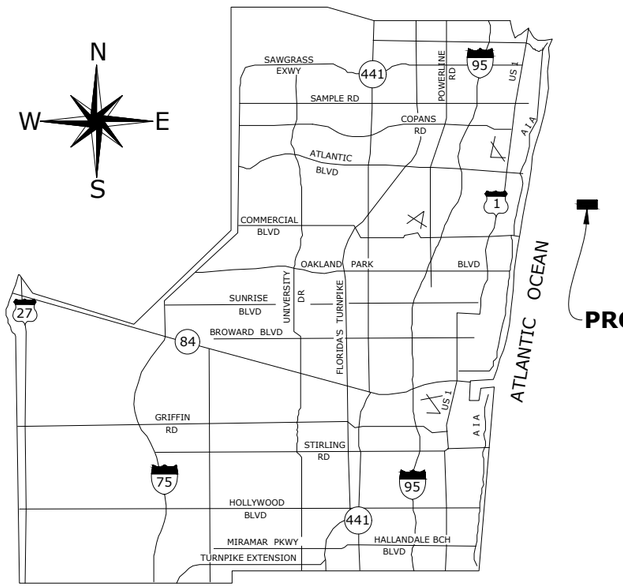
TYPICAL STANDARD LIFT STATION

THESE TYPICAL LIFT STATION PLANS CONTAIN WWS MINIMUM REQUIREMENTS AND ARE INTENDED TO PROVIDE A BASIS FOR SITE ADAPTATION AND DESIGN BY A QUALIFIED ENGINEER. THE INFORMATION HEREIN CONTAINED SHALL ONLY BE USED AS A GENERAL GUIDELINE FOR THE INTENDED OPERATION AND FUNCTIONS AND SHALL NOT BE CONSTRUED AS ALL INCLUSIVE.

ENGINEER OF RECORD AND CONSULTANTS USING THESE GUIDELINES SHALL VERIFY AND MODIFY ANY REQUIREMENT NOT NECESSARILY SHOWN AS MAY BE REQUIRED BY ANY AND ALL APPLICABLE CODES AND STANDARDS.

FOR TRIPLEX STATIONS AND FOR ALL LIFT STATIONS REQUIRING AN ONSITE GENERATOR, DESIGNER SHALL CONSULT WITH WWS FOR ADDITIONAL REQUIREMENTS. THESE STANDARDS APPLY ONLY TO DUPLEX LIFT STATIONS.

ALL CHANGES TO THESE MINIMUM REQUIREMENTS SHALL BE CLEARLY IDENTIFIED WHEN SUBMITTING FOR APPROVAL.



BROWARD COUNTY, FL

GENERAL LOCATION MAP

PROJECT LOCATION

DRAWING INDEX

DESCRIPTION	SHEET DESIGNATION
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PRELIMINARY SET

1/2025

811 Know what's **below.** **Call** before you dig.

CONTRACTOR TO COMPLY WITH FS CHAPTER 556 (UNDERGROUND FACILITY DAMAGE PREVENTION AND SAFETY ACT).

THE SIZE OF THESE PLANS MAY HAVE BEEN ALTERED BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING DATA.

THE VERTICAL DATUM USED FOR THESE DRAWINGS WAS NAVD 88

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PROJECT NO XXXX

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SCALE: AS SHOWN

DWG NO:

DESIGNATION: G-1

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GENERAL LOCATION MAP



ABBREVIATIONS

A

A/C	AIR CONDITION
AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY TRANSPORTATION OFFICIALS
ABAN	ABANDON
ABAN IP	ABANDON IN PLACE
ABS	ACRYLONITRILE BUTADIENE STYRENE
AC	ASBESTOS CEMENT PIPE
ACCMP	ASPHALT-COATED CORRUGATED METAL PIPE
ADDM	ADDENDUM
ADJ	ADJACENT
ALNMT	ALIGNMENT
ALT	ALTERNATE
ALUM	ALUMINUM
AMP	AMPERE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APPX	APPENDIX
APPROX	APPROXIMATE
ARV	AIR OR VACUUM RELIEF VALVE
ASB	ASBESTOS
ASPH	ASPHALT
ASSY	ASSEMBLY
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIAL
AUX	AUXILIARY
AVE	AVENUE
AVG	AVERAGE
AWWA	AMERICAN WATER WORKS ASSOCIATION

B

BCBM	BROWARD COUNTY BENCHMARK
BCEPD	BROWARD COUNTY ENVIRONMENTAL PROTECTION DEPARTMENT
BCPHU	BROWARD COUNTY PUBLIC HEALTH UNIT
BCV	BALL CHECK VALVE
BCWWED	BROWARD COUNTY WATER & WASTEWATER ENGINEERING DIVISION
BCWWS	BROWARD COUNTY WATER & WASTEWATER SERVICES
BE	BURIED ELECTRIC
BF	BLIND FLANGE
BFP	BACKFLOW PREVENTER
BFV	BUTTERFLY VALVE
BI	BLACK IRON
BITUM	BITUMINOUS OR BITUMASTIC
BL	BASE LINE
BLDG	BUILDING
BLK	BLOCK
BLVD	BOULEVARD
BM	BENCH MARK
BOB	BOTTOM OF BAFFLE
BOC	BACK OF CURB
BOP	BOTTOM OF PIPE
BOS	BOTTOM OF STRUCTURE
BOT	BOTTOM
BP	BRICK PAVERS
BT	BURIED TELEPHONE
BW	BOTH WAYS

C

C TO C	CENTER TO CENTER
CAP	CORRUGATED ALUMINUM PIPE
CB	CATCH BASIN
CFM	CUBIC FEET PER MINUTE
CFS	CUBIC FEET PER SECOND
CHKV	CHECK VALVE
CI, CIP	CAST IRON PIPE
CISP	CAST IRON SOIL PIPE
CJ	CONSTRUCTION JOINT
CKT	CIRCUIT
CL	CENTER LINE
CL	CLAY
CL2	CHLORINE GAS
CLF	CHAIN LINK FENCE
CLS	CHLORINE SOLUTION
CLVT	CULVERT
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CND	CONDUIT
CO	CLEAN OUT/COMPANY
CON	CONNECTION
CONC	CONCRETE
CONSTR	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACT(OR)
COORD	COORDINATE
CORP	CORPORATION
CP	CONCRETE PIPE
CPP	CORRUGATED HIGH DENSITY POLYETHYLENE PIPE
CPVC	CHLORINATED POLYVINYL CHLORIDE
CR	CONCENTRIC REDUCER
CT	COURT / COUNT
CTV	CABLE TELEVISION
CU FT	CUBIC FEET
CU YD	CUBIC YARD
CY	CUBIC YARD
CYL	CYLINDER

D

D	DELTA ANGLE
DBI	DITCH BOTTOM INLET
DCR	MIAMI DADE COUNTY RECORD
DE	DRAINAGE EASEMENT
DEG	DEGREE
DEPT	DEPARTMENT
DESCR	DESCRIPTION
DFLCT JT	DEFLECT JOINT(S)
DFT	DRY FILM THICKNESS
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DISCH	DISCHARGE
DR	DRIVE
DRWY	DRIVEWAY
DWG	DRAWING

E

E	EAST
EA	EACH
EB	ELECTRIC BOX
EC	EDGE OF CURB
ECC	ECCENTRIC
ECC RDCR	ECCENTRIC REDUCER
EF	EACH FACE
EL	EASEMENT LINE
EL	ELEVATION
ELAST	ELASTOMERIC
ELEC	ELECTRIC
EMER	EMERGENCY
ENGR	ENGINEER
EOS	EDGE OF SLAB
EOW	EDGE OF WATER
EP	EDGE OF PAVEMENT
EPDM	ETHYLENE PROPYLENE DIENE MONOMER
EPRF	EXPLOSION PROOF
EQUIP	EQUIPMENT
ES	EDGE OF SIDEWALK / SHOULDER
ESMT	EASEMENT
EST	ESTIMATE
EW	EACH WAY
EXIST	EXISTING
EXP	EXPANSION
EXST GR	EXISTING GRADE

F

F/F	FACE TO FACE
FAC	FLANGED ADAPTER COUPLING
FCV	FLOW-CONTROL VALVE
FD	FLOOR DRAIN
FDOT	FLORIDA DEPARTMENT OR TRANSPORTATION
FE	FILTER(ED) EFFLUENT
FF EL	FINISHED FLOOR ELEVATION
FH	FIRE HYDRANT
FIG	FIGURE
FIN	FINISH(ED)
FIN FL	FINISH FLOOR
FIN GR	FINISHED GRADE
FJ	FLANGED JOINT
FL	FLORIDA
FLG	FLANGE(D)
FLL	FLOW LINE
FLTR	FILTER
FM	FORCE MAIN
FPL	FLORIDA POWER AND LIGHT
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FRP	FIBERGLASS REINFORCED PLASTIC
FT	FEET OR FOOT
FV	FOOT VALVE
FWP	FACTORY WIRED PANEL

G

G	GROUND
G LN	GAS LINE
GA	GAGE
GAL	GALLON
GALV	GALVANIZED
GALV STL	GALVANIZED STEEL PIPE
GAS	NATURAL GAS
GJ	GROOVE JOINT
GLV	GLOBE VALVE
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GR LN	GRADE LINE
GRTG	GRATING
GS	GRAVITY SEWER
GTV	GATE VALVE

H

HB	HOSE BIBB
HD	HEAVY-DUTY
HDPE	HIGH-DENSITY POLYETHYLENE
HNDRL	HAND RAIL
HOA	HAND-OFF-AUTOMATIC
HORIZ	HORIZONTAL
HP	HORSEPOWER
HR	HOUR
HWL	HIGH WATER LEVEL
HWY	HIGHWAY
Hz	HERTZ

I

I&EE	INGRESS AND EGRESS EASEMENT
ID	INSIDE DIAMETER / DIMENSION
IE,INV EL	INVERT ELEVATION
IEB	INGROUND ELECTRIC BOX
IN	INCH
INF	INFLUENT
IP	IRON PIPE
IPS	INTERNATIONAL PIPE STANDARD
IW	IRRIGATION WATER

J

J-BOX	JUCTION BOX
JT	JOINT

K

kV	KILOVOLT
kVA	KILOVOLT-AMPERE
kW	KILOWATT
kWh	KILOWATT-HOUR

L

LATL	LATERAL
LB/FT	POUNDS PER FOOT
LBR	LIMEROCK BEARING RATIO
LBS	POUND(S)
LF	LINEAR FEET
LN	LANE
LP	LIGHT POLE
LS	LIFT STATION
LT	LEFT
LWL	LOW WATER LEVEL

M

m	METER
MAINT	MAINTENANCE
MAS	MAINTENANCE ACCESS STRUCTURE, MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MB	MAIL BOX
MCC	MOTOR CONTROL CENTER
ME	MITERED END
MECH	MECHANICAL
MFR	MANUFACTURE(R)
MG	MILLION GALLONS
MGD	MILLION GALLONS PER DAY
MI	MILE(S)
MIN	MINIMUM
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MNR	MANOR
MON	MONUMENT
MPH	MILES PER HOUR
MPT	MALE PIPE THREAD
MS	MOTOR STARTER
MWL	MEAN WATER LEVEL
MWP	MAXIMUM WORKING PRESSURE

N

N	NORTH
NA	NOT APPLICABLE
NAD27	NORTH AMERICAN DATUM 1927 (HORIZONTAL)
NAD83	NORTH AMERICAN DATUM 1983 (HORIZONTAL)
NE	NORTHEAST
NGVD	NATIONAL GEODETIC DATUM 1929 (VERTICAL)
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NPF	NATIONAL PIPE THREAD
NPT	NATIONAL PIPE TAPER (THREAD)
NPW	NON-POTABLE WATER
NTS	NOT TO SCALE
NW	NORTHWEST

O

O/E	OR EQUAL
OC	ON CENTER
OCEW	ON CENTER EACH WAY
OD	OUTSIDE DIAMETER
OD	OPEN DRIP PROOF
OF	OUTSIDE FACE
OHW,OHD	OVER HEAD WIRE
OH EL	OVERHEAD ELECTRIC
ORB	OFFICIAL RECORDS BOOK
OSHA	OCCUPATIONAL SAFETY AND HEALTH ACT

P

P	POLE
PB	PLAT BOOK
PBL	POLYBUTYLENE
PC	POINT OF CURVATURE
PCM	PERMANENT CONTROL MONUMENT
PE	PLAIN END
PG	PRESSURE GAGE, PAGE
PI	POINT OF INTERSECTION
PL	PROPERTY LINE
POB	POINT OF BEGINNING
POJ	PUSH-ON JOINT
POLY	POLYETHYLENE (PLASTIC)
POTW	POTABLE WATER
PP	POWER POLE
PRB	POLLUTION RETARDANT BASIN
PREFAB	PREFABRICATED
PRESS	PRESSURE
PROP	PROPERTY
PRV	PRESSURE REDUCING VALVE
PRW	PROCESS WATER
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH ABSOLUTE
PSIG	POUNDS PER SQUARE INCH GAGE
PSM	PROFESSIONAL SURVEYOR AND MAPPER
PT	POINT OF TANGENCY
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE (PLASTIC)
PVMT	PAVEMENT
PWR	POWER

Q

Q	RATE OF FLOW
QTY	QUANTITY

R

R	RADIUS
R	RANGE
RCP	REINFORCED CONCRETE PIPE
RCCP	REINFORCED CONCRETE CULVERT PIPE
RCPP	REINFORCED CONCRETE PRESSURE PIPE
RCW	RECLAIMED WATER
RD	ROAD
RDC	REDUCER
RE	RIM ELEVATION
REV	REVISION
REQD	REQUIRED
RGE	RANGE (SURVEYING)
RJ	RESTRAINED JOINT
RM	ROOM
ROW	RIGHT OF WAY
RPBP	REDUCED PRESSURE BACK FLOW PREVENTER
RPM	REVOLUTIONS PER MINUTE
RR	RAILROAD
RST	REINFORCING STEEL
RT	RIGHT
RUW	REUSE WATER
RW	RAW WATER
RW	ROADWAY
RWM	RAW WATER MAIN
RWW	RECYCLED WASH WATER
R/W	RIGHT-OF-WAY

S

S	SOUTH
SAMP	SAMPLE
SAN	SANITARY
SAN MAS	SANITARY MAINTENANCE ACCESS STRUCTURE
SB	SOIL BORING
SBT	SOUTHERN BELL TEL
SCHED	SCHEDULE
SCONC	STAMPED CONCRETE
SD	STORM DRAIN (GRAVITY)
SDMAS	STORM DRAIN MAINTENANCE ACCESS STRUCTU
SE	SOUTHEAST
SECT	SECTION
SF	SQUARE FEET OR FOOT
SHT	SHEET
SIG	SIGNAL
SLV	SLEEVE
SOLN	SOLUTION
SPEC	SPECIFICATION
SQ	SQUARE
SQ YD	SQUARE YARD
SS	SANITARY SEWER
SST	STAINLESS STEEL
ST	STREET
STA	STATION
STD	STANDARD
STL	STEEL
STRUCT	STRUCTURAL
SV	SOLENOID VALVE
SVCE	SERVICE
SW	SIDEWALK
SWD	SIDEWATER DEPTH
SYM	SYMBOL

