CONTRACT DOCUMENTS

FOR THE CONSTRUCTION OF

NORTH REGIONAL WATER RECLAMATION FACILITY MASTER REUSE WET WEATHER MANAGEMENT WELL SYSTEM PROJECT

PREPARED FOR

MANATEE COUNTY UTILITIES
MANATEE COUNTY, FL

VOLUME 2 OF 2
DRAWINGS

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CH2MHILL

Project No. 674077

NOVEMBER 2019

BID DOCUMENTS

VICINITY MAP

N

LOCATION MAP

INDEX OF DRAWINGS

01 - GENERAL

SHEET NO.	DRAWING NO.	DRAWING TITLE
02	01-G-001	LOCATION AND VICINITY MAPS, INDEX OF DRAWINGS, SECTION/DETAIL DESIGNATION
03	01-G-002	ABBREVIATIONS
04	01-G-003	CIVIL LEGEND AND GENERAL NOTES
05	01-G-004	PROCESS MECHANICAL LEGEND
06	01-G-005	STRUCUTRAL NOTES
07	01-G-006	ELECTRICAL LEGEND 1
08	01-G-007	ELECTRICAL LEGEND 2
09	01-G-008	ELECTRICAL LEGEND 3
10	01-G-009	INSTRUMENTATION AND CONTROL LEGEND 1
11	01-G-010	INSTRUMENTATION AND CONTROL LEGEND 2
12	01-G-011	PROCESS FLOW DIAGRAM UPGRADES SCHEMATIC

05 - CIVIL/SITE

13	05-D-200	RECLAIMED WATER PROPOSED PIPE MAIN KEY MAP
14	05-D-201	RECLAIMED WATER PROPOSED PIPE MAIN PLAN & PROFILE
15	05-D-202	RECLAIMED WATER PROPOSED PIPE MAIN PLAN & PROFILE
16	05-D-203	RECLAIMED WATER PROPOSED PIPE MAIN PLAN & PROFILE
17	05-D-204	RECLAIMED WATER PROPOSED PIPE MAIN PLAN & PROFILE
18	05-D-205	RECLAIMED WATER PROPOSED PIPE MAIN PLAN & PROFILE
19	05-D-206	RECLAIMED WATER PROPOSED PIPE MAIN PLAN & PROFILE
20	05-D-207	RECLAIMED WATER PROPOSED PIPE MAIN PLAN & PROFILE
21	05-D-208	SINGLE ZONE MONITOR WELLS DRAIN LINE ROUTING PLAN
22	05-D-501	DETAILS
23	05-D-502	SINGLE ZONE MONITORING WELLS DISCHARGE CONNECTION LAKE FILTERS - DETAILS
24	05-D-503	DUAL ZONE MONITORING WELL DISCHARGE CONNECTION AT EXISTING HEADWORKS - DETAIL
25	05-E-200	RECLAIMED WATER KEY MAP
26	05-E-201	SITE ENLARGED PLAN
27	05-E-202	ENLARGED SITE PLAN
28	05-E-203	ENLARGED SITE PLAN
29	05-E-204	ENLARGED SITE PLAN
30	05-E-601	MCC-2B ONE-LINE DIAGRAM AND ELEVATION
31	05-E-602	MCC-6 ONE-LINE DIAGRAM AND ELEVATION
32	05-E-603	PANEL SCHEDULES AND LIGHTING FICTURE SCHEDULE

08 - INSTRUMENTATION AND CONTROL

33	08-N-601	P&ID INJECTION WELL IW-1
34	08-N-602	P&ID INJECTION WELL IW-2
35	08-N-603	P&ID SIMPLE ZONE MONITORING WELLS
36	08-N-604	P&ID DUAL ZONE MONITORING WELL
37	08-N-701	NETWORK BLOCK DIAGRAM

10 - INJECTION WELL No. 1

38	10-D-201	INJECTION WELL No.1 DEVELOPMENT PLAN AND SECTIONS
39	10-D-202	INJECTION WELL No.1 BASKET STRAINER STATION PLAN AND SECTIONS
40	10-D-203	INJECTION WELL No.1 FUTURE PUMP INSTALLATION PLAN AND SECTIONS
41	10-E-201	INJECTION WELL No.1 AND BASKET STRAINER PLAN

20 - INJECTION WELL No. 2

42	20-D-201	INJECTION WELL No.2 DEVELOPMENT PLAN, SECTIONS & DETAIL
43	20-E-201	INJECTION WELL No.2 PLAN

30 - DUAL ZONE MONITORING WELL No. 1

44	30-D-201	DUAL ZONE MONITORING WELL No.1 PLAN AND SECTION
45	30-D-301	DUAL ZONE MONITORING WELL No.1 SECTION AND DETAILS
46	30-E-201	DUAL-ZONE MONITORING WELL DZMW-1

35 - SINGLE ZONE MONITORING WELL

47	35-D-201	TYPICAL SINGLE ZONE MONITORING WELL PLAN, SECTION, & DETAIL
48	35-E-201	SINGLE-ZONE MONITORING WELL DMW-2
49	35-E-202	SINGLE-ZONE MONITORING WELL APMW-2

40 - ELECTRICAL AND STORAGE BUILDING

50	40-E-201	ELECTRICAL AND STORAGE BUILDING POWER PLAN

50 - DEWATERING BUILDING

51	50-E-201	DEWATERING BUILDING POWER PLAN

80 - ELECTRICAL

52	80-E-601	RISER DIAGRAMS

95 - STANDARD DETAILS

53	95-C-501	STANDARD DETAILS
54	95-N-501	STANDARD DETAILS
55	95-N-502	STANDARD DETAILS
56	95-S-501	STANDARD DETAILS
57	95-D-501	STANDARD DETAILS
58	95-D-502	STANDARD DETAILS
59	95-E-501	STANDARD DETAILS
60	95-E-502	STANDARD DETAILS
61	95-E-503	STANDARD DETAILS

SECTION / DETAIL DESIGNATIONS

SECTION (LETTER) OR DETAIL (NUMERAL) DESIGNATION

DRAWING NUMBER (REPLACED WITH A LINE IF TAKEN AND SHOWN ON SAME SHEET)

ON DRAWING WHERE SECTION OR DETAIL IS TAKEN: DRAWING NUMBER WHERE SHOWN

SECTION — SCALE — 100-S-301 — ON DRAWING WHERE SECTION IS SHOWN: DRAWING NUMBER(S) WHERE TAKEN

DETAIL — SCALE — 200-M-101 — ON DRAWING WHERE DETAIL IS SHOWN: DRAWING NUMBER(S) WHERE TAKEN

DRAWING TITLE — SCALE — ON DRAWING WHERE ONLY A TITLE IS REQUIRED WITH NO REFERENCE (eg: ELEVATIONS)

SECTION CALLOUT WHERE SECTION IS ON THE SAME SHEET AND CUT EXTENDS TO A FIXED LIMIT

SECTION CALLOUT WHERE SECTION IS ON ANOTHER SHEET AND CUT EXTENDS THROUGHOUT ENTIRE SHEET (450-S-102)

GRID LINE INDICATOR

KEYNOTE NUMBER

REVISION / ADDENDA NUMBER

NORTH ARROW; CAN BE MODIFIED TO INCLUDE MAGNETIC NORTH ALONG WITH PROJECT NORTH

DESIGN DETAIL DESIGNATION

DESIGN DETAIL DESIGNATION (NUMERAL) — 1234-567 — SHOWN ON DESIGN DETAIL DRAWING(S)

NOTES:

1. ALL DESIGN DETAILS ARE TYPICAL AND MUST BE USED IF DESIGN DETAIL DESIGNATION IS NOT SHOWN
2. THE TERM STANDARD DETAIL, OR A FORM OF IT, IS SYNOMONOUS WITH DESIGN DETAIL. THE DESIGN DETAILS REPRESENT THE CHARACTER AND NATURE OF THE WORK REQUIRED THROUGHOUT THE PROJECT. ALL ASSOCIATED WORK SHALL BE IN ACCORDANCE WITH THE DESIGN DETAILS SHOWN WHETHER THE DETAILS ARE SPECIFICALLY REFERENCED OR NOT.

Tao Fu

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Date: 2019.12.16 11:11:55 -05'00'

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TAO FU LICENSE No 63138 STATE OF FLORIDA PROFESSIONAL ENGINEER

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NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

GENERAL

LOCATION AND VICINITY MAPS
INDEX OF DRAWINGS AND
SECTION/DETAIL DESIGNATIONS

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	01-G-001
SHEET	02 of 61

BID DOCUMENTS

FILENAME: 01-G-001_674077.dgn PLOT DATE: 11/15/2019 PLOT TIME: 9:10:15 AM

ABBREVIATIONS

@	AT
A/B	AERATION BASIN
AB	ANCHOR BOLT
ABDN	ABANDONED
AC	ASBESTOS CEMENT
ACBD	ACOUSTICAL BOARD
ACI	AMERICAN CONCRETE INSTITUTE
ACST	ACOUSTICAL TILE
AD	AREA DRAIN
ADDL	ADDITIONAL
ADJ	ADJACENT, ADJUSTABLE
AFF	ABOVE FINISH FLOOR
AGGR	AGGREGATE
AHR	ANCHOR
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
AL	ALUMINUM
ALTN	ALTERNATE
ANDZ	ANODIZE
APPROX	APPROXIMATE
APVD	APPROVED
ARCH	ARCHITECTURAL
ASSY	ASSEMBLY
AUTO	AUTOMATIC
AUX	AUXILIARY
AVG	AVERAGE
AWT	ADVANCED WASTE TREATMENT
BD	BOARD
BETW	BETWEEN
BF	BOTTOM FACE, BLIND FLANGE
BLDG	BUILDING
BM	BEAM, BENCH MARK
BOD	BOTTOM OF DUCT
BOT	BOTTOM
BRG	BEARING
BSP-40	BLACK STEEL PIPE, SCHEDULE 40
BSP-80	BLACK STEEL PIPE, SCHEDULE 80
BV	BALL VALVE, BUTTERFLY VALVE
BVC	BEGINNING OF VERTICAL CURVE
BWS	BACKWASH SUPPLY WATER
BWW	BACKWASH WASTEWATER
	CHANNEL (BEAM)
CAB.	CABINET
CAP.	CAPACITY
CB	CATCH BASIN
CCP	CONCRETE CYLINDER PIPE
C/C	CHLORINE CONTACT
C & C	COMPONENTS AND CLADDING
CEM PLAS	CEMENT PLASTER
CFM	CUBIC FEET PER MINUTE
CFS	CUBIC FEET PER SECOND
CG	CHLORINE GAS
CHEM	CHEMICAL
CHKD PL	CHECKERED PLATE
	CAST IRON
CIMJ	CAST IRON MECHANICAL JOINT
CIP	CAST IN PLACE, CAST IRON PIPE
CISP	CAST IRON SOIL PIPE
CJ	CONSTRUCTION JOINT
C OR CL	CENTER LINE
CL_2	CHLORINE
CLG	CEILING
CLO	CLOSET
CLR	CLEAR
CMP	CORRUGATED METAL PIPE
CMS	CHEMICAL SLUDGE
CMU	CONCRETE MASONRY UNITS
CO	CLEANOUT
CO_2	CARBON DIOXIDE
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS, CONTINUED, CONTINUATION
COORD	COORDINATE
COP.	COPPER
COR	CORNER
CPLG	CHLORINATED POLYVINYL CHLORIDE
CPVC	COUPLING
CR	CONDENSATE RETURN
CS	CHLORINE SOLUTION
C TO C	CENTER TO CENTER
CTR	CENTER
CTRD	CENTERED
CU	CUBIC
CU FT	CUBIC FEET
CU IN.	CUBIC INCH
CU YD	CUBIC YARD

CV	CHECK VALVE
CW	COLD WATER
°C	DEGREE CELSIUS
△	CENTRAL ANGLE
d	PENNY (NAIL SIZE)
D	DEEP
DB	DISTRIBUTION BOX
DBA	DEFORMED BAR ANCHOR
DBL	DOUBLE
DEG	DEGREE
DET	DETAIL
DF	DRINKING FOUNTAIN
DI	DROP INLET
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DIMJ	DUCTILE IRON MECHANICAL JOINT
DIMJGL	DUCTILE IRON MECHANICAL JOINT, GLASS LINED
DIP	DUCTILE IRON PIPE
DIPGL	DUCTILE IRON PIPE, FLANGED, GLASS LINED
DIR	DIRECTION
DISCH	DISCHARGE
DODE	DELAY ON DE-ENERGIZATION
DOE	DELAY ON ENERGIZATION
DN	DOWN
DR	DRAIN
D/S	DIGESTED SLUDGE
DS	DOWNSPOUT
DWG	DRAWING
DWL	DOWEL
E	EAST, EMPTY
EA	EACH
ECC	ECCENTRIC
EF	EACH FACE
EFL	EFFLUENT
EL	ELEVATION
ELB	ELBOW
ELC	ELECTRICAL LOAD CENTER
ELEC	ELECTRICAL
ENGR	ENGINEER
EP	EDGE OF PAVEMENT
EO	EMERGENCY OVERFLOW
EQL	EQUAL
EQL SP	EQUALLY SPACED
EQPT	EQUIPMENT
EVC	END OF VERTICAL CURVE
EW	EACH WAY
EXH	EXHAUST
EXP	EXPOSED
EXP JT	EXPANSION JOINT
EXT	EXTERIOR, EXTERNAL, EXTENSION
EXST	EXISTING
FA	FIRST AID KIT
FAB	FABRICATION
FACIL	FACILITY
FC	FLEXIBLE COUPLING
FCA	FLANGED COUPLING ADAPTER
FCTY	FACTORY
FD	FLOOR DRAIN
FDA	FLOOR DRAIN W/INTEGRAL TRAP
FDN	FOUNDATION
$FeCl_3$	FERRIC CHLORIDE
FEXT	FIRE EXTINGUISHER
FF	FINISH FLOOR
FFE	FINISHED FLOOR ELEVATION
FG	FINISH GRADE
FHY	FIRE HYDRANT
FIG.	FIGURE
FL	FLOOR
FLH	FLAT HEAD
FLL	FLOW LINE ELEVATION
FLEX	FLEXIBLE
FLG	FLANGE
FLR	FLOOR
FNSH	FINISH
FOR.	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
FRC	FIBER REINFORCED CONCRETE
FRP	FIBERGLASS REINFORCED PLASTIC
FT	FOOT OR FEET
FTG	FOOTING
F.V.	FIELD VERIFY
FWD	FORWARD
°F	DEGREE FAHRENHEIT
GA	GAGE, GAUGE
GB	GRAB BAR
GAL	GALLON
GALV	GALVANIZED
GALVI	GALVANIZED IRON
GALVS	GALVANIZED STEEL
GB	GRAB BAR
GC	GROOVED COUPLING
GCF	GROOVED COUPLING FITTING

GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GRD	GROUND
GRTG	GRATING
GSP	GALVANIZED STEEL PIPE
GTV	GATE VALVE
GVL	GRAVEL
GWB	GYPSUM WALLBOARD
GYP	GYPSUM
GYP PLAS	GYPSUM PLASTER
H.A.S	HEADED ANCHOR STUD
H	HIGH
H_2O_2	HYDROGEN PEROXIDE
H_2SO_4	SULFURIC ACID
HD	HUB DRAIN
HDNR	HARDENER
HDR	HEADER
HDW	HARDWARE
HGT	HEIGHT
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HP	HORSEPOWER
HPT	HIGH POINT
HR	HANDRAIL, HOSE RACK
HR	HOUR
HS	HIGH STRENGTH
HV	HOSE VALVE
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
I&C	INSTRUMENTATION AND CONTROL
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
I.F.	INSIDE FACE
IN.	INCH
INFL	INFLUENT
INFO	INFORMATION
INSTL	INSTALL
INSUL	INSULATION
INTR	INTERIOR
INVT	INVERT
ITG	INSULATED TEMPERED GLASS
JAN	JANITOR
JT	JOINT
KIP	THOUSAND POUNDS
KW	KILOWATT
L	ANGLE, LENGTH OF CURVE, LIGHTING CONTACTOR, LOW SPEED
LAB	LABORATORY
LAV	LAVATORY
LB	POUNDS
LB/D	POUNDS PER DAY
LB/CU FT	POUNDS PER CUBIC FOOT
LC	LIGHTING CONTACTOR
LF	LINEAR FEET
LG	LONG
LLV	LONG LEG VERTICAL
LNTL	LINTEL
LONG.	LONGITUDINAL
LPG	LIQUEFIED PETROLEUM GAS
LPT	LOW POINT
LR	LONG RADIUS
LS	LIME SLURRY
LT	LIGHT
MATL	MATERIAL
MAX	MAXIMUM
MB	MACHINE BOLT
MCC	MOTOR CONTROL CENTER
MECH	MECHANICAL
MFR	MANUFACTURER
MGD	MILLION GALLONS PER DAY
MG/L	MILLIGRAMS PER LITRE
MH	MANHOLE
MLO	MAIN LUGS ONLY
MIN	MINIMUM
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
ML	MIXED LIQUOR
MLSS	MIXED LIQUOR SUSPENDED SOLIDS
MLVSS	MIXED LIQUOR VOLATILE SUSPENDED SOLIDS
MO	MASONRY OPENING, MOTOR OPERATOR
MON	MONUMENT
MTG	MOUNTING
MTL	METAL
MTR	METERING
MWS	MAXIMUM WATER SURFACE
N	NEUTRAL, NORTH
NaCl	SODIUM CHLORIDE BRINE
NaOH	SODIUM HYDROXIDE
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT

NO.	NUMBER
N.O.	NORMALLY OPEN
NOM	NOMINAL
NORM	NORMAL
NP	NATIONAL PIPE THREAD
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER, OVERFLOW DRAIN
O.F.	OUTSIDE FACE
OVHD	OVERHEAD
O TO O	OUT TO OUT
OPNG	OPENING
OPP	OPPOSITE
OSD	OPEN SITE DRAIN
OVFL	OVERFLOW
OXY	OXYGEN
OZ	OUNCE
PC	POINT OF CURVATURE, PHOTOCELL
P/C	PRIMARY CLARIFIERS
PD	PEAK DAY
PE	PLAIN END
PHF	PEAK HOUR FLOW
PI	POINT OF INTERSECTION
P&ID	PROCESS AND INSTRUMENTATION DIAGRAM
PJF	PREMOLDED JOINT FILLER
PL	PLATE
PLAM	PLASTIC LAMINATE
PLYWD	PLYWOOD
POC	POINT OF CONNECTION
POT	POINT ON TANGENT
PPL	POLYPROPYLENE LINED
PR	PAIR
PRCST	PRECAST
PREFAB	PREFABRICATED
PRESS.	PRESSURE
PRI	PRIMARY
PROP.	PROPERTY
P/S	PRIMARY SLUDGE
PS	PUMP STATION
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH, GAUGE
PT	POINT OF TANGENCY, POTENTIAL TRANSFORMER
PTD	PAPER TOWEL DISPENSER
PTD/R	PAPER TOWEL DISPENSER/RECEPTACLE
PTRD	PRESSURE TREATED
PV	PLUG VALVE
PVC	POINT OF VERTICAL CURVATURE
PVC	POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
PVMT	PAVEMENT
PVT	POINT OF VERTICAL TANGENCY
PW	PLANT WASTE
QDRNT	QUADRANT
QTY	QUANTITY
R	R-VALUE (INSULATION), RADIUS, RED, RISER
RAD	RADIUS
RA	RETURN AIR
RAS	RETURN ACTIVATED SLUDGE
RC	REINFORCED CONCRETE
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
RDCR	REDUCER
RDW	REDWOOD
REF	REFER, REFERENCE
REFR	REFRIGERATOR
REHAB	REHABILITATE
REINF	REINFORCE, REINFORCED, REINFORCING
REQD	REQUIRED
RESIL	RESILIENT
RLS	RUBBER LINED STEEL
RM	ROOM, REMOTE MULTIPLEXER
RO	ROUGH OPENING
RST	REINFORCING STEEL
RTN	RETURN
RV	ROOF VENT
R/W	RIGHT-OF-WAY
S	SOUTH, I-BEAM
SAT	SUSPENDED ACOUSTICAL TILE
S/C	SECONDARY CLARIFIERS
SC	SOLID CORE
SCBA	SELF CONTAINED BREATHING APPARATUS
SCFM	STANDARD CUBIC FEET PER MINUTE
SCHED	SCHEDULE
SD	SOAP DISPENSER, STORM DRAIN
SEC	SECONDARY
SECT.	SECTION
SG	SAFETY GLASS
SH	SHEET
SHTG	SHEETING
SIM	SIMILAR
SLV	SHORT LEG VERTICAL
S.O.	SHUTOFF
SO_2	SULFUR DIOXIDE
SP	SPACE OR SPACES
SPECD	SPECIFIED
SPECS	SPECIFICATIONS
SPG	SPACING
SPLY	SUPPLY
SQ	SQUARE
SQ FT	SQUARE FOOT
SQ IN.	SQUARE INCH
SST	STAINLESS STEEL
STA	STATION
STD	STANDARD
STIF	STIFFENER
STOR	STORAGE
STR	STRAIGHT
STRUCT	STRUCTURAL, STRUCTURE
STL	STEEL
ST (50)	STEAM W/ INDICATED PRESSURE (PSI)
SUSP	SUSPEND
SW	SURFACE WASH
SYMM	SYMMETRICAL
T	TANGENT LENGTH, THERMOSTAT, TINTED
T&B	TOP AND BOTTOM
TAN	TANGENT
TAS	THREADED ANCHOR STUD
TBG	TUBING
TC	TOP OF CONCRETE, TOP OF CURB, TIME CLOSED
TEL	TELEPHONE
TEMP	TEMPERATURE, TEMPERED
TF	TOP FACE
TG	TEMPERED GLASS
T&G	TONGUE AND GROOVE
THK	THICK
THRD	THREADED
T.O.	TOP OF, TIME OPEN
TOG	TOP OF GROUT
TP	TURNING POINT
TPD	TONS PER DAY
TPI	TURNOUT POINT OF INTERSECTION
TRANSV	TRANSVERSE
TRD	TREAD
TSS	TOTAL SUSPENDED SOLIDS
TST	TOP OF STEEL, TWISTED SHIELDED TRIAD
TT	THRUST TIE
TTD	TOILET TISSUE DISPENSER
TW	TOP OF WALL
TWAS	THICKENED WASTE ACTIVATED SLUDGE
TYP	TYPICAL
UBC	UNIFORM BUILDING CODE
UH	UNIT HEATER
UON	UNLESS OTHERWISE NOTED
UNO	UNLESS NOTED OTHERWISE
UR	URINAL
V	VENT, VOLT, VOLTMETER
VAC	VACUUM
VAT	VINYL ASBESTOS TILE
VC	VERTICAL CURVE
VERT	VERTICAL
VCP	VITRIFIED CLAY PIPE
VTR	VENT THRU ROOF
VWC	VINYL WALL COVERING
W	WATT, WEST, WIDE FLANGE (BEAM)
W/	WITH
WAS	WASTE ACTIVATED SLUDGE
WC	WATER CLOSET
WD	WOOD
WG	WIRE GLASS
WH	WATER HEATER
WK	WEEK
WP	WORKING POINT
WR GWB	WATER RESISTANT GYPSUM WALLBOARD
WR	WASTE RECEPTACLE
WS	WATER STOP, WATER SURFACE, WELDED STEEL
WTR	WATER
WWM	WELDED WIRE MESH
XFMR	TRANSFORMER
YD	YARD
YR	YEAR

NOTES:

1. FOR ELECTRICAL AND INSTRUMENTATION ABBREVIATIONS, SEE ELECTRICAL AND INSTRUMENTATION LEGENDS.
2. CONTACT THE ENGINEER FOR ABBREVIATIONS NOT LISTED.
3. THIS IS A STANDARD LEGEND SHEET, THEREFORE, SOME SYMBOLS OR ABBREVIATIONS MAY APPEAR ON THIS SHEET AND NOT ON THE PLANS.

Tao Fu

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Date: 2019.12.16 11:12:57 -05'00'

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No 63138
STATE OF FLORIDA
PROFESSIONAL ENGINEER

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		DR	T FU	
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NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

ch2m

GENERAL
ABBREVIATIONS

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	01-G-002
SHEET	03 of 61

BID DOCUMENTS

GENERAL SITE NOTES:

1. SOURCE OF TOPOGRAPHY SHOWN ON THE CIVIL PLANS IS A SURVEY PROVIDED BY ZNS ENGINEERING. ADDITIONAL MAPPING HAS BEEN ADDED FROM RECORD DRAWINGS PREPARED BY URS AND WERE PROVIDED BY MANATEE COUNTY. EXISTING CONDITIONS MAY VARY FROM THOSE SHOWN ON THESE PLANS. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS AND ADJUST WORK PLAN ACCORDINGLY PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING TOPOGRAPHY, STRUCTURES, AND SITE FEATURES ARE SHOWN SCREENED AND/OR LIGHT-LINED. NEW FINISH GRADE, STRUCTURES, AND SITE FEATURES ARE SHOWN HEAVY-LINED.
3. HORIZONTAL DATUM: FLORIDA STATE PLANE COORDINATE SYSTEM (WEST ZONE) NAD83/2011
4. VERTICAL DATUM: NAVD88
5. MAINTAIN, RELOCATE, OR REPLACE EXISTING SURVEY MONUMENTS, CONTROL POINTS, AND STAKES WHICH ARE DISTURBED OR DESTROYED. PERFORM THE WORK TO PRODUCE THE SAME LEVEL OF ACCURACY AS THE ORIGINAL MONUMENT(S) IN A TIMELY MANNER, AND AT THE CONTRACTOR'S EXPENSE.
6. COORDINATES AND DIMENSIONS SHOWN FOR ROADWAY IMPROVEMENTS ARE TO FACE OF CURB OR EDGE OF PAVEMENT.
7. STAGING AREA SHALL BE FOR CONTRACTOR'S EMPLOYEE PARKING, CONTRACTOR'S TRAILERS AND ON-SITE STORAGE OF MATERIALS.
8. ELEVATIONS GIVEN ARE TO FINISH GRADE UNLESS OTHERWISE SHOWN.
9. SLOPE UNIFORMLY BETWEEN CONTOURS AND SPOT ELEVATIONS SHOWN.
10. ALL DISTURBED AREAS NOT RECEIVING A HARD SURFACE SHALL BE COVERED WITH GRASS.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGNING, PERMITTING, IMPLEMENTING AND MAINTAINING EROSION CONTROL DEVICES DURING CONSTRUCTION. CONTRACTOR SHALL PREPARE A SWPPP AND OBTAIN NECESSARY NPDES PERMIT.
12. CONTRACTOR SHALL TAKE ALL OTHER MEASURES TO POSITIVELY PRECLUDE EROSION MATERIALS FROM LEAVING THE SITE. CONTRACTOR TO SUBMIT EROSION CONTROL PLAN.

CIVIL LEGEND

- EXISTING GRATE INLET
- EXISTING STORM/SANITARY MANHOLE
- EXISTING SANITARY CLEANOUT
- EXISTING UTILITY BOX
- EXISTINGELECTRIC HAND HOLE
- EXISTING WATER VALVE
- EXISTING FIRE HYDRANT
- EXISTING LIGHT POLE
- EXISTING SIGN
- EXISTING BOLLARD
- EXISTING CHAIN LINK FENCE
- +X.XX EXISTING SPOT ELEVATION (HARD SURFACE)
- *X.X EXISTING SPOT ELEVATION (SOFT SURFACE)
- EXISTING ORNAMENTAL TREE (SIZE)
- BENCHMARK
- SOIL BORING
- ⊗ 158.5 SPOT ELEVATION
- 155 CONTOUR LINE
- 3:1 EMBANKMENT AND SLOPE
- DRAINAGEWAY OR DITCH
- CENTER LINE, PIPING, ROAD, DITCH, ETC.
- SILT FENCE
- N 1000.00 / E 1000.00 LOCATION POINT - COORDINATES
- ASPHALT SURFACING
- CONCRETE

GENERAL NOTE:

1. THIS IS A STANDARD LEGEND SHEET. THEREFORE, NOT ALL OF THE INFORMATION SHOWN MAY BE USED ON THIS PROJECT.

Richard Thomas Morrison

Digitally signed by Richard Thomas Morrison
Date: 2019.12.16 12:05:59 -05'00'

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RICHARD THOMAS MORRISON ★ PROFESSIONAL ENGINEER ★ LICENSE No 67713 ★ STATE OF FLORIDA ★

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NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

GENERAL
CIVIL LEGEND
AND GENERAL NOTES

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	01-G-003
SHEET	04 of 61

BID DOCUMENTS

FILENAME: 01-G-003_674077.dgn PLOT DATE: 11/15/2019 PLOT TIME: 9:11:55 AM

PIPE AND FITTING SYMBOLS

DOUBLE LINE	SINGLE LINE	
		EXISTING PIPE
		NEW PIPE
		EXISTING PIPE TO BE ABANDONED
		EXISTING PIPE TO BE REMOVED
		WELDED JOINT
		GROOVED END JOINT
		FLANGED JOINT
		MECHANICAL JOINT
		BELL & SPIGOT JOINT (LEADED)
		HUB & SPIGOT JOINT (RUBBER GASKET)
		BALL JOINT
		ADAPTER SIDE GROOVED END ADAPTER FLANGE
		FLANGED COUPLING ADAPTER
		FLEXIBLE COUPLING
		METAL BELLOWS EXP JOINT
		ELASTOMER BELLOWS EXP JOINT
		ELBOW UP
		ELBOW DOWN
		TEE UP
		TEE DOWN
		LATERAL UP
		LATERAL DOWN
		CONCENTRIC REDUCER
		ECCENTRIC REDUCER
		REDUCING BUSHING
		UNION

DOUBLE LINE	SINGLE LINE	
		CAP
		ANCHOR
		ELBOW, 90 DEGREE
		CROSS
		TEE
		ELBOW, 45 DEGREE
		LATERAL

NOTES:

1. ONLY FLANGED END CONNECTIONS ARE SHOWN HERE FOR DOUBLE LINE FITTINGS. FITTINGS WITH OTHER END PATTERNS ARE SHOWN SIMILARLY ON THE CONSTRUCTION DRAWINGS. ALSO SEE PIPING SPECIFICATIONS.
2. SYMBOLS SHOWN HERE FOR SINGLE LINE FITTINGS ARE GENERIC ONLY. REFER TO PIPING SPECIFICATIONS FOR SPECIFIC END CONNECTIONS FOR SINGLE LINE PIPE AND FITTINGS.
3. PROVIDE THRUST RESTRAINT FOR ALL FLEXIBLE COUPLINGS, FCA'S, ETC. AS SPECIFIED.
4. PROVIDE CONTROL RODS FOR ALL BELLOWS EXPANSION JOINTS AND COUPLINGS AS SPECIFIED.

MISCELLANEOUS PIPING SYMBOLS

- STRAINER
- SIGHT GLASS
- FLEXIBLE (ELASTOMER) PIPE CONNECTION
- GAUGE WITH COCK
- THERMOMETER
- ROTAMETER
- PIG LAUNCHER
- PIG CATCHER
- BACKFLOW PREVENTER
- REDUCER
- FLEXIBLE HOSE
- FLEXIBLE CONNECTOR
- PS 26-1-2 — TYPICAL INSTRUMENT SYMBOL (SEE I&C LEGEND)

VALVE SYMBOLS

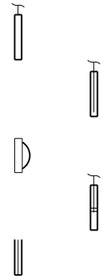
- GATE
- K — KNIFE GATE
- BUTTERFLY
- GLOBE
- BALL
- V — VEE-BALL
- SEATING PORT
- ECCENTRIC PLUG
- PLUG OR COCK
- NEEDLE
- DIAPHRAGM
- PINCH
- SWING CHECK
- BALL CHECK
- HOSE VALVE (HV- X) OR (V-X) X = NO. IN SPECS
- S — SAMPLE
- MUD
- PRESSURE RELIEF
- AIR AND/OR VACUUM RELEASE
- REGULATED SIDE — PRESSURE CONTROL
- REGULATED SIDE — PRESSURE REGULATOR
- MULTI-PORT VALVE, ARROWS INDICATE FLOW PATTERN. SEATING PORTS ARE IMPLIED BY INDICATED FLOW PATTERN.
- TELESCOPING
- ROTARY
- ANGLE GATE

ACTUATOR SYMBOLS

- PNEUMATIC DIAPHRAGM SPRING-OPPOSED, SINGLE OR DOUBLE ACTING
- PNEUMATIC CYLINDER SINGLE OR DOUBLE ACTING ACTUATED BY ONE INPUT
- E — ELECTRIC MOTOR
- H — HYDRAULIC
- MANUAL
- S — SOLENOID
- E/H — ELECTRO HYDRAULIC

GATE SYMBOLS

ELEVATION VIEW

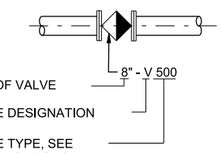


PLAN VIEW

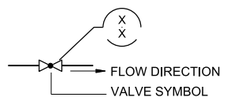
- SLUICE
- BUTTERFLY
- FLAP
- SHEAR
- FABRICATED SLIDE
- STOP LOG

VALVE DESIGNATIONS

MANUAL VALVES AND CHECK VALVES



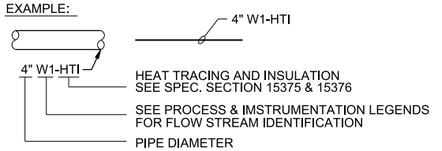
CONTROL VALVES



* BUBBLE WITH FUNCTION AND THE TAG NUMBER DESIGNATION (SEE I&C LEGEND FOR TAGGING INSTRUMENT IDENTIFICATION)

PIPING DESIGNATION

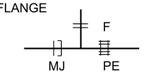
EXAMPLE:



PIPE AND FITTING END PATTERNS

B	BELL	PE	PLAIN END
S	SPIGOT	GE	GROOVED END
F	FLANGE	MJ	MECHANICAL JOINT

EXAMPLE:



Tao Fu

Digitally signed by Tao Fu
Date: 2019.12.16 11:13:24 -05'00'

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TAO FU LICENSE No 63138 STATE OF FLORIDA PROFESSIONAL ENGINEER

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TAO FU, PE #63138

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

ch2m

GENERAL
PROCESS MECHANICAL LEGEND

REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL.

BID DOCUMENTS

NTS	
VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"	
DATE	NOVEMBER 2019
PROJ	674077
DWG	01-G-004
SHEET	05 of 61

DESIGN CRITERIA

1. APPLICABLE CODE: FLORIDA BUILDING CODE SIXTH EDITION (2017), AS AMENDED BY APPLICABLE LOCAL AGENCIES.
2. REFER TO THE DRAWINGS FOR ADDITIONAL AND SPECIFIC STRUCTURE LOADINGS AND REQUIREMENTS.
3. ALL LOADS SHOWN ARE SERVICE LEVEL (UNFACTORED) UNLESS SPECIFICALLY NOTED OTHERWISE.
4. DEAD LOADS: = SELF WEIGHT
5. LIVE LOADS:
   SLAB ON GARDE = 100 PSF
6. WIND LOADS:
   ASCE 7 METHOD
   DIRECTIONAL PROCEDURE
   BASIC WIND SPEED, Vult= 151 MPH
   NOMINAL WIND SPEED, Vasd= 117 MPH
   RISK CATEGORY= III
   EXPOSURE CATEGORY= C
7. SNOW LOAD: GROUND SNOW LOAD = 0 PSF

GENERAL INFORMATION

1. FOR ABBREVIATIONS NOT LISTED, SEE ASME Y14.38 "ABBREVIATIONS AND ACRONYMS: PUBLICATION AS DISTRIBUTED BY THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME).
2. DESIGN DETAILS ARE INTENDED TO BE TYPICAL AND SHALL APPLY TO SIMILAR SITUATIONS OCCURRING THROUGHOUT THE PROJECT, WHETHER OR NOT THEY ARE INDIVIDUALLY CALLED OUT.
3. VERIFY FINAL OPENING DIMENSIONS IN WALLS AND SLABS WITH OTHER DISCIPLINE DRAWINGS PRIOR TO CONSTRUCTION OF THESE ELEMENTS.
4. FOR NUMBER, TYPE, SIZE, ARRANGEMENT, AND/OR LOCATION OF EQUIPMENT PADS, SEE OTHER DISCIPLINE DRAWINGS. COORDINATE WITH EQUIPMENT SUPPLIER PRIOR TO PLACING SLABS, WALLS AND FOUNDATIONS. COORDINATE PIPING OPENINGS WITH OTHER DISCIPLINE DRAWINGS.
5. DO NOT CUT OR MODIFY STRUCTURAL MEMBERS FOR PIPES, DUCTS, ETC, UNLESS SPECIFICALLY DETAILED OR APPROVED IN WRITING BY THE ENGINEER.
6. VISITS TO THE JOB SITE BY THE ENGINEER TO OBSERVE THE CONSTRUCTION DO NOT IN ANY WAY MEAN THAT ENGINEER IS GUARANTOR OF CONSTRUCTOR'S WORK, NOR RESPONSIBLE FOR THE COMPREHENSIVE OR SPECIAL INSPECTIONS, COORDINATION, SUPERVISION, OR SAFETY AT THE JOB SITE.
7. INFORMATION (DETAILING, DIMENSIONS, CONFIGURATIONS, AND ELEVATIONS, ETC.) OF EXISTING CONSTRUCTION SHOWN REFLECTS AVAILABLE EXISTING DESIGN DOCUMENTS, AND DOES NOT NECESSARILY REPRESENT THE AS-CONSTRUCTED CONDITIONS. THE CONTRACTOR SHALL FIELD VERIFY DIMENSIONS, ELEVATIONS AND DETAILING OF THE EXISTING STRUCTURES PRIOR TO UNDERTAKING ANY WORK THAT IS AFFECTED BY THE EXISTING STRUCTURE. NOTIFY ENGINEER IF CONDITIONS VARY FROM THAT SHOWN PRIOR TO STARTING WORK.

INSPECTION AND TESTING

1. THE CONTRACTOR SHALL SCHEDULE INSPECTIONS.
2. SPECIFIED CONCRETE AND OTHER MATERIAL TESTING RELATED TO INSPECTION DURING CONSTRUCTION WILL BE OWNER FURNISHED.
3. SPECIFIED LABORATORY TEST MIXES AND SIMILAR TEST RESULTS TO VERIFY MATERIAL QUALITY AND CONFORMANCE TO SPECIFICATIONS, AND SUBMITTED FOR REVIEW PRIOR TO ACCEPTANCE FOR USE ON THE PROJECT, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

FOUNDATIONS

1. EXCAVATIONS SHALL BE SHORED TO PREVENT SUBSIDENCE OR DAMAGE TO ADJACENT EXISTING STRUCTURES, ROADS, UTILITIES, ETC.
2. FOUNDATION SLABS, SLABS-ON-GRADE AND WALL SPECIFICALLY NOTED TO BE ON FILL SHALL BEAR ON 6" COMPACTED GRANULAR FILL, UNLESS OTHERWISE NOTED.
3. FOUNDATION BEARING SURFACES WILL BE OBSERVED BY THE GEOTECHNICAL ENGINEER OR QUALIFIED DESIGNEE PRIOR TO PLACEMENT OF FORMWORK OR REINFORCING STEEL. THE OBSERVATION WILL VERIFY IF THE ACTUAL EXPOSED SUBGRADE IS AS ANTICIPATED BY THE SITE SPECIFIC BORINGS AND DATA REPORTS.
4. NO BACKFILL SHALL BE PLACED BEHIND CANTILEVERED, FREE TOP WALLS UNTIL THE CONCRETE HAS ATTAINED 100 PERCENT OF ITS SPECIFIED 28 DAY COMPRESSIVE STRENGTH.

FORMWORK, SHORING, AND BRACING

1. STRUCTURES SHOWN ON THE DRAWINGS HAVE BEEN DESIGNED FOR STABILITY UNDER FINAL CONDITIONS ONLY. DESIGN SHOWN DOES NOT INCLUDE NECESSARY COMPONENTS OR EQUIPMENT FOR STABILITY OF THE STRUCTURES DURING CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR WORK RELATING TO CONSTRUCTION ERECTION METHODS, BRACING, SHORING, RIGGING, GUYS, SCAFFOLDING, FORMWORK, AND OTHER WORK AIDS REQUIRED TO SAFELY PERFORM THE WORK SHOWN.
2. TEMPORARY SHORING SHALL REMAIN IN PLACE UNTIL ELEVATED CONCRETE FLOOR OR SLABS HAVE REACHED 80 PERCENT OF THE 28 DAY COMPRESSIVE STRENGTH AS DETERMINED BY FIELD CYLINDER BREAKS.
3. "BURY"BARS OR "CARRIER"BARS ARE NOT ALLOWED FOR THE BOTTOM MATS OF REINFORCING IN ALL ELEVATED SLABS AND ARE NOT ALLOWED FOR THE TOP MATS OF REINFORCING IN ELEVATED SLABS LESS THAN 12 INCHES THICK.

CONCRETE REINFORCING

1. REINFORCING STEEL = ASTM A615, GRADE 60
2. FABRICATION AND PLACEMENT OF REINFORCING STEEL SHALL BE IN ACCORDANCE WITH CRSI MSP-1 "MANUAL OF STANDARD PRACTICE"AND ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE".
3. CONCRETE COVER FOR REINFORCING, UNLESS SHOWN OTHERWISE, SHALL BE:
   WHEN PLACED ON GROUND = 3"
   OTHER CONCRETE SURFACES = 2" UNLESS OTHERWISE NOTED
4. 90 DEGREE BENDS, UNLESS OTHERWISE SHOWN, SHALL BE ACI 318 STANDARD HOOKS.
5. REINFORCING FOR SLABS ON GRADE SHALL BE ADEQUATELY SUPPORTED ON BAR SUPPORTS WITH SPACERS TO KEEP REINFORCING ABOVE THE PREPARED GRADE. LIFTING REINFORCING OFF GRADE DURING CONCRETE PLACEMENT IS NOT PERMITTED.
6. REFER TO OPENING REINFORCING DETAILS 0330-001.
7. REINFORCEMENT BENDS AND LAPS, UNLESS OTHERWISE NOTED, SHALL SATISFY THE FOLLOWING MINIMUM REQUIREMENTS:

CONCRETE REINFORCING CONTINUED

CONCRETE DESIGN STRENGTH = 4,000 PSI MIN AT 28 DAYS		GRADE 60 REINFORCING STEEL								
BAR SIZE		#3	#4	#5	#6	#7	#8	#9	#10	#11
LAP SPLICE LENGTH										
SPACING < 6"	TOP BAR	1'-4"	1'-8"	2'-1"	3'-0"	5'-2"	6'-8"	8'-6"	10'-10"	13'-4"
	OTHER BAR	1'-4"	1'-4"	1'-8"	2'-4"	4'-0"	5'-2"	6'-7"	8'-4"	10'-3"
SPACING ≥ 6"	TOP BAR	1'-4"	1'-8"	2'-0"	2'-5"	3'-6"	4'-0"	5'-0"	6'-2"	7'-5"
	OTHER BAR	1'-4"	1'-4"	1'-7"	1'-10"	2'-9"	3'-1"	3'-10"	4'-9"	5'-8"
EMBEDMENT LENGTH										
SPACING < 6"	TOP BAR	1'-0"	1'-3"	1'-8"	2'-4"	4'-0"	5'-2"	6'-7"	8'-4"	10'-3"
	OTHER BAR	1'-0"	1'-0"	1'-3"	1'-10"	3'-1"	4'-0"	5'-1"	6'-5"	7'-11"
SPACING ≥ 6"	TOP BAR	1'-0"	1'-3"	1'-7"	1'-10"	2'-9"	3'-1"	3'-10"	4'-9"	5'-8"
	OTHER BAR	1'-0"	1'-0"	1'-3"	1'-5"	2'-1"	2'-5"	3'-0"	3'-8"	4'-5"

A. LAP LENGTHS ARE BASED ON MINIMUM CONCRETE COVER OF 2 INCHES. LONGER LENGTHS ARE REQUIRED FOR CONCRETE COVER LESS THAN 2 INCHES.
B. TOP BARS SHALL BE DEFINED AS ANY HORIZONTAL BARS PLACED SUCH THAT MORE THAN 12 INCHES OF CONCRETE IS CAST IN THE MEMBER BELOW THE BAR IN ANY SINGLE POUR. HORIZONTAL WALL BARS ARE CONSIDERED TOP BARS.
C. WHERE 3000 PSI CONCRETE IS USED, INCREASE ABOVE LENGTHS BY 16 PERCENT.

CAST IN PLACE CONCRETE

1. 28-DAY COMPRESSIVE STRENGTH = 4000 PSI
2. ROUGHEN AND CLEAN CONSTRUCTION JOINTS IN AS SPECIFIED PRIOR TO PLACING ADJACENT CONCRETE.
3. COORDINATE PLACEMENT OF OPENINGS AND PIPE PENETRATIONS, CURBS, DOWELS, SLEEVES, CONDUITS, BOLTS AND INSERTS PRIOR TO PLACEMENT OF CONCRETE.
4. NO ALUMINUM CONDUIT OR PRODUCTS CONTAINING ALUMINUM OR ANY OTHER MATERIAL INJURIOUS TO THE CONCRETE SHALL BE EMBEDDED IN THE CONCRETE.

DEFERRED SUBMITTALS

1. DEFERRED SUBMITTALS ARE THOSE PORTIONS OF THE DESIGN WHICH ARE NOT SUBMITTED AT THE TIME OF PERMIT APPLICATION AND WHICH ARE TO BE SUBMITTED TO THE PERMITTING AGENCY FOR ACCEPTANCE PRIOR TO INSTALLATION OF THAT PORTION OF THE WORK OR ARE REQUIRED TO BE SUBMITTED FOR REVIEW ONLY BY THE ENGINEER.
2. THE FOLLOWING IS A LIST OF DEFERRED SUBMITTALS PER FBC SECTION 107.3.4.1 THAT ARE EXPECTED TO CONTAIN STRUCTURAL CALCULATIONS OR SAFETY RELATED SYSTEM INFORMATION FOR REVIEW TO MEET BUILDING PERMITTING REQUIREMENTS FOR DESIGNED SYSTEMS. PRIOR TO INSTALLATION OF THE INDICATED STRUCTURAL ELEMENT, EQUIPMENT, DISTRIBUTION SYSTEM, OR COMPONENT OR ITS ANCHORAGE, THE CONTRACTOR SHALL SUBMIT THE REQUIRED CALCULATIONS AND SUPPORTING DATA AND DRAWINGS FOR REVIEW AND ACCEPTANCE BY THE ENGINEER. ADDITIONALLY, ACCEPTANCE INDICATED ON THE ENGINEER'S COMMENT FORM, ALONG WITH THE COMPLETED, FINAL SUBMITTAL SHALL THEN BE SUBMITTED BY THE CONTRACTOR TO THE PERMITTING AGENCY AND APPROVED PRIOR TO INSTALLATION OF THESE ITEMS.

SPECIFICATION SECTION	CODE REQUIRED DEFERRED SUBMITTALS FOR REVIEW BY PERMITTING AGENCY
01 88 15	ANCHORAGE AND BRACING
05 52 16	ALUMINUM RAILING
40 05 15	PIPING SUPPORT SYSTEMS
OTHER	ANY EQUIPMENT OR COMPONENT IN WHICH A TECHNICAL SPECIFICATION REQUIRES SUBMITTAL OF EQUIPMENT OR ANCHORAGE SYSTEM CALCULATIONS

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Clement W. Anson
Digitally signed by Clement W. Anson
Date: 2019.12.16 12:16:32 -05'00'

CLEMENT W. ANSON LICENSE No 75167 STATE OF FLORIDA PROFESSIONAL ENGINEER

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NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
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GENERAL
STRUCTURAL NOTES

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	01-G-005
SHEET	06 of 61

BID DOCUMENTS

GENERAL NOTES

1. CONDUIT, WIRE AND EQUIPMENT SIZES AND LOCATIONS SHOWN ARE FOR BID BASIS ONLY AND SHALL BE VERIFIED BY THE CONTRACTOR BEFORE CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE ALL WORK WITH APPROVED SHOP DRAWINGS, WITH THE REQUIREMENTS OF EQUIPMENT PROVIDED, WITH EQUIPMENT FURNISHED BY OWNER FOR INSTALLATION BY CONTRACTOR AND WITH REQUIREMENTS OF OTHER DIVISIONS OF THE CONTRACT AS NECESSARY TO PROVIDE COMPLETE AND WORKING SYSTEMS COMPLYING WITH THE CONTRACT DOCUMENTS. ALL PROPOSED DEVIATIONS FROM CONTRACT DOCUMENTS SHALL BE SUBMITTED AND APPROVED BY ENGINEER BEFORE EXECUTION OF THE AFFECTED WORK.

2. THE TERMS RACEWAY AND CONDUIT ARE USED IN THESE DOCUMENTS TO DENOTE NOT ONLY THE RACEWAY OR CONDUIT ITSELF BUT ALSO ALL JUNCTION BOXES, PULL BOXES, CONDULETS, FITTINGS, CLAMPS, SUPPORTS AND ALL OTHER ITEMS NECESSARY FOR A COMPLETE AND WORKING SYSTEM COMPLYING WITH THE CONTRACT DOCUMENTS.

3. NOTES INDICATED AS "REF", "REFERENCE" OR "REFER TO" ARE PROVIDED TO ASSIST IN LOCATING RELATED CONTRACTUAL REQUIREMENTS BUT ARE NOT CONTRACTUAL INSTRUCTIONS THEMSELVES. MISSING, INCORRECT OR INCOMPLETE REFERENCES SHALL HAVE NO EFFECT ON THE REQUIREMENTS OF THE CONTRACT.

4. AT ITEMS MARKED MSC (MANUFACTURER SUPPLIED OR SPECIFIED CABLE) CONTRACTOR SHALL DETERMINE REQUIREMENTS FOR, AND PROVIDE, CONDUIT AND CABLE AS REQUIRED BY MANUFACTURER AND IN COMPLIANCE WITH CONTRACT DOCUMENTS.

5. EXCEPT AS NOTED BELOW, ALL WIRE AND CABLE, INCLUDING GROUNDED CONDUCTORS ABOVE GRADE AND FIBER OPTIC CABLE, SHALL BE INSTALLED IN RACEWAY AND ENCLOSURES. EXCEPTIONS ARE EQUIPMENT CABLES PROVIDED BY EQUIPMENT MANUFACTURERS AND UL LISTED FOR INSTALLATION OUTSIDE OF CONDUIT, INCLUDING FLOAT SWITCH AND SUBMERSIBLE PUMP CABLES.

6. SPARE RUNS OF CONDUCTORS SHALL BE INSULATED OR TERMINATED AND LABELED AT BOTH ENDS. SPARE RUNS OF FIBER OPTIC STRANDS SHALL BE LABELED AND TERMINATED AT BOTH ENDS. ALL CONDUCTORS AND FIBERS SHALL BE TESTED AFTER INSTALLATION AND TEST REPORTS SHALL BE SUBMITTED. REPLACE ALL DEFECTIVE MATERIAL; DO NOT SUBMIT TEST REPORTS SHOWING DEFECTS.

7. LOCATIONS AND ELEVATIONS OF ELECTRICAL CONNECTIONS, MOTORS, PANEL BOARDS, SWITCH GEAR, TRANSFORMERS, CONTROL CABINETS AND OTHER ITEMS SHOWN ON DOCUMENTS ARE APPROXIMATE ONLY UNLESS DIMENSIONED. COORDINATE EXACT LOCATIONS AND ELEVATIONS WITH REQUIREMENTS OF OTHER DIVISIONS OF THESE DOCUMENTS. IN AREAS WHERE SPACE AVAILABLE IS LIMITED, INCLUDING ALL SPACES CONTAINING PANELBOARDS, MOTOR CONTROL CENTERS, SWITCHBOARDS OR SWITCHGEAR, PREPARE DIMENSIONED DRAWINGS SHOWING EXACT PROPOSED LOCATIONS OF EQUIPMENT AND VERIFYING THAT EQUIPMENT PROPOSED FOR USE CAN BE INSTALLED AS SHOWN ON PLANS IN COMPLIANCE WITH NEC AND MANUFACTURER'S REQUIREMENTS. SUBMIT THESE DRAWINGS AND RECEIVE APPROVAL BEFORE EXECUTING THE WORK. DO NOT SUBMIT SHOP DRAWINGS FOR EQUIPMENT WHICH IS NOT ACCOMPANIED BY DRAWINGS VERIFYING COMPLIANCE WITH CONTRACT REQUIREMENTS.

8. CONTROL (LADDER LOGIC) DIAGRAMS DEPICT FUNCTIONS REQUIRED, MAJOR COMPONENTS AND THEIR INTERCONNECTIONS, BUT ARE NOT INTENDED TO BE COMPLETE WIRING DIAGRAMS. CONTRACTOR SHALL COORDINATE WITH MANUFACTURERS OF EQUIPMENT PROVIDED TO ENSURE THAT ALL MATERIALS AND LABOR ARE PROVIDED WHICH ARE NECESSARY TO SECURE COMPLETE AND WORKING SYSTEMS WITH ALL FUNCTIONS AND COMPONENTS SHOWN ON THE CONTRACT DOCUMENTS, INCLUDING ELECTRICAL, AND INSTRUMENTATION AND CONTROL DOCUMENTS.

9. WHERE RAILINGS, FRAMING, PROCESS EQUIPMENT OR OTHER CONDUCTIVE ITEMS WHICH ARE NORMALLY NOT ENERGIZED ARE INSTALLED OUTDOORS, BOND TO GROUND RING WITH #4/0 MINIMUM BARE COPPER CONDUCTOR. UL LISTED CLAMPS ABOVE GRADE AND CAD WELDS BELOW GRADE.

10. CONDUCTIVE ENCLOSURES AND OTHER EXTERIOR METAL COMPONENTS OF INSTRUMENTS AND CONTROLS WHICH ARE NOT NORMALLY ENERGIZED SHALL BE CONNECTED TO GROUND WITH #6 MINIMUM COPPER CONDUCTOR.

11. WHERE THE NUMBER OR SIZE OF CONDUCTORS SHOWN TO BE CONNECTED ARE IN EXCESS OF THE CAPACITY OF THE STANDARD TERMINALS OF THE CONNECTED EQUIPMENT, PROVIDE ADDITIONAL TERMINALS, ENCLOSURES, JUNCTION BOXES, PULL SECTIONS, WIRES, CONDUITS AND ALL OTHER MATERIALS AND LABOR AS NECESSARY TO MAKE THE CONNECTIONS SHOWN IN COMPLIANCE WITH THE CONTRACT DOCUMENTS.

