SCHWARTZ
WASTEWATER TREATMENT
PLANT EXPANSION

GSW&SA PROJECT #857-01
SRF PROJECT #381-63

GRAND STRAND
WATER & SEWER
AUTHORITY



11x17 ARE TRUE 1/2 SCALE

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER JOSEPH W. McGOUGAN No. 12335

HOBBS, UPCHURCH AND ASSOCIATES, P.A. CERTIFICATE OF AUTHORIZATION No. C00238

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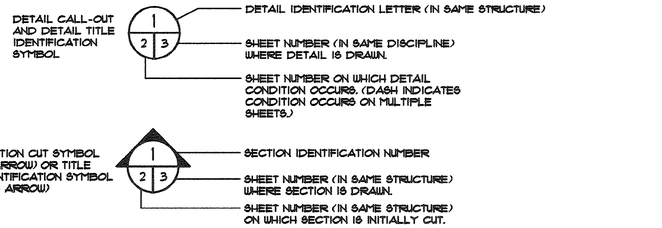
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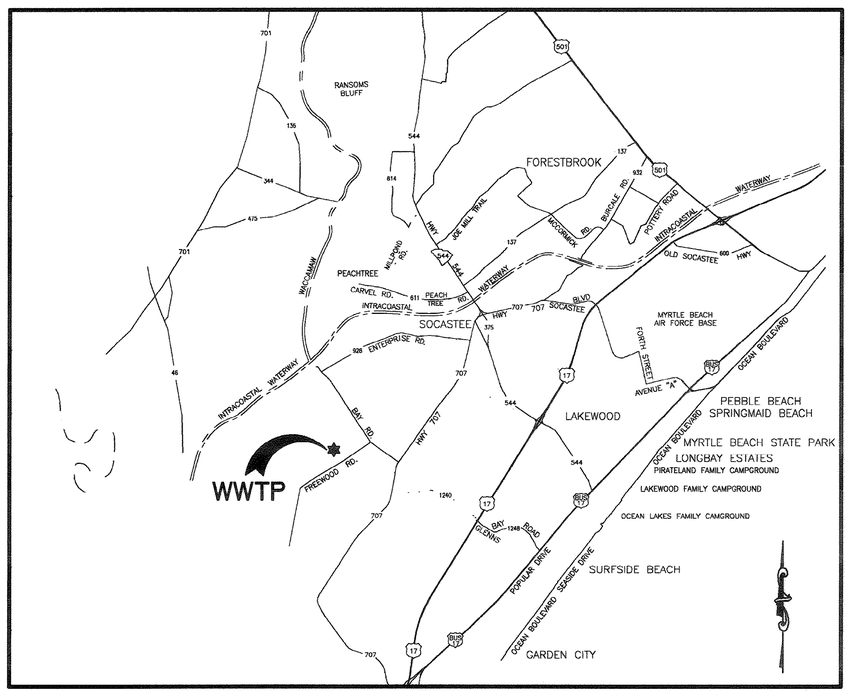
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GENERAL CONSTRUCTION ABBREVIATIONS

#	NUMBER OR POUND	D	DIAMETER	INFL	INFLUENT	R.C.P.	REINFORCED CONCRETE PIPE
ø	DIAMETER	DIA	DIAMETER	INS.	INSIDE	RAD.	RADIUS
&	AND	D.I.P.	DUCTILE IRON PIPE	INV.	INVERT	RAS	RETURN ACTIVATED SLUDGE
<	LESS THAN	DISCH.	DISCHARGE	JT.	JOINT	RED	REDUCER
<=	LESS THAN OR EQUAL TO	DP	DEEP	JTS	JOINTS	REF	REFERENCE
>	GREATER THAN	DWLS.	DOWELS	L.L.O.	LONG LEG OUT	REINF	REINFORCING OR REINFORCED
@	AT	EF.	EACH FACE	LB	POUND	REQ'D	REQUIRED
A.B.	ANCHOR BOLT	E.J.	EXPANSION JOINT	LG	LONG	S.S.	STAINLESS STEEL
AFF.	ABOVE FINISHED FLOOR	EA	EACH	L.P.	LOW POINT	SCH.	SCHEDULE
ADDL	ADDITIONAL	EFF.	EFFLUENT	M.J.	MECHANICAL JOINT	SHT	SHEET
ALUM	ALUMINUM OR ALUM	EL.	ELEVATION	MATL.	MATERIAL	SIM	SIMILAR
APPROX	APPROXIMATE(LY)	ELEV	ELEVATION	MAS	MASONRY	SO2	SULFUR DIOXIDE
ARCH	ARCHITECTURAL	EQ	EQUAL	MAX	MAXIMUM	SPA	SPACES
BM	BENCH MARK OR BEAM	EQUIP	EQUIPMENT	MECH	MECHANICAL	SQ.	SQUARE
BOTT.	BOTTOM	EXIST.	EXISTING	MFR	MANUFACTURER	STD.	STANDARD
B.W.	BLOCK WALL	EXP.	EXPANSION	MH	MANHOLE	STL	STEEL
C.I.	CAST IRON	F.E.S.	FLARED END SECTION	MIN	MINIMUM	STN	STAINLESS
C/C	CENTER TO CENTER	F.R.P.	FIBERGLASS REINFORCED PLASTIC	MTG	MOUNTING	S.W.	SLAB WIDTH
CAP	CAPACITY			N.P.W.	NONPOTABLE WATER	S.W.D.	SIDE WALL DEPTH
CIRCUM	CIRCUMFERENCE	FIG	FIGURE	N.T.S.	NOT TO SCALE	T/	TOP OF
CL	CLAY	FIN	FINISHED	NO.	NUMBER	TCJ,CJ	TYP. CONTROL JOINT, CONSTRUCTION JOINT
CLR	CLEARANCE	FL.	FLANGE	O.C.	ON CENTER	THRD	THREAD(S)(ED)
℄	CENTERLINE	FLR	FLOOR	O.D.	OUTSIDE TO OUTSIDE	TRICK	TRICKLING
CL2	CHLORINE	FTG	FOOTING	OPNG	OPENING	TYP	TYPICAL
CLARIF	CLARIFIER	GALV	GALVANIZED	OX	OXIDATION	U.O.N.	UNLESS OTHERWISE NOTED
CHEM.	CHEMICAL	HDWE	HARDWARE	P.E.	PLAIN END	VERT	VERTICAL
COL	COLUMN	HK	HOOK	PED	PEDESTAL	W.W.F.	WELDED WIRE FABRIC
CONC.	CONCRETE	HORIZ.	HORIZONTAL	PL.	PLATE	W/	WITH
CONST	CONSTRUCTION	H.P.	HIGH POINT	PLCS.	PLACES	W/O	WITHOUT
CONT	CONTINUOUS	HYD	HYDRANT	PROJ	PROJECTION	WAS	WASTE ACTIVATED SLUDGE
CONTR	CONTRACTOR	I.D.	INSIDE DIAMETER	P.S.	PUMP STATION	W/L	WATER LEVEL
CU	COPPER	O.D.	OUTSIDE DIAMETER	P.V.C.	POLYVINYL CHLORIDE		
C.W.	CONCRETE WALL						

SECTION/DETAIL LEGEND





VICINITY MAP
N.T.S.

INDEX OF SHEETS

~~XX XXXXXXX~~ = NOT IN CONTRACT

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VICINITY MAP AND INDEX

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE:	JUNE 2008
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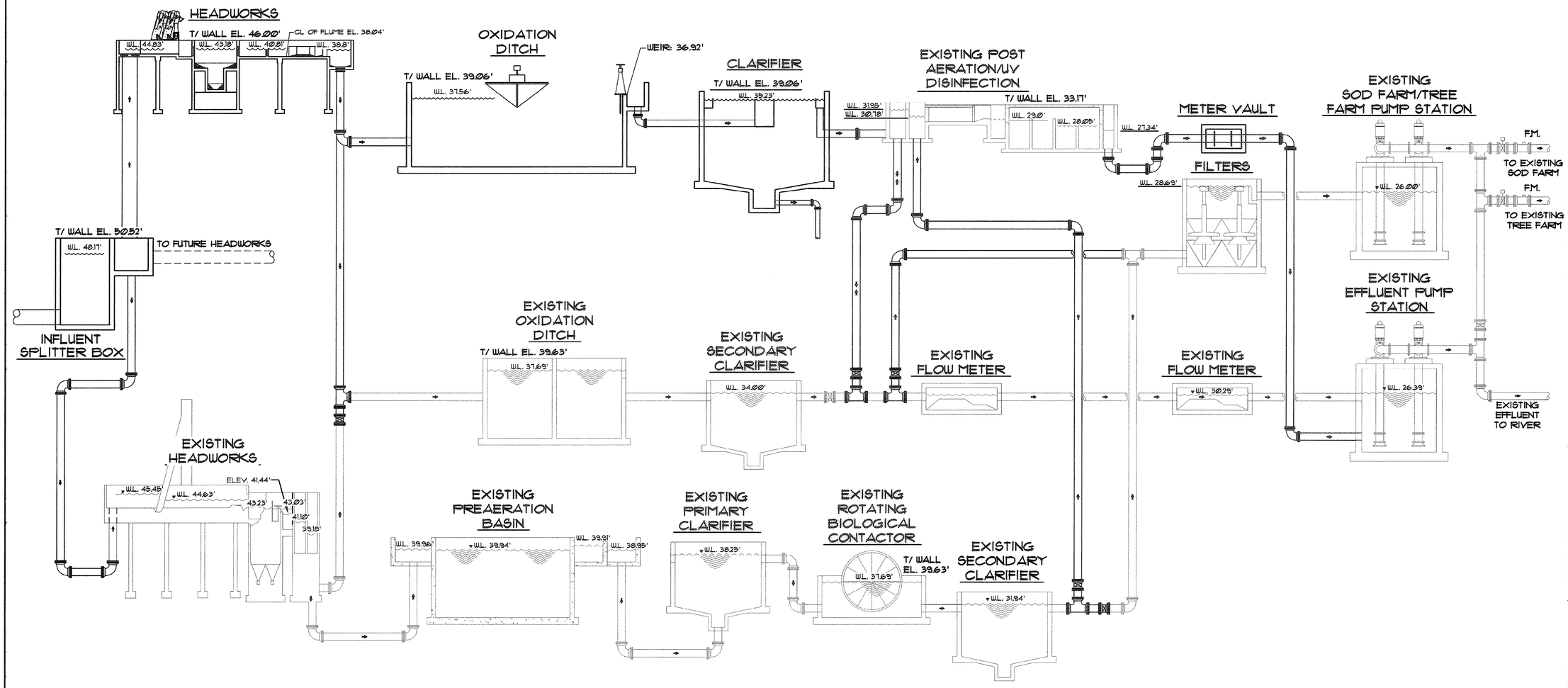
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HYDRAULIC PROFILE
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HYDRAULIC PROFILE

SCHWARTZ
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PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

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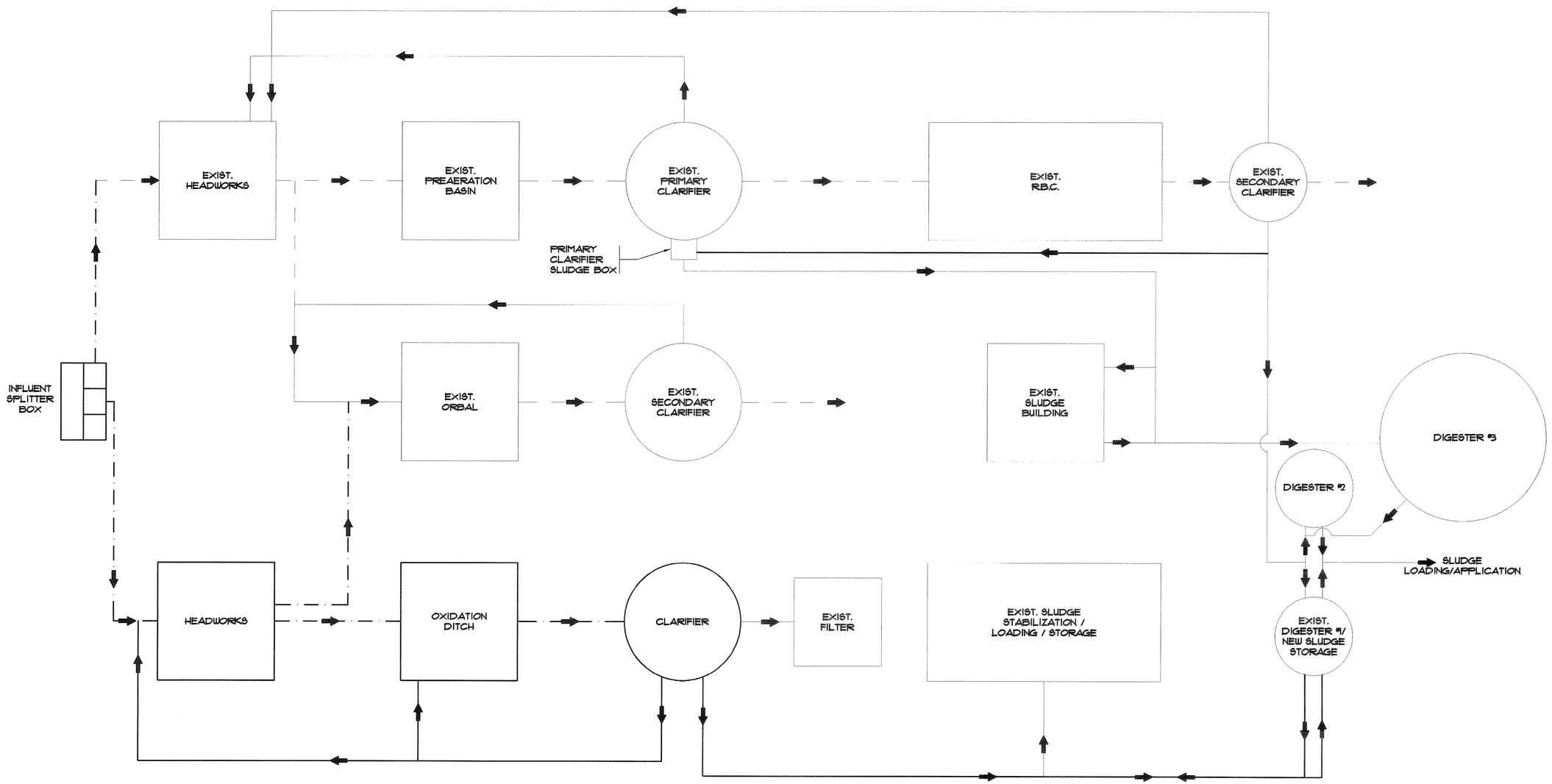
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LEGEND

NEW — EXIST.

FLOW

SLUDGE

SLUDGE SCHEMATIC

N.T.S.

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SLUDGE SCHEMATIC

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

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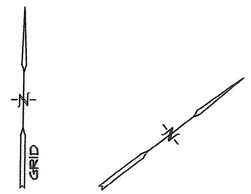
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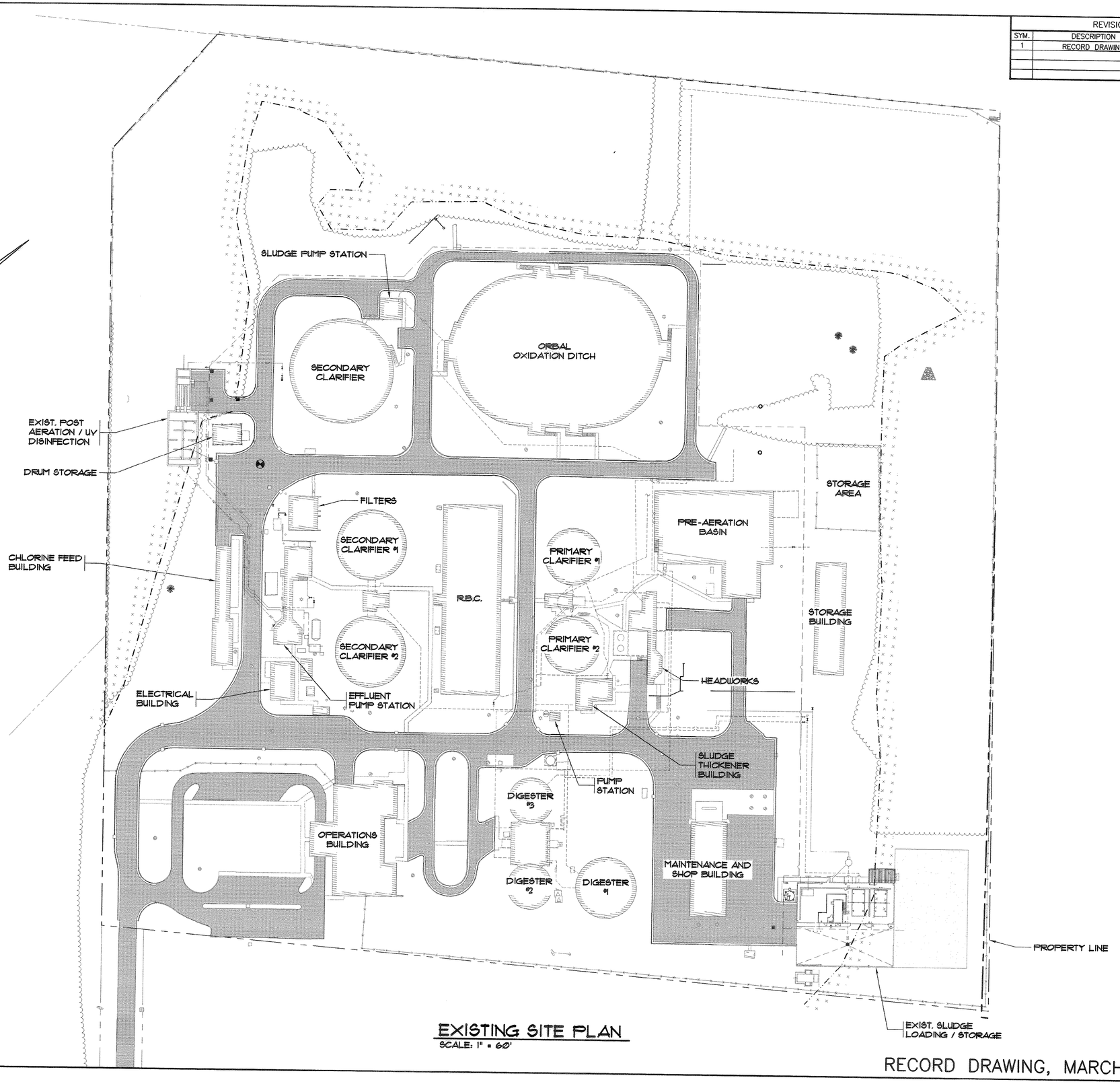
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EXISTING SITE PLAN
SCALE: 1" = 60'

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LEGEND

EXISTING	FEATURE	NEW
AIR	AIR	
SD	STORM DRAIN	
SL	SLUDGE	
CL	CL FEED	
INF	INFLUENT	
EFF	EFFLUENT	
	PROPERTY LINE	
SS	SANITARY SEWER	
YP	YARD PIPING	
FM	FORCEMAIN	
POT	POTABLE WATER	
	PLANT SERVICE WATER	
	GRID LINES	
69	1' CONTOUR	69
70	5' CONTOUR	70
	BUILDING	
	PAVED ROAD	
	GRAVEL ROAD	
	WETLAND AREA	
	TREE LINE / CLEARING LIMIT	
	FENCE	
	PINE TREE	
WH	WATT HOUR METER	WH
	ELECTRIC TRANSFORMER	
J	ELECTRIC JUNCTION BOX	J
E	ELECTRIC MANHOLE	E
H.B.	HOSE BIB (H.B.)	
	LIGHT POLE	
T	TELEPHONE VAULT	T
C.B.	CATCH BASIN (C.B.)	
J.B.	JUNCTION BOX (J.B.)	
F.E.S.	FLARED END SECTION (F.E.S.)	
	CHECK VALVE	
S	SANITARY SEWER MANHOLE	S
	VALVE MAKER	
	WATER METER	
	VALVE	
	FIRE HYDRANT	

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SCHWARTZ WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

EXISTING SITE PLAN

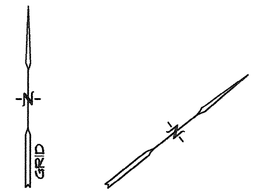
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TBM:
PK NAIL IN PAVEMENT ELEV. 23.71'.
NOTE: BENCHMARK ELEVATION, STRUCTURE ELEVATIONS, AND CONTOURS ARE BASED ON EXISTING BENCHMARKS ESTABLISHED FROM PREVIOUS PROJECTS. NAVD88 DATUM IS 1.97' BELOW ELEVATIONS PROVIDED.

LEGEND		
EXISTING	FEATURE	NEW
----- AIR -----	AIR	
----- SD -----	STORM DRAIN	------
-----	SLUDGE	
----- CL -----	CL FEED	
----- INF -----	INFLUENT	
----- EFF -----	EFFLUENT	
-----	PROPERTY LINE	
----- SS -----	SANITARY SEWER	
----- YP -----	YARD PIPING	
----- FM -----	FORCEMAIN	
----- POT -----	POTABLE WATER	
	PLANT SERVICE WATER	- - - -
	GRID LINES	
69	1' CONTOUR	69
70	5' CONTOUR	70
	BUILDING	
	PAVED ROAD	
	GRAVEL ROAD	
	WETLAND AREA	
	TREE LINE / CLEARING LIMIT	
x x x	FENCE	x x x
	PINE TREE	
WH	WATT HOUR METER	WH
	ELECTRIC TRANSFORMER	
	ELECTRIC JUNCTION BOX	
E	ELECTRIC MANHOLE	E
	HOSE BIB (H.B.)	
	LIGHT POLE	
T	TELEPHONE VAULT	T
	CATCH BASIN (C.B.)	
	JUNCTION BOX (J.B.)	
	FLARED END SECTION (F.E.S.)	
	CHECK VALVE	
S	SANITARY SEWER MANHOLE	S
	VALVE MARKER	
	WATER METER	
	VALVE	
	FIRE HYDRANT	

FENCE LINE & CLEARING LIMITS
OPEN CUT & PATCH FOR NEW ACCESS ROAD (TYP.)
6' CHAIN LINK FENCE SECTION TO BE REMOVED
SLUDGE PUMP STATION
TREES TO BE REMOVED (TYP.)
DRUM STORAGE
SECONDARY CLARIFIER
ORBAL OXIDATION DITCH
OPEN CUT & PATCH FOR NEW PIPING (TYP.)
6' CHAIN LINK FENCE
POST AERATION / UV DISINFECTION
FILTERS
STORAGE AREA
PRE-AERATION BASIN
SECONDARY CLARIFIER #1
PRIMARY CLARIFIER #1
R.B.C.
PROPERTY LINE
CHLORINE FEED BUILDING
STORAGE BUILDING
PRIMARY CLARIFIER #2
SECONDARY CLARIFIER #2
FENCE LINE & CLEARING LIMITS
HEADWORKS
OPEN CUT & PATCH FOR NEW PIPING (TYP.)
ELECTRICAL BUILDING
EFFLUENT PUMP STATION
SLUDGE THICKENER BUILDING
PUMP STATION
DIGESTER #3
OPERATIONS BUILDING
MAINTENANCE AND SHOP BUILDING
DIGESTER #2
DIGESTER #1
SLUDGE LOADING / STORAGE

INDICATES PORTIONS TO BE REMOVED

DEMOLITION & CLEARING/GRUBBING SITE PLAN

SCALE: 1" = 60'

RECORD DRAWING, MARCH 2009

Hobbs, Upchurch & Associates, P.A.
Consulting Engineers
Myrtle Beach, South Carolina 29577
PHONE: (843) 626-1910 FAX: (843) 626-1745

DEMOLITION & CLEARING/GRUBBING SITE PLAN

SCHWARTZ WASTEWATER TREATMENT PLANT UPGRADE

GRAND STRAND WATER & SEWER AUTHORITY

DATE:	JUNE 2008
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	JWM
SCALE:	AS SHOWN

SHEET NO. G-6
OF: _____

07-024-C/101 5

= NOT IN CONTRACT

N 10+00

N 8+80

N 5+00

N 0+00

E 0+00

E 3+00.08

E 5+00

E 6+00

E 10+00

GRID

TBM:
PK NAIL IN PAVEMENT ELEV. 23.71'.
NOTE: BENCHMARK ELEVATION, STRUCTURE ELEVATIONS, AND CONTOURS ARE BASED ON EXISTING BENCHMARKS ESTABLISHED FROM PREVIOUS PROJECTS. NAVD88 DATUM IS 1.97' BELOW ELEVATIONS PROVIDED.

LEGEND		
EXISTING	FEATURE	NEW
AIR	AIR	
SD	STORM DRAIN	
SL	SLUDGE	
CL	CL FEED	
INF	INFLUENT	
EFF	EFFLUENT	
PROPERTY LINE	PROPERTY LINE	
SS	SANITARY SEWER	
YP	YARD PIPING	
FM	FORCEMAIN	
POT	POTABLE WATER	
PSW	PLANT SERVICE WATER	
GRID LINES	GRID LINES	
69	1' CONTOUR	69
70	5' CONTOUR	70
BUILDING	BUILDING	
PAVED ROAD	PAVED ROAD	
GRAVEL ROAD	GRAVEL ROAD	
WETLAND AREA	WETLAND AREA	
TREE LINE / CLEARING LIMIT	TREE LINE / CLEARING LIMIT	
FENCE	FENCE	
PINE TREE	PINE TREE	
WH	WATT HOUR METER	WH
ELECTRIC TRANSFORMER	ELECTRIC TRANSFORMER	
ELECTRIC JUNCTION BOX	ELECTRIC JUNCTION BOX	
E	ELECTRIC MANHOLE	E
HOSE BIB (H.B.)	HOSE BIB (H.B.)	
LIGHT POLE	LIGHT POLE	
T	TELEPHONE VAULT	T
CATCH BASIN (C.B.)	CATCH BASIN (C.B.)	
JUNCTION BOX (J.B.)	JUNCTION BOX (J.B.)	
FLARED END SECTION (F.E.S.)	FLARED END SECTION (F.E.S.)	
CHECK VALVE	CHECK VALVE	
S	SANITARY SEWER MANHOLE	S
VALVE MARKER	VALVE MARKER	
WATER METER	WATER METER	
VALVE	VALVE	
FIRE HYDRANT	FIRE HYDRANT	

STAGING AREA
FUTURE CLARIFIER
FUTURE CLARIFIER
NEW CLARIFIER #1
NEW CLARIFIER #2
116.29'
4.25'
120.00'
199.92'
N 664087.65
E 2594895.93
N 664324.22
E 2595080.30
NEW OXIDATION DITCH #2
NEW OXIDATION DITCH #1
SLUDGE PUMP STATION
100.00'
ORBAL OXIDATION DITCH
SECONDARY CLARIFIER
POST AERATION / UV DISINFECTION
DRUM STORAGE
NEW PUMP STATION #1
NEW HEADWORKS
NEW ELECTRICAL BUILDING
NEW TRANSFORMER
NEW GENERATOR
STORAGE AREA
PROPERTY LINE
FLOW METER VAULT
FILTERS
SECONDARY CLARIFIER #1
PRIMARY CLARIFIER #1
PRE-AERATION BASIN
FUTURE OXIDATION DITCH
CHLORINE FEED BUILDING
R.B.C.
STORAGE BUILDING
NEW GRAVEL ROAD 8" SABC - READY TO BE PAVED
SECONDARY CLARIFIER #2
PRIMARY CLARIFIER #2
EXIST. HYDRO TANK
FUTURE HEADWORKS
ELECTRICAL BUILDING
EFFLUENT PUMP STATION
NEW SLUDGE PUMP STATION
NEW INFLUENT SPLITTER BOX
FENCE LINE & CLEARING LIMITS
HEADWORKS
SLUDGE THICKENER BUILDING
FUTURE OXIDATION DITCH
EXISTING DIGESTER #3 / NEW STORAGE
PUMP STATION #2
OPERATIONS BUILDING
MAINTENANCE AND SHOP BUILDING
DIGESTER #2
DIGESTER #1
SLUDGE TREATMENT BUILDING
SLUDGE LOADING / STORAGE
N 663310.02
E 2595057.57
N 663704.40
E 2595712.93

NEW SITE PLAN
SCALE: 1" = 60'

RECORD DRAWING, MARCH 2009

REVISIONS			
SYM.	DESCRIPTION	DATE	BY
1	RECORD DRAWING	MARCH09	DFW

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Hobbs, Upchurch & Associates, P.A.
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Myrtle Beach, South Carolina 29577
PHONE: (843) 626-1910 FAX: (843) 626-1745

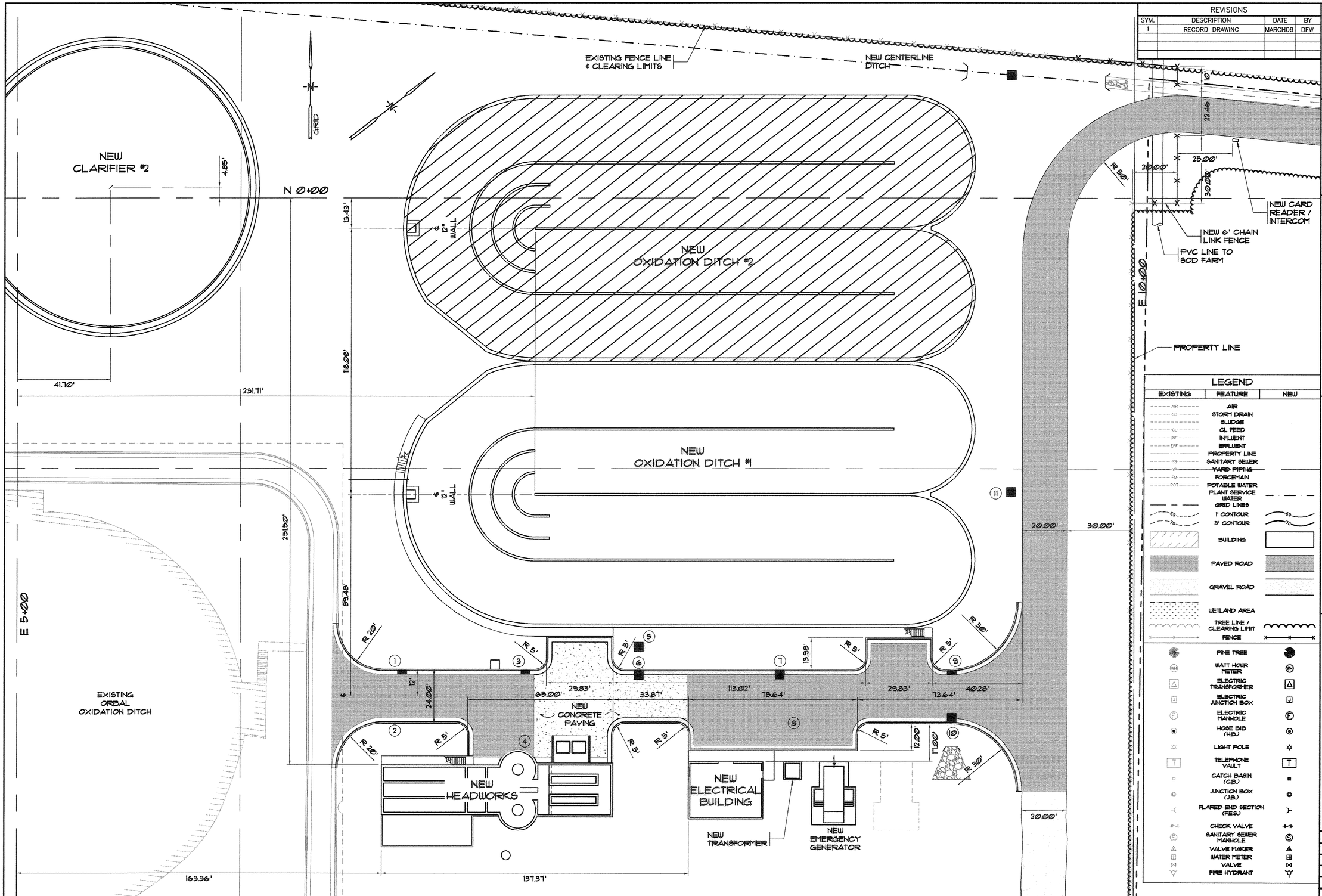
NEW SITE PLAN

SCHWARTZ
WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE:	JUNE 2008
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	JWM
SCALE:	AS SHOWN
SHEET NO.	G-7
OF:	—

07-024-7/101 S

W:\2008\HOBBSUPCHURCH.COM\ PROJECTS\07-024-7\101\CAD\LAND-DRAWINGS\G-7-PROPOSED SITE PLAN.DWG, LAYOUT: SITE PLAN, EDITED BY: SMOOL 06/20/08 15:05 SCALE: 1"=1' (1:1)
XREFS: W:\2008\07-024-7\101\CAD\LAND-DRAWINGS\G1-DESIGN\GENERAL (0)\SHEET_ W:\2008\07-024-7\101\CAD\LAND-DRAWINGS\G-8-AS-BUILTS\G-8AS-BUILTS.DWG



HEADWORKS / OXIDATION DITCH / ELECTRICAL BUILDING
LAYOUT PLAN
SCALE: 1" = 20'

RECORD DRAWING, MARCH 2009

REVISIONS			
SYM.	DESCRIPTION	DATE	BY
1	RECORD DRAWING	MARCH09	DFW

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LEGEND

EXISTING	FEATURE	NEW
AIR	AIR	
SD	STORM DRAIN	
SL	SLUDGE	
CL	CL FEED	
INF	INFLUENT	
EFF	EFFLUENT	
	PROPERTY LINE	
SS	SANITARY SEWER	
YP	YARD PIPING	
FM	FORCEMAIN	
POT	POTABLE WATER	
	PLANT SERVICE WATER	
	GRID LINES	
69	1' CONTOUR	69
70	5' CONTOUR	70
	BUILDING	
	PAVED ROAD	
	GRAVEL ROAD	
	WETLAND AREA	
	TREE LINE / CLEARING LIMIT	
	FENCE	
	PINE TREE	
WH	WATT HOUR METER	WH
	ELECTRIC TRANSFORMER	
J	ELECTRIC JUNCTION BOX	J
E	ELECTRIC MANHOLE	E
	HOSE BIB (H.B.)	
	LIGHT POLE	
T	TELEPHONE VAULT	T
	CATCH BASIN (C.B.)	
	JUNCTION BOX (J.B.)	
	FLARED END SECTION (F.E.S.)	
	CHECK VALVE	
S	SANITARY SEWER MANHOLE	S
	VALVE MAKER	
	WATER METER	
	VALVE	
	FIRE HYDRANT	

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HEADWORKS / OXIDATION DITCH / ELECTRICAL BUILDING LAYOUT PLAN

SCHWARTZ
WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE:	JUNE 2008
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	JWM
SCALE:	AS SHOWN

SHEET NO.
G-8
OF: –

07-024-8/101 5

REVISIONS			
SYM.	DESCRIPTION	DATE	BY
1	RECORD DRAWING	MARCH09	DFW

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EXISTING DEBRIS PILE TO BE REMOVED. CONTRACTOR RESPONSIBLE FOR DISPOSAL OF DEBRIS.

EXISTING CANAL. INSTALL NEW CANAL AND FILL EXIST. CANAL PER SPECS.

CONSTRUCT NEW CANAL AS SHOWN IN DETAIL ON THIS SHEET

NEW CANAL OUTLET BOX SEE 1/10/26

OUTLET SWALE TO EXIST. CANAL

EXISTING CANAL

NEW CLARIFIER #2

NEW OXIDATION DITCH #1

EXISTING CANAL. INSTALL NEW CANAL AND FILL EXIST. CANAL PER SPECS.

NEW EMERGENCY GENERATOR AND TRANSFORMER

NEW ELECTRICAL BUILDING

CLEAR EXISTING DITCH AND STABILIZE SIDE SLOPES

POST AERATION / UV DISINFECTION

TBM:
FK NAIL IN PAVEMENT ELEV. 23.11'.
NOTE: BENCHMARK ELEVATION, STRUCTURE ELEVATIONS, AND CONTOURS ARE BASED ON EXISTING BENCHMARKS ESTABLISHED FROM PREVIOUS PROJECTS. NAVD88 DATUM IS 1.91' BELOW ELEVATIONS PROVIDED.

ORBAL OXIDATION DITCH

SECONDARY CLARIFIER

NEW HEADWORKS

DRUM STORAGE

NEW PUMP STATION #1

EXIST. FILTERS

STORAGE AREA

PRE-AERATION

SECONDARY CLARIFIER #1

PRIMARY CLARIFIER #1

CHLORINE FEED BUILDING

N 5+00

R.B.C.

STORAGE BUILDING

SECONDARY CLARIFIER #2

PRIMARY CLARIFIER #2

NEW SPLITTER BOX

EXIST. FENCE LINE & CLEARING LIMITS

ELECTRICAL BUILDING

EFFLUENT PUMP STATION

PUMP STATION

HEADWORKS

CLEAR EXISTING DITCH AND STABILIZE SIDE SLOPES

SLUDGE THICKENER BUILDING

PROPERTY LINE

DIGESTER #3 / NEW STORAGE

PUMP STATION #2

OPERATIONS BUILDING

MAINTENANCE AND SHOP BUILDING

EXIST. SLUDGE TREATMENT BUILDING

DIGESTER #2

DIGESTER #1

EXIST. SLUDGE LOADING / STORAGE

12" DRAIN PIPE

N 0+00

NOTE:
EXISTING CONTOURS MAY NOT REPRESENT LOCATIONS OF ALL CANALS. APPROXIMATE LOCATIONS ARE SHOWN ON PLANS. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING THEMSELVES WITH ALL SITE FEATURES.

GRID N

LEGEND		
EXISTING	FEATURE	NEW
AIR	AIR	
SD	STORM DRAIN	
SL	SLUDGE	
CL	CL FEED	
INF	INFLUENT	
EFF	EFFLUENT	
	PROPERTY LINE	
SS	SANITARY SEWER	
YP	YARD PIPING	
FM	FORCEMAIN	
POT	POTABLE WATER	
	PLANT SERVICE WATER	
	GRID LINES	
69	1' CONTOUR	69
70	5' CONTOUR	70
	BUILDING	
	PAVED ROAD	
	GRAVEL ROAD	
	WETLAND AREA	
	TREE LINE / CLEARING LIMIT	
X X X	FENCE	X X X
	PINE TREE	
WM	WATT HOUR METER	WM
	ELECTRIC TRANSFORMER	
J	ELECTRIC JUNCTION BOX	J
E	ELECTRIC MANHOLE	E
	HOSE BIB (H.B.)	
	LIGHT POLE	
T	TELEPHONE VAULT	T
	CATCH BASIN (C.B.)	
	JUNCTION BOX (J.B.)	
	FLARED END SECTION (F.E.S.)	
	CHECK VALVE	
S	SANITARY SEWER MANHOLE	S
	VALVE MAKER	
	WATER METER	
	VALVE	
	FIRE HYDRANT	

GRADING AND DRAINAGE PLAN
SCALE: 1" = 60'

RECORD DRAWING, MARCH 2009

Hobbs, Upchurch & Associates, P.A.
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Myrtle Beach, South Carolina 29577
PHONE: (843) 626-1910 FAX: (843) 626-1745

GRADING AND DRAINAGE PLAN

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE:	JUNE 2008
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	JWM
SCALE:	AS SHOWN

SHEET NO.
G-10
OF: _

07-024-9/101 5

REVISIONS			
SYM.	DESCRIPTION	DATE	BY
1	RECORD DRAWING	MARCH09	DFW

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CONSTRUCT NEW DITCH AS SHOWN IN DETAIL ON SHEET G-10

NEW CLARIFIER #2

NEW OXIDATION DITCH #1

SWELL

DITCH

15" RCP

JUNCTION BOX #12
RIM = 20.60'
INV. = 17.82

15" RCP

20LF 18" RCP @ 0.5%
FES INV. IN = 17.92'

40LF 18" ø D.I. @ 0.5%
FES INV. OUT = 17.62'

178LF 18" RCP @ 0.5%

YARD INLET #7
RIM = 21.50'
INV. = 18.75'

EXISTING CANAL. INSTALL NEW CANAL AND FILL EXIST. CANAL PER SPECS.

YARD INLET #4
RIM = 22.50'
INV. = 19.94'

84LF 18" RCP @ 0.5%

CATCH BASIN #1
RIM = 22.75'
INV. = 20.41'

CATCH BASIN #2
RIM = 22.50'
INV. = 20.13'

CATCH BASIN #3
RIM = 22.25'
INV. = 19.88'

50LF 15" RCP @ 0.5%

11LF 15" RCP @ 0.5%

77LF 18" RCP @ 0.5%

CATCH BASIN #5
RIM = 22.00'
INV. = 19.56'

CATCH BASIN #6
RIM = 21.50'
INV. = 19.17'

55LF 15" RCP @ 0.5%

63LF 18" RCP @ 0.5%

CATCH BASIN #6A
RIM = 21.75'
INV. = 19.27'

20LF 15" RCP @ 0.5%

10LF 15" RCP @ 1.00%
F.E.S. INV. IN = 19.37'

EXISTING WETLANDS

NEW HEADWORKS

NEW ELECTRICAL BUILDING

NEW TRANSFORMER

NEW EMERGENCY GENERATOR

DRAINAGE DITCH

ORBAL OXIDATION DITCH

= NOT IN CONTRACT

GRID

SCALE: 1" = 20'

RECORD DRAWING, MARCH 2009

LEGEND

EXISTING	FEATURE	NEW
AIR	AIR	
SD	STORM DRAIN	
	SLUDGE	
CL	CL FEED	
INF	INFLUENT	
EFF	EFFLUENT	
	PROPERTY LINE	
SS	SANITARY SEWER	
YP	YARD PIPING	
FM	FORCEMAIN	
POT	POTABLE WATER	
	PLANT SERVICE WATER	
	GRID LINES	
69	1' CONTOUR	69
70	5' CONTOUR	70
	BUILDING	
	PAVED ROAD	
	GRAVEL ROAD	
	WETLAND AREA	
	TREE LINE / CLEARING LIMIT	
	FENCE	
	PINE TREE	
WH	WATT HOUR METER	WH
	ELECTRIC TRANSFORMER	
J	ELECTRIC JUNCTION BOX	J
E	ELECTRIC MANHOLE	E
	HOSE BIB (H.B.)	
	LIGHT POLE	
T	TELEPHONE VAULT	T
	CATCH BASIN (C.B.)	
	JUNCTION BOX (J.B.)	
	FLARED END SECTION (F.E.S.)	
	CHECK VALVE	
S	SANITARY SEWER MANHOLE	S
	VALVE MAKER	
	WATER METER	
	VALVE	
	FIRE HYDRANT	

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HEADWORKS, OXIDATION DITCH, & ELECTRICAL BUILDING GRADING AND DRAINAGE PLAN

SCHWARTZ WASTEWATER TREATMENT PLANT UPGRADE

GRAND STRAND WATER & SEWER AUTHORITY

DATE:	JUNE 2008
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	JWM
SCALE:	AS SHOWN

SHEET NO.
G-11
OF: –

07-024-10/101 5

REVISIONS			
SYM.	DESCRIPTION	DATE	BY
1	RECORD DRAWING	MARCH09	DFW

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= NOT IN CONTRACT

N 10+00

N 5+00

N 0+00

E 0+00

E 5+00

E 10+00

NEW CLARIFIER #1

NEW CLARIFIER #2

NEW OXIDATION DITCH #2

NEW OXIDATION DITCH #1

WOODS DRAINAGE

SLUDGE PUMP STATION

NEW MH FLOW METER VAULTS (1 / 13 / 25)

POST AERATION / UV DISINFECTION

SECONDARY CLARIFIER

ORBAL OXIDATION DITCH

NEW EMERGENCY GENERATOR AND TRANSFORMER

NEW ELECTRICAL BUILDING

NEW HEADWORKS

NEW CHEMICAL LINES

NEW CHEMICAL LINES

STORAGE AREA

TBM:
FK NAIL IN PAVEMENT ELEV. 23.71'.
NOTE: BENCHMARK ELEVATION, STRUCTURE ELEVATIONS, AND CONTOURS ARE BASED ON EXISTING BENCHMARKS ESTABLISHED FROM PREVIOUS PROJECTS. NAVD88 DATUM IS 1.97' BELOW ELEVATIONS PROVIDED.

FILTER

PRE-AERATION BUILDING

8" TEE

EFFLUENT PUMP STATION

SECONDARY CLARIFIER #1

PRIMARY CLARIFIER #1

R.B.C.

8" WAS OVER PRE-AERATION BASIN WALL

STORAGE BUILDING

HEADWORKS

CHLORINE FEED BUILDING

SECONDARY CLARIFIER #2

PRIMARY CLARIFIER #2

NEW SPLITTER BOX

ELECTRICAL BUILDING

DIGESTER #3 / NEW STORAGE

SLUDGE PUMP SUCTION

OPERATIONS BUILDING

MAINTENANCE AND SHOP BUILDING

DIGESTER #2

DIGESTER #1

SLUDGE TREATMENT BUILDING

SLUDGE LOADING / STORAGE

LEGEND

EXISTING	FEATURE	NEW
AIR	AIR	
SD	STORM DRAIN	
SL	SLUDGE	
CL	CL FEED	
INF	INFLUENT	
EFF	EFFLUENT	
	PROPERTY LINE	
SS	SANITARY SEWER	
YP	YARD PIPING	
FM	FORCEMAIN	
POT	POTABLE WATER	
	PLANT SERVICE WATER	
	GRID LINES	
69	1' CONTOUR	69
70	5' CONTOUR	70
	BUILDING	
	PAVED ROAD	
	GRAVEL ROAD	
	WETLAND AREA	
	TREE LINE / CLEARING LIMIT	
	FENCE	
	PINE TREE	
WTH	WATT HOUR METER	WTH
	ELECTRIC TRANSFORMER	
	ELECTRIC JUNCTION BOX	
E	ELECTRIC MANHOLE	E
	HOSE BIB (H.B.)	
	LIGHT POLE	
T	TELEPHONE VAULT	T
	CATCH BASIN (C.B.)	
	JUNCTION BOX (J.B.)	
	FLARED END SECTION (F.E.S.)	
	CHECK VALVE	
S	SANITARY SEWER MANHOLE	S
	VALVE MAKER	
	WATER METER	
	VALVE	
	FIRE HYDRANT	

SITE PIPING PLAN

SCALE: 1" = 60'

RECORD DRAWING, MARCH 2009

Hobbs, Upchurch & Associates, P.A.
Consulting Engineers
Myrtle Beach, South Carolina 29577
PHONE: (843) 626-1310 FAX: (843) 626-1745

SITE PIPING

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE:	JUNE 2008
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	JWM
SCALE:	AS SHOWN

SHEET NO.
G-13
OF: _____

07-024-11/101 5

REVISIONS			
SYM.	DESCRIPTION	DATE	BY
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NEW CLARIFIER #2

2 / 14 / 25 MAGNETIC FLOW METER VAULT

NEW 6" M.J. 45° BEND W/ RESTRAINTS

EXIST. FORCE MAIN TO BE RELOCATED

RELOCATED FORCE MAIN

NEW 6" M.J. 45° BEND W/ RESTRAINTS

NEW 30" M.J. 45° BEND W/ RESTRAINTS

LINES ARE CLOSE TOGETHER DUE TO MOVING CLARIFIER 8 FEET

NEW 8" M.J. 45° BEND W/ RESTRAINTS

NEW 36" M.J. 90° BEND W/ RESTRAINTS

NEW OXIDATION DITCH #2

NEW OXIDATION DITCH #1

NEW 2" PLANT WATER

2" VALVES

6"

EXIST. SLUDGE LINE TO BE RELOCATED

F.H.

CONTRACTOR SHALL FIELD LOCATE LINE PRIOR TO INSTALLATION OF ANY PIPING IN THIS AREA

ORBAL OXIDATION DITCH

CONTRACTOR SHALL FIELD LOCATE FITTING PRIOR TO INSTALLATION OF ANY PIPING IN THIS AREA

TIE INTO EXIST. 30"x30" TR FLEX

EXIST. 30" VALVE

OPEN CUT AND PATCH EXIST. ASPHALT DRIVE

OPEN CUT AND PATCH EXIST. ASPHALT DRIVE

NEW 8" M.J. 90° BEND W/ RESTRAINTS

NEW HEADWORKS

NEW ELECTRICAL BUILDING

NEW 36" M.J. 90° BEND W/ RESTRAINTS

NEW CHEMICAL FEED LINES FROM BULK STORAGE @ EXIST. HEADWORKS

NEW 36" M.J. 90° BEND W/ RESTRAINTS

NEW EMERGENCY GENERATOR AND TRANSFORMER

RELOCATED SLUDGE LINE

NEW 8" M.J. 45° BEND W/ RESTRAINTS

NEW 8" TAPPING SLEEVE W/ 8" PLUG VALVE

NEW 6" PVC 45° BEND W/ RESTRAINTS

NEW 8" M.J. 90° BEND W/ RESTRAINTS

= NOT IN CONTRACT

GRID N

HEADWORKS AND OXIDATION DITCH PIPING PLAN

SCALE: 1" = 20'

RECORD DRAWING, MARCH 2009

LEGEND

EXISTING	FEATURE	NEW
AIR	AIR	
SD	STORM DRAIN	
SL	SLUDGE	
CL	CL FEED	
INF	INFLUENT	
EFF	EFFLUENT	
	PROPERTY LINE	
SS	SANITARY SEWER	
YP	YARD PIPING	
FM	FORCEMAIN	
POT	POTABLE WATER	
	PLANT SERVICE WATER	
	GRID LINES	
69	1' CONTOUR	69
70	5' CONTOUR	70
	BUILDING	
	PAVED ROAD	
	GRAVEL ROAD	
	WETLAND AREA	
	TREE LINE / CLEARING LIMIT	
X	FENCE	X
	PINE TREE	
WH	WATT HOUR METER	WH
T	ELECTRIC TRANSFORMER	T
EJ	ELECTRIC JUNCTION BOX	EJ
E	ELECTRIC MANHOLE	E
HB	HOSE BIB (H.B.)	HB
	LIGHT POLE	
T	TELEPHONE VAULT	T
CB	CATCH BASIN (C.B.)	CB
JB	JUNCTION BOX (J.B.)	JB
FES	FLARED END SECTION (F.E.S.)	FES
	CHECK VALVE	
S	SANITARY SEWER MANHOLE	S
	VALVE MARKER	
WM	WATER METER	WM
V	VALVE	V
	FIRE HYDRANT	

= NOT IN CONTRACT

SCHWARTZ
WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

HEADWORKS AND OXIDATION DITCH PIPING PLAN

DATE:	JUNE 2008
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	JWM
SCALE:	AS SHOWN

SHEET NO. G-14

OF: _____

07-024-12/101 5

REVISIONS			
SYM.	DESCRIPTION	DATE	BY
1	RECORD DRAWING	MARCH09	DFW

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CLARIFIER #1 AND UV DISINFECTION PIPING PLAN

SCHWARTZ WASTEWATER TREATMENT PLANT UPGRADE

GRAND STRAND WATER & SEWER AUTHORITY

DATE:	JUNE 2008
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	JWM
SCALE:	AS SHOWN

SHEET NO. G-15

OF: _____

= NOT IN CONTRACT

GRID

42" M.J. 90° BEND W/ RESTRAINTS

30" M.J. RESTRAINED PLUG

30" M.J. 45° BEND W/ RESTRAINTS

NEW CLARIFIER #1

2 -30" M.J. 45° BEND W/ RESTRAINTS

42"x30" M.J. REDUCER

REMOVE EXIST. 8" PLUG FOR NEW TIE-IN

42"x30" M.J. TEE W/ 30" D.I. BLIND FLANGE 12" ABOVE GRADE

EXIST. 8" D.I.P.

NEW TAPPING SLEEVE AND VALVE

NEW FLOW METER VAULTS (SEE SHEET G-25 FOR DETAILS)

SLUDGE PUMP STATION

SECONDARY CLARIFIER

ORBAL OXIDATION DITCH

TBM:
PK NAIL IN PAVEMENT ELEV. 23.71'.
NOTE: BENCHMARK ELEVATION, STRUCTURE ELEVATIONS, AND CONTOURS ARE BASED ON EXISTING BENCHMARKS ESTABLISHED FROM PREVIOUS PROJECTS. NAVD88 DATUM IS 1.97' BELOW ELEVATIONS PROVIDED.

NEW POST AERATION / UV DISINFECTION

DRUM STORAGE

NEW PUMP STATION #1

NEW CONC. PLUG INSIDE EXIST. MANHOLE

OPEN CUT AND PATCH EXIST. ASPHALT DRIVE

SEWER LINE TO BE ABANDONED

CORE DRILL AND LINK SEAL NEW 6" SEWER LINE. INV. ELEV. 18.70'

CLARIFIER #1 & UV DISINFECTION PIPING PLAN

SCALE: 1" = 20'

RECORD DRAWING, MARCH 2009

LEGEND

EXISTING	FEATURE	NEW
AIR	AIR	
SD	STORM DRAIN	
	SLUDGE	
CL	CL FEED	
INF	INFLUENT	
EFF	EFFLUENT	
	PROPERTY LINE	
SS	SANITARY SEWER	
YP	YARD PIPING	
FM	FORCEMAIN	
POT	POTABLE WATER	
	PLANT SERVICE WATER	
	GRID LINES	
69	1' CONTOUR	69
70	5' CONTOUR	70
	BUILDING	
	PAVED ROAD	
	GRAVEL ROAD	
	WETLAND AREA	
	TREE LINE / CLEARING LIMIT	
	FENCE	
	PINE TREE	
WM	WATT HOUR METER	WM
	ELECTRIC TRANSFORMER	
J	ELECTRIC JUNCTION BOX	J
E	ELECTRIC MANHOLE	E
	HOSE BIB (H.B.)	
	LIGHT POLE	
T	TELEPHONE VAULT	T
	CATCH BASIN (C.B.)	
	JUNCTION BOX (J.B.)	
	FLARED END SECTION (F.E.S.)	
	CHECK VALVE	
S	SANITARY SEWER MANHOLE	S
	VALVE MAKER	
	WATER METER	
	VALVE	
	FIRE HYDRANT	

07-024-13/101 5

REVISIONS			
SYM.	DESCRIPTION	DATE	BY
1	RECORD DRAWING	MARCH09	DFW

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R.B.C.

PRIMARY CLARIFIER #2

CHEMICAL PUMPS AND LINES

HEADWORKS

SLUDGE THICKENER BUILDING

STORAGE BUILDING

FM FROM ISLAND GREEN

8" M.J. 45° BEND W/ RESTRAINTS

OPEN CUT AND PATCH (TYP.)

48" M.J. 90° BEND W/ RESTRAINTS

1-48" M.J. 90° BEND W/ RESTRAINTS

EXIST. 8" S.S. LINE TO BE ABANDONED

NEW SPLITTER BOX

1-54"x30" M.J. TEE
1-54"x30" M.J. REDUCER
1-54"x36" M.J. TEE
1-36" M.J. PLUG VALVE
1-30" M.J. 22 1/2° BEND
ALL W/ RESTRAINTS

NEW 36"x10" M.J. TEE W/ 10" M.J. 90° BEND ALL W/ RESTRAINTS

NEW 36" M.J. 90° BEND W/ RESTRAINTS

EXIST. 10"x10" M.J. TEE W/ 10" PLUG VALVE

NEW 10" PLUG VALVE W/ RESTRAINTS

NEW 8"x6" M.J. REDUCER W/ RESTRAINTS

30"x30" M.J. TEE
2-30" M.J. PLUG VALVES
W/ RESTRAINTS

PUMP STATION

SECONDARY CLARIFIER SLUDGE LINE

PRIMARY CLARIFIER SLUDGE LINE

PLUG EXIST. 8" LINE, CORE DRILL AND LINK SEAL NEW 8" DRAIN LINE

12" TAPPING VALVE

1-30" M.J. 90° BEND
1-30" M.J. 22 1/2° BEND
ALL W/ RESTRAINTS

1-30"x30" M.J. TEE
2-30" M.J. PLUG VALVES
W/ RESTRAINTS

EXIST. 6" M.J. PLUG VALVES

12" FORCE MAIN FROM SOD FARM

18" FORCE MAIN FROM M.B.G.&Y.

NEW SLUDGE PUMP STATION (SEE SHEET EN-42)

DIGESTER #3 / NEW STORAGE

DIGESTER #2

DIGESTER #1

MAINTENANCE AND SHOP BUILDING

EXIST. WATER LINE, FIELD DETERMINE LOCATION AND ELEVATION OF EXIST. LINE

EXIST. SLUDGE LOADING / STORA

EXIST. SLU TREATMENT E

INV. ELEV. 28.5'

GRID

LEGEND

EXISTING	FEATURE	NEW
AIR	AIR	
SD	STORM DRAIN	
SL	SLUDGE	
CL	CL FEED	
INF	INFLUENT	
EFF	EFFLUENT	
	PROPERTY LINE	
SS	SANITARY SEWER	
YP	YARD PIPING	
FM	FORCEMAIN	
POT	POTABLE WATER	
	PLANT SERVICE WATER	
	GRID LINES	
69	1' CONTOUR	69
70	5' CONTOUR	70
	BUILDING	
	PAVED ROAD	
	GRAVEL ROAD	
	WETLAND AREA	
	TREE LINE / CLEARING LIMIT	
	FENCE	
	PINE TREE	
WH	WATT HOUR METER	WH
	ELECTRIC TRANSFORMER	
	ELECTRIC JUNCTION BOX	
E	ELECTRIC MANHOLE	E
	HOSE BIB (H.B.)	
	LIGHT POLE	
T	TELEPHONE VAULT	T
	CATCH BASIN (C.B.)	
	JUNCTION BOX (J.B.)	
	FLARED END SECTION (F.E.S.)	
	CHECK VALVE	
S	SANITARY SEWER MANHOLE	S
	VALVE MAKER	
	WATER METER	
	VALVE	
	FIRE HYDRANT	

SPLITTER BOX & SLUDGE TREATMENT BUILDING PIPING PLAN

SCALE: 1" = 20'

RECORD DRAWING, MARCH 2009

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

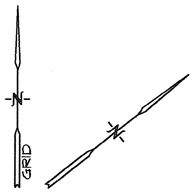
SPLITTER BOX & SLUDGE TREATMENT BUILDING PIPING PLAN

DATE:	JUNE 2008
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	JWM
SCALE:	AS SHOWN

SHEET NO. G-16

OF: –

07-024-14/101 5



= NOT IN CONTRACT

LEGEND		
EXISTING	FEATURE	NEW
AIR	AIR	
SD	STORM DRAIN	
	SLUDGE	
CL	CL FEED	
INF	INFLUENT	
EFF	EFFLUENT	
	PROPERTY LINE	
SS	SANITARY SEWER	
YP	YARD PIPING	
FM	FORCEMAIN	
POT	POTABLE WATER	
	PLANT SERVICE WATER	
	GRID LINES	
69	1' CONTOUR	69
70	5' CONTOUR	70
	BUILDING	
	PAVED ROAD	
	GRAVEL ROAD	
	WETLAND AREA	
	TREE LINE / CLEARING LIMIT	
X X X	FENCE	X X X
	PINE TREE	
WH	WATT HOUR METER	WH
	ELECTRIC TRANSFORMER	
J	ELECTRIC JUNCTION BOX	J
E	ELECTRIC MANHOLE	E
	HOSE BIB (H.B.)	
	LIGHT POLE	
T	TELEPHONE VAULT	T
	CATCH BASIN (C.B.)	
	JUNCTION BOX (J.B.)	
	FLARED END SECTION (F.E.S.)	
	CHECK VALVE	
S	SANITARY SEWER MANHOLE	S
	VALVE MARKER	
	WATER METER	
	VALVE	
	FIRE HYDRANT	

NEW FLOW METER VAULTS (SEE SHEET G-25 FOR DETAILS)

OUTFALL

EXIST. POST AERATION / UV DISINFECTION

EXIST. FLOW METER VAULT

NEW 36"x30" M.J. TEE W/ 36" M.J. PLUG VALVE W/ RESTRAINTS

OPEN CUT & PATCH EXIST. CURB AND ASPHALT AS NEEDED

45° BEND

TBM:
PK NAIL IN PAVEMENT ELEV. 23.71'.
NOTE: BENCHMARK ELEVATION, STRUCTURE ELEVATIONS, AND CONTOURS ARE BASED ON EXISTING BENCHMARKS ESTABLISHED FROM PREVIOUS PROJECTS. NAVD88 DATUM IS 1.97' BELOW ELEVATIONS PROVIDED.

NEW PUMP STATION #1

OPEN CUT AND PATCH EXIST. ASPHALT DRIVE

SEWER LINE TO BE PLUGGED AND ABANDONED

SECONDARY CLARIFIER

ORBAL OXIDATION DITCH

DRUM STORAGE

FILTER

SECONDARY CLARIFIER #1

EFFLUENT PUMP STATION

EXIST. 2,000 GAL. HYDROPNEUMATIC WATER TANK

CHLORINE BUILDING

EXIST. RPBP. VAULT

SECONDARY CLARIFIER #2

R.B.C.

UV DISINFECTION & EFFLUENT PUMP STATION PIPING PLAN

SCALE: 1" = 20'

RECORD DRAWING, MARCH 2009

REVISIONS			
SYM.	DESCRIPTION	DATE	BY
1	RECORD DRAWING	MARCH09	DFW

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UV DISINFECTION & EFFLUENT PUMP STATION PIPING PLAN

SCHWARTZ
WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE:	JUNE 2008
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	JWM
SCALE:	AS SHOWN

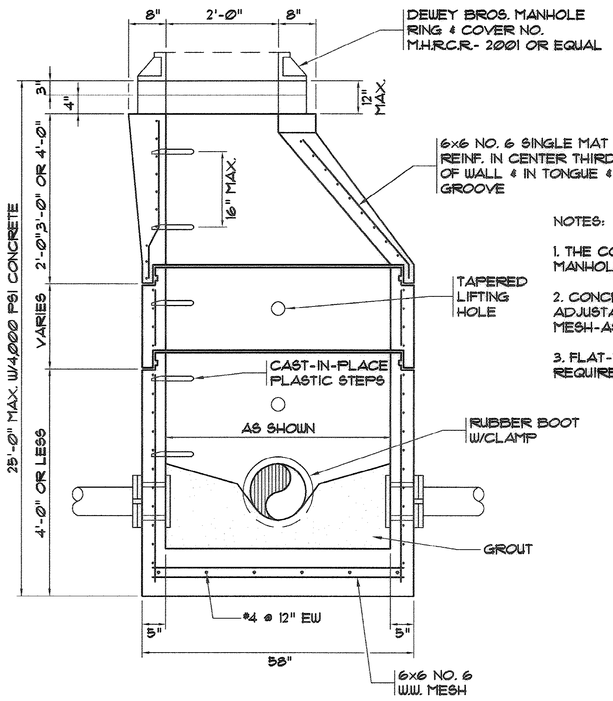
SHEET NO. G-17
OF: –

07-024-15/101 5

XREFS% I:\2007\07-024\15\101\DWG\COM_XREFS.DWG; H:\2007\07-024\15\101\DWG\DRAWINGS\ED*-AS-BUILT\G-17 PIPING PLAN.DWG, LAYOUT: SITE PLAN, EDITED: (PC: GROVE, 06/28/09 14:11 SCALE: 1"=1' (1:1)
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PIPING SCHEDULE

LINE NUMBER	SIZE AND MATERIAL	DESCRIPTION	FROM	TO
1	42" DIP (PRESSURE CLASS)	CLARIFIER EFFLUENT	LINE #15	UV DISINFECTION CHAMBER
2	8" C900 DR18	CLARIFIER SCUM	CLARIFIERS	EXISTING SS LINE
3	14" DIP (PRESSURE CLASS)	90% R.A.S.	CLARIFIERS	OXIDATION DITCH #2
4	14" DIP (PRESSURE CLASS)	90% R.A.S.	CLARIFIERS	OXIDATION DITCH #1
5	30" C905 DR 25 PVC	OXIDATION DITCH #1 EFFLUENT	OXIDATION DITCH #1	CLARIFIER #1
6	8" DIP (PRESSURE CLASS)	10% R.A.S.	CLARIFIERS	LINE #16
7	8" DIP (PRESSURE CLASS)	W.A.S.	CLARIFIERS	LINE #25
8	30" C905 DR 25 PVC	OXIDATION DITCH #2 EFFLUENT	OXIDATION DITCH #2	CLARIFIER #2
9	30" C905 DR 25 PVC	HEADWORKS EFFLUENT	HEADWORKS	OXIDATION DITCH #2
10	30" C905 DR 25 PVC	HEADWORKS EFFLUENT	HEADWORKS	OXIDATION DITCH #1
11	6" C900 DR 18 PVC	RELOCATED DIGESTER LINE	EXISTING LINE	EXISTING LINE
12	12" DIP (PRESSURE CLASS)	OXIDATION DITCH DRAIN LINE	OXIDATION DITCH	PUMP OUT STATION
13	6" C900 DR 18 PVC	FORCEMAIN	EXISTING FORCEMAIN	EXISTING FORCEMAIN
14	30" DIP (PRESSURE CLASS)	HEADWORKS EFFLUENT	HEADWORKS	EXISTING INFLUENT LINE
15	30" C905 DR 25 PVC	CLARIFIER EFFLUENT	CLARIFIER #2	LINE #1
16	48" DIP (PRESSURE CLASS)	SPLITTER BOX EFFLUENT	SPLITTER BOX	HEADWORKS
17	8" DIP (PRESSURE CLASS)	PUMP STATION #1 DISCHARGE	PUMP STATION #1	EXISTING HEADWORKS
18	30" DIP (PRESSURE CLASS)	SPLITTER BOX EFFLUENT	SPLITTER BOX	EXISTING HEADWORKS 30" INFLUENT LINE
19	54" DIP (PRESSURE CLASS)	INFLUENT HEADER	-	SPLITTER BOX
~~20~~	~~12" C900 DR 18 PVC~~	~~POTABLE WATER~~	~~EXISTING LINE~~	~~EXISTING LINE~~
~~21~~	~~2" SCH. 40 PVC~~	~~POTABLE WATER~~	~~LINE #20~~	~~SLUDGE TREATMENT BUILDING SUPPLY~~
~~22~~	~~18" DIP (PRESSURE CLASS)~~	~~PUMP STATION #2 DISCHARGE~~	~~PUMP STATION #2~~	~~EXISTING HEADWORKS~~
~~23~~	~~30" C905 DR 25 PVC~~	FORCEMAIN TO IRRIGATION BOOSTER PUMPSTATION	~~EXISTING FORCEMAIN~~	~~EXISTING FORCEMAIN~~
~~24~~	~~6" DIP (PRESSURE CLASS)~~	~~W.A.S.~~	~~LINE #25~~	~~EXISTING DIGESTER #3/NEW STORAGE~~
~~25~~	~~6" DIP (PRESSURE CLASS)~~	~~W.A.S.~~	~~SLUDGE TRANSFER PUMPS~~	~~SLUDGE TREATMENT BUILDING~~
~~26~~	~~6" DIP (PRESSURE CLASS)~~	EXISTING SECONDARY CLARIFIER W.A.S.	~~RBC SECONDARY CLARIFIER SLUDGE LINE~~	~~PRIMARY CLARIFIER SLUDGE BOX~~
~~27~~	~~36" DIP (PRESSURE CLASS)~~	ORBAL SECONDARY CLARIFIER EFFLUENT	ORBAL SECONDARY CLARIFIER	~~UV DISINFECTION CHAMBER~~
~~28~~	~~10" C905 DR 25 PVC~~	~~UV/POST AERATION EFFLUENT~~	~~UV/POST AERATION~~	~~EXISTING EFFLUENT PUMP STATION~~
~~29~~	~~36" DIP (PRESSURE CLASS)~~	RBC SECONDARY CLARIFIER EFFLUENT	~~RBC SECONDARY CLARIFIER~~	~~UV DISINFECTION CHAMBER~~
30	18" C905 DR 25 PVC	SANITARY SEWER DRAINAGE	EXISTING MANHOLE	PUMP STATION #1
31	8" DIP (PRESSURE CLASS)	DRAIN LINE	EXISTING DRAIN LINE	EXISTING MANHOLE
32	30" DIP (PRESSURE CLASS)	INFLUENT	EXISTING FORCEMAIN	LINE #19
33	30" DIP (PRESSURE CLASS)	INFLUENT	EXISTING FORCEMAIN	LINE #19
~~34~~	~~8" C900 DR 18 PVC~~	~~PLANT WATER~~	~~EFFLUENT PUMP STATION~~	~~HYDROPNEUMATIC TANK~~
~~35~~	~~12" DIP (PRESSURE CLASS)~~	~~EFFLUENT~~	SOD/TREE FARM PUMP STATION	~~LINE #23~~
~~36~~	~~18" DIP (PRESSURE CLASS)~~	~~EFFLUENT~~	~~EFFLUENT PUMP STATION~~	~~EFFLUENT CONTROL STRUCTURE~~
37	30" DIP (PRESSURE CLASS)	ORBAL SECONDARY CLARIFIER EFFLUENT	ORBAL SECONDARY CLARIFIER	EXISTING FILTER FEED LINE
~~38~~	~~8" C900 DR 18 PVC~~	~~PLANT WATER~~	~~HYDROPNEUMATIC TANK~~	~~BOOSTER PUMP/YARD HYDRANTS~~
39	8" DIP (PRESSURE CLASS)	SANITARY SEWER	HEADWORKS	EXISTING MANHOLE
~~40~~	~~12" D.I.P. (PRESSURE CLASS)~~	~~SANITARY SEWER~~	SLUDGE TREATMENT BUILDING	~~PUMP STATION #2~~
41	36" DIP (PRESSURE CLASS)	INFLUENT	BAY ROAD	LINE #19



NOTES:

1. THE CONTRACTOR SHALL ADJUST RIM OF MANHOLE TO MATCH EXISTING GRADE.
2. CONCRETE (4,000 PSI MIN.) REINF. IN ADJUSTABLE RINGS TO MEET ASTM. C-478-72 WIRE MESH-ASTM. A-1 85-69.
3. FLAT-TOP MANHOLE TO BE USED WHERE REQUIRED BY GRADE.

PRECAST MANHOLE DETAIL

N.T.S.

STORM DRAINAGE STRUCTURES

STRUCT. NUMBER	TYPE	INVERT IN N	INVERT IN S	INVERT IN E	INVERT IN W	INVERT OUT N	INVERT OUT S	INVERT OUT E	INVERT OUT W	TOP OF GRATE
1	C	-	-	-	-	20.94	-	-	-	22.75
2	C	-	20.87	-	-	-	-	20.77	-	22.75
3	C	-	20.62	-	20.52	-	-	20.42	-	22.50
4	C	20.28	-	-	20.18	-	-	20.08	-	22.25
5	C	-	19.88	-	19.78	-	-	19.68	-	22.00
6	C	-	19.41	-	19.31	19.21	-	-	-	21.50
7	Y	-	18.81	-	-	-	-	18.71	-	21.50
8	CB	-	-	-	-	20.71	-	-	-	22.50
9	Y	-	-	-	-	-	20.32	-	-	22.50
10	CB	-	-	-	-	-	19.96	-	-	21.75
11	C	-	-	-	-	19.49	-	-	-	21.75
8-A	CB	-	-	-	-	-	20.37	-	-	22.50
~~12~~	~~CB~~	11.15	11.43	11.15	-	-	-	-	11.33	24.15
~~13~~	~~Y~~	-	-	11.55±	-	11.45	-	-	-	23.15
~~14~~	~~C~~	-	-	-	-	-	-	-	11.30	23.15

C = CURB INLET
Y = YARD INLET
CB = CATCH BASIN

NOTES

1. TRANSITION FROM PVC PIPE TO D.I. PIPE SHALL BE AS SHOWN ON EN DRAWINGS. CONCRETE ENCASED D.I.P. SHALL BE USED UNDER ALL STRUCTURES U.N.O.