T

T&B	TOP AND BOTTOM
TAN	TANGENT
TEMP BM	TEMPORARY BENCHMARK
TDH	TOTAL DYNAMIC HEAD
TEFC	TOTALLY ENCLOSED FAN COOLED
TEL	TELEPHONE
TEMP	TEMPORARY
TERR	TERRACE
THD	THREAD
THD	TROUGH FRAME HEAVY DUTY DOUBLE LEAF
THK	THICKNESS
THD	TROUGH FRAME HEAVY DUTY SINGLE LEAF
TN	TON
TOB	TOP OF BEAM
TOC	TOP OF CURB
TOP	TOP OF PAVEMENT
TOS	TOP OF SLAB
TP	TURNING POINT
TR	TOP OF RIM
TR	TRACK
TYP	TYPICAL
TWN	TOWNSHIP (SURVEYING)
XFMR	TRANSFORMER

U

UEC	UNDERGROUND ELECTRIC CABLE OR CONDUIT
UED	UNDERGROUND ELECTRIC DUCT
UEE	UTILITY EASEMENT (EXCLUSIVE)
UGND	UNDERGROUND
UTC	UNDERGROUND TELEPHONE CABLE
UTIL	UTILITY
UTIL ESMT	UTILITY EASEMENT
UP	UTILITY POLE

V

V	VOLT(S)
VAC	VACUUM
VAR	VARIATION / VARIES
VCP	VITRIFIED CLAY PIPE
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE

W

W/	WITH
W/O	WITHOUT
W	WATT
W	WEST
WAY	WAY
WM	WATER METER/WIRE MESH
WM	WATER MAIN
WPR	WORKING PRESSURE
WSP	WELDED STEEL PIPE
WT	WATER TABLE / WATERTIGHT
WT EL	WATER ELEVATION
WTP	WATER TREATMENT PLANT
WW	WASTE WATER
WWF	WELDED WIRE FABRIC
WWM	WELDED WIRE MESH
WWTP	WASTEWATER TREATMENT PLANT

Y

YD	YARD(S)
YH	YARD HYDRANT

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PROJECT NAME:
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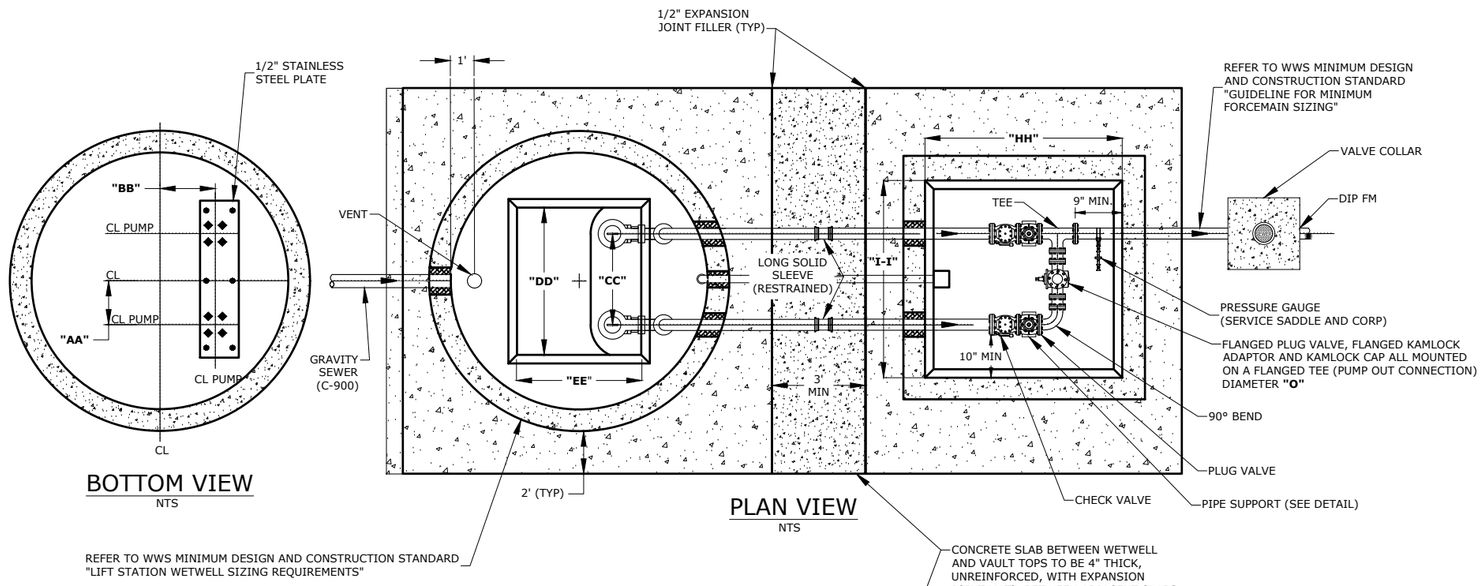
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ABBREVIATIONS AND LOCATION MAP

SCALE: AS SHOWN

DWG NO: XXXX-XX-XXX

DESIGNATION:
G-2

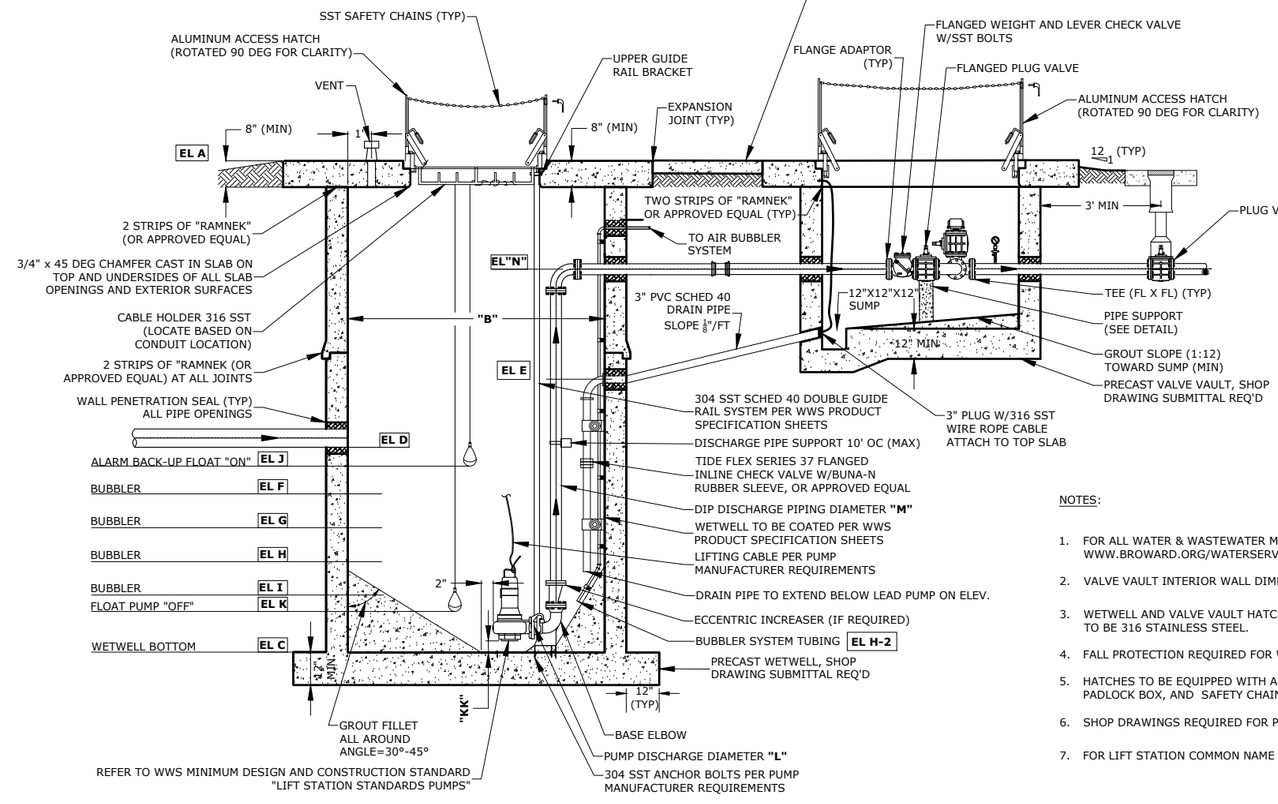
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BOTTOM VIEW
NTS

PLAN VIEW
NTS

LIFT STATION DATA TABLE	
LIFT STATION COMMON NAME	
PUMP MODEL NUMBER / IMPELLER SIZE	
WWS STANDARD CURVE #	
VOLTAGE/CYCLES/PHASE	
HORSE POWER	
RPM	
DESIGN POINT FLOW (GPM)	
DESIGN POINT HEAD (FT)	
SHUT-OFF HEAD (FT)	
MID-POINT FLOW (GPM)	
MID-POINT HEAD (FT)	
EFFICIENCY AT DESIGN POINT (%)	
RUN OUT FLOW (GPM)	
RUN OUT HEAD (FT)	
FINISHED TOP OF SLAB EL **"A"**	
WETWELL DIAMETER **"B"** (FT)	
WETWELL BOTTOM ELEVATION **"C"**	
INFLUENT PIPE DIAMETER (INCHES)	
INFLUENT PIPE INVERT ELEVATION **"D"**	
CHECK VALVE ELEVATION **"E"**	
ALARM ELEVATION **"F"**	
LAG PUMP "ON" ELEVATION **"G"**	
LEAD PUMP "ON" ELEVATION **"H"**	
BUBBLER ELEVATION **"H-2"**	
PUMPS "OFF" ELEVATION **"I"**	
ALARM/FLOAT PUMP "ON" ELEVATION **"J"**	
FLOAT PUMP "OFF" ELEVATION **"K"**	
PUMP DISCHARGE DIAMETER **"L"** (INCHES)	
DISCHARGE PIPE DIAMETER **"M"** (INCHES)	
DISCHARGE PIPE CL ELEVATION **"N"**	
PUMP OUT DIAMETER **"O"** (INCHES)	
WETWELL CL TO PUMP CL **"AA"** (IN)	
WETWELL CL TO PUMP CL **"BB"** (IN)	
PUMP CL TO PUMP CL **"CC"** (IN)	
MIN. WETWELL HATCH OPENING LENGTH **"DD"** (IN)	
MIN. WETWELL HATCH OPENING WIDTH **"EE"** (IN)	
VALVE VAULT WIDTH **"HH"** (IN)	
VALVE VAULT LENGTH **"II"** (IN)	
WETWELL BOTTOM TO VOLUTE BOTTOM **"KK"** (IN)	



ELEVATION
NTS

NOTES:

1. FOR ALL WATER & WASTEWATER MINIMUM DESIGN AND CONSTRUCTION STANDARDS VISIT THE WWS WEBSITE AT: WWW.BROWARD.ORG/WATERSERVICES/PAGES/MINIMUMDESIGNANDCONSTRUCTIONSTANDARDS.ASPX
2. VALVE VAULT INTERIOR WALL DIMENSIONS AND HATCH FRAME OPENING DIMENSIONS TO BE 60"X60" OR 72"X72" AS DIRECTED BY WWS.
3. WETWELL AND VALVE VAULT HATCHES SHALL BE US FOUNDRY, HALLIDAY (OR APPROVED EQUAL) THD/TPD ALUMINUM ACCESS HATCHES. ALL HARDWARE TO BE 316 STAINLESS STEEL.
4. FALL PROTECTION REQUIRED FOR WETWELL AND VALVE VAULT (SUBMITTAL REQUIRED).
5. HATCHES TO BE EQUIPPED WITH AUTOMATIC HOLD OPEN ARMS, HORIZONTAL COMPRESSION SPRINGS, WATERTIGHT SLAM LOCKS, RECESSED OVERSIZED PADLOCK BOX, AND SAFETY CHAINS. HINGES TO BE ATTACHED USING TAMPER PROOF CARRIAGE BOLTS WITH WELDED NUTS.
6. SHOP DRAWINGS REQUIRED FOR PRECAST WETWELL, VALVE VAULT AND TOP SLABS. ALL PRECAST STRUCTURES MUST MEET ASTM C478 SPECIFICATIONS.
7. FOR LIFT STATION COMMON NAME REFER TO WWS MINIMUM DESIGN AND CONSTRUCTION STANDARD "RETAIL LIFT STATION NAMING CONVENTION"

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PROJECT NAME: XXXXXXXXXXXX XXXXXXXXXXX

PROJECT NO XXXX

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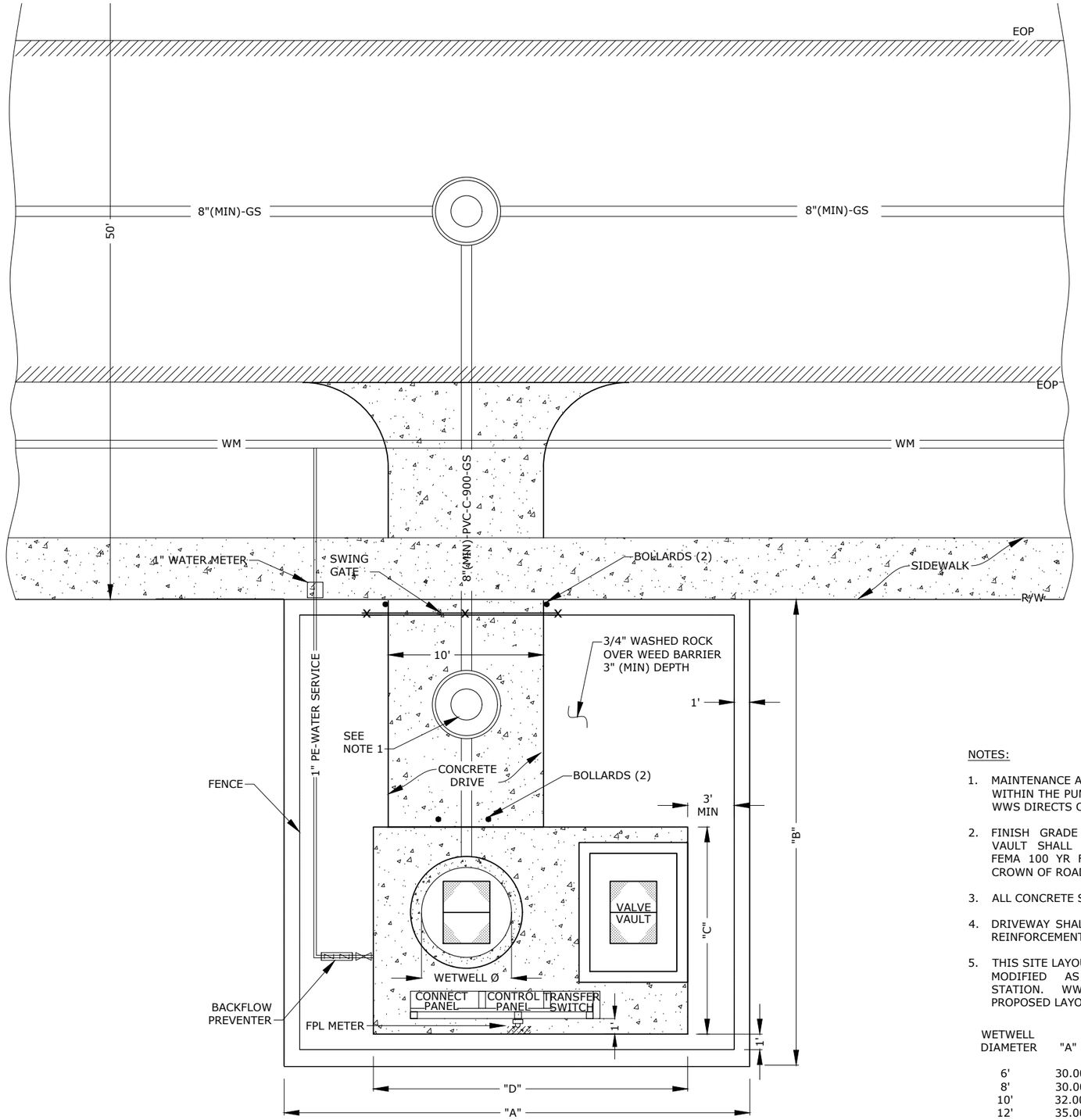
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PLAN AND ELEVATION

