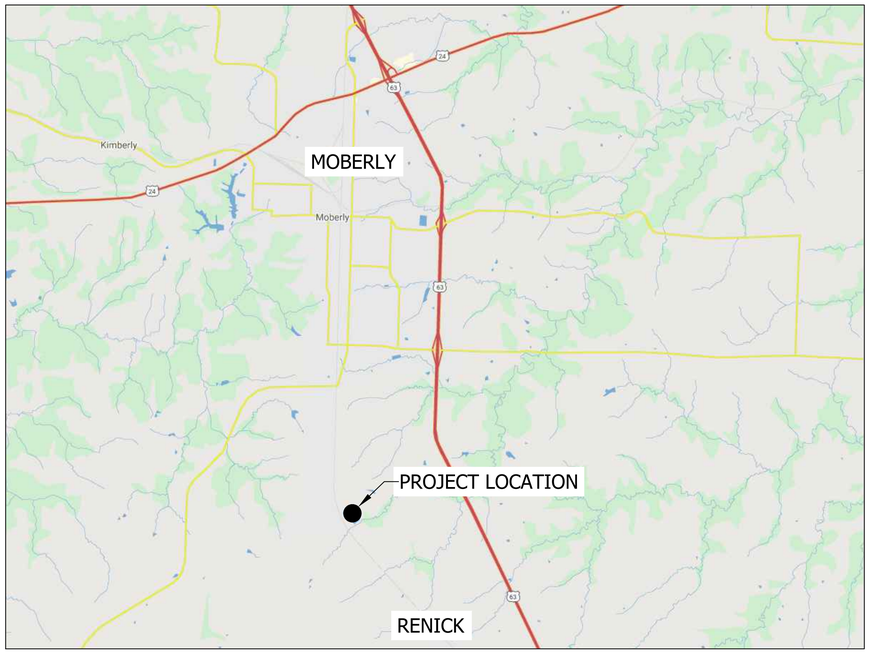
WASTEWATER TREATMENT FACILITY IMPROVEMENTS MOBERLY CORRECTIONAL CENTER MOBERLY, MISSOURI

STATE OF MISSOURI
VALERIE A. HOLLAND
NUMBER PE-2017009358
PROFESSIONAL ENGINEER
05-04-2022



VICINITY MAP
NOT TO SCALE

Bartlett & West

1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109.4000
PHONE 573.634.3181 - FAX 573.634.7904
CERTIFICATE OF AUTHORITY NO. 000167 - ENGINEERING
www.bartlettwest.com

OWNER: STATE OF MISSOURI
MICHAEL L PARSON,
GOVERNOR

DEPARTMENT OF CORRECTIONS

PROJECT MANAGEMENT: OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

DESIGNER: BARTLETT & WEST, INC.
(B&W PROJECT NUMBER: 20465.000)

PROJECT NUMBER: C1806-01

SITE NUMBER: 7005
ASSET NUMBER: 9327005058

SHEET NUMBER:
G-001
1 OF 46 SHEETS

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--	--	TYPICAL INSTALLATION ARRANGMENT

GENERAL NOTES.

1. THE LOCATION AND EXTENT OF EXISTING UNDERGROUND AND OTHER UTILITIES SHOWN ON THESE DRAWINGS MAY NOT BE TOTALLY ACCURATE OR ALL INCLUSIVE. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE, PROTECT, AND RESTORE ALL EXISTING UTILITIES ENCOUNTERED ON THIS PROJECT. CONTRACTOR IS TO BE AWARE THAT SOME UTILITIES DO NOT PARTICIPATE IN THE MISSOURI "ONE CALL" SYSTEM. THESE UTILITIES WILL NEED TO BE CONTACTED INDIVIDUALLY. ALL RESTORATIONS AND REPAIRS TO ANY PUBLIC OR PRIVATE PROPERTY DISTURBED DURING THIS PROJECT SHALL BE MADE AT THE EXPENSE OF THE CONTRACTOR. MISSOURI ONE CALL: 1-800-DIG-RITE
2. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR AND EXPENSES OF ANY DAMAGE TO EXISTING FACILITIES CAUSED BY HIS CONSTRUCTION. ALL STRUCTURES, FENCES, PAVEMENT, DRIVEWAYS, AND OTHER IMPROVEMENTS DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BE RESTORED BY THE CONTRACTOR TO THE CONDITION EQUAL TO OR BETTER THAN PRE-CONSTRUCTION CONDITION. PROOF OF RESTORATION TO A CONDITION EQUAL TO OR BETTER THAN PRE-CONSTRUCTION CONDITION WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. TREES AND LANDSCAPING NOT SPECIFIED TO BE REMOVED SHALL BE PROTECTED AS NECESSARY.
4. THE CONTRACTOR SHALL PROVIDE ACCESS TO THE WORK AT ANYTIME FOR THE OWNER, ENGINEER AND STATE/FEDERAL OFFICIALS.
5. IN ACCORDANCE WITH STATE, AND FEDERAL STATUTES, THE CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS RELATED TO SAFETY AT THIS JOB SITE. THIS RESPONSIBILITY FOR THE SAFETY OF PERSONS AND PROPERTY WILL APPLY CONTINUOUSLY AND WILL NOT BE LIMITED TO NORMAL WORKING HOURS.
6. THE CONTRACTOR IS TO IMPLEMENT ALL NECESSARY EROSION CONTROL METHODS. BEST MANAGEMENT PRACTICES FOR EROSION CONTROL MAY INCLUDE, BUT ARE NOT LIMITED TO, THE INSTALLATION OF DIKES, SILT FENCES, AND THE RE-ESTABLISHMENT OF VEGETATION. THE LOCATIONS AND EXTENTS OF EROSION CONTROL SHOWN ON THE PLANS ARE THE MINIMUM REQUIRED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ADJUST THE LOCATIONS OR ADD TO THE NUMBER OF ROCK DITCH CHECKS AND LENGTH OF SILT FENCE TO MAINTAIN EROSION CONTROL.
7. CONSTRUCTION PROGRESS OBSERVATIONS CONDUCTED BY THE OWNER AND ENGINEER ARE TO REVIEW THE CONTRACTOR'S COMPLIANCE WITH THESE PLANS AND RELATED SPECIFICATIONS. SUCH OBSERVATIONS ARE NOT TO DETERMINE THE ADEQUACY OF THE CONTRACTOR'S SAFETY PROCEDURES.
8. EQUIPMENT, MATERIAL, AND PIPING, EXCEPT AS SPECIFIED TO BE SALVAGED FOR THE OWNER, OR REMOVED BY OTHERS, WITHIN THE LIMITS OF THE DEMOLITION, EXCAVATIONS, AND BACKFILLS, WILL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE PROJECT SITE. THE SALVAGE VALUE OF THIS EQUIPMENT, MATERIALS, AND PIPING SHALL BE REFLECTED IN THE CONTRACT PRICE.
9. BACKFILLING OF EXCAVATED AREAS SHALL BE PERFORMED DURING THE SAME DAY THE EXCAVATION TOOK PLACE, UNLESS PRIOR APPROVAL TO DELAY BACKFILLING IS PROVIDED BY THE DESIGNER OF RECORD. IF EXCAVATIONS ARE NOT BACKFILLED, THE EXCAVATION SHALL BE COVERED AND CORDONED OFF AND PROPER SIGNAGE PLACED TO PROTECT THE OWNER'S PERSONNEL.
10. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION AND ENSURE PROPER 18" VERTICAL AND 10', HORIZONTAL SEPARATION BETWEEN WATER LINES AND NON-POTABLE LINES.
11. NO BYPASSING OF WASTEWATER IS ALLOWED. THE CONTRACTOR SHALL INCLUDE TEMPORARY PUMPING, IF NECESSARY, IN THE COST OF THE GRAVITY SEWER. NO OVERNIGHT PUMPING WILL BE ALLOWED UNLESS SUPERVISED FULL TIME BY THE CONTRACTOR. NO EXTRA PAYMENT FOR PUMPING WASTEWATER WILL BE APPROVED.
12. CONTRACTOR SHALL MAINTAIN A MINIMUM BURY DEPTH OF 42" TO THE TOP OF PIPE ON ALL PIPING, UNLESS OTHERWISE NOTED.