RECORD DRAWING, MARCH 2009

REVISIONS			
SYM.	DESCRIPTION	DATE	BY
1	RECORD DRAWING	MARCH09	DFW

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PIPING SCHEDULE

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

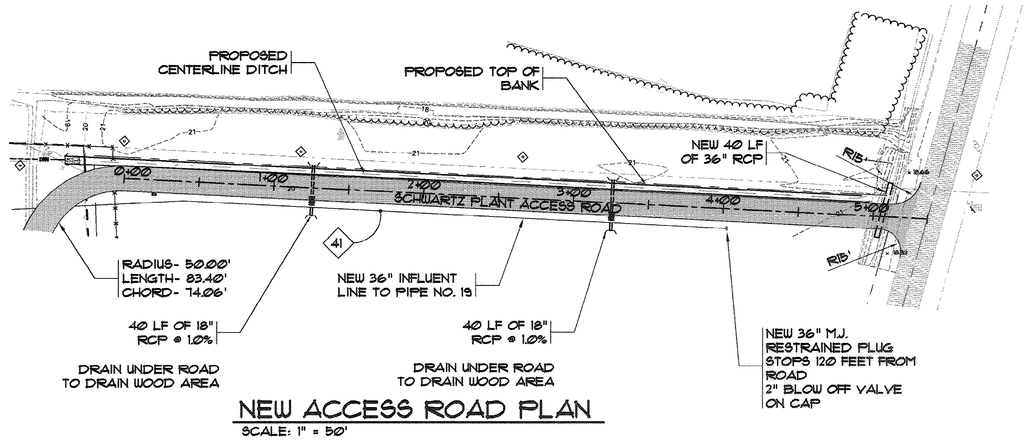
DATE:	JUNE 2008
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	JWM
SCALE:	AS SHOWN

SHEET NO. G-18
OF: _

07-024-16/101

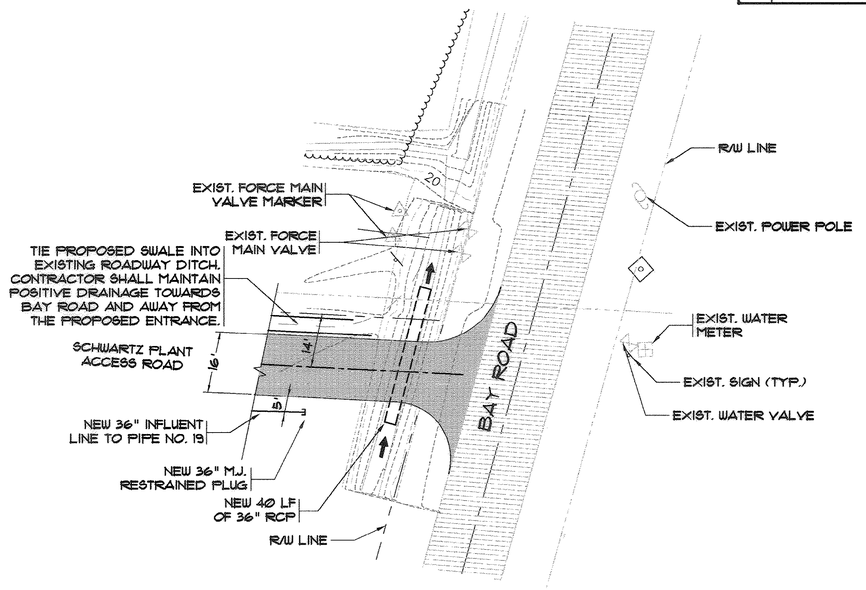
REVISIONS			
SYM.	DESCRIPTION	DATE	BY
1	RECORD DRAWING	MARCH09	DFW

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NEW ACCESS ROAD PLAN

SCALE: 1" = 50'

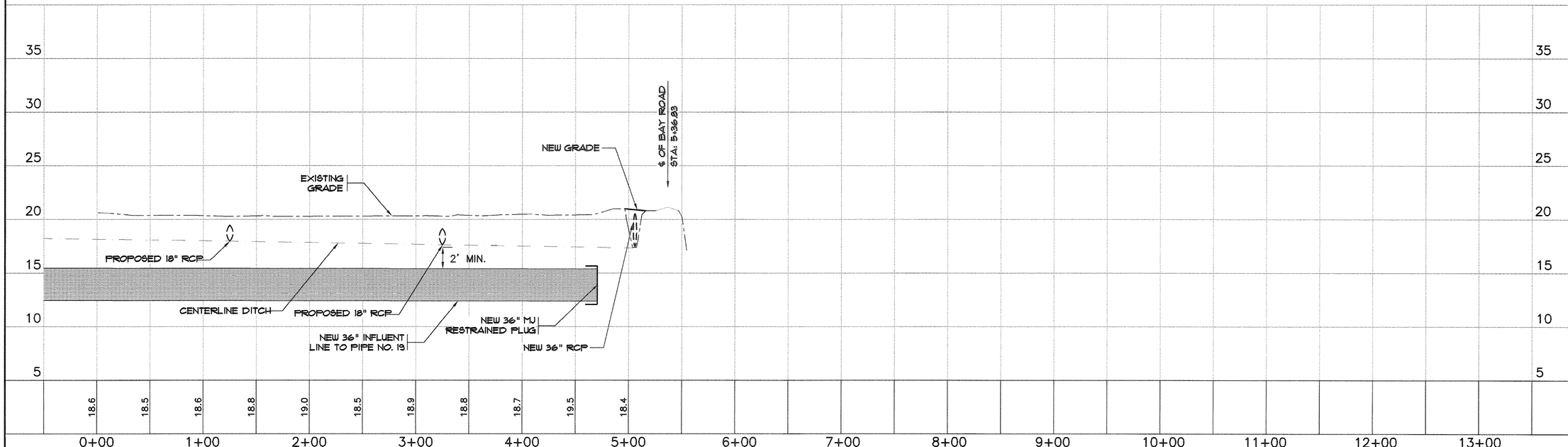


PARTIAL PLAN

SCALE: 1" = 20'

NEW ACCESS ROAD PROFILE

SCALE: 1" = 50' (HORIZONTAL)
SCALE: 1" = 5' (VERTICAL)



RECORD DRAWING, MARCH 2009

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NEW ACCESS ROAD PLAN & PROFILE

SCHWARTZ WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

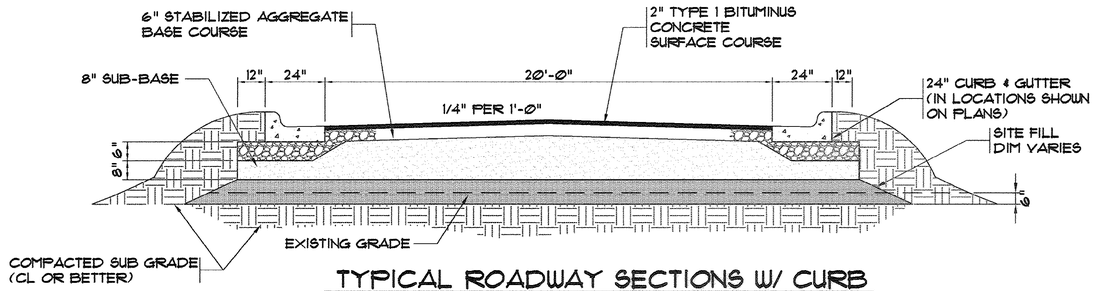
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DESIGNED:	PBW
DRAWN:	JDR
CHECKED:	PBW
SCALE:	AS SHOWN

SHEET NO. G-19

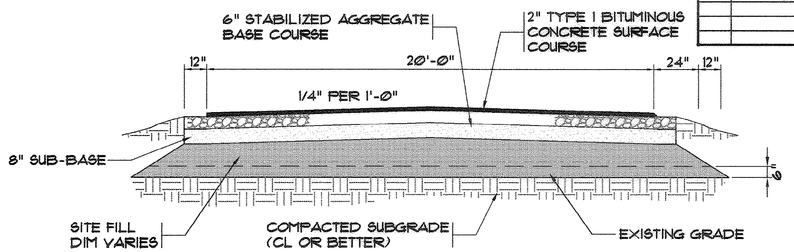
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07-024-17/101 5

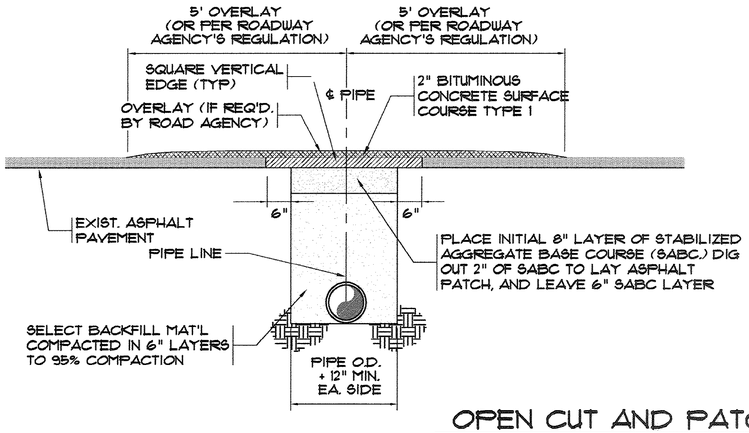
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TYPICAL ROADWAY SECTIONS W/ CURB
N.T.S.

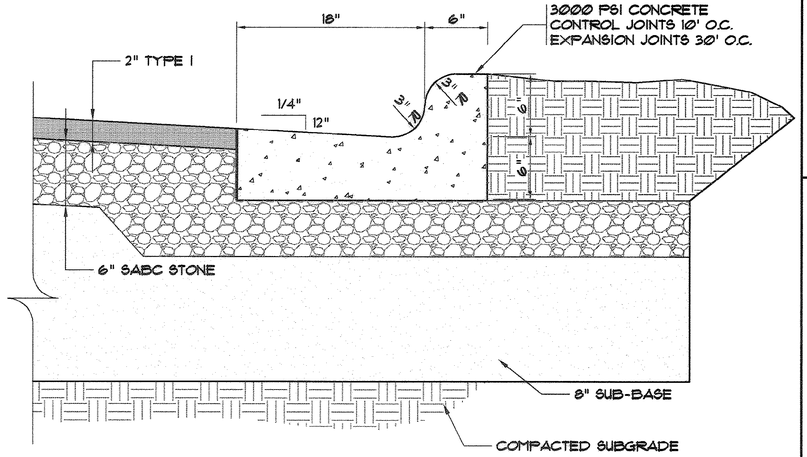


TYPICAL ROADWAY SECTION
N.T.S.

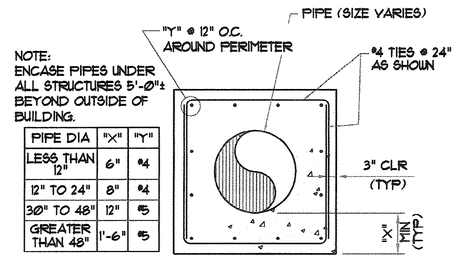


OPEN CUT AND PATCH (TYPE "A")
LOW VOLUME ASPHALT PAVEMENT
N.T.S.

NOTES:
1) PAVEMENT CUT TO EXTEND 6" BEYOND EDGES OF TRENCH AS SHOWN. PAVEMENT SHALL BE CUT TO TRUE LINE AND REMOVED BEFORE TRENCH IS CUT. ALL PAVEMENT REPAIRS TO BE IN ACCORDANCE WITH ROAD AGENCY SPECS.
2) ROAD AGENCY MAY REQUIRE A CUT & PATCH OF TRENCH AREA AND AN OVERLAY OF ENTIRE APRON OR ENTRANCE FROM THE EDGE OF THE MAIN ROAD TO THE EDGE OF THE ROAD RIGHT-OF- WAY (SEE ENCROACHMENT PERMIT).
3) WHERE EXISTING PAVEMENT IS INSUFFICIENT THICKNESS TO DEVELOP TIGHT SEAL WITH NEW SURFACE, NEW PAVEMENT SHALL LAP EXISTING SURFACE WITH AT LEAST A 10' OVERLAP ON BOTH SIDES FOR SMOOTH TRANSITION OR AS PER SPEC'S. OF ROAD AGENCY.



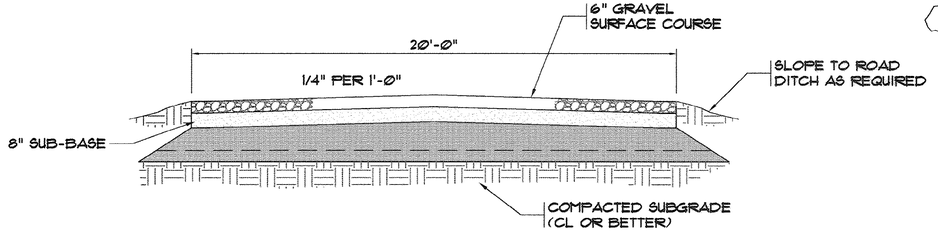
PAVEMENT, CURB & GUTTER
N.T.S.



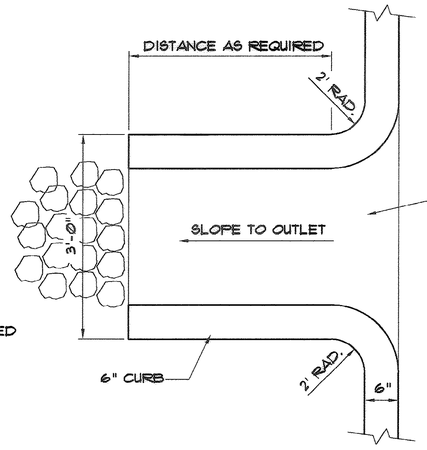
NOTE:
ENCASE PIPES UNDER ALL STRUCTURES 5'-0"± BEYOND OUTSIDE OF BUILDING.

PIPE DIA	"X"	"Y"
LESS THAN 12"	6"	#4
12" TO 24"	8"	#4
30" TO 48"	12"	#5
GREATER THAN 48"	1'-6"	#5

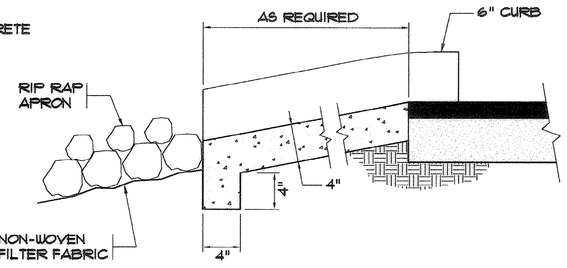
TYPICAL PIPE ENCASEMENT DETAIL
N.T.S.



TYPICAL GRAVEL ROAD SECTION
N.T.S.



CURB TURNOUT - PLAN VIEW
NTS



CURB TURNOUT - SECTION VIEW
NTS

RECORD DRAWING, MARCH 2009

REVISIONS			
SYM.	DESCRIPTION	DATE	BY
1	RECORD DRAWING	MARCH09	DFW

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Hobbs, Upchurch & Associates, P.A.
Consulting Engineers
Myrtle Beach, South Carolina 29577
PHONE: (843) 626-1810 FAX: (843) 626-1745

MISCELLANEOUS DETAILS

SCHWARTZ
WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE:	JUNE 2008
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	PBW
SCALE:	AS SHOWN

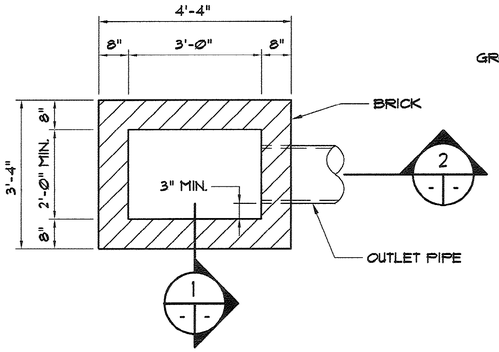
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OF: –

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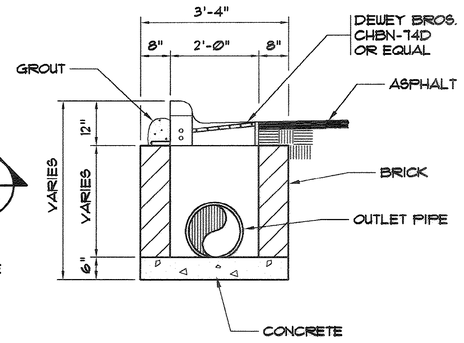
07-024-18/1015

REVISIONS			
SYM.	DESCRIPTION	DATE	BY
1	RECORD DRAWING	MARCH09	DFW

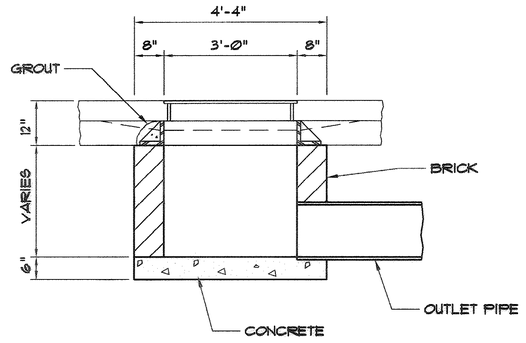
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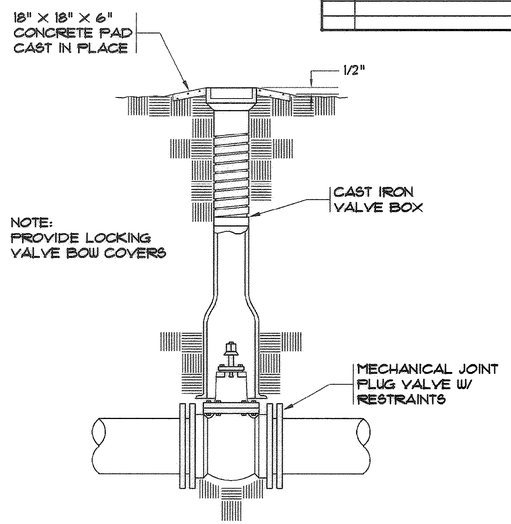
CURB INLET PLAN
N.T.S.



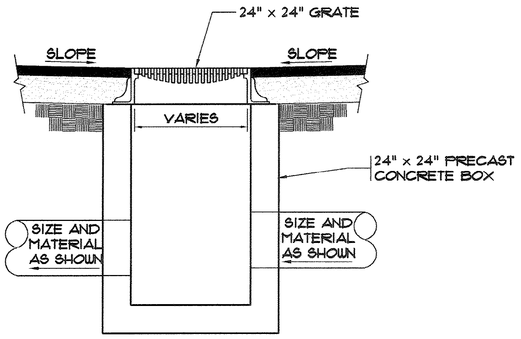
1 SECTION



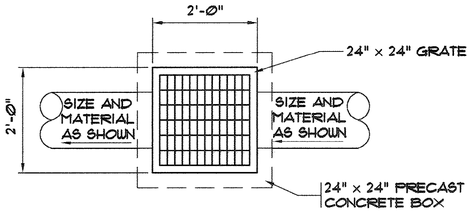
2 SECTION



PLUG VALVE ASSEMBLY
N.T.S.

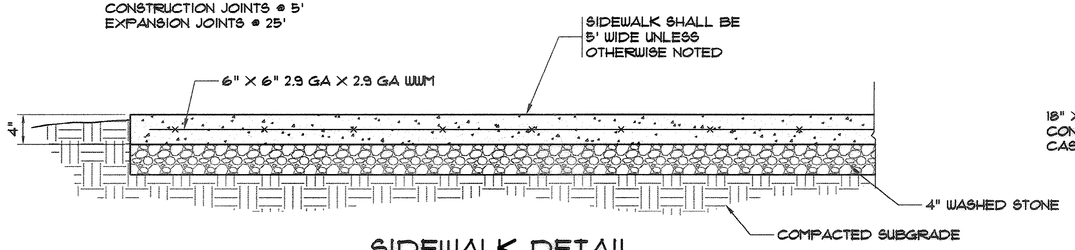


DROP INLET - SECTION
NTS

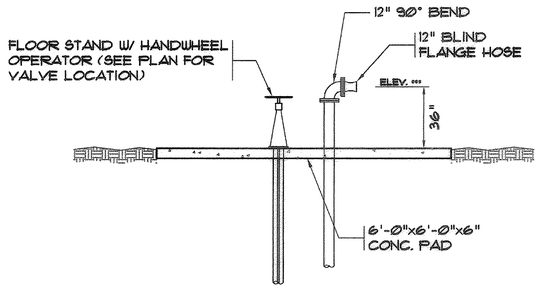


DROP INLET - PLAN VIEW
NTS

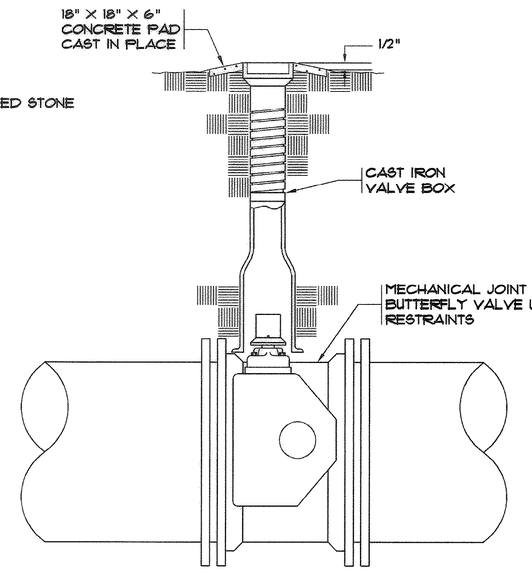
NOTE:
CONSTRUCTION JOINTS @ 5'
EXPANSION JOINTS @ 25'



SIDEWALK DETAIL
N.T.S.



PUMP OUT STATION
N.T.S.



BUTTERFLY VALVE ASSEMBLY
N.T.S.

RECORD DRAWING, MARCH 2009

Hobbs, Upchurch & Associates, P.A.
Consulting Engineers
Myrtle Beach, South Carolina 29577
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MISCELLANEOUS DETAILS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE:	JUNE 2008
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	PBW
SCALE:	AS SHOWN

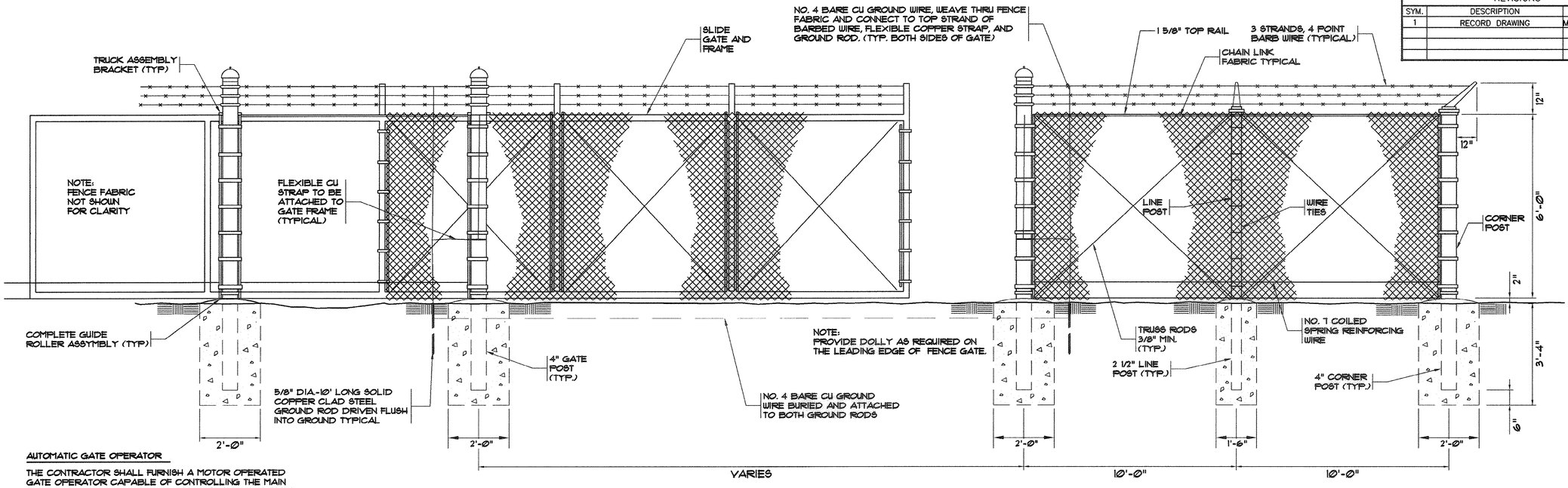
SHEET NO.
G-21
OF: _____

07-024-19/101 5

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REVISIONS			
SYM.	DESCRIPTION	DATE	BY
1	RECORD DRAWING	MARCH09	DFW

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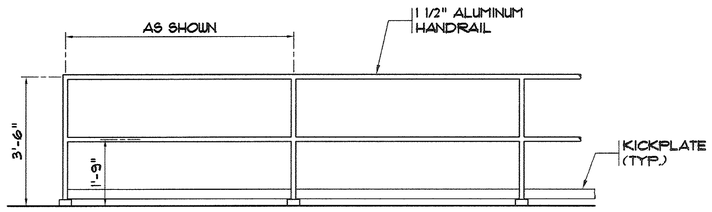


6' CHAIN LINK FENCE DETAIL

N.T.S.

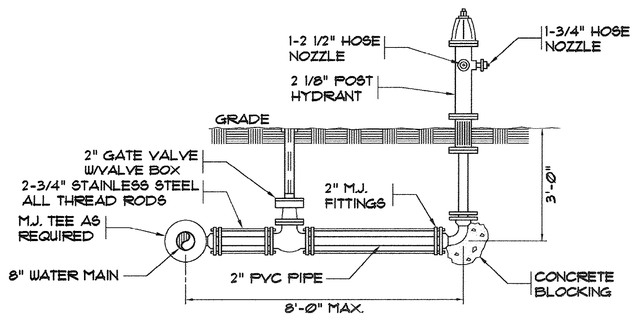
AUTOMATIC GATE OPERATOR

THE CONTRACTOR SHALL FURNISH A MOTOR OPERATED GATE OPERATOR CAPABLE OF CONTROLLING THE MAIN FACILITY GATE. THE GATE OPERATOR SHALL BE A SLIDE GATE TYPE COMPLETE WITH OPERATOR, HOUSING, PRE-WIRED CONTROL PANEL, DRIVE RAIL, AND SUPPORTING HARDWARE. THE SYSTEM SHALL ALSO INCLUDE A CARD OPERATED CONTROL DEVICE WITH VOICE COMMUNICATION CAPABILITIES TO THE CONTROL ROOM. AN OVERRIDE SWITCH SHALL BE PROVIDED IN THE CONTROL ROOM. A PHOTO ELECTRIC EYE SHALL BE UTILIZED FOR OPENING THE GATE FROM THE INTERIOR AND A TIMER PROVIDED FOR AUTOMATIC CLOSURE. SYSTEM SHALL BE HONEYWELL OR OWNER APPROVED EQUAL.



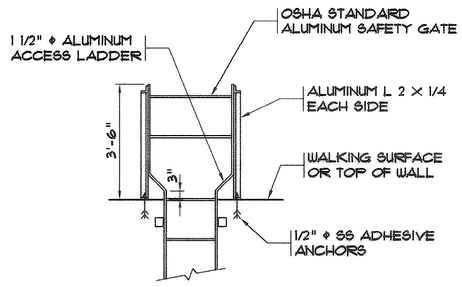
TYPICAL HANDRAIL DETAIL

N.T.S.



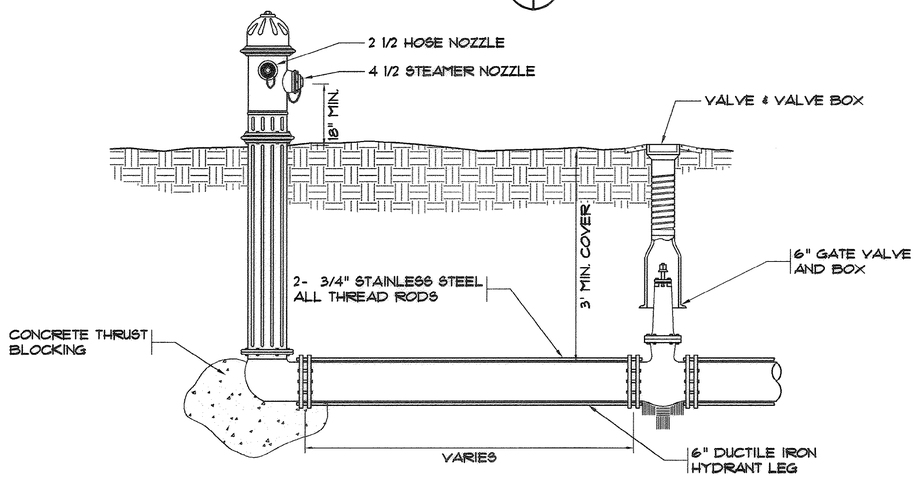
YARD HYDRANT DETAIL

N.T.S.



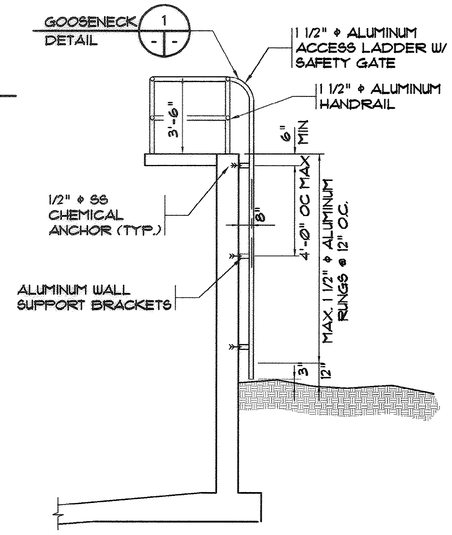
LADDER GOOSENECK DETAIL

N.T.S.



FIRE HYDRANT ASSEMBLY DETAIL

N.T.S.



LADDER DETAIL

N.T.S.

RECORD DRAWING, MARCH 2009

Hobbs, Upchurch & Associates, P.A.
Consulting Engineers
Myrtle Beach, South Carolina 29577
PHONE: (843) 626-1910 FAX: (843) 626-1745

MISCELLANEOUS DETAILS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE:	JUNE 2008
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	PBW
SCALE:	AS SHOWN

SHEET NO. G-22

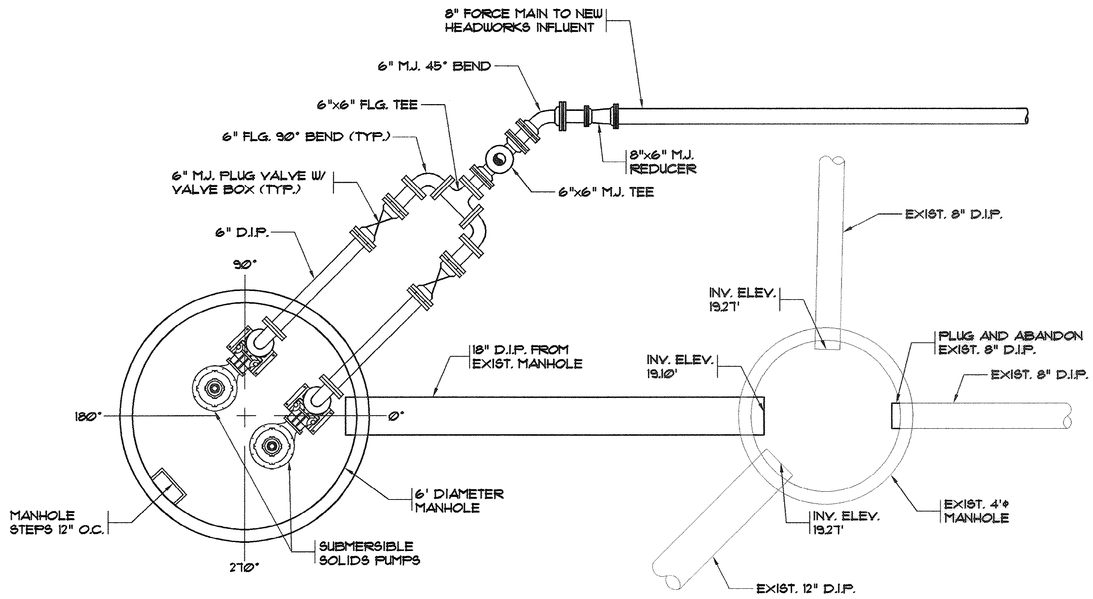
OF: _____

07-024-20/101 5

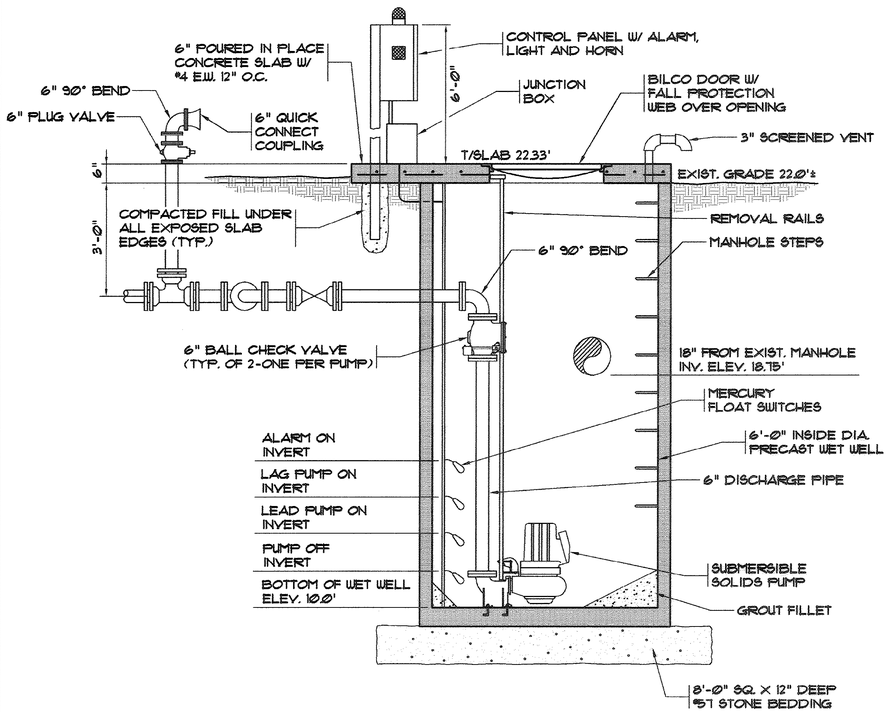
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REVISIONS			
SYM.	DESCRIPTION	DATE	BY
1	RECORD DRAWING	MARCH09	DFW

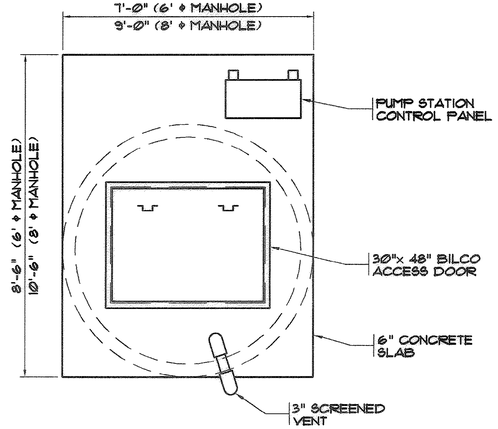
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PUMP STATION #1
BOTTOM PLAN VIEW
N.T.S.



PUMP STATION #1
ELEVATION VIEW
N.T.S.



TYP. PUMP STATION
TOP PLAN VIEW
N.T.S.

NOTE:
SEE PLANS FOR ORIENTATION

RECORD DRAWING, MARCH 2009

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Myrtle Beach, South Carolina 29577
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PUMP STATION DETAILS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

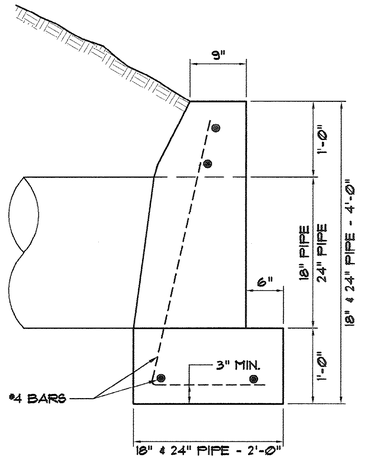
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DESIGNED:	PBW
DRAWN:	ARM
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SCALE:	AS SHOWN

SHEET NO.
G-23
OF: —

07-024-21/101 5

REVISIONS			
SYM.	DESCRIPTION	DATE	BY
1	RECORD DRAWING	MARCH09	DFW

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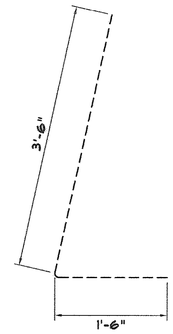
SIDE ELEVATION
SCALE: 1"=1'-Ø"

NOTES:

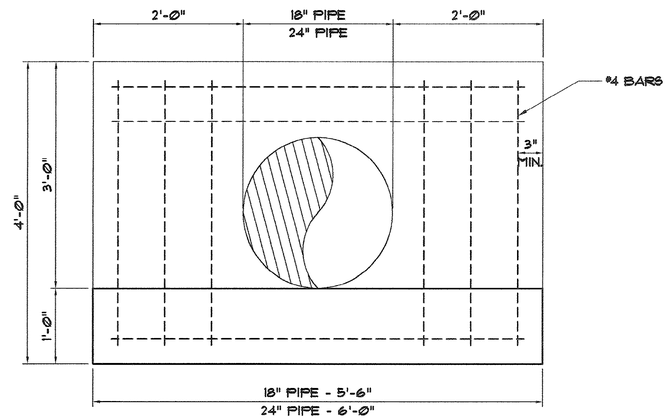
1. HEADWALLS SHALL BE CONSTRUCTED OF 4000 PSI CONCRETE. REINFORCING STEEL SHALL BE ASTM A-706, LOW ALLOY STEEL DEFORMED AND PLAIN BARS FOR CONCRETE REINFORCEMENT, GRADE 60. SPACE BETWEEN REBARS SHALL BE UNIFORM.

2. ALL MATERIAL AND WORKMANSHIP SHALL CONFORM TO THE SC DOT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (LATEST EDITION).

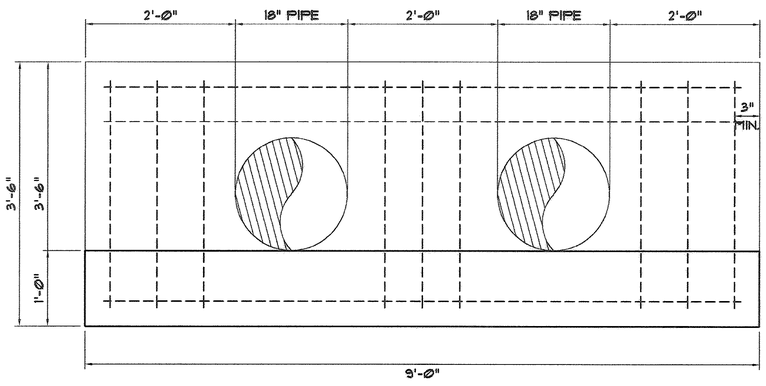
3. THE HEADWALL MAY BE PRECAST IN LIEU OF CAST IN PLACE, PROVIDING ALL MATERIALS AND DIMENSIONS MEET OR EXCEED THOSE INDICATED ON THIS DRAWING.



NO. 4 REINFORCING STEEL BAR
SCALE: 1"=1'-Ø"



18" / 24" SINGLE PIPE HEADWALL
SCALE: 1"=1'-Ø"



18" DOUBLE PIPE HEADWALL
SCALE: 1"=1'-Ø"

RECORD DRAWING, MARCH 2009

Hobbs, Upchurch & Associates, P.A.
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Myrtle Beach, South Carolina 29577
PHONE: (843) 626-1910 FAX: (843) 626-1745

HEADWALL DETAILS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

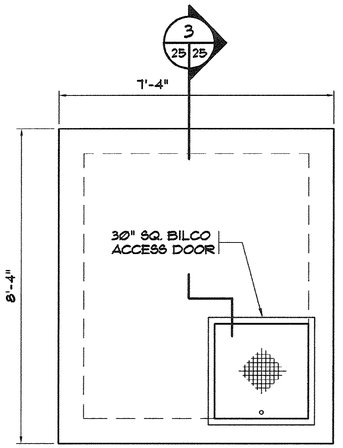
DATE:	JUNE 2008
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	PBW
SCALE:	AS SHOWN

SHEET NO.
G-24
OF: _____

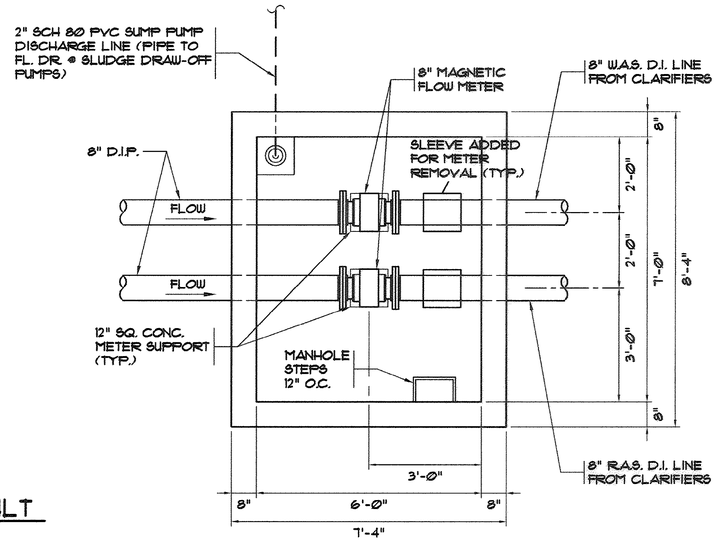
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REVISIONS			
SYM.	DESCRIPTION	DATE	BY
1	RECORD DRAWING	MARCH09	DFW

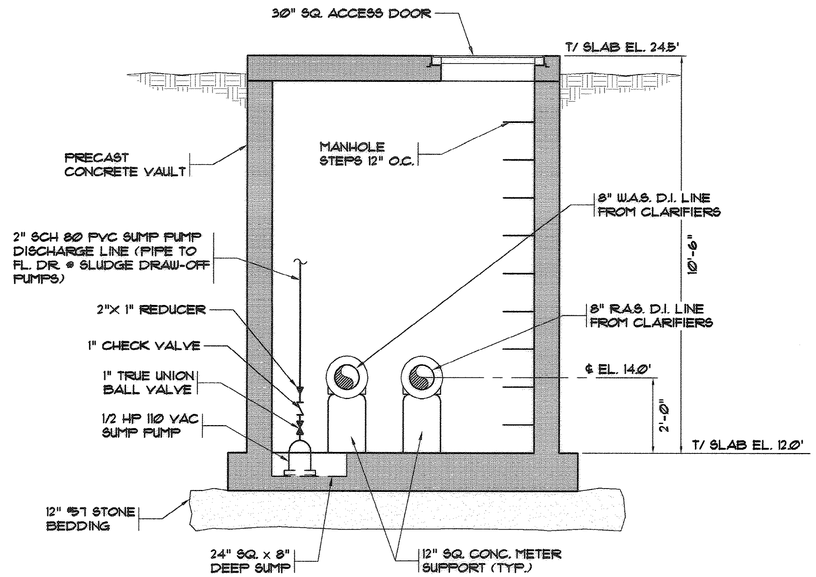
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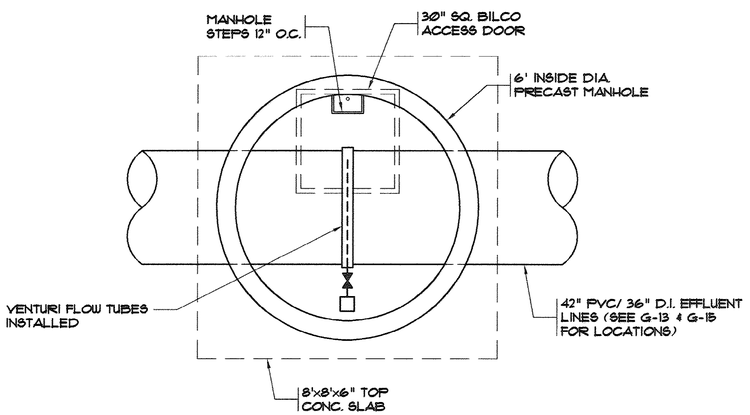
MAGNETIC FLOW METER VAULT TOP VIEW
SCALE: 1/2" = 1'-0"



2/14/25 MAGNETIC FLOW METER VAULT LOWER VIEW
SCALE: 1/2" = 1'-0"



3/25/25 SECTION
SCALE: 1/2" = 1'-0"



1/13/25 MH FLOW METER VAULT
LOWER PLAN VIEW
N.T.S.

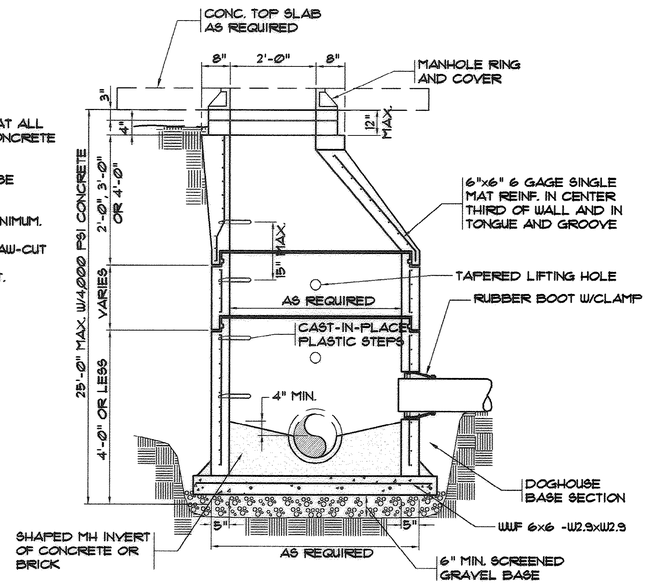
NOTES:

1. FLOW SHALL BE MAINTAINED AT ALL TIMES DURING CONSTUCTION. CONCRETE USED FOR BASE SLAB.

2. PRE-CAST SECTIONS SHALL BE 4000 P.S.I. MINIMUM.

3. STONE BASE SHALL BE 6" MINIMUM.

4. EXISTING DRAIN SHALL BE SAW-CUT TO SPRING LINE AFTER BASE CONCRETE IS PLACED AND SET.



DOGHOUSE MANHOLE DETAIL (BUILT OVER EXISTING LINE)
N.T.S.

RECORD DRAWING, MARCH 2009

Hobbs, Upchurch & Associates, P.A.
Consulting Engineers
Myrtle Beach, South Carolina 29577
PHONE: (843) 626-1910 FAX: (843) 626-1945

METER VAULT DETAILS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE:	JUNE 2008
DESIGNED:	PBW
DRAWN:	ALG
CHECKED:	JWM
SCALE:	AS SHOWN

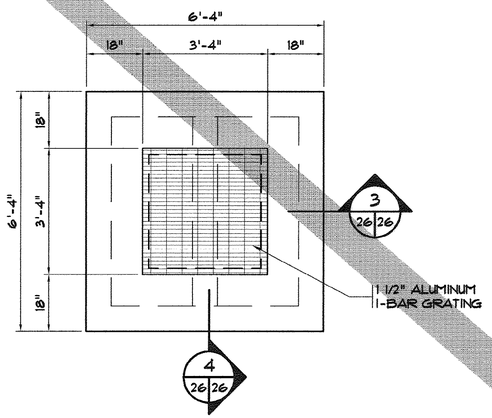
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OF: –

07-024-23/101 5

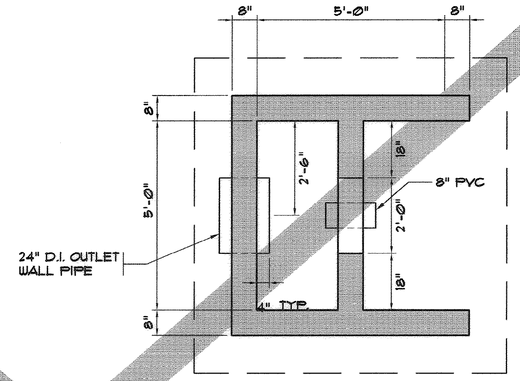
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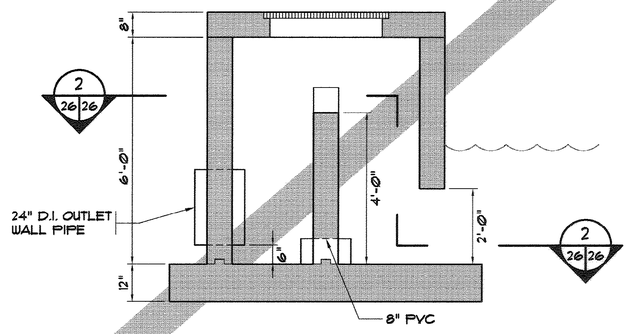
NOTE: CANAL OUTLET BOX SHALL BE PRECAST CONCRETE. DESIGNS SHALL BE SEALED BY PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF SOUTH CAROLINA.



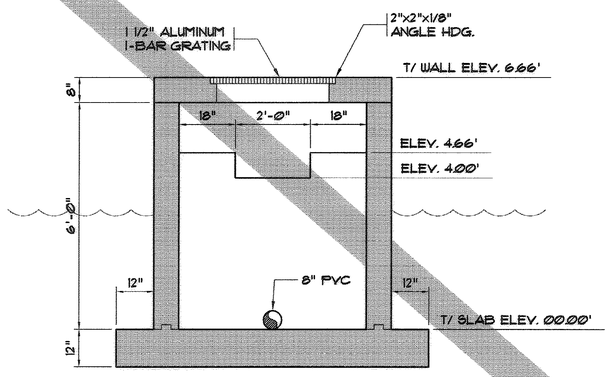
1 / 10 26 **CANAL OUTLET BOX LAYOUT PLAN**
SCALE: 1/2"=1'-0"



2 / 26 26 **SECTIONAL VIEW**
SCALE: 1/2" = 1'-0"



3 / 26 26 **SECTION VIEW**
SCALE: 1/2" = 1'-0"



4 / 26 26 **SECTION VIEW**
SCALE: 1/2" = 1'-0"

RECORD DRAWING, MARCH 2009

07-024-24/101 S

Hobbs, Upchurch & Associates, P.A.
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Myrtle Beach, South Carolina 29577
PHONE: (843) 626-1910 FAX: (843) 626-1745

CANAL OUTLET STRUCTURE

SCHWARTZ WASTEWATER TREATMENT PLANT UPGRADE

GRAND STRAND WATER & SEWER AUTHORITY

DATE:	JUNE 2008
DESIGNED:	PBW
DRAWN:	ALG
CHECKED:	JWM
SCALE:	AS SHOWN

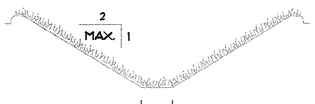
SHEET NO.
G-26
OF: _____

EROSION CONTROL NOTES:

1. ALL SEDIMENT CONTROL MEASURES SHALL BE INSPECTED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND AFTER EVERY STORM EVENT GREATER THAN Ø.5 INCHES OF PRECIPITATION DURING ANY 24-HOUR PERIOD. ALL SEDIMENT CONTROL FEATURES SHALL BE MAINTAINED UNTIL FINAL STABILIZATION HAS BEEN OBTAINED.
2. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS FRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED, UNLESS IN THAT PORTION OF THE SITE WILL RESUME WITHIN 21 DAYS.
3. PROVIDE SILT FENCE AND/OR OTHER CONTROL DEVICES, AS MAY BE REQUIRED, TO CONTROL SOIL EROSION DURING PATH CONSTRUCTION. SEDIMENT SHALL BE REMOVED FROM BEHIND SILT FENCE WHEN IT BECOMES ABOUT Ø.5 FEET DEEP AT THE FENCE. ALL DISTURBED AREAS SHALL BE CLEANED, GRADED AND STABILIZED WITH GRASSING IMMEDIATELY AFTER THE PATH INSTALLATION.
4. ALL EROSION CONTROL DEVICES SHALL BE PROPERLY MAINTAINED DURING ALL PHASES OF CONSTRUCTION UNTIL THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES AND ALL DISTURBED AREAS HAVE BEEN STABILIZED. ADDITIONAL CONTROL DEVICES MAY BE REQUIRED DURING CONSTRUCTION, IN ORDER TO CONTROL EROSION AND/OR OFFSITE SEDIMENTATION. ALL TEMPORARY CONTROL DEVICES SHALL BE REMOVED ONCE CONSTRUCTION IS COMPLETED AND THE SITE IS STABILIZED.
5. THE CONTRACTOR MUST TAKE NECESSARY ACTION TO MINIMIZE TRACKING OF MUD ONTO PAVED ROADWAY FROM CONSTRUCTION AREAS. THE CONTRACTOR SHALL DAILY REMOVE MUD/SOIL FROM PAVEMENT, AS MAY BE REQUIRED.

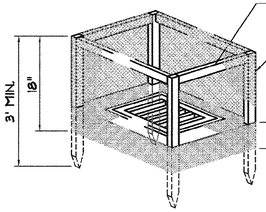
SEQUENCE OF CONSTRUCTION

1. CLEARING AND GRUBBING THOSE AREAS NECESSARY FOR INSTALLATION OF PERIMETER CONTROLS.
2. INSTALLATION OF SEDIMENT BASINS AND TRAPS.
3. CONSTRUCTION OF PERIMETER CONTROLS.
4. REMAINING CLEARING AND GRUBBING.
5. PATH/GRAVEL PARKING AREA GRADING.
6. FINAL GRADING, LANDSCAPING, OR STABILIZATION.
7. REMOVAL OF SEDIMENT CONTROLS AND INSTALLATION OF PERMANENT VEGETATION OR DISTURBED AREAS.



NOTE: PREPARE, SOD, AND INSTALL AS REQUIRED

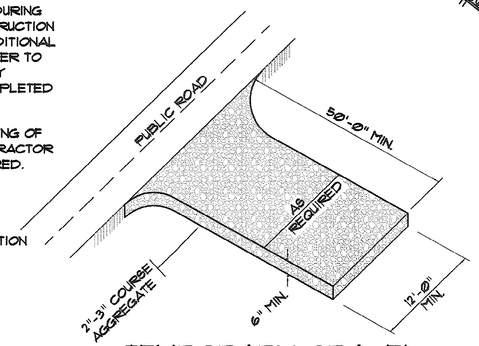
GRASS (SODDED) SWALE



TEMPORARY INLET PROTECTION DETAIL

2 - 1 - 2

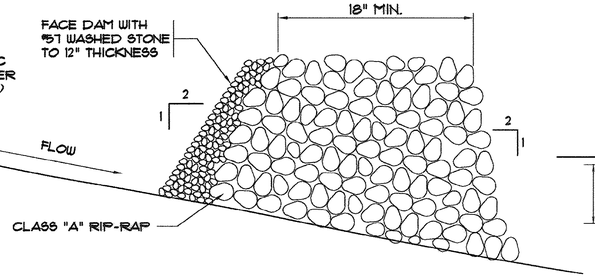
SCALE: NONE



TEMPORARY GRAVEL CONSTRUCTION ENTRANCE

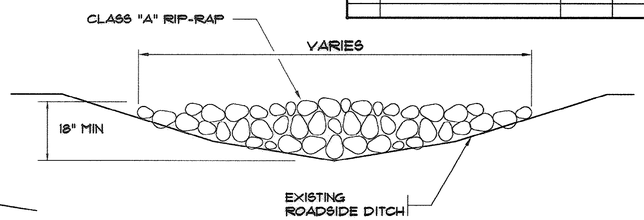
5 - 1 - 2

N.T.S.



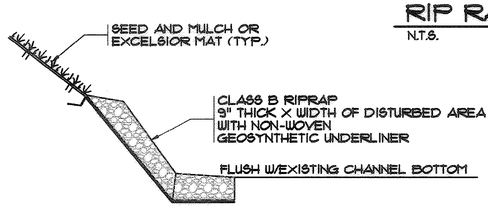
RIP RAP CHECK DAM DETAIL

N.T.S.



NOTES:

1.) CHECK DAMS SHALL BE REQUIRED ONLY IF TEMPORARY DITCH LINERS DO NOT CONTROL EROSION OR AS DIRECTED BY THE ENGINEER.
2.) CONTRACTOR SHALL REMOVE SEDIMENT ACCUMULATED BEHIND THE DAM TO PREVENT DAMAGE TO CHANNEL VEGETATION.
3.) CONTRACTOR SHALL REMOVE ROCK CHECK DAMS AFTER PERMANENT VEGETATION HAS BEEN ESTABLISHED.



RIPRAP SLOPE PROTECTION

7 - 1 - 2

N.T.S.

SEDIMENT FENCE
CONSTRUCTION SPECIFICATIONS:

1. USE A SYNTHETIC FILTER FABRIC OR A PERVIOUS SHEET OF POLYPROPYLENE, NYLON, POLYESTER OR POLYETHYLENE YARN WHICH IS CERTIFIED BY THE MANUFACTURER OR SUPPLIER AS CONFORMING TO THE REQUIREMENTS SHOWN IN TABLE BELOW. SYNTHETIC FILTER FABRIC SHOULD CONTAIN ULTRAVIOLET RAY INHIBITORS AND STABILIZERS TO PROVIDE A MINIMUM OF 6 MONTHS OF EXPECTED USEABLE CONSTRUCTION LIFE AT A TEMPERATURE RANGE OF Ø TO 120 DEGREES FAHRENHEIT.
2. FOR REINFORCEMENT OF STANDARD STRENGTH FILTER FABRIC, USE WIRE FENCE WITH A MINIMUM 14 GAUGE AND A MAXIMUM MESH SPACING OF 6 INCHES.

FENCE FABRIC SPECIFICATIONS

PHYSICAL PROPERTY REQUIREMENTS

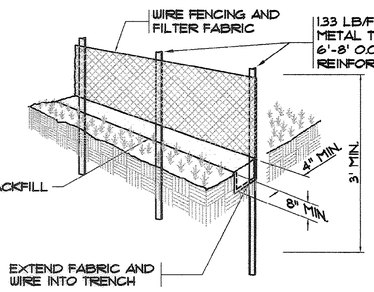
FILTERING EFFICIENCY 85% MINIMUM

TENSILE STRENGTH AT 20% EXTRA STRENGTH 50LB/LIN IN. MINIMUM
MAXIMUM ELONGATION STANDARD STRENGTH 30LB/LIN IN. MIN.

SLURRY FLOW RATE Ø.30 GAL/SQ. FT./MINUTE MINIMUM

MAINTENANCE:

INSPECT SEDIMENT FENCES AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY SHOULD THE FABRIC OF A SEDIMENT FENCE COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE, REPLACE OT PROMPTLY. REPLACE BURLAP EVERY 60 DAYS. REMOVE SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE OF THE FENCE. TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEANOUT. REMOVE ALL FENCING MATERIALS AND UNSTABLE SEDIMENT DEPOSITS AND BRING THE AREA TO GRADE AND STABILIZE IT AFTER CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.



SILT FENCE DETAIL

N.T.S.

SOIL PREPARATION

1. CHISEL COMPACTED AREAS AND SPREAD TOPSOIL 3 INCHES DEEP OVER ADVERSE SOIL CONDITIONS, IF AVAILABLE.
2. RIP THE ENTIRE AREA TO 6" DEPTH.
3. REMOVE ALL LOOSE ROCK, ROOTS, AND OTHER OBSTRUCTIONS LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
4. APPLY AGRICULTURAL LIME, FERTILIZER, AND SUPERPHOSPHATE UNIFORMLY AND MIX WITH SOIL (SEE BELOW *).
5. CONTINUE TILLAGE UNTIL A WELL-PULVERIZED, FIRM, REASONABLY UNIFORM SEEDBED IS PREPARED 4 TO 6 INCHES DEEP.
6. ALL PERMANENT COVER, SUMMER AND WINTER, SHALL BE CENTIPEDE SOD PROVIDED BY THE OWNER AND INSTALLED BY THE CONTRACTOR.

RECORD DRAWING, MARCH 2009

REVISIONS			
SYM.	DESCRIPTION	DATE	BY
1	RECORD DRAWING	MARCH09	DFW

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Myrtle Beach, South Carolina 29577
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EROSION CONTROL DETAILS

SCHWARTZ
WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

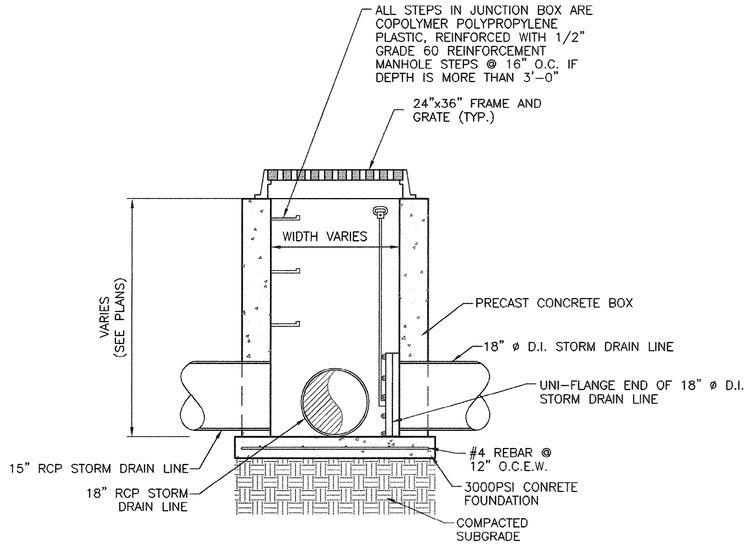
DATE:	JUNE 2008
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	PBW
SCALE:	AS SHOWN

SHEET NO.
G-27
OF: –

07-024-25/1015

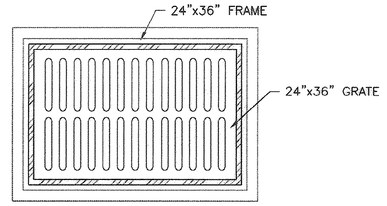
REVISIONS			
SYM.	DESCRIPTION	DATE	BY
1	RECORD DRAWING	MARCH09	DFW

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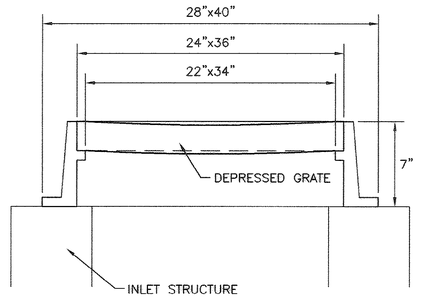


GRATE INLET DETAIL

NOT TO SCALE



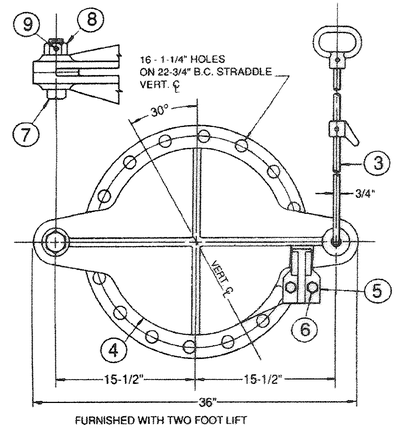
FRAME PLAN



24"x36" FRAME AND GRATE DETAIL

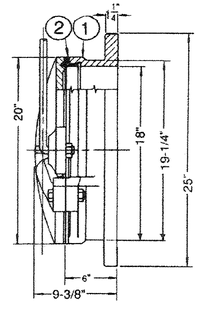
NOT TO SCALE

PARTS LIST					
ITEM	DESCRIPTION	REQ'D	MATERIAL	ASTM	
1	BODY	1	CAST IRON	A126	CL.B
2	SEAT RING	1	BRONZE	B62	
3	LIFT HANDLE	1	STEEL	A107	GR.1115
4	DISC W/BR. DISC RING	1	CAST IRON	A126	CL.B
5	RIGHT HAND WEDGE	1	CAST IRON	A126	CL.B
6	WEDGE NUT	2	STEEL		ASA B18.2
7	HINGE BOLT	1	BRONZE	B.62	
8	HINGE BOLT NUT	1	BRONZE	B.62	
9	SET SCREW	1	STEEL		PLATED



FURNISHED WITH TWO FOOT LIFT HANDLE AND CATCH (A-25215)

LONGER LIFT HANDLE FURNISHED WHEN SPECIFIED



SHEAR GATE

NOT TO SCALE

RECORD DRAWING, MARCH 2009

Hobbs, Upchurch & Associates, P.A.
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CANAL OUTLET STRUCTURE

SCHWARTZ
WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE:	JUNE 2008
DESIGNED:	JDB
DRAWN:	ONH
CHECKED:	JDB
SCALE:	AS SHOWN

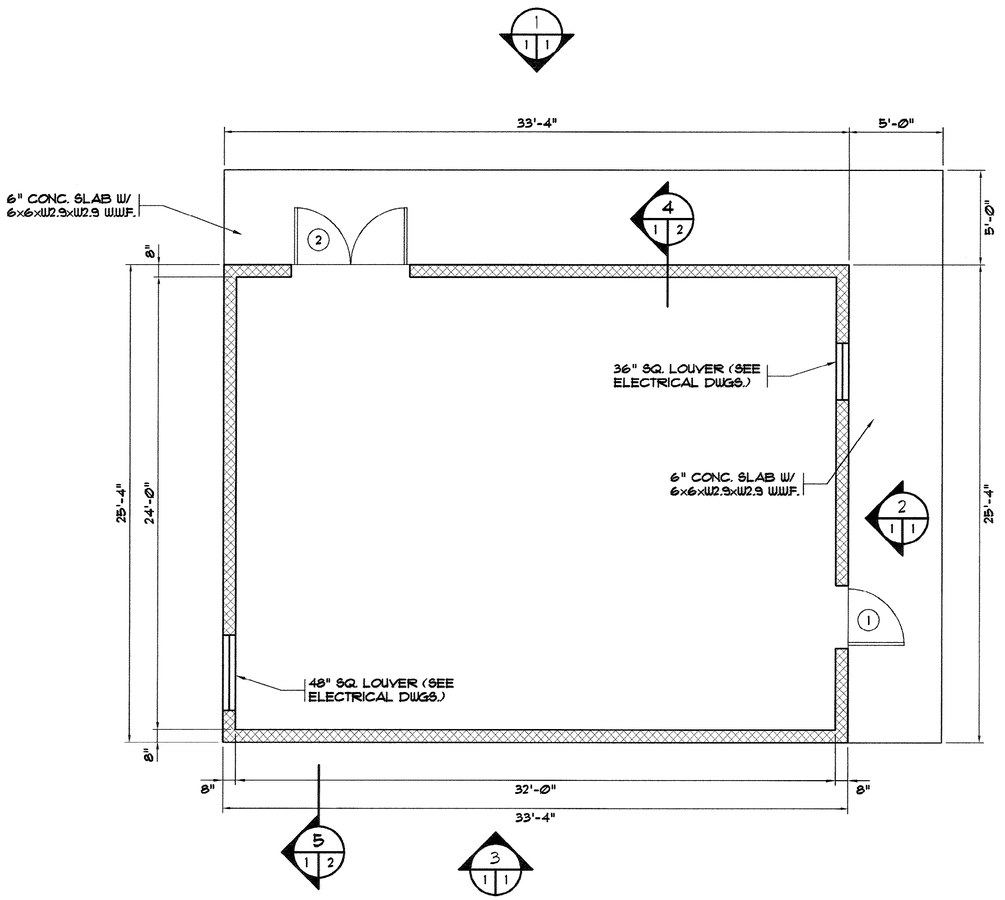
SHEET NO. G-28

OF: _____

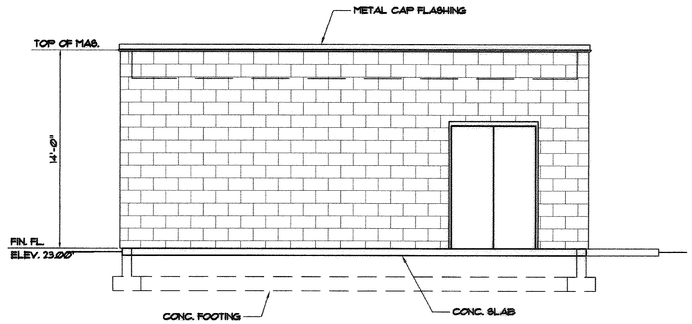
07-024-26/1015

REVISIONS			
SYM.	DESCRIPTION	DATE	BY
1	RECORD DRAWING	AUG08	WDH

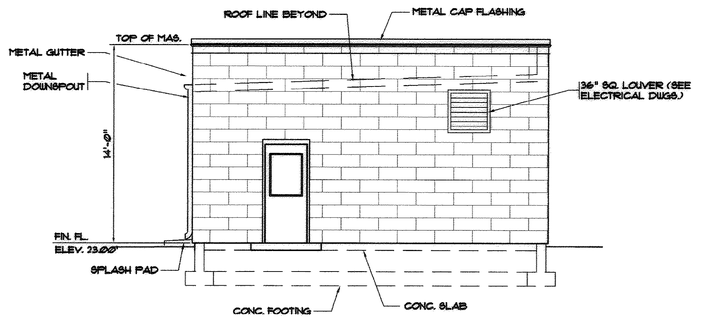
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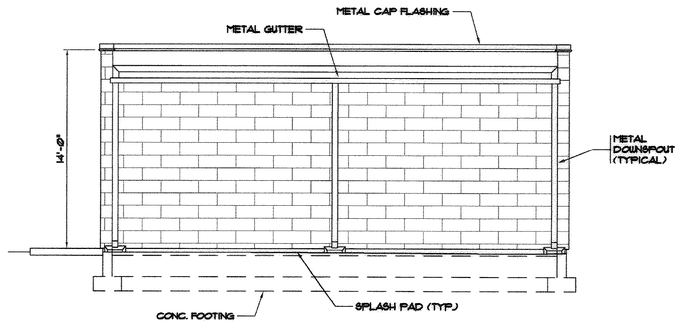
ELECTRICAL BUILDING LAYOUT PLAN
SCALE: 1/4" = 1'-0"



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



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



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

RECORD DRAWING, MARCH 2009

07-024-27/101 5

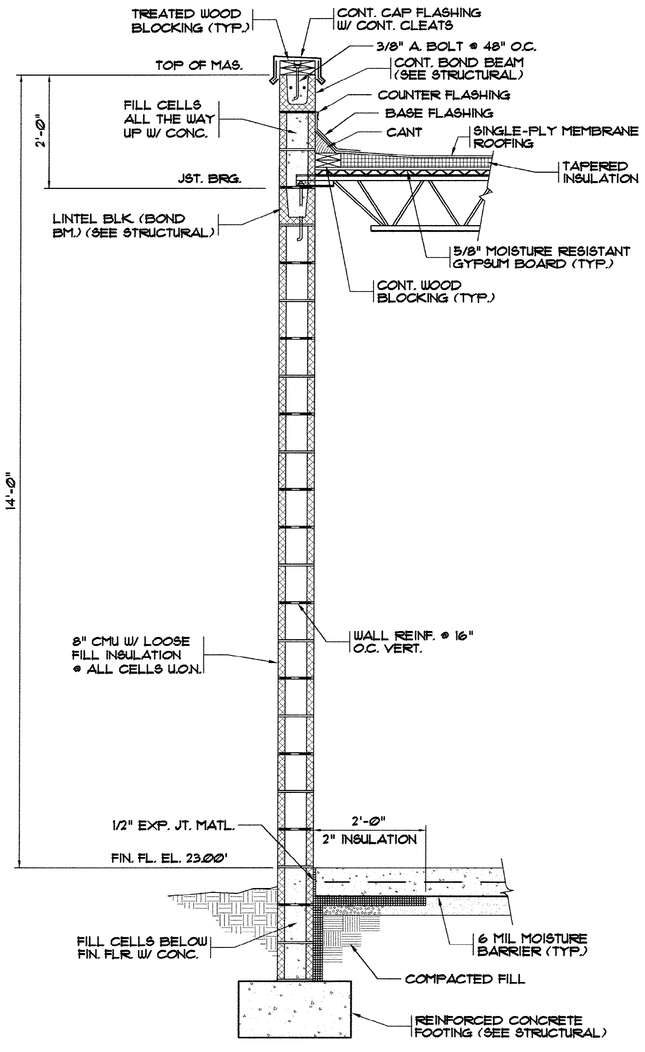
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Consulting Engineers
Myrtle Beach, South Carolina 29577
PHONE: (843) 626-1910 FAX: (843) 626-1345

ELECTRICAL BUILDING LAYOUT PLAN & ELEVATIONS

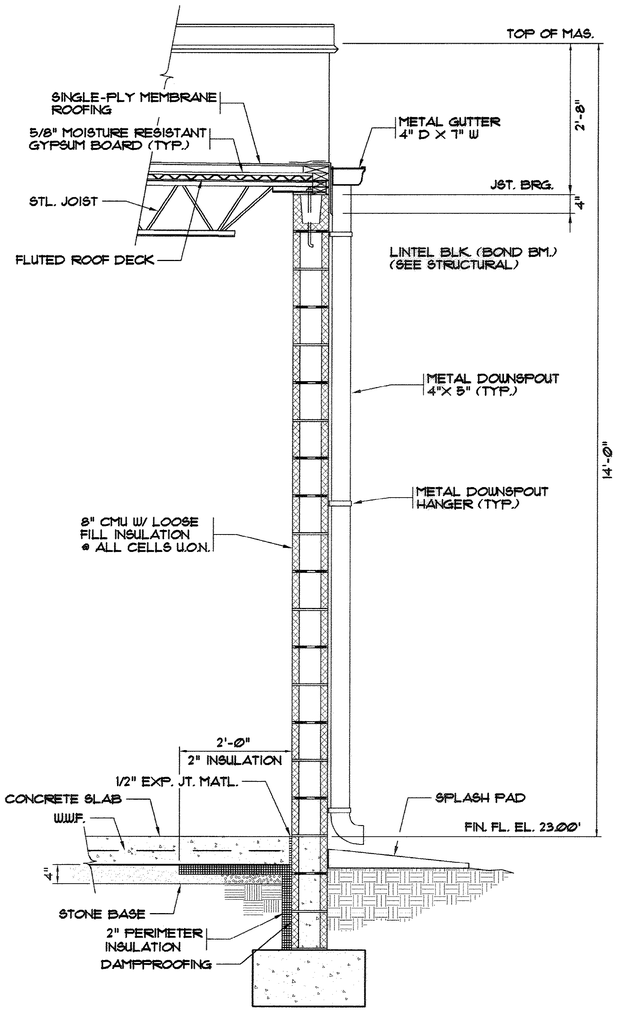
SCHWARTZ WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE:	NOV 2005
DESIGNED:	JWM
DRAWN:	ALG
CHECKED:	JWM
SCALE:	AS SHOWN
SHEET NO.	A-1
OF:	-

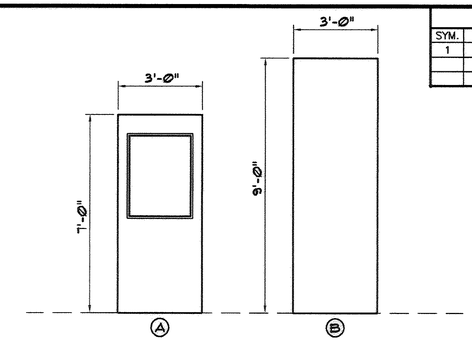
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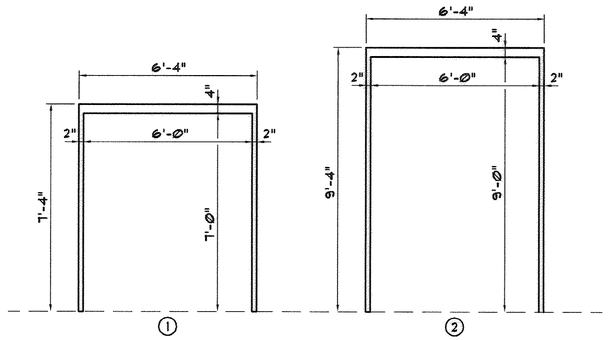
4 1|2 TYP. WALL SECTION
SCALE: 3/4" = 1'-Ø"



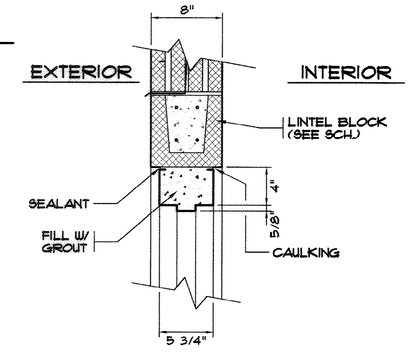
5 1|2 TYP. WALL SECTION
SCALE: 3/4" = 1'-Ø"



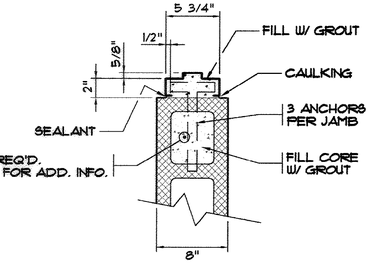
DOOR ELEVATION



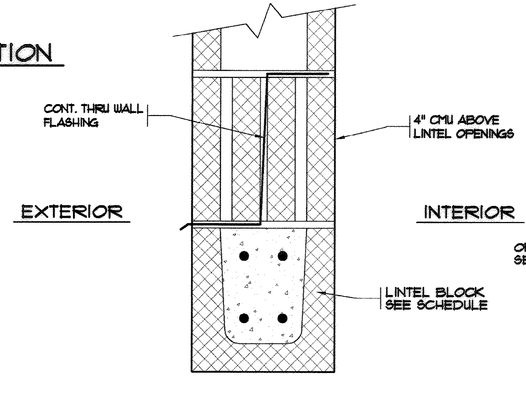
FRAME ELEVATION



HEAD SECTION



JAMB SECTION



HEAD DETAIL @ LOUVERS AND FANS
N.T.S.

DOOR DETAILS
N.T.S.