SCALE: AS SHOWN

DWG NO:

DESIGNATION:
M-1

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TYPICAL SITE PLAN

NTS

NOTES:

1. MAINTENANCE ACCESS STRUCTURES SHALL BE INSTALLED WITHIN THE PUMP STATION EASEMENT AS SHOWN UNLESS WWS DIRECTS OTHERWISE.
2. FINISH GRADE ELEVATION FOR WETWELL AND VALVE VAULT SHALL BE A MINIMUM OF ONE FOOT ABOVE THE FEMA 100 YR FLOOD ELEVATION OR NOT LOWER THAN CROWN OF ROAD.
3. ALL CONCRETE SLABS ON GRADE SHALL BE CLASS A.
4. DRIVEWAY SHALL BE 6-INCH THICK CONCRETE, WITHOUT REINFORCEMENT, UNLESS WWS DIRECTS OTHERWISE.
5. THIS SITE LAYOUT IS GENERAL IN NATURE AND SHOULD BE MODIFIED AS REQUIRED FOR EACH INDIVIDUAL LIFT STATION. WWS RESERVES THE RIGHT TO MODIFY PROPOSED LAYOUT TO MEET OPERATIONAL NEEDS.

WETWELL DIAMETER	"A"	"B"	"C"	"D"
6'	30.00'	30.00'	13.34'	20.25'
8'	30.00'	30.00'	16.34'	22.25'
10'	32.00'	32.00'	19.00'	27.50'
12'	35.00'	35.00'	20.00'	29.00'

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PROJECT NAME: XXXXXXXXXXXXXXXXXXXXXXXXXXXX

PROJECT NO XXXX

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DATE:	REVISION DESCRIPTION:

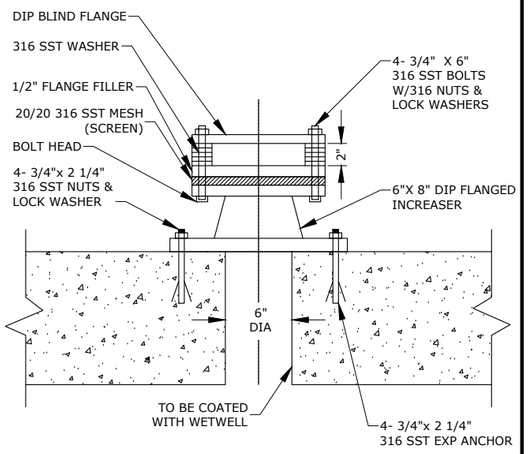
DRAWING NAME: SITE PLAN

SCALE: AS SHOWN

DWG NO:

DESIGNATION: M-2

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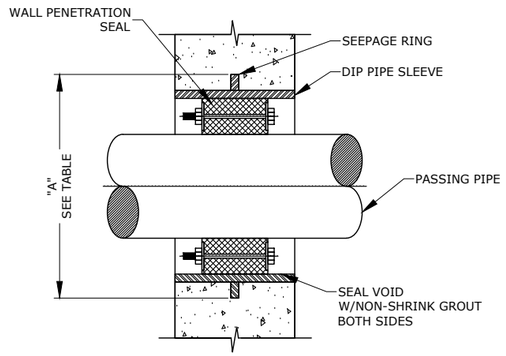
NOTE:

THE PENETRATION FOR THE VENT ASSEMBLY SHALL BE LOCATED 1' INSIDE THE INTERIOR WETWELL WALL AND CENTERED OPPOSITE FROM THE DISCHARGE PIPING.

6" WETWELL VENT

DETAIL

NTS



NOTES:

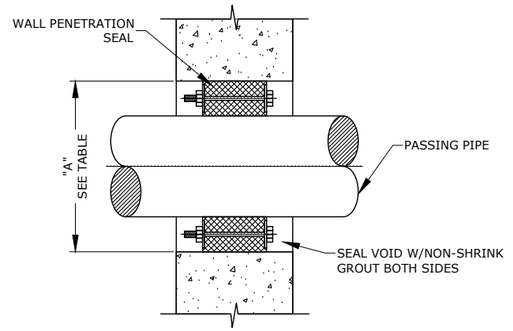
1. ALL DIMENSIONS ARE GIVEN IN INCHES.
2. USE ON NEW CONSTRUCTION, UNLESS OTHERWISE APPROVED BY BCWWS.

PIPE SIZE	NOMINAL SLEEVE DIA	"A"	PIPE SIZE	NOMINAL SLEEVE DIA	"A"
2	4	6	12	16	19
2-1/2	4	7	14	18	21
3	5	7-1/2	16	20	23-1/2
4	6	9	18	22	25
6	10	13	20	24	27-1/2
8	12	15	24	28	32
10	14	17			

WALL SLEEVE PENETRATION

DETAIL

NTS



NOTES:

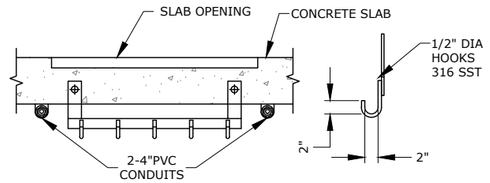
1. ALL DIMENSIONS ARE GIVEN IN INCHES.
2. USE ON EXISTING CONSTRUCTION.

PIPE SIZE	"A"	PIPE SIZE	"A"
2	4	12	16
2-1/2	4	14	18
3	5	16	20
4	6	18	24
6	10	20	24
8	12	24	30
10	14		

CORE DRILL PENETRATION

DETAIL

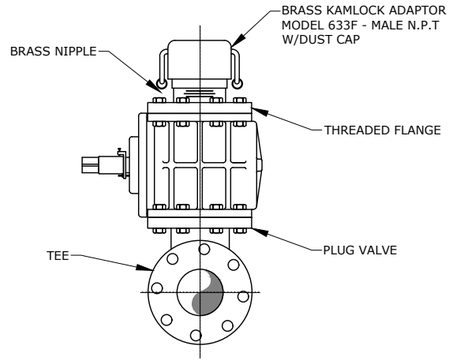
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CABLE HOLDER / CONDUIT DETAIL

DETAIL

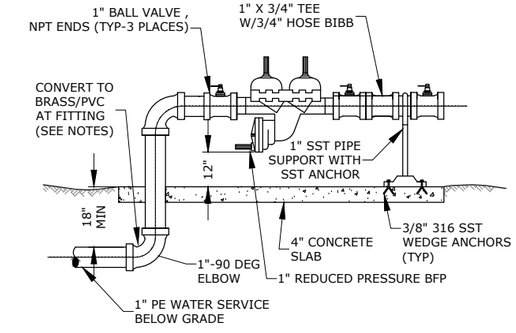
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PUMP OUT CONNECTION

DETAIL

NTS



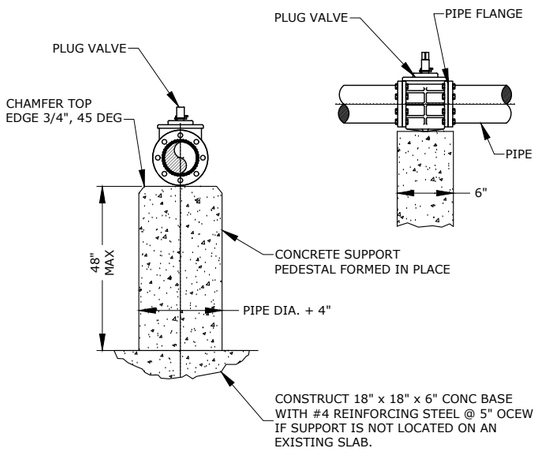
NOTES:

1. BACKFLOW PREVENTER LOCATED INSIDE FENCED AREA SHALL BE FEBCO MODEL 825Y (OR APPROVED EQUAL) AND SHALL USE SCHED 40 BRASS FOR ALL ABOVEGROUND PIPE/FITTINGS AND VALVES.
2. BACKFLOW PREVENTER LOCATED OUTSIDE FENCED AREA SHALL BE UV RESISTANT COMPOSITE PLASTIC UBS RP-500 (OR APPROVED EQUAL) AND SHALL USE SCHED 40 PVC FOR ALL ABOVE GROUND PIPE/FITTINGS.

BACKFLOW PREVENTER

DETAILS

NTS



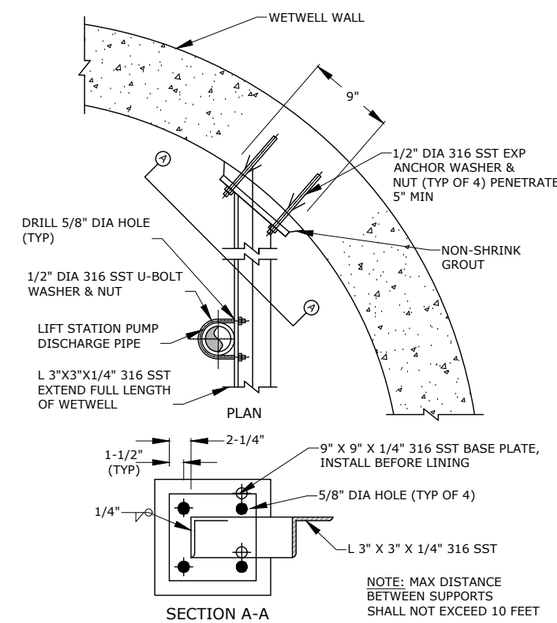
NOTES:

1. CONCRETE SHALL BE 4000 PSI, UNREINFORCED.
2. SEE PLANS AND SECTIONS FOR PIPE ELEVATION REQUIREMENT.
3. PIPE SUPPORT SUITABLE FOR PIPE SIZES 3" THROUGH 24" DIA.
4. SUPPORT STRAIGHT PIPE SECTION, FITTING OR PLUG VALVE. DO NOT PLACE UNDER CHECK VALVE.

PIPE SUPPORT - CONCRETE PEDESTAL

DETAIL

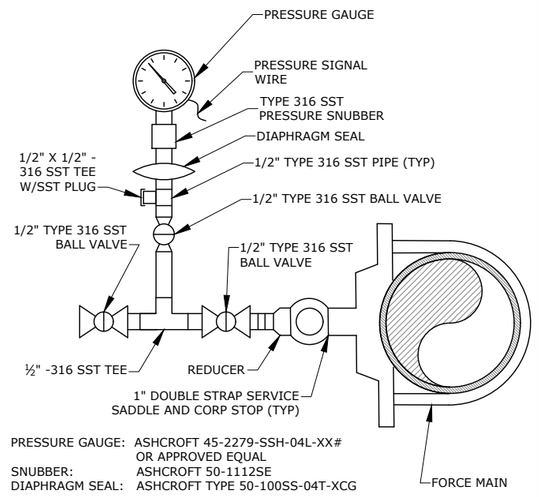
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LIFT STATION PUMP DISCHARGE PIPE SUPPORT

DETAIL

NTS



PRESSURE GAUGE: ASHCROFT 45-2279-SSH-04L-XX# OR APPROVED EQUAL
SNUBBER: ASHCROFT 50-1112SE
DIAPHRAGM SEAL: ASHCROFT TYPE 50-100SS-04T-XCG

NOTES:

1. TAP PIPE PER MANUFACTURER'S RECOMMENDATIONS AT SPRINGLINE.
2. ALL PIPE AND FITTINGS SHALL BE SCHEDULE 80 STAINLESS STEEL.
3. INSTALL PRESSURE GAUGE AND DIAPHRAGM SEAL PER MANUFACTURER'S REQUIREMENTS.
4. PRESSURE RANGE FOR GAUGE TO BE BASED ON OPERATING CONDITIONS.

