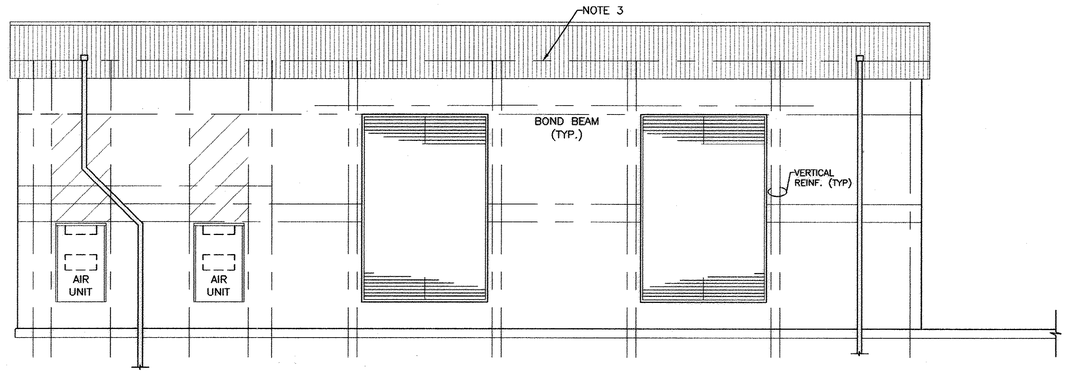
51-004-086 S



EAST ELEVATION

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

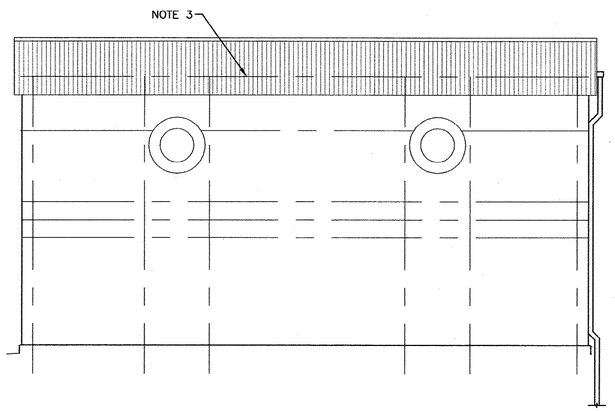


SOUTH ELEVATION

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

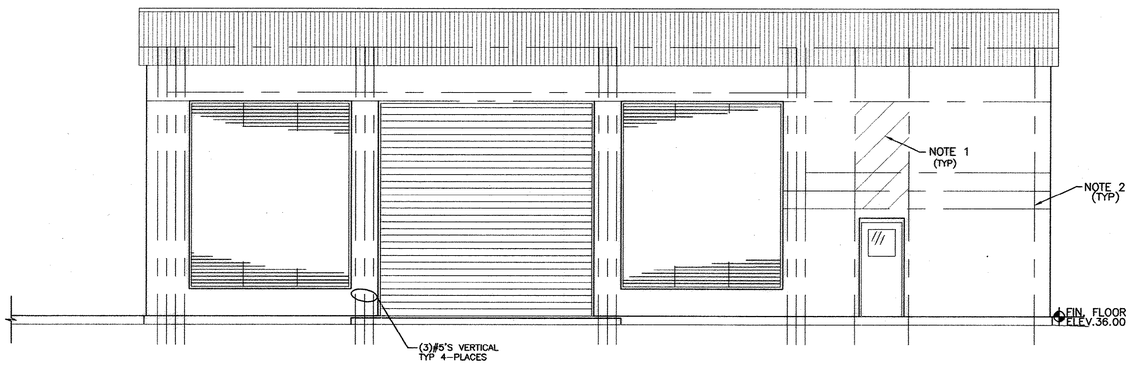
NOTES:

1. ALL HATCHED AREAS, CELLS TO BE FILLED SOLID.
2. ALL VERTICAL REINFORCING (1) #5 CENTER.
3 FILL ALL CELLS ABOVE BOND BEAM COURSE (TYP).



WEST ELEVATION

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



NORTH ELEVATION

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

0 3 6
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: GTS
DRAWN BY: ZES
CHECKED BY: GTS
APPROVED: JDP

JDP

SOUTH CAROLINA PROFESSIONAL ENGINEER
B.P. BARBER & ASSOCIATES, INC.
No. 00000
CERTIFICATE OF AUTHORIZATION
DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER
No. 7009
REGISTERED
GLEN T. SHEALY
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
GENERATOR BUILDING STRUCTURAL ELEVATIONS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149SAH	S43
REF.	OF
N.B. NO. 1731	51
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-087 5

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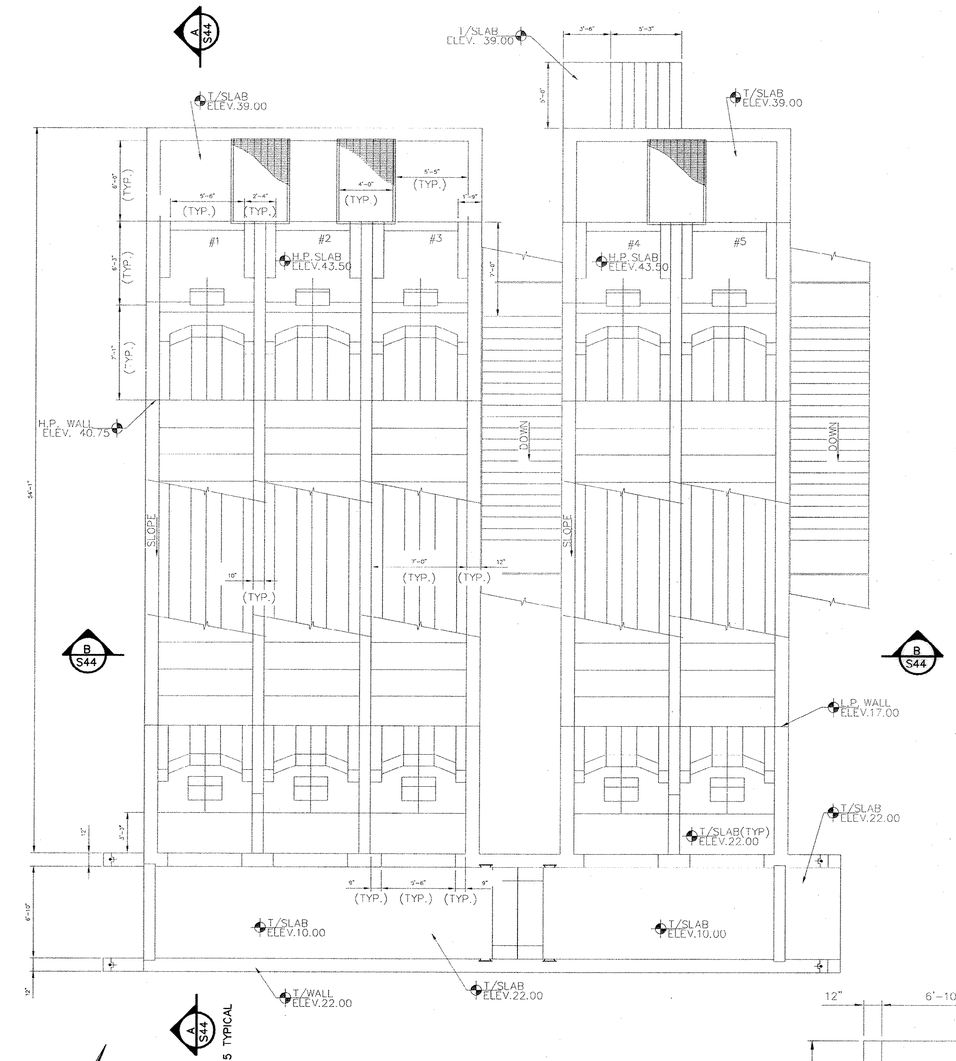
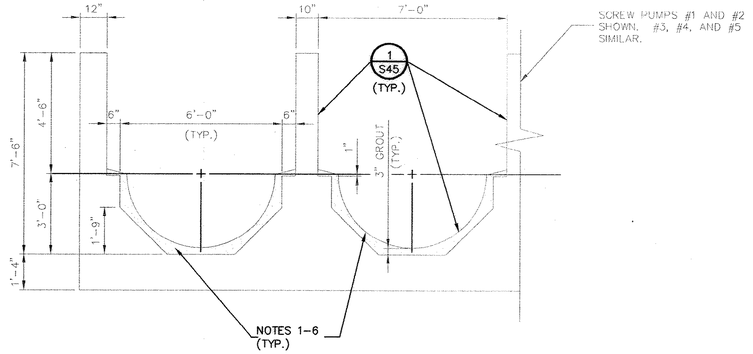
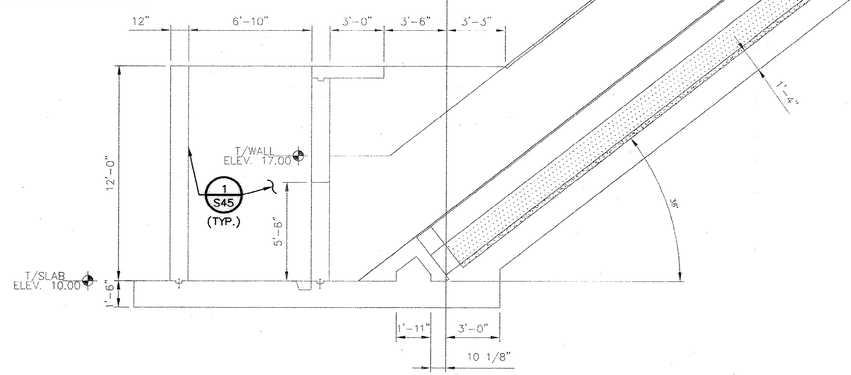


TOP PLAN
SCALE: 3/16" = 1'-0"



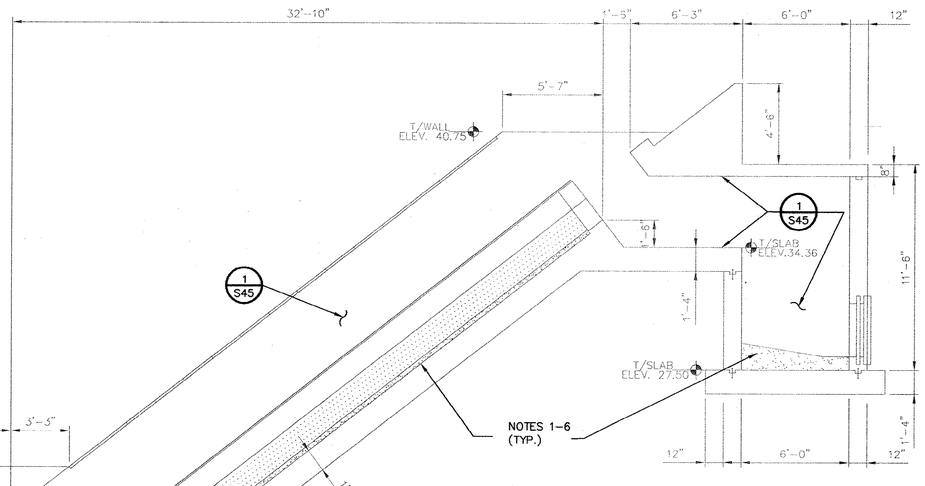
SECTION
SCALE: 3/8" = 1'-0"

0 2 4
GRAPHIC SCALE



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

0 4 8
GRAPHIC SCALE



NOTES:

1. EXISTING EQUIPMENT (NOT SHOWN) MUST BE REMOVED BEFORE REPAIR.
2. WATER BLAST TO REMOVE CONCRETE LAITANCE DOWN TO SOUND CONCRETE.
3. REPAIR CONCRETE SURFACES TO ORIGINAL LINES AND ELEVATIONS USING EITHER SHOTCRETE OR GUNITE METHOD. RUB CONCRETE SURFACES SMOOTH.
4. REPLACE GROUT FILLETS TO SIZE AND SHAPE NECESSARY TO CONFORM TO EQUIPMENT OPERATIONS.
5. APPLY MEMBRANE WATERPROOFING COATING TO ALL CONCRETE SURFACES.
6. BRIDGE CRACKS AND SEAMS WITH MESH AS DIRECTED BY MEMBRANE WATERPROOFING COATING MANUFACTURER.
7. BY-PASS PUMPING MAY BE REQUIRED FOR THIS REHAB. WORK

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: GTS
DRAWN BY: WF
CHECKED BY: GTS
APPROVED: JDP

SOUTH CAROLINA NOVEMBER 1, 2003 B. P. BARBER & ASSOCIATES, INC. No. C00000 CERTIFICATE OF AUTHORIZATION
DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7030 REGISTERED G.E.T. SHEPARD
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS - PLANNERS - SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
REHAB. TO INFLUENT SCREW PUMP STATION
DATE: FEB., 2001 SCALE: AS SHOWN

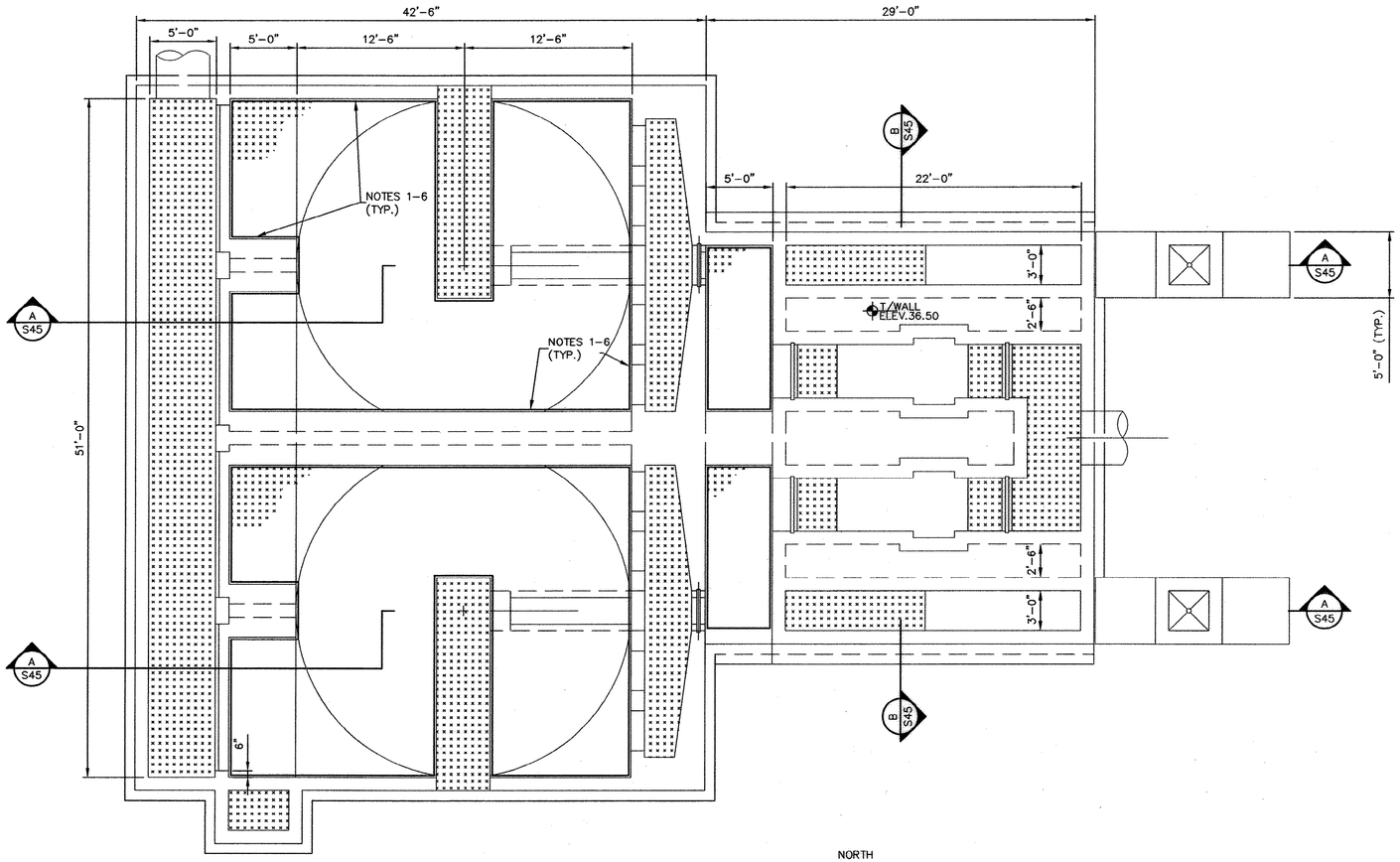
PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
99127SBB	S44
REF.	OF
N.B. NO. 1731	51
PROJECT NO. 00149	

FILE NO. 22-85-00

N:\Projects\00149\Dwg\RECORD DWG\99127SBB-R0.dwg, 1/21/2003 09:55:36 AM

51-004-088 S

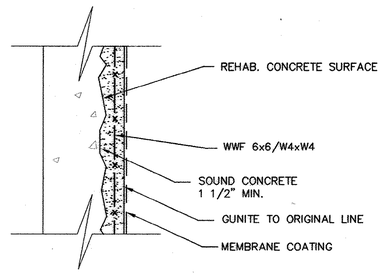


PLAN
SCALE: 3/16" = 1'-0"

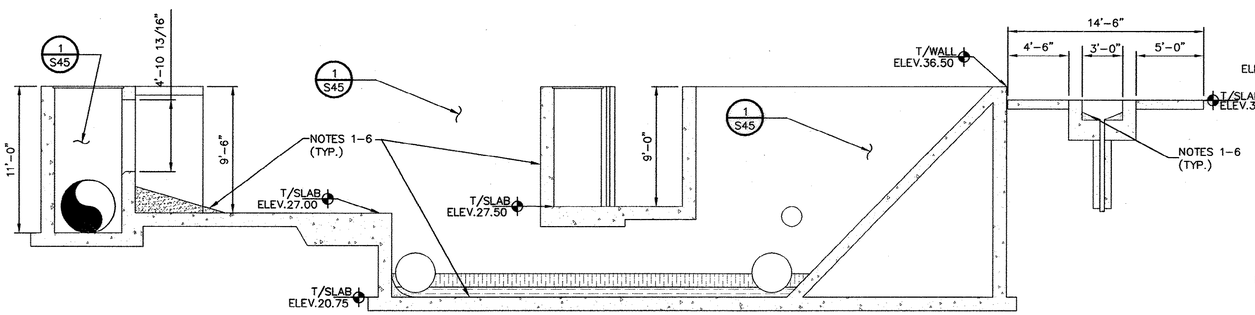
NORTH

NOTES:

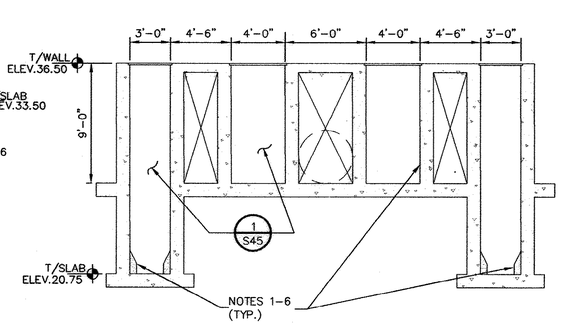
1. EXISTING EQUIPMENT (NOT SHOWN) MUST BE REMOVED BEFORE REPAIR.
2. WATER BLAST TO REMOVE CONCRETE LAITANCE DOWN TO SOUND CONCRETE.
3. REPAIR CONCRETE SURFACES TO ORGINAL LINES AND ELEVATIONS USING EITHER SHOTCRETE OR GUNITE METHOD. RUB CONCRETE SURFACES SMOOTH.
4. REPLACE GROUT FILLETS TO SIZE AND SHAPE NECESSARY TO CONFORM TO EQUIPMENT OPERATIONS.
5. APPLY MEMBRANE WATERPROOFING COATING TO ALL CONCRETE SURFACES.
6. BRIDGE CRACKS AND SEAMS WITH MESH AS DIRECTED BY COATING MANUFACTURER.



REHAB. WALL DETAIL
SCALE: NONE
1 S45



SECTION
SCALE: 3/16" = 1'-0"
A S45



SECTION
SCALE: 3/16" = 1'-0"
B S45

0 3' 6'
3/16" = 1'-0"

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS			
PROJECT ENG: RTH	DESIGNED BY: GTS	DRAWN BY: WF	CHECKED BY: GTS
APPROVED: JDP			

SOUTH CAROLINA NOTICE OF CERTIFICATE OF AUTHORIZATION — B.P. BARBER & ASSOCIATES, INC. — No. COD000 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER — No. 7039 — GLEN T. SHEPPARD — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: REHAB. TO GRIT TANK PLAN AND SECTIONS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149SBR	S45
REF.	OF
N.B. NO. 1731	51
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-089

5

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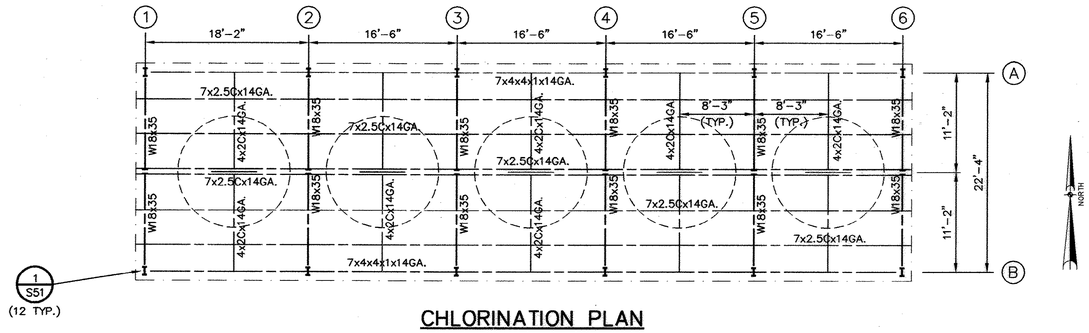


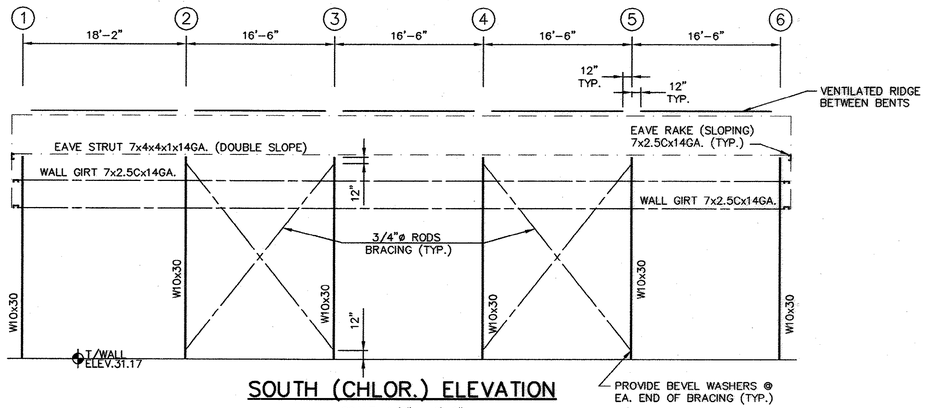
CHLORINATION PLAN

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

NOTE:

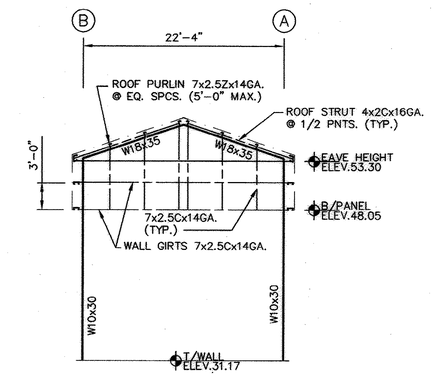
ALL STRUCTURAL STEEL FRAMING
BOTH PRIMARY AND SECONDARY
AND BRACING RODS TO BE GALVANIZED.

0 8 16
GRAPHIC SCALE



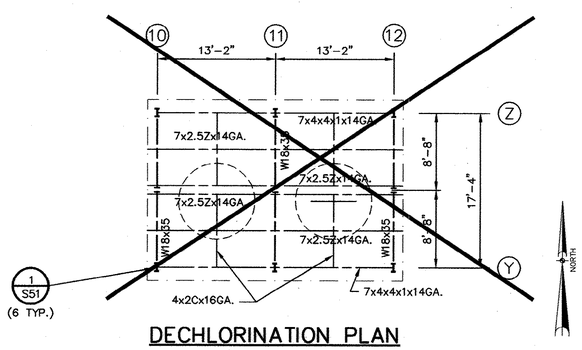
SOUTH (CHLOR.) ELEVATION

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



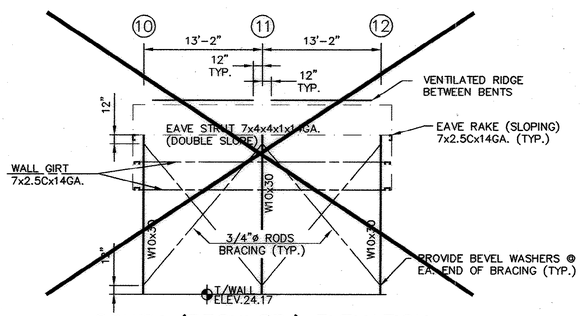
EAST (CHLOR.) ELEVATION

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



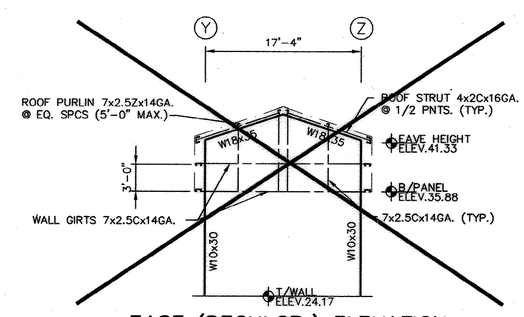
DECHLORINATION PLAN

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



SOUTH (DECHLOR.) ELEVATION

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



EAST (DECHLOR.) ELEVATION

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

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: GTS
DRAWN BY: MAB
CHECKED BY: GTS
APPROVED: JDP

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 7039 REGISTERED — B. P. BARBER & ASSOCIATES, INC. — CERTIFICATE OF AUTHORIZATION No. C-0000 — DATE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 7039 REGISTERED — B.P.B.T. SHEET — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: MISCELLANEOUS FRAMING DETAILS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149SBU
REF.
N.B. NO. 1731
PROJECT NO. 00149
SHEET S46 OF 51
FILE NO. 22-85-00

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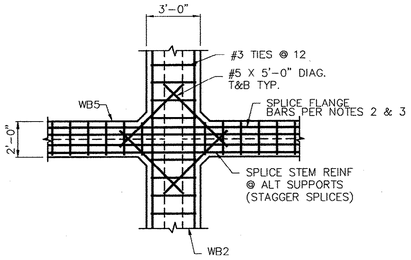
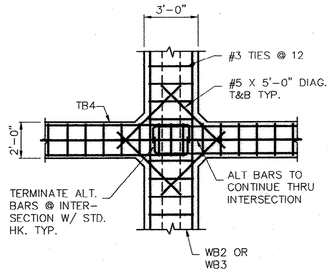
51-004-090

5



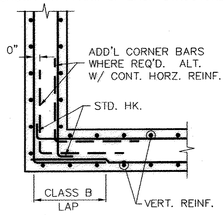
DETAIL
SCALE: 1/4" = 1'-0" 12 TYP



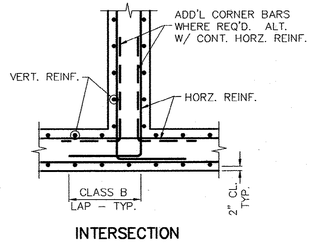
TIE BEAM CROSSING

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

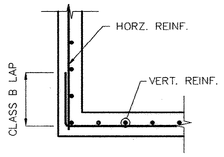
NOTE:
VERTICAL REINF. TO BE PLACED IN OUTSIDE OR INSIDE LAYER AS SHOWN ON PLANS OF EACH STRUCTURE.



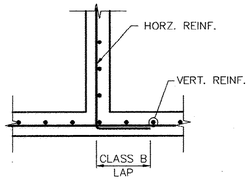
TYPE 2 CORNER



INTERSECTION

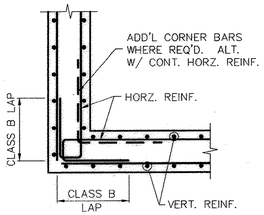


CORNER



INTERSECTION

SINGLE MAT

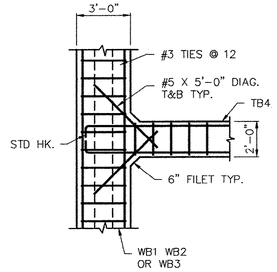


TYPE 1 CORNER

DOUBLE MAT

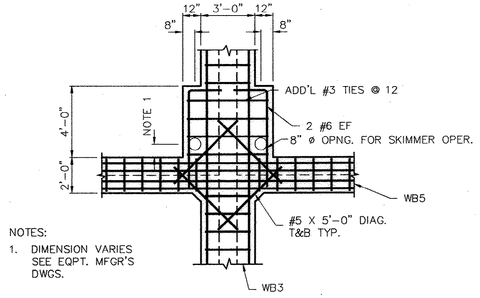
WALL REINFORCING

DETAIL
SCALE: NOT TO SCALE 15 TYP



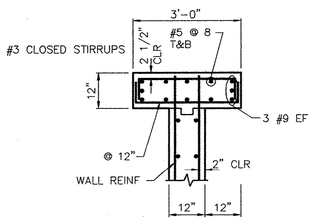
WALL BEAM TEE INTERSECTION

DETAIL
SCALE: 1/4" = 1'-0" 11 TYP

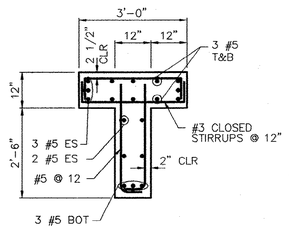


NOTES:
1. DIMENSION VARIES SEE EQPT. MFGR'S DWGS.

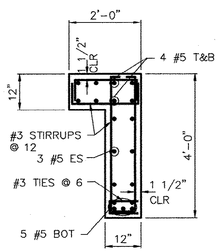
DETAIL
SCALE: 1/4" = 1'-0" 14 TYP



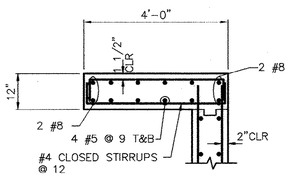
WB1 & WB2



WB3

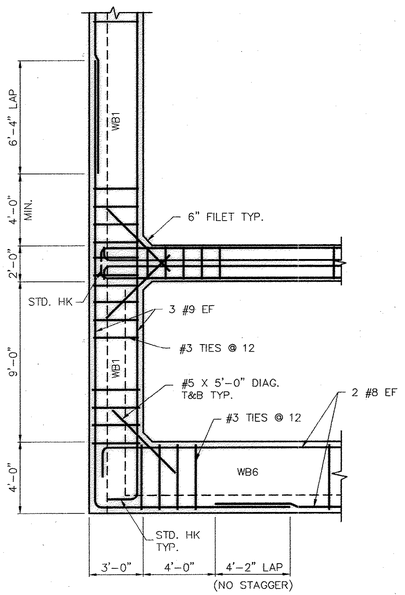


WB5



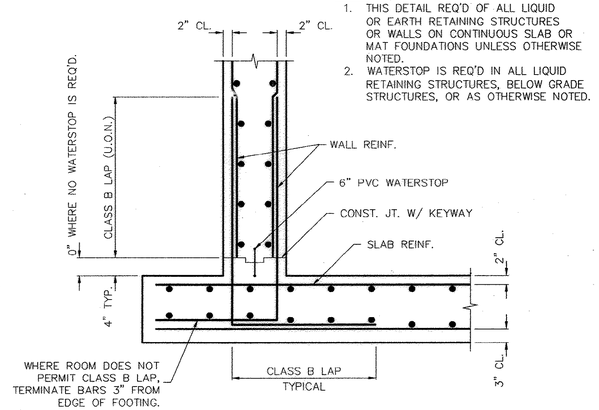
WB6

WALL BEAM
DETAIL
SCALE: NOT TO SCALE 16 TYP



WALL BEAM CORNER REINF
DETAIL
SCALE: 1/4" = 1'-0" 13 TYP

NOTES:
1. THIS DETAIL REQ'D OF ALL LIQUID OR EARTH RETAINING STRUCTURES OR WALLS ON CONTINUOUS SLAB OR MAT FOUNDATIONS UNLESS OTHERWISE NOTED.
2. WATERSTOP IS REQ'D IN ALL LIQUID RETAINING STRUCTURES, BELOW GRADE STRUCTURES, OR AS OTHERWISE NOTED.



WALL-SLAB JOINT
DETAIL
SCALE: NOT TO SCALE 22 TYP

0 4 8
SCALE: 1/4"=1'-0"

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS	
PROJECT ENG:	RTH
DESIGNED BY:	GTS
DRAWN BY:	AR
CHECKED BY:	GTS
APPROVED:	JDP

NORTH CAROLINA CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. C00000 — DATE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL No. 7039 GLEN T. SHEALY — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: MISCELLANEOUS DETAILS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	00149SU
REF.	
N.B. NO.	1731
PROJECT NO.	00149
SHEET	S47
OF	51

FILE NO. 22-85-00

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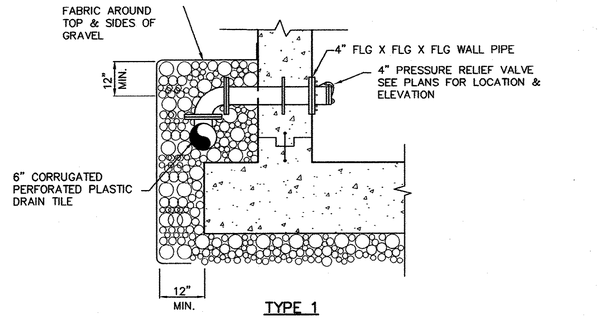
51-004-091 5



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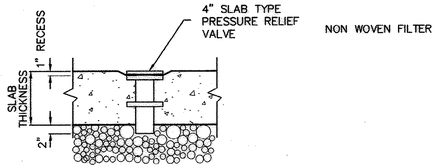
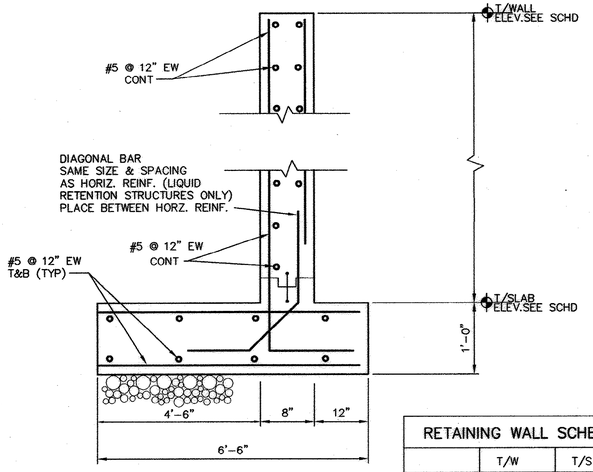


TYPE 3

RELIEF VALVES

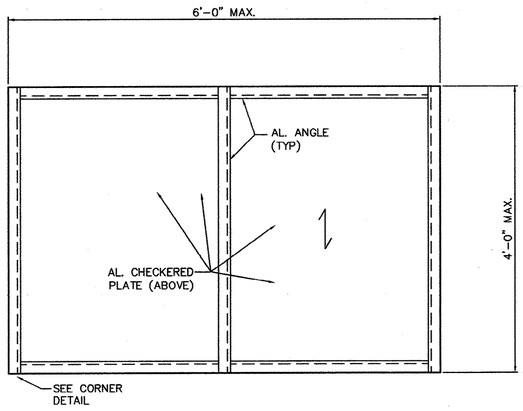
DETAIL 1 TYP
SCALE: NONE



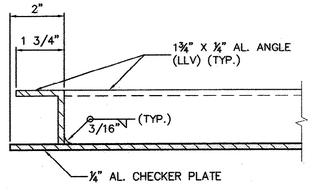
RETAINING WALL

DETAIL 2 TYP
SCALE: NONE

RETAINING WALL SCHEDULE		
	T/W	T/S
A	VARIES	20.50

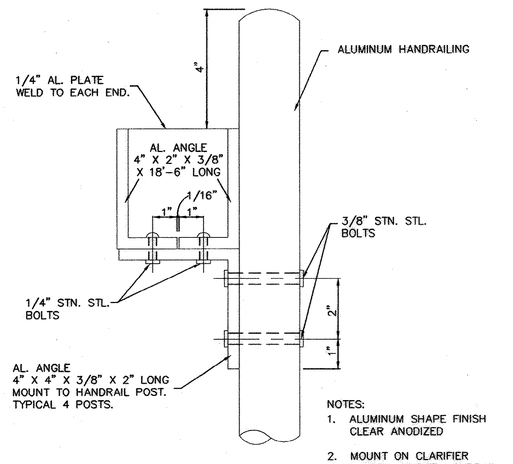


BOTTOM PLAN



CORNER DETAIL

DETAIL 3 TYP
SCALE: NONE



NOTES:
1. ALUMINUM SHAPE FINISH CLEAR ANODIZED
2. MOUNT ON CLARIFIER ACCESS BRIDGE HANDRAIL
3. CONTRACTOR SHALL PROVIDE ONE "SLUDGE JUDGE" FOR EACH CLARIFIER

"SLUDGE JUDGE" TRAY

DETAIL 4 M16
SCALE: NONE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: DEF
DRAWN BY: JRC
CHECKED BY: GTS
APPROVED: JDP

SOUTH CAROLINA NOVEMBER 4, 1962 No. 000000 B.P. BARBER & ASSOCIATES, INC. CERTIFICATE OF — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7039 GLEN T. SHEPP — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: MISCELLANEOUS DETAILS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK: 00149SBM
REF.
N.B. NO. 1731
PROJECT NO. 00149
SHEET S48 OF 51
FILE NO. 22–85–00

51-004-092 5

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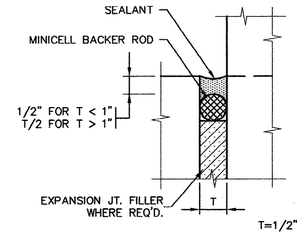
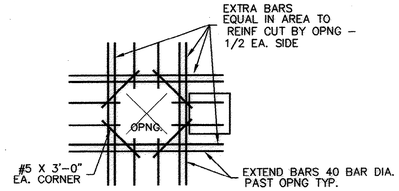


T=1/2" UNLESS NOTED OTHERWISE

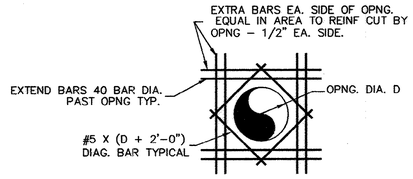
JOINT SEALANT

DETAIL 1 TYP
SCALE: NONE



NOTE:
PROVIDE AT ALL OPNGS GREATER THAN 12" EITHER DIRECTION

RECTANGULAR OPENING



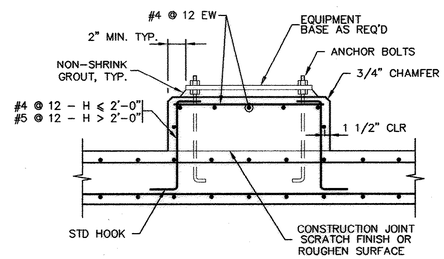
NOTE:
PROVIDE AT ALL PIPES & OPNGS GREATER THAN 12" DIA.

CIRCULAR OPENING

NOTES:
1. EXTRA REINF. SHOWN IS REQ'D IN ALL WALL & SLAB OPNGS. > 12" UNLESS OTHER ADD'L REINF. IS SHOWN ON THE DRAWINGS.
2. WHERE WALL OR SLAB HAS TWO MATS OF REINFORCING, PROVIDE ALL EXTRA REINF. SHOWN IN EACH FACE.

REINF @ OPENING

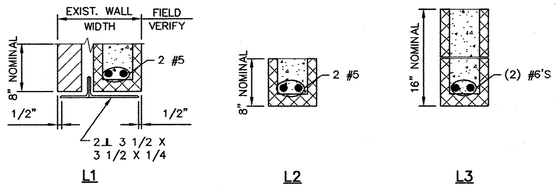
DETAIL 2 TYP
SCALE: NONE



NOTE:
PROVIDE ANCHOR BOLTS, EQUIPMENT BASE, & GROUT AS REQ'D BY EQUIPMENT MANUFACTURER

EQUIPMENT PAD

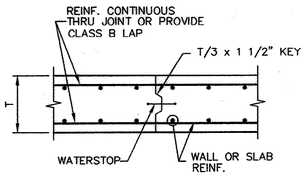
DETAIL 3 TYP
SCALE: NONE



NOTE: ALL LINTELS TO HAVE 8" MINIMUM BEARING AT EACH END.

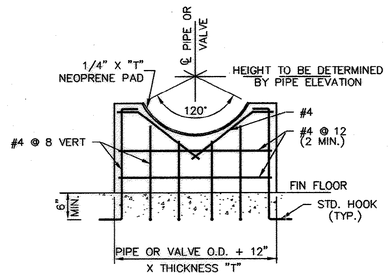
LINTEL

DETAIL 4 TYP
SCALE: NONE



CONSTRUCTION JOINT

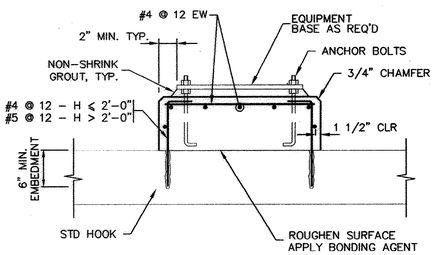
DETAIL 5 TYP
SCALE: NONE



NOTES:
1. PIPE SUPPORT THICKNESS TO BE AS FOLLOWS:
   PIPE DIA. < 24": T = 9"
   PIPE DIA. ≥ 24": T = 12"
2. PROVIDE ONE MAT OF REINF. FOR 9" THICK SUPPORT & TWO MATS (1 E.F.) FOR 12" THICK SUPPORTS.
3. PIPE SUPPORT AS SHOWN IS TYPICAL UNLESS SHOWN OTHERWISE ON THE DRAWINGS.

PIPE/VALVE SUPPORT

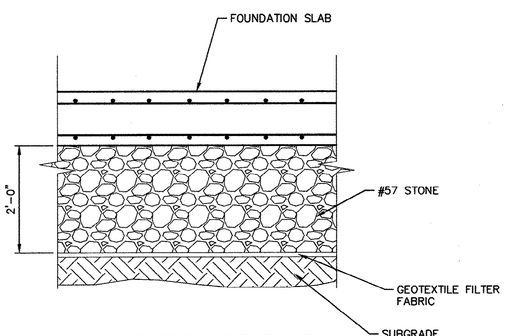
DETAIL 6 TYP
SCALE: NONE



NOTE:
PROVIDE ANCHOR BOLTS, EQUIPMENT BASE, & GROUT AS REQ'D BY EQUIPMENT MANUFACTURER

EQUIPMENT PAD

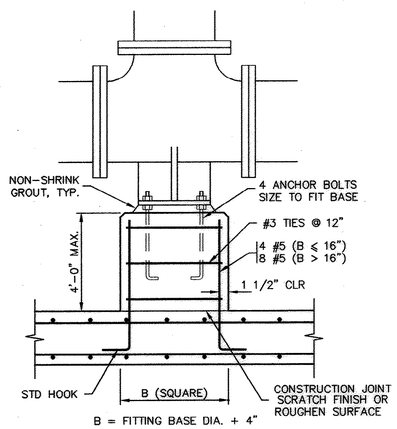
DETAIL 7 TYP
SCALE: NONE



FOUNDATION STABILITY

(TYP. @ EXCAVATIONS.)

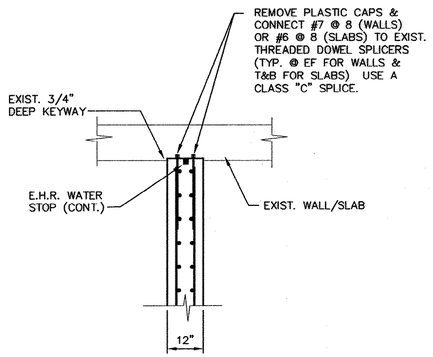
DETAIL 8 TYP
SCALE: NONE



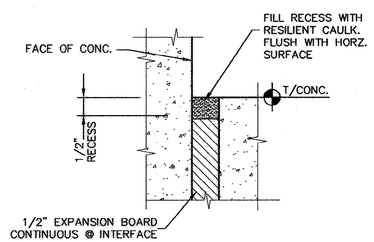
B = FITTING BASE DIA. + 4"

BASE FITTING SUPPORT

DETAIL 9 TYP
SCALE: NONE



DETAIL 10 TYP
SCALE: NONE



DETAIL 11 TYP
SCALE: NONE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS	
PROJECT ENG.	RTH
DESIGNED BY:	GTS
DRAWN BY:	JRC
CHECKED BY:	GTS
APPROVED:	JDP

SOUTH CAROLINA NOVEMBER 30, 2001 B. P. BARBER & ASSOCIATES, INC. No. C00000 CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7939 GLEN T. SHEALY — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: MISCELLANEOUS DETAILS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	99127SL
REF.	
N.B. NO.	1731
PROJECT NO.	00149
SHEET	S49
OF	51
FILE NO.	22-85-00

51-004-093 5

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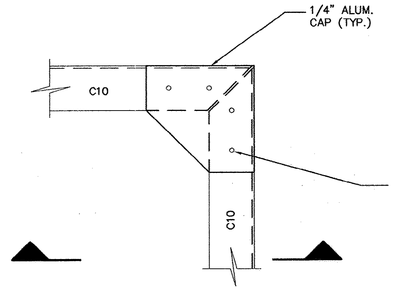
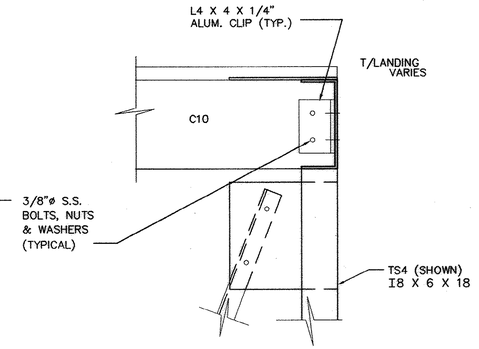
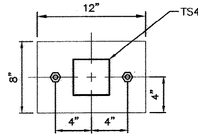


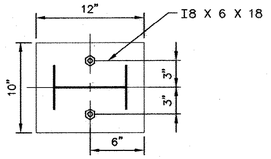
TOP PLAN



TOP SECTION

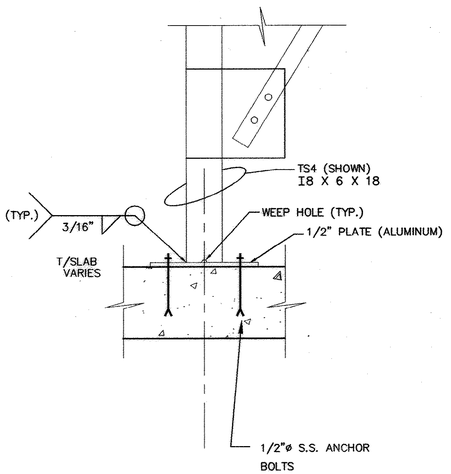


TS4



I8

BASE PLAN



BASE SECTION

PLATFORM CONNECTIONS

DETAIL (2 TYP)
SCALE: 1 1/2" = 1'-0"

0 1 2
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: CHS
DRAWN BY: JRC
CHECKED BY: GTS
APPROVED: JDP

SOUTH CAROLINA NOVEMBER 14, 2003 CERTIFICATE OF AUTHORIZATION G. P. BARBER & ASSOCIATES, INC. No. C000320
DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7030 REGISTERED
SEAL / SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
MISCELLANEOUS DETAILS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
99127SAG	S50
REF.	OF
N.B. NO. 1731	51
PROJECT NO. 00149	

FILE NO. 22-85-00

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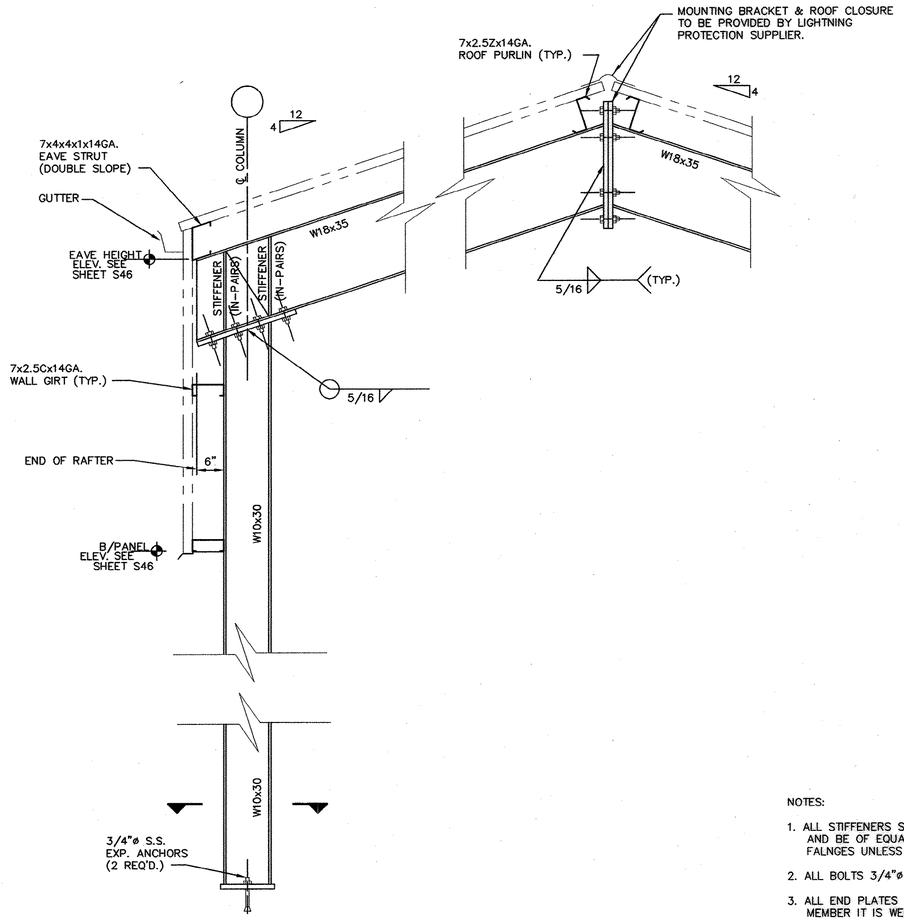
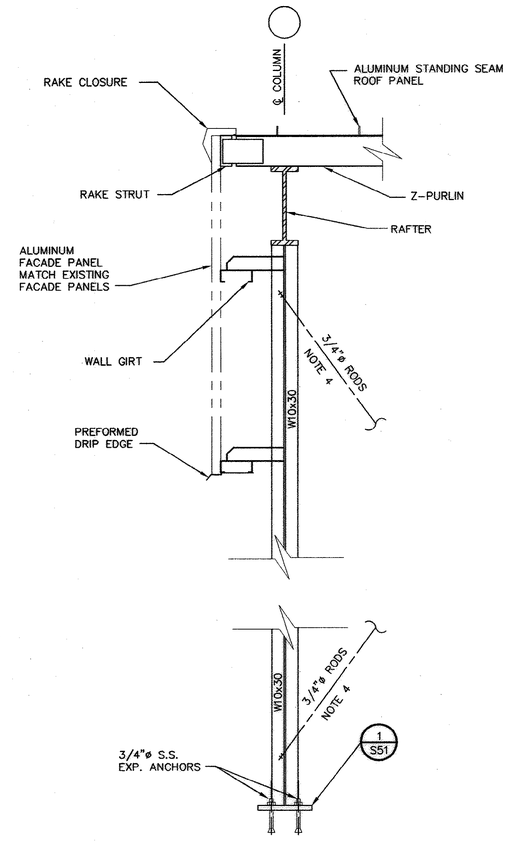
51-004-094 5



DETAIL
SCALE: NONE
(18 REQUIRED)
1
S51

NOTES:

1. ALL STIFFENERS SHOWN SHALL BE FURNISHED IN-PAIRS AND BE OF EQUAL THICKNESS TO THICKNESS OF MEMBER FALNGES UNLESS NOTED OTHERWISE (U.N.O.).
2. ALL BOLTS 3/4"ø TO BE ASTM A325 U.N.O.
3. ALL END PLATES SHALL BE SAME THICKNESS AS WEB OF MEMBER IT IS WELDED TO.
4. SEE SHEET S46 FOR LOCATION & PLACEMENT OF RODS.
5. ALL CARBON STEEL TO BE GALVANIZED U.O.N.



DETAIL
SCALE: NONE
2
S51

RECORD DRAWINGS
DATE: SEPT., 2003

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REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: GTS
DRAWN BY: MAB
CHECKED BY: GTS
APPROVED: JDP

NORTH CAROLINA CERTIFICATE OF AUTHORIZATION B. P. BARBER & ASSOCIATES, INC. No. C-000300 — DATE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL No. 7009 GLEN T. SHEEP — SIGNATURE

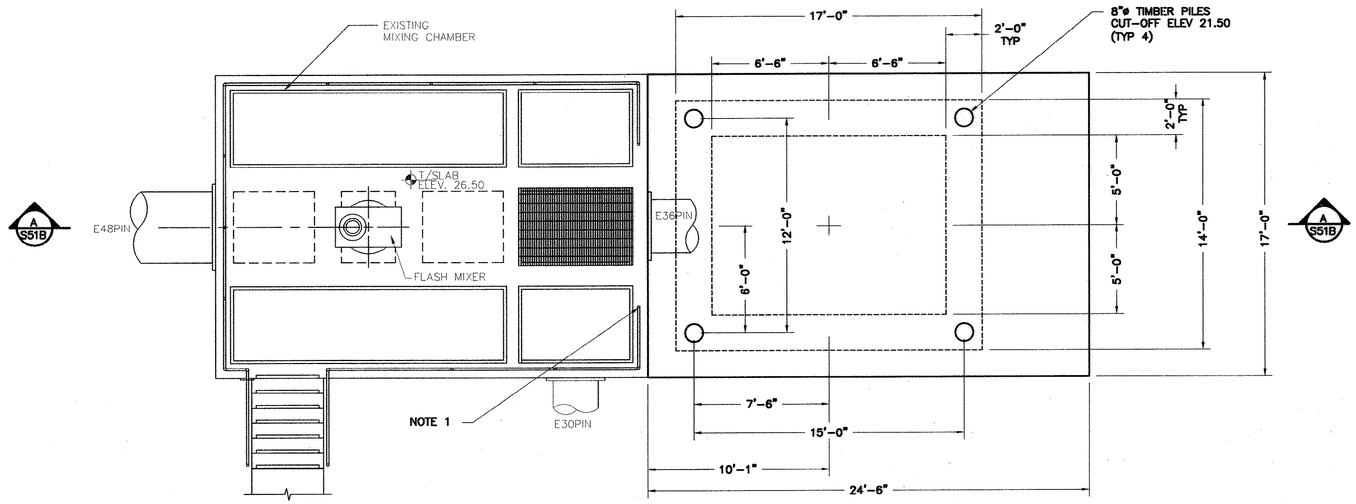
B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: CANOPY DETAILS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

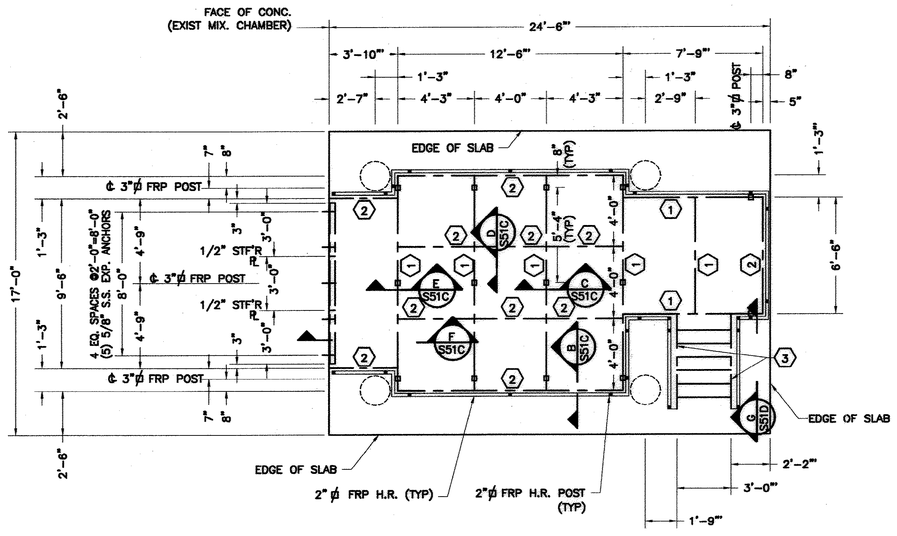
DISK 00149SBT
REF.
N.B. NO. 1731
PROJECT NO. 00149
SHEET S51 OF 51
FILE NO. 22-85-00

51-004-095 S



FOUNDATION PLAN

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



PLAN @ ELEV. 32.0

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

NOTE:

1. CUT AND REMOVE CENTER SECTION OF EXISTING HANDRAIL. CONNECT TO NEW HANDRAIL AT LIME FEED EQUIPMENT STRUCTURE.

1	FRP IB8x4x3/8
2	FRP CB8x2-3/16x3/8
3	FRP C10x2-3/4x1/2

NORTH

0 4 8
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS: PROJECT ENG: RTH | DESIGNED BY: | DRAWN BY: | CHECKED BY: TVT | APPROVED: JDP

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER — CERTIFICATE OF AUTHORIZATION — B. P. BARBER & ASSOCIATES, INC. No. 0000000 — DATE

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER — No. 7973 — THOMAS V. TVT — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW LIME FEED EQUIPMENT PLANS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149B-S11-14 | SHEET S51A
REF. | OF 51
N.B. NO. 1731
PROJECT NO. 00149
FILE NO. 22-85-00

51-004-096

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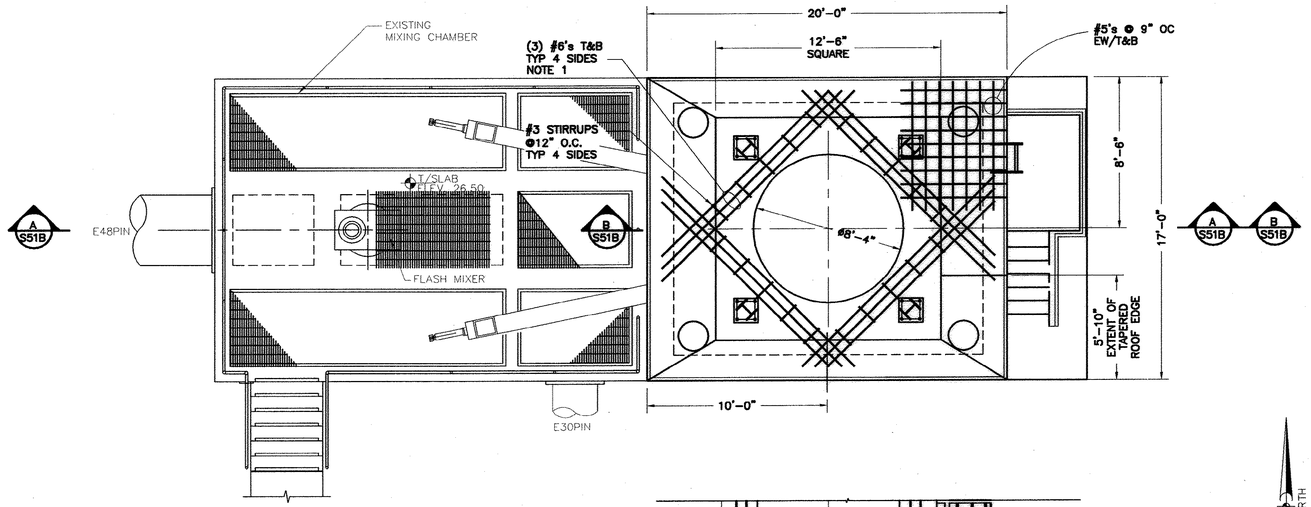
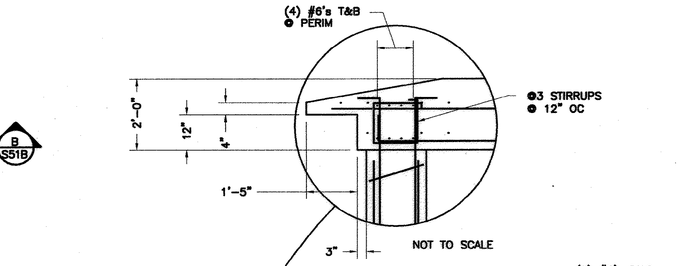
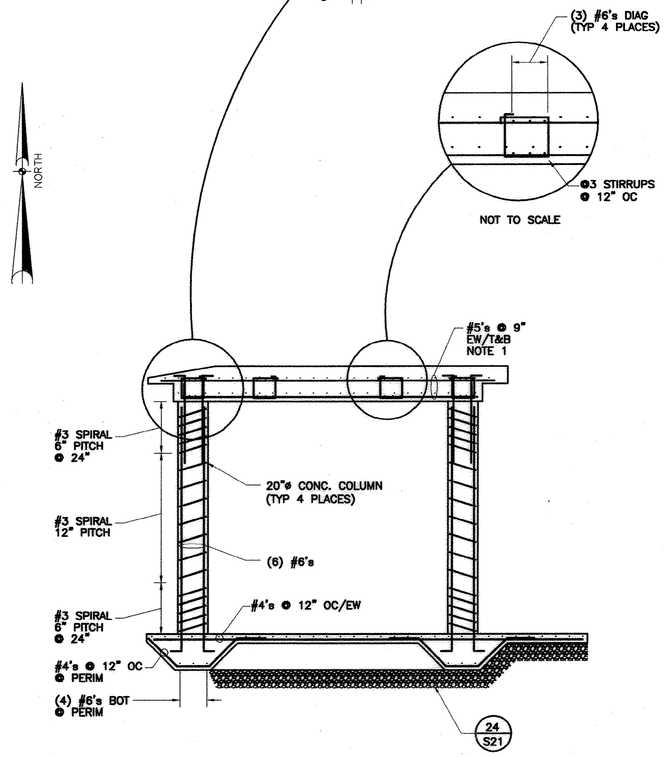


PLAN
@ ELEV. 37.5
SCALE: 1/4" = 1'-0"

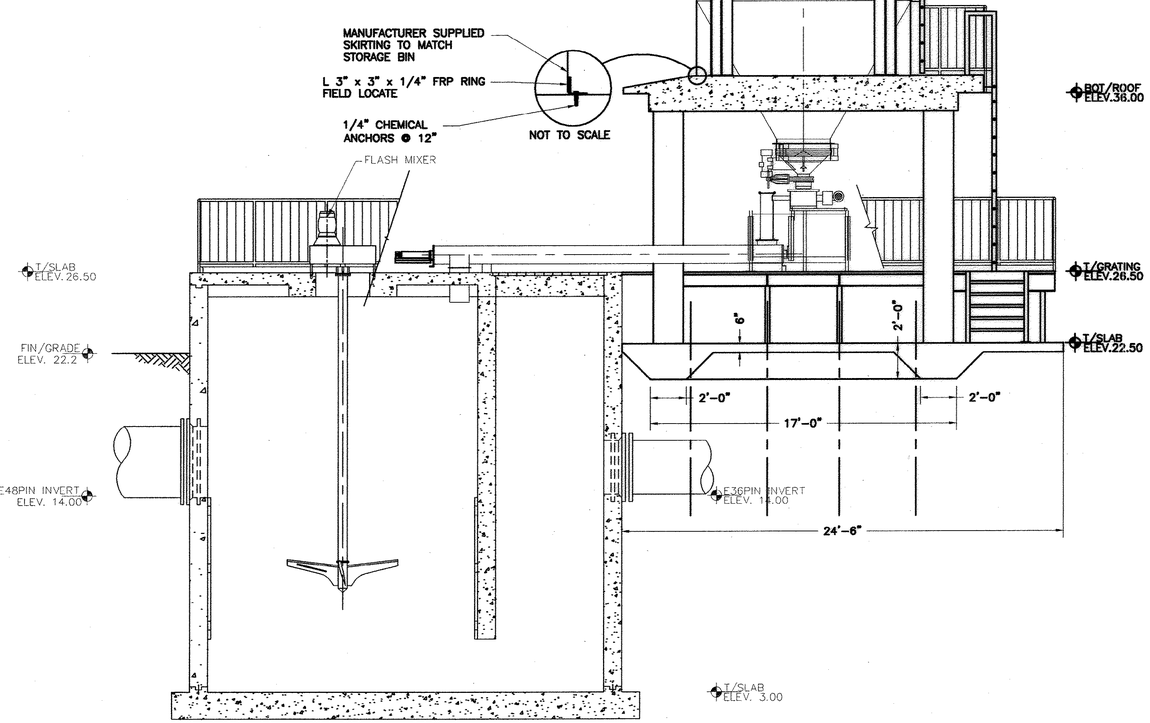




SECTION
SCALE: 1/4" = 1'-0" (B S51B)

NOTES:

1. FIELD CUT REINFORCMENT 3" CLEAR OF OPENING.



SECTION
SCALE: 1/4" = 1'-0" (A S51A) (A S51B)

0 4 8
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY:
DRAWN BY:
CHECKED BY: TVT
APPROVED: JDP

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19673 THOMAS VICTOR — CERTIFICATE OF AUTHORIZATION No. C-0910 B. P. BARBER & ASSOCIATES, INC. — DATE

SIGNATURE

bpb
B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW LIME FEED EQUIPMENT PLAN, SECTIONS & DETAILS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149B-S11-14	S51B
REF.	OF
N.B. NO. 1731	51
PROJECT NO. 00149	

FILE NO. 22-85-00

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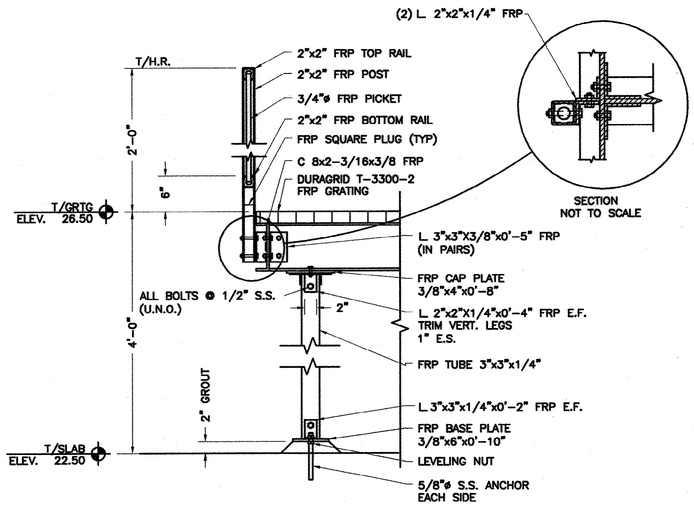
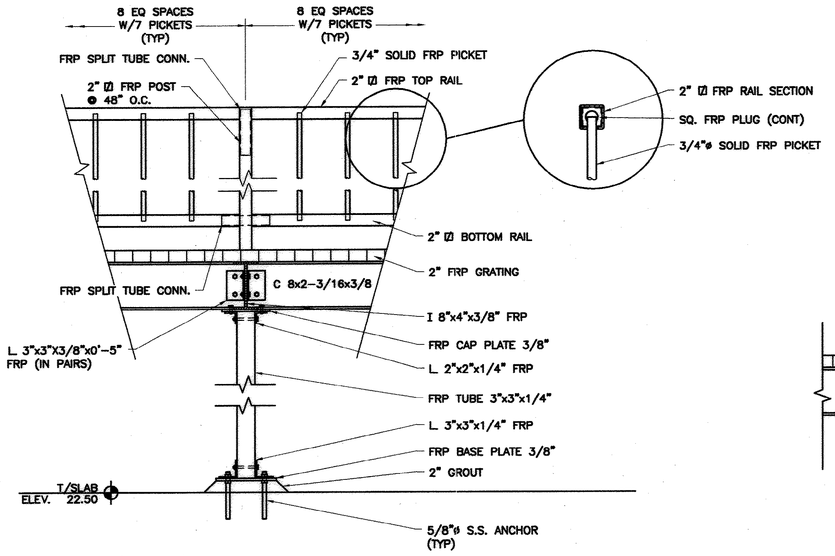


SECTION B S51A
SCALE: 1" = 1'-0"



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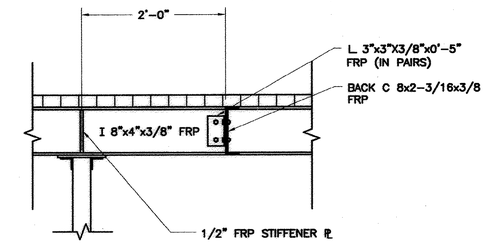
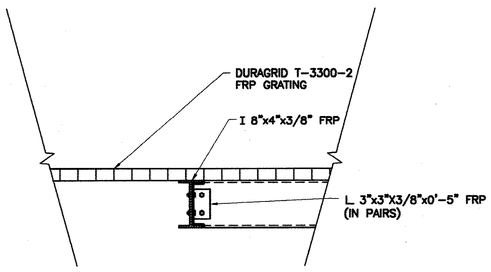
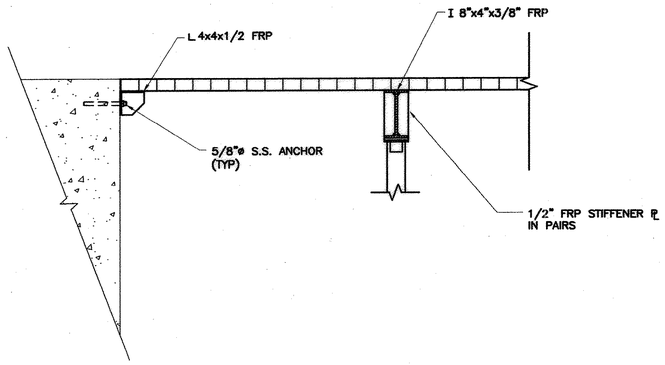
SCALE: 1" = 1'-0"



SECTION D S51A
SCALE: 1" = 1'-0"



SECTION E S51A
SCALE: 1" = 1'-0"



SECTION F S51A
SCALE: 1" = 1'-0"

0 1 2
(IN FEET)

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: R.T.H.
DESIGNED BY:
DRAWN BY:
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA NOTARY PUBLIC CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. C00320 DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7673 THOMAS V. TAYLOR SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS - PLANNERS - SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW LIME FEED EQUIPMENT SECTIONS & DETAILS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149B-S11-14	SHEET S51C
REF.	OF 51
N.B. NO. 1731	
PROJECT NO. 00149	

FILE NO. 22-85-00

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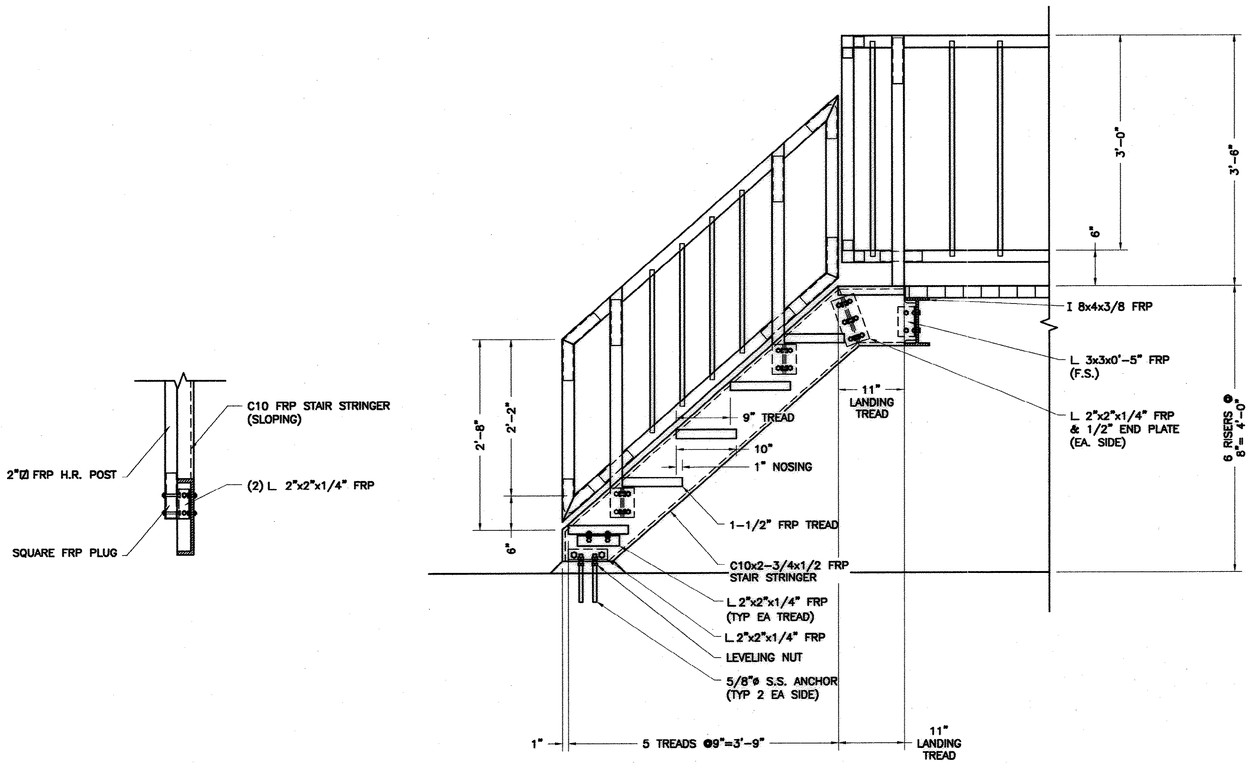
51-004-098 5



SECTION (G / S51A)

SCALE: 1" = 1'-0"

0 1 2

(IN FEET)

RECORD DRAWINGS

DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY:
DRAWN BY:
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA REGISTERED LANDSCAPE ARCHITECT — C. ALAN BARBER No. 000000 — CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 7653 — THOMAS V. TATUM

DATE

SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW LIME FEED EQUIPMENT SECTION

DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149B-S11-14
REF.
N.B. NO. 1731
PROJECT NO. 00149

SHEET S51D OF 51

FILE NO. 22-85-00

51-004-099 5

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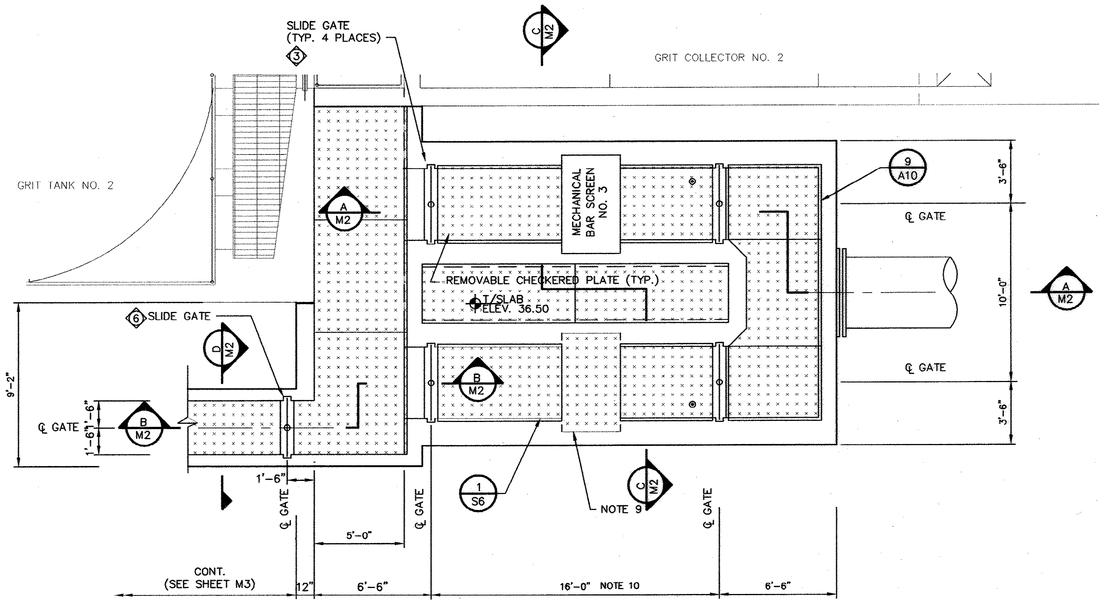
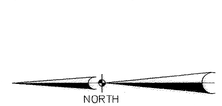
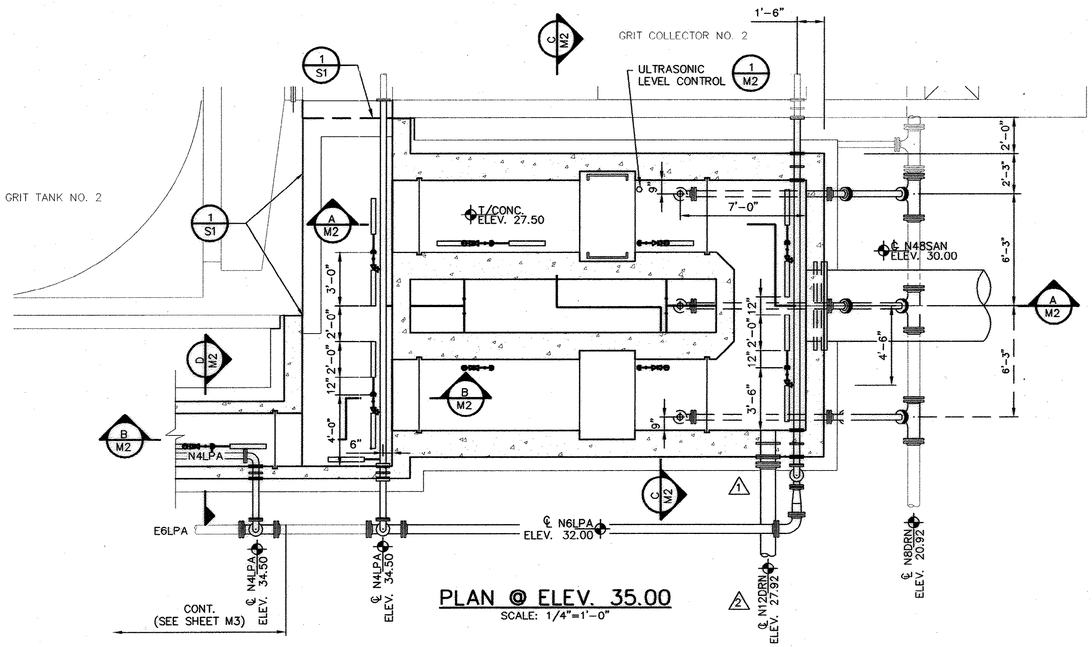


TOP PLAN
SCALE: 1/4"=1'-0"



NOTES:

1. SEE SHEET D1 FOR ADDITIONAL INFORMATION.
2. SEE PIPING PLAN "B" FOR OVERALL PIPING ARRANGEMENT.
3. MATCH E4LPA LINES (2 PLACES) WITH N4LPA AS SHOWN.
4. EXISTING CENTERLINES SHOWN FOR YARD PIPING,
5. REROUTE E2SAN (SAMPLE) AS N2SMPL (NOT SHOWN), ROUTE AS DIRECTED BY OWNER.
6. MATCH E4LPA CENTERLINES WITH N4LPA (℄ ELEVATION = 34.50), VERIFY.
7. CENTER LINE ELEVATIONS ARE APPROXIMATE. ELEVATIONS TO BE FIELD VERIFIED.
8. PROVIDE 2'-0" WIDE REMOVABLE GRATING AND CHECKERED PLATE SECTIONS CENTER ON AIR DIFUSER DROP ASSEMBLIES.
9. PROVIDE SECTION OF CHECKERED PLATE OVER OPENING FOR FUTURE MECHANICAL SCREEN.
10. DIMENSIONS TO BE VERIFIED BY MANUFACTURER.
11. SEE SHEET M52 FOR GATE SCHEDULE.



PLAN @ ELEV. 35.00
SCALE: 1/4"=1'-0"

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	CHANGE PER ADDENDUM #4	3-1	AR
2	REVISED PIPE SIZE FROM 10" TO 12"	4-10	AR

APPROVALS	
PROJECT ENG.	RCH
DESIGNED BY:	AR
DRAWN BY:	AR
CHECKED BY:	TVT
APPROVED:	JDP

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20873 THOMAS VICTOR REGISTERED
CERTIFICATE OF AUTHORIZATION B. P. BARBER & ASSOCIATES, INC. No. C000000
DATE

SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW BAR SCREEN PLANS
DATE: FEB., 2001 SCALE: AS SHOWN

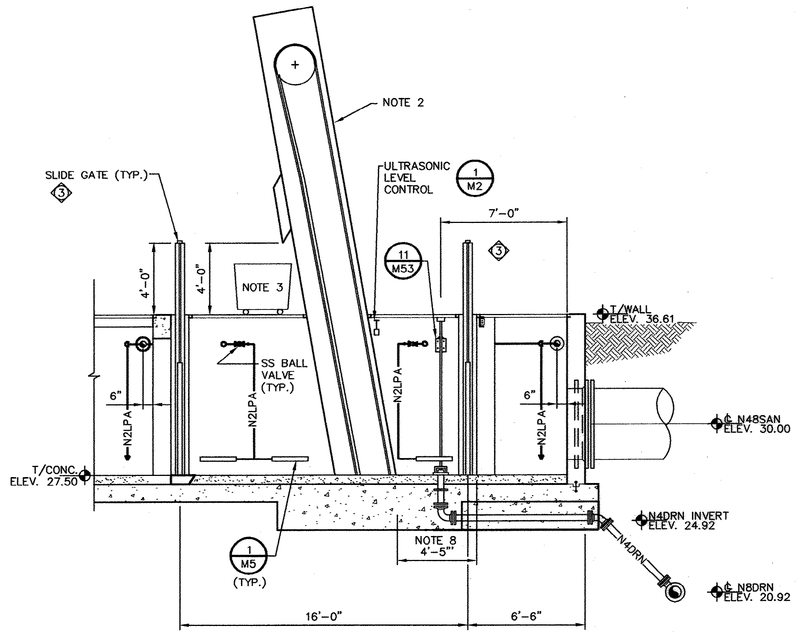
PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149MCG	M1
REF.	OF
N.B. NO. 1731	56
PROJECT NO. 00149	

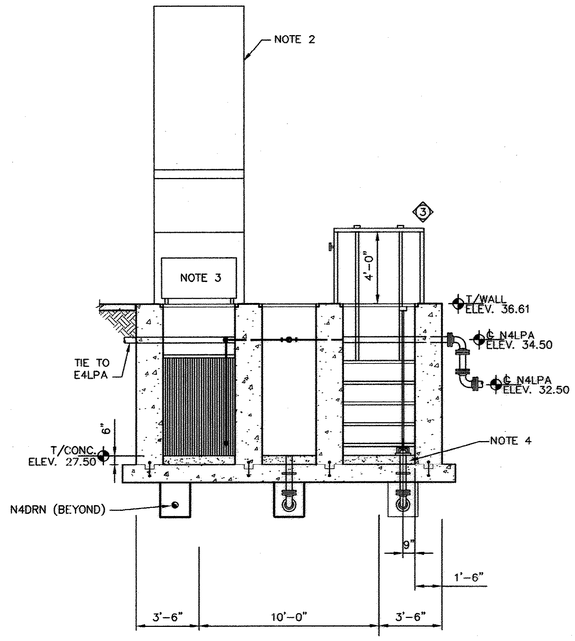
FILE NO. 22-85-00

51-004-100 5

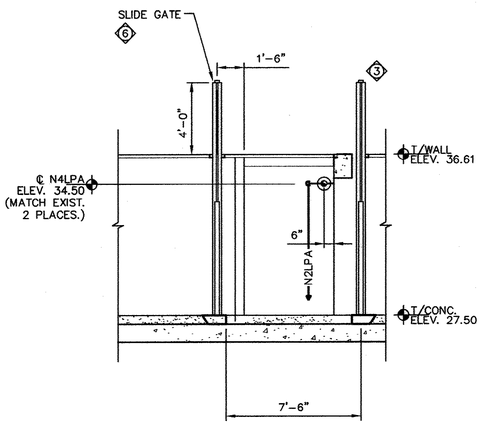
N:\Projects\00149\dwg\RECORD DWG\00149MCG-RD.dwg, 11/21/2003 11:20:14 AM



SECTION
SCALE: 1/4" = 1'-0"
A
M1



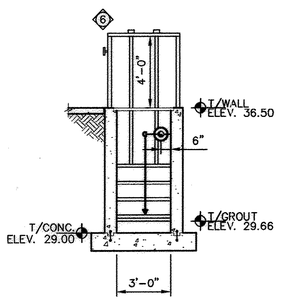
SECTION
SCALE: 1/4" = 1'-0"
C
M1



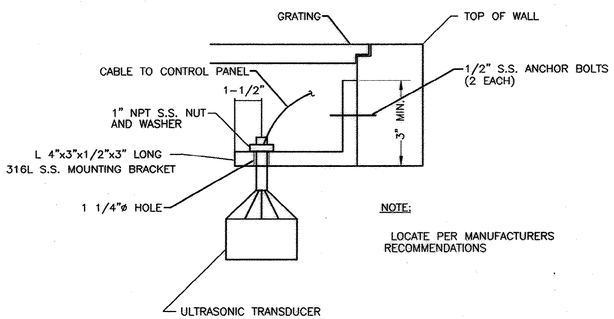
SECTION
SCALE: 1/4" = 1'-0"
B
M1

NOTES:

1. ENCASE ALL PIPES UNDER SLAB IN 2500 PSI CONCRETE (12" MINIMUN ALL AROUND).
2. PROVIDE ONE (1) MECHANICAL BAR SCREEN WHERE SHOWN.
3. SCREENINGS CONTAINER TO BE SUPPLIED BY THE OWNER.
4. PROVIDE TWO (2) NUT OPERATED MUD VALVES.
5. SEE SHEET M1 FOR ADDITIONAL INFORMATION.
6. EXISTING GRADE AND EXISTING PAVING NOT SHOWN. SEE SITE PLAN FOR COORDINATION OF YARD WORK.
7. AIR PIPING SHOWN BUT NOT DELINEATED.
8. DIMENSION TO BE VERIFIED BY EQUIPMENT MANUFACTURER.
9. SEE SHEET M52 FOR SLIDE GATE SCHEDULE.