DOOR SCHEDULE

NO.	DOOR						FRAME			REMARKS
	SIZE	TYPE	MTL.	GLASS	LOUVER	LABEL	TYPE	MTL.	GLASS	
1	3'x7'x1.75"	A	METAL	1/4" TEMP.	NONE	NONE	1	METAL	NONE	
2	PR 3'x9'x1.75"	B	METAL	NONE	NONE	NONE	2	METAL	NONE	

RECORD DRAWING, MARCH 2009

07-024-28/101 5

REVISIONS			
SYM.	DESCRIPTION	DATE	BY
1	RECORD DRAWING	AUG08	WDH

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ELECTRICAL BUILDING SECTIONS, DETAILS & DOOR SCHEDULE

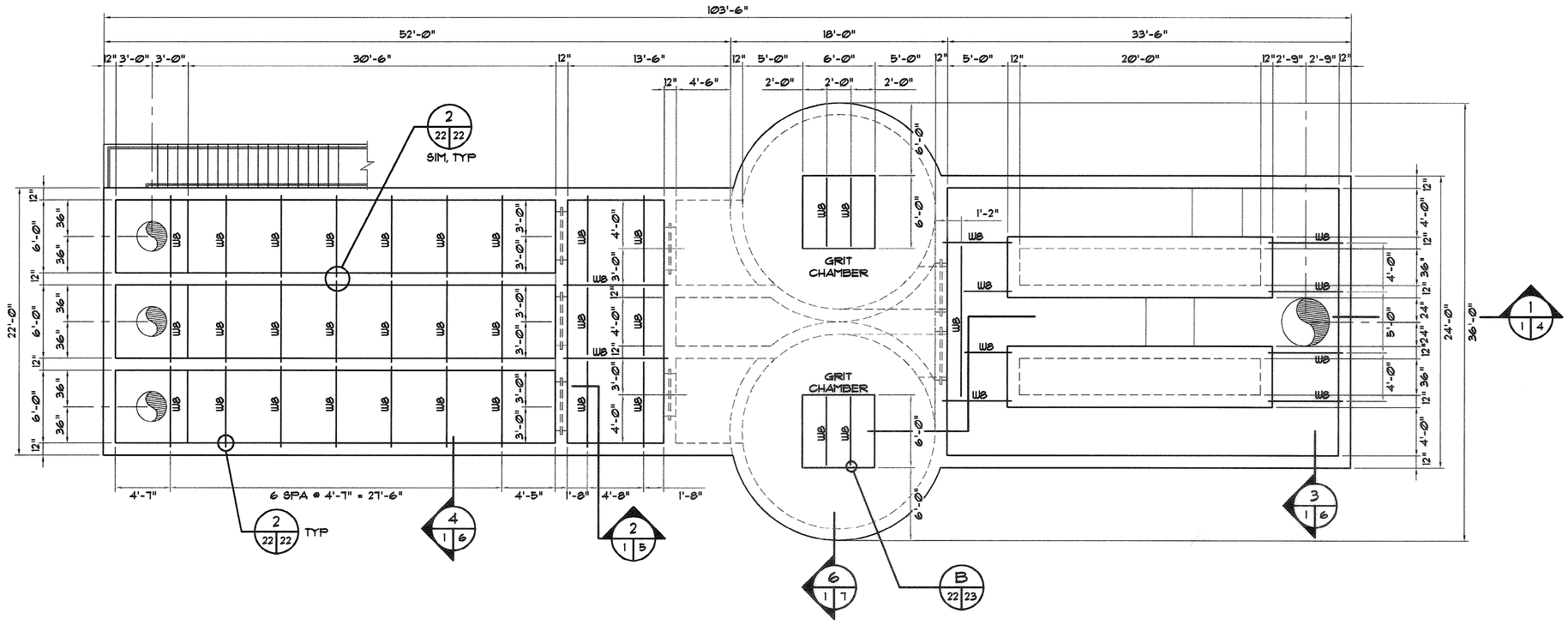
SCHWARTZ
WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE:	NOV 2005
DESIGNED:	JWM
DRAWN:	ALG
CHECKED:	JWM
SCALE:	AS SHOWN

SHEET NO. A-2
OF: --

REVISIONS			
SYM.	DESCRIPTION	DATE	BY
1	AS-BUILTS	AUG08	GER

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HEADWORKS
UPPER PLAN VIEW

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

NOTE:

1. "W8" DENOTES W8x10.

RECORD DRAWING, MARCH 2009

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Myrtle Beach, South Carolina 29577
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HEADWORKS
UPPER PLAN VIEW

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE:	JUNE 2008
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	JWM
SCALE:	AS SHOWN

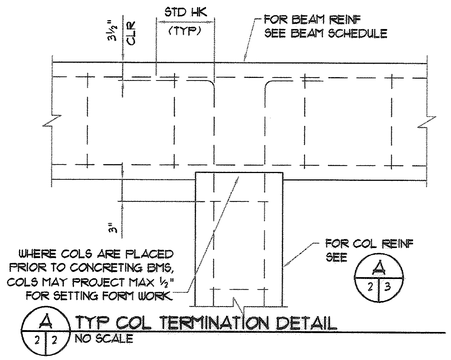
SHEET NO. S-1 OF: –

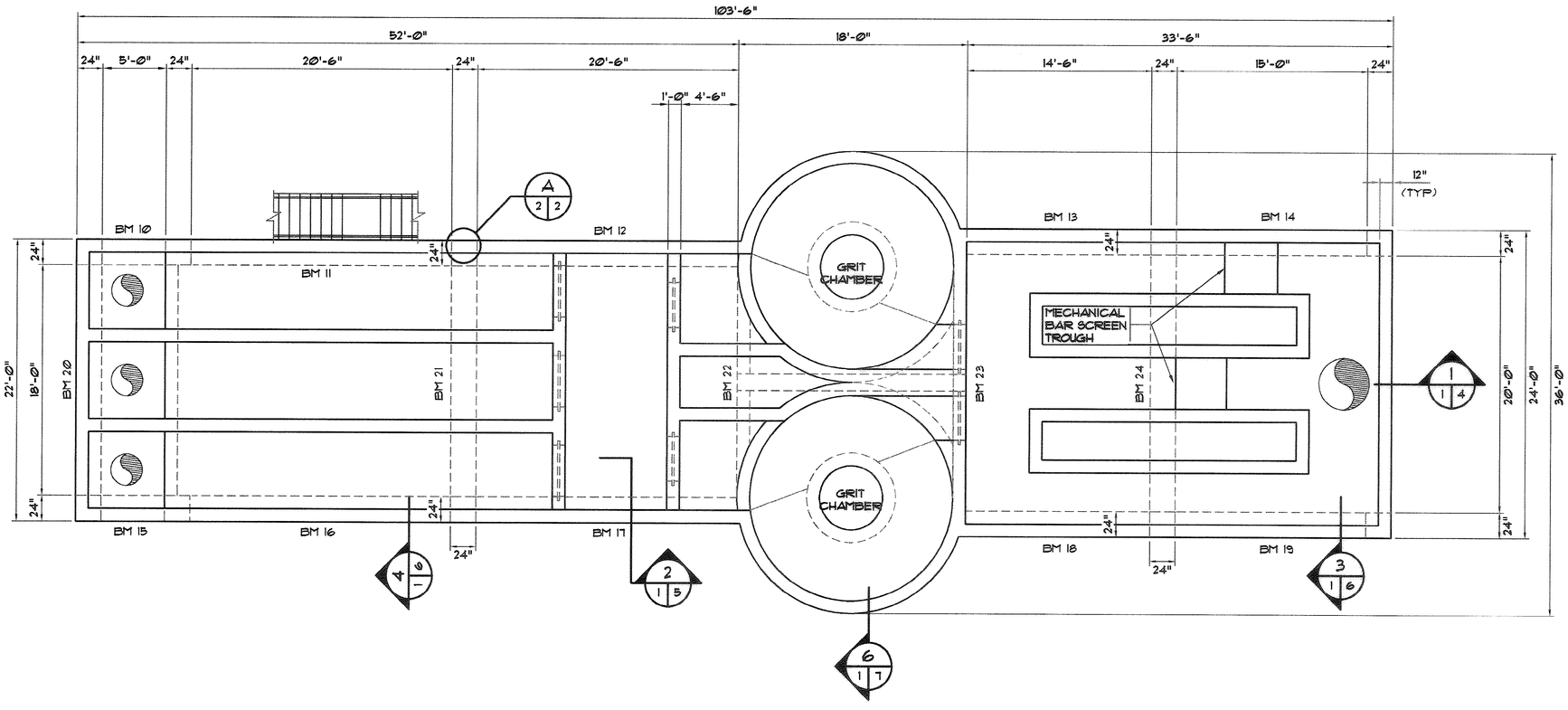
07-024-29/101

5

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REVISIONS			
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N
GRID

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

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Myrtle Beach, South Carolina 29577
PHONE: (843) 626-1510 FAX: (843) 626-1742

HEADWORKS
INTERMEDIATE PLAN

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

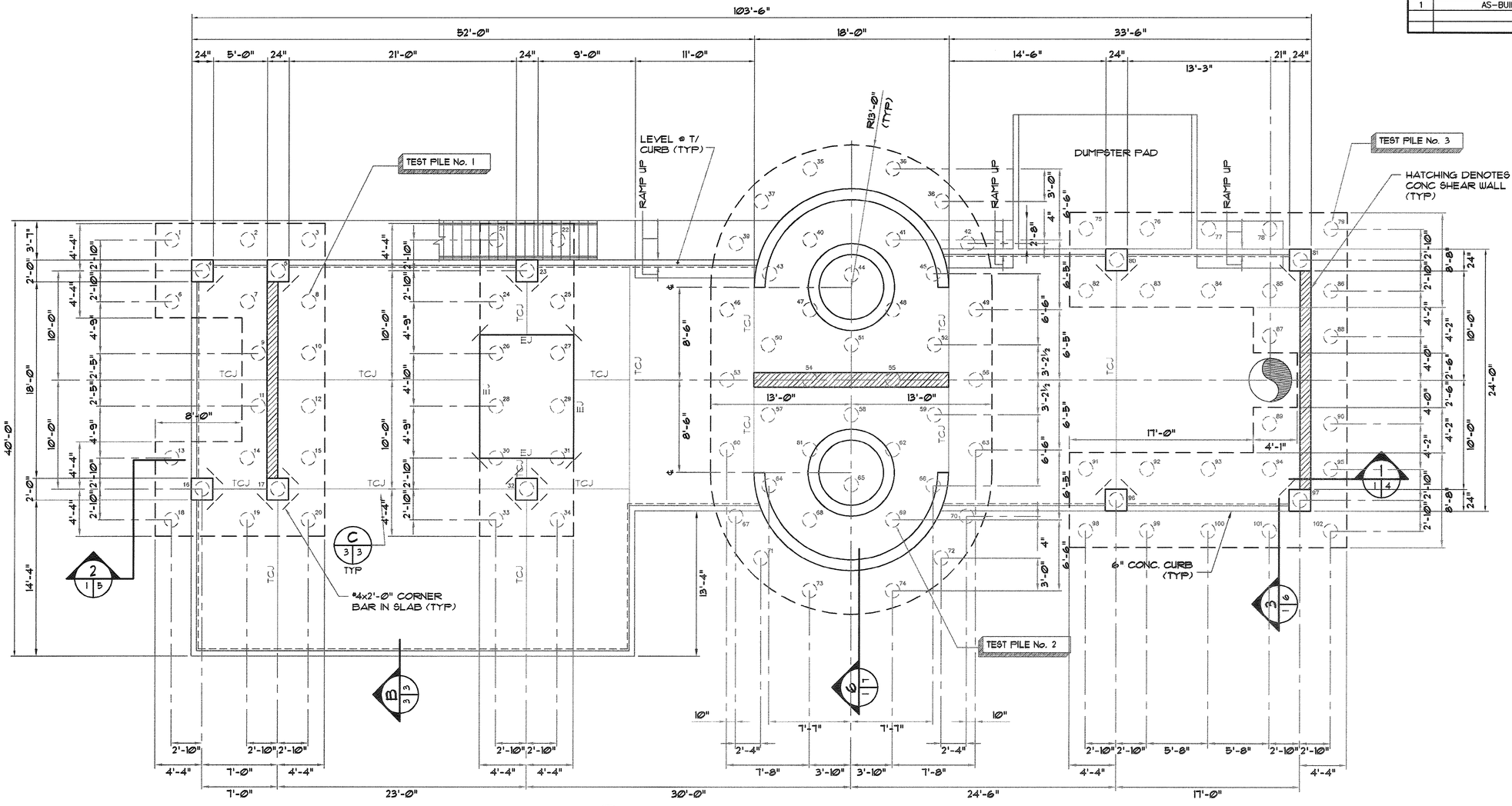
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DESIGNED:	PBW
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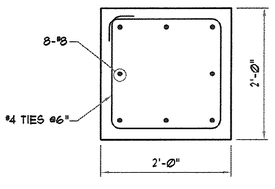
SHEET NO.
S-2
OF: –

07-024-30/101 S

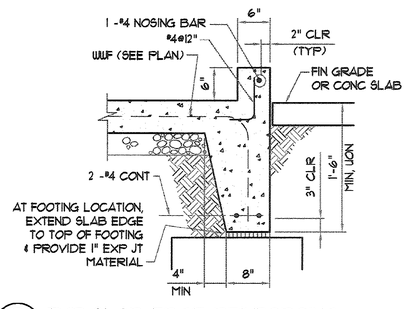
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A 2|3 TYPICAL COLUMN PLAN SECTION
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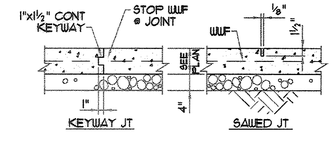
B 3|3 TYP SLAB EDGE REINFORCING
NO SCALE

N GRID

HEADWORKS FOUNDATION PLAN

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

NOTE:
1. ALL SLAB-ON-GRADE SHALL BE 6" THICKNESS, UON.
2. ALL SLABS SHALL BE PLACED OVER VAPOR BARRIER AND 4" COMPACTED STONE AND REINFORCED w/ 6x6-W2.9xW2.9
3. TOTAL NUMBER PILES FOR HEADWORKS = 102.
4. PILE CAPACITY = 40 TONS.
5. AT CONTRACTOR'S OPTION, PILE MAY BE STEEL PIPES, SAME DIAMETER AS CONCRETE PILE, FILLED WITH CONCRETE.
6. NO PILES SHALL BE PLACED BENEATH CONCRETE PIPE ENCASEMENT EXCEPT AS NOTED.



NOTE:
1. TYPE OF JOINT IS OPTIONAL WITH CONTRACTOR. SAWED JOINTS SHALL BE MADE WITHIN 12 HOURS AFTER PLACING CONCRETE.
2. WHEN KEYWAY JOINT IS ELECTED, THE SLABS SHALL BE PLACED IN CONTINUOUS STRIPS.
3. AT THE CONTRACTOR'S OPTION, A METAL PRE-FORMED JOINT OF APPROVED DESIGN WILL BE ACCEPTABLE AT EACH TCJ IN LIEU OF THE ABOVE JOINT TYPES.
4. WHERE SAWED JOINT WILL BE LEFT PERMANENTLY EXPOSED TO VIEW, FILL THE JOINT FLUSH WITH FLEXIBLE JOINT SEALING COMPOUND.

C 3|3 TYP CONTROL JOINT (TCJ) AT SLAB-ON-GRADE
NO SCALE

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HEADWORKS FOUNDATION PLAN

SCHWARTZ
WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

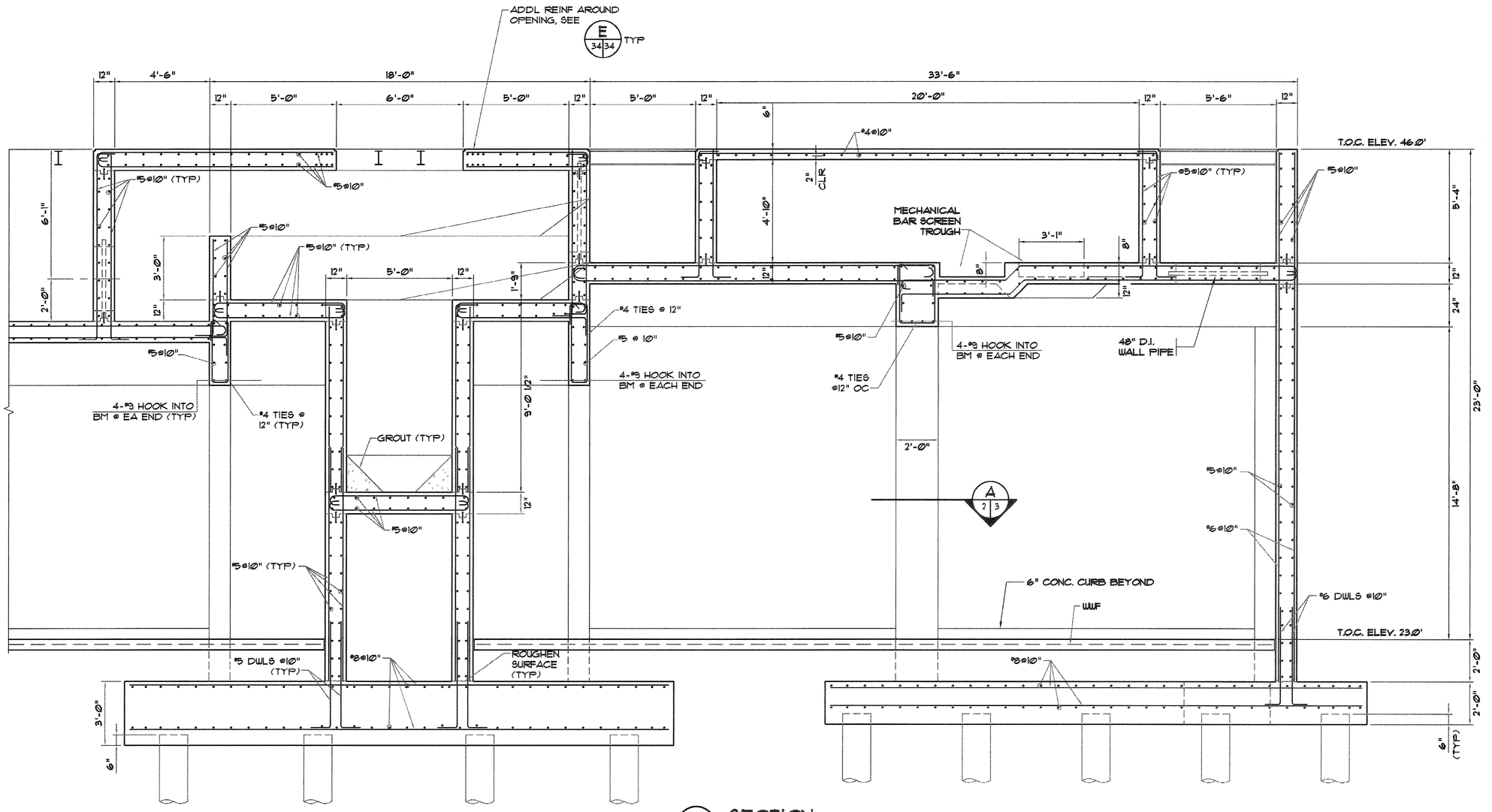
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SCALE:	AS SHOWN

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

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HEADWORKS SECTIONS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

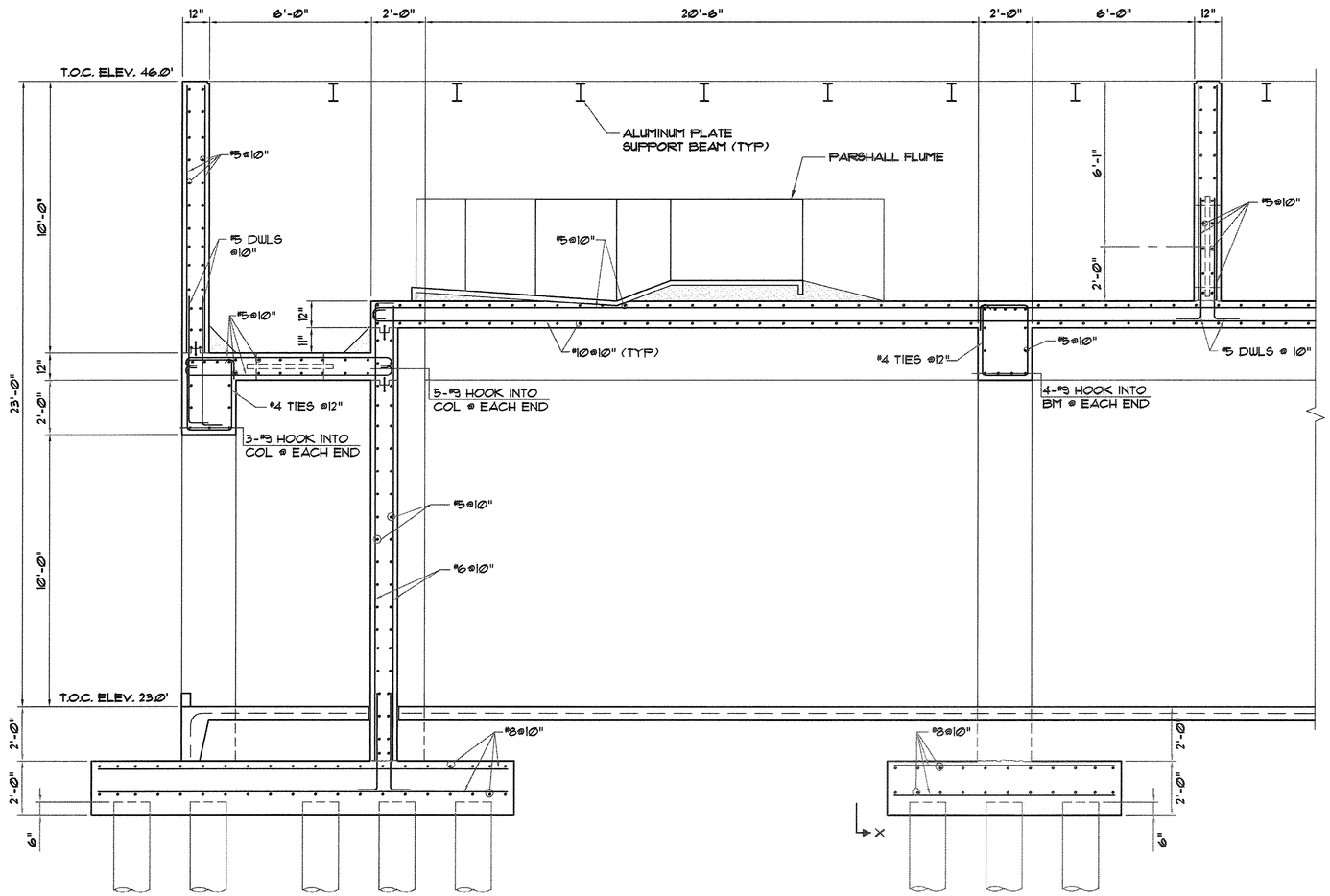
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S-4
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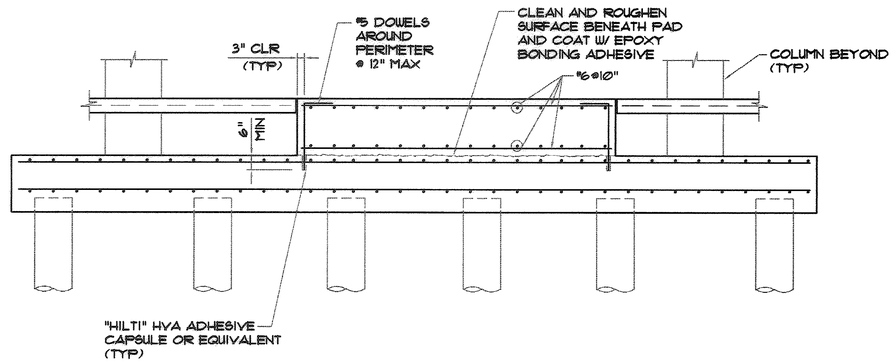
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2 / 1 | 5 SECTION
SCALE: 3/8" = 1'-Ø"



SECTION X
(EQUIPMENT PAD)

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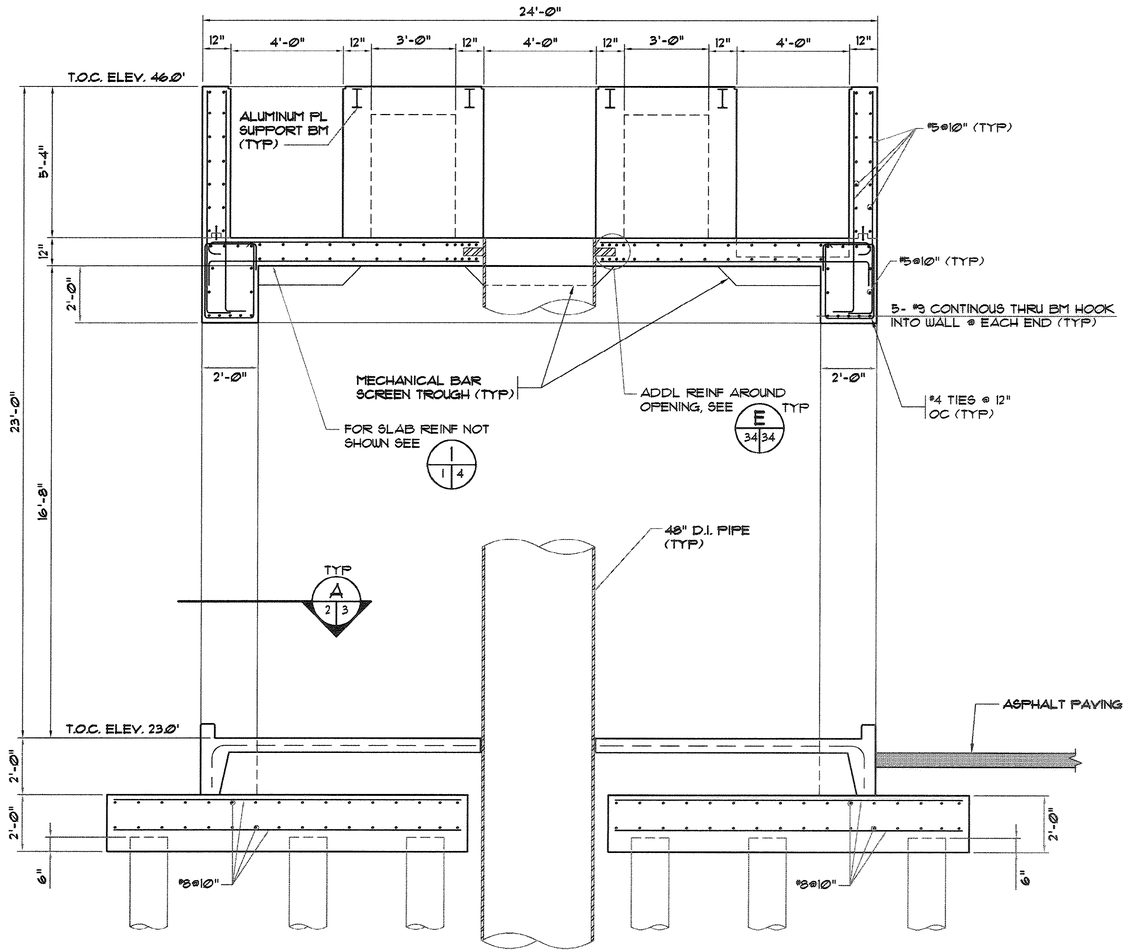
HEADWORKS SECTIONS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

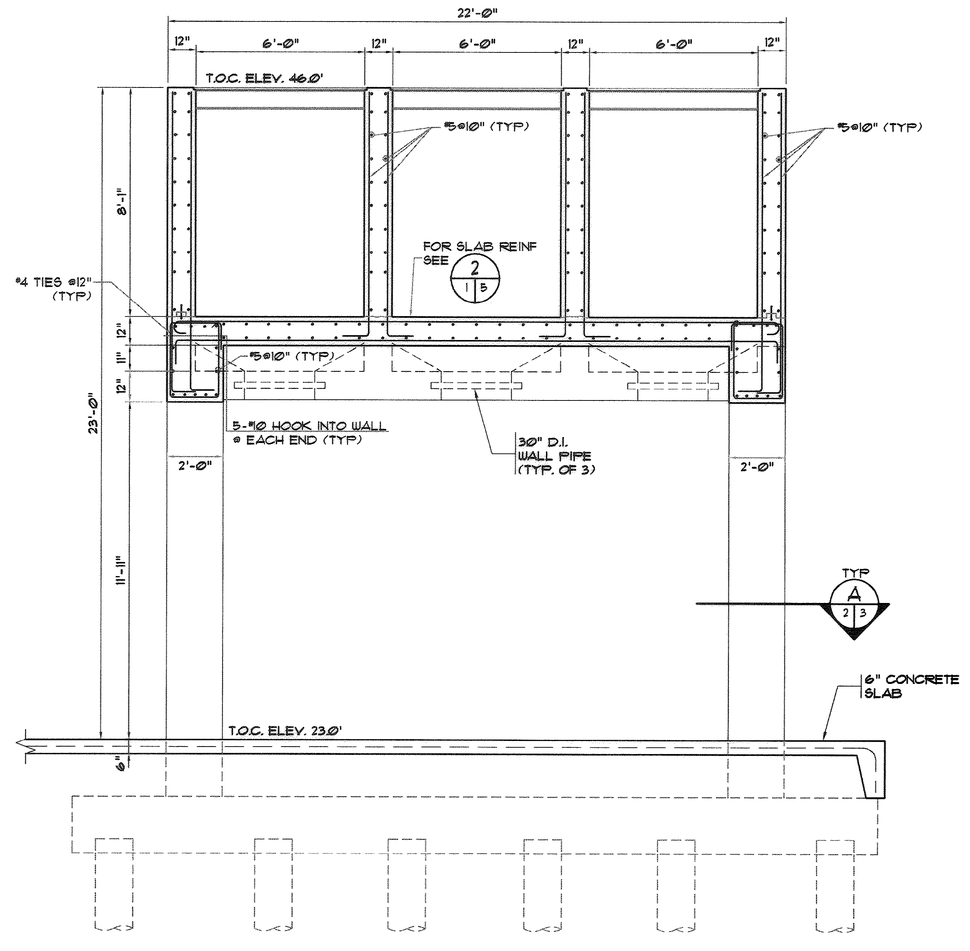
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SHEET NO.
S-5
OF: –

07-024-33/101 5



3|16 SECTION
SCALE: 3/8" = 1'-Ø"



4|16 SECTION
SCALE: 3/8" = 1'-Ø"

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HEADWORKS SECTIONS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

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CHECKED:	JWM
SCALE:	AS SHOWN

SHEET NO. S-6
OF: _____

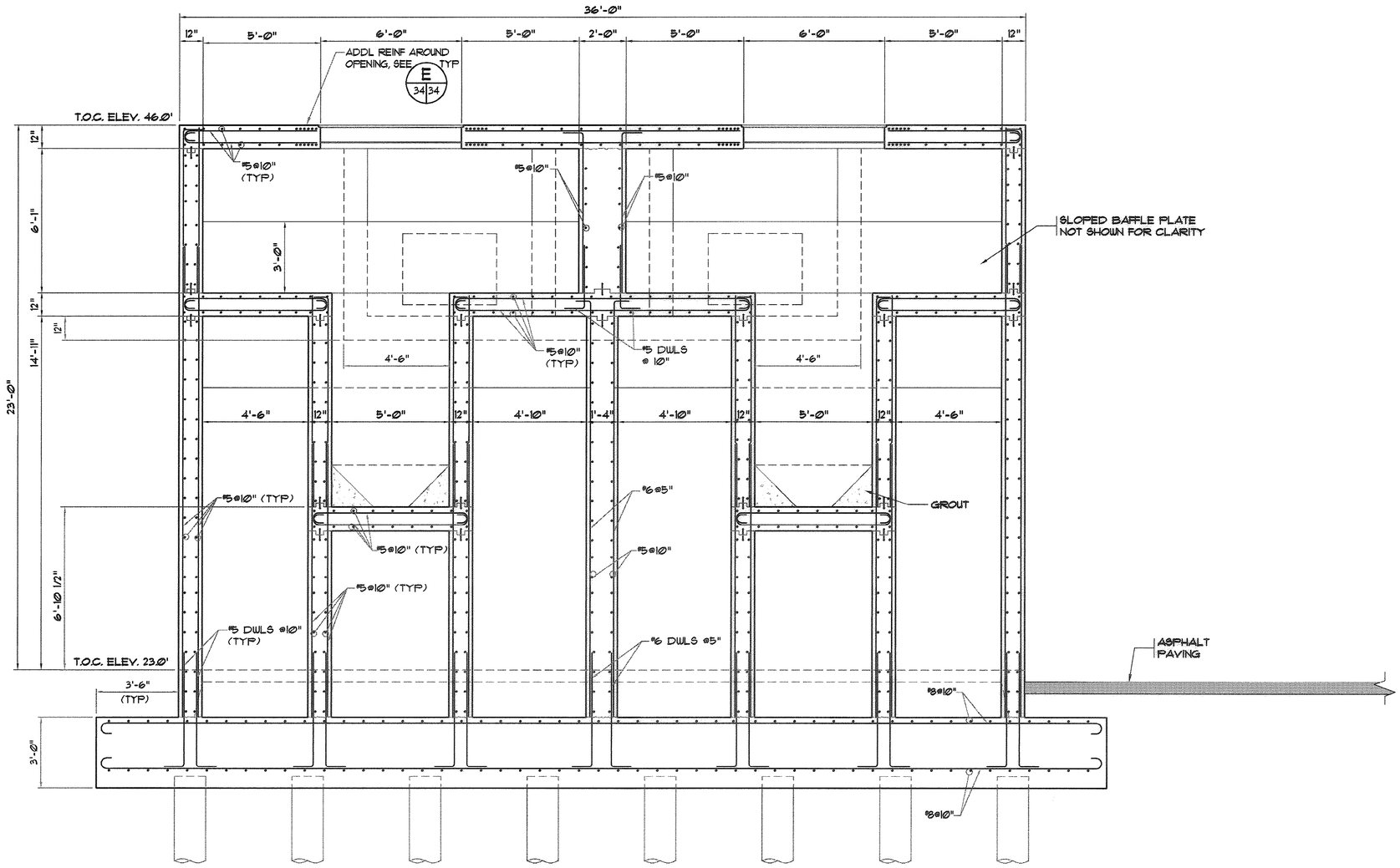
RECORD DRAWING, MARCH 2009

07-024-34/101 5

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6/17 SECTION
SCALE: 3/8" = 1'-0"

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HEADWORKS SECTIONS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

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CHECKED:	JWM
SCALE:	AS SHOWN

SHEET NO.
S-7
OF: _____

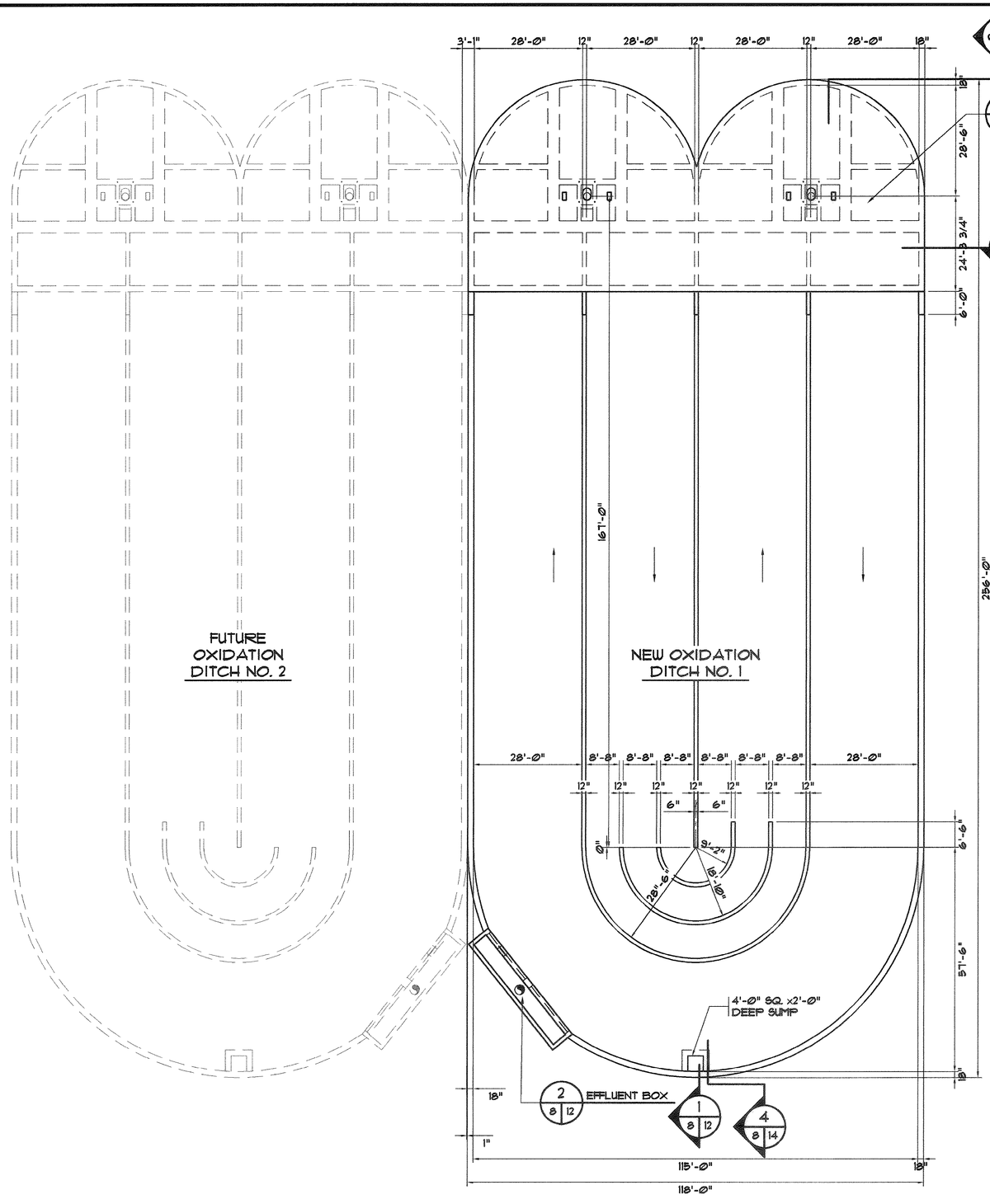
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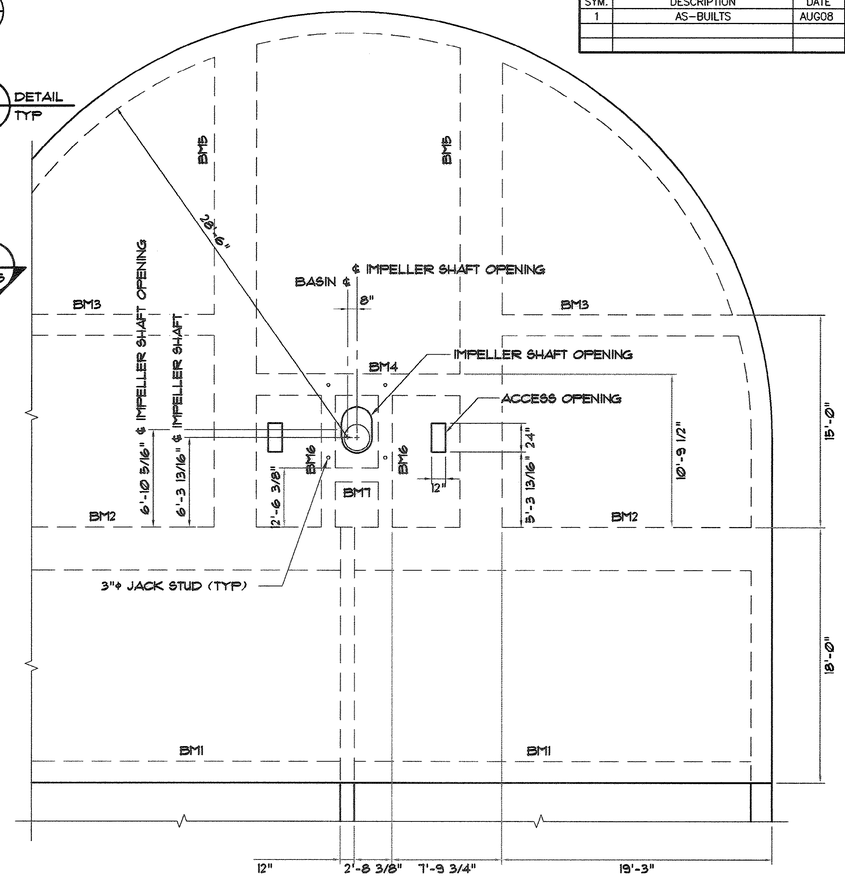
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6 / 8 | 8 DETAIL
SCALE: 3/16" = 1'-Ø"

N
GRID

OXIDATION DITCH UPPER PLAN
SCALE: 1/16" = 1'-Ø"

RECORD DRAWING, MARCH 2009

OXIDATION DITCH
UPPER PLAN

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

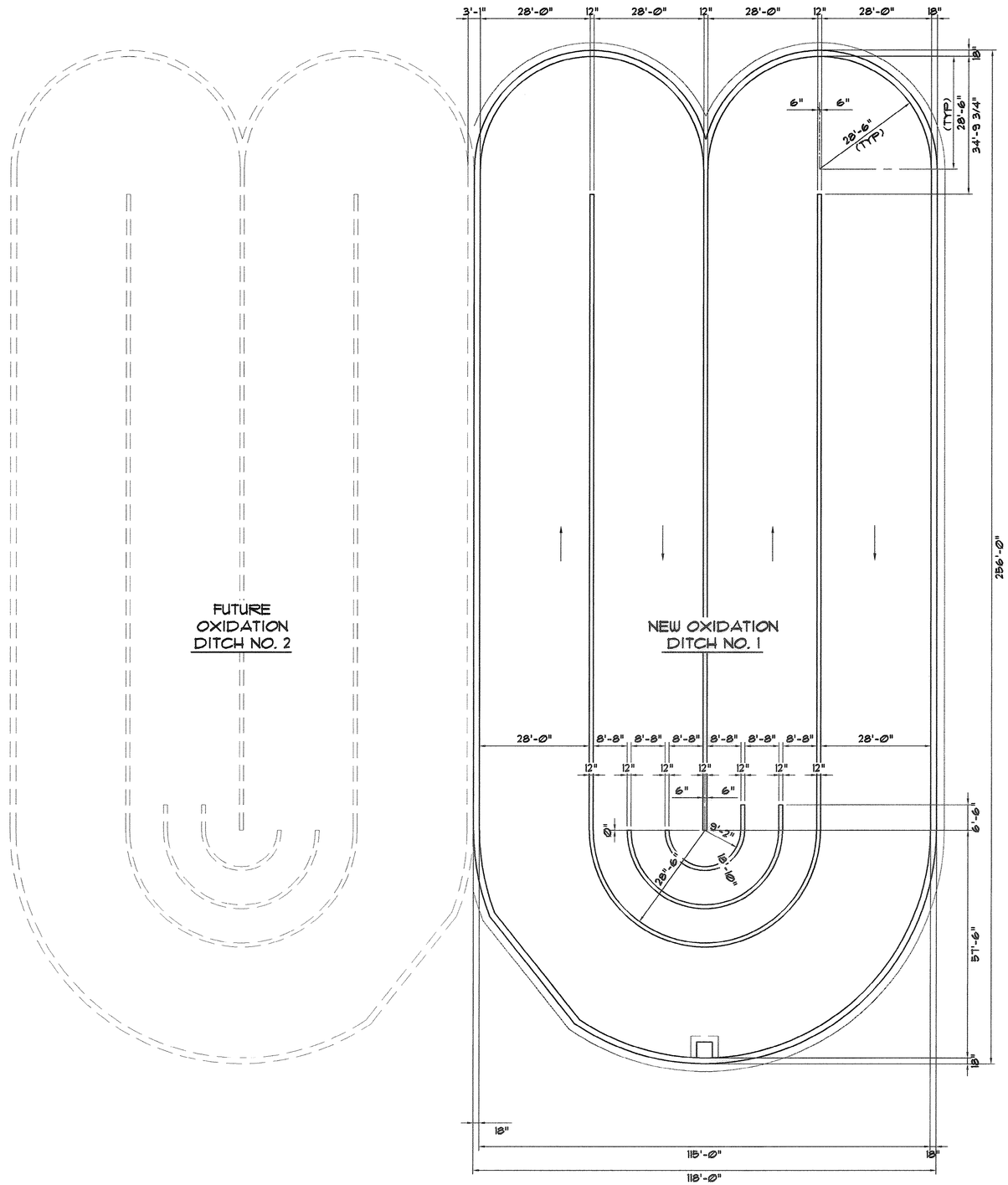
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S-8
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N
GRID

OXIDATION DITCH
LOWER PLAN
SCALE: 1/16" = 1'-0"

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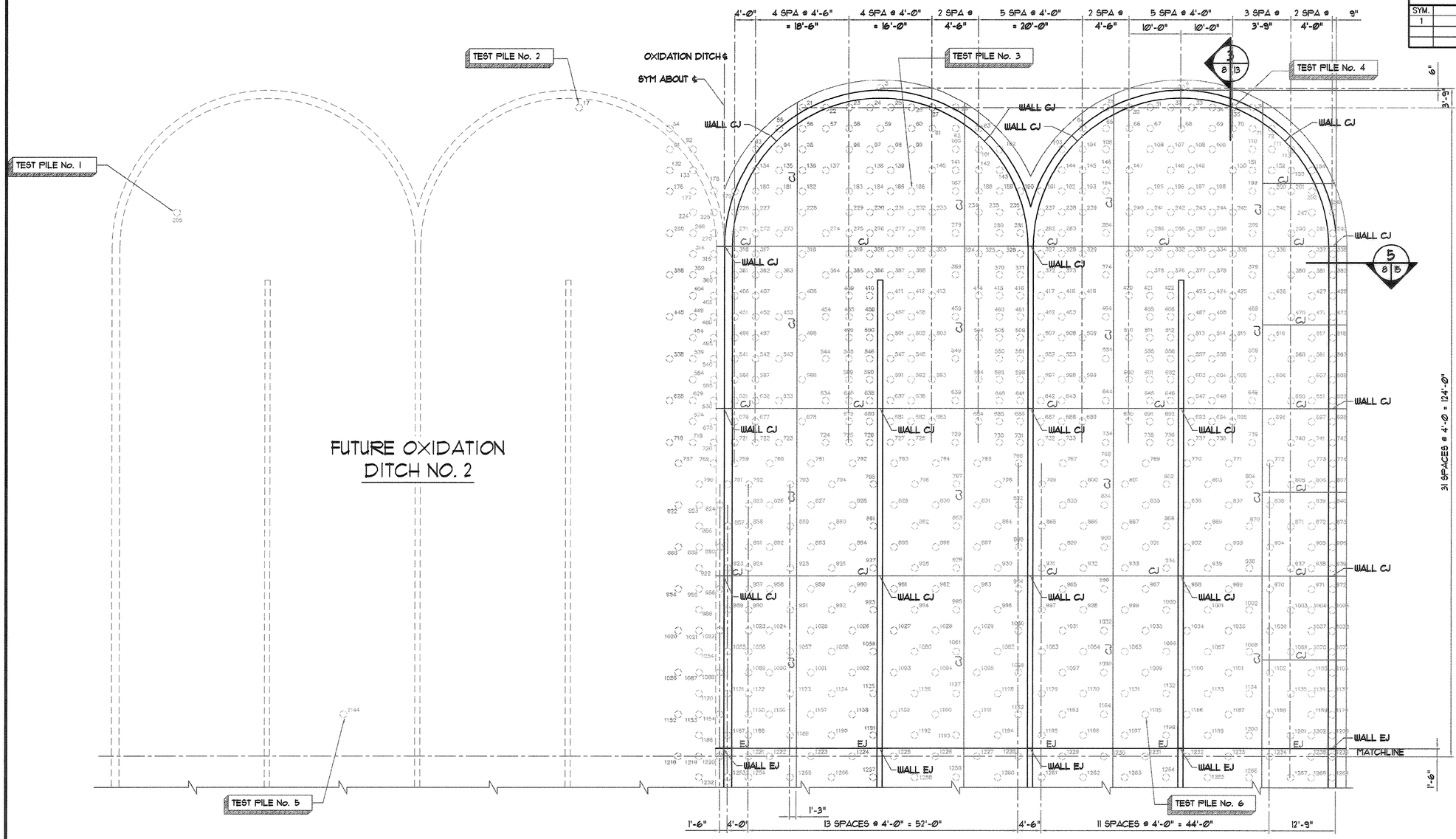
OXIDATION DITCH
FOUNDATION PLAN

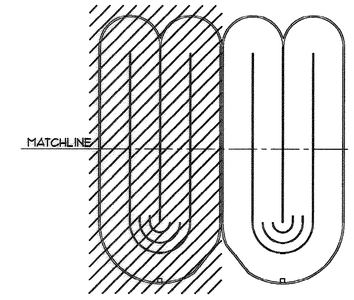
SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

DATE:	JUNE 2008
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	JWM
SCALE:	AS SHOWN

SHEET NO.
S-9
OF: _____

07-024-37/101 5





PARTIAL FOUNDATION / PILE PLAN - OXIDATION DITCH 3/32" = 1'-0"

NOTE:
1. TOTAL NUMBER PILES FOR OXIDATION DITCH = 2,140.
2. PILE DESIGN CAPACITY - 40 TONS.
3. AT CONTRACTOR'S OPTION, PILES MAY BE STEEL PIPES, SAME DIAMETER AS CONCRETE PILE, FILLED WITH CONCRETE.
4. NO PILES SHALL BE PLACED BENEATH CONCRETE PIPE ENCASEMENT EXCEPT AS NOTED.

KEY PLAN
NO SCALE

RECORD DRAWING, MARCH 2009

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OXIDATION DITCH - PARTIAL FOUNDATION PILE PLAN

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

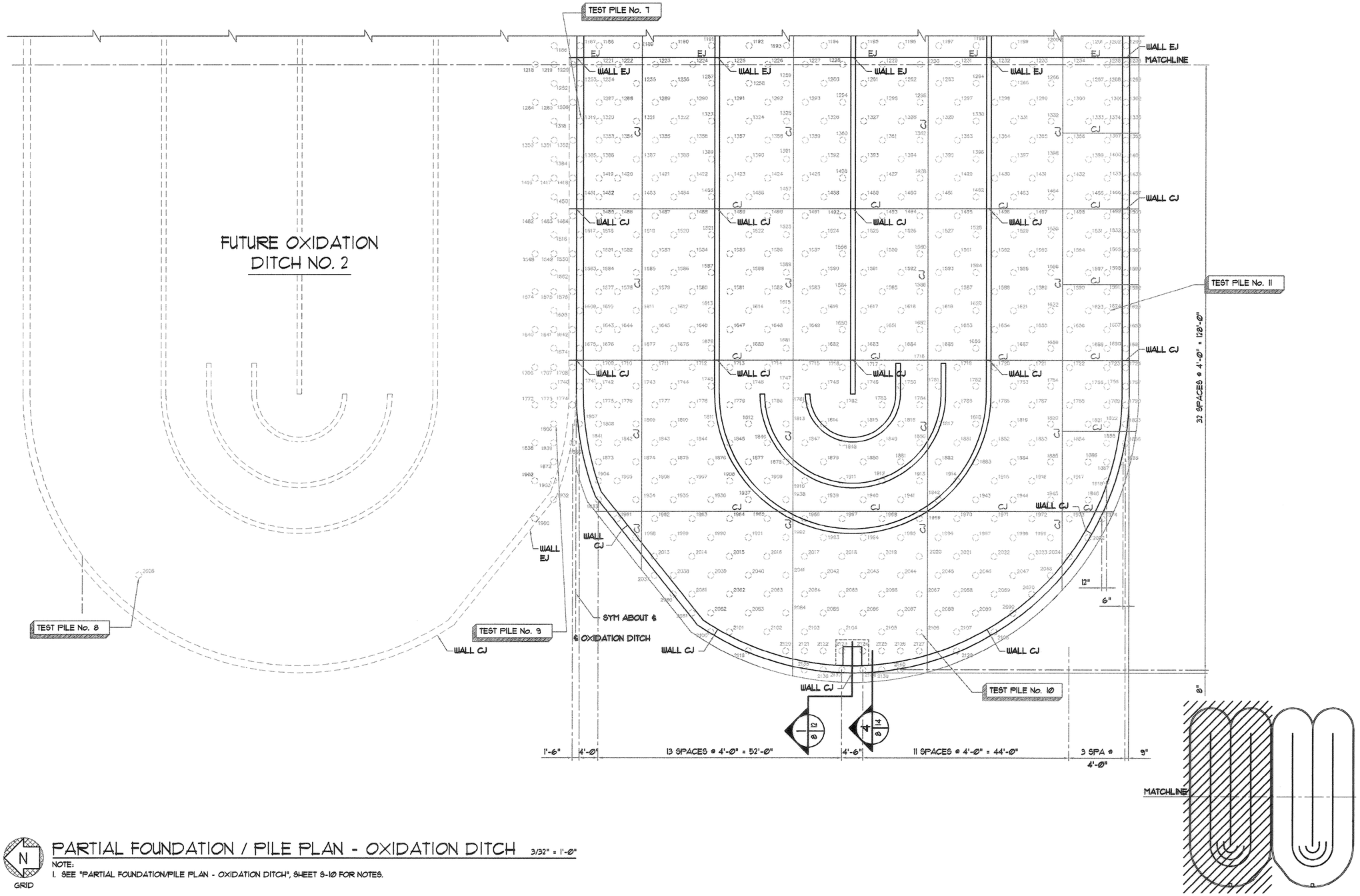
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SHEET NO.
S-10
OF:

07-024-38/101 5

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FUTURE OXIDATION DITCH NO. 2

N
GRID

PARTIAL FOUNDATION / PILE PLAN - OXIDATION DITCH 3/32" = 1'-0"

NOTE:
1. SEE "PARTIAL FOUNDATION/PILE PLAN - OXIDATION DITCH", SHEET S-10 FOR NOTES.

N
KEY PLAN
NO SCALE

RECORD DRAWING, MARCH 2009

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OXIDATION DITCH - PARTIAL FOUNDATION / PILE PLAN

SCHWARTZ
WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

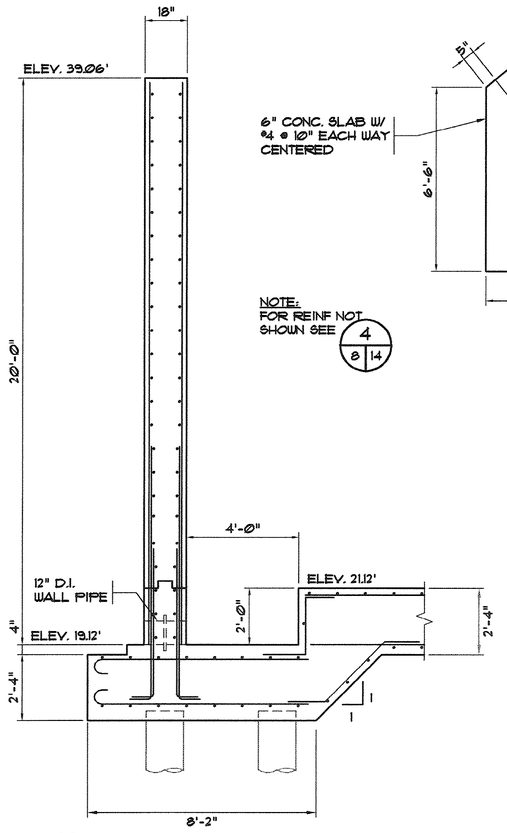
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SHEET NO.
S-11
OF:

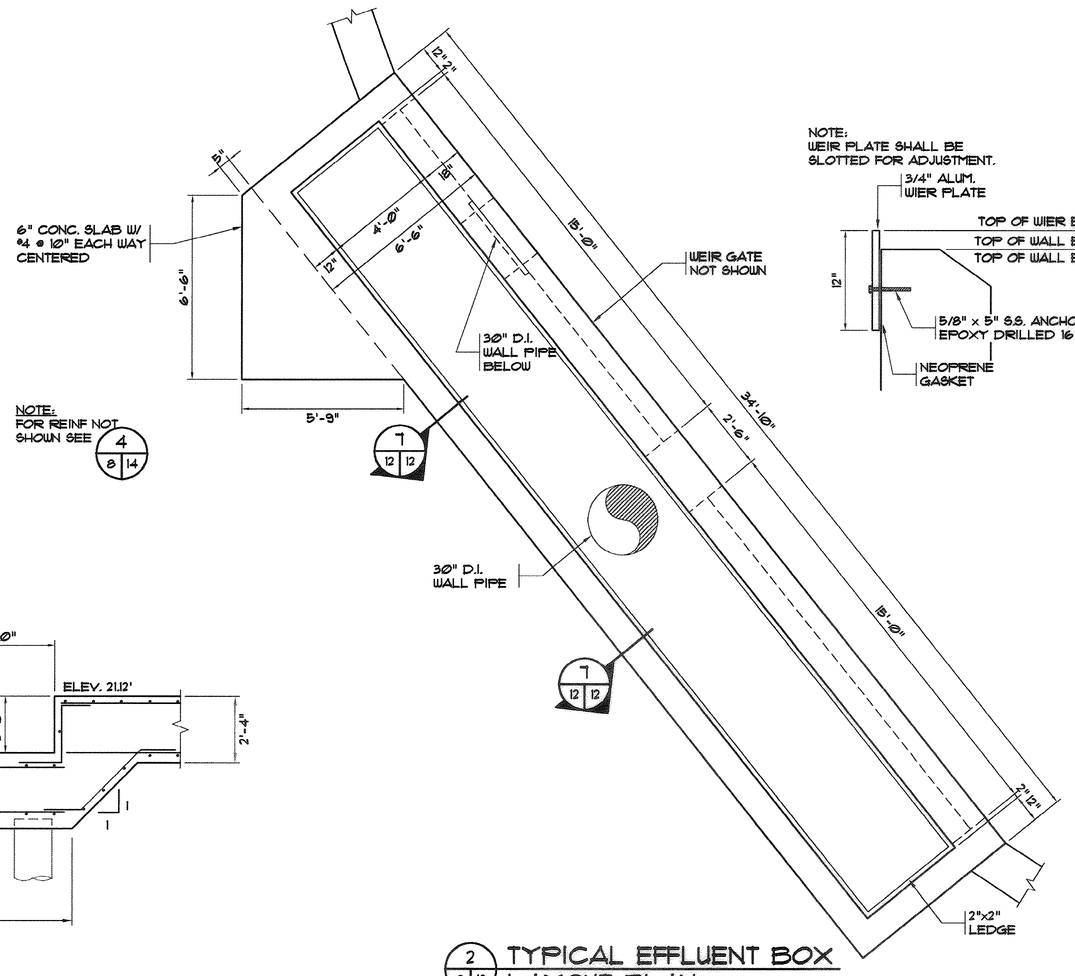
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REVISIONS			
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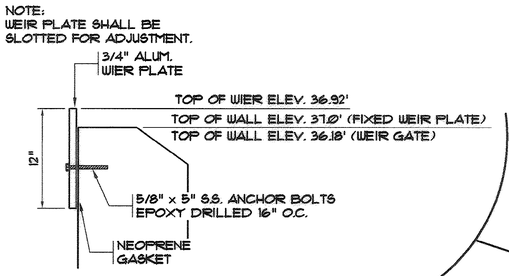
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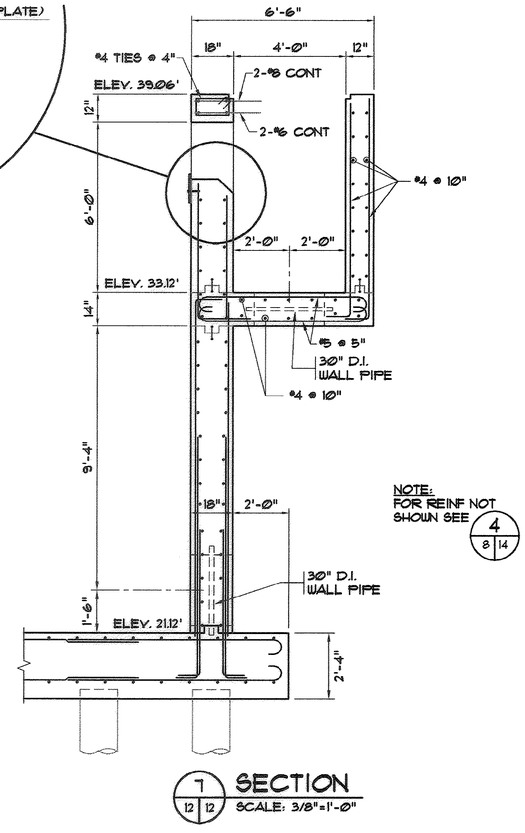


1 / 8 / 12 SUMP SECTION
SCALE: 3/8"=1'-0"



2 / 8 / 12 TYPICAL EFFLUENT BOX LAYOUT PLAN
SCALE: 3/8"=1'-0"





7 / 12 / 12 SECTION
SCALE: 3/8"=1'-0"

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OXIDATION DITCH
SECTIONS AND DETAILS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

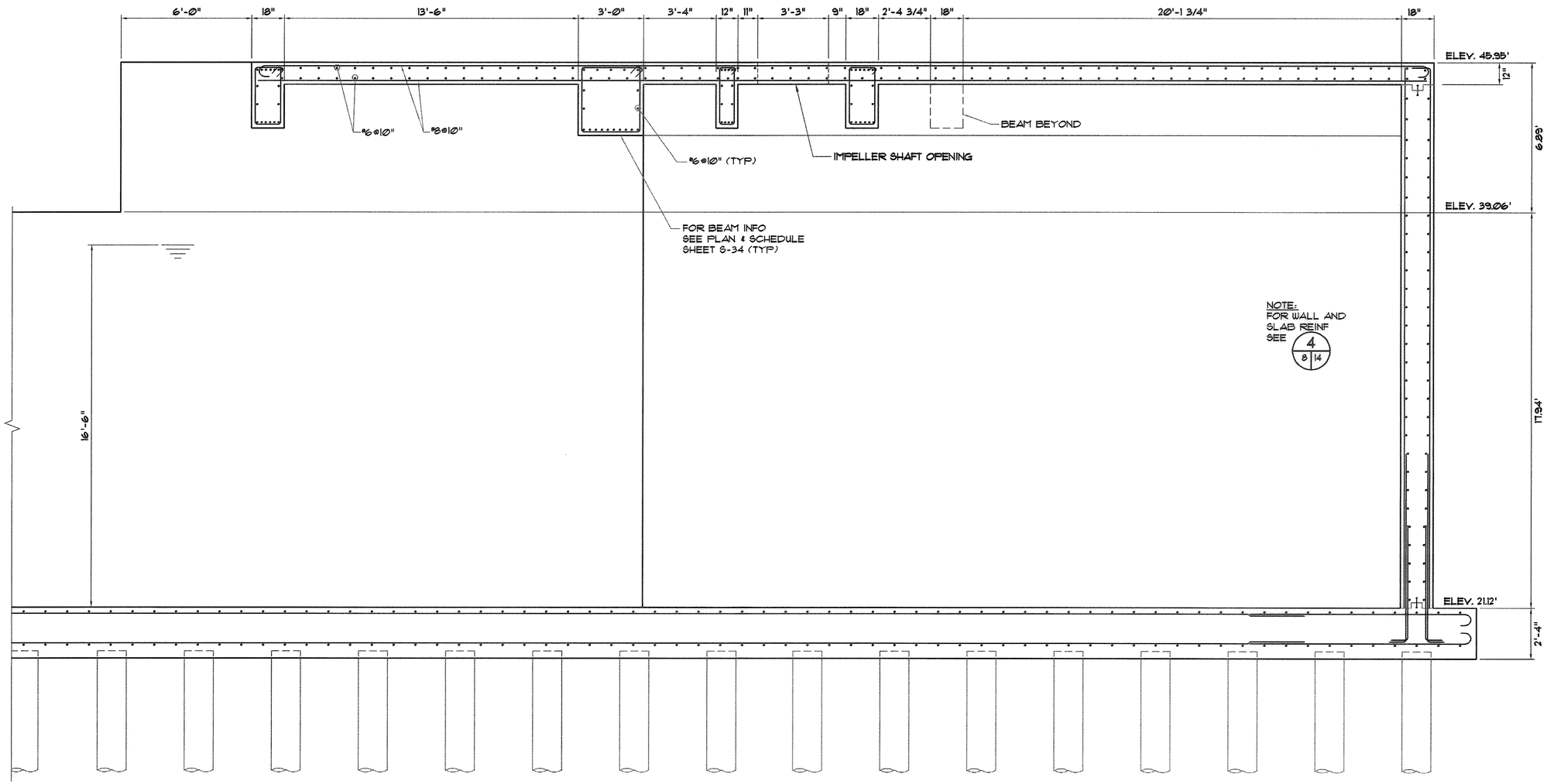
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S-12
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3 / 8|13 SECTION
SCALE 3/8"=1'-0"

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OXIDATION DITCH
SECTIONS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

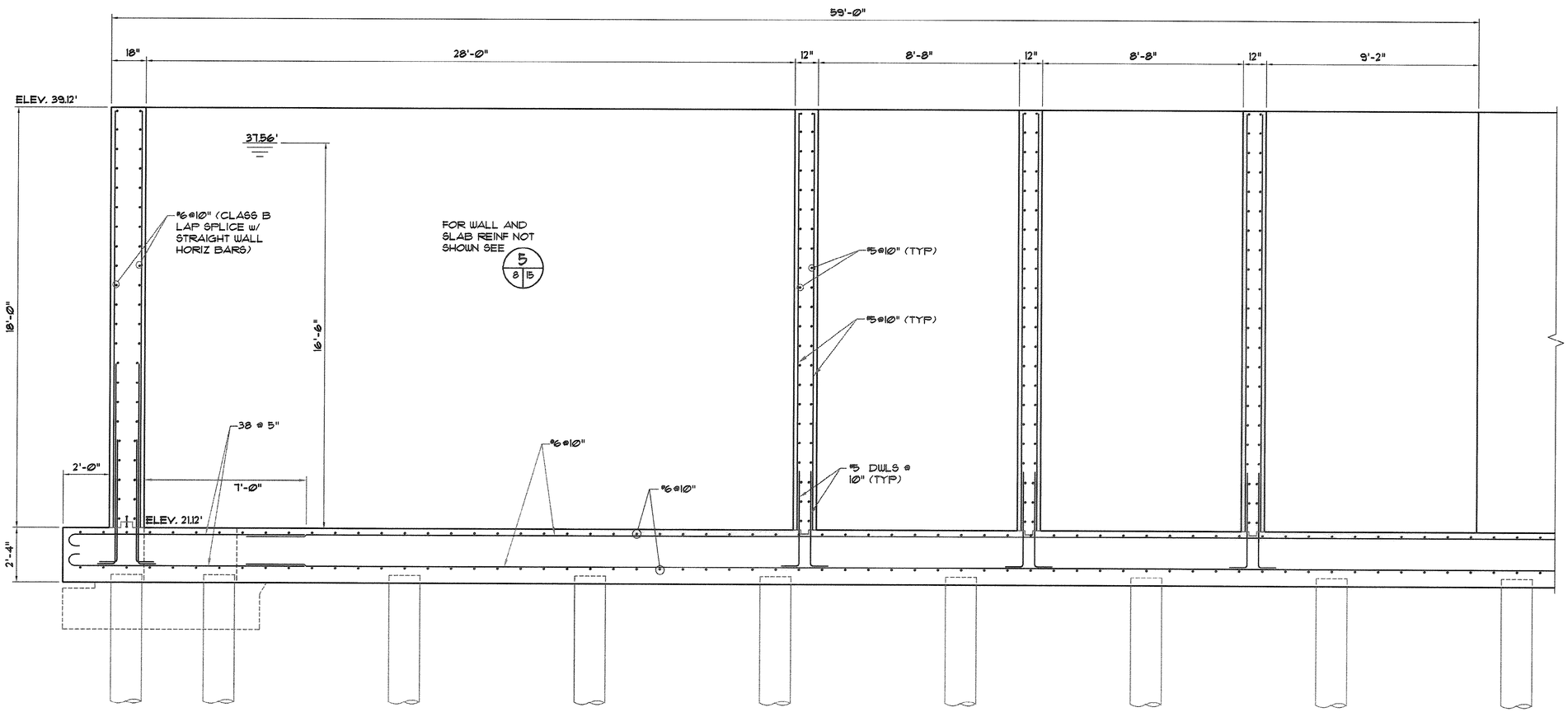
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4 / 8 | 14 SECTION
SCALE 3/8"=1'-0"

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OXIDATION DITCH SECTIONS

SCHWARTZ
WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

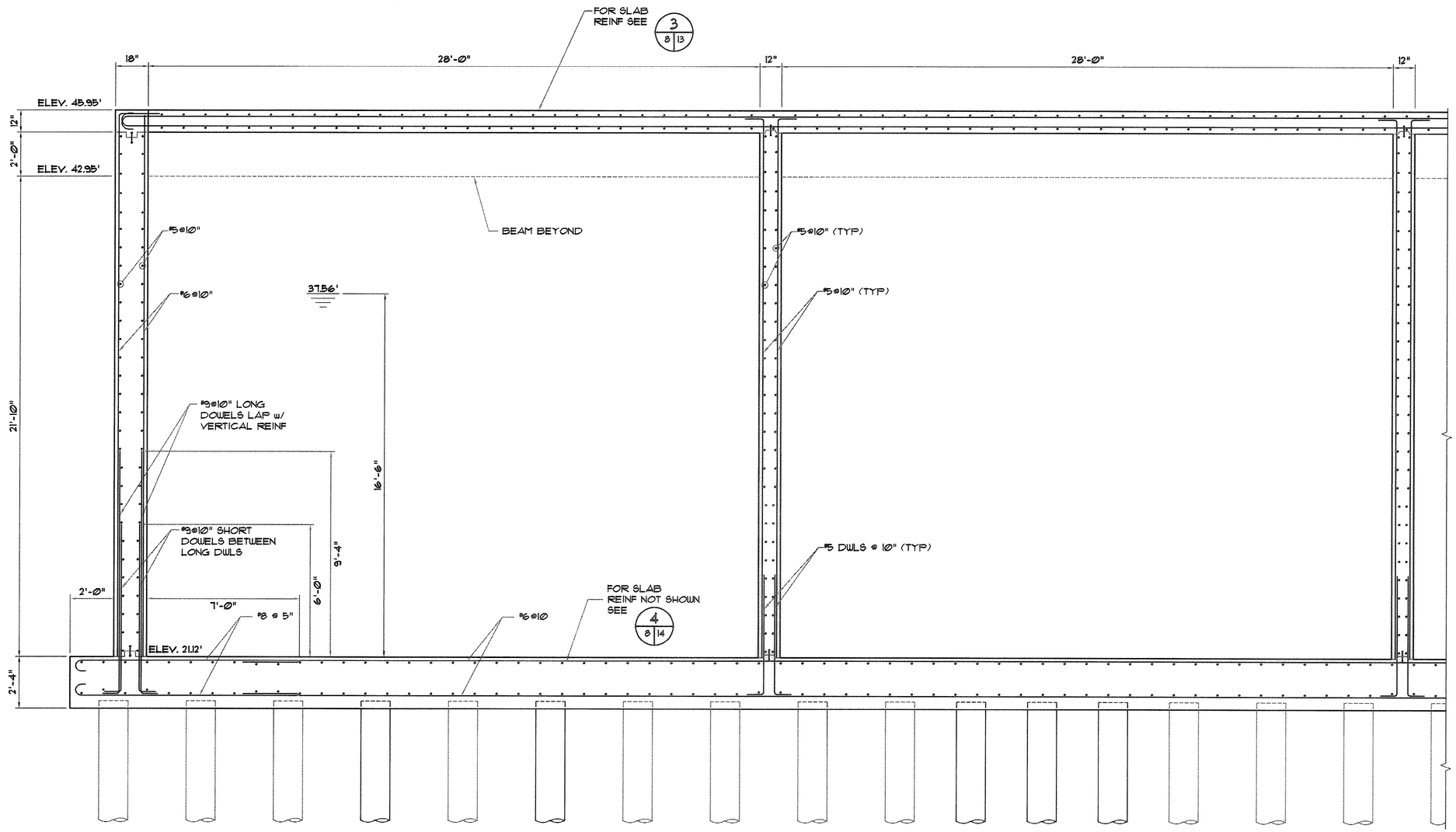
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5 / 8 | 15 SECTION
SCALE 3/8"=1'-Ø"

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OXIDATION DITCH
SECTIONS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

DATE:	JUNE 2008
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	JWM
SCALE:	AS SHOWN

SHEET NO.
S-15
OF: _____

07-024-43/101 S

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Hobbs, Upchurch & Associates, P.A.
Consulting Engineers
Myrtle Beach, South Carolina 29577
PHONE: (843) 626-1810 FAX: (843) 626-1745

CLARIFIER PLAN

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

CLARIFIER NO. 2

FUTURE CLARIFIER NO. 1

36" WALKWAY W/ 1 1/2" ALUM. I-BAR GRATING

SECTION OF WALKWAY SUPPLIED BY CONTRACTOR

36" WALKWAY WITHIN CLARIFIER

SLUDGE TROUGH

8 SR4 @ 7'-3" = 59'-4"

130'-0" DIA

26.85°

19.10°

17.95°

20.46°

17.77°

14.23°

12.64°

11.24°

11.26°

9.97°

9.31°

8.85°

8.15°

6.91°

5.98°

7'-2"

37'-4"

27'-6"

8" PVC SCUM PIPE

8" SQ. CONC. PIPE SUPPORT (TYP. OF 4)

6" CONC. SLAB

24" SQ. CONC. PUMP SUPPORT (TYP. OF 4)

CONCRETE PIPE ENCASEMENT

24" D.I. SLUDGE DRAW-OFF PIPE

ANGLES BETWEEN PILES TYP UON

30" D.I. INFLUENT PIPE

6" F.D.

6" F.D.

SLOPE TO F.D.

6" CONC. CURB

C.O.

3'-6"

3'-6"

℄ PILES

4'-6" SQ. CONC. PUMP SUPPORT (TYP. OF 3)

49'-0"

6" TYP.

14" D.I. PIPE TO OXIDATION DITCH #1

30" WALL PIPE

TYP ANGLES BETWEEN INFLUENT PIPE & SLUDGE DRAW-OFF PIPE

3'-9"

3'-9"

℄ PILES

8" PVC SCUM PIPE

8" D.I. R.A.S.

30" D.I. EFFLUENT PIPE

8" D.I. W.A.S.

14" D.I. PIPE TO OXIDATION DITCH #2

54'-6"

N

GRID

CLARIFIER LAYOUT PLAN

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

NOTE:

1. TOTAL NUMBER PILES FOR 1 CLARIFIER = 291
2. PILE CAPACITY = 40 TONS.
3. AT CONTRACTOR'S OPTION, PILE MAY BE STEEL PIPES, SAME DIAMETER AS CONCRETE PILE, FILLED WITH CONCRETE.
4. NO PILES SHALL BE PLACED BENEATH CONCRETE PIPE ENCASEMENT EXCEPT AS NOTED.
5. REFER TO SOILS REPORT FORSOIL REMEDIATION PROCEDURES AT PUMP AREA.

