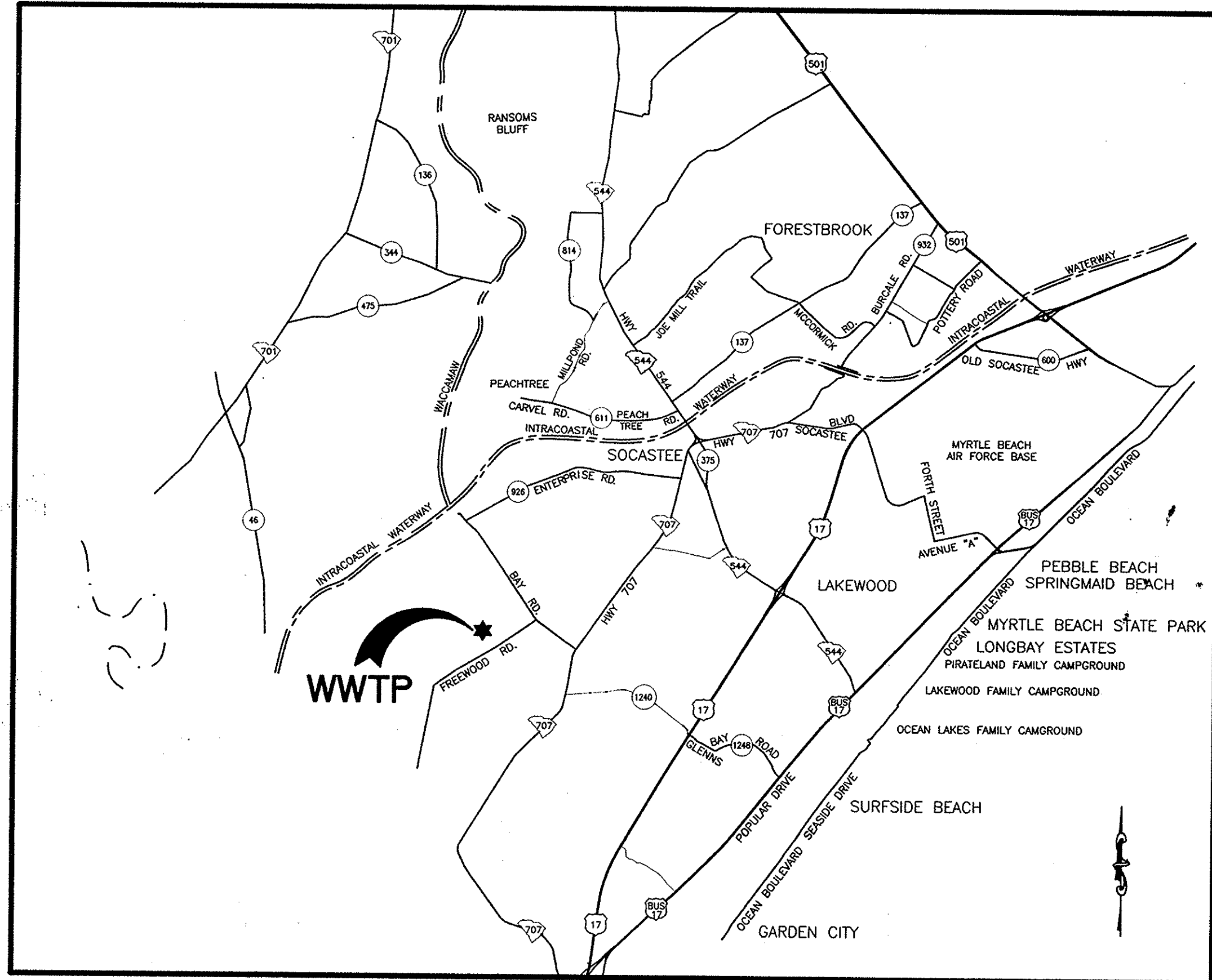
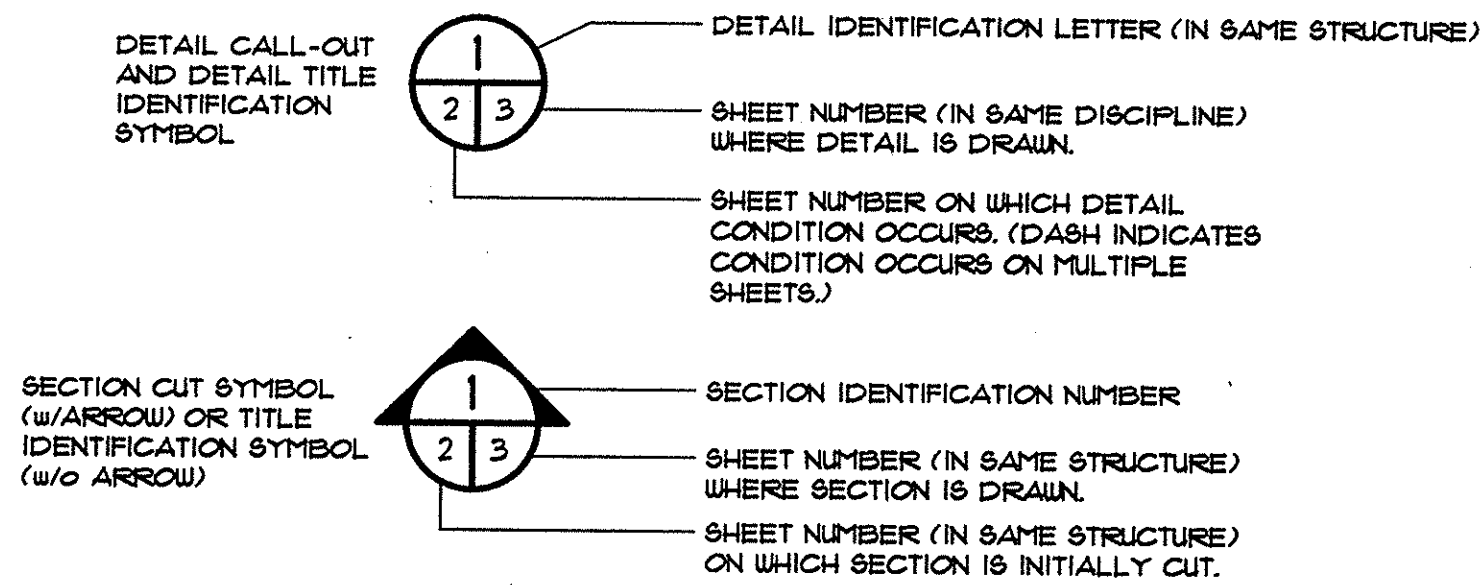


GENERAL CONSTRUCTION ABBREVIATIONS

•	NUMBER OR POUND	D	DIAMETER	INFL	INFLUENT	R.C.P.	REINFORCED CONCRETE PIPE
•	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	DULS.	DOUELS	L.L.O.	LONG LEG OUT	REINF	REINFORCING OR REINFORCED
•	AT	EF.	EACH FACE	LB	POUND	REQ'D	REQUIRED
AB.	ANCHOR BOLT	EJ.	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	FRP.	FIBERGLASS REINFORCED PLASTIC	MNTG	MOUNTING	S.W.	SLAB WIDTH
CAP	CAPACITY	FIG	FIGURE	N.P.W.	NONPOTABLE WATER	S.W.D.	SIDE WALL DEPTH
CIRCUM	CIRCUMFERENCE	FIN	FINISHED	N.T.S.	NOT TO SCALE	T/	TOP OF
CL	CLAY	FL.	FLANGE	NO.	NUMBER	T.C.J.	TYP. CONTROL JOINT, CONSTRUCTION JOINT
CL.R.	CLEARANCE	FLR	FLOOR	O.C.	ON CENTER	THRD	THREAD(SXED)
CL2	CENTERLINE	FTG	FOOTING	O/O	OUTSIDE TO OUTSIDE	TRICK	TRICKLING
CLORINE	CHLORINE	GALV	GALVANIZED	OPNG	OPENING	TYP	TYPICAL
CLARIF	CLARIFIER	HDWE	HARDWARE	OX	OXIDATION	U.O.N.	UNLESS OTHERWISE NOTED
CHEM.	CHEMICAL	HK	HOOK	P.E.	PLAIN END	VERT	VERTICAL
COL	COLUMN	HORIZ	HORIZONTAL	FED	PEDESTAL	W.W.F.	WELDED WIRE FABRIC
CONC.	CONCRETE	HP.	HIGH POINT	PL	PLATE	W/	WITH
CONST	CONSTRUCTION	HYD	HYDRANT	PLCS.	PLACES	W/O	WITHOUT
CONT	CONTINUOUS	ID.	INSIDE DIAMETER	PROJ	PROJECTION	WAS	WASTE ACTIVATED SLUDGE
CONTR	CONTRACTOR	O.D.	OUTSIDE DIAMETER	P.S.	PUMP STATION	W/L	WATER LEVEL
CU	COPPER			P.V.C.	POLYVINYL CHLORIDE		
C.W.	CONCRETE WALL						

SECTION/DETAIL LEGEND



VICINITY MAP
N.T.S.

INDEX OF SHEETS

XX XXXXXX = NOT IN CONTRACT

GENERAL

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- G-2 VICINITY MAP AND INDEX
- G-3 HYDRAULIC PROFILE
- G-4 SLUDGE SCHEMATIC
- G-5 EXISTING SITE PLAN
- G-6 DEMOLITION AND CLEARING/GRUBBING SITE PLAN
- G-7 NEW SITE PLAN
- G-8 HEADWORKS, OXIDATION DITCH, & ELECTRICAL BUILDING LAYOUT PLAN
- G-9 POST AERATION & SLUDGE TREATMENT BUILDING LAYOUT PLAN
- G-10 GRADING AND DRAINAGE PLAN
- G-11 HEADWORKS, OXIDATION DITCH, & ELECTRICAL BUILDING GRADING AND DRAINAGE PLAN
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- G-19 NEW ACCESS ROAD PLAN AND PROFILE
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- G-21 MISCELLANEOUS DETAILS
- G-22 MISCELLANEOUS DETAILS
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- A-3 SLUDGE TREATMENT BUILDING LAYOUT
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- A-6 SLUDGE TREATMENT BUILDING UPPER PLAN AND WALL SECTIONS
- A-7 SLUDGE TREATMENT BUILDING DOOR & WINDOW DETAILS
- A-8 SLUDGE TREATMENT BUILDING CEILING PLAN & DETAILS
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- S-7 HEADWORKS SECTIONS
- S-8 OXIDATION DITCH, UPPER PLAN
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- S-10 OXIDATION DITCH, PARTIAL FOUNDATION/PILE PLAN
- S-11 OXIDATION DITCH, PARTIAL FOUNDATION/PILE PLAN
- S-12 OXIDATION DITCH, SECTIONS AND DETAILS
- S-13 OXIDATION DITCH, SECTIONS
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- S-20 POST AERATION / UV DISINFECTION CHAMBER, SECTIONS
- S-21 POST AERATION / UV DISINFECTION CHAMBER, SECTIONS
- S-22 DEEP BED SAND FILTERS, EXPANSION UPPER & LOWER PLAN VIEW
- S-23 DEEP BED SAND FILTERS, SECTIONS AND DETAILS
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- S-33 ELECTRICAL BUILDING FOUNDATION AND ROOF FRAMING PLAN
- S-34 STANDARD DETAILS
- S-35 GENERAL NOTES AND STANDARD DETAILS

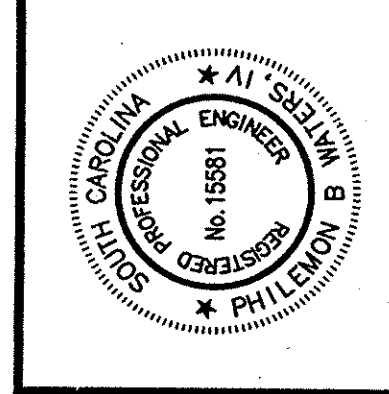
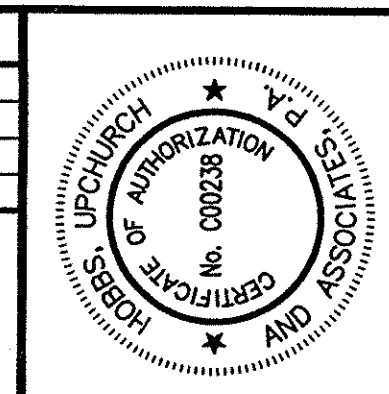
ENVIROMENTAL

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- EN-2 HEADWORKS INTERMEDIATE PLAN
- EN-3 HEADWORKS LOWER PLAN
- EN-4 HEADWORKS SECTIONS
- EN-5 HEADWORKS SECTIONS
- EN-6 HEADWORKS GRIT CLASSIFIER PLAN AND SECTIONS
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VICINITY MAP
AND INDEX

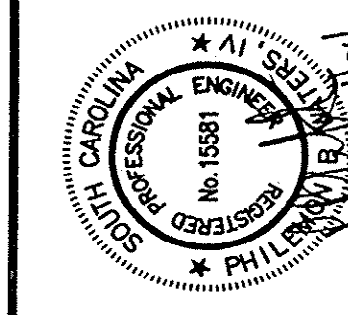
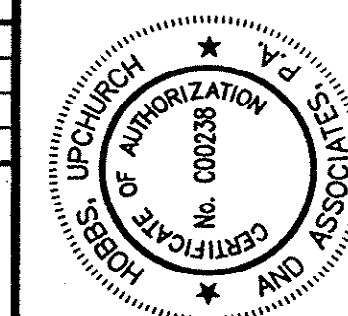
SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

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DRAWN:	ARM
CHECKED:	JWM
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OF:

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SLUDGE SCHEMATIC

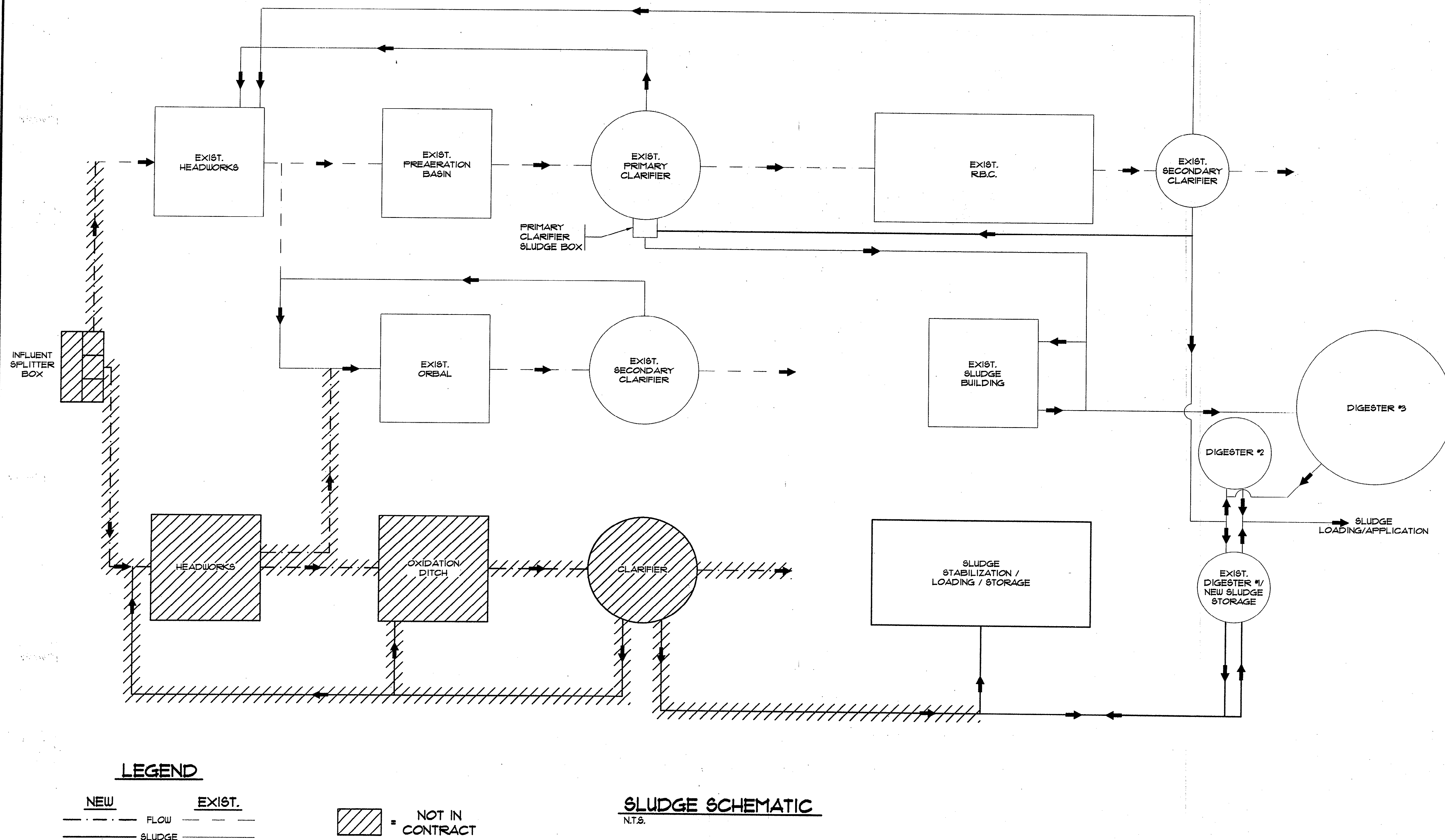
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PLANT UPGRADE
GRAND STRAND WATER &
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SCALE: AS SHOWN

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G-4

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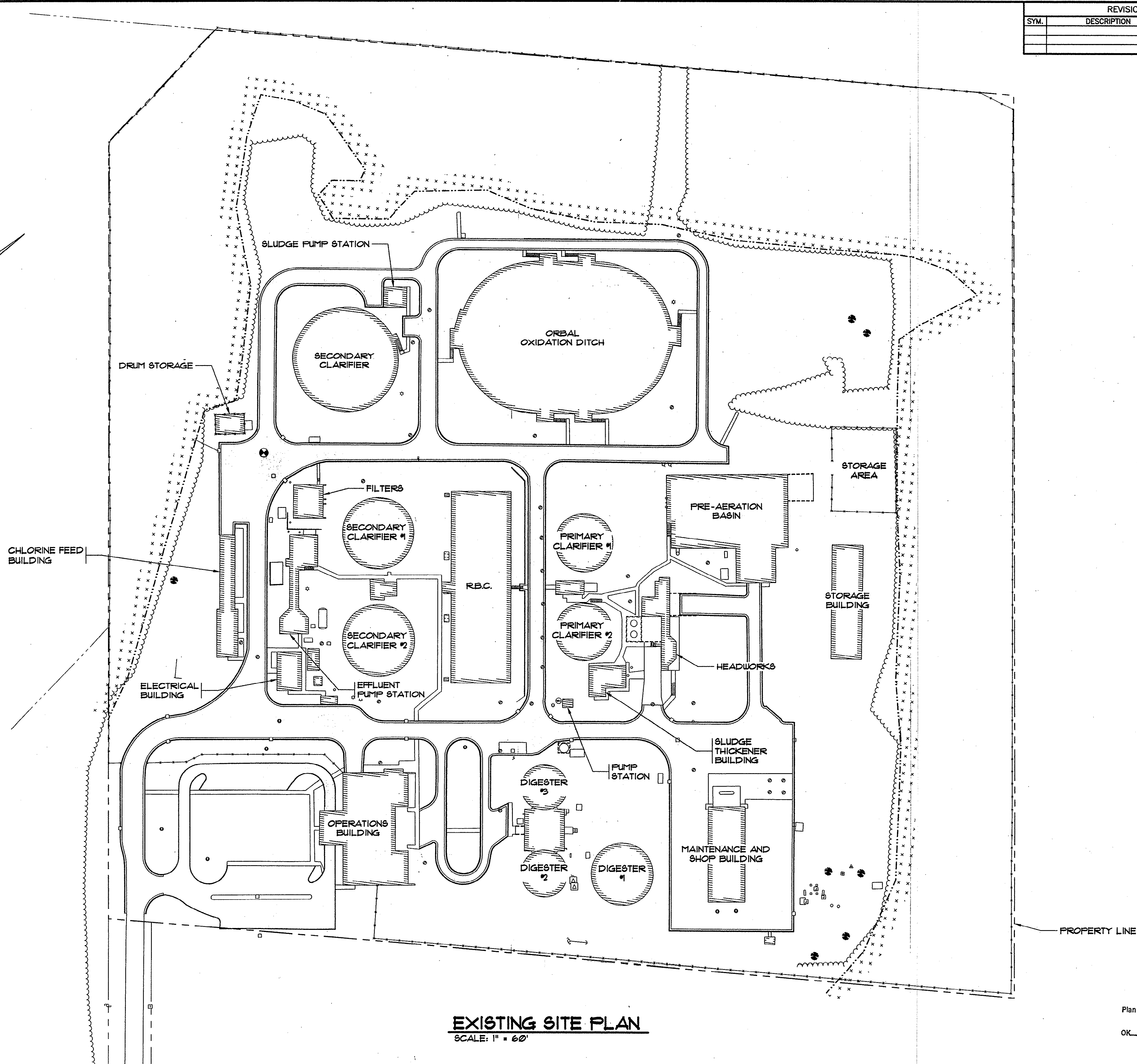


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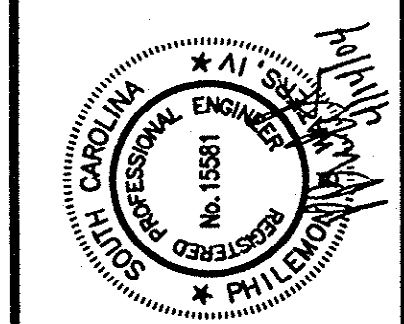
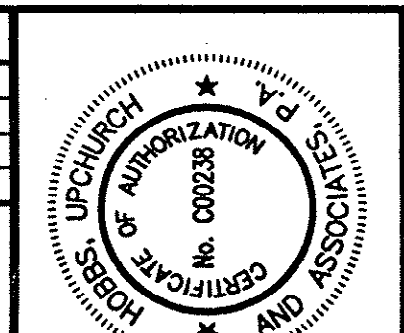
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LEGEND		
EXISTING	FEATURE	NEW
---	AIR	---
---	STORM DRAIN	---
---	SLUDGE	---
---	CL. FEED	---
---	INFLUENT	---
---	EFFLUENT	---
---	PROPERTY LINE	---
---	SANITARY SEWER	---
---	YARD PIPING	---
---	FORCEMAIN	---
---	POTABLE WATER	---
---	PLANT SERVICE WATER	---
---	GRID LINES	---
---	1' CONTOUR	---
---	5' CONTOUR	---
---	BUILDING	---
---	PAVED ROAD	---
---	GRAVEL ROAD	---
---	WETLAND AREA	---
---	TREE LINE / CLEARING LIMIT	---
---	FENCE	---
---	PINE TREE	---
---	WATT HOUR METER	---
---	ELECTRIC TRANSFORMER	---
---	ELECTRIC JUNCTION BOX	---
---	ELECTRIC MANHOLE	---
---	HOSE BIB (H.B.)	---
---	LIGHT POLE	---
---	TELEPHONE VAULT	---
---	CATCH BASIN (C.B.)	---
---	JUNCTION BOX (J.B.)	---
---	FLARED END SECTION (F.E.S.)	---
---	CHECK VALVE	---
---	SANITARY SEWER MANHOLE	---
---	VALVE MAKER	---
---	WATER METER	---
---	VALVE	---
---	FIRE HYDRANT	---



EXISTING SITE PLAN
SCALE: 1" = 60'

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SYM.	DESCRIPTION	DATE	BY



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EXISTING SITE PLAN

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

DATE:	SEPT. 2003
DESIGNED:	PBW
DRAWN:	ARM
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SCALE:	AS SHOWN

SHEET NO.	G-5
OF:	1

Plan Reviewer for Horry County
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---	AIR	---
---	STORM DRAIN	---
---	SLUDGE	---
---	CL. FEED	---
---	INFLUENT	---
---	EFFLUENT	---
---	PROPERTY LINE	---
---	SANITARY SEWER	---
---	YARD PIPING	---
---	FORCETAIN	---
---	POTABLE WATER	---
---	PLANT SERVICE WATER	---
---	GRID LINES	---
---	1' CONTOUR	---
---	5' CONTOUR	---
[Hatched Box]	BUILDING	[Hatched Box]
[Hatched Box]	PAVED ROAD	[Hatched Box]
[Hatched Box]	GRAVEL ROAD	[Hatched Box]
[Dotted Box]	WETLAND AREA	[Dotted Box]
[Wavy Line]	TREE LINE / CLEARING LIMIT	[Wavy Line]
[Star]	PINE TREE	[Star]
[Circle with M]	WATT HOUR METER	[Circle with M]
[Square with T]	ELECTRIC TRANSFORMER	[Square with T]
[Square with J]	ELECTRIC JUNCTION BOX	[Square with J]
[Circle with H]	ELECTRIC MANHOLE	[Circle with H]
[Circle with B]	HOSE BIB (H.B.)	[Circle with B]
[Star]	LIGHT POLE	[Star]
[T]	TELEPHONE VAULT	[T]
[Square]	CATCH BASIN (CB)	[Square]
[Circle with J]	JUNCTION BOX (J.B.)	[Circle with J]
[Y]	FLARED END SECTION (F.E.S.)	[Y]
[Arrow]	CHECK VALVE	[Arrow]
[Circle with S]	SANITARY SEWER MANHOLE	[Circle with S]
[Circle with V]	VALVE MAKER	[Circle with V]
[Circle with W]	WATER METER	[Circle with W]
[Circle with V]	VALVE	[Circle with V]
[Circle with F]	FIRE HYDRANT	[Circle with F]

TBM:
PK NAIL IN PAVEMENT ELEV. 23.71'.
NOTE: BENCHMARK ELEVATION, STRUCTURE ELEVATIONS, AND CONTOURS ARE BASED ON EXISTING BENCHMARKS ESTABLISHED FROM PREVIOUS PROJECTS. NAVD83 DATUM IS 191' BELOW ELEVATIONS PROVIDED.

TREE TO BE REMOVED (TYP.)

OPEN CUT & PATCH FOR NEW PIPING (TYP.)

CHLORINE FEED BUILDING

ELECTRICAL BUILDING

SLUDGE PUMP STATION

SECONDARY CLARIFIER

ORBAL OXIDATION DITCH

TREES TO BE REMOVED (TYP.)

OPEN CUT & PATCH FOR NEW PIPING (TYP.)

DRUM STORAGE

HEADWALL TO BE REMOVED

FENCE LINE & CLEARING LIMITS

FILTERS

SECONDARY CLARIFIER #1

SECONDARY CLARIFIER #2

EFFLUENT PUMP STATION

R.B.C.

PRIMARY CLARIFIER #1

PRIMARY CLARIFIER #2

PRE-AERATION BASIN

STORAGE AREA

STORAGE BUILDING

HEADWORKS

OPEN CUT & PATCH FOR NEW PIPING (TYP.)

PUMP STATION

SLUDGE THICKENER BUILDING

MAINTENANCE AND SHOP BUILDING

RELOCATE EXISTING OIL CONTAINER

WATER SUPPLY WELL TO BE ABANDONED

TO BE REMOVED

TREES TO BE REMOVED (TYP.)

OPEN CUT & PATCH FOR NEW ACCESS ROAD (TYP.)

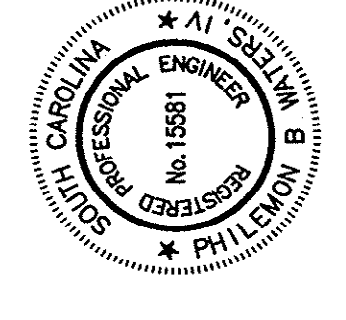
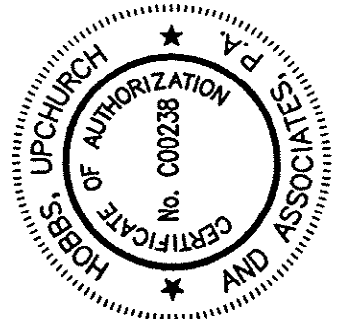
DEMOLITION & CLEARING/GRUBBING SITE PLAN

SCALE: 1" = 60'

[Hatched Box] NOT IN CONTRACT

[Hatched Box] INDICATES PORTIONS TO BE REMOVED

REVISIONS			
SYM.	DESCRIPTION	DATE	BY



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DEMOLITION & CLEARING/GRUBBING SITE PLAN

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

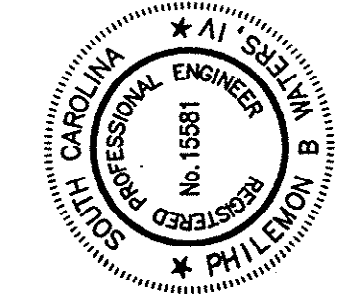
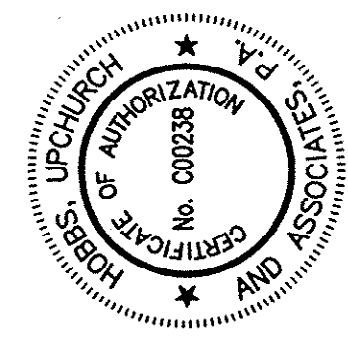
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CHECKED:	JWM
SCALE:	AS SHOWN

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G-6
OF: 1

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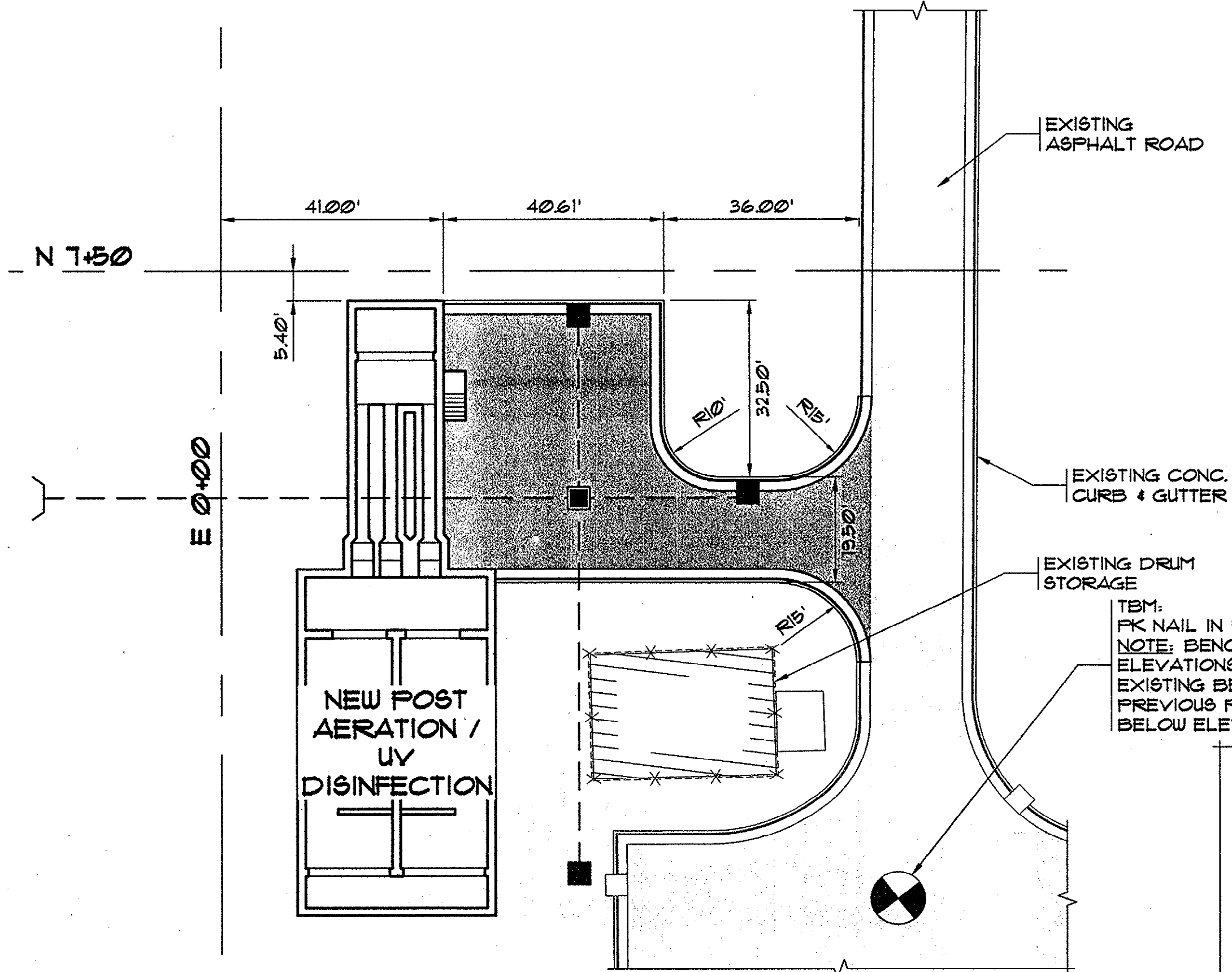
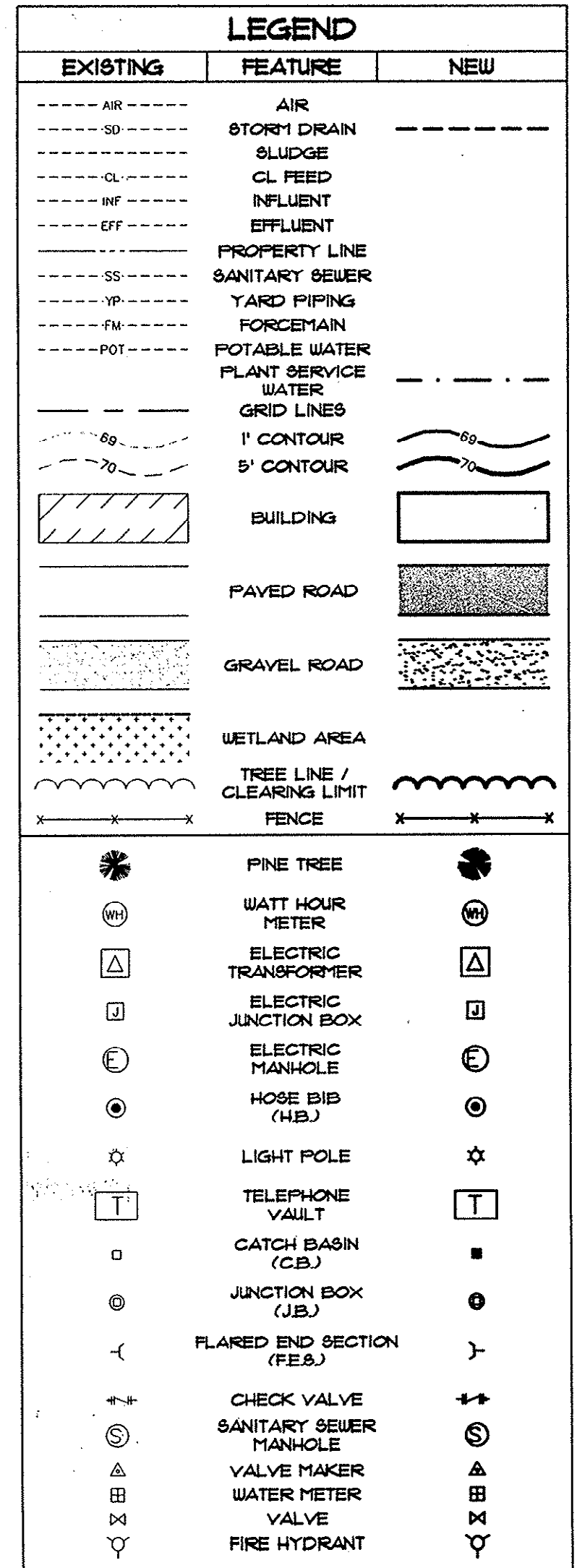


HH
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POST AERATION & SLUDGE TREATMENT BUILDING LAYOUT PLAN

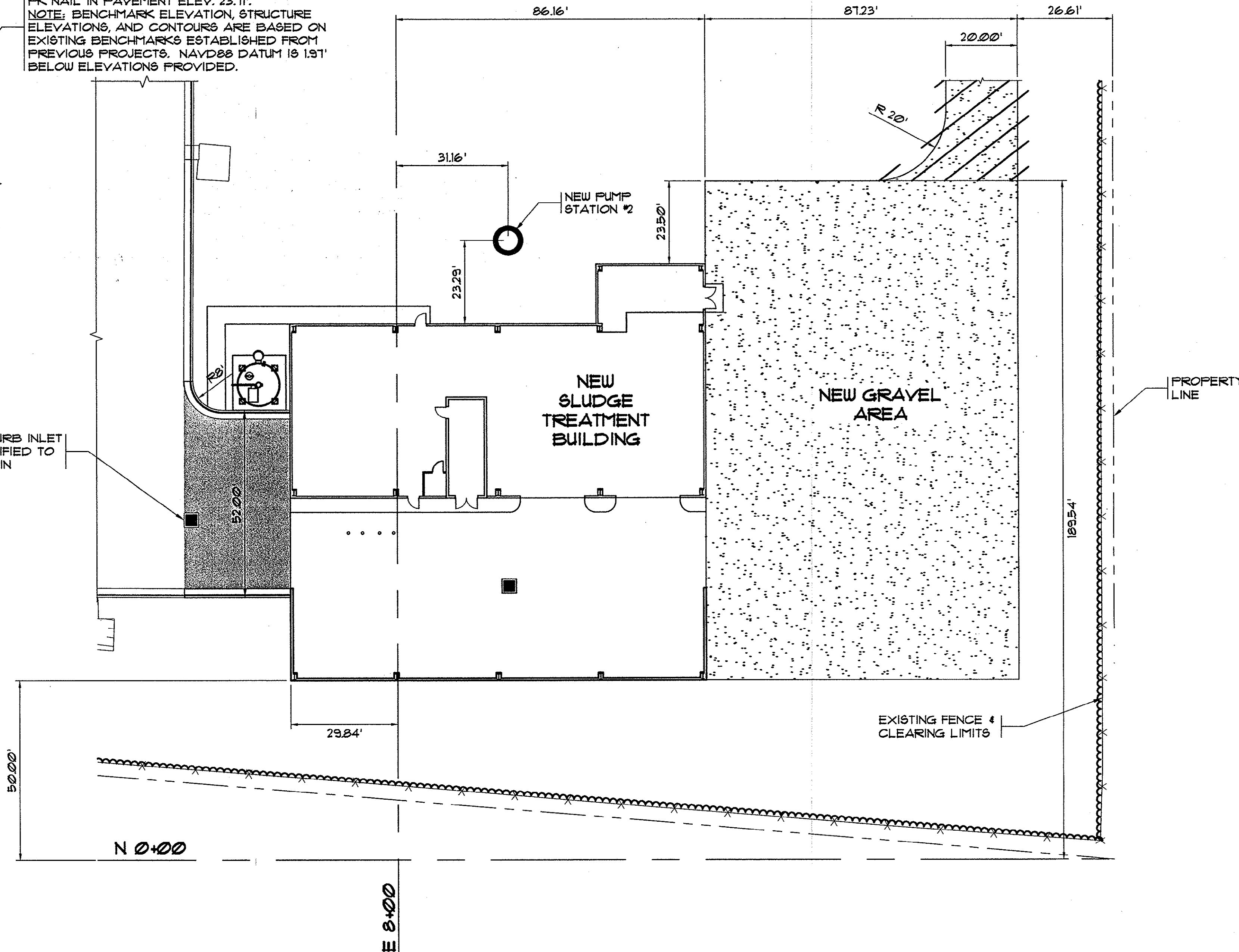
**SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY**

DATE:	SEPT. 2003
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	JWM
SCALE:	AS SHOWN
SHEET NO.	
G-9	
OF:	—



POST AERATION / UV DISINFECTION LAYOUT PLAN

SCALE: 1" = 20'



SLUDGE TREATMENT / STORAGE BUILDING
LAYOUT PLAN
SCALE: 1" = 20'

Plan Reviewer for Horry County

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HOBBS, UPCHURCH & ASSOC. BFT B:\Projects\GSD2004\800-Drawings\805-Design\General (G)\Sheet.dwg DATE: 08/02/04 TIME: 11:34 XREFS: H:\Projects\GSD2004\800-Drawings\805-Design\General (G)\Sheet.dwg Layout: Sheet

LEGEND		
EXISTING	FEATURE	NEW
---	AIR	---
---	STORM DRAIN	---
---	SLUDGE	---
---	CL FEED	---
---	INFLUENT	---
---	EFFLUENT	---
---	PROPERTY LINE	---
---	SANITARY SEWER	---
---	YARD PIPING	---
---	FORCE MAIN	---
---	POTABLE WATER	---
---	PLANT SERVICE WATER	---
---	GRID LINES	---
---	1' CONTOUR	---
---	5' CONTOUR	---
---	BUILDING	---
---	PAVED ROAD	---
---	GRAVEL ROAD	---
---	WETLAND AREA	---
---	TREE LINE / CLEARING LIMIT	---
---	FENCE	---
---	PINE TREE	---
---	WATT HOUR METER	---
---	ELECTRIC TRANSFORMER	---
---	ELECTRIC JUNCTION BOX	---
---	ELECTRIC MANHOLE	---
---	HOSE BIB (H.B.)	---
---	LIGHT POLE	---
---	TELEPHONE VAULT	---
---	CATCH BASIN (C.B.)	---
---	JUNCTION BOX (J.B.)	---
---	FLARED END SECTION (F.E.S.)	---
---	CHECK VALVE	---
---	SANITARY SEWER MANHOLE	---
---	VALVE MAKER	---
---	WATER METER	---
---	VALVE	---
---	FIRE HYDRANT	---

NOT IN CONTRACT

GRID

TBM:
FK NAIL IN PAVEMENT ELEV. 23.11'
NOTE: BENCHMARK ELEVATION, STRUCTURE ELEVATIONS, AND CONTOURS ARE BASED ON EXISTING BENCHMARKS ESTABLISHED FROM PREVIOUS PROJECTS. NAVD83 DATUM IS 1.9' BELOW ELEVATIONS PROVIDED.

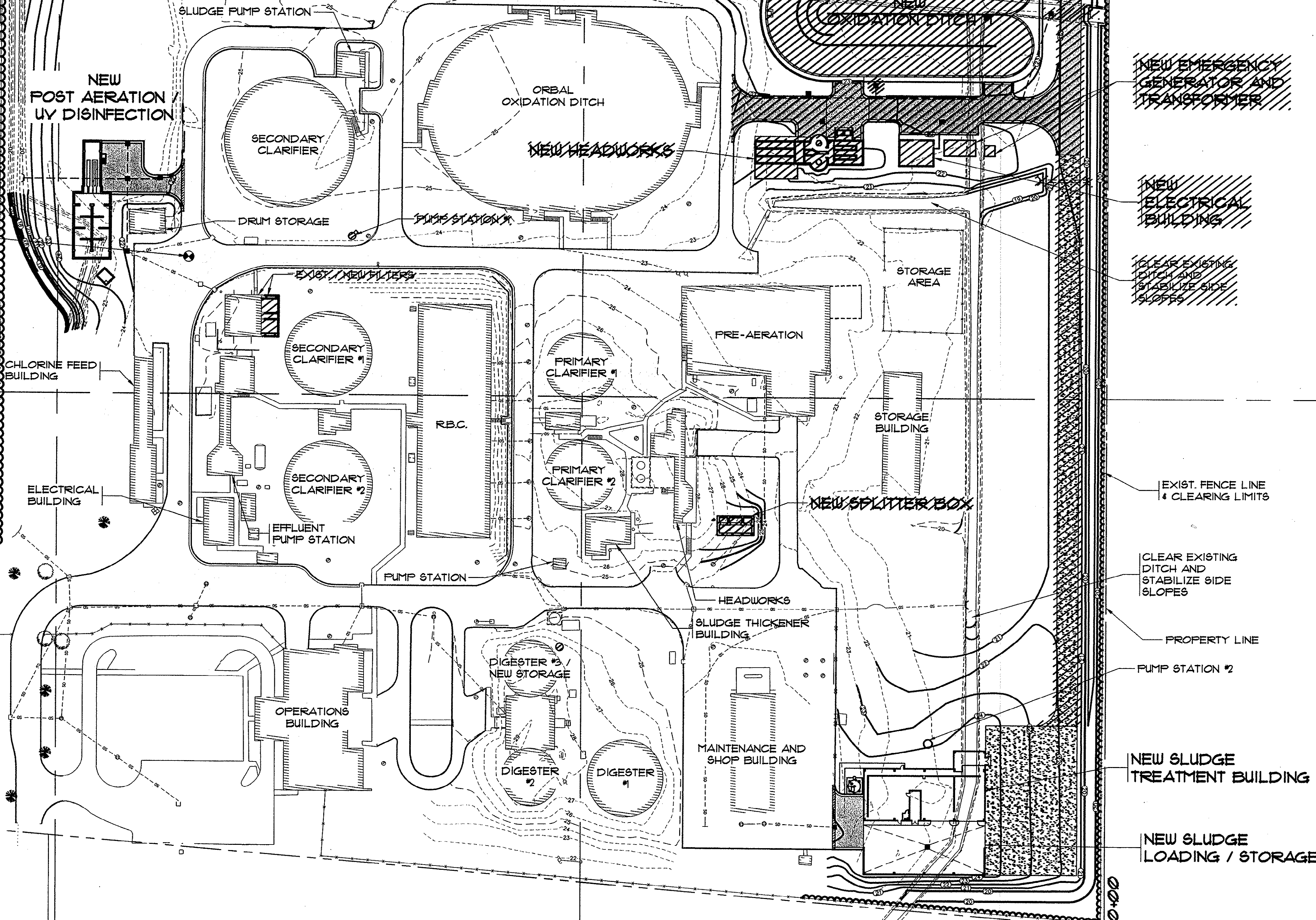
RELOCATE EXISTING DITCH. CONTRACTOR SHALL STABILIZE DITCH BANK

N 10+00

N 5+00

N 0+00

GRADING AND DRAINAGE PLAN
SCALE: 1" = 60'



NEW EMERGENCY GENERATOR AND TRANSFORMER

NEW ELECTRICAL BUILDING

CLEAR EXISTING DITCH AND STABILIZE SIDE SLOPES

EXIST. FENCE LINE & CLEARING LIMITS

CLEAR EXISTING DITCH AND STABILIZE SIDE SLOPES

PROPERTY LINE

PUMP STATION #2

NEW SLUDGE TREATMENT BUILDING

NEW SLUDGE LOADING / STORAGE

E 10+00

E 5+00

E 0+00

N 10+00

N 5+00

N 0+00

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HOBBS, UPCHURCH & ASSOC. B.T. H:\Projects\G3020A\800-Drawings\805-Design\General (G)\Sheet.dwg EDITED BY: AMILLER DATE: 10/15/03 TIME: 14:03 XREFS: H:\Projects\G3020A\800-Drawings\805-Design\General (G)\Sheet.dwg Layout: Sheet

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---	AIR	---
---	STORM DRAIN	---
---	SLUDGE	---
---	CL FEED	---
---	INF	---
---	EFF	---
---	PROPERTY LINE	---
---	SANITARY SEWER	---
---	YARD PIPING	---
---	FORCEMAIN	---
---	POTABLE WATER	---
---	PLANT SERVICE WATER	---
---	GRID LINES	---
---	1' CONTOUR	---
---	5' CONTOUR	---
---	BUILDING	---
---	PAVED ROAD	---
---	GRAVEL ROAD	---
---	WETLAND AREA	---
---	TREE LINE / CLEARING LIMIT	---
---	FENCE	---
---	PINE TREE	---
---	WATT HOUR METER	---
---	ELECTRIC TRANSFORMER	---
---	ELECTRIC JUNCTION BOX	---
---	ELECTRIC MANHOLE	---
---	HOSE BIB (H.B.)	---
---	LIGHT POLE	---
---	TELEPHONE VAULT	---
---	CATCH BASIN (C.B.)	---
---	JUNCTION BOX (J.B.)	---
---	FLARED END SECTION (FES)	---
---	CHECK VALVE	---
---	SANITARY SEWER MANHOLE	---
---	VALVE MAKER	---
---	WATER METER	---
---	VALVE	---
---	FIRE HYDRANT	---

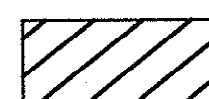
RELOCATE EXISTING DITCH CONTRACTOR SHALL STABILIZE DITCH BANK

IE = 17.30'

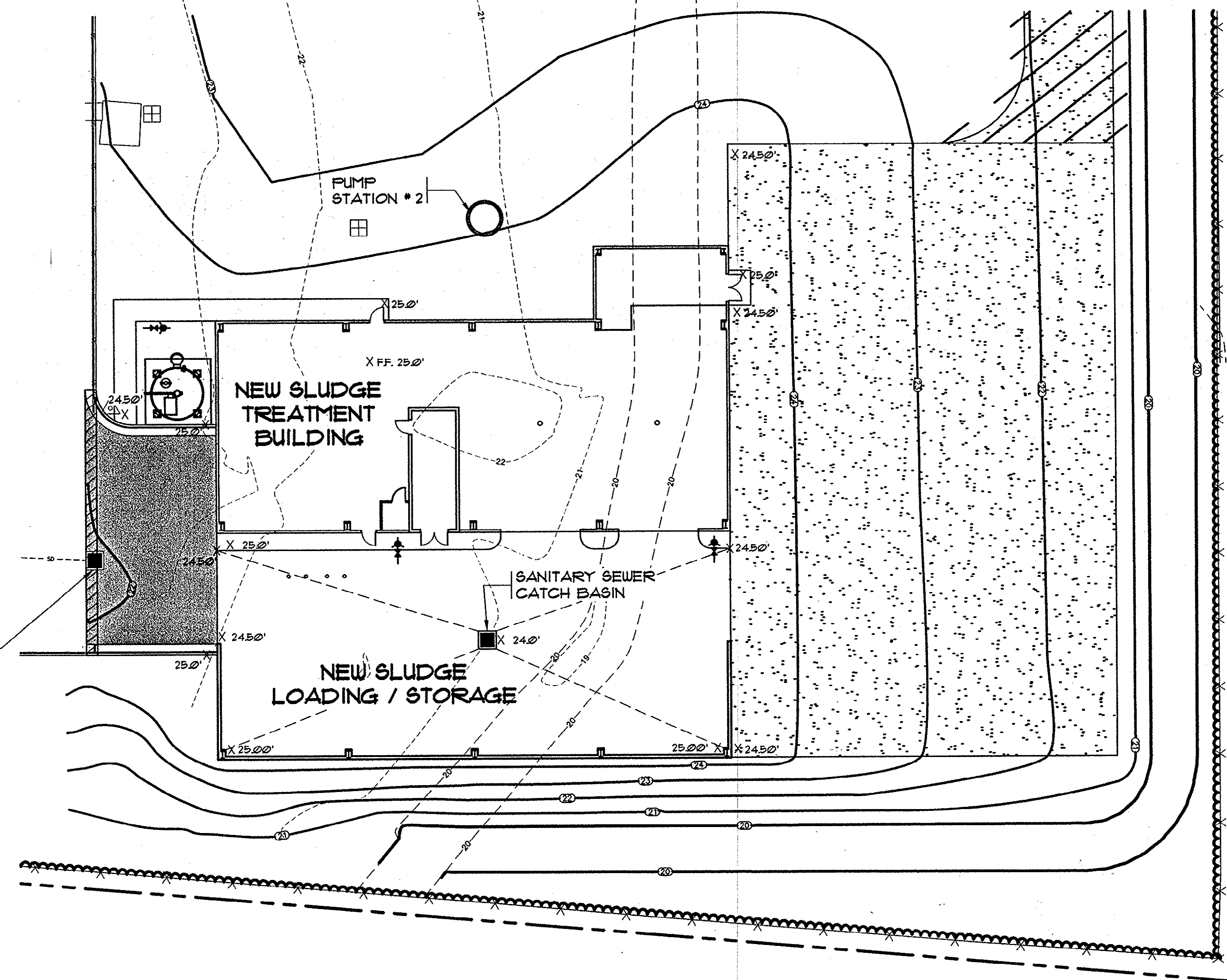
POST AERATION / UV DISINFECTION GRADING AND DRAINAGE PLAN

SCALE: 1" = 20'

REMOVE EXIST. CURB INLET AND REPLACE WITH CATCH BASIN GRATE. ELEVATION SHALL BE SIMILAR

 = NOT IN CONTRACT

TEM:
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 1.91' BELOW ELEVATIONS PROVIDED.



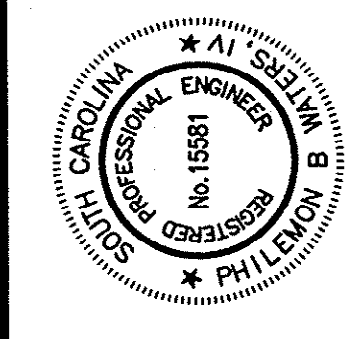
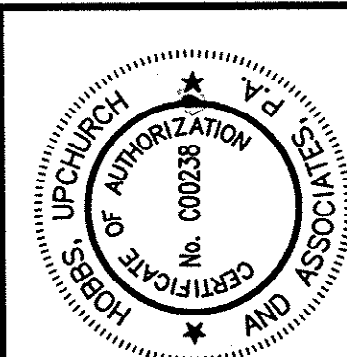
SLUDGE TREATMENT BUILDING GRADING AND DRAINAGE PLAN

SCALE: 1" = 20'

Plan Reviewer for Horry County

OK _____

REVISIONS			
SYM.	DESCRIPTION	DATE	BY



Hobbs, Upchurch & Associates, P.A.
Consulting Engineers
Myrtle Beach, South Carolina 29577
PHONE (843) 822-1910 FAX (843) 822-1745

POST AERATION, &
UV DISINFECTION, &
SLUDGE TREATMENT
BUILDING GRADING AND
DRAINAGE PLAN

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

DATE:	SEPT. 2003
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	JWM
SCALE:	AS SHOWN
SHEET NO.	G-12

HOBBS, UPCHURCH & ASSOC. BFT B:\Projects\GS0204\900-Drawings\905-Design\General (G)\G-13 Piping Plan.dwg EDITED BY: AGIBSON DATE: 08/02/04 TIME: 11:37 XREFS: H:\Projects\GS0204\900-Drawings\905-Design\General (G)\Sheet.dwg Layout: Site Plan

LEGEND		
EXISTING	FEATURE	NEW
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---	STORM DRAIN	---
---	SLUDGE	---
---	CL. FEED	---
---	INF.	---
---	EFF.	---
---	PROPERTY LINE	---
---	SANITARY SEWER	---
---	YARD PIPING	---
---	FORCE MAIN	---
---	POTABLE WATER	---
---	PLANT SERVICE WATER	---
---	GRID LINES	---
---	1' CONTOUR	---
---	5' CONTOUR	---
---	BUILDING	---
---	PAVED ROAD	---
---	GRAVEL ROAD	---
---	WETLAND AREA	---
---	TREE LINE / CLEARING LIMIT	---
---	FENCE	---
---	PINE TREE	---
---	WATT HOUR METER	---
---	ELECTRIC TRANSFORMER	---
---	ELECTRIC JUNCTION BOX	---
---	ELECTRIC MANHOLE	---
---	HOSE BIB (H.B.)	---
---	LIGHT POLE	---
---	TELEPHONE VAULT	---
---	CATCH BASIN (C.B.)	---
---	JUNCTION BOX (J.B.)	---
---	FLARED END SECTION (F.E.S.)	---
---	CHECK VALVE	---
---	SANITARY SEWER MANHOLE	---
---	VALVE MAKER	---
---	WATER METER	---
---	VALVE	---
---	FIRE HYDRANT	---

TBM:
PK NAIL IN PAVEMENT ELEV. 23.11'
NOTE: BENCHMARK ELEVATION, STRUCTURE ELEVATIONS, AND CONTOURS ARE BASED ON EXISTING BENCHMARKS ESTABLISHED FROM PREVIOUS PROJECTS. NAVD83 DATUM IS 1.91' BELOW ELEVATIONS PROVIDED.

NOT IN CONTRACT

N 10+00

N 5+00

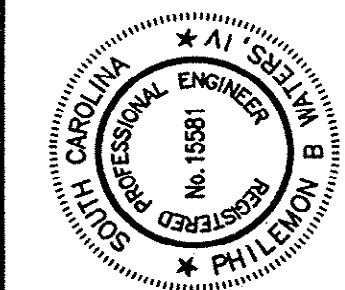
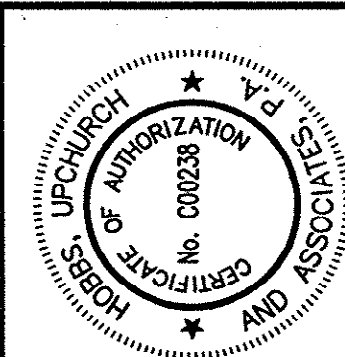
N 0+00

SITE PIPING PLAN
SCALE: 1" = 60'

E 0+00

E 10+00

REVISIONS			
SYM.	DESCRIPTION	DATE	BY



Hobbs, Upchurch & Associates, P.A.
Consulting Engineers
Myrtle Beach, South Carolina 29577
PHONE: (843) 668-9100 FAX: (843) 668-1745



SITE PIPING PLAN

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

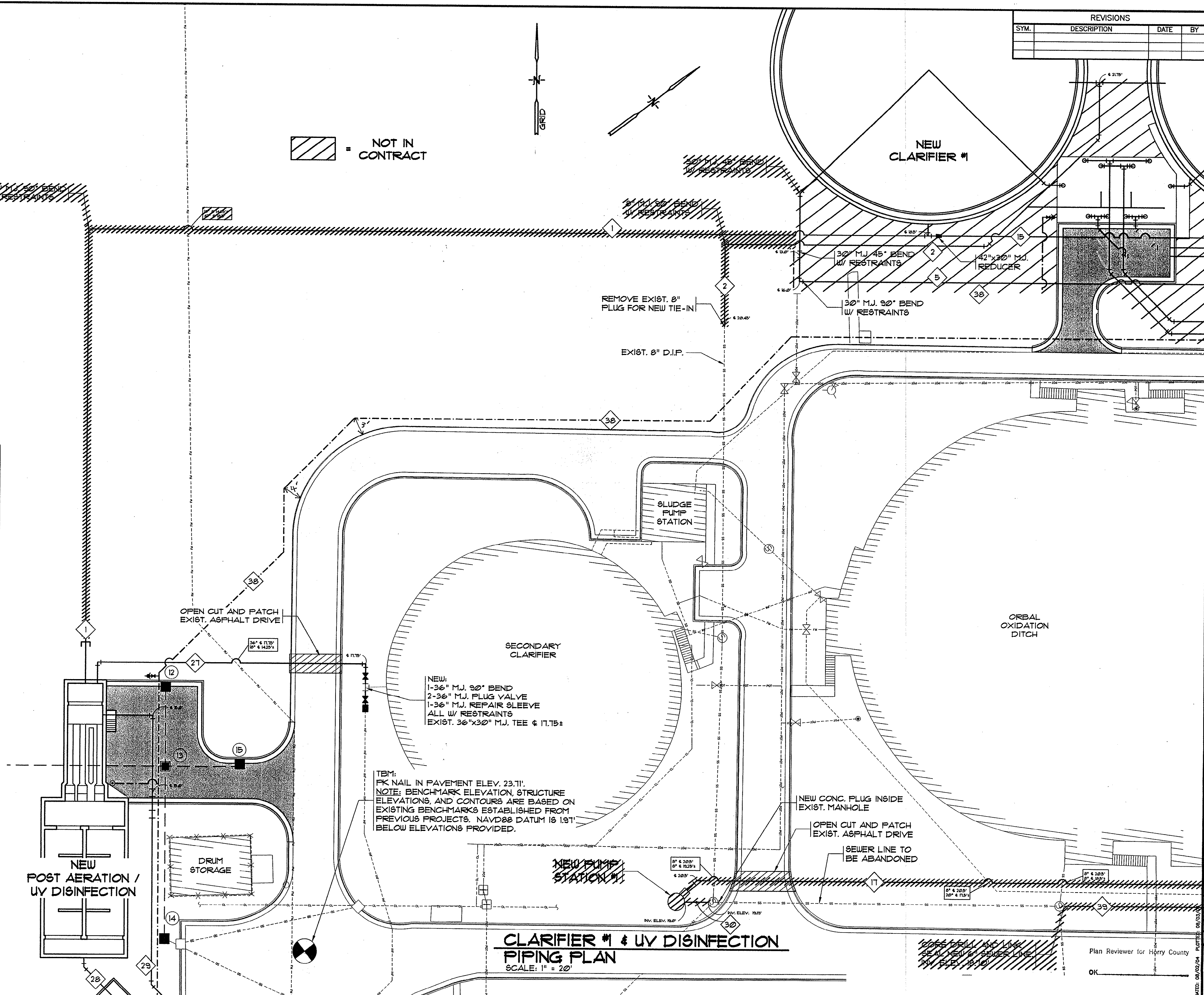
DATE:	SEPT. 2003
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	JWM
SCALE:	AS SHOWN
SHEET NO.	G-13

Plan Reviewer for Horry County

OK

HOBBS, UPCHURCH & ASSOC. BFT BY: Projects\GS02004\800-Drawings\605-Design\General (G)\G-15 Piping Plan.dwg EDITED BY: AGESON DATE: 08/02/04 TIME: 11:40 XREFS: . H:\Projects\GS02004\800-Drawings\605-Design\General (G)\Sheet.dwg Layout: Site Plan

LEGEND		
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---	SLUDGE	---
---	CL FEED	---
---	INFLUENT	---
---	EFFLUENT	---
---	PROPERTY LINE	---
---	SANITARY SEWER	---
---	YARD PIPING	---
---	FORCEMAIN	---
---	POTABLE WATER	---
---	PLANT SERVICE	---
---	WATER	---
---	GRID LINES	---
---	1' CONTOUR	---
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---	BUILDING	---
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---	TREE LINE / CLEARING LIMIT	---
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---	ELECTRIC JUNCTION BOX	---
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---	JUNCTION BOX (J.B.)	---
---	FLARED END SECTION (F.E.S.)	---
---	CHECK VALVE	---
---	SANITARY SEWER MANHOLE	---
---	VALVE MAKER	---
---	WATER METER	---
---	VALVE	---
---	FIRE HYDRANT	---



REVISIONS			
SYM.	DESCRIPTION	DATE	BY

Hobbs, Upchurch & Associates, P.A.
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Myrtle Beach, South Carolina 29577
PHONE: (843) 828-1970 FAX: (843) 828-1745

**CLARIFIER #1 AND
UV DISINFECTION
PIPING PLAN**

**SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY**

DATE: SEPT. 2003

DESIGNED: PBW

DRAWN: ARM

CHECKED: JWM

SCALE: AS SHOWN

UPDATER: 08/02/04

PLTTER: 08/02/04

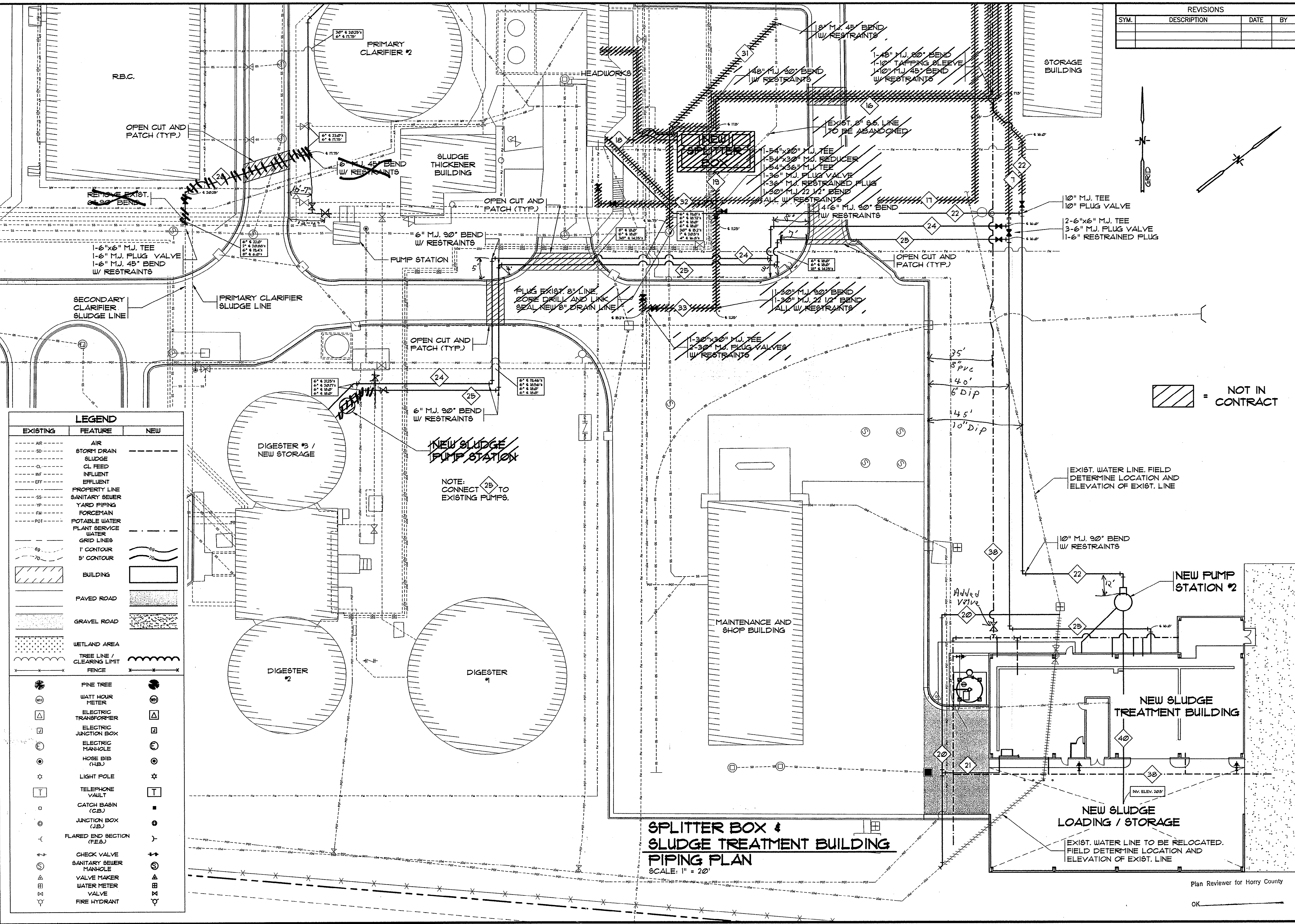
OF: 1

Plan Reviewer for Horry County

OK _____

G-15

HOBBS, UPCHURCH & ASSOC. B.T. B:\Projects\GS0204\800-Drawings\805-Design\General (G)\G-16 Piping Plan.dwg EDITED BY: AGIBSON DATE: 08/02/04 TIME: 13:53 XREFS: H:\Projects\GS0204\800-Drawings\805-Design\General (G)\Sheet.dwg Layout: Site Plan



UPCHURCH & ASSOCIATES, P.A.
REGISTERED PROFESSIONAL ENGINEER
No. 00238
SOUTH CAROLINA
PHYSICIAN

Hobbs, Upchurch & Associates, P.A.
Consulting Engineers
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PHONE: (843) 828-1910 FAX: (843) 828-1745

SPLITTER BOX & SLUDGE TREATMENT BUILDING PIPING PLAN

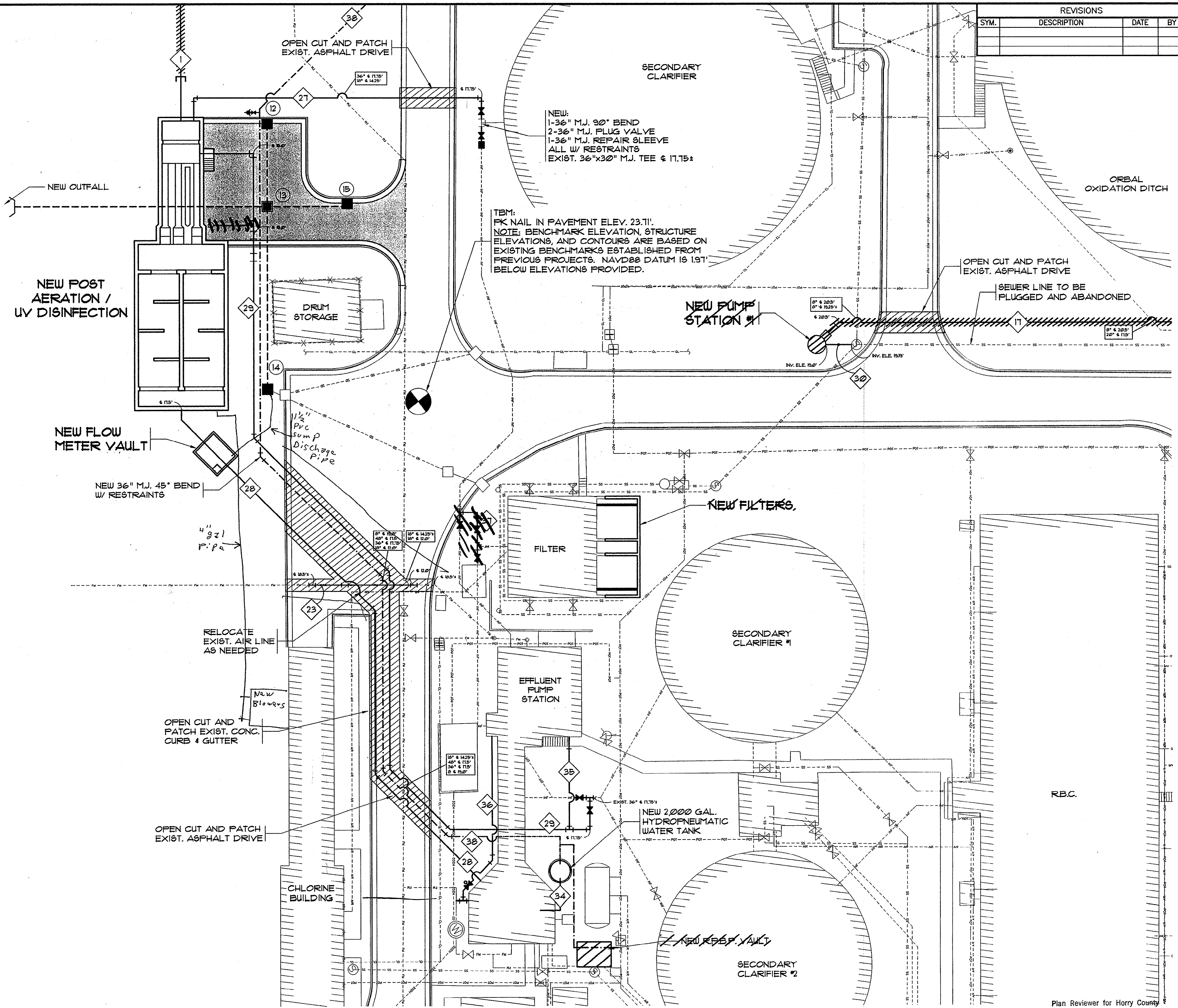
SCHWARTZ
WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE: SEPT. 2003
DESIGNED: PBW
DRAWN: ARM
CHECKED: JWM
SCALE: AS SHOWN
SHEET NO. G-16

HOBBS, UPCHURCH & ASSOC. B.T. H:\Projects\GS0204\800-Drawings\805-Design\General (G)\G-17 Piping Plan.dwg EDITED BY: JARNOLD DATE: 11/05/03 TIME: 09:18 XREFS: H:\Projects\GS0204\800-Drawings\805-Design\General (G)\Sheet.dwg Layout: Site Plan

LEGEND		
EXISTING	FEATURE	NEW
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---	STORM DRAIN	---
---	SLUDGE	---
---	CL. FEED	---
---	INFLUENT	---
---	EFFLUENT	---
---	PROPERTY LINE	---
---	SANITARY SEWER	---
---	YARD PIPING	---
---	FORCEMAIN	---
---	POTABLE WATER	---
---	PLANT SERVICE	---
---	WATER	---
---	GRID LINES	---
---	1' CONTOUR	---
---	5' CONTOUR	---
---	BUILDING	---
---	PAVED ROAD	---
---	GRAVEL ROAD	---
---	WETLAND AREA	---
---	TREE LINE /	---
---	CLEARING LIMIT	---
---	FENCE	---
---	PINE TREE	---
---	WATT HOUR	---
---	METER	---
---	ELECTRIC	---
---	TRANSFORMER	---
---	ELECTRIC	---
---	JUNCTION BOX	---
---	ELECTRIC	---
---	MANHOLE	---
---	HOSE BIB	---
---	(H.B.)	---
---	LIGHT POLE	---
---	TELEPHONE	---
---	VAULT	---
---	CATCH BASIN	---
---	(C.B.)	---
---	JUNCTION BOX	---
---	(J.B.)	---
---	FLARED END SECTION	---
---	(F.E.S.)	---
---	CHECK VALVE	---
---	SANITARY SEWER	---
---	MANHOLE	---
---	VALVE MAKER	---
---	WATER METER	---
---	VALVE	---
---	FIRE HYDRANT	---

NOT IN CONTRACT



UV DISINFECTION & EFFLUENT PUMP STATION
PIPING PLAN
SCALE: 1" = 20'

Plan Reviewer for Horry County

OK

REVISIONS

SYM.	DESCRIPTION	DATE	BY

UPCHURCH & ASSOCIATES, P.A.

CERTIFICATE OF AUTHORIZATION
No. 000238
Professional Engineer
No. 15531
PHILIP L. UPCHURCH

Hobbs, Upchurch & Associates, P.A.
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PHONE: (843) 688-1910 FAX: (843) 688-1745

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

DATE: SEPT. 2003
DESIGNED: PBW
DRAWN: ARM
CHECKED: JWM
SCALE: AS SHOWN
SHEET NO.
G-17

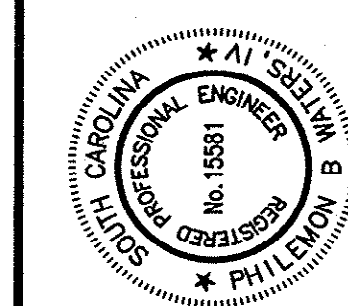
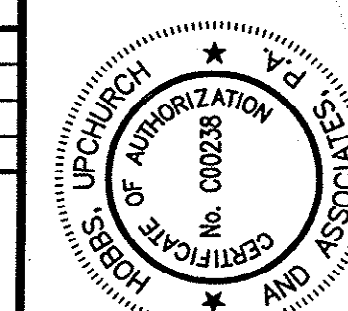
PIPING SCHEDULE				
LINE NUMBER	SIZE AND MATERIAL	DESCRIPTION	FROM	TO
1	12" C905 DR 25 PVC	CLARIFIER EFFLUENT	LINE #15	UV DISINFECTION CHAMBER
2	8" C900 DR10	CLARIFIER SCUM	CLARIFIERS	EXISTING 66 LINE
3	14" DIP (CLASS 50)	99% R4S.	CLARIFIERS	OXIDATION DITCH #2
4	14" DIP (CLASS 50)	99% R4S.	CLARIFIERS	OXIDATION DITCH #1
5	30" C905 DR 25 PVC	OXIDATION DITCH #1 EFFLUENT	OXIDATION DITCH #1	CLARIFIER #1
6	8" DIP (CLASS 50)	10% R4S.	CLARIFIERS	LINE #16
7	6" DIP (CLASS 50)	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 #4
11	6" C900 DR 10 PVC	RELOCATED DIGESTER LINE	EXISTING LINE	EXISTING LINE
12	12" DIP (CLASS 50)	OXIDATION DITCH DRAIN LINE	OXIDATION DITCH	PUMP OUT STATION
13	12" C900 DR 10 PVC	FORCEMAIN	EXISTING FORCEMAIN	EXISTING FORCEMAIN
14	30" DIP (CLASS 50)	HEADWORKS EFFLUENT	HEADWORKS	EXISTING INFLUENT LINE
15	30" C905 DR 25 PVC	CLARIFIER EFFLUENT	CLARIFIER #2	LINE #1
16	10" C905 DR 25 PVC	SPLITTER BOX EFFLUENT	SPLITTER BOX	HEADWORKS
17	8" DIP (CLASS 50)	PUMP STATION #1 DISCHARGE	PUMP STATION #1	EXISTING HEADWORKS
18	30" DIP (CLASS 50)	SPLITTER BOX EFFLUENT	SPLITTER BOX	EXISTING HEADWORKS 30" INFLUENT LINE
19	54" DIP (CLASS 50)	INFLUENT HEADER		SPLITTER BOX
20	10" C900 DR 10 PVC	POTABLE WATER	EXISTING LINE	EXISTING LINE
21	2" SCH. 40 PVC	POTABLE WATER	LINE #20	SLUDGE TREATMENT BUILDING SUPPLY
22	10" DIP (CLASS 50)	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 (CLASS 50)	W.A.S.	LINE #25	EXISTING DIGESTER #3/NEW STORAGE
25	6" DIP (CLASS 50)	W.A.S.	SLUDGE TRANSFER PUMPS	SLUDGE TREATMENT BUILDING
26	6" DIP (CLASS 50)	EXISTING SECONDARY CLARIFIER W.A.S.	RBC SECONDARY CLARIFIER SLUDGE LINE	PRIMARY CLARIFIER SLUDGE BOX
27	36" DIP (CLASS 50)	ORBAL SECONDARY CLARIFIER EFFLUENT	ORBAL SECONDARY CLARIFIER	UV DISINFECTION CHAMBER
28	48" C905 DR 25 PVC	UV/POST AERATION EFFLUENT	UV/POST AERATION	EXISTING EFFLUENT PUMP STATION
29	36" DIP (CLASS 50)	RBC SECONDARY CLARIFIER EFFLUENT	RBC SECONDARY CLARIFIER	UV DISINFECTION CHAMBER
30	10" C905 DR 25 PVC	SANITARY SEWER DRAINAGE	EXISTING MANHOLE	PUMP STATION #1
31	8" DIP (CLASS 50)	DRAIN LINE	EXISTING DRAIN LINE	EXISTING MANHOLE
32	30" DIP (CLASS 50)	INFLUENT	EXISTING FORCEMAIN	LINE #13
33	30" DIP (CLASS 50)	INFLUENT	EXISTING FORCEMAIN	LINE #13
34	8" C900 DR 10 PVC	PLANT WATER	EFFLUENT PUMP STATION	HYDROPNUMATIC TANK
35	12" DIP (CLASS 50)	EFFLUENT	SOD/TREE FARM PUMP STATION	LINE #29
36	18" DIP (CLASS 50)	EFFLUENT	EFFLUENT PUMP STATION	EFFLUENT CONTROL STRUCTURE
37	6" DIP (CLASS 50)	ORBAL SECONDARY CLARIFIER EFFLUENT	ORBAL SECONDARY CLARIFIER	EXISTING FILTER FEED LINE
38	8" C900 DR 10 PVC	PLANT WATER	HYDROPNUMATIC TANK	BOOSTER PUMPS/YARD HYDRANTS
39	6" DIP (CLASS 50)	SANITARY SEWER	HEADWORKS	EXISTING MANHOLE
40	12" D.I.P. CLASS 50	SANITARY SEWER	SLUDGE TREATMENT BUILDING	PUMP STATION #2

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.

[illegible]

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

REVISIONS			
SYM.	DESCRIPTION	DATE	BY



Jobbs, Upchurch & Associates, P.A.
Consulting Engineers
Myrtle Beach, South Carolina 29577
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PIPING SCHEDULE

**SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY**

DATE: SEPT 2003

DESIGNER:	FBW
COINTEGRATING:	ARM

CHECKED: JWM

SCALE: AS SHOWN

SHEET NO.