ALL WASTEWATER DESIGN BASED ON THE "WASTEWATER GUIDELINES AND STANDARDS DOCUMENT" DISTRIBUTED BY THE MISSOURI DEPARTMENT OF NATURAL RESOURCES AND DATED FEBRUARY 2019.

TOPOGRAPHIC SYMBOL LEGEND

- BORE HOLE or DRILL HOLE
- LANDSCAPE BOULDER
- WELL
- FLAG POLE
- POST
- TWO POLE SIGN
- ONE POLE SIGN
- PARKING METER
- STOP SIGN
- UTILITY POLE
- GUY POLE
- GUY ANCHOR
- TELEPHONE PEDESTAL
- TELEPHONE MANHOLE
- ELECTRIC MANHOLE
- TRANSFORMER/ELECTRIC PAD
- AIR CONDITIONER
- STORM MANHOLE
- AREA INLET
- OHE — OVERHEAD ELECTRIC
- UGE — UNDERGROUND ELECTRIC
- UGT — UNDERGROUND TELEPHONE
- G — GAS LINE
- SAN — SANITARY SEWER LINE
- W — WATER LINE
- ROOF DRAIN
- SANITARY MANHOLE
- CLEANOUT
- WATER SPRINKLER
- WATER MANHOLE
- WATER METER
- WATER VALVE
- FIRE HYDRANT
- LIGHT
- MANHOLE COVER
- MISCELLANEOUS TOPO ITEM
- SHRUB
- DECIDUOUS TREE
- EVERGREEN SHRUB
- EVERGREEN TREE

SURVEY MONUMENTATION

- BM — BENCHMARK
- TBM — TEMPORARY BENCHMARK
- R/W MARKER
- FOUND SURVEY MONUMENT
- SET SURVEY MONUMENT
- SET SURVEY MONUMENT IN CONCRETE
- CALCULATED SURVEY POINT
- CHISELED CROSS FOUND
- CHISELED CROSS SET

CALL OR CLICK 3 DAYS BEFORE YOU DIG!
MISSOURI ONE CALL SYSTEM 1-800-DIG-RITE or 811
www.mo1call.com

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
VALERIE A. HOLLAND
NUMBER PE-2017009358
PROFESSIONAL ENGINEER
05-04-2022

Bartlett&West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3181
FAX 573.634.5960
CERTIFICATE OF AUTHORITY NO. 000547 - ENGINEERING
www.bartlettwest.com