RECORD DRAWING, MARCH 2009

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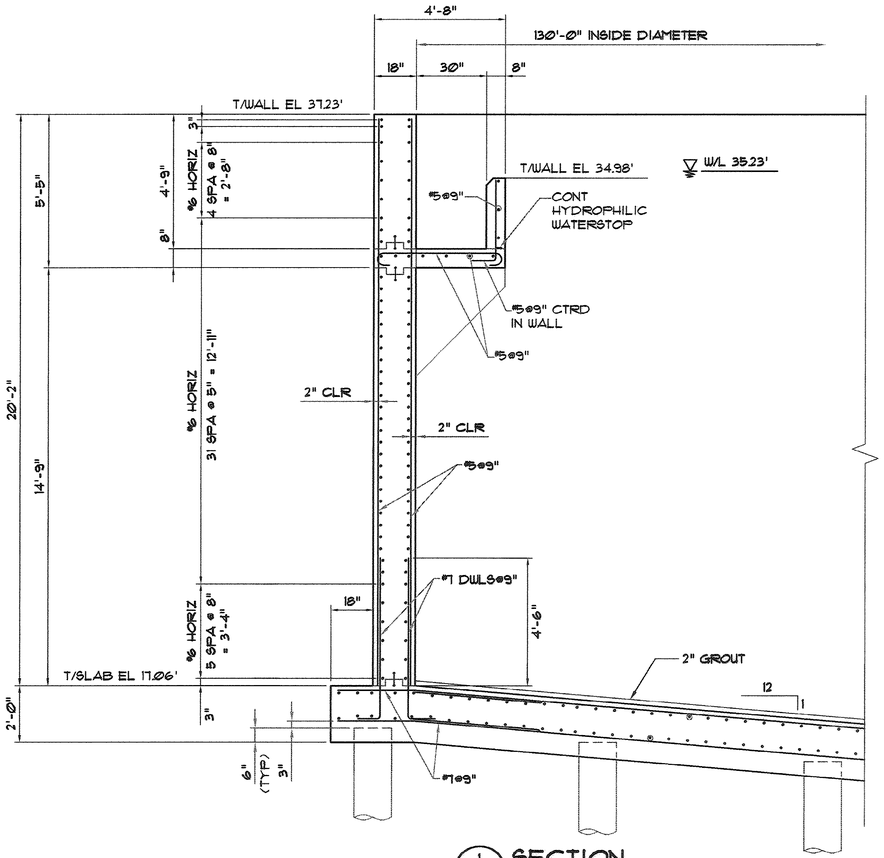
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OF: –

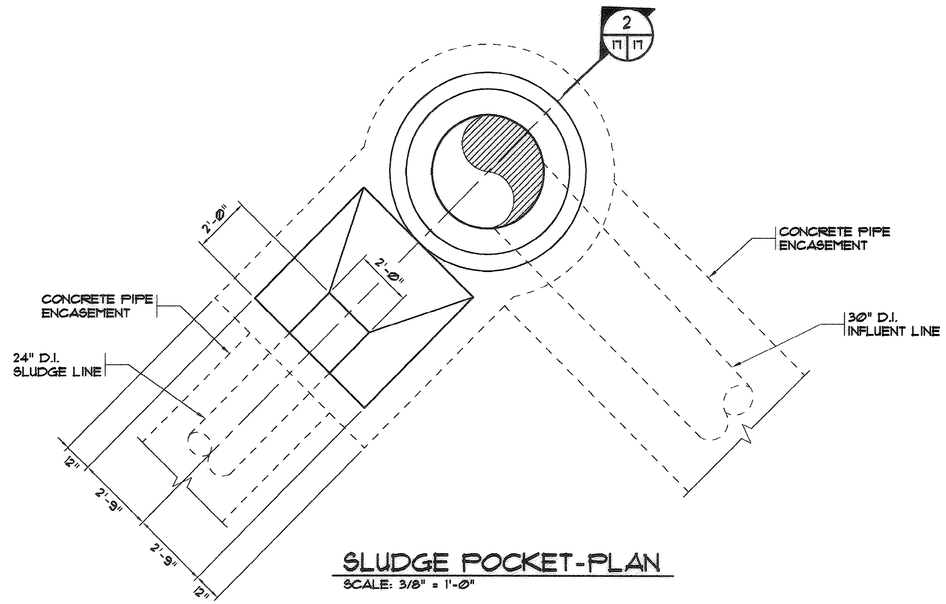
07-024-44/101 5

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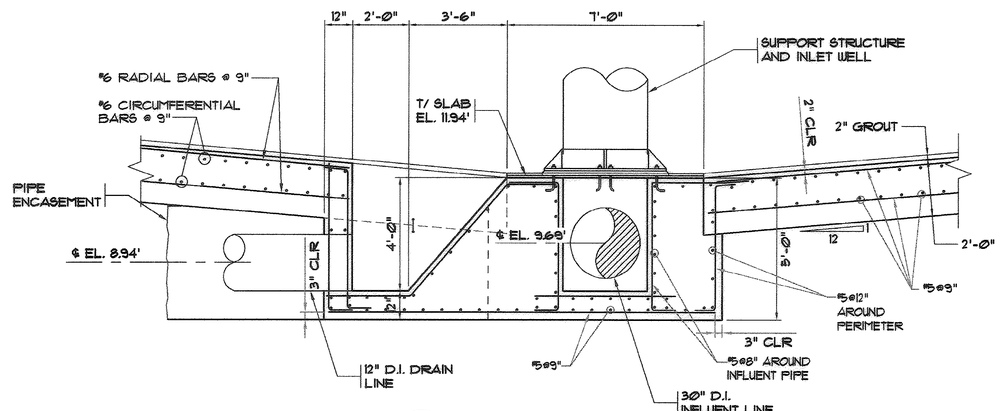
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1 / 16 | 17 SECTION
SCALE: 3/8" = 1'-0"



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



2 / 17 | 17 SECTION
SCALE: 3/8" = 1'-0"

RECORD DRAWING, MARCH 2009

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Consulting Engineers
Myrtle Beach, South Carolina 29577
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CLARIFIER SECTION
DETAILS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE:	JUNE 2008
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SCALE:	AS SHOWN

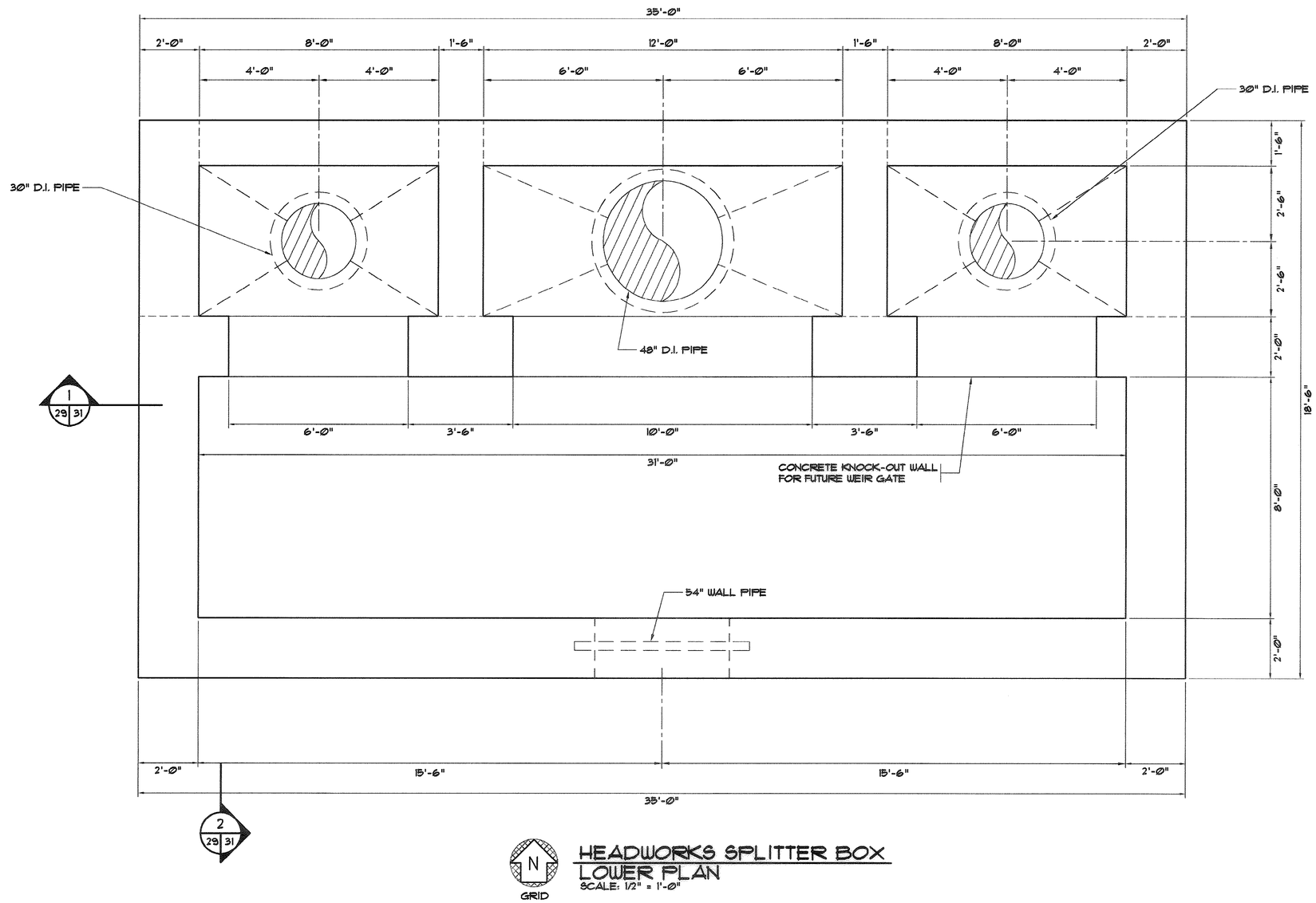
SHEET NO.
S-17
OF: —

07-024-45/101 S

WRITTEN: J:\JOBS\07\NOD-COM REMOTE 1\JOBS\07\NOD-DRAWINGS\07-45-BUILT\STRUCTURALS-17.DWG, LAYOUT: M8 SHEET, EDITED BY: GRADEL 08/22/08 15:54 SCALE: 12"=1'-0" (1:1)
XREFS: J:\JOBS\07\NOD-DRAWINGS\81_1"=DESIGN\GENERAL (07).DWG

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HEADWORKS SPLITTER BOX LOWER PLAN

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

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HEADWORKS
SPLITTER BOX
LOWER PLAN

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

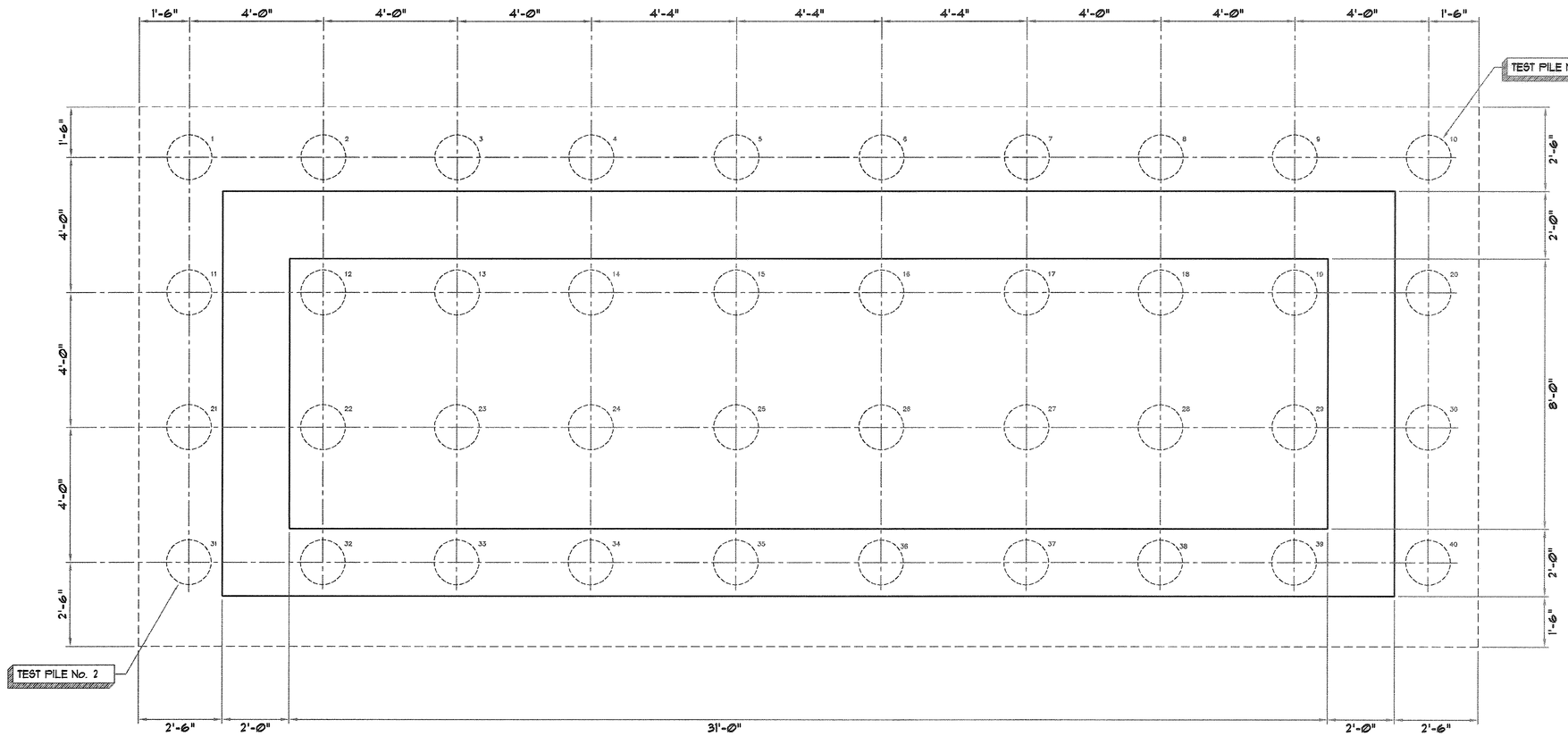
DATE:	JUNE 2008
DESIGNED:	PBW
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N
GRID

PILE FOUNDATION PLAN

1/2" = 1'-0"

NOTE:
1. TOTAL NUMBER PILES THIS STRUCTURE = 40
2. PILE DESIGN CAPACITY = 40 TONS
3. PILES ARE UNIFORMLY SPACED AS INDICATED EXCEPT WHERE NOTED. NO PILES SHALL BE PLACED BENEATH CONCRETE PILE INCASEMENT EXCEPT AS NOTED.
4. AT CONTRACTORS OPTION PILES MAY BE 16"ø STEEL PIPES FILLED WITH CONCRETE.
5. NO PILES SHALL BE PLACED BENEATH CONCRETE PIPE ENCASEMENT EXCEPT AS NOTED.

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HEADWORKS
SPLITTER BOX
LOWER/PILE FLOOR
PLAN

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

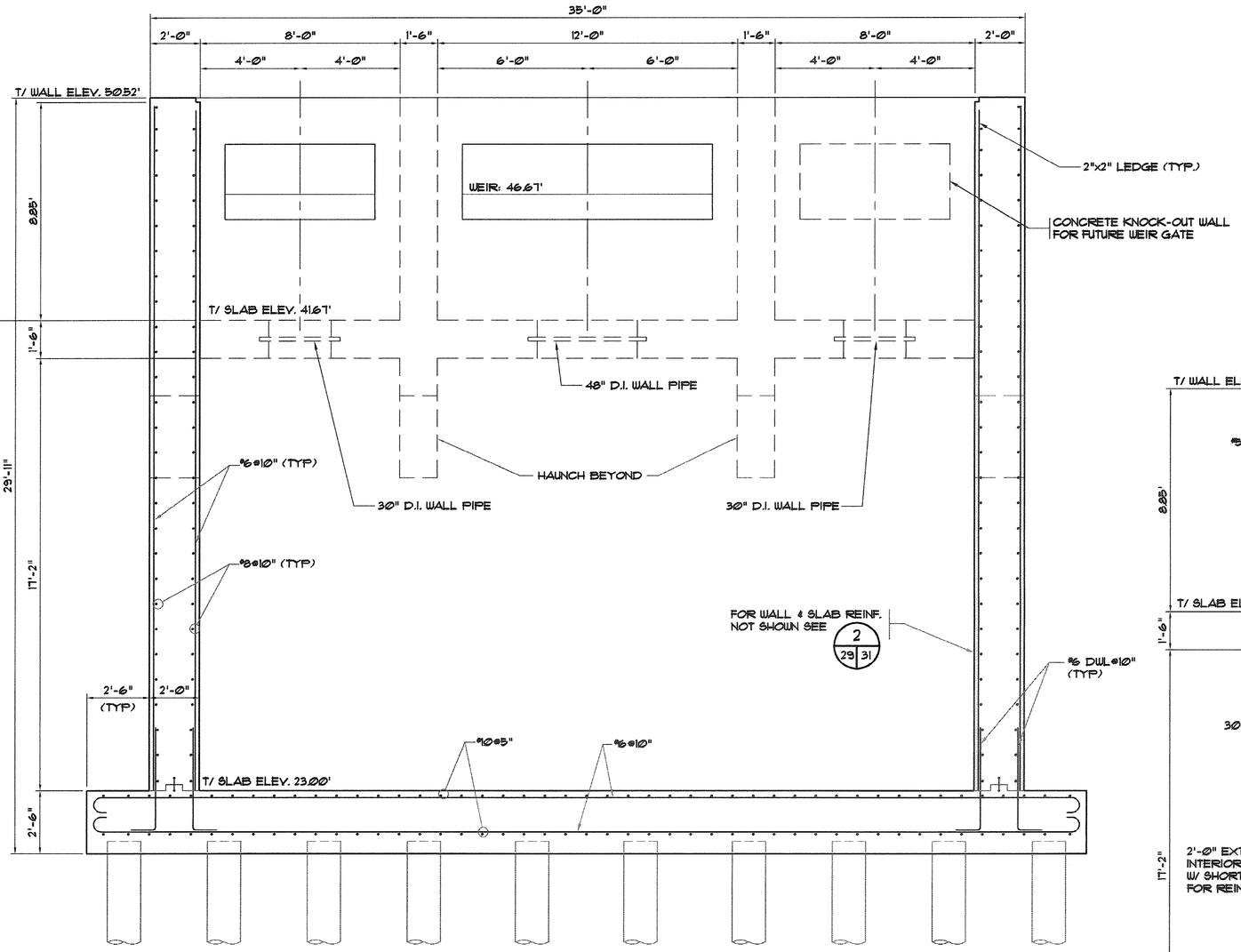
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SHEET NO.
S-30
OF:

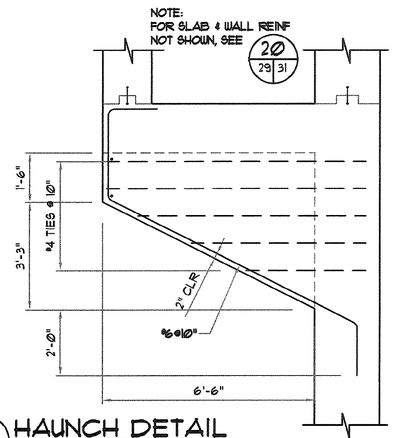
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	RECORD DRAWING	3-09	DFW

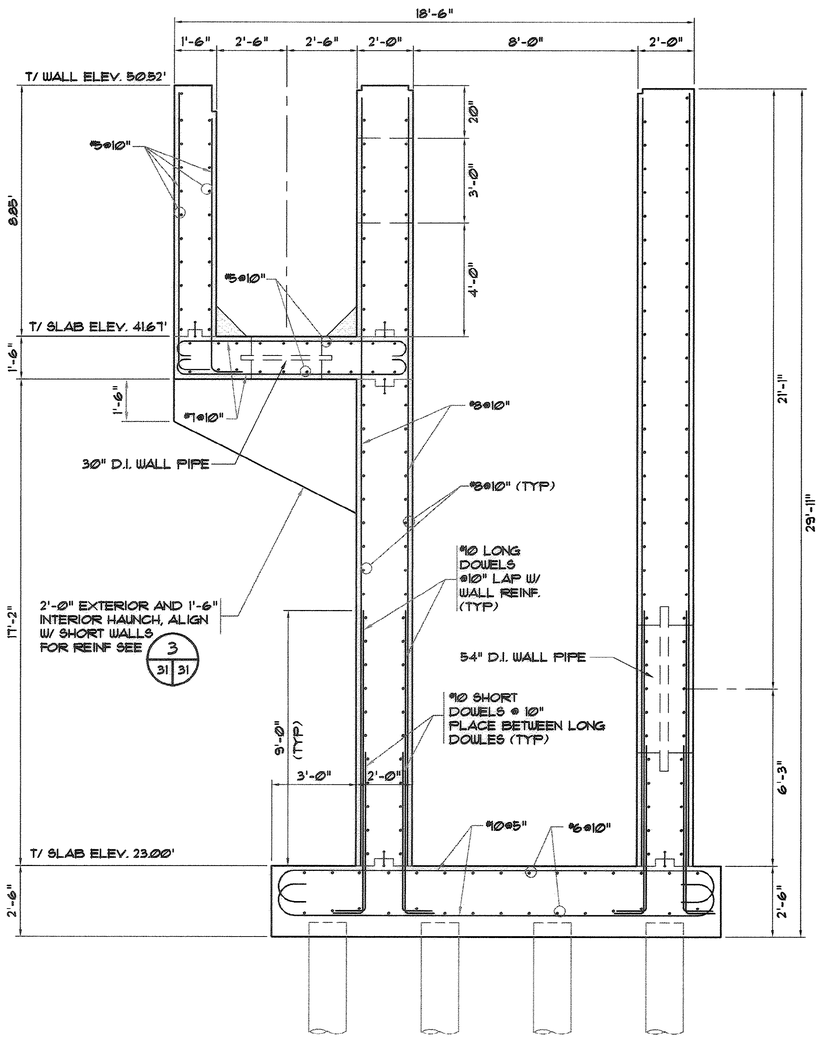
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1 | 29 | 31 SECTION
SCALE: 3/8" = 1'-0"



3 | 31 | 31 HAUNCH DETAIL
NO SCALE



2 | 29 | 31 SECTION
SCALE: 3/8" = 1'-0"

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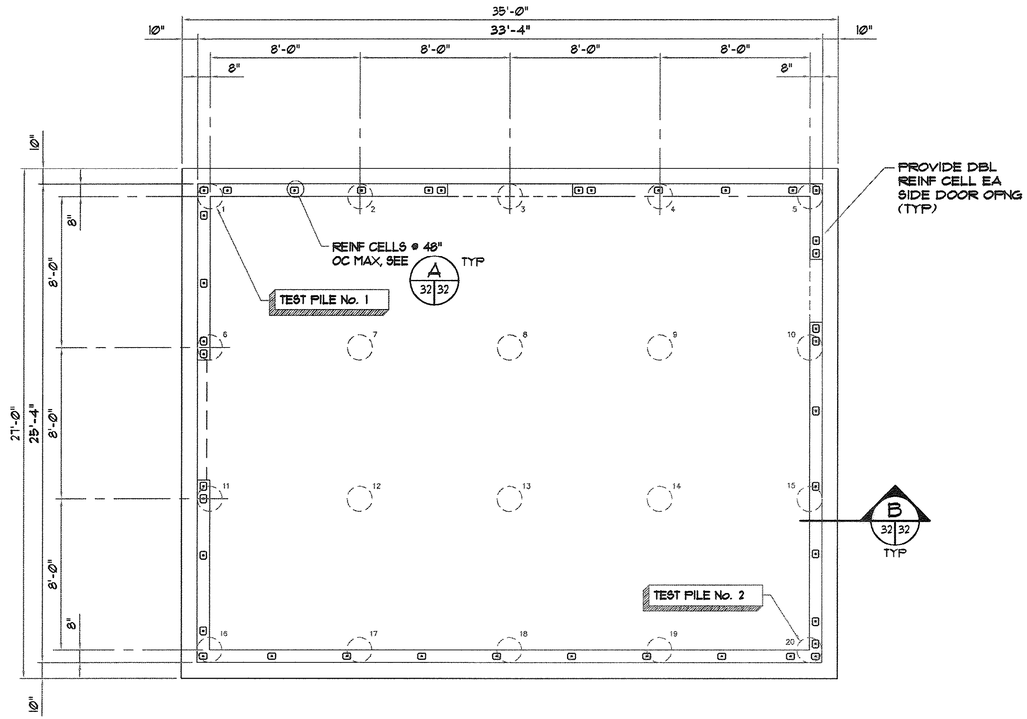
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SPLITTER BOX
SECTIONS

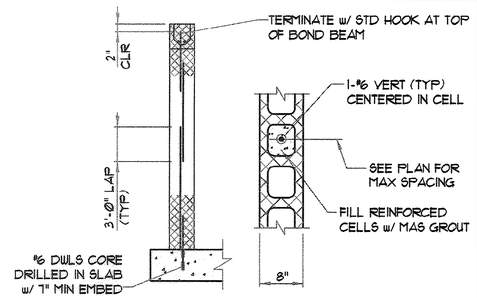
SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE:	JUNE 2008
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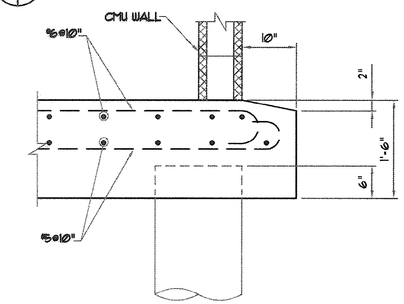
SHEET NO.
S-31
OF:

07-024-48/101 5





A 32|32 TYP WALL REINFORCING DETAIL
NO SCALE



B 32|32 TYP SLAB SECTION
NO SCALE

N GRID

FOUNDATION PLAN - ELECTRICAL BUILDING

1/4" = 1'-0"

NOTE:
1. SEE ARCH DWGS FOR LOCATIONS OF FLOOR FINISHES REQUIRING DEPRESSED SLAB.
2. SEE ARCH DWGS FOR LOCATIONS OF MAS WALLS NOT DIMENSIONED.
3. FIN FLOOR ELEV = 23.00, U.O.N.
4. WALL DIMENSIONS SHOWN ARE NOMINAL DIMENSIONS. SEE ARCH DWGS FOR ACTUAL DIMENSIONS.
5. REINFORCED CELL LOCATIONS ARE BASED ON ASSUMED CMU LOCATIONS AND WALL OPENINGS. REINFORCED CELL LOCATIONS MAY VARY SLIGHTLY TO ACCOMMODATE COURSING. COORDINATE w/ ARCH DWGS.
6. DESIGN LOADS:
   WIND: Vx = 15K (E/W) Vy = 19K (N/S)
   SEISMIC: V = 40K
7. TOTAL NUMBER PILES FOR ELECTRICAL BUILDING = 20.
8. PILE CAPACITY = 40 TONS.
9. AT CONTRACTOR'S OPTION, PILE MAY BE STEEL PIPES, SAME DIAMETER AS CONCRETE PILE, FILLED w/ CONCRETE.
10. NO PILES SHALL BE PLACED BENEATH CONCRETE PIPE ENCASEMENT EXCEPT AS NOTED.

RECORD DRAWING, MARCH 2009

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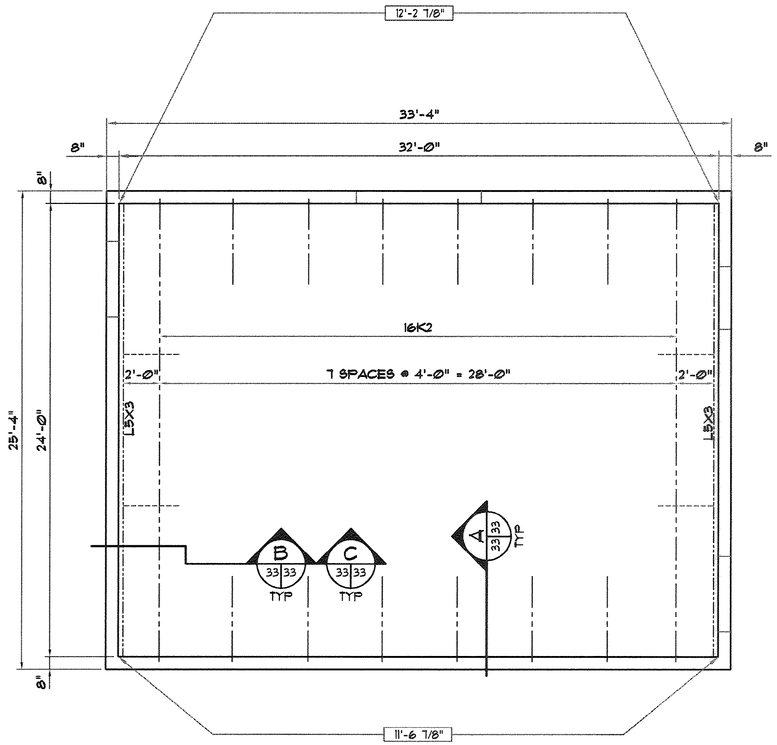
ELECTRICAL BUILDING
FOUNDATION & ROOF
FRAMING PLAN

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

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OF: –

07-024-49/101 5

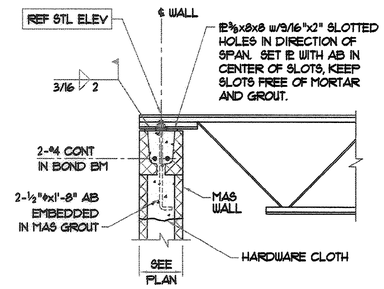


N
GRID

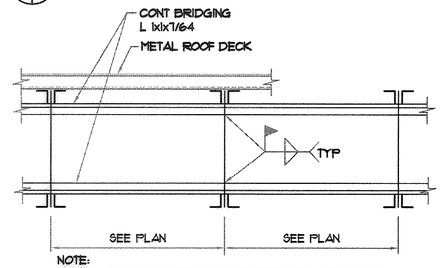
ROOF FRAMING PLAN - ELECTRICAL BUILDING

1/4" = 1'-Ø"

NOTE:
1. XX'-X" DENOTES "REF STEEL ELEV" AFF AT RESPECTIVE LOCATIONS BETWEEN ARROWS UON THUS: (±X'-X").
2. ---------- DENOTES LOCATION OF ROWS OF CONT HORIZ BRIDGING.
3. "L5x3" DENOTES CONT L5x3x3/8 DECK SUPPORT ANGLE (LLV).
4. SEE ARCH DWGS FOR LOCATION AND ELEVATION OF LINTELS.
5. SEE ARCH AND MECH DWGS FOR LOCATION OF ROOF OPNGS.
6. DESIGN ROOF JOISTS FOR NET WIND UPLIFT OF 30 PSF. PROVIDE ADDITIONAL BRIDGING AS REQD BY SJI SPECIFICATIONS.

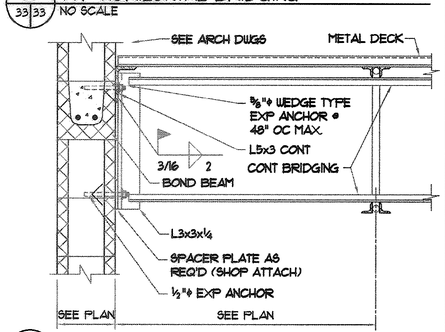


A 33 33 TYP JOIST BEARING DETAIL
NO SCALE



NOTE:
WHERE JOIST SPANS REQUIRE CENTERED ROW OF BOLTED CROSS BRIDGING, PROVIDE CROSS BRIDGING IN ACCORDANCE WITH SJI SPECIFICATIONS.

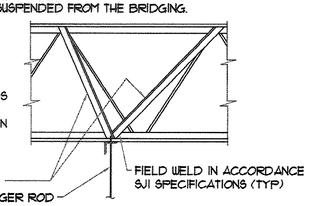
B 33 33 TYP HORIZONTAL BRIDGING
NO SCALE



C 33 33 TYP JOIST BRIDGING DETAIL
NO SCALE

NOTE:
JOISTS SHOWN ON THE STRUCTURAL DRAWINGS ARE DESIGNED FOR A UNIFORM LOAD THAT INCLUDES THE DEAD, LIVE AND MECHANICAL LOADS. THEY ARE NOT DESIGNED FOR CONCENTRATED HANGER LOADS GREATER THAN 50 POUNDS THAT MAY BE APPLIED BETWEEN PANEL POINTS. JOISTS SHALL BE STRENGTHENED AS SHOWN BELOW WHEN HANGER LOADS ARE APPLIED AT OTHER THAN PANEL POINTS. NO LOADS SHALL BE SUSPENDED FROM THE BRIDGING.

NOTE:
TYPICAL JOIST REINFORCEMENT FOR HANGER LOADS GREATER THAN 50 LBS. AT OTHER THAN PANEL POINTS.



D 32 32 JOIST REINFORCEMENT DETAIL
NO SCALE

RECORD DRAWING, MARCH 2009

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ELECTRICAL BUILDING
FOUNDATION & ROOF
FRAMING PLAN

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

DATE:	JUNE 2008
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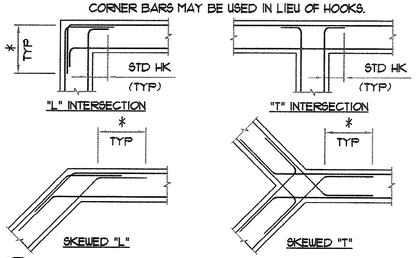
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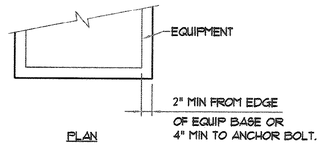
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SYM.	DESCRIPTION	DATE	BY
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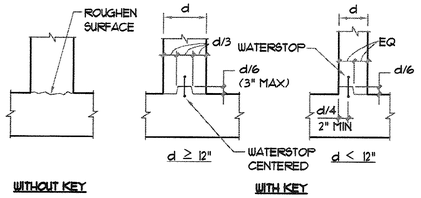
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NOTE:
1. * DENOTES "CLASS B" LAP SPLICE.
2. VERTICAL REINFORCING NOT SHOWN FOR CLARITY. CORNER BARS MAY BE USED IN LIEU OF HOOKS.

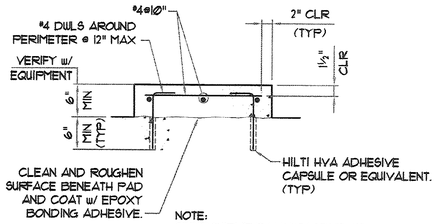


K TYP WALL INTERSECTION REINF
34|34 NO SCALE





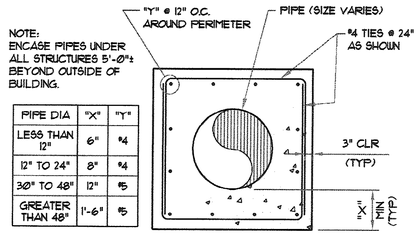
NOTE: ALL WATERSTOPS 6" PVC "DUMBELL" TYPE UON. SEE GENERAL NOTES.



NOTE:
SEE EQUIPMENT MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR EQUIPMENT ANCHORAGE REQUIREMENTS.

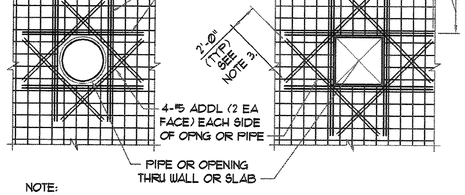
J STANDARD CONSTRUCTION JOINT
34|34 NO SCALE

F TYP EQUIPMENT PAD
34|34 NO SCALE



NOTE:
ENCASE PIPES UNDER ALL STRUCTURES 5'-Ø"± BEYOND OUTSIDE OF BUILDING.

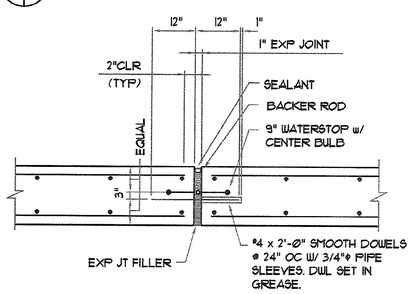
PIPE DIA	"X"	"Y"
LESS THAN 12"	6"	#4
12" TO 24"	8"	#4
30" TO 48"	12"	#5
GREATER THAN 48"	1'-6"	#5



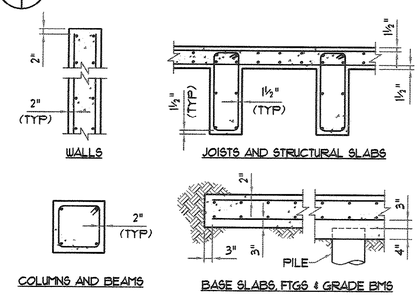
NOTE:
1. PROVIDE ADDITIONAL HORIZONTAL AND VERTICAL BARS EQUAL TO THE NUMBER OF BARS TERMINATED AT OPENING, HALF EACH SIDE.
2. AT SINGLE LAYER REINFORCED WALLS OR SLABS, PROVIDE ONLY SINGLE LAYER OF ADDITIONAL REINFORCING AT OPNG.
3. TERMINATE REINF w/ STD HK WHERE OPNG ADJACENT TO WALL OR SLAB EDGE.

H TYP PIPE ENCASEMENT DETAIL
34|34 NO SCALE

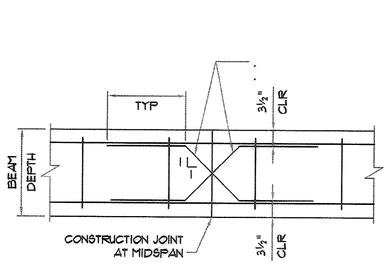
E TYP ADDL REINF AT WALL OR SLAB OPNG
34|34 NO SCALE



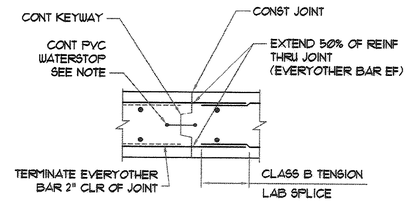
G TYP EXPANSION JOINT DETAIL
34|34 NO SCALE



D TYP REINF BAR CLEARANCES
34|34 (UNLESS OTHERWISE NOTED) NO SCALE

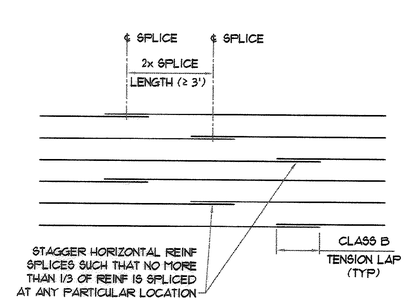


C TYP BM CONSTR JOINT
34|34 NO SCALE



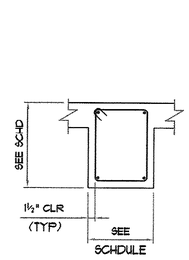
NOTE:
PROVIDE CONSTRUCTION JOINTS IN ALL WALLS AND SLABS AS NOTED ON THE PLANS AND AT 30'-Ø" MAX. PROVIDE CONTINUOUS PVC WATERSTOPS AT SLAB JOINTS, AT ALL EXTERIOR WALL JOINTS AND ANY INTERIOR WALL JOINTS WHERE DIFFERENTIAL HEIGHTS OF FLUIDS EXIST ON EITHER SIDE OF WALL. PLACE CONCRETE IN ALTERNATE SECTIONS. TERMINATE WATERSTOP 3" FROM TOP OF WALL.

B TYP CONSTRUCTION JOINT
34|34 NO SCALE

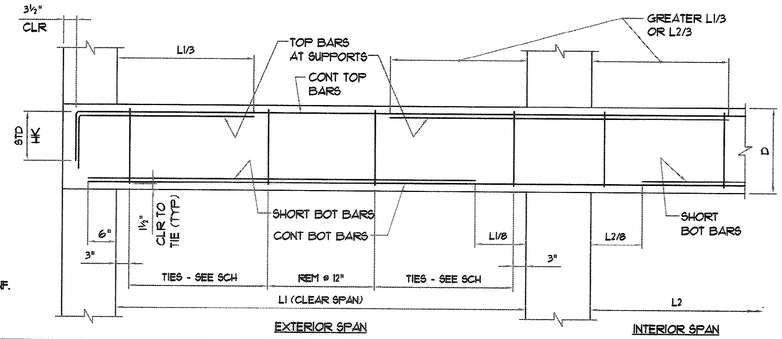


STAGGER HORIZONTAL REINF SPLICES SUCH THAT NO MORE THAN 1/3 OF REINF IS SPLICED AT ANY PARTICULAR LOCATION

A CIRCULAR WALL REINFORCING SPLICING
34|34 NO SCALE



NOTE:
SEE SCHEDULE FOR BEAM REINF. SLAB REINF NOT SHOWN FOR CLARITY.



BEAM SCHEDULE

OXIDATION DITCH

MARK	SIZE		CONT BOT BARS		SHORT BOT BARS		CONT TOP BARS		TOP BARS AT SUPPORTS			TIES			REMARKS
	W	D	NO	SIZE	NO	SIZE	NO	SIZE	NO	SIZE	LOCATION	NO @ SPA	SIZE	LOCATION	
BM1	18	36	6	#9	-	-	6	#9	-	-	-	10@12"	#4	10'-Ø"	
BM2	36	40	11	#11	-	-	7	#10	-	-	-	34@5"	#4	14'-2"	
BM3	18	36	5	#9	-	-	5	#6	-	-	-	7@12"	#4	7'-Ø"	
BM4	18	36	5	#9	-	-	5	#6	-	-	-	7@12"	#4	7'-Ø"	
BM5	36	40	10	#11	-	-	8	#9	-	-	-	16@12"	#4	16'-Ø"	
BM6	12	36	4	#9	-	-	4	#6	-	-	-	5@12"	#4	5'-Ø"	
BM7	12	36	4	#9	-	-	4	#6	-	-	-	3@12"	#4	3'-Ø"	

HEADWORKS

MARK	SIZE		CONT BOT BARS		SHORT BOT BARS		CONT TOP BARS		TOP BARS AT SUPPORTS			TIES			REMARKS
	W	D	NO	SIZE	NO	SIZE	NO	SIZE	NO	SIZE	LOCATION	NO @ SPA	SIZE	LOCATION	
BM10	-	-	-	-	-	-	-	-	-	-	-	21@5"	#4	8'-4"	
BM11	28	36	9	#10	-	-	10	#9	-	-	-	21@5"	#4	8'-4"	
BM12	28	36	9	#10	-	-	10	#9	-	-	-	-	-	-	
BM13	28	36	7	#6	-	-	4	#6	-	-	-	-	-	-	
BM14	28	36	7	#6	-	-	4	#6	-	-	-	-	-	-	
BM15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BM16	28	36	9	#10	-	-	10	#9	-	-	-	21@5"	#4	8'-4"	
BM17	28	36	9	#10	-	-	10	#9	-	-	-	21@5"	#4	8'-4"	
BM18	28	36	7	#6	-	-	4	#6	-	-	-	-	-	-	
BM19	28	36	7	#6	-	-	4	#6	-	-	-	-	-	-	
BM20	28	36	4	#3	-	-	4	#6	-	-	-	2@12"	#4	2'-Ø"	
BM21	28	36	7	#10	-	-	4	#6	-	-	-	5@12"	#4	4'-3"	
BM22	12	36	4	#6	-	-	3	#6	-	-	-	6@12"	#4	5'-3"	TIE LOCATION FROM FACE OF SHEAR WALL
BM23	12	36	4	#6	-	-	3	#6	-	-	-	6@12"	#4	5'-3"	
BM24	28	36	10	#10	-	-	5	#9	-	-	-	10@12"	#4	9'-Ø"	

RECORD DRAWING, MARCH 2009

Hobbs, Upchurch & Associates, P.A.
Consulting Engineers
Myrtle Beach, South Carolina 29577
PHONE: (843) 626-1910 FAX: (843) 626-1745

STANDARD DETAILS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE:	JUNE 2008
DESIGNED:	STW
DRAWN:	LAW
CHECKED:	WPD
SCALE:	AS SHOWN

SHEET NO.
S-34
OF:

07-024-51/101 5

W:\2024\HOBBSUPCHURCH.COM REMOTE H\USSO01\900-2PROJWGS\520-AS-BUILTS\STRUCTURALS\S-34.DWG, LAYOUT: LAYOUT1, EDITED BY: GRACM, 08/22/09 15:11 SCALE: 12"=1'-0" (1:1)
XREFS: SHEET

LINTEL SCHEDULE

OPENING	LINTEL		BEARING
0'-0" TO 1'-4"	L 3/8x3½	*	8"
1'-4" TO 4'-0"	L3½x3½x5/16	*	8"
4'-0" TO 6'-8"	L4x3½x5/16 (LLV)	*	8"
6'-8" TO 8'-0"	L5x3½x5/16 (LLV)	*	8"

* PER 4" OF WALL THICKNESS

OPENING	6" OR 8" WALL	12" WALL	BEARING
2'-0" TO 4'-0"	7⅝" 2-#3 2-#3	2-#3 2-#3	8"
4'-0" TO 5'-4"	7⅝" 2-#4 2-#5	2-#4 3-#4	8"
5'-4" TO 8'-0"	7⅝" 2-#5 2-#6	2-#5 3-#5	16"

CONC MASONRY LINTELS SHALL BE FILLED WITH MASONRY GROUT.

NOTE:
ALL UNSCHEDULED OPNGS INCLUDING OPNGS FOR MECHANICAL WORK SHALL BE PROVIDED WITH LINTELS IN ACCORDANCE WITH THIS SCHEDULE.

GENERAL NOTES

A. FOUNDATIONS.
1. MAXIMUM ALLOWABLE NET BEARING PRESSURE = 2000 PSF (PRESUMPTIVE).
2. EXCAVATIONS AND FORMS SHALL BE REVIEWED BY THE ENGINEER PRIOR TO PLACING CONCRETE.
3. AS DIRECTED BY THE ENGINEER, LOOSE AND UNSUITABLE MATERIAL SHALL BE REMOVED FROM THE BOTTOM OF THE FOUNDATIONS AND REPLACED WITH COMPACTED STRUCTURAL FILL OR STONE.
4. PLACE CONCRETE FOR WALLS AND SLABS IN ALTERNATE SECTIONS AND PROVIDE CONSTRUCTION JOINTS AT LOCATIONS SHOWN ON THE DRAWINGS, OR AT 30 FEET MAXIMUM.
5. PROVIDE BRACING AGAINST WALLS AS REQUIRED TO PREVENT DAMAGE DURING COMPACTION OF FILL.
6. FOUNDATION ELEVATIONS SHALL NOT BE RAISED OR LOWERED WITHOUT APPROVAL OF THE ENGINEER.

B. CONCRETE.
1. CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS AS FOLLOWS:
   PILES, PILE CAPS AND CONTAINMENT STRUCTURES 4000 PSI
   SLABS-ON-GRADE AND SLAB ON METAL FORMS 3500 PSI
   ALL OTHER CONCRETE 3000 PSI
2. CONCRETE WORK SHALL CONFORM TO ACI 318-99 AND ACI 301-99.
3. CONCRETE SHALL BE CURED A MINIMUM OF 7 DAYS BY ONE OR MORE METHODS SPECIFIED IN ACI 301.
4. CHAMFER EXPOSED EDGES OF CONCRETE (AND ALL CORNERS OF ALL COLUMNS) 3/4 INCH, UNLESS OTHERWISE NOTED.
5. PLACE 1/2 INCH EXPANSION JOINT MATERIAL BETWEEN EDGES OF SLABS AND VERTICAL SURFACES, UNLESS OTHERWISE NOTED.
6. PROVIDE CONSTRUCTION OR CONTROL JOINTS IN SLABS AND WALLS AT LOCATIONS SHOWN ON DRAWINGS, AT OFFSETS AND CHANGES IN DIRECTION, AND AT 30 FEET MAXIMUM. CONSTRUCTION JOINTS IN WALLS SHALL BE LOCATED A MINIMUM OF 10'-0" FROM WALL INTERSECTIONS.

C. REINFORCING STEEL.
1. BARS SHALL BE ROLLED FROM NEW BILLET-STEEL CONFORMING TO ASTM A615, GRADE 60.
2. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185 OR ASTM A497.
3. REINFORCING STEEL IN PLACE SHALL BE REVIEWED BY THE ENGINEER PRIOR TO PLACING CONCRETE.
4. DETAIL AND FABRICATE REINFORCING STEEL IN ACCORDANCE WITH "ACI DETAILING MANUAL - 1994," PUBLICATION SP-66(94).

D. GROUT.
1. PROVIDE NON-SHRINK GROUT UNDER ALL COLUMN BASE PLATES AND BEAM BEARING PLATES. NON-SHRINK GROUT SHALL CONFORM TO CORPS OF ENGINEERS SPECIFICATION CRD-C 621. GROUT SHALL BE NON-METALLIC AND NON-STAINING.

E. STRUCTURAL STEEL.
1. STEEL SHALL CONFORM TO ASTM A572, GRADE 50.
2. STRUCTURAL STEEL PIPE SHALL CONFORM TO ASTM A501.
3. STRUCTURAL STEEL TUBE SHALL CONFORM TO ASTM A500, GRADE B, Fy=46KSI.
4. STEEL WORK SHALL CONFORM TO "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS - ALLOWABLE STRESS DESIGN AND PLASTIC DESIGN", EFFECTIVE JUNE 1, 1989, AND THE "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES," EFFECTIVE SEPTEMBER 1, 1986.
5. CONNECTION BOLTS SHALL BE 3/4 INCH DIAMETER CONFORMING TO ASTM A325, TYPE X. INSTALL EACH BOLT WITH A HARDENED WASHER UNDER THE NUT OR HEAD, WHICHEVER IS TURNED FOR TIGHTENING. ALL CONNECTION BOLTS ARE REQUIRED TO BE TIGHTENED "SNUG-TIGHT" ONLY, UNLESS OTHERWISE SPECIFIED.
6. BEAMS AND LINTELS SHALL BEAR 8 INCHES MINIMUM ON MASONRY UNLESS OTHERWISE NOTED.
7. ALL ANCHOR BOLTS SHOWN ON THE DRAWINGS SHALL BE HEADED ANCHOR BOLTS, UNLESS OTHERWISE SPECIFIED. PROVIDE TWO NUTS AND ONE WASHER WITH EACH ANCHOR BOLT UNLESS OTHERWISE NOTED.
8. ALL STRUCTURAL STEEL SHALL BE GIVEN ONE SHOP COAT OF PAINT OF NOT LESS THAN 2.0 MILS DRY FILM THICKNESS CONFORMING TO SSPC PAINT 2, 13 OR 14.
9. STRUCTURAL STEEL TO BE LEFT PERMANENTLY EXPOSED TO VIEW SHALL CONFORM TO "SPECIFICATION FOR ARCHITECTURALLY EXPOSED STRUCTURAL STEEL". IN ADDITION FLAME CUT EDGES SHALL BE GROUND SMOOTH TO TRUE PLANES OR RADII AND WELDS SHALL BE GROUND SMOOTH.

F. OPEN WEB STEEL JOISTS.
1. FABRICATE AND ERECT JOISTS IN ACCORDANCE WITH "STANDARD SPECIFICATIONS, LOAD TABLES AND WEIGHT TABLES FOR STEEL JOISTS AND JOIST GIRDERS," OF THE STEEL JOIST INSTITUTE, 1994 EDITION.
2. JOISTS SHALL HAVE MINIMUM BEARING ON SUPPORTS IN ACCORDANCE WITH THE SJI SPECIFICATIONS UNLESS OTHERWISE NOTED.
3. BRIDGING SHALL BE IN PLACE, ANCHORED AND REVIEWED BY THE ENGINEER PRIOR TO PLACING CORRUGATED STEEL FORMS OR DECKING.
3. JOISTS SHALL RECEIVE ONE SHOP COAT OF MANUFACTURER'S STANDARD SHOP PAINT OF NOT LESS THAN 2 MILS DRY FILM THICKNESS.

G. STEEL ROOF DECK.
1. STEEL ROOF DECK SHALL BE DESIGNED AND MANUFACTURED IN ACCORDANCE WITH THE "SDI STEEL ROOF DECK SPECIFICATIONS" AND THE "SDI CODE OF RECOMMENDED STANDARD PRACTICE, ROOF DECK CONSTRUCTION," OF THE STEEL DECK INSTITUTE.
2. THE STEEL DECK SHALL BE 1-1/2 INCHES IN DEPTH, 22 GAGE, INTERMEDIATE RIB, AND SHALL BE ZINC COATED.
3. PROVIDE ALL RIDGE AND VALLEY PLATES, CANT STRIPS, SUMPS AND OTHER ACCESSORIES TO BE ATTACHED TO THE DECK FOR THE INSTALLATION OF INSULATION, ROOFING AND DRAINAGE.
4. ANCHOR DECK TO STRUCTURAL SUPPORTS AT 12 INCHES O.C. MAXIMUM WITH 5/8 INCH DIAMETER PUDDLE WELDS OR 3/16 INCH DIAMETER SELF-TAPPING SCREWS, UNLESS OTHERWISE NOTED ON PLANS.
5. FASTEN SIDE LAPS TOGETHER AT 3'-0" MAXIMUM O.C. WITH 5/8 INCH DIAMETER PUDDLE WELDS OR 3/16 INCH DIAMETER SELF-TAPPING SCREWS, UNLESS OTHERWISE NOTED ON PLANS.
6. SPOT PAINT ALL FIELD WELDS, FIELD CUT EDGES AND SERIOUS ABRASIONS TO THE SHOP COAT WITH ZINC CHROMATE PRIMER CONFORMING TO SSPC PAINT 11.

H. LIGHT-GAGE STEEL FRAMING
1. STEEL ROOF JOISTS AND TRACKS SHALL BE FABRICATED FROM MATERIALS CONFORMING TO ASTM A653, SQ GRADE 33
2. ALL JOISTS AND ACCESSORIES SHALL BE GALVANIZED HAVING A G-60 COATING OR EQUIVALENT.

J. UNIT MASONRY
1. ASSUMED COMPRESSIVE STRENGTH OF LOAD-BEARING CONCRETE MASONRY f'm = 1,500 PSI
2. MASONRY GROUT FILL FOR REINFORCED MASONRY CELLS, LINTELS, BOND BEAMS AND AS SHOWN ON THE DRAWINGS SHALL CONFORM TO ASTM C476.
3. ALL LAP SPLICES FOR REINFORCING BARS IN MASONRY WALL SHALL BE 48X BAR DIAMETER, UON.

K. WATERSTOPS
1. PROVIDE CONTINUOUS PVC WATERSTOPS WHERE SHOWN ON DRAWINGS. AT EXTERIOR WALL CONSTRUCTION JOINTS AND WHERE DIFFERENTIAL HEIGHTS OF FLUIDS EXIST ON EITHER SIDE OF WALL.
2. WATERSTOPS SHALL BE MANUFACTURED OF VIRGIN MATERIAL COMPOSED OF AN ELASTOMERIC POLYVINYL CHLORIDE COMPOUND MEETING THE REQUIREMENTS OF CORPS OF ENGINEERS CRD-C572. SUBMIT MANUFACTURER'S LITERATURE SHOWING COMPLIANCE WITH THE ABOVE SPECIFICATION AND SHOWING WATERSTOP SHAPES FOR USE.
3. WATERSTOPS AT CONSTRUCTION JOINTS SHALL BE 6 INCH MINIMUM LENGTH "DUMBBELL" TYPE UNLESS OTHERWISE INDICATED ON DRAWINGS. WATERSTOPS AT EXPANSION JOINTS SHALL BE 9 INCH MINIMUM LENGTH "DUMBBELL" TYPE WITH 3/4 INCH MINIMUM INSIDE DIAMETER CENTER BULB, UNLESS OTHERWISE INDICATED ON DRAWINGS.
4. ALL SPLICING OF WATERSTOPS SHALL BE SHOP FABRICATED EXCEPT THAT BUTT SPLICES MAY BE FIELD FABRICATED.

L. DESIGN LOADS.
STRUCTURAL MEMBERS SHALL BE DESIGNED FOR FULL DEAD LOADS AND THE FOLLOWING LIVE LOADS:
1. IMPORTANCE FACTORS: WIND (Iw) = 1.15
   SNOW (Is) = 1.10
   SEISMIC (Ie) = 1.25
2. LIVE LOADS: ROOF = 20 PSF
   MEZZANINE = N/A PSF
   2nd FLOOR = 50 PSF
3. SNOW LOAD: 10 PSF
4. WIND LOAD: BASIC WIND SPEED 130 MPH (ASCE 7-98)
   EXPOSURE CATEGORY C
   WIND BASE SHEARS FOR MWFRS - SEE PLAN
5. SEISMIC DESIGN CATEGORY A
   COMPLIANCE WITH SECTION 1616.4 ONLY? ____ YES _X_ NO
6. SEISMIC DESIGN CATEGORY B, C, & D
   PROVIDE THE FOLLOWING SEISMIC DESIGN PARAMETERS:
   SEISMIC USE GROUP II
   SPECTRAL RESPONSE ACCELERATION Sms = 91.4 %g
   Sm1 = 77.9 %g
   SITE CLASSIFICATION F
   BASIC STRUCTURAL SYSTEM (CHECK ONE)
   _X_ BEARING WALL ____ DUAL w/SPECIAL MOMENT FRAME
   ____ BUILDING FRAME ____ DUAL w/INTERMEDIATE R/C OR SPECIAL STEEL
   ____ MOMENT FRAME ____ INVERTED PENDULUM
   SEISMIC BASE SHEAR: SEE PLAN
   ANALYSIS PROCEDURE ____ SIMPLIFIED _X_ EQUIVALENT LATERAL FORCE
   ARCHITECTURAL, MECHANICAL, COMPONENTS ANCHORED? NO
7. LATERAL DESIGN CONTROL: SEISMIC ___ WIND _X_

M. DIMENSIONS.
1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING THE DIMENSIONS OF THE STRUCTURAL DRAWINGS AND ADVISING THE ENGINEER OF ANY DIFFERENCES IN DIMENSIONS BETWEEN THE ARCHITECTURAL ,STRUCTURAL AND CIVIL DRAWINGS PRIOR TO COMMENCING CONSTRUCTION.

N. ABBREVIATIONS.
THE FOLLOWING LIST OF ABBREVIATIONS IS NOT INTENDED TO REPRESENT ALL THOSE USED ON THESE DRAWINGS, BUT TO SUPPLEMENT THE MORE COMMON ABBREVIATIONS USED:
1. TYP - TYPICAL
2. UON - UNLESS OTHERWISE NOTED
3. CLR - CLEAR, CLEARANCE
4. TCJ - TYPICAL CONTROL JOINT, TYPICAL CONSTRUCTION JOINT
5. EJ - EXPANSION JOINT
6. CJ - CONSTRUCTION JOINT

P. CONSTRUCTION SAFETY.
1. THESE STRUCTURAL DRAWINGS DO NOT CONTAIN NECESSARY COMPONENTS FOR SAFETY DURING CONSTRUCTION.
2. THE CONTRACTOR SHALL PROVIDE ADEQUATE TEMPORARY BRACING, SHORING AND GUYING OF FRAMING AGAINST WIND, CONSTRUCTION LOADS AND OTHER TEMPORARY FORCES UNTIL SUCH PROTECTION IS NO LONGER REQUIRED FOR THE SAFE SUPPORT OF THE FRAMING.

REVISIONS			
SYM.	DESCRIPTION	DATE	BY
1	AS-BUILTS	AUG08	GER

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Hobbs, Upchurch & Associates, P.A.
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GENERAL NOTES AND STANDARD DETAILS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE:	JUNE 2008
DESIGNED:	STW
DRAWN:	LAW
CHECKED:	WPD
SCALE:	AS SHOWN

SHEET NO.
S-35
OF: _____

RECORD DRAWING, MARCH 2009

07-024-52/101 5

WITHOUT NUMBER@UPCHURCH.COM REMOTE: H:\GIS\SCH\ADD-SRAWINGS\ADD-AS-BUILT\STRUCTURAL\S-35.DWG, LAYOUT: LAYOUT1, EDITED BY: GRACIL 08/22/08 15:49 SCALE: 12"=1'-0" (1:1)
XREF'S: SHEET

REVISIONS			
SYM.	DESCRIPTION	DATE	BY
	AS-BUILTS	06.08	WDH
	RECORD DRAWING	MARCH09	DFW

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Consulting Engineers
Myrtle Beach, South Carolina 29577
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12" M.J. PLUG VALVE W/ RESTRAINTS
12" M.J. 90° BEND W/ RESTRAINTS
30" PVC PIPE TO OXIDATION DITCH #2
8" PVC PLANT WATER
30" PVC PIPE TO OXIDATION DITCH #1
ASPHALT PAVING
CONCRETE PAVING
DUMPSTERS (BY OWNER)
SLOPE SLAB INSIDE CURB 1/2" TO 12" MIN. (TYP.)
30" D.I. M.J. 45° BEND W/ RESTRAINTS
2" PVC PLANT WATER
48"x36" WALL THIMBLE (TYP. OF 3)
SLUICE GATE CONTROL PANEL
1 1/2" ALUM. HANDRAIL
BAR SCREEN CONTROL PANEL (ANDRITZ)
6"x6" CONC. CONTAINMENT CURB
VALVE
30" D.I. PIPE
PREFABRICATED ALUM. ACCESS STAIRS
ALUM. LANDING
GRIT CHAMBER MOTOR & DRIVE UNIT
GRIT CONTROL PANEL
1 1/2" PVC PLANT WATER
6" F.R.P. SUCTION LINE FOR SCRUBBER SYSTEM (TYP. OF 3 LOCATIONS)
FLOW METER (TYP. OF 3)
MECHANICAL BAR SCREEN
5/16" ALUM. SLIDE GATE (TYP. OF 6)
30" D.I. PIPE
6" F.R.P.
42"x36" SLUICE GATE W/ HANDWHEEL OPERATOR (TYP. OF 3)
12" F.R.P. SUCTION LINE FOR SCRUBBER SYSTEM (TYP. OF 3 LOCATIONS)
8"x2" TAPPING SADDLE AND VAVLE
30" D.I. M.J. 90° BEND W/ RESTRAINTS
MECHANICAL BAR SCREEN
48" M.J. 90° BE W/ RESTRAINTS
1 1/2" PLANT WATER TO SCREEN (TYP. OF 2)
12" F.R.P.
30" D.I. PIPE TO EXIST. ORBAL
3/4" ALUM. DIAMOND PLATE
PARSHAL FLUME
48"x36" SLUICE GATE W/ ELECTRIC OPERATOR (TYP. OF 3)
30" D.I. M.J. 45° BEND W/ RESTRAINTS
48"x36" SLUICE GATE W/ HANDWHEEL OPERATOR (TYP. OF 2)
PREFABRICATED ALUM. ACCESS PLATFORM
OPEN CUT AND PATCH EXISTING ASPHALT ROAD
SCRUBBER SYSTEM
48"x36" WALL THIMBLE (TYP. OF 2)
AIR LINE (TYP.)
2" ALUM. I-BAR GRATING
EXIST. 8" POTABLE WATER
4" S.S. GRIT SLURRY INLET PIPE (TYP.)
8" PVC SANITARY SEWER
8" D.I. M.J. 90° BEND W/ RESTRAINTS
2" PVC POTABLE WATER TO SAFETY SHOWER
C.O.
4' DIA. MH
8" D.I. W.A.S.
48" PVC PIPE FROM SPLITTER BOX
8" PVC DRAIN
6" PVC SLUDGE LINE RELOCATED
EXIST. ASPHALT PAVING
8" D.I. R.A.S.
6" PVC 45° BEND W/ RESTRAINTS
8" D.I. M.J. 90° BEND W/ RESTRAINTS
8" PVC SANITARY SEWER

LEGEND
N.T.S.
1" HOSE BIB & HOSE RACK
YARD HYDRANT ASSEMBLY (U.N.O.)
PLANT WATER

GRID

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

NOTES:
1. PROVIDE ODOR CONTROL SYSTEM BALANCING DAMPERS @ ALL F.R.P. OUTLETS.
2. ALL INTERIOR CONCRETE SURFACES SHALL BE COATED WITH SAUEREISEN SEWERGARD NO. 210 INSTALLED PER MANUFACTURER'S SPECIFICATIONS.

RECORD DRAWING, MARCH 2009

HEADWORKS UPPER PLAN

SCHWARTZ WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE:	JUNE 2008
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	JWM
SCALE:	AS SHOWN

SHEET NO.
EN-1
OF: _____

07-024-53/101 S

W:\2005\HOBBSUPCH\RICH\CIVIL\REVITE\ H:\05050\WDO-DRAWINGS\WDO-AS-BUILT\DWR\EN-01 HEADWORKS.DWG, LAYOUT: HEADWORKS, EDITED BY: GRACHL, 06/26/08 15:14 SCALE: 12"=1'-0" (1:1)
XREFS: N:\05050\WDO-DRAWINGS\AS-BUILT\DWR\CO-BASE - C05051, SHEET

REVISIONS			
SYM.	DESCRIPTION	DATE	BY
	AS-BUILTS	06.08	WDH
	RECORD DRAWING	MARCH09	DFW

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30" PVC PIPE TO OXIDATION DITCH #2

30" PVC PIPE TO OXIDATION DITCH #1

ASPHALT PAVING

CONCRETE PAVING

DUMPSTERS (BY OWNER)

30" D.I. M.J. 45° BEND W/ RESTRAINTS

48"x36" WALL THIMBLE (TYP. OF 3)

30" D.I. PIPE

2" PVC PLANT WATER

GROUT SLOPE

PARSHALL FLUME W/ ULTRASONIC FLOW TRANSMITTER (TYP. OF 3)

MIXER

6"x6" CONC. CONTAINMENT CURB

MECHANICAL BAR SCREEN

5/16" ALUM. SLIDE GATE (TYP. OF 6) SEE DETAIL THIS SHEET

FLOW

1 1/2" PVC PLANT WATER

48" M.J. 90° BEND W/ RESTRAINTS

30" D.I. M.J. 90° BEND W/ RESTRAINTS

30" D.I. PIPE

F.R.P. SUCTION LINE FOR SCRUBBER SYSTEM (TYP.)

30" D.I. PIPE TO EXIST. ORBAL

30" D.I. M.J. 45° BEND W/ RESTRAINTS

48"x36" SLUICE GATE W/ ELECTRIC OPERATOR (TYP. OF 3)

48"x36" SLUICE GATE W/ HANDWHEEL OPERATOR (TYP. OF 2)

42"x36" SLUICE GATE W/ HANDWHEEL OPERATOR (TYP. OF 2)

OPEN CUT AND PATCH EXISTING ASPHALT ROAD

SCRUBBER SYSTEM

48"x36" WALL THIMBLE (TYP. OF 2)

8" PVC SANITARY SEWER

48" PVC PIPE FROM SPLITTER BOX

8" D.I. M.J. 90° BEND W/ RESTRAINTS

2" PVC POTABLE WATER TO SAFETY SHOWER

C.O.

8" WYE

4' DIA. MH

8" D.I. W.A.S.

6" PVC SLUDGE LINE RELOCATED

8" D.I. R.A.S.

NOTES:

1. PROVIDE ODOR CONTROL SYSTEM BALANCING DAMPERS @ ALL F.R.P. OUTLETS.

2. ALL INTERIOR CONCRETE SURFACES SHALL BE COATED WITH SAUEREISEN SEWERGARD NO. 210 INSTALLED PER MANUFACTURER'S SPECIFICATIONS.

2" SCH 80 PVC CHEMICAL FILL LINES

8" PVC SANITARY SEWER

LEGEND
N.T.S.

- 1" HOSE BIB & HOSE RACK
- YARD HYDRANT ASSEMBLY (U.N.O.)
- PLANT WATER

8" D.I. M.J. 90° BEND W/ RESTRAINTS

8" TAPPING SLEEVE

EXIST. ASPHALT PAVING

6" PVC 45° BEND W/ RESTRAINTS

8" D.I. M.J. 45° BEND W/ RESTRAINTS

GRID

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

8" D.I. M.J. 90° BEND

8" PVC PLANT WATER

8" M.J. PLUG VALVE W/ RESTRAINTS

RECORD DRAWING, MARCH 2009

HEADWORKS INTERMEDIATE PLAN

SCHWARTZ WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE:	JUNE 2008
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	JWM
SCALE:	AS SHOWN

SHEET NO. EN-2

OF: --

07-024-54/101 5

W:\HOBBS-HOBBSUPCHURCH.COM - RESOTE H:\GS0501\GSO-DRAWINGS\GSO-AS-BUILT\DWG\EN-02 HEADWORKS.DWG, LAYOUT: HEADWORKS, EDITED BY: GRADG, 06/21/08 11:34 SCALE: 12"=1'-0" (1:1)
XREF: 07-024-BASE - 50001, SHEET

REVISIONS			
SYM.	DESCRIPTION	DATE	BY
	AS-BUILTS	06.08	WDH
	RECORD DRAWING	MARCH09	DFW

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12" M.J. PLUG VALVE W/ RESTRAINTS
12" D.I. M.J. 90° BEND W/ RESTRAINTS
30" PVC PIPE TO OXIDATION DITCH #2
30" PVC PIPE TO OXIDATION DITCH #1
ASPHALT PAVING
8" PVC PLANT WATER
30" D.I. M.J. 45° BEND W/ RESTRAINTS
2" PVC PLANT WATER
30" D.I. PIPE
CONC. SUPPORT COLUMNS (TYP.)
RAMP
16" F.R.P. SUCTION LINE FOR SCRUBBER SYSTEM ATTACHED TO BOTTOM OF HEADWORKS ABOVE (TYP.)
6" CONC. SLAB (BELOW)
1" PVC PLANT WATER
6" F.R.P.
C.O.
6" PVC DRAIN
6"F.D.
8"x6" CROSS
30" D.I. M.J. 90° BEND W/ RESTRAINTS
30" D.I. PIPE
16" F.R.P.
8" PVC DRAIN
6" F.D.
30" D.I. PIPE TO EXIST. ORBAL
30" D.I. M.J. 45° BEND W/ RESTRAINTS
OPEN CUT AND PATCH EXISTING ASPHALT ROAD
EXIST. 8" POTABLE WATER
SCRUBBER SYSTEM
500 GAL. CAUSTIC TANK
500 GAL. BLEACH TANK
2" PVC POTABLE WATER TO SAFETY SHOWER
8" D.I. M.J. 90° BEND W/ RESTRAINTS
8" WYE
6" PVC SLUDGE LINE RELOCATED
8" D.I. R.A.S.
EXIST. ASPHALT PAVING
6" PVC 45° BEND W/ RESTRAINTS
6"x6" CONC. CONTAINMENT CURB
SLOPE SLAB INSIDE CURB 1/2" TO 12" MIN. (TYP.)
DUMPSTERS (BY OWNER)
6"F.D.
1 1/2" PVC PLANT WATER
8" PVC DRAIN
OVERFLOW PIPE
4" S.S. GRIT SLURRY INLET PIPE
6"Hx6"W CONC. CURB
24"SQ. CONC. SUMP W/ 6" F.D.
8" WYE
AIR LINE
12" F.R.P.
6" CONC. SLAB
BLOWERS
6" CONC. CURB
GRIT CLASSIFIER (3/6)
48" D.I. M.J. 90° BEND W/ RESTRAINTS
48" PVC PIPE FROM SPLITTER BOX
8" M.J. 90° BEND W/ RESTRAINTS
8" PVC SANITARY SEWER
4' DIA. MH
8" D.I. W.A.S.
8" PVC DRAIN
2" SCH 80 PVC BLEACH FILL LINE FROM EXIST. 3,000 GAL. BLEACH BULK TANK @ EXIST. HEADWORKS
8" PVC SANITARY SEWER

LEGEND
N.T.S.
- 1" HOSE BIB & HOSE RACK
- YARD HYDRANT ASSEMBLY (U.N.O.)
- PLANT WATER

NOTES:
1. PROVIDE ODOR CONTROL SYSTEM BALANCING DAMPERS @ ALL F.R.P. OUTLETS.
2. ALL INTERIOR CONCRETE SURFACES SHALL BE COATED WITH SAUEREISEN SEWERGARD NO. 210 INSTALLED PER MANUFACTURER'S SPECIFICATIONS.

GRID

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

RECORD DRAWING, MARCH 2009

HEADWORKS LOWER PLAN

SCHWARTZ WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

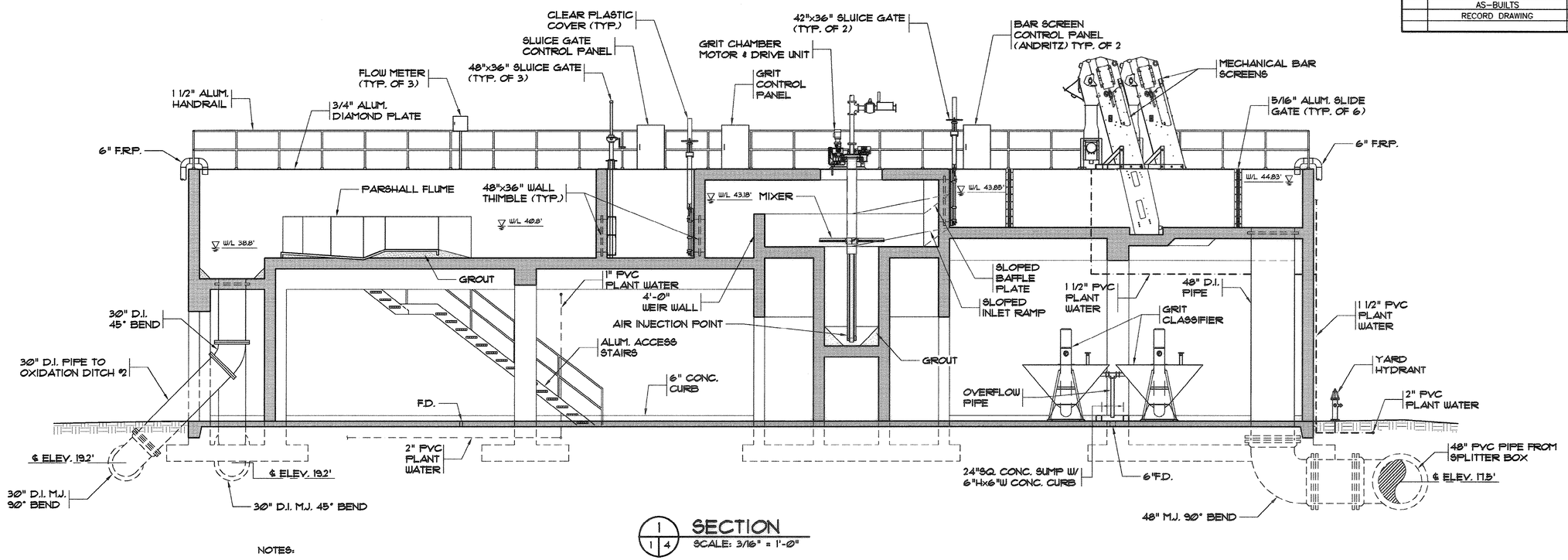
DATE:	JUNE 2008
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	JWM
SCALE:	AS SHOWN

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EN-3
OF: _____

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REVISIONS			
SYM.	DESCRIPTION	DATE	BY
	AS-BUILTS	06.08	WDH
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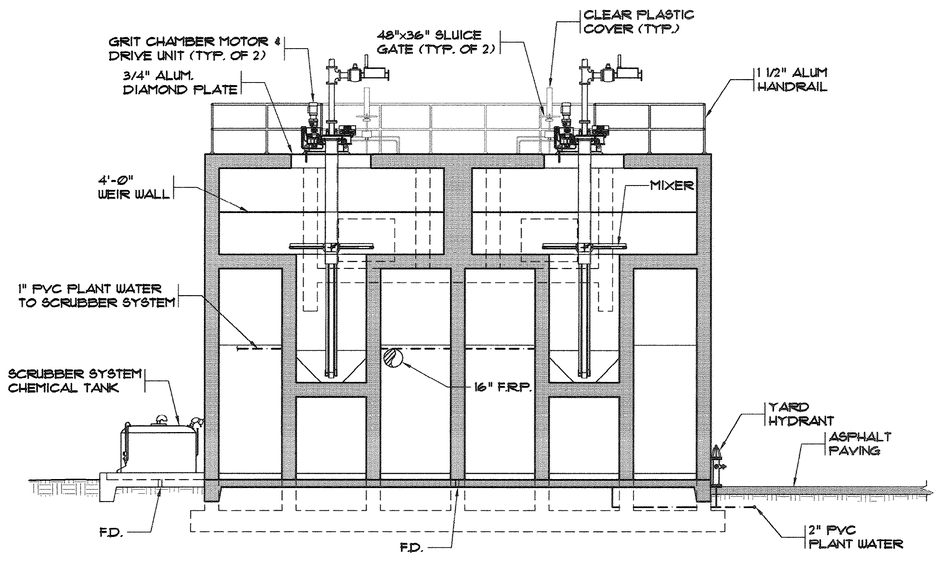


1/1/4 SECTION
SCALE: 3/16" = 1'-Ø"

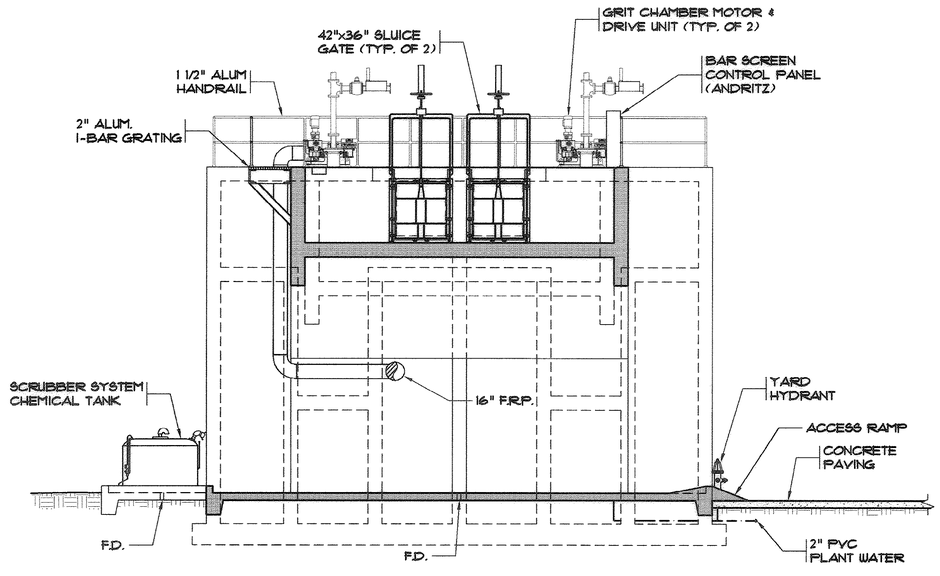
NOTES:

1. PROVIDE ODOR CONTROL SYSTEM BALANCING DAMPERS @ ALL F.R.P. OUTLETS.

2. ALL INTERIOR CONCRETE SURFACES SHALL BE COATED WITH SAUEREISEN SEWERGARD NO. 210 INSTALLED PER MANUFACTURER'S SPECIFICATIONS.