SECTION
SCALE: 1/4" = 1'-0"
D
M1



DETAIL
SCALE: NONE
1
TYP

0 4 8
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS			
PROJECT ENG: RTH	DESIGNED BY: AR	DRAWN BY: AR	CHECKED BY: TMT	APPROVED: JDP

B. P. BARBER No. 000000 REGISTERED LANDSCAPE ARCHITECT — NORTH CAROLINA — CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA — PROFESSIONAL ENGINEER — No. 7973 — REGISTERED — THOMPSON, JOHN — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW BAR SCREEN SECTIONS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	00149MAN
REF.	
N.B. NO.	1731
PROJECT NO.	00149
SHEET	M2
OF	56
FILE NO.	22-85-00

51-004-101

5

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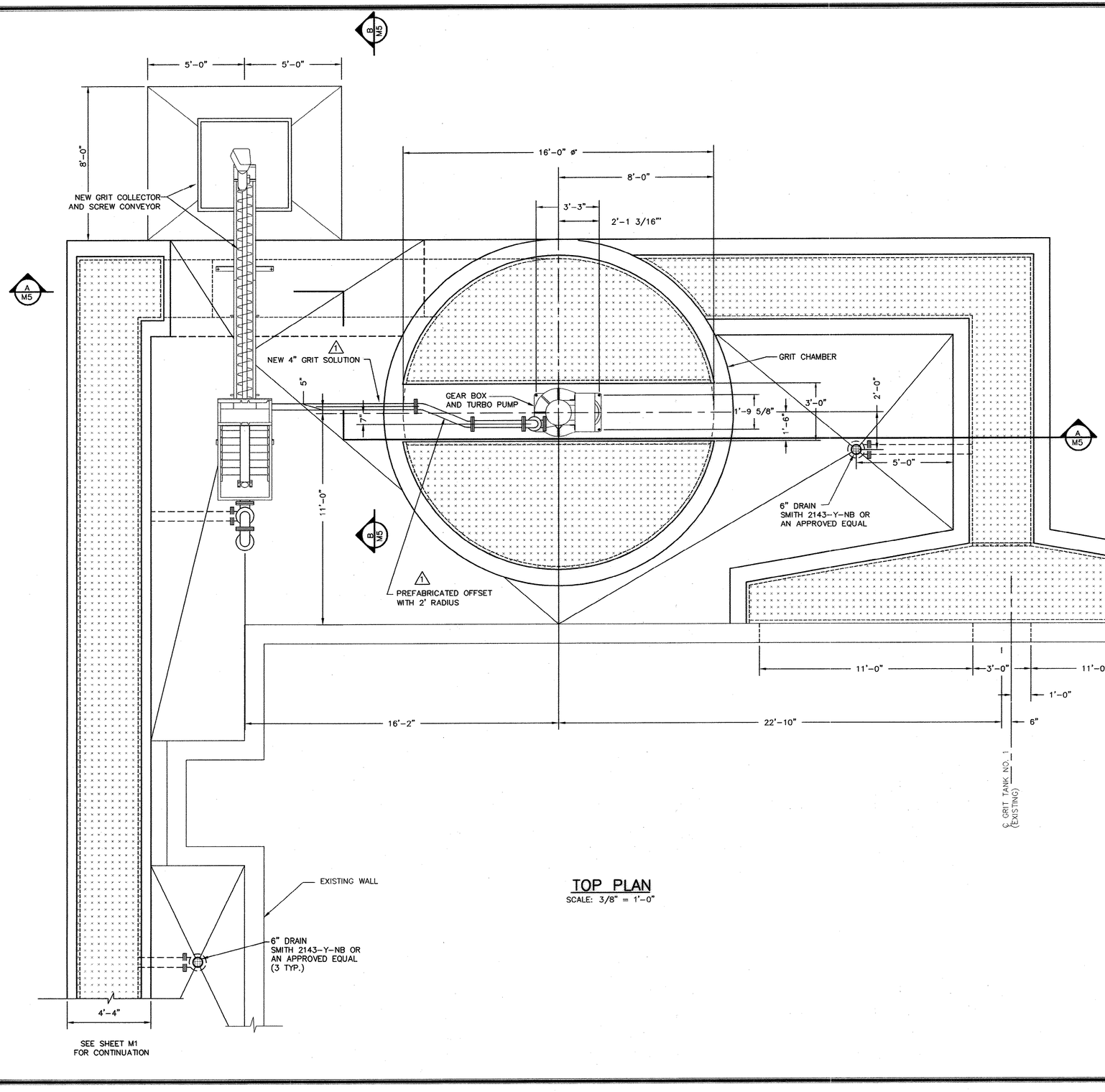

TOP PLAN
SCALE: 3/8" = 1'-0"

NOTES:

1. NOT ALL PIPING SHOWN FOR CLARITY.
2. PROVIDE AN 1NPW TO SOLENOID VALVE.

0 2 4
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	CHANGE PER ADDENDUM #4	3-1	AR

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: MAB
DRAWN BY: AR
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. C000000
DATE

REGISTERED PROFESSIONAL ENGINEER No. 9773 THOMAS V. TRETTIN SOUTH CAROLINA
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW GRIT CHAMBER TOP PLAN AND DETAIL
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149MCH	SHEET M3
REF.	OF 56
N.B. NO. 1731	
PROJECT NO. 00149	
FILE NO. 22-85-00	

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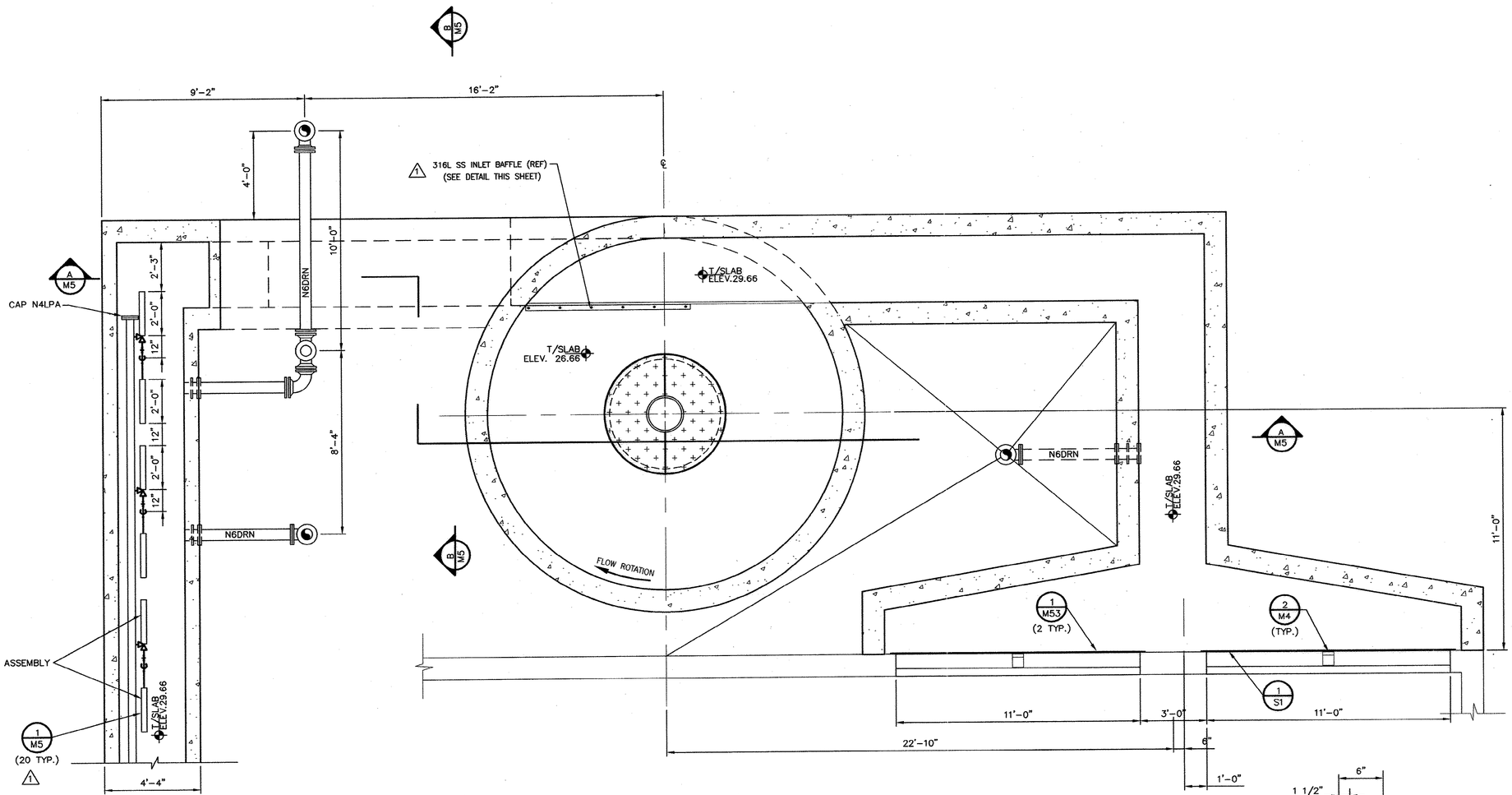
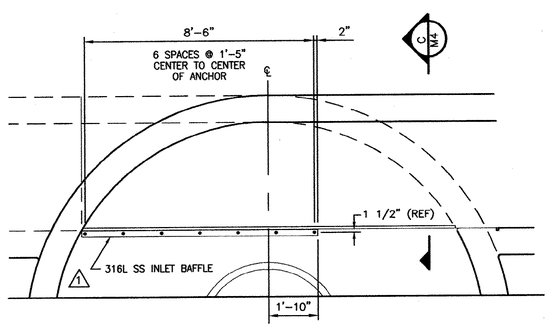
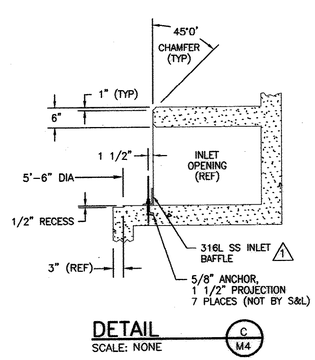
51-004-102 5



STEEL BAFFLE DETAIL

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





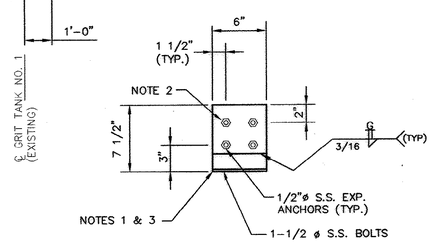
DETAIL
SCALE: NONE

PLAN @ ELEV. 35.00

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

GRAPHIC SCALE 0 2 4

PLANT



NOTES:

1. 2" X 2" 316L STAINLESS STEEL ANGLES WELDED TO BASE PLATE.
2. 3/8" THICK 316L STAINLESS STEEL BASE PLATE, WIDTH AND LENGTH SHOWN.
3. ROLLED 316L S.S. PLATE WELDED TO BASE PLATE MAY BE USED IN LIEU OF S.S. ANC

DETAIL
SCALE: NONE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	CHANGE PER ADDENDUM #4	3-1	AR

APPROVALS		
PROJECT ENG:	RTH	
DESIGNED BY:	MAB	
DRAWN BY:	AR	
CHECKED BY:	TVT	
APPROVED:	JDP	

SOUTH CAROLINA PROFESSIONAL ENGINEER — B.P. BARBER & ASSOCIATES, INC. — No. C000000 — CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER — No. 7970 — REGISTERED — THOMAS VICTOR HUTTO III — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW GRIT CHAMBER PLAN BELOW SLAB AND DETAILS — DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149MCI	SHEET M4
REF.	OF 56
N.B. NO. 1731	
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-103 5

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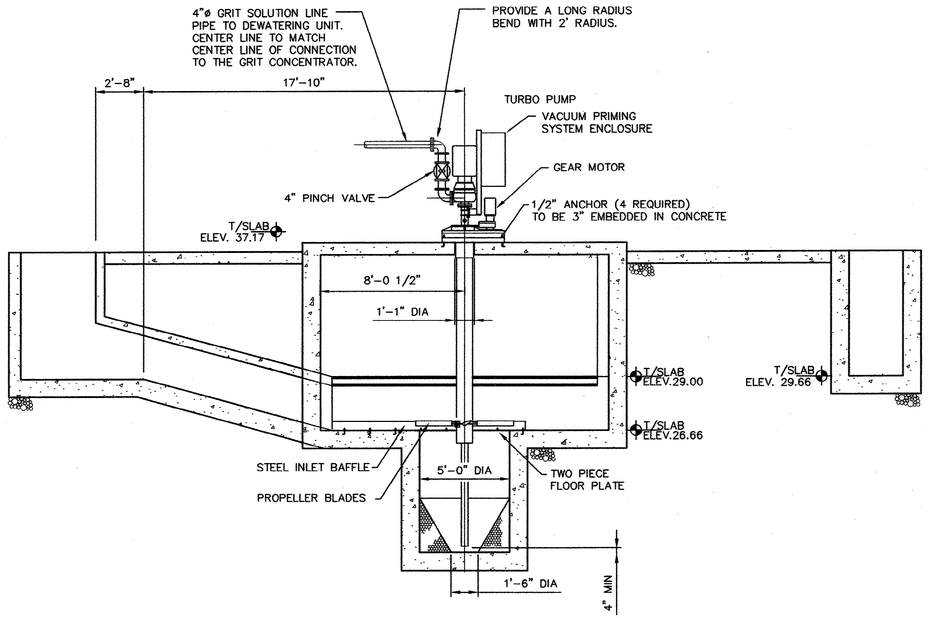
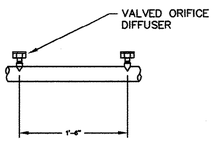
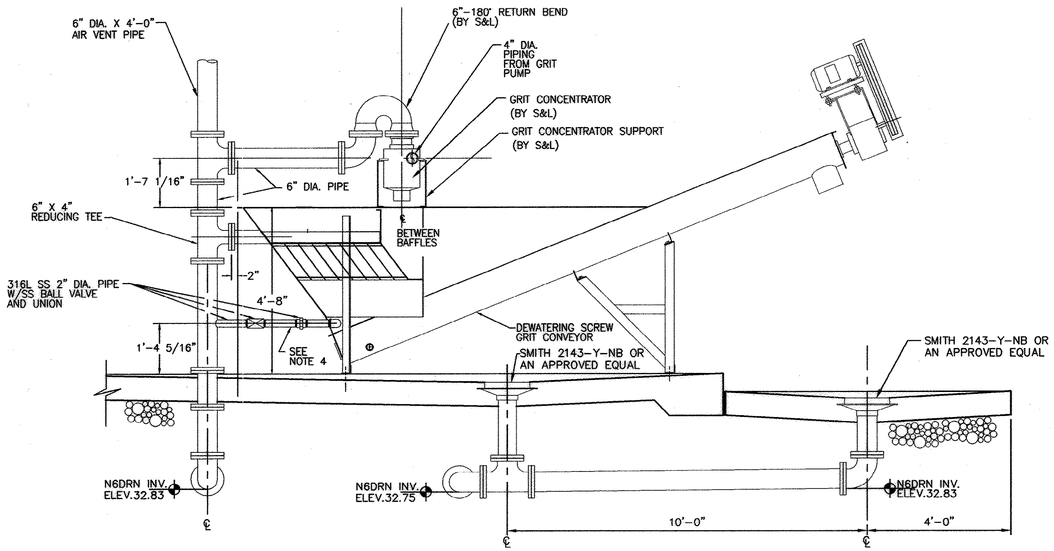


SECTION (A M3 / A M4)
SCALE: 1/4" = 1'-0"

0 4 8
GRAPHIC SCALE



DETAIL (1 M5)
SCALE: NONE



SECTION (B M3 / B M4)
SCALE: 1/2" = 1'-0"

0 2 4
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	CHANGE PER ADDENDUM #4	3-1	AR

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: MAB
DRAWN BY: AR
CHECKED BY: TVT
APPROVED: JDP

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 7073 — CERTIFICATE OF AUTHORIZATION No. C000000 — DATE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 7073 — REGISTERED — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW GRIT CHAMBER SECTIONS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149MCJ
REF.
N.B. NO. 1731
PROJECT NO. 00149
SHEET M5 OF 56
FILE NO. 22-85-00

51-004-104 5

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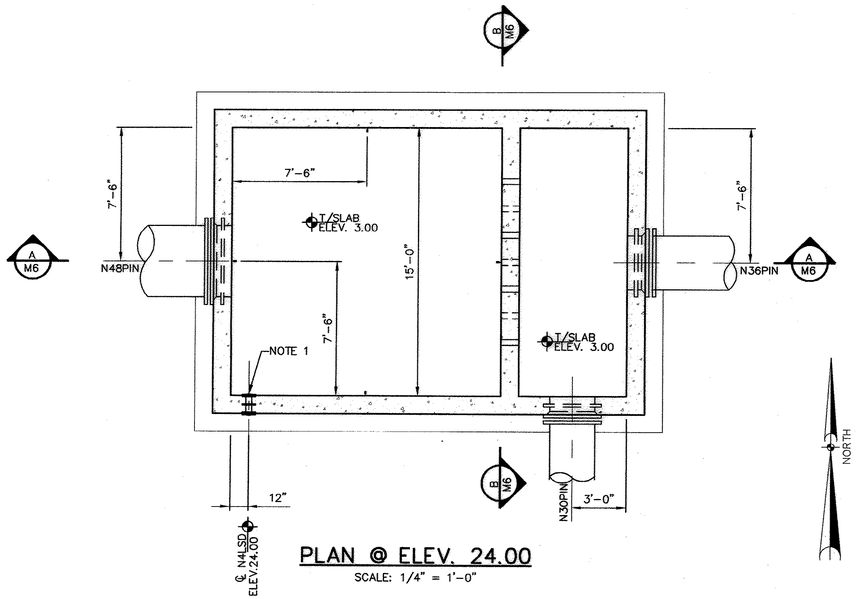
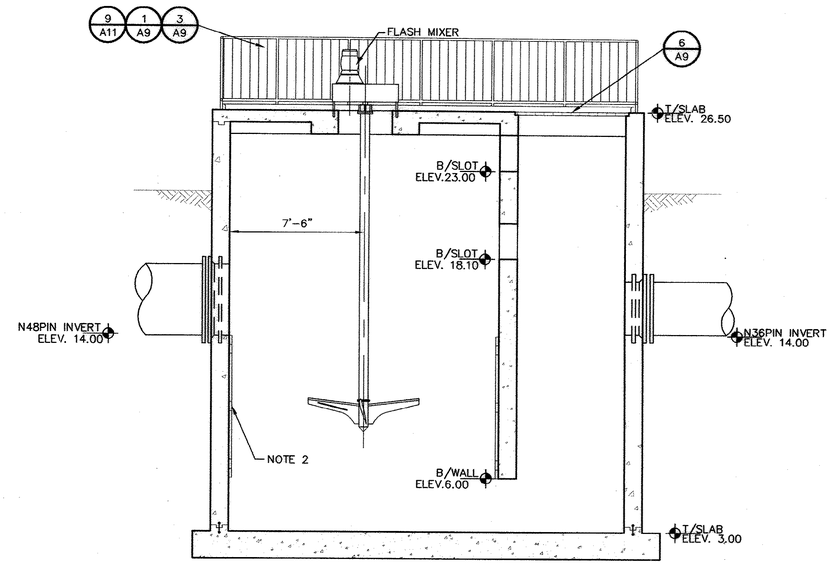


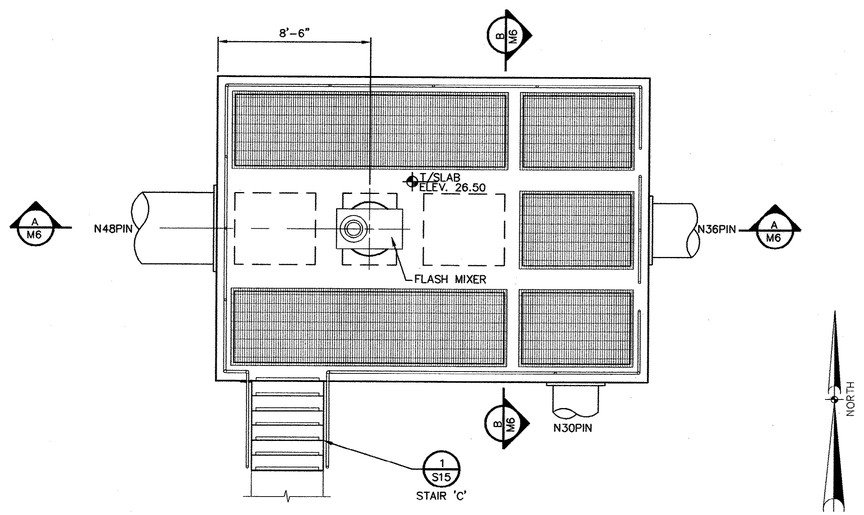
PLAN @ ELEV. 24.00

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



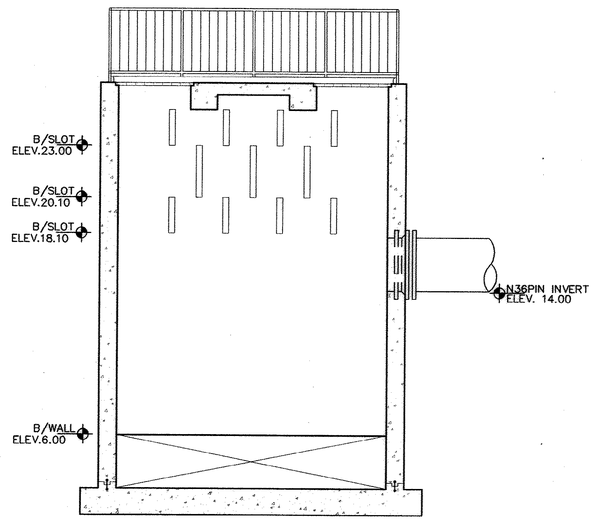
SECTION

SCALE: 1/4" = 1'-0" (A M6)



TOP PLAN

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



SECTION

SCALE: 1/4" = 1'-0" (B M6)

NOTES:

1. N4LSD (NEW 4" FUTURE) LINE FOR FUTURE LIME DIFFUSER.
2. FOUR (4) BAFFLES EQUAL DISTANCE. SEE SPEC, 11220.

0 4 8

GRAPHIC SCALE

RECORD DRAWINGS

DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS

PROJECT ENG:	DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED:
RTH	JRC	JRC	TVT	JDP

SOUTH CAROLINA NOVEMBER 20, 2003 B.P. BARBER & ASSOCIATES, INC. No. C00000 CERTIFICATE OF AUTHORIZATION

DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER REGISTERED THOMAS VICTOR No. 7973

SIGNATURE

B. P. BARBER & ASSOCIATES, INC.

ENGINEERS – PLANNERS – SURVEYORS

COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE

NEW INTERMEDIATE MIXING TANK PLANS & SECTION

DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT

IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149MAB	M6
REF.	OF
N.B. NO. 1731	56
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-105 S

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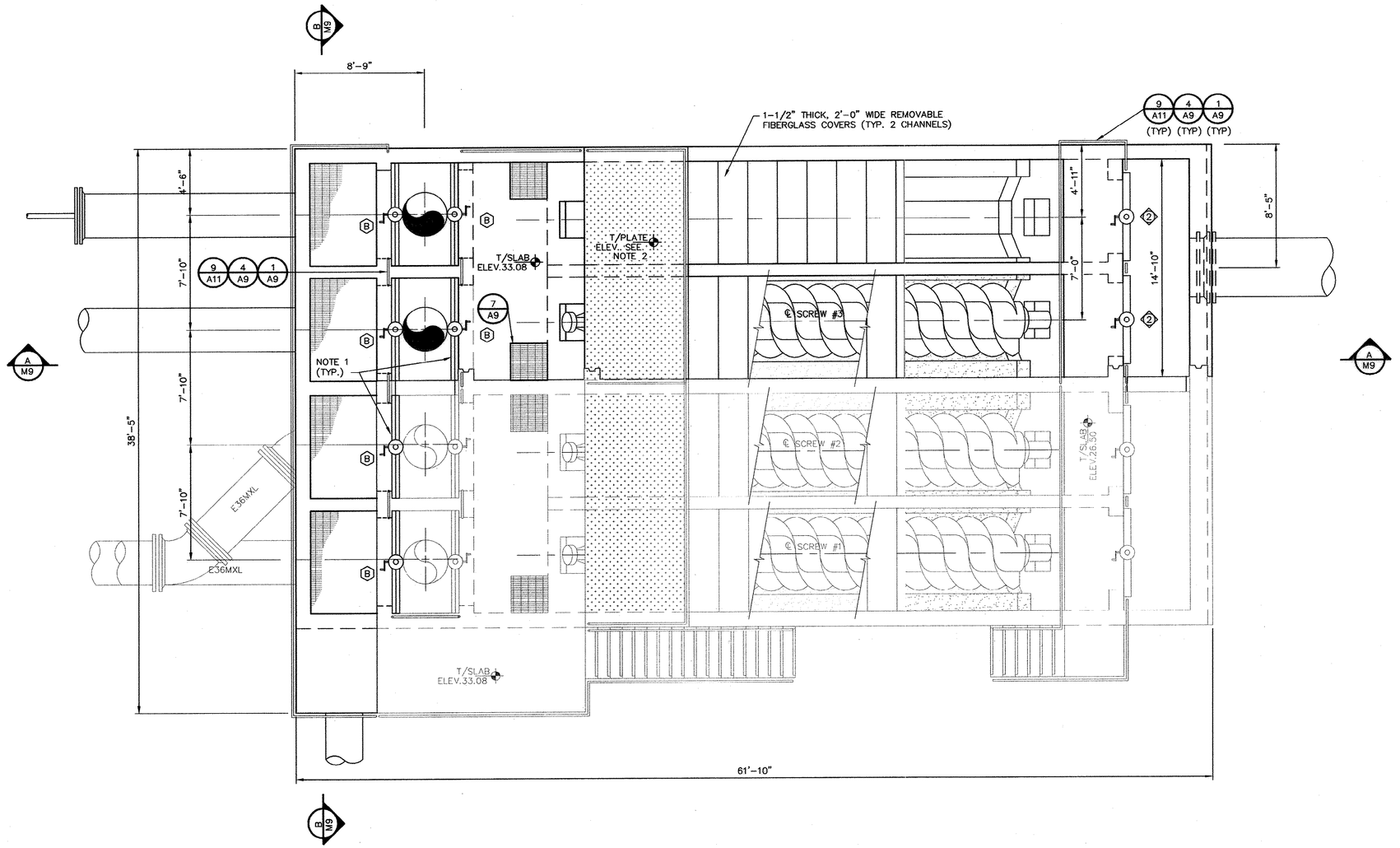

TOP PLAN
SCALE: 1/4" = 1'-0"

NOTES:

1. SEE SHEET M52 FOR GATE SCHEDULE.
2. MATCH SLAB ELEVATIONS ON EXISTING SIDE. CONTRACTOR VERIFY.

0 4 8
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: MAB
DRAWN BY: JRC
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA PROFESSIONAL ENGINEER — No. 22085 — CERTIFICATE OF AUTHORIZATION — B. P. BARBER & ASSOCIATES, INC. — No. C000320 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER — No. 7975 — THOMAS PORTER — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
MODIFICATIONS TO INTERMEDIATE PUMP STATION TOP PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
99127MG	M7
REF.	OF
N.B. NO. 1731	56
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-106 S

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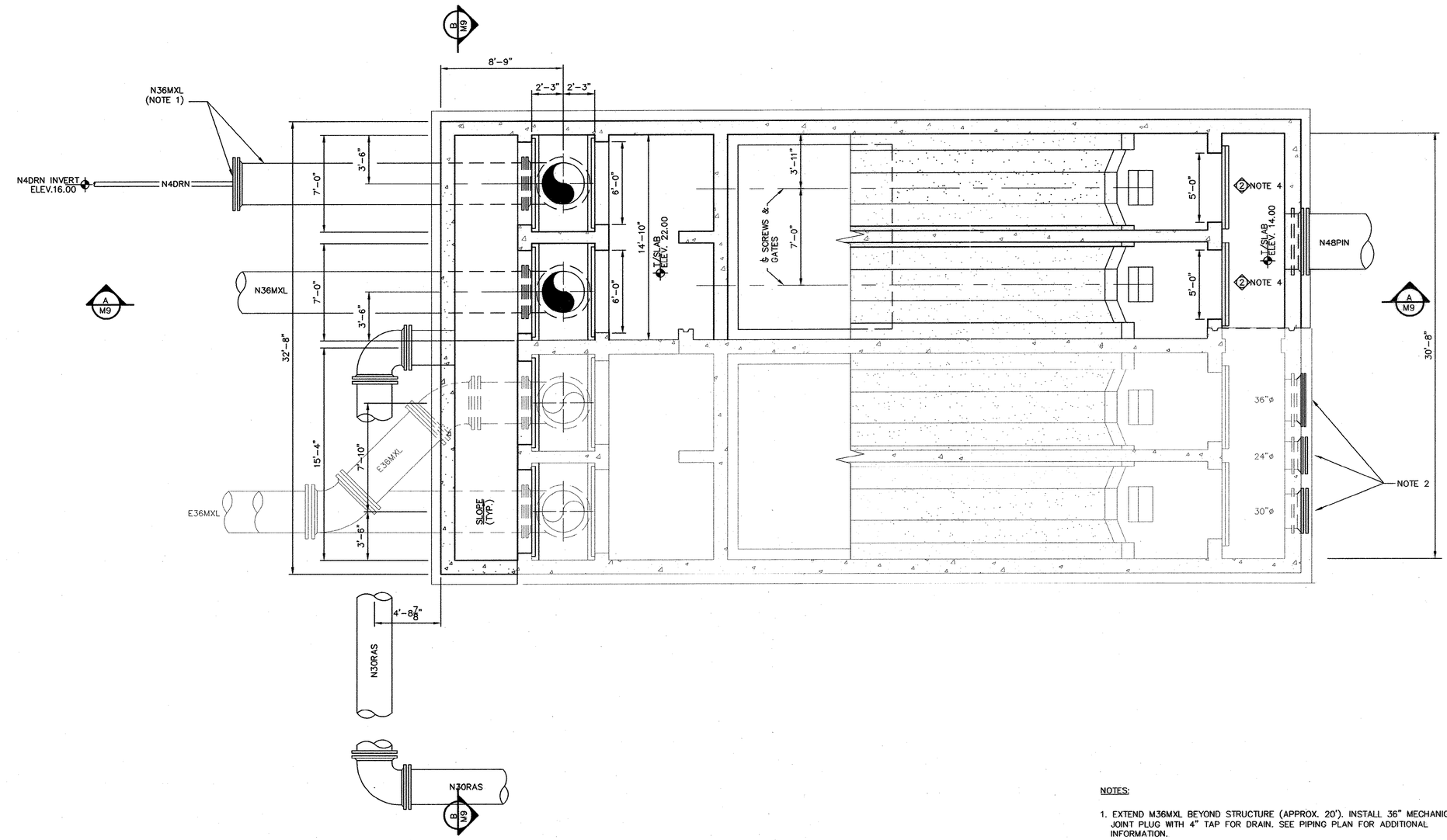

PLAN BELOW SLAB

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

NOTES:

1. EXTEND M36MXL BEYOND STRUCTURE (APPROX. 20'). INSTALL 36" MECHANICAL JOINT PLUG WITH 4" TAP FOR DRAIN. SEE PIPING PLAN FOR ADDITIONAL INFORMATION.
2. REROUTE PIPING (EXISTING PIPING NOT SHOWN). SEE PIPING PLAN. INSTALL MECHANICAL JOINT PLUGS OR BLIND FLANGES TO SEAL OFF OPENING, & SEAL INTERIOR WALL FLUSH WITH NONSHRINK GROUT.
3. ~~N30RAS (90° BEND) INVERT ELEV. = 8.00 (2 PLCS.).~~
4. SEE SHEET M52 FOR GATE SCHEDULE.

0 4 8
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: MAB
DRAWN BY: JRC
CHECKED BY: TVT
APPROVED: JDP

NORTH CAROLINA CORPORATION
B. P. BARBER & ASSOCIATES, INC.
CERTIFICATE OF AUTHORIZATION
DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER
No. 19173
REGISTERED
THOMAS V. TAYLOR
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
MODIFICATIONS TO INTERMEDIATE PUMP STATION PLAN BELOW SLAB
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY
PHASE I

DISK	SHEET
99127MH	M8
REF.	OF
N.B. NO. 1731	56
PROJECT NO. 00149	

FILE NO. 22-85-00

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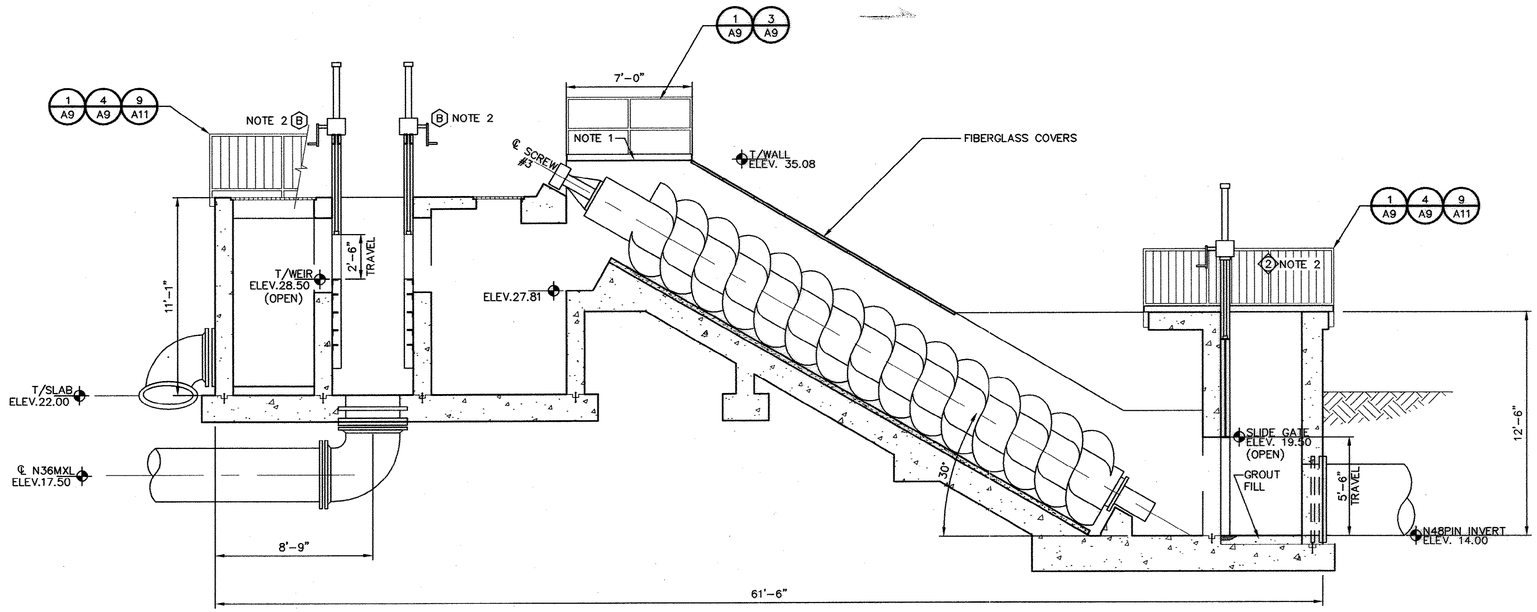
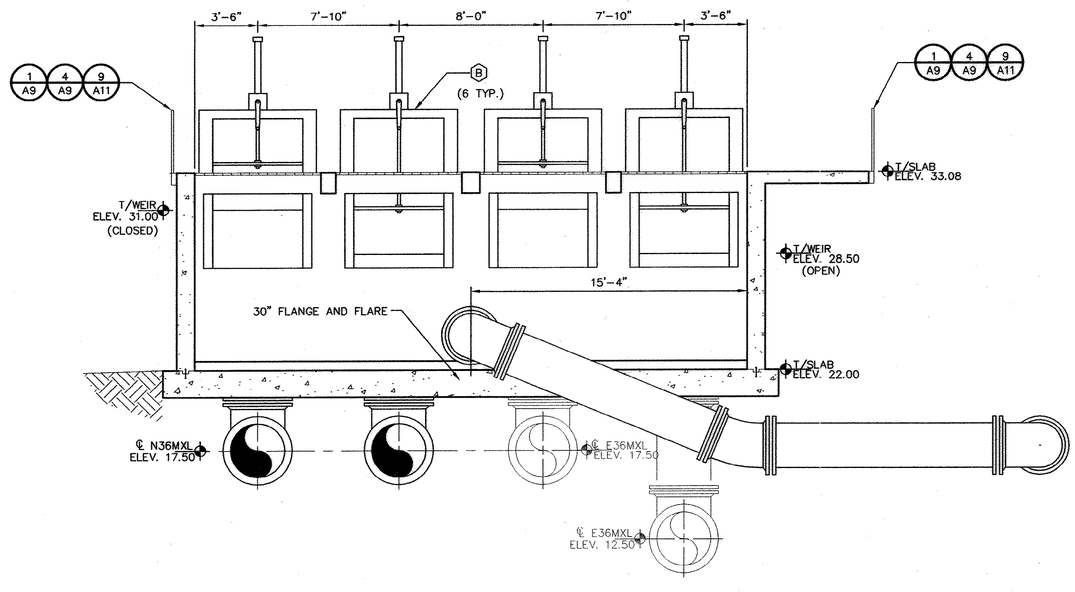
51-004-AM 107 5



SECTION (A M7 / A M8)
SCALE: 1/4" = 1'-0"



SECTION (B M7 / B M8)
SCALE: 1/4" = 1'-0"

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS			
PROJECT ENG:	RTH	DESIGNED BY:	MAB
DRAWN BY:	JRC	CHECKED BY:	TVT
APPROVED:	JDP		

SOUTH CAROLINA PROFESSIONAL ENGINEER — B.P. BARBER & ASSOCIATES, INC. — CERTIFICATE OF AUTHORIZATION No. 000300 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER — No. 7873 — III — NIHIL SINE LABORE VICTOR — REGISTERED — THOMAS — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: MODIFICATIONS TO INTERMEDIATE PUMP STATION SECTIONS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 99127MAP	SHEET M9
REF.	OF 56
N.B. NO. 1731	
PROJECT NO. 00149	

FILE NO. 22-85-00

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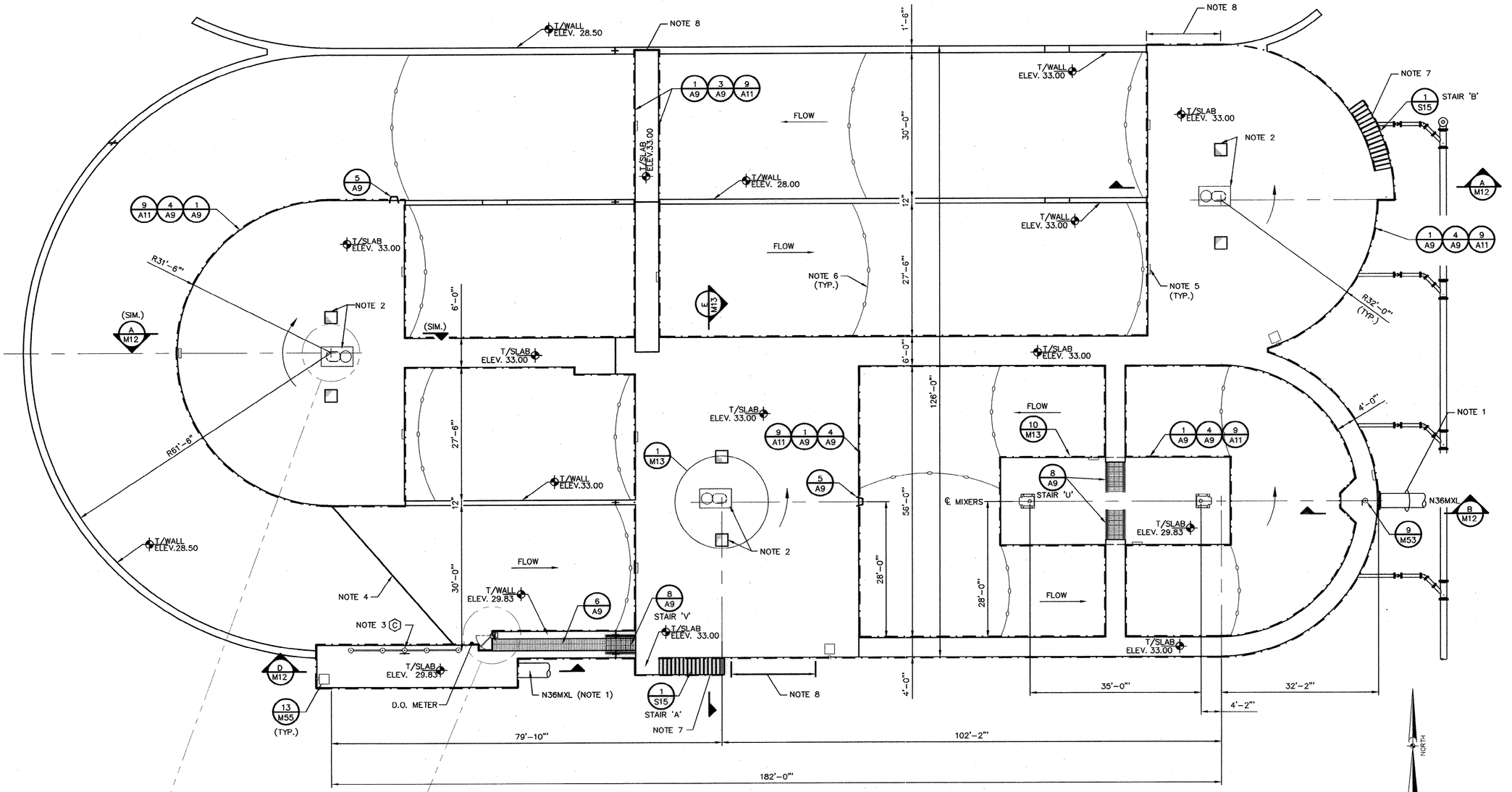
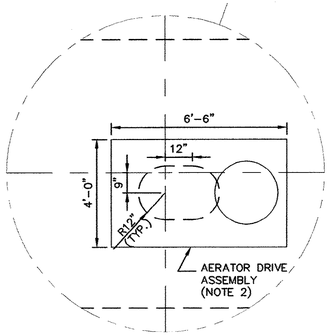
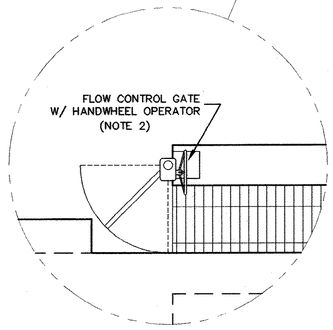




INSET A
SCALE: NONE



INSET B
SCALE: NONE

TOP PLAN
SCALE: 3/32" = 1'-0"

NOTES:

1. SEE PIPING PLAN FOR ADDITIONAL INFORMATION.
2. COORDINATE LOCATION OF ALL EQUIPMENT WITH EQUIPMENT MANUFACTURER (SHOP DRAWING).
3. SEE SHEET M52 FOR WEIR GATE SCHEDULE.
4. PROVIDE 8" (SCH. 80 PVC) SCUM DIVERTER CAPPED ON BOTH ENDS AND TIED ON BOTH ENDS, AS SHOWN.
5. LIFE PRESERVER AND CABINET, TYP. SEE SPECS.
6. SAFETY ROPE TO BE 1/2" GENERAL PURPOSE POLYPROPYLENE ROPE, WITH THREE(3), 3" x 5" FLOATS.
7. PROVIDE CONCRETE SIDEWALK BENEATH STAIRS
8. REMOVABLE HAND RAIL SECTION.

0 8 16
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY
1	CHANGE IN ELEVATION BY 6"	10/02	ZES

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: CHS
DRAWN BY: JRC
CHECKED BY: TVT
APPROVED: JDP

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL THOMAS V. TUTTLE No. 7973 REGISTERED
SIGNATURE DATE

NORTH CAROLINA BOARD OF EXAMINERS FOR ENGINEERING AND SURVEYING CERTIFICATE OF AUTHORIZATION B. P. BARBER & ASSOCIATES, INC. No. C00500

bpb
B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW AERATION BASIN TOP PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 99127MAX
REF.
N.B. NO. 1731
PROJECT NO. 00149

SHEET M10 OF 56

FILE NO. 22-85-00

51-004-109 5

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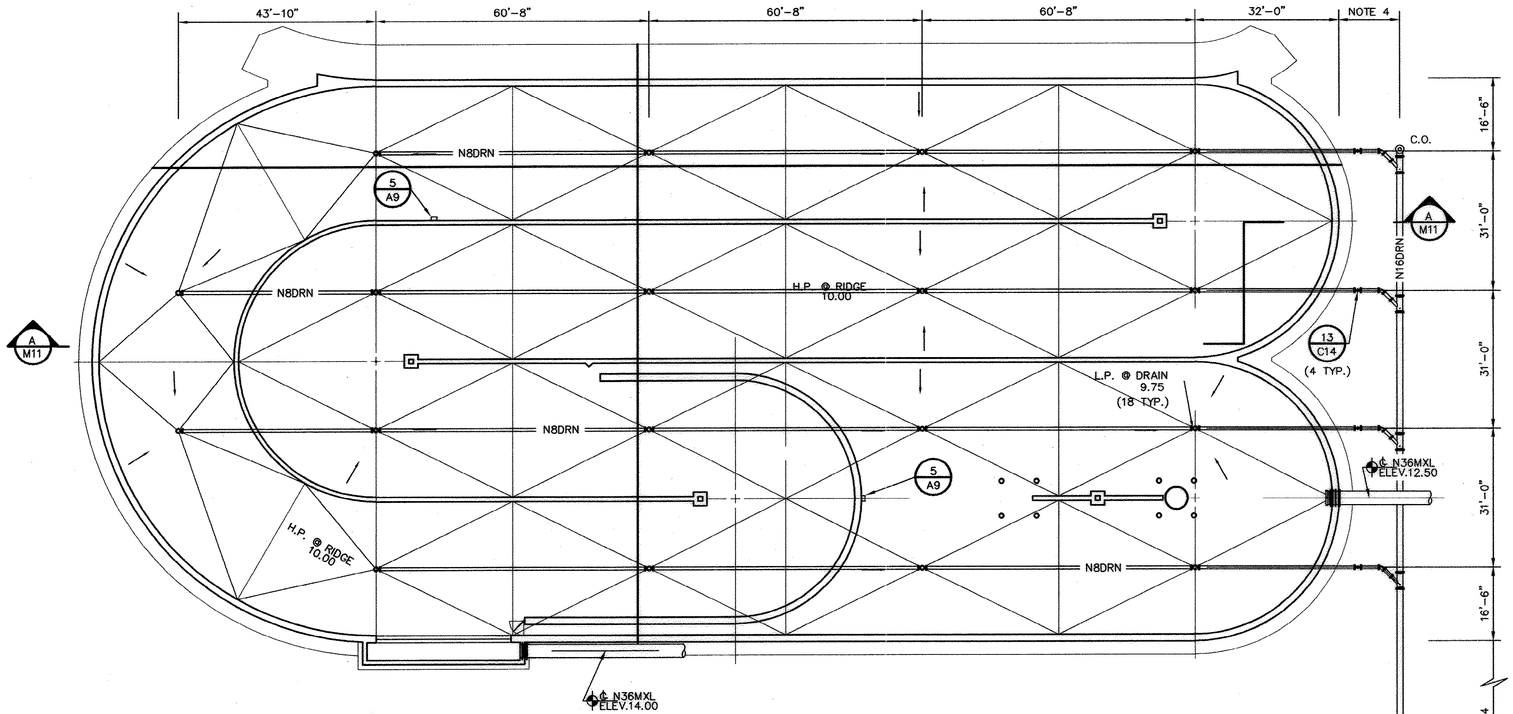
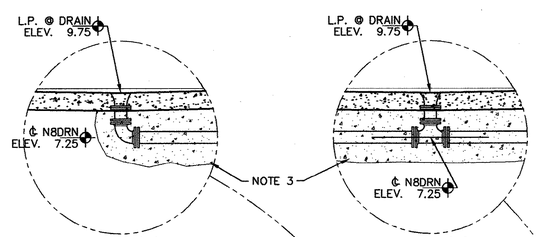
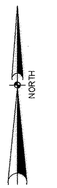




INSET 'A'
SCALE: NONE
(4 TYP.)

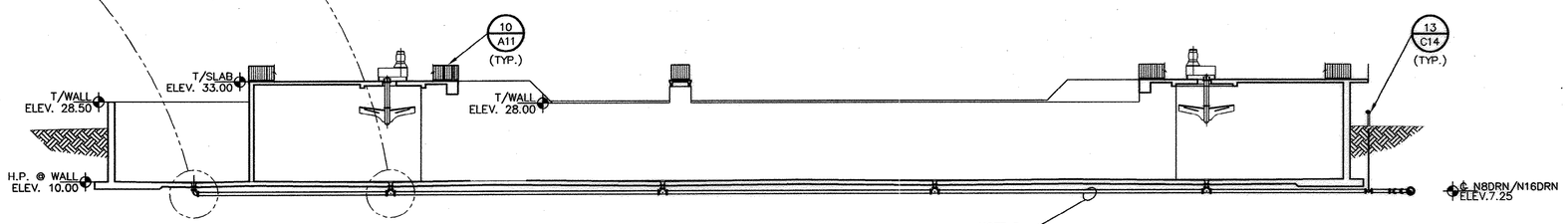
INSET 'B'
SCALE: NONE
(14 TYP.)



PLAN @ ELEV. 27.00
SCALE: 1/16" = 1'-0"

NOTES:

1. SEE PIPING PLAN FOR ADDITIONAL INFORMATION.
2. COORDINATE LOCATION OF ALL DRAIN PIPING WITH ADDITIONAL PROCESS AND UTILITY PIPING.
3. ENCASE ALL PIPING UNDER SLAB IN 2500 PSI CONCRETE (12" MIN. ALL AROUND TYP.). NOT SHOWN IN SECTION, SHOWN ON INSET 'A' & 'B'.
4. INTERCEPT E16DRN, MATCH INVERT.
5. MIXERS AND ACCESS STAIRS NOT SHOWN.



SECTION
SCALE: 1/16" = 1'-0" (A / M11)

0 16 32
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

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REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	CHANGE IN ELEVATION BY 6"	10/02	ZES

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: MAB
DRAWN BY: JRC
CHECKED BY: TVT
APPROVED: JDP

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 7673 — REGISTERED PROFESSIONAL ENGINEER — DATE

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION — B.P. BARBER & ASSOCIATES, INC. — No. C00666 — DATE

SIGNATURE

bpb
B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

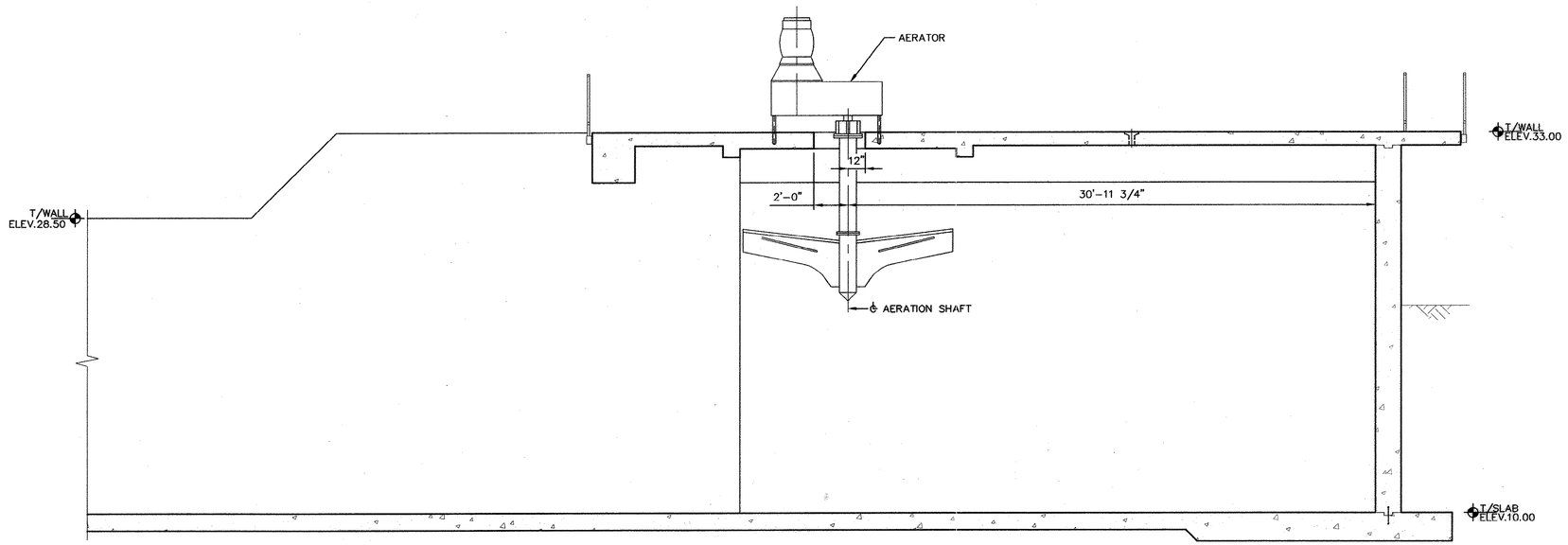
SHEET TITLE
NEW AERATION BASIN DRAINAGE PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

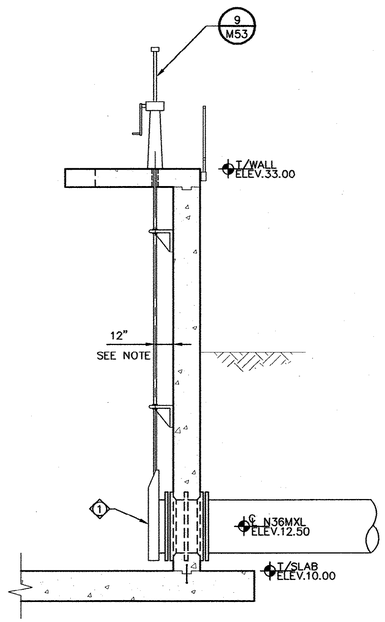
DISK	SHEET
00149MBJ	M11
REF.	OF
N.B. NO. 1731	56
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-110 S

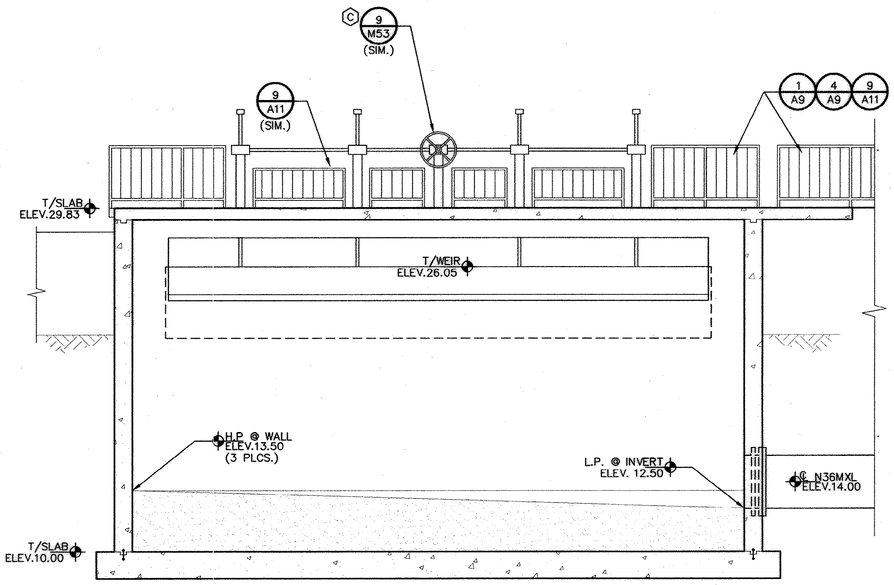


SECTION
SCALE: 1/4" = 1'-0" (A / M10)



NOTE: SLUICE GATE MANUFACTURER TO VERIFY.

SECTION
SCALE: 1/4" = 1'-0" (B / M10)



SECTION
SCALE: 1/4" = 1'-0" (D / M10)

0 4 8
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY
1	CHANGE IN ELEVATION BY 6"	10/02	ZES

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: JRC
DRAWN BY: JRC
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA NOW AUTHORIZED CERTIFICATE OF G. P. BARBER ASSOCIATES, INC. No. 000000
DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7673 REGISTERED THOMAS V. PETTUS
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW AERATION BASIN SECTIONS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 99127MP	SHEET M12
REF.	OF 56
N.B. NO. 1731	
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-111 5

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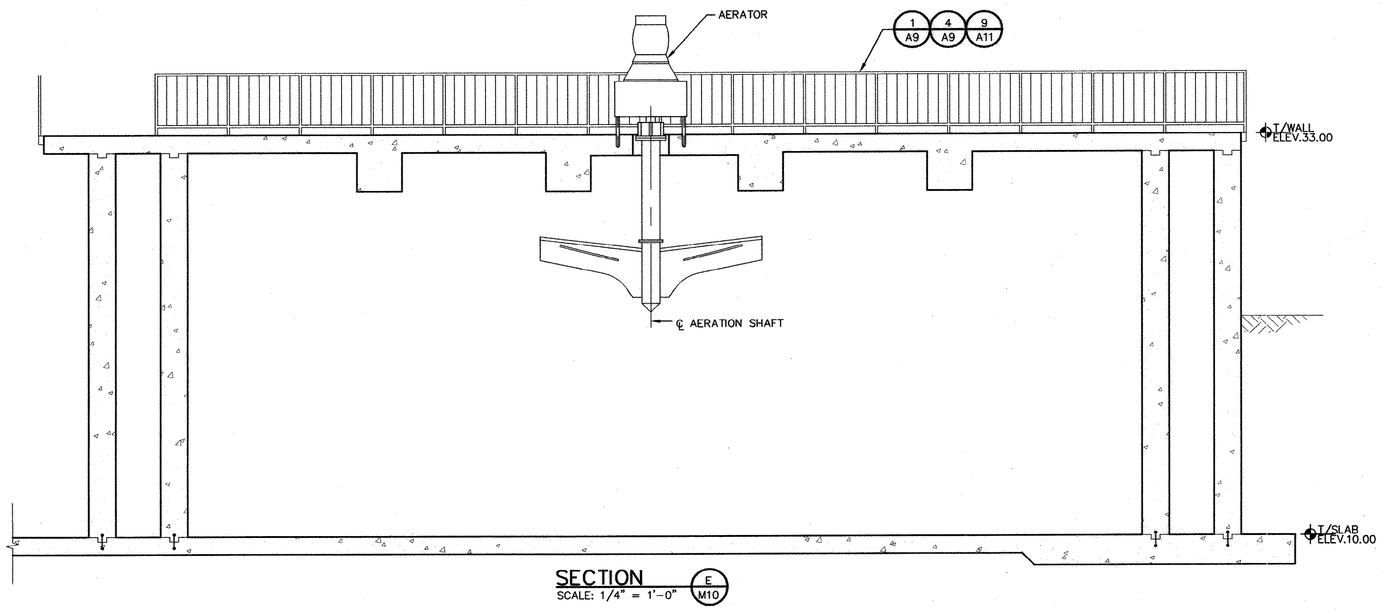
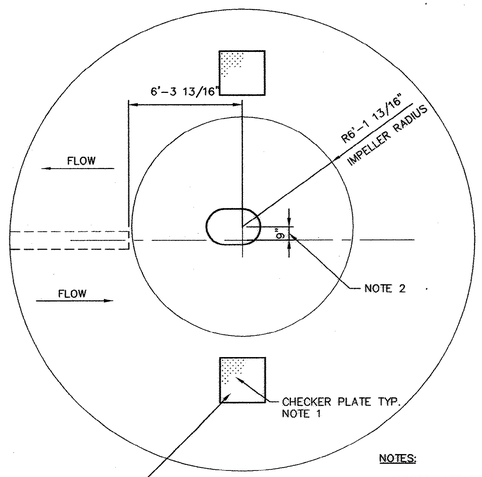


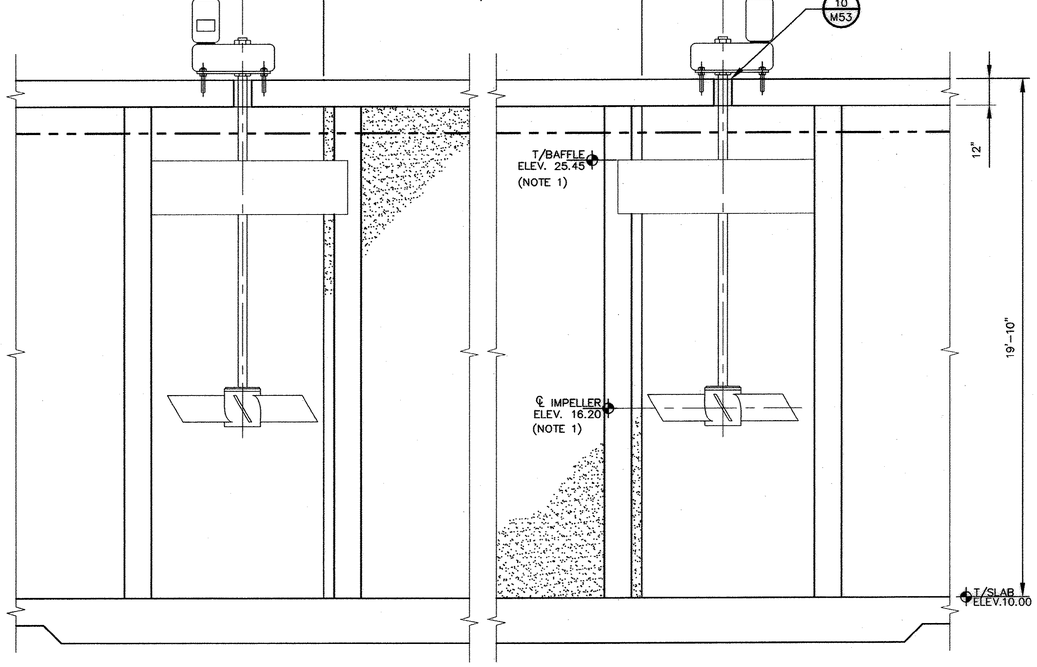
SECTION
SCALE: 1/4" = 1'-0" (E M10)



DETAIL
SCALE: 1/4" = 1'-0" (1 M10)

NOTES:

1. COORDINATE SIZE AND LOCATION OF EQUIPMENT ACCESS OPENING WITH APPROVED MANUFACTURER'S SHOP DRAWINGS.
2. SIDE OF OFFSET TO BE DETERMINED BY ROTATION.



SECTION

DETAIL
SCALE: 3/8" = 1'-0" (10 M10)

NOTE:

1. COORDINATE LOCATION OF IMPELLER AND BAFFLE WITH APPROVED MANUFACTURER'S SHOP DRAWINGS.

0 3 6
GRAPHIC SCALE

0 4 8
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY
1	CHANGE IN DIMENSION AND ELEVATION BY 6"	10/02	ZES

APPROVALS
PROJECT ENG.: RTH
DESIGNED BY: JRC
DRAWN BY: JRC
CHECKED BY: TLT
APPROVED: JDP

SOUTH CAROLINA PROFESSIONAL ENGINEER B.P. BARBER & ASSOCIATES, INC. No. C00000 CERTIFICATE OF AUTHORIZATION
DATE

REGISTERED SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7973 WILLIAM THOMAS VICTOR
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW AERATION BASIN SECTIONS & DETAIL
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
99127MS	M13
REF.	OF
N.B. NO. 1731	56
PROJECT NO. 00149	

FILE NO. 22-85-00

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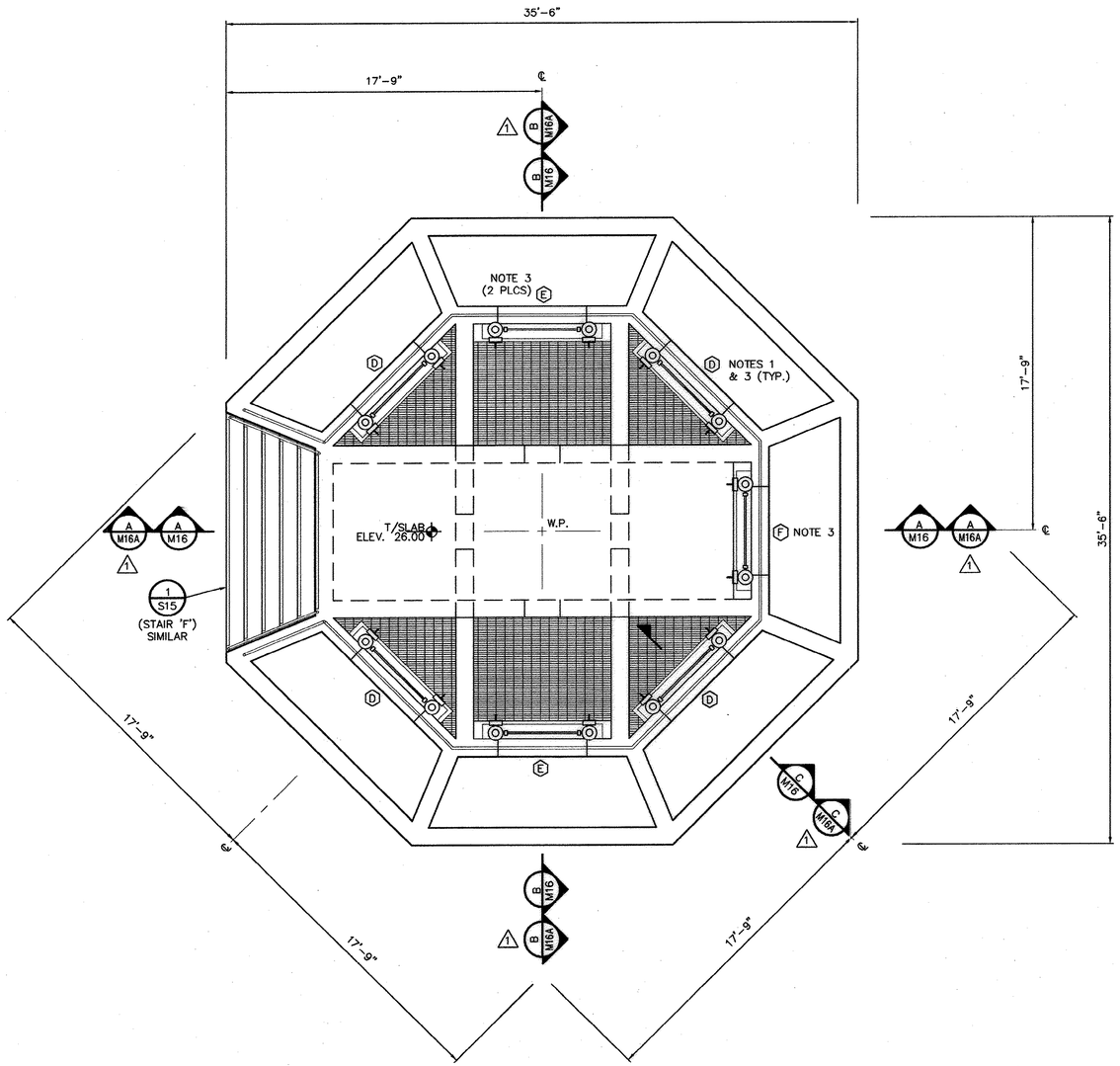

TOP PLAN

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

NOTES:

1. WEIR GATE 'D' WILL HAVE (1) ONE RECTANGULAR NOTCH (CUT-OUT) THE OTHER (3) THREE WILL RECEIVE CUT-OUTS WHEN CLARIFIERS ARE UP AND OPERATIONAL.
2. SEE SITE PLAN FOR LOCATION AND NUMBER OF SECONDARY CLARIFIERS.
3. SEE SHEET M52 FOR WEIR GATE SCHEDULE.

NORTH

0 4 8
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY
1	ALTERNATE NO. 1	2-01	RTH

APPROVALS

PROJECT ENG:	DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED:
RTH	MAB	MAB	TVT	JDP

SOUTH CAROLINA PROFESSIONAL ENGINEER — B.P. BARBER & ASSOCIATES, INC. — No. C00360 — CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER — No. 19973 — REGISTERED — THOMAS VICTOR — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS - PLANNERS - SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW DISTRIBUTION CHAMBER # 5 TOP PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149MBO	M14
REF.	OF
N.B. NO. 1731	56
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-113 5

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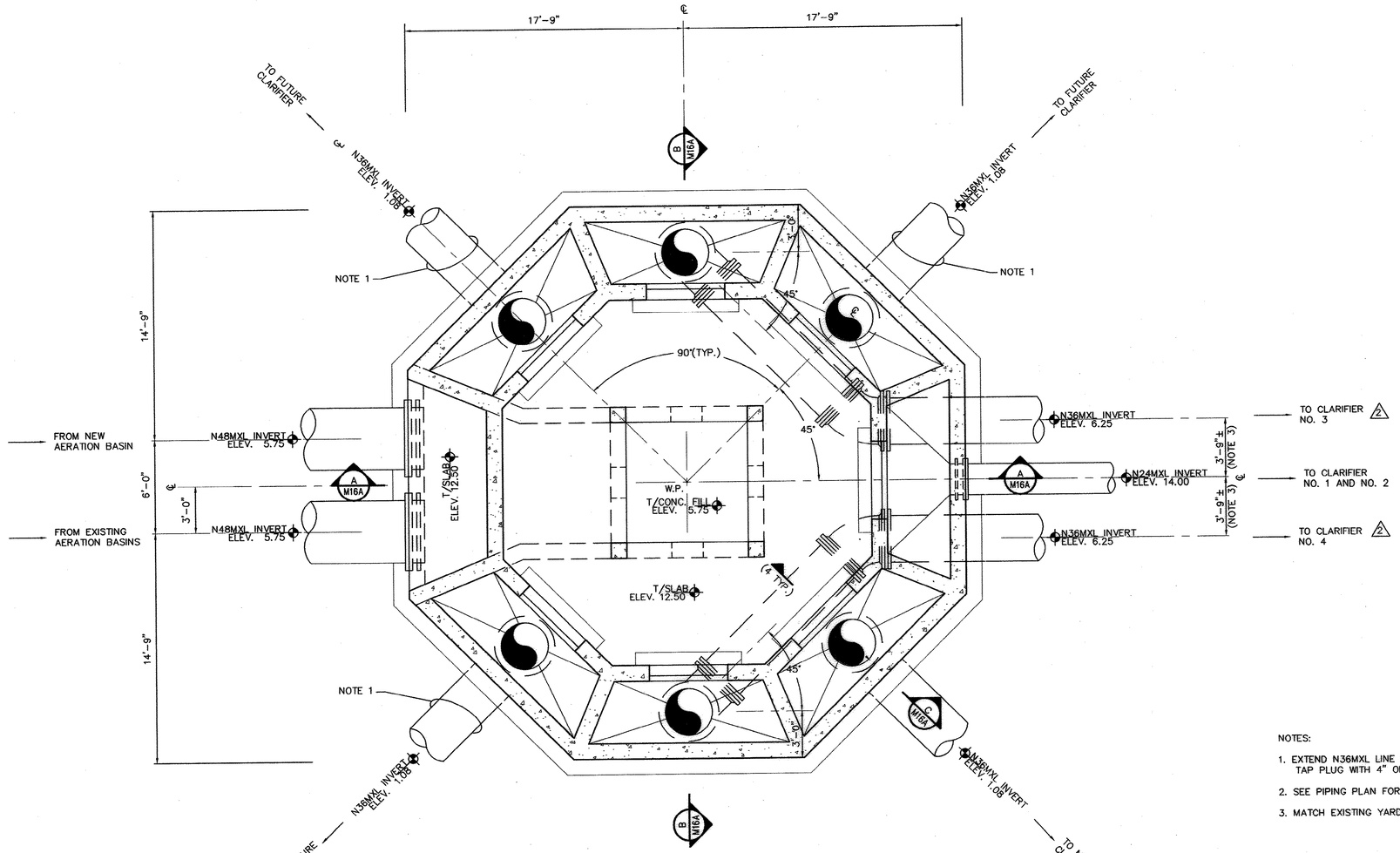

PLAN @ ELEV. 24.00

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

NOTES:

1. EXTEND N36MXL LINE 20', INSTALL 36" M.J. PLUG. TAP PLUG WITH 4" OPENING FOR N4DRN (3 PLCS.).
2. SEE PIPING PLAN FOR CONTINUATION.
3. MATCH EXISTING YARD PIPING.

NORTH

0 4 8
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	ALTERNATE NO. 1	2-01	RTH
2	CHANGE PER ADDENDUM #4	3-1	AR

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: MAB
DRAWN BY: MAB
CHECKED BY: TYT
APPROVED: JDP

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION B. P. BARBER & ASSOCIATES, INC. No. COR0008
DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER REGISTERED No. 7873 THOMAS
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW DISTRIBUTION CHAMBER #5 PLAN @ ELEV. 24.00 (ALTERNATE)
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149MBN	M15A
REF.	OF
N.B. NO. 1731	56
PROJECT NO. 00149	

FILE NO. 22-85-00

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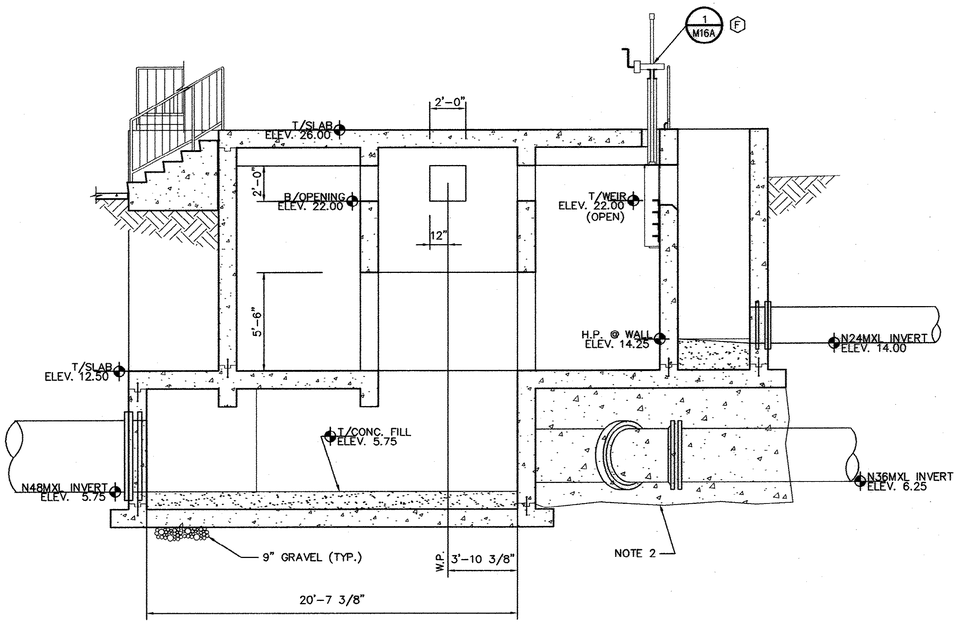
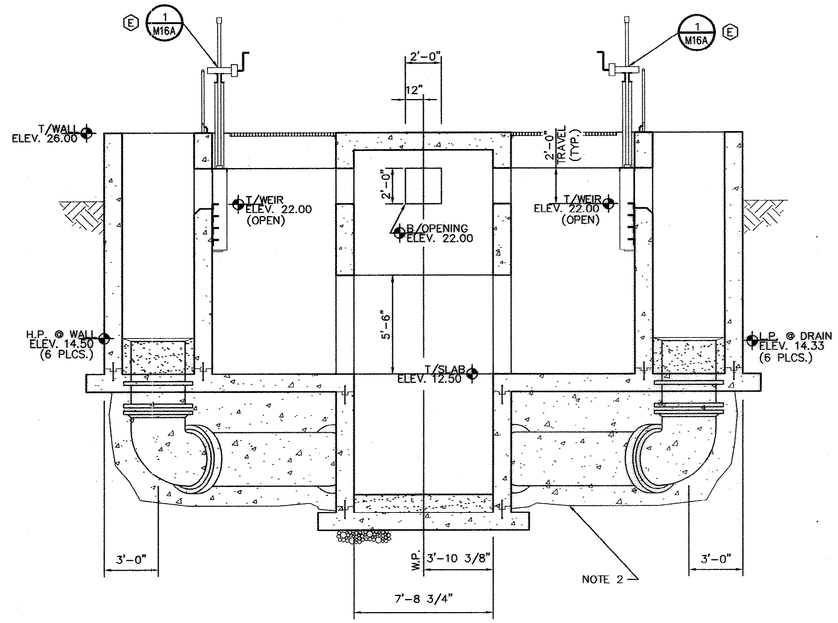


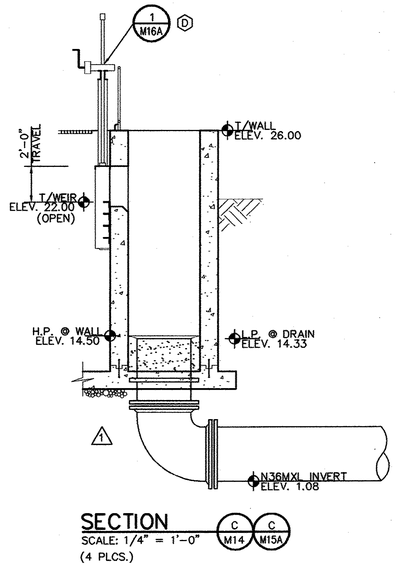
SECTION
SCALE: 1/4" = 1'-0"
A M14 A M15A



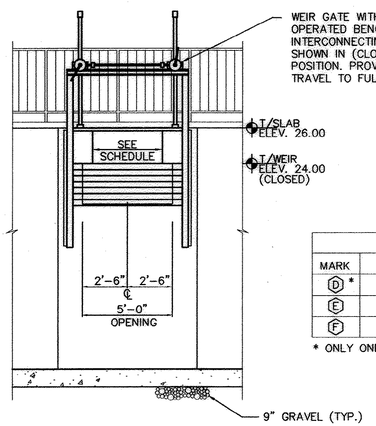
SECTION
SCALE: 1/4" = 1'-0"
B M14 B M15A

NOTES:

1. SEE SHEETS M14, M15A & PIPING PLANS FOR PIPING ORIENTATION AND CONTINUATION.
2. ENCASE ALL PIPES UNDER SLAB IN 2500 PSI CONCRETE (12" MINIMUM, ALL AROUND).
3. WEIRS BEYOND NOT SHOWN FOR CLARITY.



SECTION
SCALE: 1/4" = 1'-0"
(4 PLCS.)
C M14 C M15A



DETAIL
SCALE: 1/4" = 1'-0"
(SIMILAR 6 PLACES)
1 M16A

PLATE SCHEDULE

MARK	DIMENSIONS (WIDTH VARIES)	QTY.
D *	3'-10 1/2"W. X 2'-0"D.	4
E	3'-0 1/2"W. X 2'-0"D.	2
F	2'-4 1/2"W. X 2'-0"D.	1

* ONLY ONE PLATE TO BE DONE AT THIS TIME,

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY
1	ALTERNATE NO. 1	2-01	RTH

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: MAB
DRAWN BY: MAB
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA PROFESSIONAL ENGINEER — CERTIFICATE OF AUTHORIZATION — B. P. BARBER & ASSOCIATES, INC. — No. C000000 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER — No. 7973 — REGISTERED — THOMAS V. TVETER — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW DISTRIBUTION CHAMBER # 5 SECTIONS (ALTERNATE)
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149MBP
REF.
N.B. NO. 1731
PROJECT NO. 00149
SHEET M16A OF 56
FILE NO. 22-85-00

51-004-115 5

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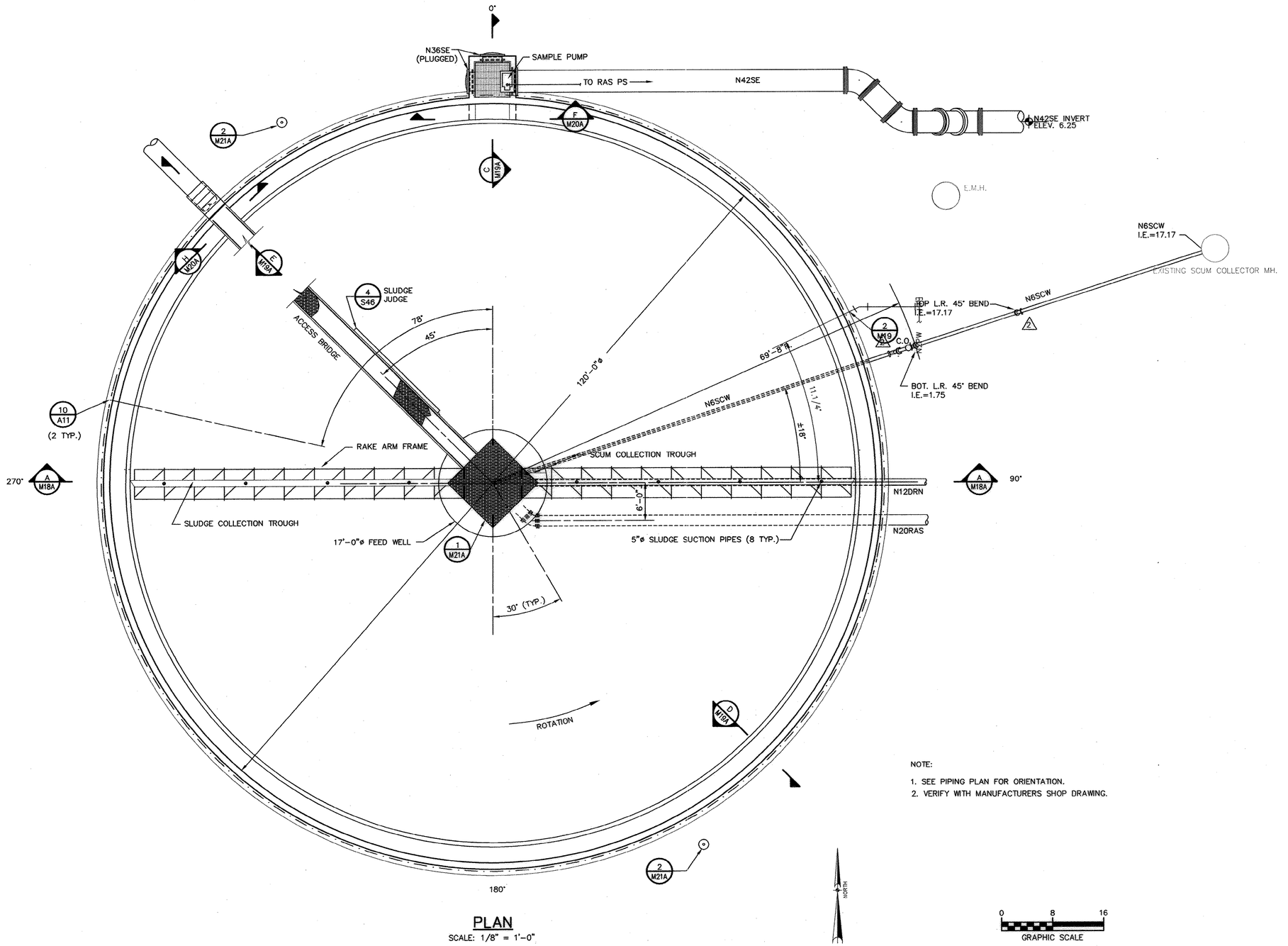

PLAN
SCALE: 1/8" = 1'-0"

NOTE:

1. SEE PIPING PLAN FOR ORIENTATION.
2. VERIFY WITH MANUFACTURERS SHOP DRAWING.

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	ALTERNATE NO. 1	2-01	RTH
2	CHANGE PER ADDENDUM #4	3-1	AR

APPROVALS
PROJECT ENG.: RTH
DESIGNED BY: MAB
DRAWN BY: MAB
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA PROFESSIONAL ENGINEER B.P. BARBER & ASSOCIATES, INC. No. C00000 CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 9713 REGISTERED THOMAS V. TROTTER — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW SECONDARY CLARIFIER # 5 PLAN (ALTERNATE)
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149MBY	SHEET M17A
REF.	OF 56
N.B. NO. 1731	
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-116 5

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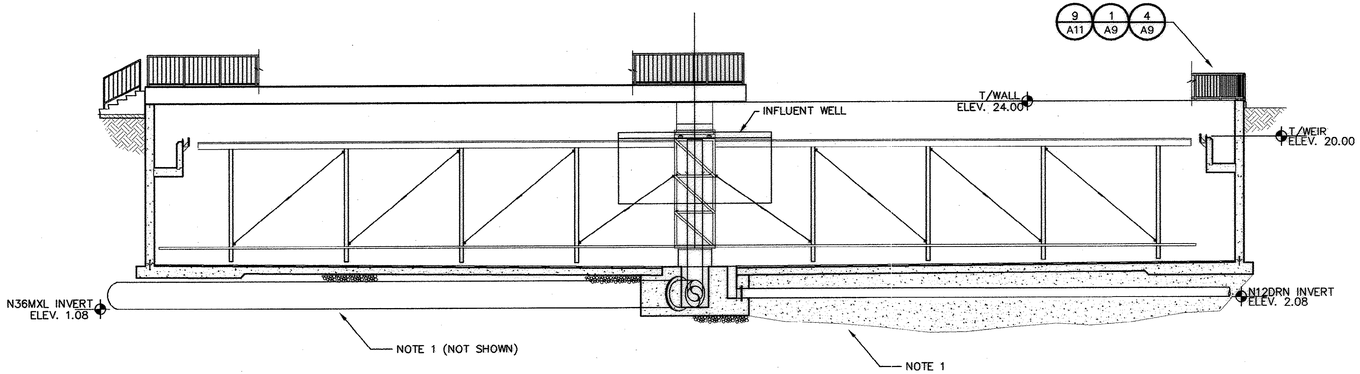

SECTION (A / M17A)
SCALE: 1/8" = 1'-0"

NOTES:

1. ENCASE ALL PIPES UNDER SLAB IN 2500 PSI CONCRETE (12" MINIMUM ALL AROUND).
2. MECHANICAL EQUIPMENT FOR CLARIFIER IS SHOWN FOR INFORMATION ONLY. ALL EQUIPMENT SHALL CONFORM TO MANUFACTURERS DRAWINGS AS APPROVED BY THE ENGINEER.