G-18

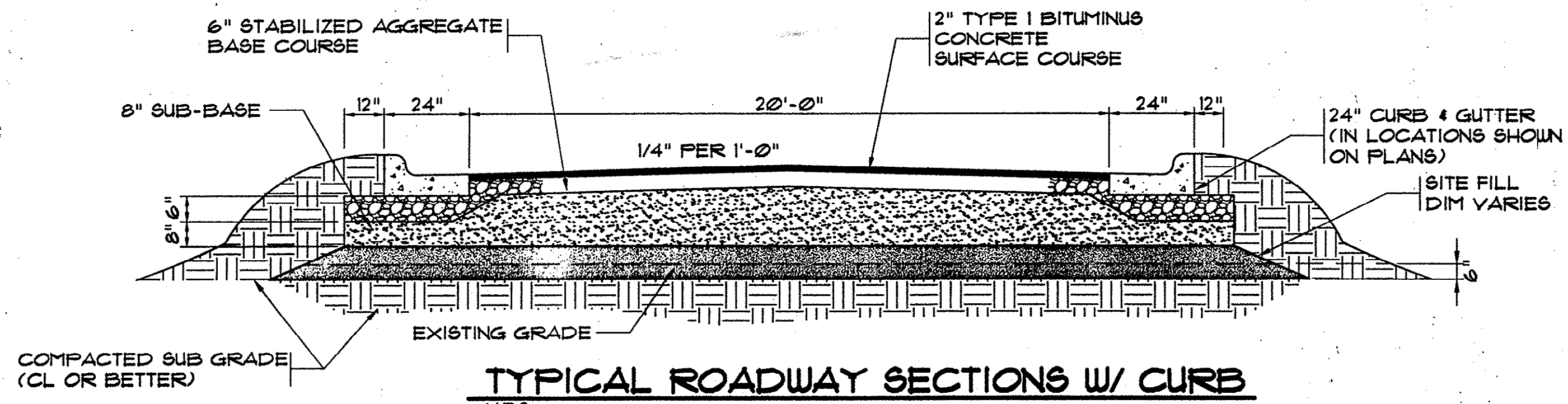
TEO:

Plan Reviewer for Horry County

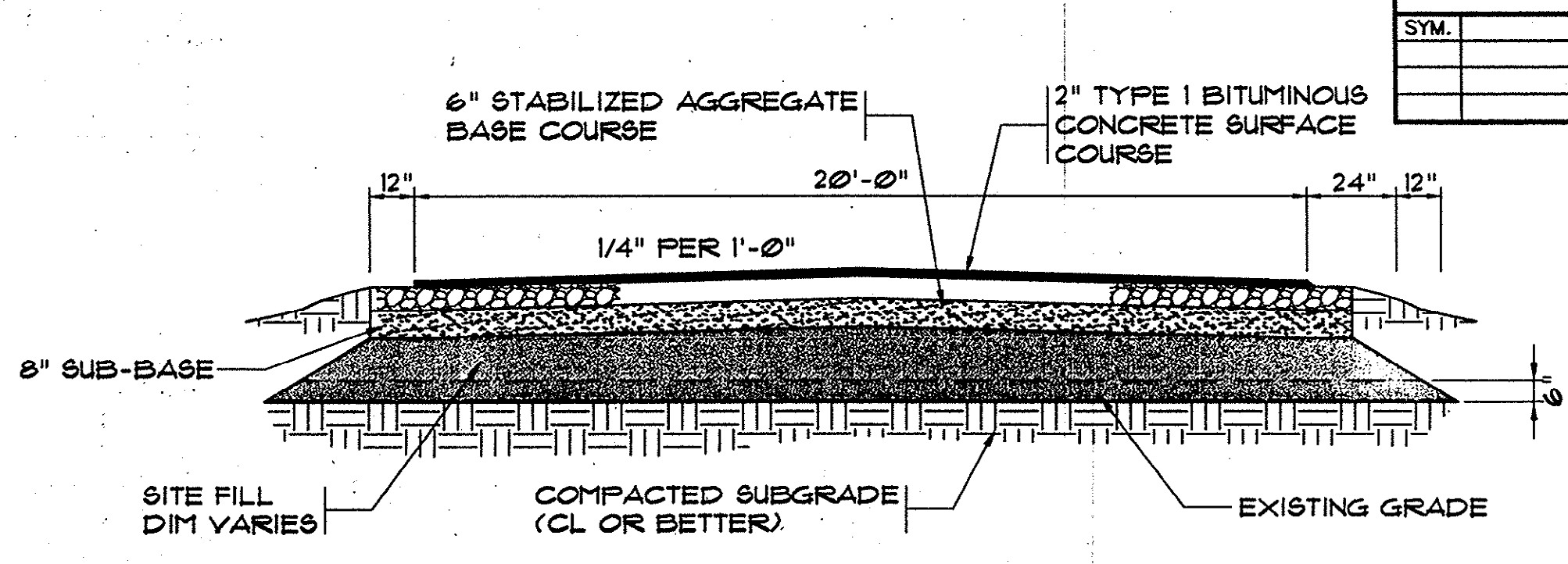
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OF: _____

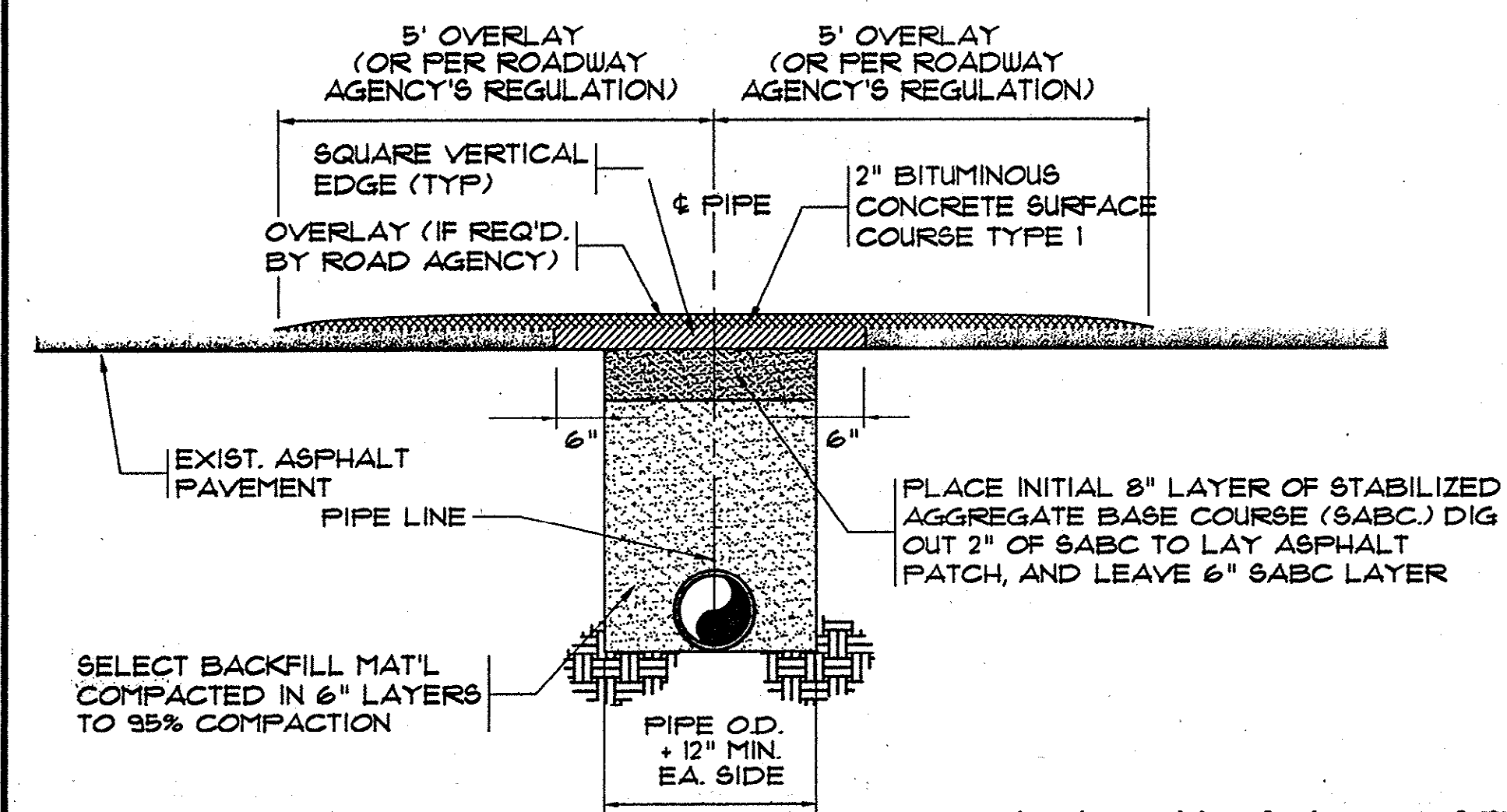
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TYPICAL ROADWAY SECTIONS W/ CURB
N.T.S.

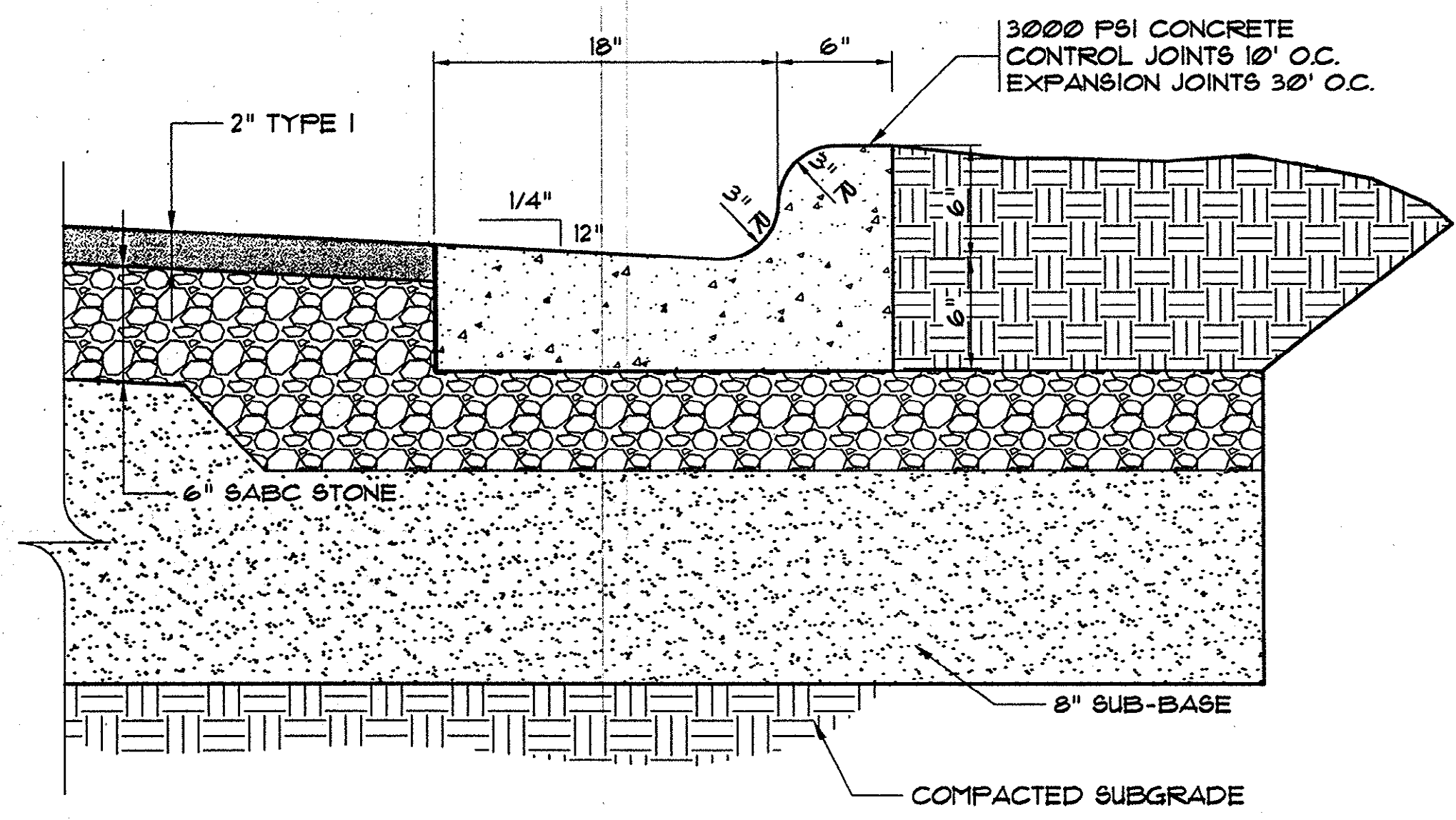


TYPICAL ROADWAY SECTION
N.T.S.

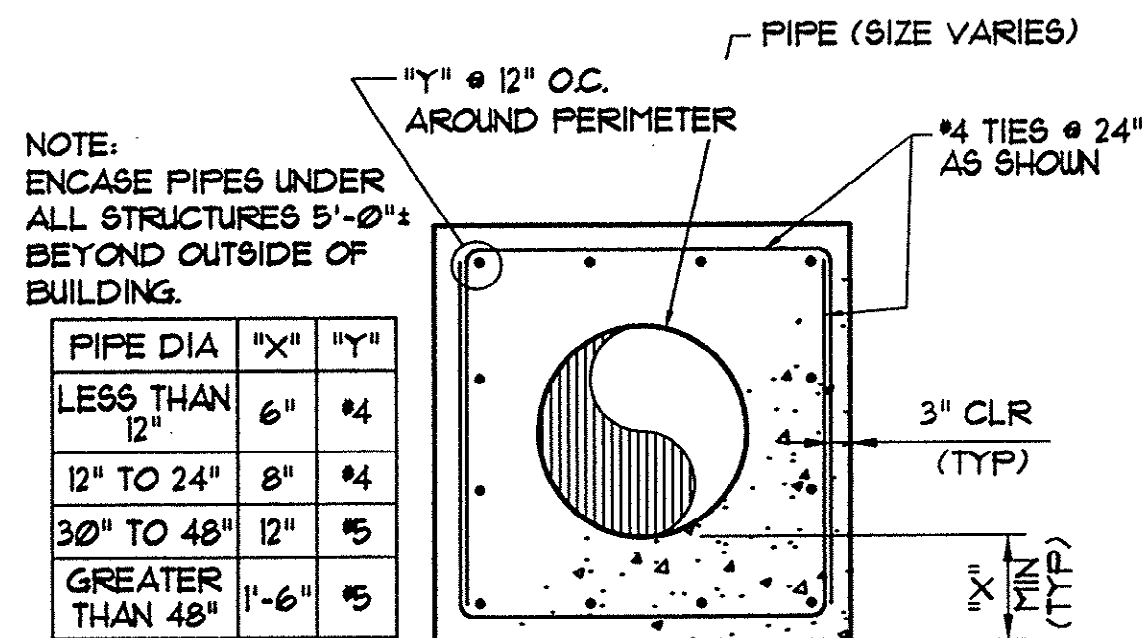


OPEN CUT AND PATCH (TYPE "A")
LOW VOLUME ASPHALT PAVEMENT
N.T.S.

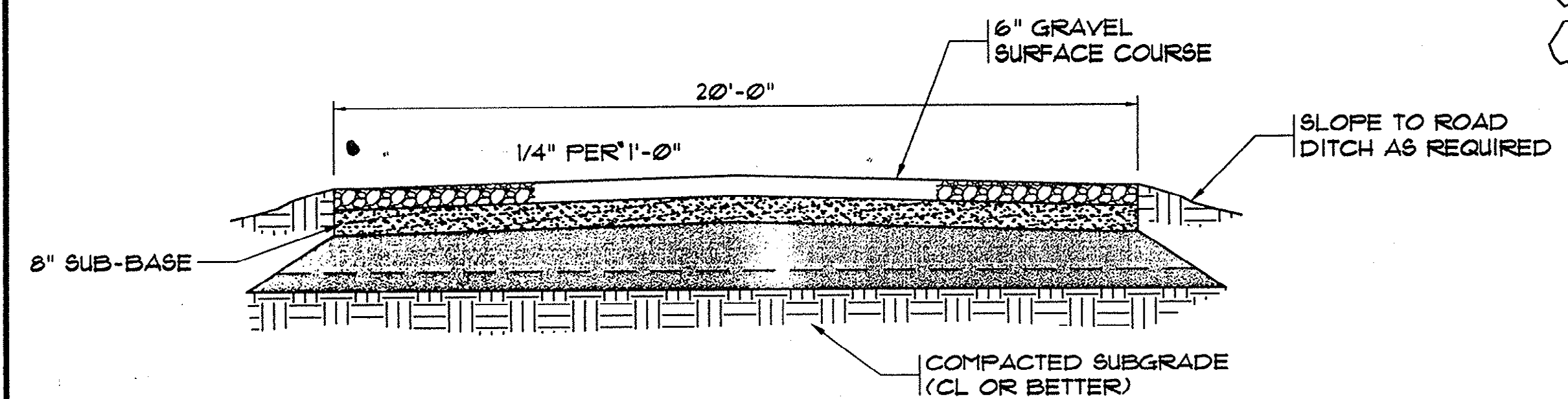
- NOTES:
- 1) PAVEMENT CUT TO EXTEND 6" BEYOND EDGES OF TRENCH AS SHOWN. PAVEMENT SHALL BE CUT TO TRUE LINE AND REMOVED BEFORE TRENCH IS CUT. ALL PAVEMENT REPAIRS TO BE IN ACCORDANCE WITH ROAD AGENCY SPECS.
 - 2) ROAD AGENCY MAY REQUIRE A CUT & PATCH OF TRENCH AREA AND AN OVERLAY OF ENTIRE APRON OR ENTRANCE 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 12" OVERLAP ON BOTH SIDES FOR SMOOTH TRANSITION OR AS PER SPECS. OF ROAD AGENCY.



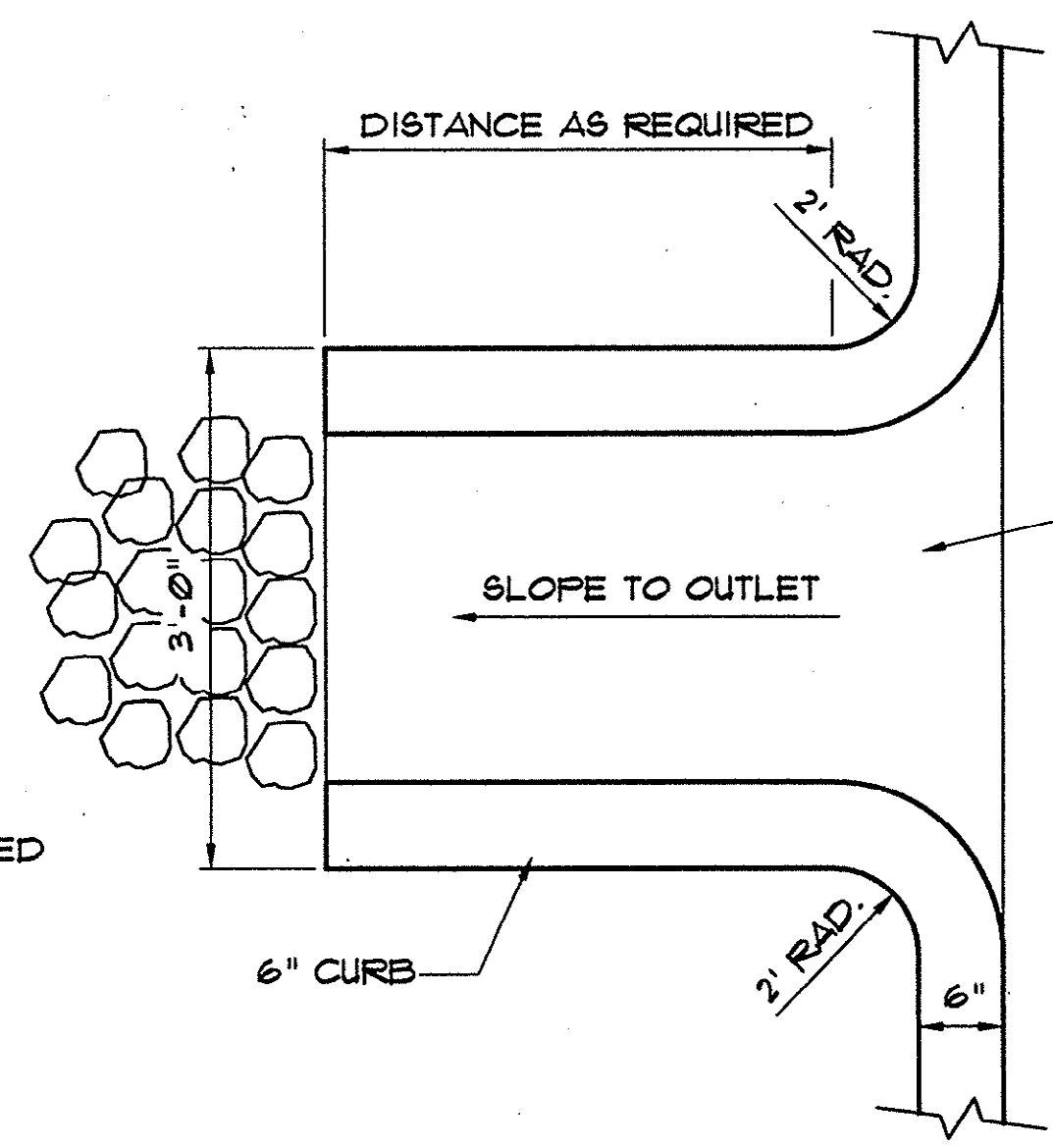
PAVEMENT, CURB & GUTTER
N.T.S.



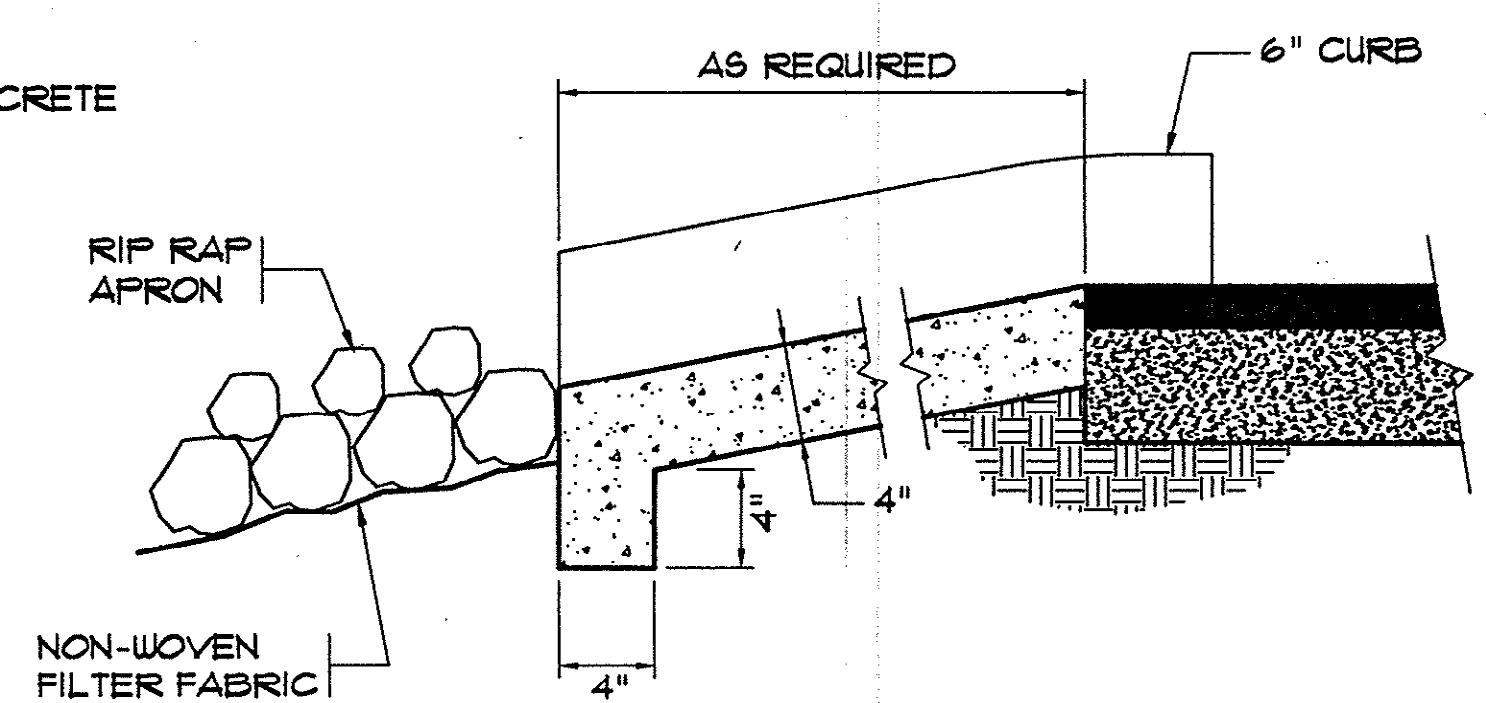
TYPICAL PIPE
ENCASEMENT DETAIL
N.T.S.



TYPICAL GRAVEL ROAD SECTION
N.T.S.

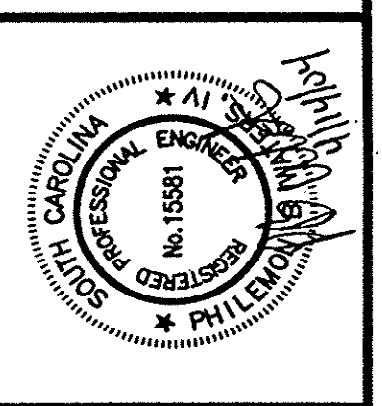
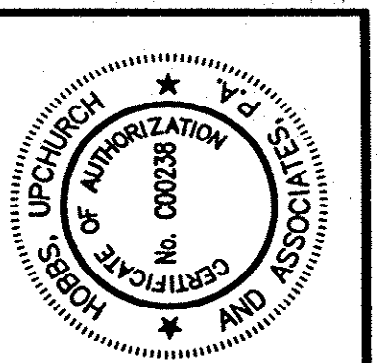


CURB TURNOUT - PLAN VIEW
N.T.S.



CURB TURNOUT - SECTION VIEW
N.T.S.

REVISIONS			
SYM.	DESCRIPTION	DATE	BY



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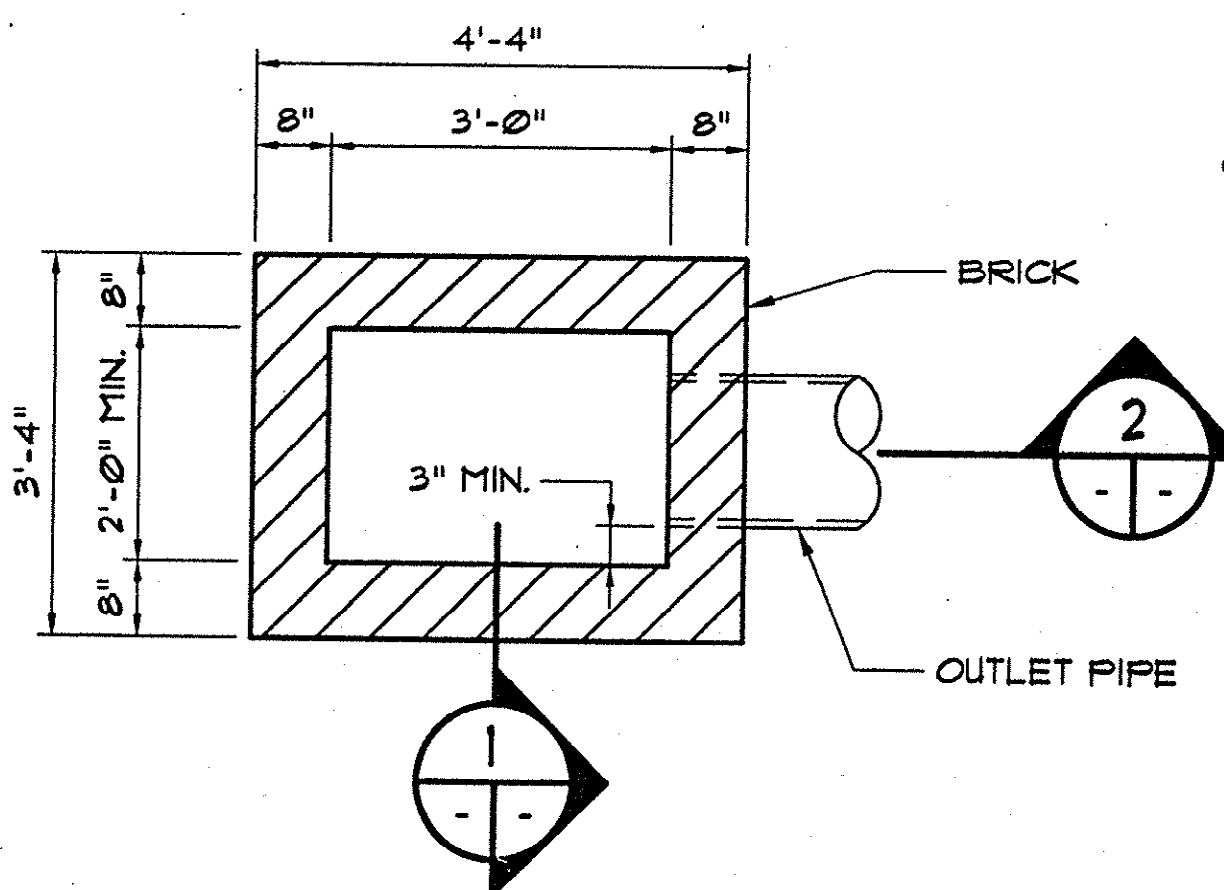
MISCELLANEOUS
DETAILS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

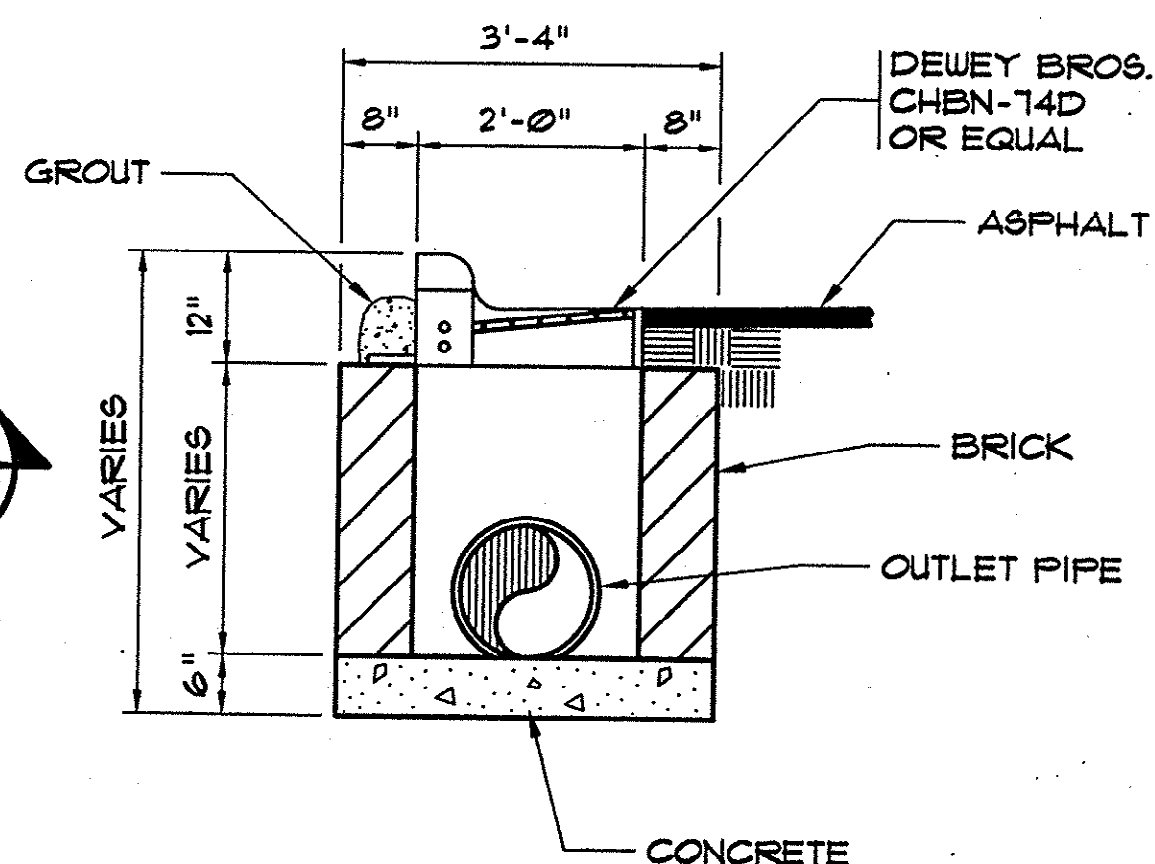
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DRAWN:	ARM
CHECKED:	PBW
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SHEET NO.	G-20

Plan Reviewer for Horry County
OK

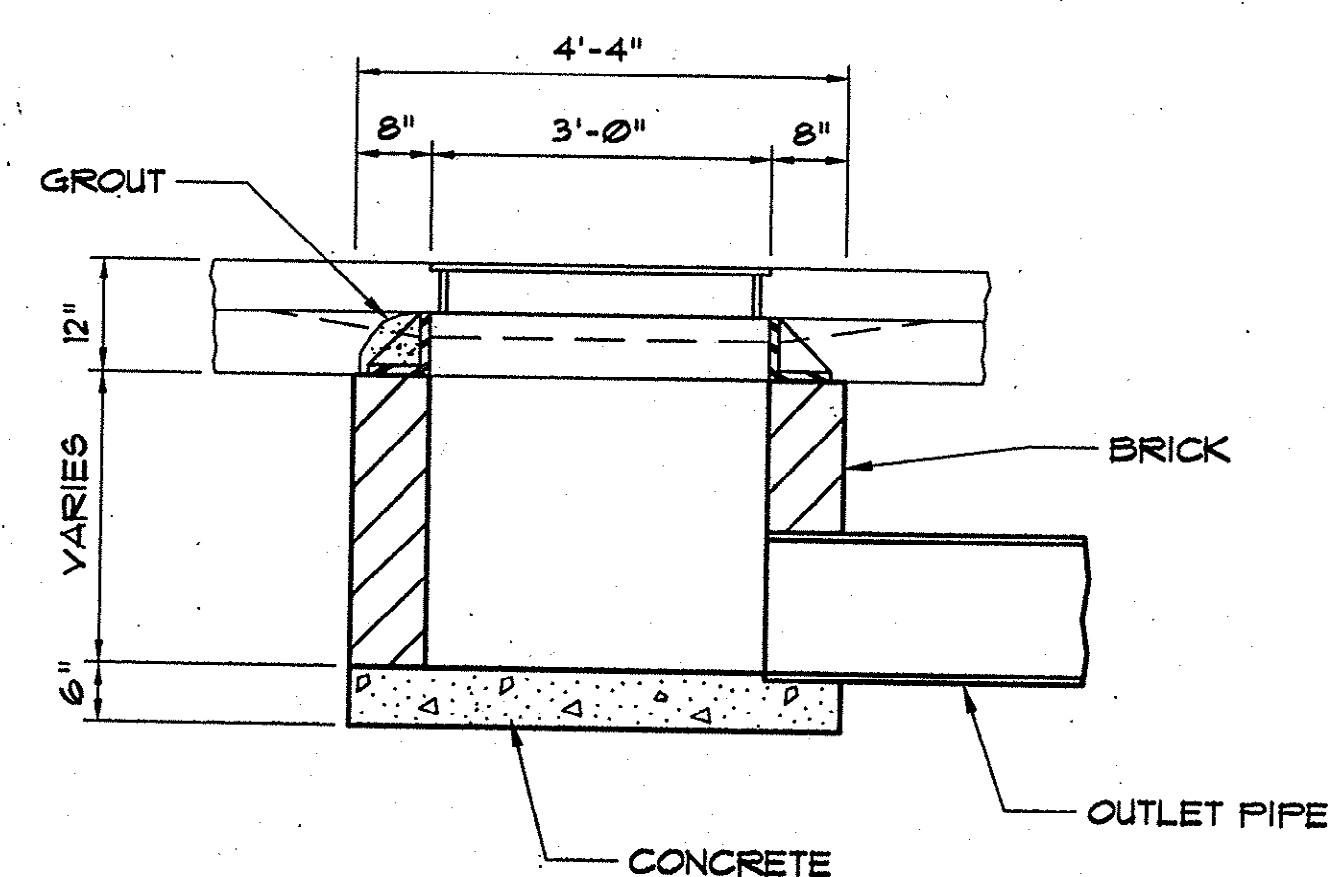
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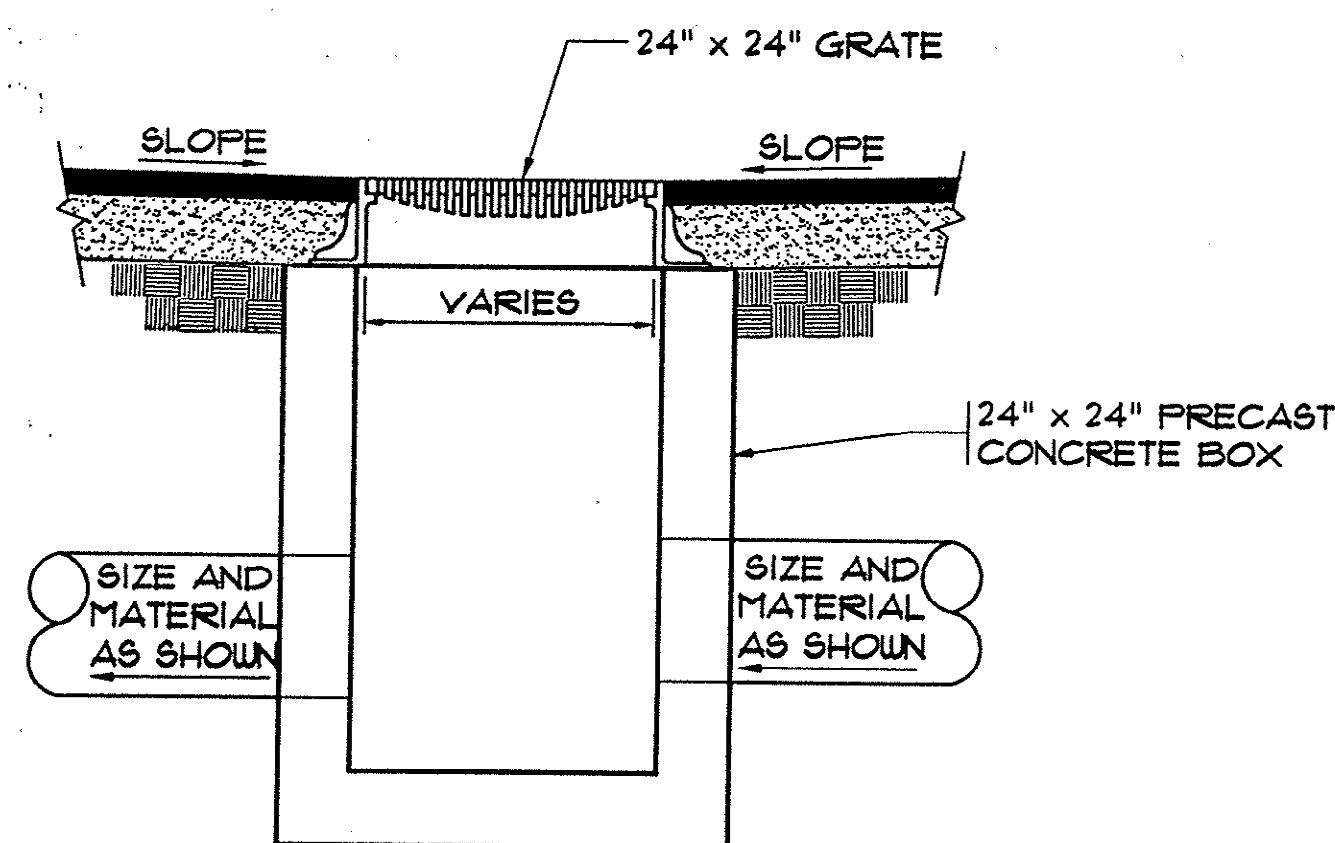
CURB INLET PLAN
N.T.S.



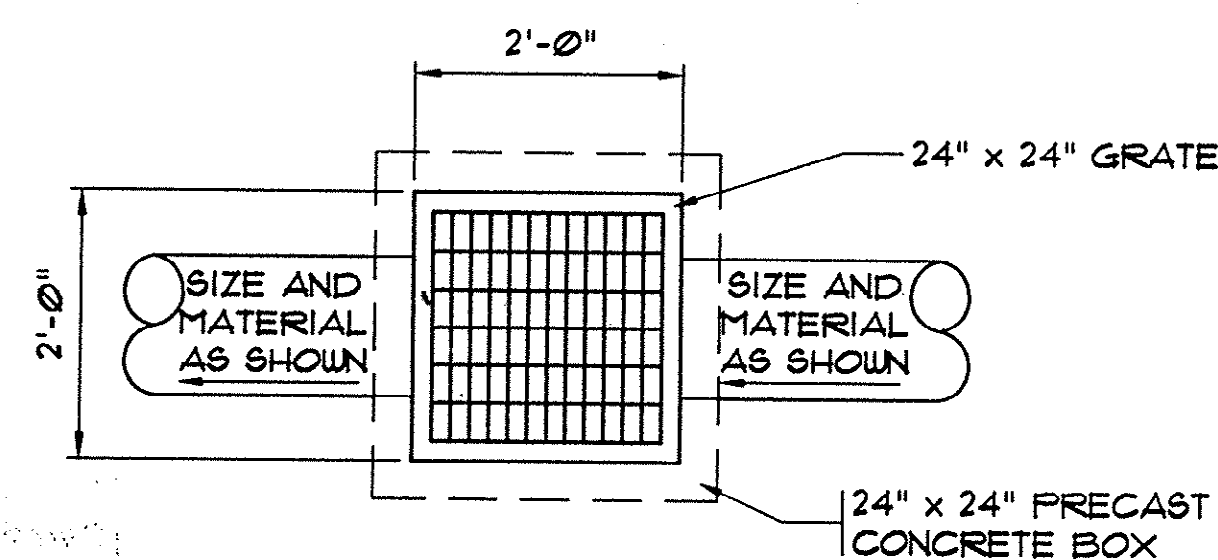
SECTION 1



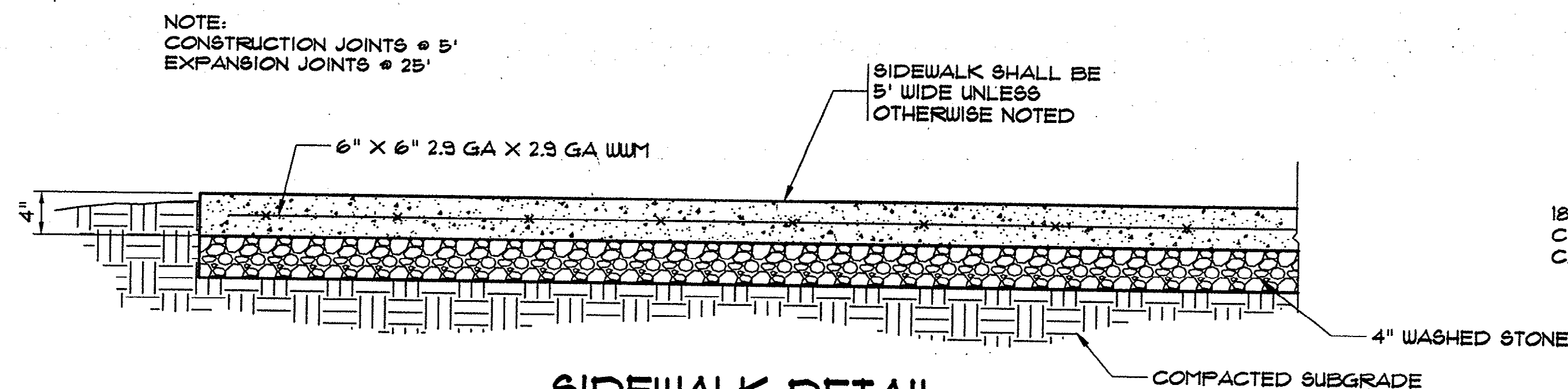
SECTION 2



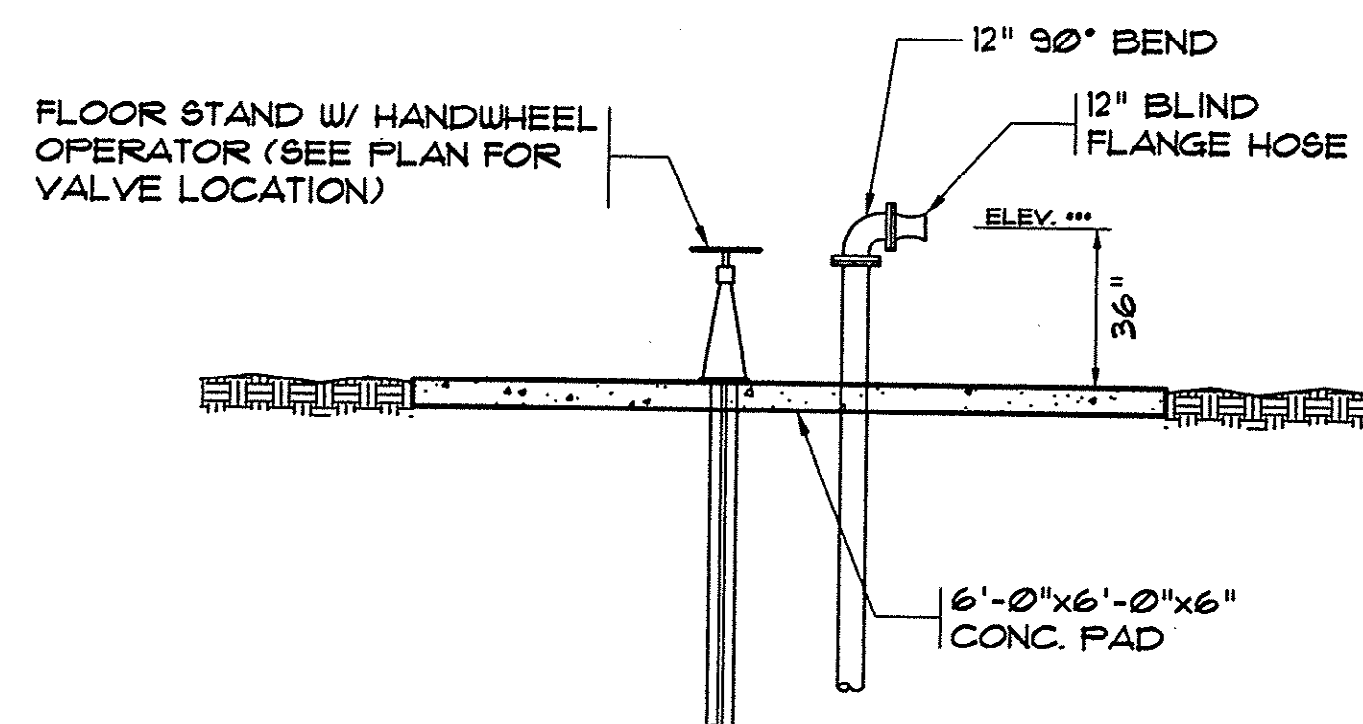
DROP INLET - SECTION
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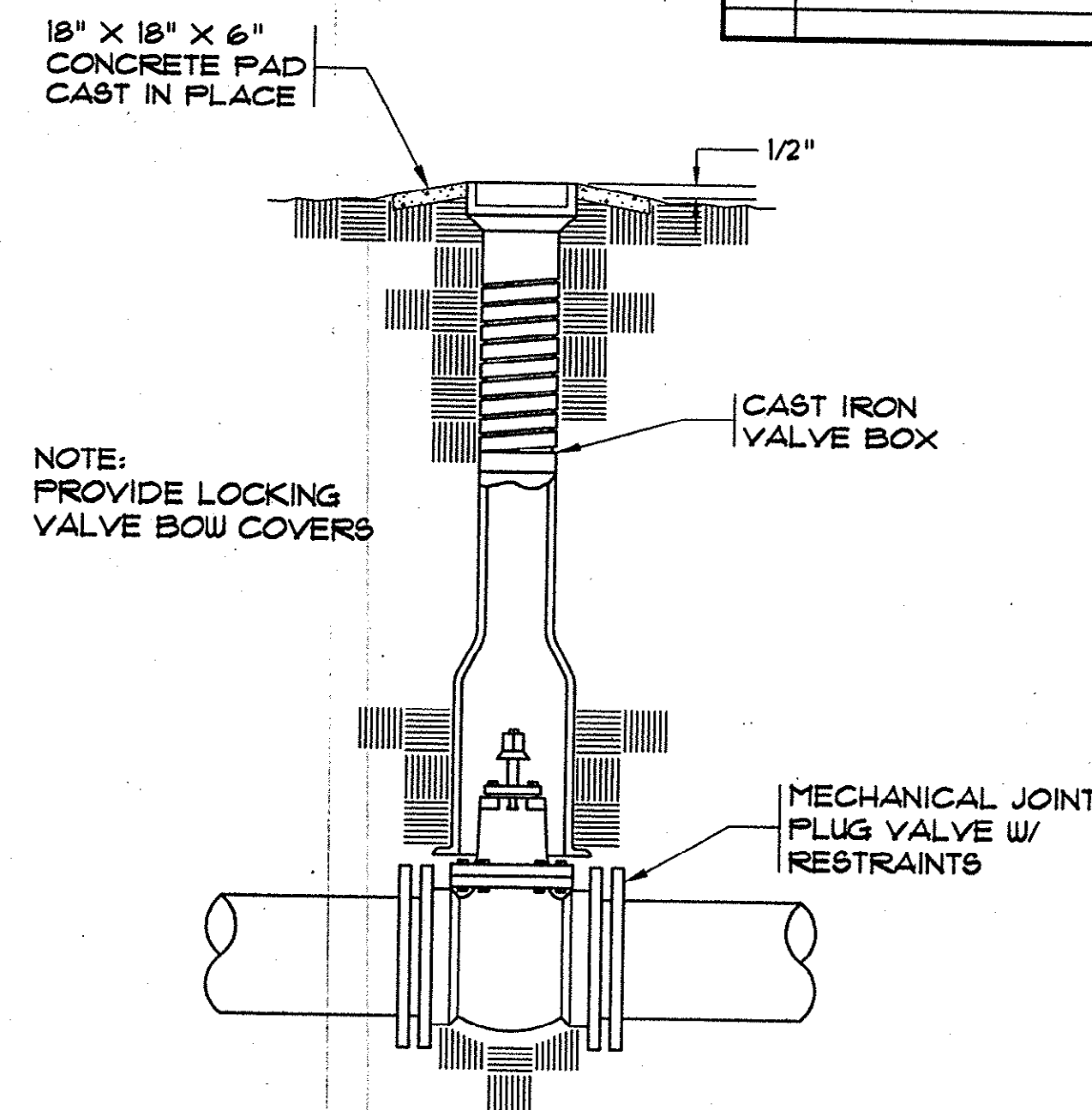
DROP INLET - PLAN VIEW
N.T.S.



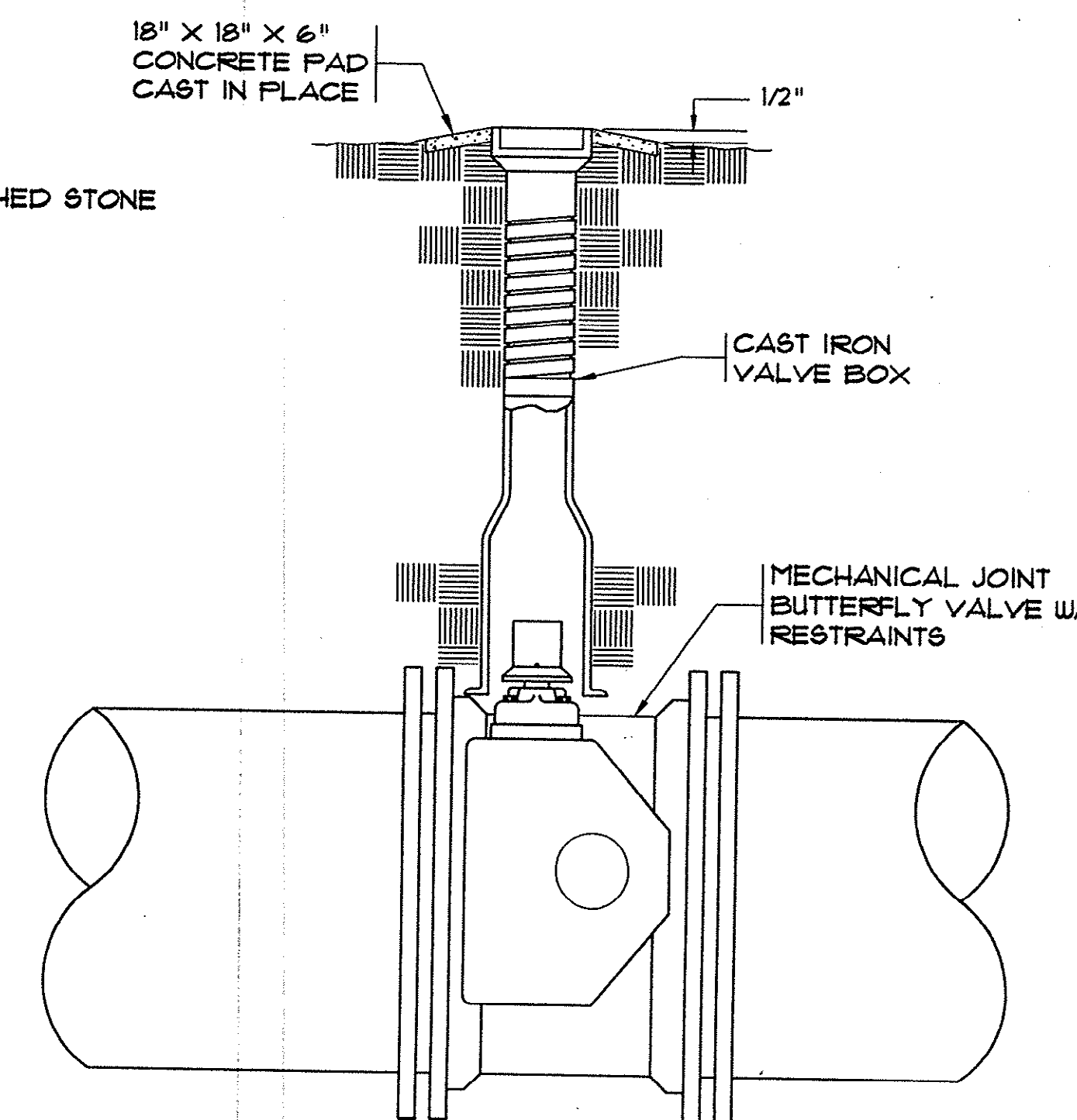
SIDEWALK DETAIL
N.T.S.



PUMP OUT STATION
N.T.S.

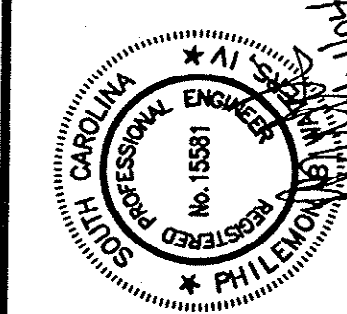
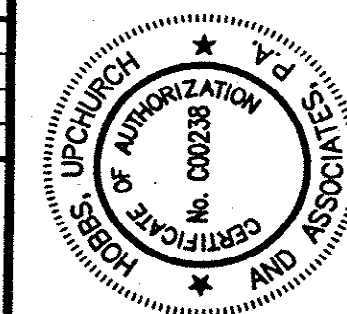


PLUG VALVE ASSEMBLY
N.T.S.



BUTTERFLY VALVE ASSEMBLY
N.T.S.

REVISIONS			
SYM.	DESCRIPTION	DATE	BY



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MISCELLANEOUS
DETAILS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

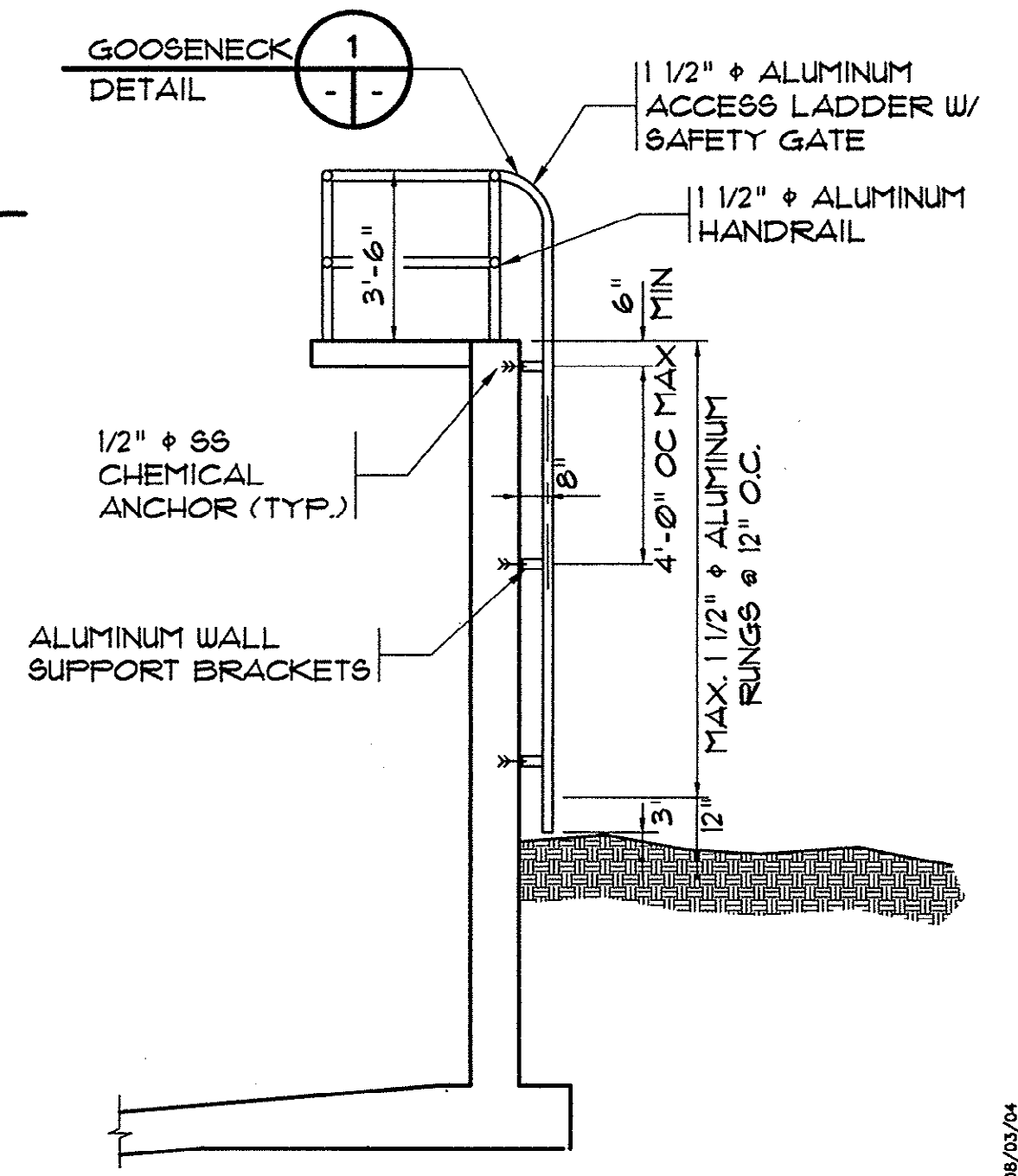
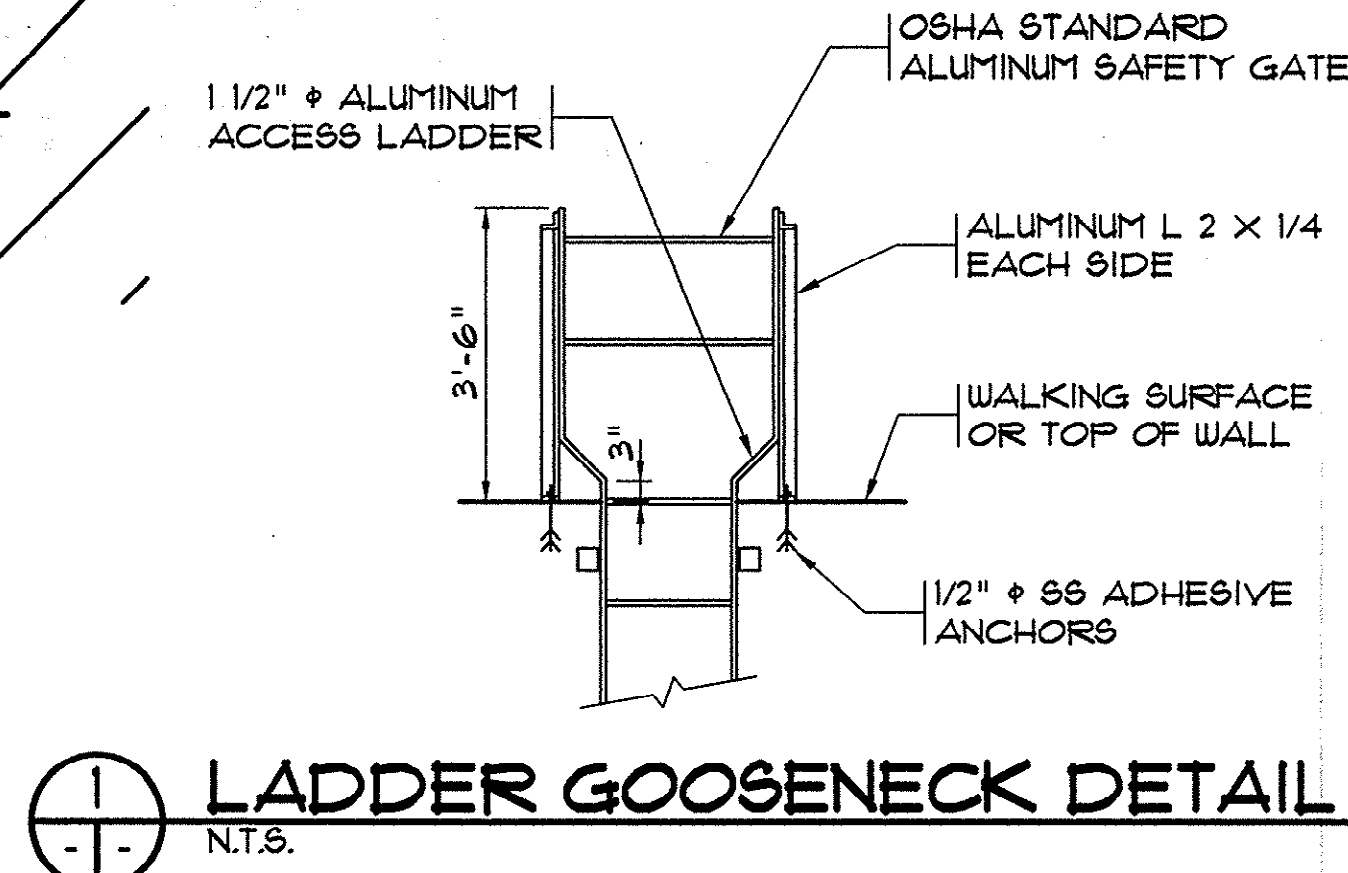
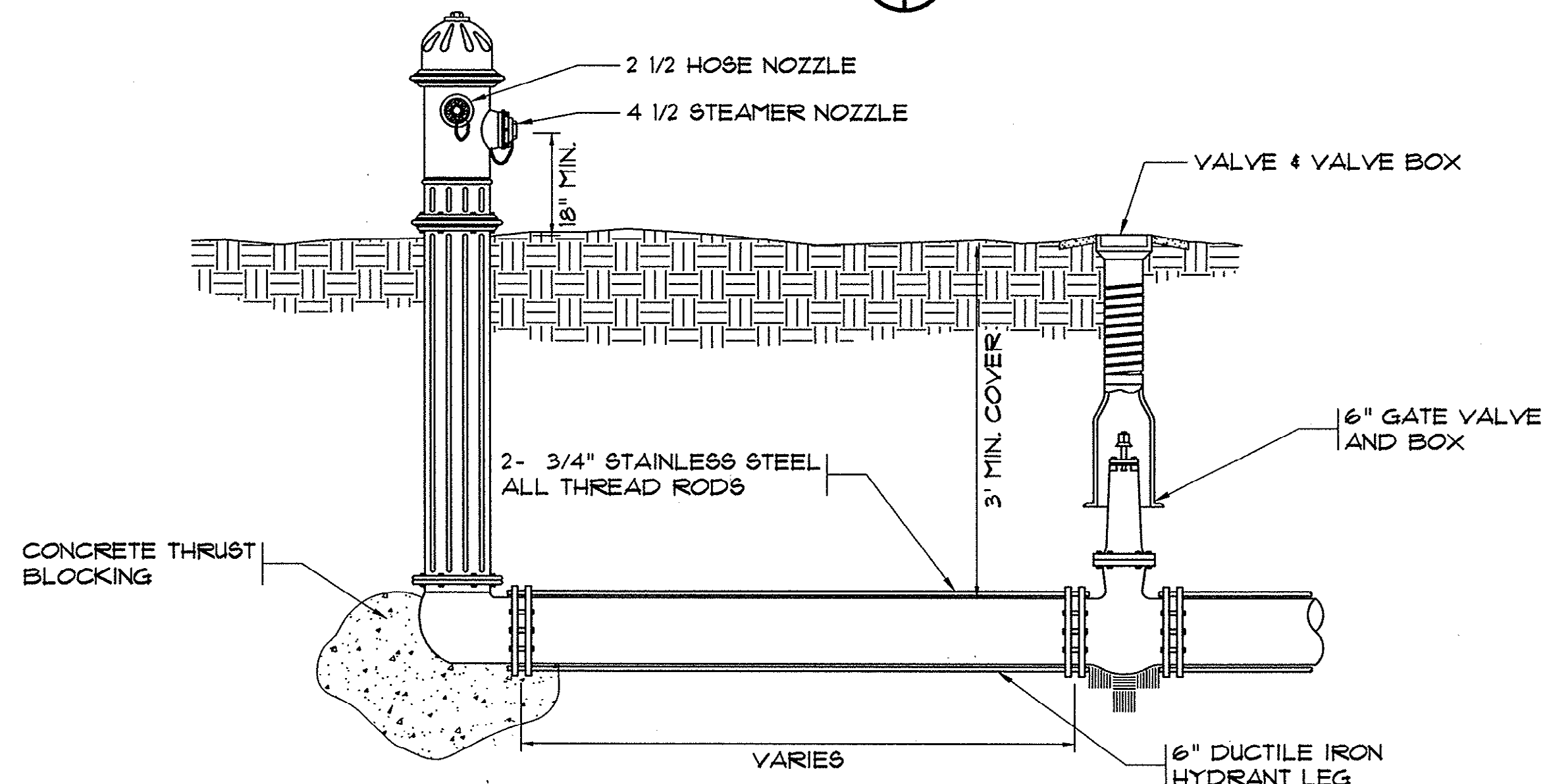
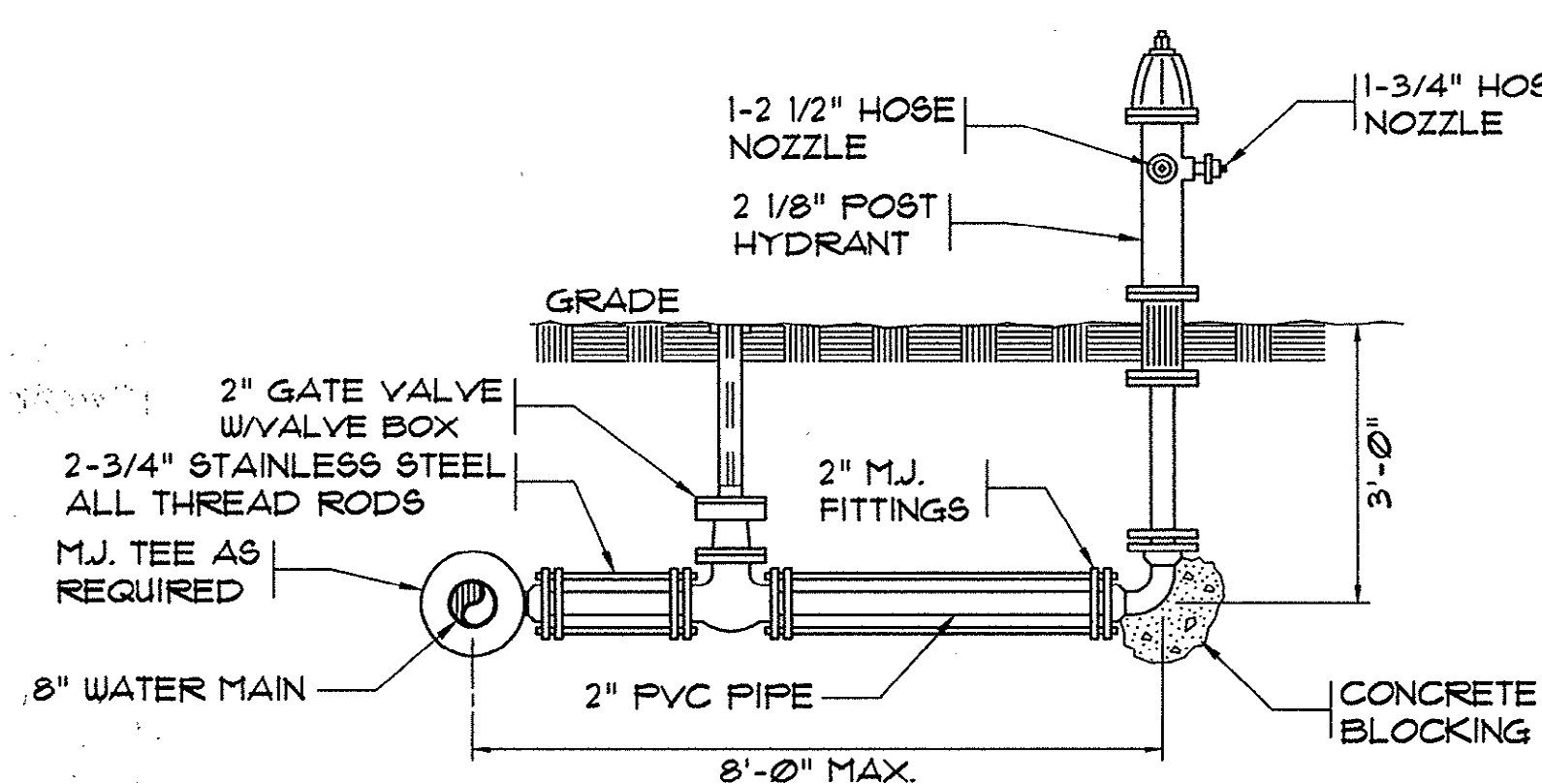
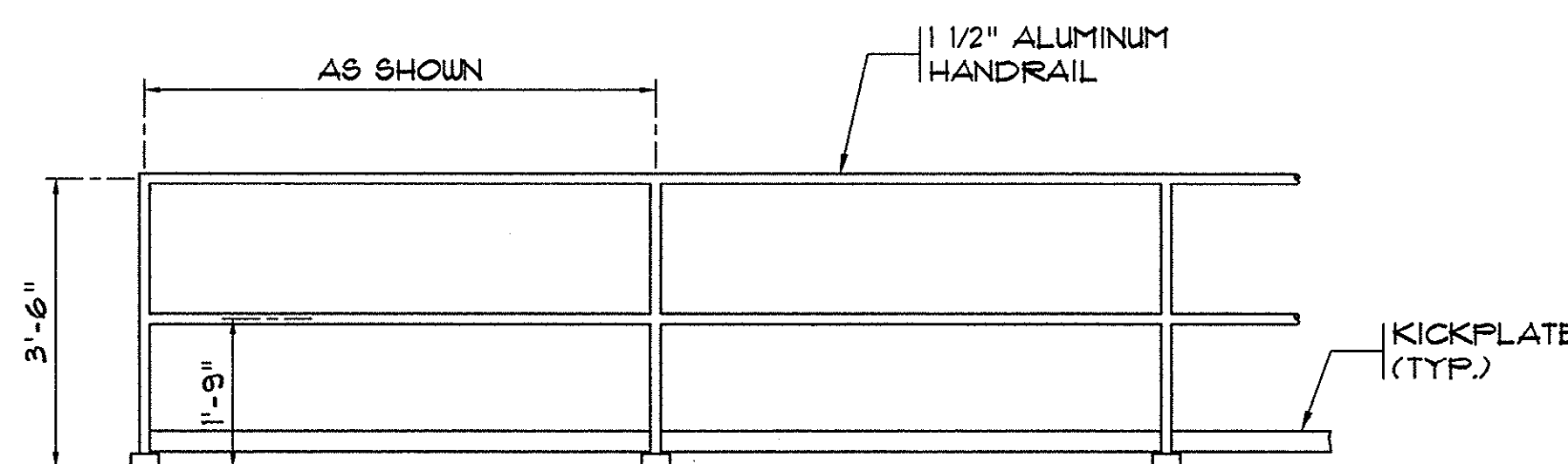
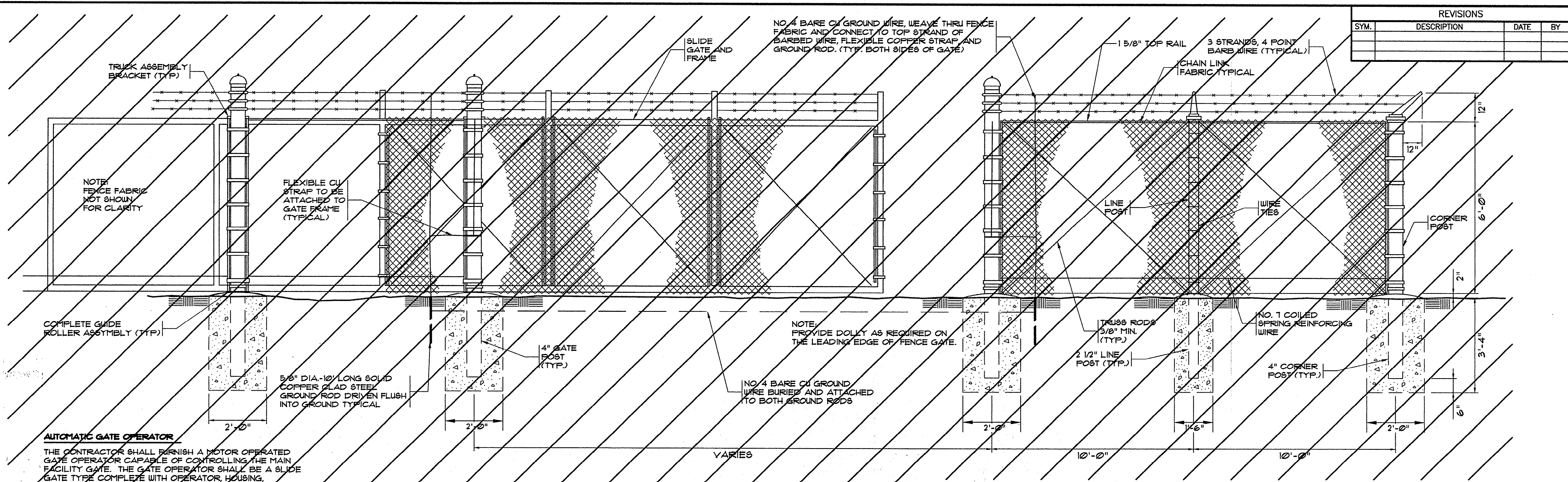
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DESIGNED:	PBW
DRAWN:	ARM
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SCALE:	AS SHOWN

Plan Reviewer for Horry County

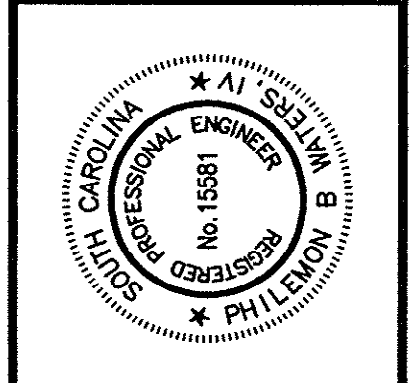
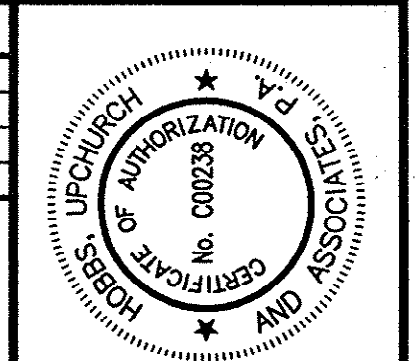
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G-21

HOBBS, UPCHURCH & ASSOC. BRT H:\Projects\GSD20A\800-Drawings\805-Design\General (G)\Sheet.dwg Layout: Details (4)



REVISIONS			
SYM.	DESCRIPTION	DATE	BY



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MISCELLANEOUS
DETAILS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

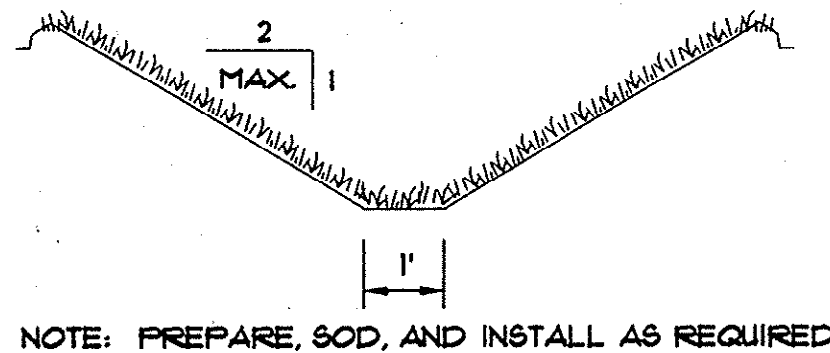
DATE:	SEPT. 2003
DESIGNED:	PBW
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CHECKED:	PBW
SCALE:	AS SHOWN
SHEET NO.	G-22

EROSION CONTROL NOTES:

- ALL SEDIMENT CONTROL MEASURES SHALL BE INSPECTED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND AFTER EVERY STORM EVENT GREATER THAN 0.5 INCHES OF PRECIPITATION DURING ANY 24-HOUR PERIOD. ALL SEDIMENT CONTROL FEATURES SHALL BE MAINTAINED UNTIL FINAL STABILIZATION HAS BEEN OBTAINED.
- STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE 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.
- 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 0.5 FEET DEEP AT THE FENCE. ALL DISTURBED AREAS SHALL BE CLEANED, GRADED AND STABILIZED WITH GRASSING IMMEDIATELY AFTER THE PATH INSTALLATION.
- 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.
- 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.

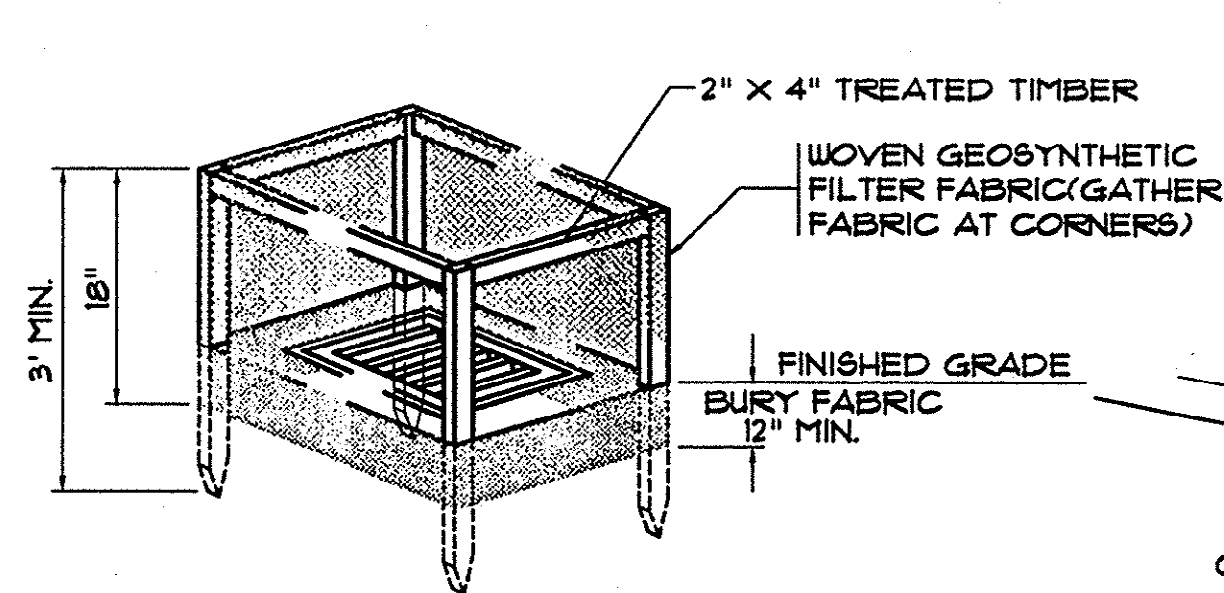
SEQUENCE OF CONSTRUCTION

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



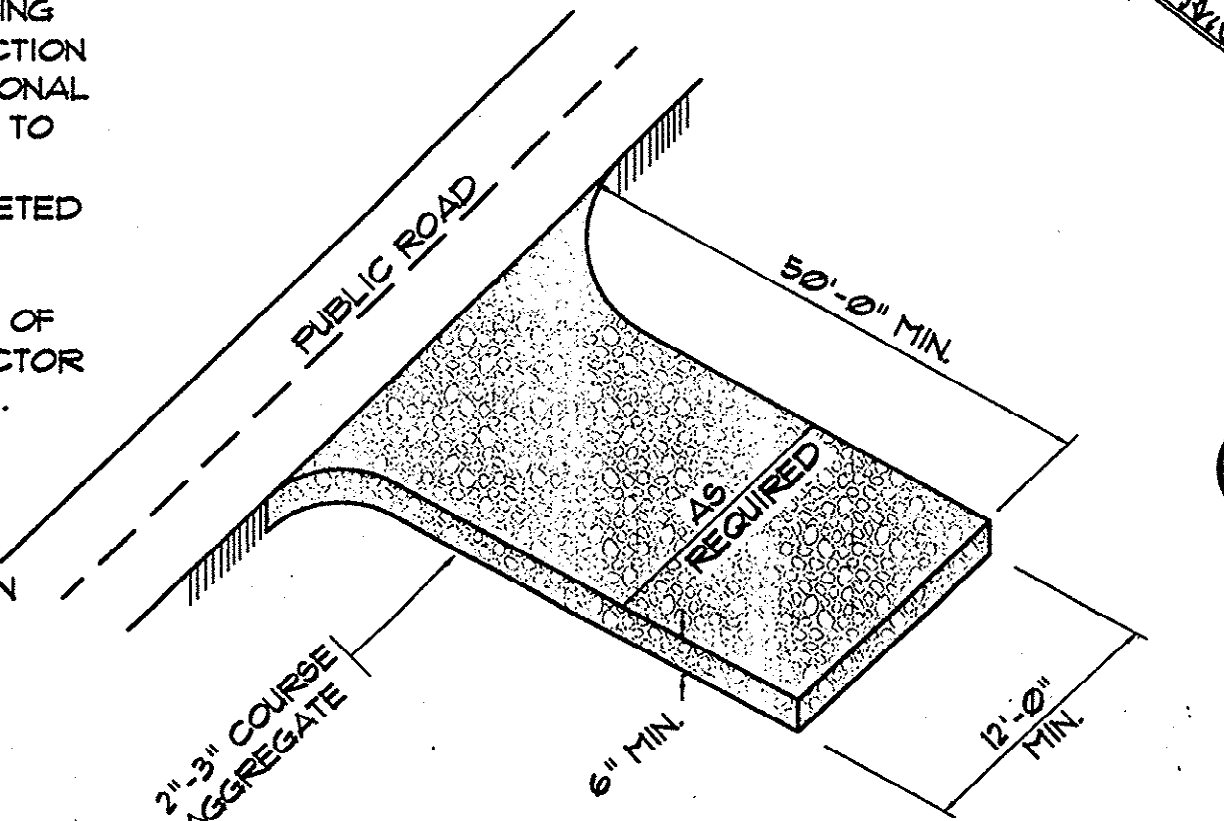
NOTE: PREPARE, SOD, AND INSTALL AS REQUIRED

GRASS (SODDED) SWALE



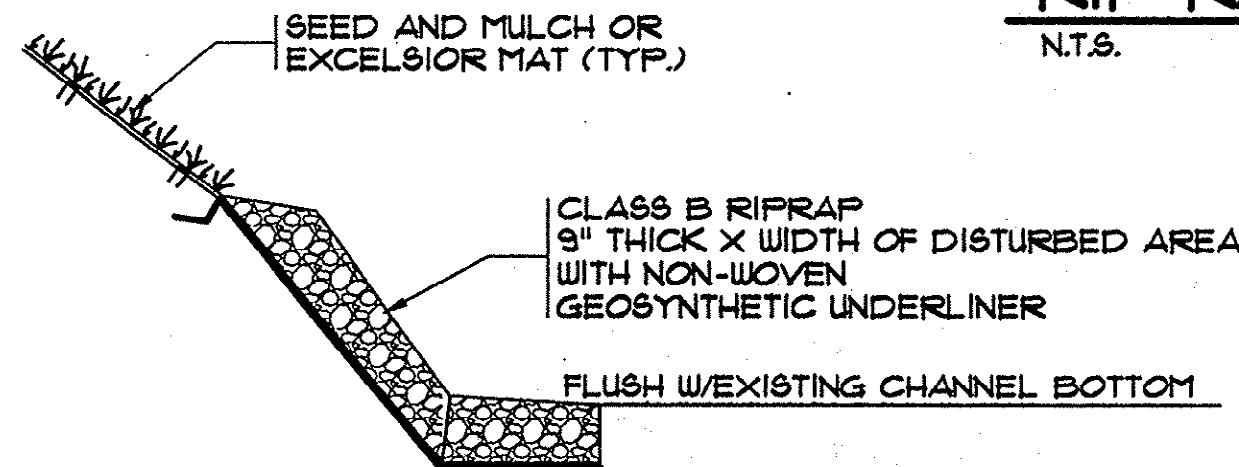
TEMPORARY INLET PROTECTION DETAIL

SCALE: NONE



TEMPORARY GRAVEL CONSTRUCTION ENTRANCE

N.T.S.