2/1/4 SECTION
SCALE: 3/16" = 1'-Ø"



5/1/4 SECTION
SCALE: 3/16" = 1'-Ø"

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HEADWORKS SECTIONS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

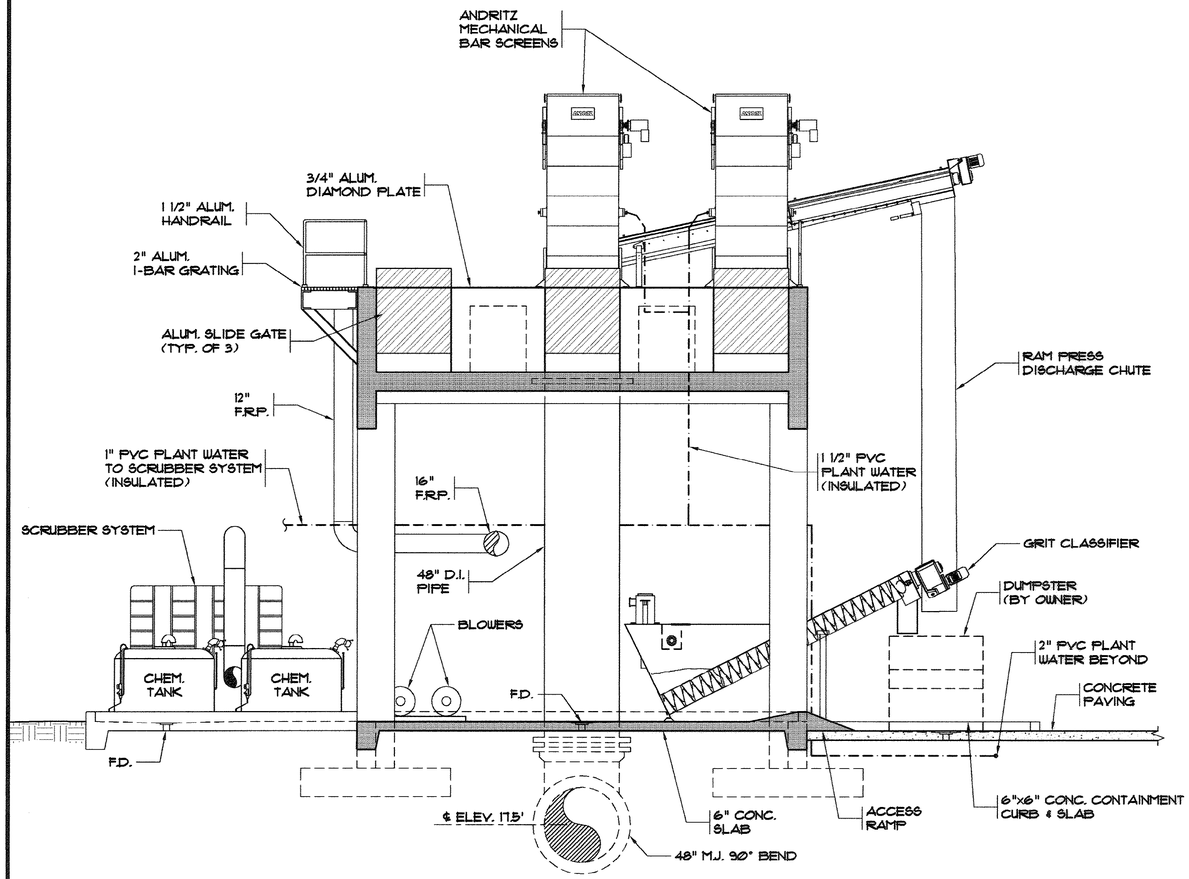
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SCALE:	AS SHOWN

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OF: -

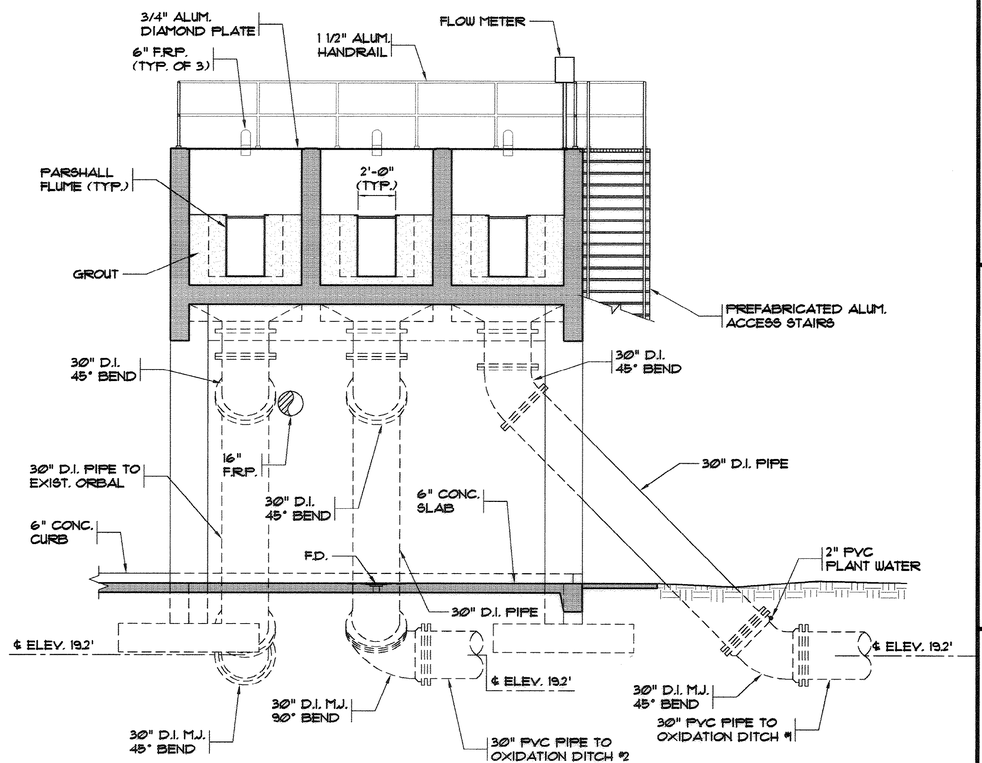
07-024-56/101 S

REVISIONS			
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	RECORD DRAWING	MARCH09	DFW

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



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

NOTES:

1. PROVIDE ODOR CONTROL SYSTEM BALANCING DAMPERS @ ALL F.R.P. OUTLETS.

2. ALL INTERIOR CONCRETE SURFACES SHALL BE COATED WITH SAUEREISEN SEWERGARD NO. 210 INSTALLED PER MANUFACTURER'S SPECIFICATIONS.

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HEADWORKS SECTIONS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

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SCALE:	AS SHOWN

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EN-5
OF: _____

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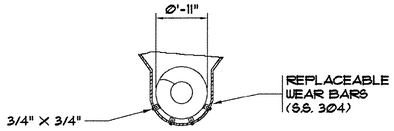
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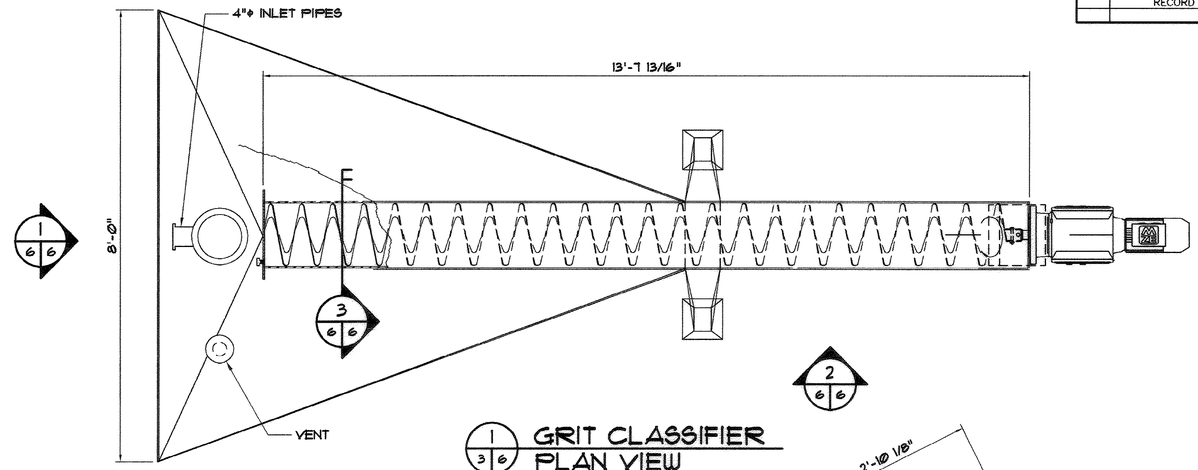
HEADWORKS GRIT CLASSIFIER PLAN AND SECTIONS

SCHWARTZ WASTEWATER TREATMENT PLANT UPGRADE

GRAND STRAND WATER & SEWER AUTHORITY

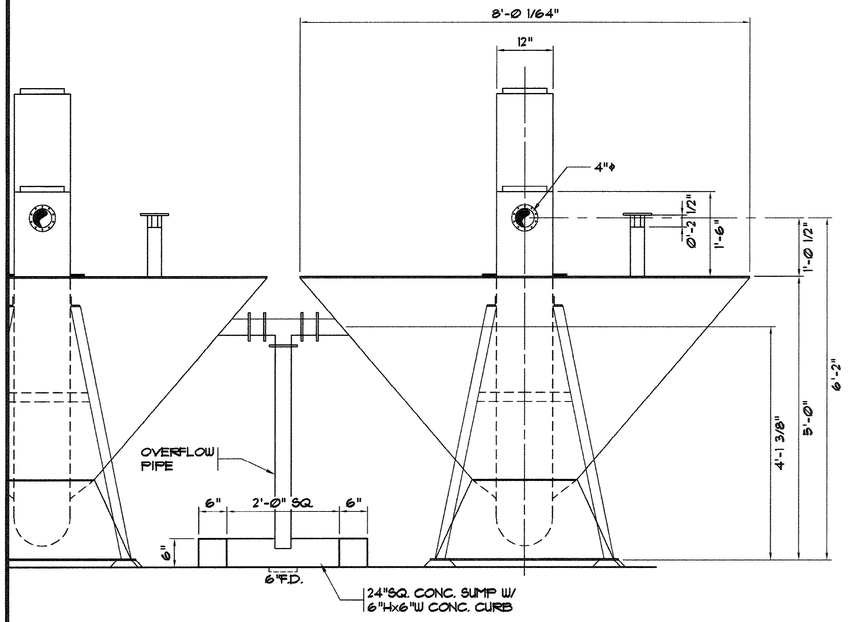


3/6 SECTION
N.T.S.

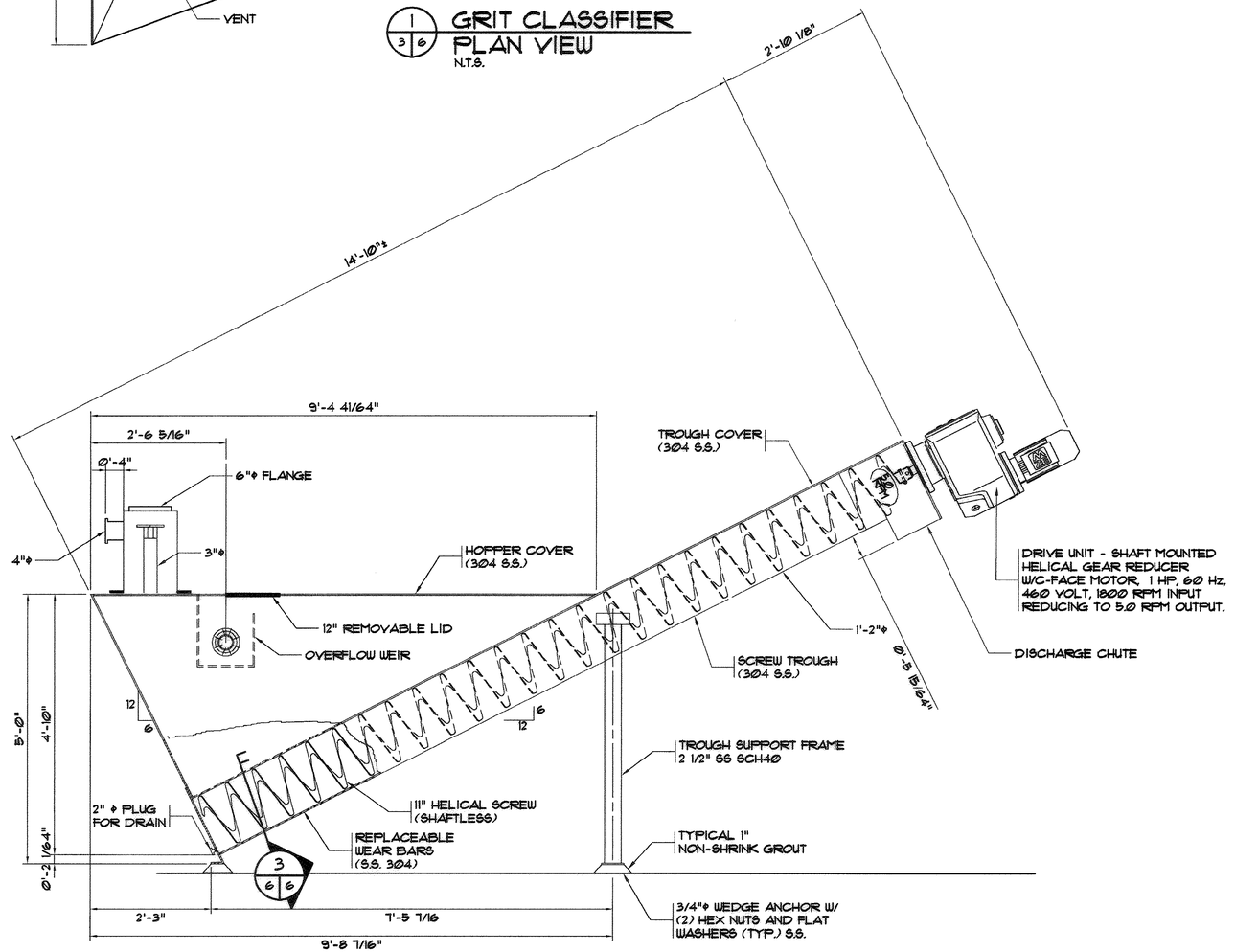


1/6 3/6 GRIT CLASSIFIER PLAN VIEW
N.T.S.

NOTE:
INLET TO BE CLAMPED OR ROTATED TO ACCOMMODATE INLET PIPE.



1/6 END VIEW
N.T.S.



2/6 ELEVATION VIEW
N.T.S.

DATE:	JUNE 2008
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	JWM
SCALE:	AS SHOWN

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EN-6
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RECORD DRAWING, MARCH 2009

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ENLARGED PLAN VIEW 1/1 8

MECHANICAL AERATOR (TYP. OF 4)

1 1/2" ALUM. HANDRAIL

1 1/2" PVC PLANT WATER (INSULATE)

FUTURE OXIDATION DITCH #2

OXIDATION DITCH #1

FLOW

FLOW

2" PVC PLANT WATER

2" PVC PLANT WATER

F.H.

TRANSFORMER

EMERGENCY GENERATOR

ELECTRICAL BUILDING

EXIST. STORAGE AREA

8" TAPPING SLEEVE & 8" M.J. PLUG VALVE W/ RESTRAINTS

8" D.I. W.A.S.

8" M.J. 90° BEND W/ RESTRAINTS

8" PVC PLANT WATER

2" PVC PLANT WATER

8" M.J. 90° BEND W/ RESTRAINTS

8" D.I. R.A.S.

8" D.I. FORCE MAIN TO EXIST. HEADWORKS

HEADWORKS

8" PVC SANITARY SEWER

4' DIA. MH

8" PVC SANITARY SEWER

NEW 6" M.J. 45° BEND W/ RESTRAINTS

EXIST. 6" PVC SLUDGE LINE

6" PVC SLUDGE LINE

12" M.J. 90° BEND W/ RESTRAINTS

12" M.J. PLUG VALVE

EXIST. 6" SLUDGE LINE TO BE RELOCATED

EFFLUENT BOX PLAN 2/1 8

2" PVC PLANT WATER

12"x12" M.J. TEE

30" PVC PIPE TO OXIDATION DITCH #1

12" M.J. 45° BEND W/ RESTRAINTS

6" M.J. 45° BEND W/ RESTRAINTS

8" WATER VALVE

14" D.I. SLUDGE LINE FROM CLARIFIER (TYP. OF 2)

30" PVC TO CLARIFIER

30" PVC TO CLARIFIER

6" M.J. 45° BEND W/ RESTRAINTS

8" PVC PLANT WATER

30" PVC PIPE TO OXIDATION DITCH #2

8" PVC PLANT WATER

8" M.J. 90° BEND W/ RESTRAINTS

8" M.J. 90° BEND W/ RESTRAINTS

8" D.I. R.A.S.

8" D.I. W.A.S.

EXIST. 8" POTABLE WATER

30" D.I. PIPE TO EXIST. ORBAL

OPEN CUT AND PATCH EXIST ASPHALT DRIVE (TYP.)

2/1 8

LEGEND
N.T.S.

- 1" HOSE BIB & HOSE RACK
- YARD HYDRANT ASSEMBLY (U.N.O.)
- PLANT WATER

N GRID

OXIDATION DITCH LAYOUT PLAN
SCALE: 1/16" = 1'-0"

RECORD DRAWING, MARCH 2009

07-024-59/101 5

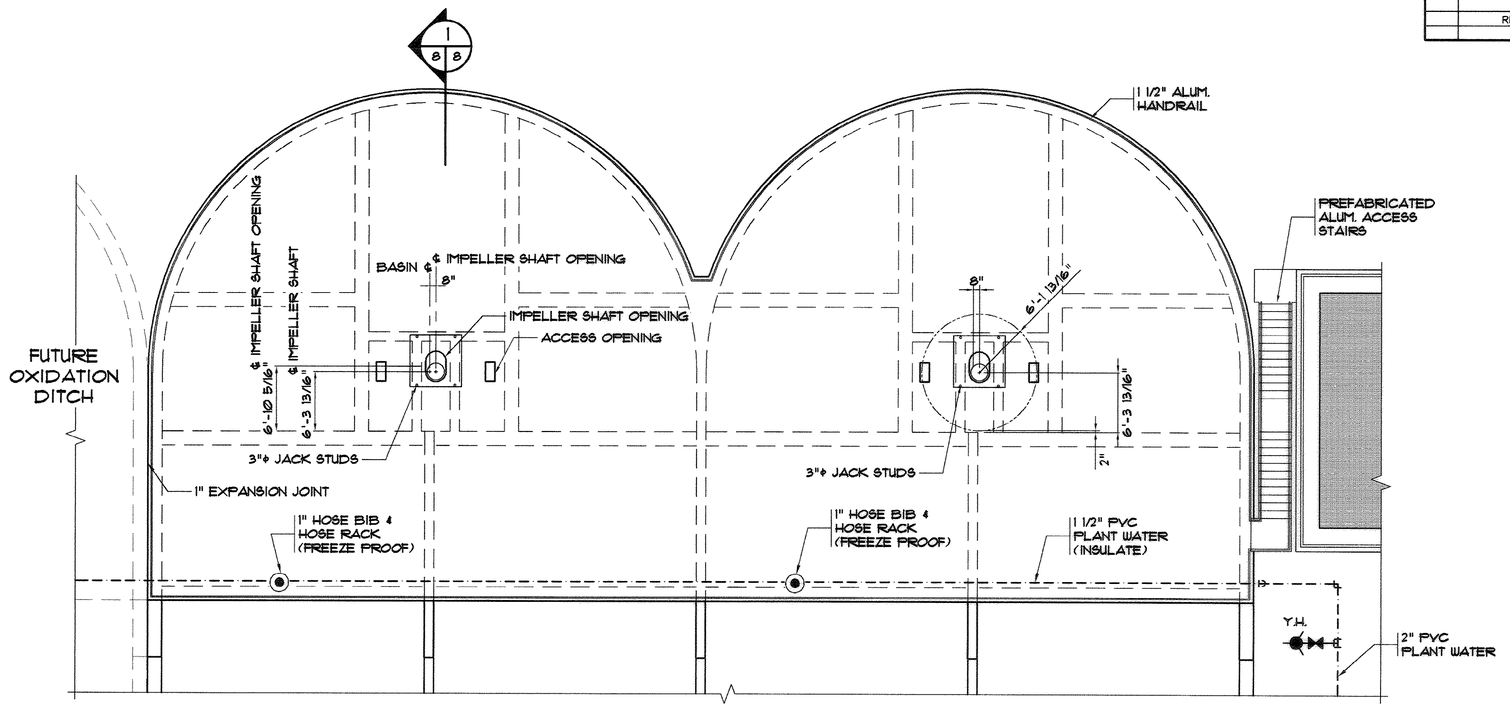
OXIDATION DITCH LAYOUT PLAN

SCHWARTZ WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

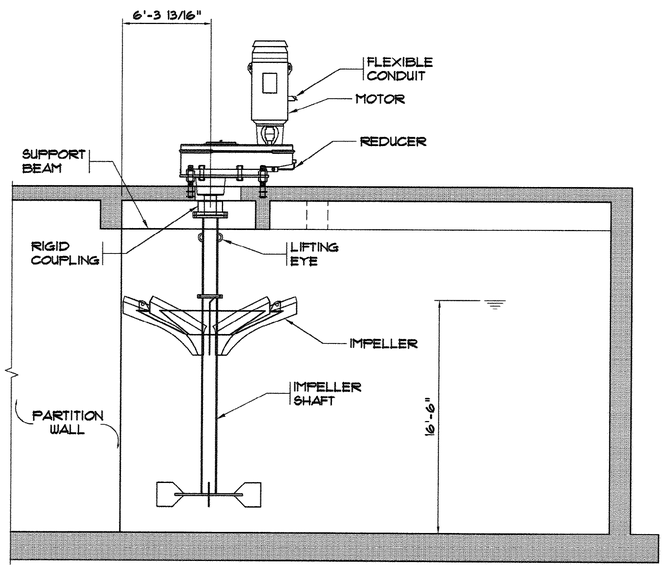
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OF:	-

REVISIONS			
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	AS-BUILTS	06.08	WDH
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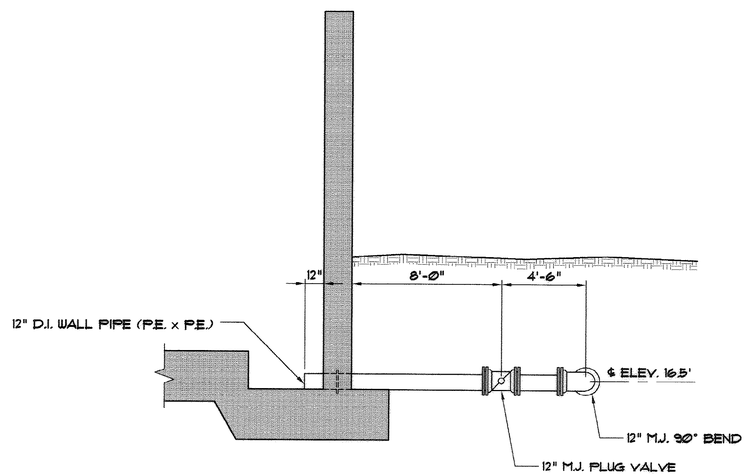
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1/7|8 OXIDATION DITCH PARTIAL PLAN
SCALE 1/8"=1'-0"



1/8|8 SECTION
SCALE 3/16"=1'-0"



2/7|8 SUMP LINE SECTION
1/4" = 1'-0"

RECORD DRAWING, MARCH 2009

07-024-60/101

5

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SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

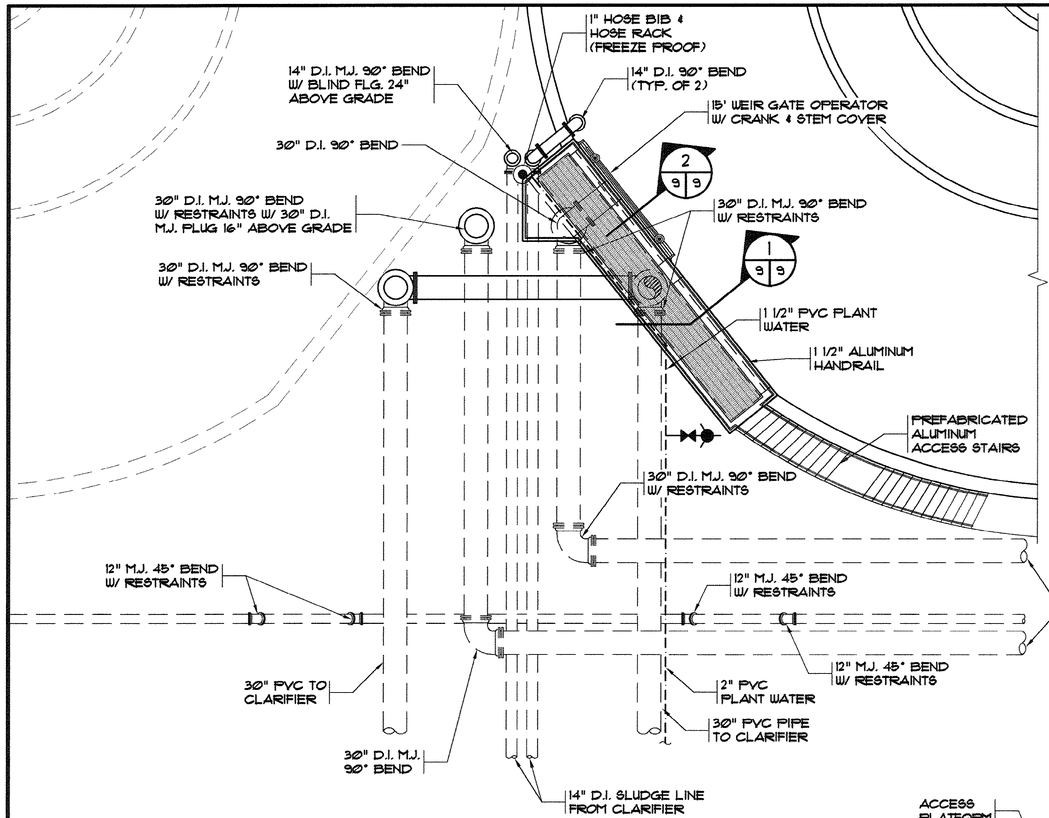
OXIDATION DITCH DETAILS

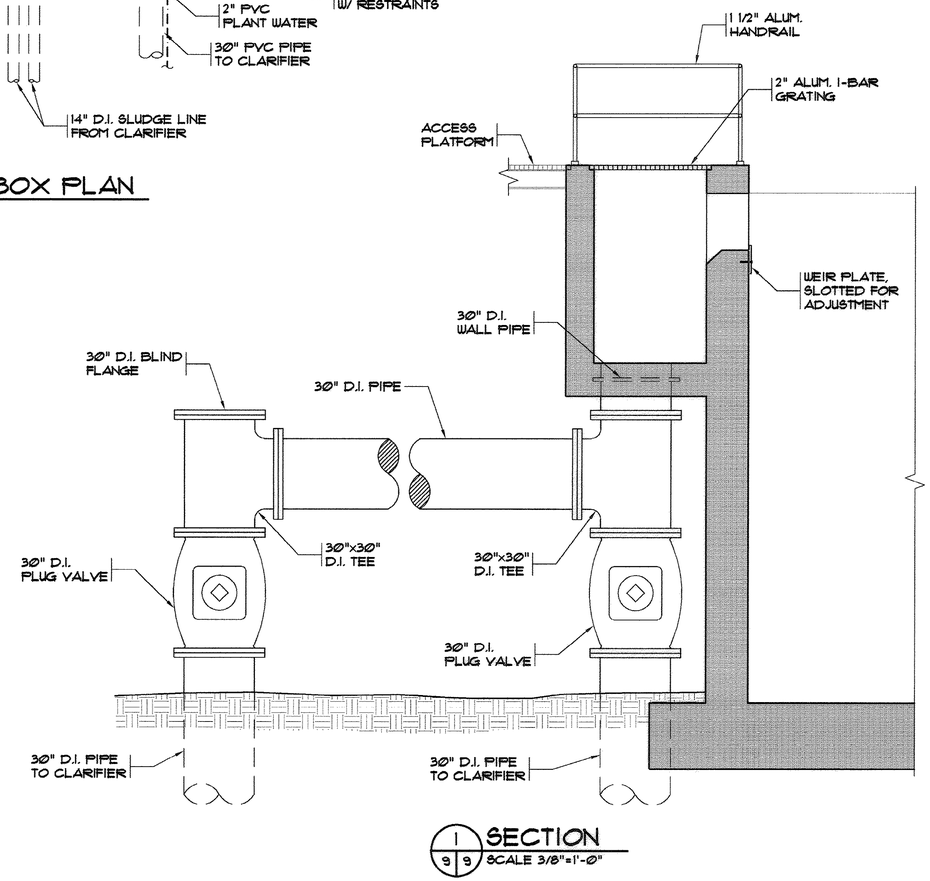
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SCALE:	AS SHOWN

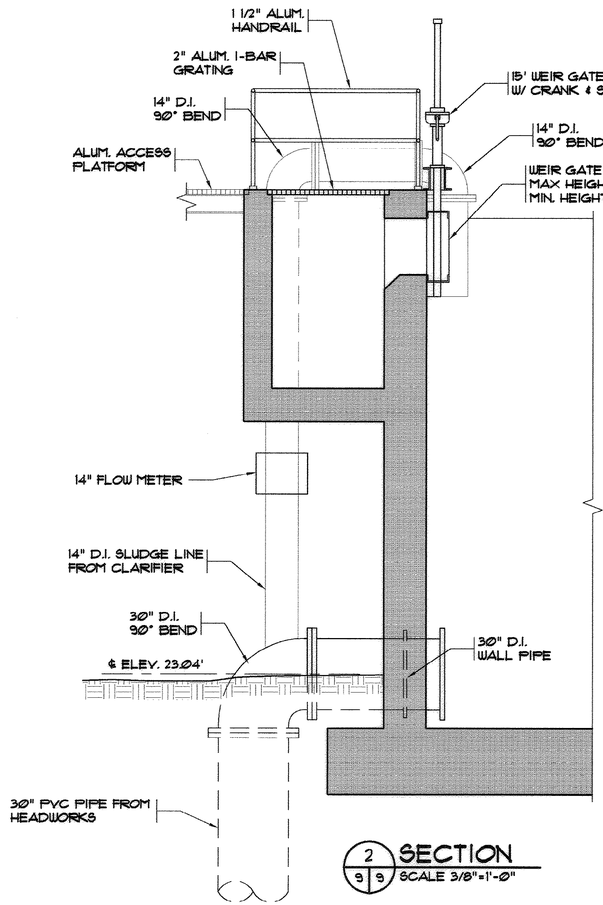
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SYM.	DESCRIPTION	DATE	BY
	AS-BUILTS	06.08	WDH
	RECORD DRAWING	MARCH09	DFW

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OXIDATION DITCH
SECTIONS & DETAILS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE:	JUNE 2008
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	JWM
SCALE:	AS SHOWN

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EN-9
OF: -

RECORD DRAWING, MARCH 2009

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5

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SYM.	DESCRIPTION	DATE	BY
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	RECORD DRAWING	MARCH09	DFW

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FUTURE CLARIFIER NO. 1

CLARIFIER NO. 2

SCUM SCRAPER W/ NEOPRENE WIPERS

SKIMMER BLADE W/ SUPPORTS

WEIR PLATE

RAKE ARM W/ BLADES

6'-Ø" DRIVE UNIT W/ TORQUE CONTROL DEVICE

DIRECTION OF ROTATION

FEEDWELL W/ 4-BAFFLED SCUM PORTS

9'-8"x6'-6" PLATFORM

FEEDWELL SUPPORTS

BAFFLE W/ FRP SUPPORTS

SECTION OF WALKWAY

ALUM HANDRAIL

6" M.J. PLUG

6" PVC SCUM PIPE

8"x6" M.J. REDUCER

6" D.I. PIPE

SCUM BOX W/ SUPPORTS

36" WALKWAY

REMOVABLE FLOOR PANEL

ENERGY DISSIPATING INLET WELL W/ MULTIPLE INLET GATES

8" M.J. 45° BEND

W.A.S. TRANSFER PUMP

FUTURE

FUTURE

24" D.I. SLUDGE DRAW-OFF PIPE

RAKE ARM W/ BLADES

30" D.I. PIPE

8"x6" M.J. WYE

6" F.D.

6" F.D.

FUTURE

R.A.S. TRANSFER PUMP (TYP.)

C.O.

CONTROL PANEL

42"x30" M.J. REDUCER

6" CONC. CURB

14" D.I. PIPE TO OXIDATION DITCH #2

30" D.I. PIPE

8" PVC SCUM PIPE

PARKING

30" PVC PIPE

42"x30" M.J. TEE W/ 30" D.I. BLIND FLANGE 12" ABOVE GRADE

8" M.J. 45° BEND W/ RESTRAINTS

30" M.J. 90° BEND W/ RESTRAINTS

SLUDGE DRAW-OFF PUMPS PLAN VIEW (2 / 10 12)

14" D.I. PIPE TO OXIDATION DITCH #1

8" D.I. W.A.S.

8" PVC PLANT WATER

2" PVC PLANT WATER

8" D.I. R.A.S.

N

GRID

CLARIFIER LAYOUT PLAN

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

RECORD DRAWING, MARCH 2009

07-074-67/101

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CLARIFIER LAYOUT PLAN

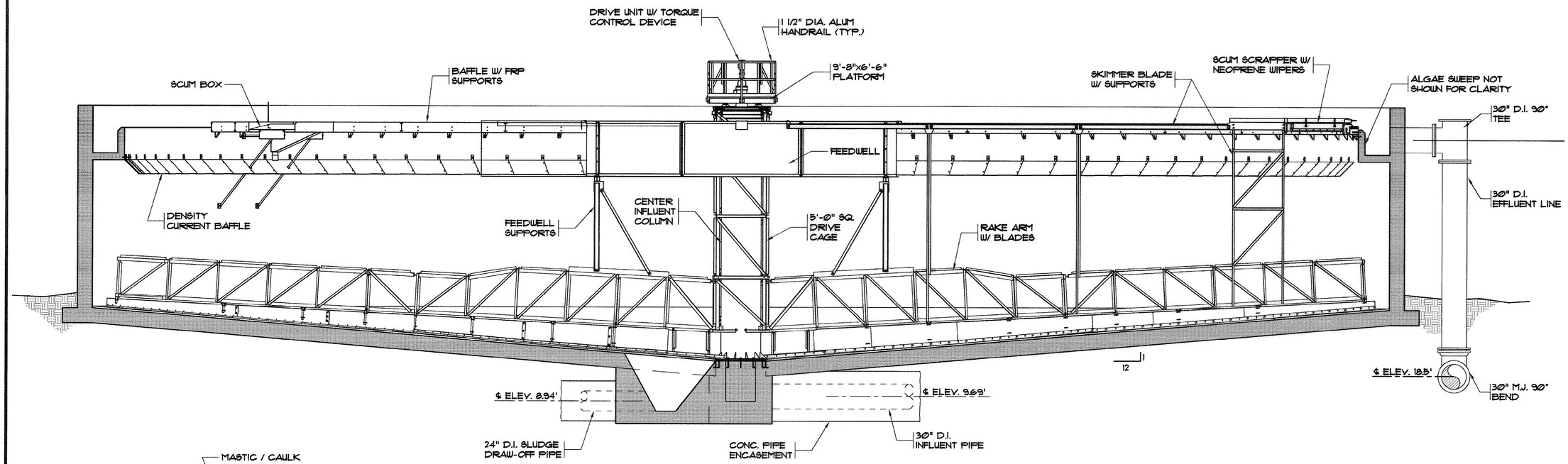
SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE:	JUNE 2008
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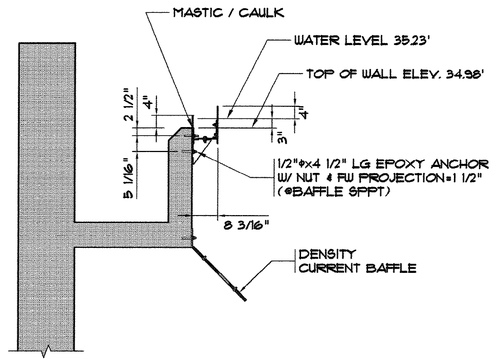
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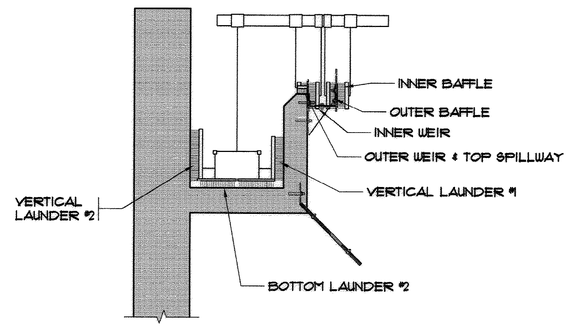
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1/10 | 11 CLARIFIER ILLUSTRATIVE SECTION
N.T.S.



TYPICAL WEIR/BAFFLE DETAIL
SCALE: 1/2"=1'-0"



TYPICAL FORD HALL ALGAE SWEEP
SCALE: 1/2"=1'-0"

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CLARIFIER SECTION

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

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FUTURE CLARIFIER NO. 1

CLARIFIER #2

6" PLUG VALVE
6" PLUG VALVE
6" D.I. 90° BEND
6" D.I. M.J. 90° BEND
6"x4" D.I. TEE
8"x6" D.I. M.J. REDUCER (TYP.)
8"x6" D.I. M.J. REDUCER (TYP.)
6" CONC. SLAB
6" D.I. 90° BEND
6" PLUG VALVE
6"x4" D.I. 90° BEND
4" PLUG VALVE (TYP.)
6"x6" D.I. TEE
8"x8" D.I. M.J. TEE
6" M.J. 90° BEND
6"x4" D.I. 90° BEND
6" D.I. M.J. 90° BEND
4" CHECK VALVE (TYP.)
8"x8" D.I. M.J. TEE
4" BLIND FLANGE (TYP. OF 2)
4"x3" EXPANSION COUPLING (TYP.)
W.A.S. TRANSFER PUMP
FUTURE R.A.S. TRANSFER PUMP
W.A.S. TRANSFER PUMP
6"x4" REDUCER (TYP.)
FUTURE R.A.S. TRANSFER PUMP
6"x4" REDUCER (TYP.)
CONC. PIPE SUPPORT W/ PIPE SUPPORT (TYP. OF 2)
6" PLUG VALVE (TYP.)
24"x6" TAPPING SADDLE (TYP. OF 2)
24" D.I. PLUG VALVE
24" D.I. M.J. PLUG
24" D.I. PLUG VALVE
24"x14" D.I. TEE (TYP. OF 3)
24" D.I. M.J. 45° BEND
24" 90° BEND
24" D.I. 90° BEND
24" D.I. M.J. 90° BEND
6" F.D.
14" PLUG VALVE
6" F.D.
24" D.I. M.J. 90° BEND
R.A.S. TRANSFER PUMP
R.A.S. TRANSFER PUMP
FUTURE R.A.S. TRANSFER PUMP
14"x12" EXPANSION COUPLING
14" CHECK VALVE
14" PLUG VALVE
8" PVC SCUM PIPE
C.O.
CONTROL PANEL
6" D.I. DRAIN
6" CONC. CURB
6"x6" PVC TEE
14" D.I. 90° BEND
14" D.I. M.J. 90° BEND
14"x14" D.I. M.J. TEE
14" D.I. M.J. 90° BEND
14" D.I. 90° BEND
14" D.I. M.J. 90° BEND
14"x14" D.I. TEE
14" D.I. M.J. 90° BEND
4' CONC. SIDEWALK
2" PVC PLANT WATER
14"x14" D.I. M.J. TEE
14" D.I. M.J. 45° BEND
14" D.I. M.J. 45° BEND
30" PVC PIPE
8" D.I. M.J. 45° BEND
14" D.I. PIPE TO OXIDATION DITCH #2
8" D.I. W.A.S.
14" D.I. M.J. 45° BEND
8" D.I. R.A.S.
14" D.I. M.J. 45° BEND
TO METER VAULT
TO METER VAULT
14" D.I. PIPE TO OXIDATION DITCH #1

2 SLUDGE DRAW-OFF PUMPS PLAN VIEW
SCALE: 3/8" = 1'-0"

RECORD DRAWING, MARCH 2009

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SLUDGE DRAW-OFF PUMPS LAYOUT PLAN

SCHWARTZ
WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

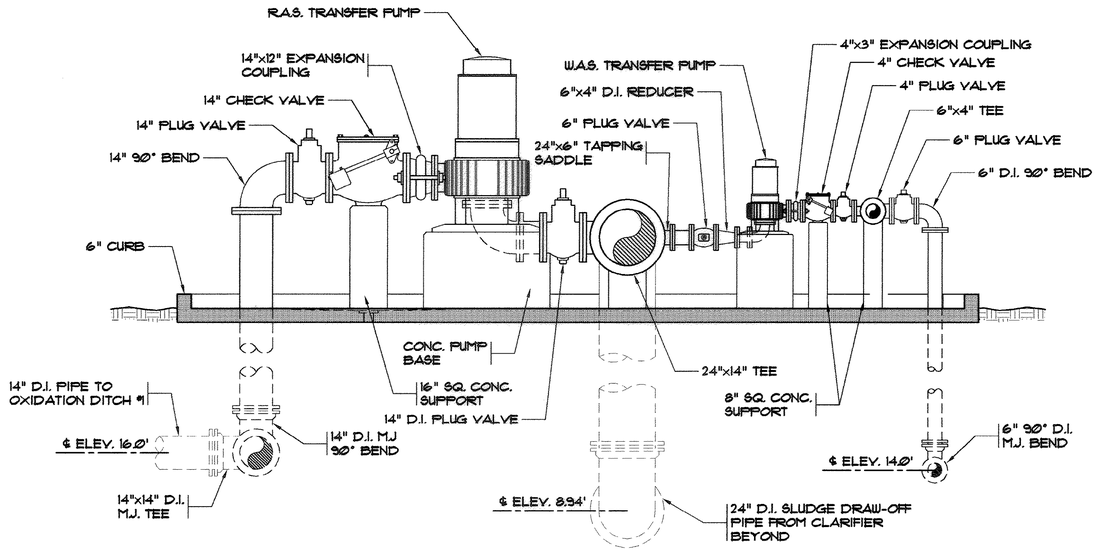
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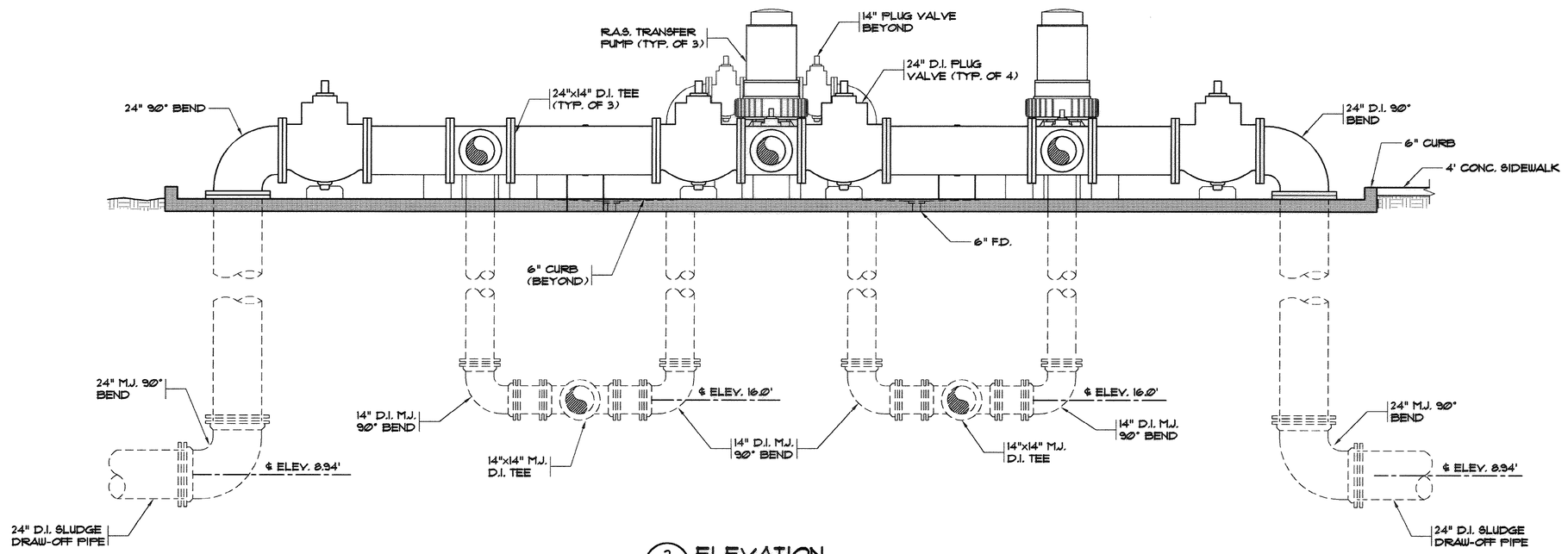
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1/13/12 ELEVATION
SCALE: 3/8" = 1'-0"



2/12/13 ELEVATION
SCALE: 3/8" = 1'-0"

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SLUDGE DRAW-OFF PUMP SECTIONS

SCHWARTZ
WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

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EXIST. HEADWORKS

12" FROM ISLAND GREEN

NEW 8" DIP DRAIN LINE TO TIE INTO EXIST. 8" DRAIN LINE FROM PRE-AERATION BASIN

20'-0"

NEW 30" 90° BEND

NEW 48" PVC

NEW 48" 45° M.J. BEND

NEW 48" 45° M.J. BEND

NEW 8" M.J. 45° BEND

NEW 30"x30" TEE

12" D.I.P.

8" D.I.P. FROM OLD PUMP STATION

12"X12"X8" MJ TEE

12" 90° MJ BEND

PIPING DETAIL A

ABANDONED

NEW 12" M.J. RESTRAINED PLUG

EXIST. 12" FORCEMAIN (ABANDONED)

NEW 2" S.S. WALL PIPE

NEW WEIR GATE W/ELECTRIC OPERATOR (TYP. OF 2)

8" LINE FROM PUMP STATION #1

EXIST. 30" 90° M.J. BEND

EXIST. STAIRWAY

EXIST. 8" WATER LINE

EXIST. 2" SAMPLE

NEW 8" M.J. PLUG VALVE

NEW SAMPLE LINE (SEE NOTE)

SEE PIPING DETAIL A THIS SHEET

NEW 54" 90° BEND

NOTE:
CONTRACTOR SHALL INSTALL A 2" SAMPLE LINE INCLUDING 2" S.S. WALL PIPE FROM THE SPLITTER BOX TO THE EXISTING SAMPLE PUMP AT THE EXISTING HEADWORKS.

EXIST. 30" FORCEMAIN

EXIST. 30" FORCE MAIN

NEW 30" M.J. PLUG VALVE WITH VALVE BOX

EXIST. 6" SLUDGE FROM DIGESTERS

NEW 54" 90° M.J. BEND

8" TO SPLITTER BOX

EXIST. 1" AIR LINE

NEW 30" M.J. 22 1/2" BEND

NEW 30" X 30" M.J. TEE

TIE IN TO 12"

EXIST. 6" SLUDGE FROM SECONDARY CLARIFIERS

EXIST. 8" 90° M.J. BEND

NEW 54"x30" M.J. TEE

EXIST. 8" S.S. DRAIN TO BE PLUGGED AND ABANDONED

NEW 54"x36" M.J. TEE
NEW 36" M.J. PLUG VALVE
NEW 36" M.J. RESTRAINED PLUG

NEW 30" M.J. PLUG VALVE WITH VALVE BOX

CORE HOLE IN EXIST. WALL FOR 8" PIPE (SEAL WITH LINK SEAL)

EXIST. MANHOLE

NEW 36" INFLUENT HEADER FROM BAY ROAD

EXIST. METHANE GAS TO BE ABANDONED

EXIST. 4" S.S. DRAIN

EXIST. HEATING WATER TO BE ABANDONED

EXIST. 8" S.S. DRAIN

NEW 54"x30" M.J. REDUCER

NEW 30" INFLUENT HEADER

NOTE:

1. ALL INTERIOR CONCRETE SURFACES OF NEW SPLITTER BOX SHALL BE COATED WITH SAUEREISEN SEWERGARD NO. 210 INSTALLED PER MANUFACTURER'S SPECIFICATION

GRID

HEADWORKS SPLITTER BOX LOWER PLAN

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

RECORD DRAWING, MARCH 2009

HEADWORKS SPLITTER BOX LOWER PLAN

SCHWARTZ WASTEWATER TREATMENT PLANT UPGRADE

GRAND STRAND WATER & SEWER AUTHORITY

DATE:	JUNE 2008
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EXISTING HEADWORKS

EXIST. 1 1/2" ALUMINUM HANDRAIL WITH KICKPLATE

NEW PREFABRICATED ALUM. ACCESS PLATFORM

20'-0"

12" FROM ISLAND GREEN

3 / 36|38

2 / 36|38

NEW 48" 45° M.J. BEND

NEW 3/4" ALUMINUM DIAMOND PLATE

NEW 1 1/2" ALUMINUM HANDRAIL WITH KICKPLATE

NEW 12" F.R.P.

ABANDONED 12" M.J. 90° BEND CAPPED WITH CONCRETE 10' OFF ROAD TO PRE-AERATION BASIN

EXIST. 30" 90° M.J. BEND

1 / 36|3T

NEW 30" D.I. INFLUENT PIPE

NEW 12" M.J. RESTRAINED PLUG

EXIST. 8" WATER LINE

NEW 10'-0" WEIR GATE W/ ELECTRIC OPERATOR

NEW 6'-0" WEIR GATE W/ ELECTRIC OPERATOR

8" LINE FROM PUMP STATION #1

NEW 8" PLUG VALVE

EXIST. 6" SLUDGE FROM DIGESTERS

EXIST. 1" AIR LINE

NEW 54" INFLUENT HEADER

NEW 54" 90° BEND

NEW 54" 90° M.J. BEND

NEW 30" M.J. PLUG VALVE WITH VALVE BOX

EXIST. 30" FORCE MAIN

EXIST. 6" SLUDGE FROM SECONDARY CLARIFIERS

8" TO SPLITTER BOX

TIE IN TO 12"

NEW 30" X 30" M.J. TEE

EXIST. 8" 90° M.J. BEND

NEW 30" M.J. 22 1/2" BEND

NEW 54"x30" M.J. TEE

EXIST. 8" S.S. DRAIN TO BE PLUGGED AND ABANDONED

NEW 54"x36" M.J. TEE
NEW 36" M.J. PLUG VALVE
NEW 36" M.J. RESTRAINED PLUG

NEW 30" M.J. PLUG VALVE WITH VALVE BOX

CORE HOLE IN EXIST. WALL FOR 8" PIPE (SEAL WITH LINK SEAL)

EXIST. MANHOLE

EXIST. 8" S.S. DRAIN

EXIST. HEATING WATER TO BE ABANDONED

NEW 54"x30" M.J. REDUCER

NEW 30" INFLUENT HEADER

GRID

HEADWORKS SPLITTER BOX
UPPER PLAN
SCALE: 1/4" = 1'-0"

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HEADWORKS SPLITTER BOX UPPER PLANS

SCHWARTZ WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

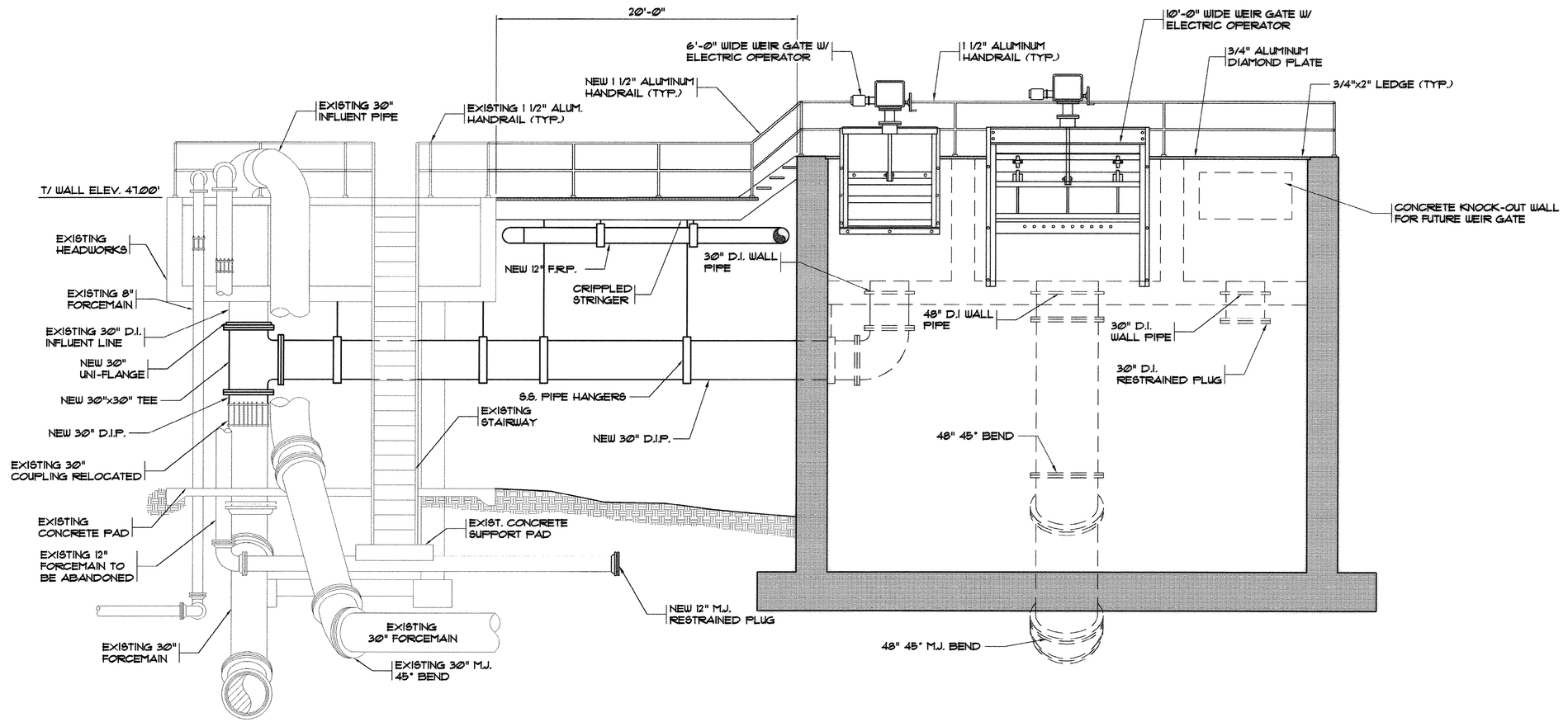
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1 / 36|37 SECTION
SCALE: 1/4" = 1'-0"

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HEADWORKS
SPLITTER BOX
SECTIONS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

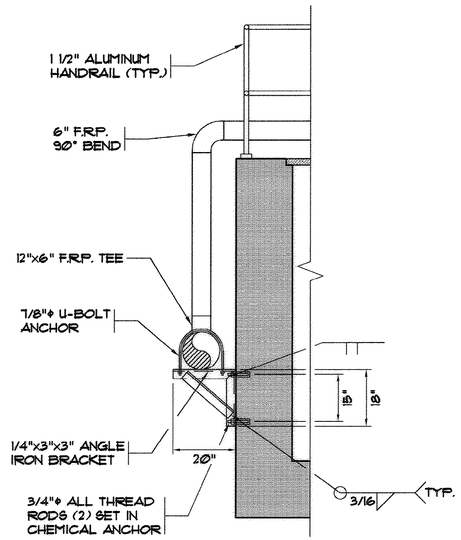
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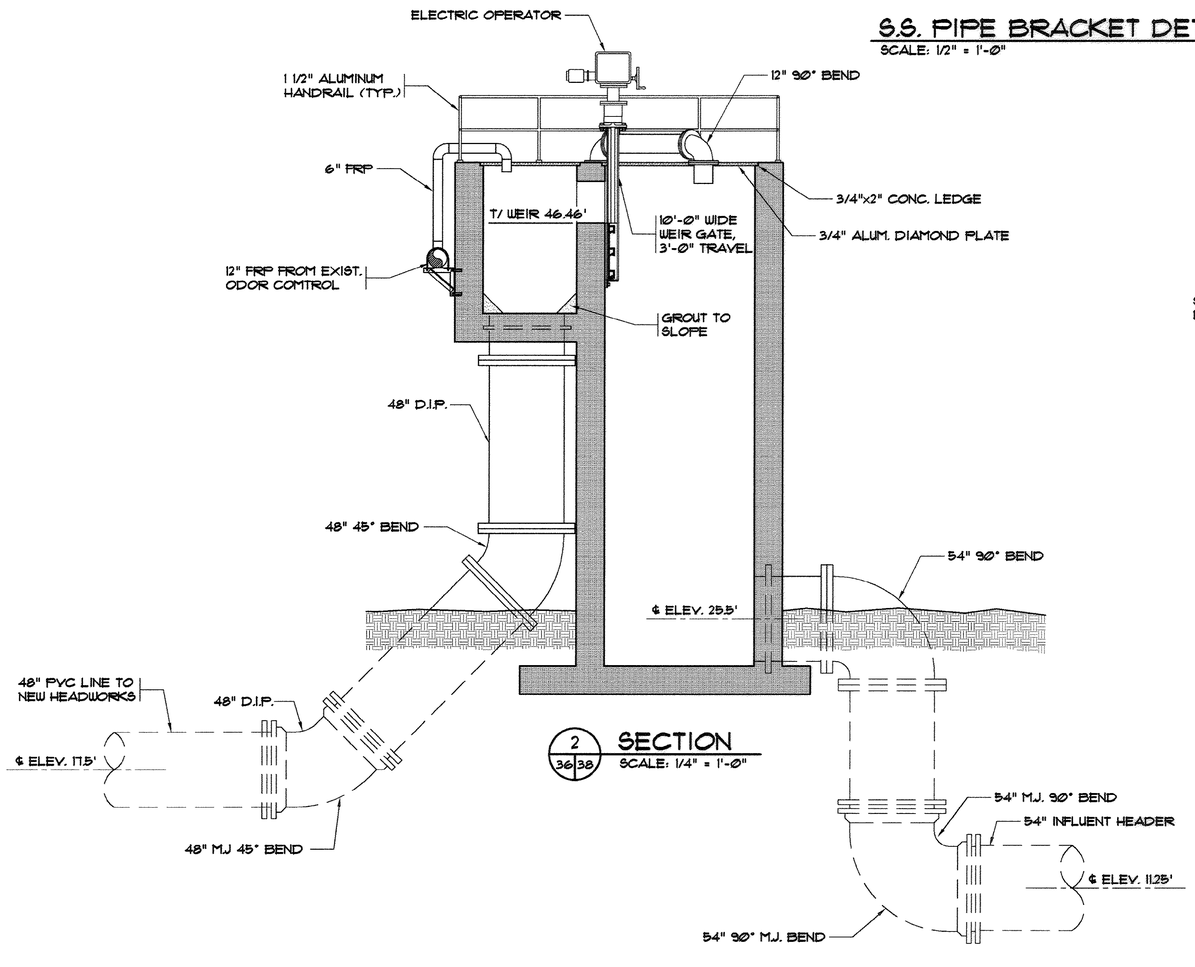
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S.S. PIPE BRACKET DETAIL

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

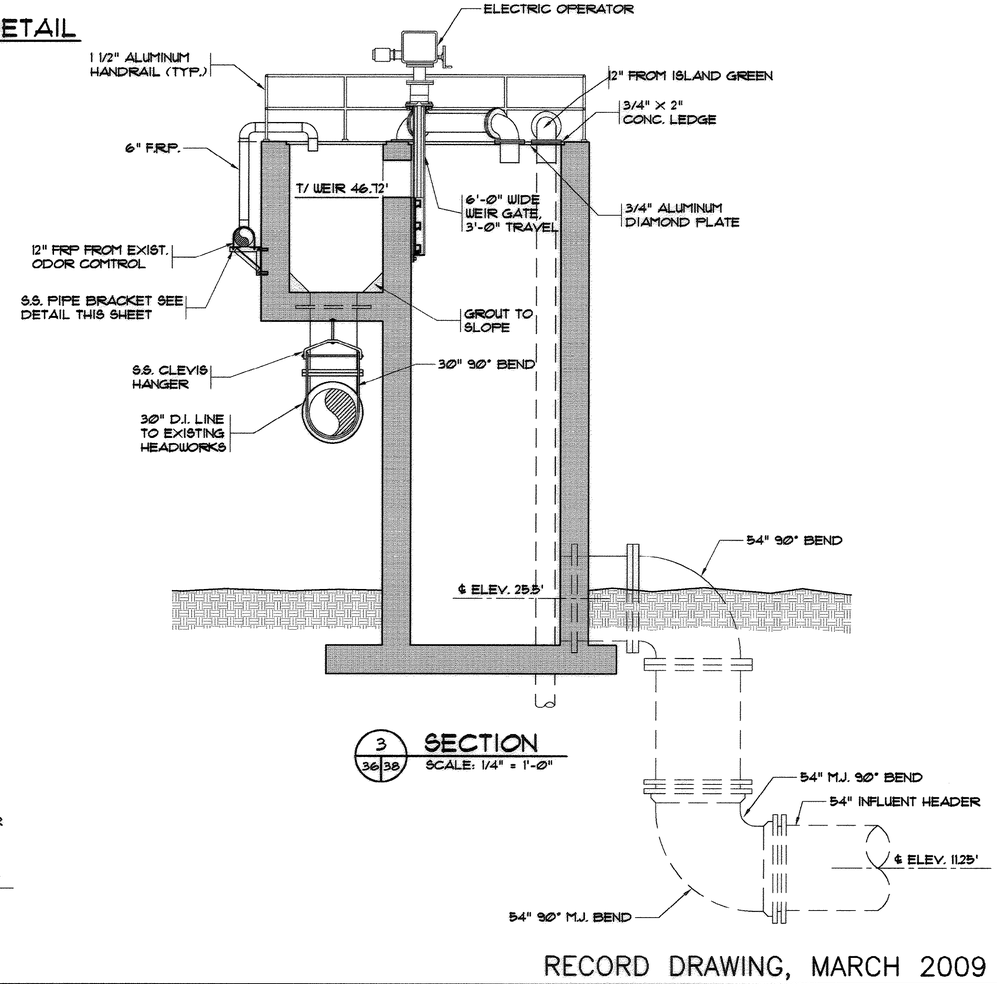
TO NEW HEADWORKS



2 | 36|38 SECTION

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

TO OLD HEADWORKS



3 | 36|38 SECTION

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

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HEADWORKS
SPLITTER BOX
SECTIONS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
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UPDATED: 11/19/03 PLOTTED: 11/07/03

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CORE HOLE IN EXIST. BULK TANKS FOR NEW 2" TRANSFER LINE (TYP. OF 2 LOCATIONS)

EXIST. 3,000 GAL. BULK BLEACH

NEW CONC. PUMP BASE (TYP. OF 2)

NEW TRANSFER PUMP (TYP. OF 2)

EXIST. SCRUBBER #2

NEW 2" SCH 80 PVC BLEACH LINE TO NEW SCRUBBER SYSTEM AT NEW HEADWORKS

EXIST. 1/2" CHEMICAL FEED LINES

EXIST. 6,400 GAL. BULK CAUSTIC

EXIST. 2" FILL LINES

EXIST. SCRUBBER #1

NEW 2" SCH 80 PVC CAUSTIC LINE TO NEW SCRUBBER SYSTEM AT NEW HEADWORKS

NEW 2" SCH 80 PVC 90° BENDS (TYP.)

NEW 2" SCH 80 PVC SUCTION LINE W/ 2" TRUE UNION BALL VALVE & 2" TRUE UNION CHECK VALVE (TYP. OF 2 LOCATIONS)

ATTACH NEW TRANSFER LINES UNDER EXIST. HEADWORKS USING UNI-STRUT @ 8'-0" O.C. MAX.

CUT IN AND WELD NEW 12" F.R.P. TEE

NEW 12" F.R.P. 90° BEND (TYP. OF 2)

S.S. PIPE BRACKETS 8'-0" O.C. MAX.

1 1/2" ALUMINUM HANDRAIL WITH KICKPLATE

EXISTING HEADWORKS

S.S. PIPE BRACKET 8'-0" O.C. MAX (TYP.)

NEW 12"x6" F.R.P. TEE (2) 6" F.R.P. 90° BEND

NEW 12" F.R.P. 90° BEND

NEW 12"x12" F.R.P. TEE

NEW 12" F.R.P. 90° BEND

NEW 12"x6" F.R.P. TEE (2) 6" F.R.P. 90° BEND

NEW 12"x6" F.R.P. TEE W/ 12" F.R.P. PLUG AND 6" F.R.P. PLUG FOR FUTURE

NEW 30" D.I. INFLUENT PIPE

EXISTING 8" FORCEMAIN

EXISTING 12" FORCEMAIN

EXISTING 30" FORCEMAIN

NEW 12" F.R.P.

10'-0" WEIR GATE W/ ELECTRIC OPERATOR

6'-0" WEIR GATE W/ ELECTRIC OPERATOR

NEW 12" F.R.P. 90° BEND

NEW 12" FROM ISLAND GREEN

NEW 8" FROM PUMP STA. #1

54" INFLUENT HEADER

ODOR CONTROL MODIFICATION PLAN

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

1 1/2" ALUMINUM HANDRAIL WITH KICKPLATE

NEW WALKWAY

NEW S.S. PIPE HANGERS 6'-0" O.C. MAX

NEW 12" F.R.P. 90° BEND (TYP. OF 2)

NEW 12" F.R.P. 90° BEND

EXISTING 12" HEADER

1 / 39|39 SECTION

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

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ODOR CONTROL MODIFICATION PLAN

SCHWARTZ WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

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EXIST. 6" D.I. DISCHARGE SLUDGE FORCE MAIN

EXIST. 6" D.I. WASTE ACTIVATED SLUDGE LINE

EXIST. 6" D.I. PIPE SECTION TO BE REMOVED FOR NEW TEE

EXIST. 6" VALVES

EXIST. 6" D.I. SLUDGE LINE

EXIST. 6" D.I. DIGESTER SLUDGE TO TRUCK LOADING STATION OR IRRIGATION

EXIST. METER VAULT

EXIST. 4" DIGESTED SLUDGE MAG. METER

EXIST. 6" PVC SLUDGE

EXIST. 6" WATER

EXIST. 6" D.I. DIGESTED SLUDGE

EXIST. 2" WATER

EXIST. 6" M.J. 45° BEND

1'-6"

25'-0" R

7'-10"

EXIST. 11'-0" ø ENERGY RECOVERY BAFFLE TO REMAIN

EXIST. 9'-0" ø DRAFT TUBE WITH (20) 2" MS AIR DIFFUSER ASSEMBLIES TO BE MODIFIED (SEE SECTION)

EXIST. ACCESS AIR BRIDGE TO REMAIN

1
40 41

EXIST. DRAFT TUBE/AIR BRIDGE SUPPORTS TO REMAIN (TYP. OF 4)

EXISTING 6" D.I. SLUDGE DRAW-OFF LINE TO BE RELOCATED

EXIST. 6" BEND TO BE RELOCATED

NEW STORAGE BASIN
(EXIST. DIGESTER #3)

EXIST.
DIGESTER
BUILDING

1'-6"

25'-0" R

23'-1"

EXIST.
DIGESTER #2

23'-1"

49'-2"

INDICATES PORTIONS TO BE MODIFIED/RELOCATED

GRID

NEW STORAGE BASIN (EXIST. DIGESTER NO. 3) DEMOLITION PLAN

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

RECORD DRAWING, MARCH 2009

NEW STORAGE BASIN
(EXISTING DIGESTER NO. 3)
DEMOLITION PLAN

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
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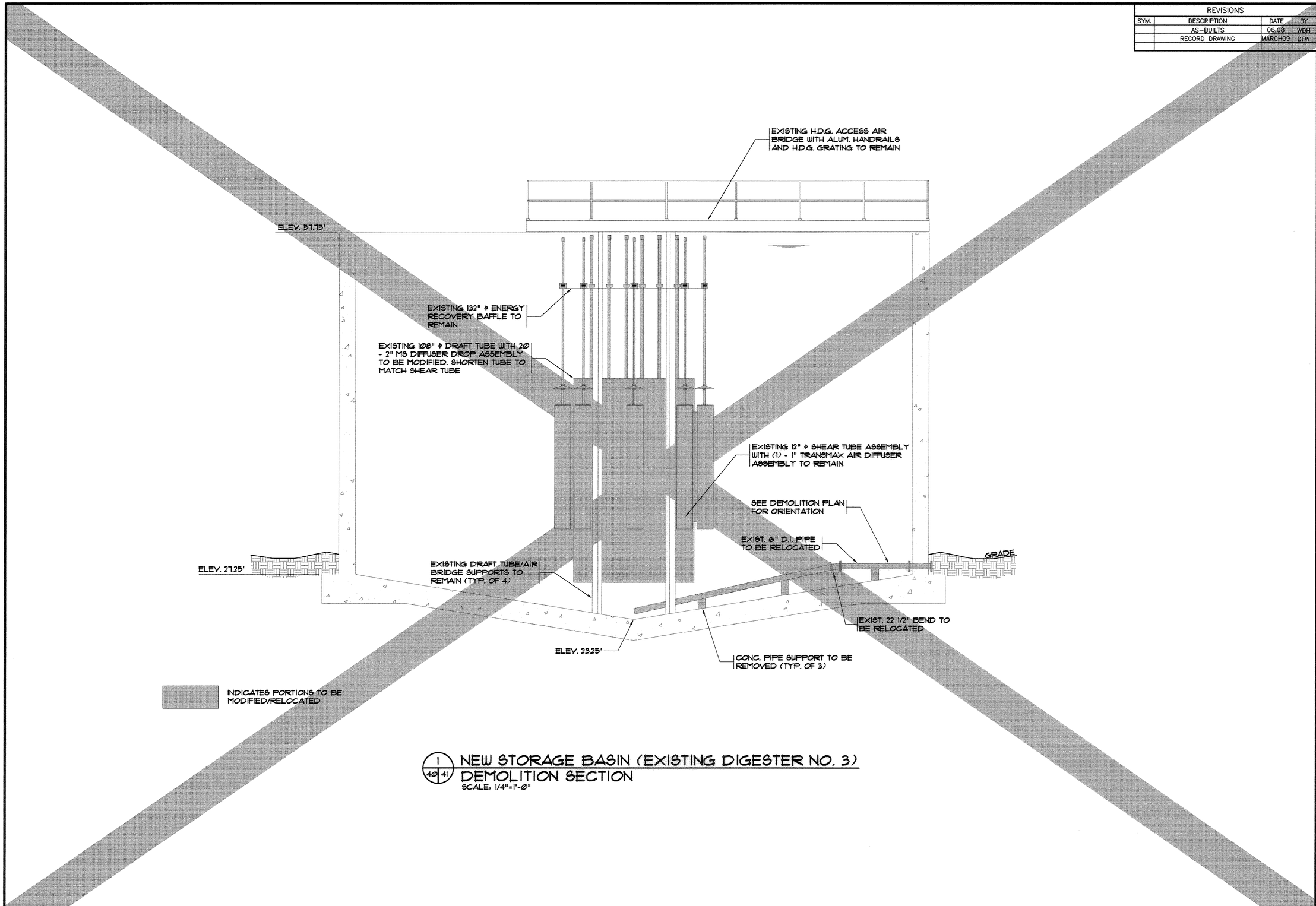
DATE:	JUNE 2008
DESIGNED:	PBW
DRAWN:	JDR
CHECKED:	JWM
SCALE:	AS SHOWN

SHEET NO.
EN-40
OF: _____

07-024-71/101 5

REVISIONS			
SYM.	DESCRIPTION	DATE	BY
	AS-BUILTS	06.08	WDH
	RECORD DRAWING	MARCH09	DFW

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1 / 40|41 NEW STORAGE BASIN (EXISTING DIGESTER NO. 3) DEMOLITION SECTION
SCALE: 1/4"=1'-0"

RECORD DRAWING, MARCH 2009

Hobbs, Upchurch & Associates, P.A.
Consulting Engineers
Myrtle Beach, South Carolina 29577
PHONE: (843) 626-1910 FAX: (843) 626-1745

NEW STORAGE BASIN
(EXISTING DIGESTER NO. 3)
DEMOLITION SECTION

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

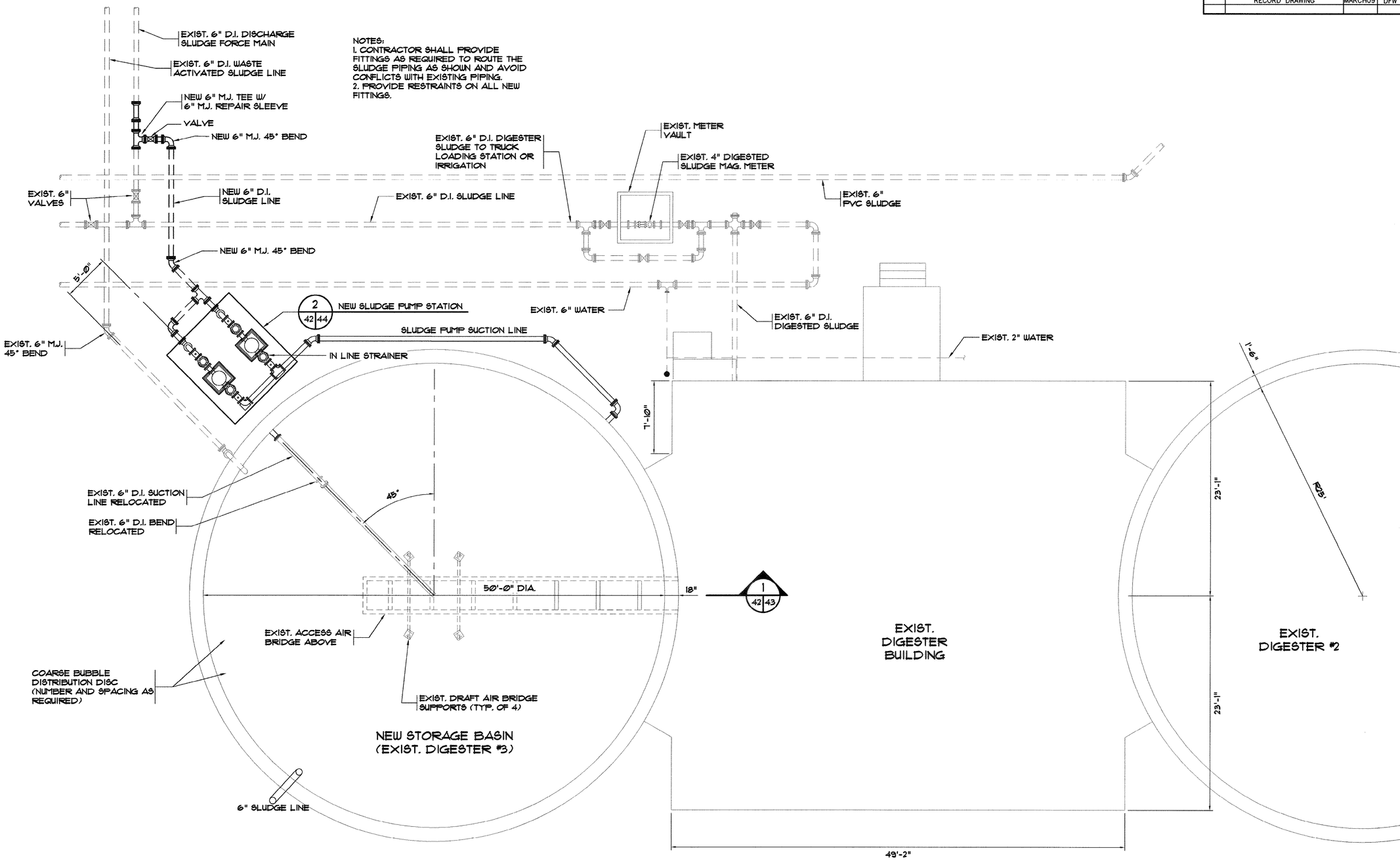
DATE:	JUNE 2008
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SCALE:	AS SHOWN

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EN-41
OF: -

07-024-72/101 5

REVISIONS			
SYM.	DESCRIPTION	DATE	BY
	AS-BUILTS	06.08	WDH
	RECORD DRAWING	MARCH09	DFW

NOTES:
1. CONTRACTOR SHALL PROVIDE FITTINGS AS REQUIRED TO ROUTE THE SLUDGE PIPING AS SHOWN AND AVOID CONFLICTS WITH EXISTING PIPING.
2. PROVIDE RESTRAINTS ON ALL NEW FITTINGS.