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF CORRECTIONS

WASTEWATER TREATMENT FACILITY IMPROVEMENTS

5201 SOUTH MORLEY ST
MOBERLY, MISSOURI 65270

PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 05/04/2022

CAD DWG FILE: G-002.dwg

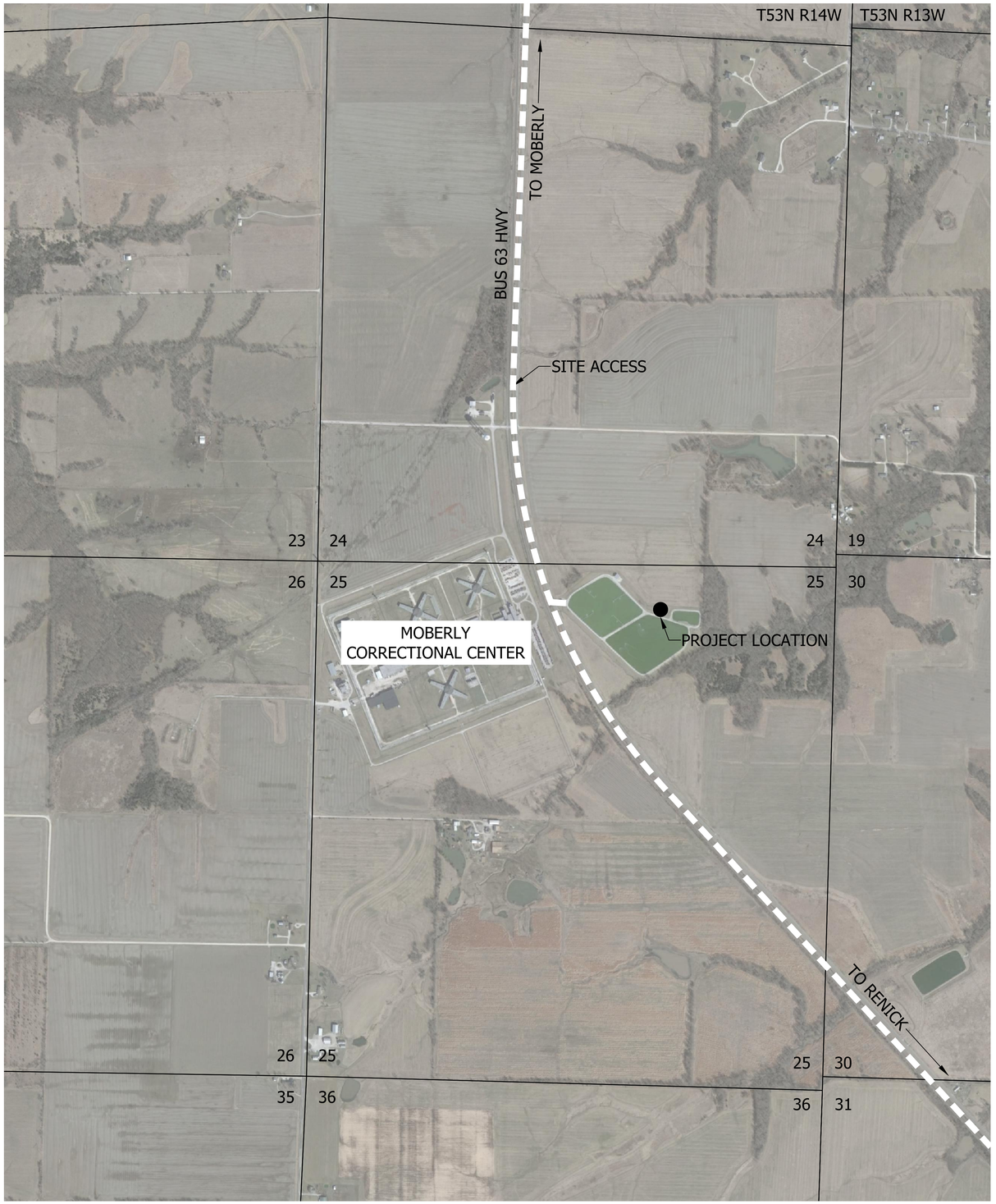
DESIGNED BY: VAH
DRAWN BY: MKA
APPROVED BY: VAH

SHEET TITLE:

GENERAL NOTES

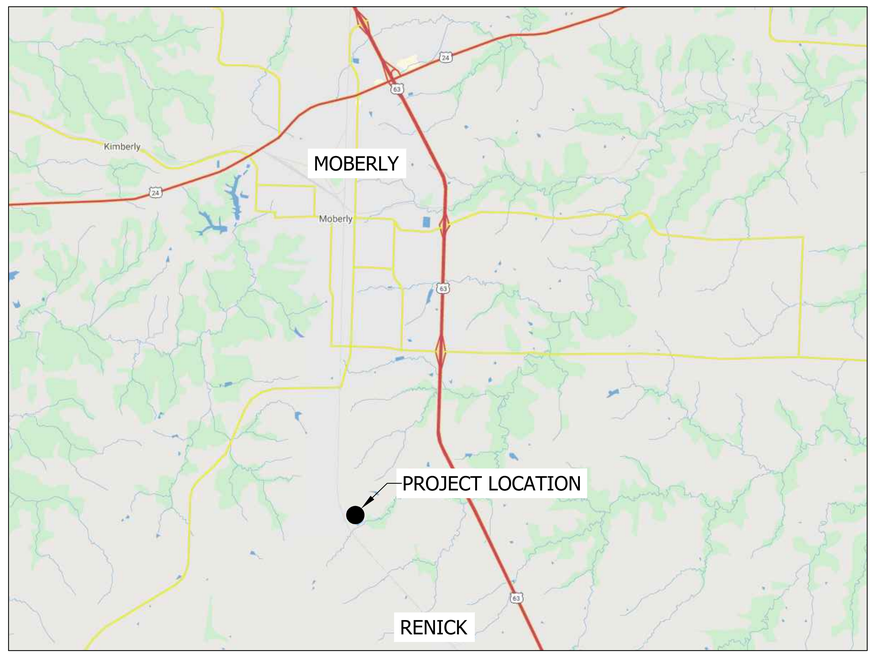
SHEET NUMBER:

G-002



LOCATION MAP
SCALE: 1"=600'
0 600' 1200'

MISSOURI COUNTY MAP
NOT TO SCALE



VICINITY MAP
NOT TO SCALE

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
VALERIE A. HOLLAND
NUMBER PE-2017009358
PROFESSIONAL ENGINEER
05-04-2022