RIPRAP SLOPE PROTECTION

N.T.S.

- SEDIMENT FENCE CONSTRUCTION SPECIFICATIONS:
- 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 0 TO 120 DEGREES FAHRENHEIT.
 - 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 0.30 GAL/SQ. FT./MINUTE MINIMUM

MAINTENANCE:

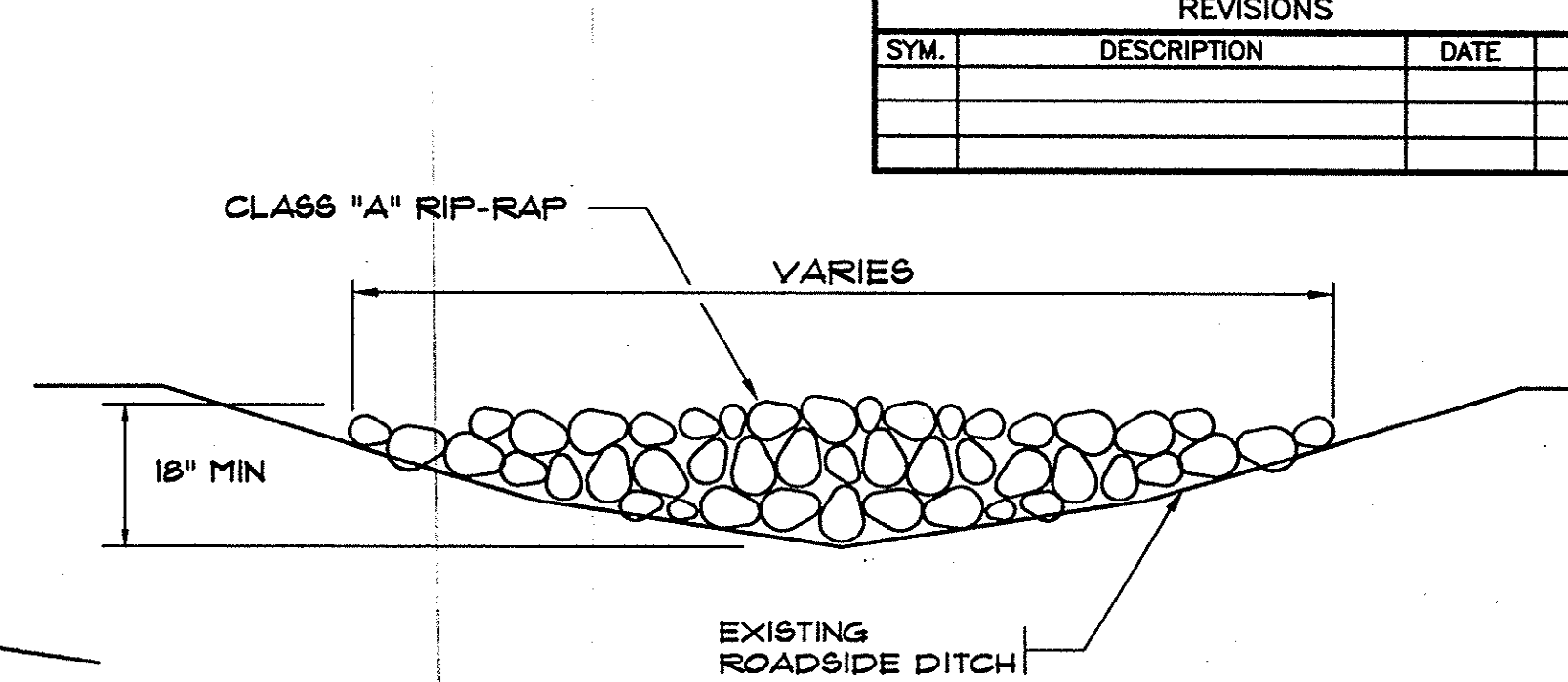
INSPECT SEDIMENT FENCES AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY SHOULD THE FABRIC OF A SEDIMENT FENCE COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY, REPLACE BURLAP EVERY 60 DAYS. REMOVE SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE 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.

SOIL PREPARATION

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

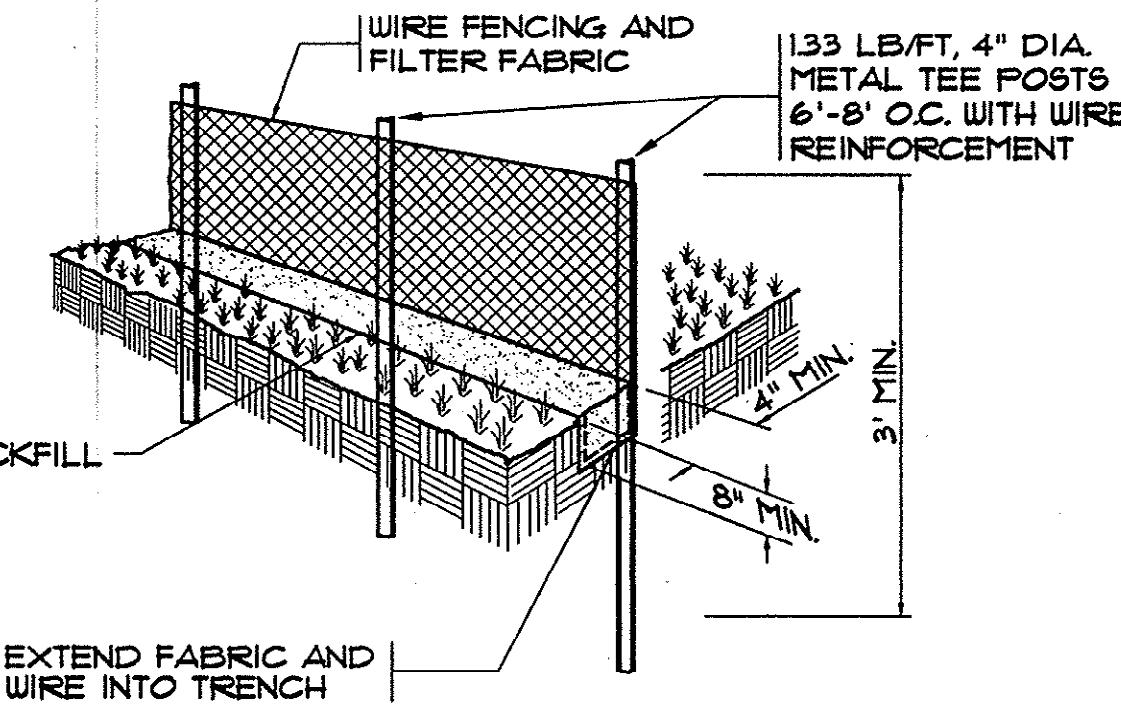
RIP RAP CHECK DAM DETAIL

N.T.S.



NOTES:

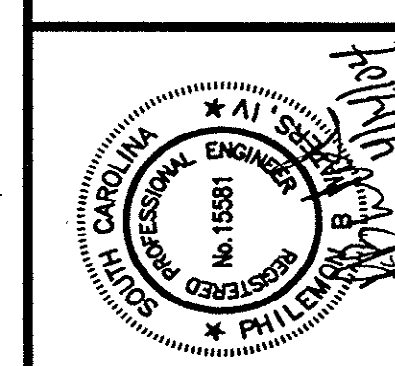
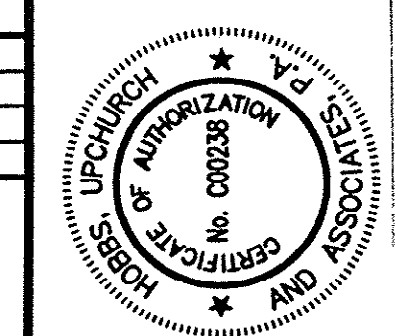
- CHECK DAMS SHALL BE REQUIRED ONLY IF TEMPORARY DITCH LINERS DO NOT CONTROL EROSION OR AS DIRECTED BY THE ENGINEER.
- CONTRACTOR SHALL REMOVE SEDIMENT ACCUMULATED BEHIND THE DAM TO PREVENT DAMAGE TO CHANNEL VEGETATION.
- CONTRACTOR SHALL REMOVE ROCK CHECK DAMS AFTER PERMANENT VEGETATION HAS BEEN ESTABLISHED.



SILT FENCE DETAIL

N.T.S.

REVISIONS			
SYM.	DESCRIPTION	DATE	BY



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EROSION CONTROL
DETAILS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

DATE:	SEPT. 2003
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	PBW
SCALE:	AS SHOWN

Plan Reviewer for Horry County

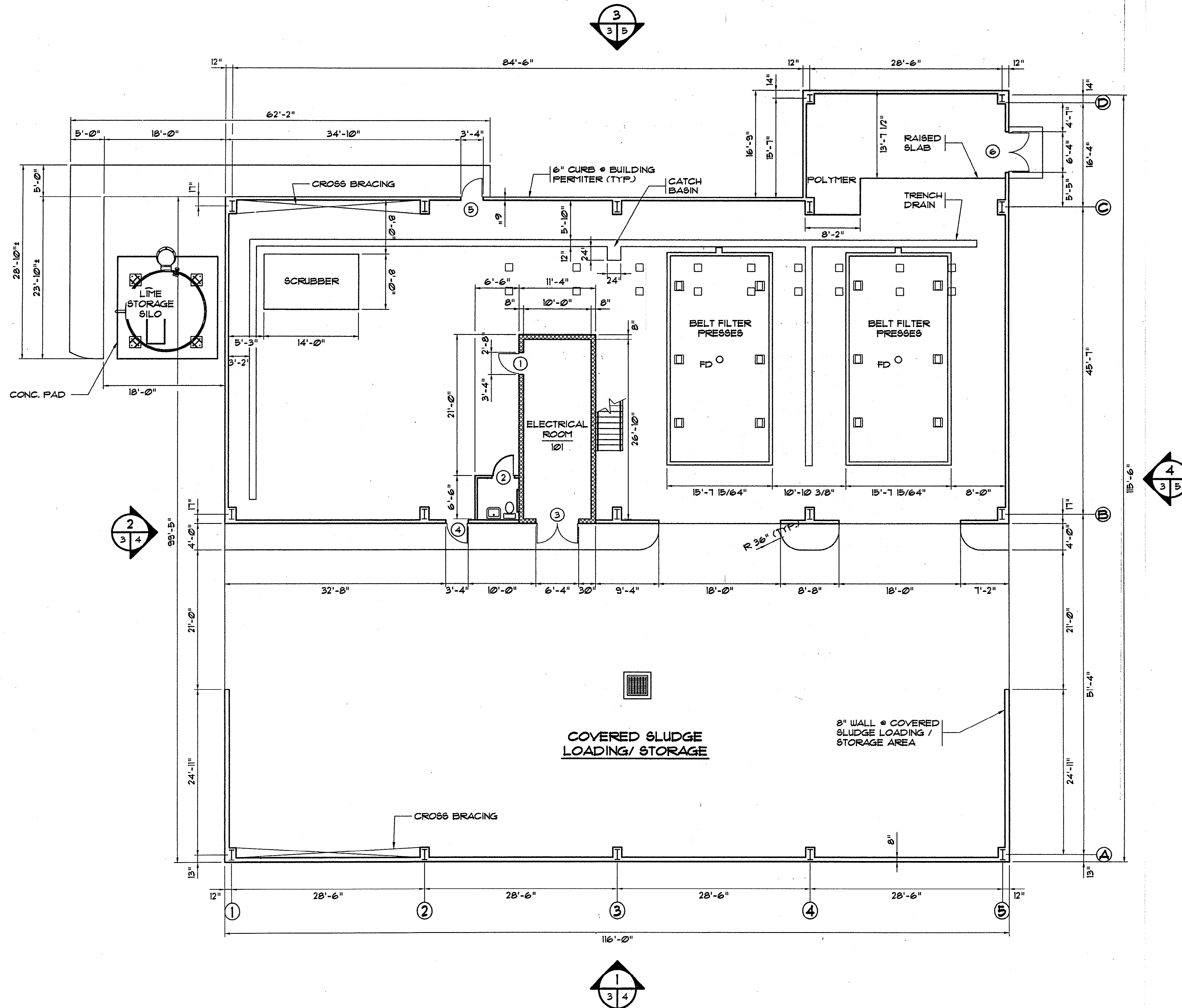
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SHEET NO.

G-25

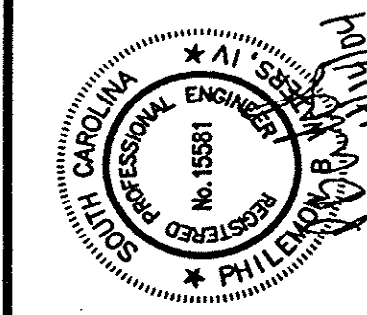
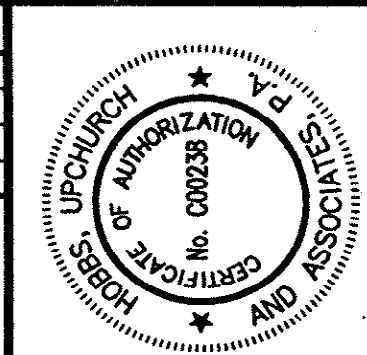
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SLUDGE TREATMENT BUILDING
LOWER PLAN
SCALE: 1/8"=1'-0"

REVISIONS			
SYM.	DESCRIPTION	DATE	BY



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**SLUDGE TREATMENT
BUILDING LAYOUT**

SCHWARTZ
**WASTEWATER TREATMENT
PLANT UPGRADE**
**GRAND STRAND WATER &
SEWER AUTHORITY**

DATE:	SEPT. 2003
DESIGNED:	PBW
DRAWN:	ALG
CHECKED:	JWM
SCALE:	AS SHOWN

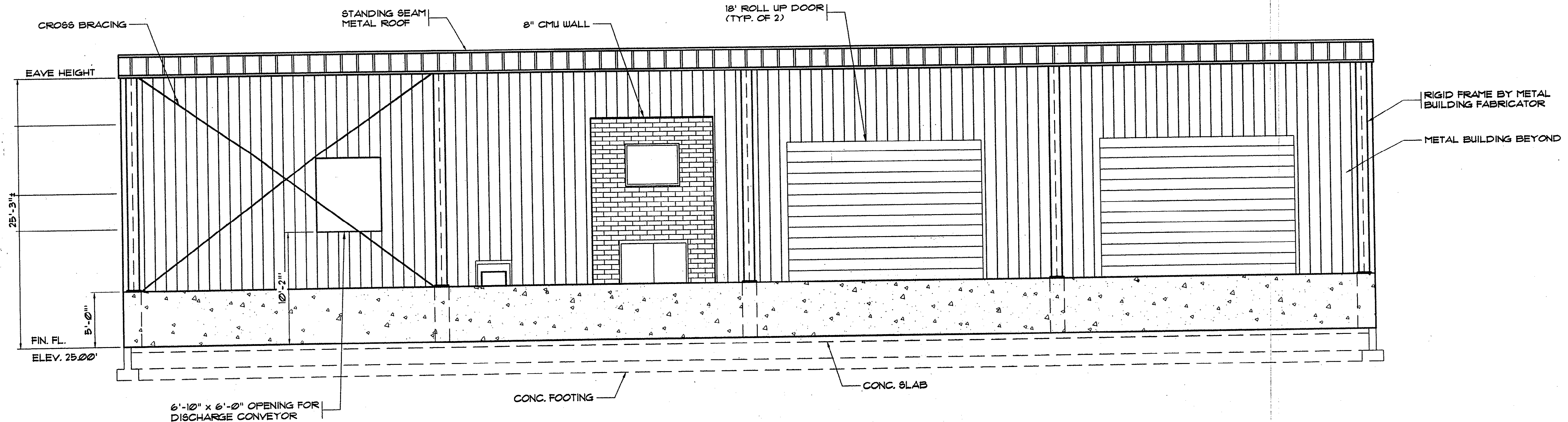
SHEET NO.
A-3
OF: 1

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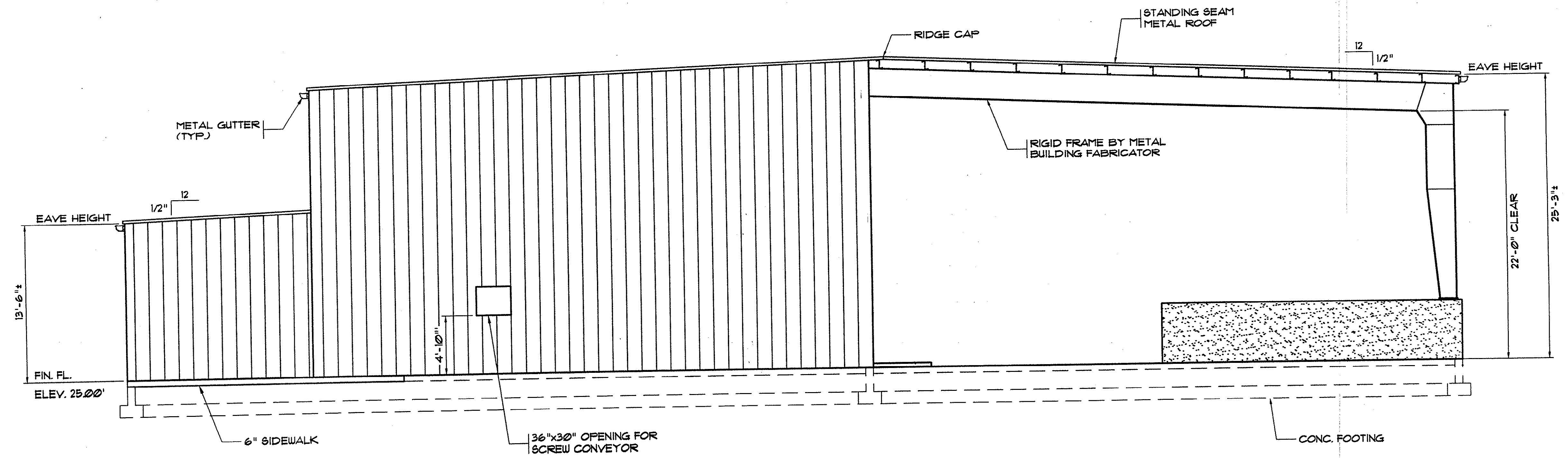
Plan Reviewer for Horry County
OK _____

UPDATER: 04/13/04

HOBBS, UPCHURCH & ASSOC. BFT H:\Projects\GSD20\800-Drawings\805-Design\Architectural (A)\A-04 SLUDGE ELEV.dwg EDITED BY: MILLER DATE: 10/10/03 TIME: 11:47 XREFS: H:\Projects\GSD20\800-Drawings\805-Design\General (G)\Street.dwg Layout: Sludge Thickener

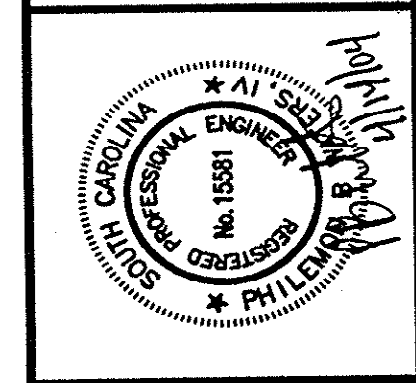
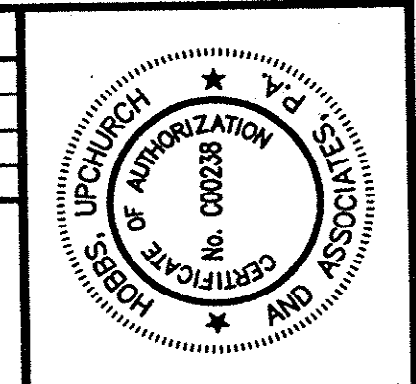


1 ELEVATION
SCALE: 3/16" = 1'-0"



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

REVISIONS			
SYM.	DESCRIPTION	DATE	BY



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PHONE: (843) 693-1810 FAX: (843) 693-1745

**SLUDGE STABILIZATION
/ PASTEURIZATION
BUILDING
ELEVATIONS**

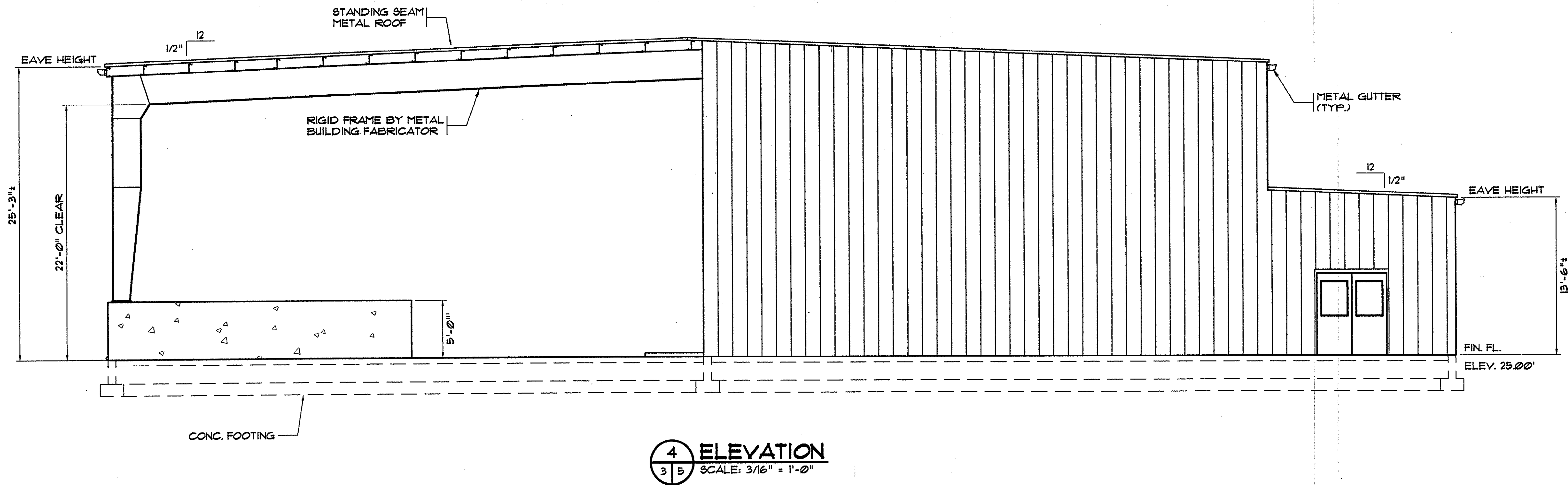
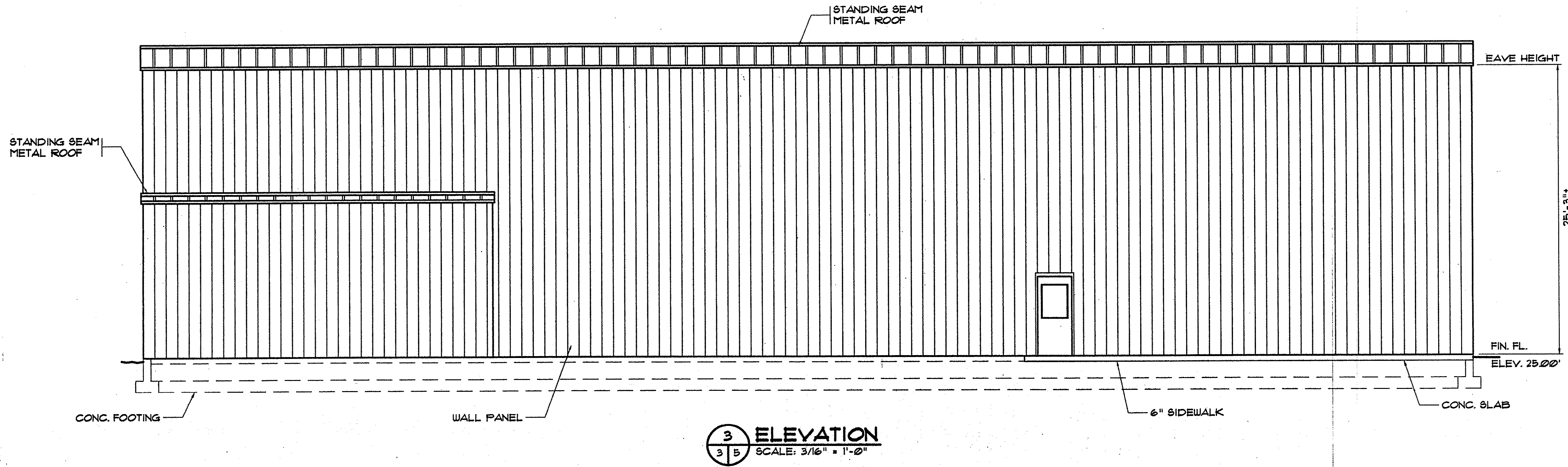
**SCHWARTZ
WASTEWATER TREATMENT
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GRAND STRAND WATER &
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DATE:	SEPT. 2003
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Plan Reviewer for Horry County
OK _____

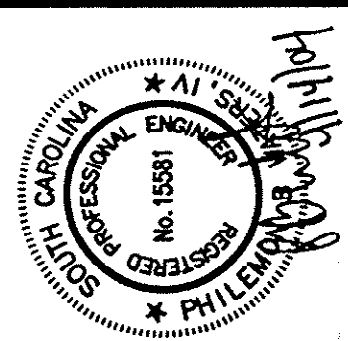
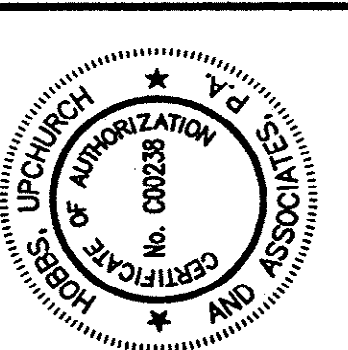
PLOTTED: 04/13/04
SHEET NO. **A-4**

HOBBS, UPCHURCH & ASSOC. BFT H:\Projects\GSD204\600-Drawings\605-Design\Architectural (A)\A-05 SLUDGE STABILIZATION BUILDING ELEVATIONS EDITED BY: MILLER DATE: 10/10/03 TIME: 11:48 XREFS: H:\Projects\GSD204\600-Drawings\605-Design\General (G)\Street.dwg Layout: Sludge Thickener



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SYM.	DESCRIPTION	DATE	BY



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Myrtle Beach, South Carolina 29577
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**SLUDGE STABILIZATION
/ PASTEURIZATION
BUILDING
ELEVATIONS**

**SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY**

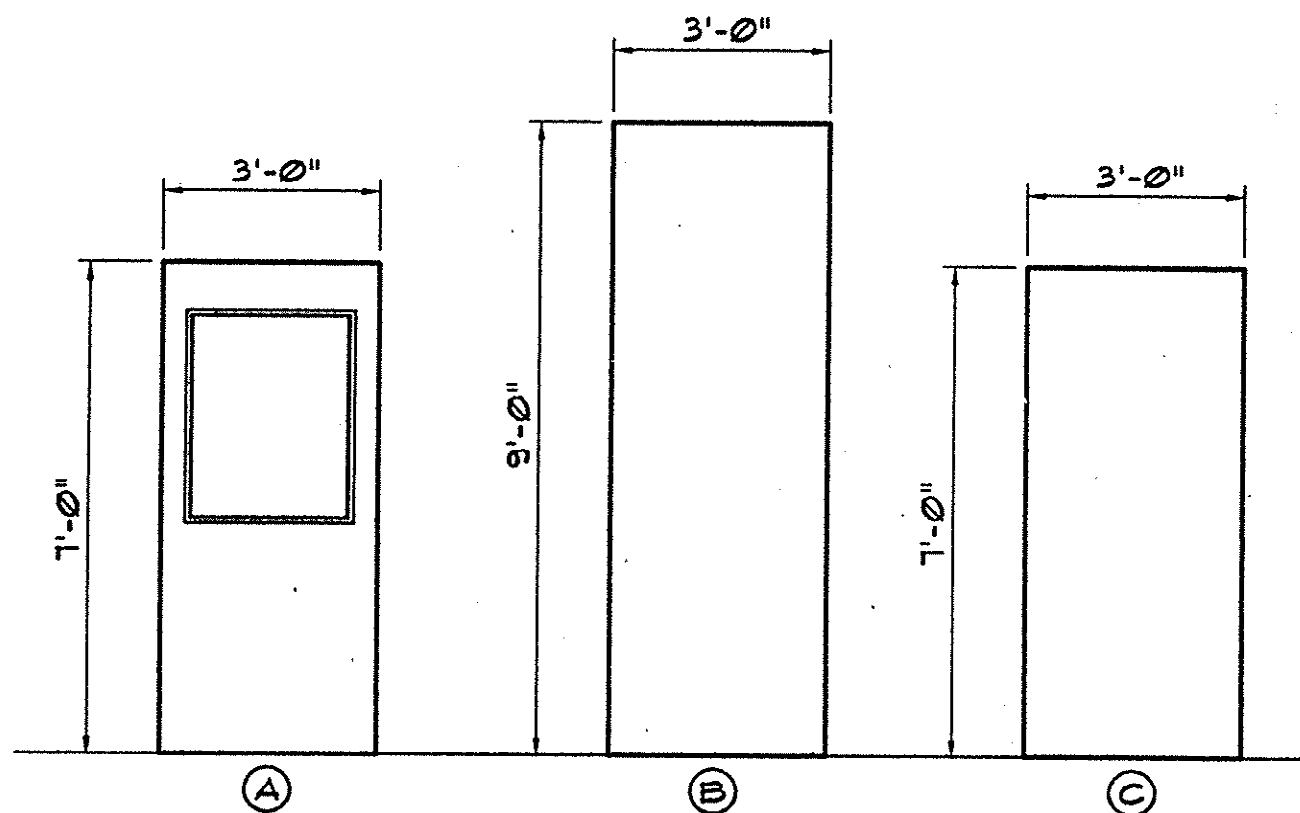
DATE: SEPT. 2003
DESIGNED: PBW
DRAWN: ALG
CHECKED: JWM
SCALE: AS SHOWN

SHEET NO.
A-5

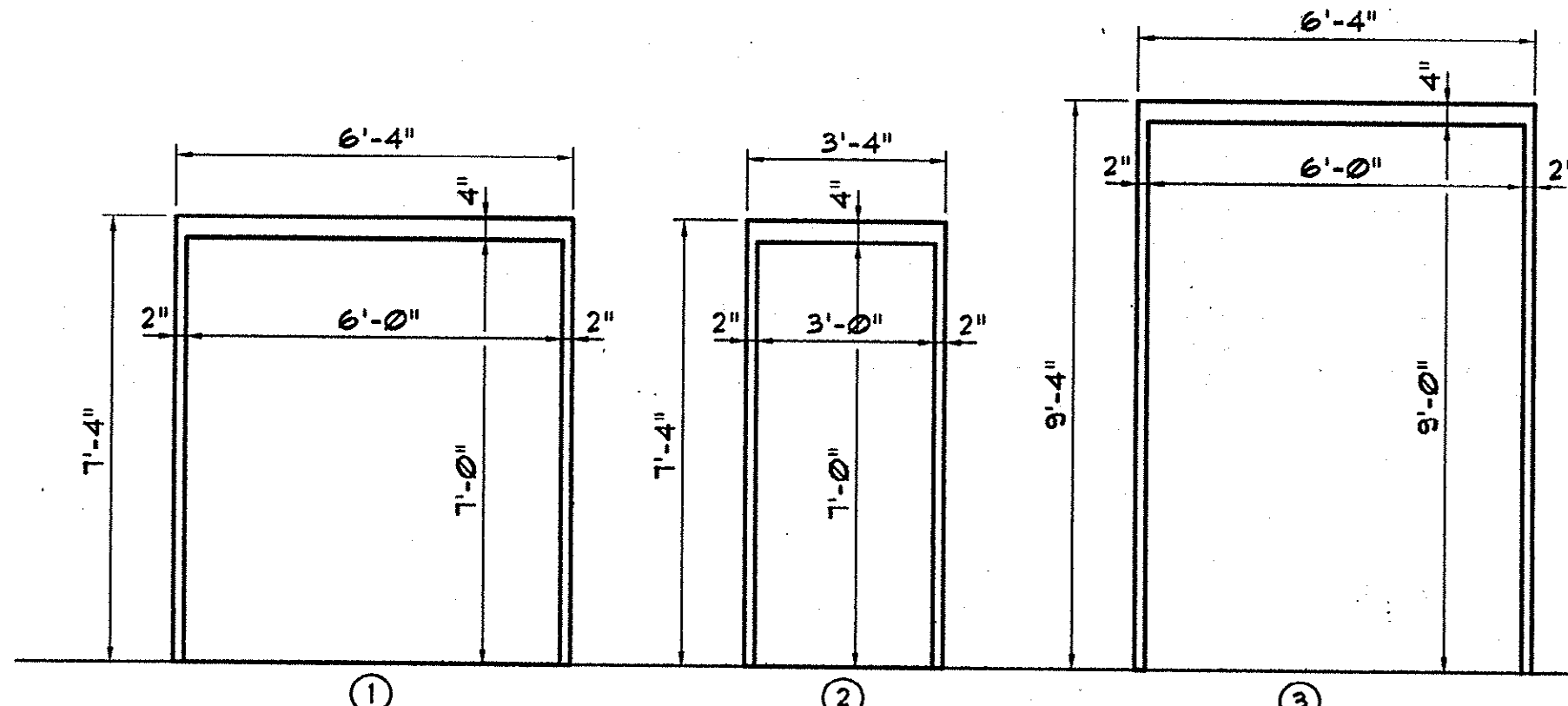
UPDATES: 03/09/04 REVISION: 04/13/04

HOBBS, UPCHURCH & ASSOC. B.T. H:\Projects\GS2004\800-Drawings\805-Design\Architectural (A)\A-07 SLUDGE DOOR.dwg EDITED BY: JAROLD DATE: 11/05/03 TIME: 08:20 XREFS: H:\Projects\GS2004\800-Drawings\805-Design\General (G)\Sheet.dwg Layout: Sludge Thickener

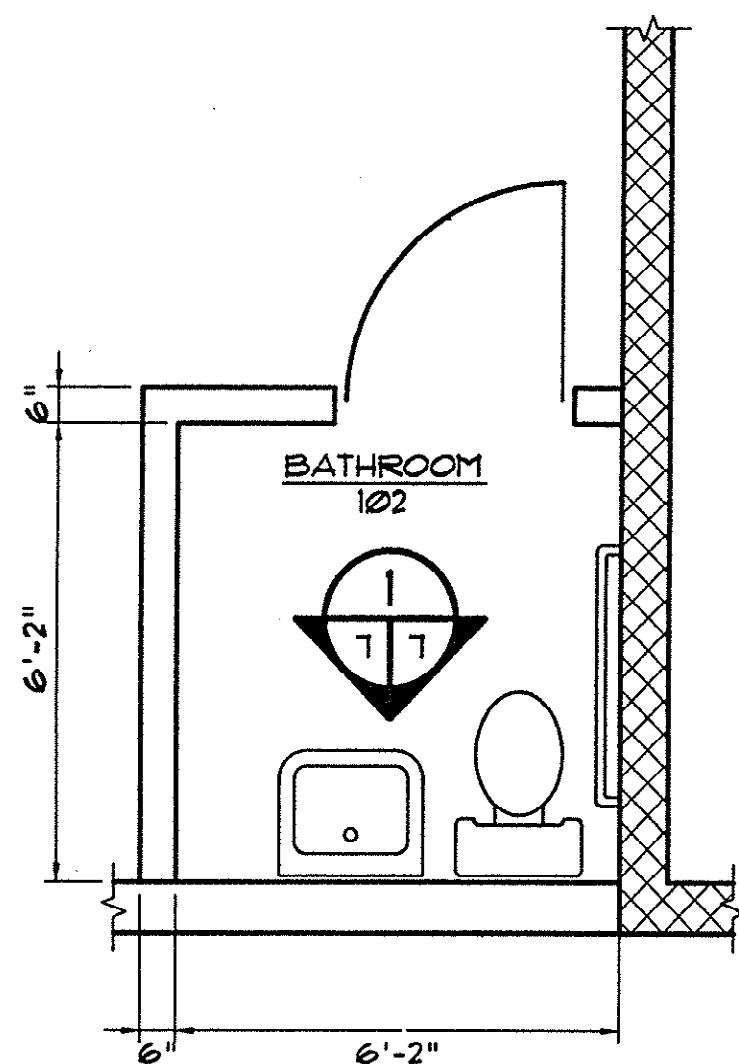
DOOR SCHEDULE											
NO.	DOOR						FRAME			REMARKS	HARDWARE SET
	SIZE	TYPE	MTL.	GLASS	LOUVER	LABEL	TYPE	MTL.	GLASS		
①	3'x7'x1.75"	A	METAL	1/4" TEMP.	NONE	20 MIN.	2	METAL	NONE		1
②	3'x7'x1.75"	C	WOOD	NONE	NONE	20 MIN.	2	METAL	NONE		2
③	PR 3'x9'x1.75"	B	METAL	NONE	NONE	NONE	3	METAL	NONE		3
④	3'x7'x1.75"	A	METAL	1/4" TEMP.	NONE	NONE	2	METAL	NONE		4
⑤	3'x7'x1.75"	A	METAL	1/4" TEMP.	NONE	NONE	2	METAL	NONE		4
⑥	PR 3'x7'x1.75"	A	METAL	1/4" TEMP.	NONE	NONE	1	METAL	NONE		3
⑦	3'x7'x1.75"	A	METAL	1/4" TEMP.	NONE	20 MIN.	2	METAL	NONE		1



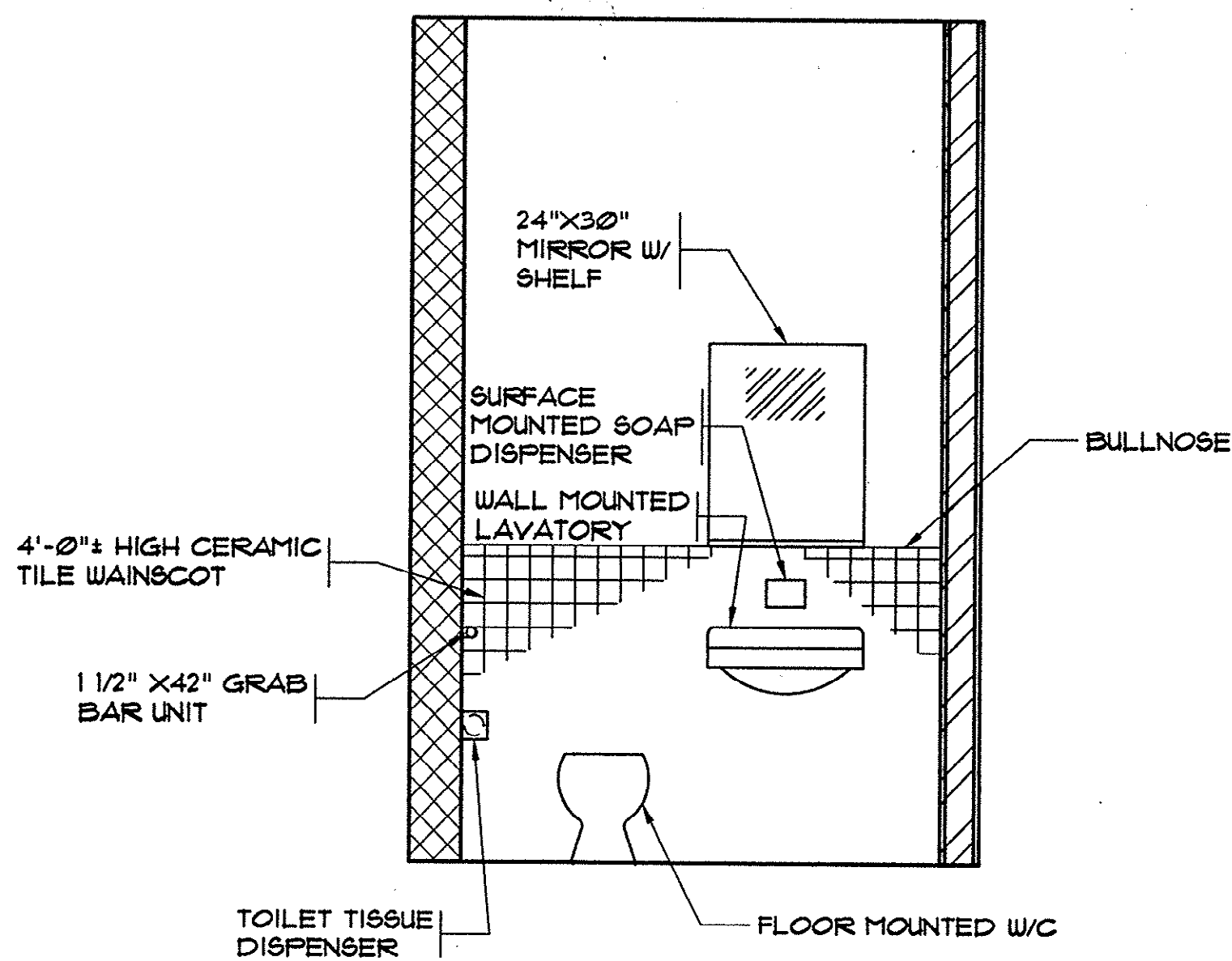
DOOR ELEVATION
N.T.S.



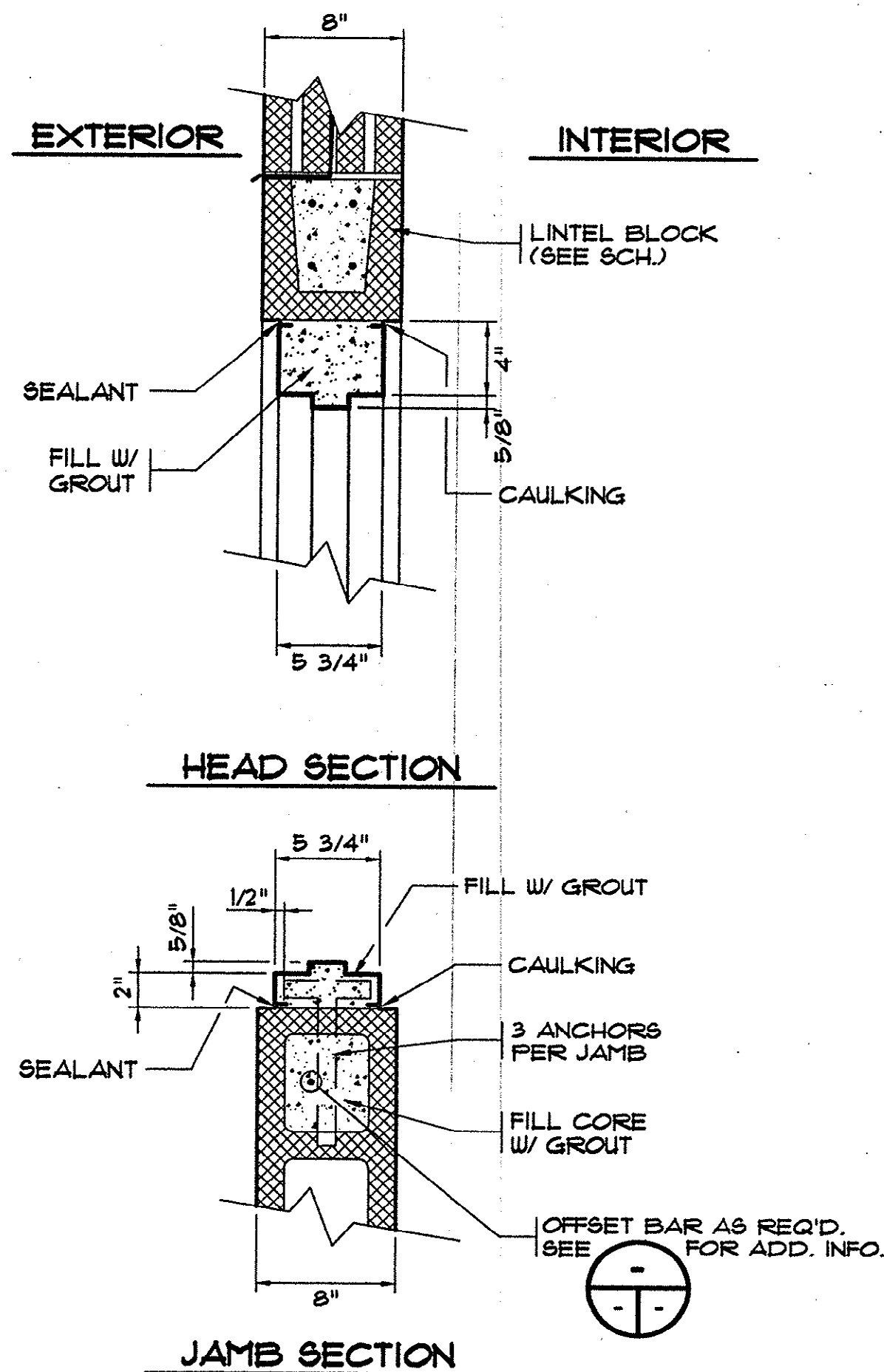
FRAME ELEVATION
N.T.S.



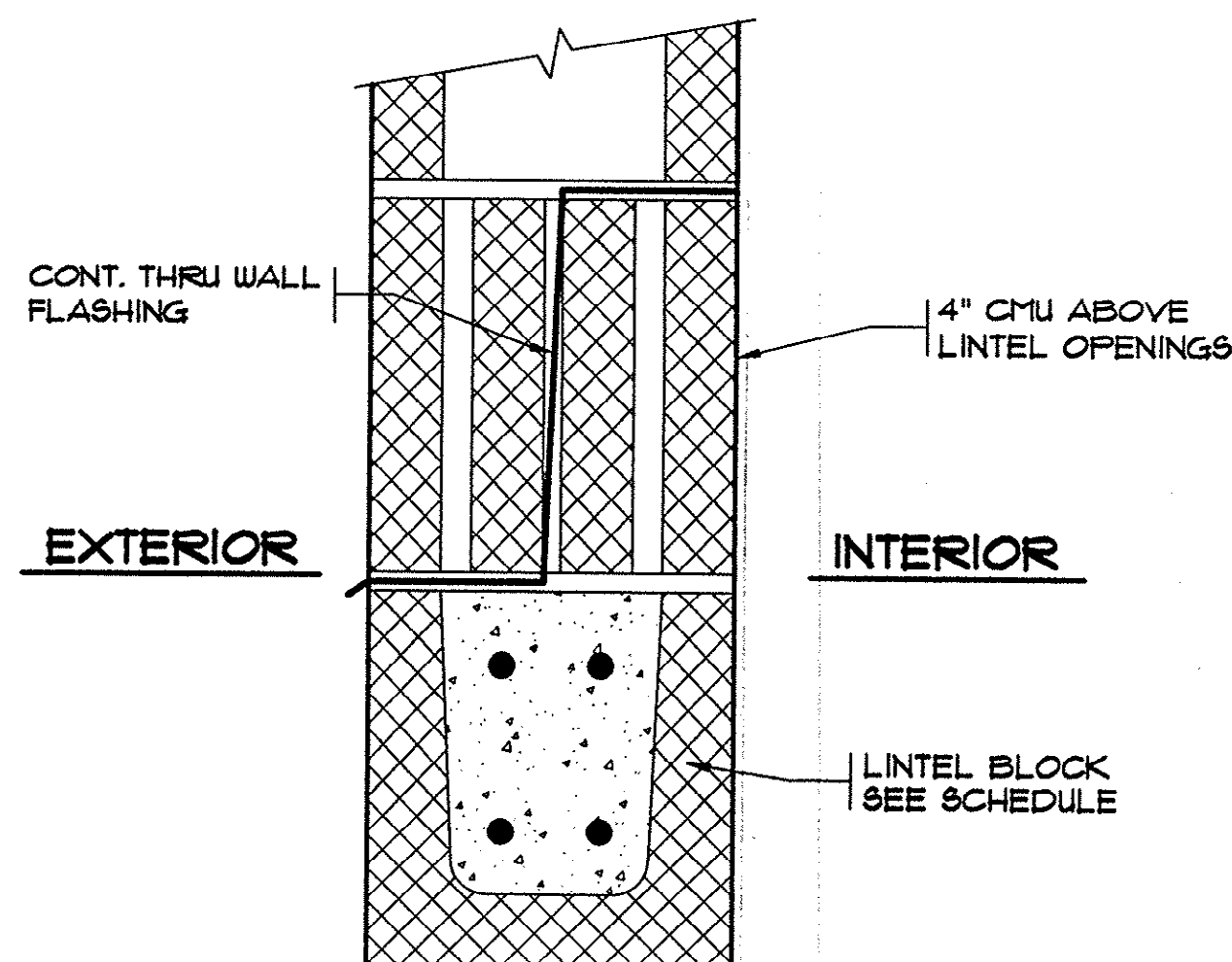
BATHROOM LAYOUT
SCALE: 3/8"=1'-0"



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

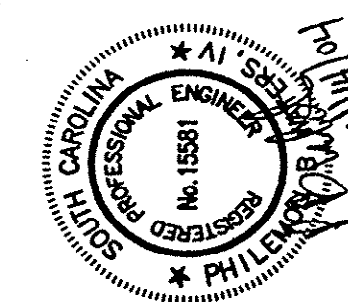
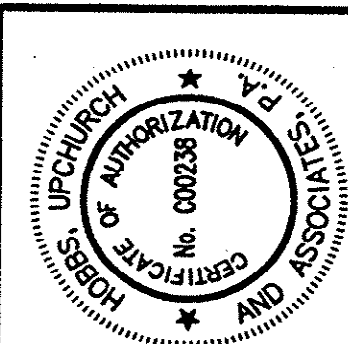


DOOR DETAILS
N.T.S.



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

REVISIONS			
SYM.	DESCRIPTION	DATE	BY



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SLUDGE TREATMENT
BUILDING DOOR &
WINDOW DETAILS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

DATE:	SEPT. 2003
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	JWM
SCALE:	AS SHOWN

SHEET NO.

A-7

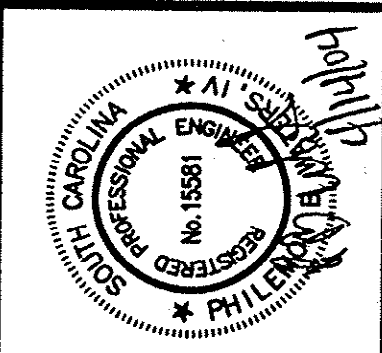
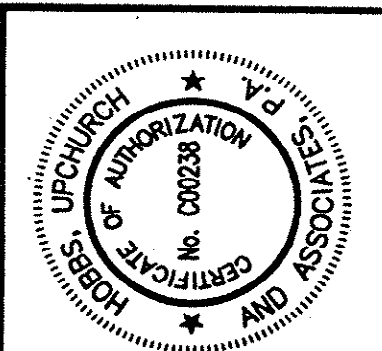
Plan Reviewer for Horry County

OK

UPDATED: 04/08/04 PLOTTED: 04/13/04

ROOM FINISH SCHEDULE					
NO. / ROOM	FLOOR	BASE	WALLS	CEILING	REMARKS
101 / ELECTRICAL ROOM	SEALED CONCRETE	NONE	PAINTED CMU	EXPOSED DECK	
102 / BATHROOM	SEALED CONCRETE	NONE	PAINTED CMU	5/8" GYP. BOARD (PAINTED)	
201 / CONTROL ROOM	SEALED CONCRETE	NONE	PAINTED CMU	5/8" GYP. BOARD (PAINTED)	

REVISIONS			
SYM.	DESCRIPTION	DATE	BY



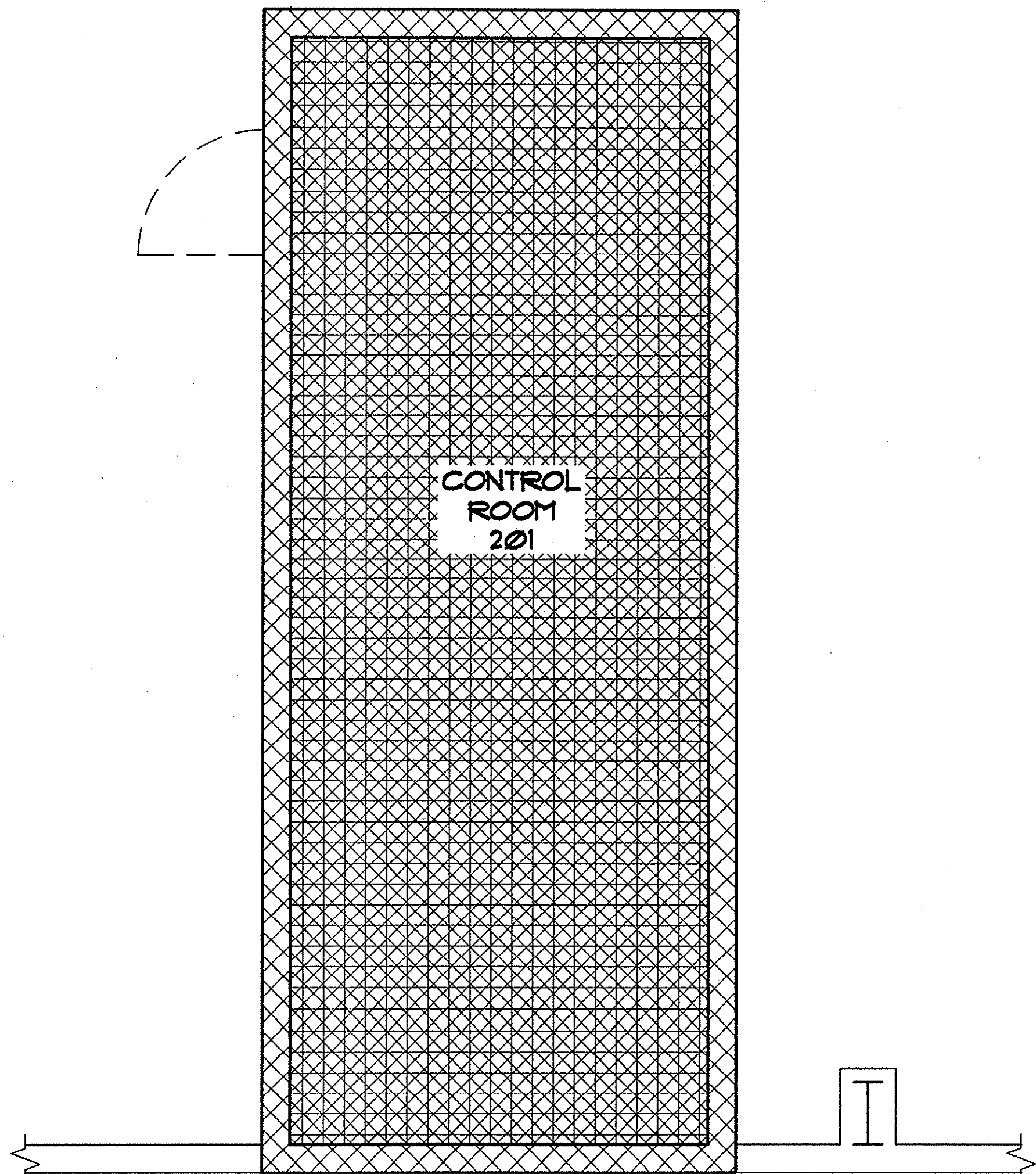
Hobbs, Upchurch & Associates, P.A.
 Consulting Engineers
 Myrtle Beach, South Carolina 29577
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**SLUDGE TREATMENT
 BUILDING CEILING PLAN
 AND DETAILS**

**SCHWARTZ
 WASTEWATER TREATMENT
 PLANT UPGRADE
 GRAND STRAND WATER &
 SEWER AUTHORITY**

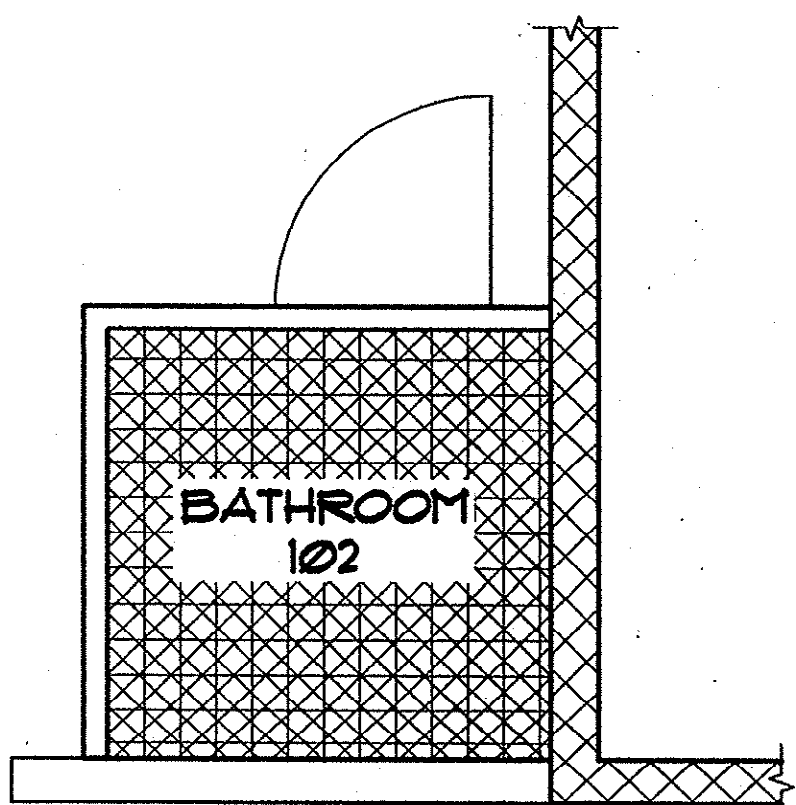
DATE:	SEPT. 2003
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	JWM
SCALE:	AS SHOWN
SHEET NO.	A-8

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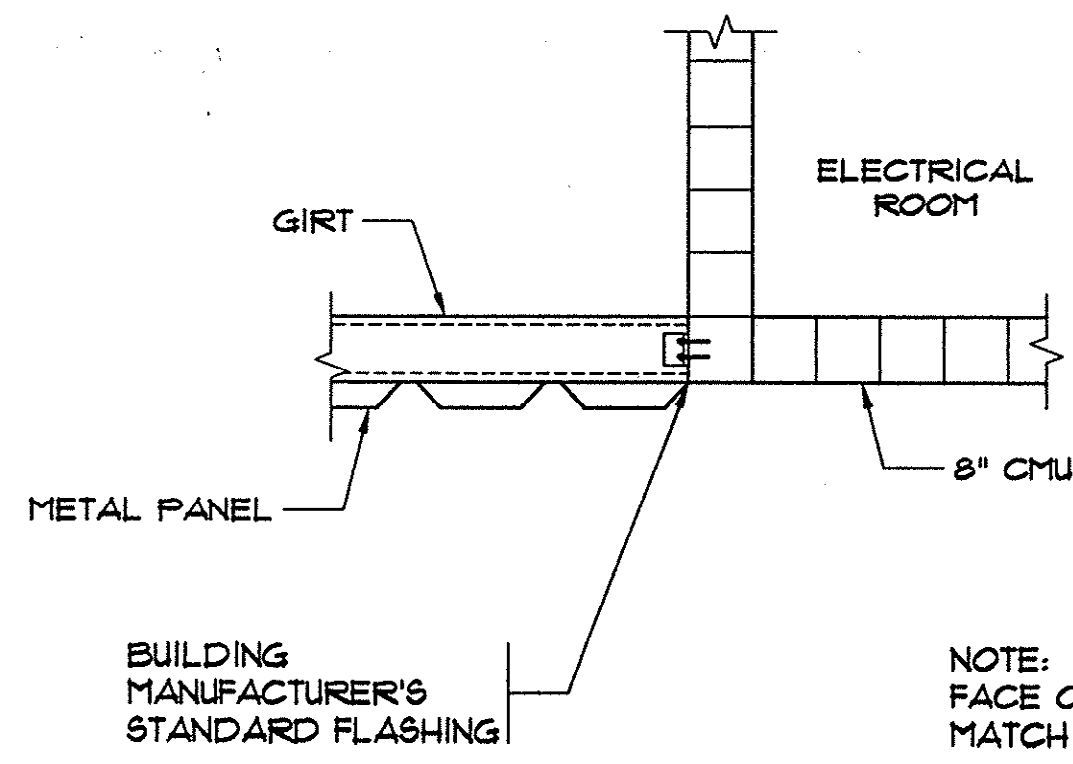


CEILING TYPE KEY
 N.T.S.
 5/8" GYPSUM BOARD
 1 HR. RATED

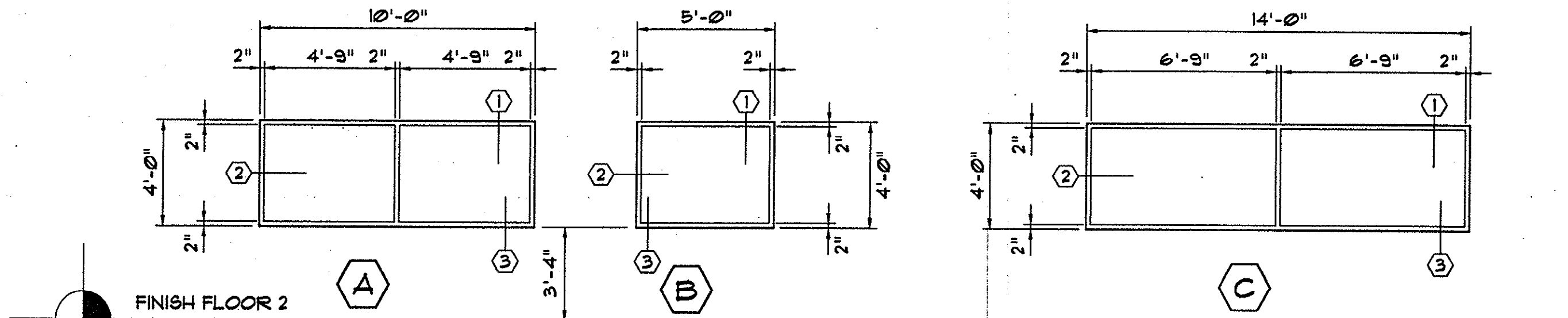
WALL TYPE KEY
 N.T.S.
 TYPICAL CMU WALL
 1 HR. RATED
 TYPICAL TWO HOUR WALL
 STOP WALL 4" ABOVE FIN. CEILING



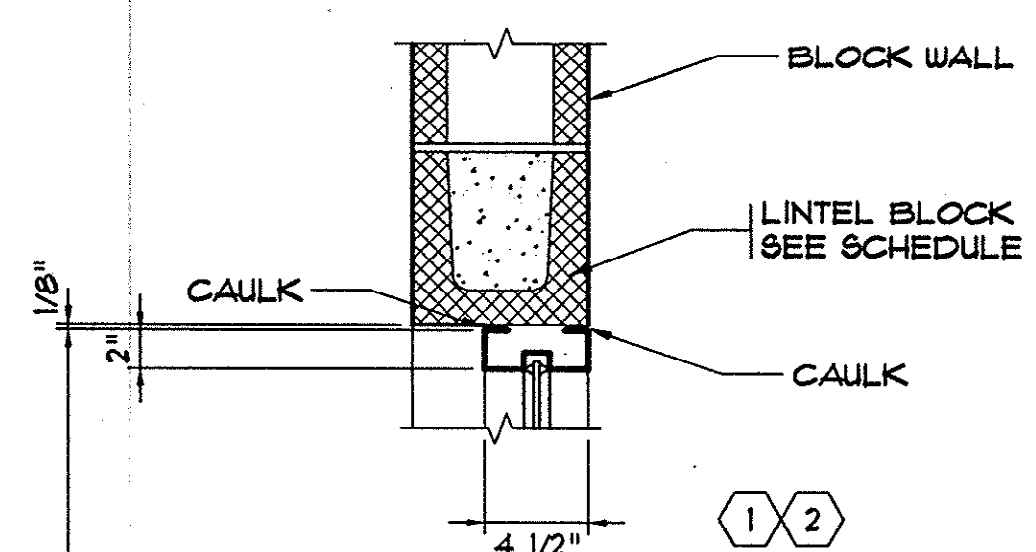
**FIRST FLOOR
 REFLECTED CEILING PLAN**
 SCALE: 3/8" = 1'-0"



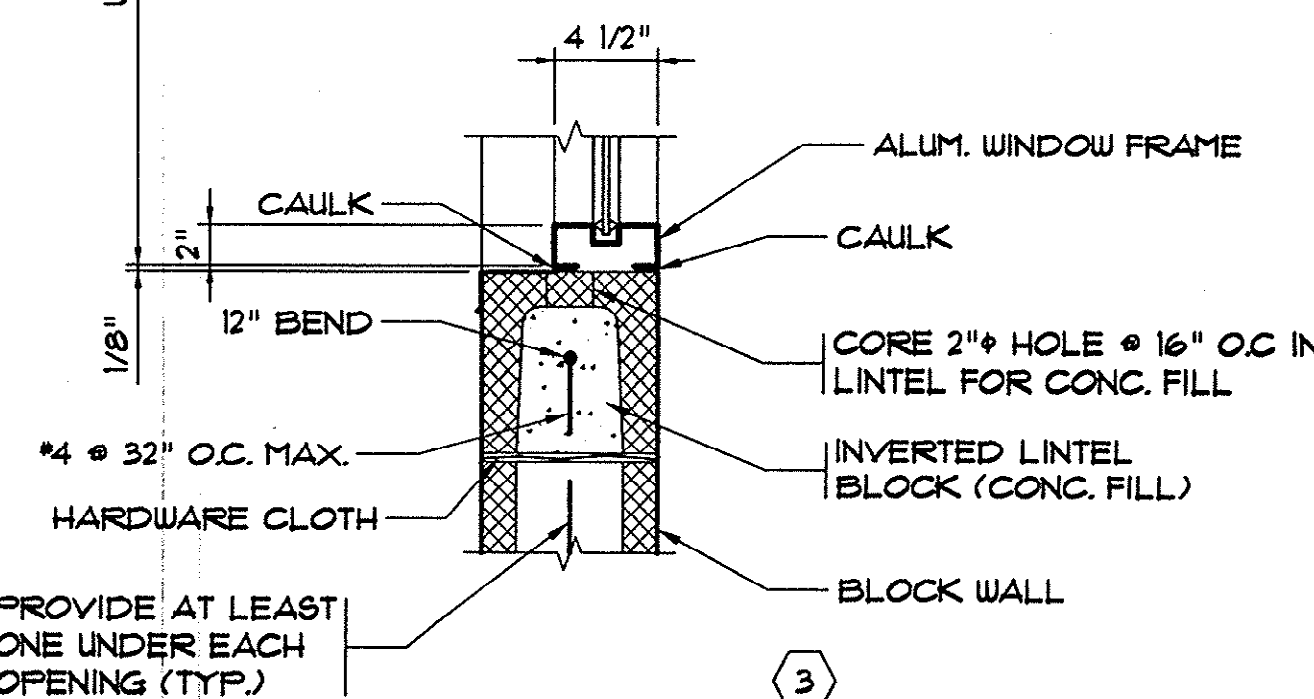
SECTION
 SCALE: 1/2" = 1'-0"



TYPICAL WINDOW ELEVATIONS
 SCALE: 1/4" = 1'-0"



**HEAD SECTION
 (JAMB SIM.)**

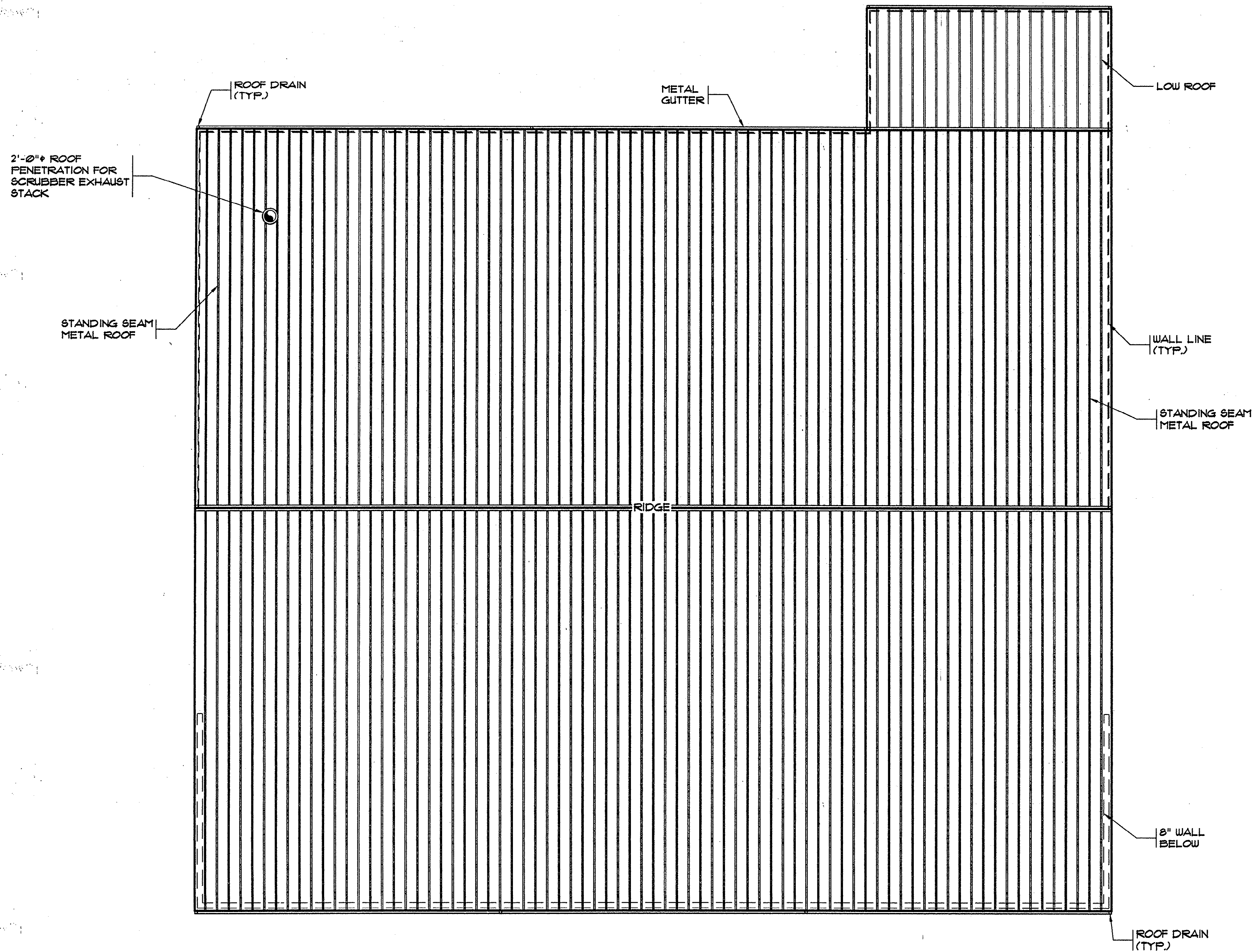


SILL SECTION

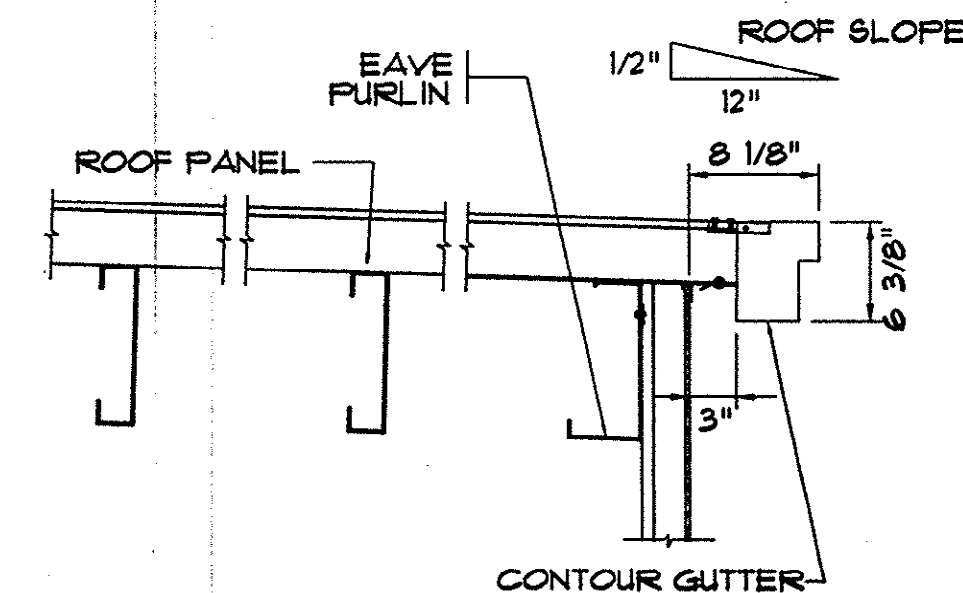
TYPICAL WINDOW DETAILS
 N.T.S.

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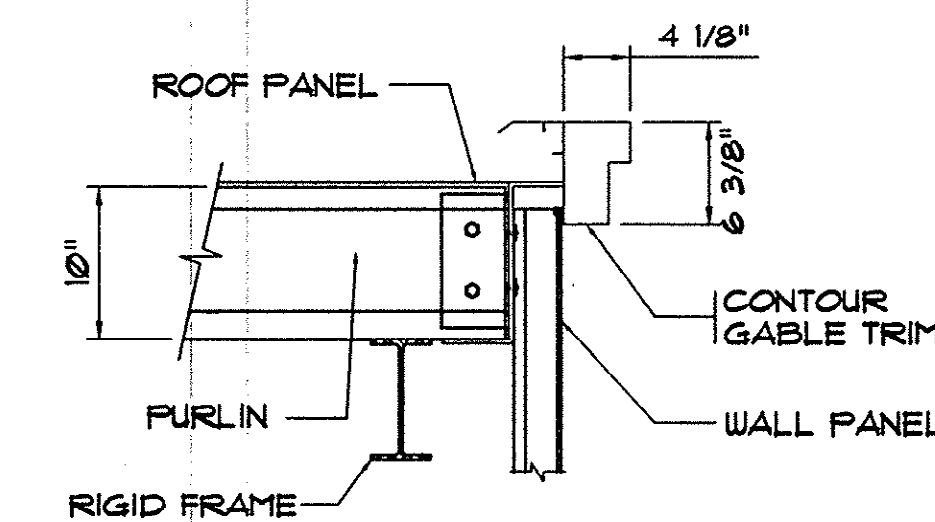
HOBBS, UPCHURCH & ASSOC. BFT H:\Projects\GS0204\800-Drawings\805-Design\Architectural (A)\A-09 SLUDGE ROOF.dwg EDITED BY: JARNOLD DATE: 11/07/03 TIME: 10:11 XREFS: H:\Projects\GS0204\800-Drawings\805-Design\General (G)\Sheet.dwg Layout: M8 Sheet



SLUDGE STABILIZATION/ PASTEURIZATION BUILDING
ROOF PLAN
SCALE: 1/8"=1'-0"

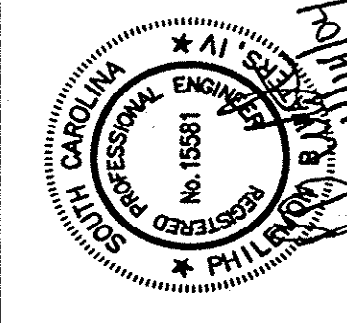
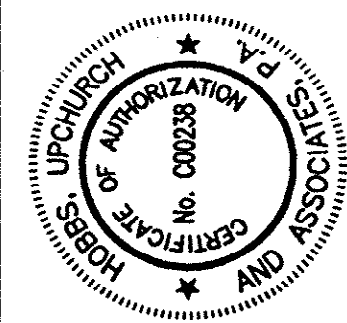


1 SECTION AT EAVE
N.T.S.



2 SECTION AT ENDWALL
N.T.S.

REVISIONS			
SYM.	DESCRIPTION	DATE	BY



Hobbs, Upchurch & Associates, P.A.
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SLUDGE STABILIZATION/
PASTEURIZATION
BUILDING
ROOF PLAN

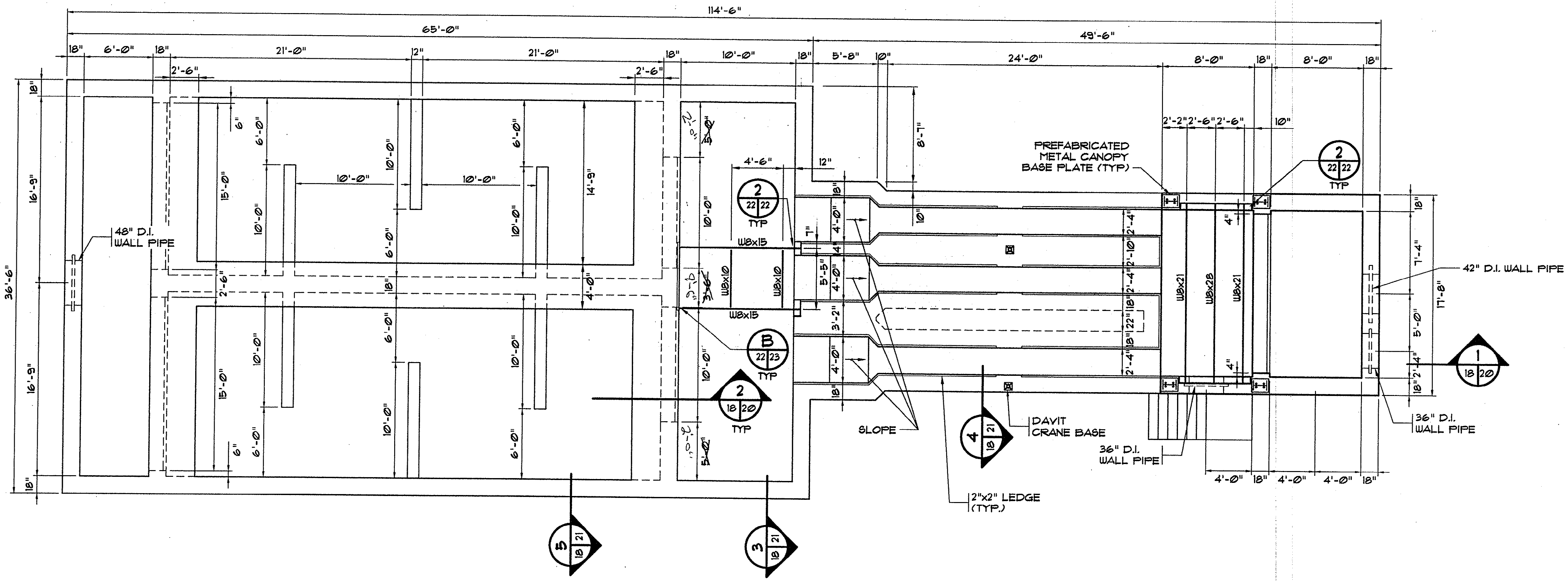
SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

DATE:	SEPT. 2003
DESIGNED:	PBW
DRAWN:	ALG
CHECKED:	JWM
SCALE:	AS SHOWN

SHEET NO.
A-9

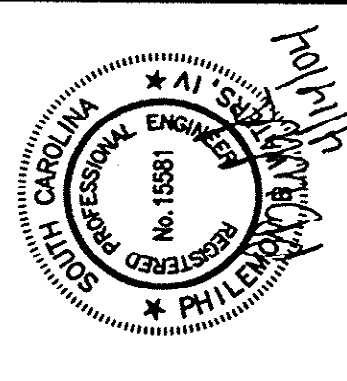
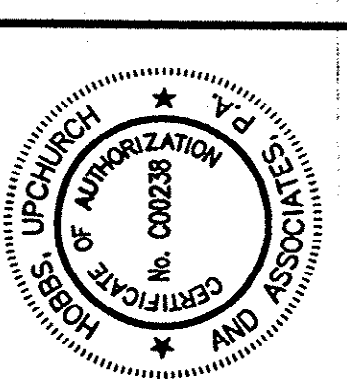
Plan Reviewer for Horry County
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UPDATED: 03/06/04 PLOTTED: 04/13/04



POST AERATION / UV DISINFECTION CHAMBER
UPPER PLAN
 SCALE: 3/16" = 1'-0"

REVISIONS			
SYM.	DESCRIPTION	DATE	BY



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**POST AERATION /
 UV DISINFECTION CHAMBER
 UPPER PLAN**

**SCHWARTZ
 WASTEWATER TREATMENT
 PLANT UPGRADE
 GRAND STRAND WATER &
 SEWER AUTHORITY**

DATE:	JUNE 2003
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	JWM
SCALE:	AS SHOWN

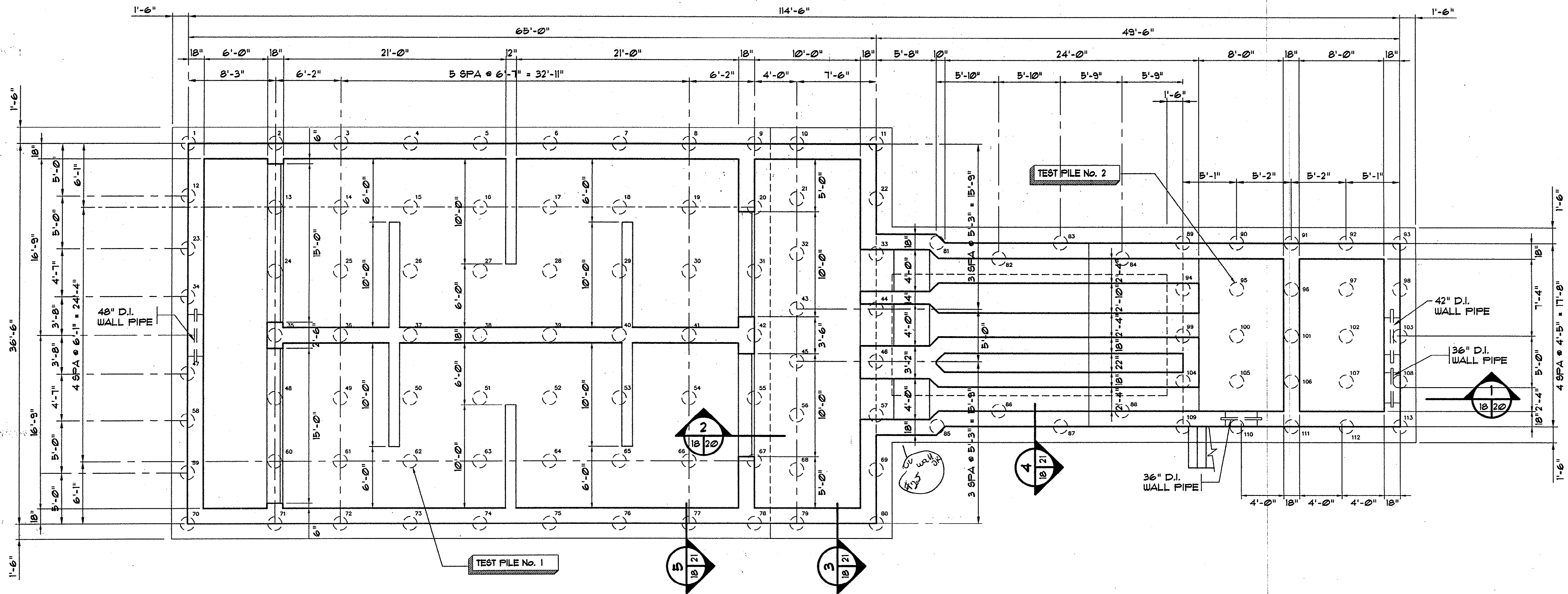
Plan Reviewer for Horry County

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SHEET NO.