0 8 16
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY
1	ALTERNATE NO. 1	2-01	RTH

APPROVALS

PROJECT ENG:	RTH
DESIGNED BY:	MAB
DRAWN BY:	MAB
CHECKED BY:	RTH
APPROVED:	JDP

SOUTH CAROLINA REGISTERED LANDSCAPE ARCHITECT
B.P. BARBER & ASSOCIATES, INC.
No. 00000
DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER
No. 7973
REGISTERED
ROBERT THOMAS VICTOR
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW SECONDARY CLARIFIER # 5 SECTION (ALTERNATE)
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	00149MBS
REF.	
N.B. NO.	1731
PROJECT NO.	00149

SHEET M18A OF 56

FILE NO. 22-85-00

51-004-117 5

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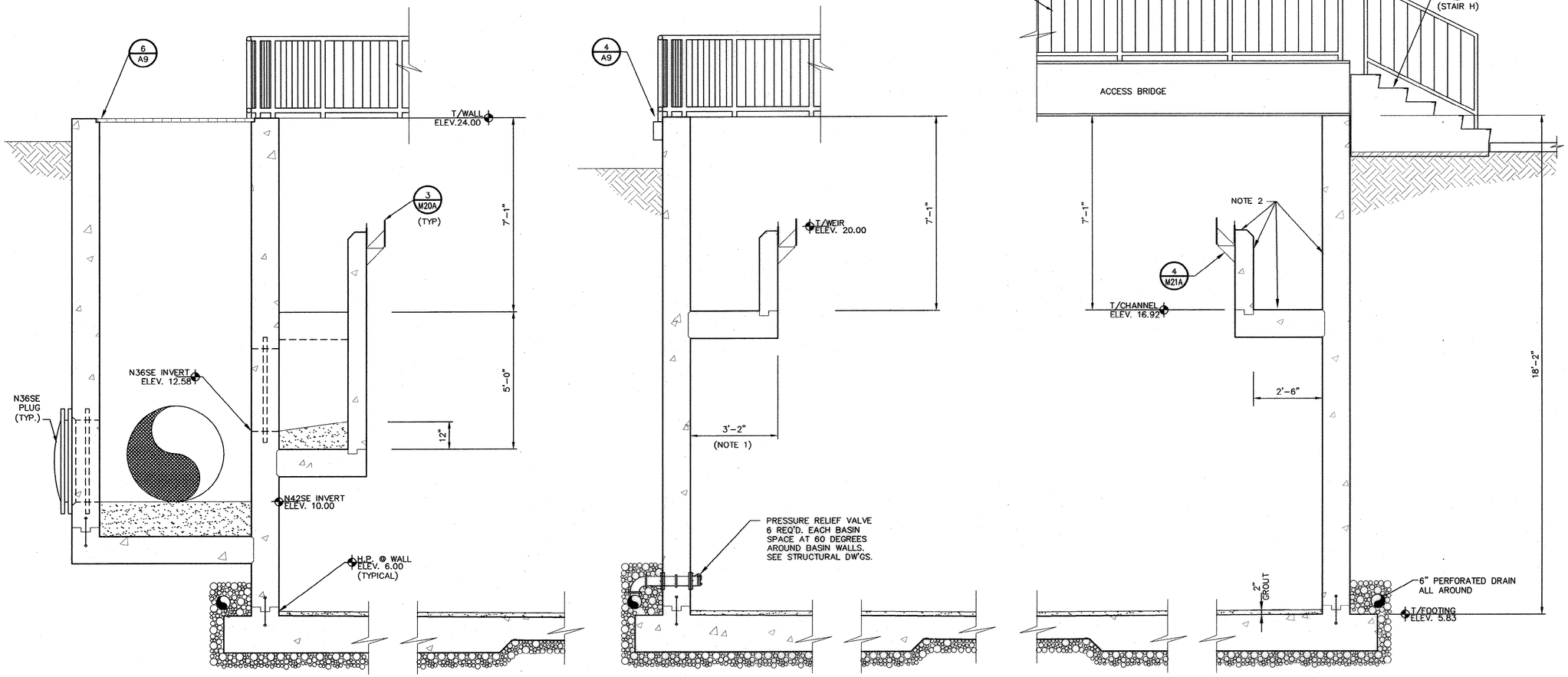

SECTION
SCALE: 1/2" = 1'-0" (C / M17A)

SECTION
SCALE: 1/2" = 1'-0" (D / M17A)

SECTION
SCALE: 1/2" = 1'-0" (E / M17A)

NOTES:

1. WIDTH OF EFFLUENT CHANNEL DETERMINED BY APPROVED MANUFACTURED SHOP DRAWINGS.
2. INTERIOR SURFACES OF EFFLUENT CHANNEL TO 6" ABOVE TOP OF WEIR SHALL BE PAINTED AS SPECIFIED. COAT EXTERIOR SURFACES TO PAINT LINE WITH CRYSTYLINE WATER PROOFING.

0 2 4
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY
1	ALTERNATE NO. 1	2-01	RTH

APPROVALS

PROJECT ENG:	RTH
DESIGNED BY:	MAB
DRAWN BY:	MAB
CHECKED BY:	TVT
APPROVED:	JDP

SOUTH CAROLINA NOVEMBER 30, 2000 B.P. BARBER & ASSOCIATES, INC. No. C00000 CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 9973 REGISTERED THOMAS VOTER — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW SECONDARY CLARIFIER # 5 SECTIONS (ALTERNATE)
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	00149MBU
REF.	
N.B. NO.	1731
PROJECT NO.	00149
SHEET	M19A
OF	56

FILE NO. 22-85-00

51-004-118 5

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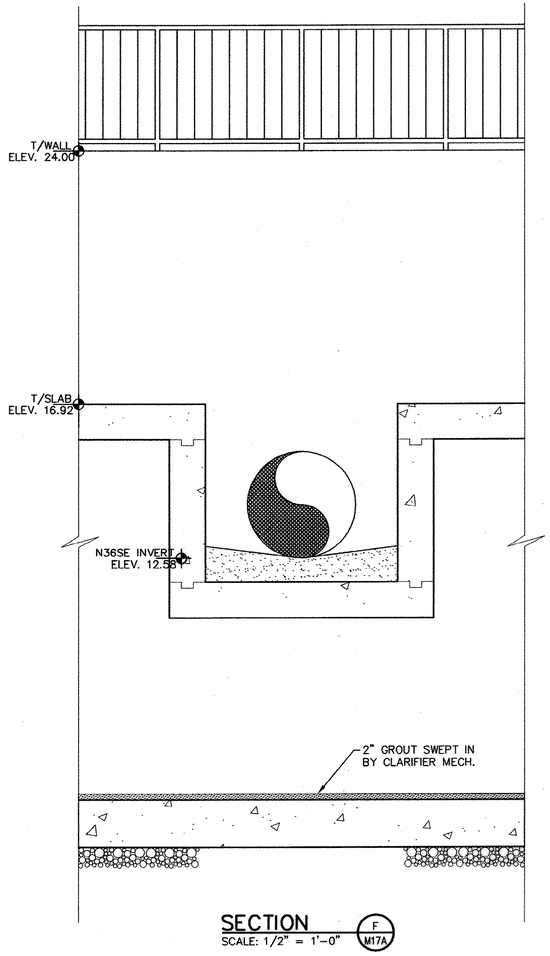

SECTION
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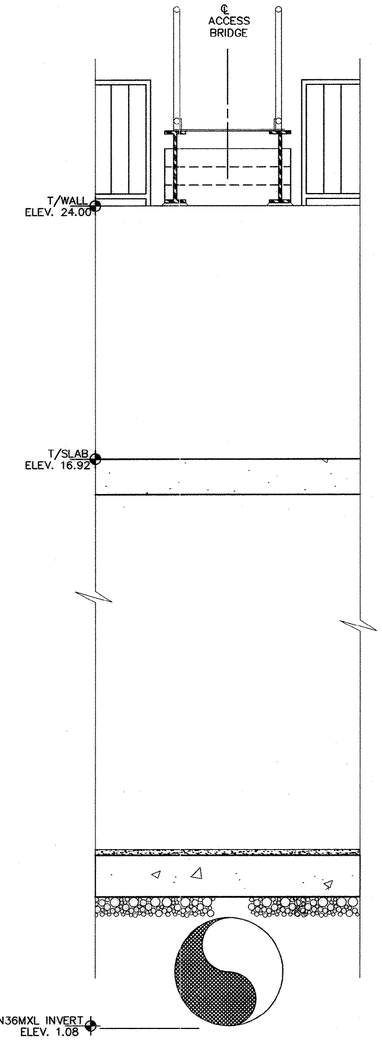

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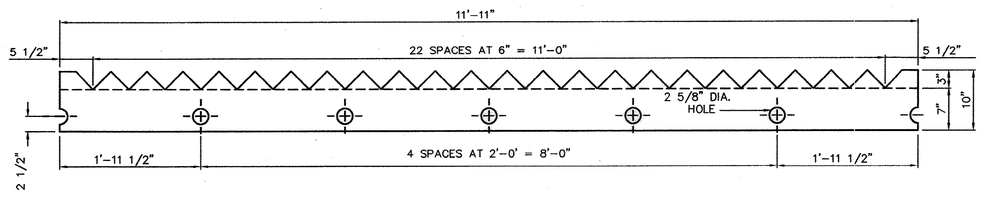

"V" NOTCH WEIR PLATE
DETAIL
SCALE: NONE (3 / M19A, 3 / M21A)

0 2 4
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

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REVISIONS

NO.	DESCRIPTION	DATE	BY
1	ALTERNATE NO. 1	2-01	RTH

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: MAB
DRAWN BY: MAB
CHECKED BY: TWT
APPROVED: JDP

SOUTH CAROLINA PROFESSIONAL ENGINEER
B.P. BARBER & ASSOCIATES, INC.
No. C00000
CERTIFICATE OF AUTHORIZATION
DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER
No. 9973
REGISTERED
THOMAS W. TROTTER III
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW SECODARY CLARIFIER # 5 SECTIONS & DETAIL (ALTERNATE)
DATE: FEB., 2001 SCALE: AS SHOWN

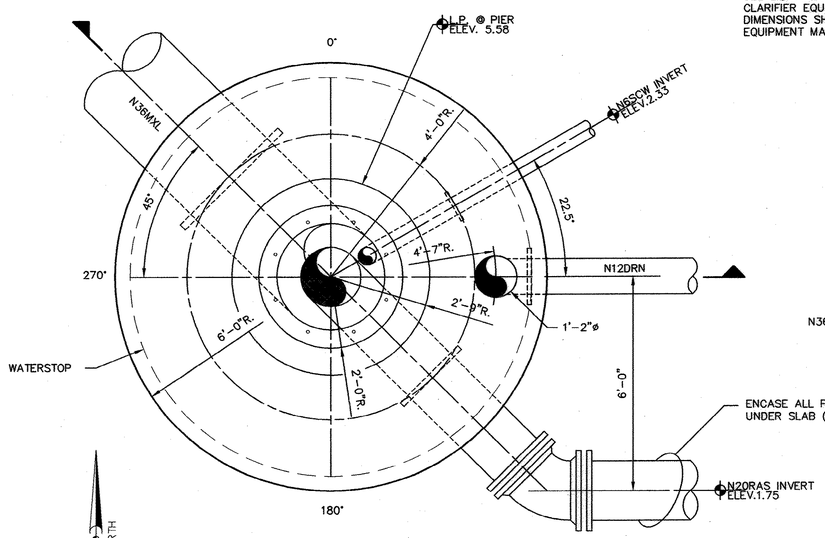
PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149MBV
REF.
N.B. NO. 1731
PROJECT NO. 00149

SHEET M20A OF 56

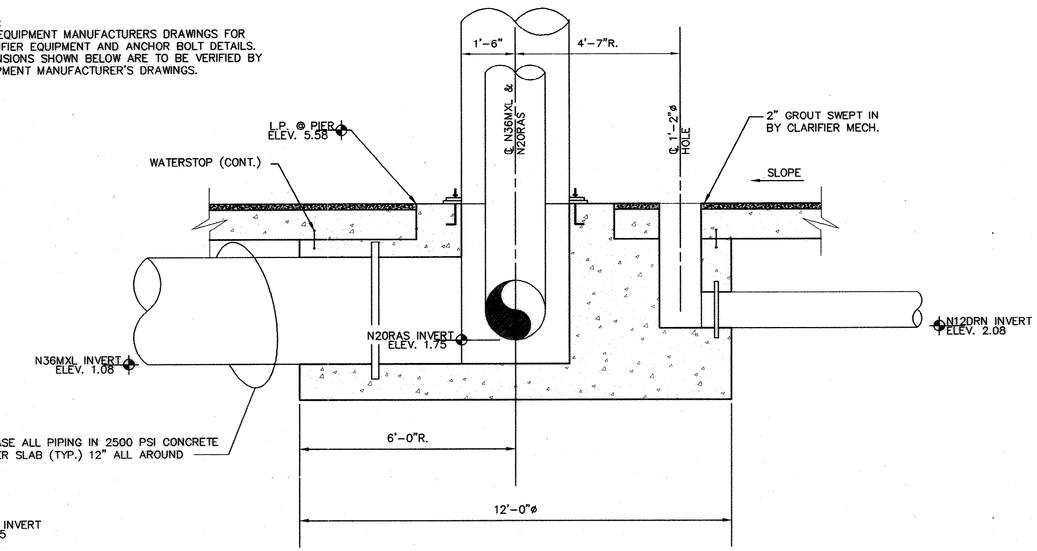
FILE NO. 22-85-00

51-004-119 5



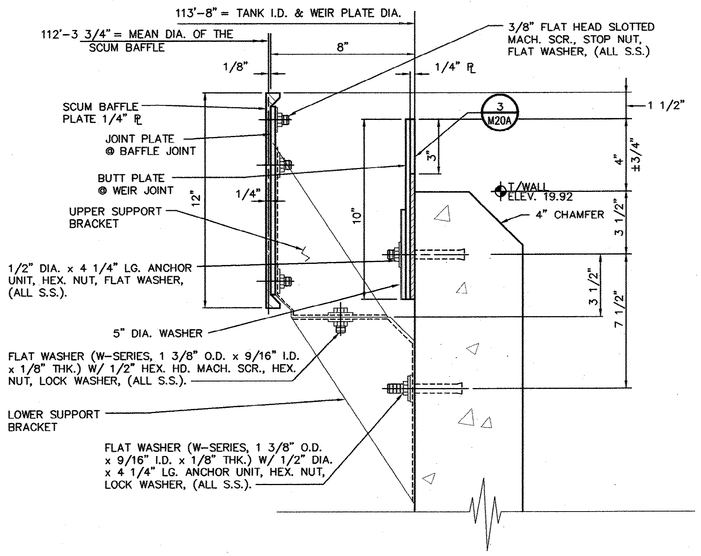
PLAN

NOTE:
SEE EQUIPMENT MANUFACTURERS DRAWINGS FOR CLARIFIER EQUIPMENT AND ANCHOR BOLT DETAILS. DIMENSIONS SHOWN BELOW ARE TO BE VERIFIED BY EQUIPMENT MANUFACTURER'S DRAWINGS.

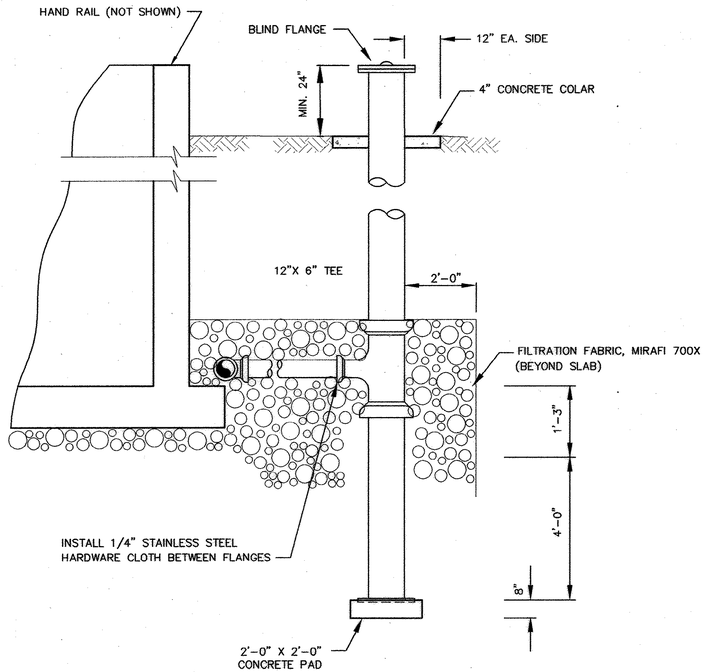


SECTION

DETAIL
SCALE: 1/2" = 1'-0" (1 / M17A)



SCUM BAFFLE AND FRP WEIR PLATE AT JOINT
DETAIL
SCALE: NONE (4 / TYP)



DETAIL
SCALE: 1/2" = 1'-0" (2 / TYP)

0 2 4
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	ALTERNATE NO. 1	2-01	RTH

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: MAB
DRAWN BY: MAB
CHECKED BY: TVT
APPROVED: JDP

NORTH CAROLINA CERTIFICATE OF AUTHORIZATION — B.P. BARBER & ASSOCIATES, INC. — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER — No. 7979 — REGISTERED — THOMAS V. TAYLOR — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW SECONDARY CLARIFIER # 5 DETAILS & SECTION (ALTERNATE)
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149MBR	M21A
REF.	OF
N.B. NO. 1731	56
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-120 5

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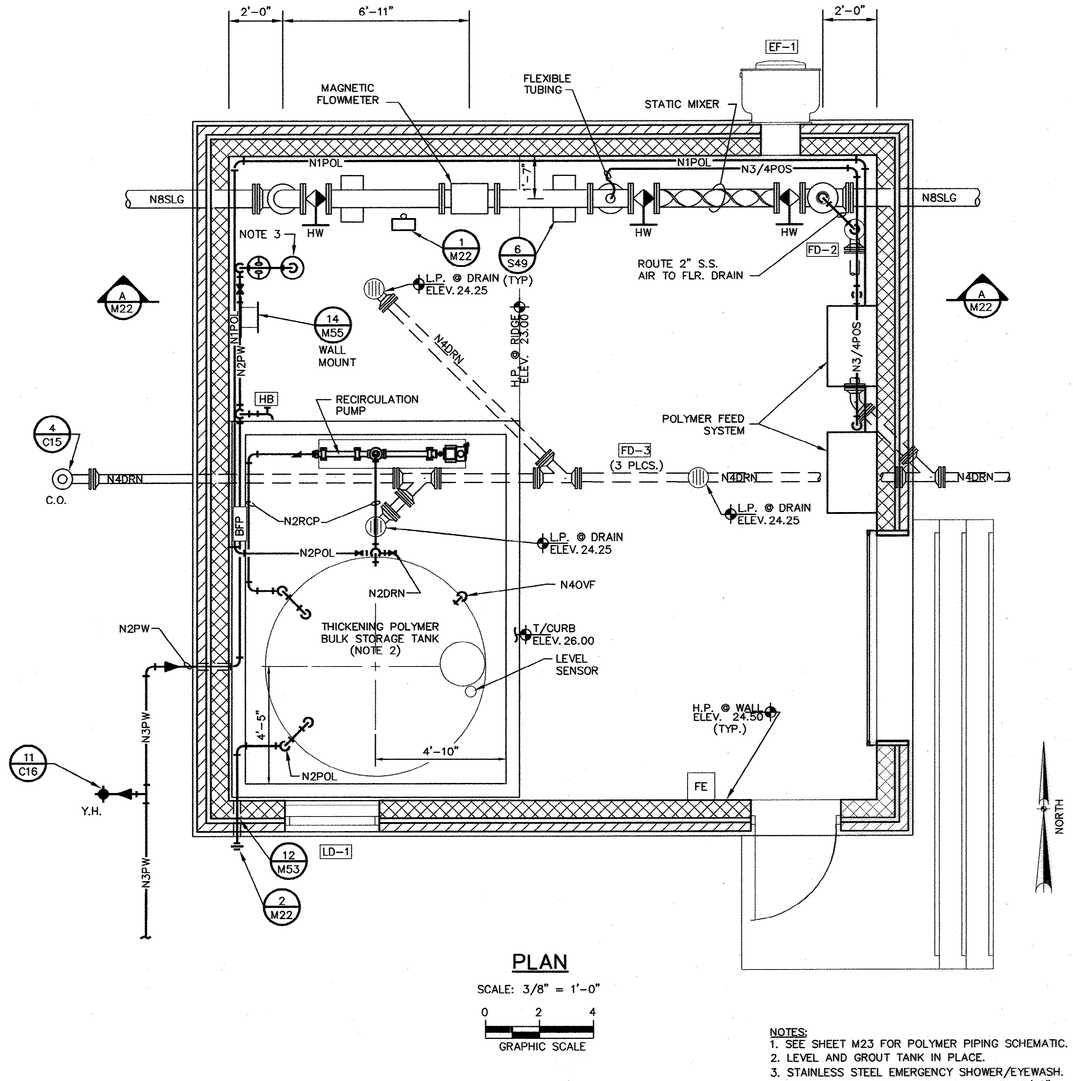


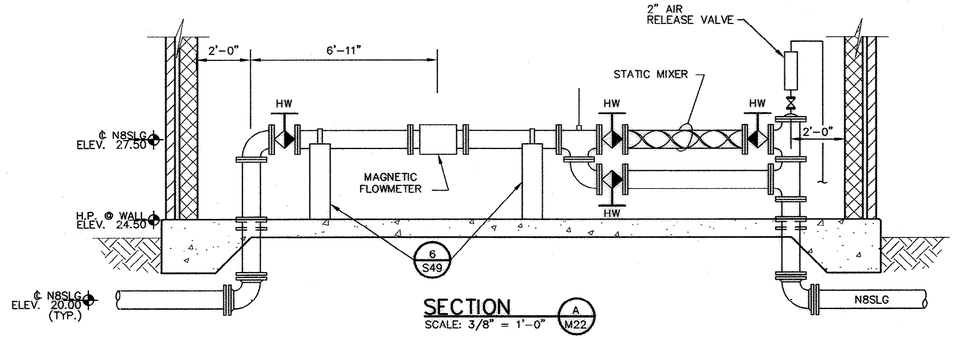
PLAN

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

0 2 4

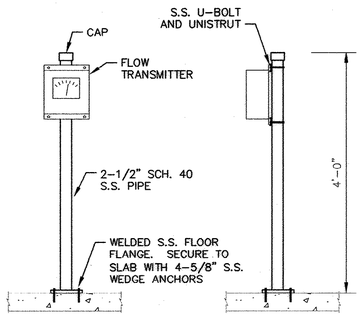
GRAPHIC SCALE

NOTES:
1. SEE SHEET M23 FOR POLYMER PIPING SCHEMATIC.
2. LEVEL AND GROUT TANK IN PLACE.
3. STAINLESS STEEL EMERGENCY SHOWER/EYEWASH. PROVIDE GUARDIAN EQUIP. NO. G-1991 W/ 8"ø S.S. BOWL.
4. FLOOR DRAINS AND ASSOCIATED PIPING NOT SHOWN IN SECTION.



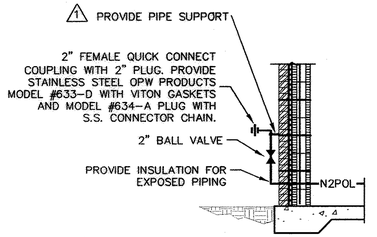
SECTION

SCALE: 3/8" = 1'-0" A M22



FLOW TRANSMITTER MOUNT DETAIL

SCALE: NONE 1 M22



QUICK CONNECT COUPLING DETAIL

SCALE: NONE 2 M22

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	CHANGE PER ADDENDUM #4	3-1	AR

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: DEF
DRAWN BY: DEF
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA NOVEMBER 19, 1976 B.P. BARBER & ASSOCIATES, INC. CERTIFICATE OF AUTHORIZATION No. C00000 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER REGISTERED THOMAS VICTOR No. 7773 — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW POLYMER BUILDING PLAN, SECTION & DETAILS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149MAK
REF.
N.B. NO. 1731
PROJECT NO. 00149

SHEET M22 OF 56

FILE NO. 22-85-00

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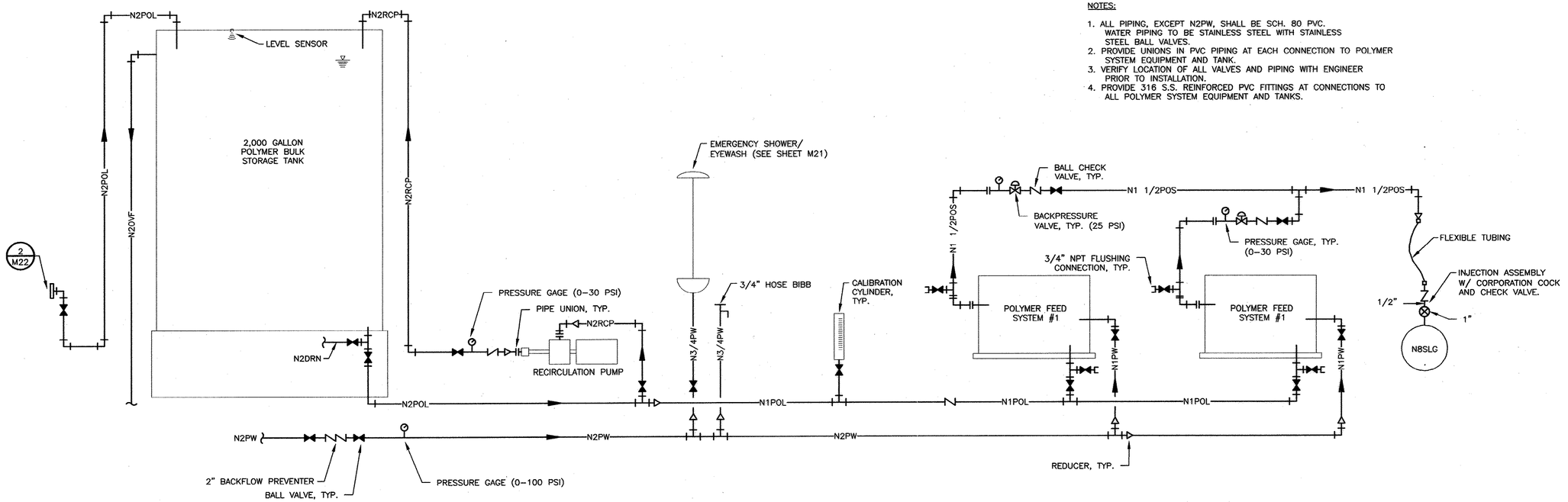
51-004-121 5



NOTES:

1. ALL PIPING, EXCEPT N2PW, SHALL BE SCH. 80 PVC. WATER PIPING TO BE STAINLESS STEEL WITH STAINLESS STEEL BALL VALVES.
2. PROVIDE UNIONS IN PVC PIPING AT EACH CONNECTION TO POLYMER SYSTEM EQUIPMENT AND TANK.
3. VERIFY LOCATION OF ALL VALVES AND PIPING WITH ENGINEER PRIOR TO INSTALLATION.
4. PROVIDE 316 S.S. REINFORCED PVC FITTINGS AT CONNECTIONS TO ALL POLYMER SYSTEM EQUIPMENT AND TANKS.

POLYMER SYSTEM PIPING SCHEMATIC

NOT TO SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS			
PROJECT ENG: RTH	DESIGNED BY: DEF	DRAWN BY: DEF	CHECKED BY: TVT	APPROVED: JDP

SOUTH CAROLINA PROFESSIONAL ENGINEER — B.P. BARBER & ASSOCIATES, INC. — No. 00000 — CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER — No. 19973 — REGISTERED — THOMAS VOTH — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW POLYMER SYSTEM PIPING SCHEMATIC

DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
99127MAL	M23
REF.	OF
N.B. NO. 1731	56
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-122 5

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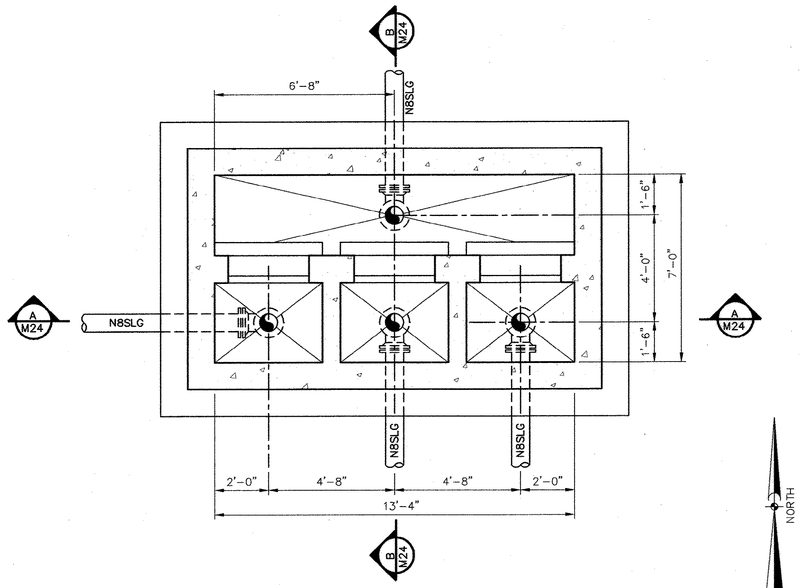
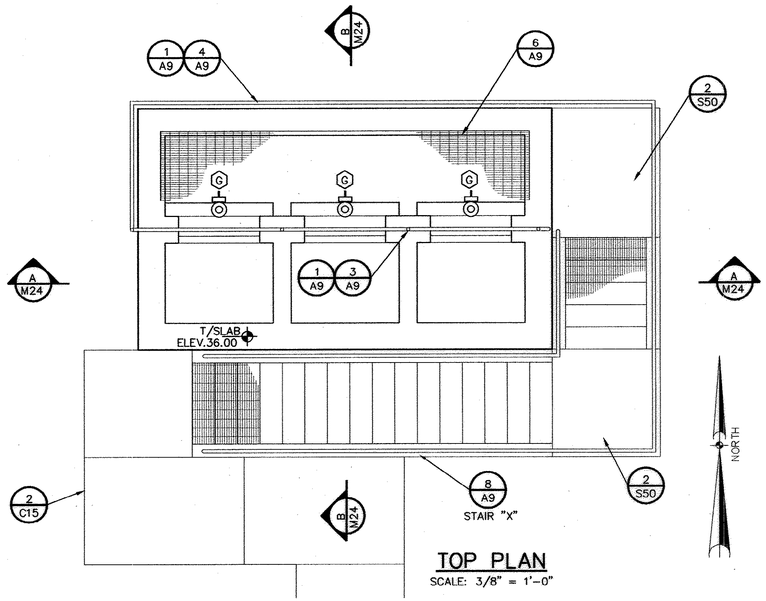


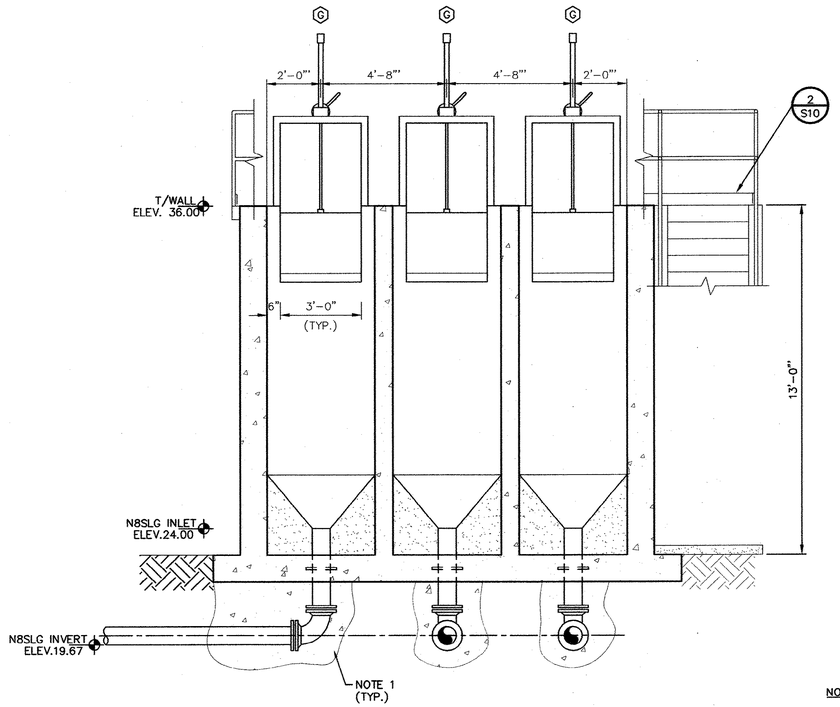
PLAN @ ELEV. 34.00

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



TOP PLAN

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

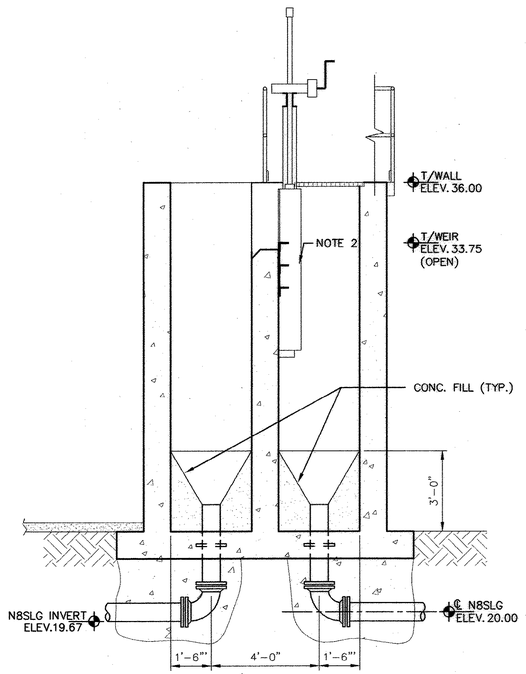


SECTION

SCALE: 3/8" = 1'-0" (A M24)

NOTES:

1. ENCASE ALL PIPES UNDER SLAB IN 2500 PSI CONCRETE. (12" MIN. ALL AROUND TYP.).
2. SEE WEIR GATE SCHEDULE SHEET M52.



SECTION

SCALE: 3/8" = 1'-0" (B M24)

0 2 4

GRAPHIC SCALE

RECORD DRAWINGS

DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS

PROJECT ENG: RTH
DESIGNED BY: DEF
DRAWN BY: DEF/GS
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA PROFESSIONAL ENGINEER — B.P. BARBER & ASSOCIATES, INC. — No. C00269 — CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER — No. 7873 — REGISTERED — THOMAS VICTOR — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW DISTRIBUTION CHAMBER #4 PLANS & SECTIONS

DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 99127MAZ	SHEET M24
REF.	OF 56
N.B. NO. 1731	
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-123 5

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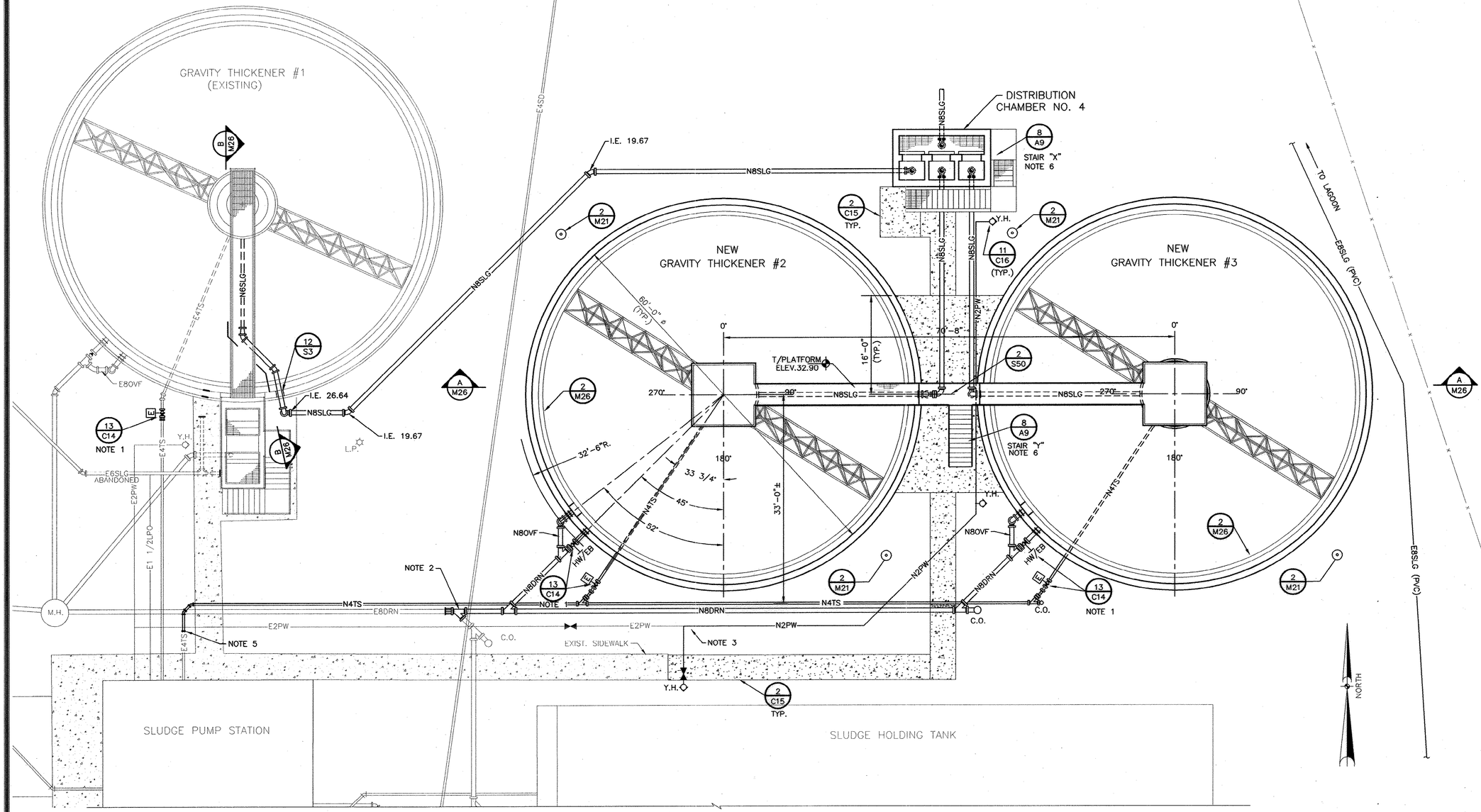

NOTES:

1. NEW 4" PLUG VALVE WITH ELECTRIC ACTUATOR, AND MANUAL HANDWHEEL ACTUATORS.
2. TIE INTO E8DRN.
3. TIE INTO E2WL.
4. THICKENERS #2 AND #3 MUST BE OPERATIONAL PRIOR TO TAKING THICKENER #1 OFF-LINE. COORDINATE ALL SHUTDOWNS WITH PLANT PERSONNEL.
5. TIE ONTO EXISTING 4" PLUG.
6. CONCRETE SIDEWALK BENEATH STAIRWAYS.

GRAVITY THICKENERS PLAN

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

GRAPHIC SCALE 0 8 16

RECORD DRAWINGS

DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS	
PROJECT ENG.	RTH
DESIGNED BY:	DEF
DRAWN BY:	DEF/GS
CHECKED BY:	TVT
APPROVED:	JDP

SOUTH CAROLINA NOVEMBER 20, 2002 CERTIFICATE OF AUTHORIZATION B. P. BARBER & ASSOCIATES, INC. No. COA0026 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7973 THOMAS V. TUCKER — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW GRAVITY THICKENERS PLAN

DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	99127ME
REF.	
N.B. NO.	1731
PROJECT NO.	00149
SHEET	M25
OF	56

FILE NO. 22-85-00

51-004-124 5

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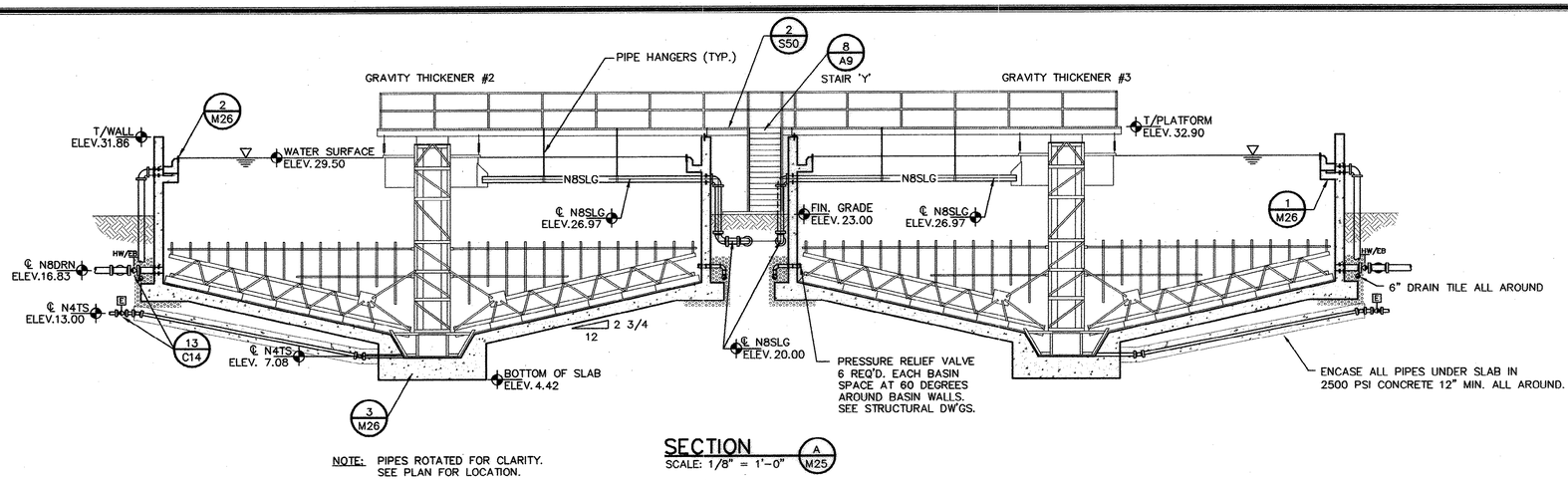
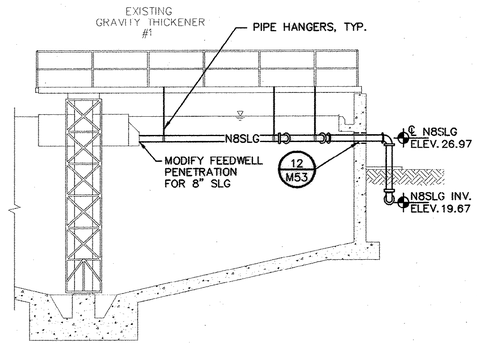
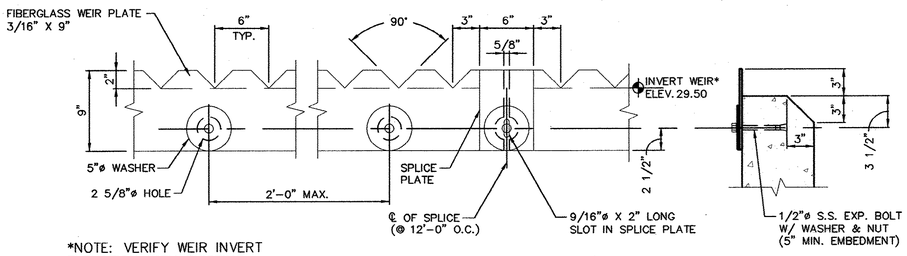


NOTE: PIPES ROTATED FOR CLARITY. SEE PLAN FOR LOCATION.

SECTION
SCALE: 1/8" = 1'-0"
A M25

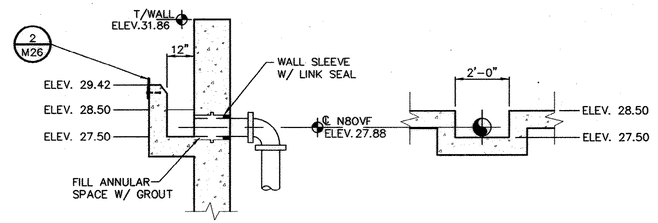


SECTION
SCALE: 1/8" = 1'-0"
B M25



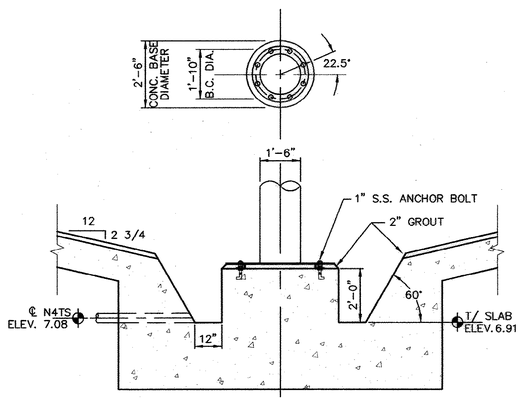
*NOTE: VERIFY WEIR INVERT ELEVATION WITH EXISTING THICKENER.

V-NOTCH WEIR
DETAIL
SCALE: 1 1/2"=1'-0"
2 TYP



SECTION VIEW SECTION VIEW

EFFLUENT CHANNEL
DETAIL
SCALE: 3/8"=1'-0"
1 TYP



CENTER PIER & SLUDGE HOPPER
DETAIL
SCALE: 3/8"=1'-0"
3 M26

0 8 16
GRAPHIC SCALE

0 2 4
GRAPHIC SCALE

0 1 2
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: DEF
DRAWN BY: GS
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA PROFESSIONAL ENGINEER B.P. BARBER & ASSOCIATES, INC. No. 7873 CERTIFICATE OF AUTHORIZATION DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7873 REGISTERED SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW GRAVITY THICKENERS SECTIONS & DETAILS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 99127MBA
REF.
N.B. NO. 1731
PROJECT NO. 00149

SHEET M26 OF 56

FILE NO. 22-85-00

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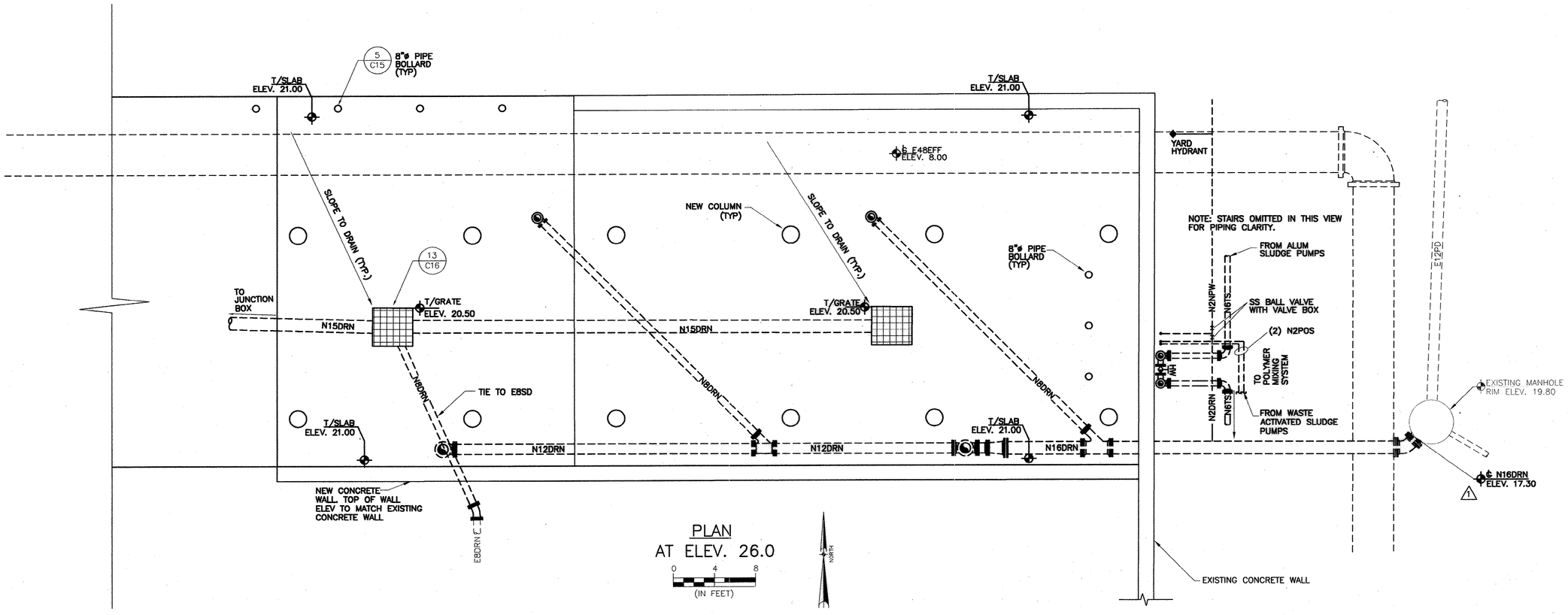


RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	CHANGE PER ADDENDUM #4	3-1	AR

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: CHS
DRAWN BY: JEB
CHECKED BY: TYT
APPROVED: JDP

SOUTH CAROLINA NOVEMBER 1, 2002 CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. PROFESSIONAL ENGINEERS DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER REGISTERED No. 7870 THOMAS ARTHUR SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW DEWATERING
FACILITY PLAN
@ ELEV 26.0
DATE: FEB., 2001 SCALE: AS SHOWN

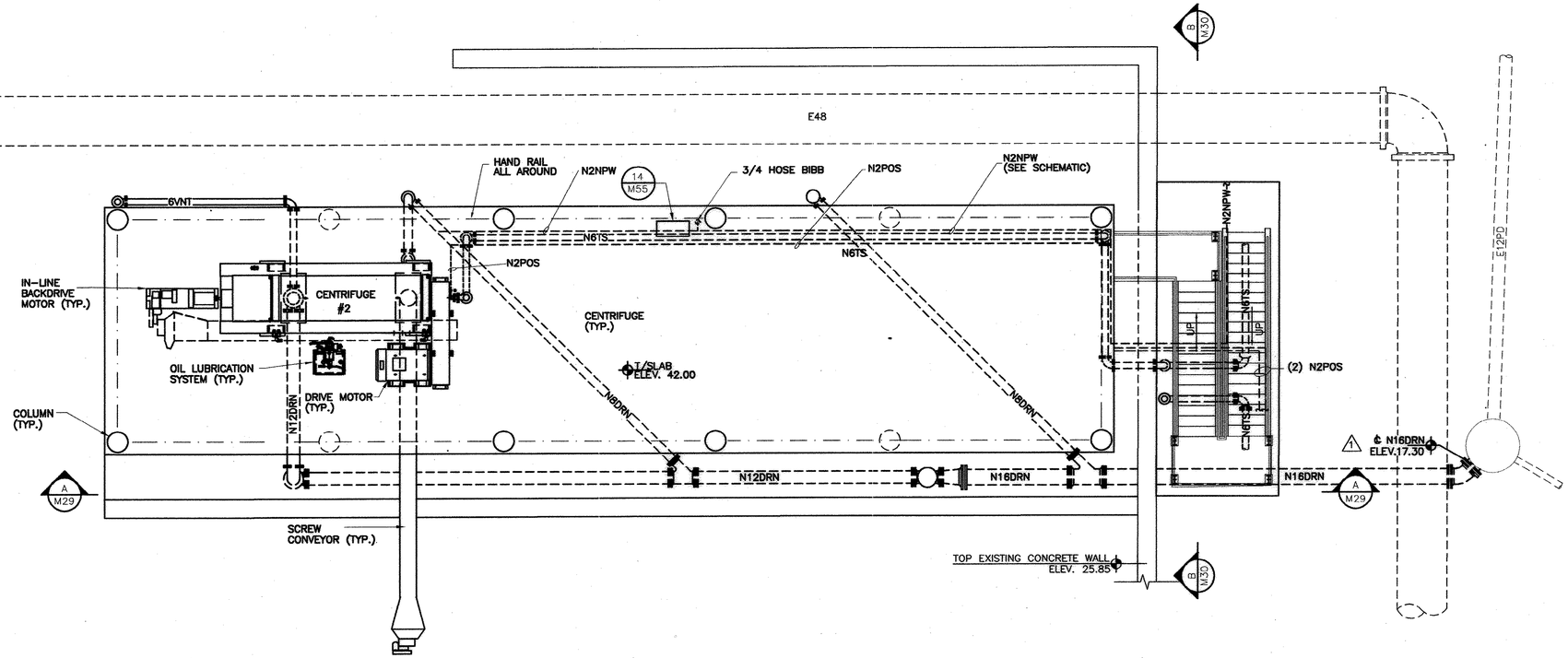
PROJECT
IMPROVEMENTS AND
EXPANSION FOR THE
WATER RECLAMATION
FACILITY
PHASE I

DISK CH149M27	SHEET M27
REF.	OF 56
N.B. NO. 1731	
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-136 5

N:\Projects\00149\dwg\SECOND DWG\CH149M27-R0.dwg, 11/21/2003 10:55:05 AM



PLAN
AT ELEV. 45.0

0 4 8
(IN FEET)

NORTH

NOTE:

1. ALL PIPING BENEATH SLAB TO BE ENCASED A MINIMUM OF 12" IN 2500 PSI CONCRETE.

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	CHANGE PER ADDENDUM #4	3-1	AR

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: CHS
DRAWN BY: JEB
CHECKED BY: TVT
APPROVED: JJP

SOUTH CAROLINA NOTHING SIMPLE ENGINEERING CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. C000000 DATE

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 7813 THOMAS V. TAYLOR SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW DEWATERING FACILITY PLAN @ ELEV 45.0

DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
CH149M28	M28
REF.	OF
N.B. NO. 1731	56
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-127 5

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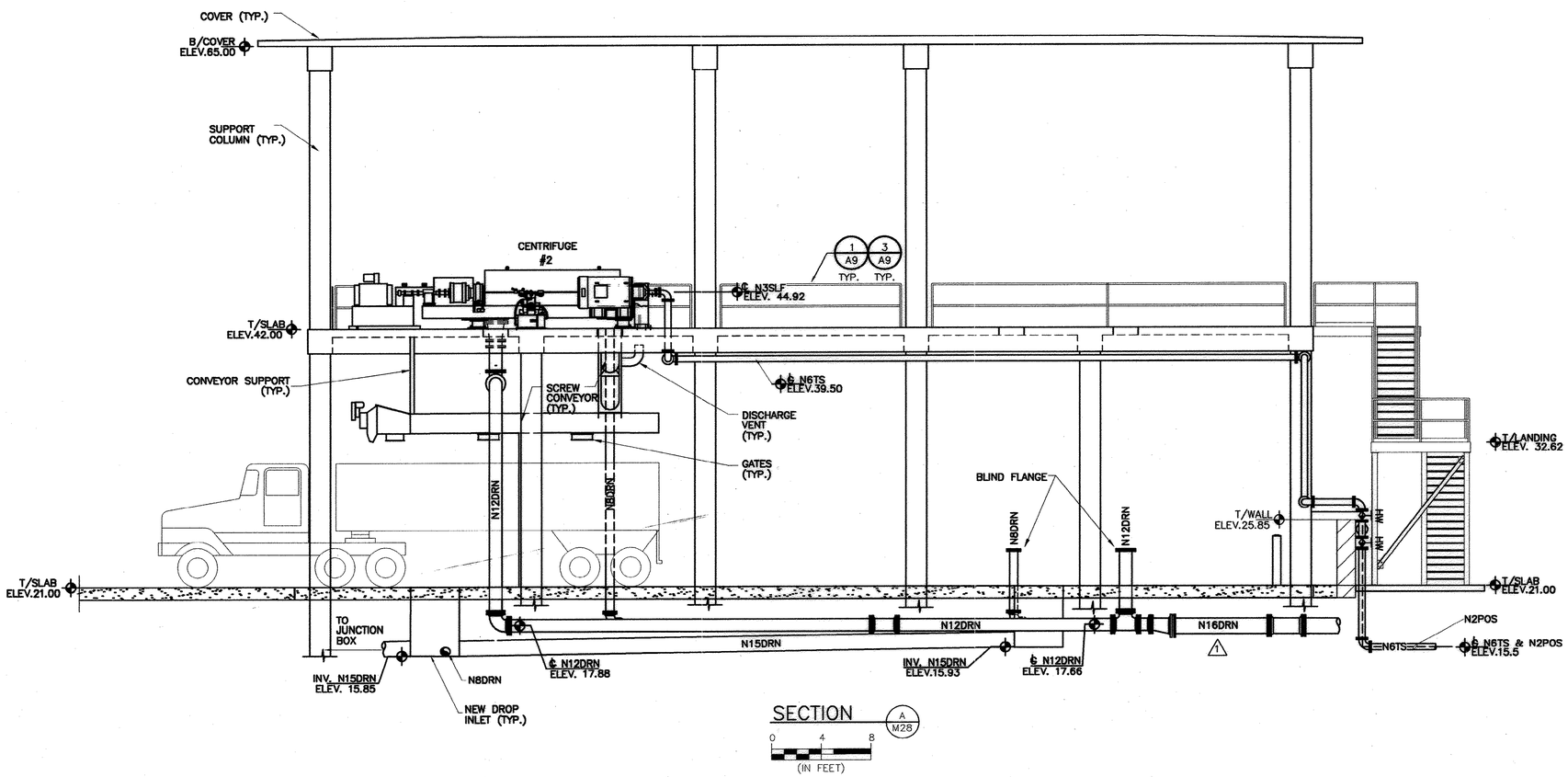

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	CHANGE PER ADDENDUM #4	3-1	AR

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: CHS
DRAWN BY: JEB
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION B. P. BARBER & ASSOCIATES, INC. No. C000320 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7673 REGISTERED THOMAS V. PETTOR — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW DEWATERING FACILITY SECTION
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
CH149M29	M29
REF.	OF
N.B. NO. 1731	56
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-128 S

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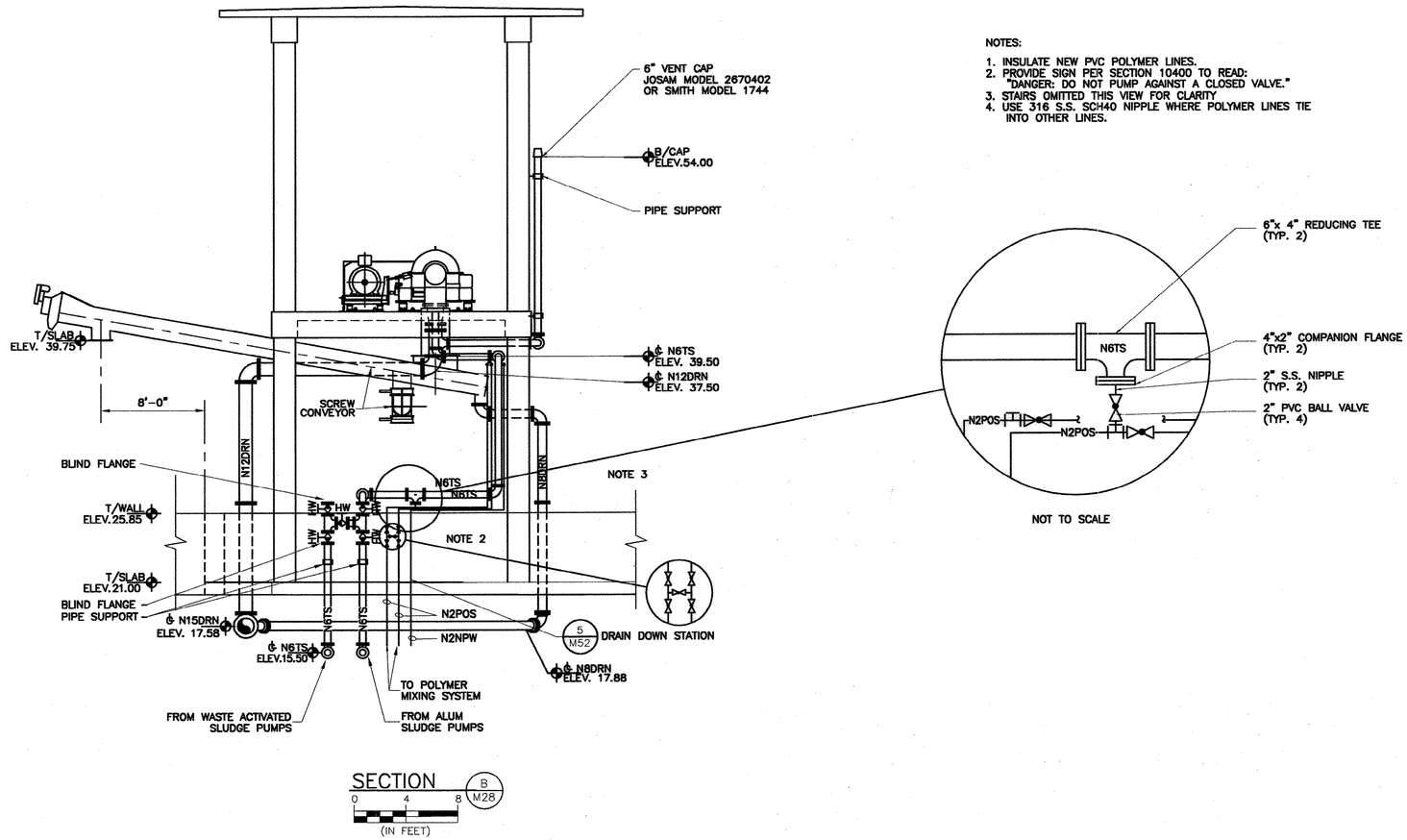


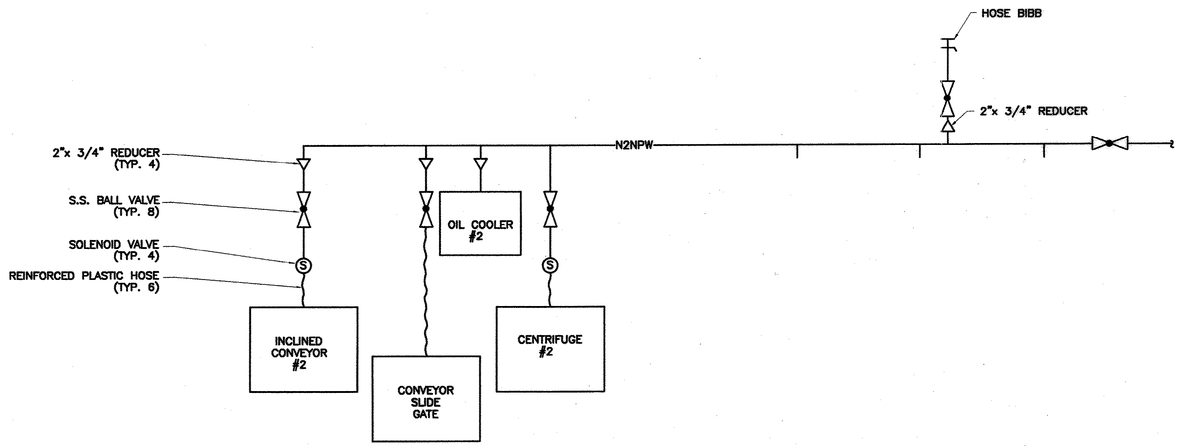
NOT TO SCALE

NOTES:

1. INSULATE NEW PVC POLYMER LINES.
2. PROVIDE SIGN PER SECTION 10400 TO READ: "DANGER: DO NOT PUMP AGAINST A CLOSED VALVE."
3. STAIRS OMITTED THIS VIEW FOR CLARITY.
4. USE 316 S.S. SCH40 NIPPLE WHERE POLYMER LINES TIE INTO OTHER LINES.

SECTION B M28

0 4 8 (IN FEET)



FLUSHING WATER SCHEMATIC

NOT TO SCALE

SCHEMATIC NOTES:

1. THIS SCHEMATIC REPRESENTS PIPING CONNECTIVITY AND DOES NOT INDICATE ACTUAL PIPE LENGTHS AND FITTINGS REQUIRED. SEE PLAN FOR SPACIAL ORIENTATION OF SYSTEM COMPONENTS.
2. INSULATE ALL NON-POTABLE WATER LINES.

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT. ENG: RTH
DESIGNED BY:
DRAWN BY: JEB
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA NOW AUTHORIZATION CERTIFICATE OF B.P. BARBER & ASSOCIATES, INC. No. C000200 DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 9973 REGISTERED THOMAS V. III SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW DEWATERING FACILITY SECTION & SCHEMATIC
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
CH149M30	M30
REF.	OF
N.B. NO. 1731	56
PROJECT NO. 00149	

FILE NO. 22-85-00

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51-004-139

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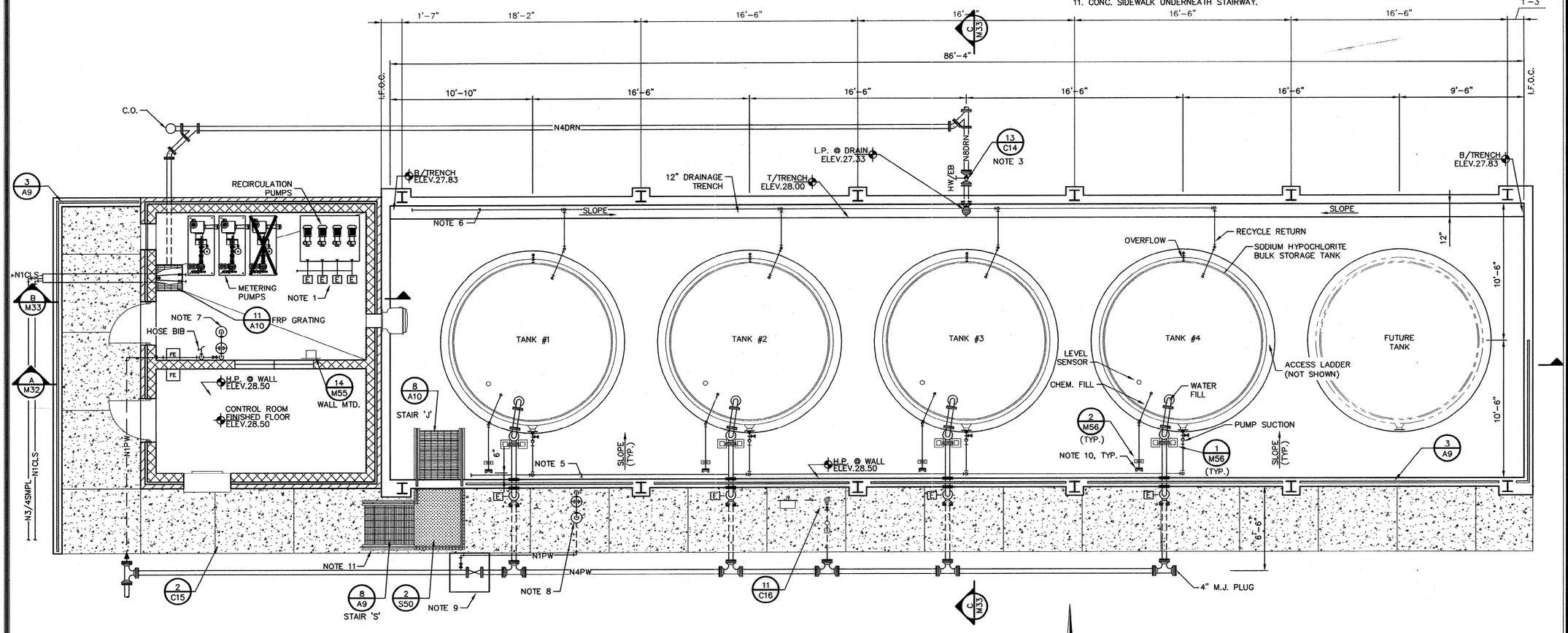
NOTES:

1. SEE CHLORINATION PIPING SCHEMATIC, SHEET M34.
2. PROVIDE INSULATION FOR ALL EXPOSED PIPE.
3. VALVE TO REMAIN CLOSED.
4. INSTALL ALL PUMP SUCTION LINES AT OR BELOW ELEVATION OF TANK BOTTOM.
5. 2" PUMP SUCTION LINES (4).
6. 2" RECIRCULATION PUMP RETURN LINES (4).
7. PVC EMERGENCY SHOWER WITH EYE/FACE WASH. PROVIDE SPEAKMAN MODEL NO. 7E-31587.
8. STAINLESS STEEL EMERGENCY SHOWER WITH EYE/FACE WASH. PROVIDE GUARDIAN EQUIP. NO. G-1991 WITH 8"ø S.S. BOWL.
9. BACKPRESSURE VALVE (0-60 PSI). INSTALL IN 3'x3' UTILITY VAULT. TAP WATER SUPPLY TO SHOWER PRIOR TO BACKPRESSURE VALVE.
10. QUICK CONNECT COUPLING, TYP. SEE SHEET M30. LOCATE HANDRAIL POSTS TO PREVENT OBSTRUCTING ACCESS TO CONNECTION.
11. CONC. SIDEWALK UNDERNEATH STAIRWAY.



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

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS			
PROJECT ENG: RTH	DESIGNED BY: DEF	DRAWN BY: JRC	CHECKED BY: TVT	APPROVED: JDP

SOUTH CAROLINA NOURSE REGISTRATION CERTIFICATE OF AUTHORIZATION B. P. BARBER & ASSOCIATES, INC. No. C000320 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7973 REGISTERED THOMAS VICTOR TVT — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW CHLORINATION FACILITY PLAN

DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149MAZ	M31
REF.	OF
N.B. NO. 1731	56
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-130

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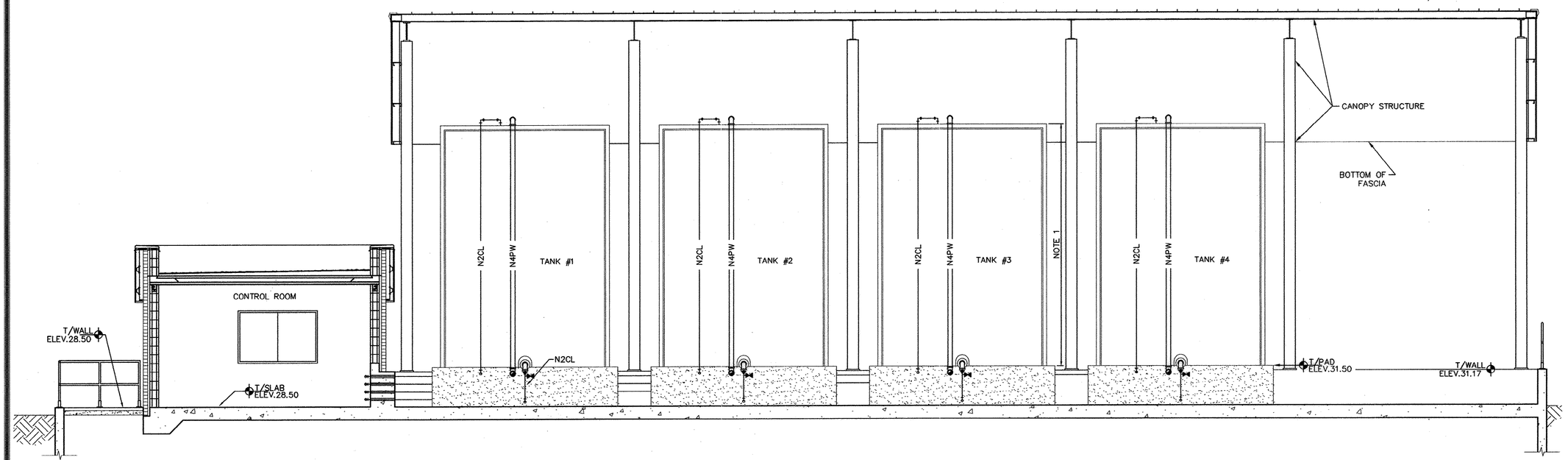

SECTION (A / M31)
SCALE: 1/4" = 1'-0"

NOTES:

1. VERIFY TANK DIMENSIONS WITH MFR.

0 4 8
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS

PROJECT ENG:	RTH
DESIGNED BY:	DEF
DRAWN BY:	DEF
CHECKED BY:	TVT
APPROVED:	JDP

SOUTH CAROLINA NOURSE CORPORATION CERTIFICATE OF AUTHORIZATION B. P. BARBER & ASSOCIATES, INC. No. C00000 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER REGISTERED THOMAS VICTOR No. 7973 — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW CHLORINATION FACILITY SECTION

DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	00149MBA
REF.	
N.B. NO.	1731
PROJECT NO.	00149

SHEET M32 OF 56

FILE NO. 22-85-00

51-004-131

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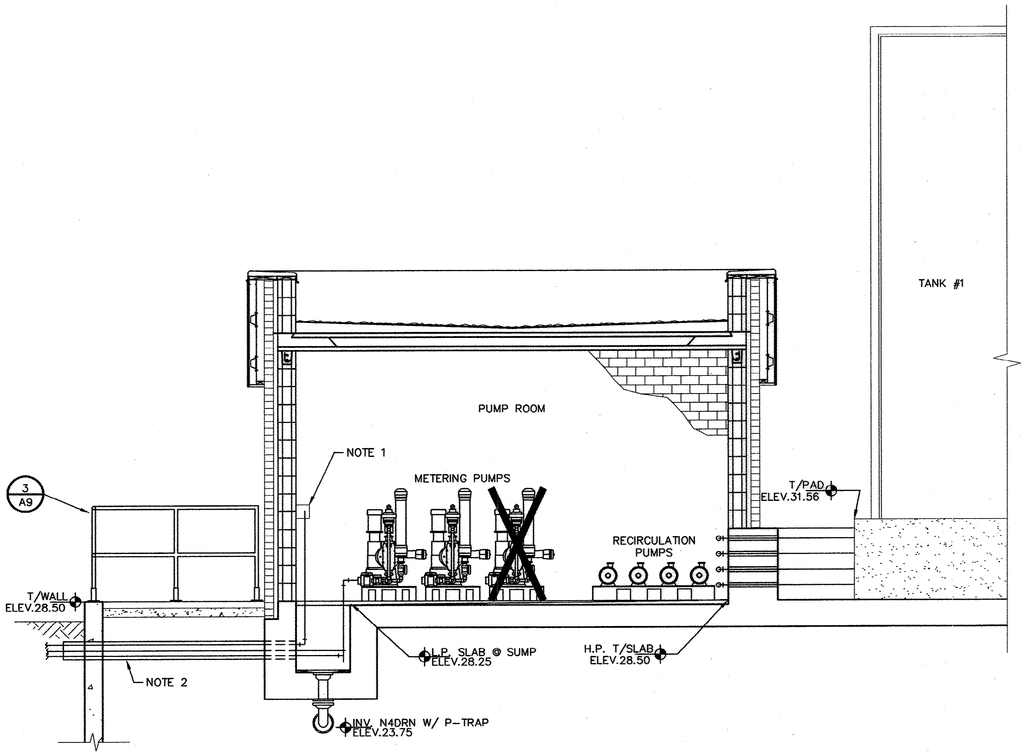
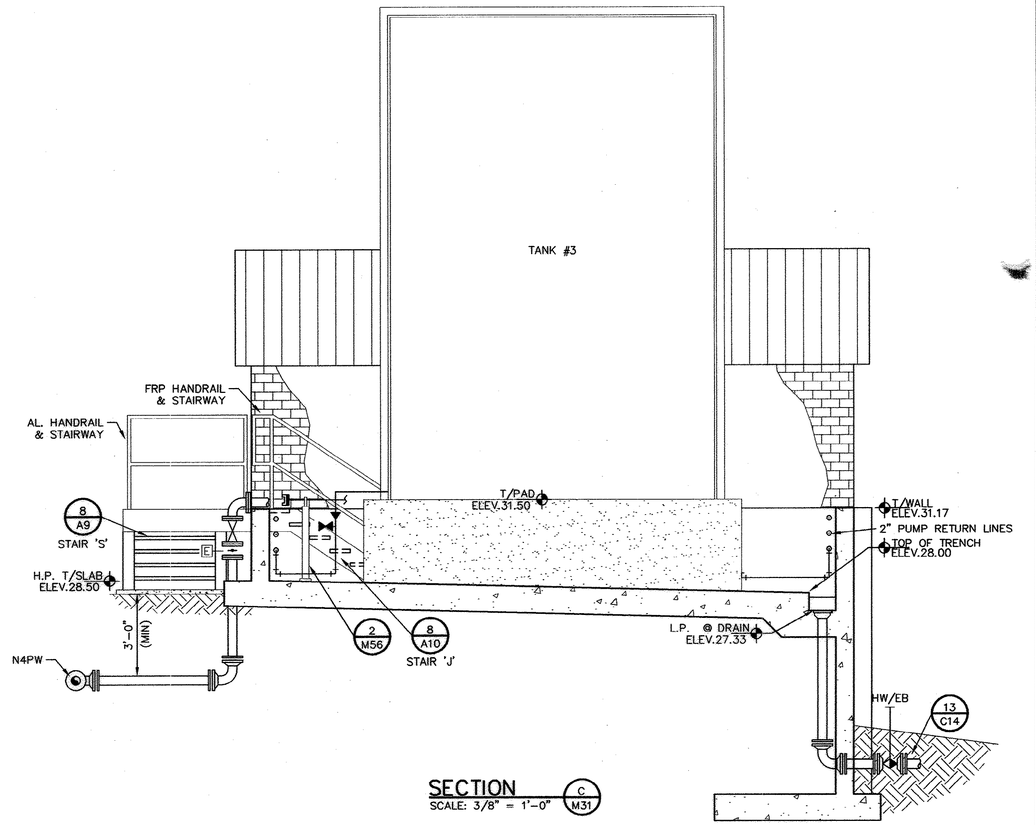


SECTION B M31
SCALE: 3/8" = 1'-0"

NOTES:

1. EFFLUENT SAMPLE FLOW CELL. ROUTE EFFLUENT SAMPLE LINE THROUGH FLOW CELL AND DISCHARGE DIRECTLY TO SUMP BELOW.
2. 8" DIP CONDUIT. ROUTE CHEM. FEED LINES AND SAMPLE LINE THROUGH 8" CONDUIT FROM SUMP AREA TO BEYOND CONTAINMENT WALL.
3. SEE CHLORINATION PIPING SCHEMATIC, SHEET M34.
4. CANOPY STRUCTURE NOT SHOWN FOR CLARITY. SEE SHEET S34.



SECTION C M31
SCALE: 3/8" = 1'-0"

0 2 4
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS			
PROJECT ENG: RTH	DESIGNED BY: DEF	DRAWN BY: DEF	CHECKED BY: TVT
			APPROVED: JDP

SOUTH CAROLINA NOVEMBER 2003 B. P. BARBER & ASSOCIATES, INC. No. C00000 CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7973 REGISTERED THOMAS VICTOR — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW CHLORINATION FACILITY SECTIONS

DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149MAY	M33
REF.	OF
N.B. NO. 1731	56
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-132

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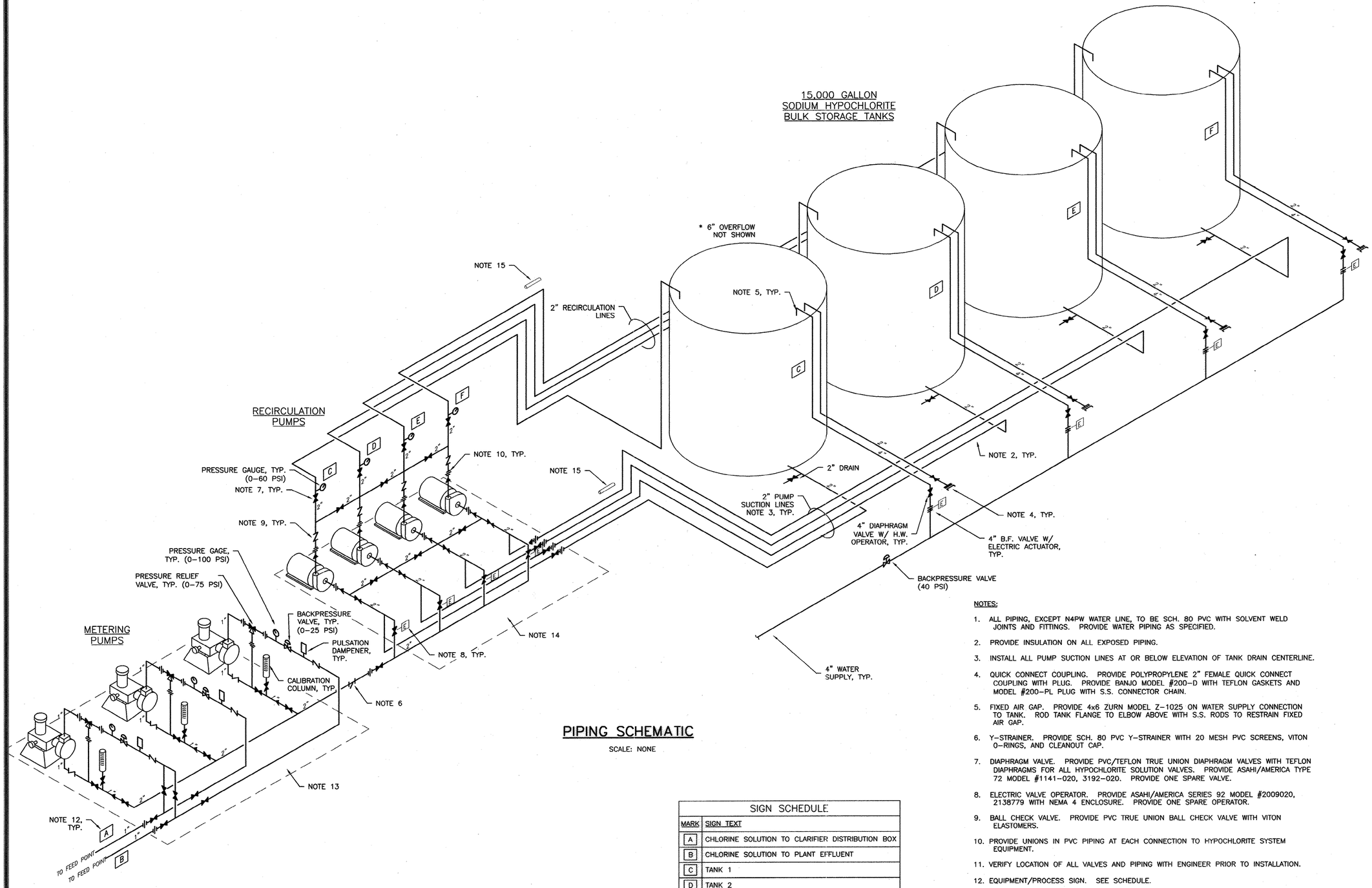

PIPING SCHEMATIC

SCALE: NONE

SIGN SCHEDULE	
MARK	SIGN TEXT
A	CHLORINE SOLUTION TO CLARIFIER DISTRIBUTION BOX
B	CHLORINE SOLUTION TO PLANT EFFLUENT
C	TANK 1
D	TANK 2
E	TANK 3
F	TANK 4

NOTES:

1. ALL PIPING, EXCEPT N4PW WATER LINE, TO BE SCH. 80 PVC WITH SOLVENT WELD JOINTS AND FITTINGS. PROVIDE WATER PIPING AS SPECIFIED.
2. PROVIDE INSULATION ON ALL EXPOSED PIPING.
3. INSTALL ALL PUMP SUCTION LINES AT OR BELOW ELEVATION OF TANK DRAIN CENTERLINE.
4. QUICK CONNECT COUPLING. PROVIDE POLYPROPYLENE 2" FEMALE QUICK CONNECT COUPLING WITH PLUG. PROVIDE BANJO MODEL #200-D WITH TEFLON GASKETS AND MODEL #200-PL PLUG WITH S.S. CONNECTOR CHAIN.
5. FIXED AIR GAP. PROVIDE 4x6 ZURN MODEL Z-1025 ON WATER SUPPLY CONNECTION TO TANK. ROD TANK FLANGE TO ELBOW ABOVE WITH S.S. RODS TO RESTRAIN FIXED AIR GAP.
6. Y-STRAINER. PROVIDE SCH. 80 PVC Y-STRAINER WITH 20 MESH PVC SCREENS, VITON O-RINGS, AND CLEANOUT CAP.
7. DIAPHRAGM VALVE. PROVIDE PVC/TEFLON TRUE UNION DIAPHRAGM VALVES WITH TEFLON DIAPHRAGMS FOR ALL HYPOCHLORITE SOLUTION VALVES. PROVIDE ASAHI/AMERICA TYPE 72 MODEL #1141-020, 3192-020. PROVIDE ONE SPARE VALVE.
8. ELECTRIC VALVE OPERATOR. PROVIDE ASAHI/AMERICA SERIES 92 MODEL #2009020, 2138779 WITH NEMA 4 ENCLOSURE. PROVIDE ONE SPARE OPERATOR.
9. BALL CHECK VALVE. PROVIDE PVC TRUE UNION BALL CHECK VALVE WITH VITON ELASTOMERS.
10. PROVIDE UNIONS IN PVC PIPING AT EACH CONNECTION TO HYPOCHLORITE SYSTEM EQUIPMENT.
11. VERIFY LOCATION OF ALL VALVES AND PIPING WITH ENGINEER PRIOR TO INSTALLATION.
12. EQUIPMENT/PROCESS SIGN. SEE SCHEDULE.
13. PRE-ENGINEERED METERING PUMP SKID.
14. PRE-ENGINEERED RECIRCULATION PUMP SKID.
15. PIPE SLEEVES THROUGH WALL FOR FUTURE TANK LINE. PROVIDE PLUG.