Bartlett&West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
MISSOURI ENGINEERING
CERTIFICATE OF AUTHORITY NO. 000548 www.bartlettwest.com

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

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WASTEWATER TREATMENT
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MOBERLY, MISSOURI 65270

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ASSET # 9327005058

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REVISION:
DATE:
ISSUE DATE: 05/04/2022

CAD DWG FILE: G-003.dwg

DESIGNED BY: MKA
DRAWN BY: MKA
APPROVED BY: VAH

SHEET TITLE:
LOCATION MAP

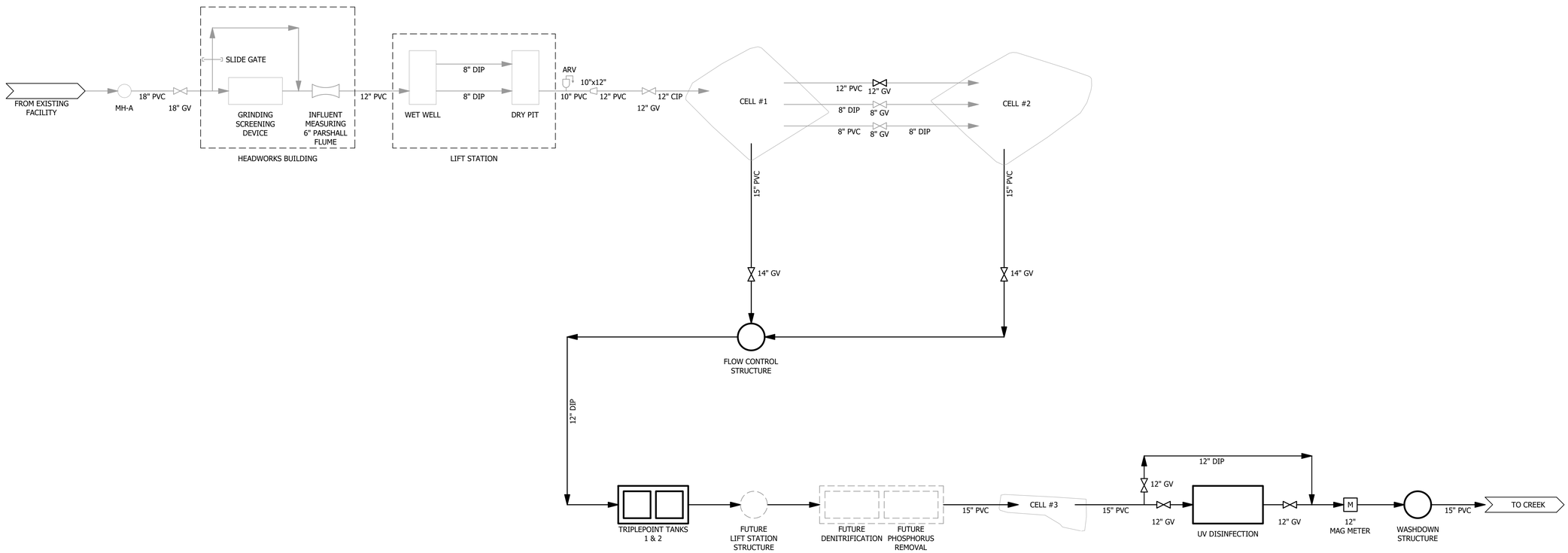
SHEET NUMBER:
G-003

GENERAL NOTES:

1. THIS PROCESS FLOW DIAGRAM PROVIDES AN OVERALL SCHEMATIC OF THE PROCESS COMPONENTS AND TREATMENT SYSTEM.
2. THE CONTRACTOR SHALL COORDINATE AND INSTALL ALL REQUIRED INTERCONNECTING PIPING, FITTINGS, AND VALVES REQUIRED TO FACILITATE A COMPLETE AND FUNCTIONAL INSTALLATION.

LEGEND

- EXISTING PROCESS ITEMS
- NEW PROCESS ITEMS
- FUTURE PROCESS ITEMS



1 PROCESS FLOW DIAGRAM
NOT TO SCALE

STATE OF MISSOURI
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GOVERNOR

STATE OF MISSOURI
VALERIE A. HOLLAND
NUMBER PE-2017009358
PROFESSIONAL ENGINEER
05-04-2022

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
FAX 573.634.5346
CERTIFICATE OF AUTHORITY NO. 000572 RENEWAL 2022
www.bartlettwest.com

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REVISION:
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DATE:
ISSUE DATE: 05/04/2022

CAD DWG FILE: G-004.dwg

DESIGNED BY: VAH
DRAWN BY: MKA
APPROVED BY: VAH

SHEET TITLE:

