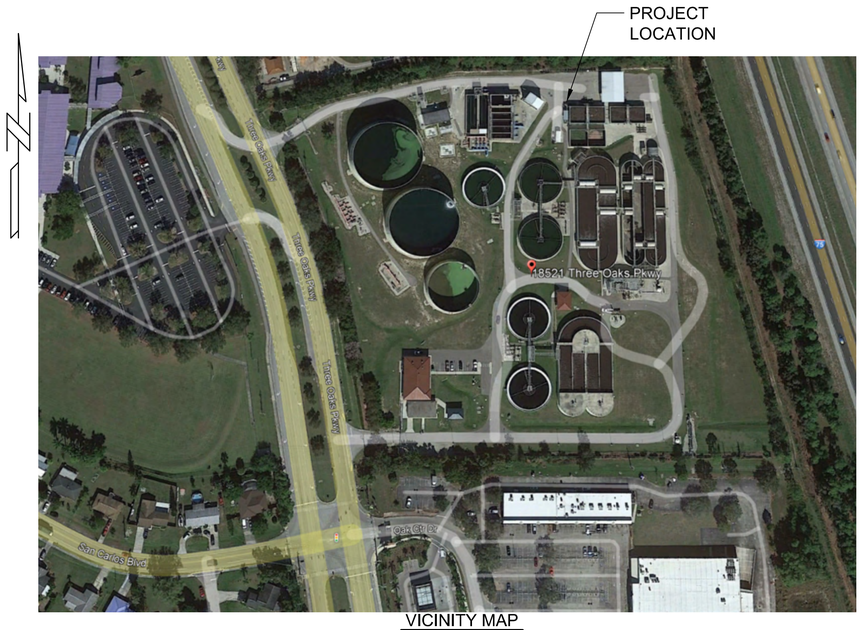
LEE COUNTY UTILITIES
THREE OAKS WATER RECLAMATION FACILITY
DEEP INJECTION WELL IW-2



VICINITY MAP
NTS

Lee County
Southwest Florida

LEE COUNTY UTILITIES
1500 MONROE STREET
FORT MYERS, FL 33902
PHONE (239) 533-8845

BLACK & VEATCH

Black & Veatch Corporation
4415 Metro Parkway, Suite 200
Fort Myers, Florida 33916 Certificate No. 8132

SEPTEMBER 2023

REGISTERED ENGINEERS
STATE OF FLORIDA

PROJECT MANAGER GENERAL, CIVIL, MECHANICAL	MARK E. MARTIN, PE MO. 67272
STRUCTURAL	JULIE GLOSS, PE NO. 86822
ELECTRICAL	DAVID MARTIN, PE NO. 91665
INSTRUMENTATION	KYLE PHIPPS, PE NO. 94332

100% DESIGN - NOT FOR CONSTRUCTION

DRAWINGS LIST

GENERAL

DWG NO.	SHEET NO.	SHEET NAME
1	G-001	COVER SHEET AND GENERAL LOCATION MAP
2	G-002	DRAWINGS LIST, NOTES, SYMBOLS AND LEGENDS
3	G-601	PROCESS FLOW DIAGRAM

CIVIL

DWG NO.	SHEET NO.	SHEET NAME
4	C-001	LEGENDS, CIVIL AND PROCESS MECHANICAL ABBREVIATIONS
5	C-101	AERIAL SITE PLAN
6	C-102	GRADING AND DRAINAGE PLAN
7	C-103	YARD PIPING PLAN
8	C-501	DETAILS 1
9	C-502	DETAILS 2
10	C-503	DETAILS 3
11	C-504	DETAILS 4

STRUCTURAL

DWG NO.	SHEET NO.	SHEET NAME
12	S-001	STANDARD NOTES AND LOADING CRITERIA
13	S-101	WELL PAD PLAN AND SECTION
14	S-102	SUCTION PIPING PAD PLAN AND SECTION
15	S-501	CONCRETE DETAILS
16	S-502	PIPE SUPPORT DETAILS

MECHANICAL

DWG NO.	SHEET NO.	SHEET NAME
17	M-001	LEGENDS AND NOTES
18	M-101	EXISTING EFFLUENT PUMP STATION DEMOLITION PLAN
19	M-102	OVERALL PIPING CONNECTION PLAN
20	M-103	WELL PAD PLAN AND SECTION
21	M-502	INJECTION WELL AND PAD MONITORING WELL DETAILS
22	M-503	INJECTION WELL WELLHEAD DETAILS

ELECTRICAL

DWG NO.	SHEET NO.	SHEET NAME
23	E-001	LEGENDS
24	E-002	ABBREVIATIONS AND NOTES
25	E-101	ELECTRICAL SITE PLAN
26	E-102	PARTIAL SITE PLAN - DEMOLITION
27	E-103	PARTIAL SITE PLAN
28	E-601	EXISTING SINGLE LINE DIAGRAM, DETAILS AND PANEL SCHEDULE

INSTRUMENTATION & CONTROLS

DWG NO.	SHEET NO.	SHEET NAME
29	I-001	P&ID - LEGENDS & ABBREVIATIONS
30	I-501	INSTRUMENTATION INSTALLATION DETAILS
31	I-601	P&ID - EFFLUENT PUMPS

GENERAL

1. ALL WORK SHALL CONFORM TO LATEST REVISION OF THE LEE COUNTY UTILITIES (LCU) DESIGN MANUAL WHICH IS AVAILABLE ON THE WEB-PAGE VIA THE FOLLOWING LINK: HTTPS://WWW.LEEGOV.COM/UTILITIES/DESIGN-MANUAL

2. THE CONTRACTOR SHALL COMPLY WITH ALL REGULATORY AND PERMITTING AGENCIES' REQUIREMENTS.

3. ANY QUANTITIES SHOWN ON PLANS ARE NOT VERIFIED BY LCU

4. ALL CONSTRUCTION PERFORMED MUST BE DONE BY A CONTRACTOR PROPERLY LICENSED IN THE STATE OF FLORIDA.

5. A PRE-CONSTRUCTION MEETING IS REQUIRED BEFORE WORK MAY BEGIN. REQUIRED ATTENDEES INCLUDE BUT ARE NOT LIMITED TO; THE ENGINEER OF RECORD OR HIS DESIGNEE, THE UNDERGROUND CONTRACTOR AND THE LCU INSPECTOR AND LCU PROJECT MANAGER ASSIGNED TO THE PROJECT. LCU IS TO BE NOTIFIED A MINIMUM OF TWO (2) WORKING DAYS PRIOR TO THE PRE-CONSTRUCTION MEETING.

6. ONE COPY OF THE LCU APPROVED/STAMPED CONSTRUCTION PLANS MUST BE MAINTAINED BY THE CONTRACTOR AT THE SITE AT ALL TIMES.

7. ANY AND ALL WORK AND MATERIALS INSTALLED BY THE CONTRACTOR THAT ARE INTENDED FOR OWNERSHIP AND MAINTENANCE BY LCU, WHICH DO NOT CONFORM TO LCU SPECIFICATIONS AND WHICH DO NOT HAVE PRIOR LCU WRITTEN APPROVAL, ARE SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE.

8. ANY WORK PERFORMED ON INFRASTRUCTURE INTENDED FOR OWNERSHIP AND MAINTENANCE BY LCU WITHOUT THE KNOWLEDGE OF LCU IS SUBJECT TO RE-EXCAVATION, REMOVAL AND REPLACEMENT OF SAME TO BE DONE AT THE CONTRACTOR'S EXPENSE.

9. LCU INSPECTION STAFF IS TO BE PRESENT FOR ALL HOT TAPS, PRESSURE TESTS, LIFT STATION START-UPS, AND FOR ANY OTHER NECESSARY INSPECTION. THE CONTRACTOR IS TO PROVIDE A MINIMUM OF TWO (2) WORKING DAYS' NOTICE PRIOR TO SCHEDULING ANY OF THE ABOVE WITH THE EXCEPTION OF THE LIFT STATION START-UP WHICH REQUIRES A MINIMUM OF TWO-WEEK'S NOTICE.

10. THE CONTRACTOR IS TO UNCOVER ALL EXISTING LCU UTILITY INFRASTRUCTURE TO VERIFY HORIZONTAL LOCATION, VERTICAL LOCATION, PIPE DIAMETER, AND PIPE MATERIAL PRIOR TO SCHEDULING THE CONNECTION WITH LCU.

GENERAL NOTES (CONTINUED)

11. LOCATIONS, ELEVATIONS, AND DIMENSIONS OF EXISTING UTILITIES, STRUCTURES AND OTHER FEATURES ARE SHOWN ACCORDING TO THE BEST INFORMATION AVAILABLE AT THE TIME OF PREPARATION OF THESE PLANS, BUT DO NOT PURPORT TO BE ABSOLUTELY CORRECT. LCU WILL NOT GUARANTEE ANY LOCATIONS AS SHOWN ON THESE PLANS OF THOSE OMITTED FROM THESE PLANS.

12. THE CONTRACTOR SHALL PROVIDE A MINIMUM OF AT LEAST TWO (2) WORKING DAYS' NOTICE TO THE INDIVIDUAL UTILITY COMPANIES PRIOR TO CONSTRUCTION.

13. THE CONTRACTOR SHALL CONTACT THE ENGINEER OF RECORD AND LCU IMMEDIATELY TO REPORT ANY CONFLICT WITH LCU UTILITIES/STRUCTURES ARISING DURING CONSTRUCTION OF ANY FACILITIES SHOWN ON THESE DRAWINGS.

14. ALL FRAMES, COVERS, VALVE BOXES, METER BOXES AND MANHOLES SHALL BE ADJUSTED TO FINISHED GRADE UPON COMPLETION OF PAVING OR RELATED CONSTRUCTION. ALL VALVE PADS SHALL BE POURED IN PLACE. NO PRE-CAST VALVE PADS WILL BE ACCEPTED.

15. LCU REQUIRES 30" MINIMUM OF COVER FALL ALL UNDERGROUND PIPING EXCEPT UNDER PAVEMENT, WHICH REQUIRES 36" MINIMUM COVER. IF LCU REQUIRED COVER CANNOT BE MAINTAINED, ALTERNATE METHODS OF CONSTRUCTION OR PIPE PROTECTION MUST BE APPROVED BY LCU AND THE ENGINEER, AT NO ADDITIONAL COST TO THE COUNTY. IF STATE AGENCIES REQUIRE ADDITIONAL COVER, MEETING THE REQUIREMENTS SHALL BE DONE AT NOT ADDITIONAL COST TO THE COUNTY.

16. LCU REQUIRES THERE TO BE A MINIMUM OF THEN (10) FEET HORIZONTAL AND 18" VERTICAL SEPARATION BETWEEN POTABLE WATER & SANITARY SEWER MAINS. LCU ALSO REQUIRES MINIMUM OF TEN (10) FEET HORIZONTAL SEPARATION BETWEEN OTHER PUBLIC AND/OR PRIVATE UTILITIES, STRUCTURE(S), BUILDING(S), WALL(S), FOUNTAIN(S), FENCE(S) AND LCU INFRASTRUCTURE UNLESS SPECIFICALLY APPROVED BY LCU

17. LCU REQUIRES THERE TO BE A MINIMUM OF FIVE (5) FEET HORIZONTAL SEPARATION AND 18" VERTICAL SEPARATION BETWEEN LCU INFRASTRUCTURE AND DRAINAGE INFRASTRUCTURE, MITERED AND SECTIONS, INLETS, ETC. LCU ALSO REQUIRES MINIMUM OF FIVE (5) FEET HORIZONTAL SEPARATION BETWEEN LCU INFRASTRUCTURE AND ALL NEW LIGHT POLE FOUNDATIONS.

18. THE TRUNK OF PALM TREES SHALL BE A MINIMUM OF FIVE (5) FEET AND THE TRUNK OF SHADE TREES SHALL BE A MINIMUM OF THE (10) FEET FROM ANY EXISTING OR PROPOSED LCU OWNED MAINTAINED PIPE/INFRASTRUCTURE.

19. AS THE WORK PROGRESSES THE CONTRACTOR SHALL PROVIDE FOR ALL CHANGES AND DEVIATIONS FROM THE LCU STAMPED/APPROVED CONSTRUCTION PLANS TO BE RECORDED. THE EXACT LOCATION OF ALL CHANGES IN VERTICAL AND HORIZONTAL ALIGNMENT SHALL BE RECORDED WITH X, Y, AND Z COORDINATES WITH RESPECT TO THE NAVD 1988 STATE PLANE FLORIDA WEST COORDINATE SYSTEM, AS WELL AS ANY OTHER RECORD INFORMATION REQUIRED BY THE LCU DESIGN MANUAL.

20. CONTRACTOR SHALL PROTECT AND MAINTAIN ALL EXISTING TREES, SHRUBS, AND PLANTS UNLESS OTHERWISE NOTED. WHERE TREES ARE MARKED TO BE REMOVED, CONTRACTOR SHALL COORDINATE WITH THE COUNTY AND ENGINEER FOR NEW TREE LOCATIONS. NEW TREES SHALL BE EQUAL IN SIZE AND TYPE OF TREES REMOVED.

21. CONTRACTOR SHALL INSTALL ALL PIPELINES, PAVING, WALKWAYS, AND CURB AND GUTTER AT A UNIFORM GRADE BETWEEN ELEVATIONS DEPICTED ON THE DRAWINGS.

22. FOR ALL SITE GRADING, SMOOTH PARABOLIC TRANSITIONS SHALL BE MADE BETWEEN CHANGES IN SLOPE. PARABOLIC ROUNDING SHALL APPLY TO ALL CUT AND FILL SECTIONS.

23. THE CONTRACTOR'S OPERATIONS SHALL CONFORM TO THE RULES AND REGULATIONS OF THE STATE CONSTRUCTION SAFETY ORDERS PERTAINING TO EXCAVATION AND TRENCHING.

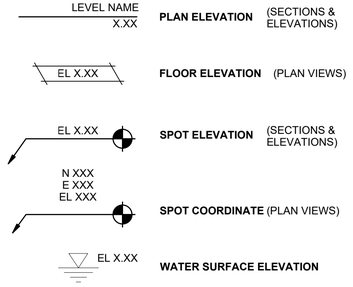
24. WHERE SPECIAL EXCAVATION ZONES ARE REQUIRED FOR THE WORK, CONTRACTOR SHALL INSTALL EXCAVATION SUPPORT SYSTEMS TO PROTECT EXISTING PIPES OR STRUCTURES. CONTRACTOR TO VERIFY EXACT LOCATION AND MATERIAL OF EXISTING PIPES WITHIN THE EXCAVATION ZONE. THE SYSTEM SHALL BE SIGNED AND SEALED BY A FLORIDA REGISTERED PROFESSIONAL ENGINEER IN GOOD STANDING AND SHALL BE SUBMITTED FOR RECORDS.

25. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING FACILITIES AS A RESULT OF CONTRACTOR'S OPERATIONS, AND SHALL HAVE ON SITE SUFFICIENT MATERIALS AND EQUIPMENT TO IMMEDIATELY REPAIR ANY DAMAGE TO EXISTING FACILITIES.

26. CONTRACTOR SHALL POTHOLE EXISTING UTILITIES PRIOR TO CONSTRUCTION AS REQUIRED.

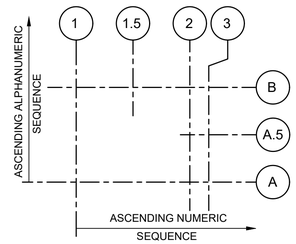
ELEVATION & GRID CALLOUTS

ELEVATION CALLOUTS

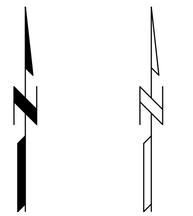


GRID/COLUMN CALLOUTS

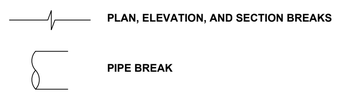
TYPICAL GRID/COLUMN LAYOUT



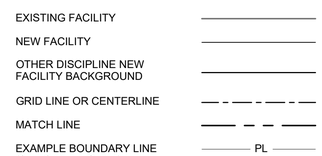
NORTH ARROW



BREAKS

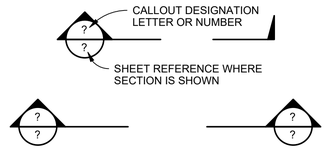


LINE STYLES

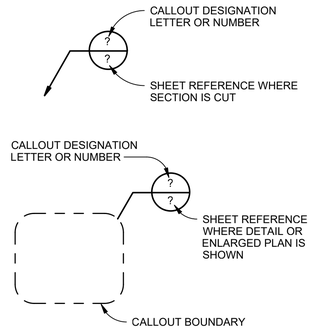


VIEW CALLOUTS

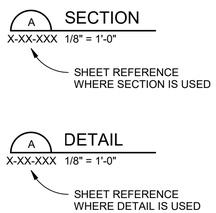
SECTION CALLOUTS



DETAIL/ENLARGED PLAN AREA CALLOUTS

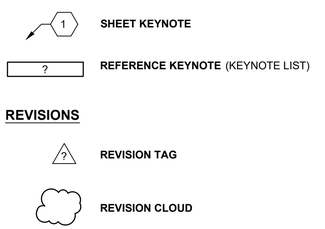


SECTION & DETAIL VIEW TITLES



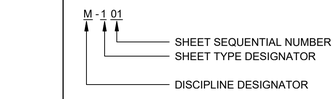
ANNOTATION

SHEET NOTES



REVISIONS

DRAWING NUMBERING SYSTEM



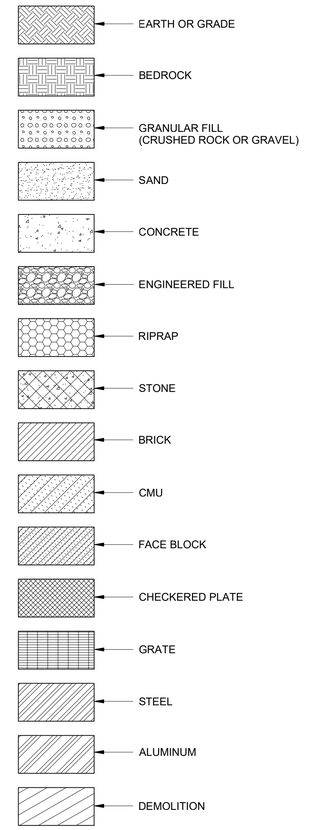
DISCIPLINE DESIGNATORS

C	CIVIL
E	ELECTRICAL
G	GENERAL
I	INSTRUMENTATION AND CONTROLS
M	MECHANICAL
S	STRUCTURAL

SHEET TYPE DESIGNATORS

0	GENERAL (SYMBOLS, LEGENDS, NOTES, ETC.)
1	PLANS (ARRANGEMENT PLANS, PARTIAL PLANS)
2	ELEVATIONS
3	SECTIONS
4	DETAILS
5	SCHEDULES & DIAGRAMS

FILL PATTERNS



BLACK & VEATCH

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Certificate No. 8132
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Fort Myers, Florida 33916

LEE COUNTY UTILITIES

THREE OAKS WATER RECLAMATION FACILITY DEEP INJECTION WELL IW-2

PRELIMINARY - NOT FOR CONSTRUCTION

REVISIONS AND RECORD OF ISSUE

DESIGNED:	CLB
DETAILED:	RSF
CHECKED:	MM
APPROVED:	MEM
DATE:	SEPTEMBER 2023
PROJECT NO.:	414567

PROCESS MECHANICAL

DRAWING LIST, NOTES, SYMBOLS, AND LEGENDS

G-002 | OF

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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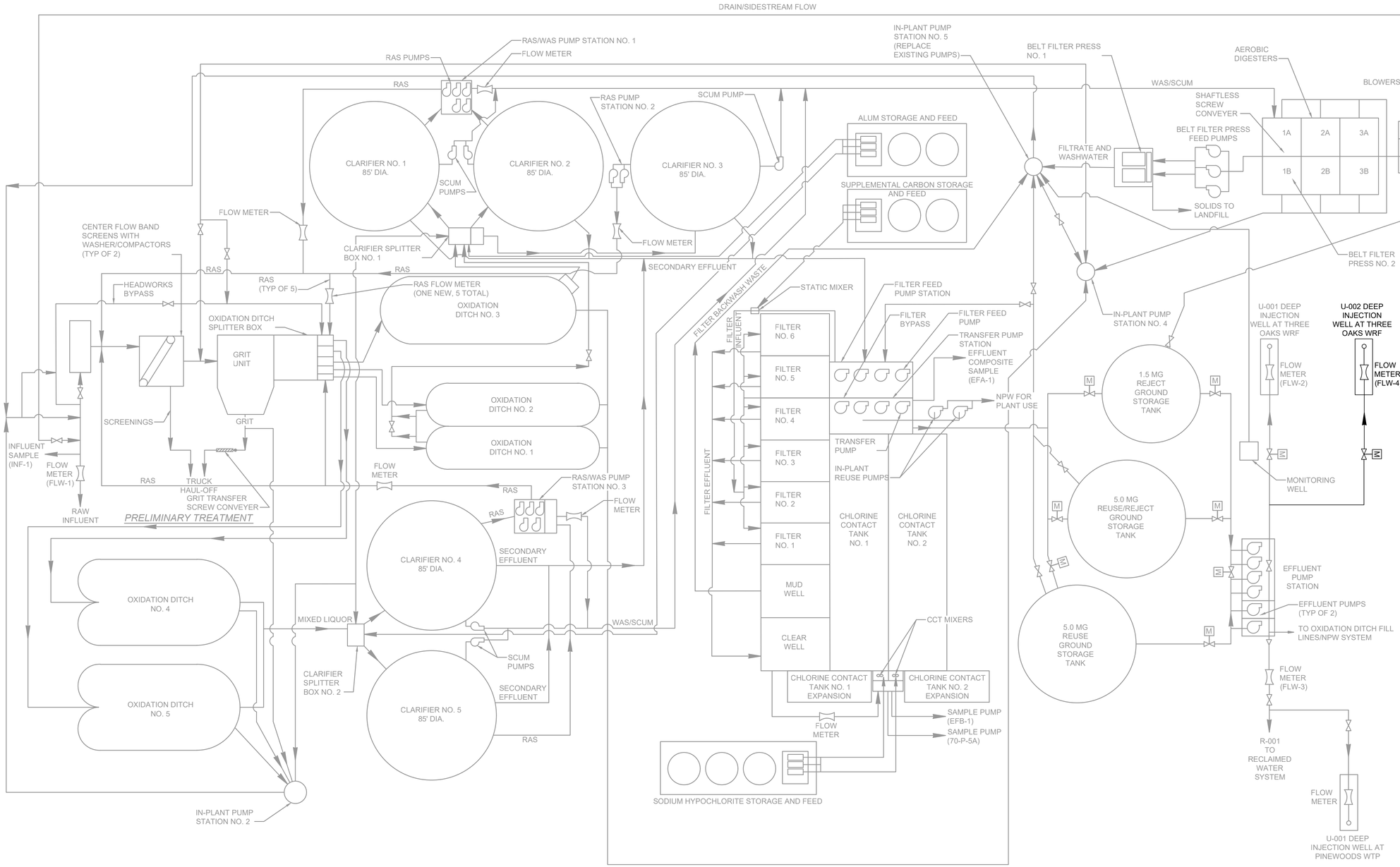
FDT1000
FDT1000



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LEE COUNTY UTILITIES

THREE OAKS WATER RECLAMATION FACILITY DEEP INJECTION WELL IW-2

PRELIMINARY - NOT FOR CONSTRUCTION

REVISIONS AND RECORD OF ISSUE

DESIGNED:	CLB
DETAILED:	AIP
CHECKED:	MM
APPROVED:	MEM
DATE:	SEPTEMBER 2023
PROJECT NO.:	414567

GENERAL

PROCESS FLOW DIAGRAM

G-601 | OF

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

PLOTTED: 8/29/2023 10:49:19 AM
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FDT1000
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CIVIL LEGENDS

EXISTING FACILITY LEGEND

- OVERHEAD UTILITY LINE
- TOP OF BANK
- TOE OF SLOPE
- WOODS LINE
- CONTOUR ELEVATION
- WATER LINE ABOVE GROUND
- GUY ANCHOR
- LIGHT POLE
- OAK TREE, UNLESS OTHERWISE NOTED
- PINE TREE
- UTILITY POLE
- SINGLE SUPPORT SIGN
- TELEPHONE SERVICE RISER
- WATER VALVE COVER
- GROUND EL.
- HARD SURFACE EL.
- ELECTRIC METER
- SANITARY SEWER VALVE COVER
- WIRE PULL BOX
- BOLLARD
- ELECTRICAL OUTLET
- FIBER OPTIC CABLE MARKER
- IRRIGATION VALVE
- WELL
- MONITORING WELL
- VENT
- TRANSFORMER
- AIR RELEASE VALVE
- NON-POTABLE WATER LINE
- BURIED ELECTRIC LINE
- BURIED TELEPHONE LINE
- FORCE MAIN
- FIBER OPTIC CABLE
- WATER MAIN
- UNKNOWN UTILITY
- AIR RELEASE VALVE
- UTILITY POLE
- TELEPHONE SERVICE RISER
- WATER VALVE COVER
- WIRE PULL BOX

NEW FACILITY LEGEND

- DESIGN POINT
- PERCENT SLOPE
- STATION
- SLOPE RUN : RISE
- CURVE NUMBER
- SPOT ELEVATION
- SURFACED STREET, ROAD OR DRIVE
- SURFACED STREET, ROAD OR DRIVE WITH CURBS
- CATCH BASIN
- SEWER OR STORMDRAIN MANHOLE
- CLEAOUT
- DRAINAGE COURSE OR FLOW LINE
- FINISHED GRADE CONTOUR
- BANK OR SLOPE LINES
- BORE HOLE OR TEST HOLE AND NUMBER
- SURVEY LINE WITH PI, PT, OR POT
- CONCRETE ENCASEMENT - PLAN VIEW
- CULVERT
- WHEELCHAIR ACCESSIBILITY MARKER
- IRS-IRON ROD AND CAP SET (LN021)
- IRF-IRON ROD FOUND
- CMF-CONCRETE MONUMENT FOUND
- WIRE PULL BOX CABLE TV
- WIRE PULL BOX ELECTRICAL
- GRATE INLET
- GUY ANCHOR
- MAILBOX
- METER ELECTRIC
- MITERED END SECTION
- SIGN DOUBLE SUPPORT
- SIGN SINGLE SUPPORT
- TELEPHONE PEDESTAL
- VALVE BOX RECLAIMED WATER
- VALVE COVER GAS
- VALVE COVER SANITARY
- VALVE COVER UNKNOWN
- VALVE COVER WATER
- WITNESS - GAS
- WIRE PULL BOX UNKNOWN
- POWER POLE - WOOD
- METER ELECTRIC
- TRANSFORMER
- SILT FENCE
- PARKING SPACE COUNT
- PROPOSED SWALE
- NEW PIPING
- NEW PIPING IN PROFILE
- BUILDINGS, STRUCTURES
- STRUCTURES UNDERGROUND
- FUTURE BUILDINGS, STRUCTURES
- FENCE
- CENTERLINE
- PROPOSED STORM DRAINAGE PIPE
- PROPOSED MESH STURCTURE
- PROPOSED INLET STURCTURE
- FIRE HYDRANT
- YARD HYDRANT
- STREET LIGHT POLE
- TO BE DEMOLISHED
- EMERGENCY ACCESS EASEMENT
- EARTH OR GRADE
- BEDROCK
- GRANULAR FILL (CRUSHED ROCK OR GRAVEL)
- SAND
- AC PAVEMENT
- CONCRETE/SIDEWALKS
- ENGINEERED FILL
- RIPRAP
- CHECKERED PLATE
- BAR GRATING (LINES IN DIRECTION OF SPAN)
- PROPOSED PAVEMENT
- PROPOSED SOLAR FIELD
- WETLANDS BOUNDARY HATCH

PIPING IDENTIFICATION LEGEND

- 6" DS — NEW PIPING
- PIPE SERVICE PROCESS CODE, SEE P&ID LEGEND & ABBREVIATIONS
- PIPE SIZE
- 6" DS — EXISTING PIPING
- 6" DS — FUTURE PIPING

EQUIPMENT & VALVE TAG LEGEND

- XXX — MECHANICAL EQUIPMENT/VALVE TAG, SEE P&ID LEGEND AND ABBREVIATIONS

LEGENDS NOTES:

1. REFER TO PROCESS MECHANICAL LEGENDS FOR VALVE, PIPE JOINT, AND PIPE FITTING SYMBOLS.
2. LEGEND SYMBOLS AND ABBREVIATIONS SHOWN IN THIS DRAWING ARE BASED ON A TEMPLATE THAT IS NOT PROJECT

   NOT USED ON THIS SPECIFIC PROJECT, BUT ARE SHOWN TO PROVIDE A DICTIONARY FOR SYMBOLS AND ABBREVIATIONS THAT MAY ALSO BE USED DURING THE PROJECT CONSTRUCTION PHASE.