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS

PROJECT ENG:	DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED:
RTH	DEF	DEF	TVT	JDP

SOUTH CAROLINA NOVEMBER 30, 2004 B.P. BARBER & ASSOCIATES, INC. No. C00000 CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 7973 THOMAS VICTOR — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS - PLANNERS - SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW CHLORINATION PIPING SCHEMATIC
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149MQ	M34
REF.	OF
N.B. NO. 1731	56
PROJECT NO. 00149	

FILE NO. 22-85-00

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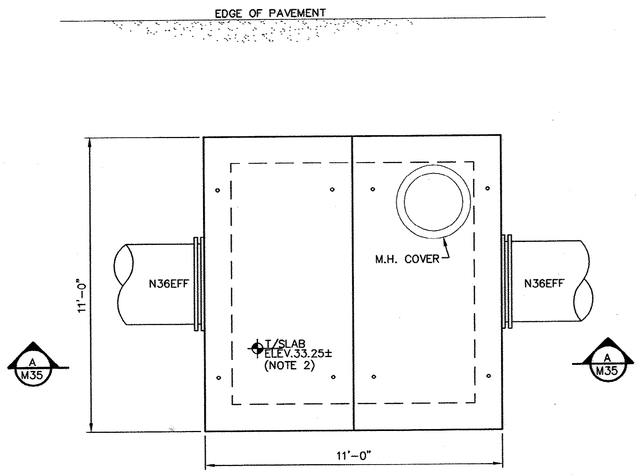
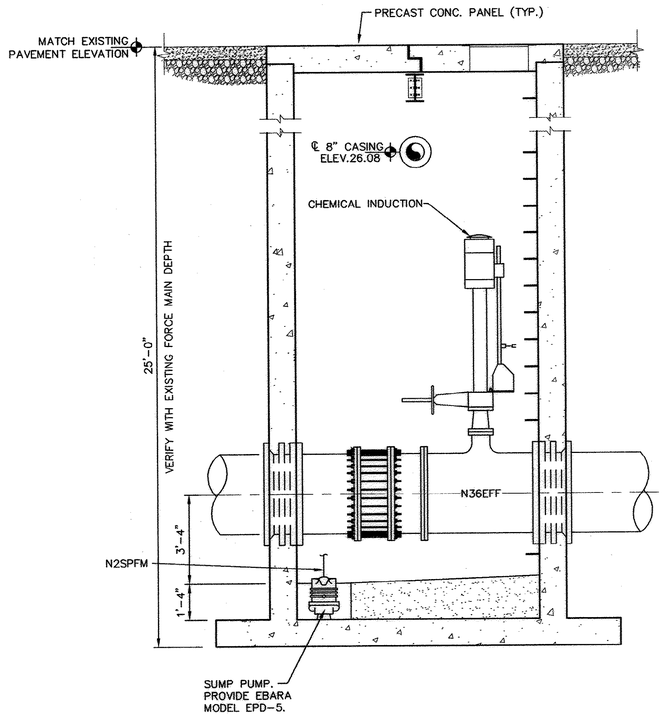
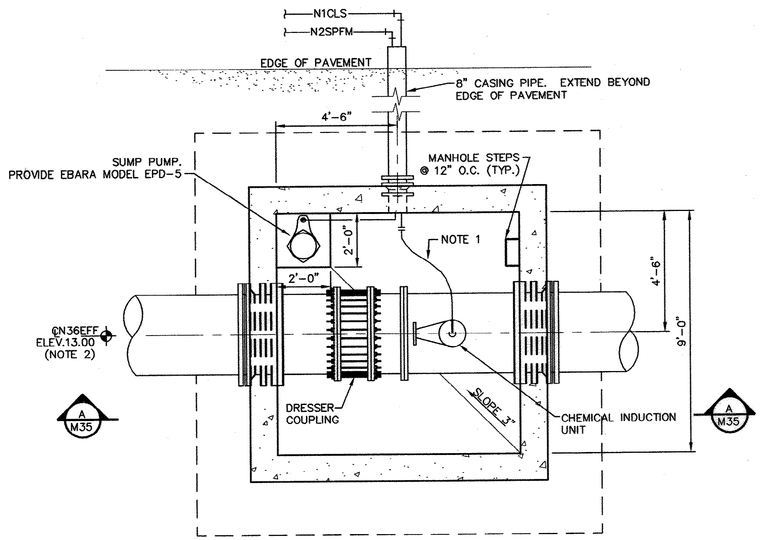


TOP PLAN
SCALE: 3/8" = 1'-0"



SECTION
SCALE: 3/8" = 1'-0" (A M35)



PLAN BELOW COVER
SCALE: 3/8"=1'-0"

NOTES:

1. HOSE ASSEMBLY. PROVIDED BY CHEM. INDUCTION UNIT MFR.

⚠1 2. FOR INSTALLATION OF THE NEW SAMPLE POINT/METER VAULT #3 AND THE NEW CHLORINE INJECTION POINT VAULT, CUT AND REMOVE A 20' SECTION OF E36EFF (CONCRETE PIPE). INSTALL NEW SECTION OF DIP PIPING FOR N36EFF WITH TRANSITION COUPLINGS TO EXISTING. BYPASS PUMPING MAY BE REQUIRED DURING INSTALLATION OF THE NEW PIPING.

0 2 4
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	CHANGE PER ADDENDUM #4	3-1	AR

APPROVALS	
PROJECT ENG:	RTH
DESIGNED BY:	MAB
DRAWN BY:	JRC
CHECKED BY:	TVT
APPROVED:	JDP

SOUTH CAROLINA NOVEMBER 13, 1973 REGISTERED PROFESSIONAL ENGINEER No. 11603 B. P. BARBER & ASSOCIATES, INC. CERTIFICATE OF AUTHORIZATION No. COA0080 — DATE

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 7973 THOMAS V. PATTON — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW CHLORINE INJECTION POINT VAULT PLANS AND SECTION
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149MBB	M35
REF.	OF
N.B. NO. 1731	56
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-134

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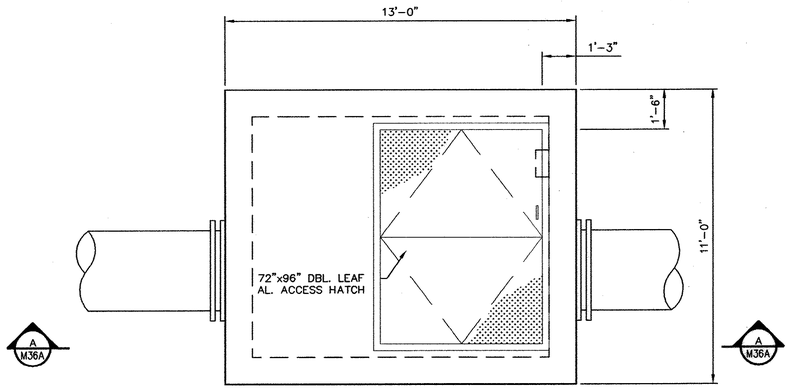
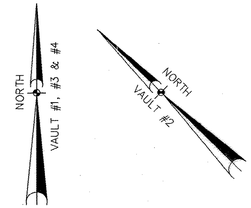
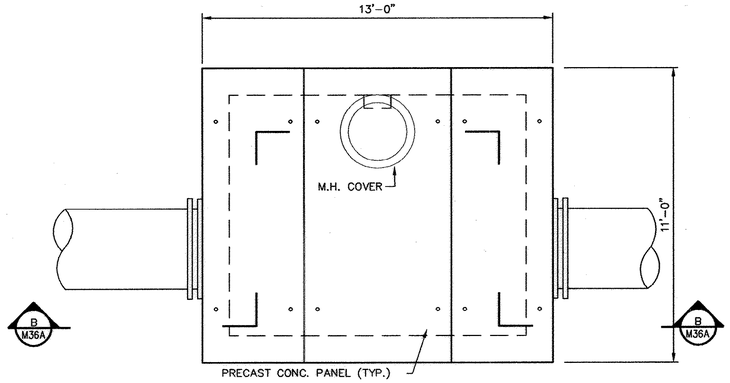
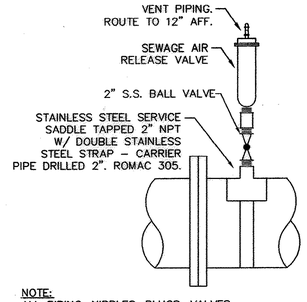


TYPE 'A' COVER
TOP PLAN
SCALE: 3/8" = 1'-0"



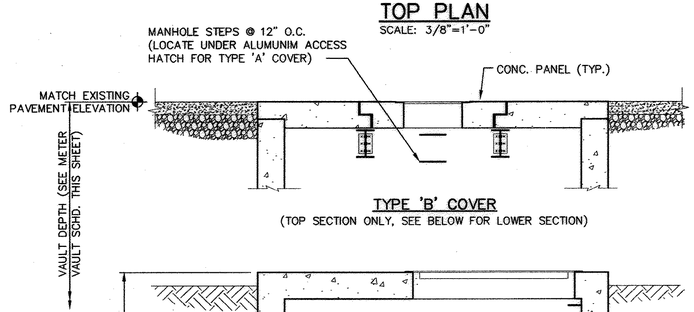


TYPE 'B' COVER
TOP PLAN
SCALE: 3/8"=1'-0"

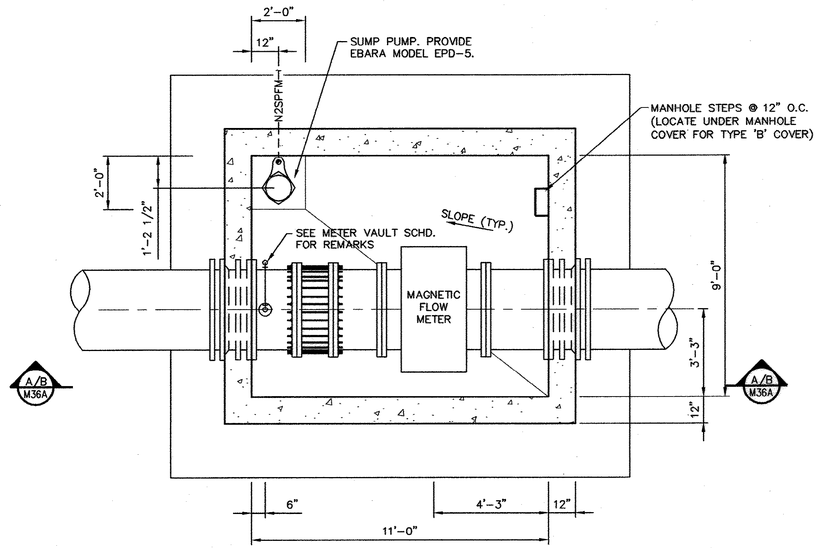


NOTE:
ALL PIPING, NIPPLES, PLUGS, VALVES, ETC. TO BE SCH. 40 304 S.S.

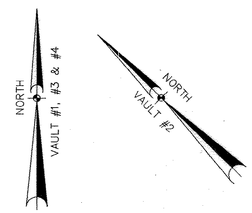
AIR RELEASE VALVE
DETAIL 1 TYP
SCALE: NONE

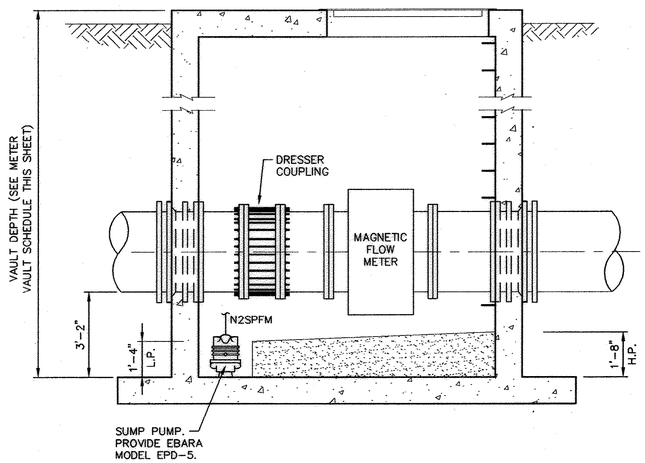


TYPE 'B' COVER
(TOP SECTION ONLY, SEE BELOW FOR LOWER SECTION)



PLAN BELOW COVER
SCALE: 3/8" = 1'-0"





TYPE 'A' COVER

SECTION A M36A / B M36A
SCALE: 3/8" = 1'-0"
(SIM.)

METER VAULT SCHEDULE

	VAULT NO.	LOCATION	VAULT DEPTH	LINE SIZE & INVERT	PIPE/METER SIZE	VAULT COVER TYPE	TRANSMITTER LOCATION	SUMP PUMP DISCHARGE	REMARKS
NOTES 1, 2 & 3	1	RETURN SLUDGE PS	13'-8"	N30RAS I.E.=11.00	30"	A	PIPE MTD. TOP OF VAULT	ROUTE TO EXIST. SLUDGE PUMP STATION WETWELL.	PROVIDE AIR RELEASE VALVE DOWNSTREAM SEE DETAIL THIS SHEET.
NOTES 1 & 2	2	CLARIFIER NO. 5	24'-1"	N36MXL I.E.=1.08	36"	A	PIPE MTD. TOP OF VAULT	ROUTE TO CENTER WELL OF DIST. CHAMBER #5	
NOTE 1	3	CHLORINATION FACILITY	25'-2"	E36EFF I.E.=11.50	36"	B	MAIN CONTROL PANEL	ROUTE TO GRADE.	PROVIDE 3/4" SAMPLE TAP DOWNSTREAM OF METER. ROUTE SAMPLE LINE TO CHLOR. BLDG.
NOTE 1	4	DECHLORINATION FACILITY	12'-7"	N36EFF I.E.=11.83	36"	A	MAIN CONTROL PANEL	ROUTE TO GRADE.	PROVIDE 3/4" SAMPLE TAP DOWNSTREAM OF METER. ROUTE SAMPLE LINE TO DECHLOR. BLDG.

NOTES: 1. VERIFY VAULT DEPTH WITH PIPING INVERTS.
2. SEE PIPE MTD. DETAIL SHEET M22.
3. PIPING FOR 30" NOT SHOWN FOR CLARITY, 36" SHOWN.

0 2 4
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY
1	ALTERNATE NO. 1	2-01	RTH

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: MAB
DRAWN BY: JRC
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA NOTARY PUBLIC
B.P. BARBER & ASSOCIATES, INC.
CERTIFICATE OF AUTHORIZATION No. C00333
DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER
REGISTERED
No. 9978
THOMAS V. TVETER
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW METER VAULT PLANS, SECTION AND SCHEDULE (ALTERNATE)
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149MCB
REF.
N.B. NO. 1731
PROJECT NO. 00149
SHEET M36A OF 56
FILE NO. 22-85-00

51-004-135

5

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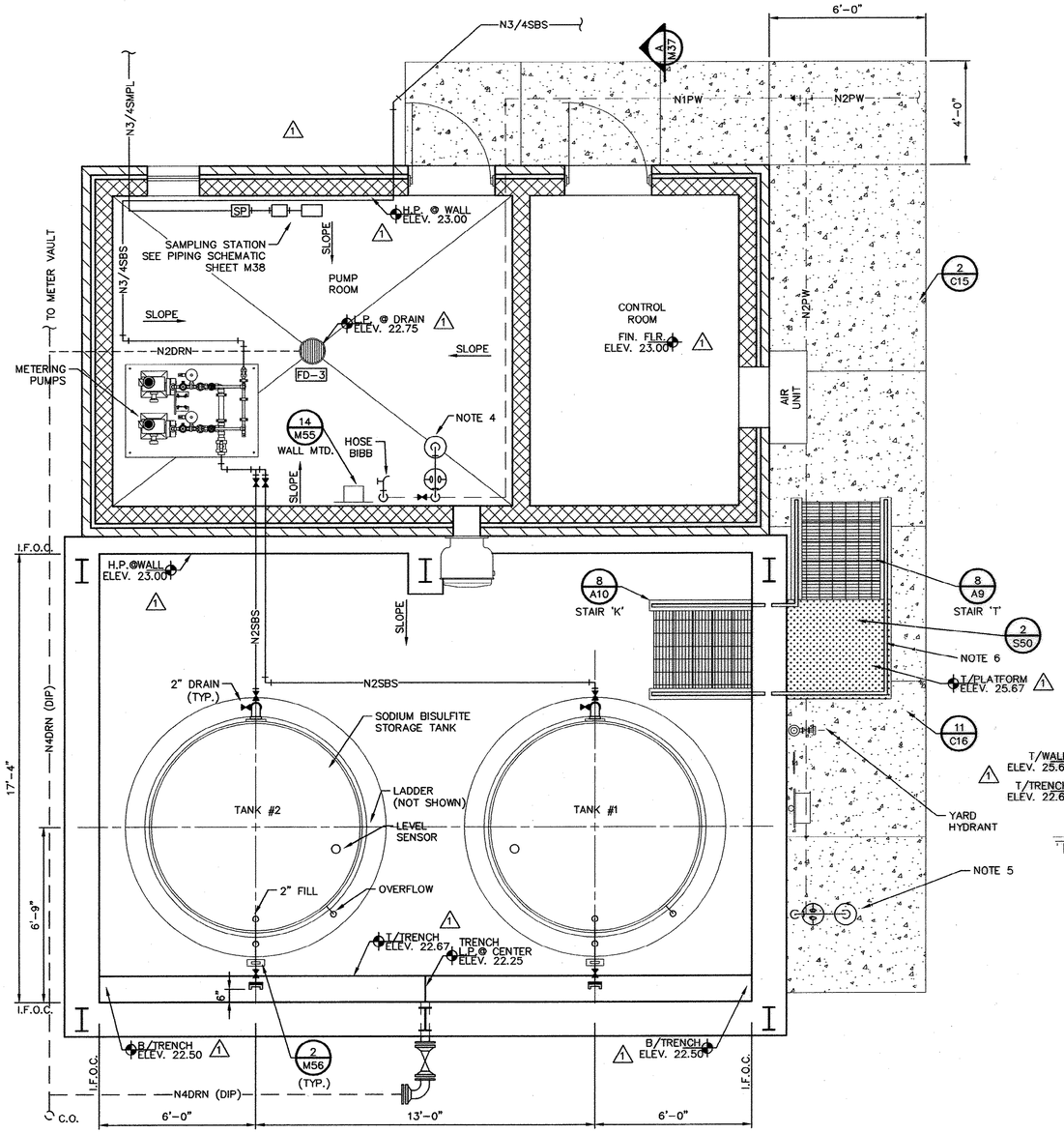
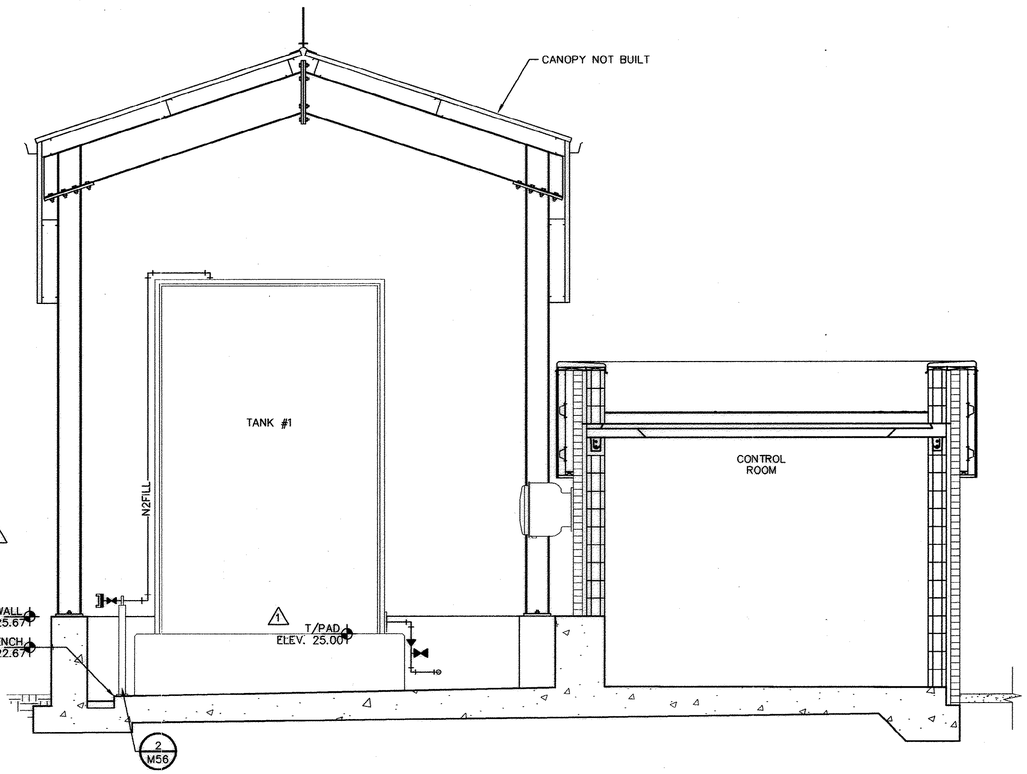
NOTES:

1. SEE DECHLORINATION PIPING SCHEMATIC, SHEET M36.
2. PROVIDE INSULATION FOR ALL EXPOSED PIPING.
3. 8" PLUG VALVE TO REMAIN CLOSED.
4. PVC EMERGENCY SHOWER WITH EYE/FACE WASH. PROVIDE SPEAKMAN MODEL NO. 7E-31587 OR ENGINEER APPROVED EQUAL.
5. STAINLESS STEEL EMERGENCY SHOWER WITH EYE/FACE WASH. PVC PROVIDE GUARDIAN EQUIP. NO. G-1991 WITH 8"ø S.S. BOWL.
6. CONC. SIDEWALK BENEATH STAIRWAY.



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



SECTION
SCALE: 3/8" = 1'-0" A M37

NORTH

0 2 4
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	CHANGE PER ADDENDUM #4	3-1	AR

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: DEF
DRAWN BY: NTW
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA REGISTERED LANDSCAPE ARCHITECT B.P. BARBER & ASSOCIATES, INC. CERTIFICATE OF AUTHORIZATION No. C00303 — DATE

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 9973 THOMAS V. TOTTEN — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW DECHLORINATION FACILITY PLAN & SECTION
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149MAX	SHEET M37
REF.	OF 56
N.B. NO. 1731	
PROJECT NO. 00149	
FILE NO. 22-85-00	

51-004-136

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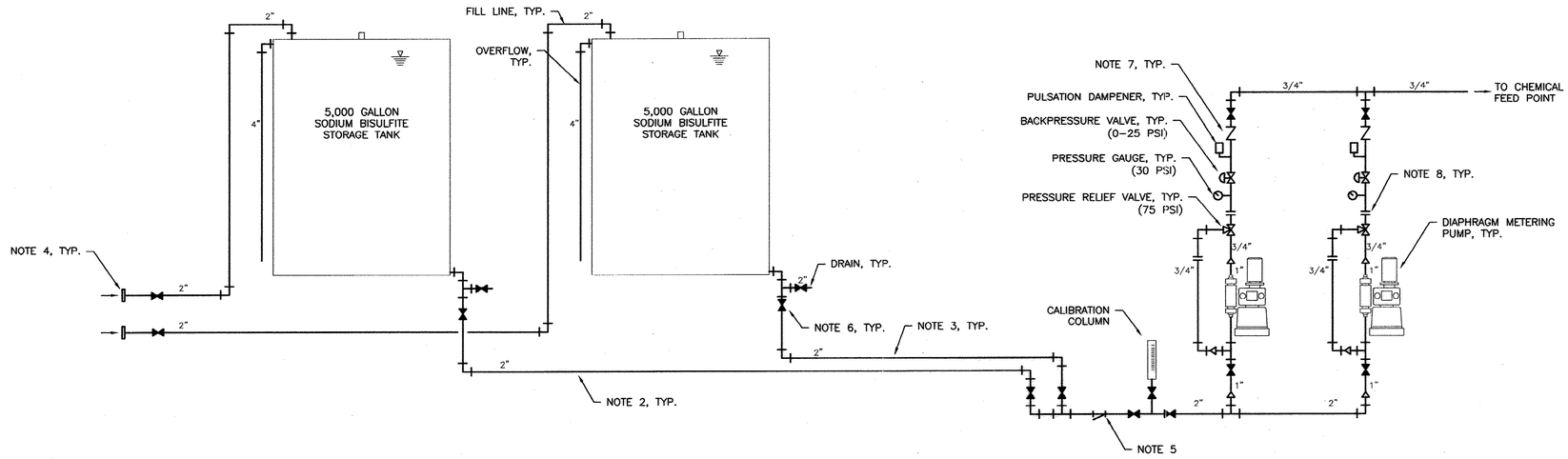
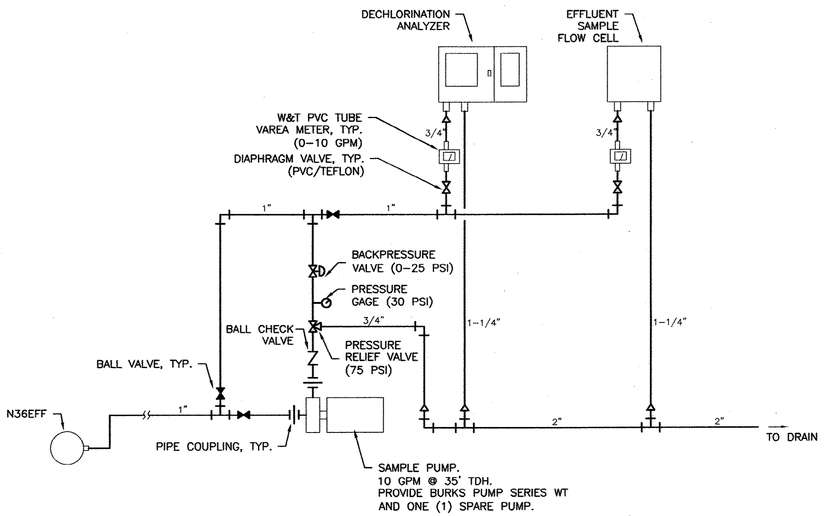


DECHLORINATION PIPING SCHEMATIC

SCALE: NONE



EFFLUENT SAMPLING STATION PIPING SCHEMATIC

SCALE: NONE

NOTES:

1. ALL PIPING TO BE SCH. 80 PVC WITH SOLVENT WELD JOINTS AND FITTINGS.
2. PROVIDE INSULATION ON ALL EXPOSED PIPING.
3. INSTALL ALL PUMP SUCTION LINES AT OR BELOW ELEVATION OF TANK DRAIN CENTERLINE.
4. QUICK CONNECT COUPLING. PROVIDE POLYPROPYLENE 2" FEMALE QUICK CONNECT COUPLING WITH PLUG. PROVIDE BANJO MODEL #200–D WITH TEFLON GASKETS AND MODEL #200–PL PLUG WITH S.S. CONNECTOR CHAIN.
5. Y–STRAINER. PROVIDE SCH. 80 PVC Y–STRAINER WITH 20 MESH PVC SCREENS, VITON O–RINGS, AND CLEANOUT CAP.
6. BALL VALVE. PROVIDE PVC TRUE UNION BALL VALVE WITH TEFLON ELASTOMERS.
7. BALL CHECK VALVE. PROVIDE PVC TRUE UNION BALL CHECK VALVE WITH TEFLON ELASTOMERS.
8. PROVIDE UNIONS IN PVC PIPING AT EACH CONNECTION TO BISULFITE SYSTEM EQUIPMENT.
9. VERIFY LOCATION OF ALL VALVES AND PIPING WITH ENGINEER PRIOR TO INSTALLATION.

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTT
DESIGNED BY: DEF
DRAWN BY: DEF
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA — NOV. 1, 1974 — B. P. BARBER & ASSOCIATES, INC. No. C00026 — CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA — PROFESSIONAL ENGINEER — No. 7973 — THOMAS VICTOR GRIGGS — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW DECHLORINATION FACILITY PIPING SCHEMATIC
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149MBD	M38
REF.	OF
N.B. NO. 1731	56
PROJECT NO. 00149	

FILE NO. 22–85–00

51-004-137 S

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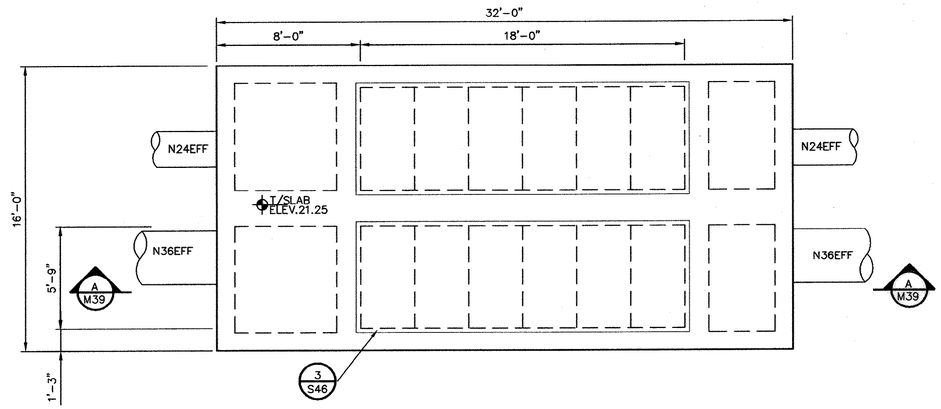
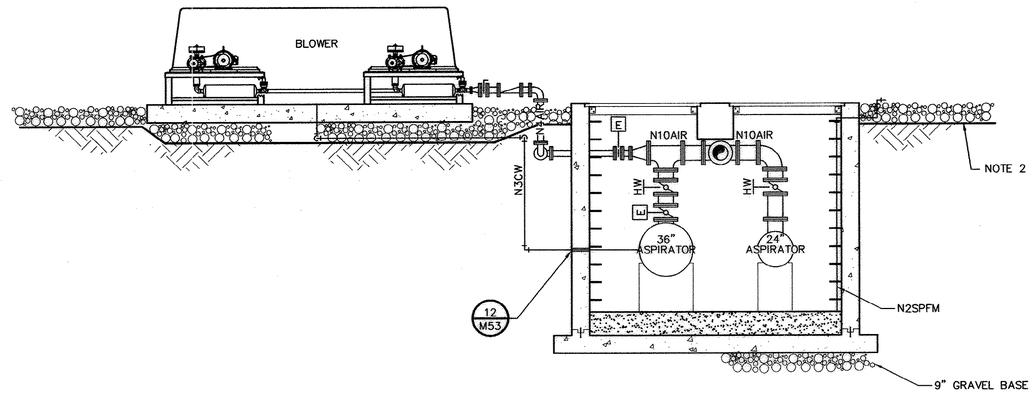


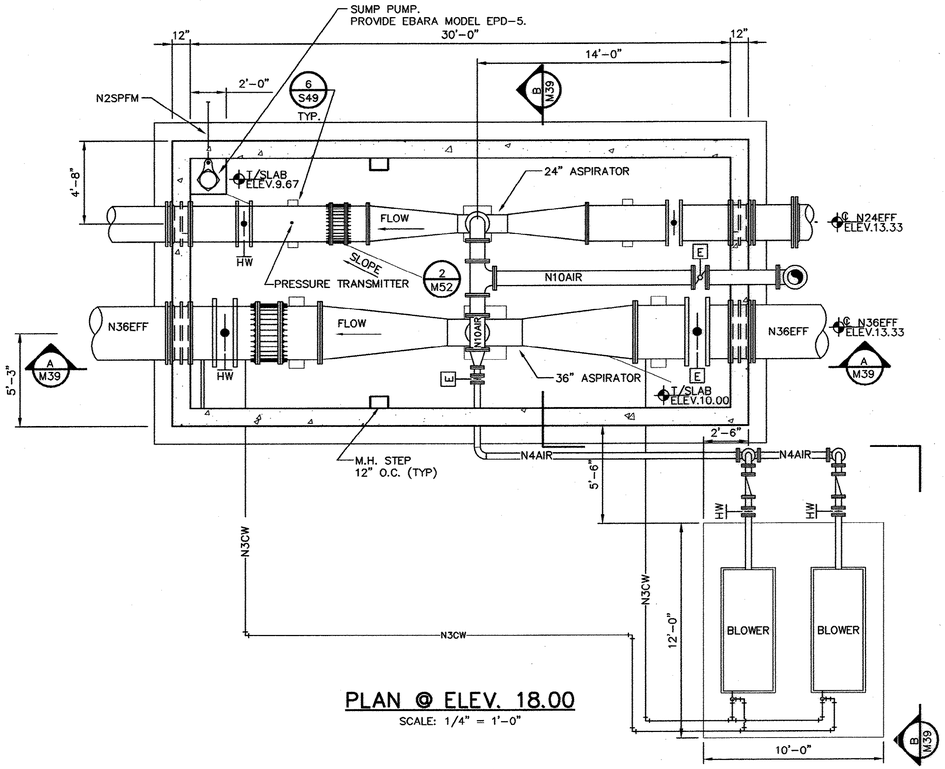
TOP PLAN

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



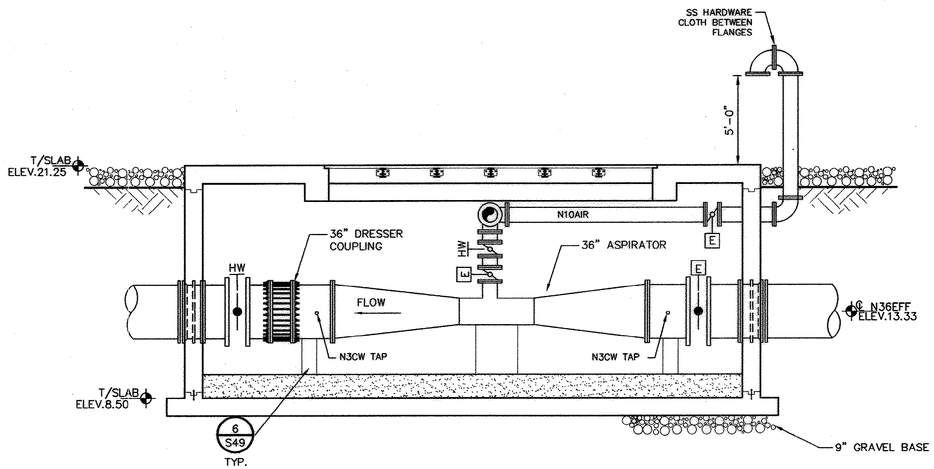
SECTION

SCALE: 1/4" = 1'-0" (B M39)



PLAN @ ELEV. 18.00

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



SECTION

SCALE: 1/4" = 1'-0" (A M39)

NOTE:

1. PROVIDE SS BALL VALVE AND SS CHECK VALVE ON THE INLET AND OUTLET PIPING TO THE HEAT EXCHANGE UNITS.

2. PROVIDE 4" OF #57 STONE OVER MIRAFI 600X FILTER FABRIC TO A DISTANCE 1' OUTSIDE OF FENCE.

0 4 8
GRAPHIC SCALE

NORTH

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTL
DESIGNED BY: MAB
DRAWN BY: ZES
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA NOVEMBER 30, 2001 G. P. BARBER ASSOCIATES, INC. No. C000020 CERTIFICATE OF AUTHORIZATION
DATE

SOUTH CAROLINA III ANNUAL PROFESSIONAL ENGINEER No. 7973 THOMAS V. TROTTER REGISTERED
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW POST AERATION VAULT PLANS & SECTION
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149MBH
REF.
N.B. NO. 1731
PROJECT NO. 00149
SHEET M39 OF 56
FILE NO. 22-85-00

51-004-138 S

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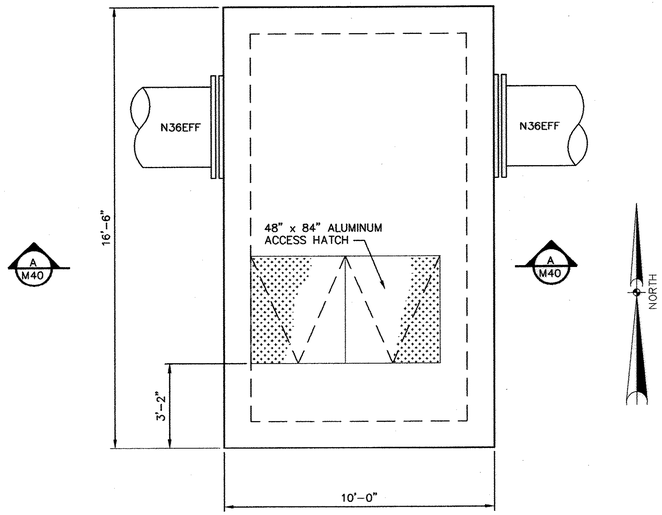
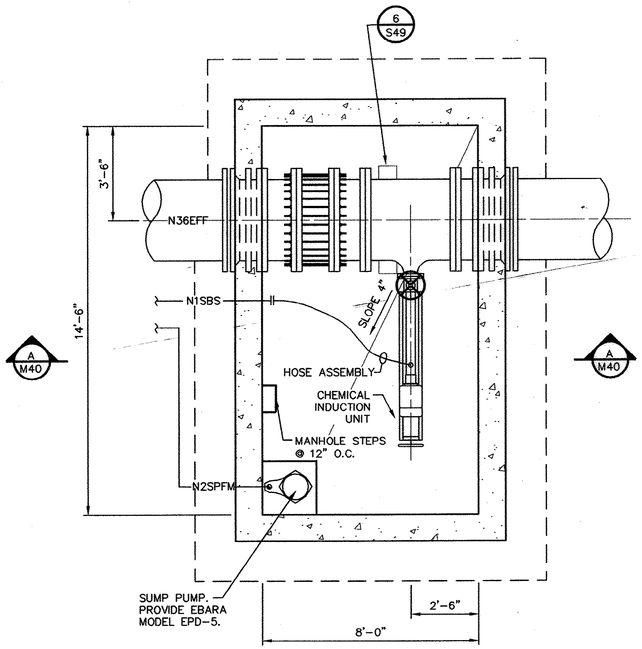
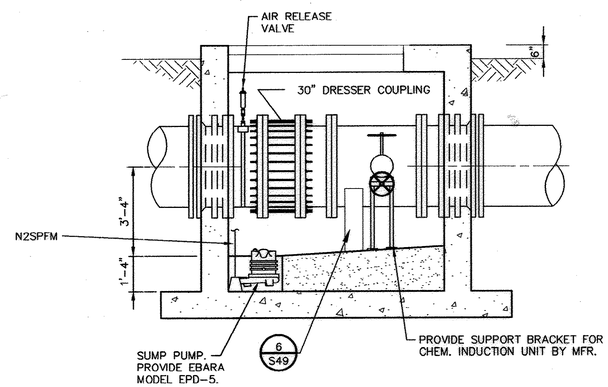


TOP PLAN
SCALE: 3/8" = 1'0"



PLAN @ ELEV. 19.00
SCALE: 3/8" = 1'0"



SECTION
SCALE: 3/8" = 1'-0" (A M40)

0 2 4
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS

PROJECT ENG.	RTH
DESIGNED BY:	MAB
DRAWN BY:	ZES
CHECKED BY:	TVT
APPROVED:	JDP

SOUTH CAROLINA NOVEMBER 30, 2001 CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. 1731

DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER REGISTERED THOMAS VICTOR No. 7973

SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW SODIUM BISULFITE INJECTION VAULT PLANS & SECTION
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	00149MBI
REF.	
N.B. NO.	1731
PROJECT NO.	00149
SHEET	M40
OF	56

FILE NO. 22-85-00

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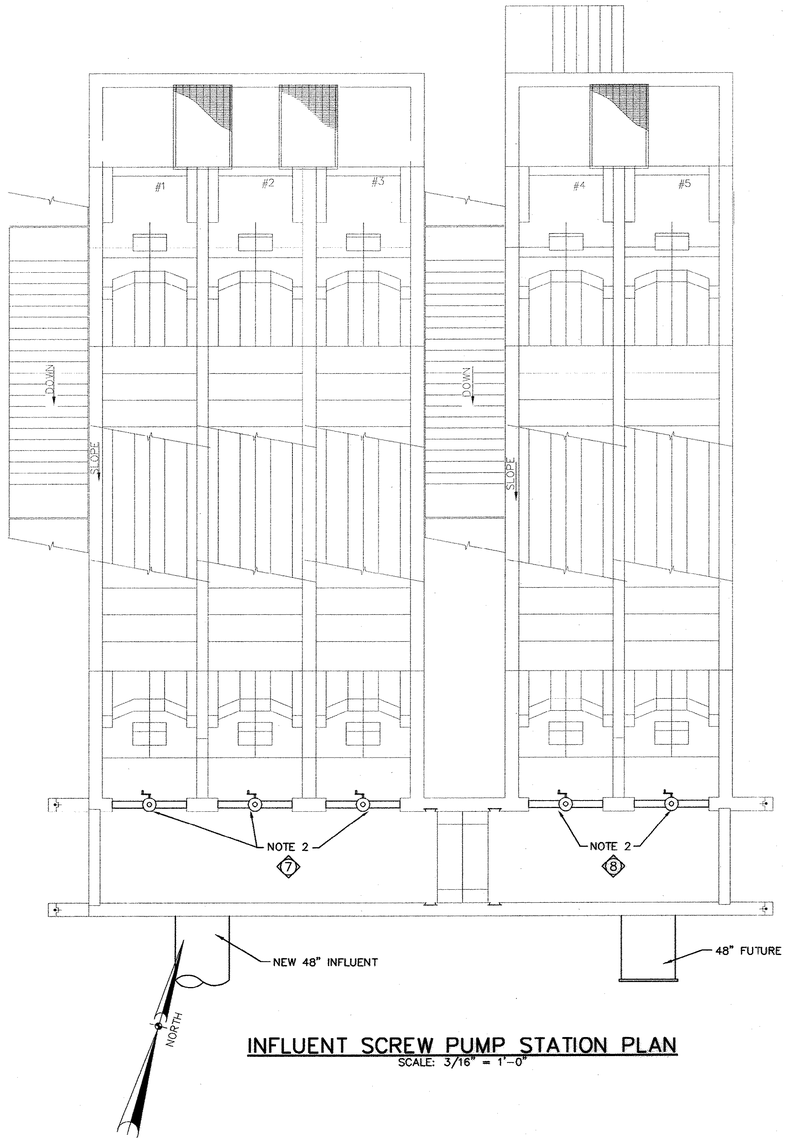
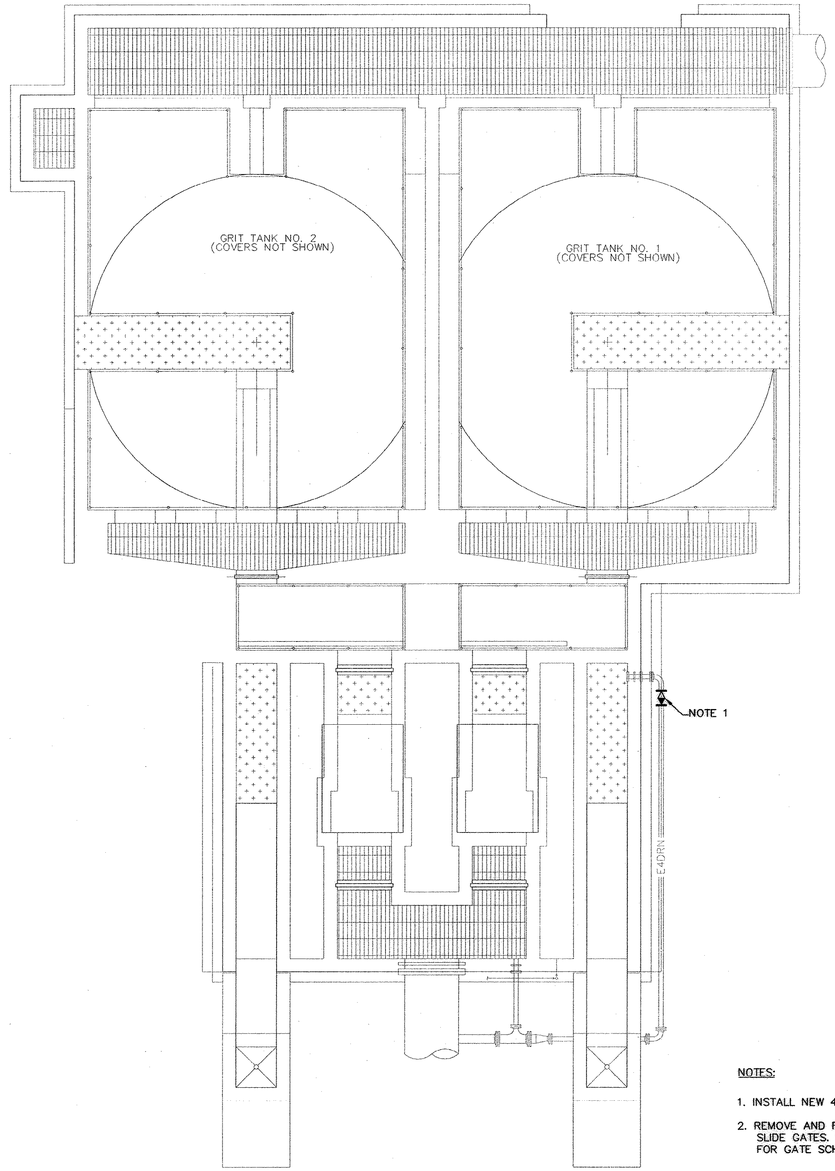


INFLUENT SCREW PUMP STATION PLAN
SCALE: 3/16" = 1'-0"



NOTES:

1. INSTALL NEW 4" PLUG VALVE.
2. REMOVE AND REPLACE EXISTING SLIDE GATES. SEE SHEET M52 FOR GATE SCHEDULE.

GRIT TANK PLAN
SCALE: 3/16" = 1'-0"

0 3 6
GRAPHIC SCALE

NORTH

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: AR
DRAWN BY: WF
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA NOVEMBER 14, 2003 B.P. BARBER & ASSOCIATES, INC. No. 000020 CERTIFICATE OF AUTHORIZATION
DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER REGISTERED THOMAS VICTOR No. 7073
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
MODIFICATIONS TO INFLUENT SCREW PUMP STATION & GRIT TANKS PLANS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY
PHASE I

DISK 00149MBM	SHEET M41
REF.	OF 56
N.B. NO. 1731	
PROJECT NO. 00149	

FILE NO. 22-85-00

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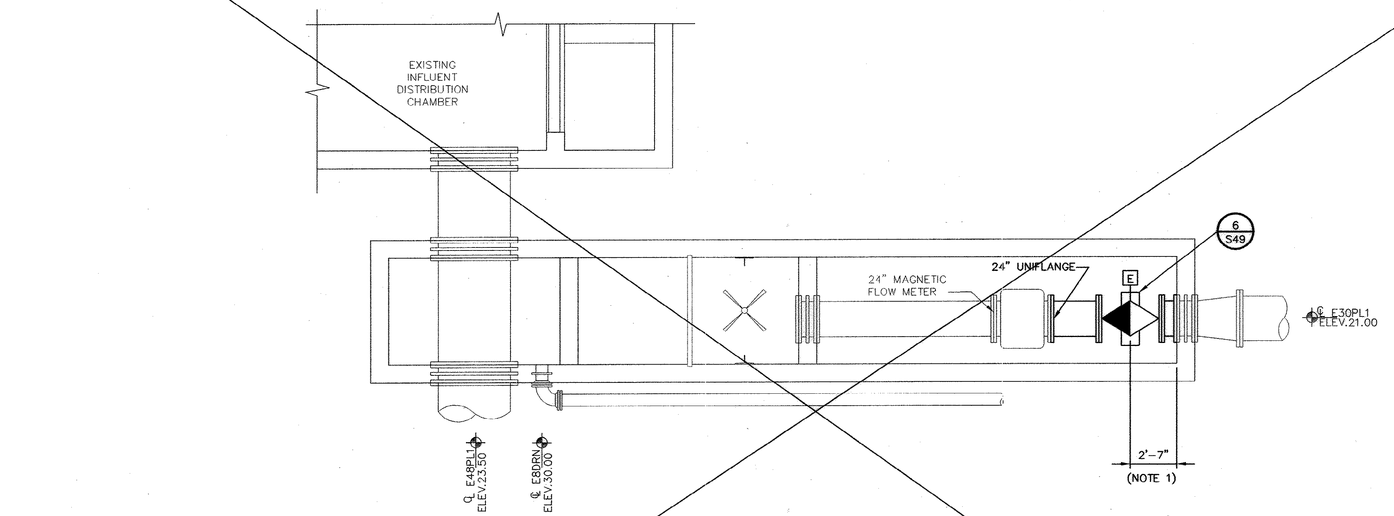

PLAN BELOW SLAB

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

NORTH

NOTES:

1. 24" ELECTRIC ACTUATOR PLUG VALVE.
2. EXISTING ELEVATIONS TAKEN FROM DRAWINGS PREPARED BY PRC CONSOER TOWNSEND CONSULTING ENGINEERS. VERIFY ELEVATIONS PRIOR TO CONSTRUCTION.

0 4 8
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS	
PROJECT ENG:	R.T.H.
DESIGNED BY:	N.T.W.
DRAWN BY:	N.T.W.
CHECKED BY:	T.V.T.
APPROVED:	J.D.P.

SOUTH CAROLINA B. P. BARBER & ASSOCIATES, INC. CERTIFICATE OF AUTHORIZATION

DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 9673 REGISTERED ARCHITECT

SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
MODIFICATIONS TO RAPID MIX BASIN PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	99127MR
REF.	
N.B. NO.	1731
PROJECT NO.	00149

SHEET M42 OF 56

FILE NO. 22-85-00

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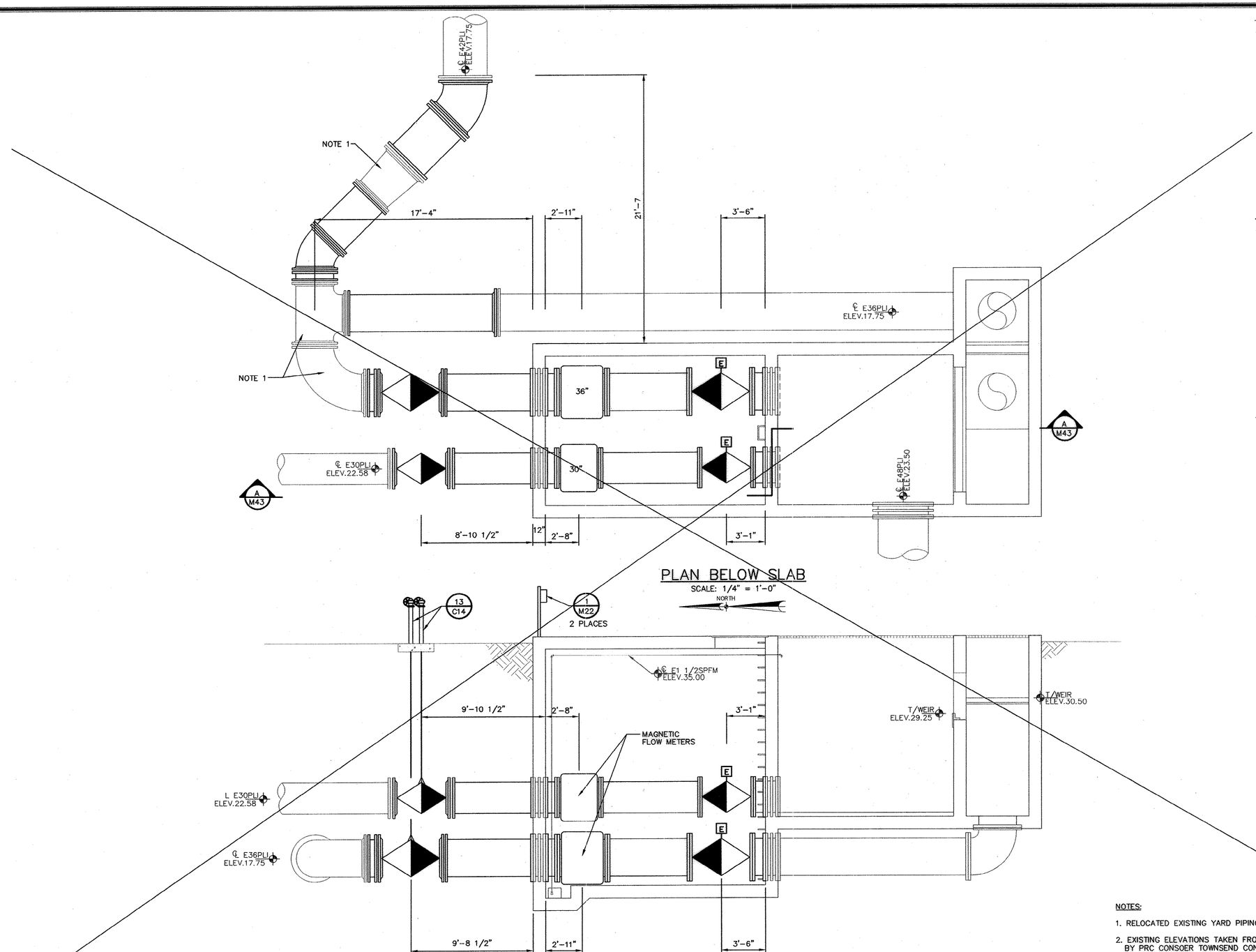
51-004-141



NOTES:

1. RELOCATED EXISTING YARD PIPING.
2. EXISTING ELEVATIONS TAKEN FROM DRAWINGS PREPARED BY PRC CONSOER TOWNSEND CONSULTING ENGINEERS. VERIFY ELEVATIONS PRIOR TO CONSTRUCTION.

0 4 8
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS	
PROJECT ENG:	RTH
DESIGNED BY:	NTW
DRAWN BY:	NTW
CHECKED BY:	RTH
APPROVED:	JDP

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL
B.P. BARBER & ASSOCIATES, INC.
CORPORATE No. C-0220
NORTH CAROLINA LICENSURE CERTIFICATE OF AUTHORIZATION
DATE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL
No. 19731
REGISTERED
THOMAS
VICTOR
III
SIGNATURE

bpb
B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
MODIFICATIONS TO INFLUENT DISTRIBUTION CHAMBER PLAN & SECTION
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	99127MQ
REF.	
N.B. NO.	1731
PROJECT NO.	00149
SHEET	M43
OF	56
FILE NO.	22-85-00

51-004-142 5

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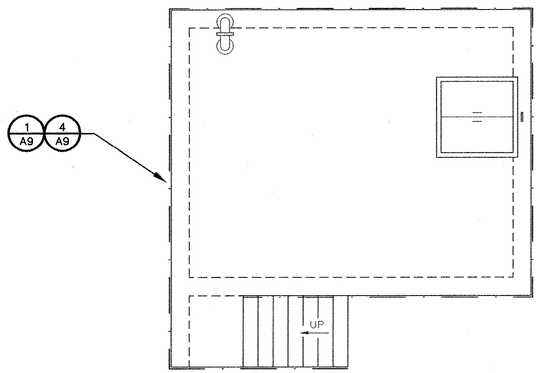
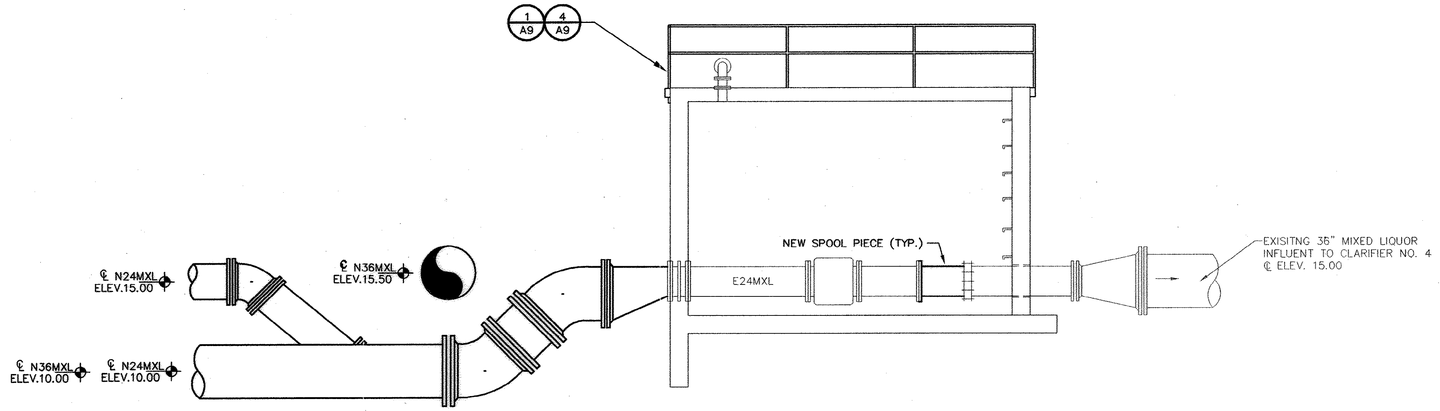
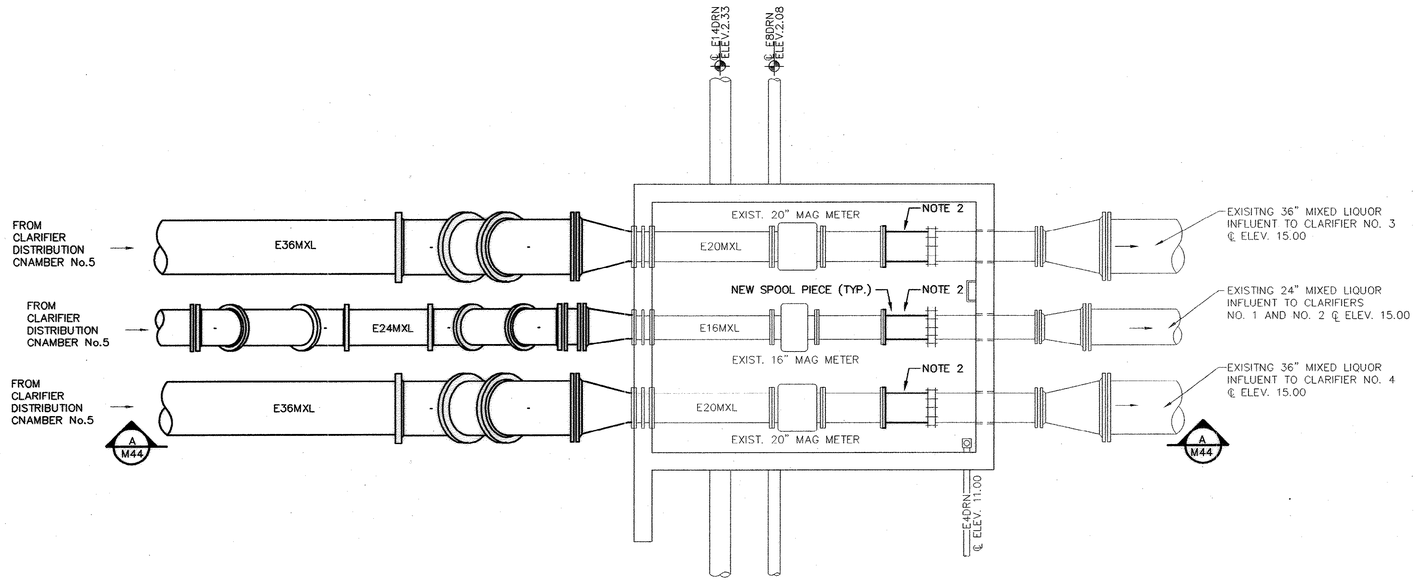


TOP PLAN
SCALE: 1/4" = 1'-0"



SECTION
SCALE: 1/4" = 1'-0"
A
M44



PLAN @ ELEV. 18.00
SCALE: 1/4" = 1'-0"

NORTH

0 4 8
GRAPHIC SCALE

NOTE:

1. EXISTING ELEVATIONS TAKEN FROM DRAWINGS PREPARED BY PRC CONCOER TOWNSEND CONSULTING ENGINEERS. VERIFY ELEVATIONS PRIOR CONSTRUCTION.
2. INSTALL A 4" FLANGED BOSS, A 4" PLUG VALVE (LEVER ACTUATED) AND A BLIND FLANGE ON THE END OF THE PLUG VALVE.

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY
1	CHANGE PER ADDENDUM #4	3-1	AR

APPROVALS

PROJECT ENG:	RTH
DESIGNED BY:	NTW
DRAWN BY:	NTW
CHECKED BY:	TVT
APPROVED:	JDP

SOUTH CAROLINA NOVEMBER 19, 2001 B. P. BARBER & ASSOCIATES, INC. No. C00500 CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 9973 THOMAS V. THOMAS JR. REGISTERED — SIGNATURE

bpb
B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
MODIFICATIONS TO CLARIFIER DISTRIBUTION CHAMBER #6 PLANS & SECTION
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	99127MBK
REF.	
N.B. NO.	1731
PROJECT NO.	00149

SHEET M44 OF 56

FILE NO. 22-85-00

51-004-143

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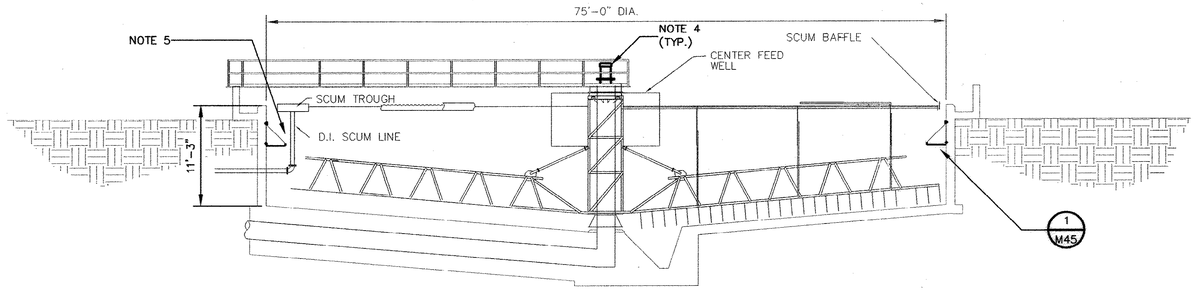
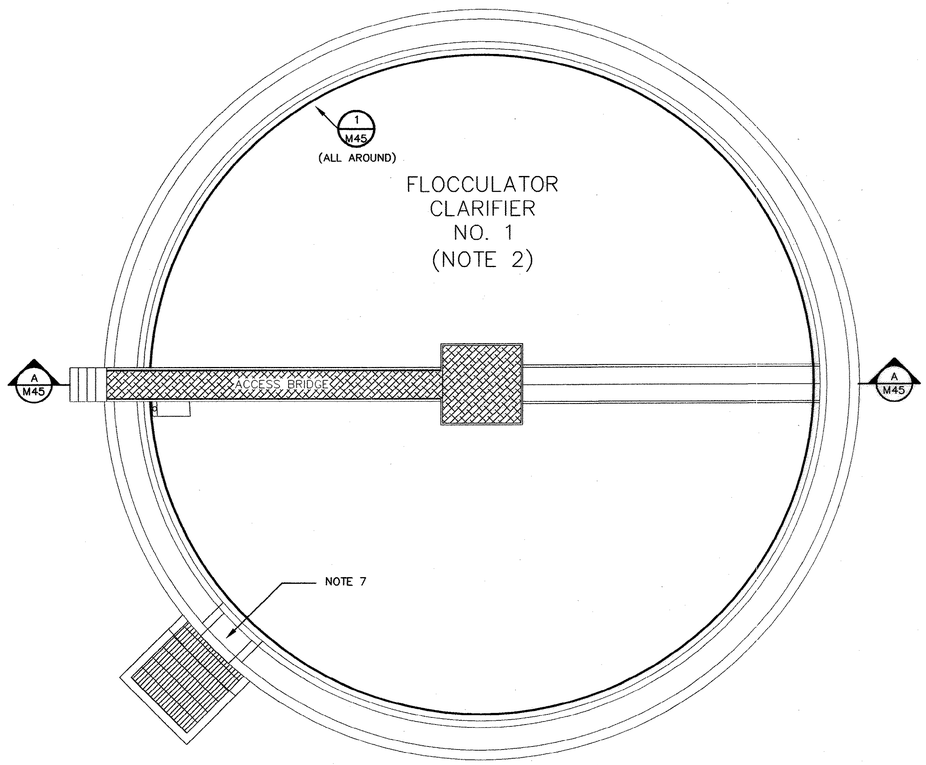
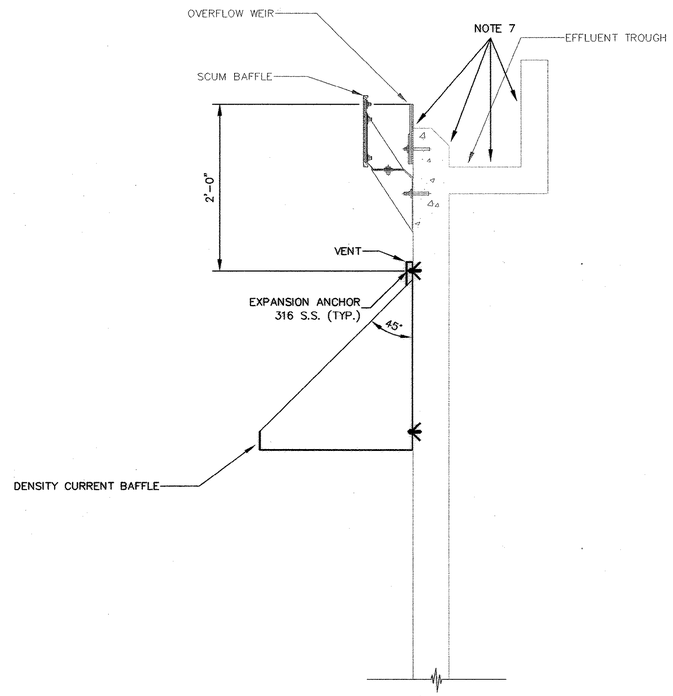


SECTION
SCALE: NONE
A
M45



PLAN
SCALE: NONE



DENSITY CURRENT BAFFLE
DETAIL
SCALE: NONE
1
M45

NOTES:

1. WORK TO BE PERFORMED ON FLOCCULATOR CLARIFIERS NO. 1 & 2.
2. FLOCCULATOR CLARIFIER NO. 1 SHOWN. FLOCCULATOR CLARIFIER NO. 2 MIRROR IMAGE.
3. SEE SITE PLAN FOR ORIENTATION OF ALL RELATED WORK.
4. REMOVE EXISTING FLOCCULATOR DRIVE AND EQUIPMENT. LEAVE MECHANISM DRIVE AND CENTER WELL IN PLACE.
5. EQUIPMENT MANUFACTURER TO VERIFY DIMENSTIONS.
6. CLEAN TO SSPC-SP6, PRIME, AND PAINT ALL STEEL COMPONENTS IN ACCORDANCE WITH SECTION 09900.
7. WATER BLAST, CLEAN, AND PAINT LAUNDERS FROM BASE OF WEIR TO HEIGHT OF WEIR ON OUTSIDE WALL.

NORTH

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS

PROJECT ENG.	DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED:
RTH	KEA	KEA	TVT	JDP

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION — B. P. BARBER & ASSOCIATES, INC. No. C000320 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER — No. 19973 — THOMAS VICTOR GRESSETTE III — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
MODIFICATIONS TO FLOCCULATOR CLARIFIER PLAN, SECTION & DETAIL
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149M45	M45
REF.	OF
N.B. NO. 1731	56
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-144

S

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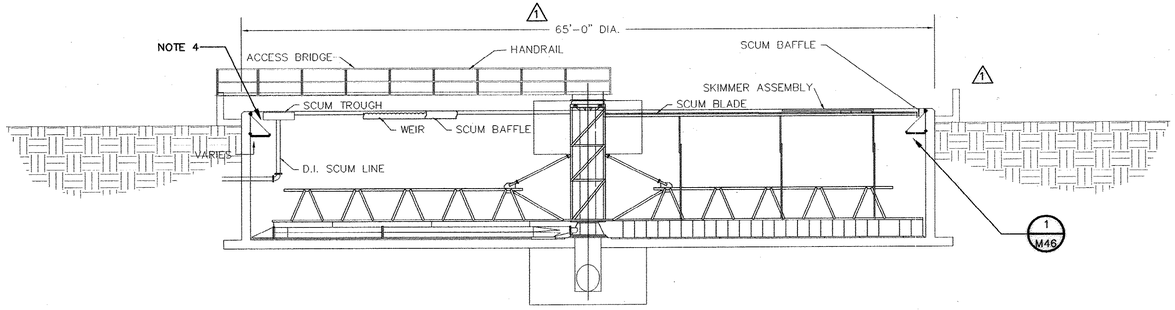
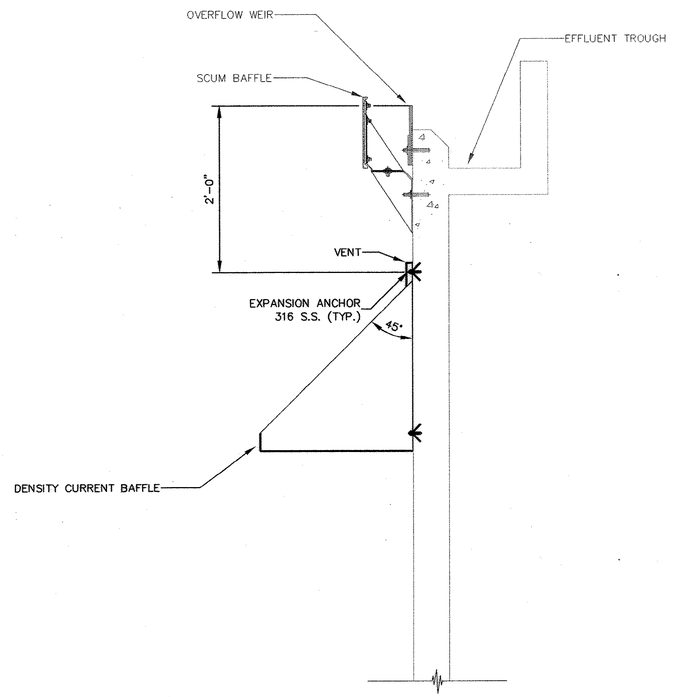
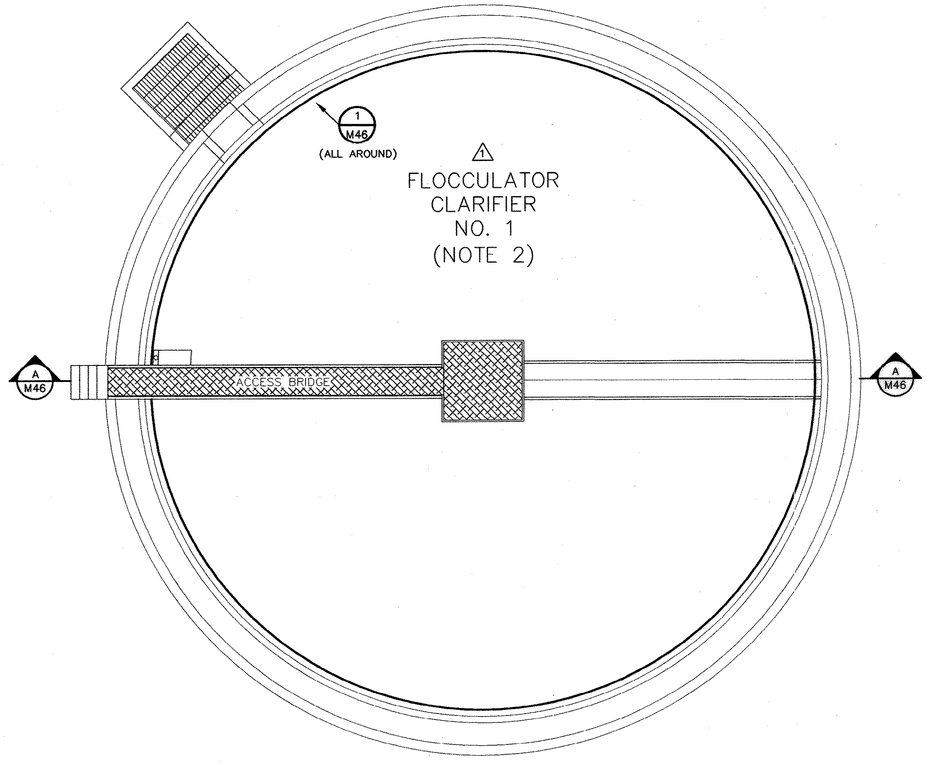


SECTION
SCALE: NONE
A
M46





PLAN
SCALE: NONE

DENSITY CURRENT BAFFLE

1 DETAIL
SCALE: NONE
1
M46

NOTES:

1. WORK TO BE PERFORMED ON SECONDARY CLARIFIERS NO. 1 & 2. 1
2. SECONDARY CLARIFIER NO. 1 SHOWN. SECONDARY CLARIFIER NO. 2 MIRROR IMAGE.
3. SEE SITE PLAN FOR ORIENTATION OF ALL RELATED WORK.
4. EQUIPMENT MANUFACTURER TO VERIFY DIMENSIONS.

NORTH

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY
1	CHANGE PER ADDENDUM #3	2-26	AR

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: KEA
DRAWN BY: KEA
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA NOTARY PUBLIC
B. P. BARBER & ASSOCIATES, INC.
CERTIFICATE OF AUTHORIZATION
No. C00320
DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER
No. 9973
THOMAS DEVICTOR
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
MODIFICATIONS TO SECONDARY CLARIFIER PLAN, SECTION & DETAIL
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149MCF	M46
REF.	OF
N.B. NO. 1731	56
PROJECT NO. 00149	

FILE NO. 22-85-00

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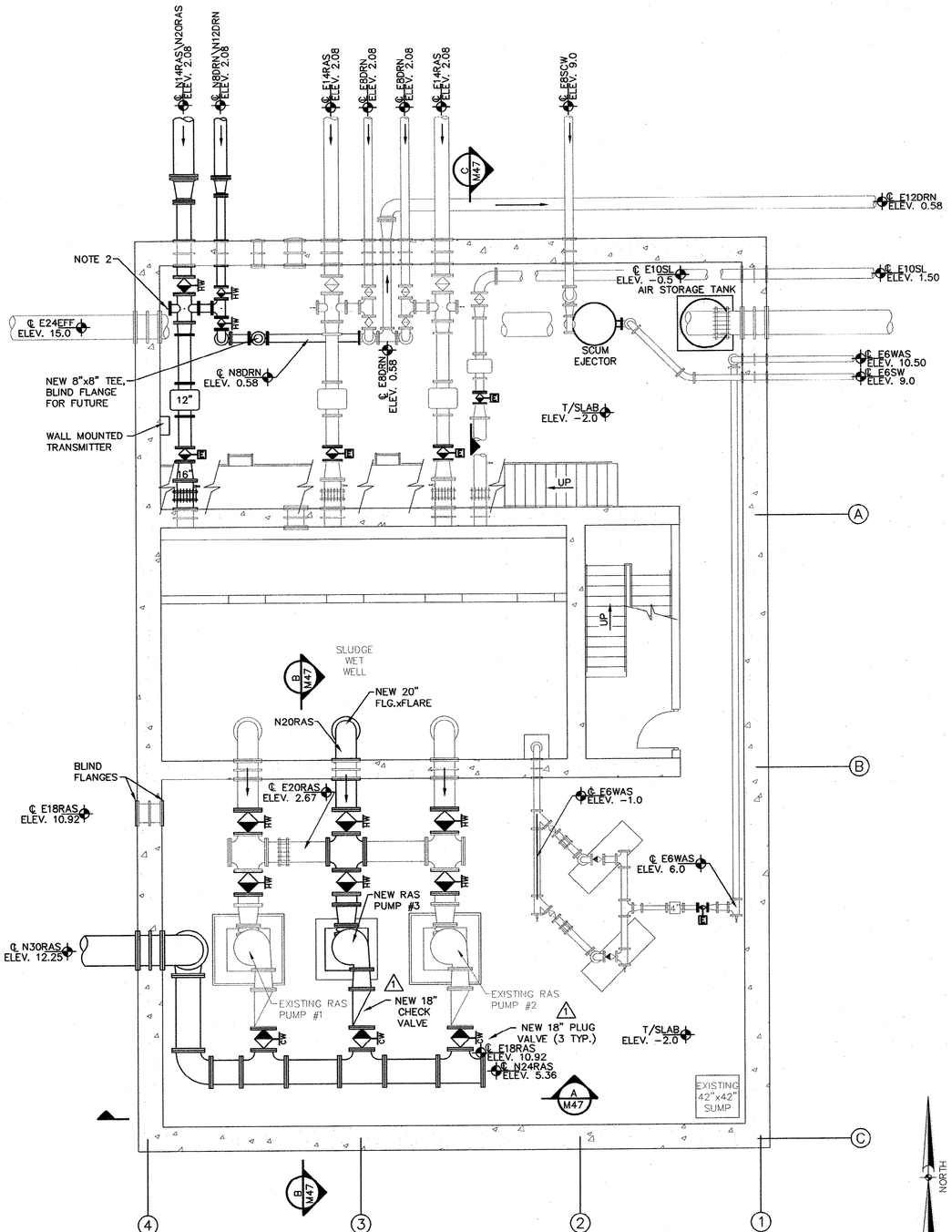
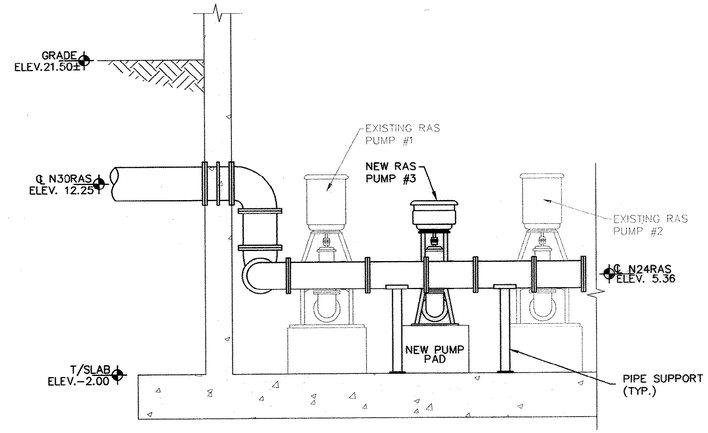
51-004-145



PLAN @ ELEV. −2.0

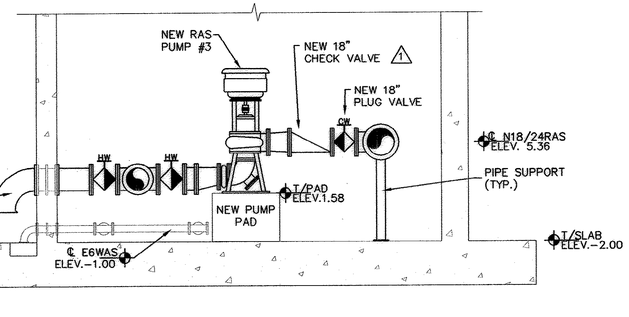
SCALE: 3/16" = 1'−0"

NORTH



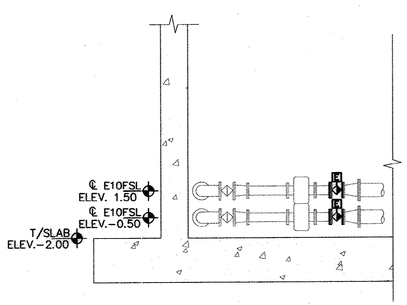
SECTION

SCALE: 3/16" = 1'−0" (A M47)



SECTION

SCALE: 3/16" = 1'−0" (B M47)



SECTION

SCALE: 3/16" = 1'−0" (C M47)

NOTES:

1. EXISTING ELEVATIONS TAKEN FROM DRAWINGS PREPARED BY PRC CONSOER TOWNSEND CONSULTING ENGINEERS. VERIFY ELEVATIONS PRIOR TO CONSTRUCTION.
2. NEW 8"x3/4" NPT COMP. FLANGE. EXTEND E14RAS WATERLINE OVER TO NEW 3/4" BUTTERFLY VALVE WITH S.S. NIPPLE ON END.
3. PROVIDE BRONZE NIPPLES.
4. INSULATE PIPING.
5. ELBOW OVER AND DOWN. INSTALL ELBOW W/SCREEN. DIRECT EXHAUST AWAY FROM PUMP. VERIFY WITH THE ENGINEER. TYPE L COPPER (TYP.).

0 3 6
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	CHANGE PER ADDENDUM #4	3-1	AR

APPROVALS	
PROJECT ENG:	RTH
DESIGNED BY:	NTW
DRAWN BY:	NTW
CHECKED BY:	TVT
APPROVED:	JDP

SOUTH CAROLINA PROFESSIONAL ENGINEER REGISTERED THOMAS V. TURNER No. 9775 CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. C000260

DATE

SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: MODIFICATIONS TO RETURN SLUDGE PUMPING STATION PLAN & SECTIONS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
99127MZ	M47
REF.	OF
N.B. NO. 1731	56
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-146

5

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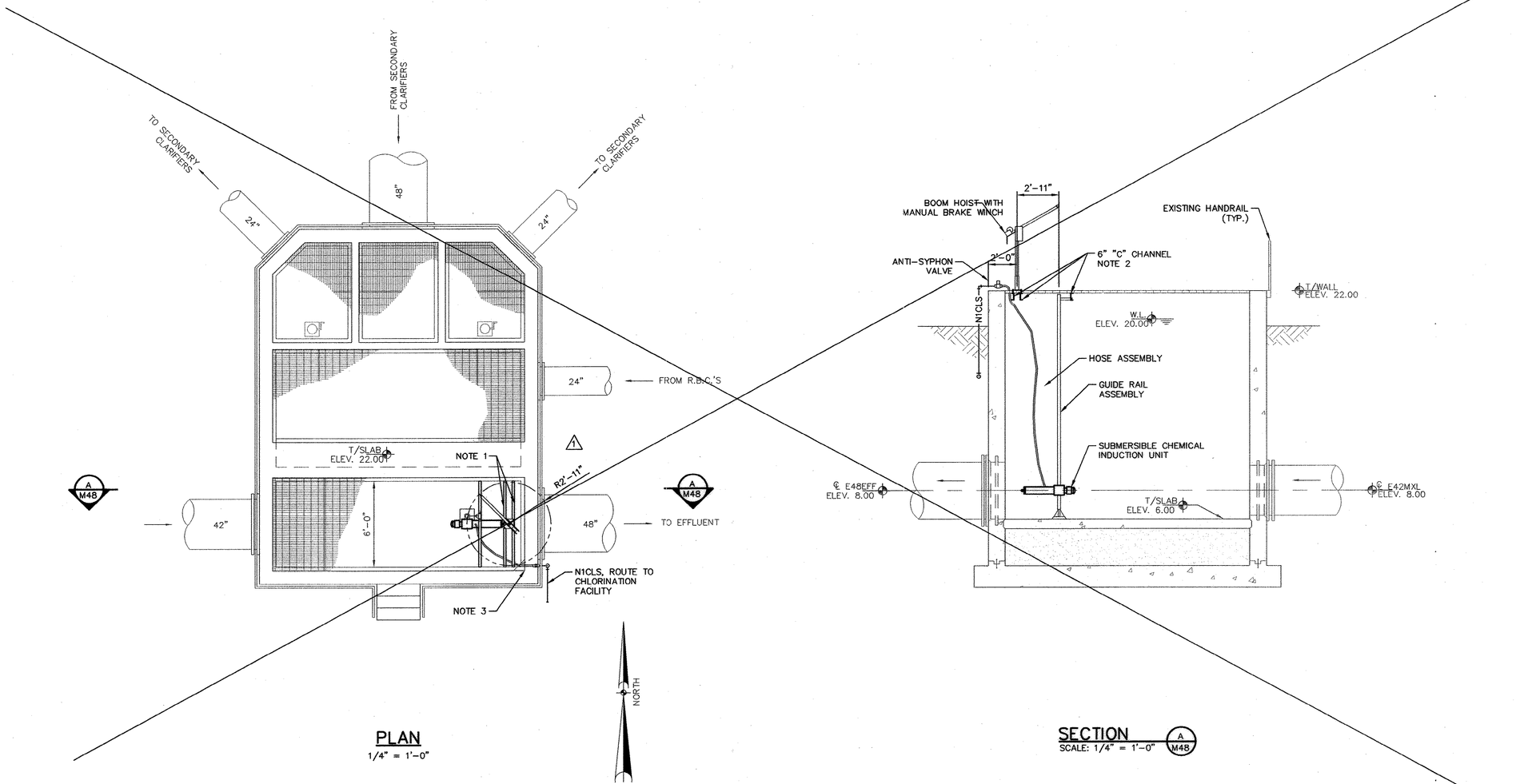

PLAN
1/4" = 1'-0"

SECTION A M48
SCALE: 1/4" = 1'-0"

NOTES:

1. MOUNTING 'C'S FLUSH TO BOTTOM OF EXISTING GRATING. USE 4" LONG MOUNTING BOLTS.
2. FASTEN MOUNTING 'C' USING CLIP ANGLES WITH 1/2" S.S. EXP. ANCHORS. WELD C TO L.
3. CUT EXISTING GRATING TO ACCEPT HOSE ASSEMBLY.