S-18

OF: _____



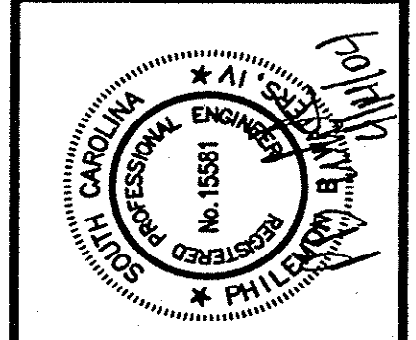
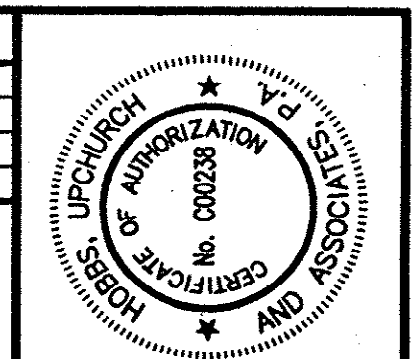
POST AERATION / UV DISINFECTION CHAMBER FOUNDATION PLAN

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

NOTE:

1. TOTAL NUMBER PILES FOR POST AERATION/UV DISINFECTION CHAMBER = 113.
2. PILE CAPACITY = 40 TONS.
3. AT CONTRACTOR'S OPTION, PILE MAY BE STEEL PILES, SAME DIAMETER AS CONCRETE PILE, FILLED WITH CONCRETE.
4. NO PILES SHALL BE PLACED BENEATH CONCRETE PIPE ENCASEMENT EXCEPT AS NOTED.

REVISIONS			
SYM.	DESCRIPTION	DATE	BY



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PHONE: (843) 688-1910 FAX: (843) 688-1745



POST AERATION /
UV DISINFECTION CHAMBER
FOUNDATION PLAN

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

DATE:	JUNE 2003
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	JWM
SCALE:	AS SHOWN

SHEET NO.

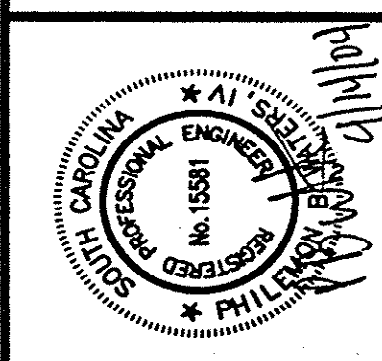
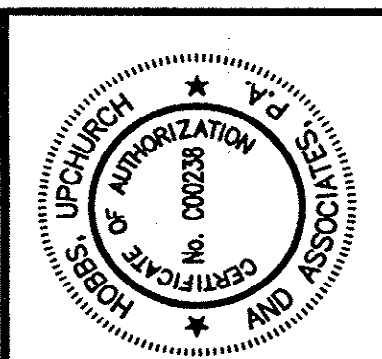
S-19

OF: _____

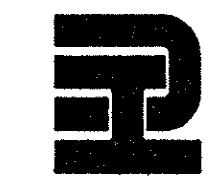
Plan Reviewer for Horry County

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SYM.	DESCRIPTION	DATE	BY



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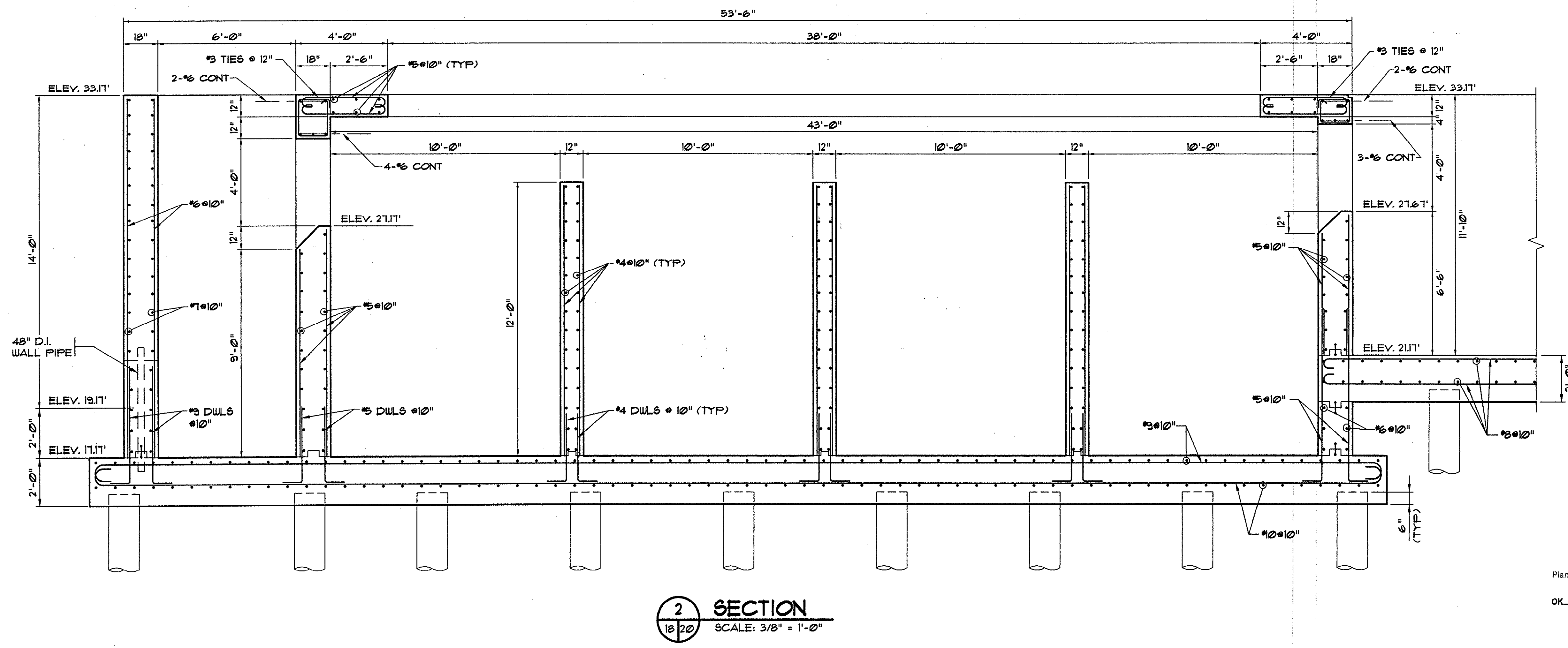
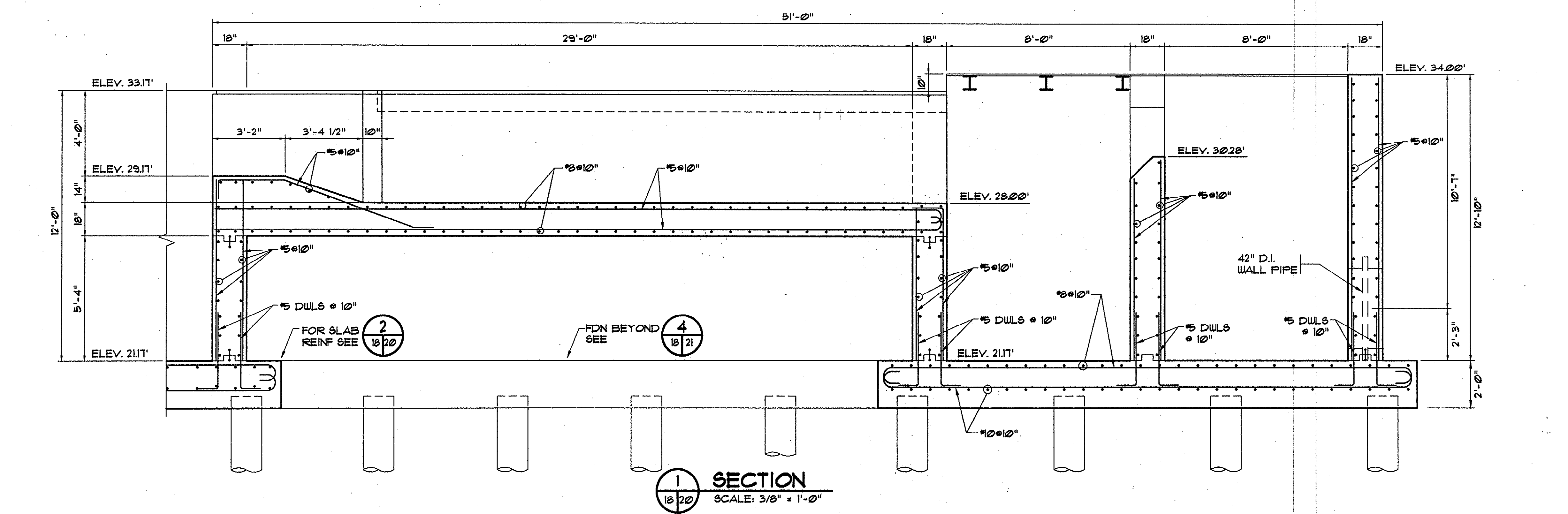
POST AERATION /
 UV DISINFECTION CHAMBER
 SECTIONS

SCHWARTZ
 WASTEWATER TREATMENT
 PLANT UPGRADE
 GRAND STRAND WATER &
 SEWER AUTHORITY

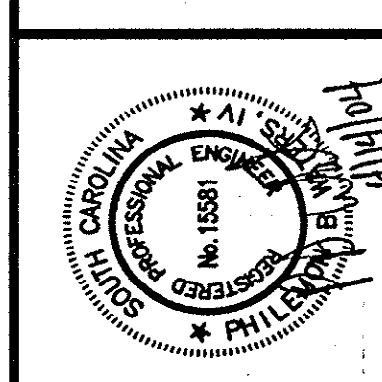
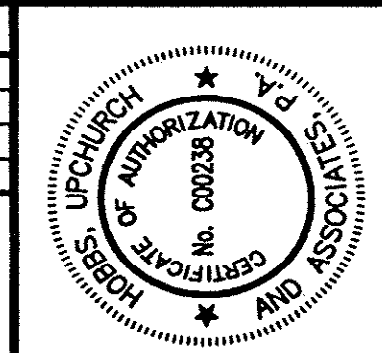
DATE:	JUNE 2003
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	JWM
SCALE:	AS SHOWN

Plan Reviewer for Horry County
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SHEET NO.
S-20
 OF: _____



REVISIONS			
SYM.	DESCRIPTION	DATE	BY

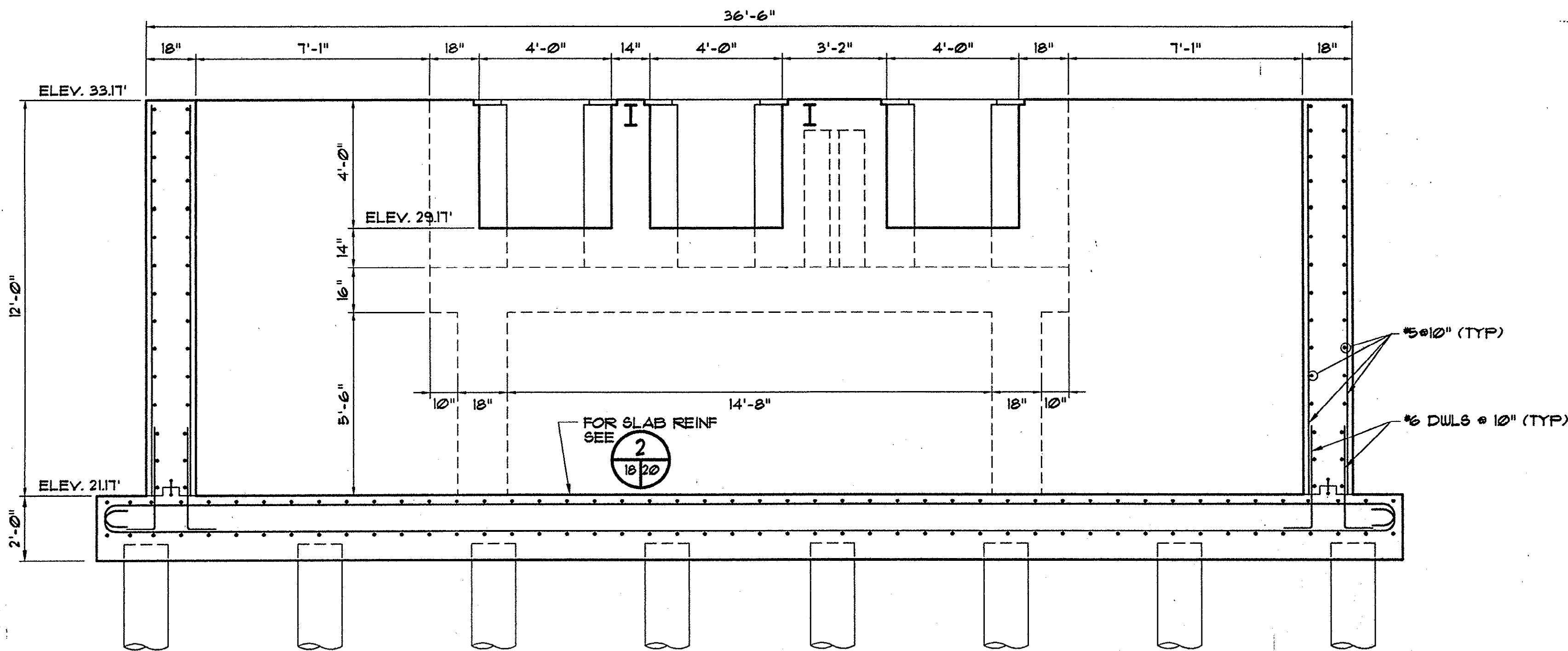


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 Myrtle Beach, South Carolina 29577
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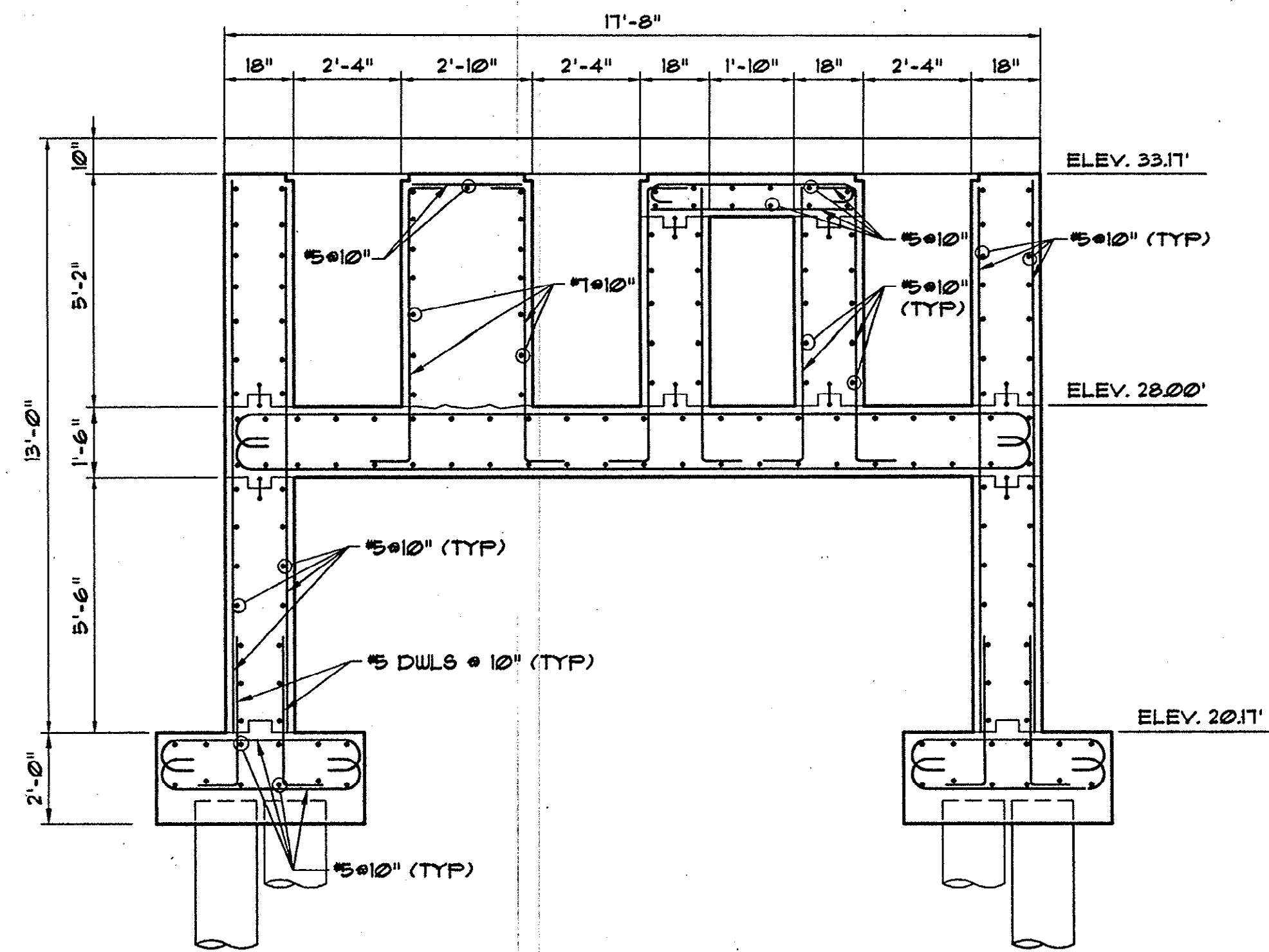
SCHWARTZ
 WASTEWATER TREATMENT
 PLANT UPGRADE
 GRAND STRAND WATER &
 SEWER AUTHORITY

POST AERATION /
 UV DISINFECTION CHAMBER
 SECTIONS

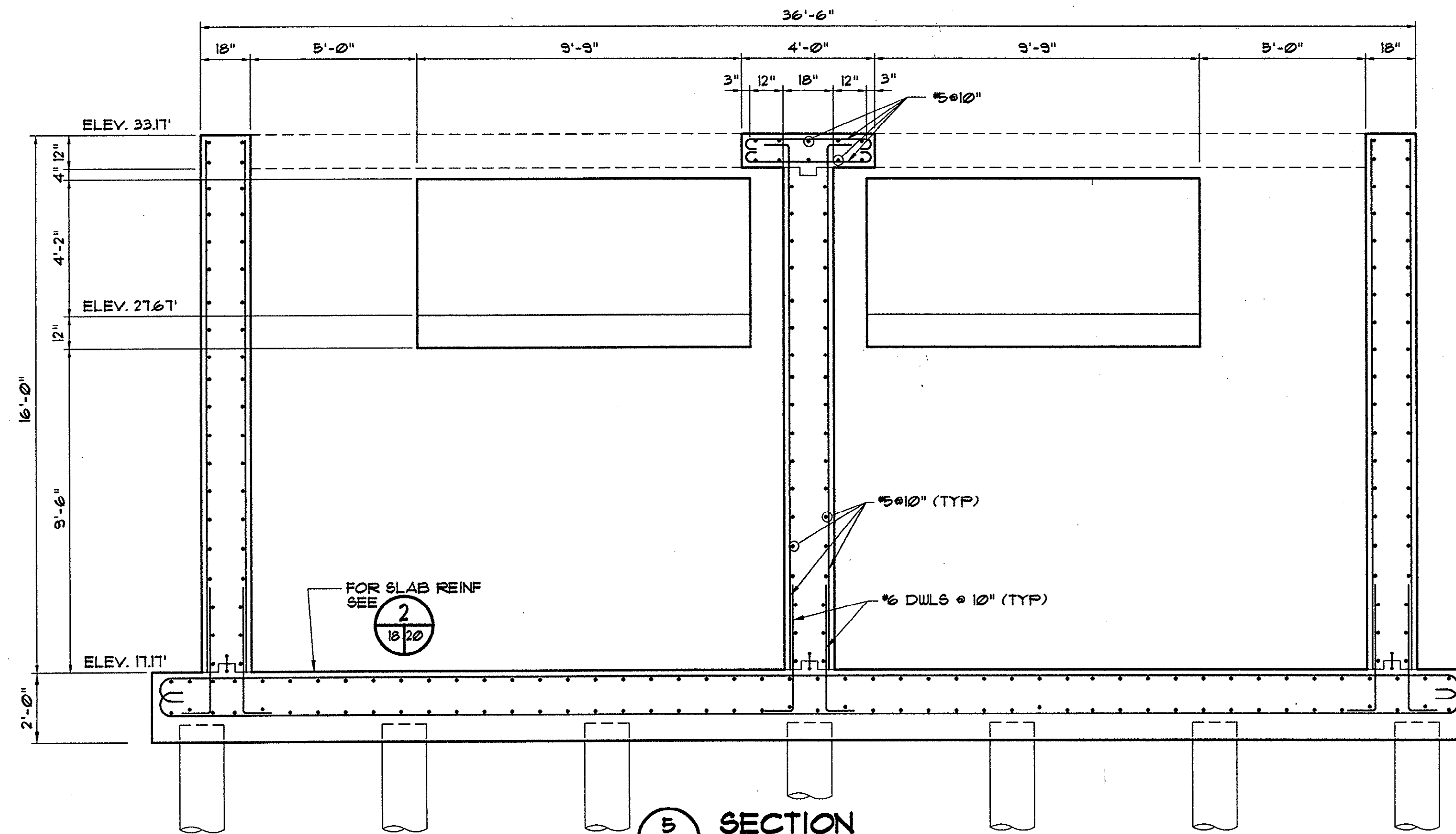
DATE: JUNE 2003
 DESIGNED: PBW
 DRAWN: ARM
 CHECKED: JWM
 SCALE: AS SHOWN
 SHEET NO. S-21



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

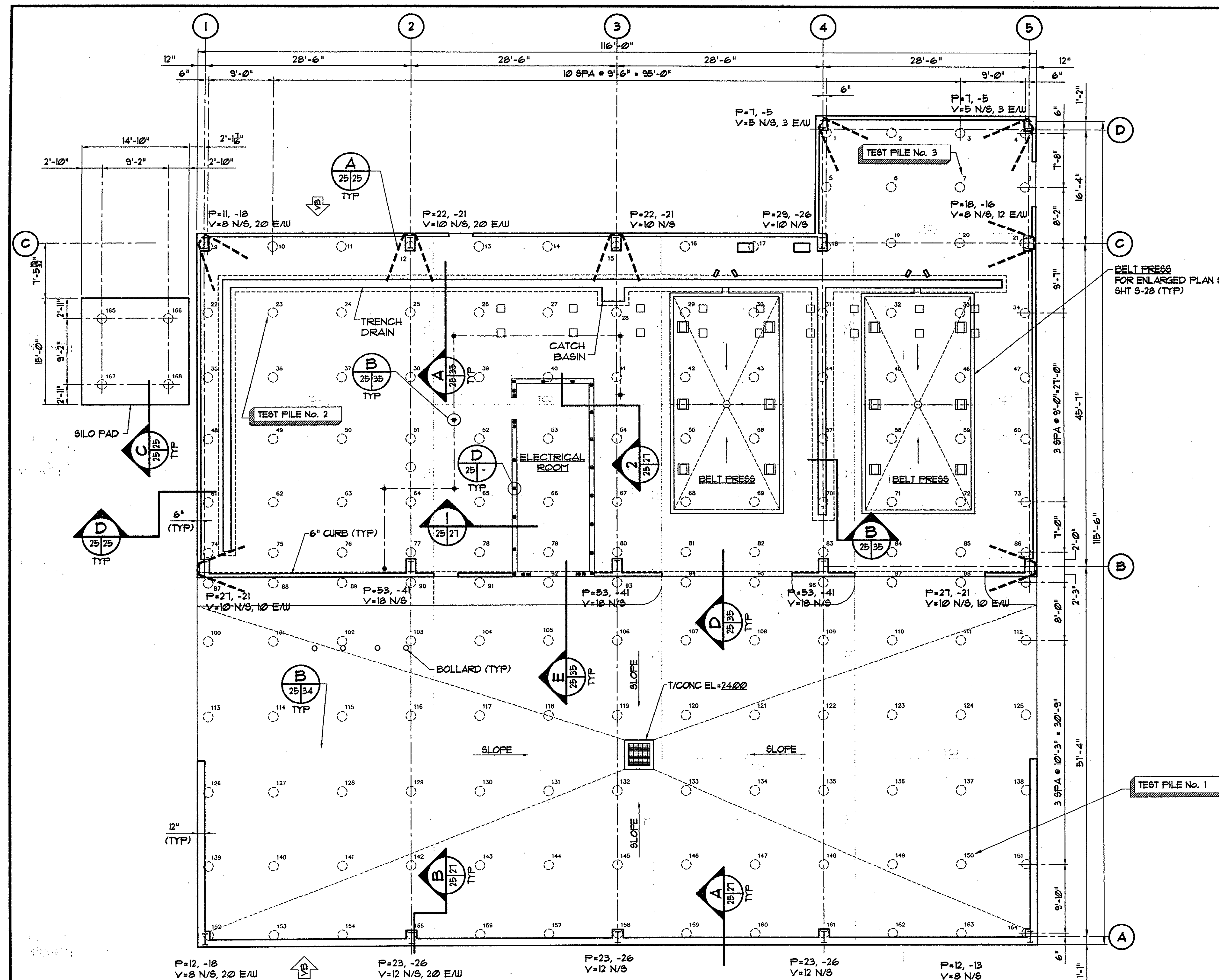


4 SECTION
 SCALE: 3/8" = 1'-0"



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

Plan Reviewer for Horry County
 OK _____



SLUDGE STABILIZATION / PASTEURIZATION BUILDING FOUNDATION PLAN

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

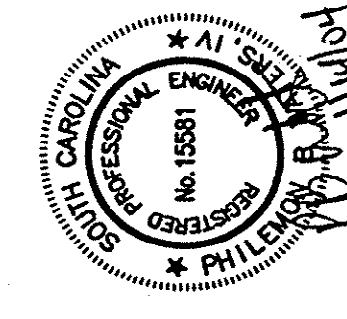
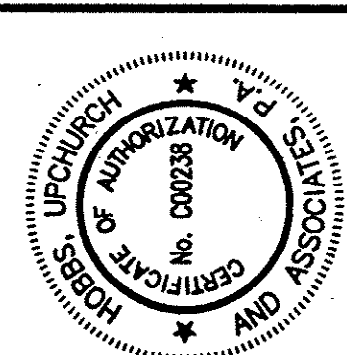
NOTE:

1. FIN FLOOR ELEV=25.00, UON.
2. SEE ARCH DWGS FOR LOCATION OF MAS PARTITIONS.
3. COORDINATE ANCHOR BOLTS WITH METAL BUILDING MANUFACTURER.
4. COORDINATE EXACT COLUMN LOCATION WITH METAL BUILDING MANUFACTURER.
5. DENOTES PROPOSED LOCATION OF VERTICAL BRACING.
6. REINFORCED CELL LOCATIONS ARE BASED ON ASSUMED CMU CORE LOCATIONS AND WALL OPENINGS.

7. REINFORCED CELL LOCATIONS MAY VARY SLIGHTLY TO ACCOMMODATE COURSING. COORDINATE WITH ARCH DWGS.
8. TOTAL NUMBER PILES FOR SLUDGE STABILIZATION/PASTEURIZATION BUILDING = 168.
9. PILE CAPACITY = 40 TONS.
10. AT CONTRACTOR'S OPTION, PILE MAY BE STEEL PIPES, SAME DIAMETER AS CONCRETE PILE, FILLED WITH CONCRETE.
11. NO PILES SHALL BE PLACED BENEATH CONCRETE PIPE ENCASUREMENT EXCEPT AS NOTED.
12. DESIGN LOADS:

WIND: Vx=11K (E/W) Vg=11K (N/S) SEISMIC: Vx=11K (E/W)

REVISIONS			
SYM.	DESCRIPTION	DATE	BY



Hobbs, Upchurch & Associates, P.A.
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Myrtle Beach, South Carolina 29577
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SLUDGE STABILIZATION / PASTEURIZATION BUILDING LAYOUT

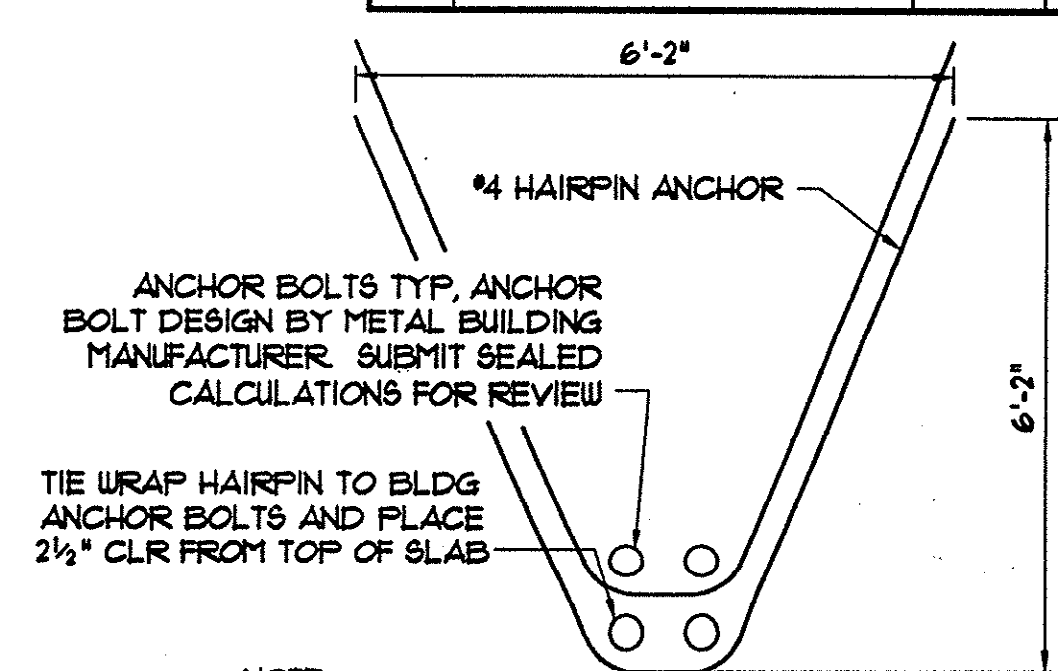
SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

DATE: JUNE 2003
DESIGNED: PBW
DRAWN: ARM
CHECKED: JWM
SCALE: AS SHOWN

SHEET NO.

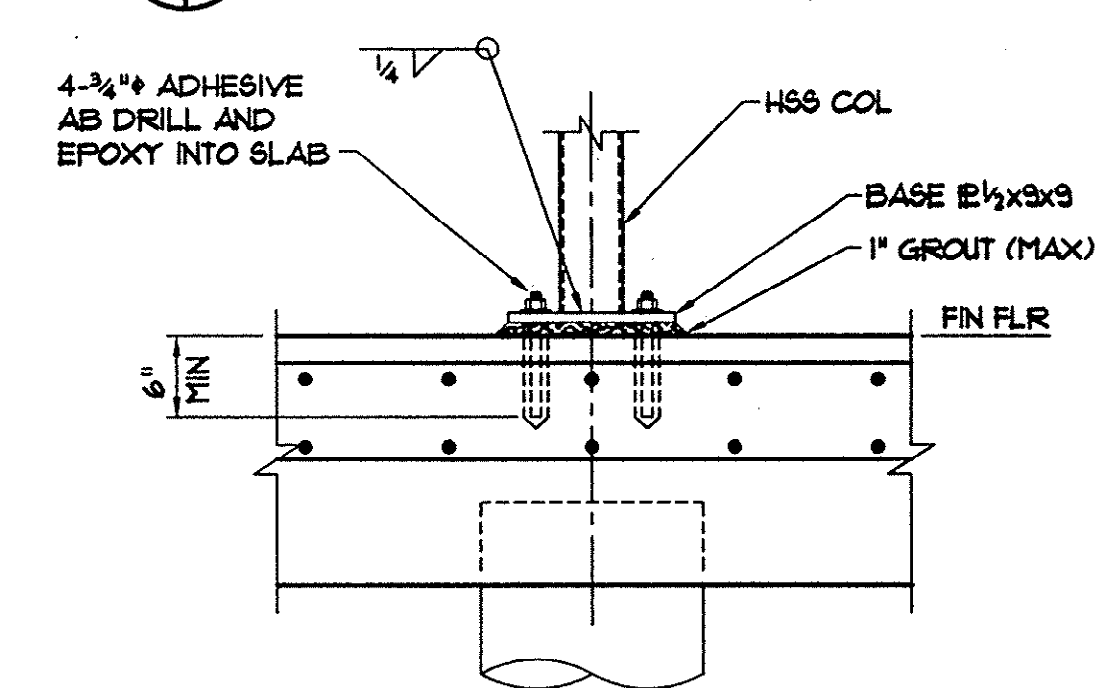
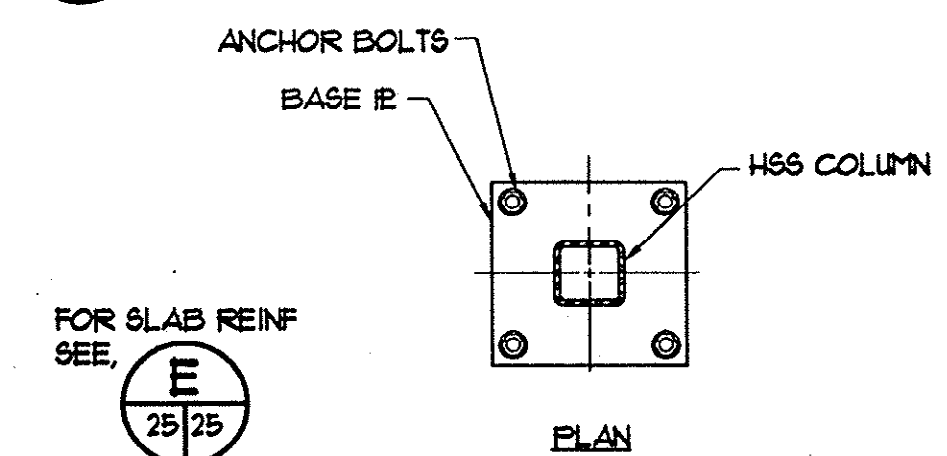
S-25

OF:

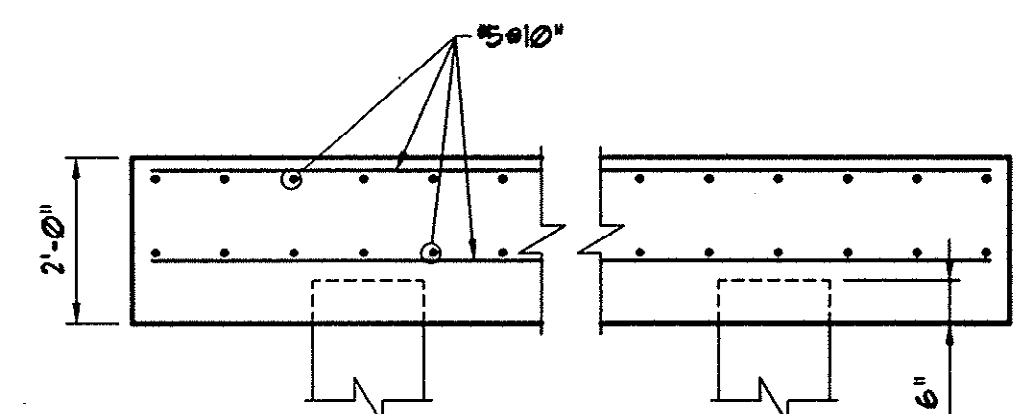


NOTE: PROVIDE ONE HAIRPIN FOR EACH PAIR OF BOLTS

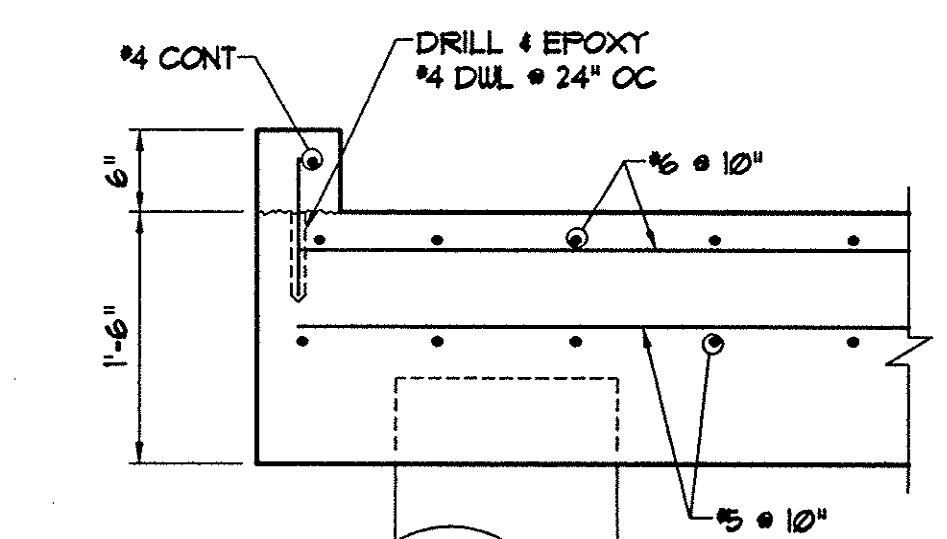
A TYP HAIRPIN DETAIL NO. 1
25/25 NO SCALE



B TYP PLATFORM COLUMN BASE DETAIL
25/25 NO SCALE



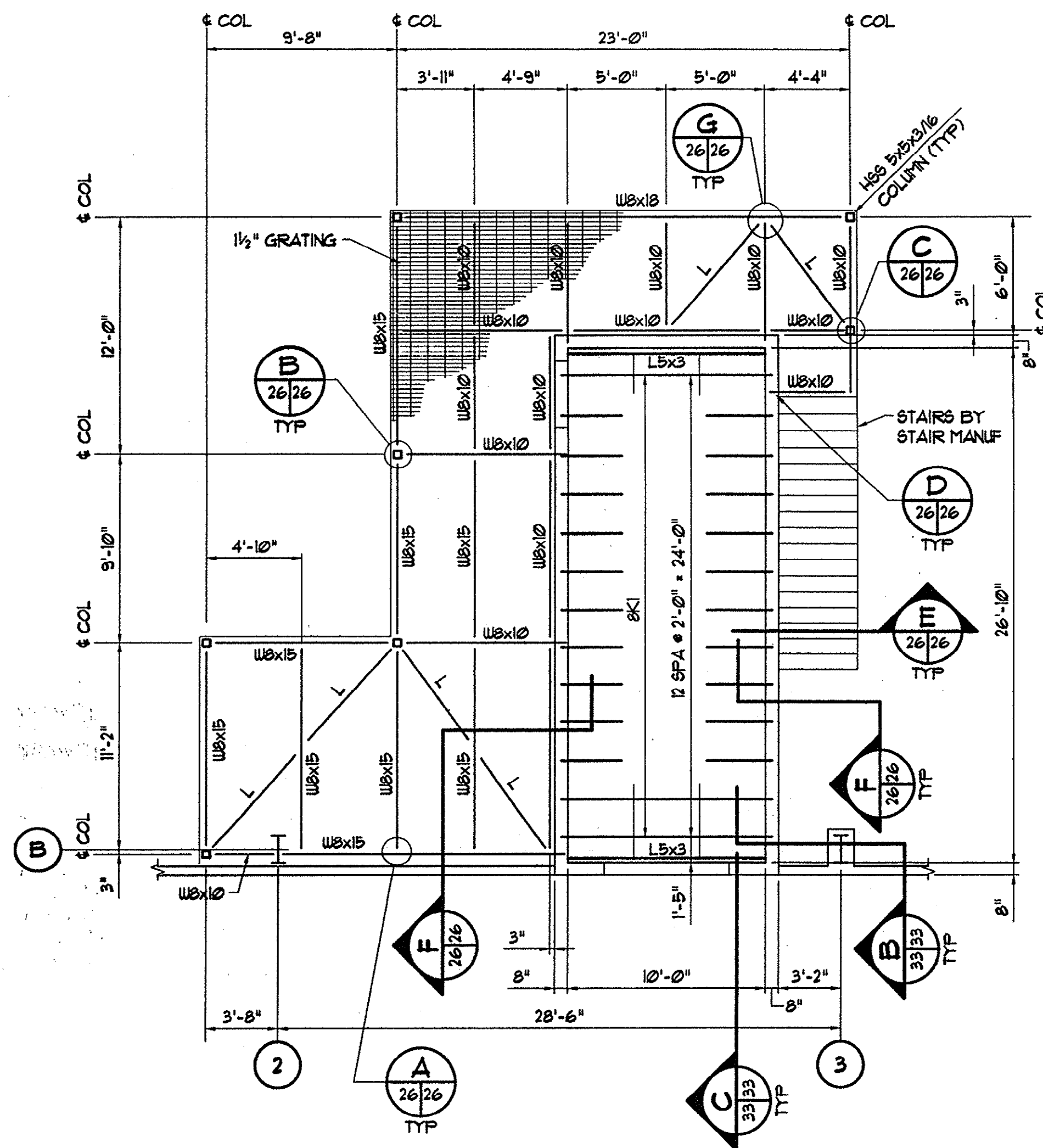
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25/25 NO SCALE



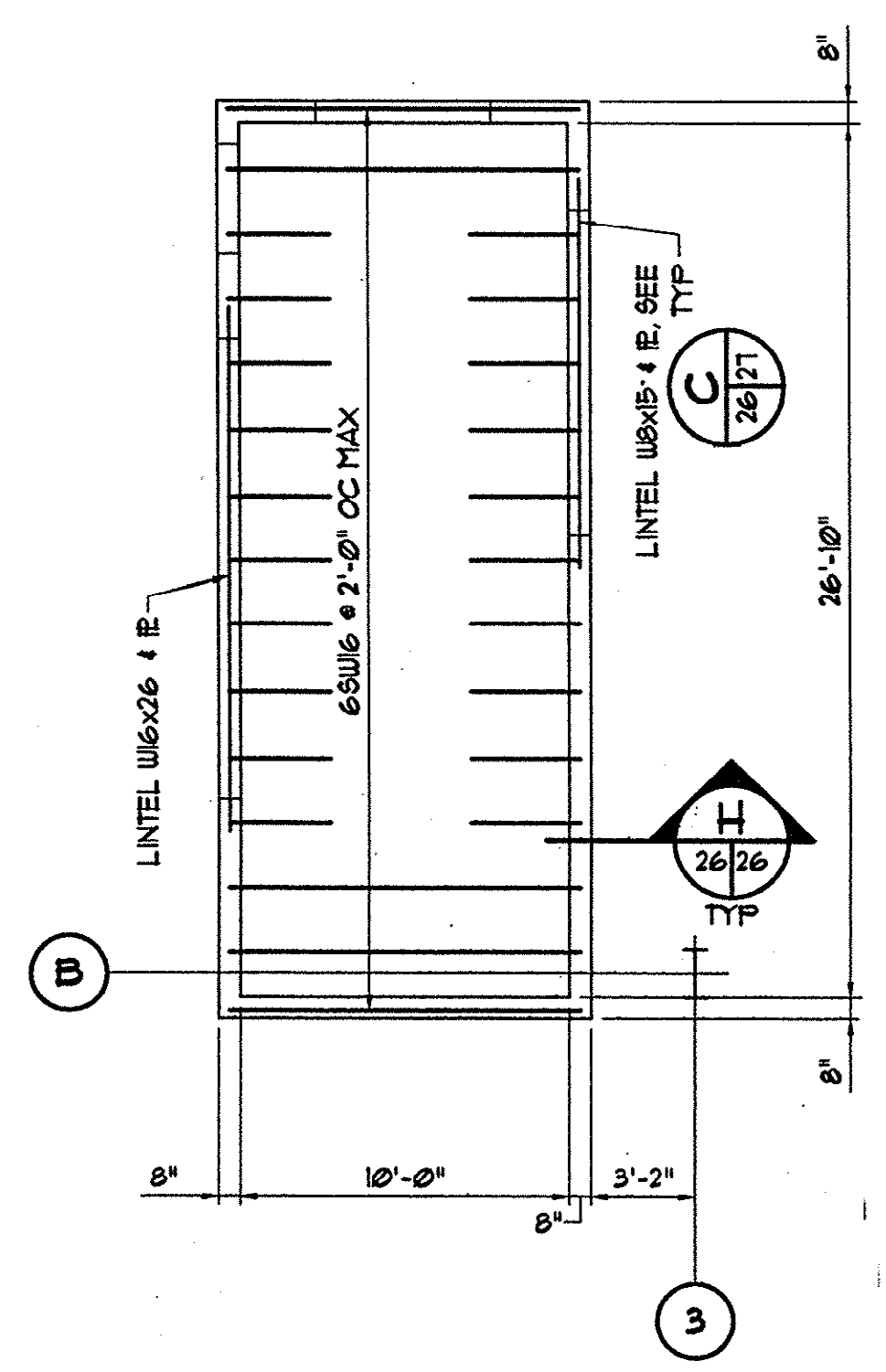
D TYP SLAB EDGE DETAIL
25/25 NO SCALE

Plan Reviewer for Horry County

OK

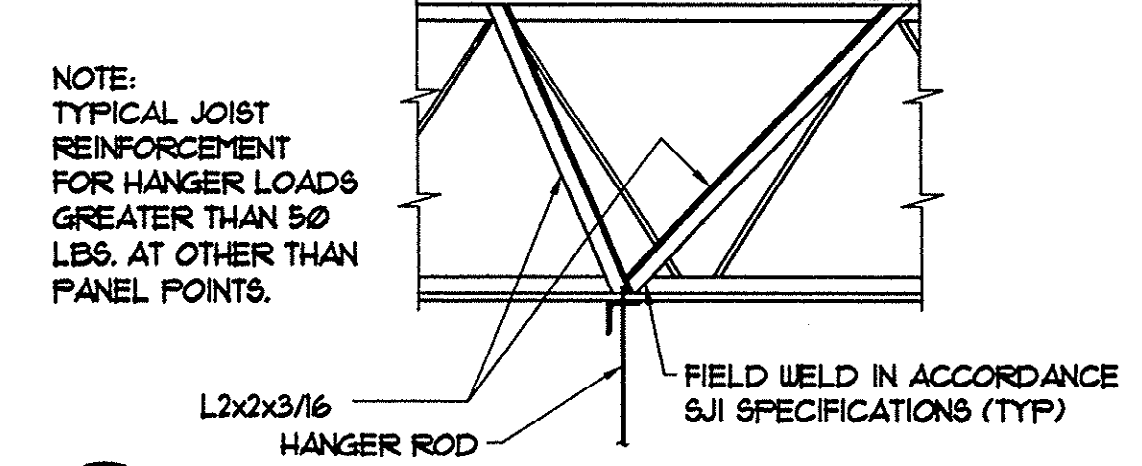


CONTROL ROOM / ACCESS PLATFORM FLOOR FRAMING PLAN
 SCALE: 3/16"=1'-0"
 NOTE:
 1. TOP OF STEEL = 3" BELOW FIN FLOOR UNLESS NOTED OTHERWISE.
 2. DENOTES LOCATION OF ROUS OF CONT HORIZ BRIDGING.
 3. SEE ARCH DWGS FOR LOCATION AND ELEVATION OF LINTELS.
 4. "L" DENOTES L3x3x1/4.
 5. FIN FLOOR AND TOP OF GRATING ELEV = 26.16, UNLESS NOTED OTHERWISE.
 6. "L5x3" DENOTES L5x3x1/4.

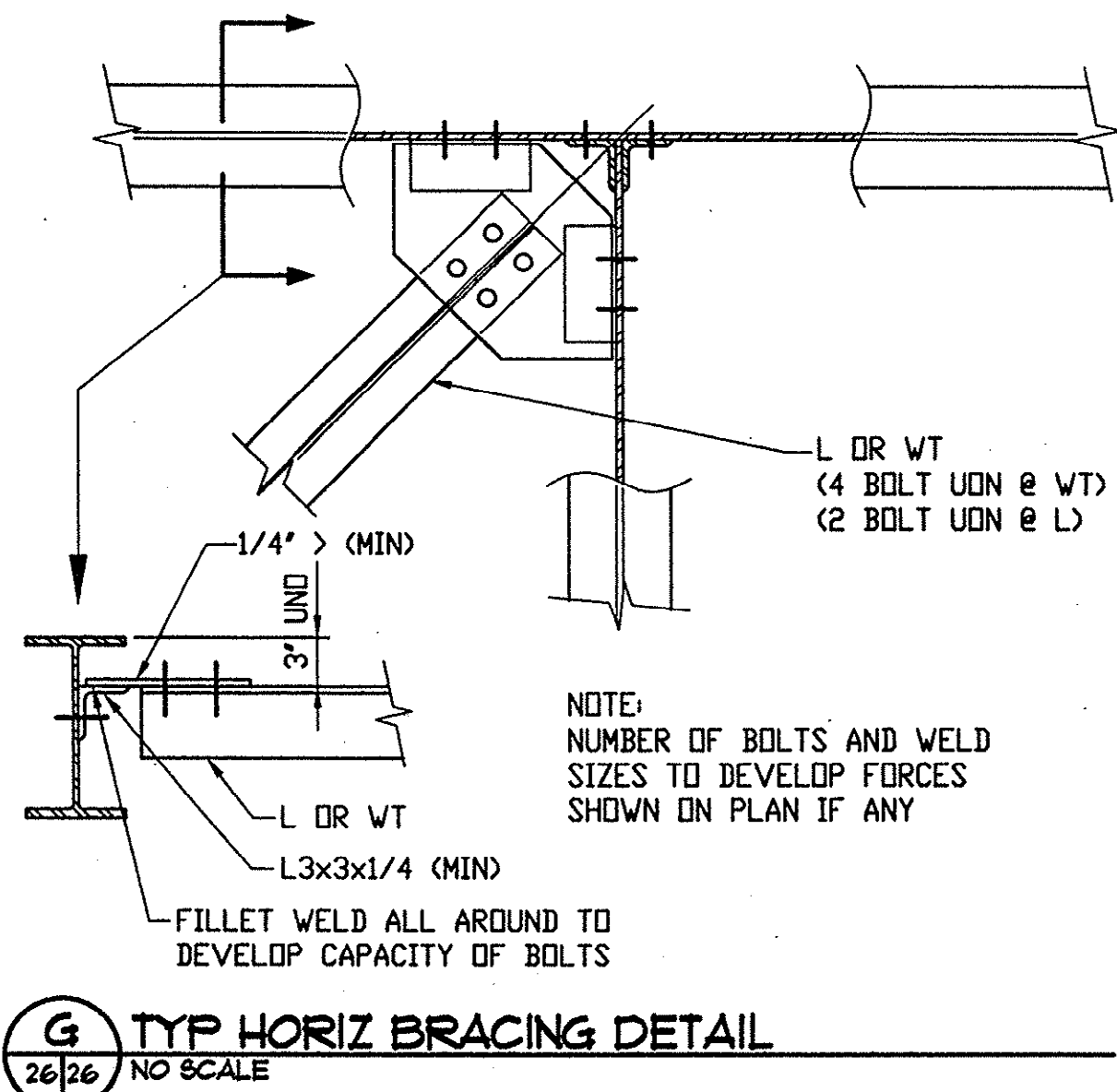


CONTROL ROOM CEILING FRAMING PLAN
 SCALE: 3/16"=1'-0"
 GRID

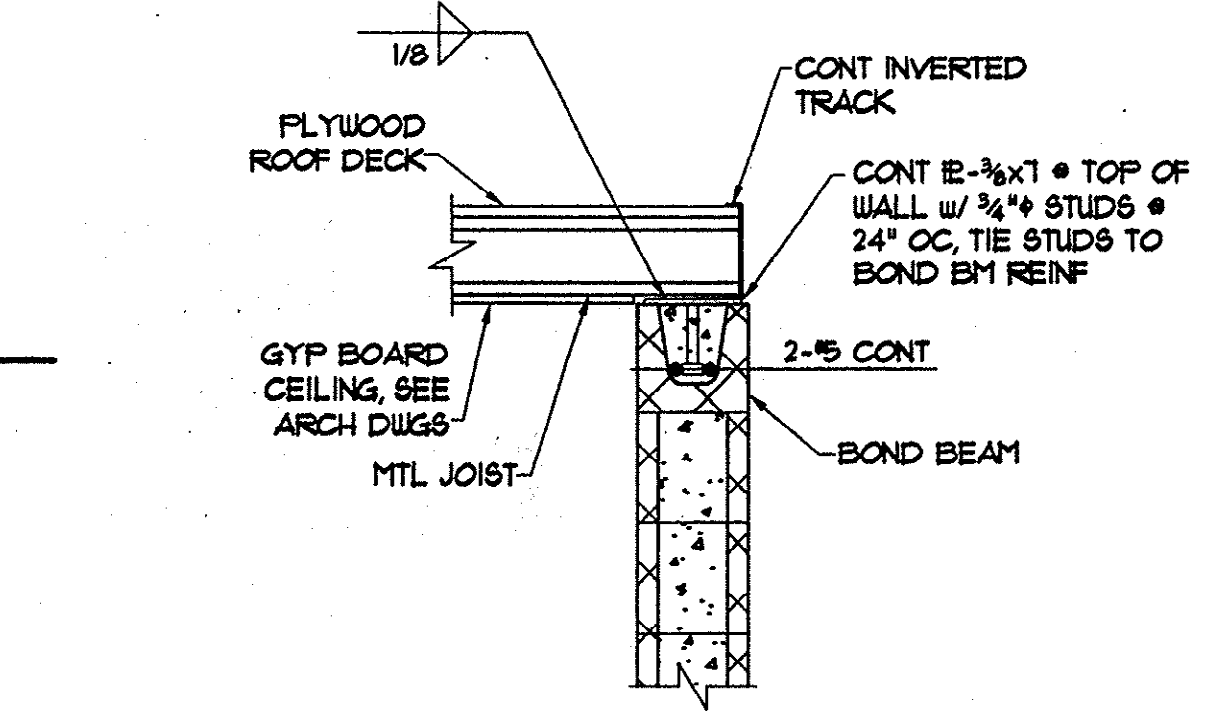
NOTE:
 JOISTS SHOWN ON THE STRUCTURAL DRAWINGS ARE DESIGNED FOR A UNIFORM LOAD THAT INCLUDES THE DEAD, LIVE AND MECHANICAL LOADS. THEY ARE NOT DESIGNED FOR CONCENTRATED HANGER LOADS GREATER THAN 50 POUNDS THAT MAY BE APPLIED BETWEEN PANEL POINTS. JOISTS SHALL BE STRENGTHENED AS SHOWN BELOW WHEN HANGER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



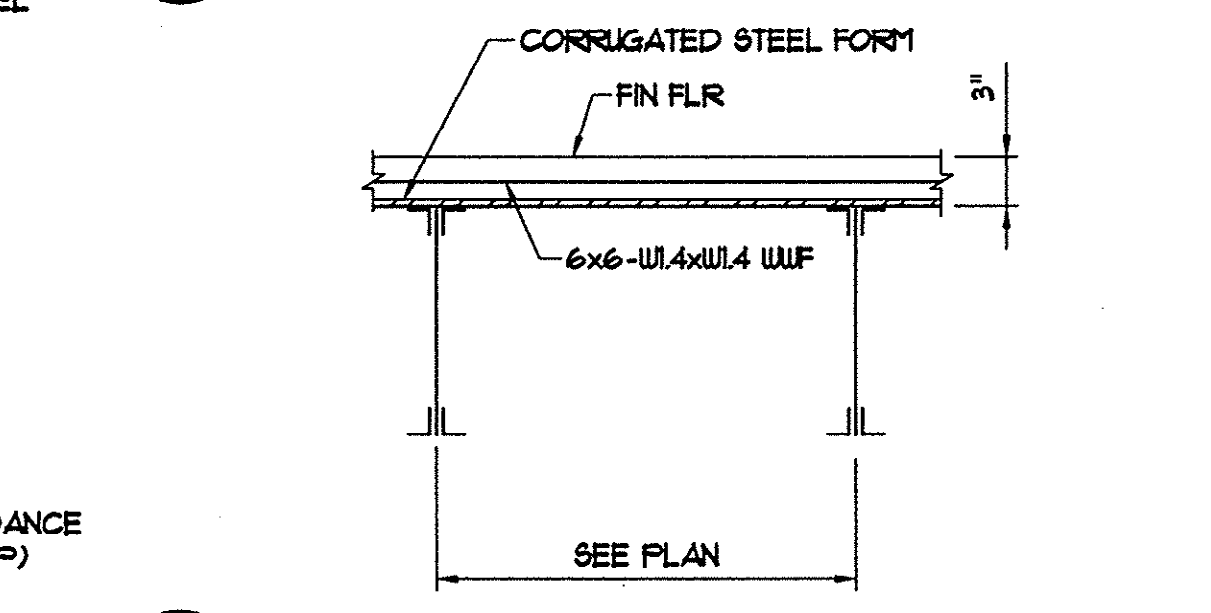
J JOIST REINFORCEMENT DETAIL
 26/26 NO SCALE



G TYP HORIZ BRACING DETAIL
 26/26 NO SCALE

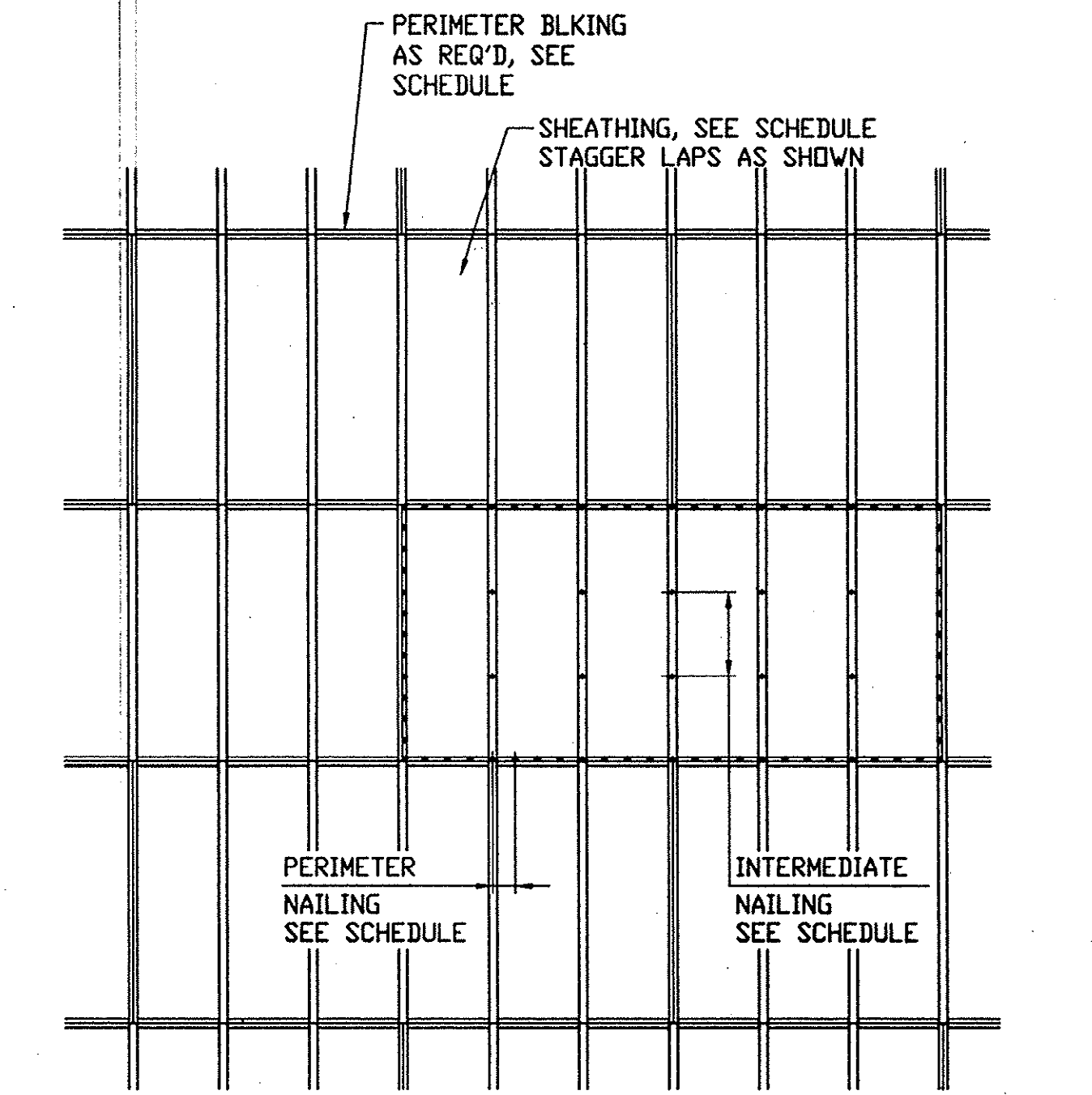


H TYP METAL JOIST BEARING
 26/26 NO SCALE

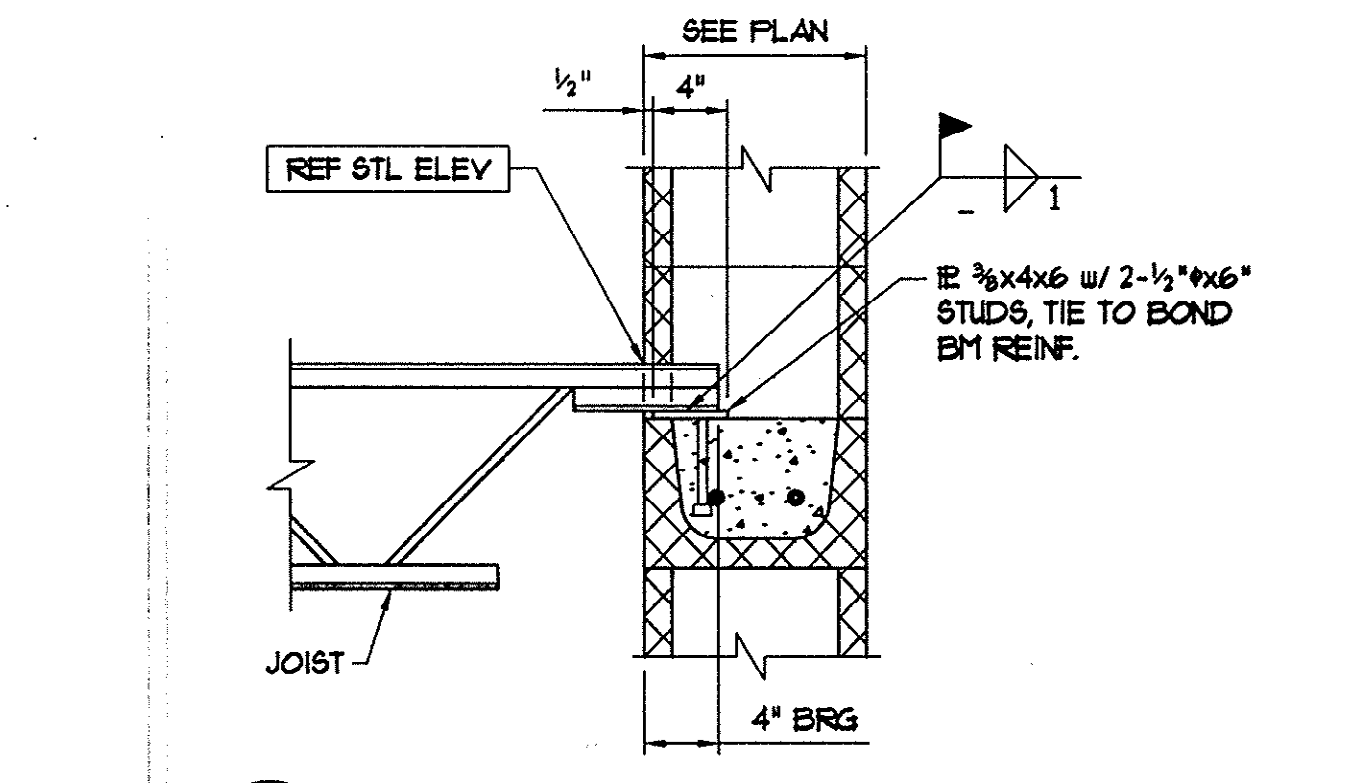


F TYP FLOOR SECTION
 26/26 NO SCALE

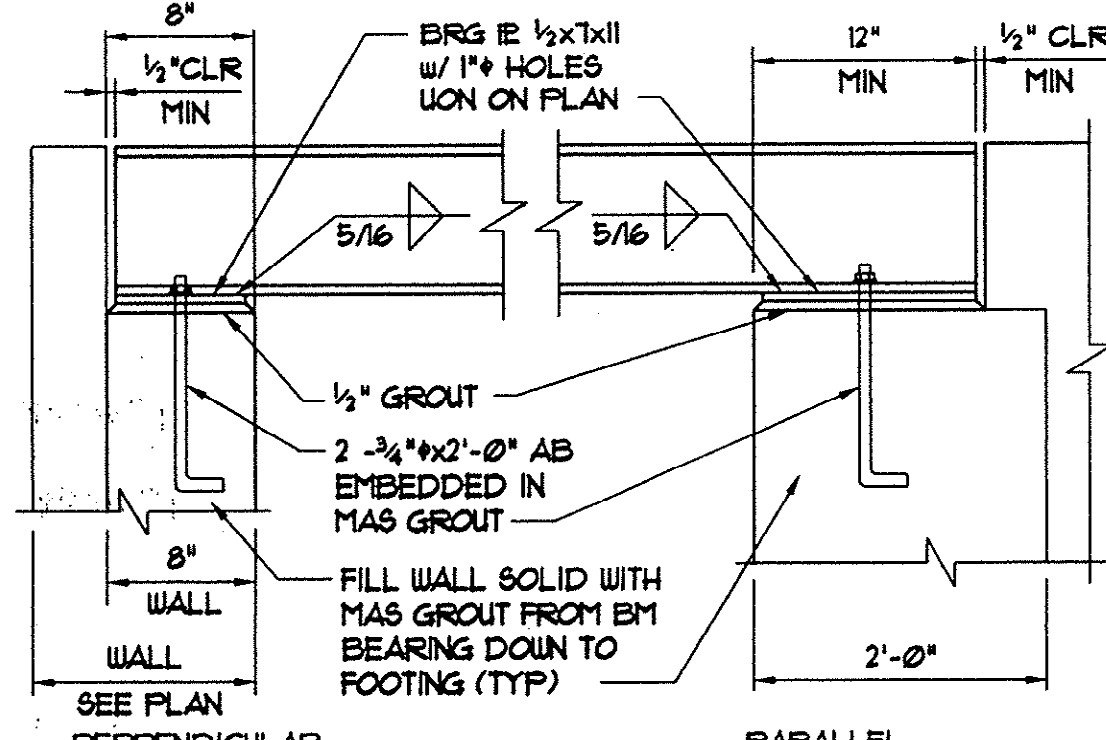
REVISIONS				
SYM.	DESCRIPTION	DATE	BY	



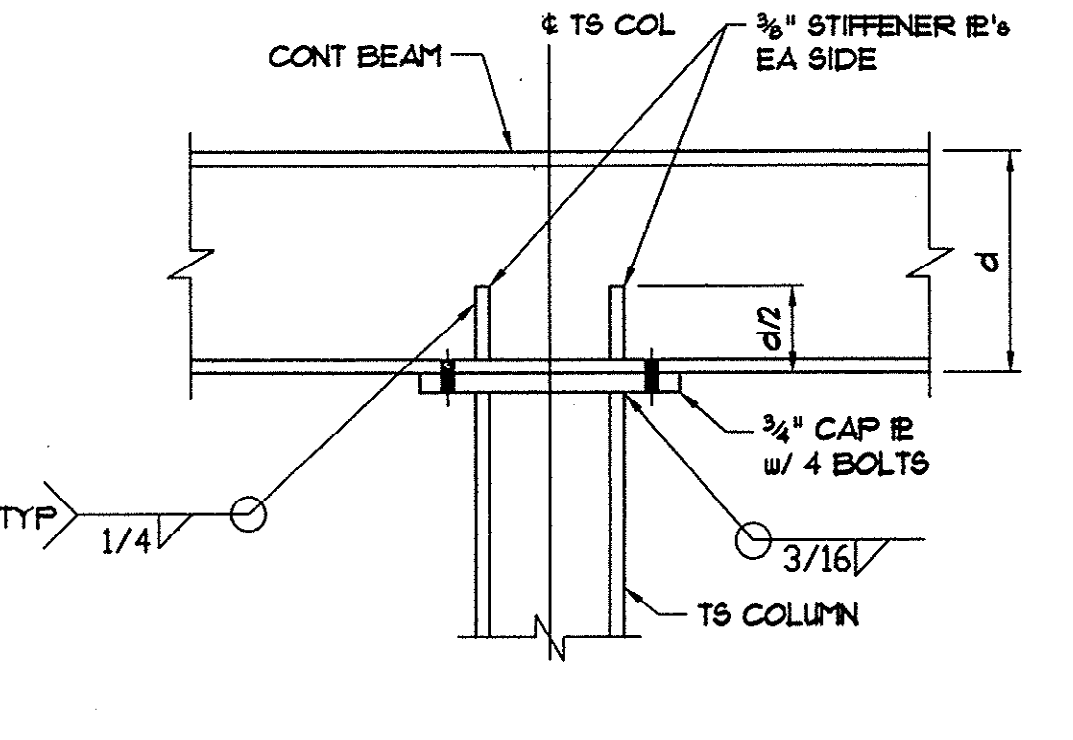
SHEATHING ATTACHMENT DETAIL



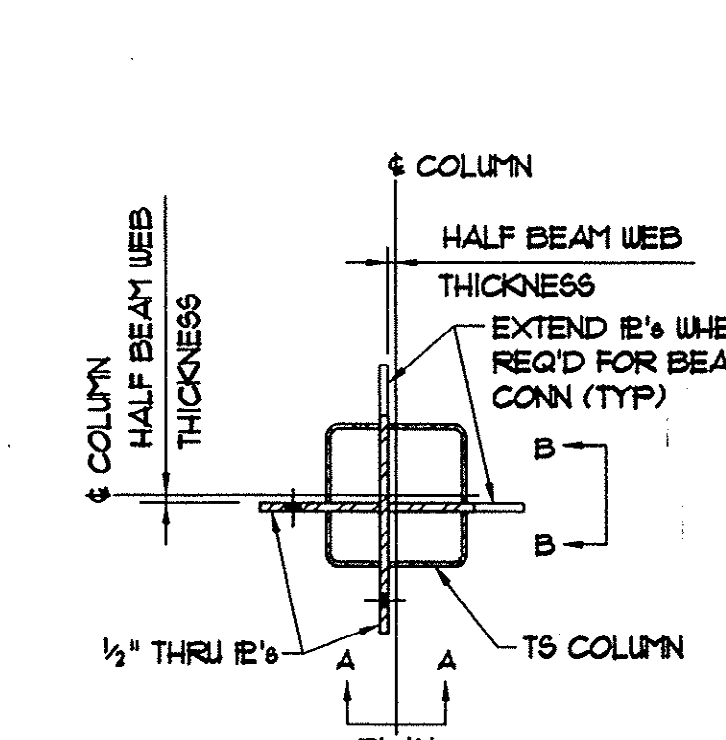
E TYP JOIST BEARING DETAIL
 26/26 NO SCALE



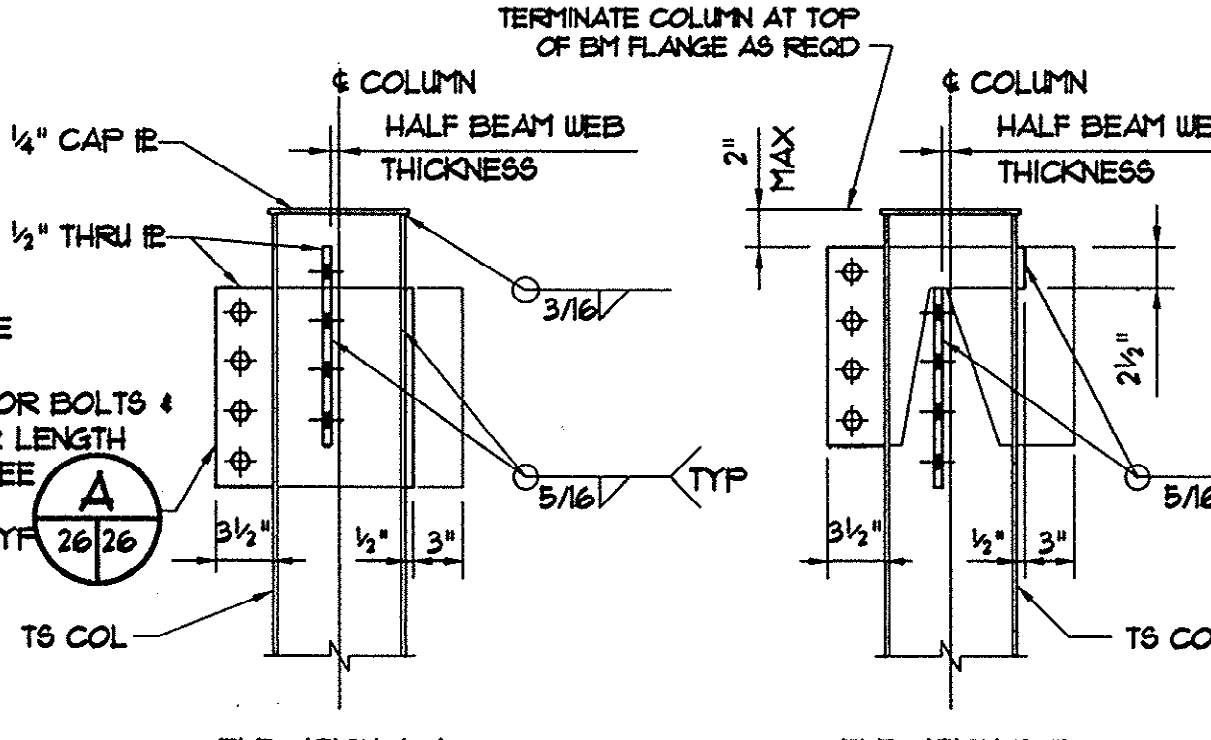
D TYP BM BEARING DETAILS AT WALLS
 26/26 NO SCALE



C TYP CONT BEAM TO TS COL CONNECTION
 26/26 NO SCALE



B TYPICAL BEAM TO TS COLUMN CONNECTION
 26/26 NO SCALE

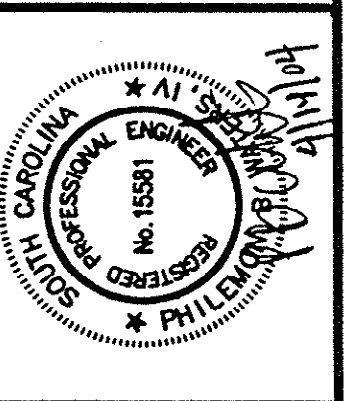
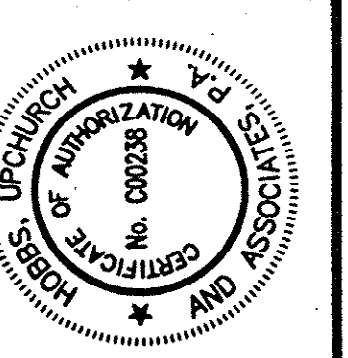


A TYP BEAM CONNECTIONS
 26/26 NO SCALE

BEAM CONN SCHEDULE				
BM DEPTH	L LENGTH	NO. BOLTS L CONN	NO. BOLTS 1/2 IE CONN	
8", 10"	0'-5 1/2"	4	2	
12", 14"	0'-8 1/2"	6	3	
16", 18"	0'-11 1/2"	8	4	
21", 24"	1'-2 1/2"	10	5	

NOTE:
 1. USE 2LG-3x3 1/2x5/16 (SLO) WHERE BM FRAMES INTO W8 COL WEB. LARGER ANGLES MAY BE USED TO ACCOMMODATE COLUMN GAGES.
 2. USE 1" BOLTS IN PLATE CONNECTIONS

A TYP BEAM CONNECTIONS
 26/26 NO SCALE



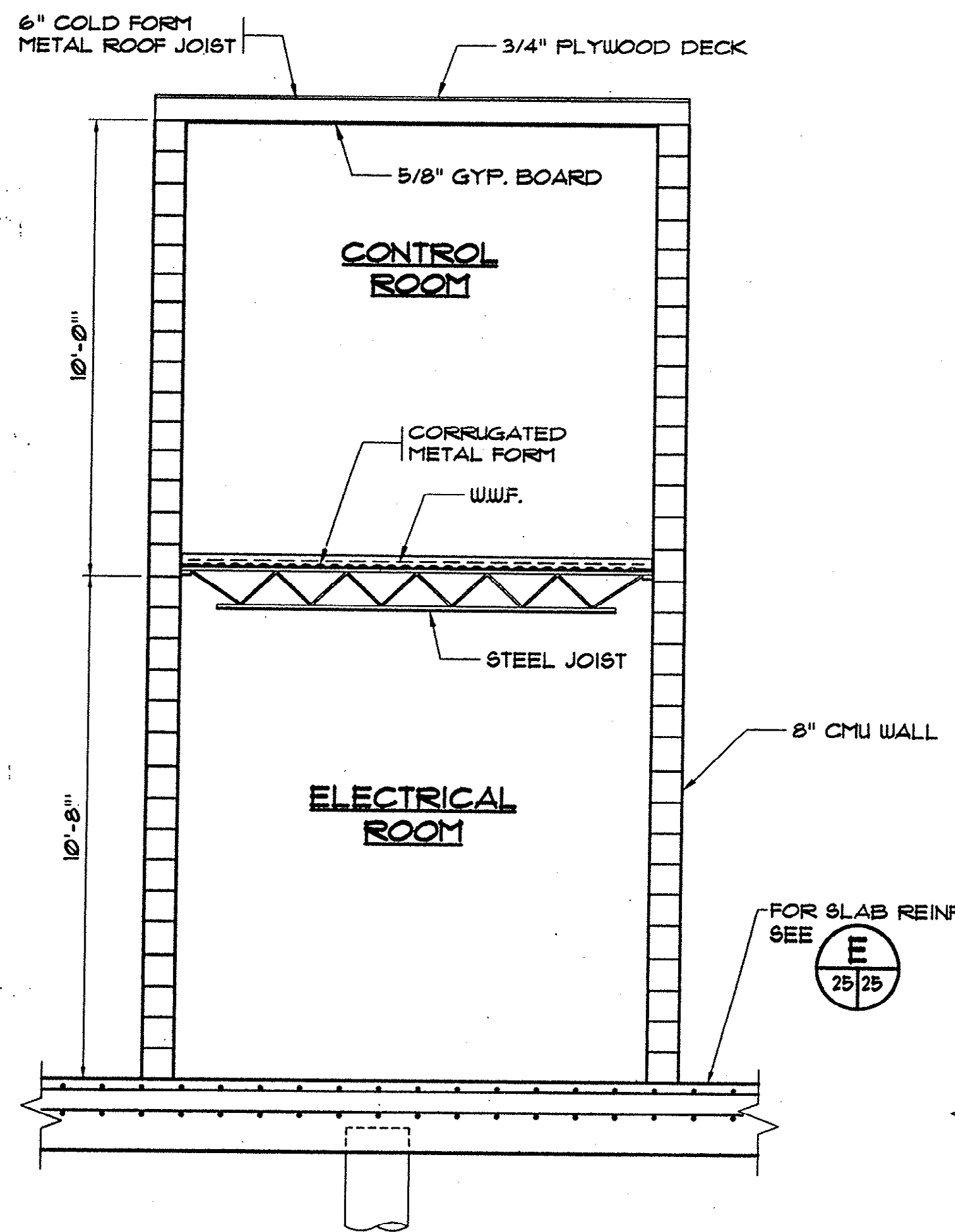
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 Consulting Engineers
 Myrtle Beach, South Carolina 29577
 PHONE (843) 868-9810 FAX (843) 868-1745



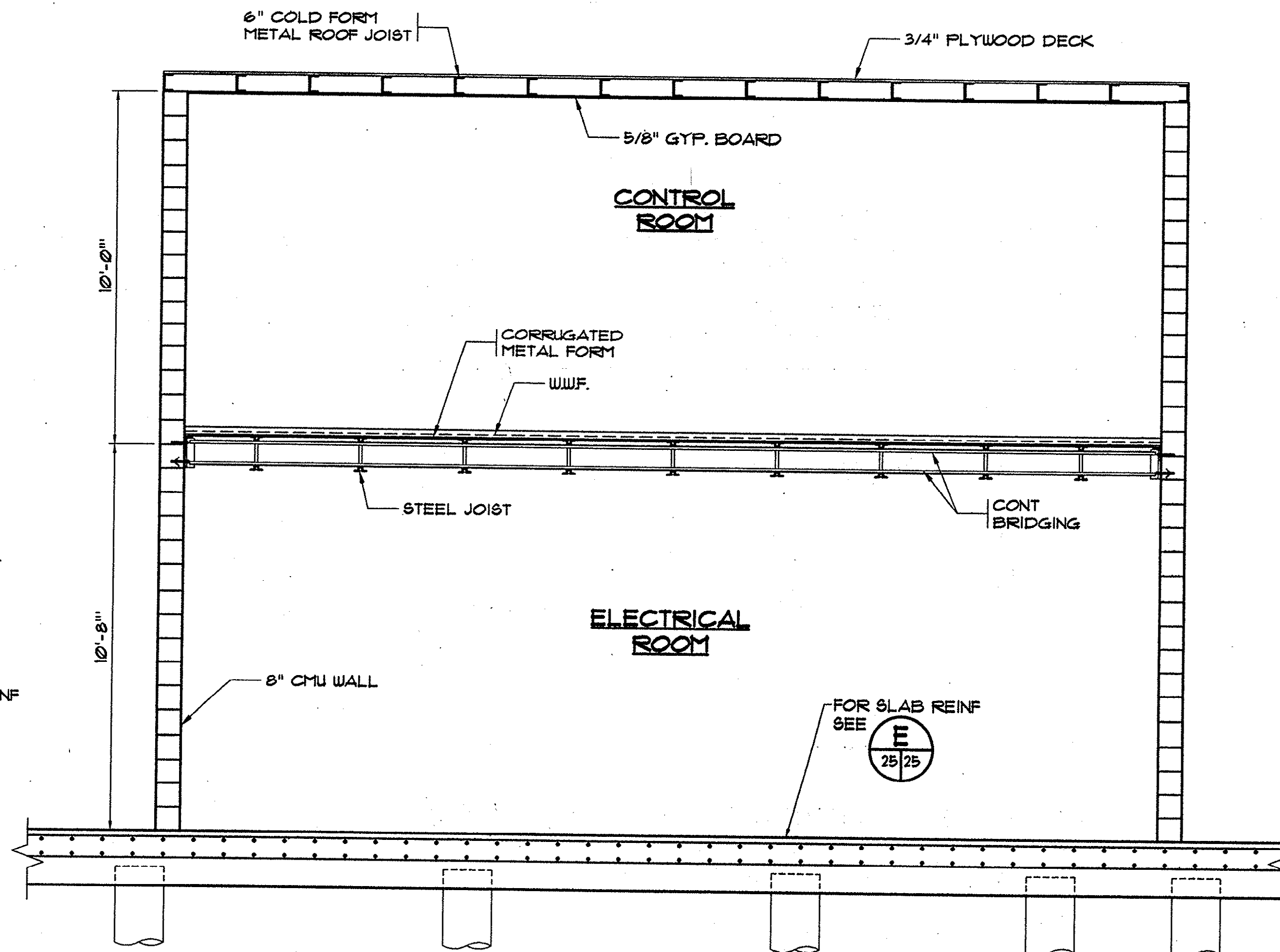
CONTROL ROOM ACCESS / PLATFORM FLOOR AND ROOF FRAMING PLANS

SCHWARTZ WASTEWATER TREATMENT PLANT UPGRADE GRAND STRAND WATER & SEWER AUTHORITY

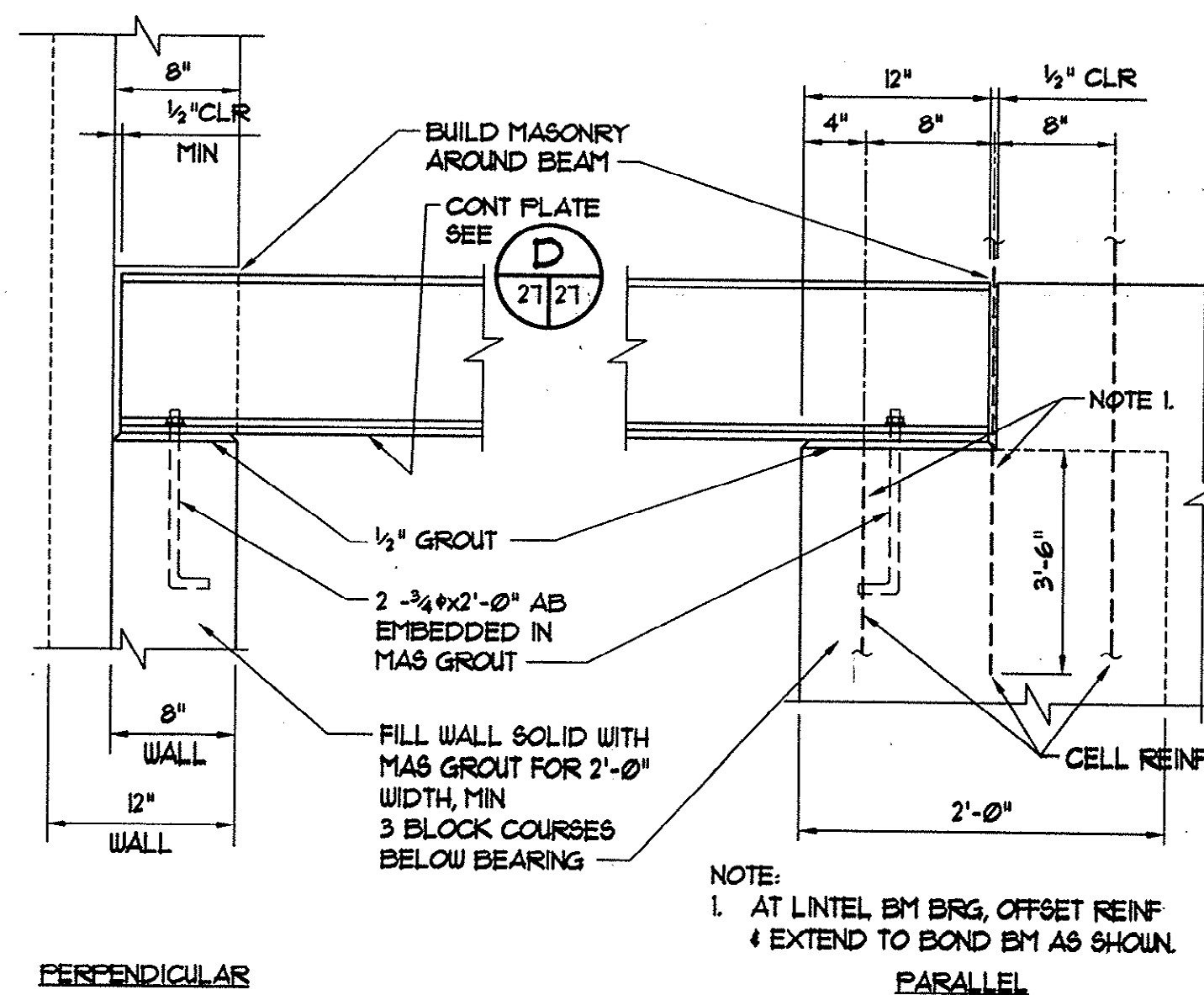
DATE: JUNE 2003
 DESIGNED: STW
 DRAWN: LAW
 CHECKED: WPD
 SCALE: AS SHOWN
 SHEET NO.