N
GRID

NEW STORAGE BASIN LAYOUT (EXISTING DIGESTER #3)

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

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NEW STORAGE BASIN LAYOUT (EXISTING DIGESTER #3)

SCHWARTZ WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

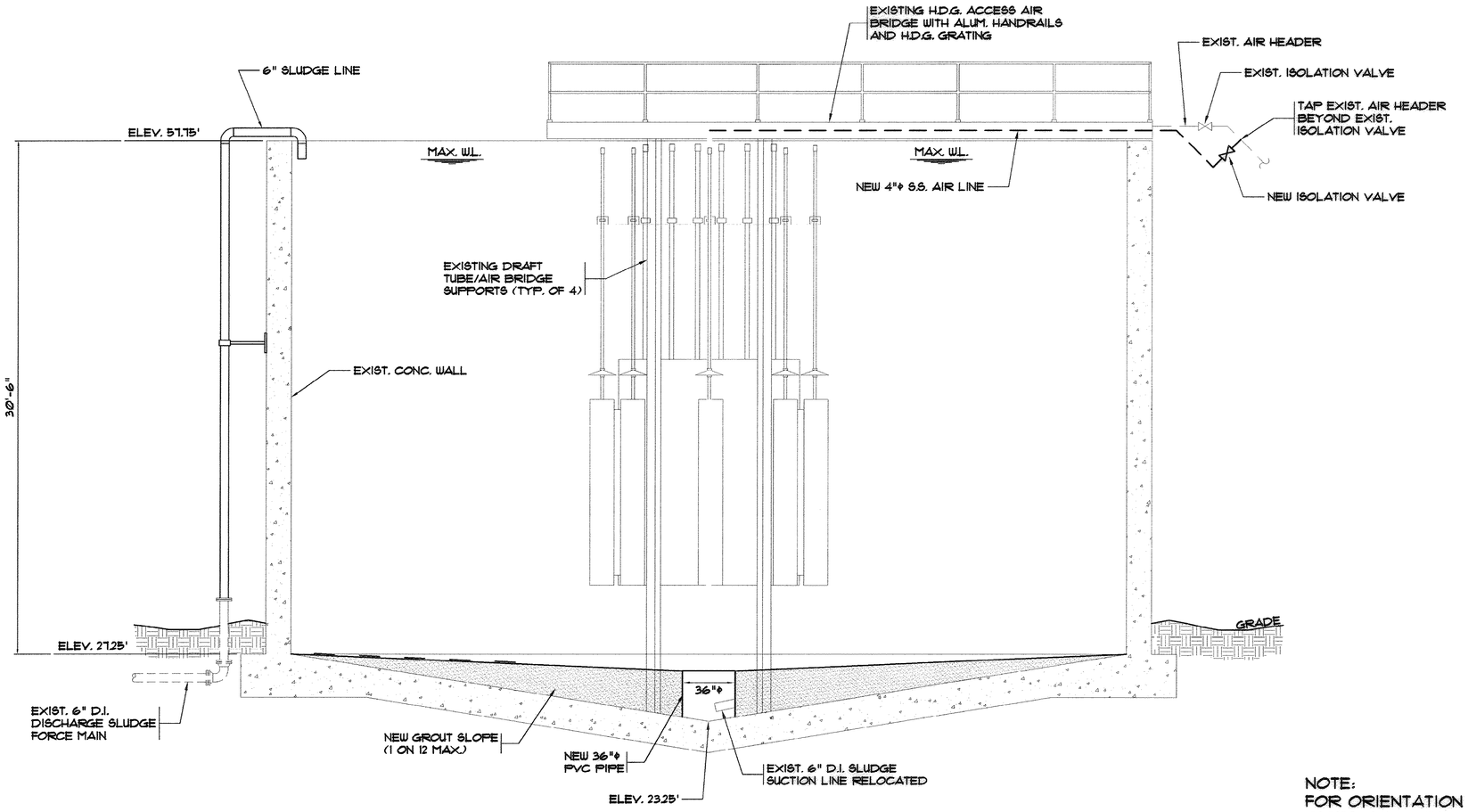
DATE:	JUNE 2008
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SCALE:	AS SHOWN

SHEET NO.
EN-42
OF: _____

07-024-73/101 5

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NOTE:
FOR ORIENTATION OF PIPES AND BRIDGE SEE PLAN VIEW.

1 / 42|43 NEW STORAGE BASIN (EXISTING DIGESTER NO. 3) SECTION

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

RECORD DRAWING, MARCH 2009

Hobbs, Upchurch & Associates, P.A.
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EXISTING DIGESTER #1 SECTION

SCHWARTZ
WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

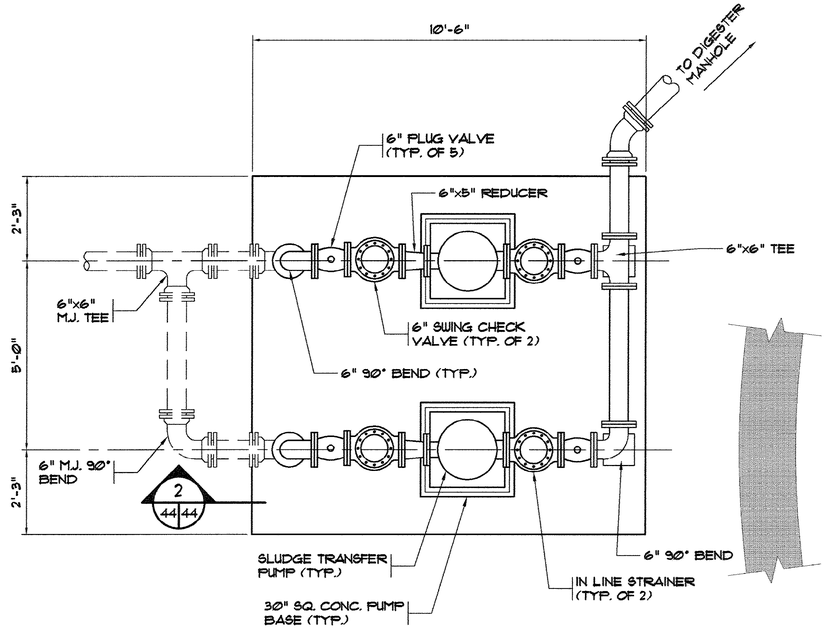
DATE:	JUNE 2008
DESIGNED:	PBW
DRAWN:	JDR
CHECKED:	JWM
SCALE:	AS SHOWN

SHEET NO.
EN-43
OF: _____

07-024-74/101 5

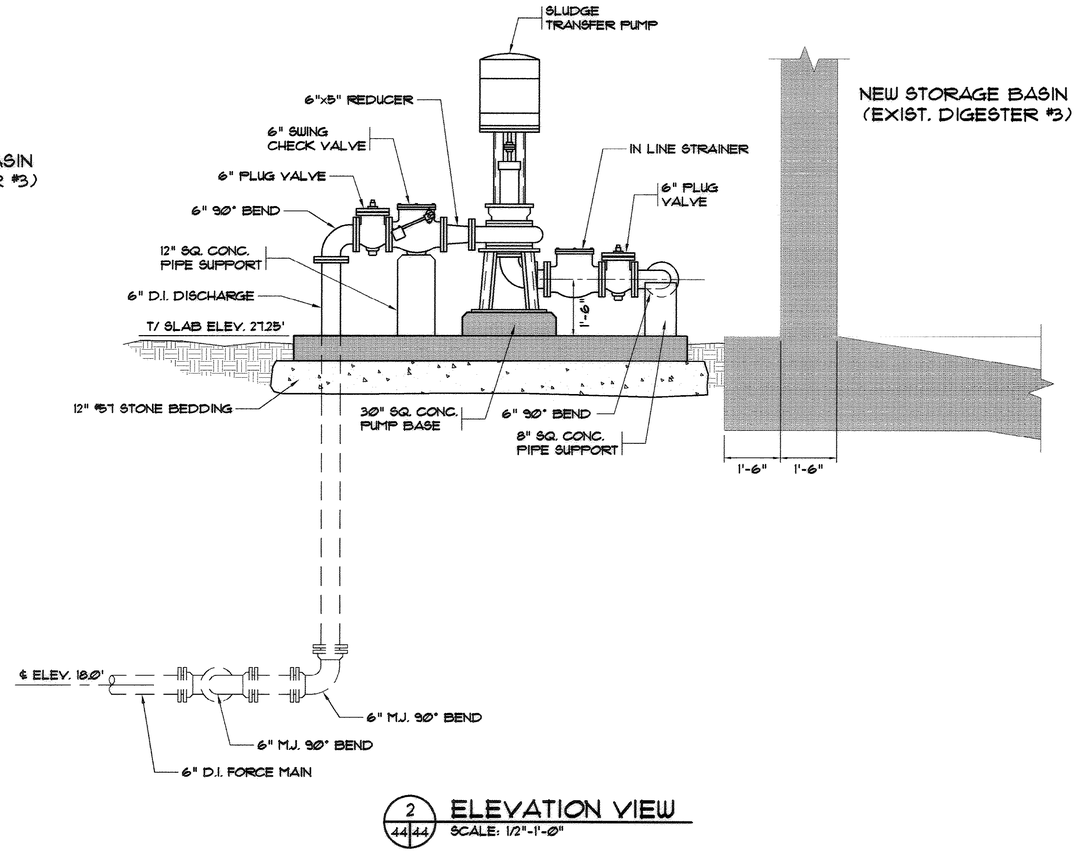
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SYM.	DESCRIPTION	DATE	BY
	AS-BUILTS	06.08	WDH
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NEW STORAGE BASIN (EXIST. DIGESTER #3)

2 / 42|44 SLUDGE PUMP STATION PLAN VIEW
SCALE: 1/2"-1'-0"



NEW STORAGE BASIN (EXIST. DIGESTER #3)

2 / 44|44 ELEVATION VIEW
SCALE: 1/2"-1'-0"

RECORD DRAWING, MARCH 2009

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NEW STORAGE BASIN LAYOUT (EXISTING DIGESTER #3)

SCHWARTZ
WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

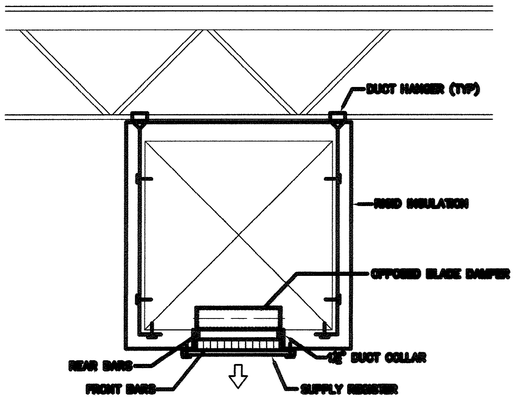
DATE:	JUNE 2008
DESIGNED:	PBW
DRAWN:	JDR
CHECKED:	JWM
SCALE:	AS SHOWN

SHEET NO.
EN-44
OF: _____

07-024-75/101 S

KEYED NOTES

1. INSTALL A/C-1 ON MINIMUM 4"X4"X1" THICK CORK NEOPRENE PADS ON 6" THICK REINFORCED CONCRETE PAD ON GRADE.
2. CONCRETE PAD TO HAVE RUBBED ¾" CHAMFERED EDGES. PAD TO BE MINIMUM 3,000 LB TEST CONCRETE.
3. WEATHERPROOF FLEXIBLE CONNECTION.
4. 1" PVC CONDENSATE DRAIN CONNECTION WITH 3" TRAP.
5. CONSTRUCT DUCTWORK OF TYPE 3003-H14 TEMPERED ALUMINUM SHEETS TO SMACNA STANDARDS. ALL JOINTS AND SEAMS SHALL BE SEALED WITH MASTIC SUCH AS UNITED DUCT SEALER OR HARDCAST IRON GRIP.
6. INSULATE DUCTS WITH 4.25 LB DENSITY RIGID DUCT BOARD WITH FOIL-SKRIM-KRAFT JACKET. SEAL ALL SEAMS AND JOINTS WITH 3" WIDE TAPE NEATLY INSTALLED WITH CLEAR MASTIC. INSTALL 8 OZ. CANVAS LAGGING WITH BF070 WHITE MASTIC OVER THE FSK JACKETING. LOCATE SEAMS IN INCONSPICUOUS PLACES. FURTHER PROTECT EXTERIOR INSULATION OUTDOORS WITH .060 INCH WHITE HYPALON JACKETING WITH LAPPED SEAMS. RIGID INSULATION IS TO BE SECURED WITH STICK PINS OR GRIP NAILS AND WASHERS AT 12" O.C. EACH WAY.
7. FLASH WALL PENETRATIONS (TOP, BOTTOM AND SIDES) WEATHERTIGHT.
8. STEEL ANGLE LINTELS.
9. ALL CONTROL WIRING SHALL BE INSTALLED IN RIGID GALVANIZED STEEL ELECTRICAL CONDUIT. CONDUIT SHALL BE INSTALLED IN THE MANNER AS SPECIFIED IN DIVISION 16.
10. AIR CONDITIONING UNIT SHALL BE MANUFACTURED BY TRANE OR APPROVED EQUAL.
11. GRILLE AND REGISTERS SHALL BE MANUFACTURED BY NAILOR OR APPROVED EQUAL.



4/M-1 SUPPLY REGISTER DETAIL
SCALE 1 1/2" = 1'-0"
1 1/2"= 1'-0" 3" 0 3" 6" 1'

AIR DISTRIBUTION DEVICES SCHEDULE

DESIGNATION	APPLICATION	CFM EACH	TYPE	MATERIAL	OPPOSED BLADE DAMPER	FINISH	SIZE	SELECTED ON
SR	SUPPLY REGISTER	780	4-WAY THROW	304 S/S	YES	#3 SATIN	16"X12"	NAILOR 67DH
RG	RETURN GRILLE	9,060	HORIZONTAL BAR	304 S/S	NO	#3 SATIN	48"X56"	NAILOR 6755H-HD

AIR CONDITIONING UNIT SCHEDULE

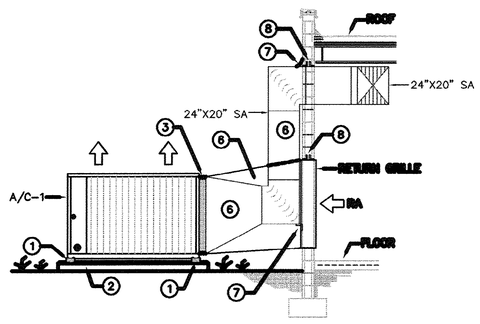
DESIGNATION	SERVES	NOMINAL TONS	CFM	EXT. S.P. IN W.G.	MIN. FAN MOTOR HP	FAN RPM	COOLING EAT °F db/wb	COOLING LAT °F db/wb	MIN. O.A. CFM	HEATING KW	HEATING STAGES	ELECTRICAL 460/3/60 MCA	MOP	COMP RLA 1	COMP RLA 2	EVAP FAN FLA	COND. FANS NO.	COND. FANS FLA	SELECTED ON
A/C-1	ELECTRICAL BUILDING	25	9,360	0.62	7 1/2	862	73.6/61.0	51.3/50.0	300	36	2	68.00	70.0	17.90	17.90	8.60	2	2.90	TRANE TFH300B400

UNIT SPEC NOTES:

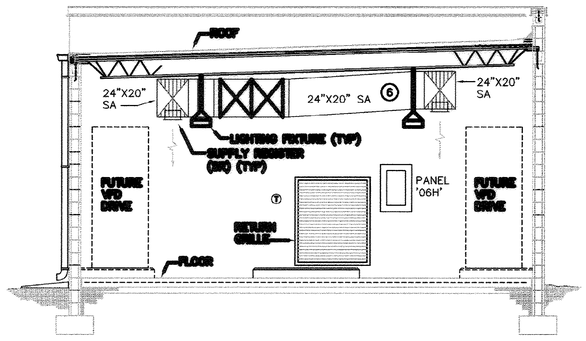
1. PROVIDE TWO INDEPENDENT REFRIGERATION CIRCUITS, SCROLL COMPRESSORS.
2. PROVIDE FIXED MINIMUM OUTSIDE AIR DAMPER, ADJUSTABLE, 300 CFM.
3. PROVIDE EIGHT (8) 20"X25"X2" MERV II FILTERS.
4. PROVIDE SPACE MOUNTED THERMOSTAT WITH SUBBASE. HEAT-OFF-COOL; FAN ON-AUTO, AUTOMATIC CHANGE-OVER.
5. PROVIDE LOW AMBIENT HEAD PRESSURE CONTROL DOWN TO 20°F AMBIENT AIR TEMPERATURE.
6. PROVIDE HOT-GAS BYPASS ON BOTTOM STEP OF REFRIGERATION.
7. COAT EXPOSED PARTS OF A/C UNIT WITH HERESITE. SUITABLE FOR A MARINE ATMOSPHERE APPLICATION.
8. PROVIDE A CONDENSER COIL AIR INTAKE GUARD.
9. PROVIDE UNIT WITH BUILT-IN RETURN AIR DUCT SMOKE DETECTOR POWERED FROM UNIT AND WITH N.O./N.C. AUXILIARY CONTACTS FOR REMOTE ALARM NOTIFICATIONS.

DRAWING LIST

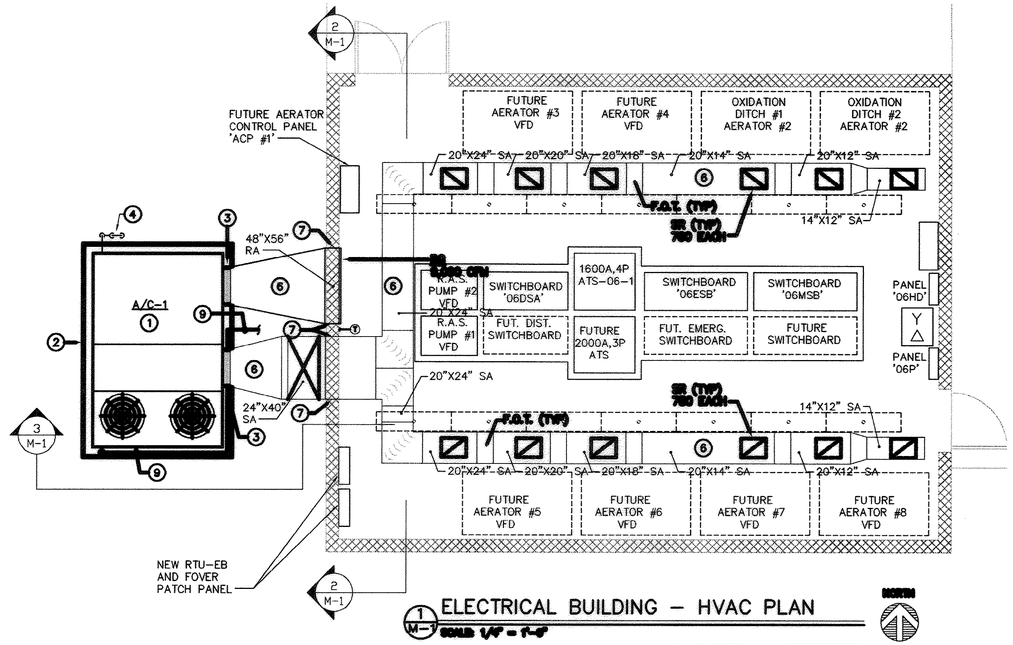
M-1 HVAC PLAN, SECTIONS, DETAIL, SCHEDULES, NOTES, AND DRAWING LIST – ELECTRICAL BUILDING



3/M-1 HVAC SECTION – A/C-1
SCALE 1/4" = 1'-0"
¼" = 1'-0" 2' 0 2' 4' 8'



2/M-1 HVAC SECTION – WEST WALL
SCALE 1/4" = 1'-0"
¼" = 1'-0" 2' 0 2' 4' 8'



1/M-1 ELECTRICAL BUILDING – HVAC PLAN
SCALE 1/4" = 1'-0"
¼" = 1'-0" 2' 0 2' 4' 8'

RECORD DRAWING, MARCH 2009

07-024-76/101

5

REVISIONS			
SYM.	DESCRIPTION	DATE	BY

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HVAC PLAN, SECTIONS, DETAIL, SCHEDULES, NOTES, AND DRAWING LIST - ELECTRICAL BUILDING

SCHWARTZ
WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE:	MAY 2006
DESIGNED:	
DRAWN:	
CHECKED:	
SCALE:	AS SHOWN
SHEET NO.	M-1
OF:	

INSTRUMENT AND CONTROL SYMBOLS

SYMBOL	DESCRIPTION
DOP	DISSOLVED OXYGEN DETECTOR PRIMARY ELEMENT
DO	DISSOLVED OXYGEN INDICATOR TRANSMITTER
FS	FLOAT SWITCH
FIT	FLOW INDICATOR/TRANS.
FE	FLOW INSTRUMENT ELEMENT
PH	PH SENSING ELEMENT
SV	SOLENOID VALVE
TS	OVER TEMPERATURE SWITCH
DPS	DIFFERENTIAL PRESSURE SWITCH
EMA	EFLUENT WEIR MODULATOR ACTUATOR
EWM	EFLUENT WEIR MOTOR. 1HP, 460V, 3ø.
TOPS	TORQUE OPERATED PROTECTIVE SWITCH
WGMO	WEIR AND SLIDE GATE WITH ELECTRICAL OPERATOR
WGO	WEIR GATE OPERATOR

CONTROL PANEL DESIGNATION SCHEDULE

SYMBOL	DESCRIPTION
AEP	AERATOR CONTROL PANEL
GRPC	GRIT REMOVAL CONTROL PANEL
OCSSCP	ODOR CONTROL SCRUBER SYSTEM CONTROL PANEL
SWCCP	SCREEN/WASHER/COMPACTOR CONTROL PANEL
WGCP	WEIR GATES CONTROL PANEL

CONTROL WIRING DIAGRAM SYSTEM SYMBOLS

- M — MAGNETIC STARTER COIL
- OL — OVERLOAD PROTECTION
- NORMALLY OPEN CONTACT OR CONTACTOR
- NORMALLY CLOSED CONTACT OR CONTACTOR
- ON-OFF SWITCH
- R — RED PILOT LIGHT
- G — GREEN PILOT LIGHT
- O / H / A — HAND-OFF-AUTOMATIC SWITCH
- OFF / ON — ON-OFF SWITCH
- TDR — TIME DELAY RELAY
- RT — RUN TIME METER

ELECTRICAL SYMBOL SCHEDULE

SYMBOL	DESCRIPTION
	CONDUIT RUN CONCEALED IN WALL, ABOVE CEILING OR UNDERGROUND TO MAXIMUM EXTENT FEASIBLE. OTHERWISE, RUN EXPOSED AS HIGH AS POSSIBLE PERPENDICULAR AND PARALLEL TO BUILDING SURFACES.
	HOME RUN TO PANEL – WITH PANEL AND CIRCUIT DESIGNATION.
	CONDUIT TURNING UP.
	CONDUIT TURNING DOWN.
	CONDUIT STUB-IN WITH CONNECTION TO EQUIPMENT
EX	EXPLOSION PROOF SEAL FITTING.
J OR J	JUNCTION BOX SIZED PER N.E.C.
J	JUNCTION BOX AND CONNECTION TO EQUIPMENT.
J	JUNCTION BOX SIZED PER N.E.C. WITH FLEXIBLE CONDUIT CONNECTIONS TO LUMINAIRES AS SHOWN, 6 FOOT LENGTH MAXIMUM.
FJ	WATER TIGHT JUNCTION BOX WITH 1-AMP FUSE AND FUSE HOLDER USE TO PROTECT EACH OUTDOOR MOUNTED INSTRUMENT REQUIRING 120 VOLTS POWER. SEE DETAILS ON SHEET E-23.
J WT	GASKETED WATER-TIGHT BOX, CAST METAL TYPE.
	LIGHTING, POWER OR DISTRIBUTION PANELBOARD.
	CONTROL PANEL
	FLUORESCENT LUMINAIRE – DRAWN APPROXIMATELY TO SCALE. SUBSCRIPT WHEN SHOWN INDICATES SWITCH CONTROLLING THE FIXTURE
	CEILING OUTLET – INCANDESCENT OR COMPACT FLUORESCENT, OR HID LUMINAIRE AS SCHEDULED.
	WALL OUTLET – INCANDESCENT OR COMPACT FLUORESCENT, OR HID LUMINAIRE AS SCHEDULED.
	FLUORESCENT STRIP FIXTURE AS SCHEDULED. PROVIDE OUTLET BOX TO FIT CONDITIONS.
	EXIT LIGHT – WALL MOUNTED, SURFACE OR RECESSED AS SCHEDULED WITH DIRECTIONAL ARROWS AS SHOWN ON DRAWINGS.
	POST-TOP OUTDOOR POLE LIGHT FIXTURE – SEE DETAIL ON SHEET E-21.
E	EMERGENCY BATTERY PACK. SEE LUMINAIRE SCHEDULE. MOUNT 12'-0" AFF. OR 1'-0" BELOW SUSPENDED CEILING, WHICH EVER IS LOWER. SEE FIXTURE SCHEDULE.
	STANDARD CONVENIENCE RECEPTACLE – MOUNT 18" UP. NEMA 5-20R DUPLEX.
	STANDARD CONVENIENCE OUTLET – MOUNT 48" FROM FLOOR OR ABOVE BACKSPLASH OR AS OTHERWISE NOTED. NEMA 5-20R, DUPLEX.
EWC	STANDARD CONVENIENCE OUTLET – FOR ELECTRIC WATER COOLER (ELECTRIC DRINKING FOUNTAIN). COORDINATE LOCATION CAREFULLY WITH EQUIPMENT NEMA 5-20R. CUPLEX, WITH GROUND FAULT PROTECTION.
	SPECIAL CONFIGURATION OUTLET – CONFIGURATION AND TYPE AS SCHEDULED.
GF	INDICATES DEVICE TO HAVE GROUND FAULT PROTECTION.
WP	INDICATES DEVICE TO HAVE WEATHERPROOF COVER.
WT	INDICATES DEVICE TO HAVE WATERTIGHT COVER.
Sa	TYPICAL LIGHT SWITCH SUBSCRIPT USED TO INDICATE WHICH FIXTURES ARE CONTROLLED
S	SINGLE POLE SWITCH 20A-120/277V. MOUNT 48" UP FROM TOP OF DEVICE TO FLOOR.
S_3	THREE WAY SWITCH 20A-120/277V. MOUNT 48" UP FROM TOP OF DEVICE TO FLOOR.
S_4	FOUR WAY SWITCH. 20A-120/277V. MOUNT 48" UP A.F.F.
S_{wp}	SWITCH WITH CAST WEATHERPROOF COVER.
200/3	NONFUSIBLE DISCONNECT SWITCH. RATING AS INDICATED, BUT NOT LESS THAN WHAT IS REQUIRED BY MOTOR: I.E. "200" INDICATES 200 AMPERE RATING; "3" INDICATES 3-POLE
	FUSIBLE DISCONNECT SWITCH. PROVIDE FUSES AS REQUIRED BY EQUIPMENT NAMEPLATE OR AS OTHERWISE NOTED.
	COMBINATION MAGNETIC STARTER WITH NONFUSIBLE DISCONNECT.
	COMBINATION MAGNETIC STARTER WITH FUSIBLE DISCONNECT SWITCH. FUSE AS NOTED.
	MAGNETIC STARTER FVNR TYPE, UNLESS OTHERWISE NOTED.
S_m	MANUAL MOTOR STARTER WITH OVERLOAD PROTECTION (UNLESS OTHERWISE NOTED) SIZE TO FIT MOTOR.
	COMBINATION DATA/TELEPHONE OUTLET. PROVIDE 3/4" C. WITH REQUIRED CABLES TO TELECOM ROOM. MOUNT 18" AFF UNLESS OTHERWISE NOTED. PROVIDE ONE VOICE JACK AND ONE DATA JACKS.
W	TELEPHONE OUTLET. MOUNT 52" AFF FOR WALL TELEPHONE. PROVIDE ONE VOICE JACK, OTHERWISE SAME AS "".
△ Y	DRY TYPE TRANSFORMER – 480-120/208V. 3-PHASE
	DRY TYPE TRANSFORMER – 480-120/240V. 1-PHASE
	PHOTOELECTRIC SMOKE FIRE DETECTOR WITH BUILT-IN AUDIOVISUAL ALARM. 120V, 60Hz. PROVIDE NO/NC AUXILIARY CONTROLS FOR REMOTE NOTIFICATION AND CONNECT TO DESIGNATED RTU.

SYMBOL	DESCRIPTION
VFD	VARIABLE FREQUENCY DRIVE TYPE MOTOR CONTROLLER WITH POWER DISCONNECT SWITCH.
	115 VOLTS, 1 PHASE MOTOR, AS APPLICABLE.
5	460 VOLT, 3 PHASE MOTOR – NUMERAL INDICATES HORSEPOWER.
	MOLDED CASE OR INSULATED CASE CIRCUIT BREAKER
HO	ON-OFF SWITCH STATION – MAINTAINED CONTACT TYPE – WIRE WITH 2 #14, 1 #14 G,1/2"C BACK TO MOTOR STARTER. PROVIDE PHENOLIC NAMEPLATE IDENTIFYING MOTOR. NEMA 4X, UNLESS OTHERWISE NOTED.
E STOP	EMERGENCY STOP PUSHBUTTON STATION, NEMA 4X, MAINTAINED CONTACT.
THH-	TYPICAL SIGNAL (TELECOM) HANDHOLE.
PHH-	TYPICAL POWER HANDHOLE.
A	AMPERE
AFF	ABOVE FINISHED FLOOR
C	CONDUIT
CC	CONTROL CABLE –#14 AWG THWN – SEE DETAILS ON SHEET E-23.
EUH	ELECTRIC UNIT HEATER
EWH	ELECTRIC WALL HEATER
F	FUSE
FLA	FULL LOAD AMPERES
FO-12	FIBER OPTIC CABLE – 12 STRAND 62.5/125 UM-MULTIMODE OUTDOOR RATED CABLE IN INNERDUCT.
FPN	FUSE PER EQUIPMENT NAMEPLATE REQUIREMENTS.
FPM	FUSE PER MANUFACTURERS RECOMMENDATIONS
FVNR	FULL VOLTAGE NON-REVERSIBLE MAGNETIC STARTER.
FW	FINISHED WATER
G	GROUND
GC	GENERAL CONTRACTOR
HPS	HIGH PRESSURE SODIUM
H-O-A	HAND-OFF-AUTOMATIC SWITCH
LTG	LIGHTING
MCA	MINIMUM CIRCUIT AMPERES
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MH	METAL HALIDE
MOPA	MAXIMUM OVERCURRENT PROTECTION IN AMPERES (SAME FOR "MOCP")
N	NEUTRAL
N.O.	NORMALLY OPEN CONTACT
N.C.	NORMALLY CLOSED CONTACT
P	POLE
REC	RECEPTACLE
RW	RAW WATER
SC	INDICATES SHIELDED CABLE: TWO CONDUCTOR, 16 AWG, OVERALL SHIELD. REFER TO SPECIFICATIONS FOR MORE REQUIREMENTS. SEE DETAILS ON SHEET E-23.
S.O.	SPACE WITH BUS PROVISION FOR FUTURE BREAKER.
SPP	SINGLE PHASE PROTECTION SYSTEM.
S.S.	STAINLESS STEEL
UG	UNDERGROUND
VFD	VARIABLE FREQUENCY DRIVE MOTOR CONTROLLER
WP	WEATHERPROOF
WT	WATER TIGHT
WTP	WATER TREATMENT PLANT
GR	GROUND ROD, 10'-0" LONG, 3/4" DIAMETER STAINLESS STEEL. BURY VERTICALLY IN GROUND 30" BELOW GRADE. PROVIDE EXOTHERMIC CONNECTION TO GROUND WIRE CONDUCTOR.
G	#1/0 THWN OR XHHW TINNED STRANDED COPPER CONDUCTOR. INSTALL APPROXIMATELY 30" BELOW GRADE AND CONNECT TO GROUND RODS.
	INDICATES CONNECTION TO GROUNDING LOOP. ALL CONNECTIONS TO BE EXOTHERMIC TYPE.
DS	DOOR POSITION MONITORING MAGNETIC SWITCH WITH AUXILIARY CONTACTS FOR DOOR MONITORING. CONNECT TO DESIGNATED RTU.
TVSS	TRANSIENT VOLTAGE SUPPRESSOR SYSTEM. REFER TO SECTION 16428.

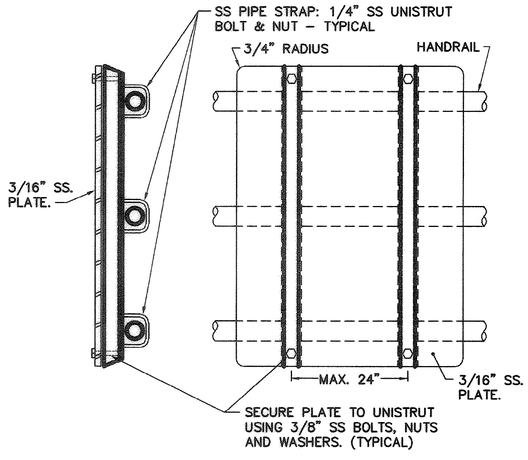
REVISIONS			
SYM.	DESCRIPTION	DATE	BY

LIST OF DRAWINGS

E-1 ELECTRICAL SYMBOLS
E-2 ELECTRICAL SITE PLAN
E-3 SITE CIRCUIT SCHEDULE AND DETAILS
E-4 EXISTING POWER RISER DIAGRAM/DEMOLITION
E-5 NEW ONE-LINE POWER RISER DIAGRAM
E-6 NEW ELECTRICAL BUILDING EQUIPMENT ELEVATIONS AND SCHEDULES
E-7 NEW ELECTRICAL EQUIPMENT PLANS AT EXISTING SLUDGE TREATMENT BUILDING
E-8 HEADWORKS UPPER ELECTRICAL PLAN
E-9 HEADWORKS LOWER ELECTRICAL PLAN
E-10 OXIDATION DITCH ELECTRICAL PLAN
E-11 WIRING DIAGRAM AND DETAILS
E-12 CLARIFIER ELECTRICAL PLAN
E-13 SLUDGE DRAW-OFF PUMPS ELECTRICAL PLAN
E-14 ELECTRICAL BUILDING SITE PLAN
E-15 NEW ELECTRICAL BUILDING PLAN AND DETAILS
E-16 PARTIAL SITE PLAN – EFFLUENT PUMP STATION PLAN
E-17 PUMP STATION PLANS AND DETAILS
E-18 ENGINE GENERATOR SET DETAILS
E-19 ENGINE GENERATOR SET CONCRETE PAD DETAIL
E-20 DUCT BANK SECTIONS AND DETAILS
E-21 LIGHTING FIXTURE SCHEDULE AND DETAILS
E-22 ELECTRICAL EQUIPMENT SCHEDULES AND DIAGRAMS
E-23 MISCELLANEOUS DETAILS
E-24 NEW HEADWORKS SPLITTER BOX
E-25 NEW METER VAULT – ELECTRICAL PLANS

GENERAL NOTES

1. ELECTRICAL CONTRACTOR SHALL COORDINATE THE LOCATION, EXACT CONFIGURATION AND REQUIREMENTS OF INSTRUMENTS AND EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS PRIOR TO RUNNING ANY WIRING.
2. ALL CIRCUITS RATED 115 VOLTS OR HIGHER SHALL BE PROVIDED WITH SEPARATE EQUIPMENT GROUNDING CONDUCTORS BONDED TO ALL METAL ENCLOSURES, METALLIC BOXES AND GROUNDING RODS ASSOCIATED WITH THE CIRCUIT.
3. REFER TO SECTION 16111 FOR TYPE OF CONDUIT REQUIRED.
4. ALL WALL MOUNTED OUTLET BOXES FOR SWITCHES, RECEPTACLES, LIGHT FIXTURES, OR OTHER APPLICATIONS SHALL BE FLUSH MOUNTED WITH WALL AND FED WITH CONDUIT CONCEALED IN WALL, EXCEPT THAT BOXES SHALL BE SURFACE MOUNTED ON SHEET METAL WALLS.
5. ALL EXTERIOR SUPPORT METAL SHALL BE STAINLESS STEEL.
6. ALL WORK SHALL CONFORM TO NEC 2005, IBC 2003 WITH SOUTH CAROLINA AMENDMENTS AND TO NFPA STANDARD 820 FIRE PROTECTION IN WASTEWATER COLLECTION FACILITIES.



TYPICAL
SWITCH, CONTROL STATION or OUTLET BOX MOUNTING PLATE AT HANDRAIL

1 E1 E1 NOT TO SCALE

NOTES:
1. EXACT SIZE TO FIT REQUIREMENTS.
2. SUPPORT EQUIPMENT TO PLATE UTILIZING SS BOLTS, WASHERS AND NUTS.

RECORD DRAWING, MARCH 2009

07-024-77/101

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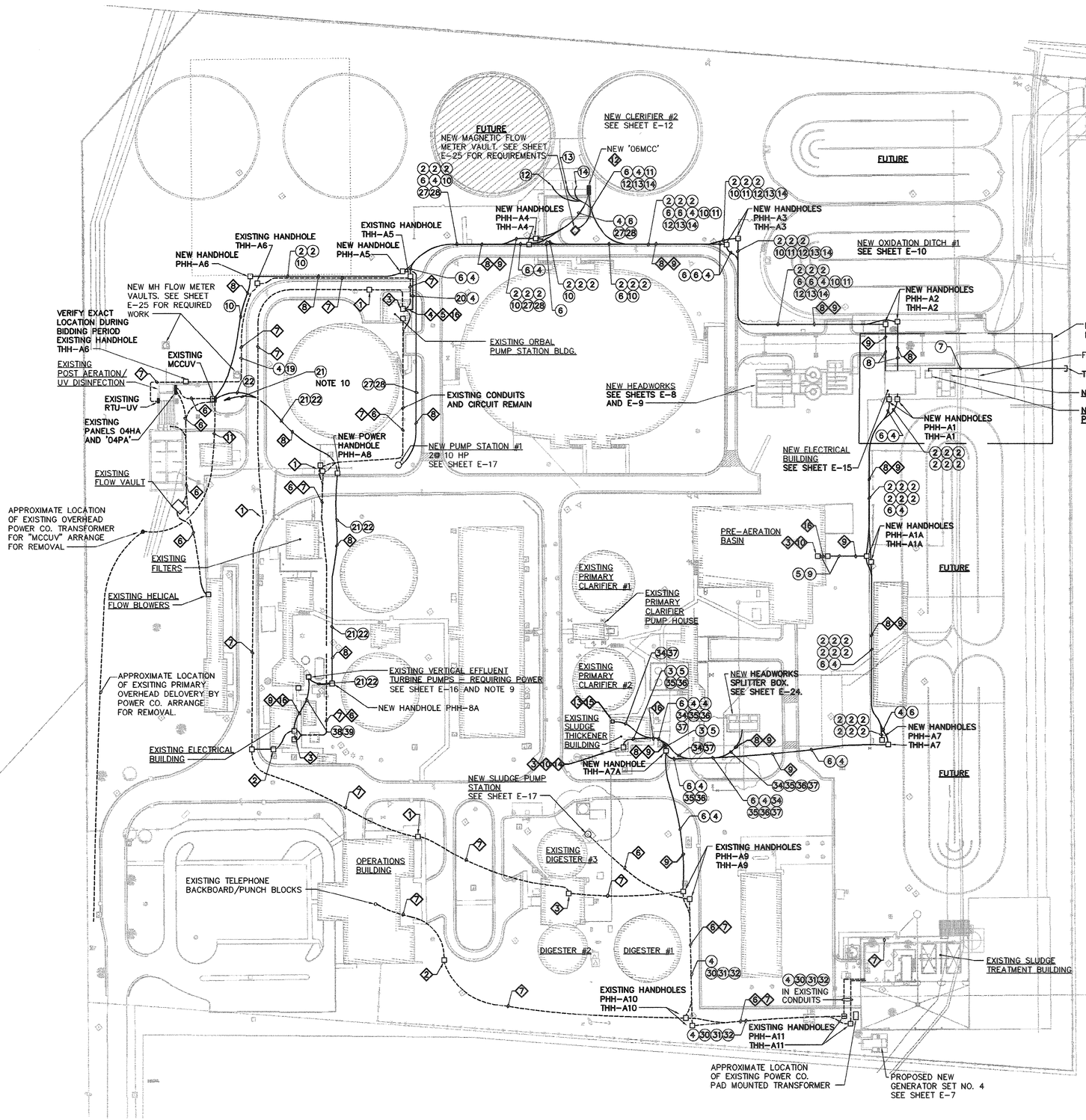
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ELECTRICAL SYMBOLS

SCHWARTZ
WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE:	MAY 2006
DESIGNED:	
DRAWN:	
CHECKED:	
SCALE:	AS SHOWN
SHEET NO.	E-1
OF:	

REVISIONS			
SYM.	DESCRIPTION	DATE	BY



LEGEND

- PHH□ — POWER HANDHOLE
- THH□ — TELECOM HANDHOLE
- ----- — DASHED LINES INDICATE EXISTING UNDERGROUND ELECTRICAL CIRCUITS/CONDUIT.
- ——— — SOLID LINES INDICATE NEW UNDERGROUND ELECTRICAL CIRCUITS/CONDUIT ENCASED IN CONCRETE AS DUCTBANK CONFIGURATION.
- ○ — INDICATES MAJOR SITE CIRCUIT DESIGNATION. SEE SHEET E-3 FOR SCHEDULE.
- ◇ — INDICATES KEYED NOTE. SEE SCHEDULE ON THIS SHEET.

ELECTRICAL SITE PLAN

NORTH

SCALE 1" = 60'-0"

NOTES:
1. ALL WORK SHOWN IS NEW EXCEPT AS OTHERWISE NOTED.
2. BEFORE RUNNING ANY CONDUIT COMMISSION A BELOW-GRADE PIPING/CONDUIT INVESTIGATION BY AN OUTFIT SPECIALIZED IN LOCATION UNDERGROUND UTILITIES AND IDENTIFY EXACT LOCATION OF BURIED UTILITIES.
3. REFER TO SHEETS G-13 THRU G-17 AND ALL "EN" SHEETS FOR INFORMATION ON EXISTING AND NEW UTILITIES.
4. DIG BY HAND TO IDENTIFY EXACT LOCATION OF CONDUITS THAT ARE TO BE INTERCEPTED OR EXTENDED. DIG BY HAND ALSO IN AREAS CONGESTED WITH PIPING, LIKE NEAR EXISTING SECONDARY CLARIFIERS.
5. ALL NEW POWER AND TELECOM CONDUITS SHOWN ON THIS SHEET SHALL BE ENCASED IN DUCTBANK CONFIGURATION WITH 3" OF CONCRETE ALL AROUND.
6. REFER TO SHEET E-3 FOR KEYED NOTES AND ELECTRICAL CIRCUIT SCHEDULE.
7. EACH EMPTY CONDUIT OR INNERDUCT SHALL BE PROVIDED WITH NYLON PULL CORD.
8. NOTICE THAT NOT ALL REQUIRED CIRCUITS AR SHOWN ON THIS PLAN. REFER TO REST OF PLANS FOR REQUIRED CIRCUITS NOT SHOWN HERE.
9. PROVIDE UNDER THIS CONTRACT STARTERS, POWER WIRING AND CONTROL WIRING FOR EXISTING 30 HP VERTICAL TURBINE PUMPS AND HYDRONEUMATIC TANK.
10. CONNECT CIRCUIT "(21)" TO EXISTING PANEL "04PA", VERIFY DURING BID PERIOD EXACT LOCATION OF THIS EQUIPMENT.

KEYED NOTES

1. EXISTING HANDHOLE
2. EXISTING PULL BOX
3. EXISTING RTU (APPROXIMATE LOCATION)
4. EXISTING POWER EQUIPMENT
5. EXISTING FIBER PATCH PANEL ADJACENT TO EXISTING RTU.
6. EXISTING POWER DUCTBANK OR UNDERGROUND CONDUIT FOR POWER.
7. EXISTING SIGNAL DUCTBANK OR UNDERGROUND CONDUIT FOR LOW VOLTAGE APPLICATION.
8. NEW POWER DUCTBANK OR UNDERBROUND CONDUIT FOR POWER. REFER TO "○" AND SCHEDULE ON E-3 FOR SPECIFIC INFORMATION.
9. NEW SIGNAL DUCTBANK OR UNDERGROUND CONDUIT FOR LOW VOLTAGE APPLICATION. REFER TO "○" AND SCHEDULE ON E-3 FOR SPECIFIC INFORMATION.
10. PROVIDE NEW FIBER PATCH PANEL ADJACENT TO EXISTING RTU.
11. APPROXIMATE ROUTING OF EXISTING TEMPORARY 480/277V SERVICE TO "MCCUV" - REMOVE. UPON CONNECTION OF NEW FEED OT 'MCCUV".
12. PROVIDE NEW FIBER PATCH PANEL ADJACENT TO RTU-06A WITHIN SECTION G OF NEW 'MCC06'.
13. PROVIDE NEW 30A, 3P CIRCUIT BREAKER ON EXISTING SPACES 37,39,41 IN EXISTING SQUARE D 480/3 PANELBOARD WITHIN EXISTING SLUDGE THICKENER BUILDING TO FEED NEW WEIR GATES AT NEW HEADWORKS SPLITTER BOX. CONNECT TO NEW CIRCUIT #"(34)".
14. CONNECT SIGNALS FROM NEW HEADWORKS SPLITTER BOX TO EXISTING RTU IN SLUDGE THICKENING BUILDING.
15. CONNECT NEW RECEPTACLE CIRCUIT FROM NEW HEADWORKS SPLITTER BOX TO EXISTING SQUIRE D 208/120V PANEL IN SLUDGE THICKNER BUILDING.
16. ACCOMPLISH PENETRATION INTO EXISTING BUILDING BY CORE-DRILLING THROUGH EXTERIOR WALL AS HIGH AS POSSIBLE. WATERPROOF PENETRATION UTILIZING "LINK-SEAL" MODEL 'C' WATER SEALING PENETRATION METHOD, OR EQUIVALENT METHOD.

GENERAL NOTES

A. BIDDERS SHALL VISIT PROJECT SITE PRIOR TO BIDDING AND SHALL VERIFY LOCATION OF ALL EXISTING ITEMS AND EXTENT AND CONFIGURATION OF EXISTING PROVISIONS FOR FUTURE WORK THAT ARE RELATED TO WORK UNDER THIS CONTRACT AND SHALL INCLUDE IN THE BID ALL COST REQUIRED TO ACCOMPLISH THE WORK BASED ON THE VERIFIED EXISTING CONDITIONS.

B. REFER TO 2/E-2/E-11 FOR DIAGRAM OF NEW FIBER OPTICS CABLES AND PATCH PANELS.

RECORD DRAWING, MARCH 2009

07-024-78/101 5

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ELECTRICAL SITE PLAN

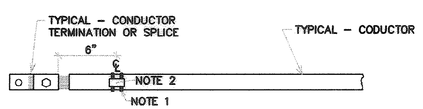
SCHWARTZ WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE:	MAY 2006
DESIGNED:	
DRAWN:	
CHECKED:	
SCALE:	AS SHOWN
SHEET NO.	E-2
OF:	

SCHEDULE OF NEW MAJOR SITE CIRCUITS (REFER TO SHEET E-2)

NOTE: ALL CONDUITS ON THIS SCHEDULE TO BE RUN IN CONCRETE ENCASED DUCTBANK CONFIGURATION. SEE DETAILS ON SHEET E-20 FOR TYPICAL REQUIREMENTS.

DESIGNATION	CONDUIT	WIRE + CABLE	CIRCUIT AMPS	VOLTS/PHASE	ORIGIN	DESTINATION	REMARKS
①	2@6"C	PULL CORD	–	HIGH VOLTAGE	PAD MOUNTED TRANSFORMER	REFER TO SITE PLAN E-2	FOR POWER CO. PRIMARY CABLES. COORDINATE WITH POWER CO. PRIOR TO RUNNING CONDUIT.
②	4"C POWER CONDUIT	PULL CORD	–	–	–	–	SPARE CONDUIT (QUANTITY AS INDICATED BY SYMBOL ON SITE PLAN)
③	2@2"C TELECOM CONDUIT	ONE FO-12	–	–	NEW FIBER PATCH PANEL IN SLUDGE THICKENER BUILDING	NEW FIBER PATCH PANEL AT THICKENER BUILDING	PROVIDE PULL CORD IN SPARE CONDUIT.
④	–	ONE FO-12	–	–	VARIOUS	–	RUN IN INNERDUCT WITHIN UNDERGROUND TELECOM CONDUIT. USE NEW 2-INCH CONDUIT WHEN RUNNING THRU BUILDING.
⑤	2@2"C TELECOM CONDUIT	ONE FO-12	–	–	NEW FIBER PATCH PANEL IN SLUDGE TREAT. BUILDING	NEW FIBER PATCH PANEL AT PRE-AERATION BASIN	PROVIDE PULL CORD IN SPARE CONDUIT.
⑥	2@4"C TELECOM CONDUITS	SEE OTHER DESIGNATIONS	–	–	–	–	ONE CONDUIT TO HAVE THREE 1 1/4-INCH INNERDUCTS WITH PULL CORDS
⑦	2@6"C	–	–	–	NEW PAD MT'D TRANSFORMER	AS SHOWN	CONDUIT FOR POWER CO. H.V. CABLES
⑧	VARIOUS CONDUITS	–	–	–	–	–	SEE SHEETS E-14 AND E-15
⑨	2@2"C TELECOM CONDUIT	ONE FO-12	–	–	NEW FIBER PATCH PANEL AT PRE-AERATION BASIN	NEW FIBER PATCH PANEL IN NEW ELECT. BUILDING	PROVIDE PULL CORD IN SPARE CONDUIT
⑩	2@4"C	3 -250 MCM, 1 #3/0 N, 1 #1/0 G, PER CONDUIT IN PARALLEL	400A	480/277V/3	06DSA	EXISTING MCCUV	REMOVE EXISTING SERVICE AT MCCUV AND CONNECT NEW FEEDER. VERIFY EXACT COCATION OF MCCUV PRIOR TO BIDDING PROJECT.
⑪	4"C	3-250 MCM, 1 #4G	400A	480/3	06DSA	NEW 06MCC	– –
⑫	2"C	3 #1,1 #4 G,	125A	480/3	NEW R.A.S. #1 PUMP VFD	NEW R.A.S. #2 PUMP	
	1 1/4"C	8 #12,1 #12 G	–	120/1			
⑬	2"C	3 #1,1 #4 G,	125A	480/3	NEW R.A.S. #2 PUMP VFD	NEW R.A.S. #2 PUMP	
	1 1/4"C	8 #12,1 #12 G	–	120/1			
⑭	2"	–	–	–	LOCATION OF FUT. R.A.S. #3 PUMP VFD	LOCATION OF FUT. R.A.S. #3 PUMP	
	1"C	–	–	–			
⑳	2@2" TELECOM CIRCUIT	SEE REMARKS	–	–	THH-A5	RTU AT ORBAL PUMP STATION	ONE CONDUIT TO CONTAIN "④" THE OTHER CONDUIT IS SPARE WITH PULL CORD
㉑	4"C	3 #1/0,1 #6 G	125A	480/3	VERTICAL EFF. PUMPS #1 & #2	EXISTING MCCUV	PROVIDE NEW 125/3 CIRCUIT BREAKER IN "MCCUV"
㉒	1 1/4"C	4 #8, 1 #8 G	2-20A	115V	REC. AT NEW EFF. PUMPS AND HYDRO-THERMATIC TANK CONTROL POWER	EXISTING PANEL 04PA-9,11	USE AVAILABLE SPARE CIRCUIT BREAKERS AT UV TREATMENT. VERIFY LOCATION OF PANEL PRIOR TO BIDDING PROJECT.
㉗	2"C	3 #4, 1 #6G	60A	480/3	NEW PUMP STATION #1	NEW 'MCC06'	–
㉘	1 1/4"C	8#14, 1 #14G	–	–	NEW PUMP STATION #1	NEW RTU-06A	–
㉚	1 1/4"C	3 #8, 6 #12, 1 #8 G	25A	480/3	NEW SLUDGE PUMP #1	EXISTING MCCSB-2K	EXISTING CONDUIT & WIRING
㉛	1 1/4"C	3 #8, 6 #12, 1 #8 G	25A	480/3	NEW SLUDGE PUMP #2	EXISTING MCCSB-2P	EXISTING CONDUIT & WIRING
㉜	1"C	2 #8, 1 #10 G	20A	120V	REC. AT SLUDGE PUMP STATION	EXISTING 04PSB	EXISTING CONDUIT & WIRING
㉝	2" SPARE POWER CONDUIT	PULL CORD	–	–	PHH-A9	MCCSB	EXISTING CONDUIT
㉞	1 1/4"C	3 #10, 1 #10G	30A	480/3	EXISTING 480/3 SQUARE D PANEL IN SLUDGE THICKENER BLDG.	NEW HEADWORKS SPLITTER BOX	–
㉟	1 1/4"C	TWO SC & TWO SC SPARE	–	–	EXISTING RTU IN SLUDGE THICKENER BLDG.	NEW GATE OPERATORS AT HEADWORKS SPLITTER BOX	–
㊱	1 1/4"C	18 #14	–	–	EXISTING RTU IN SLUDGE THICKENER BLDG.	NEW GATE OPERATORS AT HEADWORKS SPLITTER BOX	–
㊲	1 1/4"C	2 #8, 1 #8G	20A	120V	EXISTING 208/120V PANEL IN SLUDGE THICKENER BLDG.	REC. AT NEW HEADWORKS SPLITTER BOX.	–
㊳	1"C	TWO SC CABLES	–	–	HYDROPNEUMATIC TANK CONTROL PANEL	RTU AT EXSITING ELECTRICAL BUILDING.	PROVIDE WATER TIGHT PULL BOXES AS REQUIRED TO LIMIT EACH CABLE PULL TO TWO 90-DEGREE BENDS OR EQUIVALENT CONNECT AS DIRECTED.
㊴	1"C	12 #14, 1 #14G	–	120V	HYDROPNEUMATIC TANK CONTROL PANEL	RTU AT EXSITING ELECTRICAL BUILDING.	CONNECT AS DIRECTED. LEAVE IDENTIFIED AND TAPED AT EACH END ANY CONDUCTOR NOT USED AT THIS TIME.



② TYPICAL DETAIL OF IDENTIFICATION OF CONDUCTORS

NOT TO SCALE

NOTES:

1. SELF LOCKING TY-RAP TIE PLACED ON CONDUCTOR AT A LOCATION LEGIBLE FROM THE OPENING OF THE ENCLOSURE.
2. MARK IDENTIFICATION USING T & B #WT163M-3 OR EQUAL RED PERMINENT MARKING PEN, EXCEPT USE PHENOLIC NAMEPLATES IN HANDHOLES.

RECORD DRAWING, MARCH 2009

07-024-79/101 5

REVISIONS

SYM.	DESCRIPTION	DATE	BY

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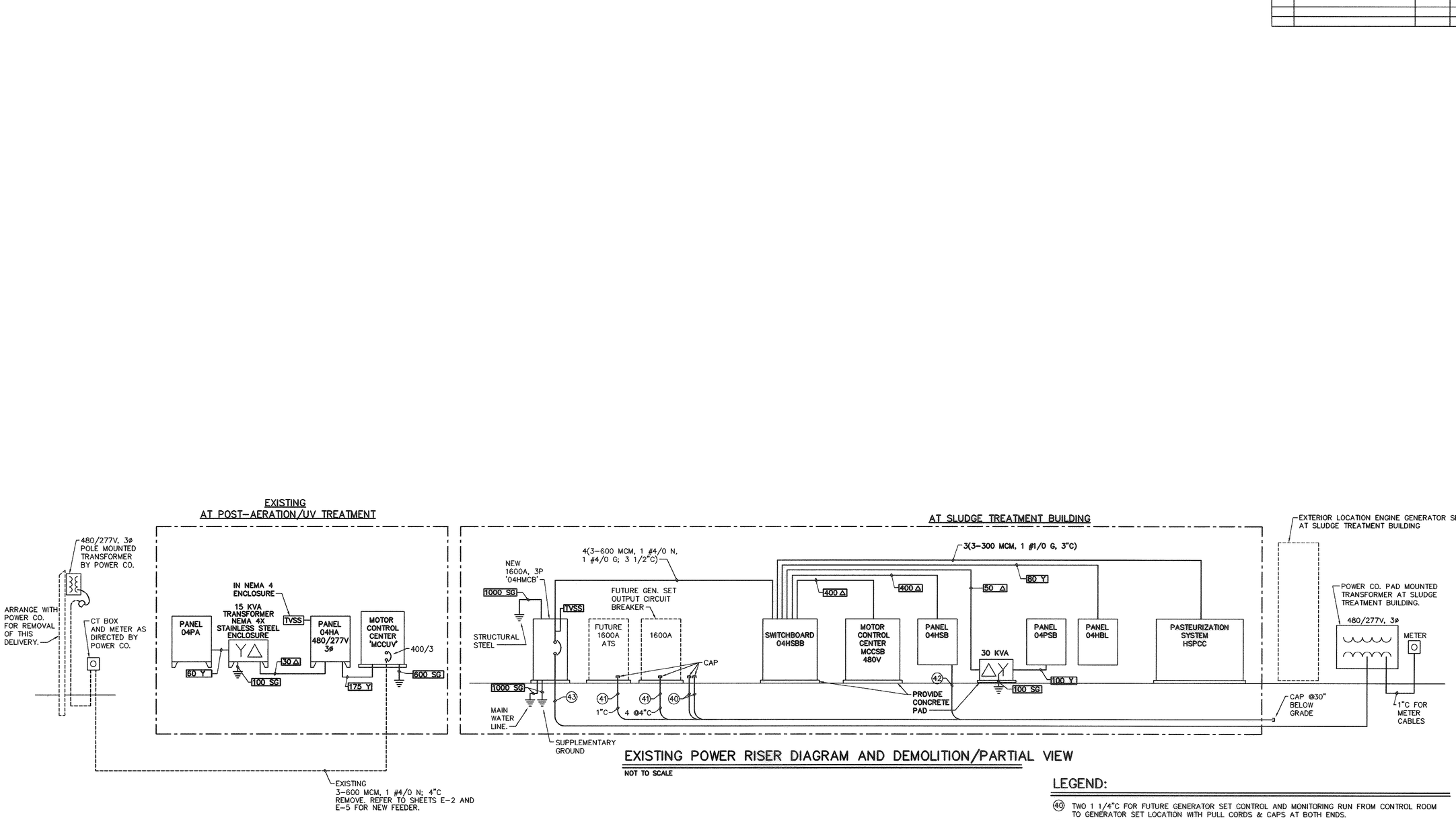
SITE CIRCUIT SCHEDULE AND DETAILS

SCHWARTZ WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE: MAY 2006
DESIGNED:
DRAWN:
CHECKED:
SCALE: AS SHOWN

SHEET NO. E-3
OF:

REVISIONS			
SYM.	DESCRIPTION	DATE	BY



EXISTING POWER RISER DIAGRAM AND DEMOLITION/PARTIAL VIEW

NOT TO SCALE

LEGEND:

(40) TWO 1 1/4"C FOR FUTURE GENERATOR SET CONTROL AND MONITORING RUN FROM CONTROL ROOM TO GENERATOR SET LOCATION WITH PULL CORDS & CAPS AT BOTH ENDS.

(41) 4 @4"C (POWER) & 1 @1"C (CONTROLS TO FUTURE ATS). WITH PULL CORDS & CAPS.

(42) 1 1/4"C WILL PULL CORD FOR FUTURE AUXILIARY GENERATOR SET POWER.

(43) 4(3-600 MCM, 1 #4/0N; 4"C)

NOTES

1. REFER TO SHEET E-7 FOR LOCATION OF EQUIPMENT AT SLUDGE TREATMENT BUILDING.

RECORD DRAWING, MARCH 2009

07-024-80/101 5

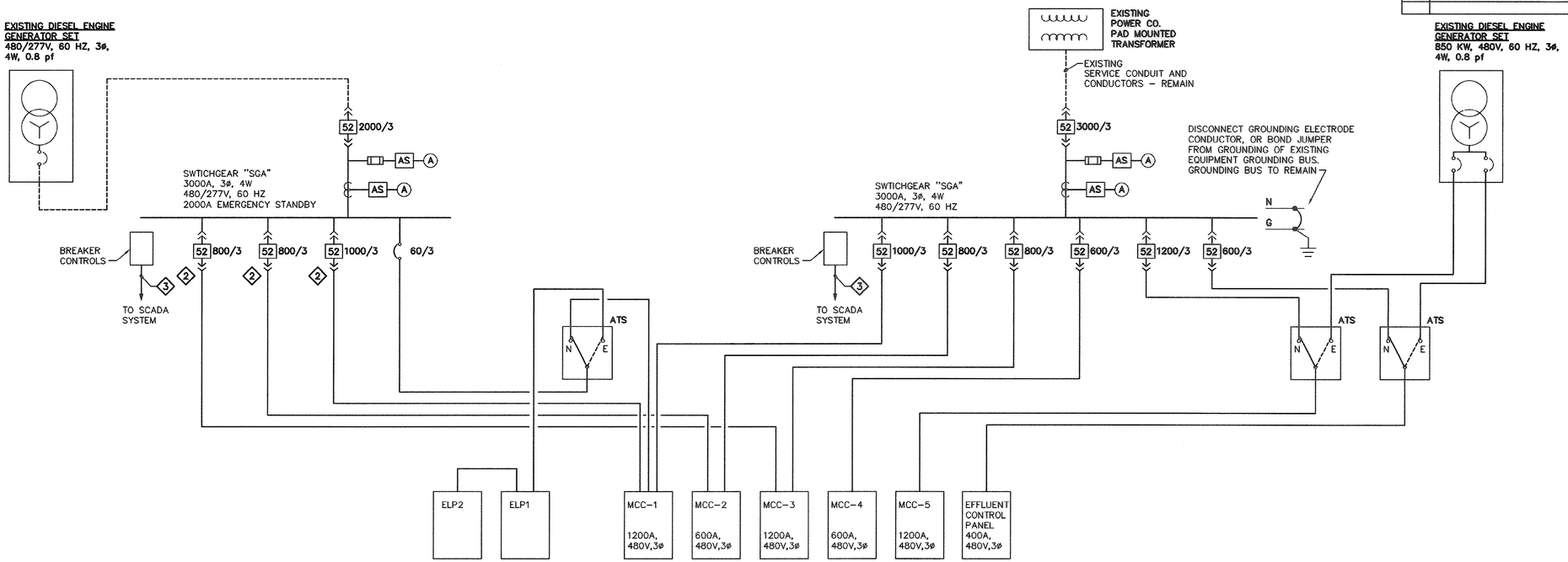
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EXISTING POWER RISER DIAGRAM/DEMOLITION

SCHWARTZ WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE:	MAY 2006
DESIGNED:	
DRAWN:	
CHECKED:	
SCALE:	AS SHOWN
SHEET NO.	E-4
OF:	



PARTIAL ONE-LINE POWER DIAGRAM – DEMOLITION

NOT TO SCALE

NOTES:
1. ALL WORK SHOWN IS NEW ESCEPT AS OTHERWISE NOTED.

ONE-LINE POWER DIAGRAM LEGEND:

⊣⊢	NORMALLY OPEN CONTACTOR	ATS	AUTOMATIC TRANSFER SWITCH
⊣/⊢	NORMALLY CLOSED CONTACTOR	G	GROUNDING
⏚	GROUNDING ELECTRODE PER NEC 250	L,S,I,GF	TYPICAL ELECTRICAL TRIP FUNCTIONS, AS APPLICABLE: L = LONG TIME S = SHORT TIME S = INSTANTANEOUS FLA= FLL LOAD AMPERE GF= GROUND FAULT
△-Y	DRY TYPE TRANSFORMER 480–208/120V, 3–PHASE	N	NEUTRAL
	TRANSFORMER, RATING AS INDICATED	NO	NORMALLY OPEN
TVSS	TRANSIENT VOLTAGE SUPPRESOR SYSTEM PROVIDE AS PART OF EQUIPMENT BEING PROTECTED.	NC	NORMALLY CLOSED
	FUSE	P	POLE
1200/3	BOLT–ON CIRCUIT BREAKER: FIRST NUMERAL =TRIP IN AMPERES, SECOND NUMERAL = POLES		

RECORD DRAWING, MARCH 2009

07-024-81/101

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REVISIONS			
SYM.	DESCRIPTION	DATE	BY

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NEW
ONE-LINE POWER
RISER DIAGRAM

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

DATE:	MAY 2006
DESIGNED:	
DRAWN:	
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SCALE:	AS SHOWN
SHEET NO.	E-5
OF:	

REVISIONS			
SYM.	DESCRIPTION	DATE	BY

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NEW ELECTRICAL BUILDING EQUIPMENT ELEVATIONS AND SCHEDULES

SCHWARTZ WASTEWATER TREATMENT PLANT UPGRADE

GRAND STRAND WATER & SEWER AUTHORITY

LOAD (KVA)				WIRE	BRKR	CKT.
A	B	C	DESCRIPTION	SIZE	RAT'G	NO.
0.1			S.O.	.	.	1
	0.0		S.O.	.	.	3
		0.0	S.O.	.	.	5
0.0			–	.	.	7
	8.3		PANEL 'GP'	8	40/2	9
		8.8	VIA 15 KVA	8	.	11
0.0			SPARE	.	15/3	13
	0.0		.	.	.	15
		0.0	.	.	.	17
0.0			SPARE	.	30/3	19
	0.0		.	.	.	21
		0.0	.	.	.	23
0.0			SPARE	.	30/3	25
	0.0		.	.	.	27
		0.0	.	.	.	29
17.4			RAS PUMP #1	3	150/3	31
	17.4		VIA VFD	3	.	33
		17.4	.	3	.	35
.	.	.	RAS PUMP #2	3	150/3	37
.	.	.	VIA VFD	3	.	39
.	.	.	.	3	.	41

CKT. NO.	BRKR RAT'G	WIRE SIZE	DESCRIPTION	LOAD (KVA) A	B	C
2	80/3	4	PANEL '06P'	1.2		
4	.	4	VIA 45 KVA		2.2	
6	.	4	.			2.0
8	15/3	.	SPARE	0.0		
10	.	.	.		0.0	
12	.	.	.			0.0
14	15/3	.	SPARE	0.0		
16	.	.	.		0.0	
18	.	.	.			0.0
20	15/3	.	SPARE	0.0		
22	.	.	.		0.0	
24	.	.	.			0.0
26	15/3	12	WEIR MOTOR	0.6		
28	.	12	.		0.6	
30	.	12	.			0.6
32	80/3	4	A/C-1	13.8		
34	.	4	.		13.8	
36	.	4	.			13.8
38	150/3	.	FUTURE RAS PUMP	.		
40	.	.	.		.	
42	.	.	.			.

TYPE: BRANCH CIRCUIT
MOUNTING: SURFACE
SUPPLY: 480V, 3-PH, 3W
MAINS: 400 AMP MAIN LUGS ONLY
SCIR: 50,000 AMPERES
NOTES:
1. WITH EQUIPMENT GROUND BUS.
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GROSS PHASE TOTALS
A= 33.1 KVA
B= 42.3 KVA
C= 42.6 KVA

CONNECTED LOAD CURRENT: 268 AMPERES

LIGHTING	3.1 KVA
HEATING	14.5 KVA
A/C MOTORS & HEAT PUMPS	41.4 KVA
AIR HANDLING & EXH FANS	1.2 KVA
RECEPTACLES	1.5 KVA
ELECTRIC WATER HEATING	0.0 KVA
ELEVATORS	0.0 KVA
FOOD PROCESSING	0.0 KVA
PROCESS	158.8 KVA
MISCELLANEOUS	1.9 KVA
TOTAL CONNECTED LOAD	222.4 KVA

PANEL 06HD

LOAD (KVA)				WIRE	BRKR	CKT.
A	B	C	DESCRIPTION	SIZE	RAT'G	NO.
0.1			SMOKE DETECTORS	12	20/1	1
	1.1		INTERIOR LIGHTING	12	20/1	3
		0.8	EXTERIOR LIGHTING	12	20/1	5
0.4			INSTRUMENTATION	10	20/1	7
	0.6		REC. @ OXID. DITCH	8	20/1	9
		0.8	EXTERIOR LIGHTING	8	20/1	11
0.0			SPARE	.	20/1	13
	0.0		SPARE	.	20/1	15
		0.0	SPARE	.	20/1	17
0.0			SPARE	.	20/1	19
	0.0		SPARE	.	20/1	21
		0.0	SPARE	.	20/1	23
0.0			SPARE	.	20/1	25
	0.0		SPARE	.	20/1	27
		0.0	SPARE	.	20/1	29
0.0			.	.	.	31
	0.0		.	.	.	33
		0.0	.	.	.	35
0.0			.	.	.	37
	0.0		.	.	.	39
		0.0	.	.	.	41

CKT. NO.	BRKR RAT'G	WIRE SIZE	DESCRIPTION	LOAD (KVA) A	B	C
2	20/1	10	CONTROLS	0.2		
4	20/1	12	RECEPTACLES		0.5	
6	20/1	12	RTU-EB			0.4
8	20/1	12	AERATOR CONTROLS	0.5		
10	20/1	.	SPARE		0.0	
12	20/1	.	SPARE			0.0
14	20/1	.	SPARE	0.0		
16	20/1	.	SPARE		0.0	
18	20/1	.	SPARE			0.0
20	20/1	.	SPARE	0.0		
22	20/1	.	SPARE		0.0	
24	20/1	.	SPARE			0.0
26	20/1	.	SPARE	0.0		
28	20/1	.	SPARE		0.0	
30	20/1	.	SPARE			0.0
32	.	.	.	0.0		
34	.	.	.		0.0	
36	.	.	.			0.0
38	.	.	.	0.0		
40	.	.	.		0.0	
42	.	.	.			0.0

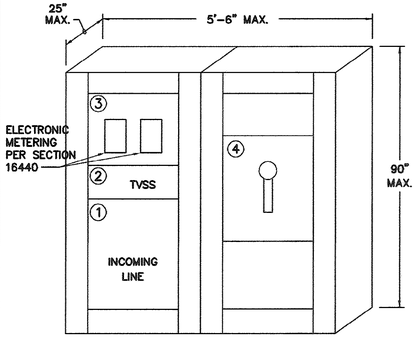
TYPE: BRANCH CIRCUIT
MOUNTING: SURFACE
SUPPLY: 208/120V, 3-PH, 4W
MAINS: 100 AMP MAIN CIRCUIT BREAKER
SCIR: 10,000 AMPERES
NOTES:
1. WITH EQUIPMENT GROUND BUS.
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.
.