PROCESS FLOW DIAGRAM

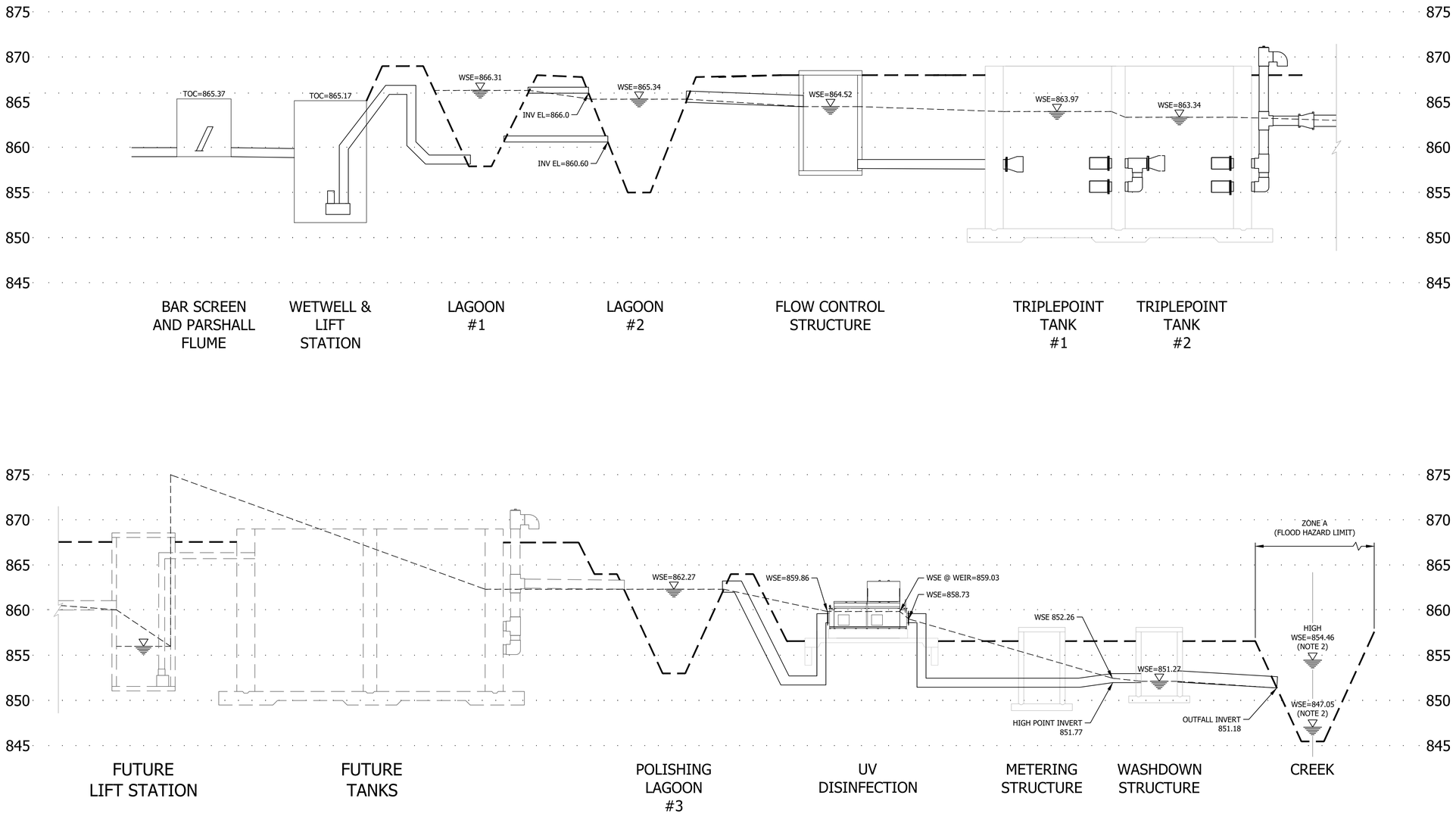
SHEET NUMBER:

G-004

PROPOSED DESIGN CRITERIA	UNITS	VALUE
AVERAGE DAILY FLOW	GPD	470,000
PEAK DAILY THROUGHPUT THROUGH TRIPLEPOINT TREATMENT	GPD	864,000
PEAK HOURLY THROUGHPUT THROUGH TRIPLEPOINT TREATEMENT	GPD	1,152,000
PEAK FLOW THROUGH UV	GPD	1,728,000
EQUALIZATION FOR CELL 1 (0.5 FT OF STORAGE 7.5-8.0 FT)	GAL	1,139,472
RAW WASTEWATER INFLUENT BOD	MG/L	250
RAW WASTEWATER INFLUENT TSS	MG/L	300
RAW WASTEWATER INFLUENT TKN	MG/L	30
RAW WASTEWATER INFLUENT ALKALINITY	MG/L	200
RAW WASTEWATER INFLUENT TOTAL NITROGEN	MG/L	15
RAW WASTEWATER INFLUENT PHOSPHORUS	MG/L	3
RAW WASTEWATER INFLUENT AMMONIA	MG/L	15
RAW WASTEWATER INFLUENT OIL AND GREASE	MG/L	25
RAW WASTEWATER INFLUENT pH	SU	7.8

GENERAL NOTES:

1. THE HYDRAULIC PROFILE IS BASED ON ALL UNITS IN SERVICE AT THE PLANT FLOW RATE OF 800 GPM.
2. EXISTING ELEVATIONS SHOWN ARE BASED ON FIELD SURVEY DATA COLLECTED BY BARTLETT & WEST ON MAY 6, 2021.
3. THE FLOODPLAIN ELEVATION IS ZONE A WITHOUT A BASE FLOOD ELEVATION BASED ON THE LATEST FEMA FIRM MAP NO. 29175C0275C EFFECTIVE 5/1/2020. WITHOUT A FLOOD PLAIN ELEVATION, THE HYDRAULIC PROFILE WAS BASED ON THE HIGH CREEK WATER SURFACE ELEVATION FIELD SURVEY DATA COLLECTED BY BARTLETT & WEST.