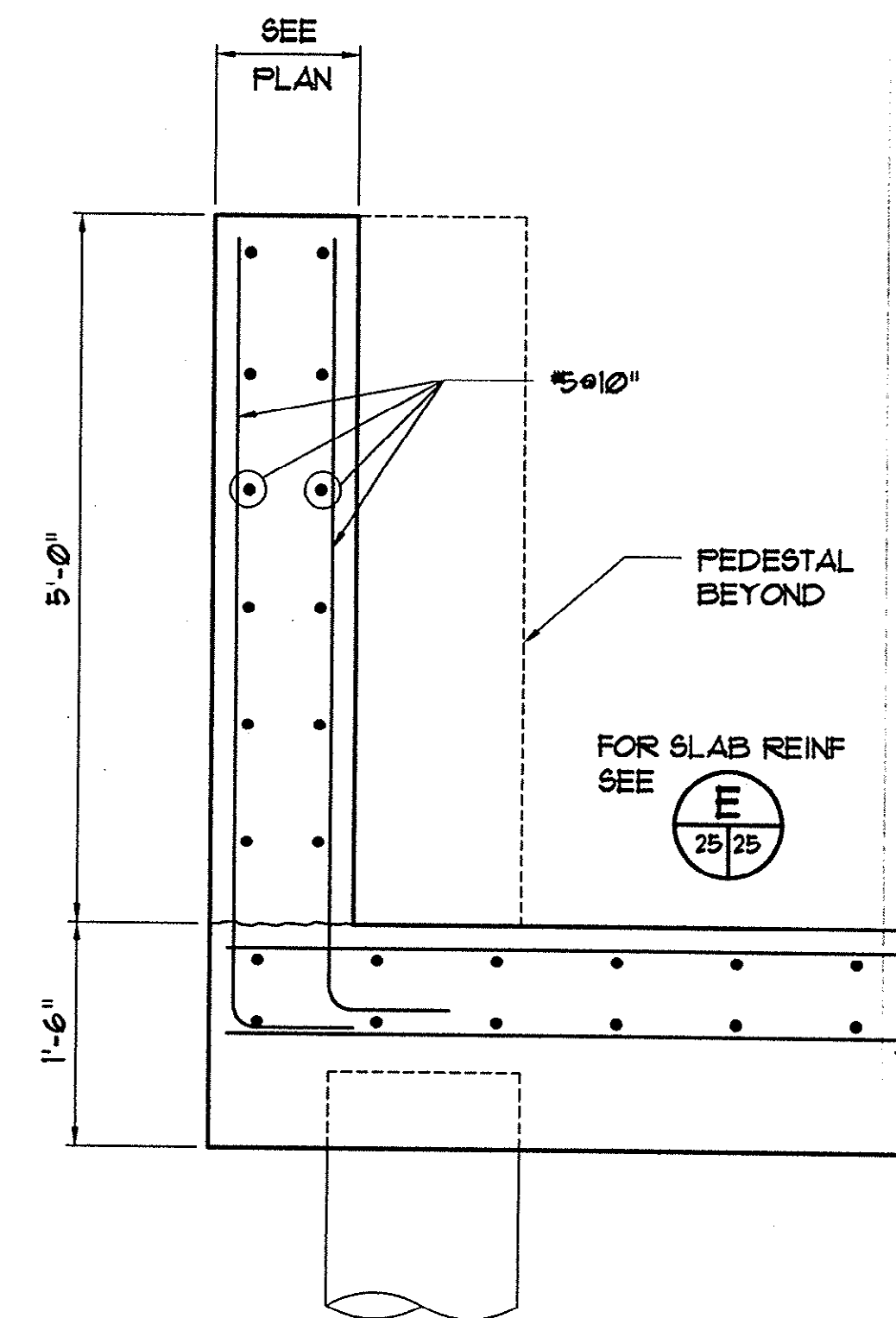
1 SECTION
25/21 SCALE: 3/8" = 1'-0"



2 SECTION
25/21 SCALE: 3/8" = 1'-0"

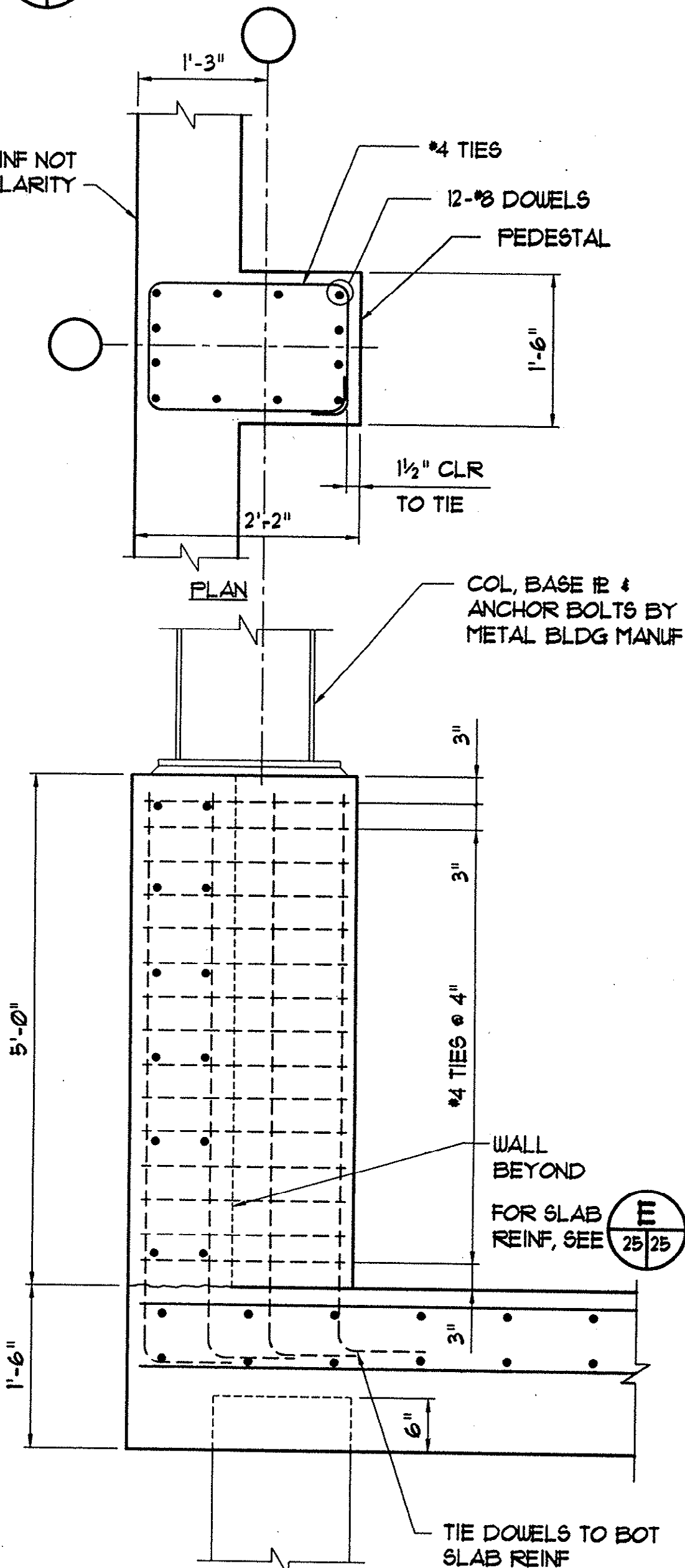


C TYP LINTEL BEARING DETAIL
26/21 NO SCALE



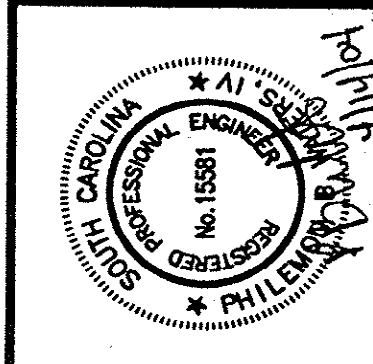
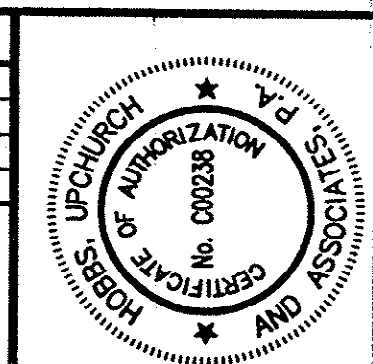
A CONC WALL AT SLUDGE STABILIZATION
25/21 NO SCALE

D TYP LINTEL DETAIL
21/21 NO SCALE



B TYP PED @ SLUDGE STABILIZATION
25/21 NO SCALE

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Myrtle Beach, South Carolina 29577
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SLUDGE BUILDING
SECTIONS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

DATE:	JUNE 2003
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	JWM
SCALE:	AS SHOWN
SHEET NO.	S-27

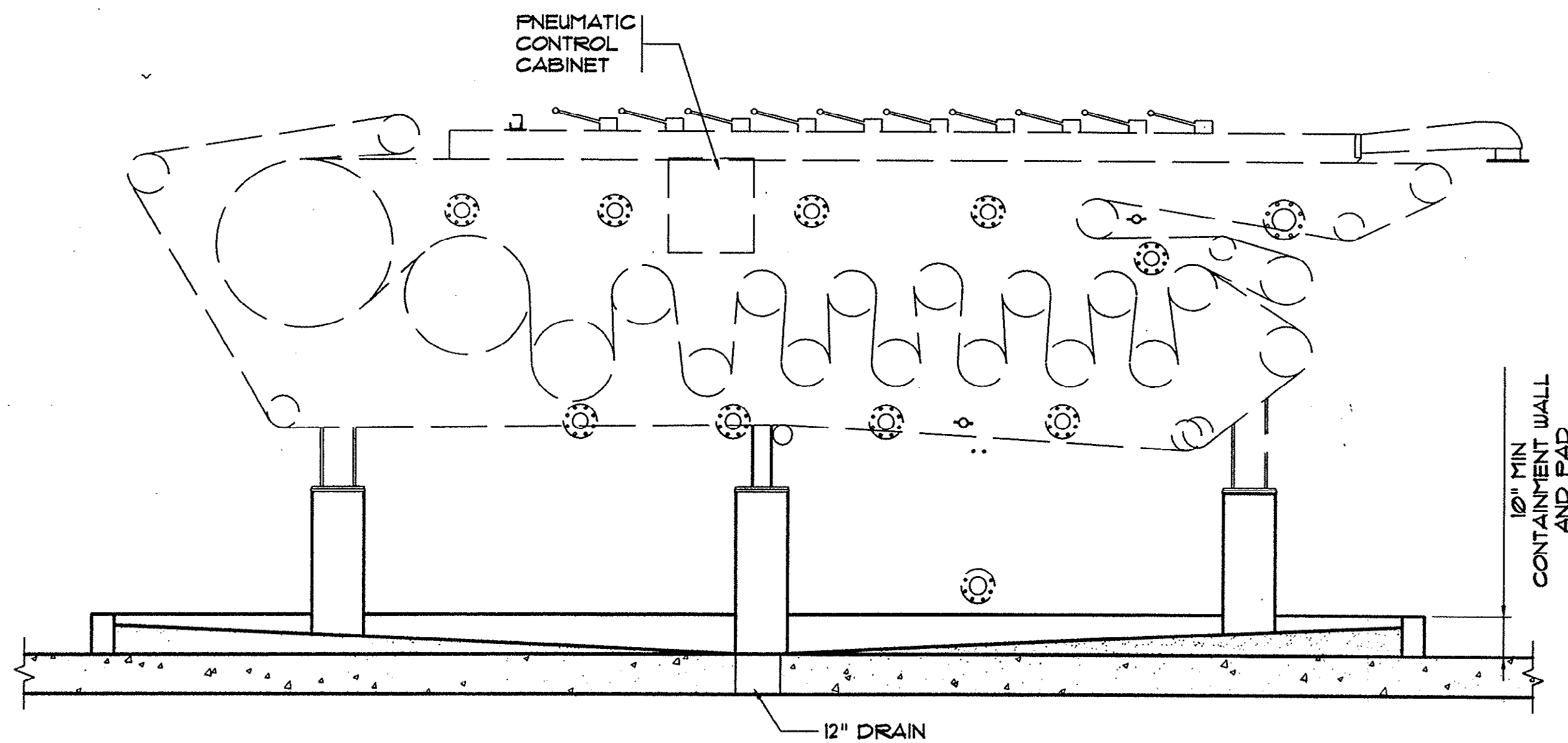
Plan Reviewer for Horry County

OK _____

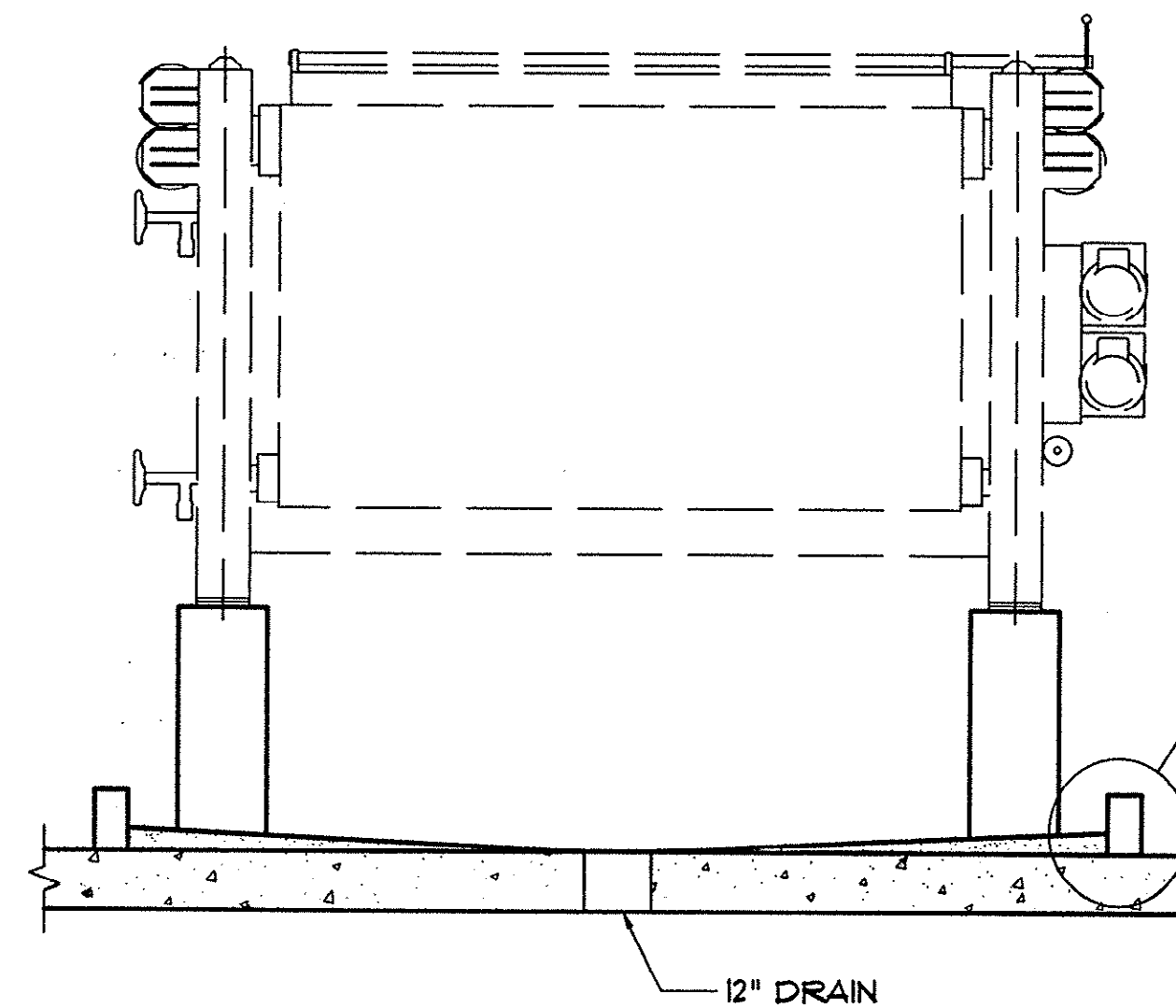
OF _____

HOBBS, UPCHURCH & ASSOC. BFT H:\Projects\GS0204\800-Drawings\605-Design\Structural (S)\S-29 Sludge.dwg EDITED BY: AGIBSON DATE: 06/19/03 TIME: 10:36 XREFS: H:\Projects\GS0204\800-Drawings\605-Design\General (G)\Sheet.dwg Layout: Sludge Thickener

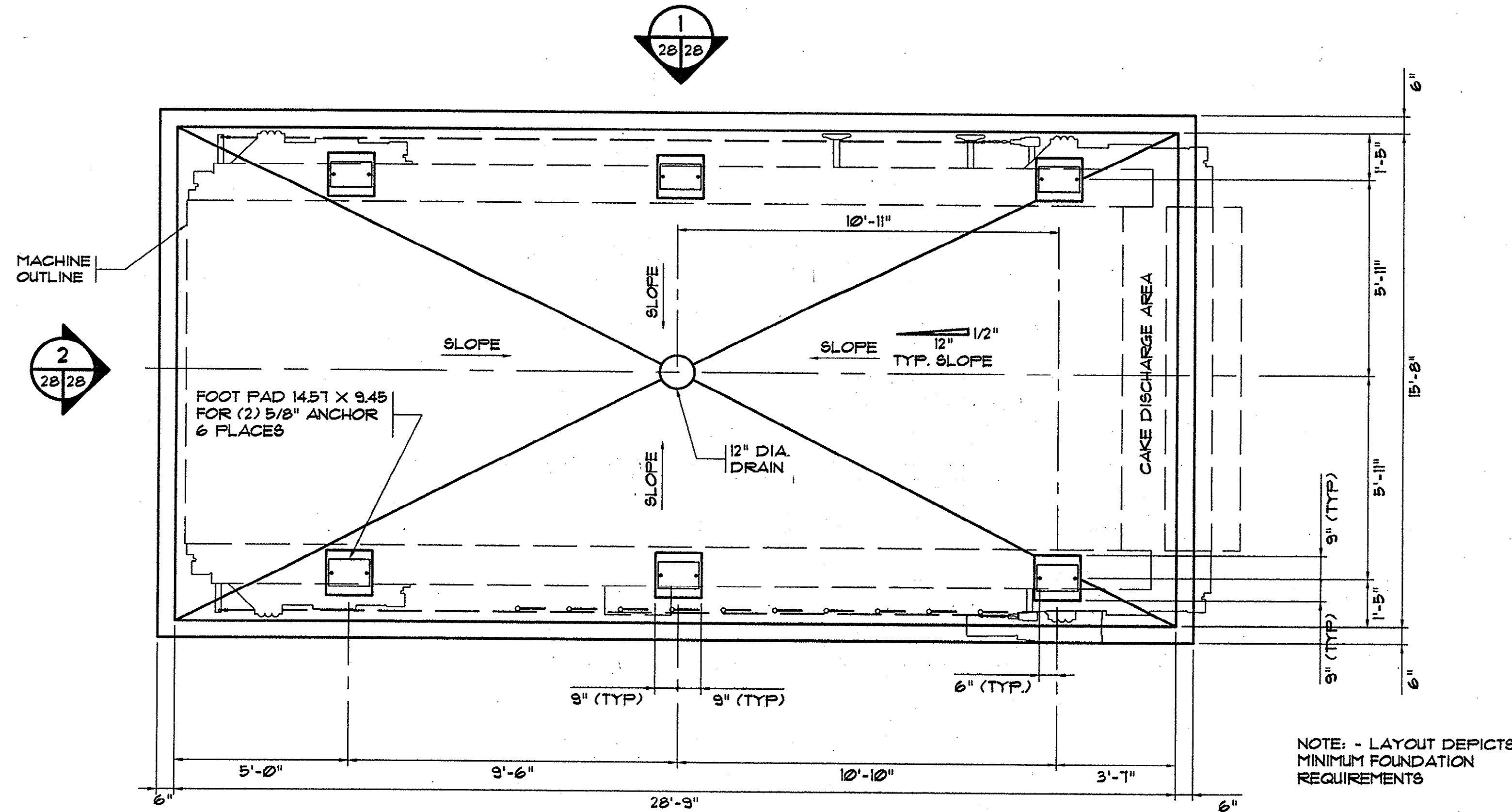
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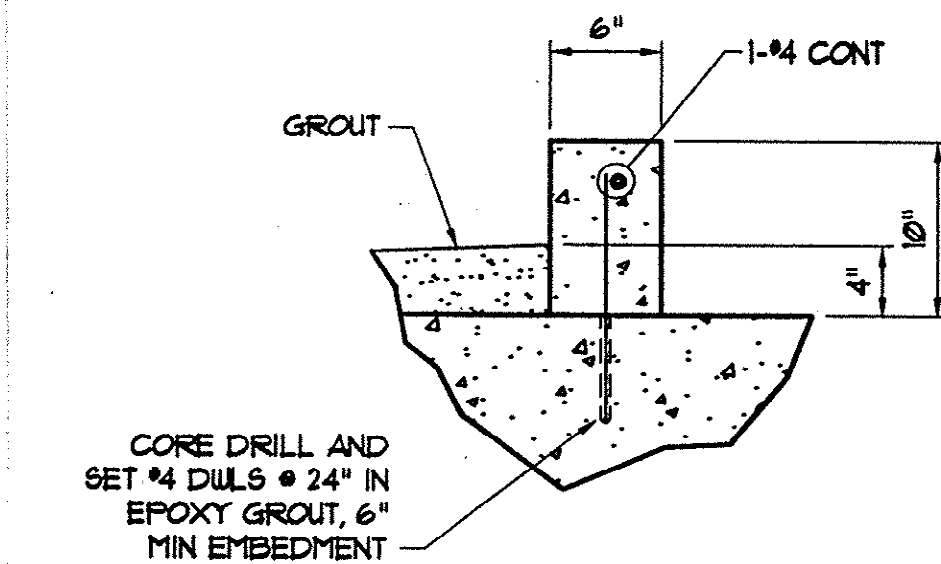
1 SECTION
28/28 SCALE: 3/8"=1'-0"



2 SECTION
28/28 SCALE: 3/8"=1'-0"



3 BELT PRESS LAYOUT
25/28 SCALE: 3/8"=1'-0"



A TYP CURB DETAIL
28/28 NO SCALE

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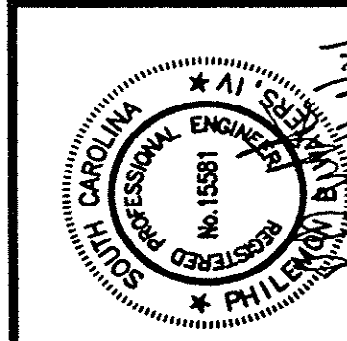
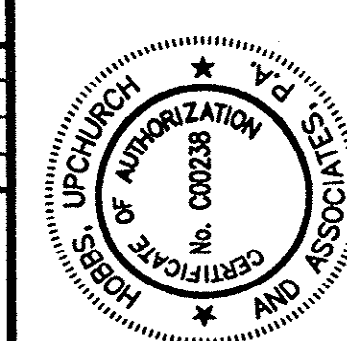
BELT PRESS LAYOUT &
SECTIONS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

DATE: JUNE 2003
DESIGNED: PBW
DRAWN: ALG
CHECKED: JWM
SCALE: AS SHOWN

Plan Reviewer for Horry County
OK _____

SHEET NO.
S-28
OF: _____



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Consulting Engineers
Myrtle Beach, South Carolina 29577
PHONE (843) 842-1810 FAX (843) 842-1745

**GENERAL NOTES AND
STANDARD DETAILS**

**SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY**

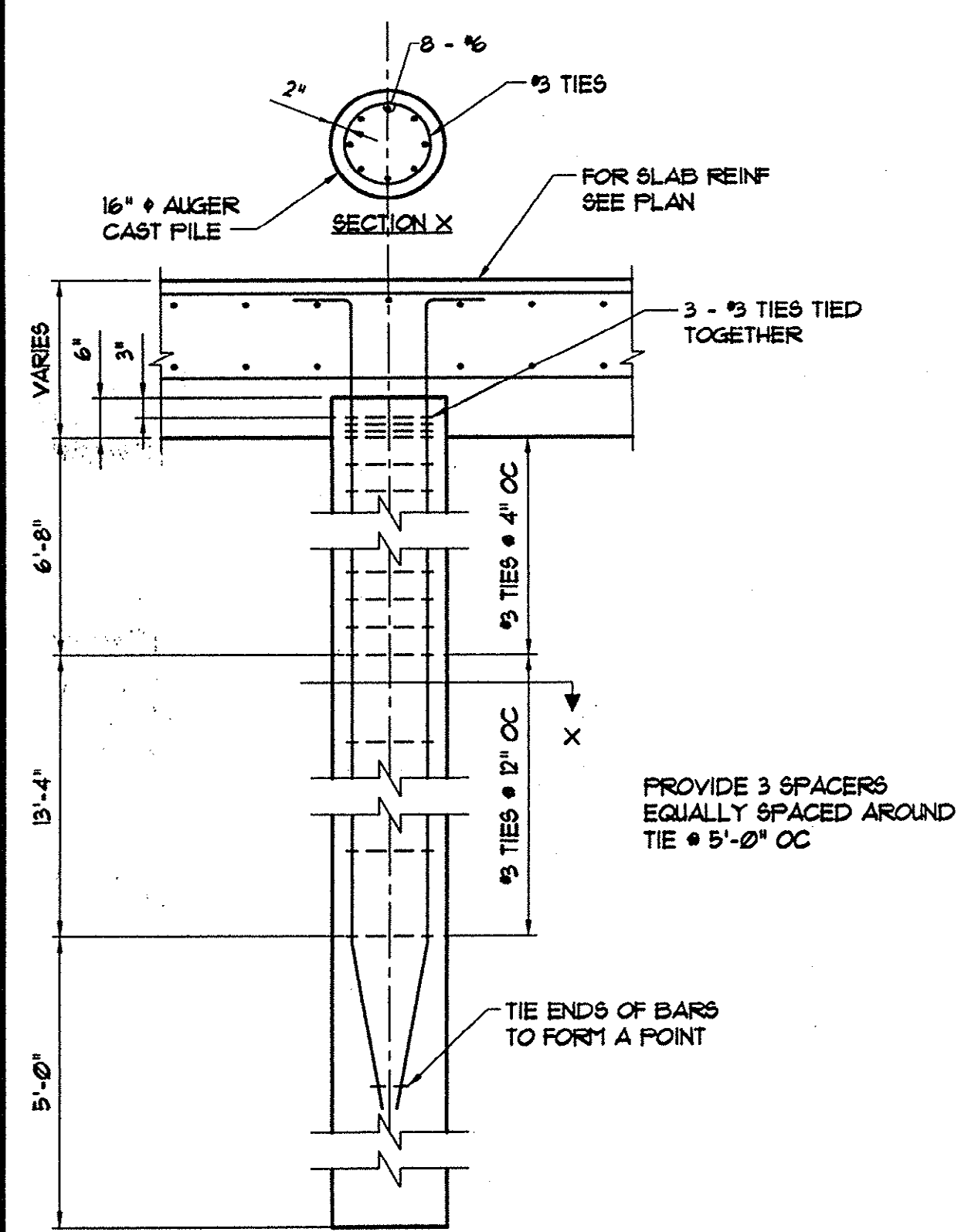
DATE: JUNE 2003
DESIGNED: STW
DRAWN: LAW
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SCALE: AS SHOWN
SHEET NO. **S-35**
OK _____
Plan Reviewer for Horry County

REVISIONS			
SYM.	DESCRIPTION	DATE	BY

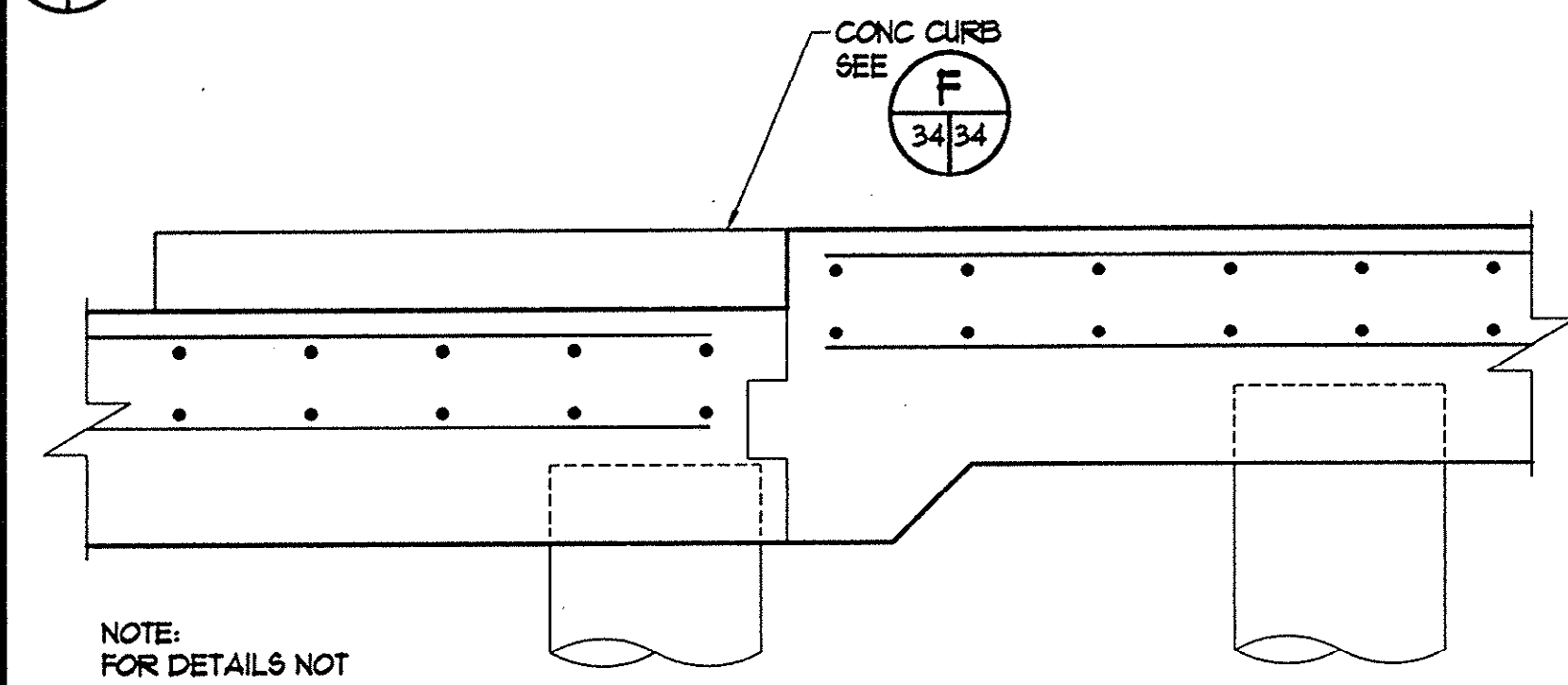
GENERAL NOTES

- 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.
2. 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 RADI 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 GRIDERS," OF THE STEEL JOIST INSTITUTE, 1994 EDITION.
2. JOISTS SHALL HAVE MINIMUM BEARING ON SUPPORTS IN ACCORDANCE WITH THE SA SPECIFICATIONS UNLESS OTHERWISE NOTED.
3. BRIDGING SHALL BE IN PLACE, ANCHORED AND REVIEWED BY THE ENGINEER PRIOR TO PLACING CORRUGATED STEEL FORMS OR DECKING.
4. 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.
- I. UNIT MASONRY**
1. ASSUMED COMPRESSIVE STRENGTH OF LOAD-BEARING CONCRETE MASONRY fm = 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 SPICES FOR REINFORCING BARS IN MASONRY WALL SHALL BE 48X BAR DIAMETER, UON.
- J. 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 SPICES MAY BE FIELD FABRICATED.
- K. DESIGN LOADS.**
STRUCTURAL MEMBERS SHALL BE DESIGNED FOR FULL DEAD LOADS AND THE FOLLOWING LIVE LOADS:
1. IMPORTANCE FACTORS: WIND (W) = 1.15
SNOW (S) = 1.10
SEISMIC (E) = 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 = 0.14 %g
Sm1 = 0.77 %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.

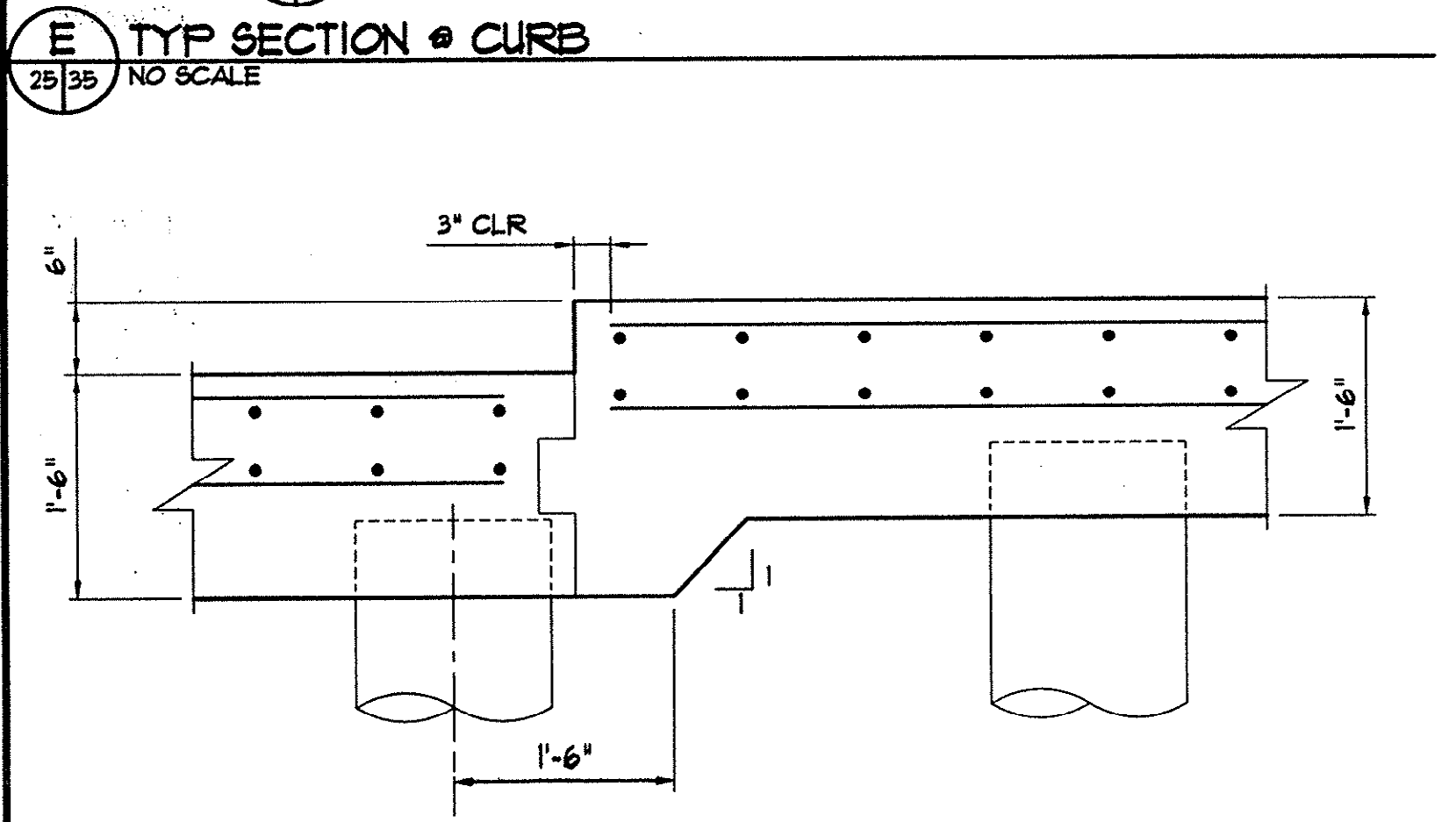
LINTEL SCHEDULE			
OPENING	LINTEL	BEARING	
0'-0" TO 1'-4"	E 3/8x3 1/2	*	8"
1'-4" TO 4'-0"	L3 1/2x3 1/2x5/16	*	8"
4'-0" TO 6'-8"	L4x3 1/2x5/16 (LLV)	*	8"
6'-8" TO 8'-0"	L5x3 1/2x5/16 (LLV)	*	8"
* PER 4' OF WALL THICKNESS			
OPENING	6" OR 8" WALL	12" WALL	BEARING
2'-0" TO 4'-0"			8"
4'-0" TO 5'-4"			8"
5'-4" TO 8'-0"			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.			



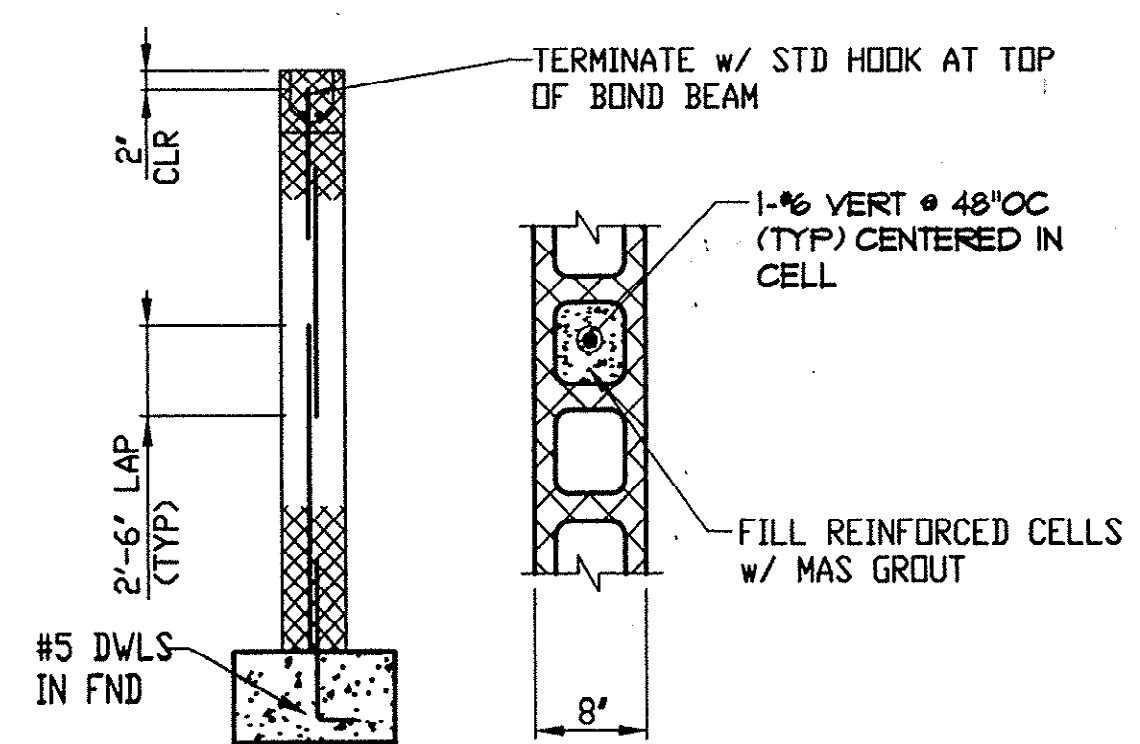
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35/35 NO SCALE



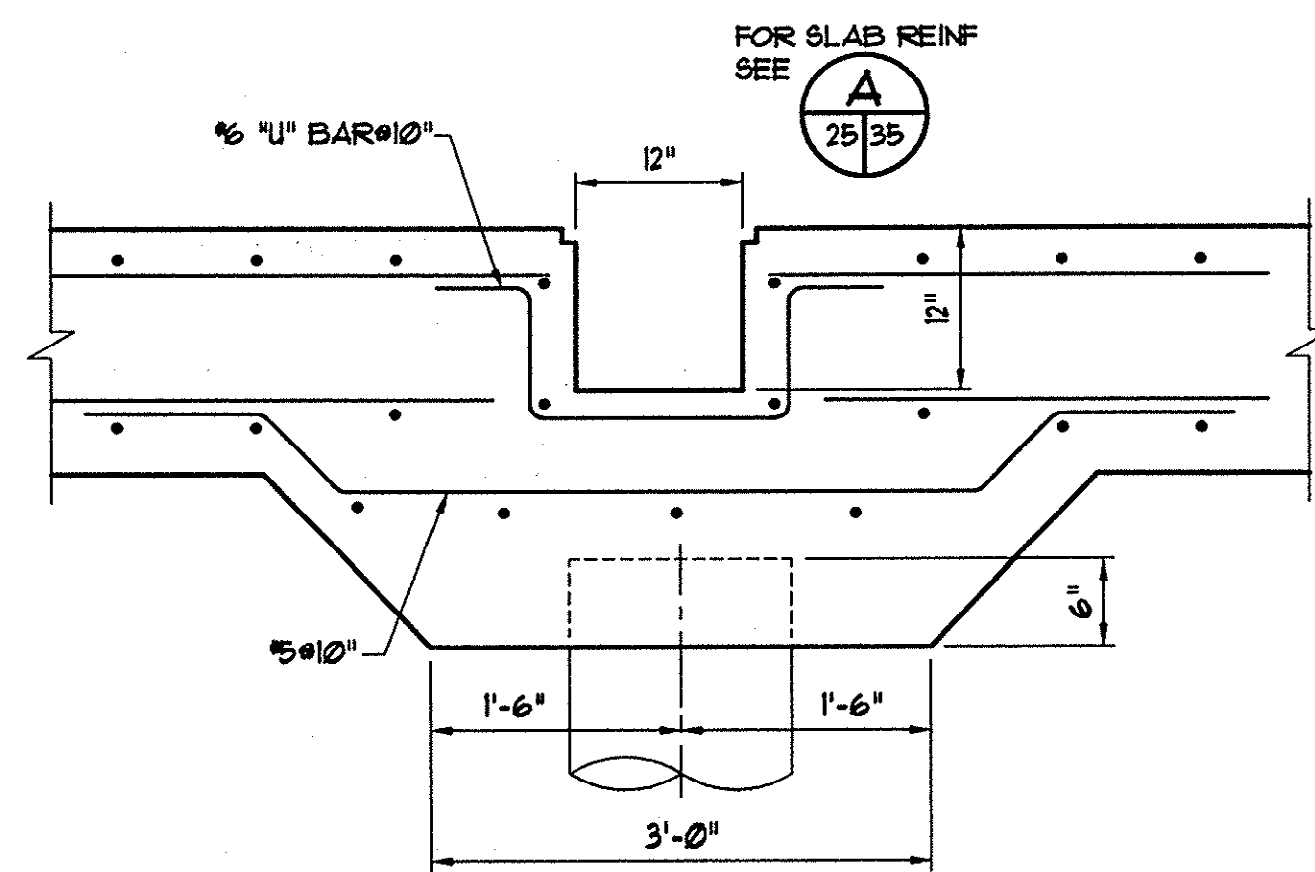
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25/35 NO SCALE



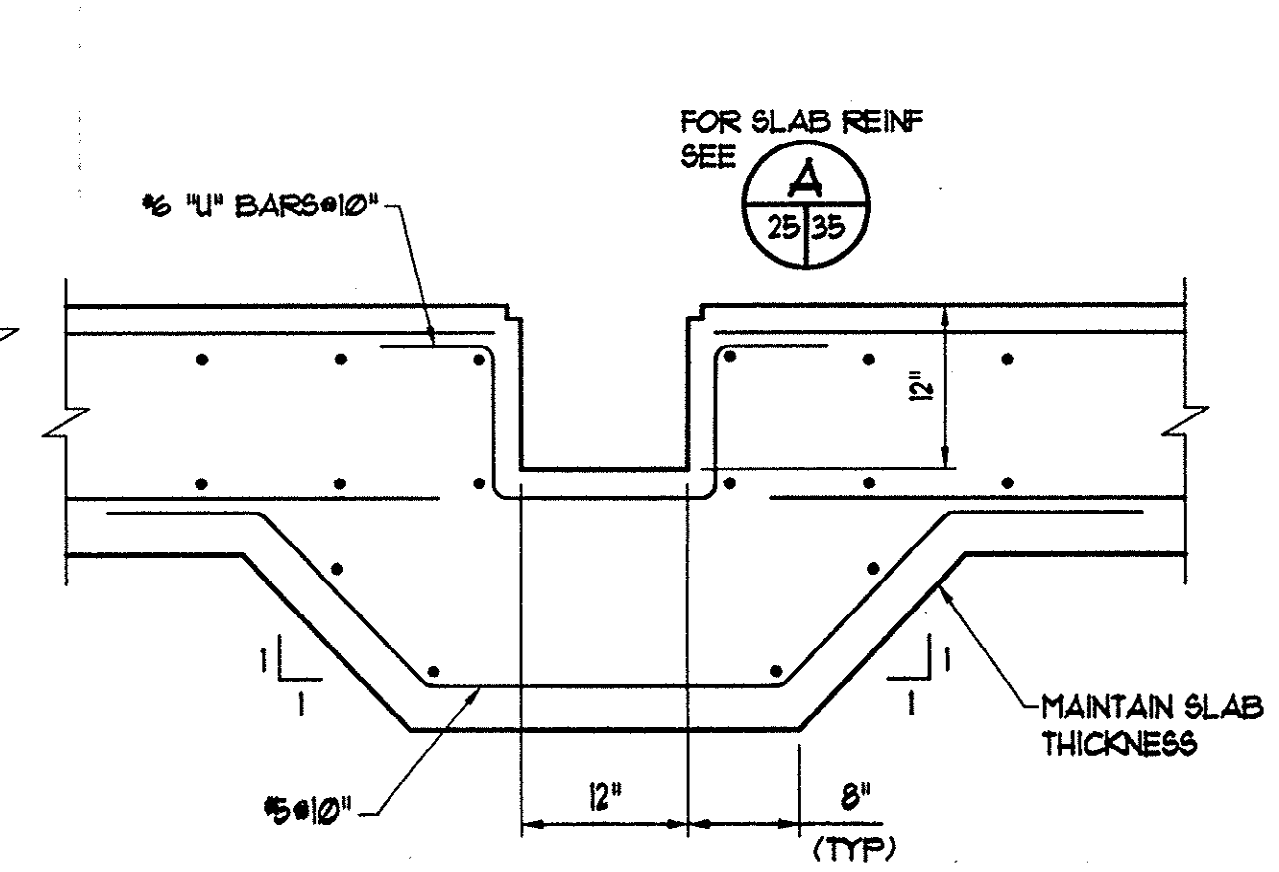
D TYP SECTION @ STEP DOWN
25/35 NO SCALE



C TYP WALL REINFCING DETAIL
25/35 NO SCALE



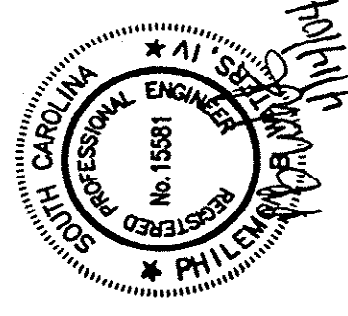
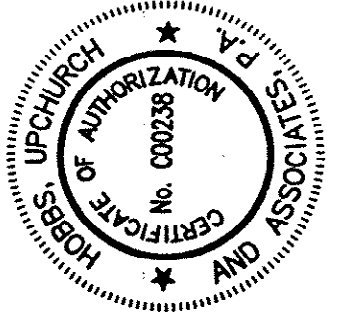
B TYP TRENCH DETAIL @ PILE
25/35 NO SCALE



A TYP TRENCH DETAIL
25/35 NO SCALE

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REVISIONS			
SYM.	DESCRIPTION	DATE	BY

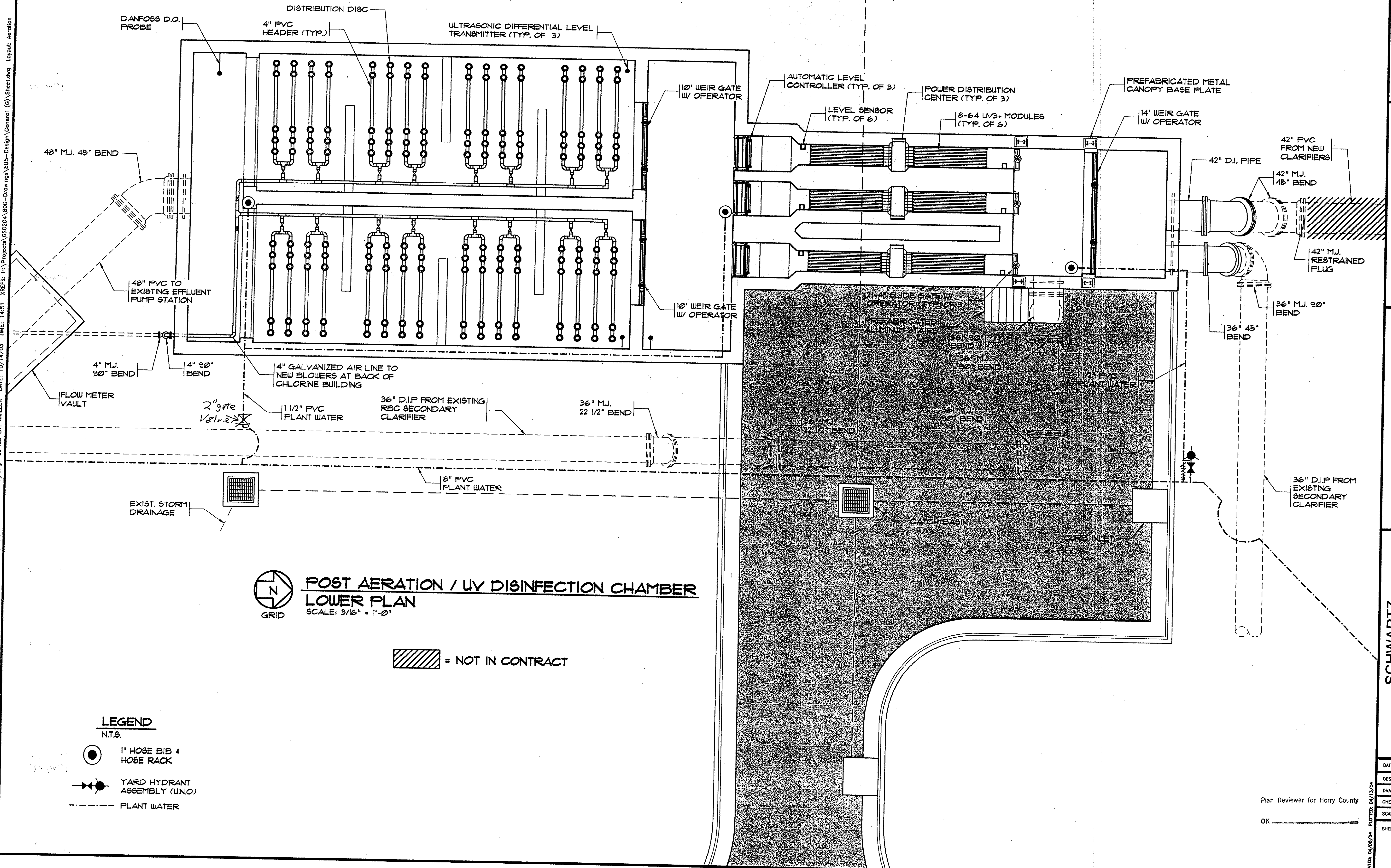


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Consulting Engineers
Myrtle Beach, South Carolina 29577
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POST AERATION /
UV DISINFECTION CHAMBER
LOWER PLAN

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

DATE:	SEPT. 2003
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	JWM
SCALE:	AS SHOWN
SHEET NO.	EN-14



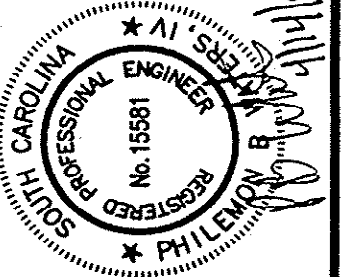
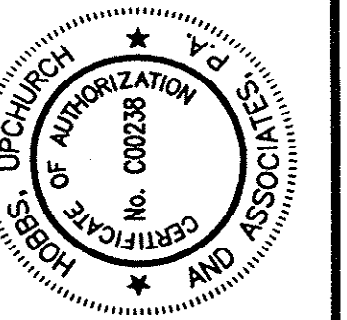
POST AERATION / UV DISINFECTION CHAMBER
LOWER PLAN
SCALE: 3/16" = 1'-0"

= NOT IN CONTRACT

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

Plan Reviewer for Horry County
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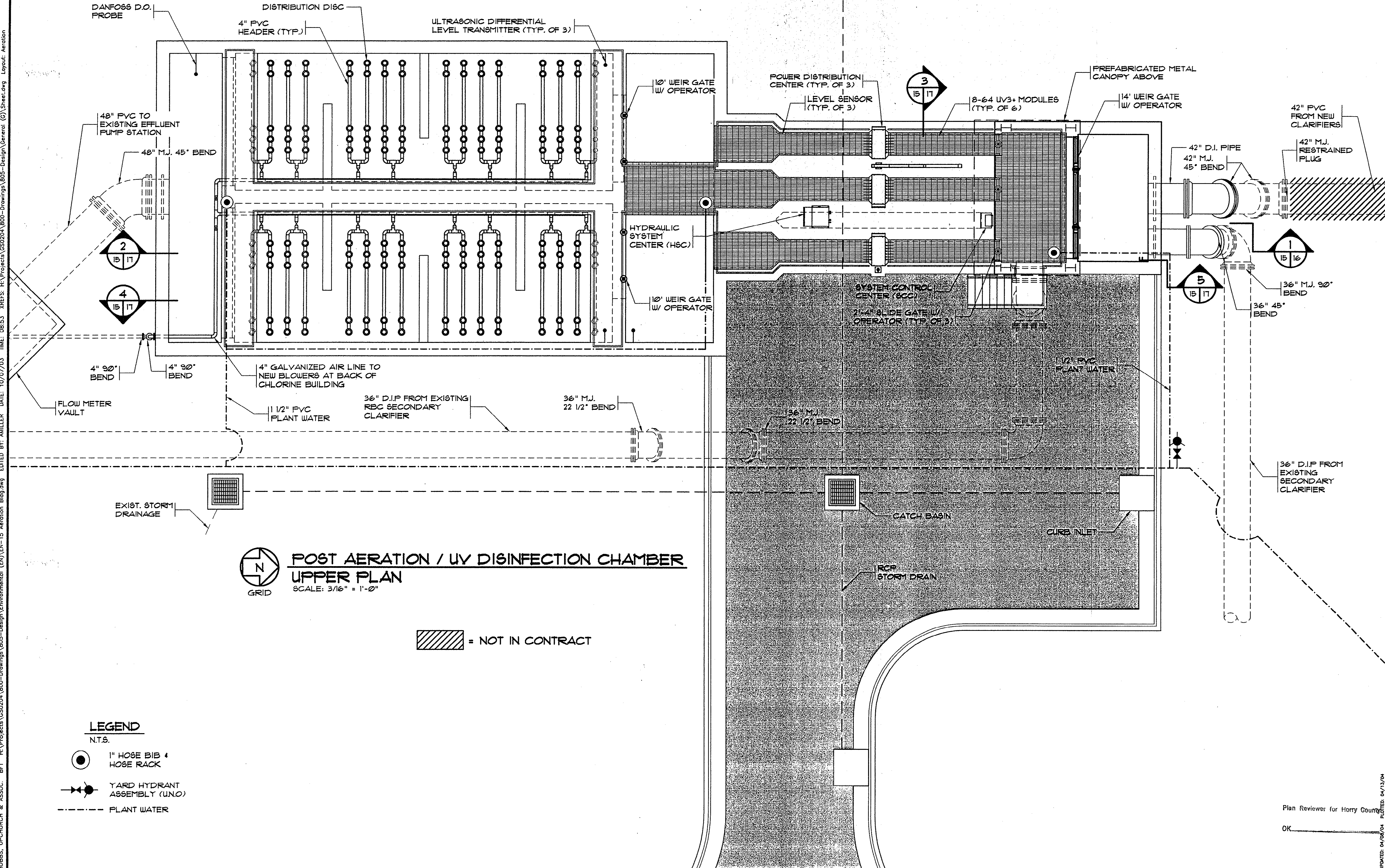
POST AERATION / UV DISINFECTION CHAMBER UPPER PLAN

**SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY**

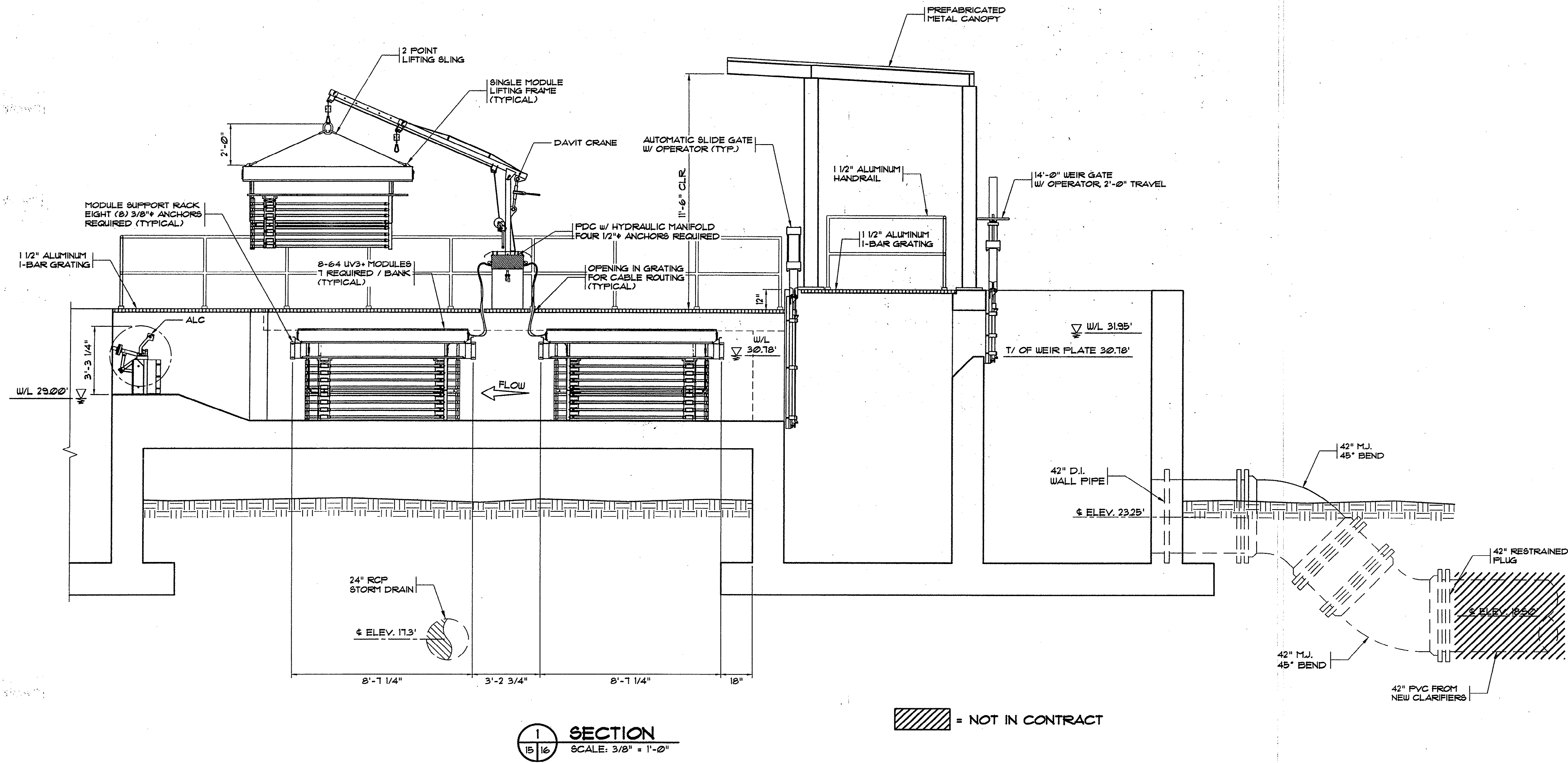
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DESIGNED:	PBW
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CHECKED:	JWM
SCALE:	AS SHOWN

SHEET NO.

EN-15



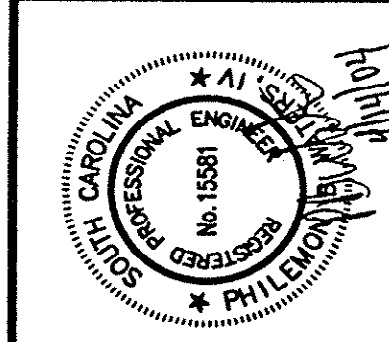
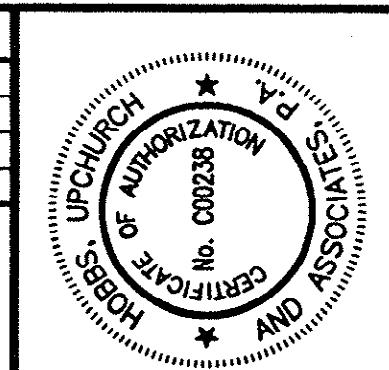
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Plan Reviewer for Harry County

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SYM.	DESCRIPTION	DATE	BY



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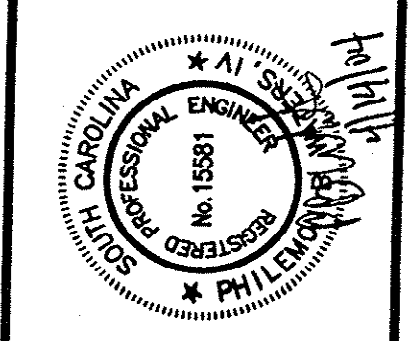
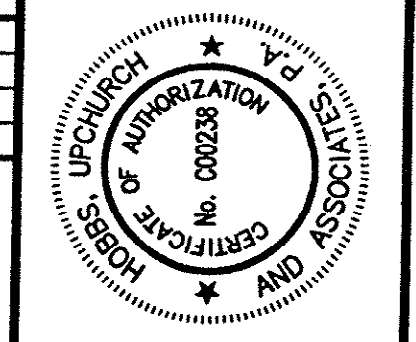
POST AERATION /
UV DISINFECTION CHAMBER
SECTIONS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

DATE:	SEPT. 2003
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	JWM
SCALE:	AS SHOWN

SHEET NO.
EN-16
OF: 1

REVISIONS			
SYM.	DESCRIPTION	DATE	BY



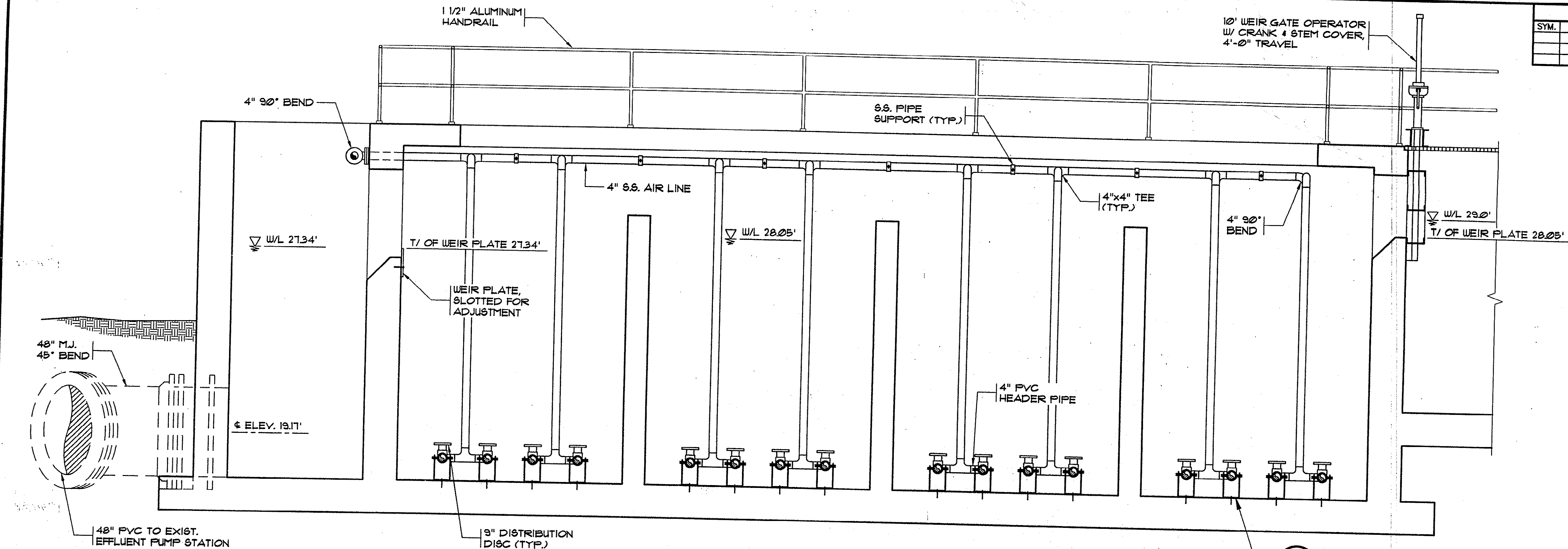
Hobbs, Upchurch & Associates, P.A.
 Consulting Engineers
 Myrtle Beach, South Carolina 29577
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**POST AERATION /
 UV DISINFECTION CHAMBER
 SECTIONS**

**SCHWARTZ
 WASTEWATER TREATMENT
 PLANT UPGRADE
 GRAND STRAND WATER &
 SEWER AUTHORITY**

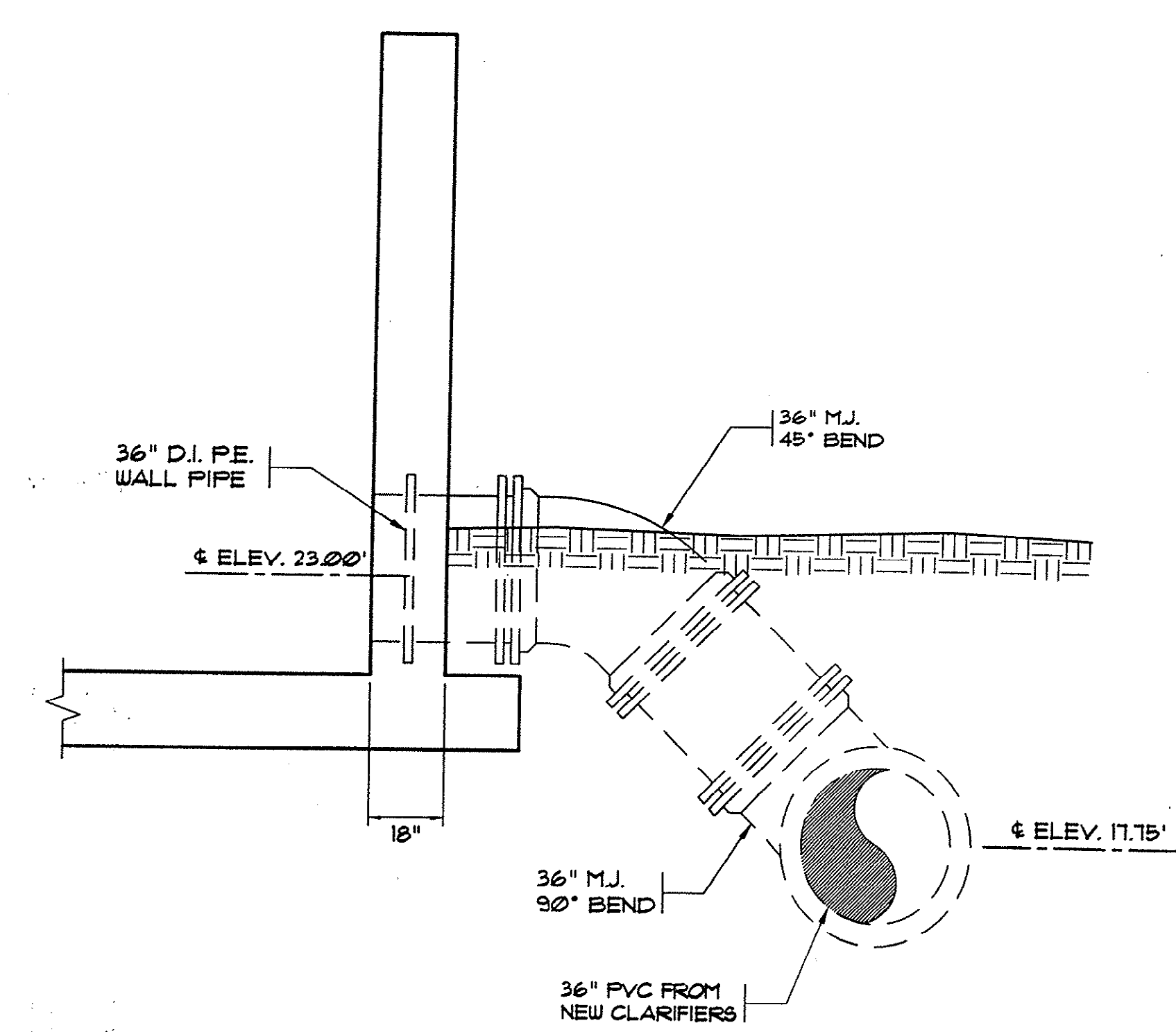
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SHEET NO.
EN-17

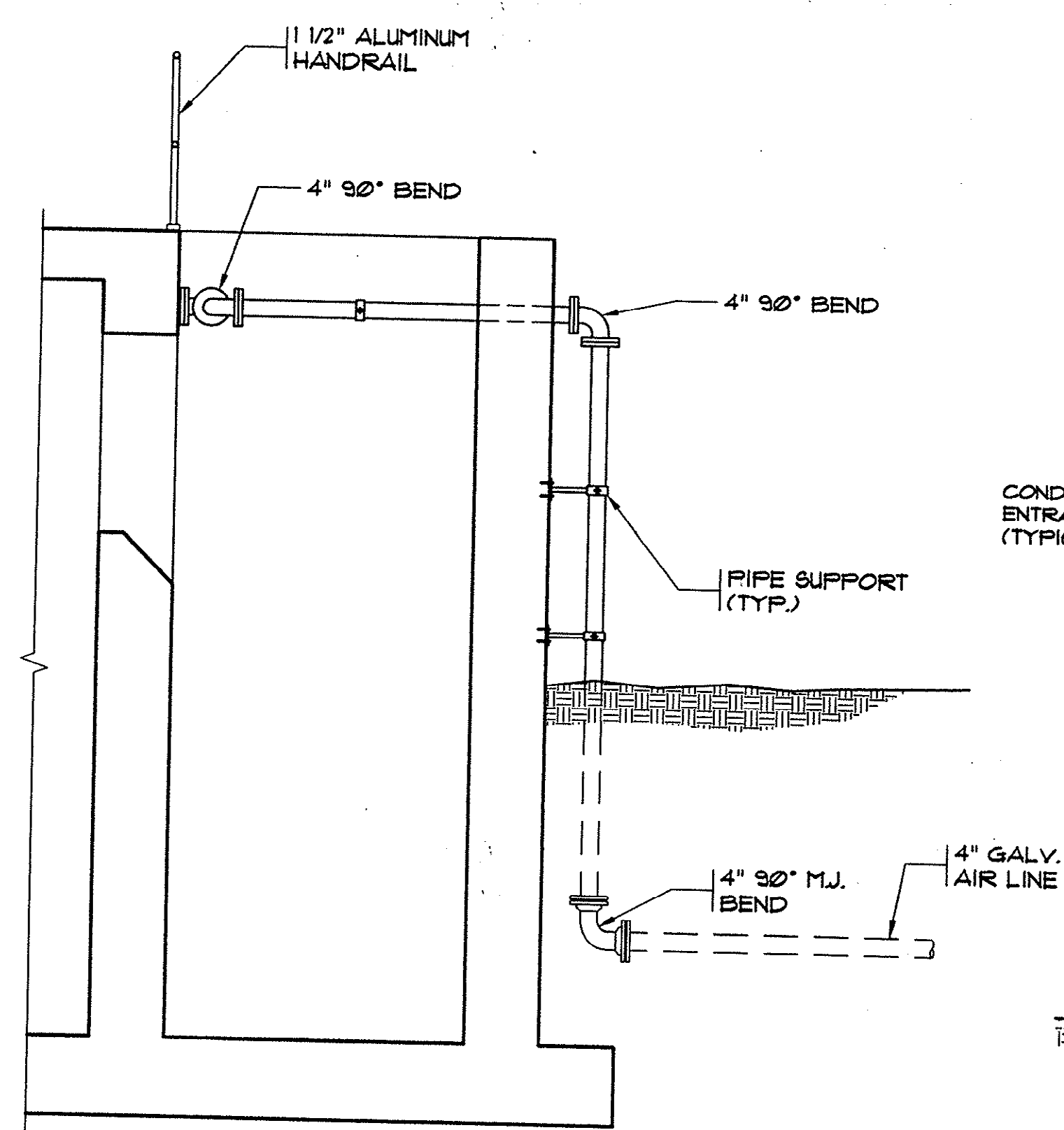


2 SECTION
 SCALE: 3/8" = 1'-0"

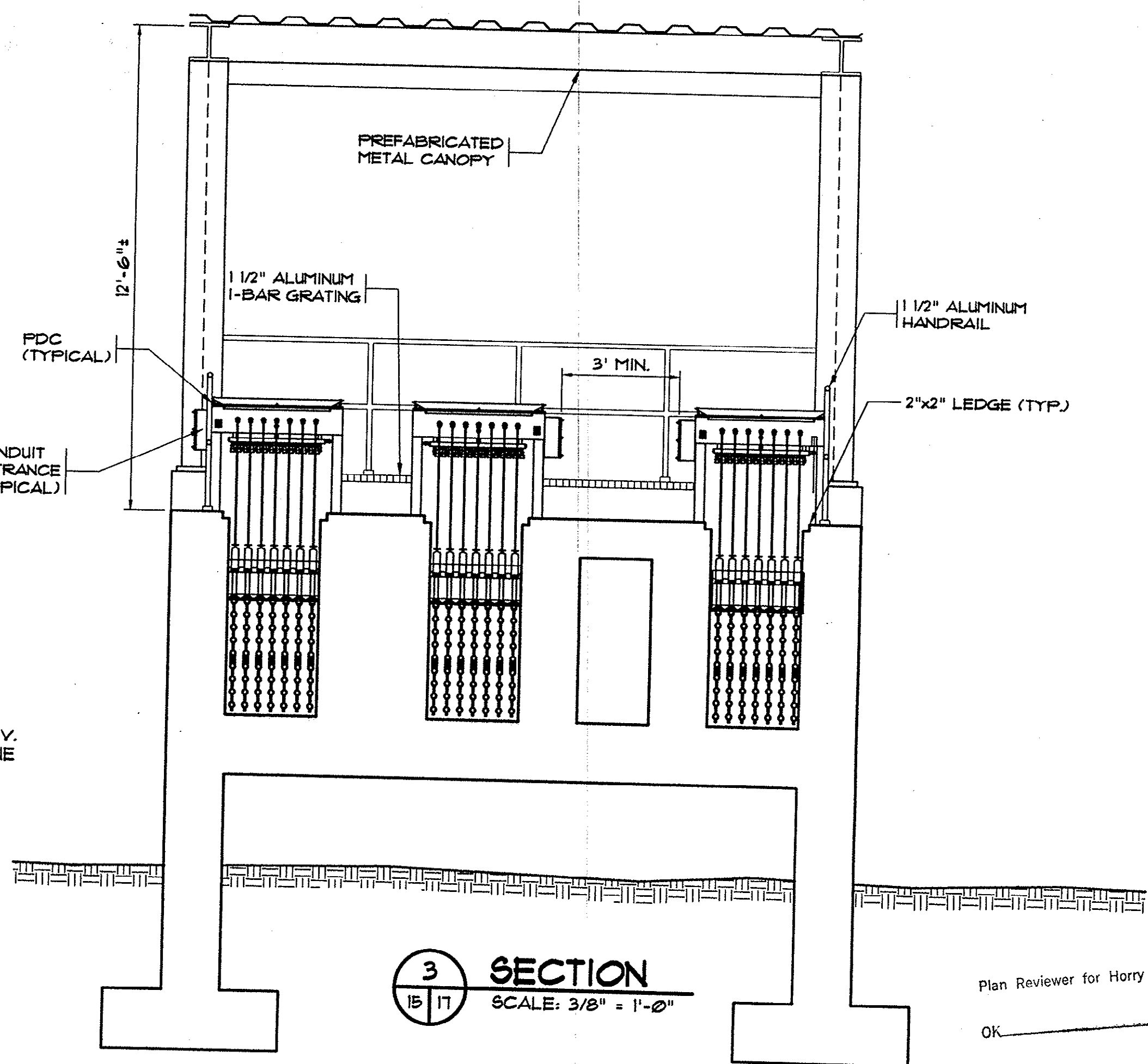
3 SECTION
 SCALE: 3/8" = 1'-0"