ABBREVIATIONS

A

AC	ASPHALT CONCRETE
ADD	ADDITIONAL
ADJ	ADJUSTABLE, ADJACENT
ALT	ALTERNATE, ALTERNATIVE
ANC	ANCHOR
AP	ACCESS PANEL, ANGLE POINT
APPROX	APPROXIMATE, APPROXIMATELY
ASSY	ASSEMBLY
ATM	ATMOSPHERE, ATMOSPHERIC
AUTO	AUTOMATIC
AUX	AUXILIARY
AVG	AVERAGE
AWG	AMERICAN WIRE GAUGE
AWWA	AMERICAN WATER WORKS ASSOCIATION
AWWF	AVERAGE WET-WEATHER FLOW

B

B	BORE HOLE
BAL	BALANCE
BC	BACK OF CURB
BET	BETWEEN
BF	BLIND FLANGE
BFV	BUTTERFLY VALVE
BLDG	BUILDING
BLK	BLOCK
BM	BENCHMARK
BMP	BEST MANAGEMENT PRACTICES
BOP	BOTTOM OF PIPE
BOT	BOTTOM
BP	BACK PRESSURE
BRG	BEARING

C

C	CURVE
CB	CATCH BASIN
CF	CUBIC FEET
CFM	CUBIC FEET PER MINUTE
CL	CENTERLINE
C/L	CENTERLINE
CM	CONCRETE MONUMENT
CO	CLEAN OUT, COMPANY
COMB SWR	COMBINED SEWER
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUED, CONTINUOUS, CONTINUATION, CONTROL
CONTR	CONTRACTOR
COR	CORNER
CP	CONTROL POINT, CATHODIC PROTECTION, CATCH POINT
CPLG	COUPLING
CPVC	CHLORINATED POLYVINYL CHLORIDE
CSP	CORRUGATED STEEL PIPE
CTR(S)	CENTER(S)
CU	CUBIC, COPPER
CV	CONTROL VALVE
CY	CUBIC YARD

D

D	DEED
DB	DEED BOOK
DEF	DEFLECTION
DEG	DEGREE
DEPT	DEPARTMENT
DET	DETAIL
DHWL	DAILY HIGH WATER LINE
DI	DROP INLET, DUCTILE IRON
DIA	DIAMETER
DIFF	DIFFUSER
DIM	DIMENSION
DIP	DUCTILE IRON PIPE
DIST	DISTRIBUTION
DIV	DIVISION
DMJ	DISMANTLING JOINT
DOT	DEPARTMENT OF TRANSPORTATION
DWG(S)	DRAWING(S)

E

E	EAST, EASTING
EA	EACH
ECL	EROSION CONTROL LINE
EFF	EFFLUENT, EFFICIENCY
EG	EXISTING GRADE
EJ	EXPANSION JOINT
EL	ELEVATION
ELB	ELBOW
ELL	ELBOW
ELEC	ELECTRIC, ELECTRICAL
ELEV	ELEVATION
EMER	EMERGENCY
ENC	ENCASEMENT
ENG	ENGINEERING
EOP	EDGE OF PAVEMENT
EOS	EDGE OF SLAB
EOW	EDGE OF WATER
EQ	EQUAL
EQUIP	EQUIPMENT
ERCP	ELLIPTICAL REINFORCED CONCRETE PIPE
EX	EXISTING
EXP	EXPANSION, EXPOSED
EXT	EXTENSION, EXTERIOR, EXTERNAL

F

FCA	FLANGED COUPLING ADAPTER
FD	FLOOR DRAIN
FDOT	FLORIDA DEPARTMENT OF TRANSPORTATION
FDEP	FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
FF	FINISHED FLOOR
FFE	FINISHED FLOOR ELEVATION
FG	FINISHED GRADE
FHA	FIRE HYDRANT ASSEMBLY
FIG	FIGURE
FL	FLOOR, FLOW LINE
FLG	FLANGE(D)
FM	FORCE MAIN, FLOW METER
FO	FIBER OPTIC
FOC	FIBER OPTIC CABLE
FPL	FLORIDA POWER & LIGHT
FPS	FEET PER SECOND
FRP	FIBERGLASS REINFORCED PLASTIC
FT	FOOT, FEET
FTG	FOOTING

G

GEN	GENERAL, GENERATOR
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GB	GRADE BREAK
GC	GROOVED COUPLING
GPD	GALLONS PER DAY
GPM	GALLONS PER MINUTE
GR	GRADE
GV	GATE VALVE

H

HDD	HORIZONTAL DIRECTIONAL DRILL
HDPE	HIGH DENSITY POLYETHYLENE
HGT	HEIGHT
HH	HANDHOLE
HMC	HARNESSED MECHANICAL COUPLING
HMJ	HARNESSED MECHANICAL JOINT
HORIZ	HORIZONTAL
HP	HIGH POINT, HIGH PRESSURE, HORSEPOWER
HR	HORIZONTAL
HVAC	HEATING, VENTILATING AND AIR CONDITIONING

I

ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IN	INCH(ES)
INC	INCORPORATED
INCL	INCLUDING
INCR	INCREASE
INST	INSTRUMENT, INSTRUMENTATION
INSUL	INSULATE, INSULATED, INSULATING
INT	INTERIOR, INTERNAL
INV	INVERT
IPS	IRON PIPE SIZE

J

J&B	JACK & BORE
JB	JUNCTION BOX
JT	JOINT

L

LAT	LATERAL, LATITUDE
LB	LICENSED BUSINESS
LB(S)	POUND(S)
LDR	LAND DEVELOPMENT REGULATIONS
LF	LINEAR FEET
LIN	LINEAL, LINEAR
LONG	LONGITUDE
LT	LEFT

M

M	MEASURED
MAINT	MAINTENANCE
MAX	MAXIMUM
MC	MECHANICAL COUPLING
MECH	MECHANICAL
MED	MEDIUM
MES	MEITERED END SECTION
MFR	MANUFACTURER
MG	MILLION GALLONS
MG/L	MILLIGRAMS PER LITER
MGD	MILLION GALLONS PER DAY
MH	MAINTENANCE HOLE, MANHOLE
MIN	MINIMUM, MINUTE
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MJRG	MECHANICAL JOINT RETAINER GLAND
MJTR	MECHANICAL JOINT WITH TIE ROD

N

N	NORTH, NORTHING, NITROGEN (TOTAL AS N)
N/A	NOT APPLICABLE
NAD	NORTH AMERICAN DATUM (HORIZONTAL)
NAVD	NORTH AMERICAN VERTICAL DATUM
NC	NORMALLY CLOSED
NF	NEAR FACE
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NO.	NUMBER(S)
NOID	NO IDENTIFICATION
NPSH	NET POSITIVE SUCTION HEAD
NPSHR	NET POSITIVE SUCTION HEAD REQUIRED
NPT	NATIONAL PIPE THREAD
NRS	NON-RISING STEM
NTS	NOT TO SCALE
NWL	NORMAL WATER LEVEL

O

OD	OUTSIDE DIAMETER
OHL	OVERHEAD UTILITY LINE
OPP	OPPOSITE
OR	OFFICIAL RECORDS BOOK
ORI	OFFICIAL RECORDS INSTRUMENT
OZ	OUNCE

P

P&ID	PIPING/PROCESS & INSTRUMENTATION DIAGRAM
PC	POINT OF CURVATURE
PCCP	PRESTRESSED CONCRETE CYLINDER PIPE
PG	PRESSURE GAUGE, PAGE
PH	PIPE HANGER
PI	POINT OF INTERSECTION
PID	PROPERTY IDENTIFICATION NUMBER
PIT	PRESSURE INDICATOR TRANSMITTER
POC	POINT ON CIRCULAR CURVE, POINT OF CONNECTION
POLY	POLYETHYLENE
POT	POINT ON TANGENT
PP	POWER POLE
PS	PIPE SUPPORT
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH ABSOLUTE
PSIG	POUNDS PER SQUARE INCH GAUGE
PT	POINT OF TANGENCY, POINT
PVC	POLYVINYL CHLORIDE, POINT OF VERTICAL CURVATURE
PVT	POINT OF VERTICAL TANGENCY
PVCP	POLYVINYL CHLORIDE PIPE
PVI	POINT OF VERTICAL INTERSECTION
PW	POTABLE WATER

R

R	RADIUS, RISER
R/W	RIGHT OF WAY
RCP	REINFORCED CONCRETE PIPE
RCCP	REINFORCED CONCRETE CYLINDER PIPE
RD	ROAD
RED	REDUCER, REDUCING
REF	REFERENCE
REINF	REINFORCED, REINFORCING
REM	REMOVABLE, REMOVE
REQD	REQUIRED
RET	RETURN
REV	REVISION, REVISED, REVERSED
RMJ	RESTRAINED MECHANICAL JOINT
RT	RIGHT
ROW	RIGHT OF WAY

S

S	SECOND, SLOPE, SOUTH
SAN	SANITARY
SCHED	SCHEDULE
SD	STORM DRAIN
SEC	SECOND
SECT	SECTION
SF	SQUARE FEET
SH	SHEET
SP	STEEL PIPE
SPEC(S)	SPECIFICATION(S)
SS	STAINLESS STEEL, SANITARY SEWER
ST SWR	STORM SEWER
STA	STATION
STD	STANDARD
STL	STEEL
STR	STRUCTURAL
SYS	SYSTEM

T

T	TELEPHONE, TOP
TAN	TANGENT
TBC	TOP BACK OF CURB
TBD	TO BE DETERMINED
TBM	TEMPORARY BENCHMARK
TC	TOP OF CURB
TEMP	TEMPERATURE, TEMPORARY
TH	TEST HOLE
TNK	TANK
TOB	TOP OF BANK
TOC	TOP OF CONCRETE, TABLE OF CONTENTS, TOTAL ORGANIC CARBON
TOP	TOP OF PIPE
TOS	TOP OF SLAB, TOE OF SLOPE
TOW	TOP OF WALL
TP	TEST PIT
TRANS	TRANSFORMER
TYP	TYPICAL

U

UB	UTILITY BOX
UG	UNDERGROUND
UGE	UNDERGROUND ELECTRICAL
USGS	UNITED STATES GEOLOGICAL SURVEY

V

V	VALVE (SEE P&ID ABBREVIATIONS), VERTICAL, VOLT, VENT
VB	VALVE BOX
VCP	VITRIFIED CLAY PIPE
VERT	VERTICAL

W

W	
W/	WEST, WIDE, WATER WITH
WM	WATER MAIN
W/O	WITHOUT
WS	WATERSTOP, WATER SURFACE
WSL	WATER SURFACE LEVEL
WT	WEIGHT

X

x	BY, TIMES

Y

YH	YARD HYDRANT

ABBREVIATION NOTES:

1. FOR EQUIPMENT ABBREVIATIONS, INCLUDING FOR VALVES, REFER TO P&ID LEGEND AND ABBREVIATIONS DRAWINGS FUNCTION CODE ABBREVIATIONS.
2. FOR SYSTEM AND PROCESS STREAM ABBREVIATIONS, REFER TO P&ID LEGEND AND ABBREVIATIONS DRAWINGS SYSTEM CODE AND PROCESS CODE ABBREVIATIONS.
3. FOR PIPE MATERIAL AND INSULATION MATERIAL ABBREVIATIONS REFER TO P&ID LEGEND AND ABBREVIATIONS DRAWINGS PIPELINE MATERIAL CODE AND INSULATION MATERIAL CODE ABBREVIATIONS.

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LEE COUNTY UTILITIES

THREE OAKS WATER RECLAMATION FACILITY DEEP INJECTION WELL IW-2

PRELIMINARY - NOT FOR CONSTRUCTION

REVISIONS AND RECORD OF ISSUE	
DESIGNED:	CLB
DETAILED:	AIP
CHECKED:	MM
APPROVED:	MEM
DATE:	SEPTEMBER 2023
PROJECT NO.:	414567

CIVIL

LEGENDS, CIVIL AND PROCESS MECHANICAL ABBREVIATIONS

C-001 OF

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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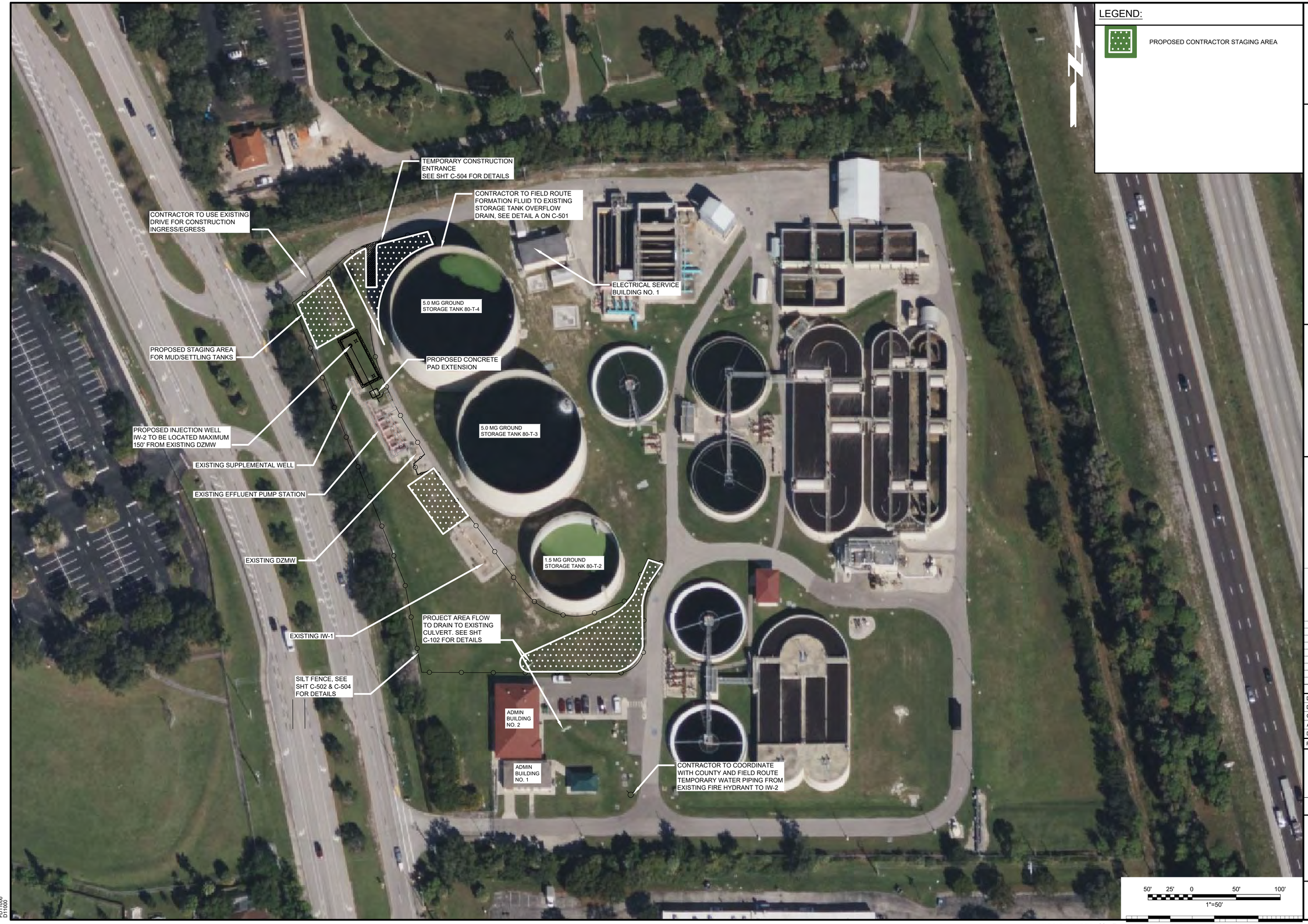

LEGEND:

PROPOSED CONTRACTOR STAGING AREA

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DEEP INJECTION WELL IW-2

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CIVIL

AERIAL SITE PLAN

C-101 OF

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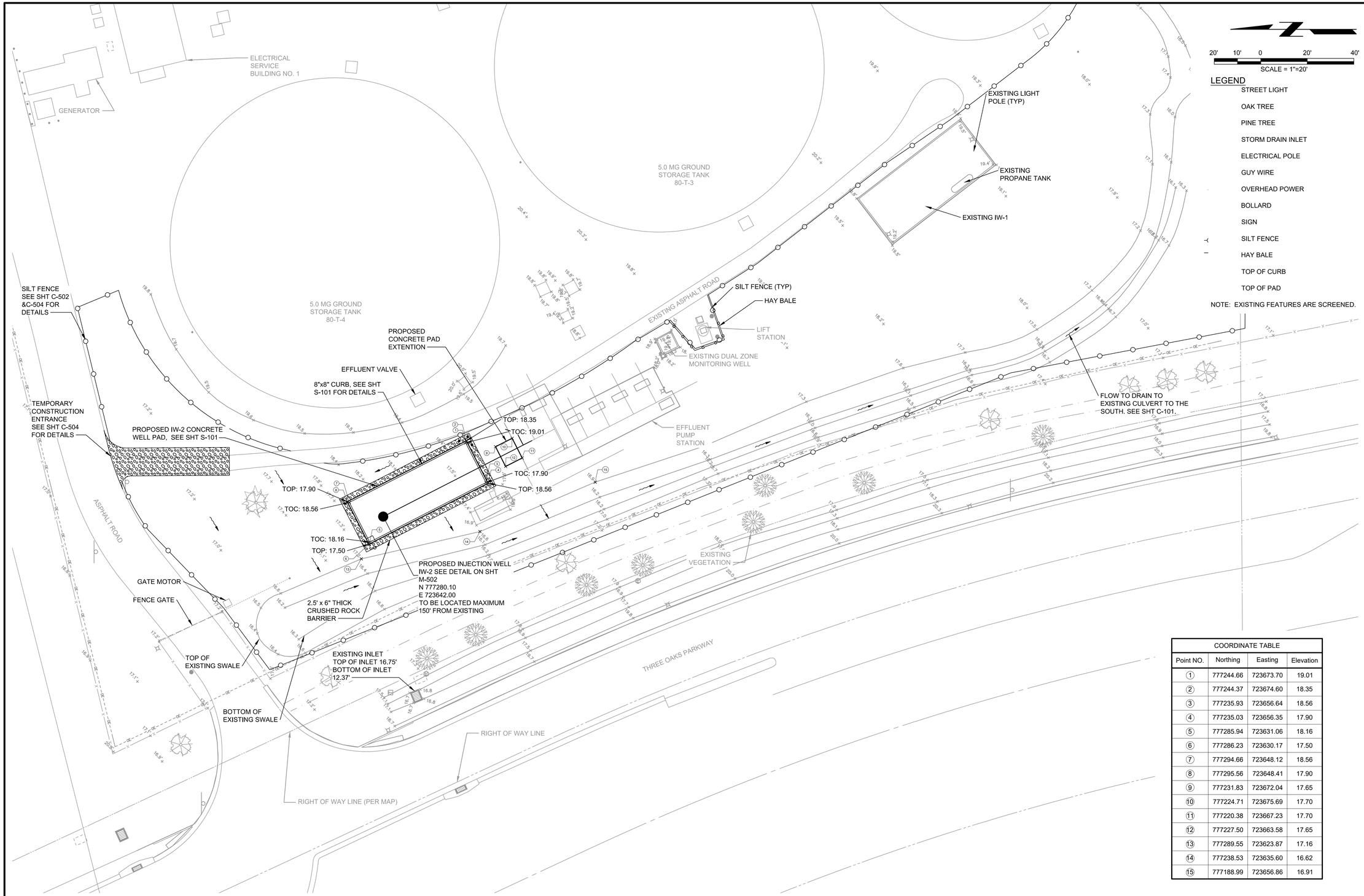

COORDINATE TABLE			
Point NO.	Northing	Easting	Elevation
①	777244.66	723673.70	19.01
②	777244.37	723674.60	18.35
③	777235.93	723656.64	18.56
④	777235.03	723656.35	17.90
⑤	777285.94	723631.06	18.16
⑥	777286.23	723630.17	17.50
⑦	777294.66	723648.12	18.56
⑧	777295.56	723648.41	17.90
⑨	777231.83	723672.04	17.65
⑩	777224.71	723675.69	17.70
⑪	777220.38	723667.23	17.70
⑫	777227.50	723663.58	17.65
⑬	777289.55	723623.87	17.16
⑭	777238.53	723635.60	16.62
⑮	777188.99	723656.86	16.91

GRADING AND DRAINAGE PLAN
SCALE = 1" = 20'

NOTE: ALL ELEVATION ARE REFERENCE TO NORTH AMERICAN VERTICAL DATUM OF 1988. (NAVD 88)

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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PDT1000

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LEE COUNTY UTILITIES

THREE OAKS WATER RECLAMATION FACILITY DEEP INJECTION WELL IW-2

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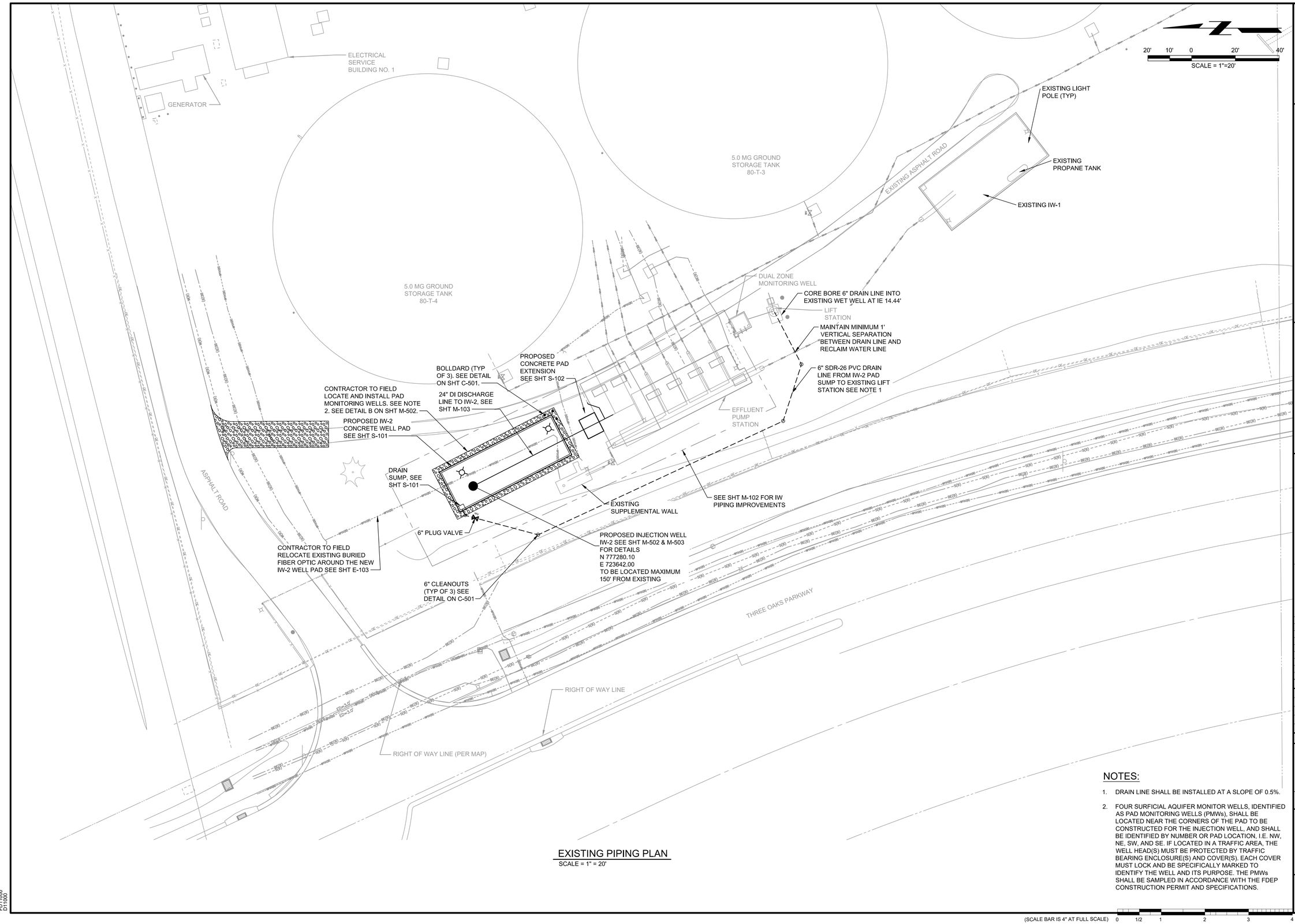
CIVIL

GRADING AND DRAINAGE PLAN

C-102 OF



EXISTING PIPING PLAN

SCALE = 1" = 20'

NOTES:

1. DRAIN LINE SHALL BE INSTALLED AT A SLOPE OF 0.5%.
2. FOUR SURFICIAL AQUIFER MONITOR WELLS, IDENTIFIED AS PAD MONITORING WELLS (PMWs), SHALL BE LOCATED NEAR THE CORNERS OF THE PAD TO BE CONSTRUCTED FOR THE INJECTION WELL, AND SHALL BE IDENTIFIED BY NUMBER OR PAD LOCATION, I.E. NW, NE, SW, AND SE. IF LOCATED IN A TRAFFIC AREA, THE WELL HEAD(S) MUST BE PROTECTED BY TRAFFIC BEARING ENCLOSURE(S) AND COVER(S). EACH COVER MUST LOCK AND BE SPECIFICALLY MARKED TO IDENTIFY THE WELL AND ITS PURPOSE. THE PMWs SHALL BE SAMPLED IN ACCORDANCE WITH THE FDEP CONSTRUCTION PERMIT AND SPECIFICATIONS.

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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THREE OAKS WATER RECLAMATION FACILITY DEEP INJECTION WELL IW-2

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CIVIL

YARD PIPING PLAN

C-103 | OF

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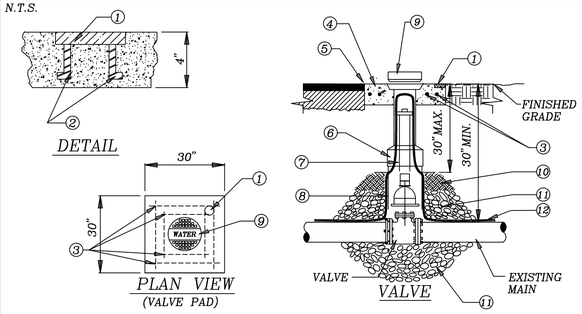
FDT1004

STANDARD DETAIL NO. 6.2
LEE COUNTY UTILITIES
VALVE INSTALLATION

N.T.S.



① BRASS PLATE: SIZE OF VALVE, VALVE TYPE
No. OF TURNS & DIRECTION TO OPEN
VALVE M.F.G. & YEAR INSTALL
SYSTEM "WATER" OR "SEWER" OR "REUSE" OR "FIRE"

② ANCHOR

③ EIGHT (8) #4 BARS OVERLAP EACH CORNER BY 2"

④ 30"SQ X 4" THK.CONC.PAD SURROUNDING BOX, MIN. 3,000 P.S.I. POURED IN PLACE

⑤ SET TOP OF BOX FLUSH WITH FINISHED GRADE

⑥ HEAVY DUTY TRAFFIC BEARING CAST IRON VALVE BOX, ADJUSTABLE SCREW TYPE, 5 1/4" DIAMETER SHAFT THAT IS LCU APPROVED

⑦ EXTENSION STEM WITH 2" OPERATING NUT AS REQUIRED, IF NUT IS MORE THAN 30" BELOW FINISH GRADE

⑧ RISER NOT TO BEAR ON VALVE OR PIPE

⑨ CAST IRON DROP COVER MARKED "WATER" OR "SEWER" OR "REUSE OR "FIRE"

⑩ COMPACTED SUITABLE EARTH BACKFILL

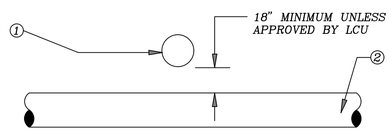
⑪ 3/4" GRANULAR MATERIAL #57 STONE

⑫ 12 GAUGE DOUBLE INSULATED COPPER LOCATING WIRE (SEE LCU STANDARD DETAIL)

REV: 12/10/2015

STANDARD DETAIL NO. 6.8
LEE COUNTY UTILITIES
WATER AND SEWER CROSSING DETAIL

N.T.S.

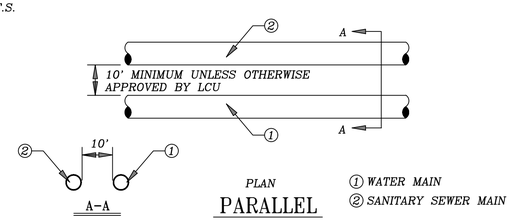


SECTION
CROSSINGS

① WATER MAIN
② SANITARY SEWER MAIN

NOTE: IF LESS THAN 18" CLEARANCE ENCASE WATER MAIN IN STEEL CASING

N.T.S.



PLAN
PARALLEL

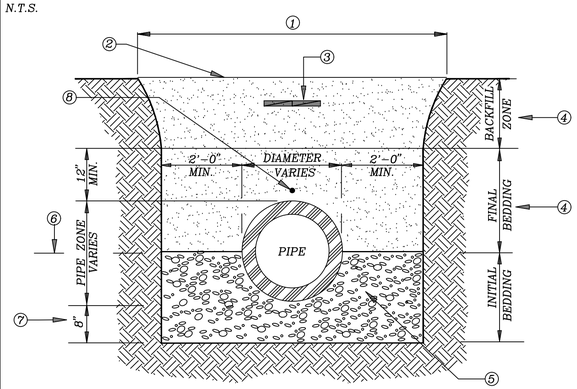
① WATER MAIN
② SANITARY SEWER MAIN

NOTE: IF LESS THAN 10' CLEARANCE ENCASE WATER MAIN IN STEEL CASING

REV: 12/10/2015

STANDARD DETAIL NO. 6.5
LEE COUNTY UTILITIES
TRENCH CROSS SECTION

N.T.S.



① EXCAVATED TRENCH

② FINISHED GRADE

③ MARKING TAPE 12" DEPTH MAX.

④ MATERIALS CLEAN DRY SAND, FINE LIME ROCK OR PIT SHELL MECHANICALLY COMPACTED IN 6" LIFTS TO AT LEAST 95% OF MAX. DENSITY, OR 98% IF UNDER PAVED AREA OF ROADWAY.

⑤ #57 STONE LOCATED UNDER PIPE OR EXISTING UNDISTURBED SUITABLE MATERIAL

⑥ SPRING LINE

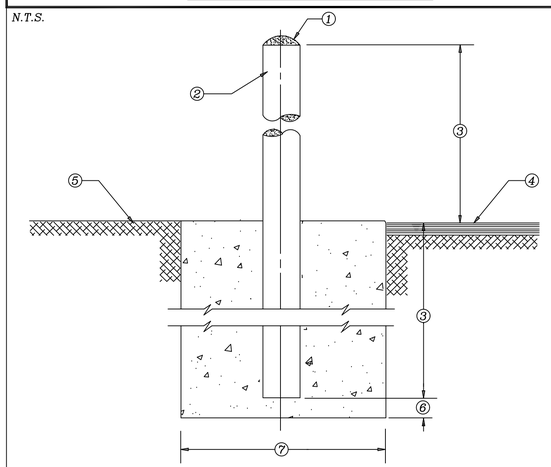
⑦ STANDARD 8" MIN TRENCH UNDERCUT AND BACKFILL WITH #57 STONE COMPACTED IN 6" LIFTS ADDITIONAL UNDERCUT AND CRUSHED ROCK BEDDING FOUNDATION WHEN DIRECTED BY L.C.U. THE CONTRACTOR IS TO REMOVE UNSTABLE MATERIAL FROM THE TRENCH FOUNDATION. THEN INSTALL STABILIZED CRUSHED ROCK BACKFILL WITH #57 STONE COMPACTED IN 6" LIFTS

⑧ LOCATING WIRE IS REQUIRED FOR ALL PRESSURIZED PIPELINES.

REV: 12/10/2015

STANDARD DETAIL NO. 6.44
LEE COUNTY UTILITIES
BOLLARD POST DETAIL

N.T.S.



① FILL AND TOP PIPE WITH CONCRETE

② 6" DIA. x 6'-0" LONG PRESSURE CLASS 350 DUCTILE IRON PIPE

③ 3'-0" MINIMUM

④ PAVEMENT

⑤ FINISHED GRADE

⑥ 3"

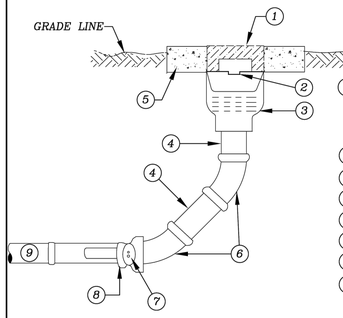
⑦ 18" DIA. CONCRETE ENCASEMENT 3000 P.S.I.

NOTE:
1. PAINT BOLLARD TO LCU STANDARDS

REV: 12/10/2015

STANDARD DETAIL NO. 6.40
LEE COUNTY UTILITIES
6" OR 8" SEWER CLEAN-OUT DETAIL

N.T.S.



① IN ALL CASES USE TRAFFIC BEARING HANDHOLE RING & COVER OR EQUAL ADJUSTED TO FINAL GRADE WITH CLEANOUT RECESSER

② 6" OR 8" THREADED CAP

③ 6" OR 8" PVC FEMALE ADAPTER

④ 6" OR 8" PVC RISER

⑤ CONCRETE COLLAR 24"x24"x4"

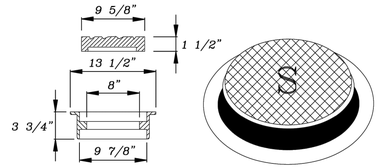
⑥ 6" OR 8" 45° ELBOW

⑦ W/WATERTIGHT PLUG

⑧ THE CONNECTION MUST BE MADE TO THE DOUBLE 45° WYE (SIZE TBD)

⑨ 6" OR 8" PVC SEWER PIPE

REVERSIBLE HANDHOLE RING AND COVER



COVERS ARE MARKED WITH "S"

COVER TYPE	LOAD RATING	COVER WEIGHT	TOTAL WEIGHT
FE	HEAVY DUTY	20	45

REV: 08/28/2019

A STORAGE TANK OVERFLOW
C-101 NO SCALE

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LEE COUNTY UTILITIES

THREE OAKS WATER RECLAMATION FACILITY
DEEP INJECTION WELL IW-2

PRELIMINARY - NOT FOR CONSTRUCTION

REVISIONS AND RECORD OF ISSUE

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PROJECT NO.:	414567

CIVIL

DETAILS 1

C-501 OF

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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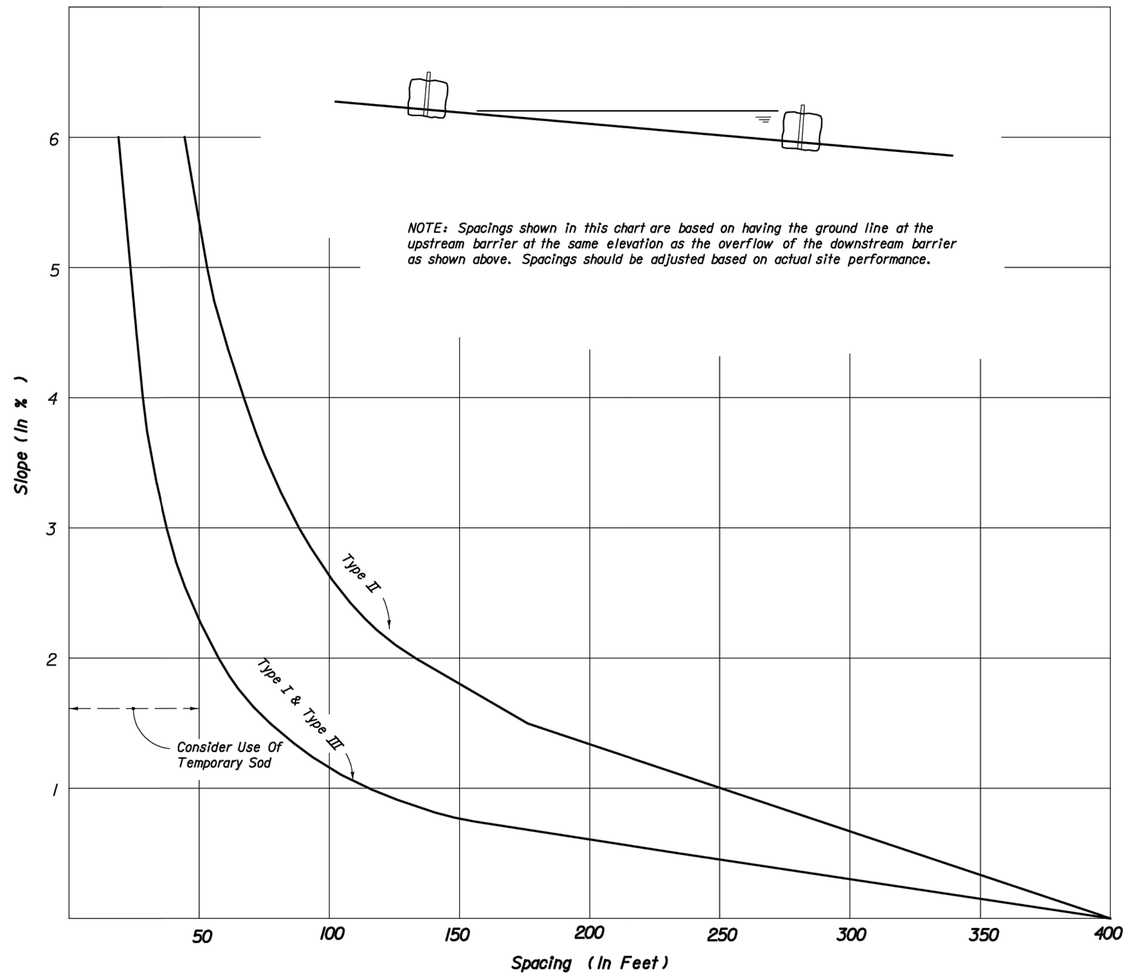

CHART I

RECOMMENDED SPACING FOR BALED HAY BARRIERS AND TYPE III SILT FENCE

EROSION CONTROL NOTES:

1. CONTRACTOR TO PROVIDE SILT FENCE, COMPOSITE SOCK FILTER AND OTHER APPROPRIATE MEASURES TO AFFECT THE FILTRATION OF SURFACE WATER FLOWS AND TO PROVIDE EROSION PROTECTION DURING CONSTRUCTION ACTIVITIES. PROTECTION IS TO BE MAINTAINED DURING THE CONSTRUCTION PERIOD UNTIL DISTURBED SOILS HAVE BEEN STABILIZED WITH GRASS OR SUITABLE EROSION PROTECTION TREATMENT.
2. REFER TO FDOT INDEX NO. 102 AND 103 FOR EROSION CONTROL APPLICATIONS.
3. PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITY, APPROPRIATE EROSION CONTROL DEVICES SHALL BE INSTALLED TO CONTROL AND REDUCE SOIL EROSION AND SEDIMENT TRANSPORT TO OFF SITE AREAS. THE CONTRACTOR SHALL MAINTAIN THESE DEVICES THROUGHOUT THE DURATION OF CONSTRUCTION. ALL DEVICES SHALL REMAIN IN PLACE UNTIL THE SURROUNDING AREAS ARE ESTABLISHED.
4. AFTER 0.5 INCH OF RAIN OR EVERY SEVEN DAYS THE EROSION CONTROL SYSTEM IS TO BE INSPECTED.

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LEE COUNTY UTILITIES

THREE OAKS WATER RECLAMATION FACILITY
DEEP INJECTION
WELL IW-2

PRELIMINARY - NOT FOR CONSTRUCTION

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PROJECT NO.:	414567

CIVIL

DETAILS 2

C-502 OF

2006 FDOT Design Standards

TEMPORARY EROSION AND SEDIMENT CONTROL

Last Revision 00 | Sheet No. 1 of 3 | Index No. 102

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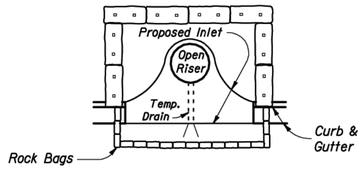
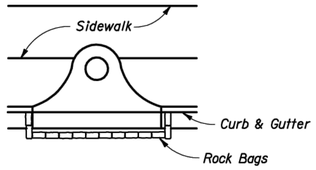


PARTIAL INLET



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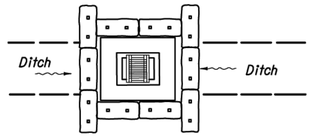
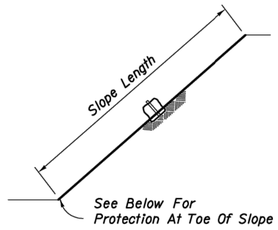


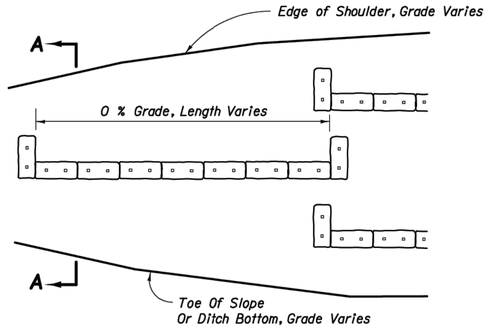
DITCH BOTTOM INLET

PROTECTION AROUND INLETS OR SIMILAR STRUCTURES



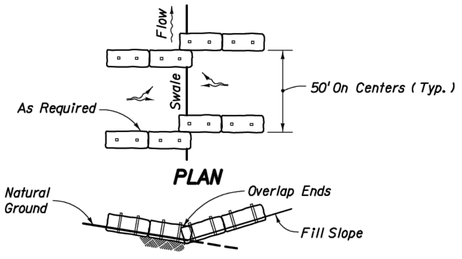
SECTION AA

Note:
Where the slope length exceeds 25 feet, construct one row of bale barriers at 0% longitudinal grade midway up the slope. Contruct two rows of bale barriers where the slope length exceeds 50 feet.



ELEVATION

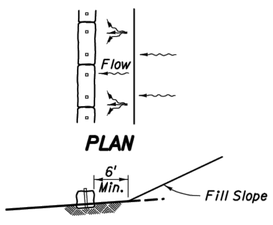
ALONG FILL SLOPE



PLAN

ELEVATION

TO BE USED WHERE THE NATURAL GROUND SLOPES TOWARD THE TOE OF SLOPE



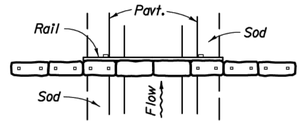
PLAN

ELEVATION

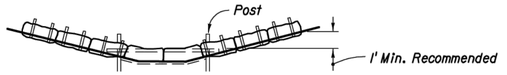
TO BE USED WHERE THE NATURAL GROUND SLOPES AWAY FROM THE TOE OF SLOPE

AT TOE OF SLOPE

BARRIERS FOR FILL SLOPES

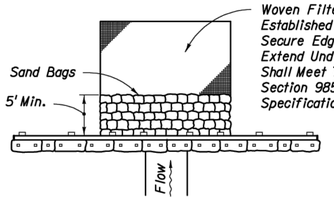


PLAN

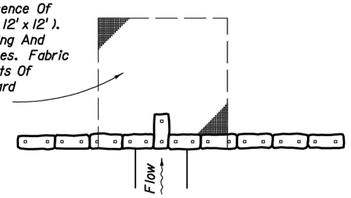


ELEVATION

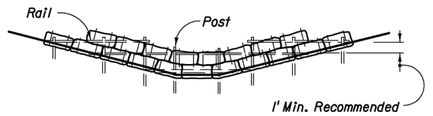
BARRIER FOR PAVED DITCH



PLAN



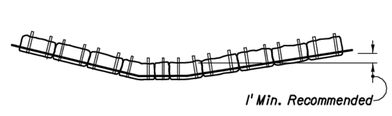
PLAN



Anchor Top Bales To Lower Bales With 2 Stakes Per Bale.

ELEVATION

TYPE II



ELEVATION

TYPE I

BARRIERS FOR UNPAVED DITCHES

NOTES FOR BALED HAY OR STRAW BARRIERS

1. Type I and II Barriers should be spaced in accordance with Chart 1, Sheet 1.
2. Hay bales shall be trenched 3" to 4" and anchored with 2 - 1" x 2" (or 1" dia.) x 4' wood stakes. Stakes of other material or shape providing equivalent strength may be used if approved by the Engineer. Stakes other than wood shall be removed upon completion of the project.
3. Rails and posts shall be 2" x 4" wood. Other materials providing equivalent strength may be used if approved by the Engineer.
4. Adjacent bales shall be butted firmly together. Unavoidable gaps shall be plugged with hay or straw to prevent silt from passing.
5. Where used in conjunction with silt fence, hay bales shall be placed on the upstream side of the fence.
6. Bales to be paid for under the contract unit price for Baled Hay or Straw, EA. The unit price shall include the cost of filter fabric for Type I and II Barriers. Sand bags shall be paid for under the unit price for Sandbagging, CY. Rock bags to be paid for under the contract unit price for Rock Bags, EA.

2006 FDOT Design Standards

TEMPORARY EROSION AND SEDIMENT CONTROL

Last Revision 00

Sheet No. 2 of 3

Index No. 102

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LEE COUNTY UTILITIES

THREE OAKS WATER RECLAMATION FACILITY
DEEP INJECTION WELL IW-2

PRELIMINARY - NOT FOR CONSTRUCTION

REVISIONS AND RECORD OF ISSUE

DESIGNED:	RS
DETAILED:	ELJ
CHECKED:	MM
APPROVED:	MEM
DATE:	SEPTEMBER 2023
PROJECT NO.:	414567

CIVIL

DETAILS 3

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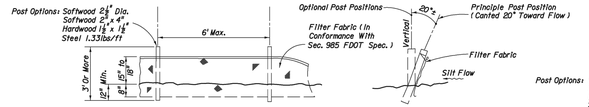
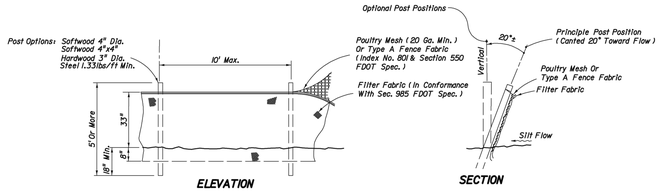


ELEVATION

SECTION

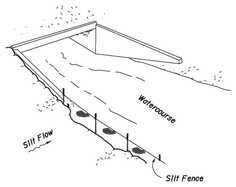
TYPE III SILT FENCE



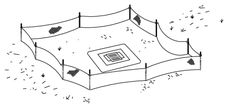
ELEVATION

SECTION

TYPE IV SILT FENCE

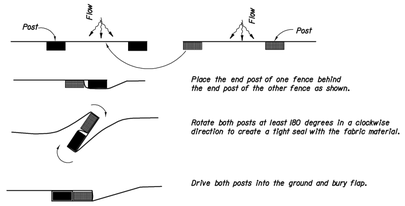


Silt Fence Protection
In Ditches with Intermittent Flow



Silt Fence Protection
Around Ditch Bottom Inlets.

SILT FENCE APPLICATIONS



PLAN VIEW

JOINING TWO SILT FENCES

NOTES FOR SILT FENCES

1. Type III Silt Fence to be used at most locations. Where used in ditches, the spacing for Type III Silt fence shall be in accordance with Chart 1, Sheet 1.
2. Type IV Silt Fence to be used where large sediment loads are anticipated. Suggested use is where fill slope is 1:2 or steeper and length of slope exceeds 25 feet. Avoid use where the detained water may back into travel lanes or off the right of way.
3. Do not construct silt fences across permanent flowing watercourses. Silt fences are to be at upland locations and turbidity barriers used at permanent bodies of water.
4. Where used as slope protection, Silt Fence is to be constructed on 0% longitudinal grade to avoid channelizing runoff along the length of the fence.
5. Silt Fence to be paid for under the contract unit price for Staked Silt Fence, (LF).

	2006 FDOT Design Standards	Last Revision	Sheet No.
	TEMPORARY EROSION AND SEDIMENT CONTROL	07/01/05	3 of 3
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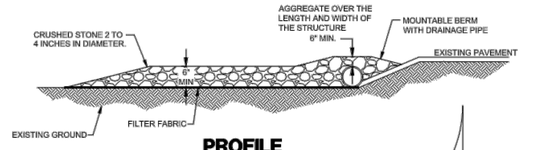
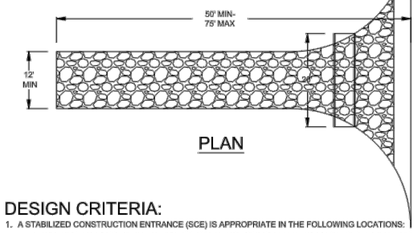
EROSION CONTROL NOTES:

1. CONTRACTOR TO PROVIDE SILT FENCE, COMPOSITE SOCK FILTER AND OTHER APPROPRIATE MEASURES TO AFFECT THE FILTRATION OF SURFACE WATER FLOWS AND TO PROVIDE EROSION PROTECTION DURING CONSTRUCTION ACTIVITIES. PROTECTION IS TO BE MAINTAINED DURING THE CONSTRUCTION PERIOD UNTIL DISTURBED SOILS HAVE BEEN STABILIZED WITH GRASS OR SUITABLE EROSION PROTECTION TREATMENT.
2. REFER TO FDOT INDEX NO. 102 AND 103 FOR EROSION CONTROL APPLICATIONS.
3. CONTRACTOR TO USE APPROPRIATE SEDIMENT CONTORL METHOD FOR THE DITCH BOTTOM INLETS. i.e COMPOSITE SOCKS.



PROFILE



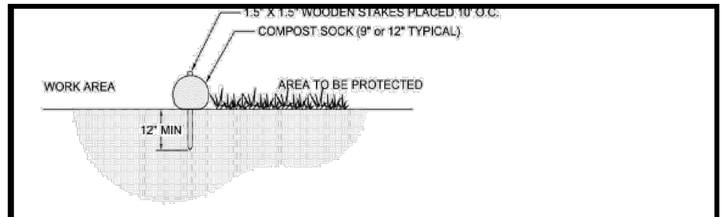
PLAN

DESIGN CRITERIA:

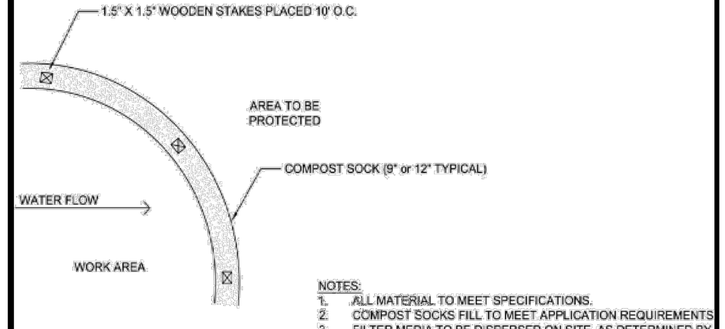
1. A STABILIZED CONSTRUCTION ENTRANCE (SCE) IS APPROPRIATE IN THE FOLLOWING LOCATIONS:
   A. WHEREVER VEHICLES ARE LEAVING A CONSTRUCTION SITE AND ENTER ONTO A PUBLIC ROAD
   B. AT ANY UNPAVED ENTRANCE/EXIT LOCATION WHERE THERE IS RISK OF TRANSPORTING MUD OR SEDIMENT ONTO PAVED ROADS.
2. THE WIDTH SHOULD BE AT LEAST 10 FEET TO 12 FEET OR AS WIDE AS THE ENTIRE WIDTH OF THE ACCESS. AT SITES WHERE TRAFFIC VOLUME IS HIGH, THE ENTRANCE SHOULD BE WIDE ENOUGH FOR TWO VEHICLES TO PASS SAFELY.
3. RUNOFF FROM A STABILIZED CONSTRUCTION ENTRANCE SHOULD DRAIN TO A SEDIMENT TRAP OR SEDIMENT BASIN.
4. PRIOR TO PLACING GEOTEXTILE (FILTER FABRIC) MAKE SURE THAT THE ENTRANCE IS PROPERLY GRADED AND COMPACTED.
5. INSPECT THE STABILIZED CONSTRUCTION ENTRANCE ON A REGULAR BASIS AND AFTER THERE HAS BEEN A HIGH VOLUME OF TRAFFIC OR STORM EVENT. APPLY ADDITIONAL STONE PERIODICALLY AND WHEN REPAIR IS REQUIRED.
6. IMMEDIATELY REMOVE SEDIMENTS OR ANY OTHER MATERIALS TRACKED ONTO THE PUBLIC ROADWAY.

STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE



SECTION NTS



PLAN NTS

Compost Socks for Sediment Control

NTS

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THREE OAKS WATER RECLAMATION FACILITY DEEP INJECTION WELL IW-2

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CIVIL

DETAILS 4

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STRUCTURAL NOTES

GENERAL

1. THE APPLICABLE BUILDING CODE IS INDICATED ON THE LOADING CRITERIA DRAWING.
2. THE REQUIREMENTS INDICATED ON THIS SHEET ARE INTENDED AS A BASIC SUMMARY OF THE MATERIAL AND CONSTRUCTION REQUIREMENTS FOR THE PROJECT. ADDITIONAL, MORE STRINGENT REQUIREMENTS ARE GIVEN IN THE PROJECT DETAIL DRAWINGS AND SPECIFICATIONS.
3. ALL STRUCTURAL RELATED SHOP DRAWINGS SHALL BE REVIEWED BY THE ENGINEER PRIOR TO CONSTRUCTION.
4. STRUCTURES MAY BE BUOYANT WHEN EMPTY DURING CONSTRUCTION. CONTRACTOR SHALL PROTECT STRUCTURES AGAINST FLOTATION UNTIL CONSTRUCTION IS COMPLETE.
5. STRUCTURES MAY BE UNSTABLE UNTIL THEY ARE CONSTRUCTED IN THIER ENTIRETY. CONTRACTOR IS RESPONSIBLE FOR DESIGNING TEMPORARY STRUCTURAL SUPPORTS TO RESIST WIND LOADS, CONSTRUCTION LOADS, AND ANY OTHER TEMPORARY CONDITIONS THAT MAY OCCUR DURING CONSTRUCTION, IN ORDER TO MAINTAIN STABILITY OF THE CONSTRUCTION WORK. ANCHORS FOR CONTRACTOR'S TEMPORARY SUPPORT SYSTEMS THAT ATTACH TO CONCRETE OR MASONRY SHALL BE LOCATED TO AVOID DAMAGING EMBEDDED REINFORCEMENT OR UTILITIES.

CAST-IN-PLACE CONCRETE

1. A MINIMUM 28 DAY COMPRESSIVE STRENGTH (f'c) OF 4,000 PSI WAS UTILIZED IN THE DESIGN OF STRUCTURAL REINFORCED CONCRETE. SEE SPECIFICATIONS FOR CONSTRUCTION STRENGTH REQUIREMENTS.
2. THE LOCATION OF ALL CONSTRUCTION JOINTS AND OTHER TYPES OF JOINTS, OTHER THAN THOSE SPECIFIED OR SHOWN ON THE PLANS, SHALL BE ACCEPTABLE TO THE ENGINEER PRIOR TO PLACING CONCRETE.

REINFORCING STEEL

1. ALL REINFORCING BAR SHALL BE GRADE 60, DEFORMED, ASTM A615, UNLESS NOTED OTHERWISE.
2. DIMENSIONS TO REINFORCING BARS ARE TO BAR CENTERLINES, UNLESS NOTED OTHERWISE. BAR COVER IS THE CLEAR DISTANCE BETWEEN THE BAR AND THE CONCRETE SURFACE.
3. NO WELDING OF REINFORCING BARS SHALL BE PERMITTED UNLESS APPROVAL IS OBTAINED FROM THE ENGINEER PRIOR TO CONSTRUCTION.
4. FOR CONCRETE SLABS THAT HAVE A SLOPING TOP FACE, THE TOP LAYERS OF REINFORCEMENT SHALL BE PLACED ON A SIMILAR SLOPE SO THAT SPECIFIED COVER IS MAINTAINED.