12. ALL MATERIALS AND EQUIPMENT PROPOSED FOR USE SHALL BE FULLY RATED AS SPECIFIED AND SCHEDULED IN THE CONTRACT DOCUMENTS AT THE PROJECT ALTITUDE AND MAXIMUM AMBIENT TEMPERATURE.

13. PROVIDE ARC FLASH WARNING AND OTHER SIGNS ON ALL PANELBOARDS, MANUAL TRANSFER SWITCH, MOTOR CONTROLLERS, CONTROL PANELS,AND OTHER EQUIPMENT PROVIDED OR MODIFIED UNDER THIS CONTRACT AND REQUIRED TO BE LABELED BY NEC INCLUDING BUT NOT LIMITED TO PARAGRAPH 110.16 FLASH PROTECTION.

14. COORDINATE SIZE AND INSTALLATION OF ALL EQUIPMENT WITH EXISTING CONDITIONS AND WORK IN OTHER DIVISIONS OF CONTRACT TO ENSURE COMPLIANCE WITH THE NEC, INCLUDING BUT NOT LIMITED TO PARAGRAPH 110.26 SPACES ABOUT ELECTRICAL EQUIPMENT.

15. STANDARD DETAILS INCLUDED IN THESE DOCUMENTS SHALL BE USED WHERE APPLICABLE WHETHER SPECIFICALLY CALLED OUT ON THE PLANS OR NOT. PRACTICES CUSTOMARY TO THE TRADE MAY BE USED ONLY WHERE NO APPLICABLE STANDARD DETAIL CAN BE FOUND IN THESE DOCUMENTS AND WHERE THE CUSTOMARY PRACTICE WILL RESULT IN A COMPLETE AND WORKING SYSTEM IN COMPLIANCE WITH THESE DOCUMENTS.

16. ALL TERMINATIONS OF RIGID METAL CONDUIT IN WALLS OF ENCLOSURES WITHOUT CAST-IN-PLACE THREADED CONDUIT BOSSES, AND WHICH ARE LOCATED OUTDOORS OR IN WET OR DAMP LOCATIONS, SHALL BE MADE USING MYERS HUBS.

17. REFER TO DOCUMENTS OF OTHER DIVISIONS OF CONTRACT, INCLUDING BUT NOT LIMITED TO PROCESS MECHANICAL, FOR LOCATIONS OF PROCESS, INSTRUMENTATION, CONTROL, AND OTHER EQUIPMENT REQUIRING ELECTRICAL, FIBER OPTIC OR RACEWAY-ONLY CONNECTIONS TO BE PROVIDED UNDER THIS DIVISION OF CONTRACT. ALL EQUIPMENT LOCATIONS SHOWN ON DRAWINGS IN THIS DIVISION ARE APPROXIMATE ONLY UNLESS DIMENSIONED.

18. PROVIDE ADDITIONAL RACEWAY, WIRING AND CONNECTIONS AS NECESSARY FOR MOTOR HEATERS, TEMPERATURE PROTECTIVE DEVICES AND OTHER MOTOR AUXILIARIES WHERE RECOMMENDED BY EQUIPMENT MANUFACTURERS, SHOWN IN CONTROL DIAGRAMS OR ON PLANS OR REQUIRED IN SPECIFICATIONS.

19. ALL SHEET METAL JUNCTION BOXES, TERMINAL JUNCTION BOXES, CONTROL PANELS AND OTHER SHEET METAL ELECTRICAL ENCLOSURES SHALL BE NEMA 4-X STAINLESS STEEL WITH FAST OPERATING CLAMP ASSEMBLIES. PROVIDE HOFFMAN SUFFIX TYPE SSLP WITH AFC412SS CLAMPS OR APPROVED EQUALS. PROVIDE TERMINAL JUNCTION BOXES AND CONTROL PANELS WITH REMOVABLE INTERIOR STEEL PANELS FACTORY PAINTED WHITE.

20. ALL FABRICATED ASSEMBLIES SUPPORTING ELECTRICAL EQUIPMENT PROVIDED UNDER THIS DIVISION OF CONTRACT SHALL BE UL LISTED INDIVIDUALLY, UL LISTED AS PART OF AN ASSEMBLY OR SHALL BE FABRICATED TO A DESIGN PREPARED BY A STRUCTURAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF FLORIDA OR OTHERWISE PERMITTED TO PRACTICE ENGINEERING IN THE STATE OF FLORIDA. WHERE DETAILS IN THE CONTRACT DOCUMENTS CONTAIN SPECIFIC DIMENSIONS, SIZES WELD INSTRUCTIONS OR SIMILAR INFORMATION, THESE SHALL BE INTERPRETED AS MINIMUM CONTRACT REQUIREMENTS AND MAY BE SUPERSEDED BY UL OR DESIGN REQUIREMENTS ABOVE.

21. COORDINATE EARTH WORK AND INSTALLATION OF ELECTRICAL ITEMS WITH INTERFERENCE'S SHOWN ON DOCUMENTS OF ALL DIVISIONS OF CONTRACT, INCLUDING CIVIL AND YARD PIPING. REPORT ALL DAMAGE AT ONCE TO OWNER AND ENGINEER AND REPAIR AS DIRECTED AT NO CHANGE IN CONTRACT.

22. PROVIDE RACKS AND SUPPORT ARMS ON WALLS OF ALL HANDHOLES. ROUTE CABLES ON, AND SECURED TO, THESE SUPPORTS. CABLES SHALL NOT BE ROUTED DIRECTLY FROM ONE DUCT TO ANOTHER.

23. TOP OF CONCRETE DUCTBANKS TO BE DYED RED. SPRINKLE RED CONCRETE DYED ON TOP OF DUCTBANK WHILE WET. TRIAL IN TO A MINIMUM OF 90% COVERAGE ON TOP OF DUCTBANK.

24. TAG EACH END OF CONDUITS WITH STAINLESS STEEL RACEWAY TAGS. TAGS SHALL INDICATE SOURCE AND DESTINATION OF CONDUIT RUN.

David Nicholson

Digitally signed by David Nicholson
Date: 2019.12.17 08:56:08 -05'00'

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DAVID C. NICHOLSON LICENSE No 60201 STATE OF FLORIDA PROFESSIONAL ENGINEER

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NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

GENERAL
ELECTRICAL LEGEND 1

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	01-G-006
SHEET	07 of 61

BID DOCUMENTS

FILENAME: 01-G-006_674077.dgn PLOT DATE: 11/15/2019 PLOT TIME: 9:07:32 AM

ONE LINE DIAGRAMS

SYMBOL	DESCRIPTION
	DRAWOUT AIR CIRCUIT BREAKER, LOW VOLTAGE
400	CIRCUIT BREAKER, THERMAL MAGNETIC TRIP SHOWN, 3 POLE, UNO
AS/AF or AT/AF	CIRCUIT BREAKER, STATIC TRIP UNIT, SENSOR AMP TRIP AND FRAME RATINGS SHOWN, 3 POLE, UNO
100/M	CIRCUIT BREAKER, MAGNETIC TRIP ONLY, TRIP RATING SHOWN, 3 POLE, UNO
100	SWITCH, CURRENT RATING INDICATED, 3 POLE, UNO
60 (3)	FUSE, CURRENT RATING AND QUANTITY INDICATED
1	MAGNETIC STARTER WITH OVERLOAD, NEMA SIZE INDICATED, FVNR UNO
AFD	ELECTRONIC STARTER/SPEED CONTROL AFD = AC ADJUSTABLE FREQUENCY DRIVE DC = DC ADJUSTABLE SPEED DRIVE RVAT = REDUCED VOLTAGE AUTO TRANSFORMER TYPE RVRT = REDUCED VOLTAGE REACTOR TYPE RVSS = REDUCED VOLTAGE SOFT STARTER
	CABLE OR BUS CONNECTION POINT
K OR K	KEY INTERLOCK
	SURGE ARRESTER (GAP TYPE)
3	AC MOTOR, SQUIRREL CAGE INDUCTION - HORSEPOWER INDICATED
G 500/625	GENERATOR, KW/KVA RATING SHOWN
	UTILITY REVENUE METER
	GROUND
15 KVA 480-120/240V 1 PH	TRANSFORMER, SIZE, VOLTAGE RATINGS, AND PHASE INDICATED
480-120V (3)	POTENTIAL TRANSFORMER, VOLTAGE RATING AND QUANTITY INDICATED
100:5 (3)	CURRENT TRANSFORMER, RATIO(100:5) AND QUANTITY INDICATED (3)
	CONNECTION POINT TO EQUIPMENT SPECIFIED IN OTHER DIVISIONS. RACEWAY, CONDUCTOR AND CONNECTION IN THIS DIVISION
SDP	SURGE PROTECTIVE DEVICE
DPM	DIGITAL POWER METER WITH MODBUS COMMUNICATIONS LINK TO DEVICE SHOWN

CONTROL DIAGRAMS

SYMBOL	DESCRIPTION
	PUSH-BUTTON SWITCH, MOMENTARY CONTACT, NORMALLY OPEN
	PUSH-BUTTON SWITCH, MOMENTARY CONTACT, NORMALLY CLOSED
HAND OFF REMOTE	SELECTOR SWITCH - MAINTAINED CONTACT - CHART IDENTIFIES OPERATION WHEN NEEDED FOR CLARITY:

	POSITION		
CKT	HAND	OFF	REMOTE
1	X	O	O
2	O	O	X

X - CLOSED CONTACT
O - OPEN CONTACT

	TOGGLE SWITCH, ON-OFF TYPE

CONTROL DIAGRAMS

SYMBOL	DESCRIPTION
ON OFF	SELECTOR SWITCH, ON-OFF TYPE
A	INDICATING LIGHT, PUSH-TO-TEST, LETTER INDICATES COLOR
A	INDICATING LIGHT - LETTER INDICATES COLOR A - AMBER G - GREEN S - STROBE B - BLUE R - RED C - CLEAR W - WHITE
ETM	ELAPSED TIME METER
M	MOTOR STARTER CONTACTOR COIL
CRX	CONTROL RELAY, X INDICATES NUMERICAL ORDER IN CIRCUIT
TDR X	TIME DELAY RELAY, X INDICATES NUMERICAL ORDER IN CIRCUIT
SV X	SOLENOID VALVE, X INDICATES NUMERICAL ORDER IN CIRCUIT
	CONTACT - NORMALLY OPEN
	CONTACT - NORMALLY CLOSED
	REMOTE DEVICE
	TIME DELAY RELAY CONTACT, NORMALLY OPEN, CLOSES WHEN ENERGIZED AND TIMED OUT
	TIME DELAY RELAY CONTACT, NORMALLY CLOSED, OPENS WHEN ENERGIZED AND TIMED OUT
	TIME DELAY RELAY CONTACT, CLOSES WHEN ENERGIZED, OPENS WHEN DE-ENERGIZED AND TIMED OUT
	TIME DELAY RELAY CONTACT, OPENS WHEN ENERGIZED, CLOSES WHEN DE-ENERGIZED AND TIMED OUT
	TERMINAL BLOCK, REMOTE
	TERMINAL BLOCK, INTERNAL
	FUSE, RATING INDICATED
CPT 120V	TRANSFORMER, CONTROL POWER

GROUND SYSTEM PLAN

SYMBOL	DESCRIPTION
	GROUND ROD (2605-235)
	GROUND ROD IN TEST WELL WITH CLAMP (NOT CAD WELD) (2605-202)
G	CAD WELD CABLE CONNECTION
R	CAD WELD CABLE TO REBAR WITH MINIMUM 2-INCH CONCRETE COVER
C	CLAMP ON BOLTED CONNECTION TO EQUIPMENT OR STRUCTURAL ELEMENT

NOTES:
1. THESE ARE STANDARD LEGEND SHEETS. SOME SYMBOLS AND ABBREVIATIONS MAY APPEAR ON THE LEGEND AND NOT ON THE DRAWINGS.
2. FOR ADDITIONAL ABBREVIATIONS OF OTHER DIVISIONS (HVAC, MECHANICAL, AND STRUCTURAL/ARCHITECTURAL) SEE OTHER LEGENDS.

POWER SYSTEM PLAN

SYMBOL	DESCRIPTION
	CONNECTION POINT TO EQUIPMENT SPECIFIED. RACEWAY, CONDUCTOR,TERMINATION AND CONNECTION IN THIS DIVISION.
MCC-A	MAJOR ELECTRICAL COMPONENT OR DEVICE - NAME OR IDENTIFYING SYMBOL AS SHOWN.
LPXXA	PANELBOARD - SURFACE MOUNTED PANELBOARD LETTER OR NUMBER FACILITY NUMBER LP - LOW VOLTAGE PANEL DP - DISTRIBUTION PANEL
	TERMINAL JUNCTION BOX
M	MOTOR, SQUIRREL CAGE INDUCTION
G	GENERATOR, VOLTAGE AND SIZE AS INDICATED.
LPXXA	HOME RUN - DESTINATION SHOWN
or /G	EXPOSED CONDUIT AND CONDUCTORS*
or /G	CONCEALED CONDUIT AND CONDUCTORS*

NOTE:
ALL UNMARKED CONDUIT RUNS CONSIST OF TWO NO. 12, ONE NO. 12 GROUND CONDUCTORS IN 3/4" CONDUIT. RUNS MARKED WITH CROSSHATCHES INDICATE NUMBER OF NO. 12 CONDUCTORS. CROSSHATCH WITH SUBSCRIPT "G" INDICATES GREEN GROUND WIRE.

/G	CROSSHATCHES WITH BAR INDICATE NO.10 CONDUCTOR. SIZE CONDUIT ACCORDING TO SPECIFICATIONS AND APPLICABLE CODE.
[1"C - 2#12, 1#12G]	CONDUIT AND CONDUCTOR CALLOUT
	CONDUIT DOWN
	CONDUIT UP
	CONDUIT, STUBBED AND CAPPED
	CONDUIT TERMINATION AT CABLE TRAY
EX	EXISTING CONDUIT/ DUCT BANK
BD	BUS DUCT - SEE SPECIFICATIONS
FO	FIBER OPTIC CONDUIT
DB	DIRECT BURIED CONDUIT
	CONCRETE ENCASED CONDUIT
XXXX	CONCRETE ENCASED DUCT BANK WHERE XXXX IS THE DUCT BANK ID. SEE DUCT BANK SCHEDULE
T	TRANSFORMER
J or HH	GENERAL CONTROL OR WIRING DEVICE. LETTER SYMBOLS OR ABBREVIATIONS INDICATE TYPE OF DEVICE
CS	CONTROL STATION, SEE CONTROL DIAGRAMS FOR CONTROL DEVICE(S) REQUIRED.
30	NONFUSED DISCONNECT SWITCH, CURRENT RATING INDICATED, 3 POLE
60/40	FUSED DISCONNECT SWITCH, CURRENT RATING INDICATED (60/40, 60=SWITCH RATING / 40=FUSE RATING) 3 POLE
2	COMBINATION CIRCUIT BREAKER AND MAGNETIC STARTER, NEMA SIZE INDICATED

POWER SYSTEM PLAN

SYMBOL	DESCRIPTION
100/40	BREAKER, SEPARATELY MOUNTED, CURRENT RATING INDICATED (100/40, 100 = FRAME SIZE; 40 = TRIP RATING) 3 POLE
XX 2	CONVENIENCE RECEPTACLE - DUPLEX UNLESS NOTED OTHERWISE WP - WEATHERPROOF C - CLOCK HANGER TL - TWIST LOCK CRE - CORROSION RESISTANT GFCI - GROUND FAULT CIRCUIT INTERRUPTER SUBSCRIPT NUMBER AT RECEPTACLE INDICATES CIRCUIT
L20R 20	RECEPTACLE, SPECIAL PURPOSE-NEMA CONFIGURATION AND AMPERAGE INDICATED

ABBREVIATIONS

A	AMMETER, AMPERES
AIC	AVAILABLE INTERRUPTING CURRENT
BC	BY-PASS CONTACTOR
C	CONDUIT
CB	CIRCUIT BREAKER
CE	CONCRETE ENCASED
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY
CU	COPPER
DOE	DELAY ON ENERGIZATION
DPM	DIGITAL POWER METER
DWG	DRAWING
EXST	EXISTING
FO	FIBER OPTIC
FOC	FIBER OPTIC CABLE
G, GND	GROUND
HH	HANDHOLE
HZ	HERTZ
IC	ISOLATION CONTACTOR
KVA	KILOVOLT AMPERES
KV	KILOVOLT
LS1	LONG TIME, SHORT TIME, INSTANTANEOUS
LV	LOW VOLTAGE
MCC	MOTOR CONTROL CENTER
MIN	MINUTE, MINIMUM
MTD	MOUNTED
MTS	MANUAL TRANSFER SWITCH
MV	MEDIUM VOLTAGE
NEC	NATIONAL ELECTRICAL CODE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
OL	OVERLOAD
PH	PHASE
RMS	ROOT MEAN SQUARE
RVSS	REDUCES VOLTAGE SOLID STATE STARTER
SEC	SECONDS
SPD	SURGE PROTECTIVE DEVICE
SW	SOUTH WEST
TDR	TIME DELAY RELAY
TJB	TERMINAL JUNCTION BOX
TYP	TYPICAL
V	VOLTS, VOLTAGE, VOLT METER
W	WITH
XFMR	TRANSFORMER
Z	IMPEDANCE

David Nicholson
Digitally signed by David Nicholson
Date: 2019.12.17 09:02:36 -05'00'

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DAVID C. NICHOLSON LICENSE No 60201 STATE OF FLORIDA PROFESSIONAL ENGINEER

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NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

GENERAL
ELECTRICAL LEGEND 2

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	01-G-007
SHEET	08 of 61

BID DOCUMENTS

FILENAME: 01-G-007_674077.dgn PLOT DATE: 11/15/2019 PLOT TIME: 9:07:30 AM

GENERAL CIRCUIT CONDUCTOR AND CONDUIT IDENTIFICATION

POWER CIRCUIT CALLOUT SCHEDULE					
EQUIPMENT GROUNDS NEC 250 Table 122		100% GROUNDS NEC 250-122(A)		SERVICE NEUTRAL NEC 250 Table 66	
2 Wire + Ground					
[20E2]	3/4"C-2#12,#12G	[20M2]	3/4"C-2#12,#12G	NA	NA
[30E2]	3/4"C-2#10,#10G	[30M2]	3/4"C-2#10,#10G	NA	NA
[40E2]	3/4"C-2#8,#10G	[40M2]	3/4"C-2#8,#8G	[40S2]	3/4"C-2#8,#8N
[50E2]	3/4"C-2#8,#10G	[50M2]	3/4"C-2#8,#8G	[50S2]	3/4"C-2#8,#8N
[60E2]	1"C-2#6,#10G	[60M2]	1"C-2#6,#6G	[60S2]	3/4"C-2#6,#8N
[70E2]	1"C-2#4,#8G	[70M2]	1"C-2#4,#4G	[70S2]	3/4"C-2#4,#8N
[80E2]	1"C-2#4,#8G	[80M2]	1"C-2#4,#4G	[80S2]	3/4"C-2#4,#8N
[90E2]	1"C-2#3,#8G	[90M2]	1"C-2#3,#3G	[90S2]	1"C-2#3,#8N
[100E2]	1"C-2#3,#8G	[100M2]	1"C-2#3,#3G	[100S2]	1"C-2#3,#8N
[110E2]	1"C-2#2,#6G	[110M2]	1"C-2#2,#2G	[110S2]	1"C-2#2,#8N
[125E2]	1-1/4"C-2#1,#6G	[125M2]	1-1/4"C-2#1,#1G	[125S2]	1-1/4"C-2#1,#6N
[150E2]	1-1/4"C-2#1/0,#6G	[150M2]	1-1/4"C-2#1/0,#1/0G	[150S2]	1-1/4"C-2#1/0,#6N
[200E2]	1-1/2"C-2#3/0,#6G	[200M2]	1-1/2"C-2#3/0,#3/0G	[200S2]	1-1/4"C-2#3/0,#4N
[225E2]	2"C-2#4/0,#4G	[225M2]	2"C-2#4/0,#4/0G	[225S2]	1-1/2"-2#4/0,#2N
[400E2]	3"C-2#500,#3G	[400M2]	3"C-2#500,#500G	[400S2]	3"-2#500,#1/0N
3 Wire + Ground					
[20E3]	3/4"C-3#12,#12G	[20M3]	3/4"C-3#12,#12G	NA	NA
[30E3]	3/4"C-3#10,#10G	[30M3]	3/4"C-3#10,#10G	NA	NA
[40E3]	3/4"C-3#8,#10G	[40M3]	3/4"C-3#8,#8G	[40S3]	3/4"C-3#8,#8N
[50E3]	3/4"C-3#8,#10G	[50M3]	3/4"C-3#8,#8G	[50S3]	3/4"C-3#8,#8N
[60E3]	3/4"C-3#6,#10G	[60M3]	3/4"C-3#6,#6G	[60S3]	3/4"C-3#6,#8N
[70E3]	1"C-3#4,#8G	[70M3]	1"C-3#4,#4G	[70S3]	1"C-3#4,#8N
[80E3]	1"C-3#4,#8G	[80M3]	1"C-3#4,#4G	[80S3]	1"C-3#4,#8N
[90E3]	1-1/4"C-3#3,#8G	[90M3]	1-1/4"C-3#3,#3G	[90S3]	1"C-3#3,#8N
[100E3]	1-1/4"C-3#3,#8G	[100M3]	1-1/4"C-3#3,#3G	[100S3]	1"C-3#3,#8N
[110E3]	1-1/2"C-3#2,#6G	[110M3]	1-1/2"C-3#2,#2G	[110S3]	1"C-3#2,#8N
[125E3]	1-1/2"C-3#1,#6G	[125M3]	1-1/2"C-3#1,#1G	[125S3]	1-1/2"C-3#1,#6N
[150E3]	1-1/2"C-3#1/0,#6G	[150M3]	1-1/2"C-3#1/0,#1/0G	[150S3]	1-1/4"C-3#1/0,#6N
[200E3]	2"C-3#3/0,#6G	[200M3]	2"C-3#3/0,#3/0G	[200S3]	1-1/2"C-3#3/0,#4N
[225E3]	2"C-3#4/0,#4G	[225M3]	2"C-3#4/0,#4/0G	[225S3]	2"C-3#4/0,#2N
[250E3]	2-1/2"C-3#300,#4G	[250M3]	2-1/2"C-3#300,#300G	[250S3]	2-1/2"C-3#300,#2N
[300E3]	3"C-3#350,#4G	[300M3]	3"C-3#350,#350G	[300S3]	2-1/2"C-3#350,#2N
[350E3]	3"C-3#500,#3G	[350M3]	3"C-3#500,#500G	[350S3]	3"C-3#500,#1/0N
[400E3]	3"C-3#500,#3G	[400M3]	3"C-3#500,#500G	[400S3]	3"C-3#500,#1/0N
[500E3]	(2)2-1/2"C-3#250,#2G	[500M3]	(2)2-1/2"C-3#250,#250G	[500S3]	(2)2-1/2"C-3#250,#1/0N
[600E3]	(2)3"C-3#350,#1G	[600M3]	(2)3"C-3#350,#350G	[600S3]	(2)3"C-3#350,#2/0N
[700E3]	(2)3"C-3#500,#1/0G	[700M3]	(2)3"C-3#500,#500G	[700S3]	(2)3"C-3#500,#2/0N
[800E3]	(2)4"C-3#600,#1/0G	[800M3]	(2)3"C-3#500,#500G	[800S3]	(2)4"C-3#600,#2/0N
[1000E3]	(3)3"C-3#350,#2/0G	[1000M3]	(3)3"C-3#500,#500G	[1000S3]	(3)3"C-3#500,#3/0N
[1200E3]	(3)4"C-3#600,#3/0G	[1200M3]	(3)4"C-3#600,#600G	[1200S3]	(3)4"C-3#600,#3/0N
[1600E3]	(4)4"C-3#600,#4/0G	[1600M3]	(4)4"C-3#600,#600G	[1600S3]	(4)4"C-3#600,#3/0N
[2000E3]	(5)4"C-3#600,#250G	[2000M3]	(5)4"C-3#600,#600G	[2000S3]	(5)4"C-3#600,#3/0N
[2500E3]	(6)4"C-3#600,#350G	[2500M3]	(6)4"C-3#600,#600G	[2500S3]	(6)4"C-3#600,#3/0N
[3000E3]	(8)4"C-3#600,#400G	[3000M3]	(8)4"C-3#600,#600G	[3000S3]	(8)4"C-3#600,#3/0N
[4000E3]	(10)4"C-3#600,#500G	[4000M3]	(10)4"C-3#600,#600G	[4000S3]	(10)4"C-3#600,#3/0N
4 Wire + Ground				**MULTI-WIRE 20 AMP**	
[20E4]	3/4"C-4#12,#12G	[20M4]	3/4"C-4#12,#12G	[20E5]	3/4"C-5#12,1#12N
[30E4]	3/4"C-4#10,#10G	[30M4]	3/4"C-4#10,#10G	[20E6]	3/4"C-6#12,1#12N
[40E4]	3/4"C-4#8,#10G	[40M4]	3/4"C-4#8,#8G	[20E7]	3/4"C-7#12,1#12N
[50E4]	3/4"C-4#8,#10G	[50M4]	3/4"C-4#8,#8G	[20E8]	3/4"C-8#12,1#12N
[60E4]	1"C-4#6,#8G	[60M4]	1"C-4#6,#6G	[20E9]	3/4"C-9#12,1#12N
[70E4]	1-1/4"C-4#4,#8G	[70M4]	1-1/4"C-4#4,#4G	[20E10]	1"C-10#10,1#10N
[80E4]	1-1/4"C-4#4,#8G	[80M4]	1-1/4"C-4#4,#4G	[20E11]	1"C-11#10,1#10N
[90E4]	1-1/4"C-4#3,#8G	[90M4]	1-1/4"C-4#3,#3G	[20E12]	1"C-12#10,1#10N
[100E4]	1-1/4"C-4#3,#8G	[100M4]	1-1/4"C-4#3,#3G	[20E13]	1"C-13#10,1#10N
[110S4]	1-1/2"C-4#2,#6G	[110M3]	1-1/2"C-4#2,#2G	[20E14]	1"C-14#10,1#10N
[125E4]	1-1/2"C-4#1,#6G	[125M4]	1-1/2"C-4#1,#1G	[20E15]	1"C-15#10,1#10N
[150E4]	2"C-4#1/0,#6G	[150M4]	2"C-4#1/0,#1/0G	[20E16]	1-1/4"C-16#10,1#10N
[200E4]	2"C-4#3/0,#6G	[200M4]	2"C-4#3/0,#3/0G	[20E17]	1-1/4"C-17#10,1#10N
[225E4]	2-1/2"C-4#4/0,#4G	[225M4]	2-1/2"C-4#4/0,#4/0G	[20E18]	1-1/4"C-18#10,1#10N
[250E4]	3"C-4#300,#4G	[250M4]	3"C-4#300,#300G	[20E19]	1-1/4"C-19#10,1#10N
[300E4]	3"C-4#350,#2G	[300M4]	3"C-4#350,#350G	[20E20]	1-1/4"C-20#10,1#10N
[350E4]	3-1/2"C-4#500,#3G	[350M4]	3-1/2"C-4#500,#500G		
[400E4]	3-1/2"C-4#500,#3G	[400M4]	3-1/2"C-4#500,#500G		
[500E4]	(2)3-1/2"C-4#250,#2G	[500M4]	(2)3-1/2"C-4#250,#250G		
[600E4]	(2)3"C-4#350,#1G	[600M4]	(2)3"C-4#350,#350G		
[700E4]	(2)3-1/2"C-4#500,#1/0G	[700M4]	(2)3-1/2"C-4#500,#500G		
[800E4]	(2)3-1/2"C-4#500,#1/0G	[800M4]	(2)3-1/2"C-4#500,#500G		
[1000E4]	(3)3"C-4#350,#2/0G	[1000M4]	(3)3"C-4#350,#350G		
[1200E4]	(3)4"C-4#600,#3/0G	[1200M4]	(3)4"C-4#600,#600G		
[1600E4]	(4)4"C-4#600,#4/0G	[1600M4]	(4)4"C-4#600,#600G		
[2000E4]	(5)4"C-4#600,#250G	[2000M4]	4"C-4#600,#600G		
[2500E4]	(6)4"C-4#600,#350G	[2500M4]	4"C-4#600,#600G		
[3000E4]	(8)4"C-4#600,#400G	[3000M4]	4"C-4#600,#600G		
[4000E4]	(10)4"C-4#600,#500G	[4000M4]	4"C-4#600,#600G		

THE CONFIGURATIONS SHOWN IN THIS SECTION TITLED "MULTI-WIRE 20 AMP" SHALL NOT BE USED FOR RECEPTACLE CIRCUITS OR OTHER CORD-AND-PLUG-CONNECTED PORTABLE LOADS. NEC-240.4(B)

MULTICONDUCTOR POWER CABLE CIRCUIT CALLOUTS	
[PC1]	[3/4"C,1 (3C#12,1#12G) TYPE 2]
[PC2]	[3/4"C,1 (3C#10,1#10G) TYPE 2]
[PC3]	[1"C,1 (3C#8,1#10G) TYPE 2]
[PC4]	[1 1/4"C,2 (3C#12,1#12G) TYPE 2]
[PC5]	[1 1/2"C,2 (3C#10,1#10G) TYPE 2]
[PC1A]	[3/4"C,1 (2C#12,1#12G) TYPE 2]
[PC2A]	[3/4"C,1 (2C#10,1#10G) TYPE 2]

EMPTY CONDUIT	
[EC-1]	[3/4"C,WITH PULL STRING]
[EC-2]	[1"C,WITH PULL STRING]
[EC-3]	[1 1/4"C,WITH PULL STRING]
[EC-4]	[1 1/2"C,WITH PULL STRING]
[EC-5]	[2"C,WITH PULL STRING]
[EC-6]	[3"C,WITH PULL STRING]
[EC-7]	[4"C,WITH PULL STRING]
[EC-8]	[5"C,WITH PULL STRING]

MULTICONDUCTOR CONTROL CABLE CIRCUIT CALLOUTS	
[CC5]	[3/4"C,1-5C TYPE 1]
[CC7]	[3/4"C,1-7C TYPE 1]
[CC9]	[1"C,1-9C TYPE 1]
[CC12]	[1"C,1-12C TYPE 1]
[CC19]	[1 1/2"C, 1-19C TYPE 1]
[CC25]	[1 1/2"C,1-25C TYPE 1]
[CC37]	[2"C,1-37C TYPE 1]
[CCC1]	[1-7C #12 TYPE 1]
[MSC]	[MANUFACTURER SUPPLIED CABLE]
[CAT]	[1"C, CAT6 CABLE]
[CX]	[1-1/2"C, COAX CABLE]
[FMM]	[2"C, MULTI-MODE FIBER OPTIC CABLE W/ INNER DUCT]
[PH]	[1"C, PHONE CABLE]
[DP]	[1"C, PROFIBUS DP CABLE]
[HDMI]	[1 1/2"C, HDMI CABLE]

ANALOG CIRCUIT CALLOUTS	
[A1]	[3/4"C,1 TYPE 3]
[A2]	[1"C,2 TYPE 3]
[A3]	[1"C,3 TYPE 3]
[A4]	[1"C,4 TYPE 3]
[A5]	[1 1/4"C,5 TYPE 3]
[A6]	[1 1/4"C,6 TYPE 3]
[A7]	[1 1/2"C,7 TYPE 3]
[A8]	[1 1/2"C,8 TYPE 3]
[A9]	[1 1/2"C,9 TYPE 3]
[A10]	[2"C,10 TYPE 3]
[A11]	[2"C,11 TYPE 3]
[A12]	[2"C,12 TYPE 3]
[A13]	[2"C,13 TYPE 3]
[A14]	[2"C,14 TYPE 3]
[A15]	[3/4"C,1 TYPE 4]
[A16]	[3/4"C,2 TYPE 4]
[A17]	[1"C,3 TYPE 4]
[A18]	[1 1/4"C,4 TYPE 4]
[A19]	[1 1/4"C,5 TYPE 4]
[A20]	[1 1/4"C,6 TYPE 4]
[A21]	[1 1/2"C,7 TYPE 4]
[A22]	[1 1/2"C,8 TYPE 4]
[A23]	[2"C,9 TYPE 4]
[A24]	[3/4"C,1-4 pr. TYPE 5]
[A25]	[1"C,2-4 pr. TYPE 5]

CONTROL CIRCUIT CALLOUTS	
[C1]	[3/4"C,MSC]
[C2]	[3/4"C,2#14,1#14G]
[C3]	[3/4"C,3#14,1#14G]
[C4]	[3/4"C,4#14,1#14G]
[C5]	[3/4"C,5#14,1#14G]
[C6]	[3/4"C,6#14,1#14G]
[C7]	[3/4"C,7#14,1#14G]
[C8]	[3/4"C,8#14,1#14G]
[C9]	[3/4"C,9#14,1#14G]
[C10]	[3/4"C,10#14,1#14G]
[C11]	[3/4"C,11#14,1#14G]
[C12]	[3/4"C,12#14,1#14G]
[C13]	[3/4"C,13#14,1#14G]
[C14]	[3/4"C,14#14,1#14G]
[C15]	[3/4"C,15#14,1#14G]
[C16]	[3/4"C,16#14,1#14G]
[C17]	[3/4"C,17#14,1#14G]
[C18]	[3/4"C,18#14,1#14G]
[C19]	[3/4"C,19#14,1#14G]
[C20]	[1"C,20#14,1#14G]
[C21]	[1"C,21#14,1#14G]
[C22]	[1"C,22#14,1#14G]
[C23]	[1"C,23#14,1#14G]
[C24]	[1"C,24#14,1#14G]
[C25]	[1"C,25#14,1#14G]
[C30]	[1"C,30#14, 1#14G]
[C40]	[1 1/4"C, 40#14, 1#14G]
[C50]	[1 1/4"C, 50#14, 1#14G]

NOTES:

1. FOR CABLE TYPES, SEE SPECIFICATIONS.
2. CONDUIT SIZES ARE BASE ON THE AREA OF THE CONDUCTORS.
3. SIZING OF CONDUCTORS #1AWG AND SMALLER BASED ON AMPACITIES AT 60 DEGREES C, SIZING OF CONDUCTORS #1/0AWG AND LARGER BASED ON AMPACITIES AT 75 DEGREES C.
4. WHERE CIRCUITS ARE UNDERGROUND, DIRECT BURIED OR CONCRETE ENCASED, MINIMUM CONDUIT SIZE SHALL BE 1".
5. FOR METRIC CONDUIT SIZES USE THE FOLLOWING CONVERSION:
   1/2" = 16 mm 1/4" = 35 mm
   3/4" = 21 mm 1 1/2" = 41 mm
   1" = 27 mm 2" = 53 mm

DAVID C. NICHOLSON LICENSE No 60201 STATE OF FLORIDA PROFESSIONAL ENGINEER

NO.	DATE	REVISION	BY	APVD
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DAVID C NICHOLSON, PE #60201

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

GENERAL
ELECTRICAL LEGEND 3

David Nicholson
Digitally signed by David Nicholson
Date: 2019.12.17 09:09:44 -05'00'

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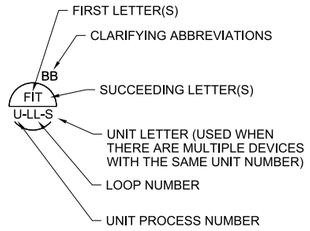
NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	01-G-008
SHEET	09 of 61

BID DOCUMENTS

INSTRUMENT IDENTIFICATION

EXAMPLE SYMBOLS



DIGITAL SYSTEM INTERFACES

- ▲ ANALOG INPUT
- ▼ ANALOG OUTPUT
- $\triangle_X$ DISCRETE INPUT
- ∇_X DISCRETE OUTPUT

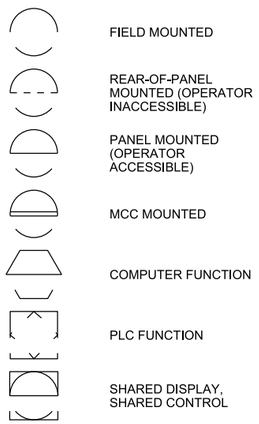
INSTRUMENT IDENTIFICATION LETTERS TABLE

LETTER	FIRST-LETTER		SUCCEEDING-LETTERS		
	PROCESS OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS (+)		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE (*)	USER'S CHOICE (*)	USER'S CHOICE (*)
C	USER'S CHOICE (*)			CONTROL	
D	DENSITY (S.G.)	DIFFERENTIAL			
E	VOLTAGE		PRIMARY ELEMENT, SENSOR		
F	FLOW RATE	RATIO (FRACTION)			
G	USER'S CHOICE (*)		GLASS, GAUGE VIEWING DEVICE	GATE	
H	HAND (MANUAL)				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M	MOTION	MOMENTARY			MIDDLE, INTERMEDIATE
N	TORQUE		USER'S CHOICE (*)	USER'S CHOICE (*)	USER'S CHOICE (*)
O	USER'S CHOICE (*)		ORIFICE, RESTRICTION		
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION		
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD OR PRINT		
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTI VARIABLE		MULTI FUNCTION	MULTI FUNCTION	MULTI FUNCTION
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL		
X	UNCLASSIFIED (*)	X AXIS	UNCLASSIFIED (*)	UNCLASSIFIED (*)	UNCLASSIFIED (*)
Y	EVENT, STATE OR PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT	
Z	POSITION	Z AXIS		DRIVE, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

TABLE BASED ON THE INTERNATIONAL SOCIETY OF AUTOMATION (ISA) STANDARD.

(+) WHEN USED, EXPLANATION IS SHOWN ADJACENT TO INSTRUMENT SYMBOL. SEE ABBREVIATIONS AND LETTER SYMBOLS.
(*) WHEN USED, DEFINE THE MEANING HERE FOR THE PROJECT.

GENERAL INSTRUMENT OR FUNCTIONAL SYMBOLS



TRANSDUCERS

A	ANALOG	I	CURRENT
D	DIGITAL	P	PNEUMATIC
E	VOLTAGE	PF	PULSE FREQUENCY
F	FREQUENCY	PD	PULSE DURATION
H	HYDRAULIC	R	RESISTANCE

EXAMPLE

CURRENT TO PNEUMATIC TRANSDUCER (BACK OF PANEL, IN A FLOW LOOP)

ACCESSORY DEVICES

A	ALARM
C	CONTROLLER
I	INDICATOR
R	RECORDER
S	SWITCH
T	TRANSMITTER
X	UNCLASSIFIED

EXAMPLE

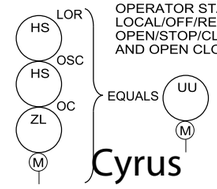
TRANSMITTER AS AN ACCESSORY TO A FLOW ELEMENT

SPECIAL CASES

ON AND OFF EVENT LIGHTS

ON-OFF HAND SWITCH, MAINTAINED CONTACT SWITCH (CONTROLLED DEVICE WILL RESTART ON RETURN OF POWER AFTER POWER FAILURE).

STOP-START HAND SWITCH MOMENTARY CONTACT SWITCHES (CONTROLLED DEVICE WILL NOT RESTART ON RETURN OF POWER AFTER POWER FAILURE).



ELECTRIC ACTUATOR WITH MULTI-VARIABLE, MULTI-FUNCTION OPERATOR STATION, INCLUDING LOCAL/OFF/REMOTE HANDSWITCH, OPEN/STOP/CLOSE PUSHBUTTON AND OPEN CLOSED STATUS LIGHTS

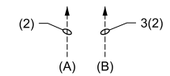
Cyrus John Saharkhiz

Digitally signed by Cyrus John Saharkhiz
Date: 2019.12.16 14:30:42 -05'00'

LINE LEGEND

- PRIMARY PROCESS (CLOSED CONDUIT, DASHED LINE INDICATES ALTERNATE FLOW STREAM)
- SECONDARY PROCESS
- BYPASS PROCESS
- PROCESS (OPEN CHANNEL)
- ANALOG SIGNAL (4 TO 20 mAdc, ETC.)
- DISCRETE (ON/OFF, ETC.)
- MSC — MANUFACTURER SUPPLIED CABLE
- MSC(P) — MANUFACTURER SUPPLIED CABLE (POWER)
- HYDRAULIC SYSTEM SIGNAL
- o — DATA LINK
- BUILDING OR FACILITY BOUNDARY
- PACKAGE SYSTEM EQUIPMENT
- TYPICAL BREAK

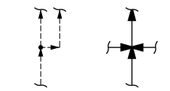
PARALLELING LINES



(A) TOTAL OF 2 SIGNALS

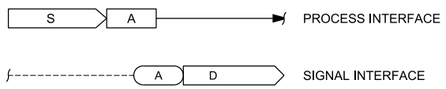
(B) 3 TYPICAL SETS OF 2 SIGNALS EACH. TOTAL OF 6 SIGNALS.

CONNECTING LINES



NON-CONNECTING LINES

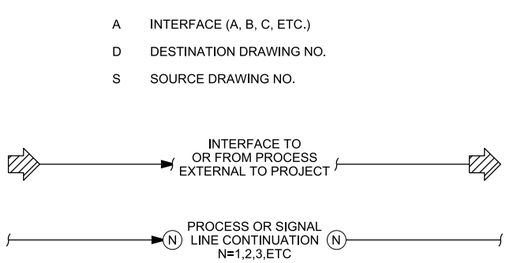
INTERFACE SYMBOLS



A INTERFACE (A, B, C, ETC.)

D DESTINATION DRAWING NO.

S SOURCE DRAWING NO.



SELF CONTAINED VALVE & EQUIPMENT TAG NUMBERS

D-WXY

D	ARV	AIR RELEASE VALVE
	AVRV	AIR AND VACUUM RELEASE VALVE
	E	EJECTOR
	G	GATE
	M	MECHANICAL EQUIPMENT
	P	PUMP
	PCV	PRESSURE RELIEF VALVE
	PRV	PRESSURE REDUCING VALVE
	PSV	PRESSURE SUSTAINING VALVE
	T	TANK
W		UNIT PROCESS NUMBER
X		LOOP NUMBER
Y		UNIT LETTER

Cyrus John Saharkhiz

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ABBREVIATIONS & LETTER SYMBOLS

AC	ALTERNATING CURRENT
AM	AUTO-MANUAL
C5	CAT 5 CABLE
C6	CAT 6 CABLE
CAM	COMPUTER-AUTO-MANUAL
CCS	CENTRAL CONTROL SYSTEM
CL_2 etc.	CHLORINE (TYPICAL: USE STANDARD CHEMICAL ELEMENT ABBREVIATIONS)
CM	COMPUTER-MANUAL
COD	CHEMICAL OXYGEN DEMAND
CP-X	CONTROL PANEL NO. X
DC	DIRECT CURRENT
DCS	DISTRIBUTED CONTROL SYSTEM
DCU	DISTRIBUTED CONTROL UNIT
DO	DISSOLVED OXYGEN
ED	ENABLE / DISABLE
EN	ENABLE
FCL_2	FREE CHLORINE RESIDUAL
FOS	FAST-OFF-SLOW
FOSA	FAST-OFF-SLOW-AUTO
FOSR	FAST-OFF-SLOW-REMOTE
FP-W-X	FIELD PANEL NO. WX (W=UNIT PROCESS NUMBER X=PANEL NUMBER)
FR	FORWARD-REVERSE
HOA	HAND-OFF-AUTO
HOR	HAND-OFF-REMOTE
ISR	INTRINSICALLY SAFE RELAY
LEL	LOWER EXPLOSIVE LIMIT
LOS	LOCKOUT STOP
LR	LOCAL-REMOTE
MA	MANUAL-AUTO
MC	MODULATE-CLOSE
MCC-X	MOTOR CONTROL CENTER NO. X
MPR	MOTOR PROTECTION RELAY
MSC	MANUFACTURER SUPPLIED CABLE
OC	OPEN-CLOSE(D)
OCA	OPEN-CLOSE-AUTO
OCR	OPEN-CLOSE-REMOTE
OO	ON-OFF
OOA	ON-OFF-AUTO
OOR	ON-OFF-REMOTE
ORP	OXIDATION REDUCTION POTENTIAL
OSC	OPEN-STOP-CLOSE
pH	HYDROGEN ION CONCENTRATION
PLC	PROGRAMMABLE LOGIC CONTROLLER
RIO	REMOTE I/O UNIT
RM-X	REMOTE MULTIPLEXING MODULE NO. X
RTU-X	REMOTE TELEMETRY UNIT NO. X
SCP-X	SECURITY CONTROL PANEL
SF	SLOWER-FASTER
SS	START-STOP
SSC	SUPERVISORY SET POINT CONTROL
TCL_2	TOTAL CHLORINE RESIDUAL
TOC	TOTAL ORGANIC CARBON
TOD	TOTAL OXYGEN DEMAND
TURB	TURBIDITY
UP	UNDER PLC CONTROL
VHC	VOLATILE HYDROCARBONS
VIB	VIBRATION
$\triangle$	DIFFERENCE
Σ	SUM
×	MULTIPLY
÷	DIVIDE
F(X)	CHARACTERIZED
X^n	RAISED TO THE Nth POWER
$\sqrt{\ }$	SQUARE ROOT
AVG	AVERAGE
1:1	REPEAT OR BOOST
>	SELECT HIGHEST SIGNAL
<	SELECT LOWEST SIGNAL
}	BIAS
%	GAIN OR ATTENUATE

GENERAL NOTES

1. COMPONENTS SHOWN WITH A DIAMOND (◆) ARE PART OF SECTION 40 90 00, PROCESS INSTRUMENTATION AND CONTROLS.
2. COMPONENTS AND PANELS SHOWN WITH A ASTERISK (∗) ARE PART OF A PACKAGE SYSTEM; SEE EQUIPMENT SPECIFICATIONS. FOR MULTIPLE PACKAGES ON SAME DRAWING, USE ∗, ∗2, ∗ 3, ETC.
3. COMPONENTS AND PANELS SHOWN WITH A DOUBLE ASTERISK (∗∗) ARE TO BE PROVIDED UNDER DIVISION 26, ELECTRICAL.
4. THIS IS A STANDARD LEGEND. THEREFORE, NOT ALL OF THIS INFORMATION MAY BE USED ON THE PROJECT.

CYRUS JOHN SAHARKHIZ LICENSE No. 84591 STATE OF FLORIDA PROFESSIONAL ENGINEER

NO.	DATE	DSGN
DR	C.SAHARKHIZ	
CHK	A.PASTRANA	
APVD	C.WILSON	
BY	C.SAHARKHIZ	

REVISION

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
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ch2m

GENERAL

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

INSTRUMENTATION AND CONTROL
LEGEND 1

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	01-G-009
SHEET	10 of 61

BID DOCUMENTS

VALVE SYMBOLS

- GATE
- KNIFE GATE
- BUTTERFLY
- GLOBE
- BALL
- V — VEE-BALL
- PLUG
- SEAT PORT ECCENTRIC PLUG
- DIAPHRAGM
- PINCH
- NEEDLE
- SWING CHECK
- BALL CHECK
- BACKFLOW PREVENTER
- ROTARY
- TELESCOPE
- S — SAMPLE
- MUD
- PRESSURE RELIEF
- AIR AND/OR VACUUM RELEASE
- REGULATED SIDE PRESSURE CONTROL
- PRESSURE REGULATION (CLAY-TYPE)
- MULTI-PORT VALVE (GATE VALVE SHOWN. FOR OTHER VALVE TYPES, APPROPRIATE VALVE SYMBOL SHOWN.) SEAT PORTS ARE IMPLIED BY INDICATED FLOW PATTERN.
- ANGLE GATE

GATE SYMBOLS

- SLUICE
- BUTTERFLY
- FABRICATED SLIDE
- FLAP
- STOP LOG
- SHEAR

ACTUATOR SYMBOLS

- PNEUMATIC DIAPHRAGM SPRING-OPPOSED, SINGLE OR DOUBLE ACTING
- PNEUMATIC CYLINDER SINGLE OR DOUBLE ACTING ACTUATED BY ONE INPUT
- M — ELECTRIC MOTOR
- S — SOLENOID
- VALVE POSITIONER
- H — HYDRAULIC
- DIAPHRAGM, DIFFERENTIAL PRESSURE
- E/H — ELECTROHYDRAULIC
- MANUAL

NOTE:
ON LOSS OF PRIMARY POWER (PNEUMATIC, ELECTRICAL, OR HYDRAULIC)

XX: FO FAIL OPEN
FC FAIL CLOSED
FLP FAIL TO LAST POSITION

PRIMARY ELEMENT SYMBOLS

- PARSHALL FLUME
- WEIR
- ORIFICE PLATE
- FLOW TUBE
- PITOT-STATIC
- VORTEX METER
- ULTRASONIC FLOW METER
- M — ELECTROMAGNETIC FLOW METER
- INSERTION ELECTROMAGNETIC FLOW METER
- V - CONE FLOW METER
- PROPELLER OR TURBINE METER
- THERMAL FLOWMETER
- LEVEL (BUBBLER TUBE)
- LS — LEVEL (FLOAT)
- FI — ROTAMETER
- DE — DENSITY METER
- XX — GENERIC
- LE — LEVEL (R = RADAR)

MISCELLANEOUS SYMBOLS

- V — VENT TO ATMOSPHERE
- VTR — VENT TO ROOF
- AIR GAP
- T — DRIP TRAP
- PIG INSERT POINT
- PIG CATCH POINT
- A — SELF CONTAINED AIR SUPPLY
- AP — AIR PURGE SET
- F — FLUSHING CONNECTION
- S — SEAL WATER SET
- WP — WATER PURGE SET
- FLEXIBLE CONNECTION
- AERATOR
- DIAPHRAGM SEAL
- ANNULAR DIAPHRAGM SEAL
- SS — COMPOSITE SAMPLER
- FLAME TRAP
- CALIBRATION COLUMN
- S — INLINE SILENCER
- BLIND FLANGE
- PIPE CAP
- STRAINER
- BASKET STRAINER
- FILTER
- PULSATION DAMPENER
- EXPANSION CHAMBER

FFLCPLLLX — PANEL CONTINUED ON SAME OR OTHER DRAWING
PANEL OUTLINE
PANEL NAME

120V — 120 VOLT, 60 HZ POWER
480V — 480 VOLT, 60 HZ POWER

XX — AIR SET
XX = SUPPLY PRESSURE IN PSIG.

- PLUG
- RECEPTACLE
- RUPTURE DISK (VACUUM)
- RUPTURE DISK (PRESSURE)
- TV — TV MONITOR
- TV — TV CAMERA
- AND — LOGIC ELEMENT: IF A AND NOT B THEN C
- OR — LOGIC ELEMENT: IF A OR B THEN C
- RADIO ANTENNA
- I — INTERLOCK, SEE CONTROL DIAGRAMS
- I — VOICE COMMUNICATION POINT
- SKIMMING MECHANISM
- SCREW CONVEYOR
- MIXER
- ELECTRIC MOTOR

PUMP AND COMPRESSOR SYMBOLS

- XX — CENTRIFUGAL PUMP (DRY PIT)
- XX — CENTRIFUGAL WET PIT PUMP OR TURBINE PUMP
- XX — RECIPROCATING OR METERING PUMP (POSITIVE DISPLACEMENT)
- XX — DIAPHRAGM PUMP
- XX — GEAR PUMP OR BLOWER (POSITIVE DISPLACEMENT)
- XX — PROGRESSING CAVITY PUMP
- XX — COMPRESSOR (CENTRIFUGAL)
- XX — COMPRESSOR (PISTON)
- XX — BLOWER OR FAN (CENTRIFUGAL)
- EJECTOR
- SUBMERSIBLE SUMP PUMP
- XX — CHEMICAL METERING PUMP

XX: AS ADJUSTABLE SPEED
CS CONSTANT SPEED

SERVICE IDENTIFICATION

DR	DRAIN (PROCESS)
RW	RECLAIMED WATER
V	VENT
W2	WATER, NON-POTABLE

CYRUS JOHN SAHARKHIZ — No. 84591 — STATE OF FLORIDA — PROFESSIONAL ENGINEER

NO.	DATE	DSGN	REVISION	BY	CHK	APVD
		C.SAHARKHIZ		C.SAHARKHIZ	A.PASTRANA	C.WILSON

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 · AAC001992
CYRUS JOHN SAHARKHIZ, PE #84591

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

GENERAL
INSTRUMENTATION AND CONTROL
LEGEND 2

BID DOCUMENTS

Cyrus John Saharkhiz
Digitally signed by Cyrus John Saharkhiz
Date: 2019.12.16 14:09:58 -05'00'

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NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	01-G-010
SHEET	11 of 61

FILENAME: 01-G-010_674077.dgn PLOT DATE: 11/15/2019 PLOT TIME: 9:08:22 AM

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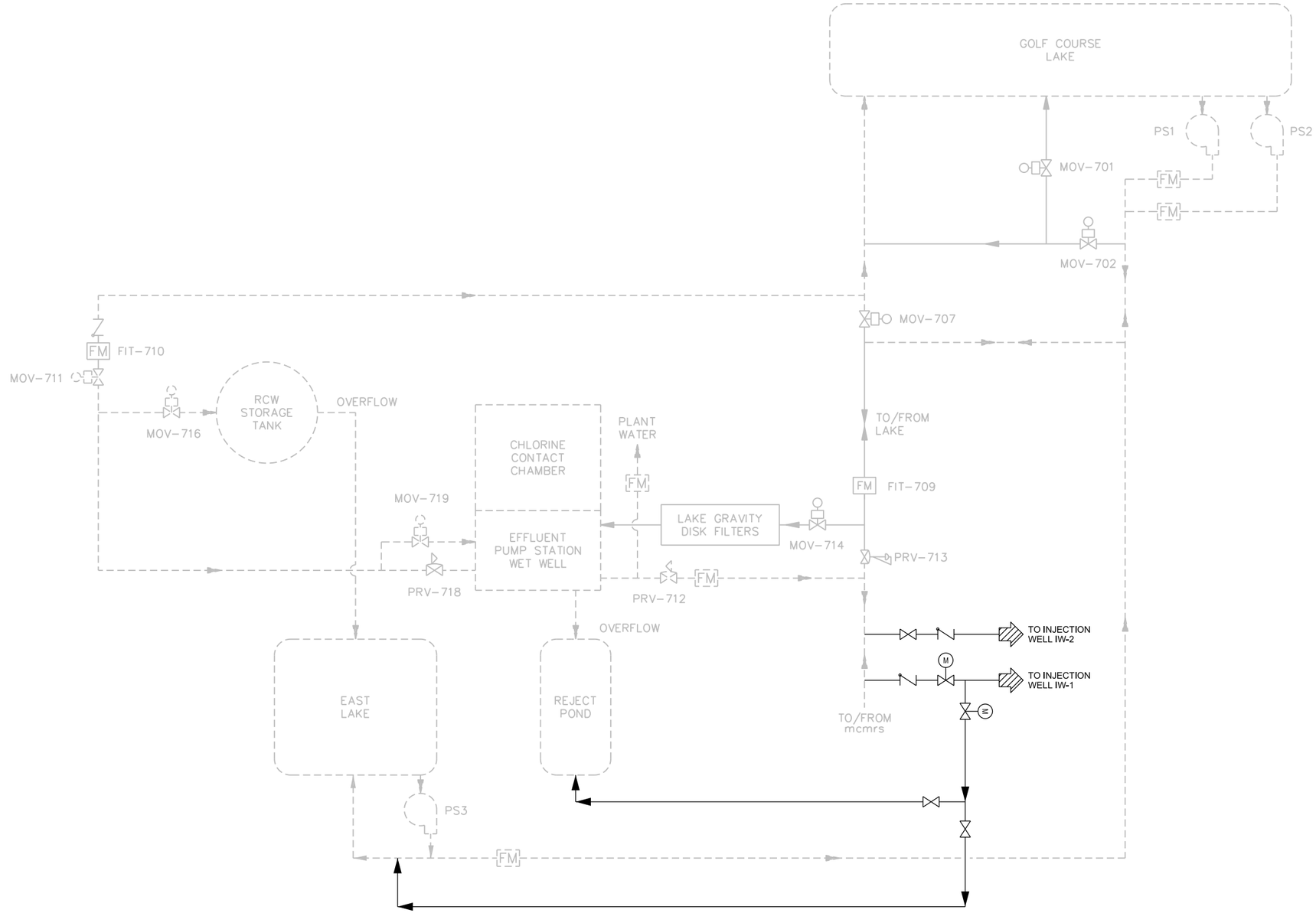
Tao Fu
Digitally signed by Tao Fu
Date: 2019.12.16 11:13:54 -05'00'

TAO FU LICENSE No 63138 STATE OF FLORIDA PROFESSIONAL ENGINEER

LEGEND

EXISTING		PROPOSED
----------	PIPELINE	————
—	CHECK VALVE	
—	MOTORIZED VALVE	
—	PRESSURE REGULATING VALVE	
	PUMP STATION	—
FM	FLOW METER	FM



NO.	DATE	DR	REVISION	CHK	APVD
DSGN	T FU	WL CLOUGH		T INNISS	APVD

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 AAC001992
TAO FU, PE #63138

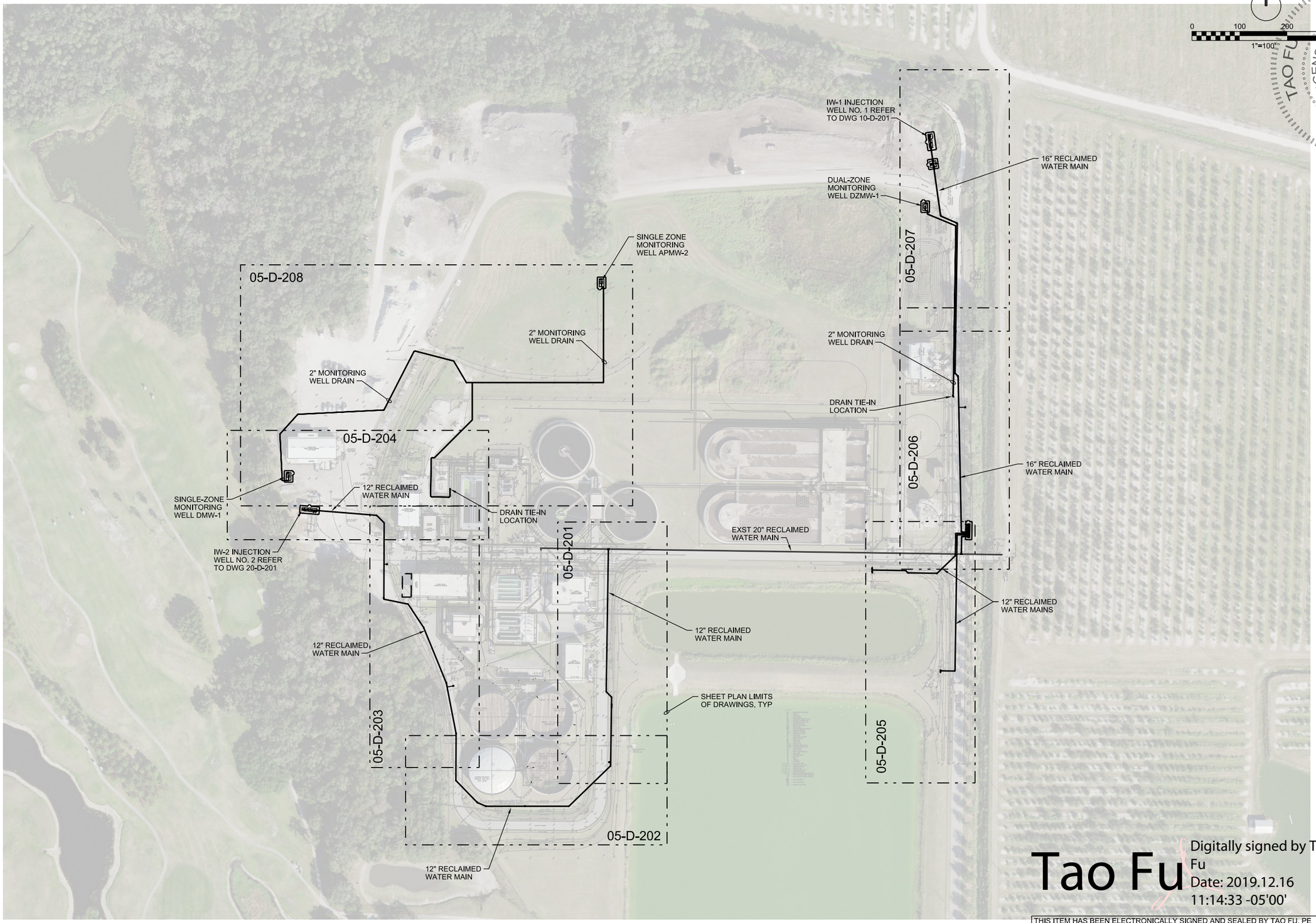
NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

GENERAL
PROCESS FLOW DIAGRAM
UPGRADES
SCHEMATIC

AS NOTED
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	01-G-011
SHEET	12 of 61

BID DOCUMENTS



KEY MAP - PLAN

1"=100'

Tao Fu

Digitally signed by Tao Fu
Date: 2019.12.16 11:14:33 -05'00'

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STATE OF FLORIDA PROFESSIONAL ENGINEER
TAO FU LICENSE No 63138

NO.	DATE	REVISION	BY	APVD
DSGN	T FU	DR WL CLOUGH	CHK T INNISS	APVD T FU

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 · AAC001992
TAO FU, PE #63138

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

YARD PIPING

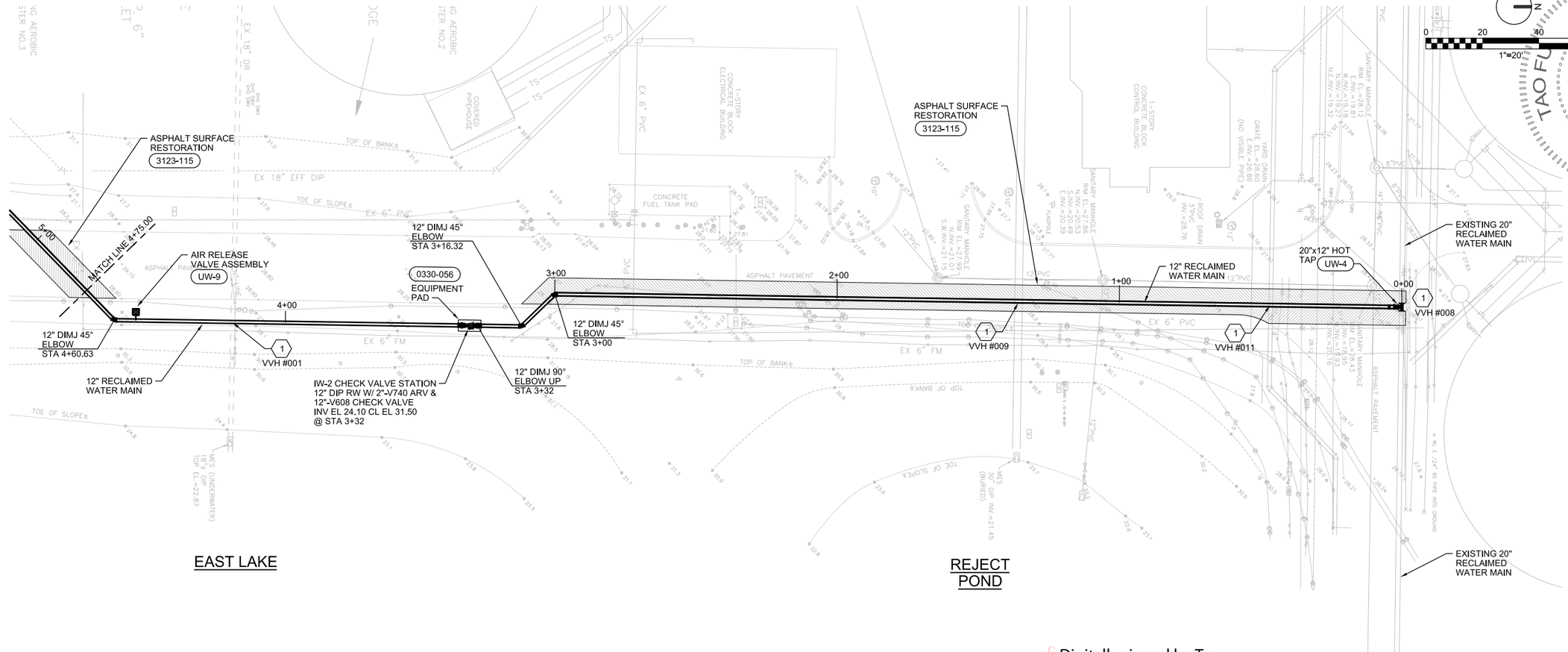
RECLAIMED WATER
PROPOSED PIPE MAIN
KEY MAP

AS NOTED
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	05-D-200
SHEET	13 of 61

BID DOCUMENTS

FILENAME: 05-D-200_674077.dgn PLOT DATE: 11/15/2019 PLOT TIME: 9:08:30 AM

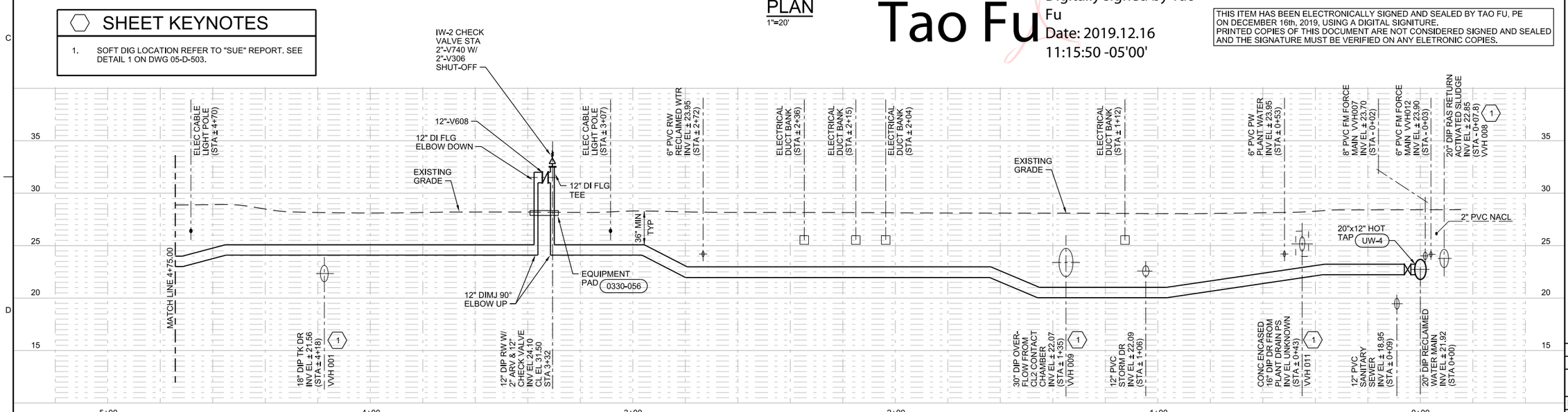


PLAN

1"=20'

SHEET KEYNOTES

1. SOFT DIG LOCATION REFER TO "SUE" REPORT. SEE DETAIL 1 ON DWG 05-D-503.



PROFILE

1"=20' HORIZ, 1"=5 VERT

Tao Fu

Digitally signed by Tao Fu
Date: 2019.12.16 11:15:50 -05'00'

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STATE OF FLORIDA PROFESSIONAL ENGINEER
TAO FU LICENSE No 63138

NO.	DATE	DR	REVISION	CHK	APVD	BY
DSGN		T FU	WL CLOUGH	T INNISS		T FU

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 · AAC001992
TAO FU, PE #63138

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

YARD PIPING

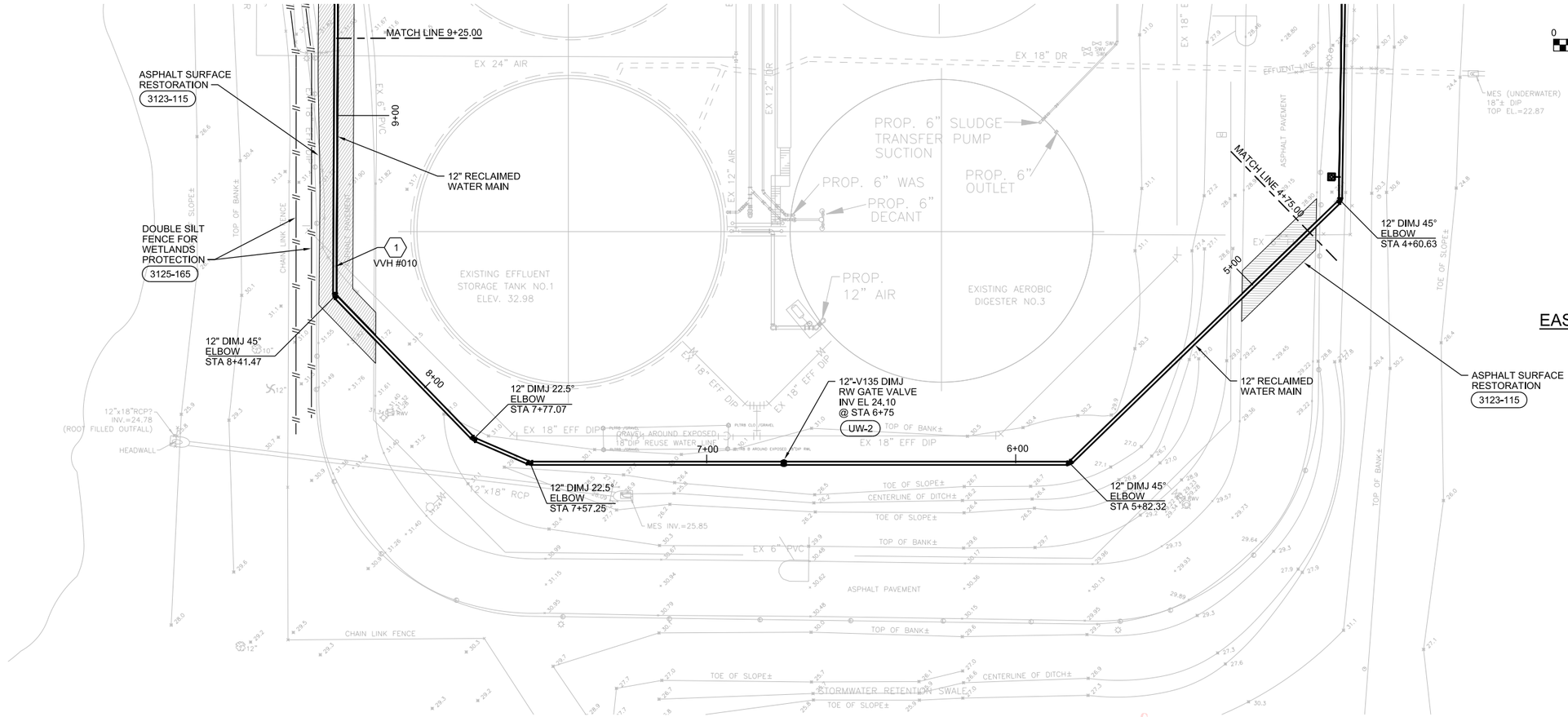
RECLAIMED WATER
PROPOSED PIPE MAIN
PLAN & PROFILE

AS NOTED
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	05-D-201
SHEET	14 of 61

BID DOCUMENTS

FILENAME: 05-D-201_674077.dgn PLOT DATE: 11/15/2019 PLOT TIME: 9:05:44 AM



PLAN
1"=20'

SHEET KEYNOTES

1. SOFT DIG LOCATION REFER TO "SUE" REPORT. SEE DETAIL 1 ON DWG 05-D-503.

Tao Fu
Digitally signed by Tao Fu
Date: 2019.12.16 11:16:25 -05'00'

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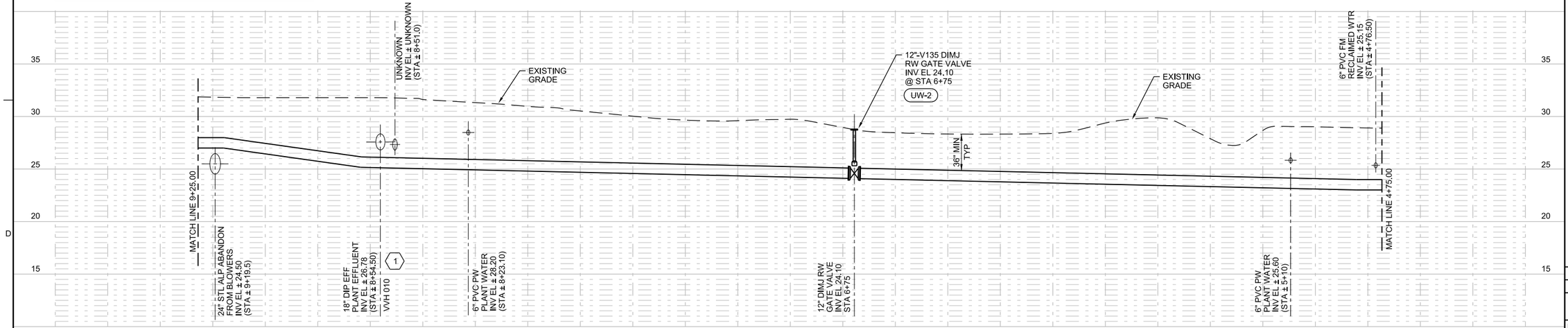


PROFILE
1"=20' HORIZ, 1"=5 VERT

NO.	DATE	REVISION	BY	APVD
DSGN	T FU	DR T FU	WL CLOUGH CHK	T INNISS APVD

STATE OF FLORIDA PROFESSIONAL ENGINEER
TAO FU LICENSE No 63138

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 AAC001992
TAO FU, PE #63138

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

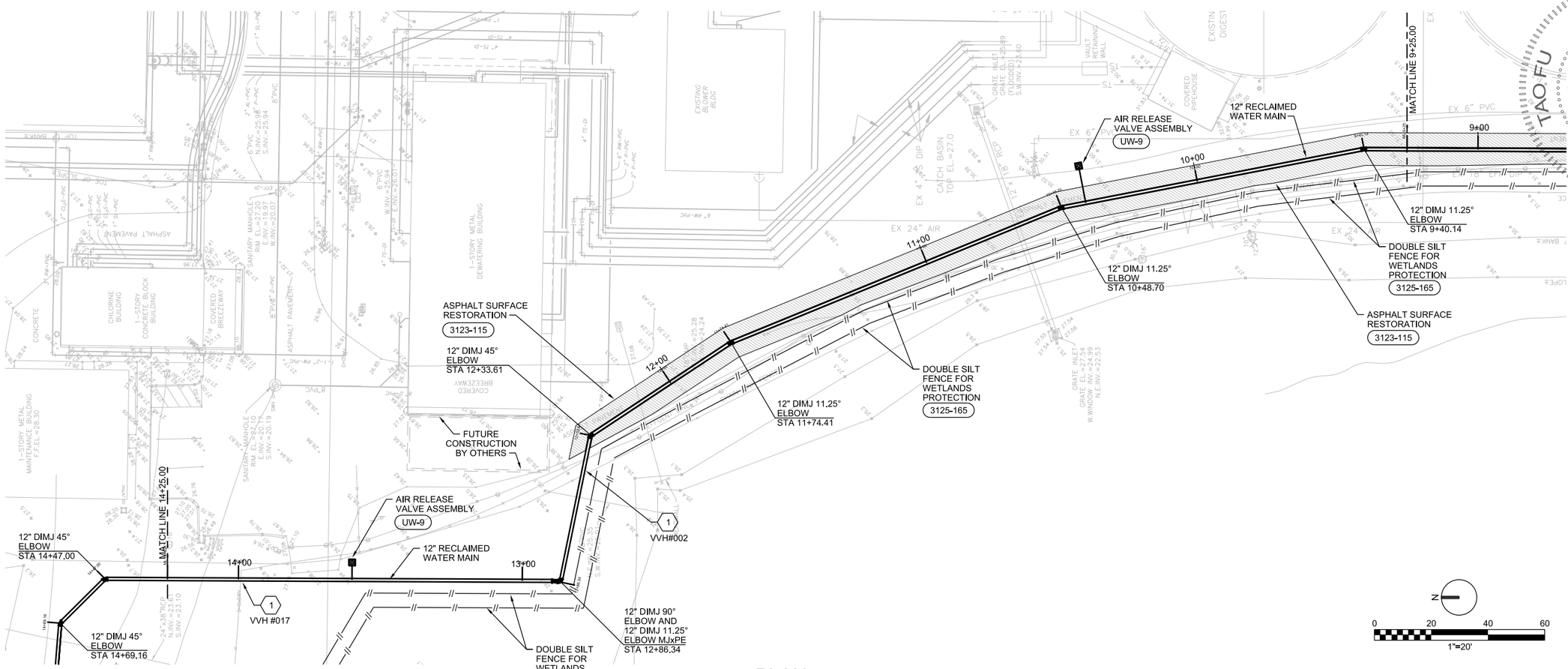
YARD PIPING

RECLAIMED WATER
PROPOSED PIPE MAIN
PLAN & PROFILE

AS NOTED
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	05-D-202
SHEET	15 of 61

BID DOCUMENTS

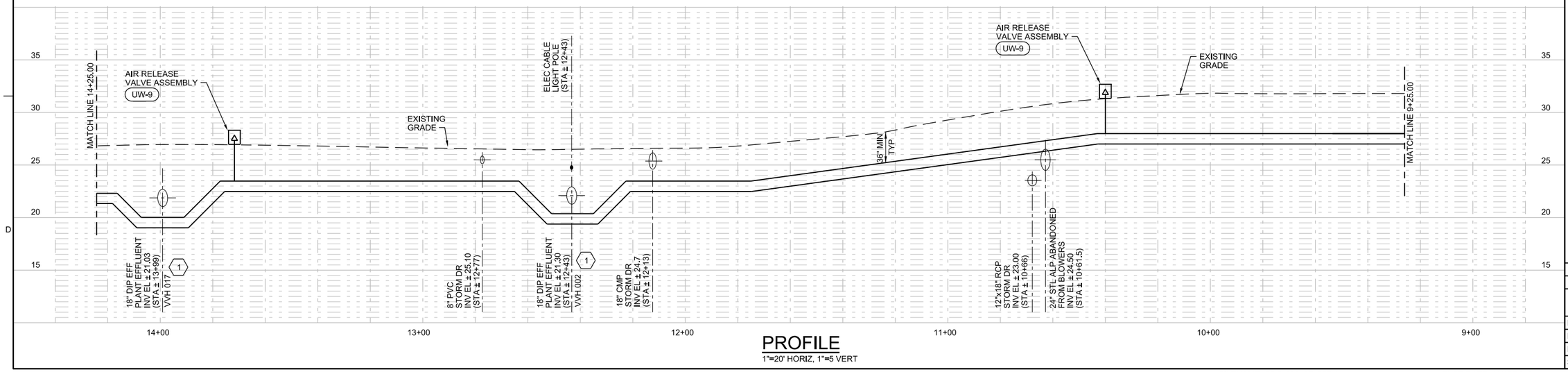


SHEET KEYNOTES

1. SOFT DIG LOCATION REFER TO "SUE" REPORT. SEE DETAIL 1 ON DWG 05-D-503.

PLAN

1"=20'



PROFILE

1"=20' HORIZ, 1"=5 VERT

Tao Fu

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Date: 2019.12.16 11:17:10 -05'00'

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STATE OF FLORIDA PROFESSIONAL ENGINEER
TAO FU
LICENSE No 63138

NO.	DATE	REVISION	BY	APVD
DSGN	T FU	WL CLOUGH	T INNISS	APVD
DR	T FU	CHK		

843 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 · AAC001992
TAO FU, PE #63138

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

YARD PIPING

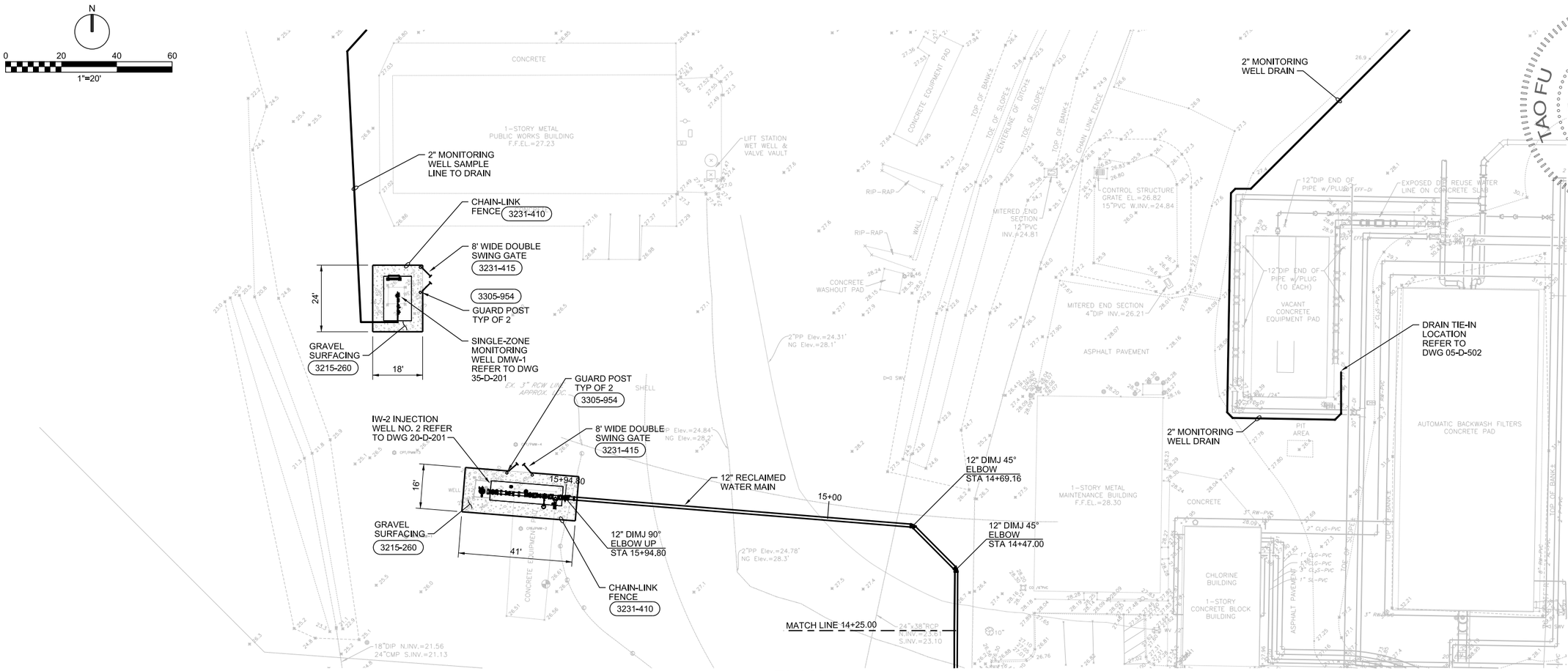
RECLAIMED WATER
PROPOSED PIPE MAIN
PLAN & PROFILE

AS NOTED
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

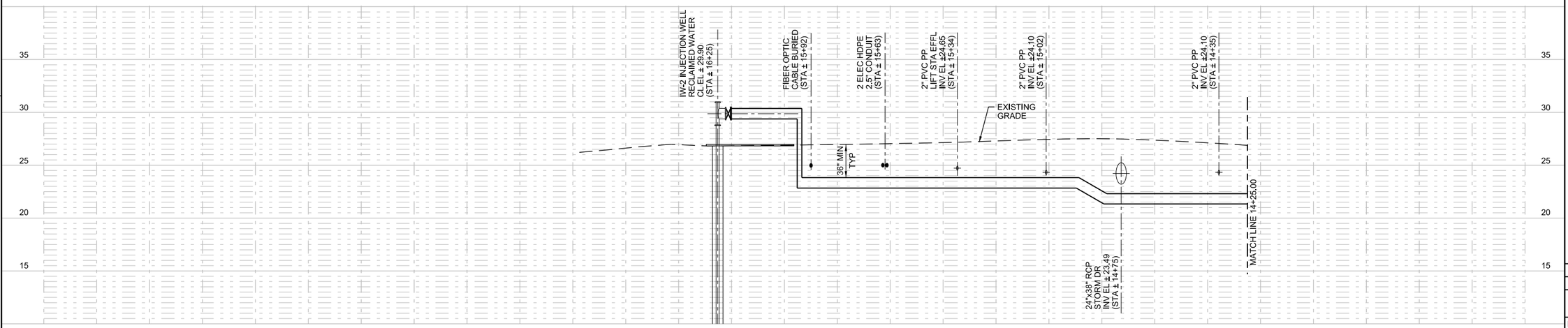
DATE	NOVEMBER 2019
PROJ	674077
DWG	05-D-203
SHEET	16 of 61

BID DOCUMENTS

FILENAME: 05-D-203_674077.dgn PLOT DATE: 11/15/2019 PLOT TIME: 9:06:45 AM



PLAN
1"=20'



PROFILE
1"=20' HORIZ, 1"=5 VERT

Tao Fu
Digitally signed by Tao Fu
Date: 2019.12.16 11:18:10 -05'00'

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TAO FU LICENSE No 63138 STATE OF FLORIDA PROFESSIONAL ENGINEER

NO.	DATE	DR	REVISION	CHK	APVD	BY
		T FU	WL CLOUGH	T INNISS	APVD	T FU

ch2m
643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 · AAC001992
TAO FU, PE #63138

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

YARD PIPING

RECLAIMED WATER PROPOSED PIPE MAIN PLAN & PROFILE

AS NOTED
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	05-D-204
SHEET	17 of 61

BID DOCUMENTS

Tao Fu

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Date: 2019.12.16 11:19:04 -05'00'

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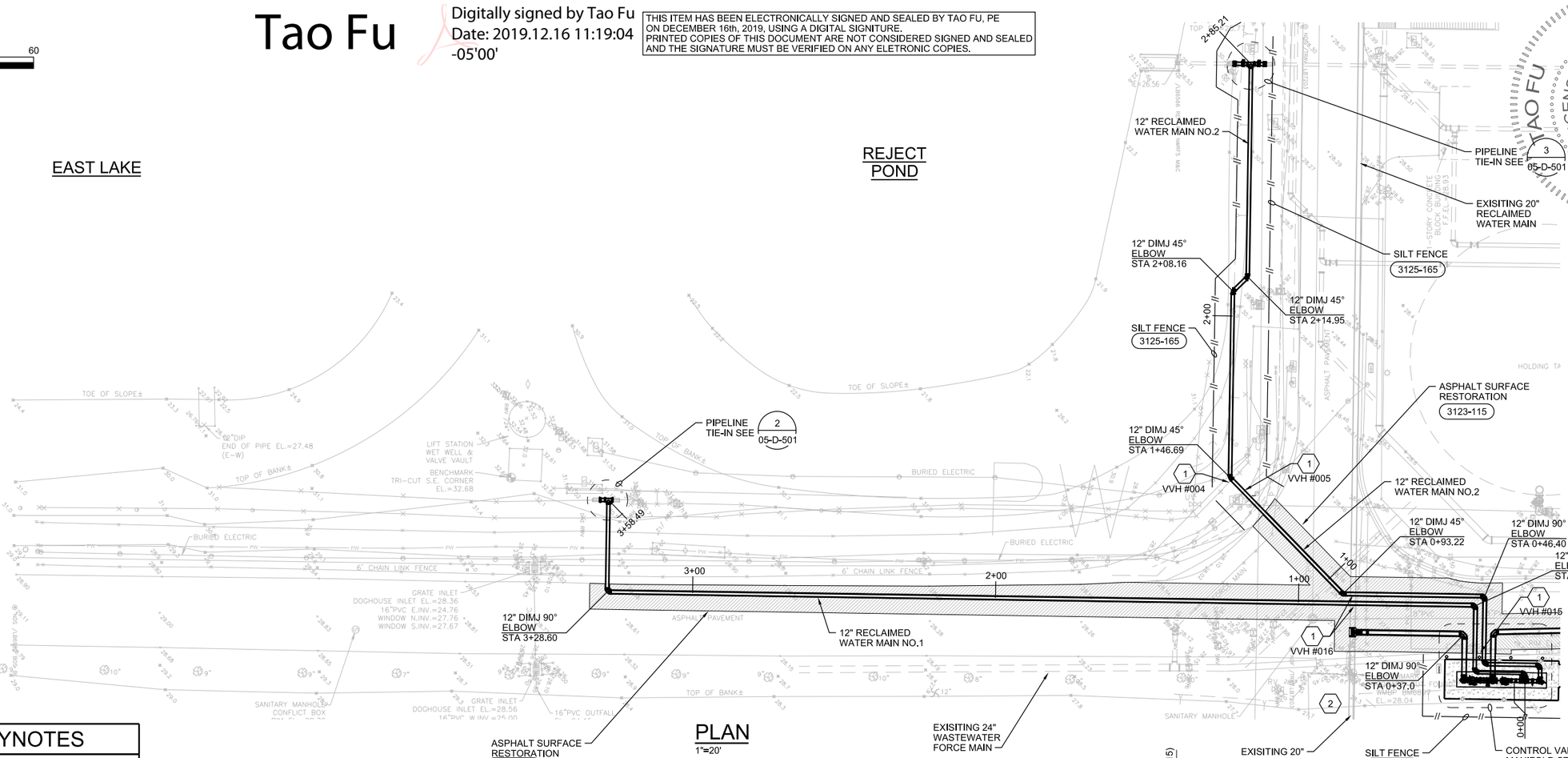
N

0 20 40 60
1"=20'

EAST LAKE

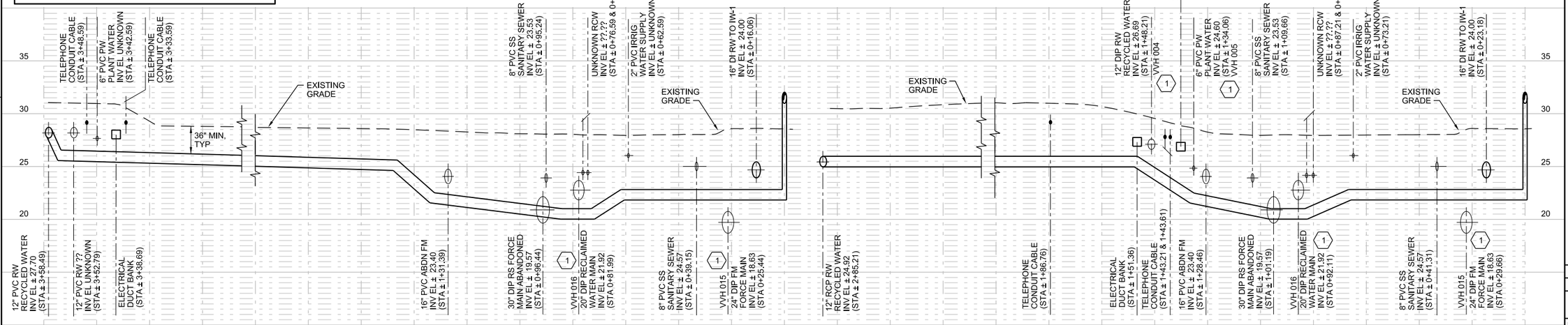
REJECT POND



PLAN
1"=20'

SHEET KEYNOTES

1. SOFT DIG LOCATION REFER TO "SUE" REPORT. SEE DETAIL 1 ON DWG 05-D-503.
2. NO CONSTRUCTION VEHICLES ALLOWED ON BRIDGE



PROFILE MAIN NO.1
1"=20' HORIZ, 1"=5 VERT

PROFILE MAIN NO.2
1"=20' HORIZ, 1"=5 VERT

NO.	DATE	REVISION	DR	CHK	APVD	BY
DSGN	T FU	WL CLOUGH	T INNISS	APVD		T FU

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 · AAC001992
TAO FU, PE #63138

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

ch2m:

YARD PIPING

RECLAIMED WATER
PROPOSED PIPE MAIN
PLAN & PROFILE

AS NOTED
VERIFY SCALE
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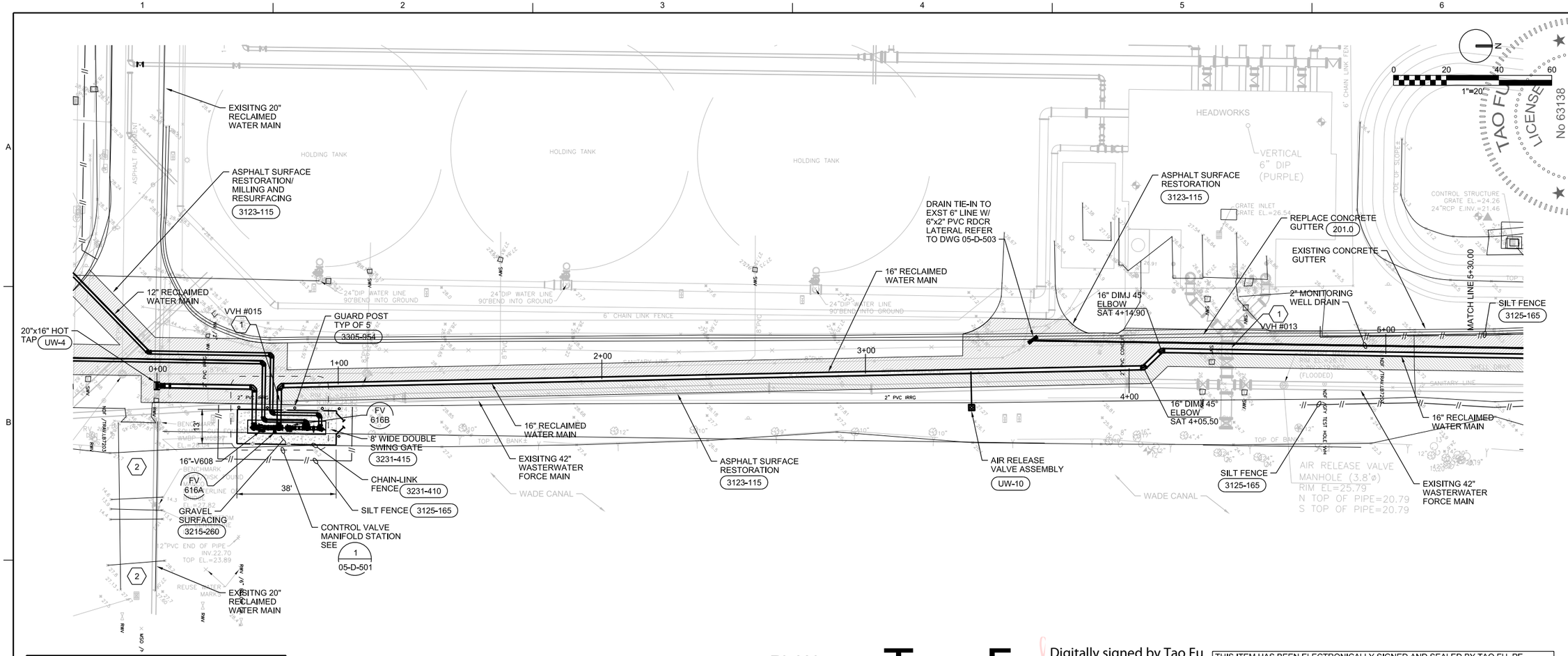
0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	05-D-205
SHEET	18 of 61

BID DOCUMENTS

FILENAME: 05-D-205_674077.dgn PLOT DATE: 11/15/2019 PLOT TIME: 9:06:42 AM



SHEET KEYNOTES

1. SOFT DIG LOCATION REFER TO "SUE" REPORT. SEE DETAIL 1 ON DWG 05-D-503.
2. NO CONSTRUCTION VEHICLES ALLOWED ON BRIDGE

PLAN

1"=20'

Tao Fu

Digitally signed by Tao Fu
Date: 2019.12.16 11:19:59 -05'00'

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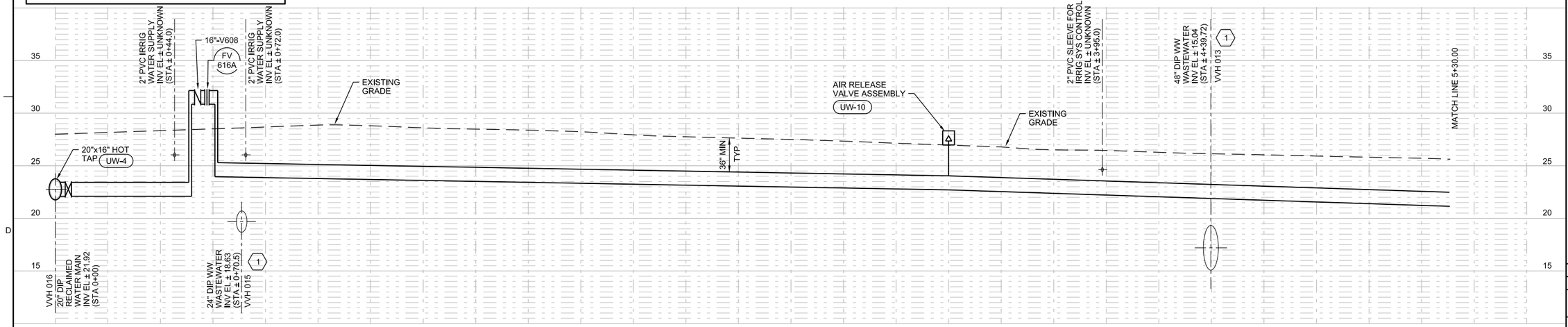


PROFILE

1"=20' HORIZ, 1"=5 VERT

NO.	DATE	DSGN	DR	CHK	APVD
		T FU	WL CLOUGH	T INNISS	APVD

REVISION BY

STATE OF FLORIDA PROFESSIONAL ENGINEER
TAO FU LICENSE No 63138

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 AAC001992
TAO FU, PE #63138

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

ch2m

YARD PIPING

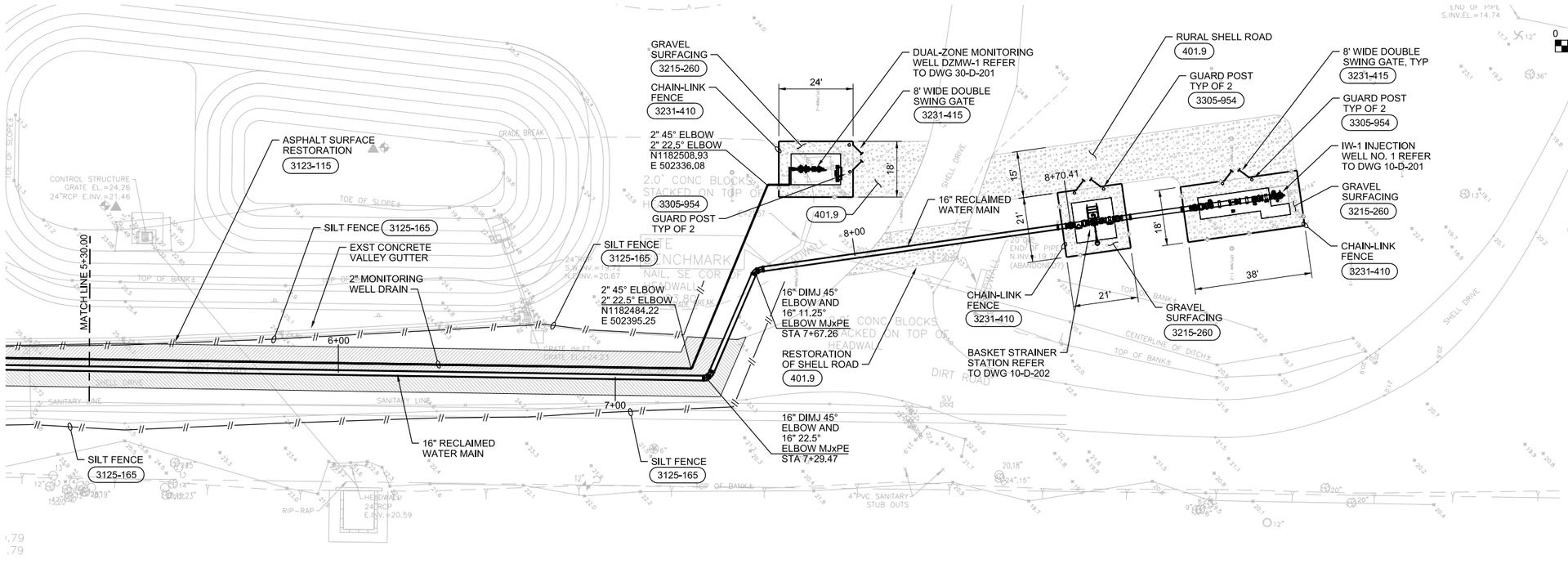
RECLAIMED WATER
PROPOSED PIPE MAIN
PLAN & PROFILE

AS NOTED
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

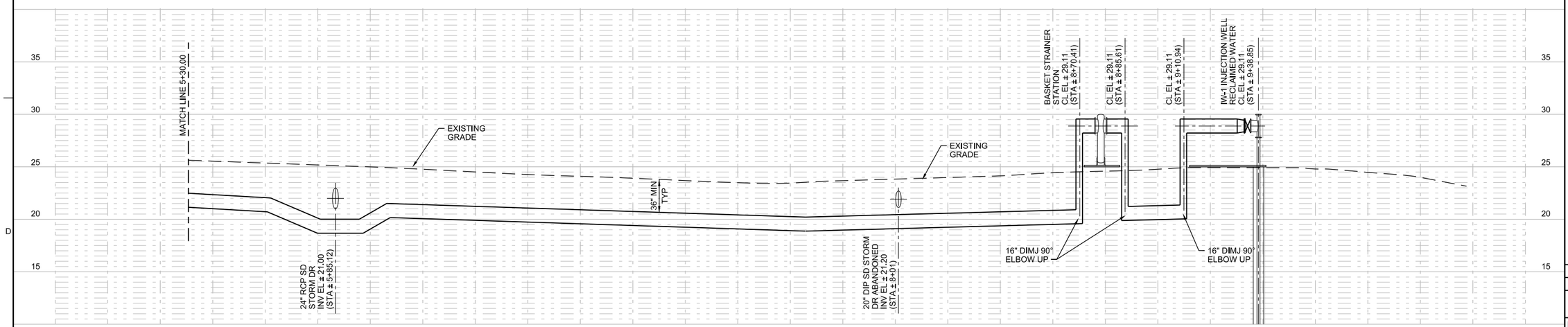
DATE	NOVEMBER 2019
PROJ	674077
DWG	05-D-206
SHEET	19 of 61

BID DOCUMENTS

FILENAME: 05-D-206_674077.dgn PLOT DATE: 11/15/2019 PLOT TIME: 9:05:51 AM



PLAN
1"=20'



PROFILE
1"=20' HORIZ, 1"=5 VERT

Tao Fu
Digitally signed by Tao Fu
Date: 2019.12.16 11:22:12 -05'00'

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STATE OF FLORIDA PROFESSIONAL ENGINEER
TAO FU
LICENSE No 63138

NO.	DATE	DSGN	DR	CHK	APVD	BY
		T FU	T FU	WL CLOUGH	T INNISS	T FU

REVISION

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 . . . AAC001992
TAO FU, PE #63138

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

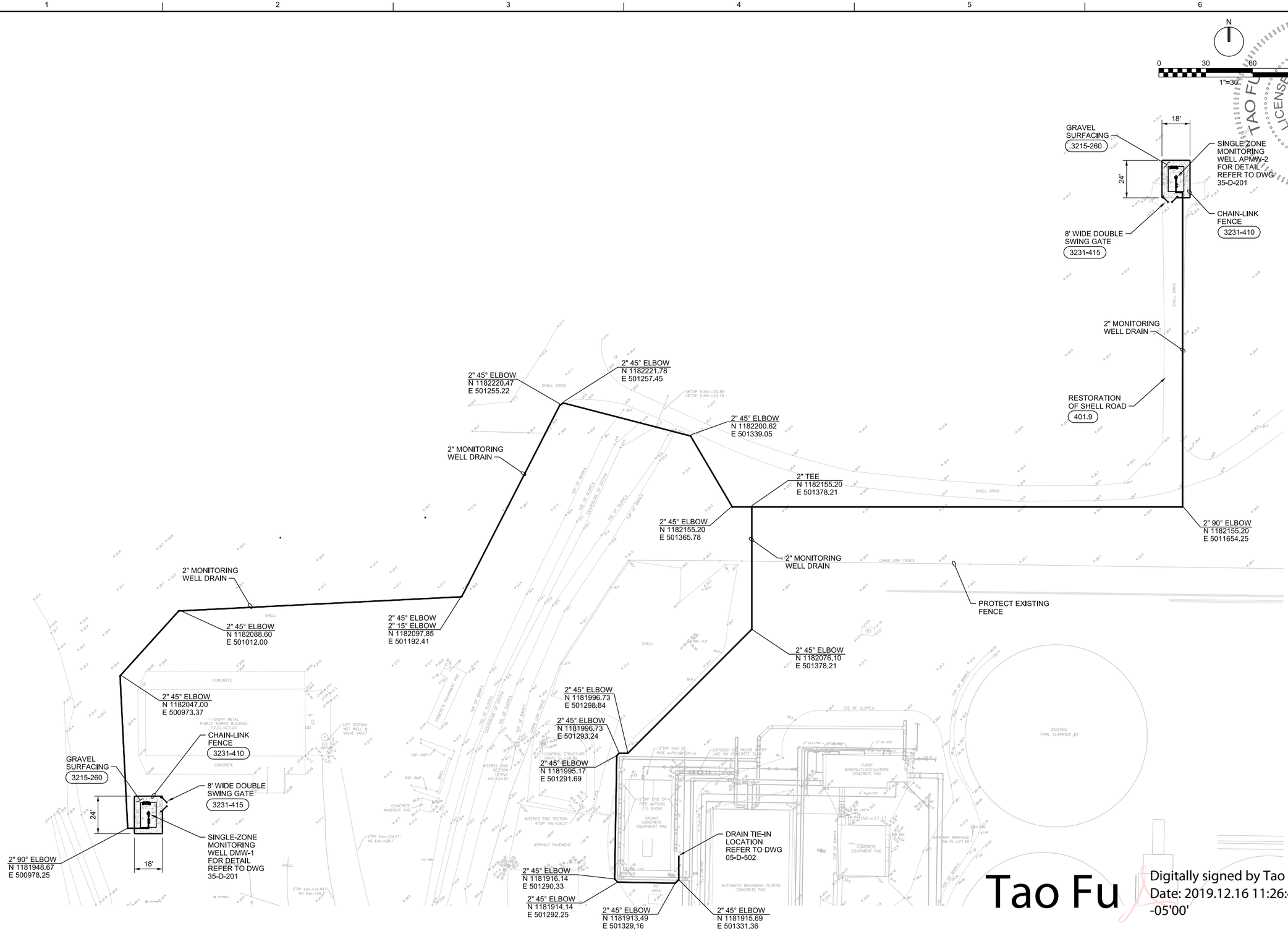
YARD PIPING

RECLAIMED WATER PROPOSED PIPE MAIN PLAN & PROFILE

AS NOTED
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	05-D-207
SHEET	20 of 61

BID DOCUMENTS



DRAIN LINE ROUTING - PLAN

1"=30'

Tao Fu

Digitally signed by Tao Fu
Date: 2019.12.16 11:26:41 -05'00'

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STATE OF FLORIDA PROFESSIONAL ENGINEER
TAO FU LICENSE No 63138

NO.	DSGN	DATE	REVISION	CHK	BY	APVD
	T FU		WL CLOUGH	DR	T FU	APVD
					T INNISS	

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 AAC001992
TAO FU, PE #63138

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

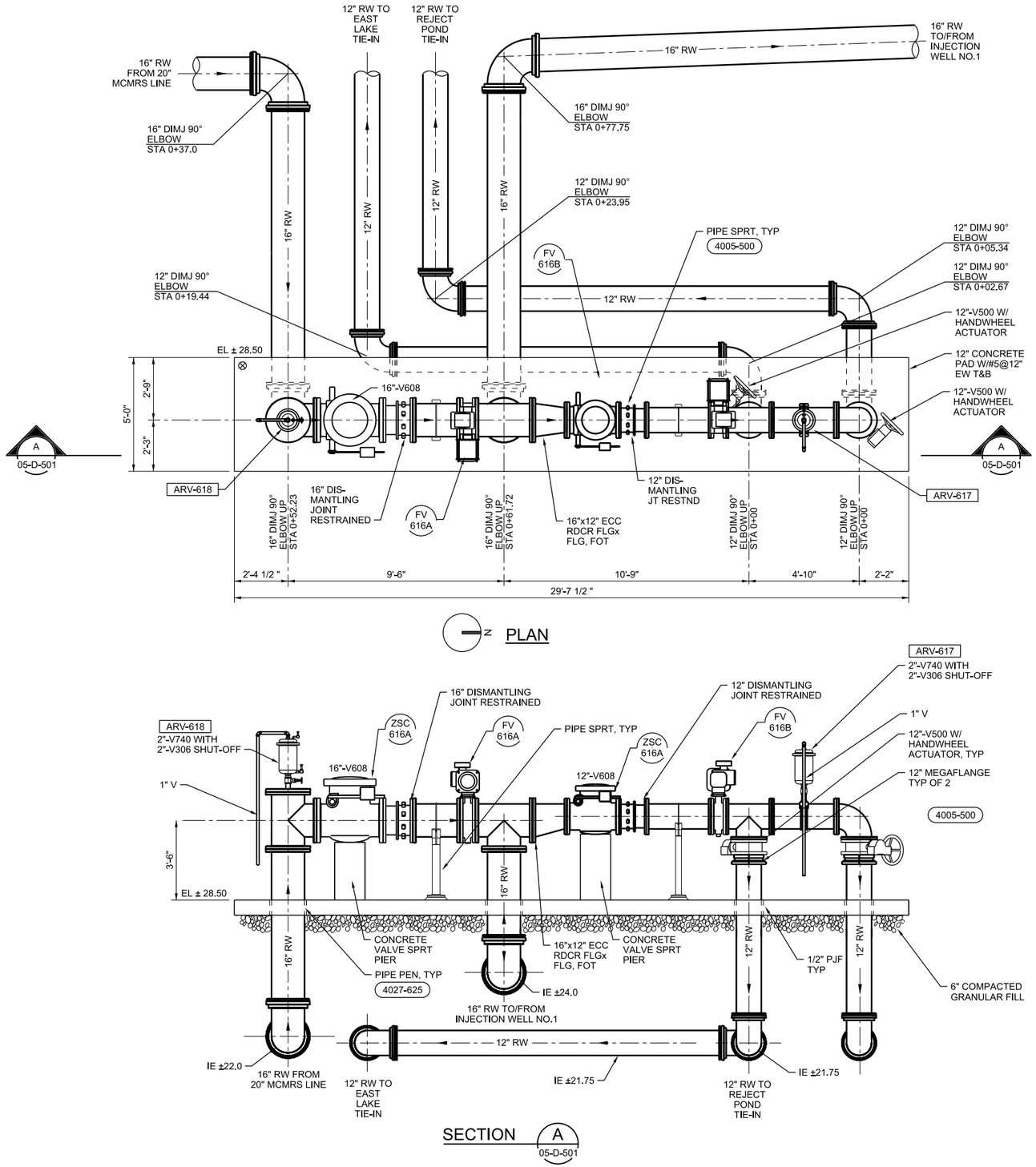
YARD PIPING

SINGLE ZONE MONITOR WELLS
DRAIN LINE ROUTING
PLAN

AS NOTED
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	05-D-208
SHEET	21 of 61

BID DOCUMENTS



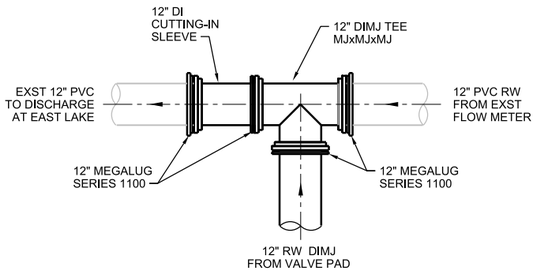
Z PLAN

SECTION A
05-D-501

1 CONTROL VALVE MANIFOLD STATION - DETAIL 2

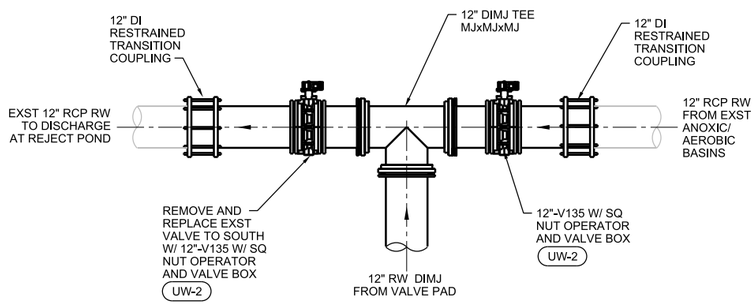
3/8"=1'-0"

05-D-205
05-D-206



EAST LAKE TIE-IN - PLAN 1

Z 2 DETAIL
NTS
05-D-205



REJECT POND TIE-IN - PLAN 1

Z 3 DETAIL
NTS
05-D-205

Tao Fu

Digitally signed by Tao Fu
Date: 2019.12.16 11:27:59 -05'00'

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SHEET KEYNOTES

1. THE TIE-INS SHALL BE CONSTRUCTED WHEN THE POND WATER LEVEL IS LOWER THAN THE INVERT OF THE PIPES.
2. ENCASE ALL PIPES BELOW SLAB. SEE DETAIL 0330-016

TAO FU LICENSE No 63138 STATE OF FLORIDA PROFESSIONAL ENGINEER

NO.	DATE	REVISION	DR	CHK	APVD	BY
			T FU	WL CLOUGH	T INNISS	T FU

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 · AAC001992
TAO FU, PE #63138

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

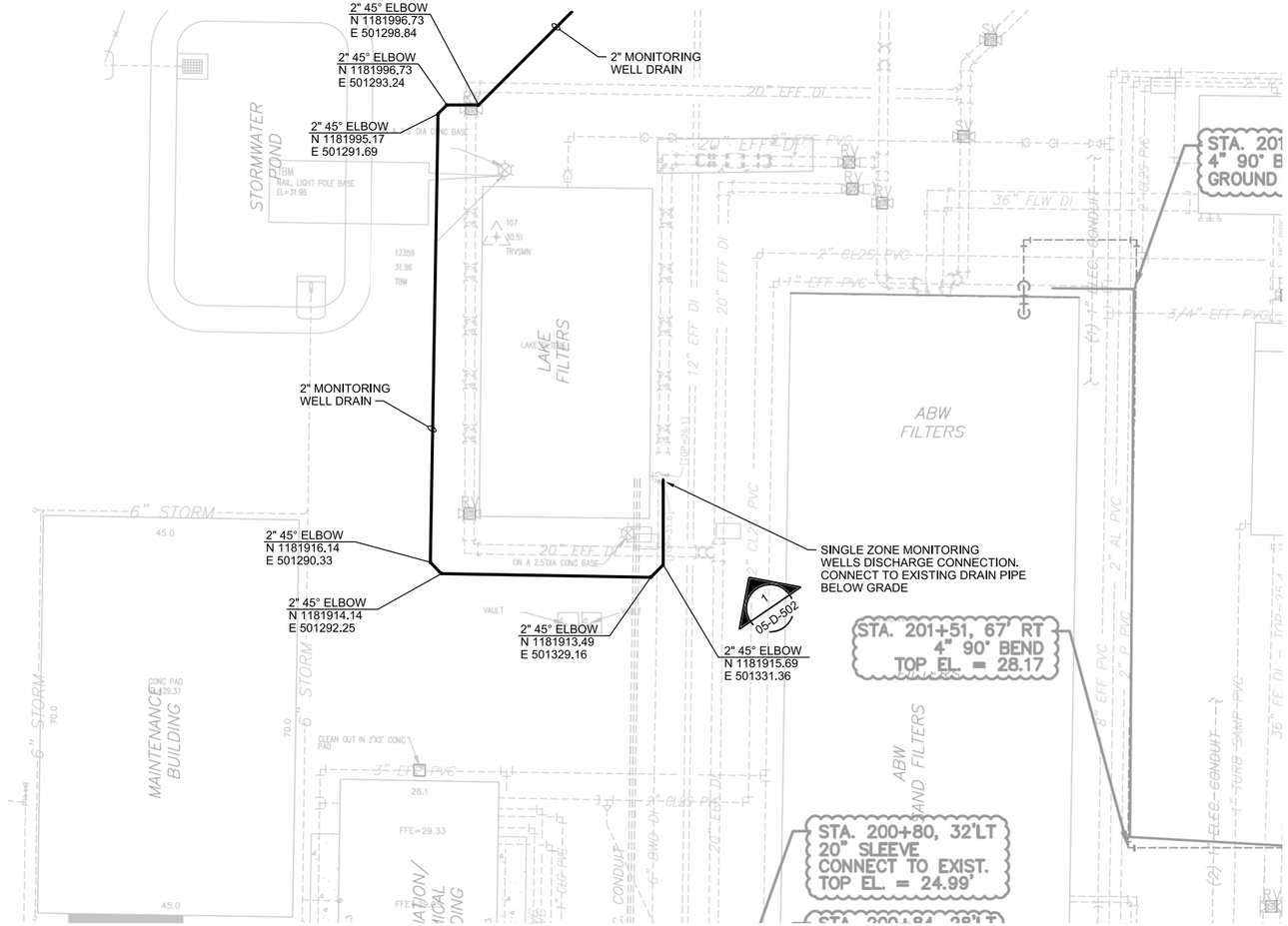
YARD PIPING

DETAILS

AS NOTED
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	05-D-501
SHEET	22 of 61

BID DOCUMENTS



N

EXISTING LAKE FILTERS PLAN

NTS

DRAIN CONNECTION, CUT INTO EXISTING 6" DI DRAIN. INSTALL 6"x2" TEE. FIELD VERIFY SIZE AND LOCATION OF EXISTING DRAIN LINE.

1 — 05-D-502

PHOTO DETAIL

NTS

Tao Fu

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Date: 2019.12.16 11:29:23 -05'00'

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TAO FU
LICENSE
No 63138
STATE OF FLORIDA
PROFESSIONAL ENGINEER

NO.	DATE	REVISION	BY	APVD
DSGN	T FU	DR T FU	CHK WL CLOUGH	APVD T INNISS

ch2m
643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 · AAC001992
TAO FU, PE #63138

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

YARD PIPING

SINGLE ZONE MONITORING WELLS DISCHARGE CONNECTION LAKE FILTERS - DETAILS

AS NOTED
VERIFY SCALE
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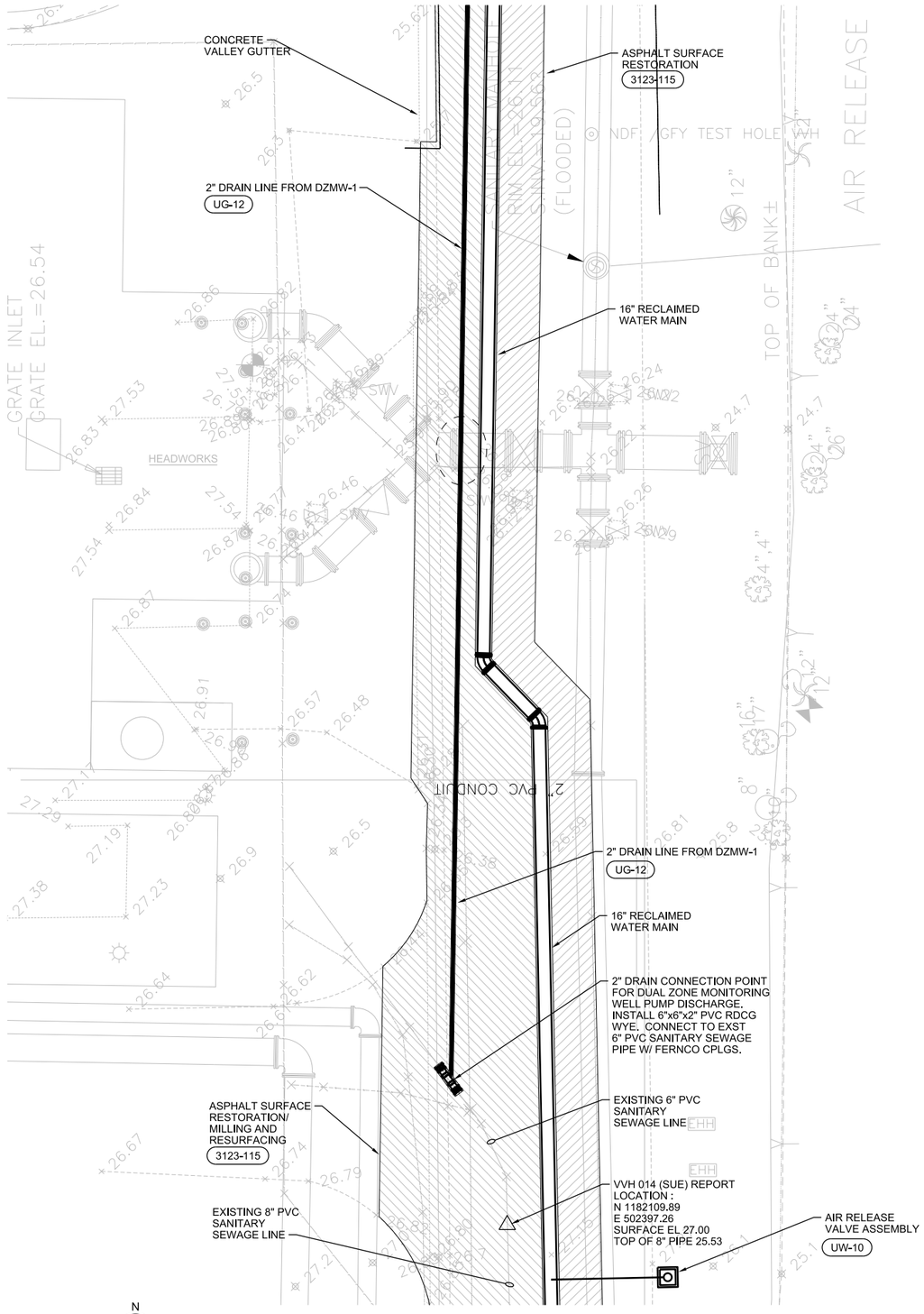
DATE	NOVEMBER 2019
PROJ	674077
DWG	05-D-502
SHEET	23 of 61

BID DOCUMENTS

FILENAME: 05-D-502_674077.dgn PLOT DATE: 11/15/2019 PLOT TIME: 9:09:55 AM



EXISTING HEADWORKS
1/8"=1'-0"

North Regional Wastewater Reclamation Facility
SUBSURFACE UTILITY EXCAVATION (SUE) REPORT

ID Name Location	Northing	Easting	Surface Elevation	Measured Depth (ft.)	Top of Pipe	Pipe Size	Pipe Material	Type	Surface
VVH#001	1181393.37	501670.22	28.06	4.87	23.19	18"	DIP	EFFLUENT	GROUND
VVH#002	1181692.07	501233.11	26.47	3.54	22.93	18"	DIP	RECLAIMED	GROUND
VVH#003	1181761.29	502221.21	30.44	2.78	27.66	12"	DIP	RECLAIMED	GROUND
VVH#004	1181756.36	502358.02	30.16	2.37	27.79	12"	DIP	RECLAIMED	GROUND
VVH#005	1181767.85	502362.39	28.33	3.21	25.12	6"	PVC	WATER	GROUND
VVH#006	1182492.98	502407.96	23.49	5.12	18.37	48"	DIP	FORCE MAIN	GROUND
VVH#007	1181807.24	501673.66	28.15	3.73	24.42	8"	PVC	RECLAIMED	4" PVMT.
VVH#008	1181811.80	501666.12	27.98	3.33	24.65	20"	DIP	RECLAIMED	GROUND
VVH#009	1181671.31	501663.61	27.91	3.17	24.74	30"	DIP	EFFLUENT	4" PVMT.
VVH#010	1181329.12	501344.87	31.84	3.44	28.40	18"	DIP	RECLAIMED	4" PVMT.
VVH#011	1181782.39	501666.22	28.36	1.96	26.40	28"±	CONC. CAP	UNKNOWN	4" PVMT.
VVH#012	1181809.63	501665.88	28.03	3.57	24.46	6"	PVC	FORCE MAIN	GROUND
VVH#013	1182199.83	502393.60	26.10	6.82	19.28	48"	DIP	FORCE MAIN	4" PVMT.
VVH#014	1182109.89	502397.26	27.00	1.47	25.53	8"	PVC	SANITARY	4" PVMT.
VVH#015	1181841.62	502411.92	28.58	7.80	20.78	48"±	DIP	FORCE MAIN	2" PVMT.
VVH#016	1181800.67	502406.23	27.85	4.13	23.72	20"	DIP	RECLAIMED	3" PVMT.
VVH#017	1181806.90	501194.16	27.36	4.71	22.65	18"	DIP	RECLAIMED	GROUND

DIP = Ductile Iron Pipe, PVC = Polyvinyl Chloride Pipe, PVMT. = Pavement, CONC. = Concrete

SURVEYOR'S REPORT
MANATEE COUNTY NORTH REGIONAL WASTEWATER RECLAMATION FACILITY
I hereby certify that:

1. I am a Professional Surveyor and Mapper, registered in the State of Florida, holding Certificate No. PSM 4292 and that I am acting on behalf of ZNS Engineering, L.C., a corporation authorized to offer services of registered Surveyors and Mappers in the State of Florida, holding L.B. No. 6982.
2. This certificate is made to SUE Report of Subsurface Utility Location as shown hereon.
3. Elevations shown are based on 1988 NAVD. The elevations are derived from Square Cut Found at Northwest corner of bridge, East side of site, WMBP BM 6897 (Elevation of 28.04) and Manatee County Benchmark Revit & Disk Found at North centerline of bridge, East side of site (Elevation of 27.82).
4. Coordinates are based on the Florida State Plane Coordinate System (West Zone) NAD 83 / 2011 - EPOCH 2010.0000 and were derived using Real Time Kinematic Method and the Florida Department of Transportation Permanent Reference Network Site "Manatee G. Stroop CORS-ARP" (PID DL7628).

Date: June 13, 2019

R.E.M. Edgerton, PSM
Professional Surveyor and Mapper
Florida License No. 4292

T:\Manatee\NRWRF\ SUE Report 06-13-19.dwg

1 SUBSURFACE UTILITY EXCAVATION (SUE) REPORT - DETAIL
NTS

05-D-201
05-D-202
05-D-203
05-D-205
05-D-206

Tao Fu
Digitally signed by Tao Fu
Date: 2019.12.16 11:30:47 -05'00'

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SHEET KEYNOTES

1. SOFT DIG LOCATION REFER TO "SUE" REPORT. SEE DETAIL 1 ON DWG 05-D-503.

TAO FU
LICENSE No 63138
STATE OF FLORIDA
PROFESSIONAL ENGINEER

NO.	DATE	REVISION	DR	CHK	APVD
DSGN			T FU	WL CLOUGH	T INNISS

BY: T FU APVD

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 · AAC001992
TAO FU, PE #63138

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

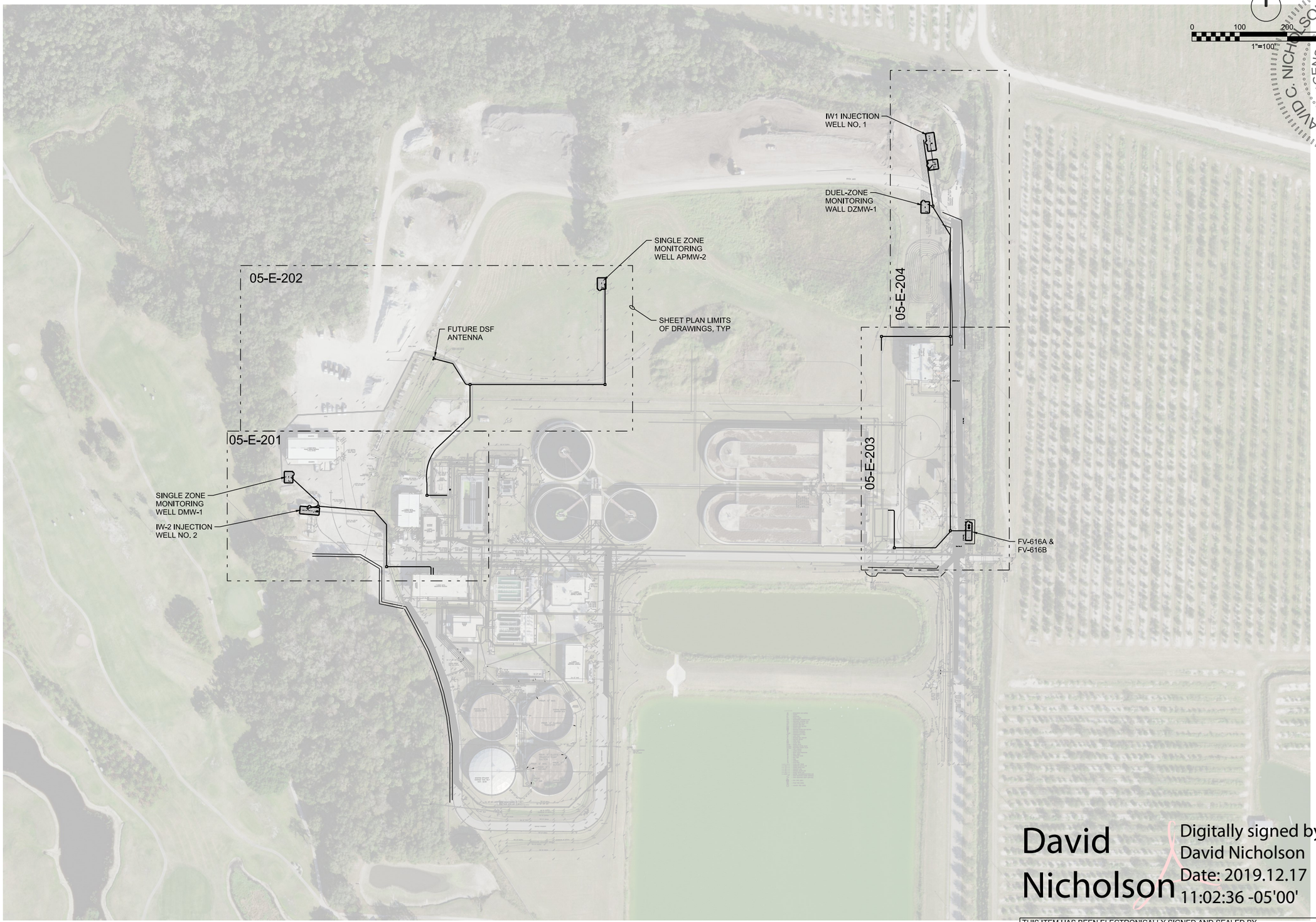
YARD PIPING
DUAL ZONE MONITORING WELL DISCHARGE CONNECTION AT EXISTING HEADWORKS - DETAIL

BID DOCUMENTS

AS NOTED
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	05-D-503
SHEET	24 of 61

FILENAME: 05-D-503_674077.dgn PLOT DATE: 11/15/2019 PLOT TIME: 9:06:39 AM



KEY MAP - PLAN

1"=100'

N

0 100 200 300

1"=100'

DAVID C. NICHOLSON LICENSE No 60201 STATE OF FLORIDA PROFESSIONAL ENGINEER

David Nicholson

Digitally signed by David Nicholson
Date: 2019.12.17 11:02:36 -05'00'

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NO.	DATE	REVISION	BY	APVD
DSGN	D NICHOLSON	DR A PASTRANA	CHK M GOSLOW	APVD D NICHOLSON

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 AAC001992
DAVID C NICHOLSON, PE #60201

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

ELECTRICAL
RECLAIMED WATER
KEY MAP

BID DOCUMENTS

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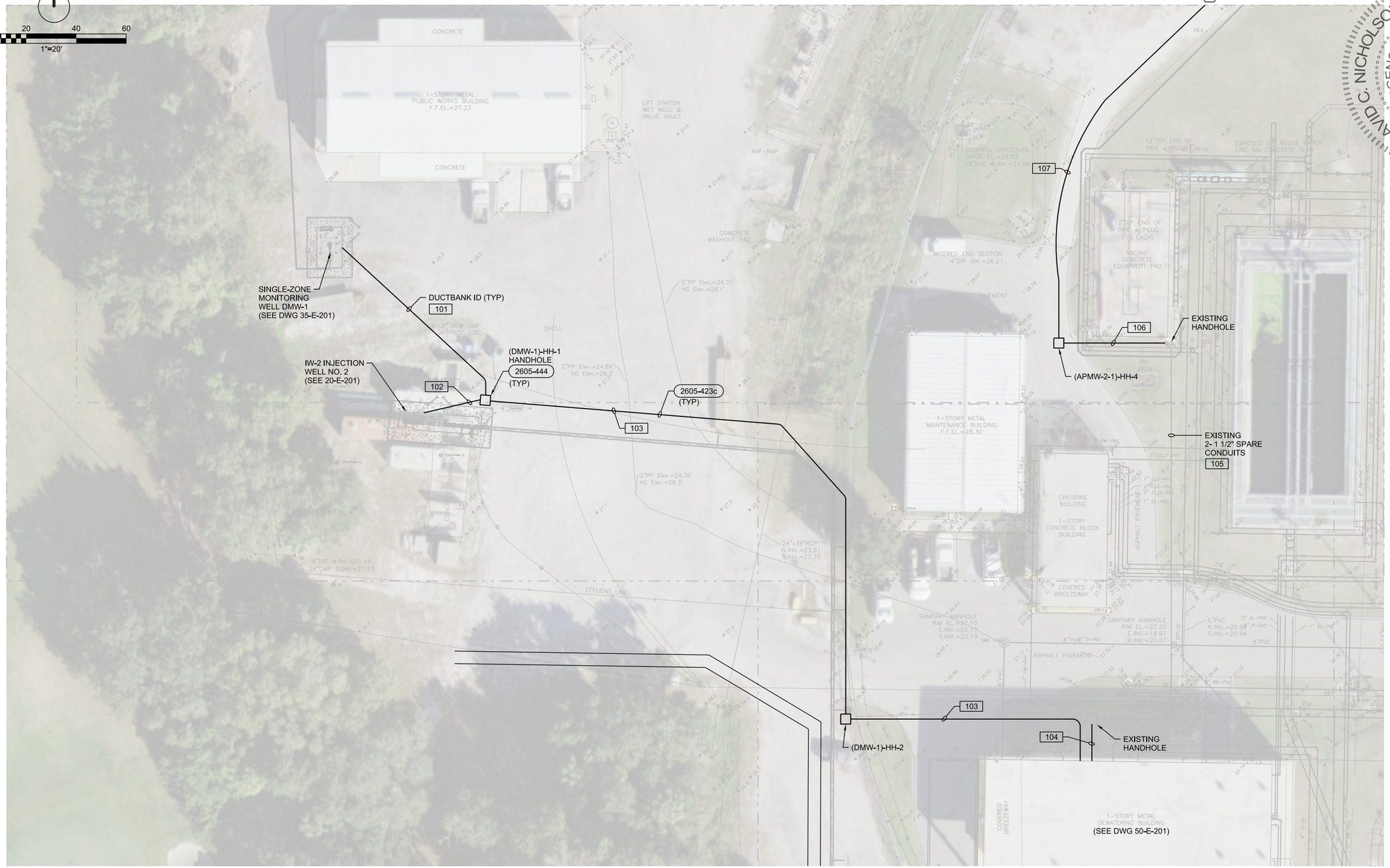
0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	05-E-200
SHEET	25 of 61

FILENAME: 05-E-200_674077.dgn PLOT DATE: 11/15/2019 PLOT TIME: 9:06:27 AM



ENLARGED PLAN
1"=20'

GENERAL SHEET NOTES

1. SEE DRAWING 05-E-603 FOR DUCTBANK SCHEDULE.

SHEET KEYNOTES

1. SEE DRAWING 05-E-202 FOR CONTINUATION.

David Nicholson
Digitally signed by David Nicholson
Date: 2019.12.17 09:15:25 -05'00'

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DAVID C. NICHOLSON LICENSE No 60201 STATE OF FLORIDA PROFESSIONAL ENGINEER

NO.	DATE	REVISION	DR	CHK	BY	APVD
DSGN	D NICHOLSON	A PASTRANA	A PASTRANA	M GOSLOW	D NICHOLSON	APVD

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 · AAC001992
DAVID C NICHOLSON, PE #60201

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

ELECTRICAL
SITE ENLARGED PLAN

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BID DOCUMENTS

AS NOTED
VERIFY SCALE
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DATE	NOVEMBER 2019
PROJ	674077
DWG	05-E-201
SHEET	26 of 61

FILENAME: 05-E-201_674077.dgn PLOT DATE: 11/15/2019 PLOT TIME: 9:07:47 AM

ENLARGED PLAN
1"=30'

David Nicholson

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Date: 2019.12.17 09:21:33 -05'00'

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GENERAL SHEET NOTES

1. SEE DWG 05-E-603 FOR DUCT BANK SCHEDULE

SHEET KEYNOTES

1. SEE DWG 05-E-201 FOR CONTINUATION.
2. CAP END OF EMPTY CONDUITS 24" BELOW FINISHED GRADE.

DAVID C. NICHOLSON LICENSE No 60201
STATE OF FLORIDA PROFESSIONAL ENGINEER

NO.	DATE	REVISION	DR	CHK	BY	APVD
DSGN	D NICHOLSON		A PASTRANA	M GOSLOW	D NICHOLSON	APVD

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 AAC001992
DAVID C NICHOLSON, PE #60201

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

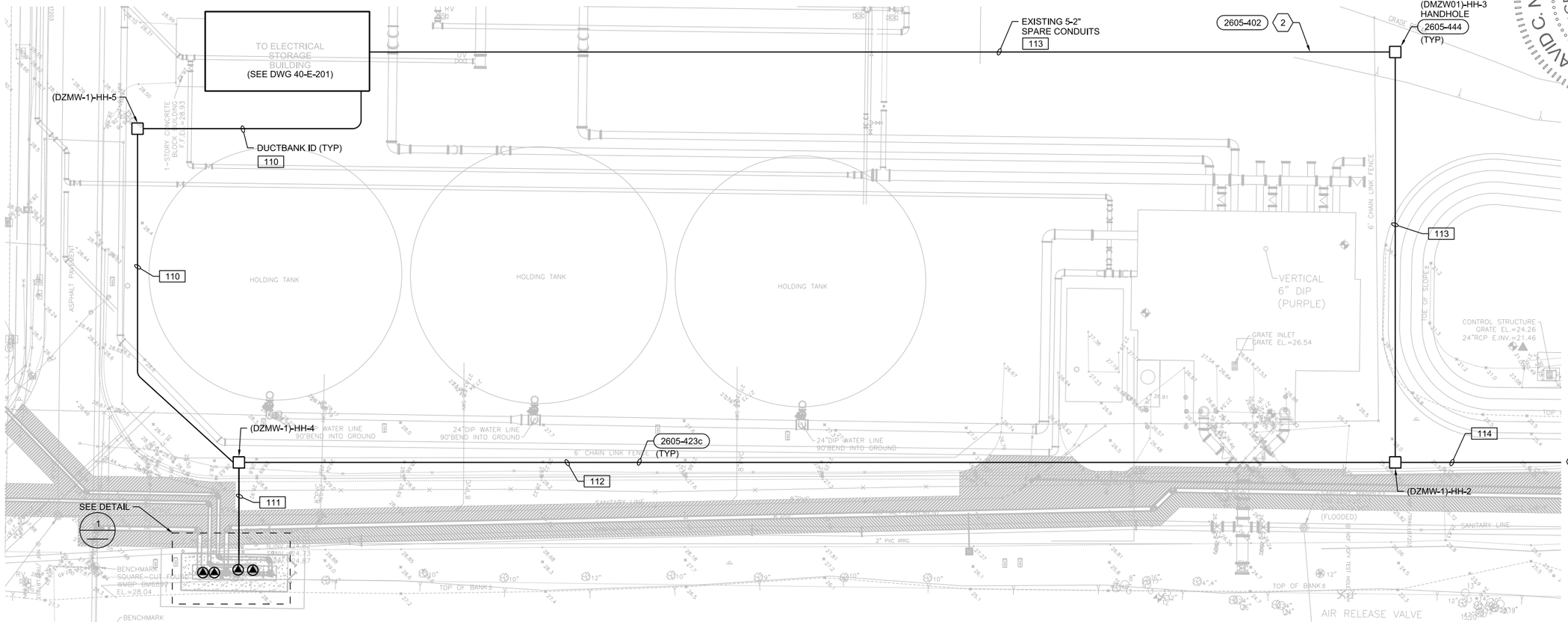
ELECTRICAL
ENLARGED SITE PLAN

AS NOTED
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	05-E-202
SHEET	27 of 61

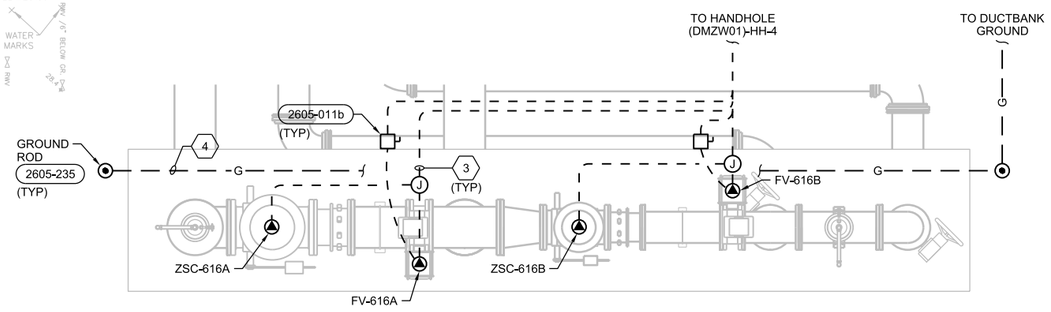
BID DOCUMENTS

FILENAME: 05-E-202_674077.dgn PLOT DATE: 11/15/2019 PLOT TIME: 9:05:48 AM



ENLARGED PLAN

1"=20'



1 DETAIL
NTS

David Nicholson
Digitally signed by David Nicholson
Date: 2019.12.17 09:25:47 -05'00'

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GENERAL SHEET NOTES

1. SEE RISER DIAGRAM ON DWG 80-E-601 FOR WIRE AND CONDUIT REQUIREMENTS.
2. SEE DWG 05-E-603 FOR DUCTBANK SCHEDULE.

SHEET KEYNOTES

1. SEE DWG 05-E-204 FOR CONTINUATION.
2. EXTEND EXISTING 2" CONDUITS TO NEW HANDHOLE.
3. CONDUIT BELOW CONCRETE SLAB.
4. EMBED #2/0 BARE COPPER GROUND CONDUCTOR IN CONCRETE SLAB FOR A MINIMUM OF 20 FEET. TIE GROUND CONDUCTOR TO SLAB STEEL REBAR.

N
0 20 40 60
1"=20'

STATE OF FLORIDA PROFESSIONAL ENGINEER
DAVID C. NICHOLSON LICENSE No 60201

NO.	DATE	REVISION	CHK	BY	APVD
DR	A PASTRANA		M GOSLOW	D NICHOLSON	APVD
DSGN	D NICHOLSON				

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 AAC001992
DAVID C NICHOLSON, PE #60201

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

ELECTRICAL
ENLARGED SITE PLAN

BID DOCUMENTS

AS NOTED	
VERIFY SCALE	
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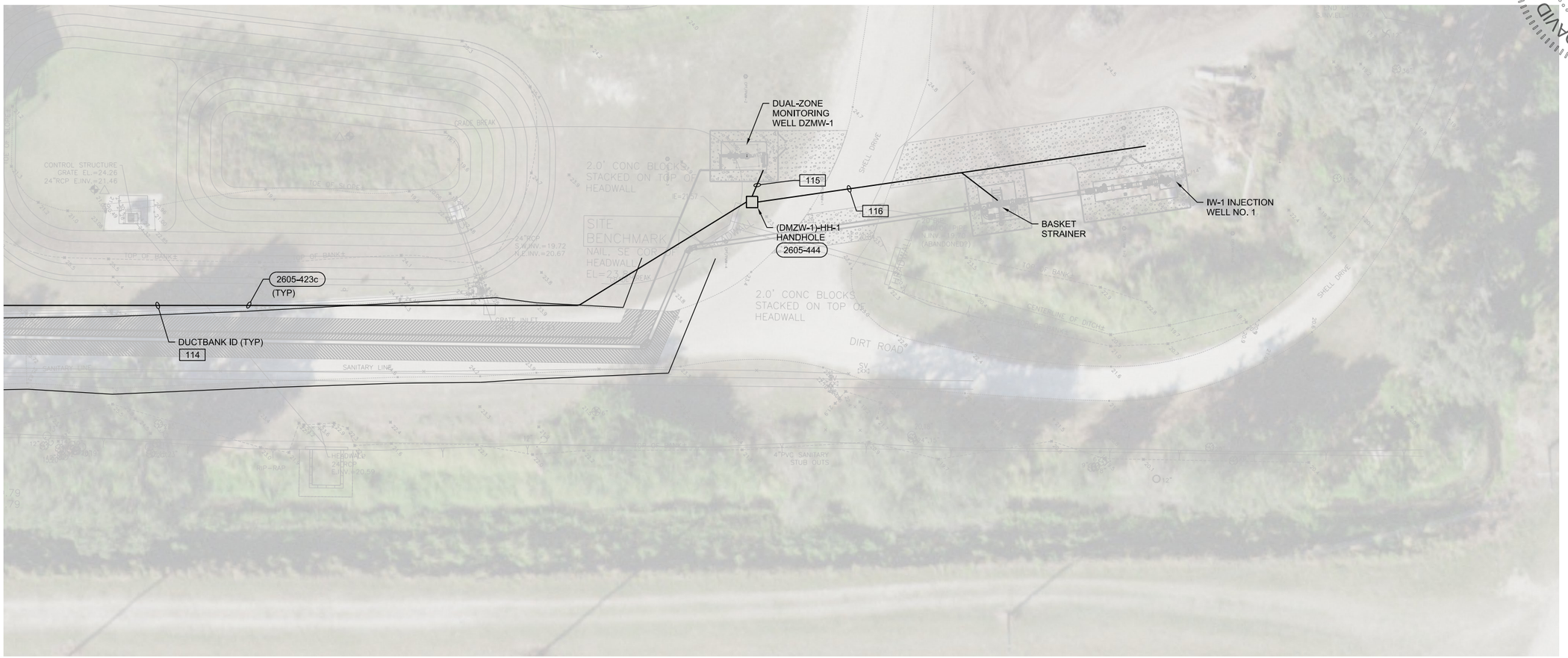
DATE	NOVEMBER 2019
PROJ	674077
DWG	05-E-203
SHEET	28 of 61



ENLARGED PLAN

1"=20'

David Nicholson

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Date: 2019.12.17 09:31:13 -05'00'

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GENERAL SHEET NOTES

1. SEE DWG 05-E-603 FOR DUCTBANK SCHEDULE

SHEET KEYNOTES

1. SEE DWG 05-E-203 FOR CONTINUATION.

N

0 20 40 60
1"=20'

DAVID C. NICHOLSON LICENSE No 60201
STATE OF FLORIDA PROFESSIONAL ENGINEER

NO.	DATE	DSGN	DR	CHK	APVD	BY	REVISION
		D NICHOLSON	A PASTRANA	M GOSLOW	APVD	D NICHOLSON	

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 AAC001992
DAVID C NICHOLSON, PE #60201

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

ELECTRICAL

ENLARGED SITE PLAN

AS NOTED
VERIFY SCALE
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0 1"

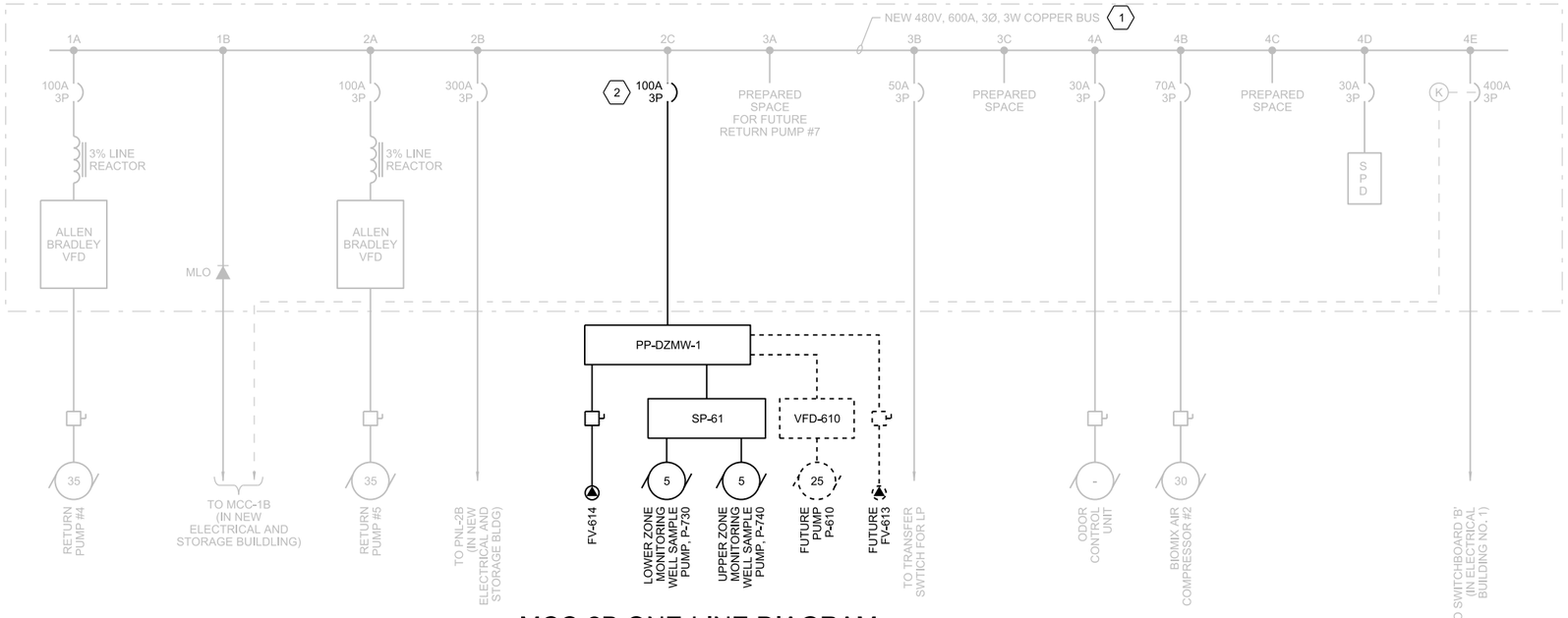
DATE	NOVEMBER 2019
PROJ	674077
DWG	05-E-204
SHEET	29 of 61

BID DOCUMENTS

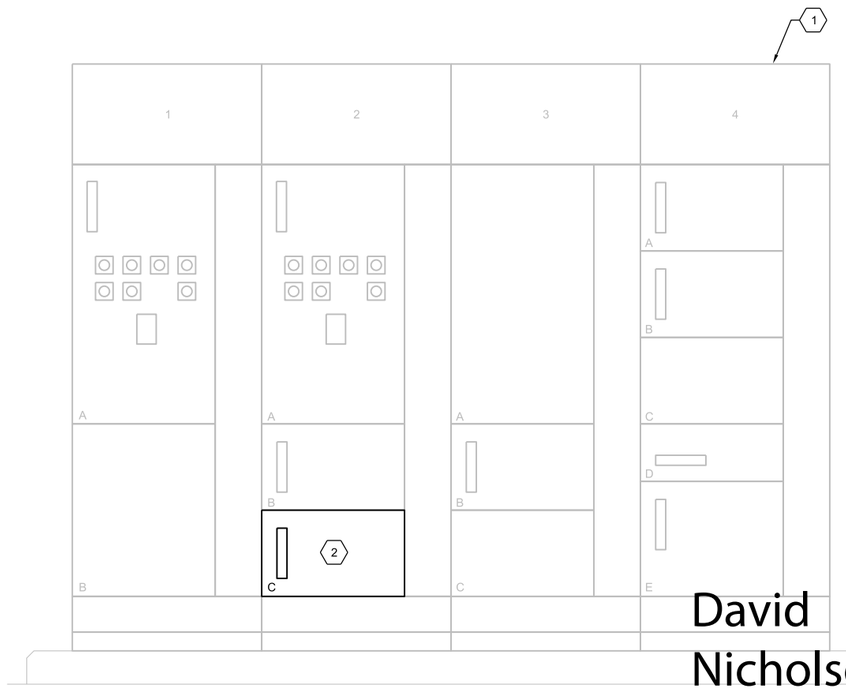
FILENAME: 05-E-204_674077.dgn PLOT DATE: 11/15/2019 PLOT TIME: 9:10:40 AM

SHEET KEYNOTES

1. MCC MANUFACTURED BY ALLEN-BRADLEY CENTERLINE2100 ARCSHIELD.
2. PROVIDE NEW 100A, 3-POLE CIRCUIT BREAKER TO FEED POWER PANEL PP-DZMW-1; MATCH EXISTING MANUFACTURER TYPE AND AIC RATING.



MCC-2B ONE-LINE DIAGRAM
NTS



MCC-2B ELEVATION
NTS

David Nicholson
Digitally signed by David Nicholson
Date: 2019.12.17 09:35:37 -05'00'

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DAVID C. NICHOLSON LICENSE No 60201 STATE OF FLORIDA PROFESSIONAL ENGINEER

NO.	DATE	REVISION	DR	CHK	BY
DSGN	D NICHOLSON		A PASTRANA	M GOSLOW	APVD D NICHOLSON

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 · AAC001992
DAVID C NICHOLSON, PE #60201

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

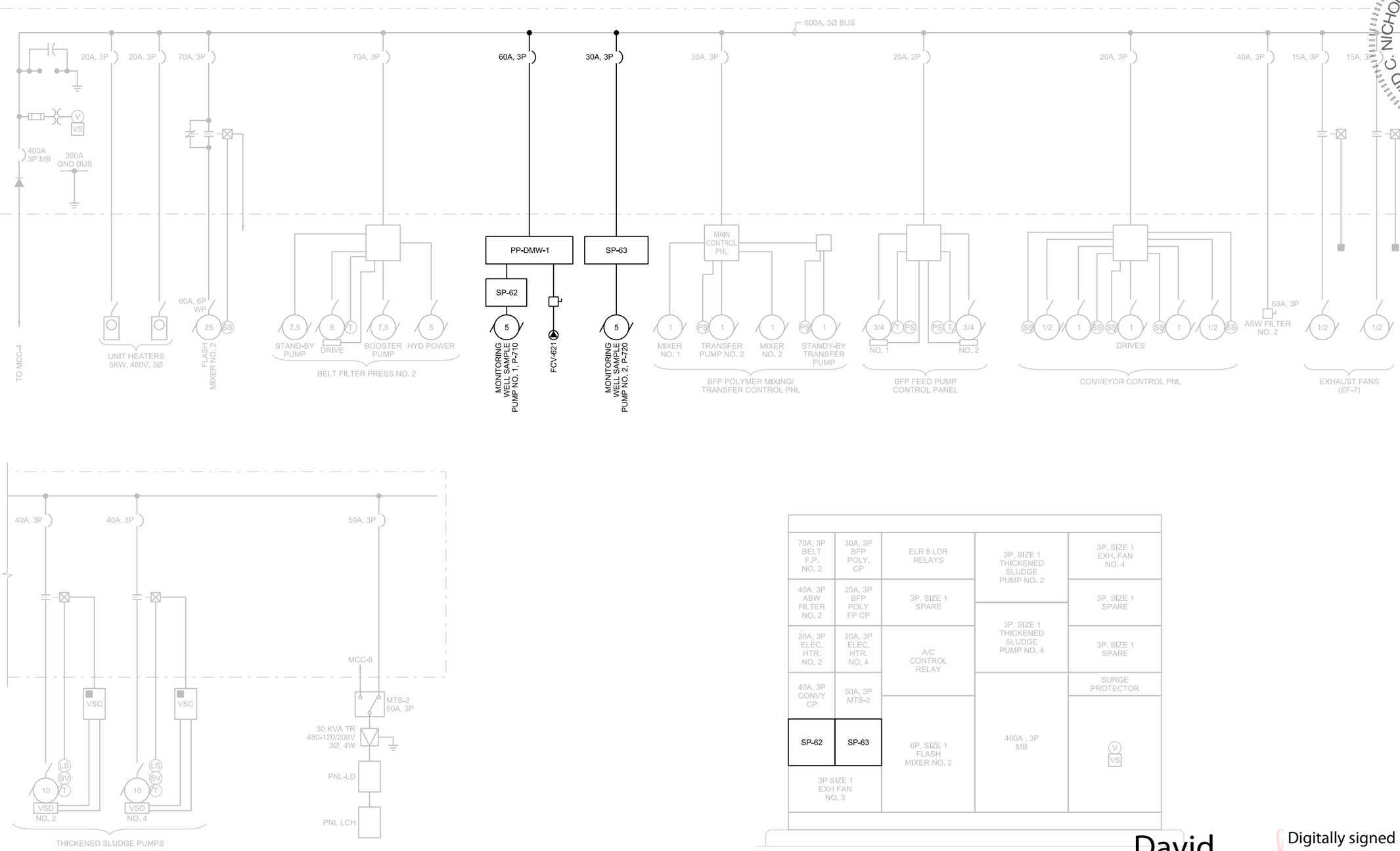
ELECTRICAL
MCC-2B ONE-LINE DIAGRAM AND ELEVATION

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ADJUST SCALE ACCORDINGLY

DATE	NOVEMBER 2019
PROJ	674077
DWG	05-E-601
SHEET	30 of 61

BID DOCUMENTS

FILENAME: 05-E-601_674077.dgn PLOT DATE: 11/15/2019 PLOT TIME: 9:05:42 AM



MCC-6 ONE-LINE DIAGRAM

NTS

MCC-6 ELEVATION

NTS

David Nicholson

Digitally signed by David Nicholson
Date: 2019.12.17 09:41:00 -05'00'

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DAVID C. NICHOLSON LICENSE No 60201 STATE OF FLORIDA PROFESSIONAL ENGINEER

NO.	DATE	REVISION	DR	CHK	APVD	BY
DSGN	D NICHOLSON		A PASTRANA	M GOSLOW	APVD	D NICHOLSON

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 · AAC001992
DAVID C NICHOLSON, PE #60201

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

ELECTRICAL

MCC-6 ONE-LINE DIAGRAM AND ELEVATION

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	05-E-602
SHEET	31 of 61

BID DOCUMENTS

VOLTAGE: 480 BUS RATING: 400A LOCATION: ELECTRICAL AND STORAGE BUILDING
PHASE: 3 MAIN BREAKER RATING: 200A MOUNTING: FLOOR
WIRE: 3 FED FROM: MCC-2B

PANEL NAME: RELOCATED PNL-2B

CKT NO.	CIRCUIR DESCRIPTION	LOAD (KVA)	BKR AMPS	PH	BKR AMPS	LOAD (KVA)	CIRCUIR DESCRIPTION	CKT NO.
1	GRIT PUMP #2	17.5	40	A/B/C	50	9.0	PANEL 'HWL' IN HEADWORKS VIA XFMR T1	2
3	RELOCATED SURGE PROTECTION DEVICE	-	30	A/B/C	20	4.0	SCREEN #2	4
5	FUTURE GRIT SNAIL #2	-	20	A/B/C	20	5.0	SCREW CONVEYOR #3	6
7	FV-616A	1.0	20	A/B/C	-	-	SPACE	8
9	FV-616B	1.0	20	A/B/C	-	-	SPACE	10
11	SPACE	-	-	PH	-	-	SPACE	12
13	SPACE	-	-	PH	-	-	SPACE	14
15	STORAGE ROOM HVAC EQUIPMENT (1)	15.0	20	PH	-	-	SPACE	16

	A	B	C	TOTAL
CONNECT LOAD (PER PHASE KVA):	17.2	17.2	17.2	51.5
CONNECT LOAD (PER PHASE AMPS):	62.0	62.0	62.0	

NOTE(1) EXISTING SPARE 20, 3-POLE CIRCUIT BREAKER SHALL BE UTILIZD FOR NEW STORAGE ROOM HVAC UNIT, CONTRACTOR SHALL COORDINATE ALL ELECTRICAL REQUIREMENTS WITH HVAC UNIT PROVIDED.

PANEL: PP-DMW-1 LOCATION: SINGLE ZONE MONITORING WELL NO. 1
SERVICE VOLTAGE: 480Y/277V PHASE: 3 WIRE: 4
TOTAL LOAD KVA: 11.5 BUS SIZE: 100 MAIN SIZE: 60 TYPE: CB
REMARKS: INTREGRAL SPD NEUTRAL: N/A MOUNTING: SURFACE AIC: 35K
NEMA 4X 316 SS ENCLOSURE

LOAD IN KVA A	LOAD IN KVA B	LOAD IN KVA C	CIRCUIT DESCRIPTION	BKR A/P	CKT NO.	CKT NO.	BKR A/P	CIRCUIT DESCRIPTION	LOAD IN KVA A	LOAD IN KVA B	LOAD IN KVA C
3.5					1	2					
	3.5		SP-62	30/3	3	4	30/3	SPARE			
		3.5			5	6					
0.3					7	8					
	0.3		FV-621	20/3	9	10	20/3	SPARE			
		0.3			11	12					
			SPACE		13	14		SPACE			
			SPACE		15	16		SPACE			
			SPACE		17	18		SPACE			
			SPACE		19	20					
			SPACE		21	22	30/3	SPD			
			SPACE		23	24					
3.8	3.8	3.8	TOTAL						0.0	0.0	0.0

PANEL: PP-DZMW-1 LOCATION: DUEL ZONE MONITORING WELL NO.1
SERVICE VOLTAGE: 480Y/277V PHASE: 3 WIRE: 4
TOTAL LOAD KVA: 52.2 BUS SIZE: 100 MAIN SIZE: 100 TYPE CB
REMARKS: INTERGRAL SPD NEUTRAL: N/A MOUNTING: SURFACE AIC: 35K
NEMA 4X 316 SS ENCLOSURE

LOAD IN KVA A	LOAD IN KVA B	LOAD IN KVA C	CIRCUIT DESCRIPTION	BKR A/P	CKT NO.	CKT NO.	BKR A/P	CIRCUIT DESCRIPTION	LOAD IN KVA A	LOAD IN KVA B	LOAD IN KVA C
3.5					1	2					
	3.5		SP-61	30/3	3	4	60/3	FUTURE VFD-610			
		3.5			5	6					
0.3					7	8					
	0.3		FV-614	20/3	9	10	20/3	FUTURE FV-613			
		0.3			11	12					
					13	14					
			SPARE	30/3	15	16	20/3	SPARE			
					17	18					
			SPACE		19	20					
			SPACE		21	22	30/3	SPD			
			SPACE		23	24					
3.8	3.8	3.8	TOTAL						0.0	0.0	0.0

LIGHTING FIXTURE SCHEDULE

SYMBOL	MARK	VOLTS	DRIVER CURRENT	LAMP TYPE	LAMP WATTS	LAMP LUMENS	MOUNT	DESCRIPTION	MAKE/MODEL
	A	120	700mA (MIN)	LED 40K	137	15,964	CONCRETE POLE 10FT AFG	CUT-OFF SHOE BOX LIGHTING FIXTURE ALL ALUMINUM WITH DIE CAST BODY W/ DARK BRONZE FINISH AND DOOR TEMPERED GLASS LENS MOUNTED ON NINE INCH ARM,SEALED AGAINST ENTRY OF INSECTS. ALUMINUM REFLECTOR, TYPE R3 DISTRIBUTION WITH HINGED DOOR ACCESS. PROVIDE MANUAL ON-OFF SWITCH 48-INCH AFG ON POLE UL LISTED FOR OUTDOOR LOCATIONS. CONTRACTOR SHALL HAVE STRUCTURAL CALCULATIONS PERFORMED TO DETERMINE REQUIRED POLE AND HARDWARE STRENGTH AND DEPTH OF BURIAL. CALCULATIONS SHALL BE BASED ON CHARACTERISTICS OF LIGHT FIXTURE AND DESIGN CRITERIA ON STRUCTURAL NOTES SHEET OF THESE DOCUMENTS AND SHALL BE PREFORMED BY AND ENGINEER QUALIFIED UNDER FLORIDA STATUTES 471.003 EITHER BY LICENSURE OF FULL TIME EMPLOYMENT BY POLE MANUFACTURER	LITHONIA KAD LED SERIES: KAD LED 60C 700 40K R3 MVOLT SP09 DDBXD COOPER/LUMARK RK RIDGEWAY SERIES HUBBELL/SPAULDING CIMARRON SERIES

DUCT BANK SCHEDULE

DUCT BANK ID	CONDUIT SIZE	CIRCUIT ID	CIRCUIT TYPE	FROM	TO	COMMENTS
101	1 1/2"	PP-DMW-1	POWER	MCC-6	PP-DMW-1	
	2"	SP-62	NETWORK	SP-3	SP-62	FIBER OPTIC
	1"	LIT-620	ANALOG	SP-62	LIT-620	SHEET KEYNOTE 2
	1"	PIT-620	ANALOG	SP-62	PIT-620	SHEET KEYNOTE 2
	1"	DPIT-622	ANALOG	SP-62	DPIT-622	SHEET KEYNOTE 2
	1"	FIT-621	ANALOG	SP-62	FIT-621	SHEET KEYNOTE 2
	1"	FIT-621	POWER	SP-62	FIT-621	
	1"	FCV-621	ANALOG	SP-62	FCV-621	SHEET KEYNOTE 2
	1"	FCV-621	POWER	PP-DMW-1	FCV-621	
	1"	FCV-621	CONTROL	SP-62	FCV-621	
	1"	POLE LIGHT IW2	POWER	POLE LIGHT DMW1	POLE LIGHT IW2	
	1 1/2"	EMPTY	SPARE	MCC-6	PP-DMW-1	
	2"	EMPTY	SPARE	PP-DMW-1	IW-2	
	2"	EMPTY	SPARE	PP-DMW-1	IW-2	
	2"	EMPTY	SPARE	SP-3	SP-62	
102	1"	LIT-620	ANALOG	SP-62	LIT-620	SHEET KEYNOTE 2
	1"	PIT-620	ANALOG	SP-62	PIT-620	SHEET KEYNOTE 2
	1"	DPIT-622	ANALOG	SP-62	DPIT-622	SHEET KEYNOTE 2
	1"	FIT-621	ANALOG	SP-62	FIT-621	SHEET KEYNOTE 2
	1"	FIT-621	POWER	SP-62	FIT-621	
	1"	FCV-621	ANALOG	SP-62	FCV-621	SHEET KEYNOTE 2
	1"	FCV-621	POWER	PP-DMW-1	FCV-621	
	1"	FCV-621	CONTROL	SP-62	FCV-621	
	1"	POLE LIGHT IW2	POWER	POLE LIGHT DMW1	POLE LIGHT IW2	
	2"	EMPTY	SPARE	PP-DMW-1	IW-2	
	2"	EMPTY	SPARE	PP-DMW-1	IW-2	
103	1 1/2"	PP-DMW-1	POWER	MCC-6	PP-DMW-1	
	2"	SP-62	NETWORK	SP-3	SP-62	FIBER OPTIC
	1 1/2"	EMPTY	SPARE	MCC-6	PP-DMW-1	
	2"	EMPTY	SPARE	SP-3	SP-62	
104	1 1/2"	SP-63	POWER	MCC-6	SP-63	
	1"	LIT-720	ANALOG	SP-3	LIT-720	SHEET KEYNOTE 2
105	1 1/2"	SP-63	POWER	MCC-6	SP-63	
	1 1/2"	LIT-720	ANALOG	SP-3	LIT-720	
106	1 1/2"	SP-63	POWER	MCC-6	SP-63	
	1"	LIT-720	ANALOG	SP-3	LIT-720	SHEET KEYNOTE 2
107	1 1/2"	SP-63	POWER	MCC-6	SP-63	
	1"	LIT-720	ANALOG	SP-3	LIT-720	SHEET KEYNOTE 2
	2"	EMPTY	SPARE	(APMW-2)-HH-4	FUTURE ANTENNA	
	2"	EMPTY	SPARE	(APMW-2)-HH-4	FUTURE ANTENNA	
	2"	EMPTY	SPARE	(APMW-2)-HH-4	(APMW-2)-HH-1	
	2"	EMPTY	SPARE	(APMW-2)-HH-4	(APMW-2)-HH-1	
108	1 1/2"	SP-63	POWER	MCC-6	SP-63	
	1"	LIT-720	ANALOG	SP-3	LIT-720	SHEET KEYNOTE 2
	2"	EMPTY	SPARE	(APMW-2)-HH-4	SP-63	SPARE
	2"	EMPTY	SPARE	(APMW-2)-HH-4	SP-63	SPARE
109	2"	EMPTY	SPARE	(APMW-2)-HH-4	FUTURE ANTENNA	SPARE
	2"	EMPTY	SPARE	(APMW-2)-HH-4	FUTURE ANTENNA	SPARE
110	1"	FV-616A	POWER	PP-DMW-1	FV-616A	
	1"	FV-616B	POWER	PP-DMW-1	FV-616B	
	1"	EMPTY	SPARE	PNL-2B	FV-616A	
	1"	EMPTY	SPARE	PNL-2B	FV-616B	
111	1"	FV-616A	POWER	PP-DMW-1	FV-616A	
	1"	FV-616B	POWER	PP-DMW-1	FV-616B	
	1"	EMPTY	SPARE	PNL-2B	FV-616A	
	1"	EMPTY	SPARE	PNL-2B	FV-616B	
	1"	FV-616A	CONTROL	SP-61	FV-616A	
	1"	FV-616B	CONTROL	SP-61	FV-616B	
	1"	EMPTY	SPARE	SP-61	FV-616A	
	1"	EMPTY	SPARE	SP-61	FV-616B	

DUCT BANK SCHEDULE

DUCT BANK ID	CONDUIT SIZE	CIRCUIT ID	CIRCUIT TYPE	FROM	TO	COMMENTS
112	1"	FV-616A	CONTROL	SP-61	FV-616A	
	1"	FV-616B	CONTROL	SP-61	FV-616B	
	1"	EMPTY	SPARE	SP-61	FV-616A	
	1"	EMPTY	SPARE	SP-61	FV-616B	
113	2"	PP-DZMW-1	POWER	MCC-2B	PP-DZMW-1	
	2"	SP-61	NETWORK	EQ-1	SP-61	FIBER OPTIC
	2"	EMPTY	SPARE	MCC-2B	(DZMW-1)-HH-1	
	2"	EMPTY	SPARE	MCC-1B	(DZMW-1)-HH-1	
	2"	EMPTY	SPARE	MCC-1B	(DZMW-1)-HH-1	
114	2"	PP-DZMW-1	POWER	MCC-2B	PP-DZMW-1	
	2"	SP-61	NETWORK	EQ-1	SP-61	FIBER OPTIC
	2"	EMPTY	SPARE	MCC-2B	(DZMW-1)-HH-1	
	2"	EMPTY	SPARE	MCC-1B	(DZMW-1)-HH-1	
	2"	EMPTY	SPARE	MCC-1B	(DZMW-1)-HH-1	
	1"	FV-616A	CONTROL	SP-61	FV-616A	
	1"	FV-616B	CONTROL	SP-61	FV-616B	
	1"	EMPTY	SPARE	SP-61	FV-616A	
	1"	EMPTY	SPARE	SP-61	FV-616B	
115	2"	PP-DZMW-1	POWER	MCC-2B	PP-DZMW-1	
	2"	SP-61	NETWORK	EQ-1	SP-61	FIBER OPTIC
	1"	FV-616A	CONTROL	SP-61	FV-616A	
	1"	FV-616B	CONTROL	SP-61	FV-616B	
	1"	EMPTY	SPARE	SP-61	FV-616A	
	1"	EMPTY	SPARE	SP-61	FV-616B	
	2"	VFD-610	POWER	PP-DZMW-1	VFD-610	FUTURE
	1"	VFD-610	NETWORK	SP-61	VFD-610	FUTURE
	1"	FV-613	POWER	PP-DZMW-1	FV-613	FUTURE
	1"	FV-613	CONTROL	SP-61	FV-613	FUTURE
	1"	ZSC-610	CONTROL	SP-61	ZSC-610	FUTURE
	1"	LIT-610	ANALOG	SP-61	LIT-610	SHEET KEYNOTE 2
	1"	PIT-610	ANALOG	SP-61	PIT-610	SHEET KEYNOTE 2
	1"	DPIT-621	ANALOG	SP-61	DPIT-621	SHEET KEYNOTE 2
	1"	DPIT-621	SPARE	SP-61	DPIT-612	SHEET KEYNOTE 2
	1"	DPIT-621	ANALOG	SP-61	DPIT-621	SHEET KEYNOTE 2
	1"	FIT-614	ANALOG	SP-61	FIT-614	SHEET KEYNOTE 2
	1"	FIT-614	POWER	SP-61	FIT-614	
	1"	FCV-614	ANALOG	SP-61	FCV-614	SHEET KEYNOTE 2
	1"	FCV-614	POWER	PP-DZMW-1	FCV-614	
	1"	FCV-614	CONTROL	SP-62	FCV-614	
	1"	POLE LIGHT IW1	POWER	POLE LIGHT DZMW1	POLE LIGHT IW1	
	2"	EMPTY	SPARE	PP-DZMW-1	IW-1	
	2"	EMPTY	SPARE	SP-61	IW-1	
116	2"	VFD-610	POWER	PP-DZMW-1	VFD-610	FUTURE
	1"	VFD-610	NETWORK	SP-61	VFD-610	FUTURE
	1"	FV-613	POWER	PP-DZMW-1	FV-613	FUTURE
	1"	FV-613	CONTROL	SP-61	FV-613	FUTURE
	1"	ZSC-610	CONTROL	SP-61	ZSC-610	FUTURE
	1"	LIT-610	ANALOG	SP-61	LIT-610	SHEET KEYNOTE 2
	1"	PIT-610	ANALOG	SP-61	PIT-610	SHEET KEYNOTE 2
	1"	DPIT-621	ANALOG	SP-61	DPIT-621	SHEET KEYNOTE 2
	1"	DPIT-621	SPARE	SP-61	DPIT-612	SHEET KEYNOTE 2
	1"	FIT-614	ANALOG	SP-61	FIT-614	SHEET KEYNOTE 2
	1"	FIT-614	POWER	SP-61	FIT-614	
	1"	FCV-614	ANALOG	SP-61	FCV-614	SHEET KEYNOTE 2
	1"	FCV-614	POWER	PP-DZMW-1	FCV-614	
	1"	FCV-614	CONTROL	SP-62	FCV-614	
	1"	POLE LIGHT IW1	POWER	POLE LIGHT DZMW1	POLE LIGHT IW1	
	2"	EMPTY	SPARE	PP-DZMW-1	IW-1	
	2"	EMPTY	SPARE	SP-61	IW-1	

SHEET KEYNOTES

1. PROVIDE NEW 20A, 3-POLE CIRCUIT BREAKER MATCH EXISTING MANUFACTURER, TYPE AND AIC RATING.
2. SEPERATE ANALOG FROM 480V CABLES BY A MINIMUM OF 18 INCHES, AND FROM 120V CABLES BY A MINIMUM OF 12 INCHES.

David Nicholson
Digitally signed by David Nicholson
Date: 2019.12.17 09:46:12 -05'00'

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY DAVID C. NICHOLSON, PE ON DECEMBER 16th, 2019, USING A DIGITAL SIGNITURE. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELETRONIC COPIES.

DAVID C. NICHOLSON LICENSE No 60201 STATE OF FLORIDA PROFESSIONAL ENGINEER

NO.	DATE	REVISION	CHK	BY
DSGN	D NICHOLSON	DR	A PASTRANA	APVD	M GOSLOW	APVD	D NICHOLSON

843 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 · AAC001992
DAVID C NICHOLSON, PE #60201

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

ELECTRICAL

PANEL SCHEDULES, LIGHTING FICTURE SCHEDULE, AND AND DUCTBANK SCHEDULE

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	05-E-603
SHEET	32 of 61

BID DOCUMENTS

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SP-7

UPS
SS1
PS

PLC

LEVEL
PRESSURE
DIFFERENTIAL PRESSURE
REMOTE POSITION CMD
POSITION FEEDBACK
FLOW
SS2
REMOTE
OPENED
CLOSED
OPEN
CLOSE
REMOTE
OPENED
CLOSED
OPEN
CLOSE
CLOSED

480VAC

480VAC
VFD-610 **

120V

VERTICAL TURBINE PUMP 1
P-610

ARV-611
ZSC 610
8" x 6"
8" RW

ARV-610
PIT 610
LIT 610
MSC
S
LE 610
14" CASING
EXISTING INJECTION WELL IW-1

16" RW

UU 613
FV 613
480VAC
16" x 8"

UU 614
480VAC
16" RW
FCV 614
FLOW MODULATION

SS4
FIT 614
MSC
FE 614

ARV-615
BASKET STRAINER
PDIT 612

ARV-616
1 (TYP) 480VAC
UU 616A
FV 616A
ZSC 616A
20"x16" HOT TAP SADDLE & VALVE (NORMALLY OPEN)
N.O.

ZSC 616B
FV 616B
UU 616B
480VAC
12" RW

20" RW

12" W2

M

REJECT POND
EAST LAKE

FROM PLANT RECLAIM WATER
24" W2
24" x 12"
12" W2

SHEET KEYNOTES

1. CONTROL VALVE POWER FED FROM 480VAC PARTITION OF CONTROL PANEL.

Cyrus John Saharkhiz

Digitally signed by Cyrus John Saharkhiz
Date: 2019.12.16 14:12:56 -05'00'

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CYRUS JOHN SAHARKHIZ LICENSE No. 84591 STATE OF FLORIDA PROFESSIONAL ENGINEER

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			A PASTRANA	C.WILSON	APVD	C.SAHARKHIZ

C.SAHARKHIZ DSGN

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CYRUS JOHN SAHARKHIZ, PE #84591

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

INSTRUMENTATION AND CONTROL
P&ID
INJECTION WELL IW-1

NTS
VERIFY SCALE
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0 1"

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SHEET	33 of 61

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SP-8

UPS

SS1

PS

PLC

LEVEL

PRESSURE

REMOTE POSITION CMD

POSITION FEEDBACK

FLOW

DIFFERENTIAL PRESSURE

SS2

SS2

120V

SS4

FIT 621

MSC

ARV-620

PIT 620

S

UU 621

M

480VAC

FCV 621

M

FE 621

QUICK CONNECT

12"x6"

ARV-623

12" RW

12" RW

BASKET STRAINER

DPIT 622

LIT 620

MSC

12" CASING

LE 620

9" FRP CASING

EXISTING INJECTION WELL IW-2 (DESIGNATED AS IW-3 FOR WELL CONSTRUCTION PERMIT)

20" MCMRS

N.O.

20"x12" HOT TAP SADDLE & VALVE (NORMALLY OPEN)

12" X

20" MCMRS

Cyrus John Saharkhiz

Digitally signed by Cyrus John Saharkhiz
Date: 2019.12.16 14:15:47 -05'00'

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CYRUS JOHN SAHARKHIZ LICENSE No. 84591 STATE OF FLORIDA PROFESSIONAL ENGINEER

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CYRUS JOHN SAHARKHIZ, PE #84591

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

INSTRUMENTATION AND CONTROL

P&ID
INJECTION WELL IW-2

NTS

VERIFY SCALE

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0 1"

DATE	NOVEMBER 2019
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DWG	08-N-602
SHEET	34 of 61

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FILENAME: 08-N-602_674077.dgn PLOT DATE: 11/15/2019 PLOT TIME: 9:07:34 AM

SP-8

PLC

LEVEL

SS2

SP-3 (1)

PLC

LEVEL

SS2

(1)

SS3

ARV-710

PI 710

FI 710

FQ 710

LIT 710

2" DR

2" DR

2" DR

TO EXISTING SANITARY SEWER SYSTEM

MSC

LE 710

CS

DMW-1

MONITORING WELL SAMPLE PUMP NO. 1

P-710

(1)

ARV-720

LE-720

LIT-720

APMW

FI/FQ-720

FI/FQ-720

MONITORING WELL SAMPLE PUMP NO. 2

P-720

2" DR

(SAME AS ABOVE)

Cyrus John Saharkhiz

Digitally signed by Cyrus John Saharkhiz
Date: 2019.12.16 14:18:03 -05'00'

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SHEET KEYNOTES

1. TERMINATE 4-20mA ANALOG SIGNAL AT SPARE ANALOG INPUT IN THE EXISTING SLUDGE DEWATERING PANEL PLC.

CYRUS JOHN SAHARKHIZ LICENSE No. 84591 STATE OF FLORIDA PROFESSIONAL ENGINEER

NO.	DATE	REVISION	CHK	APVD	BY
DSGN	C.SAHARKHIZ	DR	A.PASTRANA	C.WILSON	APVD

C.SAHARKHIZ

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GAINESVILLE, FLORIDA 32601
EB0000072 AAC001992
CYRUS JOHN SAHARKHIZ, PE #84591

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

INSTRUMENTATION AND CONTROL

P&ID

SIMPLE ZONE MONITORING WELLS

NTS

VERIFY SCALE

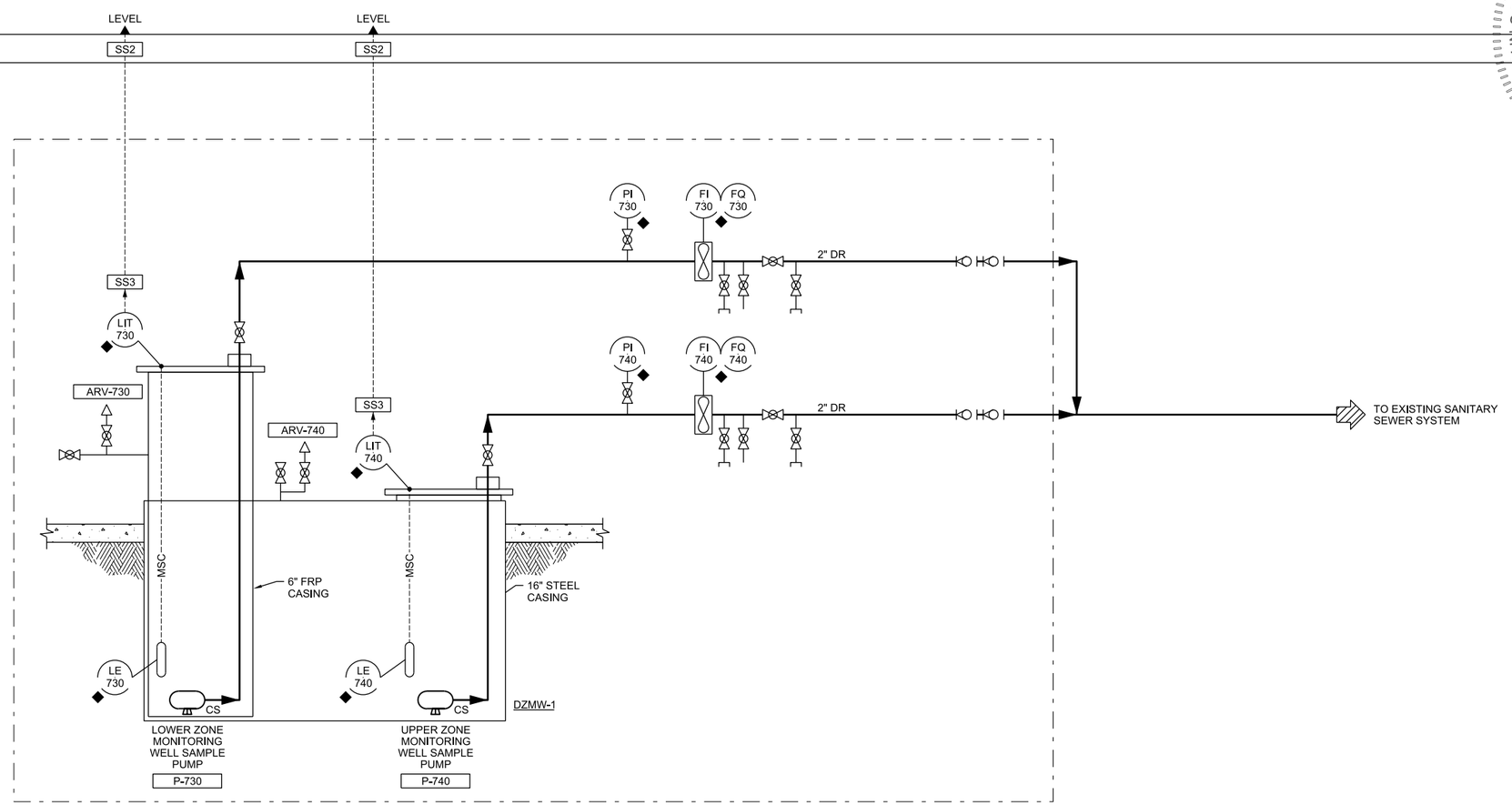
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	08-N-603
SHEET	35 of 61

BID DOCUMENTS

SP-7

PLC



CYRUS JOHN SAHARKHIZ LICENSE No. 84591 STATE OF FLORIDA PROFESSIONAL ENGINEER

NO.	DATE	REVISION	BY	APVD
DSGN	C.SAHARKHIZ	DR	A.PASTRANA	CHK	C.WILSON	APVD	C.SAHARKHIZ

BID DOCUMENTS

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

INSTRUMENTATION AND CONTROL
P&ID
DUAL ZONE MONITORING WELL

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 · AAC001992
CYRUS JOHN SAHARKHIZ, PE #84591

Cyrus John Saharkhiz

Digitally signed by Cyrus John Saharkhiz
Date: 2019.12.16 14:19:53 -05'00'

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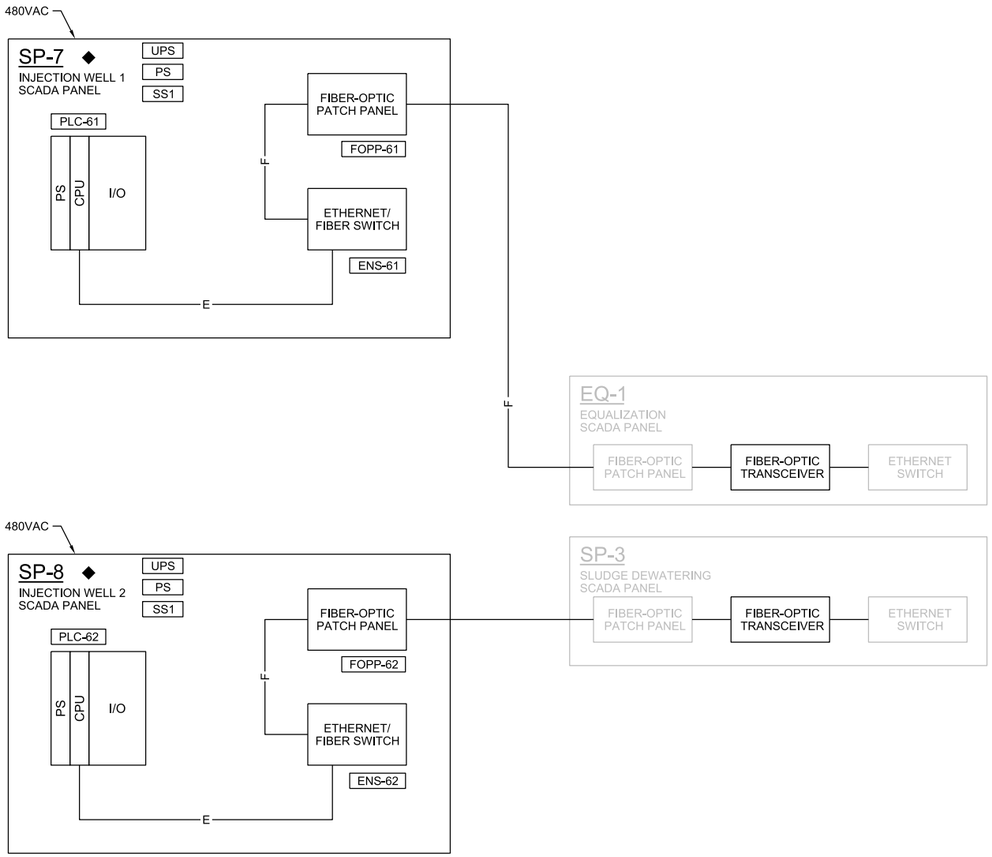
NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	08-N-604
SHEET	36 of 61

FILENAME: 08-N-604_674077.dgn PLOT DATE: 11/15/2019 PLOT TIME: 9:08:03 AM

GENERAL SHEET NOTES

E	ETHERNET, CATEGORY 5e
F	FIBER-OPTIC CABLE, MULTIMODE OM1
CPU	- CENTRAL PROCESSING UNIT
ENS	- ETHERNET SWITCH
FOPP	- FIBER-OPTIC PATCH PANEL
I/O	- INPUT/OUTPUT
PLC	- PROGRAMMABLE LOGIC CONTROLLER
PS	- POWER SUPPLY
SCADA	- SUPERVISORY CONTROL AND DATA AQUISITION
SS1	- PANEL SURGE SUPPRESSOR
UPS	- UNINTERRUPTIBLE POWER SUPPLY



STATE OF FLORIDA PROFESSIONAL ENGINEER
CYRUS JOHN SAHARKHIZ LICENSE No. 84591

NO.	DATE	DSGN	DR	CHK	BY	REVISION
		C.SAHARKHIZ	A.PASTRANA	C.WILSON	APVD	C.SAHARKHIZ

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 AAC001992
CYRUS JOHN SAHARKHIZ, PE #84591

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

INSTRUMENTATION AND CONTROL

NETWORK BLOCK DIAGRAM

Cyrus John Saharkhiz
Digitally signed by Cyrus John Saharkhiz
Date: 2019.12.16 14:21:47 -05'00'

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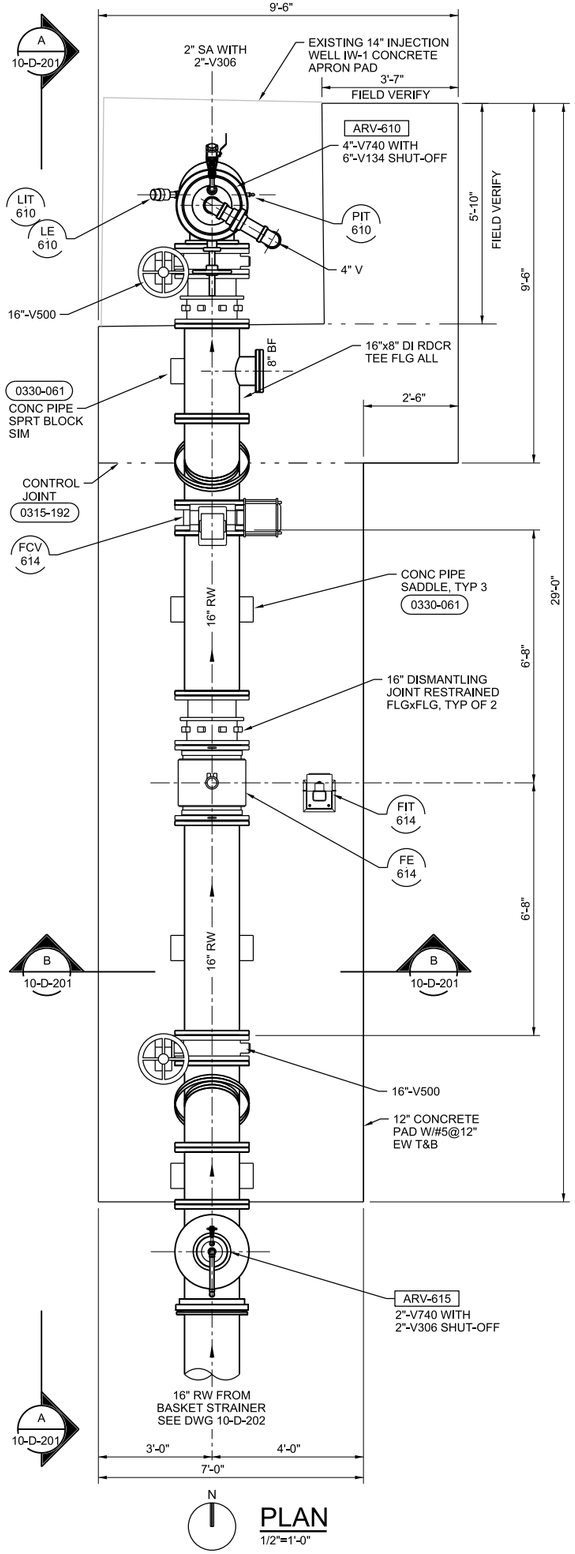
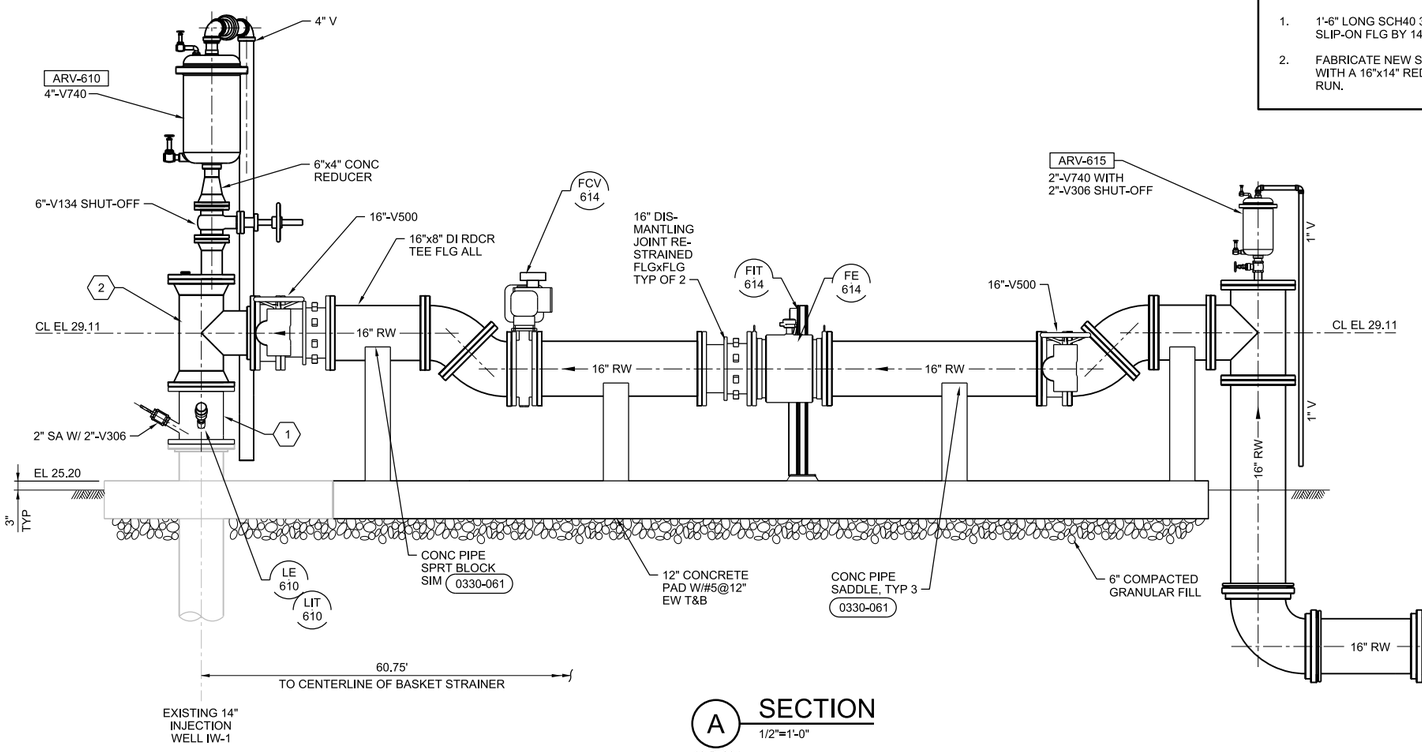
NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

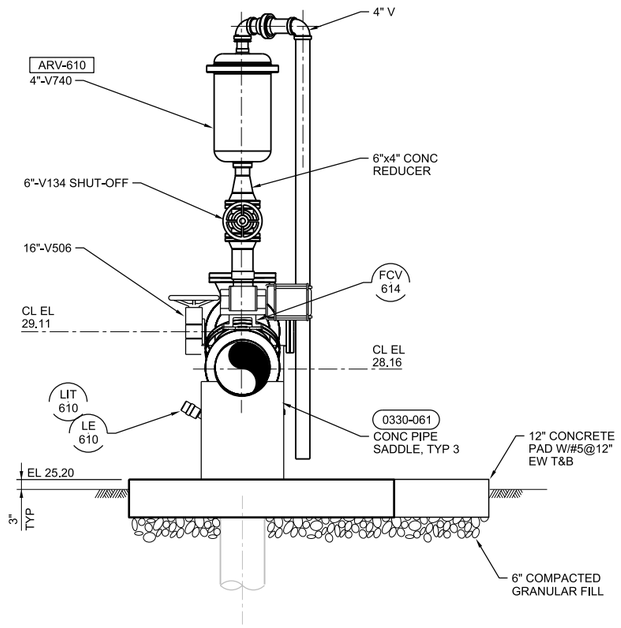
DATE	NOVEMBER 2019
PROJ	674077
DWG	08-N-701
SHEET	37 of 61

BID DOCUMENTS





A SECTION
1/2"=1'-0"
10-D-201



B SECTION
1/2"=1'-0"
10-D-201

SHEET KEYNOTES

1. 1'-6" LONG SCH40 316 SST SPOOL. 14" 316 SST 150# SLIP-ON FLG BY 14" 316 SST 150# SLIP-ON FLG.
2. FABRICATE NEW STAINLESS STEEL 14"x14"x14" TEE WITH A 16"x14" REDUCING FLANGE ON THE BRANCH RUN.

TAO FU LICENSE No 63138 STATE OF FLORIDA PROFESSIONAL ENGINEER

NO.	DATE	DSGN	DR	CHK	APVD	REVISION	BY	APVD
		T FU	T FU	WL CLOUGH	T INNISS		T FU	

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 · AAC001992
TAO FU, PE #63138

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

ch2m

PROCESS MECHANICAL

INJECTION WELL No.1 DEVELOPMENT PLAN AND SECTIONS

Tao Fu
Digitally signed by Tao Fu
Date: 2019.12.16 11:32:22 -05'00'

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GENERAL SHEET NOTES

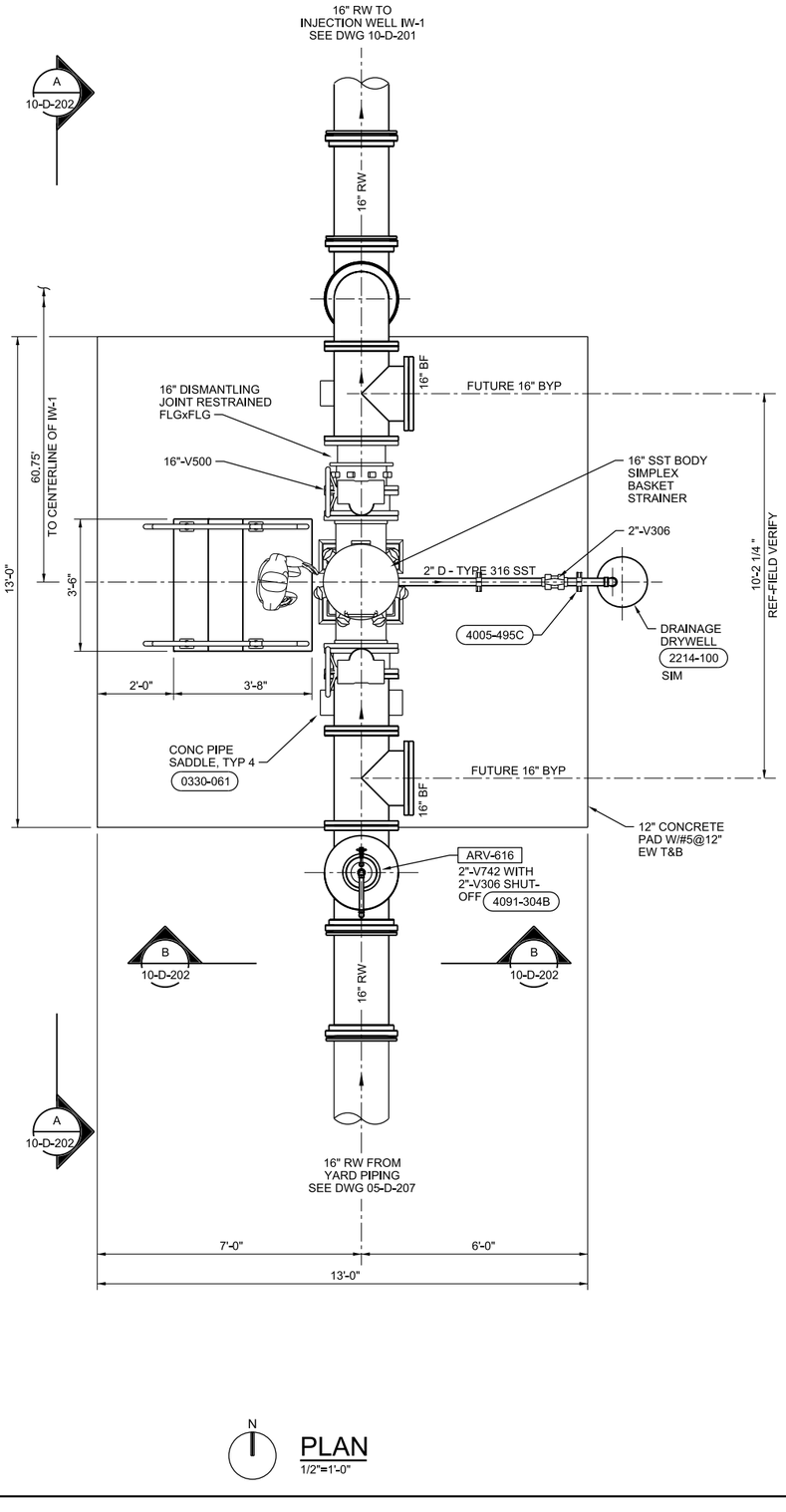
1. SEE P&ID DRAWINGS FOR INSTRUMENT AND CONTROL INSTALLATION DETAILS.
2. ALL BURIED PIPES SHALL BE RESTRAINED.
3. RESTORE DISTURBED AREA WITH BAHIA SOD.
4. PROVIDE INSULATING FLANGE KITS FOR ALL CONNECTIONS BETWEEN DIP AND STAINLESS STEEL.

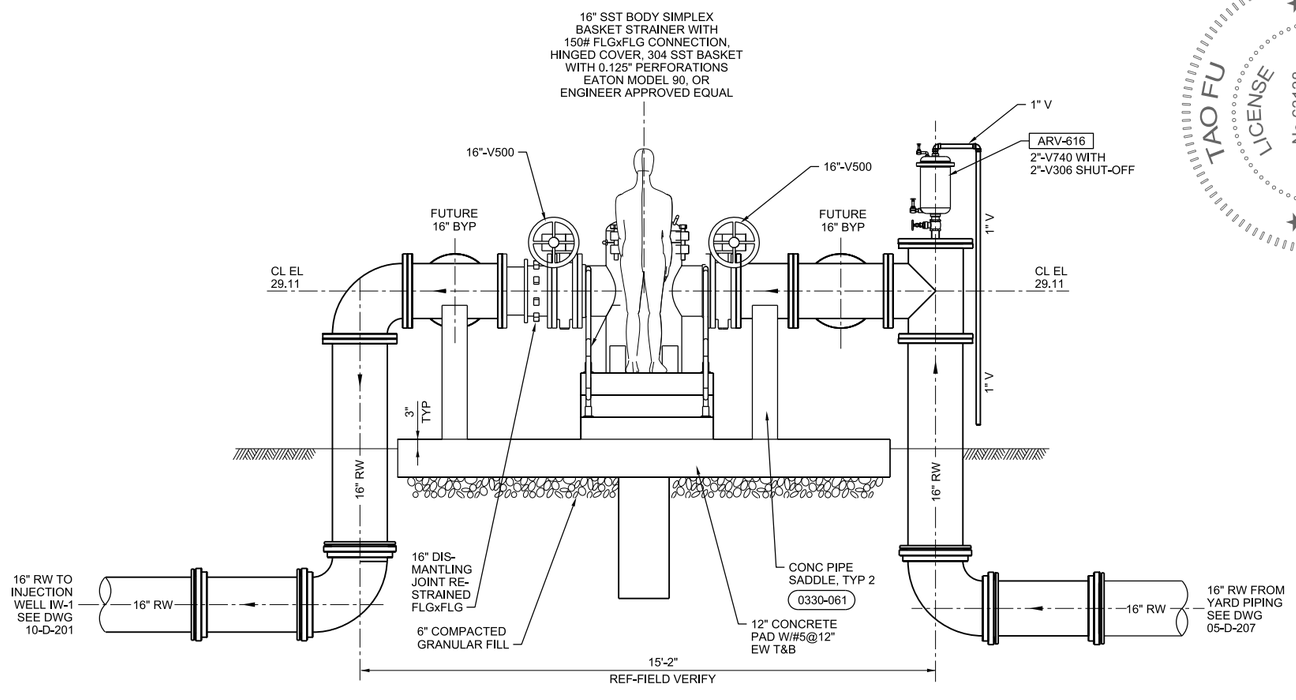
AS NOTED
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

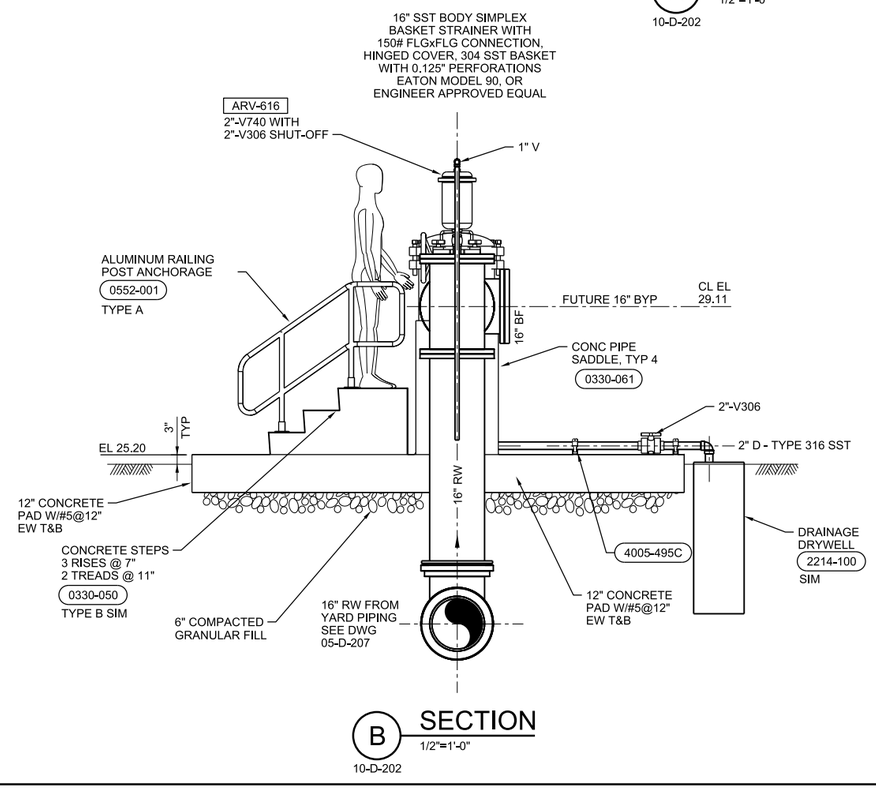
DATE	NOVEMBER 2019
PROJ	674077
DWG	10-D-201
SHEET	38 of 61

BID DOCUMENTS

FILENAME: 10-D-201_674077.dgn PLOT DATE: 11/15/2019 PLOT TIME: 9:08:13 AM







Tao Fu

Digitally signed by Tao Fu
Date: 2019.12.16 11:34:20 -05'00'

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GENERAL SHEET NOTES

1. SEE P&ID DRAWINGS FOR INSTRUMENT AND CONTROL INSTALLATION DETAILS.
2. ALL BURIED PIPES SHALL BE RESTRAINED.
3. RESTORE DISTURBED AREA WITH BAHIA SOD.
4. PROVIDE INSULATING FLANGE KITS FOR ALL CONNECTIONS BETWEEN DIP AND STAINLESS STEEL.

TAO FU
LICENSE
No 63138
STATE OF FLORIDA
PROFESSIONAL ENGINEER

NO.	DATE	DSGN	DR	CHK	APVD	BY
		T FU	T FU	WL CLOUGH	T INNISS	APVD

REVISION

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 · AAC001992
TAO FU, PE #63138

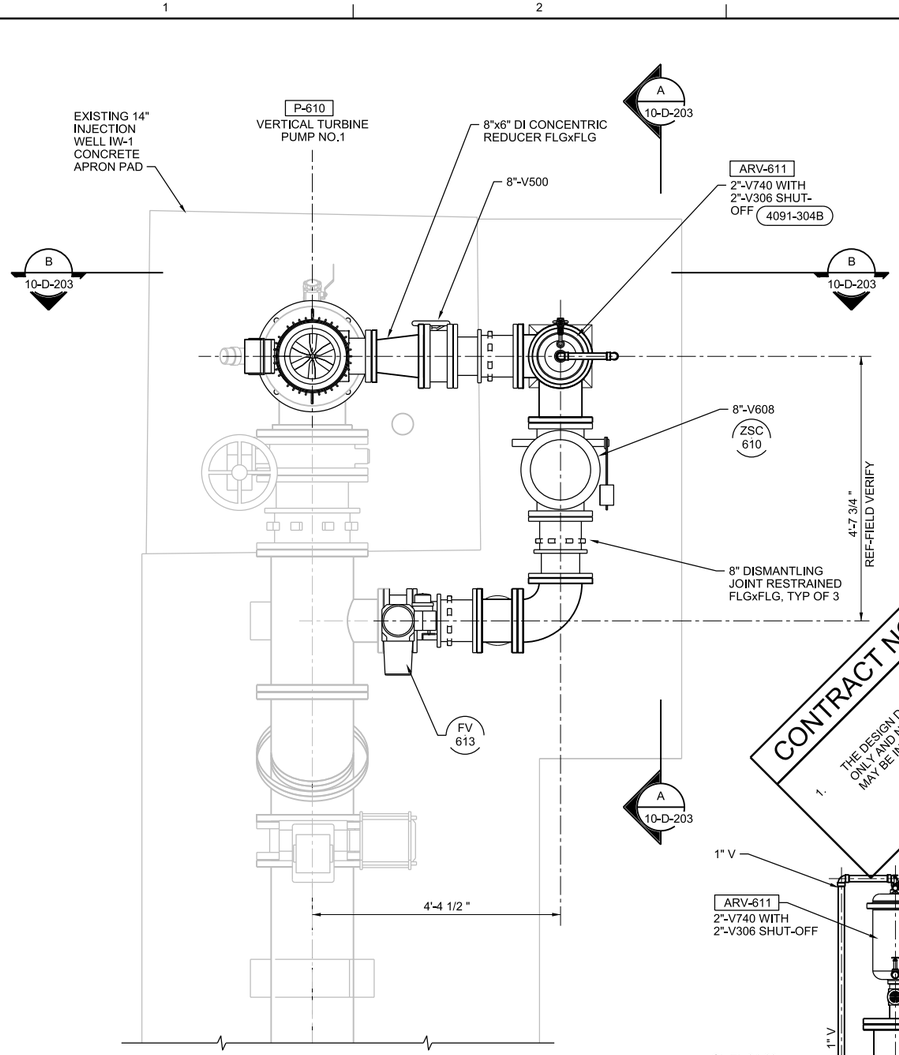
NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

PROCESS MECHANICAL
INJECTION WELL No.1
BASKET STRAINER STATION
PLAN AND SECTIONS

BID DOCUMENTS

AS NOTED	
VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"	
DATE	NOVEMBER 2019
PROJ	674077
DWG	10-D-202
SHEET	39 of 61

FILENAME: 10-D-202_674077.dgn PLOT DATE: 11/15/2019 PLOT TIME: 9:08:06 AM

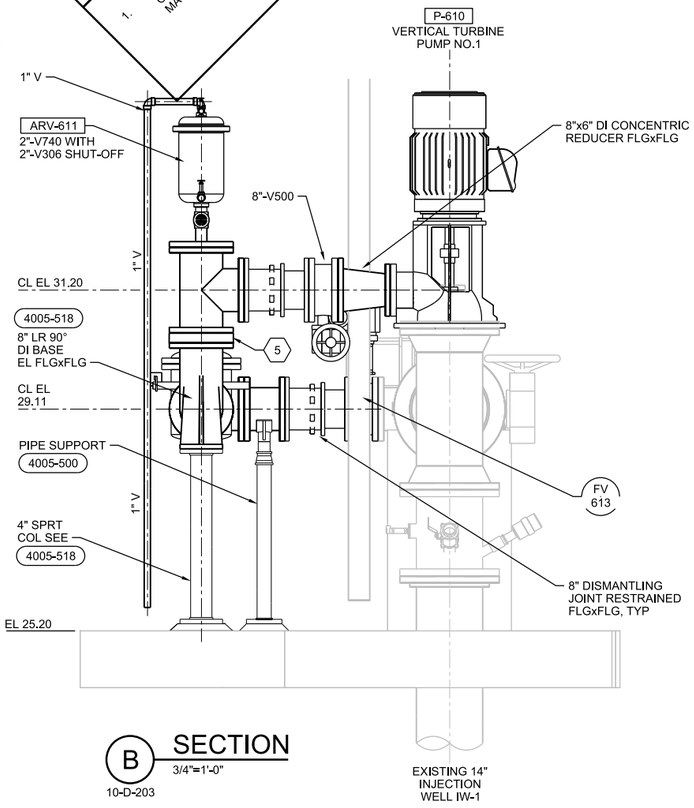


N

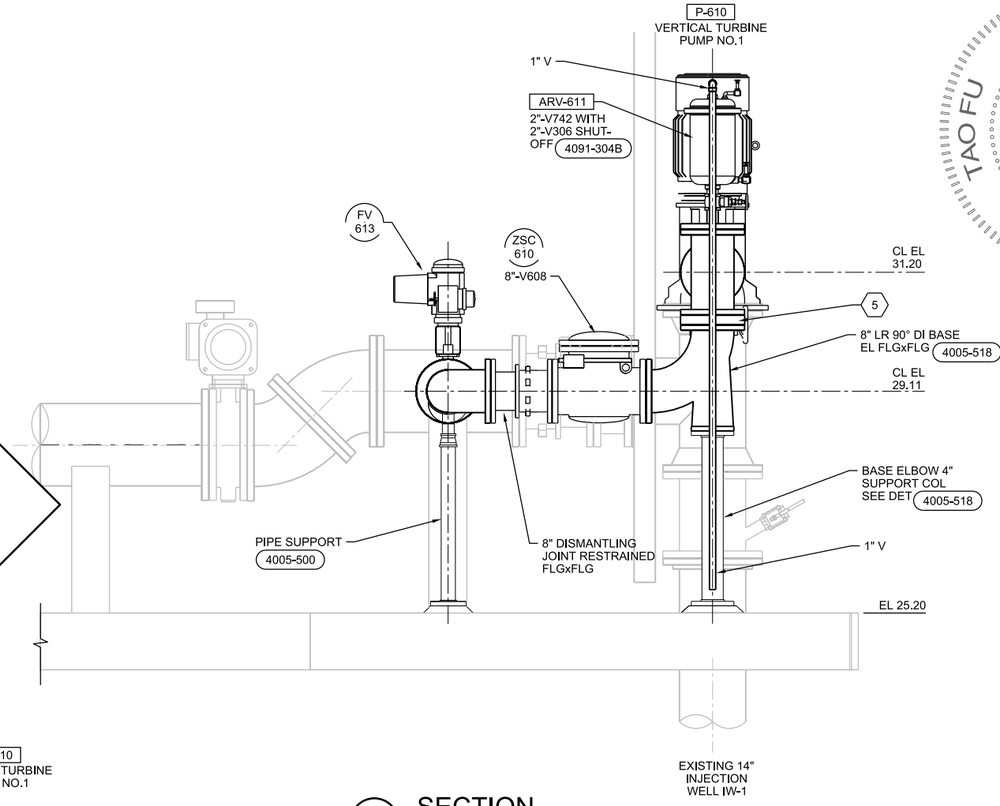
PLAN
3/4"=1'-0"

CONTRACT NOTE

1. THE DESIGN DISPLAYED ON THIS DRAWINGS IS FOR REFERENCE ONLY AND NOT PART OF THE CURRENT CONTRACT. THIS DESIGN MAY BE INCLUDED IN A FUTURE CONTRACT.



B 10-D-203 SECTION
3/4"=1'-0"



A 10-D-203 SECTION
3/4"=1'-0"

Tao Fu
Digitally signed by Tao Fu
Date: 2019.12.16 11:35:51 -05'00'

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GENERAL SHEET NOTES

1. SEE P&ID DRAWINGS FOR INSTRUMENT AND CONTROL INSTALLATION DETAILS.
2. ALL BURIED PIPES SHALL BE RESTRAINED.
3. RESTORE DISTURBED AREA WITH BAHIA SOD.
4. PROVIDE INSULATING FLANGE KITS FOR ALL CONNECTIONS BETWEEN DIP AND STAINLESS STEEL.
5. FLANGE FILLER LAY LENGTH AS REQUIRED.

TAO FU LICENSE No 63138 STATE OF FLORIDA PROFESSIONAL ENGINEER

NO.	DATE	DR	REVISION	CHK	APVD
DSGN		T FU	WL CLOUGH	T INNISS	APVD
				BY	T FU

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 · AAC001992
TAO FU, PE #63138

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

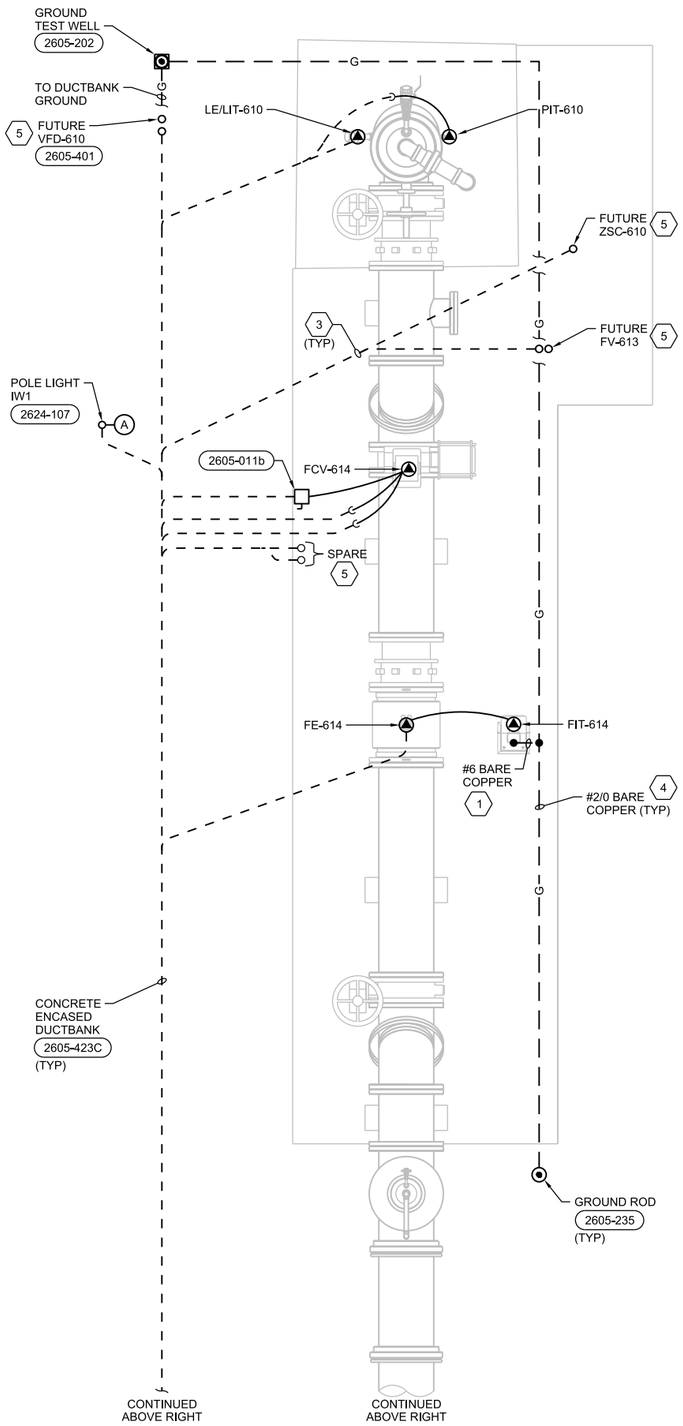
PROCESS MECHANICAL - FUTURE
INJECTION WELL No.1
FUTURE PUMP INSTALLATION
PLAN AND SECTIONS

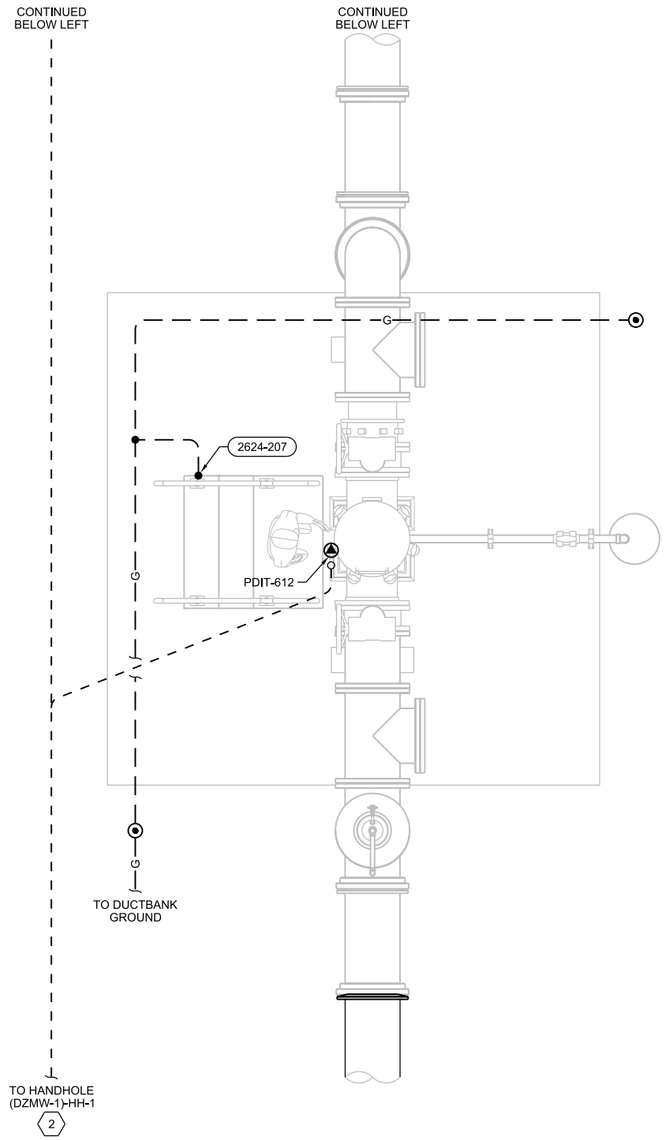
FUTURE - NOT IN CONTRACT

AS NOTED
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	10-D-203
SHEET	40 of 61

FILENAME: 10-D-203_674077.dgn PLOT DATE: 11/15/2019 PLOT TIME: 9:10:09 AM





GENERAL SHEET NOTES

1. SEE RISER DIAGRAM ON DWG 80-E-601 FOR WIRE AND CONDUIT REQUIREMENTS.

SHEET KEYNOTES

1. SEE INSTRUMENTATION AND CONTROL DETAILS FOR ADDITIONAL GROUNDING REQUIREMENTS.
2. FOR CONTINUATION SEE DWG 05-E-204.
3. CONDUIT BELOW CONCRETE SLAB.
4. EMBED #2/0 BARE COPPER GROUND CONDUCTOR IN CONCRETE SLAB FOR A MINIMUM OF 20 FEET. TIE GROUND CONDUCTOR TO SLAB STEEL REBAR.
5. CAP END OF EMPTY CONDUITS AT 6" ABOVE SLAB.

N

PLAN
1/2"=1'-0"

David Nicholson

Digitally signed by David Nicholson
Date: 2019.12.17 10:04:29 -05'00'

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STATE OF FLORIDA PROFESSIONAL ENGINEER
DAVID C. NICHOLSON LICENSE No 60201

NO.	DATE	DSGN	DR	CHK	BY	REVISION
		D NICHOLSON	A PASTRANA	M GOSLOW	APVD	D NICHOLSON

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 AAC001992
DAVID C NICHOLSON, PE #60201

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

ELECTRICAL

INJECTION WELL No.1 AND BASKET STRAINER PLAN

BID DOCUMENTS

AS NOTED
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	10-E-201
SHEET	41 of 61

FILENAME: 10-E-201_674077.dgn PLOT DATE: 11/15/2019 PLOT TIME: 9:09:12 AM

Tao Fu

Digitally signed by Tao Fu
Date: 2019.12.16 11:37:26 -05'00'

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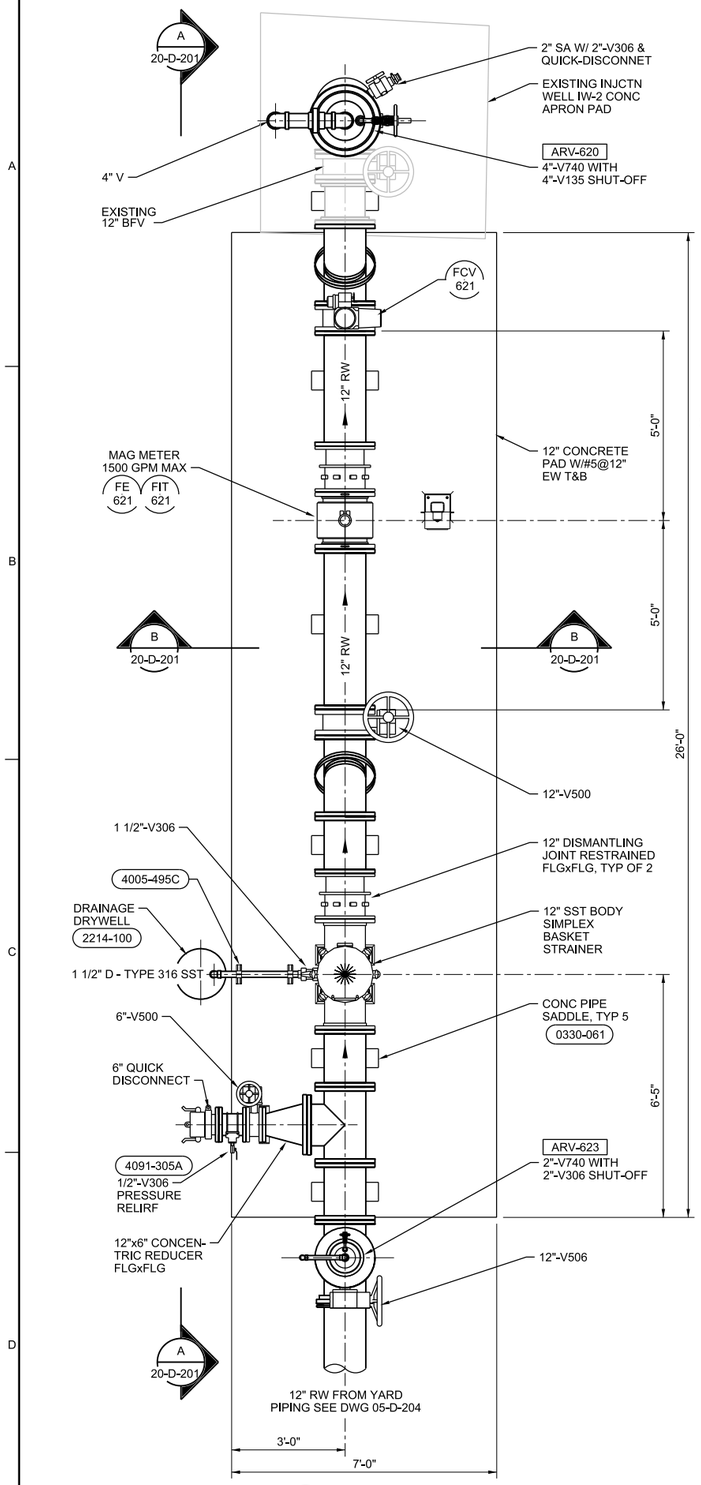
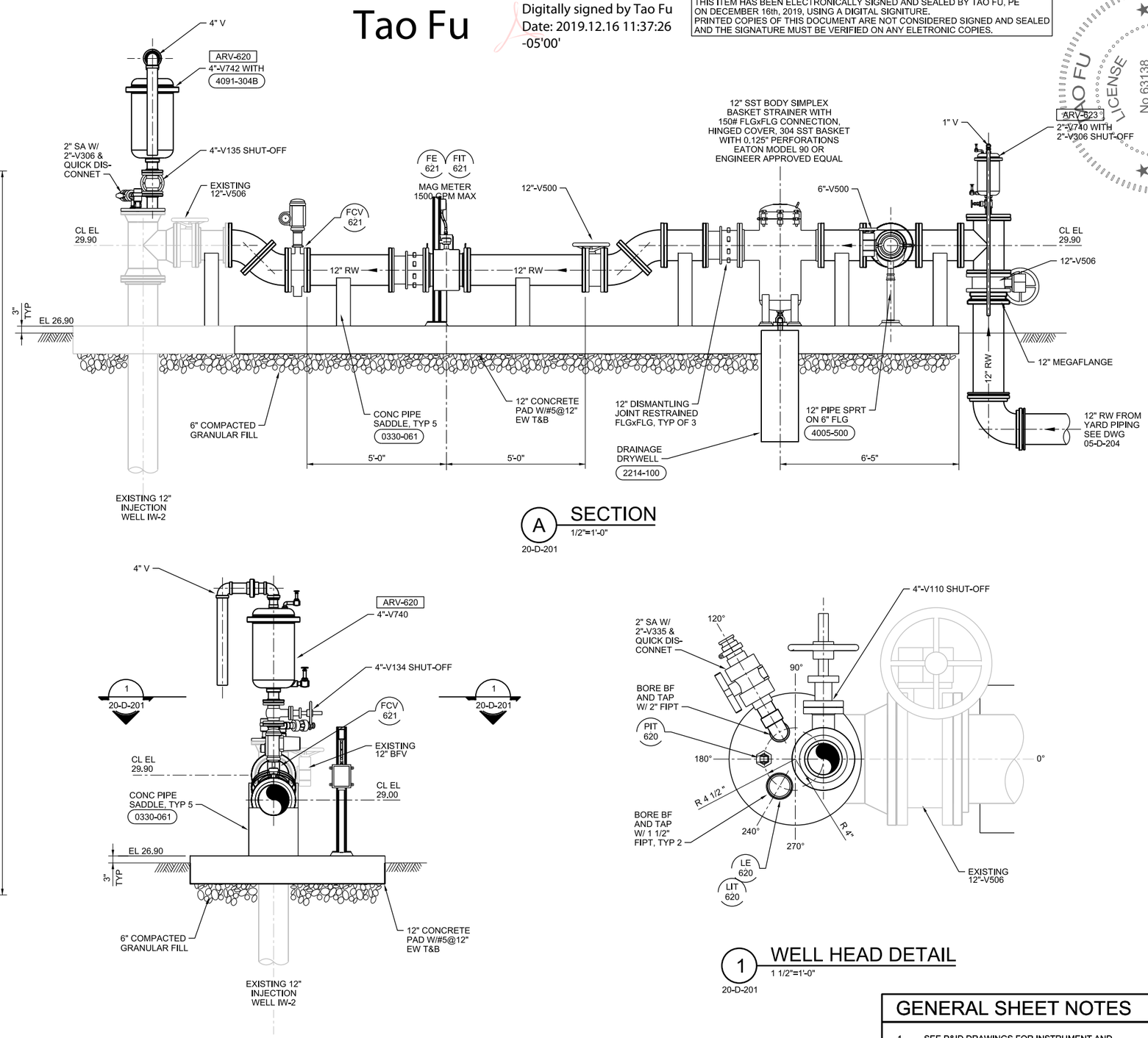


PLAN
1/2"=1'-0"



A SECTION
1/2"=1'-0"
20-D-201

B SECTION
1/2"=1'-0"
20-D-201

1 WELL HEAD DETAIL
1 1/2"=1'-0"
20-D-201

GENERAL SHEET NOTES

1. SEE P&ID DRAWINGS FOR INSTRUMENT AND CONTROL INSTALLATION DETAILS.
2. ALL BURIED PIPES SHALL BE RESTRAINED.
3. RESTORE DISTURBED AREA WITH BAHIA SOD.
4. PROVIDE INSULATING FLANGE KITS FOR ALL CONNECTIONS BETWEEN DIP AND STAINLESS STEEL.

STATE OF FLORIDA PROFESSIONAL ENGINEER
TAO FU LICENSE No 63138

NO.	DATE	DSGN	DR	CHK	APVD	BY
		T FU	WL CLOUGH	T INNISS	APVD	T FU

REVISION

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 · AAC001992
TAO FU, PE #63138

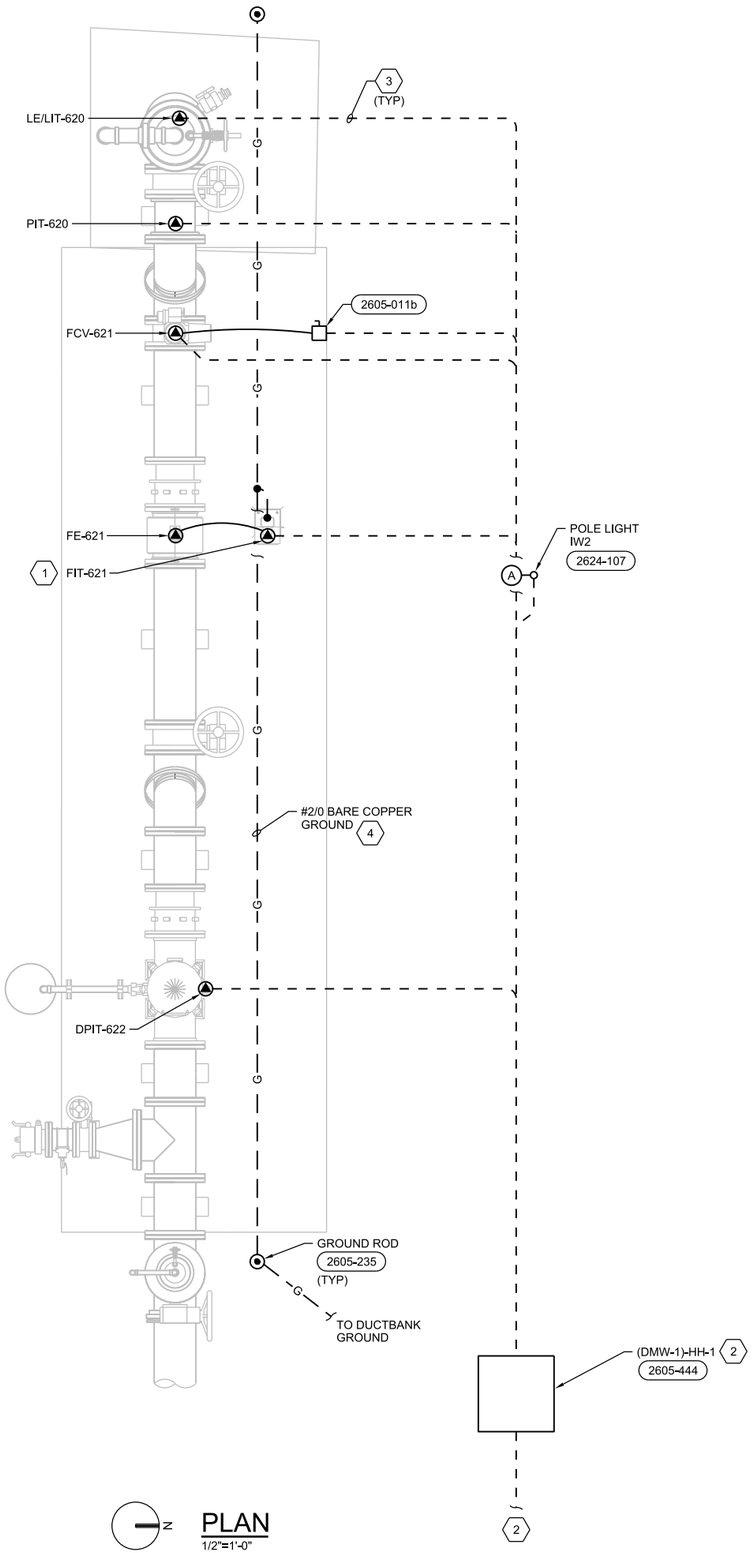
NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

PROCESS MECHANICAL
INJECTION WELL No.2 DEVELOPMENT PLAN, SECTIONS & DETAIL

BID DOCUMENTS

AS NOTED	
VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"	
DATE	NOVEMBER 2019
PROJ	674077
DWG	20-D-201
SHEET	42 of 61

FILENAME: 20-D-201_674077.dgn PLOT DATE: 11/15/2019 PLOT TIME: 9:08:14 AM



GENERAL SHEET NOTES

1. SEE RISER DIAGRAM ON DWG 80-E-601 FOR WIRE AND CONDUIT REQUIREMENTS.

SHEET KEYNOTES

1. SEE INSTRUMENTATION AND CONTROL DETAILS FOR ADDITIONAL GROUNDING REQUIREMENTS.
2. SEE DWG 05-E-201 FOR LOCATION OF HANDHOLE AND CONTINUATION OF DUCTBANK.
3. CONDUITS BELOW CONCRETE SLAB.
4. EMBED #2/0 BARE COPPER GROUND CONDUCTOR IN CONCRETE SLAB FOR A MINIMUM OF 20 FEET. TIE GROUND CONDUCTOR TO SLAB STEEL REBAR.

STATE OF FLORIDA PROFESSIONAL ENGINEER
DAVID C. NICHOLSON LICENSE No 60201

NO.	DATE	REVISION	BY	APVD
DSGN	D NICHOLSON	DR	A PASTRANA	CHK	M GOSLOW	APVD	D NICHOLSON

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 · AAC001992
DAVID C NICHOLSON, PE #60201

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

ELECTRICAL
INJECTION WELL No.2 PLAN

David Nicholson
Digitally signed by David Nicholson
Date: 2019.12.17 10:09:32 -05'00'

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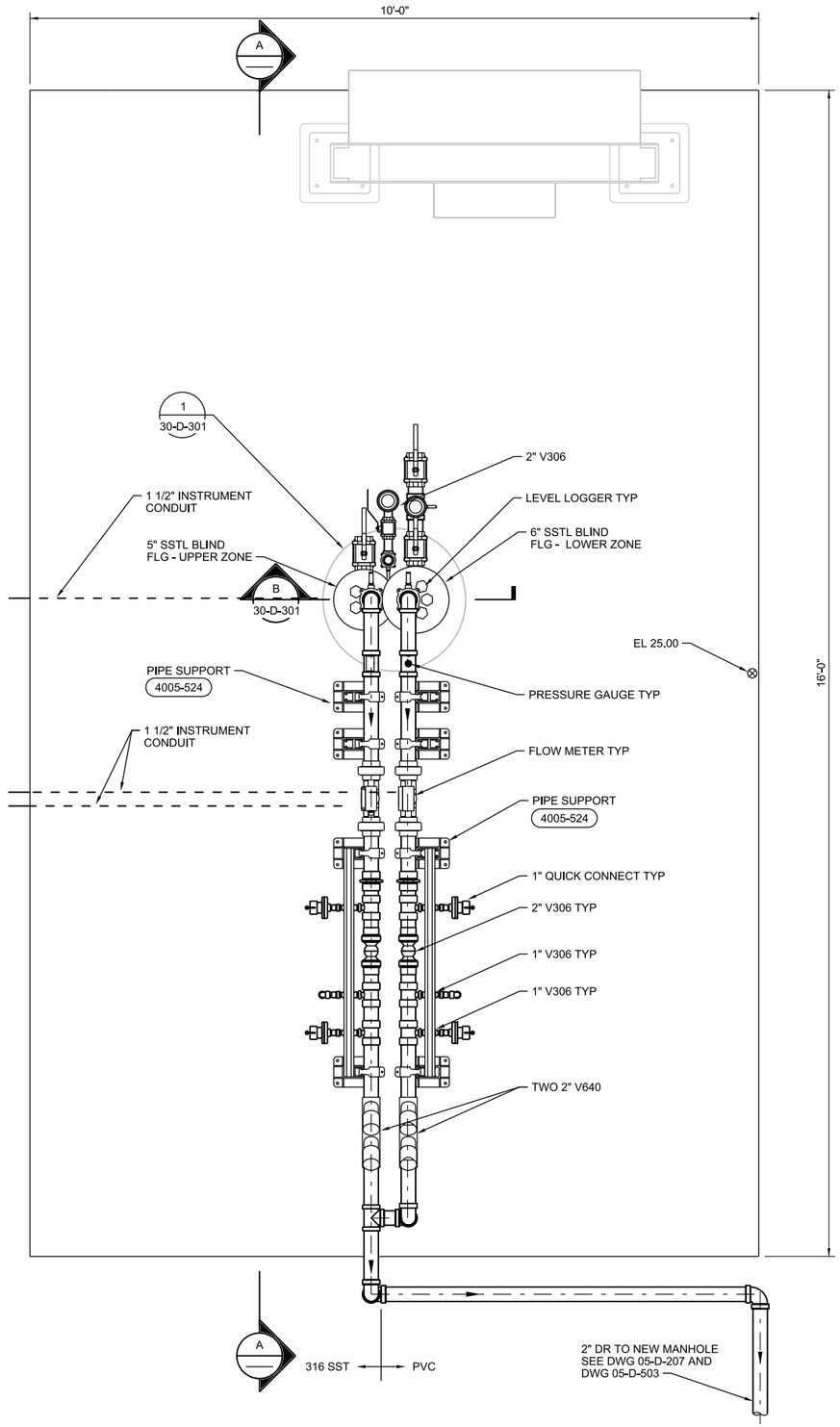
AS NOTED
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	20-E-201
SHEET	43 of 61

BID DOCUMENTS

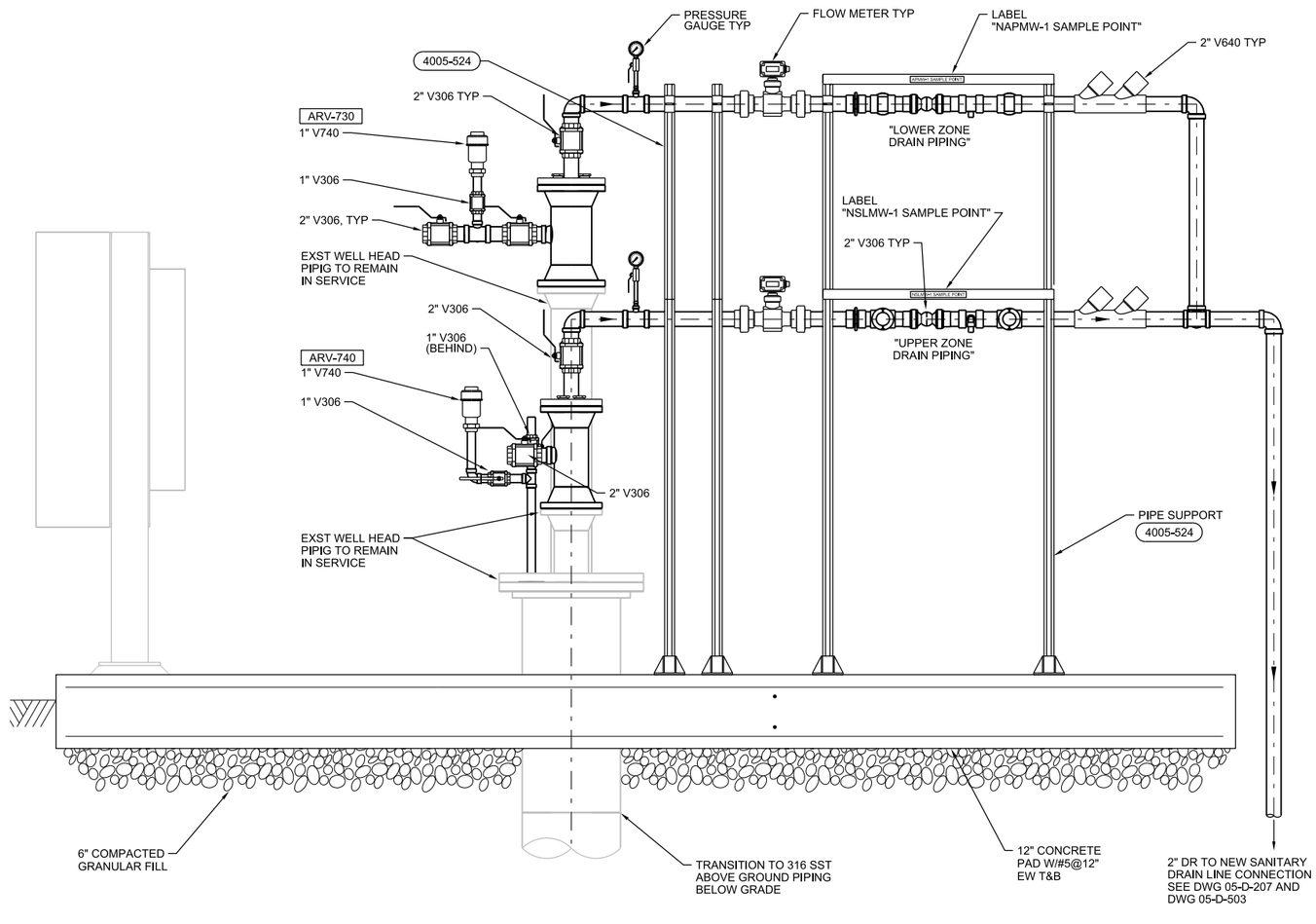
FILENAME: 20-E-201_674077.dgn PLOT DATE: 11/15/2019 PLOT TIME: 9:09:50 AM



N

DUAL ZONE MONITORING WELL - PLAN

1"=1'-0"



A SECTION

1"=1'-0"

GENERAL SHEET NOTES

1. ALL EXPOSED PIPE SHALL BE TYPE 316 SST.
2. SEE ELECTRICAL DRAWINGS FOR ADDITONAL CONDUITS IN SLAB.
3. SAMPLE PUMP SETTING DEPTH: 80 FT LOWER ZONE - 120 FT UPPER ZONE.
4. WELD HOOK ON BLIND FLANGE BOTTOM FOR SAMPLE PUMP.
5. PROVIDE ONE SUBMERSIBLE PUMP IN EACH ZONE. THE PUMP SHALL BE GOULDS MODEL 85GS50, 5HP, 460V, 3 PHASE. DESIGN POINT 80GPM AT 182 FT.

STATE OF FLORIDA PROFESSIONAL ENGINEER TAO FU LICENSE NO. 63138

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY TAO FU, PE ON DECEMBER 16th, 2019, USING A DIGITAL SIGNITURE.
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Tao Fu
Digitally signed by Tao Fu
Date: 2019.12.16 11:39:03 -05'00'

NO.	DATE	DSGN	DR	CHK	REVISION	BY	APVD
		T FU	T FU	WL CLOUGH	T INNISS	APVD	T FU

ch2m
643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 · AAC001992
TAO FU, PE #63138

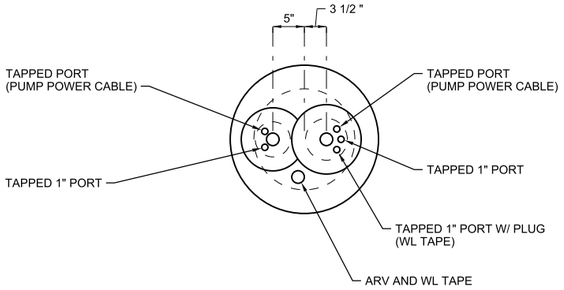
NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

PROCESS MECHANICAL
DUAL ZONE
MONITORING WELL No.1
PLAN AND SECTION

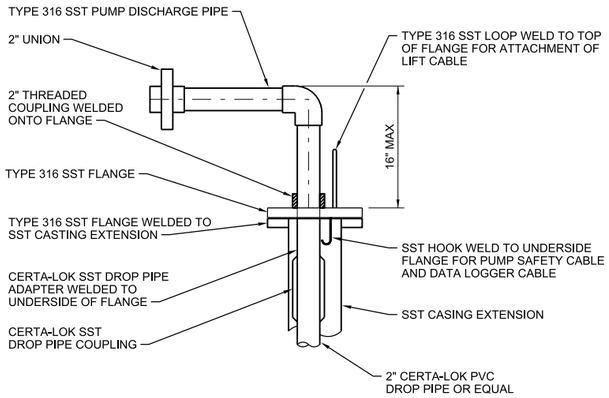
AS NOTED
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	30-D-201
SHEET	44 of 61

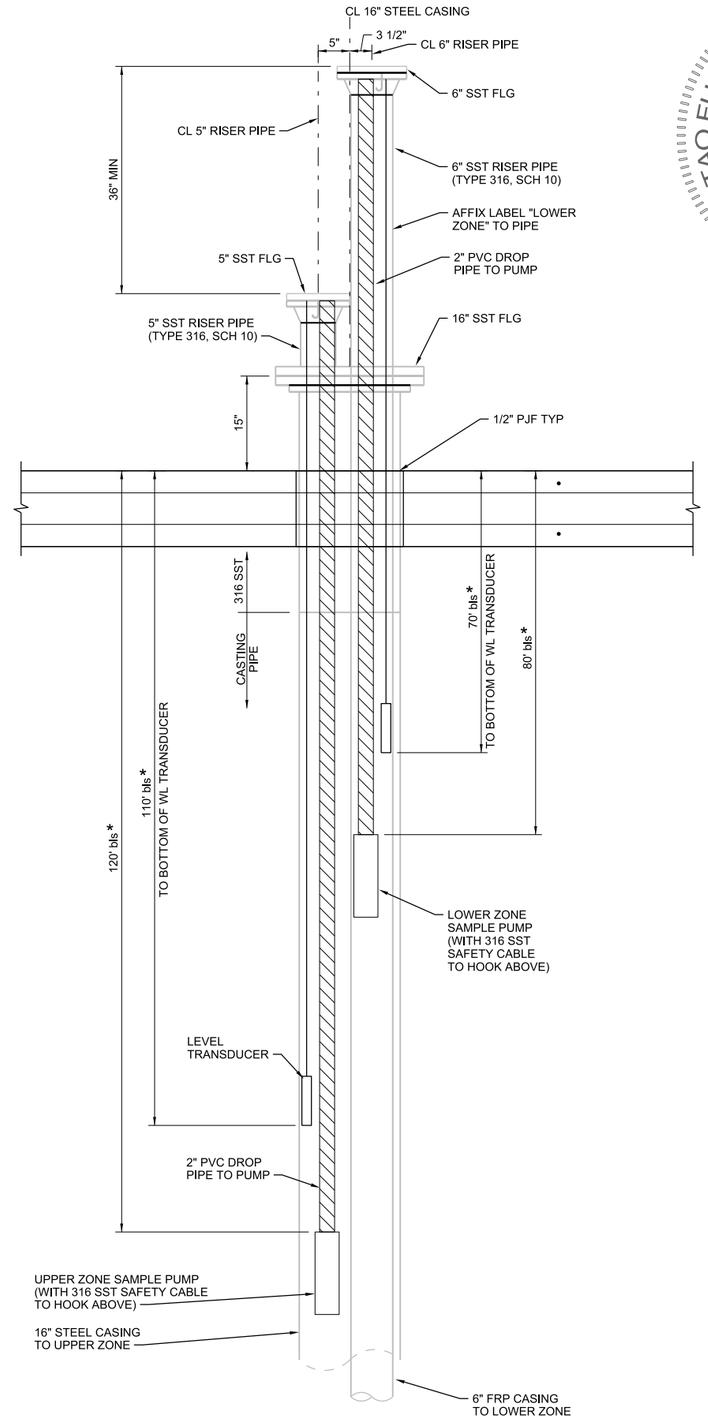
BID DOCUMENTS



1 DETAIL
NTS
30-D-201



2 DETAIL
NTS



* bls = BELOW LAND SURFACE

B SECTION
NTS
30-D-201

GENERAL SHEET NOTES

1. MONITOR WELLS MAY AT TIMES BE ARTESIAN.

Tao Fu
Digitally signed by Tao Fu
Date: 2019.12.16 11:41:18 -05'00'

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY TAO FU, PE ON DECEMBER 16th, 2019, USING A DIGITAL SIGNITURE.
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TAO FU LICENSE No 63138 STATE OF FLORIDA PROFESSIONAL ENGINEER

NO.	DATE	REVISION	BY	APVD
DSGN	T FU	DR T FU	CHK WL CLOUGH	APVD T INNISS

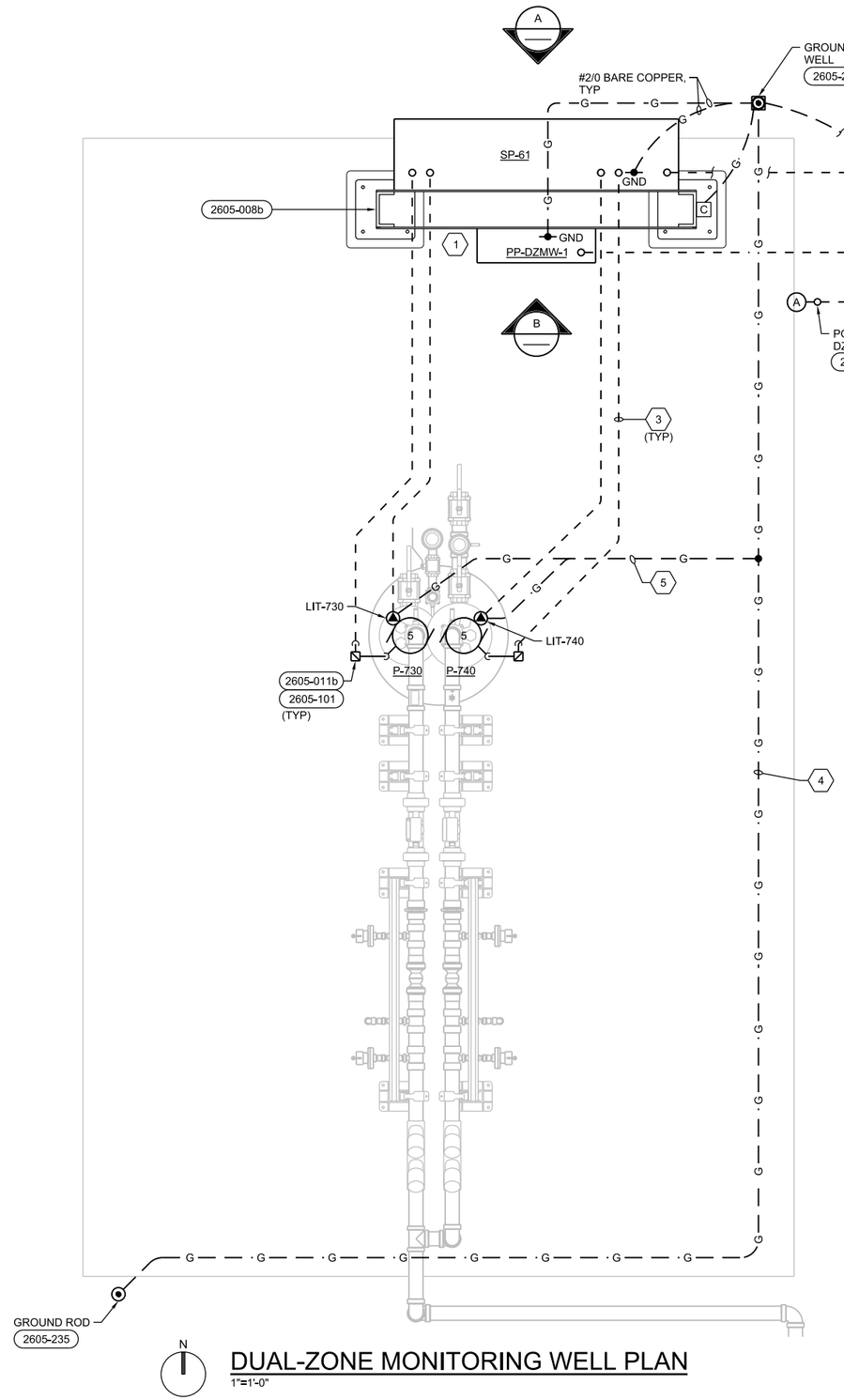
643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 · AAC001992
TAO FU, PE #63138

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

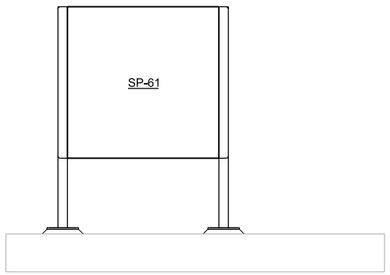
PROCESS MECHANICAL
DUAL ZONE
MONITORING WELL No.1
SECTION AND DETAILS

BID DOCUMENTS

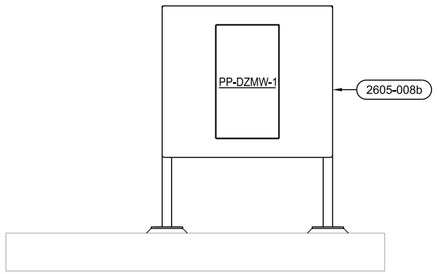
AS NOTED	
VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"	
DATE	NOVEMBER 2019
PROJ	674077
DWG	30-D-301
SHEET	45 of 61



DUAL-ZONE MONITORING WELL PLAN
1"=1'-0"



ELECTRICAL EQUIPMENT - NORTH
A ELEVATION
1/2"=1'-0"



ELECTRICAL EQUIPMENT - SOUTH
B ELEVATION
1/2"=1'-0"

GENERAL NOTES

1. SEE RISER DIAGRAM ON DWG 80-E-601 FOR WIRE AND CONDUIT REQUIREMENTS.

SHEET KEYNOTES

1. PANELBOARD PP-DMZW-1:
   - A. 480V, 3 PHASE, 3 WIRE, 100A MAIN, 24 CIRCUITS, TIN-PLATED COPPER BUS, COPPER GROUND BUS, TIN PLATED COPPER BUS BARS.
   - B. NEMA 4X STAINLESS STEEL ENCLOSURE WITH NAMEPLATE PER DETAIL 2605-500.
   - C. EATON POW-R LINE C PANELBOARD OR EQUAL
   - D. SEE PANELBOARD SCHEDULE ON DWG 05-E-603.
2. SEE DWG 05-E-204 FOR LOCATION OF HANDHOLE AND CONTINUATION OF DUCTBANK.
3. CONDUIT BELOW CONCRETE SLAB.
4. EMBED #2/0 BARE COPPER GROUND CONDUCTOR IN CONCRETE SLAB FOR A MINIMUM OF 20 FEET. TIE GROUND WIRE TO SLAB STEEL REBAR.
5. SEE INSTRUMENTATION AND CONTROL DETAILS FOR ADDITIONAL GROUNDING REQUIREMENTS.

STATE OF FLORIDA PROFESSIONAL ENGINEER
DAVID C. NICHOLSON LICENSE No 60201

NO.	DATE	REVISION	DR	CHK	APVD
DSGN	D NICHOLSON		A PASTRANA	M GOSLOW	D NICHOLSON

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 · AAC001992
DAVID C NICHOLSON, PE #60201

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

ELECTRICAL
DUAL-ZONE MONITORING WELL
DZMW-1

BID DOCUMENTS

David Nicholson
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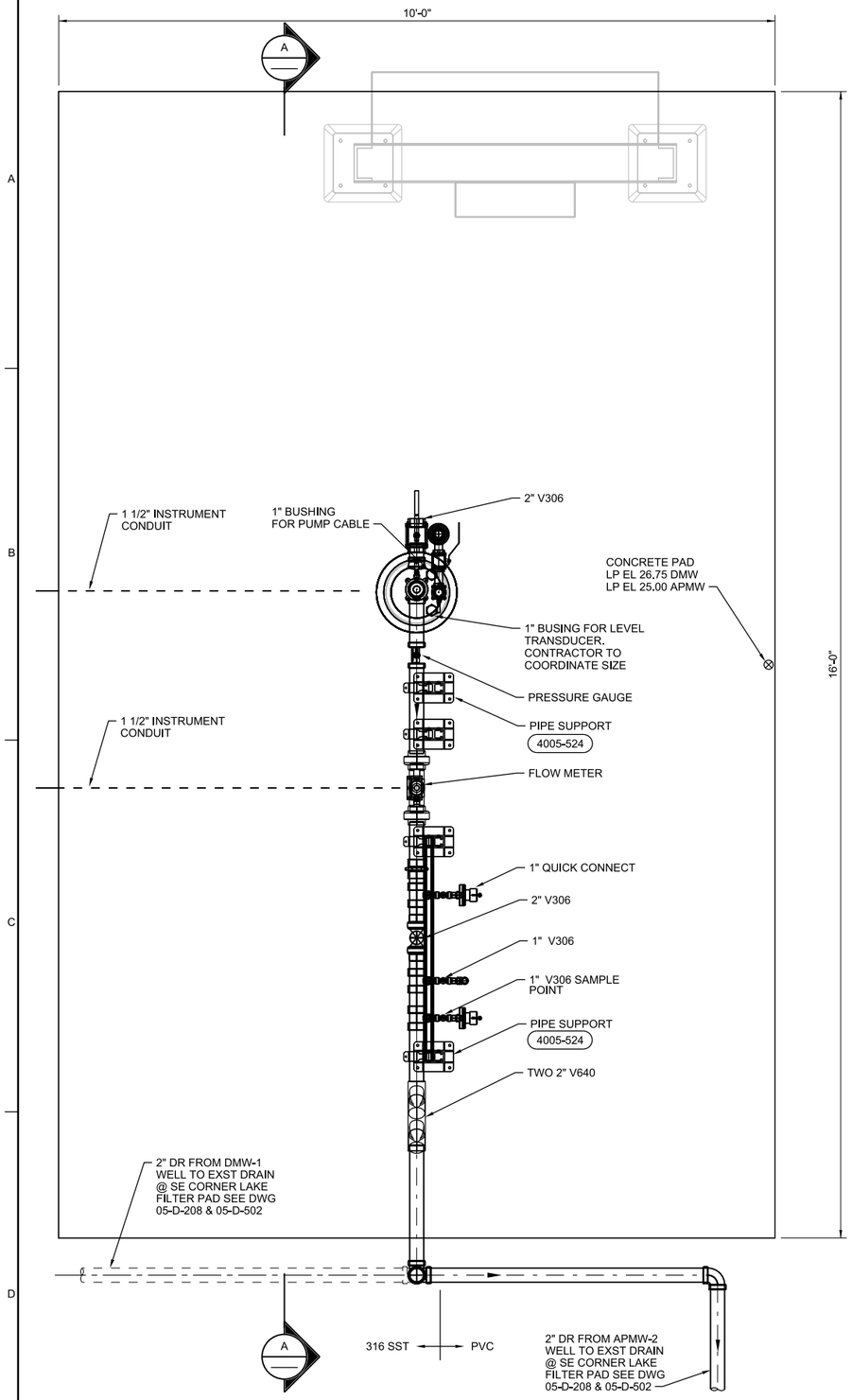
PROJ	674077
DWG	30-E-201
SHEET	46 of 61



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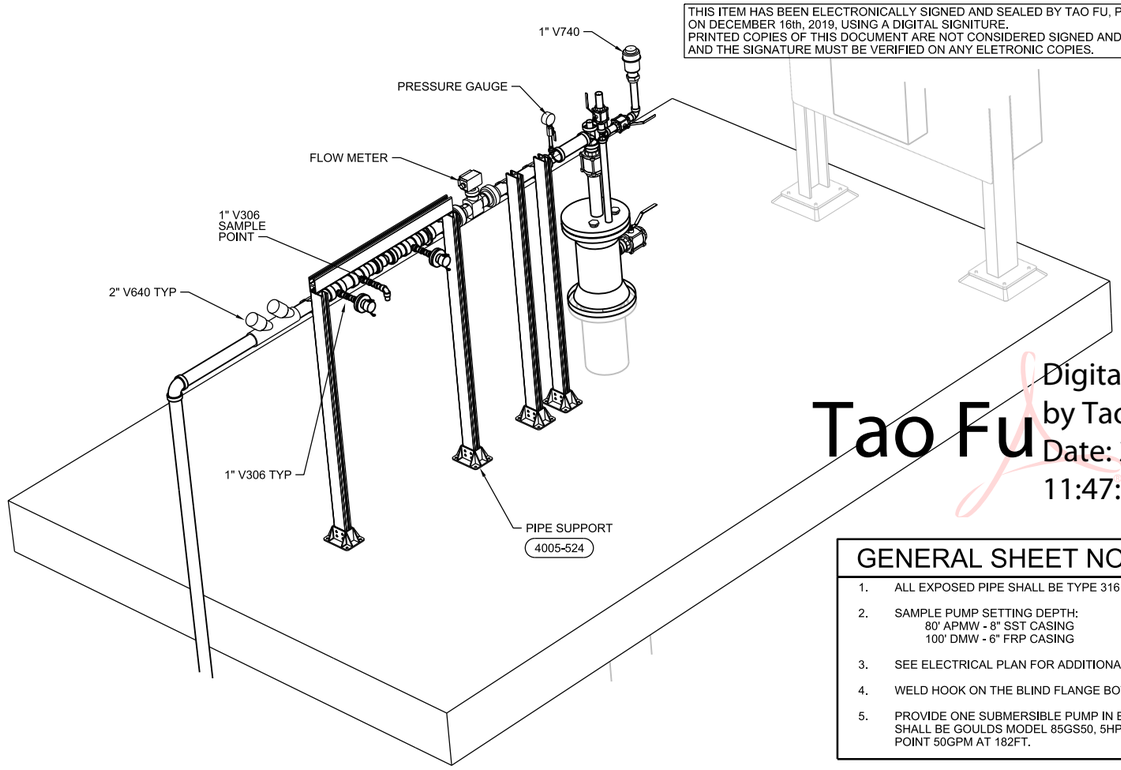
TYPICAL SINGLE ZONE MONITORING WELL - PLAN

1"=1'-0"



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TAO FU LICENSE No 63138 STATE OF FLORIDA PROFESSIONAL ENGINEER

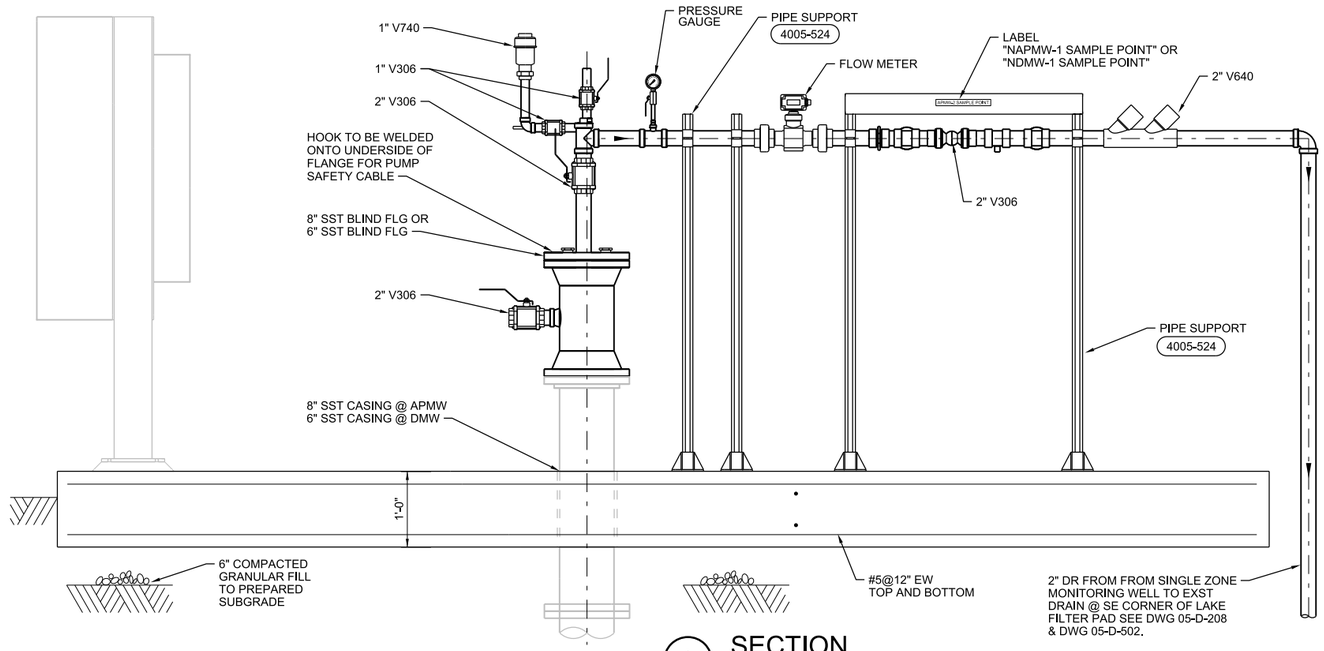
Tao Fu Digitally signed by Tao Fu Date: 2019.12.16 11:47:19 -05'00'

GENERAL SHEET NOTES

1. ALL EXPOSED PIPE SHALL BE TYPE 316 SST
2. SAMPLE PUMP SETTING DEPTH:
   80' APMW - 8" SST CASING
   100' DMW - 6" FRP CASING
3. SEE ELECTRICAL PLAN FOR ADDITIONAL CONDUITS IN SLAB.
4. WELD HOOK ON THE BLIND FLANGE BOTTOM FOR SAMPLE PUMP.
5. PROVIDE ONE SUBMERSIBLE PUMP IN EACH WELL. THE PUMP SHALL BE GOULDS MODEL 85GS50, 5HP, 460V, 3PHASE. DESIGN POINT 50GPM AT 182FT.

TYPICAL SINGLE ZONE MONITORING WELL - ISOMETRIC

NTS



A SECTION

1"=1'-0"

NO.	DATE	REVISION	DR	CHK	APVD
DSGN	T FU	WL CLOUGH	T INNISS	APVD	T FU

BY

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 · AAC001992
TAO FU, PE #63138

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

ch2m

YARD PIPING

TYPICAL SINGLE ZONE MONITORING WELL PLAN, SECTION, & DETAIL

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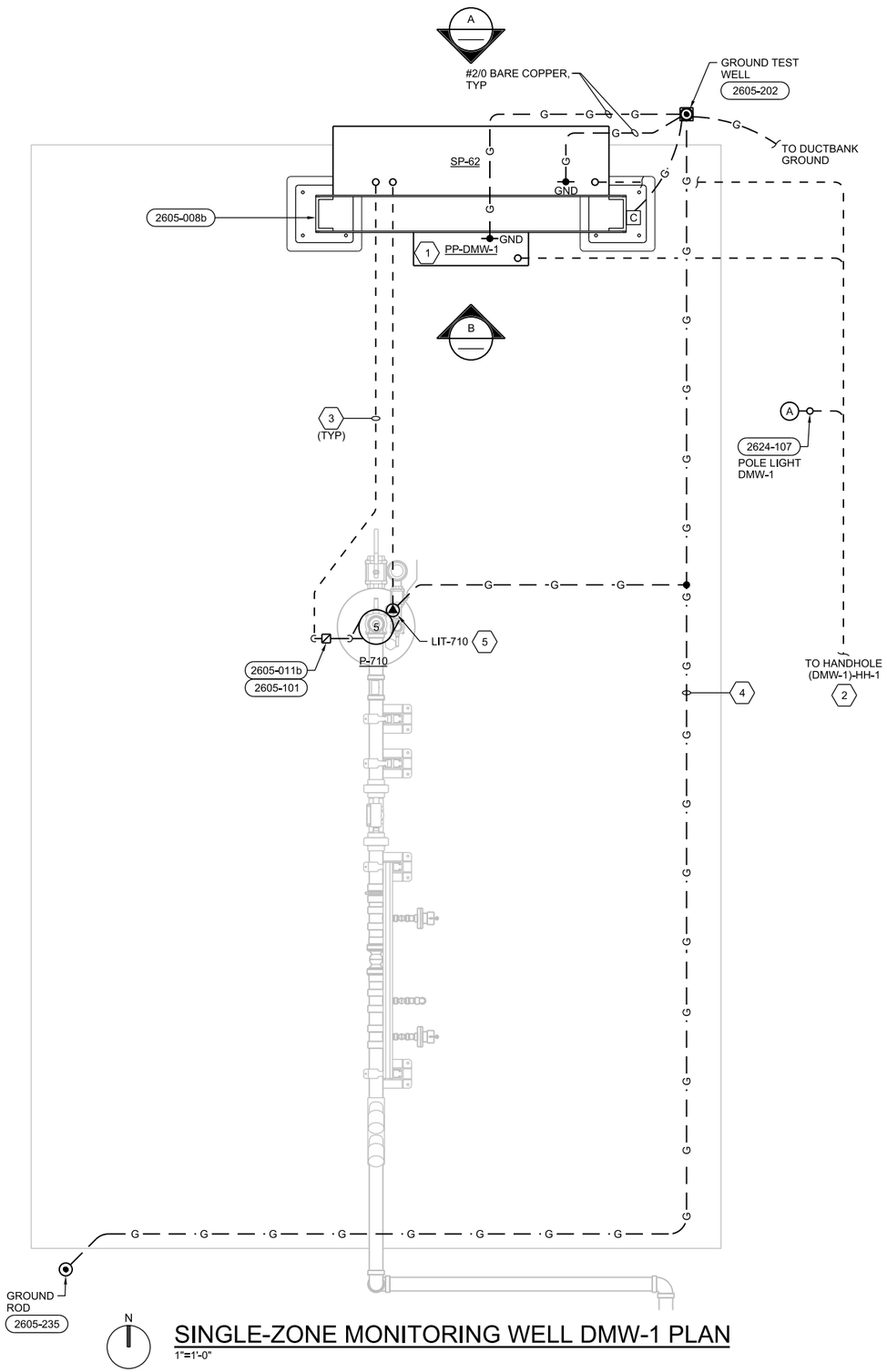
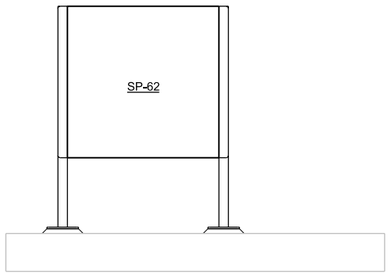
PROJ	674077
DWG	35-D-201
SHEET	47 of 61

FILENAME: 35-D-201_674077.dgn PLOT DATE: 11/15/2019 PLOT TIME: 9:09:58 AM



SINGLE-ZONE MONITORING WELL DMW-1 PLAN

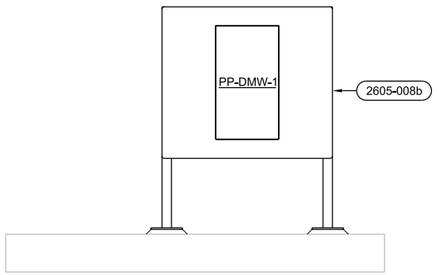
1"=1'-0"



ELECTRICAL EQUIPMENT - NORTH

A ELEVATION

1/2"=1'-0"



ELECTRICAL EQUIPMENT - SOUTH

B ELEVATION

1/2"=1'-0"

GENERAL NOTES

1. SEE RISER DIAGRAM ON DWG 80-E-601 FOR WIRE AND CONDUIT REQUIREMENTS.

SHEET KEYNOTES

1. PANELBOARD PP-DMW-2:
   - A. 480V, 3 PHASE, 3 WIRE, 100A MAIN, 24 CIRCUITS, TIN-PLATED COPPER BUS, COPPER GROUND BUS, TIN PLATED COPPER BUS BARS.
   - B. NEMA 4X STAINLESS STEEL ENCLOSURE WITH NAMEPLATE PER DETAIL 2605-500.
   - C. EATON POW-R LINE C PANELBOARD OR EQUAL.
   - D. SEE PANELBOARD SCHEDULE ON DWG 05-E-603.
2. SEE DWG 05-E-201 FOR LOCATION.
3. EMBED CONDUIT IN CONCRETE SLAB.
4. EMBED #2/0 BARE COPPER GROUND CONDUCTOR IN CONCRETE SLAB FOR A MINIMUM OF 20 FEET. TIE GROUND WIRE TO SLAB STEEL REBAR.
5. SEE INSTRUMENTATION AND CONTROL DETAILS FOR ADDITIONAL GROUNDING REQUIREMENTS.

DAVID C. NICHOLSON LICENSE No 60201 STATE OF FLORIDA PROFESSIONAL ENGINEER

NO.	DATE	REVISION	BY	APVD
DSGN	D NICHOLSON	DR	A PASTRANA	CHK	M GOSLOW	APVD	D NICHOLSON

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GAINESVILLE, FLORIDA 32601
EB0000072 · AAC001992
DAVID C NICHOLSON, PE #60201

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

ELECTRICAL
SINGLE-ZONE MONITORING WELL DMW-1

BID DOCUMENTS

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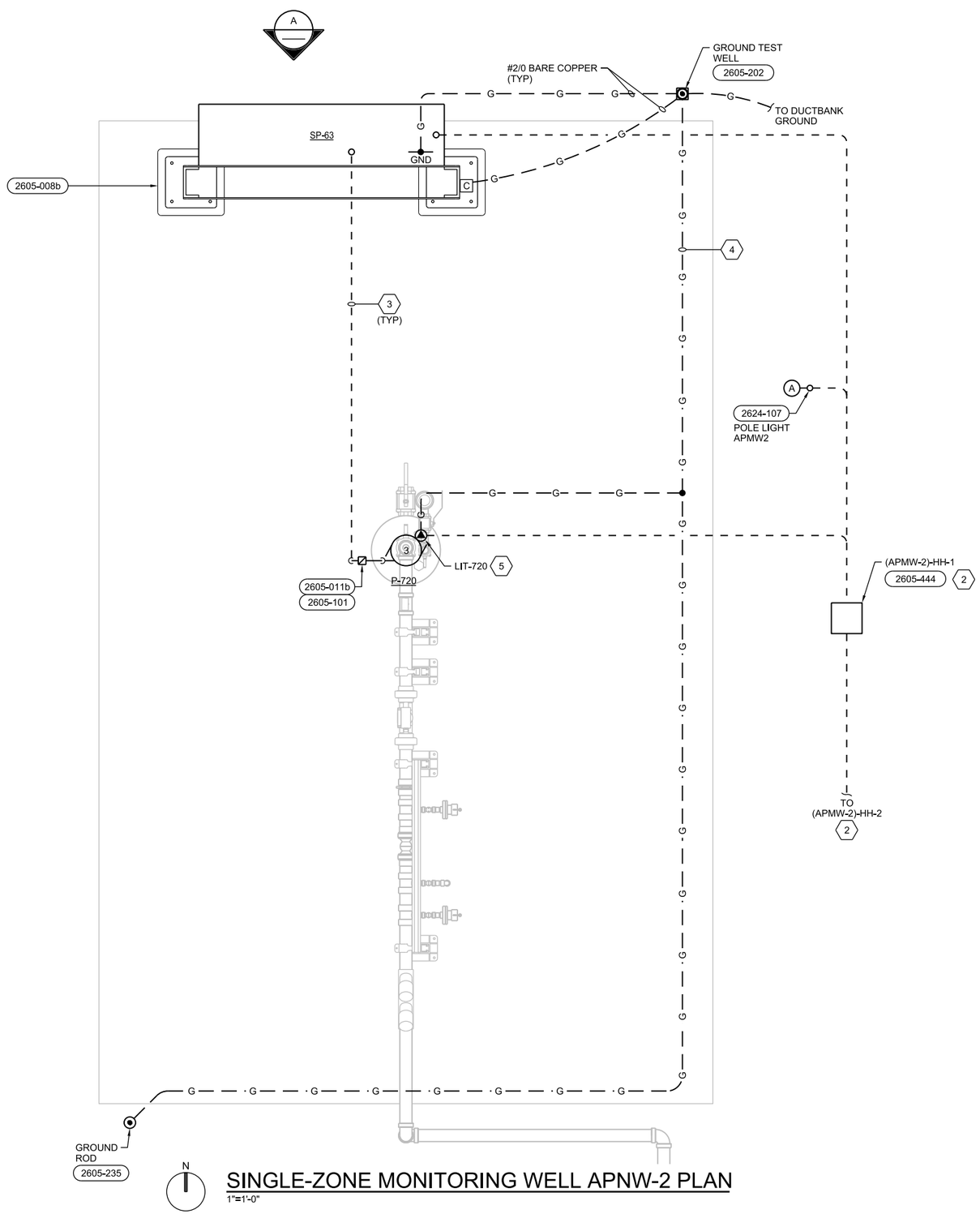
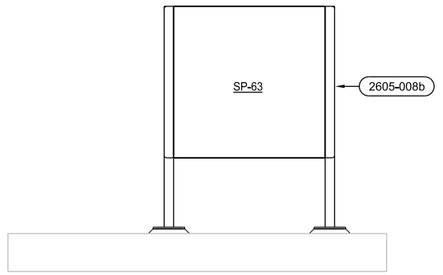
SHEET	48 of 61



SINGLE-ZONE MONITORING WELL APNW-2 PLAN

1"=1'-0"



ELECTRICAL EQUIPMENT - NORTH

A ELEVATION

1/2"=1'-0"

GENERAL NOTES

1. SEE RISER DIAGRAM ON DWG 80E-601 FOR WIRE AND CONDUIT REQUIREMENTS.

SHEET KEYNOTES

1. NOT USED.
2. SEE DWG 05-E-202 FOR LOCATION OF HANDHOLE AND CONTINUATION OF DUCTBANK.
3. EMBED CONDUIT IN CONCRETE SLAB.
4. EMBED #2/0 BARE COPPER GROUND CONDUCTOR IN CONCRETE SLAB FOR A MINIMUM OF 20 FEET. TIE GROUND WIRE TO SLAB STEEL REBAR.
5. SEE INSTRUMENTATION AND CONTROL DETAILS FOR ADDITIONAL GROUNDING REQUIREMENTS.

STATE OF FLORIDA PROFESSIONAL ENGINEER DAVID C NICHOLSON No 60201

NO.	DATE	REVISION	CHK	APVD	BY
DSGN	D NICHOLSON	DR	A PASTRANA	M GOSLOW	APVD	D NICHOLSON

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GAINESVILLE, FLORIDA 32601
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DAVID C NICHOLSON, PE #60201

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

ELECTRICAL
SINGLE-ZONE MONITORING WELL APMW-2

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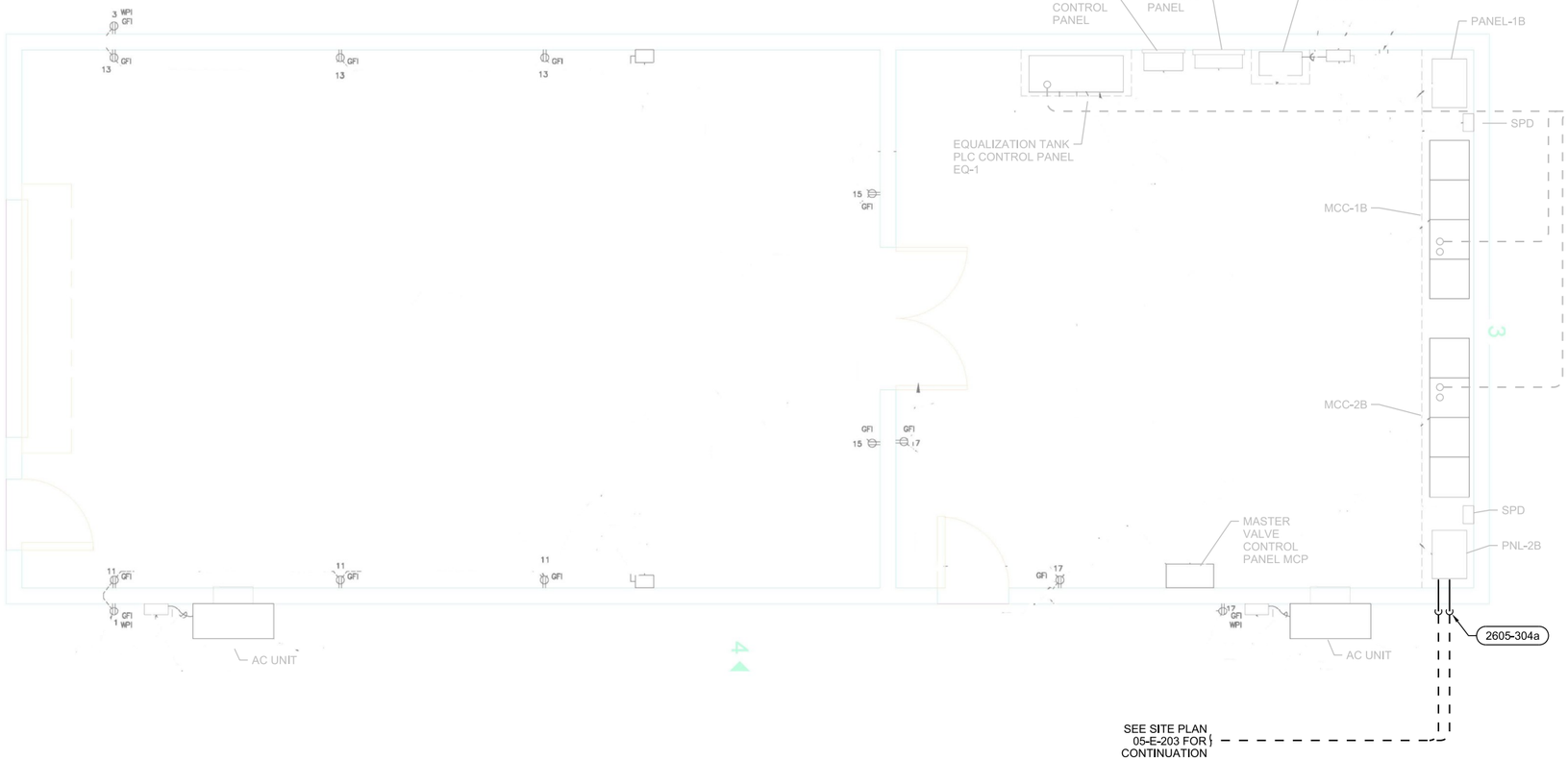
DWG	35-E-202
SHEET	49 of 61



POWER PLAN
NTS

DAVID C. NICHOLSON LICENSE No 60201 STATE OF FLORIDA PROFESSIONAL ENGINEER

NO.	DATE	REVISION	BY	APVD
DSGN	D NICHOLSON	DR A PASTRANA	CHK M GOSLOW	APVD D NICHOLSON

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GAINESVILLE, FLORIDA 32601
EB0000072 AAC001992
DAVID C NICHOLSON, PE #60201

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

ELECTRICAL

ELECTRICAL AND STORAGE BUILDING POWER PLAN

David Nicholson
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Date: 2019.12.17 11:13:51 -05'00'

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DATE	NOVEMBER 2019
PROJ	674077
DWG	40-E-201
SHEET	50 of 61

BID DOCUMENTS

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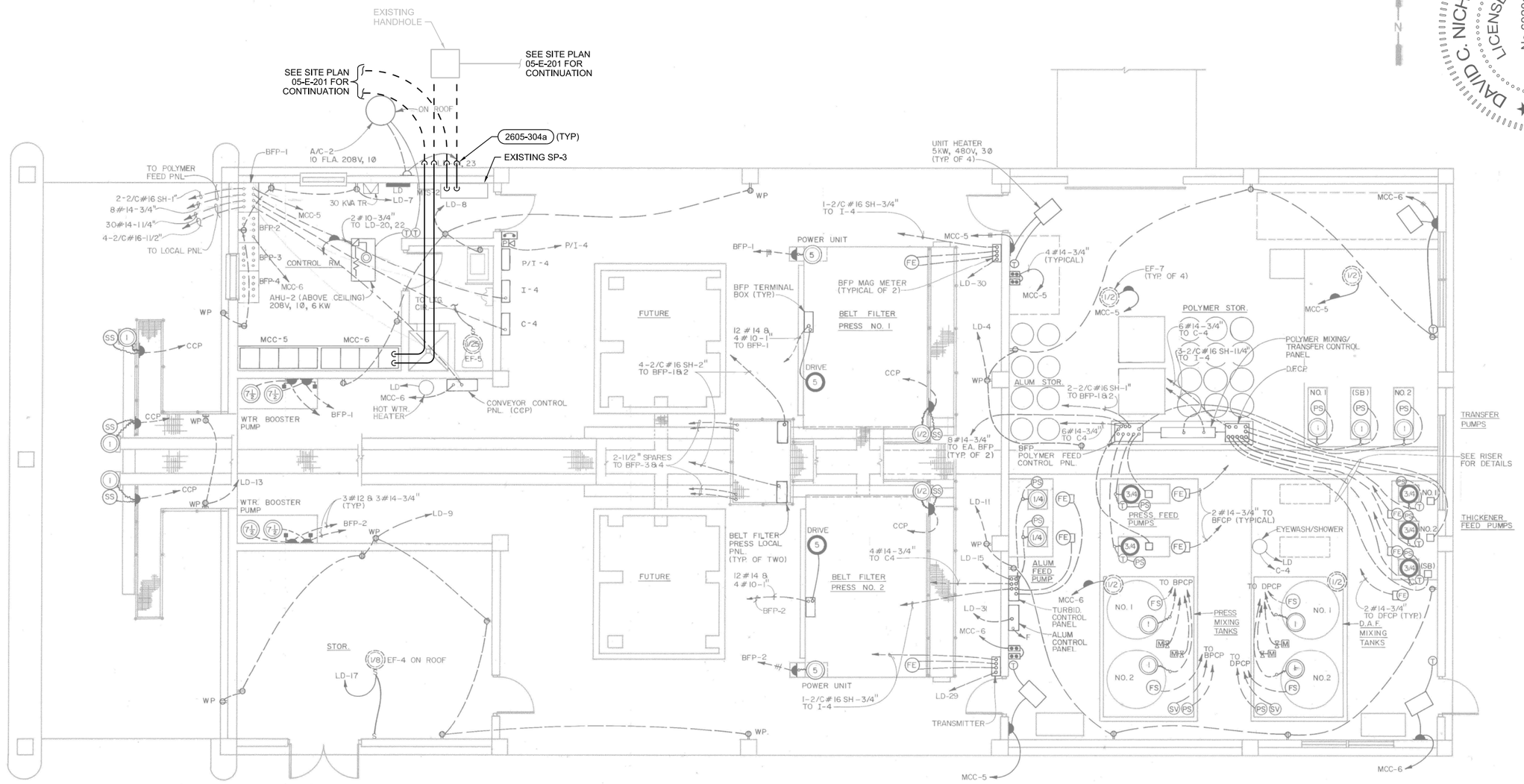

POWER PLAN
NTS

David Nicholson

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DAVID C. NICHOLSON LICENSE No 60201 STATE OF FLORIDA PROFESSIONAL ENGINEER

NO.	DATE	REVISION	BY	APVD
DSGN	D NICHOLSON	DR	A PASTRANA	CHK	M GOSLOW	APVD	D NICHOLSON

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 AAC001992
DAVID C NICHOLSON, PE #60201

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

ELECTRICAL
DEWATERING BUILDING
POWER PLAN

BID DOCUMENTS

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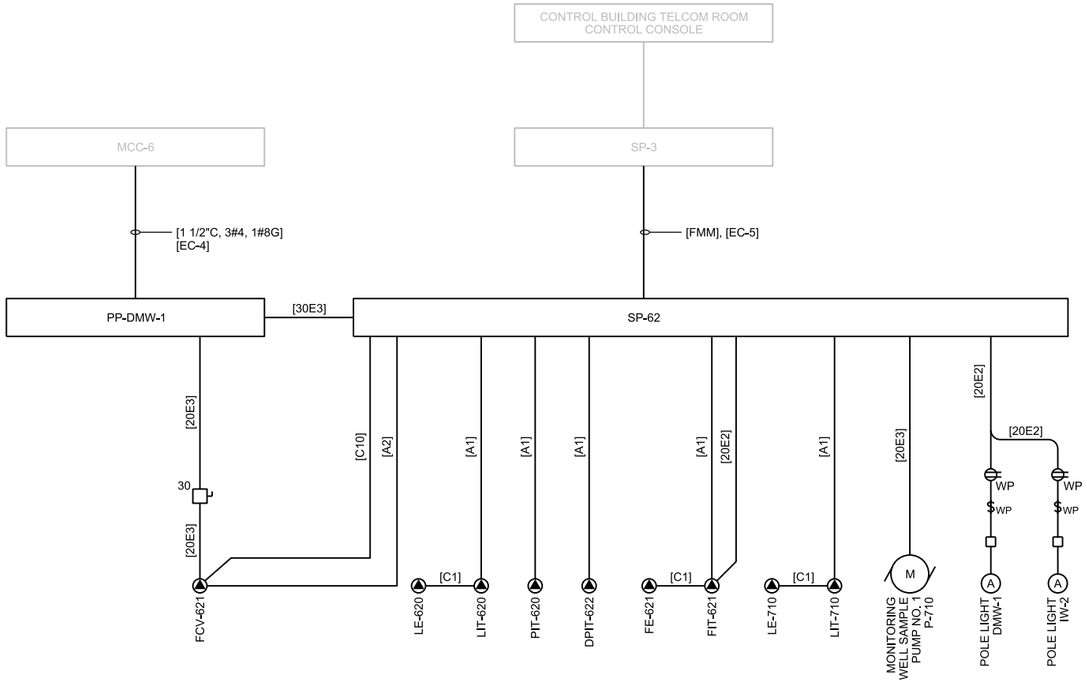
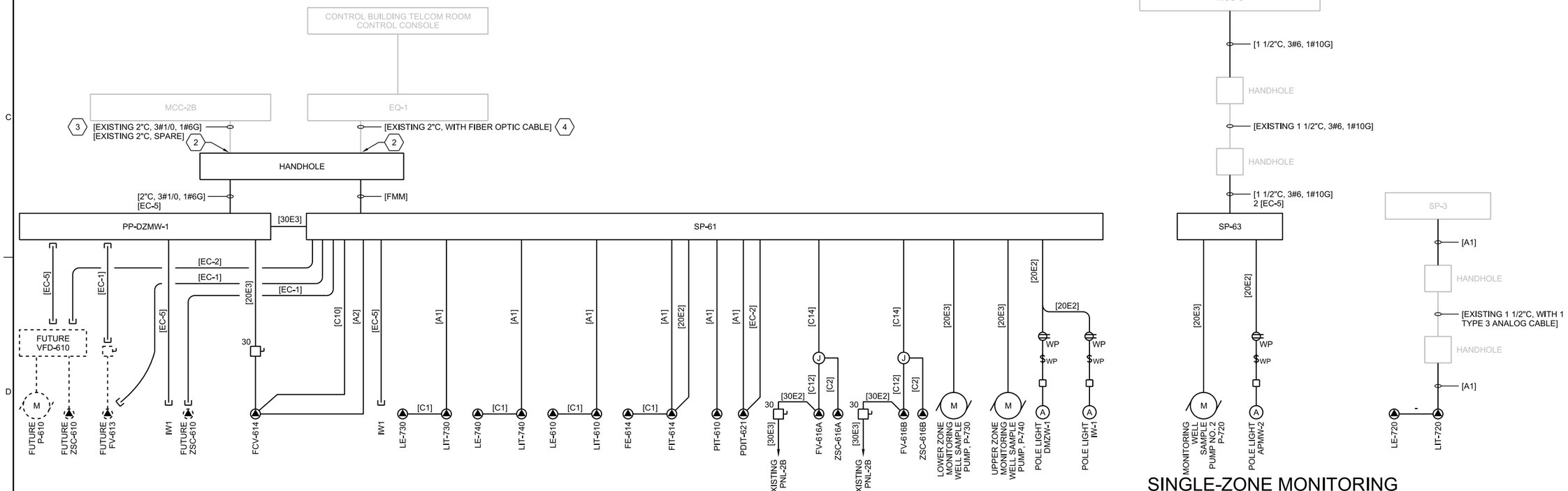
VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"	
DATE	NOVEMBER 2019
PROJ	674077
DWG	50-E-201
SHEET	51 of 61

FILENAME: 50-E-201_674077.dgn PLOT DATE: 11/15/2019 PLOT TIME: 9:07:34 AM



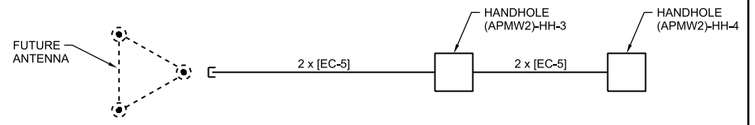
SINGLE-ZONE DMW-1 MONITORING WELL & INJECTION WELL NO. 2 RISER DIAGRAM

NTS



DUAL-ZONE MONITORING WELL & INJECTION WELL NO. 1 RISER DIAGRAM

NTS



FUTURE ANTENNA RISER DIAGRAM

NTS

SINGLE-ZONE MONITORING WELL APMW-2 RISER DIAGRAM

NTS

GENERAL SHEET NOTES

1. SEE DWG 01-G-008 FOR CIRCUIT CONDUCTOR AND CONDUIT IDENTIFICATION SCHEDULES.

SHEET KEYNOTES

1. NOT USED.
2. EXTEND EXISTING 2" CONDUITS TO NEW HANDHOLE.
3. ROUTE NEW CONDUCTORS FOR PP-DZMW-1 IN EXISTING 2" CONDUIT FROM NEW HANDHOLE TO MCC-2B.
4. ROUTE NEW FIBER OPTIC CABLE FOR SP-61 IN EXISTING 2" CONDUIT FROM NEW HANDHOLE TO PANEL EQ-1.

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David Nicholson

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STATE OF FLORIDA PROFESSIONAL ENGINEER
DAVID C. NICHOLSON LICENSE No 60201

NO.	DATE	REVISION	CHK	BY
DSGN	D NICHOLSON	DR	A PASTRANA	M GOSLOW	APVD	D NICHOLSON

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 AAC001992
DAVID C NICHOLSON, PE #60201

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

ELECTRICAL
RISER DIAGRAMS

NTS
VERIFY SCALE
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0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	80-E-601
SHEET	52 of 61

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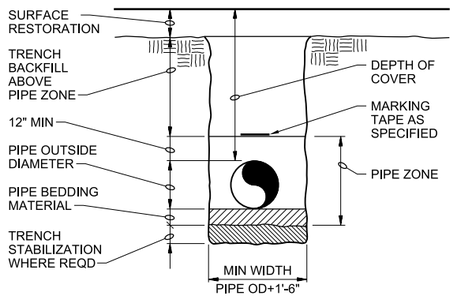
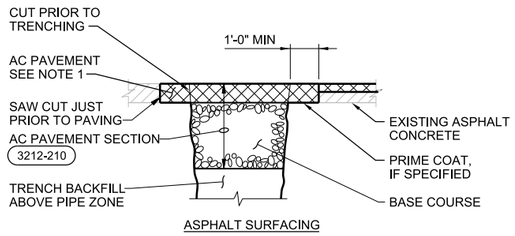


TYPICAL TRENCH

NTS

3123-110



ASPHALT SURFACING

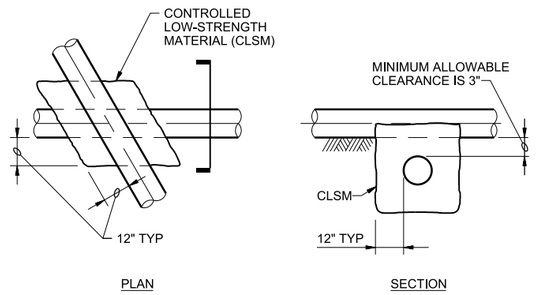
NOTES:

1. IN AREAS OF RESTORATION ADJACENT TO MILLING AND RESURFACING, THE 3" RESTORATION PAVEMENT SHALL BE PLACED IN TWO EQUAL LIFTS. THE LAST LIFT SHALL BE PLACED SIMULTANEOUSLY WITH THE RESURFACING PAVEMENT.

SURFACE RESTORATION

NTS

3123-115



NOTES:

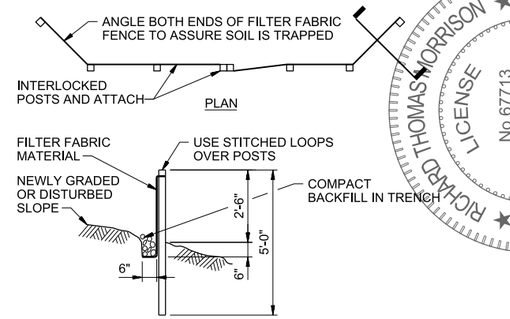
CLSM SUPPORT IS REQUIRED:

1. WHEN BOTH PIPELINES ARE NEW AND CLEARANCE BETWEEN THEM IS LESS THAN 12".
2. WHEN A NEW PIPELINE IS CROSSING OVER AN EXISTING PIPELINE AND THE CLEARANCE BETWEEN THEM IS LESS THAN 12".
3. AT ALL PIPE CROSSINGS WHERE A NEW PIPELINE IS CROSSING UNDER AN EXISTING PIPELINE.
4. REFER TO SPECIFICATION SECTION 31 23 23.15 FOR CLSM REQUIREMENTS.

TRENCH PIPE CROSSING

NTS

3123-120



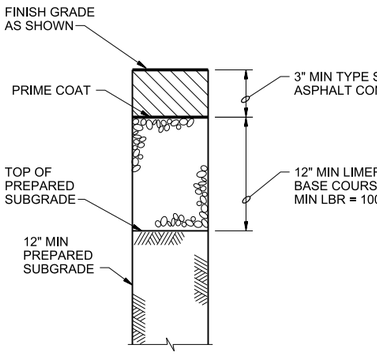
NOTES:

1. BURY BOTTOM OF FILTER FABRIC 6" VERTICALLY BELOW FINISHED GRADE.
2. WOOD OR STEEL FENCE POSTS.
3. STITCHED LOOPS TO BE INSTALLED DOWNHILL SIDE OF SLOPE.
4. COMPACT ALL AREAS OF FILTER FABRIC TRENCH.

SILT FENCE

NTS

3125-165



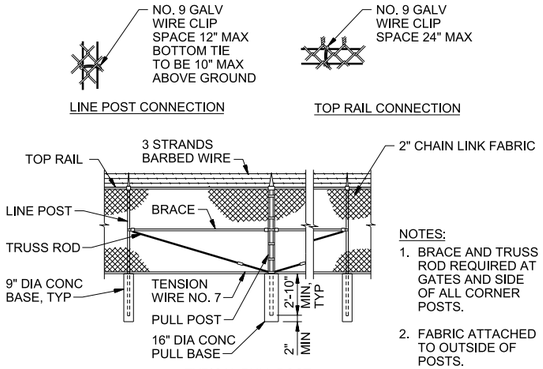
NOTE:

FOR SURFACE RESTORATION, MATCH EXISTING ASPHALT THICKNESS IF GREATER THAN 3 INCHES.

ASPHALT CONCRETE PAVEMENT

NTS

3212-210



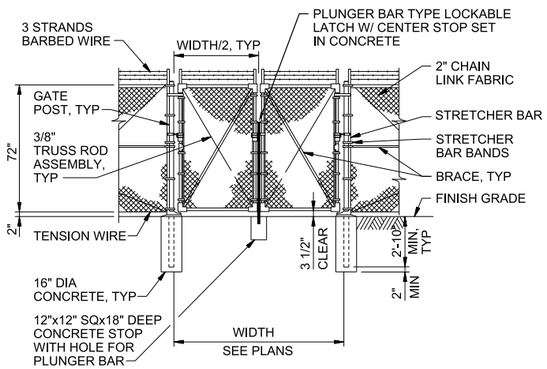
NOTES:

1. BRACE AND TRUSS ROD REQUIRED AT GATES AND SIDE OF ALL CORNER POSTS.
2. FABRIC ATTACHED TO OUTSIDE OF POSTS.

CHAIN LINK FENCE

NTS

3231-410



Richard Thomas Morrison

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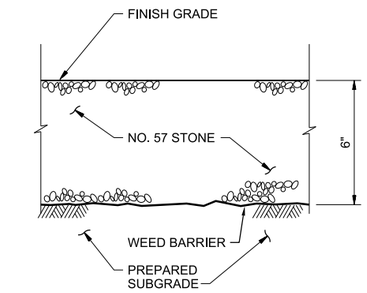
Date: 2019.12.16 12:08:17 -05'00'

DOUBLE SWING GATE

NTS

3231-415



GRAVEL SURFACING

NTS

3215-260

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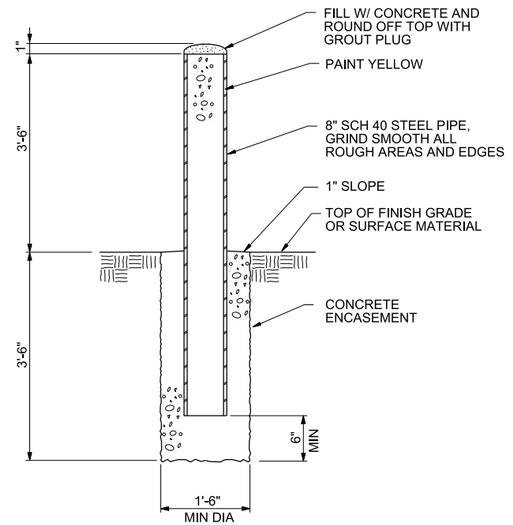


NOTE:
CONCRETE MIX DESIGN SHALL BE IN ACCORDANCE WITH SPECIFICATION 03 30 10, STRUCTURAL CONCRETE.

PERMANENT GUARD POST

NTS

3305-954

RICHARD THOMAS MORRISON PE 67713
643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 - AAC001992

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

CIVIL

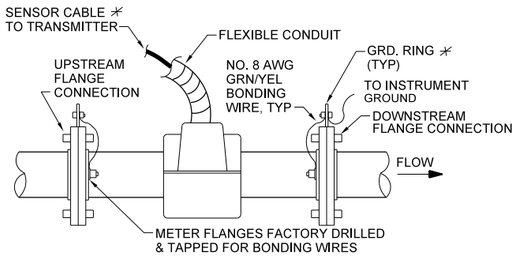
STANDARD DETAILS

NO.	DATE	DSGN	DR	CHK	APVD	BY	REVISION
		R MORRISON	WL CLOUGH	T INNISS	APVD	R MORRISON	

BID DOCUMENTS

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	95-C-501
SHEET	53 of 61



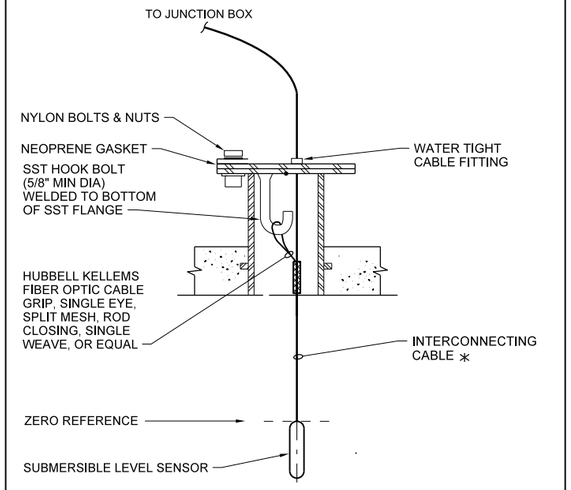
NOTES:

1. COMPONENTS DESIGNATED BY ✳ ARE SUPPLIED BY INSTRUMENT MANUFACTURER.
2. IF PIPE IS NON-CONDUCTIVE BOND MAGMETER TO ONE OF THE FOLLOWING ACCEPTABLE GROUNDS:
   A) METALLIC WATER PIPE IF BURIED PORTION IS MORE THAN 10'.
   B) STRUCTURAL STEEL.

MAGNETIC FLOWMETER INSTALLATION

NTS

4091-222BG



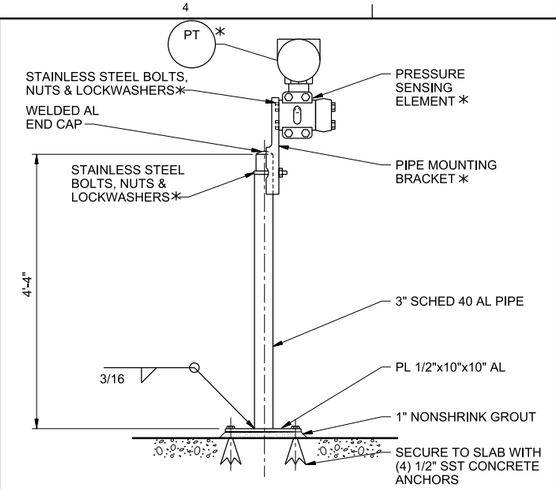
NOTES:

1. COMPONENTS DESIGNATED BY ✳ ARE SUPPLIED BY INSTRUMENT MANUFACTURER.

SUBMERSIBLE LEVEL TRANSMITTER INSTALLATION

NTS

4091-267CG



STANCHION MOUNT

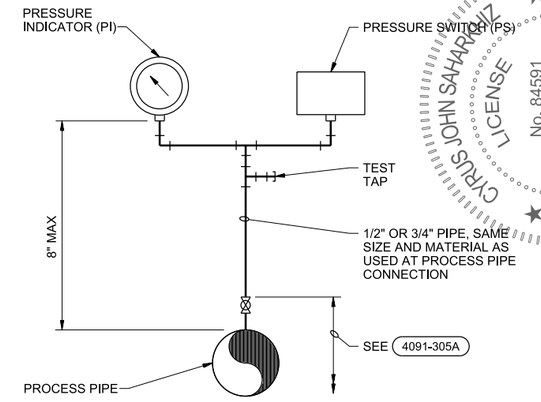
NOTES:

1. PAINT ALUMINUM IN CONTACT WITH CONCRETE ACCORDING TO SPECIFICATIONS FOR PAINTING.
2. ALTERNATIVELY, STANCHION SUPPORT SHALL BE O'BRIEN CORP. MODEL 32FP52 WITH 9 MIL ARC SPRAY ZINC METALLIZED COATING; OR EQUAL.
3. COMPONENTS DESIGNATED BY ✳ ARE SUPPLIED BY INSTRUMENT MANUFACTURER.

PRESSURE AND PRESSURE DIFFERENTIAL TRANSMITTER INSTALLATION

NTS

4091-302



DIRECT MOUNTING

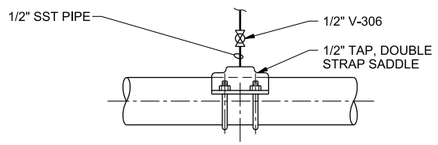
NOTES:

1. INDICATOR AND SWITCH INSTALLATION SHOWN. FOR SINGLE INSTRUMENT INSTALLATIONS, MOUNT DEVICE DIRECTLY ABOVE TEST TAP.

PRESSURE SWITCH & INDICATOR INSTALLATION

NTS

4091-304A

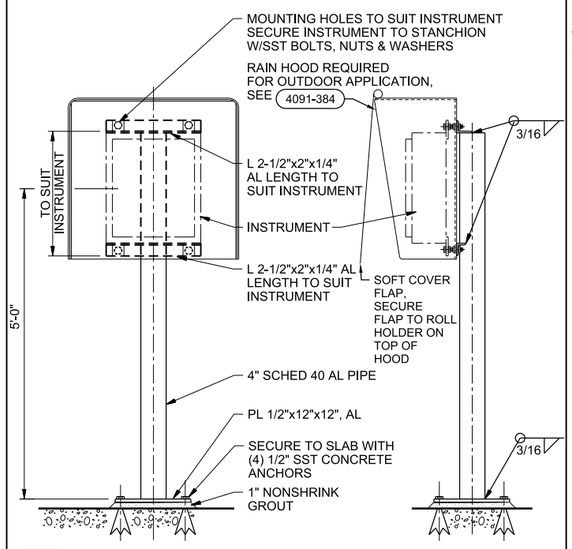


CEMENT LINE STEEL PIPE, CAST IRON PIPE AND DUCTILE IRON PIPE

PRESSURE CONNECTION INSTALLATION

NTS

4091-305A



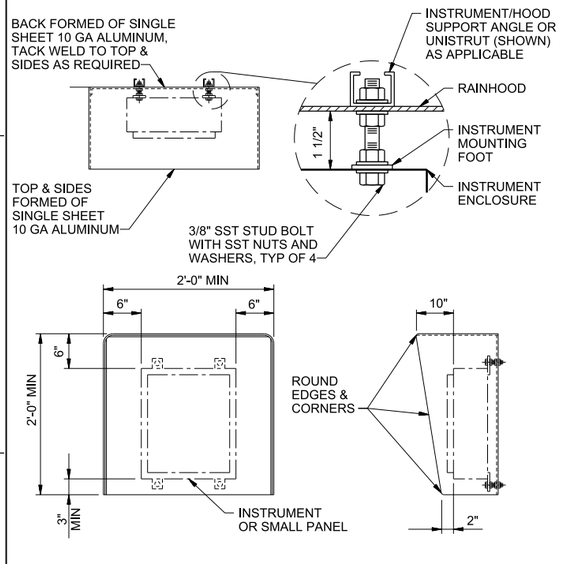
NOTES:

1. ROUND OFF ALL EXPOSED EDGES AND CORNERS.
2. PAINT ALUMINUM IN CONTACT WITH CONCRETE ACCORDING TO SPECIFICATIONS FOR PAINTING.

STANCHION SUPPORT FOR CASE MOUNTED INSTRUMENTS

NTS

4091-383



NOTES:

1. ALL EXPOSED EDGES TO BE GROUND SMOOTH AND BURR FREE.
2. MOUNT RAIN HOOD BETWEEN INSTRUMENT AND MOUNTING BRACKET. DRILL HOLES IN RAIN HOOD AS PER MOUNTING HOLES FOR INSTRUMENT, SEE 4091-383 4091-385

RAIN HOOD INSTALLATION

NTS

4091-384

Cyrus John Saharkhiz

Digitally signed by Cyrus John Saharkhiz
Date: 2019.12.16 14:23:56 -05'00'

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STATE OF FLORIDA PROFESSIONAL ENGINEER
CYRUS JOHN SAHARKHIZ LICENSE No. 84591

NO.	DATE	REVISION	DR	CHK	BY
DSGN	C.SAHARKHIZ	A.PASTRANA	C.WILSON	APVD	C.SAHARKHIZ

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 · AAC001992
CYRUS JOHN SAHARKHIZ, PE #84591

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

INSTRUMENTATION AND CONTROL

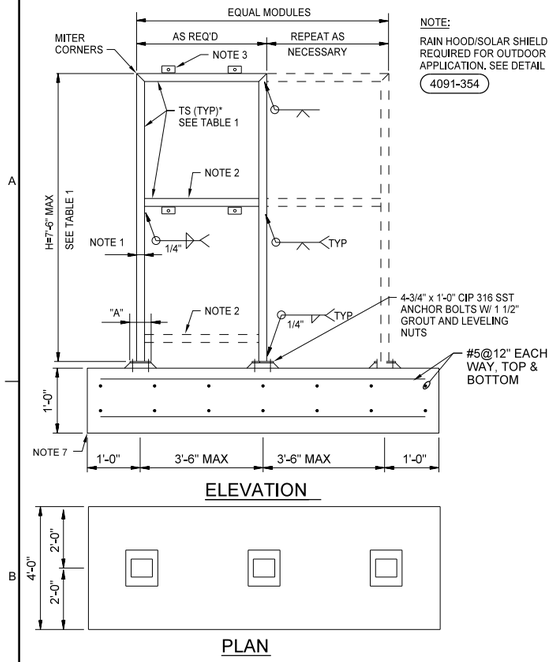
STANDARD DETAILS

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

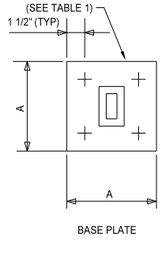
DATE	NOVEMBER 2019
PROJ	674077
DWG	95-N-501
SHEET	54 of 61

BID DOCUMENTS

FILENAME: 95-N-501_674077.dgn PLOT DATE: 11/15/2019 PLOT TIME: 9:11:45 AM



NOTE:
RAIN HOOD/SOLAR SHIELD REQUIRED FOR OUTDOOR APPLICATION. SEE DETAIL 4091-354



NOTES:

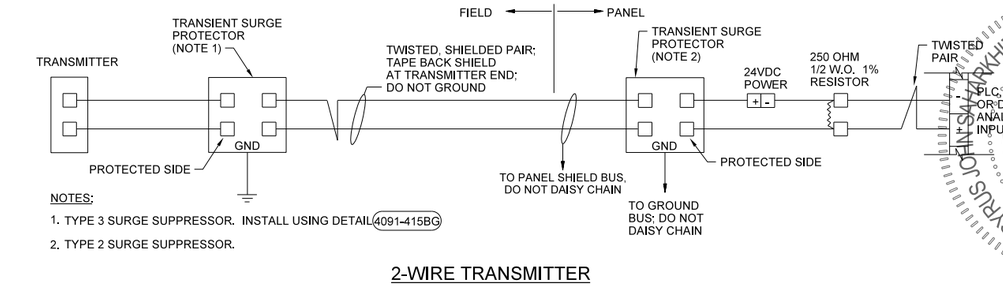
1. TOTAL WEIGHT OF PANEL(S) SHALL NOT EXCEED 750 LB IN EACH MODULE.
2. FOR PANELS WITH "H" GREATER THAN 4'-0", ONE HORIZONTAL MEMBER MUST BE LOCATED WITHIN THE MIDDLE THIRD OF THE FRAME HEIGHT. PROVIDE ADD'L MEMBERS AS NECESSARY FOR PANEL MOUNTING.
3. PROVIDE L 2 1/2"x 2 1/2"x 1/4"x 0'-3" WELD ALL AROUND TO TS; TYP AT EACH PANEL MOUNT.
4. GRIND ALL WELDS AND SHARP CORNERS SMOOTH.
5. THIS DETAIL APPLIES TO NON-FREE STANDING ELECTRICAL EQUIPMENT OVER 25 LB WHICH IS NOT MOUNTED ON A FREE STANDING FRAME OR IS NOT WALL MOUNTED.
6. PANEL OR INSTRUMENT FRONT FACES NORTH, UNLESS OTHERWISE NOTED.
7. PROVIDE REINFORCED PAD SHOWN EXCEPT WHERE THE RACK CAN BE MOUNTED ON SUITABLE EXISTING PAD.

TABLE 1			
	ALUMINUM FRAME		
HEIGHT "H"	TS (MIN SIZE)	BASE PLATE (IN)	
		A	t
5'-0" MAX.	TS 3 x 3 x.188	8	1/2
7'-6" MAX.	TS 4 x 4 x.188	9	5/8

8. PROVIDE #6 BARE COPPER GROUND WIRE FROM EACH PANEL AND INSTRUMENT MOUNTED ON RACK TO GROUND STUD. CONNECTION TO GROUND GRID SPECIFIED UNDER DIVISION 16.

PANEL MOUNTING RACK WITH CONCRETE PAD
NTS

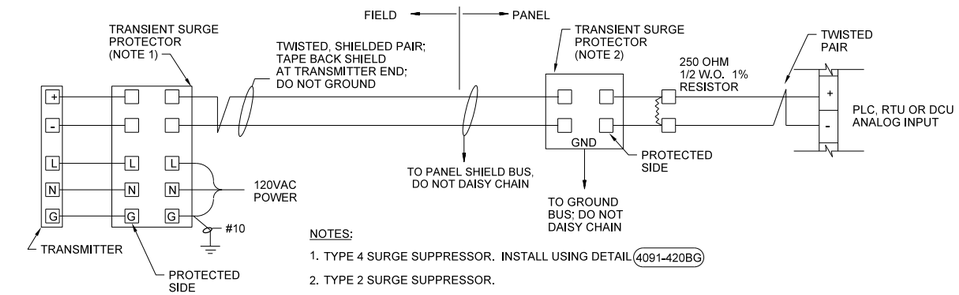
4091-402CG



NOTES:

1. TYPE 3 SURGE SUPPRESSOR. INSTALL USING DETAIL 4091-415BG
2. TYPE 2 SURGE SUPPRESSOR.

2-WIRE TRANSMITTER



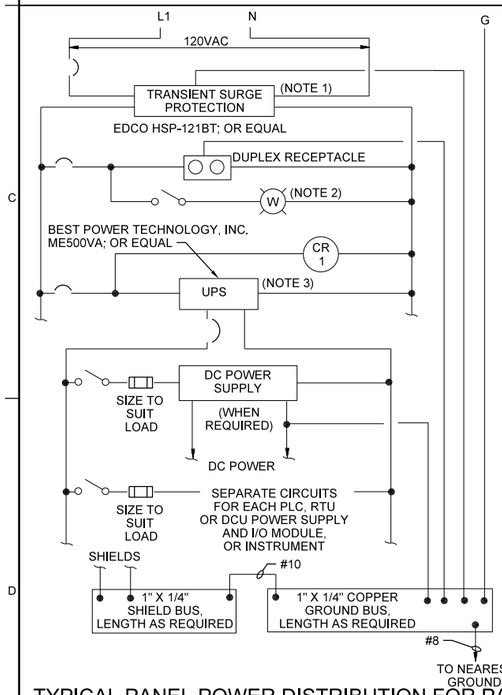
NOTES:

1. TYPE 4 SURGE SUPPRESSOR. INSTALL USING DETAIL 4091-420BG
2. TYPE 2 SURGE SUPPRESSOR.

4-WIRE TRANSMITTER

TYPICAL OUTDOOR TRANSJITTERS
NTS

4091-405BG



NOTES:

1. IF LOAD EXCEEDS 15 AMPS PROVIDE ADDITIONAL PARRALLEL CIRCUITS WITH TRANSIENT SURGE PROTECTION AS SHOWN.
2. PROVIDE APPROPRIATE LIGHTING PACKAGE FOR PANEL SIZE HOFFMAN BULLETIN A-80, OR EQUAL.
3. FOR LOADS OVER 400VA, PROVIDE SIMILAR UPS SIZED FOR 125 PERCENT OF THE CONNECTED LOAD.
4. PROVIDE 120VAC CIRCUITS TO POWER SITE LIGHTING AS SHOWN ON ELECTRICAL DRAWNGS.
5. 120VAC CONTROL POWER FED FROM 480VAC CONTROL POWER TRANSFORMER IN SEPARATE PANEL PARTITION.

Cyrus John Saharkhiz
Digitally signed by Cyrus John Saharkhiz
Date: 2019.12.16 14:26:22 -05'00'

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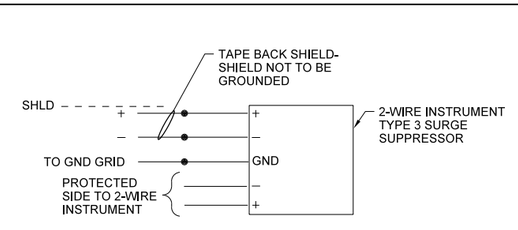
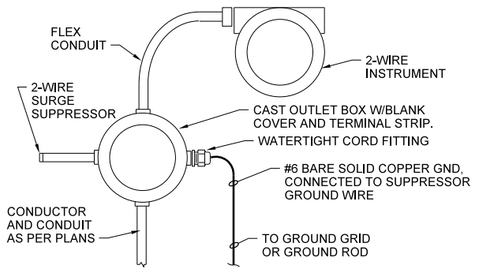
TYPICAL PANEL POWER DISTRIBUTION FOR PANELS WITH INTERNAL UPS
NTS

4091-406BG

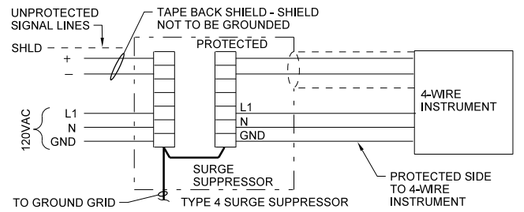


WIRING DIAGRAM

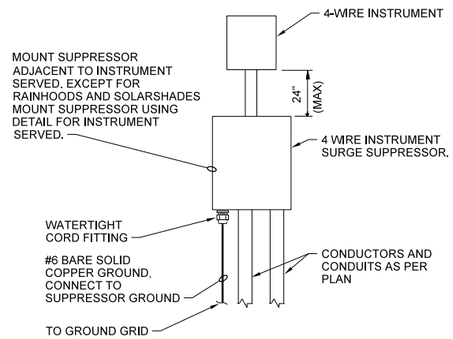


TYPE "3" SURGE SUPPRESSOR INSTALLATION 2-WIRE INSTRUMENT
NTS

4091-415BG



WIRING DIAGRAM



TYPE "4" SURGE SUPPRESSOR INSTALLATION 4-WIRE INSTRUMENT
NTS

4091-267CG

CYRUS JOHN SAHARKHIZ, PE #84591
843 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 · AAC001992

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

INSTRUMENTATION AND CONTROL

STANDARD DETAILS

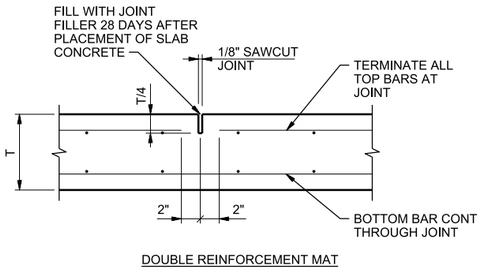
NO.	DATE	DSGN
REVISION	CHK	DR
APVD	C.WILSON	A.PASTRANA
BY	APVD	C.SAHARKHIZ

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	95-N-502
SHEET	55 of 61

BID DOCUMENTS

STATE OF FLORIDA PROFESSIONAL ENGINEER
CYRUS JOHN SAHARKHIZ LICENSE No. 84591



DOUBLE REINFORCEMENT MAT

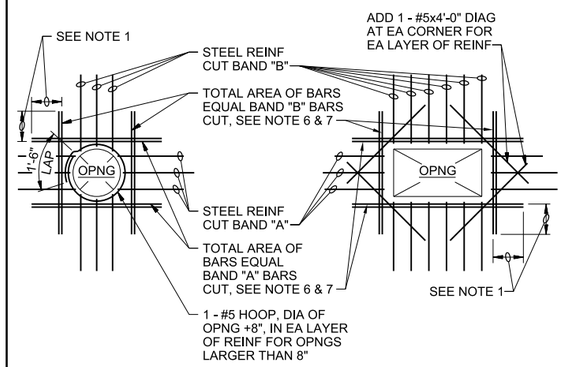
NOTES:

1. CONTRACTOR SHALL USE STRING LINE OR OTHER POSITIVE MEANS TO PLACE REINFORCEMENT AND LOCATE SAWCUT.

SLAB ON GRADE SAWN CONTROL JOINT

NTS

0315-192



NOTES:

1. PROVIDE MINIMUM LAP, SEE GENERAL STRUCTURAL NOTES.
2. TYPICAL FOR ALL OPENINGS IN CONCRETE WALLS OF BELOW GRADE AND HYDRAULIC STRUCTURES AND ALL STRUCTURAL CONCRETE SLABS UNLESS INDICATED OTHERWISE ON PLANS.
3. DO NOT WELD REINFORCEMENT TO PIPE SLEEVES AND INSERTS.
4. PROVIDE A MINIMUM OF 2 "A" BARS AND 2 "B" BARS EACH SIDE OF OPENING (1 EACH FACE), INCLUDING DOWELS AND CORNER BARS, TYPICAL.
5. FOR OPENINGS LARGER THAN 8'-0", REINFORCE SAME AS FOR 8'-0" OPENINGS.
6. SPACE AT 3 BAR DIAMETERS (OR 3" MINIMUM) ON CENTER. LOCATE HALF OF TOTAL AREA ON EACH SIDE OF OPENING.
7. AT OPENINGS WITHIN 12" OF AN INTERSECTING WALL OR SLAB, PROVIDE ONLY THE EXTRA REINFORCEMENT WHICH WILL FIT, AT THE BAR SPACING IN NOTE 6.