1 PEAK THROUGHPUT FLOW 800 GPM
NOT TO SCALE

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NUMBER PE-2017009358
PROFESSIONAL ENGINEER
05-04-2022

Bartlett&West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
CERTIFICATE OF AUTHORITY NO. 000822 RENEWAL 2022
www.bartlettwest.com

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
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ISSUE DATE: 05/04/2022

CAD DWG FILE: G-005.dwg

DESIGNED BY: VAH
DRAWN BY: MKA
APPROVED BY: VAH

SHEET TITLE:
HYDRAULIC PROFILE

SHEET NUMBER:
G-005

ABBREVIATIONS

-A-

ABBREV.	DESCRIPTION
AA	AERATION AIR
AB	AHR BOLT OR AGGREGATE BASE & AERATION BASIN
ABAN	ABANDONED IN PLACE
ABC	AGGREGATE BASE COURSE
ABD	AERATION BASIN DRAIN
AC	ASPHALTIC CONCRETE
ACB	AIR CIRCUIT BREAKER
ACP	ASBESTOS CEMENT PIPE OR ACOUSTIC CEILING PANELS
ACU	AIR CONDITIONING UNIT
ADA	AMERICANS WITH DISABILITIES ACT
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
AHR	ANCHOR
AI	ANALOG INPUT
AIC	AIR COMPRESSOR
AID	AIR DRYER
ALM	ALARM
ALTN	ALTERNATE
AL	ALUMINUM
ALP	AIR-LOW PRESSURE
AMSL	ABOVE MEAN SEA LEVEL
AO	ANALOG OUTPUT
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
ARV	AIR RELEASE VALVE
AS	AIR SCOUR
ATC	ACOUSTICAL TILE CEILING
AWP	ACOUSTIC WALL PANEL
AUTO	AUTOMATIC
AUX	AUXILIARY
AV	ANGLE VALVE
AVG	AVERAGE
@	AT

-B-

BC	BEGINNING OF CURVE
BCV	BALL CHECK VALVE
BCW	BARE COPPER WIRE
BD	BOARD
BF	BLIND FLANGE, BOTTOM FLAT
BFP	BACK FLOW PREVENTER
BFV	BUTTERFLY VALVE
BL	BLEACH
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BLO	BLOWER
BM	BEAM
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BRG	BEARING
BRKR	BREAKER
BS	BOTTOM SLUDGE
BSC	BAR SCREEN
BSCIP	BELL & SPIGOT CAST IRON PIPE
BSP	BLACK STEEL PIPE
BTU	BRITISH THERMAL UNITS
BV	BALL VALVE
BYP	BYPASS

-C-

C	CONDUIT
C TO C	CENTER TO CENTER
CA	CONCRETE ANCHOR
CB	CATCH BASIN
CFM	CUBIC FOOT PER MINUTE
CHA	CHANNEL AIR
CHAN	CHANNEL
CHS	CHLORINE RESIDUAL SENSOR
CHL	CHLORINE
CHR	CHLORINE RESIDUAL
CIP	CAST IRON PIPE
CIRC	CIRCUMFERENTIAL
CISP	CAST IRON SOIL PIPE
CJ	CONSTRUCTION JOINT
CL OR ℄	CENTER LINE OR CLOSE (D)
CLD	CHLORINE LEAK DETECTOR
CLG	CHLORINE GAS OR CEILING
CLL	CHLORINE LIQUID
CLO	CLEAN LUBE OIL
CLP	CONTROL PANEL
CLR	CLEAR OR CHLORINE RELIEF
CLV	CHLORINE VACUUM OR CHLORINE VENT
CMLSP	CEMENT MORTAR LINED STEEL PIPE
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CND	CONDUIT
CO	CLEANOUT OR CONDUIT ONLY
COL	COLUMN
COMP	COMPACTED
COMPA	COMPRESSED AIR
CONC	CONCRETE
CONN	CONNECTION
CONSTR	CONSTRUCTION
CONT	CONTINUE (D) (OUS) OR CONTROL
CPLG	COUPLING
CPT	CONTROL POWER TRANSFORMER
CR	CONDENSATE RETURN
CRN	CRANE
CRPT	CARPET TILE
CS	CHLORINE SOLUTION
CSE	CHLORINATED SECONDARY EFFLUENT
CSP	CARBON STEEL PIPE
CT	CERAMIC TILE
CTD	CENTERED
CTSK	COUNTERSUNK
CU	CUBIC
CUP	COPPER PIPE
CW	COLD WATER

-D-

ABBREV.	DESCRIPTION
D	DRAIN
D/B	DESIGN/BUILD
DBL	DOUBLE
DCS	DECHLORINATION SOLUTION OR DISTRIBUTED CONTROL SYSTEM OR DILUTED CAUSTIC SOLUTION
DEG	DEGREE
DEMO	DEMOLISH OR DEMOLITION
DET	DETAIL
DG	DIGESTER GAS
DGR	DEGRITTED RETURN
DGS	DIGESTED SLUDGE
DI	DICRETE INPUT
DIA OR ⌀	DIAMETER
DIAG	DIAGONAL
DIG	DIGESTER
DIM	DIMENSION
DIP	DUCTILE IRON PIPE
DIPBS	DUCTILE IRON PIPE, BELL & SPIGOT
DIPMJ	DUCTILE IRON PIPE, MECHANICAL JOINT
DIST	DISTRIBUTION
DJ	DOUBLE JOINT
DMPR	DAMPER
DN	DOWN
DO	ENGINE DIESEL OIL OR DISCRETE OUTPUT
DR	DRAIN OR DRIVE
DS	DOWN SPOUT
DSL	DIGESTED SLUDGE
DV	DIAPHRAGM VALVE
DW	DEWATERING PUMP DISCHARGE
DWG	DRAWING

-E-

E	EAST OR BURIED ELECTRICAL
EA	EACH
EC	END OF CURVE
ECC	ECCENTRIC
ED	EQUIPMENT DRAIN
EDB	ELECTRICAL DUCT BANK
EEX	ENGINE EXHAUST
EF	EACH FACE OR EXHAUST FAN
EFL	EFFLUENT
EFU	EXHAUST FAN UNIT
EGR	ENGINE GENERATOR ROOM
EJW	ENGINE JACKET WATER
EL	ELEVATION
ELB	ELBOW
ELEC	ELECTRIC (AL)
EMBED	EMBEDMENT
EMH	ELECTRICAL MANHOLE
ENGR	ENGINEER
EO	EMERGENCY OVERFLOW
EOP	EDGE OF PAVEMENT
EP	EXPLOSION PROOF
EQB	EQUALIZATION BASIN
EQL	EQUAL, EQUALIZATION
EQPT	EQUIPMENT
ES	EMERGENCY STOP
ESEW	EMERGENCY SHOWER AND EYEWASH
EW	EACH WAY
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EXIST	EXISTING
EXP	EXPANSION
EXPO	EXPOSED
EXT	EXTERIOR