POST-INSTALLED ANCHORS

1. POST-INSTALLED ANCHORS SHALL INCLUDE ADHESIVE ANCHORS (THREADED RODS, BOLTS OR REINFORCING BARS), EXPANSION ANCHORS, AND UNDERCUT ANCHORS INSTALLED INTO HARDENED CONCRETE OR MASONRY. SEE THE ANCHORAGE IN CONCRETE AND MASONRY SPECIFICATION SECTION FOR ADDITIONAL REQUIREMENTS.
2. POST-INSTALLED ANCHORS SHALL ONLY BE USED WHERE INDICATED ON THE DRAWINGS. CONTRACTOR SHALL OBTAIN APPROVAL FROM ENGINEER PRIOR TO USING POST-INSTALLED ANCHORS FOR MISSING OR MISPLACED CAST-IN-PLACE ANCHORS.
3. CARE SHALL BE TAKEN TO AVOID CONFLICTS WITH EXISTING REINFORCING STEEL AND OTHER EMBEDDED ITEMS WHEN DRILLING HOLES. REINFORCING BARS SHALL NOT BE DAMAGED DURING DRILLING OR ANCHOR INSTALLATION. HOLES SHALL BE DRILLED AND CLEANED PER THE PRODUCT MANUFACTURER'S INSTRUCTIONS. ANCHORS SHALL BE INSTALLED PER THE PRODUCT MANUFACTURER'S INSTRUCTIONS AT NOT LESS THAN MINIMUM EDGE DISTANCES AND/OR SPACING INDICATED IN THE MANUFACTURER'S LITERATURE.
4. SUBSTITUTION REQUESTS FOR PRODUCTS OTHER THAN THOSE LISTED IN THE SPECIFICATION OR INDICATED ON THE DRAWINGS SHALL BE SUBMITTED TO ENGINEER FOR REVIEW AND APPROVAL. PRODUCT ICC-ESR EVALUATION REPORTS SHALL BE INCLUDED WITH THE SUBMITTAL PACKAGE. IF REQUESTED, CALCULATIONS PREPARED BY A REGISTERED PROFESSIONAL ENGINEER USING METHODS AND PROCEDURES REQUIRED BY THE BUILDING CODE MAY BE REQUIRED AS PART OF THE SUBMITTAL PACKAGE.
5. UNLESS NOTED OTHERWISE, THE MINIMUM EMBEDMENT PROVIDED FOR ADHESIVE ANCHORED REINFORCING BARS SHALL DEVELOP THE FULL TENSILE STRENGTH OF THE BAR.
6. SPECIAL INSPECTION WILL BE PROVIDED FOR ALL POST-INSTALLED ANCHORS.

STAINLESS STEEL

1. STAINLESS STEEL BOLTS SHALL CONFORM TO ASTM F593, ALLOY GROUP 1 OR 2, UNLESS NOTED OTHERWISE. MINIMUM YIELD STRENGTH SHALL BE 45 KSI.
2. STAINLESS STEEL PLATES SHALL CONFORM TO ASTM A240, TYPE 316L.
3. STAINLESS STEEL STRUCTURAL SHAPES SHALL CONFORM TO ASTM A1069 OR ASTM A276, TYPE 316L.

ALUMINUM

1. UNLESS NOTED OTHERWISE, ALUMINUM ALLOY IN ALL ALUMINUM STRUCTURAL MATERIALS SHALL BE 6061-T6. PIPE AND TUBING FOR GUARDRAIL AND HANDRAIL SHALL BE ALLOY 6061-T6 OR 6005A-T61.
2. ALL ALUMINUM SURFACES IN CONTACT WITH CONCRETE OR DISSIMILAR METALS SHALL BE COATED OR COVERED WITH A HEAVY COAT OF BITUMINOUS PAINT TO PREVENT ALUMINUM-CONCRETE REACTION OR ELECTROLYTIC ACTION.

STRUCTURAL STEEL

1. ROLLED WIDE FLANGE SHAPES SHALL HAVE A MINIMUM YIELD STRENGTH OF 50 KSI;
   CHANNELS, PLATES, AND ANGLES A MINIMUM OF 36 KSI;
   STRUCTURAL PIPES A MINIMUM OF 35 KSI;
   ROUND STRUCTURAL TUBES A MINIMUM OF 46 KSI;
   RECTANGULAR STRUCTURAL TUBES A MINIMUM OF 50 KSI.
2. WELDING SHALL BE DONE WITH A FILLER MATERIAL HAVING A MINIMUM TENSILE STRENGTH OF 70 KSI.
3. BOLTED CONNECTIONS SHALL USE 3/4" DIA ASTM F3125, GRADE A325 BOLTS OR GRADE F1852 TWIST-OFF BOLTS, WITH THE THREADS EXCLUDED FROM THE SHEAR PLANE, UNLESS NOTED OTHERWISE.
4. CARBON STEEL OR GALVANIZED STEEL ANCHOR RODS AND ANCHOR BOLTS SHALL CONFORM TO ASTM F1554 GRADE 36.
5. HOLES FOR ANCHOR RODS AND ANCHOR BOLTS IN COLUMN BASE PLATES USING ASTM F844 OR F436 FLAT CIRCULAR WASHERS SHALL BE AS FOLLOWS:

   BOLTS/RODS 3/4" TO 1" - 5/16" OVERSIZE
   BOLTS/RODS 1" TO 2" - 1/2" OVERSIZE
   BOLTS/RODS OVER 2" - 1" OVERSIZE

   AT THE CONTRACTORS OPTION, OVERSIZE HOLES LARGER THAN THOSE LISTED ABOVE MAY BE USED, PROVIDED THAT 3/8" PLATE WASHERS ARE USED WITH STANDARD HOLES AND FIELD WELDED WITH A 5/16" FILLET WELD TO THE BASE PLATE ALONG A MIN OF 3 SIDES.

EXCAVATION, BACKFILL, AND FOUNDATIONS

1. FOUNDATION CONSTRUCTION SHALL NOT BEGIN UNTIL ANY REQUIRED INSPECTION HAS BEEN COMPLETED AND THE CONTRACTOR NOTIFIED TO PROCEED.
2. TO FACILITATE SCHEDULING, AT LEAST 48 HOURS ADVANCE NOTICE SHALL BE GIVEN TO THE ENGINEER PRIOR TO THE REQUIRED INSPECTIONS.
3. UNLESS NOTED OTHERWISE, BACKFILL SHALL NOT BE PLACED AGAINST WALLS WHICH SUPPORT A CONCRETE SLAB OR WALKWAY UNTIL THE TOP SLAB OR WALKWAY HAS BEEN PLACED IN ITS ENTIRETY AND ALL CONCRETE HAS REACHED THE SPECIFIED DESIGN STRENGTH.
4. OVER-EXCAVATION OF SOIL, OR OVER-BREAKING OF ROCK, THAT WOULD RESULT IN A STRUCTURAL CONCRETE THICKNESS GREATER THAN INDICATED ON THE DRAWINGS SHALL BE CLASSIFIED AS UNAUTHORIZED EXCAVATION. CONTRACTOR SHALL SELECT ONE OF TWO METHODS TO ADDRESS UNAUTHORIZED EXCAVATION.
   - REPLACE UNAUTHORIZED EXCAVATION MATERIAL WITH LEAN CONCRETE THAT IS PLACED SEPARATELY FROM THE STRUCTURAL CONCRETE INDICATED ON THE DRAWINGS. CONTRACTOR WILL RECEIVE NO ADDITIONAL PAYMENT FOR THE LEAN CONCRETE.
   - REPLACE UNAUTHORIZED EXCAVATION MATERIAL WITH STRUCTURAL CONCRETE THAT IS PLACED MONOLITHICALLY WITH THE STRUCTURAL CONCRETE INDICATED ON THE DRAWINGS, CREATING AN ENLARGED SECTION. CONTRACTOR SHALL NOTIFY ENGINEER FOR DIRECTION PRIOR TO PERFORMING THIS WORK. THE INCREASED CONCRETE THICKNESS MAY REQUIRE ADDITIONAL REINFORCEMENT AND/OR OTHER DESIGN MODIFICATIONS. IF THE INCREASED CONCRETE THICKNESS EXCEEDS 36 INCHES, ENGINEER MAY REQUIRE CONTRACTOR TO IMPLEMENT MASS CONCRETE HEAT MITIGATION PROCEDURES. CONTRACTOR WILL RECEIVE NO ADDITIONAL PAYMENT FOR EXTRA STRUCTURAL CONCRETE, ADDITIONAL REINFORCEMENT, OTHER DESIGN MODIFICATIONS, OR MASS CONCRETING PROCEDURES.
5. THE FOLLOWING NET ALLOWABLE BEARING PRESSURES WERE UTILIZED IN THE DESIGN OF THE FOUNDATIONS.

   MAT FOUNDATIONS.....1500 PSF

EXISTING STRUCTURES

1. THE DRAWINGS DEPICT WORK AT EXISTING STRUCTURES. ALL DIMENSIONS AND ALL DEPICTIONS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO ORDERING MATERIALS, STARTING FABRICATION, OR STARTING CONSTRUCTION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE, REPAIRS OR STRUCTURAL MODIFICATIONS THAT ARE REQUIRED DUE TO DEMOLITION BEYOND THE LIMITS IDENTIFIED IN THE DRAWINGS.
3. REINFORCEMENT FOR ANY EXISTING CONCRETE OR MASONRY ELEMENT SHALL NOT BE DAMAGED UNLESS THE ELEMENT IS TO BE DEMOLISHED. WHEN LOCATING EXISTING REINFORCEMENT IS REQUIRED, IT SHALL BE LOCATED USING NON-DESTRUCTIVE METHODS. REINFORCING STRANDS IN EXISTING PRESTRESSED CONCRETE SHALL NOT BE CUT UNLESS INDICATED ON THE DRAWINGS OR OTHERWISE AUTHORIZED BY THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE, REPAIRS OR STRUCTURAL MODIFICATIONS THAT ARE REQUIRED DUE TO DAMAGE OF CONCRETE, MASONRY OR REINFORCEMENT THAT HAS BEEN IDENTIFIED ON THE DRAWINGS TO REQUIRE FIELD VERIFICATION.
4. CORE DRILLING AND SAW CUTTING SHALL NOT BE PERFORMED UNLESS INDICATED ON THE DRAWINGS OR APPROVED BY ENGINEER.
5. EXPOSED CONCRETE SURFACES THAT REMAIN AFTER DEMOLITION SHALL BE REPAIRED TO MATCH ADJACENT CONCRETE SURFACES.
6. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, EXPOSED CONCRETE SURFACES WITH REINFORCEMENT, ANCHOR BOLTS, HANGER RODS, OR OTHER EXPOSED METAL EMBEDMENTS SHALL BE REPAIRED BY CUTTING OFF THE METAL AT THE FACE OF THE CONCRETE, GRINDING SMOOTH, AND COATING. COATING SHALL EXTEND A MINIMUM OF 1" BEYOND THE EDGE OF ANY EXPOSED METAL.

SPECIAL INSPECTIONS

1. THERE ARE NO THRESHOLD BUILDINGS AS DEFINED BY FLORIDA BUILDING CODE. THEREFORE, SPECIAL INSPECTIONS ARE NOT REQUIRED.

DELEGATED DESIGN

1. THE FOLLOWING ITEMS ARE IDENTIFIED IN THE DRAWINGS AND SPECIFICATIONS AS BEING DESIGNED AND SEALED BY THE CONTRACTOR OR THE CONTRACTOR'S SUPPLIER IN ACCORDANCE WITH THE SPECIFICATIONS INDICATED BELOW. SUBMITTALS FOR THESE ITEMS SHALL BE PREPARED BY THE SUPPLIERS AND SUBMITTED TO ENGINEER AND CODE OFFICIAL FOR REVIEW.

   SECTION 016700– EQUIPMENT AND NON-STRUCTURAL COMPONENTS.
   SECTION 058100– EQUIPMENT ANCHORAGE.

BASIC LOADING CRITERIA

THE APPLICABLE BUILDING CODE IS THE 2020 FLORIDA BUILDING CODE, BASED ON THE 2018 INTERNATIONAL BUILDING CODE.

1. DEAD LOAD ..... CALCULATED
2. LIVE LOADS:
   OPERATING AND PROCESS FLOORS..... 150 PSF
   STAIRS, SERVICE PLATFORMS & LANDINGS..... 100 PSF
   ALL FLOORS NOT INDICATED..... 100 PSF
3. LATERAL EARTH PRESSURE (EQUIVALENT FLUID PRESSURE)
   NON-SATURATED..... 70 PSF/FT
   SATURATED..... 100 PSF/FT
4. LATERAL SURCHARGE..... EQUIVALENT TO 2 FEET OF SOIL WHERE ADJACENT TO A ROADWAY
5. COMPACTIVE SURCHARGE LOAD..... 400 PSF AT FINISH GRADE ELEVATION DECREASING LINEARLY AT SAME RATE AS BACKFILL LOAD INCREASES. FOR WALLS 8 FEET OR LESS IN HEIGHT, USE CRITERIA 4 ABOVE AS COMPACTIVE SURCHARGE.

6. HYDROSTATIC FLUID PRESSURE..... 63 PSF/FT
7. SNOW LOAD:
   GROUND SNOW LOAD (P_g)..... 0 PSF
8. SEISMIC LOAD:
   MAPPED MCE SHORT PERIOD SPECTRAL RESPONSE ACCELERATION (S_S)..... 0.047g
   MAPPED MCE ONE SECOND PERIOD SPECTRAL RESPONSE ACCELERATION (S_1)..... 0.023g
   DESIGN SPECTRAL RESPONSE ACCELERATION AT SHORT PERIODS (S_{DS})..... 0.050g
   DESIGN SPECTRAL RESPONSE ACCELERATION AT ONE SECOND PERIOD (S_{D1})..... 0.037g
   SITE CLASS..... D
   SIESMIC DESIGN CATEGORY..... A
9. WIND LOAD:
   BASIC (ULTIMATE) DESIGN WIND SPEED..... 169 MPH
   ALLOWABLE STRESS (NOMINAL) DESIGN WIND SPEED..... 134 MPH
   GROUND ELEVATION FACTOR (K_e)..... 1.0
   EXPOSURE..... C
10. FLOOD DESIGN DATA:
    DESIGN FLOOD ELEVATION..... NOT LOCATED IN FEMA FLOOD ZONE

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LEE COUNTY UTILITIES

THREE OAKS WATER RECLAMATION FACILITY
DEEP INJECTION WELL IW-2

PRELIMINARY - NOT FOR CONSTRUCTION

REVISIONS AND RECORD OF ISSUE

DESIGNED:	JCG
DETAILED:	ERB
CHECKED:	YY
APPROVED:	JCG
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STRUCTURAL

STANDARD NOTES AND LOADING CRITERIA

S-001 OF

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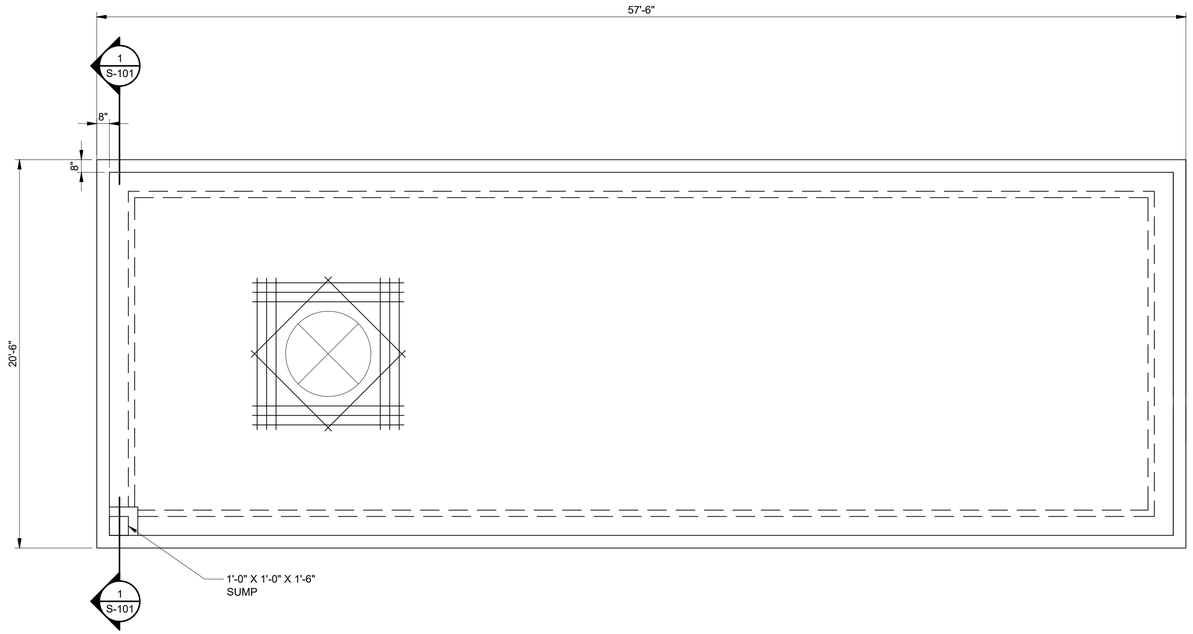
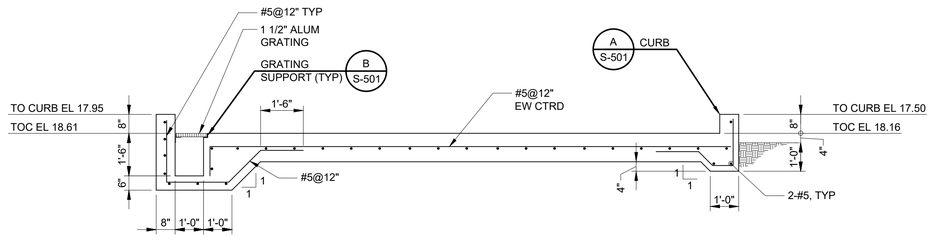
FT1000
FT1000

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4



PLAN
1/4" = 1'-0"



1 S-101 SECTION
3/8" = 1'-0"

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

12" 6" 0 1' 2' 3' 4' 5' 6' 7'
3/8"=1'-0"

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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ET1000
ET1003

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LEE COUNTY UTILITIES

THREE OAKS WATER RECLAMATION FACILITY
DEEP INJECTION WELL IW-2

PRELIMINARY - NOT FOR CONSTRUCTION

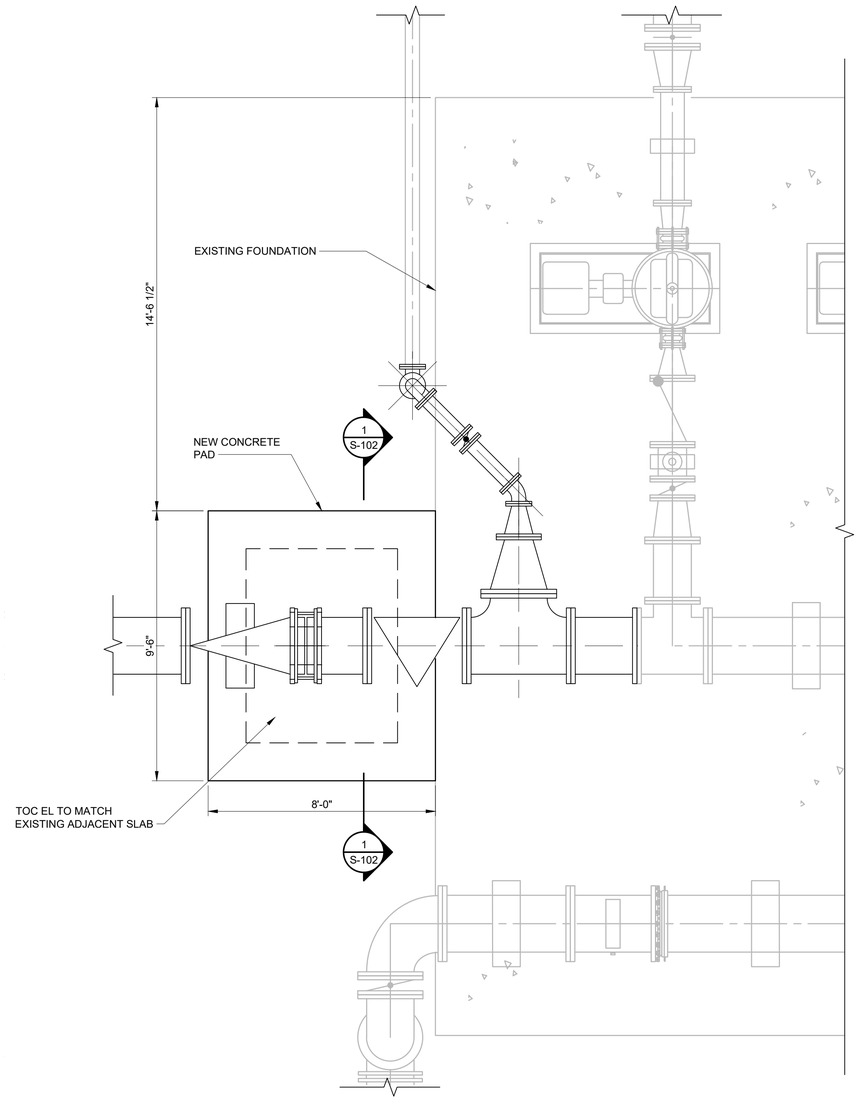
REVISIONS AND RECORD OF ISSUE

DESIGNED:	JCG
DETAILED:	ERB
CHECKED:	YY
APPROVED:	JCG
DATE:	SEPTEMBER 2023
PROJECT NO.:	414567

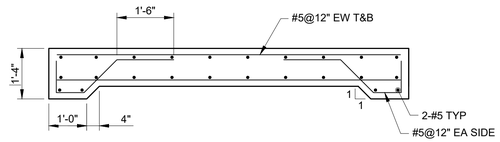
STRUCTURAL

WELL PAD PLAN AND SECTION

S-101 OF



PLAN
3/8" = 1'-0"



1 S-101 SECTION
3/8" = 1'-0"

12" 6" 0 1' 2' 3' 4' 5' 6' 7'
3/8"=1'-0"

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

PLOTTED: 9/15/2023 12:24:33 PM
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FDT1000
FDT1002

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THREE OAKS WATER RECLAMATION FACILITY
DEEP INJECTION WELL IW-2

PRELIMINARY - NOT FOR CONSTRUCTION

REVISIONS AND RECORD OF ISSUE

DESIGNED:	JCG
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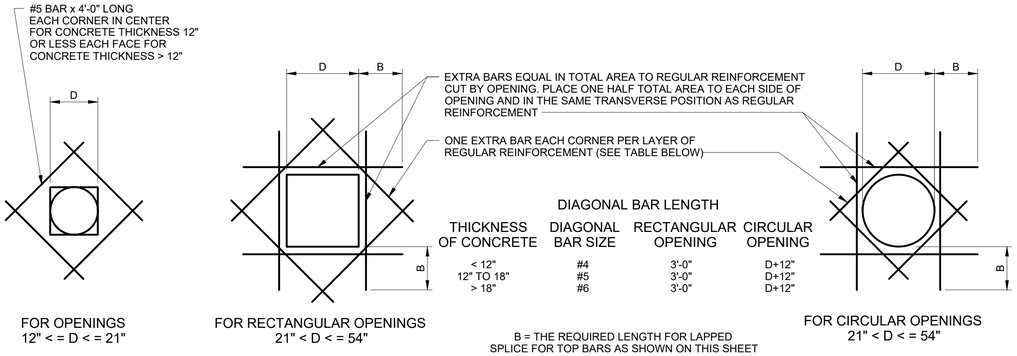
DATE:	SEPTEMBER 2023
PROJECT NO.:	414567

STRUCTURAL

SUCTION PIPING PAD PLAN AND SECTION

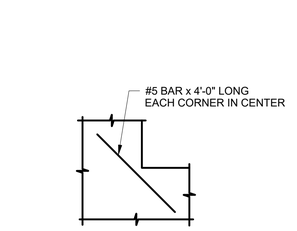
S-102 OF



TYPICAL REQUIRED UNLESS ADDITIONAL REINFORCEMENT SPECIFICALLY INDICATED AT OPENINGS ON DRAWINGS

TYPICAL EXTRA REINFORCEMENT AT OPENINGS 12" TO <= 54"

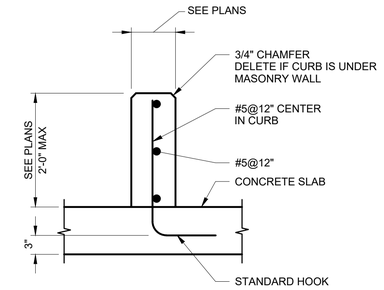
NO SCALE



NOTE:
TYPICAL REQUIRED UNLESS ADDITIONAL REINFORCEMENT SPECIFICALLY INDICATED AT OPENINGS ON DRAWINGS

TYPICAL EXTRA REINFORCEMENT AT ISOLATED RE-ENTRANT CORNERS

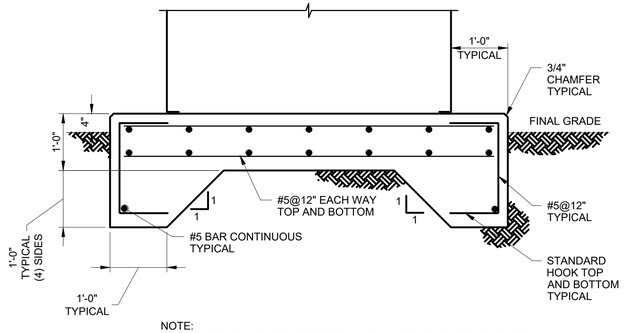
NO SCALE



NOTE:
WHEN CURB WIDTH EXCEEDS 8", PROVIDE
ABOVE REINFORCEMENT IN EACH FACE OF CURB

A TYPICAL CONCRETE CURB DETAIL

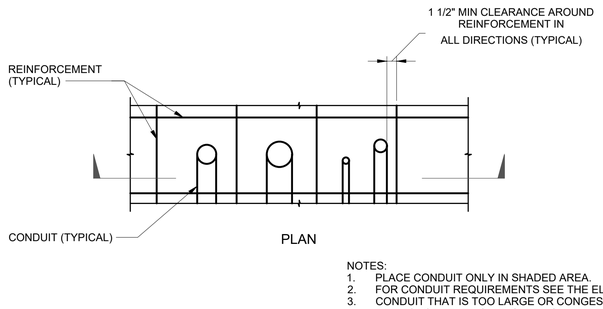
1" = 1'-0"



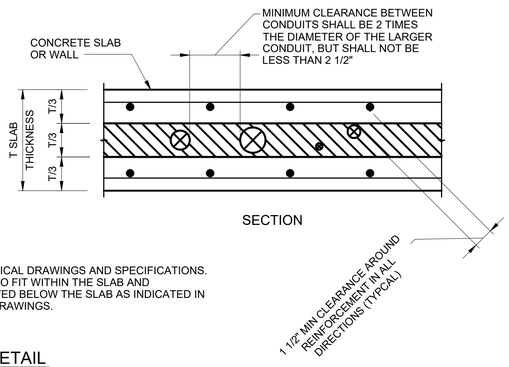
NOTE:
FOUNDATION DIMENSIONS DETERMINED BY EQUIPMENT FURNISHED
AND EQUIPMENT ANCHORAGE EDGE DISTANCE REQUIREMENTS.

EXTERIOR EQUIPMENT FOUNDATION

3/4" = 1'-0"



PLAN



SECTION

NOTES:
1. PLACE CONDUIT ONLY IN SHADED AREA.
2. FOR CONDUIT REQUIREMENTS SEE THE ELECTRICAL DRAWINGS AND SPECIFICATIONS.
3. CONDUIT THAT IS TOO LARGE OR CONGESTED TO FIT WITHIN THE SLAB AND REINFORCEMENT AS INDICATED SHALL BE ROUTED BELOW THE SLAB AS INDICATED IN THE ELECTRICAL SPECIFICATIONS OR ON THE DRAWINGS.

CONDUIT PLACING DETAIL

1" = 1'-0"

LENGTH OF LAPPED SPLICES FOR REINFORCEMENT (INCHES)

UNLESS NOTED OTHERWISE ON THE DRAWINGS

BAR SIZE *	BEAMS & COLUMNS		WALLS & SLABS		BAR SIZE *
	**TOP BARS	OTHERS	**TOP BARS	OTHERS	
#3	16	16	16	16	#3
#4	19	16	19	16	#4
#5	24	18	24	18	#5
#6	33	26	29	22	#6
#7	55	42	48	37	#7
#8	69	53	60	46	#8
#9	84	65	74	57	#9
#10	103	79	91	70	#10
#11	122	94	108	83	#11

* LAP SPLICE LENGTH FOR BARS OF DIFFERENT SIZES SHALL BE THE GREATER OF THE SMALL BAR LAP LENGTH OR 0.75x THE LARGER BAR LAP LENGTH.

** TOP BARS ARE HORIZONTAL BARS SO PLACED THAT MORE THAN 12" OF CONCRETE IS CAST IN THE MEMBER BELOW THE BAR. HORIZONTAL BARS IN WALLS ARE TO BE PROVIDED WITH LAP LENGTHS AS REQUIRED FOR TOP BARS. VERTICAL BARS MAY BE CONSIDERED AS OTHER BARS.