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



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

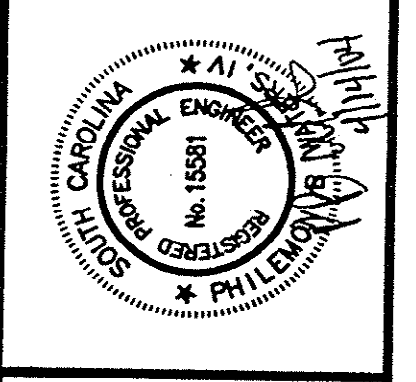
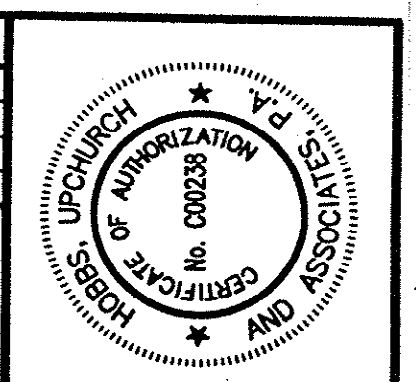


3 SECTION
 SCALE: 3/8" = 1'-0"

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HOBBS, UPCHURCH & ASSOC. BFT H:\Projects\GS0204\B00-Drawings\B05-Design\Environmental (EN)\EN-17 Aeration Sections.dwg EDITED BY: AMILLER DATE: 10/09/03 TIME: 10:42 XREFS: H:\Projects\GS0204\B00-Drawings\B05-Design\General (G)\Sheet.dwg Layout: Aeration

REVISIONS			
SYM.	DESCRIPTION	DATE	BY



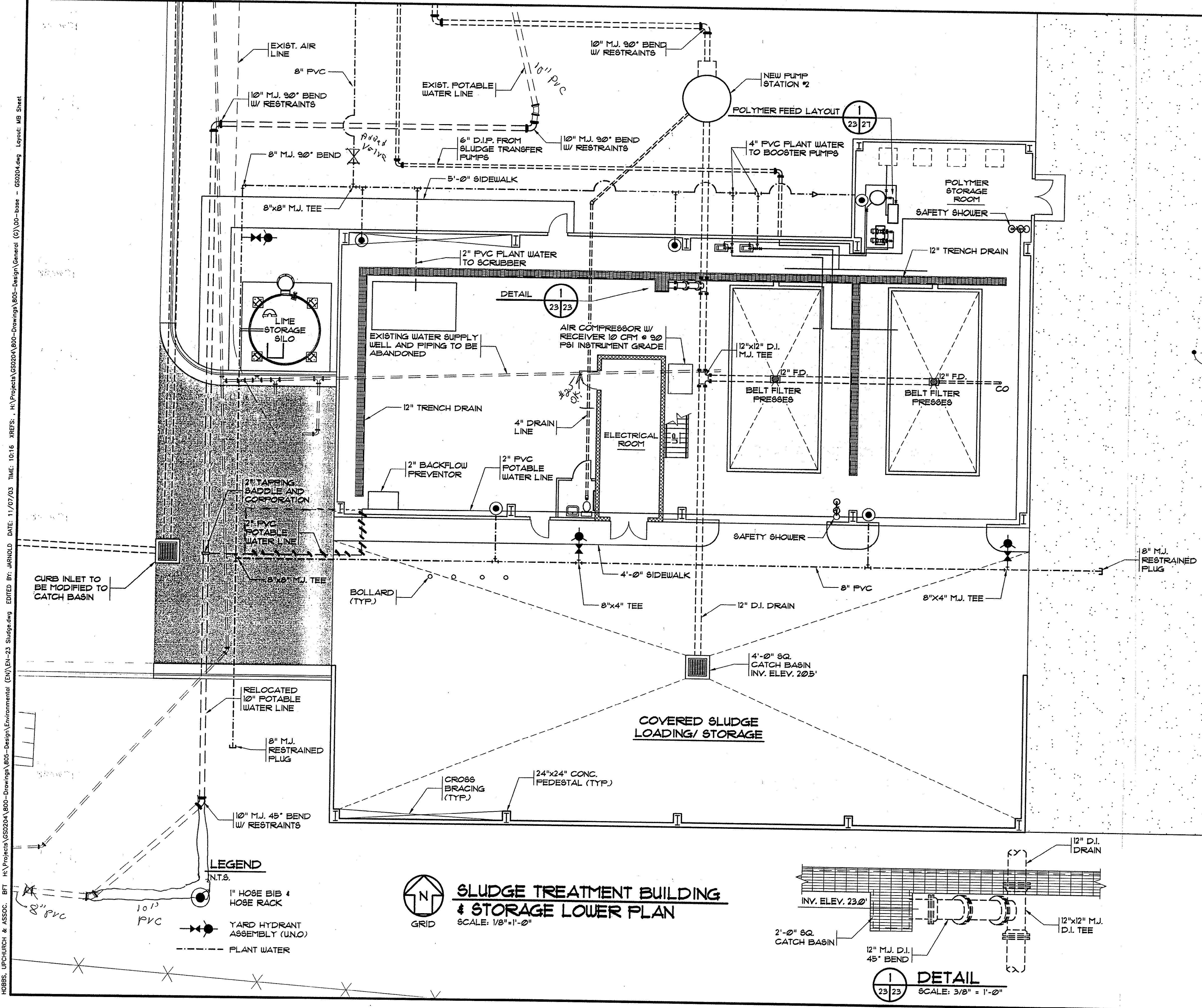
Upchurch & Associates, P.A.
 Consulting Engineers
 Myrtle Beach, South Carolina 29577
 PHONE (843) 638-1910 FAX (843) 638-1745

SLUDGE TREATMENT BUILDING & STORAGE LOWER PLAN

SCHWARTZ
 WASTEWATER TREATMENT PLANT UPGRADE
 GRAND STRAND WATER & SEWER AUTHORITY

DATE:	SEPT. 2003
DESIGNED:	PBW
DRAWN:	ALG
CHECKED:	JWM
SCALE:	AS SHOWN
SHEET NO.	EN-23

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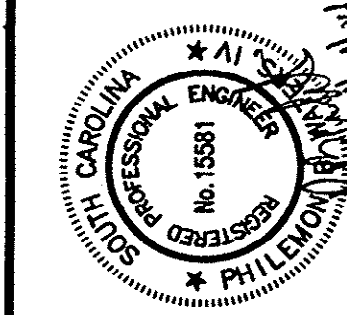
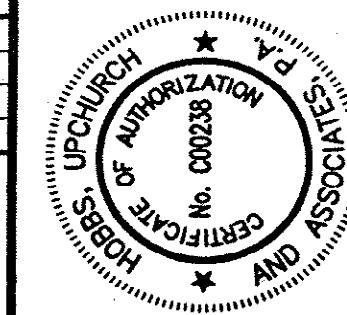
SLUDGE TREATMENT BUILDING & STORAGE LOWER PLAN
 SCALE: 1/8" = 1'-0"

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

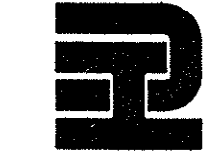
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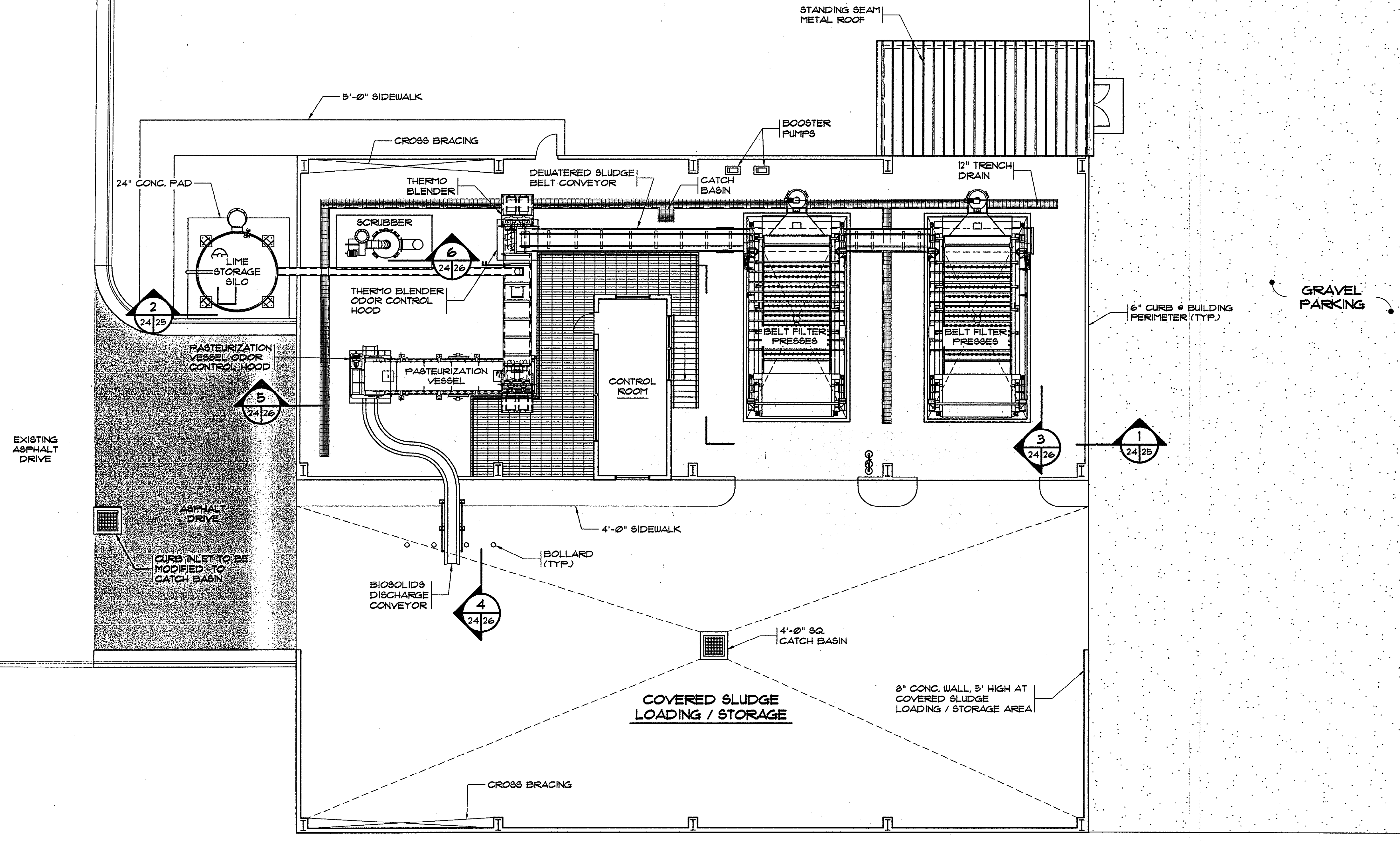


SLUDGE TREATMENT
BUILDING & STORAGE
UPPER PLAN

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

DATE:	SEPT. 2003
DESIGNED:	PBW
DRAWN:	ALG
CHECKED:	JWM
SCALE:	AS SHOWN

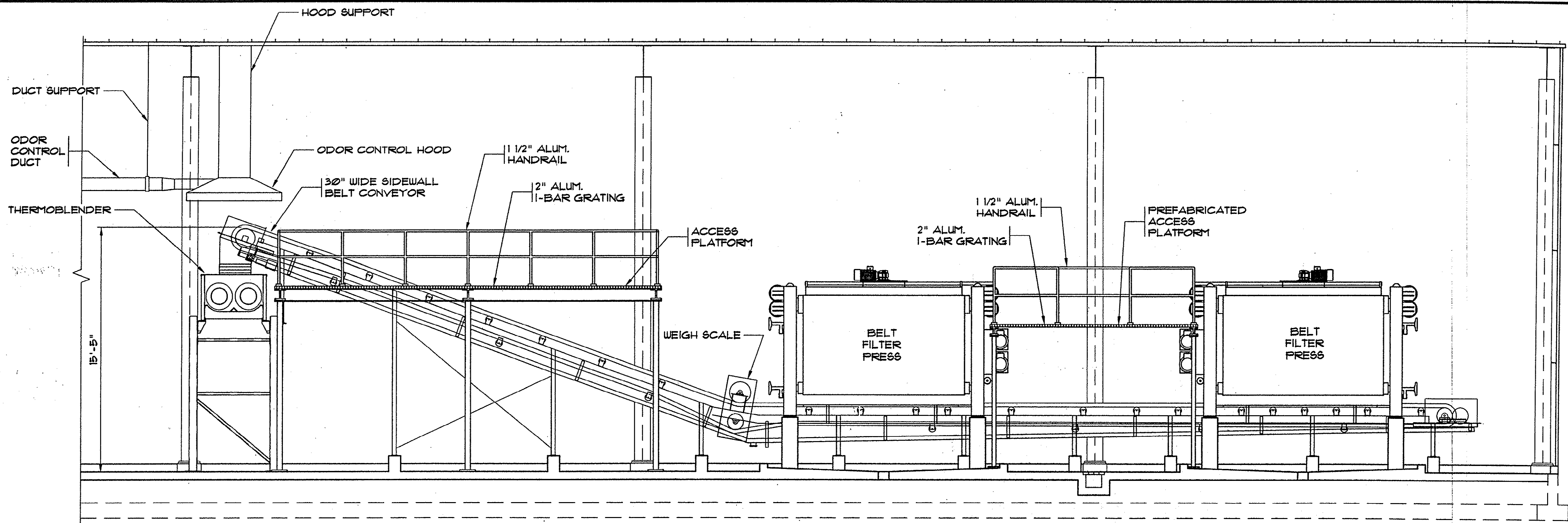
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EN-24



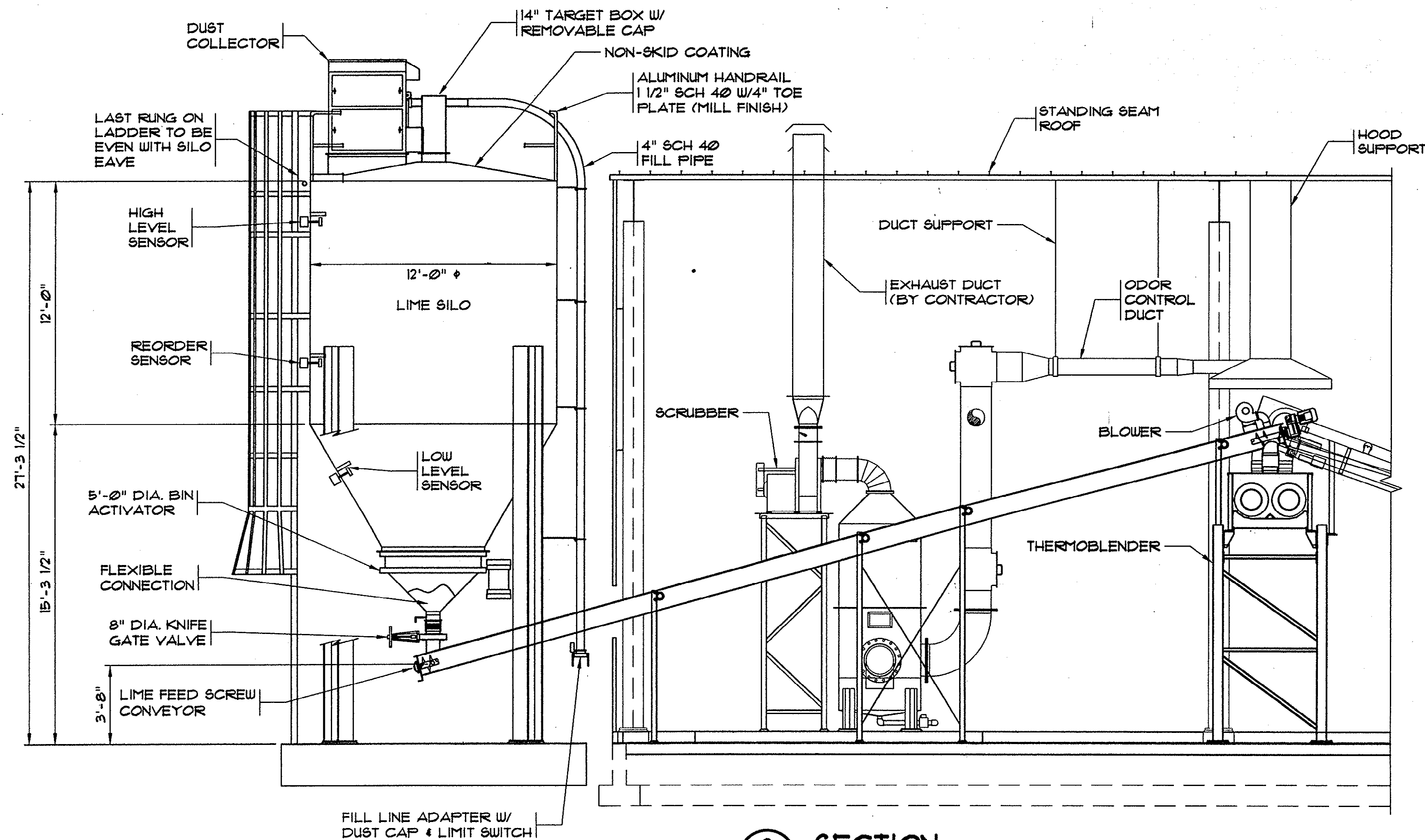
**SLUDGE TREATMENT BUILDING
& STORAGE UPPER PLAN**
SCALE: 1/8"=1'-0"

Plan Reviewer for Horry County
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SECTION 1
SCALE: 1/4" = 1'-0"



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

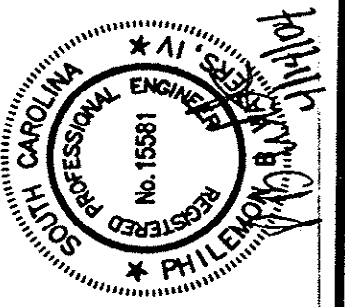
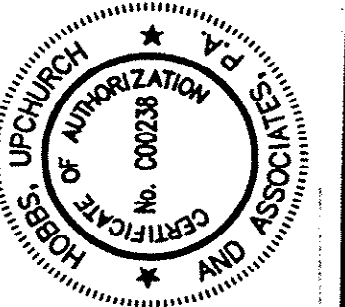
NOTES:

1. ALL ODOR CONTROL DUCT WORK SHALL BE FRP DUCT.
2. CONTRACTOR SHALL SUBMIT DUCTING PLAN AND DETAILS TO GSWA FOR APPROVAL PRIOR TO FABRICATION OR INSTALLATION OF DUCT.
3. COORDINATE SUPPORT FOR DUCTWORK AND EXHAUST HOODS WITH PREFABRICATED BUILDING MANUFACTURER.

Plan Reviewer for Horry County

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SLUDGE TREATMENT
BUILDING SECTIONS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

DATE:	SEPT. 2003
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	JWM
SCALE:	AS SHOWN

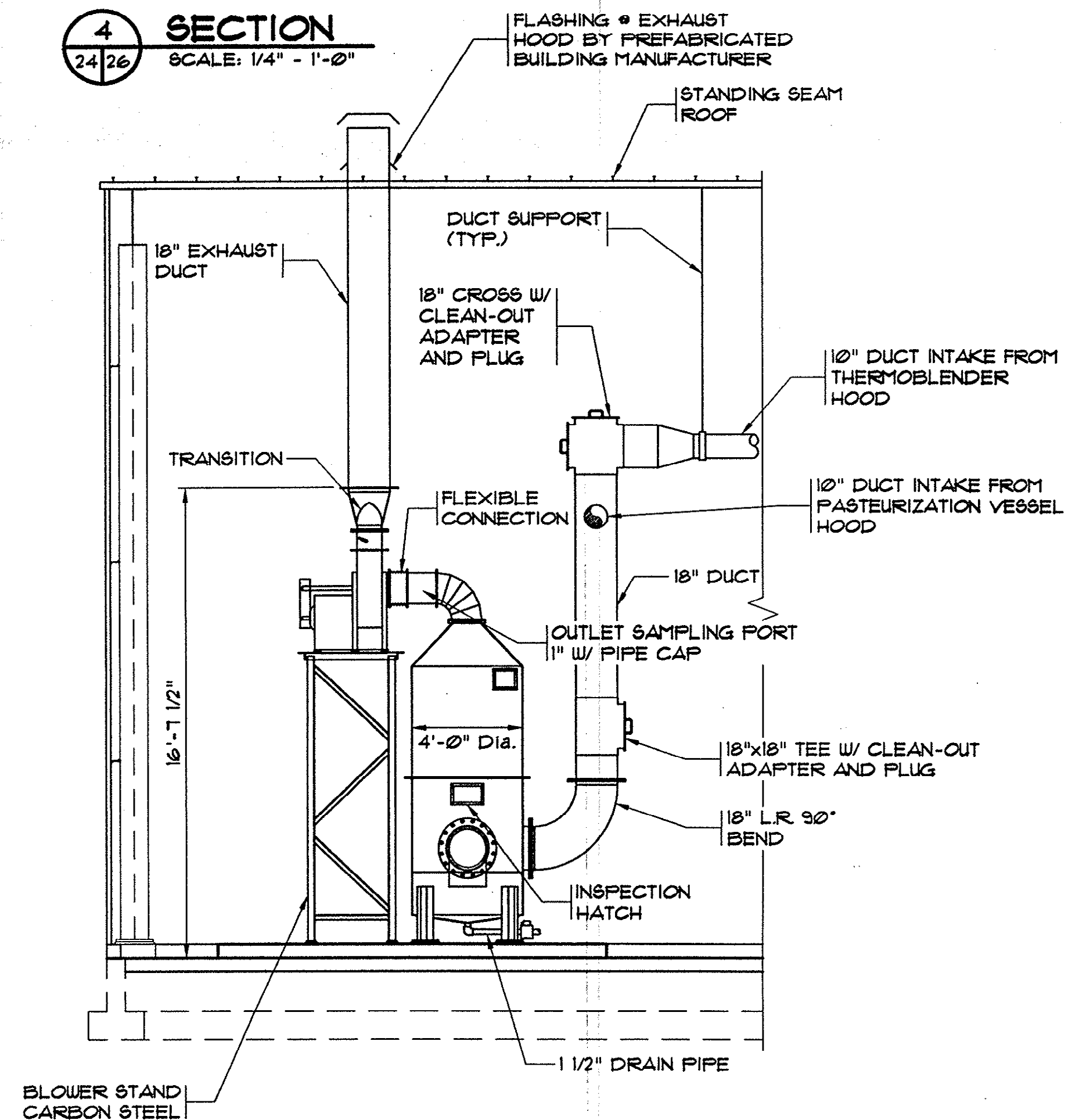
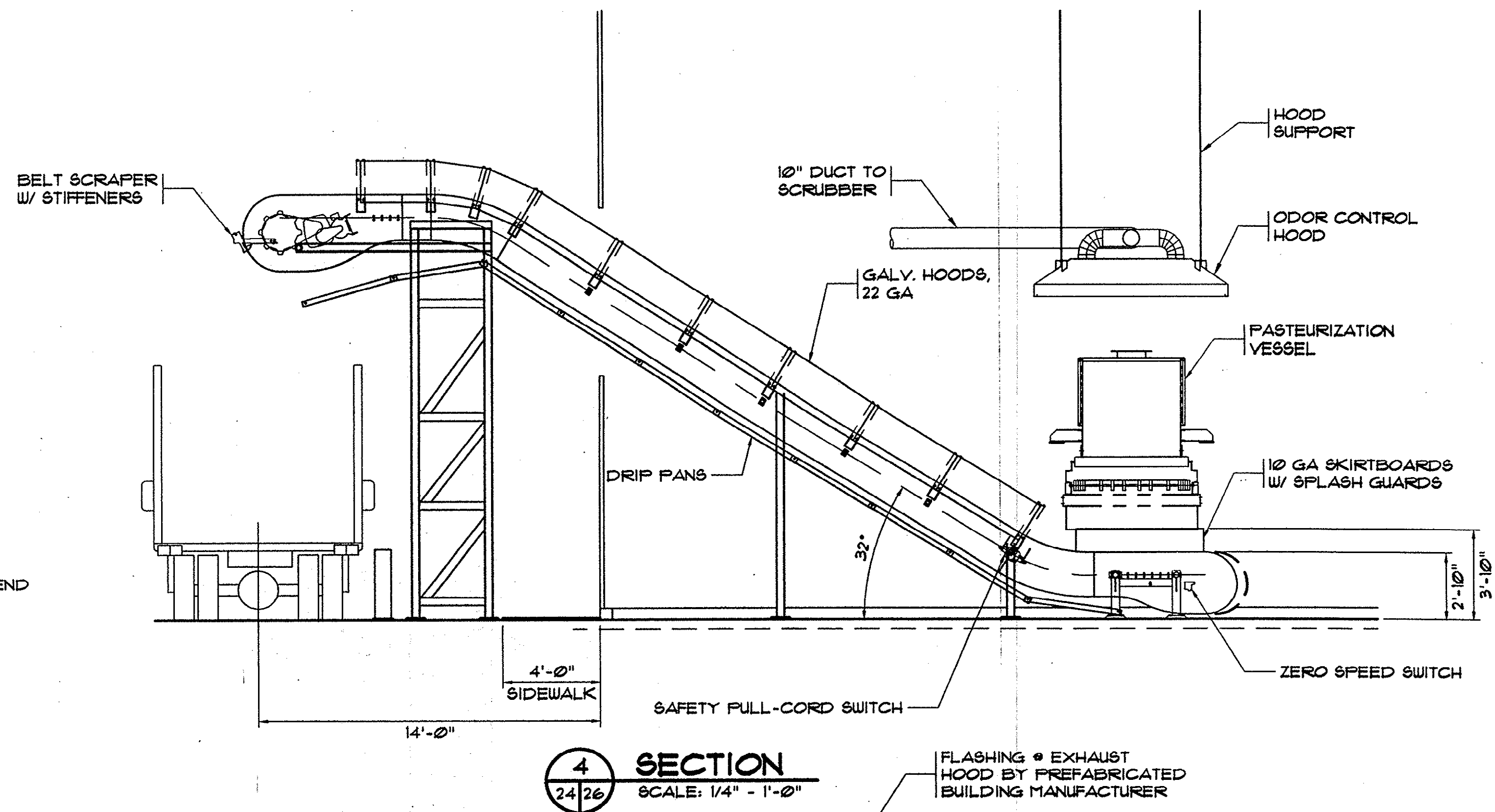
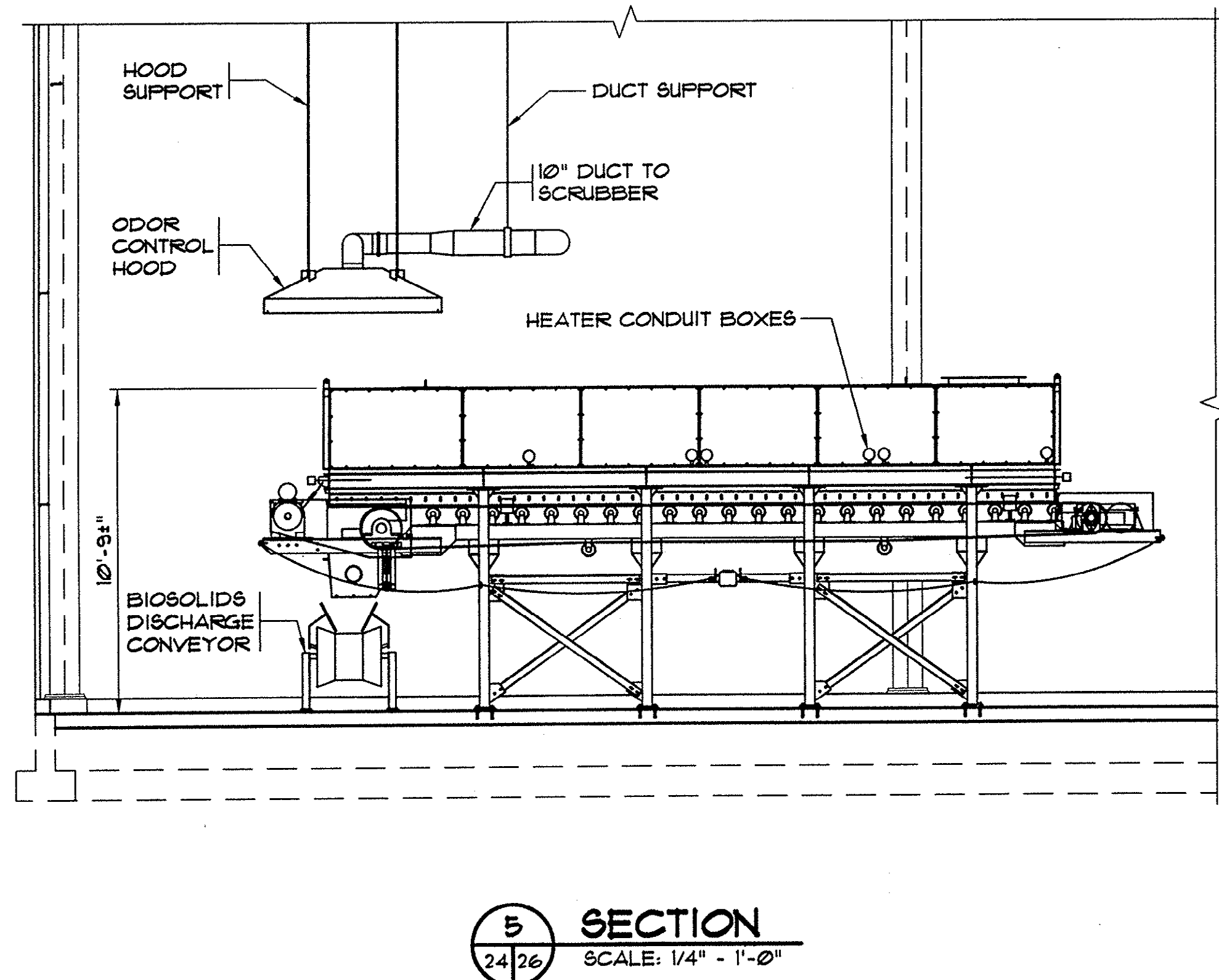
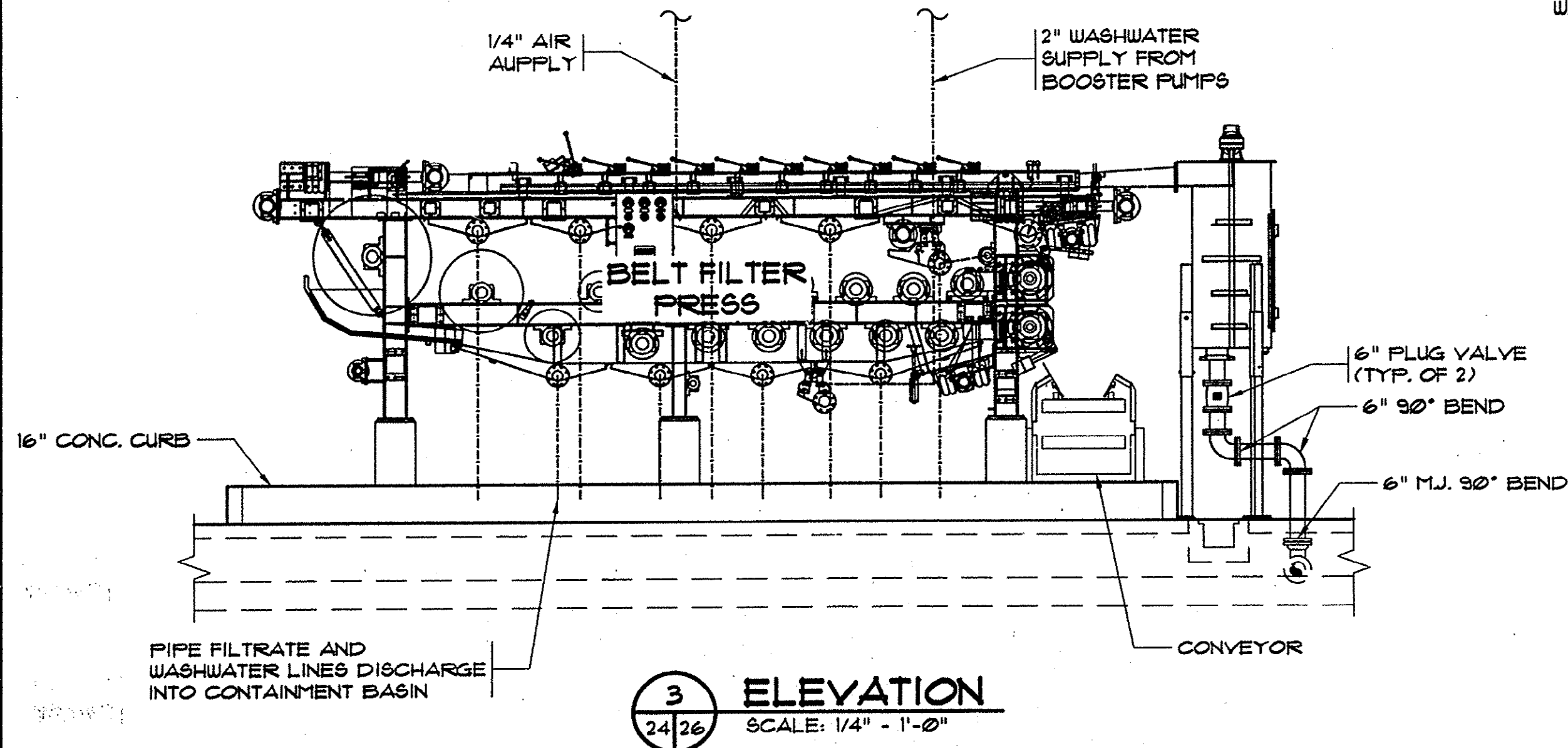
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EN-25

OF

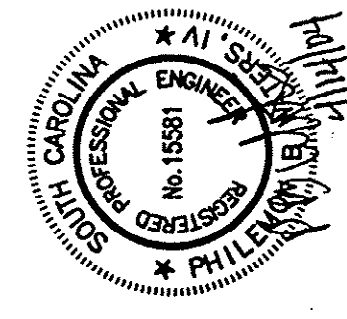
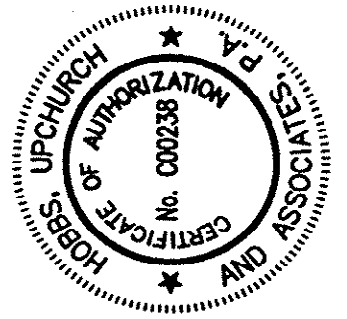
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DATE: 10/09/03 TIME: 14:45
EDITED BY: AMILLER
EN-26 Sludge.dwg

NOTES:

1. ALL ODOR CONTROL DUCT WORK SHALL BE FRP DUCT.
2. CONTRACTOR SHALL SUBMIT DUCTING PLAN AND DETAILS TO GSUSA FOR APPROVAL PRIOR TO FABRICATION OR INSTALLATION OF DUCT.
3. COORDINATE SUPPORT FOR DUCTWORK AND EXHAUST HOODS WITH PREFABRICATED BUILDING MANUFACTURER.



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SYM.	DESCRIPTION	DATE	BY



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SLUDGE TREATMENT
BUILDING SECTIONS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

DATE:	SEPT. 2003
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	PBW
SCALE:	AS SHOWN

SHEET NO.

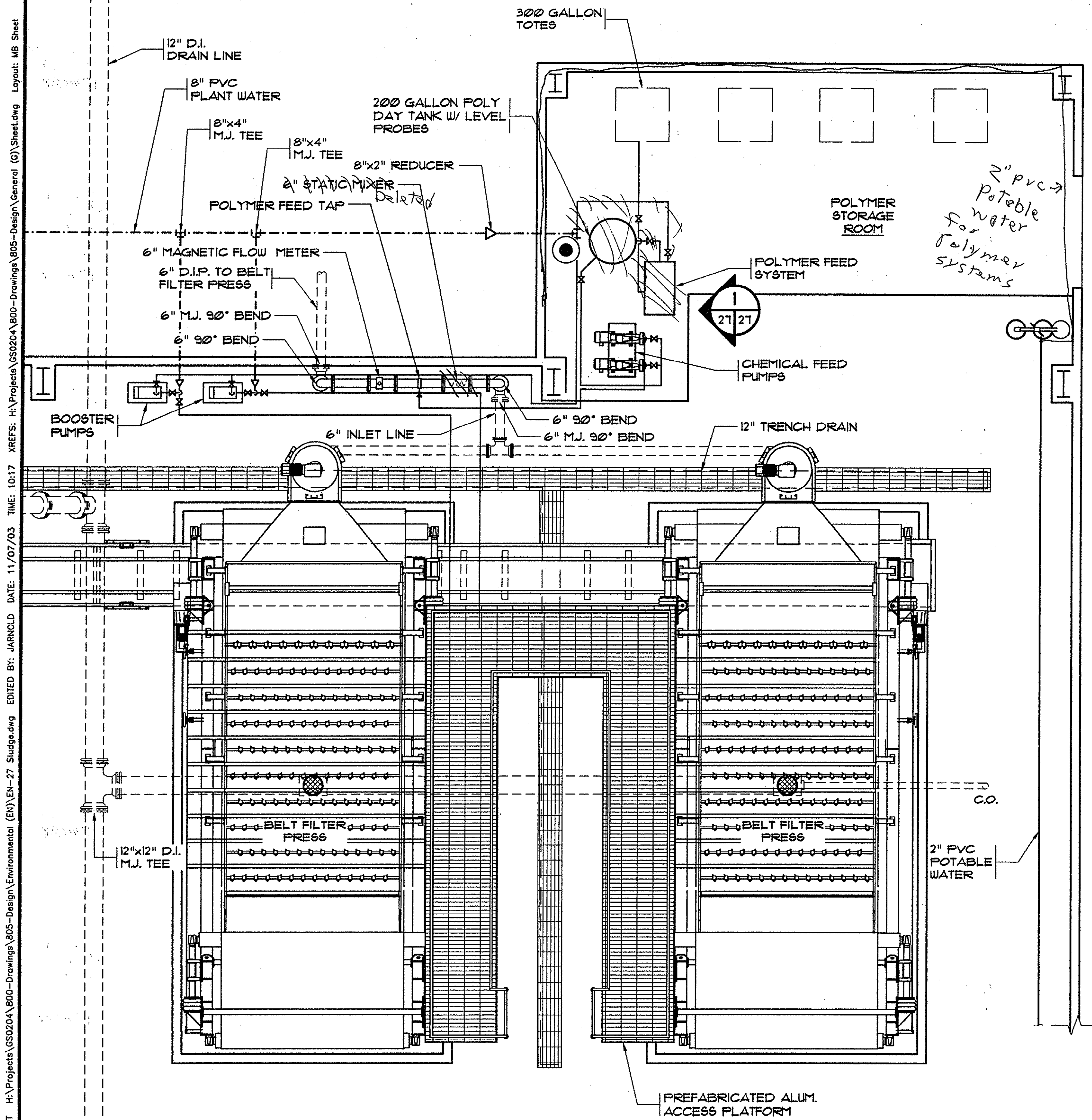
EN-26

Plan Reviewer for Horry County

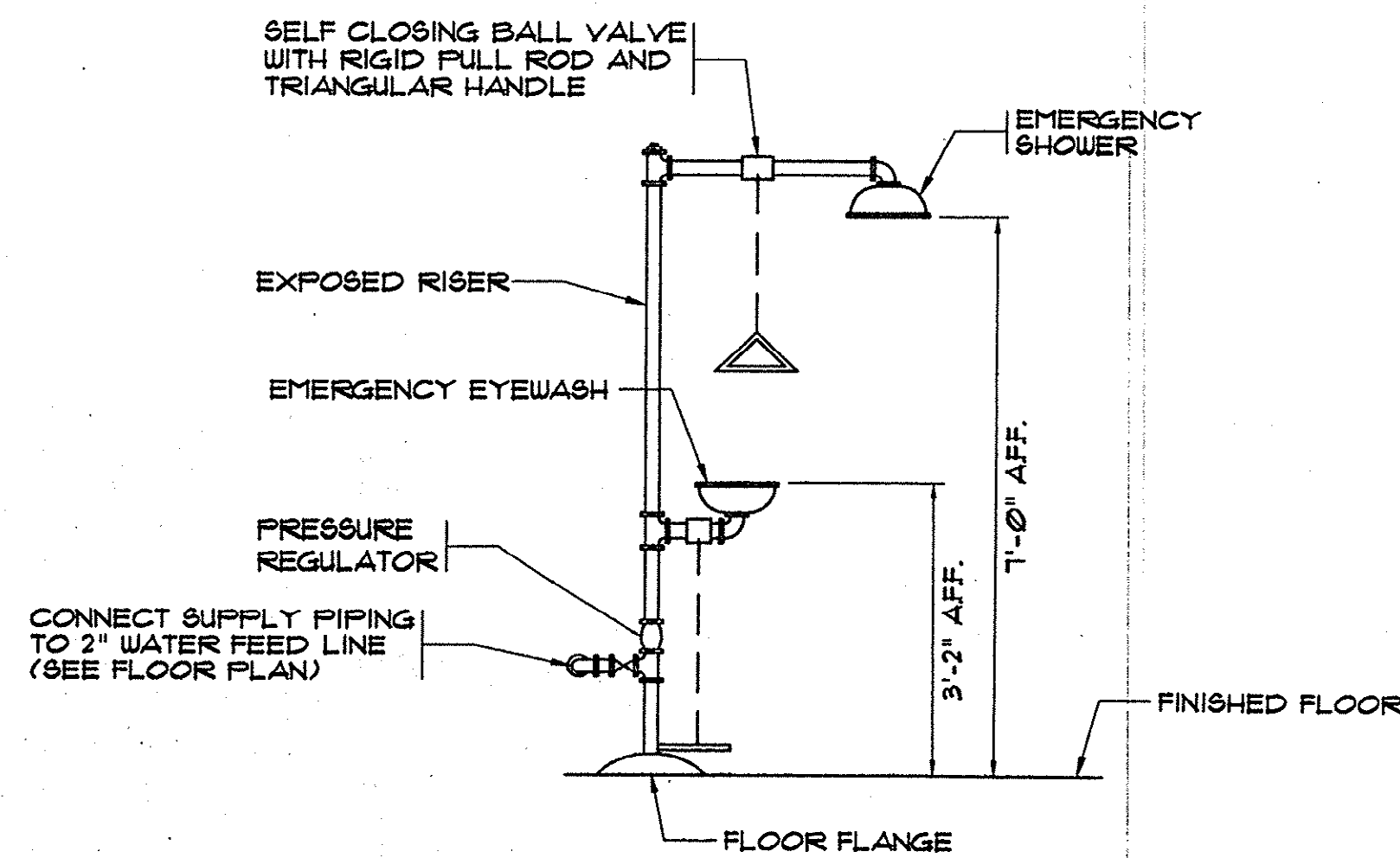
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UPDATES: 10/09/03 ROUTED: 03/06/04

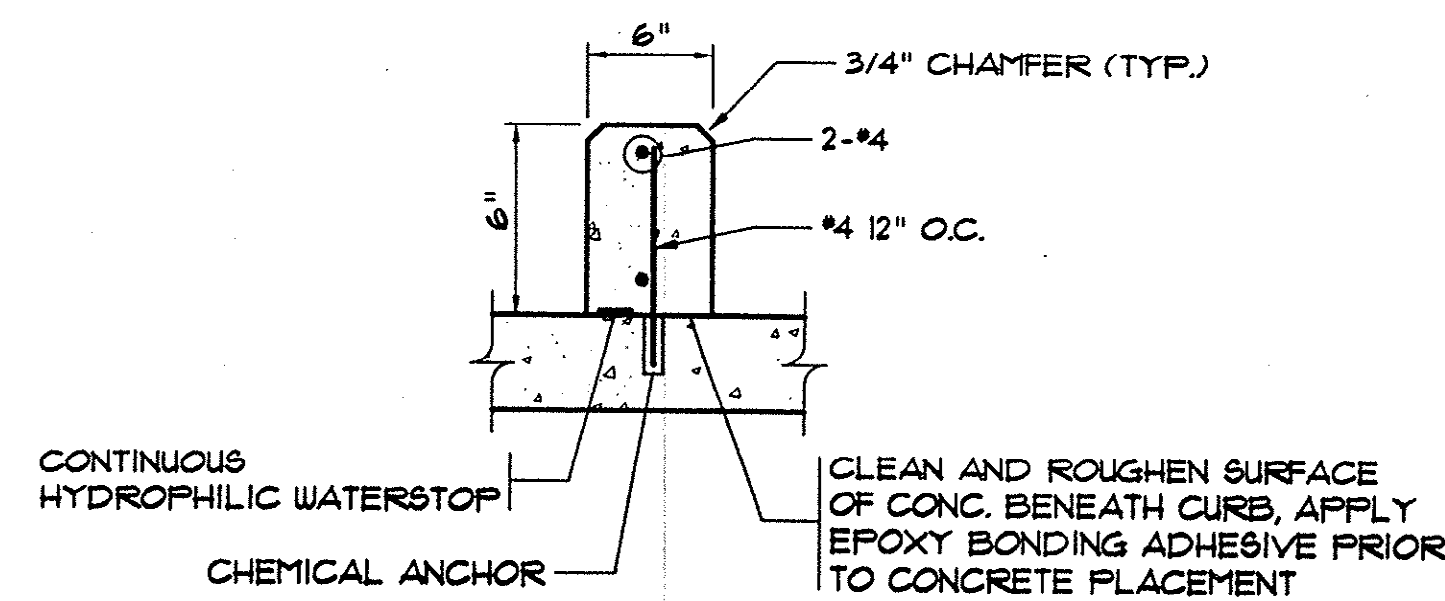
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1 POLYMER FEED LAYOUT
23 27 SCALE: 1/4" = 1'-0"



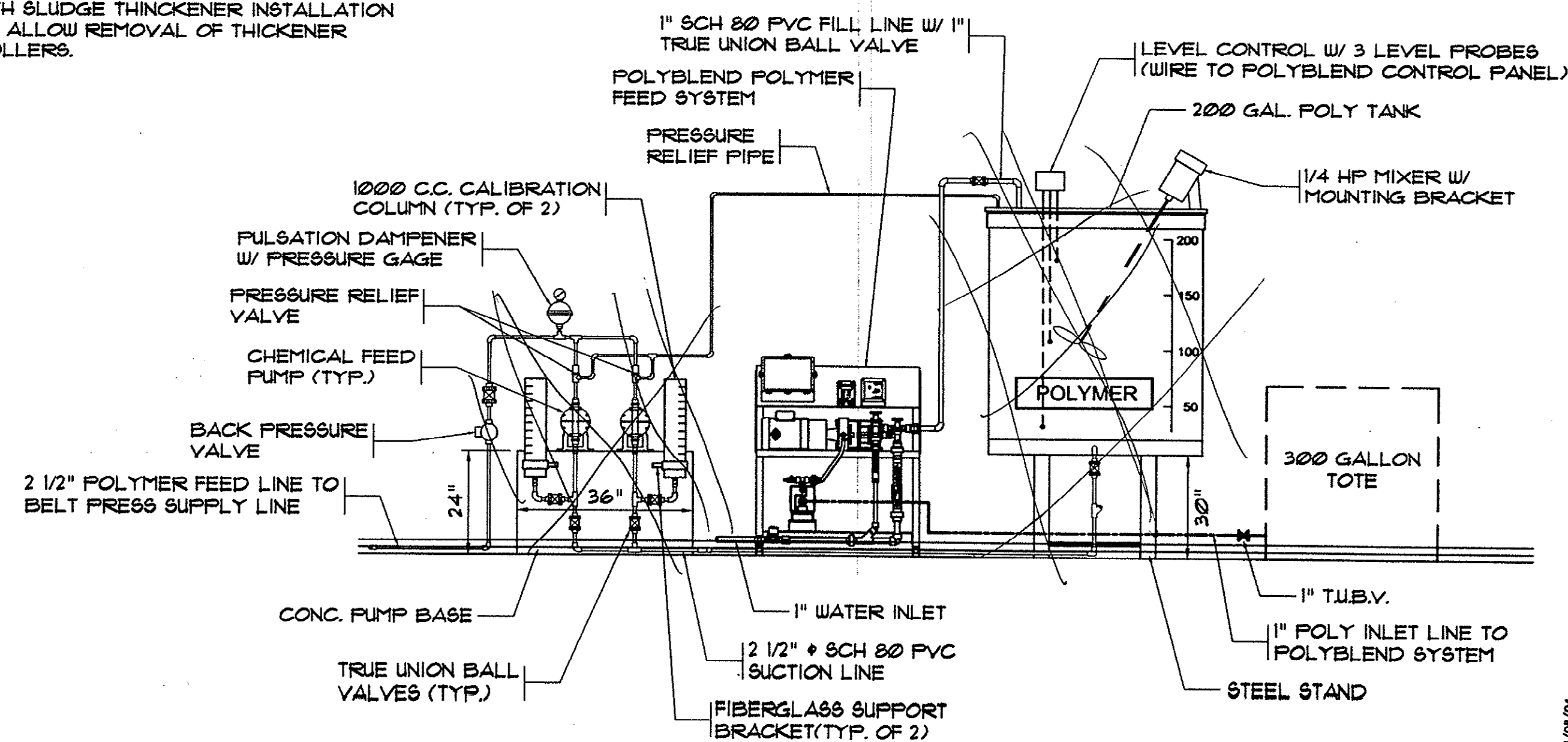
SAFETY SHOWER AND EYEWASH DETAIL
N.T.S.



CONCRETE CONTAINMENT CURB
DETAIL FOR POLYMER FEED
N.T.S.

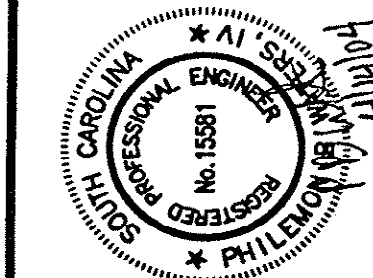
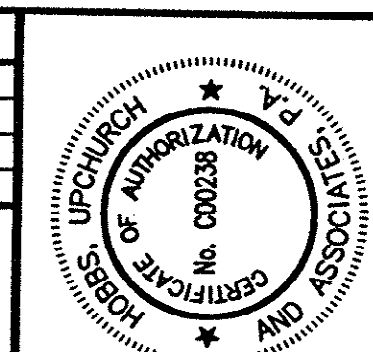
NOTES:

- 200 GALLON POLY TANK SHALL BE MOUNTED ON A METAL STAND. TANK SHALL BE GRADUATED W/ MARKINGS EMBOSSED IN TANK. CHEMICAL NAME SHALL BE PAINTED AND APPLIED TO TANK.
- CONTRACTOR SHALL SECURE ALL VALVES & EQUIPMENT USING FIBERGLASS UNI-STRUT.
- CONTRACTOR SHALL COORDINATE DESIGN OF PREFABRICATED PLATFORM WITH SLUDGE THICKENER INSTALLATION TO ALLOW REMOVAL OF THICKENER ROLLERS.

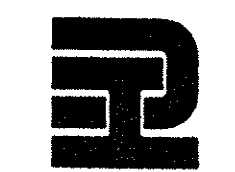


1 POLYMER FEED SCHEMATIC
21 27 N.T.S.

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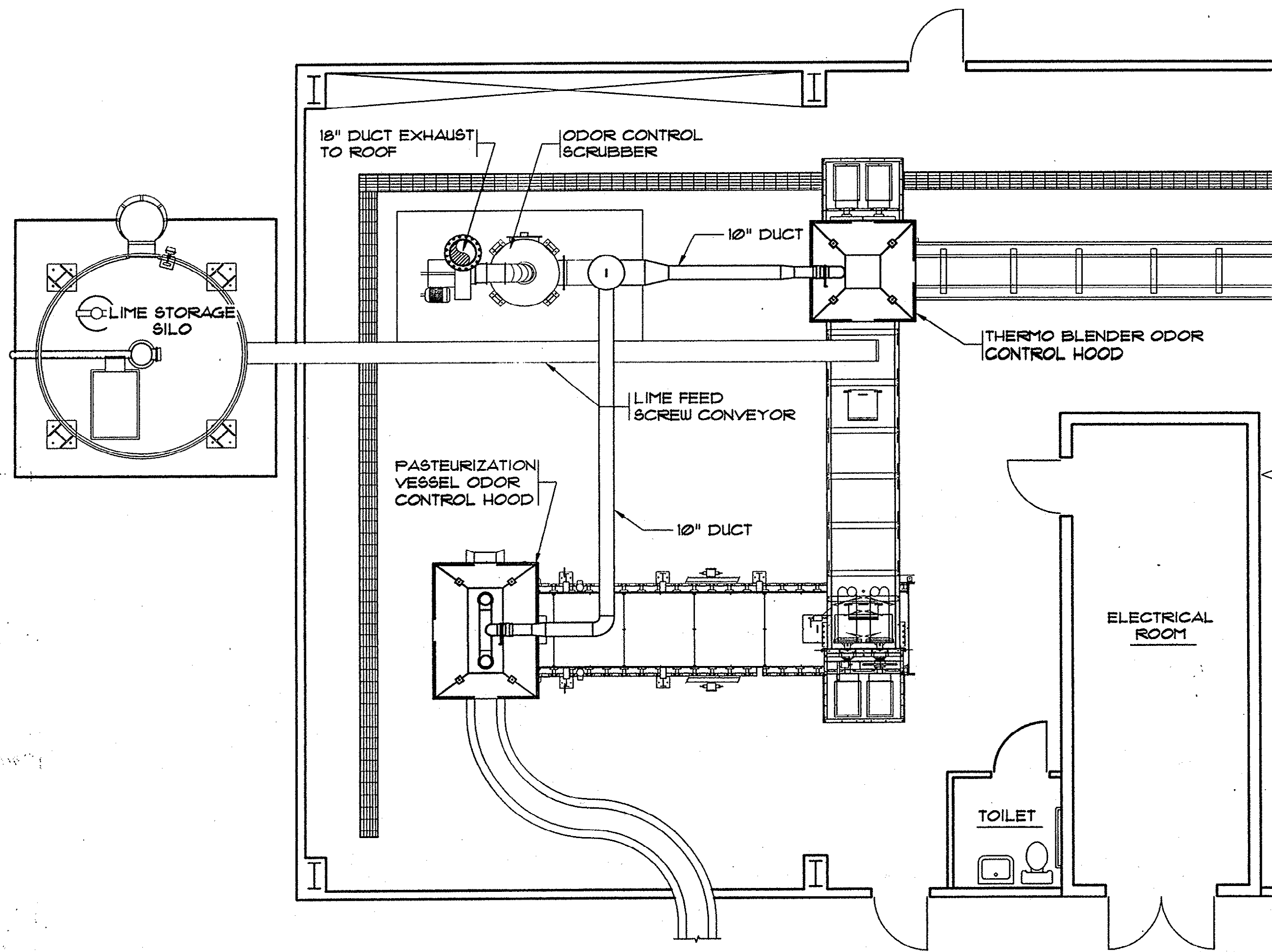
SLUDGE STABILIZATION/
PASTEURIZATION
BUILDING & SLUDGE
STORAGE
DETAILS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

DATE: SEPT. 2003
DESIGNED: PBW
DRAWN: ALG
CHECKED: PBW
SCALE: AS SHOWN
SHEET NO.

EN-27

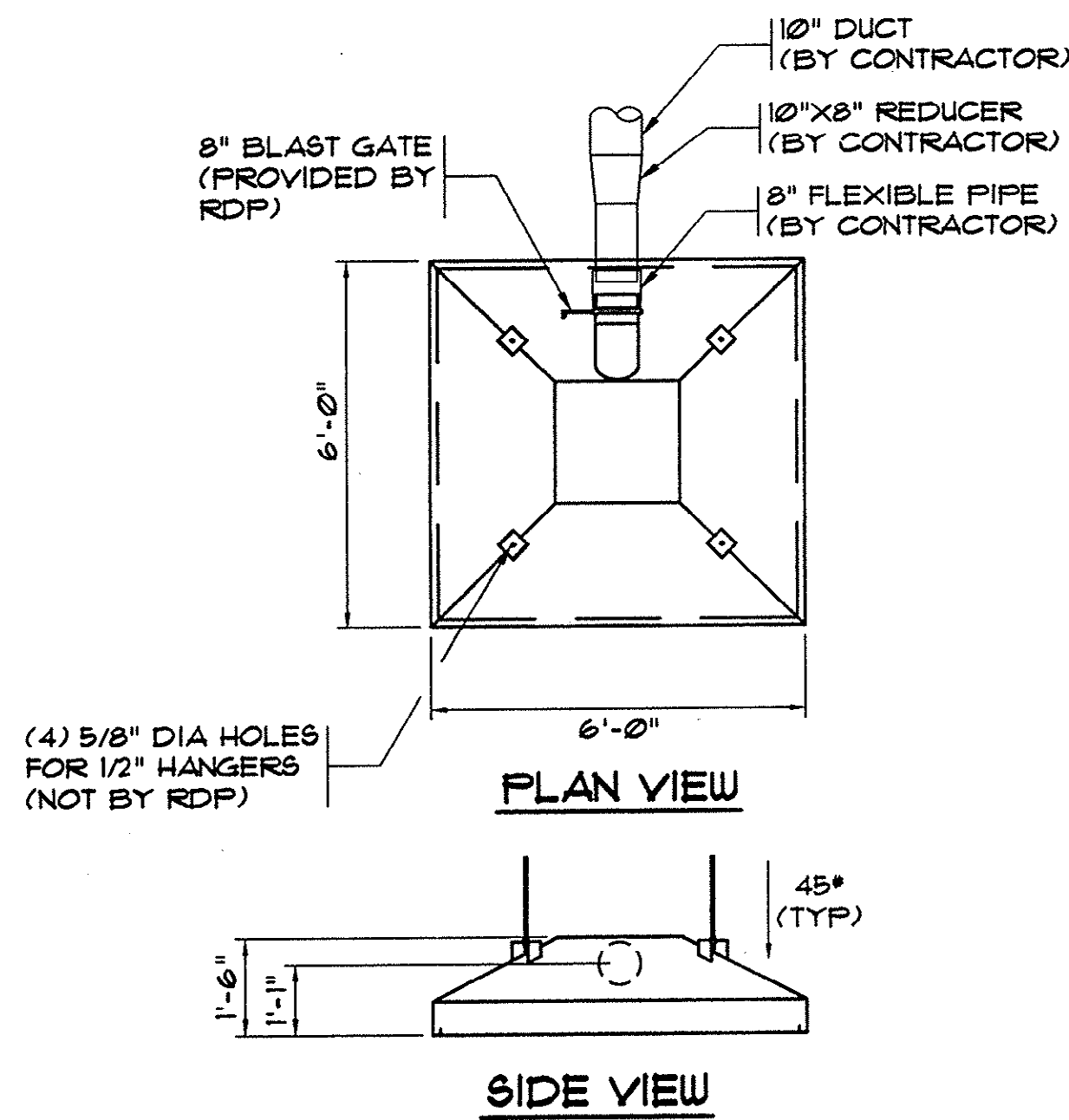
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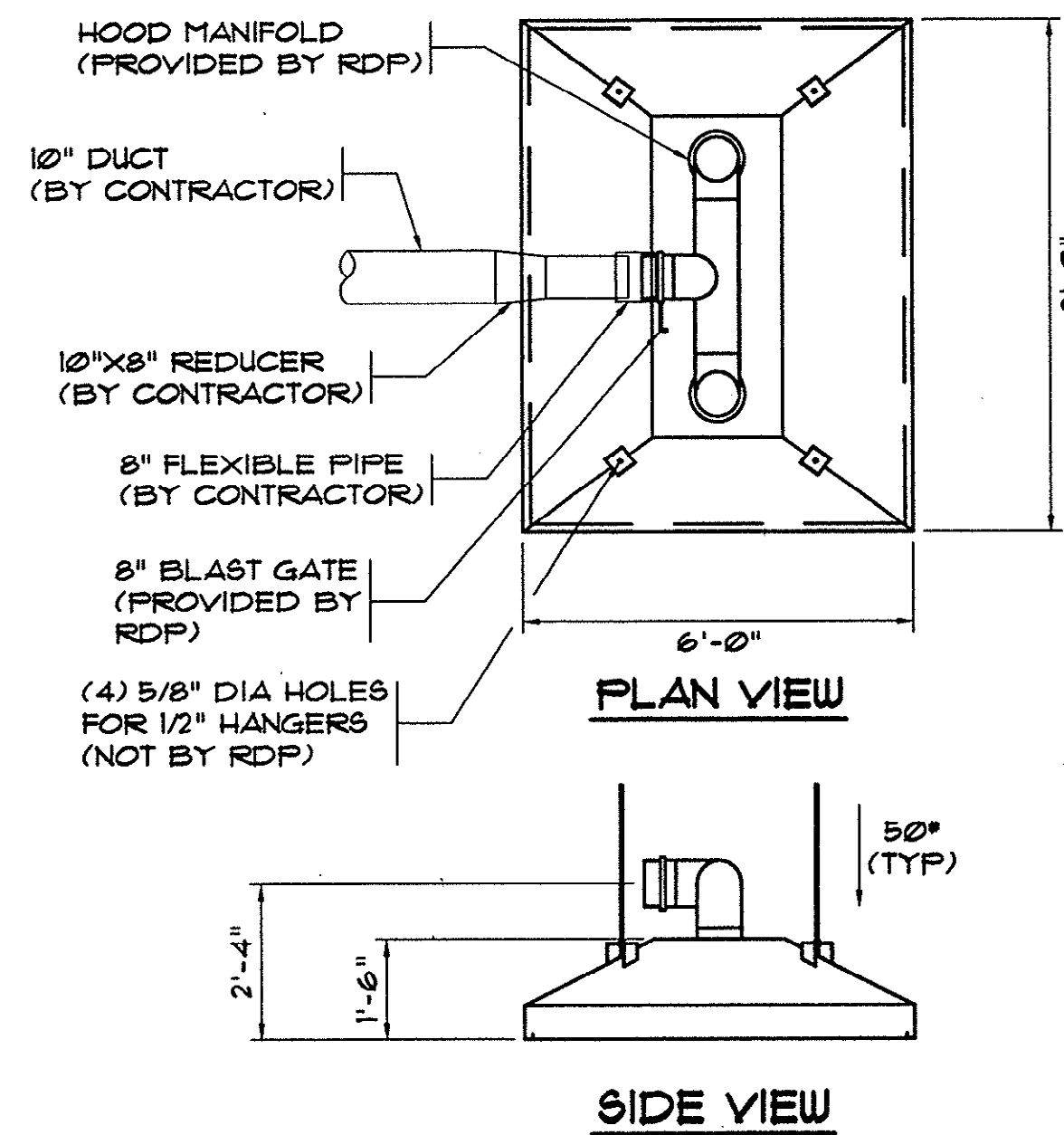
SLUDGE TREATMENT BUILDING &
ODOR CONTROL DUCTING PLAN
SCALE: 3/16"=1'-0"

NOTES:

1. ALL ODOR CONTROL DUCT WORK SHALL BE FRP DUCT.
2. CONTRACTOR SHALL SUBMIT DUCTING PLAN AND DETAILS TO GSUSA FOR APPROVAL PRIOR TO FABRICATION OR INSTALLATION OF DUCT.
3. COORDINATE SUPPORT FOR DUCTWORK AND EXHAUST HOODS WITH PREFABRICATED BUILDING MANUFACTURER.

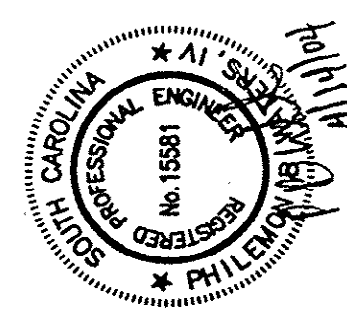
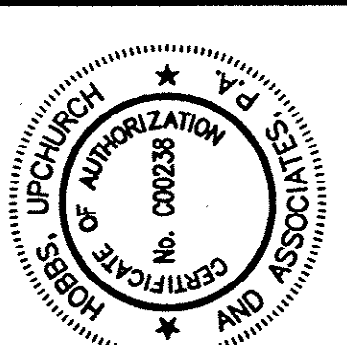


THERMO BLEND ODOR
CONTROL HOOD PLAN
SCALE: 3/8"=1'-0"

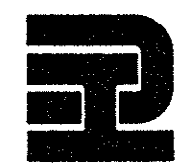


PASTEURIZATION VESSEL
ODOR CONTROL HOOD PLAN
SCALE: 3/8"=1'-0"

REVISIONS			
SYM.	DESCRIPTION	DATE	BY



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Consulting Engineers
Myrtle Beach, South Carolina 29577
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SLUDGE TREATMENT
BUILDING DUCTING PLAN

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

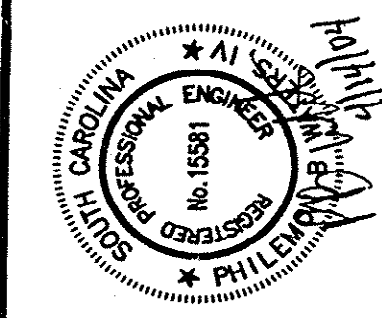
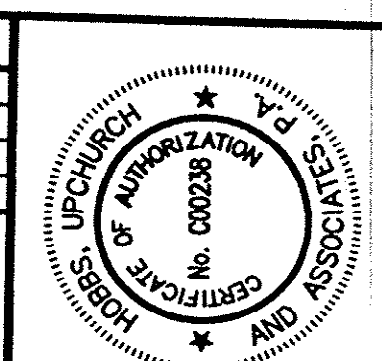
DATE:	SEPT. 2003
DESIGNED:	PBW
DRAWN:	-
CHECKED:	JWM
SCALE:	AS SHOWN

Plan Reviewer for Horry County

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SHEET NO.
EN-28
OF _____

REVISIONS			
SYM.	DESCRIPTION	DATE	BY



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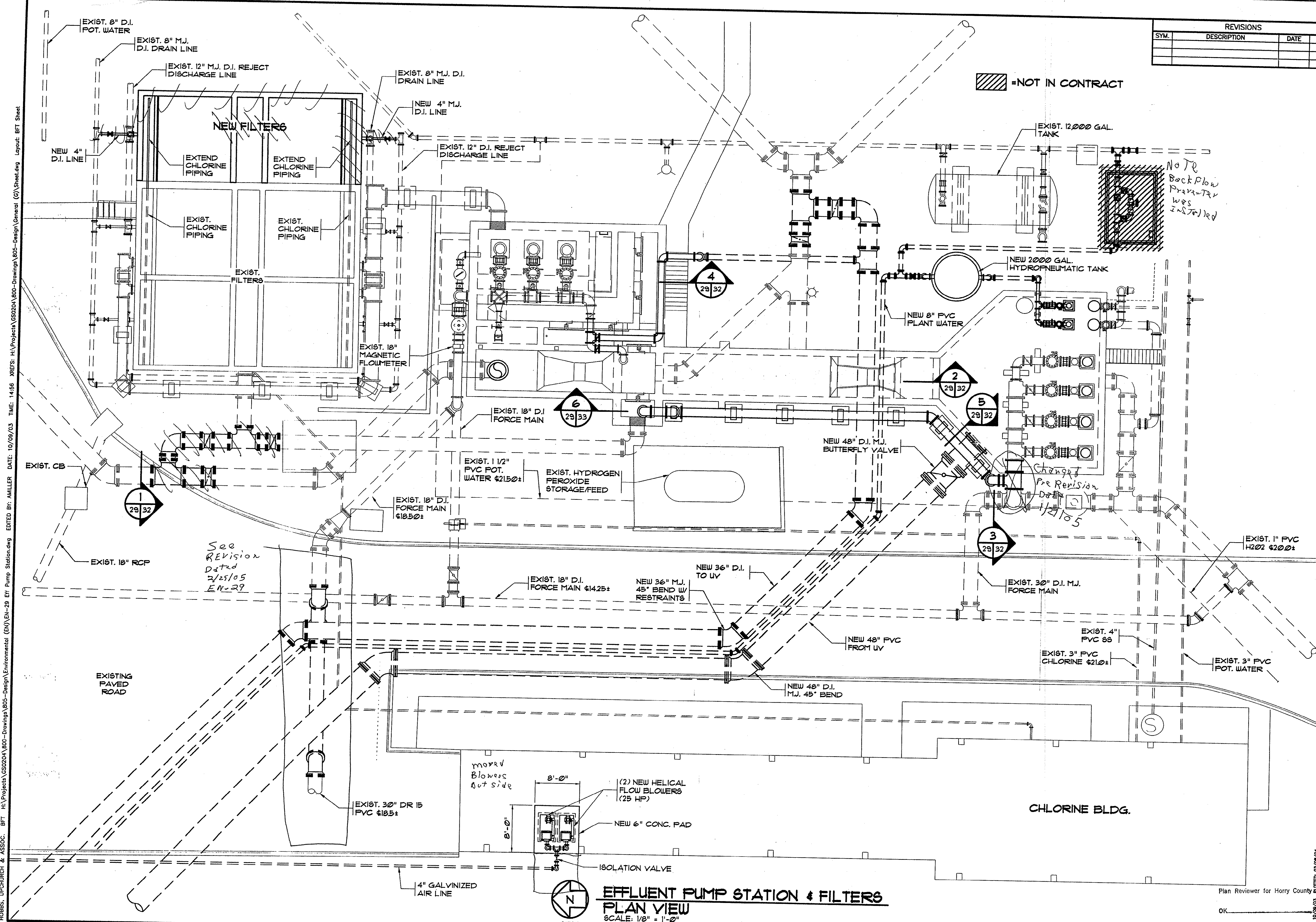


**EFFLUENT PUMP STATION
& FILTERS PLAN VIEW**

**SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY**

DATE:	SEPT. 2003
DESIGNED:	PBW
DRAWN:	ARM
CHECKED:	PBW
SCALE:	AS SHOWN
SHEET NO.	EN-29

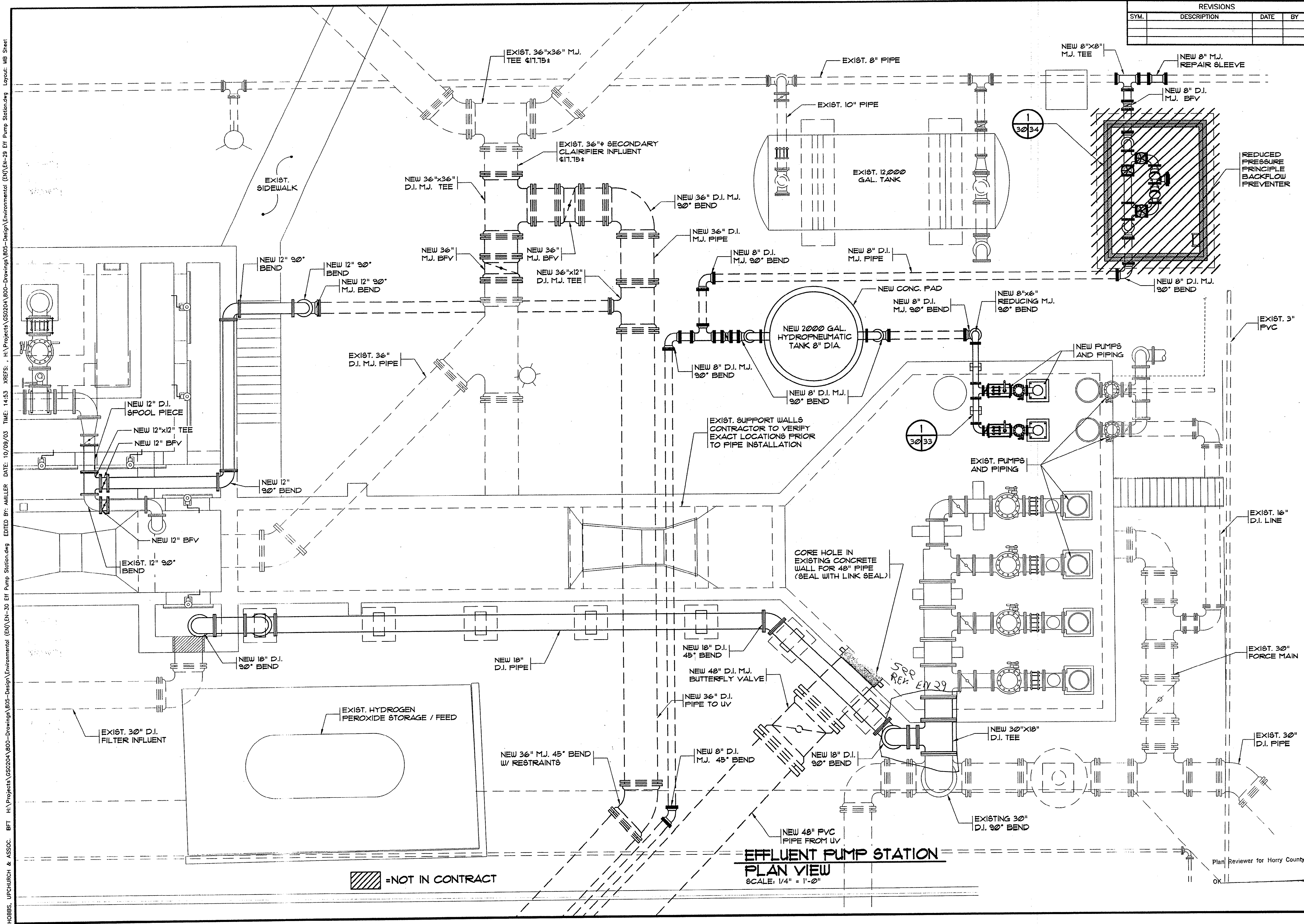
Plan Reviewer for Horry County
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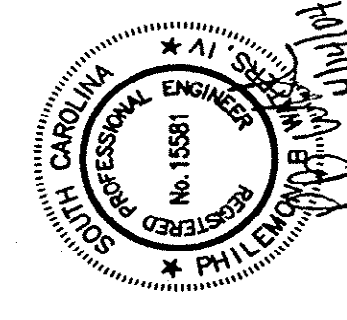
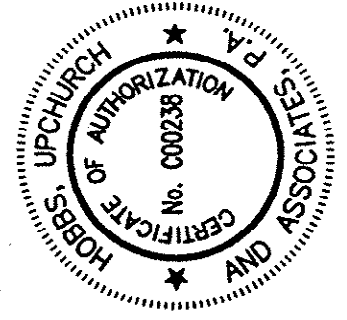
**EFFLUENT PUMP STATION & FILTERS
PLAN VIEW**
 SCALE: 1/8" = 1'-0"

HOBBS, UPCHURCH & ASSOC. BFT H:\Projects\GS0204\B00-Drawings\B05-Design\General (G)\Sheet.dwg Layout: BFT Sheet
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 EDITED BY: MILLER
 DATE: 10/09/03 TIME: 14:56 XREFS: H:\Projects\GS0204\B00-Drawings\B05-Design\General (G)\Sheet.dwg
 LAYOUT: BFT Sheet

HOBBS, UPCHURCH & ASSOC. B.T. I:\Projects\G50204\800-Drawings\B05-Design\Environmental (EN)\EN-30 Eff Pump Station.dwg EDITED BY: AMILLER DATE: 10/09/03 TIME: 14:53 XREFS: I:\Projects\G50204\800-Drawings\B05-Design\Environmental (EN)\EN-29 Eff Pump Station.dwg Layout: M8 Sheet



REVISIONS			
SYM.	DESCRIPTION	DATE	BY



Hobbs, Upchurch & Associates, P.A.
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Myrtle Beach, South Carolina 29577
PHONE (843) 684-1910 FAX (843) 684-1745

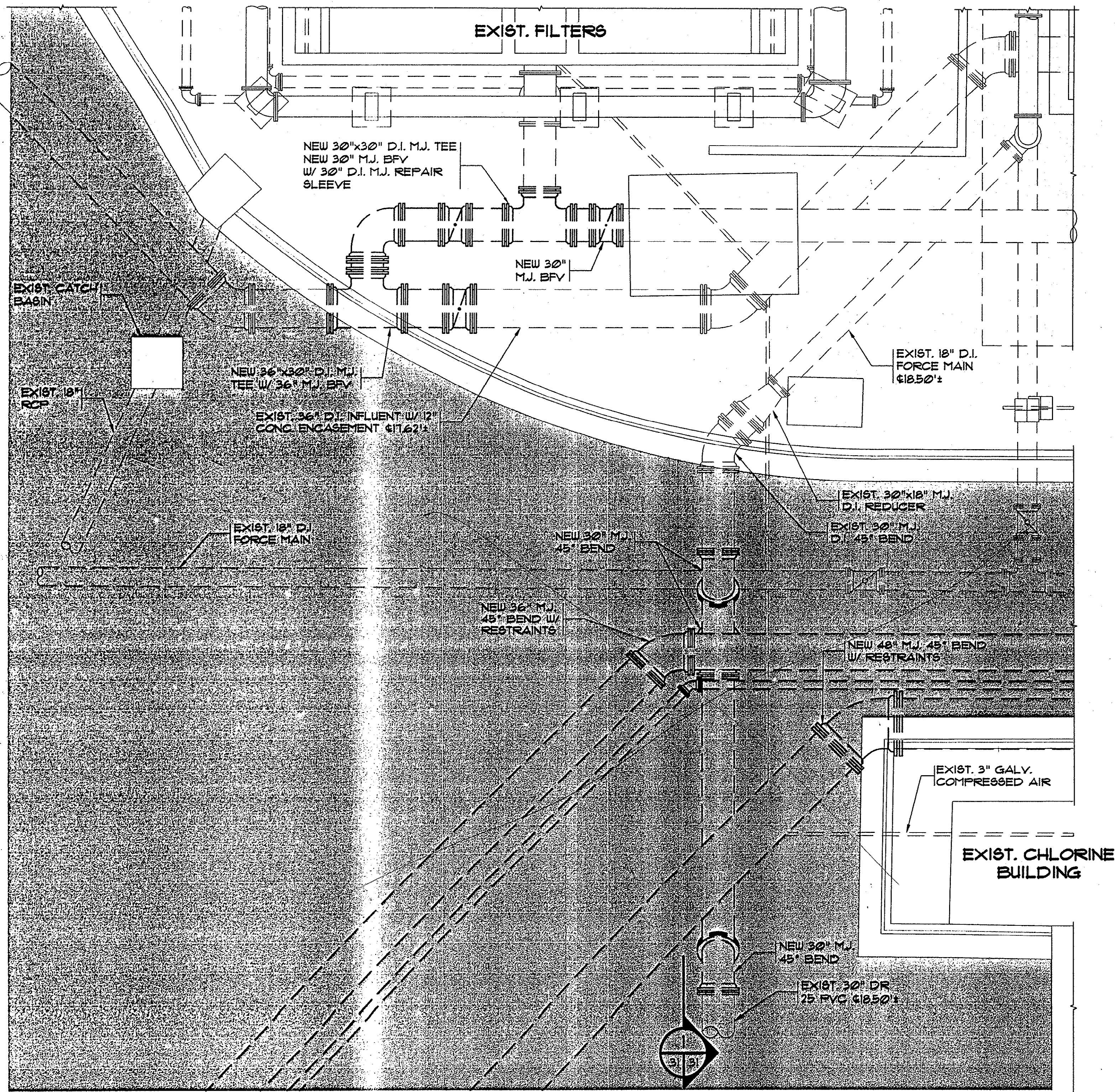
**EFFLUENT PUMP STATION
PLAN VIEW**

**SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY**

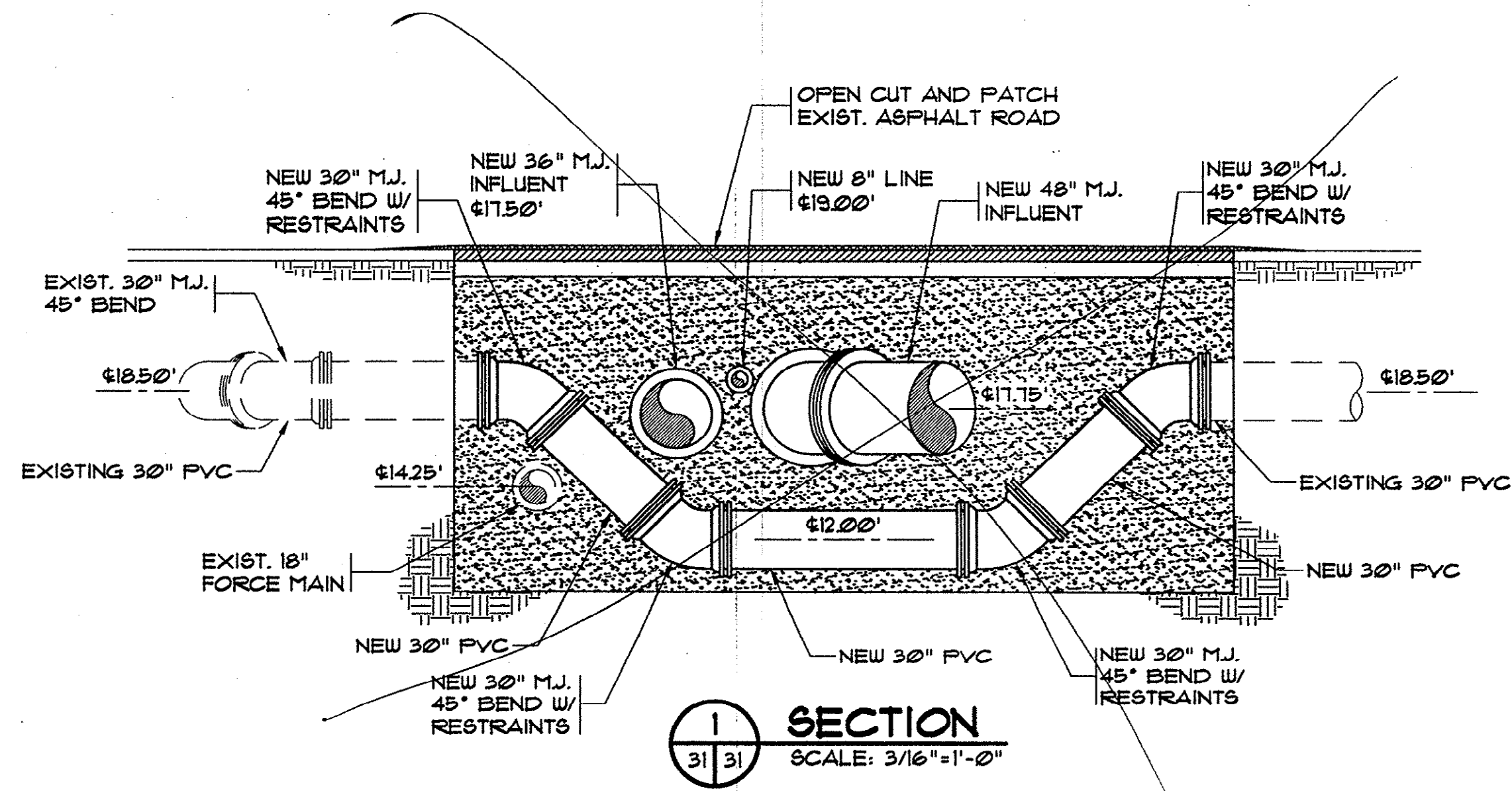
DATE:	SEPT. 2003
DESIGNED:	PBW
DRAWN:	-
CHECKED:	PBW
SCALE:	AS SHOWN
SHEET NO.	EN-30