-F-

F	FAHRENHEIT
FA	FLAME ARRESTOR OR FOUL AIR
FACP	FIRE ALARM CONTROL PANEL
FAE	FOUL AIR EXHAUST
FAN	FAN
FB	FLAT BAR
FC	FLEXIBLE CONNECTION OR FLEXIBLE COUPLING
FCA	FLANGE COUPLING ADAPTER
FCL	FAILS CLOSED OR FERRIC CHLORIDE
FCS	FERRIC CHLORIDE SOLUTION
FCTF	FACTORY FINISH
FCV	FLAPPER CHECK VALVE
FD	FLOOR DRAIN
FDN	FOUNDATION
FE	FINAL EFFLUENT OR FLOW ELEMENT
FEC	FIRE EXTINGUISHER CABINET
FEXT	FIRE EXTINGUISHER
FF	FAR FACE OR FACTORY FINISH
FG	FINISH GRADE
FHY	FIRE HYDRANT
FIG	FIGURE
FILP	FAILS IN LAST POSITION
FIN FL	FINISH FLOOR
FIT	FLOW INDICATOR/TRANSMITTER
FL	FLOOR
FLEX	FLEXIBLE
FLG	FLANGE
FLGA	FLANGE ADAPTER
FLL	FLOW LINE
FLT	FILTRATE
FM	FORCE MAIN
FO	FAILS OPEN OR FUEL OIL
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
FPR	FIRE ALARM CABLE PAIR
FR	FORWARD-REVERSE
FRP	FIBERGLASS REINFORCED PLASTIC
FS	FROTH SPRAY
FSH	FLUSH SHELL
FSLOS	FAST-SLOW LOCKOUT STOP
FSP	FABRICATED STEEL PIPE

-F CONT.-

FST	FAST OR FORWARD-STOP
FSST	FAST-SLOW-STOP
FT	FOOT
FTC	FAIL TO CLOSE
FTG	FOOTING
FTO	FAIL TO OPEN
FW	FRESH WATER
FX	FIRE EXTINGUISHER
FXE	FIRE EXTINGUISHER (ELEC RM)

-G-

G	GRIT PIPING
GA	GAGE OR GAUGE
GALV	GALVANIZE (D)
GB	GRAB BAR
GEN	GENERATOR
GFI	GROUND FAULT INTERRUPTER
GL	GLASS
GLB	GLUE LAMINATED BEAM
GLCIP	GLASS LINED CAST IRON PIPE
GLV	GLOBE VALVE
GND	GROUND
GR	GRADE
GSP	GALVANIZED STEEL PIPE
GTV	GATE VALVE
GWB	GYPSUM WALLBOARD
GYP	GYPSUM

-H-

H1E	HOOK ONE END
H2E	HOOK TWO ENDS
HA	HAND-AUTO
HDW	HARDWARE
HLA	HIGH LEVEL ALARM
HM	HALLOW METAL
HOA	HAND-OFF-AUTO
HORIZ	HORIZONTAL
"HP"	HIGH POINT OR HORSEPOWER
HPA	HIGH PRESSURE AIR
HPT	HIGH POINT
HPU	HEAT PUMP UNIT
HR	HOSE RACK
HRR	HEAT RECOVERY RETURN
HRS/HRW	HEAT RECOVERY SUPPLY
HTR	HEATER
HW	HEATED DOMESTIC WATER OR HOT WATER
HWL	HIGH WATER LEVEL
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY OR HIGH WATER SURFACE

-I-

IA	INSTRUMENT AIR
IC	INSTRUMENTATION CONDUIT
ID	INTERIOR DIAMETER
IN OR "	INCH
INCLR	INTERCOOLER
INF	INFLUENT
INJ	INJECTOR
INSTR	INSTRUMENT (ATION)
INSUL	INSULATE (D) (ING)(TION)
INTEG	INTEGRAL
INTR	INTERIOR
INVT	INVERT
INWC	INCHES WATER COLUMN
IPB	INSTRUMENTATION PULL BOX
IPD	INFLUENT PUMP DISCHARGE
IPR	INFLUENT PUMP RECYCLE
ISB	INFLUENT SEWER BYPASS
I/O	INPUT/OUTPUT MODULE

-J-

J	JOIST
JAN	JANITOR
JB	JUNCTION BOX
JT	JOINT
JWR	JACKET WATER RETURN
JWS	JACKET WATER SUPPLY

-L-

L	ANGLE OR LEFT
LA	LIGHTNING ARRESTER
LAB	LABORATORY
LC	LOCK CLOSE
LCP	LOCAL CONTROL PANEL
LIM SW	LIMIT SWITCH
LL	LIVE LOAD
LLA	LOW LEVEL ALARM
LLCO	LOW LEVEL CUT OFF
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LO	LOCK OUT
LOP	LOCK OPEN
LOR	LOCAL-OFF-REMOTE
LOS	LOCKOUT-STOP
LP	LOW POINT OR LIQUID PROPANE
LPA	LOW PRESSURE AIR
LPDG	LOW PRESSURE DIGESTER GAS
LR	LONG RADIUS
LRA	LOCAL-REMOTE-AUTO
LS	LIMIT SWITCH
LSA	LEVEL SENSOR, AIR (BUBBLER)
LTG	LIGHTNING
LUBO	LUBE OIL
LVR	LOUVER