PRESSURE GAUGE

DETAIL

NTS

LAST SAVED: 01/08/25 - 2:19PM

PROJECT NAME:
XXXXXXXXXXXX
XXXXXXXXXXXX

PROJECT NO XXXX

NOT FOR CONSTRUCTION

SEAL

DESIGN:	DRAWN:	CHECK:
DATE:	REVISION DESCRIPTION:	

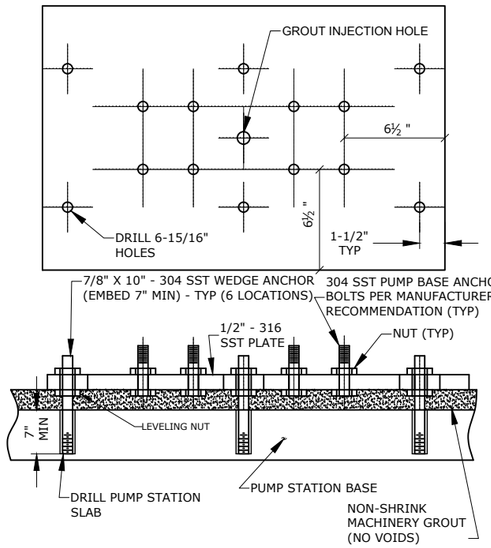
DRAWING NAME:
STANDARD DETAILS

SCALE: AS SHOWN

DWG NO:

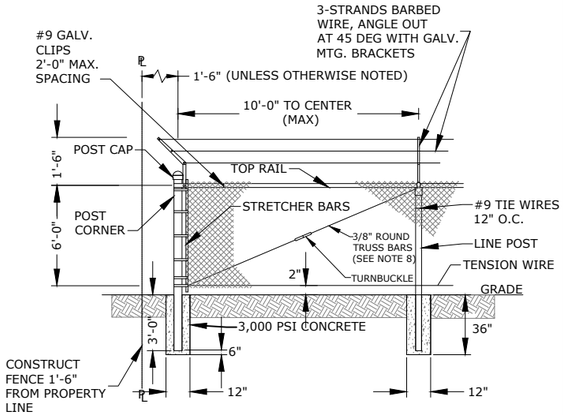
DESIGNATION:
M-3

\\wwsuffile01.utlbc-wws.org\group\WWED\TECHNICAL STANDARDS COMMITTEE\LS-CAD\WWED LIFT STATIONS TEMPLATE 1-8-2025.dwg, 1/8/2025 2:20:48 PM, DATE



NOTE: SHOP DRAWING SUBMITTAL REQ'D

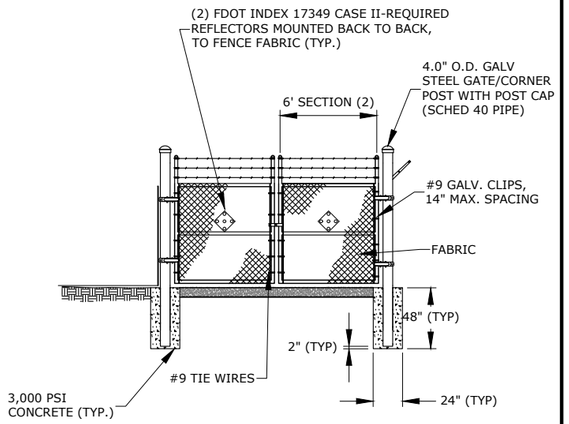
PUMP PLATFORM
DETAIL
NTS



NOTES:

1. FABRIC: No 9 GALV STEEL WIRE, 2" MESH, BLACK VINYL COATED.
1. FABRIC TIES: No 9 GALV STEEL WIRE SPACED 12" APART ON POST AND 24" APART ON RAILS.
2. CORNER POST: 3" OUTSIDE DIAMETER PIPE, 5.79 #/FT.
3. LINE POST: 2½" OUTSIDE DIAMETER PIPE, 5.79 #/FT - SCHED 40.
4. TOP RAIL: 1⅝" OUTSIDE DIAMETER PIPE, 2.27 #/FT.
5. NUTS, BOLTS & SCREWS: SHALL BE OF GALVANIZED STEEL, MIN SIZE ⅜" DIAMETER.
6. BOTTOM WIRE: COIL SPRING WIRE 7 GA.
7. TRUSS BARS ARE REQUIRED FOR THE FIRST SPAN ON EACH SIDE OF A CORNER POST OR GATE SECTION.
8. ALL FENCING MATERIALS: TO BE HOT DIPPED GALVANIZED.

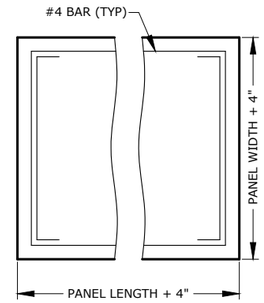
CHAIN-LINK FENCE
DETAIL
NTS



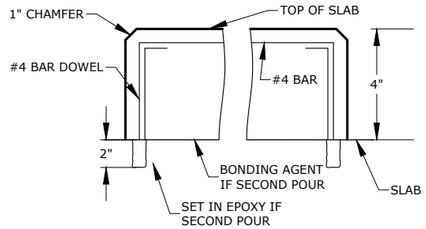
NOTES:

1. GATE SECTIONS SHALL BE HORIZONTALLY CROSS-BRACED AT THE MIDPOINT WITH 1.660" DIA. SCHEDULE 40 STEEL PIPE.
2. 3-BARB WIRE STRANDS W/GALV. BRACKETS, SET VERTICAL OVER GATE.
3. GATE POST: 4" OUTSIDE DIAMETER PIPE, 9.1 #/FT.

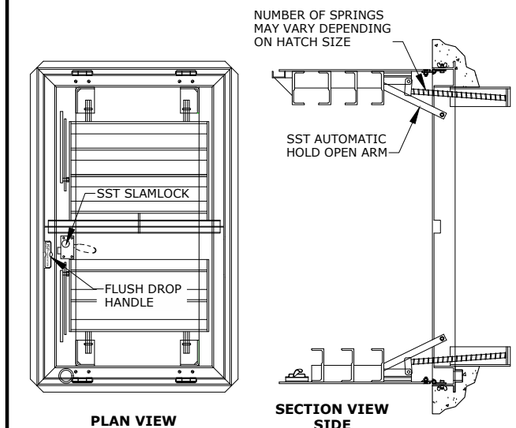
12' SWING GATE
DETAIL
NTS



NOTE: VERIFY REBAR DOES NOT CONFLICT WITH PANEL ANCHOR BOLTS

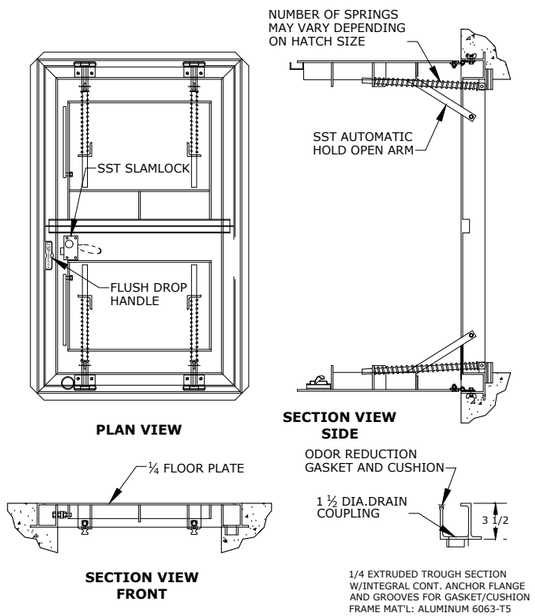


ELECTRICAL PANEL SLAB
DETAIL
NTS



NOTE: ALL STRUCTURES LOCATED IN THE RIGHT-OF-WAY MUST USE THIS COVER UNLESS WWS DIRECTS OTHERWISE.

TROUGH FRAME, HEAVY-DUTY, DOUBLE ACCESS DOOR COVER (THD)
DETAIL
NTS



NOTE: ALL STRUCTURES LOCATED IN EASEMENTS MUST USE THIS COVER UNLESS WWS DIRECTS OTHERWISE.

FRAME DETAIL

TROUGH FRAME, PEDESTRIAN, DOUBLE ACCESS DOOR COVER (TPD)
DETAIL
NTS

PROJECT NAME:
XXXXXXXXXXX
XXXXXXXXXXX
PROJECT NO XXXX

NOT FOR CONSTRUCTION

SEAL

DESIGN:	DRAWN:	CHECK:
DATE:	REVISION DESCRIPTION:	

DRAWING NAME:
STANDARD DETAILS

SCALE: AS SHOWN

DWG NO:

DESIGNATION:
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GENERAL

1. ALL CONSTRUCTION AND MATERIALS SHALL COMPLY WITH BROWARD COUNTY WATER AND WASTEWATER SERVICES (WWS) "MINIMUM DESIGN AND CONSTRUCTION STANDARDS" AND APPLICABLE LOCAL AND NATIONAL CODES.

2. MINIMUM REQUIREMENTS FOR PRODUCTS USED IN BROWARD COUNTY DISTRIBUTION AND COLLECTION SYSTEMS ARE DEFINED IN "PRODUCT SPECIFICATION SHEETS".

3. FOR ALL WATER & WASTEWATER "MINIMUM DESIGN AND CONSTRUCTION STANDARDS" AND "PRODUCT SPECIFICATION SHEETS" REFER TO: WWW.BROWARD.ORG/WATERSERVICES/PAGES/MINIMUMDESIGNANDCONSTRUCTIONSTANDARDS.ASPX

4. WHENEVER A MATERIAL, ARTICLE OR PIECE OF EQUIPMENT IS IDENTIFIED IN THE PROJECT MANUAL INCLUDING DRAWINGS (PLANS) AND SPECIFICATIONS BY REFERENCE TO MANUFACTURER'S OR VENDOR'S NAME, TRADE NAMES, CATALOG NUMBERS, OR OTHERWISE, IT IS INTENDED MERELY TO ESTABLISH A STANDARD, AND UNLESS IT IS FOLLOWED BY WORDS INDICATING THAT NO SUBSTITUTION IS PERMITTED, ANY MATERIAL, ARTICLE, OR EQUIPMENT OF OTHER MANUFACTURERS AND VENDORS WHICH WILL PERFORM OR SERVE THE REQUIREMENTS OF THE GENERAL DESIGN WILL BE CONSIDERED EQUALLY ACCEPTABLE, PROVIDED THE MATERIAL, ARTICLE OR EQUIPMENT SO PROPOSED IS, IN THE OPINION OF THE WWS, EQUAL IN SUBSTANCE, QUALITY, AND FUNCTION. REFER TO PRODUCT SPECIFICATION SHEETS AT WWW.BROWARD.ORG/WATERSERVICES/PAGES/MINIMUMDESIGNANDCONSTRUCTIONSTANDARDS.ASPX

5. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS TO COMPLETE THE WORK AS SPECIFIED.

6. IF APPLICABLE THE CONTRACTOR SHALL SUPPLY ALL LABOR AND EQUIPMENT NECESSARY TO BY-PASS THE LIFT STATION DURING CONSTRUCTION AND MAINTAIN SAID BYPASS FOR THE DURATION OF ITS USE.

7. COMPLIANCE TO "TRENCH SAFETY ACT" IS REQUIRED FOR ALL EXCAVATIONS IN EXCESS OF 5 FEET DEEP. CONTRACTOR SHALL COMPLY WITH THE U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATIONS STANDARDS OSHA 29 CFR 1910.146, 'PERMIT-REQUIRED CONFINED SPACES' AND OSHA 29 CFR 1926, 'SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION.'

8. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL NOTIFY:

   SUNSHINE STATE 1 CALL 811
   BCWWS NETWORK ..... (954)-831- 0838
   BCWWS INSPECTOR..... (954)-831- 0901

9. THE CONTRACTOR SHALL ATTACH PUMP GUIDE RAILS AS PER MANUFACTURER'S RECOMMENDATIONS.

10. ALL VALVES ARE TO BE TAGGED, STATING TYPE OF VALVE AND NUMBER OF TURNS TO OPERATE. IF THE VALVE IS BURIED, A BRASS PLATE WILL BE CAST IN THE CONCRETE APRON AROUND THE VALVE COVER. IF THE VALVE IS LOCATED IN A PIT, THE TAG SHALL BE HUNG FROM THE VALVE WITH A PLASTIC STRAP.

11. ALL VALVE BOXES SHALL HAVE LOCKING LIDS.

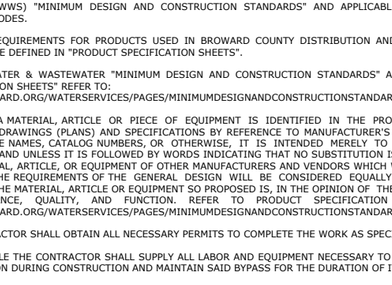
12. DUCTILE IRON PIPE AND FITTINGS SHALL CONFORM TO BCWWS PRODUCT SPECIFICATION SHEETS.

13. ALL JOINTS SHALL BE RESTRAINED IN ACCORDANCE WITH THE PLANS, SPECIFICATIONS AND IN COMPLIANCE WITH AWWA STANDARDS.

14. COMPLETE "AS-BUILT" INFORMATION RELATIVE TO VALVES, FITTINGS, LENGTH OF PIPE AND THE LIKE, SHALL BE ACCURATELY RECORDED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER PRIOR TO FINAL ACCEPTANCE OF THE WORK. ALL ELEVATIONS SHALL BE TAKEN BY AN INDEPENDENT REGISTERED LAND SURVEYOR OR PROFESSIONAL SURVEYOR AND MAPPER AND INCLUDED IN THE "AS-BUILT" INFORMATION FURNISHED BY THE CONTRACTOR. FINAL APPROVAL OF THE PROJECT IS SUBJECT TO THE FINAL REVIEW AND APPROVAL OF THE "AS-BUILT" INFORMATION FURNISHED TO THE REGULATORY AGENCIES AND WWS.

15. ALL ELEVATIONS SHOWN ON THE CONSTRUCTION DRAWINGS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988, (N.A.V.D. 88), HORIZONTAL DATUM NAD83 (HARN) FLORIDA EAST (0901) - US FOOT, UNLESS OTHERWISE NOTED.

16. CONTRACTOR SHALL PROVIDE A IDENTIFICATION SIGN AS SHOWN.
    SIGN SHALL BE FABRICATED OF ⅛"ALUMINUM WITH WHITE REFLECTIVE BACKGROUND AND RED LETTERS.
    LARGE LETTERS SHALL BE 1" HIGH
    SMALL LETTERS SHALL BE 1/2" HIGH
    BORDER SHALL BE ½" THICK,
    OFFSET ½" FROM EDGE OF SIGN
    SIGN SHALL BE PERMANENTLY ATTACHED TO THE FENCE, IF AVAILABLE, OR CONTROL PANEL WHERE VISIBLE FROM THE STREET
    XXX= WWS LIFT STATION COMMON NAME



SIGN DETAIL
NTS

17. ENGINEER SHALL PROVIDE FLOATATION CALCULATIONS FOR EACH STRUCTURE TO BE CONSTRUCTED.

PUMPS AND CONTROL PANEL

1. PUMPS AND ALL APPURTENANCES REQUIRED TO MAKE A COMPLETE AND OPERATING SYSTEM SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. PUMPS WILL TO BE SUPPLIED WITH 60 FT CABLES, REFER TO WWS "LIFT STATION STANDARD PUMPS".

2. CONTROL PANEL, CONNECTION PANEL AND TRANSFER SWITCH WITH LOUVERED ENCLOSURE ARE TO BE PROVIDED BY THE CONTRACTOR AND MANUFACTURED BY CHAMPION CONTROLS INC. TO WWS SPECIFICATIONS (NO SUBSTITUTION).

CAST-IN-PLACE CONCRETE

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH FLORIDA BUILDING CODE (FBC), AMERICAN CONCRETE INSTITUTE (ACI) 318 AND THE CONTRACT SPECIFICATIONS.

2. COMPLETE ENGINEERING AND PRODUCT DATA SHALL BE SUBMITTED TO THE ENGINEER ON ALL ADMIXTURES, CURING COMPOUNDS, HARDENERS, SEALERS, REINFORCING STEEL AND WATER STOPS IN ACCORDANCE WITH THE SPECIFICATIONS.

3. REINFORCEMENT STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-615.

4. CONCRETE COVER FOR STEEL REINFORCEMENT SHALL BE AS SPECIFIED ON ACI 318.

5. PIPES, INSERTS, AND OTHER METAL OBJECTS SHOWN SHALL BE BUILT INTO, SET IN, OR ATTACHED TO THE CONCRETE. ALL REQUIRED HOLES SHALL BE CAST AT TIME OF CONSTRUCTION.