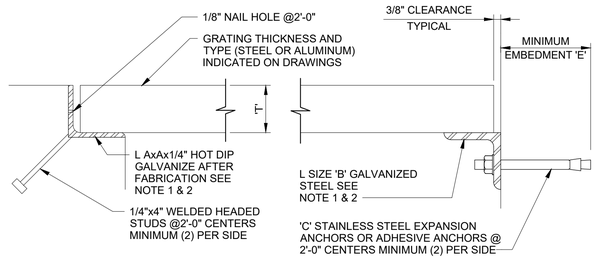
CONCRETE COVER FOR REINFORCEMENT

UNLESS NOTED OTHERWISE ON THE DRAWINGS

LOCATION	SPECIFIED COVER
UNFORMED SURFACES ADJACENT TO EXCAVATION	3"
SURFACES INSIDE OF OZONE CONTACTORS EXPOSED TO OZONE IN WATER OR AIR	3"
TOP SURFACES OF SLABS THAT ARE SUBMERGED	3"
FORMED SURFACES THAT ARE SUBMERGED, AND FORMED OR TOP SURFACES EXPOSED TO WEATHER, SATURATED AIR, OR EARTH	2"
OTHER LOCATIONS:	
BEAMS AND GIRDERS	1 1/2"
SLABS, WALLS AND JOISTS:	
#6 AND LARGER	1 1/2"
#5 AND SMALLER	1"

NOTES:

1. COVER IS MEASURED TO NEAREST BAR, STIRRUP, TIE, OR SPIRAL, AS APPLICABLE.
2. TOLERANCES FOR CONCRETE COVER AND THE FABRICATION AND PLACING OF REINFORCEMENT SHALL CONFORM TO ACI 117.



GRATING THICKNESS 'T'	L SIZE AxAx1/4 INCHES	L SIZE 'B' INCHES	'C' ANCHOR	
			DIA	MIN 'E'
1"	1 3/4 x 1 3/4*	2 1/2x2 1/2x1/4	1/2"	3 1/4"
1 1/4"	1 3/4 x 1 3/4*	2 1/2x2 1/2x1/4	1/2"	3 1/4"
1 1/2"	1 3/4 x 1 3/4	2 1/2x2 1/2x1/4	1/2"	3 1/4"
1 3/4"	2x2	3x3x3/8	3/4"	4 3/4"
2"	2 1/2x2 1/2*	3x3x3/8	3/4"	4 3/4"
2 1/4"	2 1/2x2 1/2	3x3x3/8	3/4"	4 3/4"
2 1/2"	3x3*	3x3x3/8	3/4"	4 3/4"

* TRIM AND BEVEL UPSTANDING LEG TO FIT

NOTES:

1. ALL GRATING SUPPORTED ON CONCRETE SHALL HAVE AN EMBEDDED ANGLE RECESSED AS SHOWN UNLESS NOTED OTHERWISE. GRATING SUPPORTED BY THE FACE MOUNTED ANGLE SHALL BE USED WHERE THE CONCRETE EXTENDS ABOVE THE TOP OF THE GRATING OR AT EXISTING STRUCTURES.
2. WHERE GRATING IS REQUIRED TO BE STAINLESS STEEL, SUPPORT ANGLES SHALL ALSO BE STAINLESS STEEL.

B METALGRATING SUPPORT

NO SCALE

12" 6" 0 1' 2' 3'
3/4"=1'-0"

12" 9" 6" 3" 0 1' 2'
1"=1'-0"

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

PLOTTED: 8/30/2023 9:27:11 AM
FILE: C:\PW_WORKING\BVW_AMERICAS_2\D1749735\S-501.DWG
PD11000
PD11002

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THREE OAKS WATER RECLAMATION FACILITY
DEEP INJECTION
WELL IW-2

PRELIMINARY - NOT FOR CONSTRUCTION

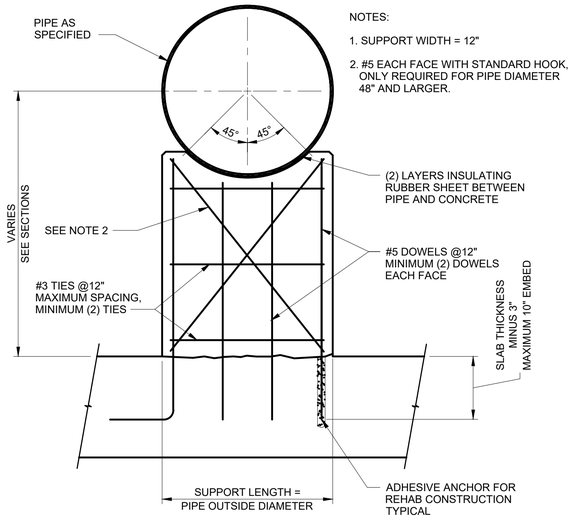
REVISIONS AND RECORD OF ISSUE

DESIGNED:	JCG
DETAILED:	ERB
CHECKED:	YY
APPROVED:	JCG
DATE:	SEPTEMBER 2023
PROJECT NO.:	414567

STRUCTURAL

CONCRETE DETAILS

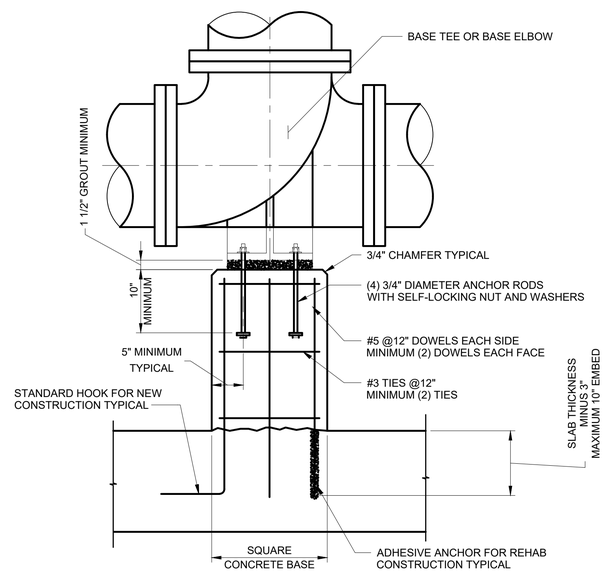
S-501 OF



NOTES:

1. SUPPORT WIDTH = 12"
2. #5 EACH FACE WITH STANDARD HOOK, ONLY REQUIRED FOR PIPE DIAMETER 48" AND LARGER.

A CONCRETE SADDLE PIPE SUPPORT
1" = 1'-0"



D CONCRETE SUPPORT FOR BASE TEE OR BASE ELBOW
1" = 1'-0"

12" 9" 6" 3" 0 1' 2'
1"=1'-0"

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

PLOTTED: 8/30/2023 9:28:45 AM
FILE: C:\PW_WORKING\BVW_AMERICAS_2\D1749735\S-502.DWG
PD1000
D1000

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LEE COUNTY UTILITIES

THREE OAKS WATER RECLAMATION FACILITY DEEP INJECTION WELL IW-2

PRELIMINARY - NOT FOR CONSTRUCTION

REVISIONS AND RECORD OF ISSUE

DESIGNED:	JCG
DETAILED:	ERB
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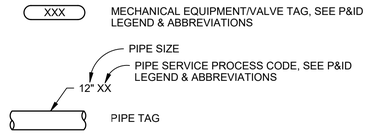
DATE:	SEPTEMBER 2023
PROJECT NO.:	414567

STRUCTURAL

PIPE SUPPORT DETAILS

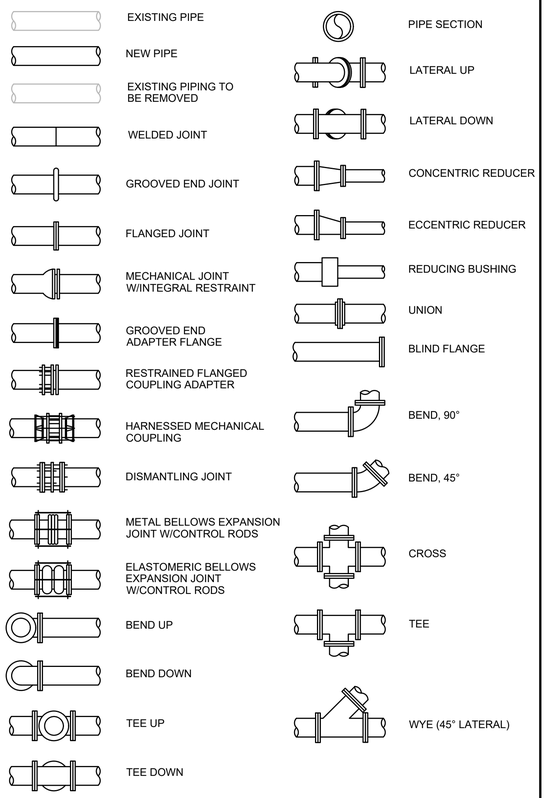
S-502 OF

PIPE, EQUIPMENT & VALVE TAG LEGEND

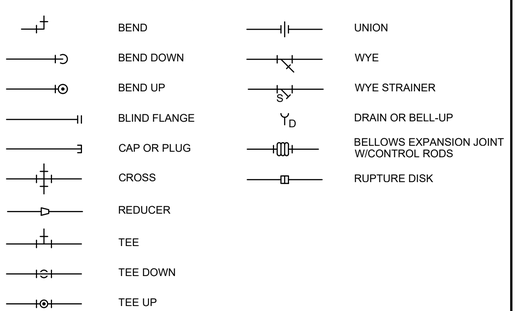


PIPE & FITTINGS SYMBOL LEGEND

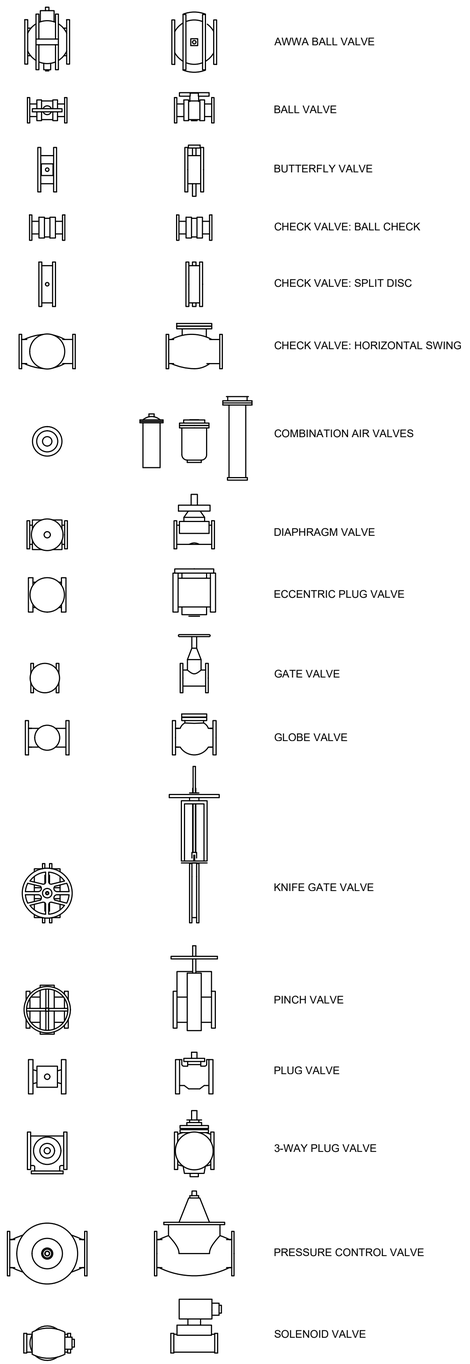
DOUBLE LINE



SINGLE LINE



ACTUAL VALVE SYMBOL LEGEND

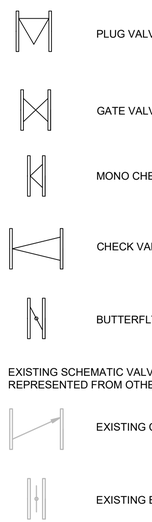


GENERAL PROCESS MECHANCAL NOTES

1. LEGENDS SHOWN IN THIS DRAWING ARE BASED ON A TEMPLATE THAT IS NOT PROJECT SPECIFIC. SOME LEGEND SYMBOLS ARE NOT USED ON THIS PROJECT, BUT ARE SHOWN TO PROVIDE A DICTIONARY FOR SYMBOLS THAT MAY ALSO BE USED DURING THE PROJECT CONSTRUCTION PHASE.
2. FOR PROCESS MECHANICAL ABBREVIATIONS, REFER TO GENERAL ABBREVIATIONS.
3. REFER TO THE P&ID LEGEND AND ABBREVIATIONS FOR SINGLE-LINE VALVE, GATE, ACTUATOR, FITTING, EQUIPMENT, AND OTHER SYMBOLS.
4. FITTING TYPES IN THE LEGEND ON THIS SHEET SHOW FLANGED END CONNECTIONS. FITTINGS FOR OTHER END CONNECTION TYPES ARE SIMILAR.
5. VALVE TYPES IN THE LEGENDON THIS SHEET REPRESENT THE TYPICAL APPEARANCE FOR EACH TYPE OF VALVE. THE ACTUAL VALVES USED FOR THIS PROJECT MAY VARY IN APPEARANCE.
6. LAY PIPE TO UNIFORM GRADE BETWEEN INDICATED ELEVATION POINTS.
7. SIZE OF FITTINGS SHOWN ON DRAWINGS SHALL MATCH CONNECTING PIPING, UNLESS OTHERWISE INDICATED. TYPE OF JOINT AND FITTING MATERIAL SHALL BE THE SAME AS CONNECTING PIPING.
8. ALL REQUIRED HANGERS, SUPPORTS, BRACES, INSERTS, AND ACCESSORIES ARE NOT SHOWN ON THE DRAWINGS. PIPE SUPPORTS FOR 12-INCH DIAMETER AND SMALLER PIPES SHALL BE DESIGNED AND FURNISHED BY THE CONTRACTOR AS SPECIFIED.
9. ALL PRESSURIZED OR SURCHARGED PIPELINES, PIPE FITTINGS, COUPLINGS, JOINTS, EXPANSION JOINTS, TANK CONNECTIONS, AND CHANNEL CONNECTIONS SHALL BE PROVIDED WITH THRUST RESTRAINT BASED ON SPECIFIED PRESSURES AND TEMPERATURES.
10. NUMBER AND LOCATION OF UNIONS AND COUPLINGS SHOWN ON DRAWINGS IS ONLY APPROXIMATE. CONTRACTOR SHALL PROVIDE ALL UNIONS AND COUPLINGS REQUIRED BY THE SPECIFICATIONS AND AS NECESSARY TO FACILITATE CONVENIENT REMOVAL OF VALVES AND MECHANICAL EQUIPMENT.
11. WHERE A GROOVED END JOINT IS SHOWN,IT SHALL BE THE RIGID JOINT TYPE,UNLESS OTHERWISE SPECIFIED. WHERE A FLANGED COUPLING ADAPTER IS SHOWN, A STANDARD FLANGE SHALL BE JOINED TO THE COUPLING ADAPTER.
12. CONTRACTOR SHALL ORIENT VALVES AS SPECIFIED.
13. NOT ALL LEGEND SYMBOLS APPLY. THESE PROJECT IS UTILIZING THE SCHEMATIC VALVE SYMBOL LEGEND FOR VALVES DISPLAYED ON DRAWINGS FOR THIS PROJECT.

SCHEMATIC VALVE SYMBOL LEGEND

PLAN/SECTION VIEW



EXISTING SCHEMATIC VALVE SYMBOLS AS REPRESENTED FROM OTHERS

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DEEP INJECTION WELL IW-2

PRELIMINARY - NOT FOR CONSTRUCTION

REVISIONS AND RECORD OF ISSUE	
DESIGNED:	JP
DETAILED:	AIP
CHECKED:	PC
APPROVED:	MEM
DATE:	SEPTEMBER 2023
PROJECT NO.:	414567

PROCESS MECHANICAL

LEGENDS AND NOTES

M-001 OF

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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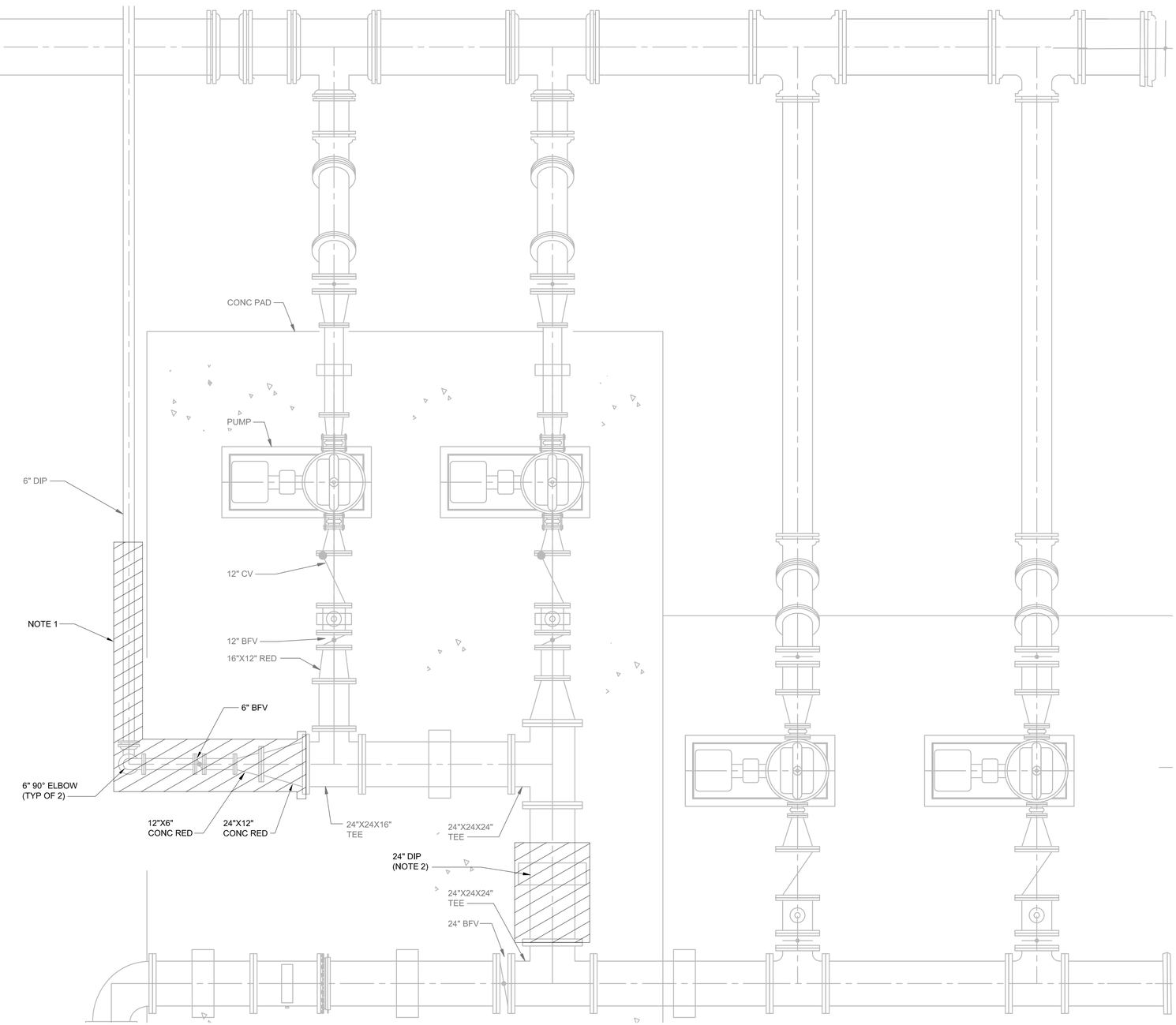
ED11000
D11002



DEMOLITION PLAN
3/8" = 1'-0"

GENERAL SHEET NOTES

1. REUSE PIPE AND FITTINGS AS NECESSARY.
2. REMOVE PART OF SPOOL AS REQUIRED TO INSTALL NEW PLUG VALVE.

LEGEND

DEMOLITION =

12" 6" 0 1' 2' 3' 4' 5' 6' 7'
3/8"=1'-0"

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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THREE OAKS WATER RECLAMATION FACILITY
DEEP INJECTION WELL IW-2

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PROJECT NO.:	414567

PROCESS MECHANICAL

EXISTING EFFLUENT PUMP STATION DEMOLITION PLAN

M-101 OF

PLOTTED: 9/1/2023 12:54:58 PM
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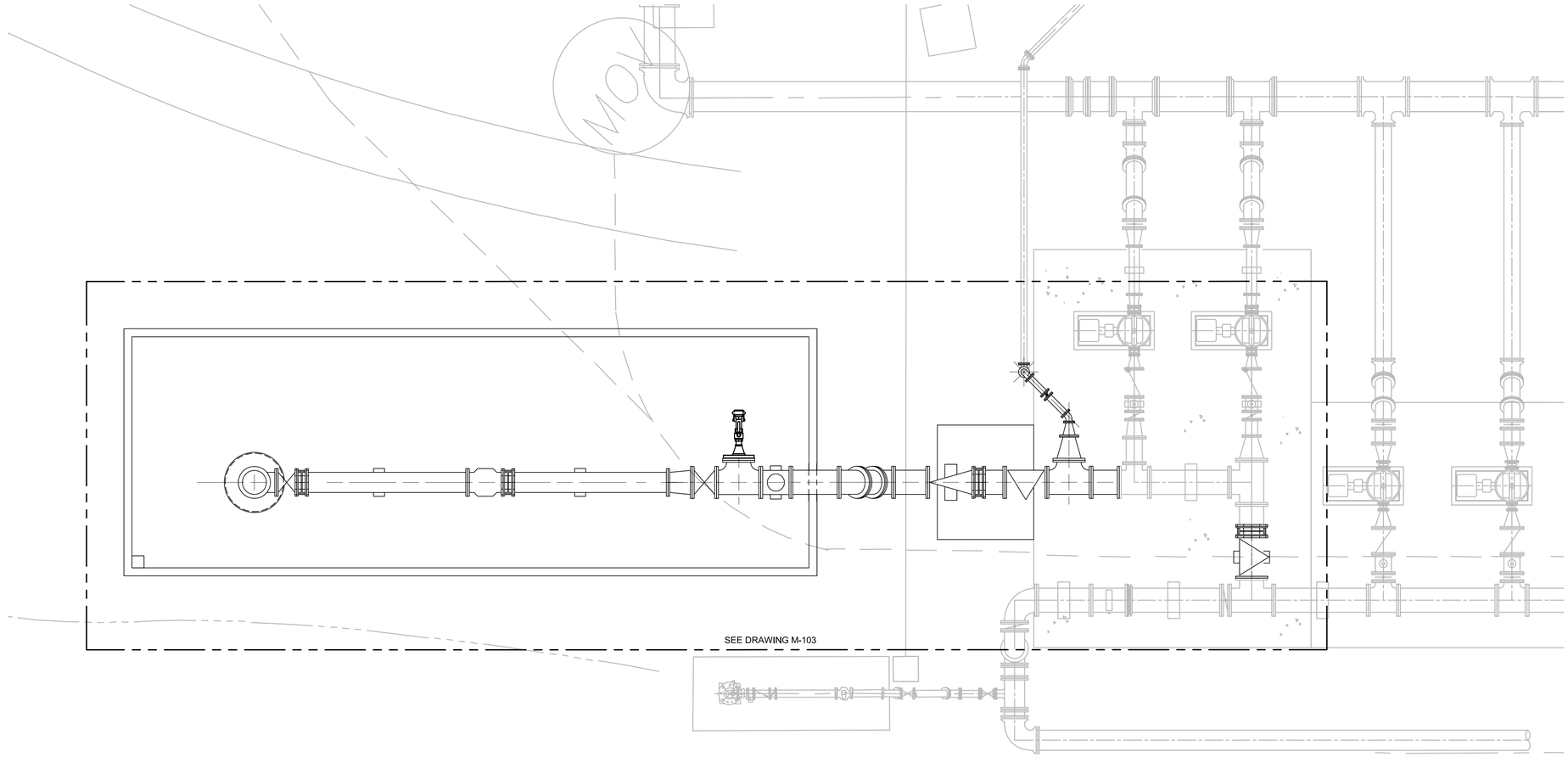
ED11000
D11004



OVERALL PIPING CONNECTION PLAN
3/16" = 1'-0"

6' 4' 2' 0 5' 10'
3/16"=1'-0"

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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THREE OAKS WATER RECLAMATION FACILITY
DEEP INJECTION WELL IW-2

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APPROVED:	MEM
DATE:	SEPTEMBER 2023
PROJECT NO.:	414567

MECHANICAL

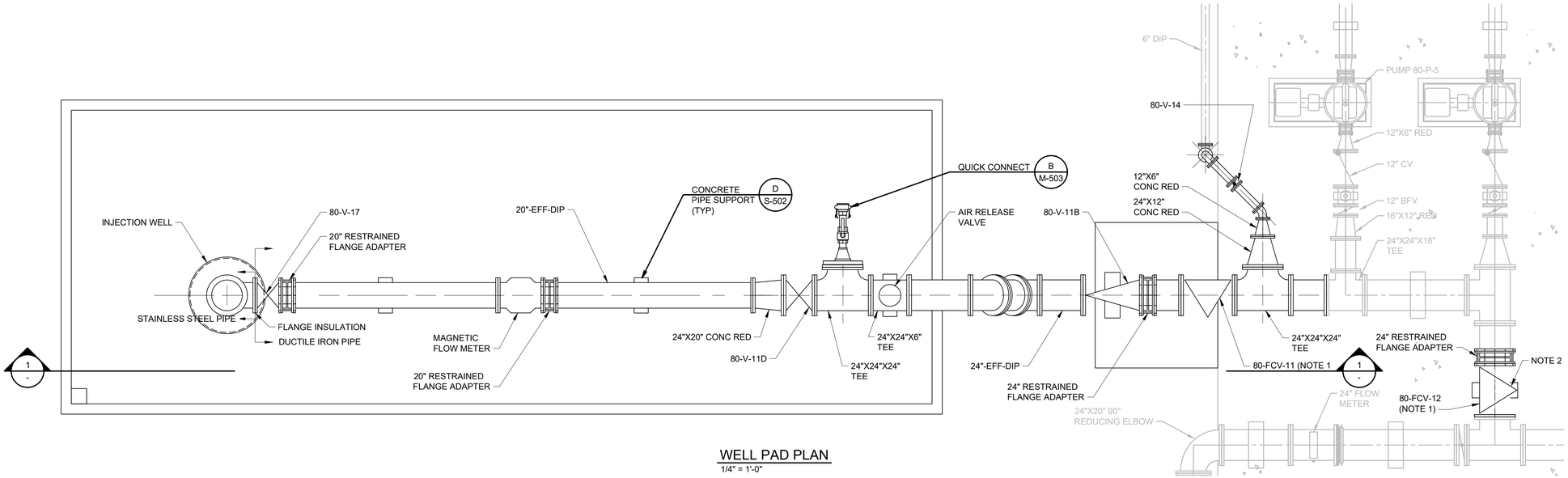
OVERALL PIPING CONNECTION PLAN

M-102 OF

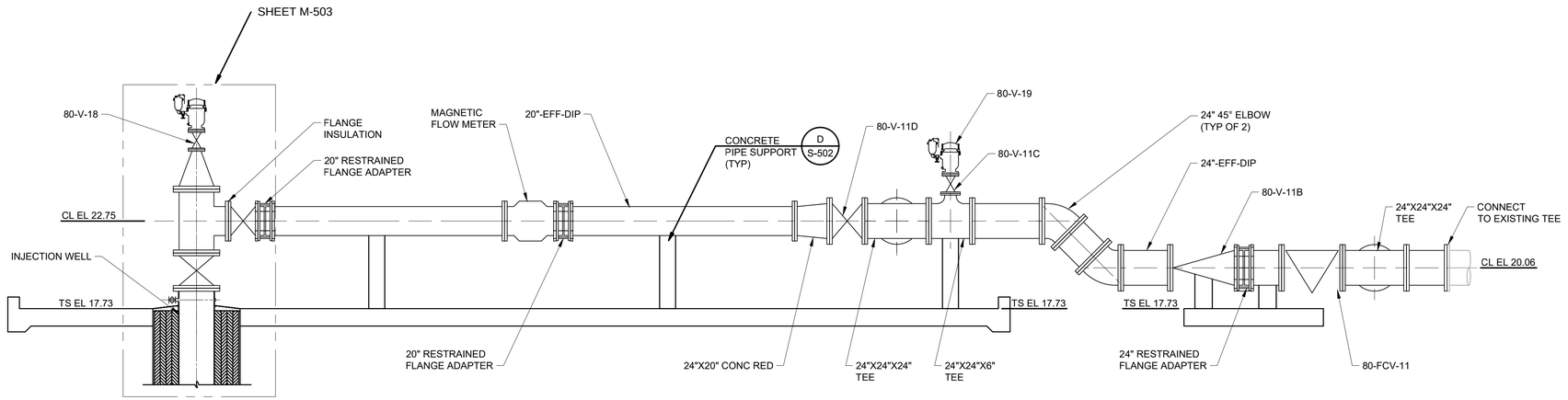
PLOTTED: 9/1/2023 12:55:49 PM
FILE: C:\PW_WORKING\BV\W_AMERICAS_2\D1749735\M-102.DWG
ET11000
PT1000

GENERAL SHEET NOTES

1. MOTORIZED VALVE.
2. OWNER PROVIDED VALVE. CONTRACTOR TO COORDINATE WITH VALVE MANUFACTURER AND ACTUATOR MANUFACTURER TO TEST AND CERTIFY CONDITION AND OPERATION OF THIS VALVING EQUIPMENT. REFER TO SECTION15102 FOR MORE INFORMATION. THIS CERTIFICATION MUST BE COMPLETED BEFORE THE VALVING EQUIPMENT IS INSTALLED IN THE PIPING.