UPDATED: 11/07/03 PLOTTED: 03/08/04

HOBBS, UPCHURCH & ASSOC. B.T. H:\Projects\GS020A\800-Drawings\805-Design\Environmental (EN)\EN-31 Eff. Pump Station.dwg EDITED BY: ANLLER DATE: 10/09/03 TIME: 14:55 XREFS: H:\Projects\GS020A\800-Drawings\805-Design\Environmental (EN)\EN-29 Eff. Pump Station.dwg Layout: 4B Sheet

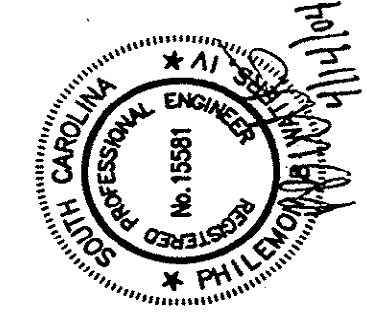
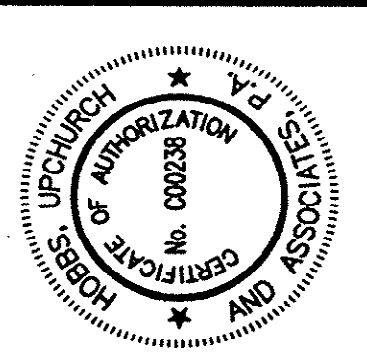


**FILTER AREA
PLAN VIEW**
SCALE: 3/16"=1'-0"

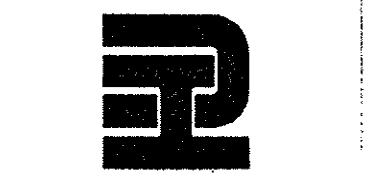


See Rev.
EN-31

REVISIONS			
SYM.	DESCRIPTION	DATE	BY



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Consulting Engineers
Myrtle Beach, South Carolina 29577
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**FILTER AREA
PLAN VIEW**

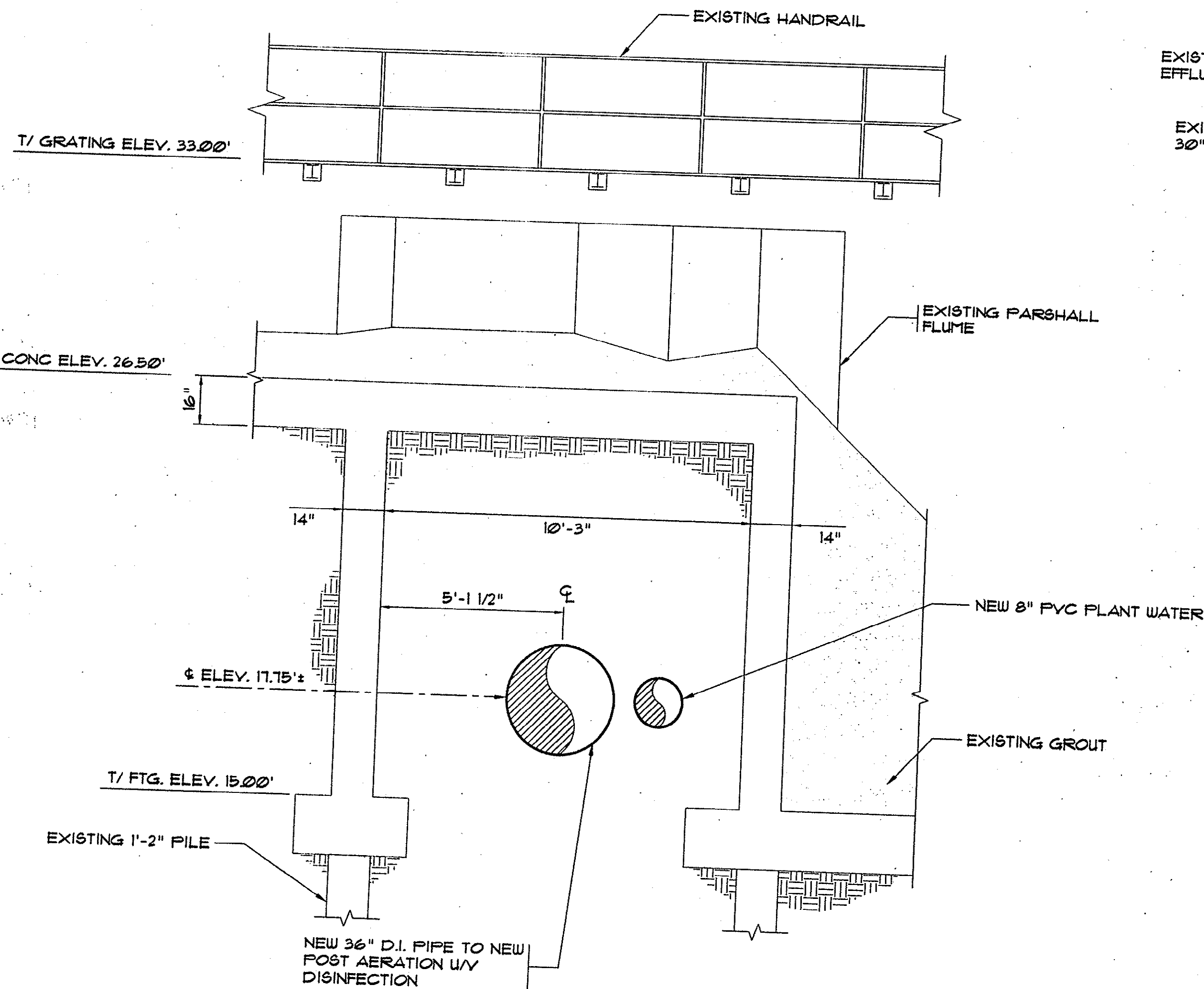
**SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY**

DATE:	SEPT. 2003
DESIGNED:	PBW
DRAWN:	-
CHECKED:	PBW
SCALE:	AS SHOWN
SHEET NO.	EN-31

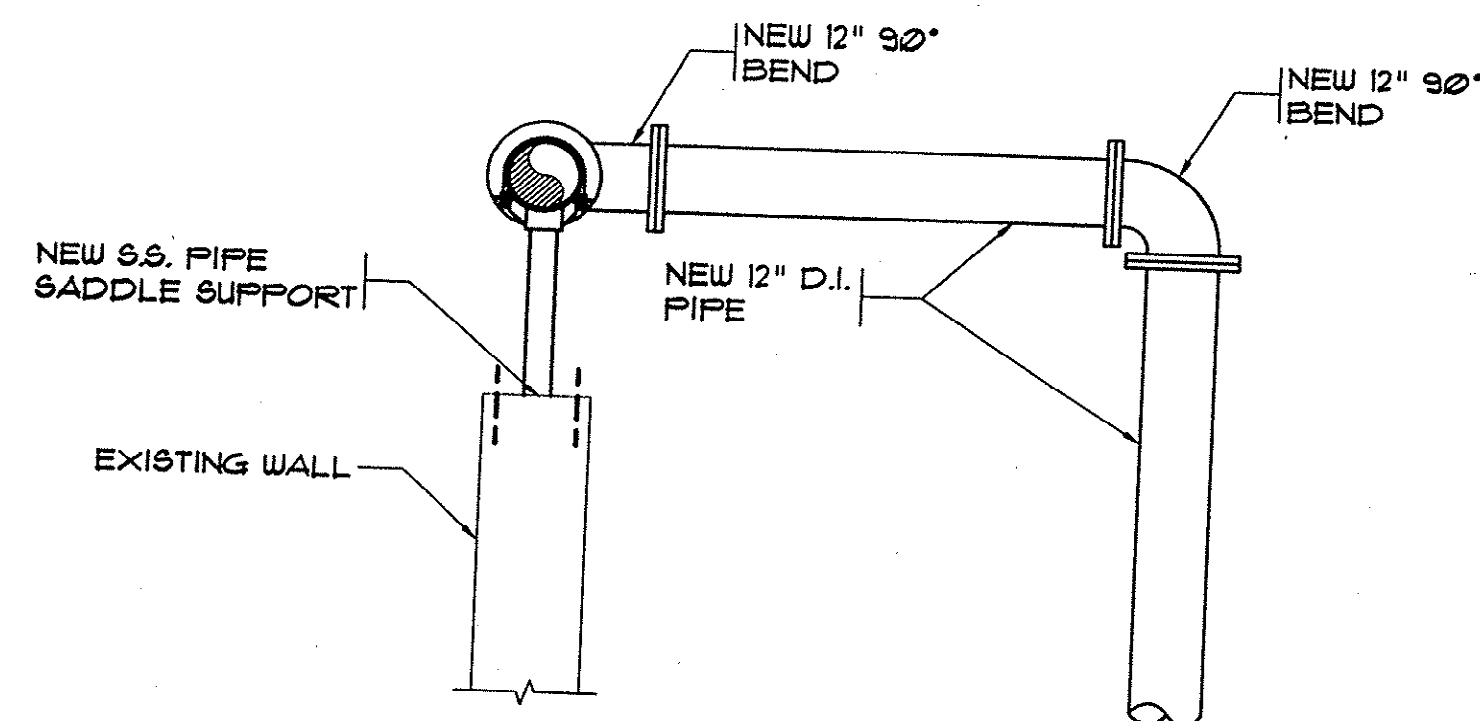
Plan Reviewer for Horry County
OK

UPDATES: 04/07/04 ROUTED: 04/09/04

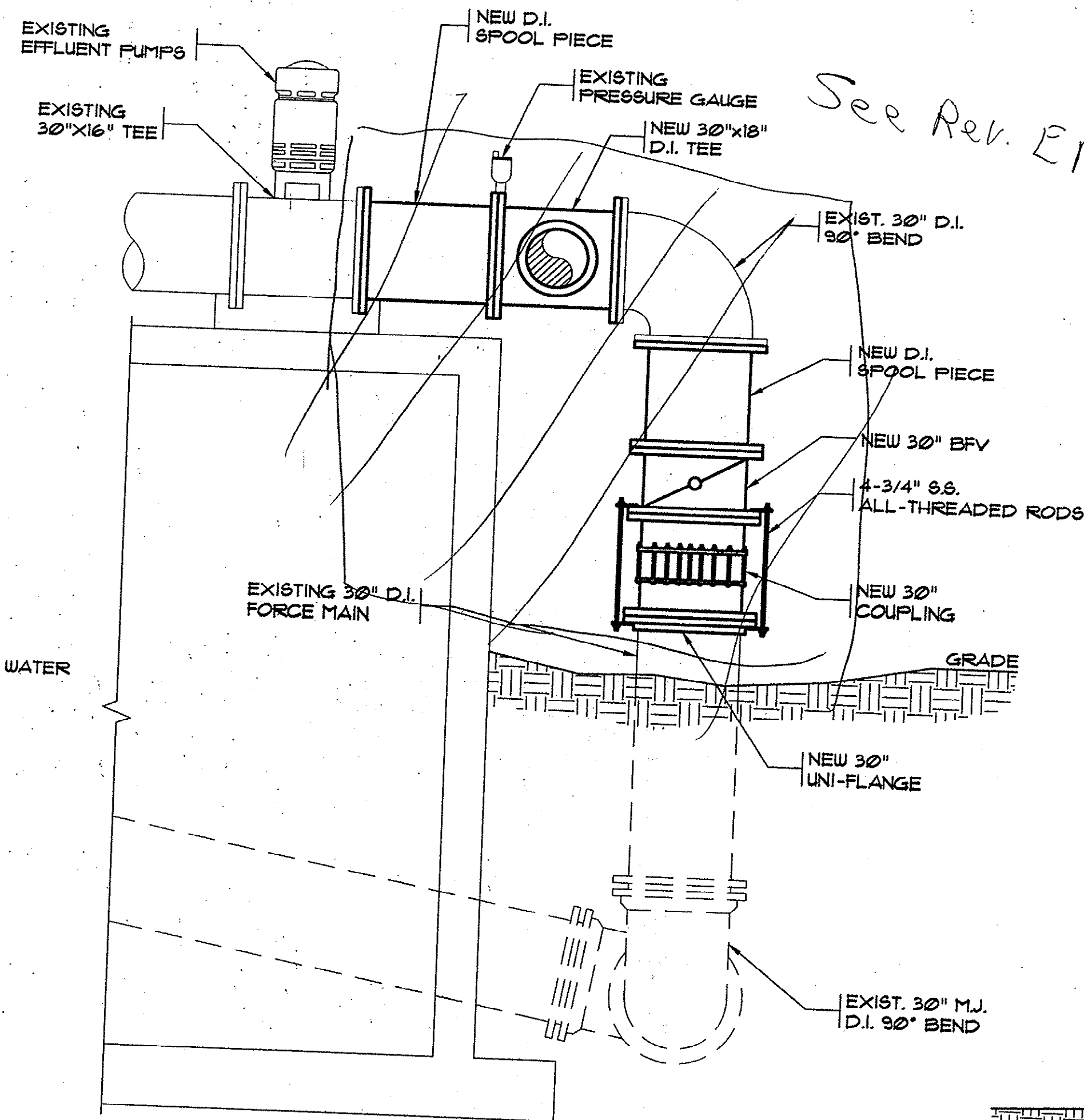
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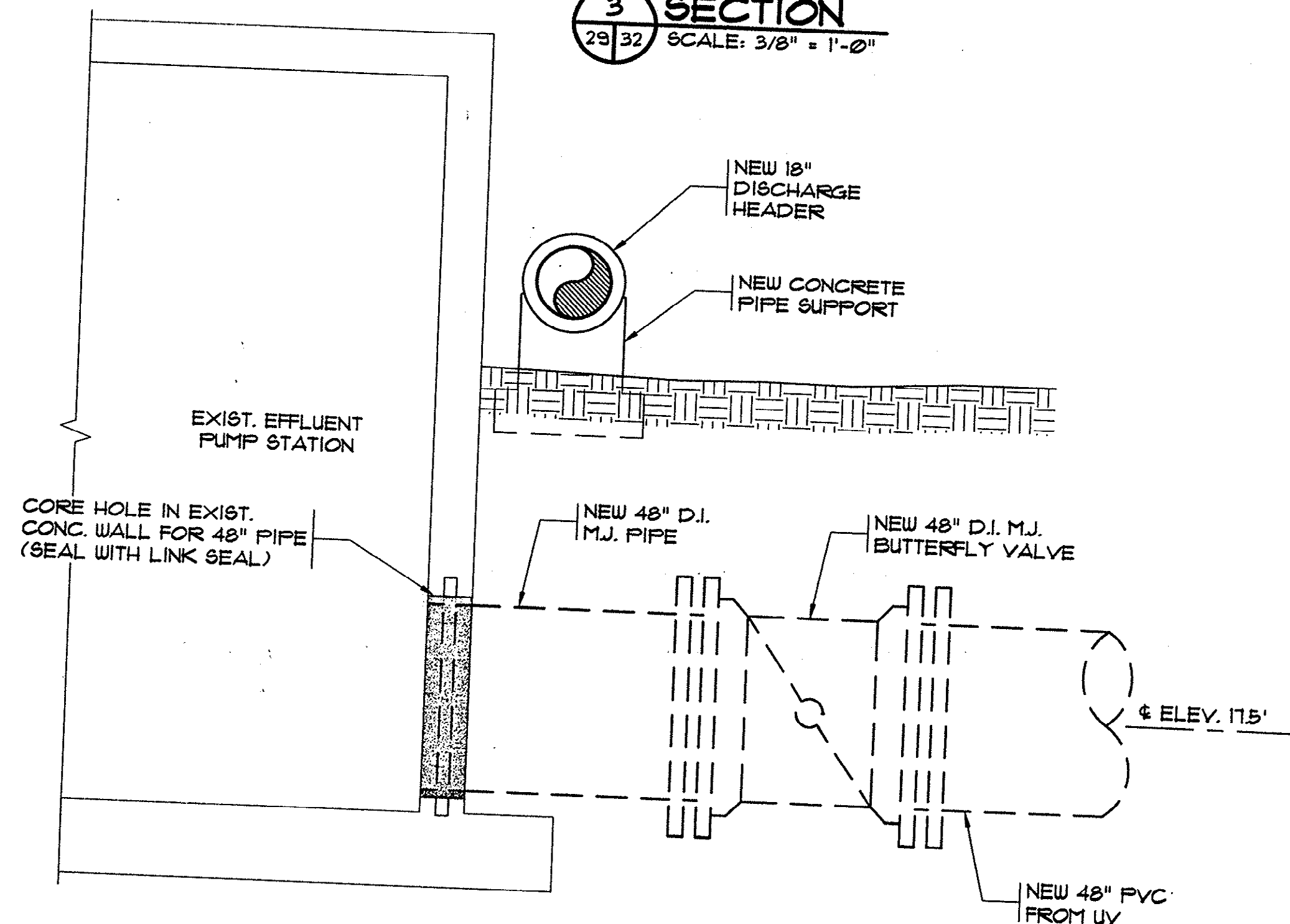
2 SECTION
29/32 SCALE: 3/8" = 1'-0"



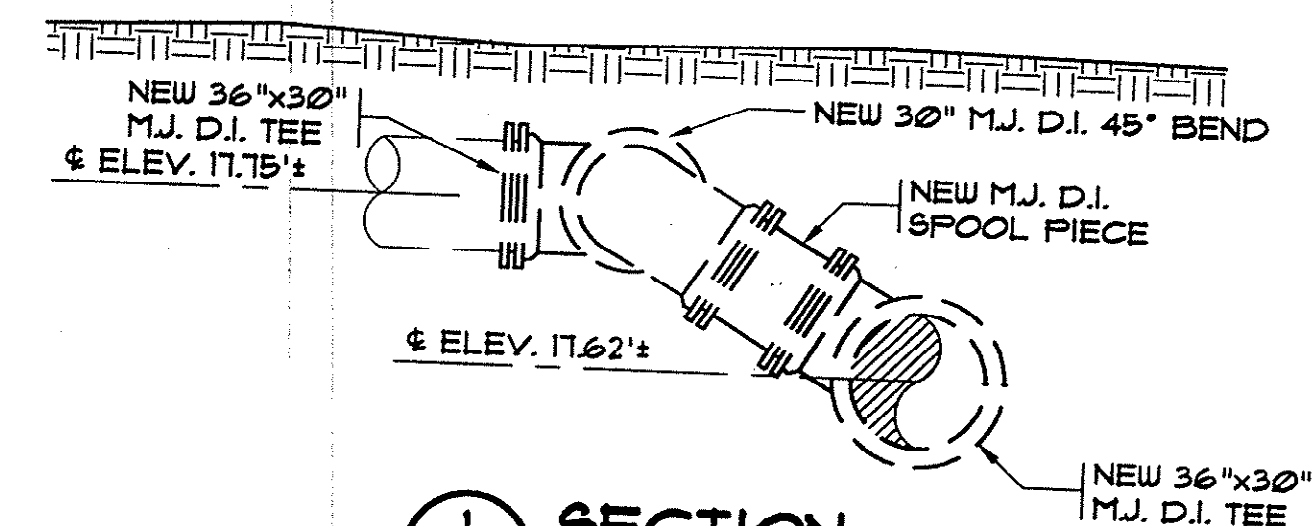
4 SECTION
29/32 SCALE: 3/8" = 1'-0"



3 SECTION
29/32 SCALE: 3/8" = 1'-0"

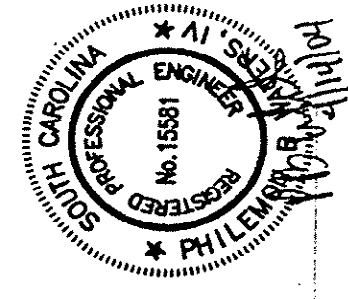


5 SECTION
29/32 SCALE: 3/8" = 1'-0"



1 SECTION
29/32 N.T.S.

REVISIONS			
SYM.	DESCRIPTION	DATE	BY



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EFFLUENT PUMP STATION SECTIONS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

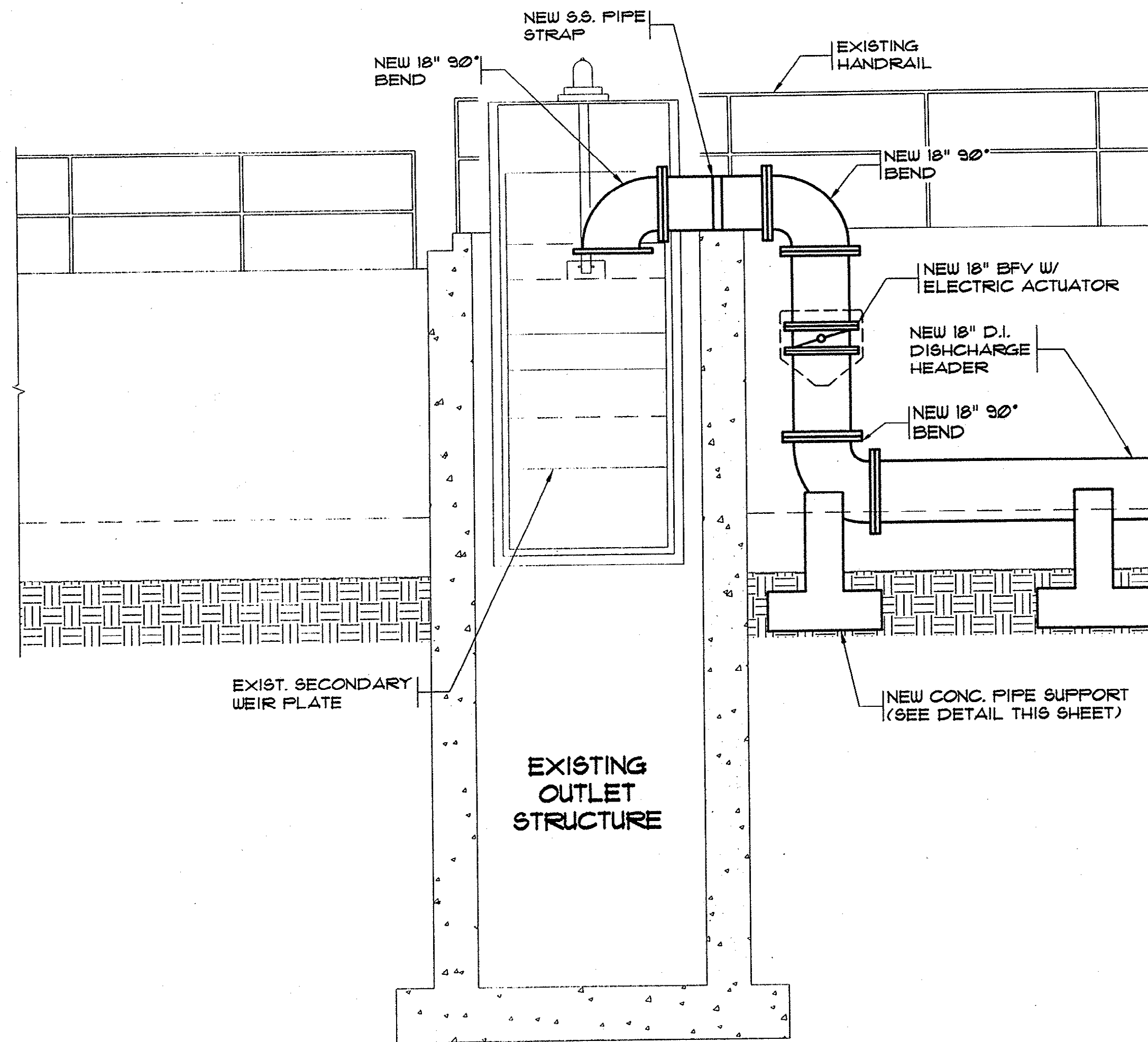
Plan Reviewer for Horry County
OK _____

DATE:	SEPT. 2003
DESIGNED:	PBW
DRAWN:	—
CHECKED:	PBW
SCALE:	AS SHOWN

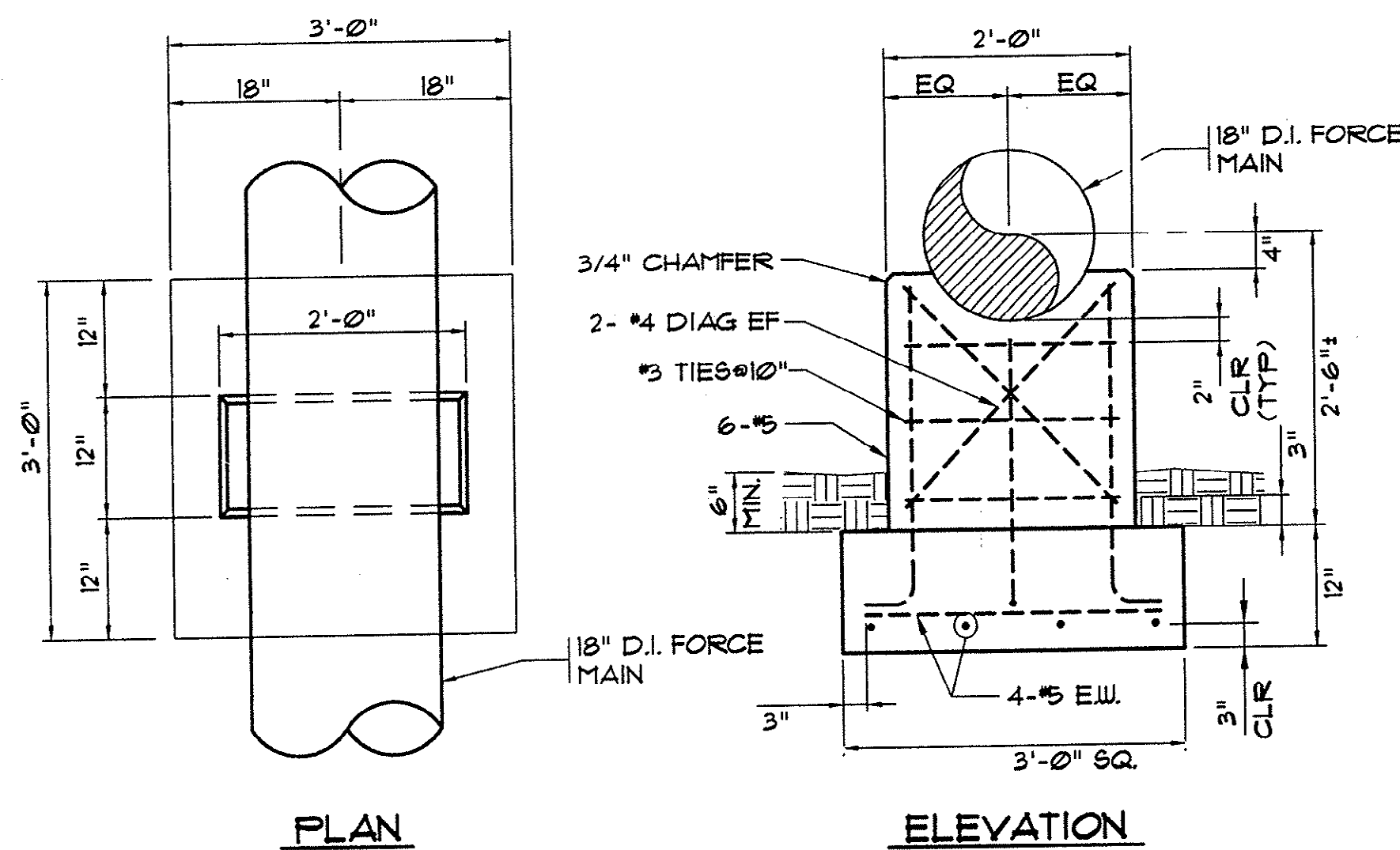
SHEET NO.
EN-32

UPDATED: 10/15/03 PLOTTED: 03/28/04

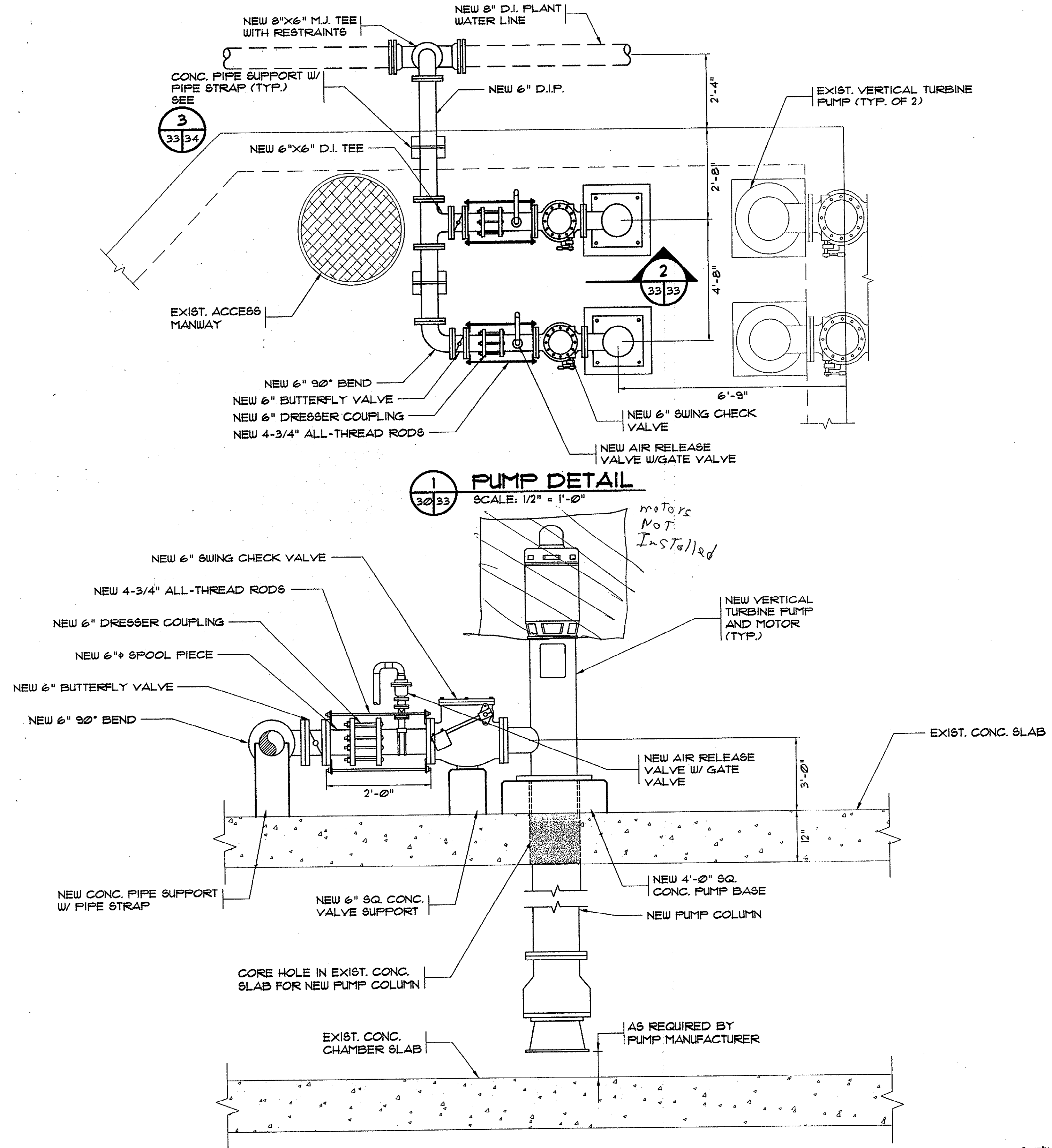
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DATE: 10/15/03 TIME: 15:34 XREFS: H:\Projects\GS0204\800-Drawings\805-Design\General (G)\Sheet.dwg
EDITED BY: MILLER
Pump Stationing.dwg
EN-33 Eff Pump Stationing.dwg
UPCHURCH & ASSOC. BFT H:\Projects\GS0204\800-Drawings\805-Design\General (G)\Sheet.dwg Layout: MB Sheet
DATE: 10/15/03 TIME: 15:34 XREFS: H:\Projects\GS0204\800-Drawings\805-Design\General (G)\Sheet.dwg
EDITED BY: MILLER
Pump Stationing.dwg
EN-33 Eff Pump Stationing.dwg



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



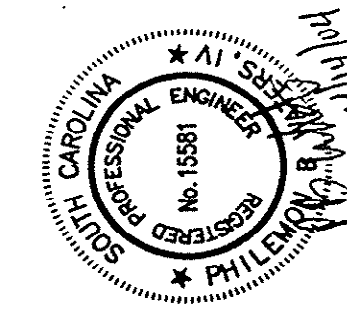
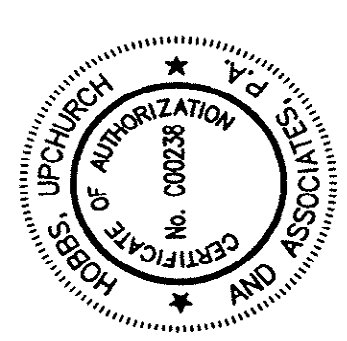
PIPE SUPPORT DETAIL
SCALE: 3/4" = 1'-0"



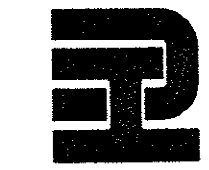
2 ELEVATION VIEW
SCALE: 3/4" = 1'-0"

Plan Reviewer for Horry County
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REVISIONS			
SYM.	DESCRIPTION	DATE	BY



Hobbs, Upchurch & Associates, P.A.
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Myrtle Beach, South Carolina 29577
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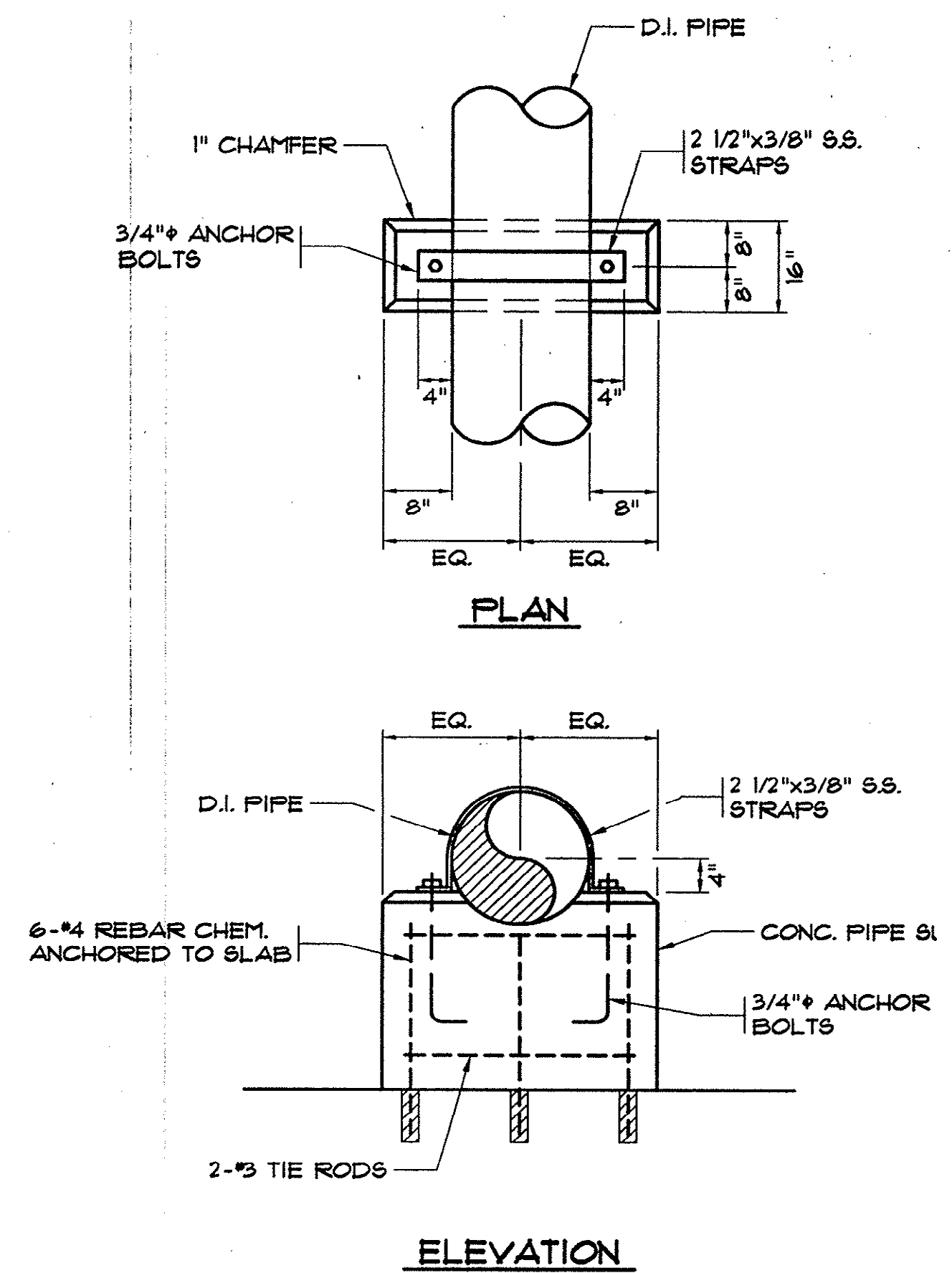
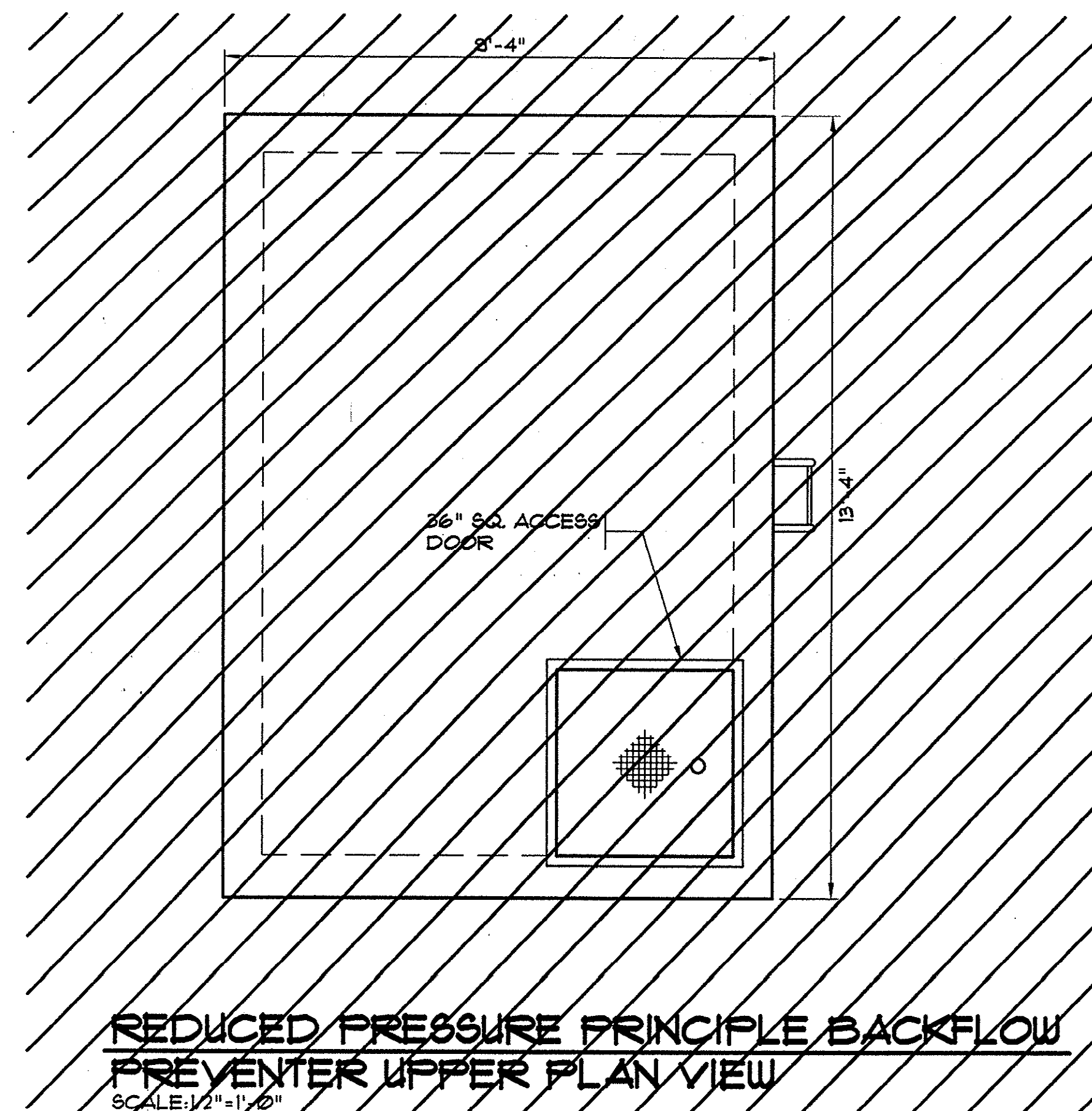
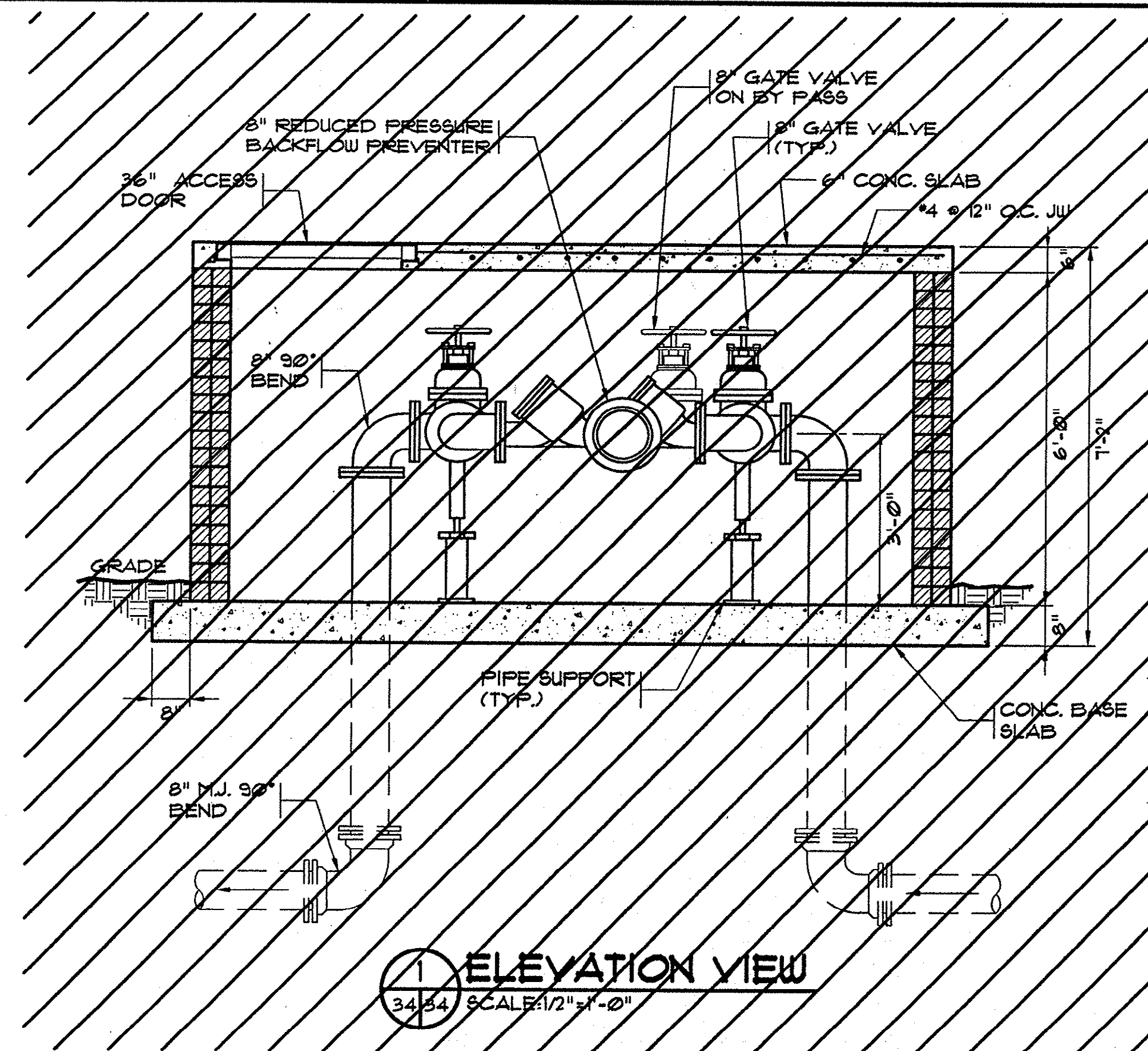
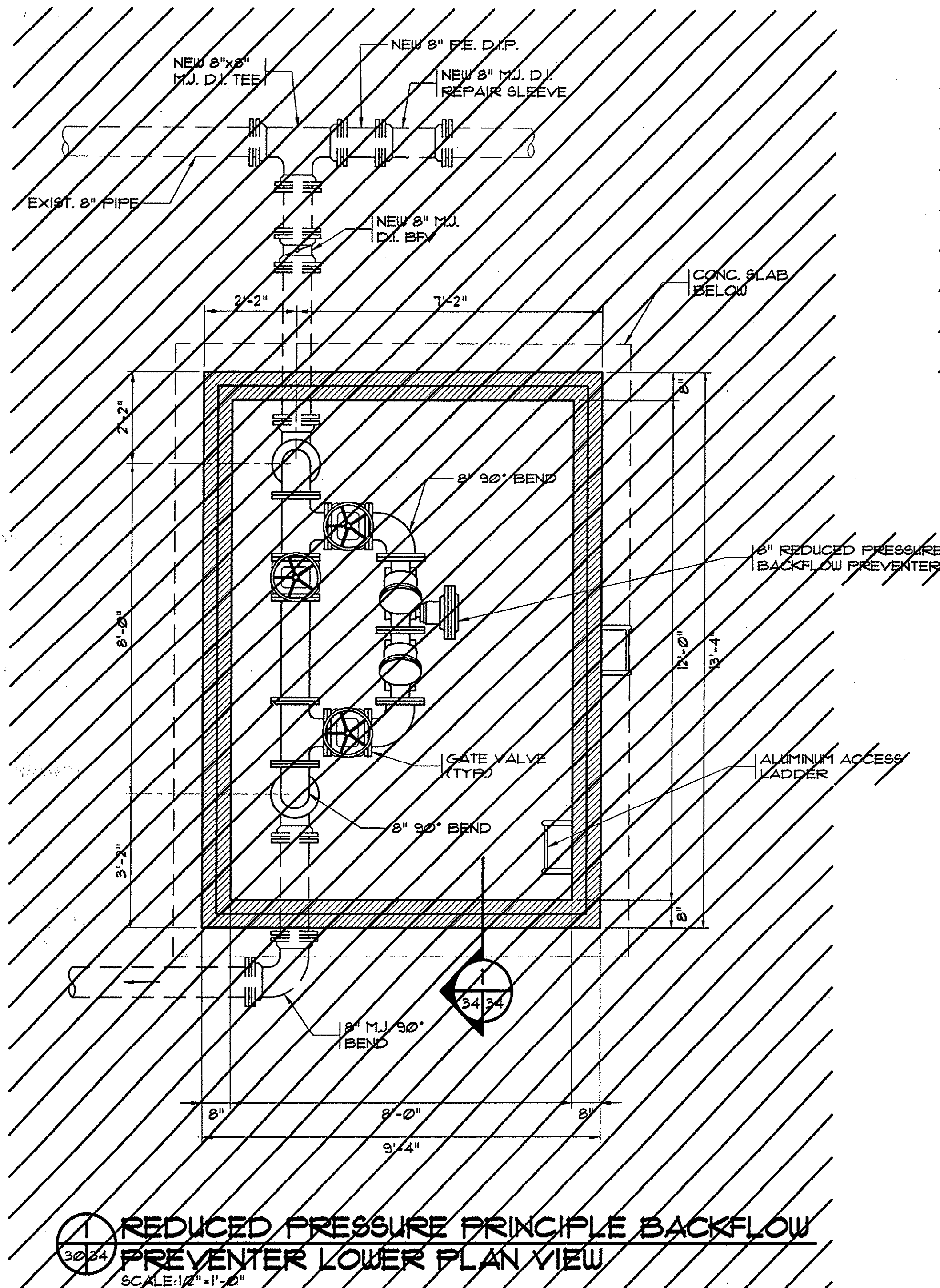
EFFLUENT PUMP STATION
SECTIONS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

DATE:	SEPT. 2003
DESIGNED:	PBW
DRAWN:	-
CHECKED:	PBW
SCALE:	AS SHOWN

SHEET NO.
EN-33

UPDATED: 10/15/03 PLOTTED: 03/26/04



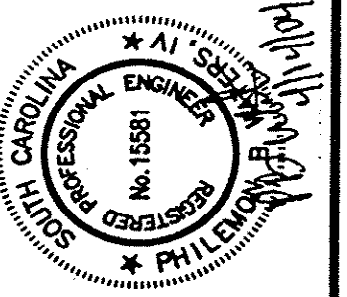
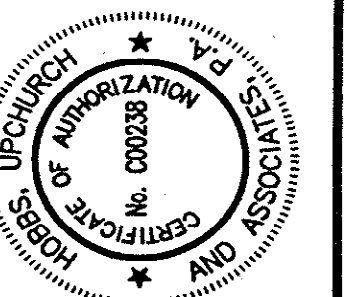
3 TYP. PIPE SUPPORT DETAIL
33 34 N.T.S.

 = NOT IN CONTRACT

Plan Reviewer for Horry County

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REVISIONS			
SYM.	DESCRIPTION	DATE	BY



H **Hobbs, Upchurch & Associates, P.A.**
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Myrtle Beach, South Carolina 29577
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EFFLUENT PUMP STATION SECTIONS

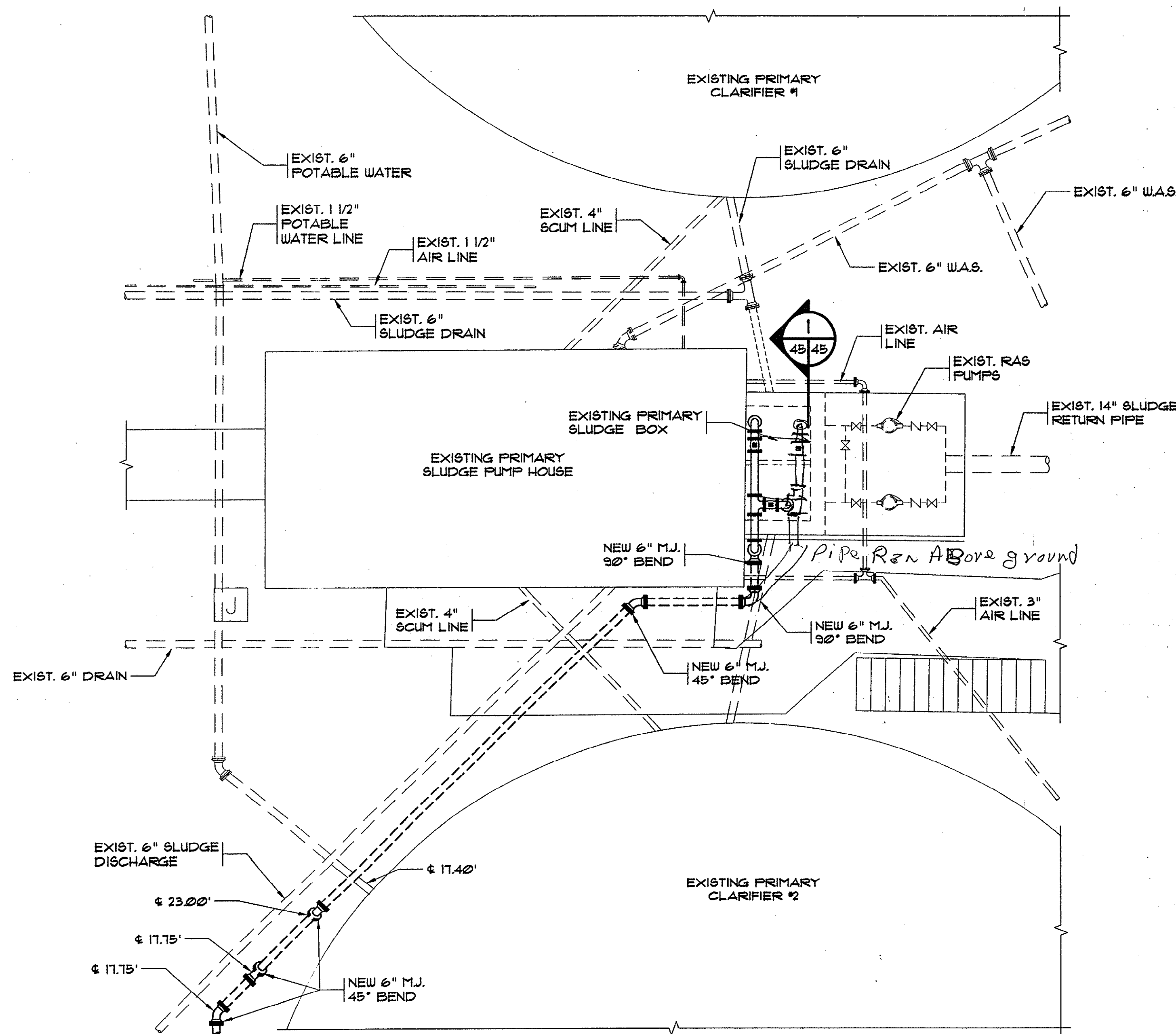
**SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY**

DATE:	SEPT. 2003
DESIGNED:	PBW
DRAWN:	—
CHECKED:	PBW
SCALE:	AS SHOWN

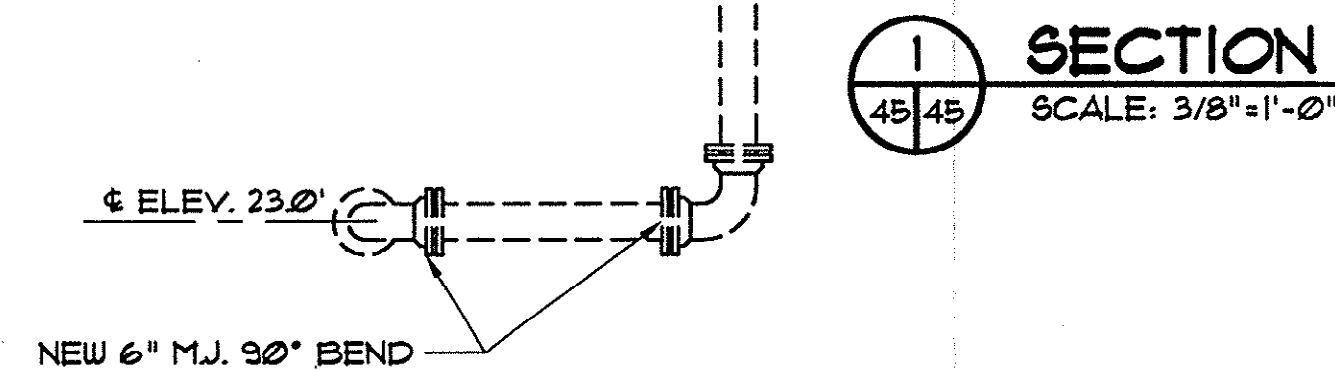
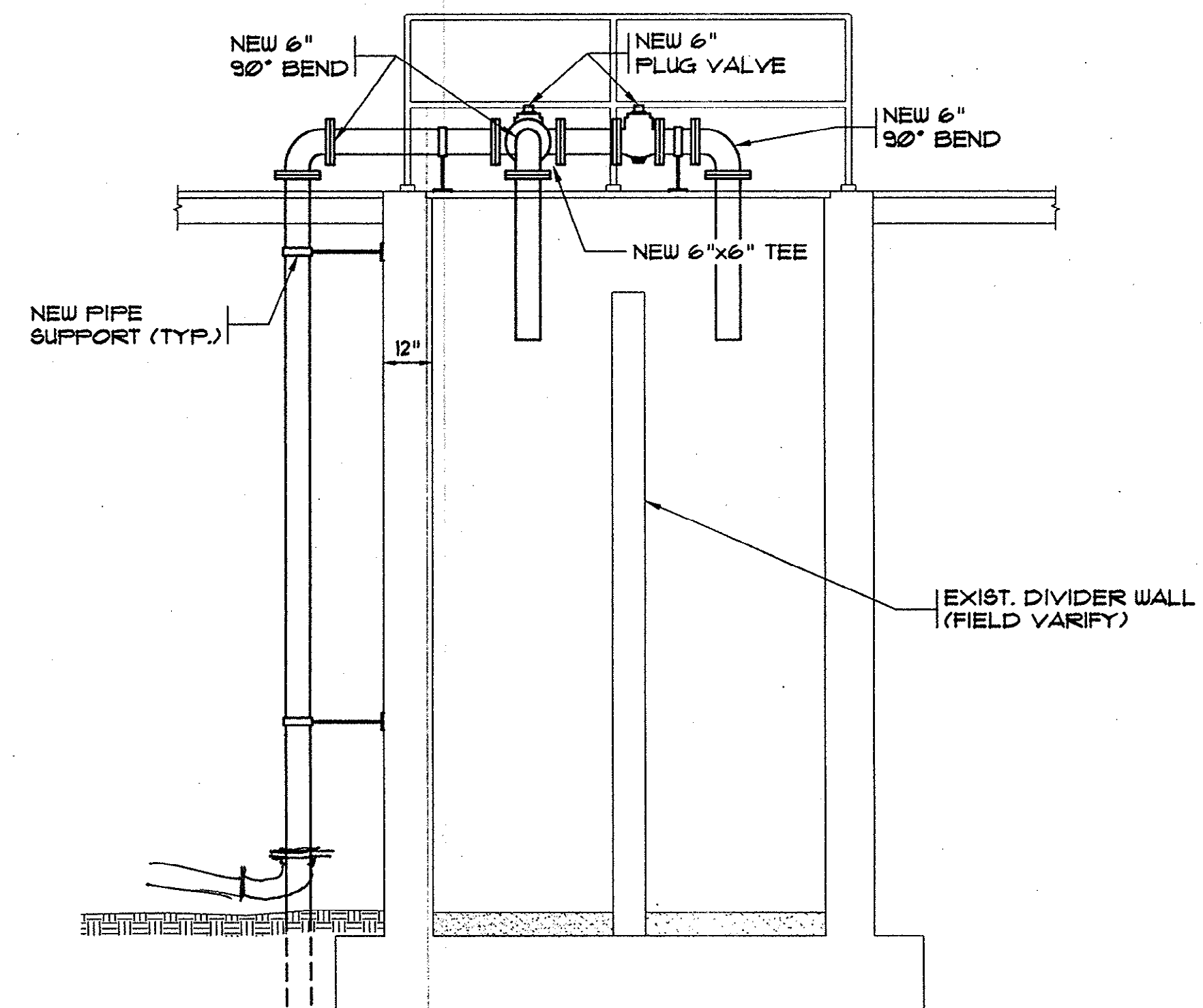
EN-34

OF: _____

HOBBS, UPCHURCH & ASSOC. B.T. B:\Projects\GS0204\800-Drawings\805-Design\Environmental\EN-45 SLUDGE BOX.dwg EDITED BY: DCARTER DATE: 04/08/04 TIME: 17:55 XREFS: B:\Projects\GS0204\800-Drawings\805-Design\General\G1\Sheet.dwg Layout: Site Plan

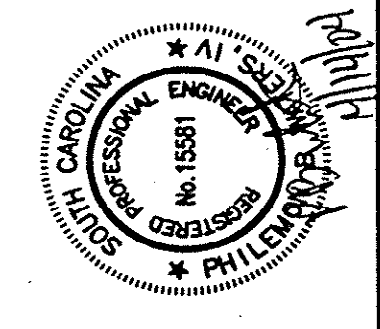
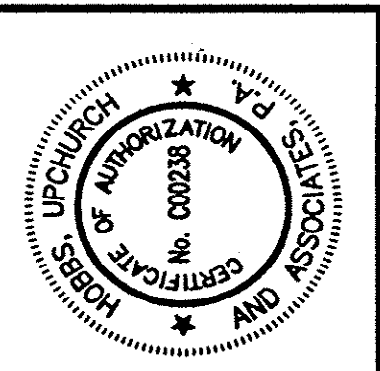


**EXISTING PRIMARY SLUDGE
PUMP HOUSE LAYOUT**
SCALE: 3/16"=1'-0"



Plan Reviewer for Horry County
OK _____

REVISIONS			
SYM.	DESCRIPTION	DATE	BY



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Myrtle Beach, South Carolina 29577
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**EXISTING PRIMARY
SLUDGE PUMP HOUSE
LAYOUT AND SECTION**

**SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY**

DATE: SEPT. 2003

DESIGNED: PBW

DRAWN: ALG

CHECKED: JWM

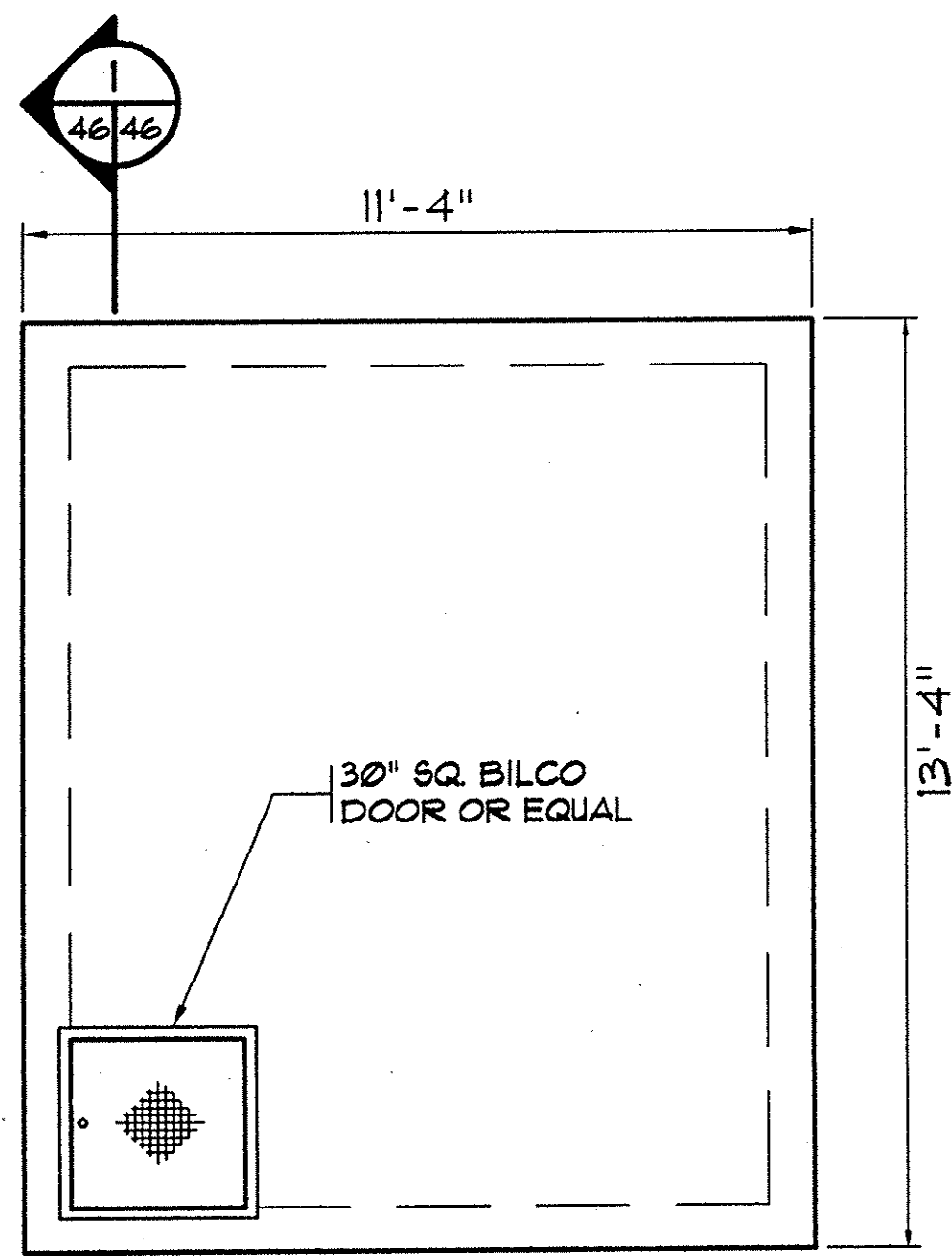
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SHEET NO.

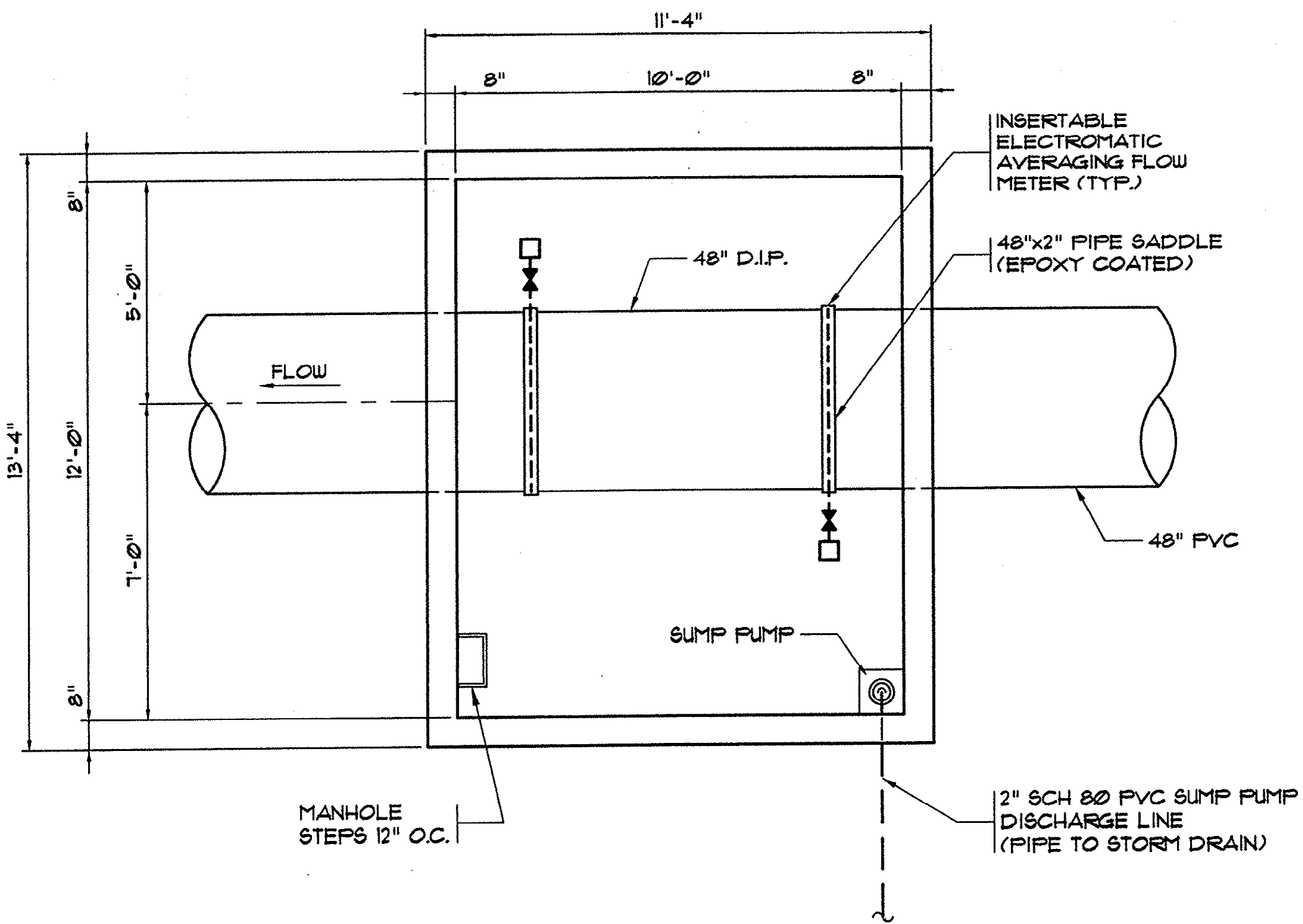
EN-45

OF:

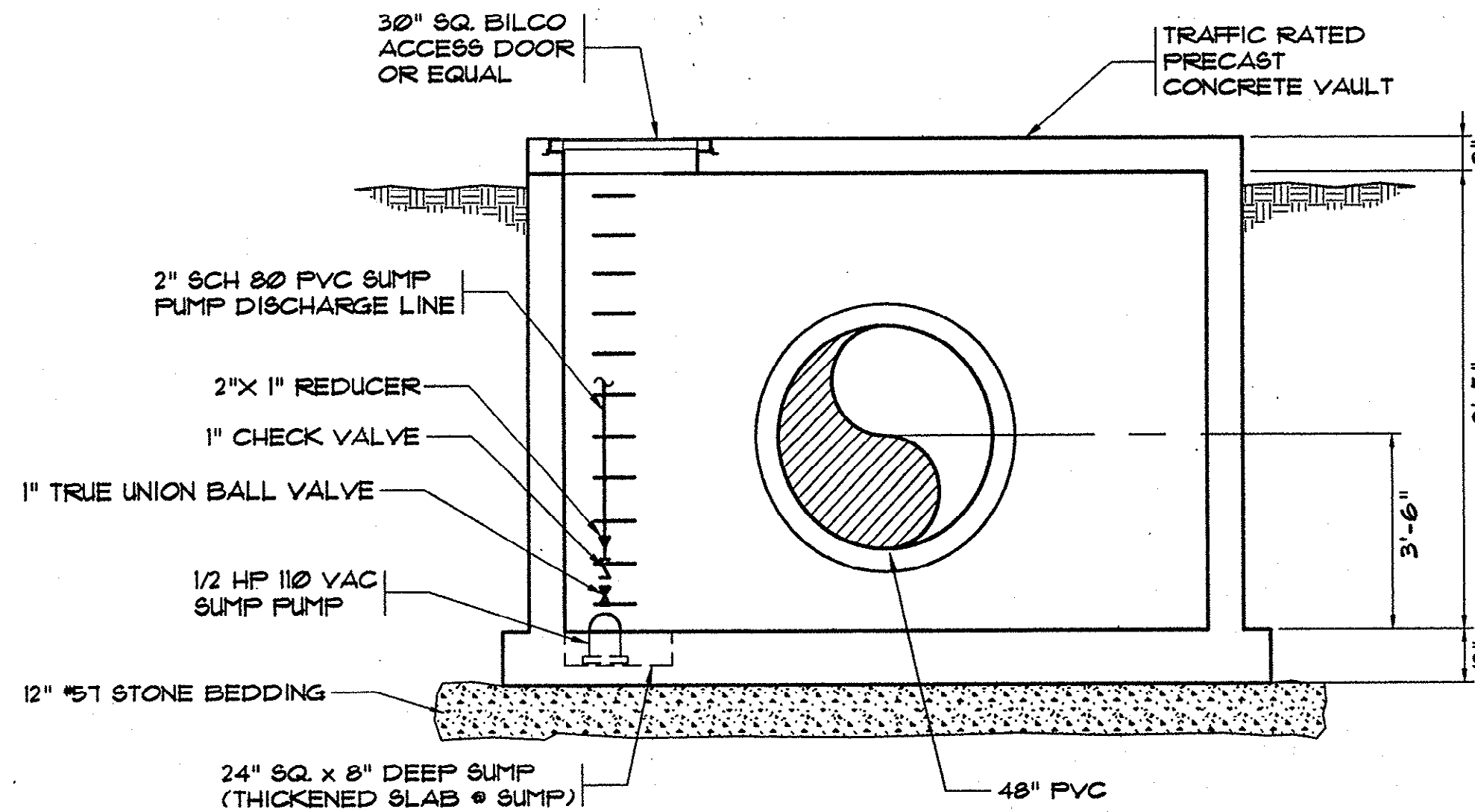
HOBBBS, UPCHURCH & ASSOC. B.T. B:\Projects\GS020A\800-Drawings\805-Design\General (G)\Sheet.dwg Layout: MB Sheet
DATE: 04/09/04 TIME: 18:08 XREFS: B:\Projects\GS020A\800-Drawings\805-Design\General (G)\Sheet.dwg



**FLOW METER VAULT
UPPER PLAN VIEW**
SCALE: 3/8" = 1'-0"

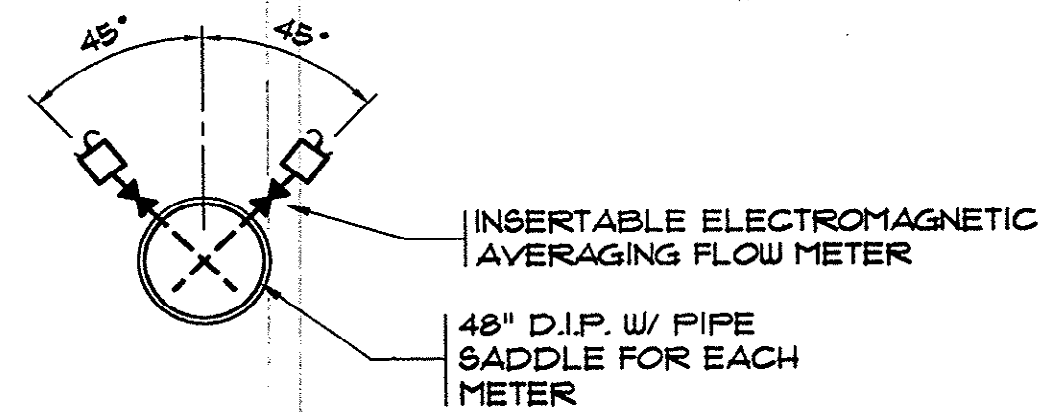


**FLOW METER VAULT
LOWER PLAN VIEW**
SCALE: 3/8" = 1'-0"

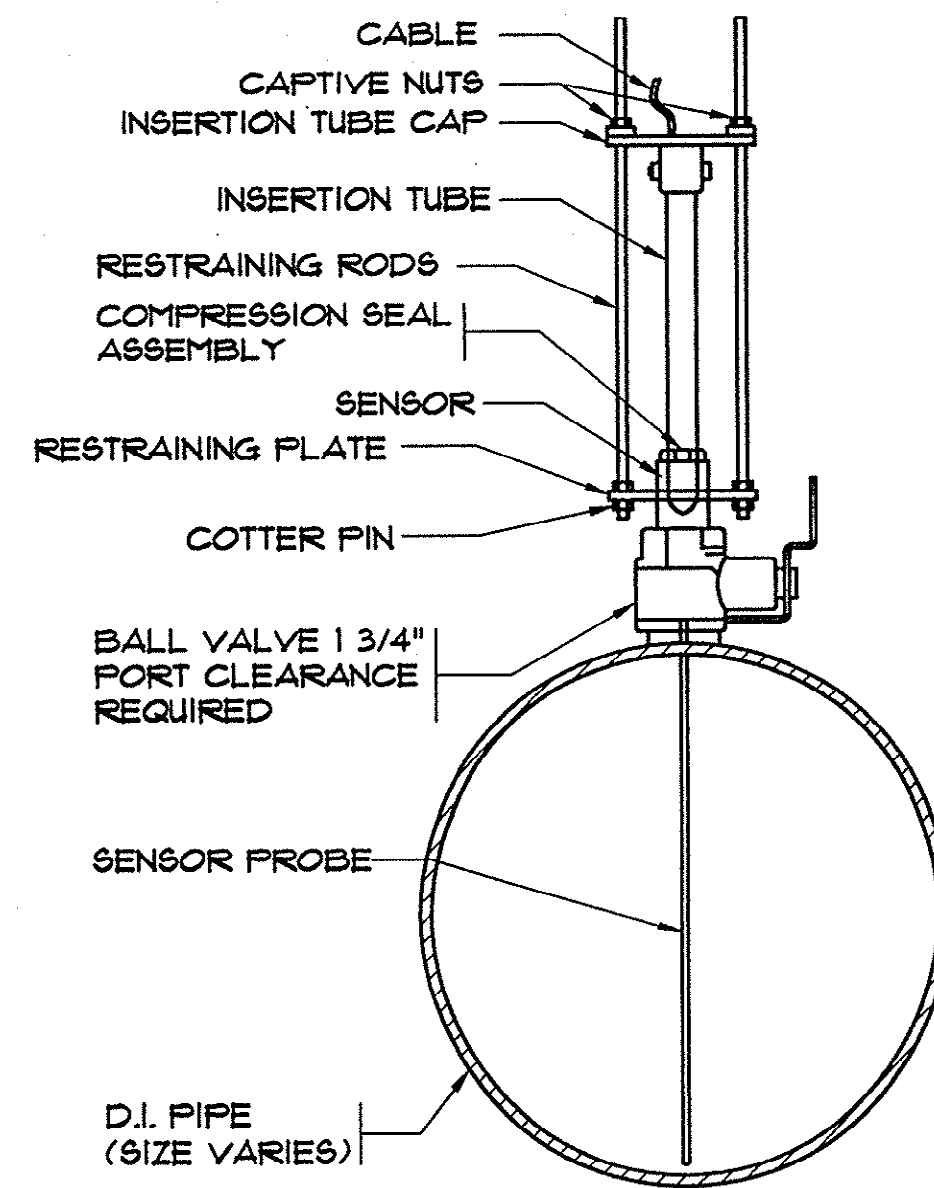


NOTE:
SEE LOWER PLAN FOR
SUMP PUMP ORIENTATION.

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



FLOW METER SECTION
N.T.S.

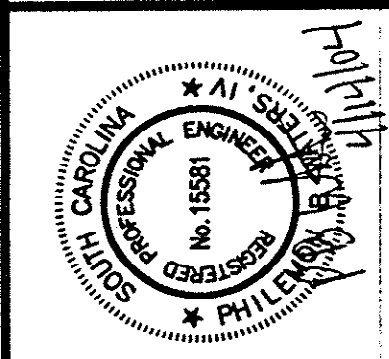
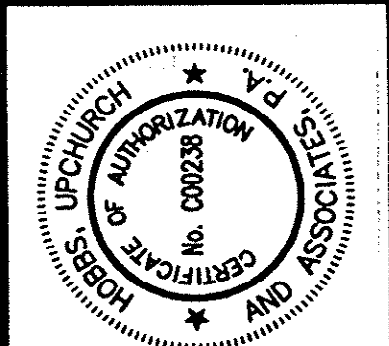


**INSERTABLE ELECTROMAGNETIC
AVERAGING FLOW METER**
N.T.S.

Plan Reviewer for Harry County

OK _____

REVISIONS			
SYM.	DESCRIPTION	DATE	BY



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**FLOW METER LAYOUT
& DETAILS**

**SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY**

DATE:	SEPT. 2003
DESIGNED:	PBW
DRAWN:	ALG
CHECKED:	JWM
SCALE:	AS SHOWN
SHEET NO.	EN-46

OF: _____

MECHANICAL SYMBOL LEGEND

	SUPPLY AIR DUCT OR DIFFUSER
	RETURN OR EXHAUST AIR DUCT OR GRILLE
	WALL MOUNTED THERMOSTAT/HUMIDISTAT
	FLEXIBLE DUCT
	ELBOW WITH DOUBLE WALL TURNING VANES
	DIFFUSER OR GRILLE TYPE
	SPIN-IN FITTING WITH VOLUME DAMPER
	DUCT UP
	DUCT DOWN
	MANUAL VOLUME DAMPER
A.F.F.	ABOVE FINISHED FLOOR
B.F.C.	BELOW FINISHED CEILING
U.C.	UNDERCUT DOOR BY GENERAL CONTRACTOR
G.C.	GENERAL CONTRACTOR
M.C.	MECHANICAL SUB-CONTRACTOR
P.C.	PLUMBING SUB-CONTRACTOR
C.C.	ELECTRICAL SUB-CONTRACTOR
A.F.F.	ABOVE FINISHED FLOOR
8"ø	ROUND DUCT SIZE
S.A.	SUPPLY AIR DUCTWORK
R.A.	RETURN AIR DUCTWORK
E.A.	EXHAUST AIR
O.A.	OUTSIDE AIR
O.B.D.	OPPOSED BLADE DAMPER
V.D.	VOLUME DAMPER
	WALL SWITCH
D.L.	DOOR LOUVER BY GENERAL CONTRACTOR
RS	REFRIGERANT SUCTION
RL	REFRIGERANT LIQUID
D	A/C DRAIN
FLA	FULL LOAD AMPS
MOCP	MAXIMUM OVERLOAD CURRENT PROTECTION
MCA	MINIMUM CIRCUIT AMPS
	SUPPLY AIR OR RETURN AIR DUCTWORK TO BE INTERNALLY LINED
A" X B" (L)	LINED DUCTWORK (INTERNAL DIMENSIONS)
AD	AUTOMATIC DAMPER
AD	ACCESS DOOR
FD	FIRE DAMPER
CD	CONDENSATE DRAIN
AHU	AIR HANDLING UNIT
CU	CONDENSING UNIT
EF-	EXHAUST FAN
SAF	SUPPLY AIR FAN
CD	CEILING DIFFUSER
CRG	CEILING RETURN GRILLE
ER	EXHAUST REGISTER
EG	EXHAUST GRILLE
RG	RETURN GRILLE
SR	SUPPLY REGISTER
P.B.	ON-OFF PUSH BUTTON STATION WITH PILOT LIGHT
	DAMPER MOTOR

GENERAL NOTES

1. MOUNT THERMOSTATS AT 48" ABOVE FINISHED FLOOR.
2. SUPPLY, AND RETURN DUCTS SHALL BE EXTERNALLY INSULATED.
3. SLOPE ALL DRAIN LINES A MINIMUM OF 1/8" PER FOOT IN DIRECTION OF FLOW.
4. COORDINATE WITH THERMOSTAT WITH LIGHT SWITCH LOCATIONS AND FAN STARTERS.
5. FLEX DUCT SHALL NOT BE USED.
6. PROVIDE TRANSITIONS AS REQUIRED FOR DUCT RUNOUTS TO GRILLES AND DIFFUSERS.
7. REFRIGERANT PIPING SHALL BE SIZED BY THE EQUIPMENT MANUFACTURER.
8. COORDINATE ROUTING OF DUCTS WITH STRUCTURAL BEAM AND JOIST CONFIGURATION.
9. EQUIPMENT SHALL GENERALLY BE LOCATED AS INDICATED ON THE DRAWINGS.
10. PROVIDE A FLEXIBLE CONNECTION ON SUPPLY DUCT DISCHARGE OFF OF FAN SECTIONS AND ON DISCHARGE SIDE OF RETURN AIR PLENUM.
11. PROVIDE LAMINATED MARKER ABOVE THERMOSTAT TO READ AS FOLLOWS: "THERMOSTAT SHALL ACT AS EMERGENCY STOP SWITCH".
12. ALL MANUFACTURERS GIVEN ARE FOR PRODUCT SELECTION ONLY. FINAL SELECTION OF MANUFACTURERS IS TO BE BASED ON APPROVED EQUAL AS LISTED IN SPECIFICATIONS.