6. ALL CAST-IN-PLACE CONCRETE SHALL BE ACCURATELY FORMED AND PROPERLY PLACED AND FINISHED AS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN.

7. CONCRETE SHALL BE EITHER CLASS A OR CLASS B, AS INDICATED ON THE DRAWINGS OR SPECIFIED IN THESE SPECIFICATIONS. IN GENERAL CLASS A CONCRETE SHALL BE USED FOR REINFORCED CONCRETE CAST-IN-PLACE IN FORMS FOR SLABS, FOOTINGS, FOUNDATIONS, MAINTENANCE ACCESS STRUCTURES AND SIMILAR REINFORCED CONCRETE STRUCTURES COMING UNDER THE SCOPE OF ACI 318. CLASS B CONCRETE SHALL BE PLAIN CONCRETE AND SHALL BE USED FOR PIPE CRADLES, PIPE AND CONDUIT ENCASEMENT, BEDDING, GRADE CORRECTION, ANCHORS, COLLARS, THRUST BLOCKS, MASSIVE SECTIONS AND OTHER NON-REINFORCED CONCRETE.

8. CONCRETE INGREDIENTS SHALL BE SELECTED, PROPORTIONED, AND MIXED IN SUCH A MANNER AS WILL PRODUCE A WATERTIGHT DURABLE CONCRETE THAT WILL DEVELOP THE FOLLOWING MINIMUM COMPRESSIVE STRENGTHS AT AN AGE OF 28 DAYS WHEN SAMPLED, CURED AND TESTED IN ACCORDANCE WITH THE PROCEDURES SPECIFIED IN ASTM C 31 AND C 39:

CLASS OF CONCRETE	AGE	AVERAGE OF THREE CONSECUTIVE SPECIMENS	MINIMUM ANY ONE SPECIMEN
A	28 DAYS	4,000 PSI	3,500 PSI
B	28 DAYS	3,000 PSI	2,500 PSI

FINISHING UNFORMED SURFACES

1. NO SURFACE TREATMENT WILL BE REQUIRED FOR BURIED CONCRETE NOT FORMING AN INTEGRAL PART OF STRUCTURE EXCEPT THAT REQUIRED TO OBTAIN THE SURFACE ELEVATIONS OR CONTOURS AND SURFACES FREE OF LAITANCE. THE UNFORMED SURFACES OF ALL OTHER CONCRETE SHALL BE SCREEDED AND GIVEN AN INITIAL FLOAT FINISH FOLLOWED BY ADDITIONAL FLOATING FOLLOWED BY TROWELING WHERE REQUIRED. CARE SHALL BE TAKEN THAT NO EXCESS WATER IS PRESENT WHEN THE FINISH IS MADE. NO SPECIAL CONCRETE OR CEMENT MORTAR TOPPING COURSE SHALL BE USED UNLESS SO SHOWN ON THE DRAWING.

2. SCREEDING: SCREEDING SHALL PROVIDE A CONCRETE SURFACE CONFORMING TO THE PROPER ELEVATION AND CONTOUR WITH ALL AGGREGATES COMPLETELY EMBEDDED IN MORTAR. ALL SCREEDED SURFACES SHALL BE FREE OF SURFACE IRREGULARITIES WITH A HEIGHT OR DEPTH IN EXCESS OF 1/4 INCH AS MEASURED FROM A 10-FOOT STRAIGHT EDGE.

3. FLOATING: SCREEDED SURFACES SHALL BE GIVEN AN INITIAL FLOAT FINISH AS SOON AS THE CONCRETE HAS STIFFENED SUFFICIENTLY FOR PROPER WORKING. INITIAL FLOATING SHALL BE FOLLOWED BY A SECOND FLOATING AT THE TIME OF INITIAL SET. THE SECOND FLOATING SHALL PRODUCE A FINISH OF UNIFORM TEXTURE AND COLOR. UNLESS ADDITIONAL FINISHING IS SPECIFICALLY REQUIRED, THE COMPLETED FINISH FOR UNFORMED SURFACES SHALL BE THE FLOAT FINISH PRODUCED BY THE SECOND FLOATING.

4. BROOMING: SURFACES OF EQUIPMENT BASES AND SLABS ON GRADE SHALL BE GIVEN A LIGHT BROOM FINISH PROVIDING A NONSLIP SURFACE. BROOMING SHALL BE DONE AFTER THE SECOND FLOATING AND FOR TRAFFIC AREAS SHALL BE AT RIGHT ANGLES TO THE NORMAL TRAFFIC DIRECTION.

5. EDGING: ALL PERMANENTLY EXPOSED EDGES OF UNFORMED SURFACES SHALL BE CHAMFERED WITH A 3/4 INCH APPROVED EDGING TOOL UNLESS OTHER EDGE TREATMENT IS INDICATED ON THE DRAWINGS.

6. CURING: ALL CONCRETE SHALL BE PROTECTED FROM LOSS OF MOISTURE BY CURING FOR AT LEAST 14 DAYS FOLLOWING PLACEMENT. CURING OPERATIONS SHALL TAKE PLACE IMMEDIATELY AFTER CONCRETE FINISHING IS COMPLETE OR FORMS ARE REMOVED. BREAKING OF FORM TIES OR OTHERWISE BREAKING THE SEAL BETWEEN THE CONCRETE SURFACE AND THE FORM SHALL BE CONSIDERED FORM REMOVAL.

PRE-CAST CONCRETE

1. WALL AND SLAB THICKNESSES SHOWN ON THESE STANDARDS ARE MINIMUMS. MANUFACTURER IS SOLELY RESPONSIBLE FOR STRUCTURAL DESIGN.

2. PRE-CAST UNITS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C-478

3. LIFTING HOLES THROUGH THE STRUCTURE ARE NOT PERMITTED

4. THE BOTTOM SLAB SHALL BE CAST MONOLITHICALLY WITH THE LOWER WALL SECTION

5. ALL STRUCTURES SHALL BE DESIGNED TO SUPPORT AN H-20 WHEEL LOADING

6. COMPLETE ENGINEERING AND PRODUCT DATA, SHALL BE SUBMITTED TO THE ENGINEER.

ACCESS HATCH

1. EACH HATCH SHALL BE DESIGNED ACCORDING TO THE OPENINGS SHOWN ON THE DRAWINGS. THE ALUMINUM ACCESS FRAMES SHALL BE MANUFACTURED FROM 1/4-INCH THICK, EXTRUDED 6063-T5 ALUMINUM.

2. THE FRAME SHALL BE DRAINABLE WITH A 1 1/2-INCH THREADED DRAIN COUPLING LOCATED ON CORNER FRAME.

3. THE DOOR PANELS SHALL CLOSE FLUSH AND SHALL BE 1/4-INCH THICK 5086-H34 ALUMINUM DIAMOND (CHECKER) PLATE REINFORCED FOR AASHTO H-20-44 WHEEL LOADS.

4. REMOVABLE ALUMINUM CROSS-BEAMS SHALL BE PROVIDED BY THE HATCH SUPPLIER AS REQUIRED TO ACCOMPLISH THE STATED LOADING.

5. THE DOORS SHALL HAVE HEAVY DUTY STAINLESS STEEL BUTT HINGES WITH TAMPER-PROOF FASTENERS.

6. ALL HARDWARE SHALL BE MADE OF TYPE 316 STAINLESS STEEL.

7. EACH DOOR SHALL HAVE SPRING OPERATORS, SUCH THAT THE MAXIMUM LIFTING EFFORT IS LESS THAN 25 POUNDS.

8. THE HATCH SUPPLIER SHALL PROVIDE THE NUMBER OF SPRING OPERATORS AS REQUIRED TO ACCOMPLISH THE MAXIMUM LIFTING REQUIREMENT.

9. EACH DOOR SHALL OPEN TO 90 DEGREE AND LOCK AUTOMATICALLY WITH A STAINLESS STEEL, POSITIVE LOCKING ARM AND A STAINLESS STEEL RELEASE HANDLE.

10. EACH DOOR SHALL HAVE A RECESSED STAINLESS STEEL LIFTING HANDLE AND RECESSED OVERSIZED PADLOCK BOX.

11. THE HATCH SHALL BE PROVIDED WITH A TYPE 316 STAINLESS STEEL SLAM-LOCK WITH A REMOVABLE HANDLE.

12. ALL ACCESS DOORS SHALL BE DESIGNED WITH A NEOPRENE GASKET ON THE INSIDE LIP OF THE FRAME PERIMETER, TO FORM AN ESSENTIALLY AIR-TIGHT SEAL.

13. ALL ACCESS DOORS SHALL BE EQUIPPED WITH A MINIMUM OF FOUR (4) STAINLESS STEEL CARRIAGE BOLTS WITH WELDED NUTS TO SECURE THE DOORS IN THE DOWN POSITION. BOLTS SHALL BE PER THE MANUFACTURERS RECOMMENDATION.

WETWELL REHABILITATION

1. SURFACE PREPARATION

   A. ANY LOOSE, UNSOUND, OR CRACKED BRICK OR CONCRETE SHALL BE CHISELED OR HAMMERED OUT.

   B. ALL SURFACES TO RECEIVE EITHER THE ONE COMPONENT REINFORCED MORTAR OR EPOXY LINING SHALL BE STRUCTURALLY SOUND AND SHALL BE CLEANED TO REMOVE LAITANCE, GREASE. LOOSE MORTAR, PAINT OR OTHER SURFACE CONTAMINANTS USING SAND BLASTING, HYDRO-GRIT BLASTING AT 3,500 PSI MINIMUM OR OTHER MECHANICAL SCARIFICATION TECHNIQUES APPROVED BY THE ENGINEER.

   C. SURFACE SHALL BE TESTED BY THE CONTRACTOR, IN THE PRESENCE OF THE ENGINEER,USING A SURFACE pH TESTER EQUAL TO INSTA-CHECK SURFACE pH PENCIL AS MANUFACTURED BY PHYDRION. SURFACE SHALL INDICATE A pH=7.0 OR GREATER.

   D. ALL ACTIVE LEAKS IN THE STRUCTURE SHALL BE STOPPED USING CHEMICAL GROUTING AND HYDRAULIC CEMENT.

   E. ALL CRACKS, VOIDS AND REMOVED STEP HOLES SHALL BE FILLED USING A WATER RESISTANT FAST-SETTING CEMENT PATCH.

2. REBUILDING CONCRETE SURFACES

   A. THE CONCRETE SHALL BE RETURNED TO ITS ORIGINAL WALL THICKNESS USING A ONE COMPONENT MORTAR, MINIMUM INSTALLED THICKNESS SHALL BE 1/2".

   B. ONE COMPONENT REINFORCED WET MORTAR: THE ONE COMPONENT MORTAR SHALL BE MICROSILICA ENHANCED, FIBER REINFORCED AND BE DESIGNED FOR CORROSIVE ENVIRONMENTS WITH A pH=2.0 OR HIGHER. REINFORCED MORTAR SHALL HAVE THE FOLLOWING MINIMUM PHYSICAL PROPERTIES:

1. FLEXURAL STRENGTH	1000 PSI @ 28 DAYS ASTM C78-84
2. COMPRESSIVE STRENGTH	9000 PSI @ 28 DAYS ASTM C109-92
3. DENSITY (WET):	130 LB/CU. FT. ASTM C138-92
4. SPLITTING TENSILE STRENGTH:	700 PSI @ 28 DAYS ASTM C496-90
5. SLANT SHEAR BOND STRENGTH:	2250PSI @ 28 DAYS ASTM C882-91
6. SULFATE RESISTANCE WEIGHTLOSS 84 DAY IMMERSION	pH 1.0 <.97% ASTM C-267 pH 2.0 <.30% pH 3.0 <.18%

   C. MATERIAL SHALL BE BASF SP15, OR APPROVED EQUAL.

PAINTING & COATINGS:

1. WETWELL & VALVE VAULT EXTERIOR: THE EXTERIOR OF WET WELL & VALVE VAULTS SHALL BE COATED WITH TWO (2), 10 MILS (DFT) EACH COAT OF A BITUMASTIC COATING (20 MILS TOTAL DFT). BITUMASTIC COATING SHALL BE CARBOLINE (KOPPERS) 300M, OR APPROVED EQUAL.

2. WETWELL INTERIOR, OPTION A: THE INTERIOR OF A NEW OR REHABILITATED WET WELL, WHERE DIRECTED BY WWS, SHALL BE COATED WITH TWO (2) COATS, 15 MILS (DFT) EACH, OF A BITUMASTIC COATING (30 MILS DFT, TOTAL). BITUMASTIC COATING SHALL BE CARBOLINE (KOPPERS) 300M, OR APPROVED EQUAL.

3. WETWELL INTERIOR, OPTION B: THE INTERIOR OF A NEW OR REHABILITATED WET WELL, WHERE DIRECTED BY WWS, SHALL BE COATED WITH A SPRAYABLE, HIGH BUILD, MOISTURE TOLERANT, CHEMICAL RESISTANT EPOXY COATING DESIGNED TO BE APPLIED ON DRY OR DAMP CONCRETE SURFACES AND YIELDING A HARD DURABLE CHEMICAL RESISTANT FINISH TO A pH OF 1.0, EPOXY COATING SHALL BE BASF SEWER GUARD HBS 100, OR OTHER APPROVED MATERIAL ON THE WWS PRODUCT SPECIFICATION SHEETS. APPLY MATERIAL USING A 30:O OR 45:1 AIRLESS SPRAYER TO A MINIMUM DRY THICKNESS OF 60 MILS IN TWO 30 MILS COATS.

4. VALVE VAULT CONCRETE INTERIOR SURFACES: THE INTERIOR CONCRETE SURFACES OF VALVE VAULTS SHALL BE COATED WITH A 100% SOLIDS POLYAMINE EPOXY SPECIFICALLY DESIGNED FOR WASTEWATER IMMERSION AND LOW PERMEATION TO H2S GAS. MATERIAL SHALL BE IN CONFORM WITH THE PRODUCT SPECIFICATION SHEETS, OR APPROVED EQUAL, APPLIED IN TWO (2) COATS 20 MILS (DFT) EACH (40.0 MIL DFT, TOTAL). FINAL COLOR TO BE BEIGE. SURFACE PREPARATION, PRIMING AND APPLICATION SHALL BE IN ACCORDANCE WITH THE MORE STRINGENT OF THE MANUFACTURERS RECOMMENDATIONS OR LISTED IN THE PRODUCT SPECIFICATION SHEETS.