OPENING REINFORCING

NTS

0330-001

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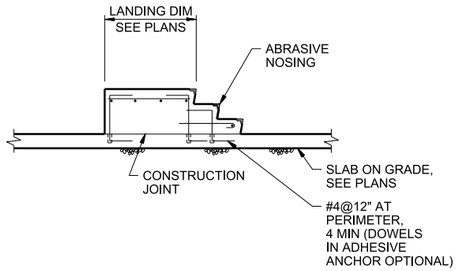
Clement W. Anson

Digitally signed by Clement W. Anson
Date: 2019.12.16 12:18:27 -05'00'



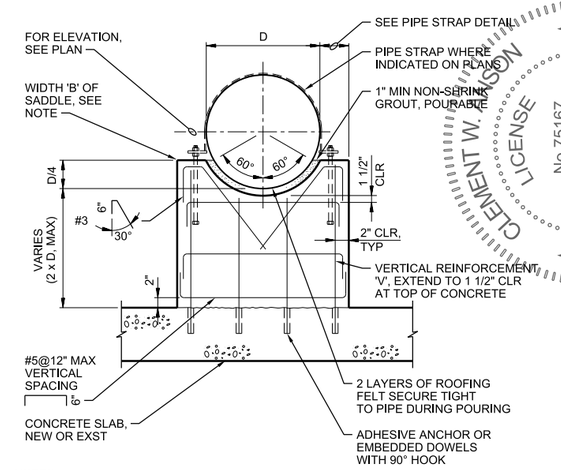
NOTE:

REINFORCE WITH #5 @12", UNLESS OTHERWISE NOTED.

CONCRETE STAIR - ON GRADE

NTS

0330-050



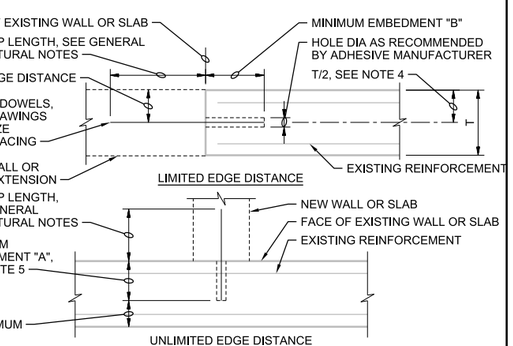
NOTES:

1. FOR 'B'=10" OR THICKER, USE 2 LAYERS OF REINFORCEMENT, TURN HORIZONTAL BARS 90° TO HOOK AROUND VERTICALS , 1 1/2" COVER.
2. FOR LOCATIONS WHERE PIPE STRAP IS REQUIRED, REFER TO DRAWINGS. UNLESS INDICATED OTHERWISE A STRAP IS NOT REQUIRED.
3. PROVIDE 3/4" x (STRAP WIDTH PLUS 1" WIDE) NEOPRENE PAD BETWEEN STRAP AND PIPE IF REQUIRED.
4. THICKNESS 'B' OF SADDLE:
   B=9" WHEN: D ≤ 20"
   B=10" WHEN; 22" < D ≤ 34"
   B=12" WHEN; 36" < D ≤ 48"

CONCRETE PIPE SUPPORT

NTS

0330-061



DOWEL SIZE	MINIMUM EDGE DISTANCE	MINIMUM EMBEDMENT "A"	MINIMUM EMBEDMENT "B"
#3	2 1/2"	5"	8"
#4	3 1/2"	7"	11"
#5	4"	8"	13"
#6	5"	10 1/2"	16"
#7	6"	12 1/2"	20"
#8	7"	14"	22"
#9	7 1/2"	15"	24"

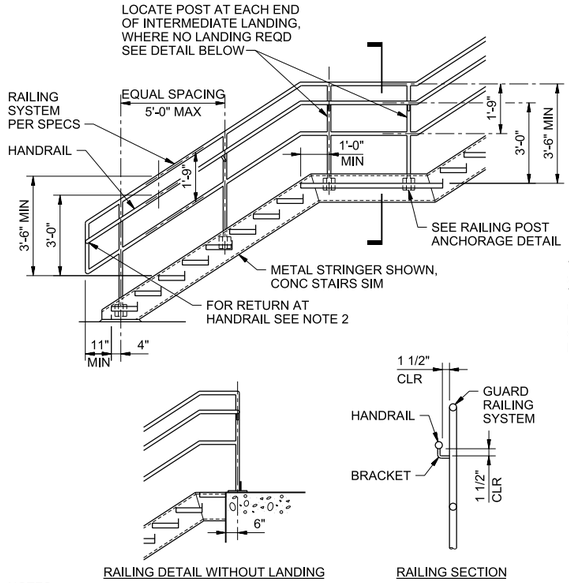
NOTES:

1. CONFORM TO REQUIREMENTS OF SPECIFICATION SECTION 03 63 00, CONCRETE DOWELING
2. FOLLOW ADHESIVE MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION.
3. USE MINIMUM EMBEDMENTS SHOWN, EXCEPT USE MANUFACTURER'S MINIMUM RECOMMENDED EMBEDMENT IF GREATER.
4. LOCATE DOWELS CENTERED IN WALL OR SLAB UNLESS OTHERWISE NOTED ON DRAWINGS. WHERE 2 ROWS OF DOWELS INDICATED, STAGGER SPACING & LOCATE ALTERNATING DOWELS AT MINIMUM EDGE DISTANCE FROM OPPOSITE FACES.
5. PROVIDE MINIMUM EMBEDMENT "A" SHOWN IN TABLE UNLESS SHORTER EMBEDMENT DEPTH IS CALLED OUT ON DRAWINGS.

ADHESIVE DOWEL

NTS

0330-105



RAILING DETAIL WITHOUT LANDING

RAILING SECTION

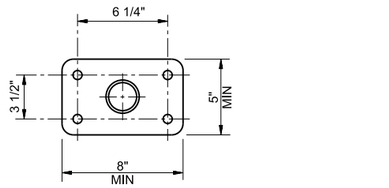
NOTES:

1. PROVIDE TOE BOARD AT LANDING WHERE REQUIRED.
2. RETURN ENDS OF HANDRAIL TO GUARD AT BOTH ENDS.

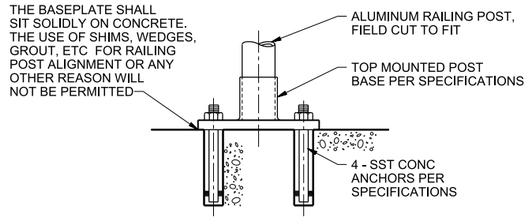
DETAIL 1 OF 2

RAILING - 2 RAIL STAIR - ALUMINUM

NTS



PLAN



ELEVATION

NOTE:

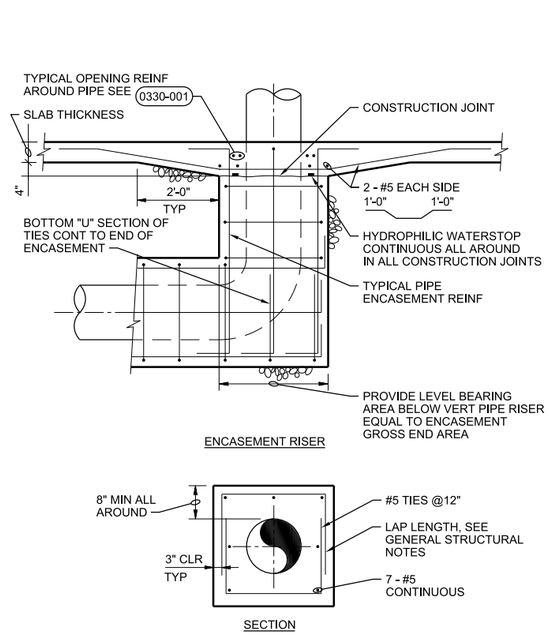
PROVIDE PROTECTION FOR DISSIMILAR METALS AND FOR ALUMINUM IN CONTACT WITH CONCRETE PER SPECIFICATIONS.

DETAIL 2 OF 2

RAILING - 2 RAIL STAIR - ALUMINUM

NTS

0552-001



ENCASEMENT RISER

SECTION

PIPE ENCASEMENT

NTS

0330-016

PROFESSIONAL ENGINEER
STATE OF FLORIDA
CLEMENT W. ANSON LICENSE No 75167

NO.	DATE	REVISION	DR	CHK	APVD
DSGN	C ANSON	WL CLOUGH	C ANSON	T INNISS	C ANSON

BY

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 · AAC001992
CLEMENT WILBERT ANSON PE 75167

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

STRUCTURAL

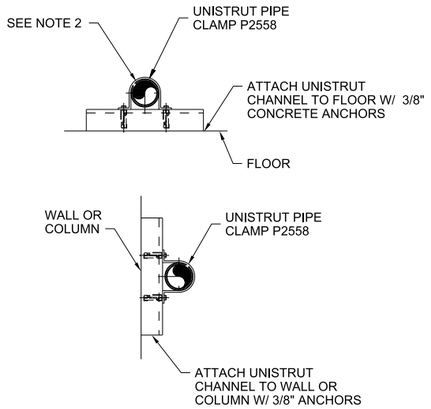
STANDARD DETAILS

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	95-S-501
SHEET	56 of 61

BID DOCUMENTS

FILENAME: 95-S-501_674077.dgn PLOT DATE: 11/15/2019 PLOT TIME: 9:28:55 AM



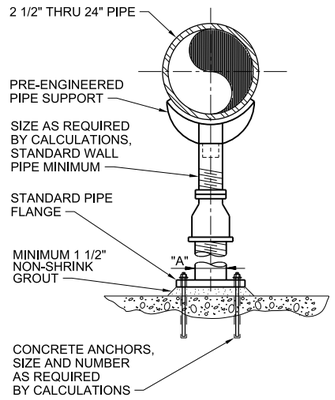
NOTES:

1. FOR MATERIALS OF CONSTRUCTION SEE SPECIFICATIONS SECTION 40 05 13.
2. FOR PVC PIPE USE UNISTRUT P2600 UNICUSHION INSTALLED BY THE MECHANICAL CONTRACTOR.
3. TIGHTEN CLAMP SNUG TO PIPE.

PIPE SUPPORT

NTS

4005-495C



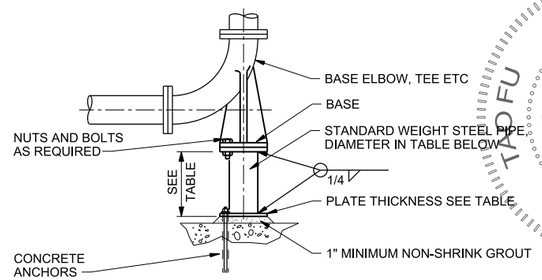
DIMENSION TABLE	
PIPE SIZE	"A" MINIMUM NOMINAL PIPE SIZE
2-1/2"	2-1/2"
3"	2-1/2"
4"	3"
6"	3"
8"	3"
10"	3"
12"	3"
14"	4"
16"	4"
20"	6"
24"	6"

NOTE:
SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.

PIPE SUPPORT -SADDLE SUPPORT
PEDESTAL TYPE - ADJUSTABLE

NTS

4005-500



DIMENSION TABLE				
PIPE SIZE	SUPPORT DIAMETER	PLATE		ANCHOR BOLT DIAMETER
		DIAMETER	THICKNESS	
3"	1 1/2"	5"	3/8"	3/8"
4"	2"	6"	3/8"	3/8"
6"	3"	7"	3/8"	3/8"
8" and 10"	4"	9"	1/2"	1/2"
12" thru 16"	6"	11"	1/2"	1/2"
18" thru 24"	8"	13 1/2"	5/8"	5/8"
30"	10"	16"	5/8"	5/8"
36"	12"	19"	5/8"	5/8"
42"	16"	23 1/2"	3/4"	3/4"
48"	18"	25"	3/4"	3/4"
54"	20"	30"	3/4"	3/4" (USE 6)
60"	24"	32"	3/4"	3/4" (USE 6)

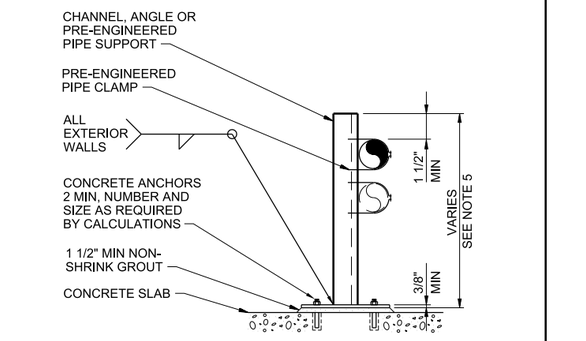
NOTES:

1. ALSO USE FOR SUPPORT OF HORIZONTALTEE OR CROSS.

BASE BEND/TEE SUPPORT

NTS

4005-518



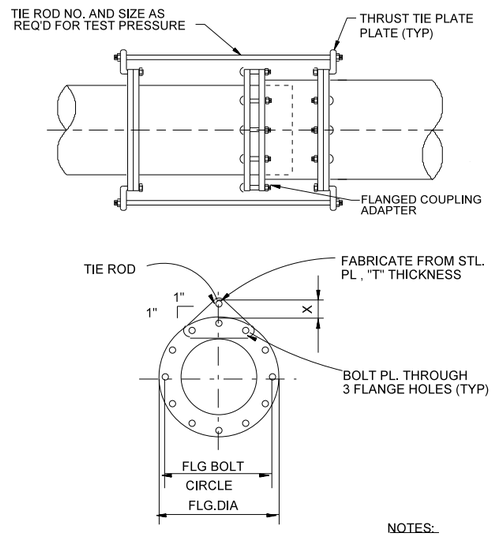
NOTES:

1. SUBMIT FINAL DESIGN DRAWINGS AND CALCULATIONS OF SUPPORTS AND ANCHORAGES AS SPECIFIED.
2. MAXIMUM PIPE SIZE: 2" DIAMETER.
3. MATERIAL TYPE SHALL BE AS SHOWN ON DRAWINGS OR AS SPECIFIED.
4. PROVIDE PIPE PROTECTION BARRIER AS SPECIFIED.
5. LENGTH IS DEPENDENT ON PIPE SPACING & DISTANCE OF PIPE FROM BASE.
6. USE 1 5/8" SQUARE CHANNEL MINIMUM OR 1 5/8"x3 1/4" BACK-TO-BACK PROFILE TO ACHIEVE PROPER SUPPORT CHARACTERISTICS.

PIPE SUPPORT

NTS

4005-524



PIPE SIZE	X	T @ TEST PRESS <150 PSI	T @ TEST 150< PRESS <375 PSI
6"	2 3/4 "	5/8 "	5/8 "
8"	2 3/4 "	5/8 "	3/4 "
10"	2 3/4 "	5/8 "	1"
12"	3"	3/4 "	1"
14	3 1/4 "	3/4 "	1"
16"	3 1/4 "	1"	1"
18"	3 1/2 "	1"	1"
20"	3 3/4 "	1"	1 1/2 "
22"	4"	1"	1 3/4 "
24"	4 1/4 "	1 1/4 "	1 3/4 "

TIE ROD SCHEDULE													
TEST PRESSURE		25 PSI		50 PSI		100 PSI		150 PSI		225 PSI		375 PSI	
PIPE DIAM. (IN.)	MINIMUM PIPE WALL THICKNESS (IN.)	TIE RODS		TIE RODS		TIE RODS		TIE RODS		TIE RODS		TIE RODS	
		DIA. (IN.)	NO. REQD	DIA. (IN.)	NO. REQD	DIA. (IN.)	NO. REQD	DIA. (IN.)	NO. REQD	DIA. (IN.)	NO. REQD	DIA. (IN.)	NO. REQD
6	3/16	–	–	–	–	5/8	2	5/8	2	5/8	2	5/8	2
8	3/16	–	–	–	–	5/8	2	5/8	2	5/8	2	3/4	2
10	3/16	–	–	–	–	5/8	2	5/8	2	5/8	2	7/8	2
12	3/16	5/8	2	5/8	2	5/8	2	5/8	2	5/8	2	7/8	4
14	3/16	5/8	2	5/8	2	3/4	2	3/4	2	3/4	4	1	4
16	3/16	5/8	2	5/8	2	3/4	2	7/8	2	7/8	4	1	4
18	1/4	5/8	2	5/8	2	7/8	2	1	2	1	4	1-1/4	4
20	1/4	5/8	2	3/4	2	7/8	2	7/8	4	7/8	4	1-1/4	4
22	1/4	5/8	2	3/4	2	3/4	4	7/8	4	7/8	4	1-1/2	4
24	1/4	5/8	2	3/4	2	7/8	4	1	4	1	6	1-1/2	6

NOTES:

1. TIE RODS SHALL CONFORM TO ASTM A193 GRADE B7.
2. NUTS SHALL CONFORM TO ASTM A194 GRADE 2H.
3. PLATE SHALL CONFORM TO ASTM A283 GRADE D.
4. TIE ROD NUTS SHALL BE TIGHTENED GRADUALLY AND EQUALLY IN STAGES TO PREVENT UNEVEN ALIGNMENT AND TO ALLOW EQUAL STRESS ON ALL TIE RODS UNDER PRESSURE. TIGHTEN UNTIL SNUG. THREADS SHALL PROTRUDE FROM NUTS. PEEN THREADS AFTER TIGHTENING NUTS. CONTRACTOR SHALL USE DATA FOR ONLY THOSE PIPE SIZES AND TEST PRESSURES SPECIFIED IN THIS CONTRACT.

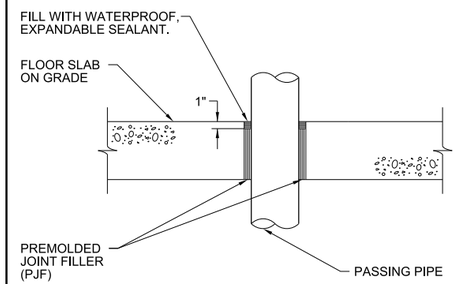
THRUST TIE ROD/CONNECTION PLATE

NTS

4005-544

Tao Fu

Digitally signed by Tao Fu
Date: 2019.12.16 11:50:11 -05'00'



SLAB ON GRADE PIPE PENETRATIONS

NTS

4027-625

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 · AAC001992
TAO FU, PE #63138

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

YARD PIPING

STANDARD DETAILS

NO.	DATE	REVISION	DR	CHK	APVD
DSGN			T FU	WL CLOUGH	T INNISS

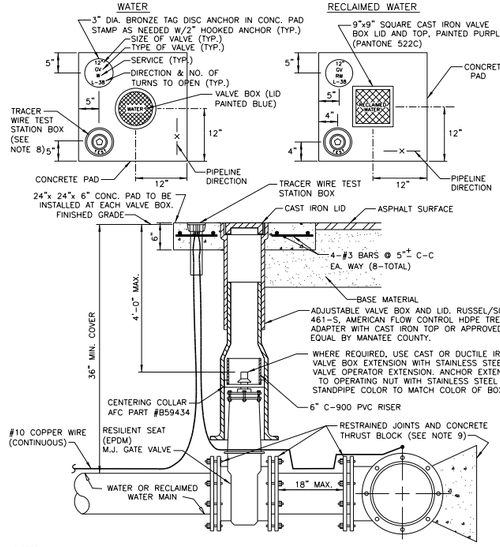
BY: T FU APVD

STATE OF FLORIDA
TAO FU
LICENSE No 63138
PROFESSIONAL ENGINEER

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	95-D-501
SHEET	57 of 61

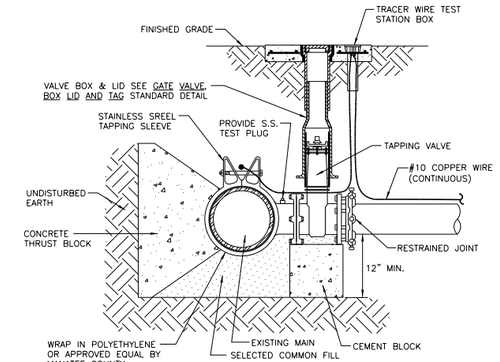
BID DOCUMENTS



NOTES:

1. "WV" OR "RWV" TO BE IMPRESSED INTO THE NEWLY-POURED CONCRETE CURB, ALONG WITH DISTANCE IN FEET TO THE VALVE. IF NO CURB, INSTALL A BLUE DISC WITH "W" OR PURPLE DISC WITH "RW" AND A 1/8"x1" GALVANIZED STEEL SCREW IN THE EDGE OF PAVEMENT WITH THE FOOTAGE FROM THE DISC TO THE VALVE.
2. ALL EXISTING AND PROPOSED VALVE BOXES SHALL BE ADJUSTED TO FINISHED GRADES AS DETERMINED IN THE FIELD.
3. WATER VALVES SHALL NOT BE PLACED IN HANDICAPPED RAMPS.
4. PRECAST CONCRETE PADS & THRUST BLOCKS SHALL NOT BE USED.
5. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1/2".
6. FOR VALVES 16" AND LARGER, USE BUTTERFLY VALVES.
7. PIPELINE DIRECTION TO BE IMPRESSED INTO NEWLY POURED CONCRETE PAD.
8. TRACER WIRE TEST STATION BOX IS NOT REQUIRED IN VALVE BOX PAD IF THE GATE VALVE IS LOCATED WITHIN 200 FEET OF A WATER SERVICE, BLOW-OFF, BACKFLOW PREVENTER OR FIRE HYDRANT THAT HAS A TRACER WIRE BOX.
9. WHERE THRUST BLOCK NOT USED, RESTRAINED JOINTS MUST THEN EXTEND FROM TEE FULL LENGTH SPECIFIED FOR "TEES."
10. BINGHAM & TAYLOR P200NFG FOR NORMAL YARD SERVICE. WHERE VALVE WILL BE IN STREET OR PARKING UNDER VEHICLE TRAFFIC, USE P525RD CENTERED IN SEPARATE CONCRETE PAD SIMILAR TO STANDARD VALVE BOX PAD.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT				
REV.BY	DATE	MAY 10, 2011	GATE VALVE, BOX, LID AND TAG	UW-2
CLB/KE	11/10	DATE OF APPROVAL		PAGE 120

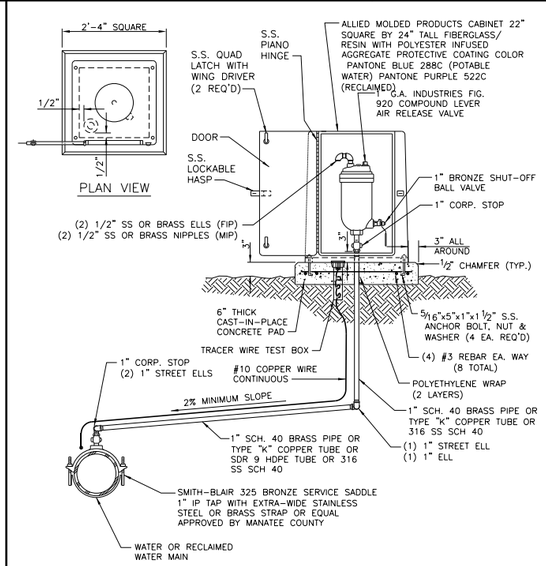


ELEVATION

NOTES:

1. PRIOR TO TAPPING, CONTRACTOR TO DEMONSTRATE 60 MINUTE HYDROSTATIC TEST OF THE TAPPING SLEEVE AND VALVE WITH NO LOSS OF 180 PSI PRESSURE FOR WATER AND RECLAIMED WATER OR 150 PSI FOR FORCE MAIN.
2. ALL FITTINGS TO BE WRAPPED WITH 20 MIL VISQUEEN AT THRUST BLOCK.
3. ALL TAPS ON CONCRETE WATER MAINS AND LARGER THAN 12" ARE TO BE MADE BY A MANATEE COUNTY APPROVED TAPPING COMPANY. ALL MATERIALS TO BE SUPPLIED BY THE CONTRACTOR.
4. ALL TAPS MUST BE OF A SMALLER SIZE THAN THE MAIN BEING TAPPED & PLACED NO CLOSER THAN 30" OR A DISTANCE EQUAL TO (1) MAIN PIPE DIAMETER PLUS (2) TAP PIPE DIAMETERS (WHICHEVER IS GREATER) FROM A JOINT OR FITTING.
5. CONTRACTOR TO SUPPLY A DRY HOLE FOR TAPPING CREW TO WORK IN AND A BACK-HOE TO LOWER TAPPING MACHINE INTO THE HOLE.
6. WHERE THRUST BLOCK NOT USED, RESTRAINED JOINTS MUST THEN EXTEND FROM TEE FULL LENGTH SPECIFIED FOR "TEES."
7. TRACER WIRE TEST STATION BOX IS REQUIRED AT CONNECTIONS TO EXISTING MAINS.

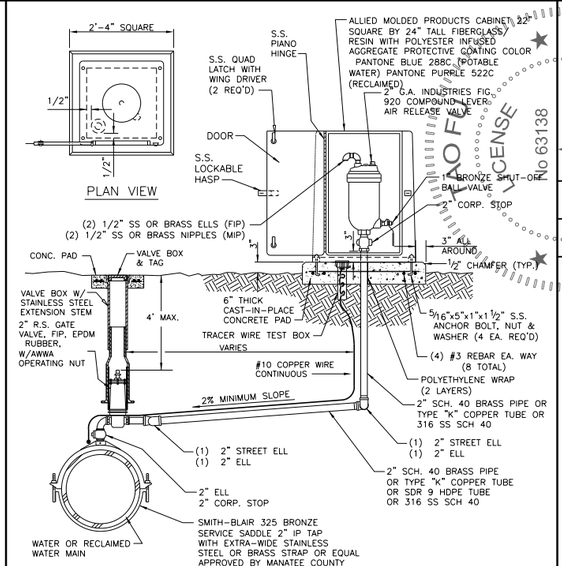
MANATEE COUNTY PUBLIC WORKS DEPARTMENT				
REV.BY	DATE	MAY 10, 2011	TAPPING SLEEVE AND VALVE	UW-4
CLB/KE	11/10	DATE OF APPROVAL		PAGE 122



NOTES:

1. AIR RELEASE VALVES TO BE INSTALLED AT HIGH POINTS ALONG WATER MAINS WHERE SPECIFICALLY INDICATED ON THE PLAN.
2. ARV VENT ORIFICE TO BE SIZED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION FOR WATER MAIN SIZE.
3. ALL INCIDENTAL FITTINGS AND HARDWARE TO BE STAINLESS STEEL, BRASS OR COPPER.
4. ALL PIPE THREADS TO BE SEALED AIR TIGHT.
5. VENT PIPE TO BE LAID ACCURATELY ON SLOPE, WITHOUT HIGH OR LOW POINTS.

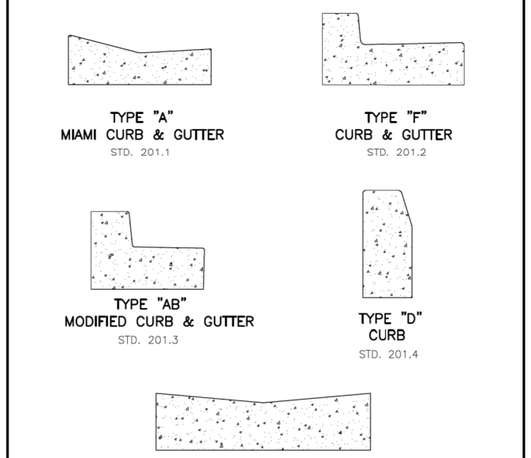
MANATEE COUNTY PUBLIC WORKS DEPARTMENT				
REV.BY	DATE	MAY 10, 2011	ABOVE-GROUND AIR RELEASE VALVE ASSY. FOR 12-INCH AND SMALLER WATER MAINS	UW-9
CLB/KE	11/10	DATE OF APPROVAL		PAGE 127



NOTES:

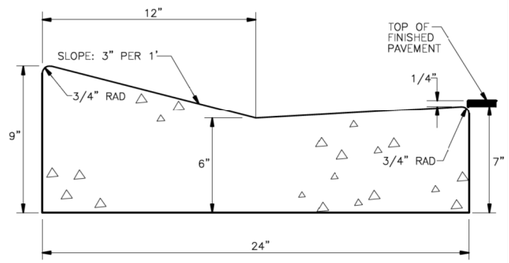
1. AIR RELEASE VALVES TO BE INSTALLED AT HIGH POINTS ALONG WATER MAINS WHERE SPECIFICALLY INDICATED ON THE PLAN.
2. ARV VENT ORIFICE TO BE SIZED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION FOR WATER MAIN SIZE.
3. ALL INCIDENTAL FITTINGS AND HARDWARE TO BE STAINLESS STEEL, BRASS OR COPPER.
4. ALL PIPE THREADS TO BE SEALED AIR TIGHT.
5. VENT PIPE TO BE LAID ACCURATELY ON SLOPE, WITHOUT HIGH OR LOW POINTS.
6. SEE GATE VALVE, BOX, LID AND TAG STANDARD DETAIL. CENTERING COLLAR IS NOT REQUIRED ON 2" GATE VALVES.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT				
REV.BY	DATE	MAY 10, 2011	AIR RELEASE ASSEMBLY FOR 16-INCH AND LARGER MAINS	UW-10
CLB/KE	11/10	DATE OF APPROVAL		PAGE 128



1. ALL CURB & GUTTER SHALL PROVIDE A 0.125" TO 0.25" CONTRACTION JOINT AT 10' CENTERS.
2. ALL CURB & GUTTER SHALL BE CONSTRUCTED IN COMPLIANCE WITH FLORIDA D.O.T. STANDARD SPECIFICATIONS PER F.D.O.T. ROADWAY AND TRAFFIC DESIGN STANDARDS INDEX NO. 300, LATEST REVISION.
3. TOP OF FINISHED PAVEMENT SHALL BE 0.25" ABOVE LIP OF GUTTER, LOW SIDE.

MANATEE COUNTY TRANSPORTATION DEPARTMENT				
REV.BY	DATE	6/12/07	CURB & GUTTER CONTROL SHEET	201.0
		DATE OF B.O.C.C. APPROVAL		

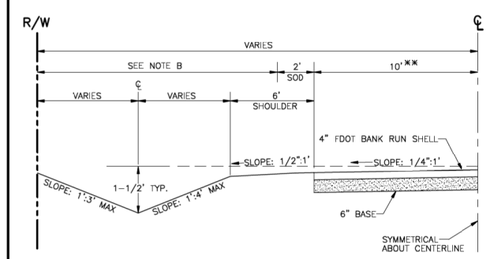


TYPE "A"
MIAMI CURB & GUTTER

A) CLASS 1 CONCRETE 3,000 P.S.I. AT 28 DAYS.

B) CURB AND GUTTER SHALL MEET THE SPECIFICATIONS ESTABLISHED BY FLORIDA D.O.T. STANDARD SPECIFICATIONS PER F.D.O.T. ROADWAY AND TRAFFIC DESIGN STANDARDS INDEX NO. 300, LATEST REVISION.

MANATEE COUNTY TRANSPORTATION DEPARTMENT				
REV.BY	DATE	6/12/07	TYPE A MIAMI CURB & GUTTER	201.1
		DATE OF B.O.C.C. APPROVAL		



Note: These roads may only be approved for use in Ag-rural designated areas on rights-of-way dedicated prior to Oct. 15, 1990. Roads will be classified as "Emergency Maintained Only." Local residents are required to perform routine maintenance.

NOTES:

*A) Clean, stabilized 6" base. Minimum LBR 40, 98% T180 AASHTO. This requires raking and removal of plant material before compaction, if plant material exists within the right of way.

B) Road shall be finished with 4" FDOT bank run shell, then leveled and compacted.

C) Side 2' of road shoulder shall be sodded and if there is no substantial existing grass, remaining shoulder, slopes and ditch bottom shall have a minimum of 2" topsoil, and shall be seeded and mulched. Areas susceptable to erosion must be sodded.

D) The slope of contiguous property may not exceed 3' to 1'.

E) 12" cover on storm sewers, no portion of pipe allowed in base.

F) Laboratory tests are required to substantiate structural section design. Specifications shown on this sheet are minimum requirements.

* Or approved equal.

** Road may be 12' in width, (6' half width) on non-through roads (Dead Ends) serving 4 or fewer lots. Shoulders shall be a minimum of 6' in width and constructed of a stabilized or compacted soil with a minimum LBR OF 40. The Transportation Director may allow variance to the road standards for certain circumstances.

** Road may be 16' in width (8' half width) on non-through roads (Dead Ends) serving 5 to 8 lots.

MANATEE COUNTY TRANSPORTATION DEPARTMENT				
REV.BY	DATE	6/12/07	RURAL SHELL ROAD	401.9
		DATE OF B.O.C.C. APPROVAL		

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY TAO FU, PE ON DECEMBER 16th, 2019, USING A DIGITAL SIGNITURE.
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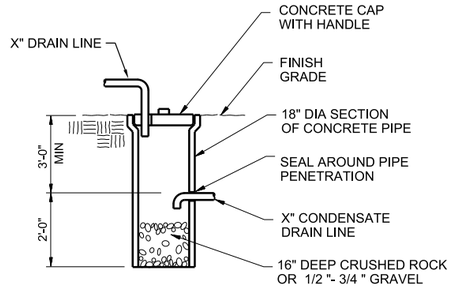


Tao Fu
Digitally signed by Tao Fu
Date: 2019.12.16 11:52:20 -05'00'

DRAINAGE DRYWELL
NTS

2214-100

NO.	DATE	REVISION	DR	CHK	APVD
			T FU	WL CLOUGH	T INNISS

BY	APVD
T FU	

STATE OF FLORIDA PROFESSIONAL ENGINEER
LICENSE No 63138

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 · AAC001992
TAO FU, PE #63138

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

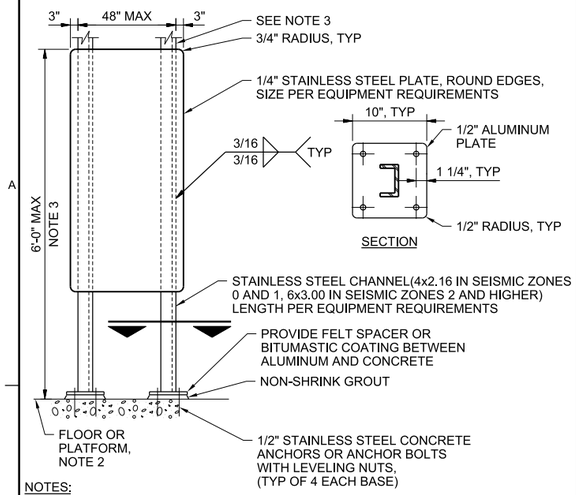
YARD PIPING
STANDARD DETAILS

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	95-D-502
SHEET	58 of 61

BID DOCUMENTS

FILENAME: 95-D-502_674077.dgn PLOT DATE: 11/15/2019 PLOT TIME: 9:09:17 AM

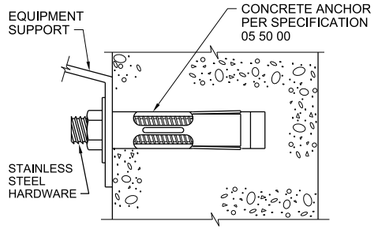


NOTES:

1. USE STAINLESS STEEL MOUNTING HARDWARE. USE WASHER AND SPLIT LOCK WASHER UNDER ALL NUTS.
2. FOR YARD LOCATIONS PROVIDE A 6 INCH THICK CONCRETE PAD AT GRADE WITH #4 BAR @ 12" OC EACH WAY, CENTERED. THE PAD SHALL BE 12 INCHES LONGER THAN THE MOUNTING PLATE BY ONE HALF THE HEIGHT OF THE MOUNTING PLATE ABOVE FINISHED GRADE. MINIMUM WIDTH 24 INCHES.
3. FOR HEIGHTS EXCEEDING 5'-0" OR WEIGHT OF MOUNTED EQUIPMENT EXCEEDING 200 LBS, SIZE POSTS AND CONNECTIONS FOR LATERAL LOADS. EXTEND POSTS TO STRUCTURE ABOVE WHERE REQUIRED BY CALCULATION, SEE GENERAL ELECTRICAL CONSTRUCTION NOTES ON DRAWINGS.

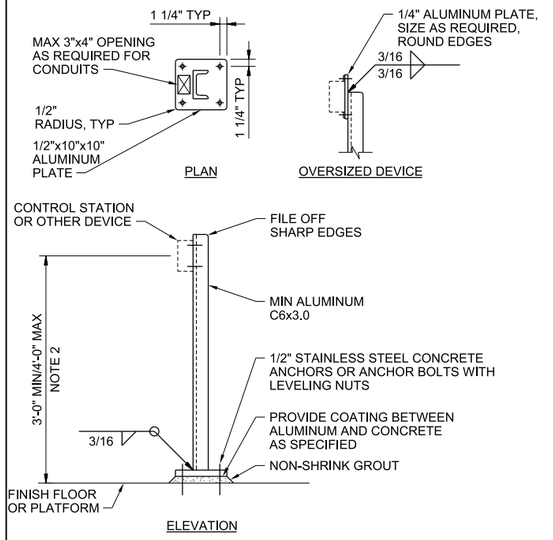
DEVICE MOUNTING EQUIPMENT PEDESTAL
NTS

2605-008b



CONCRETE ANCHOR INSTALLATION
NTS

2605-010

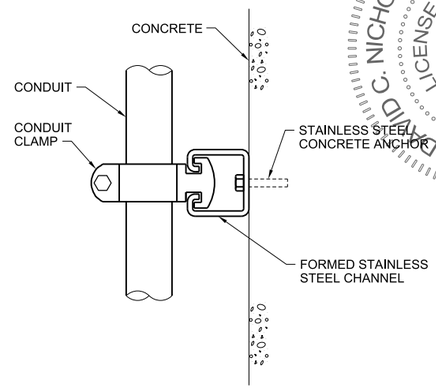


NOTES:

1. ALL MOUNTING HARDWARE SHALL BE STAINLESS STEEL. USE WASHERS AND SPLIT-LOCK WASHERS UNDER ALL NUTS AND BOLTS.
2. FOR HEIGHTS EXCEEDING 4'-0" OR WEIGHTS OF MOUNTED EQUIPMENT EXCEEDING 200 LBS, SIZE POST AND CONNECTION FOR LATERAL LOADS. EXTEND POSTS TO STRUCTURE ABOVE WHERE REQUIRED BY CALCULATION.

PEDESTAL MOUNTED DEVICE
NTS

2605-011b



NOTE:

1. SUPPORT ALL EXPOSED CONDUITS ON FORMED STEEL CHANNELS.

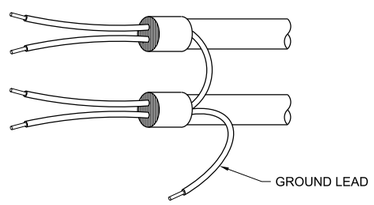
CONDUIT SUPPORT ON STRUCTURE
NTS

2605-017

NOTE:
ALL SHIELDED INSTRUMENTATION CABLE SHALL BE TERMINATED IN ACCORDANCE WITH THIS DETAIL WHERE GROUNDING IS REQUIRED.

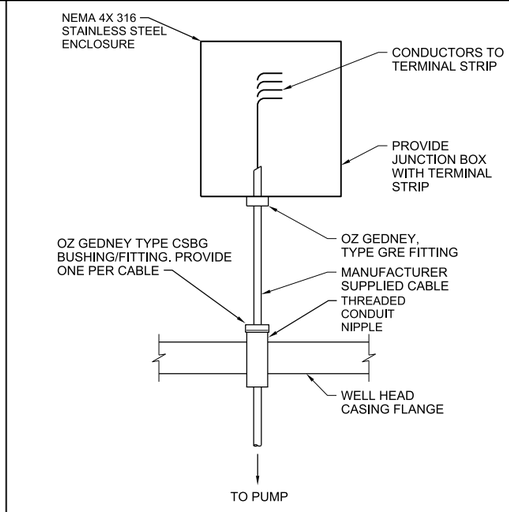
TERMINATION OF SHIELDED INSTRUMENTATION CABLE
NTS

2605-100b



UNACCEPTALBE METHOD OF GROUNDING INSTRUMENTATION CABLE SHIELD
NTS

2605-100c



NOTES:

1. ALL HARDWARE SHALL BE STAINLESS STEEL.
2. THIS DETAIL SHALL BE USED FOR TERMINATION OF ALL MANUFACTURER SUPPLIED CABLES (MSC) EXITING A WELL HEAD.

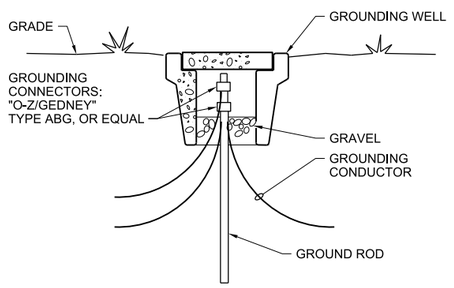
PRESSURE CONNECTION INSTALLATION
NTS

2605-101

THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY DAVID C. NICHOLSON, PE ON DECEMBER 16th, 2019, USING A DIGITAL SIGNATURE. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELETRONIC COPIES.

David Nicholson

Digitally signed by David Nicholson
Date: 2019.12.17 11:31:31 -05'00'



GROUNDING TEST WELL
NTS

2605-202

DAVID C. NICHOLSON
LICENSE
No 60201
STATE OF FLORIDA
PROFESSIONAL ENGINEER

NO.	DATE	REVISION	DR	CHK	BY
DSGN	D NICHOLSON		A PASTRANA	M GOSLOW	APVD
					D NICHOLSON

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 AAC001992
DAVID C NICHOLSON, PE #60201

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

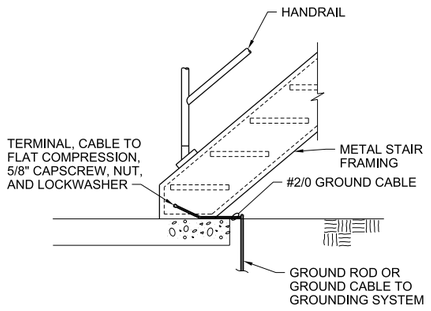
ELECTRICAL

STANDARD DETAILS

AS NOTED
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

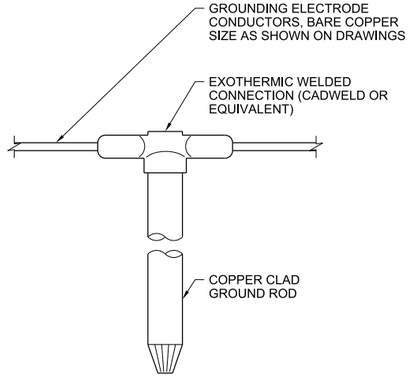
DATE	NOVEMBER 2019
PROJ	674077
DWG	95-E-501
SHEET	59 of 61

BID DOCUMENTS



GROUNDING, GENERAL STAIRWAY
NTS

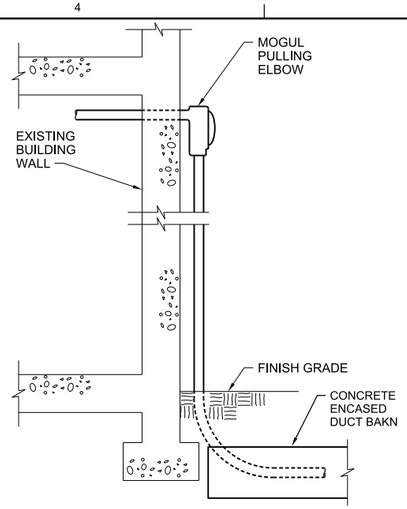
2605-207



NOTES:
1. TOP OF GROUND ROD SHALL BE SAND BEDDED 6" MIN BELOW GRADE.
2. CONNECTIONS TO EXISTING GROUNDING ELECTRODE CONDUCTORS SHALL BE CADWELD OR EQUIVALENT.

GROUND ROD CONNECTION
NTS

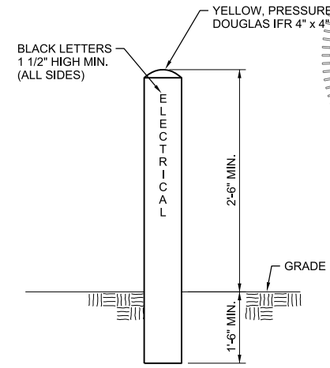
2605-235



NOTES:
1. INSTALL CONDUITS THROUGH EXISTING WALLS IN ACCORDANCE WITH THIS DETAIL IF NOT OTHERWISE INDICATED.
2. DRILL HOLE USING METHODS THAT LEAVE A SMOOTH OPENING. SEAL OPENING AROUND CONDUIT, INSIDE, AND OUTSIDE, WITH ONE PART POLYURETHANE IMMERSIBLE SEALANT RATED FOR OUTDOOR USE.

CONDUIT ENTRANCE
NTS

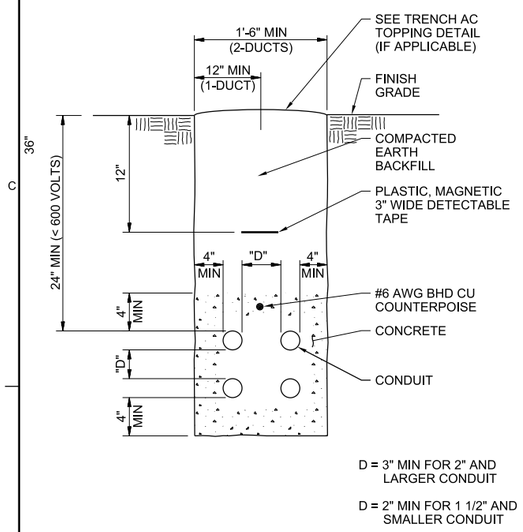
2605-304a



NOTES:
1. LOCATE MARKERS AT THE END OF THE CONDUITS.

4" x 4" CONDUIT MARKER
NTS

2605-401



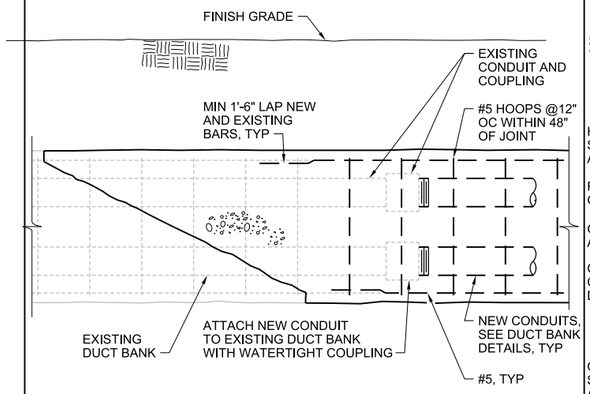
D = 3" MIN FOR 2" AND LARGER CONDUIT

D = 2" MIN FOR 1 1/2" AND SMALLER CONDUIT

NOTES:
1. COLOR TOP OF CONCRETE WITH RED DYE. REFER TO GENERAL NOTE 23 ON DWG 01-G-006 FOR ADDITIONAL REQUIREMENTS.

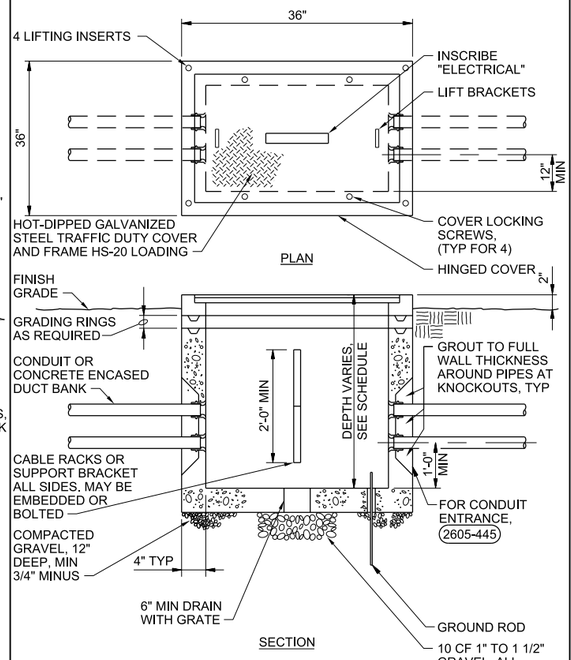
TRENCH AND CONDUIT PLACEMENT
NTS

2605-423a



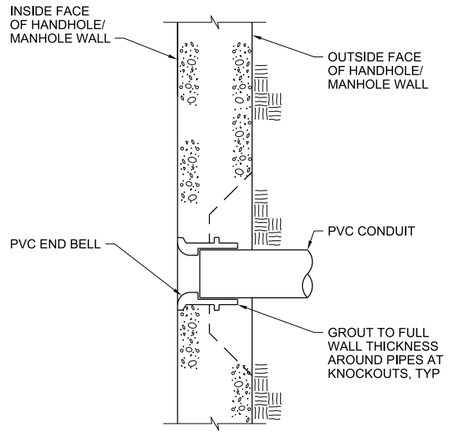
CONCRETE ENCASED DUCTBANK CONTINUATION AT CONTRACT LIMIT
NTS

2605-402



HANDHOLE
NTS

2605-444



CONDUIT HANDHOLE/ MANHOLE ENTRANCE
NTS

2605-445

David Nicholson
Digitally signed by David Nicholson
Date: 2019.12.17 11:37:47 -05'00'

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DAVID C. NICHOLSON LICENSE No 60201 STATE OF FLORIDA PROFESSIONAL ENGINEER

NO.	DATE	REVISION	BY	APVD
DSGN	D NICHOLSON		D NICHOLSON	
DR	A PASTRANA		M GOSLOW	APVD
CHK				

643 SW 4TH AVE
GAINESVILLE, FLORIDA 32601
EB0000072 · AAC001992
DAVID C NICHOLSON, PE #60201

NORTH REGIONAL WATER RECLAMATION
MASTER REUSE WET WEATHER MANAGEMENT
ABOVE GROUND INFRASTRUCTURE
MANATEE COUNTY, FLORIDA

ELECTRICAL

STANDARD DETAILS

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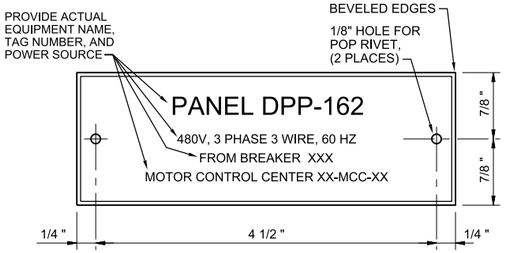
0 1"

DATE	NOVEMBER 2019
PROJ	674077
DWG	95-E-502
SHEET	60 of 61

BID DOCUMENTS

FILENAME: 95-E-502_674077.dgn PLOT DATE: 11/15/2019 PLOT TIME: 9:10:16 AM



TOP ROW: 3/8 " LETTERS
OTHER ROWS: 1/8 " LETTERS
1/4" SPACING BETWEEN FIRST 2 ROWS
1/8" SPACING BETWEEN OTHER ROWS
1/8" THICK ENGRAVED PHENOLIC
BLACK LETTERING ON WHITE BACKGROUND

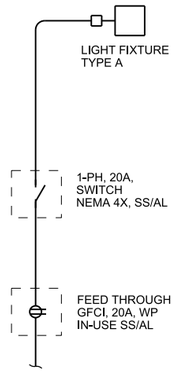
NOTES:

1. PROVIDE ADHESIVE INSTEAD OF POP REVET ON STAINLES STEEL ENCLOSURE.

PANELBOARD NAMEPLATE

NTS

2605-500



YARD LIGHTING AND ELECTRICAL

NTS

2624-107

36"

David Nicholson

Digitally signed by David Nicholson
Date: 2019.12.17 11:43:40 -05'00'

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DSGN	D NICHOLSON		A PASTRANA	M GOSLOW	D NICHOLSON	APVD

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