0 4 8
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY
1	CHANGE PER ADDENDUM #3	2-26	AR

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: JRC
DRAWN BY: JRC
CHECKED BY: TVT
APPROVED: JDP

NORTH CAROLINA NOVEMBER 20, 2002 B.P. BARBER & ASSOCIATES, INC. No. C00000 CERTIFICATE OF AUTHORIZATION — DATE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 7973 REGISTERED THOMAS VICTOR — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: MODIFICATIONS TO CLARIFIER DISTRIBUTION BOX
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149MBX	M48
REF.	OF
N.B. NO. 1731	56
PROJECT NO. 00149	

FILE NO. 22-85-00

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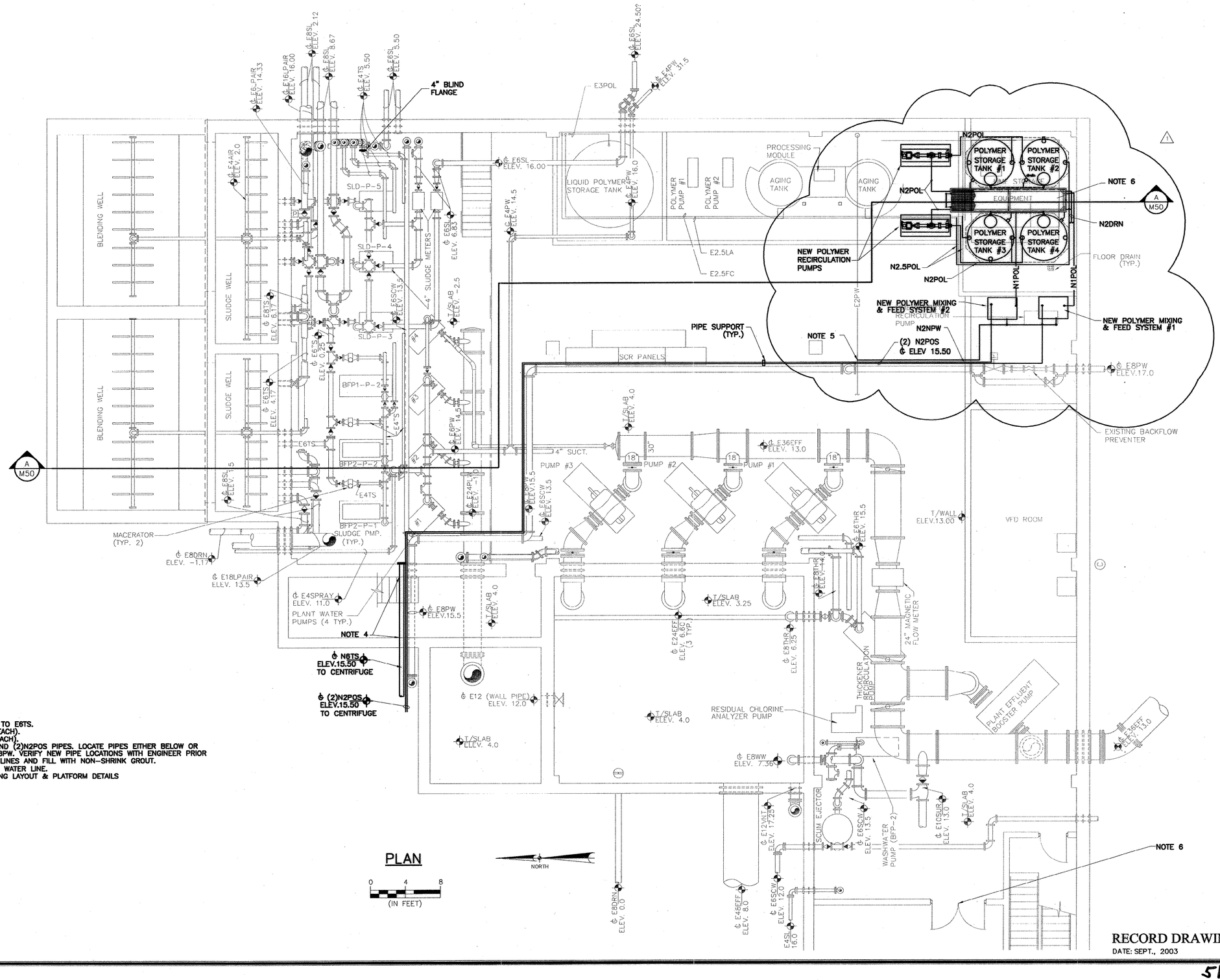
51-004-147 5



NOTES:

1. TIE N6TS SUCTION PIPING TO E6TS.
2. NEW 6" MACERATORS (2 EACH).
3. NEW SLUDGE PUMPS (2 EACH).
4. CORE HOLES FOR N6TS AND (2)N2POS PIPES. LOCATE PIPES EITHER BELOW OR ON NORTHERN SIDE OF E8PW. VERIFY NEW PIPE LOCATIONS WITH ENGINEER PRIOR TO CORING. INSTALL NEW LINES AND FILL WITH NON-SHRINK GROUT.
5. TIE TO EXISTING 2" PLANT WATER LINE.
6. SEE SHEET M51 FOR PIPING LAYOUT & PLATFORM DETAILS

PLAN

0 4 8
(IN FEET)

NORTH

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY
1	REV. TANKS LAYOUT & PLATFORM ADDED	3-02	AR

APPROVALS
PROJECT ENG: RTH
DESIGNED BY:
DRAWN BY:
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA NOTIFICATION OF CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. COA0008
DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 9173 REGISTERED
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
MODIFICATIONS TO PROCESS CENTER BASEMENT PUMP REPLACEMENT PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK CH149M49REV
REF.
N.B. NO. 1731
PROJECT NO. 00149

SHEET M49 OF 56

FILE NO. 22-85-00

51-004-148 5

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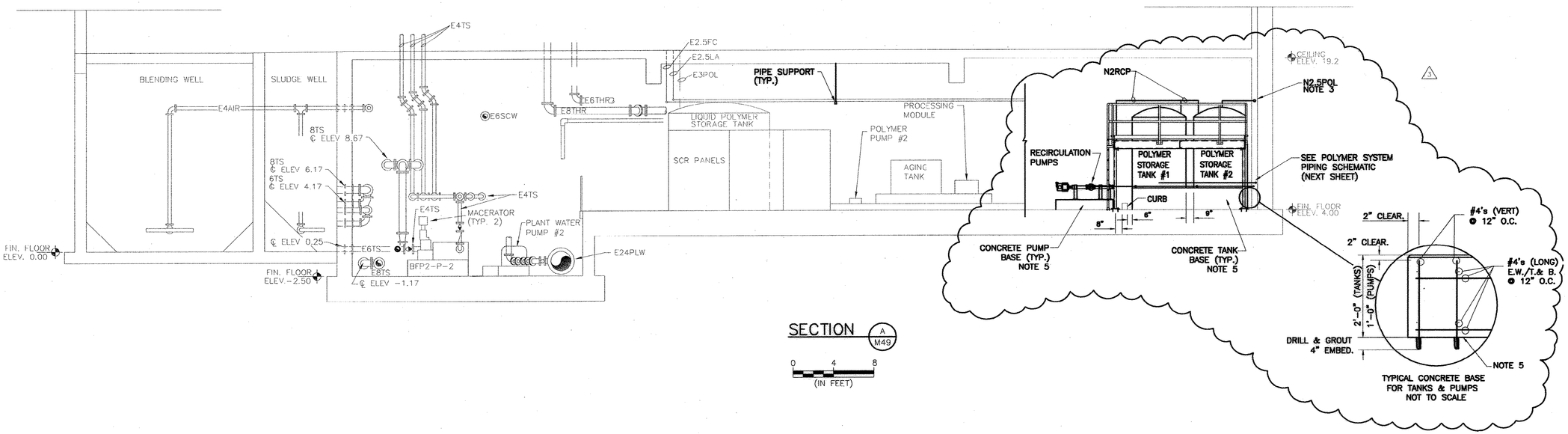
NOTES:

1. TIE NEW 6" SUCTION PIPING TO E6TS FROM SLUDGE WELL.
2. LOCATE NEW SLUDGE PUMPS ON EXISTING CONCRETE PUMP BASES.
3. TIE NEW POLYMER SUPPLY LINES INTO ABANDONED LIQUID ALUM (AL) AND FERRIC CHLORIDE (FC) SUPPLY LINES. FLUSH EXISTING LINES (MINIMUM 4' PER SECOND VELOCITY FOR 10 MIN.) PROIR TO TIE IN. RELABEL EXISTING LINES AS POLYMER SUPPLY.
4. ROUTE TANK OVERFLOW AND DRAIN LINES TO EXISTING FLOOR DRAIN.
5. ROUGHEN CONCRETE TO EXPOSE AGGREGATE 1/4" AMPLITUDE, INSTALL CONCRETE BASE.



SECTION A / M49

0 4 8
(IN FEET)

RECORD DRAWINGS
DATE: SEPT., 2003

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REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	CHANGE PER ADDENDUM #4	3-1	AR
2	CHANGE PER ADDENDUM #5	3-4	AR
3	REV. TANKS LAYOUT & ADD. ELEVATION ABOVE	3-21	AR

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: CHS
DRAWN BY: CHS
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA NOVEMBER 30, 2001 B. P. BARBER & ASSOCIATES, INC. CERTIFICATE OF AUTHORIZATION No. COA0020 — DATE

SOUTH CAROLINA III NOVEMBER REGISTERED PROFESSIONAL ENGINEER No. 7873 — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

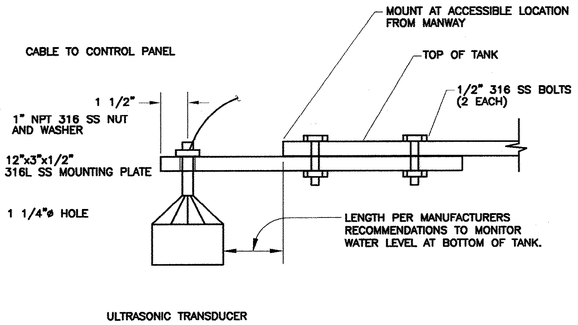
SHEET TITLE: MODIFICATIONS TO PROCESS CENTER BASEMENT FLOOR SECTIONS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK CH149M50REV	SHEET M50
REF.	OF 56
N.B. NO. 1731	
PROJECT NO. 00149	

FILE NO. 22-85-00

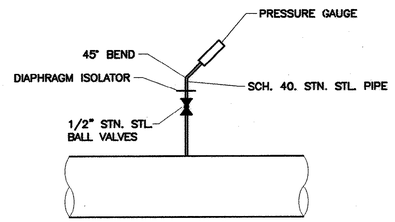
51-004-149 5



DETAIL 1/M51

TRANSDUCER MOUNTING PLATE

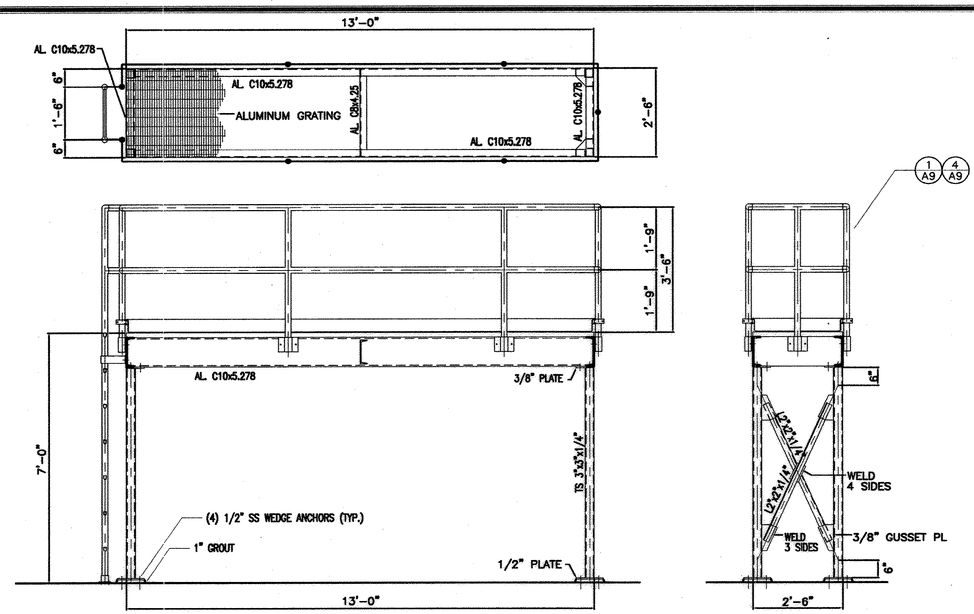
NOT TO SCALE



DETAIL 2/M51

PRESSURE GAUGE CONNECTION

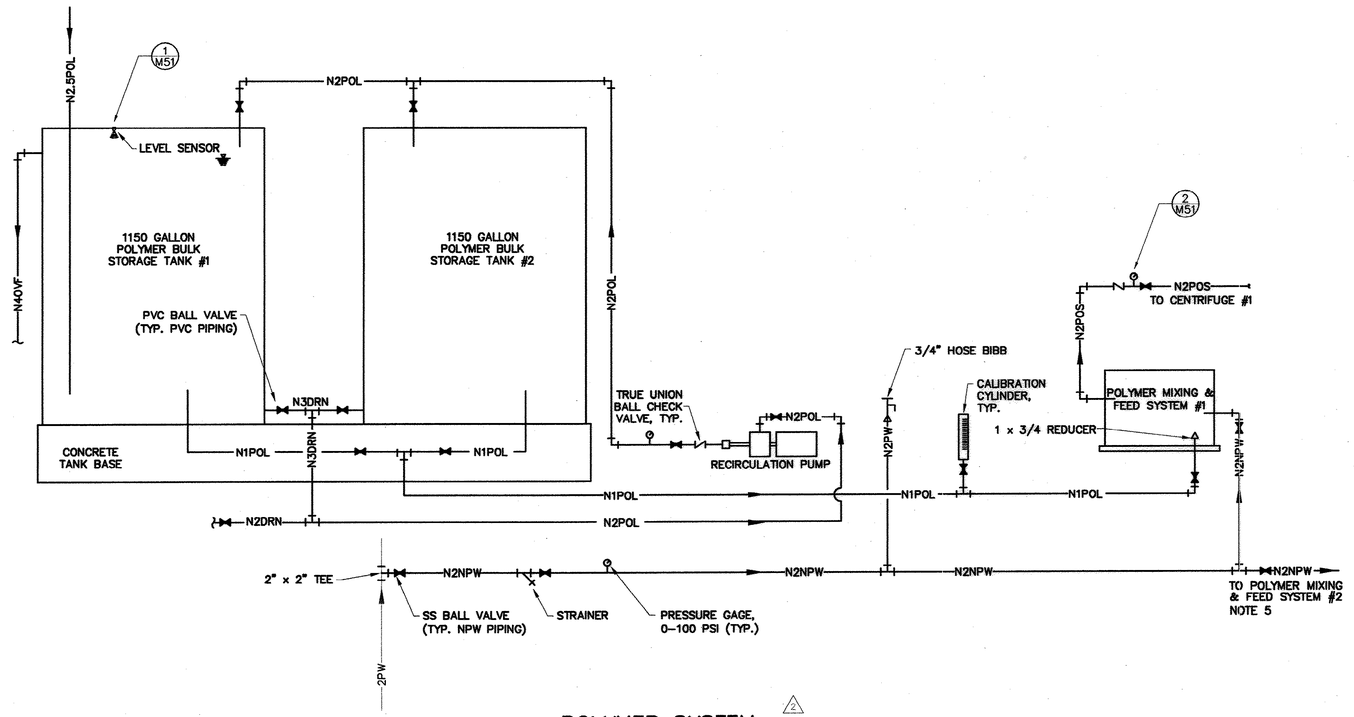
NOT TO SCALE



POLYMER TANKS PLATFORM & HANDRAIL

NOT TO SCALE

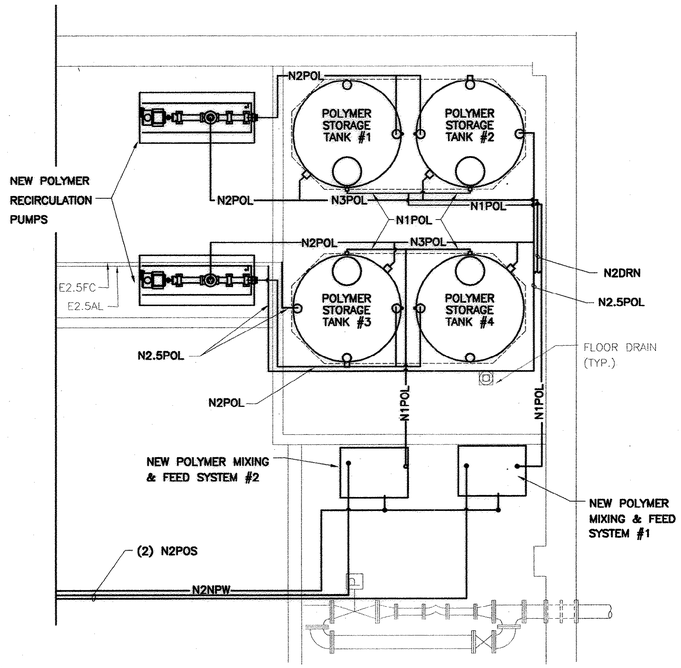
△3



POLYMER SYSTEM PIPING SCHEMATIC

NOT TO SCALE

△2



POLYMER SYSTEM PIPING LAYOUT

NOT TO SCALE

△1

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	PIPE LAYOUT ADDED	3-02	AR
2	PIPE SCHEMATIC REVISED	3-02	AR
3	PLATFORM DETAIL	3-02	AR

APPROVALS
PROJECT ENG: RTH
DESIGNED BY:
DRAWN BY:
CHECKED BY: TVT
APPROVED: JDP

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL — CERTIFICATE OF AUTHORIZATION — B. P. BARBER & ASSOCIATES, INC. No. C00000 — DATE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL — No. 7873 — REGISTERED — THOMAS V. TAYLOR — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
MODIFICATIONS TO PROCESS CENTER BASEMENT FLOOR POLYMER SYSTEM PIPING SCHEMATIC
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK CH149M51REV
REF.
N.B. NO. 1731
PROJECT NO. 00149

SHEET M51 OF 56

FILE NO. 22-85-00

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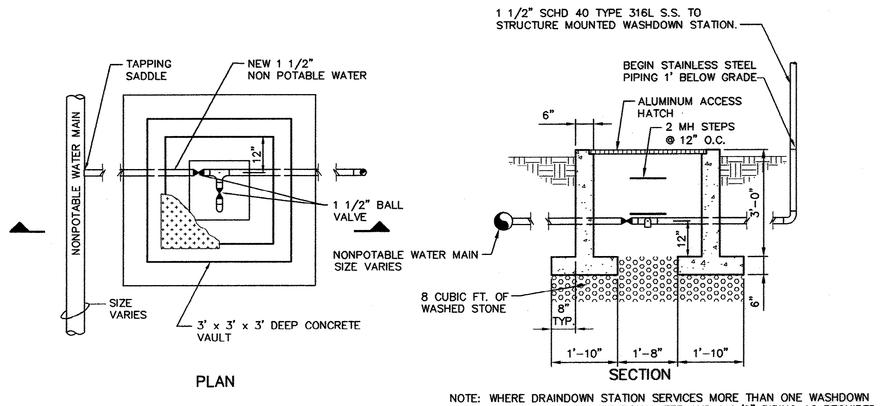
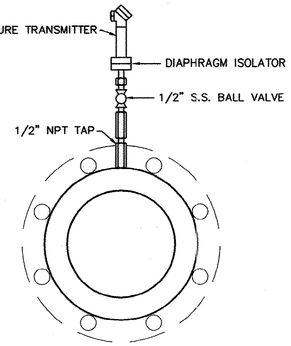


NOTE: WHERE DRAINDOWN STATION SERVICES MORE THAN ONE WASHDOWN STATION, PROVIDE ADDITIONAL TEE AND 1 1/2" PIPING AS REQUIRED.

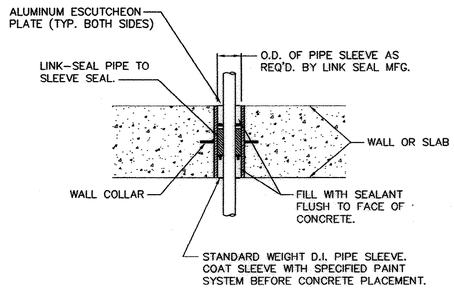
DRAINDOWN STATION

DETAIL (5 TYP)
SCALE: NONE



PRESSURE MONITORING SENSOR AND TRANSMITTER

DETAIL (2 TYP)
SCALE: NONE



PIPE SLEEVE

DETAIL (3 TYP)
SCALE: NONE

WEIR GATE SCHEDULE

MARK	NO. REQUIRED	LOCATION	SIZE	WEIR ELEV. OPEN	WEIR ELEV. CLOSED	FRAME	TYPE LIFT	MATERIAL OF CONSTRUCTION
(B)	6	INTERMEDIATE PUMP STATION	6' x 4'	28.00	30.50	SELF CONTAINED	FRAME MOUNTED HANDCRANK OPERATORS	316 STAINLESS STEEL
(C)	1	AERATION BASIN	30'-0" x 2'-0"	25.00	27.00	NON-SELF CONTAINED	FLOORSTAND HANDCRANK (MULTI) OPERATORS	316 STAINLESS STEEL
(D)	4	DISTRIBUTION CHAMBER NO. 5	5'W. x 4'H. W/3.874'x2' RECT. NOTCH	22.00	24.00	SELF CONTAINED	FRAME MOUNTED DUAL CRANK OPERATORS	316 STAINLESS STEEL
(E)	2	DISTRIBUTION CHAMBER NO. 5	5'W. x 4'H. W/3.043'x2' RECT. NOTCH	22.00	24.00	SELF CONTAINED	FRAME MOUNTED DUAL CRANK OPERATORS	316 STAINLESS STEEL
(F)	1	DISTRIBUTION CHAMBER NO. 5	5'W. x 4'H. W/2.378'x2' RECT. NOTCH	22.00	24.00	SELF CONTAINED	FRAME MOUNTED DUAL CRANK OPERATORS	316 STAINLESS STEEL
(G)	3	DISTRIBUTION CHAMBER #4	3'W x 4"H	33.50	35.75	SELF CONTAINED	FRAME MOUNTED HANDCRANK OPERATOR	316 STAINLESS STEEL
(H)	1	NEW CLARIFIER #5	2'W x 3'H	19	21	SELF CONTAINED	FRAME MOUNTED HAND WHEEL OPERATOR	316 STAINLESS STEEL

HVAC SCHEDULE

MARK	NO. REQ'D.	REMARKS
EF-1	1	BELT DRIVEN CENTRIFUGAL SIDEWALL EXHAUSTER, HEAVY GAUGE ALUMINUM CONSTRUCTION, 2448 CFM AT 0.25 S.P., 1/4 H.P., 120 V. 1ø, 60 HZ., GREENHECK CWB-180-4 WITH BUILT-IN DISCONNECT, BIRDSCREEN AND GRAVITY DAMPER.
EF-2	1	BELT DRIVEN CENTRIFUGAL SIDEWALL EXHAUSTER, HEAVY GAUGE ALUMINUM CONSTRUCTION, 977 CFM AT 0.25 S.P., 1/4 H.P., 120V. 1ø, 60 HZ., GREENHECK CWB-101-4 WITH BUILT-IN DISCONNECT, BIRDSCREEN AND GRAVITY DAMPER.
EF-3	1	BELT DRIVEN CENTRIFUGAL SIDEWALL EXHAUSTER, HEAVY GAUGE ALUMINUM CONSTRUCTION, 977 CFM AT 0.25 S.P., 1/4 H.P., 120 V. 1ø, 60 HZ., GREENHECK CWB-101-4 WITH BUILT-IN DISCONNECT, BIRDSCREEN AND GRAVITY DAMPER.
EF-4	1	BELT DRIVEN CENTRIFUGAL SIDEWALL EXHAUSTER, HEAVY GAUGE ALUMINUM CONSTRUCTION, 4227 CFM AT 0.25 S.P., 1/3 H.P., 480 V. 3ø, 60 HZ., GREENHECK CWB-300-3 WITH BUILT-IN DISCONNECT, BIRDSCREEN AND GRAVITY DAMPER.
EF-5	1	BELT DRIVEN CENTRIFUGAL SIDEWALL EXHAUSTER, HEAVY GAUGE ALUMINUM CONSTRUCTION, 4227 CFM AT 0.25 S.P., 1/3 H.P., 480V. 3ø, 60 HZ., GREENHECK CWB-300-3 WITH BUILT-IN DISCONNECT, BIRDSCREEN AND GRAVITY DAMPER.
AC-1	2	WALL-MOUNTED, 2 TON AIR CONDITIONER WITH 8kW ELECTRIC HEAT, SUPPLY & RETURN GRILLES. SOLID STATE THERMOSTAT CONTROL, RAIN HOOD, AND CORROSION-RESISTANT FINISH. MARVAIR AVP24-ACD-08-C, 480 V. 3ø
AC-2	2	WALL-MOUNTED 3 TON AIR CONDITIONER WITH 9kW ELECTRIC HEAT , SUPPLY AND RETURN GRILLES, SOLID STATE, TWO STAGE, LEAD/LAG THERMOSTAT CONTROL(CAT# LL357A) FOR REDUNDANT OPERATION, RAIN HOOD, AND CORROSION RESISTANT FINISH. MARVAIR AVP36-ACD-09-C 480V. 3ø

SLUICE GATE SCHEDULE

MARK	NO. REQUIRED	LOCATION	SIZE	℄ ELEV.	HEADS SEATING	HEADS UNSEATING	FRAME TYPE	WALL THIMBLE	TYPE LIFT	MATERIAL OF CONSTRUCTION
(1)	1	AERATION BASIN	36" ø	12.50	25	25	NON SELF-CONTAINED SIDE WEDGE	'E' TYPE 24" LONG	HANDCRANK OPERATED FLOORSTAND	CAST IRON
(4)	2	CHAMBER #2	36" ø	15.50	25	25	NON SELF-CONTAINED FLUSH BOT. INVERT	'E' TYPE	HANDCRANK OPERATED FLOORSTAND	CAST IRON
(5)	2	CHAMBER #3	36" ø	15.50	25	25	NON SELF-CONTAINED FLUSH BOT. INVERT	'E' TYPE	HANDCRANK OPERATED FLOORSTAND	CAST IRON

SLIDE GATE SCHEDULE

MARK	NO. REQUIRED	LOCATION	SIZE	HEADS SEATING	HEADS UNSEATING	FRAME TYPE	TYPE LIFT	MATERIAL OF CONSTRUCTION
(2)	2	INTERMEDIATE PUMP STATION	60" x 66"	25	25	SELF CONTAINED GATE W/SEAL & FLUSH BOT. INVERT	HANDCRANK OPERATED FRAME MOUNTED	316 STAINLESS STEEL
(3)	4	BAR SCREEN	48" x 72"	25	25	SELF CONTAINED GATE W/SEAL & FLUSH BOT. INVERT	HANDCRANK OPERATED FRAME MOUNTED	316 STAINLESS STEEL
(6)	1	BAR SCREEN	36" x 48"	25	25	SELF CONTAINED GATE W/SEAL & FLUSH BOT. INVERT	HANDCRANK OPERATED FRAME MOUNTED	316 STAINLESS STEEL
(7)	3	INFLUENT SCREW PUMPS	48" x 48"	25	25	SELF CONTAINED GATE W/SEAL & FLUSH BOT. INVERT	HANDCRANK OPERATED FRAME MOUNTED	316 STAINLESS STEEL
(8)	2	INFLUENT SCREW PUMPS	66" x 66"	25	25	SELF CONTAINED GATE W/SEAL & FLUSH BOT. INVERT	HANDCRANK OPERATED FRAME MOUNTED	316 STAINLESS STEEL

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: MAB
DRAWN BY: JRC
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA NOURSE REGISTRATION CERTIFICATE OF AUTHORIZATION — B. P. BARBER & ASSOCIATES, INC. No. C00020 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER — THOMAS V. WELCH — No. 7973 — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS - PLANNERS - SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: MISCELLANEOUS DETAILS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149MBF
REF.
N.B. NO. 1731
PROJECT NO. 00149

SHEET M52 OF 56

FILE NO. 22-85-00

51-004-151 5

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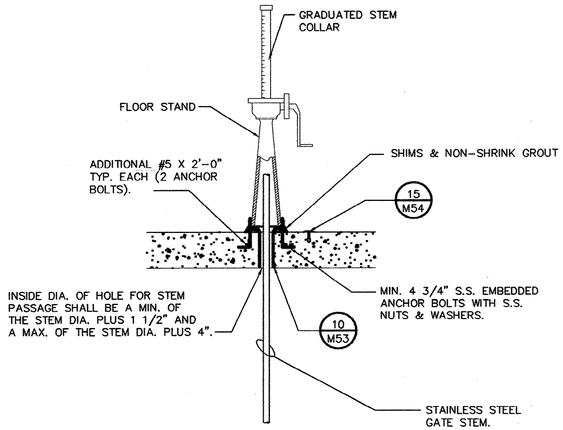
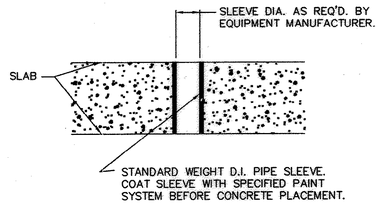


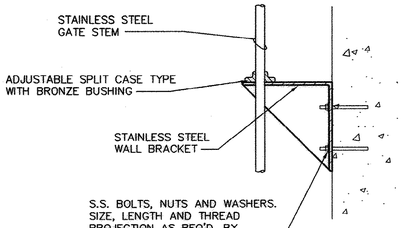
FLOOR STAND INSTALLATION

DETAIL 9 TYP
SCALE: NONE



SHAFT SLEEVE

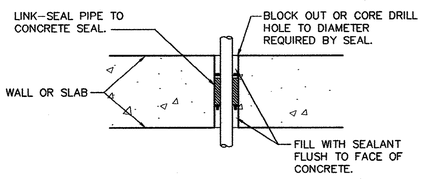
DETAIL 10 TYP
SCALE: NONE



NOTE: LOCATION AND SPACING TO BE IN ACCORDANCE WITH APPROVED SHOP DRAWINGS.

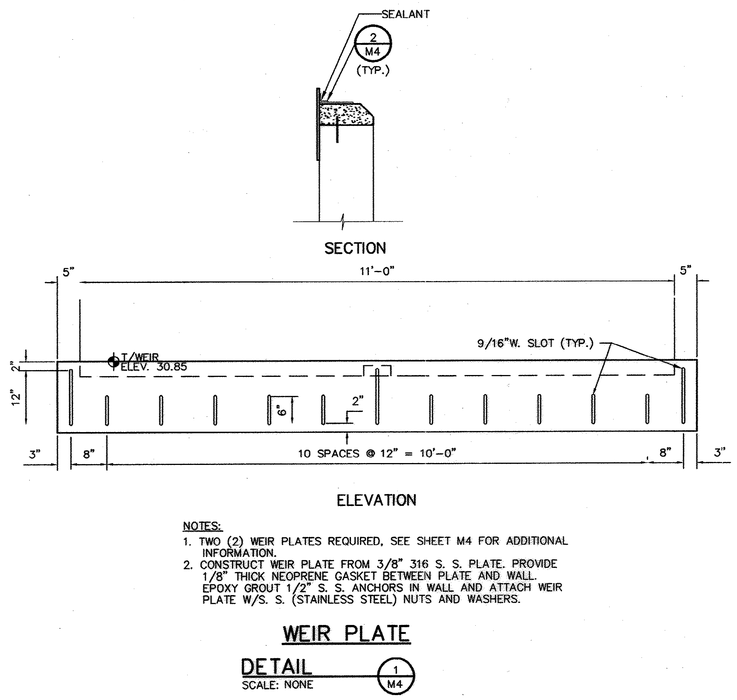
STEM GUIDE INSTALLATION

DETAIL 11 TYP
SCALE: NONE



PIPE THRU' CONCRETE

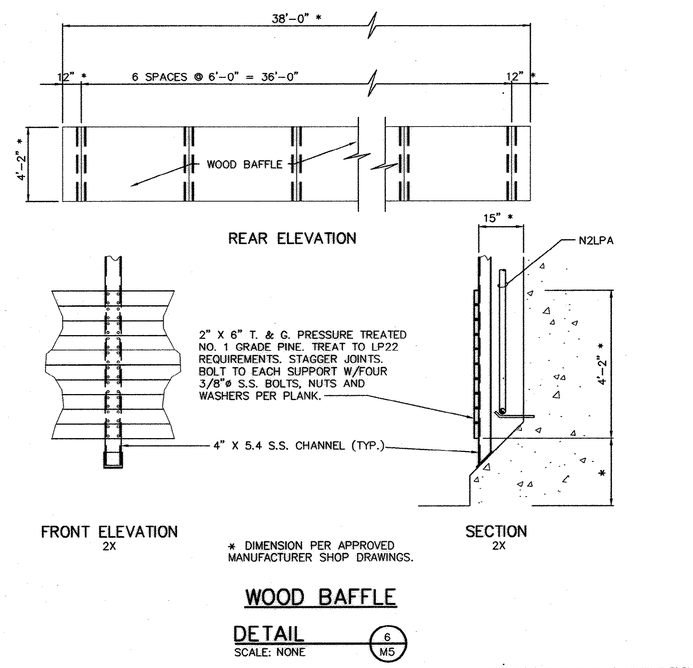
DETAIL 12 TYP
SCALE: NONE



NOTES:
1. TWO (2) WEIR PLATES REQUIRED, SEE SHEET M4 FOR ADDITIONAL INFORMATION.
2. CONSTRUCT WEIR PLATE FROM 3/8" 316 S. S. PLATE. PROVIDE 1/8" THICK NEOPRENE GASKET BETWEEN PLATE AND WALL. EPOXY GROUT 1/2" S. S. ANCHORS IN WALL AND ATTACH WEIR PLATE W/S. S. (STAINLESS STEEL) NUTS AND WASHERS.

WEIR PLATE

DETAIL 1 M4
SCALE: NONE



* DIMENSION PER APPROVED MANUFACTURER SHOP DRAWINGS.

WOOD BAFFLE

DETAIL 6 M5
SCALE: NONE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS			
PROJECT ENG: RTH	DESIGNED BY: MAB	DRAWN BY: JRC	CHECKED BY: JRC	APPROVED: JDP

SOUTH CAROLINA PROFESSIONAL ENGINEER B.P. BARBER & ASSOCIATES, INC. No. C00300 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7973 III WILLIAM THOMAS VICTOR — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: MISCELLANEOUS DETAILS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
99127MBL	M53
REF.	OF
N.B. NO. 1731	56
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-152 5

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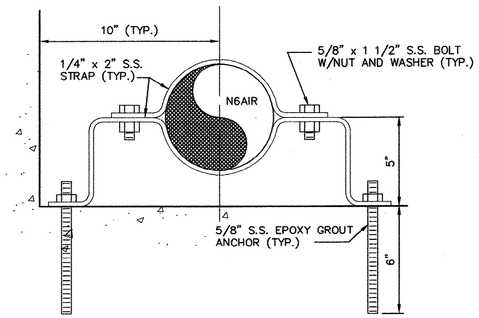
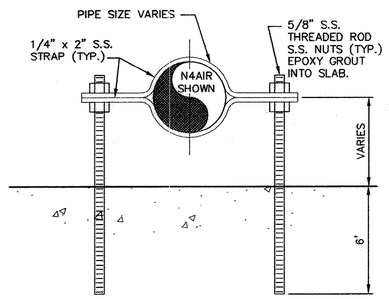


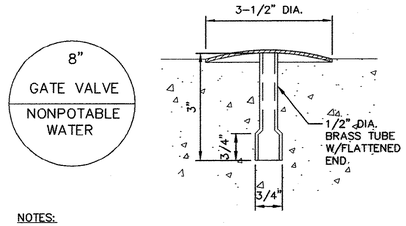
DIFFUSER PIPING SUPPORT

DETAIL 5 TYP
SCALE: NONE



PIPING SUPPORT

DETAIL 6 TYP
SCALE: NONE

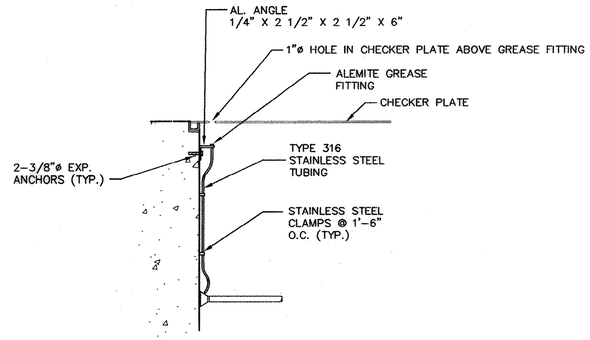


NOTES:

1. FACTORY STAMP USING 1/4" HIGH CHARACTERS. INDICATE VALVE SIZE AND TYPE ON UPPER HALF OF MARKER TOP. INDICATE EITHER POTABLE WATER OR NONPOTABLE WATER ON LOWER HALF OF MARKER TOP AS REQUIRED. SET MARKER IN 6" THICK CONCRETE PAD ADJACENT TO VALVE BOX.
2. PROVIDE ON ALL BURIED VALVES W/NUT OPERATORS

BRASS IDENTIFICATION MARKER BURIED VALVES

DETAIL 16 TYP
SCALE: NONE



REMOTE BEARING GREASE LINE

DETAIL 8 M5
SCALE: NONE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS

PROJECT ENG.	DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED:
RTH	WAB	JRC	TVT	JDP

SOUTH CAROLINA REGISTERED LANDSCAPE ARCHITECT — CERTIFICATE OF AUTHORITY — R. Bryan Bunch No. 000000 — DATE

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER — No. 7973 — THOMAS VICTOR — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: MISCELLANEOUS DETAILS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149MK	M54
REF.	OF
N.B. NO. 1731	56
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-153 S

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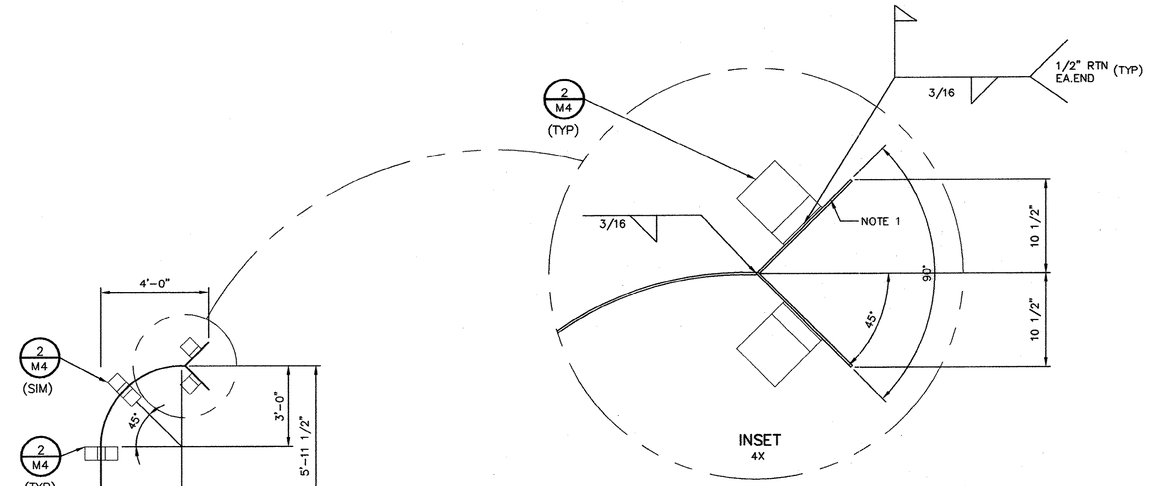


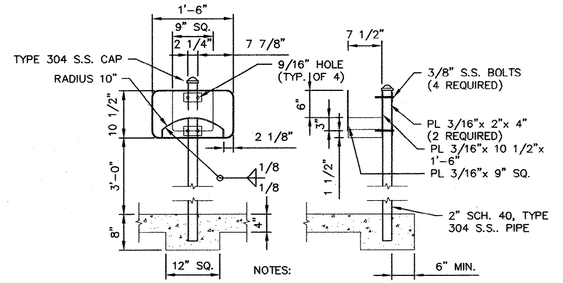
NOTE:
1. PROVIDE 3/8" S.S. PLATE (U.N.O.)

DETAIL
SCALE: 3/8"=1'-0"
12 M4 / 12 M5

0 2 4
GRAPHIC SCALE

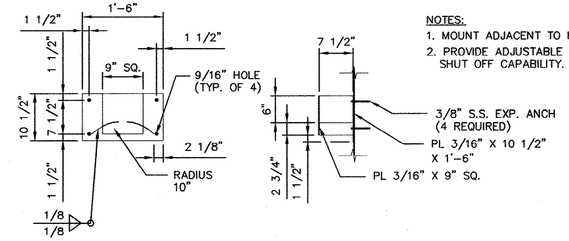
DETAIL
SCALE: NONE
13 TYP

NOTE: PROVIDE SIGN: SETON 529 BMB, TO READ AS FOLLOWS: "CAUTION" NONPOTABLE WATER DO NOT DRINK. (SIGN NOT SHOWN)



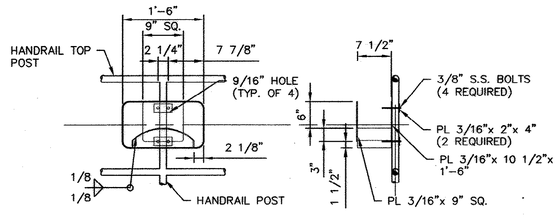
NOTES:
1. RACKS AND PLATES TO BE CONSTRUCTED OF 6061-T6 ALUMINUM ALLOY.
2. WHEN USED WITH YARD HYDRANT STATION, REFER TO CONCRETE PAD DIMENSIONS FOR YARD HYDRANT STATION DETAIL 11 SHEET C16.

POST MOUNT



NOTES:
1. MOUNT ADJACENT TO HOSE BIBS.
2. PROVIDE ADJUSTABLE NOZZLE W/ SHUT OFF CAPABILITY.

WALL MOUNT



NOTE: RACKS & PLATES TO BE CONSTRUCTED OF 6061-T6 ALUMINUMALLOY

HANDRAIL MOUNT

HOSE RACK

DETAIL
SCALE: NONE
14 TYP

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS	
PROJECT ENG: RTH	
DESIGNED BY: MAB	
DRAWN BY: JRC	
CHECKED BY: TVT	
APPROVED: JDP	

SOUTH CAROLINA NOURSE REGISTRATION CERTIFICATE OF AUTHORIZATION B. P. BARBER & ASSOCIATES, INC. No. C000000 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER THOMAS V. PICTOR No. 7973 — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: MISCELLANEOUS DETAILS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149MJ	M55
REF.	OF
N.B. NO. 1731	56
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-154 S

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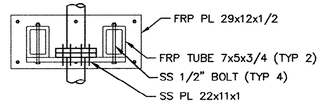
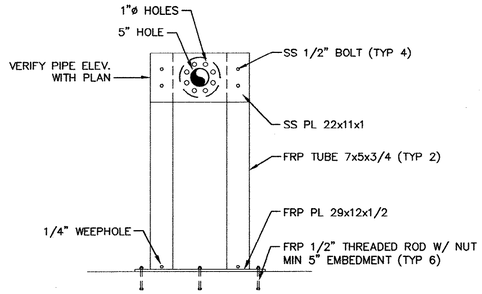
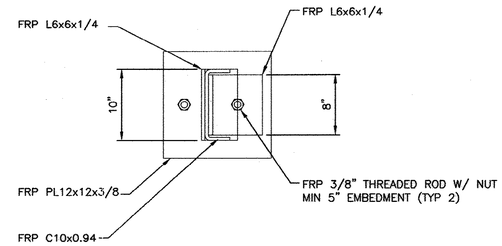


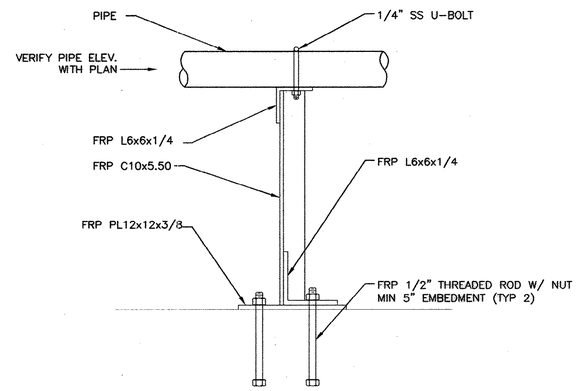


NOTES:
1. ALL FRP SHAPES SHALL BE STRONGWELL EXTREN 625
2. FRP–FRP CONNECTIONS SHALL BE EPOXY ADHESIVE AS DIRECTED BY STRONGWELL.
3. THREADED RODS AND NUTS TO BE STRONGWELL FIBREBOLT

FRP RESTRAINED PIPE SUPPORT DETAIL

SCALE: NONE (1 TYP)





NOTES:
1. ALL FRP SHAPES SHALL BE STRONGWELL EXTREN 625
2. FRP–FRP CONNECTIONS SHALL BE EPOXY ADHESIVE AS SPECIFIED BY STRONGWELL.
3. THREADED RODS AND NUTS TO BE STRONGWELL FIBREBOLT

FRP PIPE SUPPORT DETAIL

SCALE: NONE (2 TYP)

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: MAB
DRAWN BY: JRC
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA NOW EXPIRED CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. COA0008 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 9173 REGISTERED — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: MISCELLANEOUS DETAILS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149MBK
REF.
N.B. NO. 1731
PROJECT NO. 00149

SHEET M56 OF 56

FILE NO. 22-85-00

51-004-155 5

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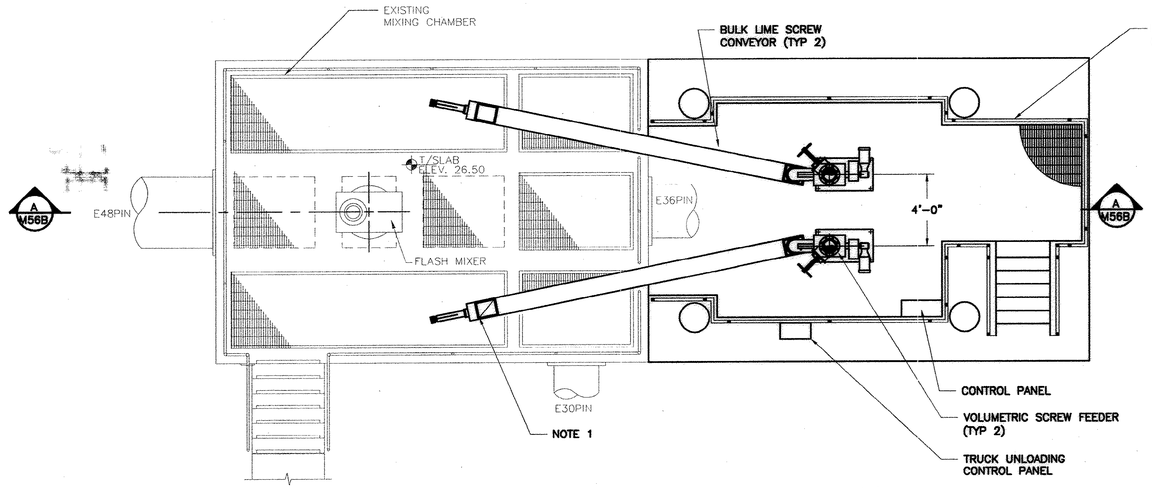
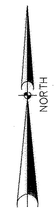
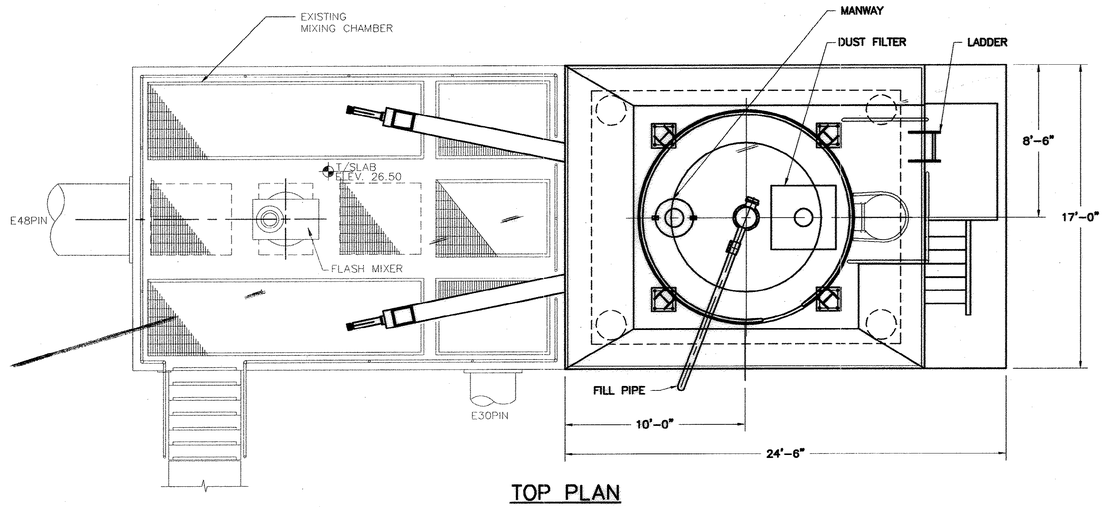


PLAN
@ ELEV. 32.0
SCALE: 1/4" = 1'-0"

NOTES:

1. CUT HOLE IN GRATING FOR CONVEYOR DISCHARGE. INSTALL ALUM. GRATING SUPPORTS AS REQUIRED TO MAINTAIN DESIGN LOADING.





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

0 4 8
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: HHF
DRAWN BY: JEB
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA NOVEMBER 30, 2001 CERTIFICATE OF AUTHORIZATION B. P. BARBER & ASSOCIATES, INC. No. C00020
DATE

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 7973 THOMAS V. TROTTER
SIGNATURE

bpb
B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW LIME
FEED EQUIPMENT
PLANS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND
EXPANSION FOR THE
WATER RECLAMATION
FACILITY
PHASE I

DISK 00149B-M11-12
REF.
N.B. NO. 1731
PROJECT NO. 00149

SHEET M56A OF 56

FILE NO. 22-85-00

51-004-156 5

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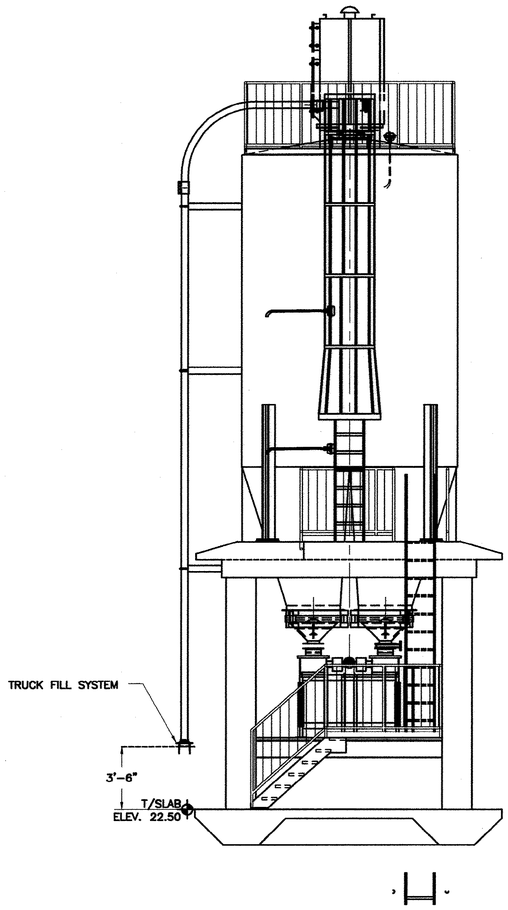
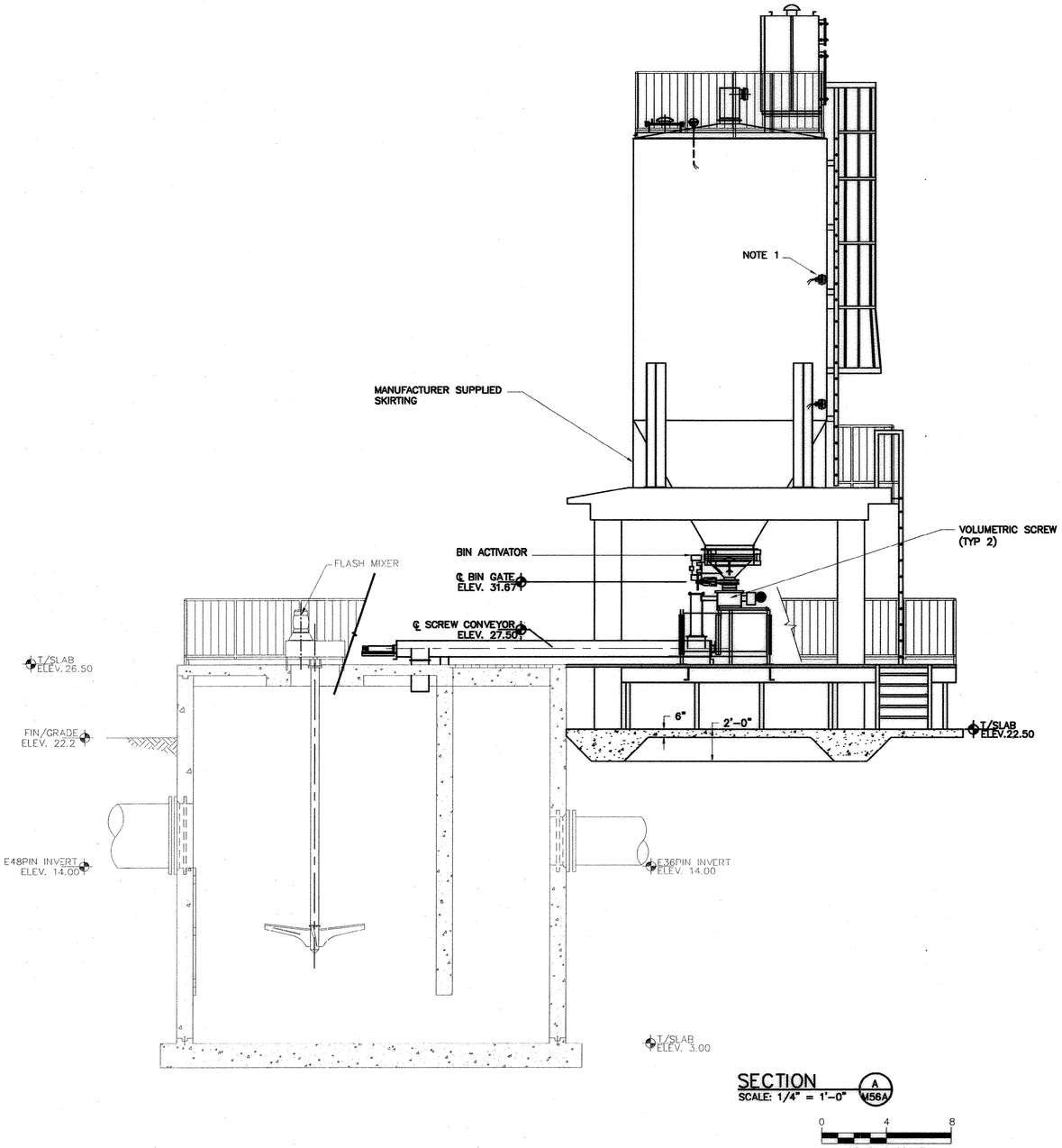
NOTES:

1. ALL EXTERNAL MOUNTED SWITCHES, ETC., SHALL BE ACCESSIBLE FROM LADDER.



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



SECTION
SCALE: 1/4" = 1'-0" A M56A

0 4 8
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS	
PROJECT ENG: RTH	APPROVED: JDP
DESIGNED BY: KHF	
DRAWN BY: JEB	
CHECKED BY: TVT	

SOUTH CAROLINA REGISTERED CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. C00260 — DATE

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 7873 THOMAS VICTOR — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW LIME FEED EQUIPMENT SECTION & ELEVATION
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149B-M11-12	SHEET M56B
REF.	OF 56
N.B. NO. 1731	
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-157 5

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GENERAL NOTES

A. CONTRACTOR WILL BE HELD RESPONSIBLE FOR HAVING VISITED THE SITES AND HAVING FAMILIARIZED HIMSELF WITH THE EXISTING CONDITIONS PRIOR TO SUBMITTING HIS BID.

B. CONSULT APPROVED MANUFACTURER'S WIRING AND CONNECTION DIAGRAMS AND SHOP DRAWINGS IN DETAIL FOR EXACT CONNECTION REQUIREMENTS TO EQUIPMENT PROVIDED BY OTHER TRADES.

C. DO NOT SCALE THESE DRAWINGS. ALL ROUGHING TO BE DONE FROM DIMENSIONS ON LAYOUT, ARCHITECTURAL, STRUCTURAL DRAWINGS AND SITE INVESTIGATION.

D. SUSPENDED CONDUITS SHALL BE SUPPORTED WITH PROPERLY INSTALLED TRAPEZE HANGERS AND CONDUIT CLAMPS. INSTALL ALL NECESSARY CONCRETE INSERTS FOR HANGER RODS.

E. CONSULT LAYOUT, MECHANICAL AND STRUCTURAL DRAWINGS FOR ADDI-TIONAL DETAILS CONCERNING EQUIPMENT LOCATIONS AND REQUIREMENTS.

F. ALL CONTROL AND SIGNAL WIRING SHALL BE VERIFIED BY THE EQUIPMENT SUPPLIERS. ANY CHANGES OR ADDITIONS TO THE SYSTEM INDICATED ON THESE ELECTRICAL DRAWINGS THAT ARE REQUIRED TO ACCOMMODATE A SPECIFIC MANUFACTURER'S EQUIPMENT SHALL BE COVERED BY THE SUPPLIER.

G. COORDINATE EXACT LOCATIONS OF LIGHT FIXTURES TO CLEAR WORK OF OTHER TRADES.

H. CONTRACTOR'S RECORD DRAWINGS SHALL SHOW EXACT LOCATIONS OF UNDERGROUND CONDUITS.

I. CONNECTIONS TO MOTORS AND EQUIPMENT MADE WITH WATERTIGHT FLEXIBLE CONDUIT SHALL BE PROPERLY SUPPORTED AND CLAMPED.

J. CONNECT REMOTE CONTROL WIRING THROUGH AUTO POSITION OF SELECTOR SWITCHES AND STATUS WIRING THROUGH NORMALLY OPEN AUXILIARY CONTACTS OF DEVICES (STARTER) UNLESS OTHERWISE NOTED.

K. DO NOT ROUTE ANY RACEWAYS THROUGH OPENINGS.

L. ALL CONTROL, STATUS AND SIGNAL WIRING SHALL BE IDENTIFIED AT EACH TERMINATION AND IN PULL BOXES BY COLOR CODE OR NUMBERING SYSTEM PROVIDE SCHEDULE FOR CONNECTIONS BEING MADE UNDER OTHER DIVISIONS.

M. ALL EXPOSED CONDUIT SHALL BE INSTALLED USING NON-METALLIC OR STAINLESS STEEL CLAMPS PROVIDING MINIMUM OF 1/2" SPACE BETWEEN CONDUIT AND MOUNTING SURFACE.

N. ALL CABLE PULLS SHALL BE WITHIN CABLE MANUFACTURER'S RECOM-MENDED CABLE PULLING TENSIONS. VERIFY WITH MANUFACTURER AND FIELD RECORD TENSIONS FOR SUBMITTAL TO ENGINEER.

O. ALL CONDUIT JOINTS IN UNDERGROUND RUNS FEEDING EQUIPMENT LOCATED LEVEL WITH OR BELOW CONDUIT ELEVATIONS SHALL BE SEALED WITH COPPER BASE CONDUCTIVE COUPLING COMPOUND AFTER WHICH A SEALANT WITH A PVC TAPE WRAP (1/2" OVERLAP) SHALL BE APPLIED TO EXTERIOR OF COUPLING. EXTEND WRAP 6" BEYOND COUPLING ON BOTH SIDES. THIS SHALL BE IN ADDITION TO CONDUIT COATING AS SPECIFIED.

P. ALL COATED MATERIAL THAT HAS FINISH DAMAGED, BROKEN OR CUT DURING INSTALLATION SHALL BE CLEANED AND COATED WITH A REPAIR KIT.

Q. ALL SUPPORT FRAMING HARDWARE, BOLTS, ANCHORS, ETC. SHALL BE PROVIDED IN ACCORDANCE WITH SPECIFICATIONS.

R. CONSULT YARD PIPING PLANS FOR NEW AND EXISTING UTILITIES. ACCURACY OF PLANS CANNOT BE GUARANTEED, BUT IT IS ASSUMED THE UTILITIES ARE DENOTED AS CLOSELY AS POSSIBLE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE, MAINTAIN AND PROTECT ANY EXISTING UTILITIES DURING NEW WORK AND REPAIR ANY AND ALL DAMAGED.

S. ALTERNATE ROUTING OF YARD CONDUITS FROM THAT INDICATED MAY BE CONSIDERED BUT MUST FIRST BE APPROVED BY ENGINEER.

T. CONSULT DEMOLITION AND TEMPORARY FACILITIES PLANS. SOME OF THE EXISTING EQUIPMENT DENOTED AS BEING RELOCATED MAY FIRST BE REMOVED AND TEMPORARILY RELOCATED PRIOR TO FINAL RELOCATION. VERIFY.

U. ALL FLOOR SAW CUTTING AND CHASING, WALL AND FLOOR CORING AND CHASING OF EXISTING CONSTRUCTION TO ACCOMMODATE ELECTRICAL INSTALLATION SHALL BE PROVIDED UNDER ELECTRICAL CONTRACT. REPAIR OF SUCH FOR A WATERTIGHT INSTALLATION SHALL BE UNDER GENERAL CONTRACT.

V. REMOVE ALL EXISTING ELECTRICAL EQUIPMENT, FIXTURES, CONDUIT AND WIRING DEEMED USELESS AND/OR WHERE REMAINING IN VIEW AFTER RENOVATIONS AND REMOVE ALL WIRING FROM ANY RACEWAYS NOT REMOVED. PROPERLY DISPOSE OF ALL MATERIALS.

W. CONSULT PROCESS/INSTRUMENTATION DIAGRAMS AND SCADA SCHEDULES AND VERIFY THAT NECESSARY NEW AND EXISTING RACEWAYS AND WIRING/CABLE HAVE BEEN INDICATED ON ELECTRICAL DRAWINGS TO ACCOMMODATE SYSTEM INDICATED AND SPECIFIED.

X. CONSULT MECHANICAL DRAWINGS FOR ADDITIONAL INSTALLATION DETAILS.

Y. LEAVE SUFFICIENT SLACK IN ALL WIRING AND CABLES TO REACH FINAL TERMINATION POINTS. VERIFY FROM APPROVED EQUIPMENT DRAWINGS AND WIRING DIAGRAMS.

Z. ALL SIGNAL (SHIELDED), DATA (FIBER-OPTIC) AND CONTROL (#14 AWG) CABLES/WIRING SHALL BE CONTINUOUS FROM POINT OF ORIGINATION TO POINT OF TERMINATION AND PULLED THRU PULL BOXES - I.E. NO SPLICES.

AA. UNLESS OTHERWISE NOTED PULL AND JUNCTION BOXES SHALL BE PER SPECIFICATIONS AND SIZED PER CODE AND/OR AS CONDITIONS DICTATE.

BB. ANY POWER INTERRUPTION SHALL BE SCHEDULED WITH OWNER IN WRITING 72 HOURS PRIOR TO SHUTDOWN. SHUTDOWNS MAY BE LIMITED TO OFF-PEAK HOURS (LATE NIGHT).

CC. ALL GALVANIZED MATERIAL THAT HAS FINISH DAMAGED, BROKEN OR CUT DURING INSTALLATION SHALL BE CLEANED AND COATED WITH A COLD GALVANIZING COMPOUND.

DD. ALL CONTROL PANELS INDICATED ON ELECTRICAL DRAWINGS WILL BE PROVIDED UNDER GENERAL CONTRACT & WIRED BY ELECTRICAL CONTRACTOR.

ELECTRICAL SYMBOLS

- FLUSH WALL OUTLET WITH BRACKET FIXTURE.
- SURFACE CEILING OUTLET WITH SURFACE FLUORESCENT FIXTURE. SEE FIXT. SCHED.
- FLUSH WALL-MOUNTED OUTLET WITH EXIT LIGHT. SHADED AREA DENOTES DIRECTION OF SIGN FACE VISIBILITY. SEE FIXTURE SCHEDULE.
- J — SURFACE JUNCTION OR PULL BOX. SEE SPECIFICATIONS FOR TYPE.
- S_a — FLUSH WALL SINGLE POLE SWITCH. 48" UP TO CENTERLINE. SUBSCRIPT DENOTES OUTLETS CONTROLLED. AH NO. 1991 OR EQUAL OF HUBBELL OR P&S.
- S_{3a} — FLUSH WALL THREE-WAY SWITCH. 48" UP TO CENTERLINE. AH NO. 1993 OR EQUAL OF HUBBELL OR P&S.
- 1 HOT, 1 NEUTRAL, 1 GROUND
- 1 HOT, 2 SWITCHLEGS, 1 GROUND
- 1 HOT, 2 RIDERS, 1 NEUTRAL, 1 GROUND OR 2 HOT, 1 SWITCHLEG, 1 NEUTRAL, 1 GROUND, ETC.
- A2 — RACEWAY RUN UNDERFLOOR OR UNDERGROUND. NOTATIONS SAME AS ABOVE.
- B4 — RACEWAY RUN EXPOSED. NOTATIONS SAME AS ABOVE.
- RACEWAY IN SLAB. NOTATIONS SAME AS ABOVE.
- WATERTIGHT FLEXIBLE CONDUIT (W.F.C.).
- FLUSH WALL DUPLEX RECEPTACLE. 18" UP TO CENTERLINE UNLESS NOTED OTHERWISE. AH. NO. 5252 OR EQUAL OF HUBBELL OR P&S.
- WPGF — WEATHERPROOF GROUND FAULT RECEPTACLE. 18" UP TO CENTERLINE UNLESS NOTED OTHERWISE. AH NO. GF5242 WITH TAYMAC COVER OR EQUAL OF HUBBELL OR P&S. SURFACE OR FLUSH MOUNTED AS REQUIRED.
- FLUSH WALL TELEPHONE OUTLET. 18" UP TO CENTERLINE UNLESS NOTED OTHERWISE INSTALL PLATE WITH BUSHED 1/2" OPENING.
- MAGNETIC MOTOR STARTER.
- PANELBOARD.
- TELEPHONE BOARD.
- J — SURFACE JUNCTION BOX. SEE SPECIFICATIONS FOR TYPE.
- AIR TERMINAL. SEE SPECIFICATIONS.
- GROUND ROD. SEE SPECIFICATIONS.
- MAIN LIGHTNING CONDUCTOR.
- 30/3/4X/FPN — 600V. HEAVY DUTY SAFETY SWITCH, DESIGNATIONS: AMPERES/POLES/NEMA/FUSE PER NAMEPLATE
- 30/3/4X — 600V. HEAVY DUTY DISCONNECT SWITCH, DESIGNATIONS: AMPERES/POLES/NEMA
- FLUSH WALL-MOUNTED OUTLET W/2-HEAD EMERGENCY FIXTURE. SEE FIXTURE SCHEDULE.
- 3 — INDUCTION MOTOR, DESIGNATION: HORSEPOWER
- E — ELECTRIC MOTOR-OPERATED VALVE. SEE MECHANICAL SPECIFICATIONS FOR TYPE.

FIXTURE SCHEDULE #1

SYMBOL	DESCRIPTION	LAMPS
A	GUTH #ELA-W1-11-200P-M. PENDANT MOUNT, WET LOCATION, PRISMATIC REFRACTOR, LENSED, GASKETED, H.I.D.	(1) VENTURE MS200W/BU/MED/PS
B	FAILSAFE #FPS-332-120-EB81-Z. WET LOCATION, VAPOR-TIGHT, COLD WEATHER BALLAST, SURFACE FLUORESCENT	(3) F32T8
C	GREENLEE #WWS-150MH-MT-FT-BRZ-PS. CAST ALUMINUM, CUT-OFF WALLPAK. MOUNTING HT. VARIES.	(1) VENTURE MH150W/U/MED/PS
D	MCGRAW-EDISON #GSA-20329AR-BZ (FIXT.). MA1021BZ (ARM). SSA6X30WXM1GV (30' POLE). PROVIDE W/BOLT COVERS, AND HANDHOLE COVER. AREA LIGHTING	(1) VENTURE MS200W/BU/MED/PS
E	MCGRAW-EDISON #GSB-20329AR-BZ (FIXT.). SSA4T15WX2-EG (15' POLE). PROVIDE W/BOLT COVERS, HANDHOLE COVER, GFI RECEPTACLE WHERE SHOWN, AREA LIGHTING.	(1) VENTURE MS200W/BU/MED/PS
EM	PATHWAY #N4X18-2LH-TD. WATER-TIGHT, CORROSION RESISTANT, 2-HEAD EMERGENCY FIXTURE. MOUNT 12' AFF.	(2) 8W PAR36 HALOGEN SEALED BEAM, 90 MIN. BATT. BACKUP
EX	PATHWAY #PLEX1R CORROSION RESISTANT, EXIT LIGHT. WALL MOUNT ABOVE DOOR	L.E.D. 90 MIN. BATTERY BACKUP
F	MCGRAW-EDISON (2) #GSA-20329AR-BZ (FIXT) (2) MA1021BZ (ARM). SSA9X30WXM2GV (30' POLE). PROVIDE W/BOLT COVERS, AND HANDHOLE COVER. AREA LIGHTING	(2) VENTURE MS200W/BU/MED/PS
G	INSIGHT #WT923-IBB-3--TBR, ENCLOSED, GASKETED, WET LOCATION, WALL-MOUNTED ASYMMETRIC UPLIGHT. MOUNTING HT. VARIES. SEE PLAN	(1) VENTURE MS400W/HOR/T15
H	METALUX #CR-232A-120-EB81. SURFACE MOUNTED FLOURESCENT.	(2) F32T8

- LIT — LEVEL INDICATING TRANSMITTER. SEE SPECIFICATIONS.
- FIT — FLOW INDICATING TRANSMITTER. SEE SPECIFICATIONS.
- PS — PRESSURE SWITCH. SEE SPECIFICATIONS.
- E — NEW POLE-MOUNTED SITE LIGHTING. SEE FIXTURE SCHEDULE FOR DESIGNATION.
- NEW ELECTRIC MANHOLE.
- TRANSFORMER, GROUNDED
- L.P. — EXISTING AREA LIGHTING
- M.H. (E) — EXISTING ELECTRICAL MANHOLE.
- TRANSFORMER, GROUNDED
- POTENTIAL TRANSFORMER (PT) - (*SUBSCRIPT INDICATES QUANTITY AND VOLTAGE RATIO)
- SURGE ARRESTERS (THREE)
- NEMA 4X , SURFACE MOUNT, ONE BUTTON PUSH-BUTTON STATION ALLEN BRADLEY #800H-1HB4R
- NEMA 4X , SURFACE MOUNT, TWO BUTTON PUSH-BUTTON STATION ALLEN BRADLEY #800H-2HA4R
- T — FLUSH OUTLET W/ THERMOSTAT CONTROL. 48" A.F.F. BY EQUIPMENT MANUFACTURER.
- TC — 120V, ASTRONOMICAL TIME CLOCK WITH 3-SPDT, SWITCHES, 20A, 208V. INTERMATIC CAT #ET70415CR.

FIXTURE SCHEDULE #2

SYMBOL	DESCRIPTION	LAMPS
A	FAILSAFE #FPS-332-120-EB81-Z. WET LOCATION, VAPOR-TIGHT, COLD WEATHER BALLAST, SURFACE FLUORESCENT	(3) F32T8
B	GREENLEE #WWS-150MH-MT-FT-BRZ-PS. CAST ALUMINUM, CUT-OFF WALLPAK. MOUNTING HT. VARIES.	(1) VENTURE MH150W/U/MED/PS
EM	PATHWAY #N4X18-2LH-TD. WATER-TIGHT, CORROSION RESISTANT, 2-HEAD EMERGENCY FIXTURE. MOUNT 12' AFF.	(2) 8W PAR36 HALOGEN SEALED BEAM, 90 MIN. BATT. BACKUP
EX	PATHWAY #PLEX1R CORROSION RESISTANT, EXIT LIGHT. WALL MOUNT ABOVE DOOR	L.E.D. 90 MIN. BATTERY BACKUP
E	MCGRAW-EDISON #GSB-20329AR-BZ (FIXT.). SSA4T15WX2-EG (15' POLE). PROVIDE W/BOLT COVERS, HANDHOLE COVER, GFI RECEPTACLE WHERE SHOWN, AREA LIGHTING.	(1) VENTURE MS200W/BU/MED/PS

- 15 — THERMAL MAGNETIC CIRCUIT BREAKER OR MOTOR CIRCUIT PROTECTOR (600/OR LESS) AS SPECIFIED (NUMBER INDICATES TRIP RATING)
- 15 — FUSE (NUMBER INDICATES AMPERE RATING)
- 15 / 1 — MOLDED CASE CIRCUIT BREAKER, OR MOTOR CIRCUIT PROTECTOR, MAGNETIC STARTER, CONTROL TRANSFORMER, AUX. CONTACTS, ETC. AS REQUIRED. NUMBERS INDICATE TRIP RATING AND STARTER SIZE. STARTER TYPE IS FVNR UNLESS OTHERWISE NOTED.
- F1 — MEDIUM VOLTAGE CIRCUIT BREAKER, DESIGNATION: FEEDER 1
- SEPARABLE CONNECTORS
- CABLE TERMINATORS
- PC — PHOTO CELL
- OH — EXISTING OVERHEAD ELECTRICAL
- E — EXISTING UNDERGROUND ELECTRICAL
- PHIT — PH INDICATING TRANSMITTER. SEE SPECIFICATIONS.
- PT — PRESSURE TRANSMITTER. SEE SPECIFICATIONS.
- NEW EQUIPMENT
- EXISTING EQUIPMENT
- A — SCADA ANTENNA MNTD TO RADIO TOWER
- B — SCADA ANTENNA MNTD ON UNISTRUT
- PROGRAMMABLE LOGIC CONTROLLER (PLC)
- RVSS / 4 — REDUCED VOLTAGE, SOLID STATE MOTOR STARTER WITH THERMAL OVERLOADS. NEMA SIZE AS SHOWN. SEE SPECIFICATIONS
- DM — SQUARE-D MODEL CM2450 POWER LOGIC CIRCUIT MONITOR UNLESS NOTED OTHERWISE
- F/I — FIBER OPTIC INTERFACE MODULE. SEE SPECIFICATIONS FOR FURTHER DETAILS

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS: PROJECT ENG: ATR; DESIGNED BY: JMA; DRAWN BY: GS; CHECKED BY: TVT; APPROVED: JDP

SOUTH CAROLINA PROFESSIONAL ENGINEER — CERTIFICATE OF AUTHORIZATION — B. P. BARBER & ASSOCIATES, INC. No. C000000 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER — THOMAS V. TOTH — No. 7673 — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS - PLANNERS - SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: ELECTRICAL NOTES & SYMBOLS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149E1-RD; REF.; N.B. NO. 1731; PROJECT NO. 00149
SHEET E1 OF 50

FILE NO. 22-85-00

51-004-158 5

Projects\00149\dwg\XREF\RD-DWGS\00149E1-RD.dwg, 12/29/2003 09:24:53 AM

MATCH LINE "C"
SEE SHEET E4

MATCH LINE "A"
SEE SHEET E3

FUTURE SECONDARY CLARIFIER #6
SECONDARY CLARIFIER #3
FLOCC. CLARIFIER
SECONDARY CLARIFIER #4
SECONDARY CLARIFIER #5
AERATION BASIN #3
AERATION BASIN #2
AERATION BASIN #1
SLUDGE COMPOSTING PAD
BLOWER BLDG.
COMPOST CURING SHED
INTERMEDIATE SCREW PUMPS
NEW LIME ADDITION
NEW METER VAULT #2
NEW METER VAULT #1
NEW UNIT-SUBSTATION U16
NEW 12"H X 12"W X 10"D PULL BOX. MOUNT BOTTOM JUST BELOW ROOF FACIA
VFD ENCL. #2 (PLC-4B)
VFD ENCL. #1 (PLC-4C)
TANK DRAINAGE
CORE WALL AND CONNECT TO FIRE ALARM PANEL
NEW D.O. PROBE
NEW D.O. PROBE
HANDHOLD AT SIGN.
WELL HOUSE
VALVE BOX

1-2/C #16, 3/4"C (FIT)
2#10, 1#10G, 3/4"C (FIT POWER)
2#10, 1#10G, 3/4"C (SUMP PMP POWER)
2#10, 1#10G, 3/4"C (SAMPLE PMP POWER)
3#12, 1#12G, 3/4"C (CLARIFIER POWER)
9#14, 3/4"C (CLARIFIER START/STOP/ALARM)
2#12, 1#12G, 3/4"C (LIGHTING)
3#6, 1#8G, 1 1/4"C (480V/3 RECEPTACLE)

1-2/C #16, 3/4"C (FIT)
9#14, 3/4"C (CLARIFIER START/STOP/ALARM)
PLC-4

2-2/C #18 3/4"C

3#6, 1#8G, 2"C "P-162"
30#14, 2"C
2/C #16, 1"C
32#14, 2"C "PLC-4A"
PLC-4
PLC-4A

1-3/C #18, BELDEN CABLE FOR RS485 COMMUNICATIONS

SEE SHEET E9 FOR INTERMEDIATE PUMP STATION MODIFICATIONS.

SEE SHEETS E20 & E21 FOR NEW LIME SYSTEM

SEE SHEETS E18 & E19 FOR MODIFICATIONS TO RAS PUMP STATION

2-3/4"C
NOTE 2
NOTE 1
NOTE 2
NOTE 2
NOTE 1
NOTE 2

2-PARALLEL RUNS 3-#3/0, 1#4G, 3"C
F.O. CABLE, 1-2"C
2-PARALLEL RUNS 3#400MCM, 3"C 20#14, 1"C 2-SPARE 3"C 3#8, 1#10G, 2"C (MIXER) 3#8, 1#10G, 2"C (MIXER) 1-SPARE 1"C
1-F.O. CABLE, 2"C. TO "PLC-4A"
84#14, 3"C CONNECT FOR CONTROL AT "PLC-4"
4#14, 1"C 2-3/4"C
1"C
2-3/4"C

P-7 FACP
P-141
P162

PARTIAL ELECTRICAL SITE PLAN "A"
SCALE: 1"=40'

NORTH

0 40 80
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

GENERAL ELECTRICAL NOTES:

1. SEE SCADA ONE-LINE DIAGRAMS FOR CABLE REQUIREMENTS AND QUANTITIES. CONNECT TO EXISTING PLC'S AS REQ'D.
2. SEE BUILDING PLANS FOR EQUIPMENT LAYOUTS AND CONDUIT ROUTING.
3. ANTENNA TOWERS TO BE NO FURTHER THAN 10'-0" FROM BUILDING HOUSING RESPECTIVE PLC AND TOWERS TO BE NO GREATER IN HEIGHT THAN 25'.
4. CONDUIT UNDER ASPHALT ROADWAY MUST BE CONCRETE ENCASED.

ELECTRICAL PLAN NOTES:

1. CONCRETE ENCASE ALL NEW CONDUITS THIS AREA.
2. LOCATE AND INTERCEPT EXISTING CONDUIT. EXTEND SAME SIZE. CONNECT FOR SCADA.

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG. RTH
DESIGNED BY: JMA
DRAWN BY: GS
CHECKED BY: TVT
APPROVED: JDP

NORTH CAROLINA PROFESSIONAL ENGINEER CERTIFICATE OF AUTHORIZATION B. P. BARBER & ASSOCIATES, INC. No. C00350 — DATE

NORTH CAROLINA PROFESSIONAL ENGINEER No. 7873 REGISTERED THOMAS VICTOR — SIGNATURE

bpb
B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: PARTIAL ELECTRICAL SITE PLAN "A"
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149-2-E1
REF.
N.B. NO. 1731
PROJECT NO. 00149

SHEET E2 OF 50

FILE NO. 22-85-00

51-004-159 5

Projects\00149\dwg\RECORD DWG\00149-2-E1-10.dwg, 01/29/2004 03:12:05 PM

MATCH LINE "A"
SEE SHEET E2

MATCH LINE "C"
SEE SHEET E4

STUB UP AT UTILITY METER POLE AND CONNECT FOR CONTROL TO METER DEMAND PULSE SIGNAL. VERIFY EXACT LOCATION.

NEW CHAMBER #4

NOTE 5

M.H.(E)

NOTE 4

NOTE 3

DP3

LAGOON BLOWER BUILDING

42#14, 2"C, 1-2" SPARE

2-3/C RS485 1"C, NOTE 19

CHAMBER B

CHAMBER C

FLOCC. CLARIFIER #1

SECONDARY CLARIFIER #1

HOLDING LAGOON

B E48

NORTH

7+00N

6+00N

5+00N

4+00N

3+00N

2+00N

2B

2A

1A

1B

WASTE ACTIVATED SLUDGE HOLDING TANKS

HAND HOLE

2/C #18 1"C

BUBBLER CONROL PANEL

ROTATING BIOLOGICAL CONTACTORS

BUBBLER CONROL PANEL

HAND HOLE

P-51

50#14, 2"C
2#12, 1#12G, 3/4"C
2-2/C #18, 2"C

2/C #18, 1"C SPARE 2"C
42#14, 2"C F.O. CABLE, 2"C

PLC-5

NOTE 9

CLARIFIER DISTRIBUTION BOX

CONCRETE PAD

PLC-8

CENTRIFUGE P164

HAND HOLE

PAVED SLUDGE COMPOSTING PAD

A E47

SEE SHEETS E23, E24, E25 & E26 FOR PROCESS CENTER ELECTRICAL

D.A.F. SLUDGE HANDLING BUILDING

DAF UNIT #2

AIR COMP

AIR P.S.

DAF UNIT #1

12#14, 1"C
1-2/C #18, 1"C

14#14, 1"C

P-151

NOTE 23

U15

CONNECT TO HOLDING TANK BLOWER MOTOR STARTERS. CORE AND PATCH AS REQ'D

GEN-2 750kW 480/3

GEN-3 600kW 480/3

26#14, 2"C
2-2/C #18, 2"C

FIBER OPTIC CABLE TO ETHERNET HUB

PROCESS CENTER LCP-B NOTE 7

SEP1

NOTE 8

2"C TO PLC-6

P-91

P-92

P-93

PLC-9

NOTE 6

MCB

LCP-C NOTE 7

SLUDGE COMPOSTING PAD

BLOWER BUILDING

COMPOSTING

OPERATIONS CENTER

1-F.O. CABLE, 3-2/C #16, 2"C

2-2/C #18, 2"C
18#14, 2"C

SEE SHEET E6 FOR NEW BAR SCREEN

BAR SCREEN #3 & 4 CONTROL PANEL

NOTE 10

PLC-2A

2-2/C #18, 1-1/4"C
42#14, 2"C
2-2/C #18, 1"C
4-2/C #18, 2"C

NOTE 14

INFLUENT DISTRIBUTION CHAMBER

HOLDING LAGOON

GRIT CHAMBERS

NOTE 17

HYDRO-RANGER ENCLOSURE

BAR SCREENS

NOTE 16

ODOR SCRUBBER #1

28#14, EXISTING 2"C

METER VAULT & RAPID MIX BASIN

TANKS

P-23

P-22

NOTE 13

NOTE 11

NOTE 22

MODIFICATIONS TO MECH. SCREEN

E48 E49

S-F D1

HAND HOLE

NOTE 1

PLC-1

NOTE 10

60#14, 2"C

LAGOON AERATION AERATOR

NOTE 24

NOTE 18

PLC-3

CHLORINATION FACILITY

12#14, 1"C

WATER CHAMP CONTROL PANEL

CONTROL PANEL

CHLORINE INJECTION VAULT

NOTE 12

WELLHOUSE

NEW METER VAULT #3

ETHERNET HUB INSIDE S/G LOW VOLTAGE SIDE

1"F.O. CABLE, 2"C

INTERCEPT TWO (2) EXISTING 4" CONDUITS

MDSG

P24

DIESEL FUEL TANK

GENERATOR BUILDING

TERMINATION CABINET NOTE 20

2-3/C RS485 1"C, NOTE 21

EXISTING UTILITY POLE, NEW DELIVERY POINT FROM SANTEE ELECTRIC CO.

2-3/C RS485 1"C, NOTE 19

INFLUENT SCREW PUMPS

GEN-1 200kW 480/3

P-21

NOTE 15

16#14, 1"C

NOTE 16

LAGOON ODOR SCRUBBER #3

NEW SCRUBBER DISCONNECT

16#14, 1"C

SEE SHEET E5 FOR INFLUENT PUMP STATION ELECTRICAL

PH PROBE

CONTROL PANEL INFLUENT ODOR SCRUBBER #2

NOTE 16

10+00E

11+00E

12+00E

13+00E

14+00E

15+00E

16+00E

17+00E

GENERAL ELECTRICAL NOTES:

1. SEE SCADA ONE-LINE DIAGRAMS FOR CABLE REQUIREMENTS AND QUANTITIES.
2. SEE BUILDING PLANS FOR EQUIPMENT LAYOUTS AND CONDUIT ROUTING.

