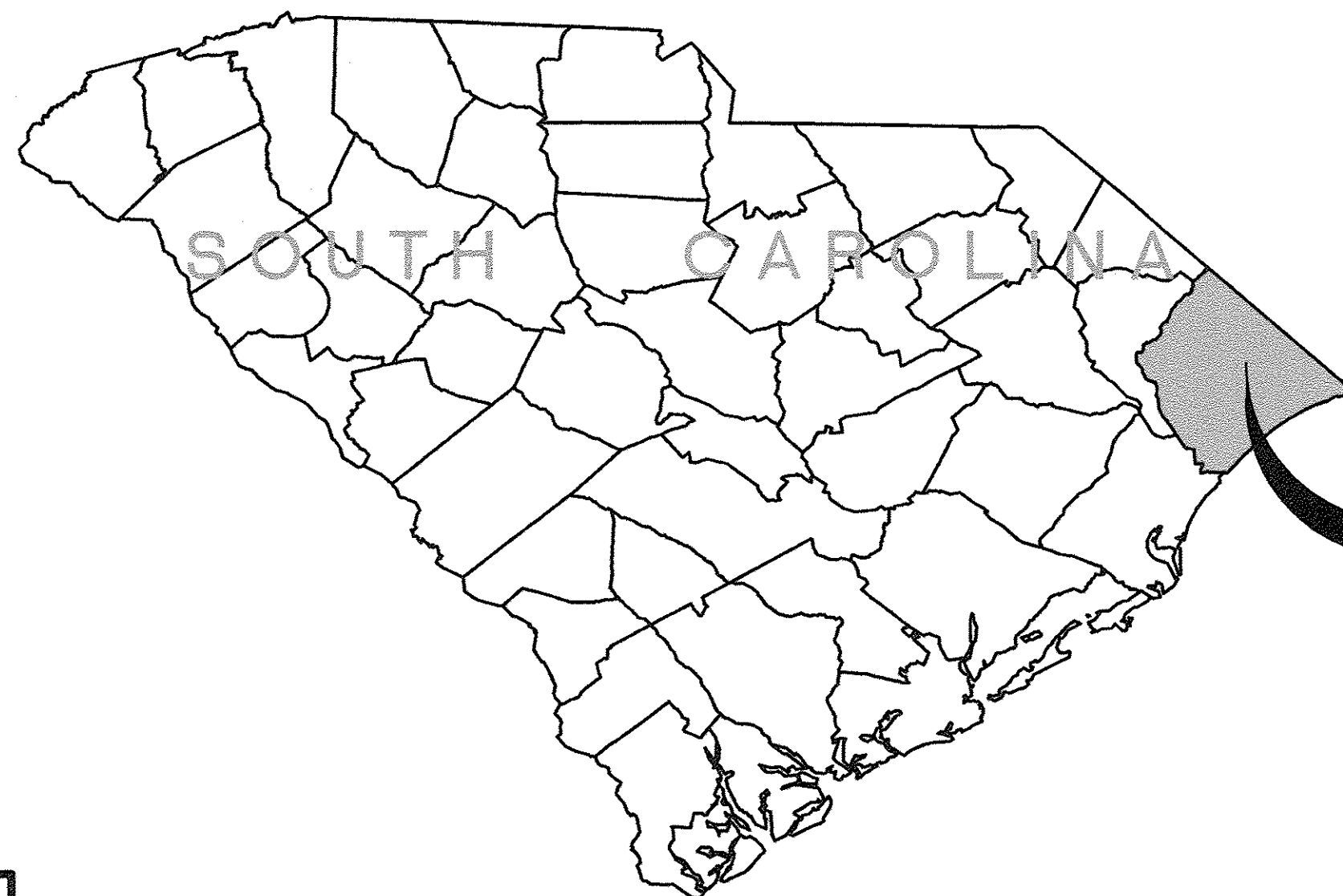
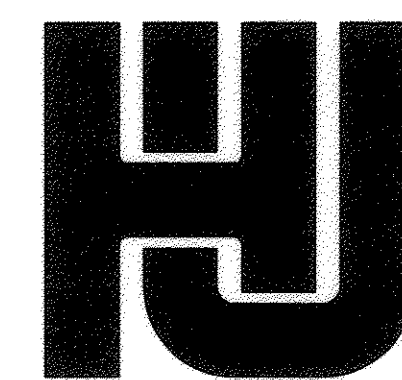


BULL CREEK WTP FINISHED WATER PUMP STATION NO. 2 (PUMP STATION & ELECTRICAL BLDG.)



HORRY COUNTY

11x17 ARE TRUE 1/2 SCALE
AS-BUILT

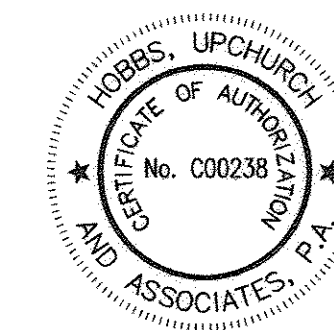
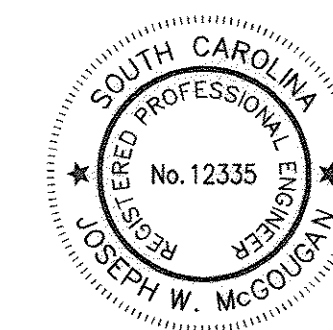


HOBBS, UPCHURCH & ASSOCIATES, P.A.

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MYRTLE BEACH, SOUTH CAROLINA 29577

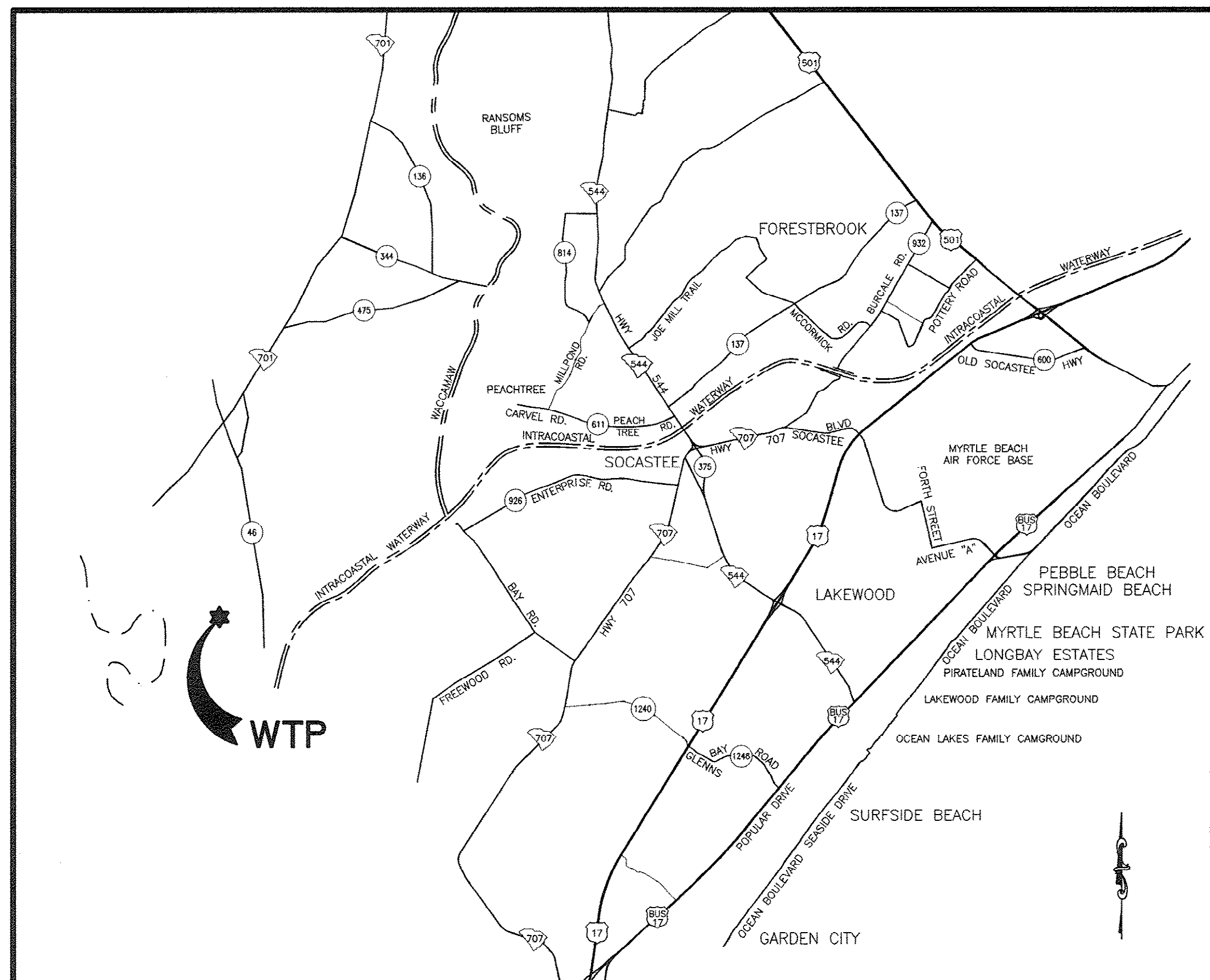
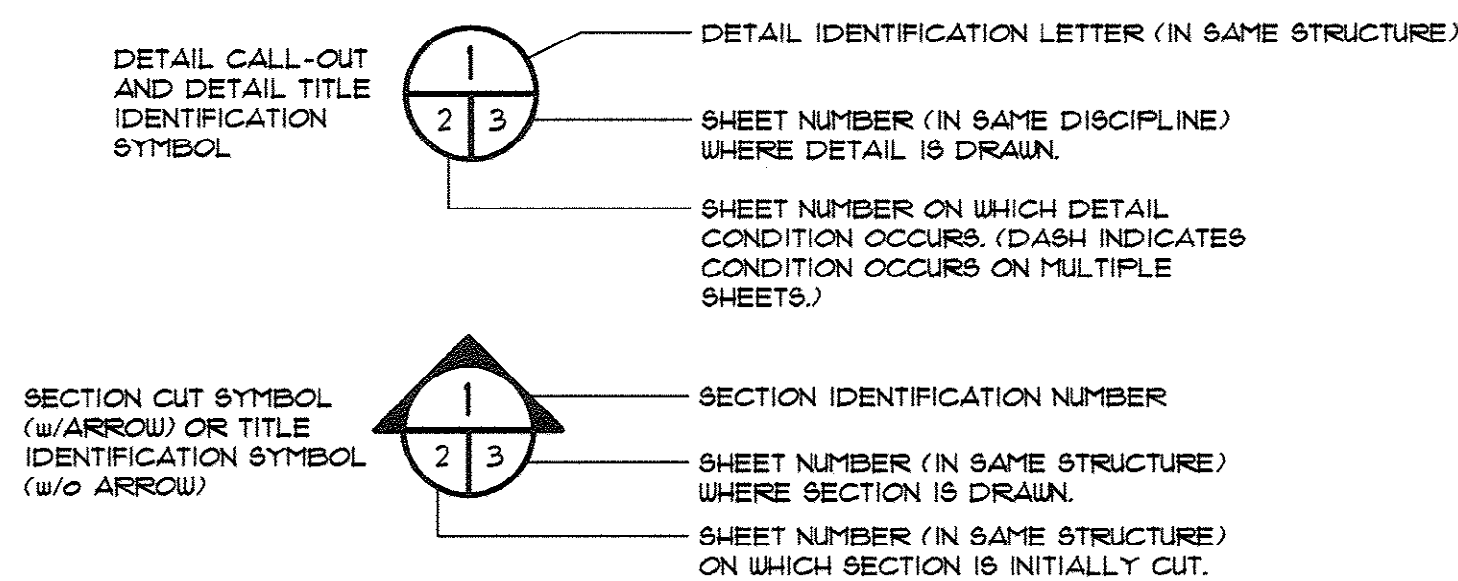
PHONE: (843) 626-1910 FAX: (843) 626-1745



GENERAL CONSTRUCTION ABBREVIATIONS

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

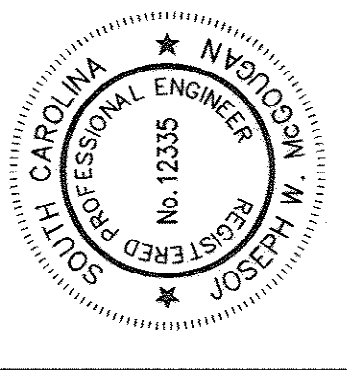
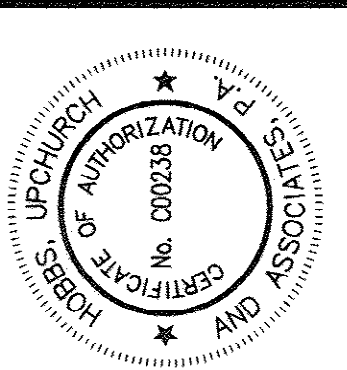
SECTION/DETAIL LEGEND



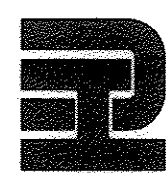
INDEX OF SHEETS

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- VICINITY MAP AND INDEX
- EXISTING SITE PLAN
- NEW SITE PLAN
- CHEMICAL FEED LAYOUT
- ENLARGED SITE PLAN
- PIPING DETAILS
- FINISHED WATER PUMP STATION NO. 2 LAYOUT & SECTION
- FINISHED WATER PUMP STATION NO. 2 LAYOUT & DETAILS
- STAIR LAYOUT & DETAILS
- ELECTRICAL BUILDING LAYOUT
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- FINISHED WATER METER VAULT NO. 1
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- EXISTING CHEMICAL FEED VAULT MODIFICATION PLAN
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- EXISTING AMMONIA & FLUORIDE FEED MODIFICATION PLAN
- CHEMICAL FEED DETAILS
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- MISCELLANEOUS DETAILS
- MISCELLANEOUS DETAILS
- ELECTRICAL SYMBOLS & DETAILS
- ONE-LINE POWER DIAGRAM
- ELECTRICAL SITE PLAN
- ENLARGED PARTIAL SITE PLAN
- NEW ELECTRICAL BUILDING EQUIPMENT PLAN AND DETAILS
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- POWER EQUIPMENT SCHEDULES AND ELEVATIONS
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- DUCTBANK SECTIONS AND DETAILS
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- ENGINE GENERATOR SET PLAN AND DETAILS
- ENGINE GENERATOR CONCRETE PAD DETAILS, SCHEDULES AND DIAGRAMS
- NEW METER VAULT DETAILS
- EXISTING PLANT UNIT 2001 LOWER AND UPPER LEVEL POWER PLAN - NEW DETAIL
- EXISTING AMMONIA AND FLUORIDE FEED ELECTRICAL MODIFICATION PLAN
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- HVAC FLOOR PLAN, MECHANICAL LEGEND, KEYED NOTES NOTES AND AIR DEVICE SCHEDULE
- HVAC ROOF PLAN, RTU SCHEDULE AND CONDENSATE DRAIN DETAILS
- MECHANICAL EQUIPMENT SECTION

REVISIONS			
SYM.	DESCRIPTION	DATE	BY



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VICINITY MAP
AND INDEX

BULL CREEK WTP
FINISHED WATER PUMP STATION NO. 2
(PUMP STATION & ELECTRICAL BLDG.)
GRAND STRAND WATER & SEWER AUTHORITY

DATE: OCT. 2008

DESIGNED: JWM

DRAWN: ALG

CHECKED: JWM

SCALE: AS SHOWN

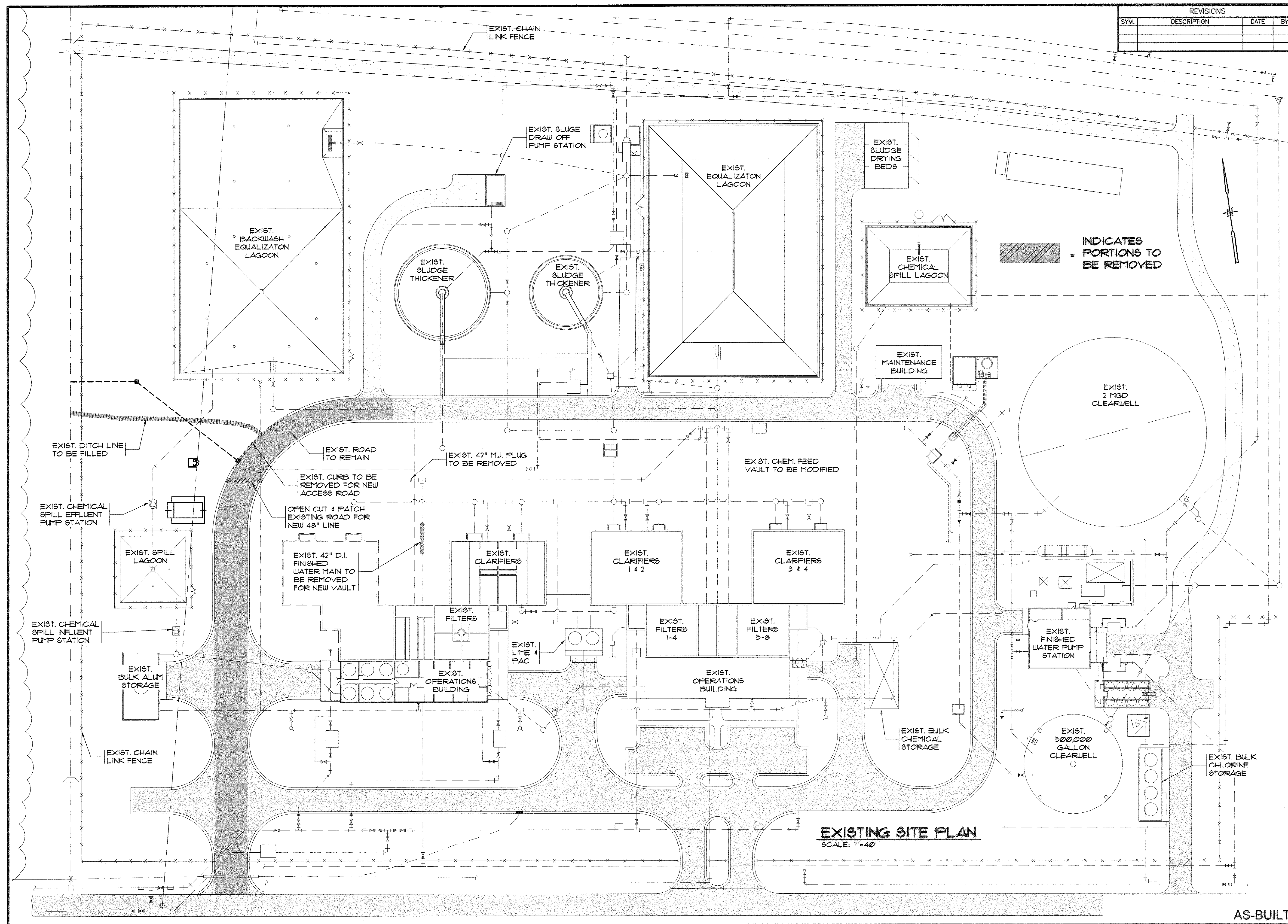
SHEET NO.

2

AS-BUILT

OF: 25 VERSION: 5

33-014-002/49 W



REVISIONS			
SYM.	DESCRIPTION	DATE	BY

Hobbs, Upchurch & Associates, P.A.
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EXISTING SITE PLAN

BULL CREEK WTP
 FINISHED WATER PUMP STATION NO. 2
 (PUMP STATION & ELECTRICAL BLDG.)
 GRAND STRAND WATER & SEWER AUTHORITY

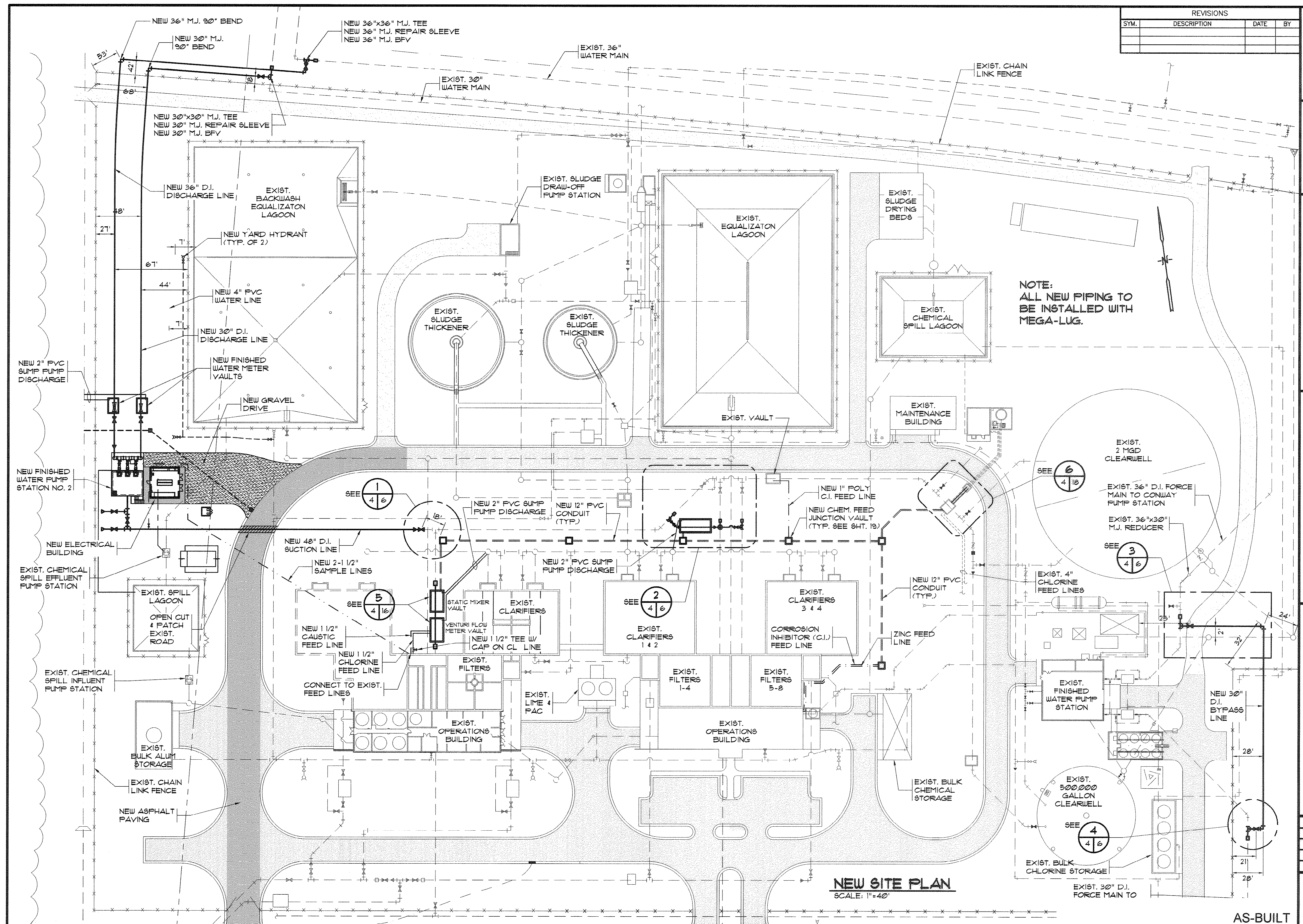
DATE: OCT. 2008
 DESIGNED: JWM
 DRAWN: DC
 CHECKED: JWM
 SCALE: AS SHOWN

SHEET NO.
3

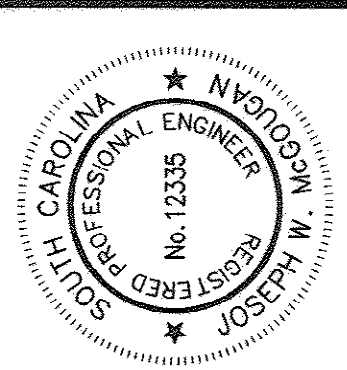
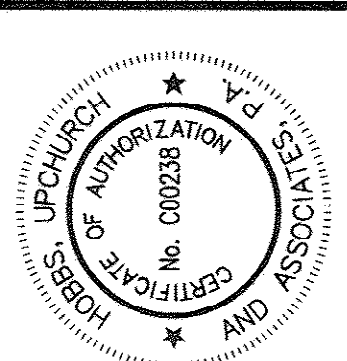
OF: 25 VERSION: 5

AS-BUILT

33-014-003/49 W



REVISIONS			
SYM.	DESCRIPTION	DATE	BY



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NEW SITE PLAN

BULL CREEK WTP
FINISHED WATER PUMP STATION NO. 2
(PUMP STATION & ELECTRICAL BLDG.)
 GRAND STRAND WATER & SEWER AUTHORITY

DATE:	OCT. 2008
DESIGNED:	JWM
DRAWN:	DC
CHECKED:	JWM
SCALE:	AS SHOWN
SHEET NO.	4
OF:	25
VERSION:	5

33-014-004/49 W

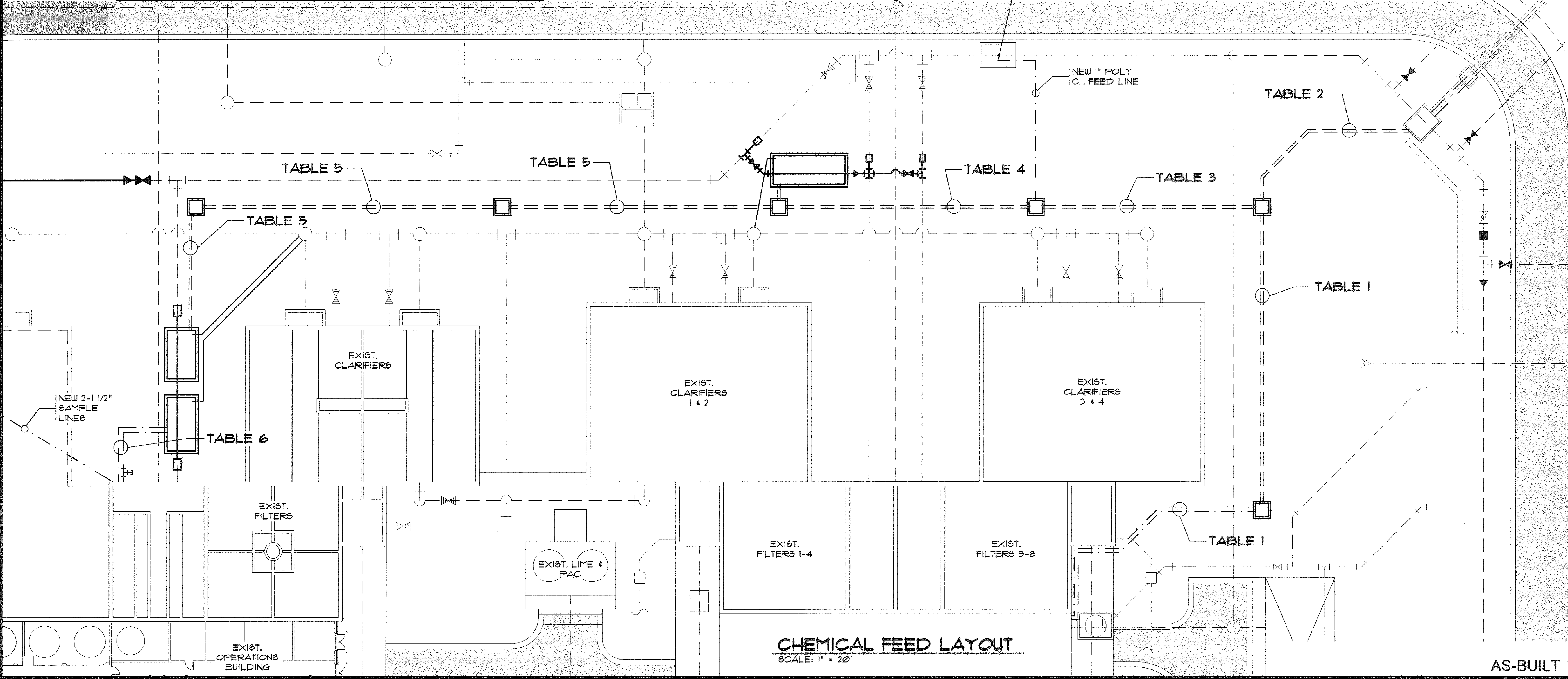
TABLE 1	TABLE 4
1 - 1" C.I.	2 - 1/2" FL (IN 1" CPVC)
1 - 1" Z	2 - 1" AM
TABLE 2	1 - 1" CL
2 - 1/2" FL (IN 1" CPVC)	2 - 1" Z
2 - 1" AM	1 - 1" C
1 - 1" CL	2 - 1" C.I.
1 - 1" Z	2 - 1" SPARE
1 - 1" C	TABLE 5
2 - 1" SPARE	1 - 1/2" FL (IN 1" CPVC)
TABLE 3	1 - 1" AM
2 - 1/2" FL (IN 1" CPVC)	1 - 1" Z
2 - 1" AM	1 - 1" C.I.
1 - 1" CL	1 - 1" SPARE
2 - 1" Z	TABLE 6
1 - 1" C	1 - 1" CL
1 - 1" C.I.	1 - 1" C
2 - 1" SPARE	

CHEMICAL FEED LINES:

C.I. = CORROSION INHIBITOR
Z = ZINC
AM = AMMONIA
FL = FLUORIDE
C = CAUSTIC
CL = CHLORINE

NOTE:

ROUTE CONDUIT TO AVOID
CONFLICTS WITH UNDERGROUND
OBSTRUCTIONS AND WHERE
POSSIBLE TO AVOID LARGE
LAND DISTURBANCES.



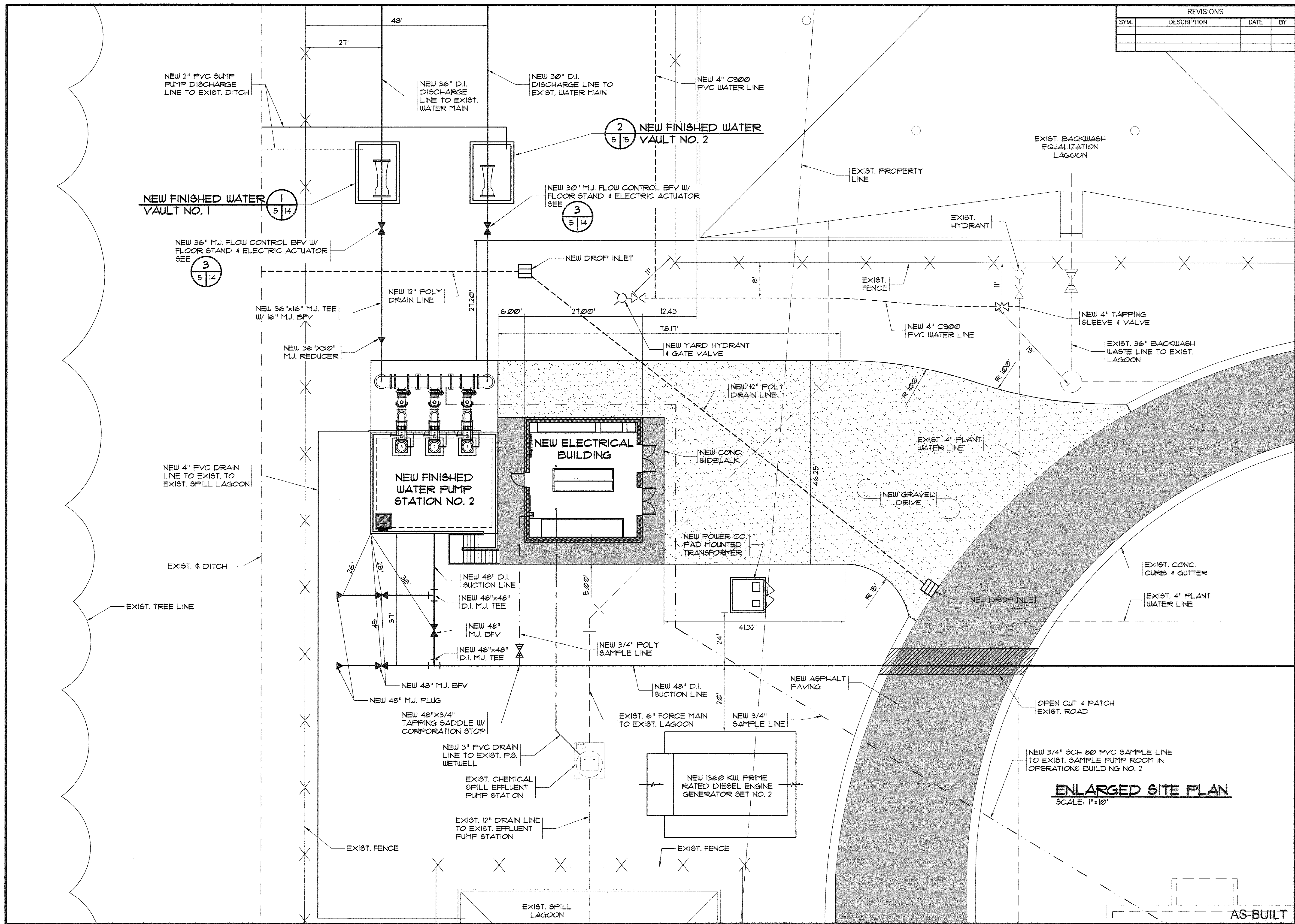
REVISIONS			
SYM.	DESCRIPTION	DATE	BY

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CHEMICAL FEED LAYOUT

BULL CREEK WTP
FINISHED WATER PUMP STATION NO. 2
(PUMP STATION & ELECTRICAL BLDG.)
GRAND STRAND WATER & SEWER AUTHORITY

DATE: OCT. 2008
DESIGNED: JWM
DRAWN: DC
CHECKED: JWM
SCALE: AS SHOWN
SHEET NO. 4A
OF 25 VERSION: 5



REVISIONS			
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BULL CREEK WTP
FINISHED WATER PUMP STATION NO. 2
(PUMP STATION & ELECTRICAL BLDG.)
 GRAND STRAND WATER & SEWER AUTHORITY

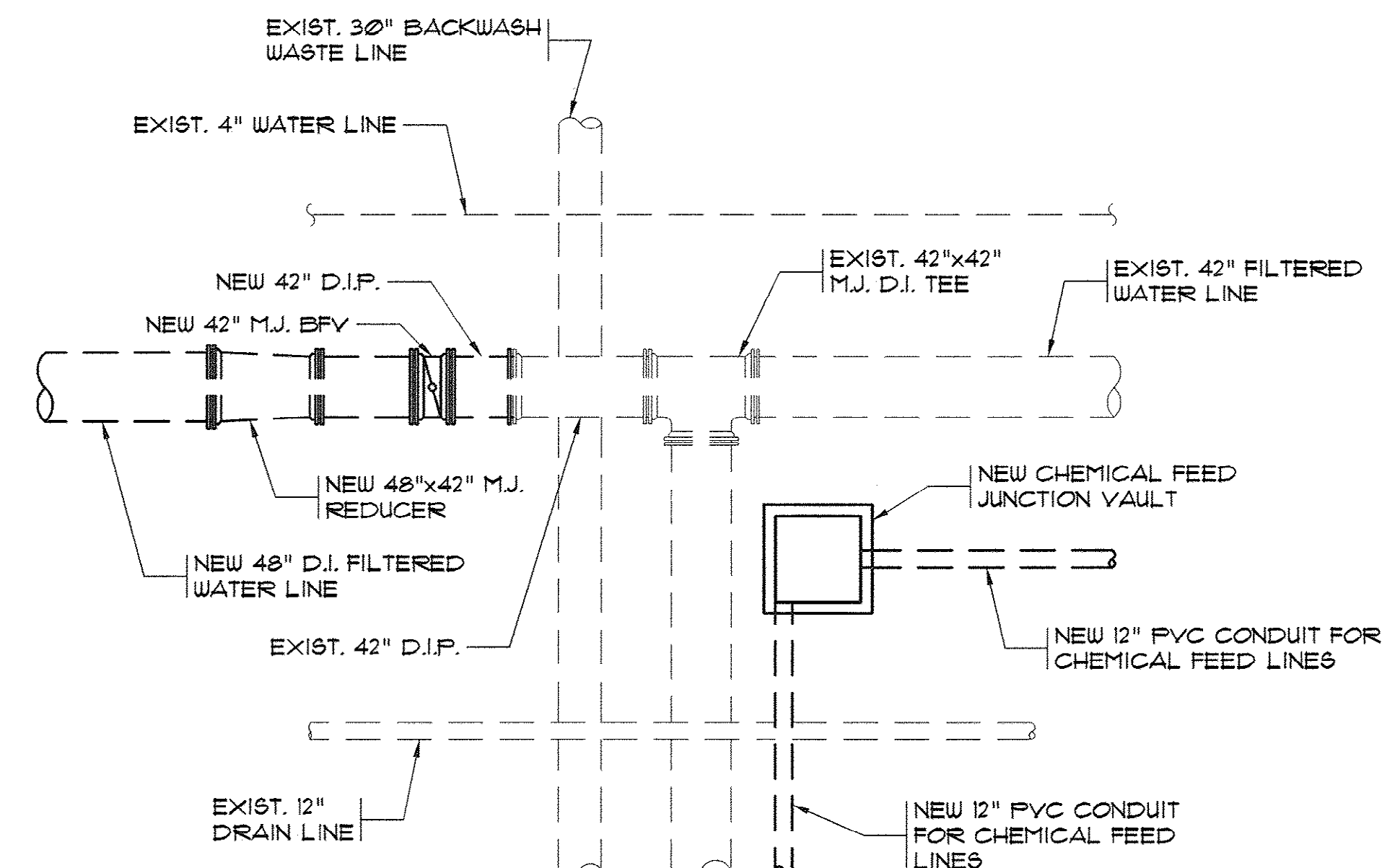
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 DRAWN: JWM
 CHECKED: JWM
 SCALE: AS SHOWN
 SHEET NO. **5**

OF: 25 VERSION: 5

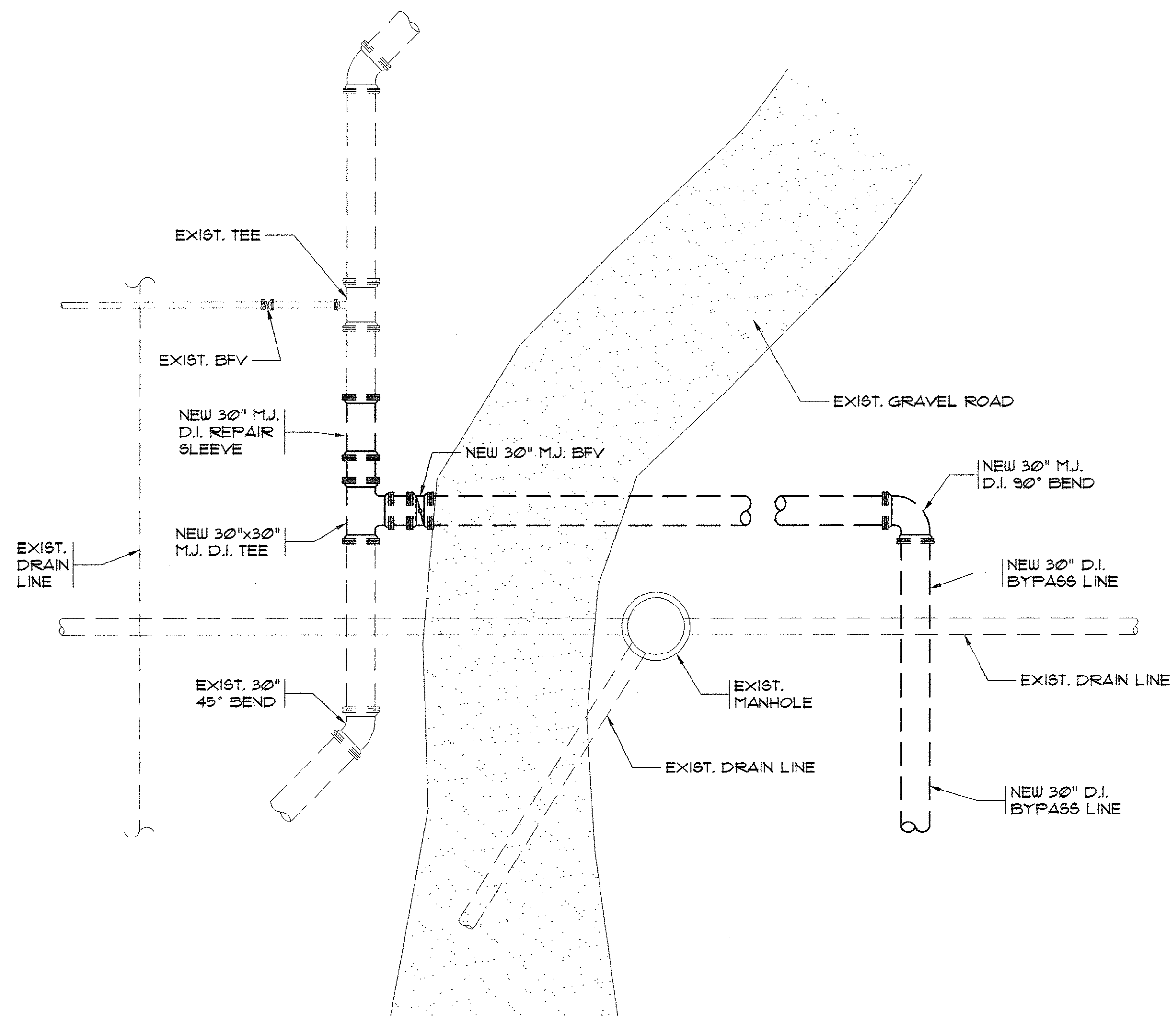
ENLARGED SITE PLAN
SCALE: 1"=10'

AS-BUILT

33-014-006/49 W

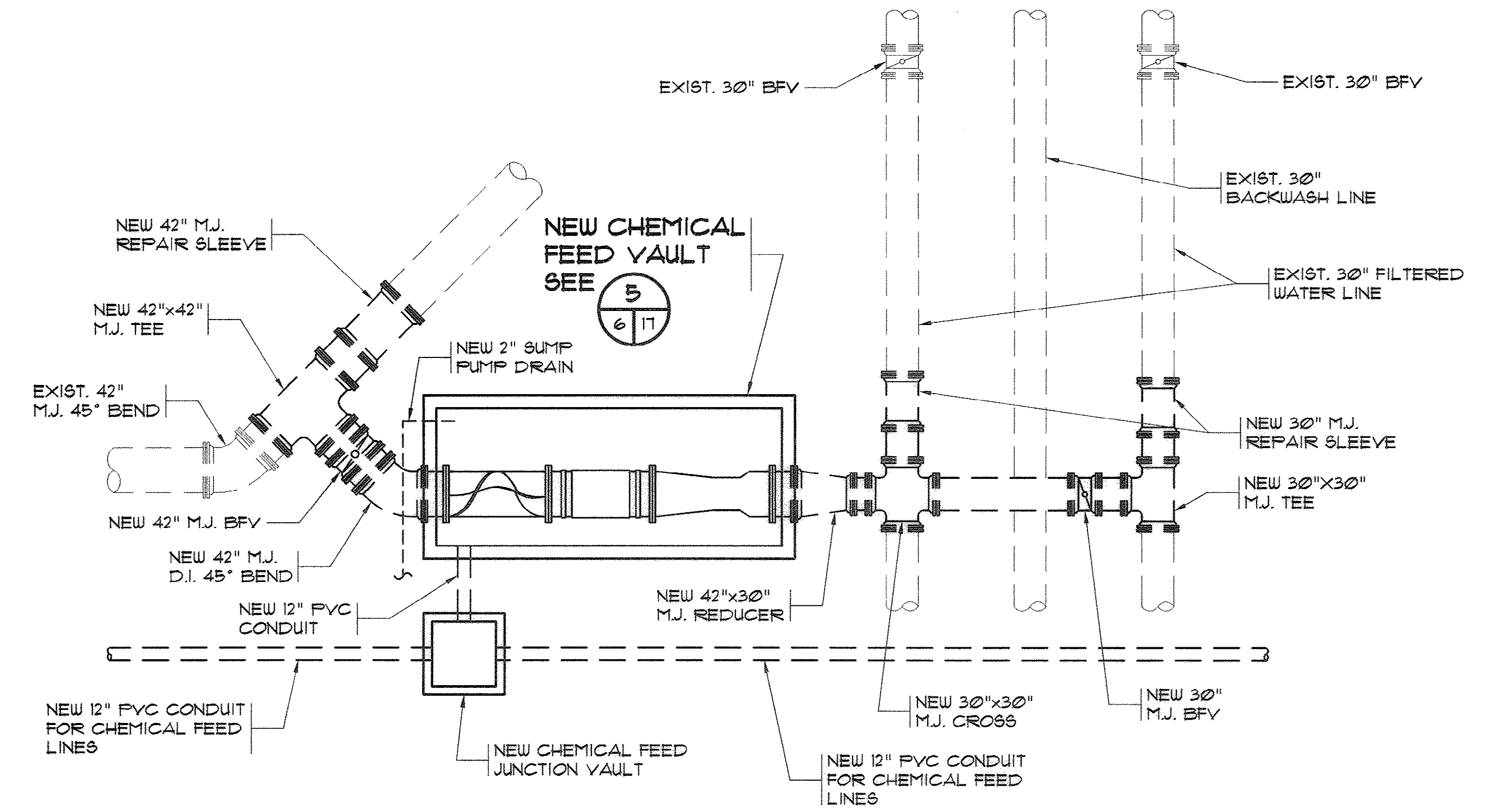


1 PIPING DETAIL
SCALE: 1/8"=1'-0"

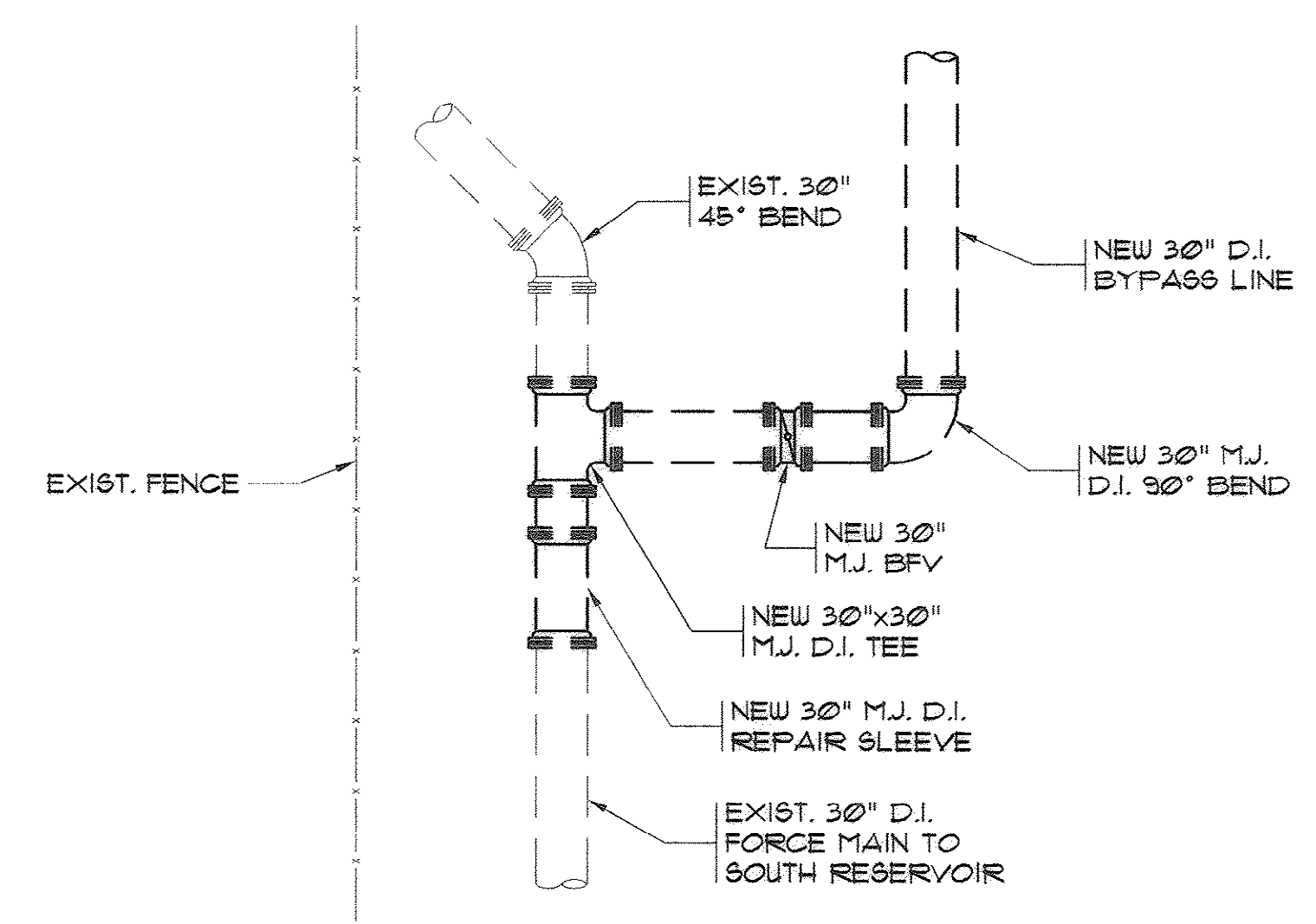


3 PIPING DETAIL
SCALE: 1/8"=1'-0"

NOTES:
1. ALL NEW PIPING TO BE INSTALLED WITH MEGA-LUG.
2. ALL NEW BUTTERFLY VALVES (BFV) TO HAVE VALVE BOXES.

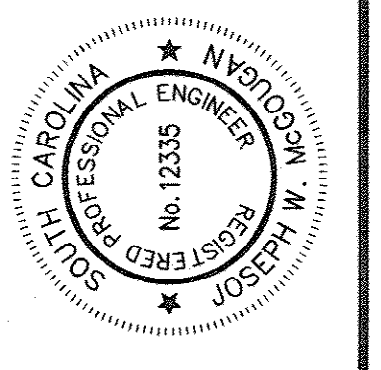
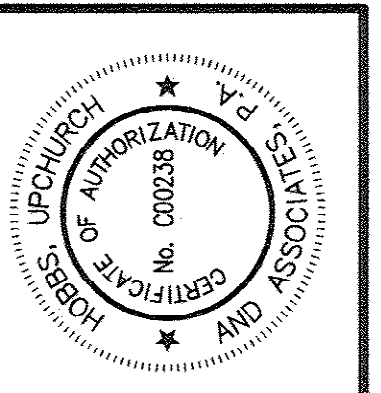


2 PIPING DETAIL
SCALE: 1/8"=1'-0"



4 PIPING DETAIL
SCALE: 1/8"=1'-0"

REVISIONS			
SYM.	DESCRIPTION	DATE	BY



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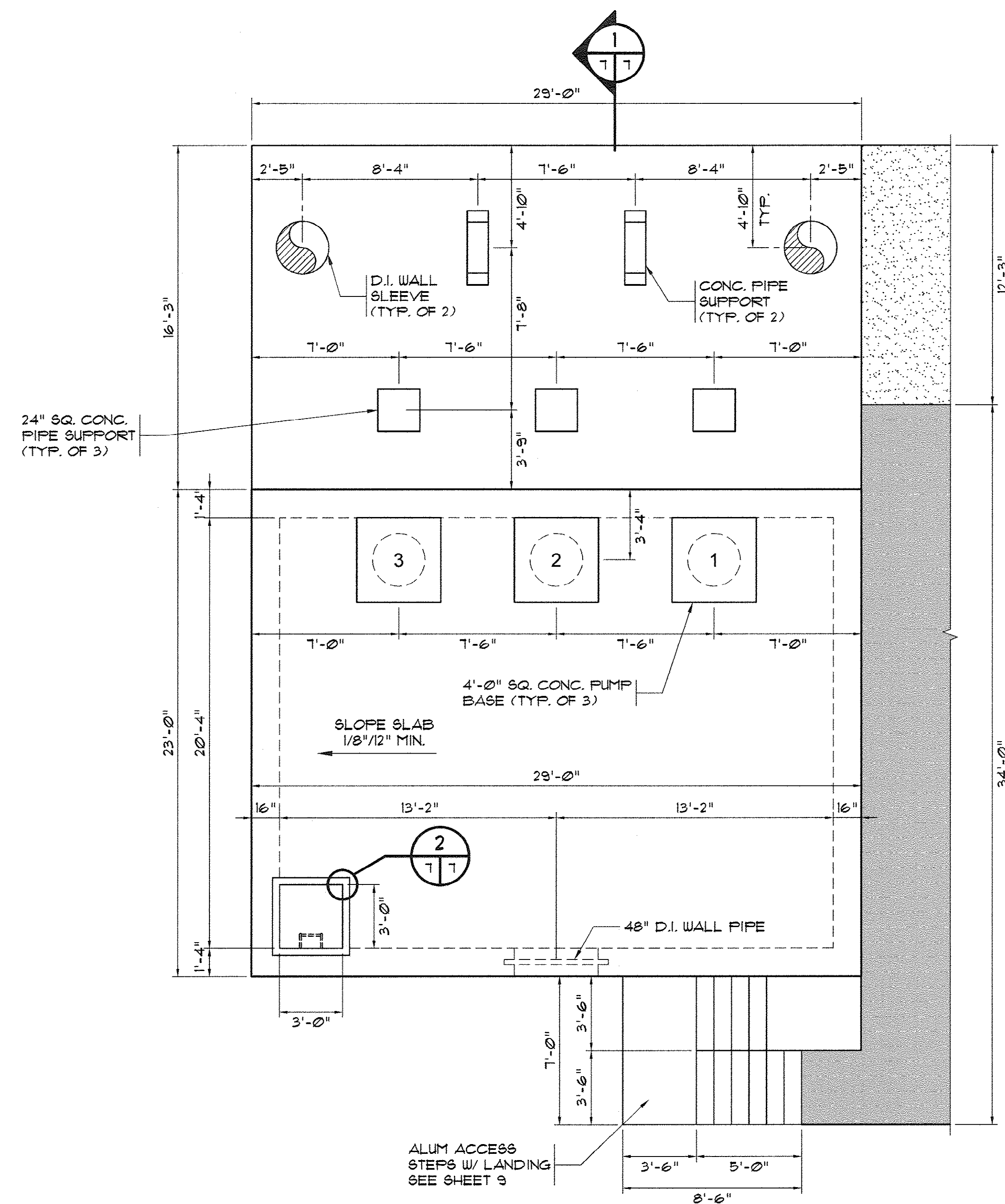
PIPING DETAILS

BULL CREEK WTP
FINISHED WATER PUMP STATION NO. 2
(PUMP STATION & ELECTRICAL BLDG.)
GRAND STRAND WATER & SEWER AUTHORITY

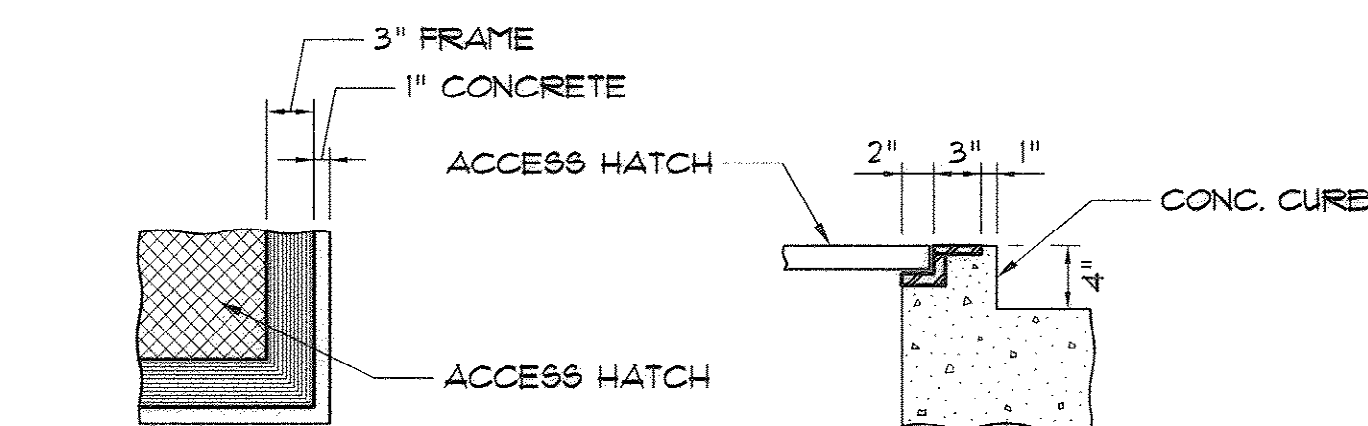
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DESIGNED:	JWM
DRAWN:	ALG
CHECKED:	JWM
SCALE:	AS SHOWN
SHEET NO.	6
OF:	25
VERSION:	5

AS-BUILT

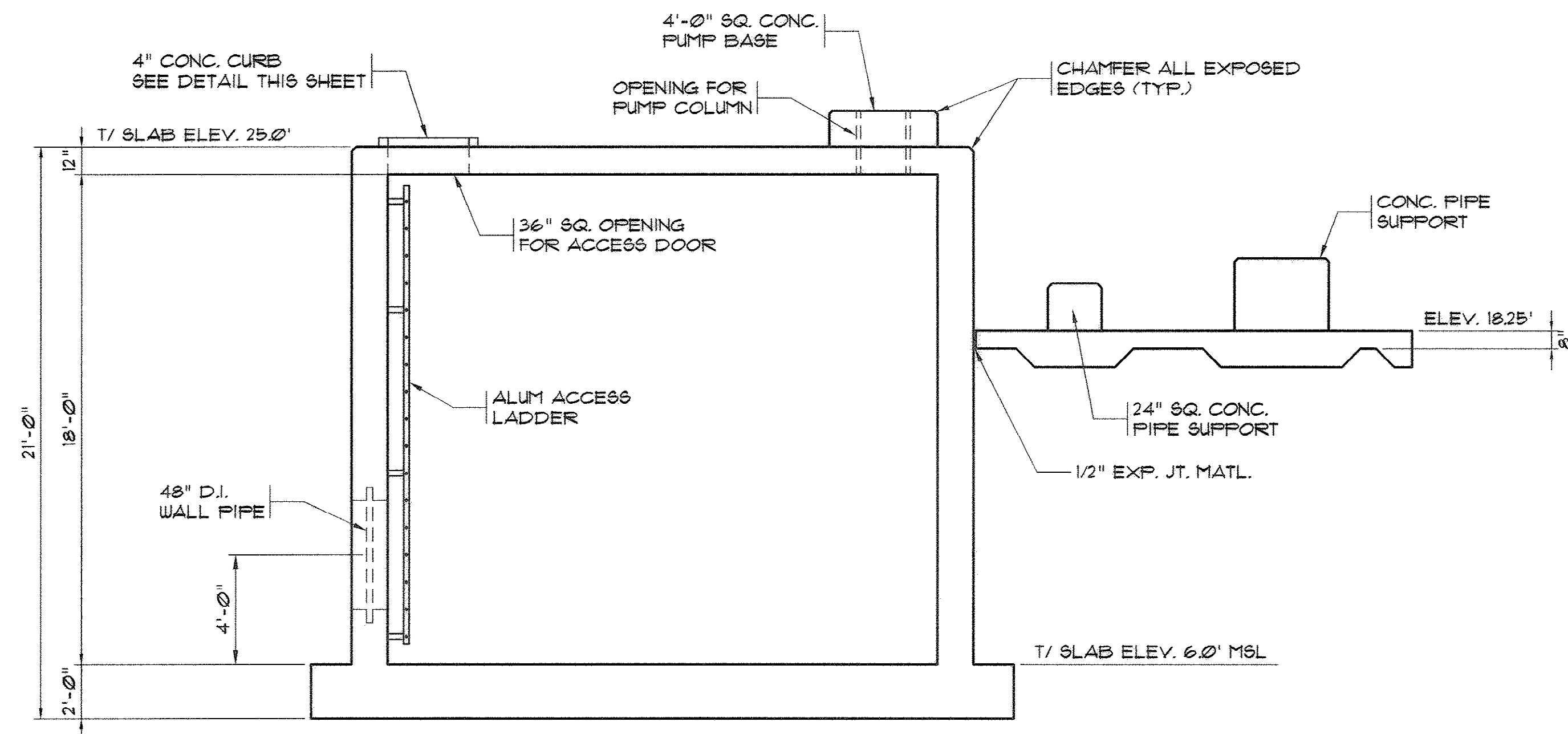
33-014-007/49 W



FINISHED WATER PUMP STATION NO. 2
SCALE: 1/4" = 1'-0"

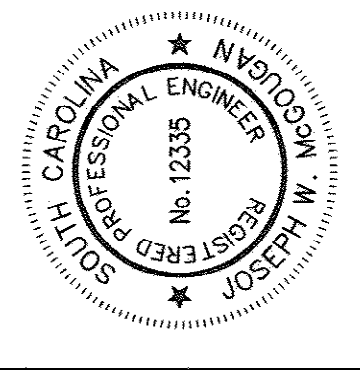
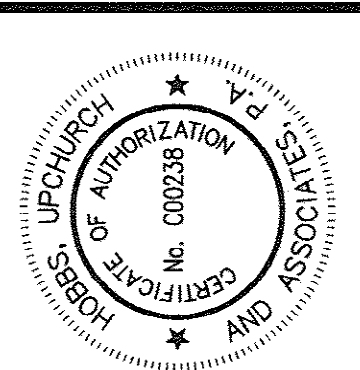


2 CURB DETAIL @ BILCO DOOR
N.T.S.

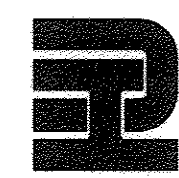


SECTION
SCALE: 1/4" = 1'-0"

REVISIONS			
SYM.	DESCRIPTION	DATE	BY



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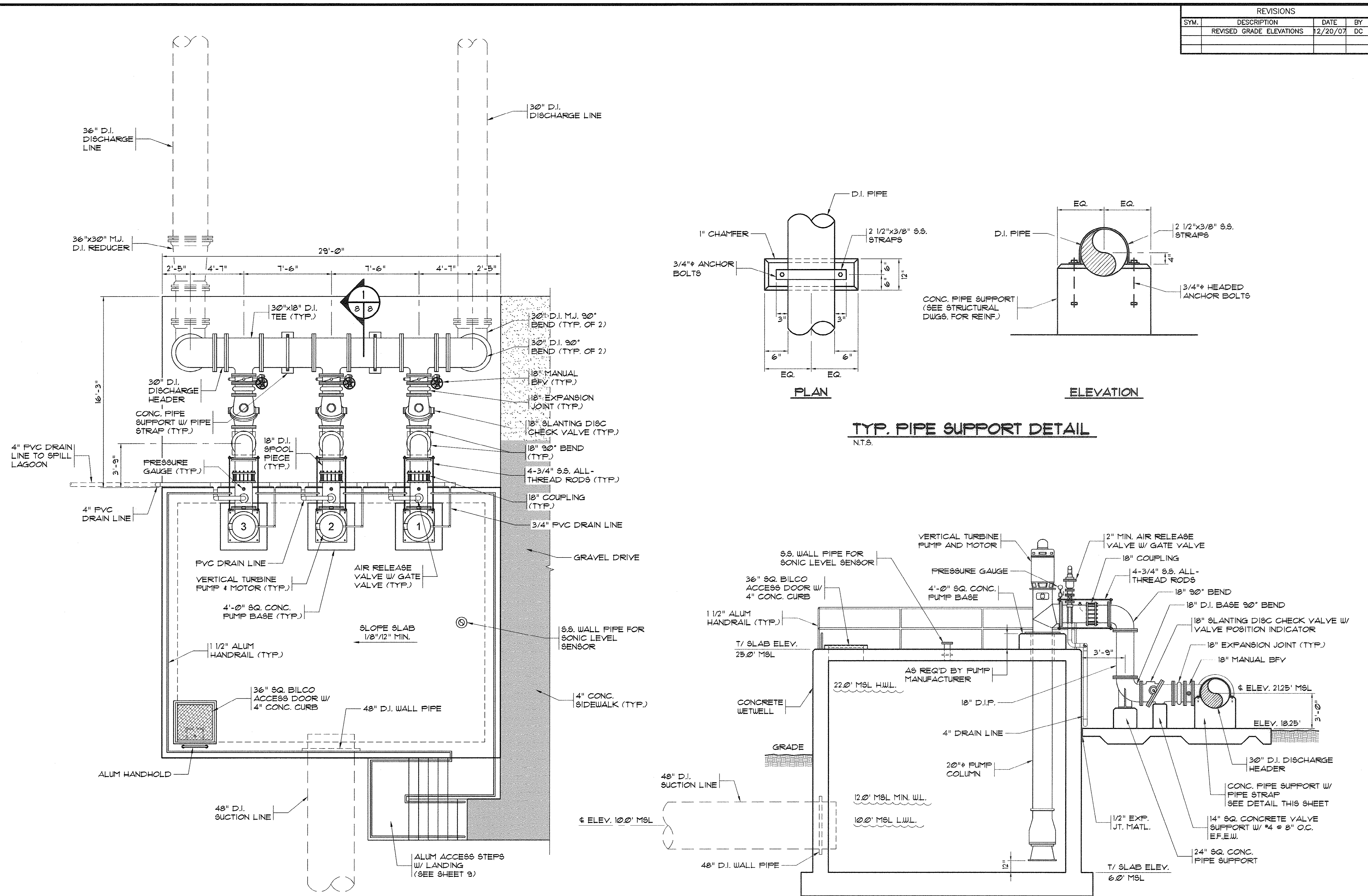
**FINISHED WATER PUMP
STATION NO. 2
LAYOUT & SECTION**

**BULL CREEK WTP
FINISHED WATER PUMP STATION NO. 2
(PUMP STATION & ELECTRICAL BLDG.)
GRAND STRAND WATER &
SEWER AUTHORITY**

DATE:	OCT. 2008
DESIGNED:	JWM
DRAWN:	
CHECKED:	JWM
SCALE:	AS SHOWN
SHEET NO.	7
OF:	25
VERSION:	5

AS-BUILT

33-014-008/49 W



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FINISHED WATER PUMP STATION NO. 2 LAYOUT & DETAILS

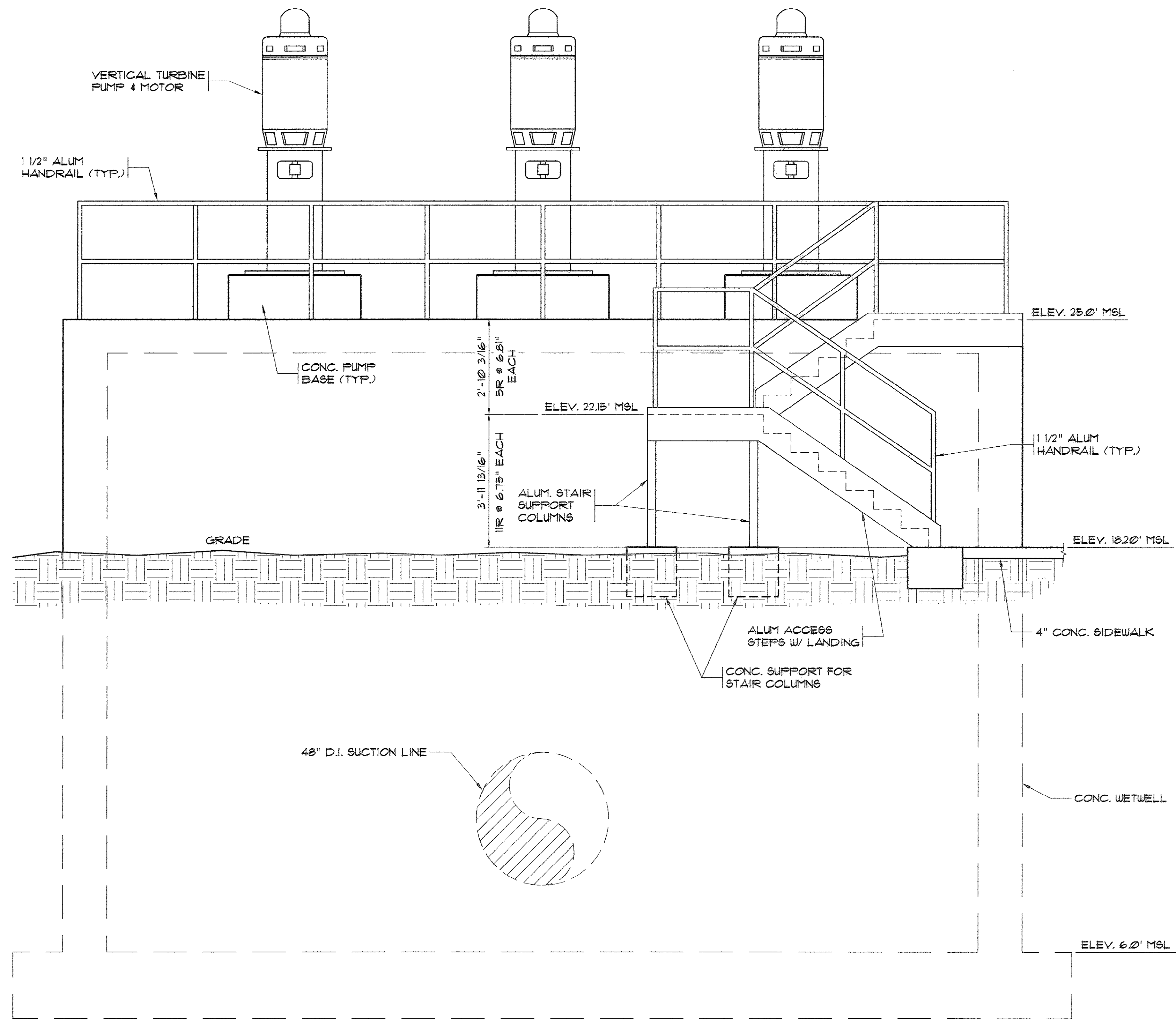
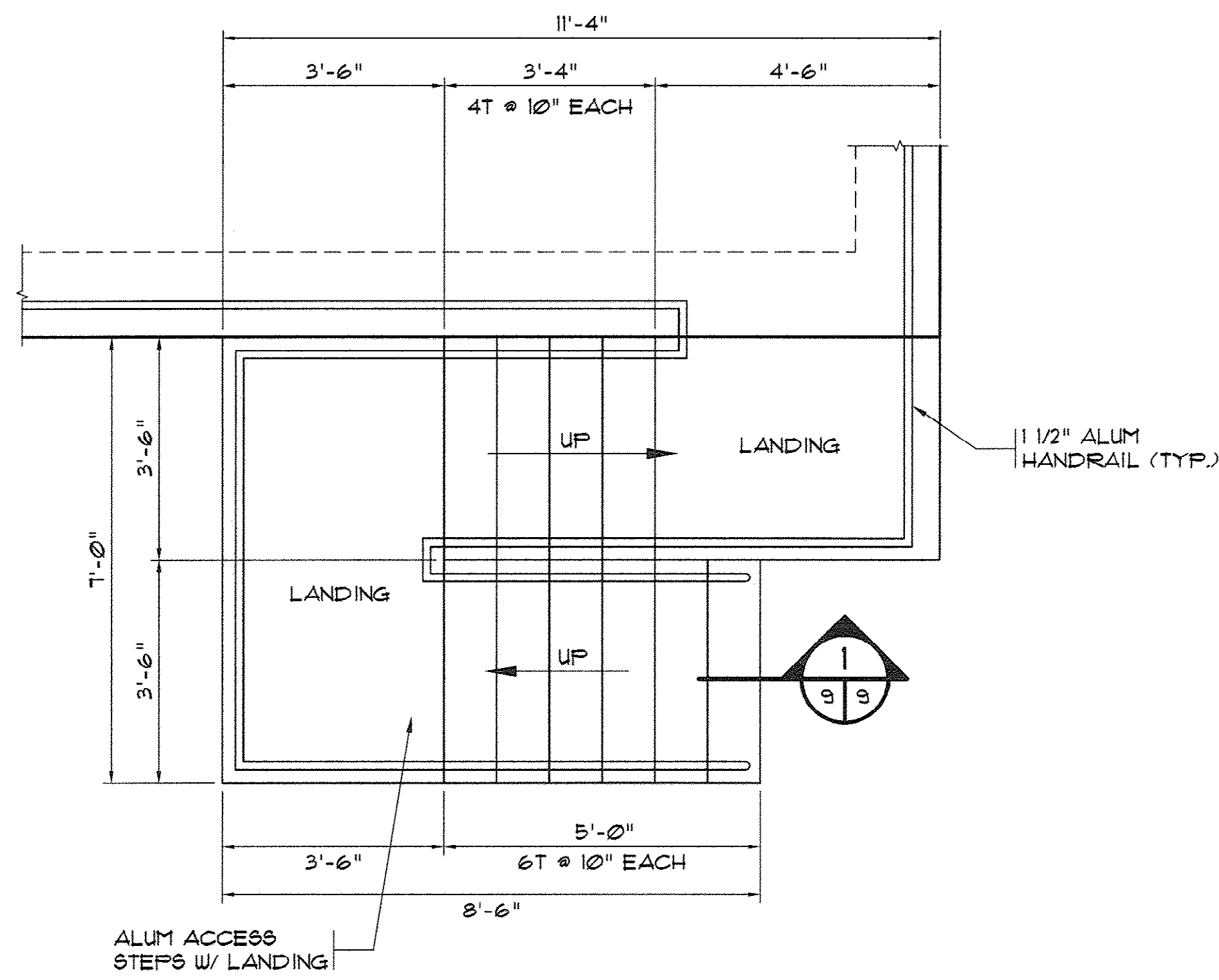
BULL CREEK WTP FINISHED WATER PUMP STATION NO. 2 (PUMP STATION & ELECTRICAL BLDG.)
GRAND STRAND WATER & SEWER AUTHORITY

DATE: OCT. 2008
DESIGNED: JWM
DRAWN: DC
CHECKED: JWM
SCALE: AS SHOWN
SHEET NO. 8

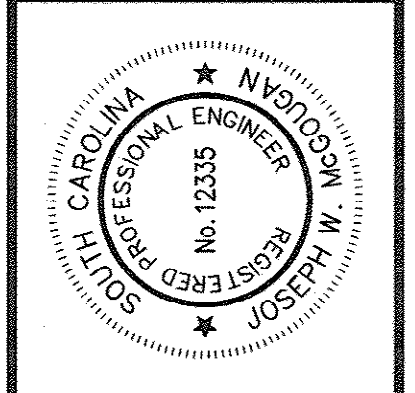
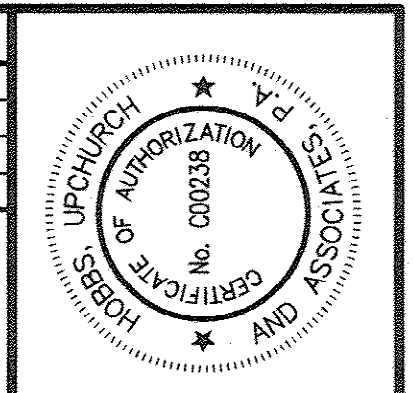
AS-BUILT

OP: 25 VERSION: 5

33-014-009/49 W



REVISIONS			
SYM.	DESCRIPTION	DATE	BY
	REVISED GRADE ELEVATIONS	12/20/07	DC



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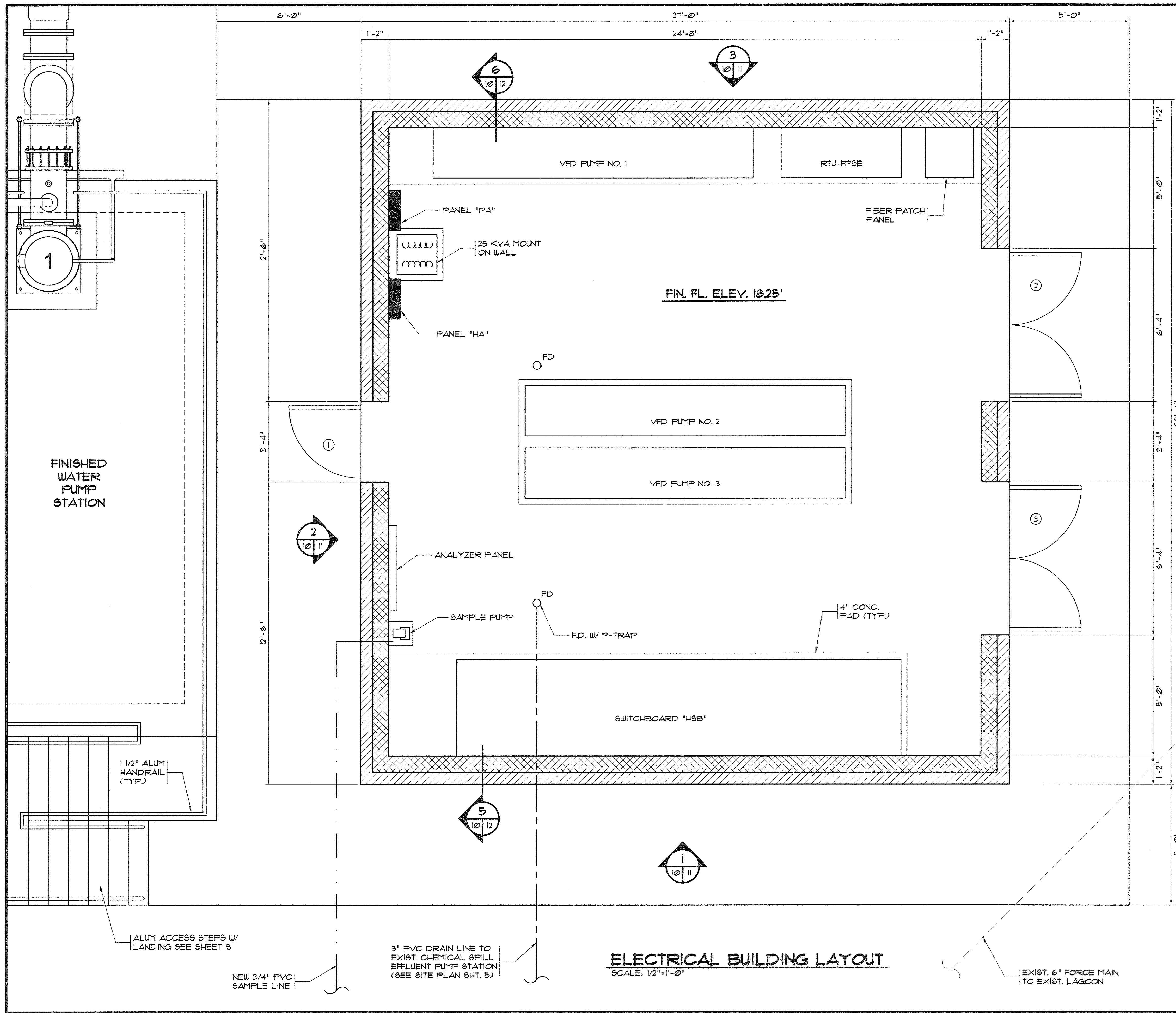
STAIR LAYOUT & DETAILS

BULL CREEK WTP
 FINISHED WATER PUMP STATION NO. 2
 (PUMP STATION & ELECTRICAL BLDG.)
 GRAND STRAND WATER & SEWER AUTHORITY

DATE:	OCT. 2008
DESIGNED:	JWM
DRAWN:	ALG
CHECKED:	JWM
SCALE:	AS SHOWN
SHEET NO.	9

AS-BUILT

33-014-010/49 W



REVISIONS			
SYM.	DESCRIPTION	DATE	BY
	REVISED FIN. FL. ELEVATIONS	12/20/07	DC

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ELECTRICAL BUILDING LAYOUT

**BULL CREEK WTP
 FINISHED WATER PUMP STATION NO. 2
 (PUMP STATION & ELECTRICAL BLDG.)
 GRAND STRAND WATER &
 SEWER AUTHORITY**

DATE: OCT. 2008
 DESIGNED: JWM
 DRAWN: ALG
 CHECKED: JWM
 SCALE: AS SHOWN

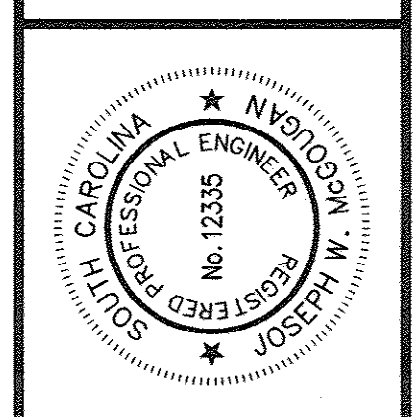
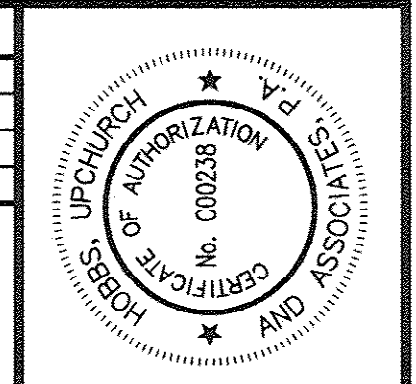
SHEET NO. **10**

OF: 25 VERSION: 5

AS-BUILT

33-014-011/49 W

REVISIONS			
SYM.	DESCRIPTION	DATE	BY
	REVISED FIN. FL. ELEVATIONS	12/20/07	DC

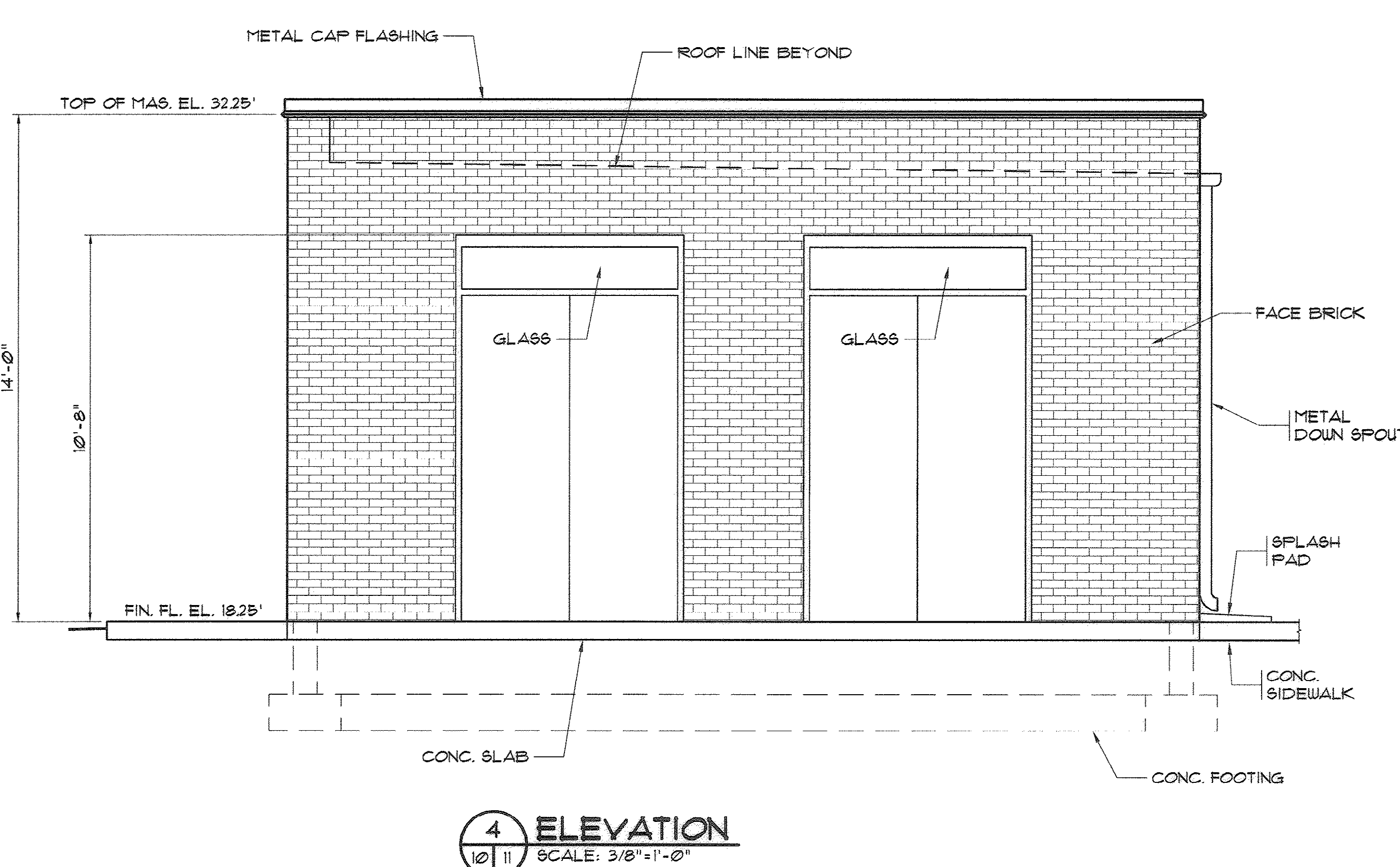
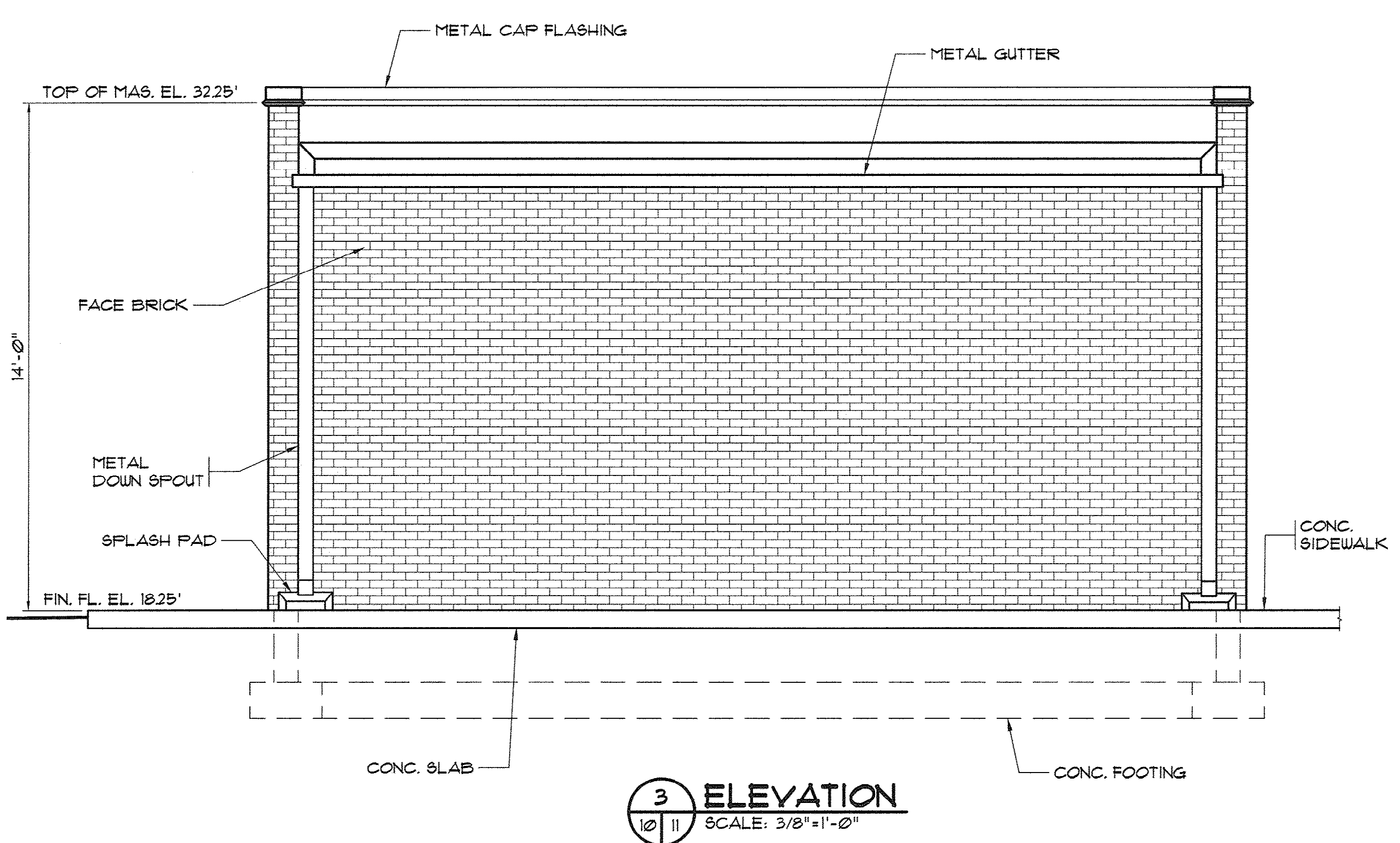
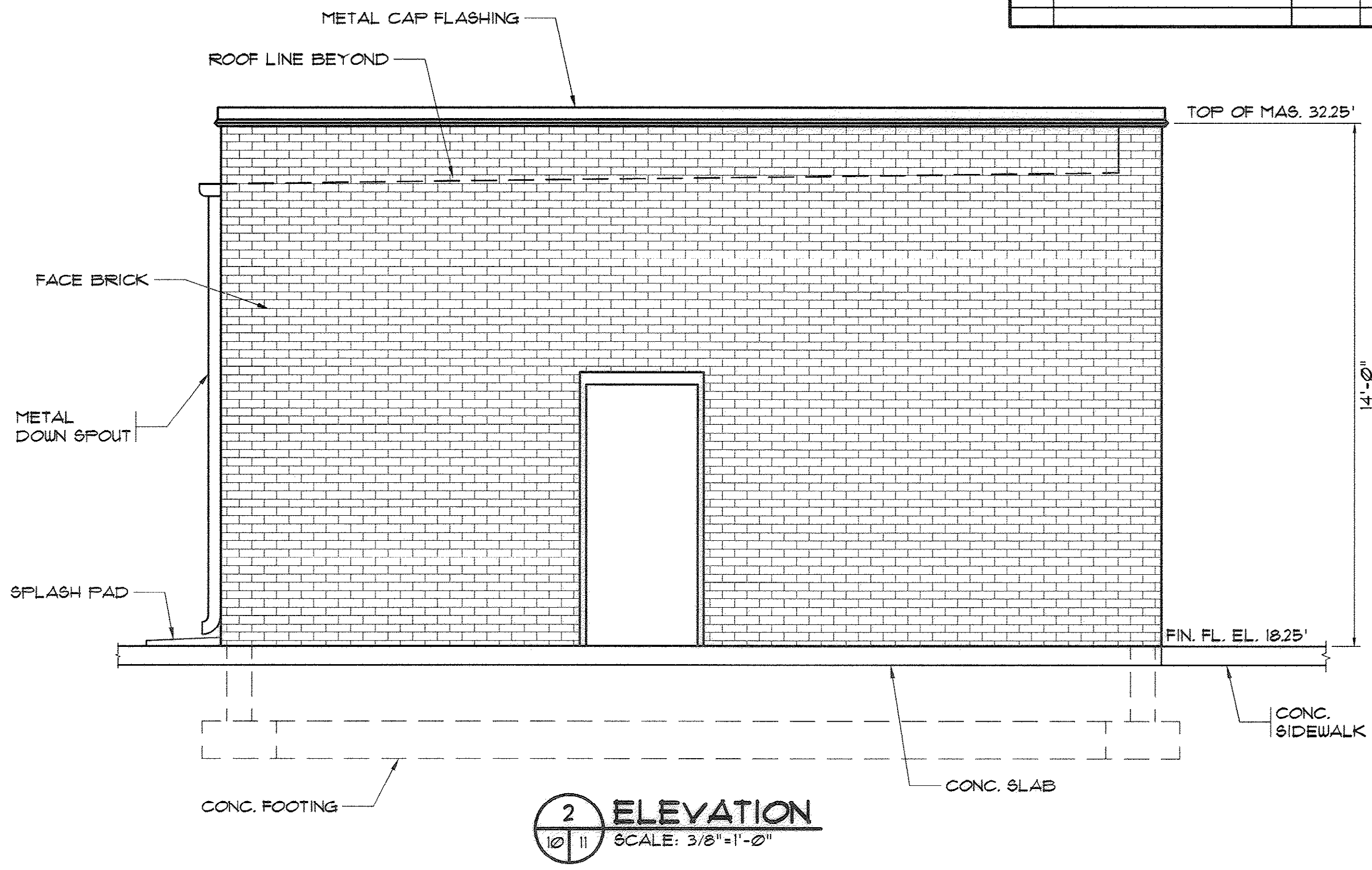
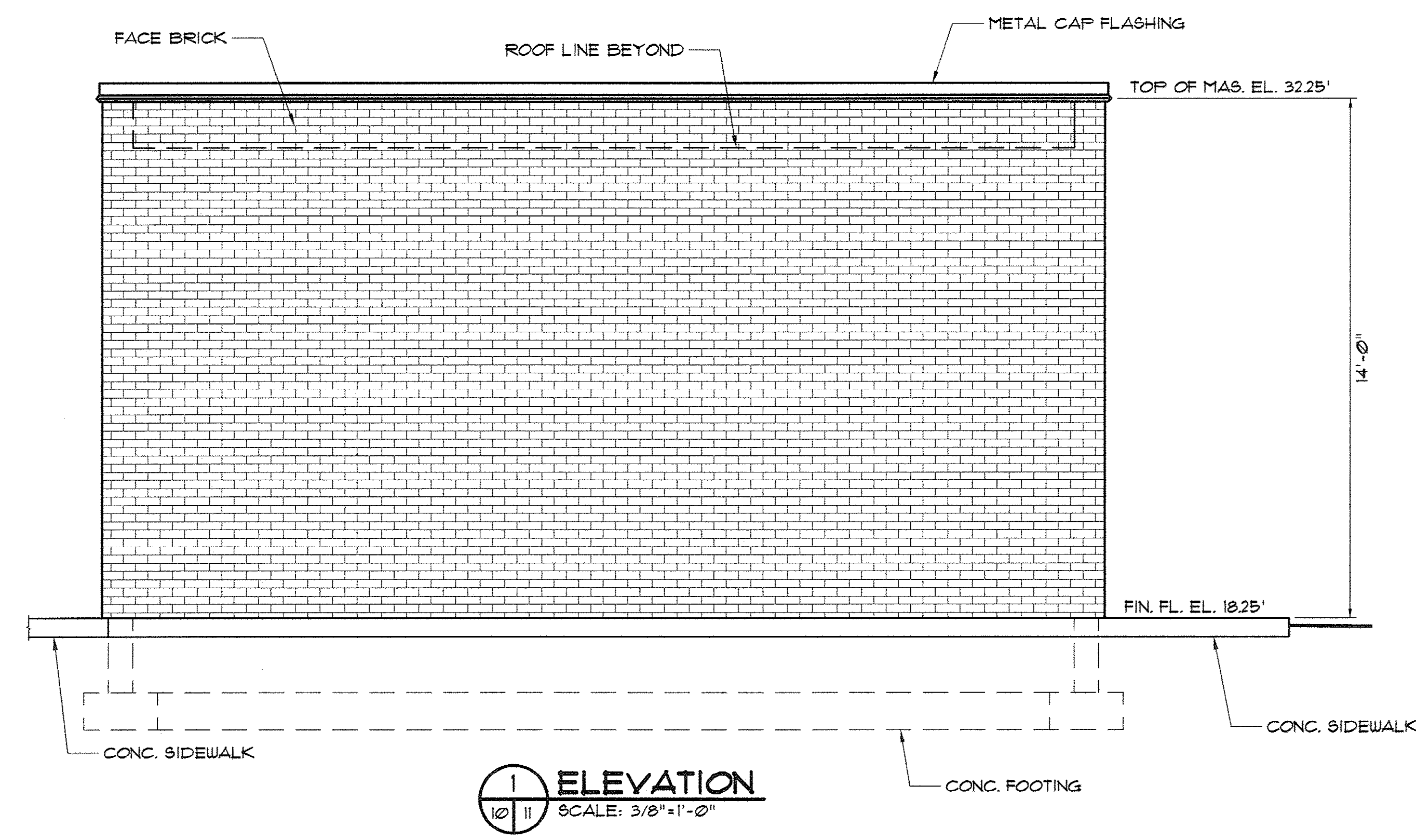


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Consulting Engineers
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**ELECTRICAL BUILDING
 EXTERIOR ELEVATIONS**

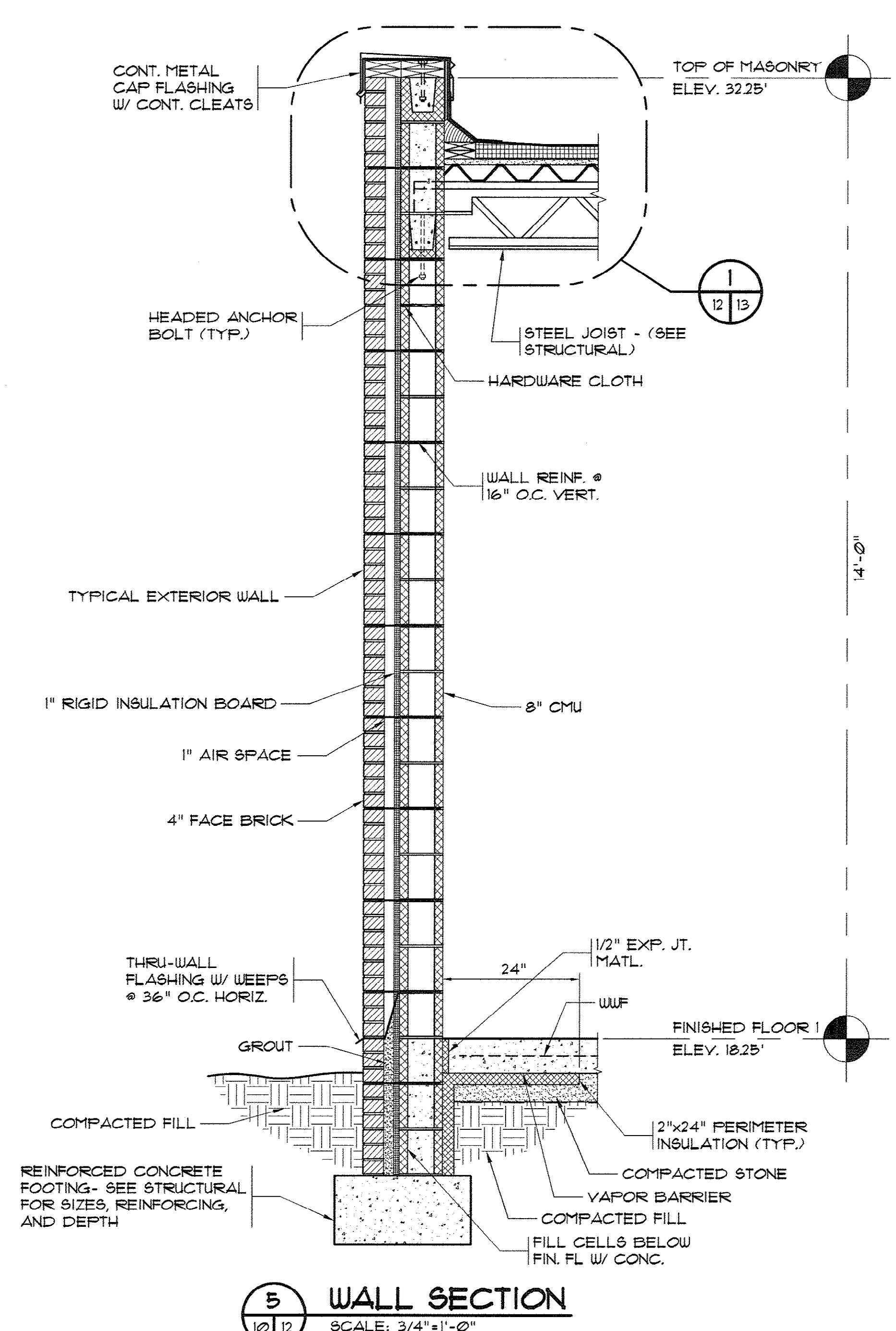
**BULL CREEK WTP
 FINISHED WATER PUMP STATION NO. 2
 (PUMP STATION & ELECTRICAL BLDG.)
 GRAND STRAND WATER &
 SEWER AUTHORITY**

DATE:	OCT. 2008
DESIGNED:	JWM
DRAWN:	ALG
CHECKED:	JWM
SCALE:	AS SHOWN
SHEET NO.	11
OF: 25	VERSION: 5

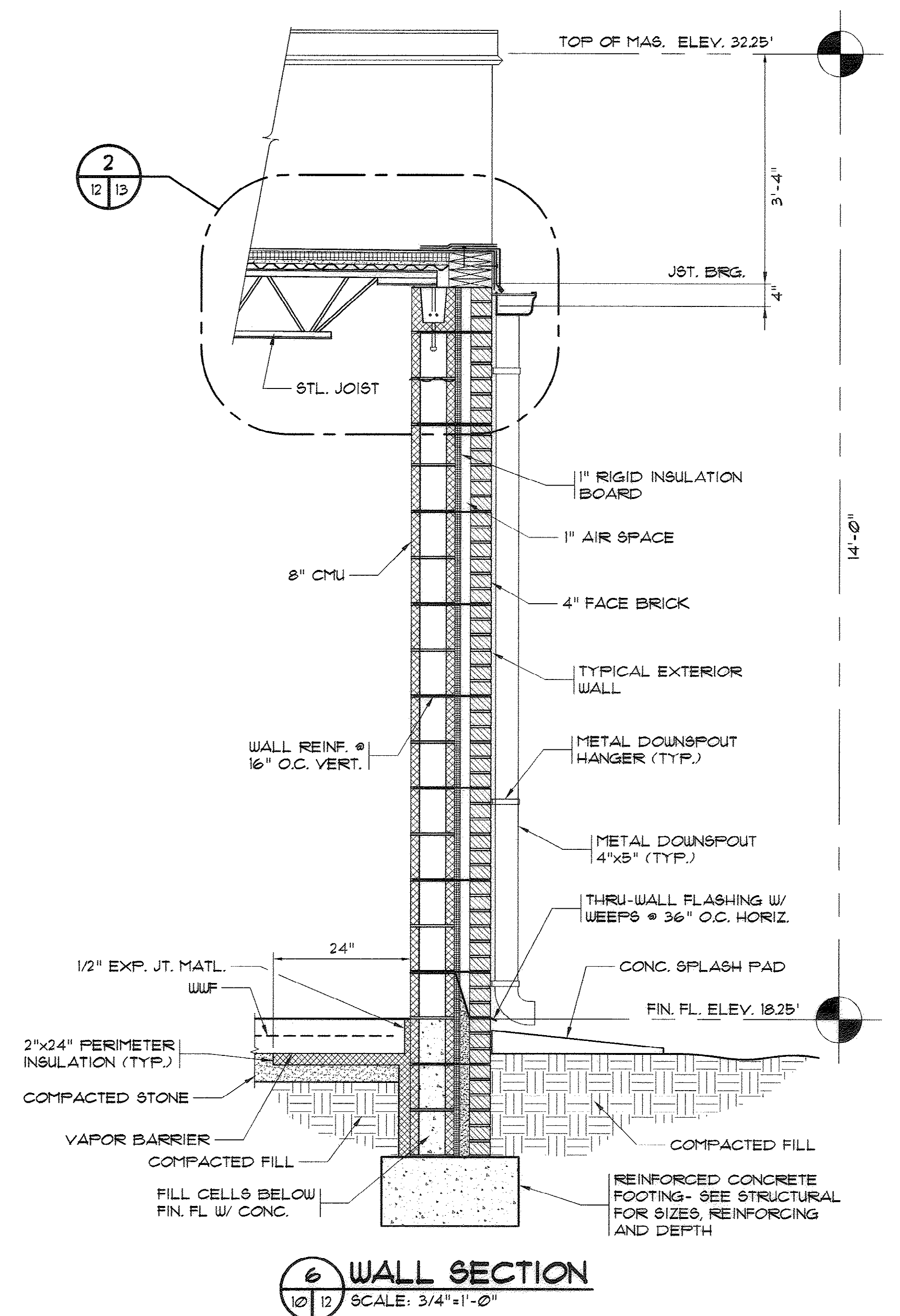


AS-BUILT

33-014-012/49 W

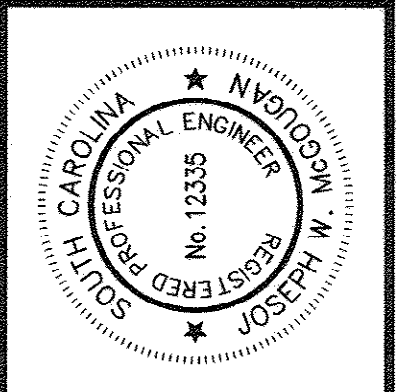
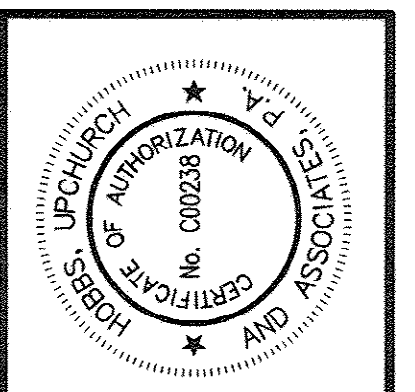


5 WALL SECTION
 SCALE: 3/4"=1'-0"



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

REVISIONS			
SYM.	DESCRIPTION	DATE	BY
	REVISED FIN. FL. ELEVATIONS	12/20/07	DC



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**ELECTRICAL BUILDING
 WALL SECTIONS**

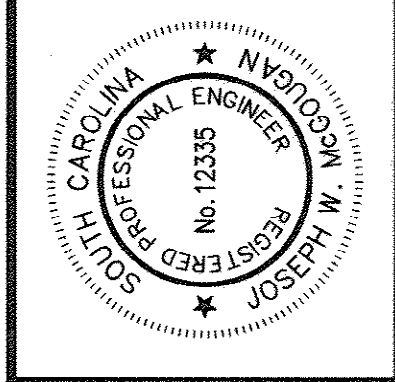
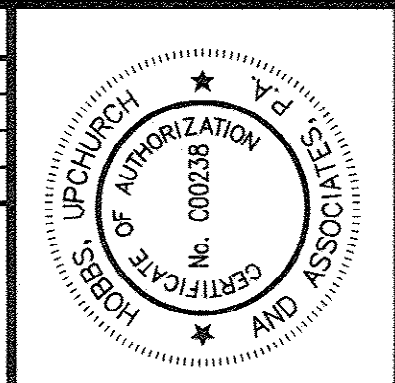
**BULL CREEK WTP
 FINISHED WATER PUMP STATION NO. 2
 (PUMP STATION & ELECTRICAL BLDG.)
 GRAND STRAND WATER &
 SEWER AUTHORITY**

DATE:	OCT. 2008
DESIGNED:	JWM
DRAWN:	ALG
CHECKED:	JWM
SCALE:	AS SHOWN
SHEET NO.	12
OF: 25	VERSION: 5

AS-BUILT

33-014-013/49 W

REVISIONS			
SYM.	DESCRIPTION	DATE	BY

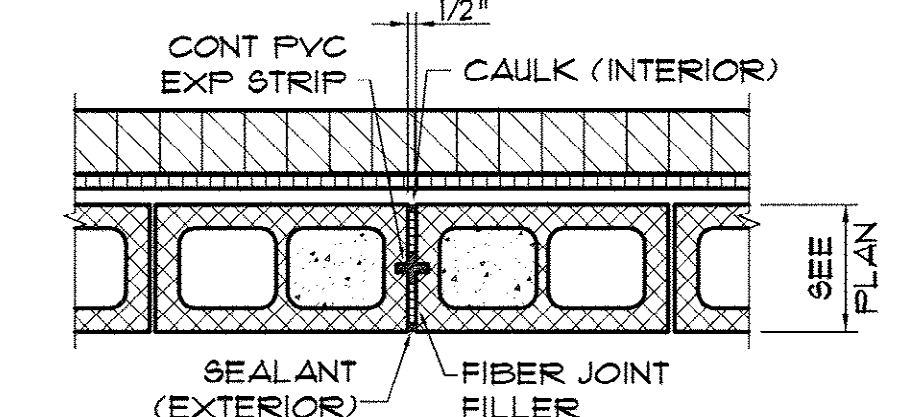


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ELECTRICAL BUILDING DETAILS

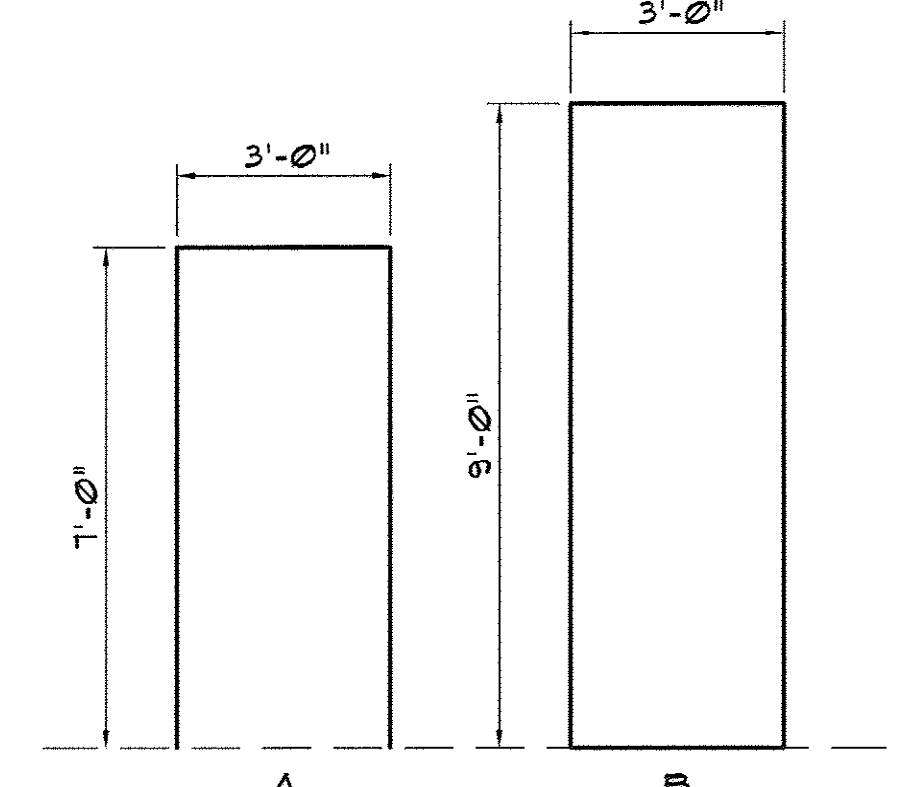
**BULL CREEK WTP
 FINISHED WATER PUMP STATION NO. 2
 (PUMP STATION & ELECTRICAL BLDG.)
 GRAND STRAND WATER &
 SEWER AUTHORITY**

DATE:	OCT. 2008
DESIGNED:	JWM
DRAWN:	ALG
CHECKED:	JWM
SCALE:	AS SHOWN
SHEET NO.	13

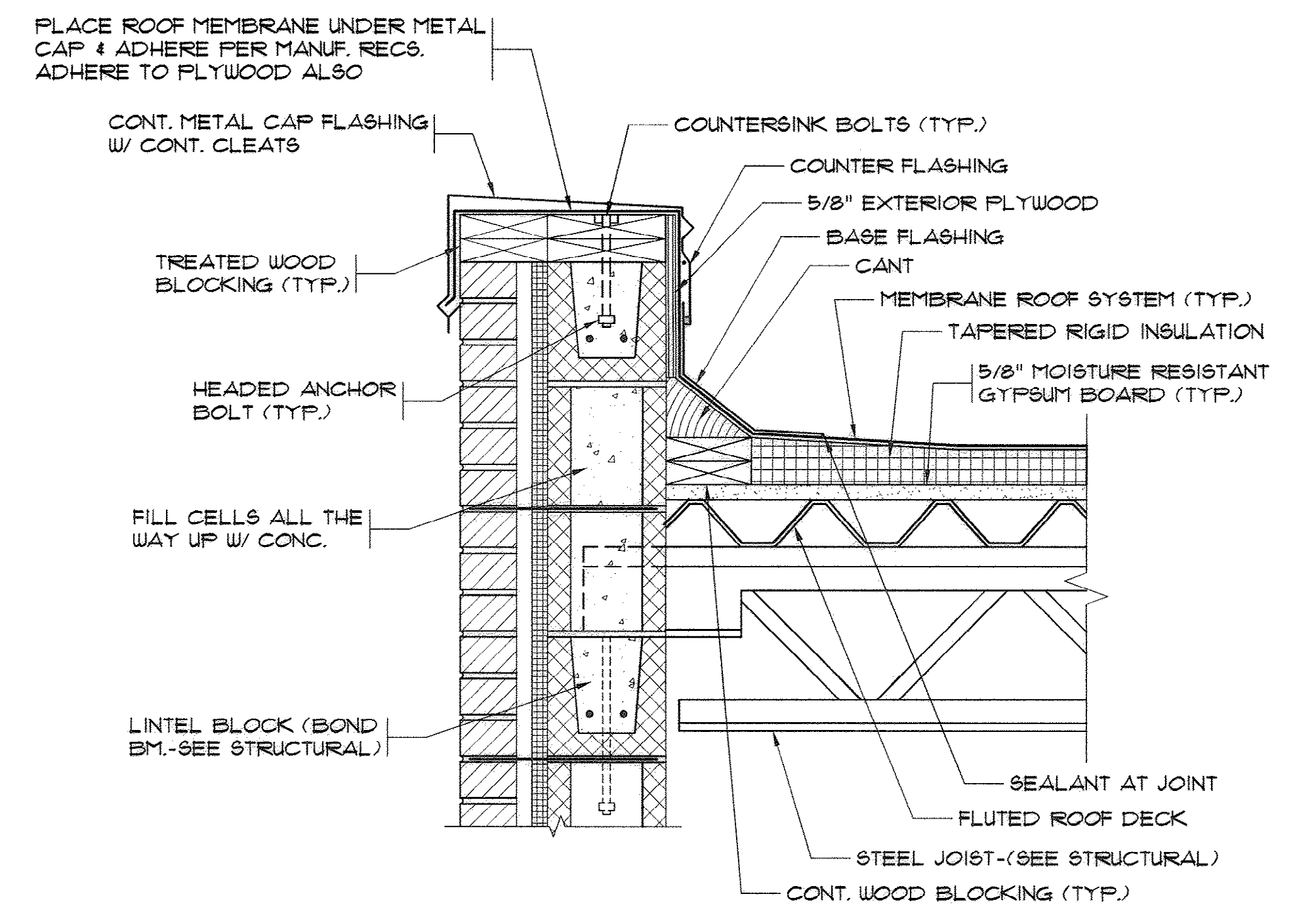


NOTE:
 PROVIDE CONTROL JOINTS IN MAS WALLS AT LOCATIONS DENOTED "MCJ" ON PLAN OR ELEVATION. JOINT SHALL EXTEND FROM TOP OF WALL TO FTG. UON. MAS JOINT REINF SHALL BE DISCONTINUOUS AT "MCJ's".
 BOND BEAM REINF SHALL BE CONTINUOUS THRU "MCJ's"

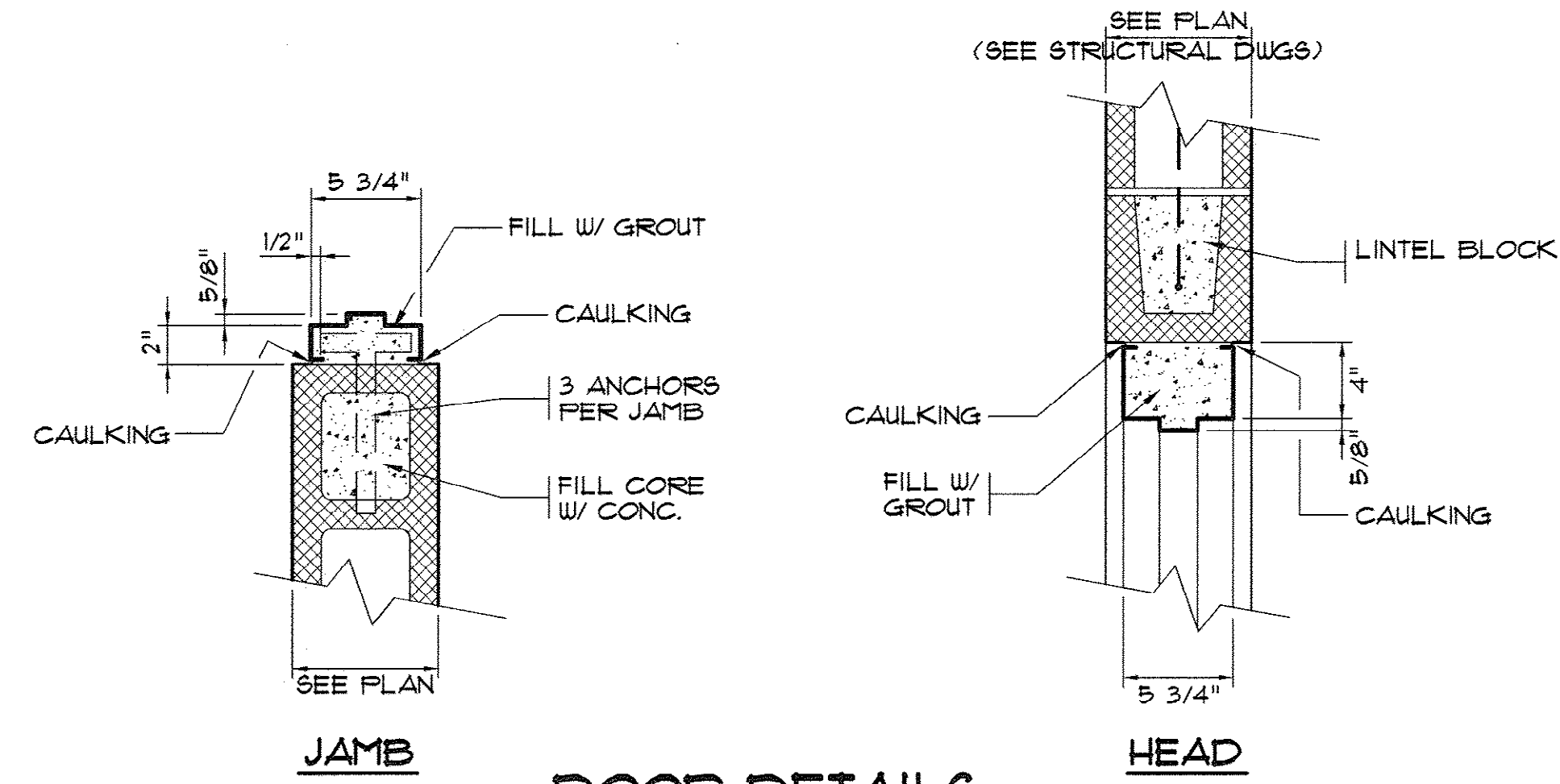
TYP MAS WALL CONTROL JOINT (MCJ)
 NTS



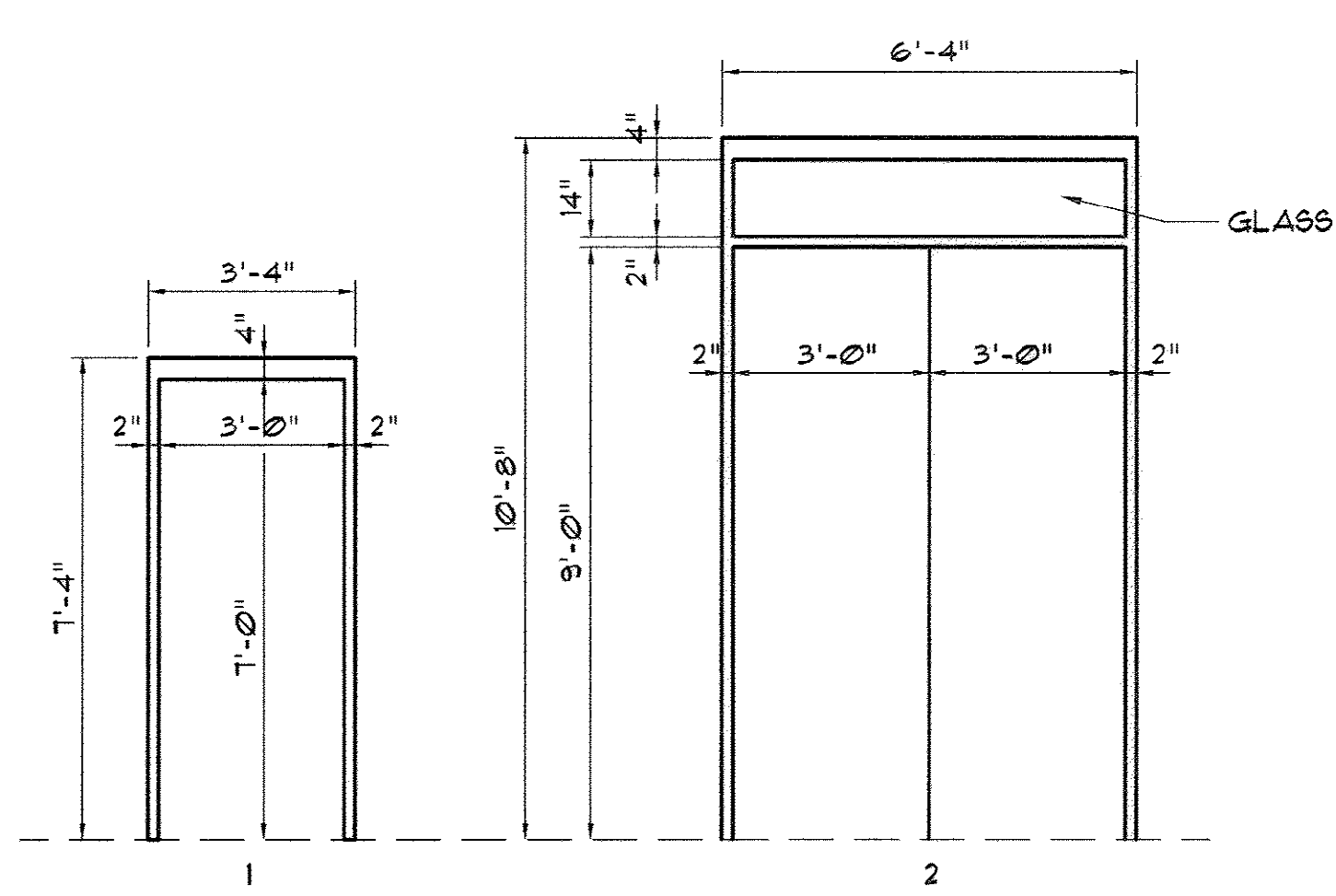
DOOR ELEVATION



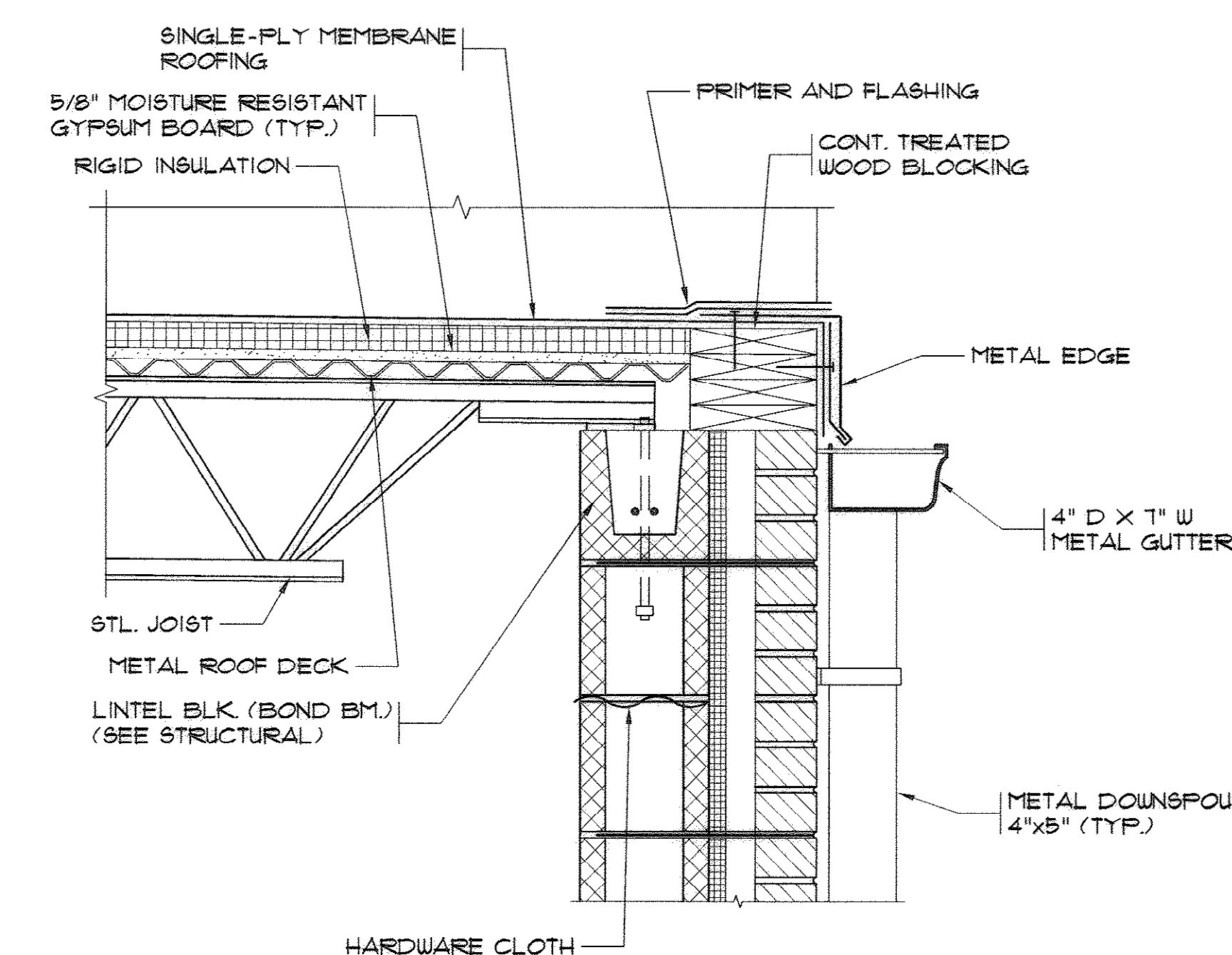
1 PARAPET ROOF DETAIL
 SCALE: 1 1/2"=1'-0"



DOOR DETAILS



FRAME ELEVATIONS



2 PARAPET ROOF DETAIL
 SCALE: 1 1/2"=1'-0"

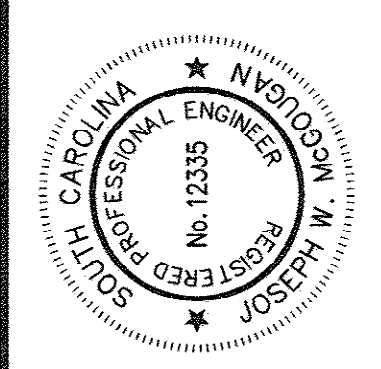
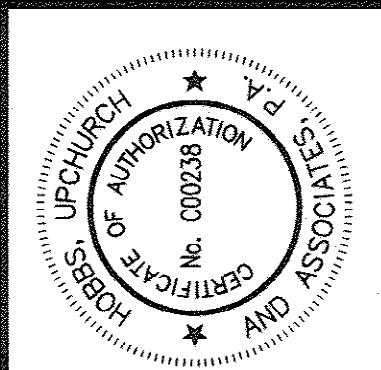
NOTE:
 PROVIDE METAL THRESHOLD AT DOOR WAY

DOOR SCHEDULE										
NO.	DOOR						FRAME			REMARKS
	SIZE	TYPE	MTL.	GLASS	LOUVER	LABEL	TYPE	MTL.	GLASS	
1	3'x7'x1.75"	A	INSUL. HM.	NONE	NONE	NONE	1	HM.	NONE	PAINT DOOR + FRAME
2	PR 3'x9'x1.75"	B	INSUL. HM.	NONE	NONE	NONE	2	HM.	YES	PAINT DOOR + FRAME
3	PR 3'x9'x1.75"	B	INSUL. HM.	NONE	NONE	NONE	2	HM.	YES	PAINT DOOR + FRAME

AS-BUILT

33-014-014/49 W

REVISIONS			
SYM.	DESCRIPTION	DATE	BY
	REVISED ELEVATIONS	12/20/07	DC

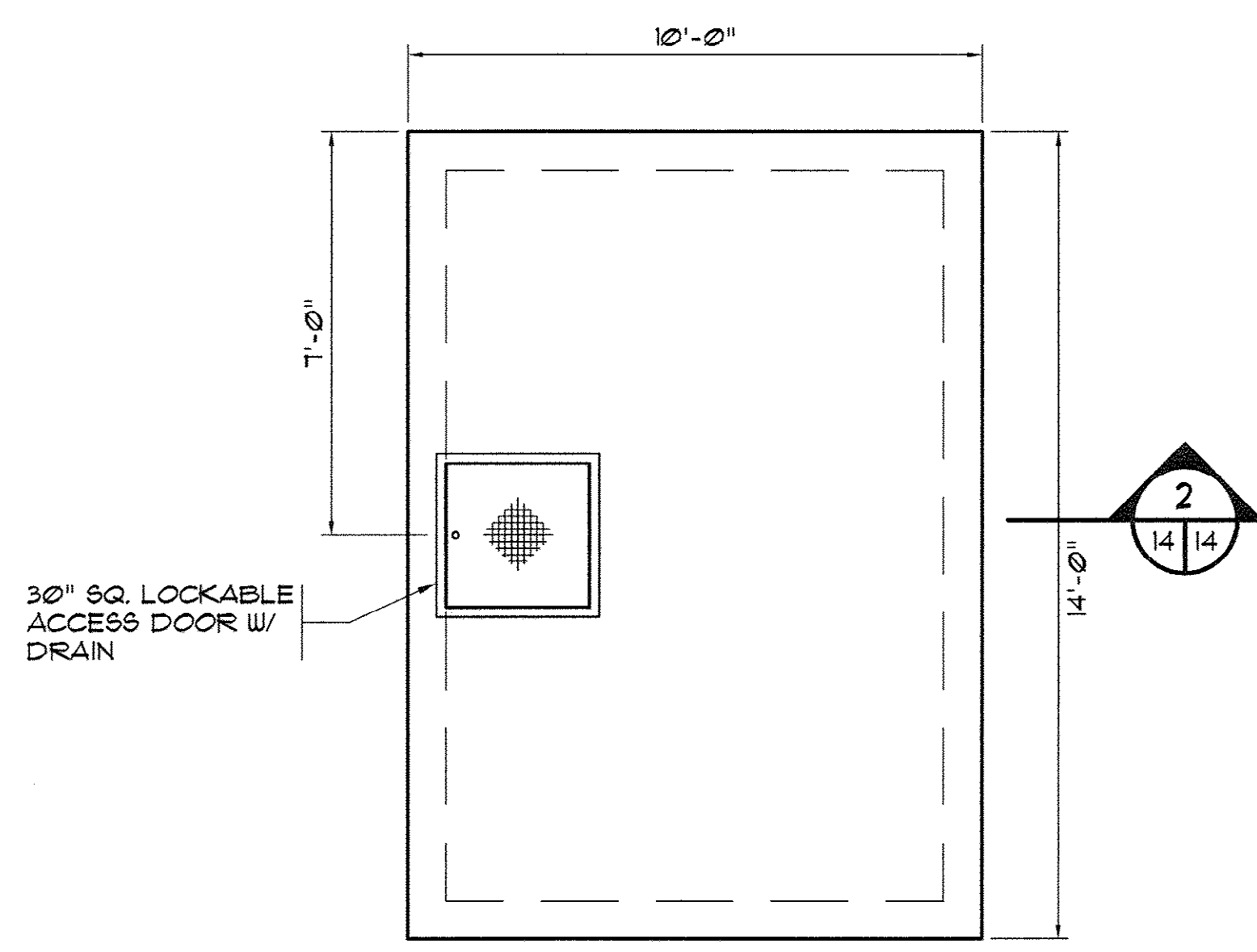


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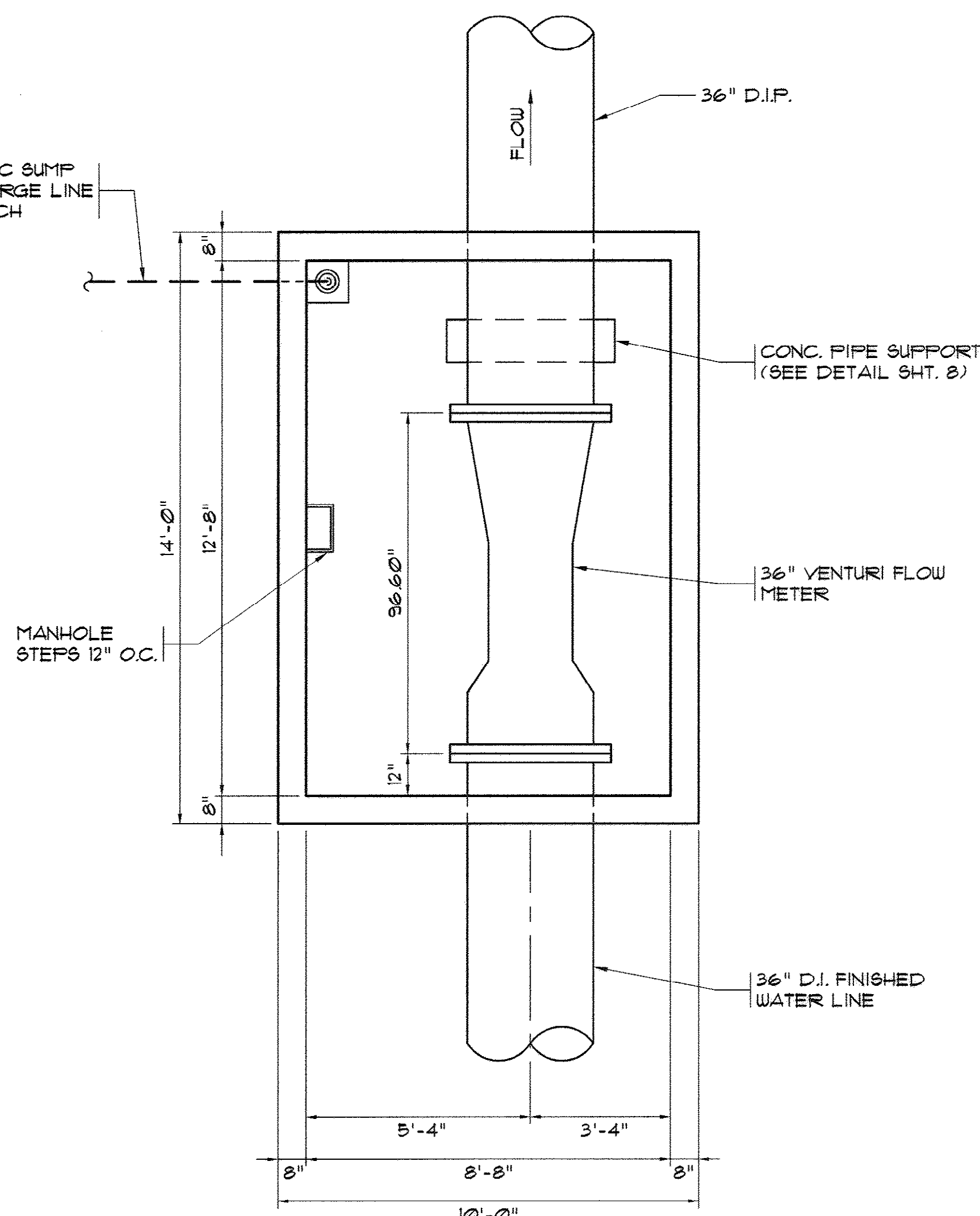
**FINISHED WATER
 METER VAULT NO. 1**

**BULL CREEK WTP
 FINISHED WATER PUMP STATION NO. 2
 (PUMP STATION & ELECTRICAL BLDG.)
 GRAND STRAND WATER &
 SEWER AUTHORITY**

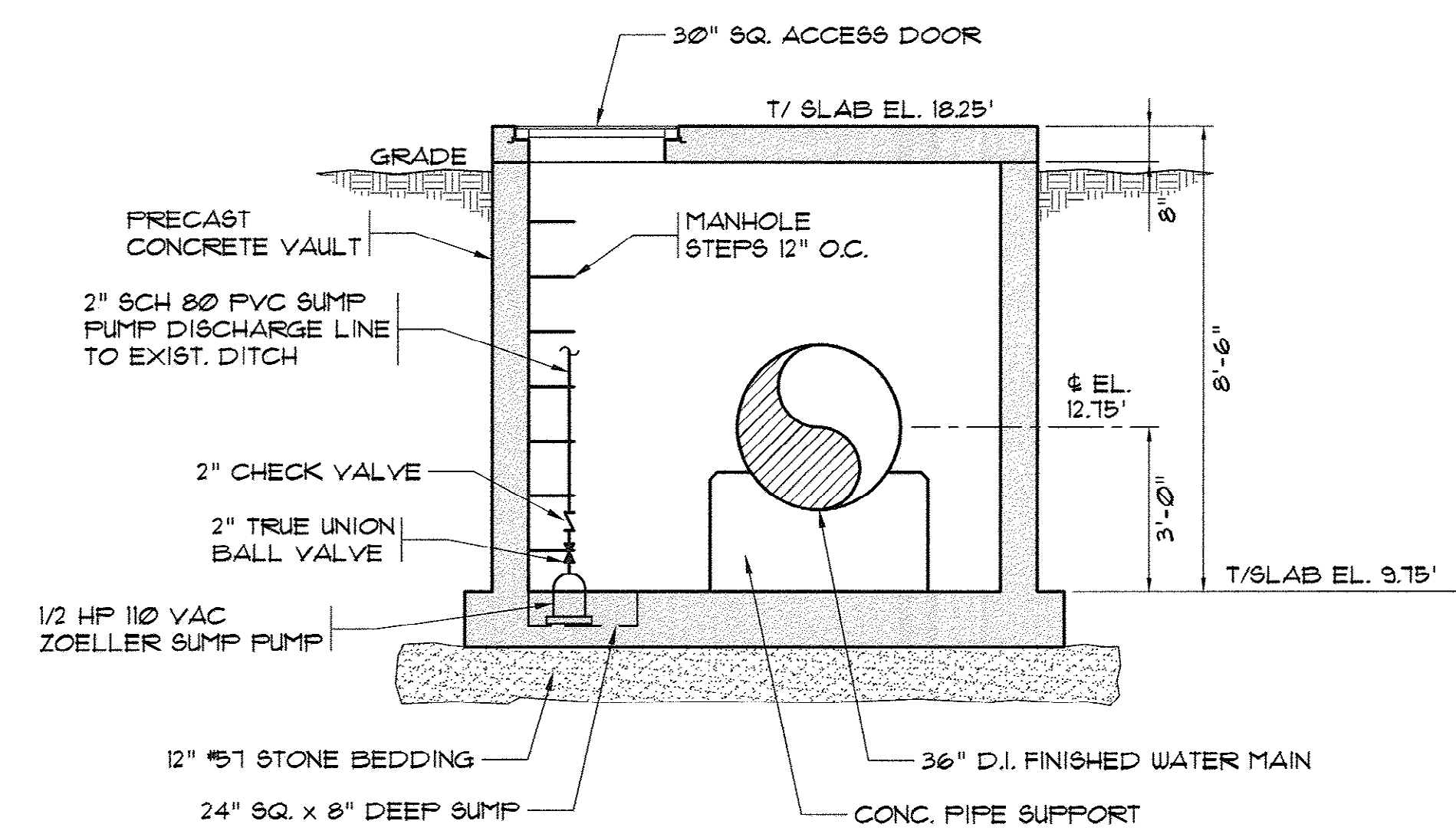
DATE:	OCT. 2008
DESIGNED:	JWM
DRAWN:	DC
CHECKED:	JWM
SCALE:	AS SHOWN
SHEET NO.	14
OF:	25
VERSION:	5



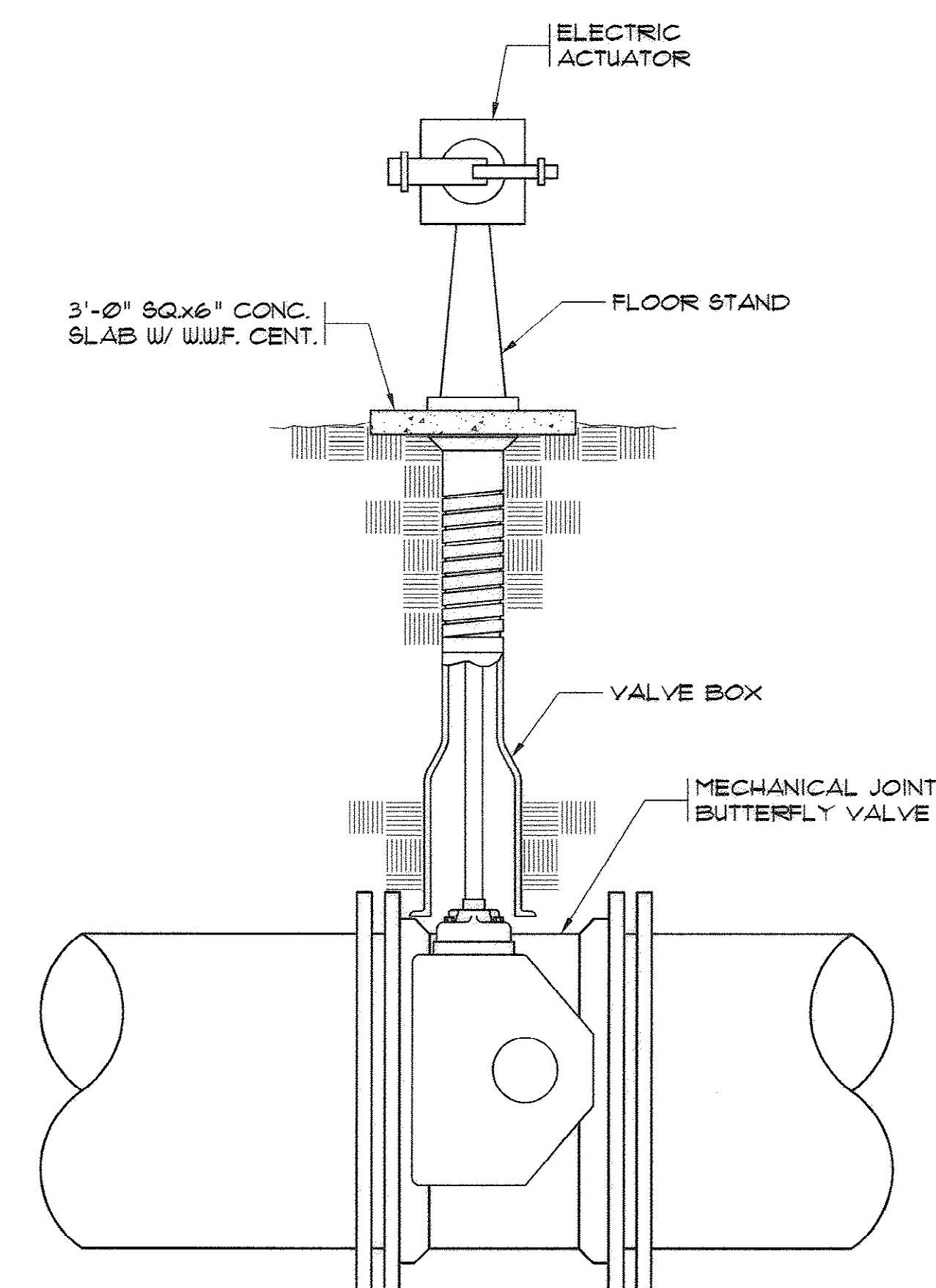
**1 FINISHED WATER METER VAULT NO. 1
 UPPER PLAN**
 SCALE: 3/8" = 1'-0"



**FINISHED WATER METER VAULT NO. 1
 LOWER PLAN**
 SCALE: 3/8" = 1'-0"



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



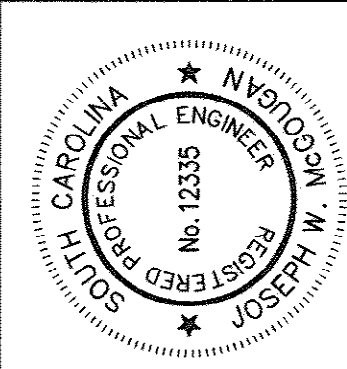
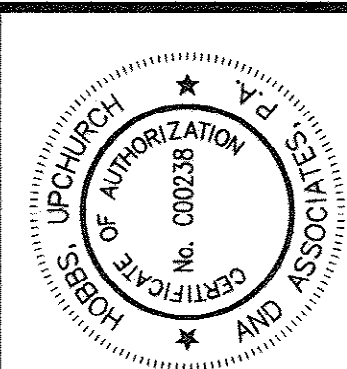
3 BFV W/ ELECTRIC ACTUATOR
 NT6

NOTE:
 PROVIDE CONCRETE
 SUPPORTS FOR METER
 AS APPROVED BY
 METER MANUFACTURER.

AS-BUILT

33-014-015/49 W

REVISIONS			
SYM.	DESCRIPTION	DATE	BY
	REVISED ELEVATIONS	12/20/07	DC



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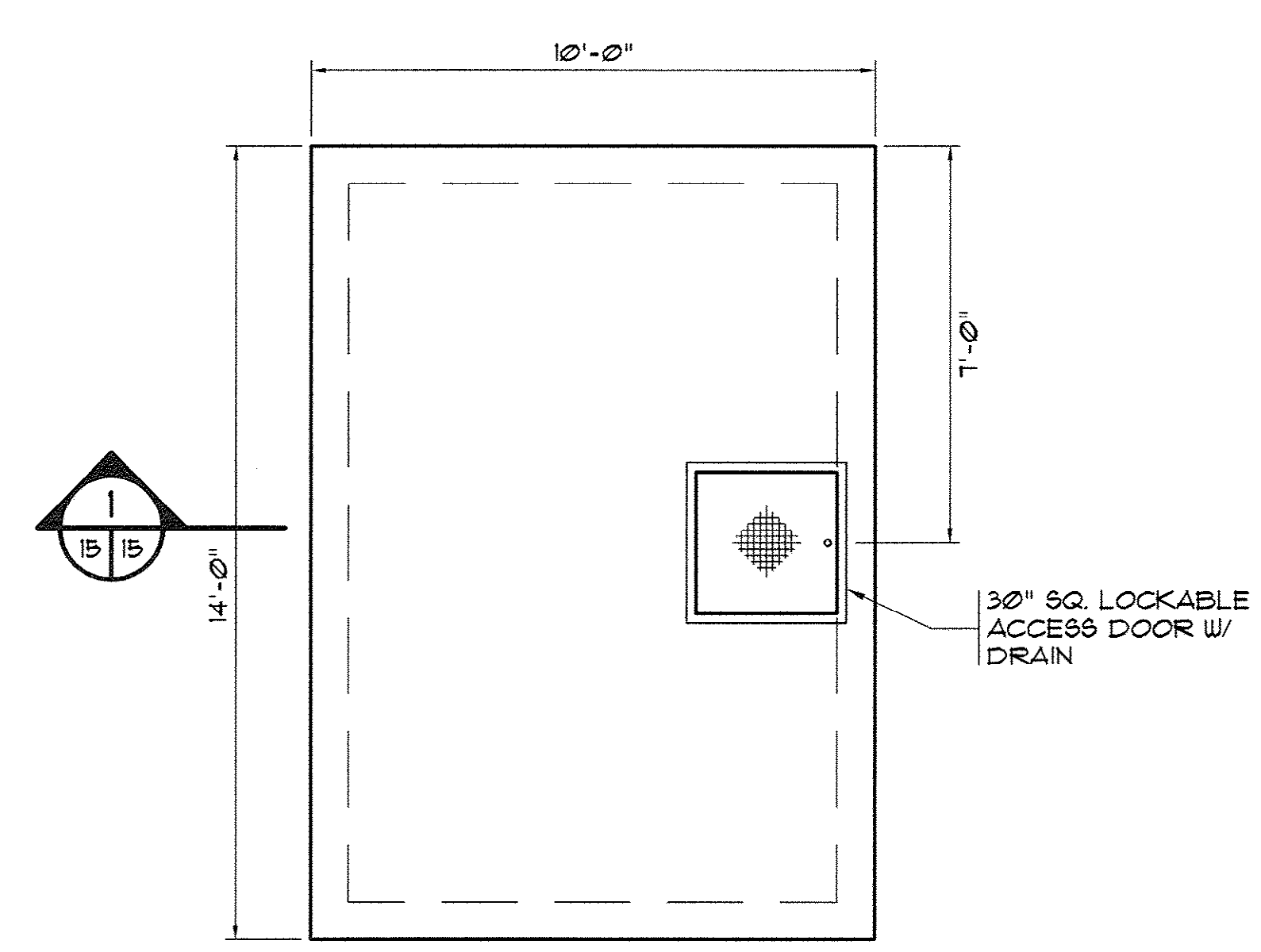
**FINISHED WATER
 METER VAULT NO. 2**

**BULL CREEK WTP
 FINISHED WATER PUMP STATION NO. 2
 (PUMP STATION & ELECTRICAL BLDG.)
 GRAND STRAND WATER &
 SEWER AUTHORITY**

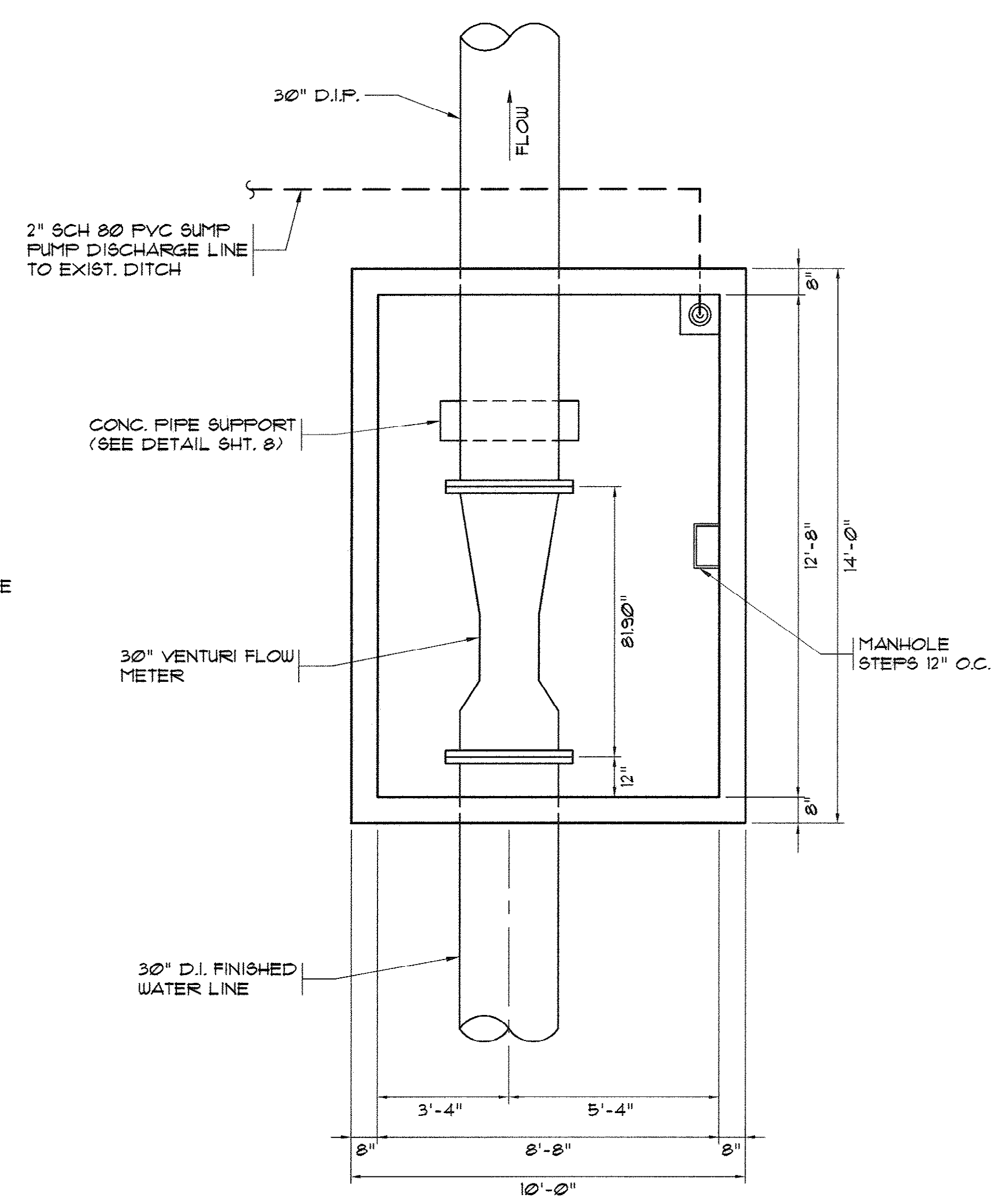
DATE:	OCT. 2008
DESIGNED:	JWM
DRAWN:	DC
CHECKED:	JWM
SCALE:	AS SHOWN
SHEET NO.	15

AS-BUILT

33-014-016/49 2d

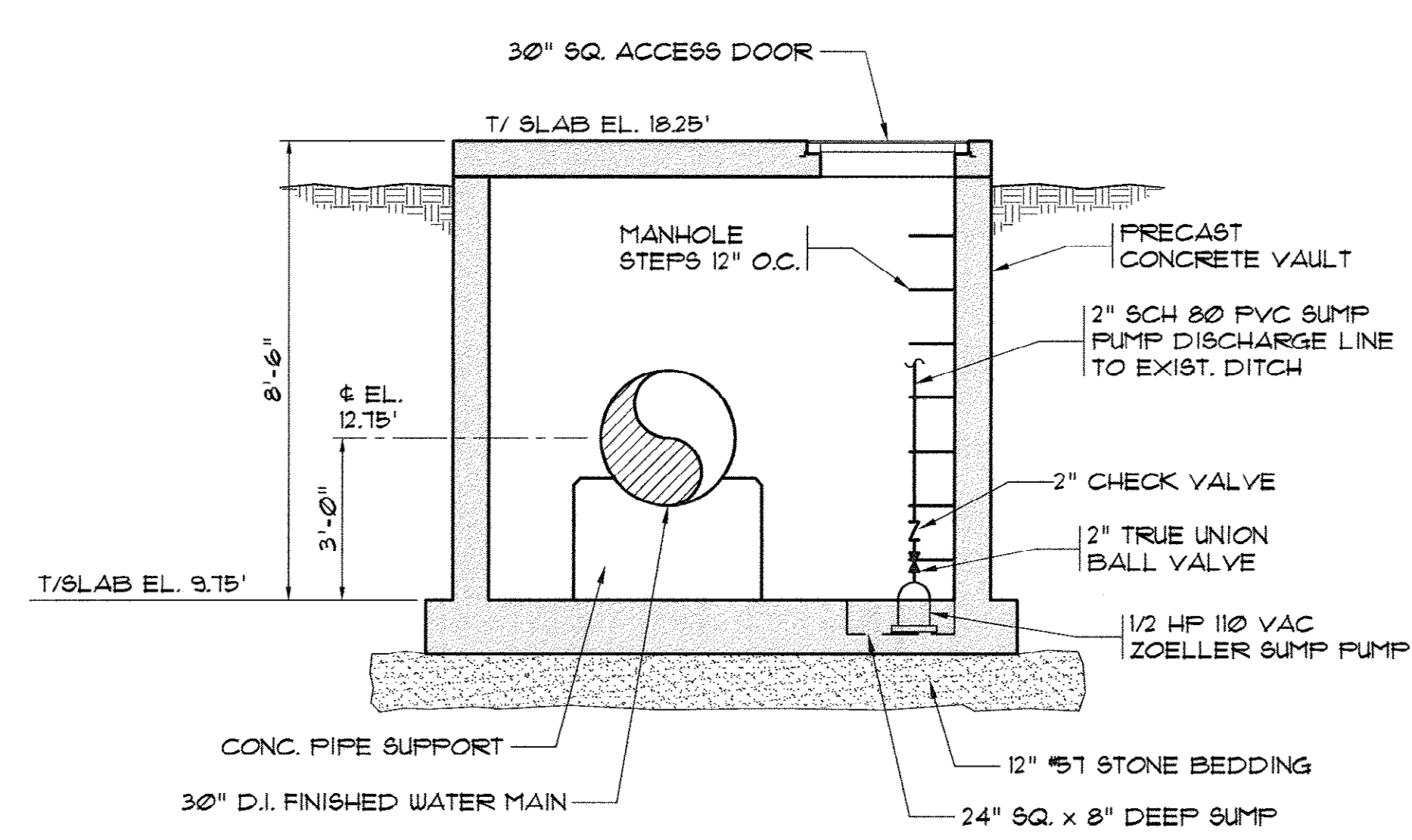


**2 FINISHED WATER METER VAULT NO. 2
 UPPER PLAN**
 SCALE: 3/8" = 1'-0"

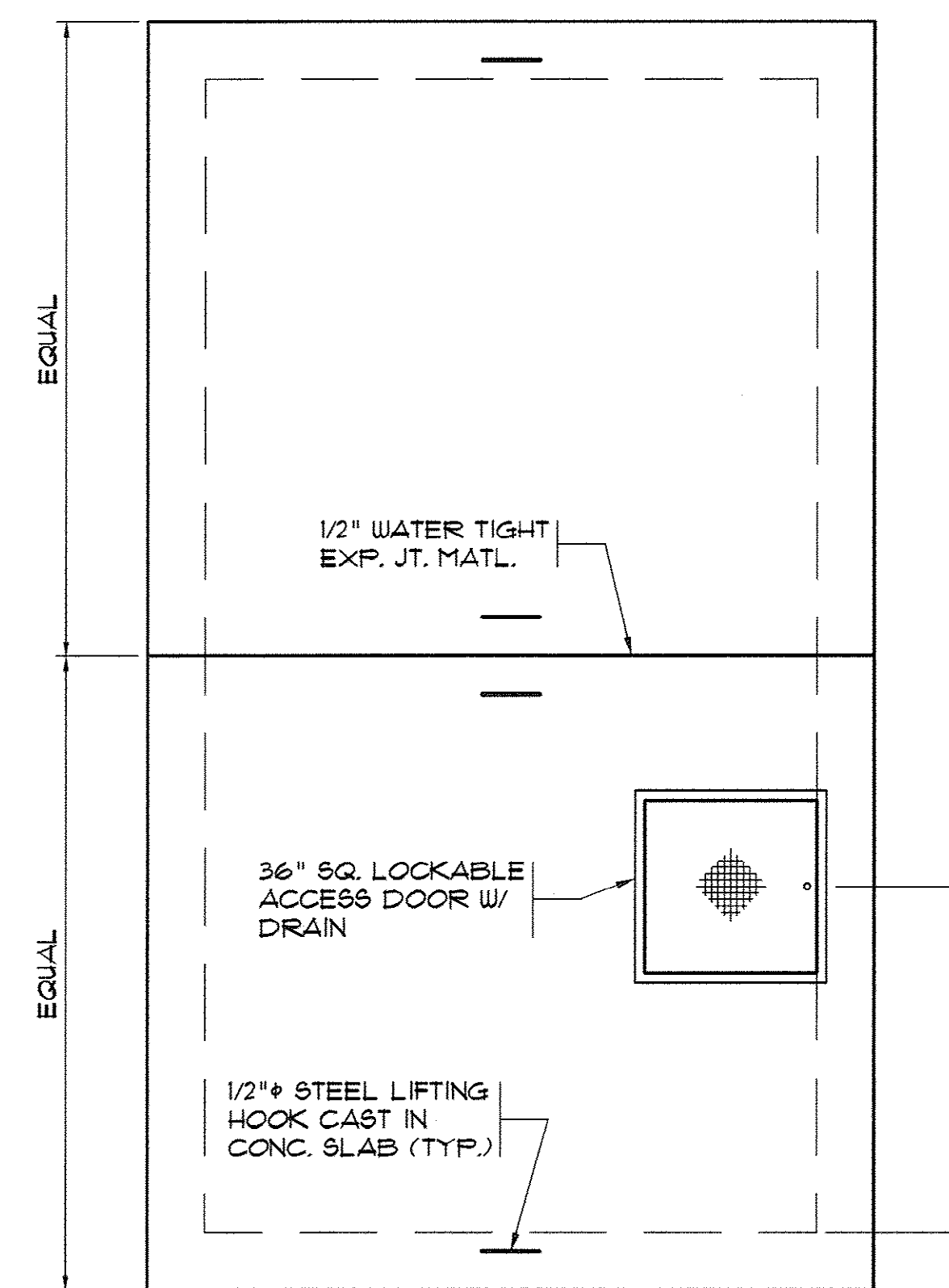


NOTE:
 PROVIDE CONCRETE
 SUPPORTS FOR METER
 AS APPROVED BY
 METER MANUFACTURER.

**FINISHED WATER METER VAULT NO. 2
 LOWER PLAN**
 SCALE: 3/8" = 1'-0"

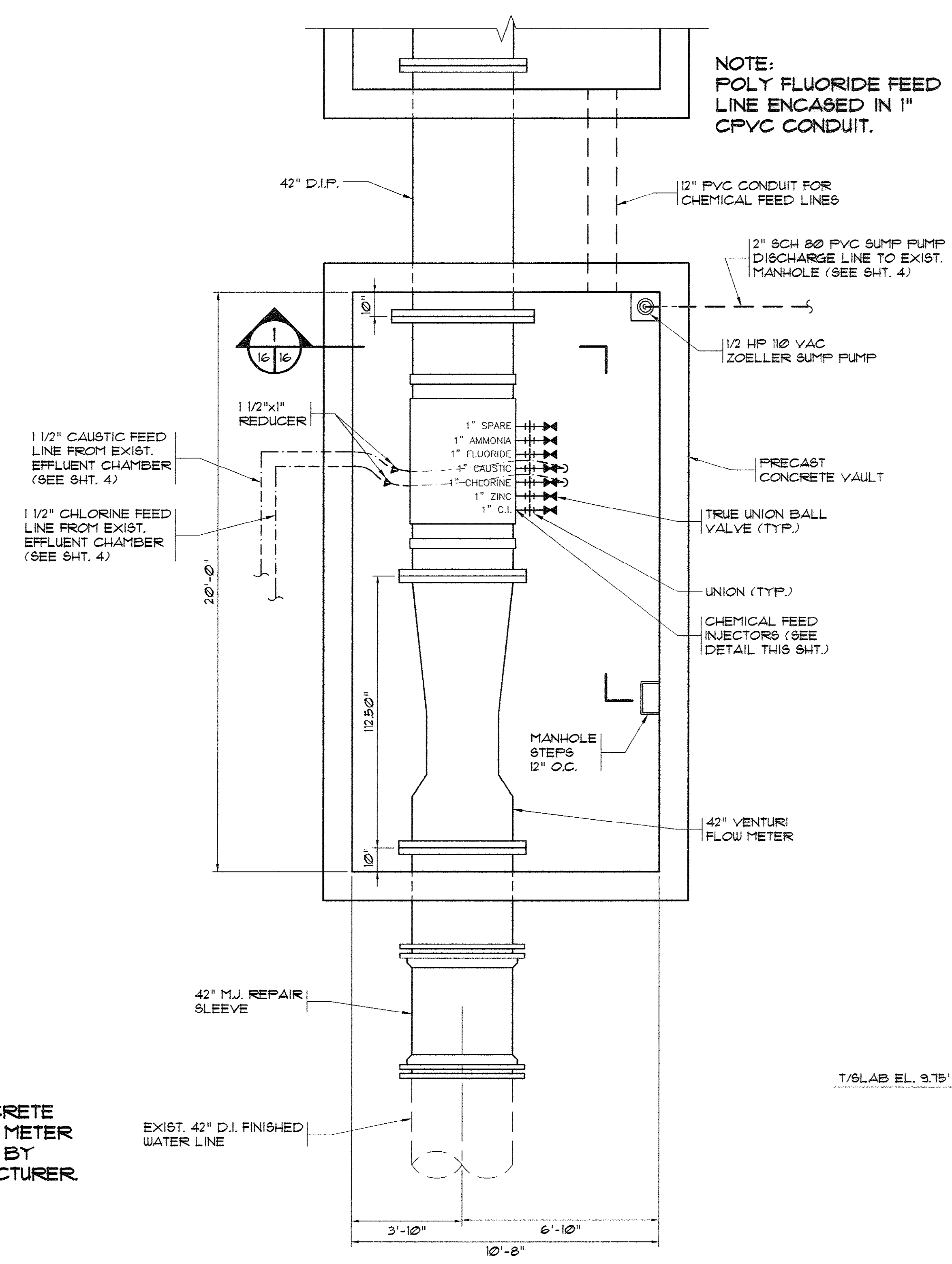


1 SECTION
 SCALE: 3/8" = 1'-0"

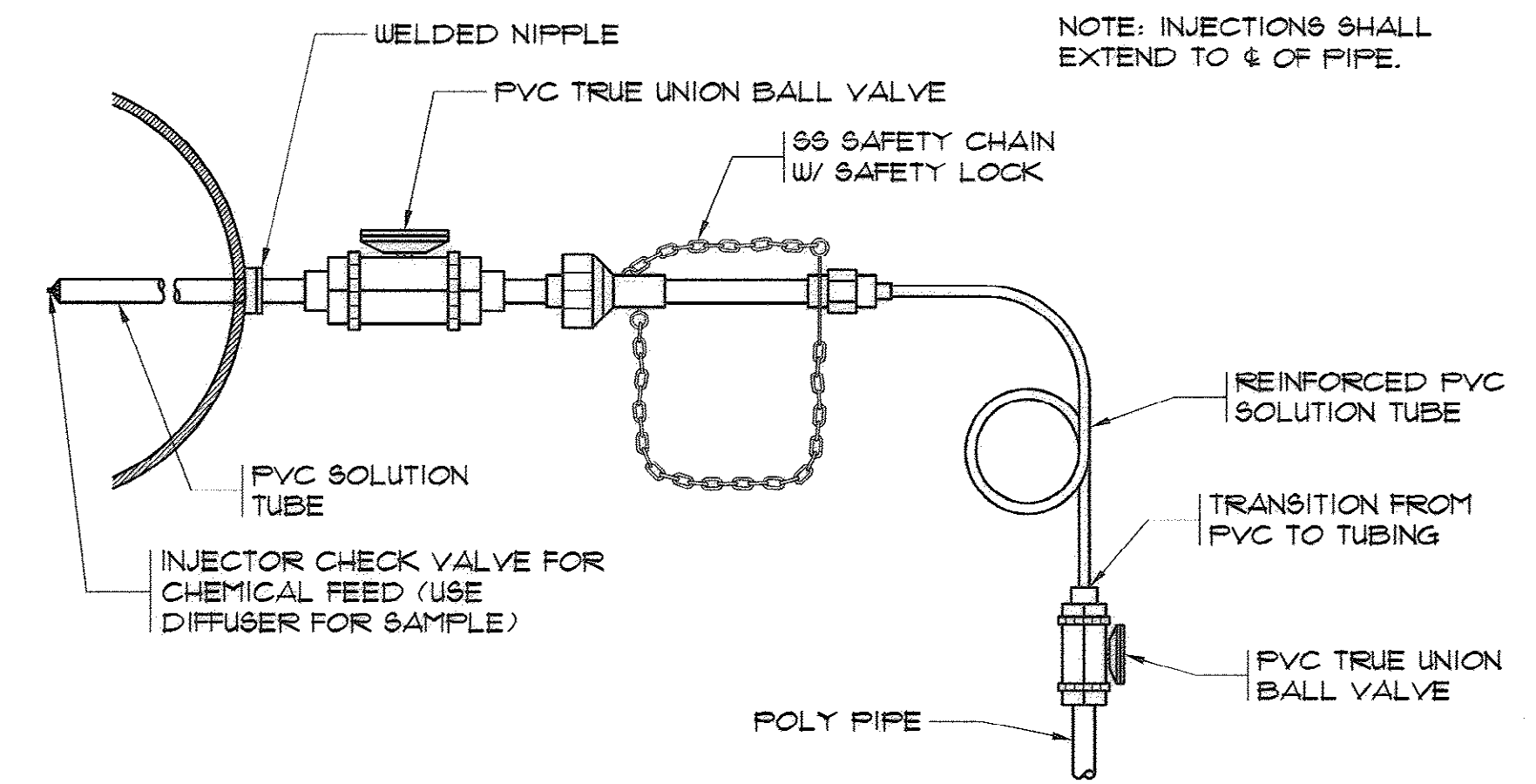


**VENTURI FLOW METER VAULT
UPPER PLAN**
SCALE: 3/8" = 1'-0"

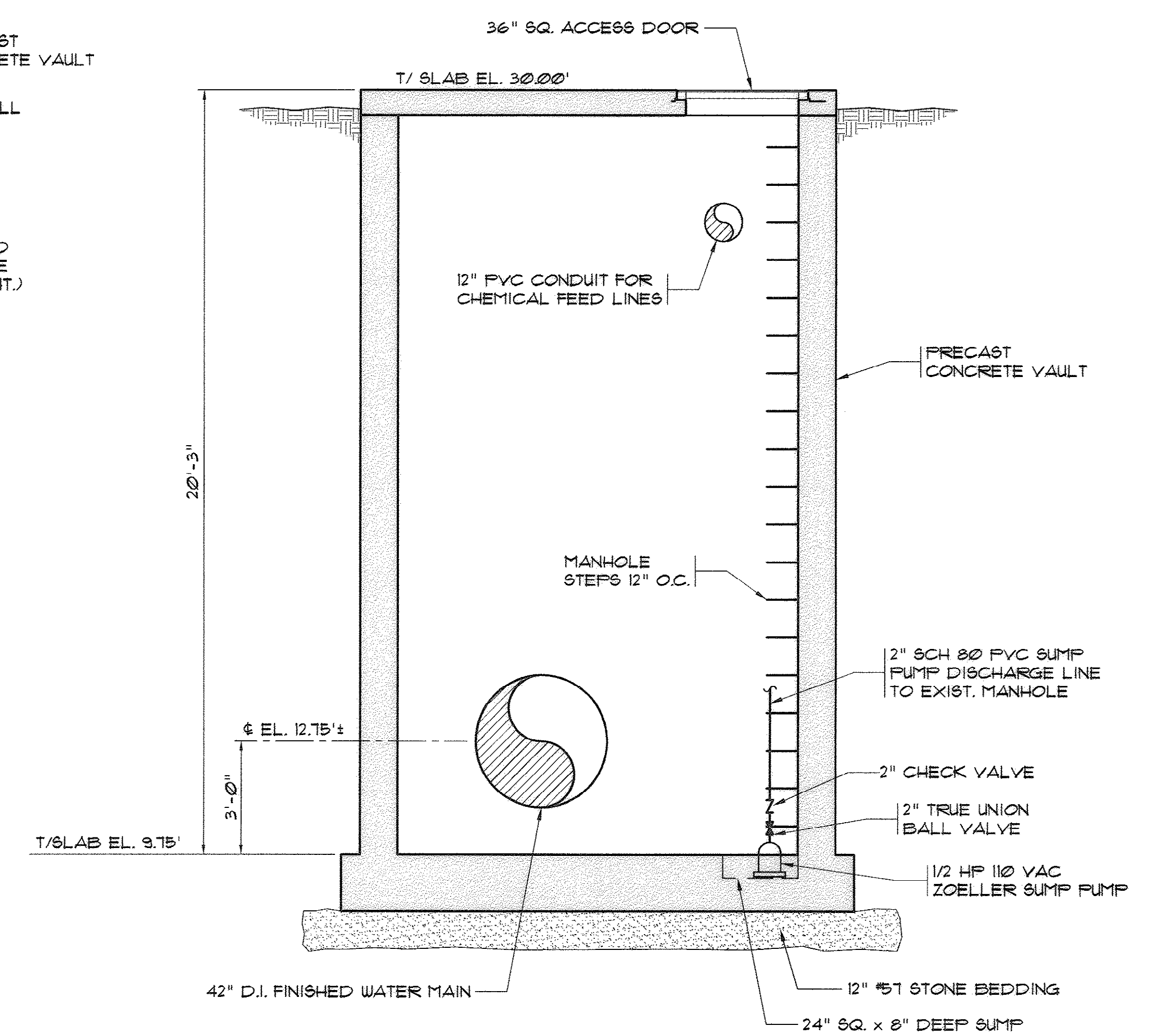
NOTE:
PROVIDE CONCRETE
SUPPORTS FOR METER
AS APPROVED BY
METER MANUFACTURER.



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



**1" CHEMICAL FEED INJECTOR
AND SAMPLE TAP DETAIL**
N.T.S.



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

REVISIONS			
SYM.	DESCRIPTION	DATE	BY

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**VENTURI FLOW
METER VAULT**

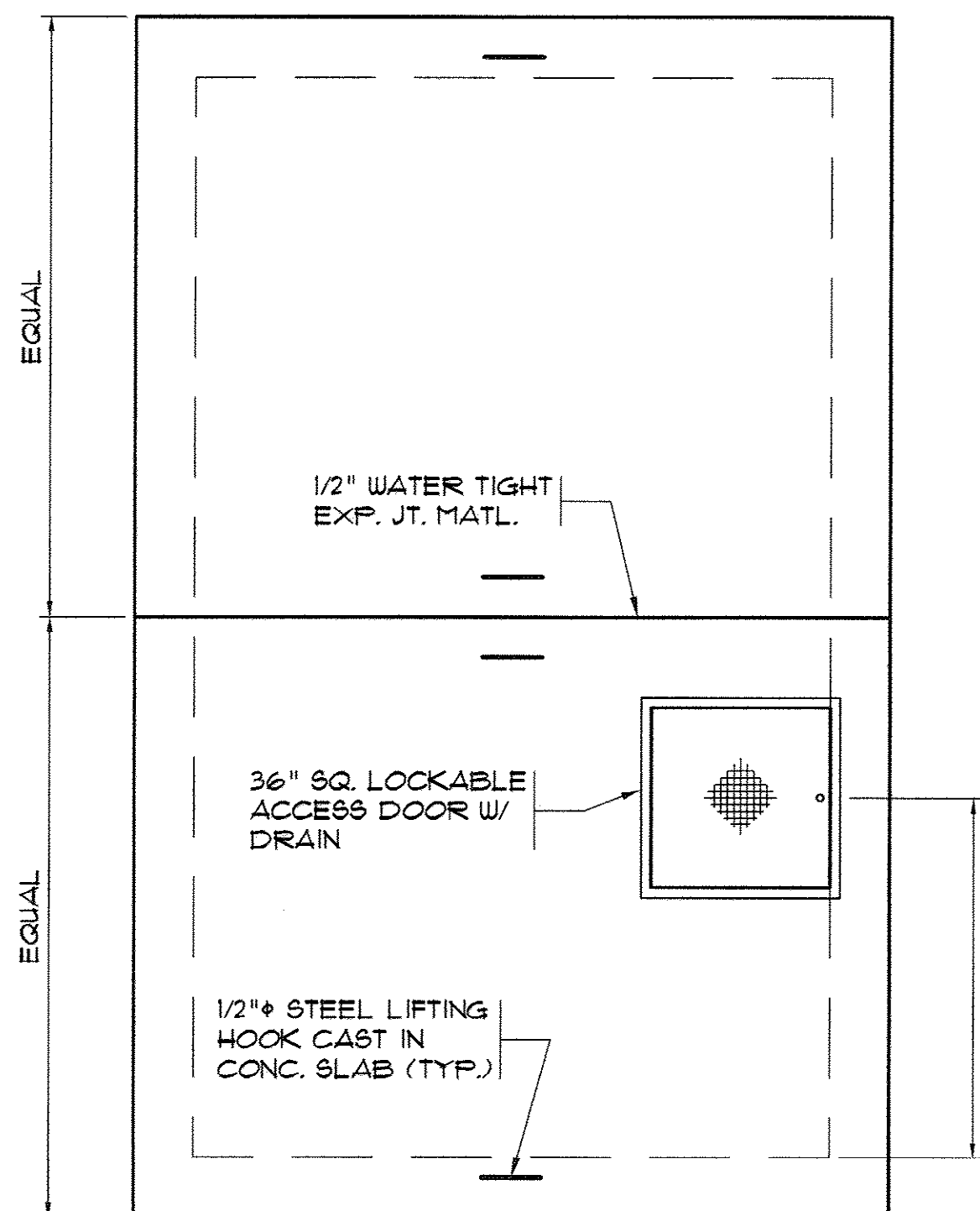
**BULL CREEK WTP
FINISHED WATER PUMP STATION NO. 2
(PUMP STATION & ELECTRICAL BLDG.)
GRAND STRAND WATER &
SEWER AUTHORITY**

DATE: OCT. 2008
DESIGNED: JWM
DRAWN: DC
CHECKED: JWM
SCALE: AS SHOWN
SHEET NO.
16

OF: 25 VERSION: 5

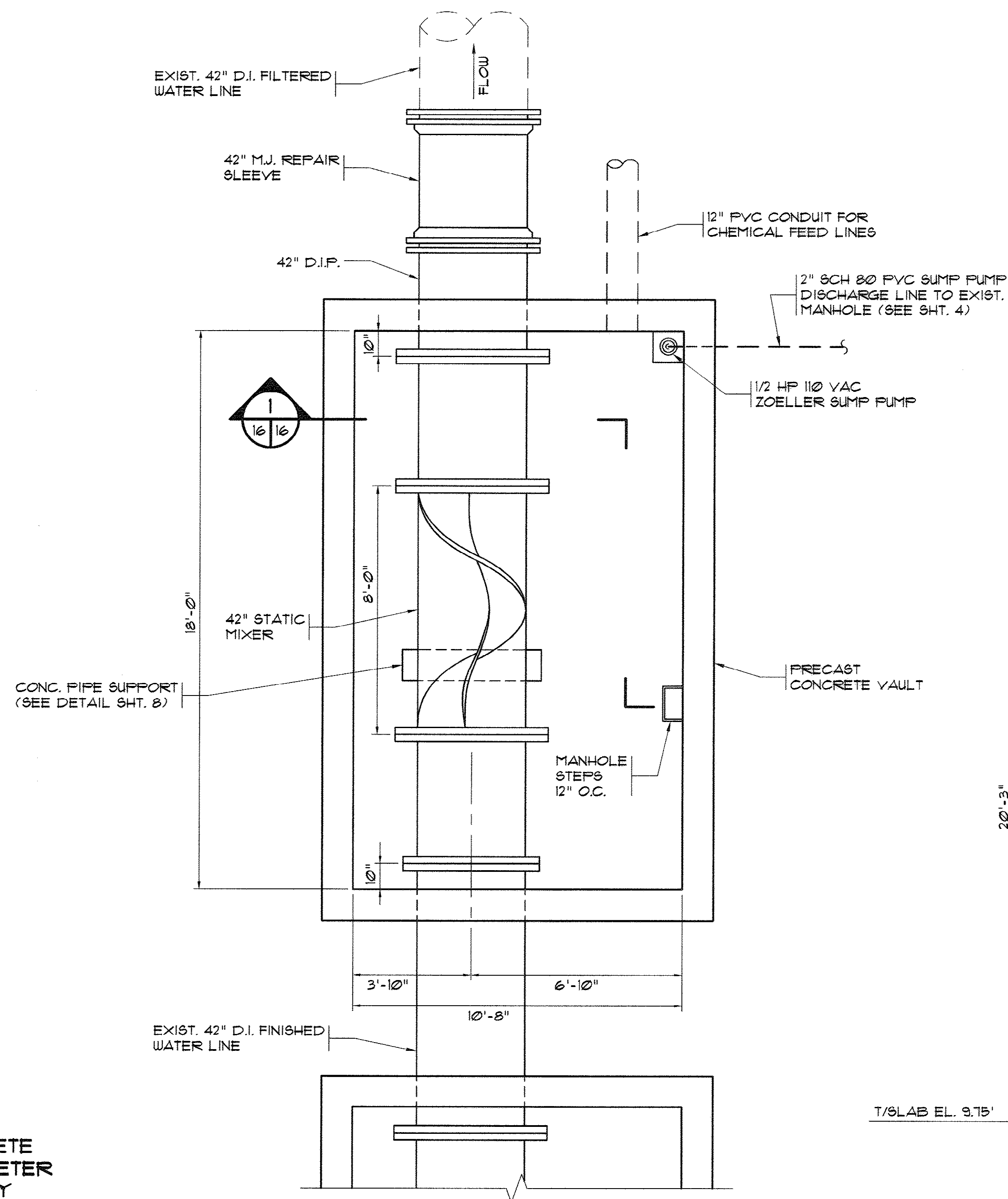
AS-BUILT

33-014-017/49 W

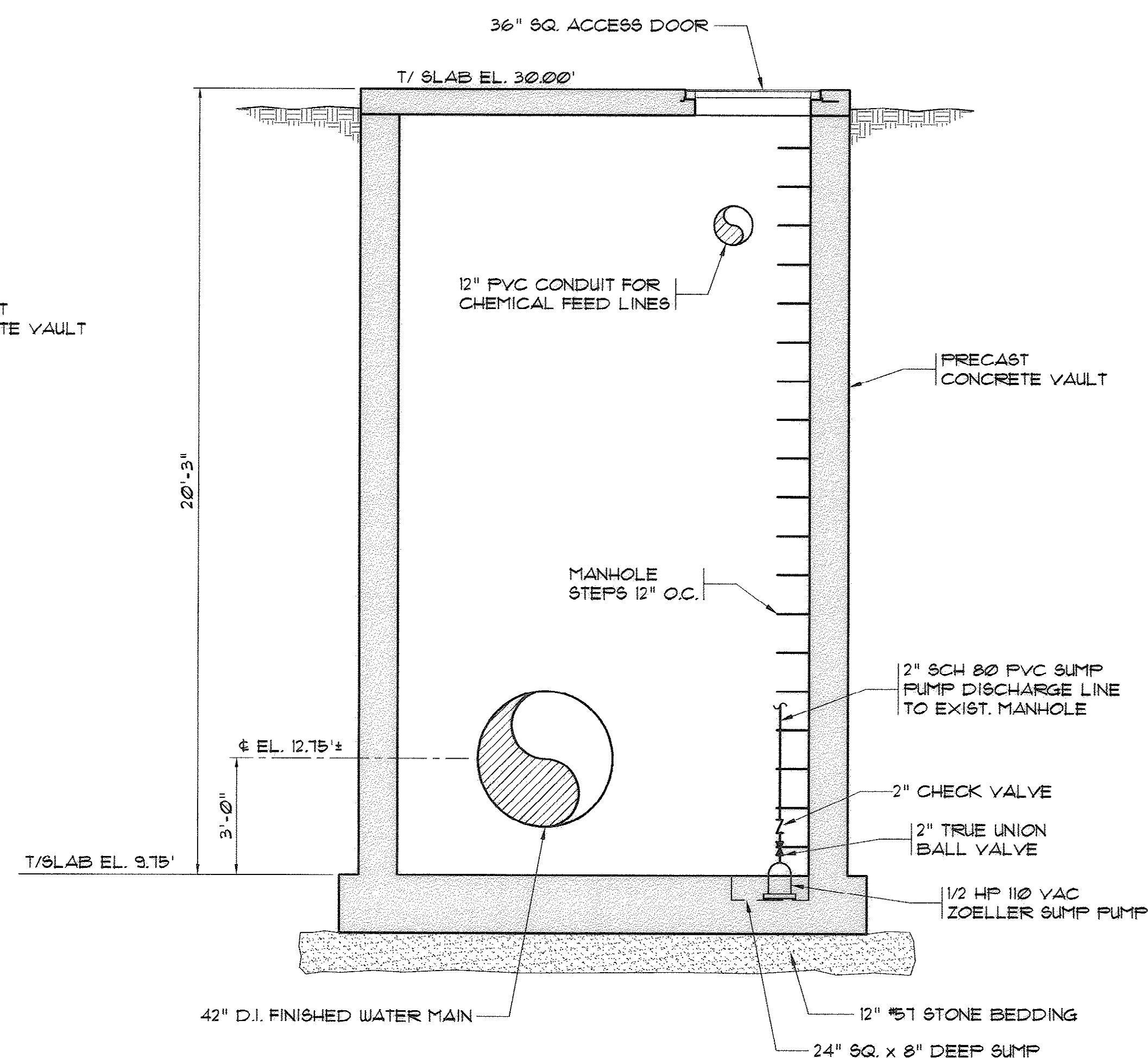


**STATIC MIXER VAULT
UPPER PLAN**
SCALE: 3/8" = 1'-0"

NOTE:
PROVIDE CONCRETE
SUPPORTS FOR METER
AS APPROVED BY
METER MANUFACTURER.

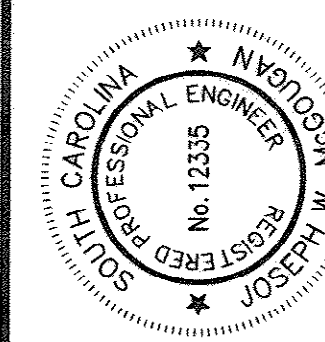
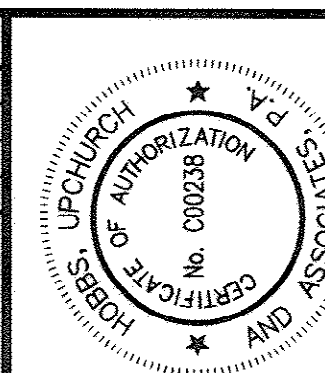


**5
4** **STATIC MIXER VAULT
LOWER PLAN**
SCALE: 3/8" = 1'-0"



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

REVISIONS			
SYM.	DESCRIPTION	DATE	BY



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**STATIC MIXER
VAULT**

**BULL CREEK WTP
FINISHED WATER PUMP STATION NO. 2
(PUMP STATION & ELECTRICAL BLDG.)
GRAND STRAND WATER &
SEWER AUTHORITY**

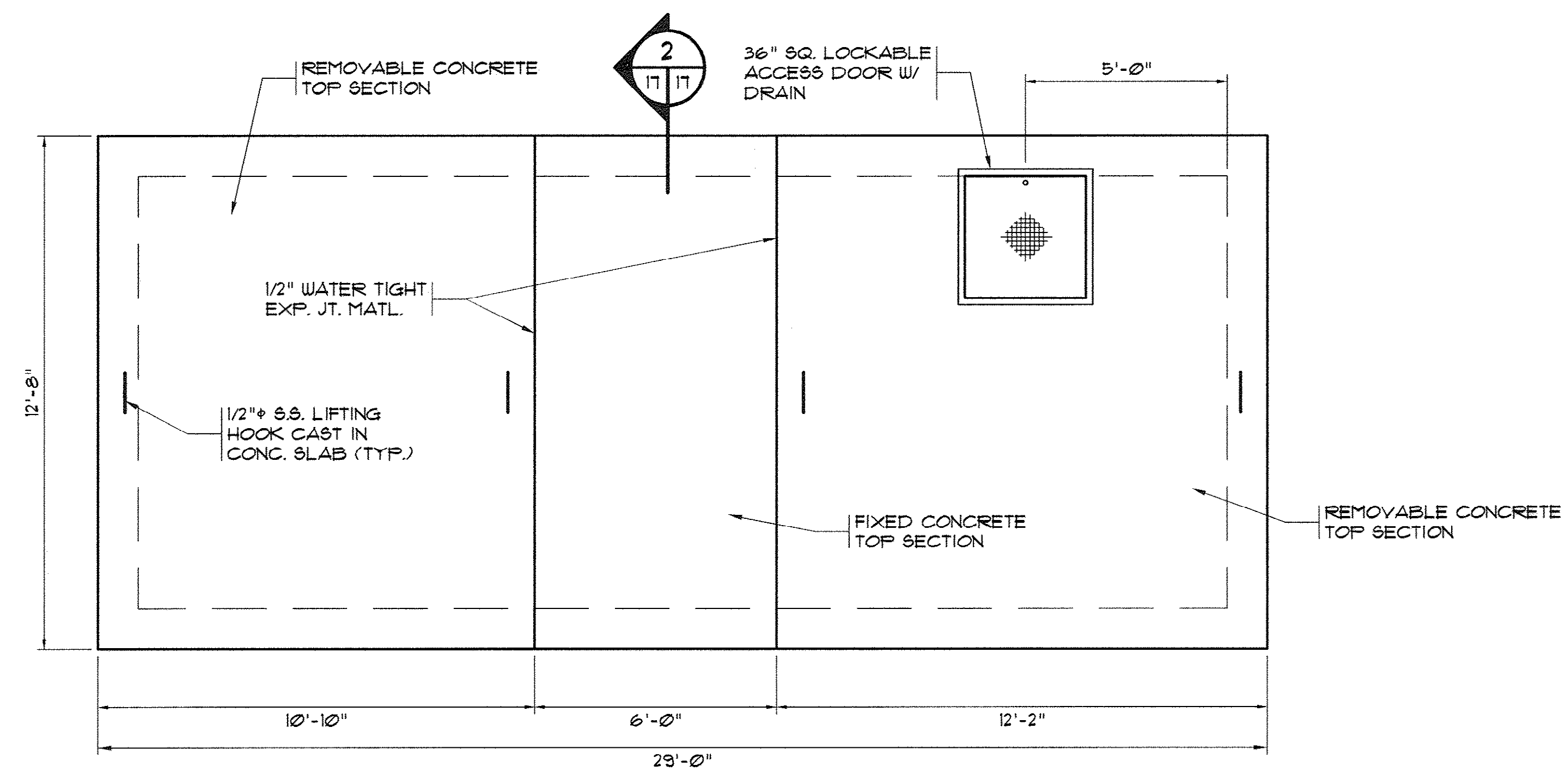
DATE:	OCT. 2008
DESIGNED:	JWM
DRAWN:	DC
CHECKED:	JWM
SCALE:	AS SHOWN

SHEET NO.
16A

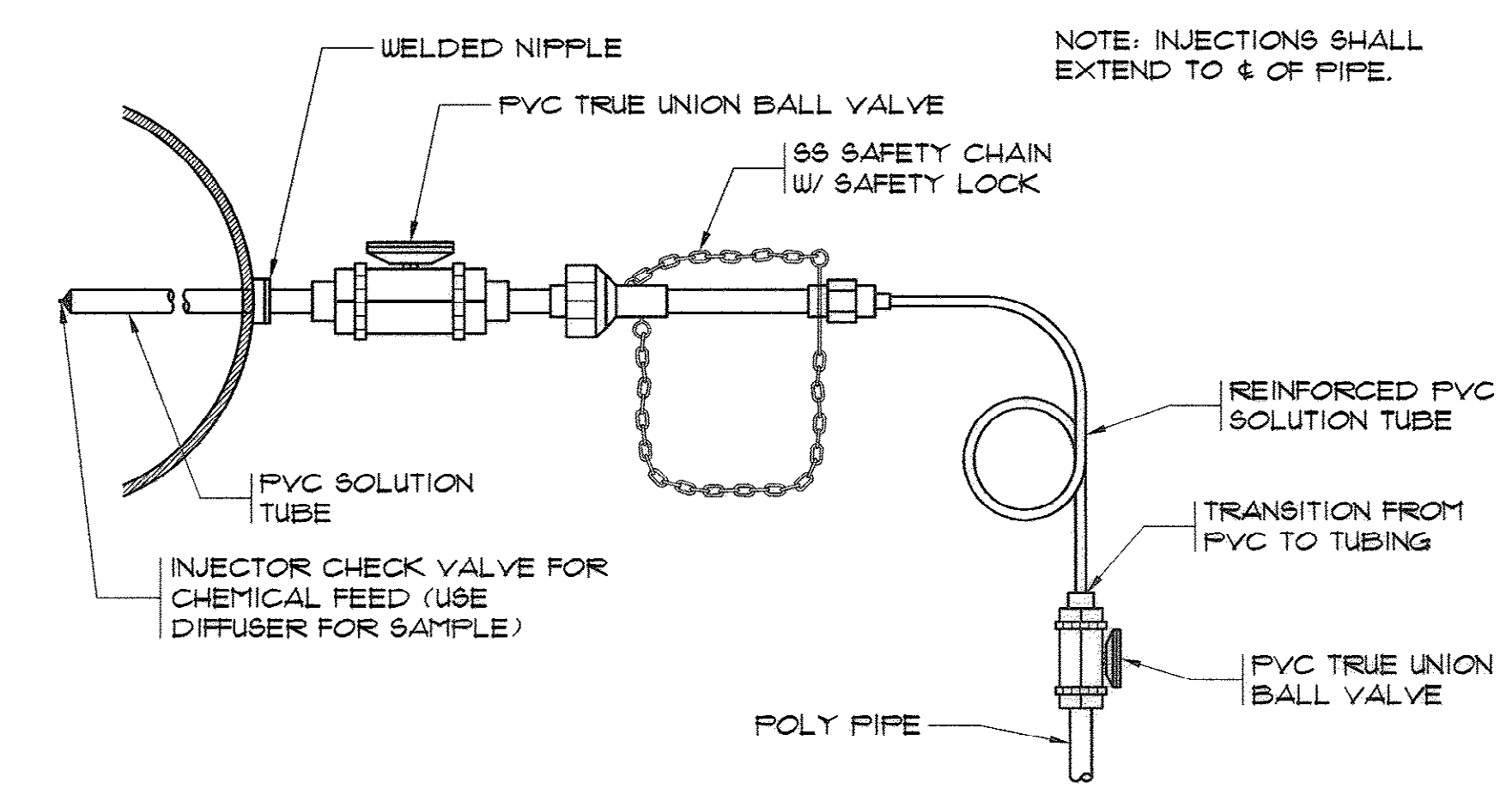
AS-BUILT

OF: 25 VERSION: 5

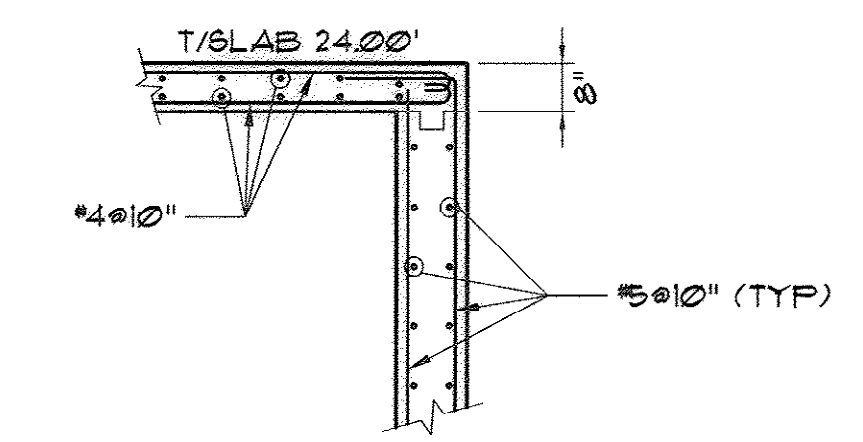
33-014-018/49 W



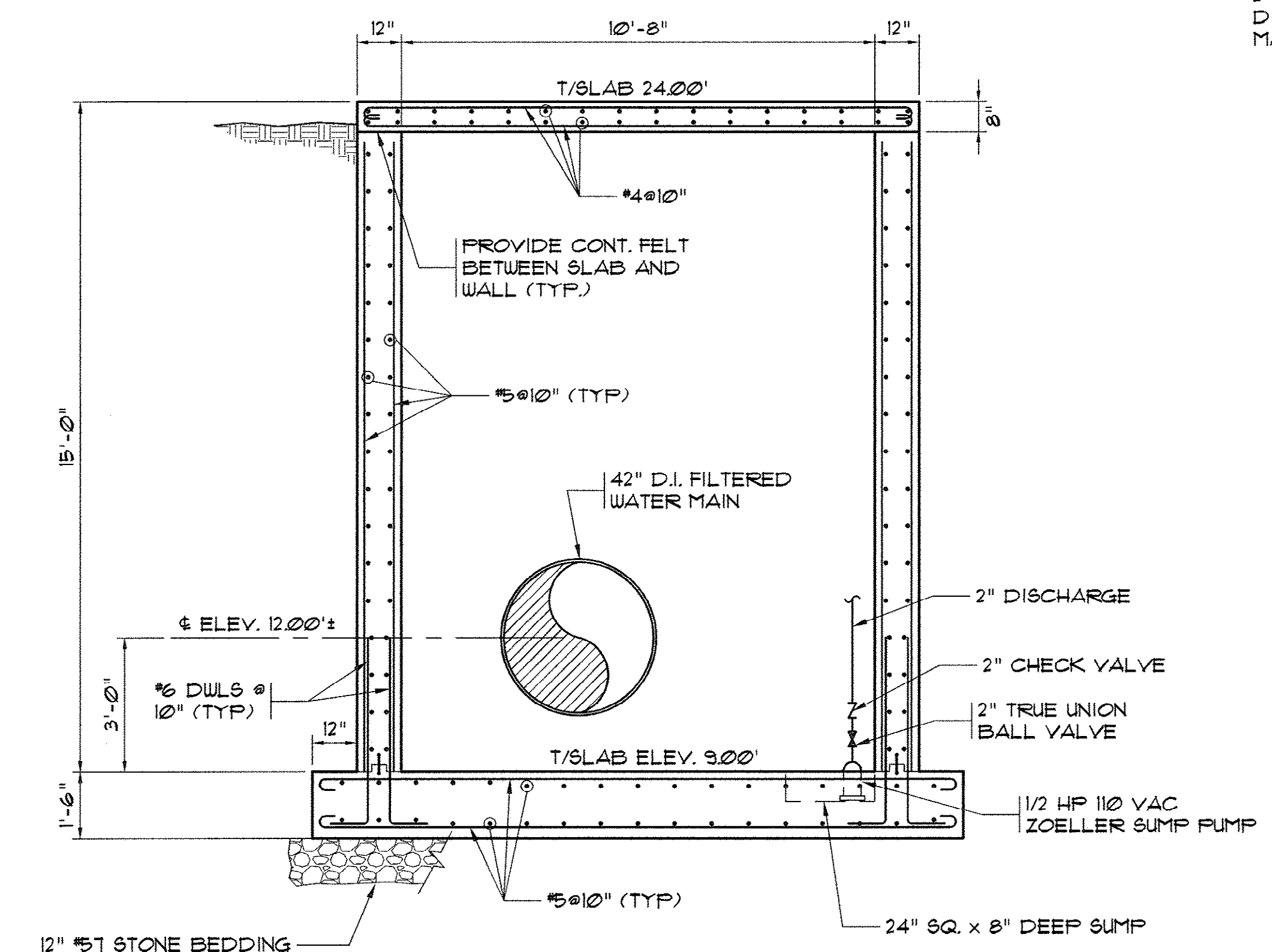
**CHEMICAL FEED VAULT
UPPER PLAN**
SCALE: 3/8" = 1'-0"



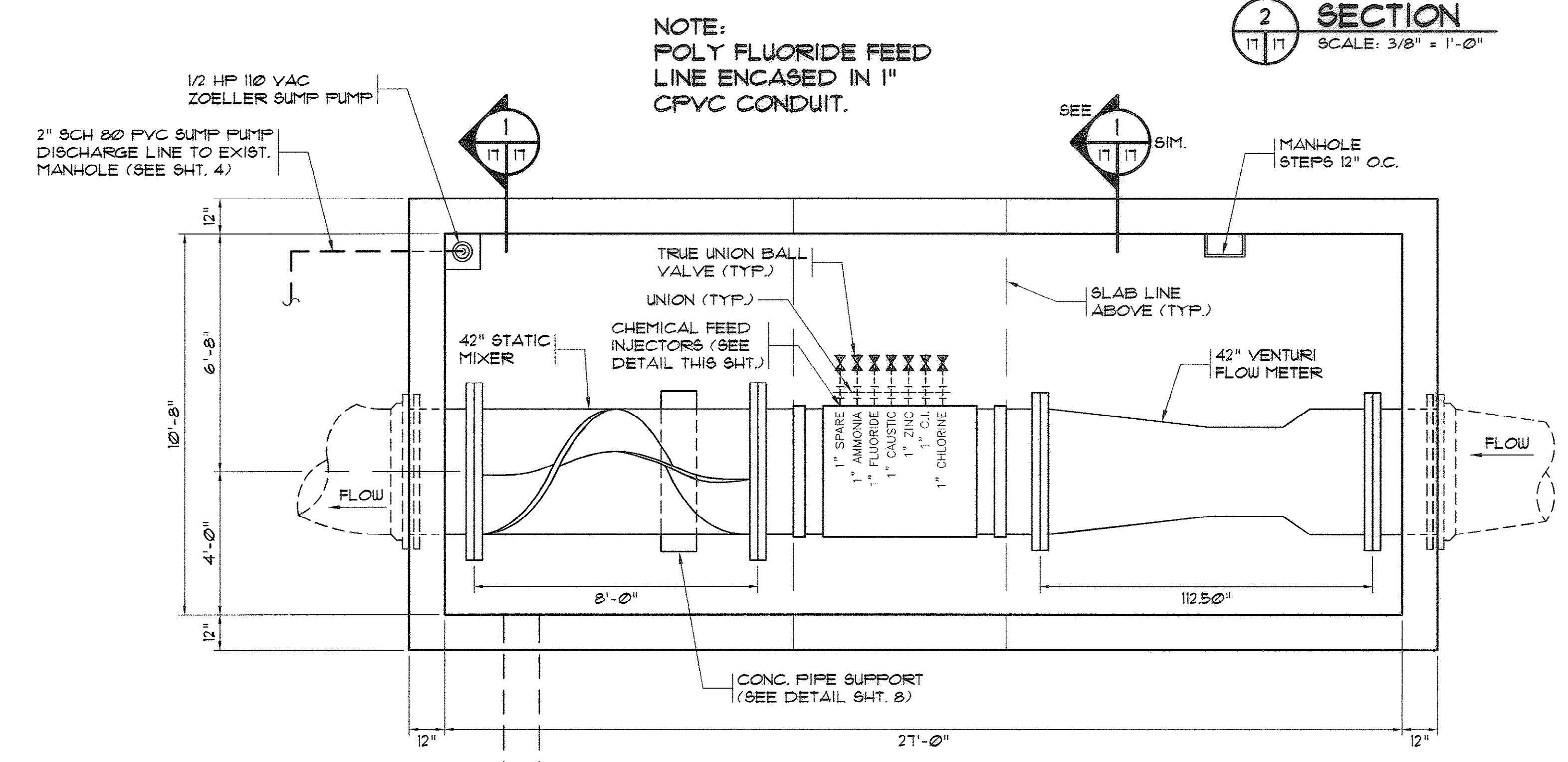
**1" & 4" CHEMICAL FEED INJECTOR
AND SAMPLE TAP DETAIL**
N.T.S.



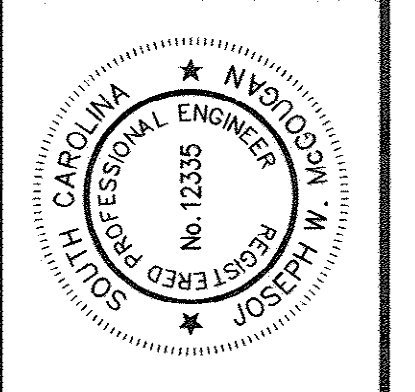
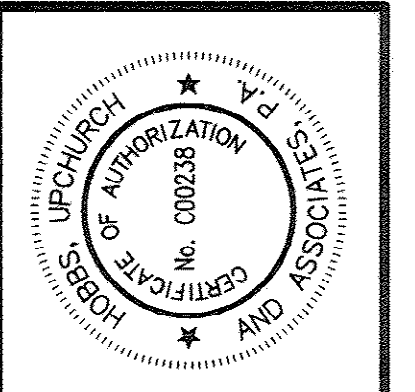
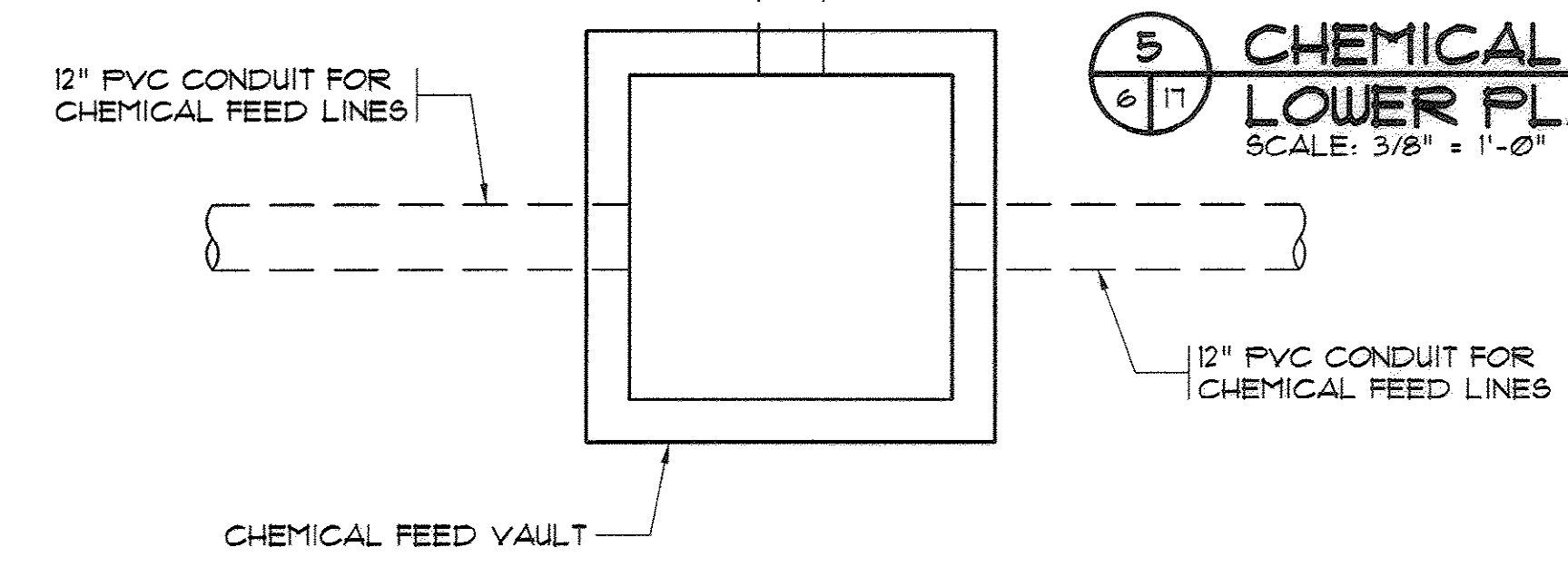
2 SECTION
SCALE: 3/8" = 1'-0"



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



**5 CHEMICAL FEED VAULT
LOWER PLAN**
SCALE: 3/8" = 1'-0"



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CHEMICAL FEED VAULT

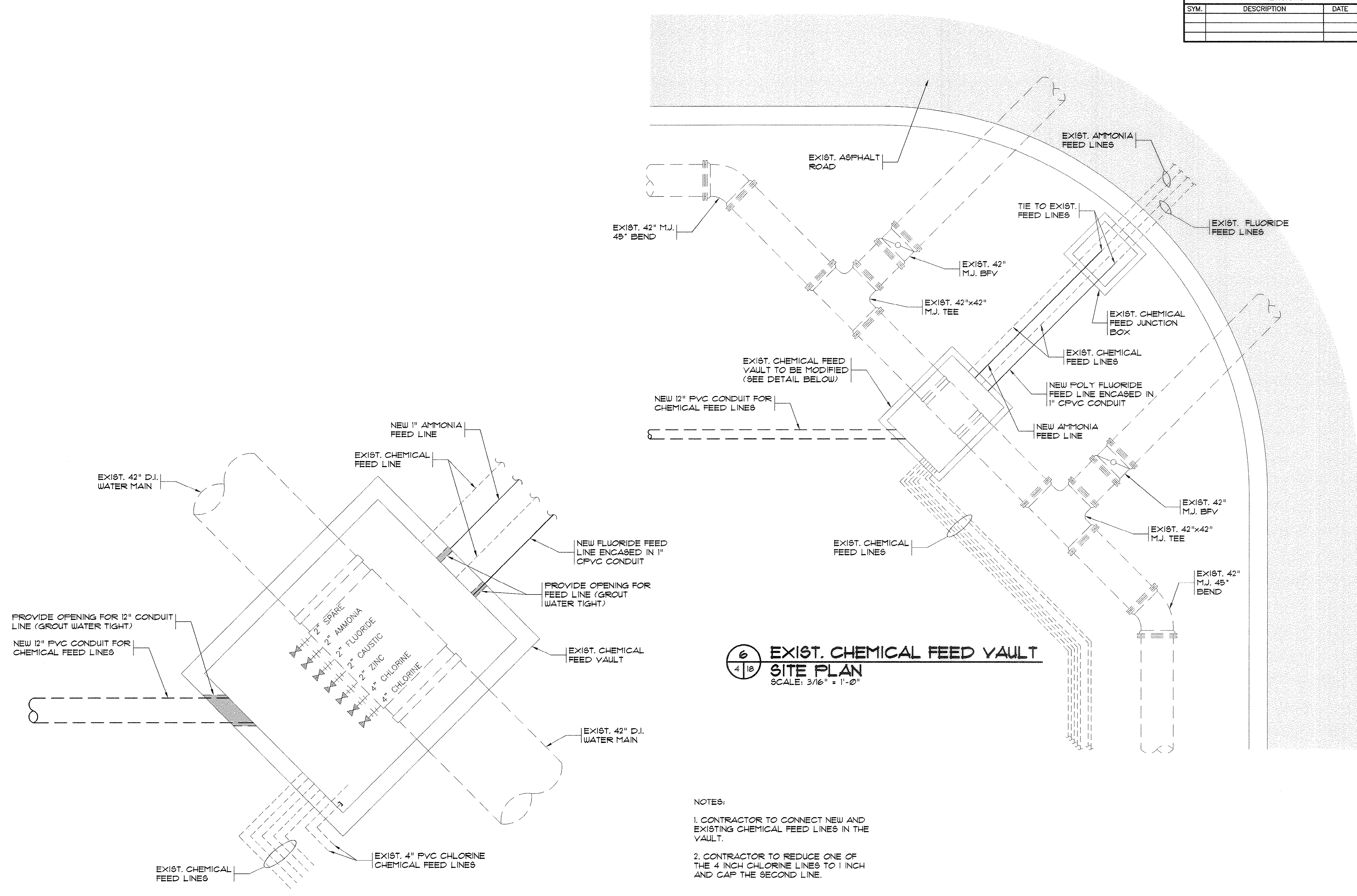
BULL CREEK WTP
FINISHED WATER PUMP STATION NO. 2
(PUMP STATION & ELECTRICAL BLDG.)
GRAND STRAND WATER & SEWER AUTHORITY

DATE:	OCT. 2008
DESIGNED:	JWM
DRAWN:	DC
CHECKED:	JWM
SCALE:	AS SHOWN

SHEET NO.
17

AS-BUILT

33-014-019/49 W



**EXIST. CHEMICAL FEED VAULT
MODIFICATION PLAN**
SCALE: 1/2"=1'-0"

**EXIST. CHEMICAL FEED VAULT
SITE PLAN**
SCALE: 3/16"=1'-0"

- NOTES:
1. CONTRACTOR TO CONNECT NEW AND EXISTING CHEMICAL FEED LINES IN THE VAULT.
 2. CONTRACTOR TO REDUCE ONE OF THE 4 INCH CHLORINE LINES TO 1 INCH AND CAP THE SECOND LINE.

REVISIONS			
SYM.	DESCRIPTION	DATE	BY

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**EXISTING CHEMICAL
FEED VAULT
MODIFICATION PLAN**

**BULL CREEK WTP
FINISHED WATER PUMP STATION NO. 2
(PUMP STATION & ELECTRICAL BLDG.)
GRAND STRAND WATER &
SEWER AUTHORITY**

DATE:	OCT. 2008
DESIGNED:	JWM
DRAWN:	ALG
CHECKED:	JWM
SCALE:	AS SHOWN

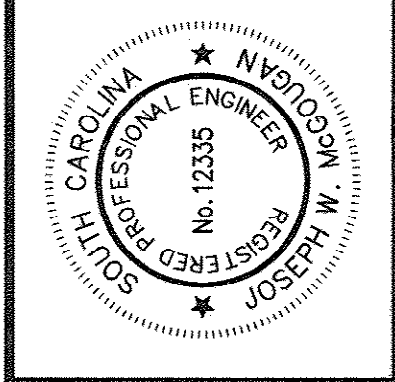
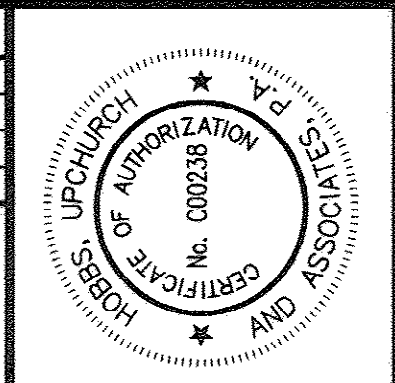
SHEET NO.
18

OF: 25 VERSION: 5

AS-BUILT

33-014-020/49 W

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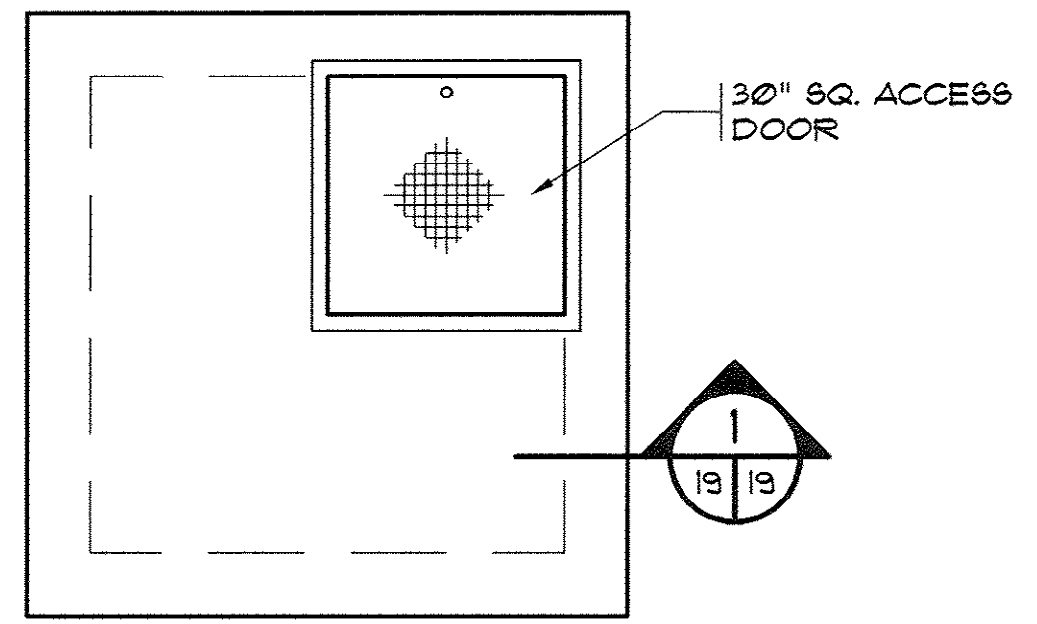
CHEMICAL FEED JUNCTION VAULT

BULL CREEK WTP
 FINISHED WATER PUMP STATION NO. 2
 (PUMP STATION & ELECTRICAL BLDG.)
 GRAND STRAND WATER & SEWER AUTHORITY

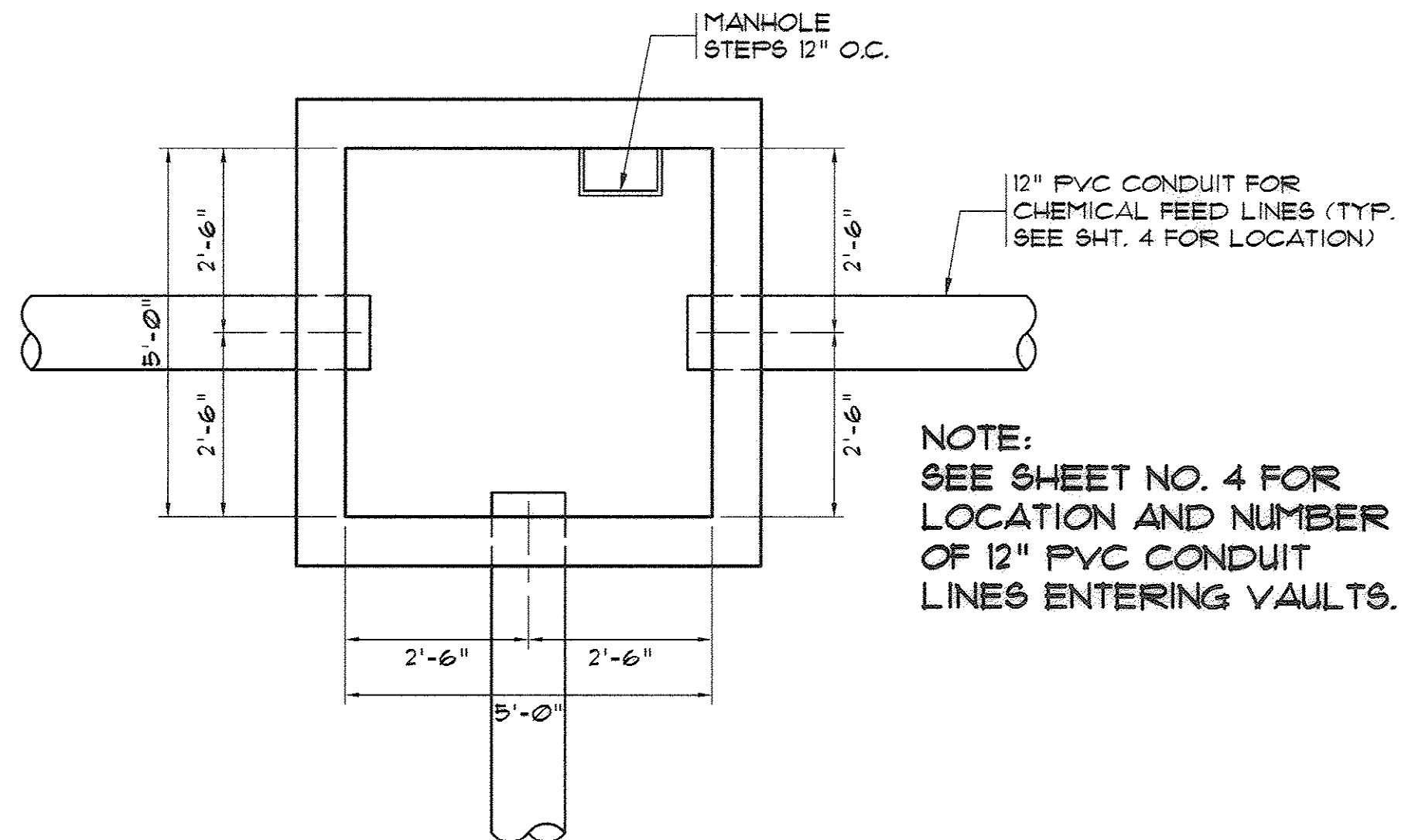
DATE:	OCT. 2008
DESIGNED:	JWM
DRAWN:	DC
CHECKED:	JWM
SCALE:	AS SHOWN
SHEET NO.	19

AS-BUILT

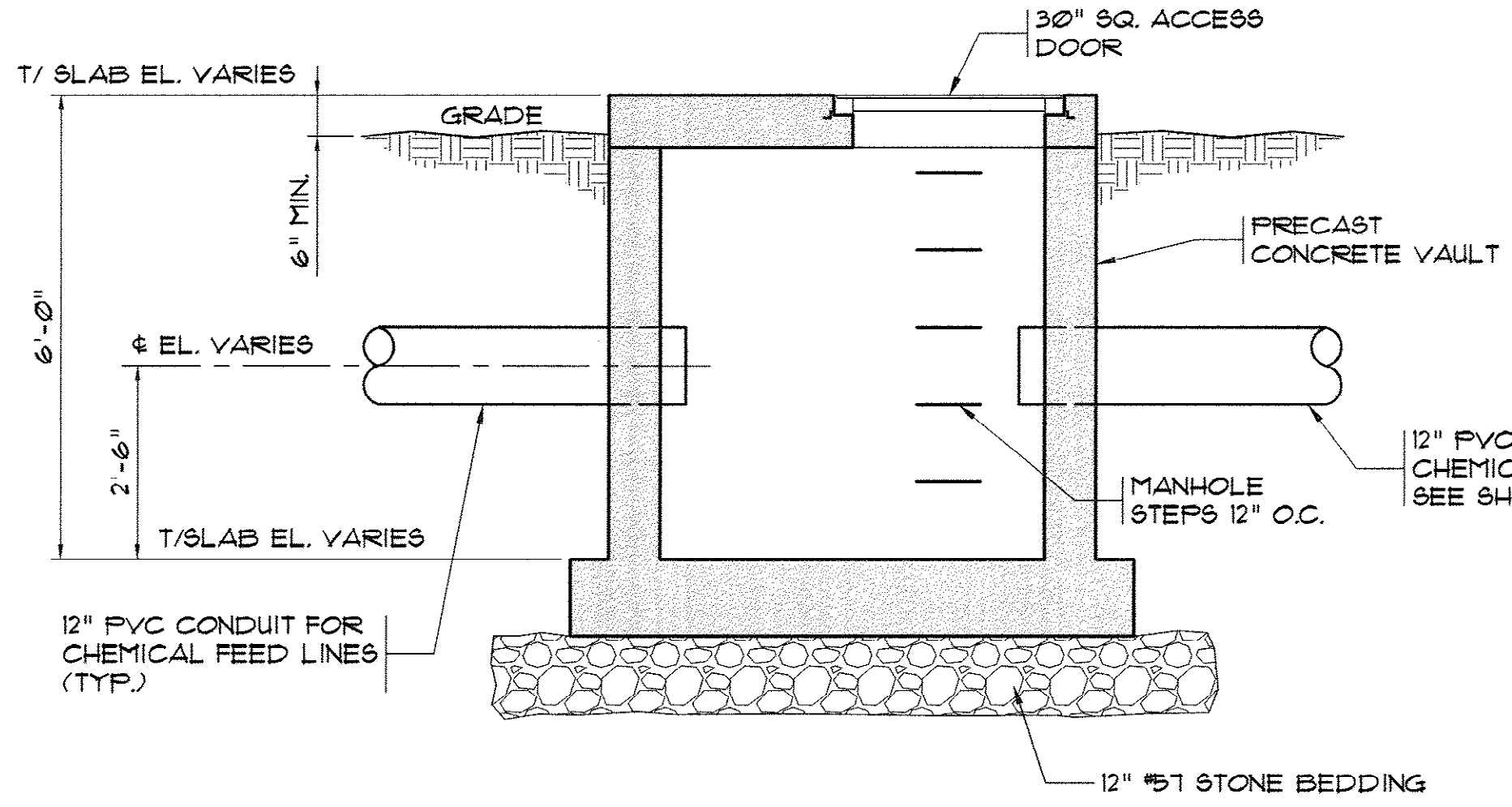
OF:	25	VERSION:	5
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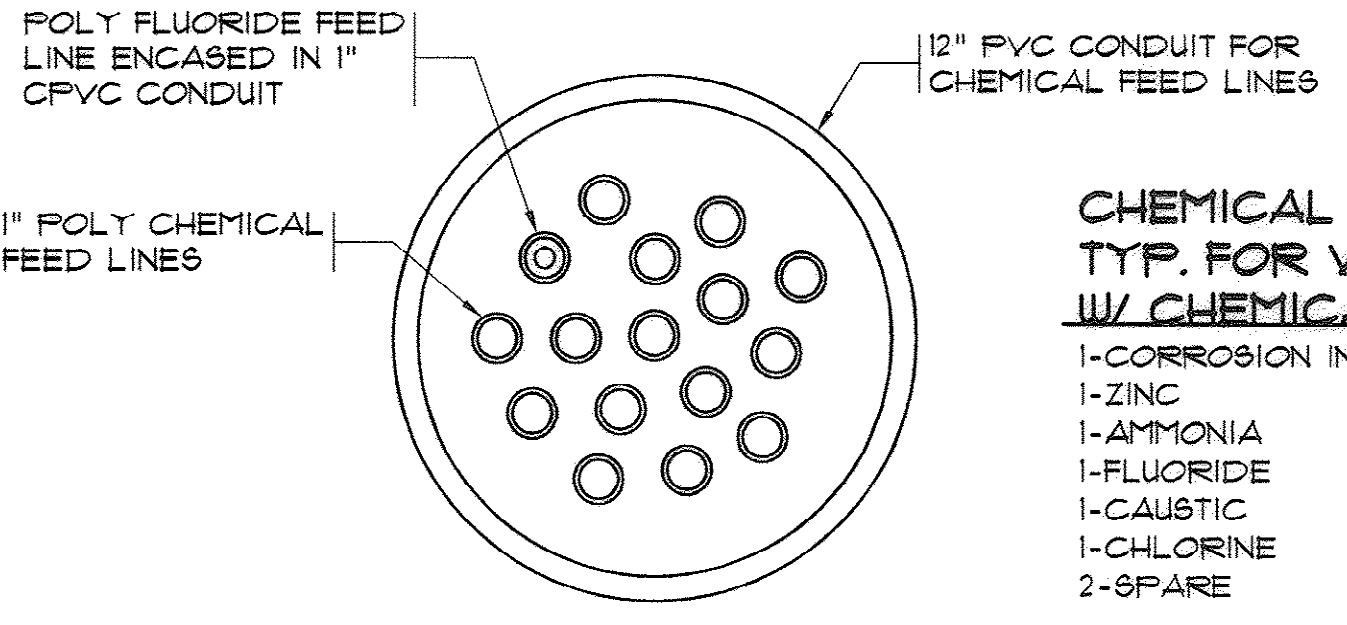
TYP. CHEMICAL FEED JUNCTION VAULT
UPPER PLAN
 SCALE: 1/2" = 1'-0"



TYP. CHEMICAL FEED JUNCTION VAULT
LOWER PLAN (SCHEMATIC VIEW ONLY)
 SCALE: 1/2" = 1'-0"



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

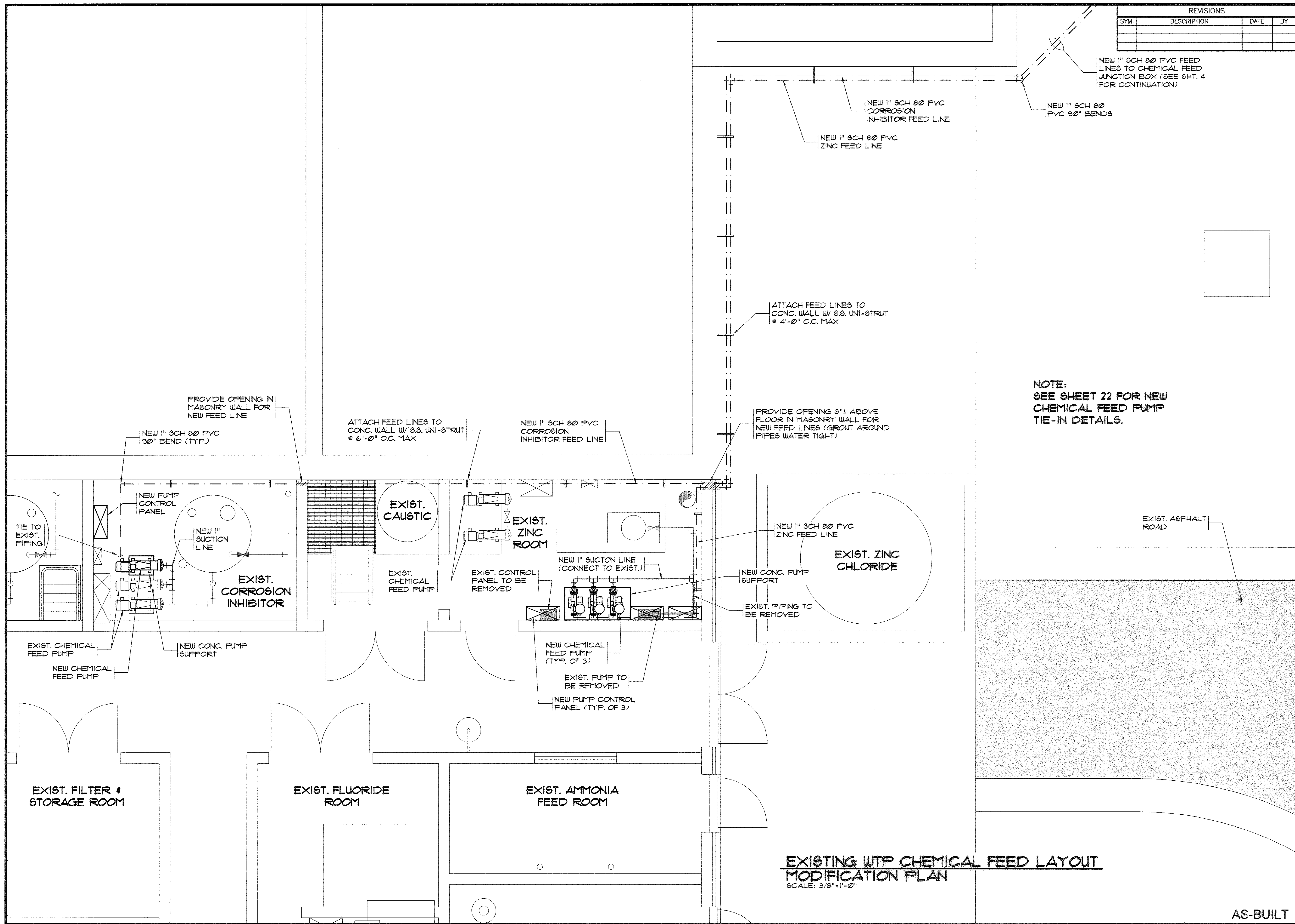


12" PVC CONDUIT SECTION
 SCALE: 1/2" = 1'-0"

- CHEMICAL FEED LINES:**
TYP. FOR VENTURI FLOW METER VAULTS
W/ CHEMICAL FEED INJECTIONS
- 1-CORROSION INHIBITOR
 - 1-ZINC
 - 1-AMMONIA
 - 1-FLUORIDE
 - 1-CAUSTIC
 - 1-CHLORINE
 - 2-SPARE

- NOTES:**
1. SLOPE 12" CONDUIT LINES TO VAULTS W/ SUMP PUMPS.
 2. NO JOINTS IN CHEMICAL FEED LINES IN 12" CONDUIT, ONLY IN JUNCTION VAULT. MUST BE COMPATIBLE W/ CHEMICALS.

33-014-021/49 W



REVISIONS			
SYM.	DESCRIPTION	DATE	BY

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STATE OF NORTH CAROLINA

JOSEPH A. UPCHURCH
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No. 12335
STATE OF SOUTH CAROLINA

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**EXISTING WTP
CHEMICAL FEED LAYOUT
MODIFICATION PLAN**

**BULL CREEK WTP
FINISHED WATER PUMP STATION NO. 2
(PUMP STATION & ELECTRICAL BLDG.)
GRAND STRAND WATER &
SEWER AUTHORITY**

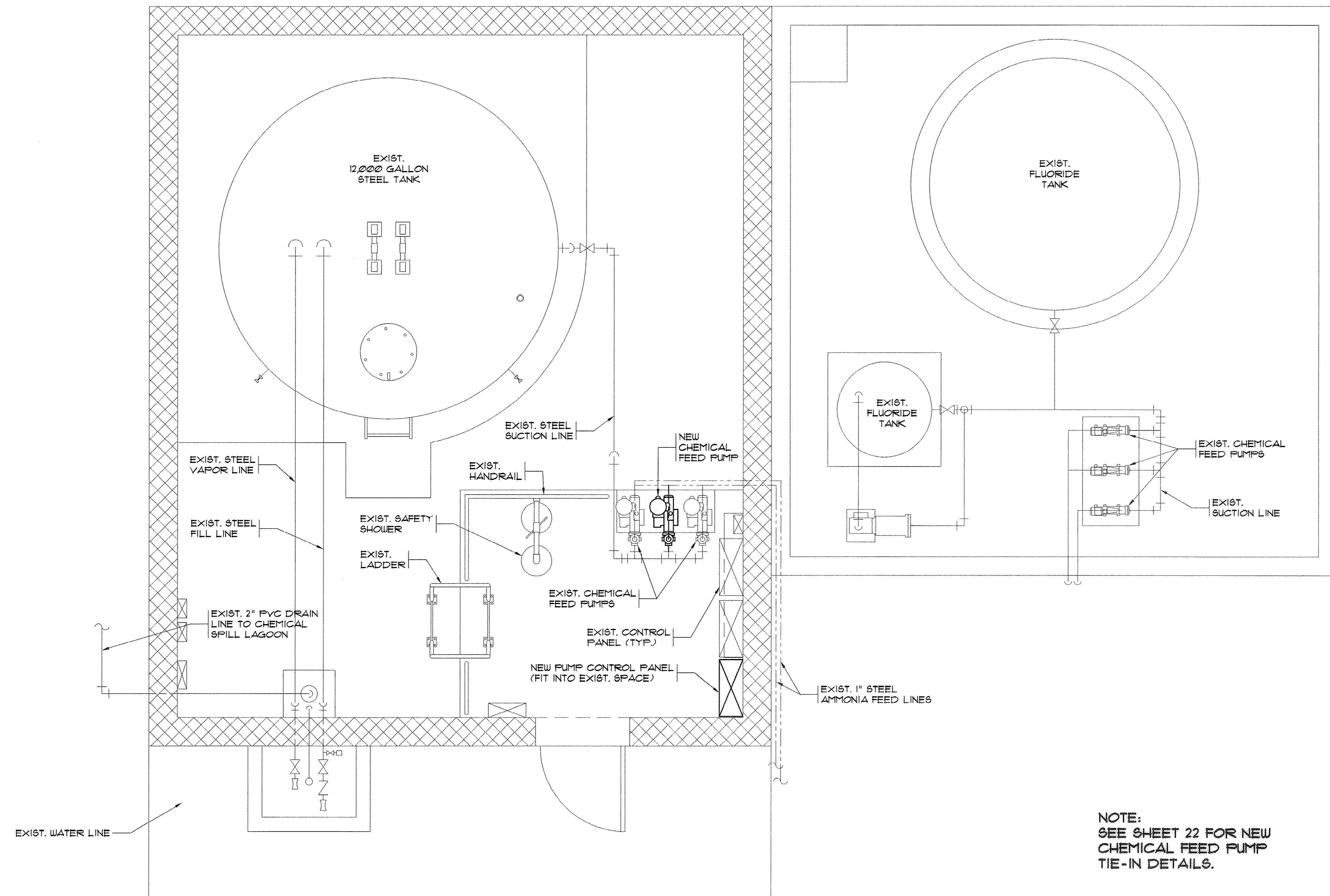
DATE:	OCT. 2008
DESIGNED:	JWM
DRAWN:	ALG
CHECKED:	JWM
SCALE:	AS SHOWN

SHEET NO. **20**

OF 25 VERSION: 5

AS-BUILT

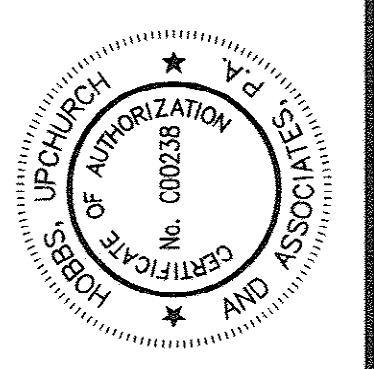
33-014-022/49 W

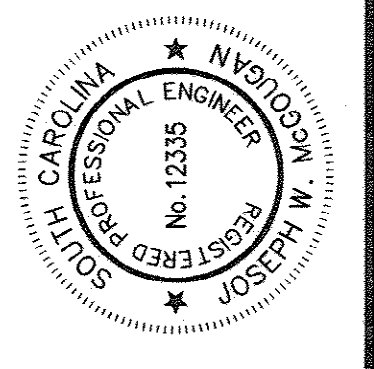


NOTE:
SEE SHEET 22 FOR NEW
CHEMICAL FEED PUMP
TIE-IN DETAILS.

**EXISTING AMMONIA & FLUORIDE FEED
MODIFICATION PLAN**
SCALE: 1/2"=1'-0"

REVISIONS			
SYM.	DESCRIPTION	DATE	BY





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Consulting Engineers
Myrtle Beach, South Carolina 29577
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**EXISTING AMMONIA & FLUORIDE FEED
MODIFICATION PLAN**

**BULL CREEK WTP
FINISHED WATER PUMP STATION NO. 2
(PUMP STATION & ELECTRICAL BLDG.)
GRAND STRAND WATER & SEWER AUTHORITY**

DATE: OCT. 2008

DESIGNED: JWM

DRAWN: ALG

CHECKED: JWM

SCALE: AS SHOWN

SHEET NO.

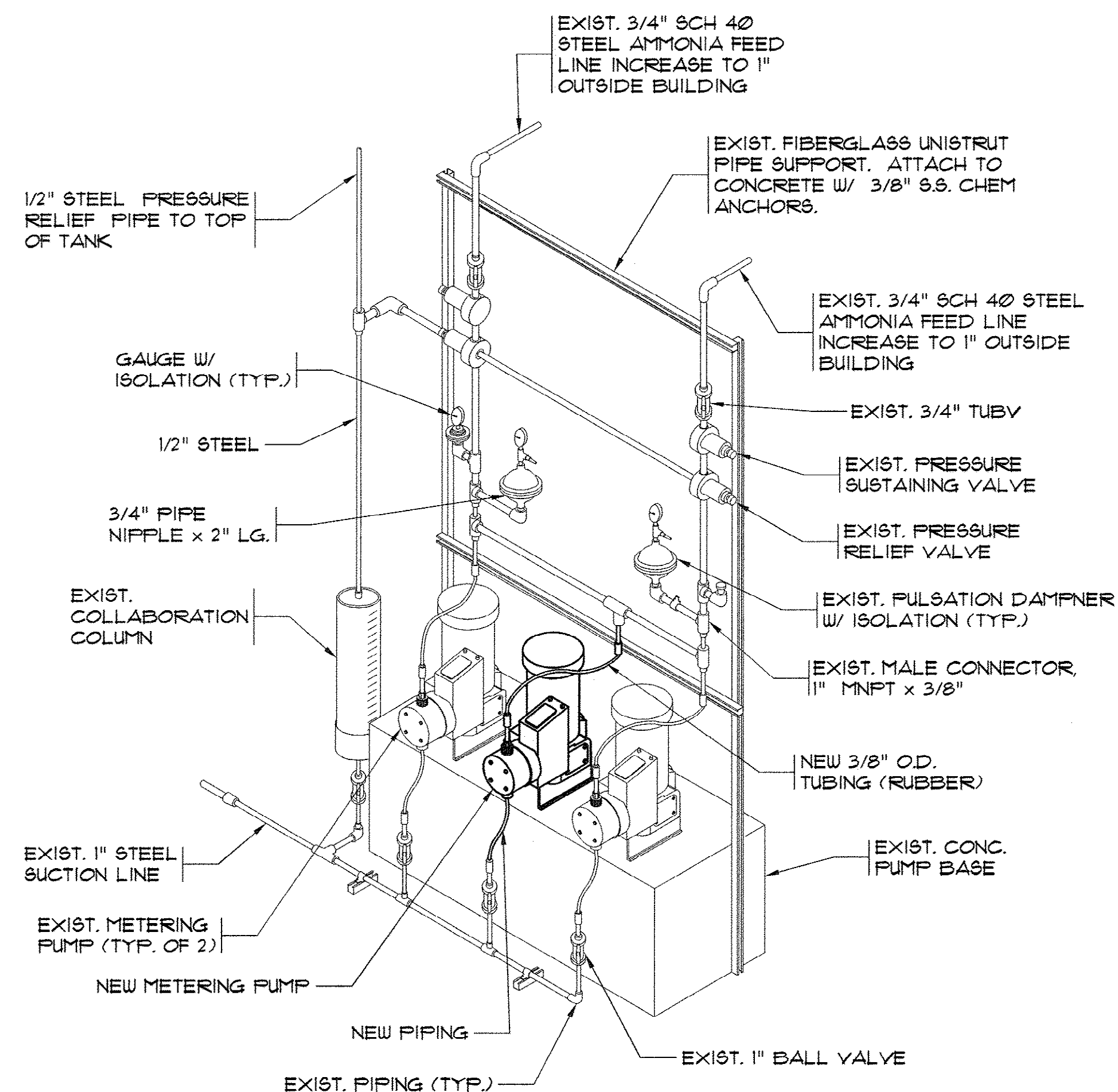
21

OF: 25

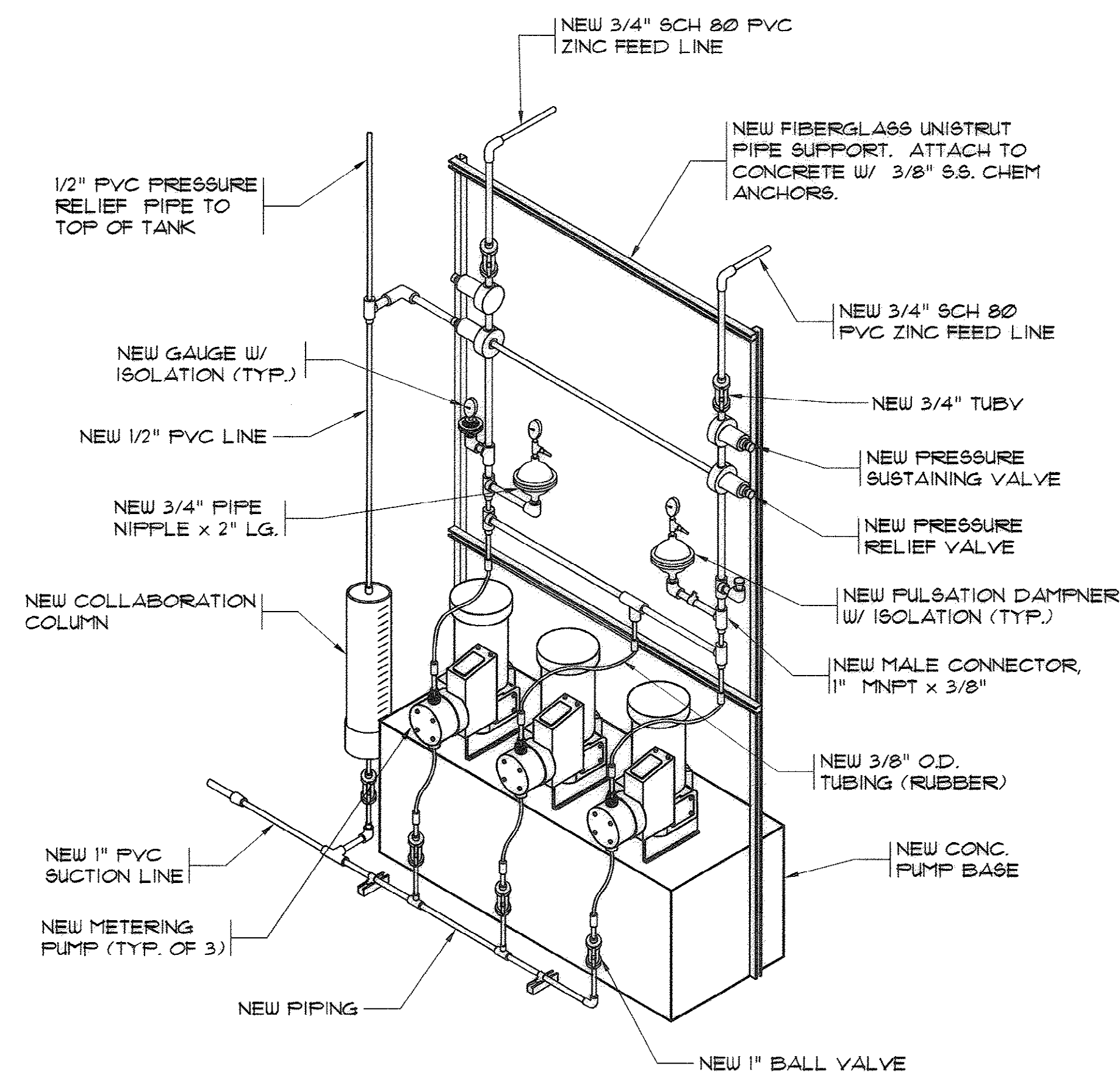
VERSION: 5

AS-BUILT

33-014-023/49 W

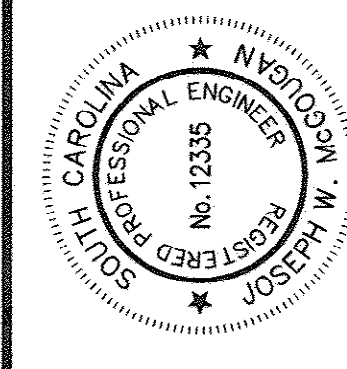
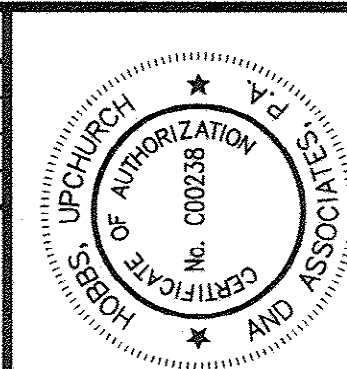


AMMONIA FEED SCHEMATIC
N.T.S.



ZINC FEED SCHEMATIC
N.T.S.

REVISIONS			
SYM.	DESCRIPTION	DATE	BY



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**CHEMICAL FEED
DETAILS**

BULL CREEK WTP
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AS-BUILT

OF: 25 VERSION: 5

33-014-024/49 W

SEEDBED PREPARATION

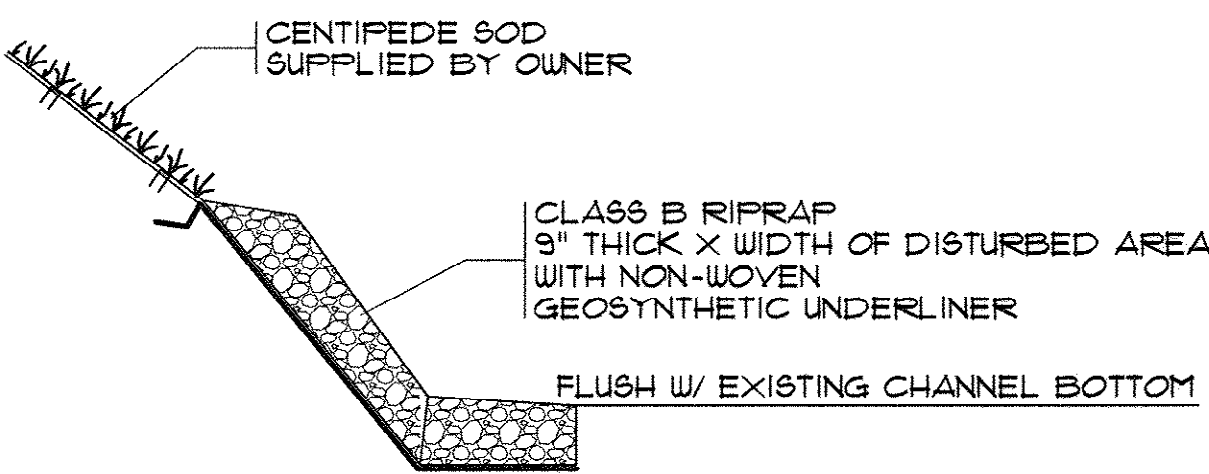
1. CHISEL COMPACTED AREAS AND SPREAD TOPSOIL 3 INCHES DEEP OVER ADVERSE SOIL CONDITIONS.
2. RIP THE ENTIRE AREA TO 6" DEPTH.
3. REMOVE ALL LOOSE ROCK, ROOTS AND OTHER OBSTRUCTIONS LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
4. APPLY AGRICULTURAL LIME, FERTILIZER AND SUPER PHOSPHATE UNIFORMLY AND MIX WITH SOIL.
5. CONTINUE TILLAGE UNTIL A WELL-PULVERIZED, FIRM REASONABLY UNIFORM SEEDBED IS PREPARED 4 TO 6 INCHES DEEP.
6. COVER SEED LIGHTLY WITH SEEDING EQUIPMENT OR CULTIPACK AFTER SEEDING.
7. MULCH IMMEDIATELY AFTER SEEDING.
8. INSPECT ALL SEEDED AREAS AND MAKE NECESSARY REPAIRS OR RESEED WITHIN THE PLANTING SEASON. IF STAND SHOULD BE OVER 60% DAMAGED, REESTABLISH FOLLOWING ORIGINAL LIME, FERTILIZER AND SEEDING RATES.
9. FERTILIZER SHALL BE APPLIED AT THE RATE OF 1000 POUNDS PER ACRE.
10. LIME SHALL BE APPLIED AT THE RATE OF 3000 POUNDS PER ACRE.
11. THE PERMANENT VEGETATION SHALL BE CENTIPEDE SOD, SUPPLIED BY OWNER AND PLACED BY THE CONTRACTOR.
12. OTHER PLANTINGS OR SEEDING AS CONTAINED IN THE CRITICAL AREA STABILIZATION SECTION OF SCS HANDBOOK "EROSION AND SEDIMENT CONTROL IN DEVELOPING AREAS" MAY BE USED PROVIDED THE WORK COMPLIES WITH ALL APPLICABLE SPECIFICATIONS CONTAINED IN SCS HANDBOOK.
13. CONSULT CONSERVATION INSPECTOR ON MAINTENANCE AND FERTILIZATION AFTER PERMANENT COVER IS ESTABLISHED.

SOIL EROSION CONTROL NOTES

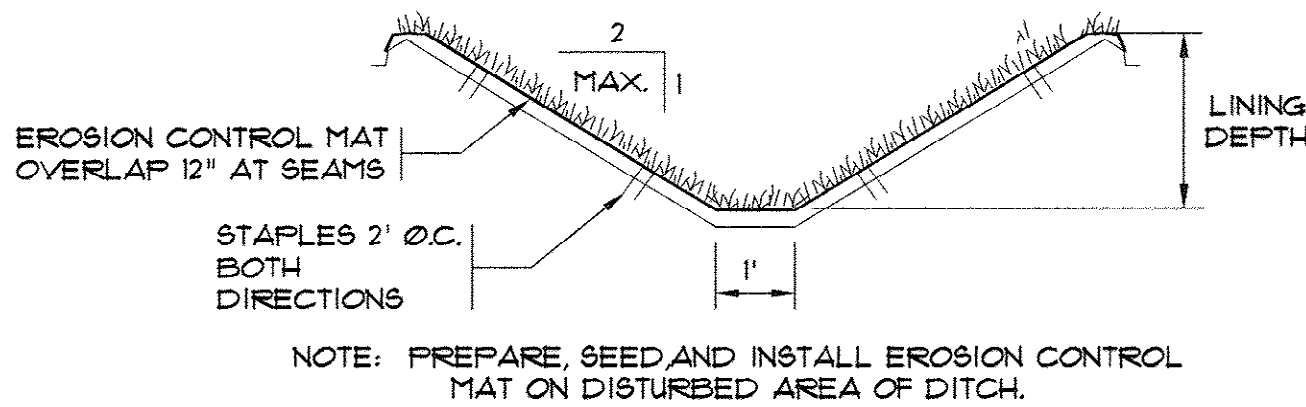
1. ALL SEDIMENT CONTROL MEASURES SHALL BE INSPECTED ONCE EVERY SEVEN CALENDAR DAYS AFTER ANY STORM EVENT OF GRATER THAN 0.5 INCHES OF PRECIPITATION DURING AND 24-HOURS PERIOD. ALL SEDIMENTS CONTROL FEATURES SHALL BE MAINTAINED UNTIL FINAL STABILIZATION HAS BEEN OBTAINED.
 2. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE TEMPORARY OR PERMANENTLY CEASED, UNLESS ACTIVITY IN THE PORTION OF THE SITE WILL RESUME WITHIN 21 DAYS.
 3. PROVIDE SILT FENCE AND/OR OTHER DEVICES, AS MAY BE REQUIRED TO CONTROL SOIL EROSION DURING UTILITY CONSTRUCTION. ALL DISTURBED AREAS SHALL BE CLEANED, GRADED AND STABILIZED WITH GRASSING IMMEDIATELY AFTER THE CONSTRUCTION ACTIVITY.
 4. ALL EROSION CONTROL DEVICES SHALL BE PROPERLY MAINTAINED DURING ALL PHASES OF CONSTRUCTION UNTIL THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES AND ALL DISTURBED AREAS HAVE BEEN STABILIZED. ADDITIONAL CONTROL DEVICES MAY BE REQUIRED DURING CONSTRUCTION IN ORDER TO CONTROL EROSION AND/OR OFF SITE SEDIMENTATION. ALL TEMPORARY CONTROL DEVICES SHALL BE REMOVED ONCE CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED.
 5. TEMPORARY DIVERSION BERMIS AND/OR DITCHES WILL BE PROVIDED AS NEEDED DURING CONSTRUCTION TO PROTECT WORK AREAS FROM UPSLOPE RUNOFF AND/OR TO DIVERT SEDIMENT LADEN WATER TO APPROPRIATE TRAPS OR STABLE OUTLETS.
 6. IF NECESSARY, SLOPES WHICH EXCEED EIGHT (8) VERTICAL FEET SHOULD BE STABILIZED WITH SYNTHETIC OR VEGETATIVE MATS, IN ADDITION TO HYDROSEEDING. IT MAY BE NECESSARY TO INSTALL TEMPORARY SLOPE DRAINS DURING CONSTRUCTION. TEMPORARY BERMIS MAY BE NEEDED UNTIL SLOPE IS BROUGHT TO GRADE.
7. COMPLY WITH ALL REQUIREMENTS OF SPECIFICATIONS.

EROSION CONTROL
SEQUENCE OF CONSTRUCTION

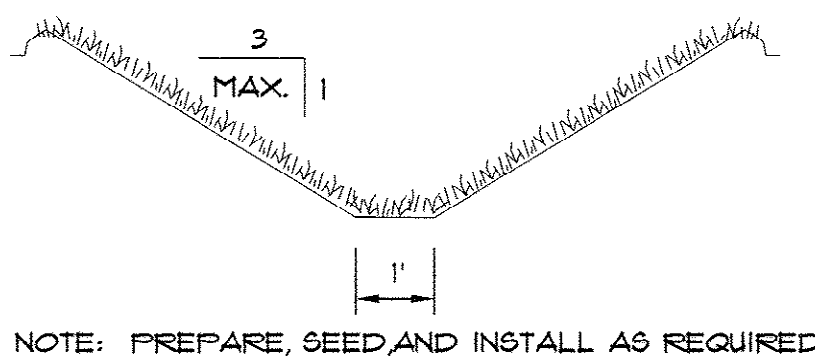
1. CLEARING AND GRUBBING THOSE AREAS NECESSARY FOR INSTALLATION OF PERIMETER CONTROLS.
2. INSTALLATION OF SEDIMENT BASINS AND TRAPS.
3. CONSTRUCTION OF PERIMETER CONTROLS.
4. REMAINING CLEARING AND GRUBBING.
5. ROAD GRADING.
6. GRADING FOR THE REMAINDER OF THE SITE.
7. CONSTRUCTION, PROTECT STORM DRAINS UNTIL AFTER COMPLETION OF CONSTRUCTION.
8. FINAL GRADING, LANDSCAPING AND STABILIZATION.
9. REMOVABLE OF SEDIMENT MEASURES.



RIP RAP SLOPE PROTECTION
N.T.S.



EROSION CONTROL MAT SWALE



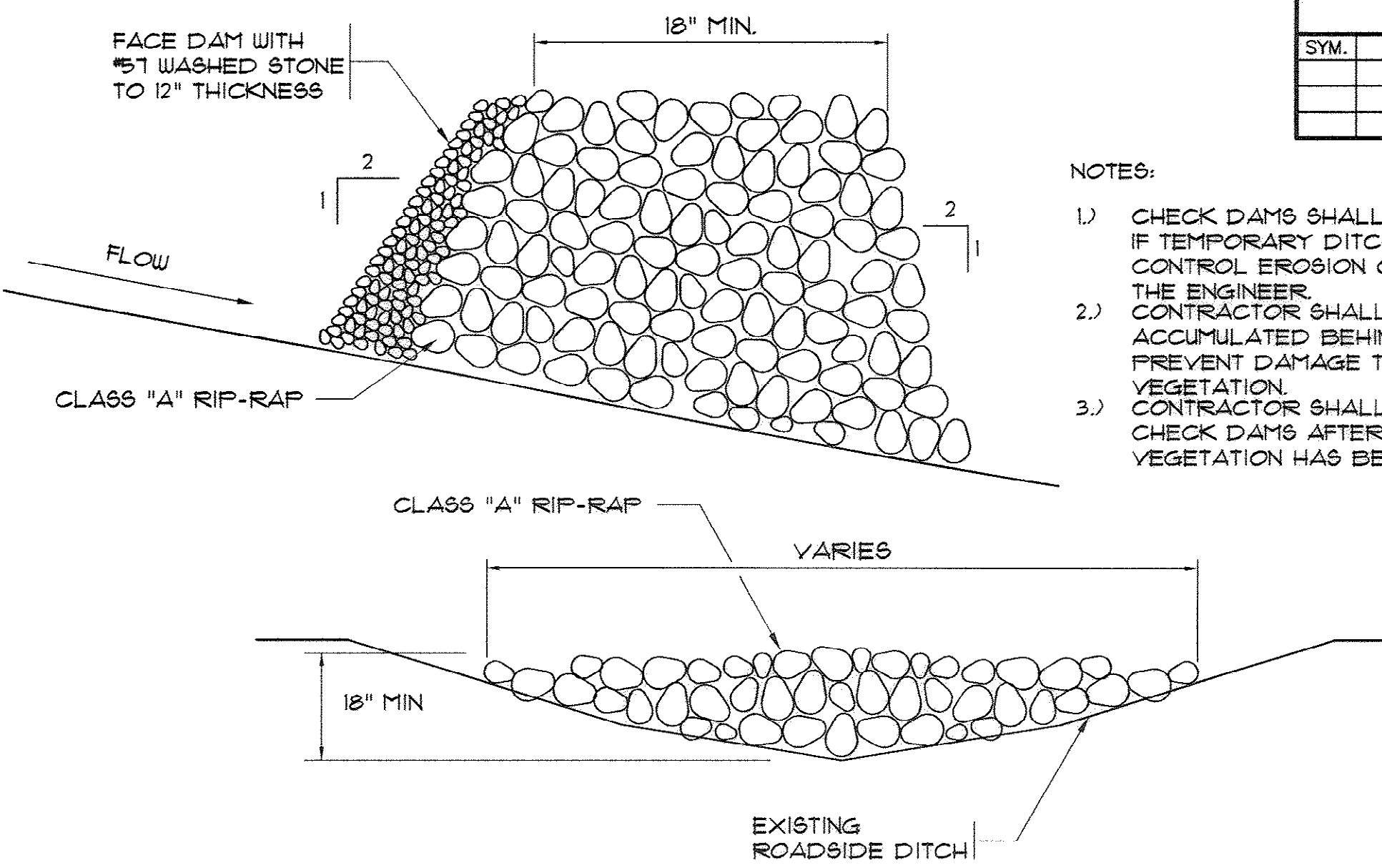
GRASS (SEEDED) SWALE

- A.) BURY THE TOP OF THE MAT IN A TRENCH 6" OR MORE IN DEPTH.
- B.) TAMP THE TRENCH FULL OF SOIL. SECURE WITH STAPLES EVERY 12" ACROSS THE TOP AND EVERY 3' AROUND THE EDGES AND BOTTOM.
- C.) OVERLAP BURY UPPER END OF LOWER STRIP AS IN 'A' AND 'B'. OVERLAP END OF TOP STRIP 18" AND STAPLE EVERY 12" JUST BELOW THE ANCHOR SLOT.
- D.) EROSION STOP FOLD OF MAT BURIED IN SLIT TRENCH AND TAMPED, DOUBLE ROW OF STAPLES.

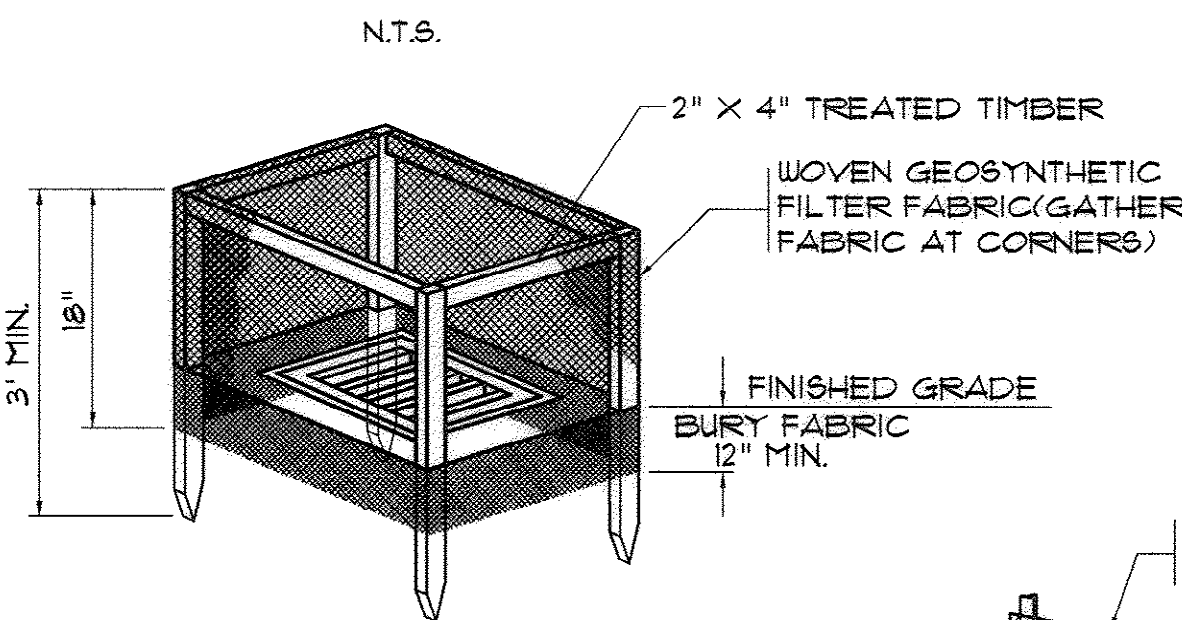
MAINTENANCE

INSPECT ALL MULCHES PERIODICALLY, AND AFTER RAINSTORMS TO CHECK FOR RILL EROSION DISLOCATION, OR FAILURE. WHERE EROSION IS OBSERVED, APPLY ADDITIONAL MULCH. IF WASHOUT OCCURS, REPAIR THE SLOPE GRADE, RESEED, AND REINSTALL MULCH. CONTINUE INSPECTIONS UNTIL VEGETATION IS FIRMLY ESTABLISHED.

DETAILS FOR STABILIZING SWALES

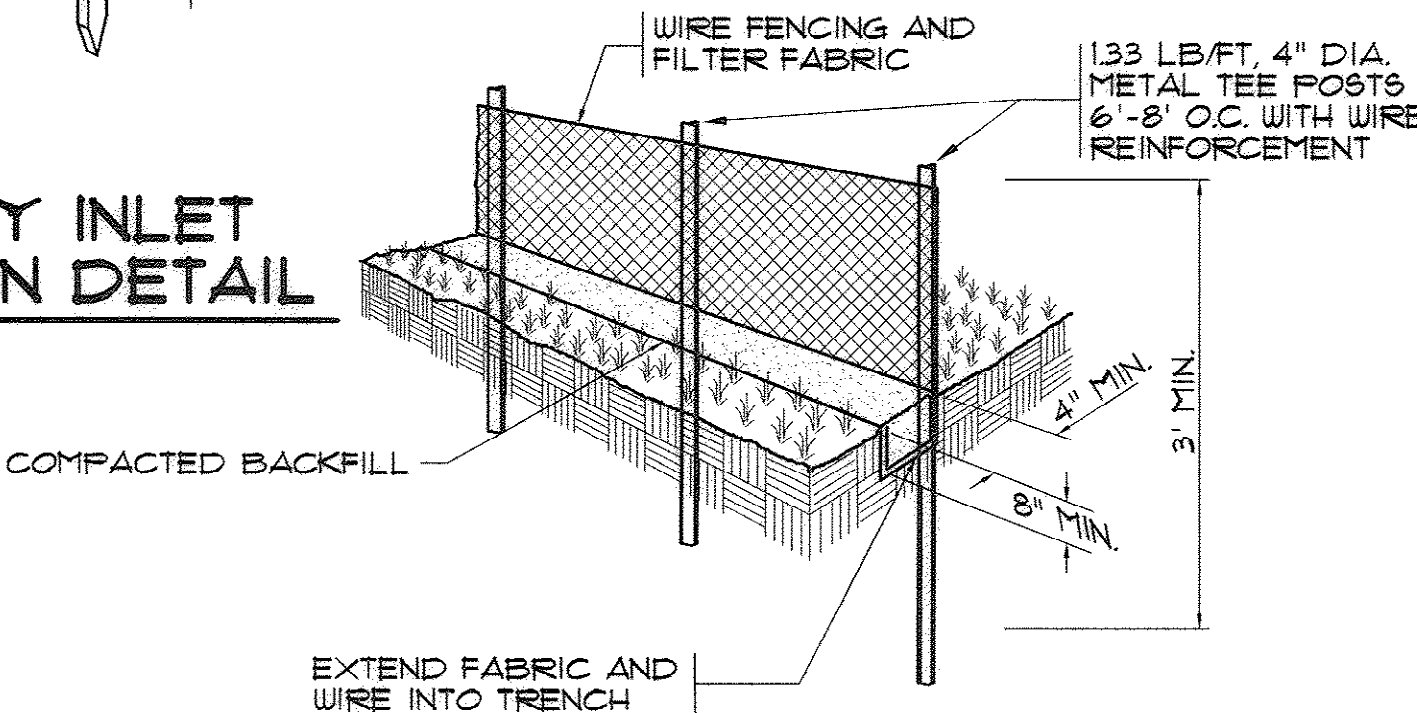


RIP RAP CHECK DAM DETAIL



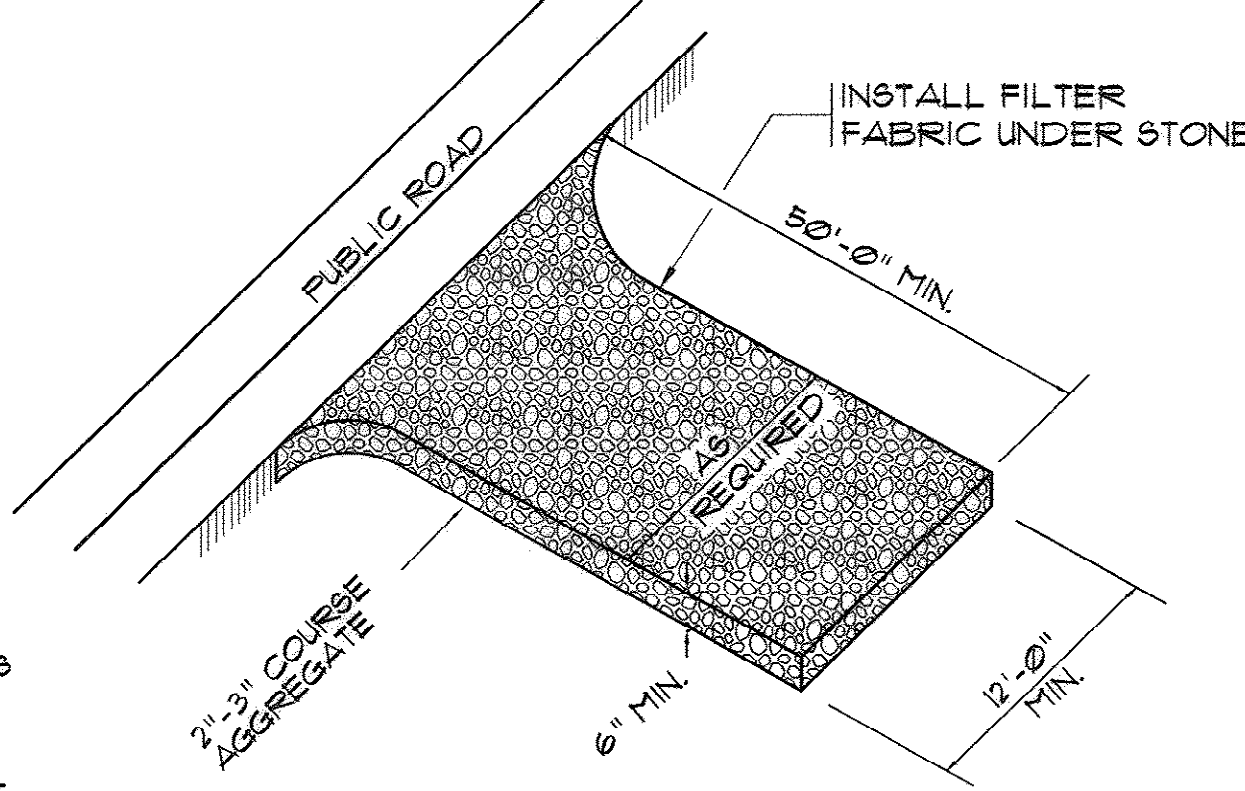
TEMPORARY INLET PROTECTION DETAIL

SCALE: NONE



SILT FENCE DETAIL

N.T.S.



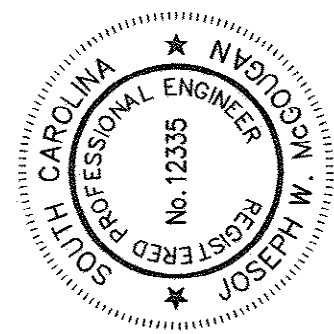
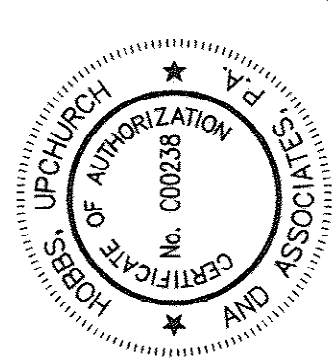
TEMPORARY GRAVEL CONSTRUCTION ENTRANCE

N.T.S.

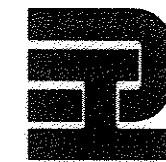
REVISIONS			
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NOTES:

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



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EROSION CONTROL
DETAILS

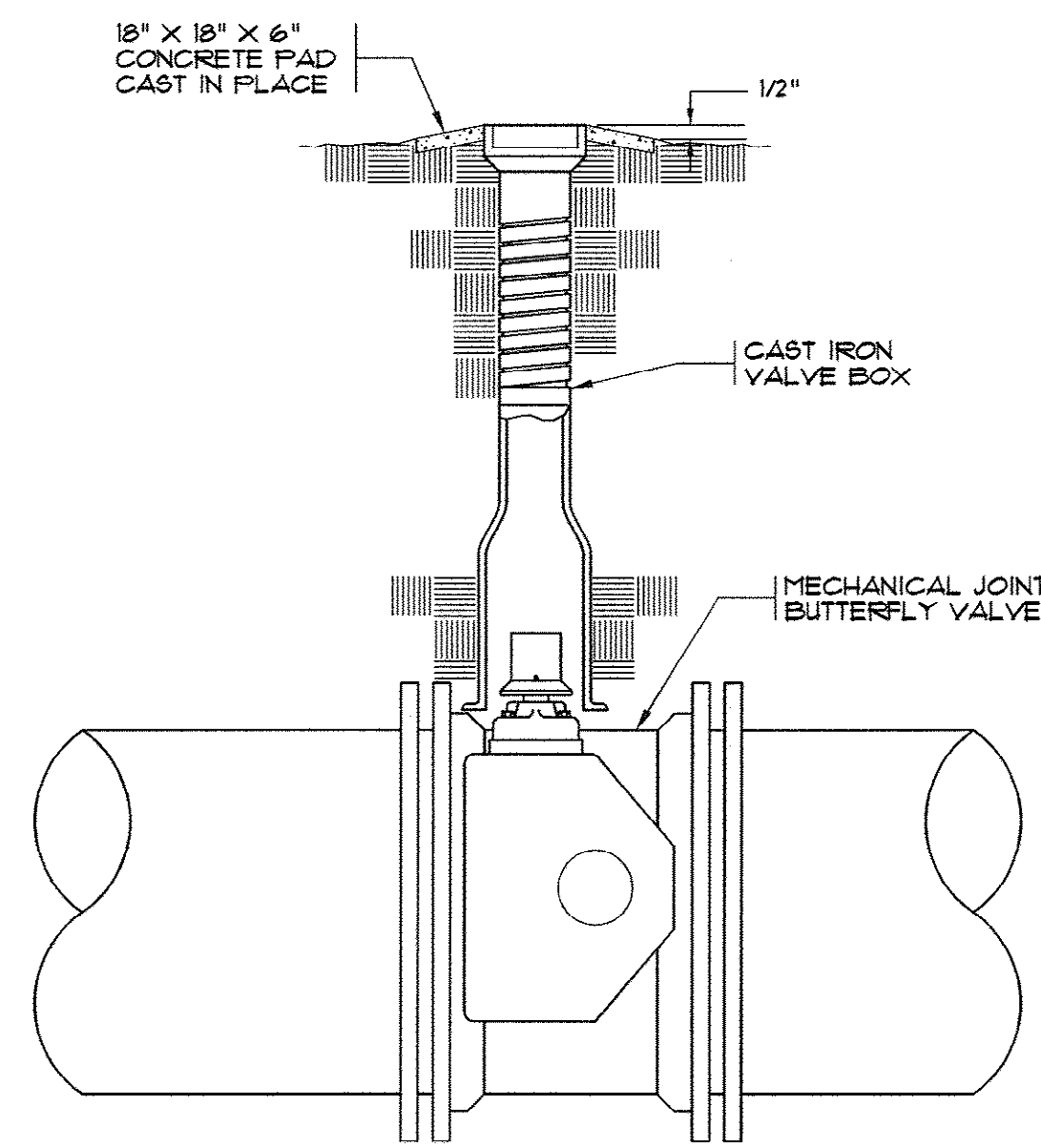
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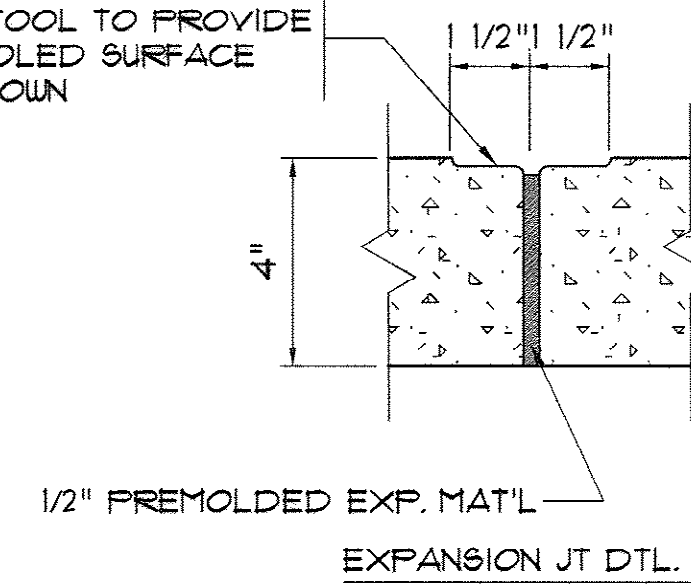
AS-BUILT

33-014-025/49 W

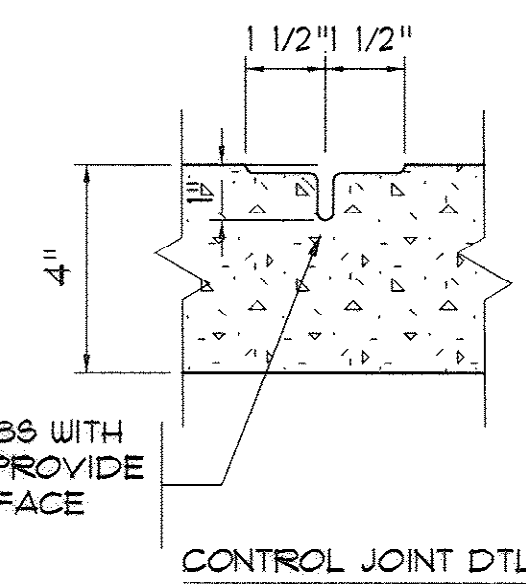


BUTTERFLY VALVE ASSEMBLY
N.T.S.

FORM JOINT BETWEEN SLABS WITH CONC. JOINTING TOOL TO PROVIDE NOM. 3" WIDE TOOLED SURFACE PROFILED AS SHOWN

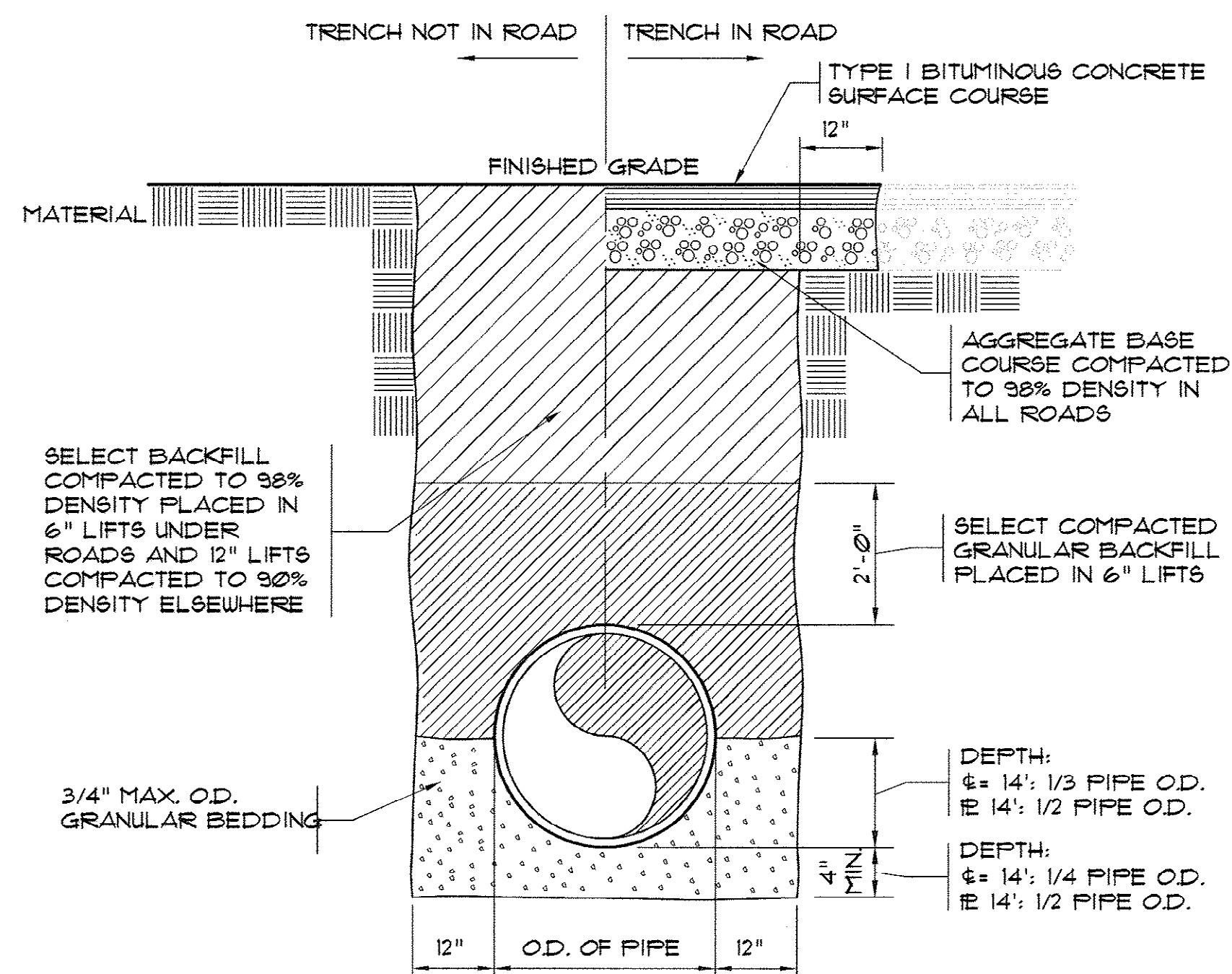


FORM JOINT BETWEEN SLABS WITH CONC. JOINTING TOOL TO PROVIDE NOM. 3" WIDE TOOLED SURFACE PROFILED AS SHOWN

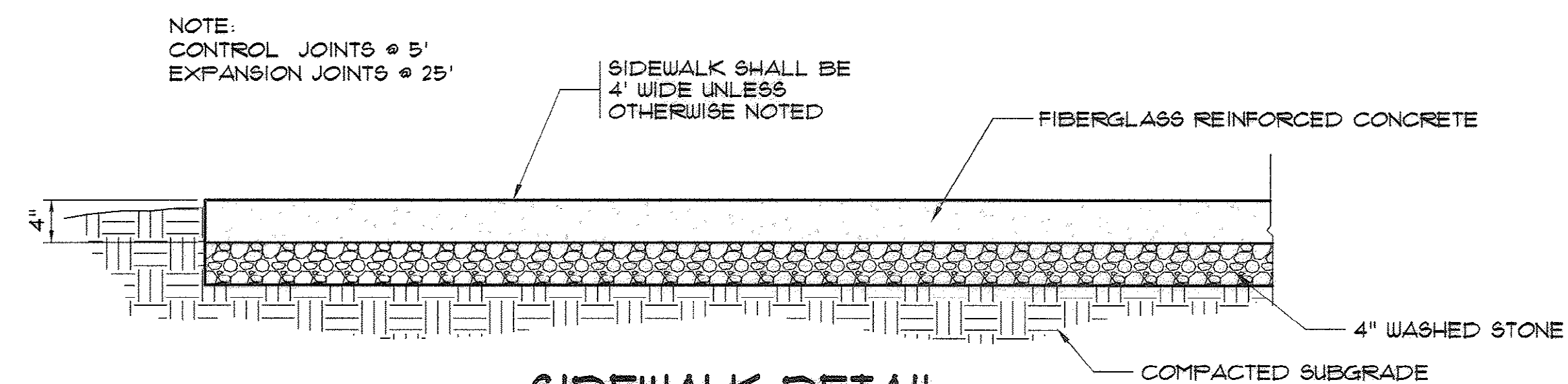


CONTROL JOINT AND EXPANSION JOINT DETAIL
N.T.S.

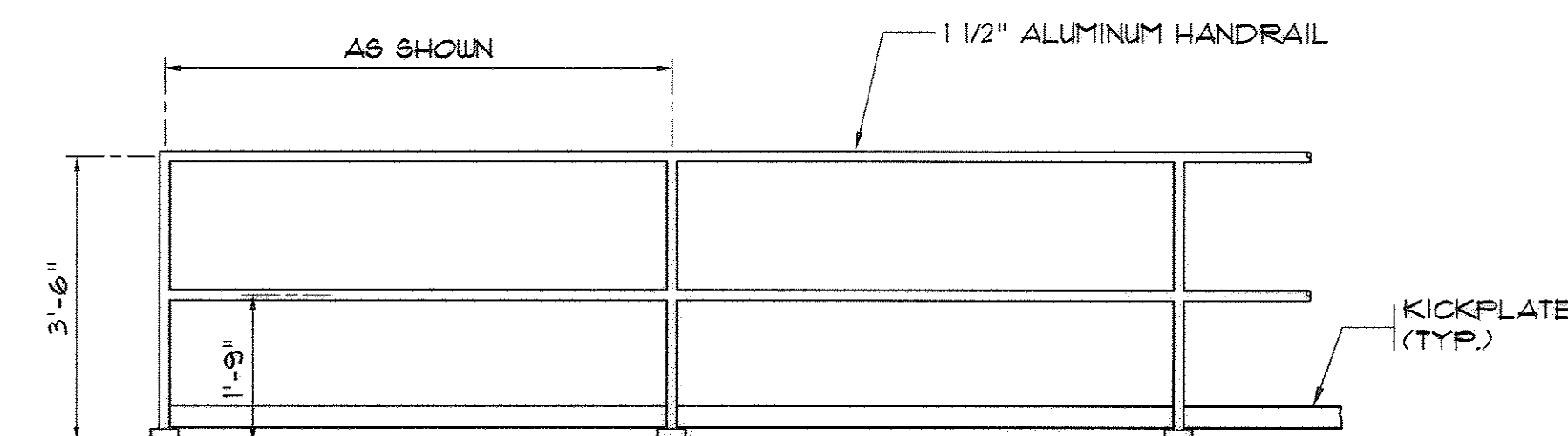
NOTE:
PROVIDE CONTROL JOINTS IN WALKS @ 5'-0" O.C., PROVIDE EXP. JTS @ MIN. 25'-0" O.C. & @ ALL EDGES W/ OTHER MATERIALS



PIPE BEDDING DETAIL
N.T.S.

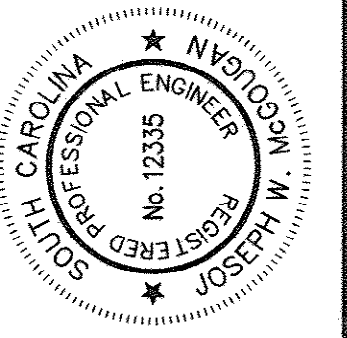
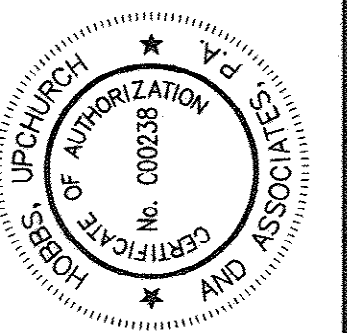


SIDEWALK DETAIL
N.T.S.



TYPICAL HANDRAIL DETAIL
N.T.S.

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MISCELLANEOUS DETAILS

BULL CREEK WTP
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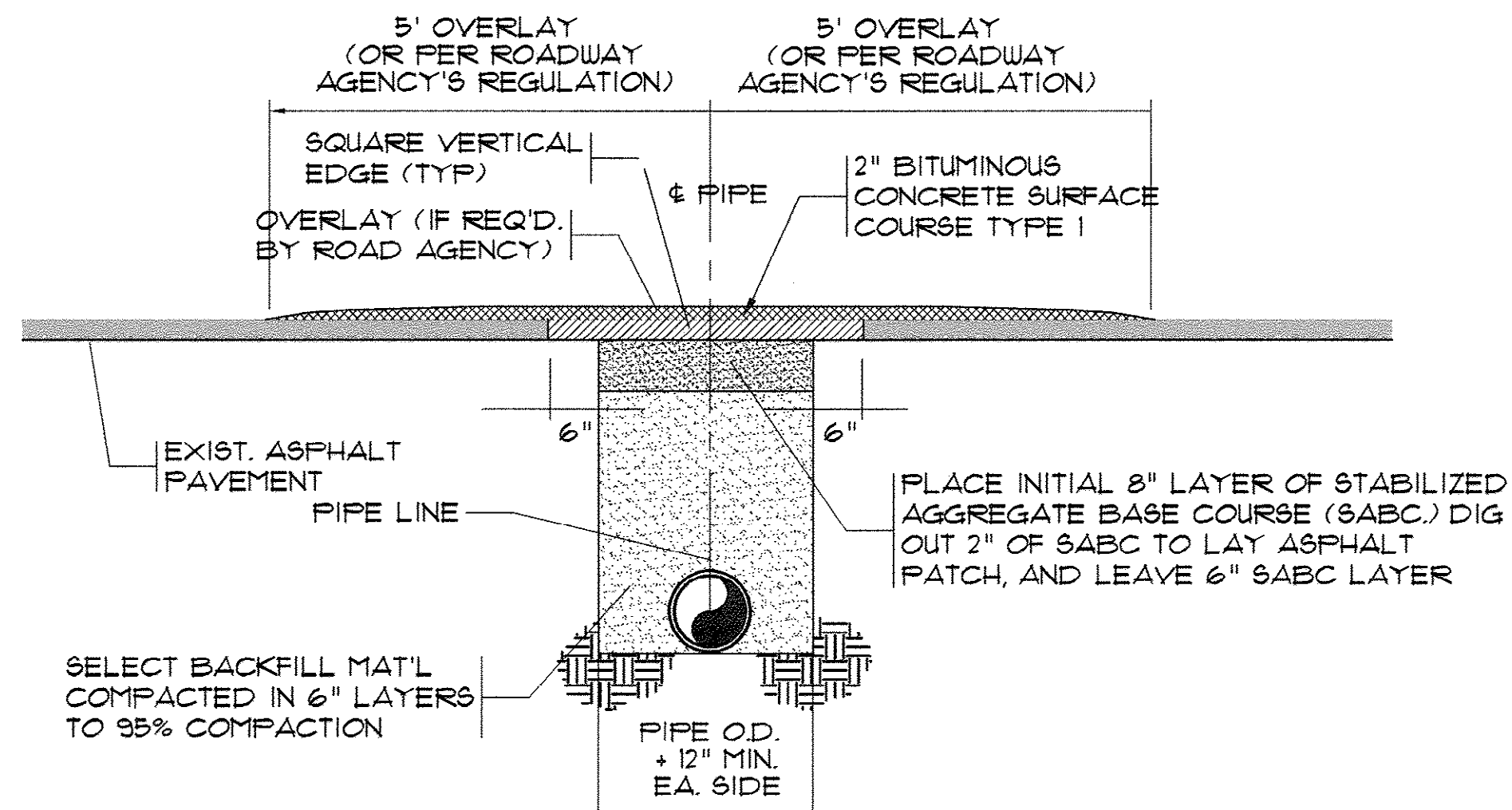
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SCALE:	AS SHOWN

SHEET NO. **24**

AS-BUILT

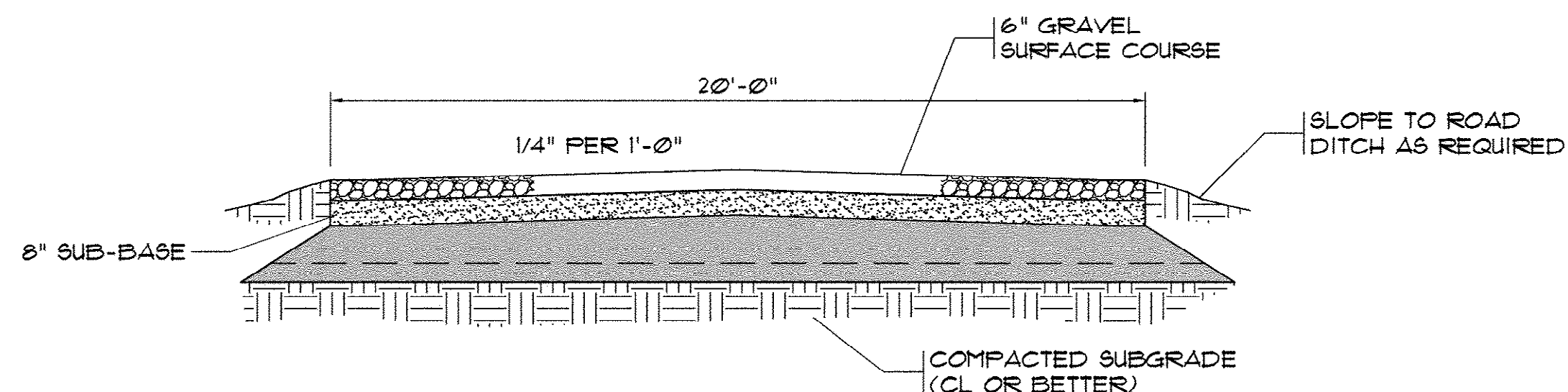
OF 25 VERSION: 5

33-014-026/49 W

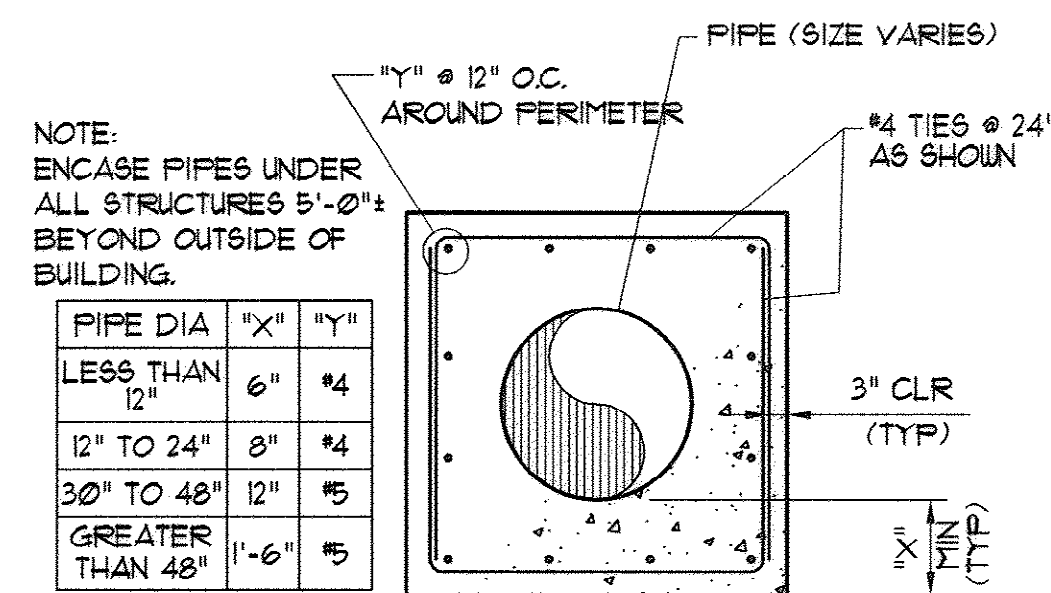


- NOTES:
- 1) PAVEMENT CUT TO EXTEND 6" BEYOND EDGES OF TRENCH AS SHOWN. PAVEMENT SHALL BE CUT TO TRUE LINE AND REMOVED BEFORE TRENCH IS CUT. ALL PAVEMENT REPAIRS TO BE IN ACCORDANCE WITH ROAD AGENCY SPECS.
 - 2) ROAD AGENCY MAY REQUIRE A CUT & PATCH OF TRENCH AREA AND AN OVERLAY OF ENTIRE APRON OR ENTRANCE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

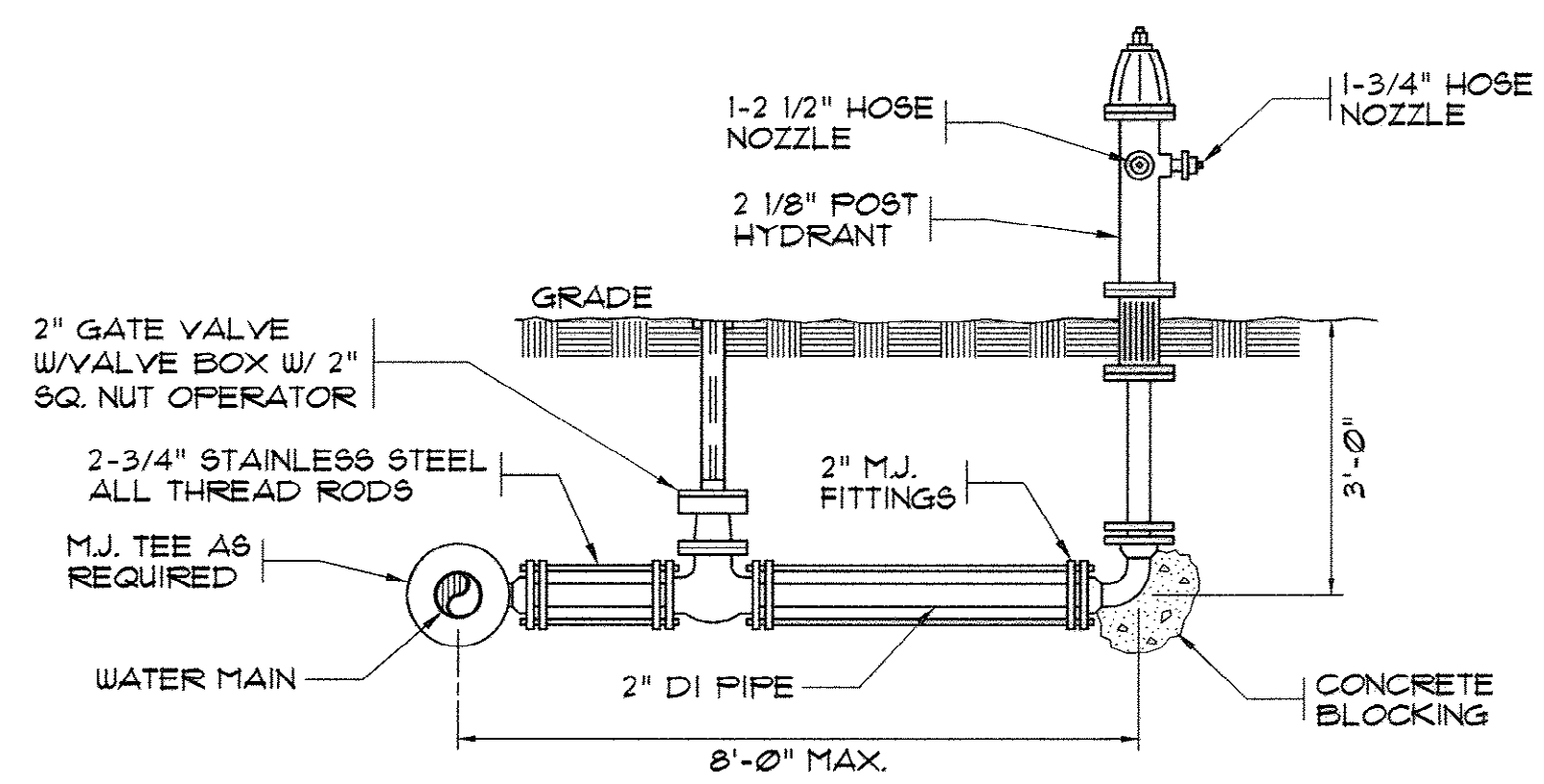
**OPEN CUT AND PATCH (TYPE "A")
LOW VOLUME ASPHALT PAVEMENT**
N.T.S.



TYPICAL GRAVEL ROAD SECTION
N.T.S.

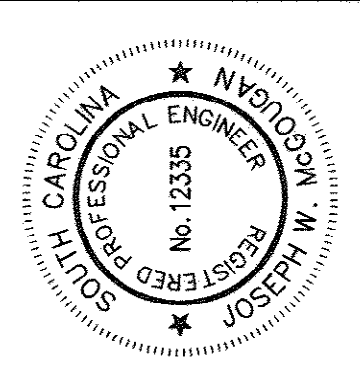
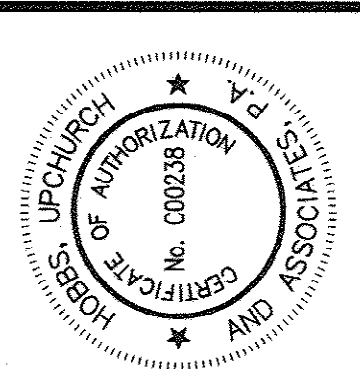


**TYPICAL PIPE
ENCASEMENT DETAIL**
N.T.S.



YARD HYDRANT DETAIL
N.T.S.

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MISCELLANEOUS DETAILS

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AS-BUILT

33-014-027/49 W

INSTRUMENT AND CONTROL SYMBOLS

SYMBOL	DESCRIPTION
	LEVEL INDICATING TRANSMITTER
	LEVEL INDICATING PRIMARY ELEMENT
	PRESSURE SWITCH
	FLOW INDICATION PRIMARY ELEMENT
	FLOW INDICATING TRANSMITTER

CONTROL WIRING DIAGRAM SYSTEM SYMBOLS

	MAGNETIC STARTER COIL
	OVERLOAD PROTECTION
	NORMALLY OPEN CONTACT OR CONTACTOR
	NORMALLY CLOSED CONTACT OR CONTACTOR
	ON-OFF SWITCH
	RED PILOT LIGHT
	GREEN PILOT LIGHT
	HAND-OFF-AUTOMATIC SWITCH
	ON-OFF SWITCH
	TIME DELAY RELAY
	RUN TIME METER

ELECTRICAL SYMBOL SCHEDULE

SYMBOL	DESCRIPTION
	CONDUIT RUN CONCEALED IN WALL, ABOVE CEILING OR UNDERGROUND TO MAXIMUM EXTENT FEASIBLE, OTHERWISE, RUN EXPOSED AS HIGH AS POSSIBLE PERPENDICULAR AND PARALLEL TO BUILDING SURFACES.
	HOME RUN TO PANEL - WITH PANEL AND CIRCUIT DESIGNATION.
	CONDUIT TURNING UP.
	CONDUIT TURNING DOWN.
	CONDUIT STUB-IN WITH CONNECTION TO EQUIPMENT
	JUNCTION BOX SIZED PER N.E.C.
	JUNCTION BOX AND CONNECTION TO EQUIPMENT.
	JUNCTION BOX SIZED PER N.E.C. WITH FLEXIBLE CONDUIT CONNECTIONS TO LUMINAIRES AS SHOWN, 6 FOOT LENGTH MAXIMUM.
	WATER TIGHT JUNCTION BOX WITH 1-AMP FUSE AND FUSE HOLDER USE TO PROTECT EACH OUTDOOR MOUNTED INSTRUMENT REQUIRING 120 VOLTS POWER. SEE DETAILS ON SHEET E-11.
	GASKETED WATER-TIGHT BOX, CAST METAL TYPE.
	LIGHTING, POWER OR DISTRIBUTION PANELBOARD.
	CONTROL PANEL
	FLUORESCENT LUMINAIRE - DRAWN APPROXIMATELY TO SCALE.
	SAVE AS " " EXCEPT TO BE UNSWITCHED PERMANENTLY "ON" AS A "NIGHT LIGHT".
	WALL OUTLET - INCANDESCENT OR COMPACT FLUORESCENT, OR HID LUMINAIRE AS SCHEDULED.
	FLUORESCENT STRIP FIXTURE AS SCHEDULED. PROVIDE OUTLET BOX TO FIT CONDITIONS.
	EXIT LIGHT - WALL MOUNTED, SURFACE OR RECESSED AS SCHEDULED WITH DIRECTIONAL ARROWS AS SHOWN ON DRAWINGS.
	NEW POST-TOP OUTDOOR POLE LIGHT FIXTURE TYPE "SB" - SEE SPECIFICATION AND DETAIL ON SHEET E-10.
	NEW AREA LIGHT FIXTURE (TYPE "SA" SEE SPECIFICATION ON SHEET E-10.
	EMERGENCY BATTERY PACK. SEE LUMINAIRE SCHEDULE. MOUNT 12"-0" AFF. OR 1'-0" BELOW SUSPENDED CEILING, WHICH EVER IS LOWER. SEE FIXTURE SCHEDULE.
	STANDARD CONVENIENCE RECEPTACLE - MOUNT 18" UP. NEMA 5-20R DUPLEX.
	STANDARD CONVENIENCE OUTLET - MOUNT 48" FROM FLOOR OR ABOVE BACKSPLASH OR AS OTHERWISE NOTED. NEMA 5-20R, DUPLEX.
	STANDARD CONVENIENCE OUTLET - FOR ELECTRIC WATER COOLER (ELECTRIC DRINKING FOUNTAIN). COORDINATE LOCATION CAREFULLY WITH EQUIPMENT NEMA 5-20R, DUPLEX, WITH GROUND FAULT PROTECTION.
	CORROSION RESISTANT NEMA 5-20R DUPLEX RECEPTACLE HUBBELL #53CM62 IN NON-METALLIC BOX WITH 93101 COVER PLATE OR EQUIVALENT FROM CROSE-HINDS (5739CR).
	SPECIAL CONFIGURATION OUTLET - CONFIGURATION AND TYPE AS SCHEDULED.
	INDICATES DEVICE TO HAVE GROUND FAULT PROTECTION.
	INDICATES DEVICE TO HAVE WEATHERPROOF COVER.
	INDICATES DEVICE TO HAVE WATERTIGHT COVER.
	SINGLE POLE SWITCH 20A-120/277V. MOUNT 48" UP FROM TOP OF DEVICE TO FLOOR.
	SWITCH WITH CAST WEATHERPROOF COVER.
	NONFUSIBLE DISCONNECT SWITCH. RATING AS INDICATED, BUT NOT LESS THAN WHAT IS REQUIRED BY MOTOR; I.E. "200" INDICATES 200 AMPERE RATING; "3" INDICATES 3-POLE
	FUSIBLE DISCONNECT SWITCH. PROVIDE FUSES AS REQUIRED BY EQUIPMENT NAMEPLATE OR AS OTHERWISE NOTED.
	COMBINATION MAGNETIC STARTER WITH NONFUSIBLE DISCONNECT.
	COMBINATION MAGNETIC STARTER WITH FUSIBLE DISCONNECT SWITCH. FUSE AS NOTED.
	MAGNETIC STARTER FVNR TYPE, UNLESS OTHERWISE NOTED.
	MANUAL MOTOR STARTER WITH OVERLOAD PROTECTION (UNLESS OTHERWISE NOTED) SIZE TO FIT MOTOR.
	COMBINATION DATA/TELEPHONE OUTLET. PROVIDE 3/4" C. WITH REQUIRED CABLES TO TELECOM ROOM. MOUNT 18" AFF UNLESS OTHERWISE NOTED. PROVIDE ONE VOICE JACK AND ONE DATA JACKS.
	DRY TYPE TRANSFORMER - 480-120/240V. 1-PHASE
	PHOTOELECTRIC SMOKE FIRE DETECTOR WITH BUILT-IN AUDIOVISUAL ALARM. 120V, 60HZ. PROVIDE NO/NC AUXILIARY CONTROLS FOR REMOTE NOTIFICATION AND CONNECT TO DESIGNATED RTU (120V, 60 HZ.)
	SAME AS " " EXCEPT DUCT TYPE SMOKE DETECTOR COMPLETE WITH REMOTE MOUNTED KEY TEST SWITCH STATION AND SENSING TUBE (120V, 60 HZ). INSTALL IN DUCTWORK IN COMPLIANCE WITH NFPA-72. WIRE TO SHUTDOWN ROOF TOP UNIT NAD SEND ALARM TO RTU-FPS2 WHEN SMOKE IS SENSED.

SYMBOL	DESCRIPTION
	VARIABLE FREQUENCY DRIVE TYPE MOTOR CONTROLLER WITH POWER DISCONNECT SWITCH.
	115V, 60 HZ MOTOR
	METERING PUMP MOTOR WITH BUILT-IN AC-DC CONVERTER
	460 VOLT, 3 PHASE MOTOR - NUMERAL INDICATES HORSEPOWER.
	MOLDED CASE OR INSULATED CASE CIRCUIT BREAKER
	ON-OFF SWITCH STATION - MAINTAINED CONTACT TYPE - WIRE WITH 2 #14, 1 #14 G, 1/2" C BACK TO MOTOR STARTER. PROVIDE PHENOLIC NAMEPLATE IDENTIFYING MOTOR. NEMA 4X, UNLESS OTHERWISE NOTED.
	AMPERE
	ABOVE FINISHED FLOOR
	CONDUIT
	CONTROL CABLE - #14 AWG THWN - SEE DETAILS ON SHEET E-11.
	DATA HIGHWAY CABLE. SEE SECTION 16158 OF SPECS.
	FUSE
	FULL LOAD AMPERES
	FIBER OPTIC CABLE - 12 STRAND 62.5/125 UM-MULTIMODE OUTDOOR RATED CABLE IN INNERDUCT.
	FUSE PER EQUIPMENT NAMEPLATE REQUIREMENTS.
	FUSE PER MANUFACTURERS RECOMMENDATIONS
	FULL VOLTAGE NON-REVERSIBLE MAGNETIC STARTER.
	FINISHED WATER
	GROUND
	GENERAL CONTRACTOR
	HIGH PRESSURE SODIUM
	HAND-OFF-AUTOMATIC SWITCH
	LIGHTING
	MINIMUM CIRCUIT AMPERES
	MAIN CIRCUIT BREAKER
	MOTOR CONTROL CENTER
	METAL HALIDE
	MAXIMUM OVERCURRENT PROTECTION IN AMPERES (SAME FOR "MOCP")
	NEUTRAL
	"NIGHT LIGHT" FIXTURE TO BE ALWAYS "ON" - UNSWITCHED.
	NORMALLY OPEN CONTACT
	NORMALLY CLOSED CONTACT
	POLE
	PUMP CONTROL PANEL
	RECEPTACLE
	EXISTING ITEM - REMAIN
	RAW WATER
	INDICATES SHIELDED CABLE: TWO CONDUCTOR, 16 AWG, OVERALL SHIELD. REFER TO SPECIFICATIONS FOR MORE REQUIREMENTS. SEE DETAILS ON SHEET E-11.
	SHORT CIRCUIT INTERRUPTING RATE
	SPACE WITH BUS PROVISION FOR FUTURE BREAKER.
	SINGLE PHASE PROTECTION SYSTEM.
	STAINLESS STEEL
	UNDERGROUND
	VARIABLE FREQUENCY DRIVE MOTOR CONTROLLER
	WEATHERPROOF
	WATER TIGHT
	WATER TREATMENT PLANT
	GROUND ROD, 10'-0" LONG, 3/4" DIAMETER STAINLESS STEEL. BURY VERTICALLY IN GROUND 30" BELOW GRADE. PROVIDE EXOTHERMIC CONNECTION TO GROUND WIRE CONDUCTOR.
	#1/0 THWN OR XHHW TINNED STRANDED COPPER CONDUCTOR. INSTALL APPROXIMATELY 30" BELOW GRADE AND CONNECT TO GROUND RODS. REFER TO SECTION 16172.
	INDICATES GROUNDING ELECTRODE SYSTEM PER NEC ARTICLE 250. ALL CONNECTIONS TO BE EXOTHERMIC TYPE.
	DOOR POSITION MONITORING MAGNETIC SWITCH WITH AUXILIARY CONTACTS FOR DOOR MONITORING. CONNECT TO DESIGNATED RTU.
	TRANSIENT VOLTAGE SUPPRESSOR SYSTEM. REFER TO SECTION 16428.

LIST OF DRAWINGS

E-1	ELECTRICAL SYMBOLS AND DETAILS
E-2	ONE-LINE POWER DIAGRAM
E-3	ELECTRICAL SITE PLAN
E-4	ENLARGED PARTIAL SITE PLAN
E-5	NEW ELECTRICAL BUILDING EQUIPMENT PLAN AND DETAILS
E-6	FINISH WATER PUMP STATION ELECTRICAL PLAN AND SECTIONS
E-7	POWER EQUIPMENT SCHEDULES AND ELEVATIONS
E-8	PUMP CONTROL RISER DIAGRAMS
E-9	DUCTBANK SECTIONS AND DETAILS
E-10	LIGHTING FIXTURE SCHEDULE AND DETAILS
E-11	MISCELLANEOUS DETAILS
E-12	ENGINE GENERATOR SET PLAN AND DETAILS
E-13	ENGINE GENERATOR SET CONCRETE PAD DETAILS, SCHEDULES AND DIAGRAMS
E-14	NEW METER VAULT DETAILS
E-15	EXISTING PLANT UNIT 2001 LOWER AND UPPER LEVEL POWER PLAN - NEW DETAIL
E-16	EXISTING AMMONIA AND FLUORIDE FEED ELECTRICAL MODIFICATION PLAN
E-17	EXISTING WTP CHEMICAL FEED LAYOUT MODIFICATION PLAN

GENERAL NOTES

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

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

SS PIPE STRAP: 1/4" SS UNISTRUT BOLT & NUT - TYPICAL

3/4" RADIUS

HANDRAIL

3/16" SS. PLATE.

MAX. 24"

3/16" SS. PLATE.

SECURE PLATE TO UNISTRUT USING 3/8" SS BOLTS, NUTS AND WASHERS. (TYPICAL)

SIDE VIEW

FRONT VIEW

NOT TO SCALE

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

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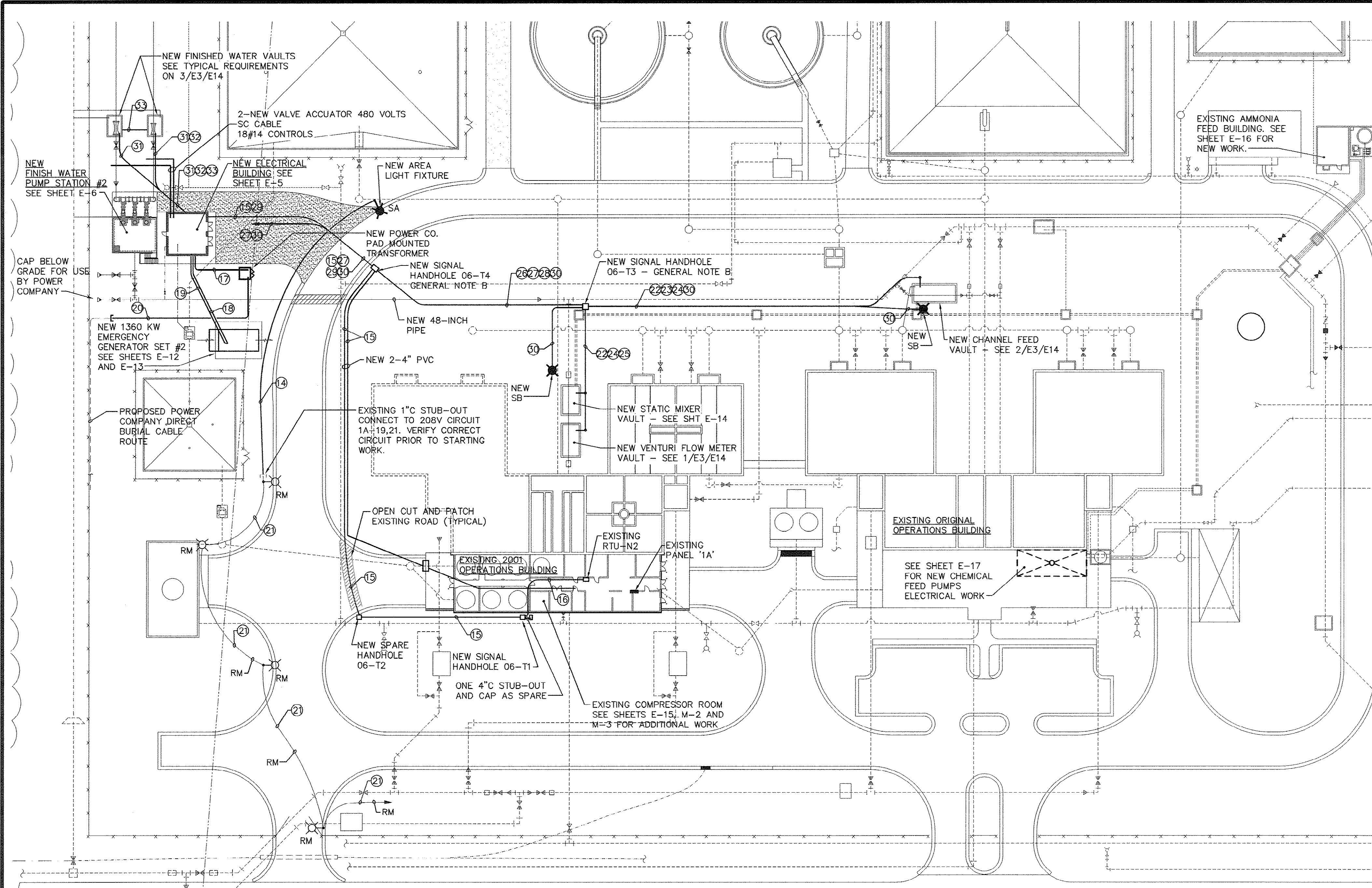
ELECTRICAL SYMBOLS AND DETAILS

BULL CREEK WTP
FINISHED WATER PUMP
STATION NO. 2
GRAND STRAND WATER & SEWER AUTHORITY

DATE: SEPT. 2008
DESIGNED: DL
DRAWN: DM
CHECKED: DL
SCALE: AS SHOWN
SHEET NO. E-1

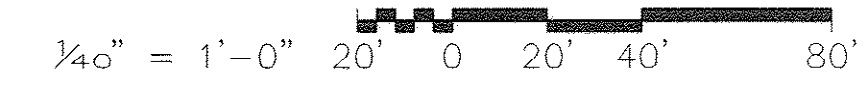
AS-BUILT

33-014-028/49 W



ELECTRICAL SITE PLAN

SCALE: 1"=40'-0"



- GENERAL NOTES:**
- A. LOCATE AND MARK EXISTING UNDERGROUND UTILITIES PRIOR TO STARTING ANY DIGGING. DIG BY HAND AT THE CROSSINGS WITH EXISTING UTILITIES TO AVOID ACCIDENTAL DAMAGING OF EXISTING PIPES AND CONDUITS. PLAN ON CROSSING UNDER EXISTING UTILITIES UNLESS OTHERWISE APPROVED BY OWNER AND ENGINEER. NOT ALL EXISTING UTILITIES ARE SHOWN HERE.
 - B. PROVIDE STAINLESS STEEL 8"H x 12"L x 6" DEEP, NEMA 4X PULL/JUNCTION BOXES IN NEW SIGNAL HANDHOLES 06-T3 AND 06-T4. CONNECT DIRECTLY TO SPECIFIED POWER CONDUITS. MOUNT AGAINST WALL OF HANDHOLE 12" UP FROM BOTTOM.

REVISIONS			
SYM.	DESCRIPTION	DATE	BY

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MAIN SITE CONDUITS LEGEND

- 14 NEW 2 #8,1 #10 G, 1" C EXTEND EXISTING CIRCUIT 1A-19,21 TO NEW AREA LIGHT.
- 15 NEW 2-4" C ENCASED IN CONCRETE FROM EXISTING RTU-N2 TO NEW RTU-FPS2. PROVIDE PULL CORDS ON BOTH CONDUITS. PROVIDE ONE FO-12 CABLE AND THREE INNERDUCTS IN ONE CONDUIT. REFER TO SECTION 16158 FOR CABLE SPECS.
- 16 ONE 4-INCH METAL CONDUIT WITH ONE FO-12 AND THREE INNERDUCTS. PROVIDE PULL CORDS. CONNECT TO FIBER PATCH PANEL AT RTU-N2. RUN CONDUIT AS HIGH AS POSSIBLE EXISTING BULK STORAGE ROOM AND FIRST LEVEL CORRIDOR. IN WATERPROOF CONDUIT PENETRATIONS AND INSIDE OF NEW CONDUIT. REFER TO SECTION 16158 FOR CABLE SPECS.
- 17 NEW 2500A UNDERGROUND SERVICE ENCASED IN CONCRETE. SEE SHEET E-4: 8(3-400 MCM, 1 #3/0 N, 3" C).
- 18 NEW 2500A UNDERGROUND EMERGENCY POWER SERVICE ENCASED IN CONCRETE FROM GENERATOR SET NO. 2: 8(3-400 MCM, 1-400 MCM N, 1-350 MCM G, 4" C).
- 19 NEW AUXILIARY POWER AND CONTROL/MONITORING CIRCUITS ENCASED IN CONCRETE FROM NEW ELECTRICAL BUILDING TO NEW GENERATOR SET #2:
 - 2 #4, 1 #6G, 1 1/4" C FROM H-35137 TO 25KVA TRANSFORMER VIA 100/2 FUSED SERVICE SWITCH.
 - ONE 1" C WITH TWO "DH" CABLES FROM RTU-FPS2 TO GENERATOR SET FOR MODBUS NETWORK INTERFACE.
 - ONE 1" C WITH WIRES AS REQUIRED FROM RTU-FPS2 TO GENERATOR SET DOOR MONITORING SWITCHES.
 - ONE 1" C WITH WIRES AS REQUIRED FROM REMOTE GENERATOR ANNUNCIATOR TO GENERATOR SET CONTROL PANEL.
 - ONE 1" C SPARE.
 - ONE 3/4" C WITH 4 #12 FROM HSB ATS TO GENERATOR SET FOR START/STOP COMMAND.
- 20 NEW 205" CONDUITS ENCASED IN CONCRETE FOR POWER CO. USE. SEE SHEET E-4.
- 21 EXISTING 2 #8,1 #10 G, 1" C WITH 208V, 1ø CIRCUIT FOR SITE LIGHTING FROM EXISTING CIRCUIT 19, 21 IN PANEL "1A" IN EXISTING BUILDING. VERIFY CIRCUIT PRIOR TO MAKING NEW CONNECTION AND ADJUST AS REQUIRED.
- 22 NEW 1 1/4" C WITH ONE SC OUTDOOR (BELDEN #83702) CABLE TO RTU-FPS2 FROM FLOW METER.
- 23 NEW 3 #6, 1 #6 G, 1 1/4" C TO PA-23,25.
- 24 NEW SPARE 2-INCH SIGNAL CONDUIT WITH PULL CORD.
- 25 NEW 3 #8, 1 #8 G, 1 1/4" C TO PA-19,21.
- 26 NEW 2-INCH CONDUIT ENCASED IN CONCRETE WITH TWO SC OUTDOOR CABLES TO RTU-FPS2 FROM FLOW METERS.
- 27 NEW 3 #6 AND 3 #8, 1 #6 G, 2" C ENCASED IN CONCRETE TO PA-19,21,23,25.
- 28 NEW TWO 2-INCH SPARE SIGNAL CONDUITS WITH PULL CORD, ENCASED IN CONCRETE.
- 29 NEW CABLES "28" ABOVE RUN IN ONE OF INNERDUCTS AS PART OF "19".
- 30 NEW 2 #6, 1 #6 G, 1 1/4" C FOR LIGHTING CIRCUIT TO NEW PA-15,17.
- 31 NEW 1 1/4" C WITH "E9" ELEMENT CABLE TO "E11" IN NEW ELECTRICAL BUILDING.
- 32 NEW 5 #10, 1 #10 G, 1" C TO PA-18,20,22 (THREE 120V, 20A CIRCUITS).
- 33 NEW 4 #10,1 #10 G, 1" C TO PA-20,22 (TWO 120V, 20A, CIRCUITS).

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**ELECTRICAL
SITE PLAN**

**BULL CREEK WTP
FINISHED WATER PUMP
STATION NO. 2
GRAND STRAND WATER &
SEWER AUTHORITY**

DATE:	SEPT. 2008
DESIGNED:	DL
DRAWN:	DM
CHECKED:	DL
SCALE:	AS SHOWN
SHEET NO.	E-3
OF:	17

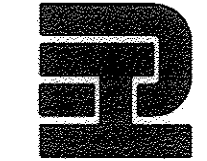
AS-BUILT

33-014-030/49 2

REVISIONS			
SYM.	DESCRIPTION	DATE	BY
1	ADDENDUM #4	7/27/07	DL

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ENLARGED PARTIAL
 SITE PLAN

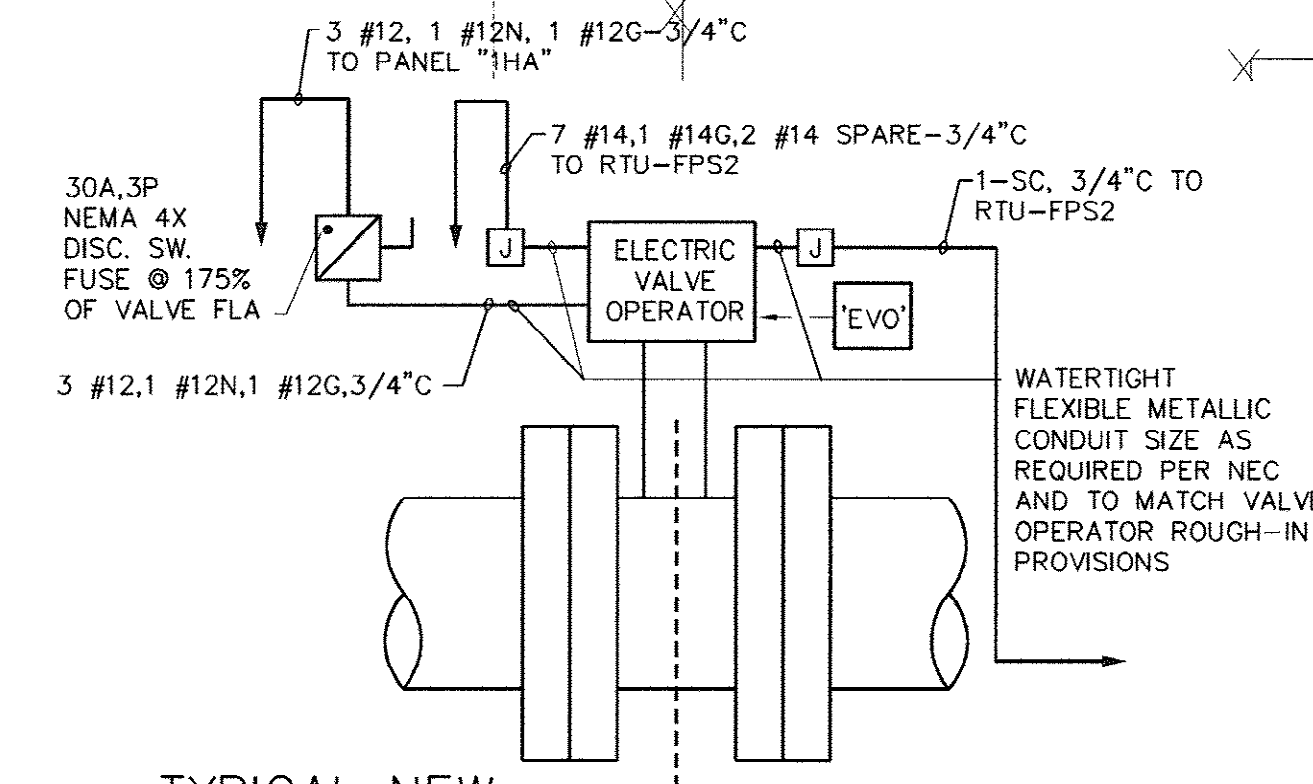
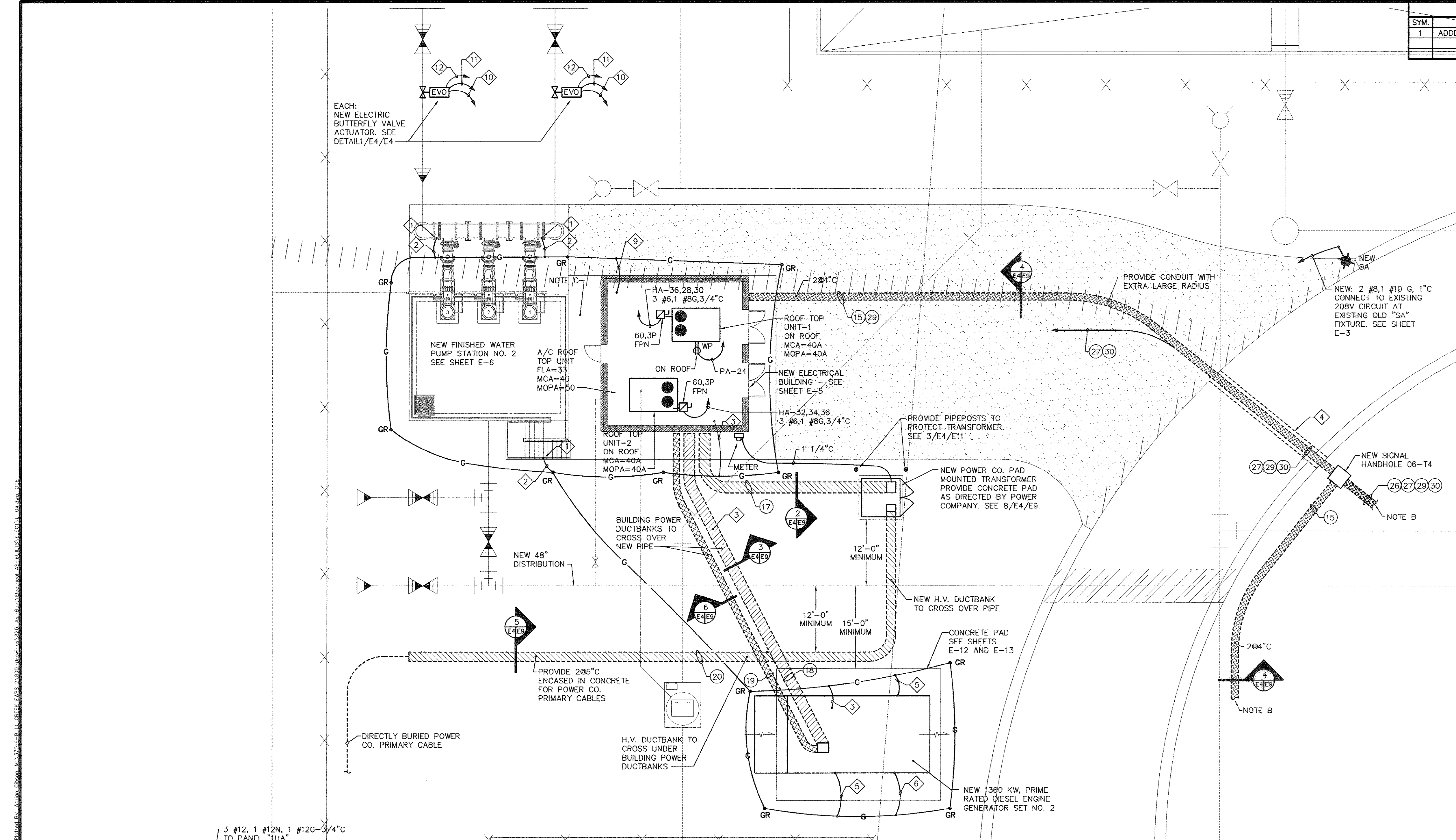
BULL CREEK WTP
 FINISHED WATER PUMP
 STATION NO. 2
 GRAND STRAND WATER &
 SEWER AUTHORITY

DATE:	SEPT. 2008
DESIGNED:	DL
DRAWN:	DM
CHECKED:	DL
SCALE:	AS SHOWN

SHEET NO.
E-4
 OF 17

AS-BUILT

33-014-031/49 W



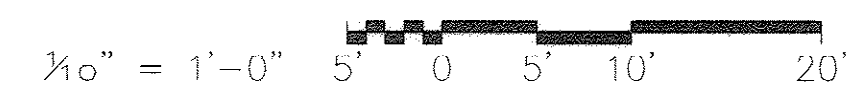
TYPICAL NEW
 460V, 330 ELECTRIC BUTTERFLY VALVE OPERATOR
 "EVO" WIRING REQUIREMENTS (TWO REQUIRED)

NOT TO SCALE

- NOTES:
 1. INSULATE AND IDENTIFY AT BOTH ENDS ANY SPARE WIRE NOT USED.
 2. IDENTIFY EACH CONDUCTOR AT BOTH ENDS.

PARTIAL ELECTRICAL SITE PLAN

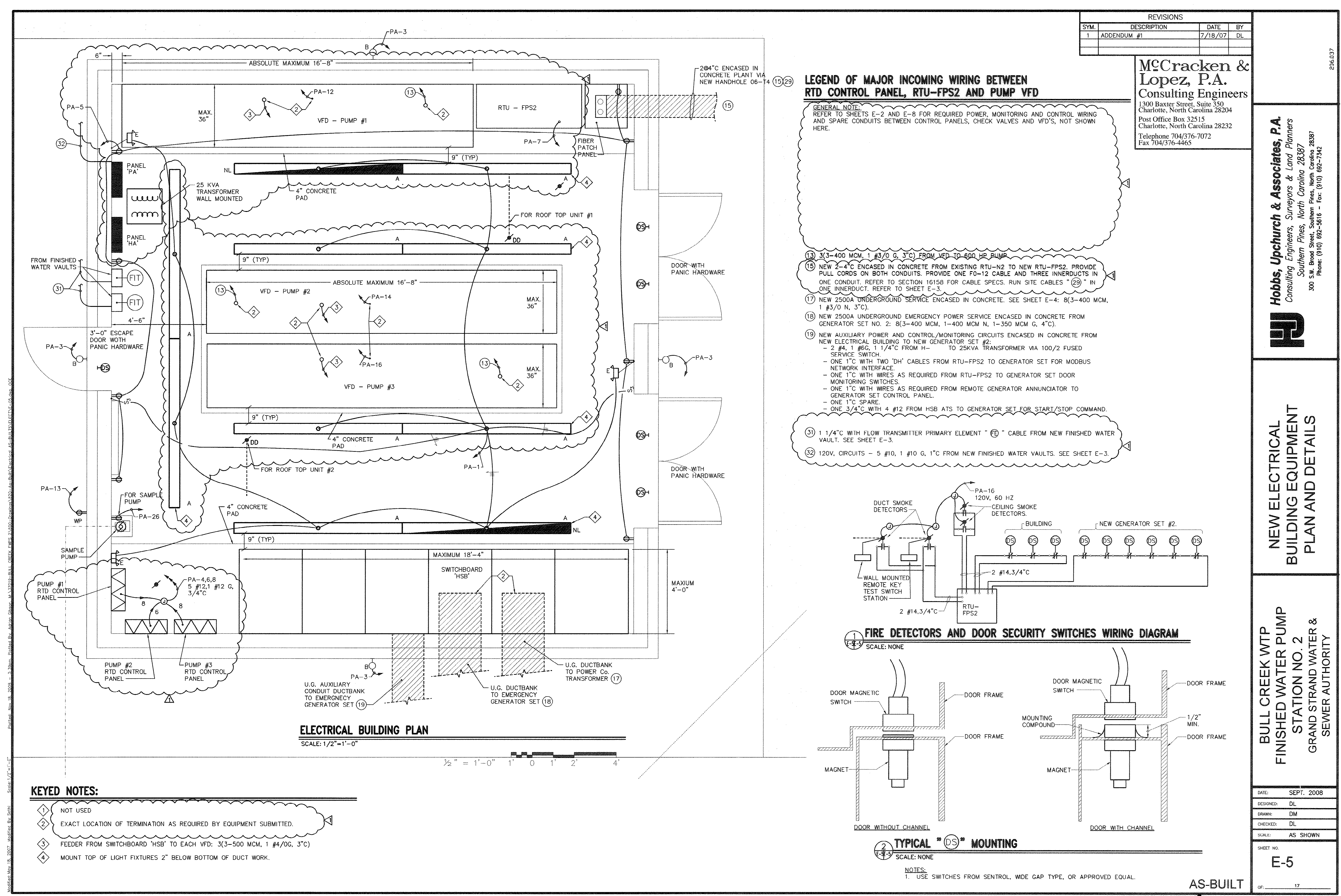
SCALE: 1"=10'-0"



- GENERAL NOTES:
 A. LOCATE AND MARK EXISTING UNDERGROUND UTILITIES PRIOR TO STARTING ANY DIGGING. DIG BY HAND AT THE CROSSINGS WITH EXISTING UTILITIES TO AVOID ACCIDENTAL DAMAGING OF EXISTING PIPES AND CONDUITS. PLAN ON CROSSING UNDER EXISTING UTILITIES UNLESS OTHERWISE APPROVED BY OWNER AND ENGINEER. NOT ALL EXISTING UTILITIES ARE SHOWN HERE.
 B. REFER TO SHEET E-3 FOR NEW CONDUIT "O" LEGEND AND COMBINATION OF NEW DUCT BANKS.
 C. REFER TO ONE-LINE POWER DIAGRAM ON SHEET E-2, SHEET E-6 AND DIAGRAMS ON SHEET E-8 FOR CONDUIT BETWEEN FINISHED WATER PUMP STATION AND NEW ELECTRICAL BUILDING.

KEYED NOTES

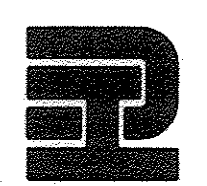
- 1 PROVIDE SUITABLE GROUNDING CLAMP OR GROUNDING FITTING. USE MATERIALS SUITABLE FOR OBJECT BEING GROUNDED: I.E. USE NON-COPPER BASED CLAMPS OR CONNECTIONS WHEN BONDING ALUMINUM STRUCTURES OR WHEN BONDING UNDERGROUND FERROUS PIPES.
- 2 #2G BONDING CONDUCTOR.
- 3 #4/0 G - GROUNDING ELECTRODE CONDUCTOR.
- 4 TRENCH AND PATCH PAVEMENT TO ALLOW FOR NEW CONDUITS.
- 5 #3/0 BONDING GROUND CABLE
- 6 #3/0 GROUND CABLE - BOND CONCRETE PAD REBAR.
- 7 #6 GROUNDING ELECTRODE CONDUCTOR FOR 25 KVA TRANSFORMER AND 100/70/3 FUSED SWITCH.
- 8 #6G - SERVICE GROUNDING ELECTRODE CONDUCTOR.
- 9 #6G - 25 KVA TRANSFORMER SERVICE GROUNDING ELECTRODE CONDUCTOR
- 10 7 #14, 2 #14 SPARE, 1 #14 G, 3/4" C TO RTU-FPS2.
- 11 ONE SC-3/4" C TO RTU-FPS2.
- 12 3 #12, 1 #12 N, 1 #12 G, 3/4" C TO PANEL 1HA-15A, 3-POLE CIRCUIT BREAKER.



REVISIONS			
SYM.	DESCRIPTION	DATE	BY
1	ADDENDUM #1	7/18/07	DL

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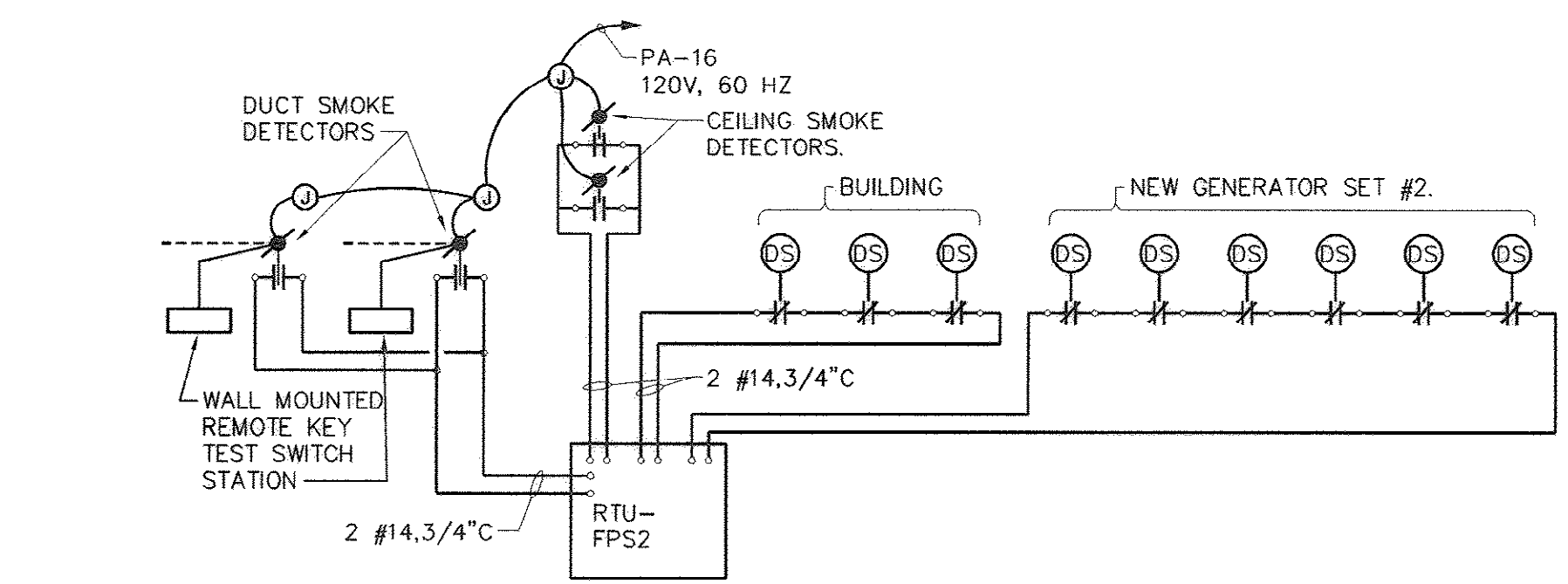
**NEW ELECTRICAL
BUILDING EQUIPMENT
PLAN AND DETAILS**

**BULL CREEK WTP
FINISHED WATER PUMP
STATION NO. 2
GRAND STRAND WATER &
SEWER AUTHORITY**

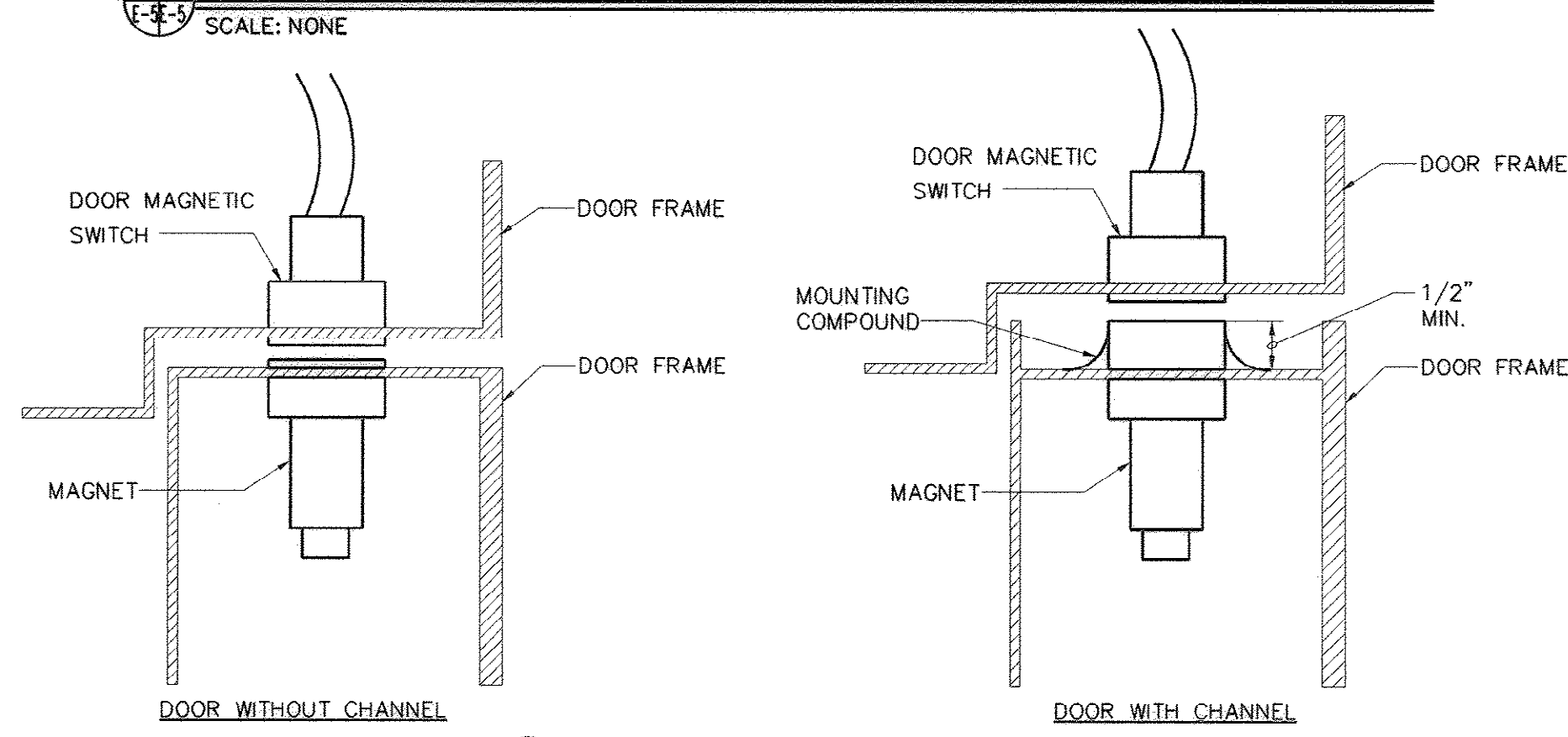
DATE:	SEPT. 2008
DESIGNED:	DL
DRAWN:	DM
CHECKED:	DL
SCALE:	AS SHOWN
SHEET NO.	E-5

**LEGEND OF MAJOR INCOMING WIRING BETWEEN
RTD CONTROL PANEL, RTU-FPS2 AND PUMP VFD**

- GENERAL NOTE:
REFER TO SHEETS E-2 AND E-8 FOR REQUIRED POWER, MONITORING AND CONTROL WIRING AND SPARE CONDUITS BETWEEN CONTROL PANELS, CHECK VALVES AND VFD'S, NOT SHOWN HERE.
- 13 3/3-400 MCM, 1 #3/0 G, 3" C FROM VFD TO 600 HP PUMP
 - 15 NEW 2-4" C ENCASED IN CONCRETE FROM EXISTING RTU-N2 TO NEW RTU-FPS2. PROVIDE PULL CORDS ON BOTH CONDUITS. PROVIDE ONE F0-12 CABLE AND THREE INNERDUCTS IN ONE CONDUIT. REFER TO SECTION 16158 FOR CABLE SPECS. RUN SITE CABLES "29" IN ONE INNERDUCT. REFER TO SHEET E-3.
 - 17 NEW 2500A UNDERGROUND SERVICE ENCASED IN CONCRETE. SEE SHEET E-4: 8(3-400 MCM, 1 #3/0 N, 3" C).
 - 18 NEW 2500A UNDERGROUND EMERGENCY POWER SERVICE ENCASED IN CONCRETE FROM GENERATOR SET NO. 2: 8(3-400 MCM, 1-400 MCM N, 1-350 MCM G, 4" C).
 - 19 NEW AUXILIARY POWER AND CONTROL/MONITORING CIRCUITS ENCASED IN CONCRETE FROM NEW ELECTRICAL BUILDING TO NEW GENERATOR SET #2:
 - 2 #4, 1 #6G, 1 1/4" C FROM H- TO 25KVA TRANSFORMER VIA 100/2 FUSED SERVICE SWITCH.
 - ONE 1" C WITH TWO "DH" CABLES FROM RTU-FPS2 TO GENERATOR SET FOR MODBUS NETWORK INTERFACE.
 - ONE 1" C WITH WIRES AS REQUIRED FROM RTU-FPS2 TO GENERATOR SET DOOR MONITORING SWITCHES.
 - ONE 1" C WITH WIRES AS REQUIRED FROM REMOTE GENERATOR ANNUNCIATOR TO GENERATOR SET CONTROL PANEL.
 - ONE 1" C SPARE.
 - ONE 3/4" C WITH 4 #12 FROM HSB ATS TO GENERATOR SET FOR START/STOP COMMAND.
 - 31 1 1/4" C WITH FLOW TRANSMITTER PRIMARY ELEMENT "FE" CABLE FROM NEW FINISHED WATER VAULT. SEE SHEET E-3.
 - 32 120V, CIRCUITS - 5 #10, 1 #10 G, 1" C FROM NEW FINISHED WATER VAULTS. SEE SHEET E-3.



FIRE DETECTORS AND DOOR SECURITY SWITCHES WIRING DIAGRAM



TYPICAL "DS" MOUNTING

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

- KEYED NOTES:**
- 1 NOT USED
 - 2 EXACT LOCATION OF TERMINATION AS REQUIRED BY EQUIPMENT SUBMITTED.
 - 3 FEEDER FROM SWITCHBOARD 'HSB' TO EACH VFD: 3(3-500 MCM, 1 #4/0G, 3" C)
 - 4 MOUNT TOP OF LIGHT FIXTURES 2" BELOW BOTTOM OF DUCT WORK.

ELECTRICAL BUILDING PLAN
SCALE: 1/2"=1'-0"



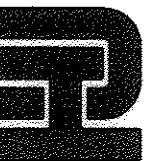
AS-BUILT

33-014-032/49 W

REVISIONS			
SYM.	DESCRIPTION	DATE	BY
1	ADDENDUM #1	7/18/07	DL

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FINISH WATER PUMP STATION ELECTRICAL PLAN AND SECTION

**BULL CREEK WTP
FINISHED WATER PUMP
STATION NO. 2
GRAND STRAND WATER &
SEWER AUTHORITY**

DATE: SEPT. 2008

DESIGNED: DL

DRAWN: DM

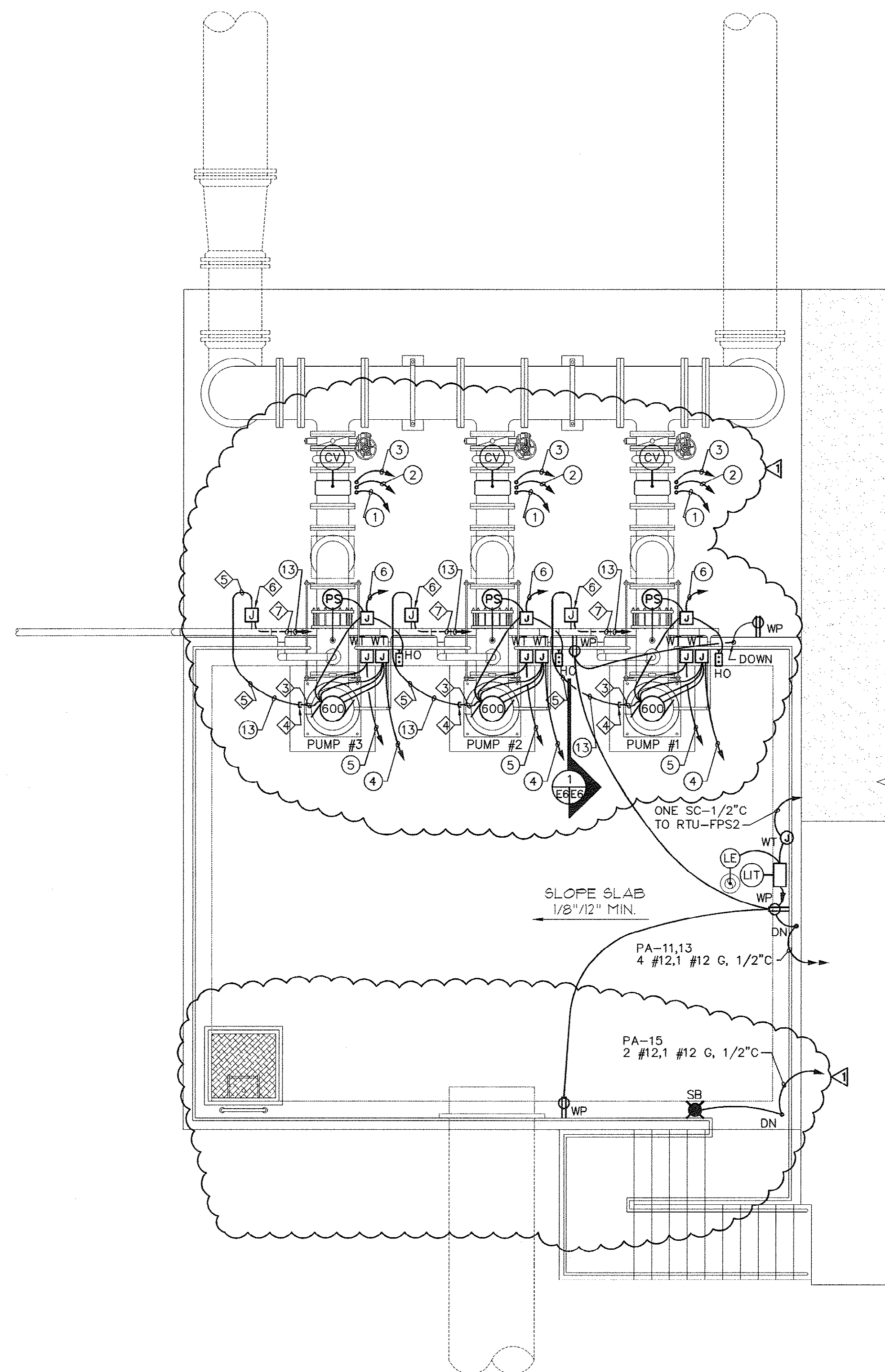
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SHEET NO.

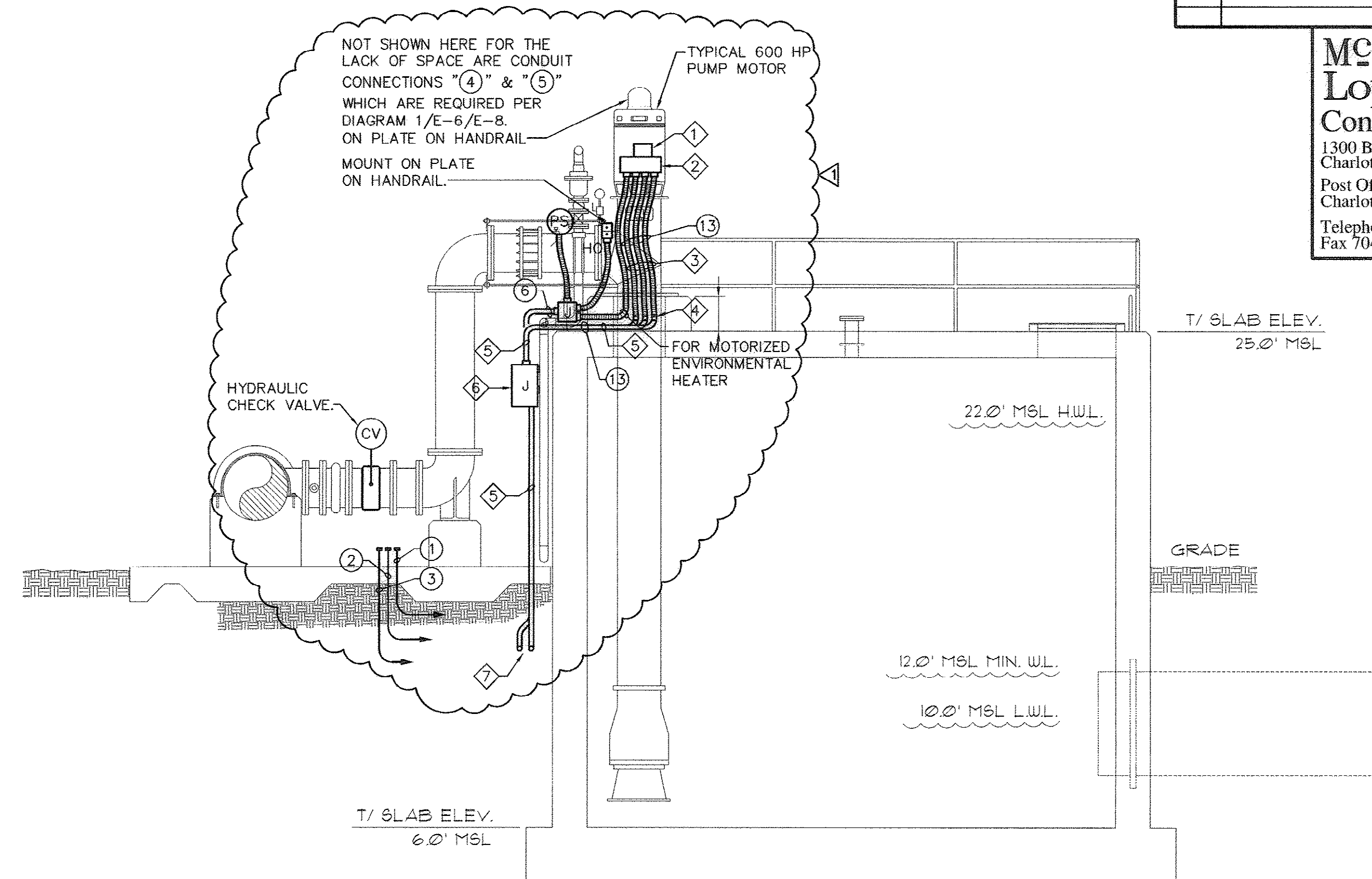
E-6

OE: 17



1 FINISH WATER PUMP STATION NO. 2 - ELECTRICAL PLAN
SCALE: 1/4" = 1'-0"

GENERAL NOTES:
A. ALL BOXES, CABINETS AND SWITCHES EXPOSED TO WEATHER SHALL BE WATERTIGHT, NEMA 4 CONSTRUCTION.



KEYED NOTES

- 1 VERTICAL TURBINE PUMP 600 HP MOTOR TERMINAL BOX.
- 2 PROVIDE STAINLESS STEEL, NEMA 4X, PULL/JUNCTION BOX EXTENSION AT MOTOR TERMINAL BOX TO ALLOW FOR TERMINATION OF CONDUITS.
- 3 LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT FOR MAIN FEEDER. ALSO REQUIRED, BUT NOT SHOWN HERE, ARE SAME TYPE OF CONDUITS FOR MOTOR ALARM AND AUXILIARY WIRES. REFER TO DIAGRAMS ON SHEET E-6 FOR MORE DETAIL.
- 4 TRANSITION FROM PVC COATED RIGID STEEL CONDUIT TO LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT, USING SUITABLE WATERTIGHT FITTING.
- 5 PVC COATED RIGID STEEL CONDUIT. REFER TO ONE-LINE POWER DIAGRAM.
- 6 NEMA 4X, STAINLESS STEEL PULL BOX, MINIMUM DIMENSIONS: 18" LONG x 16" WIDE x 8" DEEP. USE TO PULL MOTOR POWER CONDUCTORS.
- 7 SCHEDULE 40 PVC CONDUIT RUN UNDERGROUND.

**LEGEND OF CONTROL AND MONITORING WIRING BETWEEN RTD
CONTROL PANEL, RTU-FPS2 AND PUMP VFD**

- (1) 1 1/4" C WITH PULL CORD BETWEEN CHECK VALVE LOCATION AND VFD FOR FITIRE CONVERSION TO ELECTRICALLY ASSISTED VALVE.
- (2) 3/4" C WITH PULL CORD BETWEEN CHECK VALVE LOCATION AND VFD FOR FUTURE CONVERSION
- (3) 3/4" C WITH PULL CORD BETWEEN CHECK VALVE LOCATION AND RTU-FPS2.
- (2) TWO BELDEN #83653 AND ONE BELDEN #83652, SHIELDED CABLES, IN 1" C FROM MOTOR TO RTD CONTROL PANEL FOR MOTOR BEARINGS TEMPERATURE MONITOR AND EXCESSIVE VIBRATION.
- (5) SIX BELDEN #83653, SHIELDED CABLES, IN 1 1/4" C FROM MOTOR TO RTD CONTROL PANEL FOR MOTOR WINDING HEAT MONITORING.
- (6) 4 #14, 4 #14 SPARE, 1 #14 G, 3/4" C FROM "HO" STATION AND "(PS)" AT PUMP AND FROM MOTOR HEATER, TO VFD.
- (7) 1-SC-3/4" C FROM RTD CONTROL PANEL TO VFD FOR AUTO SPEED REFERENCE.
- (8) 4 #14, 4 #14 SPARE, 1 #14 G, 3/4" C FROM RTD CONTROL PANEL TO VFD FOR AUTO RUN INPUT AND INTERLOCK.
- (9) 6 #14, 6 #14 SPARE, 3/4" C FROM RTD CONTROL PANEL TO VFD FOR, PUMPING AUTO, PUMPING AUTO, VFD RUN, VFD FAILURE, VFD IN BYPASS, RVSS FAULT.
- (10) ONE - DHC, 3/4" C FROM RTD CONTROL PANEL TO RTU-FPS2.
- (11) 16 #14, 1 #14 G, 3/4" C FROM VFD TO RTU-FPS2.
- (12) SIX, SC CABLES, 1" C FROM VFD TO RTU-FPS2.
- (13) 3(3-400 MCM, 1 #3/0 G, 3" C) FROM VFD TO 600 HP PUMP.

AS-BUILT

33-014-033/49 W

SWITCHBOARD 'HSB'

SERVICE: 480/277V, 3-PH, 4W
 BUSES: 2500A - MLO
 NOTES:
 1. SUITABLE FOR SERVICE ENTRANCE.
 2. SEE SECTION 16442 FOR ADDITIONAL REQUIREMENTS.
 3. CIRCUIT BREAKERS 'MNB' & 'MEB' ARE DRAW OUT MOTOR OPERATED POWER BREAKERS WITH CONTROL AND ELECTRIC/MECHANICAL INTERLOCK TO FORM AN UL 1008 ATS.
 LEGEND: L=LONG TRIP PICKUP & DELAY, G=GROUND FAULT TRIP PICKUP & DELAY, S=SHORT TRIP PICKUP & DELAY, AM=AMMETER, I=INSTANTANEOUS TRIP.
 4. ONE PUMP IS NOT CONCURRENT WITH THE OTHER TWO.

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

CONNECTED LOAD (KVA)		
LIGHTING	1.4	
HEATING	17.8	
A/C & HEAT PUMPS	52.8	
AIR HANDLING	1.2	
RECEPTACLES	2.2	
WATER HEATING	0.0	
ELEVATORS	0.0	
FOOD PROCESSING	0.0	
PROCESS	2.3	
MISCELLANEOUS	1137.6	
TOTAL (KVA)	1215.3	
CONNECTED LOAD: 1462 AMPERES		

UNIT	LOAD SERVED	PROTECTION			WIRE & CONDUIT	REMARKS	LOAD (KVA) PER PHASE		
		POLE	FRAME	TRIP			A	B	C
	'MNB' – NOTE 3	3	2500	2500	SEE ONE–LINE POWER DIAGRAM	L,S,I,G,A,M	405.1	401.8	408.4
	'MEB' – NOTE 3	3	2500	2500	SEE ONE–LINE POWER DIAGRAM	L,S,I,G,A,M	0.0	0.0	0.0
1	PUMP #1/VFD #1	3	1200	1200	SEE ONE–LINE POWER DIAGRAM	L,S,I,G,A,M	188.6	188.6	188.6
2	PUMP #2/VFD #2	3	1200	1200	SEE ONE–LINE POWER DIAGRAM	L,S,I,G,A,M	188.6	188.6	188.6
3	PUMP #3/VFD #3 (NOTE 4.)	3	1200	1200	SEE ONE–LINE POWER DIAGRAM–NOTE 4	L,S,I,G,A,M	0.0	0.0	0.0
4	SPARE	3	1200	1200		L,S,I,G,A,M	0.0	0.0	0.0
5	SPARE	3	400	400			0.0	0.0	0.0
6	PANEL 'HA'	3	400	400	SEE ONE–LINE POWER DIAGRAM		27.9	24.6	31.2
7	SPARE	3	800	800			0.0	0.0	0.0

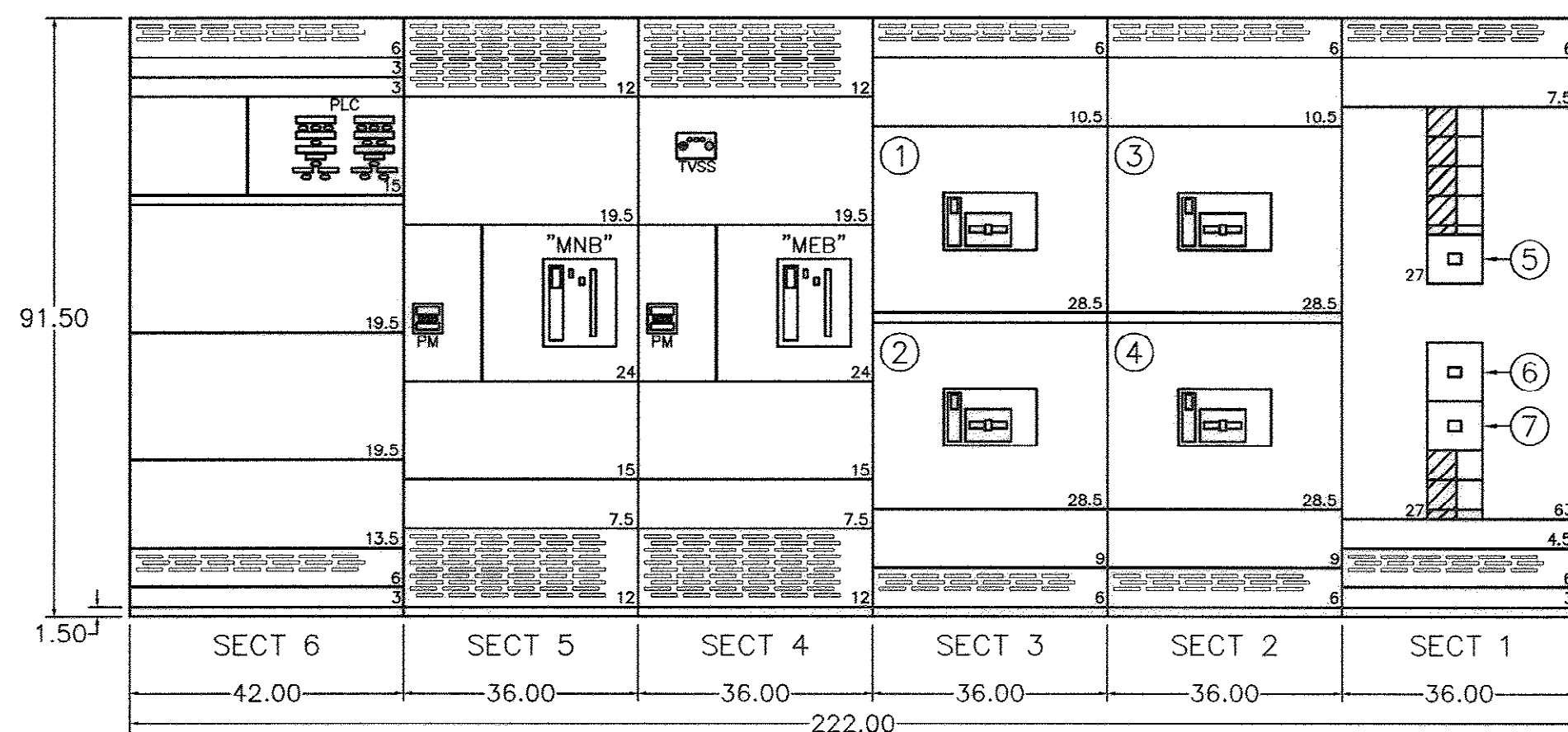
LOAD (KVA)			DESCRIPTION	WIRE SIZE	BRKR RAT'G	CKT. NO.	CKT. NO.	BRKR RAT'G	WIRE SIZE	DESCRIPTION	LOAD (KVA)
A	B	C									A B C
0.0			S.O.			1	2	15/3	12	BFV--	0.3
	0.0		S.O.			3	4		12		0.3
		0.0	S.O.			5	6		12		0.3
0.0			S.O.			7	8	15/3	12	BFV--	0.3
	0.0		S.O.			9	10		12		0.3
		0.0	S.O.			11	12		12		0.3
0.0			S.O.			13	14	25/3		SPARE	0.0
	0.0		S.O.			15	16				0.0
		0.0	S.O.			17	18				0.0
0.0			S.O.			19	20	100/3		SPARE	0.0
	0.0		SPARE		30/3	21	22				0.0
		0.0				23	24				0.0
0.0						25	26	60/3	6	ROOF TOP A/CUNIT #1	8.8
	0.0		S.O.			27	28		6		8.8
		0.0	SPARE		60/3	29	30		6		8.8
0.0						31	32	60/3	6	ROOF TOP A/C	8.8
	0.0					33	34		6	UNIT #2	8.8
		9.8	PANEL 'GP' VIA	4	70/2	35	36		6		8.8
10.3			25 KVA	4		37	38	60/3		SPARE	0.0
	7.0		PANEL 'PA'	4	70/2	39	40				0.0
		3.8	VIA 25 KVA TRANSF.	4		41	42				0.0

TYPE: BRANCH CIRCUIT MOUNTING: SURFACE SUPPLY: 480V, 3-PH, 3W MAINS: 400A MLO SCIR: 50,000A NOTES: 1. WITH EQUIPMENT GROUND BUS.	GROSS PHASE TOTALS A= 28.5 KVA B= 23.2 KVA C= 31.8 KVA	CONNECTED LOAD: 103 AMPERES LIGHTING 1.4 KVA HEATING 17.8 KVA A/C MOTORS & HEAT PUMPS 52.8 KVA AIR HANDLING & EXH FANS 1.2 KVA RECEPTACLES 2.2 KVA ELECTRIC WATER HEATING 0.0 KVA ELEVATORS 0.0 KVA FOOD PROCESSING 0.0 KVA PROCESS 4.1 KVA MISCELLANEOUS 6.0 KVA TOTAL CONNECTED LOAD 85.5 KVA
--	---	--

LOAD (KVA)			DESCRIPTION	WIRE SIZE	BRKR RAT'G	CKT. NO.	CKT. NO.	BRKR RAT'G	WIRE SIZE	DESCRIPTION	LOAD (KVA)
PH1	PH2										PH1 PH2
0.5			INTERIOR LIGHTING	12	20/1	1	2	20/1	12	SWBD 'MEB' HEATER	0.3
	0.4		EXT. LIGHTING	12	20/1	3	4	15/1	12	PCP-1	0.1
0.6			INTERIOR RECEPT.	12	20/1	5	6	15/1	12	PCP-2	0.1
	0.4		RTU-FPSZ	12	20/1	7	8	15/1	12	PCP-3	0.1
1.0				12	20/1	9	10	15/1	12	VFD#1 HEATER	0.3
	0.1		INSURUMENTATION	12	15/1	11	12	15/1	12	VFD#2 HEATER	0.3
0.4			EXTERIOR RECEPT.	12	20/1GF	13	14	15/1	12	VFD#3 HEATER	0.3
	0.3		EXT. SITE LTG.	*	20/2	15	16	15/1	12	SMOKE DETECTORS	0.1
0.3				*		17	18	20/1	10	SUMP PUMP WMV #1	1.2
	0.3		VENT. FM. VAULT	8	20/1	19	20	20/1	10	SUMP PUMP WMV #2	1.2
0.3			VENT. FM. VAULT	8	20/1	21	22	20/1	10	WMV #1 & #2 UG. ELEC	0.8
	0.3		CHEM. FEED VAULT	6	20/1	23	24	20/1GF	12	ROOF REC	0.2
0.3			CHEM. FEED VAULT	6	20/1	25	26	20/1	12	SAMPLE PUMP	0.6
	0.0		SPARE		20/1	27	28	20/1		SPARE	0.0
0.0			SPARE		20/1	29	30	20/1		SPARE	0.0
	0.0		SPARE		20/1	31	32	20/1		SPARE	0.0
0.0			SPARE		20/1	33	34	20/1		SPARE	0.0
	0.0		SPARE		20/1	35	36	20/1		SPARE	0.0
0.0			SPARE		20/1	37	38	20/1		SPARE	0.0
	0.0		SPARE		20/1	39	40	20/1		SPARE	0.0
0.0			SPARE		20/1	41	42	20/1		SPARE	0.0

TYPE: BRANCH CIRCUIT MOUNTING: SURFACE SUPPLY: 240/120V, 1-PH, 3W MAINS: 150A MAIN BREAKER SCIR: 10,000A NOTES: 1. WITH EQUIPMENT GROUND BUS. 2. GF = CIRCUIT WITH BUILT-IN GROUND FAULT PROTECTION - REQUIRES DEDICATED NEUTRAL. 3. SEE PLANS AND SITE PLANS FOR WIRING SIZE.	GROSS PHASE TOTALS PH1= 7.0 KVA PH2= 3.8 KVA	CONNECTED LOAD: 45 AMPERES LIGHTING 1.0 KVA HEATING 0.3 KVA A/C MOTORS & HEAT PUMPS 0.0 KVA AIR HANDLING & EXH FANS 0.0 KVA RECEPTACLES 1.8 KVA ELECTRIC WATER HEATING 0.0 KVA ELEVATORS 0.0 KVA FOOD PROCESSING 0.0 KVA PROCESS 2.3 KVA MISCELLANEOUS 5.4 KVA TOTAL CONNECTED LOAD 10.8 KVA
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PANEL PA



MAIN SWITCHBOARD 'HSB' ELEVATION FRONT ACCESSIBLE ONLY

SCALE: NONE

LOAD (KVA)			DESCRIPTION	WIRE SIZE	BRKR RAT'G	CKT. NO.	CKT. NO.	BRKR RAT'G	WIRE SIZE	DESCRIPTION	LOAD (KVA)
A	B	C									A B C
5.9			CHEM SPILL EFFL	6	60/3	1	2	60/3	6	CHEM SPILL INFL	5.9
	5.9		PUMP STAT	6		3	4		6	PUMP STAT	5.9
		5.9		6		5	6		6		5.9
10.7			HRU-1	6	60/3	7	8	40/3	8	HRU-2	6.0
	10.7			6		9	10		8		5.9
		10.9		6		11	12		8		5.9
2.0			POLY FIR AND TANK	10	30/3	13	14	30/3	10	POLY AG TANK	2.0
	2.0			10		15	16		10		2.0
		2.0		10		17	18		10		2.0
11.2			AIR COMP	4	80/3	19	20	60/3		SPARE	0.0
	11.2		2 @ 15 HP	4		21	22				0.0
0.0			SPARE	4	30/3	25	26			S.O. (100A)	0.0
	0.0					27	28				0.0
0.0			SPARE			29	30				0.0
	0.0		SPARE		60/3	31	32			S.O. (100A)	0.0
0.0						33	34				0.0
	0.0					35	36				0.0
5.6			NW CU-1 - NOTE 2	8	40/3	37	38	15/3	12	NEW BCU-1	1.0
	5.6			8		39	40		12	NOTE 2	1.0
		5.6		8		41	42		12		1.0

TYPE: BRANCH CIRCUIT MOUNTING: SURFACE SUPPLY: 480V, 3 PHASE, 3 WIRE MAINS: 400A MLO SCIR: 30,000A NOTES: 1. WITH EQUIPMENT GROUND BUS. 2. PROVIDE NEW 40/3 AND 15/3 CIRCUIT BREAKERS IN EXISTING SPACES 3. SEE SHEET E-15 FOR LOCATION.	GROSS PHASE TOTALS A= 50.3 KVA B= 50.2 KVA C= 50.4 KVA	CONNECTED LOAD: LIGHTING 0.0 KVA HEATING 30.0 KVA A/C MOTORS & HEAT PUMPS 16.8 KVA AIR HANDLING & EXH FANS 23.1 KVA RECEPTACLES 0.0 KVA ELECTRIC WATER HEATING 0.0 KVA ELEVATORS 0.0 KVA FOOD PROCESSING 0.0 KVA PROCESS 81.0 KVA MISCELLANEOUS 0.0 KVA TOTAL 150.9 KVA
--	---	--

EXISTING PANEL 1HA



REVISIONS			
SYM.	DESCRIPTION	DATE	BY
1	ADDENDUM #4	7/27/07	DL

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**POWER EQUIPMENT
 SCHEDULES AND
 ELEVATIONS**

**BULL CREEK WTP
 FINISHED WATER PUMP
 STATION NO. 2
 GRAND STRAND WATER &
 SEWER AUTHORITY**

DATE:	SEPT. 2008
DESIGNED:	DL
DRAWN:	DM
CHECKED:	DL
SCALE:	AS SHOWN

SHEET NO.
E-7

AS-BUILT

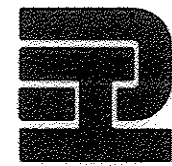
33-014-034/49 W

Modified: May 08, 2007 Modified By: Seph Scale: 1/8"=1'-0" Plotted: Nov 18, 2008 - 3:00pm Plotted By: Adrian Gibson, M.A.N.T.U.S. BIAL, CSECE, P.E. 2,300-Broadway #202-4th Floor, New York, NY 10013-8001, AS-BUILT ELECTRICAL, 208, 202

REVISIONS			
SYM.	DESCRIPTION	DATE	BY
1	ADDENDUM #1	7/18/07	DL/RM

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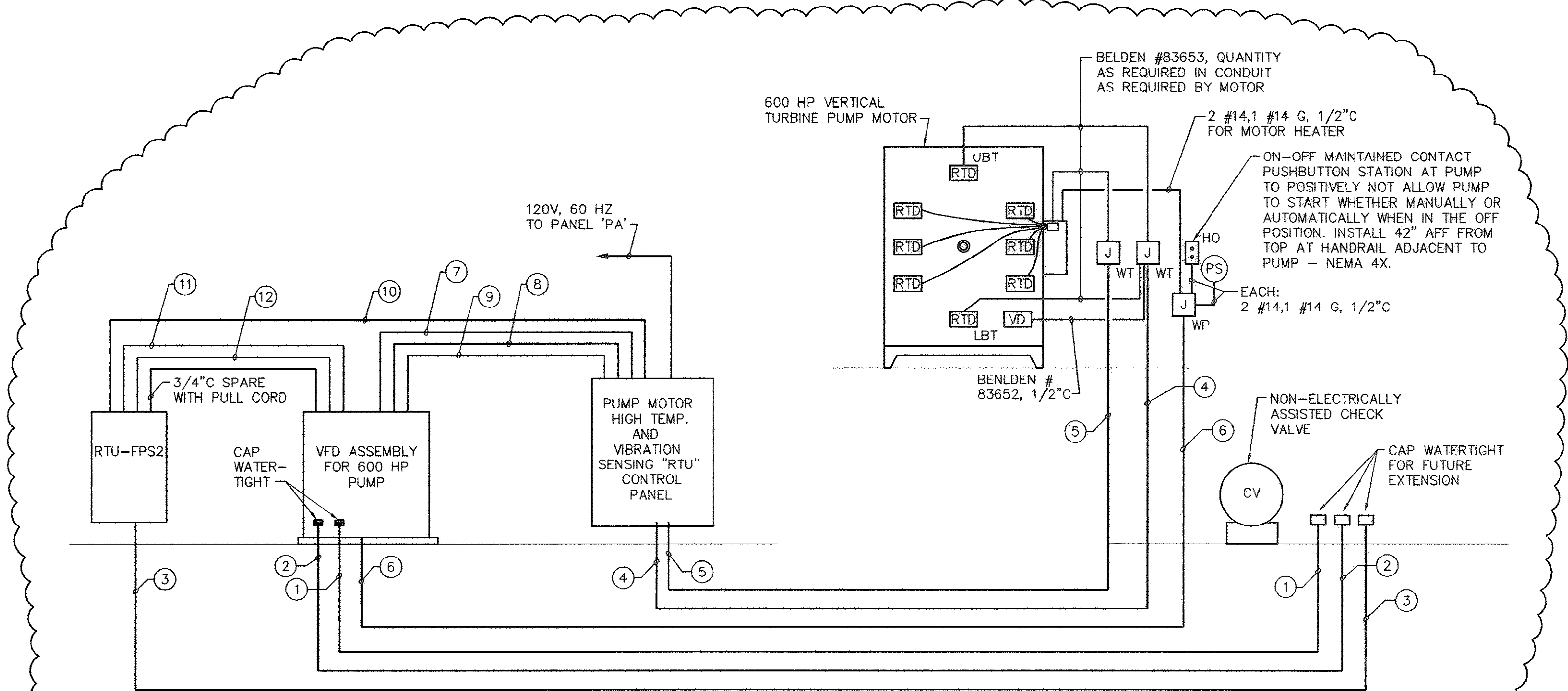
**PUMP CONTROL
RISER DIAGRAMS**

**BULL CREEK WTP
FINISHED WATER PUMP
STATION NO. 2
GRAND STRAND WATER &
SEWER AUTHORITY**

DATE:	SEPT. 2008
DESIGNED:	DL
DRAWN:	DM
CHECKED:	DL
SCALE:	AS SHOWN

SHEET NO.
E-8

OF: 17



1 TYPICAL PUMP CONTROL WIRING RISER DIAGRAM - THREE REQUIRED
SCALE: NONE

**LEGEND OF CONTROL AND MONITORING WIRING BETWEEN RTD
CONTROL PANEL, RTU-FPS2 AND PUMP VFD**

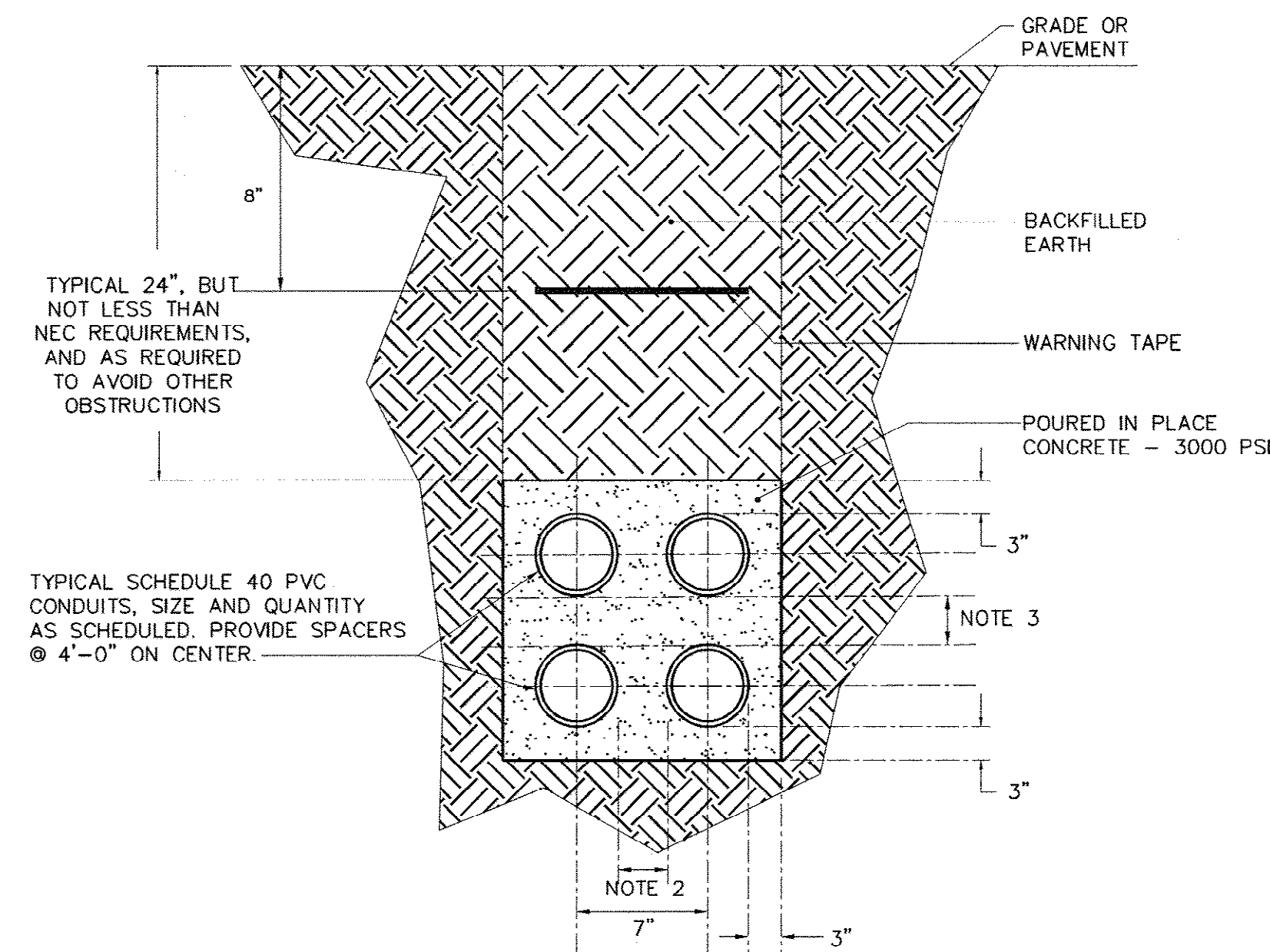
- 1 1/4" C WITH PULL CORD BETWEEN CHECK VALVE LOCATION AND VFD FOR FUTURE CONVERSION TO TO ELECTRICALLY ASSISTED VALVE.
- 2 3/4" C WITH PULL CORD BETWEEN CHECK VALVE LOCATION AND VFD FOR FUTURE CONVERSION
- 3 3/4" C WITH PULL CORD BETWEEN CHECK VALVE LOCATION AND RTU-FPS2.
- 4 TWO BELDEN #83653 AND ONE BELDEN #83652, SHIELDED CABLES, IN 1" C FROM MOTOR TO RTD CONTROL PANEL FOR MOTOR BEARINGS TEMPERATURE MONITOR AND EXCESSIVE VIBRATION.
- 5 SIX BELDEN #83653, SHIELDED CABLES, IN 1 1/4" C FROM MOTOR TO RTD CONTROL PANEL FOR MOTOR WINDING HEAT MONITORING.
- 6 #14, 4 #14 SPARE, 1 #14 G, 3/4" C FROM "HO" STATION AND "(PS)" AT PUMP AND FROM MOTOR HEATER, TO VFD.
- 7 1-SC-3/4" C FROM RTD CONTROL PANEL TO VFD FOR AUTO SPEED REFERENCE.
- 8 4 #14, 4 #14 SPARE, 1 #14 G, 3/4" C FROM RTD CONTROL PANEL TO VFD FOR AUTO RUN INPUT AND INTERLOCK.
- 9 6 #14, 6 #14 SPARE, 3/4" C FROM RTD CONTROL PANEL TO VFD FOR, PUMPING AUTO, PUMPING AUTO, VFD RUN, VFD FAILURE, VFD IN BYPASS, RVSS FAULT.
- 10 ONE - DHC, 3/4" C FROM RTD CONTROL PANEL TO RTU-FPS2.
- 11 16 #14, 1 #14 G, 3/4" C FROM VFD TO RTU-FPS2.
- 12 SIX, SC CABLES, 1" C FROM VFD TO RTU-FPS2.

ELECTRICALLY ASSISTED CHECK VALVE SYSTEM COMPONENTS:

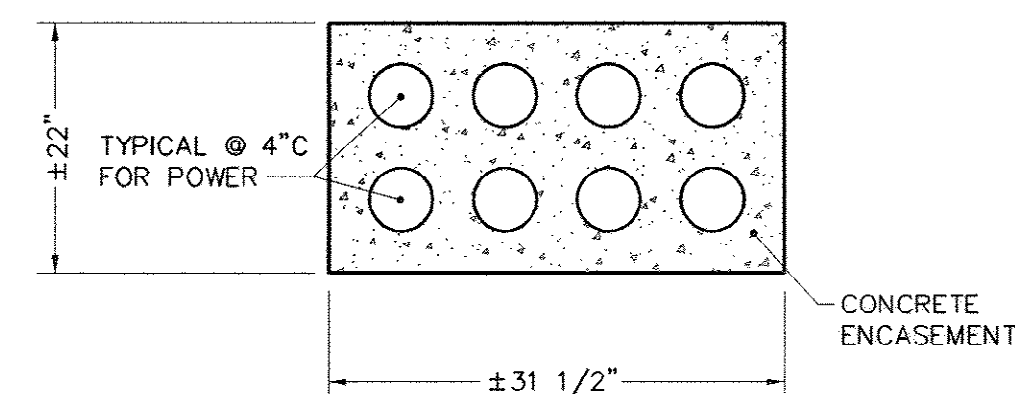
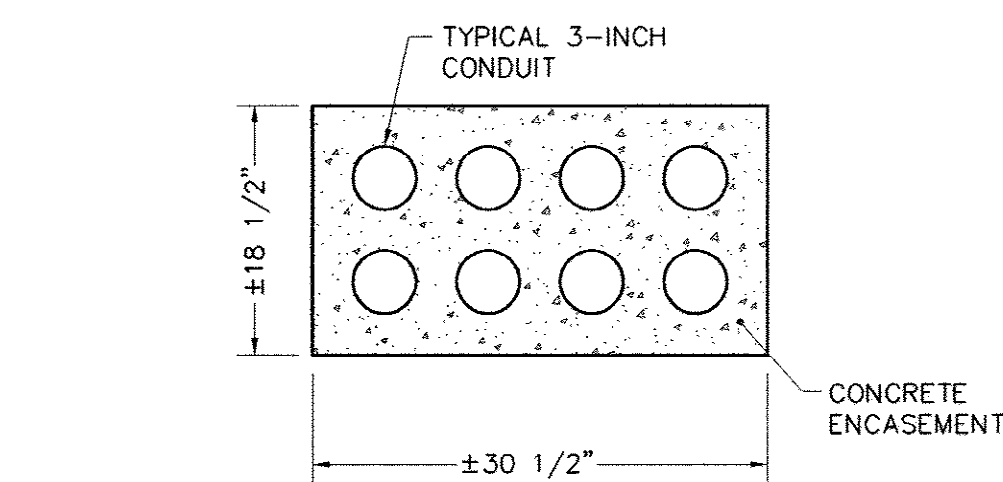
- (CV) 100% HYDROLIC CHECK VALVE. PROVIDE EMPTY CONDUITS AS SHOWN FOR FUTURE CONVERSION TO ELECTRICALLY ASSISTED CHECK VALVE.
- (RTD) RESISTANCE TEMPERATURE DETECTOR - FURNISHED WITH MOTOR.
- (VD) EXCESSIVE VIBRATION DETECTOR - FURNISHED WITH MOTOR.
- LBT LOWER BEARING TEMPERATURE DETECTOR.
- UBT UPPER BEARING TEMPERATURE DETECTOR

AS-BUILT

33-014-035/49 W

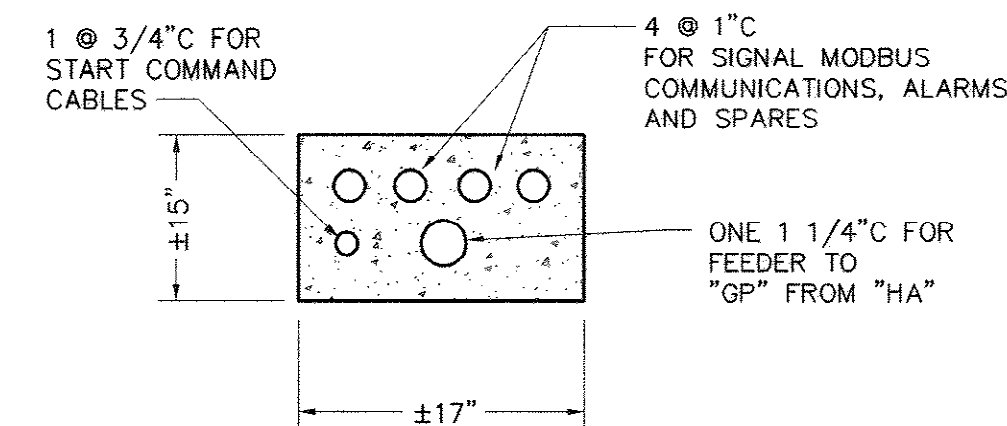


- NOTES:
1. ALL FEEDERS RUN OUTSIDE REQUIRE CONCRETE ENCASEMENT.
 2. PROVIDE 3" OR MORE, SEPARATION BETWEEN ADJACENT POWER CONDUITS
2" SEPARATION BETWEEN SIGNAL CONDUITS.

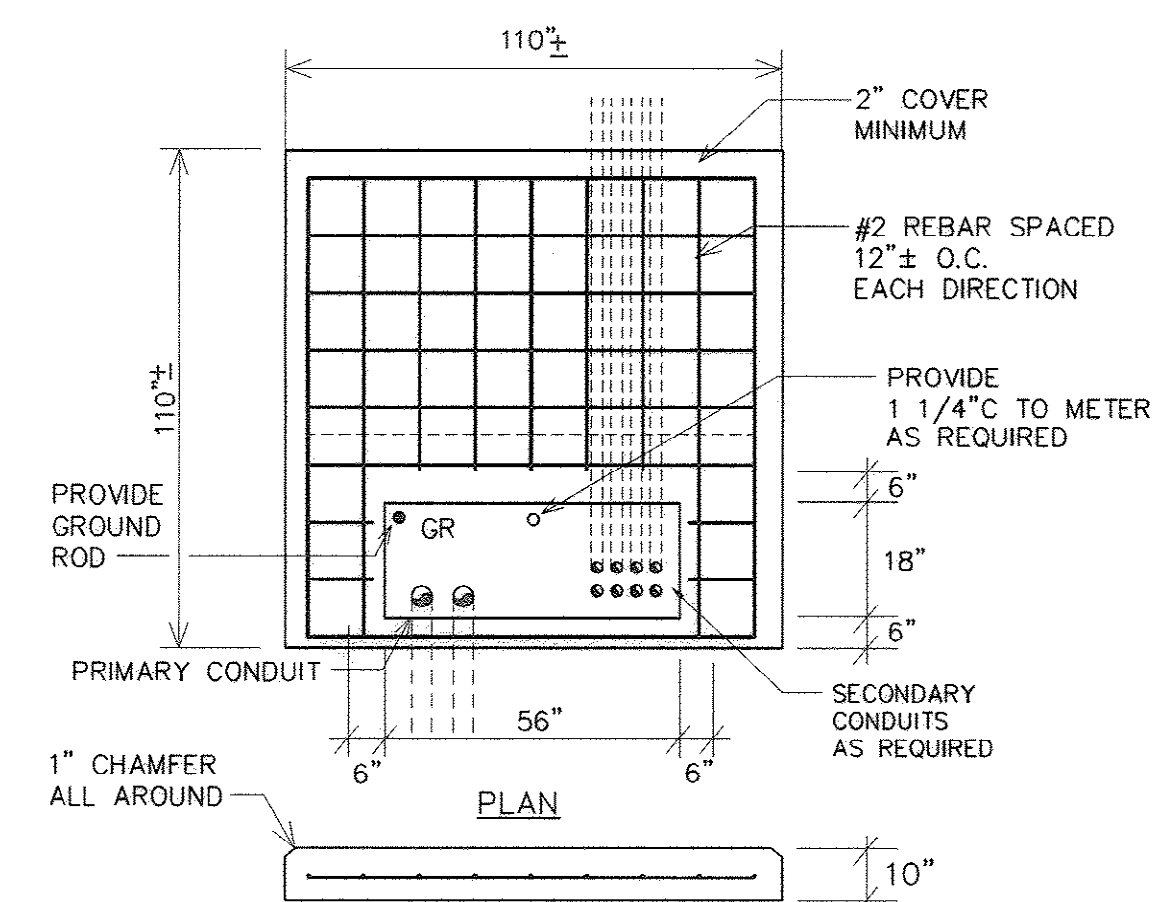


- SECTION THRU
GENERATOR SET POWER DUCTBANK

- NOTES:
1. REFER TO 1/E9/E9 FOR ADDITIONAL REQUIREMENTS.



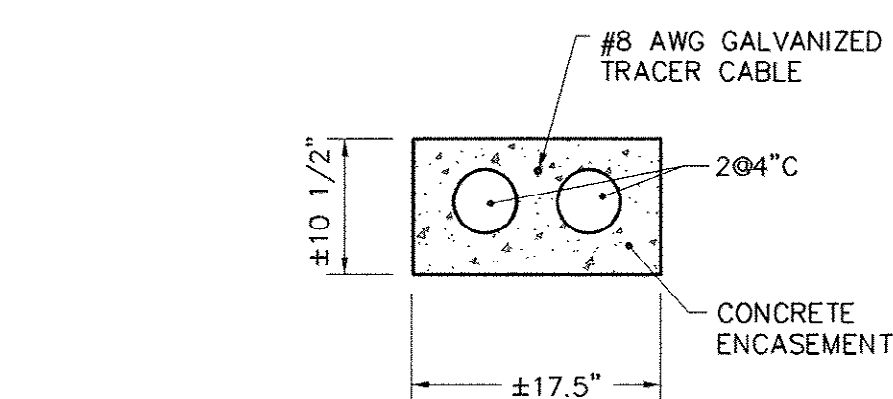
- NOTES:
1. REFER TO 1/E9/E9 FOR ADDITIONAL REQUIREMENTS.



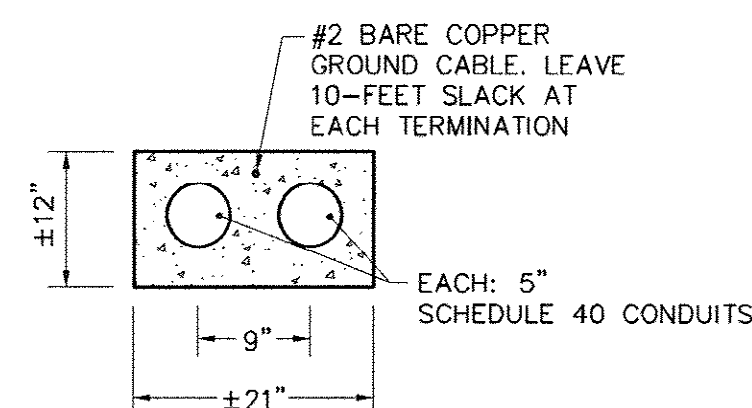
- | NOTES: | SECTION |
|---|---------|
| 1. CONCRETE TO BE 3,000 LBS. GRADE.
2. DIMENSIONS SHOWN HERE ARE ONLY APPROXIMATE. OBTAIN FROM POWER CO. THE EXACT DIMENSIONS AND PAD CONFIGURATION REQUIRED AND PROVIDE PAD TO SATISFY POWER COMPANY'S REQUIREMENTS.
4. PAD SHALL HAVE AN AVERAGE HEIGHT OF 6" ABOVE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



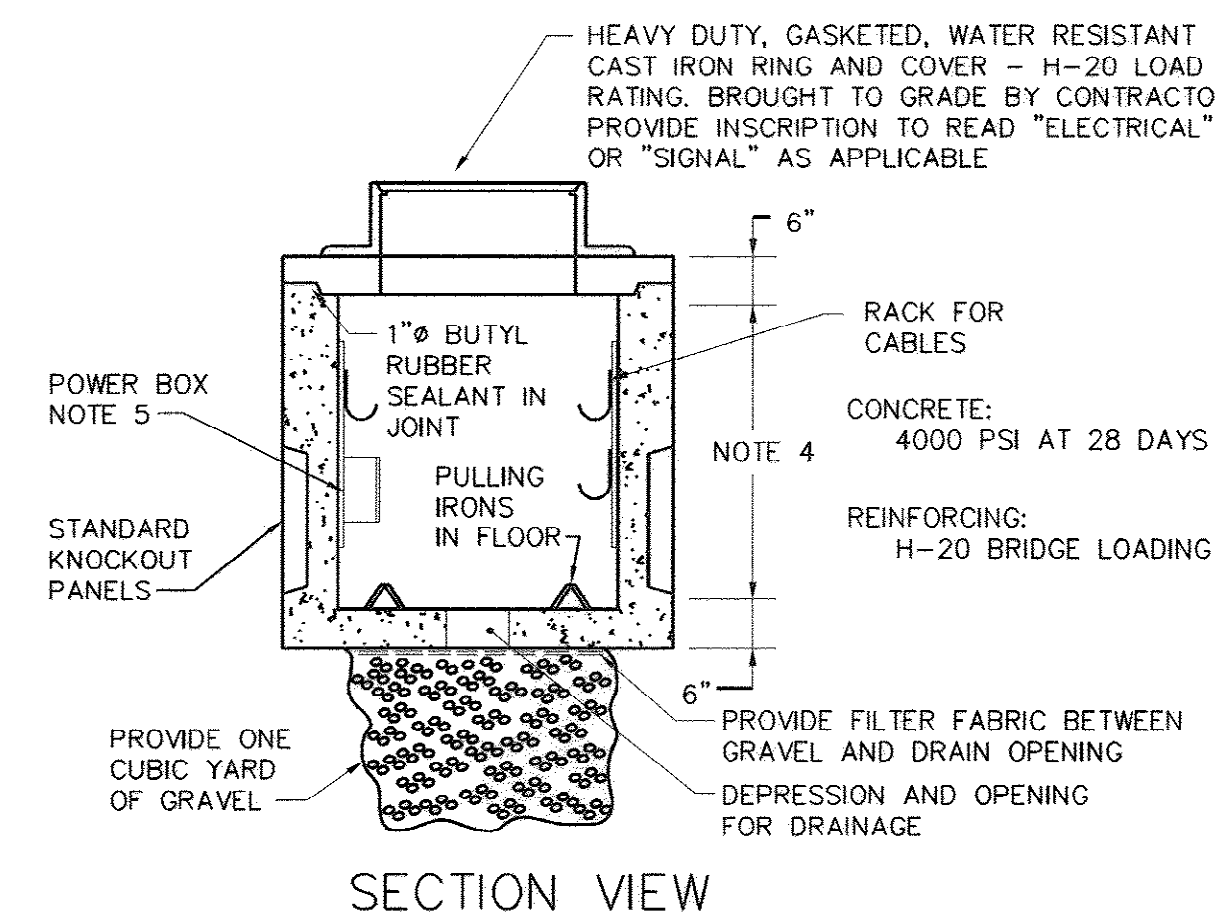
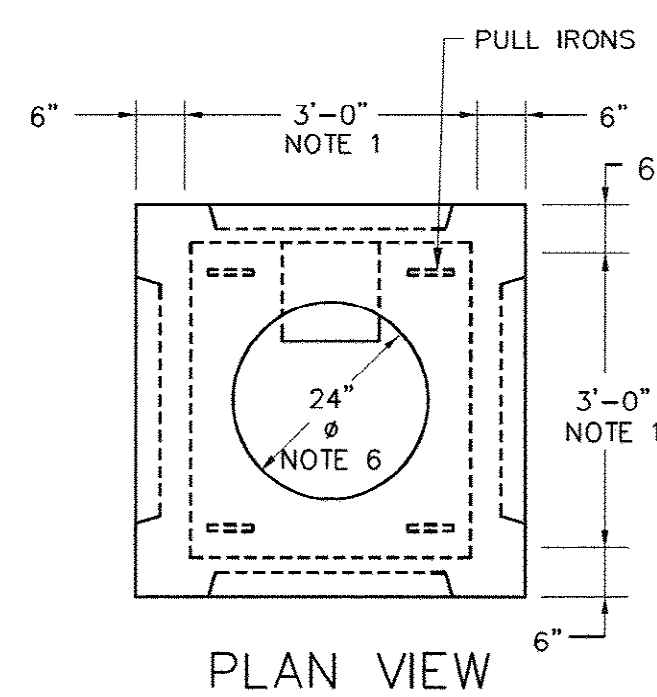
- E4 E9 NOT TO SCALE



- NOTES:
1. REFER TO 1/E9/E9 FOR ADDITIONAL REQUIREMENTS.



- NOTES:
1. REFER TO 1/E9/E9 FOR ADDITIONAL REQUIREMENTS.



- TYPICAL SIGNAL HANDHOLE DETAIL

- E4 E9 NOT TO SCALE

- NOTES:
1. RACK CABLES TO THE SIDES IN A NEAT AND ORGANIZED MANNER.
 2. PROVIDE IN EACH HANDHOLE LABEL IDENTIFICATION TAGS FOR EACH CIRCUIT OR CABLE. STATING CABLE USAGE, ORIGIN AND TERMINATION POINT.
 3. RACK FIBER OPTICS CABLES SEPARATELY FROM COPPER CABLES.
 4. HANDHOLE HEIGHT AS REQUIRED TO MAINTAIN CONDUIT DEPTH, BUT NOT LESS THAN 3'-0".
 5. SOME HANDHOLES, AS INDICATED ON SITE PLAN, SHALL BE PROVIDED WITH NEMA 4X STAINLESS STEEL POWER PULL BOXES DIRECTLY CONNECTED TO INCOMING POWER CONDUITS.

REVISIONS			
SYM.	DESCRIPTION	DATE	BY

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DUCT BANK SECTIONS AND DETAILS

**BULL CREEK WTP
FINISHED WATER PUMP
STATION NO. 2
GRAND STRAND WATER &
SEWER AUTHORITY**

DATE: SEPT. 2008

DESIGNED: DL

DRAWN: DM

CHECKED: DL

SCALE: AS SHOWN

SHEET NO.

E-9

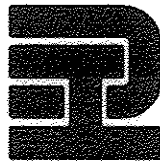
OF 17

AS-BUILT

33-014-036/49 W

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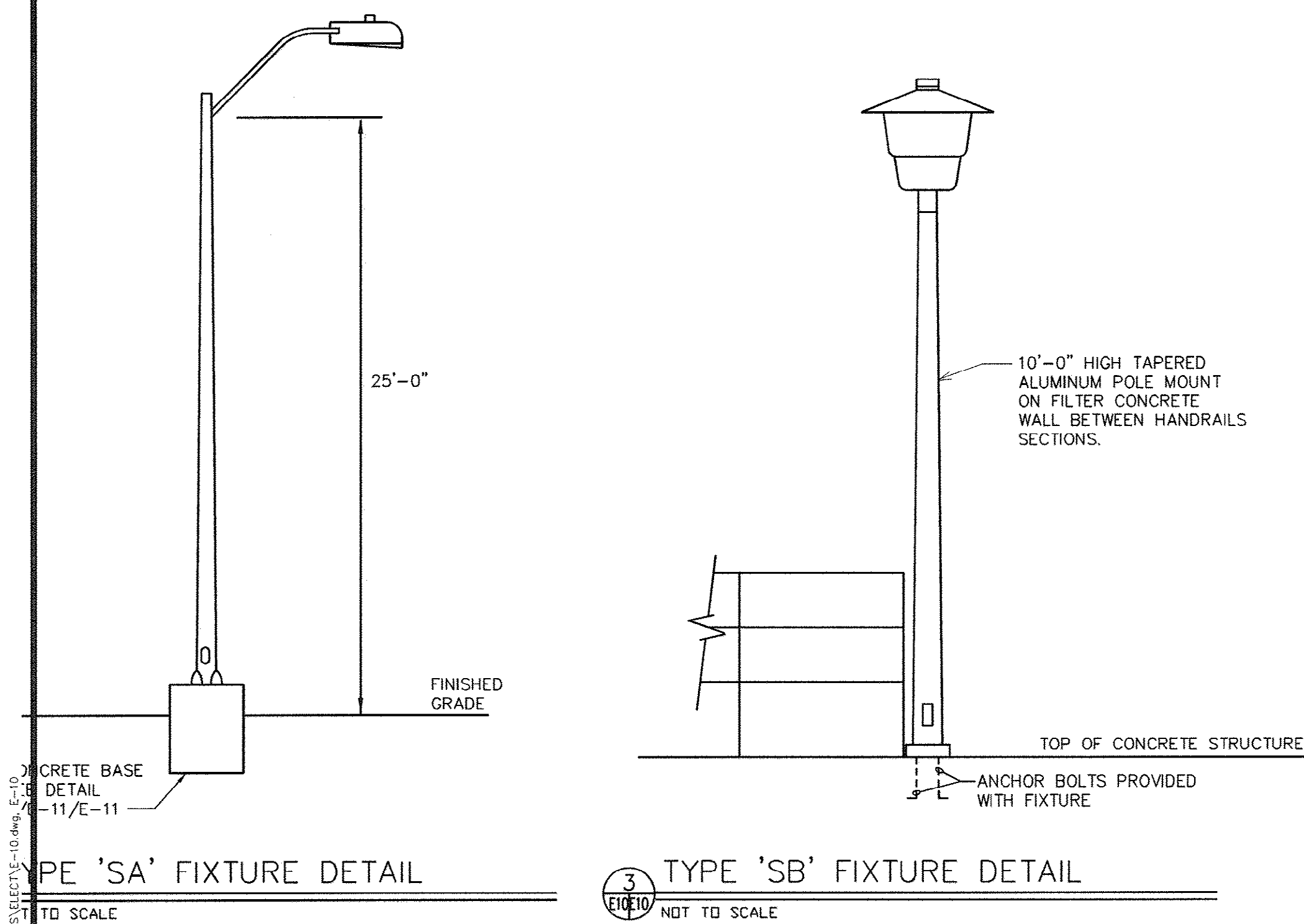
LIGHTING FIXTURE SCHEDULE AND DETAILS

**BULL CREEK WTP
FINISHED WATER PUMP
STATION NO. 2
GRAND STRAND WATER &
SEWER AUTHORITY**

DATE:	SEPT. 2008
DESIGNED:	DL
DRAWN:	DM
CHECKED:	DL
SCALE:	AS SHOWN

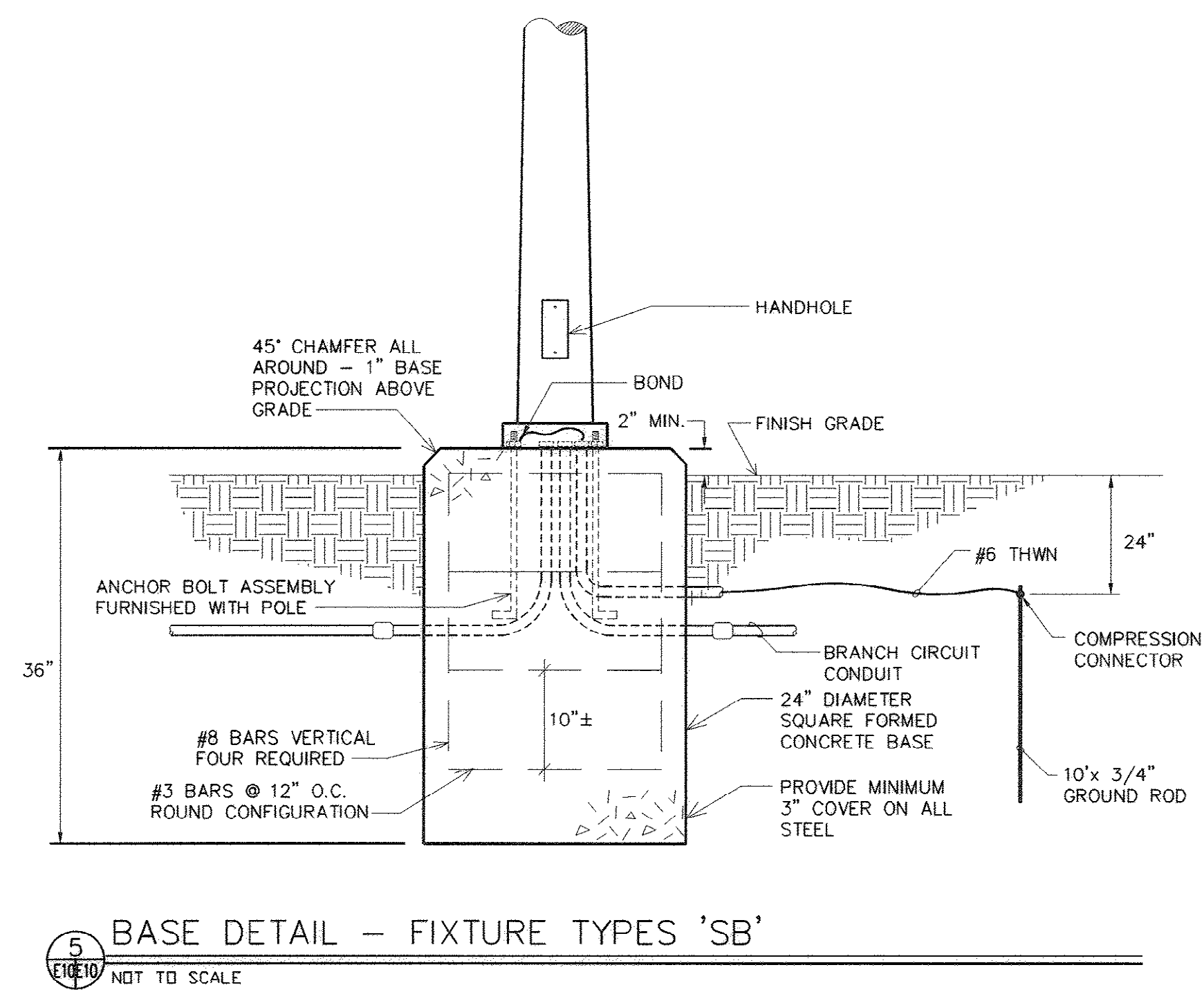
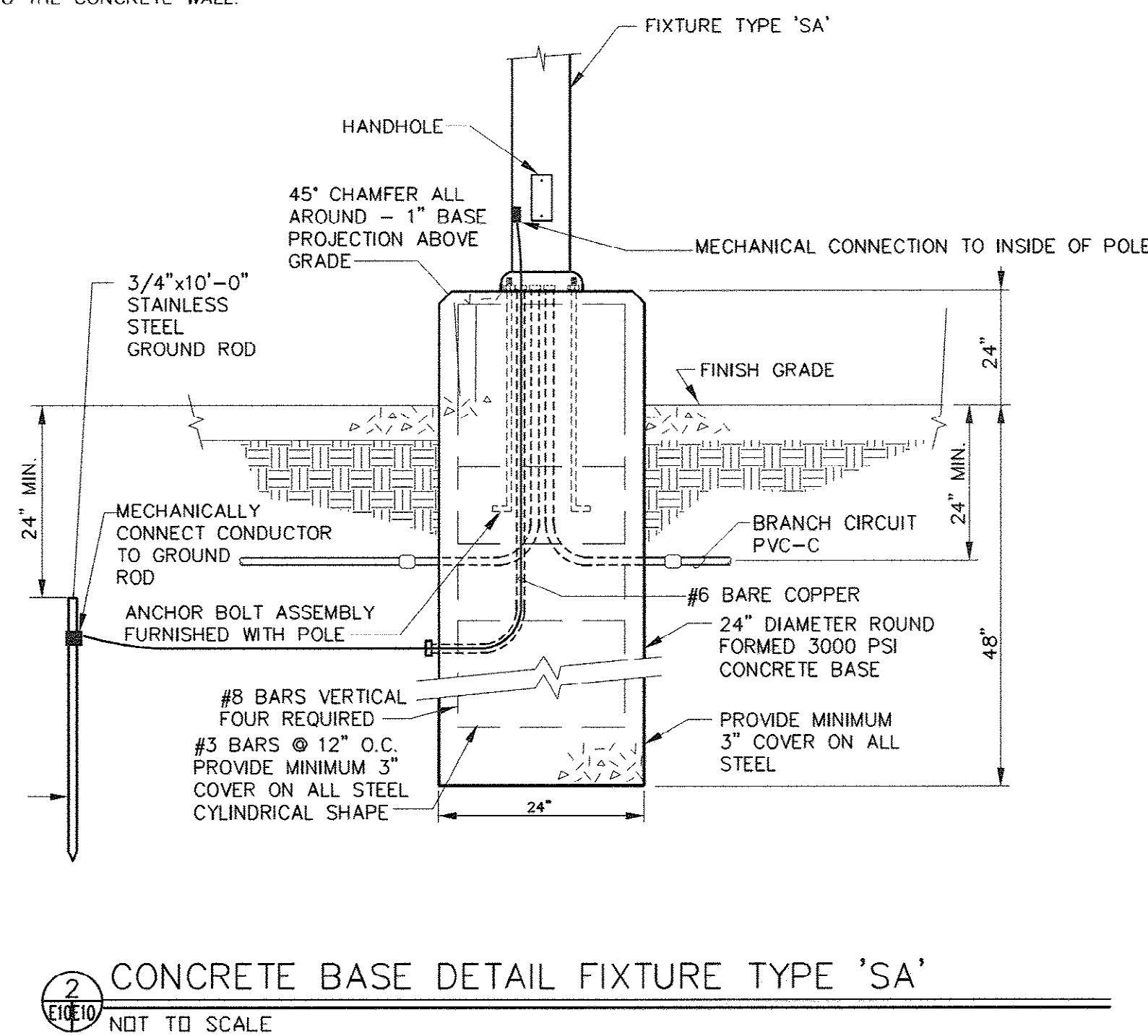
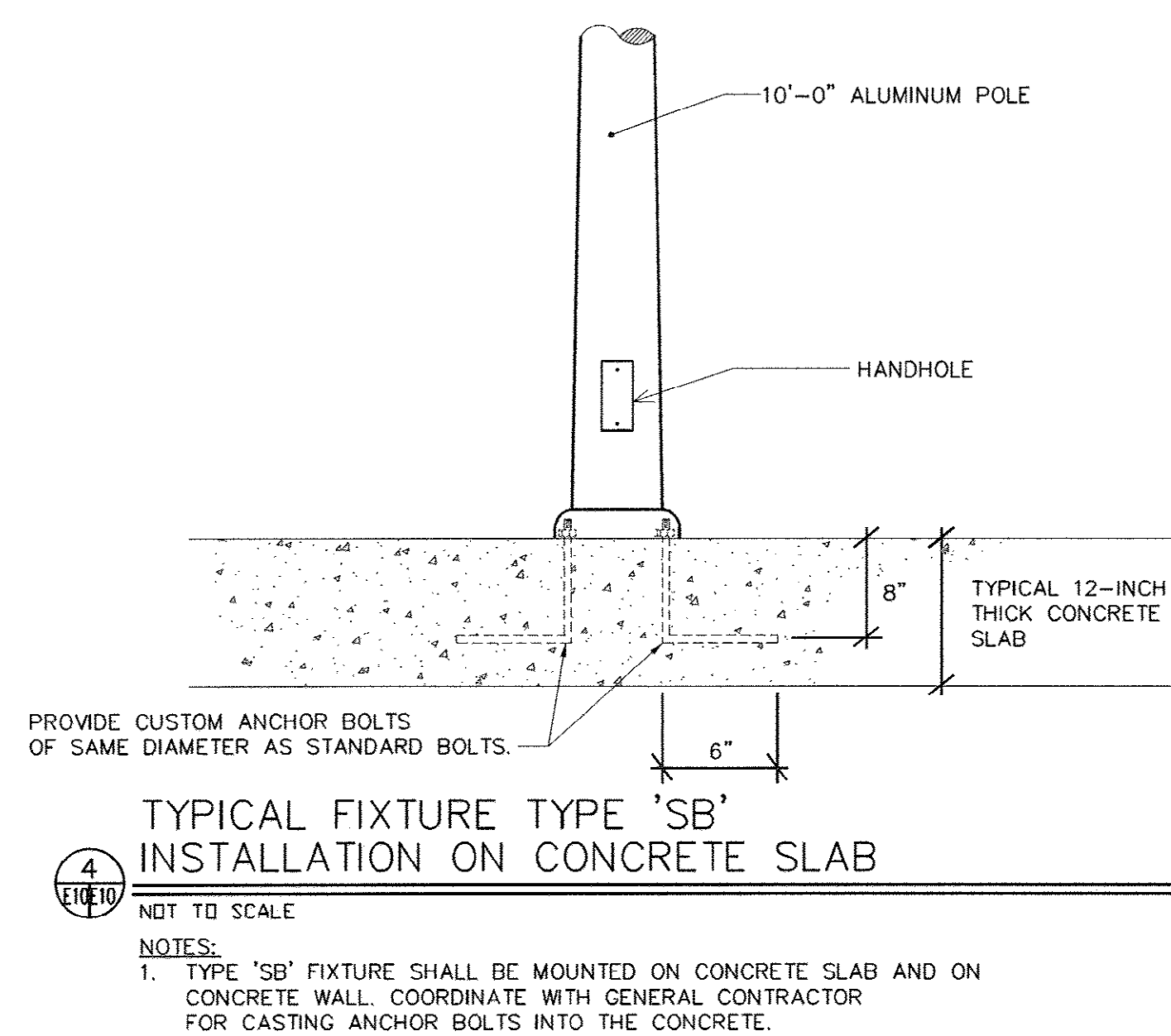
SHEET NO. E-10

OF: 17



LIGHTING FIXTURE SCHEDULE										Post Of Charlotte
FIXTURE TYPE	MANUFACTURER & CATALOG INFORMATION	LAMPS		BALLAST		TOTAL WATTS	DESCRIPTION		Telephone Fax-704	
		QTY.	TYPE	WATTS	QTY.					TYPE
A	LITHONIA TCAL 2-32-120-GEB-AL-WGSASR11(2) OR EQUIVALENT FROM HUBBELL	2	F32T8	32	1	ELECTRONIC	58	58	FLUORESCENT SUSPENDED, CORROSION RESISTANT ALUMINUM BODY STRIP LIGHT, 8-FOOT LONG, WITH 11-GAUGE WIRE GUARD.	
B	HUBBELL PGS-A100S-128-1-PBT-1	1	HPS	100	1	HPF	130	130	EXTERIOR WALL MOUNTED FIXTURE WITH PHOTOCCELL SWITCH. MUST MATCH EXISTING SIMILAR TYPE LIGHT FIXTURE.	
C	HUBBELL NVB15GHG-NVB	1	A21	150	-	-	-	150	WALL MOUNTED FIXTURE WITH GASKET, HEAT RESISTANT GLOBE AND GUARD. SUITABLE FOR WET LOCATIONS, WITH WALL MOUNTING ARM, OUTLEET BOX AND 90°C WIRING CONNECTION. NON-METALLIC, NEMA 4X.	
	HUBBELL/DUAL LITE LM40-12V-I-V-40G	2	SBT	7.2	-	-	-	14.4	12- VOLT OUTPUT, 120V INPUT, EMERGENCY BATTERY LIGHT WITH VOLTMEETER, SELF-TESTING, WIRE GUARDS AND TWO LIGHT HEADS.	
SA	LUMINAIRE: GE-M-2AC-25-S-O-A-1-G-MC2-F-J-U VERIFY, MUST MATCH EXISTING ONES. POLE: GE-R-R-T-A-25-SA-6S-7.0-4.5-C	1	HSP	250	1	AUTOREG. 120/208/240/277 VOLTS	300	300	AREA LIGHTING FIXTURE: IES DISTRIBUTION TYPE III. MUST MATCH EXISTING. 25 FOOT ROUND TAPERED SEAMLESS ALUMINUM ALLOY POLE. SATIN FINISH COMPLETE WITH HANDHOLE, GROUND LUG, TAPERED OVAL LUMINAIRE ARM 6'-0" LONG. CONNECT TO 208V EXISTING CIRCUIT.	
SB	LUMINAIRE: GE-P17M-10-S-O-A-2-AMN3-GRU + PE SWITCH POLE: GE-ARTA-10-3S-5.0-B-SN-A (TYPE III IES DISTRIBUTION) WITH PE SWITCH	1	HPS	100	1	AUTOREG. 120/208/240/277 VOLTS	130	130	POST TOP LIGHT FIXTURE ON 3-INCH DIAMETER SCHEDULE 40 ALUMINUM POLE, 10'-0" LONG. POLE SHALL HAVE 2 1/2" DIAMETER TENON. GRAY FINISH. PROVIDE PE SWITCH. CONNECT TO NEW 240 VOLT CIRCUIT.	

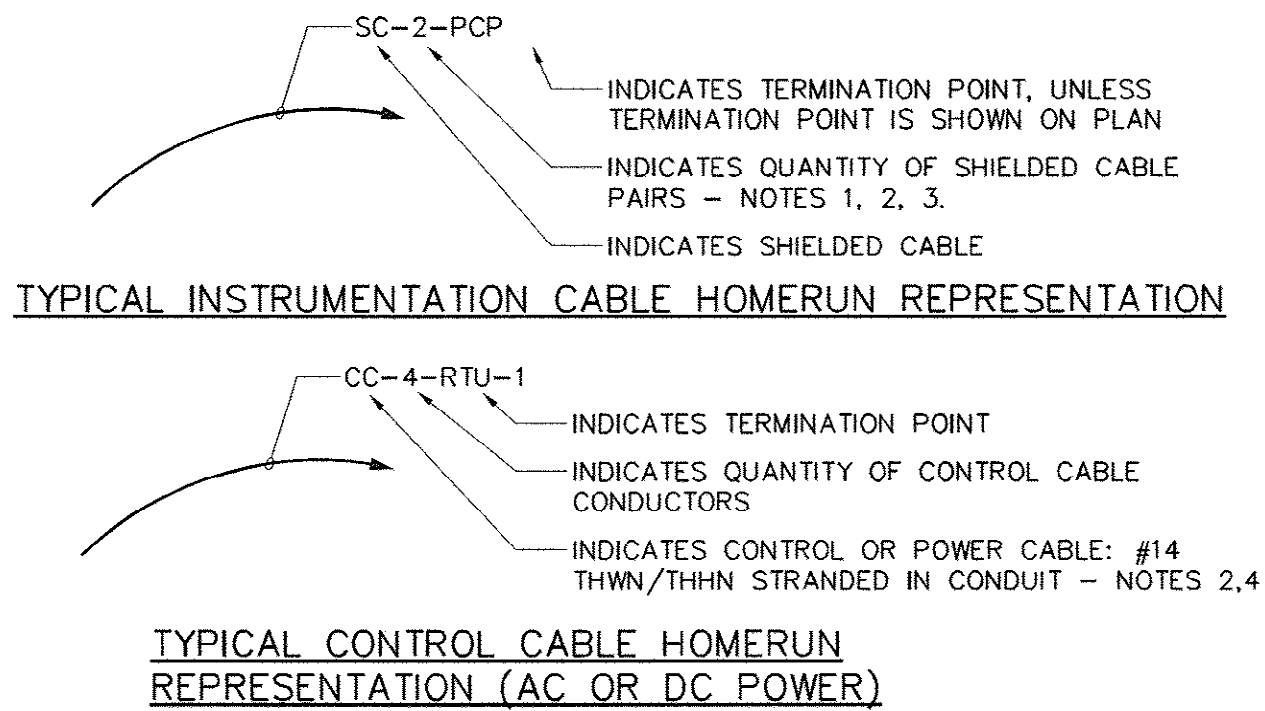
NOTES:
1. EQUIVALENT FIXTURES, AS JUDGED BY THE ENGINEER, FROM DAYBRITE, G.E., WILLIAMS, STONCO, COOPER LIGHTING, WIDELITE OR HUBBELL, ARE EQUALLY ACCEPTABLE.



AS-BUILT

33-014-037/49 2W

Modified Apr. 26, 2006. Modified by: Seth
Scale: 1/8"=1'-0"
Printed: Nov. 18, 2008 - 3:42pm. Printed by: Justin Olson, A 137019-BULL CREEK PUMP STATION 2, 3000-Durham St. 2008-11-18
E-11



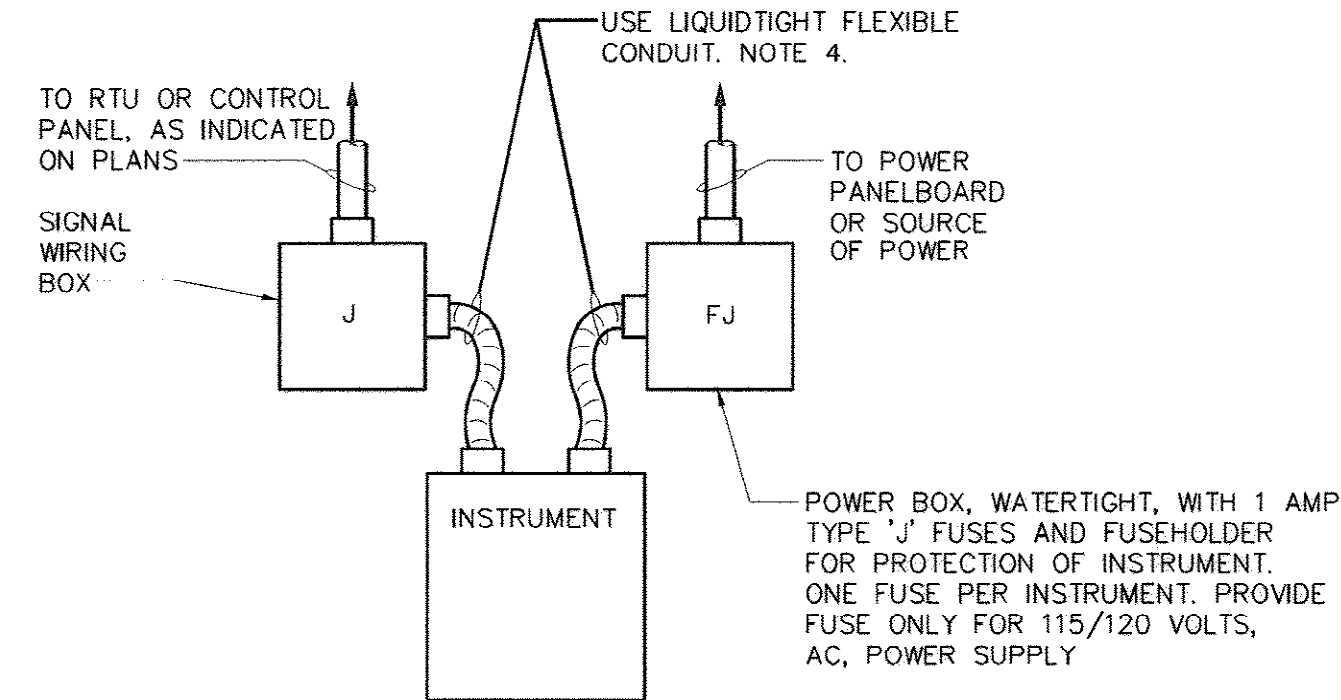
CONTROL AND INSTRUMENTATION CABLE HOMERUN LEGEND AND PLAN REPRESENTATION

1. SHIELDED CABLES FOR INSTRUMENTATION AND CERTAIN POWER APPLICATIONS, "SC" CABLES, SHALL BE #16 TWISTED PAIR, STRANDED, BELD FOIL ALUMINUM-POLYESTER 100% SHIELDED COVERAGE CHROME PVC JACKET OR EQUIVALENT FOR INDOOR APPLICATIONS. USE SIMILAR CABLE, FOR OUTDOOR, OR BELOW GRADE OR BELOW-SLAB APPLICATIONS, EXCEPT WITH FLUORINATED ETHYLENE-PROPYLENE JACKET. REFER TO SECTION 16158 FOR SPECS.
2. DO NOT MIX SHIELDED CABLES AND NON-SHIELDED CONTROL CONDUCTORS IN SAME CONDUIT.
3. IF NO QUANTITY IS GIVEN IT IS TO REQUIRE ONE (1) CABLE.
4. PROVIDE EQUIVALENT GROUNDING CONDUCTOR IN EACH "CC" CONDUIT RUN IN ADDITION TO THE INDICATED CONDUCTORS.

INSTRUMENTATION AND CONTROL CABLES CONDUIT CHART

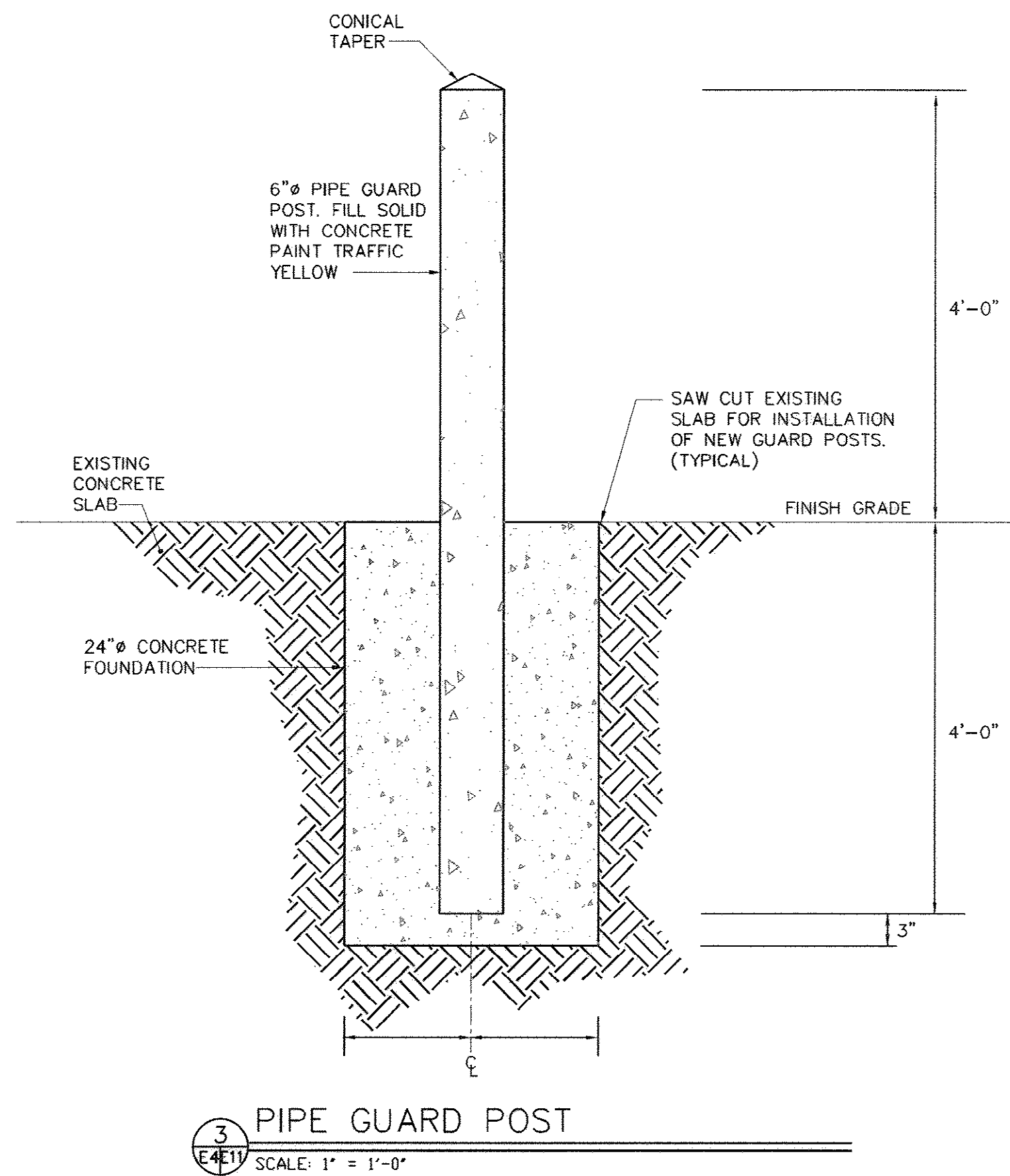
CONDUIT SIZE - INCHES NOTE *	MAXIMUM SC SHIELDED CABLES	MAXIMUM THHN/THWN CONDUCTORS #14 AWG
3/4	2	21
1	4	33
1 1/4	6	52
1 1/2	9	76
2	16	133
2 1/2	25	200
3	50	291

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



TYPICAL INSTRUMENT CONNECTION REQUIREMENTS - DETAIL

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



REVISIONS			
SYM.	DESCRIPTION	DATE	BY

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TYPICAL PANEL DIAGRAM					
BRANCH CIRCUIT WIRE COLOR					
120/208 OR 120/240	POLE NUMBER	120/208 OR 120/240	277/480	POLE NUMBER	277/480
BROWN	1	BLACK	BROWN	1	BROWN
ORANGE	3	RED	ORANGE	3	ORANGE
YELLOW	5	BLUE	YELLOW	5	YELLOW
BROWN	7	BLACK	BROWN	7	BROWN
ORANGE	9	RED	ORANGE	9	ORANGE
YELLOW	11	BLUE	YELLOW	11	YELLOW
ETC.	ETC.	ETC.	ETC.	ETC.	ETC.
NEUTRAL					
120/240 OR 120/208 VOLTS - WHITE					
277/480 VOLTS - WHITE WITH IDENTIFIABLE COLOR STRIPE (NOT GREEN). IF NOT AVAILABLE AT TIME OF INSTALLATION, CLEAR USE OF GRAY WITH ELECTRICAL INSPECTOR.					
GROUND WIRE, WHEN USED OR CALLED FOR, SHALL BE GREEN FOR ALL VOLTAGES.					

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Southern Pines, North Carolina 28387
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MISCELLANEOUS DETAILS

BULL CREEK WTP
FINISHED WATER PUMP
STATION NO. 2
GRAND STRAND WATER & SEWER AUTHORITY

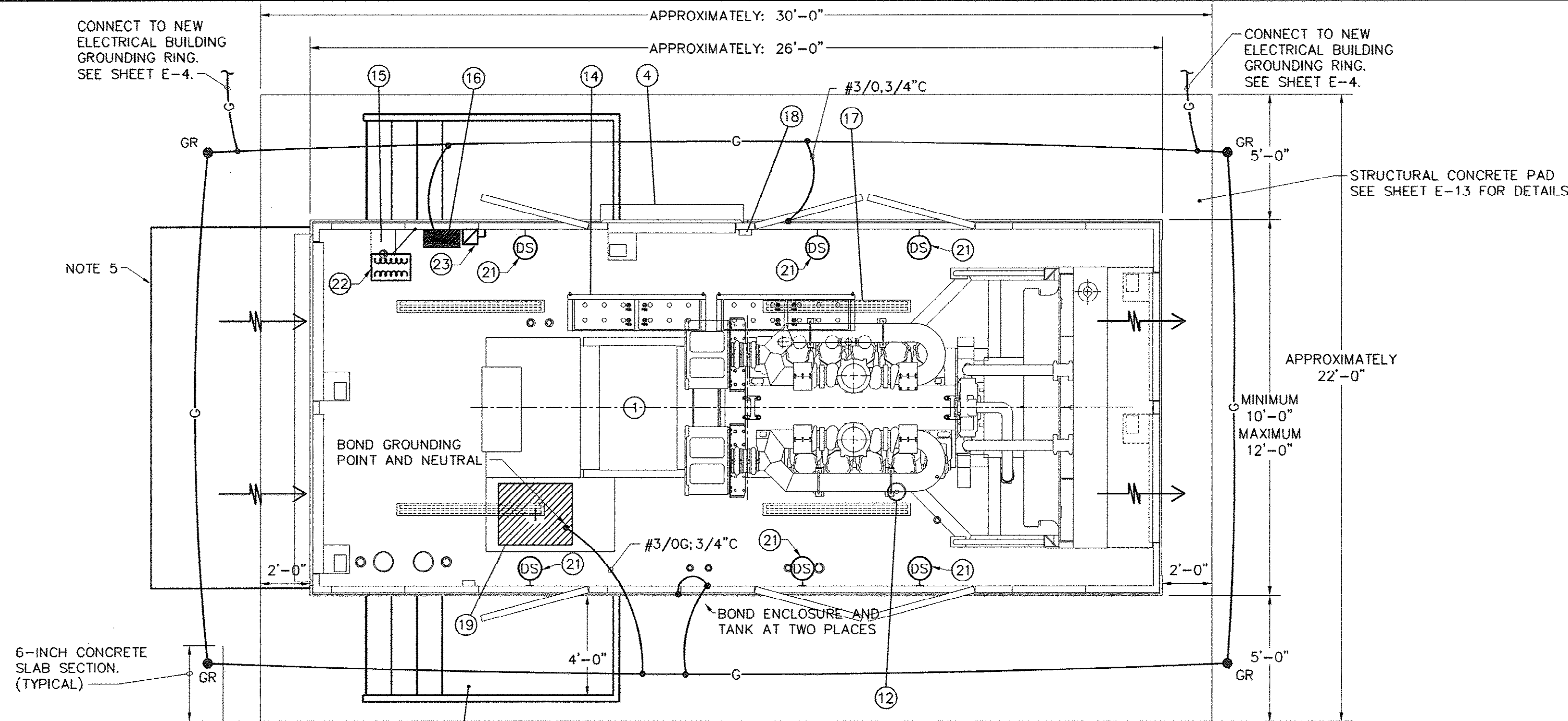
DATE:	SEPT. 2008
DESIGNED:	DL
DRAWN:	DM
CHECKED:	DL
SCALE:	AS SHOWN

SHEET NO.
E-11

AS-BUILT

33-014-038/49 W

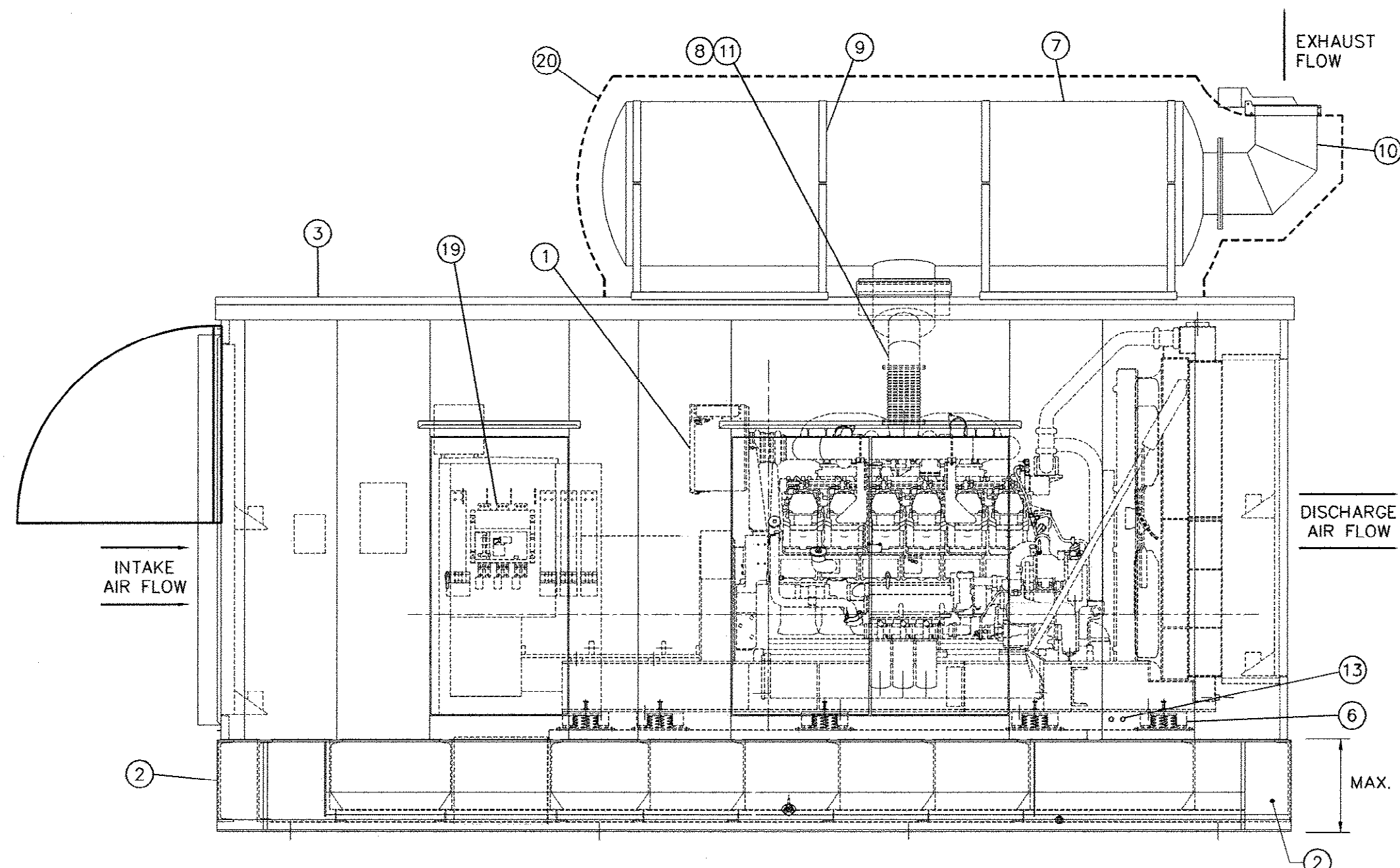
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PROVIDE TWO SETS OF ALUMINUM PLATFORM AND STEPS, FINISH TO MATCH GENERATOR SET. NUMBER OF STEPS AND QUANTITY AS REQUIRED BY HEIGHT OF TANK AND OSHA REGULATIONS.

ENGINE GENERATOR SET - PLAN VIEW

NOT TO SCALE



ENGINE GENERATOR SET - RIGHT SIDE VIEW

NOT TO SCALE

NEW GENERATOR SET PREFABRICATED WALK-IN WEATHERPROOF HOUSING PLAN

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

NOTES:

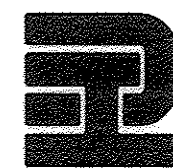
1. PROVIDE ALL THE NECESSARY GRADING AND EARTH BACKFILLING TO ACCOMPLISH PAD ELEVATIONS INDICATED.
2. EXACT DIMENSIONS SHALL BE ADJUSTED TO FIT ENGINE GENERATOR SET AND EQUIPMENT SUBMITTAL.
3. HOUSING OUTLETS AND HOUSING EQUIPMENT SHALL BE FACTORY PROVIDED WITH EQUIPMENT, CONDUIT, MATERIALS AND METHODS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

COMP	QTY	DESCRIPTION
1	1	1360 KW PRIME RATED DIESEL ENGINE GENERATOR SET.
2	1	PROVIDE UL LABELED "IN-BASE" FUEL TANK WITH CAPACITY FOR 4000-GALLON RATED FUEL TANK. PROVIDE 10% CAPACITY SECONDARY CONTAINMENT TANK, LOW FUEL LEVEL ALARM SWITCHES, SECONDARY CONTAINMENT ALARM SWITCHES AND SIX-POINT LIFT PROVISIONS
3	1	ALUMINUM ENCLOSURE - WITH (2) 36W X 72H AND (2) 72W X 72H ACCESS DOORS AND STAINLESS STEEL DOOR HANDLES AND HINGES (APPROXIMATE DIMENSIONS)
4	3	MOTORIZED AIR INTAKE LOUVER WITH STAINLESS STEEL WIRE MESH BIRDSCREEN
5	2	MOTORIZED RADIATOR DISCHARGE LOUVER
6	10	VIBRATION SPRING ISOLATORS
7	1	EXHAUST SILENCER - CRITICAL GRADE
8	1	WYE TYPE EXHAUST FLEXIBLE CONNECTION WITH RAINSKIRT
9	4	SILENCER MOUNTING BRACKET
10	1	90 DEGREE EXHAUST ELBOW WITH RAINCAP
11	1	THERMAL INSULATION BLANKET GROUP FOR FLEX CONNECTION, MANIFOLDS AND TURBOCHARGER
12	1	FUEL/WATER SEPARATOR
13	1	OIL, WATER AND FUMES DISPOSAL LINES
14	1	BATTERIES, RACKS, CABLES AND 120VAC, 75 WATT HEATER PADS WITH THERMOSTAT
15	1	BATTERY CHARGER - 24VDC, 10 AMP
16	1	WALL MOUNTED PANELBOARD "GP" AS SCHEDULED ON SHEET E-8.
17	4	INTERIOR FLOURESCENT LIGHT WITH (2) 3-WAY WALL SWITCHES
18	2	DUPLEX RECEPTACLE - 120VAC, 20 AMP, GFI PROTECTED
19	1	CIRCUIT BREAKER - 2500 AMP, 3-POLE WITH 24VDC SHUNT TRIP AND GROUND FAULT ALARM - 100% RATED.
20	1	INSULATION, AS SPECIFIED, FOR SILENCER AND RELATED PIPING WITH ALUMINUM SHEATHING/WEATHER PROTECTING JACKET
21	1	PROVIDE DOOR MONITORING SWITCHES WITH N.C. CONTACTS.
22	1	480-240/120V, 1-PHASE DRY TYPE TRANSFORMER - 25KVA
23	1	100A, 2P FUSED SWITCH SUITABLE FOR SERVICE ENTRANCE.

REVISIONS			
SYM.	DESCRIPTION	DATE	BY

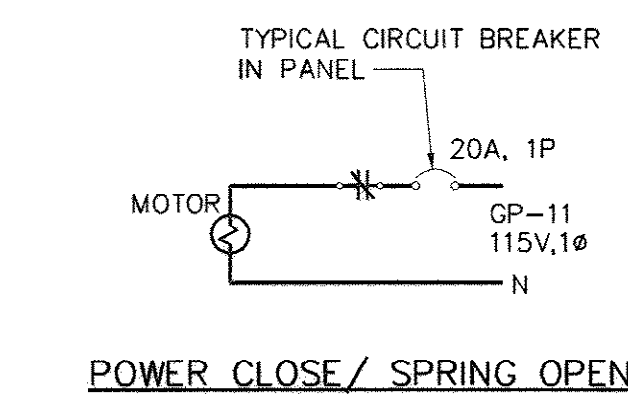
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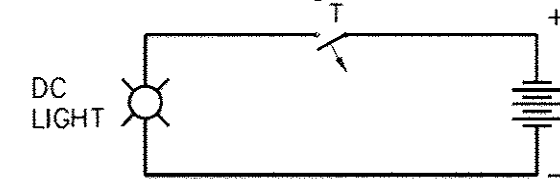


ENGINE GENERATOR SET PLAN AND DETAILS

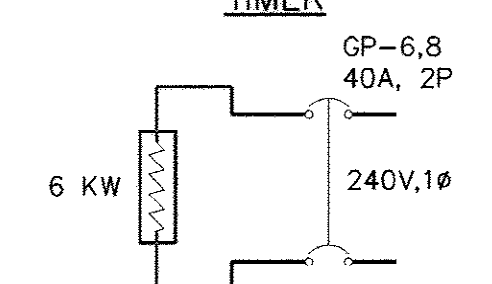
BULL CREEK WTP
FINISHED WATER PUMP
STATION NO. 2
GRAND STRAND WATER & SEWER AUTHORITY



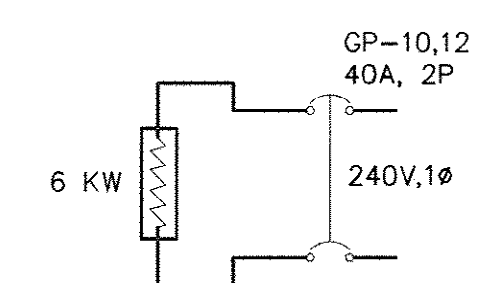
POWER CLOSE / SPRING OPEN



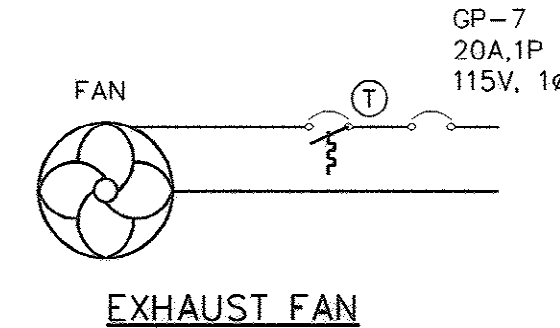
TIMER



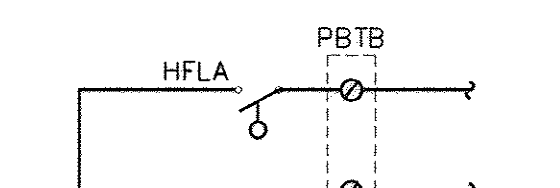
JACKET WATER HEATER #1



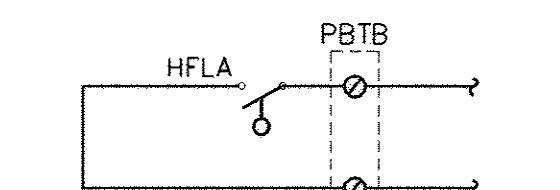
JACKET WATER HEATER #2



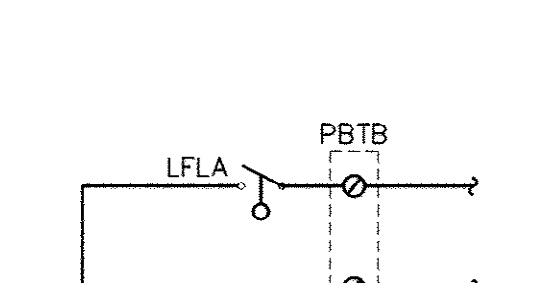
EXHAUST FAN



INTERSTITIAL FUEL TANK RUPTURE ALARM



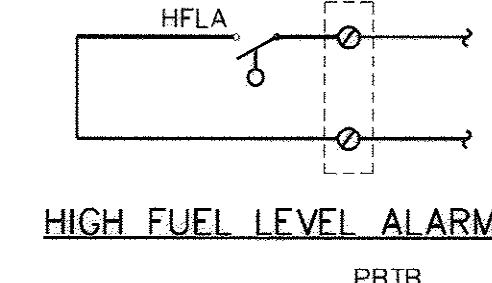
FUEL TANK RUPTURE ALARM



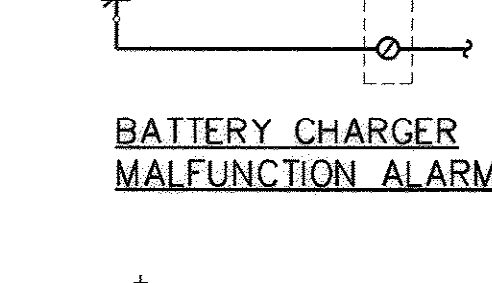
LOW FUEL LEVEL ALARM



HIGH FUEL LEVEL ALARM



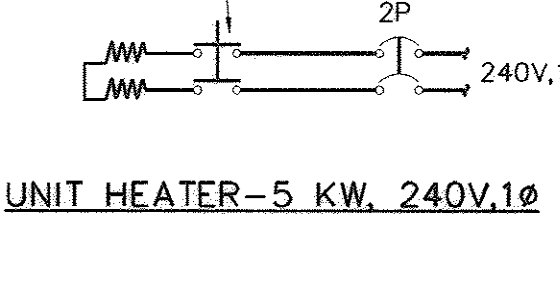
BATTERY CHARGER MALFUNCTION ALARM



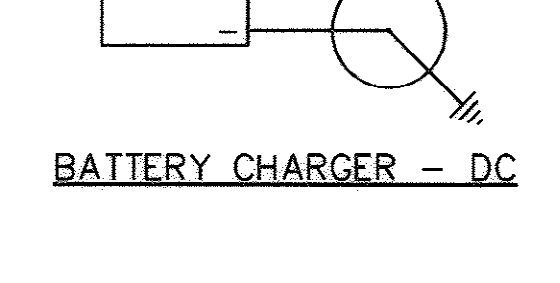
FUEL GAUGE CIRCUIT



UNIT HEATER-5 KW. 240V, 1Ø



BATTERY CHARGER - DC



BATTERY CHARGER - AC

GENERATOR SET ENCLOSURE - ACCESSORY WIRING - CONNECT ALL LINE VOLTAGE WIRE TO PANEL

NOT TO SCALE

NOTE:

1. TANK INSTALLER MUST OBTAIN SEPARATE TANK PERMIT TO SATISFY EPA AND STATE ENVIRONMENTAL PROTECTION REGULATIONS.
2. ALARMS SHOWN HERE SHALL BE TRANSMITTED TO RTU-FP52 VIA MODBUS NETWORK CONNECTION AS SPECIFIED ON SECTION 16610.
3. PROVIDE ADDITIONAL CIRCUITS AS REQUIRED TO WIRE ALL ELECTRICAL ITEMS IN THE ENCLOSURE.
4. PROVIDE ADDITIONAL ALARMS AND CONTROLS TO SATISFY IBC2003.

AS-BUILT

33-014-039/49 W

DATE: SEPT. 2008

DESIGNED: DL

DRAWN: DM

CHECKED: DL

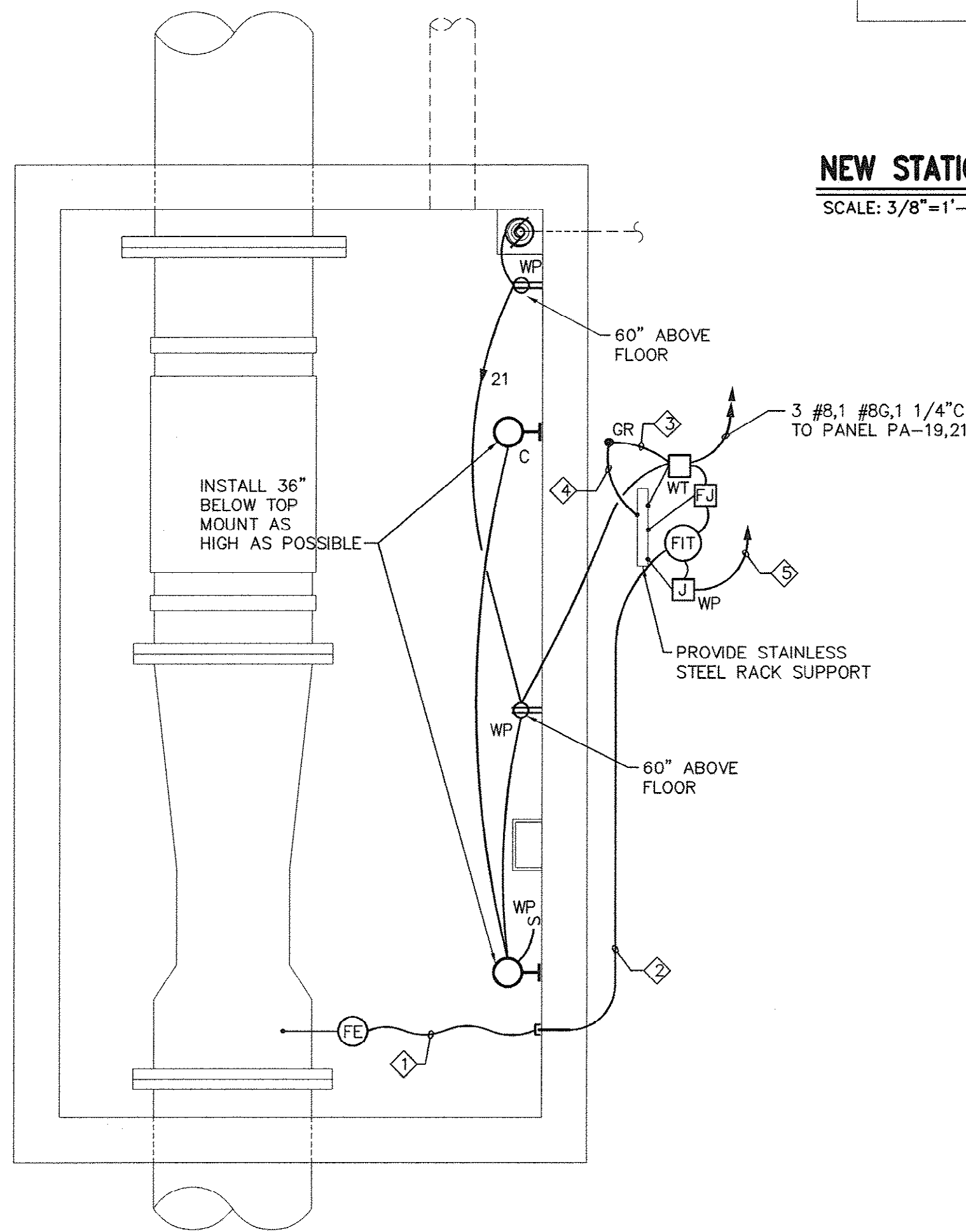
SCALE: AS SHOWN

SHEET NO.

E-12

OF: 17

Modified May 10, 2007 Modified By: SSB
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Printed: Nov 18, 2008 - 3:15pm - Printed By: Admin_Glass, M:\31010-Bull Creek Water Pump Station\Drawings\AS-Built\Sheet E-14.dwg, PLOT



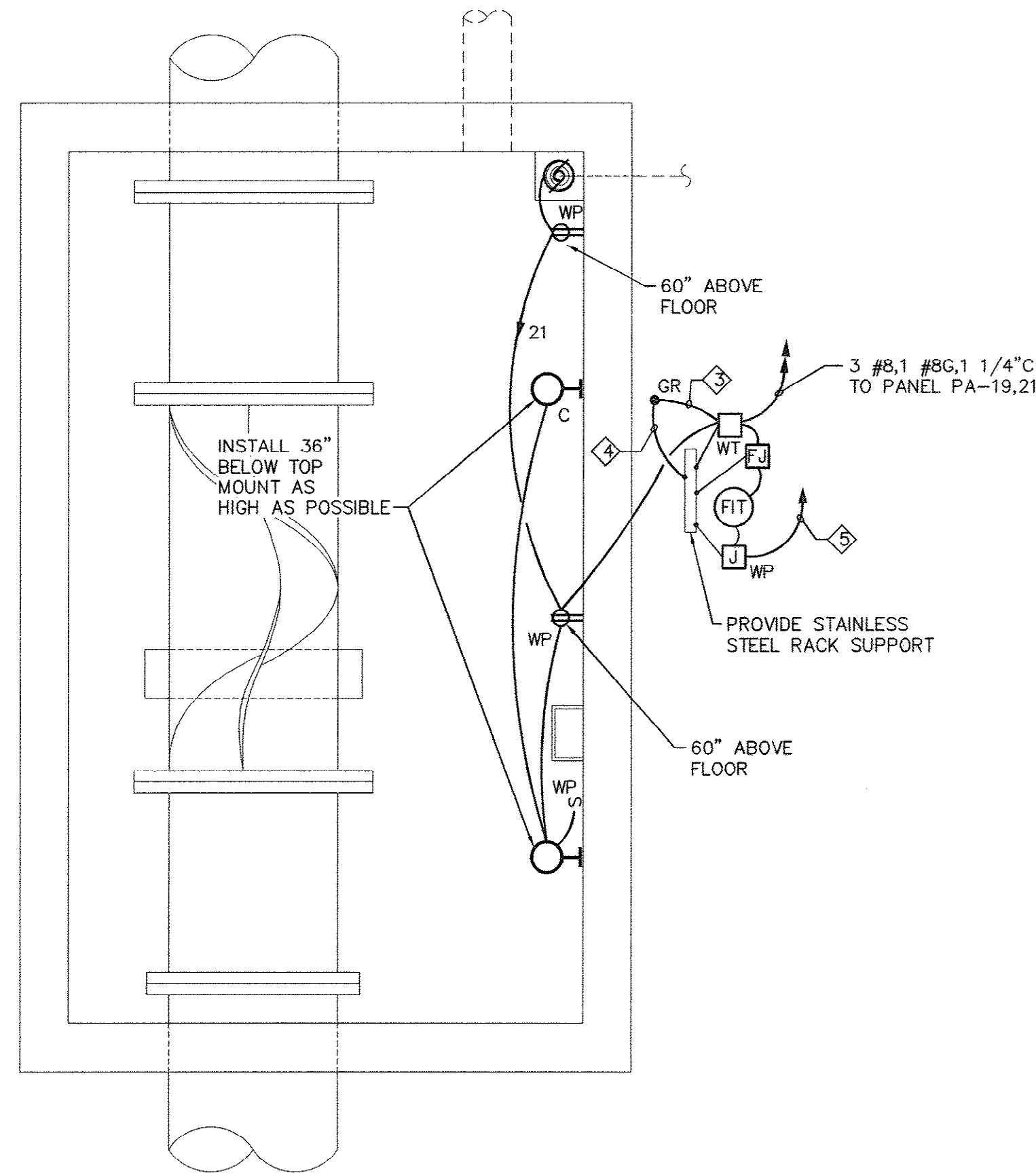
1 NEW VENTURI FLOW METER VAULT - ELECTRICAL PLAN
SCALE: 3/8"=1'-0"

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

NEW STATIC MIXER VAULT - ELECTRICAL PLAN

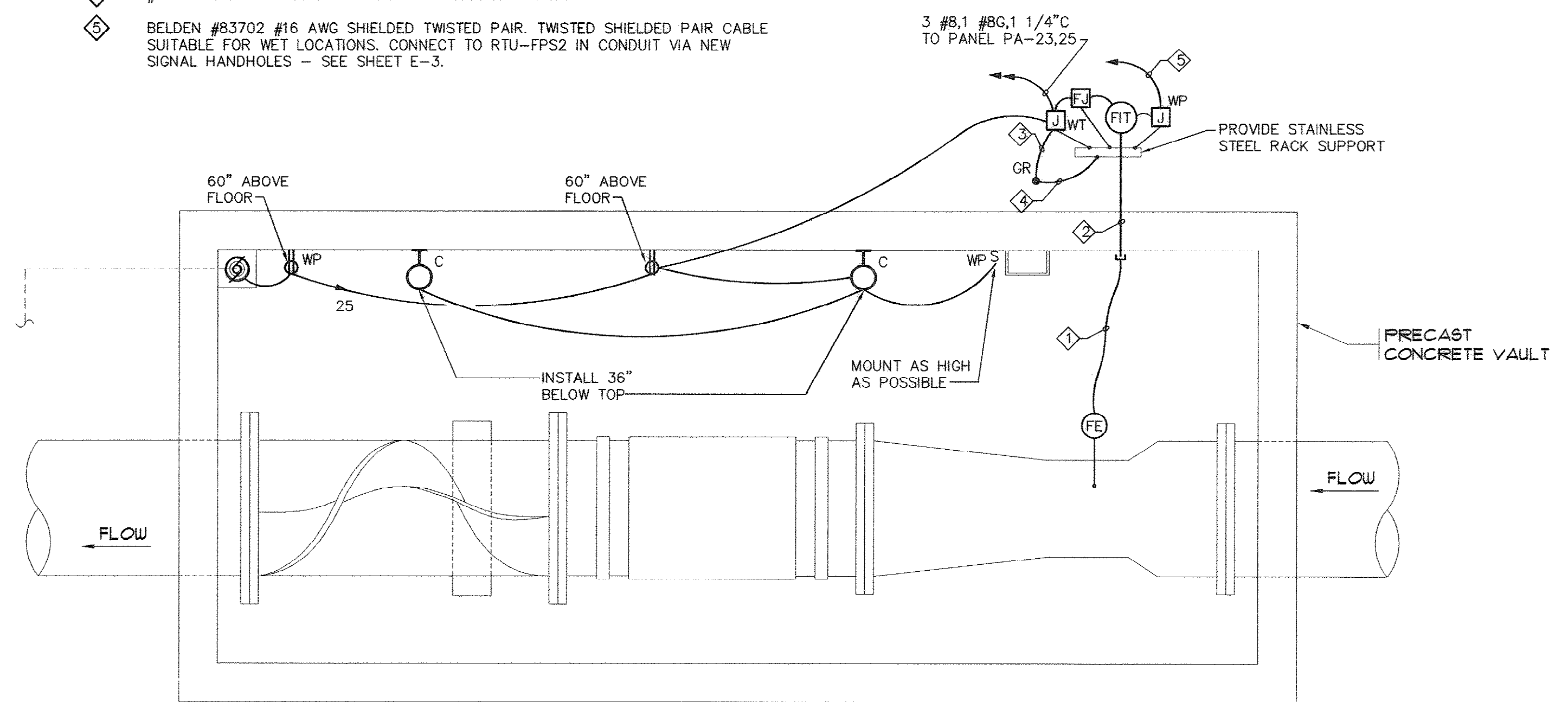
SCALE: 3/8"=1'-0"

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



KEYED NOTES

- 1 CABLE TO BE FURNISHED WITH METER.
- 2 1 1/4" C INSTALL CABLE
- 3 #8G - CONNECT FROM GROUNDING ROD TO GROUNDING CONDUCTOR IN J. BOX. BOND TO J. BOX.
- 4 #8 Cu FROM GROUND ROD - BOND TO SUPPORT RACK.
- 5 BELDEN #83702 #16 AWG SHIELDED TWISTED PAIR. TWISTED SHIELDED PAIR CABLE SUITABLE FOR WET LOCATIONS. CONNECT TO RTU-FPS2 IN CONDUIT VIA NEW SIGNAL HANDHOLES - SEE SHEET E-3.



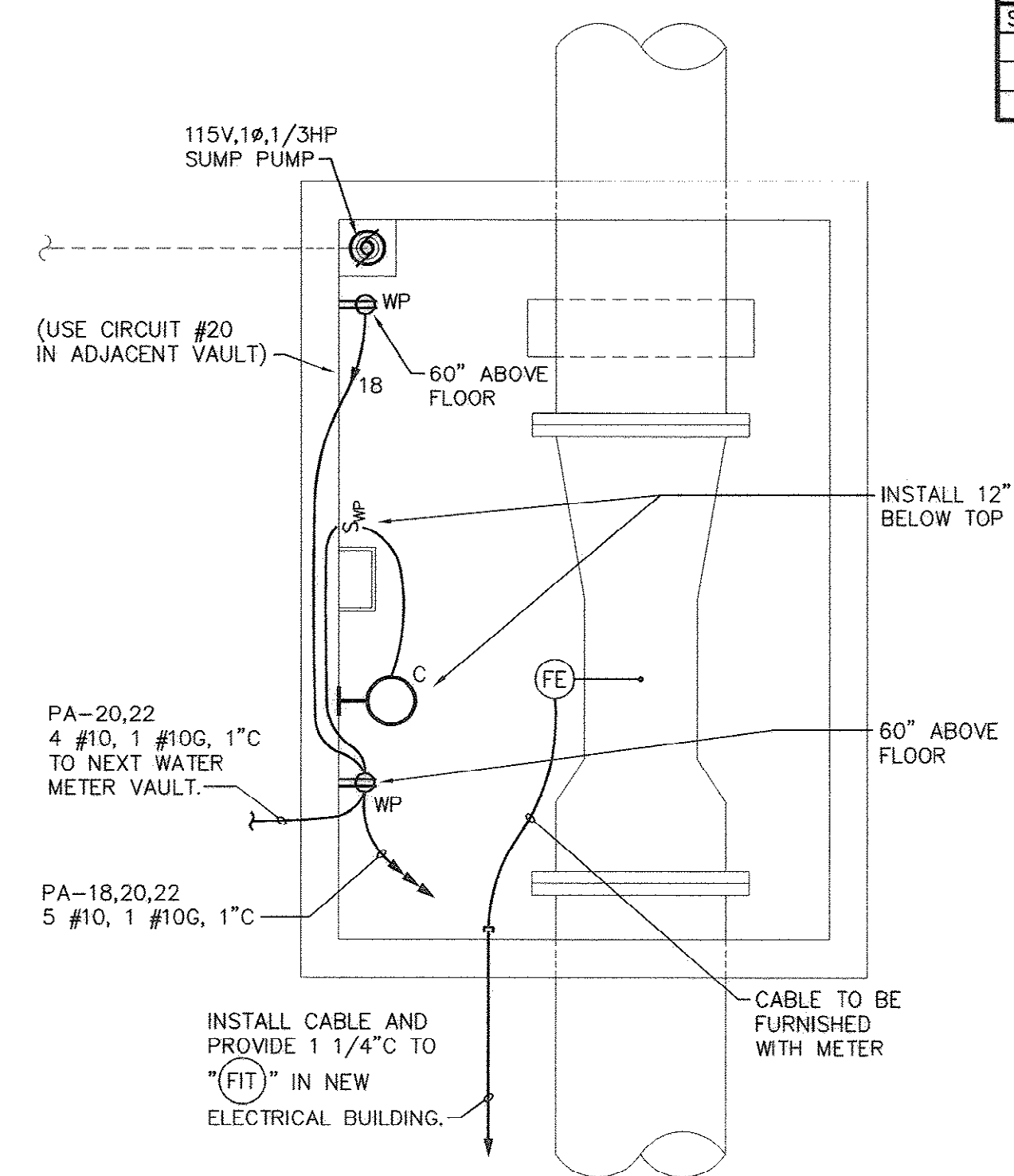
2 NEW CHEMICAL FEED VAULT ELECTRICAL PLAN
SCALE: 3/8"=1'-0"

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

3 TYPICAL NEW FINISHED WATER METER VAULT ELECTRICAL PLAN (TWO REQUIRED)

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

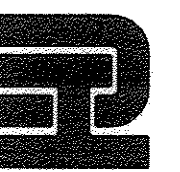
3/8" = 1'-0" 1' 0' 1' 2' 4'



REVISIONS			
SYM.	DESCRIPTION	DATE	BY

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**NEW METER VAULTS
DETAILS**

**BULL CREEK WTP
FINISHED WATER PUMP
STATION NO. 2
GRAND STRAND WATER &
SEWER AUTHORITY**

DATE: SEPT. 2008
DESIGNED: DL
DRAWN: DM
CHECKED: DL
SCALE: AS SHOWN
SHEET NO.

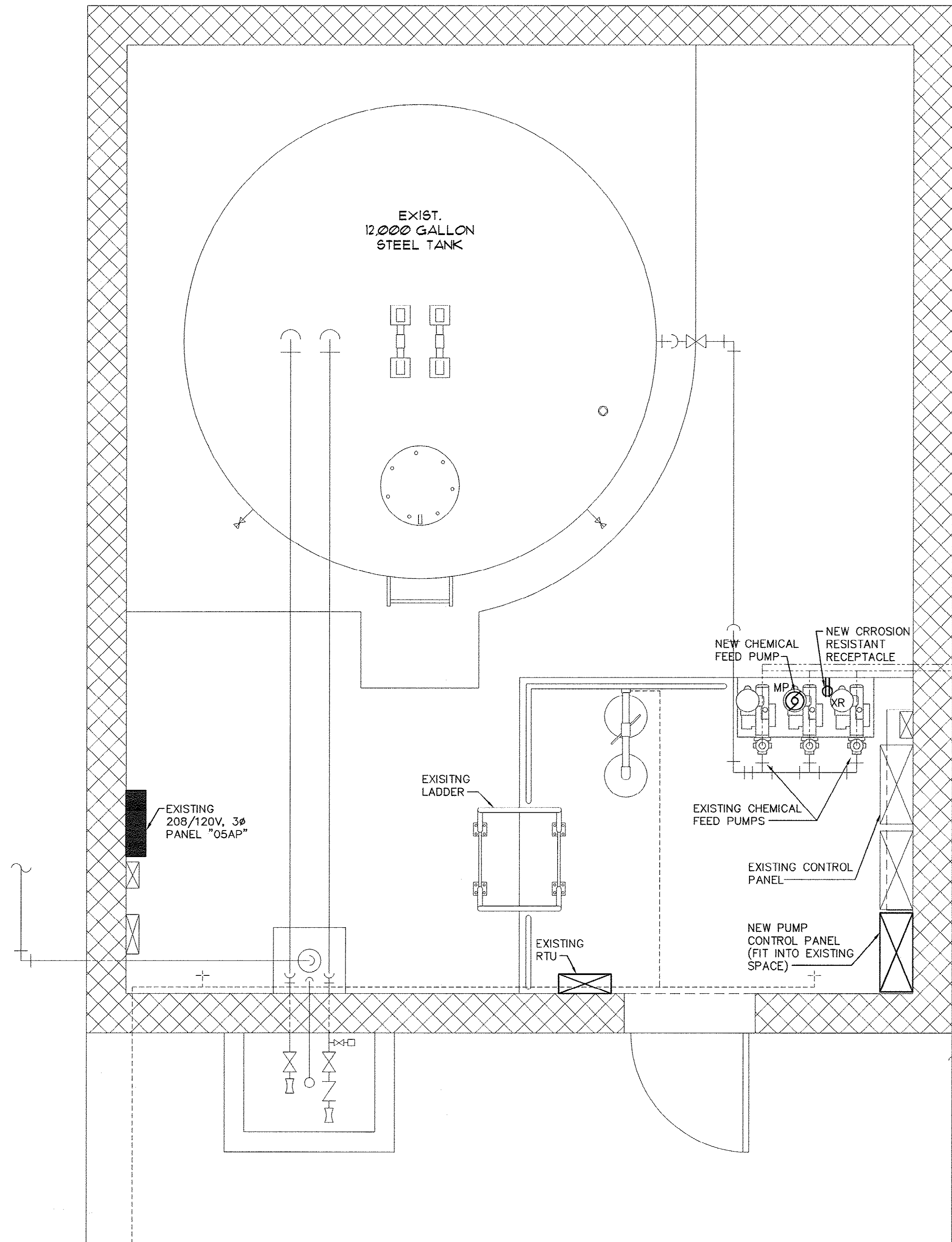
E-14

AS-BUILT

33-014-041/492



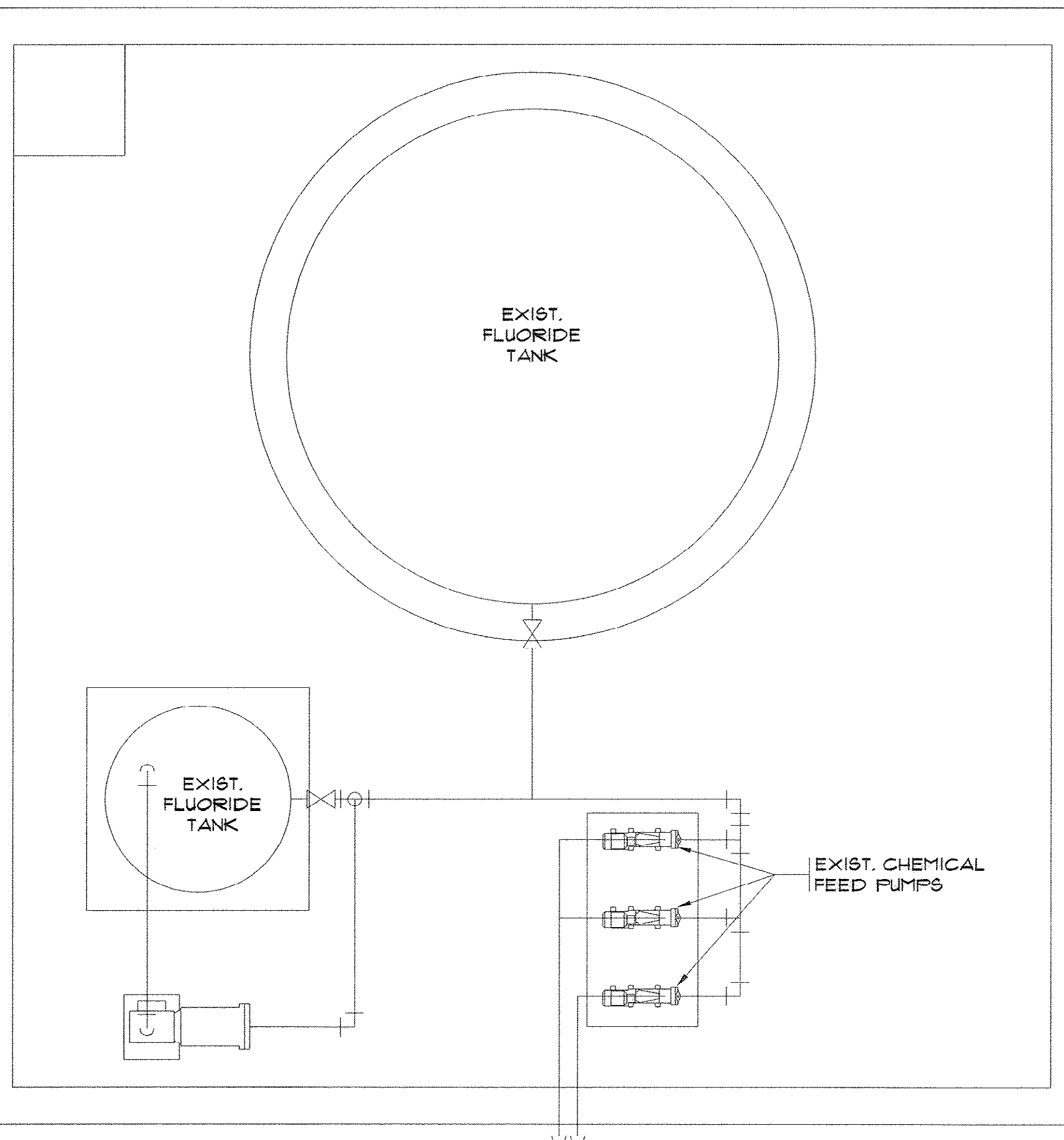
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1 EXISTING AMMONIA AND FLUORIDE FEED ELECTRICAL MODIFICATION PLAN

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

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



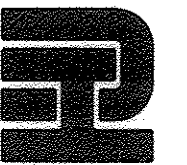
2 RISER DIAGRAM FOR CONNECTION TO NEW AMMONIA CHEMICAL FEED PUMP

SCALE: NONE

REVISIONS			
SYM.	DESCRIPTION	DATE	BY

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EXISTING AMMONIA AND
FLUORIDE FEED
ELECTRICAL
MODIFICATION PLAN

BULL CREEK WTP
FINISHED WATER PUMP
STATION NO. 2
GRAND STRAND WATER &
SEWER AUTHORITY

DATE: SEPT. 2008
DESIGNED: DL
DRAWN: DM
CHECKED: DL
SCALE: AS SHOWN

SHEET NO.
E-16

AS-BUILT

OF 17

33-014-043/49 W



SEE RISER DIAGRAM
1/E17/E17 FOR
REQUIRED ELECTRICAL
WORK.

NEW PUMP
CONTROL
PANEL

NEW CHEMICAL
FEED PUMP

NEW

NEW CHEMICAL
FEED PUMP
(TYP. OF 3)

NEW PUMP CONTROL
PANEL (TYP. OF 3)

**EXISTING WTP CHEMICAL FEED
LAYOUT MODIFICATION PLAN**

1
E 317

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

3/8" = 1'-0"

1' 0' 1' 2' 4'

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EXISTING WTP CHEMICAL FEED LAYOUT MODIFICATION PLAN

**BULL CREEK WTP
FINISHED WATER PUMP
STATION NO. 2
GRAND STRAND WATER &
SEWER AUTHORITY**

SHEET NO.

E-17

AS-BUILT

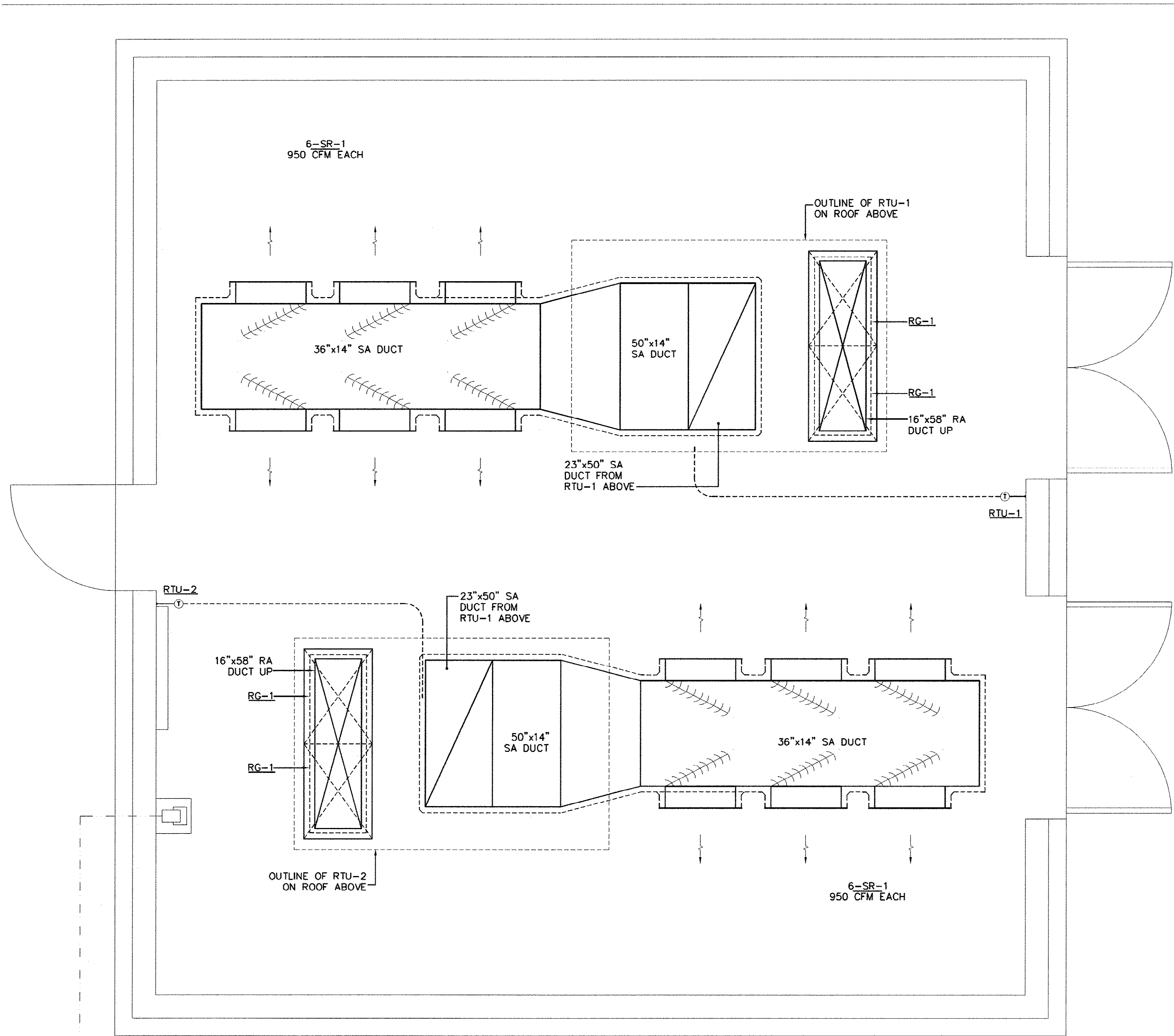
OF: 17

33-014-044/49 w

Modified: May 18, 2007 Modified By: Brockel Scale: 1/2" = 1'-0" Printed: Nov 18, 2008 11:46am Printed By: Admin_Cassidy, M.A. 1013-Bull Creek Water Pump Station No. 2, AS-Built Mechanical, AS-Built Mechanical, 1340p, M-1

AIR DISTRIBUTION DEVICE SCHEDULE							
DESIGNATION	SERVICE	CFM	PANEL SIZE	TYPE	FINISH	REMARKS	SELECTED ON
SR-1	SUPPLY REGISTER	950	24"x12"	VERTICAL FRONT BARS HORIZONTAL REAR BARS	S.S.	O.B.D.	NAILOR 67DV
RG-1	RETURN GRILLE	2850	24"x30"	STRAIGHT BARS	S.S.	-	NAILOR 67FV

- ① PROVIDE STAINLESS STEEL GRILLES AND REGISTERS.
② PROVIDE GASKETED MARGINS.



① HVAC FLOOR PLAN
SCALE: 1/2" = 1'-0"

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

REVISIONS			
SYM.	DESCRIPTION	DATE	BY

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Post Office Box 32515
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Telephone 704/376-7072
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KEYED NOTES

- ① ROOF TOP UNITS SHALL BE MANUFACTURED BY TRANE OR APPROVED EQUAL.
- ② GRILLE AND REGISTERS SHALL BE MANUFACTURED BY NAILOR OR APPROVED EQUAL.
- ③ INSTALL RTU'S ON FACTORY PROVIDED ROOF MOUNTING FRAMES SECURED TO THE STRUCTURE. PROVIDE FRAMES WITH SLOPED BASES TO MATCH THE PITCH OF THE ROOF SO THE UNIT IS INSTALLED LEVEL.
- ④ INSTALL AND CALIBRATE ROOM THERMOSTATS. INSTALL ALL CONTROL WIRING IN EMT CONDUIT. ROUTE CONDUIT TO THE UNIT WITHIN THE ROOF FRAME. PENETRATION OF THE ROOF IS NOT PERMITTED.
- ⑤ CONDENSATE DRAIN PIPING SHALL BE 1" HARD DRAWN TYPE "K" COPPER WATER TUBING WITH SWEATED FITTINGS.
- ⑥ CONSTRUCT DUCTWORK OF TYPE 3003-H14 TEMPERED ALUMINUM SHEETS TO SMAGNA STANDARDS. ALL JOINTS AND SEAMS SHALL BE SEALED WITH MASTIC SUCH AS UNITED DUCT SEALER OR HARDCAST IRON GRIP.
- ⑦ INSULATE DUCT WORK WITH 2" THICK RIGID 4.25 LB DENSITY FIBERGLASS DUCT INSULATION WITH ALUMINUM JACKETING. INSTALL WITH GRIP NAILS OR STICK PINS AT 12" O.C. AND WITH IN 2" OF EACH EDGE. VAPOR SEAL ALL SEAMS AND EDGES WITH 4" WIDE MATCHING ALUMINUM TAPE APPLIED WITH TALCOTE 70 WHITE ADHESIVE. PAINT WITH 2 COATS OF FLAT WHITE PAINT. PAINT AFTER CLEANING, PREPPING AND PRIMING. PAINT TOP, BOTTOM, SIDES AND ENDS. DO NOT PAINT STAINLESS STEEL REGISTERS.
- ⑧ PLACE UNITS IN OPERATION. CHECK BOTH HEATING AND COOLING MODES OF OPERATION. ADJUST THE AIRFLOWS TO THE CFM'S INDICATED ON THE DRAWINGS. SUBMIT A TESTING REPORT FOR EACH UNIT INDICATING THE CFM AT EACH AIR DEVICE, THE SPACE DRY BULB AND WET BULB TEMPERATURES, AND THE AMBIENT AIR DRY BULB AND WET BULB TEMPERATURE AT THE TIME OF TESTING.

MECHANICAL LEGEND

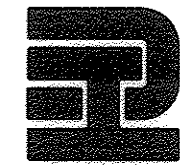
SYMBOL	DESCRIPTION
S.A.	SUPPLY AIR
R.A.	RETURN AIR
E.A.	EXHAUST AIR
O.A.	OUTSIDE AIR
①	THERMOSTAT
S.R.	SUPPLY REGISTER
- CD -	CONDENSATE DRAIN
RTU	ROOF TOP UNIT
O.B.D.	OPPOSED BLADE DAMPER
F.C.	FLEXIBLE CONNECTION
----	CONTROL WIRING

DRAWING INDEX

- M-1 HVAC FLOOR PLAN, MECHANICAL LEGEND, KEYED NOTES, AIR DEVICE SCHEDULE
M-2 HVAC ROOF PLAN, RTU SCHEDULE, CONDENSATE DRAIN DETAILS
M-3 SECTION - MECHANICAL EQUIPMENT

AS-BUILT

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HVAC FLOOR PLAN,
MECHANICAL LEGEND,
KEYED NOTES, AIR
DEVICE SCHEDULE

BULL CREEK WTP
FINISHED WATER PUMP
STATION NO. 2
GRAND STRAND WATER &
SEWER AUTHORITY

DATE: SEPT. 2008

DESIGNED: WG

DRAWN: CAD

CHECKED: RAM

SCALE: AS SHOWN

SHEET NO.

M-1

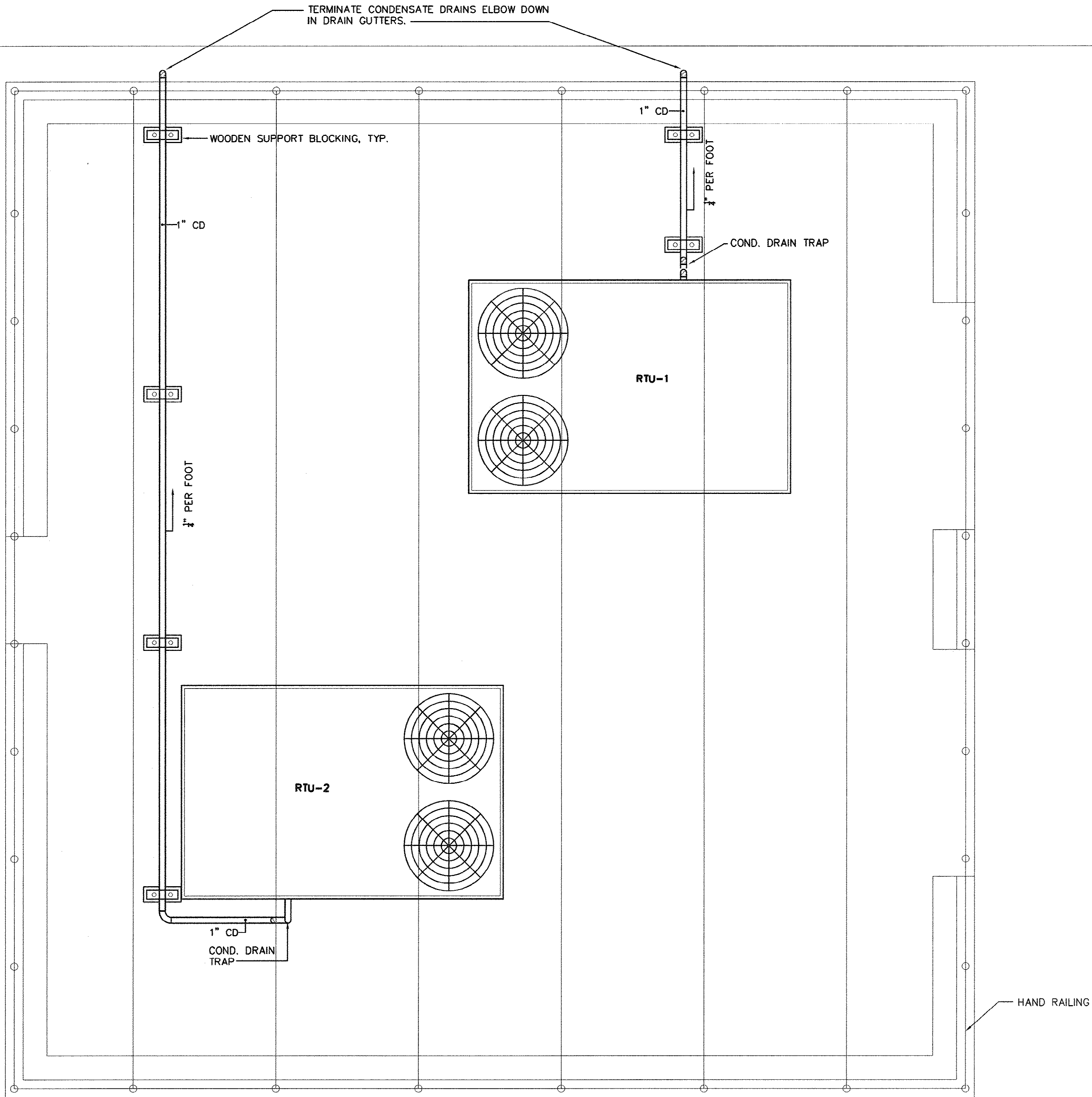
OF 3

33-014-045/49 25

Modified May 18, 2007 Modified By: BrockG Scale: 1/2" = 1'-0" Printed: Nov. 18, 2008 - 3:46pm Printed By: Adrian Green, M.A.S.S. 13015-BAL GREEN, P.E. 2300-C-Durham, NC 27704-AS-BUILT Electrical AS-BUILT Mechanical AS-BUILT Structural AS-BUILT

ROOFTOP UNIT SCHEDULE																				
DESIGNATION	LOCATION	NOMINAL TONS	CFM	EXT. S.P. IN W.G.	COOLING CAPACITY (BTU/HR)			O.A.T. °F	HEATING		MIN FAN MOTOR HP	MAX FAN MOTOR RPM	FAN MODEL	FILTERS	ELECTRICAL DATA					TRANE MODEL
					SENSIBLE	TOTAL	E.A.T. °F DB/WB		KW	VOLTS/PHASE					VOLTS/PHASE	FLA	MCA	WSA	MOCP	
RTU-1	FWP NO.2	12½	5,700	1.0	126,000	150,000	78/65	95	5.0	460/3	3.0	763	BELT	(2) 20"x20"x2" (4) 20"x25"x2"	460/3		31	40	40	TC151C4
RTU-1	FWP NO.2	12½	5,700	1.0	126,000	150,000	78/65	95	5.0	460/3	3.0	763	BELT	(2) 20"x20"x2" (4) 20"x25"x2"	460/3		31	40	40	TC151C4

- 1 PROVIDE UNIT WITH FINISHES SUITABLE FOR MARINE APPLICATION.
- 2 PROVIDE FULL PERIMETER ROOF CURB WITH SLOPED BASE TO MATCH ROOF SLOPE.
- 3 PROVIDE ALL OPERATING CONTROLS, INCLUDING THERMOSTATS.
- 4 PROVIDE LOW AMBIENT HEAD PRESSURE CONTROL DOWN TO 20°F AMBIENT.



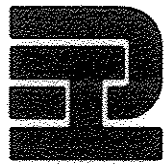
1 HVAC ROOF PLAN
M-2 SCALE: 1/2" = 1'-0"

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

REVISIONS			
SYM.	DESCRIPTION	DATE	BY

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HVAC ROOF PLAN, RTU
SCHEDULE, CONDENSATE
DRAIN DETAILS

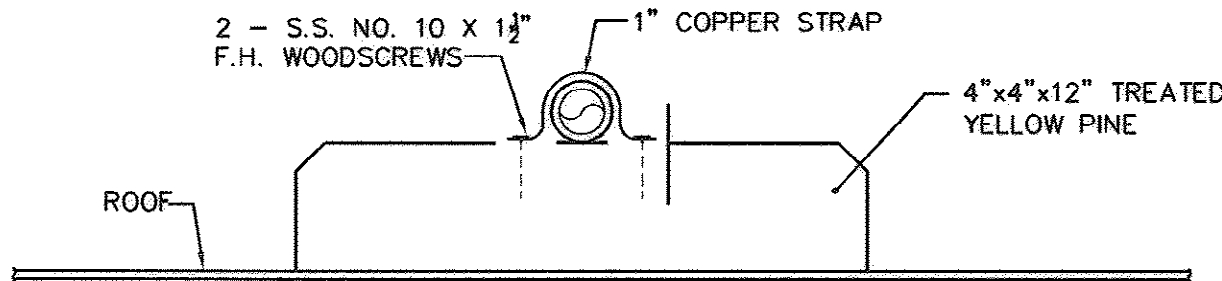
BULL CREEK WTP
FINISHED WATER PUMP
STATION NO. 2
GRAND STRAND WATER &
SEWER AUTHORITY

DATE: SEPT. 2008
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SCALE: AS SHOWN

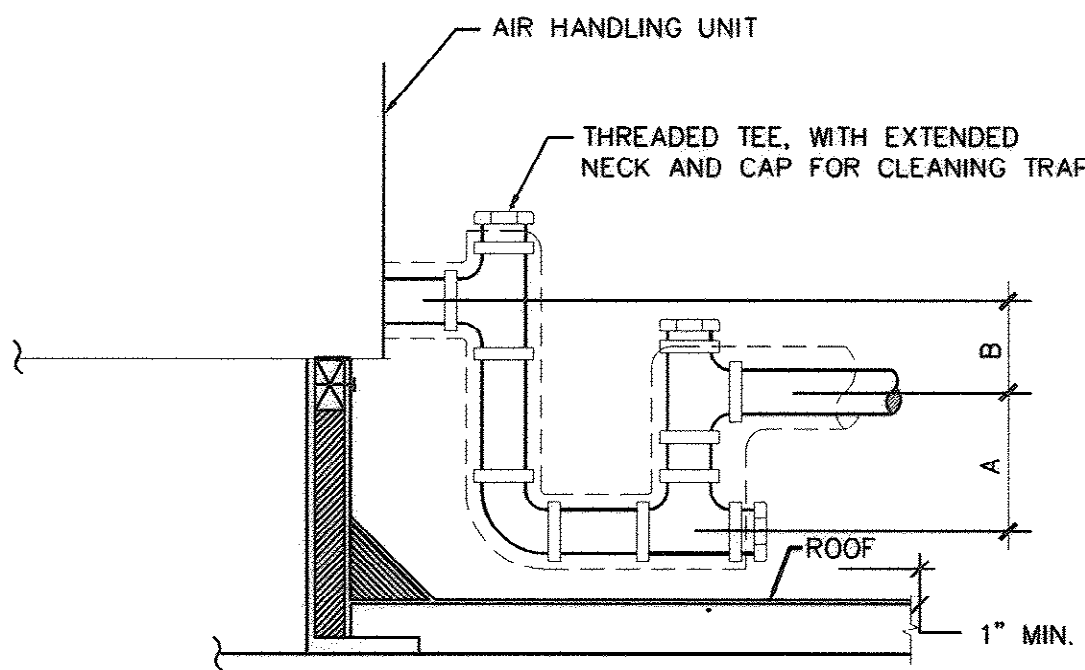
SHEET NO.

M-2

OF: 3



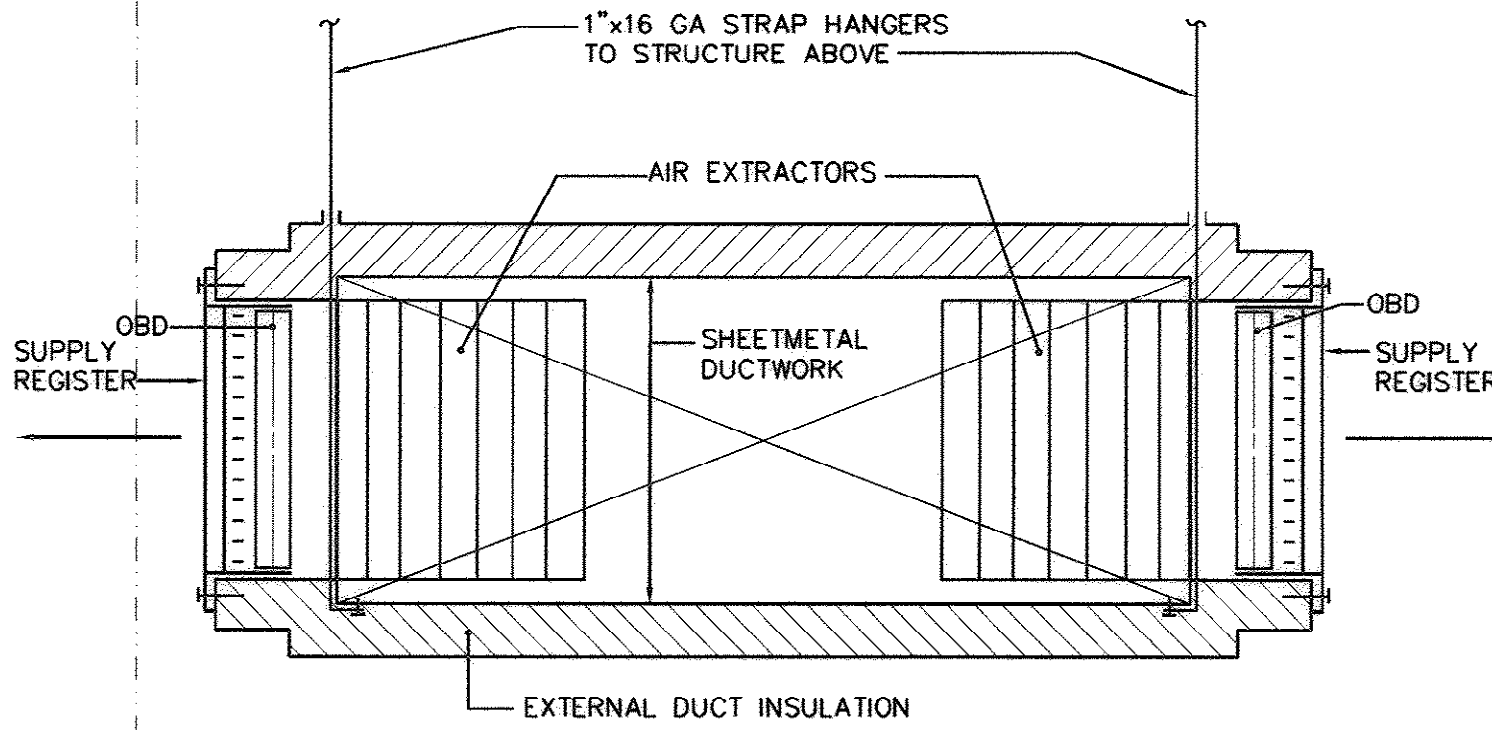
2 CONDENSATE DRAIN PIPING SUPPORT DETAIL
M-2 SCALE: 3" = 1'-0"



A = GREATER OF 4" OR 1/2" PLUS
(BLOWTHRU) AHU TOTAL PRESSURE IN INCHES-WC
B = GREATER OF 2" OR 1/2" PLUS
(DRAWTHRU) AHU TO TOTAL PRESSURE IN INCHES-WC

- NOTES:
1. 1" MIN. PIPE SIZE OR DRAIN SIZE TAP IN AHU INSULATE FOR CONDENSATE CONTROL AS REQUIRED.

3 CONDENSATE DRAIN TRAP DETAIL
M-2 NTS

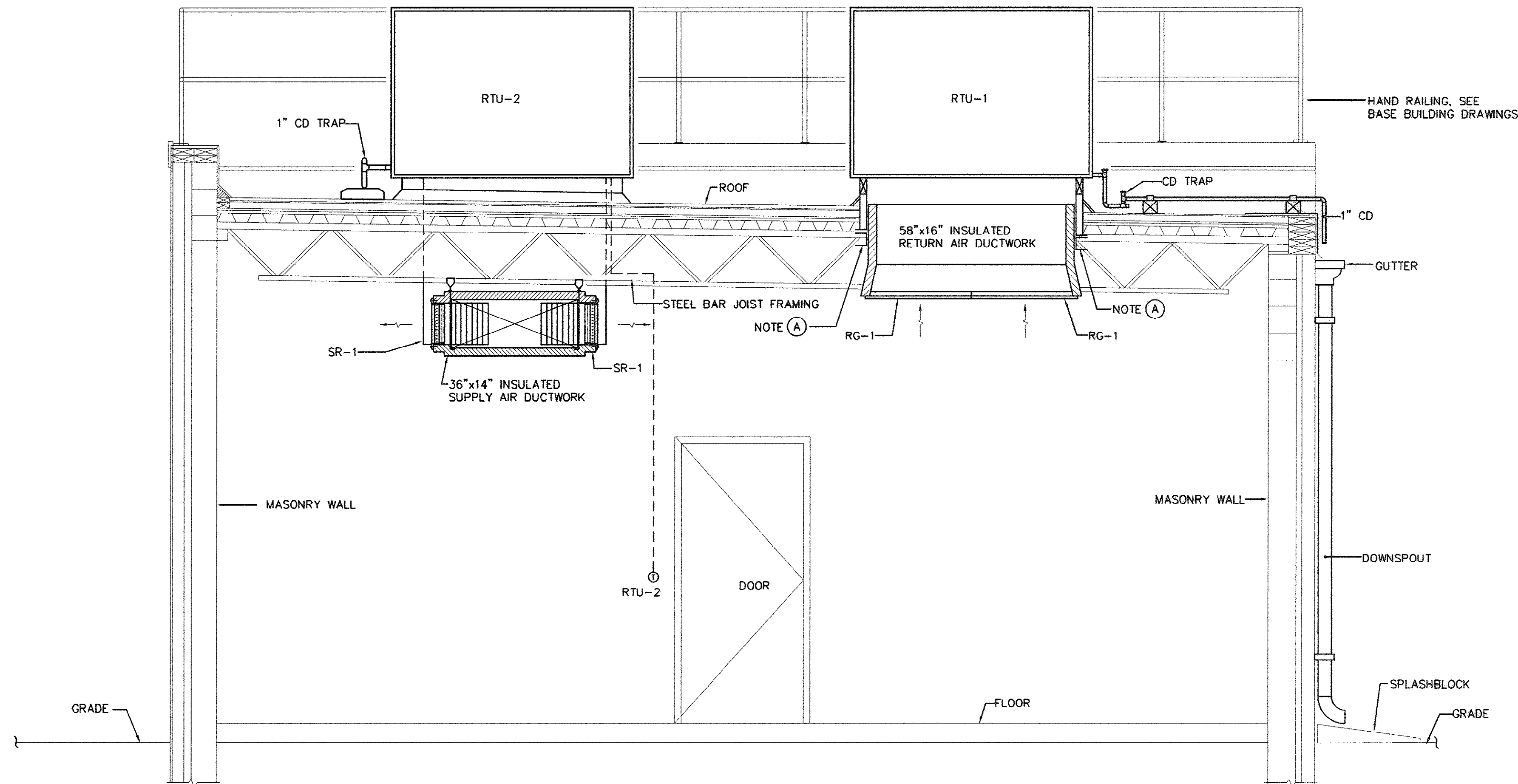


4 DUCT CONSTRUCTION DETAIL
M-2 SCALE: NONE

AS-BUILT

33-014-046/49 2

Modified May 18, 2007 Modified By: BWS/LS Scale: 1/2" = 1'-0" Printed: Nov 18, 2008 3:55pm Printed By: Addison, Charles M:\33013-Bull Creek Water Pump Station No. 2\AS-BUILT\MECHANICAL M-3.dwg



SECTION - MECHANICAL EQUIPMENT

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

NOTE (A)

PROVIDE AND INSTALL SUPPLEMENTAL INTERMEDIATE STEEL TO SUPPORT THE FULL PERIMETER OF THE ROOF MOUNTING FRAME.

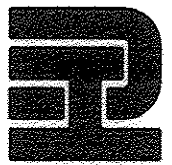
1/2" = 1'-0"

1' 0' 1' 2' 4'

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SECTION - MECHANICAL EQUIPMENT

BULL CREEK WTP
FINISHED WATER PUMP
STATION NO. 2
GRAND STRAND WATER &
SEWER AUTHORITY

DATE: SEPT. 2008
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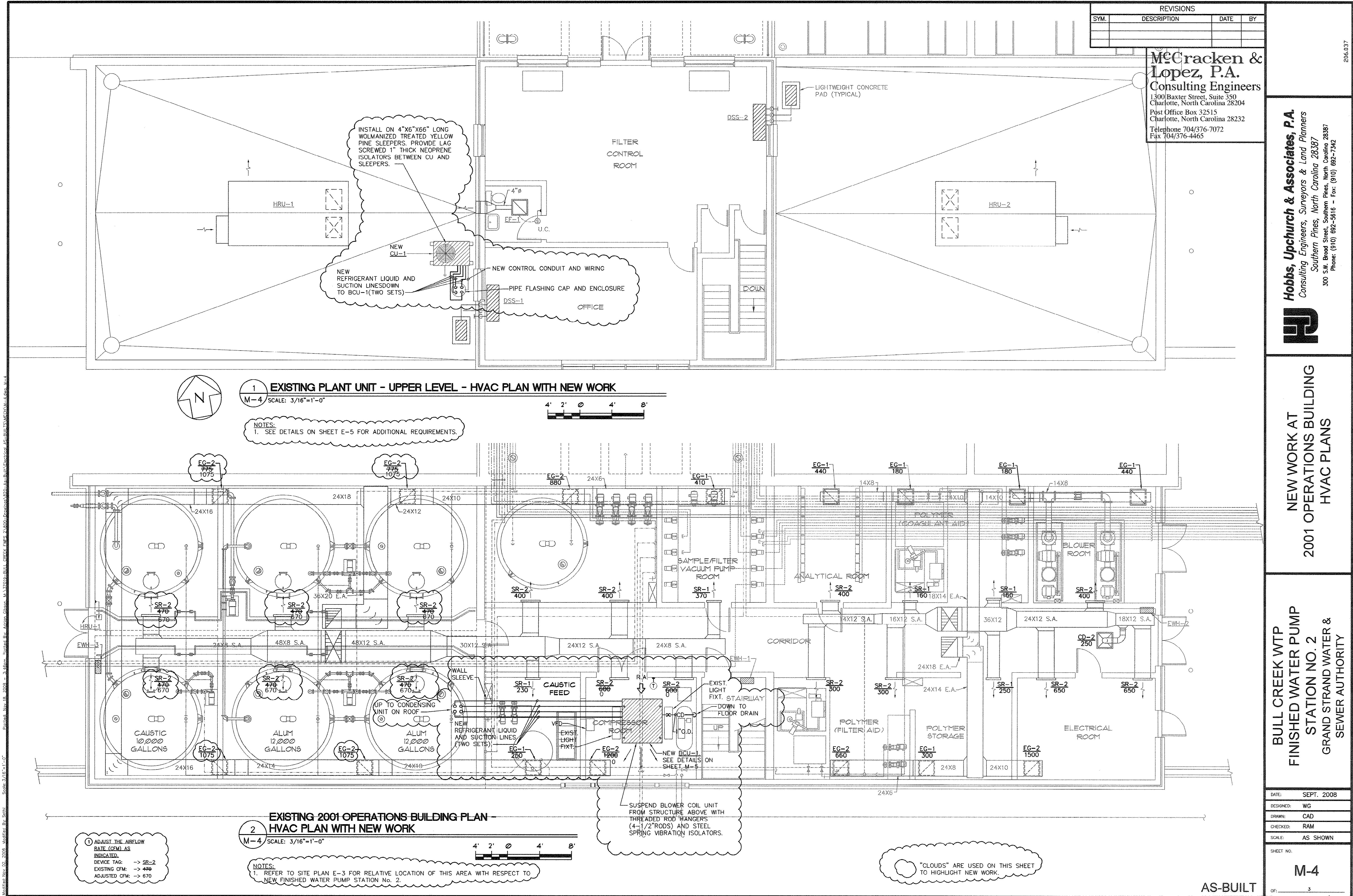
M-3

AS-BUILT

OF: 3

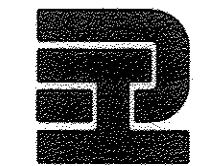
33-014-047/49 2

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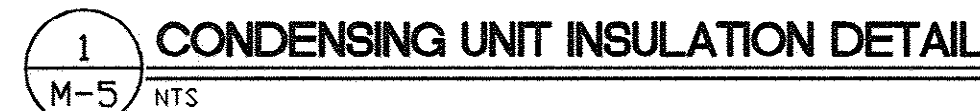


**NEW WORK AT
 2001 OPERATIONS BUILDING
 HVAC PLANS**

**BULL CREEK WTP
 FINISHED WATER PUMP
 STATION NO. 2
 GRAND STRAND WATER &
 SEWER AUTHORITY**

DATE:	SEPT. 2008
DESIGNED:	WG
DRAWN:	CAD
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SCALE:	AS SHOWN
SHEET NO.	M-4

OF: 3



REVISIONS			
SYM.	DESCRIPTION	DATE	BY

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1. THERMOSTATS SHALL BE LOCATED 46" ABOVE THE FINISHED FLOOR.
2. ROOF OPENINGS AND MISCELLANEOUS STEEL SHALL BE PROVIDED BY THE MECHANICAL SUB-CONTRACTOR. HEAT RECOVERY UNIT FRAMES AND EQUIPMENT CURBS SHALL BE PROVIDED BY THE MECHANICAL SUB-CONTRACTOR.
3. PROVIDE SLEEVES FOR ALL PIPING, CONDUIT AND DUCTWORK PASSING THROUGH WALLS.
4. THE AIR HANDLING UNIT SUPPORTS AND MISCELLANEOUS STEEL SHALL BE PROVIDED BY THE MECHANICAL SUB-CONTRACTOR. SIZES, REINFORCING, ETC. SHALL BE DETERMINED BY THE MECHANICAL SUB-CONTRACTOR.
5. ALL CONTROL WIRING AND CONDUIT SHALL BE CONCEALED IN FINISHED SPACES.
6. ALL ROOF CURBS PROVIDED BY THE MECHANICAL SUB-CONTRACTOR SHALL BE APPROVED BY THE ROOFING SUB-CONTRACTOR.
7. ALL ROOF MOUNTED MECHANICAL EQUIPMENT SHALL BE PRIMED BY THE MECHANICAL SUB-CONTRACTOR. FINAL PAINTING SHALL BE PROVIDED BY THE GENERAL CONTRACTOR.
8. INSULATE REFRIGERANT SUCTION PIPING AND CONDENSATE DRAIN PIPING WITH 3/4" THICK ARMAFLEX INSULATION. PAINT TWO COATS OF WHITE ARMAFLEX ENAMEL PAINT.

- ① UNIT SELECTED ON TRANE TWE120B3 WITH DISCHARGE GRILLE.
- ② INSTALL FROM STRUCTURE ABOVE WITH (4) 1/2" GALV THREADED ROD HANGERS AND (4) STEEL SPRING VIBRATION ISOLATORS.

① UNIT SELECTED ON TRANE TTA120B4..

② INSTALL WITH GALV LAG SCREWS ON (1) INCH THICK NEOPRENE VIBRATION ISOLATORS ON 4"x6"x66" LONG WOLMANIZED YELLOW PINE SLEEPERS ON THE ROOF



MECHANICAL SCHEDULES AND DETAILS

BULL CREEK WTP
FINISHED WATER PUMP
STATION NO. 2
GRAND STRAND WATER &
SEWER AUTHORITY

DATE: SEPT. 2008

DESIGNED: WG

DRAWN: CAD

CHECKED: RAM

SCALE: AS SHOWN

SHEET NO.

M-5

1

UF: _____

410 9.1

19 W

206.037

AS-BUILT

M-5

OF: 3

496 W

372