5. DUCTILE IRON PIPE AND FITTINGS: DIP EXTERIOR SURFACES SHALL BE COATED WITH A 100% POLYAMINE EPOXY SPECIFICALLY DESIGN FOR WASTEWATER IMMERSION AND LOW PERMEATION TO H2S GAS. MATERIAL SHALL BE IN CONFORM WITH THE PRODUCT SPECIFICATION SHEETS, OR APPROVED EQUAL, APPLIED IN TWO (2) COATS 20 MILS (DFT) EACH (40.0 MIL DFT, TOTAL). DIP INTERIOR SURFACES SHALL BE COATED WITH 40 MILS (DFT) OF PROTECTO 401.

6. VALVES SHALL RECEIVE ONLY THE FINAL 20 MIL (DFT) COAT. FINAL COLOR TO BE BEIGE. SURFACE PREPARATION, PRIMING AND APPLICATION SHALL BE IN ACCORDANCE WITH THE MORE STRINGENT OF THE MANUFACTURER'S RECOMMENDATIONS OR THE WWS SPECIFICATIONS. SURFACE PREPARATION AND APPLICATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. CERTIFICATION OF MANUFACTURER SHALL BE PROVIDED.

ELECTRICAL NOTES:

1. CONTROL PANEL ELECTRICAL SYSTEM SHALL BE COMPLETELY AND EFFECTIVELY GROUNDED AS REQUIRED BY NEC.

2. ALL ELECTRICAL INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE NEC AND SHALL COMPLY WITH ALL NATIONAL AND LOCAL RULES, ORDINANCES, AND CODES AT TIME OF INSTALLATION.

3. ALL SERVICE CONDUCTORS SHALL BE STRANDED COPPER TYPE THWN.

4. ALL ENCLOSURES SHALL BE 316 STAINLESS STEEL WATERTIGHT NEMA 3R RIGHT SIDE OPENING. ALL MOUNTING HARDWARE MUST BE 316 SST.

5. USE T & B CORROSION RESISTANT-LIQUIDTIGHT-STRAIN RELIEF THERMO-PLASTIC FLEXIBLE CORD & CABLE CONNECTOR ON THE INSIDE OF THE TOP CONNECTION PANEL TO FIT APPROPRIATE CABLE SIZE. TRANSFER SWITCH MAY BE MOUNTED ON EITHER END BUT GENERATOR RECEPTACLE MUST BE ON OUTSIDE. (STATE LEFT OR RIGHT SIDE GEN. RECPT. WHEN ORDERING.)

6. ALL PUMP MOTORS SHALL BE 3 PHASE. WHEN THE LOCAL POWER COMPANY CANNOT PROVIDE 3 PHASE POWER TO THE STATION, A "ROTOPHASE" PHASE CONVERTER SHALL BE SUPPLIED TO PROVIDE 3 PHASE POWER TO THE STATION.

7. ALL CONTROL CIRCUIT WIRES SHALL BE TERMINATED WITH FORK TYPE CRIMP-ON CONNECTORS AND SHALL HAVE AN ADJACENT HEAT SHRINK NUMBER, CORRESPONDING EACH CONNECTOR WITH NUMBERS AS INDICATED ON THE SCHEMATIC. NO CONCEALED WIRING SHALL BE PERMITTED BEHIND THE SUB PANEL.

8. EACH DEVICE IN THE CONTROL CIRCUIT SHALL BE IDENTIFIED WITH THE PROPER CONTROL CIRCUIT ABBREVIATION AS SHOWN IN THE TABLE AND ON THE SCHEMATIC.

9. FROM THE REAR SIDE OF THE DEAD FRONT HINGED PANEL, ALL WIRES SHALL BE NEATLY LACED TOGETHER INTO A HARNESS AND TERMINATED INTO A TERMINAL STRIP.

10. DRIVEN GROUND ROD WHICH DOES NOT HAVE A RESISTANCE TO GROUND OF 10 OHMS OR LESS SHALL BE AUGMENTED UNTIL THE RESISTANCE TO GROUND IS 10 OHMS OR LESS. LIGHTENING ARRESTER LEADS TO BE ATTACHED TO THE MCB AS PER MOST RECENT NEC ARTICLE # 280.

11. ALL BRANCH CIRCUITS SHALL HAVE PROPER SIZE WIRING.

12. WHEN CONNECTIONS ARE COMPLETE IN THE CONNECTION BOX, COAT THE TERMINAL BLOCKS AND WIRE ENDS WITH PROTECTIVE COMPOUND, NO-OXIDE OR EQUAL, TO PREVENT CORROSION.

13. SCHEMATIC DRAWINGS SHALL BE PLACED IN STATION ARE TO BE ENCASED BETWEEN TWO PIECES OF 3/16" PLEXIGLASS.

14. ELECTRICAL SERVICE SHALL BE A MINIMUM OF 100 AMPS OF # 1 THWN STRANDED COPPER WIRE IN RIGID ALUMINUM CONDUIT-MINIMUM
    SIZE = 1 1/2". INTERMEDIATE METAL CONDUIT UNACCEPTABLE.

15. UNDERGROUND SERVICE PULL BOXES ARE TO BE INSTALLED AT EACH 250 FEET OF SERVICE PULL. VOLTAGE DROP TO BE LIMITED TO A MAXIMUM OF 3 PERCENT DROP.

16. BUBBLER TUBING SHALL BE CLEAR, 1/4" TYGON (OR APPROVED EQUAL). BACK-UP SENSOR TUBING TO BE RED.

17. TUBBING FITTINGS SHALL BE SWAGELOK BRASS FITTINGS (OR APPROVED EQUAL).

18. COLOR CODING:

   A. SINGLE PHASE 120/240V-BLACK, WHITE, AND RED.

   B. THREE PHASE 120/240V 4 WIRE-HI LEG CENTER AND ORANGE, WHENEVER NEUTRAL IS PRESENT. IN THE ABSENCE OF NEUTRAL, THEY WILL BE MARKED BLACK, RED, AND BLUE AND/OR A-B-C. WILL CONSTITUTE CLOCKWISE ROTATION OF ALL 3-PHASE MOTORS. THIS IS TO ASSURE PHASE RELATION THROUGHOUT THE SYSTEM.

   C. 120/208V, 4 WIRE, THREE PHASE SHALL BE BLACK, WHITE, RED, AND BLUE WHERE THE NEUTRAL IS PRESENT. IF THE NEUTRAL IS ABSENT, BLACK, RED, AND BLUE AND/OR A-B-C WILL CONSTITUTE CLOCKWISE ROTATION OF ALL THREE PHASE MOTORS, THIS IS TO ASSURE PHASE RELATION THROUGHOUT THE SYSTEM.

   D. 277/480V, 4-WIRE-BROWN, ORANGE, YELLOW AND WHITE WHEN THE NEUTRAL IS PRESENT. IF THE NEUTRAL IS ABSENT, A-B-C WILL CONSTITUTE CLOCKWISE ROTATION OF ALL THREE PHASE MOTORS. THIS IS TO ASSURE PHASE RELATION THROUGHOUT THE SYSTEM.

19. FABRICATE ANTENNA MAST FROM A 21 FOOT LENGTH OF 2½ " DIAMETER SCHEDULE 40 ALUMINUM PIPE. PAINT LOWER THREE (3) FEET WITH ASPHALTUM PAINT, CAP THE TOP OF PIPE.

20. RUN 3/4 INCH RIGID ALUMINUM CONDUIT UP THE MAST FOR THE ANTENNA CABLE TO WITHIN 16 INCHES OF THE TOP. RUN SECOND 3/4 INCH CONDUIT UP THE MAST FOR ALARM AND FLOOD LIGHTS AS SHOWN. USE STAINLESS STEEL UNISTRUT AND CLAMPS TO HOLD CONDUITS TO THE MAST.

21. MOUNT FLOOD LIGHT AND FLASHING RED LIGHT ON THE ANTENNA MAST AT TEN (10) FEET AND EIGHT (8) FEET ABOVE GRADE.

22. TEST PUMPS AS FOLLOWS:

   A. TECHNICIAN MUST BE PRESENT TO CONDUCT TESTS.

   B. MEGGER MOTORS, MOTORS SHALL BE 20 MEGOHMS OR MORE TO GROUND, DO NOT MEGGER LOW VOLTAGE CONTROLS.

   C. CHECK VOLTAGE, CHECK PUMP ROTATION, RECORD VOLTAGE AND AMPS UNDER LOAD.

   D. DEMONSTRATE PROPER OPERATION OF ALL CONTROLS.

   E. CONDUCT DRAWDOWN TESTS AS REQUIRED.

   F. CHECK OPERATION WITH OWNER'S PORTABLE GENERATOR AND CHANGE WIRE CONNECTIONS IN THE PANEL TO GIVE CORRECT ROTATION.

WHERE CONFLICTS EXIST BETWEEN THESE NOTES AND WWS "MINIMUM DESIGN AND CONSTRUCTION STANDARDS", THE MINIMUM STANDARDS WILL GOVERN.

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PROJECT NO XXXX

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DRAWING NAME: PUMP STATIONS NOTES

SCALE: AS SHOWN

DWG NO:

DESIGNATION: M-5

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TO BE COMPLETED
BY ENGINEER OF RECORD

SITE PLAN
SCALE:

TO BE COMPLETED
BY ENGINEER OF RECORD

ELECTRICAL RISER DIAGRAM
NTS

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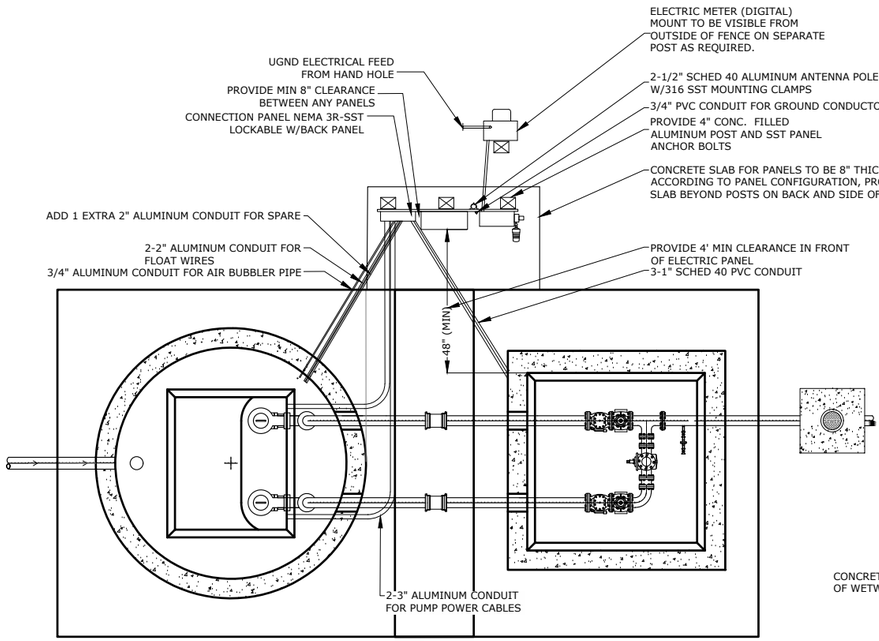
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ELECTRICAL SITE PLAN

SCALE: AS SHOWN

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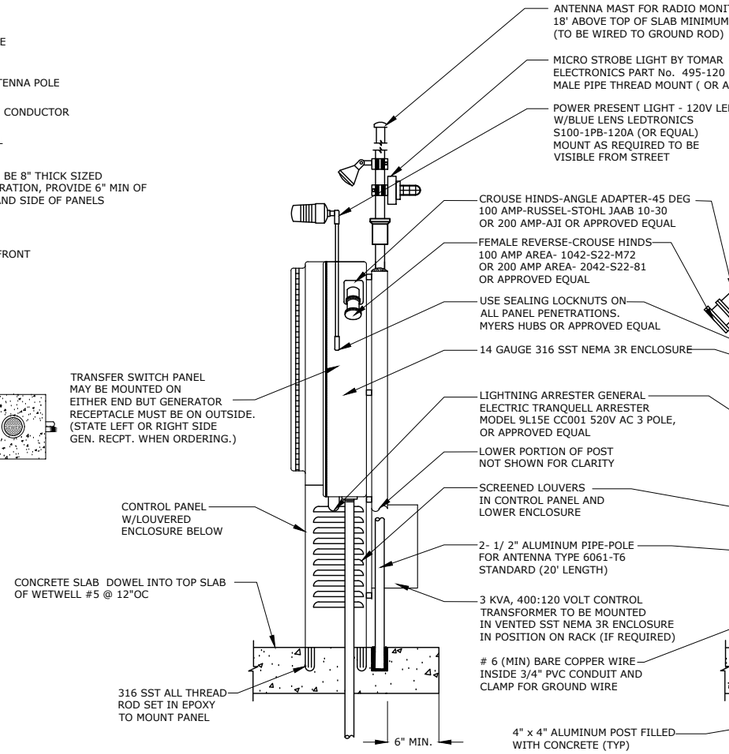
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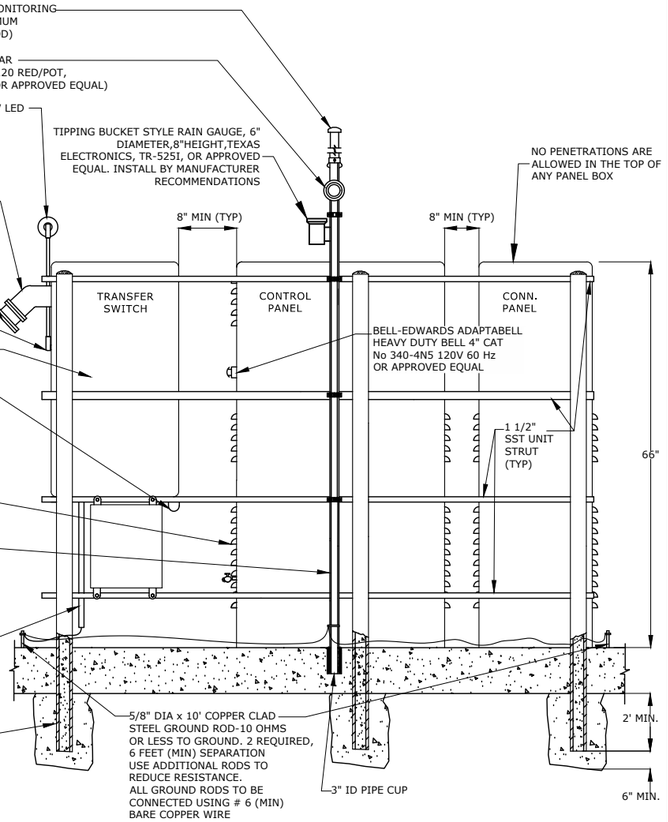
PLAN VIEW