ELECTRICAL PLAN NOTES:

1. INTERCEPT EXISTING UG CONDUIT AND CONTINUE SAME SIZE TO S-1 (SECTION #3). INSTALL 1-F.O. CABLE BETWEEN FIBER INTERFACE (AT S-1) AND HUB IN SCADA CABINET (GENERATOR BLDG).
2. NOT USED.
3. EXISTING CONDUIT TO PROCESS CENTER FOR FLOW METER ANALOG SIGNAL. INTERCEPT IN PROCESS CENTER AT EXISTING MAIN CONTROL PANEL. VERIFY LOCATION.
4. REWORK MANHOLE TO ACCEPT NEW CONDUIT FROM BLOWER BUILDING MCC. SEAL ALL PENETRATIONS WATERTIGHT.
5. RISE UP ALONG BUILDING WALL TO ABOVE TOP OF MCC ELEVATION. EXTEND CONDUITS OVER AND DOWN INTO TOP OF MCC.
6. DEMOLISH EXISTING MAIN CONTROL CONSOLE. REUSE EXISTING CONDUITS BETWEEN "LCP-A" AND MCP AND BETWEEN BELT PRESS PANEL AND "MCP". PULL ALL NEW CONDUCTORS BETWEEN "LCP-A" AND "MCP" AND BETWEEN "LCP-B" AND "MCP". SEE PLAN OF OPERATOR CONTROL ROOM FOR LOCATION OF NEW OPERATOR CONTROL CONSOLE.
7. PANEL LOCATED IN BASEMENT OF PROCESS CENTER. SEE SPECIFICATIONS FOR MODIFICATIONS TO THIS PANEL.
8. BELT PRESS CONTROL PANEL LOCATED ON FIRST FLOOR OF PROCESS CENTER. SEE SPECIFICATIONS AND DRAWINGS FOR MODIFICATIONS TO THIS PANEL.
9. LOCATE AND INTERCEPT EXISTING CONDUIT. CONTINUE TO "PLC-5" AND CONNECT FOR CONTROL. HOMERUN 2#12, 1#12, 3/4"C FROM PLC-5 TO 1P 20A, CB IN MCC P51.
10. CUT AND REPAIR ASPHALT TO MATCH ORIGINAL FINISH.
11. 1-2/C #18 EACH TANK. CONNECT TO HYDRO-RANGER. CORE AND PATCH CONTAINMENT WALL TO ORIGINAL FINISH. SEAL WATER-TIGHT.
12. LOCATE AND INTERCEPT EXISTING CONDUIT. EXTEND TO RADIO ANTENNA MOUNTING STRUCTURE AND CONNECT MFG-SUPPLIED COAXIAL CABLE TO ANTENNA. SEE SPECIFICATIONS AND DETAILS.
13. 10#14, 1"C. TO EACH BAR SCREEN PANEL #1 & 2 FOR CONTROL. CUT CONCRETE AND REPAIR AS REQUIRED.
14. CONNECT TO EXISTING FLOW TRANSMITTERS AND MOTOR VALVE OPERATORS FOR CONTROL.
15. EXISTING DISCONNECT SWITCH. REMOVE AND REPLACE WITH NEW DISTRIBUTION PANEL.
16. 8#14, 3/4"C, CONNECT TO SCRUBBER CONTROL PANEL.
17. 8#14, 1"C TO EACH GRIT COLLECTOR (#1 & #2).
18. CONNECT NEW RADIO TO EXISTING PLC-3 W/1"C. SYSTEM INTEGRATOR TO VERIFY CONNECTION REQUIREMENTS.
19. CONNECT TO RS485 PORT ON UTILITY METER FOR DEMAND-PULSE SIGNAL. VERIFY REQUIREMENTS WITH MR. PHIL GREENWAY OF SANTEE ELECTRIC CO. 843-347-3399; X3029.
20. INSTALL FIBER OPTIC HUB IN TERMINATION CABINET. SEE SPECIFICATIONS.
21. CONNECT TO GENERATOR CONTROL PLC WITH 3/C RS485.
22. INSTALL FIBER OPTIC INTERFACE DEVICE TO ACCEPT RS485 CABLE FROM METERING DEVICES.
23. 24" X 24" X 12" NEMA 4X S.S. PULL BOX. MOUNT ON WALL 36" ABOVE FINISHED GRADE.
24. CONNECT FOR CONTROL AT LAGOON AERATOR.
25. PROVIDE PLC-5 IN NEMA 4X S.S. ENCLOSURE W/SUNSHIELD. PROVIDE AND INSTALL 4" STEEL-REINFORCED CONRETE PAD FOR PLC-5 MOUNTING. 1" CHAMFER ALL EDGES.

PARTIAL ELECTRICAL SITE PLAN "B"

SCALE: 1"=40'

0 40 80

GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS		DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED:
PROJECT ENG:	RTR	MJA	GS	TVT	JDP

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7973 REGISTERED THOMAS V. TVT

CERTIFICATE OF AUTHORIZATION B. P. BARBER & ASSOCIATES, INC. No. C000000

DATE

SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS - PLANNERS - SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: PARTIAL ELECTRICAL SITE PLAN "B"

DATE: FEB., 2001 SCALE: AS SHOWN

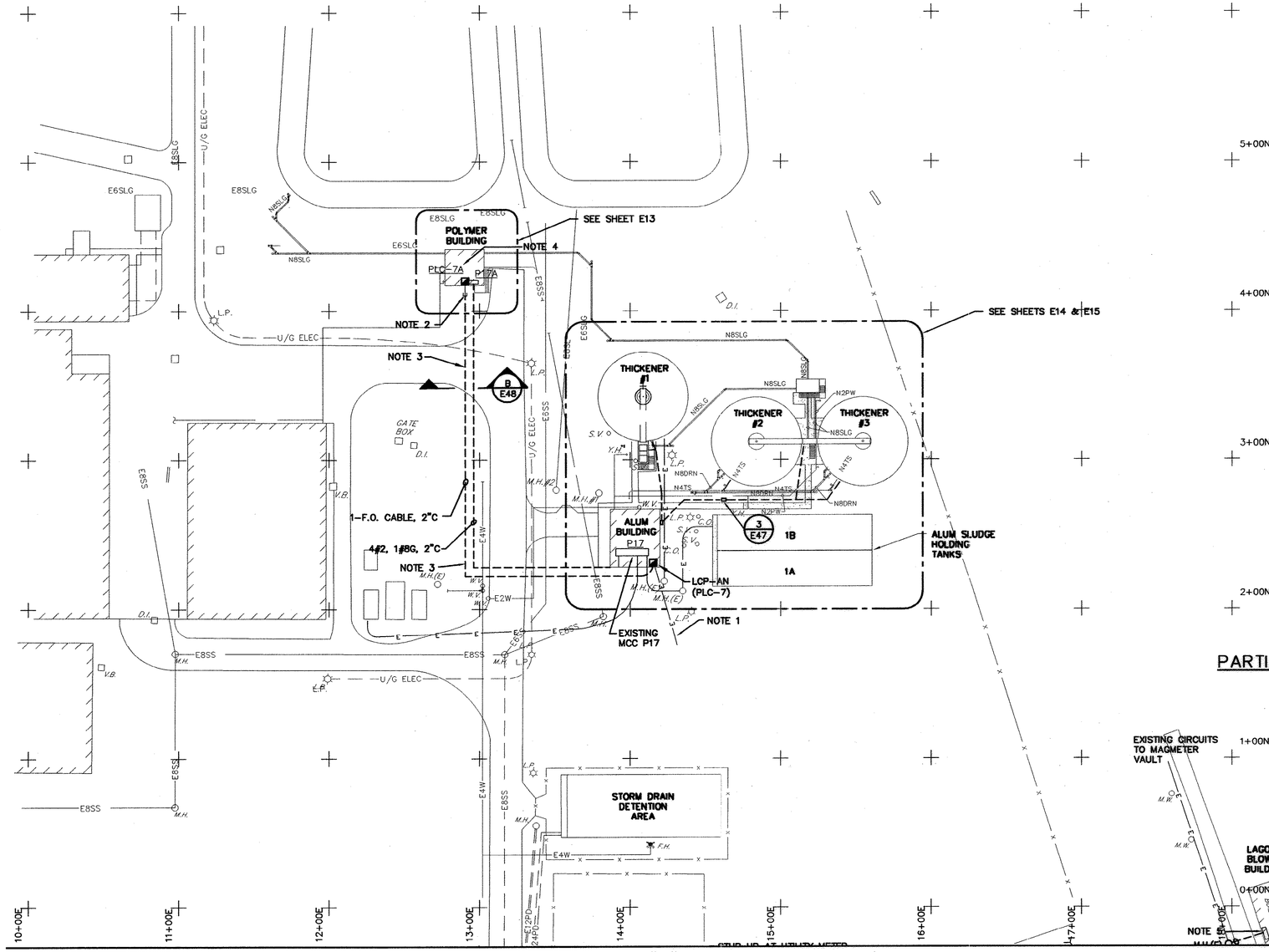
PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149-2-E2	E3
REF.	OF
N.B. NO. 1731	50
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-160 5

Projects\00149\dwg\MSCHU\00149-2-E2-RU.dwg, 01/05/2004 10:13:18 PM



MATCH LINE "C"
SEE SHEETS E2 & E3

PARTIAL ELECTRICAL SITE PLAN "C"

SCALE: 1"=40'

0 40 80
GRAPHIC SCALE

NORTH

GENERAL ELECTRICAL NOTES:

1. SEE SCADA ONE-LINE DIAGRAMS FOR CABLE REQUIREMENTS AND QUANTITIES.
2. SEE BUILDING PLANS FOR EQUIPMENT LAYOUTS AND CONDUIT ROUTING.

ELECTRICAL PLAN NOTES:

1. THIS CONDUIT TERMINATES IN PROCESS CENTER IN EXISTING PANEL LCP-B. EXTEND THIS CONDUIT FROM LCP-B UP TO NEW FIBER HUB IN CONTROL ROOM. INSTALL NEW 12/C FIBER OPTIC CABLE IN EXISTING CONDUIT BETWEEN PLC-7 AND NEW FIBER HUB. SEE SCADA DRAWINGS AND SPECIFICATIONS FOR FURTHER INFORMATION.
2. LOCATE AND INTERCEPT EXISTING UNDERGROUND CONDUIT. CONNECT FOR CONTROL TO PLC PANEL.
3. CUT AND REPAIR ASPHALT TO MATCH ORIGINAL FINISH.
4. PROVIDE AND INSTALL 2#12, 1#12G, 3/4"C FROM EXISTING "PZ1" TO NEW PLC-7A FOR POWER. RUN EXPOSED.

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS			
PROJECT ENG:	PTH	DESIGNED BY:	JMA
DRAWN BY:	GS	CHECKED BY:	TVT
APPROVED:	JDP		

SOUTH CAROLINA NOVEMBER 20, 2003 CERTIFICATE OF AUTHORIZATION B. P. BARBER & ASSOCIATES, INC. No. 000000 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7673 REGISTERED THOMAS V. TUTEN — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: PARTIAL ELECTRICAL SITE PLAN "C"
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149-2-E3	E4
REF.	OF
N.B. NO. 1731	50
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-161 5

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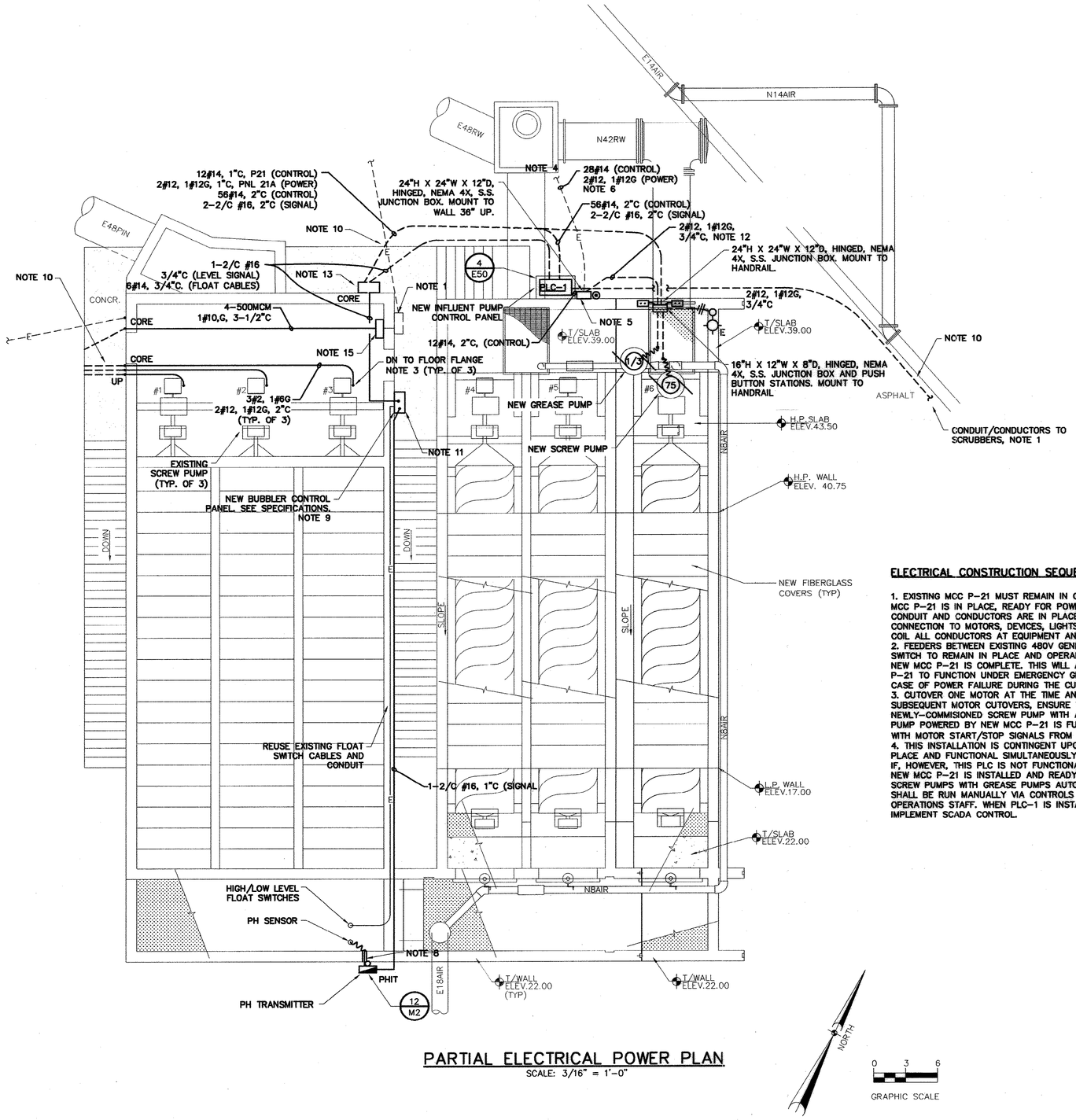
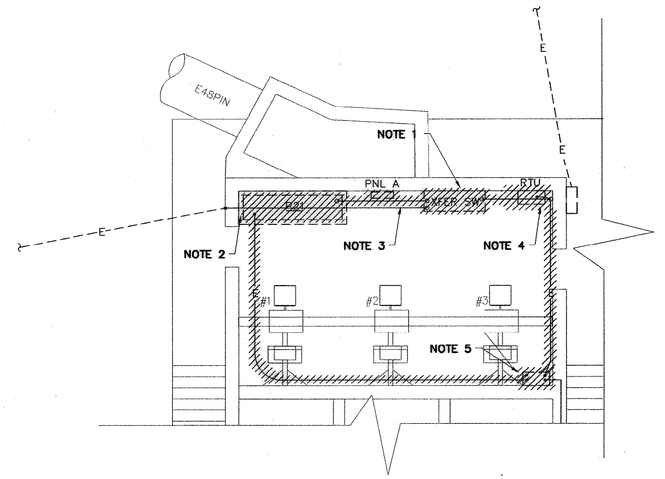


PARTIAL ELECTRICAL POWER PLAN
SCALE: 3/16" = 1'-0"



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

ELECTRICAL CONSTRUCTION SEQUENCE NOTES:

1. EXISTING MCC P-21 MUST REMAIN IN OPERATION UNTIL NEW MCC P-21 IS IN PLACE, READY FOR POWER AND ALL FEEDER CONDUIT AND CONDUCTORS ARE IN PLACE AND READY FOR CONNECTION TO MOTORS, DEVICES, LIGHTS, RECEPTACLES, ETC. COIL ALL CONDUCTORS AT EQUIPMENT AND TAG.
2. FEEDERS BETWEEN EXISTING 480V GENERATOR AND TRANSFER SWITCH TO REMAIN IN PLACE AND OPERABLE UNTIL CUTOVER TO NEW MCC P-21 IS COMPLETE. THIS WILL ALLOW EXISTING MCC P-21 TO FUNCTION UNDER EMERGENCY GENERATOR ONLY IN THE CASE OF POWER FAILURE DURING THE CUTOVER.
3. CUTOVER ONE MOTOR AT THE TIME AND, PRIOR TO SUBSEQUENT MOTOR CUTOVERS, ENSURE THAT EACH NEWLY-COMMISIONED SCREW PUMP WITH ASSOCIATED GREASE PUMP POWERED BY NEW MCC P-21 IS FUNCTIONAL, COMPLETE WITH MOTOR START/STOP SIGNALS FROM NEW PLC-1.
4. THIS INSTALLATION IS CONTINGENT UPON NEW PLC #1 BEING IN PLACE AND FUNCTIONAL SIMULTANEOUSLY WITH NEW MCC P-21. IF, HOWEVER, THIS PLC IS NOT FUNCTIONAL AT THE TIME THAT NEW MCC P-21 IS INSTALLED AND READY FOR CUTOVER, THEN SCREW PUMPS WITH GREASE PUMPS AUTOMATICALLY INTERLOCKED SHALL BE RUN MANUALLY VIA CONTROLS AT NEW MCC P-21 BY OPERATIONS STAFF. WHEN PLC-1 IS INSTALLED AND FUNCTIONAL, IMPLEMENT SCADA CONTROL.

ELECTRICAL DEMOLITION NOTES:

1. REFER TO CONSTRUCTION SEQUENCE NOTES PRIOR TO ELECTRICAL DEMOLITION OF ANY EQUIPMENT IN THIS BUILDING.
2. REMOVE MCC P-21 AND EQUIPMENT PAD FLUSH WITH EXISTING FINISHED FLOOR. CUT ALL UNUSED CONDUITS BACK 2" BELOW FINISHED FLOOR AND PATCH TO MATCH EXISTING FINISH.
3. REMOVE TRANSFORMER AND PANEL, RTU, BUBBLER PANEL, TRANSFER SWITCH, AND ALL EXPOSED, ASSOCIATED CONDUIT, JUNCTION BOXES, ETC. CUT CONCEALED CONDUITS BACK 2" BELOW FINISHED FLOOR AND PATCH FLOOR TO MATCH EXISTING.
4. REMOVE CONDUIT CURRENTLY SERVING AS FEEDER TO LINE SIDE OF TRANSFER SWITCH BACK TO NEAREST COUPLING ABOVE FINISHED FLOOR.
5. REMOVE BUBBLER PANEL. REUSE EXISTING CONDUITS.

ELECTRICAL PLAN NOTES:

1. SPLICE FEEDER IN EXISTING JUNCTION BOX AND EXTEND TO NEW MCC P-21.
2. NOT USED.
3. INSTALL TEE CONDULET ABOVE FINISHED FLOOR. INSTALL W.F.C. TO MOTOR PECKER HEAD.
4. SEE SHEET E2 FOR CONTINUATION.
5. INSTALL NEW 24"H X 24"W X 12"D, HINGED, NEMA 4X, S.S. JBOX OVER TWO (2) EXISTING 2" CONDUITS. EXTEND CONDUITS INTO NEW JBOX AND SEAL W/MEYERS HUBS.
6. UTILIZE TWO EXISTING SPARE CONDUITS TO MCC P-23. RUN WIRE BRUSH AND MANDREL FULL LENGTH EACH CONDUIT.
7. INSTALL STEEL REINFORCED CONCRETE EQUIPMENT PAD.
8. CORE WALL 12" BELOW GRADE. PATCH AS REQUIRED FOR WATERTIGHT SEAL.
9. UTILIZE EXISTING CONDUITS. PULL ALL NEW CONDUCTORS. FIELD VERIFY CONDITION OF EXISTING CONDUITS.
10. CUT AND REPAIR TO MATCH EXISTING FINISH.
11. INTERCEPT EXISTING FLOAT SWITCH CONDUCTORS. EXTEND THROUGH NEW JUNCTION BOX TO NEW PLC-1 AND CONNECT FOR CONTROL.
12. CONNECT TO LIGHTING CONTACTOR AT MCC P-23 FOR POWER
13. 24"H X 24"W X 12"D NEMA 4X, S.S. PULL BOX. MOUNT TO WALL AT ELEVATION TO MATCH CONDUIT.
14. NOT USED.
15. INTERCEPT EXISTING CONDUIT AT NEAREST COUPLING ABOVE FLOOR, INSTALL 24"H X 16"W X 12"D NEMA 4X, S.S. JUNCTION BOX AND EXTEND CONDUITS THROUGH WALL, DOWN AND OVER TO NEW MCC P-21.

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: JMA
DRAWN BY: GS
CHECKED BY: TVT
APPROVED: JDP

NORTH CAROLINA NOTIFICATION OF CERTIFICATE OF G. P. BARBER & ASSOCIATES, INC. No. C-0000000 — DATE

REGISTERED PROFESSIONAL ENGINEER SOUTH CAROLINA No. 7973 — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: INFLUENT PUMP STATION ELECTRICAL PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE 1

DISK	SHEET
00149-2-E4	E5
REF.	OF
N.B. NO. 1731	50
PROJECT NO. 00149	

FILE NO. 22-85-00

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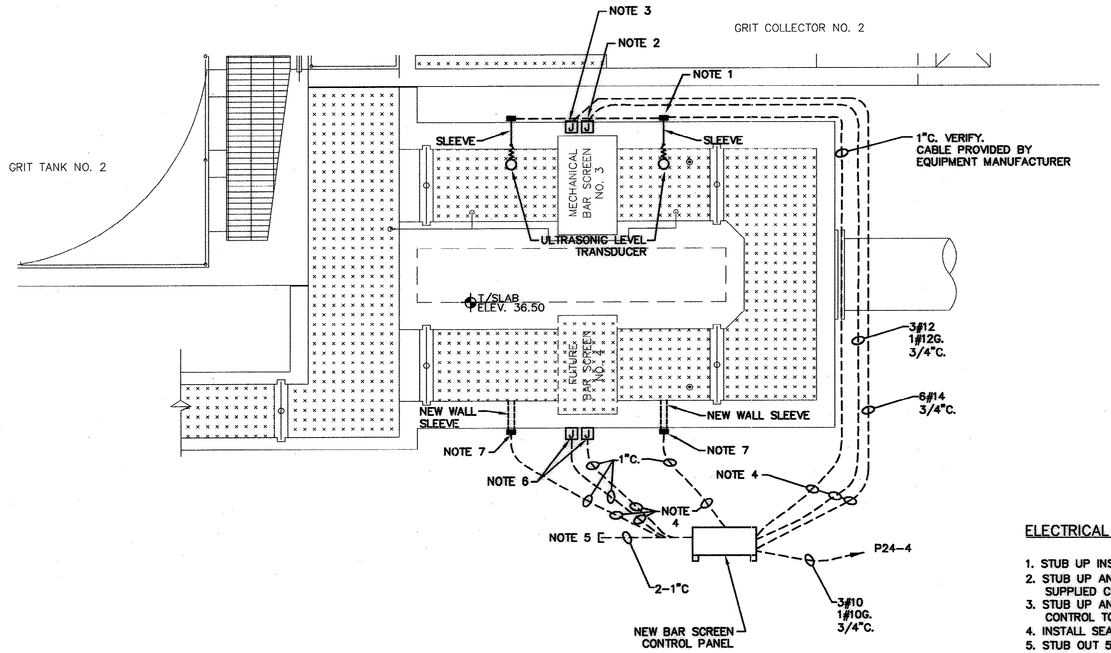

ELECTRICAL PLAN

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

NORTH

0 4 8

GRAPHIC SCALE

ELECTRICAL PLAN NOTES:

1. STUB UP INSTALL CONDULET. CONNECT TO LEVEL TRANSDUCER W/W.F.C.
2. STUB UP AND INSTALL BOX ON EQUIPMENT FRAME. EXTEND TO MOTOR W/MANUFACTURER-SUPPLIED CABLE.
3. STUB UP AND INSTALL BOX ON EQUIPMENT FRAME. EXTEND TO MOTOR AND CONNECT FOR CONTROL TO LIMIT SWITCH.
4. INSTALL SEAL-OFFS BELOW PANEL (TOTAL OF 3).
5. STUB OUT 5'-0". CAP AND MARK FOR FUTURE SCADA.
6. STUB UP 6". INSTALL BOX FOR FUTURE BAR SCREEN.
7. STUB UP AND INSTALL CONDULET. RUN CONDUIT THROUGH WALL SLEEVE AND CAP FOR FUTURE LEVEL TRANSDUCER.

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: JMA
DRAWN BY: GS
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA NOTIVERSED CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. 000000
DATE

REGISTERED PROFESSIONAL ENGINEER SOUTH CAROLINA No. 7973
SIGNATURE

bpb
B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW BAR SCREEN ELECTRICAL PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149E5-RD
REF.
N.B. NO. 1731
PROJECT NO. 00149

SHEET E6 OF 50

FILE NO. 22-85-00

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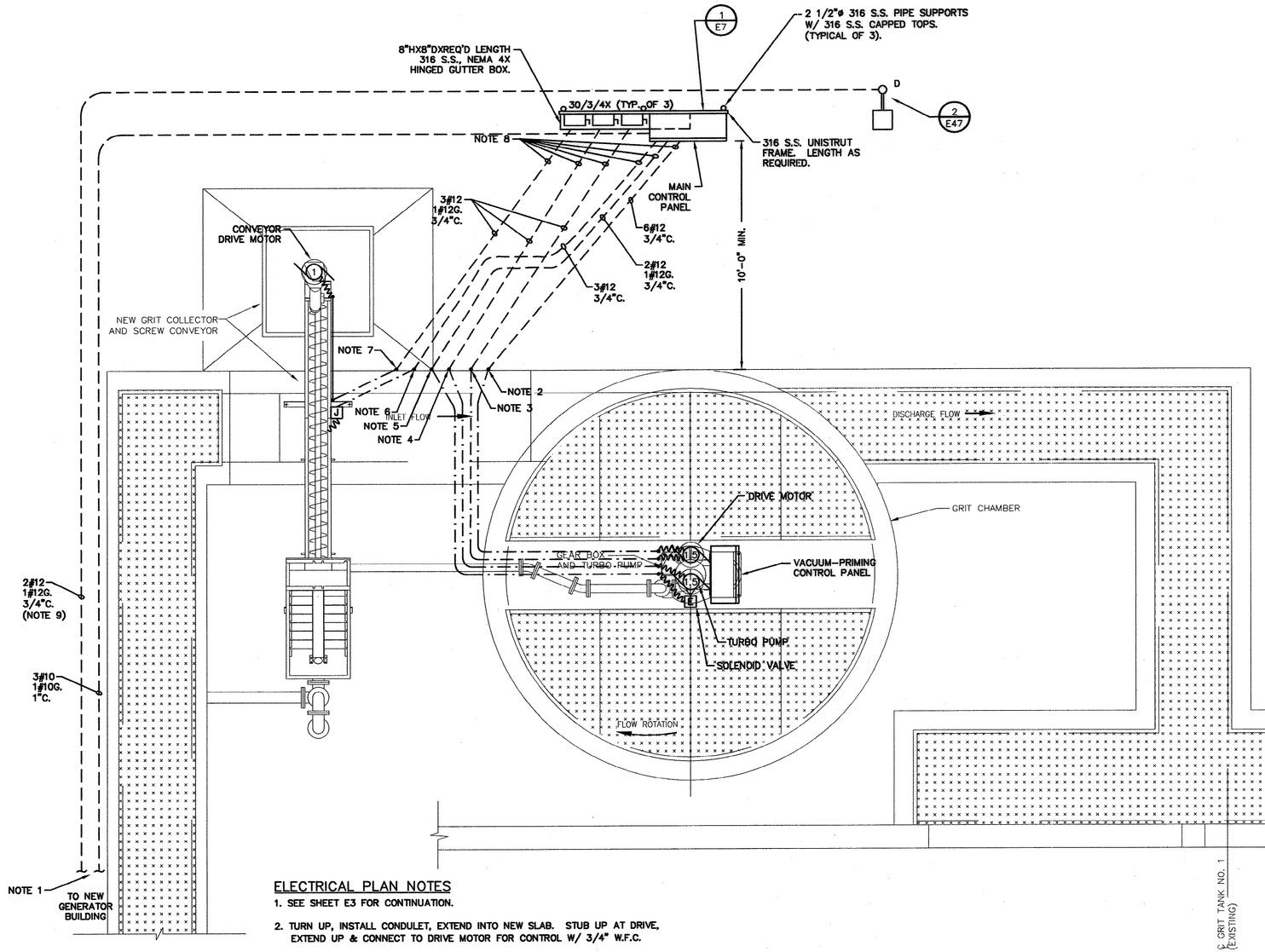
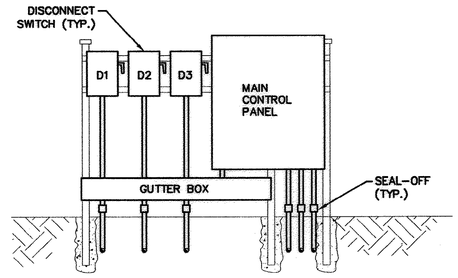


ELECTRICAL PLAN

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



EQUIPMENT MOUNTING

DETAIL

SCALE: NONE

1 E7

ELECTRICAL PLAN NOTES

1. SEE SHEET E3 FOR CONTINUATION.
2. TURN UP, INSTALL CONDULET, EXTEND INTO NEW SLAB. STUB UP AT DRIVE, EXTEND UP & CONNECT TO DRIVE MOTOR FOR CONTROL W/ 3/4" W.F.C.
3. TURN UP, INSTALL CONDULET, EXTEND INTO NEW SLAB. STUB UP AT DRIVE, EXTEND UP & CONNECT TO DRIVE MOTOR FOR POWER W/ 3/4" W.F.C.
4. TURN UP, INSTALL CONDULET, EXTEND INTO NEW SLAB. STUB UP AT DRIVE, EXTEND UP & CONNECT TO PUMP MOTOR FOR POWER W/ 3/4" W.F.C.
5. TURN UP, INSTALL CONDULET, EXTEND INTO NEW SLAB. STUB UP AT DRIVE, EXTEND UP TO SOLENOID VALVE W/ 3/4" W.F.C.
6. TURN UP, INSTALL CONDULET, EXTEND INTO NEW SLAB. STUB UP AT CONVEYOR SUPPORT, INSTALL JBOX ON CONVEYOR FRAME, EXTEND UP & CONNECT TO EMERGENCY CABLE SWITCH FOR CONTROL W/ 3/4" W.F.C. VERIFY LOCATION.
7. TURN UP, INSTALL CONDULET, EXTEND INTO NEW SLAB. STUB UP AT CONVEYOR SUPPORT, EXTEND UP TO END OF CONVEYOR, CONNECT TO CONVEYOR DRIVE MOTOR FOR POWER W/ 3/4" W.F.C.
8. INSTALL SEAL-OFFS IN THESE CONDUITS. SEE DETAIL.
9. RUN THROUGH TIME CLOCK TO MCC P24.

GRAPHIC SCALE 0 2 4

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS

PROJECT ENG:	DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED:
RTH	JMA	GS	TVT	JDP

NORTH CAROLINA CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. C-0000 — DATE

NORTH CAROLINA PROFESSIONAL ENGINEER No. 7973 REGISTERED TIMOTHY V. TAYLOR — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW GRIT CHAMBER ELECTRICAL PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149E6-RD	E7
REF.	OF
N.B. NO. 1731	50
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-164 5

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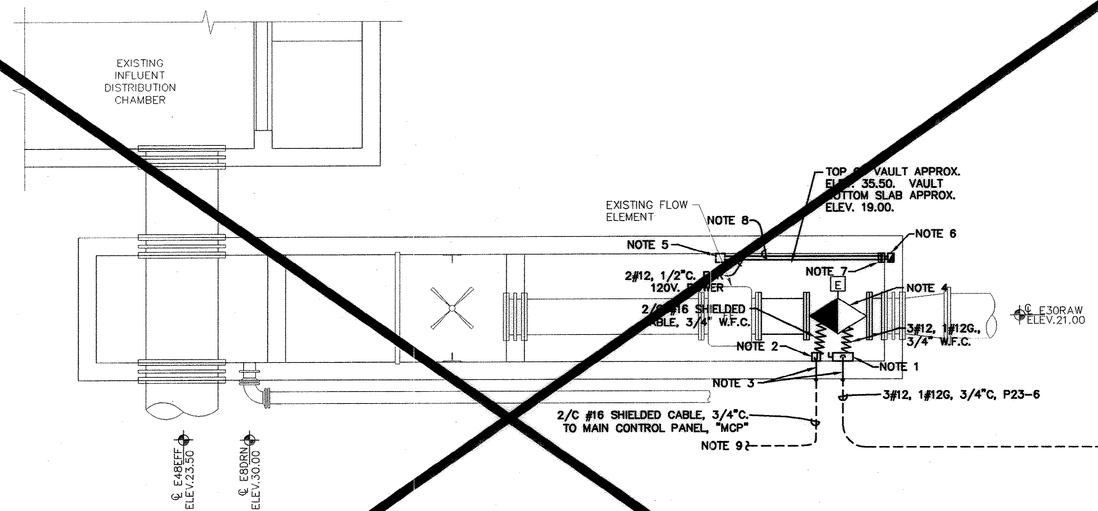

RAPID MIX BASIN ELECTRICAL PLAN

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

NORTH

RAPID MIX BASIN PLAN NOTES:

1. 30 AMP, 3P WITH GROUND, 480 VOLT, NEMA 4X, NON-FUSIBLE SAFETY DISCONNECT SWITCH. LOCATED AT ELEV. TO MATCH VALVE ELECTRIC ACTUATOR (VERIFY).
2. LOCATE CAST BOX AT ELEV. TO MATCH VALVE ELECTRIC ACTUATOR.
3. CORE UP TO APPROX. ELEV. 33.00, CORE WALL & EXTEND OUT. PATCH WATERTIGHT.
4. CONNECT TO VALVE ELECTRIC ACTUATOR WITH WATERTIGHT FLEXIBLE CONDUIT (W.F.C.) FOR POWER & SIGNAL.
5. APPROX. LOCATION OF EXISTING FLOW INDICATING TRANSMITTER. DISCONNECT, REMOVE UNIT AND REINSTALL ON TOP OF VAULT. INSTALL NEMA 4X BOX AND SPLICE/EXTEND WIRING TO NEW LOCATION.
6. RELOCATE FLOW TRANSMITTER AND PIPE MOUNT (SEE DETAIL) ON TOP OF VAULT (APPROX. ELEV. 35.50). CONNECT FOR POWER AND SIGNAL AS FIELD DETERMINED.
7. CORE AND PATCH WATERTIGHT VAULT TOP SLAB.
8. NEW FLOW TUBE CABLE (VERIFY AND MATCH EXISTING TYPE) AND 2/C #16 SHIELDED CABLE IN 3/4"C. (VERIFY) UP TO TRANSMITTER.
9. SEE SHEET E3 FOR CONTINUATION.

OMIT

0 4 8

GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG.: R.T.H.
DESIGNED BY: JMA
DRAWN BY: JMA/GS
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA NOVUM VIRGINIA CERTIFICATE OF AUTHORIZATION B. P. BARBER & ASSOCIATES, INC. No. C00000

DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER THOMAS VICTOR No. 7973 REGISTERED

SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: MODIFICATIONS TO RAPID MIX BASIN ELECTRICAL PLAN

DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149E7-RD	E8
REF.	OF
N.B. NO. 1731	50
PROJECT NO. 00149	

FILE NO. 22-85-00

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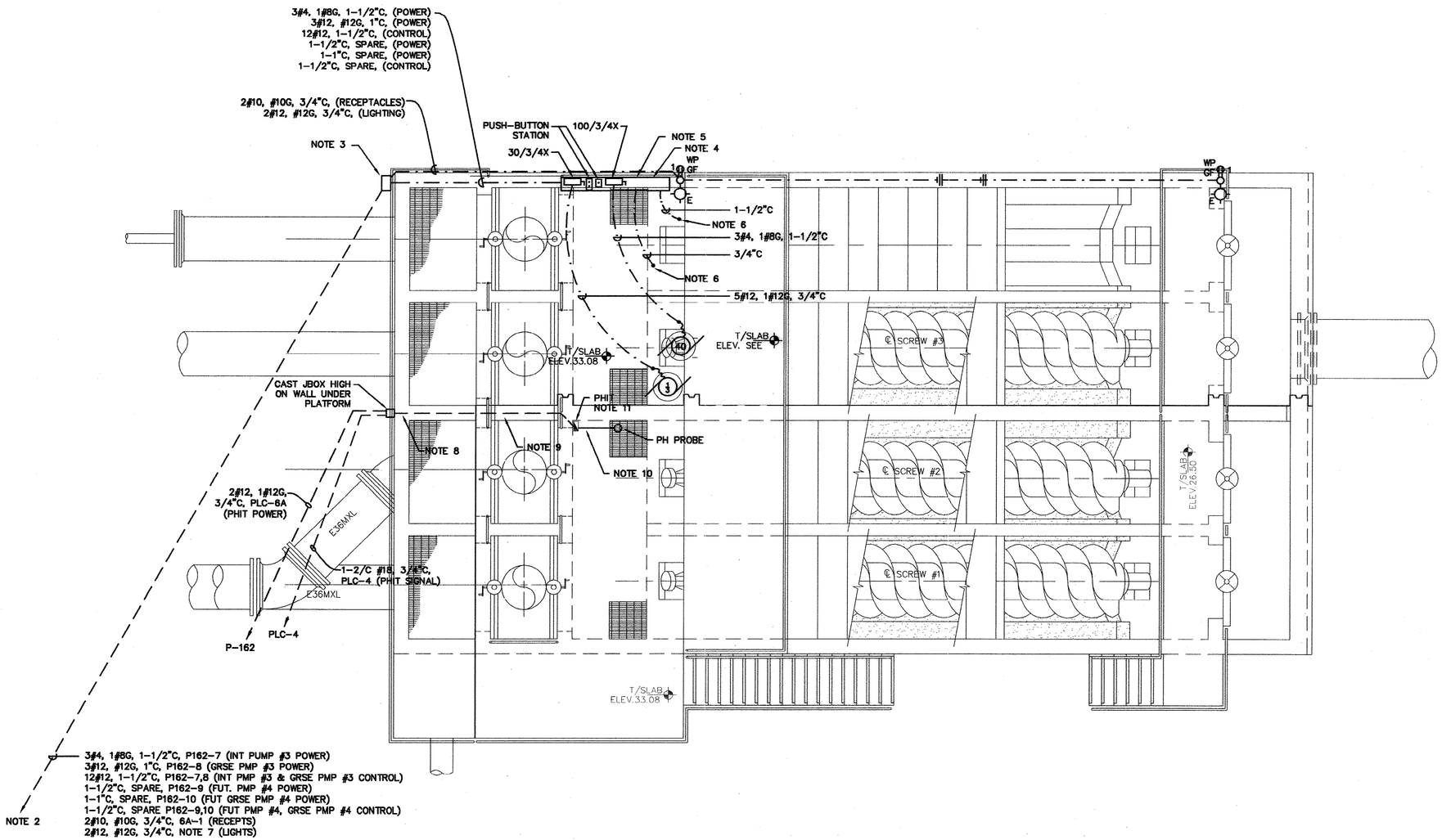

PARTIAL ELECTRICAL PLAN

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

ELECTRICAL PLAN NOTES:

1. ACTUAL LOCATION OF ALL EQUIPMENT TO BE DETERMINED BY EQUIPMENT MANUFACTURER (SHOP DRAWING).
2. SEE SHEET E2 FOR CONTINUATION.
3. 24"HX12"WX8"D, NEMA 4X, S.S. PULL BOX. MOUNT BOX AT 36" ABOVE FINISHED GRADE. RUN CONDUITS IN WALL OVER AND UP.
4. 12"HX"WXREQ'D WIDTHX10"D, NEMA 4X, S.S. GUTTER BOX. MOUNT BOTTOM OF BOX 12" A.F.F.
5. SPACE FOR FUTURE PUMP #4 DISCONNECT SWITCH AND PUSH-BUTTON STATIONS.
6. STUB CONDUITS 6" A.F.F. AND INSTALL THREADED CAP FOR FUTURE EQUIPMENT.
7. RUN THROUGH TIME CLOCK TO P162
8. CORE WALL AND SEAL WATERTIGHT AROUND CONDUITS.
9. RUN BELOW AND SECURE CONDUIT TO BOTTOM OF TOP SLAB.
10. 1"C W/ MFG-SUPPLIED CABLE. VERIFY CONDUIT SIZE.
11. MOUNT TRANSMITTER TO HANDRAIL.

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS

PROJECT ENG:	DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED:
RTH	JMA	JMA	TVT	JDP

NORTH CAROLINA PROFESSIONAL ENGINEER — B.P. BARBER & ASSOCIATES, INC. — No. C-00500 — CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER — No. 7973 — REGISTERED — THOMAS VICTOR — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: MODIFICATIONS TO INTERMEDIATE PUMP STATION ELECTRICAL PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149E8-RD	E9
REF.	OF 50
N.B. NO. 1731	
PROJECT NO. 00149	

FILE NO. 22-85-00

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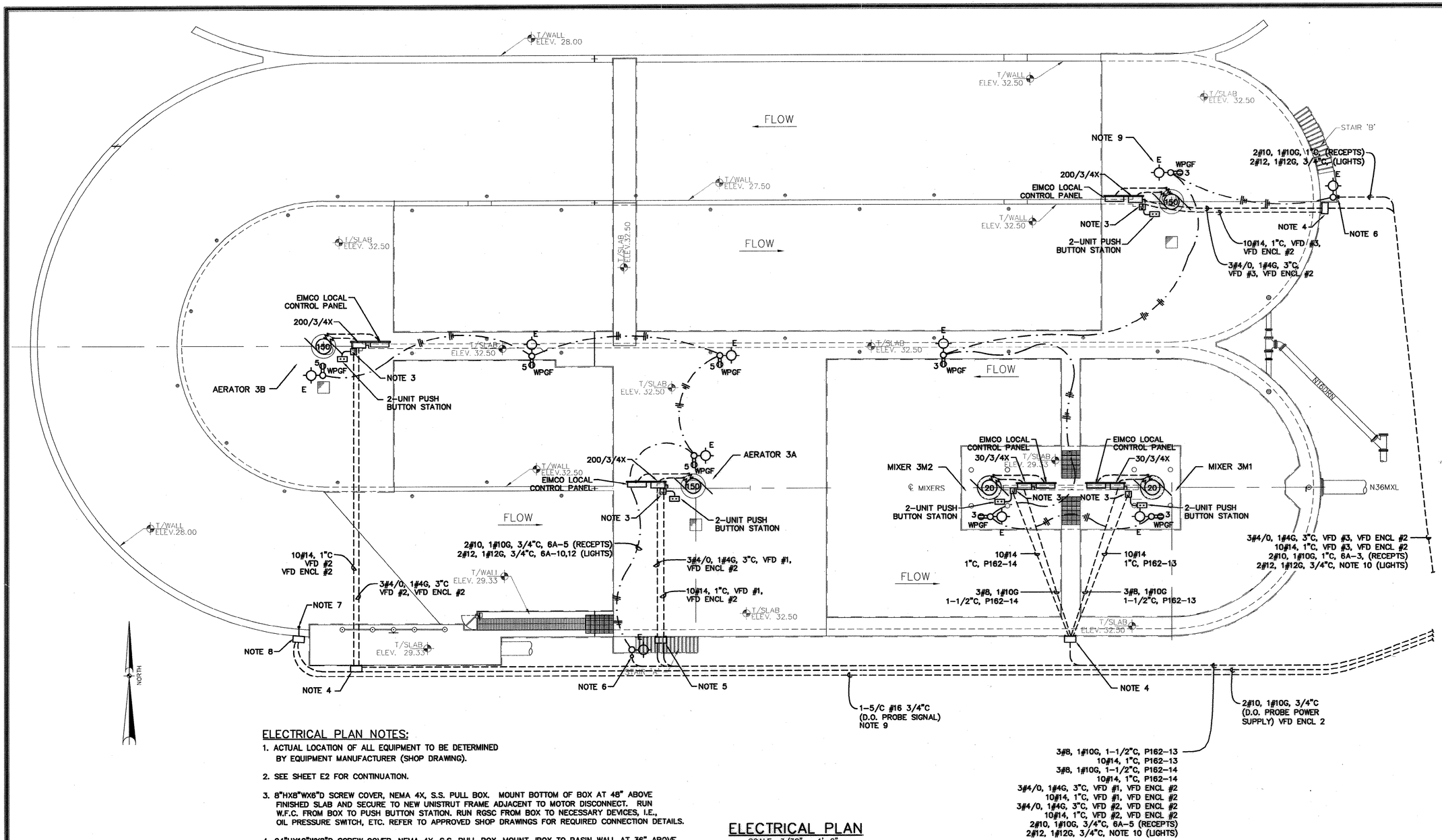


ELECTRICAL PLAN NOTES:

1. ACTUAL LOCATION OF ALL EQUIPMENT TO BE DETERMINED BY EQUIPMENT MANUFACTURER (SHOP DRAWING).
2. SEE SHEET E2 FOR CONTINUATION.
3. 8"HX8"WX6"D SCREW COVER, NEMA 4X, S.S. PULL BOX. MOUNT BOTTOM OF BOX AT 48" ABOVE FINISHED SLAB AND SECURE TO NEW UNISTRUT FRAME ADJACENT TO MOTOR DISCONNECT. RUN W.F.C. FROM BOX TO PUSH BUTTON STATION. RUN RGSC FROM BOX TO NECESSARY DEVICES, I.E., OIL PRESSURE SWTCH, ETC. REFER TO APPROVED SHOP DRAWINGS FOR REQUIRED CONNECTION DETAILS.
4. 24"HX12"WX8"D SCREW COVER, NEMA 4X, S.S. PULL BOX. MOUNT JBOX TO BASIN WALL AT 36" ABOVE FINISHED GRADE. RUN CONDUITS DOWN OUT OF BOX AND UNDER BASIN BOTTOM SLAB OVER TO CONCRETE COLUMN AND UP TO EQUIPMENT AS SHOWN.
5. 24"HX24"WX10"D SCREW COVER, NEMA 4X, S.S. PULL BOX. MOUNT JBOX TO BASIN WALL AT 36" ABOVE FINISHED GRADE. RUN CONDUITS DOWN OUT OF BOX AND UNDER BASIN BOTTOM SLAB OVER TO CONCRETE WALL AND UP TO EQUIPMENT AS SHOWN.
6. TURN UP TO CONDULET. RUN CONDUIT IN CENTERLINE OF TOP SLAB TO FIXTURE POLE.
7. NEW DISSOLVED OXYGEN (D.O.) PROBE. VERIFY EXACT LOCATION.
8. NEW 120V, 1ø POWER SUPPLY IN NEMA 4X ENCLOSURE. MOUNT TO BASIN WALL 48" UP.
9. MAINTAIN 12" MIN. SEPARATION FROM CONDUITS CONTAINING POWER CONDUCTORS.
10. RUN THROUGH TIME CLOCK TO P162.

ELECTRICAL PLAN

SCALE: 3/32" = 1'-0"

0 8 16
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS		
PROJECT ENG:	R.T.H.	
DESIGNED BY:	JNA	
DRAWN BY:	JNA	
CHECKED BY:	T.V.T.	
APPROVED:	J.D.P.	

SOUTH CAROLINA NOTARY PUBLIC B.P. BARBER & ASSOCIATES, INC. CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7873 REGISTERED — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

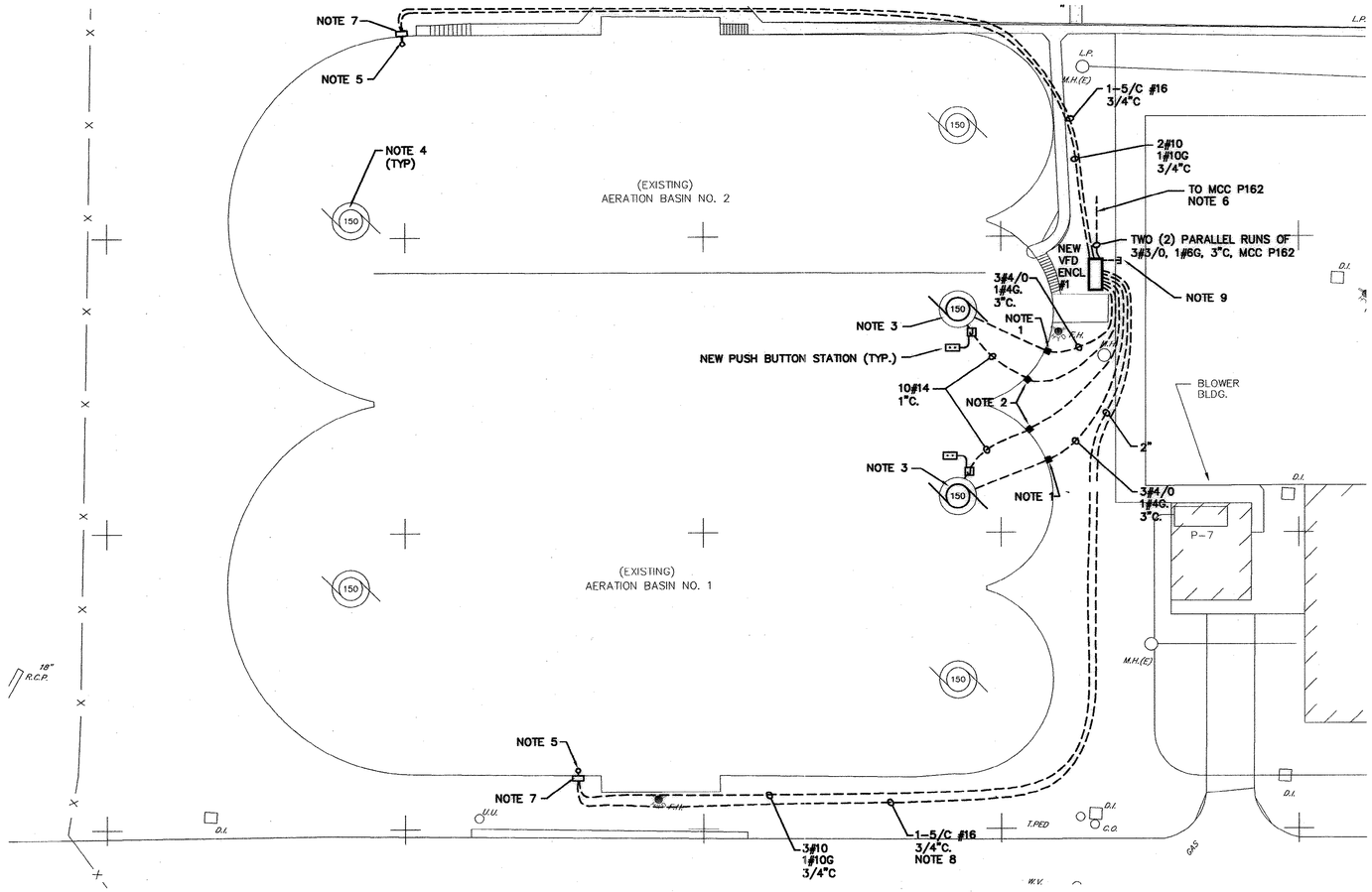
SHEET TITLE: NEW CARROUSEL AERATION BASIN ELECTRICAL PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	00149E9-RD
REF.	
N.B. NO.	1731
PROJECT NO.	00149
SHEET	E10
OF	50
FILE NO.	22-85-00

51-004-167 5

Projects\00149\dwg\RECORD DWGS\00149E9-R0.dwg, 12/29/2003 09:30:37 AM



ELECTRICAL PLAN NOTES

1. DISCONNECT AND REMOVE EXISTING 150 HP MOTOR. REMOVE POWER CONDUCTORS BACK TO MCC P141 (LOCATED IN RETURN SLUDGE BUILDING). REPLACE EXISTING CONDULET WITH NEW 12"X12"X12" BOX ON BASIN WALL. REUSE CONDUIT BETWEEN BOX AND NEW MOTOR.
2. DISCONNECT AND REMOVE CONTROL CONDUCTORS BACK TO MCC P141 (LOCATED IN RETURN SLUDGE BUILDING). REPLACE EXISTING CONDULET WITH NEW 6"X6"X6" BOX ON BASIN WALL. REUSE CONDUIT BETWEEN BOX AND NEW MOTOR.
3. NEW 150 HP INVERTER DUTY AERATOR MOTOR.
4. EXISTING 150 HP AERATOR MOTOR TO REMAIN, TYP. OF 2 EACH BASIN.
5. NEW DISSOLVED OXYGEN (D.O.) PROBE. VERIFY EXACT LOCATION.
6. SEE SHEET E2 FOR FURTHER DETAILS.
7. NEW 120V, 1ø POWER SUPPLY IN NEMA 4X ENCLOSURE. MOUNT TO BASIN WALL 48" UP. CONNECT TO (D.O.) PROBE W/ MANUFACTURER SUPPLIED CABLE.
8. MAINTAIN 12" MIN. SEPARATION FROM CONDUITS CONTAINING POWER CONDUCTORS.
9. STUB OUT FOR FUTURE SCADA THIS SIDE OF WALKWAY.

PARTIAL ELECTRICAL PLAN

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

NORTH

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: JMA
DRAWN BY: GS
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA NOVEMBER 30, 2004 CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. C00320
DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7673 THOMAS ROBERT MOTLEY
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
MODIFICATIONS TO EXISTING AERATION BASINS ELECTRICAL PLAN

DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149E10-RD
REF.
N.B. NO. 1731
PROJECT NO. 00149

SHEET E11 OF 50

FILE NO. 22-85-00

51-004-168 S

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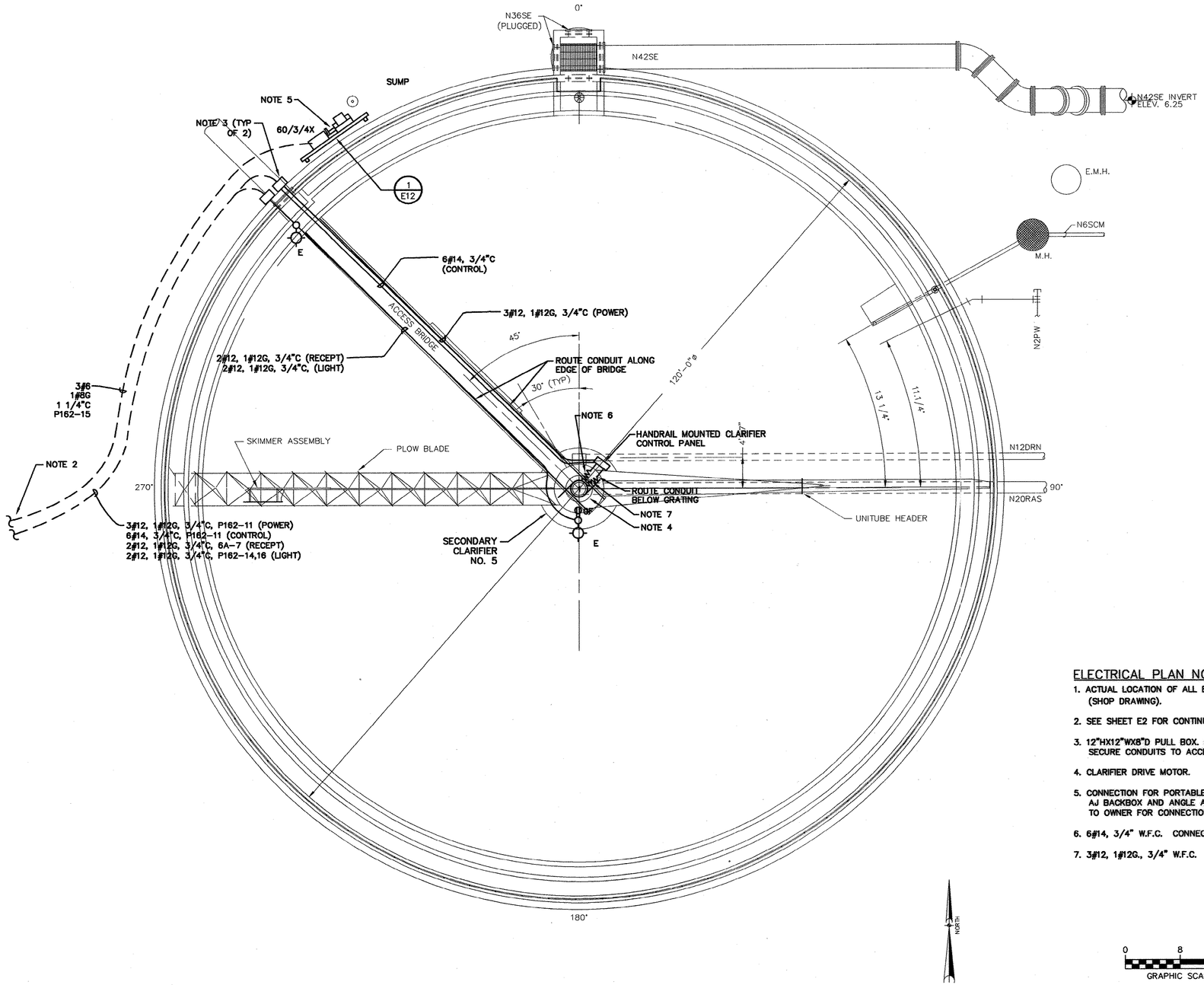
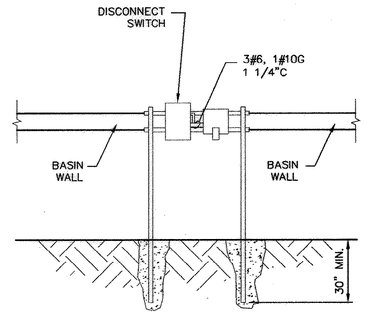


ELECTRICAL PLAN
SCALE: 1/8" = 1'-0"



DETAIL 1/E12
SCALE: NONE

ELECTRICAL PLAN NOTES:

1. ACTUAL LOCATION OF ALL EQUIPMENT TO BE DETERMINED BY EQUIPMENT MANUFACTURER (SHOP DRAWING).
2. SEE SHEET E2 FOR CONTINUATION.
3. 12"HX12"WX8"D PULL BOX. MOUNT BOX TO BASIN WALL AT 24" ABOVE FINISHED GRADE. SECURE CONDUITS TO ACCESS BRIDGE HANDRAIL AND RUN TO EQUIPMENT AS SHOWN.
4. CLARIFIER DRIVE MOTOR.
5. CONNECTION FOR PORTABLE SUBMERSIBLE PUMP, 600V, 60A, 3W, 4P. RECEPTACLE W/ AJ BACKBOX AND ANGLE ADAPTER. CROUSE-HINDS CAT # AREA6424. PROVIDE PLUG TO OWNER FOR CONNECTION TO SUBMERSIBLE PUMP. CROUSE-HINDS CAT # APJ6485.
6. 6#14, 3/4" W.F.C. CONNECT FOR HIGH TORQUE AND OVER TORQUE.
7. 3#12, 1#12G., 3/4" W.F.C. CONNECT FOR POWER.

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS

PROJECT ENG:	RTH
DESIGNED BY:	JMA
DRAWN BY:	JMA
CHECKED BY:	TVT
APPROVED:	JDP

SOUTH CAROLINA NOTICE OF CERTIFICATE OF AUTHORIZATION
B.P. BARBER & ASSOCIATES, INC.
No. C00368
DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER
No. 7973
THOMAS VICTOR WESTBERG
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS - PLANNERS - SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW SECONDARY CLARIFIER #5 ELECTRICAL PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	00149E11-RD
REF.	
N.B. NO.	1731
PROJECT NO.	00149
SHEET	E12
OF	50
FILE NO.	22-85-00

Projects\00149\dwg\RECORD DWG\00149e11-rd.dwg, 12/29/2003 09:31:45 AM

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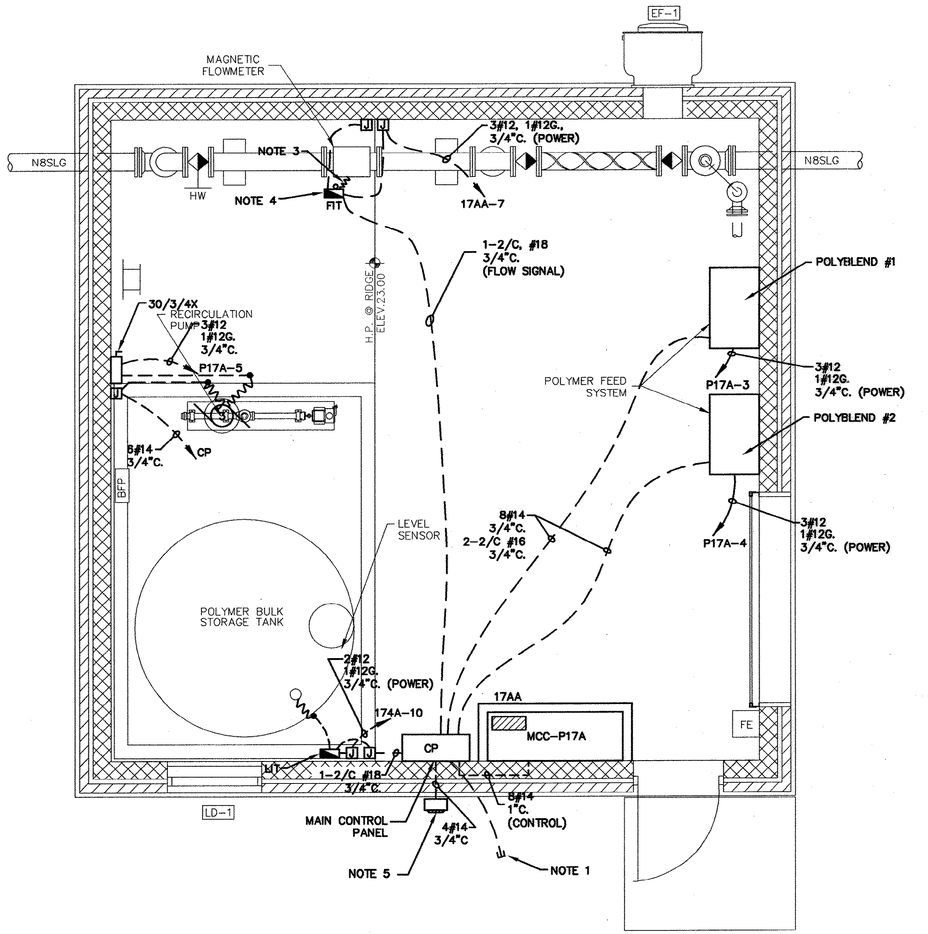
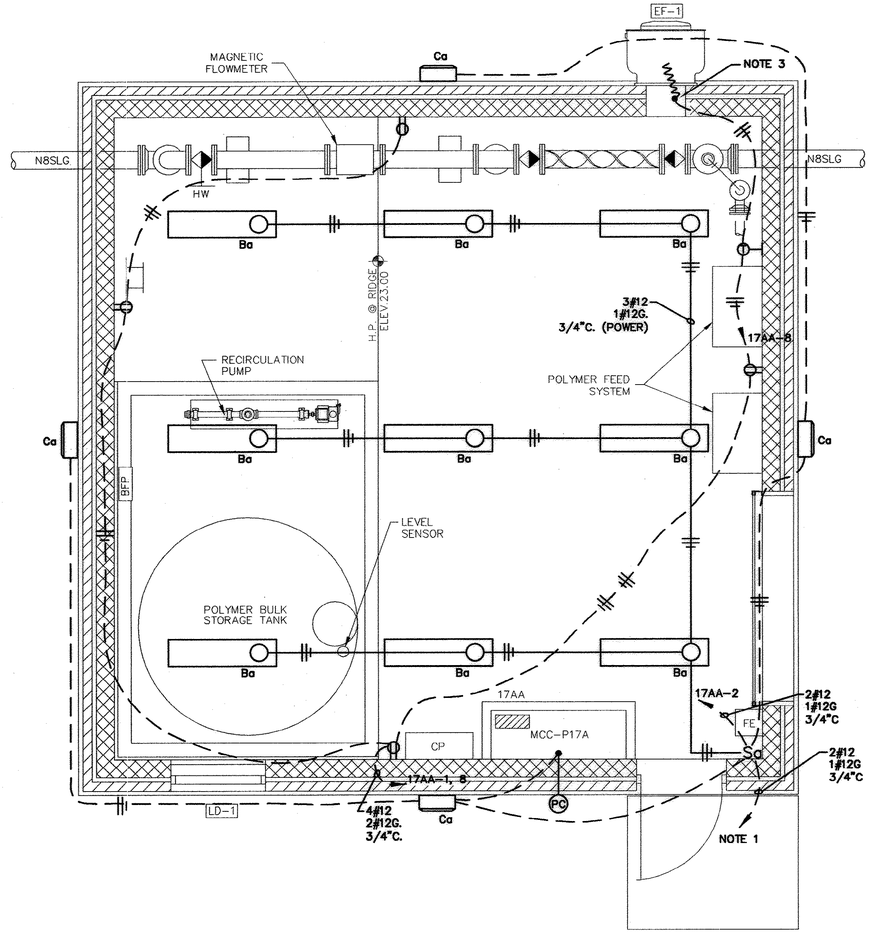


ELECTRICAL POWER PLAN

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

0 2 4
GRAPHIC SCALE



LIGHTING & RECEPTACLES PLAN

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

0 2 4
GRAPHIC SCALE

POWER PLAN NOTES

1. STUB CONDUIT OUT 5'-0" BEYOND BUILDING SLAB. MARK & CAP FOR FUTURE SCADA.
2. MOUNT JBOXES TO 316 S.S. FRAME.
3. CABLE BY EQUIPMENT MANUFACTURER.
4. PIPE MOUNTED FLOW TRANSMITTER. SEE DETAIL.
5. ALARM HORN & LIGHT. MOUNT 20'-0" A.F.F.

GENERAL ELECTRICAL NOTES

1. ACTUAL LOCATION OF ALL EQUIPMENT TO BE DETERMINED BY EQUIPMENT MANUFACTURER (SHOP DRAWINGS).

LIGHTING & RECEPTACLE PLAN NOTES

1. RUN THROUGH TIME CLOCK TO P17A.
2. INSTALL FIXTURE CENTERED IN FASCIA APPROXIMATELY 26'-0" A.F.F.
3. STUB INTO OPENING AND CONNECT TO EF-1 W/ W.F.C.

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: JMA
DRAWN BY: GS
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA NOTARIZED CERTIFICATE OF B.P. BARBER & ASSOCIATES, INC. REG. NO. C00303 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 19173 REGISTERED THOMAS VOTOUR — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW POLYMER BUILDING ELECTRICAL PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149E12-RD
REF.
N.B. NO. 1731
PROJECT NO. 00149
SHEET E13 OF 50
FILE NO. 22-85-00

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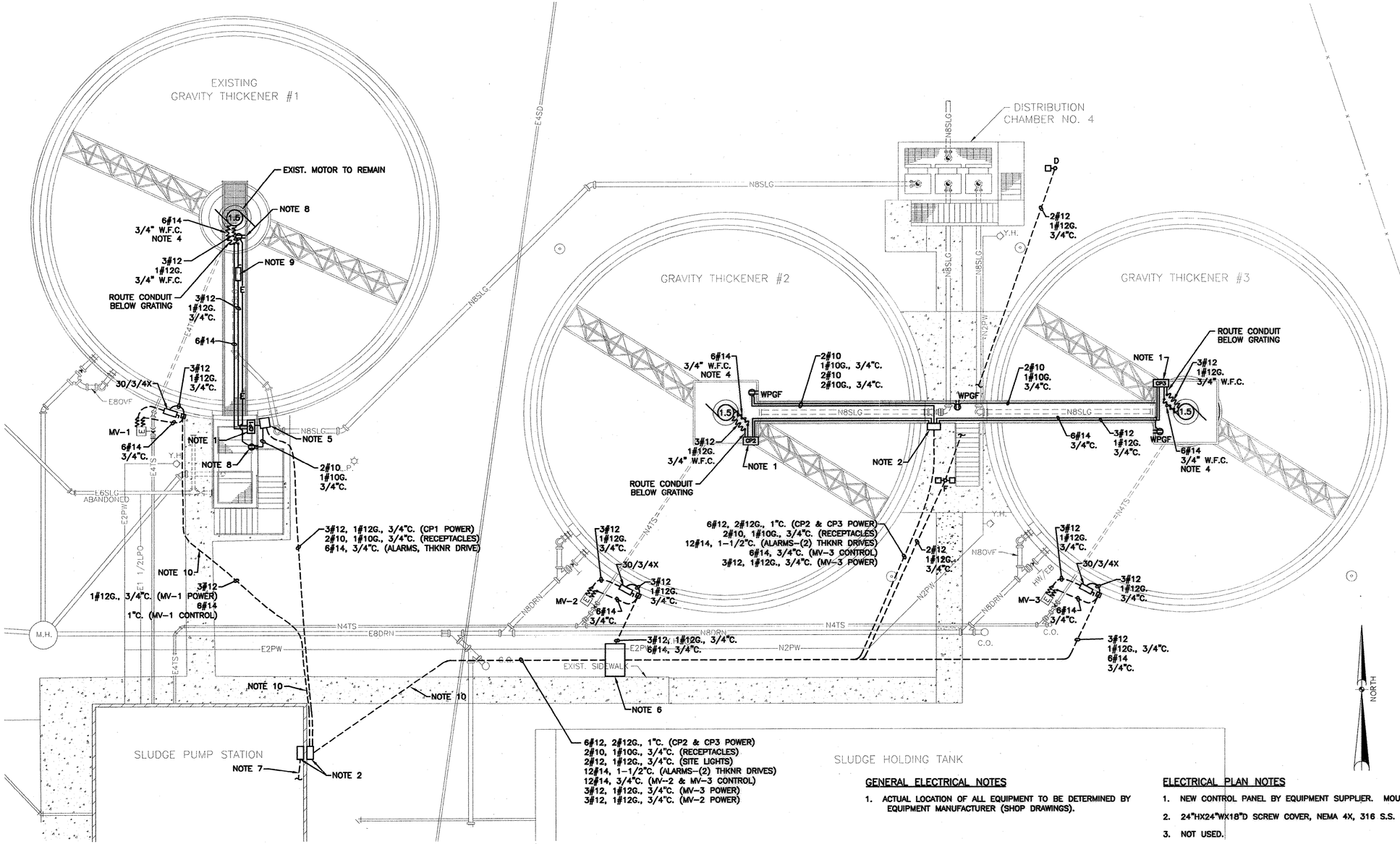

GRAVITY THICKENERS ELECTRICAL PLAN

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

GENERAL ELECTRICAL NOTES

1. ACTUAL LOCATION OF ALL EQUIPMENT TO BE DETERMINED BY EQUIPMENT MANUFACTURER (SHOP DRAWINGS).

ELECTRICAL PLAN NOTES

1. NEW CONTROL PANEL BY EQUIPMENT SUPPLIER. MOUNT TO HANDRAIL.
2. 24"HX24"WX18"D SCREW COVER, NEMA 4X, 316 S.S. PULL BOX.
3. NOT USED.
4. 2#14 FOR "HIGH TORQUE"
   2#14 FOR "OVER TORQUE"
   2#14 FOR "SHEARED PIN"
5. EXISTING PULL BOX.
6. 17"WX30"LX30"D POLYMER CONCRETE PULL BOX W/ HEAVY DUTY COVER. QUAZITE CAT #PG1730BA30 OR APPROVED EQUAL. INSTALL NON-METALLIC MULTI-MOUNT CABLE SUPPORT ARMS, UNDERGROUND DEVICES, INC. OR APPROVED EQUAL INSIDE BOX 12" O.C. (2 ON ONE SIDE AND ONE CENTERED ON ENDWALL. PROVIDE 24" GRAVEL BASE. PROVIDE 2" DIA DRAIN IN BOTTOM OF BOX.
7. SEE SHEET E4 FOR CONTINUATION.
8. EXISTING RECEPTACLE.
9. EXISTING THICKENER DRIVE DISCONNECT, 30/3/4X.
10. SAWCUT EXISTING SIDEWALK. REPAIR AND PATCH.

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS

PROJECT ENG.	DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED:
RTH	JMA	GS	TVT	JDP

SOUTH CAROLINA NOVEMBER 30, 2000 B. P. BARBER & ASSOCIATES, INC. No. C00330 CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7173 WILLIAM THOMAS HUTTON REGISTERED — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW GRAVITY THICKENERS ELECTRICAL PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149E13-RD	E14
REF.	OF
N.B. NO. 1731	50
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-171 5

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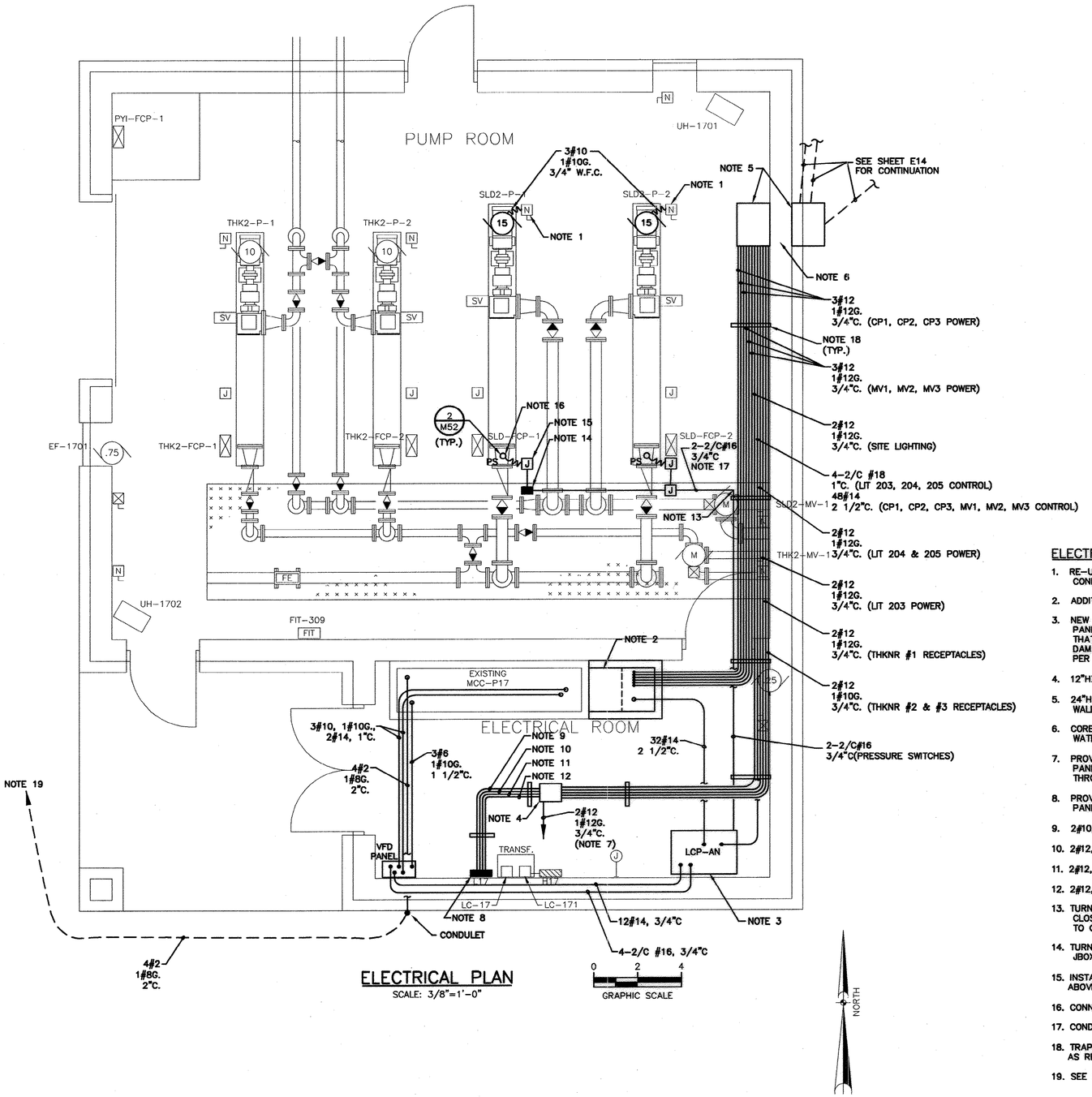

ELECTRICAL PLAN

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

ELECTRICAL PLAN NOTES

1. RE-USE EXISTING DISCONNECT SWITCH. RE-USE CONDUIT & CONDUCTORS FROM MCC P17 TO DISCONNECT SWITCH.
2. ADDITIONS TO EXISTING MCC P17. SEE ONE-LINE DIAGRAM.
3. NEW CONTROL PANEL LCP-AN. THIS PANEL REPLACES EXISTING PANEL LCP-A. RE-USE ALL EXISTING CONDUIT & CONDUCTORS THAT RUN FROM EXISTING DEVICES TO THIS PANEL. REPLACE DAMAGED CONDUCTORS. TEST ALL EXISTING CABLES PER NEW INSTALLATION SPECIFICATIONS.
4. 12"HX12"WX10"D NEMA 12 PULL BOX. MOUNT TO BUILDING STEEL.
5. 24"HX24"WX18"D NEMA 4X S.S. PULL BOX. MOUNT BOX HIGH ON WALL. MATCH ELEVATIONS OF INTERIOR & EXTERIOR BOXES.
6. CORE WALL AS REQUIRED. SEAL ALL WALL PENETRATIONS WATERTIGHT.
7. PROVIDE & INSTALL ONE (1) 20A, 2P CIRCUIT BREAKER IN PANEL H17 TO SERVE NEW SITE LIGHTING CIRCUIT 277V. RUN THROUGH EXISTING LIGHTING CONTACTOR. MATCH EXISTING EQUIPMENT.
8. PROVIDE & INSTALL (4) 20A, 1P CIRCUIT BREAKERS IN EXISTING PANEL L17. MATCH EXISTING EQUIPMENT.
9. 2#10, 1#10G., 3/4"C. (THKNR #2 & #3 RECEPTACLES).
10. 2#12, 1#12G., 3/4"C. (THKNR #1 RECEPTACLES).
11. 2#12, 1#12G., 3/4"C. (LIT 203 POWER).
12. 2#12, 1#12G., 3/4"C. (LIT 204 & 205 POWER).
13. TURN DOWN PAST TRAPEZE HANGER. RUN DOWN CLOSE TO WALL. RUN BELOW GRATING AND OVER TO CONDULET.
14. TURN UP TO CONDULET. RUN CONDUIT EXPOSED TO JBOX.
15. INSTALL JBOX ON PUMP SUPPORT APPROXIMATELY 12" ABOVE FINISHED SLAB.
16. CONNECT TO PRESSURE SWITCH FOR CONTROL W/W.F.C.
17. CONDUIT BELOW GRATING.
18. TRAPEZE PIPE SUPPORT MINIMUM 10' O.C. PROVIDE QUANTITY AS REQUIRED TO MEET N.E.C. REQUIREMENT FOR SUPPORT.
19. SEE SHEET E4 FOR CONTINUATION.

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: AA
DRAWN BY: GS
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7073 REGISTERED THOMAS VICTOR
SOUTH CAROLINA NOVEMBER 19, 2003 CERTIFICATE OF AUTHORIZATION B. P. BARBER & ASSOCIATES, INC. No. COA0080
DATE

SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS - PLANNERS - SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
MODIFICATIONS TO ALUM SLUDGE PUMP STATION ELECTRICAL PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149E14-RD	SHEET E15
REF.	OF 50
N.B. NO. 1731	
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-172

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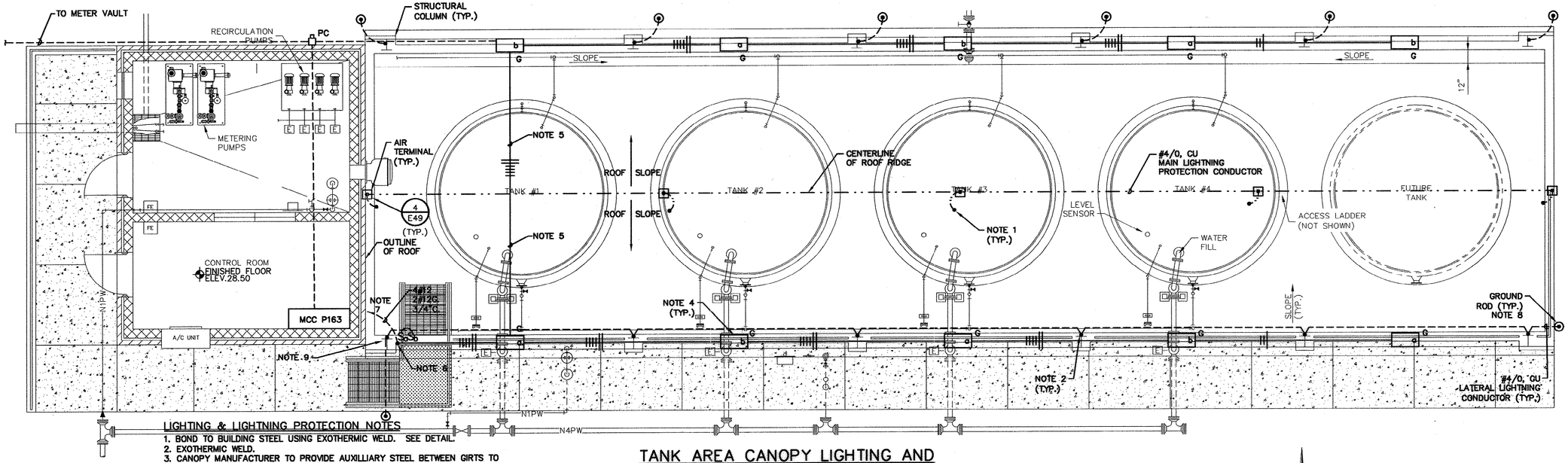


LIGHTING & LIGHTNING PROTECTION NOTES

1. BOND TO BUILDING STEEL USING EXOTHERMIC WELD. SEE DETAIL.
2. EXOTHERMIC WELD.
3. CANOPY MANUFACTURER TO PROVIDE AUXILLIARY STEEL BETWEEN GIRTS TO ACCOMODATE LIGHT FIXTURES, QTY. AND LOCATION AS REQUIRED.
4. MOUNT BOTTOM OF FIXTURE AT ELEVATION 37.50 (APPROX. 36'-0" ABOVE TOP OF CONTAINMENT WALL).
5. FOLLOW ROOF SLOPE WITH CONDUIT. SECURE TO PURLINS WITH 316 S.S. BEAM CLAMPS, SPACING AS REQUIRED.
6. STUB UP 48" ABOVE TOP OF CONTAINMENT WALL NEAR COLUMN AND INSTALL 2-GANG, CAST OUTLET BOX. INSTALL 316 S.S. UNISTRUT FRAME TO SUPPORT CONDUIT AND OUTLET BOX. SECURE FRAME TO COLUMN.
7. RUN THROUGH TIME CLOCK TO P163.
8. TOP OF GROUND ROD 24" BELOW FINISHED GRADE.
9. EXOTHERMIC WELD LATERAL LIGHTNING CONDUCTOR TO COLUMN. RUN SAID CONDUCTOR DOWN IN 1 1/2" SCH. 40 PVC THROUGH FOUNDATION. TRANSITION TO BARE CONDUCTOR. EXTEND TO ROD & EXOTHERMIC WELD.