GROSS PHASE TOTALS
A= 1.2 KVA
B= 2.2 KVA
C= 2.0 KVA

CONNECTED LOAD CURRENT: 15 AMPERES

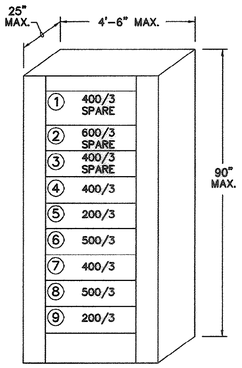
LIGHTING	2.7 KVA
HEATING	0.0 KVA
A/C MOTORS & HEAT PUMPS	0.0 KVA
AIR HANDLING & EXH FANS	0.0 KVA
RECEPTACLES	1.1 KVA
ELECTRIC WATER HEATING	0.0 KVA
ELEVATORS	0.0 KVA
FOOD PROCESSING	0.0 KVA
PROCESS	0.4 KVA
MISCELLANEOUS	1.2 KVA
TOTAL CONNECTED LOAD	5.4 KVA

PANEL 06P



SWITCHBOARDS '06ESB' AND '06MSB' ELEVATION

NOT TO SCALE



SWITCHBOARD '06DSA' ELEVATION

NOT TO SCALE

SWITCHBOARD '06ESB'

SERVICE: 480/277V, 3-PH, 4W
BUSES: 1600A
NOTES:
1. SUITABLE FOR SERVICE ENTRANCE.
2. WITH ELECTRONIC METERING.
3. REFER TO SECTION 16440 FOR ADDITIONAL REQUIREMENTS.
4. WITH MODBUS PLUS NETWORK INTERFACE WITH SCADA SYSTEM.
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TYPE: FRONT ACCESSIBLE ONLY
S.C. RATING: 30,000A

CONNECTED LOAD (KVA)	
LIGHTING	0.0
HEATING	0.0
A/C & HEAT PUMPS	0.0
AIR HANDLING	0.0
RECEPTACLES	0.0
WATER HEATING	0.0
ELEVATORS	0.0
FOOD PROCESSING	0.0
PROCESS	0.0
MISCELLANEOUS	0.0
TOTAL (KVA)	0.0

CONNECTED LOAD: 0 AMPERES

UNIT	LOAD SERVED	PROTECTION POLE	FRAME	TRIP	WIRE & CONDUIT	REMARKS	LOAD (KVA) PER PHASE A	B	C
1	INCOMING LINE	.	–	–	.	.	0.0	0.0	0.0
2	TVSS	3	–	–	.	BUILT-IN	0.0	0.0	0.0
3	METERING SECTION	.	.	–	–	.	0.0	0.0	0.0
4	SW'BD 06DSA VIA ATS-06-1	3	1600	1600	SEE ONE-LINE POWER DIAGRAM	L,S,GF	0.0	0.0	0.0

SWITCHBOARD '06MSB'

SERVICE: 480/277V, 3-PH, 4W
BUSES: 1600A
NOTES:
1. SUITABLE FOR SERVICE ENTRANCE.
2. WITH ELECTRONIC METERING.
3. REFER TO SECTION 16440 FOR ADDITIONAL REQUIREMENTS.
4. WITH MODBUS PLUS NETWORK INTERFACE WITH SCADA SYSTEM.
.
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TYPE: FRONT ACCESSIBLE ONLY
S.C. RATING: 65,000A

CONNECTED LOAD (KVA)	
LIGHTING	0.0
HEATING	0.0
A/C & HEAT PUMPS	0.0
AIR HANDLING	0.0
RECEPTACLES	0.0
WATER HEATING	0.0
ELEVATORS	0.0
FOOD PROCESSING	0.0
PROCESS	0.0
MISCELLANEOUS	0.0
TOTAL (KVA)	0.0

CONNECTED LOAD: 0 AMPERES

UNIT	LOAD SERVED	PROTECTION POLE	FRAME	TRIP	WIRE & CONDUIT	REMARKS	LOAD (KVA) PER PHASE A	B	C
1	INCOMING LINE	.	–	–	.	.	0.0	0.0	0.0
2	TVSS	3	–	–	.	BUILT-IN	0.0	0.0	0.0
3	METERING SECTION	.	.	–	–	.	0.0	0.0	0.0
4	SW'BD 06DSA VIA ATS-06-1	3	1600	1600	SEE ONE-LINE POWER DIAGRAM	L,S,GF-100% RATED	0.0	0.0	0.0

SWITCHBOARD '06DSA'

SERVICE: 480/277V, 3-PH, 4W
BUSES: 1600A MAIN LUGS ONLY
NOTES:
1. WITH EQUIPMENT GROUNDING BUS.
2
3. REFER TO SECTION 16440 FOR ADDITIONAL REQUIREMENTS.
4. WITH MODBUS PLUS NETWORK INTERFACE WITH SCADA SYSTEM.
.
.
.
.
.

TYPE: FRONT ACCESSIBLE ONLY
S.C. RATING: 65,000A

CONNECTED LOAD (KVA)	
LIGHTING	5.1
HEATING	14.5
A/C & HEAT PUMPS	41.4
AIR HANDLING	1.2
RECEPTACLES	3.1
WATER HEATING	0.0
ELEVATORS	0.0
FOOD PROCESSING	0.0
PROCESS	829.6
MISCELLANEOUS	5.1
TOTAL (KVA)	900.0

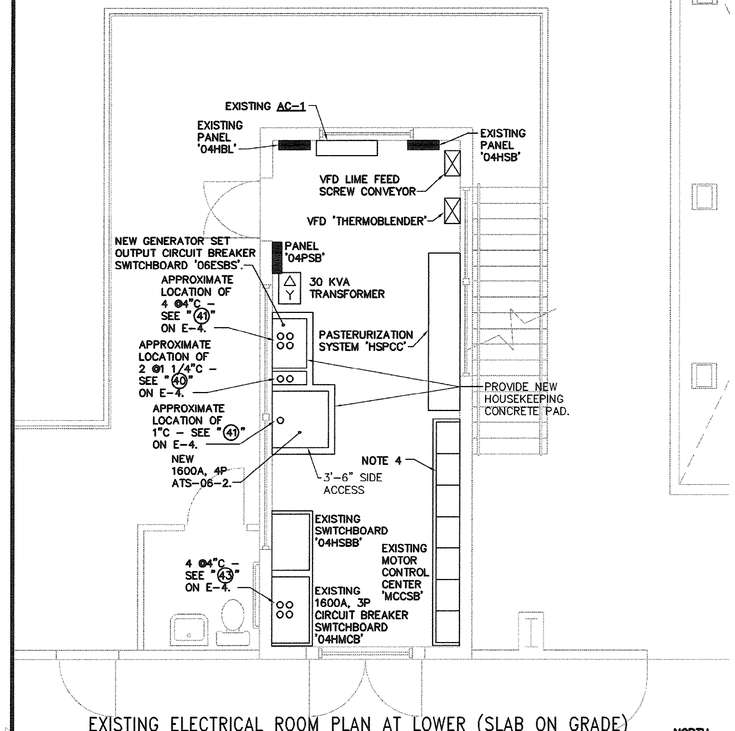
CONNECTED LOAD: 1083 AMPERES

UNIT	LOAD SERVED	PROTECTION POLE	FRAME	TRIP	WIRE & CONDUIT	REMARKS	LOAD (KVA) PER PHASE A	B	C
1	SPARE	3	400	400	.	.	0.0	0.0	0.0
2	SPARE	3	600	600	.	S,L,I,GF	0.0	0.0	0.0
3	SPARE – FUTURE MCC	3	400	400	–	.	0.0	0.0	0.0
4	PANEL 06HD	3	400	400	SEE ONE LINE DIAGRAM	.	67.9	77.1	77.4
5	MOTOR CONTROL CENTER 06MCC	3	225	225	SEE ONE LINE DIAGRAM	.	49.4	50.1	47.3
6	AERATOR #1	3	600	500	SEE ONE LINE DIAGRAM	S,L,I,GF	64.0	64.0	64.0
7	MOTOR CONTROL CENTER MCCUV	3	400	400	SEE ONE LINE DIAGRAM	.	49.4	50.1	47.3
8	AERATOR #2	3	600	500	SEE ONE LINE DIAGRAM	S,L,I,GF	64.0	64.0	64.0
9	PANEL 08HWDP	3	225	200	.	.	0.0	0.0	0.0

DATE:	MAY 2006
DESIGNED:	
DRAWN:	
CHECKED:	
SCALE:	AS SHOWN
SHEET NO.	E-6
OF:	

RECORD DRAWING, MARCH 2009

07-024-82/101 5



EXISTING ELECTRICAL ROOM PLAN AT LOWER (SLAB ON GRADE) LEVEL AT SLUDGE TREATEMENT BUILDING

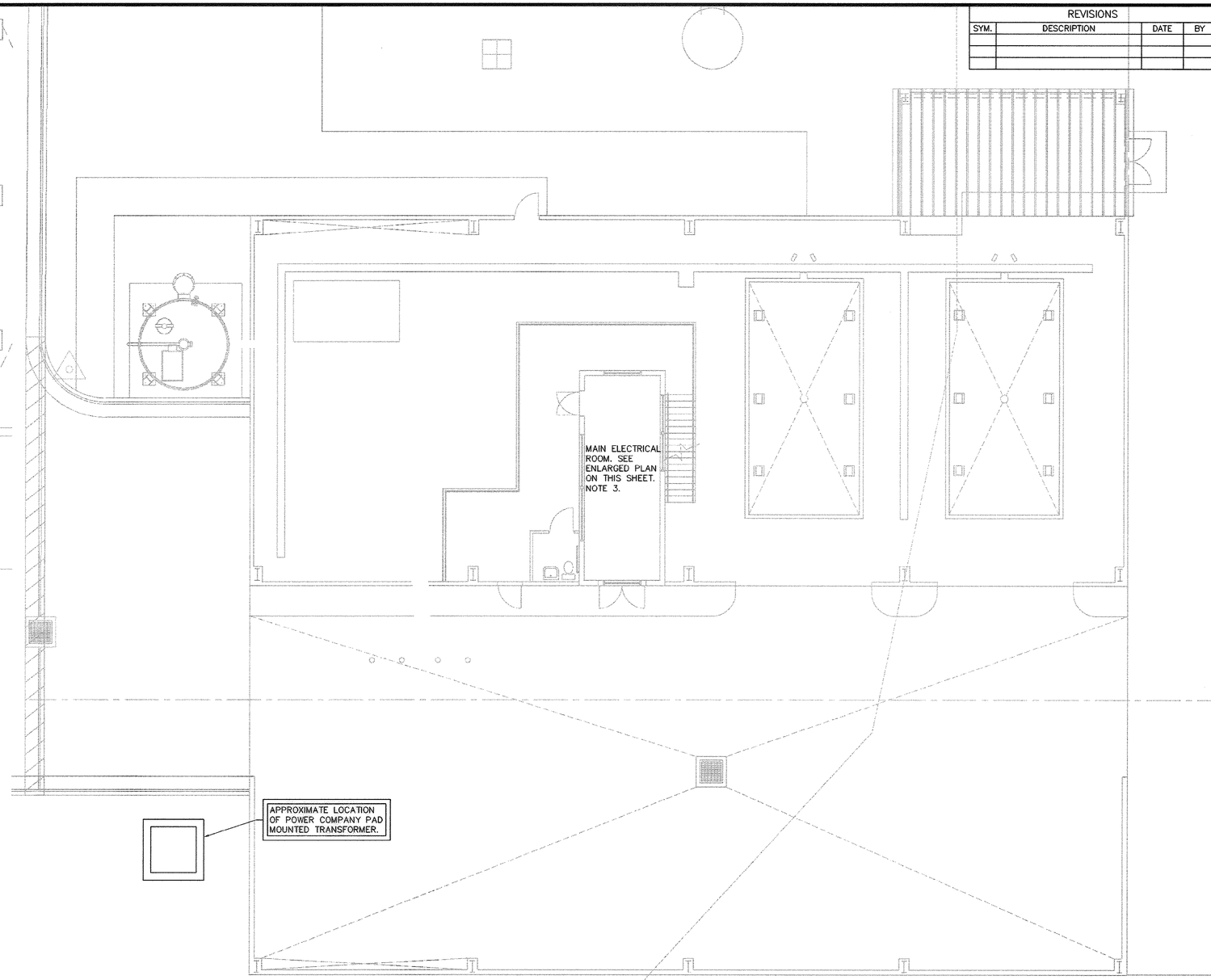
1 E6E6 SCALE: 1/4"=1'-0"

NORTH

¼" = 1'-0" 2' 0 2' 4' 8'

NOTES – SHEET E-6

1. ALL EQUIPMENT SHOWN IS EXISTING EXCEPT AS OTHERWISE NOTED.
2. BIDDERS SHALL VISIT PROJECT SITE PRIOR TO SUBMITTING BID AND VERIFY THAT PROPOSED INSTALLATION IS CONSTURCTABLE AS SHOWN ON CONTRACT DRAWINGS. VERIFY LOCATION OF EXISTING CONDUIT STUB-UPS BOTH AT ELECTRICAL ROOM AND AT SITE. PROVIDE ADDITIONAL BOXES, CONDUITS AND CONNECTIONS AS NECESSARY TO ACCOMPLISH INSTALLATION OF NEW ENGINE GENERATOR. SUBMISSION OF BID SHALL SIGNIFY ACCEPTANCE OF THESE CONDITIONS. EXACT LOCATION OF NEW EQUIPMENT SHALL BE ADJUSTABLE AS ALLOWED BY AVAILABLE SPACE AND N.E.C. RULES, TO BE ABLE TO REUSE EXISTING CONDUITS TO MAXIMUM EXTENT FEASIBLE.
3. RTU-SB IS IN CONTROL ROOM ABOVE ELECTRICAL ROOM.
4. EXISTING MOTOR CONTROL CENTER 'MCCSB' IS 480V/3 SQUARE D MODEL 6 WITH PLC AND I/O, DRAWING NO. 019232185. EXISTING UNITS "2K" AND "2P" ARE NOW C-RVNR, 20A CIRCUIT BREAKER AND NEMA SIZE 1 STARTER FOR 7 1/2 HP MOTORS. CHANGE THESE UNITS TO HANDLE 10 HP NEW SLUDGE PUMP STATION PUMPS BY REPLACING 20/3 CIRCUIT BREAKERS WITH NEW 30/3 CIRCUIT BREAKERS AND EXCHANGING THE OVERLOAD THERMAL UNIT WITH NEW UNIT. BRANCH CIRCUIT WIRING TO REMAIN AS IS.



EXISTING SLUDGE TREATMENT – LOWER LEVEL PLAN

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

NORTH

⅛" = 1'-0" 4' 0 4' 8' 16'

RECORD DRAWING, MARCH 2009

07-024-83/101 5

REVISIONS			
SYM.	DESCRIPTION	DATE	BY

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NEW ELECTRICAL EQUIPMENT PLANS AT EXISTING SLUDGE TREATMENT BUILDING

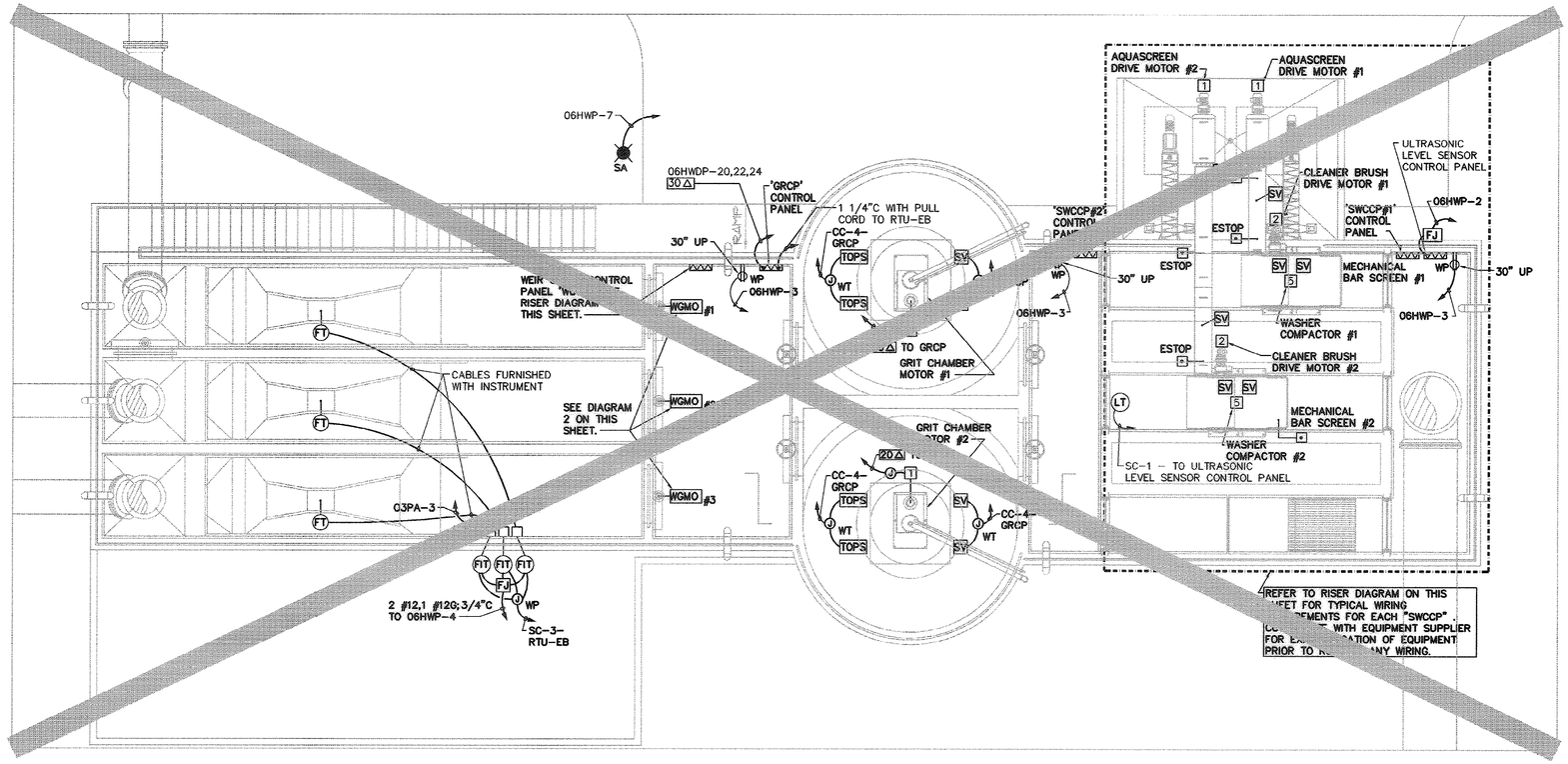
SCHWARTZ WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

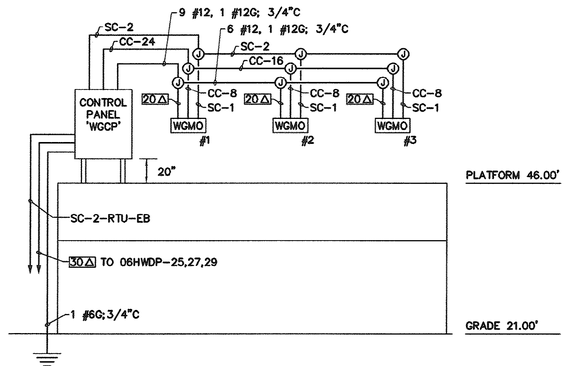
DATE:	MAY 2006
DESIGNED:	
DRAWN:	
CHECKED:	
SCALE:	AS SHOWN
SHEET NO.	E-7
OF:	

REVISIONS			
SYM.	DESCRIPTION	DATE	BY

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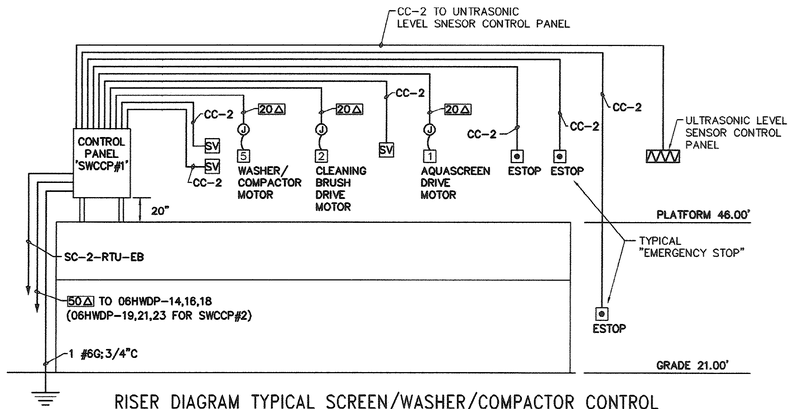
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RISER DIAGRAM TYPICAL WEIR GATES CONTROL PANEL 'WGCP' WIRING REQUIREMENTS

2 E8/E8 SCALE: NOT TO SCALE



RISER DIAGRAM TYPICAL SCREEN/WASHER/COMPACTOR CONTROL PANEL 'SWCCP' WIRING REQUIREMENTS (TWO REQUIRED)

3 E8/E8 SCALE: NOT TO SCALE

NOTES:
1. COORDINATE WITH EQUIPMENT SUPPLIER, PRIOR TO RUNNING ANY WIRING, FOR EXACT LOCATION OF ELECTRICAL ITEMS AND FINAL REQUIREMENTS.

HEADWORKS UPPER ELECTRICAL PLAN

1 E8/D8 SCALE: 3/16" = 1'-0"

NORTH

3/16" = 1'-0" 2' 0 2' 4' 8'

NOTES:
1. PRIOR TO RUNNING ANY CONDUIT COORDINATE WITH EQUIPMENT SUPPLIER/GENERAL CONTRACTOR FOR FINAL CONFIGURATION OF EQUIPMENT AND EXACT LOCATION OF POWER AND CONTROL DEVICES. CONTROL DEVICES GENERALLY ARE LOCATED ON PROCESS EQUIPMENT AND RELATED INTERCONNECTING CONDUIT SHALL FOLLOW EQUIPMENT PROFILE, NOT NECESSARILY IN LEVEL PLANE.
2. THE FOLLOWING AREAS ARE CLASSIFIED UNDER NFPA 820 CLASS 1, DIVISION 2, GROUP D HAZARDOUS ATMOSPHERES: PITS AND ENVELOPE EXTENDING 18" ABOVE GRADE AND 10'-0" HORIZONTALLY FROM EXTERIOR WALL ENVELOPE 18" ABOVE THE TOP OF THE TANK AND EXTENDING 18" BEYOND THE EXTERIOR OF THE TANK.
3. WORK WITH HAZARDOUS ATMOSPHERE SHALL COMPLY WITH ARTICLE 501 OF THE NATIONAL ELECTRICAL CODE. PROVIDE CONDUIT SEALS TO SATISFY NEC.
4. FOR CONNECTION TO MOTORS WITHIN CLASS 1, DIVISION 2 LOCATIONS, USE LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT WITH FITTINGS APPROVED FOR CLASS 1, DIVISION 2 ATMOSPHERES.
5. BOXES AND SWITCHES SHALL BE NEMA 4X CONSTRUCTION.
6. CONDUIT SHALL BE RUN CONCEALED BELOW GRADE, PAVEMENT OR SLAB TO MAXIMUM EXTENT FEASIBLE.
7. REFER TO SHEET E-9 FOR LOCATION OF GRIT CHAMBER AND BLOWERS.

HEADWORKS UPPER ELECTRICAL PLAN

SCHWARTZ WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

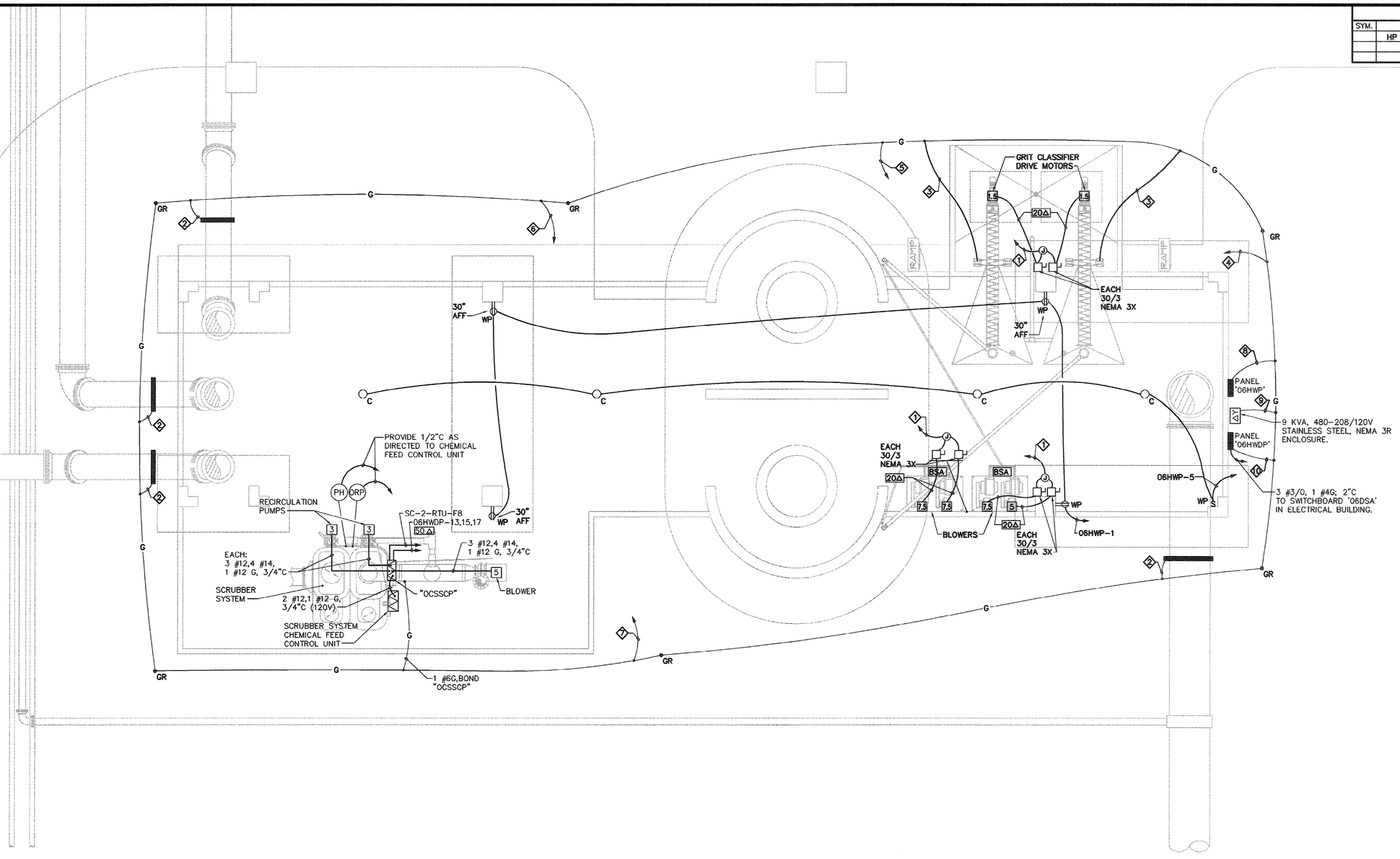
DATE:	MAY 2006
DESIGNED:	
DRAWN:	
CHECKED:	
SCALE:	AS SHOWN

SHEET NO. E-8
OF: _____

RECORD DRAWING, MARCH 2009

07-024-84/101 S

REVISIONS			
SYM.	DESCRIPTION	DATE	BY
	HP REVISIONS	3-26-09	DFW



HEADWORKS LOWER ELECTRICAL PLAN

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

3/16" = 1'-0" 2' 0 2' 4' 8'

NOTES:
1. PRIOR TO RUNNING ANY CONDUIT COORDINATE WITH EQUIPMENT SUPPLIER/GENERAL CONTRACTOR FOR FINAL CONFIGURATION OF EQUIPMENT AND EXACT LOCATION OF POWER AND CONTROL DEVICES. CONTROL DEVICES GENERALLY ARE LOCATED ON PROCESS EQUIPMENT AND RELATED INTERCONNECTING CONDUIT SHALL FOLLOW EQUIPMENT PROFILE, NOT NECESSARILY IN LEVEL PLANE.
2. THE FOLLOWING AREAS ARE CLASSIFIED UNDER NFPA 820 AS CLASS 1, DIVISION 2, GROUP D HAZARDOUS ATMOSPHERES: PITS AND ENVELOPE EXTENDING 18" ABOVE GRADE AND 10'-0" HORIZONTALLY FROM EXTERIOR WALL ENVELOPE 18" ABOVE THE TOP OF THE TANK AND EXTENDING 18" BEYOND THE EXTERIOR OF THE TANK.
3. WORK WITH HAZARDOUS ATMOSPHERE SHALL COMPLY WITH ARTICLE 501 OF THE NATIONAL ELECTRICAL CODE. PROVIDE CONDUIT SEALS TO SATISFY NEC.
4. FOR CONNECTION TO MOTORS WITHIN CLASS 1, DIVISION 2 LOCATIONS, USE LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT WITH FITTINGS APPROVED FOR CLASS 1, DIVISION 2 ATMOSPHERES.
5. BOXES AND SWITCHES SHALL BE NEMA 4X CONSTRUCTION.
6. CONDUIT SHALL BE RUN CONCEALED BELOW GRADE, PAVEMENT OR SLAB TO MAXIMUM EXTENT FEASIBLE.
7. PROVIDE CONDUIT TO PROTECT EXPOSED GROUNDING CONDUCTORS.

KEYED NOTES

1. 6 #12,1 #12 G, 4 #14; 3/4"C TO 'GRCP#1' & "GRCP#2". SEE SHEET E-8.
2. 1 #2 G, BOND PIPE UTILITIZING SUITABLE GROUND CLAMP.
3. 1 #2G, BOND GRIT CLARRIFIER METAL STRUCTURE.
4. 1 #6 G, BOND PANEL SWCCP #1 – NOTE 7.
5. 1 #6 G, BOND PANEL SWCCP #2 – NOTE 7.
6. 1 #6 G, BOND PANEL GRPC – NOTE 7.
7. 1 #6 G, BOND PANEL WGCP – NOTE 7.
8. 1 #6 G, BOND PANEL 06HWP – NOTE 7.
9. 1 #6 G, BOND 9KVA TRASNSFORMER – NOTE 7.
10. 1 #4 G, BOND PANEL 06HWDP – NOTE 7.

RECORD DRAWING, MARCH 2009

07-024-85/101 5

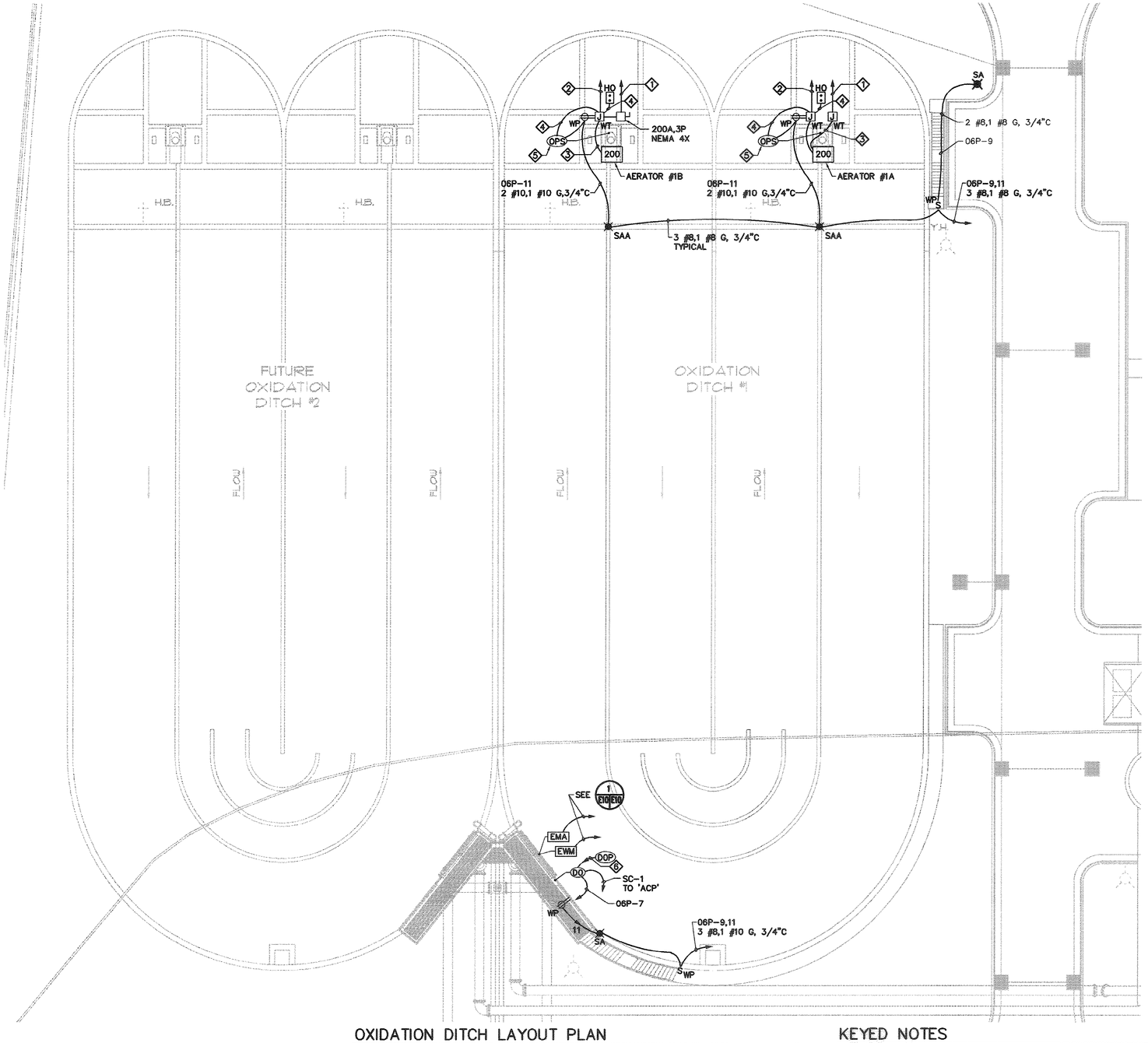
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HEADWORKS LOWER ELECTRICAL PLAN

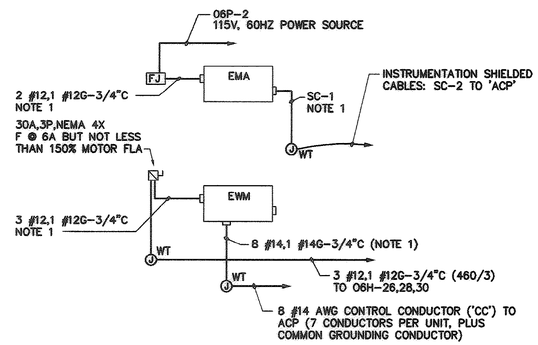
SCHWARTZ WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE: MAY 2006
DESIGNED:
DRAWN:
CHECKED:
SCALE: AS SHOWN
SHEET NO. E-9
OF:



OXIDATION DITCH LAYOUT PLAN

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



1 E10/E10 TYPICAL WEIR MOTOR AND MODULATOR WIRING RISER DIAGI

NOT TO SCALE

NOTES:
1. FINAL CONNECTION TO EQUIPMENT SHALL BE MADE WITH 1/2-INCH OR 3/4-INCH CONDUIT AS REQUIRED BY EQUIPMENT.

KEYED NOTES

1. 3-400 MCM, 1 #1 G, 3"C TO SWITCHBOARD '06DSA'.
2. 8 #14,1 #14 G, 4 #14 SPARE, 1"C TO AERATOR CONTROL PANEL 'ACP'. SEE 1/E10/E11.
3. 3-400 MCM, 1 #1 G, 3"C CONNECTION TO MOTOR. PROVIDE NEMA 4, GASKETED MOTOR TERMINAL BOX EXTENSION IF SO REQUIRED TO MAKE MOTOR CONNECTION.
4. 2 #14, 1 #14 G, 3/4"C.
5. SPEED REDUCER LOW OIL PRESSURE SAFETY DEVICE WITH AUXILIARY CONTACT. REQUIRES 120V, 60 HZ CONNECTION.
6. PROVIDE 1-INCH CONDUIT AS REQUIRED AND PULL SPECIAL CABLE FURNISHED WITH 'DOP'. CONNECT TO DO.

RECORD DRAWING, MARCH 2009

07-024-86/101 5

REVISIONS			
SYM.	DESCRIPTION	DATE	BY

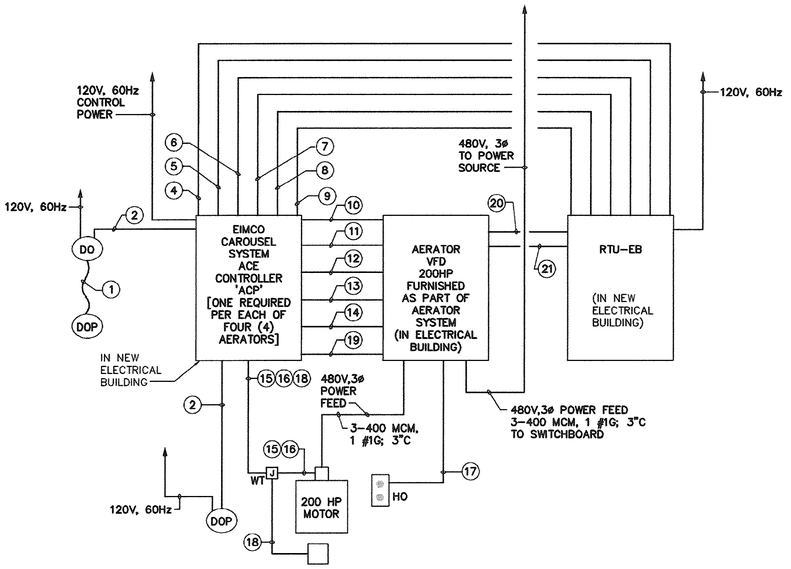
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OXIDATION DITCH
ELECTRICAL PLAN

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

DATE:	MAY 2006
DESIGNED:	
DRAWN:	
CHECKED:	
SCALE:	AS SHOWN
SHEET NO.	E-10
OF:	



TYPICAL AERATOR/EIMCO CONTROL PANEL WIRING REQUIREMENTS

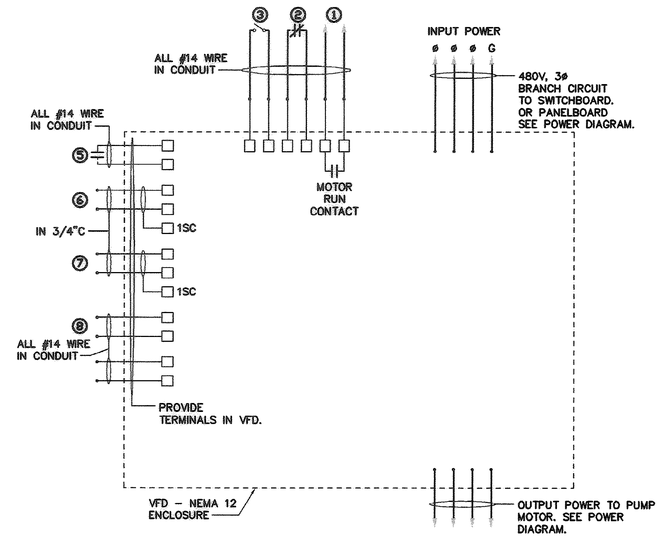
1 DSEW — NOT TO SCALE

LEGEND:

1. CABLE FURNISHED WITH D.O. PROBE
2. SC-1 4-20 MA SIGNAL TO 'ACP' FROM D.O. ANALIZER/TRANSMITTER
3. NOT USED
4. CC-2 – AERATOR RUN TO RTU
5. CC-2 – AERATOR LOW OIL PRESS ALARM TO RTU
6. CC-2 – AERATOR MOTOR OVER LOAD TO RTU
7. CC-2 – AERATOR LOW D.O. ALARM TO RTU
8. CC-2 – AERATOR HIGH D.O. ALARM TO RTU
9. SC-1 – D.O. 4-20 mA DC TO RTU
10. CC-2 – RUN CONTACT FROM 'ACP' TO VFD
11. CC-2 – SPEED REFERENCE SELECT FROM 'ACP' TO VFD (SELECT 4-20 MA SINGNAL WHEN ENERGIZED)
12. CC-2 – VFD RUN PERMIT FROM 'ACP' TO VFD
13. CC-2 – RUN SIGNAL FROM VFD TO 'ACP' PANEL
14. SC-1 – 4-20 MA SPEED SIGNAL FROM 'ACP' TO VFD
15. CC-2 – AERATOR MOTOR SPACE HEATER
16. CC-2 – AERATOR MOTOR OVERHEAT SENSOR (MOTOR THERMOSTAT)
17. CC-2 – HAND-OFF MAINTAINED CONTACT CONTROL STATION BY MOTOR SIDE. WIRE TO STOP AND START MOTOR AHEAD OF ANY OTHER COMMAND
18. CC-2 – AERATOR LOW OIL PRESSURE ALARM
19. CC-2 – SPARE BETWEEN 'ACP' AND 'VFD'
20. SC-1 – 4-20 MA DC FROM VFD TO RTU – CONNECT AS DIRECTED
21. CC-8 – FROM VFD TO RTU – CONNECT AS DIRECTED

GENERAL NOTES:

1. COORDINATE WITH EQUIPMENT SUPPLIER PRIOR TO RUNNING ANY WIRING.
2. VFD MAY ONLY ACCEPT WIRING THROUGH BUTTOM OF UNIT.



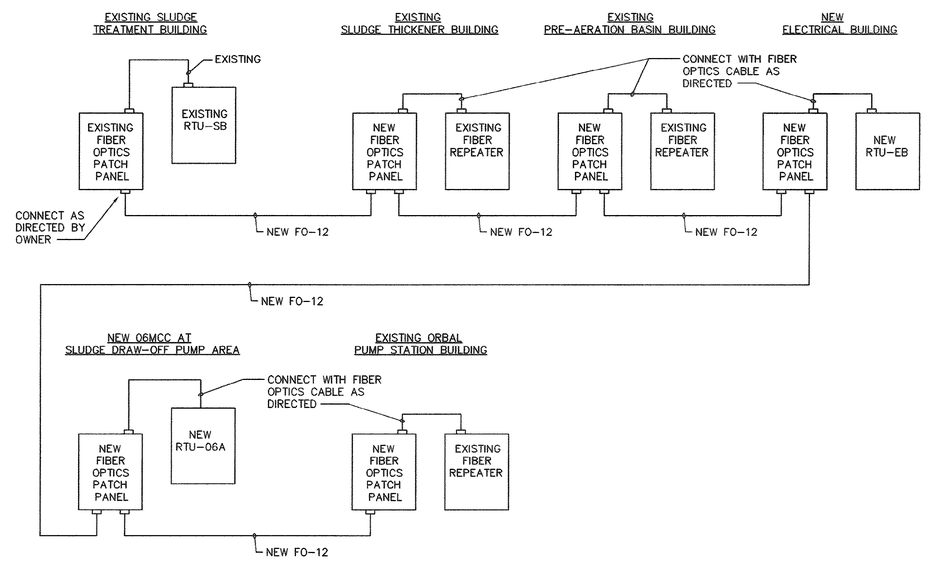
TYPICAL RAS PUMP VFD WIRING DIAGRAM

3 DSEW — NOT TO SCALE

RAS PUMP VFD KEYED NOTES

(ALL CONNECTIONS TO BE VERIFIED WITH EQUIPMENT FURNISHED)

1. AUXILIARY 'RUN' INDICATION TO RTU-EB.
2. CONTACT IN RTU WIRE TO REMOTELY CONTROL ON-OFF RUNNING OF MOTOR
3. AUX. CONTACT FOR HIGH TEMP PROTECTION IN MOTOR WINDINGS. (JUMP CONTACTS IF NOT PROVIDED).
4. NOT USED
5. AUTO RUN REQUEST – TO RTU-EB.
6. 4-20 mA AUTO PACING SIGNALLING – TO RTU-EB.
7. 4-20 mA PUMP SPEED FEED BACK – TO RTU-EB.
8. PUMP MALFUNCTION SIGNAL – TO RTU-EB.
9. VFD AUTO CONTROL MODE – TO RTU-EB.



PLANT BACKBONE SCADA FIBER OPTICS CABLE EXPANSION DIAGRAM

2 P2 ET — NOT TO SCALE

NOTES:
1. THIS DIAGRAM IS GENERAL IN NATURE AND IS INTENDED TO SHOW TYPICAL CABLING REQUIREMENTS AND SYSTEM INTERCONNECTION METHODOLOGY. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL CABLING, RACKSAND CABINETS, PASSIVE EQUIPMENT, INTERCONNECTIONS AND ALL ITEMS REQUIRED TO PROVIDE A COMPLETE, WARRANTED, AND OPERATIONAL CABLE DISTRIBUTION SYSTEM AS TYPICALLY SHOWN HERE, AS WELL AS ON THE PLANS AND IN THE PROJECT SPECIFICATIONS.
2. CAMPUS FIBER OPTICS CABLES SHALL CONSIST OF 12 STRAND 62.5/125 MULTIMODE OUTDOOR RATED CABLE TERMINATE BOTH ENDS IN CABINET MOUNTED ENCLOSURES, USING ST CONNECTORS.
3. ALL CABLING SHALL BE RATED FOR THE ENVIRONMENT AND INSTALLED PER NFPA 70.
4. PROVIDE A NYLON PULL CORD IN EACH CONDUIT RUN IN ADDITION TO ANY CABLES SPECIFIED HERE.
5. REFER TO SECTION 16158 FOR ADDITIONAL REQUIREMENTS.

RECORD DRAWING, MARCH 2009

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AERATOR DETAIL AND DIAGRAM

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

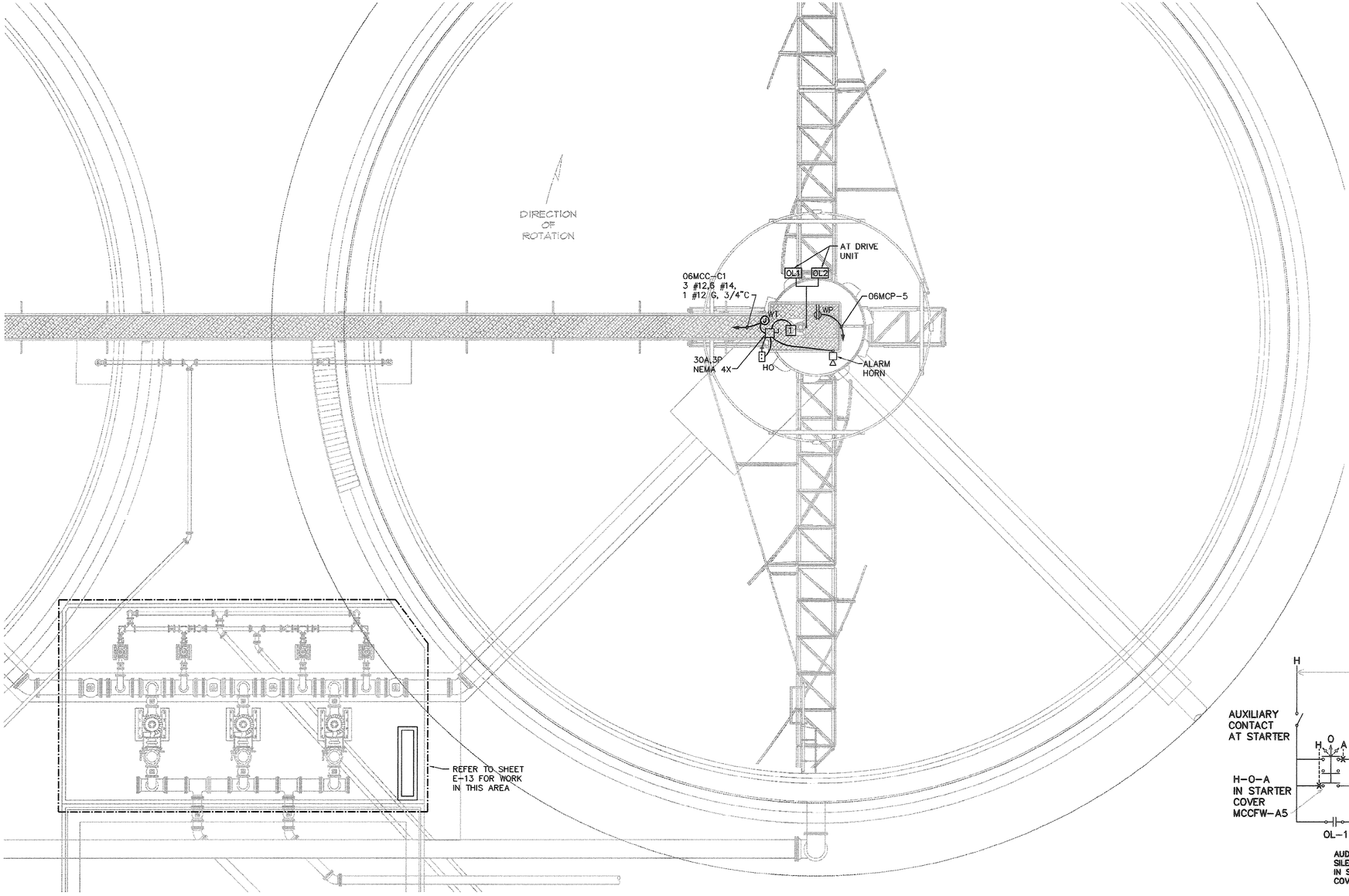
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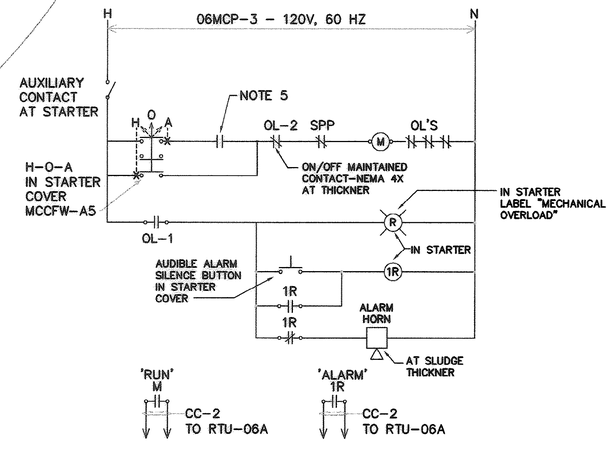


1 CLARIFIERS LAYOUT PLAN

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

1/8" = 1'-0" 4' 0 4' 8' 16'

NOTES:
1. THE AREA AROUND CLARIFIER EXTENDING 18 INCHES ABOVE CLARIFIER WATER LEVEL AND EXTENDING 10 FEET HORIZONTALLY FROM CLARIFIER WETTED WALLS IS CLASSIFIED AS A CLASS 1, DIVISION 2 HAZARDOUS LOCATION. DO NOT PENETRATE THE HAZARDOUS AREA WITH ANY POWER WIRING NOT BELONGING TO THE CLARIFIER.



2 CLARIFIER CONTROL VIA PLC WIRING DIAGRAM

S12|S12/1 NOT TO SCALE

NOTES:
1. OL-1 = NORMALLY OPEN CONTACT IN THE OVERLOAD DEVICE ON THE WORM GEAR ON THE EQUIPMENT CLOSES AT 40% LOAD TO INITIATE AN ALARM.
2. OL-2 = SAME AS OL-1 ABOVE EXCEPT NORMALLY CLOSED CONTACT THAT OPENS TO STOP MOTOR AT 100% LOAD.
3. ▷| WEATHERPROOF VIBRATING HORN RATED 120 VOLTS AND 103dB AT 10 FT.
4. STARTER IS PART OF 06MCC.
5. ON-OFF CONTACT FROM PLC CONTROLLED FROM COMMAND FROM RTU-EB.

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07-074-88/101

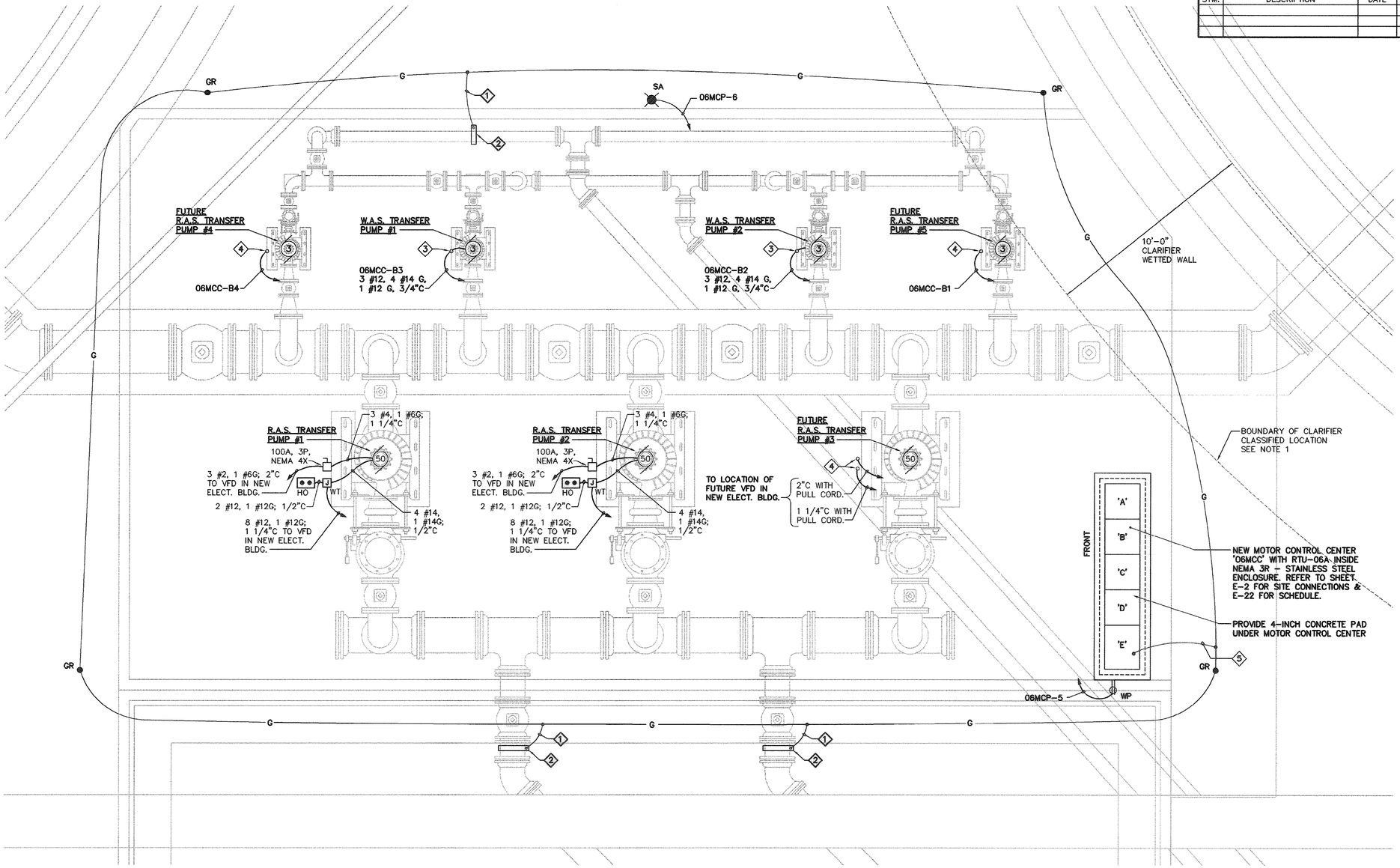
5

CLARIFIERS
ELECTRICAL PLAN

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
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DATE:	MAY 2006
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SLUDGE DRAW-OFF PUMPS ELECTRICAL PLAN

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

3/8" = 1'-0" 1' 0 1' 2' 4'

NOTES:
1. THE AREA AROUND CLARIFIER EXTENDING 18 INCHES ABOVE CLARIFIER WATER LEVEL AND EXTENDING 10 FEET HORIZONTALLY FROM CLARIFIER WETTED WALLS IS CLASSIFIED AS A CLASS 1, DIVISION 2 HAZARDOUS LOCATION. DO NOT PENETRATE THE HAZARDOUS AREA WITH ANY POWER WIRING NOT BELONGING TO THE CLARIFIER.

KEYED NOTES

1. #2G
2. GROUNDING CLAMP
3. STUB-UP CONDUIT TRANSITION TO LIQUID TIGHT FLEXIBLE METALLIC CONDUIT AND CONNECT TO MOTOR.
4. STUB-UP CONDUIT AND CAP WATERPROOF FOR FUTURE EXTENSION.
5. #1/0G

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07-024-89/101

5

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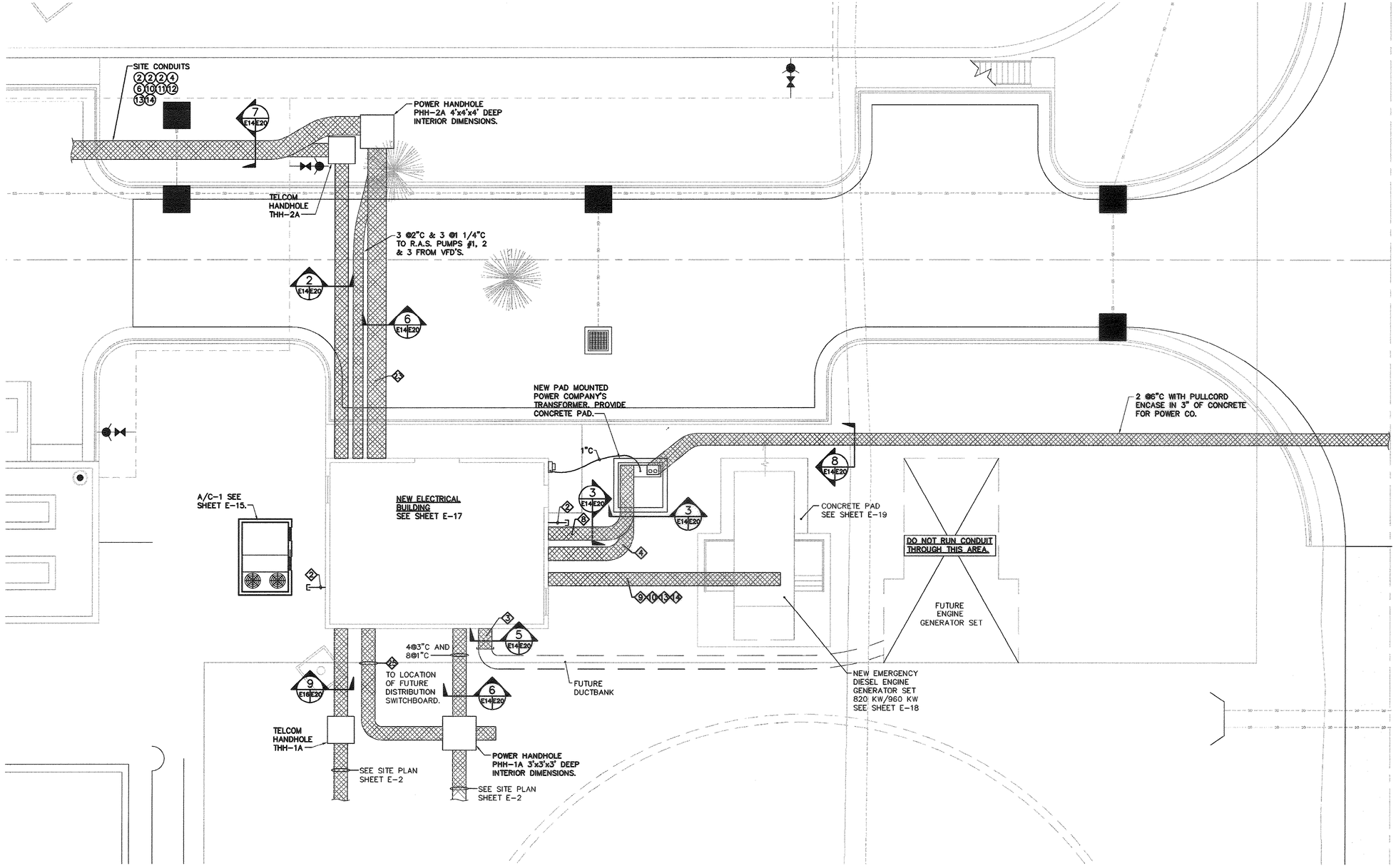
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SLUDGE DRAW-OFF PUMPS ELECTRICAL PLAN

SCHWARTZ WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

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PARTIAL ELECTRICAL SITE PLAN

NORTH

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

NOTES:
1. REFER TO SHEET E-15 FOR KEYED NOTES ("◇").
2. REFER TO SHEET E-20 FOR DUCT BANK SECTION DETAILS.

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07-024-90/101

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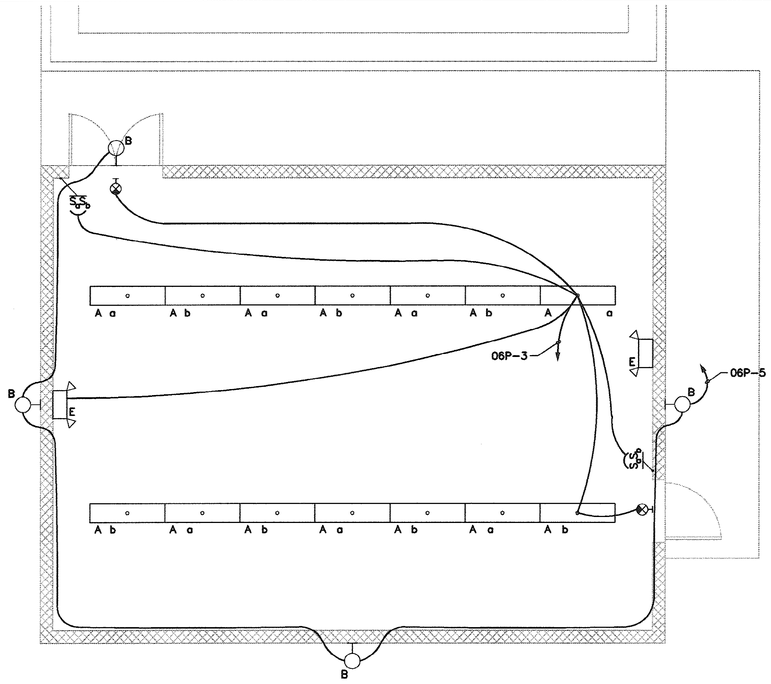
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ELECTRICAL BUILDING SITE PLAN

SCHWARTZ
WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

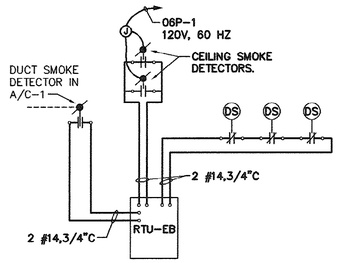
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LIGHTING LAYOUT

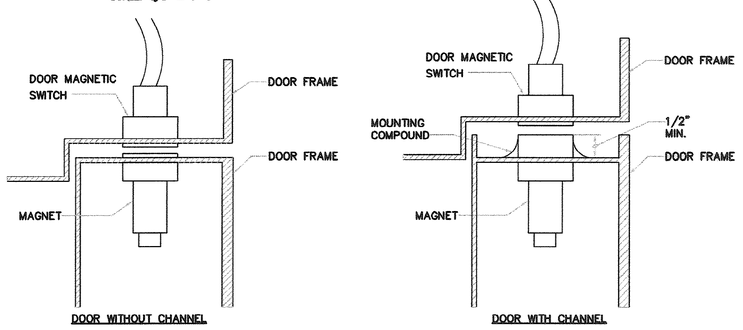
SCALE: 1/4" = 1'-0"

NORTH



FIRE DETECTORS AND DOOR SECURITY SWITCHES WIRING DIAGRAM

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

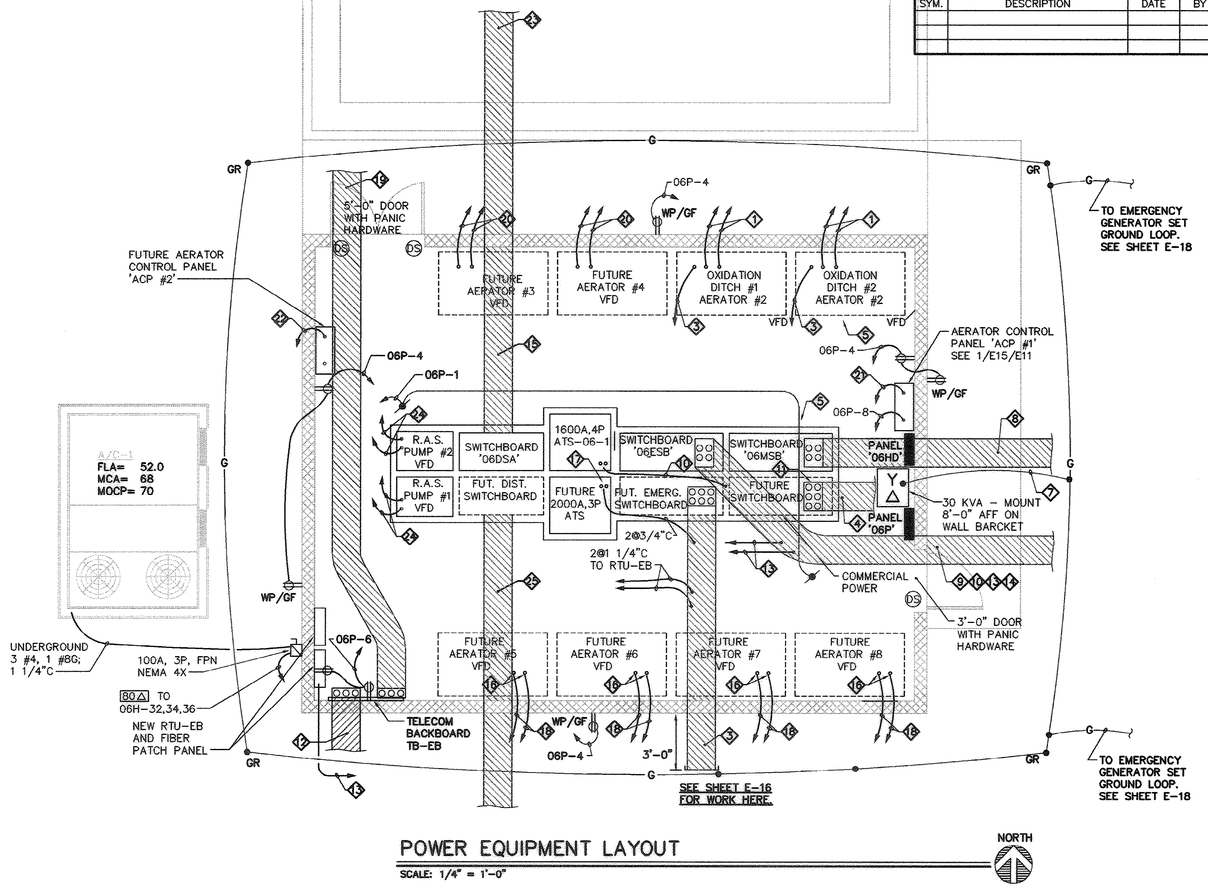


TYPICAL (DS) " MOUNTING

NOT TO SCALE

NOTES:

1. USE SWITCHES FROM SENTROL, WIDE GAP TYPE, OR APPROVED EQUAL.



POWER EQUIPMENT LAYOUT

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

NORTH

KEYED NOTES

1. ONE 3"C AND ONE 3/4"C FOR AERATOR POWER AND ON-OFF MANUAL CONTROL STATION. RUN TO AERATORS VIA HANDHOLE PHH-2A. SEE ONE-LINE POWER DIAGRAM.
2. THREE 1" SPARE CONDUITS FROM PANELS '06P' AND THREE 1 1/4"C FROM PANEL "06HD". STUB-OUT 5'-0" FROM BUILDING AND CAP BOTH ENDS WATER TIGHT.
3. SIX 3" CONDUITS , TWO @ 1 1/4"C AND TWO @ 3/4"C SPARE CONDUITS ENCASED IN 2 INCHES FO CONCRETE ALL AROUND STUB-OUT 3'-0" FROM BUILDING AND CAP BOTH ENDS WATER TIGHT. BOTTOM OF DUCT BANK AT 36" BELOW GRADE FOR FUTURE GEN. SET.
4. SIX 4" CONDUITS FROM LOCATION OF FUTURE SWITCHBOARD TO PAD MOUNTED TRANSFORMER. CAP BOTH ENDS WATER TIGHT. BOTTOM OF DUCT BANK AT 38" BELOW GRADE.
5. PROVIDE 4-INCH HIGH CONCRETE PAD.
6. #3/0 GROUNDING - 3/4"C
7. #4 GROUNDING - 3/4"C
8. FOUR 4" CONDUITS ENCASED IN 3" OF CONCRETE TO NEW PAD MOUNTED TRANSFORMER, FOR 1600A SERVICE TO "06MSB".
9. FOUR 4" CONDUITS ENCASED IN 3" OF CONCRETE TO NEW GENERATOR SET #3 FOR 1600A EMERGENCY SERVICE.
10. TWO 3/4"C, ONE WITH 4 #12 FOR GENERATOR SET START COMMAND. ONE IS SPARE CONDUITS.
11. EXACT LOCATION OF CONDUIT STUB-UP SHALL BE MIRROR IMAGE FROM WHAT IS DONE FOR '06MSB' AND FOR '06ESB' ESCEPT ADJUSTED FOR SIX CONDUITS INSTEAD OF FOUR CONDUITS.
12. THREE @4"C ENCASED IN 3" OF CONCRETE. CAMPUS BACKBONE TELECOM SYSTEM. RUN TO HANDHOLE THH-A1.
13. TWO 1 1/4"C FROM NEW GENERATOR SET NO. 3. TO RTU-EB FOR MODBUS COMMUNICATION AND SPARE CONDUIT. PROVIDE TWO SC CABLES SUITABLE FOR WET LOCATIONS IN ONE CONDUIT.
14. FEEDER FROM PANEL '06H' TO PANEL 'GP' VIA 15KVA TRANSFORMER WITHIN GENERATOR SET #3 ENCLOSURE.
15. 4-4"C FROM '06DSA' TO HANDHOLE PHH-A2, FOR FEEDERS TO 'MCCUV', '06MCC' FUTURE 'MCC' AND ALSO GROUP UNDER THIS DUCTBANK CONDUITS FROM '1', '2' AND '3'.
16. STUB-UP 6" AFF (TYPICAL FOR STUB-UPS WHERE NO CONCRETE PAD IS PROVIDED NOW) SEAL AND CAP.
17. STUB-UP 4" AFF. SEAL AND CAP (TYPICAL FOR WHERE CONCRETE PAD IS PROVIDED).
18. ONE 3" AND ONE 3/4" SPARE CONDUITS FROM LOCATION OF FUTURE 200 HP VFD TO POWER HANDHOLE PHH-A1. STUB-UP IN SPACE ALLOWED FOR FUTURE VFD AT SAME RELATIVE LOCATION USED FOR VFD'S BEING INSTALLED UNDER THIS CONTRACT.
19. THREE 4"C ENCASED IN 3" OF CONCRETE - CAMPUS BACKBONE TELECOM SYSTEM. RUN TO HANDHOLE THH-A2.
20. ONE 3" AND ONE 3/4" SPARE CONDUITS FROM LOCATION OF FUTURE 200 HP VFD TO POWER MANHOLE PHH-2A VIA DUCT BANK "23". STUB-UP IN SPACE ALLOCATED FOR FUTURE VFD AT SAME RELATIVE LOCATION USED FOR VFD'S BEING INSTALLED UNDER THIS CONTRACT.
21. 4@3/4"C FROM ACP-1 TO HANDHOLE PHH-2A.
22. 4@3/4"C FROM FUTURE ACP-2 TO HANDHOLE PHH-1A.
23. POWER DUCT BANK COMPRISING TWO "1", TWO "20" PLUS "15", PLUS "21".
24. ONE @ 2" AND ONE @ 1 1/4" CONDUITS FROM VFD TO REMOTE R.A.S. PUMP.
25. 4@4" SPARE CONDUITS FROM HANDHOLE PHH-1A.
26. MOUNT NEW R.A.S. PUMPS #1 AND #2 VFD'S ON FLOOR STAND OR ON FLOOR TO CEILING EQUIPMENT RACK.

GENEARAL NOTES

A. PROVIDE AS PART OF THIS CONTRACT A FIELD COORDINATION FLOOR PLAN LAYOUT OF THE ELECTRICAL BUILDING SHOWING NEW AND FUTURE EQUIPMENT AT 1/2"=1'-0" SCALE. NEW EQUIPMENT FOOT PRINT WILL BE BASED ON APPROVED SHOP DRAWINGS. DIMENSIONS OF FUTURE EQUIPMENT WILL BE ASSUMED TO BE THE SAME AS MATCHING NEW EQUIPMENT. LOCATION OF CONDUIT STUB-UPS FOR FUTURE EQUIPMENT SHALL MATCH RELATIVE LOCATION OF STUB-UPS FOR NEW EQUIPMENT.

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NEW ELECTRICAL BUILDING PLAN AND SCHEDULES

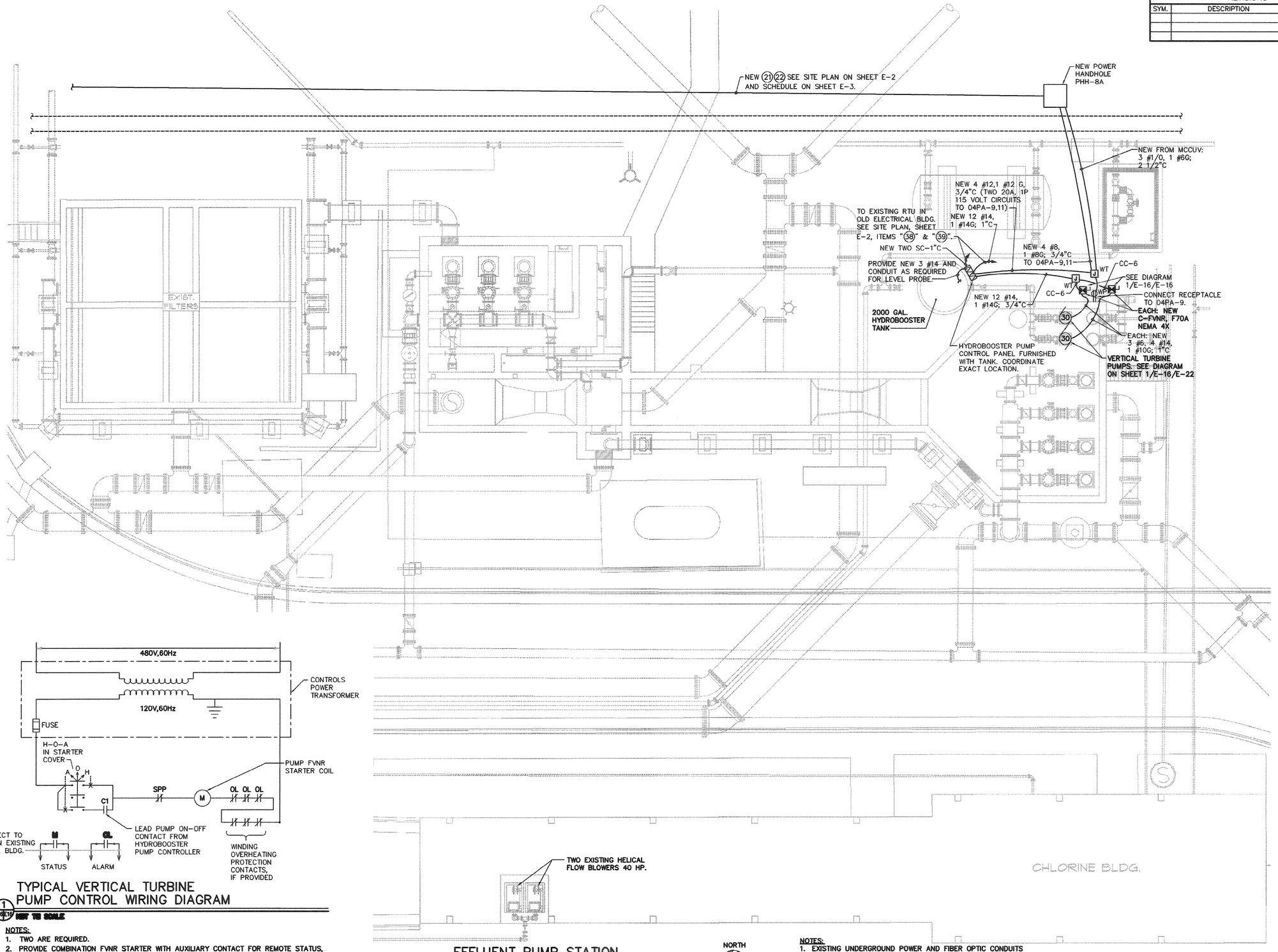
SCHWARTZ
WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

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TYPICAL VERTICAL TURBINE PUMP CONTROL WIRING DIAGRAM

1 E16/E16 NOT TO SCALE

NOTES:
1. TWO ARE REQUIRED.
2. PROVIDE COMBINATION FVNR STARTER WITH AUXILIARY CONTACT FOR REMOTE STATUS, AND ALSO FOR OVERLOAD ALARM, NOTIFICATION VIA SCADA SYSTEM.
3. COORDINATE WITH HYDROBOOSTER SYSTEM SUPPLIER FOR EXACT METHOD TO OBTAIN ACCESS TO "C1" CONTACT.