WELL PAD PLAN
1/4" = 1'-0"



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

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

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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CHECKED:	PC
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PROJECT NO.:	414567

PROCESS MECHANICAL

WELL PAD PLAN AND SECTION

M-103 | OF

PLOTTED: 9/15/2023 12:28:53 PM
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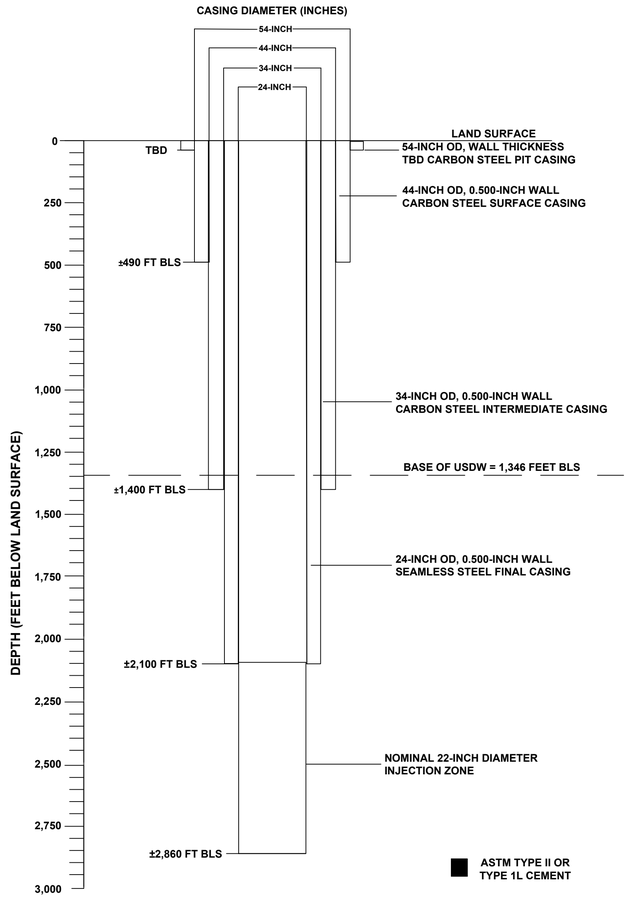
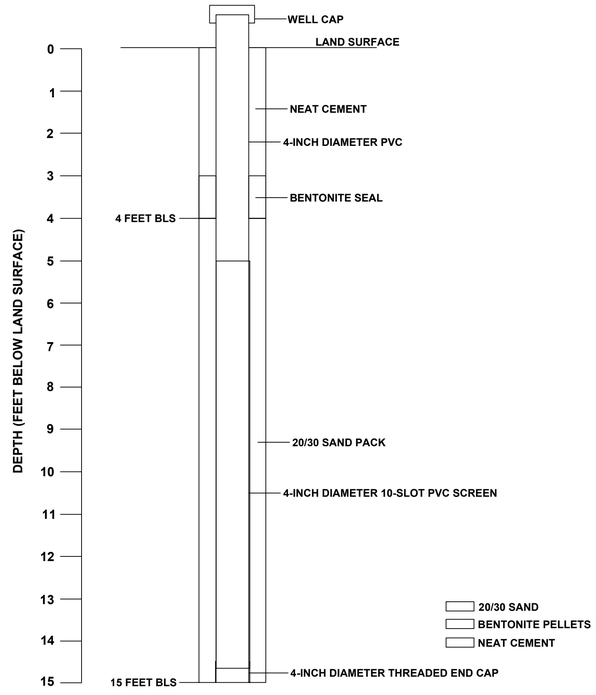
ED11000
D11002



A C-103 INJECTION WELL DETAIL
NO SCALE



B C-103 PAD MONITORING WELL DETAIL
NO SCALE

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LEE COUNTY UTILITIES

THREE OAKS WATER RECLAMATION FACILITY
DEEP INJECTION WELL IW-2

PRELIMINARY - NOT FOR CONSTRUCTION

REVISIONS AND RECORD OF ISSUE

DESIGNED:	AS
DETAILED:	AIP
CHECKED:	PC
APPROVED:	MEM
DATE:	SEPTEMBER 2023
PROJECT NO.:	414567

MECHANICAL

INJECTION WELL AND PAD MONITORING WELL DETAILS

M-502 OF

12' 8' 4' 0 10' 20'
3/32"=1'-0"

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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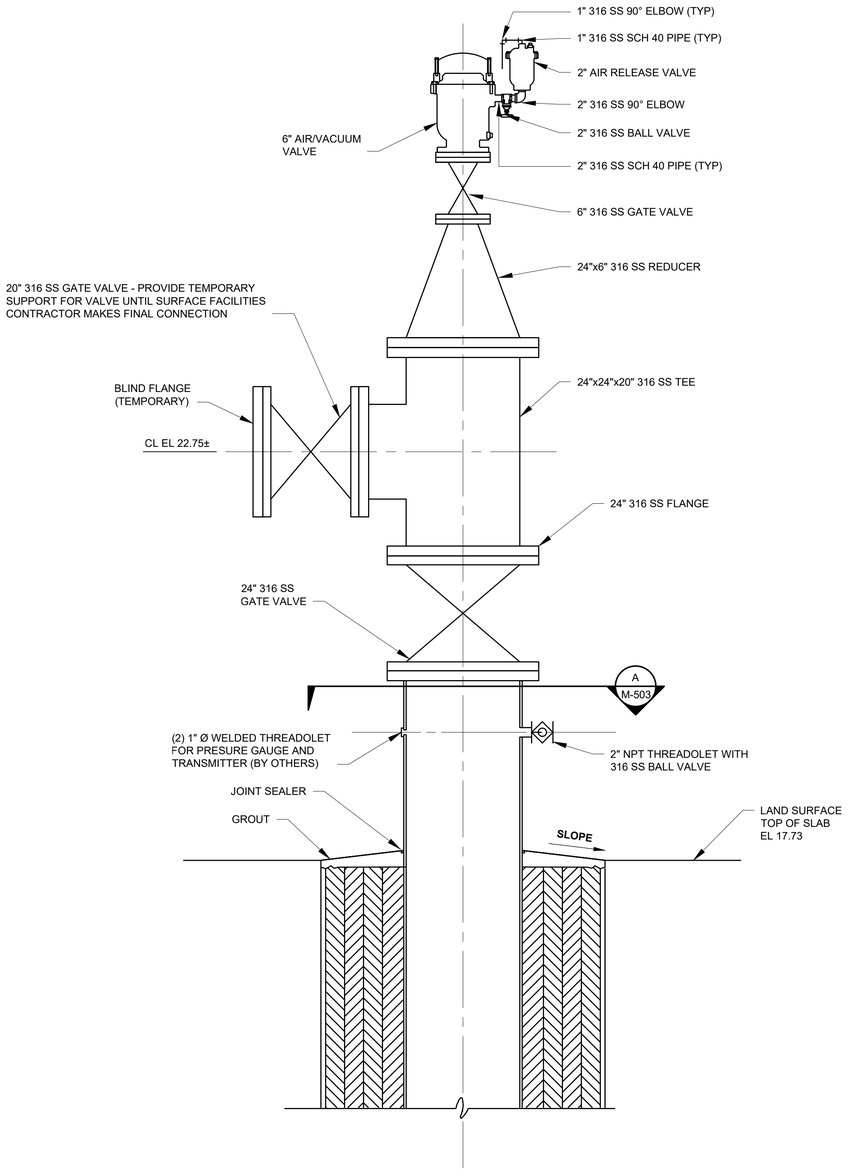
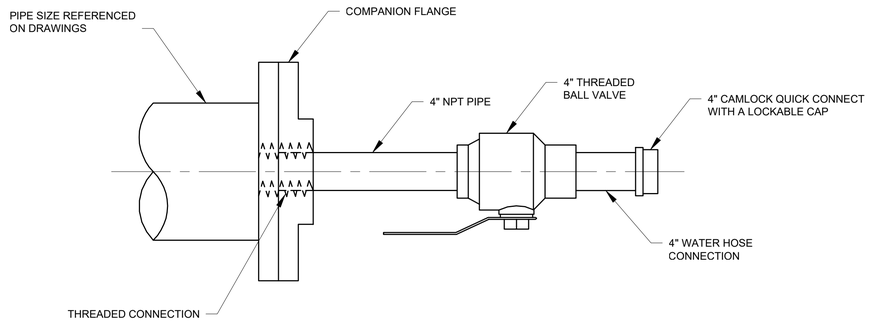


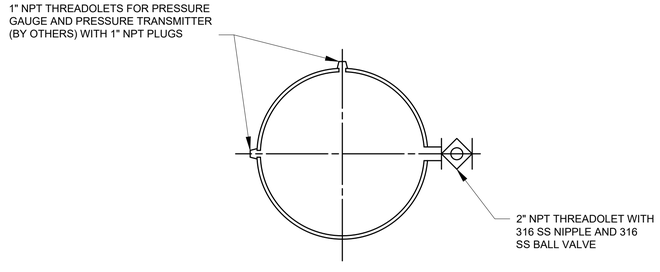
A INJECTION WELLHEAD DETAIL
M-103 3/4" = 1'-0"



NOTE:

1. ALL PIPE AND FITTINGS SHALL BE STAINLESS STEEL.

B COMPANION FLANGE WITH BLOWOUT CONNECTION (BOF)
NO SCALE



NOTE:

1. 1" AND 2" THREADOLET SHALL BE WELDED ON IN FIELD AFTER TAPPING FINAL CASING FOR HOLE OF EQUAL SIZE.

1 SECTION
- 3/4" = 1'-0"

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LEE COUNTY UTILITIES

THREE OAKS WATER RECLAMATION FACILITY
DEEP INJECTION WELL IW-2

PRELIMINARY - NOT FOR CONSTRUCTION

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MECHANICAL

INJECTION WELL WELLHEAD DETAILS

M-503 OF

12" 6" 0 1' 2' 3'
3/4"=1'-0"

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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ELECTRICAL LEGENDS

ONE-LINE DIAGRAM LEGEND

1500KVA
2.4KV Δ - 480Y/277V
3-PH, 60HZ
TRANSFORMER WITH PRIMARY AND SECONDARY VOLTAGE, AND KVA RATING AS NOTED

CS 4#14,3/4"
20 3P - 60 22:3#8,#10G, 4#14,2"
CIRCUIT NO.22 WITH 3#8 INSULATED CONDUCTORS AND 1#10 GROUND WIRE FOR A 20HP MOTOR WITH 3 POLE, 60A, MOTOR DISCONNECT SWITCH AND 4#14 INSULATED CONDUCTORS FOR AUXILIARY ITEM, AS FOR EXAMPLE A CONTROL STATION, ALL IN 2" CONDUIT.

AUXILIARY ITEMS MAY NOT BE COMPLETELY SHOWN
HS
20 3P-60 22:3#8,#10G 4#14,2"
CONDUCTORS FOR AUXILIARY ITEM SHALL NOT PASS THROUGH MOTOR DISCONNECT SWITCH.

AUXILIARY ITEMS MAY NOT BE COMPLETELY SHOWN
15
ONE-LINE SHOWING POWER AND CONTROL TO A PACKAGE UNIT, AS FOR EXAMPLE A STEAM GENERATOR OR AN AIR HANDLING UNIT, SHALL IMPLY THAT ANY AND ALL ASSOCIATED EQUIPMENT SHALL ALSO BE INSTALLED AND WIRED AS REQUIRED BY THE EQUIPMENT FURNISHED.

INDICATES THAT ALL OR PART OF CIRCUIT MAY BE ROUTED IN DUCT BANK OR UNDERGROUND. CONDUIT SIZE SHOWN ON ONE-LINE IS ABOVE GROUND AND/OR INSIDE OF STRUCTURE. SEE DUCT BANK SCHEDULE AND SECTIONS FOR CONDUIT SIZE OF UNDERGROUND PORTION OF CIRCUIT.

HIGH VOLTAGE DRAWOUT AIR OR VACUUM CIRCUIT BREAKER

3P-20
LOW VOLTAGE AIR CIRCUIT BREAKER, 3 POLE, 20 AMPERE

S4
SIZE 4 COMBINATION MAGNETIC MOTOR STARTER

LOW VOLTAGE DRAWOUT AIR CIRCUIT BREAKER

HIGH VOLTAGE DRAWOUT CONTACTOR

FUSE AND DISCONNECT SWITCH

S2
SIZE 2 COMBINATION MAGNETIC MOTOR STARTER, REVERSING OR 2 SPEED

S1
SIZE 1 COMBINATION REDUCED VOLTAGE AUTOTRANSFORMER

POTENTIAL TRANSFORMER

CURRENT TRANSFORMER

CURRENT OR POTENTIAL TEST SWITCH

G GENERATOR

K KIRK KEY INTERLOCK

E ELECTRICAL INTERLOCK

R RESISTOR

59G PROTECTION RELAY WITH IEEE DEVICE FUNCTION AS SHOWN

V SINGLE-FUNCTION METER

SURGE OR LIGHTNING ARRESTER

SURGE ARRESTER WITH SURGE CAPACITOR

GROUND CONNECTION

SCHEMATIC SYMBOLS

- WIRE CONNECTION POINT
- EXTERNAL CONNECTION POINT
- NORMALLY OPEN CONTACT
- NORMALLY CLOSED CONTACT
- STARTER, CONTACTOR OR RELAY COIL
- NORMALLY OPEN PUSH BUTTON
- NORMALLY CLOSED PUSH BUTTON
- MAINTAINED PUSH BUTTON
- NORMALLY CLOSED GEARED LIMIT SWITCH
- NORMALLY OPEN GEARED LIMIT SWITCH
- INDICATING LIGHT
- FUSE
- POTENTIOMETER
- CAPACITOR
- DIODE
- RESISTOR
- CONTROL POWER TRANSFORMER
- SWITCH
- MS MANUAL STARTER
- OL OVERLOAD
- OVERLOAD
- ELECTRODE
- FLOAT SWITCH (CLOSING ON RISING LEVEL)
- FLOAT SWITCH (OPENING ON RISING LEVEL)
- P PRESSURE SWITCH (CLOSING ON RISING PRESSURE)
- P PRESSURE SWITCH (OPENING ON RISING PRESSURE)
- V VACUUM SWITCH (CLOSING ON INCREASING VACUUM)
- V VACUUM SWITCH (OPENING ON INCREASING VACUUM)
- TEMPERATURE SWITCH (CLOSING ON RISING TEMPERATURE)
- TEMPERATURE SWITCH (OPENING ON RISING TEMPERATURE)
- FLOW ACTUATED SWITCH (CLOSING ON INCREASE IN FLOW)
- FLOW ACTUATED SWITCH (OPENING ON INCREASE IN FLOW)
- ON TIME DELAY CONTACT (NORMALLY OPEN, WHEN THE COIL IS ENERGIZED THE CONTACT WILL CLOSE AFTER A TIME DELAY)
- ON TIME DELAY CONTACT (NORMALLY CLOSED, WHEN THE COIL IS ENERGIZED THE CONTACT WILL OPEN AFTER A TIME DELAY)
- OFF TIME DELAY CONTACT (NORMALLY OPEN, WHEN THE COIL IS DE-ENERGIZED THE CONTACT WILL OPEN AFTER A TIME DELAY)
- OFF TIME DELAY CONTACT (NORMALLY CLOSED, WHEN THE COIL IS DE-ENERGIZED THE CONTACT WILL CLOSE AFTER A TIME DELAY)
- TORQUE SWITCH (NORMALLY OPEN)
- TORQUE SWITCH (NORMALLY CLOSED)
- LIMIT SWITCH (NORMALLY OPEN)
- LIMIT SWITCH (NORMALLY OPEN, HELD CLOSED)
- LIMIT SWITCH (NORMALLY CLOSED)
- LIMIT SWITCH (NORMALLY CLOSED, HELD OPEN)
- DIFFERENTIAL PRESSURE SWITCH (NORMALLY OPEN, CLOSING ON INCREASING DIFF.)
- DIFFERENTIAL PRESSURE SWITCH (NORMALLY CLOSED, OPENING ON INCREASING DIFF.)

SWITCH & OUTLET SYMBOLS

- S SINGLE POLE SWITCH
- S_2 TWO POLE SWITCH
- S_{3A} THREE-WAY SWITCH CONTROLLING LIGHTS WITH "A" DESIGNATION
- S_4 FOUR-WAY SWITCH
- S^{C1}_{M} MOMENTARY SWITCH CONTROLLING CONTACTOR C1
- S^{DM}_{A} DIMMING WALL SWITCH CONTROLLING LIGHTS WITH "A" DESIGNATION
- S^{OS}_{A} WALL SWITCH OCCUPANCY SENSOR CONTROLLING LIGHTS WITH "A" DESIGNATION
- DUPLEX RECEPTACLE 120 VOLT
- SIMPLEX RECEPTACLE
- RANGE RECEPTACLE
- TWISTLOCK RECEPTACLE
- 30 240V, 1Ø RECEPTACLE, TYPICAL AMPERE RATING NOTED
- 60 480V, 3Ø WELDING RECEPTACLE, TYPICAL AMPERE RATING NOTED
- 120 VOLT DUPLEX RECEPTACLE (UPS)
- DUPLEX FLOOR OUTLET
- TELEPHONE OUTLET
- TELEPHONE FLOOR OUTLET
- CX COAXIAL CABLE OUTLET
- DATA NETWORK OUTLET

MISCELLANEOUS SYMBOLS

- STROBE
- HORN & STROBE
- HORN
- T THERMOSTAT
- J JUNCTION BOX
- GROUND ROD
- GROUND ROD WITH TEST WELL
- GROUND CONNECTION
- DISCONNECT SWITCH
- COMBINATION STARTER
- POWER PANEL
- LIGHTING PANEL
- MISCELLANEOUS PANEL
- LIGHTING CONTACTOR
- CAMERA
- PE PHOTOELECTRIC SENSOR, PHOTOCELL
- OS CEILING MOUNTED OCCUPANCY SENSOR
- OS WALL MOUNTED OCCUPANCY SENSOR

BREAKER DETAILS

DETAIL A

52 — 5KV, 1200A, 49KA
A 5KV CLASS MEDIUM-VOLTAGE, DRAWOUT, VACUUM OR AIR INSULATED CIRCUIT BREAKER WITH A 1,200 AMPERE FRAME. BREAKER HAS A 49,000 AMPERE MAXIMUM FAULT CURRENT INTERRUPTING RATING.

DETAIL B

3P-50
A LOW VOLTAGE FIXED MOUNTED MOLDED CASE CIRCUIT BREAKER WITH A 50 AMPERE TRIP RATING.
TRIP UNIT IS NON-ADJUSTABLE THERMAL-MAGNETIC TYPE.

1000AT, 1200AF, SST, LSIG, AFRD
A LOW VOLTAGE FIXED MOUNTED MOLDED CASE CIRCUIT BREAKER WITH A 1200 AMPERE FRAME AND A 1000 AMPERE TRIP RATING.
TRIP UNIT IS ADJUSTABLE SOLID-STATE TYPE WITH LONG-TIME, SHORT-TIME, INSTANTANEOUS, GROUND FAULT AND ARC-FLASH REDUCTION PROTECTION FEATURES.

DETAIL C

800AT, 1000AS, 1600AF, AFRD
A LOW VOLTAGE, DRAWOUT, POWER OR INSULATED CASE CIRCUIT BREAKER WITH A 1600A FRAME AND SOLID-STATE TRIP UNIT.
TRIP UNIT HAS A SENSOR MODULE RATED FOR 1000 AMPERES AND WITH A TRIP RATING OF 800 AMPERES AND ARC-FLASH REDUCTION PROTECTION FEATURES.

CONDUIT & WIRING INSTALLATION LEGEND

- CONDUIT EXPOSED
- CONDUIT CONCEALED
- CONDUIT TURNING UP. CONDUIT TURNING DOWN.
- CONDUIT PLUGGED FLUSH. CONDUIT CAPPED.
- L2 - 5 TYPICAL FOR HOME RUN TO BE ROUTED TO LIGHTING PANEL L2 & CONNECTED TO CIRCUIT #5 (MINIMUM NO. 12 AWG CONDUCTORS AND 3/4" CONDUIT)
- 1 LP1-1 A POLE OR STANCHION MOUNTED LIGHTING FIXTURE. REFER TO NUMBER OR LETTER IN FIXTURE SCHEDULE. POWERED FROM LIGHTING PANEL LP1, CIRCUIT 1. CONTROLLED VIA FROM SWITCH A.
- 1 LP1-1 A WALL MOUNTED LIGHTING FIXTURE. REFER TO NUMBER OR LETTER IN FIXTURE SCHEDULE. POWERED FROM LIGHTING PANEL LP1, CIRCUIT 1. CONTROLLED VIA FROM SWITCH A.
- 1 LP1-1 A CEILING, PENDANT, OR RECESSED LIGHTING FIXTURE. REFER TO NUMBER OR LETTER IN FIXTURE SCHEDULE. POWERED FROM LIGHTING PANEL LP1, CIRCUIT 1. CONTROLLED VIA FROM SWITCH A.
- LP1-1 RECEPTACLE POWERED FROM LIGHTING PANEL LP1, CIRCUIT 1.
- LP1-1 A / 1 LINEAR LIGHTING FIXTURE. REFER TO NUMBER OR LETTER IN FIXTURE SCHEDULE. POWERED FROM LIGHTING PANEL LP1, CIRCUIT 1. CONTROLLED VIA SWITCH A.
- LP1-1 EX EXIT LIGHTING FIXTURE. REFER TO FIXTURE NUMBER OR LETTERS IN FIXTURE SCHEDULE. POWERED FROM LIGHTING PANEL 1, CIRCUIT 1.
- LP1-1 EM EMERGENCY LIGHTING FIXTURE. REFER TO FIXTURE NUMBER OR LETTERS IN FIXTURE SCHEDULE. POWERED FROM LIGHTING PANEL 1, CIRCUIT 1.
- E UNDERGROUND CONCRETE ENCASED ELECTRICAL DUCT BANK
- UNDERGROUND CONCRETE ENCASED ELECTRICAL BANK ROUTED BENEATH SLAB-ON-GRADE
- EE DIRECT BURIED CONDUIT
- GROUND CONDUCTOR
- UE UE UNDERGROUND ELECTRIC
- OH OH OVERHEAD CIRCUIT

COMMUNICATION SYMBOLS

- HORN SPEAKER
- DUAL HORN SPEAKER
- WALL MOUNTED CONE SPEAKER
- SK CEILING MOUNTED CONE SPEAKER

PROTECTION/RELAY DEVICE NUMBERS

25 - SYNCHRONIZING OR SYNCHRONISM-CHECK DEVICE
27 - UNDERVOLTAGE RELAY
32 - DIRECTIONAL POWER RELAY
37 - UNDERCURRENT OR UNDERPOWER RELAY
46 - REV. PHASE OR PHASE-BAL. CURRENT RELAY
47 - PHASE SEQ. OR PHASE BAL. VOLTAGE RELAY
49 - MACHINE OR TRANSFORMER THERMAL RELAY
50 - INSTANTANEOUS OVERCURRENT
51 - AC TIME OVERCURRENT RELAY
52 - AC CIRCUIT BREAKER
59 - OVERVOLTAGE RELAY
63 - PRESSURE SWITCH
64 - GROUND DETECTOR RELAY
67 - AC DIRECTIONAL OVERCURRENT RELAY
71 - LIQUID OR GAS LEVEL RELAY
81 - FREQUENCY RELAY
83 - AUTOMATIC SELECTIVE CONTROL OR TRANSFER RELAY
86 - LOCKOUT RELAY
87 - DIFFERENTIAL PROTECTIVE RELAY

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DEEP INJECTION WELL IW-2

PRELIMINARY - NOT FOR CONSTRUCTION

REVISIONS AND RECORD OF ISSUE

DESIGNED:	DM
DETAILED:	DMF
CHECKED:	SJA
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DATE:	SEPTEMBER 2023
PROJECT NO.:	414567

ELECTRICAL

LEGENDS

E-001 OF

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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ELECTRICAL ABBREVIATIONS & NOTES

ELECTRICAL GENERAL NOTES

1. SOLID LINES (————————) INDICATE NEW WORK OR EQUIPMENT.
2. SCREENED LINES (————————) INDICATE EXISTING WORK OR EQUIPMENT.
3. DASHED LINES (– – – – – – – –) INDICATE FUTURE WORK OR EQUIPMENT.
4. REFER TO INDIVIDUAL DISCIPLINE CONTRACT DRAWINGS FOR ADDITIONAL ABBREVIATIONS, DETAILS, AND GENERAL DESIGN NOTES.
5. LEGEND SHEETS ARE GENERAL. SOME SYMBOLS AND ABBREVIATIONS MAY NOT BE UTILIZED ON THIS SPECIFIC PROJECT.
6. INFORMATION RELATED TO CIRCUIT IDENTIFICATION, WIRE & CONDUIT SIZES, AND ROUTING, IS ON THE FOLLOWING DRAWING TYPES.
   - A. ONE-LINE DIAGRAMS SHOW CIRCUIT IDENTIFICATION, WIRE QUANTITY AND SIZES, AND CONDUIT SIZE WITHIN STRUCTURES. ONE-LINE DIAGRAMS ALSO INDICATE ORIGIN AND DESTINATION OF CIRCUITS, AND IDENTIFY CIRCUITS ROUTED UNDERGROUND.
   - B. FOR CIRCUITS WITHOUT UNDERGROUND PORTIONS, BUILDING FLOOR PLANS SHOW LOCATION OF EQUIPMENT FOR DETERMINING CIRCUIT LENGTH WITHIN THE STRUCTURE. FOR CIRCUITS WITH UNDERGROUND PORTIONS, ANTICIPATED PENETRATION OF UNDERGROUND CONDUITS ARE SHOWN ON STRUCTURE PLANS FOR DETERMINING THE LENGTH OF THE IN-STRUCTURE PORTIONS OF CIRCUITS. BUILDING FLOOR PLANS MAY ALSO SHOW HOME RUNS FOR LIGHTING, RECEPTACLE, AND OTHER MISCELLANEOUS EQUIPMENT CIRCUITS.
   - C. SITE PLANS INDICATE THE GENERAL ROUTING OF UNDERGROUND CONDUITS AND DUCT BANKS. CIRCUITS ROUTED IN UNDERGROUND CONDUITS OR DUCT BANKS ARE INDICATED IN DUCT BANK SECTIONS REFERENCED ON THE SITE PLAN.
   - D. DUCT BANK SECTIONS AND SCHEDULES IDENTIFY CONDUIT SIZE, CONDUIT MATERIAL, ARRANGEMENT OF THE UNDERGROUND CONDUITS, AND CIRCUITS ROUTED IN EACH UNDERGROUND CONDUIT.

AREA DESIGNATIONS

THE SPECIAL AREA DESIGNATION BOXES, AS DEFINED BELOW, ARE LOCATED ON THE PLAN DRAWINGS TO DEFINE ELECTRICAL INSTALLATION REQUIREMENTS. DESIGNATION BOXES ARE LOCATED WITHIN ROOM OR BELOW ROOM NUMBER. ALL INDOOR AREAS NOT INDICATED OTHERWISE ARE AREA TYPE 1 AND MINIMUM NEMA TYPE 1 ENCLOSURES.

AREA TYPE 1A	CORROSIVE CHEMICAL FEED AND STORAGE ROOMS. CONDUIT SYSTEM SHALL BE EXPOSED SCHEDULE 80 PVC RIGID NON-METALLIC CONDUIT WITH PVC FITTINGS, BOXES AND ACCESSORIES.
AREA TYPE 4	INDOOR WET LOCATIONS SUCH AS VAULTS, HOSEDOWN AREAS, BASEMENTS, ETC. MINIMUM NEMA TYPE 4 ENCLOSURE FOR EQUIPMENT AND GASKETED FITTINGS IN A CONDUIT SYSTEM.
AREA TYPE 7A	CLASS I, DIVISION 1 AREA AS DEFINED BY NEC. ALL EQUIPMENT AND CONDUIT SYSTEMS SHALL BE RATED FOR USE IN THIS AREA.
AREA TYPE 7B	CLASS I, DIVISION 2, GROUP C AND D (METHANE, GASOLINE) AS DEFINED BY NEC. EQUIPMENT AND CONDUITS SYSTEMS SHALL BE RATED FOR USE IN THIS AREA.
AREA TYPE 12	INDOOR, DRY, DIRTY AREA. REQUIRES MINIMUM NEMA TYPE 12 GASKETED ENCLOSURES FOR ALL EQUIPMENT AND GASKETED FITTINGS IN CONDUIT SYSTEMS.

GENERAL REQUIREMENTS

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ROUTING ALL CONDUITS NOT SHOWN ON THE PLANS. THIS SHALL INCLUDE ALL CONDUITS SHOWN ON THE ONE-LINES AND HOME-RUNS SHOWN ON THE PLAN DRAWINGS. CONDUITS SHALL BE ROUTED AS DEFINED IN THE SPECIFICATION.
2. SPARE WIRES SHALL BE TAPED AND COILED AND LABELED TO INDICATE WHERE OTHER END OF SPARE WIRE IS LOCATED.
3. IF EQUIPMENT SUPPLIED BY MANUFACTURER HAS A LARGER LOAD THAN VALUE SHOWN, THE CABLE CONDUIT AND ELECTRICAL EQUIPMENT SHALL BE ENLARGED, AS REQUIRED, TO ACCOMMODATE THE HIGHER VALUE.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING PROPERLY SIZED STARTER OVERLOADS FOR EQUIPMENT FURNISHED.
5. LIGHTING AND RECEPTACLE CIRCUITS DESIGNATED ON THE FLOOR PLANS ARE NOT SHOWN ON THE ONE-LINES. CONDUCTORS FOR LIGHTING, RECEPTACLES, AND MISCELLANEOUS 120VAC CIRCUITS SHALL BE MINIMUM NO. 12AWG. CONDUIT FOR LIGHTING, RECEPTACLES, AND MISCELLANEOUS 120VAC CIRCUITS SHALL BE MINIMUM 3/4".
6. IN AREAS WHERE THERE ARE OVERHEAD BRIDGE CRANES, HOISTS, ETC. NO CONDUITS SHALL BE RUN OVERHEAD THAT WILL INTERFERE WITH THE OPERATION OF THE EQUIPMENT.

ELECTRICAL ABBREVIATIONS

A

A	AMBER, AMPERE, ALARM
AC	ALTERNATING CURRENT
ACB	AIR CIRCUIT BREAKER
ACR	ACCESS CARD READER
AF	AMPERE FRAME
AFD	ADJUSTABLE FREQUENCY DRIVE
AFRD	ARC-FLASH REDUCTION DEVICE
AM	AMMETER
ANN	ANNUNCIATOR
AR	ALARM RELAY
AS	AMMETER SWITCH, AMPERE SENSOR
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE

B

B	BUS
BC	BATTERY CHARGER
BKR	BREAKER
BR	BRAKE
BT	BEARING TEMPERATURE

C

C	CLOSE, COUNTER, CONTACTOR, CONTROL, CCTV CAMERA
CAP	CAPACITOR
CB	CIRCUIT BREAKER
CB"A"	CIRCUIT BREAKER AUXILIARY CONTACT (OPEN WHEN BREAKER IS OPEN)
CB"B"	CIRCUIT BREAKER AUXILIARY CONTACT (CLOSED WHEN BREAKER IS OPEN)
CD	CONTROL DAMPER
CI	CELL INTERLOCK
CKT	CIRCUIT
CL2	CHLORINE
COS	CABLE OPERATED SWITCH
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CR	CURRENT OF CONTROL RELAY, CARD READER
CS	CONTROL STATION
CT	CYCLE TIMER OR CURRENT TRANSFORMER
CTC	CYCLE TIMER CLUTCH
CTM	CYCLE TIMER MONITOR
2/C	2 CONDUCTOR
4"C	4" CONDUIT

D

DC	DIRECT CURRENT, DOOR CONTACT
DI	DOOR INTERLOCK
DM	DAMPER MOTOR, DEMAND METER, DIMMER SWITCH
DPDT	DOUBLE POLE DOUBLE THROW
DPST	DOUBLE POLE SINGLE THROW
DPR	DIFFERENTIAL PRESSURE REGULATOR
DPS	DIFFERENTIAL PRESSURE SWITCH
DS	DISCONNECT SWITCH, DOOR SWITCH, DESKTOP STATION
DVLS	DISCHARGE VALVE LIMIT SWITCH

E

E	ELECTRIC OPERATOR FOR CONTROL DAMPER OR VALVE
EC	EMPTY CONDUIT
EDS	ELECTRICAL DOOR STRIKE
EL	ELEVATION, EMERGENCY LIGHT
EMH	ELECTRICAL MANHOLE
ER	ELECTRODE RELAY
ES	END SWITCH, REQUEST TO EXIT SENSOR
E-STOP	EMERGENCY STOP
ETM	ELAPSED TIME METER
EX	EXISTING
EXP	EXPLOSION PROOF

F

F	FORWARD, FIELD
FO	FIBER OPTIC
FPR	FEEDER PROTECTION RELAY
FS	FLOW SWITCH

G

G	GREEN, GROUND, GENERATOR, GROUND FAULT
GD	GROUND DETECTOR
GEN	GENERATOR
GFCI,GFI	GROUND FAULT CURRENT INTERRUPTOR, GROUND FAULT INTERRUPTOR
GLS	GEARED LIMIT SWITCH
GPR	GENERATOR PROTECTION RELAY
GND	GROUND
#8G	#8 GROUND WIRE

H

H	HIGH, HUMIDISTAT
HH	HANDHOLE
HMT	HIGH MOTOR TEMPERATURE
HOA	HAND-OFF-AUTO
HOR	HAND-OFF-REMOTE
HP	HORSEPOWER
HS	HAND STATION
HWCO	HIGH WATER CUTOFF
HZ	HERTZ (CYCLE)

I

I/O	INPUT/OUTPUT
I	INSTANTANEOUS
IJB	INTERCOM JUNCTION BOX

J

J,JB	JUNCTION BOX

K

K	KEY INTERLOCK
KAIC	THOUSAND AMPERES INTERRUPTING CURRENT
KCMIL	THOUSAND CIRCULAR MIL
KO	KEY OPERATED
KV	KILOVOLT
KVA	KILOVOLT AMPERE
KVAR	KILOVAR
KW	KILOWATT
KWH	KILOWATT HOUR

L

L	LOW, LEVEL, LONG-TIME
LA	LIGHTNING ARRESTER
LAN	LOCAL AREA NETWORK
LC	LIGHTING CONTRACTOR
LCE	LIGHTING CONTACTOR ENCLOSURE, LIGHTING CONTROL ENCLOSURE
LCP	LOCAL CONTROL PANEL
LCS	LOCAL CONTROL STATION
LOA	LOCAL-OFF-AUTO
LOR	LOCAL-OFF-REMOTE
LOS	LOCK OUT STOP
LP	LIGHTING PANEL
LS	LIMIT OR LEVEL SWITCH
LTG	LIGHTING
LWCO	LOW WATER CUTOFF

M

M	MAGNETIC MOTOR STARTER
MA	MILLIAMPERE
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCLU	MOTOR CONTROL LINEUP
MD	MOISTURE DETECTOR, MOTION DETECTOR
MDL	MAGNETIC DOOR LOCK
MFR	MANUFACTURER
MH	MANHOLE, MOUNTING HEIGHT
MOV	MOTOR OPERATED VALVE
MPR	MOTOR PROTECTION RELAY
MS	MANUAL MOTOR STARTER
MSH	MOTOR SPACE HEATER
MTS	MANUAL TRANSFER SWITCH
MV	MILLIVOLT, MEDIUM VOLTAGE
MVA	MEGAVOLT AMPERE

N

N	NEUTRAL
NGR	NEUTRAL GROUNDING RESISTOR
NGT	NEUTRAL GROUNDING TRANSFORMER
NC	NORMALLY CLOSED
NO	NORMALLY OPEN, NUMBER

O

O	OPEN
OL	OVERLOAD
OOA	ON-OFF-AUTO
OOR	ON-OFF-REMOTE
OS	OCCUPANCY SENSOR
O/U	OVER/UNDER

P

P	PRIMARY, POWER, POLE
PCS	PLANT CONTROL SYSTEM
PB	PUSH BUTTON, PULL BOX
PE	PHOTOELECTRIC SENSOR, PHOTOCELL
PF	POWER FACTOR
PFCC	POWER FACTOR CORRECTION CAPACITOR
PH	PHASE
PL	PILOT LIGHT
PLC	PROGRAMMABLE LOGIC CONTROLLER
PP	POWER PANEL
PR	PAIR
PRS	PROXIMITY SWITCH
PS	PRESSURE SWITCH
PT	POTENTIAL TRANSFORMER, PROGRAM TIMER

Q

NOT USED

R

R	RED, RAISE, RELAY, REVERSE
RECP	RECEPTACLE
RES	RESISTOR
RH	REMOTE HANDSET
RT	REPEATING TIMER
RTD	RESISTANCE TEMPERATURE DETECTOR
RTU	REMOTE TERMINAL UNIT
RVSS	REDUCED VOLTAGE SOLID STATE STARTER

S

S	SHORT-TIME, SHIELDED, STARTER
SA	SURGE ARRESTER, SPEAKER AMPLIFIER
SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
SF6	SULFUR HEXAFLOURIDE
SH	SPACE HEATER
SN	SOLID NEUTRAL
SO	SOLENOID OILER
SP	SINGLE POLE
SPD	SURGE PROTECTION DEVICE
SPDT	SINGLE POLE DOUBLE THROW
SPST	SINGLE POLE SINGLE THROW
SS	SELECTOR SWITCH, START/STOP, STAINLESS STEEL
SSM	SOLID-STATE METERING
SSS	SOLID STATE STARTER
SST	SOLID-STATE TRIP
SUPV	SUPERVISORY CONTROL
SV	SOLENOID VALVE
SWB,SWBD	SWITCHBOARD
SWG,SWGR	SWITCHGEAR

T

T	THERMOSTAT, TIMER, TOTALIZER, TRANSFORMER
TACH	TACHOMETER
TB	TERMINAL BLOCK
TC	TIMER CLUTCH
TD	TIME DELAY RELAY
TEMP	TEMPERATURE
TM	TIMER MOTOR
TQ	TORQUE
TR	TIMER RELAY, TRIAD
TS	TEMPERATURE SWITCH
TTB	TELEPHONE TERMINAL BOARD

U

UG	UNDERGROUND
UPS	UNINTERRUPTIBLE POWER SUPPLY

V

V	VOLTS, VOLTAGE RESTRAINED
VA	VOLT AMPERE
VAR	VARMETER
VFD	VARIABLE FREQUENCY DRIVE
VI	VACUUM INTERRUPTER
VLS	VALVE LIMIT SWITCH
VM	VOLTMETER
VPI	VALVE POSITION INDICATOR
VS	VOLTMETER SWITCH

W

W	WHITE, WATTS
WH	WATTHOUR METER
WM	WATT METER
WP	WEATHERPROOF
WPI	WEATHERPROOF IN-USE
WS	WALL STATION

X

X	AUXILIARY RELAY
XFMR	TRANSFORMER
XP	EXPLOSION PROOF

Y

Y	YELLOW

Z

Z	AUXILIARY RELAY, IMPEDANCE
ZS	POSITION SWITCH
ZSS	ZERO SPEED SWITCH

1-1PR#16S	ONE, SINGLE PAIR, TWISTED SHIELDED #16 CABLE
3-7/C#14	THREE, SINGLE, SEVEN CONDUCTOR #14 MULTICONDUCTOR CONTROL CABLES

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LEE COUNTY UTILITIES

THREE OAKS WATER RECLAMATION FACILITY DEEP INJECTION WELL IW-2

PRELIMINARY - NOT FOR CONSTRUCTION

REVISIONS AND RECORD OF ISSUE

DESIGNED:	DM
DETAILED:	DMF
CHECKED:	SJA
APPROVED:	DVM
DATE:	SEPTEMBER 2023
PROJECT NO.:	414567

ELECTRICAL

ABBREVIATIONS AND NOTES

E-002

OF

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

PLOTTED: 8/29/2023 7:08:52 AM
FILE: C:\PW_WORKING\BVW_AMERICAS_2\D1749728\E-002.DWG
FDT1000
DT1000

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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THREE OAKS WATER RECLAMATION FACILITY
DEEP INJECTION WELL IW-2

PRELIMINARY - NOT FOR CONSTRUCTION

REVISIONS AND RECORD OF ISSUE	
DESIGNED:	DM
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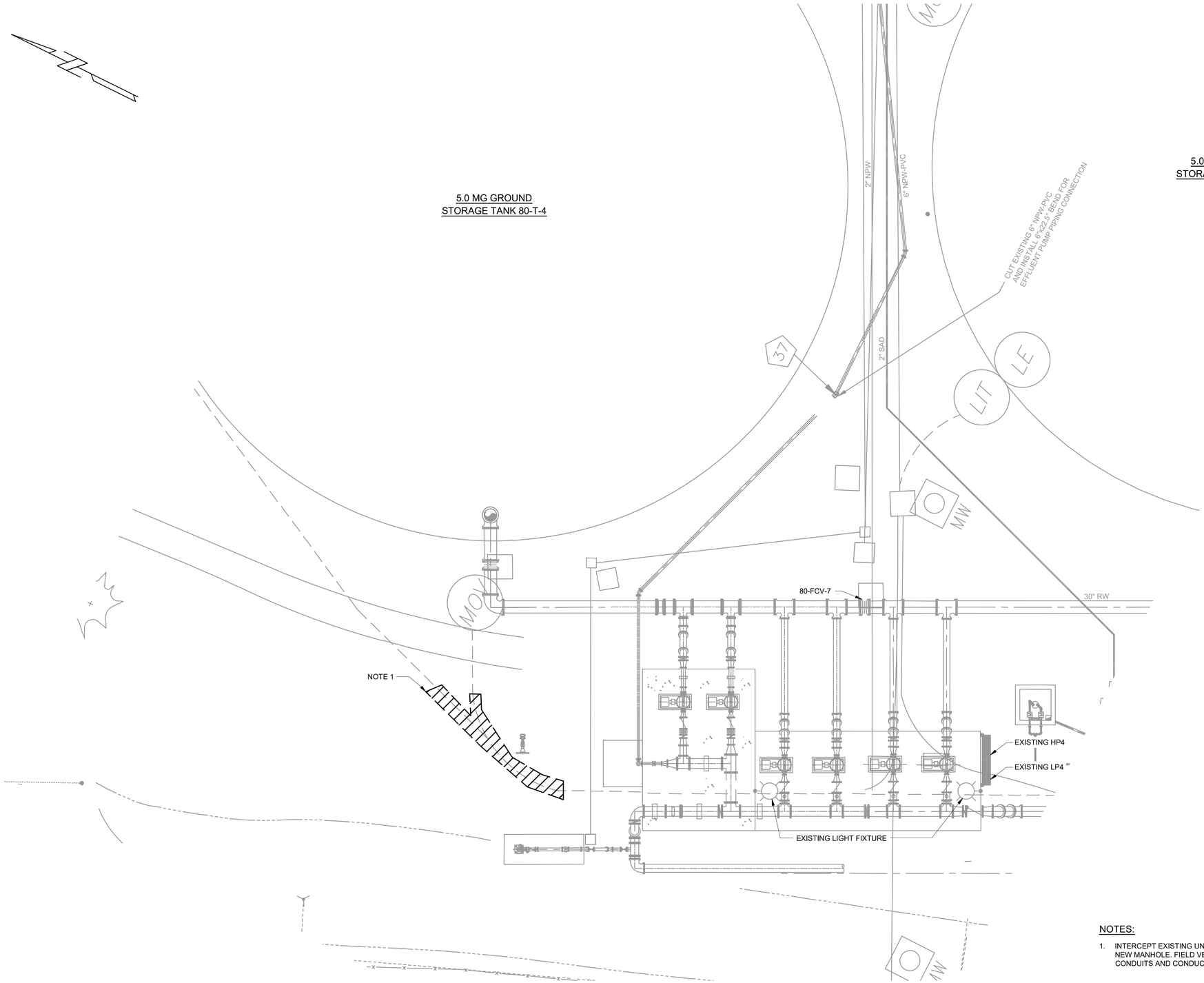
APPROVED:	DVM
DATE:	SEPTEMBER 2023
PROJECT NO.:	414567

ELECTRICAL

ELECTRICAL SITE PLAN

E-101 OF

PLOTTED: 8/30/2023 9:40:41 AM
FILE: C:\PW_WORKING\BVW_AMERICAS_2\D1749728\E-101.DWG
FDT1000
D1000



ELECTRICAL PARTIAL PLAN DEMOLITION
3/32" = 1'-0"

NOTES:

1. INTERCEPT EXISTING UNDERGROUND CONDUITS AND STUB UP INTO NEW MANHOLE. FIELD VERIFY EXACT LOCATION AND QUANTITY OF CONDUITS AND CONDUCTORS

12' 8' 4' 0 10' 20'
3/32"=1'-0"

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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LEE COUNTY
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THREE OAKS WATER
RECLAMATION FACILITY
DEEP INJECTION
WELL IW-2

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REVISIONS AND RECORD OF ISSUE

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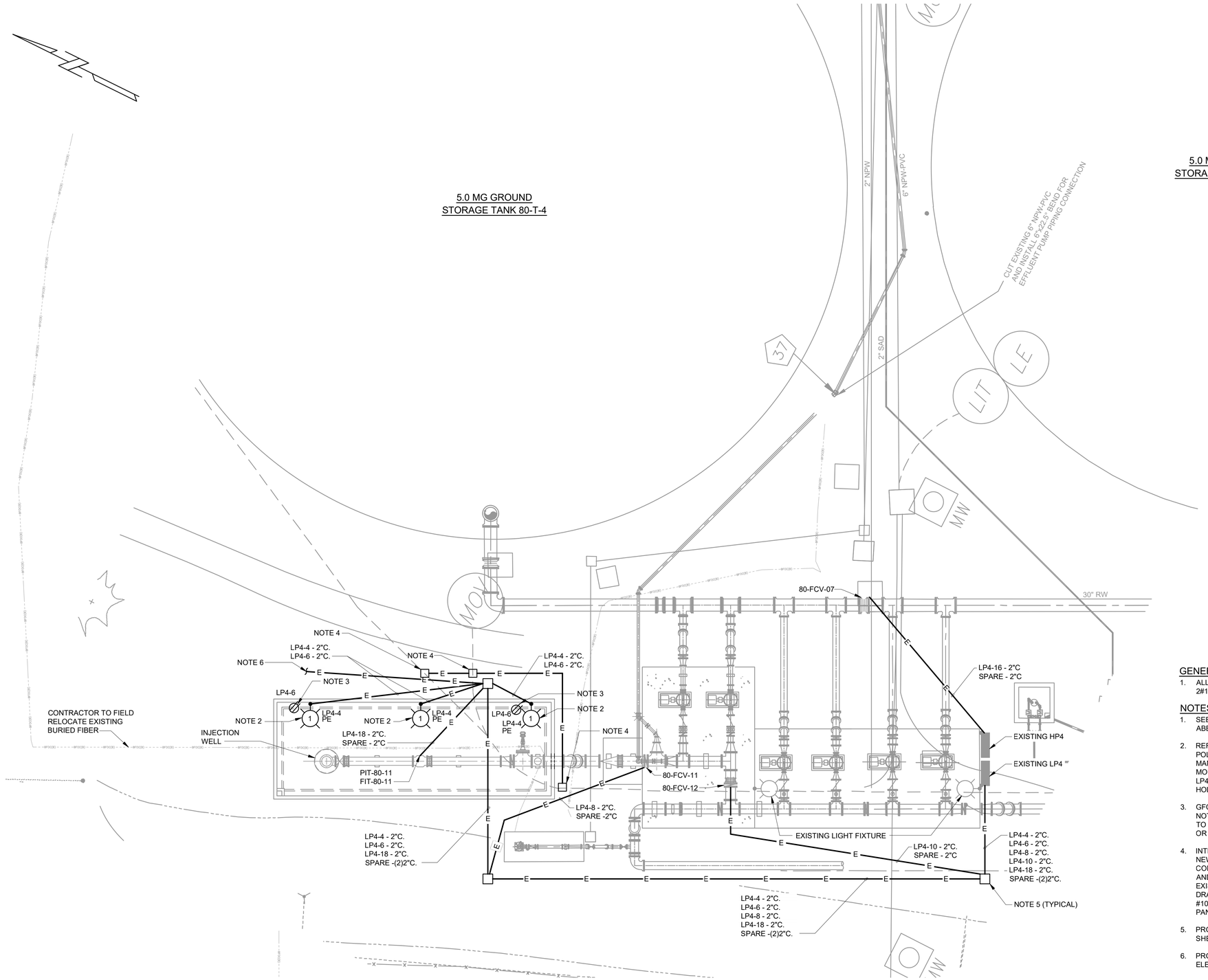
ELECTRICAL

PARTIAL SITE PLAN
DEMOLITION

E-102 OF

PLOTTED: 8/30/2023 9:33:35 AM
FILE: C:\PW_WORKINGBVW_AMERICAS_2\D1749728\E-102.DWG
FDT1000
FDT1002



ELECTRICAL PARTIAL PLAN
3/32" = 1'-0"

GENERAL NOTES

1. ALL NEW ELECTRICAL CIRCUITS SHOWN ON THIS SHEET SHALL BE 2#12G,1#12G., UNLESS NOTES OTHERWISE

NOTES:

1. SEE DRAWING E-001 AND E-002 FOR ELECTRICAL LEGEND & ABBREVIATIONS AND GENERAL REQUIREMENTS.
2. REFER TO THE LIGHTING FIXTURE SCHEDULE ON SHEET E-501. LIGHT POLES SHALL BE PROVIDED BY THE SAME LIGHTING FIXTURE MANUFACTURER AND SHALL HAVE A HANDHOLE FOR A RECEPTACLE MOUNTED AT 18" AFF. PROVIDE AND INSTALL DEDICATED WIRES FROM LP4 TO THIS LIGHT FIXTURE. NO SPLICES ARE ALLOWED IN ANY HAND HOLE OR JUNCTION BOX.
3. GFCI RECEPTACLE TO BE INSTALLED ON LIGHTING POLE. REFER TO NOTE #2 ABOVE. PROVIDE AND INSTALL DEDICATED WIRES FROM LP4 TO THIS RECEPTACLE. NO SPLICES ARE ALLOWED IN ANY HAND HOLE OR JUNCTION BOX
4. INTERCEPT EXISTING UNDERGROUND CONDUITS AND STUB UP INTO NEW HANDHOLE. FIELD VERIFY EXACT LOCATION AND QUANTITY OF CONDUITS AND CONDUCTORS. SPLICE AND PROVIDE NEW CONDUITS AND CONDUCTORS BETWEEN HANDHOLES AS REQUIRED TO MATCH EXISTING CONDITIONS. IN ACCORDANCE WITH THE EXISTING RECORD DRAWINGS POWER FOR GST #4 LEVEL TRANSMITTER IS FROM CIRCUIT #10 ON PANEL LP4 AND POWER FOR GST #4 EFFLUENT MOV IS FROM PANEL HP4 CIRCUIT 14,16,18.
5. PROVIDE HANDHOLE PER TYPICAL ELECTRICAL HANDHOLE DETAIL ON SHEET E-601.
6. PROVIDE AND INSTALL (2) 2" CONDUITS TO PLC-2 AT THE EXISTING ELECTRICAL BUILDING.

12' 8' 4' 0 10' 20'
3/32"=1'-0"

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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LEE COUNTY UTILITIES

THREE OAKS WATER RECLAMATION FACILITY
DEEP INJECTION WELL IW-2

PRELIMINARY - NOT FOR CONSTRUCTION

REVISIONS AND RECORD OF ISSUE

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ELECTRICAL

PARTIAL SITE PLAN

E-103

OF

PLOTTED: 8/30/2023 9:34:56 AM
FILE: C:\PW_WORKING\BVW_AMERICAS_2\D1749728\E-103.DWG
FDT1000
DT1000

EXISTING PANELBOARD: LP4				BUS: COPPER				MAINS: 3P-100A MAIN BREAKER				
PHASE			SERVICE: 120/208V, 3PH, 4W, S/N	RATING: 100A				LOCATION: INJECTION WELL / EFFLUENT	PHASE		
"A"	"B"	"C"	MOUNTING: SURFACE					PUMP STATION	"A"	"B"	"C"
V.A.	V.A.	V.A.	LOAD	P	BKR	CKT #	BKR	P LOAD	V.A.	V.A.	V.A.
			(E) MONITORING WELL LEVEL	1	20	1 2	20	1 (E) DEEP INJECTION WELL			
			(E) INJ/MONIT POLE RECEPT	1	20	3 4	20	1 (N) INJECTION WELL N POLE LTG		237	
			(E) SPARE	1	20	5 6	20	1 (N) INJECTION WELL N POLE RCPT			540
			(E) INJECTION WELL AIR COMPRESSOR	1	20	7 8	20	1 (N) MOV 80-FCV-11	372		
			(E) GST #3 LEVEL TRANSMITTER	1	20	9 10	20	1 (N) MOV 80-FCV-12		372	
			(E) REUSE DISTRIBUTION FIT	1	20	11 12	20	1 (E) GST #4 LEVEL TRANSMITTER			
			(E) INJECTION WELL N POLE RECEPT	1	20	13 14	20	1 (E) INJECTION WELL S POLE RCPT			
			(E) SPARE	1	20	15 16	20	1 (N) MOV 80-FCV-7		360	
			(E) LIGHTING CONTROL	1	20	17 18	20	1 (N) FIT-80-11			100
			(E) SPARE	1	20	19 20	20	1 (E) GST #2 LEVEL TRANSMITTER			
			(E) SPARE	1	20	21 22	20	1 (E) SPARE			
			(E) SPARE	1	20	23 24	20	1 (E) SPARE			
			(E) MAIN BREAKER	3	100	25 26	20	1 (E) SPACE			
			-	-	-	27 28	20	1 (E) SPACE			
			-	-	-	29 30	20	1 (E) SPACE			
0			TOTAL "A"			372		TOTAL "A"	372		
	0		TOTAL "B"			969		TOTAL "B"		969	
		0	TOTAL "C"			640		TOTAL "C"			640
			TOTAL (NOTE 1) =			1981					

NOTES:

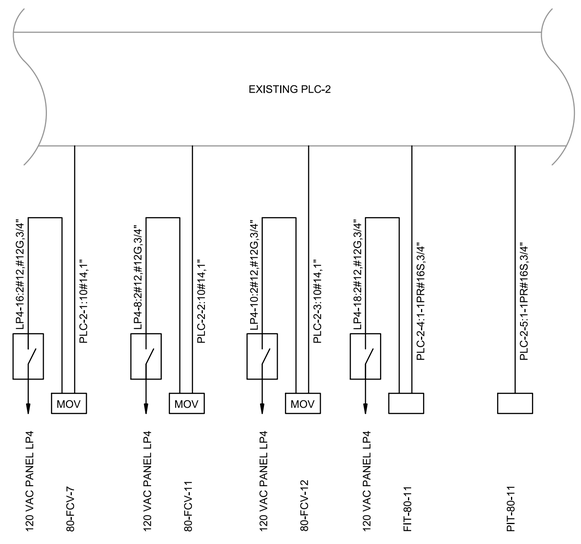
1. TOTAL LOAD IS THE NEW LOAD ADDED TO THIS EXISTING PANEL WITHIN THIS PROJECT SCOPE. EXISTING CONNECTED LOADS ARE NOT KNOWN. PROVIDE A 30-DAY LOAD STUDY PER NEC 220.87 TO ENSURE THE PANEL HAS THE CAPACITY FOR NEWLY ADDED LOADS.

EXISTING LP4 PANEL SCHEDULE

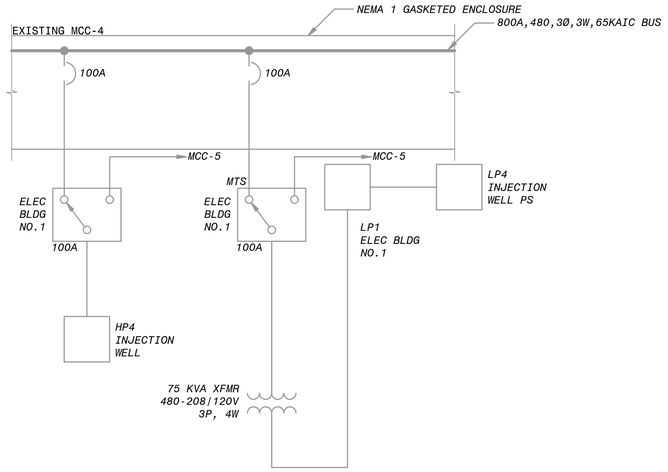
EXISTING PANELBOARD: HP4				BUS: COPPER					MAINS: MLO				
PHASE			SERVICE: 480V, 3PH, 3W, S/N	RATING: 100A					LOCATION: INJECTION WELL / EFFLUENT	PHASE		
"A"	"B"	"C"	MOUNTING: SURFACE						PUMP STATION	"A"	"B"	"C"
V.A.	V.A.	V.A.	LOAD	P	BKR	CKT #	BKR	P	LOAD	V.A.	V.A.	V.A.
						1 2						
			MOV 80-V-4F TANK 4 DISCHARGE	3	20	3 4	20	1	MOV 80-2E TANK 2 INLET			
						5 6						
						7 8						
			MOV 80-V-2F TANK 2 DISCHARGE	3	20	9 10	20	1	MOV 80-V-3F TANK 3 DISCHARGE			
						11 12						
						13 14						
			SPARE	3	20	15 16	20	1	SPARE			
						17 18						
						19 20						
			UPPER ZONE PUMP CP	3	20	21 22	20	1	SPARE			
						23 24						
						25 26	20	1	SPACE			
			LOWER ZONE PUMP CP	3	20	27 28	20	1	SPACE			
						29 30	20	1	SPACE			
0			TOTAL "A"			0			TOTAL "A"	0		
	0		TOTAL "B"			0			TOTAL "B"		0	
		0	TOTAL "C"			0			TOTAL "C"			0
			TOTAL =			0						

EXISTING HP4 PANEL SCHEDULE

LIGHTING FIXTURE SCHEDULE				
FIXTURE	LAMP	MTG HGT	DESCRIPTION	MANUFACTURER
1	LED 79W 3,666 LUMENS	10'-0"	DSX0 LED SERIES, FORWARD OPTICS, LIMITED WAVELENGTH AMBER TYPE III MEDIUM, 120V-277V, SQUARE POLE MOUNTING,HIGH/LOW MOTION/AMBIENT SENSOR ENABLED AT 2FC, NATURAL ALUMINUM, PHOTOCELL-SSL TWIST-LOCK (120-277V)	(FIXTURE) LITHONIA DSX0 LED P2 AMBLW AMCRI T3M MVOLT SPA PIR DNAXD DLL127F 1.5 JU (LIGHT POLE LITHONIA SSA 10-0 4C)

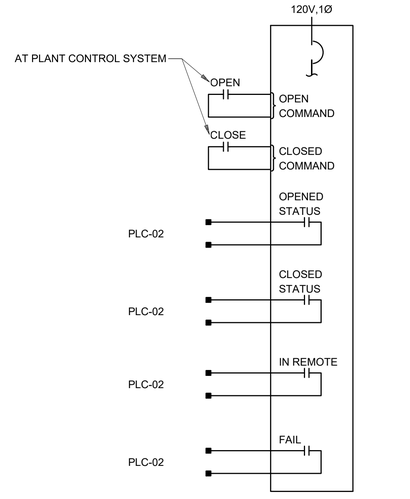


PARTIAL PLC-2 ONE LINE DIAGRAM

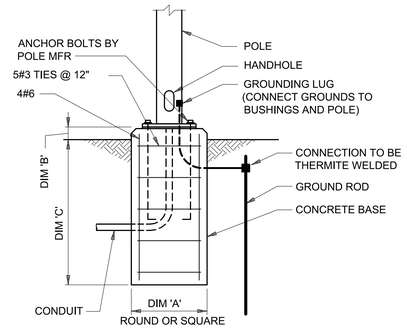


EXISTING-ONE LINE DIAGRAM

ELECTRICAL BUILDING NO.1 (MAIN SERVICE)
FOR REFERENCE ONLY



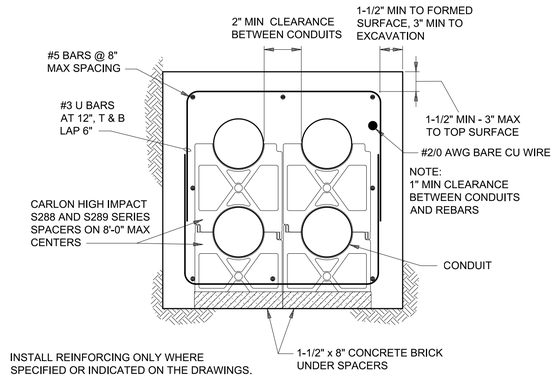
OPEN/CLOSE VALVE ACTUATOR



TYPICAL POLE MOUNTING DETAIL

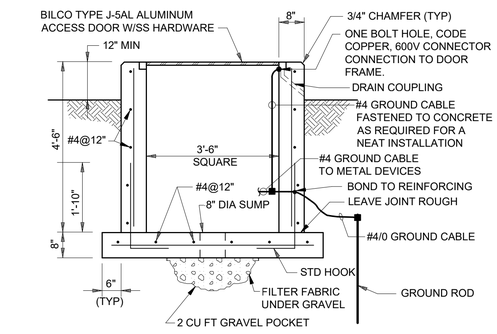
NO SCALE

A	B	C	POLE LENGTH
1'-0"	2"	3'-0"	10' TO 12'
1'-6"	2"	4'-0"	12' TO 20'
2'-0"	2"	5'-0"	20' TO 40'



TYPICAL DUCT BANK SECTION

NO SCALE



TYPICAL ELECTRICAL HANDHOLE DETAIL

NO SCALE NOT SUITABLE FOR ROADWAY LOCATIONS

NOTES:

1. SEE DRAWING E-001 AND E-002 FOR ELECTRICAL LEGEND & ABBREVIATIONS AND GENERAL REQUIREMENTS.
2. FUSE SIZE FOR MOTOR ACTUATORS SHALL BE AS RECOMMENDED BY ACTUATOR MANUFACTURER.

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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LEE COUNTY UTILITIES

THREE OAKS WATER RECLAMATION FACILITY DEEP INJECTION WELL IW-2

PRELIMINARY - NOT FOR CONSTRUCTION

REVISIONS AND RECORD OF ISSUE

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DETAILED:	DMF
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PROJECT NO.:	414567

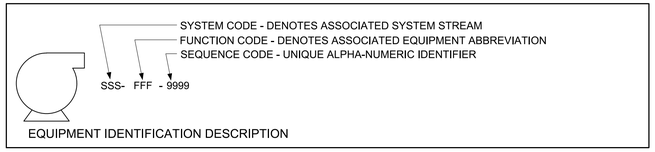
ELECTRICAL

EXISTING SINGLE LINE DIAGRAM, DETAILS AND PANEL SCHEDULE

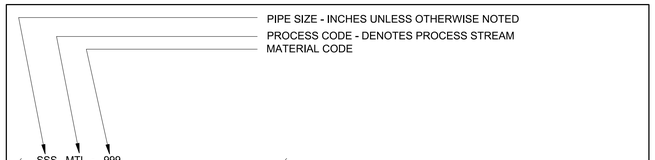
E-601

OF

PLOTTED: 9/1/2023 7:21:12 AM
FILE: C:\PW_WORKINGBWW_AMERICAS_2\D1749728\E-601.DWG
FD11000
FD11003

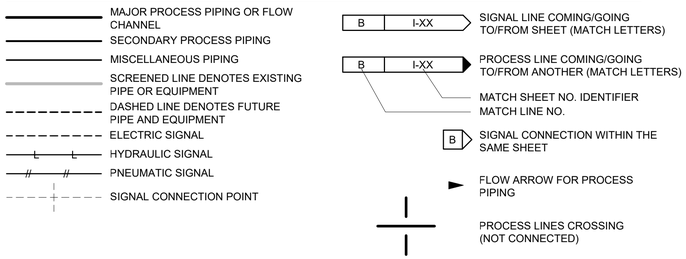


EQUIPMENT IDENTIFICATION DESCRIPTION

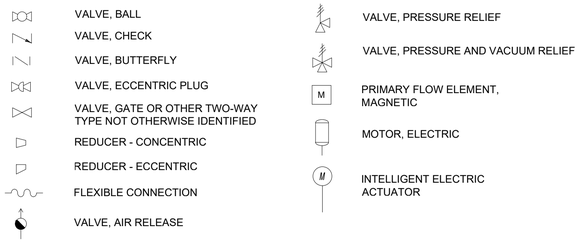


PIPELINE IDENTIFICATION DESCRIPTION

LINE SYMBOLS



SYMBOLS



HAND SWITCH DESIGNATIONS

LOR	LOCAL-OFF-REMOTE
OSC	OPEN-STOP-CLOSE

FUNCTION CODE DESIGNATIONS

FCV	VALVE, FLOW CONTROL
V	VALVE, GENERAL OR UNSPECIFIED
P	PUMP, POSITIVE DISPLACEMENT, ROTARY, DRUM OR BELL MOUNTED

POWER SUPPLY ABBREVIATIONS

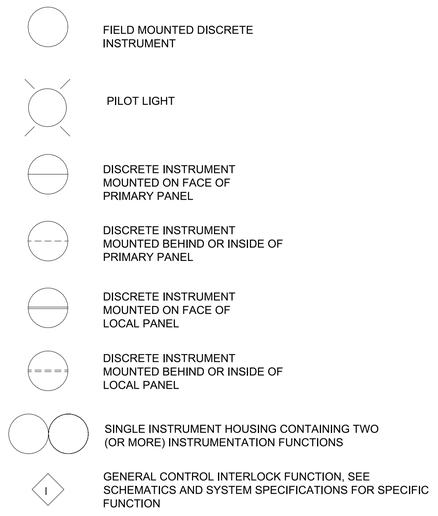
480V	480 VAC
120V	120 VAC

POWER SUPPLY SOURCE LABEL, USED ONLY WHERE NECESSARY TO HELP CLARIFY AN INSTRUMENT OR SYSTEM FUNCTION.

GENERAL NOTES

1. IN GENERAL, THE P&ID SYMBOLS AND DEVICE IDENTIFICATIONS ARE BASED ON INTERNATIONAL SOCIETY OF AUTOMATION, STANDARD PRACTICE ANSI/ISA-5.1 (2009). SOME MODIFICATIONS, ADDITIONS, AND ALTERATIONS HAVE BEEN MADE AS NEEDED TO ACCOMMODATE THE PROJECT REQUIREMENTS.
2. SOME CONTROL AND INTERLOCK REQUIREMENTS WHICH CAN BE MORE CLEARLY ILLUSTRATED ON SCHEMATIC DRAWINGS HAVE BEEN OMITTED FROM THE P&ID DRAWINGS.
3. THIS IS A GENERAL LEGEND SHEET. SOME SYMBOLS AND ABBREVIATIONS MAY NOT BE UTILIZED ON THIS SPECIFIC PROJECT.

GENERAL INSTRUMENT SYMBOLS

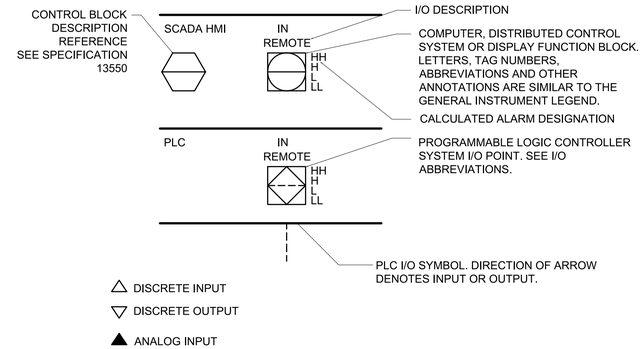


INSTRUMENT AND I/O ABBREVIATIONS
MEANINGS OF IDENTIFICATION LETTERS

LETTER	FIRST LETTER		SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	VARIABLE MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT OR ACTIVE FUNCTION	FUNCTION MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	USER'S CHOICE			CONTROL	CLOSE
D	USER'S CHOICE	DIFFERENTIAL			DEVIATION
E	VOLTAGE (EMF)		SENSOR, PRIMARY ELEMENT		
F	FLOW, FLOW RATE	RATIO (FRACTION)			
G	USER'S CHOICE		GLASS, GAUGE, VIEWING DEVICE		
H	HAND (MANUALLY INITIATED)				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER		SCAN		
K	TIME OR TIME-SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	USER'S CHOICE	MOMENTARY			MIDDLE OR INTERMEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE (RESTRICTION)		OPEN
P	PRESSURE OR VACUUM		POINT (TEST CONNECTION)		
Q	QUANTITY	INTEGRATE OR TOTALIZE	INTEGRATE OR TOTALIZE		
R	RADIATION		RECORD		RUN
S	SPEED OR FREQUENCY	SAFETY		SWITCH	STOP
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	
V	VIBRATION OR MECHANICAL ANALYSIS			VALVE, DAMPER OR LOUVER	
W	WEIGHT OR FORCE		WELL, PROBE		
X	UNCLASSIFIED	X-AXIS	ACCESSORY DEVICES OR UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE, OR PRESENCE	Y-AXIS		AUXILIARY DEVICES	
Z	POSITION, DIMENSION	Z-AXIS		DRIVE, ACTUATOR OR FINAL CTRL ELEMENT	

DIGITAL SYSTEMS INTERFACE SYMBOLS

NOTE: REFER TO DETAILED SYSTEM SPECIFICATIONS FOR FUNCTIONAL DESCRIPTION. ALSO SEE I/O SCHEDULES FOR COMPLETE INPUT AND OUTPUT LISTINGS.



INSTRUMENT AND I/O ABBREVIATION DEFINITIONS

AAH	ANALYZER ALARM HIGH
AAHH	ANALYZER ALARM HIGH-HIGH
AAL	ANALYZER ALARM LOW OR STROBE ALARM LIGHT
AALL	ANALYZER ALARM LOW-LOW
AAX	ALARM HORN
AE	ANALYZER SENSOR
AI	ANALYZER INDICATION
AIT	ANALYZER INDICATING TRANSMITTER
ASH	ANALYZER SWITCH HIGH
ASHH	ANALYZER SWITCH HIGH-HIGH
CB	CONTROL BLOCK REFERENCE (SCADA LEVEL)
FAH	FLOW ALARM HIGH
FAL	FLOW ALARM LOW
FC	FLOW CONTROLLER
FE	PRIMARY FLOW ELEMENT/SENSOR
FG	FLOW SIGHT GAUGE
FI	FLOW DIGITAL INDICATOR (LED OR SCREEN)
FIC	FLOW INDICATING CONTROLLER
FIT	FLOW INDICATING TRANSMITTER
FQG	FLOW TOTALIZING GAUGE
FQIT	FLOW TOTALIZING INDICATING TRANSMITTER
FSH	FLOW SWITCH HIGH
FSL	FLOW SWITCH LOW
FY	FLOW SIGNAL CONVERTER, REPEATER, OR ISOLATOR
HIC	HAND INDICATING CONTROLLER
HMS	MOMENTARY PUSHBUTTON OR SELECTOR SWITCH
HS	HAND SWITCH
IAH	CURRENT ALARM HIGH (MOTOR OVERLOAD)
IE	CURRENT ELEMENT/SENSOR
ISH	CURRENT SWITCH HIGH USED TO DETECT HIGH TORQUE
JA	POWER FAILURE ALARM
JI	POWER INDICATOR
JIT	POWER INDICATING TRANSMITTER
JL	POWER INDICATING LIGHT
KQI	TIME TOTALIZING INDICATOR
LAH	LEVEL ALARM HIGH
LAHH	LEVEL ALARM HIGH-HIGH
LAL	LEVEL ALARM LOW
LALL	LEVEL ALARM LOW-LOW
LE	PRIMARY LEVEL ELEMENT/SENSOR
LG	LEVEL SIGHT GAUGE
LI	LEVEL INDICATOR (LED OR SCREEN)
LIT	LEVEL INDICATING TRANSMITTER
LSH	LEVEL SWITCH HIGH
LSHH	LEVEL SWITCH HIGH-HIGH
LSL	LEVEL SWITCH LOW
LSLL	LEVEL SWITCH LOW LOW
LY	LEVEL SIGNAL CONVERTER, ISOLATOR, OR REPEATER
OAH	TORQUE ALARM HIGH
OAHH	TORQUE ALARM HIGH HIGH
OSH	TORQUE SWITCH HIGH
OSHH	TORQUE SWITCH HIGH-HIGH
PAH	PRESSURE ALARM HIGH
PAHH	PRESSURE ALARM HIGH-HIGH
PAL	PRESSURE ALARM LOW
PALL	PRESSURE ALARM LOW-LOW
PDAH	DIFFERENTIAL PRESSURE ALARM HIGH
PDAHH	DIFFERENTIAL PRESSURE ALARM HIGH-HIGH
PDG	DIFFERENTIAL PRESSURE GAUGE
PDI	DIFFERENTIAL PRESSURE INDICATOR (LED OR SCREEN)
PDIT	DIFFERENTIAL PRESSURE INDICATING TRANSMITTER
PDSH	DIFFERENTIAL PRESSURE SWITCH HIGH
PDSHH	DIFFERENTIAL PRESSURE SWITCH HIGH-HIGH
PDSL	DIFFERENTIAL PRESSURE SWITCH LOW
PDSLL	DIFFERENTIAL PRESSURE SWITCH LOW-LOW
PE	PRESSURE SENSOR
PG	PRESSURE GAUGE
PI	PRESSURE INDICATOR (LED OR SCREEN)
PIT	PRESSURE INDICATING TRANSMITTER
PSH	PRESSURE SWITCH HIGH
PSL	PRESSURE SWITCH LOW
SC	SPEED CONTROL
SI	SPEED INDICATION (LED OR SCREEN)
SIT	SPEED INDICATING TRANSMITTER
SSL	SPEED SWITCH LOW
TAH	TEMPERATURE ALARM HIGH
TAHH	TEMPERATURE ALARM HIGH-HIGH
TAL	TEMPERATURE ALARM LOW
TDI	DIFFERENTIAL TEMPERATURE INDICATOR (LED OR SCREEN)
TDIT	DIFFERENTIAL TEMPERATURE TRANSMITTER
TE	TEMPERATURE SENSOR/RESISTANCE TEMPERATURE DETECTOR
TG	TEMPERATURE GAUGE
TI	TEMPERATURE INDICATOR (LED OR SCREEN)
TIT	TEMPERATURE INDICATING TRANSMITTER
TSH	TEMPERATURE SWITCH HIGH
TSHH	TEMPERATURE SWITCH HIGH HIGH
TSL	TEMPERATURE SWITCH LOW
UA	MULTIVARIABLE/COMMON ALARM/COMMON FAULT
UCR	RUN COMMAND
UCS	STOP COMMAND
VAH	VIBRATION ALARM HIGH
WE	PRIMARY WEIGHT SENSOR/LOAD CELL
WG	WEIGHT GAUGE
WIT	WEIGHT INDICATING TRANSMITTER
YA	GENERAL ALARM EVENT
YI	EVENT INDICATION (LED OR SCREEN)
YIR	RUNNING INDICATION
YIS	STOPPED INDICATION
YL	EVENT INDICATING LIGHT
YLR	RUNNING INDICATING LIGHT
YLS	STOPPED INDICATING LIGHT
ZI	POSITION INDICATOR
ZIC	CLOSED INDICATION
ZIO	OPEN INDICATION
ZIT	POSITION INDICATING TRANSMITTER
ZLC	CLOSED INDICATING LIGHT
ZLO	OPEN INDICATING LIGHT
ZSC	CLOSED POSITION SWITCH
ZSO	OPEN POSITION SWITCH
ZT	POSITION TRANSMITTER
ZC	POSITION COMMAND

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THREE OAKS WATER RECLAMATION FACILITY
DEEP INJECTION WELL IW-2

PRELIMINARY - NOT FOR CONSTRUCTION

REVISIONS AND RECORD OF ISSUE

DESIGNED:	LJB
DETAILED:	DRS
CHECKED:	MJC
APPROVED:	KAP
DATE:	SEPTEMBER 2023
PROJECT NO.:	414567

INSTRUMENTATION & CONTROL

P&ID - LEGEND AND ABBREVIATIONS

I-001 OF

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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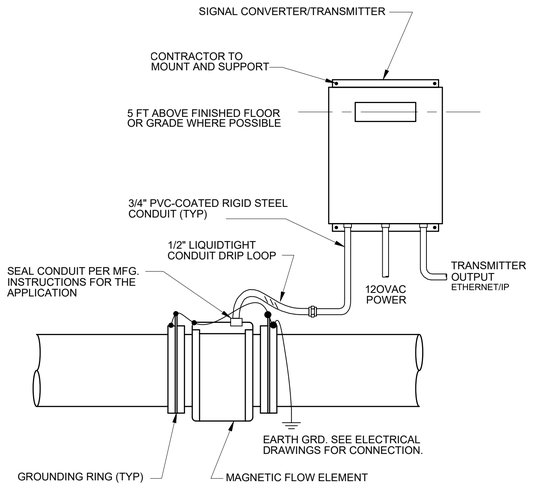
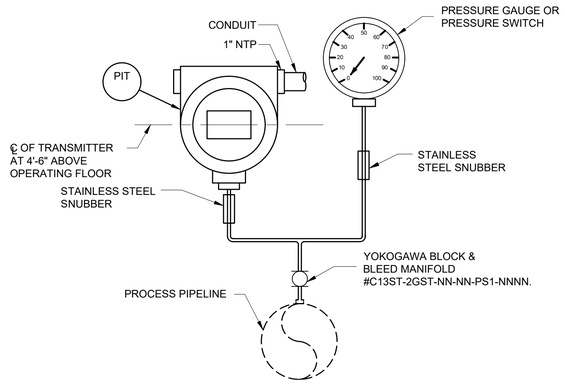


A FLOW METER-MAGNETIC INSTALLATION DETAIL
NO SCALE

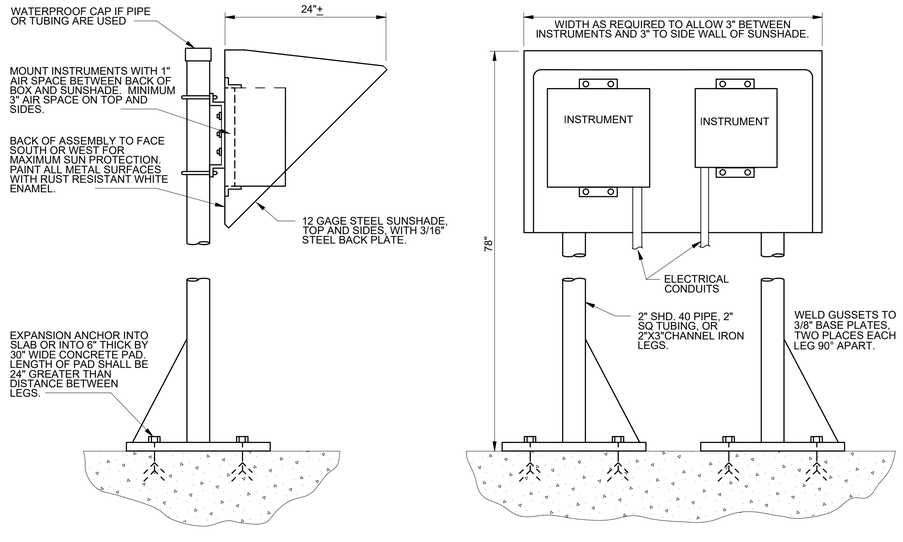
NOTE:
1. PIPE TO BE SUPPORTED ON BOTH SIDES OF METER



B PRESSURE GAUGE & TRANSMITTER INSTALLATION DETAIL
NO SCALE

NOTES:

1. PRESSURE GAUGES AND PRESSURE SWITCH FOR CHEMICAL SERVICE SHALL BE AS SPECIFIED IN 46 30 50.
2. ISOLATION VALVES SHALL BE PER MECHANICAL DRAWINGS.



SIDE VIEW

FRONT VIEW

C OUTDOOR INSTRUMENT MOUNTING DETAIL
NO SCALE

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REVISIONS AND RECORD OF ISSUE

DESIGNED:	LJB
DETAILED:	AWR
CHECKED:	MJC
APPROVED:	KAP
DATE:	SEPTEMBER 2023
PROJECT NO.:	414567

INSTRUMENTATION & CONTROL

INSTRUMENTATION INSTALLATION DETAILS

I-501 OF

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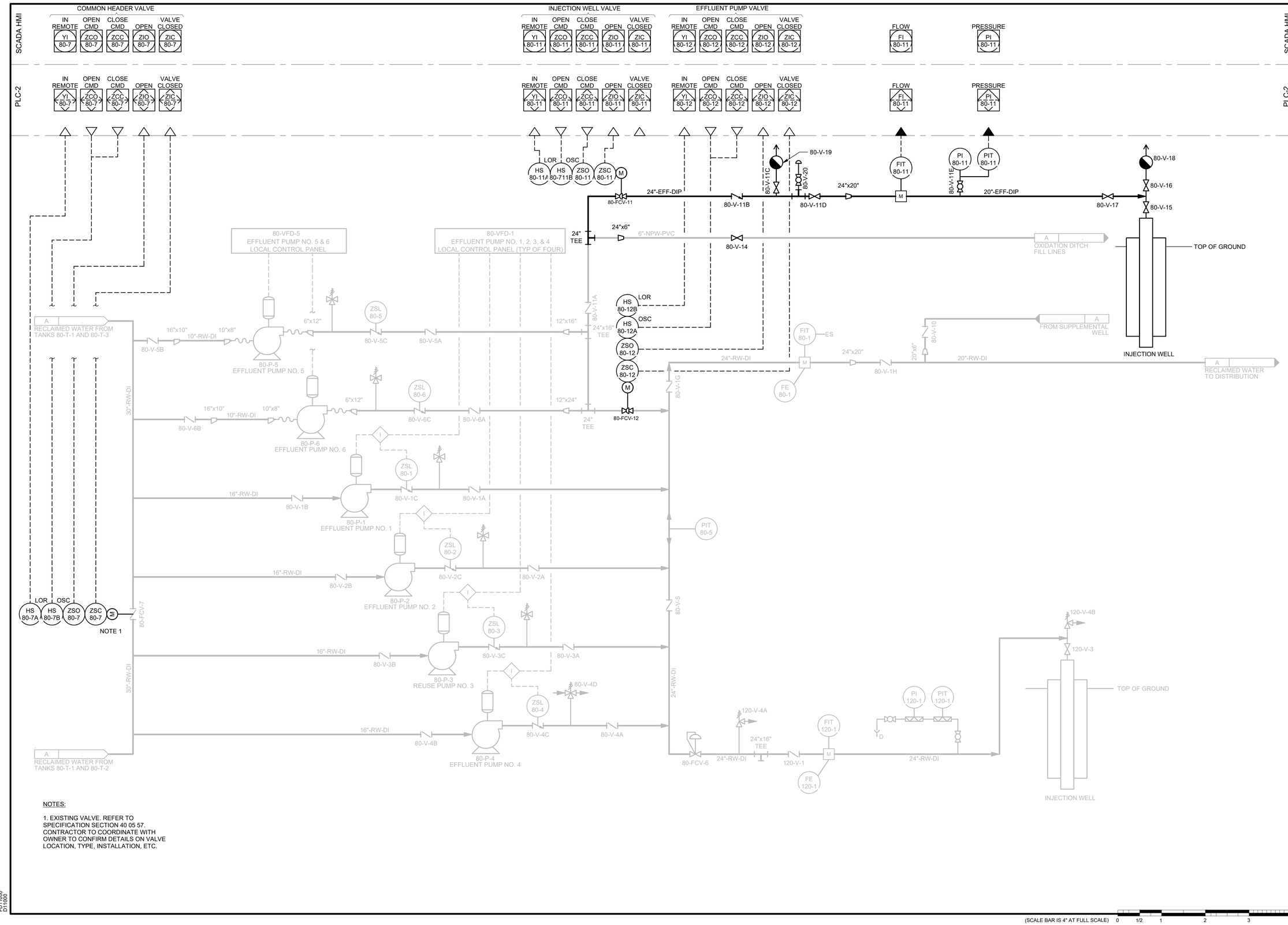
(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4



NOTES:

1. EXISTING VALVE. REFER TO SPECIFICATION SECTION 40 05 57. CONTRACTOR TO COORDINATE WITH OWNER TO CONFIRM DETAILS ON VALVE LOCATION, TYPE, INSTALLATION, ETC.

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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DEEP INJECTION WELL IW-2

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REVISIONS AND RECORD OF ISSUE	
DESIGNED:	LJB
DETAILED:	DRS
CHECKED:	MJC
APPROVED:	KAP
DATE:	SEPTEMBER 2023
PROJECT NO.:	414567

INSTRUMENTATION & CONTROL

P&ID - EFFLUENT PUMPS

I-601

OF