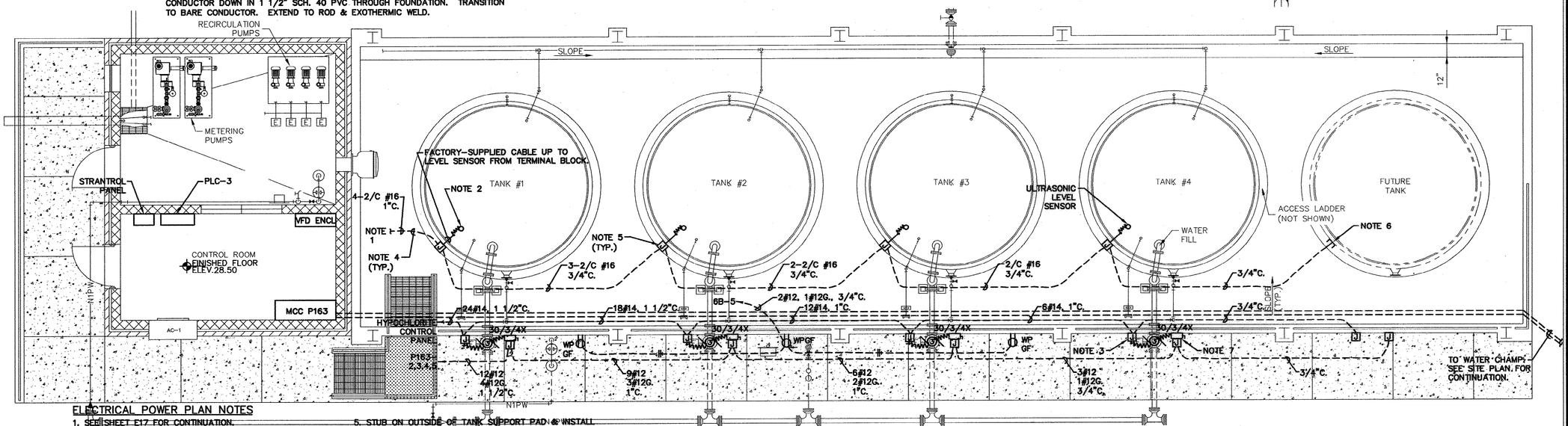
TANK AREA CANOPY LIGHTING AND LIGHTNING PROTECTION PLAN

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

NORTH

0 4 8

GRAPHIC SCALE



ELECTRICAL POWER PLAN NOTES

1. SEE SHEET E17 FOR CONTINUATION.
2. ULTRASONIC LEVEL TRANSDUCER (TYP. OF FOUR (4)). CONNECT FOR CONTROL.
3. STUB UP ON OUTSIDE OF CONTAINMENT WALL & INSTALL JBOX. CONNECT FOR CONTROL TO VALVE MOTOR OPERATOR.
4. RUN FACTORY SUPPLIED CABLES CONTINUOUS BETWEEN LEVEL TRANSDUCER AND TERMINAL BLOCK IN JBOX.
5. STUB ON OUTSIDE OF TANK SUPPORT PAD & INSTALL NEMA 4X, NON-METALLIC HINGED ENCLOSURE W/ TERMINAL BLOCK, SIZE AS REQ'D TO MAKE CONNECTIONS. INSTALL 6" ABOVE PAD.
6. STUB UP 12" ABOVE FINISHED SLAB & CAP FOR CONNECTION TO FUTURE TANK. USE EXISTING LAYOUT TO LOCATE.
7. STUB UP ON OUTSIDE OF CONTAINMENT WALL AND INSTALL JBOX & DISC. SW. CONNECT FOR POWER TO VALVE MOTOR OPERATOR.
8. STUB UP ON OUTSIDE OF CONTAINMENT WALL AND INSTALL CAST BOX

TANK AREA ELECTRICAL POWER PLAN

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

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS			
PROJECT ENG.	RTH	DRAWN BY:	GS
DESIGNED BY:	JMA	CHECKED BY:	TVT
		APPROVED:	JDP

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION B. P. BARBER & ASSOCIATES, INC. No. C000000 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7972 REGISTERED THOMAS VICTOR — SIGNATURE

bpb

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW CHLORINATION FACILITY ELECTRICAL PLANS

DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149E15-RD	E16
REF.	OF
N.B. NO. 1731	50
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-173 5

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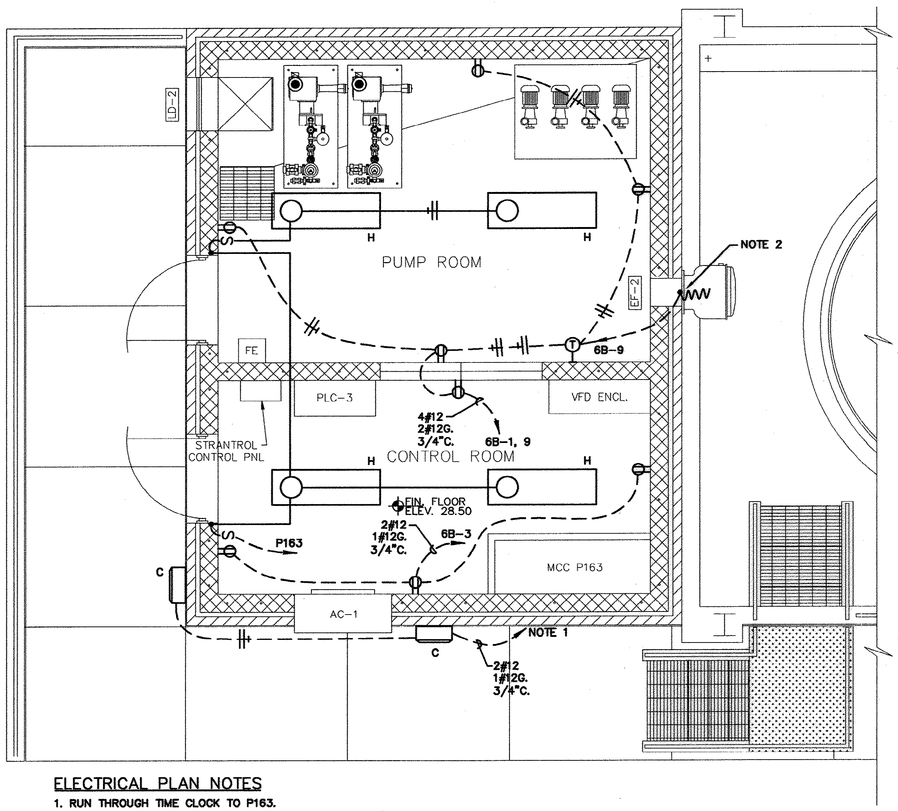
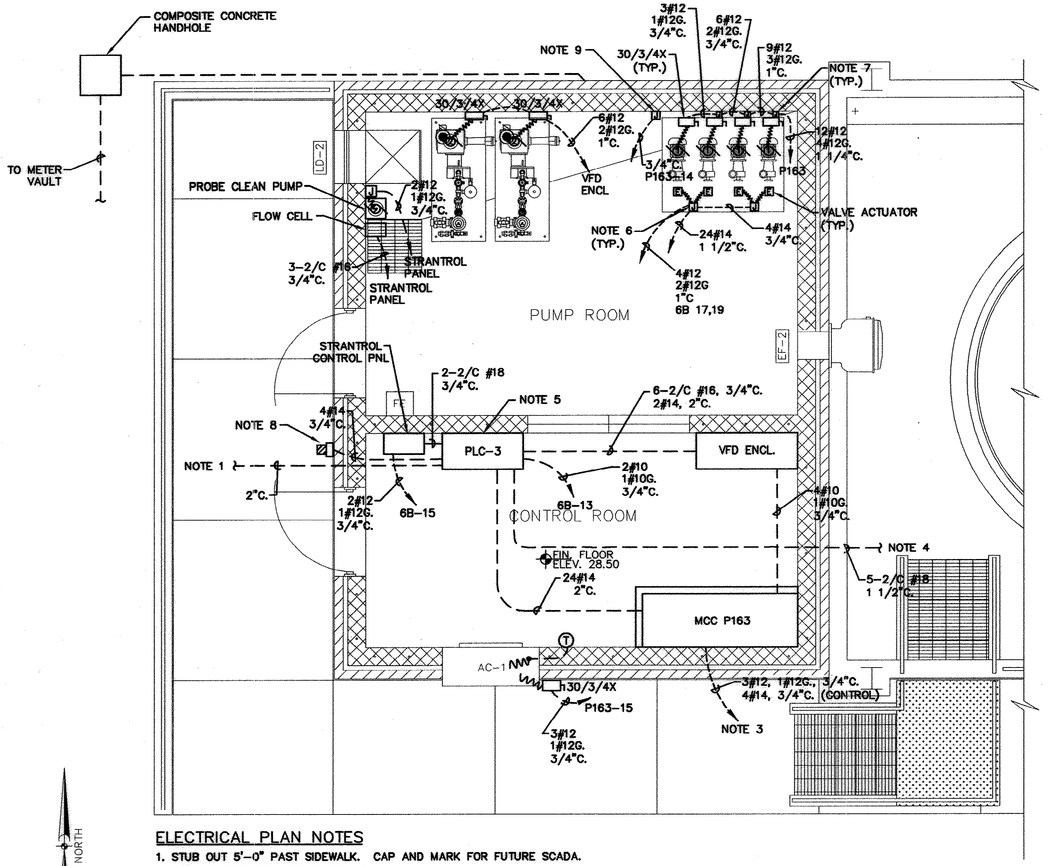


ELECTRICAL PLAN NOTES

1. RUN THROUGH TIME CLOCK TO P163.
2. STUB INTO OPENING. CONNECT TO EF-2 W/ W.F.C.

LIGHTING & RECEPTACLES PLAN

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



ELECTRICAL PLAN NOTES

1. STUB OUT 5'-0" PAST SIDEWALK. CAP AND MARK FOR FUTURE SCADA. FOR CONTINUATION SEE SHEET E3.
2. DELETED.
3. RUN TO SUBTROL CONTROL PANEL LOCATED AT CHLORINE INJECTION VAULT. SEE SITE PLAN.
4. CONDUIT TO TANK #1 JUNCTION BOX. SEE SHEET E16 FOR CONTINUATION.
5. ALL FIT'S LOCATED IN CONTROL PANEL.
6. STUB UP 6" A.F.F. AND INSTALL CAST BOX. CONNECT FOR POWER AND CONTROL TO VALVE ACTUATORS.
7. STUB UP AND INSTALL CAST BOX BELOW DISCONNECT SWITCH.
8. ALARM HORN & LIGHT. MOUNT 9'-0" ABOVE FINISHED GRADE.
9. BOX FOR FUTURE RECIRCULATION PUMP.

ELECTRICAL POWER PLAN

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

NORTH

0 2 4
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS	
PROJECT ENG.	RTL
DESIGNED BY:	JMA
DRAWN BY:	GS
CHECKED BY:	TVT
APPROVED:	JDP

SOUTH CAROLINA NOVEMBER 30, 2001 CERTIFICATE OF AUTHORIZATION G. P. BARBER & ASSOCIATES, INC. No. C000000 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7673 THOMAS V. TUTEN REGISTERED — SIGNATURE

bpb
B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

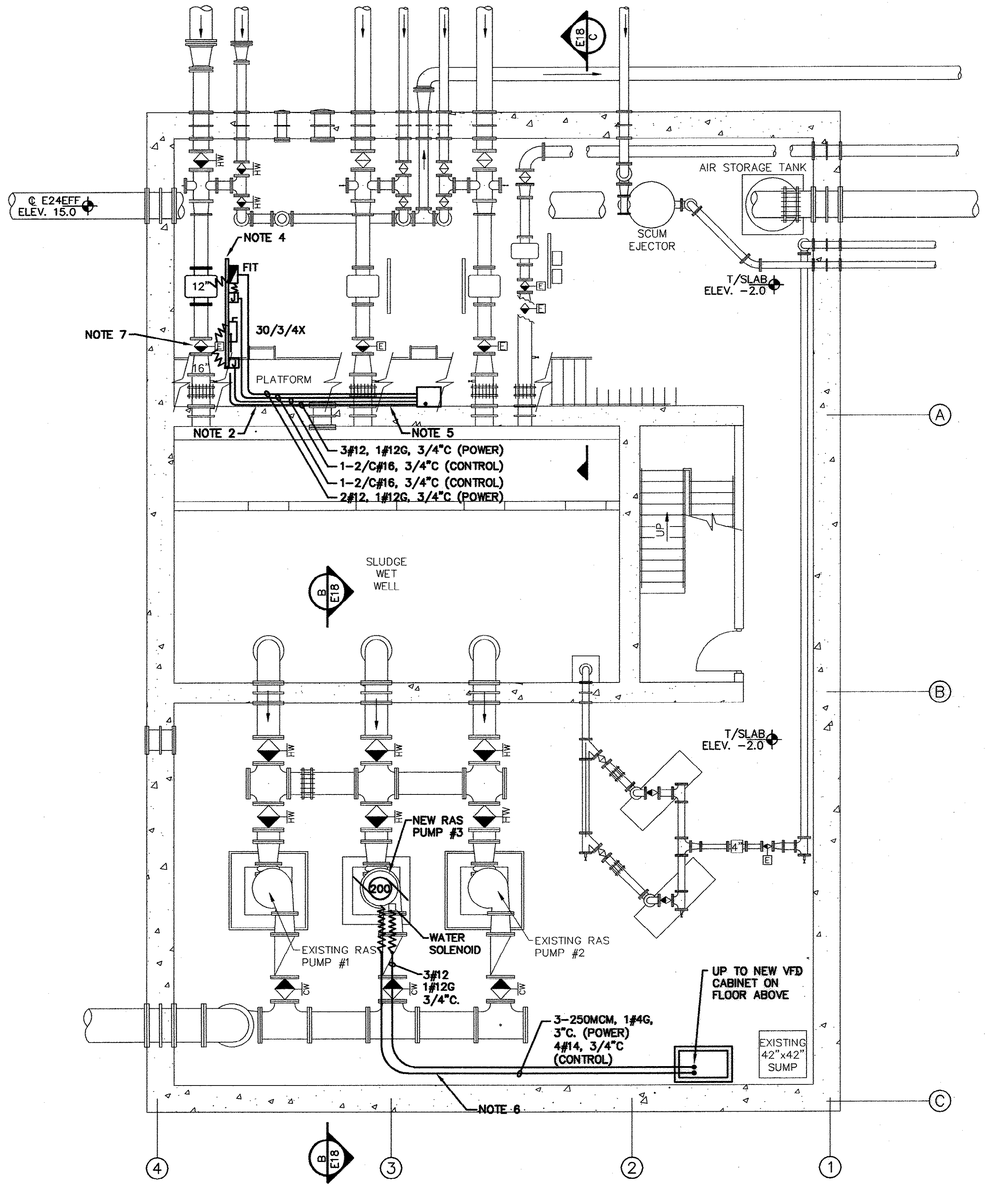
SHEET TITLE
NEW CHLORINATION FACILITY ELECTRICAL PLANS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	00149E16-RD
REF.	
N.B. NO.	1731
PROJECT NO.	00149
SHEET	E17
OF	50
FILE NO.	22-85-00

51-004-174 5

AM 1:54:51 12/5/2003 D:\Projects\00149\CAD\DWG\00149E16-RD.dwg

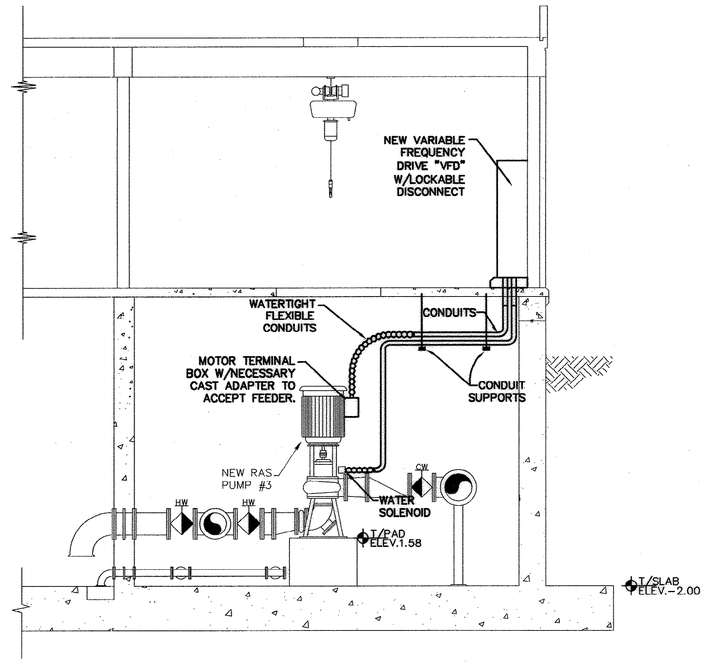


SECTION ELECTRICAL NOTES:

1. DISCONNECT AND REMOVE EXISTING I/P EQUIPMENT. FIT'S (2) & MAGMETERS (2) TO REMAIN.
2. SUPPORT CONDUITS ALONG WALL AS REQ'D. FLOOR ABOVE. SEE FIRST FLOOR PLAN SHEET FOR CONTINUATION.
3. DELETED.
4. PROVIDE AND INSTALL NEW UNISTRUT FRAME.
5. INSTALL 12"D X 18"W X 18"L S.C., NEMA 4X BOX UNDER WALKWAY. RUN CONDUITS UP OUT OF BOX AND THROUGH FLOOR ABOVE. SEE FIRST FLOOR PLAN SHEET FOR CONTINUATION.
6. SUPPORT CONDUITS WITH TRAPEZE HANGERS AS REQUIRED. ALL CONCRETE ANCHORS SHALL BE 316 S.S.
7. VALVE MOTOR OPERATOR. CONNECT FOR POWER AND CONTROL W/ W.F.C.
8. JBOX MOUNTED BELOW DISC. SW.

BASEMENT PARTIAL ELECTRICAL PLAN

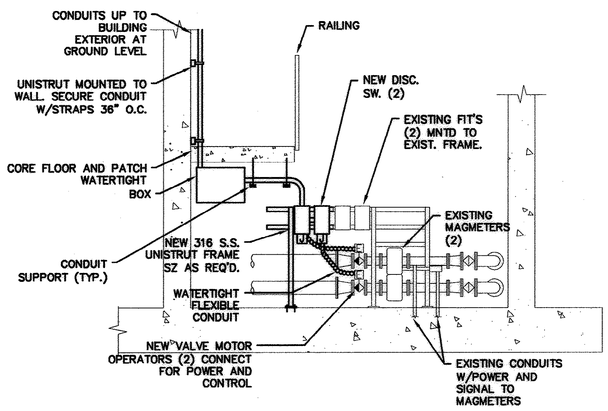
SCALE: 3/16" = 1'-0"



SECTION

SCALE: NTS

B E18



SECTION ELECTRICAL NOTES:

1. DISCONNECT AND REMOVE EXISTING I/P EQUIPMENT. FIT'S (2) & MAGMETERS (2) TO REMAIN.

SECTION

SCALE: NTS

C E18

NORTH

0 3 6

GRAPHIC SCALE

RECORD DRAWINGS

DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS

PROJECT ENG: RTH
DESIGNED BY: JMA
DRAWN BY: JMA
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA NOT VALID WITHOUT SIGNATURE AND SEAL OF CERTIFICATE HOLDER — R.C. BARBER III — REGISTERED No. 00000 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER — No. 7973 — REGISTERED — THOMAS VICTOR III — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: MODIFICATIONS TO RETURN SLUDGE PUMPING STATION ELECTRICAL PLAN — DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK: 00149E17-RD
REF.
N.B. NO. 1731
PROJECT NO. 00149

SHEET E18 OF 50

FILE NO. 22-85-00

51-004-175 5

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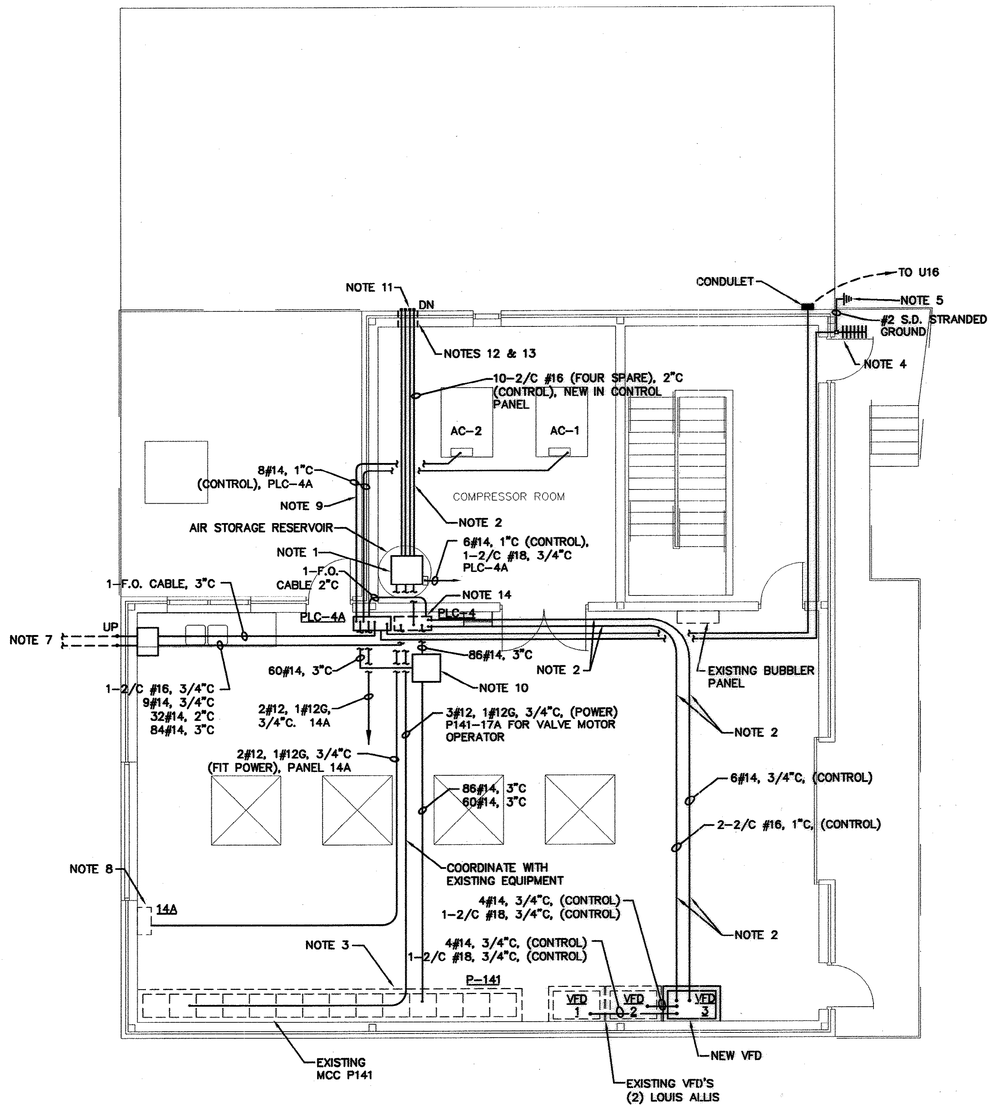

FIRST FLOOR PARTIAL ELECTRICAL PLAN

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

NORTH

0 3 6
GRAPHIC SCALE

ELECTRICAL PLAN NOTES:

1. INSTALL NEW BOX ON CEILING, 12"D X 18"W X 18"L S.C., NEMA 4X.
2. SUPPORT CONDUITS WITH TRAPEZE HANGERS AS REQUIRED. ALL CONCRETE ANCHORS SHALL BE 316 S.S.
3. REFER TO ONE-LINE DIAGRAM FOR EXACT LOCATION OF CONDUIT ENTRY INTO MCC P141.
4. NEW RADIO ANTENNA MOUNTED TO 316 S.S. 1-3/4" UNISTRUT RACK. SYSTEM INTEGRATOR TO VERIFY EXACT LOCATION. SEE DETAIL AND SPECIFICATIONS. ALL GROUND CONNDCTIONS TO BE EXOTHERMIC.
5. COMMON GROUND FOR UNISTRUT ANTENNA RACK AND PLC ENCLOSURE.
6. COAXIAL CABLE TO RADIO IN PLC ENCLOSURE.
7. SEE SITE PLAN FOR CONTINUATION.
8. PROVIDE AND INSTALL NEW 20A/1P CIRCUIT BREAKER TO SERVE PLC. CIRCUIT BREAKER TO MATCH EXISTING EQUIPMENT.
9. SUPPORT CONDUITS ON NEW 316 S.S. TRAPEZE HANGERS MIN. 6'-0" O.C.
10. 24" X 24" X 12", NEMA 4X, S.S. PULL BOX. MOUNT TO STRUCTURE ABOVE WITH 316 S.S. UNISTRUT, ALLTHREAD AND HARDWARE.
11. CORE SLAB AND PATCH WATERTIGHT. RUN CONDUIT UP WALL AND INSTALL CONDULETS.
12. CORE HIGH ON WALL AND PATCH WATERTIGHT, EXTEND CONDUIT THROUGH WALL, INSTALL CONDULET & RUN DOWN. CORE SLAB AND EXTEND TO BOX BELOW.
13. TAPE, TAG AND COIL ALL SPARE CONDUCTORS IN BOX.
14. REMOVE EXISTING CONTROL PANEL. REPLACE WITH NEW AS SHOWN. REUSE ALL EXISTING CONDUIT AND CONDUCTORS THAT RUN FROM EXISTING EQUIPMENT TO THIS PANEL. REPLACE DAMAGED CONDUCTORS. TEST ALL EXISTING CONDUCTORS PER NEW INSTALLATION SPECIFICATIONS. PROVIDE A MEANS FOR TEMPORARY-MANUAL SYSTEM OPERATION (48 HRS. MAXIMUM) DURING CHANGE OVER. COORDINATE WITH OWNER PRIOR TO BEGINNING WORK.

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: JMA
DRAWN BY: GS
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA NOVEMBER 30, 2000 B.P. BARBER & ASSOCIATES, INC. CERTIFICATE OF AUTHORIZATION No. C00303 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER REGISTERED No. 9973 THOMAS V. TOTTER — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS - PLANNERS - SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
RETURN SLUDGE PUMP STATION FIRST FLOOR ELECTRICAL PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149-2-E10
REF.
N.B. NO. 1731
PROJECT NO. 00149
SHEET E19 OF 50
FILE NO. 22-85-00

51-004-176 S

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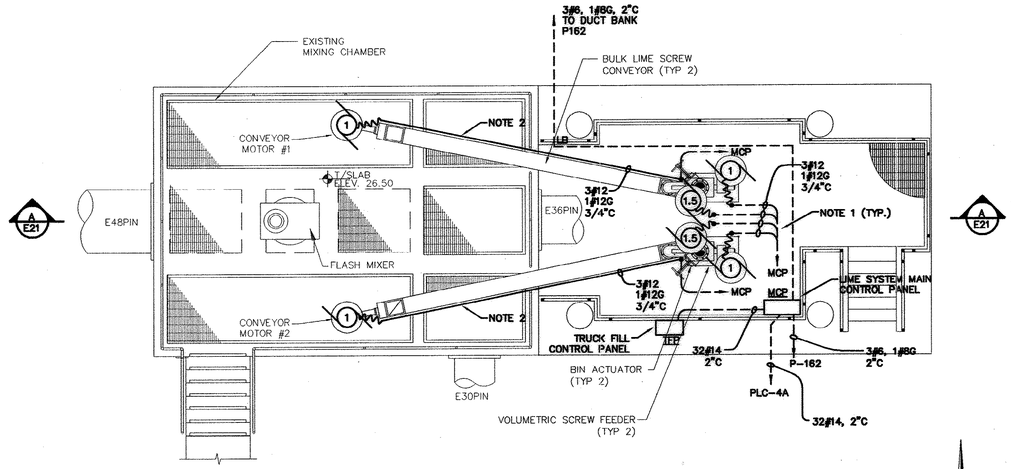
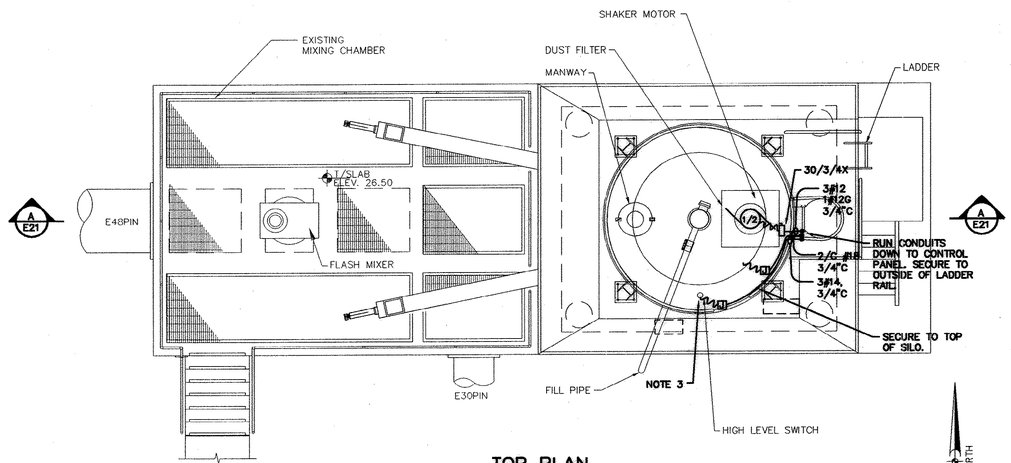


PLAN @ ELEV. 32.0

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



TOP PLAN

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

NORTH

LIME SILO ELECTRICAL NOTES:

1. ELECTRICAL EQUIPMENT, I.E. MOTORS, LEVEL DEVICES, ETC., ASSOCIATED WITH THE LIME SYSTEM WILL BE PROVIDED AND FACTORY-INSTALLED BY THE SYSTEM MFG. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR VERIFYING NAMEPLATE VOLTAGE/PHASE PRIOR TO CONNECTION, PROVIDING AND INSTALLING ALL CONDUIT AND WIRING AS SHOWN ON THESE DRAWINGS AND FINAL FIELD TERMINATIONS. THE SYSTEM SUPPLIER IS ULTIMATELY RESPONSIBLE FOR DELIVERING A COMPLETE AND OPERATIONAL SYSTEM TO THE OWNER. SHOULD ANY DISCREPANCIES ARISE BETWEEN THE ELECTRICAL LAYOUT AS SHOWN ON THESE DRAWINGS AND THE ACTUAL ELECTRICAL REQUIREMENTS, THE EQUIPMENT SUPPLIER SHALL REMEDY AT NO ADDITIONAL COST TO THE OWNER.
2. VERIFY ALL CONDUIT AND WIRING REQUIREMENTS PER ENGINEER APPROVED SHOP DRAWINGS PRIOR TO INSTALLATION. ANY CONDUITS, CONDUCTORS, FITTINGS, HARDWARE, ETC. OMITTED FROM THESE DRAWINGS, BUT NEEDED FOR A COMPLETE INSTALLATION ARE THE RESPONSIBILITY OF THE EQUIPMENT SUPPLIER TO PROVIDE AND INSTALL.
3. CONTROL PANEL MOUNTING HARDWARE SUPPLIED BY SYSTEM MFG. AND INSTALLED BY ELECTRICAL CONTRACTOR.
4. VERIFY EXACT LOCATIONS OF EQUIPMENT WITH ENGINEER APPROVED SHOP DRAWINGS PRIOR TO INSTALLATION.
5. ALL CONDUIT ASSOCIATED WITH LIME SILO INSTALLATION TO BE RIGID GALVANIZED STEEL W/PVC COATING. NO ALUMINUM FITTINGS, BOXES OR SUPPORTS SHALL BE USED.
6. ALL CONDUIT, FITTINGS, JBOX SUPPORTS, UNISTRUT, ETC., TO BE RIGID GALVANIZED STEEL W/PVC COATING.
7. ROUTE CONDUIT PER MANUFACTURER'S RECOMMENDATIONS. REFER TO ENGINEER-APPROVED SHOP DRAWINGS FOR INSTALLATION DETAILS.
8. PROVIDE CONDUIT SLEEVES FOR ALL SLAB CONDUIT PENETRATIONS. CORE SLAB IF REQUIRED.

ELECTRICAL PLAN NOTES:

1. RUN CONDUITS UNDER FLOOR SLAB. SUPPORT WITH TRAPEZE-TYPE HANGERS.
2. SECURE CONDUITS TO SIDE OF CONVEYOR FRAME.
3. CONNECT TO LEVEL SWITCH W/W.F.C.
4. CONNECT TO LEVEL TRANSDUCER W/W.F.C.

0 4 8
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG.: RTH
DESIGNED BY: JMA
DRAWN BY: GS
CHECKED BY:
APPROVED: JDP

NORTH CAROLINA BOARD OF EXAMINERS FOR ENGINEERS AND SURVEYORS
R.P. BARBER & ASSOCIATES
No. C020550
CERTIFICATE OF AUTHORIZATION
DATE

NORTH CAROLINA PROFESSIONAL ENGINEER
No. 7975
REGISTERED
J. MICHAEL THOMAS
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS - PLANNERS - SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW LIME
FEED EQUIPMENT
ELECTRICAL PLAN

DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND
EXPANSION FOR THE
WATER RECLAMATION
FACILITY
PHASE I

DISK 00149-2-E11
REF.
N.B. NO. 1731
PROJECT NO. 00149

SHEET E20 OF 50

FILE NO. 22-85-00

51-004-177 S

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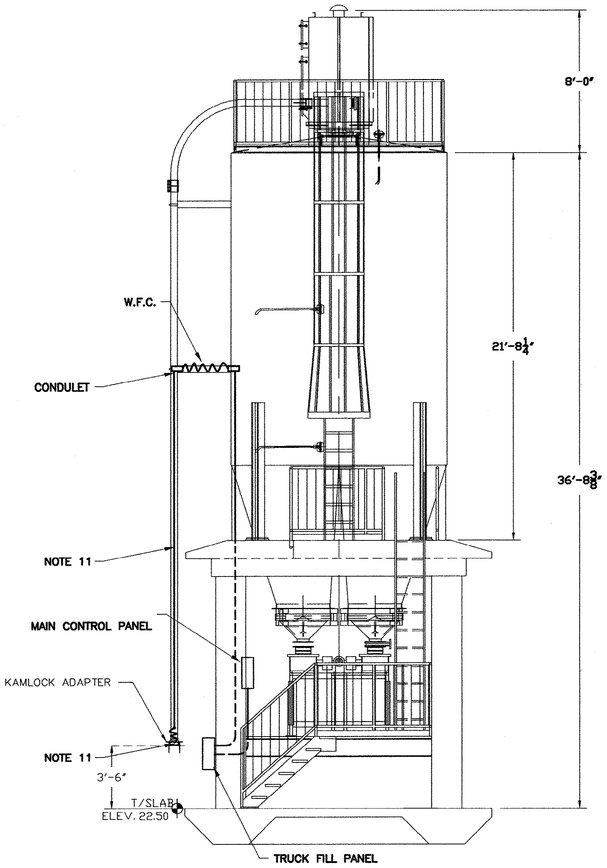
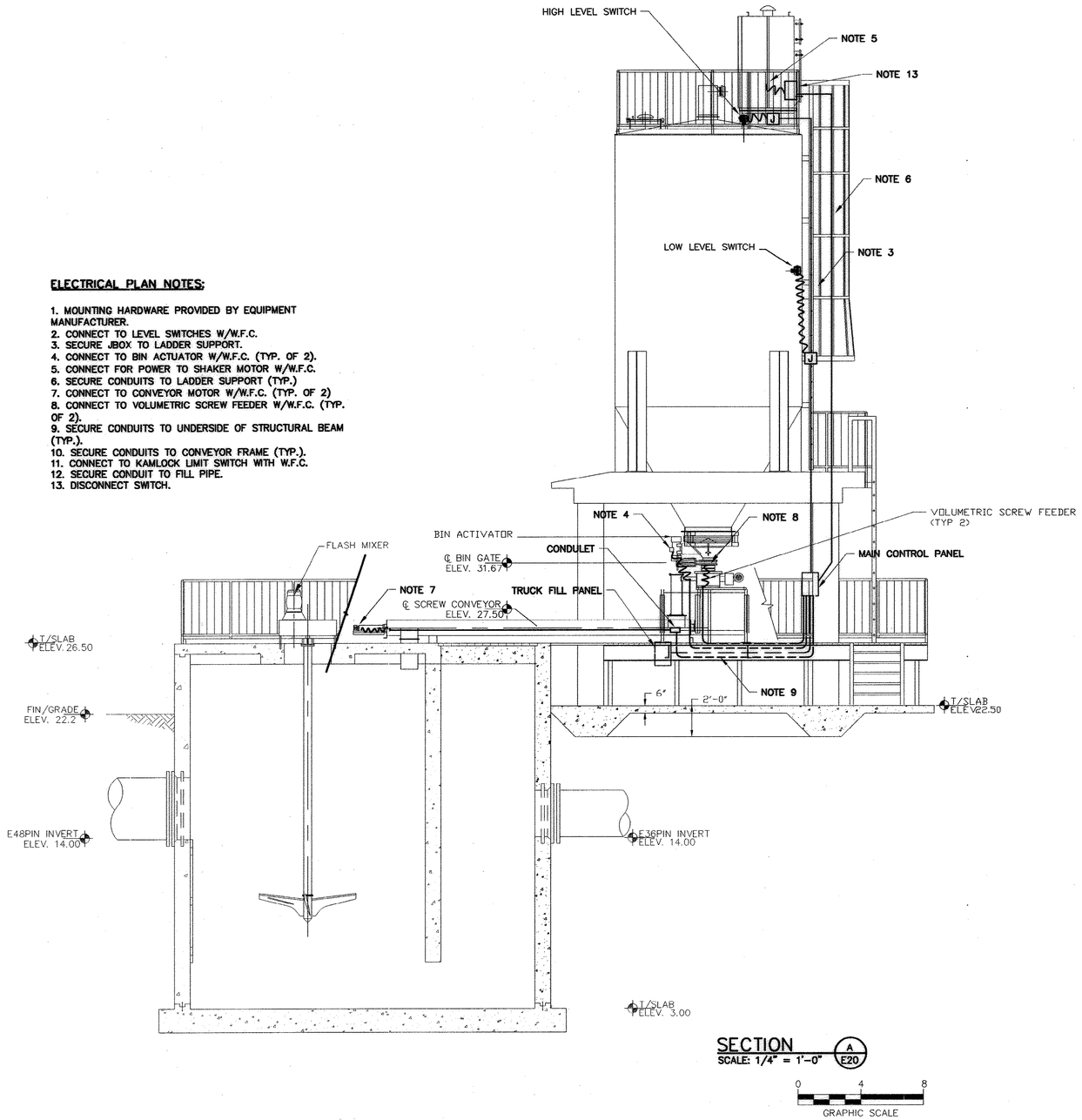


EAST ELEVATION
SCALE: 1/4" = 1'-0"

ELECTRICAL PLAN NOTES:

1. MOUNTING HARDWARE PROVIDED BY EQUIPMENT MANUFACTURER.
2. CONNECT TO LEVEL SWITCHES W/W.F.C.
3. SECURE JBOX TO LADDER SUPPORT.
4. CONNECT TO BIN ACTUATOR W/W.F.C. (TYP. OF 2).
5. CONNECT FOR POWER TO SHAKER MOTOR W/W.F.C.
6. SECURE CONDUITS TO LADDER SUPPORT (TYP.)
7. CONNECT TO CONVEYOR MOTOR W/W.F.C. (TYP. OF 2)
8. CONNECT TO VOLUMETRIC SCREW FEEDER W/W.F.C. (TYP. OF 2).
9. SECURE CONDUITS TO UNDERSIDE OF STRUCTURAL BEAM (TYP.).
10. SECURE CONDUITS TO CONVEYOR FRAME (TYP.).
11. CONNECT TO KAMLOCK LIMIT SWITCH WITH W.F.C.
12. SECURE CONDUIT TO FILL PIPE.
13. DISCONNECT SWITCH.



SECTION (A / E20)
SCALE: 1/4" = 1'-0"

0 4 8
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS			
PROJECT ENG: RTH	DESIGNED BY: JMA	DRAWN BY: KRB	CHECKED BY: TVT
			APPROVED: JDP

SOUTH CAROLINA PROFESSIONAL ENGINEER — CERTIFICATE OF AUTHORIZATION — B.P. BARBER & ASSOCIATES, INC. — No. C000320 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER — No. 7673 — THOMAS V. TEMPLETON — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW LIME FEED EQUIPMENT SECTION & ELEVATION ELECTRICAL
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149-2-E12	E21
REF.	OF
N.B. NO. 1731	50
PROJECT NO. 00149	

FILE NO. 22-85-00

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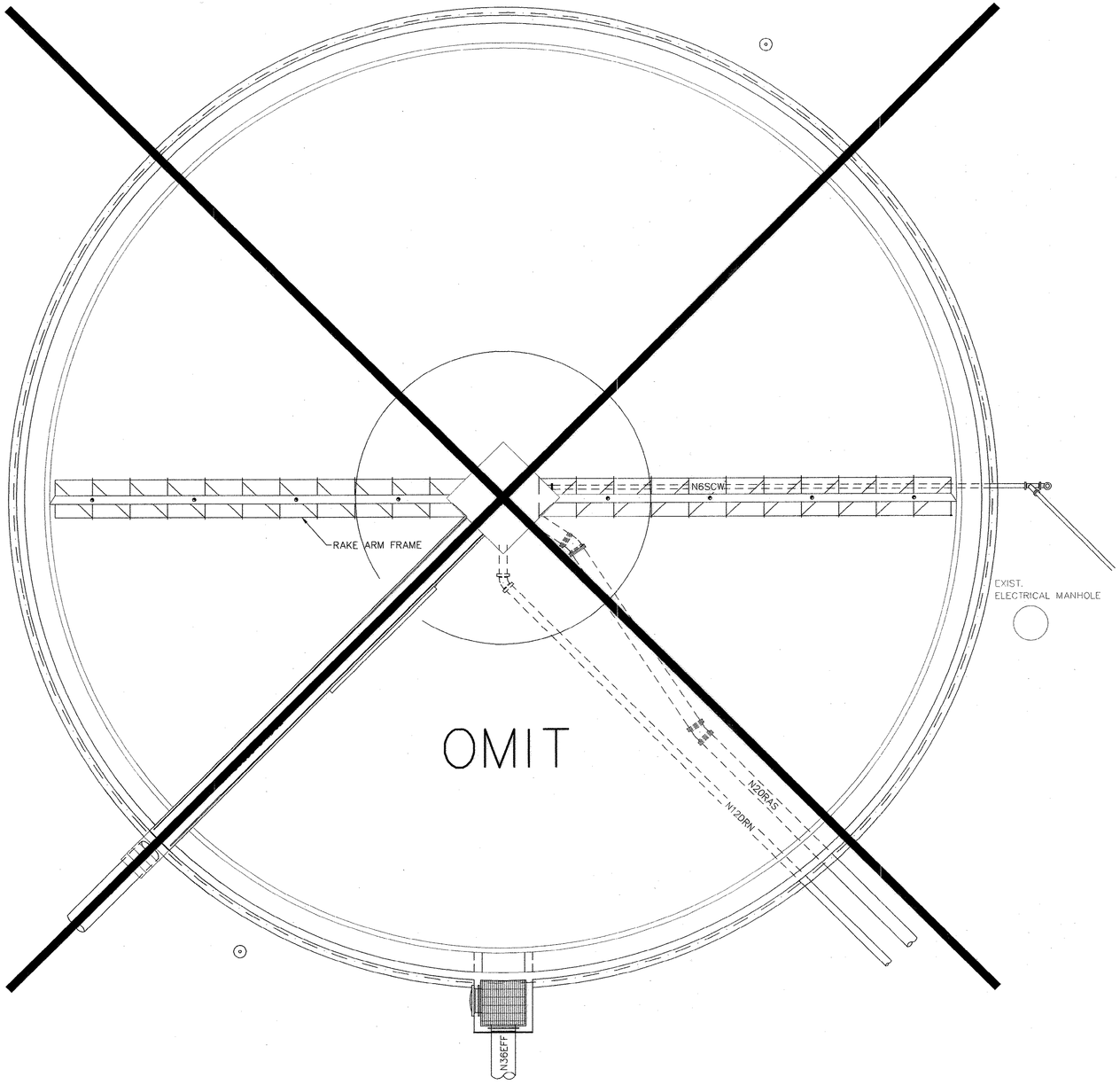
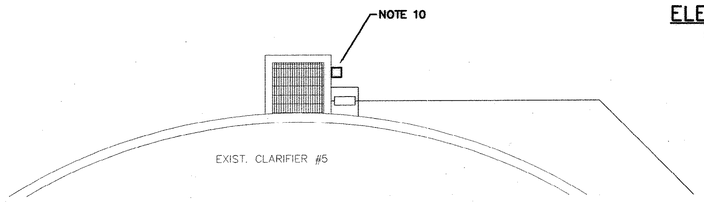
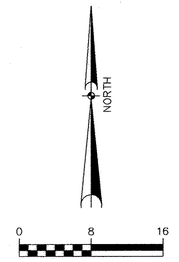


ELECTRICAL PLAN NOTE:

10. 10"H X 10"W X 8"D NEMA 4X, NON-METALLIC, TERMINAL BOX WITH 250V POWER TERMINAL STRIP. MOUNT TO WALL AT 12" ABOVE FINISHED GRADE.



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



RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS			
PROJECT ENG: RTH	DESIGNED BY: JMA	DRAWN BY: KS	CHECKED BY: TVT	APPROVED: JDP

SOUTH CAROLINA REGISTERED LANDSCAPE ARCHITECT — B.P. BARBER & No. CO00000 — CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER — No. 7970 — REGISTERED — THOMAS V. TAYLOR — SIGNATURE

bpb

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW SECONDARY CLARIFIER #6 ELECTRICAL PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149-2-E14	E22
REF.	OF
N.B. NO. 1731	50
PROJECT NO. 00149	

FILE NO. 22-85-00

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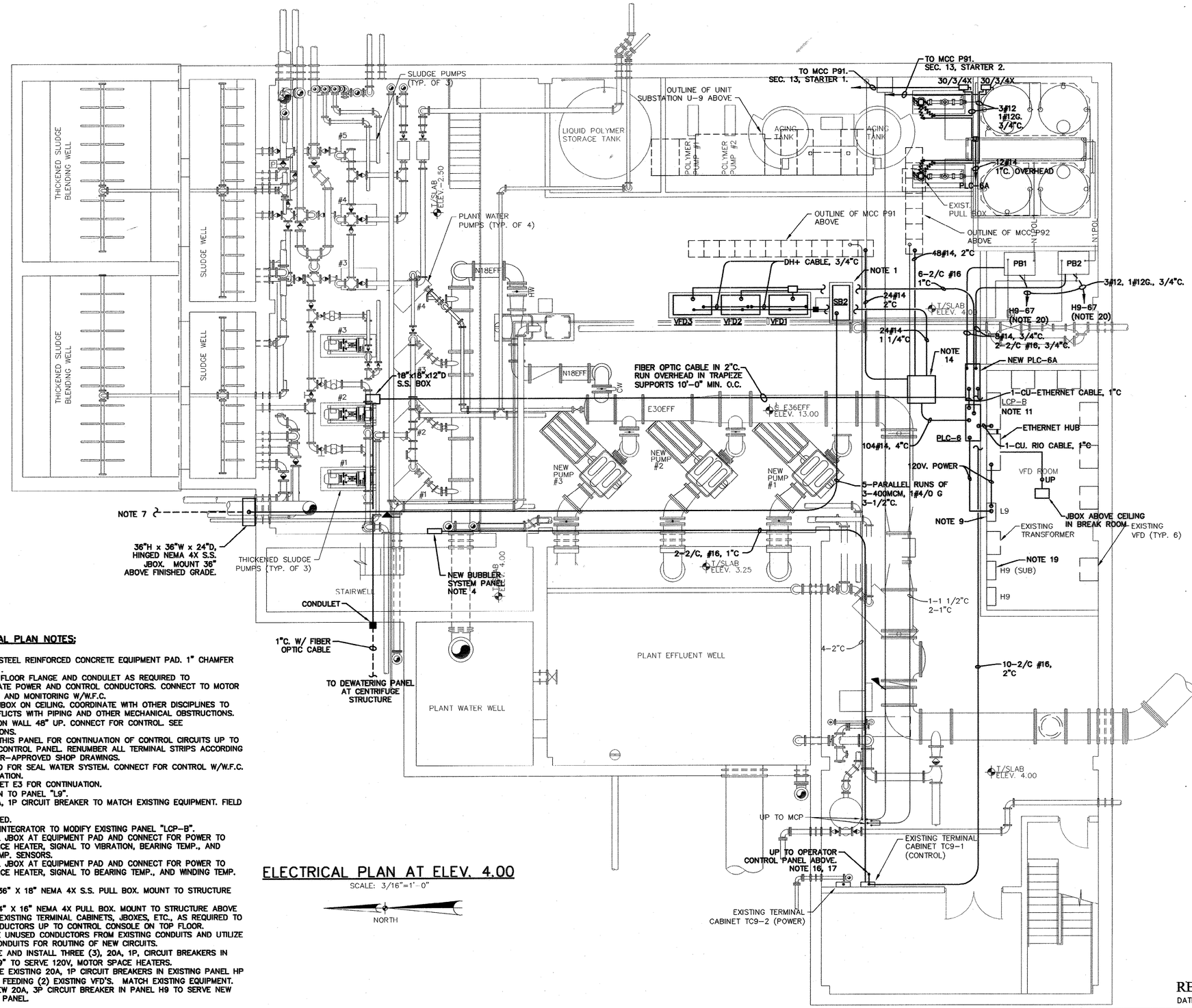

ELECTRICAL PLAN NOTES:

1. NEW 4" STEEL REINFORCED CONCRETE EQUIPMENT PAD. 1" CHAMFER ALL EDGES .
2. INSTALL FLOOR FLANGE AND CONDULET AS REQUIRED TO ACCOMMODATE POWER AND CONTROL CONDUCTORS. CONNECT TO MOTOR FOR POWER AND MONITORING W/W.F.C.
3. MOUNT JBOX ON CEILING. COORDINATE WITH OTHER DISCIPLINES TO AVOID CONFLICTS WITH PIPING AND OTHER MECHANICAL OBSTRUCTIONS.
4. MOUNT ON WALL 48" UP. CONNECT FOR CONTROL. SEE SPECIFICATIONS.
5. UTILIZE THIS PANEL FOR CONTINUATION OF CONTROL CIRCUITS UP TO NEW MAIN CONTROL PANEL. RENUMBER ALL TERMINAL STRIPS ACCORDING TO ENGINEER-APPROVED SHOP DRAWINGS.
6. SOLENOID FOR SEAL WATER SYSTEM. CONNECT FOR CONTROL W/W.F.C. VERIFY LOCATION.
7. SEE SHEET E3 FOR CONTINUATION.
8. HOMERUN TO PANEL "L9".
9. ADD 20A, 1P CIRCUIT BREAKER TO MATCH EXISTING EQUIPMENT. FIELD VERIFY.
10. NOT USED.
11. SCADA INTEGRATOR TO MODIFY EXISTING PANEL "LCP-B".
12. INSTALL JBOX AT EQUIPMENT PAD AND CONNECT FOR POWER TO MOTOR SPACE HEATER, SIGNAL TO VIBRATION, BEARING TEMP., AND WINDING TEMP. SENSORS.
13. INSTALL JBOX AT EQUIPMENT PAD AND CONNECT FOR POWER TO MOTOR SPACE HEATER, SIGNAL TO BEARING TEMP., AND WINDING TEMP. SENSORS.
14. 36" X 36" X 18" NEMA 4X S.S. PULL BOX. MOUNT TO STRUCTURE ABOVE.
15. 24"X 24" X 16" NEMA 4X PULL BOX. MOUNT TO STRUCTURE ABOVE
16. REUSE EXISTING TERMINAL CABINETS, JBOXES, ETC., AS REQUIRED TO ROUTE CONDUCTORS UP TO CONTROL CONSOLE ON TOP FLOOR.
17. REMOVE UNUSED CONDUCTORS FROM EXISTING CONDUITS AND UTILIZE EXISTING CONDUITS FOR ROUTING OF NEW CIRCUITS.
18. PROVIDE AND INSTALL THREE (3), 20A, 1P, CIRCUIT BREAKERS IN PANEL "L-9" TO SERVE 120V, MOTOR SPACE HEATERS.
19. REPLACE EXISTING 20A, 1P CIRCUIT BREAKERS IN EXISTING PANEL HP CURRENTLY FEEDING (2) EXISTING VFD'S. MATCH EXISTING EQUIPMENT.
20. ADD NEW 20A, 3P CIRCUIT BREAKER IN PANEL H9 TO SERVE NEW POLYBLEND PANEL.

ELECTRICAL PLAN AT ELEV. 4.00

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

NORTH

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: JNA
DRAWN BY: GS
CHECKED BY: TVT
APPROVED: JDP

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19731 REGISTERED THOMAS VICTOR
DATE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS - PLANNERS - SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: PROCESS CENTER PARTIAL ELECTRICAL PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149-2-E17
REF.
N.B. NO. 1731
PROJECT NO. 00149
SHEET E23 OF 50
FILE NO. 22-85-00

51-004-180

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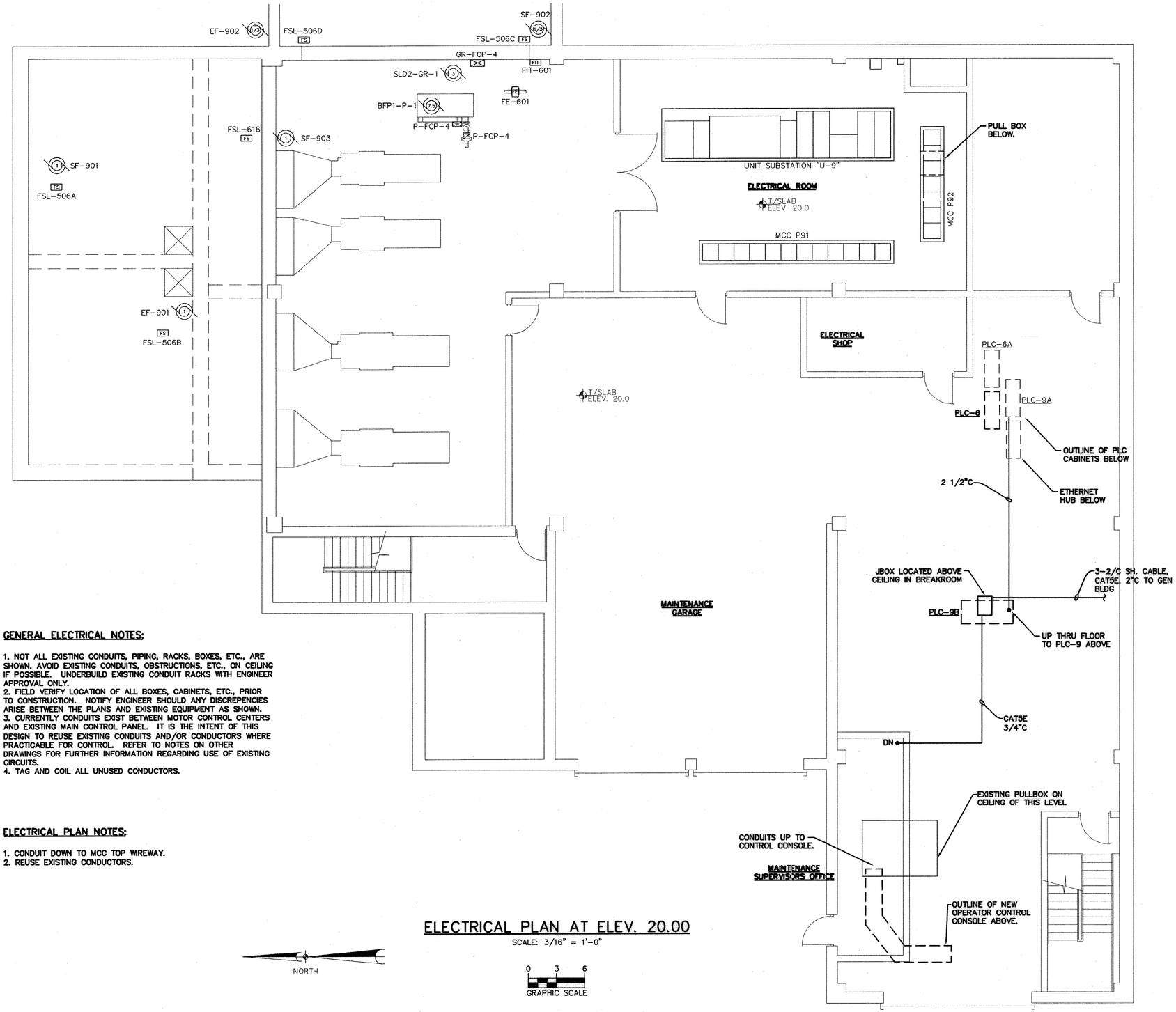


GENERAL ELECTRICAL NOTES:

1. NOT ALL EXISTING CONDUITS, PIPING, RACKS, BOXES, ETC., ARE SHOWN. AVOID EXISTING CONDUITS, OBSTRUCTIONS, ETC., ON CEILING IF POSSIBLE. UNDERBUILD EXISTING CONDUIT RACKS WITH ENGINEER APPROVAL ONLY.
2. FIELD VERIFY LOCATION OF ALL BOXES, CABINETS, ETC., PRIOR TO CONSTRUCTION. NOTIFY ENGINEER SHOULD ANY DISCREPENCIES ARISE BETWEEN THE PLANS AND EXISTING EQUIPMENT AS SHOWN.
3. CURRENTLY CONDUITS EXIST BETWEEN MOTOR CONTROL CENTERS AND EXISTING MAIN CONTROL PANEL. IT IS THE INTENT OF THIS DESIGN TO REUSE EXISTING CONDUITS AND/OR CONDUCTORS WHERE PRACTICABLE FOR CONTROL. REFER TO NOTES ON OTHER DRAWINGS FOR FURTHER INFORMATION REGARDING USE OF EXISTING CIRCUITS.
4. TAG AND COIL ALL UNUSED CONDUCTORS.

ELECTRICAL PLAN NOTES:

1. CONDUIT DOWN TO MCC TOP WIREWAY.
2. REUSE EXISTING CONDUCTORS.

ELECTRICAL PLAN AT ELEV. 20.00

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

NORTH

0 3 6
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: JMA
DRAWN BY: GS
CHECKED BY: JDP
APPROVED: JDP

SOUTH CAROLINA NOTARIZATION CERTIFICATE OF R.P. BARBER & ASSOCIATES, INC. No. C00000 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7973 REGISTERED THOMAS VICTOR — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

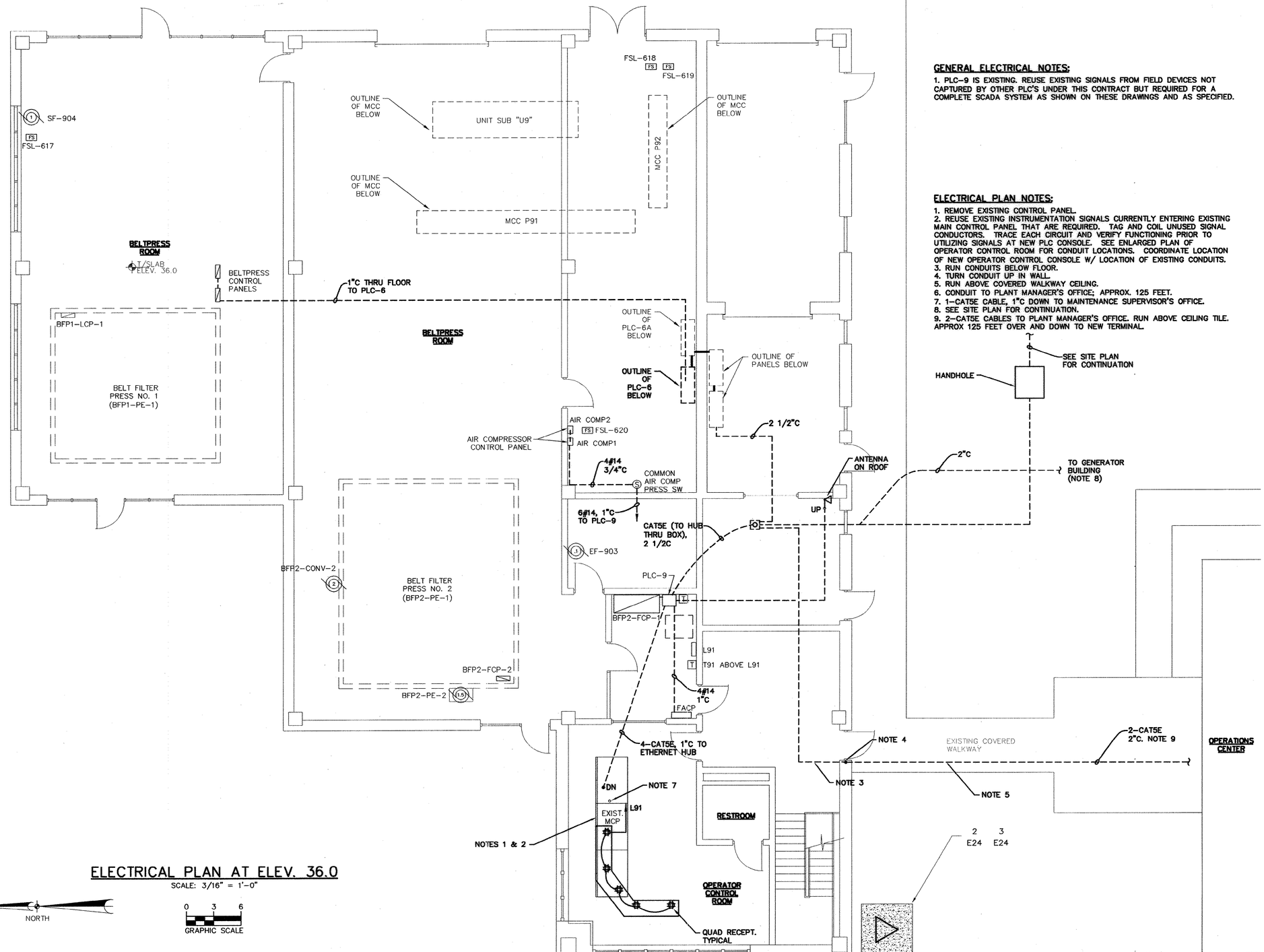
SHEET TITLE: PROCESS CENTER FIRST FLOOR ELECTRICAL PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149-2-E18
REF.
N.B. NO. 1731
PROJECT NO. 00149
SHEET E24 OF 50
FILE NO. 22-85-00

51-004-181
5

Projects\00149\dwg\MECHNO DWG\00149-2-E18-NO.dwg, 01/05/2004 03:22:23 PM



ELECTRICAL PLAN AT ELEV. 36.0

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

NORTH

0 3 6
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

GENERAL ELECTRICAL NOTES:

1. PLC-9 IS EXISTING. REUSE EXISTING SIGNALS FROM FIELD DEVICES NOT CAPTURED BY OTHER PLC'S UNDER THIS CONTRACT BUT REQUIRED FOR A COMPLETE SCADA SYSTEM AS SHOWN ON THESE DRAWINGS AND AS SPECIFIED.

ELECTRICAL PLAN NOTES:

1. REMOVE EXISTING CONTROL PANEL.
2. REUSE EXISTING INSTRUMENTATION SIGNALS CURRENTLY ENTERING EXISTING MAIN CONTROL PANEL THAT ARE REQUIRED. TAG AND COIL UNUSED SIGNAL CONDUCTORS. TRACE EACH CIRCUIT AND VERIFY FUNCTIONING PRIOR TO UTILIZING SIGNALS AT NEW PLC CONSOLE. SEE ENLARGED PLAN OF OPERATOR CONTROL ROOM FOR CONDUIT LOCATIONS. COORDINATE LOCATION OF NEW OPERATOR CONTROL CONSOLE W/ LOCATION OF EXISTING CONDUITS.
3. RUN CONDUITS BELOW FLOOR.
4. TURN CONDUIT UP IN WALL.
5. RUN ABOVE COVERED WALKWAY CEILING.
6. CONDUIT TO PLANT MANAGER'S OFFICE; APPROX. 125 FEET.
7. 1-CAT5E CABLE, 1"C DOWN TO MAINTENANCE SUPERVISOR'S OFFICE.
8. SEE SITE PLAN FOR CONTINUATION.
9. 2-CAT5E CABLES TO PLANT MANAGER'S OFFICE. RUN ABOVE CEILING TILE. APPROX 125 FEET OVER AND DOWN TO NEW TERMINAL.

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS: PROJECT ENG: RTH; DESIGNED BY: JNA; DRAWN BY: GS; CHECKED BY: TVT; APPROVED: JDP

SOUTH CAROLINA NOVEMBER 4, 2003 REGISTERED B.P. BARBER & ASSOCIATES, INC. No. C00369 CERTIFICATE OF — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 19173 REGISTERED THOMAS V. TUTOR — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: PROCESS CENTER PARTIAL ELECTRICAL PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149-2-E19
REF.
N.B. NO. 1731
PROJECT NO. 00149

SHEET E25 OF 50

FILE NO. 22-85-00

51-004-182 S

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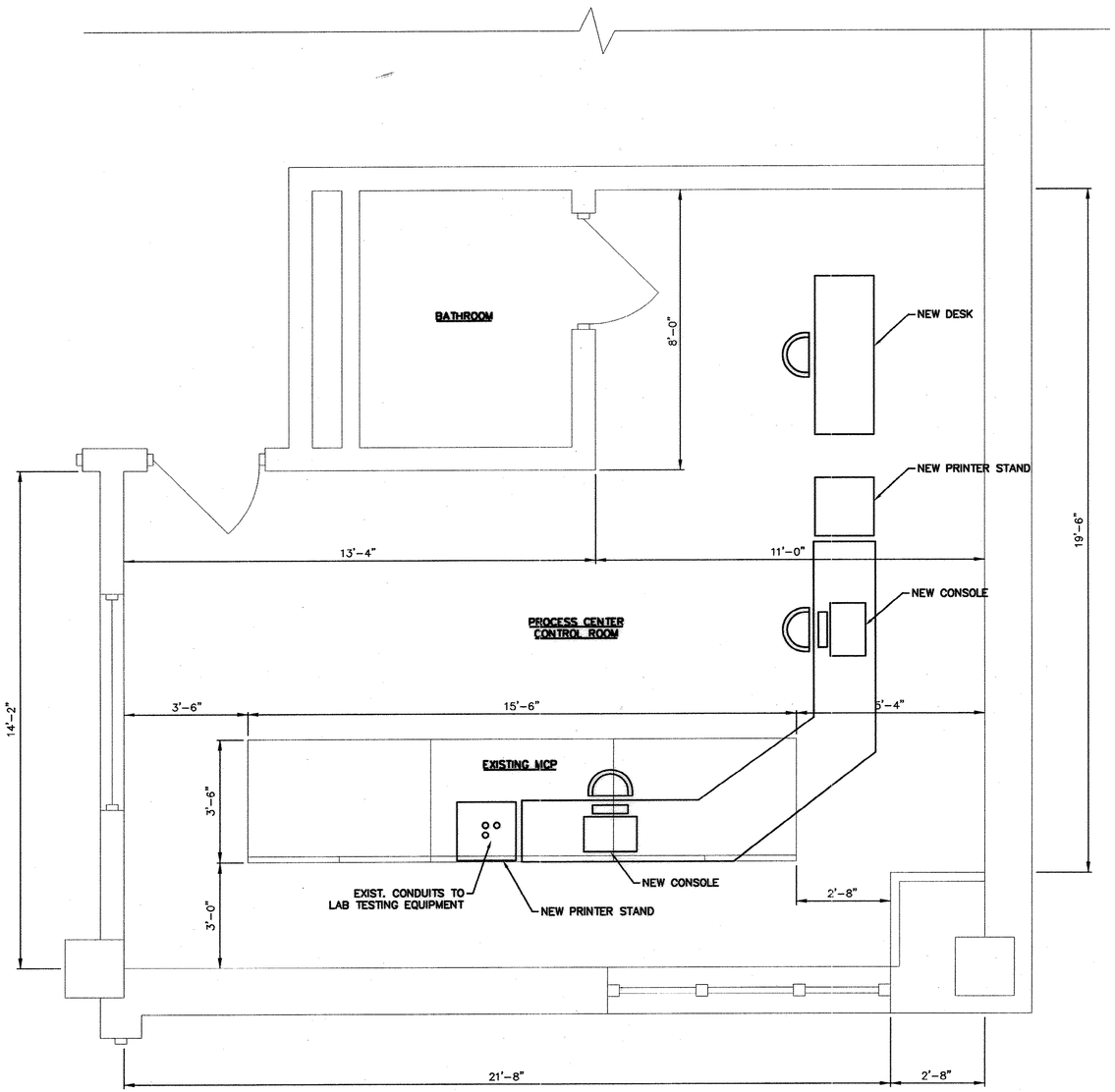

PROCESS CENTER FIRST FLOOR
CONTROL ROOM CONSOLE LAYOUT

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

CONSOLE LAYOUT ELECTRICAL NOTES:

1. VERIFY DIMENSIONS OF CONSOLE W/ENGINEER-APPROVED SHOP DRAWINGS.
2. REUSE EXISRTING CONDUITS WHERE PRACTICABLE. REMOVE UNUSED SIGNALS FROM CABINET.
3. CORE FLOOR AS REUQUIRED TO ACCOMMODATE NEW CONDUITS.
4. SEE SITE PLAN AND FLOOR PLANS FOR FURTHER INFORMATION.
5. SEE SPECIFICATIONS FOR DETAILS.
6. SYSTEM INTEGRATOR RESPONSOBLE FOR PROVIDING AND INSTALLING CONSOLE AND ASSOCAIATED EQUIPMENT. THIS DRAWING FOR INFORMATION ONLY.

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: MA
DRAWN BY: GS
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA PROFESSIONAL ENGINEER — CERTIFICATE OF AUTHORIZATION — B. P. BARBER & ASSOCIATES, INC. No. C000330 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER — No. 7073 — REGISTERED — THOMAS V. POTTER — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: PROCESS CENTER CONTROL ROOM CONSOLE LAYOUT
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149-2-E20
REF.
N.B. NO. 1731
PROJECT NO. 00149

SHEET E26 OF 50

FILE NO. 22-85-00

51-004-183

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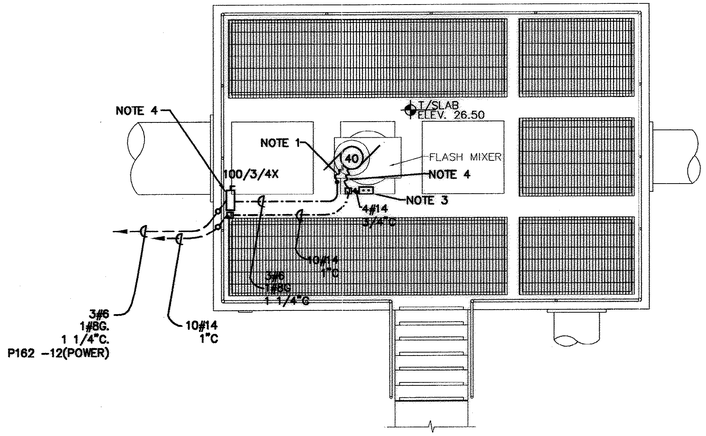
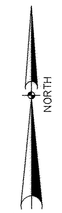


ELECTRICAL PLAN
SCALE: 1/4" = 1'-0"



ELECTRICAL PLAN NOTES

1. STUB UP AND CONNECT TO MIXER DRIVE W/W.F.C.
2. STUP UP TO BOX AND CONNECT TO MIXER DRIVE W/W.F.C.
3. TWO-BUTTON PUSH BUTTON STATION. CONNECT FOR CONTROL.
4. MOUNT DISC SW. TO HANDRAIL.

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS

PROJECT ENG.	RTH
DESIGNED BY:	JMA
DRAWN BY:	GS
CHECKED BY:	TVT
APPROVED:	JDP

SOUTH CAROLINA NOVEMBER 19, 2003 B. P. BARBER & ASSOCIATES, INC. No. C00000 CERTIFICATE OF AUTHORIZATION — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7973 REGISTERED THOMAS V. TOMPKINS — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW INTERMEDIATE MIXING TANK ELECTRICAL PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	00149E20-RD
REF.	
N.B. NO.	1731
PROJECT NO.	00149

SHEET E27 OF 50

FILE NO. 22-85-00

51-004-184 S

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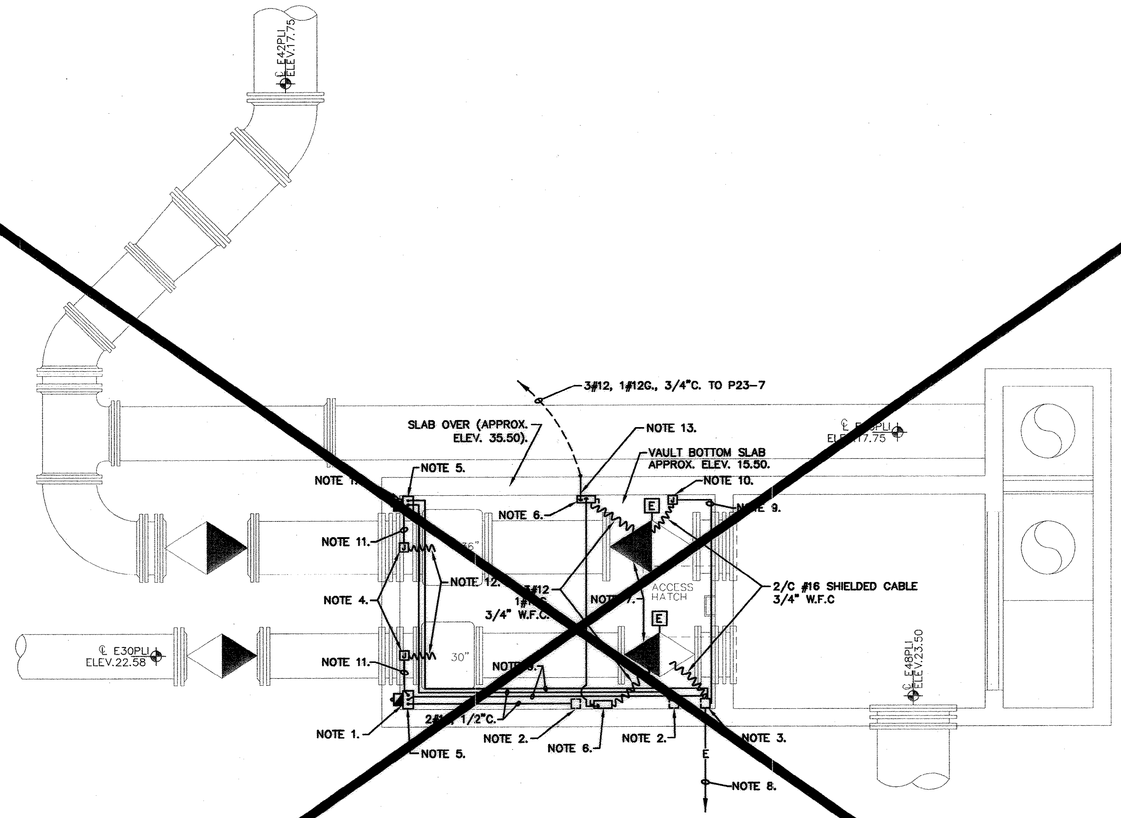

EXISTING INFLUENT DISTRIBUTION CHAMBER ELECTRICAL PLAN

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

NORTH

INFLUENT DISTRIBUTION CHAMBER PLAN NOTES

1. NEW FLOW TRANSMITTER PIPE MOUNTED (SEE DETAIL) ON TOP OF VAULT (APPROX. ELEV. 35.50). CONNECT FOR POWER & SIGNAL.
2. EXIST. BOX/SWITCH FOR POWER (APPROX. ELEV. 20.50). EXTEND OVER & UP TO TRANSMITTER ABOVE.
3. EXIST. BOX CONTAINING 4-2/C SIGNAL CABLES. EXTEND OVER & UP TO TRANSMITTERS ABOVE AND OVER TO VALVE ELECTRIC ACTUATORS.
4. LOCATE CAST BOX ABOVE FLOW TUBE & CONNECT WITH WATERTIGHT FLEXIBLE CONDUIT.
5. CORE & PATCH WATERTIGHT VAULT TOP SLAB.
6. 30 AMP, WITH GROUND, 480 VOLT, NEMA 4X, NON-FUSIBLE SAFETY DISCONNECT SWITCH. LOCATE AT ELEV. TO MATCH VALVE ELECTRIC ACTUATOR (VERIFY).
7. CONNECT TO VALVE ELECTRIC ACTUATOR WITH WATERTIGHT FLEXIBLE CONDUIT (W.F.C.) FOR POWER & SIGNAL.
8. EXIST. CONDUIT CONTAINING 4-2/C SIGNAL CABLES TO EXIST. MAIN CONTROL PANEL TO REMAIN.
9. 2/C #16 SHIELDED CABLE, 3/4" C. CONNECT TO APPROPRIATE EXIST. SIGNAL CABLE (NOTE 3).
10. LOCATE CAST BOX AT ELEV. TO MATCH VALVE ELECTRIC ACTUATOR.
11. 3/4" C. WITH CABLE PROVIDED WITH FLOW METER.
12. 3/4" W.F.C. WITH CABLE PROVIDED WITH FLOW METER.
13. RISE UP TO APPROX. ELEV. 33.00, CORE WALL & EXTEND OUT. PATCH WATERTIGHT.

OMIT

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: DPB
DRAWN BY: GS
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER — B.P. BARBER & ASSOCIATES, INC. — No. C00260 — CERTIFICATE OF — DATE

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER — No. 7873 — THOMAS VICTOR — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
MODIFICATIONS TO EXISTING INFLUENT DISTRIBUTION CHAMBER ELECTRICAL PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149E21-RD	E28
REF.	OF
N.B. NO. 1731	50
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-185

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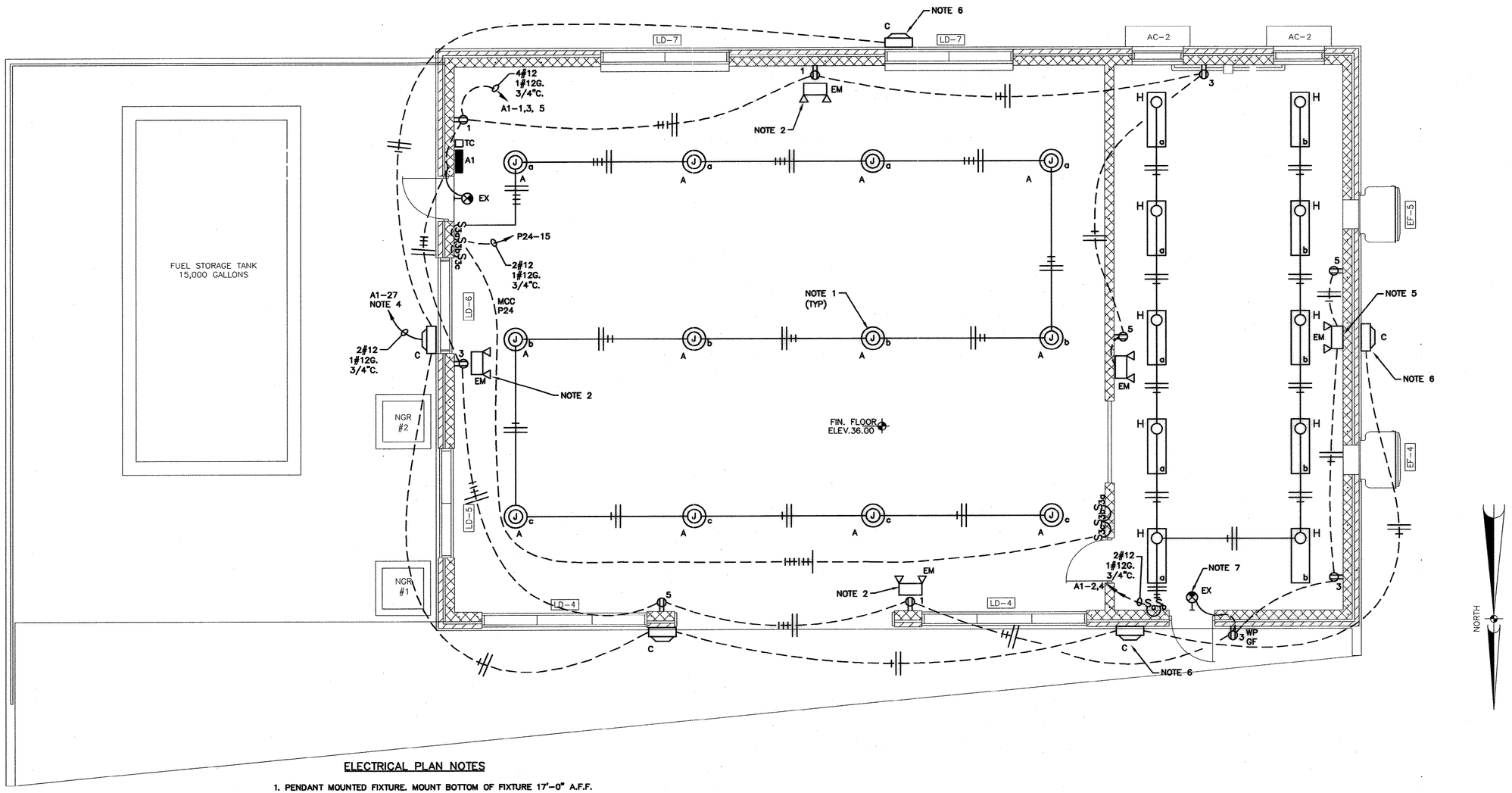

ELECTRICAL PLAN NOTES

1. PENDANT MOUNTED FIXTURE. MOUNT BOTTOM OF FIXTURE 17'-0" A.F.F.
2. EMERGENCY LIGHT ABOVE RECEPTACLE. MOUNT 14'-0" UP (TYP).
3. TIME CLOCK.
4. RUN THROUGH TIME CLOCK TO P24.
5. EMERGENCY & EXIT FIXTURES SHALL REMAIN ENERGIZED AT ALL TIMES. DO NOT SWITCH THESE FIXTURES. RUN HOT FROM LINE SIDE OF EITHER 3-WAY SWITCH TO THESE FIXTURES (TYPICAL OF ALL).
6. MOUNT FIXTURE CENTERED IN FASCIA APPROX. 20'-6" A.F.F. (TYP.)
7. MOUNT FIXTURE TO WALL ABOVE DOOR (TYP.).

LIGHTING & RECEPTACLES PLAN

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

0 4 8
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: MA
DRAWN BY: GS
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA PROFESSIONAL ENGINEER
B.P. BARBER & ASSOCIATES, INC.
CERTIFICATE OF AUTHORIZATION No. C000020
DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER
THOMAS V. VICTOR
No. 7673
REGISTERED
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW GENERATOR BUILDING ELECTRICAL PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149E22-RD
REF.
N.B. NO. 1731
PROJECT NO. 00149
SHEET E29 OF 50
FILE NO. 22-85-00

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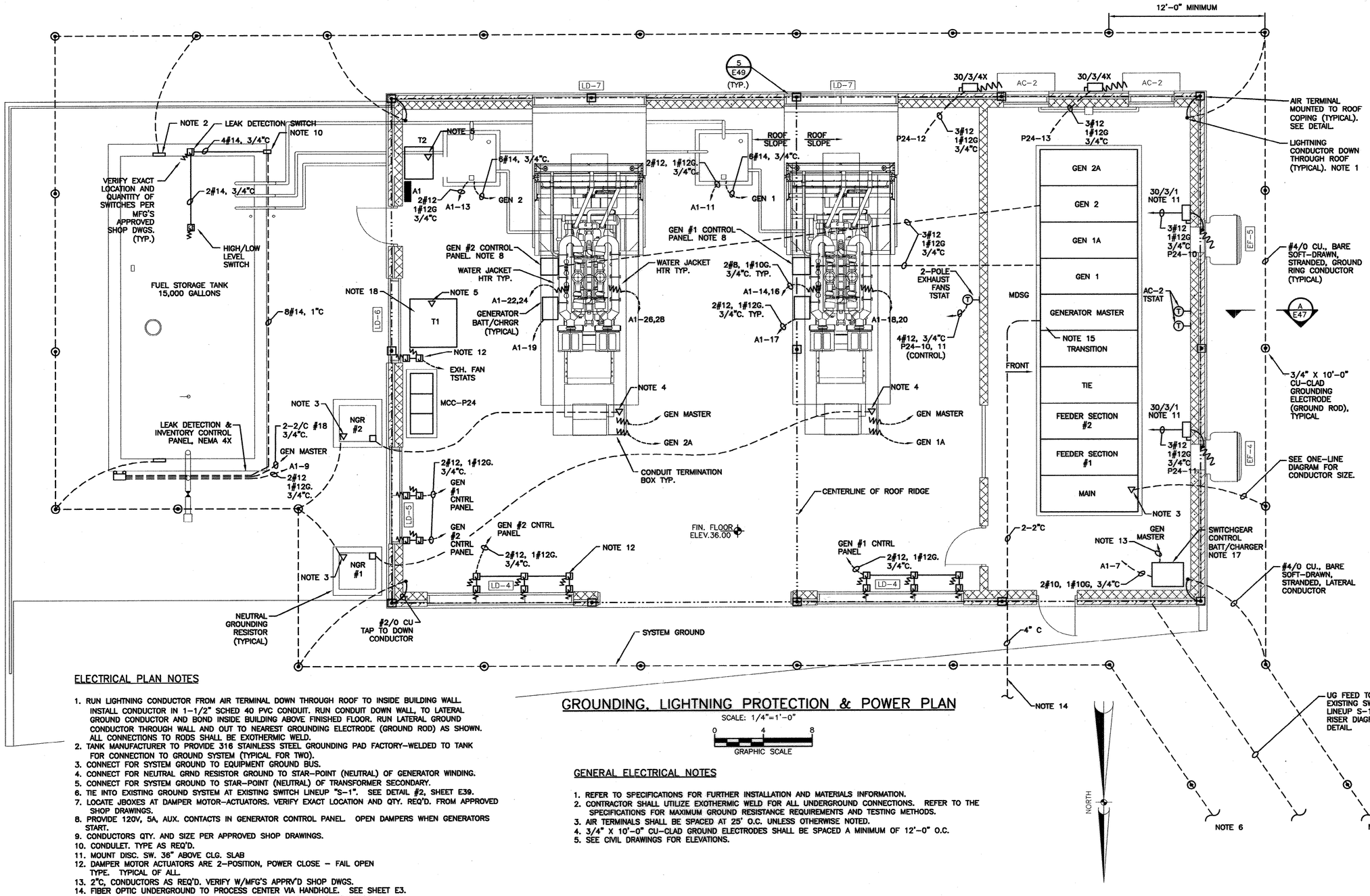

ELECTRICAL PLAN NOTES

1. RUN LIGHTNING CONDUCTOR FROM AIR TERMINAL DOWN THROUGH ROOF TO INSIDE BUILDING WALL. INSTALL CONDUCTOR IN 1-1/2" SCHED 40 PVC CONDUIT. RUN CONDUIT DOWN WALL, TO LATERAL GROUND CONDUCTOR AND BOND INSIDE BUILDING ABOVE FINISHED FLOOR. RUN LATERAL GROUND CONDUCTOR THROUGH WALL AND OUT TO NEAREST GROUNDING ELECTRODE (GROUND ROD) AS SHOWN. ALL CONNECTIONS TO RODS SHALL BE EXOTHERMIC WELD.
2. TANK MANUFACTURER TO PROVIDE 316 STAINLESS STEEL GROUNDING PAD FACTORY-WELDED TO TANK FOR CONNECTION TO GROUND SYSTEM (TYPICAL FOR TWO).
3. CONNECT FOR SYSTEM GROUND TO EQUIPMENT GROUND BUS.
4. CONNECT FOR NEUTRAL GRND RESISTOR GROUND TO STAR-POINT (NEUTRAL) OF GENERATOR WINDING.
5. CONNECT FOR SYSTEM GROUND TO STAR-POINT (NEUTRAL) OF TRANSFORMER SECONDARY.
6. TIE INTO EXISTING GROUND SYSTEM AT EXISTING SWITCH LINEUP "S-1". SEE DETAIL #2, SHEET E39.
7. LOCATE JBOXES AT DAMPER MOTOR-ACTUATORS. VERIFY EXACT LOCATION AND QTY. REQ'D. FROM APPROVED SHOP DRAWINGS.
8. PROVIDE 120V, 5A, AUX. CONTACTS IN GENERATOR CONTROL PANEL. OPEN DAMPERS WHEN GENERATORS START.
9. CONDUCTORS QTY. AND SIZE PER APPROVED SHOP DRAWINGS.
10. CONDULET. TYPE AS REQ'D.
11. MOUNT DISC. SW. 36" ABOVE CLG. SLAB
12. DAMPER MOTOR ACTUATORS ARE 2-POSITION, POWER CLOSE - FAIL OPEN TYPE. TYPICAL OF ALL.
13. 2"C, CONDUCTORS AS REQ'D. VERIFY W/MFG'S APPRV'D SHOP DWGS.
14. FIBER OPTIC UNDERGROUND TO PROCESS CENTER VIA HANDHOLE. SEE SHEET E3.
15. COORDINATE STUB UP LOCATION WITH SWITCH GEAR MFG SHOP DRAWINGS.
16. NOT USED.
17. GENERATOR SWITCHGEAR MANUFACTURER TO PROVIDE STATION BATTERIES FOR CONTROL POWER.
18. "T-1": 500KVA, 12470 PRI, 480/277V, SEC., MEDIUMK VOLTAGE DISTRIBUTION TRANSFORMER, 3ø, DRY-TYPE VENTILATED, 150°C RISE, COPPER WINDINGS, 60KV BIL, NEMA 1 ENCLOSURE, SIMILAR TO G.E. TYPE QV-H. VERIFY DIMENSIONS.