EFFLUENT PUMP STATION

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

NORTH

NOTES:
1. EXISTING UNDERGROUND POWER AND FIBER OPTIC CONDUITS ARE ENCASED IN CONCRETE.

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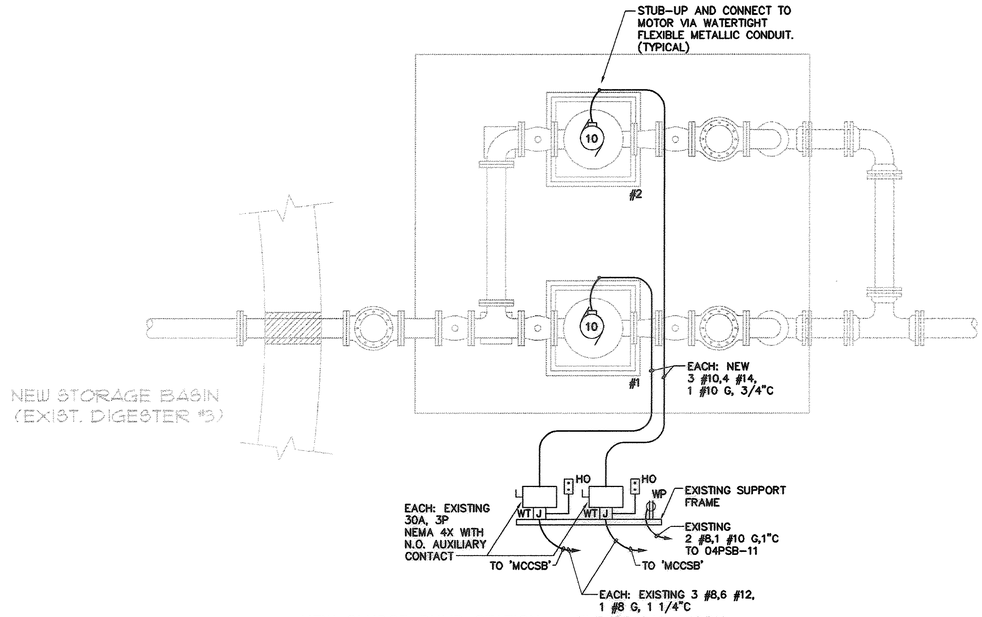
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PARTIAL SITE PLAN
EFFLUENT PUMP
STATION PLAN

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
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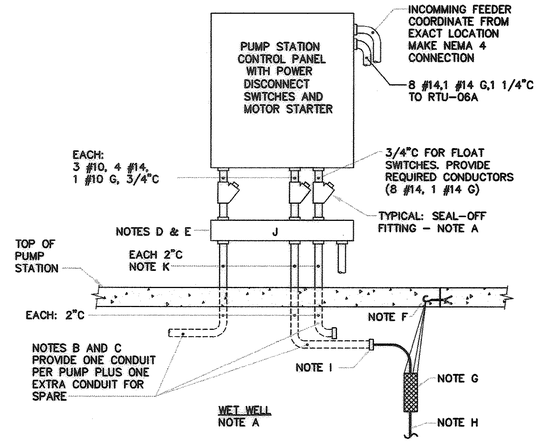


1 E2&E1 NEW SLUDGE PUMP STATION – ELECTRICAL WORK

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

½" = 1'-0" 1' 0 1' 2' 4'

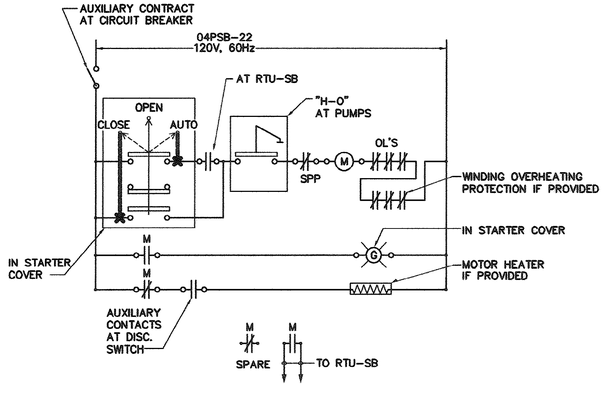
NOTES:
1. COORDINATE FINAL PUMP MOTOR SIZE AND MOTOR CONNECTION REQUIREMENTS PRIOR TO RUNNING ANY CONDUIT.
2. SEE DETAIL 2 ON THIS SHEET FOR CONTROL WIRING DIAGRAM.



PUMP STATION #1 WIRING ELEVATION DETAIL

NOT TO SCALE

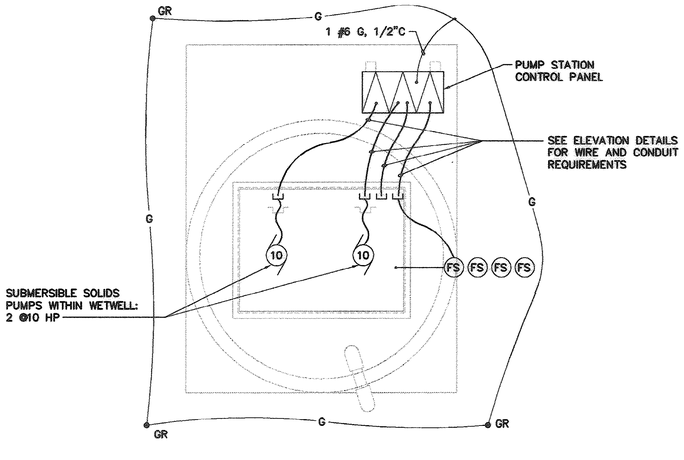
NOTES:
A. WET WELL IN CLASSIFIED AS A CLASS 1, DIVISION 1 GROUPS C AND D LOCATION. PROVIDE SEAL OFF FITTINGS IN ALL CONDUITS ENTERING WET WELL, SEAL WITH COMPOUND AFTER INSTALLATION OF CABLES AS REQUIRED BY THE NEC. AREA ABOVE WET WELL IS CLASSIFIED AS FOLLOWS:
   SPACE WITHIN 3-FOOT RADIOUS OF WETWELL VENT IS CLASSIFIED AS CLASS 1, DIVISION 1;
   SPACE WITHIN 3-FOOT AND 5-FOOT RADIOUS OF VENT IS CLASS 1, DIVISION 2;
   SPACE WITHIN 3-FOOT OF ACCESS HATCH IS CLASSIFIED AS CLASS 1, DIVISION 2 UP TO 18" ABOVE TOP OF WELL OR GRADE. ALL WORK WITHIN THESE AREAS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE NEC.
B. PROVIDE SPARE 2" CONDUIT FROM THE JUNCTION BOX TO INSIDE OF WET WELL.
C. PROVIDE ONE 2" CONDUIT FOR EACH PUMP FROM JUNCTION BOX TO INSIDE WET WELL. INSTALL CABLE FURNISHED BY CONTROL PANEL SUPPLIER, AND SPLICE IN JUNCTION BOX.
D. CONNECT PUMP MOTOR AND FLOAT SWITCHES WIRING FROM JUNCTION BOX TO CONTROL PANEL PER PUMP STATION CONTROL PANEL MANUFACTURER'S CONTROL WIRING DIAGRAM.
E. PROVIDED GASKETED, WATERTIGHT STAINLESS STEEL NEMA 4X JUNCTION BOX, SIZE TO MEET NEC.
F. PROVIDE 3/8" MIN. S.S. HOOK OR OPEN EYE BOLT IN S.S. CONCRETE ANCHOR PER SET OF CABLES.
G. PROVIDE HEAVY DUTY, SINGLE EYE, CLOSED MESH S.S. CORD GRIP SIZED TO FIT CABLE, KELLUMS OR EQUAL TYPICAL FOR ALL FLOAT AND POWER CABLES.
H. TYPICAL POWER, CONTROL AND FLOAT CABLES FURNISHED WITH PUMPS ARRANGE FLOATS FOR MAXIMUM CLEARANCE OF WET WALL AND ADJACENT FLOATS. COORDINATE WITH GENERAL CONTRACTOR.
I. PROVIDE INSULATED BUSHING AT THE END OF EACH CONDUIT. SEAL WATERTIGHT CONDUIT PENETRATION THROUGH WET WELL.
J. COORDINATE FINAL PUMP STATION REQUIREMENTS PRIOR TO RUNNING ANY CONDUIT.
K. SEAL INTERIOR OF OUTGOING CONDUIT TO WET WELL, WITHIN JUNCTION BOX, UTILIZING DUCT TAPE.
L. REFER TO SECTION 16111 FOR CONDUIT SPECIFICATIONS.



3 E1&E17 TYPICAL SLUDGE TRANSFER PUMPS WIRING DIAGRAM (TWO REQUIRED)

NOT TO SCALE

NOTES:
1. STARTERS ARE EXISTING IN 'MCCSB'. REPLACE 20A, 3P BREAKERS WITH NEW 30A, 3P CIRCUIT BREAKERS AND REPLACE O.L. HEATERS WITH NEW ONES.



2 E2&E17 NEW PUMP STATION #1 PLAN – ELECTRICAL WORK

SCALE: NONE

NOTES:
1. SEE ELEVATION DETAIL ON THIS SHEET FOR ADDITIONAL INFORMATION.
2. REFER TO FLOOR PLAN FOR REQUIRED CIRCUIT AND EXTERNAL MOUNTING.

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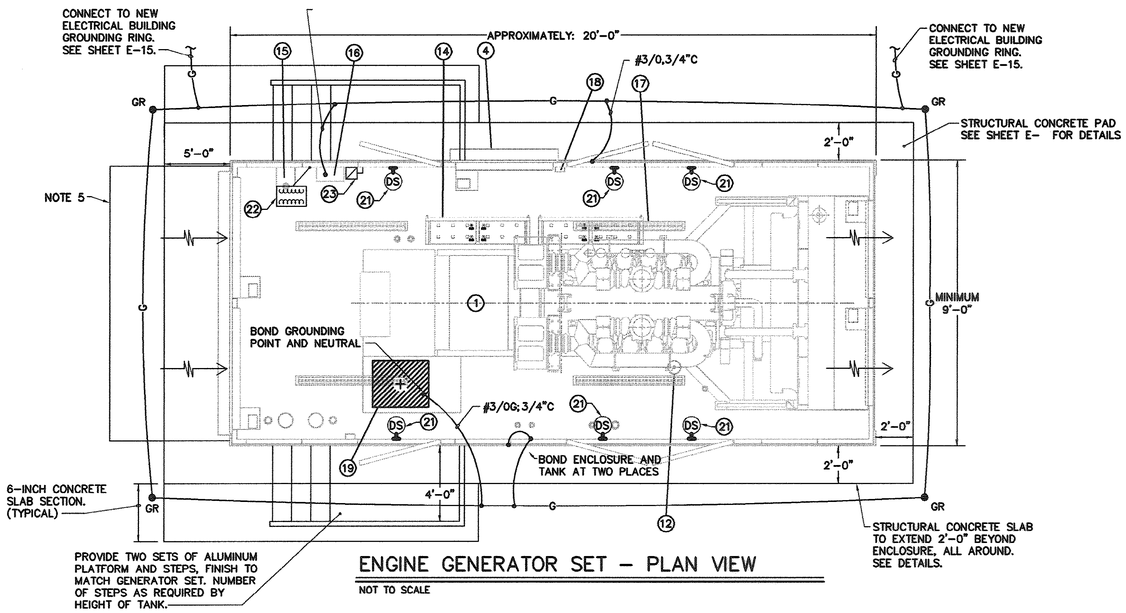
PUMP STATION PLANS AND DETAILS

SCHWARTZ
WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

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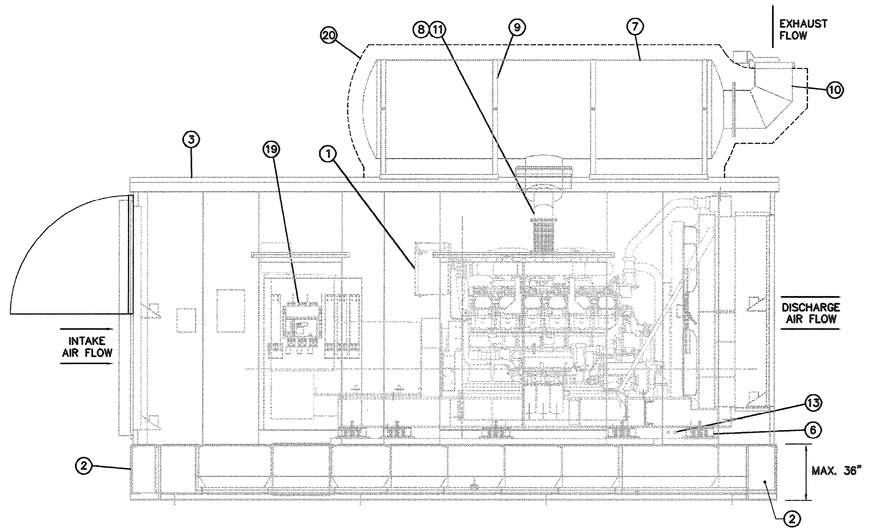
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ENGINE GENERATOR SET – PLAN VIEW

NOT TO SCALE



ENGINE GENERATOR SET – RIGHT SIDE VIEW

NOT TO SCALE

NEW GENERATOR SET PREFRABRICATED WALK-IN WEATHERPROOF HOUSING PLAN

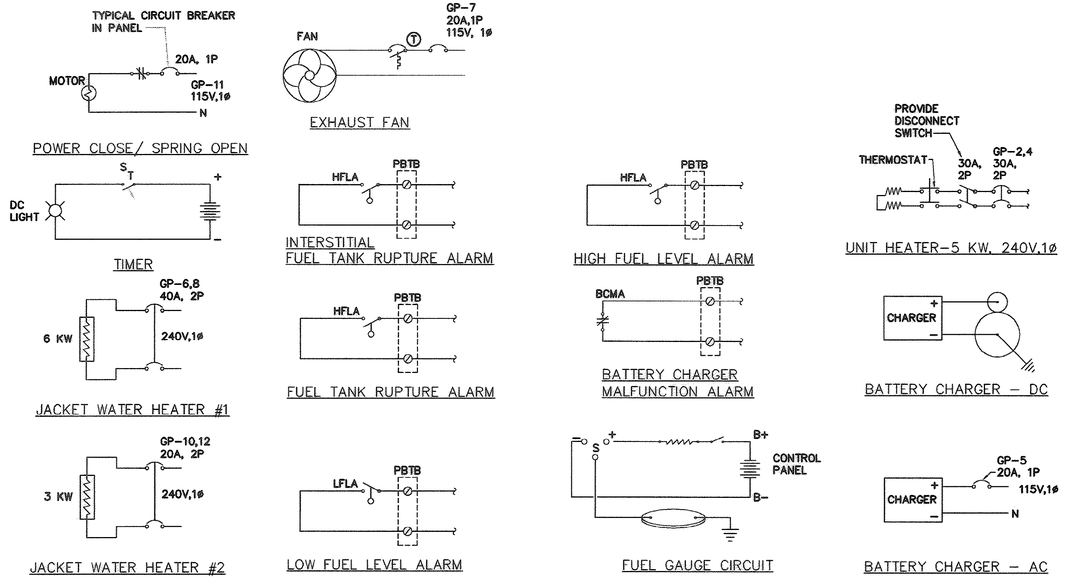
SCALE: 1/4" = 1'-0"

NOTES:

1. PROVIDE ALL THE NECESSARY GRADING AND EARTH BACKFILLING TO ACCOMPLISH PAD ELEVATIONS INDICATED.
2. EXACT DIMENSIONS SHALL BE ADJUSTED TO FIT ENGINE GENERATOR SET AND EQUIPMENT SUBMITTAL.
3. HOUSING OUTLETS AND HOUSING EQUIPMENT SHALL BE FACTORY PROVIDED WITH EQUIPMENT, CONDUIT, MATERIALS AND METHODS CONFORMING TO THE CONTRACT SPECIFICATIONS. REFER TO SECTION 16610 FOR SPECIFIC REQUIREMENTS RELATED TO SWITCHBOARD AND GENERATOR SET.
4. ALL ELECTRICAL CONPONENTS SHALL BE U.L. LISTED.
5. PROVIDE WEATHER PROTECTIVE HOODS OVER AIR INTAKE LOUVERS TO PREVENT RAIN FROM COMING INTO ENCLOSURE UNDER STORMY CONDITIONS.

REVISIONS			
SYM.	DESCRIPTION	DATE	BY

COMP	QTY	DESCRIPTION
1	1	820 KW PRIME/900 KW STANDBY DIESEL ENGINE GENERATOR SET.
2	1	PROVIDE UL LABELED "IN-BASE" FUEL TANK WITH CAPACITY FOR 24 HOUR RATED FUEL TANK AT 900 KW. PROVIDE 10% CAPACITY SECONDARY. CONTAINMENT TANK, LOW FUEL LEVEL ALARM SWITCHES, SECONDARY CONTAINMENT ALARM SWITCHES AND SIX-POINT LIFT PROVISIONS
3	1	STEEL ENCLOSURE – WITH (2) 36W X 72H AND (2) 72W X 72H ACCESS DOORS AND STAINLESS STEEL DOOR HANDLES AND HINGES (APPROXIMATE DIMENSIONS)
4	3	MOTORIZED AIR INTAKE LOUVER WITH STAINLESS STEEL WIRE MESH BIRDSCREEN
5	2	MOTORIZED RADIATOR DISCHARGE LOUVER
6	10	VIBRATION SPRING ISOLATORS
7	1	EXHAUST SILENCER – CRITICAL GRADE
8	1	WYE TYPE EXHAUST FLEXIBLE CONNECTION WITH RAINSKIRT
9	4	SILENCER MOUNTING BRACKET
10	1	90 DEGREE EXHAUST ELBOW WITH RAINCAP
11	1	THERMAL INSULATION BLANKET GROUP FOR FLEX CONNECTION, MANIFOLDS AND TURBOCHARGER
12	1	FUEL/WATER SEPARATOR
13	1	OIL, WATER AND FUMES DISPOSAL LINES
14	1	BATTERIES, RACKS, CABLES AND 120VAC, 75 WATT HEATER PADS WITH THERMOSTAT
15	1	BATTERY CHARGER – 24VDC, 10 AMP
16	1	WALL MOUNTED PANELBOARD 'GP' AS SCHEDULED ON SHEET E-19.
17	4	INTERIOR FLOURESCENT LIGHT WITH (2) 3-WAY WALL SWITCHES
18	2	DUPLEX RECEPTACLE – 120VAC, 20 AMP, GFI PROECTED
19	1	CIRCUIT BREAKER – 1600 AMP, 3-POLE WITH 24VDC SHUNT TRIP AND GROUND FAULT PROTECTION ALARM.
20	1	INSULATION, AS SPECIFIED, FOR SILENCER AND RELATED PIPING WITH ALUMINUM SHEATHING/WEATHER PROTECTING JACKET
21	1	PROVIDE DOOR MINITORING SWITCHES WITH N.C. CONTACTS.
22	1	480-240/120V, 1-PHASE DRY TYPE TRANSFORMER – 15KVA
23	1	60A, 2P FUSED SWTICH SUITABLE FOR SERVICE ENTRANCE.



GENERATOR SET ENCLOSURE – ACCESSORY WIRING – CONNECT ALL LINE VOLTAGE WIRE TO PANE

NOT TO SCALE

NOTE:

1. TANK INSTALLER MUST OBTAIN SEPARATE TANK PERMIT TO SATISFY EPA AND STATE EMVIRONMENTAL PROTECTION REGULATIONS.
2. ALARMS SHOWN HERE SHALL BE TRANSMITTED TO RTU-EB VIA MODBUS NETWORK CONNECTION AS SPECIFIED ON SECTION 16610.
3. PROVIDE ADDITIONAL CIRCUITS AS REQUIRED TO WIRE ALL ELECTRICAL ITEMS IN THE ENCLOSURE.
4. PROVIDE ADDITIONAL ALARMS AND CONTROLS TO SATISFY IBC2003.
5. FOR GENERATOR SET NO. 4 MAKE SAME CONNECTIONS TO PANEL 'GPA'.

RECORD DRAWING, MARCH 2009

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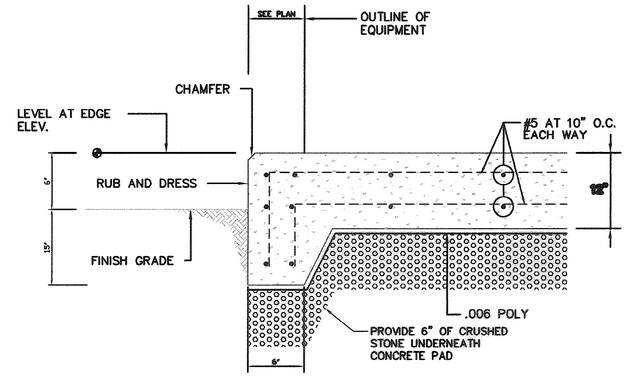
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ENGINE GENERATOR SET DETAILS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

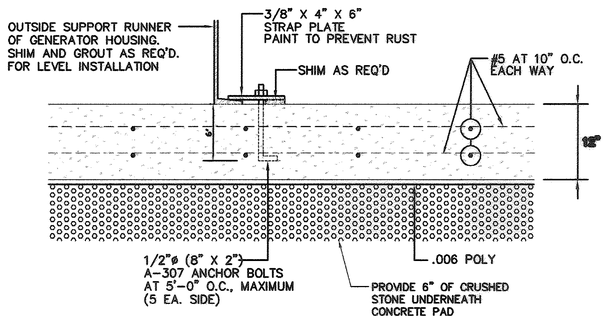
DATE: MAY 2006
DESIGNED:
DRAWN:
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SHEET NO. E-18
OF:

07-024-94/101 5



STRUCTURAL CONCRETE EQUIPMENT PAD

NOT TO SCALE

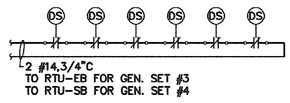


ANCHOR DETAIL

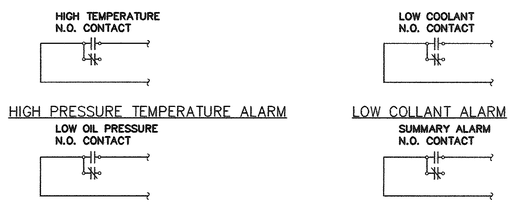
NOT TO SCALE

CONSTRUCTION NOTES FOR GENERATOR SET CONCRETE PAD SITEWORK

1. CLEAR AND GRUB VEGETATION AND OTHER ORGANIC MATTER IN AREA FOR SITE WORK. STRIP TOPSOIL FOR ENTIRE DEPTH AND STOCK PILE FOR RESPREADING AT COMPLETION OF THIS PROJECT.
2. THE CONTRACTOR SHALL EMPLOY A TESTING LABORATORY TO CONFIRM AND TO CERTIFY THE SOIL AND CONCRETE REQUIREMENTS AS INDICATED ON THE DRAWINGS AND IN THE PROJECT SPECIFICATIONS.
3. FILLS AND BACKFILLS SHALL BE COMPACTED AS FOLLOWS:
   A. TOP 12 INCHES = 100 PERCENT PER ASTM D698
   B. ALL OTHERS = 95 PERCENT PER ASTM D698
4. FILL MATERIALS SHALL BE SELECT; FREE OF ANY ORGANIC MATTER, DEBRIS, HARD LUMPS, AND ROCK PARTICLES LARGER THAN 2 INCHES. MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT SHALL BE 100 POUNDS PER CUBIC FOOT AS DETERMINED BY ASTM D698. PLASTICITY INDEX (P.I.) SHALL NOT EXCEED 15.
5. SOIL BEARING PRESSURE USED IN FOUNDATION DESIGN IS 3000 PSF. HAVE SOILS ENGINEER CONFIRM AND CERTIFY BEARING CONDITIONS.
6. ELEVATIONS SHALL BE THE EDGE OF EXTERIOR CONCRETE PAD.
7. ALL DISTURBED LAWN AREAS SHALL BE SEEDED AND GRASSED.
8. ALL CONCRETE WORK SHALL COMPLY WITH ACI 318.
9. CAST-IN-PLACE CONCRETE SHALL BE 4000 PSI, AIR ENTRAINED.
10. REINFORCING STEEL SHALL BE AS FOLLOWS:
    A. REINFORCING BARS: DEFORMED BARS HAVING A MINIMUM YIELD STRENGTH OF 60 KSI (ASTM A615, GRADE 60).
11. CONCRETE COVER FOR REINFORCING SHALL BE AS FOLLOWS:
    A. UNFORMED CONCRETE IN CONTACT WITH THE EARTH = 3 INCHES.
12. CURE CONCRETE FOR A MINIMUM OF SEVEN (7) DAYS WITH LIQUID CURING COMPOUND CONFORMING TO ASTM C-309. ALLOW FOURTEEN (14) DAYS MINIMUM CURING TIME PRIOR TO SETTING GENERATORS.
13. GROUT SHALL BE PRE-MIXED, NON-METALLIC GROUT HAVING A MINIMUM COMPRESSIVE STRENGTH OF 7000 PSI AT 28 DAYS.
14. THE CONTRACTOR SHALL PERFORM A THOROUGH FIELD INSPECTION OF THE EXISTING CONDITIONS PRIOR TO BIDDING THE WORK. THE CONTRACTOR SHALL NOTE AND INCLUDE IN HIS BID ANY EXTRA WORK ITEMS NEEDED TO COMPLETE THIS PROJECT.
15. FIELD VERIFY ALL EXISTING CONDITIONS, ELEVATIONS, AND DIMENSIONS. REPORT FINDINGS AND ANY DISCREPANCIES TO THE ENGINEER FOR EVALUATION PRIOR TO BEGINNING WORK.
16. ALL NEW MATERIALS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS OR INSTRUCTIONS, AND STANDARD INDUSTRY PRACTICES.
17. CONTRACTOR SHALL ERECT AND MAINTAIN ALL SIGNS, BARRICADES, AND OTHER WARNING DEVICES REQUIRED TO SAFELY PREFORM THE WORK.
18. VERIFY CONCRETE PAD SIZE WITH THE GENERATOR SET SUPPLIER PRIOR TO COMMENCING WORK. DIMENSIONS SHOWN HERE ARE ONLY APPROXIMATE.
19. VERIFY EXACT LOCATION OF PAD WITH OWNER PRIOR TO STARTING.
20. VERIFY SPACING AND LOCATION OF ANCHOR BOLTS WITH THE GENERATOR SUPPLIER AND APPROVED SHOP DRAWINGS.
21. STEEL PLATES AND SHIMS SHALL BE A-36 - HOT DIP GALVANIZED.
22. PROVIDE ALL OF THE NECESSARY EARTH MOVING TO PREPARE SITE FOR GENERATOR PAD.



DOOR MONITORING ALARM



GENERATOR SET ALARMS WIRING DIAGRAMS

NOT TO SCALE

LOAD (KVA) PH1	LOAD (KVA) PH2		DESCRIPTION	WIRE SIZE	BRKR RAT'G	CKT. NO.		CKT. NO.	BRKR RAT'G	WIRE SIZE	DESCRIPTION	LOAD (KVA) PH1	LOAD (KVA) PH2	
0.4			LIGHTING	12	20/1	1		2	30/2	10	UNIT HEATER	2.5		
	0.4		RECEPTACLES	12	20/1	3		4	.	10	.		2.5	
0.4			BATTERY CHARGER	12	20/1	5		6	40/2	8	JACKET WATER NTR. #1	3.0		
	1.2		FAN	12	20/1	7		8	.	8	(6 KW)		3.0	
0.5			GEN. HEATER	12	20/1	9		10	20/2	12	JACKET WATER NTR. #2	1.5		
	0.2		DAMPER CONTROLS	12	20/1	11		12	.	12	(3 KW) (IF NEEDED)		1.5	
0.0			SPARE	.	20/1	13		14	15/3	.	SPARE	0.0		
	0.0		SPARE	.	20/1	15		16	.	.	.		0.0	
0.0			SPARE	.	20/1	17		18	.	.	.	0.0		
	0.0		S.O.	.	.	19		20	.	.	S.O.		0.0	
0.0			S.O.	.	.	21		22	.	.	S.O.	0.0		
	0.0		S.O.	.	.	23		24	.	.	S.O.		0.0	
0.0			.	.	.	25		26	.	.	.	0.0		
	0.0		.	.	.	27		28	.	.	.		0.0	
0.0			.	.	.	29		30	.	.	.	0.0		
	0.0		.	.	.	31		32	.	.	.		0.0	
0.0			.	.	.	33		34	.	.	.	0.0		
	0.0		.	.	.	35		36	.	.	.		0.0	
0.0			.	.	.	37		38	.	.	.	0.0		
	0.0		.	.	.	39		40	.	.	.		0.0	
0.0			.	.	.	41		42	.	.	.	0.0		

TYPE: BRANCH CIRCUIT
MOUNTING: SURFACE
SUPPLY: 240/120V, 1-PH, 3W
MAINS: 80A M.C.B.
SCIR: 10,000 A
NOTES:
1. SUITABLE FOR SERVICE ENTRANCE.
2. TO BE PROVIDED AS PART OF GENERATOR SET ENCLOSURE IN CONFORMANCE WITH SECTION 16470.

GROSS PHASE TOTALS
PH1= 8.3 KVA
PH2= 8.8 KVA

PANELS 'GP' AND 'GPA'

CONNECTED LOAD: 71 AMPERES	
LIGHTING	0.4 KVA
HEATING	14.5 KVA
A/C MOTORS & HEAT PUMPS	0.0 KVA
AIR HANDLING & EXH FANS	1.2 KVA
RECEPTACLES	0.4 KVA
ELECTRIC WATER HEATING	0.0 KVA
ELEVATORS	0.0 KVA
FOOD PROCESSING	0.0 KVA
PROCESS	0.0 KVA
MISCELLANEOUS	0.6 KVA
TOTAL CONNECTED LOAD	17.1 KVA

REVISIONS			
SYM.	DESCRIPTION	DATE	BY

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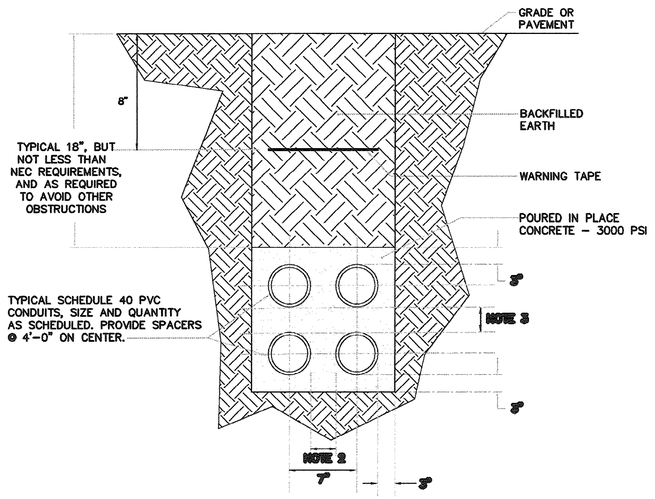
ENGINE GENERATOR SET
CONCRETE PAD DETAILS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE: MAY 2006
DESIGNED:
DRAWN:
CHECKED:
SCALE: AS SHOWN
SHEET NO. E-19
OF:

RECORD DRAWING, MARCH 2009

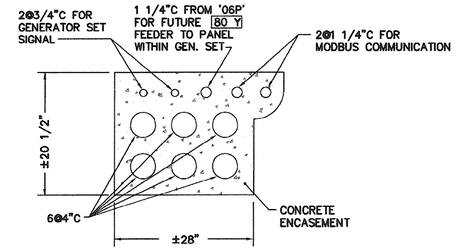
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TYPICAL SECTION THROUGH DUCTBANK RUN (FOR SYSTEMS RATED 600V AND LESS)

1 E20 E20 — NOT TO SCALE

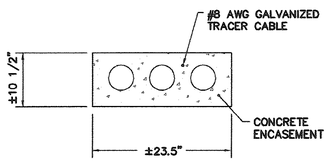
NOTES:
1. ALL FEEDERS RUN OUTSIDE REQUIRE CONCRETE ENCASEMENT.
2. PROVIDE 3" OR MORE, SEPARATION BETWEEN ADJACENT POWER CONDUITS, 2" SEPARATION BETWEEN SIGNAL CONDUITS.



SECTION THRU DUCTBANK FOR FUTURE ENGINE GENERATOR SET

5 E14 E20 — NOT TO SCALE

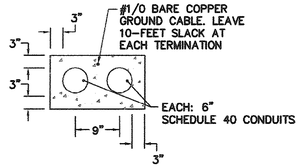
NOTES:
1. REFER TO 1/E20/E20 FOR ADDITIONAL REQUIREMENTS.



SECTION THRU SINGNAL DUCTBANK

9 E14 E20 — NOT TO SCALE

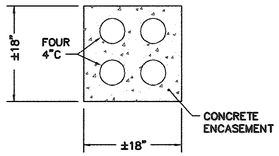
NOTES:
1. REFER TO 1/E20/E20 FOR ADDITIONAL REQUIREMENTS.



SECTION THRU POWER CO. DUCTBANK

8 E14 E20 — NOT TO SCALE

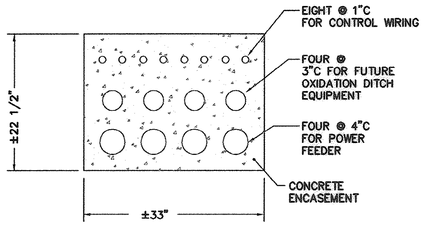
NOTES:
1. REFER TO 1/E20/E20 FOR ADDITIONAL REQUIREMENTS.



SECTION THRU POWER DUCTBANK

2 E14 E20 — NOT TO SCALE

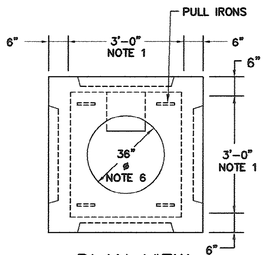
NOTES:
1. REFER TO 1/E20/E20 FOR ADDITIONAL REQUIREMENTS.



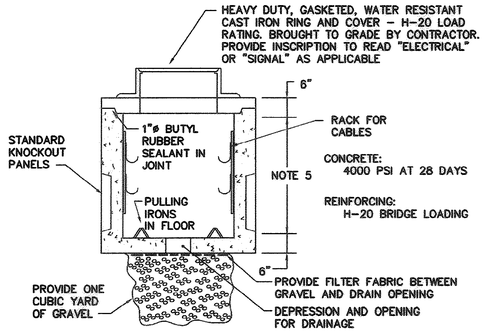
SECTION THRU DUCTBANK

6 E14 E20 — NOT TO SCALE

NOTES:
1. REFER TO 1/E20/E20 FOR ADDITIONAL REQUIREMENTS.



PLAN VIEW

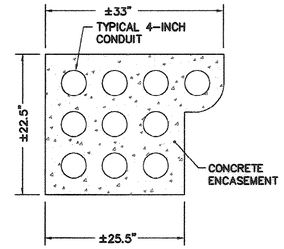


SECTION VIEW

TYPICAL HANDHOLE DETAIL

10 E20 E20 — NOT TO SCALE

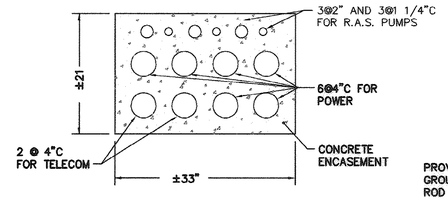
NOTES:
1. POWER MANHOLES PHH-A1 AND A2 DIMENSIONS SHALL BE 4'-0" x 4'-0" x 4'-0", INTERIOR DIMENSIONS.
2. RACK CABLES TO THE SIDES IN A NEAT AND ORGANIZED MANER.
3. PROVIDE IN EACH HANDHOLE LABEL IDENTIFICATION TAGS FOR EACH CIRCUIT OR CABLE. STATING CABLE USAGE, ORIGIN AND TERMINATION POINT.
4. RACK FIBER OPTICS CABLES SEPARATELY FROM COPPER CABLES.
5. HANDHOLE HEIGHT AS REQUIRED TO MAINTAIN CONDUIT DEPTH, BUT NOT LESS THAN 3'-0", EXCEPT AS OTHERWISE REQUIRED PER NOTE 1.
6. USE 24" ACCESS COVER FOR SIGNAL HANDHOLES.



SECTION THRU DUCTBANK FROM PAD MOUNTED TRANSFORMER TO SWITCHBOARD '06MSB' AND LOCATION OF FUTURE SWITCHBOARD

3 E14 E20 — NOT TO SCALE

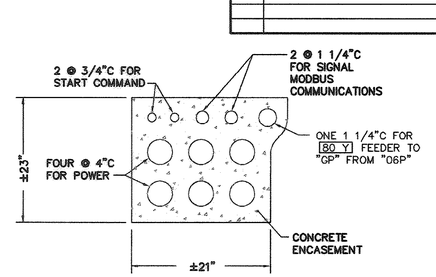
NOTES:
1. REFER TO 1/E20/E20 FOR ADDITIONAL REQUIREMENTS.



SECTION THRU TYPICAL POWER/TELECOM CAMPUS DUCTBANK

7 E14 E20 — NOT TO SCALE

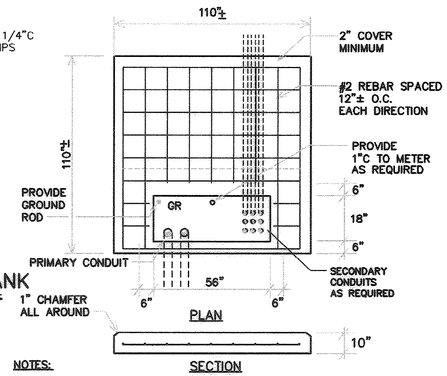
NOTES:
1. REFER TO 1/E20/E20 FOR ADDITIONAL REQUIREMENTS.



SECTION THRU GENERATOR SET DUCTBANK

4 E14 E20 — NOT TO SCALE

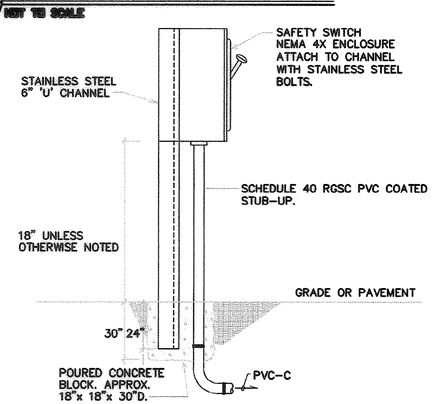
NOTES:
1. REFER TO 1/E20/E20 FOR ADDITIONAL REQUIREMENTS.



NOTES:
1. CONCRETE TO BE 3,000 LBS. GRADE.
2. DIMENSIONS SHOWN HERE ARE ONLY APPROXIMATE. OBTAIN FROM POWER CO. THE EXACT DIMENSIONS AND PAD CONFIGURATION, REQUIRED AND PROVIDE PAD TO SATISFY POWER COMPANY'S REQUIREMENTS.
4. PAD SHALL HAVE AN AVERAGE HEIGHT OF 6" ABOVE GRADE AND SHALL BE RECESSED IN THE GROUND, NOT LESS THAN 4-INCHES FOR A TOTAL MINIMUM THICKNESS OF 10".

PAD MOUNTED TRANSFORMER CONCRETE PAD TYPICAL

11 E14 E20 — NOT TO SCALE



TYPICAL FIELD DISCONNECT SUPPORT

NOT TO SCALE

RECORD DRAWING, MARCH 2009

07-024-96/101 5

REVISIONS			
SYM.	DESCRIPTION	DATE	BY

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DUCT BANK SECTIONS AND DETAILS

SCHWARTZ
WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

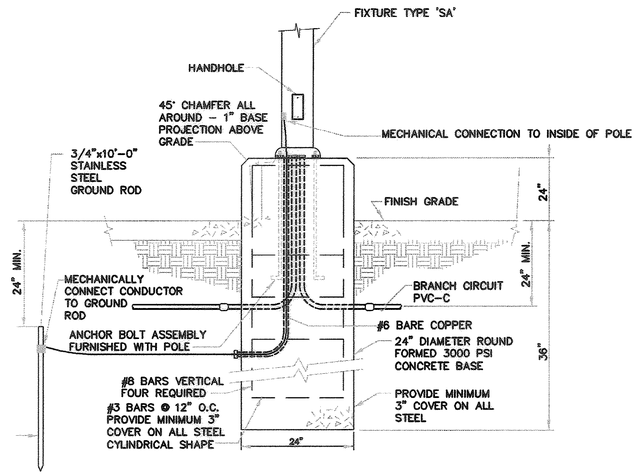
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OF:	

REVISIONS			
SYM.	DESCRIPTION	DATE	BY

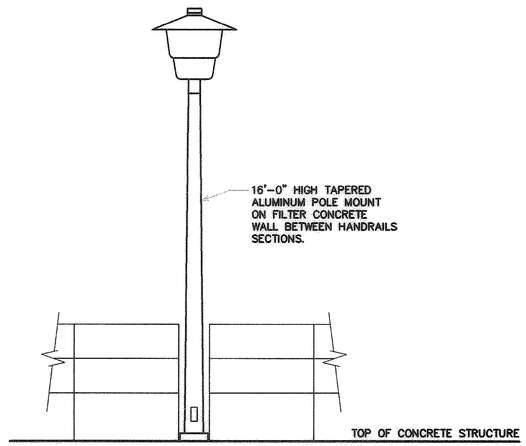
LIGHTING FIXTURE SCHEDULE

FIXTURE TYPE	MANUFACTURER & CATALOG INFORMATION	LAMPS QTY.	LAMPS TYPE	LAMPS WATTS	BALLAST QTY.	BALLAST TYPE	BALLAST WATTS	TOTAL WATTS	DESCRIPTION
									FLUORESCENT
A	LITHONIA DM240 OR EQUAL (120V)	2	F32T8	32	1	ELECTRONIC	58	58	TOTALLY ENCLOSED CORROSION RESISTANT 4-FOOT LONG. MOUNT SUSPENDED FROM STRUCTURE, AT APPROX. 9'-0" AFF.
B	LITHONIA TWP 15085 OR EQUAL (120V)	1	HPS	150	1	CWA	170	170	OUTDOOR, WEATHERPROOF FIXTURE WITH POLYCARBONATE LENS AND MULTI-TAP BALLAST. MOUNT ON BUILDING WALL. PROVIDE BACK-UP PLATE, AS REQUIRED.
C	LITHONIA KACM150STB (120V)	1	HPS	150	1	CWA	170	170	WEATHERPROOF SURFACE MOUNTED HIGH PRESSURE SODIUM SQUARE FIXTURE, ENCLOSED AND GASKETED. U.L. LISTED FOR WET LOCATION, DROP PRISMATIC LENS, SURFACE MOUNTED.
D	RAL VP SERIES	1	INCAND.	150	–	–	–	150	WALL MOUNTED INCANDESCENT FIXTURE WITH GASKET. GLASS GLOBE. GUARD. UL LISTED FOR WET LOCATION.
E	LITHONIA ELUX-N-H OR EQUAL (120V)	2	HALOGEN	8	–	–	–	16	EMERGENCY BATTERY LIGHT WITH 90-MINUTE NICKEL-CADMIUM BATTERY PACK.
SA	GE #P15S2A-2-A-M-S-3-GR-U WITH POLE # ARTA 163S5.0ASNA OR EQUAL (120V) NOTE 2	2	HSP	150	1	AUTOREG.	170	170	HPS POST-TOP FIXTURE, 16-FOOT, ROUND, 0.188 THICK ALUMINUM POLE, HANDHOLE, P.E. COIL SWITCH. SUITABLE FOR 110 MILE SUSTAINED WIND. MUST MATCH EXISTING SIMILAR FIXTURES AT SITE. MOUNT ON CONCRETE BASE.
SAA	GE #P15S2A-2-A-M-S-3-GR-U WITH POLE # ARTA 163S5.0ASNA OR EQUAL (120V) NOTE 2	2	HPS	150	1	AUTOREG.	170	170	HPS POST-TOP FIXTURE, 16-FOOT, ROUND, 0.188 THICK ALUMINUM POLE, HANDHOLE, P.E. COIL SWITCH. SEE DETAIL ON THIS SHEET. SUITABLE FOR 110 MILE SUSTAINED WIND. MUST MATCH EXISTING SIMILAR FIXTURES AT SITE.

NOTES:
1. EQUIVALENT FIXTURES, AS JUDGED BY THE ENGINEER, FROM DAYBRITE, G.E., WILLIAMS, STONCO, COOPER LIGHTING, WIDELITE OR HUBBELL, ARE EQUALLY ACCEPTABLE.



CONCRETE BASE DETAIL FIXTURE TYPE 'SA'
NOT TO SCALE



TYPE 'SAA' FIXTURE DETAIL
NOT TO SCALE
NOTES:
1. INSTALL FIXTURE ON CONCRETE WALL. COORDINATE WITH GENERAL CONTRACTOR FOR CASTING ANCHOR BOLTS INTO THE CONCRETE WALL.

RECORD DRAWING, MARCH 2009

07-024-97/101 S

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LIGHTING FIXTURE SCHEDULE AND DETAILS

SCHWARTZ
WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE:	MAY 2006
DESIGNED:	
DRAWN:	
CHECKED:	
SCALE:	AS SHOWN
SHEET NO.	E-21
OF:	

LOAD (KVA) PH1	LOAD (KVA) PH2		DESCRIPTION	WIRE SIZE	BRKR RAT'G	CKT. NO.
0.2			PLC	12	15/1	1
	0.8		STARTER CONTROL	12	15/1	3
0.2			RECEPTACLES	12	20/1	5
	0.2		RTU--06A	12	15/1	7
1.2			MFM VAULT S.P.	12	20/1	9
	0.4		LTG & INSTR.	12	20/1	11
0.0			SPARE	.	15/1	13
	0.0		SPARE	.	15/1	15
0.0			SPARE	.	15/1	17
	0.0		.	.	.	19
0.0			.	.	.	21
	0.0		.	.	.	23
0.0			.	.	.	25
	0.0		.	.	.	27
0.0			.	.	.	29
	0.0		.	.	.	31
0.0			.	.	.	33
	0.0		.	.	.	35
0.0			.	.	.	37
	0.0		.	.	.	39
0.0			.	.	.	41

CKT. NO.	BRKR RAT'G	WIRE SIZE	DESCRIPTION	LOAD (KVA) PH1	LOAD (KVA) PH2	
2	20/1	12	CUBICLE HEATERS	1.0		
4	15/1	.	SPARE		0.0	
6	20/1	12	SITE LIGHTING	0.2		
8	15/1	.	SPARE		0.0	
10	20/1	.	SPARE	0.0		
12	20/1	.	SPARE		0.0	
14	20/1	.	SPARE	0.0		
16	20/1	.	SPARE		0.0	
18	20/1	.	SPARE	0.0		
20	.	.	.		0.0	
22	.	.	.	0.0		
24	.	.	.		0.0	
26	.	.	.	0.0		
28	.	.	.		0.0	
30	.	.	.	0.0		
32	.	.	.		0.0	
34	.	.	.	0.0		
36	.	.	.		0.0	
38	.	.	.	0.0		
40	.	.	.		0.0	
42	.	.	.	0.0		

TYPE: BRANCH CIRCUIT
MOUNTING: SURFACE
SUPPLY: 240/120V, 1-PH, 3W
MAINS: 60A M.C.B.
SCIR: 10,000 A
NOTES:
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GROSS PHASE TOTALS
PH1= 2.8 KVA
PH2= 1.4 KVA

CONNECTED LOAD: 18 AMPERES

LIGHTING	0.2 KVA
HEATING	1.0 KVA
A/C MOTORS & HEAT PUMPS	0.2 KVA
AIR HANDLING & EXH FANS	0.0 KVA
RECEPTACLES	0.2 KVA
ELECTRIC WATER HEATING	0.0 KVA
ELEVATORS	0.0 KVA
FOOD PROCESSING	0.0 KVA
PROCESS	0.4 KVA
MISCELLANEOUS	2.2 KVA
TOTAL CONNECTED LOAD	4.2 KVA

PANEL 06MCP

LOAD (KVA) A	B	C	DESCRIPTION	WIRE SIZE	BRKR RAT'G	CKT. NO.
0.8			REC. - LOWER LEVEL	12	20/1	1
	0.6		REC. - UPPER LEVEL	12	20/1	3
		0.8	LIGHTING LOWER LEVEL	12	20/1	5
0.3			LIGHTING SITE	12	20/1	7
	0.0		SPARE	.	20/1	9
		0.0	SPARE	.	20/1	11
0.0			.	.	.	13
	0.0		.	.	.	15
		0.0	.	.	.	17
0.0			.	.	.	19
	0.0		.	.	.	21
		0.0	.	.	.	23
0.0			.	.	.	25
	0.0		.	.	.	27
		0.0	.	.	.	29
0.0			.	.	.	31
	0.0		.	.	.	33
		0.0	.	.	.	35
.	.	.	.	.	.	37
.	.	.	.	.	.	39
.	.	.	.	.	.	41

CKT. NO.	BRKR RAT'G	WIRE SIZE	DESCRIPTION	LOAD (KVA) A	B	C
2	15/1	12	U.S. LEVEL SENSOR	0.0		
4	15/1	12	FIT's		0.0	
6	15/1	.	SPARE			0.0
8	15/1	.	SPARE	0.0		
10	15/1	.	SPARE		0.0	
12	15/1	.	SPARE			0.0
14	.	.	.	0.0		
16	.	.	.		0.0	
18	.	.	.			0.0
20	.	.	.	0.0		
22	.	.	.		0.0	
24	.	.	.			0.0
26	.	.	.	0.0		
28	.	.	.		0.0	
30	.	.	.			0.0
32	.	.	.	0.0		
34	.	.	.		0.0	
36	.	.	.			0.0
38	.	.	.			
40	.	.	.			
42	.	.	.			

TYPE: BRANCH CIRCUIT
MOUNTING: SURFACE
SUPPLY: 208/120V, 3-PH, 4W
MAINS: 40 AMP MAIN CIRCUIT BREAKER
SCIR: 10,000 AMPERES
NOTES:
1. WITH EQUIPMENT GROUND BUS.
#REF!
2. NEMA 3R WITH STAINLESS STEEL ENCLOSURE.
.
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GROSS PHASE TOTALS
A= 1.1 KVA
B= 0.6 KVA
C= 0.8 KVA

CONNECTED LOAD CURRENT: 7 AMPERES

LIGHTING	1.1 KVA
HEATING	0.0 KVA
A/C MOTORS & HEAT PUMPS	0.0 KVA
AIR HANDLING & EXH FANS	0.0 KVA
RECEPTACLES	1.4 KVA
ELECTRIC WATER HEATING	0.0 KVA
ELEVATORS	0.0 KVA
FOOD PROCESSING	0.0 KVA
PROCESS	0.0 KVA
MISCELLANEOUS	0.0 KVA
TOTAL CONNECTED LOAD	2.5 KVA

PANEL 06HWP

LOAD (KVA) A	B	C	DESCRIPTION	WIRE SIZE	BRKR RAT'G	CKT. NO.
0.0			S.O.	.	.	1
	0.0		S.O.	.	.	3
		0.0	S.O.	.	.	5
0.0			S.O.	.	.	7
	0.0		S.O.	.	.	9
		0.0	S.O.	.	.	11
5.7			OCSSCP'	8	50/3	13
	5.7		.	8	.	15
		5.7	.	8	.	17
7.2			'GRCP #2'	8	50/3	19
	7.2		.	8	.	21
		7.2	.	8	.	23
1.7			WCCP	10	30/3	25
	1.7		.	10	.	27
		1.7	.	10	.	29
0.0			SPARE	.	50/3	31
	0.0		.	.	.	33
		0.0	.	.	.	35
.	.	.	S.O.	.	.	37
.	.	.	S.O.	.	.	39
.	.	.	S.O.	.	.	41

CKT. NO.	BRKR RAT'G	WIRE SIZE	DESCRIPTION	LOAD (KVA) A	B	C
2	.	.	S.O.	0.0		
4	.	.	S.O.		0.0	
6	.	.	S.O.			0.0
8	.	.	S.O.	0.0		
10	.	.	S.O.		0.0	
12	.	.	S.O.			0.0
14	50/3	8	'GRCP#1'	7.2		
16	.	8	.		7.2	
18	.	8	.			7.2
20	30/3	10	'SWWCCP#1'	3.3		
22	.	10	.		3.3	
24	.	10	.			3.3
26	15/3	12	PANEL 06HWP	1.6		
28	.	12	VIA 9 KVA		0.6	
30	.	12	.			0.8
32	30/3	10	'SWWCCP#2'	3.3		
34	.	10	.		3.3	
36	.	10	.			3.3
38	.	.	.			
40	.	.	.			
42	.	.	.			

TYPE: BRANCH CIRCUIT
MOUNTING: SURFACE
SUPPLY: 480V, 3-PH, 3W
MAINS: 200 AMP MAIN CIRCUIT BREAKER
SCIR: 25,000 AMPERES
NOTES:
1. WITH EQUIPMENT GROUND BUS.
2. SUITABLE FOR SERVICE ENTRANCE.
3. NEMA 3R WITH STAINLESS STEEL ENCLOSURE.
.
.

GROSS PHASE TOTALS
A= 18.0 KVA
B= 17.0 KVA
C= 17.2 KVA

CONNECTED LOAD CURRENT: 63 AMPERES

LIGHTING	1.6 KVA
HEATING	0.0 KVA
A/C MOTORS & HEAT PUMPS	0.0 KVA
AIR HANDLING & EXH FANS	0.0 KVA
RECEPTACLES	1.4 KVA
ELECTRIC WATER HEATING	0.0 KVA
ELEVATORS	0.0 KVA
FOOD PROCESSING	0.0 KVA
PROCESS	49.2 KVA
MISCELLANEOUS	0.0 KVA
TOTAL CONNECTED LOAD	52.2 KVA

PANEL 06HWDP

MOTOR CONTROL CENTER '06MCC'

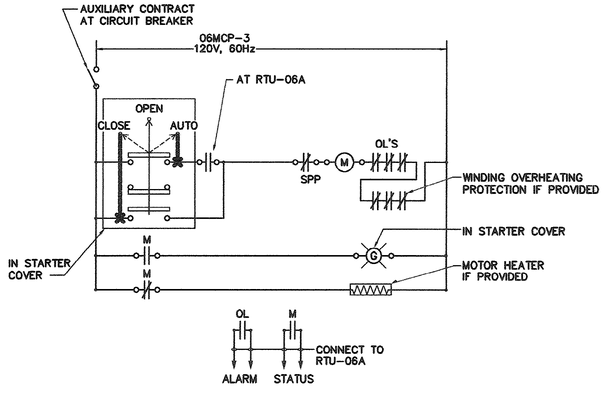
SERVICE: 480V, 3-PH, 3W
TYPE: NEMA 3R, TYPE 1, CLASS B, WITH PLC & I/O
MAIN BUS: 600 AMPERES
SCIR: 42,000 AMPERES

NOTES:
1. WITH EQUIPMENT GROUNDING BUS
2. NEMA 3R, NON-WALK-IN, STAINLESS STEEL ENCLOSURE.
3. WITH BUILT-IN TVSS COMPLYING WITH SECTION 16428.
4. REFER TO SECTION 16156 FOR ADDITIONAL REQUIREMENTS.
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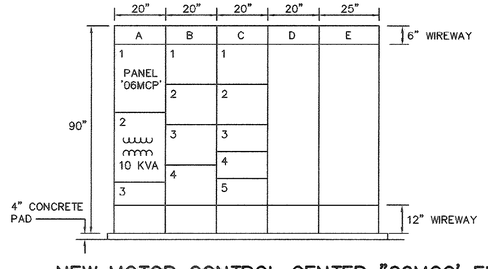
CONNECTED LOAD (KVA)	
LIGHTING	0.0
HEATING	0.0
A/C & HEAT PUMPS	0.0
AIR HANDLING	0.0
WATER HEATING	0.0
RECEPTACLES	0.0
ELEVATORS	0.0
FOOD PROCESSING	0.0
PROCESS	0.0
MISCELLANEOUS	0.0
TOTAL (KVA)	0.0

CONNECTED LOAD: 0 AMPERES

UNIT	LOAD SERVED	HP	FLA	STARTER	-	3P, C.B.	WIRE & CONDUIT	REMARKS	LOAD (KVA) PER PHASE A	B	C
A1	PANEL '06MCP'	.	.	.	.	.	INTERNAL	SEE SCHED.	0.0	0.0	0.0
A2	10 KVA TRANSFORMER	.	.	.	.	.	INTERNAL	240/120V,1ø	0.0	0.0	0.0
A3	INCOMING LINE	.	.	.	.	.	SEE POWER RISER	.	0.0	0.0	0.0
B1	FUT. RAS PUMP #5	3	4.8	FVNR	.	15	3/4"C	a,b,c,d,e,f,g,h,i	0.0	0.0	0.0
B2	WAS PUMP #2	3	4.8	FVNR	.	15	3 #12,4 #14,1 #12 G,3/4"C	a,b,c,d,e,f,g,h,i	0.0	0.0	0.0
B3	WAS PUMP #1	3	4.8	FVNR	.	15	3 #12,4 #14,1 #12 G,3/4"C	a,b,c,d,e,f,g,h,i	0.0	0.0	0.0
B4	FUT. RAS PUMP #4	3	4.8	FVNR	.	15	3/4"C	a,b,c,d,e,f,g,h,i	0.0	0.0	0.0
C1	CLARIFIER #2	1	2.1	FVNR	.	15	3 #12,6 #14,1 #14 G, 3/4"C	a,b,c,d,e,f,g,i,j	0.0	0.0	0.0
C2	FUT. CLARFIER #2	1	2.1	FVNR	.	15	3 #12,6 #14,1 #12 G, 3/4"C	a,b,c,d,e,f,g,i,j	0.0	0.0	0.0
C3	SPARE CIRCUIT BREAKER	.	.	.	.	100	.	100/3 C.B.	0.0	0.0	0.0
C4	SPARE CIRCUIT BREAKER	.	.	.	.	60	.	60/3 C.B.	0.0	0.0	0.0
C5	PUMP STATION #1	.	.	.	.	80	3 #4,1 #8 G, 2"C	80/3 C.B.	0.0	0.0	0.0
D1	PLC	.	.	.	.	.	.	m,n	0.0	0.0	0.0
E1	RACK/ENCL. FOR RTU-06A	.	.	.	.	.	.	k,l,n	0.0	0.0	0.0



TYPICAL 'WAS' PUMPS WIRING DIAGRAM (TWO REQUIRED)
3 E13.22
NOT TO SCALE



NEW MOTOR CONTROL CENTER "06MCC' ELEVATION
2 E16.22
NOT TO SCALE

NOTES:
1. MAXIMUM DIMENSIONS = 145" WIDE x 20" DEEP + NEMA 3R ENCLOSURE.

MOTOR CONTROL CENTER SCHEDULES NOTES:

a. 120V, 60Hz CONTROL POWER FROM PANEL '06MCP'. PROVIDE TERMINAL STRIP.

b. WITH AUXILIARY CONTACT IN CIRCUIT BREAKER FOR CONTROL POWER DISCONNECTION WHEN BREAKER OR POWER SWITCH IS IN THE OPEN POSITION.

c. WITH H-O-A SWITCH IN STARTER COVER.

d. WITH GREEN "RUN" PILOT LIGHT IN STARTER COVER. (VERIFY COLOR WITH OWNER PRIOR TO SUBMITTING SHOP DRAWINGS)

e. WITH TWO N.O. AND ONE N.C. EXTRA AUXILIARY CONTACTS OVER AND AND ABOVE WHAT IS REQUIRED FOR "d".

f. WITH SEPARATE SINGLE PHASE RELAY PROTECTION SYSTEM. ("SPP" CONTACT)

g. WITH PROVISIONS FOR REMOTE CONTROL WHEN IN THE AUTOMATIC POSITION.

h. SEE DIAGRAM ON THIS SHEET.

i REMOTELY CONTROLLED FROM RTU-06A.

j. WITH SPECIAL CONTROL REQUIREMENTS PER CONTROL WIRING DIAGRAM ON SHEET E-12.

k. PROVIDE RACK TO MOUNT THE FOLLOWING EQUIPMENT: FIBER OPTICS PATCH PANEL, WIRE CONCENTRATOR TO CONVERT FROM FIBER TO COPPER WIRE, AND RTU (SCADA SYSTEM REMOTE TERMINAL UNIT). PROVIDE NEMA 20R DOUBLE DUPLEX RECEPTACLE.

l. CONTRACTOR TO INSTALL HERE RTU-06A.

m. PROVIDE 120V POWER SUPPLY TO OPERATE PLC.

n. PROVIDE ENVIRONMENTAL HEATER IN CUBICLE WITH THERMOSTAT. FEED FROM PANEL '06MCP.'

RECORD DRAWING, MARCH 2009

REVISIONS SYM.	DESCRIPTION	DATE	BY
1	V.E. REVISIONS	8/06/04	DL
2	ADD FAN WIRING	8/11/05	DL
3	HEADWORK REVISION	3/26/09	DFW

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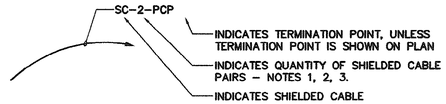
Hobbs, Upchurch & Associates, P.A.
Consulting Engineers
Myrtle Beach, South Carolina 29577
PHONE: (843) 626-1910 FAX: (843) 626-1746

ELECTRICAL EQUIPMENT SCHEDULES AND DIAGRAMS

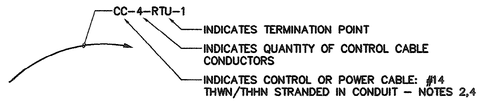
SCHWARTZ WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE: MAY 2006
DESIGNED:
DRAWN:
CHECKED:
SCALE: AS SHOWN
SHEET NO. E-22
OF:

07-024-98/101 S



TYPICAL INSTRUMENTATION CABLE HOMERUN REPRESENTATION



TYPICAL CONTROL CABLE HOMERUN REPRESENTATION (AC OR DC POWER)

CONTROL AND INSTRUMENTATION CABLE HOMERUN LEGEND AND PLAN REPRESENTATION

1 E-23 NOT TO SCALE

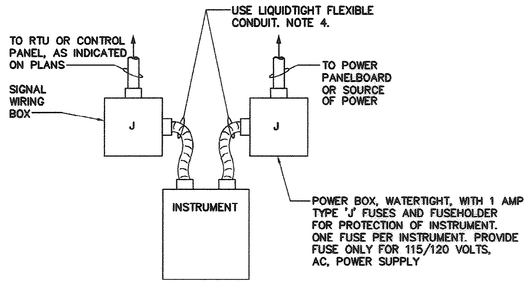
NOTES:

1. SHIELDED CABLES FOR INSTRUMENTATION AND CERTAIN POWER APPLICATIONS, "SC" CABLES, SHALL BE #16 TWISTED PAIR, STRANDED, BELD FOIL ALUMINUM–POLYESTER 100% SHIELDED COVERAGE CHROME PVC JACKET OR EQUIVALENT FOR INDOOR APPLICATIONS. USE SIMILAR CABLE, FOR OUTDOOR, OR BELOW GRADE OR BELOW–SLAB APPLICATIONS, EXCEPT WITH FLUORINATED ETHYLENE–PROPYLENE JACKET.
2. DO NOT MIX SHIELDED CABLES AND NON–SHIELDED CONTROL CONDUCTORS IN SAME CONDUIT.
3. IF NO QUANTITY IS GIVEN IT IS TO REQUIRE ONE (1) CABLE.
4. PROVIDE EQUIVALENT GROUNDING CONDUCTOR IN EACH "CC" CONDUIT RUN IN ADDITION TO THE INDICATED CONDUCTORS.

INSTRUMENTATION AND CONTROL CABLES CONDUIT CHART

CONDUIT SIZE – INCHES NOTE *	MAXIMUM SC SHIELDED CABLES	MAXIMUM THHN/THWN CONDUCTORS #14 AWG
3/4	2	21
1	4	33
1 1/4	6	52
1 1/2	9	76
2	16	133
2 1/2	25	200
3	50	291

* – EXTERIOR, UNDERGROUND CONDUIT SHALL BE MINIMUM 1–INCH SIZE, (CONDUIT BETWEEN STRUCTURES) REGARDLESS THAT THIS CHART MAY ALLOW SMALLER CONDUIT.



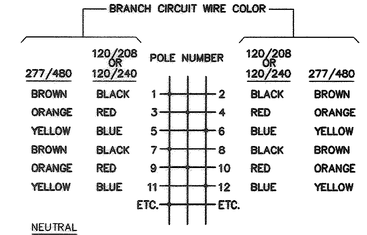
TYPICAL INSTRUMENT CONNECTION REQUIREMENTS – DETAIL

2 E-23 NOT TO SCALE

NOTES:

1. BOXES SHALL BE CAST ALLOY TYPE WITH HUBS.
2. ALL CONNECTIONS SHALL BE WATERTIGHT.
3. SUPPORT BOXES INDEPENDANTLY OF INSTRUMENT.
4. PRIOR TO RUNNING FINAL CONDUIT VERIFY SIZE OF CONDUIT HUBS IN INSTRUMENTATION ENCLOSURE.

TYPICAL PANEL DIAGRAM



NEUTRAL

120/240 OR 120/208 VOLTS – WHITE

277/480 VOLTS – WHITE WITH IDENTIFIABLE COLOR STRIPE (NOT GREEN). IF NOT AVAILABLE AT TIME OF INSTALLATION, CLEAR USE OF GRAY WITH ELECTRICAL INSPECTOR.

GROUND WIRE, WHEN USED OR CALLED FOR, SHALL BE GREEN FOR ALL VOLTAGES.

REVISIONS			
SYM.	DESCRIPTION	DATE	BY

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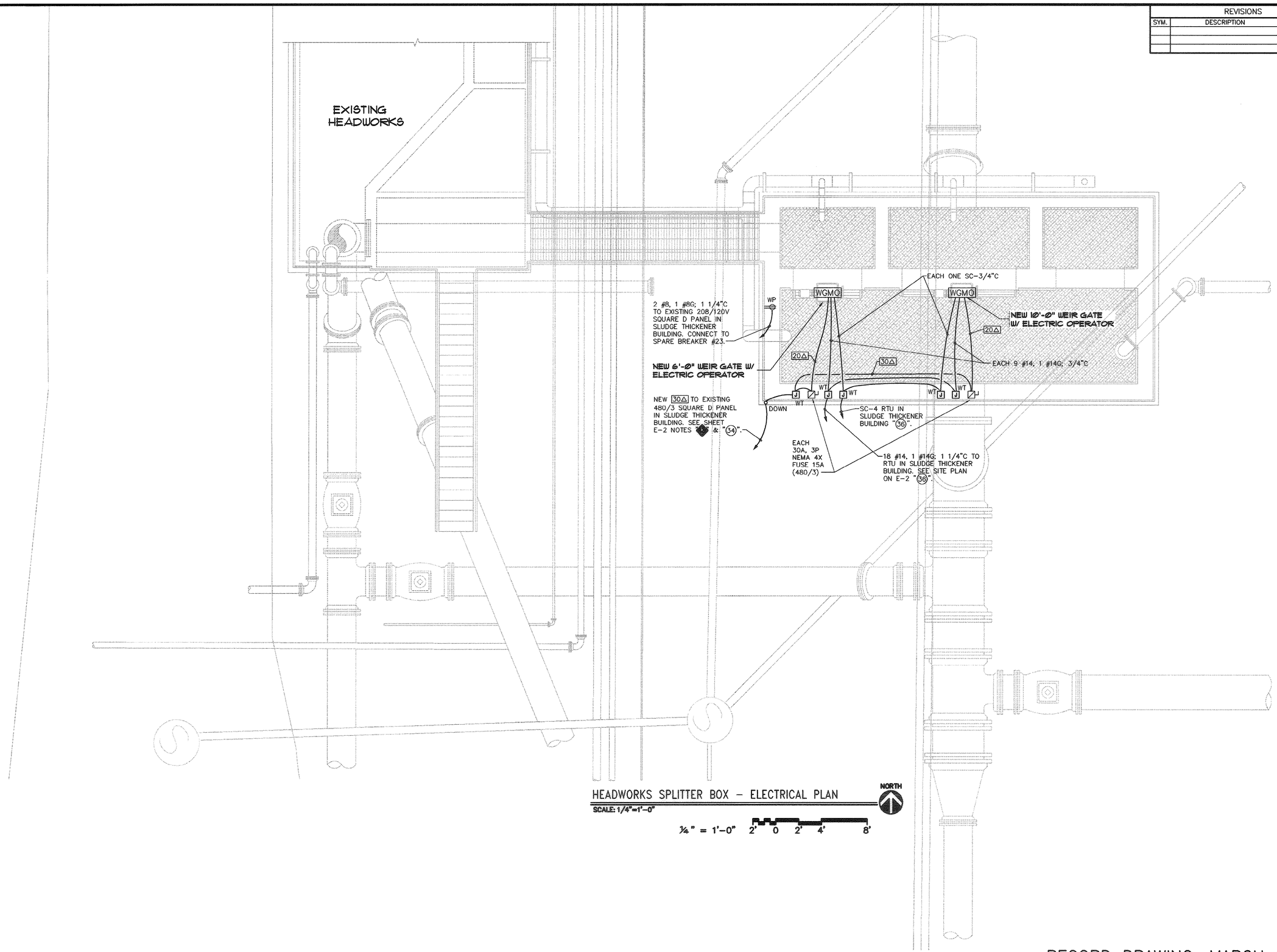
MISCELLANEOUS DETAILS

SCHWARTZ
WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE: MAY 2006
DESIGNED:
DRAWN:
CHECKED:
SCALE: AS SHOWN
SHEET NO. E-23
OF:

RECORD DRAWING, MARCH 2009

07-024-99/101 5



HEADWORKS SPLITTER BOX – ELECTRICAL PLAN

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

NORTH

¼" = 1'-0" 2' 0 2' 4' 8'

REVISIONS			
SYM.	DESCRIPTION	DATE	BY

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NEW HEADWORKS SPLITTER BOX

SCHWARTZ
WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

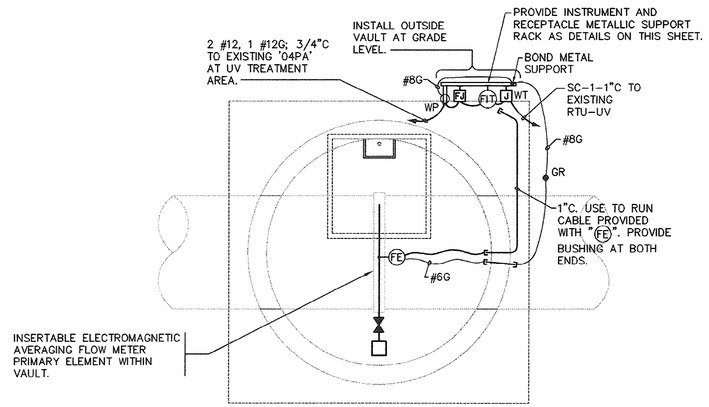
DATE:	MAY 2006
DESIGNED:	
DRAWN:	
CHECKED:	
SCALE:	AS SHOWN
SHEET NO.	E-24
OF:	

RECORD DRAWING, MARCH 2009

07-024-100/101

5

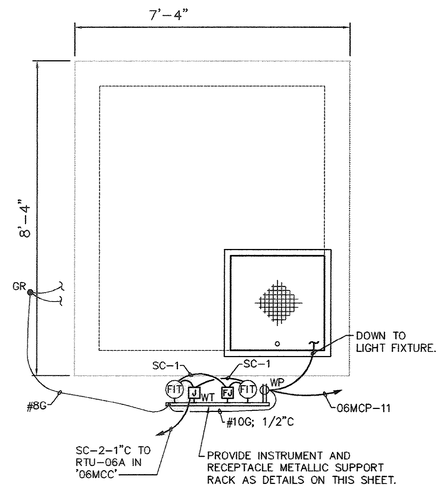
REVISIONS			
SYM.	DESCRIPTION	DATE	BY
1	V.E. REVISIONS	8/06/04	DL
2	ADD FAN WIRING	8/11/05	DL



1 E2.5 TYPICAL MH FLOW METER VAULT (TWO REQUIRED)

SCALE: NONE

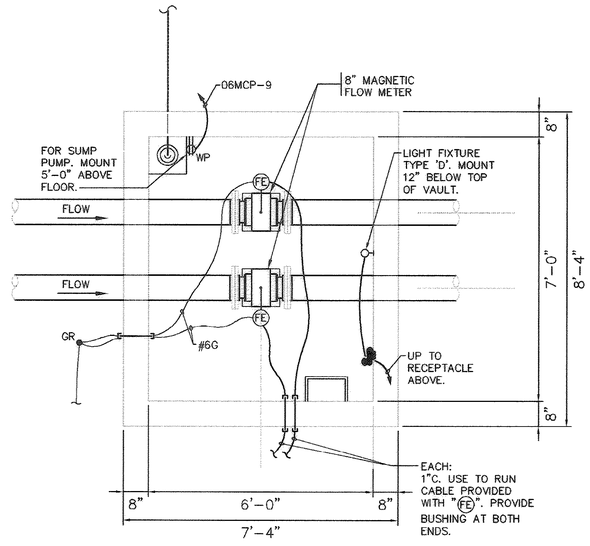
NOTES:
1. WATERPROOF INTERIOR OF CONDUITS PENETRATING VAULT.



MAGNETIC FLOW METER VAULT - TOP VIEW

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

½" = 1'-0" 1' 0 1' 2' 4'

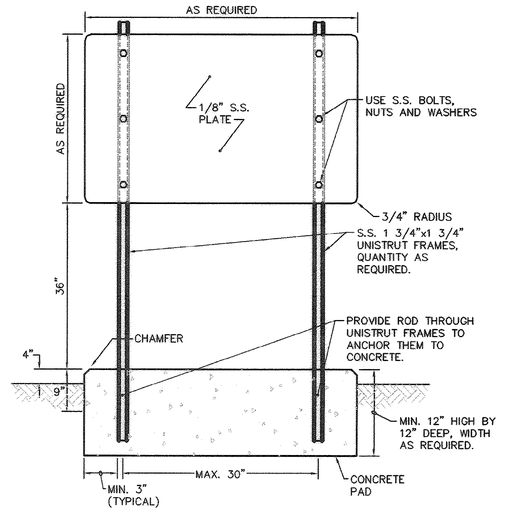


2 E2.5 MAGNETIC FLOW METER VAULT - LOWER VIEW

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

½" = 1'-0" 1' 0 1' 2' 4'

NOTES:
1. WATERPROOF INTERIOR OF CONDUITS PENETRATING VAULT.



SMALL EQUIPMENT, OUTLET AND INSTRUMENTATION FREE-STANDING SUPPORT RACK

SCALE: NONE

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METER VAULT DETAILS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE: MAY 2006
DESIGNED:
DRAWN:
CHECKED:
SCALE: AS SHOWN
SHEET NO. E-25
OF:

RECORD DRAWING, MARCH 2009

07-024-101/101