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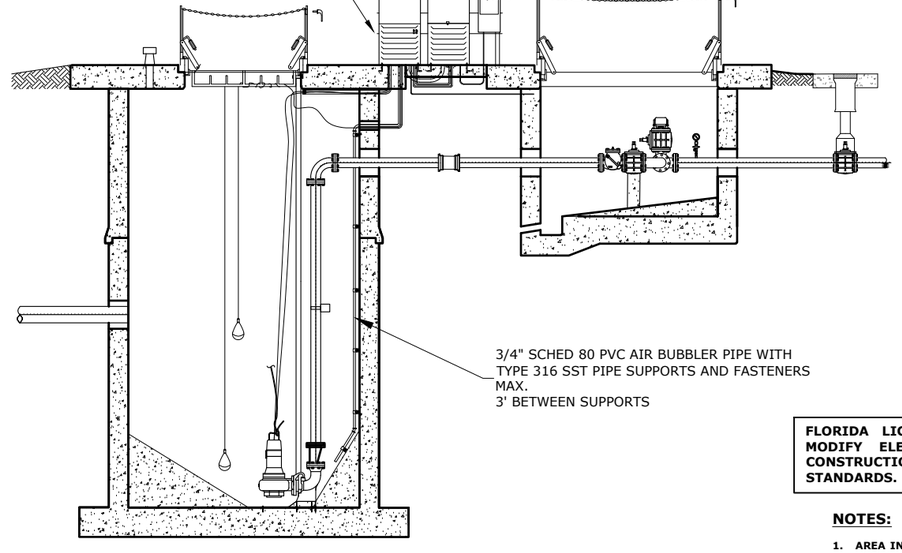
PANEL SIDE VIEW

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PANEL REAR VIEW

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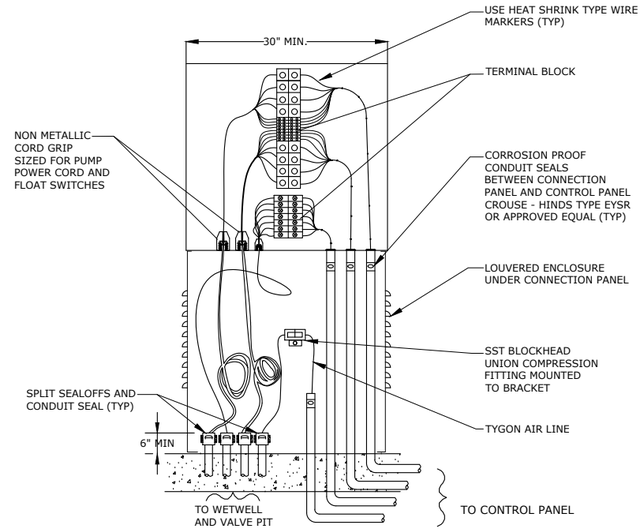
ELEVATION

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FLORIDA LICENSED PROFESSIONAL ENGINEER TO REVIEW AND MODIFY ELECTRICAL DESIGN AS REQUIRED TO ACCOMPLISH CONSTRUCTION IN ACCORDANCE WITH APPLICABLE CODES AND STANDARDS.

NOTES:

1. **AREA INSIDE WETWELL IS CONSIDERED A CLASS 1, DIVISION 2 AREA IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE**
2. **ALL OTHER AREAS ARE NOT CLASSIFIED**
3. **NO PENETRATIONS SHALL BE PERMITTED IN THE TOP OF ANY PANEL BOX**
4. **CONTROL PANEL/CONNECTION PANEL AND TRANSFER SWITCH TO BE MANUFACTURED BY CHAMPION CONTROLS, INC. TO WWS SPECIFICATIONS (NO SUBSTITUTION).**



CONNECTION PANEL DETAIL

NTS

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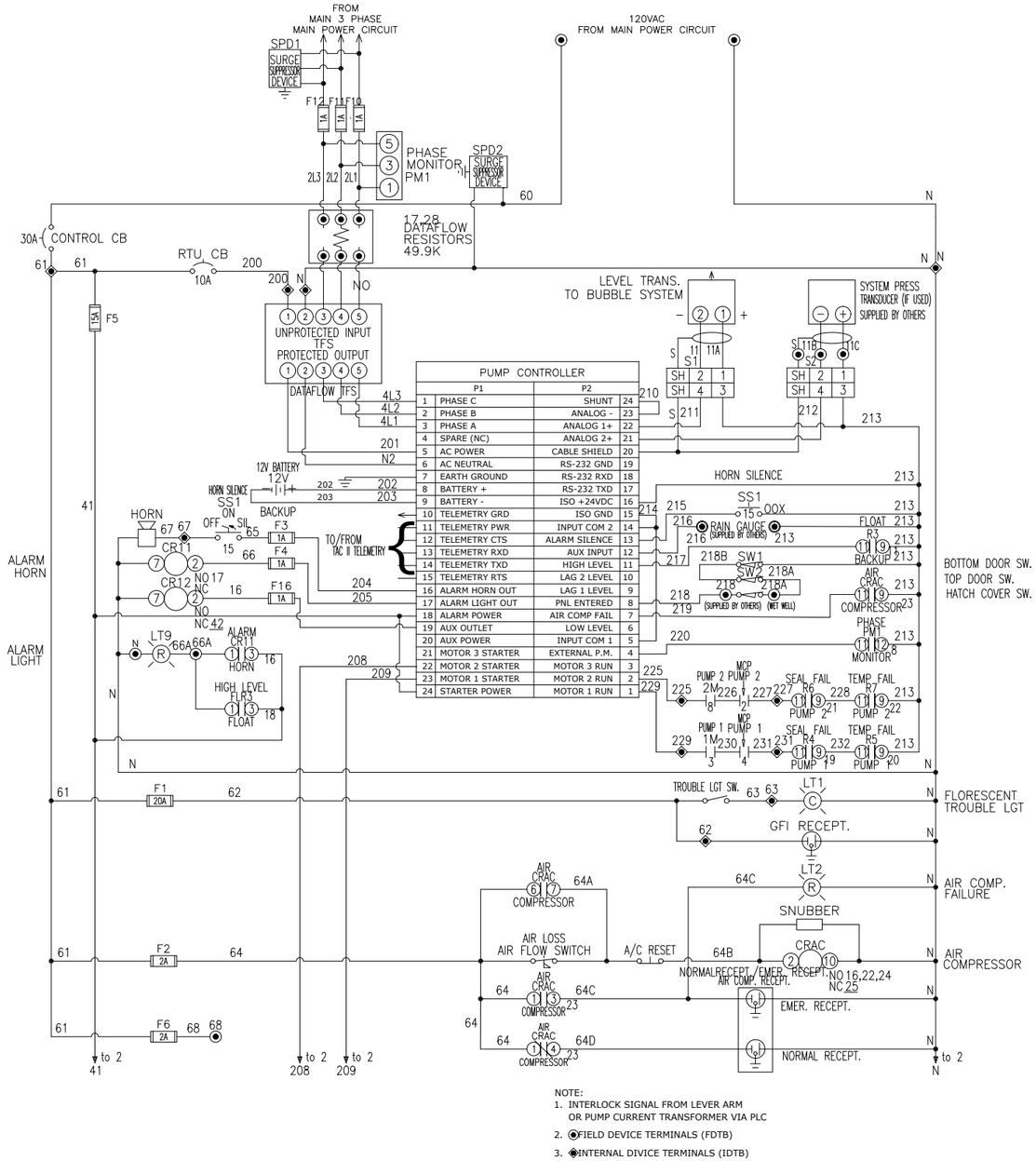
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ELECTRICAL PLAN AND
CONNECTION PANEL

SCALE: AS SHOWN

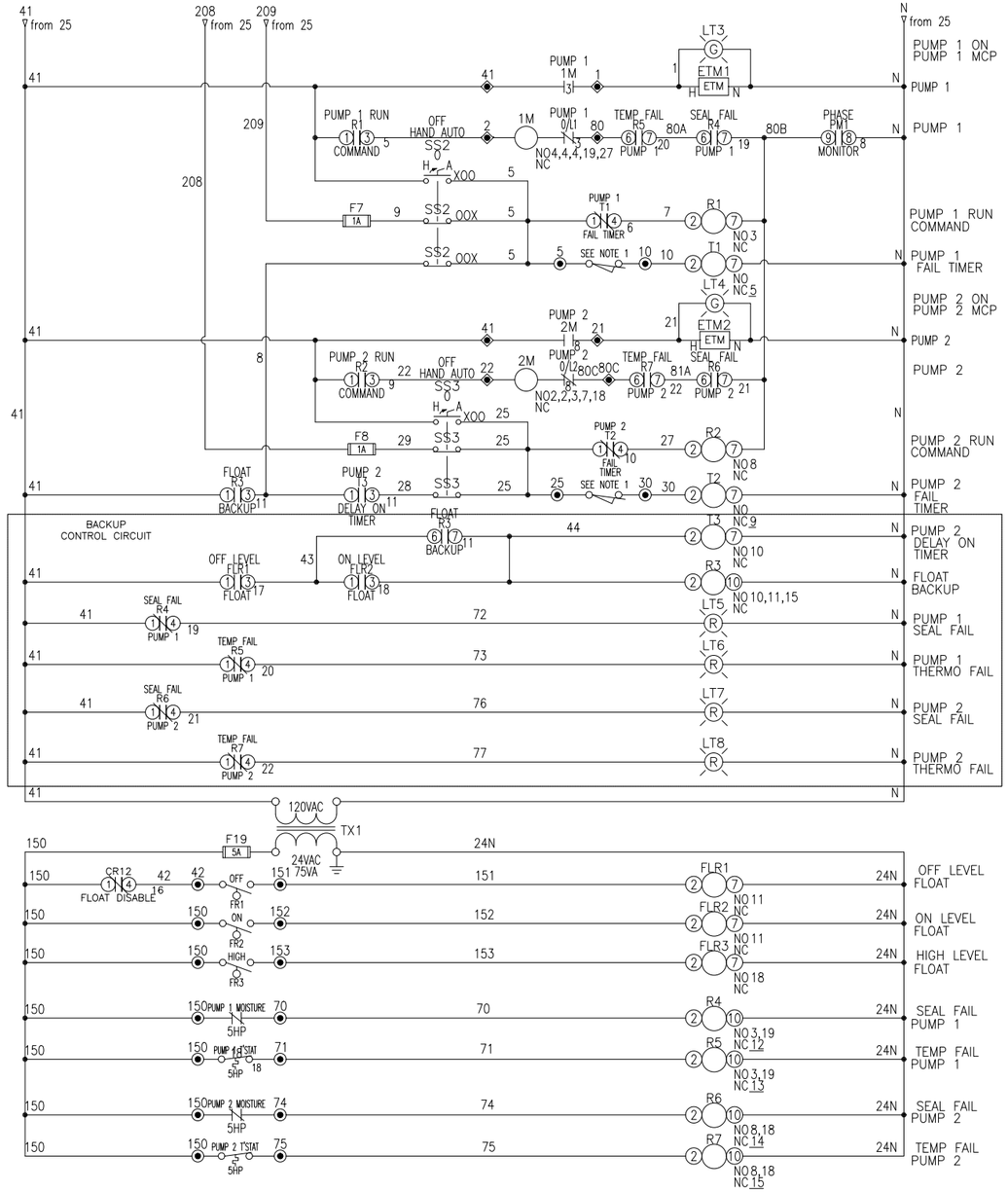
DWG NO:

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E-2

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NOTE:
1. INTERLOCK SIGNAL FROM LEVER ARM OR PUMP CURRENT TRANSFORMER VIA PLC
2. ◉ FIELD DEVICE TERMINALS (FDTB)
3. ◉ INTERNAL DIVICE TERMINALS (IDTB)



FLORIDA LICENSED PROFESSIONAL ENGINEER TO REVIEW AND MODIFY ELECTRICAL DESIGN AS REQUIRED TO ACCOMPLISH CONSTRUCTION IN ACCORDANCE WITH APPLICABLE CODES AND STANDARDS.

DUPLEX ELECTRICAL CONTROL CIRCUIT

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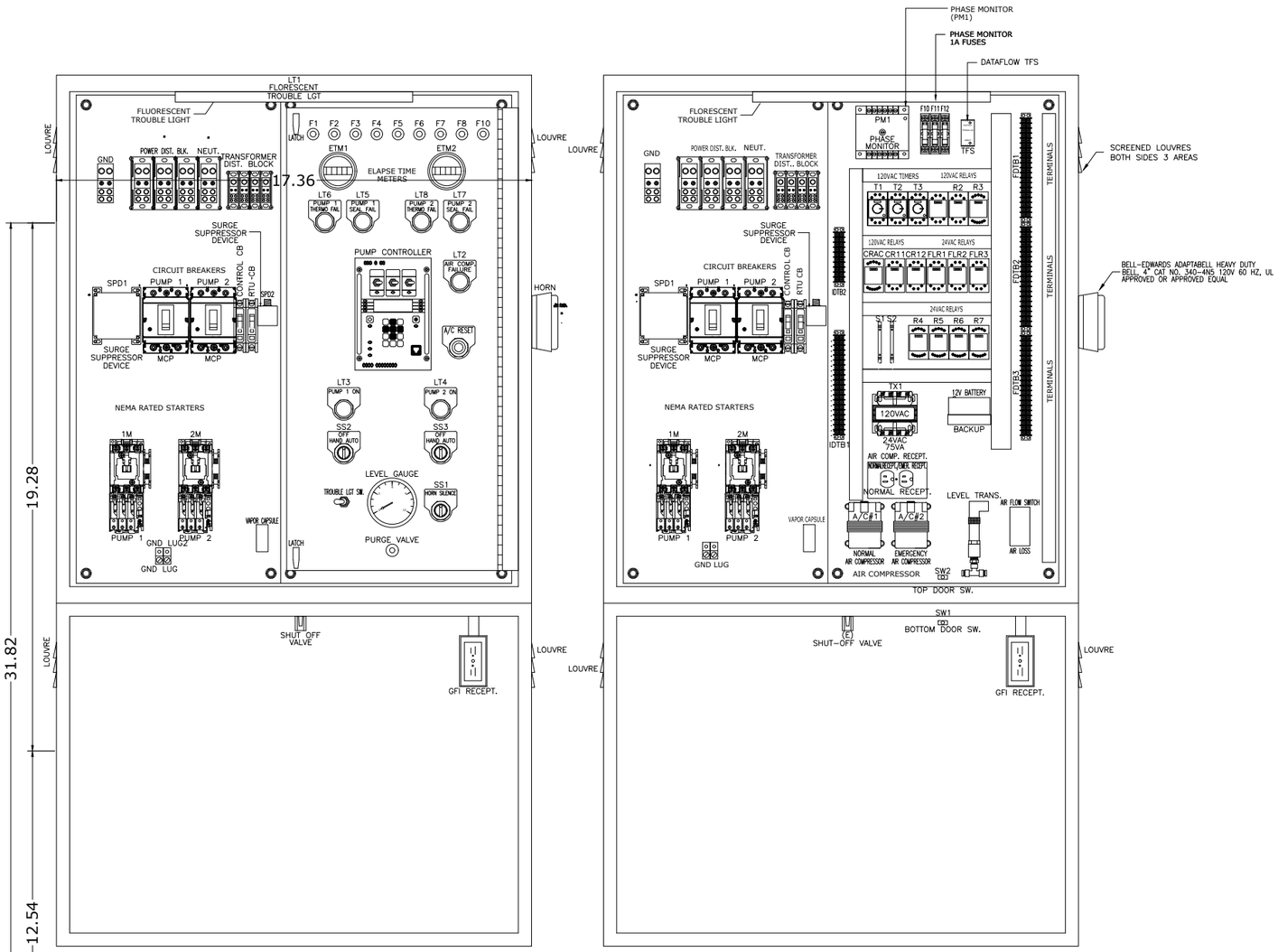
DRAWING NAME: DUPLEX CONTROLS CIRCUIT

SCALE: NTS

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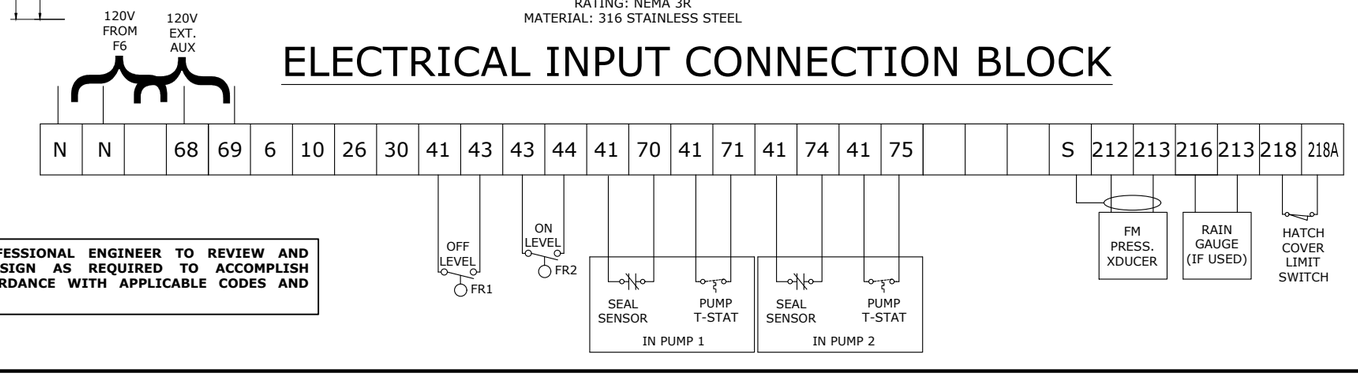


DUPLEX CONTROL PANEL LAYOUT

DUPLEX CONTROL PANEL LAYOUT

ENCLOSURE SIZE : 66" x 36" x 10"
RATING: NEMA 3R
MATERIAL: 316 STAINLESS STEEL

ELECTRICAL INPUT CONNECTION BLOCK



FLORIDA LICENSED PROFESSIONAL ENGINEER TO REVIEW AND MODIFY ELECTRICAL DESIGN AS REQUIRED TO ACCOMPLISH CONSTRUCTION IN ACCORDANCE WITH APPLICABLE CODES AND STANDARDS.

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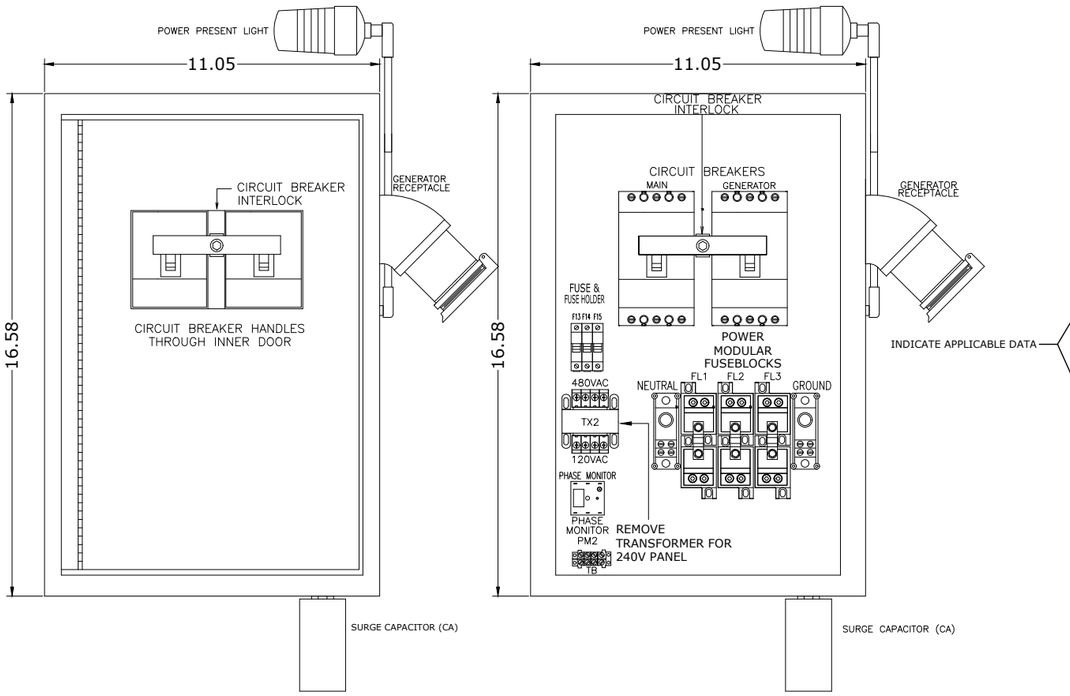
DRAWING NAME:
ELECTRIC SCHEMATIC AND CONTROL PANEL

SCALE: NTS

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E-4

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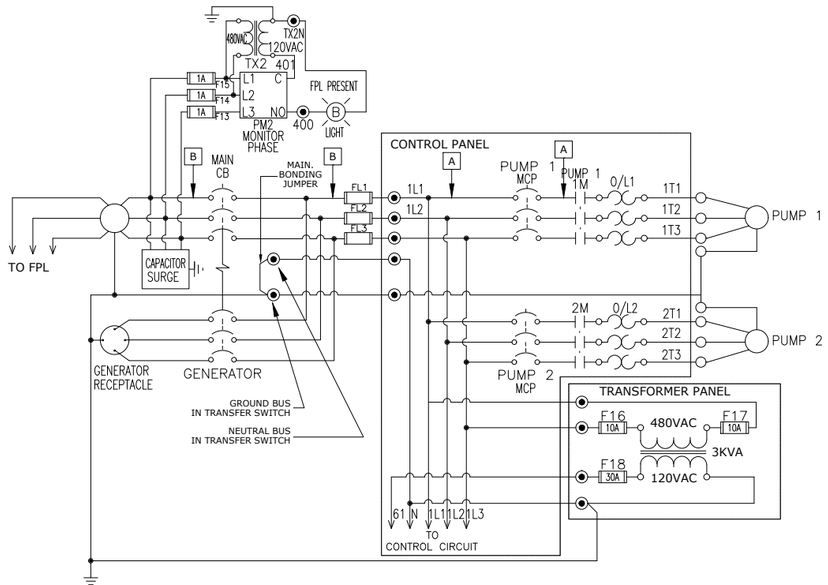
INDICATE APPLICABLE DATA

240 VOLT								
HP	MOTOR AMP (I)	STARTER SIZE	CONDUCTOR (A)	PUMP CB	MAIN/EMER CB	CONDUCTOR (B)	GENERATOR PLUG*	SERVICE RACEWAY (MIN)
3	9.6	1	12	20	100	1 (44A)	100	2"
5	15.2	1	10	40	100	1 (58A)	100	2"
7.5	22	2	10	50	125	1 (75A)	100	2"
10	28	2	8	70	125	1 (90A)	100	2"
15	42	3	6	100	175	2/0 (125A)	100	2"
20	54	3	4	150	225	4/0 (155A)	100	3"

480 VOLT								
HP	MOTOR AMP (I)	STARTER SIZE	CONDUCTOR (A)	PUMP CB	MAIN/EMER CB	CONDUCTOR (B)	GENERATOR PLUG*	SERVICE RACEWAY (MIN)
3	5	1	12	15	100	1 (32.5A)	200	2"
5	8	1	12	15	100	1 (40A)	200	2"
7.5	11	1	12	20	100	1 (47.5A)	200	2"
10	14	2	12	30	100	1 (55A)	200	2"
15	21	2	10	50	125	1 (72.5A)	200	2"
20	27	2	10	60	125	1 (87.5A)	200	2"
25	34	2	8	90	150	1/0 (105A)	200	2"
30	40	3	6	100	150	1/0 (120A)	200	2"
40	52	3	4	150	225	4/0 (150A)	200	3"
50	65	4	4	175	250	250 KCM(182.5A)	200	3"
60	77	4	3	200	300	350 KCM(212.5A)	200	3"
75	96	4	1	250	300	350 KCM(260A)	200	3"
100	124	4	2/0	250	350	500 KCM(330A)	200	4"

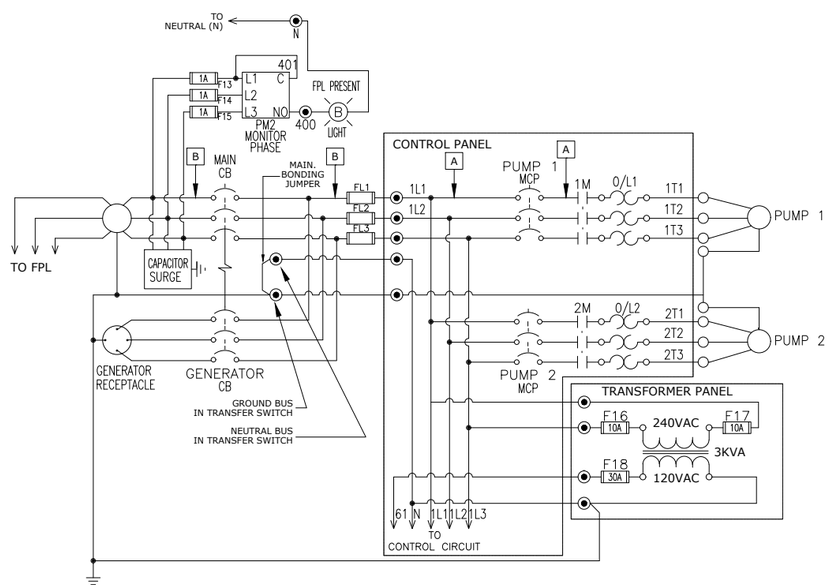
NOTE :

1. THE ABOVE TABLE COMPILED PER CURRENT NATIONAL ELECTRIC CODE SECTION 430 TABLE 430.250
2. GROUNDING ELECTRODE SIZED PER NATIONAL ELECTRICAL CODE
3. *GENERATOR PLUGS ARE SIZED TO MATCH THE GENERATOR'S CORD, NOT THE ELECTRICAL SERVICE.
4. CONDUCTOR B IS A SERVICE FEEDER, SIZED FOR 2 PUMPS AT 125% 0F FLA PLUS A 20 AMP GENERAL LOAD.
5. DESIGNER TO VERIFY DATA IN THESE TABLES
6. SERVICE RACEWAY TO BE OVERSIZED AS SHOWN TO ACCOMMODATE FUTURE EXPANSION.



480V MAIN POWER CIRCUIT

NOTE:
MCB AND ECB ARE TO BE SUITABLE FOR USE AS SERVICE EQUIPMENT ARE TO BE PERMANENTLY IDENTIFIED AS SERVICE DISCONNECTS, ARE TO BE CAPABLE OF BEING OPERATED WITHOUT EXPOSING OPERATOR TO CONTACT WITH LIVE PARTS.
GROUND FAULT PROTECTION-25000 IC AT 240 V, 30000 IC AT 480 V.



240V MAIN POWER CIRCUIT

FLORIDA LICENSED PROFESSIONAL ENGINEER TO REVIEW AND MODIFY ELECTRICAL DESIGN AS REQUIRED TO ACCOMPLISH CONSTRUCTION IN ACCORDANCE WITH APPLICABLE CODES AND STANDARDS.

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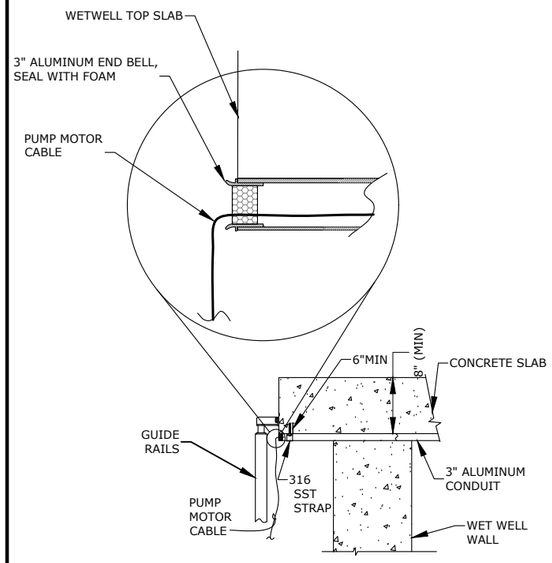
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ELECTRICAL SERVICE AND TRANSFER SWITCH

SCALE: AS SHOWN

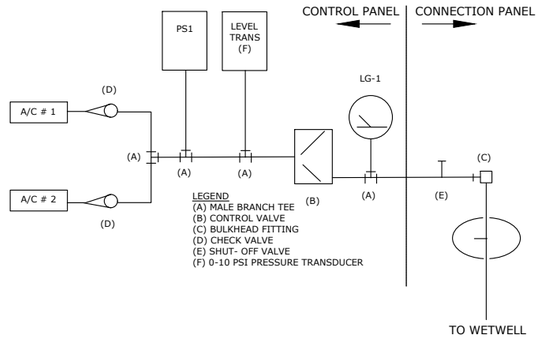
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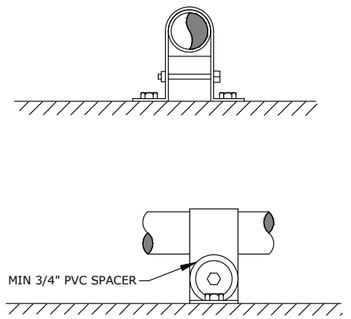
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GUIDE RAIL AND PUMP CONDUIT
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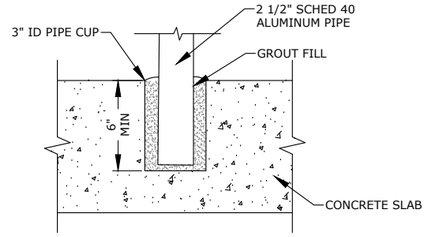


BUBBLER PIPING
NTS



NOTE:
ALL MOUNTING HARDWARE MUST BE 316 SST

BUBBLER PIPE SPACER
NTS



3" PIPE CUP
NTS

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PROJECT NO XXXX

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DESIGN:	DRAWN:	CHECK:

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DRAWING NAME:
ELECTRICAL DETAILS

SCALE:
AS SHOWN

DWG NO:

DESIGNATION:
E-6

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