GROUNDING, LIGHTNING PROTECTION & POWER PLAN

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

0 4 8
GRAPHIC SCALE

GENERAL ELECTRICAL NOTES

1. REFER TO SPECIFICATIONS FOR FURTHER INSTALLATION AND MATERIALS INFORMATION.
2. CONTRACTOR SHALL UTILIZE EXOTHERMIC WELD FOR ALL UNDERGROUND CONNECTIONS. REFER TO THE SPECIFICATIONS FOR MAXIMUM GROUND RESISTANCE REQUIREMENTS AND TESTING METHODS.
3. AIR TERMINALS SHALL BE SPACED AT 25' O.C. UNLESS OTHERWISE NOTED.
4. 3/4" X 10'-0" CU-CLAD GROUND ELECTRODES SHALL BE SPACED A MINIMUM OF 12'-0" O.C.
5. SEE CIVIL DRAWINGS FOR ELEVATIONS.

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: JMA
DRAWN BY: JMA
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA PROFESSIONAL ENGINEER B.P. BARBER & ASSOCIATES, INC. No. C00060 CERTIFICATE OF AUTHORIZATION
DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 9173 REGISTERED THOMAS VICTOR
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS - PLANNERS - SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW GENERATOR BUILDING ELECTRICAL PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149E23-RD
REF.
N.B. NO. 1731
PROJECT NO. 00149

SHEET E30 OF 50

FILE NO. 22-85-00

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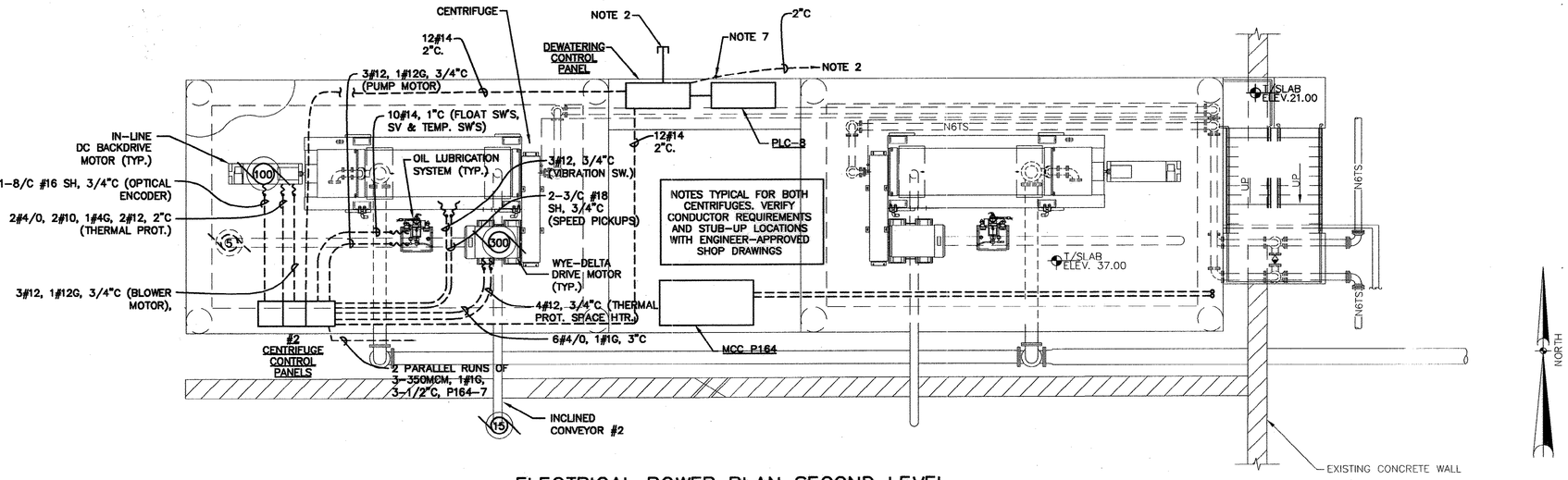


ELECTRICAL POWER PLAN SECOND LEVEL

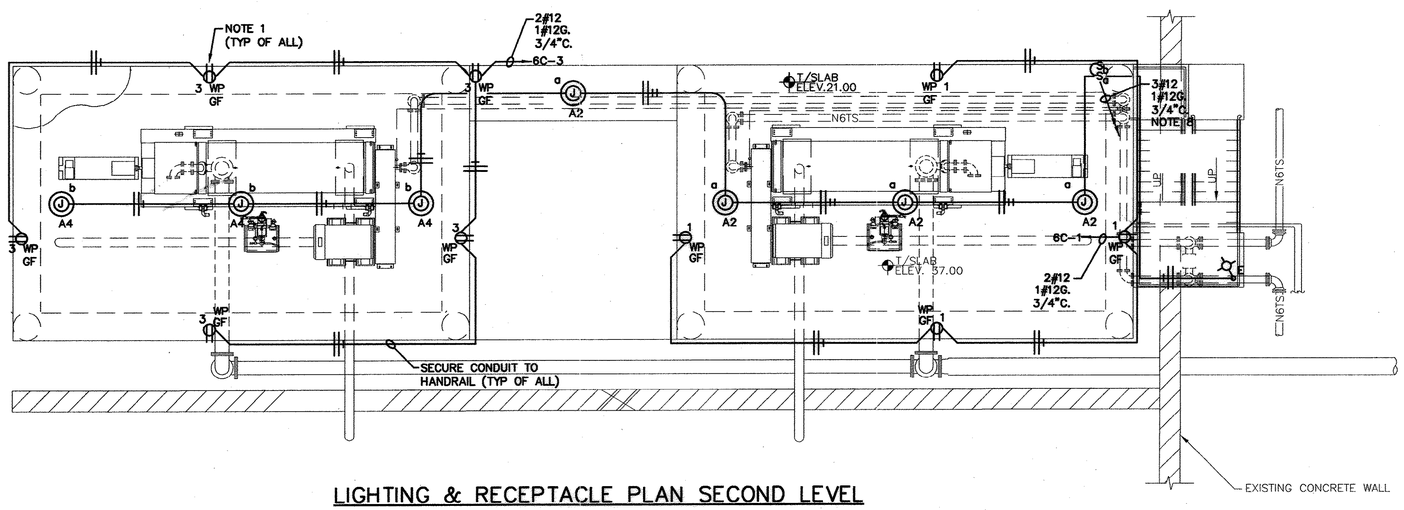
SCALE: 3/16" = 1'-0"

ELECTRICAL PLAN NOTES:

1. MOUNT TO HANDRAIL WITH S.S. STRUT AND HARDWARE.
2. RUN CONDUIT WITH PIPING OVER TO PROCESS CENTER MAIN CONTROL ROOM. SEE SHEET E3 FOR CONTINUATION.
3. SECURE CONDUIT TO COLUMN WITH 316 S.S. STRUT.
4. SEE PARTIAL ELECTRICAL SITE PLAN FOR CONTINUATION.
5. CONNECT TO BRIDGE CRANE. VERIFY LOCATION
6. RUN CONDUIT DOWN COLUMN AND UNDERGROUND. TRANSITION TO CONCRETE-ENCASED DUCTBANK. SEE SHEET E3 FOR CONTINUATION.
7. RUN CONDUIT DOWN COLUMN AND UNDERGROUND. SEE SHEET E3 FOR CONTINUATION.
8. RUN THROUGH TIME CLOCK TO P164.

GENERAL ELECTRICAL NOTES:

1. DELETED.
2. ACTUAL LOCATION OF ALL EQUIPMENT CONNECTIONS TO BE DETERMINED BY APPROVED EQUIPMENT MANUFACTURER'S (SHOP DRAWING).
3. CONTRACTOR TO TAG ALL CONDUCTORS ON BOTH ENDS ACCORDING TO THESE DRAWINGS AND TO EQUIPMENT MANUFACTURER'S APPROVED SHOP DRAWINGS.
4. SEE SHEET E32 FOR FURTHER DETAILS.
5. ALL CONTROL WIRE SHALL BE TYPE THWN.
6. TYPICALLY, CONDUITS TO RUN BELOW FLOOR AT BOTTOM OF BEAMS. PROVIDE NECESSARY SUPPORTS & TRAPEZE HANGERS. ADJUST CONDUIT ROUTING TO AVOID NEW PIPE & EQUIPMENT. COORDINATE WITH OTHER TRADES.



LIGHTING & RECEPTACLE PLAN SECOND LEVEL

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

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS	
PROJECT ENG:	RTH
DESIGNED BY:	JMA
DRAWN BY:	JMA
CHECKED BY:	TVT
APPROVED:	JDP

SOUTH CAROLINA NOV 19, 2003 CERTIFICATE OF AUTHORIZATION C. P. BARBER & ASSOCIATES, INC. No. C000300 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7673 REGISTERED THOMAS V. TUTEN — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS - PLANNERS - SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW DEWATERING FACILITY ELECTRICAL PLANS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	00149E24-RD
REF.	
N.B. NO.	1731
PROJECT NO.	00149
SHEET	E31
OF	50

FILE NO. 22-85-00

51-004-188

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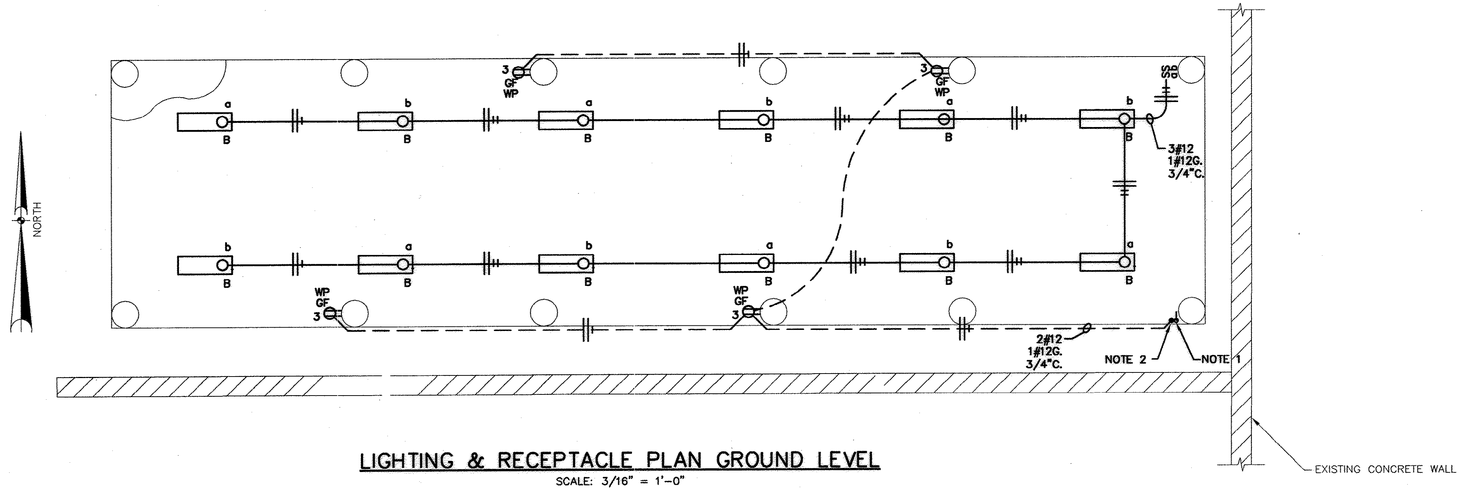
ELECTRICAL LIGHTING & RECEPTACLE PLAN NOTES:

1. 2#12, 1#12G, 3/4"C UP THROUGH TIME CLOCK TO MCC P164 (LIGHTS).
2. 2#12, 1#12G, 3/4"C UP TO PANEL 6C (RECEPTS.).



LIGHTING & RECEPTACLE PLAN GROUND LEVEL

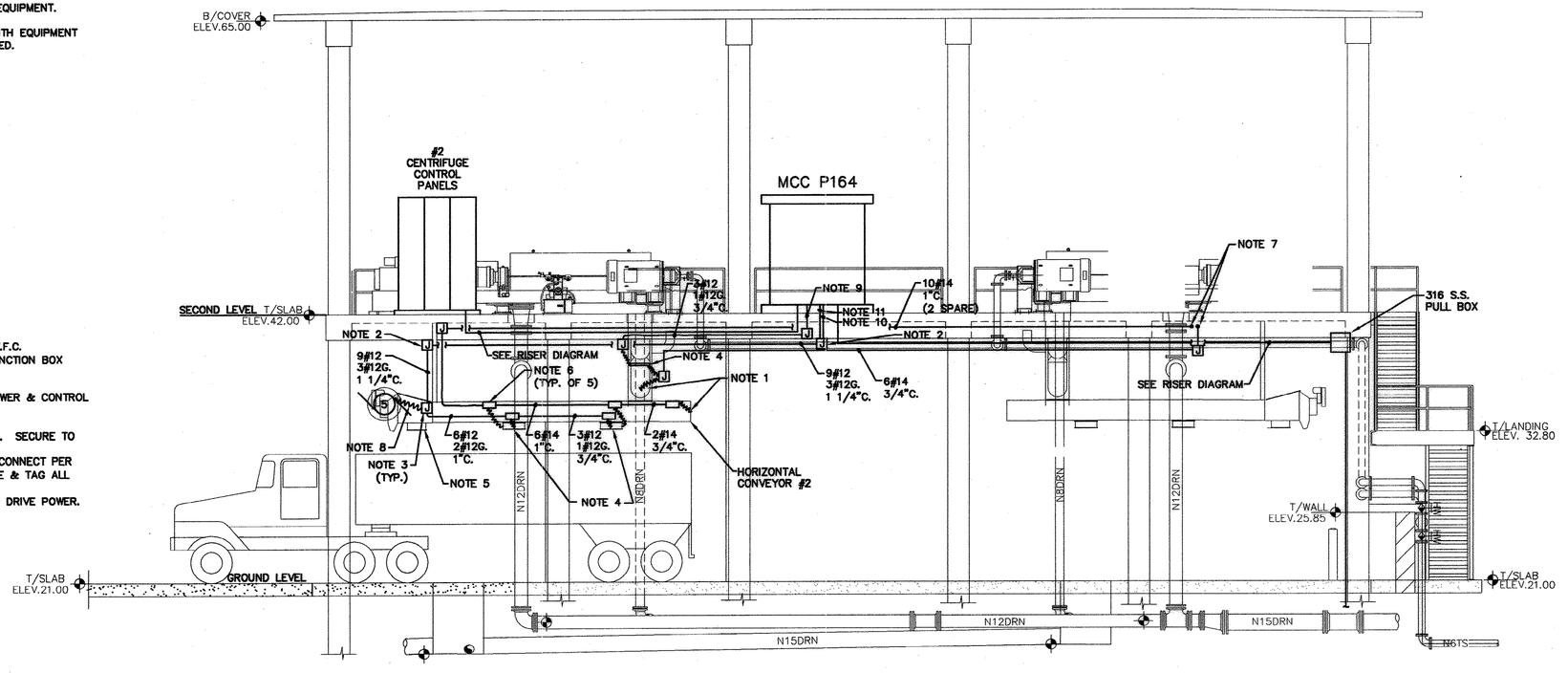
SCALE: 3/16" = 1'-0"

GENERAL ELECTRICAL NOTES:

1. COORDINATE ELECTRICAL INSTALLATION WITH OTHER DISCIPLINES.
2. ONLY CENTRIFUGE #1 WILL BE INSTALLED DURING PHASE I OF THIS PROJECT. CENTRIFUGE #2 WILL BE INSTALLED DURING PHASE II. INSTALL ALL CONDUITS, JUNCTION BOXES, CONDULETS, ETC. FOR BOTH CENTRIFUGES. CONDUCTORS FOR CENTRIFUGE #2 WILL BE INSTALLED DURING PHASE II.
3. TYPICALLY CONDUITS TO RUN BELOW FLOOR AT BOTTOM OF BEAMS. PROVIDE NECESSARY SUPPORTS & TRAPEZE HANGERS. ADJUST CONDUIT ROUTING TO AVOID NEW PIPING & EQUIPMENT.
4. ALL CONTROL WIRE SHALL BE TYPE THWN.
5. COORDINATE EXACT LOCATIONS OF LIGHT FIXTURES WITH EQUIPMENT AND PIPING LAYOUT. RELOCATE FIXTURES AS REQUIRED.

ELECTRICAL ELEVATION NOTES:

1. ZERO SPEED SWITCH. CONNECT FOR CONTROL W/ W.F.C.
2. SECURE JUNCTION BOX TO CONVEYOR SUPPORT. JUNCTION BOX SIZE AS REQUIRED.
3. SECURE JUNCTION BOX TO CONVEYOR.
4. ELECTRIC-OPERATED SLIDE GATE. CONNECT FOR POWER & CONTROL W/ W.F.C.
5. OPENING.
6. CONDULET TYPE AS REQUIRED TO MAKE CONNECTION. SECURE TO CONVEYOR.
7. RUN CONDUIT OVER & UP TO DEWATERING PANEL. CONNECT PER MANUFACTURER'S APPROVED SHOP DRAWINGS. TAPE & TAG ALL SPARES.
8. 3#12, 1#12G., 3/4" W.F.C. CONNECT FOR CONVEYOR DRIVE POWER.
9. 6#12, 2#12G., 3/4"C., P164-9, 10.
10. 9#12, 3#12G., 1 1/4"C., P164-2, 11, 12.
11. 9#12, 3#12G., 1 1/4"C., P164-3, 13, 14.



CONVEYORS, GATES, ELECTRICAL POWER ELEVATION

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

RECORD DRAWINGS

DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS	
PROJECT ENG:	RTH
DESIGNED BY:	JMA
DRAWN BY:	JMA/GS
CHECKED BY:	TVT
APPROVED:	JDP

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19373 THOMAS V. TOTTER REGISTERED — CERTIFICATE OF AUTHORIZATION — S.C. BOARD FOR ENGINEERING & SURVEYING No. C00260 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER SEAL 19373 THOMAS V. TOTTER REGISTERED — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS - PLANNERS - SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW CENTRIFUGE ELECTRICAL PLAN & ELEVATION

DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149E25-RD	E32
REF.	OF
N.B. NO. 1731	50
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-189

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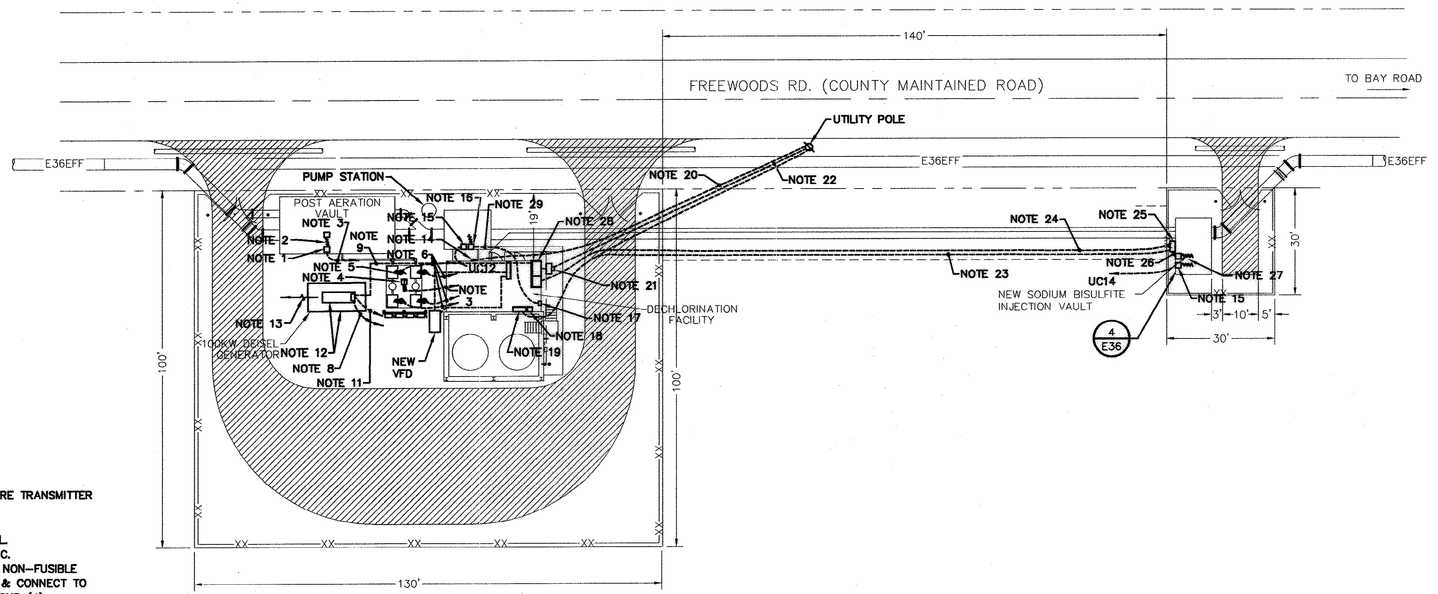


DECHLORINATION SITE PLAN NOTES

1. STUB INTO VAULT, INSTALL CAST BOX & CONNECT TO PRESSURE TRANSMITTER W/ W.F.C.
2. 2/C #16 SHIELDED CABLE, 3/4" W.F.C.
3. 2/C #16 SHIELDED CABLE, 3/4"C. TO BLOWER CONTROL PANEL.
4. STUB UP & CONNECT TO TEMPERATURE TRANSMITTER W/ W.F.C.
5. STUB UP, INSTALL NEMA 4X, 30 AMP, 3P W/ GROUND, 480V. NON-FUSIBLE SAFETY DISCONNECT SWITCH ON PIPE SUPPORT (SEE DETAIL) & CONNECT TO 20 HP, 480V., 3ø BLOWER MOTOR W/ W.F.C. TYPICAL FOR FOUR (4).
6. 3#8, 1#10G., 3/4"C. TO BLOWER CONTROL PANEL.
7. DELETED.
8. 2#12 (UC13 – GEN. ACCESSORIES), 2#12 (UC15/17 – 3KW BLOCK HEATER), 1#12G., 3/4"C.
9. 4#1/0, 1#6G., 2"C.
10. 4#12, 3/4"C.
11. 4#14, 3/4" TO STRANTROL PLC PANEL FOR RUN INDICATION & ALARM.
12. GENERATOR SUPPORT PAD W/ WALL AROUND.
13. COOLING AIR DISCHARGE.
14. TELEPHONE BOX. SEE PLAN.
15. STUB INTO VAULT, INSTALL CAST BOX & CONNECT TO SUMP PUMP (1/2 HP, 120V.) W/ W.F.C.
16. STUB INTO VAULT, INSTALL CAST BOX & CONNECT TO MAGNETIC FLOW METER TUBE W/ W.F.C. CONTAINING CABLE PROVIDED W/ METER.
17. MAGNETIC FLOW METER TRANSMITTER.
18. UNI-CENTER "UC".
19. STRANTROL PLC PANEL.
20. 1"C. SEE PLAN.
21. METER. SEE POWER RISER DIAGRAM.
22. OVERHEAD SECONDARY SERVICE. SEE POWER RISER DIAGRAM.
23. 4#12, 3/4"C. FOR CONTROL & ALARM.
24. 3#12, 1#12G., 3/4"C. MS2.
25. SUBTROL CONTROL PANEL FOR SODIUM BISULFATE CHEMICAL INDUCTION UNIT. INSTALL ON S.S. PIPE STAND (SEE DETAIL).
26. 3#12, 1#12G., 3/4"C.
27. STUB INTO VAULT, INSTALL BOX & CONNECT TO INDUCTION UNIT MOTOR W/ W.F.C.
28. MAIN SWITCHBOARD "MS".
29. 1"C. W/ CABLE SUPPLIED W/ MAGNETIC FLOW METER.

DECHLORINATION FACILITY ELECTRICAL SITE PLAN

SCALE: 1" = 20'

0 20 40

GRAPHIC SCALE

NORTH

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS			
PROJECT ENG.	RTT	DESIGNED BY:	JMA
DRAWN BY:	GS	CHECKED BY:	TVT
APPROVED:	JDP		

SOUTH CAROLINA NOVEMBER 19, 2003 B. P. BARBER & ASSOCIATES, INC. CERTIFICATE OF AUTHORIZATION No. C000220 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7973 REGISTERED THOMAS V. TRETTER — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: DECHLORINATION FACILITY ELECTRICAL SITE PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

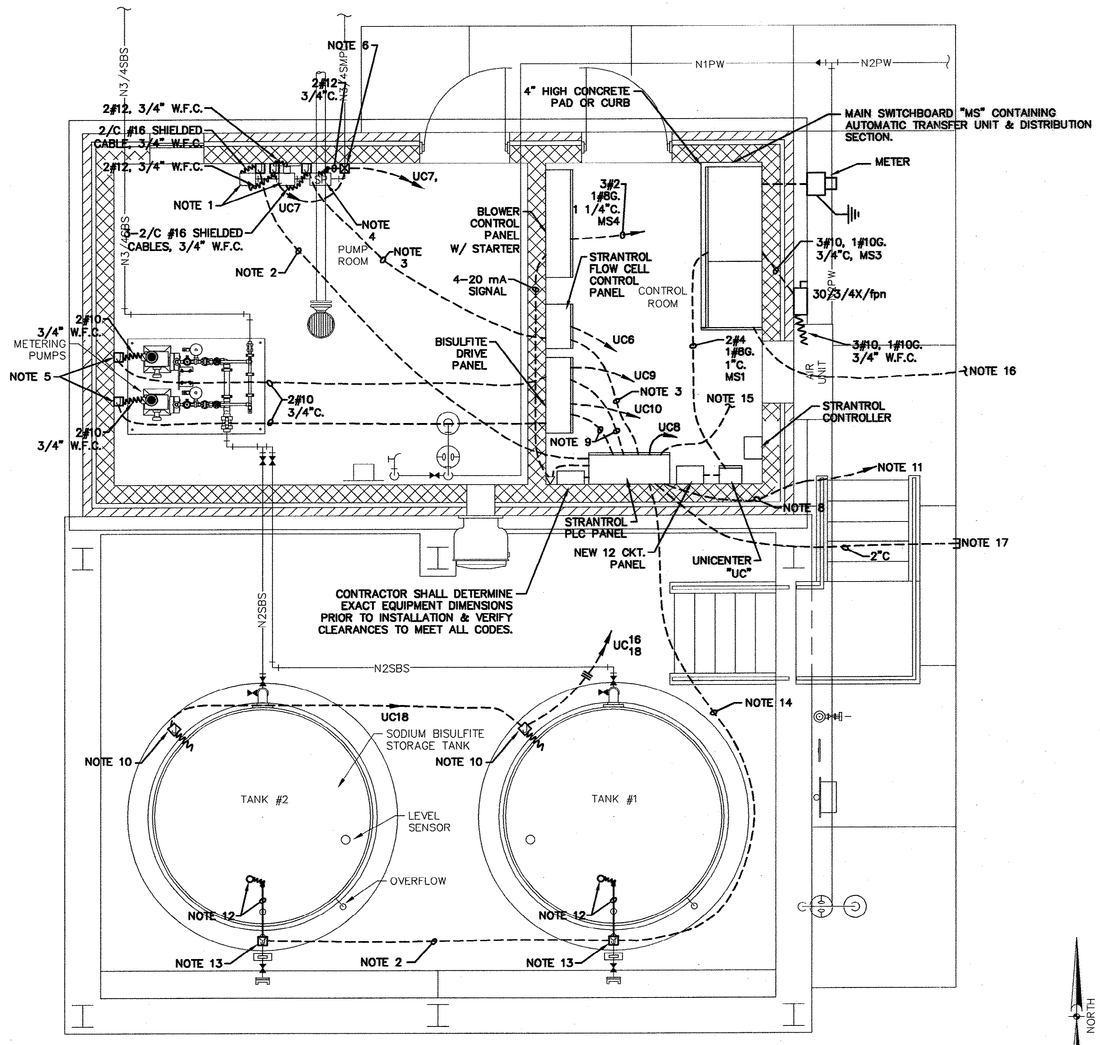
PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149E26-RD	SHEET E33
REF.	OF 50
N.B. NO. 1731	
PROJECT NO. 00149	

FILE NO. 22-85-00

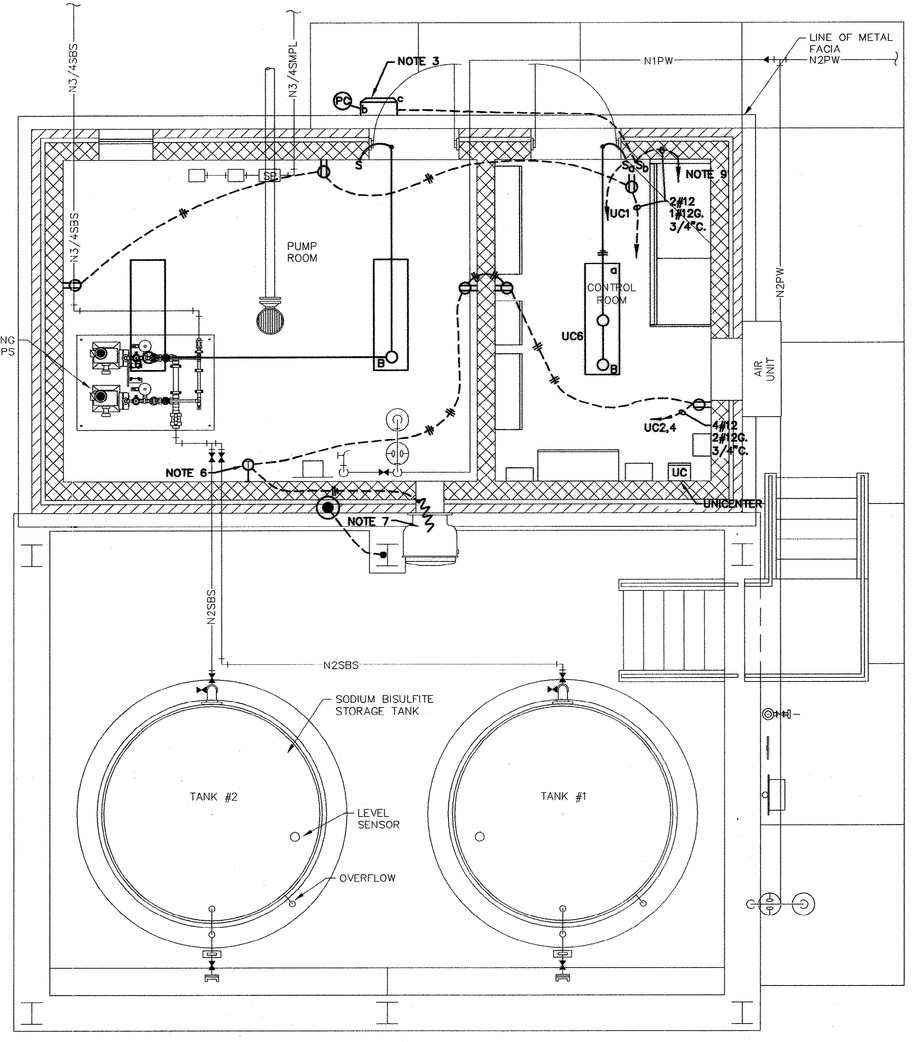
51-004-190 5

Projects\00149\dwg\MECHNU DWG\00149E26-RD.dwg 12/29/2003 09:46:31 AM



ELECTRICAL POWER PLAN

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



LIGHTING, RECEPTACLE AND LIGHTING PROTECTION PLAN

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

POWER PLAN NOTES

1. LOCATE CAST BOX ADJACENT TO EQUIPMENT AND CONNECT FOR POWER AND SIGNAL.
2. 2/C #16 SHIELDED CABLE, 3/4"C.
3. 3-2/C #16 SHIELDED CABLES, 3/4"C.
4. CONNECT TO PUMP (1/2HP, 120V.) W/ WATERTIGHT FLEXIBLE CONDUIT (W.F.C.).
5. LOCATE CAST BOX ADJACENT TO PUMP (1/2HP, D.C.) AND CONNECT FOR POWER.
6. PUMP DISCONNECT. INSTALL CAST BOX 50" UP TO CENTERLINE ABOVE FLOOR WITH AH NO. 6808UDAC OR APPROVED EQUAL. LABEL APPROPRIATELY.
7. 6"X6"X6" NEMA 4X STAINLESS STEEL BOX FOR TELEPHONE. INSTALL 36" ABOVE GRADE. LEAVE 24" SLACK IN ALL TELEPHONE CABLES.
8. 4/C TELEPHONE CABLE, 3/4"C. LEAVE 24" SLACK BOTH ENDS.
9. 2/C #16 SHIELDED CABLE, 2#14, 3/4"C.
10. STUB UP IN EDGE OF TANK SUPPORT PAD AND INSTALL CAST BOX 6" ABOVE PAD. CONNECT TO TANK HEAT TAPE AS REQUIRED BY TANK MANUFACTURER. VERIFY REQUIREMENTS AND EXACT LOCATION.
11. 1" EMPTY CONDUIT TO METER POLE (SEE SITE PLAN). EXTEND UP POLE 36" & CAP (VERIFY).
12. LEVEL TRANSDUCER ON TOP OF TANK. EXTEND CONDUIT UP AND CONNECT W/ W.F.C. INSTALL FACTORY SUPPLIED CABLE DOWN TO BOX.
13. STUB UP IN EDGE OF TANK SUPPORT PAD AND INSTALL CAST BOX 6" ABOVE PAD. SPLICE TO FACTORY TRANSDUCER CABLE.
14. 2-2/C #20 SHIELDED CABLES, 3/4"C.
15. 1" CONDUIT W/ CABLE TO MAGNETIC FLOW METER TUBE IN VAULT (CABLE SUPPLIED W/ MAGNETIC FLOW METER). SEE SITE PLAN.
16. 3#12, 1#12G., 3/4"C. TO SUBTROL CONTROL PANEL. SEE SHEET E33.
17. STUB OUT 5'-0" BEYOND EDGE OF SIDEWALK. CAP & MARK FOR FUTURE SCADA.

LIGHTING, RECEPTACLE AND LIGHTING PROTECTION PLAN NOTES

1. NOT USED.
2. NOT USED.
3. INSTALL FIXTURE CENTERED IN FACIA APPROX. 9'-6" A.F.F.
4. NOT USED.
5. TOP OF ROD AT 24" BELOW FINISHED GRADE.
6. FLUSH WALL OUTLET 4'-10" A.F.F. W/THERMOSTAT (PROVIDED W/FAN)
7. WALL EXHAUSTER (120V 1/4HP) STUB INTO OPENING AND CONNECT W/W.F.C. (PROVIDED W/ FAN).
8. NOT USED.

0 2 4
GRAPHIC SCALE

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS			
PROJECT ENG: RTH	DESIGNED BY: JMA	DRAWN BY:	CHECKED BY: TVT
			APPROVED: JDP

SOUTH CAROLINA NOVEMBER 14, 1995 B.P. BARBER & ASSOCIATES, INC. No. C000000 CERTIFICATE OF AUTHORIZATION — DATE

REGISTERED PROFESSIONAL ENGINEER No. 9173 THOMAS PATTON HAMM — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
NEW DECHLORINATION FACILITY ELECTRICAL PLANS
DATE: FEB., 2001 SCALE: AS SHOWN

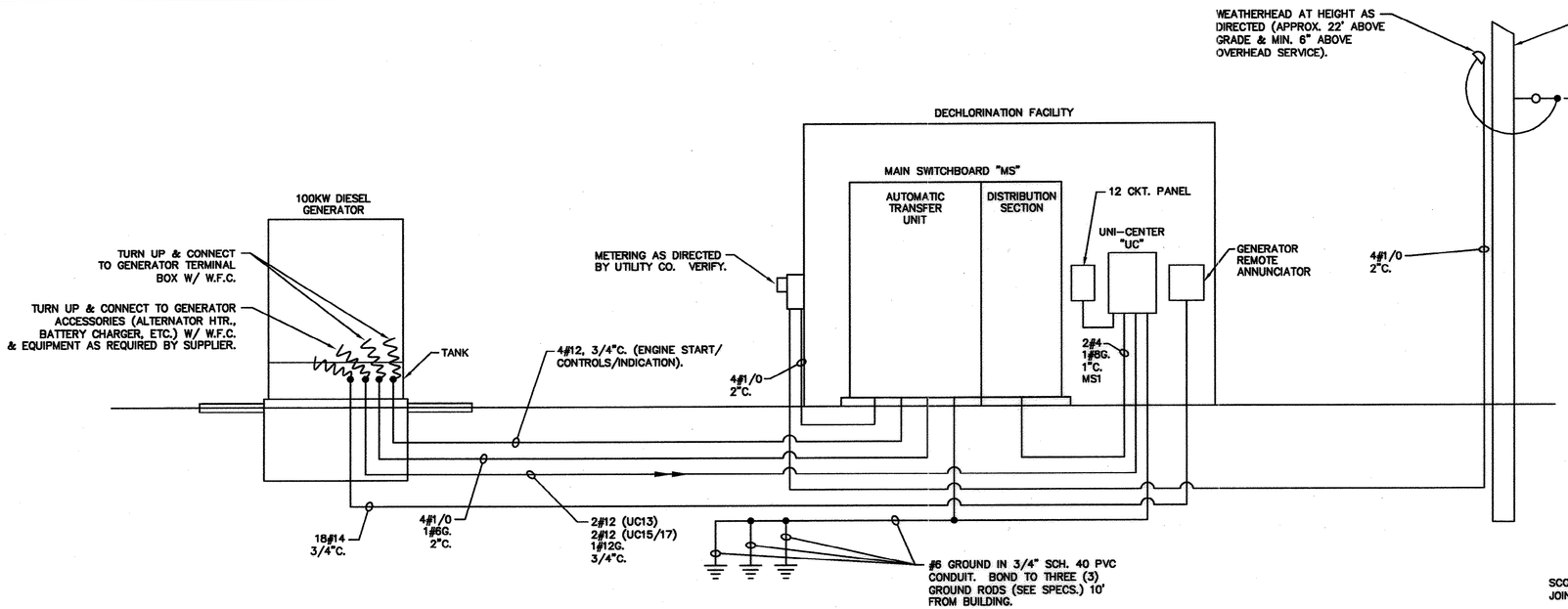
PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	SHEET
00149E27-RD	E34
REF.	OF
N.B. NO. 1731	50
PROJECT NO. 00149	

FILE NO. 22-85-00

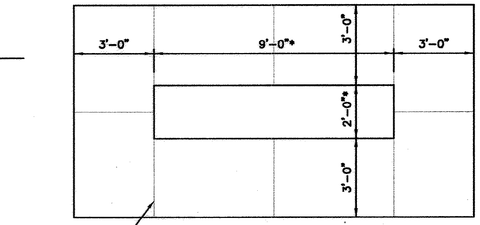
51-004-191 5

Projects\00149\dwg\RECORD DWG\00149E27-RD.dwg, 12/29/2003 08:47:03 AM



DECHLORINATION FACILITY POWER RISER DIAGRAM

NO SCALE

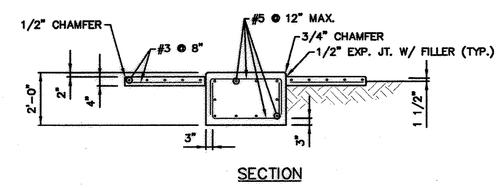


PLAN

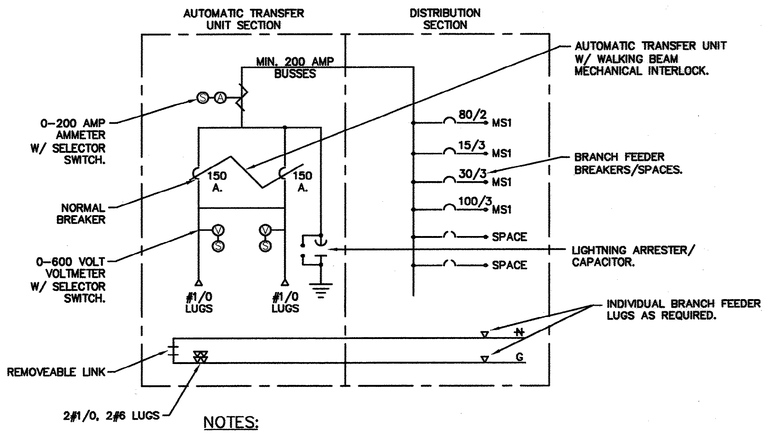
DECHLORINATION FACILITY EQUIPMENT SCHEDULE

UNI-CENTER "UC":

INTEGRAL UNIT CONSISTING OF SINGLE PHASE 480 VOLT TO 120/240 VOLT DRY-TYPE TRANSFORMER, MAIN PRIMARY BREAKER AND PANEL WITH MAIN SECONDARY BREAKER AND BRANCH CIRCUIT BREAKERS. TRANSFORMER SHALL BE 25 KVA HAVING 80 AMP PRIMARY BREAKER. PANEL SHALL CONTAIN 150 AMP SECONDARY BREAKER AND 24-20 AMP, 1P, 125V. BREAKERS (CIR 1-14, 16 & 18) AND 1-20 AMP, 2P, 250V. BREAKER (CIR. 15 & 17).



SECTION



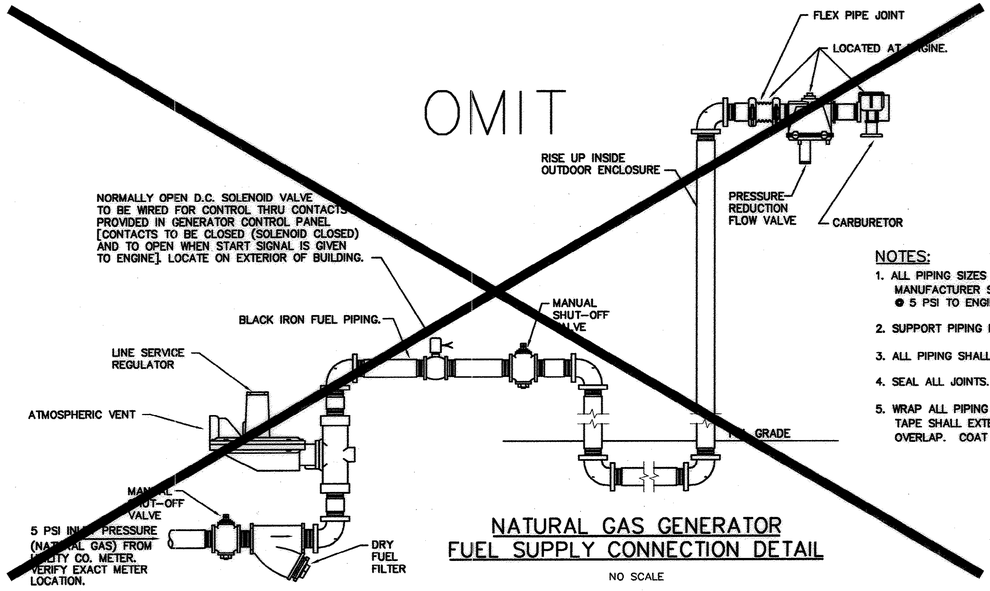
NOTES:

1. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. METERING TO BE APPROX. 5'-6" UP.

MAIN SWITCHBOARD "MS" ONE-LINE DIAGRAM

NO SCALE

OMIT



NATURAL GAS GENERATOR FUEL SUPPLY CONNECTION DETAIL

NO SCALE

GENERATOR PAD DETAIL

NO SCALE

NOTES:

1. ALL PIPING SIZES TO BE COORDINATED WITH GENERATOR MANUFACTURER SO AS TO PROVIDE PROPER GAS QUANTITY @ 5 PSI TO ENGINE.
2. SUPPORT PIPING IN MANNER APPROVED BY ENGINEER.
3. ALL PIPING SHALL BE 2"- VERIFY WITH MANUFACTURER.
4. SEAL ALL JOINTS.
5. WRAP ALL PIPING INSTALLED BELOW GRADE W/ PVC TAPE. TAPE SHALL EXTEND 6" ABOVE GRADE & HAVE MIN. 1/2" OVERLAP. COAT TAPE WRAP W/ ASPHALTUM BASED EPOXY.

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS: PROJECT ENG: JDP; DESIGNED BY: JMA; DRAWN BY: GS; CHECKED BY: TVT; APPROVED: JDP

SOUTH CAROLINA NOVEMBER 30, 2001 CERTIFICATE OF AUTHORIZATION G. P. BARBER & ASSOCIATES, INC. No. C000202 — DATE

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 7973 THOMAS V. TROTTER — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS - PLANNERS - SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: NEW DECHLORINATION FACILITY ELECTRICAL DETAILS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149E28-RD; REF.; N.B. NO. 1731; PROJECT NO. 00149; SHEET E35 OF 50

FILE NO. 22-85-00

51-004-193 5

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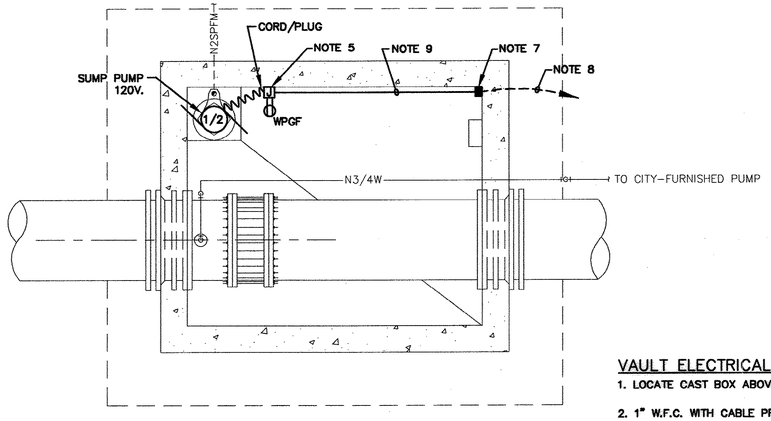
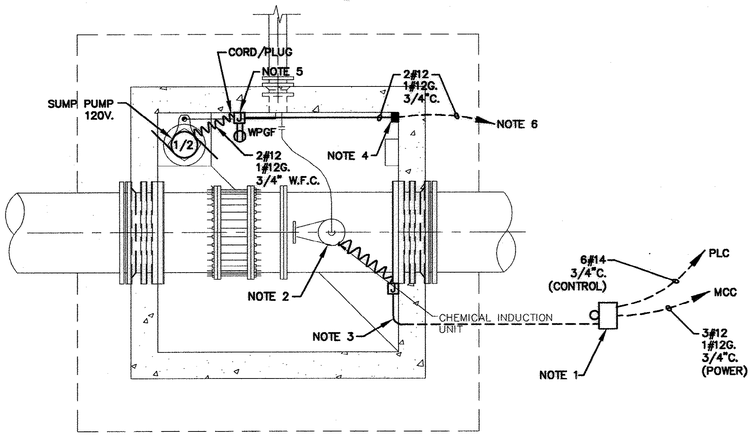


METER VAULT #3

DETAIL (2/E3)

NOT TO SCALE



CHEMICAL INJECTION POINT

DETAIL (4/E3 & 4/E33)

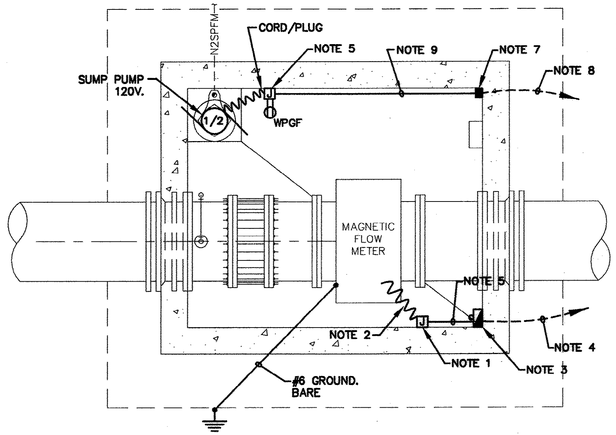
NOT TO SCALE

VAULT ELECTRICAL NOTES

1. LOCATE CAST BOX ABOVE FLOW TUBE & CONNECT W/ W.F.C.
2. 1" W.F.C. WITH CABLE PROVIDED W/ FLOW METER.
3. NEW PIPE-MOUNTED FLOW TRANSMITTER (SEE DETAIL) ON TOP OF VAULT. CONNECT FOR POWER & SIGNAL. VERIFY LOCATION.
4. HOMERUN AS SHOWN IN SCHEDULE.
5. 1" C. W/ CABLE PROVIDED W/ FLOW METER.
6. 1" C. W/ CABLE PROVIDED W/ FLOW METER. RUN TO TRANSMITTER LOCATION AS SHOWN IN SCHEDULE.
7. UP TO CONDULET APPROX. 24" BELOW TOP OF VAULT.
8. HOMERUN AS SHOWN IN SCHEDULE.
9. 3/4"C.; CONDUCTORS TO MATCH HOMERUN.

CHEMICAL INJECTION ELECTRICAL NOTES

1. NEW PIPE-MOUNTED SUBTROL PANEL ON SIDE OF ROAD. CONNECT FOR POWER.
2. STUB INTO VAULT, INSTALL CAST BOX AND CONNECT TO INDUCTION UNIT W/ W.F.C.
3. 1"C. W/ CABLE PROVIDED W/ SUBTROL UNIT.
4. CONDULET APPROX. 24" BELOW TOP OF VAULT.
5. LOCATE CAST BOX 24" ABOVE SUMP PUMP.
6. HOMERUN TO PANEL (120V.).



METER VAULT #1 & #2

DETAIL (1/E2)

NOT TO SCALE

METER VAULT SCHEDULE

VAULT NO.	LOCATION	TRANSMITTER LOCATION	HOMERUN		CIRCUIT DESCR.	
			SUMP PMP	XMITTER	SUMP PMP	XMITTER
1	RETURN SLUDGE PS	PIPE MTD. ** TOP OF VAULT	PNL 6A-18	PNL 6A-13	2#10, 1#10G, 3/4"C	2#10, 1#10G, 3/4"C
2	CLARIFIER NO. 5	PIPE MTD. ** TOP OF VAULT	PNL 6A-20	PNL 6A-17	2#10, 1#10G, 3/4"C	2#10, 1#10G, 3/4"C
3	CHLORINATION FACILITY	MAIN CNTRL PNL CHLOR. BLDG.	PNL 6B-16	PNL 6B-4	2#12, 1#12G, 3/4"C	2#12, 1#12G, 3/4"C

** SEE PIPE MTD. DETAIL SHEET M22.

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: JMA
DRAWN BY: JMA/GS
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA PROFESSIONAL ENGINEER R.P. BARBER No. 12000 REGISTERED CERTIFICATE OF AUTHORIZATION DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 7073 REGISTERED THOMAS VETTER SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
METER VAULT AND CHEMICAL INJECTION ELECTRICAL DETAILS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

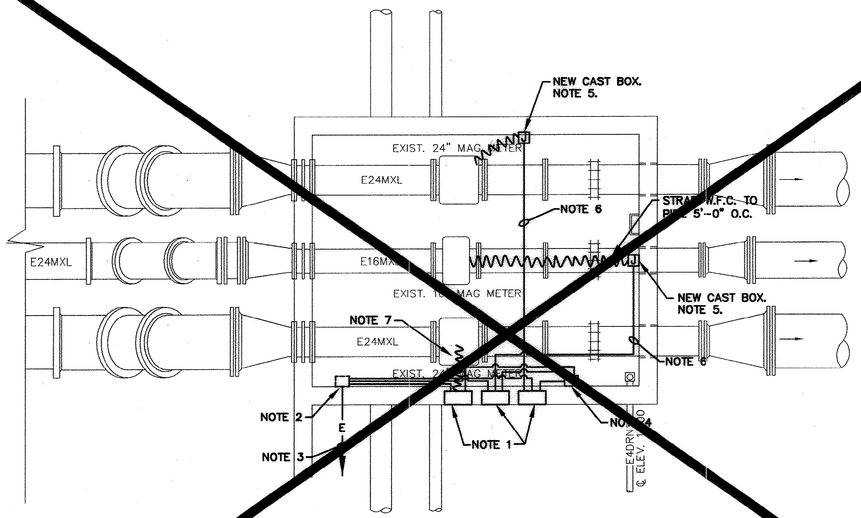
DISK 00149E29-RD
REF.
N.B. NO. 1731
PROJECT NO. 00149

SHEET E36 OF 50

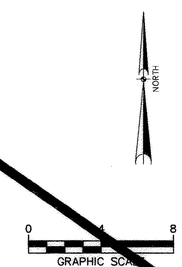
FILE NO. 22-85-00

51-004-193 5

Projects\00149\dwg\RECORD DWG\00149E29-M2.dwg, 12/29/2003 08:48:16 AM



CLARIFIER DISTRIBUTION CHAMBER #6 ELECTRICAL PLAN
SCALE: 1/4" = 1'-0"



DISTRIBUTION CHAMBER PLAN NOTES

1. RELOCATE EXISTING TRANSMITTERS FROM INSIDE VAULT TO TOP OF VAULT AS SHOWN. MOUNT TO HANDRAIL W/ 316 S.S. UNISTRUT & HARDWARE.
2. EXISTING BOX CONTAINING 3-2/C SIGNAL CABLES. EXTEND OVER AND UP TO TRANSMITTERS ABOVE.
3. EXISTING CONDUIT CONTAINING 4-2/C SIGNAL CABLES TO REMAIN.
4. EXISTING BOX/SWITCH FOR POWER. EXTEND OVER AND UP TO TRANSMITTERS ABOVE.
5. MOUNT ON WALL ABOVE FLOW TUBE AND CONNECT W/ 3/4" W.F.C.
6. 1"C. W/ NEW CABLE PER MANUFACTURER'S REQUIREMENTS. EXISTING METERS ARE FOXBORO. FIELD VERIFY MODEL NUMBER TO MATCH NEW CABLES.
7. 1" W.F.C. W/ NEW CABLE. SEE NOTE 6.

OMIT

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: JMA
DRAWN BY: JMA / GS
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA REGISTERED LANDSCAPE ARCHITECT — CERTIFICATE OF AUTHORIZATION — B. P. BARBER & ASSOCIATES, INC. — No. C000000 — DATE

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER — THOMAS V. TAYLOR — No. 7673 — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
MODIFICATIONS TO CLARIFIER DISTR. CHAMBER #6 ELECTRICAL PLAN
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149E30-RD
REF.
N.B. NO. 1731
PROJECT NO. 00149
SHEET E37 OF 50
FILE NO. 22-85-00

51-004-194 S

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NEW MAIN SWITCHGEAR SG-1
NEW GENERATOR BLDG

SANTEE COOPER ELECTRIC COMPANY SUBSTATION

1200A NORMAL BUS

1200A EMERG. BUS

GENERATOR MASTER CONTROL CUBICLE — PLC — TO OWNER-FURNISHED SCADA SYSTEM MAIN PLC

GENERATOR #1 CONTROL CUBICLE

GENERATOR #2 CONTROL CUBICLE

GROUND BUS

SYSTEM GROUND

500kVA 12470V:480V — MCC P-24

GENERATOR 1500kW .8pf — G1 — NEUTRAL GROUNDING RESISTOR NGR #1 — 100:5 — SYSTEM GROUND

GENERATOR 1500kW .8pf — G2 — NEUTRAL GROUNDING RESISTOR NGR #2 — 100:5 — SYSTEM GROUND

MAIN SWITCH LINEUP S-1
BY GRIT COLLECTORS

MEDIUM VOLTAGE LINEUP — 600A BUS — NOTE 2 — 250E — NOTE 5 — GROUND BUS

DISTRIBUTION PANEL D1 — NEUTRAL BUS — GROUND BUS

500kVA 12470V:480V TRANSFORMER

NOTE 1 — DIP POLE #125 — 2-PARALLEL RUNS OF 3#1/0 (15kV), AL, 1#6 (600V)

OVERHEAD PRIMARY BY SANTEE COOPER ELECTRIC COMPANY

12470V:480V — MCC P-31

AUTOMATIC TRANSFER SWITCH — MCC P-22 — GRIT TANK AREA

MCC-21
SCREW PUMPHOUSE

400A BUS* — AUTOMATIC TRANSFER SWITCH — INFLUENT PUMP 1 — INFLUENT PUMP 2 — INFLUENT PUMP 3

GENERATOR 200kW .8pf — NOTE 3

UNIT SUB U-9
PROCESS BUILDING BASEMENT

2000A BUS — 600A BUS, 1000A N. — 1500kVA 12470V:480V

INCOMING FEEDER — TRANSFORMER — MAIN BREAKER — MCC P-91 — MCC P-71 — SPARE BREAKER — SPARE BREAKER — AUTOMATIC VFD BYPASS SWITCHES — GENERATOR BREAKER — MCC P-92 — SPARE — #4/0 — #2 — MCC P-51

UNIT SUB U-15
BY 700kW GENERATOR BLDG

1400A BUS — 800A BUS — 2 PARALLEL RUNS 4-500MCM NOTE 4 — 1000kVA 12470V:480V

INCOMING FEEDER — TRANSFORMER — MCC P-151 — MCC P-93 — MCC P-23

GENERATOR TIE BREAKER — 800A ** — MANUAL TRANSFER SWITCH

UNIT SUB U-14
OUTSIDE SLUDGE HANDLING BLDG

2000A BUS — 1500kVA 12470V:480V

INCOMING FEEDER — TRANSFORMER — MCC P-141 — MCC P-7

NEW UNIT SUB U-16
OUTSIDE SLUDGE HANDLING BLDG

MEDIUM VOLTAGE SWITCH — DP1 — 3000A BUS — 2500kVA 12470V:480V

INCOMING FEEDER — TRANSFORMER — MCC P162 AERATOR VFD'S INTERM. — MCC P163 CHLORINE BUILDING — MCC P164 CENTRIFUGE 1 & 2 — SPARE

800A ** — GENERATOR 600kW .8pf — 800A ** — GENERATOR 700kW .8pf — ** KEY INTERLOCKS — NOTE 3

WATER PLANT DISTRIBUTION

UNIT SUB U-3
NEAR THICKENER BLDG

2000A BUS — 1500kVA 12470V:480V

INCOMING FEEDER — TRANSFORMER — OZONE BLDG MCC — DP-1 — MCC P-17 — MCC P-17A

ONE-LINE ELECTRICAL NOTES
1. UTILITY COMPANY TO REMOVE EXISTING PLANT SERVICE ENTRANCE CONDUCTORS.
2. INSTALL NEW FUSES (3) SIZED AS SHOWN.
3. ABANDON GENERATOR.
4. INSTALL CONNECTORS ON BOTH ENDS OF CABLES AND BOLT TO CIRCUIT BREAKERS.
5. REMOVE ALL CONNECTIONS BETWEEN EARTH AND "S-1" GROUND BUS.

"IL" INTERLOCK BETWEEN THESE COMPONENTS
"GSCT" GROUND SENSING CURRENT TRANSFORMER
"750" G.E. MULTILIN 4-FUNCTION RELAY
"489" G.E. MULTILIN MULTIFUCTION RELAY

GENERAL ELECTRICAL NOTES
1. ALL EXISTING LOW VOLTAGE GENERATORS (600V.) SHALL BE DISCONNECTED FROM THEIR RESPECTIVE TRANSFER DEVICES AND ABANDONED IN PLACE.PULL BACK ALL CONDUCTORS TO GENERATOR DISCONNECT TERMINALS AND CAP ALL ASSOCIATED CONDUIT. REMOVE CONDUIT WHERE NECESSARY TO COMPLETE ABANDONMENT PROCESS. ALL EXISTING TRANSFER EQUIPMENT ASSOCIATED WITH ABANDONED GENERATORS SHALL BE CIRCUMVENTED BY MEANS OF FLEXIBLE CONDUCTOR, BUS, ETC. SO THAT IN NO EVENT CAN THE EXISTING LOW VOLTAGE GENERATOR BUS BE CONNECTED TO THE NORMAL BUS.
2. INFORMATION USED TO DEVELOP THIS DRAWING WAS OBTAINED FROM PRC ENGINEERING DRAWINGS, J&&G ENGINEERING DRAWINGS AND FROM FIELD DATA OBTAINED BY B.P. BARBER. FIELD VERIFY THAT ALL COMPONENTS ARE AS SHOWN ON THIS DRAWING. IF DISCREPENCIES ARE FOUND, IMMEDIATELYREPORT TO ENGINEER.

DEMOLISH EXISTING EQUIPMENT.

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS — PROJECT ENG: RTH — DESIGNED BY: JWA — DRAWN BY: JWA — CHECKED BY: TVT — APPROVED: JDP

SOUTH CAROLINA PROFESSIONAL ENGINEER — CERTIFICATE OF AUTHORIZATION — B.P. BARBER & ASSOCIATES, INC. — No. COA0020 — DATE

SOUTH CAROLINA PROFESSIONAL ENGINEER — REGISTERED — No. 7673 — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: MODIFIED OVERALL ONE-LINE DIAGRAM
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149E31-RD | REF. | N.B. NO. 1731 | PROJECT NO. 00149

SHEET E38 OF 50

FILE NO. 22-85-00

51-004-195 5

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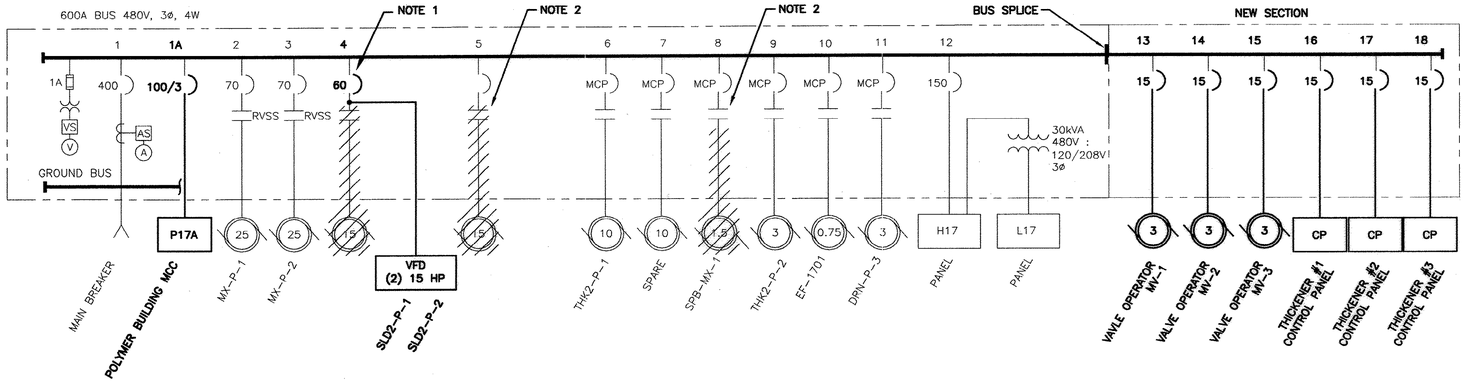
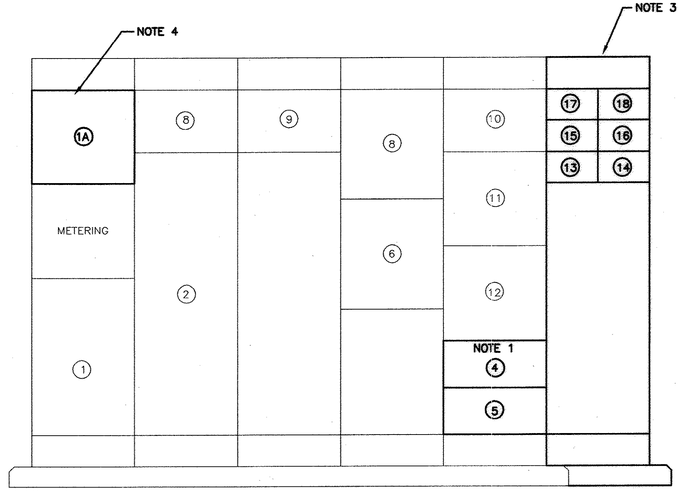
MODIFICATIONS TO MCC P17

THICKENER BUILDING





EXISTING MCC P17 MODIFICATIONS

NOT TO SCALE

GENERAL ELECTRICAL NOTES

1. INFORMATION USED TO DEVELOP THIS DRAWING WAS OBTAINED FROM PRC ENGINEERING DRAWINGS, J.J.&G. ENGINEERING DRAWINGS, AND FROM FIELD DATA GATHERED BY B.P. BARBER. FIELD VERIFY THAT ALL COMPONENTS ARE AS-SHOWN ON THIS DRAWING. IF DESCREPANCIES ARE FOUND, REPORT TO ENGINEER IMMEDIATELY.

MCC P17 ELECTRICAL NOTES

1. REMOVE EXISTING STARTER COMPLETE W/ BUCKET. INSTALL NEW 60A, 3P CIRCUIT BREAKER TO MATCH EXISTING EQUIPMENT. MODIFY COMPARTMENT TO ACCEPT NEW CIRCUIT BREAKER AS SHOWN.
2. STARTER TO REMAIN AS SPARE.
3. ADD NEW 300A, VERTICAL SECTION TO MCC WITH EQUIPMENT AS SHOWN. MODIFY EXISTING MCC AS NECESSARY TO EXTEND MAIN GROUND BUS. MAINTAIN SAME BUS AMPACITIES AND BRACING FOR NEW ADDITION.
4. INSTALL NEW 100A, 3P CIRCUIT BREAKER IN EXISTING SPACE COMPLETE W/ BUCKET TO MATCH EXISTING EQUIPMENT.

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: JMA
DRAWN BY: JMA
CHECKED BY: TVT
APPROVED: JDP

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECTURAL CORPORATION
B.P. BARBER & ASSOCIATES, INC.
No. C00080
CERTIFICATE OF AUTHORIZATION
DATE

NORTH CAROLINA PROFESSIONAL ENGINEER
No. 7073
ASSISTANT DIRECTOR
THOMAS V. FACTOR
SIGNATURE

bpb
B. P. BARBER & ASSOCIATES, INC.
ENGINEERS - PLANNERS - SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
MCC ONE-LINE DIAGRAMS & ELEVATIONS
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

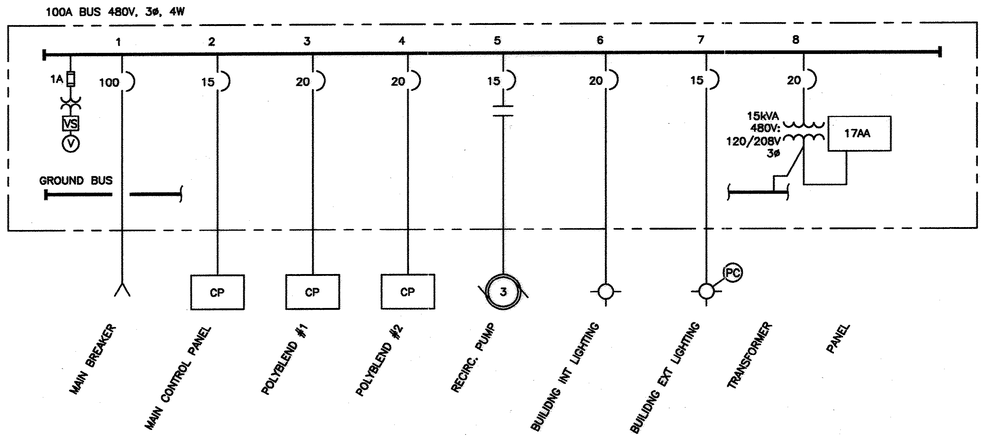
DISK 00149E32-RD
REF.
N.B. NO. 1731
PROJECT NO. 00149
SHEET E39 OF 50
FILE NO. 22-85-00

51-004-196 5

Plotted: 7/1/2002 9:56:15 AM D:\WG\00149\Dwg\00149E32-RD.dwg

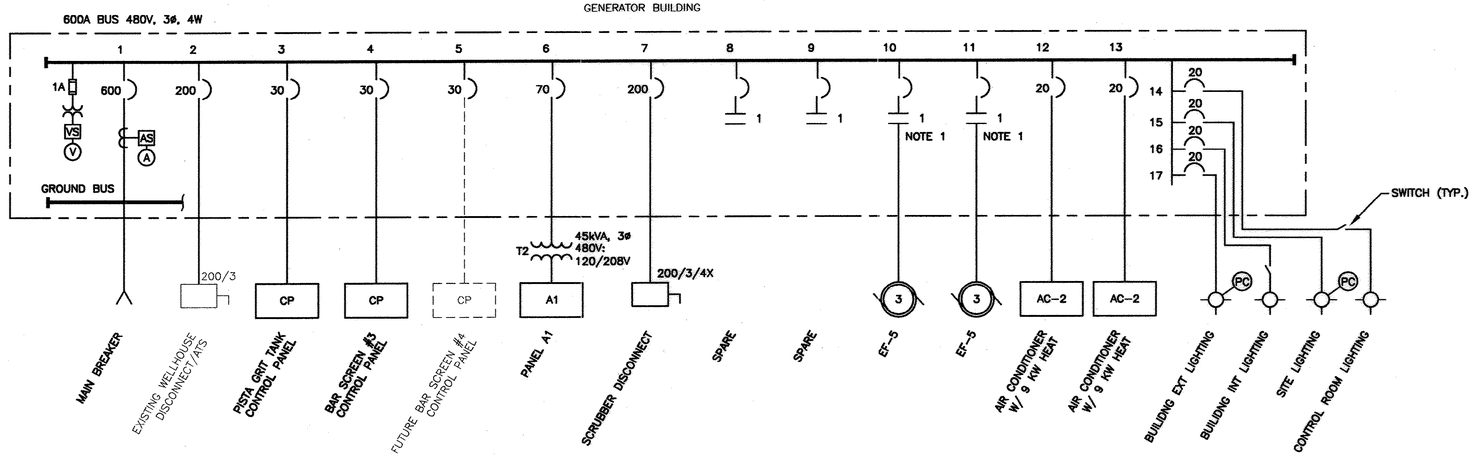
MCC P17A

POLYMER BUILDING



MCC P24

GENERATOR BUILDING



MCC P24 ELECTRICAL NOTES

1. PROVIDE N.O. AUXILLIARY CONTACTS FOR SIGNAL TO DAMPER MOTOR ACTUATORS.

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: JMA
DRAWN BY: JMA/GS
CHECKED BY: TVT
APPROVED: JDP

NORTH CAROLINA NOVEMBER 30, 2004 SEAL 030000 CERTIFICATE OF AUTHORIZATION G.P. BARBER & ASSOCIATES, INC. — DATE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL No. 9973 THOMAS E. VICTOR — SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: MCC ONE-LINE DIAGRAMS & ELEVATION
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149E33-RD
REF.
N.B. NO. 1731
PROJECT NO. 00149
SHEET E40 OF 50
FILE NO. 22-85-00

51-004-197 5

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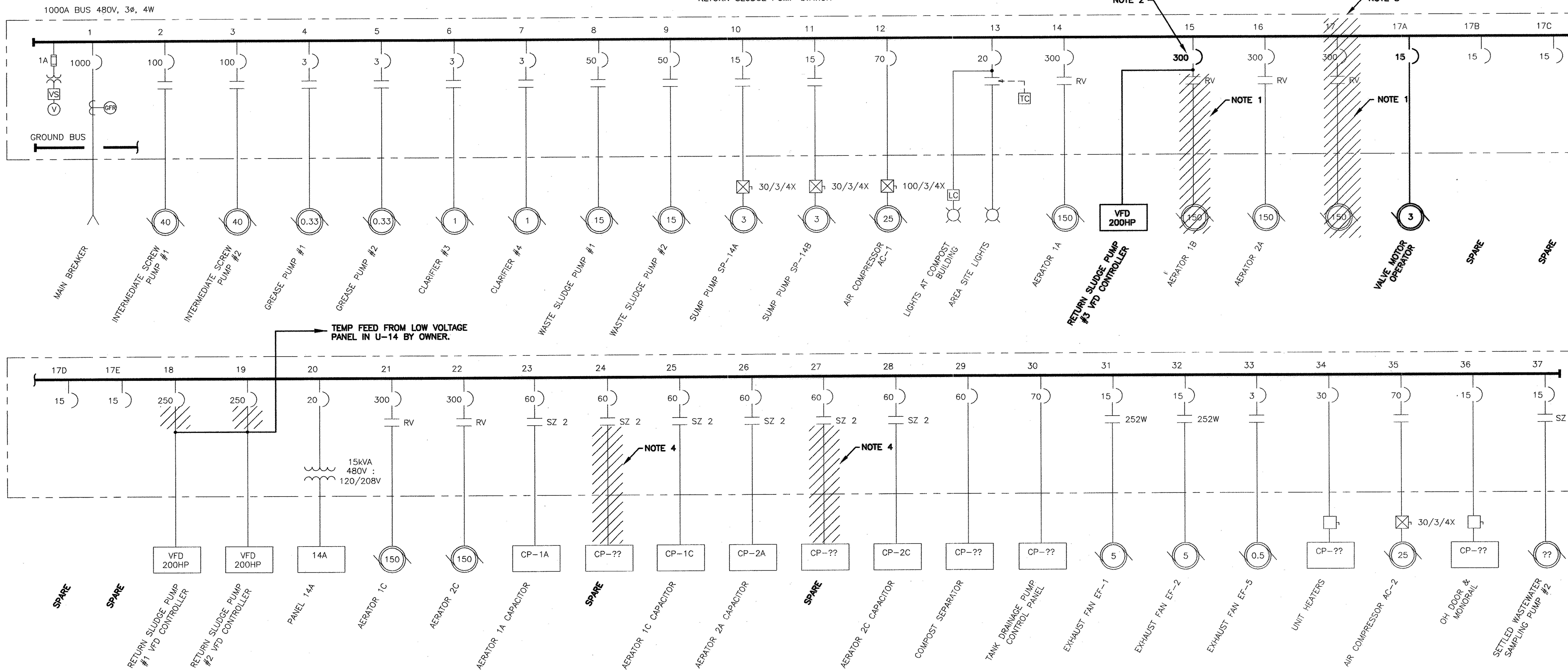
MODIFICATIONS TO MCC P141

RETURN SLUDGE PUMP STATION

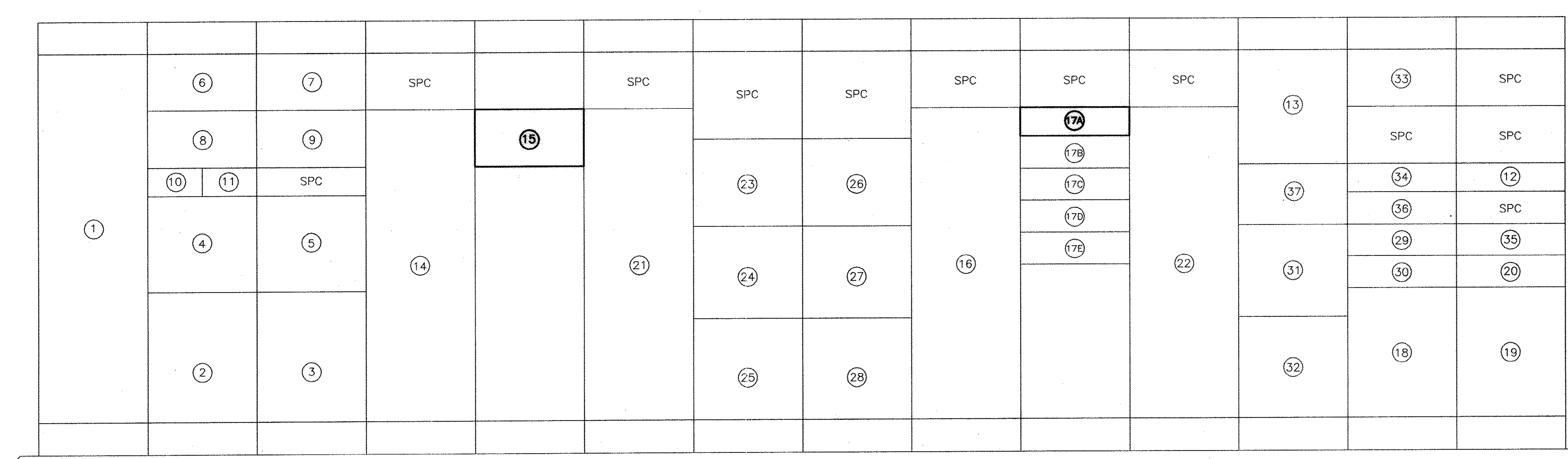


GENERAL ELECTRICAL NOTES

1. INFORMATION USED TO DEVELOP THIS DRAWING WAS OBTAINED FROM PRC ENGINEERING DRAWINGS, JJ&G ENGINEERING DRAWINGS AND FROM FIELD DATA OBTAINED BY B.P. BARBER. FIELD VERIFY THAT ALL COMPONENTS ARE AS SHOWN ON THIS DRAWING. IF DISCREPANCIES ARE FOUND, IMMEDIATELY REPORT TO ENGINEER.

MCC P141 ONE-LINE MODIFICATION NOTES

1. REMOVE EXISTING EQUIPMENT INCLUDING AUTO TRANSFORMER STARTER, CIRCUIT BREAKER, ETC. MODIFY EXISTING SPACE TO ACCEPT ONE (1) NEW 300A, 3P, CIRCUIT BREAKER AS SHOWN. REMOVE EXISTING AERATOR MOTOR AND REPLACE WITH NEW (SEE MODIFICATIONS TO EXISTING AERATION BASIN SHEET). COORDINATE OUTAGE W/OWNER. SEE ONE-LINE DIAGRAM FOR NEW AERATOR-MOTOR FEEDER IN NEW MCC P162. TURN ALL REMOVED EQUIPMENT OVER TO OWNER.
2. PROVIDE & INSTALL NEW CIRCUIT BREAKER AS SHOWN TO MATCH EXISTING EQUIPMENT. EQUIPMENT IS GE 8000 LINE MOTOR CONTROL CENTER.
3. REMOVE EXISTING EQUIPMENT INCLUDING AUTO TRANSFORMER STARTER, CIRCUIT BREAKER, ETC. MODIFY EXISTING SPACE TO ACCEPT FIVE (5) NEW 15A, 3P, CIRCUIT BREAKER AS SHOWN. REMOVE EXISTING AERATOR MOTOR AND REPLACE WITH NEW (SEE MODIFICATIONS TO EXISTING AERATION BASIN SHEET). COORDINATE OUTAGE W/OWNER. SEE ONE-LINE DIAGRAM FOR NEW AERATOR-MOTOR FEEDER IN NEW MCC P162. RETURN ALL REMOVED EQUIPMENT OVER TO OWNER.
4. DISCONNECT & REMOVE POWER CONDUCTORS BETWEEN CAPACITORS AND MCC. DISCONNECT & REMOVE CONTROL CONDUCTORS BETWEEN P141-15 & P141-24; AND BETWEEN P141-17 & P141-27. TWO (2) STARTERS AND TWO (2) CAPACITORS REMAIN IN PLACE FOR SPARE.
5. P141-17A, 17B, 17C, 17D, & 17E REPLACE P141-17.



MODIFICATIONS TO MCC P141 ELEVATION

RETURN SLUDGE PUMP STATION

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: RTH
DESIGNED BY: JMA
DRAWN BY: JMA/GS
CHECKED BY: TVT
APPROVED: JDP

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. C00020
DATE

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 7973 THOMAS VICTOR NIVIN, III
SIGNATURE

bpb
B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
MCC ONE-LINE DIAGRAM & ELEVATION
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK 00149E34-RD
REF.
N.B. NO. 1731
PROJECT NO. 00149
SHEET E41 OF 50

FILE NO. 22-85-00

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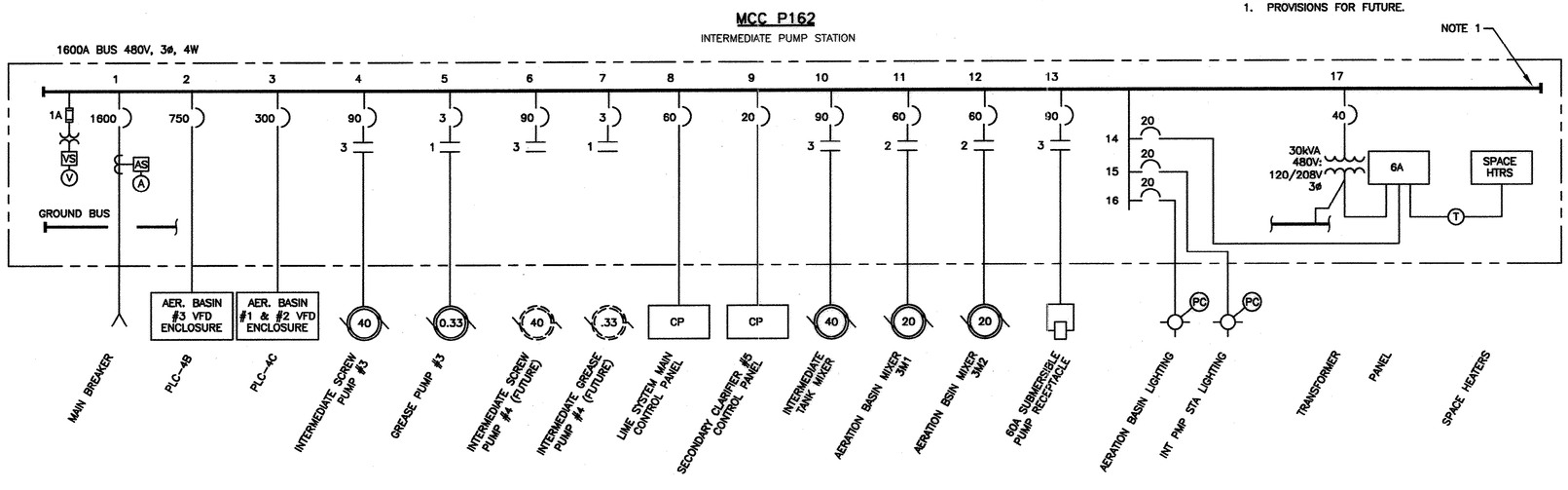
MCC P162

INTERMEDIATE PUMP STATION

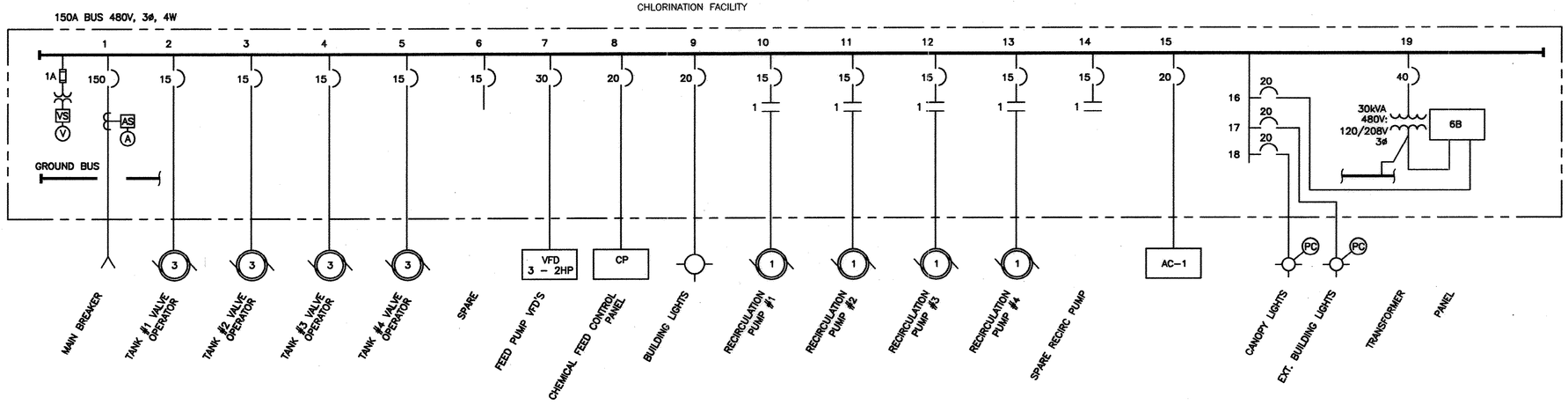


ONE-LINE NOTES:

1. PROVISIONS FOR FUTURE.

MCC P163

CHLORINATION FACILITY



RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS		
PROJECT ENG:	RTH	
DESIGNED BY:	JMA	
DRAWN BY:	JMA/GS	
CHECKED BY:	TVT	
APPROVED:	JDP	

NORTH CAROLINA CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. P.A. — DATE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL No. 7873 THOMAS VICTOR — SIGNATURE

bpb

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS — PLANNERS — SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE: MCC ONE-LINE DIAGRAMS

DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT: IMPROVEMENTS AND EXPANSION FOR THE WATER RECLAMATION FACILITY PHASE I

DISK	00149E35-RD
REF.	
N.B. NO.	1731
PROJECT NO.	00149
SHEET	E42
OF	50
FILE NO.	22-85-00

51-004-199

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MCC P164

DEWATERING FACILITY

RECORD DRAWINGS
DATE: SEPT., 2003

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS		DRAWN BY:	CHECKED BY:
PROJECT ENG:	DESIGNED BY:	JMA/JS	TYT
RTH	JMA		APPROVED:
			JDP

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION
B.P. BARBER & ASSOCIATES, INC.
No. C000000
DATE

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER
No. 7975
SIGNATURE

B. P. BARBER & ASSOCIATES, INC.
ENGINEERS – PLANNERS – SURVEYORS
COLUMBIA • SPARTANBURG • CHARLESTON • FLORENCE

SHEET TITLE
MCC
ONE-LINE
DIAGRAM
DATE: FEB., 2001 SCALE: AS SHOWN

PROJECT
IMPROVEMENTS AND
EXPANSION FOR THE
WATER RECLAMATION
FACILITY
PHASE I

DISK	SHEET
00149E36-RD	E43
REF.	OF
N.B. NO. 1731	50
PROJECT NO. 00149	

FILE NO. 22-85-00

51-004-300 5

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