DRAWING LIST

M-01	MECHANICAL SYMBOLS, SCHEDULES, GENERAL NOTES AND DRAWING LIST
M-02	SLUDGE THICKENER BUILDING PLAN - MECHANICAL
M-03	CONTROL ROOM UPPER AND OVERHEAD DECK PLANS - MECHANICAL
M-04	MECHANICAL DETAILS
M-05	MECHANICAL DETAILS

REVISIONS			
SYM.	DESCRIPTION	DATE	BY

MOTOR CONTROL SCHEDULE									
MOTOR DESIGNATION	UNIT USE	ADDITIONAL INFORMATION	RATING			MOTOR LOCATION	MOTOR STARTER		AUXILIARY CONTROL DEVICES
			HORSEPOWER (KW)	VOLTAGE	PHASE				
EF-1	VENTILATION		7.5	460	3	IN UNIT ON ROOF	FVNR	MCCSB	PUSHBUTTON W/PILOT LIGHT ON COLUMN
EF-2	VENTILATION		7.5	460	3	IN UNIT ON ROOF	FVNR	MCCSB	PUSHBUTTON W/PILOT LIGHT ON COLUMN
EF-3	VENTILATION		7.5	460	3	IN UNIT ON ROOF	FVNR	MCCSB	PUSHBUTTON W/PILOT LIGHT ON COLUMN
EF-4	VENTILATION		7.5	460	3	IN UNIT ON ROOF	FVNR	MCCSB	PUSHBUTTON W/PILOT LIGHT ON COLUMN
EF-5	VENTILATION		7.5	460	3	IN UNIT ON ROOF	FVNR	MCCSB	PUSHBUTTON W/PILOT LIGHT ON COLUMN
EF-6	VENTILATION		7.5	460	3	IN UNIT ON ROOF	FVNR	MCCSB	PUSHBUTTON W/PILOT LIGHT ON COLUMN
EF-7	VENTILATION		7.5	460	3	IN UNIT ON ROOF	FVNR	MCCSB	PUSHBUTTON W/PILOT LIGHT ON COLUMN
EF-8	VENTILATION		7.5	460	3	IN UNIT ON ROOF	FVNR	MCCSB	- -
EF-9	VENTILATION		100 WATTS	115	1	TOILET ROOM	MOTOR RATED TOGGLE SWITCH	WALL	PUSHBUTTON W/PILOT LIGHT ON COLUMN
EF-10	VENTILATION		3/4	460	3	ELECT. BUILDING	CONTACTOR	ON WALL	THERMOSTAT AUX CONTACTS TRANSFORMER ON WALL
A/C-1 INDOOR	ROOM COOLING	MCA 0.5 MOCP 15	0.5 AMPS	115	1	ELECT. ROOM	CONTACTOR	IN UNIT	THERMOSTAT IN UNIT
A/C-1 OUTDOOR	ROOM COOLING	MCA 11.0 MOCP 15		115	1	EXTERIOR	CONTACTOR	IN UNIT	NONE -
A/C-2 INDOOR	ROOM COOLING & HEATING	MCA 26 MOCP 30	1.5 HP 14.96	460	3	CONTROL ROOM	CONTACTOR	IN UNIT	THERMOSTAT IN UNIT
A/C-2 OUTDOOR	ROOM COOLING	MCA 14.0 MOCP 20		460	3	EXTERIOR	CONTACTOR	IN UNIT	NONE -

AIR DISTRIBUTION DEVICES SCHEDULE

DESIGNATION	LOCATION	PANEL SIZE	NECK SIZE	FILTERS	TYPE	CFM EACH	SELECTED ON
CRG-1	CONTROL ROOM	24"x20"	20"x16"	1 - 16"x20"	DEFLECTED LOUVERED BARS, 1" THICK HINGED FILTER GRILLE	700	NAILOR 67FBS45 STAINLESS STEEL
CD-1	CONTROL ROOM	24"x24"			SQUARE PERFORATED FACE CEILING DIFFUSER SURFACE MOUNTED	470	NAILOR 4320CBA

FAN SCHEDULE

DESIGNATION	TYPE	LOCATION	CFM	TOTAL S.P. IN". W.G.	WHEEL DIA. IN.	WHEEL RPM	SONES	MOTOR			ACCESSORIES			SELECTED ON
								HP	VOLTS	PHASE	BDD	INSULATED ROOF CURB	MOTOR DISCONNECT	
EF-1	PRV	SLUDGE TREATMENT BUILDING ROOF	21,000	0.50	48	385	12.7	7 1/2	460	3	YES	YES	YES	PENN JB48
EF-2	PRV	SLUDGE TREATMENT BUILDING ROOF	21,000	0.50	48	385	12.7	7 1/2	460	3	YES	YES	YES	PENN JB48
EF-3	PRV	SLUDGE TREATMENT BUILDING ROOF	21,000	0.50	48	385	12.7	7 1/2	460	3	YES	YES	YES	PENN JB48
EF-4	PRV	SLUDGE TREATMENT BUILDING ROOF	21,000	0.50	48	385	12.7	7 1/2	460	3	YES	YES	YES	PENN JB48
EF-5	PRV	SLUDGE TREATMENT BUILDING ROOF	21,000	0.50	48	385	12.7	7 1/2	460	3	YES	YES	YES	PENN JB48
EF-6	PRV	SLUDGE TREATMENT BUILDING ROOF	21,000	0.50	48	385	12.7	7 1/2	460	3	YES	YES	YES	PENN JB48
EF-7	PRV	SLUDGE TREATMENT BUILDING ROOF	21,000	0.50	48	385	12.7	7 1/2	460	3	YES	YES	YES	PENN JB48
EF-8	PRV	SLUDGE TREATMENT BUILDING ROOF	21,000	0.50	48	385	12.7	7 1/2	460	3	YES	YES	YES	PENN JB48
EF-9	CEILING	TOILET ROOM	100	0.25	-	1550	3.0	1.4 AMPS	115	1	YES	-	YES	PENN Z6H

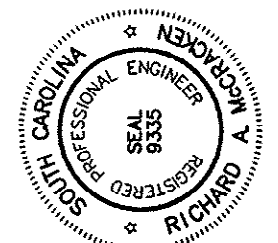
SPLIT SYSTEM AIR CONDITIONING UNIT SCHEDULE

DESIGNATION	SERVES	LOCATION	CFM	BTU/HR TOTAL	BTU/HR SENSIBLE	VOLTS / PHASE	KW	OUTDOOR UNIT			REFRIGERANT PIPING		UNIT FLA	SELECTED ON
								LOCATION	CAPACITY BTU/HR	AMB. AIR °F	VOLTS PHASE	SUCTION	LIQUID	
A/C-1	ELECT ROOM 101	IN ROOM	230	8,500	7,000	115/1/60	NONE 0.5 AMP FAN DRIVE	ON GRADE	8,500	95°	115/1/60	3/8"	1/4"	11.0 MITSUBISHI MS09TW AND MU09TW
A/C-2	CONTROL ROOM 201	ABOVE ROOM	2200	60,000	48,000	460/3/60	14.96 1 1/2 HP FAN DRIVE	ON GRADE	60,000	95°	460/3/60	1 1/8"	3/8"	NOTE 1 10.1 TRANE 2TWA0072A4000A TWE090A--

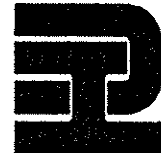
NOTES:

1. MIN. CIRCUIT AMPACITY - 26; MAXIMUM OVER CURRENT PROTECTION - 30.

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MECHANICAL SYMBOLS,
SCHEDULES, GENERAL
NOTES, AND DRAWING
LIST

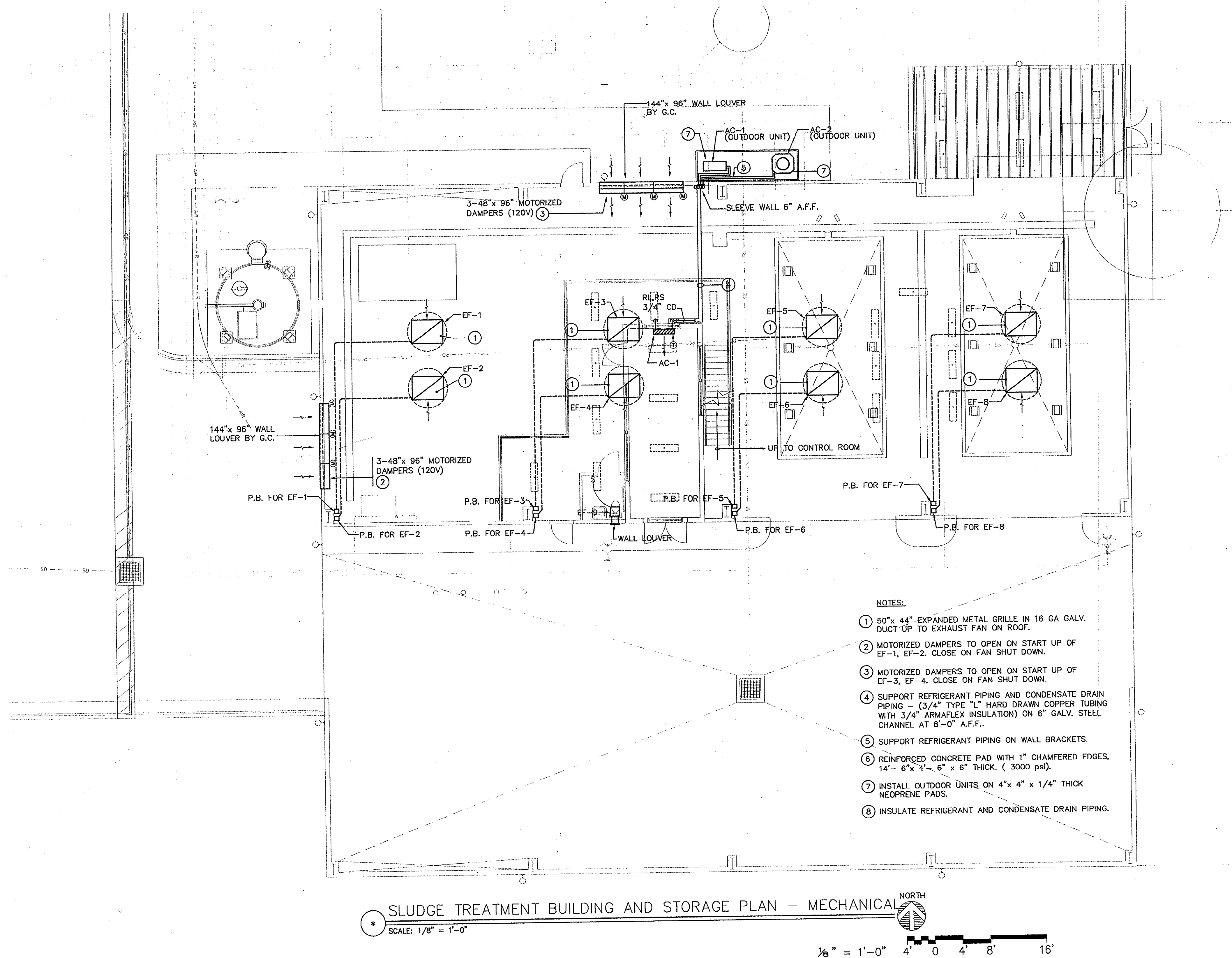
SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

DATE:	12 APRIL 2004
DESIGNED:	RAM
DRAWN:	CADD
CHECKED:	RAM
SCALE:	AS SHOWN
SHEET NO.	

M-01

Plan Reviewer for Horry County

04/12/04 RRD 1/8"=1' 203-028\BIO\MECH\W-02.dwg



NOTES:

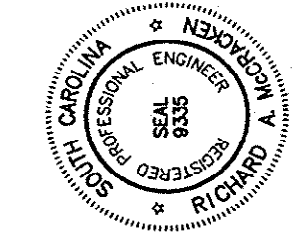
- 50"x 44" EXPANDED METAL GRILLE IN 16 GA GALV. DUCT UP TO EXHAUST FAN ON ROOF.
- MOTORIZED DAMPERS TO OPEN ON START UP OF EF-1, EF-2. CLOSE ON FAN SHUT DOWN.
- MOTORIZED DAMPERS TO OPEN ON START UP OF EF-3, EF-4. CLOSE ON FAN SHUT DOWN.
- SUPPORT REFRIGERANT PIPING AND CONDENSATE DRAIN PIPING - (3/4" TYPE "L" HARD DRAWN COPPER TUBING WITH 3/4" ARMAFLEX INSULATION) ON 6" GALV. STEEL CHANNEL AT 8'-0" A.F.F..
- SUPPORT REFRIGERANT PIPING ON WALL BRACKETS.
- REINFORCED CONCRETE PAD WITH 1" CHAMFERED EDGES, 14'- 6"x 4'- 6" x 6" THICK. (3000 psi).
- INSTALL OUTDOOR UNITS ON 4"x 4" x 1/4" THICK NEOPRENE PADS.
- INSULATE REFRIGERANT AND CONDENSATE DRAIN PIPING.

* SLUDGE TREATMENT BUILDING AND STORAGE PLAN - MECHANICAL
SCALE: 1/8" = 1'-0"

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

REVISIONS			
SYM.	DESCRIPTION	DATE	BY

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SLUDGE TREATMENT
BUILDING AND STORAGE
PLAN - MECHANICAL

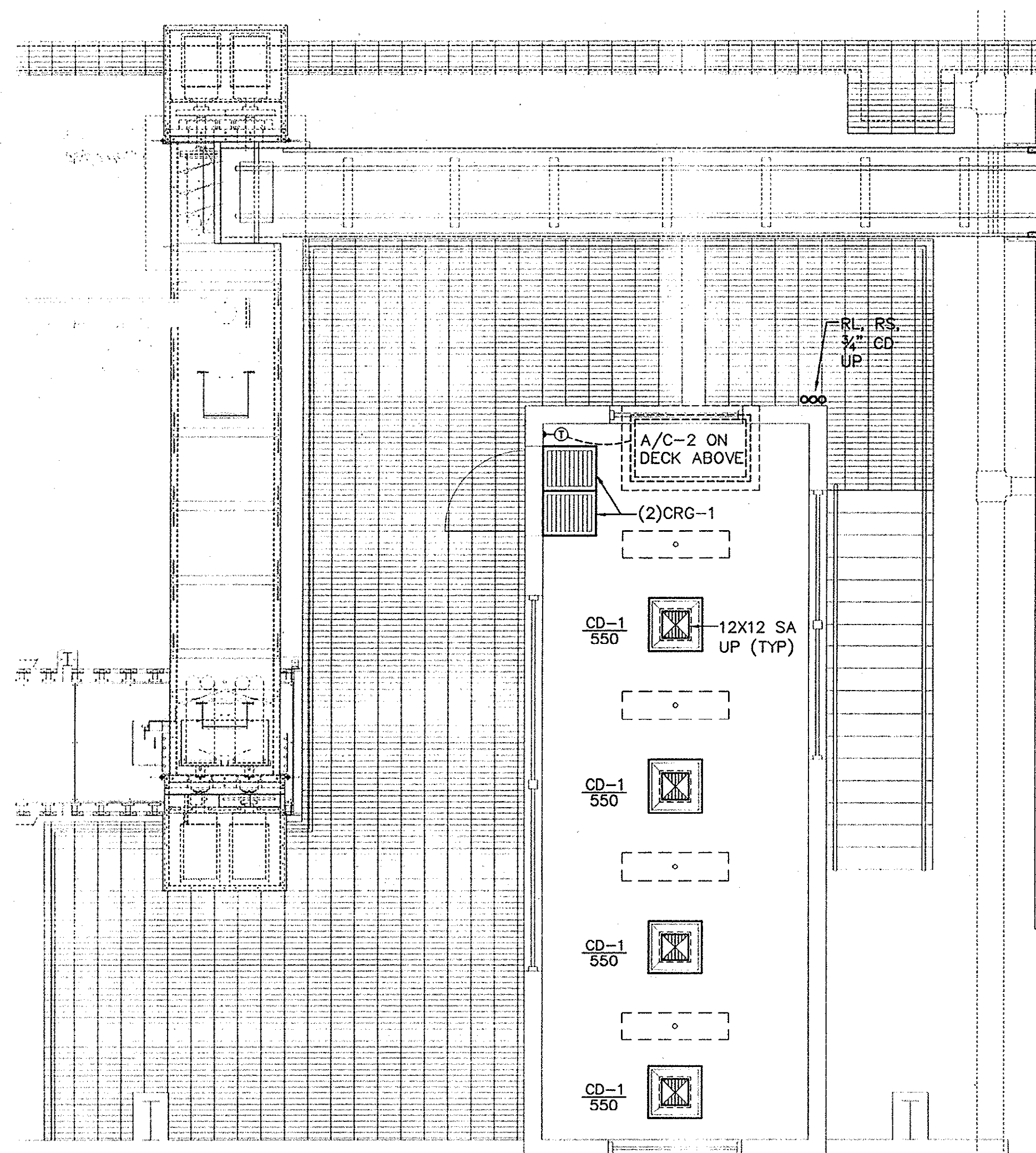
SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

DATE: APRIL 2004
DESIGNED: RAM
DRAWN: CADD
CHECKED: RAM
SCALE: AS SHOWN

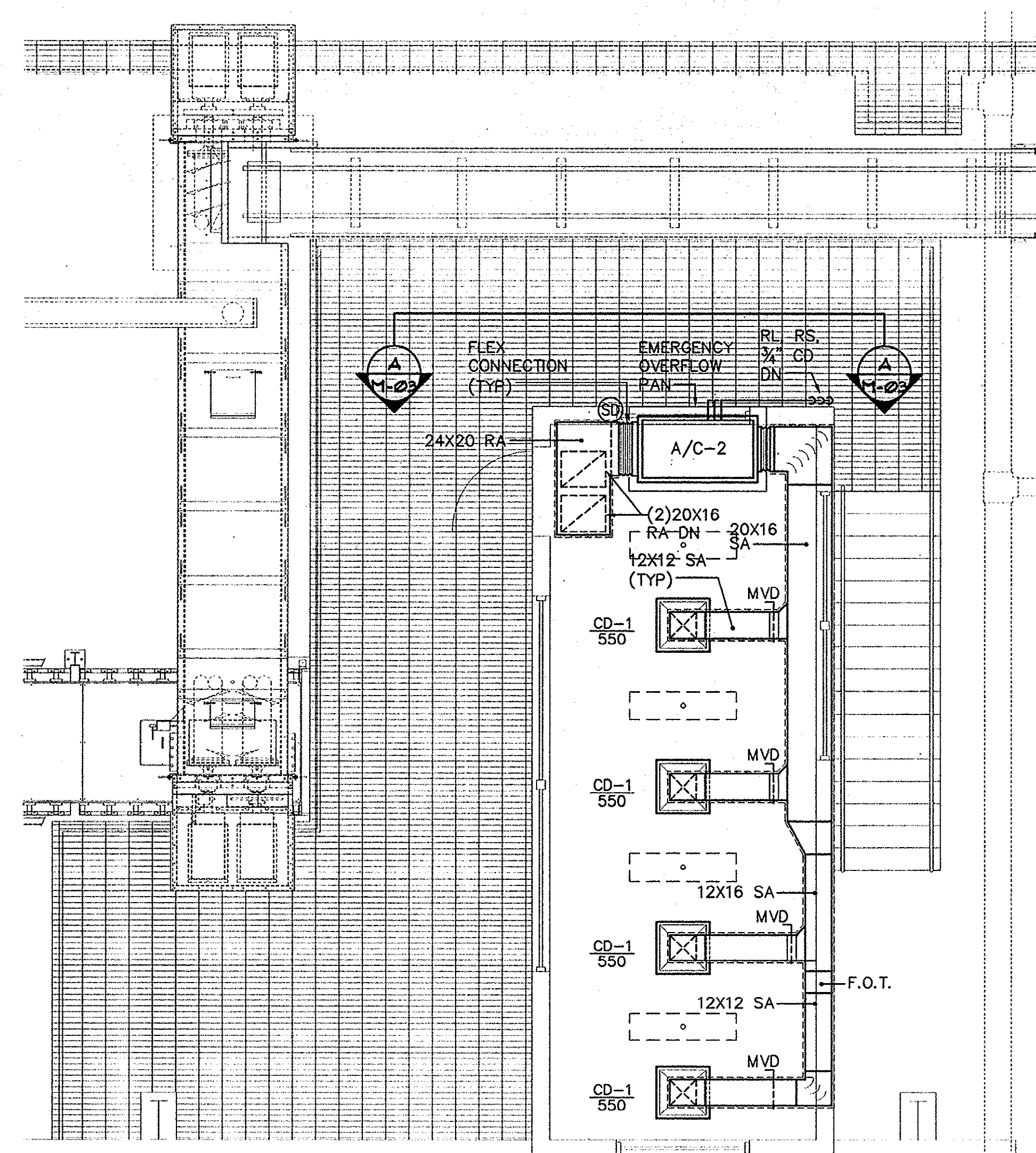
SHEET NO.
M-02

Plan Reviewer for Horry County
OK

04/12/04 CADD 1/4"=1' 203-028.BID.MECH.M-03.dwg

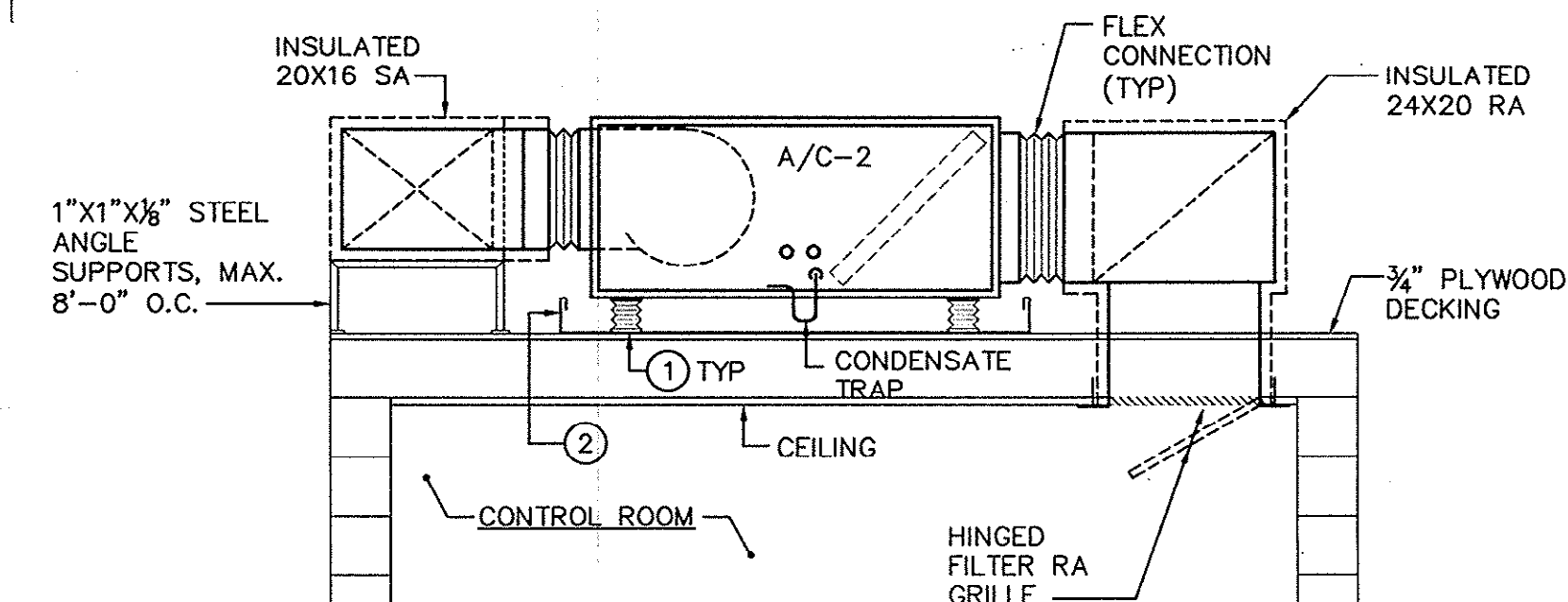


1 UPPER LEVEL CONTROL ROOM PLAN — MECHANICAL
SCALE: 1/4" = 1'-0"
1/4" = 1'-0" 2' 0 2' 4' 8'



2 OVERHEAD DECK OF UPPER LEVEL CONTROL ROOM PLAN — MECHANICAL
SCALE: 1/4" = 1'-0"
1/4" = 1'-0" 2' 0 2' 4' 8'

NOTE:
INSULATE SUPPLY AIR AND RETURN AIR DUCTWORK WITH 4# DENSITY DUCTBOARD 1 1/2" THICK WITH FSK JACKETING. VAPOR SEAL ALL JOINTS.



A/C-2 INSTALLATION DETAIL
SCALE: 1/2" = 1'-0"

NOTES (THIS SECTION ONLY):

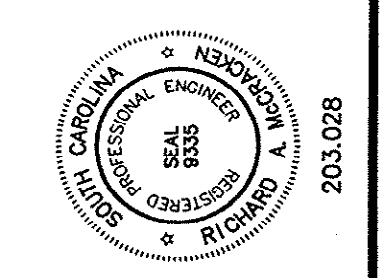
- 1 SECURE UNIT TO STEEL SPRING VIBRATION ISOLATORS ON 1/4" THICK 6"x4" NEOPRENE PADS.
- 2 EMERGENCY OVERFLOW DRAIN PAN WITH HIGH WATER FAN "OFF" SWITCH. PAN 16 GAUGE WITH WELDED CORNERS AND HEMMED EDGES. PAN 4" LARGER THAN A/C UNIT IN EACH DIMENSION AND 4" DEEP.

Plan Reviewer for Hotby County

OK

REVISIONS			
SYM.	DESCRIPTION	DATE	BY

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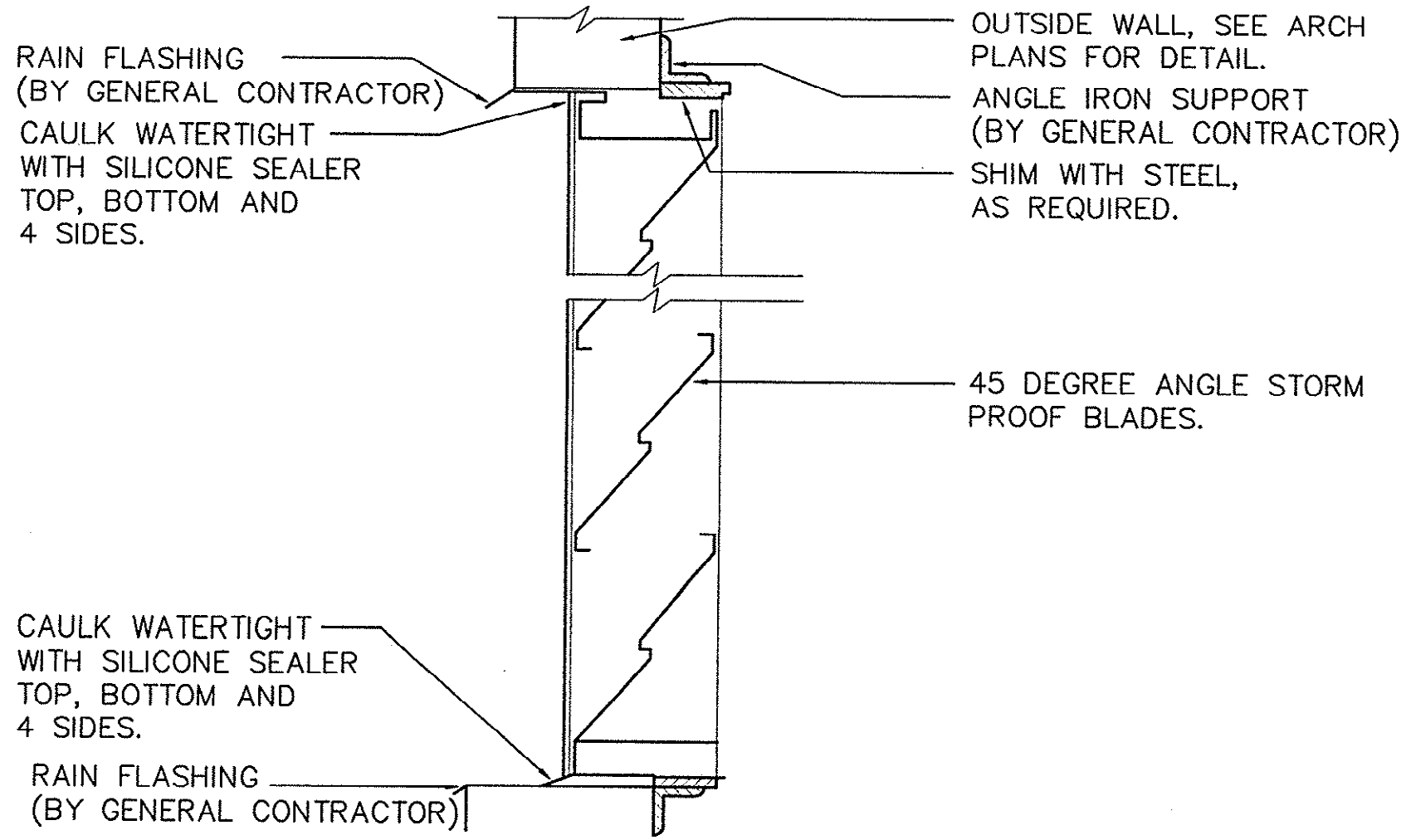
Hobbs, Upchurch & Associates, P.A.
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CONTROL ROOM UPPER AND OVERHEAD DECK PLANS - MECHANICAL

SCHWARTZ
WASTEWATER TREATMENT PLANT UPGRADE
GRAND STRAND WATER & SEWER AUTHORITY

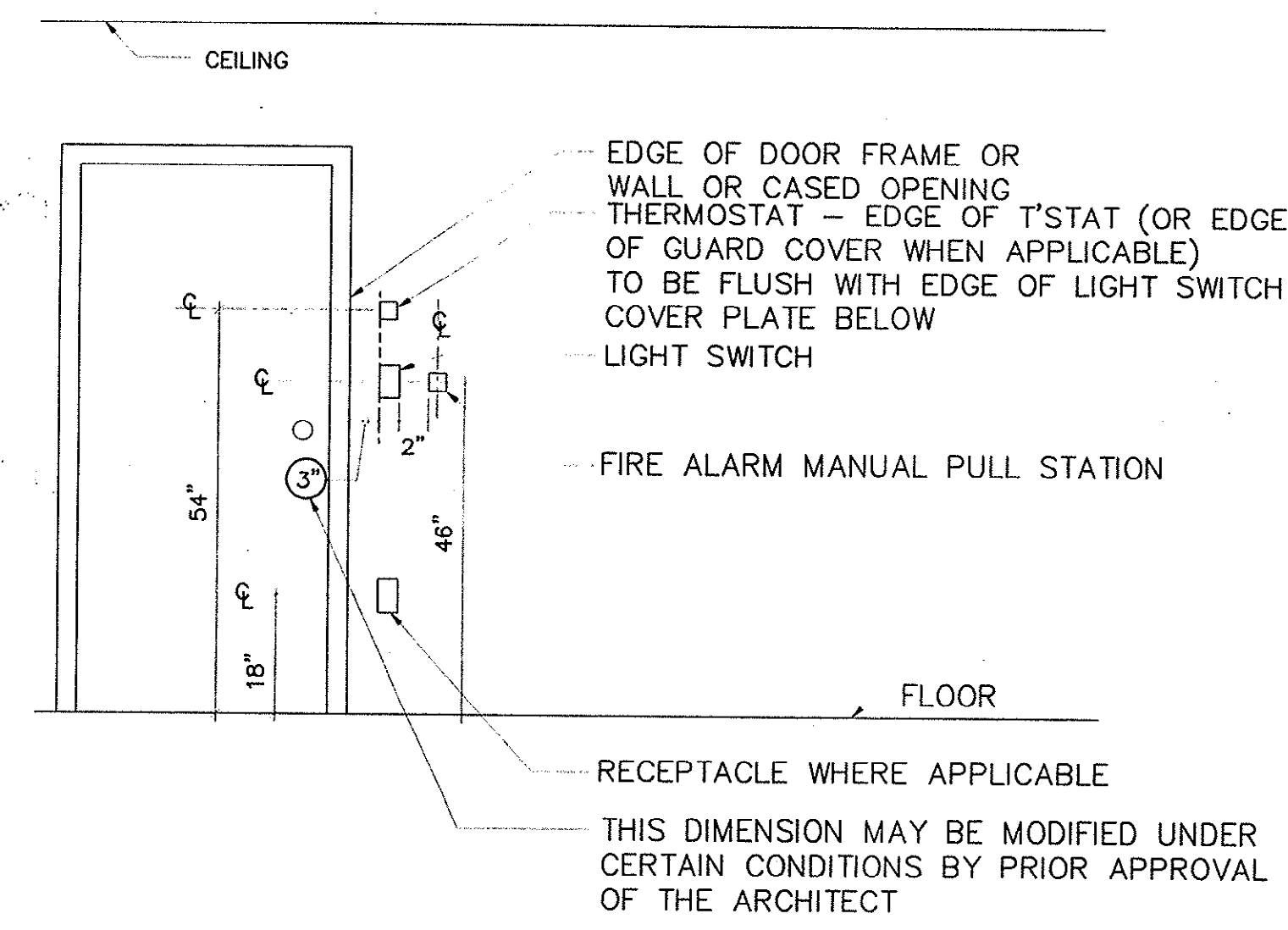
DATE:	APRIL 2004
DESIGNED:	RAM
DRAWN:	CADD
CHECKED:	RAM
SCALE:	AS SHOWN

SHEET NO.
M-03



LOUVER DETAIL

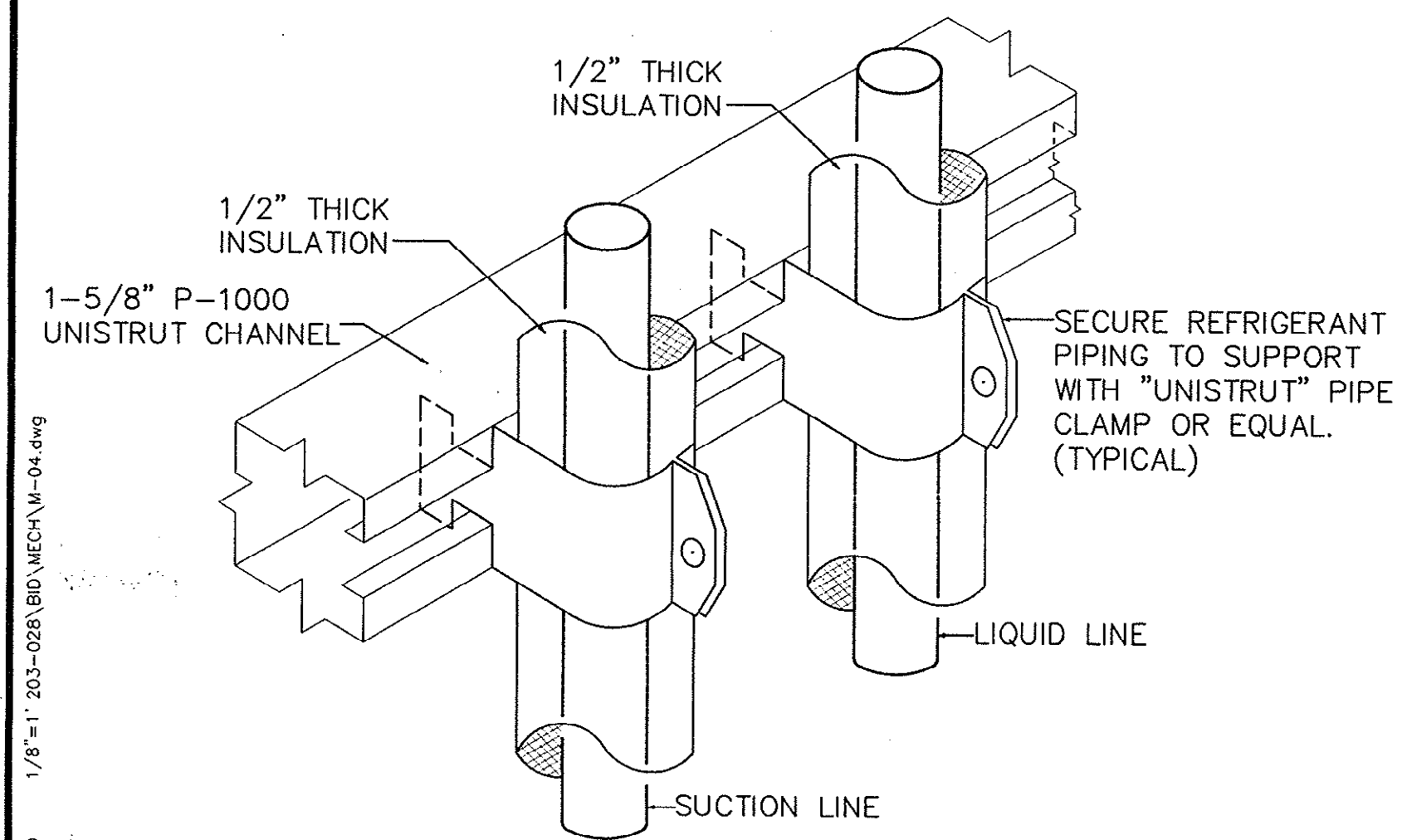
NOT TO SCALE



TYPICAL LOCATION OF SWITCHES/ALARMS/ THERMOSTATS/ OUTLETS

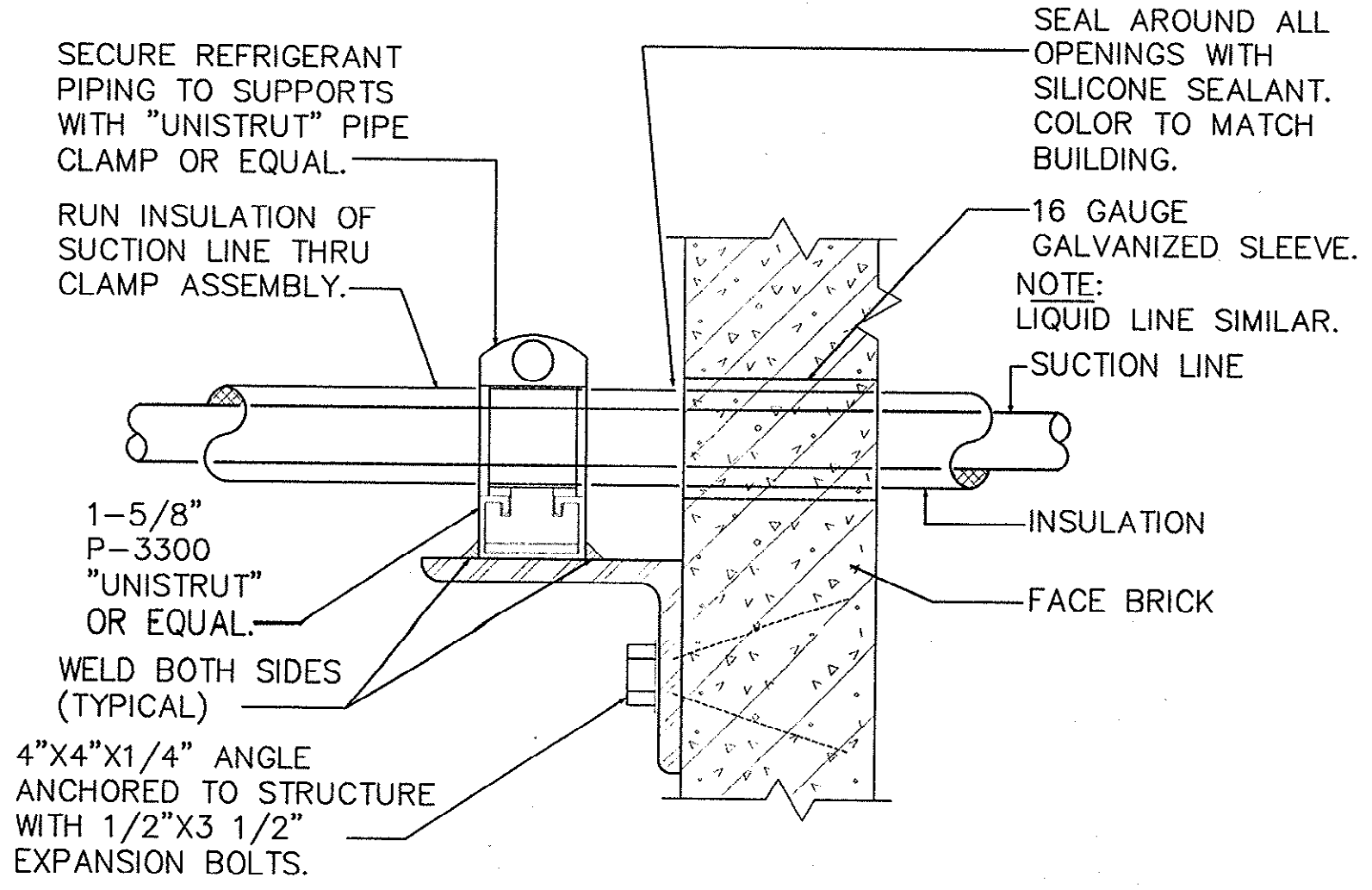
NOT TO SCALE

NOTE:
ALL THERMOSTATS, SWITCHES AND OTHER DEVICES SHALL BE INSTALLED IN A NEAT AND ORDERLY FASHION, WITH EACH ITEM BEING PLUMB AND SQUARE.



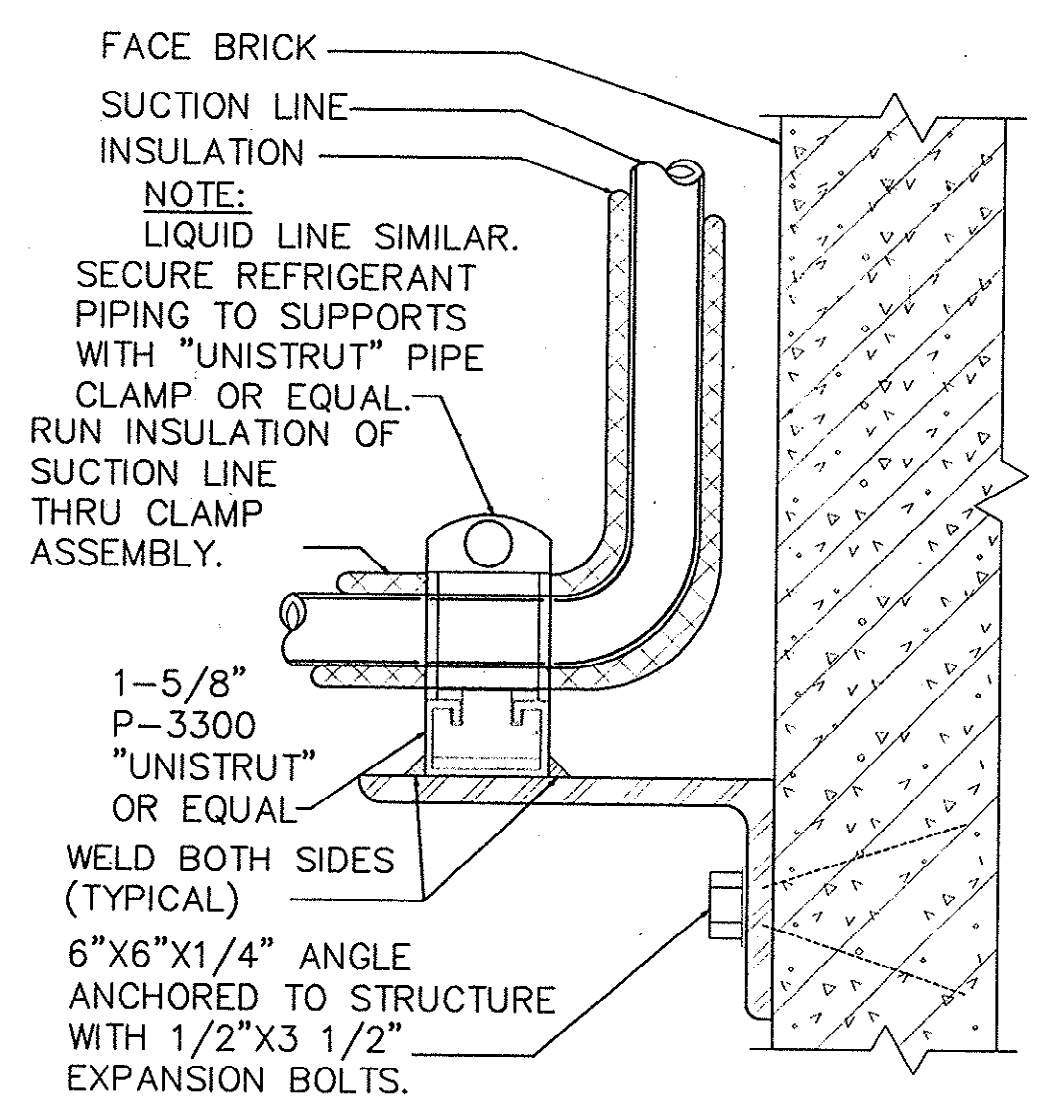
REFRIGERANT PIPE SUPPORT DETAIL

NTS



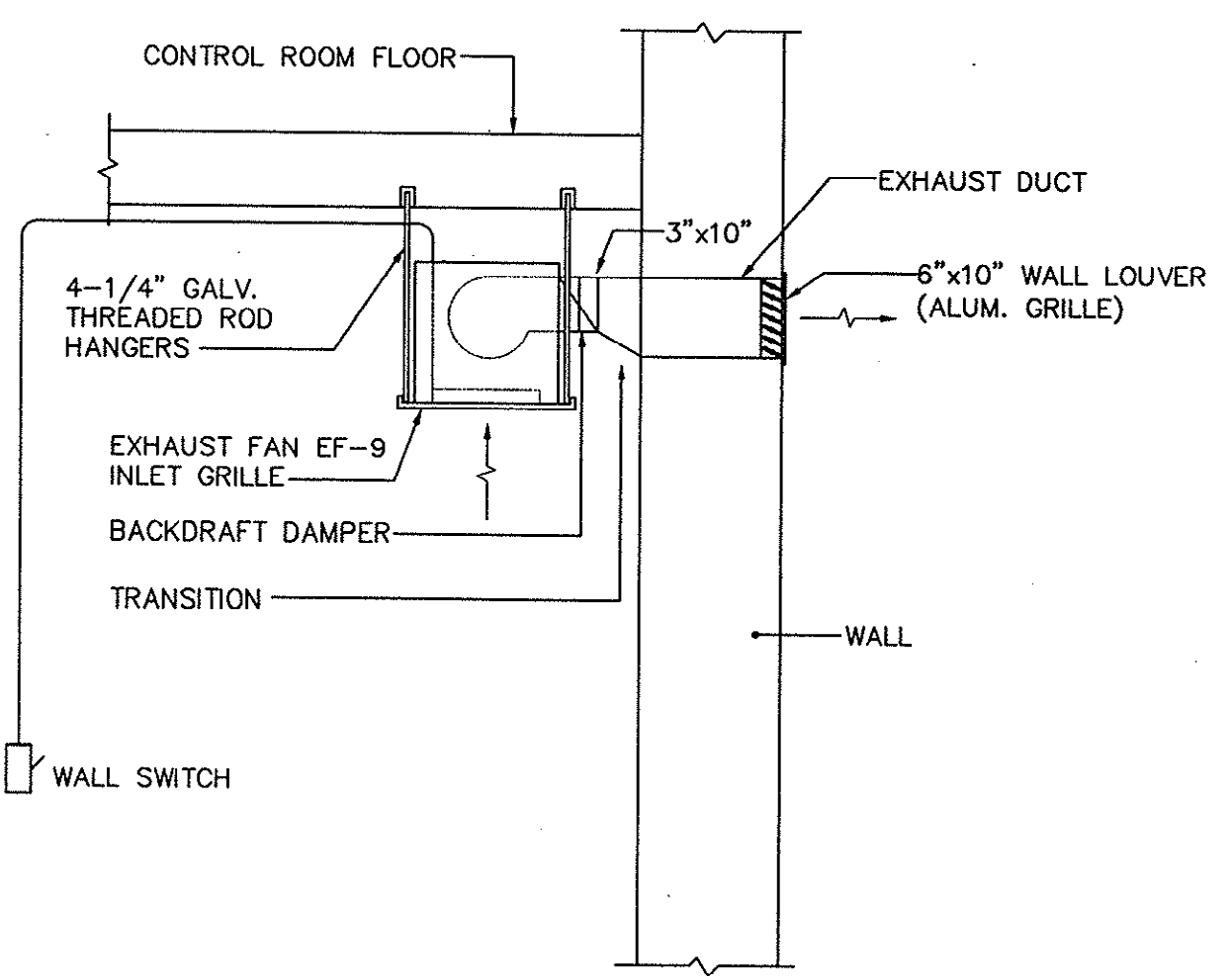
REFRIGERANT PIPE SUPPORT AT WALL

NTS



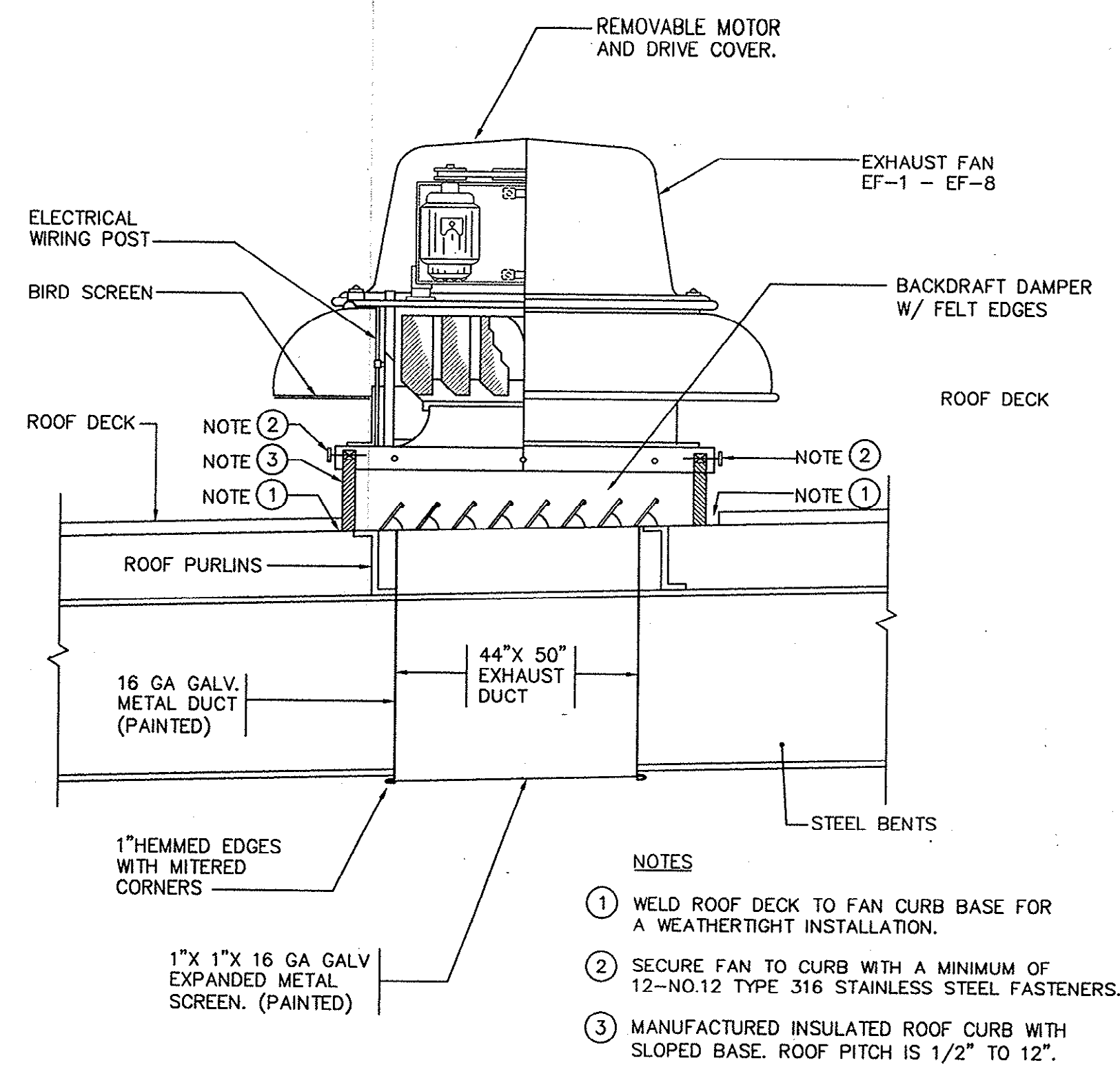
REFRIGERANT PIPE SUPPORT AT WALL

NTS



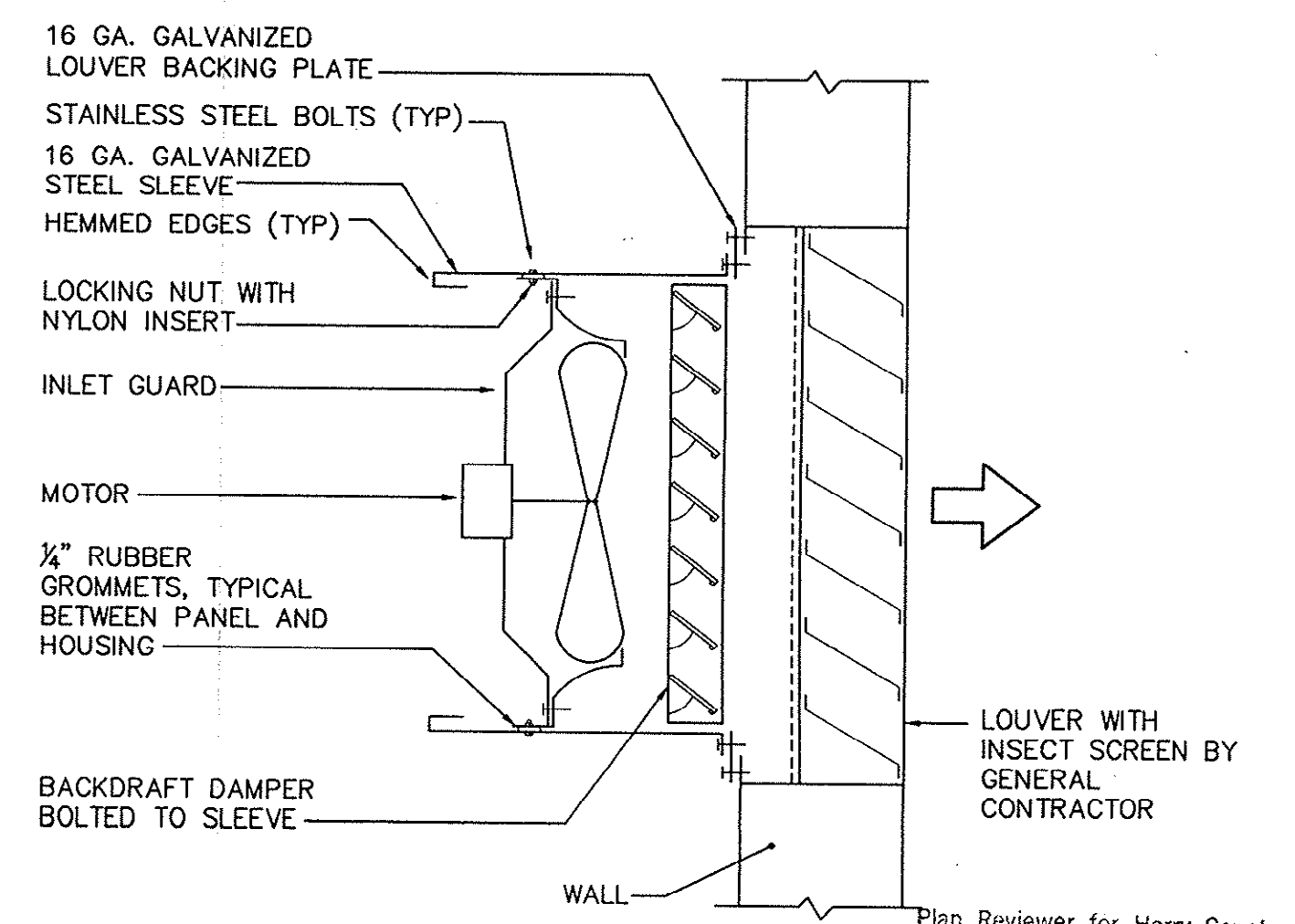
EXHAUST FAN EF-9 DETAIL

SCALE: N.T.S.



EXHAUST FAN DETAIL (EF-1 THRU EF-8)

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

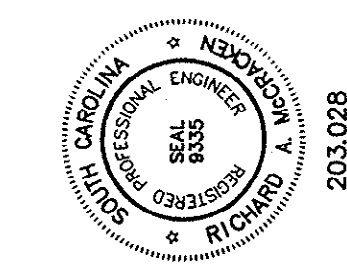


EXHAUST FAN DETAIL (EF-10)

NOT TO SCALE

REVISIONS			
SYM.	DESCRIPTION	DATE	BY

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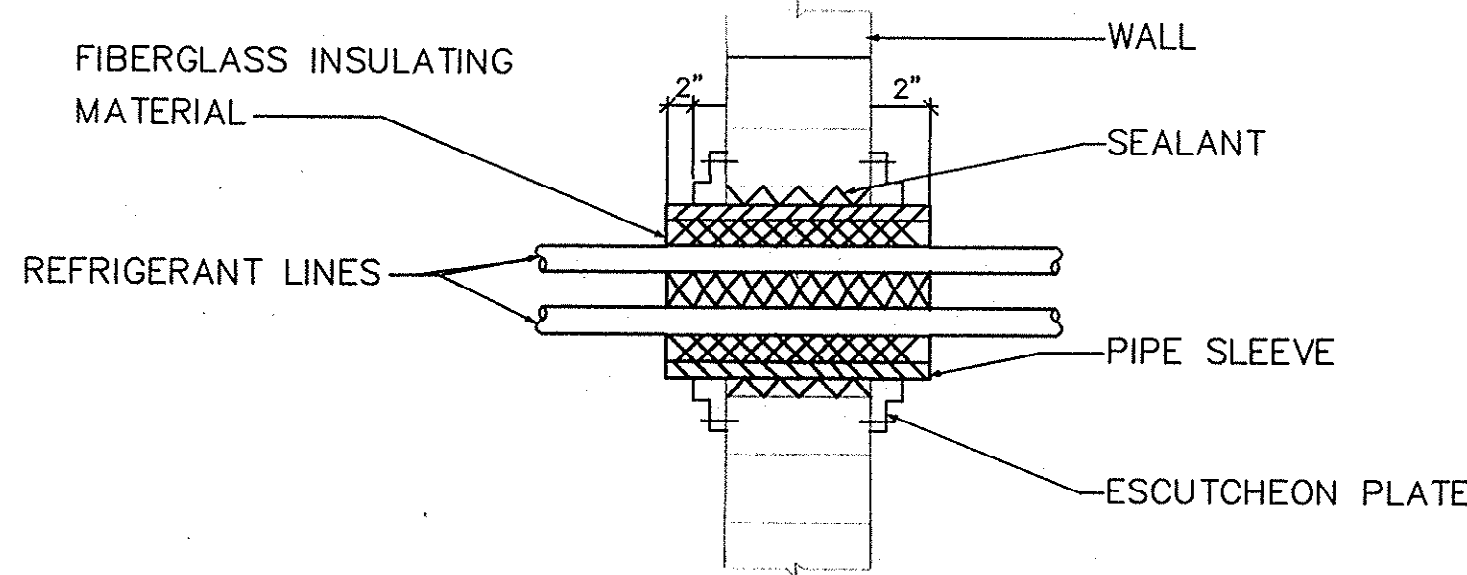
MECHANICAL
DETAILS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

DATE:	APRIL 2004
DESIGNED:	RAM
DRAWN:	CADD
CHECKED:	RAM
SCALE:	AS SHOWN

SHEET NO.
M-04
OF: _____

34/12/04 RPD 1/8"=1' 203-028 B01.MECH (U-04.dwg)



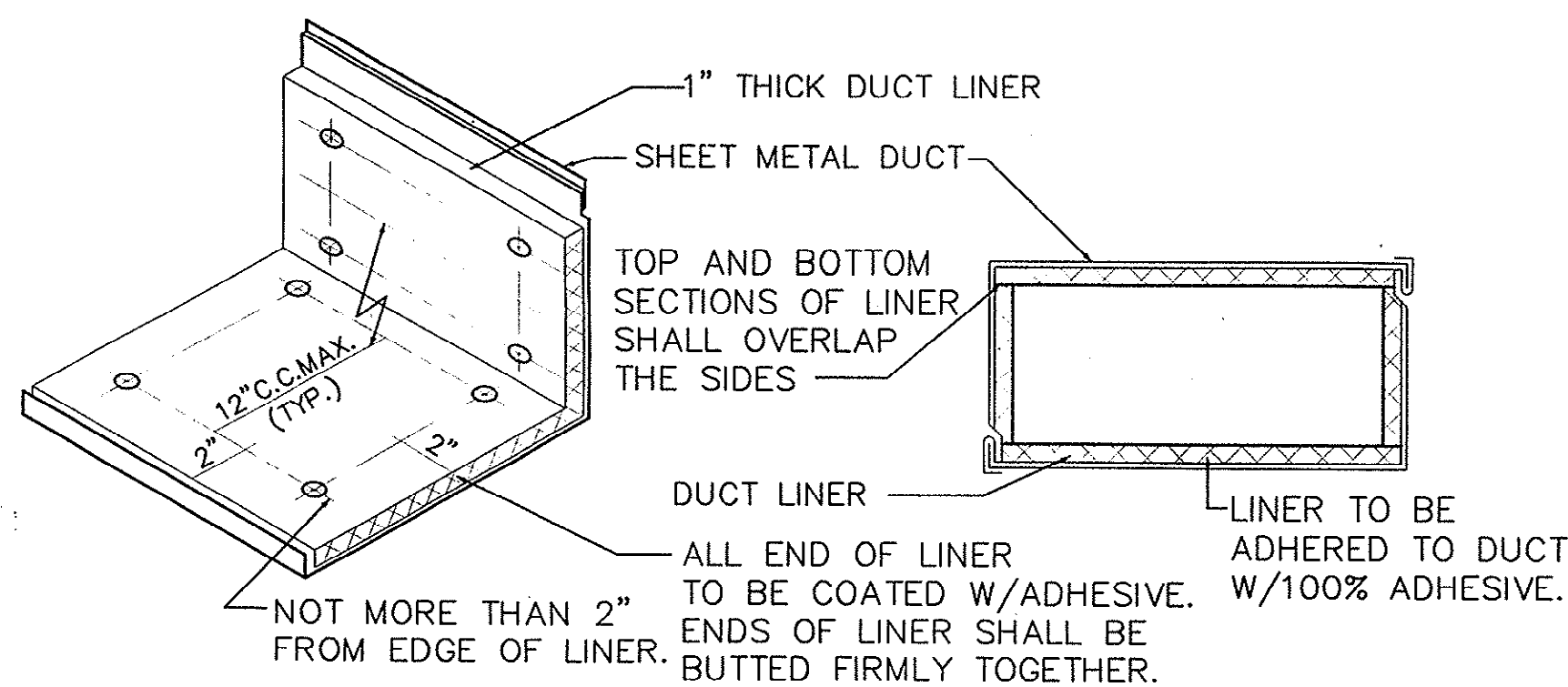
PIPE SLEEVE DETAIL

NTS

METAL FASTENERS:

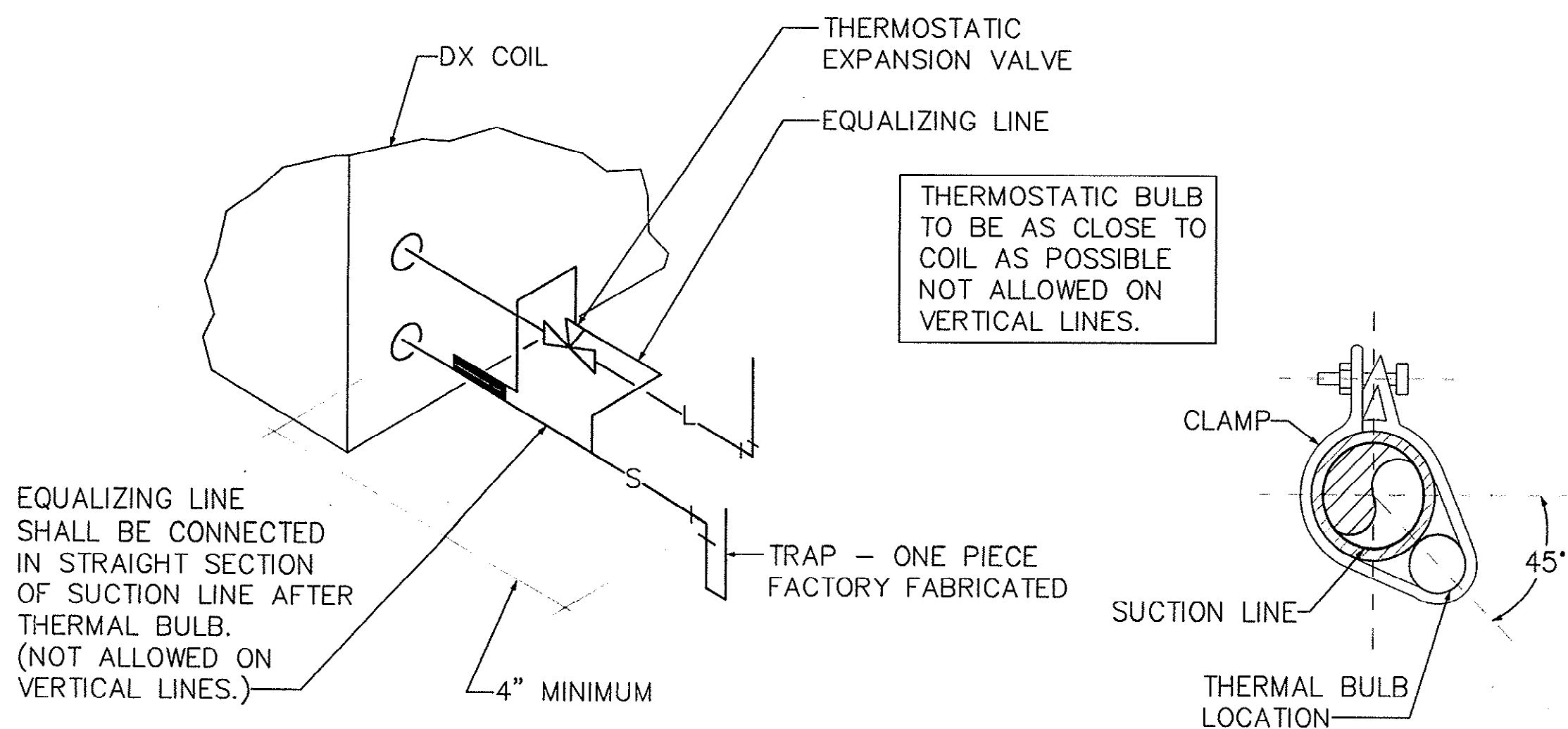
OMARK INSUL-PINS,
DURO DYNE FASTENERS
OR GRIP NAILS.

GRIP NAILS SHALL BE INSTALLED
BY "GRIPNAIL AIR HAMMER" OR
BY AUTOMATIC FASTENER EQUIPMENT.



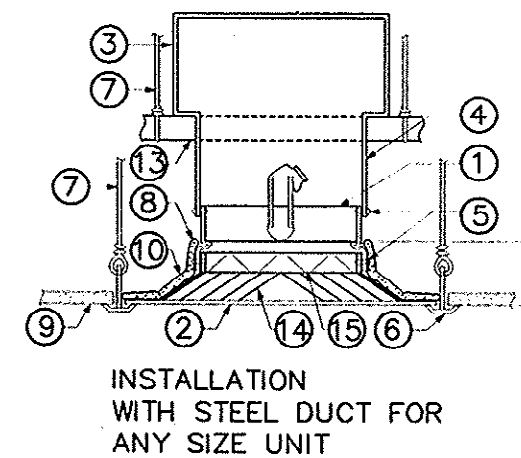
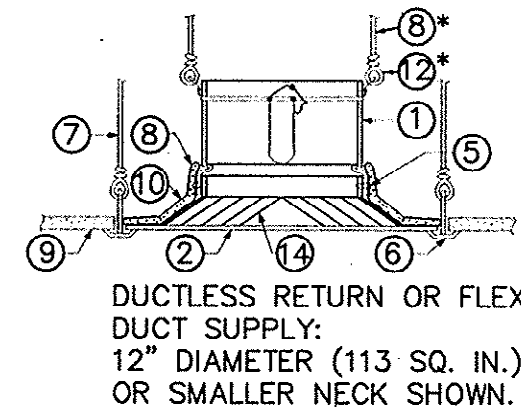
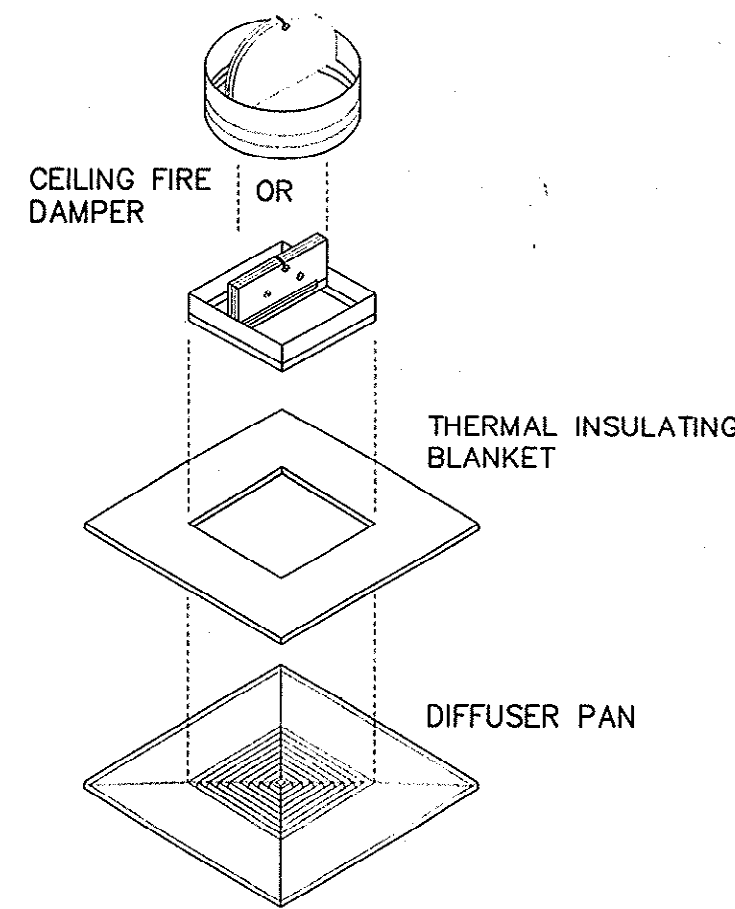
DUCT LINER DETAIL

NTS



REFRIGERANT COIL CONNECTION DETAIL

NTS



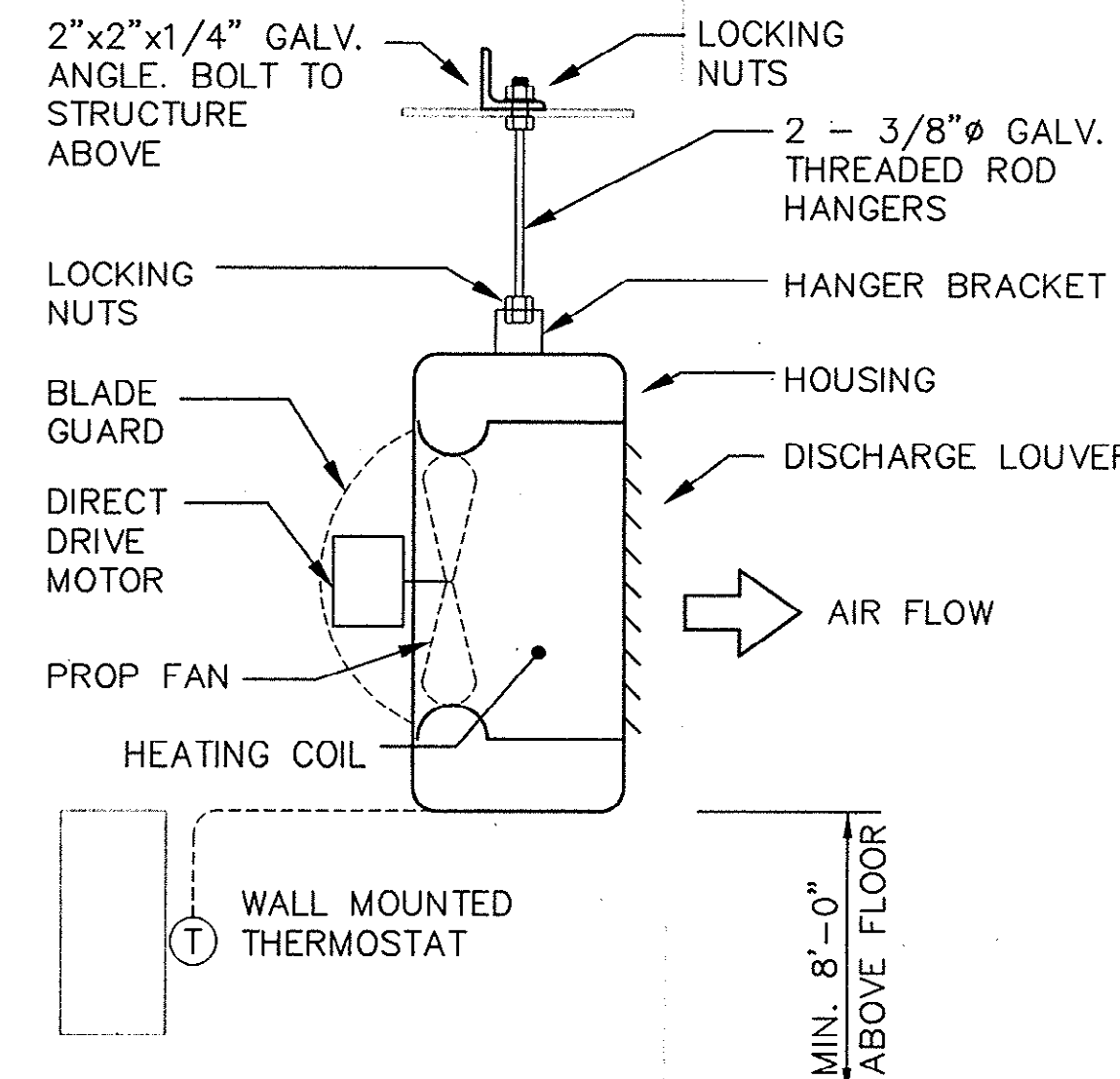
*REQUIRED WHEN NECK
SIZE IS GREATER THAN
113 SQ. IN.

- ① FIRE DAMPER
- ② DIFFUSER (GRILLE) 24 GAGE MINIMUM
- ③ DUCT
- ④ DUCT DROP
- ⑤ #8 SHEET METAL SCREW
- ⑥ CEILING GRID (UL CLASSIFIED)
- ⑦ 12 GAGE STEEL WIRE
- ⑧ 16 GAGE STEEL WIRE
- ⑨ CEILING MATERIAL
- ⑩ THERMAL BLANKET INSULATION - REFRACTORY CERAMIC COVER
- ⑪ THERMAL BLANKET EXTENSION (3" WIDE) - REFRACTORY CERAMIC FIBER
- ⑫ HANGER STRAP
- ⑬ 16 MSG 1 1/2" CHANNEL
- ⑭ DIFFUSER OR GRILLE CORE (METALLIC OR NON-METALLIC)
- ⑮ VOLUME CONTROLLER

CEILING FIRE DAMPER DETAIL

NOT TO SCALE

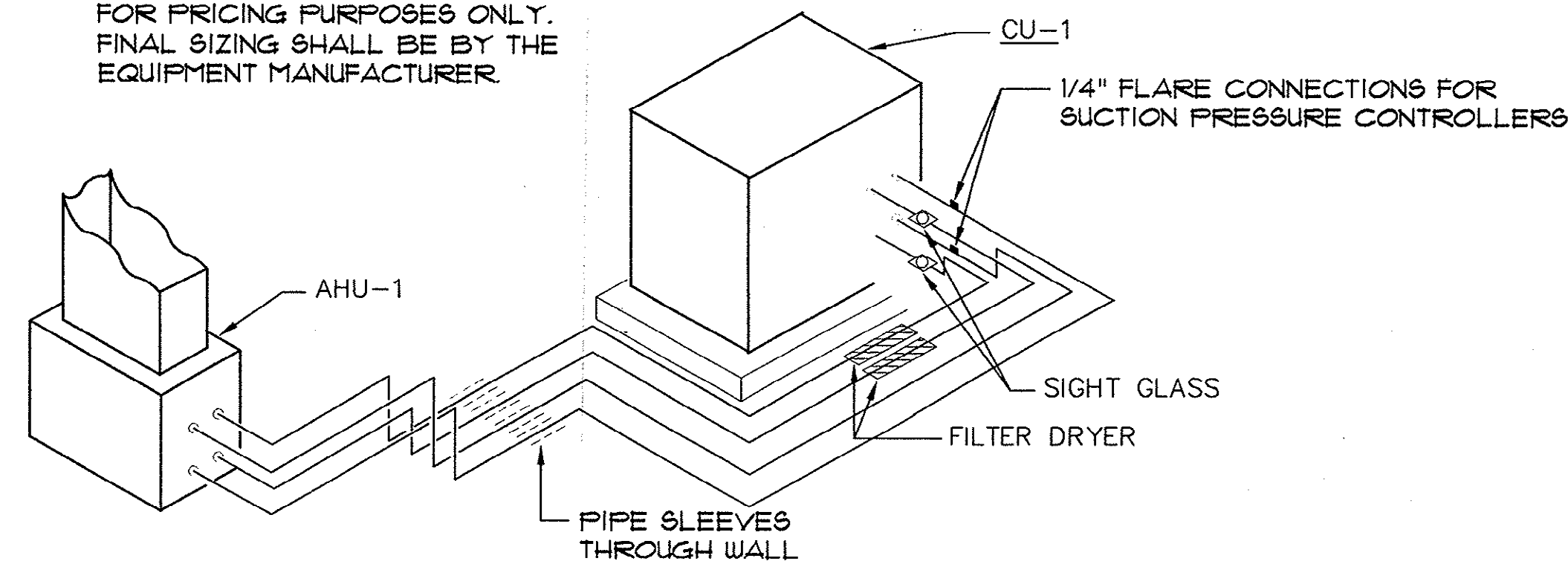
X-DIMENSION 4" MAXIMUM WITH 12" DIAMETER (113 SQ. IN.) DAMPER AND SMALLER.
2 3/4" MAXIMUM WITH DAMPER LARGER THAN 12" DIAMETER (113 SQ. IN.).
INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH MANUFACTURERS
INSTRUCTIONS.



UNIT HEATER DETAIL

NOT TO SCALE

NOTE:
REFRIGERANT PIPE SIZES ARE
FOR PRICING PURPOSES ONLY.
FINAL SIZING SHALL BE BY THE
EQUIPMENT MANUFACTURER.



REFRIGERANT PIPING SCHEMATIC

NOT TO SCALE

DIMENSION OF LONGEST SIDE, INCHES	SHEET METAL GAUGE (ALL FOUR SIDES)	MINIMUM REINFORCING ANGLE SIZE AND MAXIMUM LONGITUDINAL SPACING BETWEEN TRANSVERSE JOINTS &/OR INTERMEDIATE REINFORCING	TRANSVERSE REINFORCING (1)			
			AT JOINTS			
			MIN. H. IN.	DRIVE SLIP PLAIN S SLIP	HEMMED S SLIP	ALTER'NT BAR SLIP
UP THRU 12	26	NONE REQUIRED	1	24	24	24
13-18	24	NONE REQUIRED	1	24	24	24
19-30	24	1"x1"x1/8" @ 60 IN.	1	-	24	24
31-42	22	1"x1"x1/8" @ 60 IN.	1	-	-	22

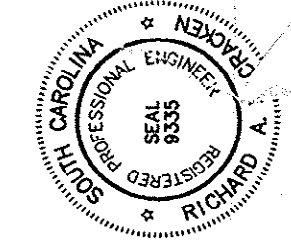
(1) TRANSVERSE REINFORCING SIZE IS DETERMINED BY
DIMENSION OF SIDE TO WHICH ANGLE IS APPLIED.

DUCT CONSTRUCTION DETAIL

NTS

REVISIONS			
SYM.	DESCRIPTION	DATE	BY

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MECHANICAL
DETAILS

SCHWARTZ
WASTEWATER TREATMENT
PLANT UPGRADE
GRAND STRAND WATER &
SEWER AUTHORITY

DATE: APRIL 2004
DESIGNED: RAM
DRAWN: CADD
CHECKED: RAM
SCALE: AS SHOWN

SHEET NO.

M-05

OF: