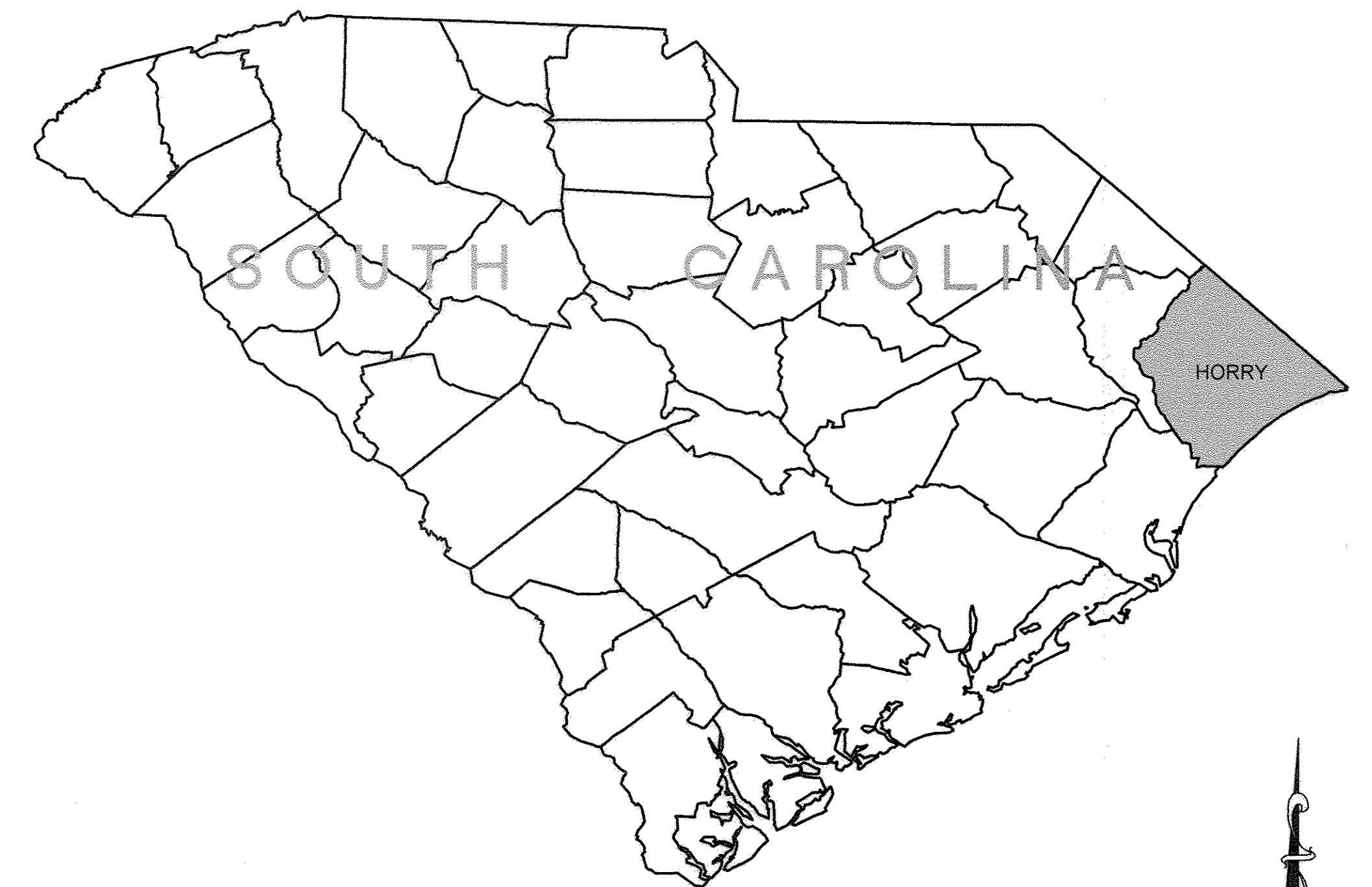
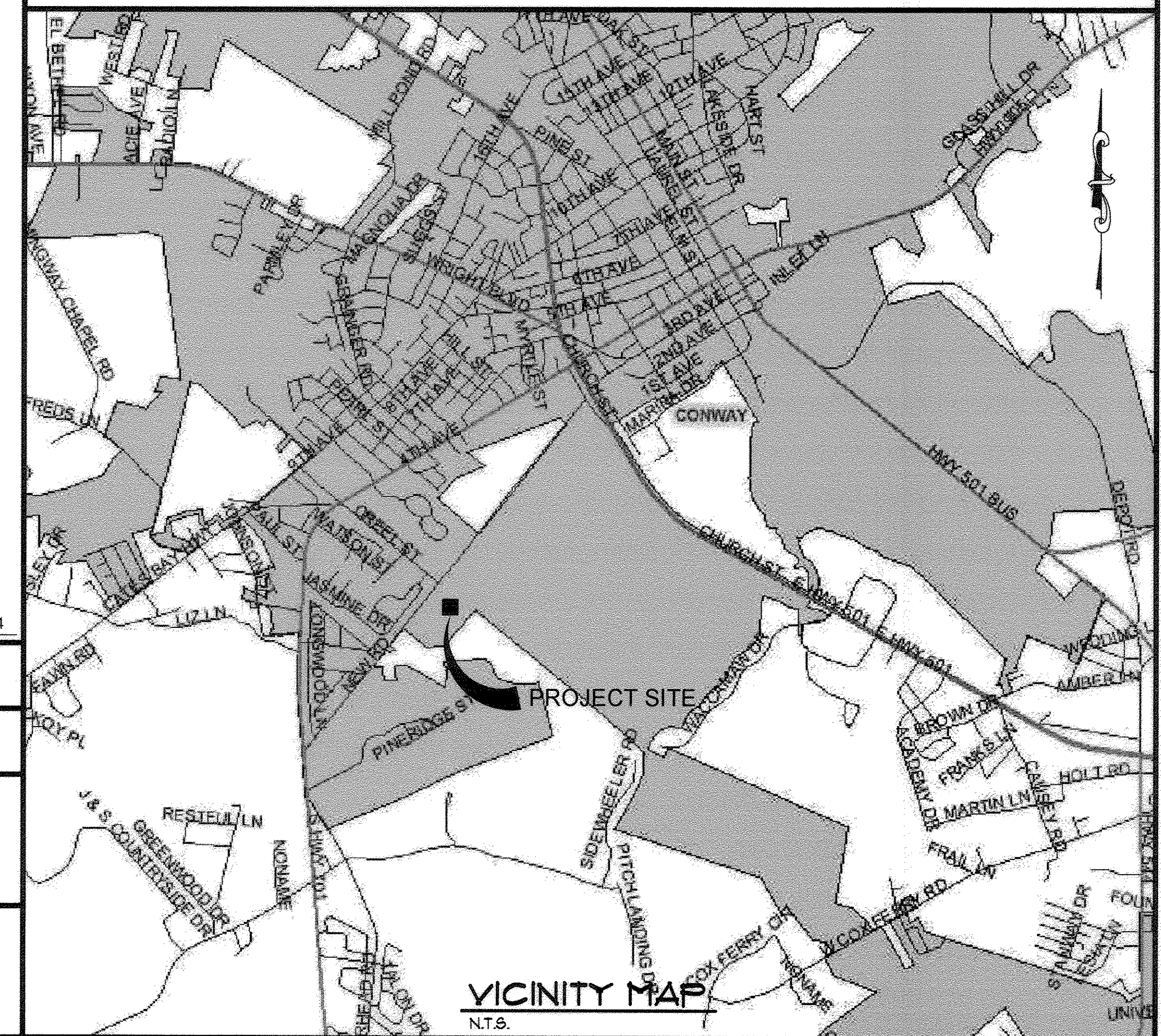


CONWAY WWTP CLARIFIER ADDITION

HORRY COUNTY, SOUTH CAROLINA



LOCATION MAP
N.T.S.



VICINITY MAP
N.T.S.

mm MARZIANO & MCGOUGAN, P.A.
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JULY 2009

JOB NO. 37007

11x17 DWGS. ARE
TRUE HALF SCALE

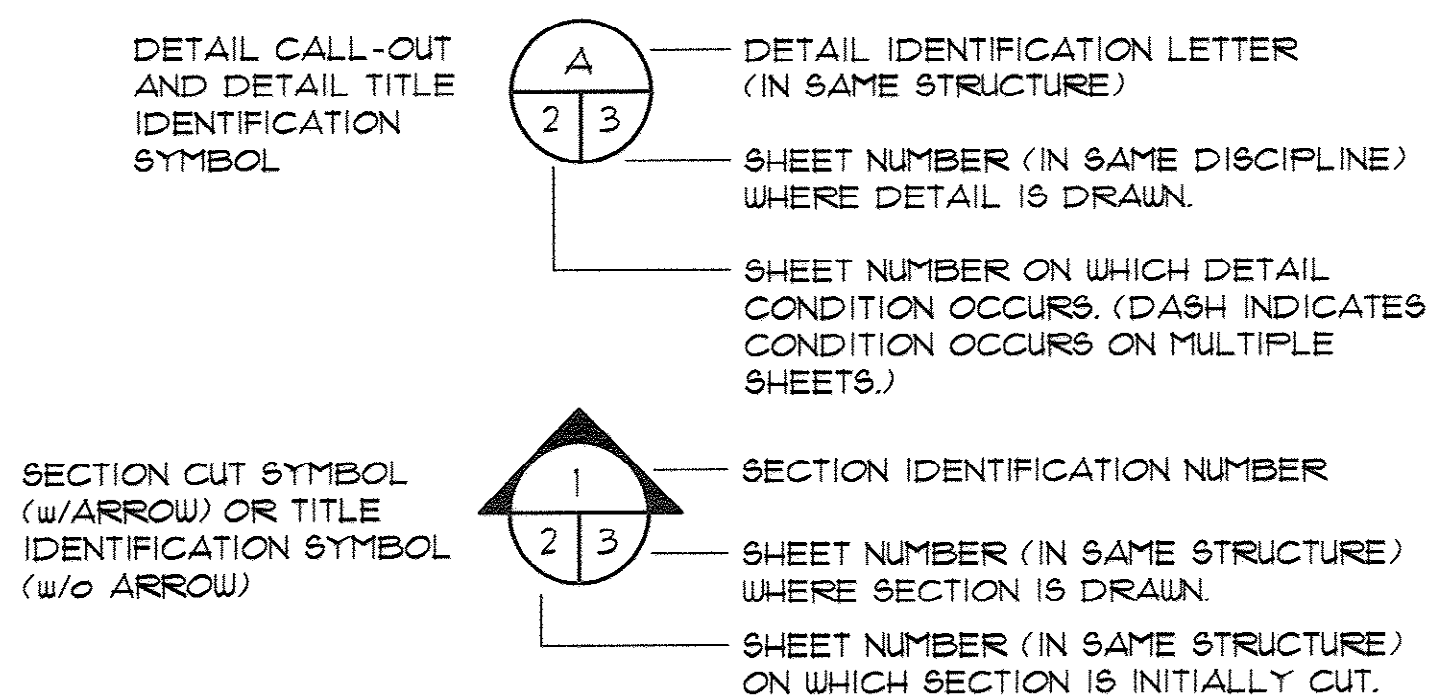
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7-17-2009

35-005-001/36

GENERAL CONSTRUCTION ABBREVIATIONS

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

SECTION/DETAIL LEGEND



GENERAL NOTES

A. FOUNDATIONS.

1. MAXIMUM ALLOWABLE NET BEARING PRESSURE = 1000 PSF.
2. EXCAVATIONS AND FORMS SHALL BE REVIEWED BY THE ENGINEER PRIOR TO PLACING CONCRETE.
3. AS DIRECTED BY THE ENGINEER, LOOSE AND UNSUITABLE MATERIAL SHALL BE REMOVED FROM THE BOTTOM OF THE FOUNDATIONS AND REPLACED WITH COMPACTED STRUCTURAL FILL OR STONE.
4. PLACE CONCRETE FOR WALLS AND SLABS IN ALTERNATE SECTIONS AND PROVIDE CONSTRUCTION JOINTS AT LOCATIONS SHOWN ON THE DRAWINGS, OR AT 30 FEET MAXIMUM.
5. PROVIDE BRACING AGAINST WALLS AS REQUIRED TO PREVENT DAMAGE DURING COMPACTION OF FILL.
6. ALL FILL OR BACKFILL SHALL BE SELECT MATERIAL FREE FROM ROOTS, TRASH, WOOD SCRAPS AND OTHER EXTRANEOUS MATERIALS. PLACE IN LIFTS NOT EXCEEDING 8 INCHES AND COMPACT EACH LIFT TO 95% DENSITY (98% FINAL FOOT) AT OPTIMUM MOISTURE CONTENT AS MEASURED BY ASTM D698.
7. WHERE SOFT SOILS REQUIRE OVER EXCAVATION FOR BUILDING FOUNDATIONS, OVER EXCAVATED AREAS SHALL BE BACKFILLED WITH COMPACTED #57 OR #67 STONE TO THE DESIGN BEARING ELEVATION.
8. MAT FOUNDATION SLABS FOR CLARIFIER AND PUMP STATIONS SHALL BE SUPPORTED ON STABILIZED SUBGRADE, GEOTEXTILE FABRIC AND 12" OF COMPACTED #57 OR #67 STONE, UON.

B. CONCRETE.

1. CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS AS FOLLOWS:

CONTAINMENT STRUCTURES AND SLABS	4,000 PSI
ALL OTHER CONCRETE	3,000 PSI
2. CONCRETE WORK SHALL CONFORM TO ACI 318-02 AND ACI 301-05.
3. CONCRETE SHALL BE CURED A MINIMUM OF 7 DAYS BY ONE OR MORE METHODS SPECIFIED IN ACI 301.
4. CHAMFER EXPOSED EDGES OF CONCRETE (AND ALL CORNERS OF ALL COLUMNS) 3/4 INCH, UNLESS OTHERWISE NOTED.
5. PLACE 1/2 INCH EXPANSION JOINT MATERIAL BETWEEN EDGES OF SLABS AND VERTICAL SURFACES, UNLESS OTHERWISE NOTED.
6. PROVIDE CONSTRUCTION OR CONTROL JOINTS IN SLABS AND WALLS AT LOCATIONS SHOWN ON DRAWINGS, AT OFFSETS AND CHANGES IN DIRECTION, AND AT 30 FEET MAXIMUM. CONSTRUCTION JOINTS IN WALLS SHALL BE LOCATED A MINIMUM OF 10'-0" FROM WALL INTERSECTIONS.

C. REINFORCING STEEL.

1. BARS SHALL BE ROLLED FROM NEW BILLET-STEEL CONFORMING TO ASTM A615, GRADE 60.
2. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185 OR ASTM A497.
3. REINFORCING STEEL IN PLACE SHALL BE REVIEWED BY THE ENGINEER PRIOR TO PLACING CONCRETE.

D. GROUT.

1. NON-SHRINK GROUT SHALL CONFORM TO CORP OF ENGINEERS SPECIFICATION CRD-C 671.
2. GROUT SHALL BE NON-STAINING AND NON-SHRINKING.

E. WATERSTOPS.

1. PROVIDE CONTINUOUS PVC WATERSTOPS WHERE SHOWN ON DRAWINGS. AT EXTERIOR WALL CONSTRUCTION JOINTS AND WHERE DIFFERENTIAL HEIGHTS OF FLUIDS EXIST ON EITHER SIDE OF WALL.
2. WATERSTOPS SHALL BE MANUFACTURED OF VIRGIN MATERIAL COMPOSED OF AN ELASTOMERIC POLYVINYL CHLORIDE COMPOUND MEETING THE REQUIREMENTS OF CORPS OF ENGINEERS CRD-C572. SUBMIT MANUFACTURER'S LITERATURE SHOWING COMPLIANCE WITH THE ABOVE SPECIFICATION AND SHOWING WATERSTOP SHAPES FOR USE.
3. WATERSTOPS AT CONSTRUCTION JOINTS SHALL BE 6 INCH MINIMUM LENGTH "DUMBBELL" TYPE UNLESS OTHERWISE INDICATED ON DRAWINGS. WATERSTOPS AT EXPANSION JOINTS SHALL BE 9 INCH MINIMUM LENGTH "DUMBBELL" TYPE WITH 3/4 INCH MINIMUM INSIDE DIAMETER CENTER BULB, UNLESS OTHERWISE INDICATED ON DRAWINGS.
4. ALL SPLICING OF WATERSTOPS SHALL BE SHOP FABRICATED EXCEPT THAT BUTT SPLICES MAY BE FIELD FABRICATED.
5. HYDROPHILIC WATERSTOPS SHALL BE A NON-BENTONITE, COEXTRUDED, STRIP APPLIED HYDROPHILIC RUBBER CONSISTING OF CHLOROPRENE RUBBER AND CHLOROPRENE RUBBER MODIFIED TO IMPART HYDROPHILIC PROPERTIES.
6. HYDROPHILIC WATERSTOP SHALL HAVE AN EXPANSION DELAY COATING TO INHIBIT INITIAL EXPANSION DUE TO MOISTURE PRESENT IN FRESH CONCRETE.
7. HYDROPHILIC WATERSTOP VOLUMETRIC EXPANSION RATIO MUST BE A MINIMUM OF 3:1.

F. DESIGN LOADS.

STRUCTURAL MEMBERS SHALL BE DESIGNED FOR FULL DEAD LOADS

AND THE FOLLOWING LIVE LOADS:

1. IMPORTANCE FACTORS:

WIND (iw)	= 1.15
SNOW (Is)	= 1.10
SEISMIC (Ie)	= 1.25
2. LIVE LOADS:

ROOF	= 20 PSF (REDUCIBLE)
FLOORS, UON	= 300 PSF
3. SNOW LOAD:

Pg = 10 PSF GROUND SNOW LOAD
Pf = 11.0 PSF, FLAT SNOW LOAD PLUS RAIN SURCHARGE
Ce = 1.0, Ct = 1.10

4. WIND LOAD: BASIC WIND SPEED 125 (ASCE 7-02)
EXPOSURE CATEGORY C, ENCLOSED BUILDING (GCpi = ±0.18)
COMPONENT AND CLADDING WIND PRESSURES

	AREA	SURFACE PRESSURE (PSF)		
		10 SF	50 SF	100 SF
ROOF				
NEGATIVE ZONE 1		-52.4	-42.7	-35.8
NEGATIVE ZONE 2		-82.3	-68.6	-59.1
NEGATIVE ZONE 3		-82.3	-68.6	-59.1
WALL	AREA	20 SF	100 SF	500 SF
NEGATIVE ZONE 4		-35.8	-32.5	-29.2
NEGATIVE ZONE 5		-65.7	-52.4	-39.2
POSITIVE ZONE 4 & 5		35.8	30.9	25.9

5. SEISMIC DESIGN CATEGORY A
COMPLIANCE WITH SECTION 1616.4 ONLY? ☐ YES ☒ NO
6. SEISMIC DESIGN CATEGORY D
PROVIDE THE FOLLOWING SEISMIC DESIGN PARAMETERS:

SEISMIC USE GROUP	II
SPECTRAL RESPONSE ACCELERATION	Ss = 84.7 %g Sds = 65.6 %g
	S1 = 26.5 %g Sd1 = 33.0 %g
	Cs = 0.029 R = 2.5 LIGHT FRAME WALLS

SITE CLASSIFICATION D

BASIC STRUCTURAL SYSTEM

- | | |
|--|---|
| <input type="checkbox"/> BEARING WALL | <input type="checkbox"/> DUAL w/SPECIAL MOMENT FRAME |
| <input checked="" type="checkbox"/> BUILDING FRAME | <input type="checkbox"/> DUAL w/INTERMEDIATE R/C OR SPECIAL STEEL |
| <input type="checkbox"/> MOMENT FRAME | <input type="checkbox"/> INVERTED PENDULUM |

ANALYSIS PROCEDURE ☐ SIMPLIFIED ☒ EQUIVALENT LATERAL FORCE

G. DIMENSIONS.

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING THE DIMENSIONS OF THE STRUCTURAL DRAWINGS AND ADVISING THE ENGINEER OF ANY DIFFERENCES IN DIMENSIONS BETWEEN THE ARCHITECTURAL, STRUCTURAL AND CIVIL DRAWINGS PRIOR TO COMMENCING CONSTRUCTION.
2. DIMENSIONS SHOWN TO EXISTING CONSTRUCTION ARE PLUS OR MINUS REGARDLESS OF WHETHER SHOWN AS SUCH ON THE DRAWINGS OR NOT. DIMENSIONS TO EXISTING CONSTRUCTION ARE TAKEN FROM THE ORIGINAL BUILDING DRAWINGS AND HAVE NOT BEEN FIELD VERIFIED. THE CONTRACTOR SHALL VERIFY IN THE FIELD ALL DIMENSIONS TO EXISTING CONSTRUCTION.

H. ABBREVIATIONS.

THE FOLLOWING LIST OF ABBREVIATIONS IS NOT INTENDED TO REPRESENT ALL THOSE USED ON THESE DRAWINGS, BUT TO SUPPLEMENT THE MORE COMMON ABBREVIATIONS USED:

1. TYP - TYPICAL
2. UON - UNLESS OTHERWISE NOTED
3. CLR - CLEAR, CLEARANCE
4. TCJ - TYPICAL CONTROL JOINT, TYPICAL CONSTRUCTION JOINT
5. EJ - EXPANSION JOINT
6. CJ - CONSTRUCTION JOINT

I. CONSTRUCTION SAFETY.

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

INDEX OF SHEETS

- 1 COVER SHEET
- 2 GENERAL NOTES & INDEX
- 3 HYDRAULIC PROFILE
- 4 EXISTING SITE PLAN
- 5 EXISTING DIKE MODIFICATION SECTIONS
- 6 NEW SITE PLAN
- 7 ENLARGED PIPING PLAN
- 8 SITE GRADING PLAN
- 9 CLARIFIER STRUCTURAL LAYOUT
- 10 CLARIFIER STRUCTURAL SECTIONS
- 11 CLARIFIER MECHANICAL LAYOUT
- 12 CLARIFIER MECHANICAL SECTIONS
- 13 RAS/ WAS PUMP STATION UPPER & LOWER PLANS
- 14 RAS/ WAS PUMP STATION SECTIONS
- 15 FILTER TRANSFER PUMP STATION
- 16 RETURN ACTIVATES SLUDGE PIPING PLAN & SECTIONS
- 17 EXISTING HEADWORKS MODIFICATION PLAN
- 18 CHEMICAL FEED BUILDING LAYOUT & DETAILS
- 19 STRUCTURAL DETAILS
- 20 EROSION CONTROL DETAILS
- 21 MISCELLANEOUS DETAILS
- 22 MISCELLANEOUS DETAILS
- 23 MISCELLANEOUS DETAILS
- 24 MISCELLANEOUS DETAILS

- E-1 SCHEDULES & DETAILS
- E-2 ELECTRICAL SITE PLAN
- E-3 ONE-LINE POWER DIAGRAM
- E-4 CLARIFIER ELECTRICAL PLAN
- E-5 RAS/ WAS PUMP STATION ELECTRICAL PLAN
- E-6 FILTER TRANSFER PUMP STATION ELECTRICAL PLAN
- E-7 EXIST. HEADWORKS ELECTRICAL PLAN
- E-8 ELECTRICAL DETAILS
- E-9 ELECTRICAL DETAILS
- E-10 ELECTRICAL DETAILS

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1100 BEND AVENUE • SUITE 201 • CONWAY, SC 29526
PHONE: 843/686-0123 FAX: 843/686-0123

GENERAL NOTES & INDEX

CONWAY WWTP
CLARIFIER ADDITION
HORRY COUNTY, SOUTH CAROLINA

Scale: AS SHOWN

Date: JULY, 2009

Drawn: ALG

Checked: JWM

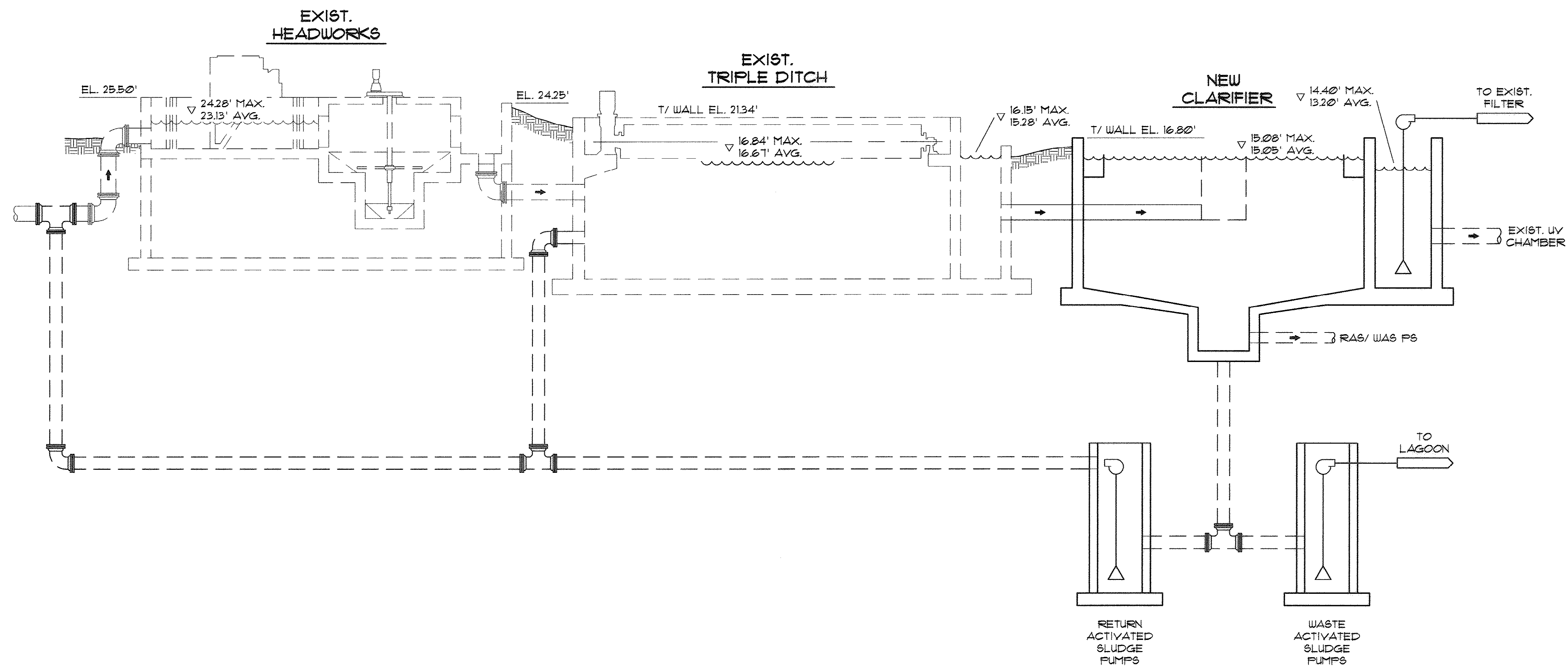
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Of: 34 Version: 4

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HYDRAULIC PROFILE
N.T.S.

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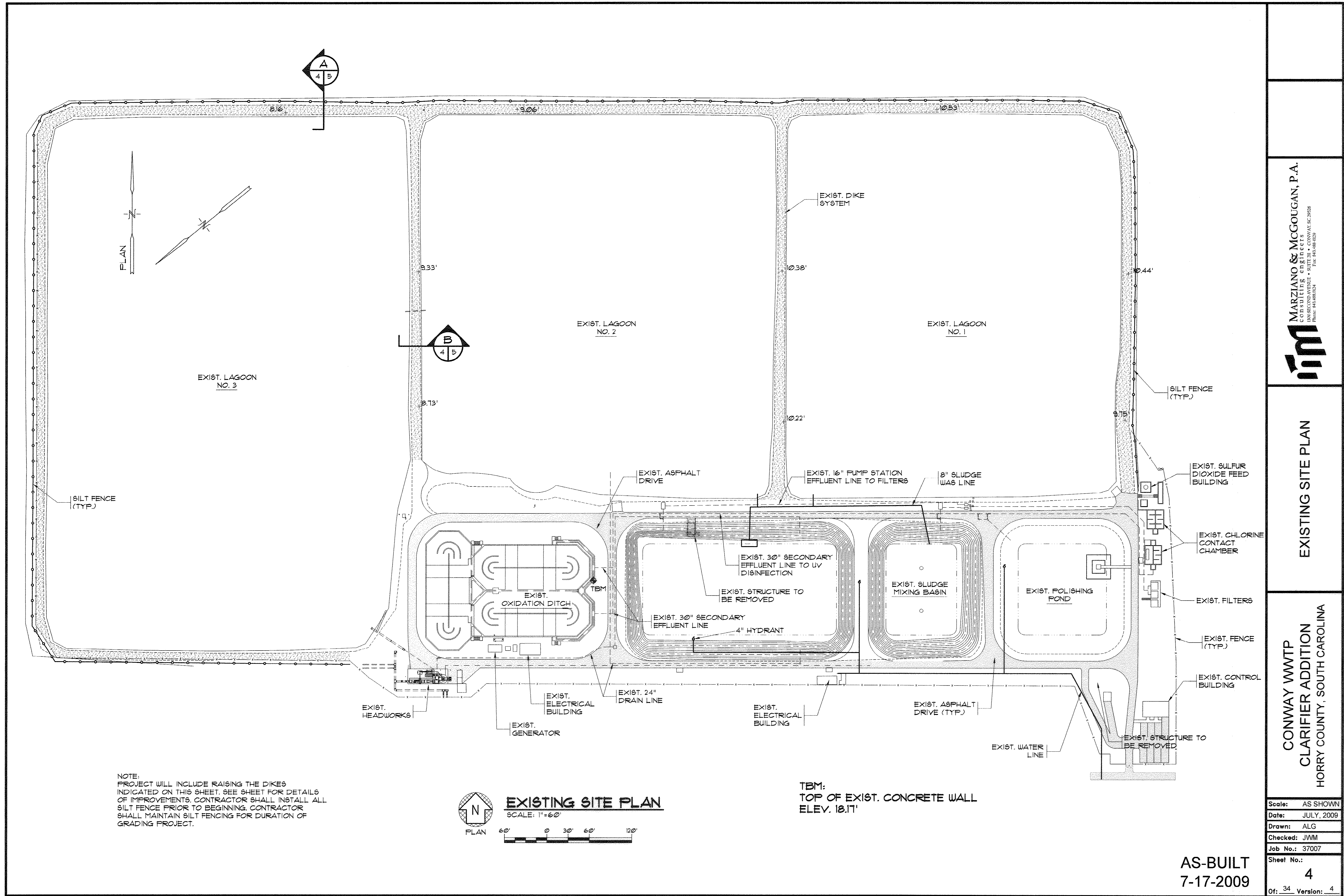
im MARZIANO & MCGOUGAN, P.A.
CONSULTING ENGINEERS
1000 W. 10TH STREET, SUITE 200
CONWAY, SC 29524
Phone: 843.682.0222 Fax: 843.682.0223

HYDRAULIC PROFILE

CONWAY WWTP
CLARIFIER ADDITION
HORRY COUNTY, SOUTH CAROLINA

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Job No.:	37007
Sheet No.:	3
Of: 34	Version: 4

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35-005-004/36

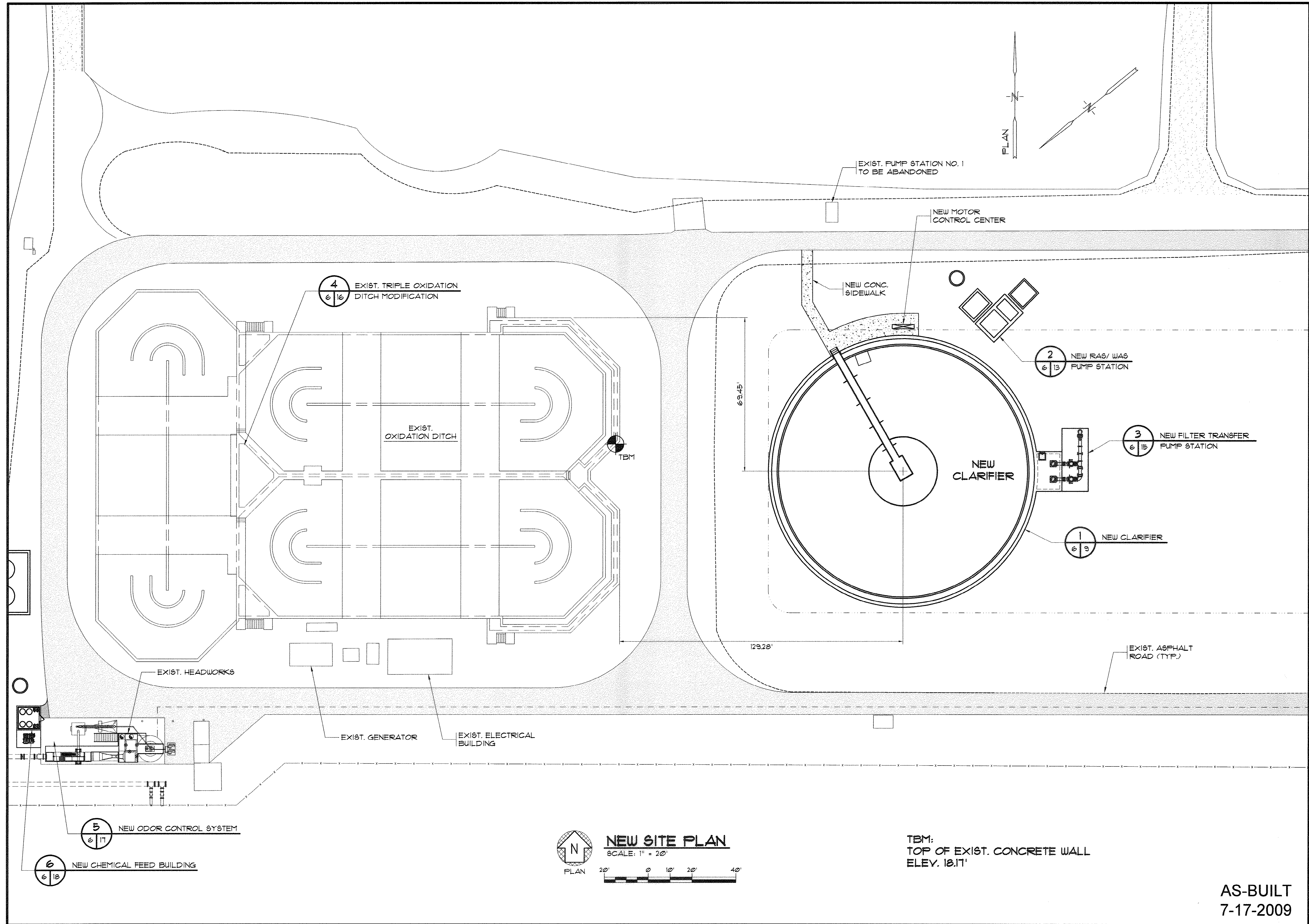



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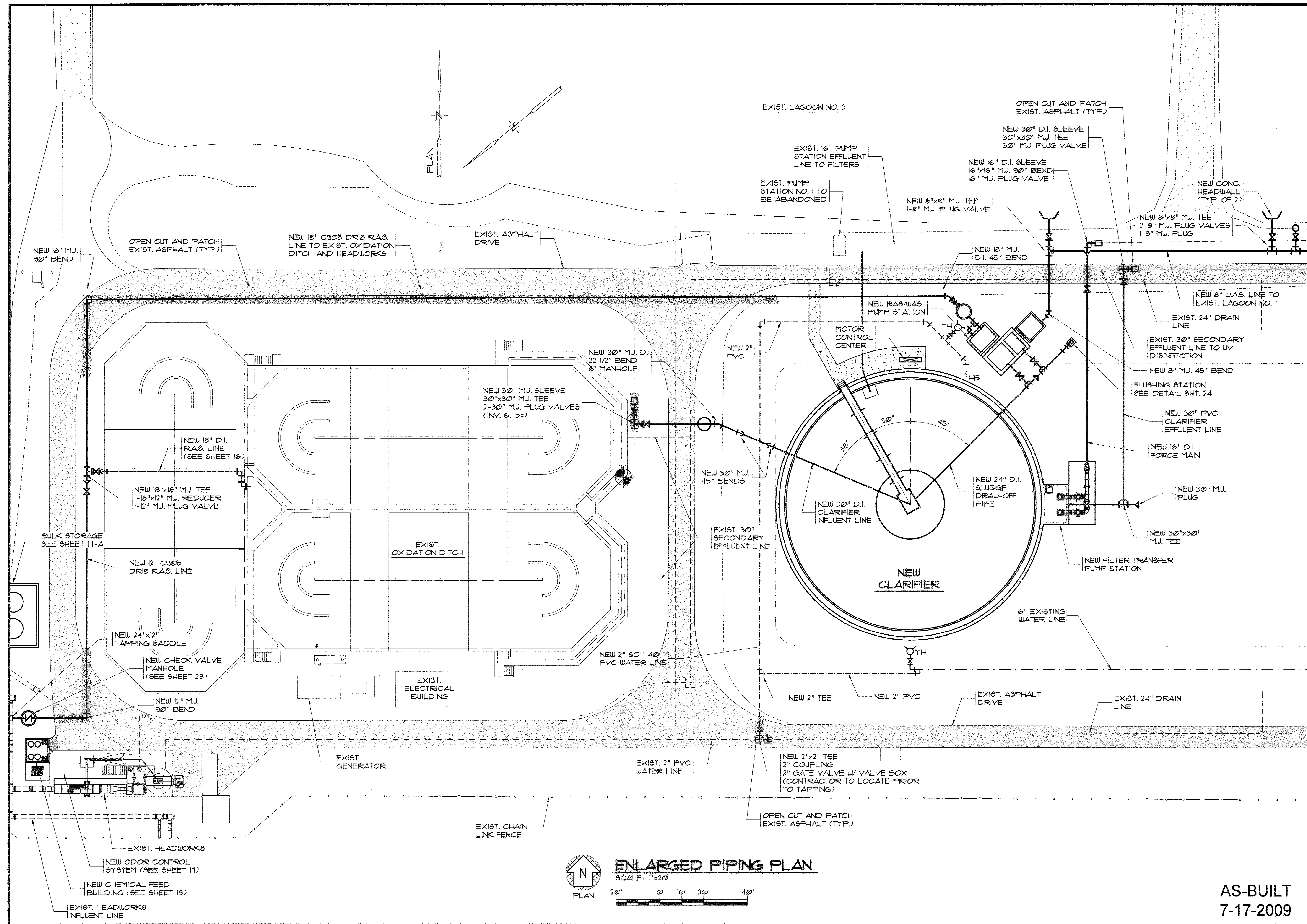
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 MARZIANO & MCGOUGAN, P.A. CONSULTING ENGINEERS 1000 W. 10th Street, Suite 200 Myrtle Beach, SC 29578 Phone: 843.682.0225 Fax: 843.682.0225	
NEW SITE PLAN	
CONWAY WWTreatment PLANT CLARIFIER ADDITION HORRY COUNTY, SOUTH CAROLINA	
Scale: AS SHOWN Date: JULY, 2009 Drawn: ALG Checked: JWM Job No.: 37007 Sheet No.: 6 Of: 34 Version: 4	AS-BUILT 7-17-2009

35-005-006/36



ENLARGED PIPING PLAN

SCALE: 1"=20'
 20' 0' 10' 20' 40'

im MARZIANO & MCGOUGH, P.A.
 consulting engineers
 1000 W. 10th Avenue • Suite 300 • Conway, SC 29526
 Phone: 843.681.1234 Fax: 843.681.1235

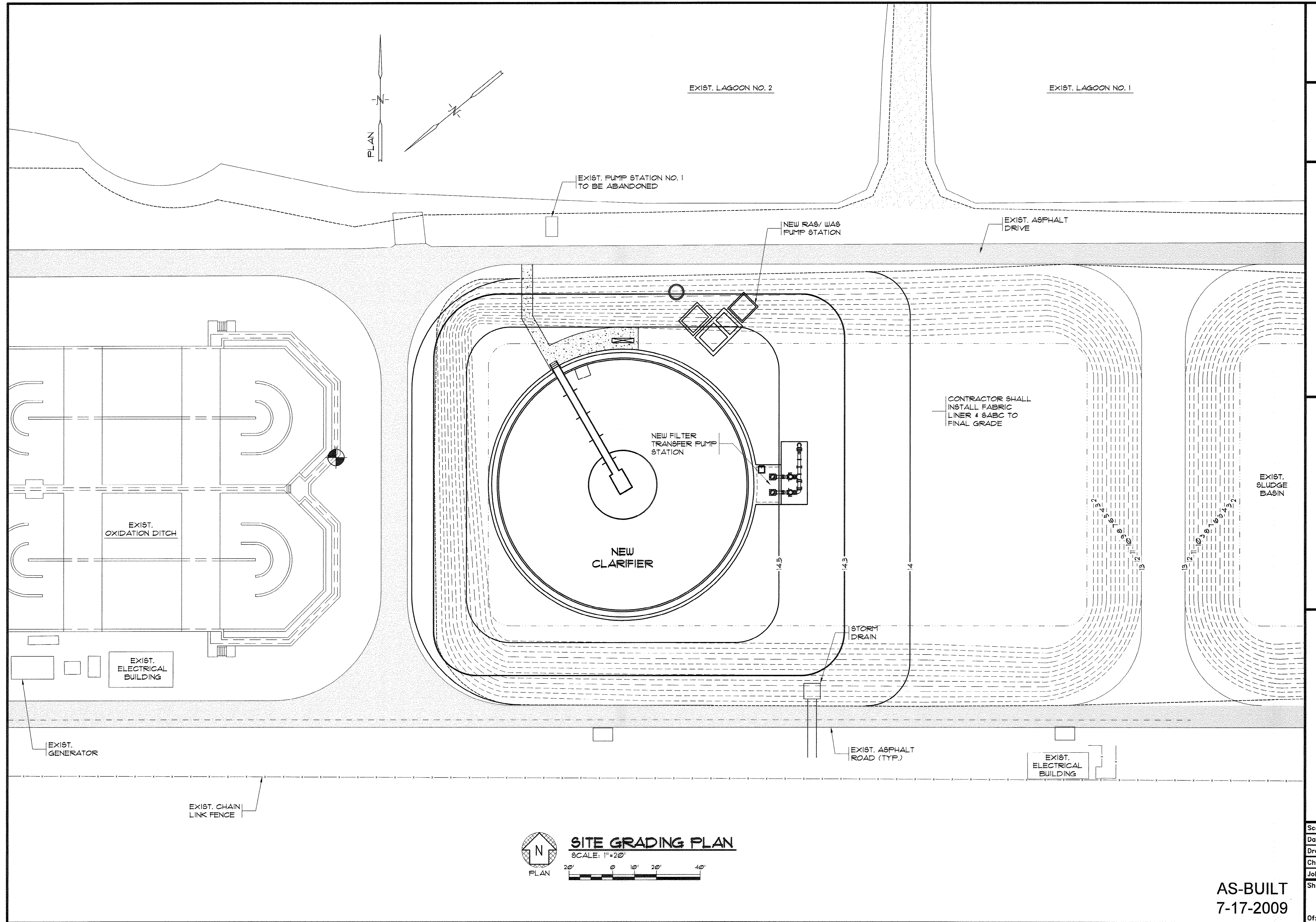
ENLARGED PIPING PLAN

CONWAY WWTP
 CLARIFIER ADDITION
 HORRY COUNTY, SOUTH CAROLINA

Scale:	AS SHOWN
Date:	JULY, 2009
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Checked:	JWM
Job No.:	37007
Sheet No.:	7
Of: 34	Version: 4

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35-005-007/36



SITE GRADING PLAN

SCALE: 1"=20'



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REGISTERED PROFESSIONAL ENGINEERS
SOUTH CAROLINA • EXPIRATION DATE 12/31/2010
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SITE GRADING PLAN

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CLARIFIER ADDITION
HORRY COUNTY, SOUTH CAROLINA

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Job No.: 37007

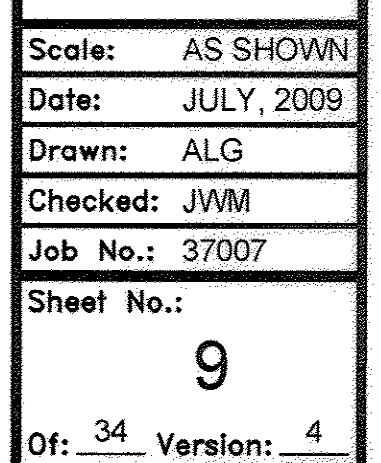
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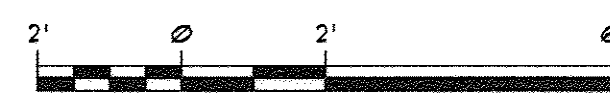
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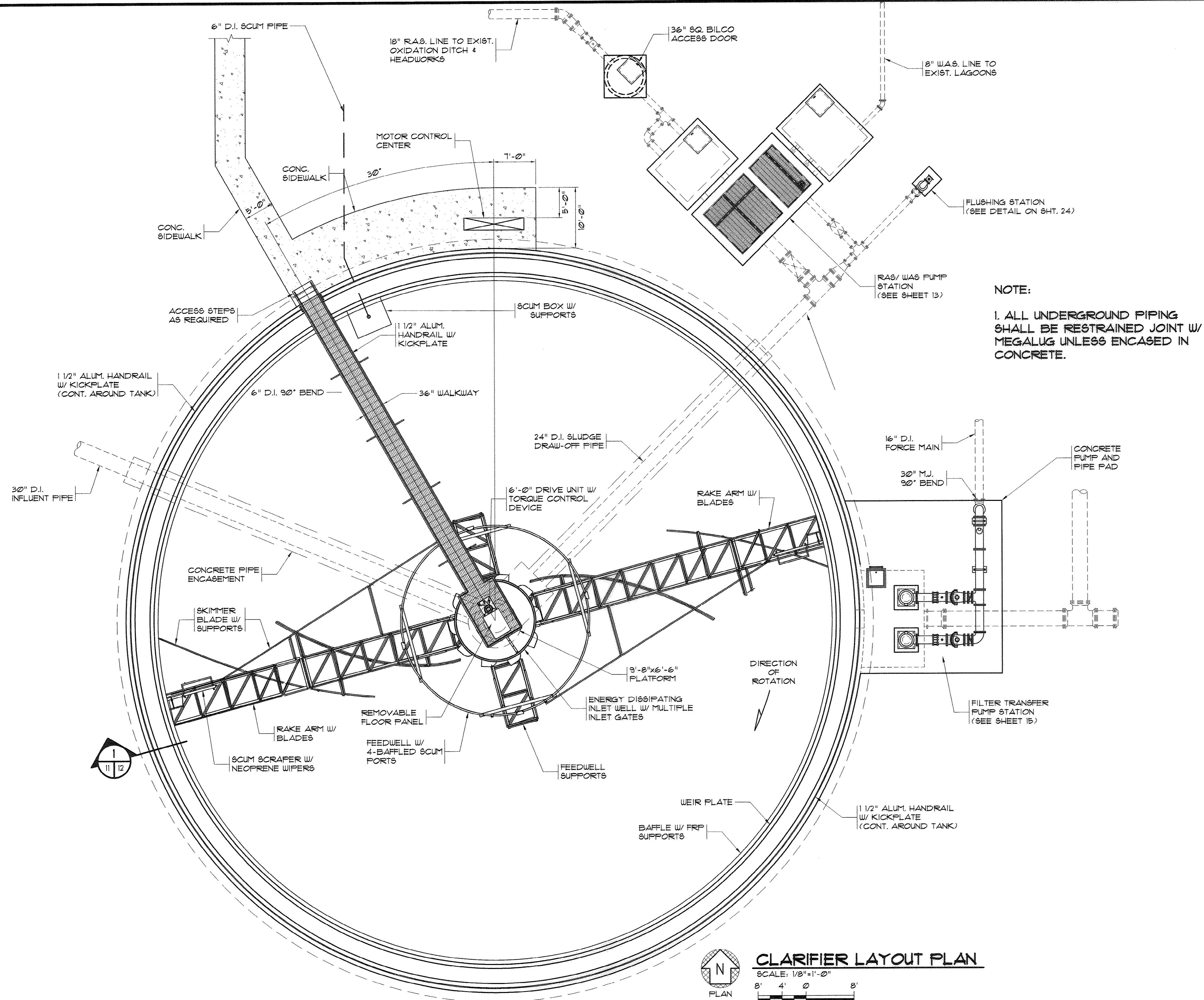
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35-005-009/36



35-005-010|36



CLARIFIER LAYOUT PLAN

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

0' 4' 8'

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7-17-2009

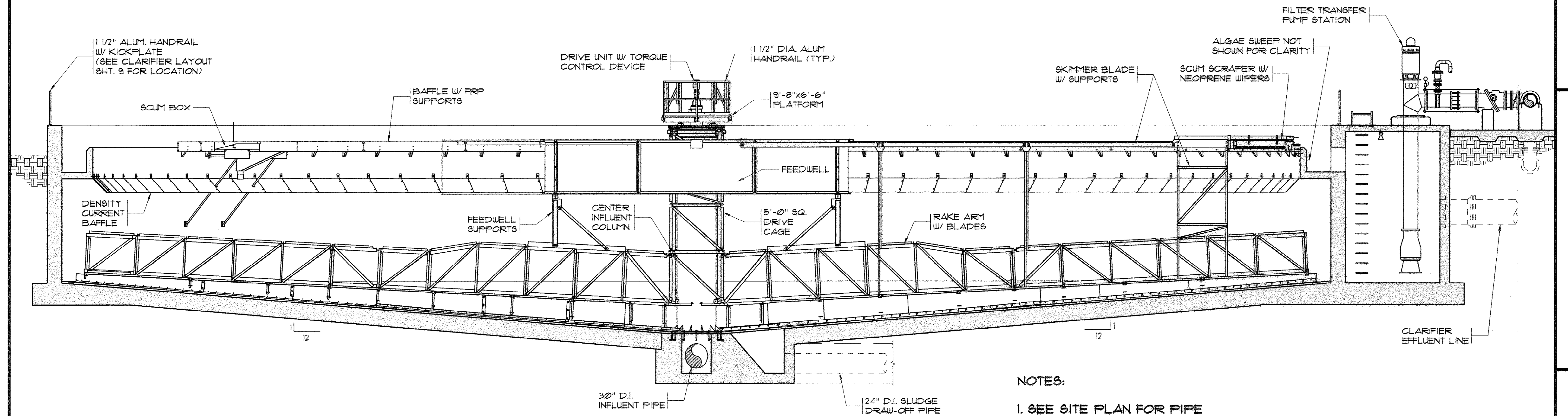
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DENVER, CO 80202
PHONE: 303.733.8800
FAX: 303.733.8801

CLARIFIER
MECHANICAL LAYOUT

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HORRY COUNTY, SOUTH CAROLINA

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Of: 34 Version: 4

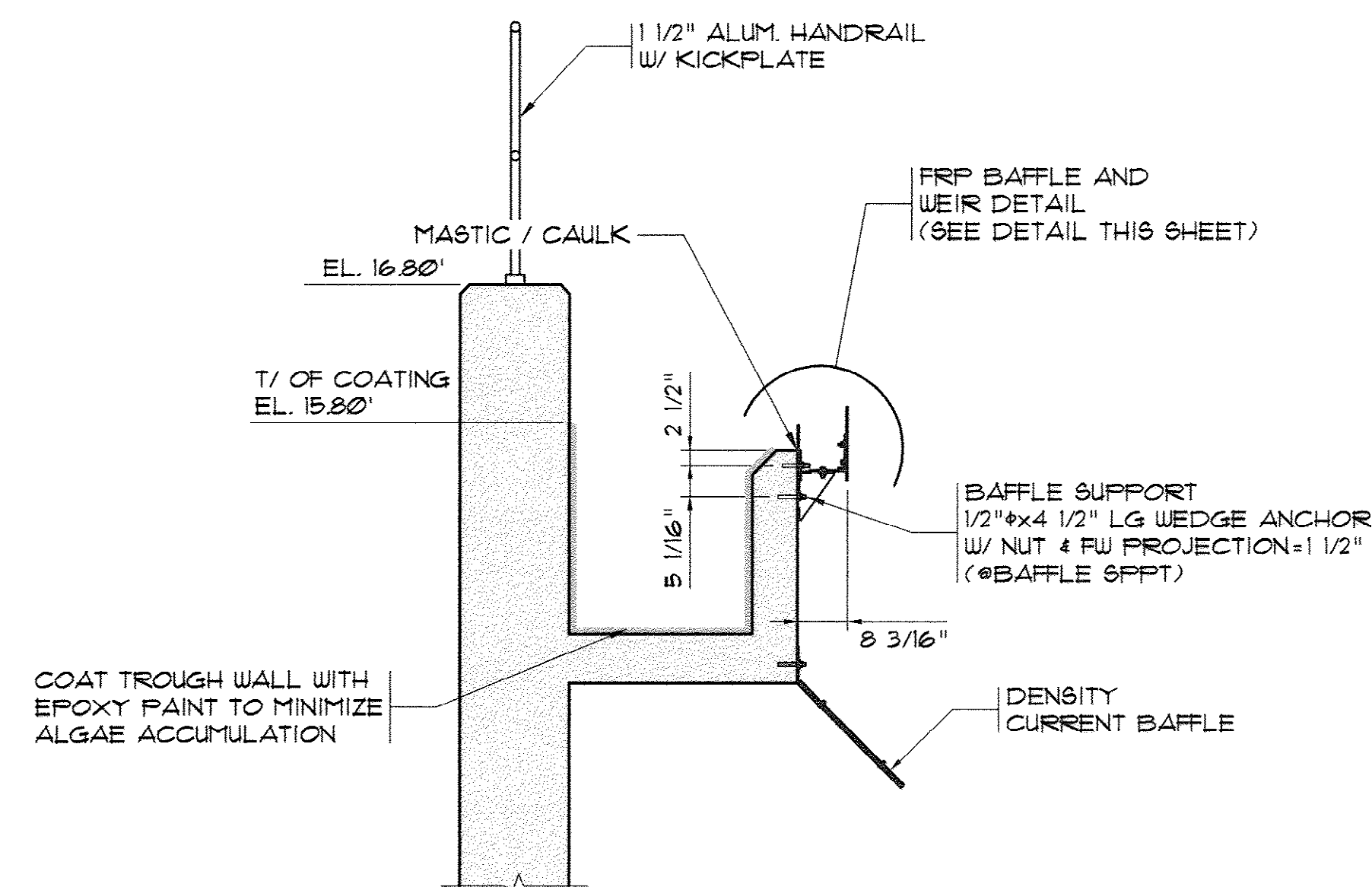
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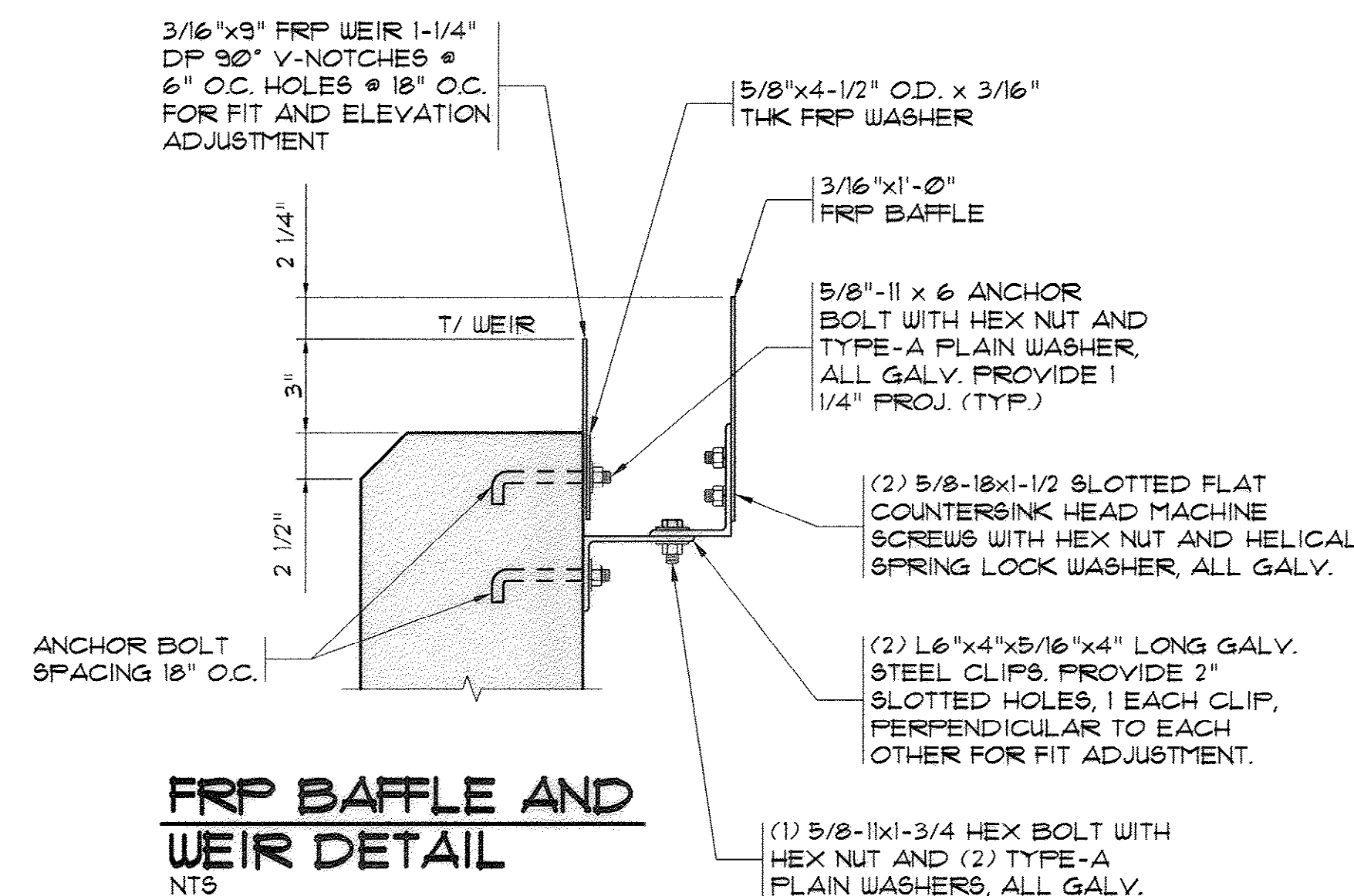
CLARIFIER ILLUSTRATIVE SECTION
N.T.S.

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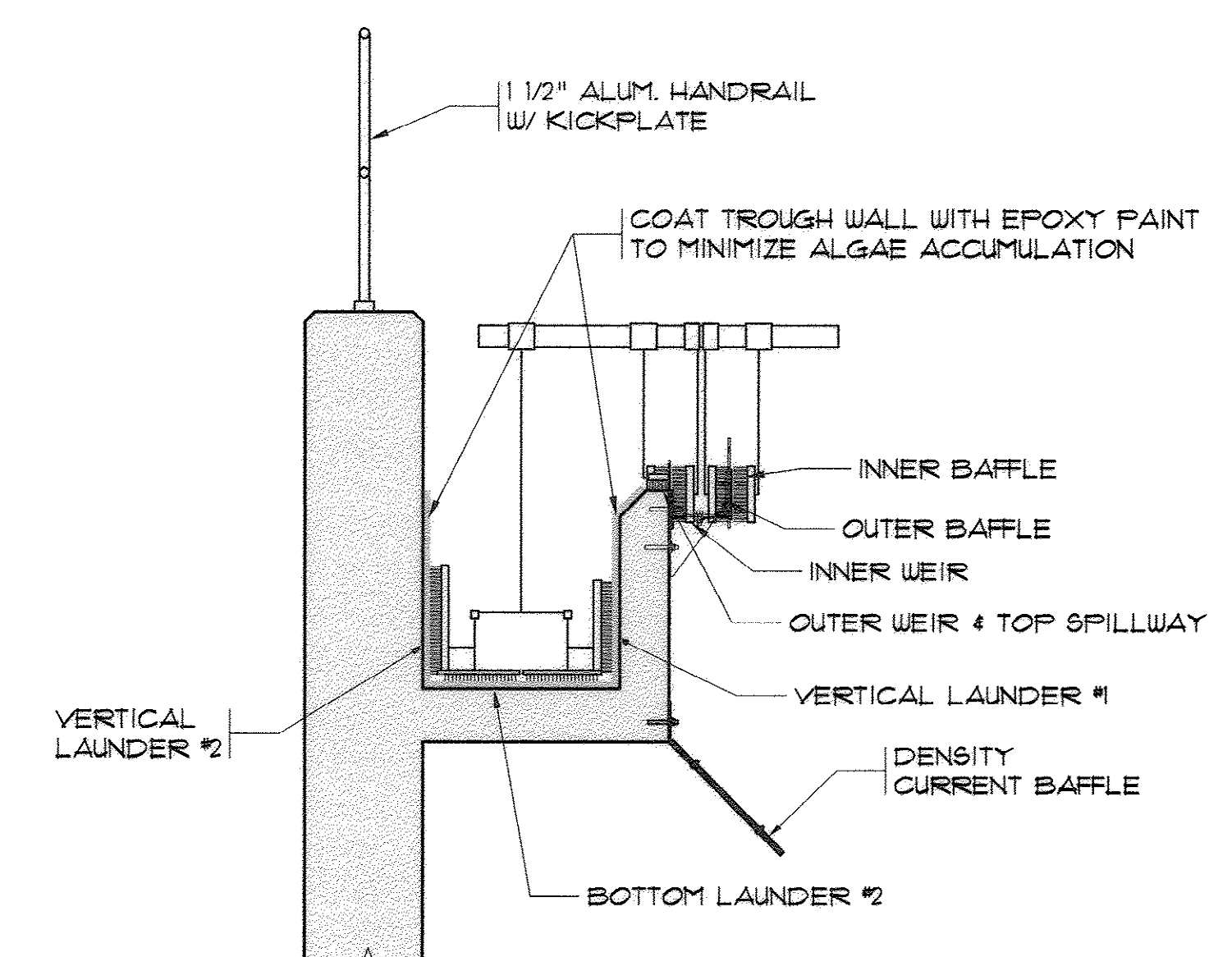
1. SEE SITE PLAN FOR PIPE ORIENTATION.
2. SEE STRUCTURAL DRAWING FOR FOUNDATION REQUIREMENTS.



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



FRP BAFFLE AND WEIR DETAIL
N.T.S.



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



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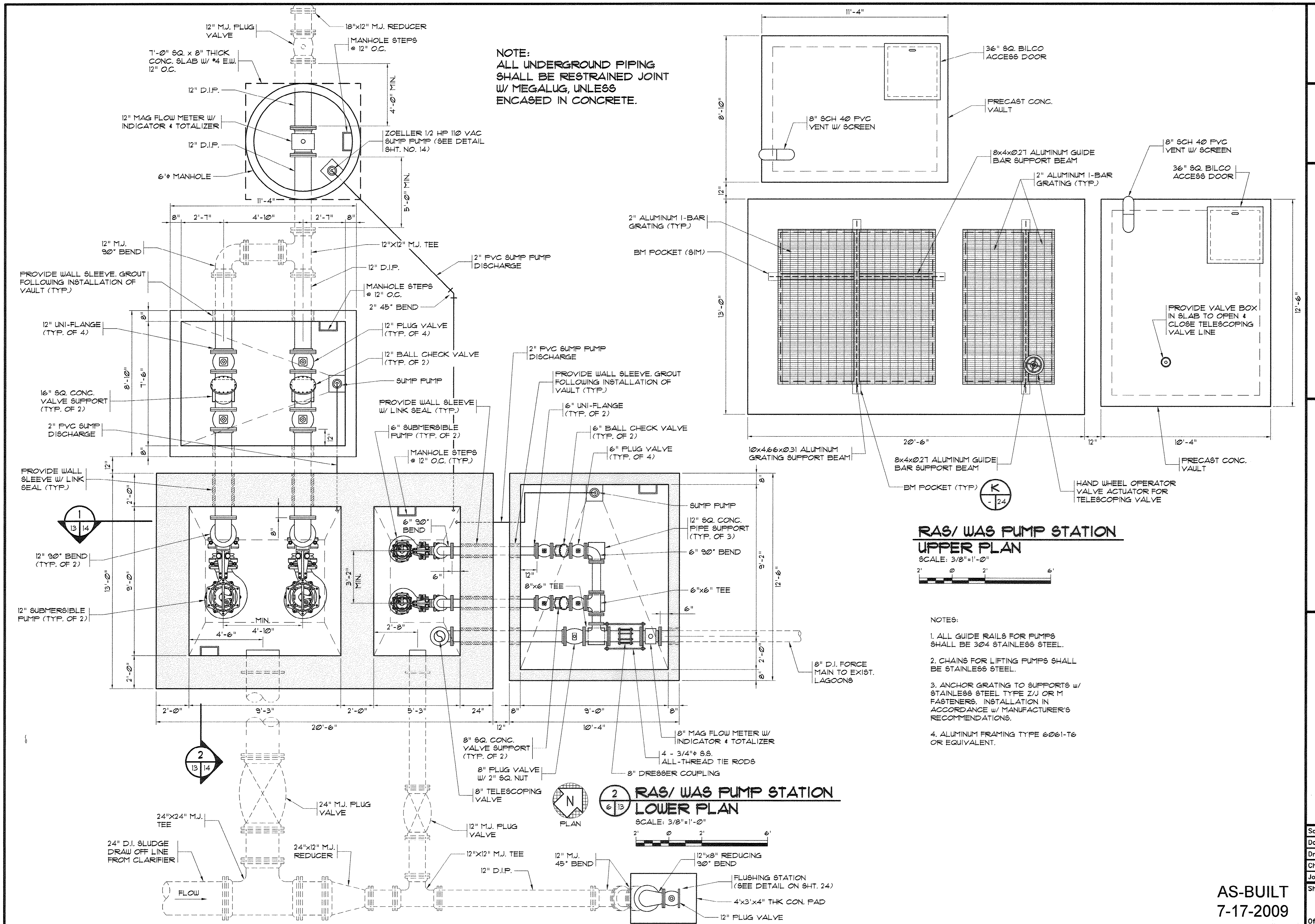
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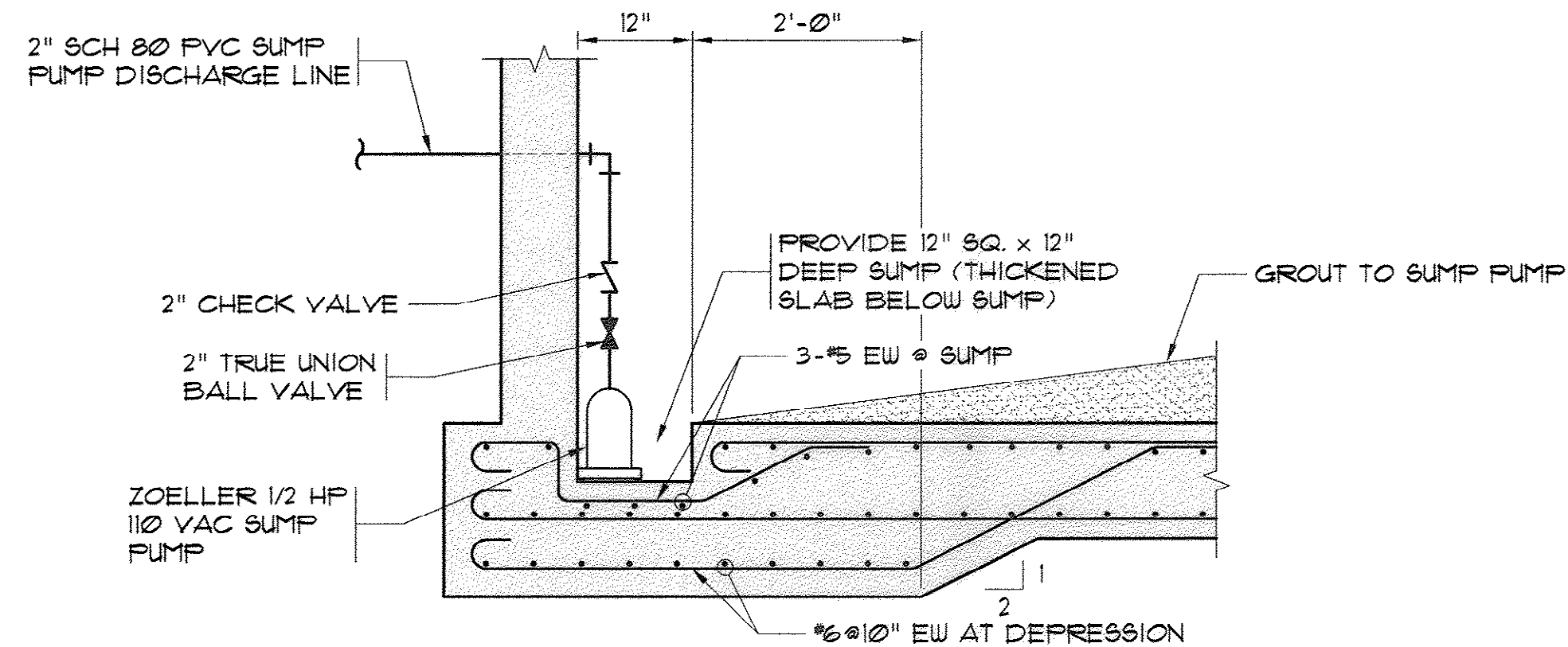
**CLARIFIER
MECHANICAL SECTIONS**

**CONWAY WWTP
CLARIFIER ADDITION
Horry County, South Carolina**

Scale: AS SHOWN
Date: JULY, 2009
Drawn: ALG
Checked: JVM
Job No.: 37007
Sheet No.: 12
Of: 34 Version: 4

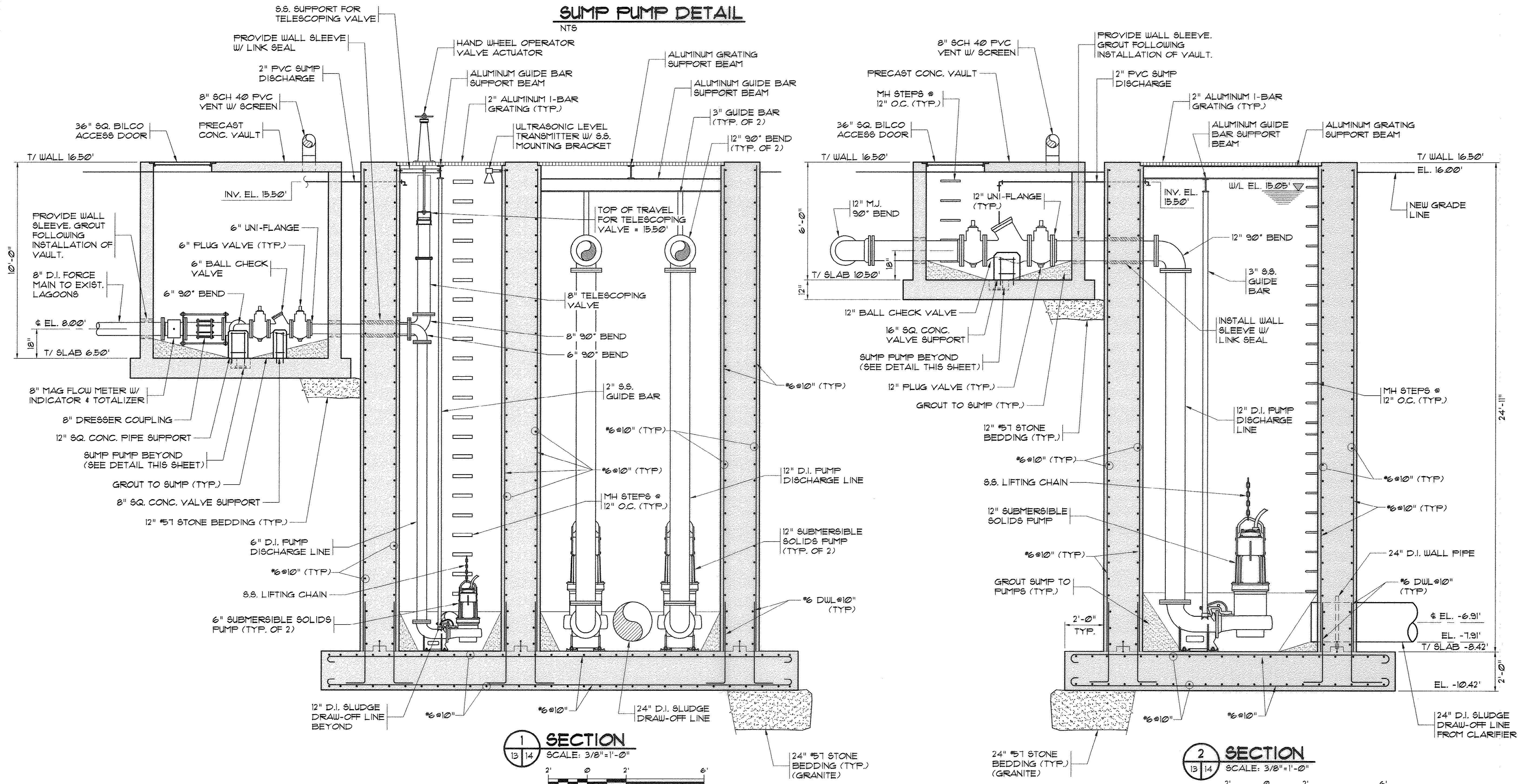
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NOTE:
1. ALL UNDERGROUND PIPING SHALL BE RESTRAINED JOINT W/ MEGALUG, UNLESS ENCASED IN CONCRETE.
2. GROUT WETWELLS TO PUMPS.

SUMP PUMP DETAIL



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

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

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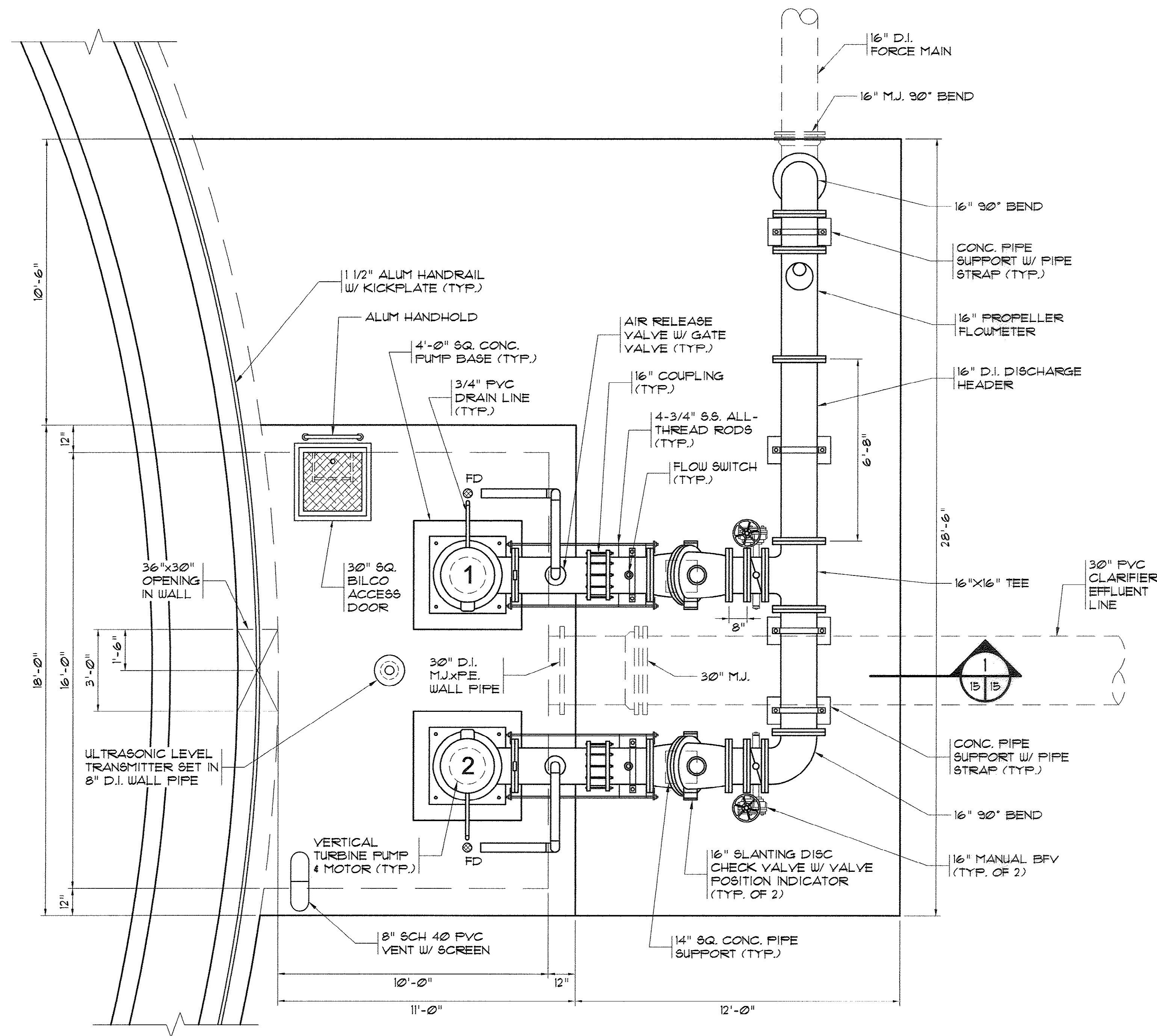
RAS/WAS PUMP
STATION SECTIONS

CONWAY WWTP
CLARIFIER ADDITION
Horry County, South Carolina

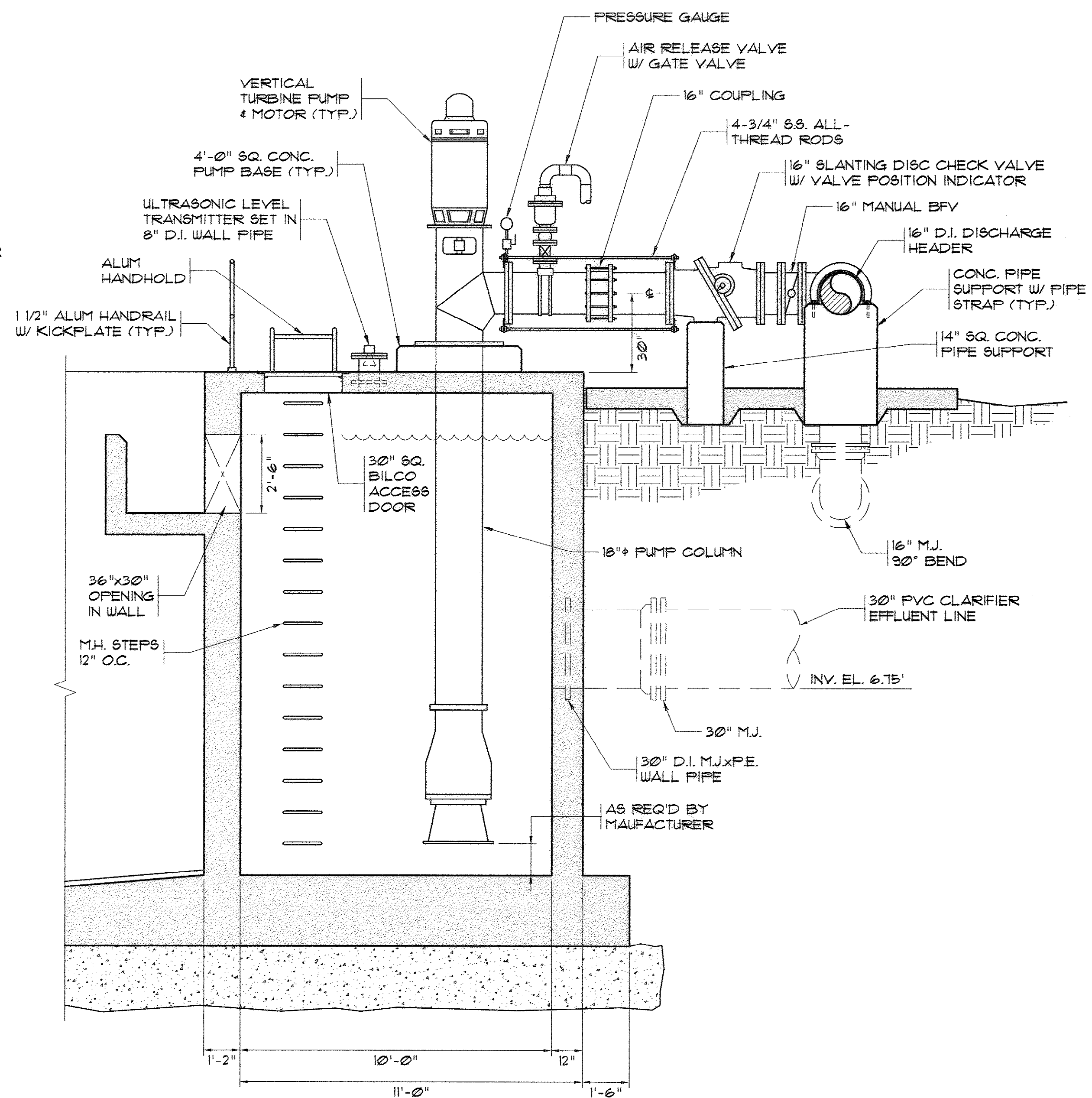
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Job No.: 37007
Sheet No.: 14
Of: 34 Version: 4

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7-17-2009

35-005-014/36



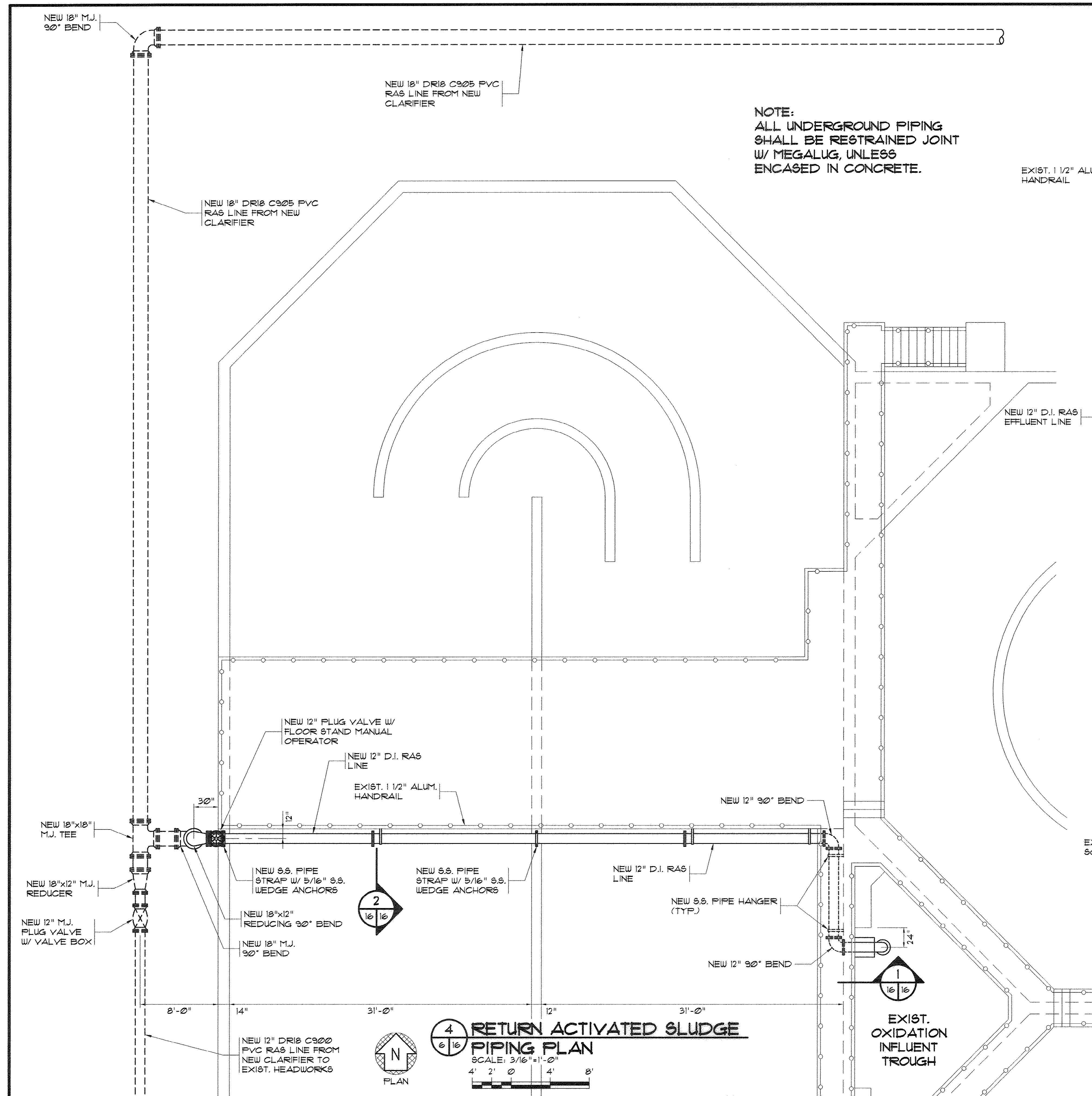
3 FILTER TRANSFER PUMP STATION
SCALE: 3/8"=1'-0"



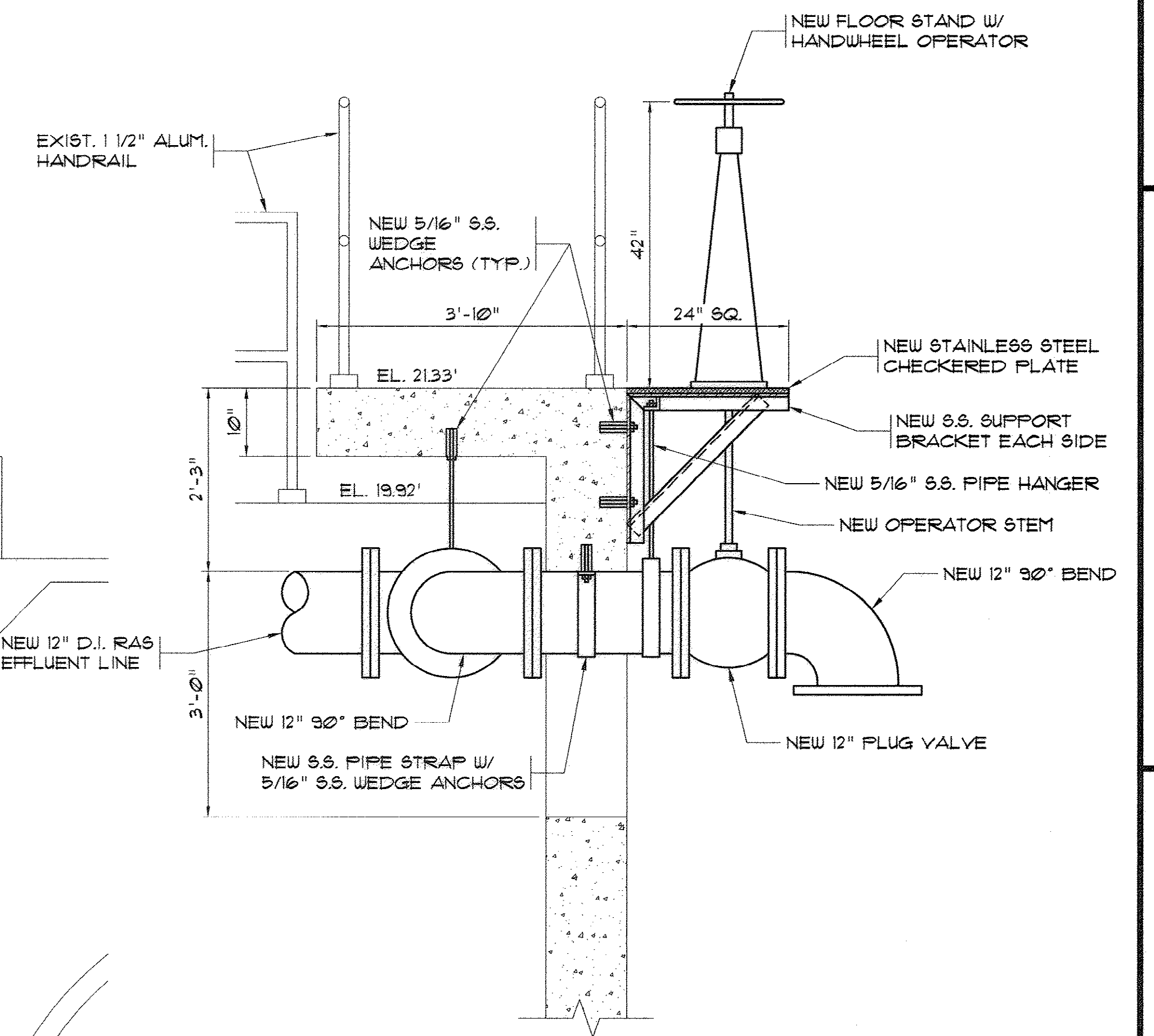
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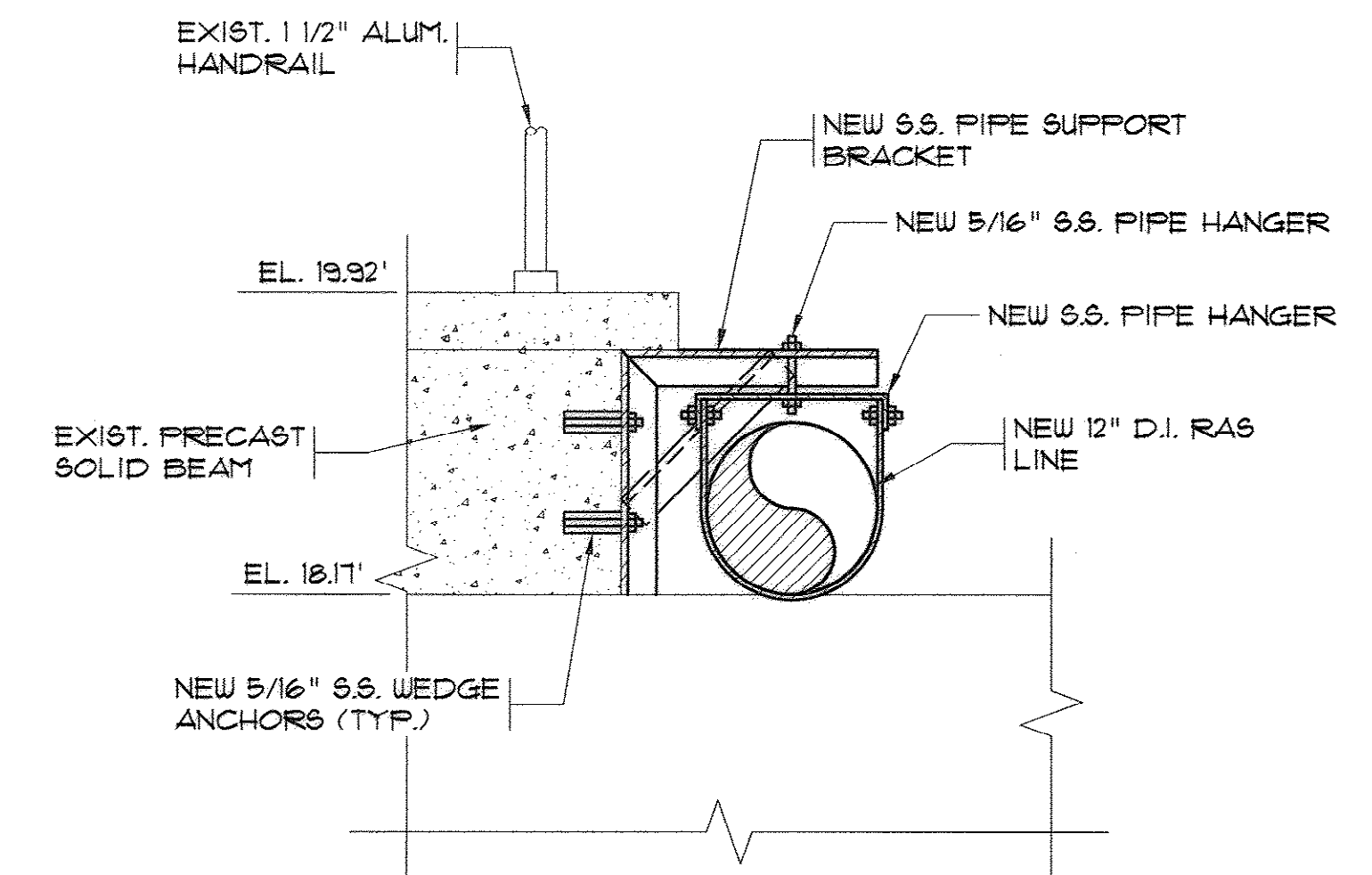
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7-17-2009



NOTE:
ALL UNDERGROUND PIPING
SHALL BE RESTRAINED JOINT
W/ MEGALUG, UNLESS
ENCASED IN CONCRETE.

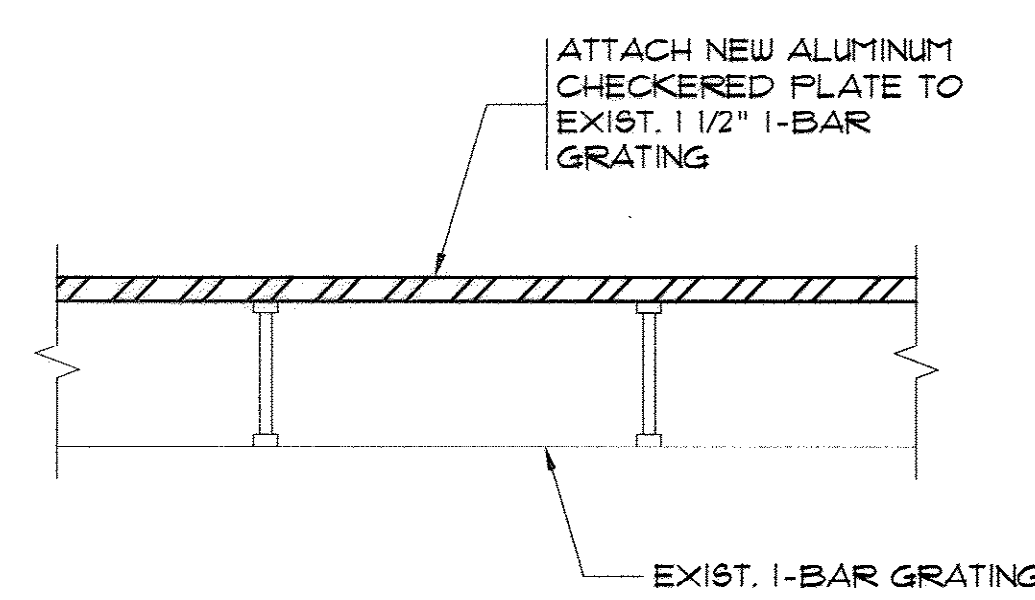
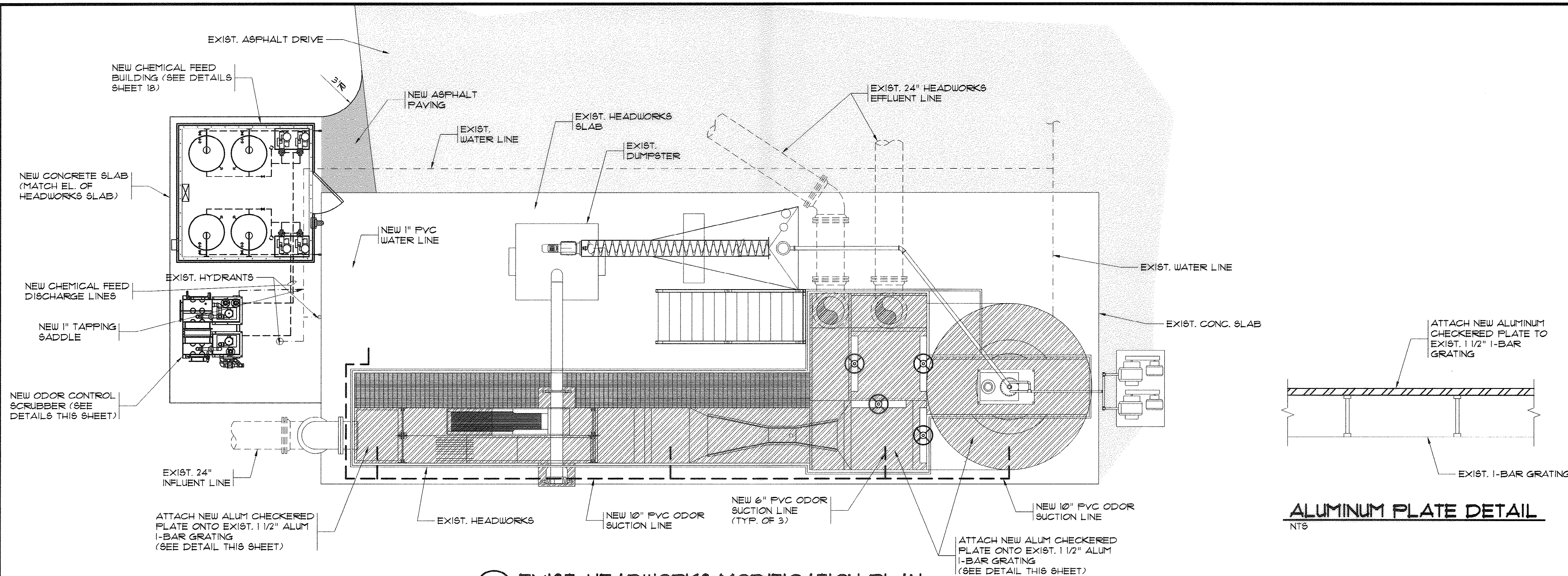


1 RAS LINE DISCHARGE SECTION
SCALE: 3/4"=1'-0"

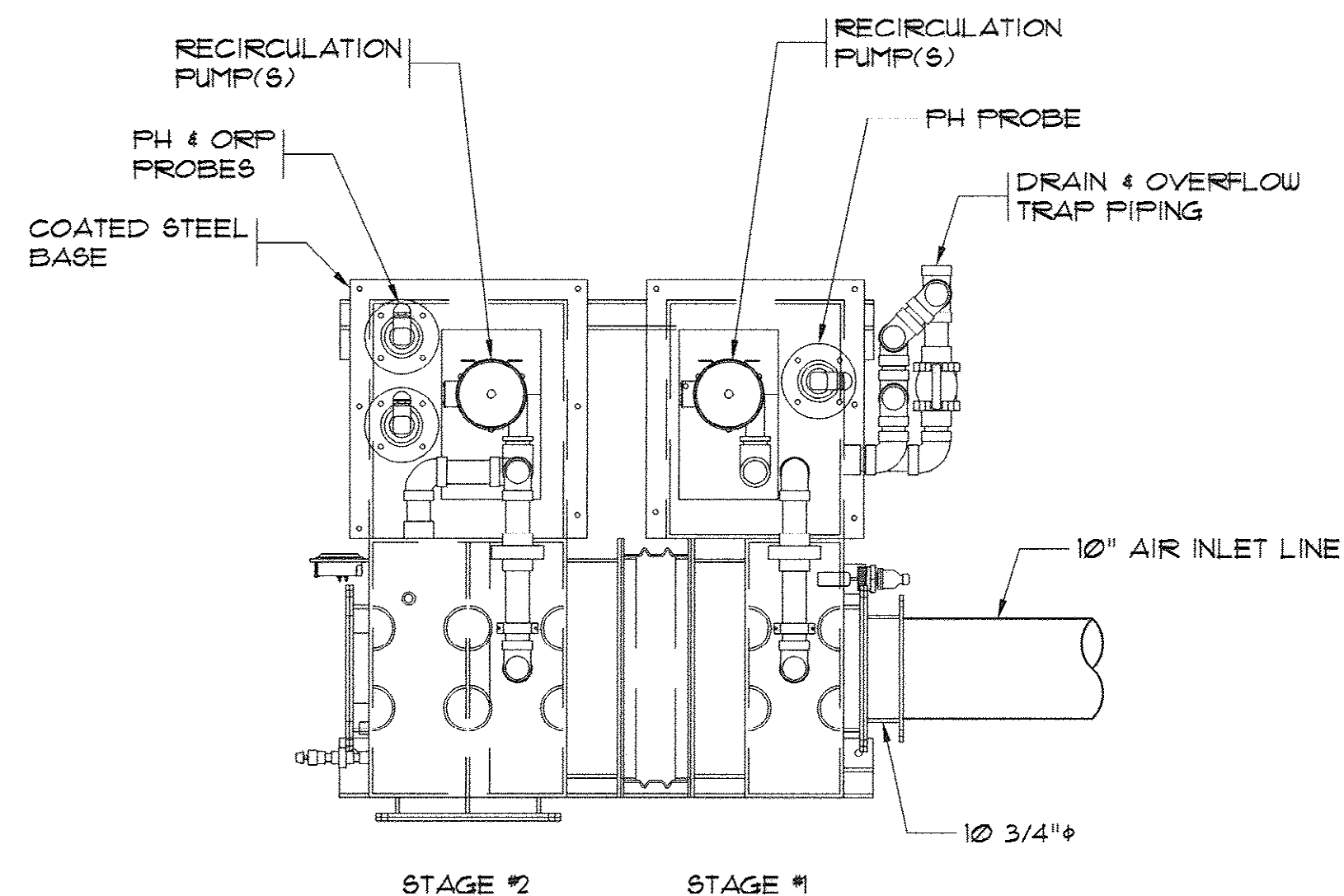


2 RAS LINE PIPE HANGER DETAIL
SCALE: 1"=1'-0"

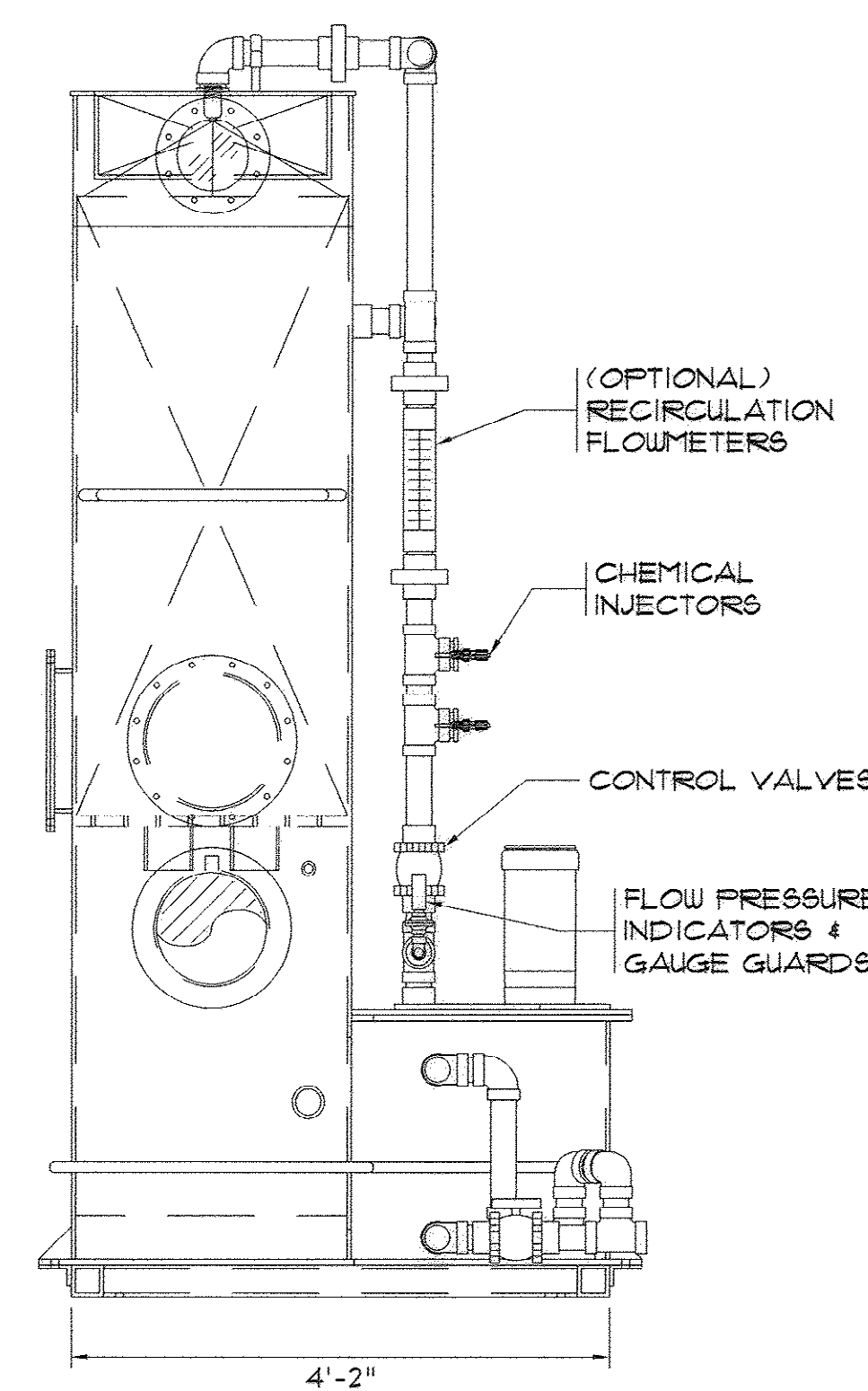
AS-BUILT
7-17-2009



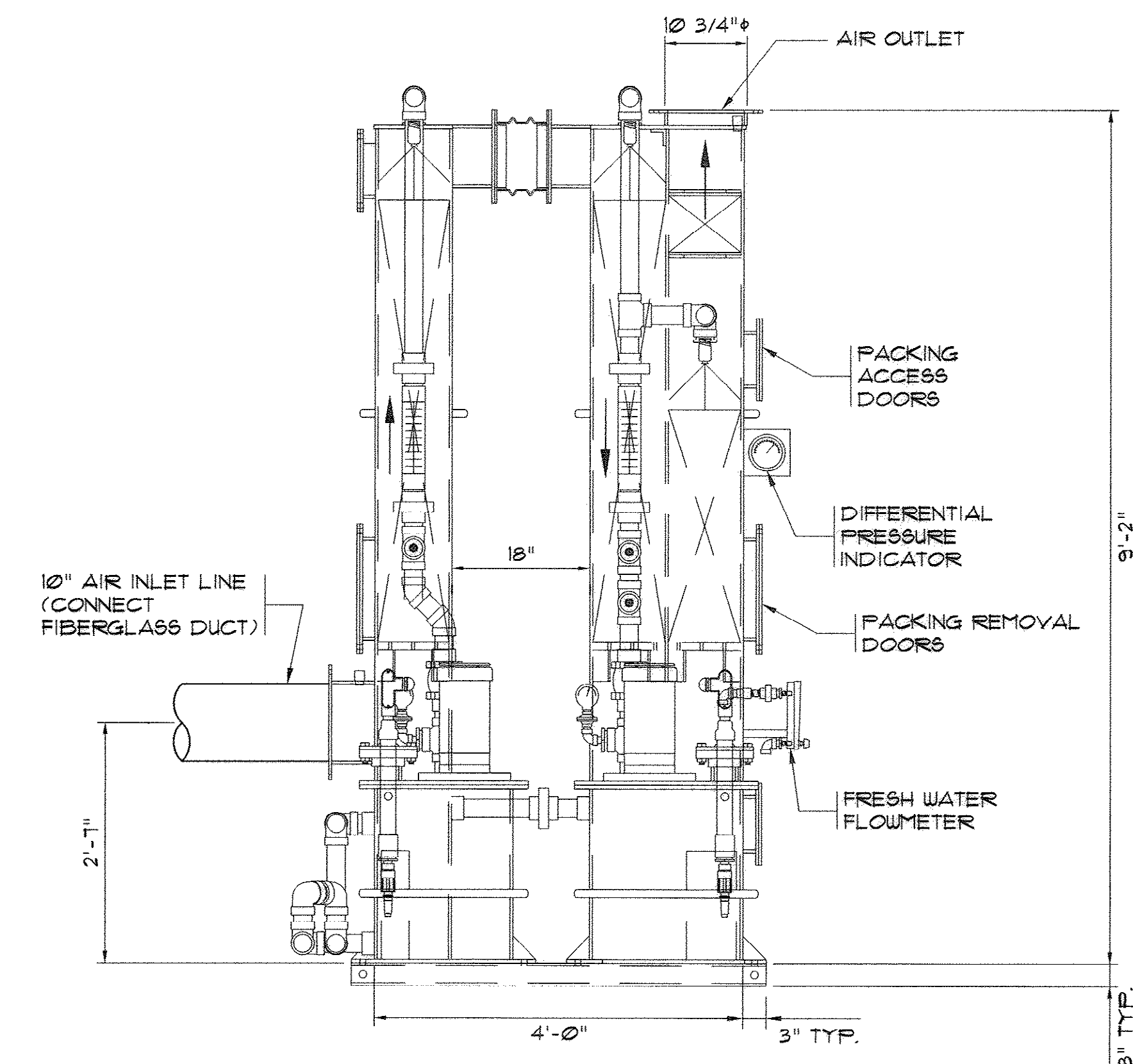
5 EXIST. HEADWORKS MODIFICATION PLAN
NTS



**ODOR CONTROL SCRUBBER
PLAN VIEW**
NTS



**ODOR CONTROL SCRUBBER
FRONT ELEVATION**
NTS



**ODOR CONTROL SCRUBBER
RIGHT ELEVATION**
NTS

AS-BUILT
7-17-2009

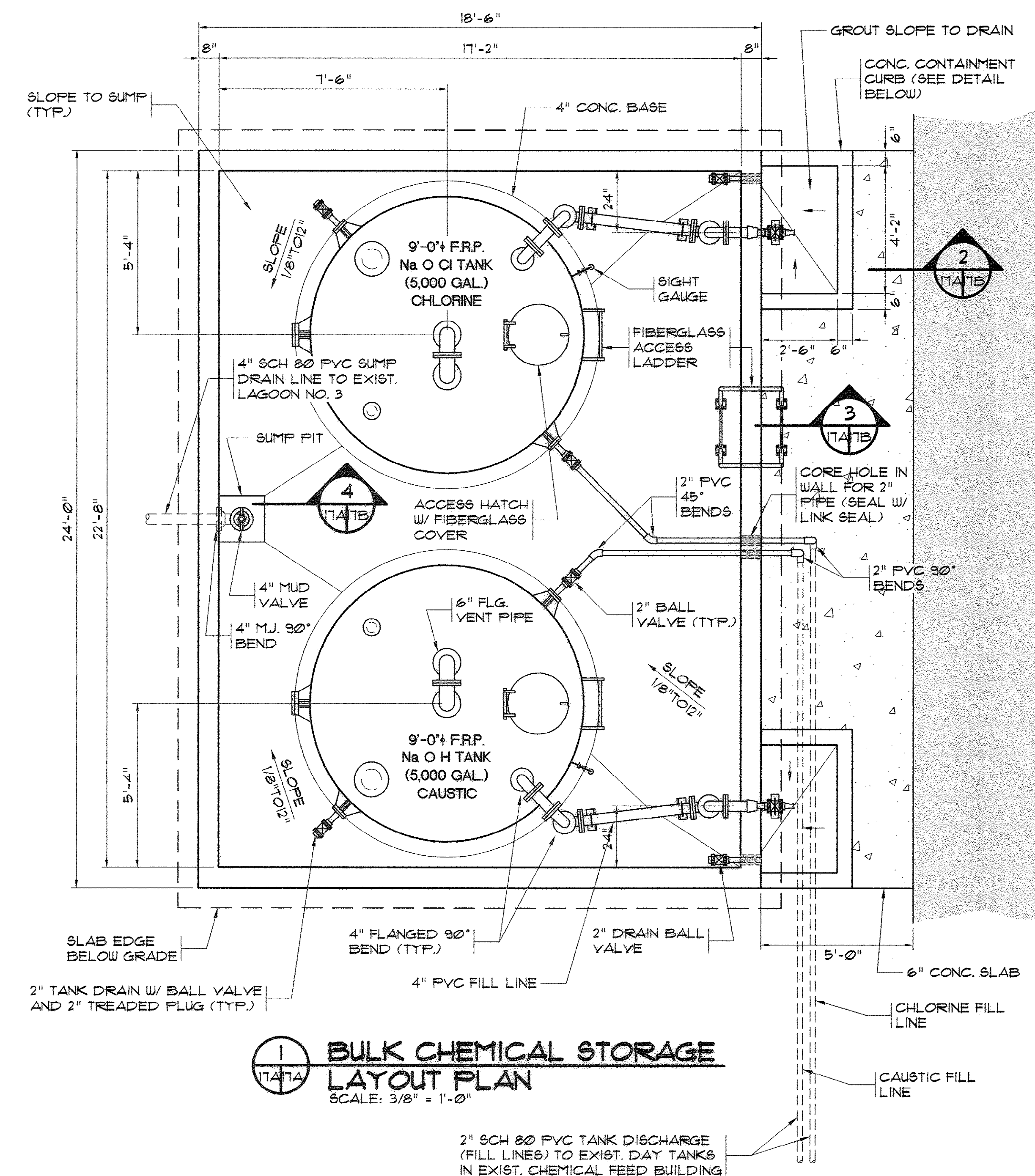
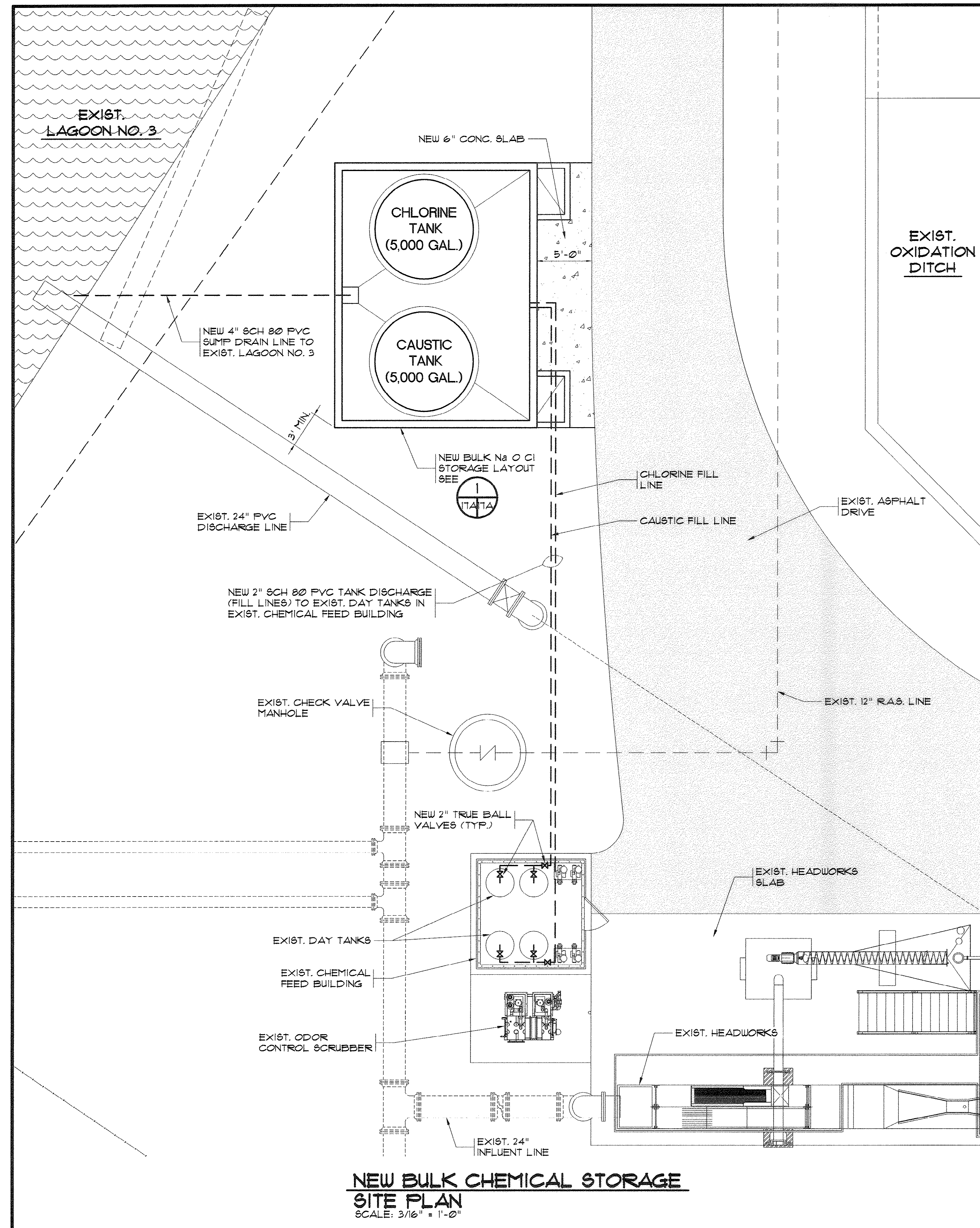
RM MARZIANO & MCGOUGH, P.A.
CONSULTING ENGINEERS
1305 SECOND AVENUE • SUITE 201 • CONWAY, SC 29526
PHONE: 843.486.0124 FAX: 843.486.0125

**EXIST. HEADWORKS
MODIFICATION PLAN**

**CONWAY WWTP
CLARIFIER ADDITION
HORRY COUNTY, SOUTH CAROLINA**

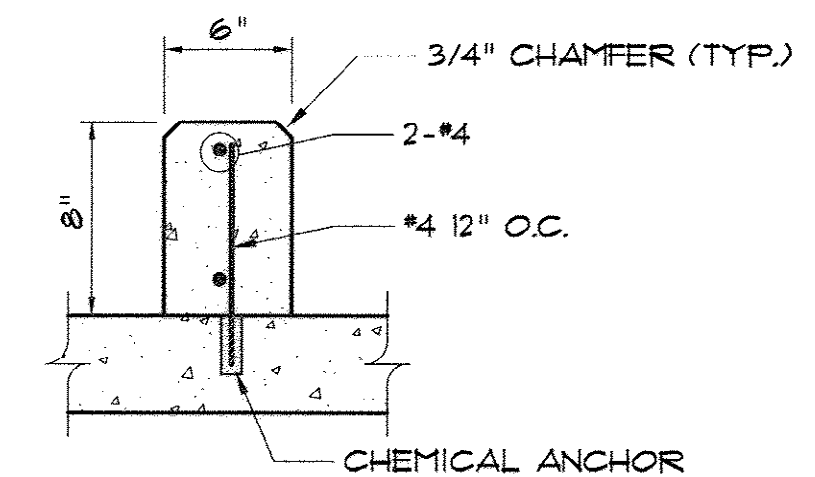
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Date:	JULY, 2009
Drawn:	ALG
Checked:	JWM
Job No.:	37007
Sheet No.:	17
Of: 34	Version: 4

35-005-017/36



NOTES:

1. ALL CHEMICAL FEED PIPING AND WATER LINES SHALL BE SCH 80 PVC. (U.O.N.)
2. PIPE SUPPORTS FOR CHEMICAL FEED LINES SHALL BE FIBERGLASS UNI-STRUT W/ S.S. PIPE STRAP @ 5'-0" O.C. MAX.
3. CONTRACTOR SHALL PROVIDE INSULATION AND HEAT TRACING FOR ALL PIPING, VALVES AND FITTINGS ASSOCIATED WITH BULK STORAGE. INSULATION SHALL BE URETHANE FOAM WRAPPED W/ PVC SHEATH.



**CONCRETE CONTAINMENT CURB
QUICK CONNECT ATTACHMENT**
N.T.S.

AS-BUILT

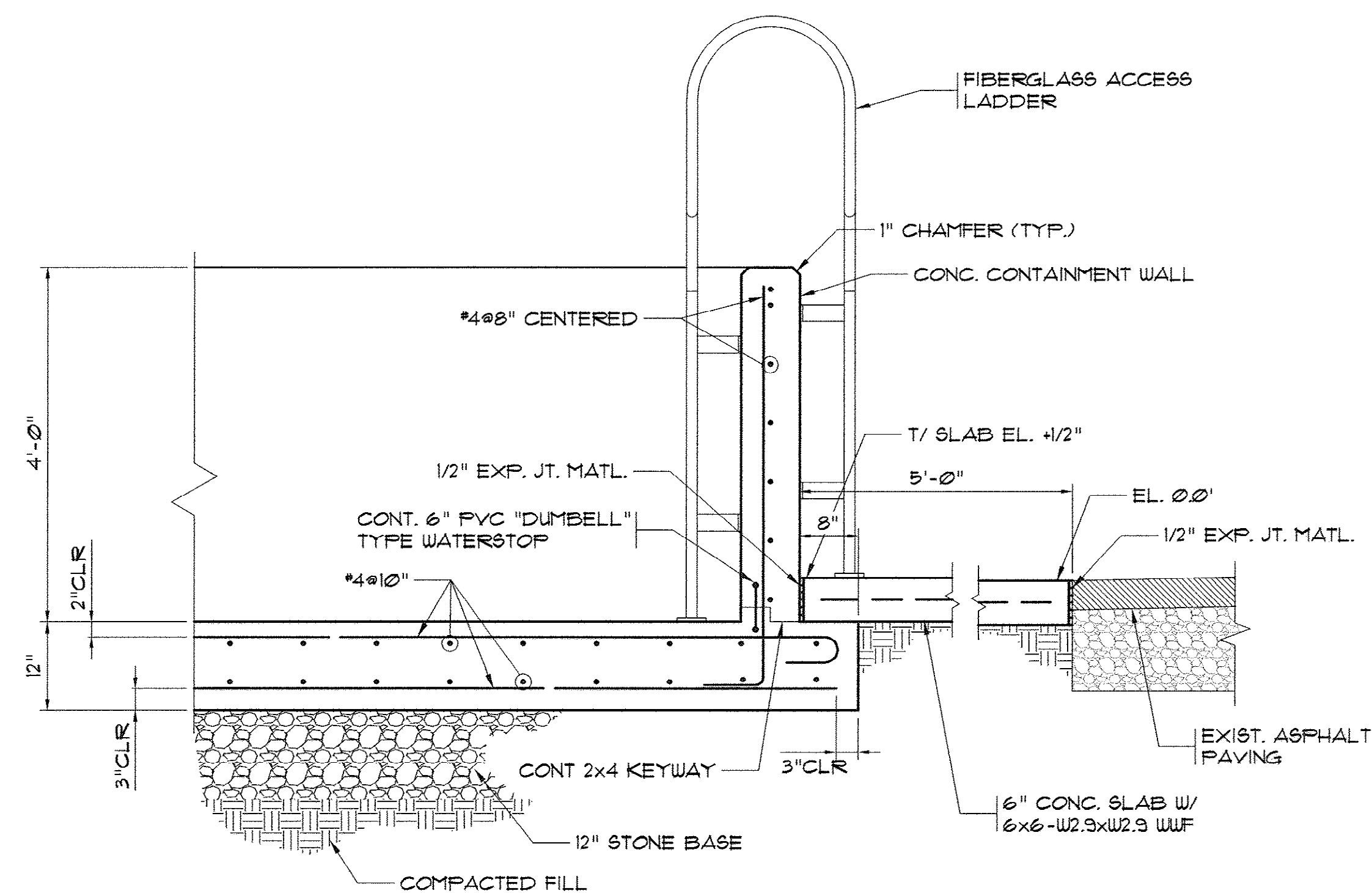
35-005-018136

MARZIANO & MCGOUGH, P.A.
CONSULTING ENGINEERS
REGISTERED PROFESSIONAL ENGINEERS
SOUTH CAROLINA
P.E. NO. 10000
P.E. NO. 10000

**BULK CHEMICAL
STORAGE PLAN VIEWS**

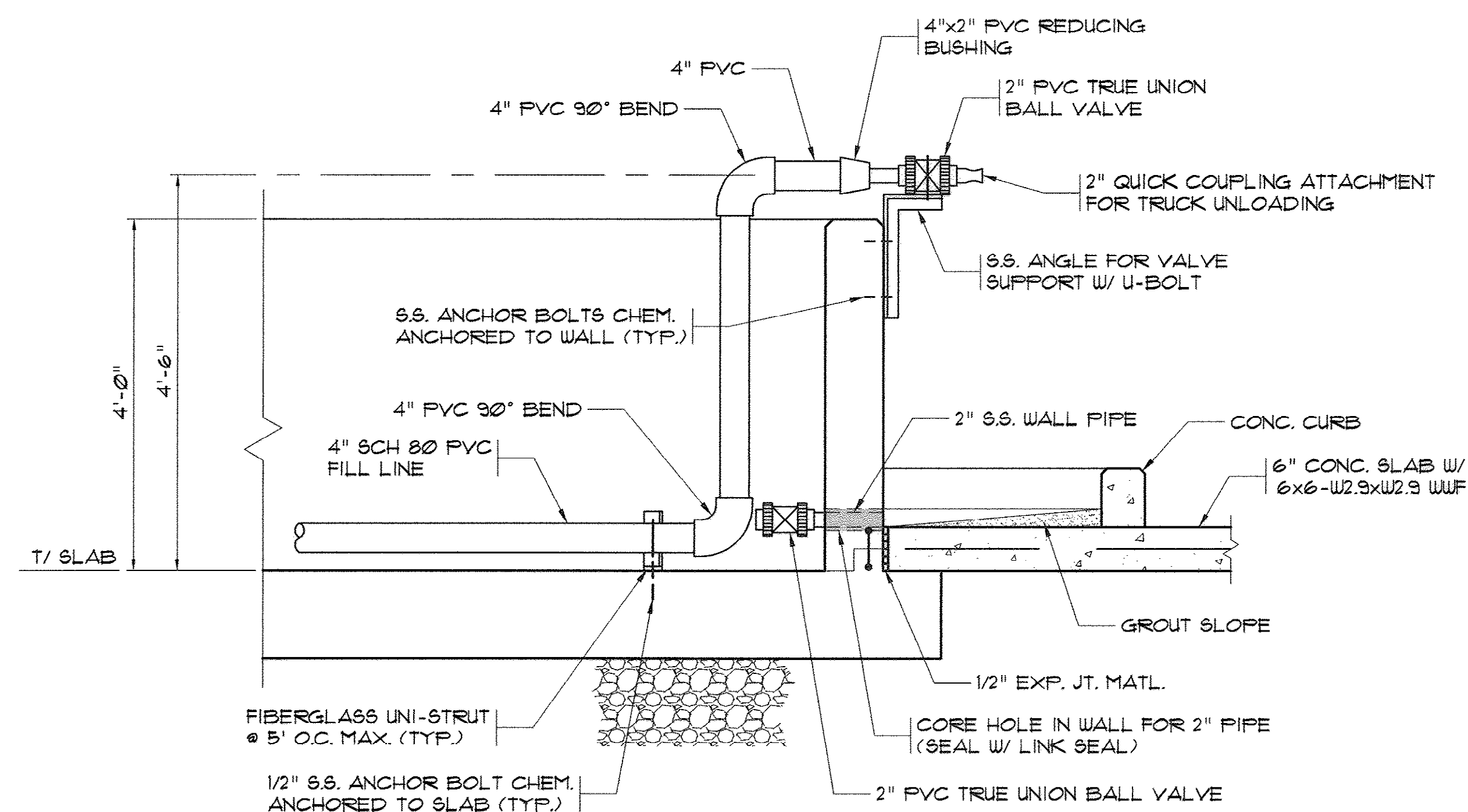
**CONWAY WWTP
CLARIFIER ADDITION
HORRY COUNTY, SOUTH CAROLINA**

Scale: AS SHOWN
Date: JULY, 2009
Drawn: DC
Checked: JWM
Job No.: 37007
Sheet No.: 17-A
Of: 34 Version: 1



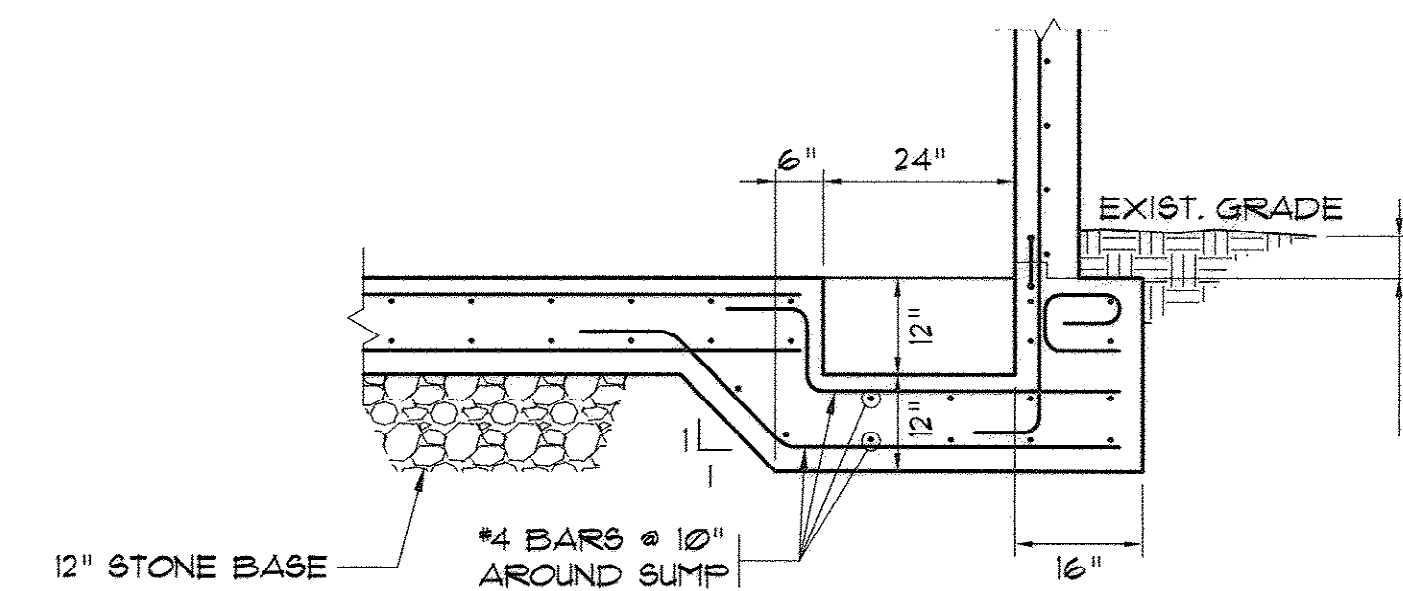
**FILL LINE CONNECTION &
CONTAINMENT WALL DETAIL**
SCALE: 3/4" = 1'-0"

NOTE:
PIPE SUPPORTS FOR CHEMICAL
FEED LINES SHALL BE FIBERGLASS
UNI-STRUT W/ S.S. PIPE STRAP @
5'-0" O.C. MAX.

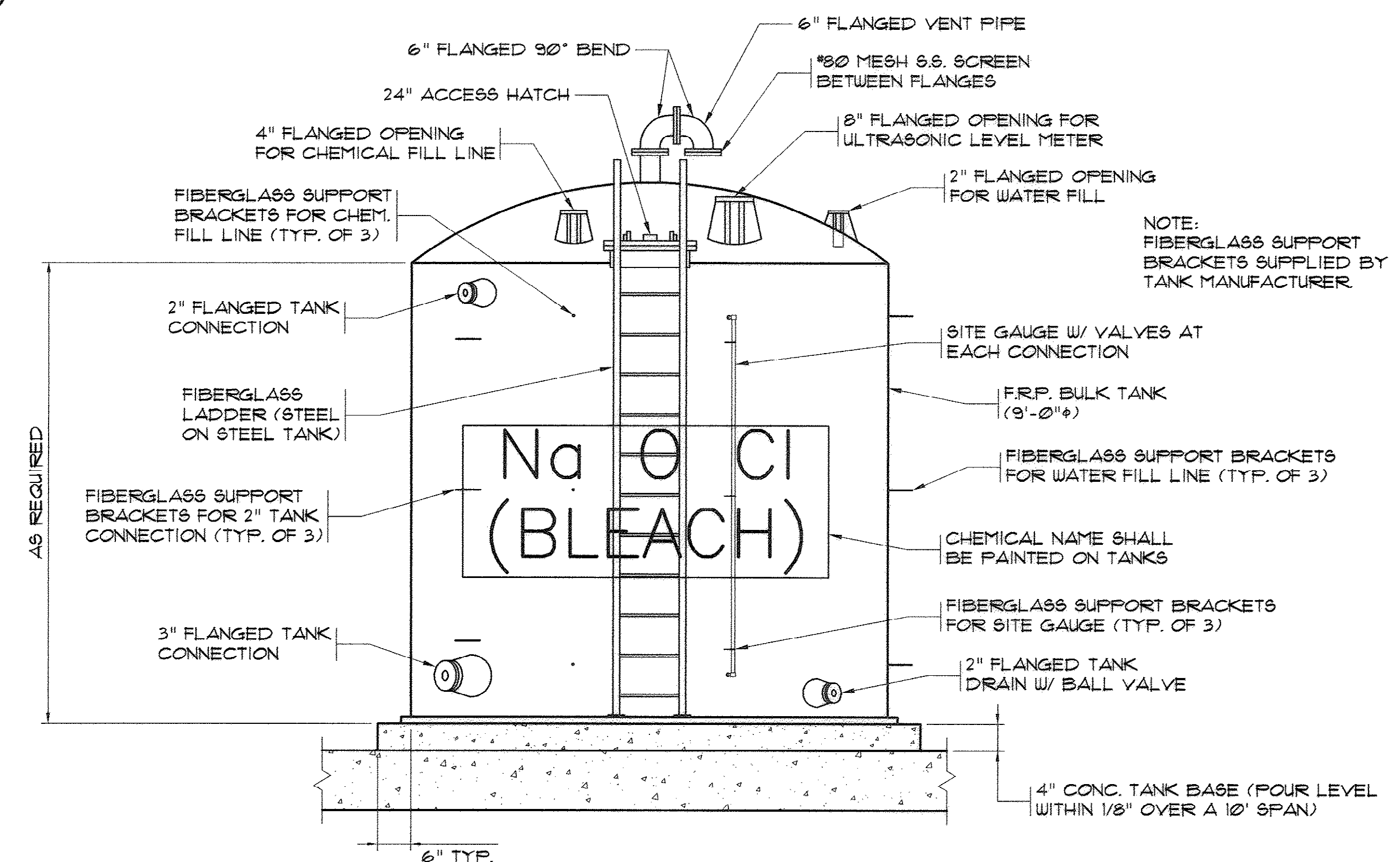


2 SECTION VIEW
ITATE SCALE: 3/4" = 1'-0"

NOTE:
ADD CHEMICAL NAME
PLATE AT FILL LINE.



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



TYP. TANK OPENING AND
APPURTENANCES DETAIL
N.T.S.

AS-BUILT

35-005-019/36

MARZIANO & MCGOUGAN, P.A.
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1300 SECOND AVENUE • SUITE 201 • CONWAY, SC 29526
Phone: 843/468-0124 Fax: 843/468-0129

BULK STORAGE SECTIONS AND DETAILS

CONWAY WWTP
CLARIFIER ADDITION
Horry County, South Carolina

Scale: AS SHOWN

Date: JULY, 2009

Drawn:	DC
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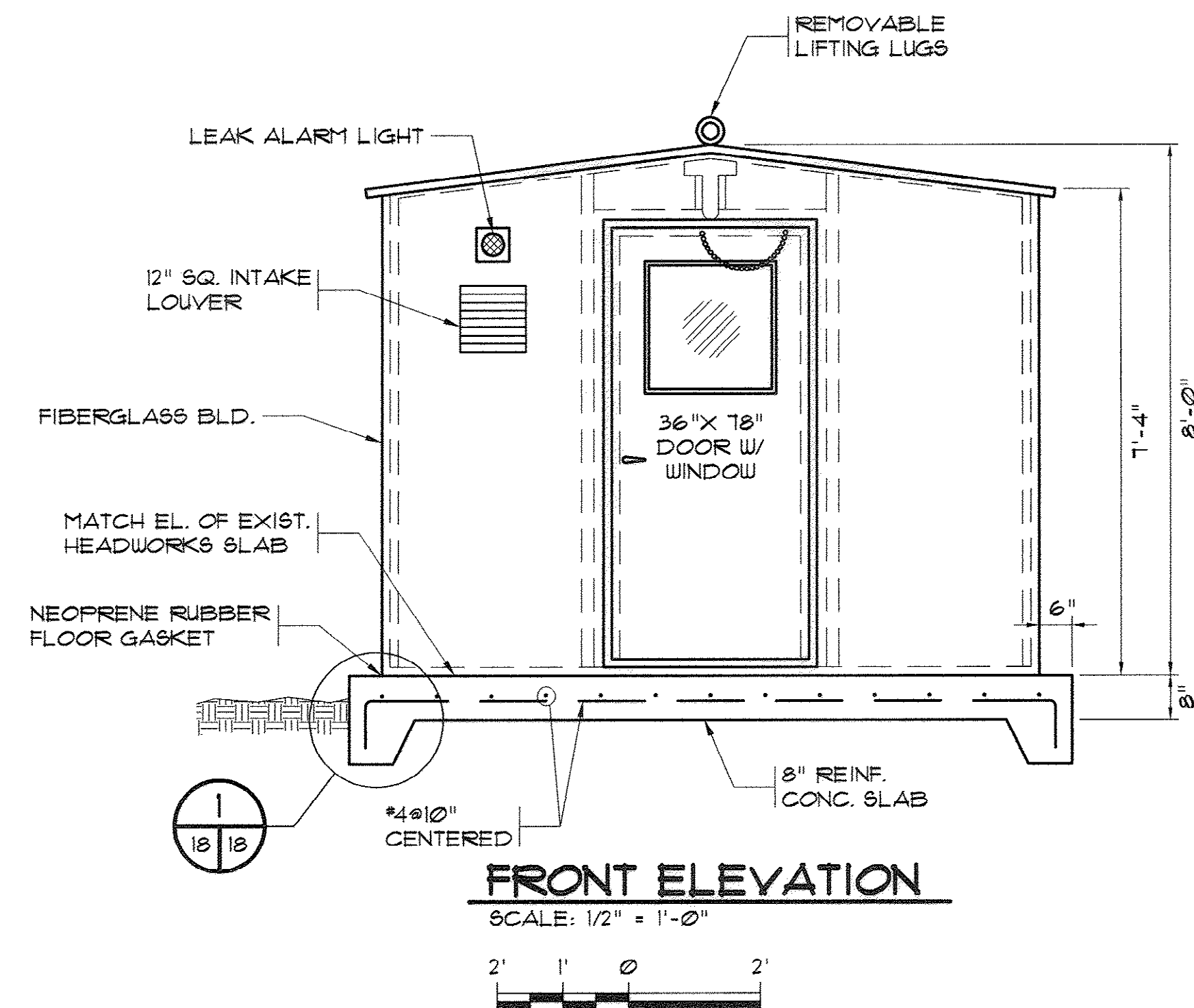
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Job No.: 37007

Sheet No.:

17-B

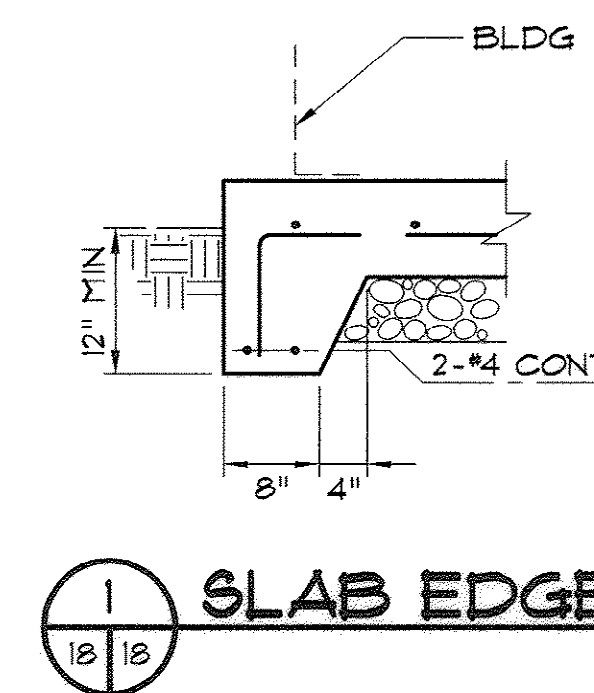
Of: 34 Version: 1



NOTES:

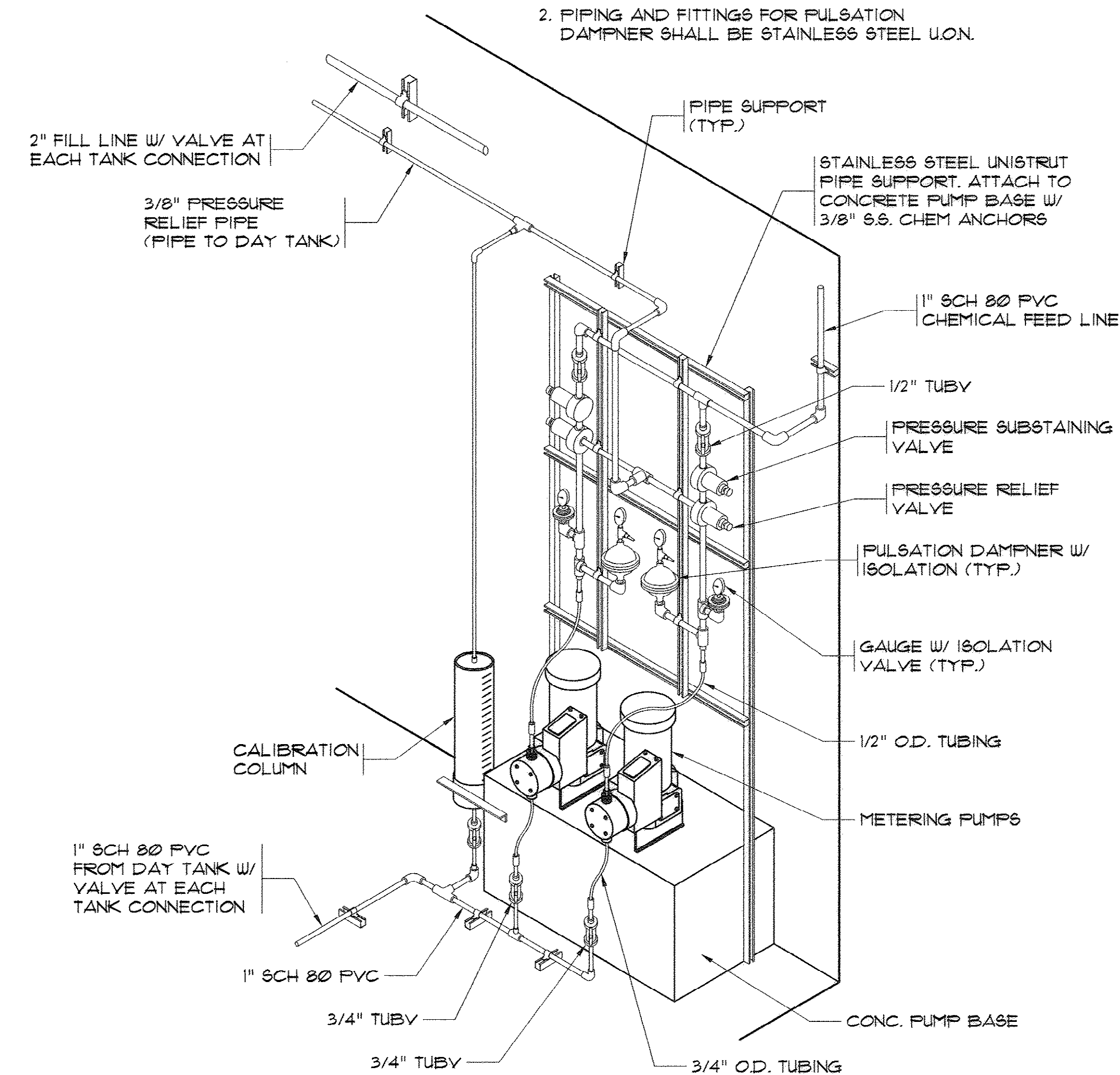
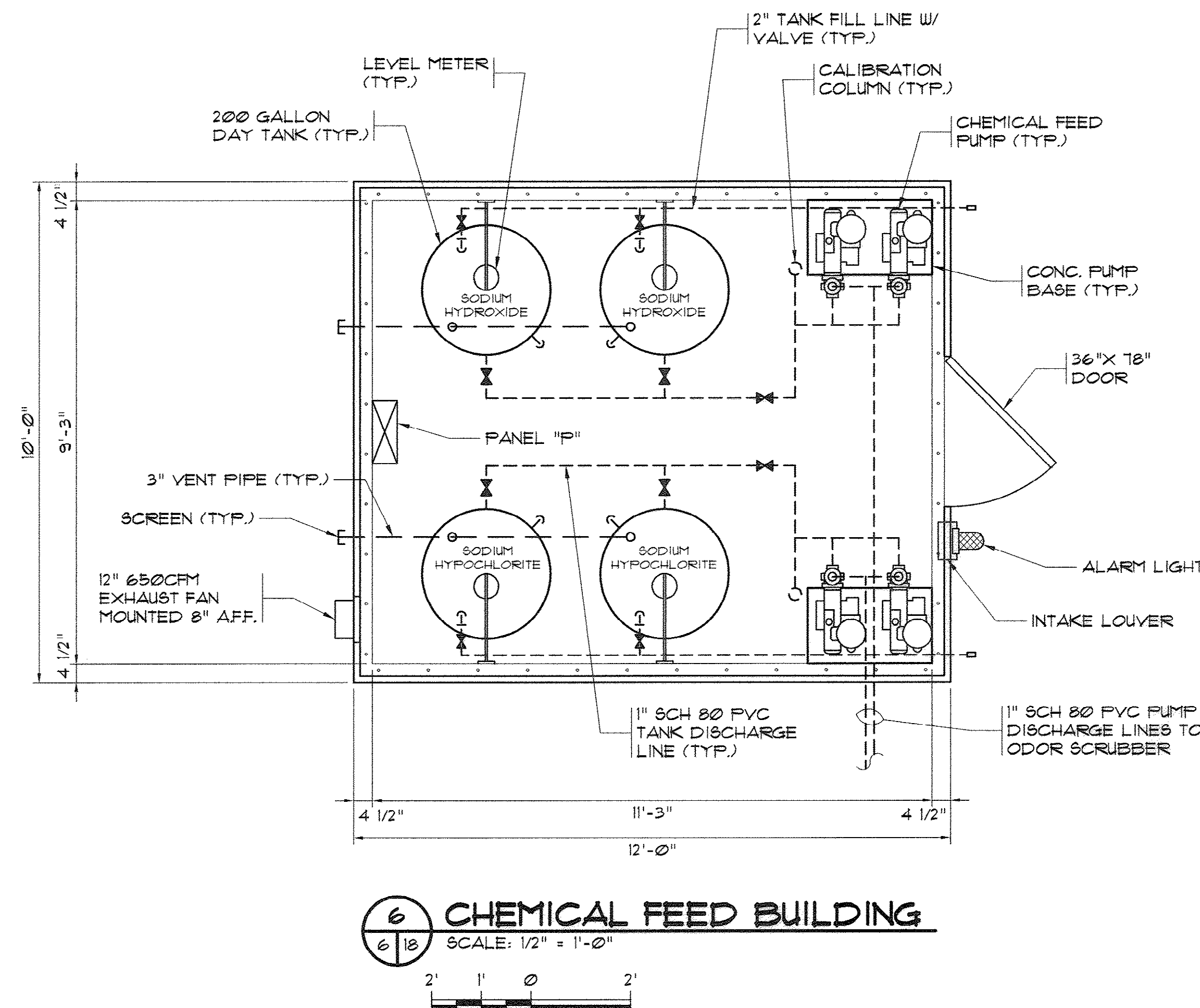
1. FIBERGLASS BUILDING SHALL BE DESIGNED FOR A 125 MPH WIND LOAD AND A 30 LBS/FT. SNOW LOAD. THE STRUCTURE WILL HAVE A R VALUE OF 7. THE STRUCTURE SHALL BE MAINTENANCE FREE AND CORROSION RESISTANT. DOOR LATCHES AND HINGES SHALL BE STAINLESS STEEL. THE BUILDING SHALL HAVE CORROSION RESISTANT MOUNTING CHANNELS ON ALL FOUR SIDES. THE BUILDING SHALL BE PREWIRED USING LIQUID TIGHT CONDUIT.

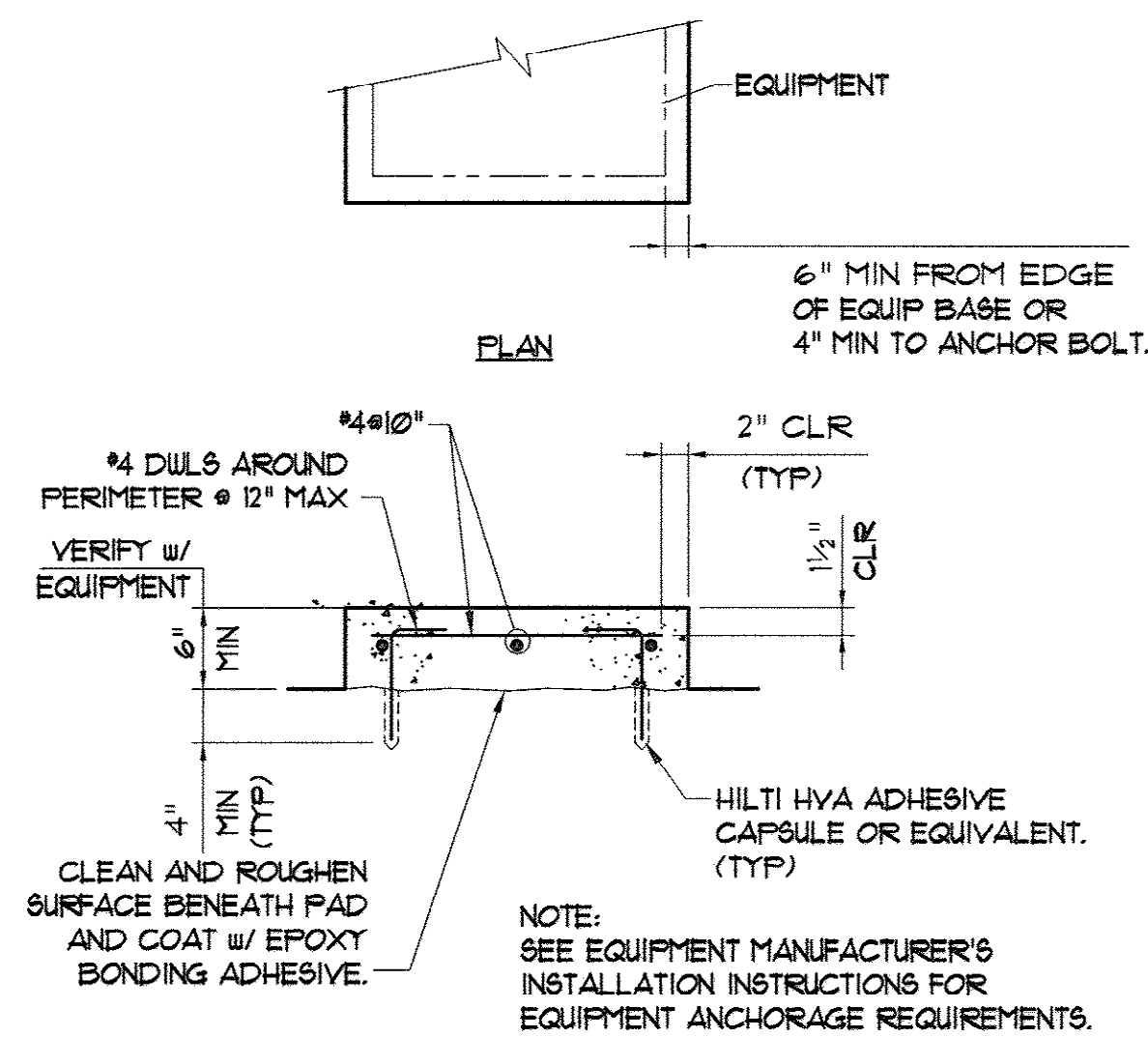
2. THE BUILDING SHALL HAVE A 12' X 12' SAFETY GLASS BUILT INTO THE DOOR. THE DOOR SHALL ALSO HAVE PANIC HARDWARE INSTALLED. THE BUILDING SHALL BE COMPLETE WITH SERVICE ENTRANCE POWER DISCONNECT, A 40 AMP 120/240 VOLT PANEL AND SHALL BE COMPLETELY WIRED. UNISTRUT SHALL BE PROVIDED FOR MOUNTING THE EQUIPMENT INSIDE THE BUILDINGS. (SEE NOTES ON PLANS FOR ADDITIONAL DETAILS.)



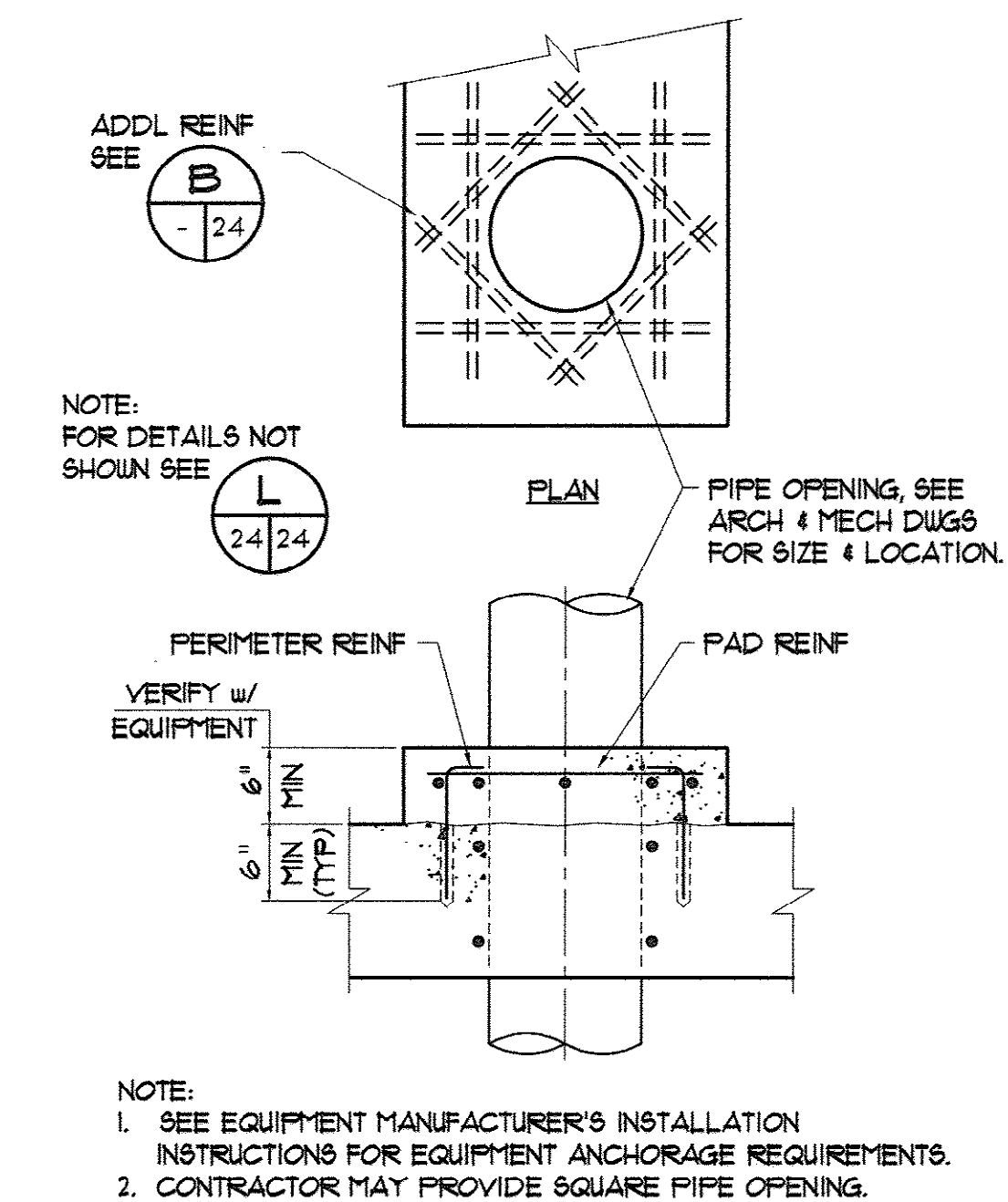
NOTES:

- EXTEND ALL FILL LINES & PRESSURE RELIEF LINES TO WITHIN 2" OF THE BOTTOM OF THE DAY TANKS.
- PIPING AND FITTINGS FOR PULSATION DAMPNER SHALL BE STAINLESS STEEL U.O.N.

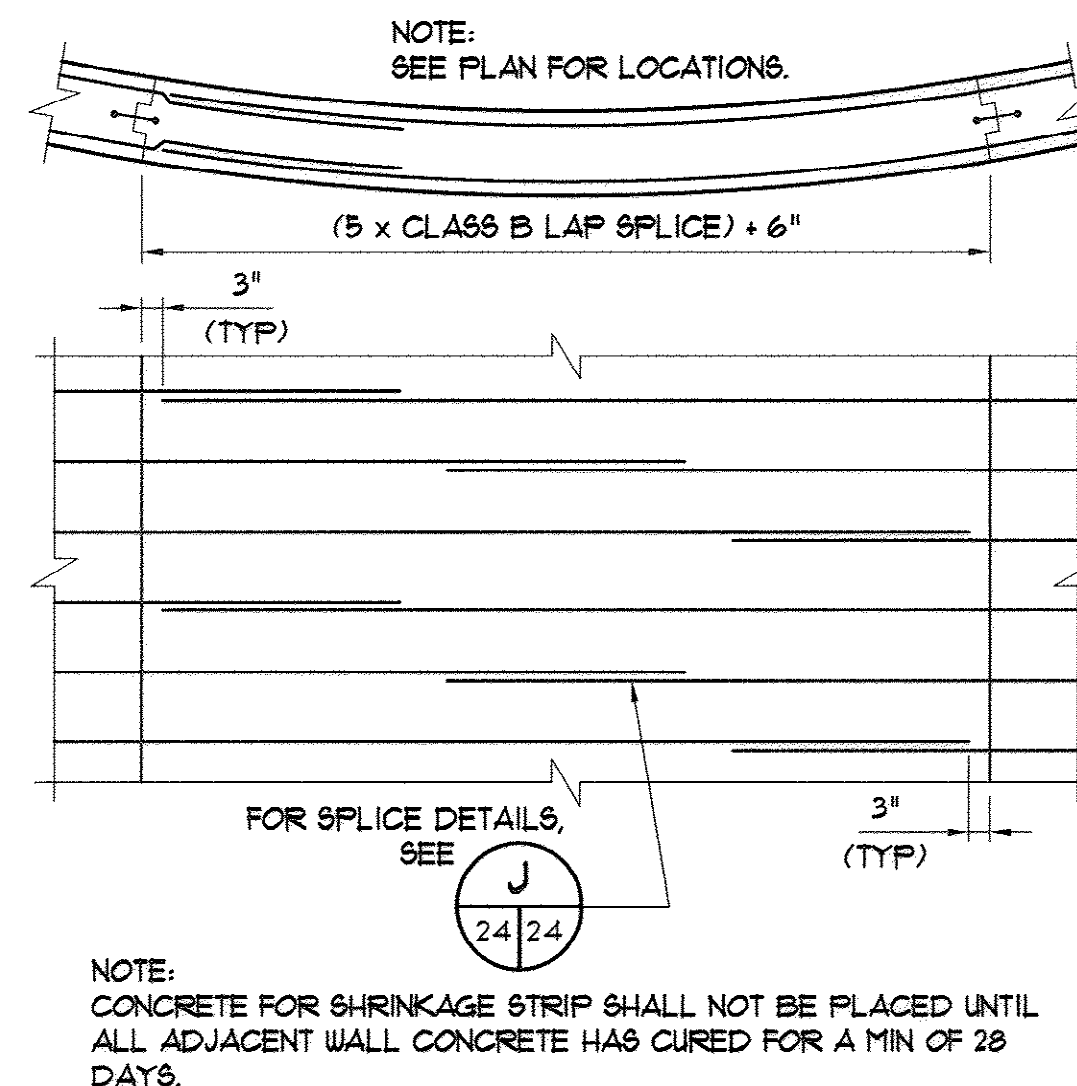




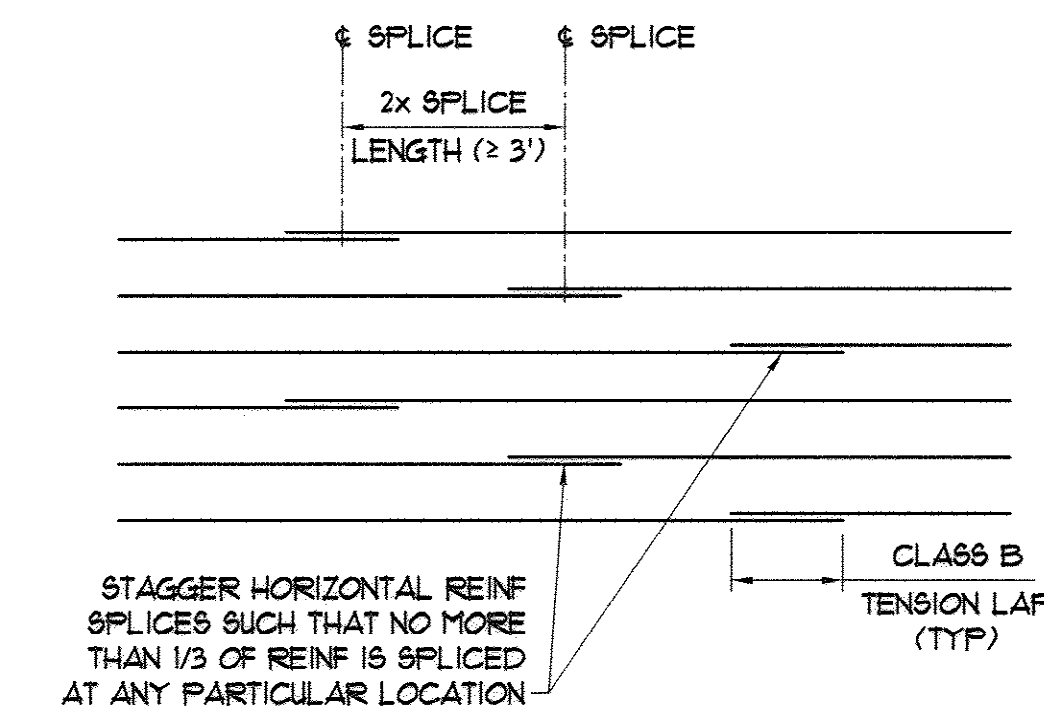
L TYPICAL EQUIPMENT PAD
- 24/24



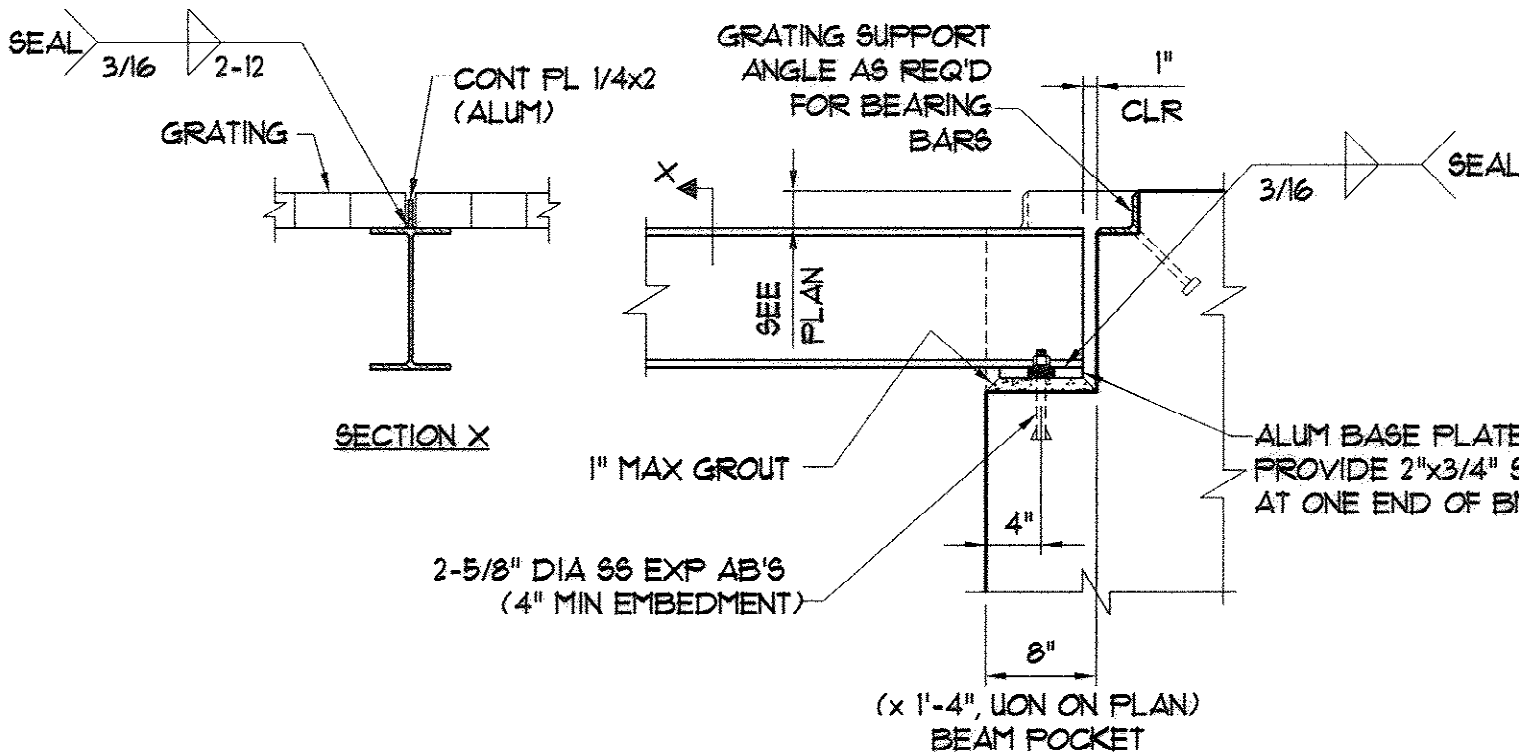
M TYPICAL EQUIPMENT PAD WITH OPENING
- 24/24 NO SCALE



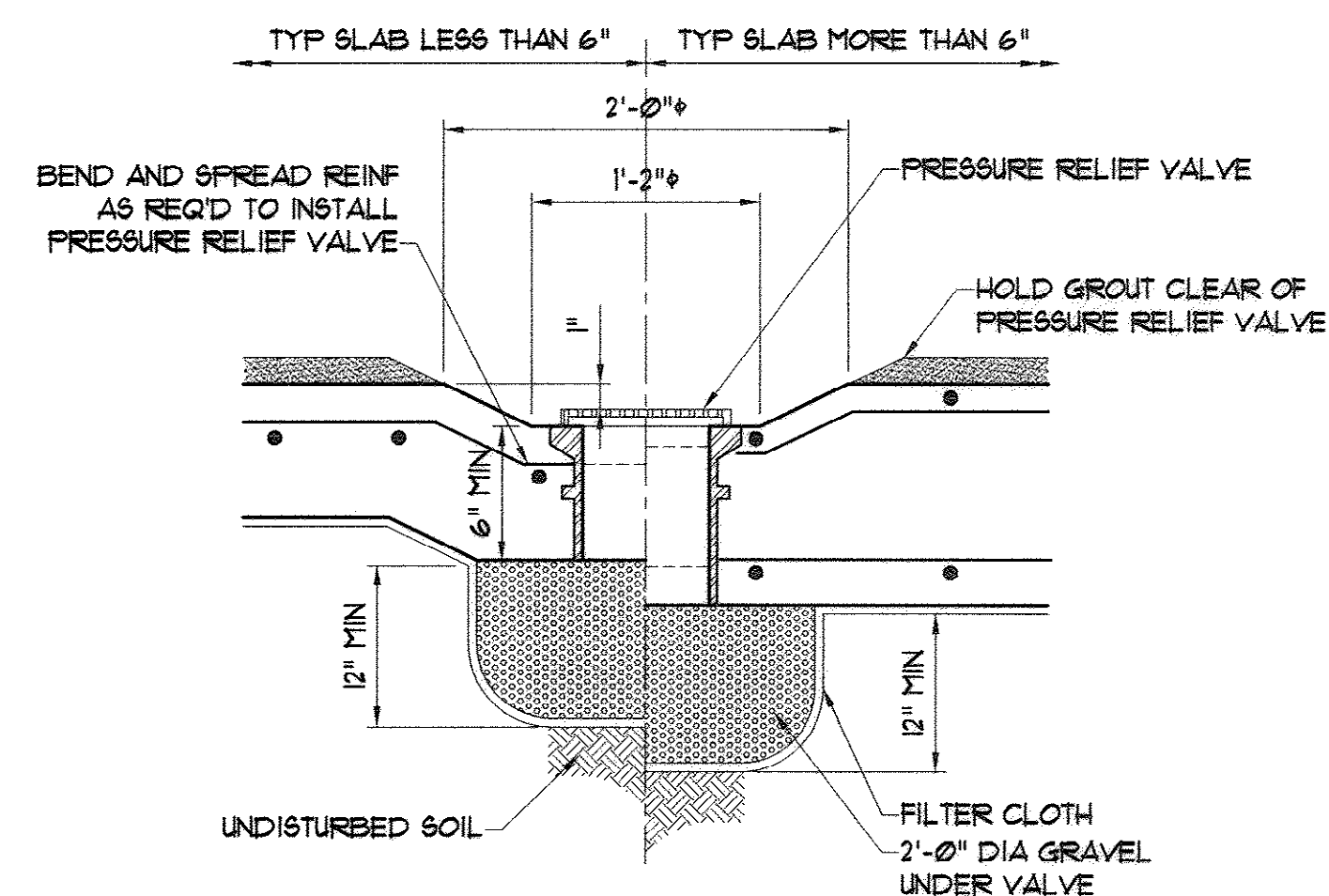
H TYP SHRINKAGE STRIP
- 24/24 NO SCALE



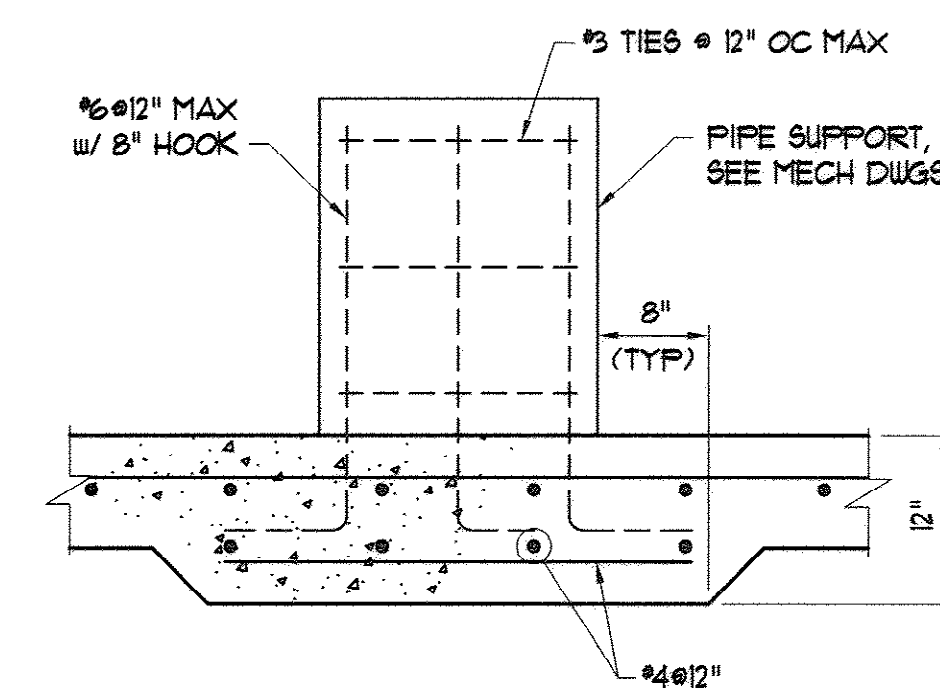
J CIRCULAR WALL REINFORCING SPLICING
- 24/24 NO SCALE



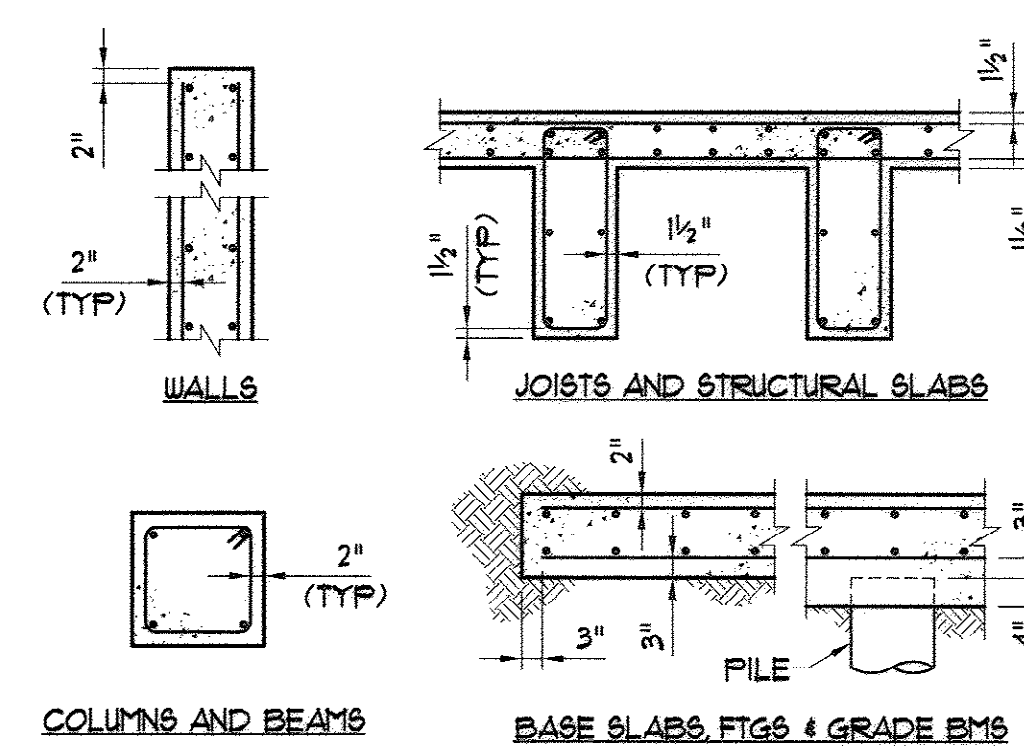
K TYP BEAM POCKET & GRATING SUPPORT DETAIL
- 24/24 NO SCALE



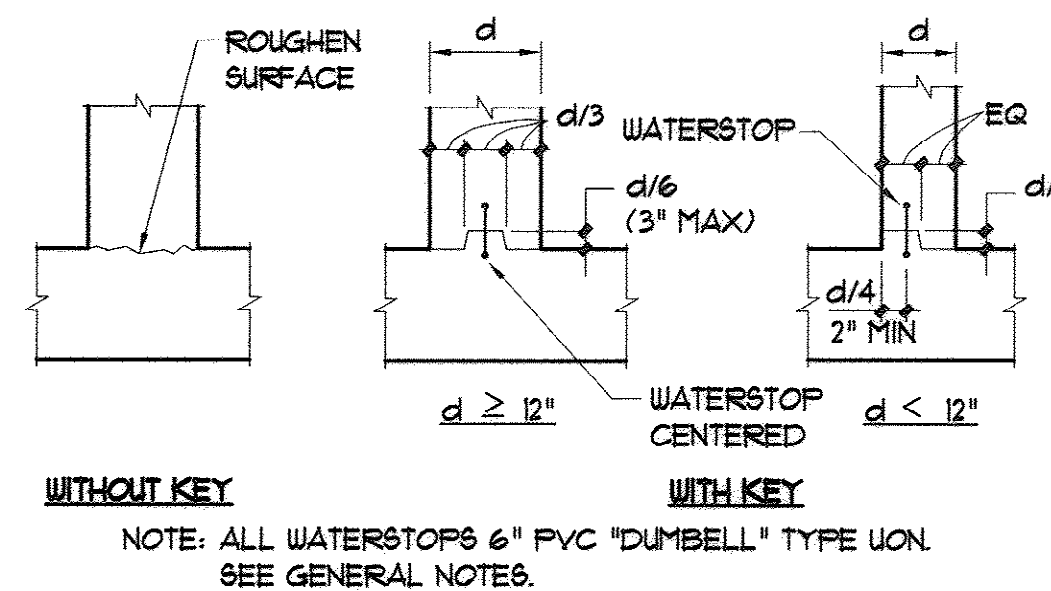
A PRESSURE RELIEF VALVE DETAIL
- 24/24 NO SCALE



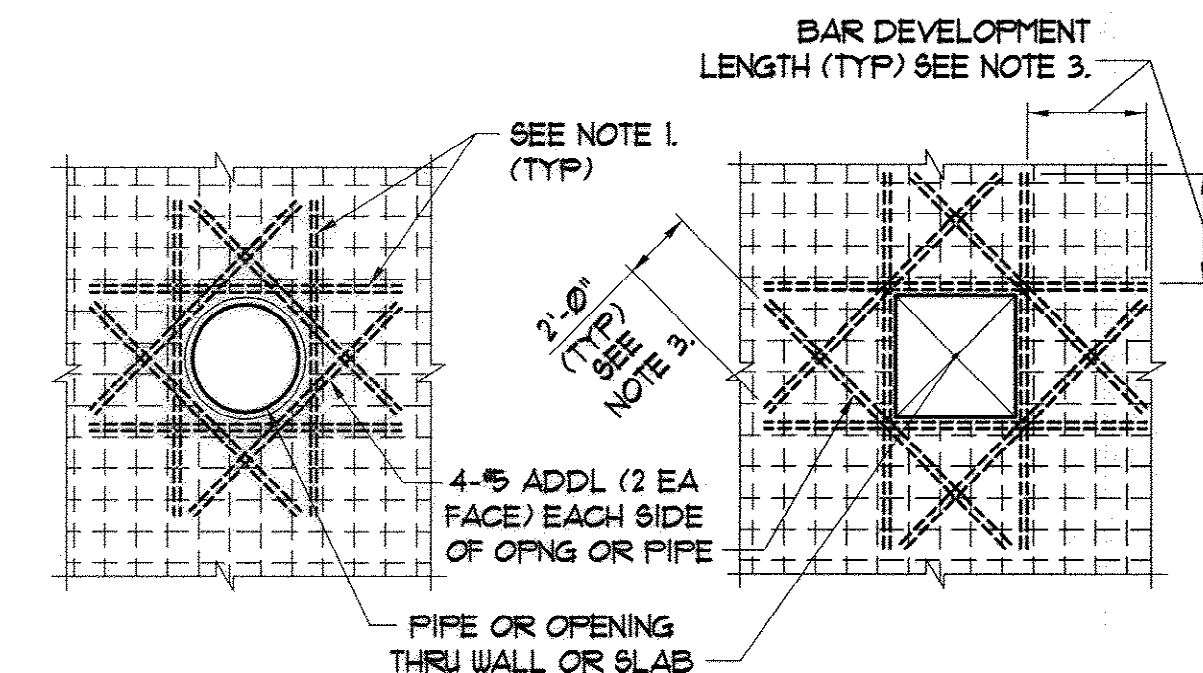
E TYP PIPE SUPPORT PIER
- 10/24 NO SCALE



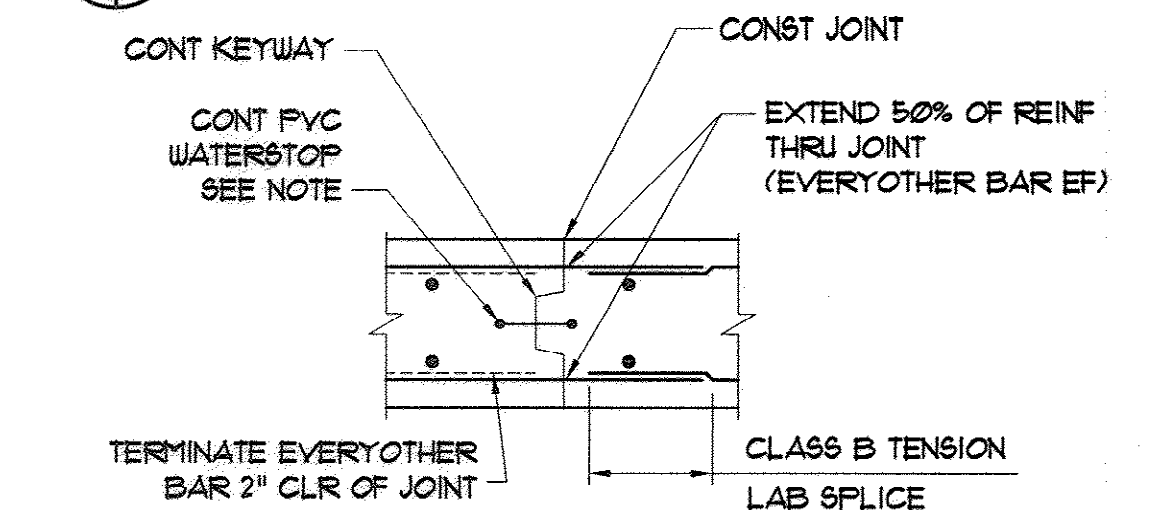
F TYP REINF BAR CLEARANCES
- 24/24 (UNLESS OTHERWISE NOTED) NO SCALE



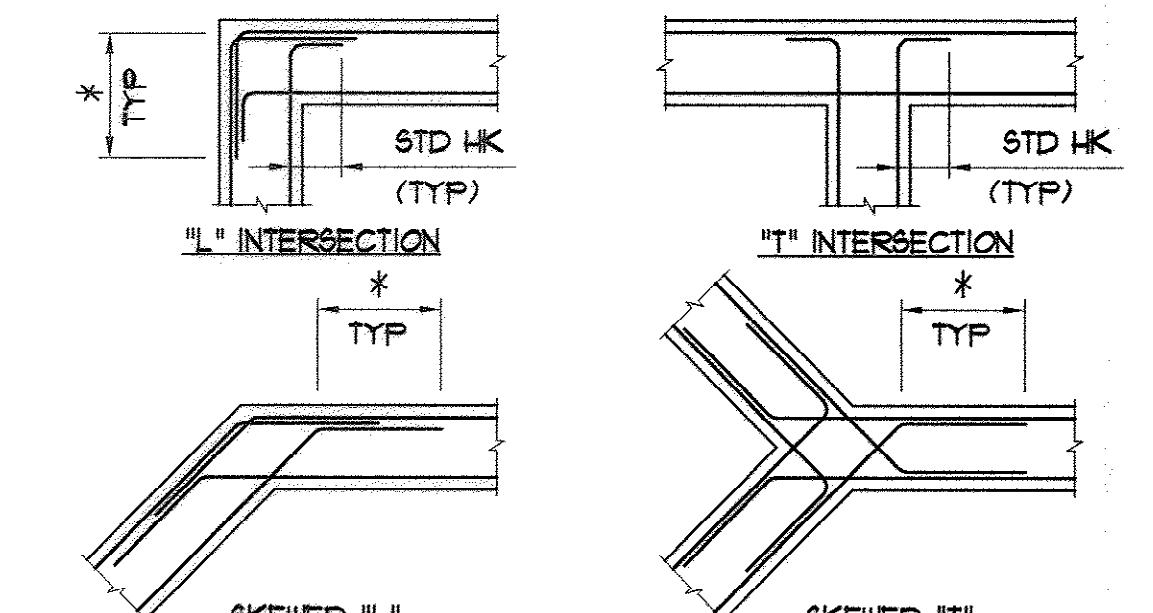
G STANDARD CONSTRUCTION JOINT DETAILS
- 24/24 NO SCALE



B TYP ADDITIONAL REINF AROUND OPNG AT SLAB OR WALL
- 24/24 NO SCALE

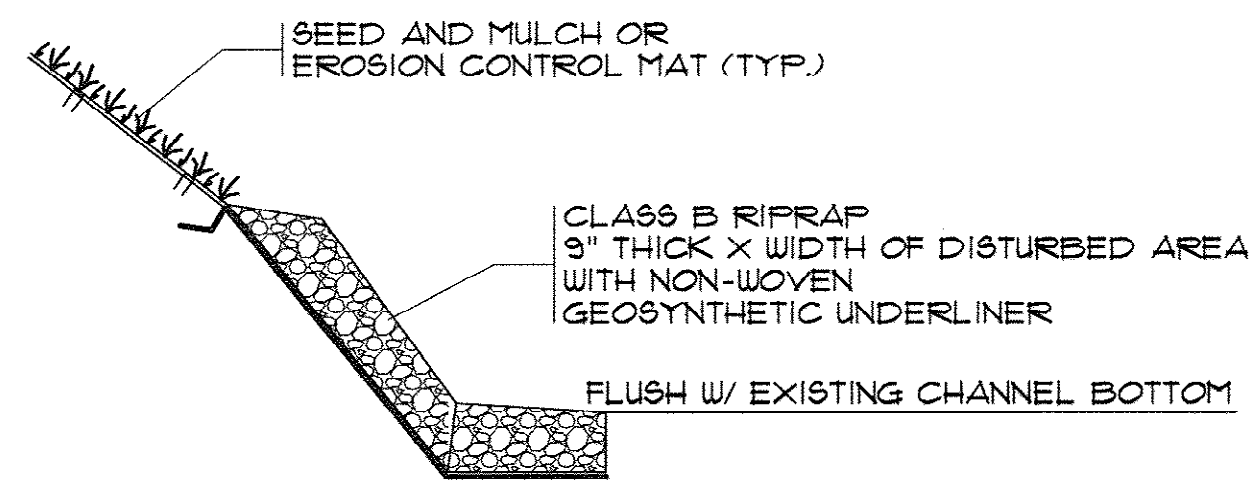


C TYP WALL OR SLAB CONSTRUCTION JOINT
- 24/24 NO SCALE



D TYP WALL INTERSECTION REINFORCING
- 24/24 NO SCALE

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RIP RAP SLOPE PROTECTION
N.T.S.

SEEDBED PREPARATION

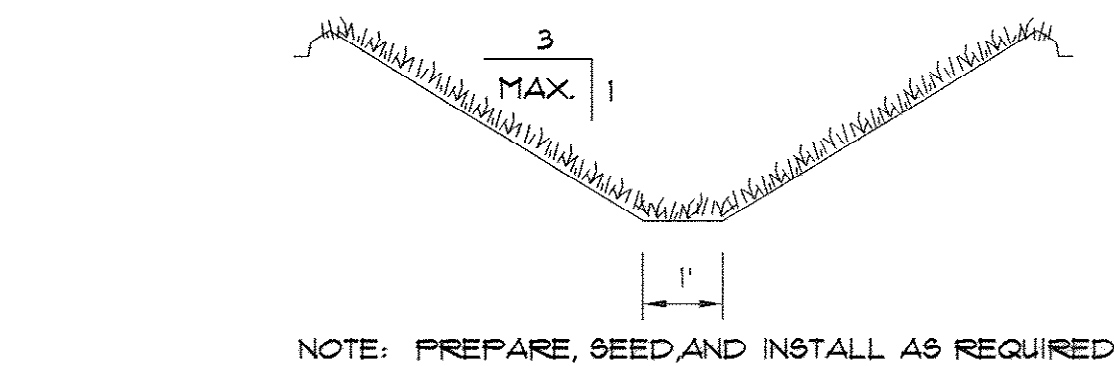
1. CHISEL COMPACTED AREAS AND SPREAD TOPSOIL 3 INCHES DEEP OVER ADVERSE SOIL CONDITIONS.
2. RIP THE ENTIRE AREA TO 6" DEPTH.
3. REMOVE ALL LOOSE ROCK, ROOTS AND OTHER OBSTRUCTIONS LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
4. APPLY AGRICULTURAL LIME, FERTILIZER AND SUPER PHOSPHATE UNIFORMLY AND MIX 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. PERMANENT VEGETATION.
 - A. SUMMER (MARCH 1 - AUGUST 14)

COMMON BERMUDA (HULLED)	25 lbs./ACRE
GERMAN MILLET	10 lbs./ACRE
 - B. WINTER (AUGUST 15 - FEBRUARY 28)

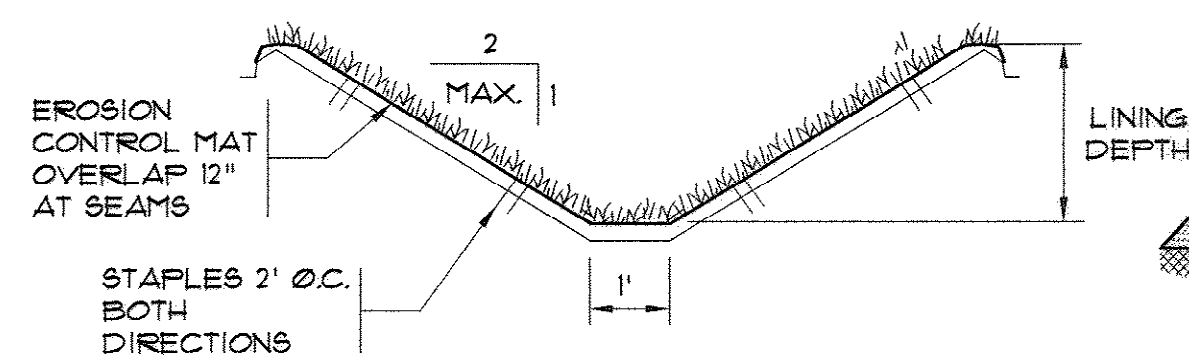
ANNUAL RYE	40 lbs./ACRE
COMMON BERMUDA (UNHULLED)	30 lbs./ACRE
12. RYE GRAIN AND MILLET SHALL BE ADDED IN ORDER TO ESTABLISH QUICK GROUND COVER FOR EROSION CONTROL PURPOSES.
13. TEMPORARY VEGETATION:
 - A. (APRIL 1 - AUGUST 15)

ANNUAL SUDAN GRASS (SWEET OF TIF)	40 lbs./ACRE
BROWN TOP MILLET	50 lbs./ACRE
 - B. (AUGUST 15 - MARCH 1)

RYE GRAIN	55 lbs./ACRE
-----------	--------------
14. OAT GRAIN IS TO BE ADDED IF SEEDING DATE IS BETWEEN MARCH 1 AND APRIL 10, AT THE RATE OF 10 POUNDS PER ACRE.
15. OTHER PLANTINGS OR SEEDING AS CONTAINED IN THE CRITICAL AREA STABILIZATION SECTION OF SC9 HANDBOOK "EROSION AND SEDIMENT CONTROL IN DEVELOPING AREAS" MAY BE USED PROVIDED THE WORK COMPLIES WITH ALL APPLICABLE SPECIFICATIONS CONTAINED IN SC9 HANDBOOK.
16. CONSULT CONSERVATION INSPECTOR ON MAINTENANCE AND FERTILIZATION AFTER PERMANENT COVER IS ESTABLISHED



GRASS (SEEDED) SWALE



EROSION CONTROL MAT 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

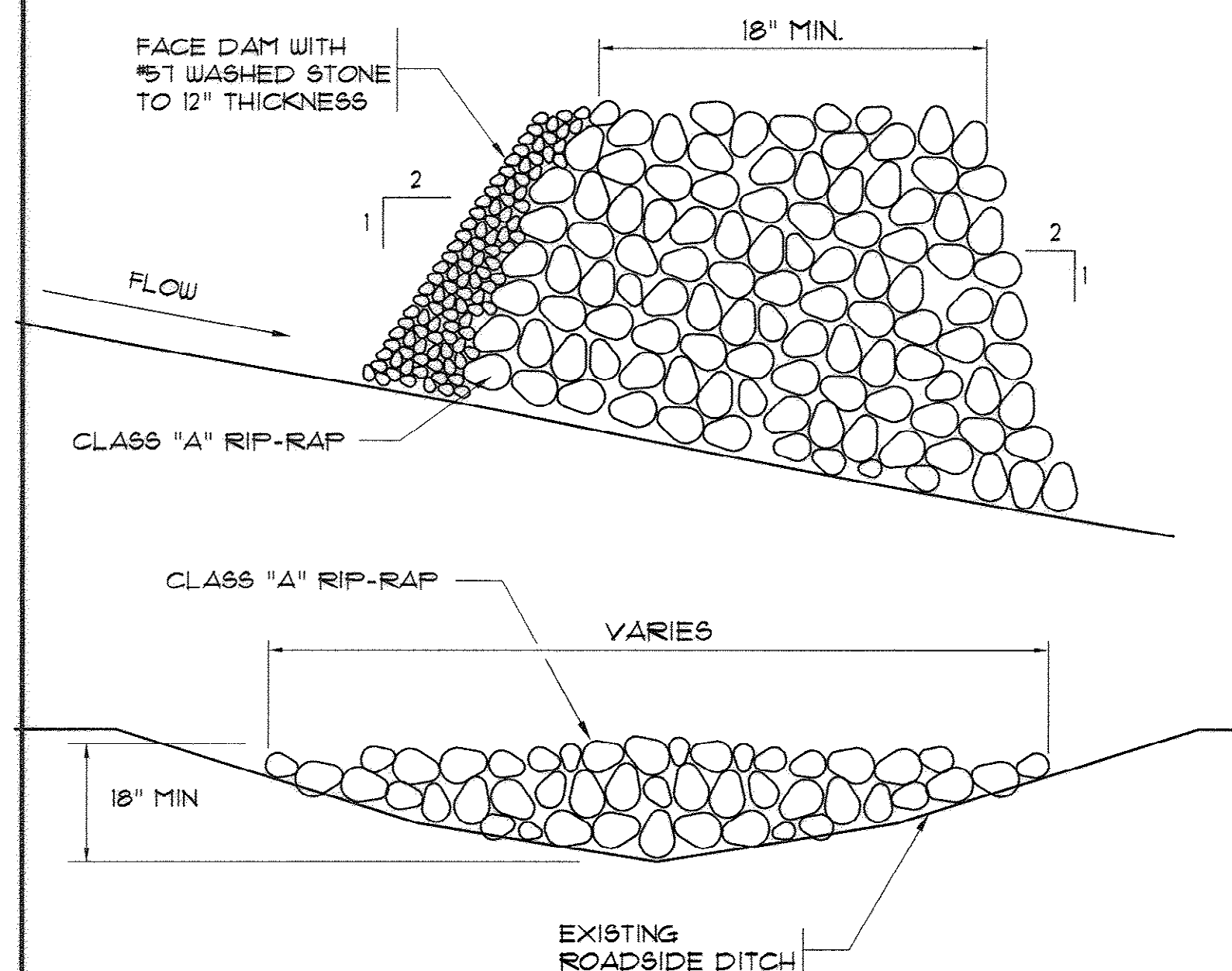
INSPECT ALL MULCHES PERIODICALLY, AND AFTER RAINSTORMS TO CHECK FOR RILL EROSION DISLOCATION, OR FAILURE. WHERE EROSION IS OBSERVED, APPLY ADDITIONAL MULCH. IF WASHOUT OCCURS, REPAIR THE SLOPE GRADE, RESEED, AND REINSTALL MULCH. CONTINUE INSPECTIONS UNTIL VEGETATION IS FIRMLY ESTABLISHED.

DETAILS FOR STABILIZING SWALES

SOIL EROSION CONTROL NOTES

1. ALL SEDIMENT CONTROL MEASURES SHALL BE INSPECTED ONCE EVERY SEVEN CALENDAR DAYS AND AFTER ANY STORM EVENT OF GREATER THAN 0.5 INCHES OF PRECIPITATION DURING A 24-HOUR PERIOD. ALL SEDIMENT CONTROL FEATURES SHALL BE MAINTAINED UNTIL FINAL STABILIZATION HAS BEEN OBTAINED.
2. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS 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 BERMS 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 BERMS MAY BE NEEDED UNTIL SLOPE IS BROUGHT TO GRADE.

1. COMPLY WITH ALL REQUIREMENTS OF SPECIFICATIONS.

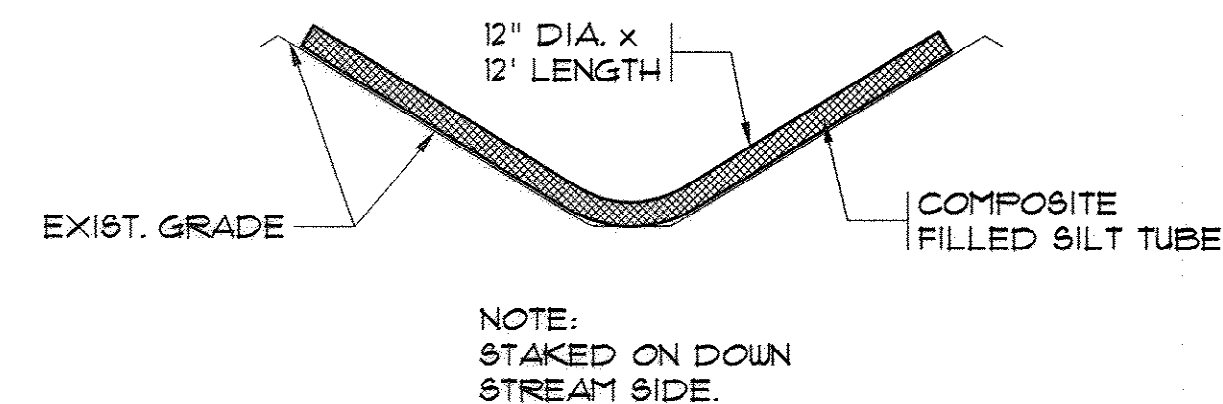


RIP RAP CHECK DAM DETAIL

N.T.S.

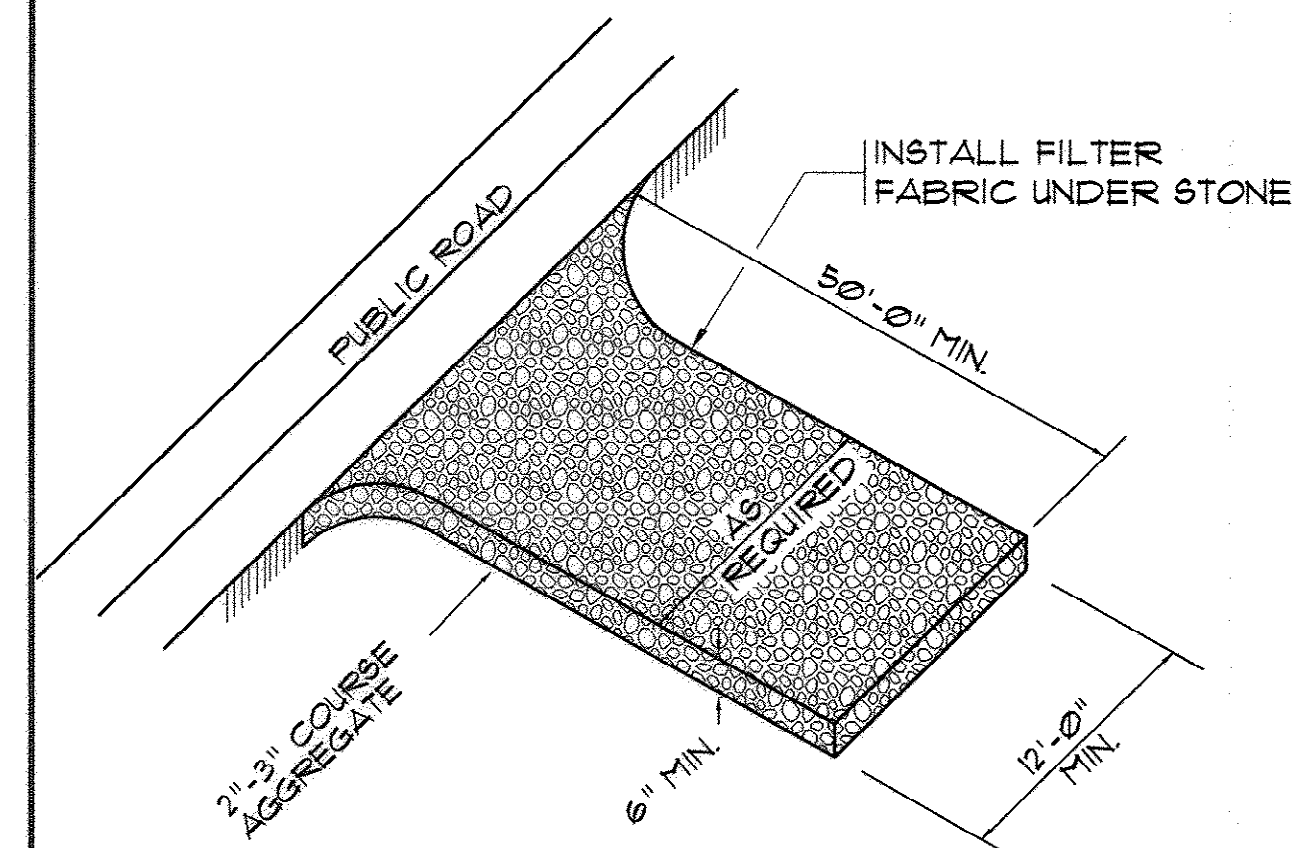
NOTES:

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



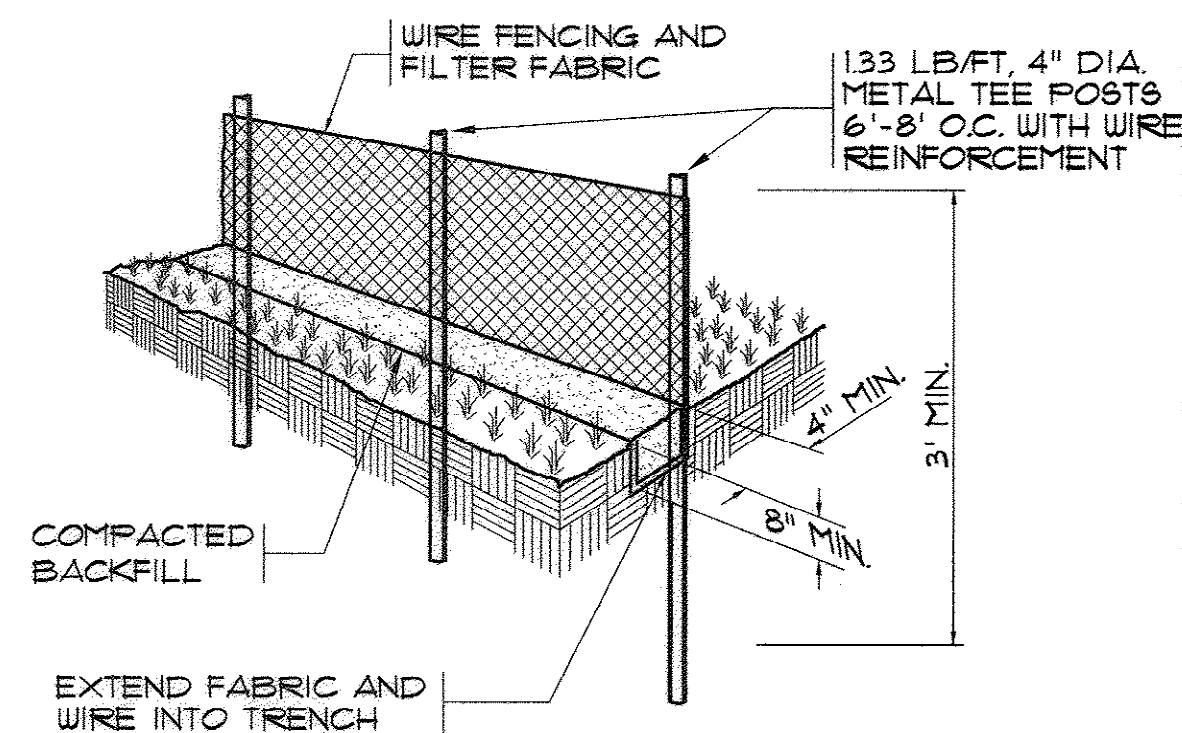
SILT TUBE DETAIL

N.T.S.



TEMPORARY GRAVEL CONSTRUCTION ENTRANCE

N.T.S.



SILT FENCE DETAIL

N.T.S.

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.

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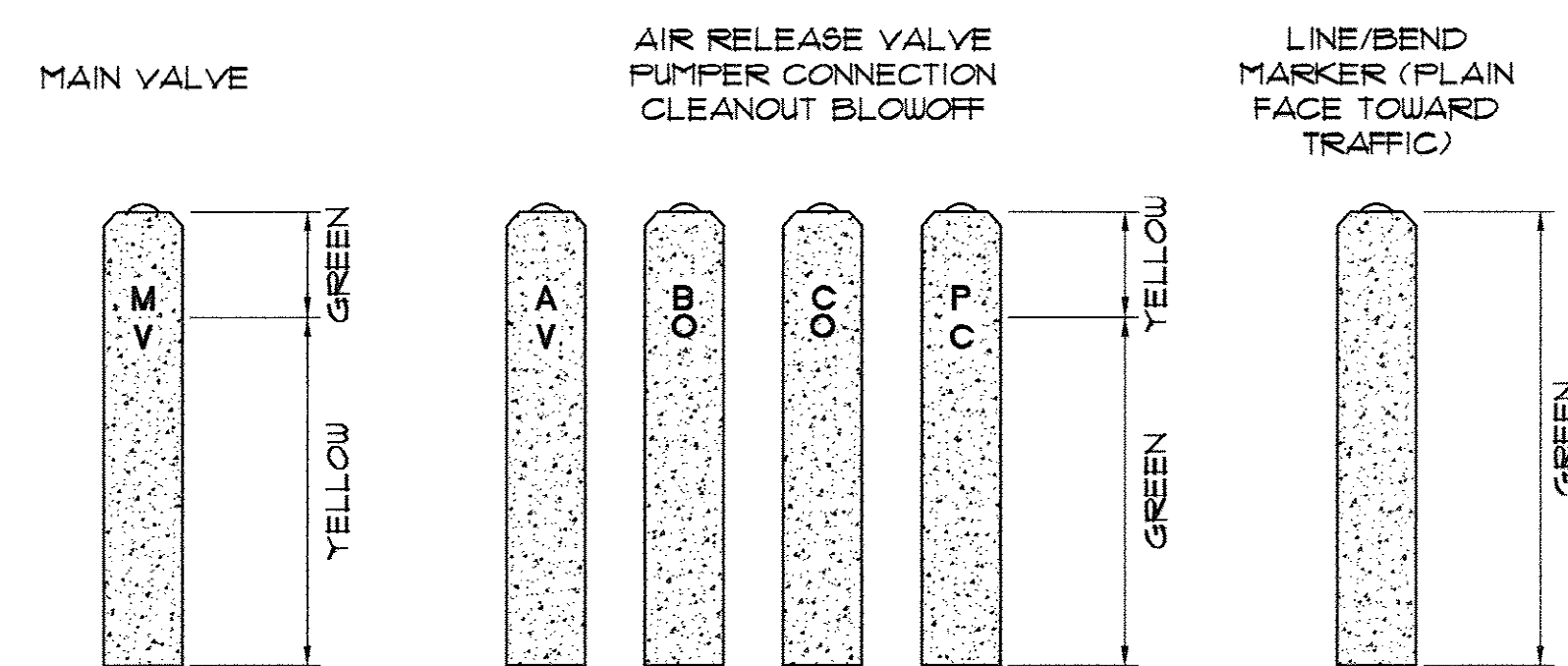
M MARZIANO & MCGOUGAN, P.A.
CONSULTING ENGINEERS
1000 W. 10TH AVE. SUITE 200
DENVER, CO 80202
TEL: 303.733.0029

EROSION CONTROL
DETAILS

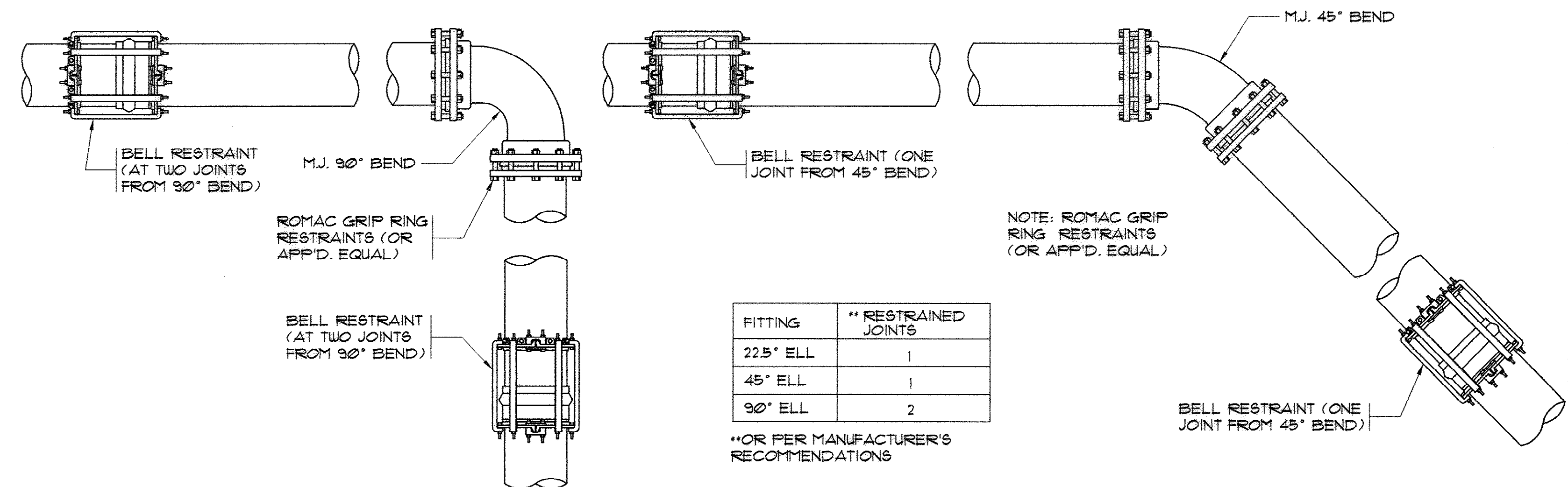
CONWAY WWTP
CLARIFIER ADDITION
HORRY COUNTY, SOUTH CAROLINA

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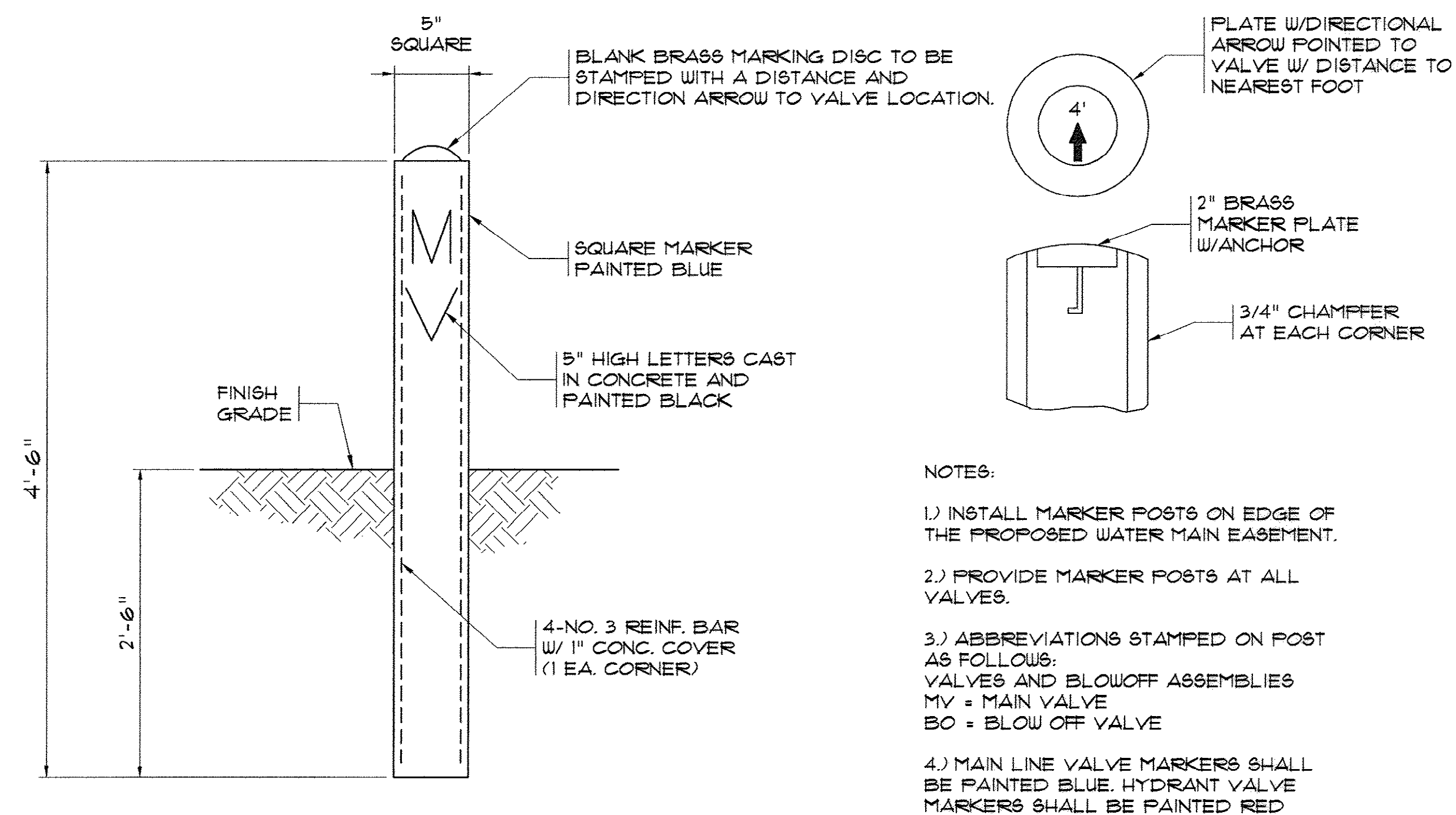
35-005-022/36



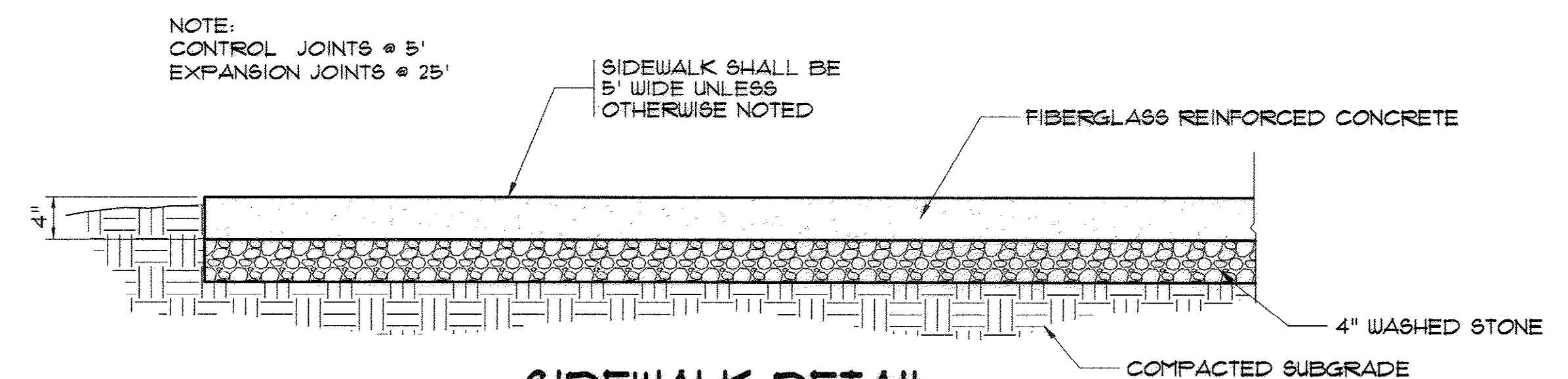
CONCRETE MARKER PAINT CODES
N.T.S.



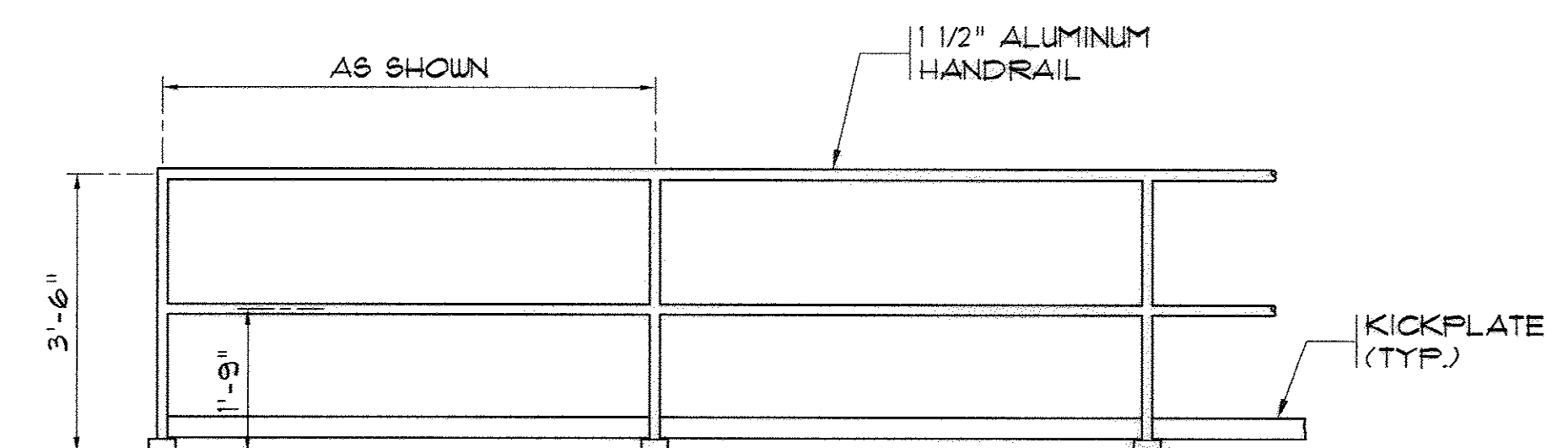
TYPICAL FITTING AND JOINT RESTRAINT
N.T.S.



VALVE MARKER POST DETAIL
N.T.S.



SIDEWALK DETAIL
N.T.S.



TYPICAL HANDRAIL DETAIL
N.T.S.

AS-BUILT
7-17-2009

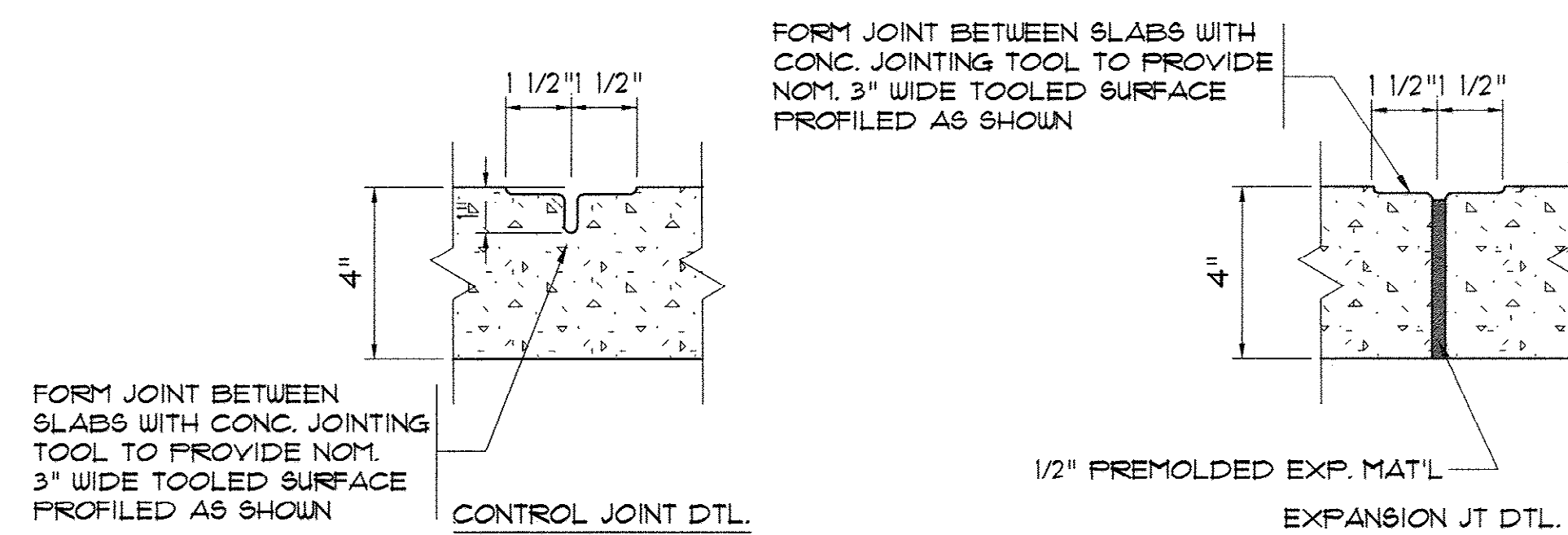
MARZIANO & MCGOUGHAN, P.A.
CONSULTING ENGINEERS
100 SECOND AVENUE • SUITE 301 • CONWAY, SC 29524
PHONE: 843.688.0124

MISCELLANEOUS DETAILS

CONWAY WWTP
CLARIFIER ADDITION
HORRY COUNTY, SOUTH CAROLINA

Scale: AS SHOWN
Date: JULY, 2009
Drawn: ALG
Checked: JWM
Job No.: 37007
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Of: 34 Version: 4

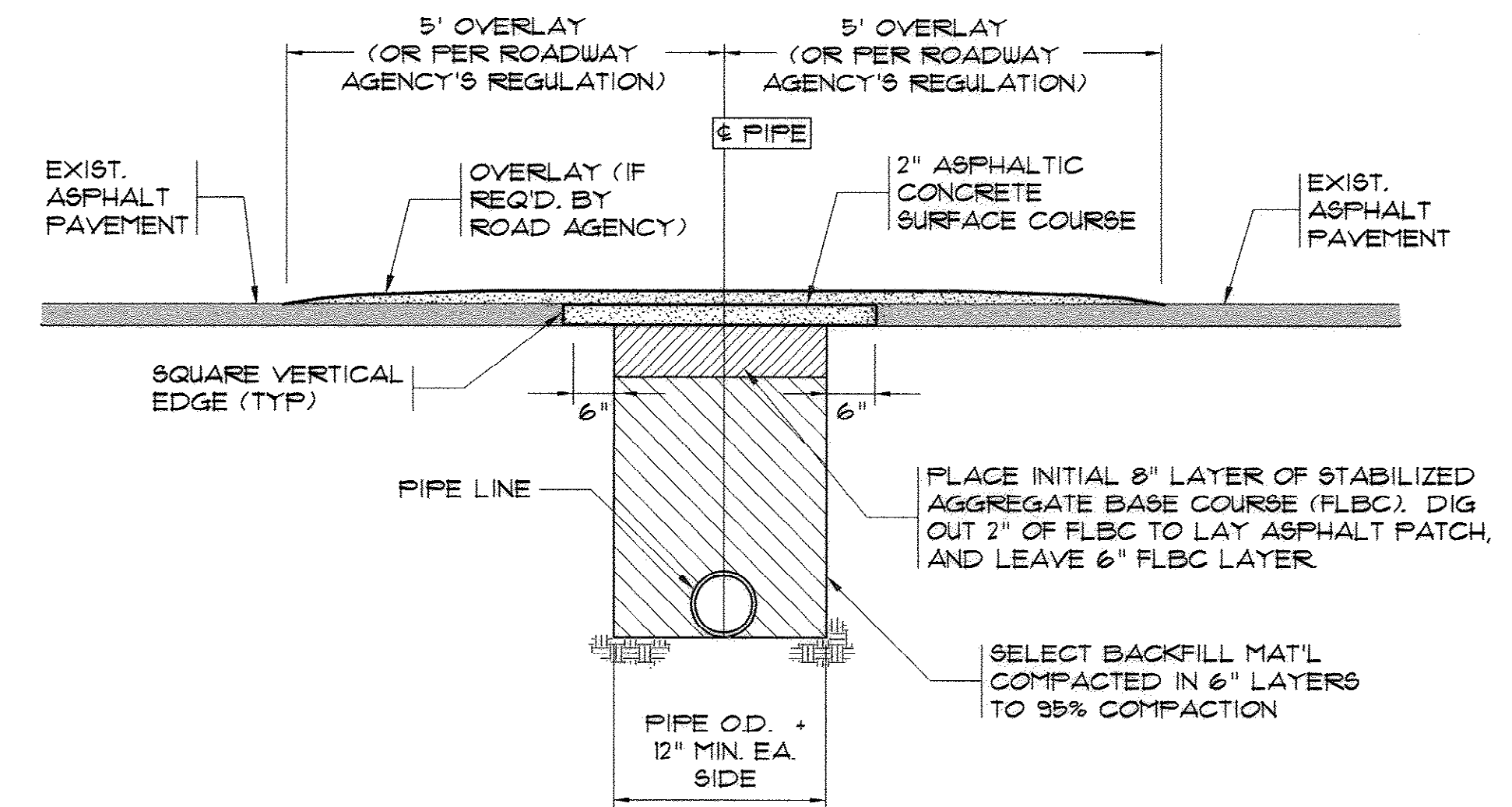
35-005-023/36



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

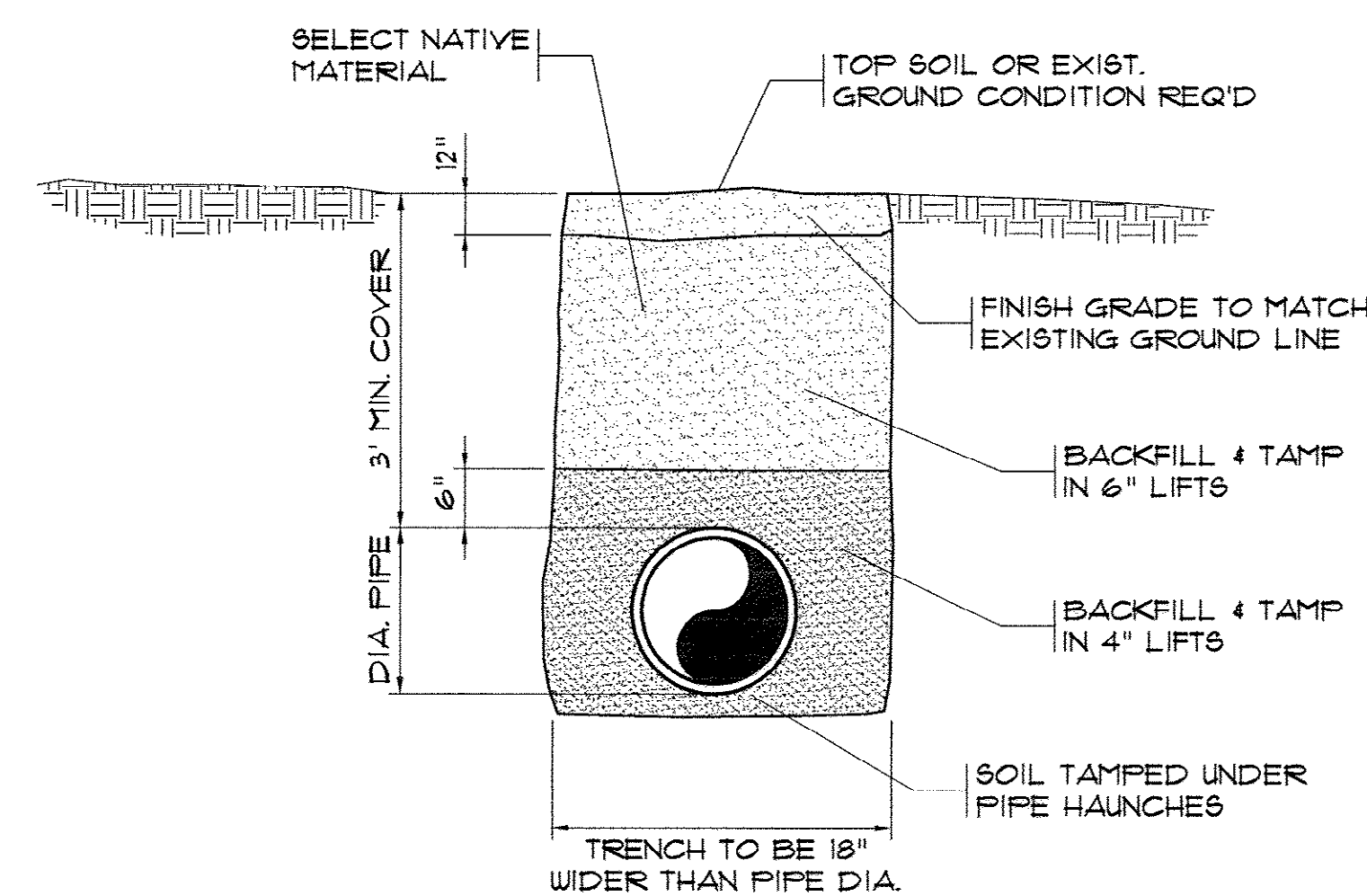


NOTES:

- 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.

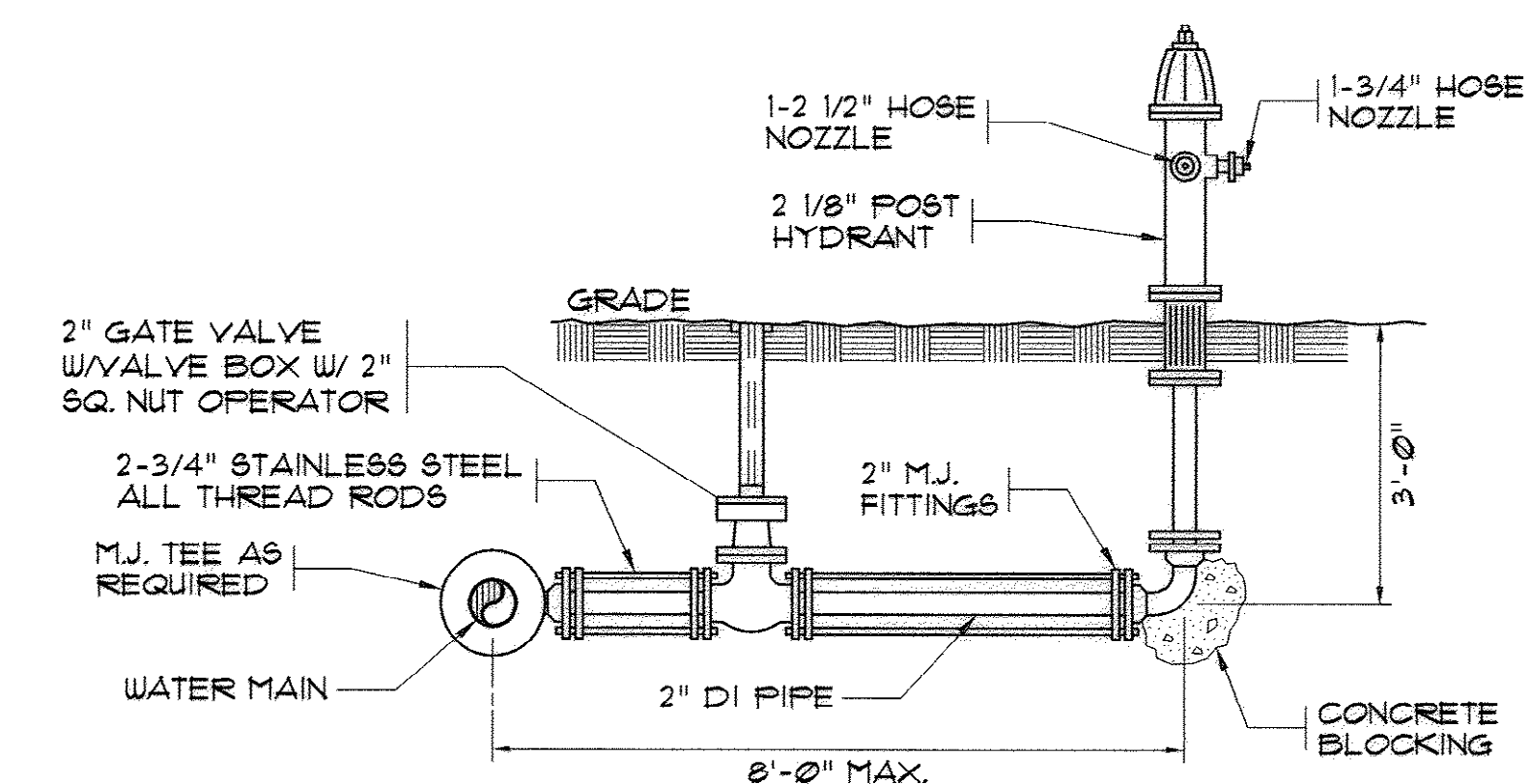
OPEN CUT REPAIR FOR LOW VOLUME ASPHALT PAVEMENT

N.T.S.



TYPICAL PIPE BEDDING DETAIL

N.T.S.



YARD HYDRANT DETAIL

N.T.S.

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7-17-2009

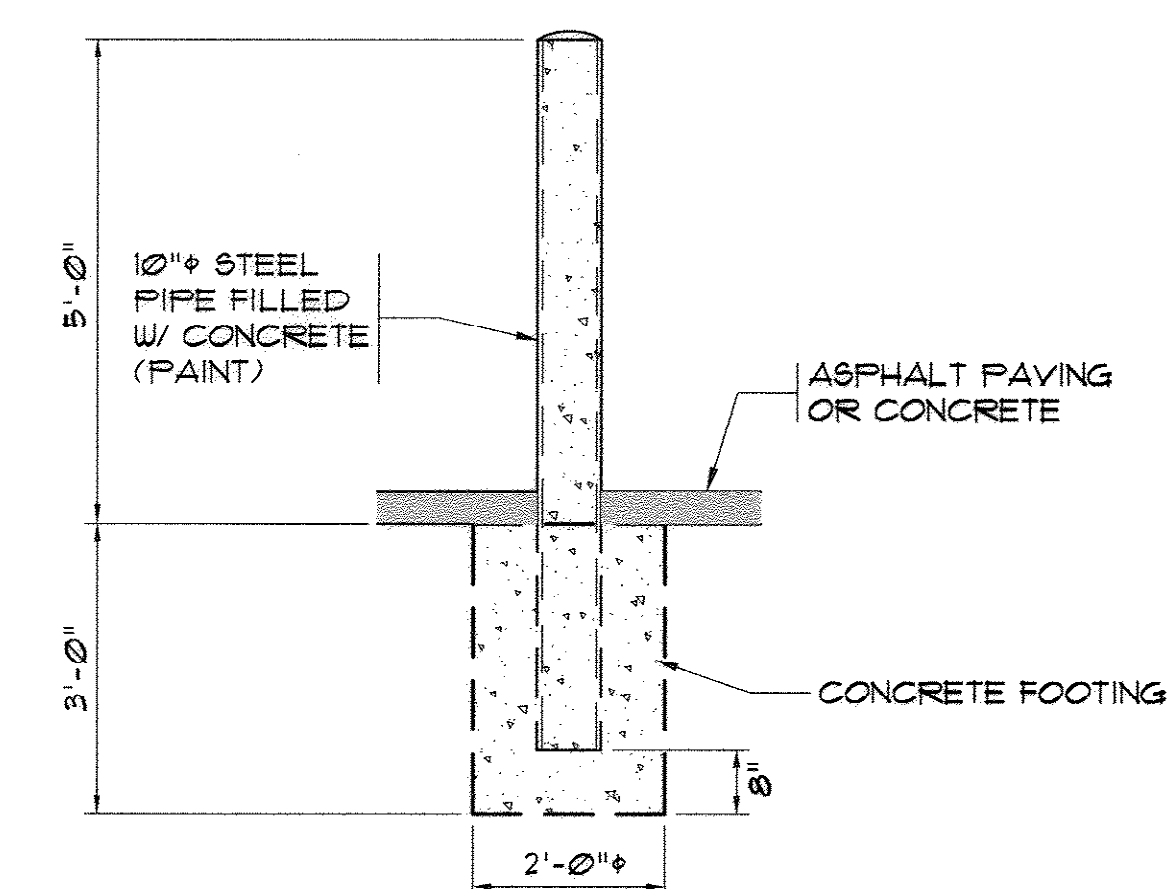
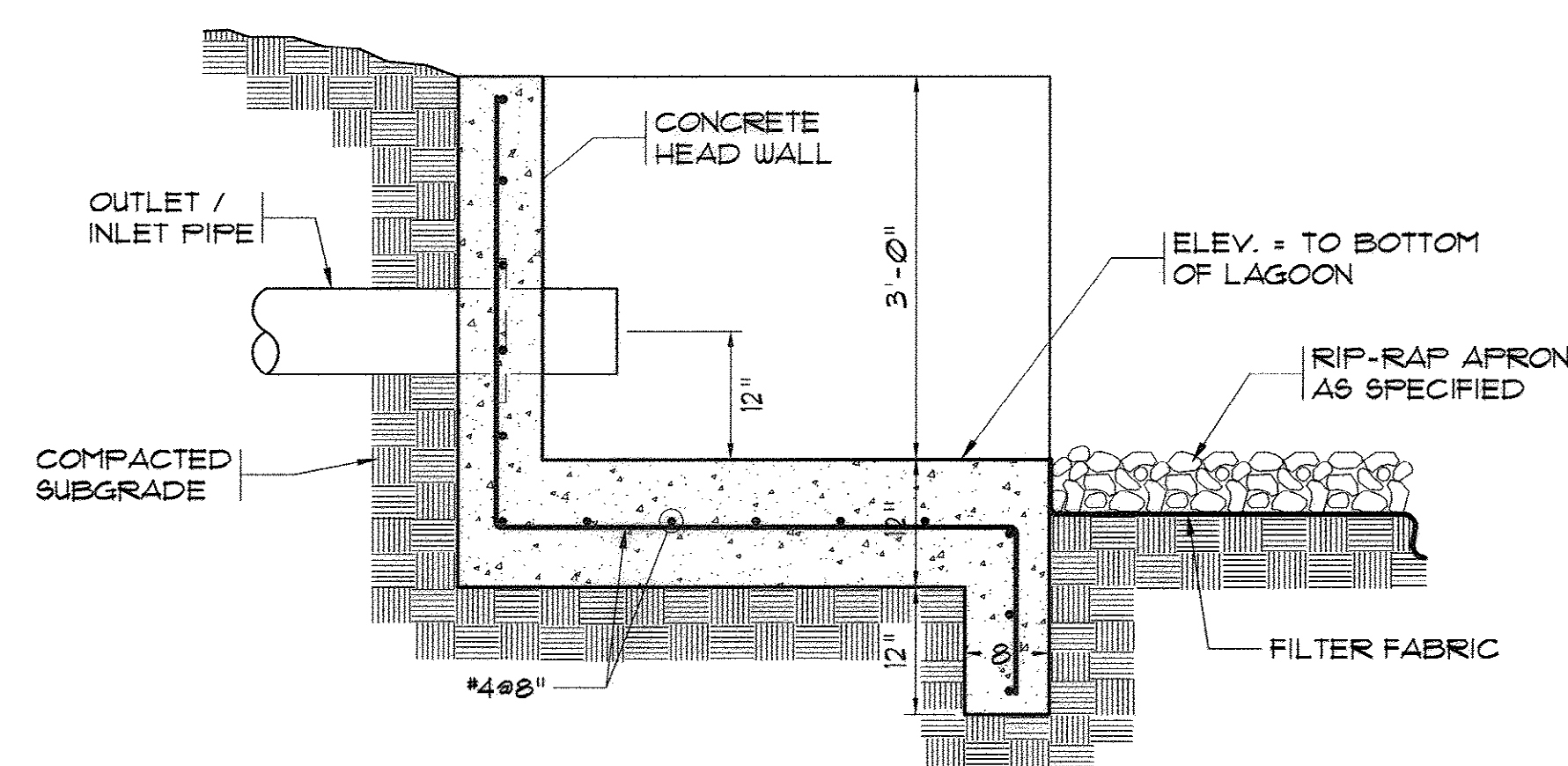
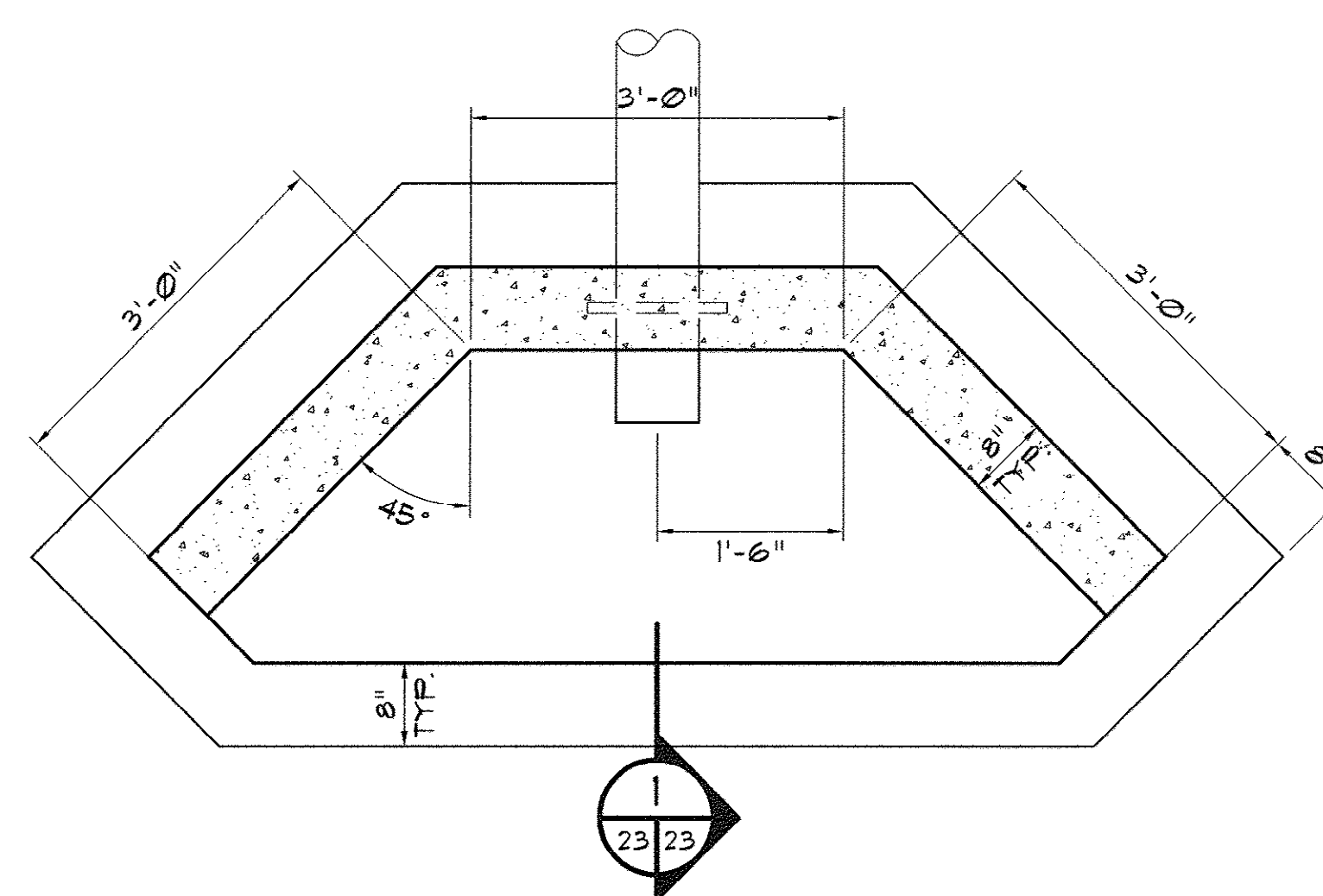
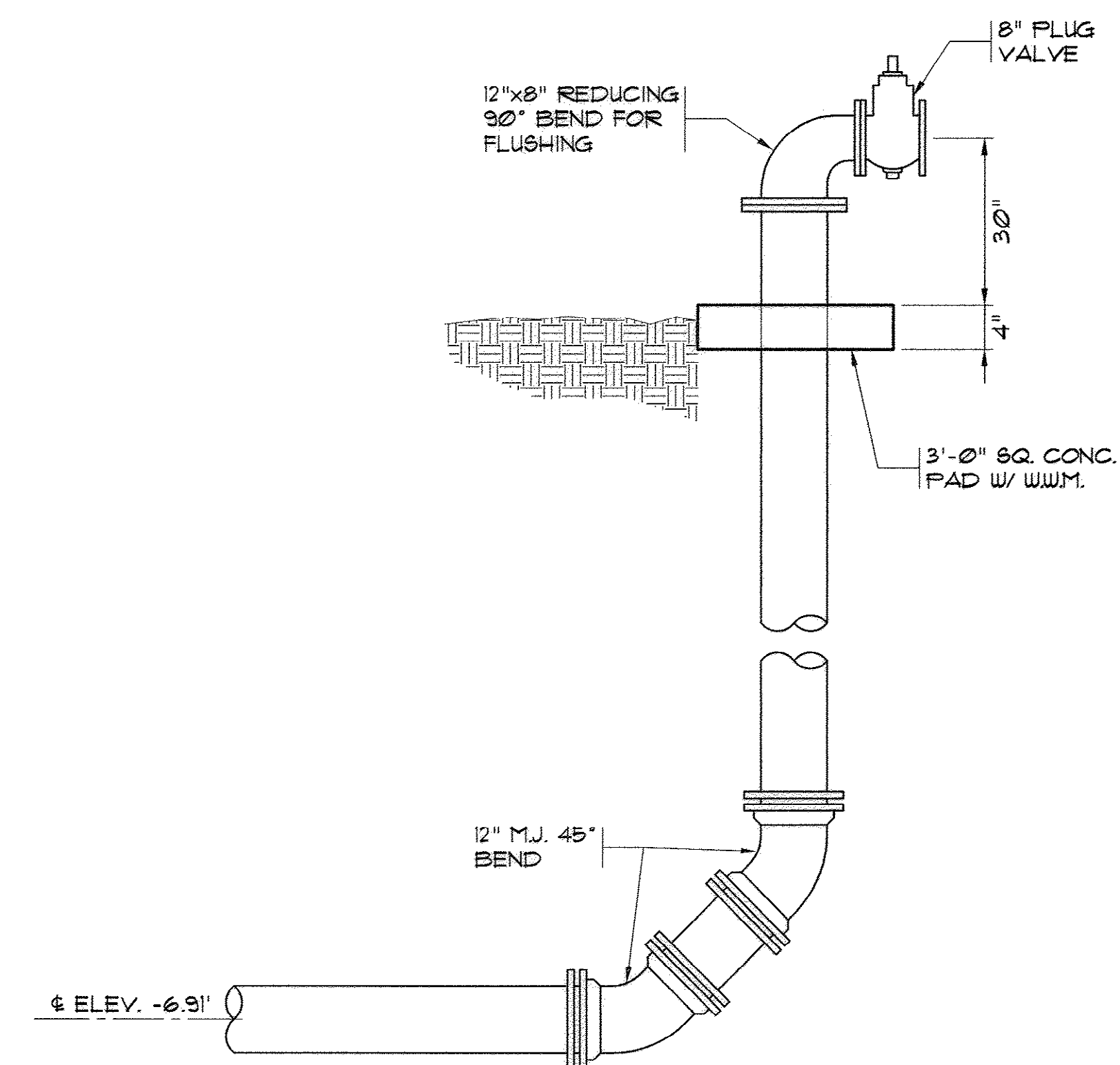
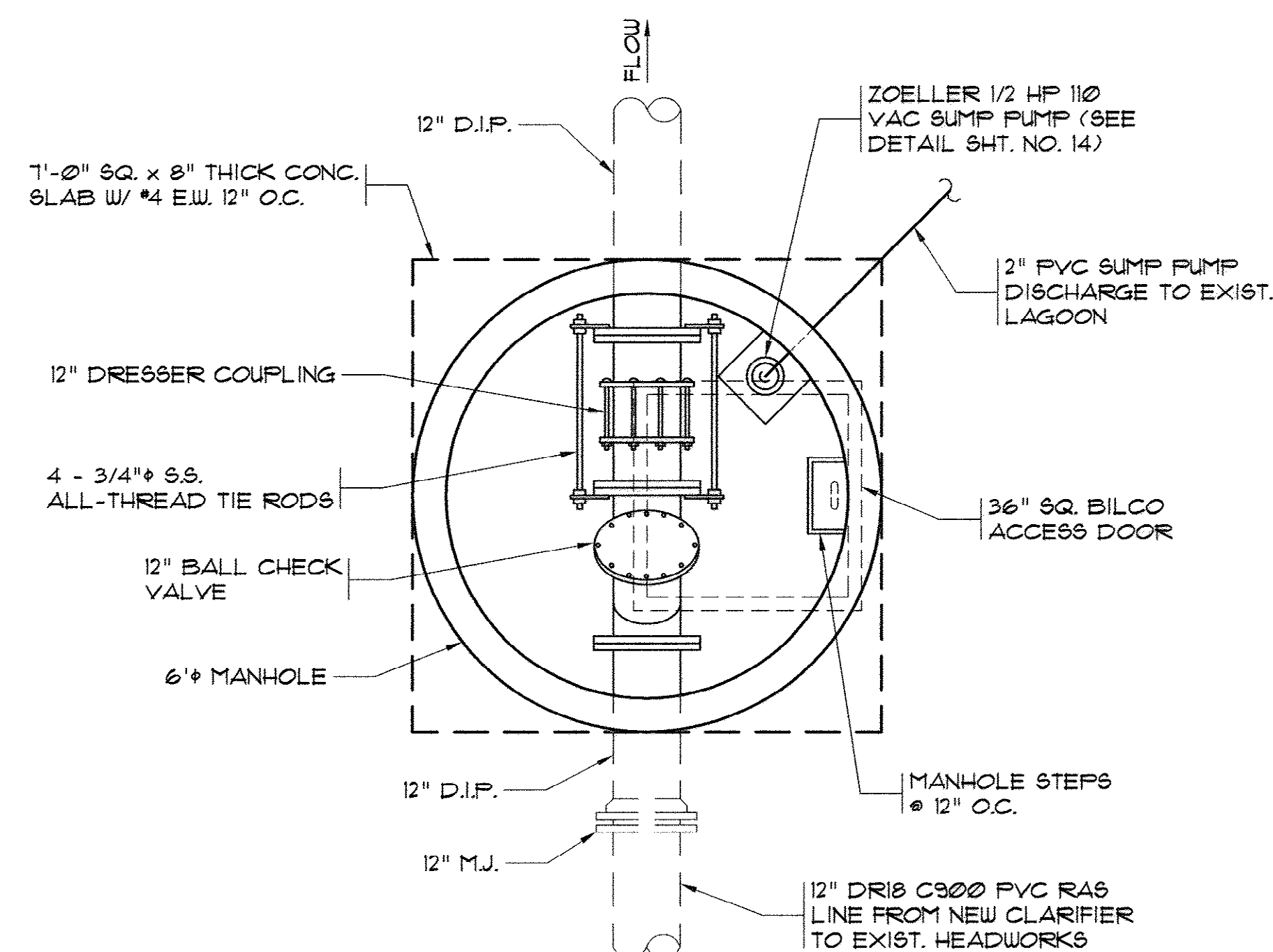
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MISCELLANEOUS DETAILS

CONWAY WWTP
CLARIFIER ADDITION
HORRY COUNTY, SOUTH CAROLINA

Scale: AS SHOWN
Date: JULY, 2009
Drawn: ALG
Checked: JWM
Job No.: 37007
Sheet No.: 23
Of: 34 Version: 4

35-005-025/36



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MISCELLANEOUS DETAILS

CONWAY WWTP
CLARIFIER ADDITION
HORRY COUNTY, SOUTH CAROLINA

Scale: AS SHOWN

Date: JULY, 2009

Date:	JUL
Drawn:	ALG

Checked: JWM

Job No.: 3700

Sheet No.:

24

Of: 34 Version: 4

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7-17-2009

35-005-026|36

ELECTRICAL SYMBOL SCHEDULE

SYMBOL	DESCRIPTION
	CONDUIT RUN CONCEALED BELOW GRADE OR PAVEMENT. IF THIS IS NOT FEASIBLE RUN EXPOSED, AS HIGH AS POSSIBLE, SOLID LINES ARE ALSO USED TO SHOW CONDUIT RUN BELOW GRADE ENCASED IN CONCRETE.
	HOME RUN TO PANEL - WITH PANEL AND CIRCUIT DESIGNATION.
	JUNCTION BOX SIZED PER N.E.C., OR LARGER IF SO NOTED.
	WATERTIGHT JUNCTION BOX
	FUSE POWER BOX, WATERTIGHT FOR CONNECTION TO INSTRUMENTATION. SEE DETAIL ON SHEET E-10.
	LIGHTING, POWER OR DISTRIBUTION PANELBOARD.
	CONTROL PANEL
	NEW AREA LIGHTING FIXTURE - SEE DETAIL ON SHEET E-10 AND LIGHTING FIXTURE SCHEDULE ON THIS SHEET.
	NEMA 5-20R DUPLEX RECEPTACLE. MONT 18" AFF UNLESS OTHERWISE NOTED.
	INDICATES RECEPTACLE TO HAVE GROUND FAULT PROTECTION.
	INDICATES DEVICE TO HAVE WEATHERPROOF COVER.
	SURGE ARRESTER
	NONFUSIBLE DISCONNECT SWITCH. RATED IN HORSEPOWER TO MATCH OR EXCEED RATING OF MOTOR
	FUSIBLE DISCONNECT SWITCH.
	INDIVIDUAL CIRCUIT BREAKER.
	COMBINATION MAGNETIC STARTER WITH NONFUSIBLE DISCONNECT.
	VARIABLE FREQUENCY MOTOR DRIVE WITH DISCONNECT SWITCH.
	DRYTYPE TRANSFORMER SINGLE PHASE 480-240/120V
	DRY TYPE TRANSFORMER - THREE PHASE, 480-120/208 VOLTS, EXCEPT AS OTHERWISE NOTED.
	115 OR 230 VOLT, 1 PHASE MOTOR.
	110 VOLT DC MOTOR
	460 VOLT, 3 PHASE MOTOR - NUMERAL INDICATES HORSEPOWER.
	GROUND ROD, 10'-0" LONG, 3/4" DIAMETER STAINLESS STEEL. BURY VERTICALLY IN GROUND 30" BELOW GRADE. CADWELD CONNECT TO GROUND WIRE CONDUCTOR.
	#4 BARE TINNED COPPER CONDUCTOR. INSTALL APPROXIMATELY 30" BELOW GRADE AND CONNECT TO GROUND RODS.
	INDICATES CONNECTION TO GROUNDING LOOP. ALL CONNECTIONS TO BE CADWELD TYPE. INSULATE CONNECTION WITH RUBBER TAPE.
	ON-OFF SWITCH STATION - NEMA 4X ENCLOSURE MAINTAINED CONTACT TYPE - WIRE WITH 2 #14, 1 #14 G, 1/2" C BACK TO MOTOR STARTER. PROVIDE PHENOLIC NAMEPLATE IDENTIFYING MOTOR DESIGNATION.
	TYPICAL SYMBOL USED TO IDENTIFY SITE CONDUITS THAT ARE PART OF DUCTBANK. SEE SCHEDULE ON SHEET E-2
	ALARM HORN 120V, WEATHERPROOF, 100dB @ 10FT

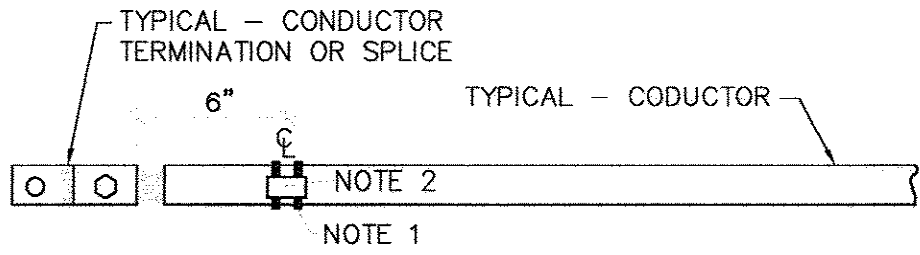
SYMBOL	DESCRIPTION
A	AMPERE
AFF	ABOVE FINISHED FLOOR
ATS	AUTOMATIC TRANSFER SWITCH
C	CONDUIT
DHC	INDICATES TWISTED PAIR SHIELDED "DATA HIGHWAY" CABLE SUITABLE FOR OUTDOOR TELECOMMUNICATIONS. SEE SPEC. SECTION 16158 - GENERAL NOTE 12.
E	EMERGENCY
F	FUSE
FLA	FULL LOAD AMPERES
FO-12	FIBER OPTIC CABLE - 12 STRAND 62.5/125 um - MULTIMODE OUTDOOR RATED CABLE IN INNERDUCT. SEE SECTION 16158.
FVNR	FULL VOLTAGE NON-REVERSIBLE MAGNETIC STARTER.
G	GROUND
GF	GROUND FAULT CIRCUIT INTERRUPTER DEVICE
H	HEIGHT
H-O-A	HAND-OFF-AUTOMATIC SWITCH
LTG	LIGHTING
MCM	kcmil (THOUSAND CIRCULAR MILS)
N	NORMAL
N.C.	NORMALLY CLOSED CONTACT
N.O.	NORMALLY OPEN CONTACT
P	POLE
REC	RECEPTACLE
RGSC	RIGID GALVANIZED STEEL CONDUIT.
RTU	DIGITAL CONTROL SYSTEM REMOTE TERMINAL UNIT.
SC	INDICATES SHIELDED CABLE. REFER TO SECTION 16158 FOR SPECIFICATION. REFER TO SHEET 1/E1/E1 FOR ADDITIONAL REQUIREMENTS.
S.O.	SPACE WITH BUS PROVISION FOR FUTURE BREAKER.
SS	STAINLESS STEEL
VFD	VARIABLE FREQUENCY DRIVE MOTOR CONTROLLER - REFER TO SECTION 16165.
WP	WEATHERPROOF
WT	WATER TIGHT

INSTRUMENT AND CONTROL SYMBOLS

SYMBOL	DESCRIPTION
	FLOW TRANSMITTER PRIMARY ELEMENT
	FLOW INDICATOR TRANSMITTER
	LEVEL TRANSMITTER PRIMARY ELEMENT
	LEVEL INDICATOR 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
	TIME DELAY RELAY



TYPICAL DETAIL OF IDENTIFICATION OF CONDUCTORS

- NTS
- NOTES:
- SELF LOCKING TY-RAP TIE PLACED ON CONDUCTOR AT A LOCATION LEGIBLE FROM THE OPENING OF THE ENCLOSURE.
 - MARK IDENTIFICATION.

GENERAL NOTES:

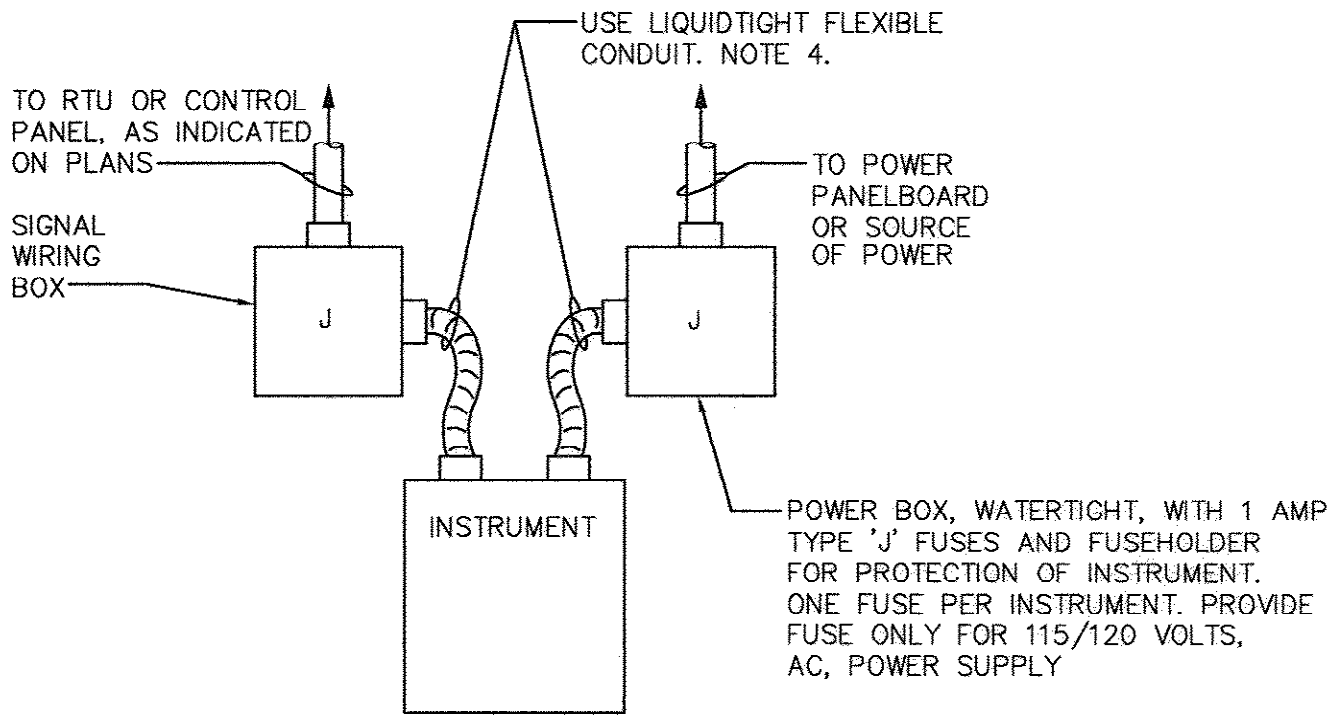
- ELECTRICAL CONTRACTOR SHALL COORDINATE THE LOCATION, EXACT CONFIGURATION AND REQUIREMENTS OF INSTRUMENTS AND EQUIPMENT BEING FURNISHED BY GENERAL CONTRACTOR AND THE OTHER CONTRACTOR, PRIOR TO RUNNING ANY WIRING.
- ALL CIRCUITS RATED 115 VOLTS OR HIGHER SHALL BE PROVIDED WITH SEPARATE EQUIPMENT GROUNDING CONDUCTORS BONDED TO ALL METAL ENCLOSURES AND BOXES ASSOCIATED WITH THE CIRCUIT.
- MINIMUM SIZE CONDUIT WITHIN BUILDINGS AND ON EXTERIOR STRUCTURES SHALL BE 3/4 INCH. MINIMUM SIZE OUTDOOR CONDUIT, OTHER THAN CONDUIT ON EXTERIOR STRUCTURES, CONDUIT SHALL BE 1 INCH. MINIMUM SIZE CONDUCTOR, OTHER THAN INSTRUMENTATION OR CONTROL CONDUCTORS, SHALL BE #12. ALL UNDERGROUND CONDUIT IDENTIFIED AS DUCT BANK SHALL BE ENCASED IN 2 INCHES OF CONCRETE ALL AROUND.
- ELECTRICAL CONTRACTOR SHALL RUN CONDUITS CONCEALED UNDERGROUND OR IN CONCRETE WALLS AND FLOORS TO MAXIMUM EXTENT FEASIBLE. EXPOSED CONDUIT SHOULD BE RUN UNDER WALKWAYS OR STRAP TO STRUCTURE SURFACES IN A NEAT MANNER, OUT OF VIEW AS MUCH AS POSSIBLE AND PARALLEL AND PERPENDICULAR TO STRUCTURAL COMPONENTS. CONDUITS EXPOSED TO WEATHER OR WATER SHALL BE SCHEDULE 40 RIGID METALLIC CONDUIT WITH 40-MIL OR GREATER PVC COATING. SAME FOR CONDUIT FITTINGS. ALL EXPOSED OUTLET BOXES SHALL BE FD/OR FS AS APPLICABLE, CAST ALLOY.
- CONDUIT EXPOSED WITHIN BUILDING SHALL BE RIGID STEEL CONDUIT OR IMC. CONDUIT BELOW GRADE OR IN CONCRETE SHALL BE SCHEDULE 40 PVC EXCEPT AS OTHERWISE NOTED FOR INSTRUMENTATION CABLES.
- CONDUIT SHALL BE RUN CONCEALED IN WALLS AND ABOVE CEILING TO MAXIMUM EXTENT FEASIBLE. IN AREAS OF BUILDING WITHOUT A SUSPENDED CEILING RUN CONDUITS AS HIGH AS POSSIBLE.
- ALL EXTERIOR SUPPORT METAL SHALL BE STAINLESS STEEL.
- LOCATE ALL EXISTING UNDERGROUND UTILITIES AT AREA OF SITE WORK PRIOR TO START ANY DIGGING. DIG BY HAND IN CONGESTED AREAS.
- DO NOT MIX 600 VOLT RATED WIRING WITH COPPER SIGNAL WIRING ("SC" WIRING) OR FIBER OPTICS WIRING.
- ALL OUTDOOR SWITCHES, CONTROL STATIONS AND MOTOR CONTROLLERS SHALL HAVE NEMA 4X ENCLOSURES
- MAKE ALL FINAL CONNECTIONS IN CONTROL PANELS AS DIRECTED BY CONTROL PANEL SUPPLIER. FINAL CONNECTIONS TO SCADA SYSTEM RTU'S WILL BE DONE BY OWNER WITH CABLE PROVIDED BY THIS CONTRACTOR.
- CONDUIT USED FOR INSTRUMENTATION OR "DATA HIGHWAY" WIRING SHALL BE PVC COATED RIGID STEEL CONDUIT.

LIST OF DRAWINGS:

E-1	SCHEDULES AND DETAILS
F-2	ELECTRICAL SITE PLAN
E-3	ONE-LINE POWER DIAGRAM
E-4	CLARIFIER ELECTRICAL PLAN
E-5	RAS/WAS PUMP STATION ELECTRICAL PLAN
E-6	FILTER TRANSFER PUMP STATION ELECTRICAL PLAN
E-7	EXIST. HEADWORKS ELECTRICAL PLAN
E-8	ELECTRICAL DETAILS
E-9	ELECTRICAL DETAILS
E-10	ELECTRICAL DETAILS

LIGHTING FIXTURE SCHEDULE

FIXTURE TYPE:	"H"
LAMPS QUANTITY:	1
WATTAGE:	175 WATTS
TYPE:	METAL HALIDE
BALLAST:	C.W.A.
BALLAST WATTS:	200 WATTS
BALLAST VOLTAGE:	208 VOLTS
POLE:	14-FOOT. ALUMINUM. TAPERED WITH BASE AND STAINLESS STEEL HARDWARE 0.188" THICK, 3" TOP DIAMETER, 5" BASE DIAMETER, WITH TRANSFORMER BASE
FINISH:	NATURAL ALUMINUM FOR BOTH LUMINAIRE AND POLE
TYPE DISTRIBUTION:	IES TYPE III
CONFIGURATION:	SEE DETAIL ON SHEET E-10
ACCESSORIES:	BUILT-IN P.E. SWITCH
MOUNTING:	ON CONCRETE BASE
MANUFACTURER:	G.E. HUBBELL MCGRAW-EDISON



TYPICAL POWER INSTRUMENT CONNECTION REQUIREMENTS - DETAIL

- NTS
- NOTES:
- BOXES SHALL BE CAST ALLOY TYPE WITH HUBS.
 - ALL CONNECTIONS SHALL BE WATERTIGHT.
 - SUPPORT BOXES INDEPENDANTLY OF INSTRUMENT.
 - PRIOR TO RUNNING FINAL CONDUIT VERIFY SIZE OF CONDUIT HUBS IN INSTRUMENTATION ENCLOSURE.

TYPICAL PANEL DIAGRAM

BRANCH CIRCUIT WIRE COLOR					
	120/208 OR 120/240	POLE NUMBER		120/208 OR 120/240	277/480
BROWN	BLACK	1	2	BLACK	BROWN
ORANGE	RED	3	4	RED	ORANGE
YELLOW	BLUE	5	6	BLUE	YELLOW
BROWN	BLACK	7	8	BLACK	BROWN
ORANGE	RED	9	10	RED	ORANGE
YELLOW	BLUE	11	12	BLUE	YELLOW
		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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SCHEDULES
AND DETAILS

CONWAY WWTP
CLARIFIER ADDITION
HORRY COUNTY, SOUTH CAROLINA

Scale:	AS SHOWN
Date:	JULY, 2009
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Job No.:	37007
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Of: 34	Version: 4

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7-17-2009

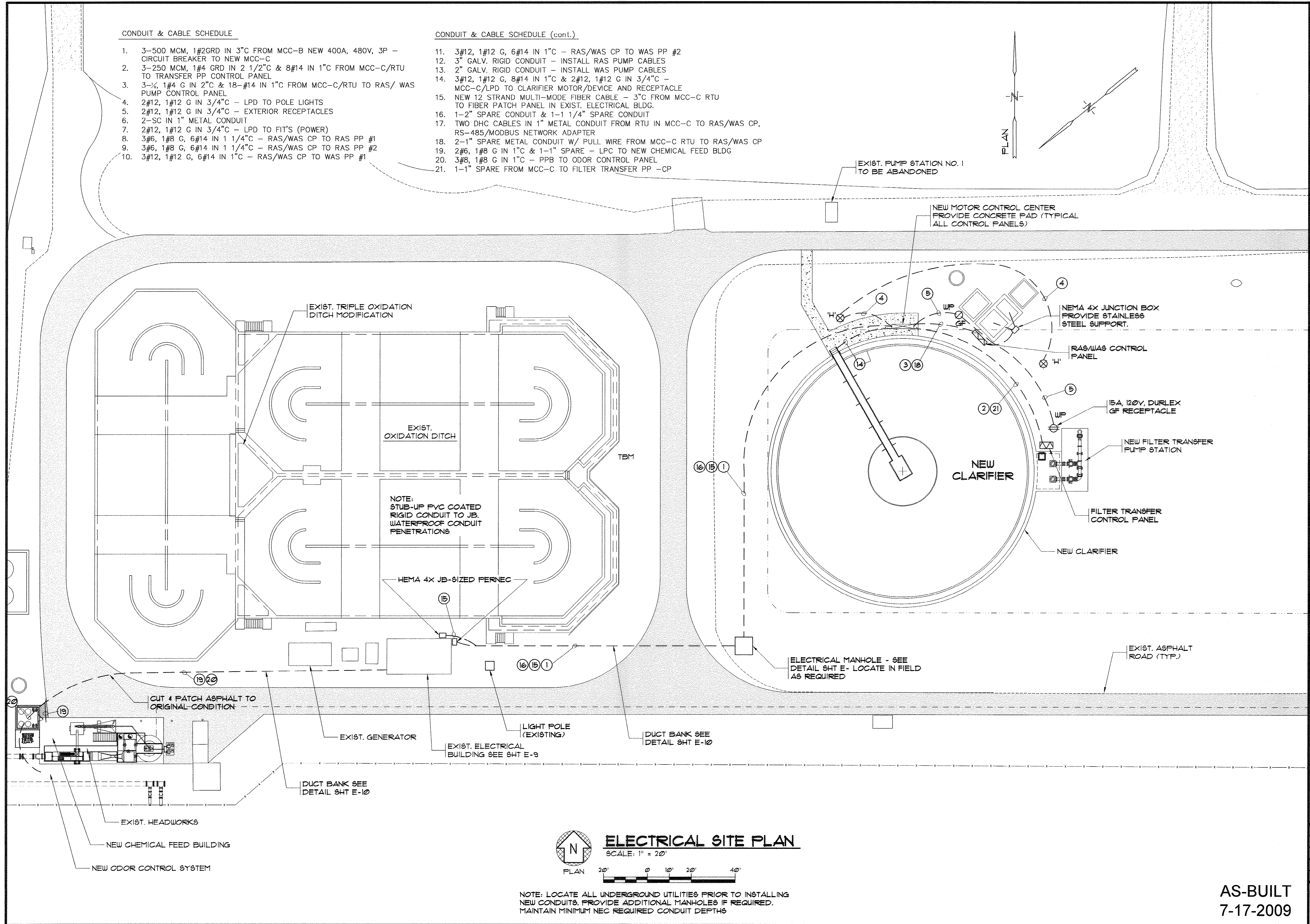
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CONDUIT & CABLE SCHEDULE

- 3-500 MCM, 1#2GRD IN 3"C FROM MCC-B NEW 400A, 480V, 3P - CIRCUIT BREAKER TO NEW MCC-C
- 3-250 MCM, 1#4 GRD IN 2 1/2"C & 8#14 IN 1"C FROM MCC-C/RTU TO TRANSFER PP CONTROL PANEL
- 3-1/2, 1#4 G IN 2"C & 18-#14 IN 1"C FROM MCC-C/RTU TO RAS/ WAS PUMP CONTROL PANEL
- 2#12, 1#12 G IN 3/4"C - LPD TO POLE LIGHTS
- 2#12, 1#12 G IN 3/4"C - EXTERIOR RECEPTACLES
- 2-SC IN 1" METAL CONDUIT
- 2#12, 1#12 G IN 3/4"C - LPD TO FIT'S (POWER)
- 3#6, 1#8 G, 6#14 IN 1 1/4"C - RAS/WAS CP TO RAS PP #1
- 3#6, 1#8 G, 6#14 IN 1 1/4"C - RAS/WAS CP TO RAS PP #2
- 3#12, 1#12 G, 6#14 IN 1"C - RAS/WAS CP TO WAS PP #1

CONDUIT & CABLE SCHEDULE (cont.)

- 3#12, 1#12 G, 6#14 IN 1"C - RAS/WAS CP TO WAS PP #2
- 3" GALV. RIGID CONDUIT - INSTALL RAS PUMP CABLES
- 2" GALV. RIGID CONDUIT - INSTALL WAS PUMP CABLES
- 3#12, 1#12 G, 8#14 IN 1"C & 2#12, 1#12 G IN 3/4"C - MCC-C/LPD TO CLARIFIER MOTOR/DEVICE AND RECEPTACLE
- NEW 12 STRAND MULTI-MODE FIBER CABLE - 3"C FROM MCC-C RTU TO FIBER PATCH PANEL IN EXIST. ELECTRICAL BLDG.
- 1-2" SPARE CONDUIT & 1-1 1/4" SPARE CONDUIT
- TWO DHC CABLES IN 1" METAL CONDUIT FROM RTU IN MCC-C TO RAS/WAS CP, RS-485/MODBUS NETWORK ADAPTER
- 2-1" SPARE METAL CONDUIT W/ PULL WIRE FROM MCC-C RTU TO RAS/WAS CP
- 2#6, 1#8 G IN 1"C & 1-1" SPARE - LPC TO NEW CHEMICAL FEED BLDG
- 3#8, 1#8 G IN 1"C - PPB TO ODOR CONTROL PANEL
- 1-1" SPARE FROM MCC-C TO FILTER TRANSFER PP - CP



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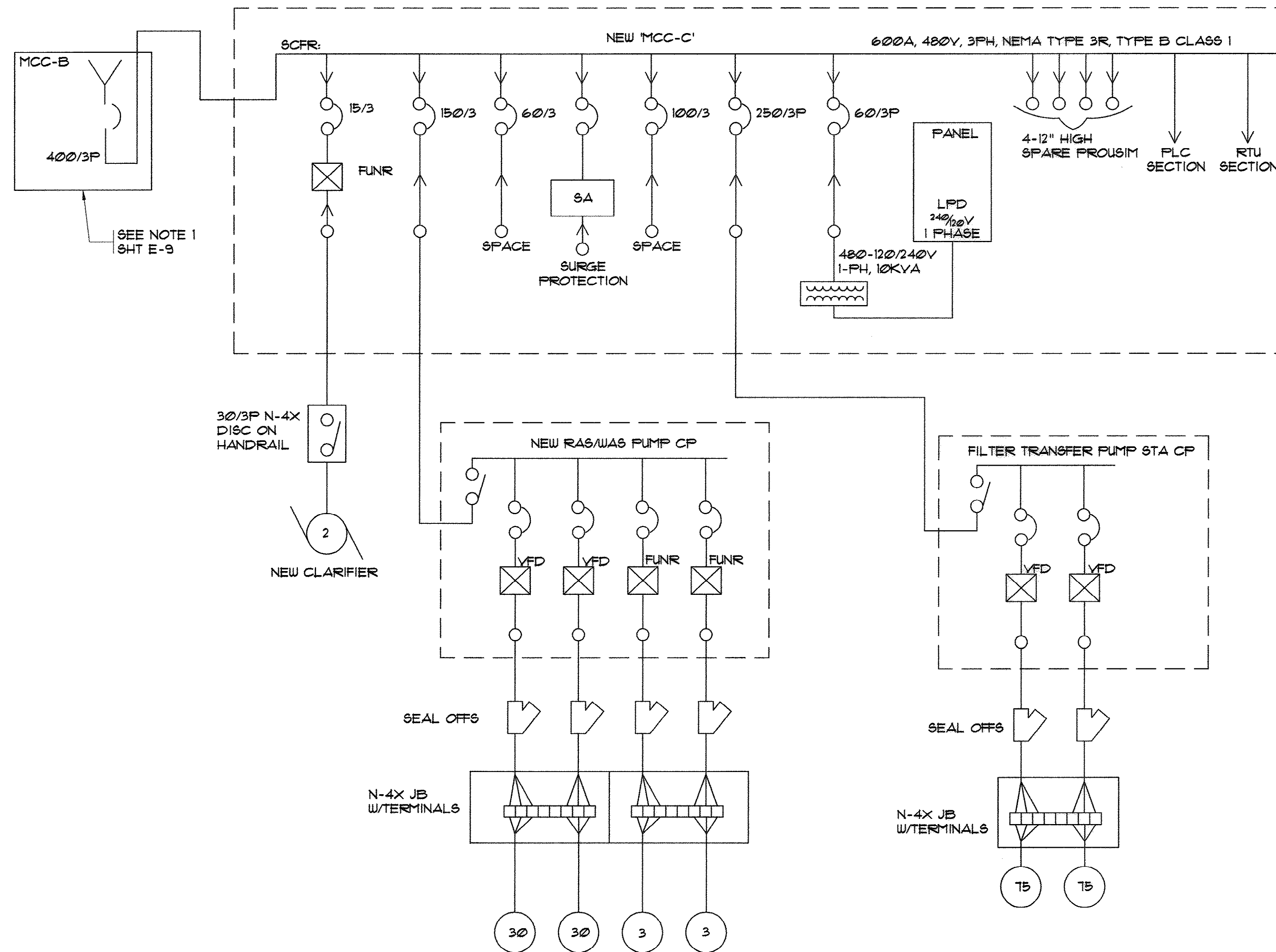
ELECTRICAL SITE PLAN

CONWAY WWTP
CLARIFIER ADDITION
HORRY COUNTY, SOUTH CAROLINA

Scale: AS SHOWN
Date: JULY, 2009
Drawn: ALG
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Job No.: 37007
Sheet No.: E-2
Of: 34 Version: 4

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7-17-2009

35-005-028/36



ONE-LINE POWER DIAGRAM
NTS

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7-17-2009

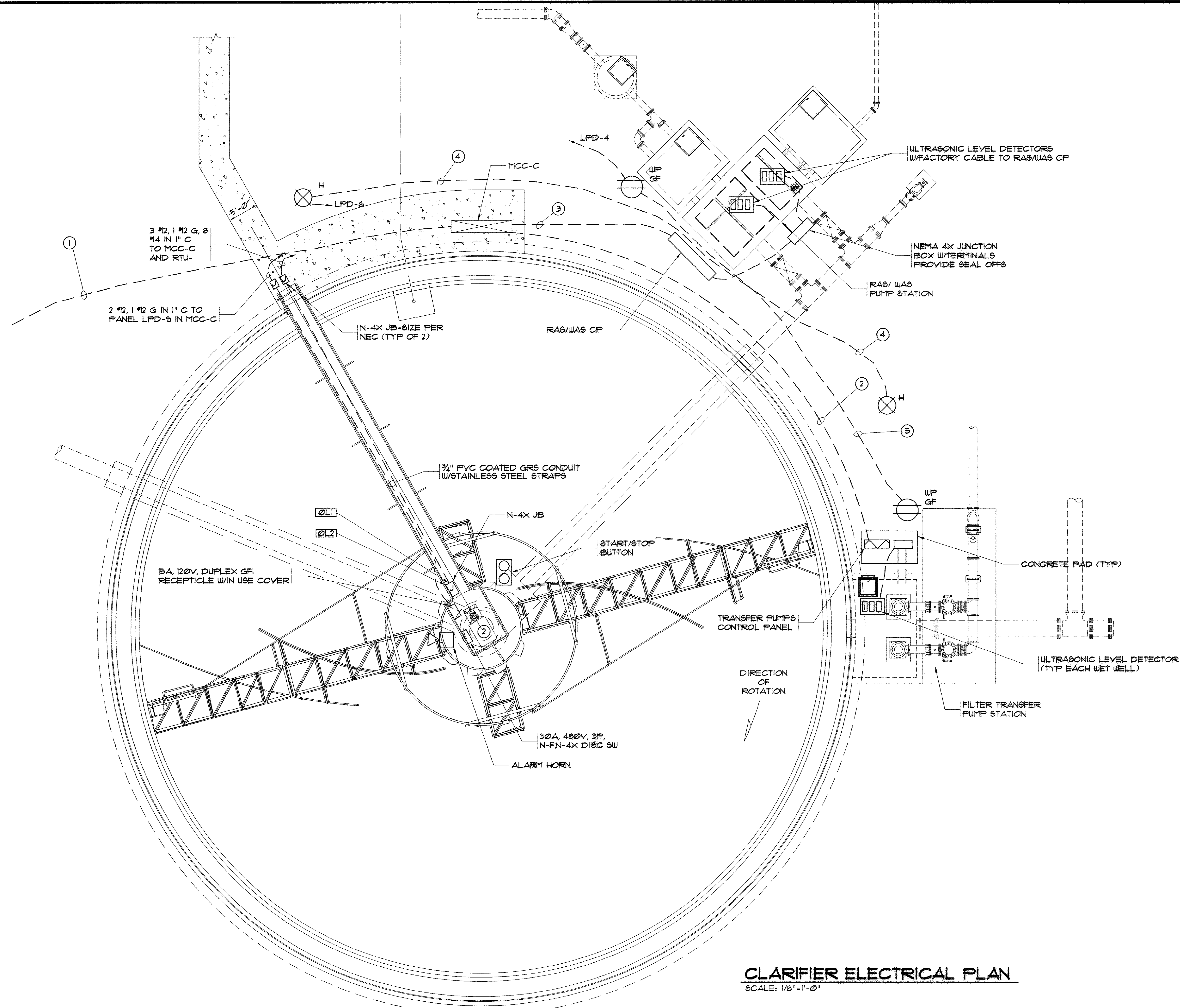
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**ONE-LINE POWER
DIAGRAM**

**CONWAY WWTP
CLARIFIER ADDITION
Horry County, South Carolina**

Scale:	AS SHOWN
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Of: 34	Version: 4



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

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**CLARIFIER
ELECTRICAL PLAN**

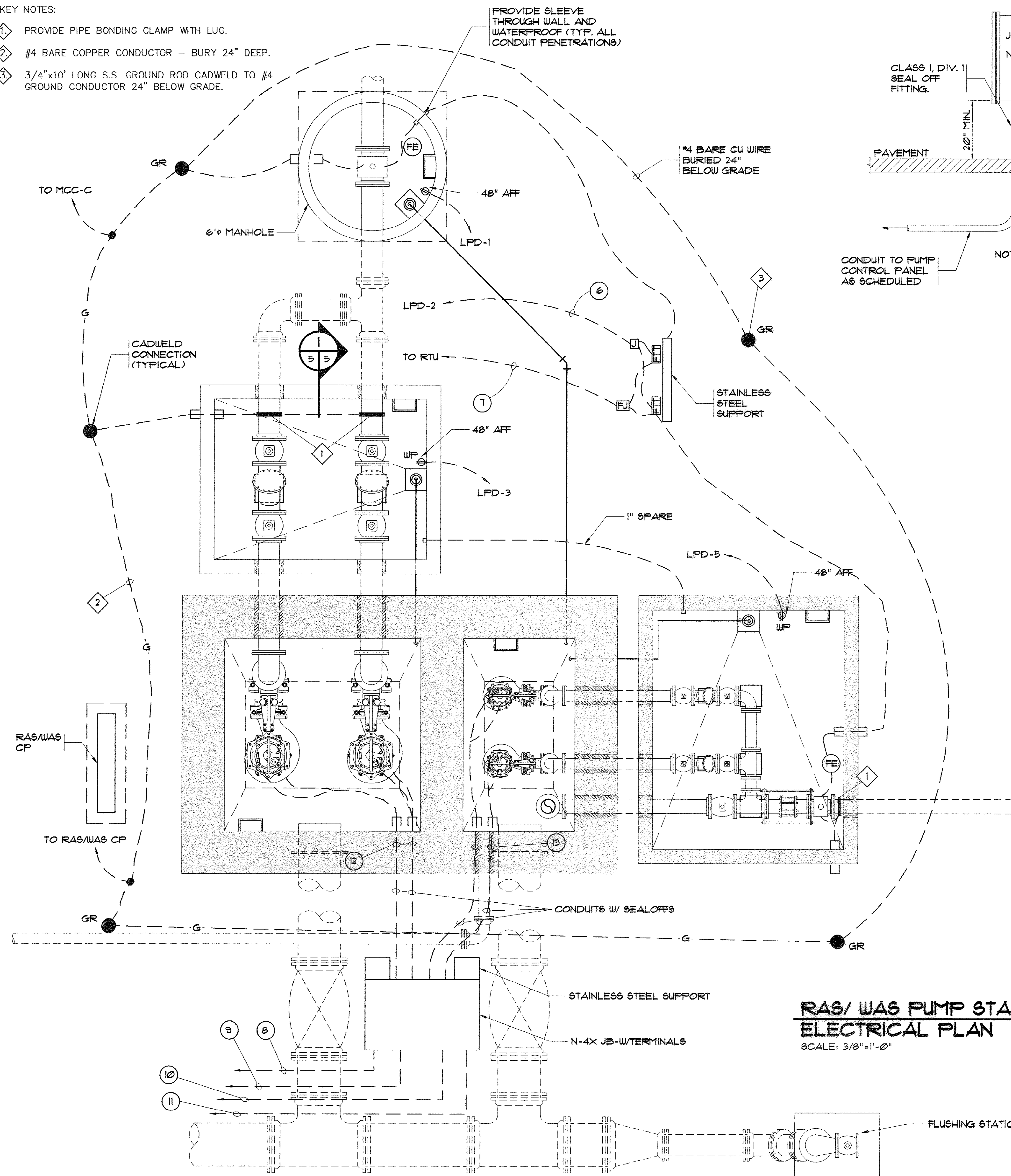
CONWAY WWTP
CLARIFIER ADDITION
HORRY COUNTY, SOUTH CAROLINA

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Of:	34
Version:	4

35-005-030/36

KEY NOTES:

- 1 PROVIDE PIPE BONDING CLAMP WITH LUG.
- 2 #4 BARE COPPER CONDUCTOR - BURY 24" DEEP.
- 3 3/4"x10' LONG S.S. GROUND ROD CADWELD TO #4 GROUND CONDUCTOR 24" BELOW GRADE.



**RAS/ WAS PUMP STATION
ELECTRICAL PLAN**

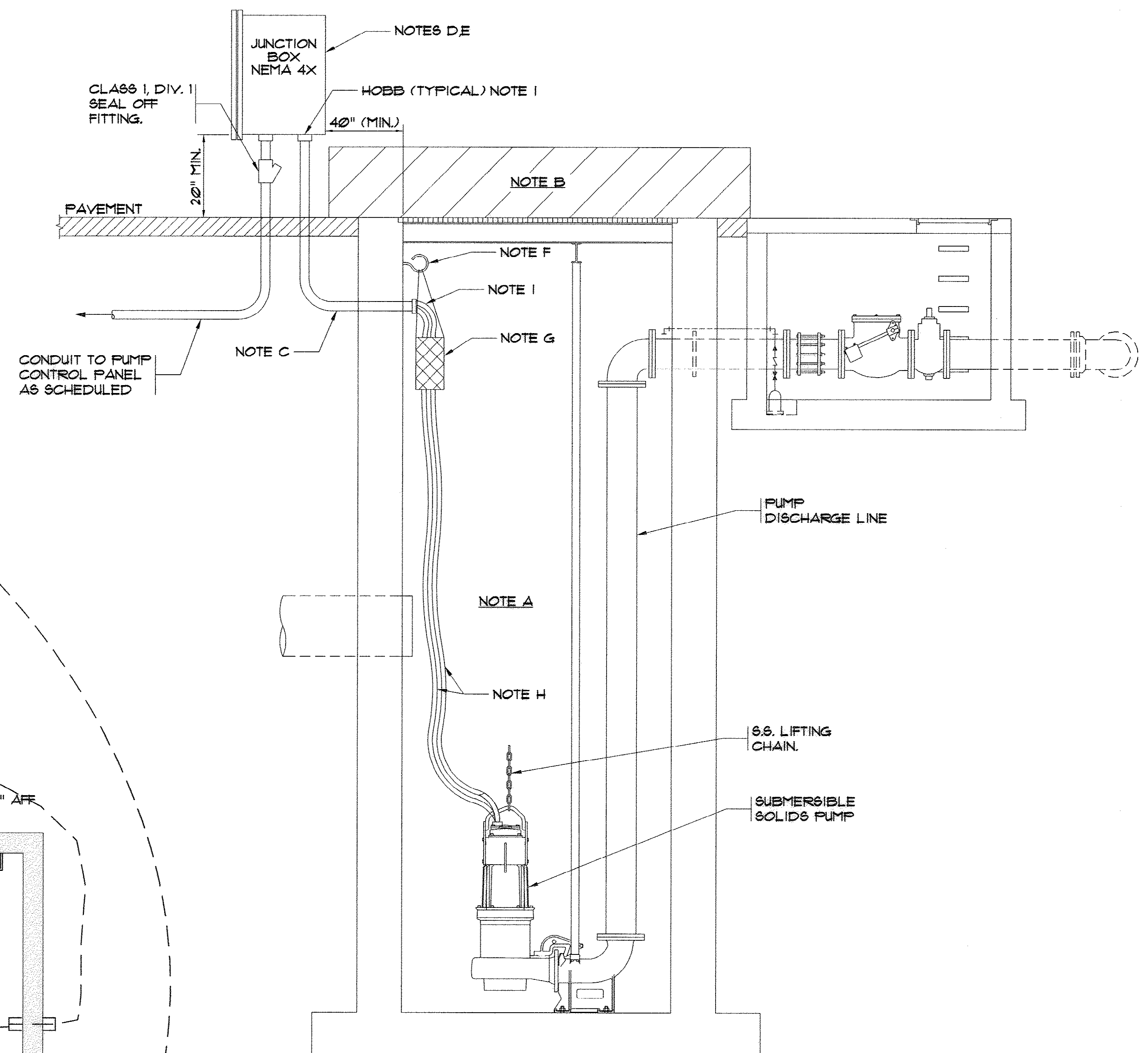
SCALE: 3/8"=1'-0"

**1
5
5 RAS/ WAS PUMP STATION
SECTION**

NTS

NOTES:

- A. WET WELL IS CLASSIFIED AS A CLASS 1, DIVISION 1 GROUPS C AND D LOCATION. PROVIDE SEAL OFF FITTINGS IN ALL CONDUITS ENTERING WET WELL, SEAL WITH COMPOUND AFTER INSTALLATION OF CABLES AS REQUIRED BY THE CODE.
- B. THE AREA ABOVE WET WELL EXTENDING 18" ABOVE GRATING AND 36" BEYOND INSIDE WALL OF WET WELL IS CLASSIFIED AS CLASS 1, DIVISION 2 GROUPS C AND D LOCATION.
- C. PROVIDE ONE CONDUIT SIZED AS REQUIRED BY CABLES BUT NOT SMALLER THAN WHAT IS SHOWN ON POWER DIAGRAM FOR EACH PUMP FROM JUNCTION BOX TO INSIDE WET WELL. INSTALL CABLE FURNISHED BY CONTROL PANEL SUPPLIER, AND SPlice IN JUNCTION BOX.
- D. PROVIDE GASKETED, WATERTIGHT STAINLESS STEEL NEMA 4X JUNCTION BOX WITH BACK PANEL. SIZE TO MEET NEC. PROVIDE STAINLESS STEEL SUPPORT.
- E. CONNECT IN JUNCTION BOX THE PUMP MOTOR BRANCH CIRCUIT WIRING AND ALARM WIRING TO THE POWER AND ALARM CABLES FURNISHED WITH PUMP USE SQUARE D COPPER POWER DISTRIBUTION BLOCKS, LBC SERIES, SUITABLE FOR THE CABLES WITH CLEAR PLASTIC COVERS (LBC SERIES). PROVIDE BONDING LUG.
- F. PROVIDE 3/8" (MIN.) S.S. HOOK OR OPEN EYE BOLT IN S.S. CONCRETE ANCHOR PER SET OF CABLES.
- G. PROVIDE HEAVY DUTY, SINGLE EYE, CLOSED MESH S.S. CORD GRIP SIZED TO FIT CABLE, KELLUMS OR EQUAL TYPICAL FOR ALL CONTROL AND POWER CABLES.
- H. PUMP CABLES ARE TYPICALLY POWER CABLE AND WATERSEAL FAILURE ALARM/OVERHEAT ALARM CABLE. COORDINATE WITH PUMP SUPPLIER FOR EXACT CABLING CONFIGURATION.
- I. PROVIDE INSULATED BUSHING AT THE END OF EACH CONDUIT. SEAL WATERTIGHT CONDUIT PENETRATION THROUGH WET WELL AND INTO BOX.



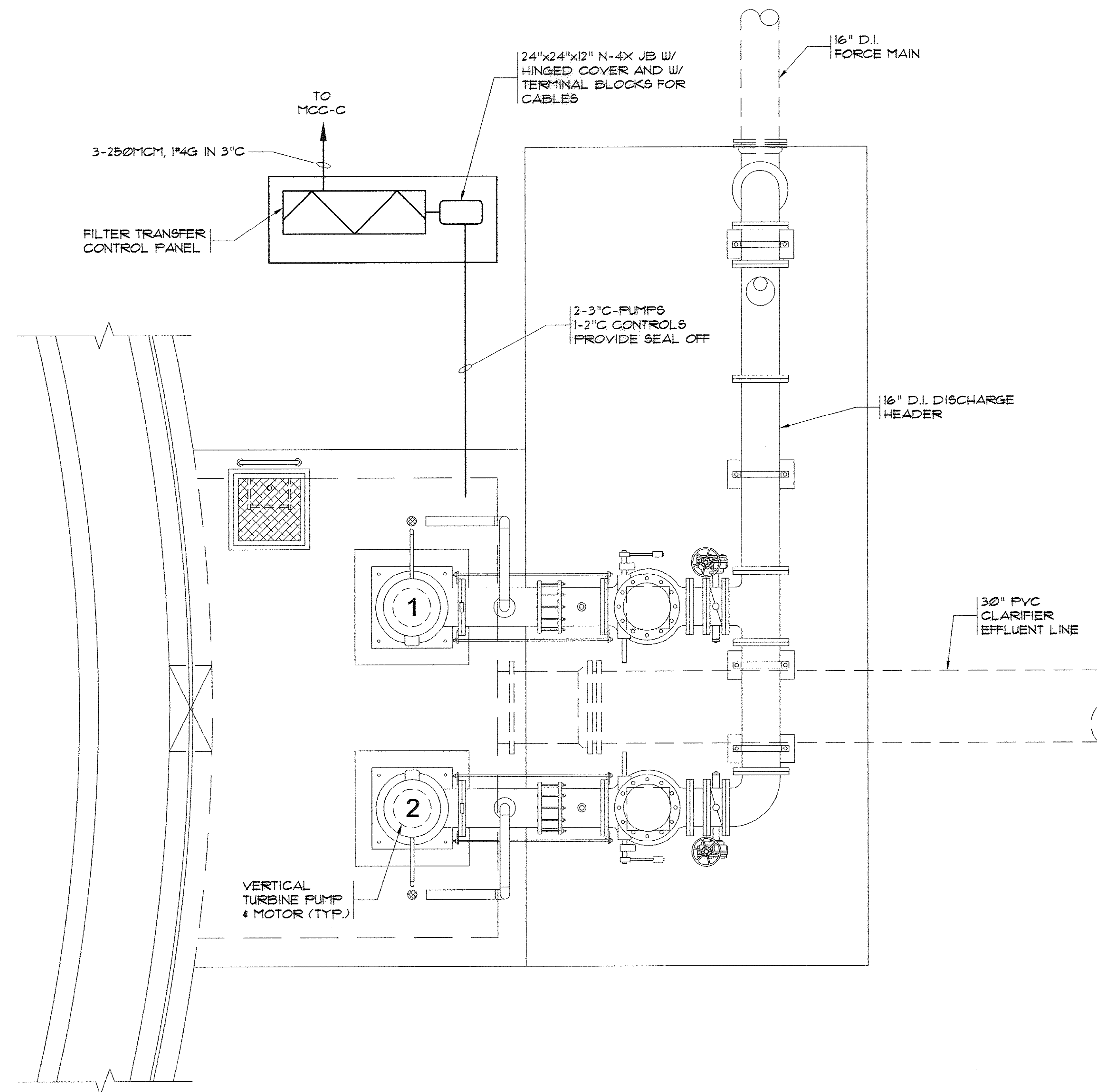
**RAS/ WAS PUMP STATION
ELECTRICAL PLAN**

**CONWAY WWTP
CLARIFIER ADDITION
HORRY COUNTY, SOUTH CAROLINA**

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E-5
Of: 34 Version: 4

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35-005-031/36



**FILTER TRANSFER PUMP STATION
ELECTRICAL PLAN**
SCALE: 3/8"=1'-0"

AS-BUILT
7-17-2009

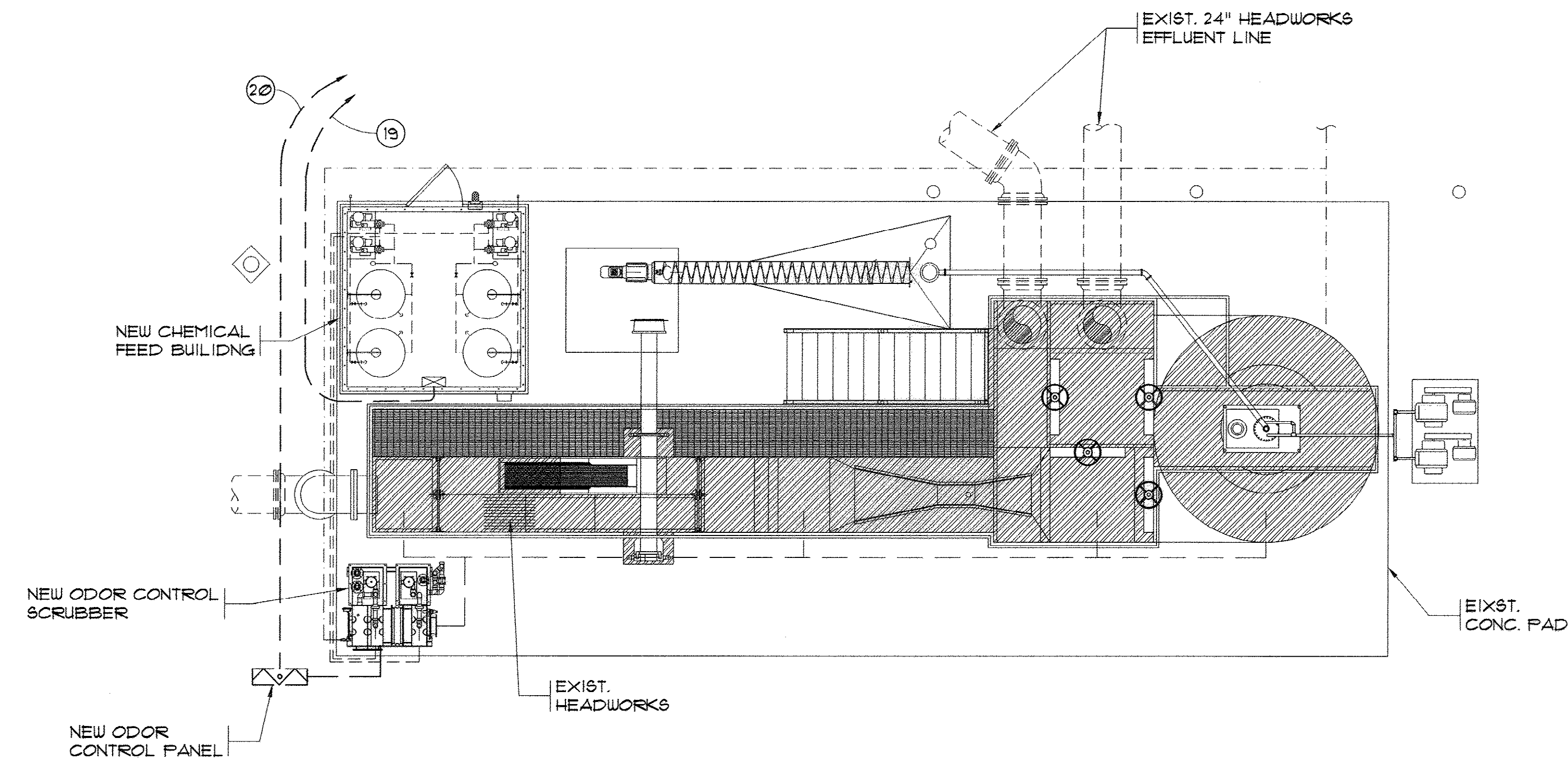
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FILTER TRANSFER
PUMP STATION
ELECTRICAL PLAN

CONWAY WWTP
CLARIFIER ADDITION
HORRY COUNTY, SOUTH CAROLINA

Scale:	AS SHOWN
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Sheet No.:	E-6
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35-005-032 | 36



EXIST. HEADWORKS ELECTRICAL PLAN
NTS

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7-17-2009

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EXIST. HEADWORKS
ELECTRICAL PLAN

CONWAY WWTP
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Of: 34	Version: 4

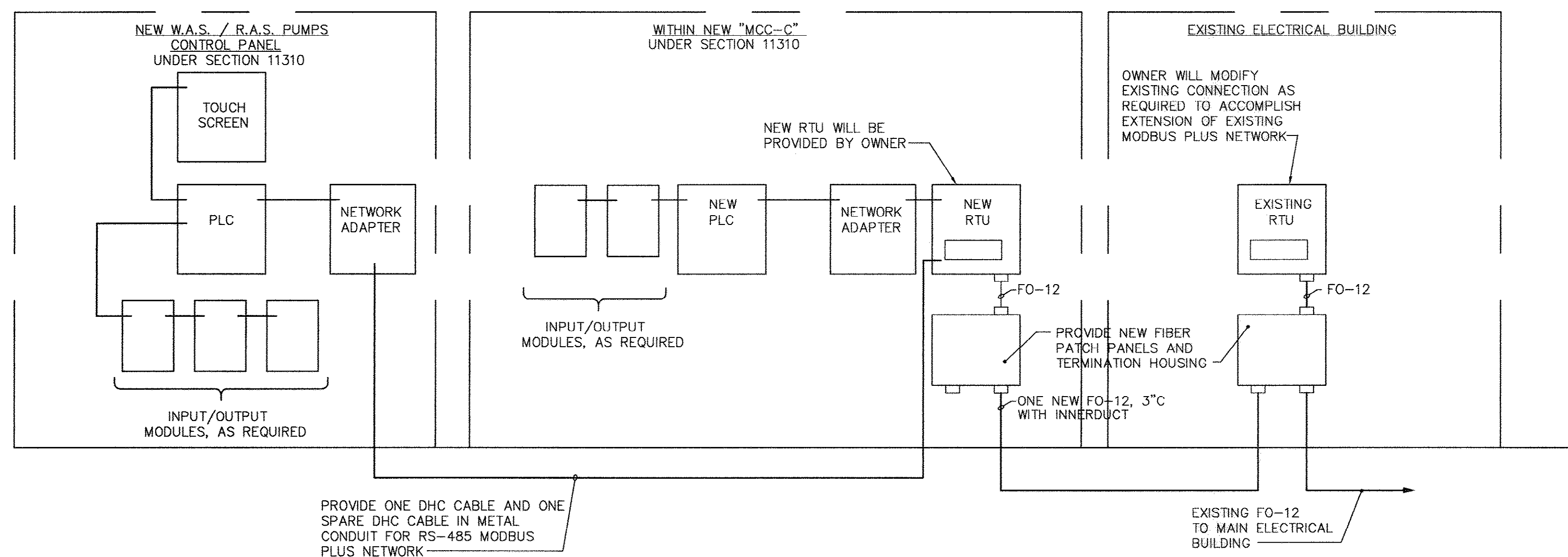
SERVICE: 480V, 3-PH, 3W-600 AMP MAIN BUS SCIR: 42KA
TYPE: NEMA 3R, TYPE B, CLASS 1

LEGEND:

- a. WITH 480-115V CONTROLS POWER TRANSFORMER.
- b. WITH HAND-OFF CONTROL SWITCH IN COVER.
- c. WITH RED ALARM "MECHANICAL OVERLOAD" PILOT LIGHT IN COVER.
- d. WITH AUDIBLE ALARM SWITCH.
- e. REFER TO CONTROL WIRING DIAGRAM ON SHT. E-9 FOR ADDITIONAL REQUIREMENTS.
- f. FEEDER IS FOR PUMP STATION WITH TWO 75HP PUMPS.
- g. FEEDER IS FOR PUMP STATION WITH TWO 50HP PUMPS AND TWO 3HP PUMPS.
- h. ONE OF EACH GROUP OF PUMPS ALWAYS STANDBY.
- i. PROVIDE 120V, 60 HZ, POWER SUPPLY FROM PANEL LPD TO OPERATE PLC.
- j. OWNER TO INSTALL RTU HERE.
- k. PROVIDE RACK TO MOUNT THE FOLLOWING EQUIPMENT:
FIBER OPTICS PATCH PANEL WITH CONCENTRATOR TO CONVERT FROM FIBER TO COPPER ETHERNET
MODBUS PLUS 485 WIRING AND RTU. PROVIDE NEMA 20R DOUBLE DUPLEX RECEPTACLE.
- l. PROVIDE ENVIRONMENTAL HEATER IN CUBICLE WITH THERMOSTAT. FEED FROM PANEL "LPD".

CONDUIT & CABLE SCHEDULE

1. 3-500 MCM, 1#2GRD IN 3" C FROM MCC-B NEW 400A, 480V, 3P - CIRCUIT BREAKER TO NEW MCC-C
2. 3-250 MCM, 1#4 CRD IN 2 1/2" C & 8#14 IN 1" C FROM MCC-C/RTU TO TRANSFER PP CONTROL PANEL
3. 3-#6, 1#4 G IN 2" C & 18-#14 IN 1" C FROM MCC-C/RTU TO RAS/ WAS PUMP CONTROL PANEL
4. 2#12, 1#12 G IN 3/4" C - LPD TO POLE LIGHTS
5. 2#12, 1#12 G IN 3/4" C - EXTERIOR RECEPTACLES
6. 2-SC IN 1" METAL CONDUIT
7. 2#12, 1#12 G IN 3/4" C - LPD TO FIT'S (POWER)
8. 3#6, 1#8 G, 6#14 IN 1 1/4" C - RAS/WAS CP TO RAS PP #1
9. 3#6, 1#8 G, 6#14 IN 1 1/4" C - RAS/WAS CP TO RAS PP #2
10. 3#12, 1#12 G, 6#14 IN 1" C - RAS/WAS CP TO WAS PP #1
11. 3#12, 1#12 G, 6#14 IN 1" C - RAS/WAS CP TO WAS PP #2
12. 3" GALV. RIGID CONDUIT - INSTALL RAS PUMP CABLES
13. 2" GALV. RIGID CONDUIT - INSTALL WAS PUMP CABLES
14. 3#12, 1#12 G, 8#14 IN 1" C & 2#12, 1#12 G IN 3/4" C - MCC-C/LPD TO CLARIFIER MOTOR/DEVICE AND RECEPTACLE
15. NEW 12 STRAND MULTI-MODE FIBER CABLE - 3" C FROM MCC-C RTU TO FIBER PATCH PANEL IN EXIST. ELECTRICAL BLDG.
16. 1-2" SPARE CONDUIT & 1-1 1/4" SPARE CONDUIT
17. TWO DHC CABLES IN 1" METAL CONDUIT FROM RTU IN MCC-C TO RAS/WAS CP, RS-485/MODBUS NETWORK ADAPTER
18. 2-1" SPARE METAL CONDUIT W/ PULL WIRE FROM MCC-C RTU TO RAS/WAS CP
19. 2#6, 1#8 G IN 1" C & 1-1" SPARE - LPC TO NEW CHEMICAL FEED BLDG
20. 3#8, 1#8 G IN 1" C - PPB TO ODOR CONTROL PANEL
21. 1-1" SPARE FROM MCC-C TO FILTER TRANSFER PP - CP



NTS

NOTES:

1. THIS DIAGRAM IS GENERAL IN NATURE AND IS INTENDED TO SHOW TYPICAL CABLING REQUIREMENTS AND SYSTEM INTERCONNECTION METHODOLOGY. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL CABLING, RACK STAND CABINETS, EQUIPMENT, INTER-CONNECTIONS AND ALL ITEMS REQUIRED TO PROVIDE A COMPLETE, WARRANTED, AND OPERATIONAL CABLE DISTRIBUTION SYSTEM AS TYPICALLY SHOWN HERE. AS WELL AS ON THE PLANS AND IN THE PROJECT SPECIFICATIONS.
2. CAMPUS FIBER OPTICS CABLES SHALL CONSIST OF 12 STRAND 62.5/125 MULTIMODE OUTDOOR TERMINATE BOTH ENDS IN FIBER PATCH PANELS IN CABINET MOUNTED ENCLOSURES, USING ST CONNECTORS.
3. ALL CABLING SHALL BE RATED FOR THE ENVIRONMENT AND INSTALLED PER NFPA 70E. PROVIDE A NYLON PULL CORD IN EACH CONDUIT RUN IN ADDITION TO ANY CABLES SPECIFIED.
4. REFER TO SECTION 16158 FOR ADDITIONAL REQUIREMENTS.
6. ALL CABLE SHOWN IS NEW.
7. MAKE ALL CABLE TERMINATIONS AS DIRECTED EXCEPT THAT OWNER WILL MAKE FINAL CONNECTIONS TO RTU'S UTILIZING CABLES FURNISHED UNDER DIVISION 16 - ELECTRICAL.

AS-BUILT
7-17-2009

35-005-034(36)

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ELECTRICAL DETAILS

CONWAY WWTP
CLARIFIER ADDITION
Horry County, South Carolina

Scale: AS SHOWN

Date: JULY, 2009

Drawn: ALG

Checked: AT

Job No.: 37007

Sheet No.:

E-8

L-5

Of: 34 Version: 4

PLC CABINET	PLC POWER SUPPLY	PANEL PP-B	MIXER #3	STORM WATER PUMP	SPARE SIZE 1 STR
	150/3P CB	MIXER #1	WAS PUMP #1	ODOR CONTROL PUMP	SPARE SIZE 1 STR
	150/3P CB	MIXER #2	WAS PUMP #2	SPARE SIZE 1 STR	SPARE SIZE 1 STR
	SPARE SIZE 1 STR	SPACE	SPACE	SPACE	SPACE

EXIST. 'MCC-B'

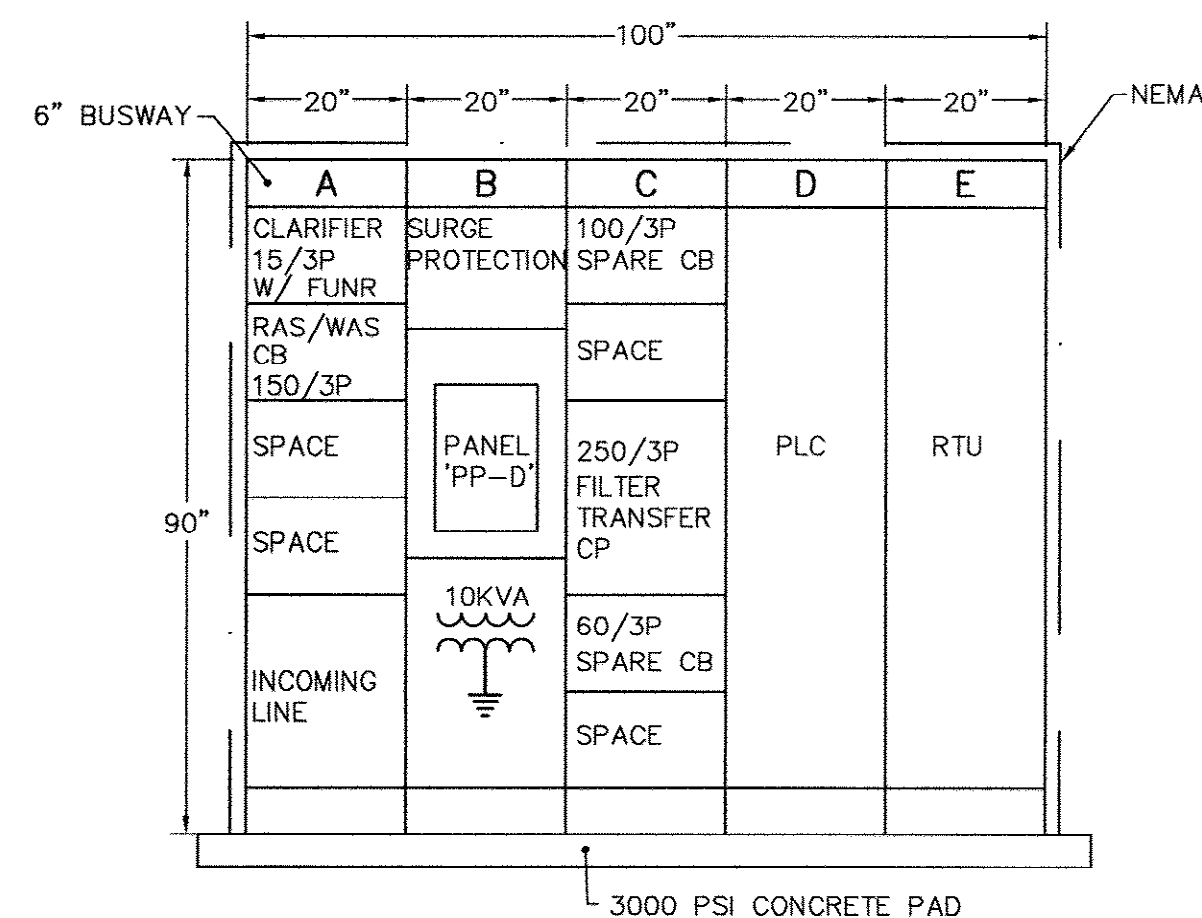
NTS

PLC CABINET	PLC POWER SUPPLY	PANEL PP-B	MIXER #3	STORM WATER PUMP	NEW 400/3P CB NOTE 1
	150/3P CB	MIXER #1	WAS PUMP #1	ODOR CONTROL PUMP	BLANK CUR
	150/3P CB	MIXER #2	WAS PUMP #2	SPARE SIZE 1 STR	SPARE SIZE 1 STR
	SPARE SIZE 1 STR	SPACE	SPACE	SPACE	SPACE

MODIFICATIONS TO EXIST. 'MCC-B'

NTS

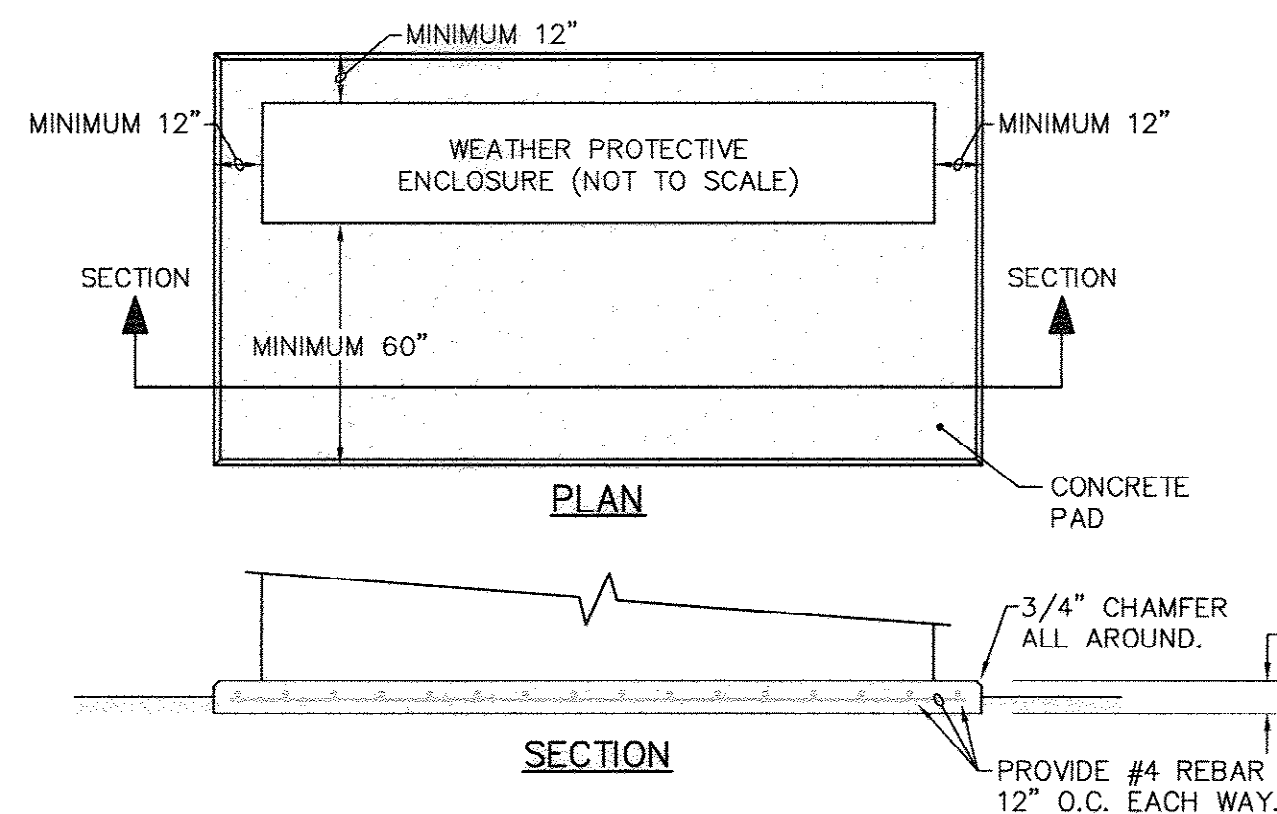
NOTE 1:
REMOVE TWO EXIST. SIZE 1 STARTERS IN THIS CUBICLE AND TURN OVER TO OWNER. INSTALL ONE NEW 400A, 480V, 3 POLE SQD TYPE 'LH' CIRCUIT BREAKER TO FEED NEW 'MCC-C'. PROVIDE A BLANK COVER FOR UNUSED ADDITIONAL SPACE BELOW NEW CIRCUIT BREAKER.



NEW MOTOR CONTROL CENTER 'MCC-C' ELEVATION

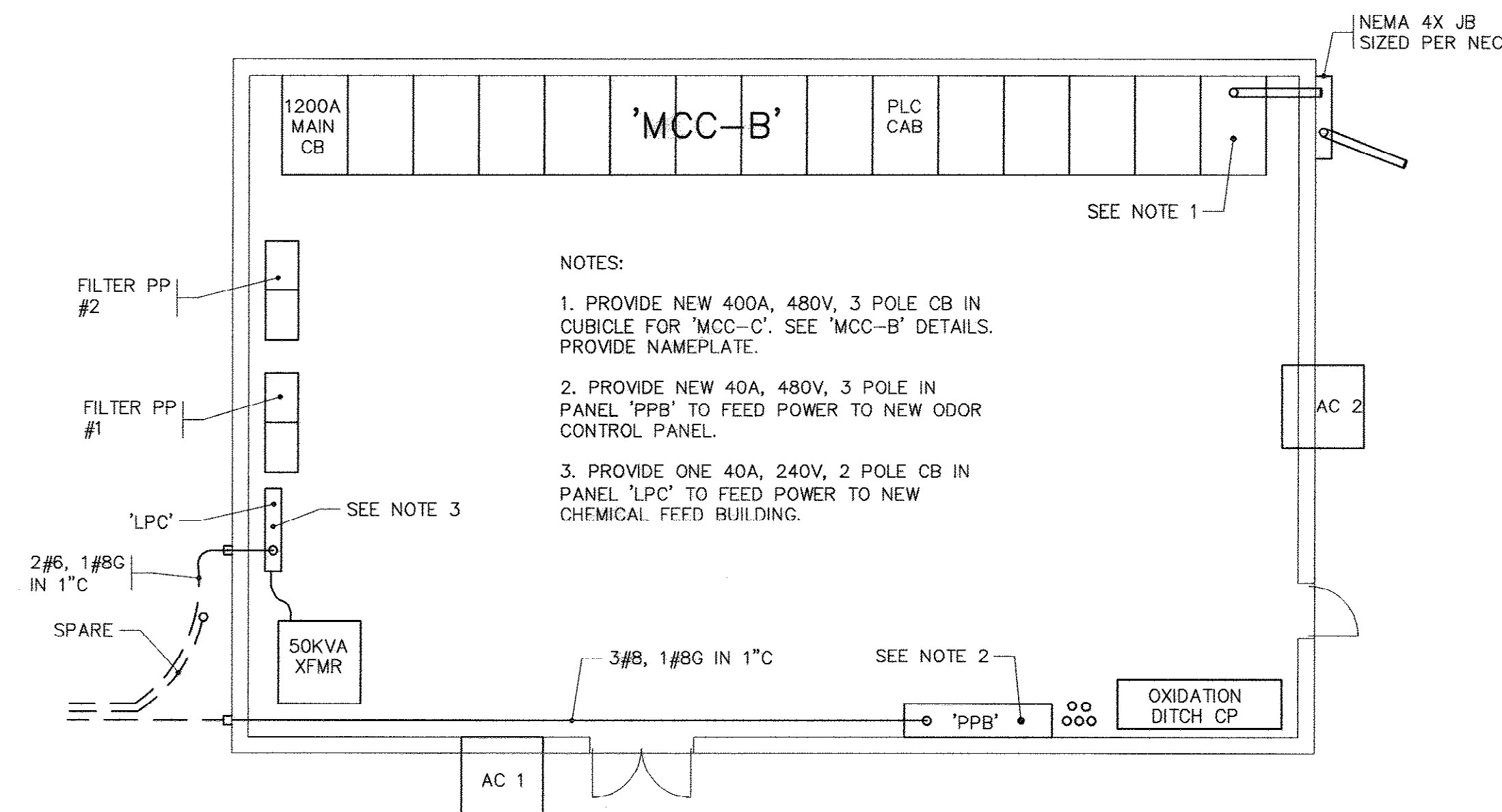
NTS

NOMINAL DIMENSIONS = 100" WIDE x 20" DEEP.



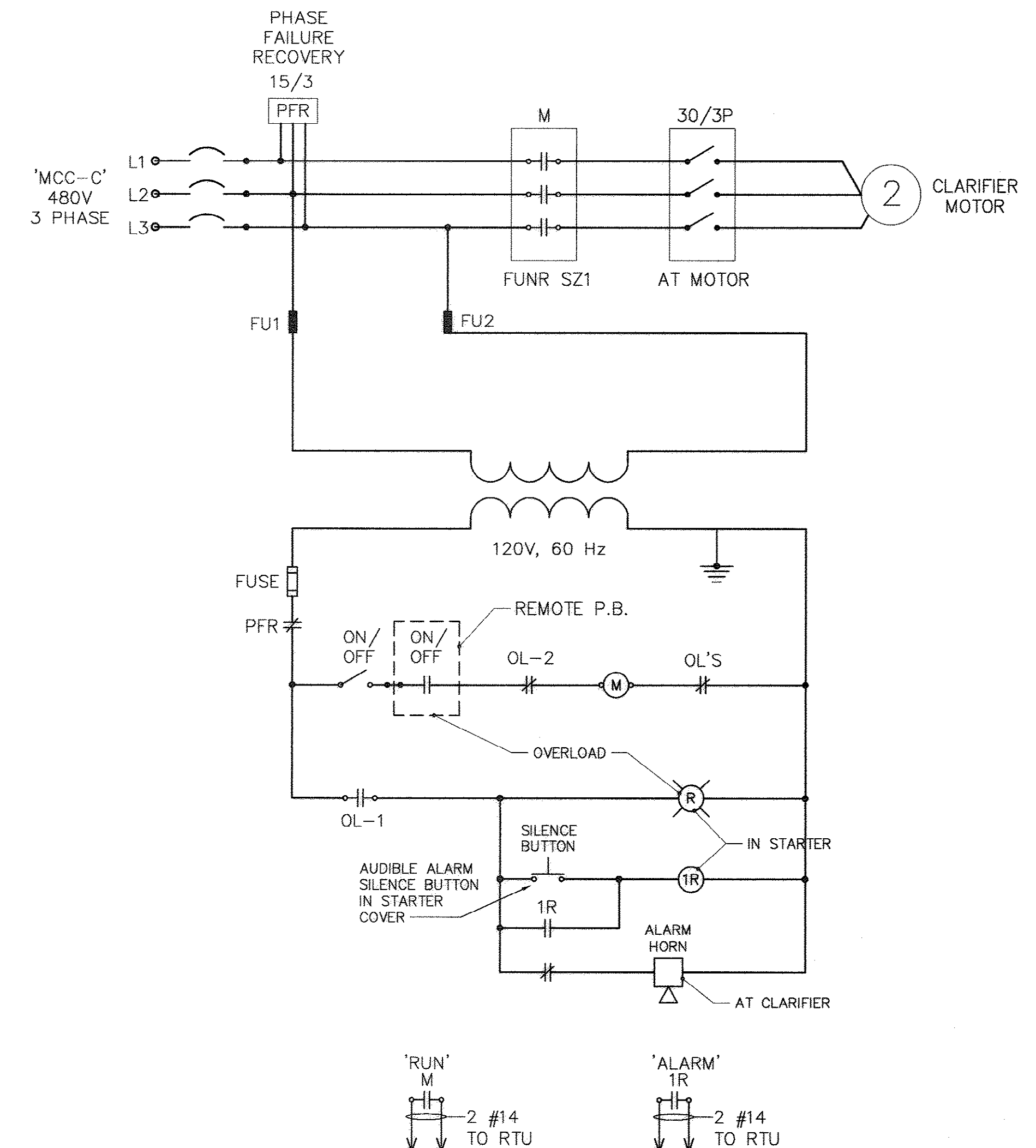
TYPICAL OUTDOOR ELECTRICAL EQUIPMENT PAD

NTS



EXIST. ELECTRICAL BUILDING

NTS



CLARIFIER CONTROL VIA PLC DIAGRAM IN 'MCC-C'

NTS

NOTES:
1. OL-1 = NORMALLY OPEN CONTACT IN TORQUE O/L DEVICE.
2. OL-2 = SAME AS OL-1 EXCEPT NORMALLY CLOSED CONTACT.
3. STARTER IS LOCATED IN 'MCC-C'.

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ELECTRICAL DETAILS

CONWAY WWTP
CLARIFIER ADDITION
HORRY COUNTY, SOUTH CAROLINA

Scale: AS SHOWN
Date: JULY, 2009
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