-L CONT.-

LWL	LOW WATER LEVEL
LWS	LOW WATER SURFACE
L/L	LEAD/LAG
L/L/LL	LOCAL-REMOTE
L/R	LEAD/LAG/LAG-LAG

-M-

MATL	MATERIAL
MAX	MAXIMUM
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MECH	MECHANICAL
MFRS	MANUFACTURER'S
MH	MANHOLE, SANITARY
MIN	MINIMUM
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MJDIP	MECHANICAL JOINT DUCTILE IRON PIPE
MK	MARK
ML	MIXED LIQUOR
MON	MONUMENT
MSL	MEAN SEA LEVEL
MTD	MOUNTED
MV	MOTORIZED VALVE
MWS	MAXIMUM WATER SURFACE
MXR	MIXER

-N-

N	NORTH
NA	NOT APPLICABLE
NAT GR	NATURAL GRADE
NC	NORMALLY CLOSED
NCHO	NORMALLY CLOSED HEAD OPEN
NDV	NEEDLE VALVE
NF	NEAR FACE
NG	NATURAL GAS
NL	NIGHT LIGHT
NO	NORMALLY OPEN
NO OR #	NUMBER
NOHC	NORMALLY OPEN HEAD CLOSED
NOM	NOMINAL
NP	NATIONAL PIPE THREAD
NTS	NOT TO SCALE
NV	NEEDLE VALVE

-O-

OC	ON CENTER
OCL	OPEN-CLOSE
OD	OUTSIDE DIAMETER
OIS	OPERATOR INTERFACE STATION
OP	OPEN
OPNG	OPENING
OPP	OPPOSITE
OPR	OPERATE(OR)
OSC	OPEN-STOP-CLOSE
OTF	OUTFALL
OVFL	OVERFLOW
OVLD	OVERLOAD

-P-

PA	PLANT AIR
PB	PULL BOX
PBP	PLANT BYPASS
PCV	PLUG CONCENTRIC VALVE
PD	PLANT DRAIN
PE	PLANT EFFLUENT
PEF	PRIMARY EFFLUENT
PERP	PERPENDICULAR
PEV	PLUG ECCENTRIC VALVE
PG	PRESSURE GAUGE
PH	PHASE, pH
PHW	PLANT HOT WATER
PI	POINT OF INTERSECTION OR PRIMARY INFLUENT
PIV	PINCH VALVE
PL	PLATE (STEEL) OR PROPERTY LINE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PLCS	PLACES
PLE	PLAIN END
PPD	POUNDS PER DAY
PPMV	POUNDS PER MILLIONS BY VOLUME
PPBV	POUNDS PER BILLIONS BY VOLUME
PLYWD	PLYWOOD
PMP	PUMP
PNL	PANEL
POL	POLYMER
POLS	POLYMER SOLUTION
PR	PAIR OR INSTRUMENT CABLE PAIR
PRC	PLANT RECYCLE
PREFAB	PREFABRICATED
PRI	PRIMARY
PRPNE	PROPANE GAS
PRV	PRESSURE REDUCING VALVE
PS	PRIMARY SLUDGE, PUMP STATION
PSC	PRIMARY SCUM
PSI	POUND PER SQUARE INCH
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE
PVCP	RIGID POLYVINYL CHLORIDE PIPE
PVMT	PAVEMENT
PWR	POWER

-R-

R	RIGHT OR PLANT RECYCLE FLOW OR RADIUS
RAS	RETURN ACTIVATED SLUDGE
RCP	REINFORCED CONCRETE PIPE
RCPT	RECEPTACLE
RD	ROOF DRAIN
RDCR/RED	REDUCER
RDR	ROLL-UP-DOOR
RDY	READY
REF	REFERENCE
REINF	REINFORCE (D)(ING)(MENT)
REJ	RUBBER EXPANSION JOINT
REQD	REQUIRED
REV	REVISION OR REVERSE ACTING
RFW	RECLAIMED WATER
RM	ROOM
RMT	REMOTE
RP	RADIUS POINT
RS	RAW SEWAGE
RTM	RUNNING TIME METER
R/W	RIGHT-OF-WAY

-S-

S	SOUTH
SA	SAMPLE PIPING OR SERVICE AIR
SC	SUM
SCHED	SCHEDULE
SCF	STANDARD CUBIC FEET
SCFM	STANDARD CUBIC FOOT PER MINUTE
SCS	SCRUBBER CHLORINE SOLUTION
SCV	SWING CHECK VALVE
SD	STORM DRAIN
SE	SECONDARY EFFLUENT
SEC	SECONDARY
SECT	SECTION
SEL	SELECT
SF	SUPPLY FAN, SQUARE FEET
SGL	SINGLE
SH	SHEET
SIL	SILENCE
SIM	SIMILAR
SL	SLUDGE OR SLOW
SLD	SINGLE LINE DRAWING
SLG	SLUDGE OR SLUICE GATE
SLOS	START-LOCKOUT-STOP
SLP	SLOPE
SN	SUPERNATANT
SOLV	SOLENOID VALVE
SOV	SULFUR OXIDE VACUUM
SP	STOP
SPEC	SPECIFICATION
SPLP	SAMPLER PUMP
SQ	SQUARE
SR	STOP-RESET, SHORT RADIUS
SRG	SPLIT RANGE
SRT	SOLIDS RETENTION TIME
SS	SERVICE SINK OR START-STOP OR SANITARY SEWER
SSC	SECONDARY SCUM
SSK	SECONDARY SKIMMINGS
SSL	SECONDARY SLUDGE
SST	STAINLESS STEEL
SSTT	SOLID STATE TRIP
SSW	SANITARY SEWER
ST	STEAM OR START
STA	STATION
STD	STANDARD
STL	STEEL
STM	STEAM
STOR	STORAGE
STR	STRAINER
STRL	STRUCTURAL
STRUCT	STRUCTURE
SUSP	SUSPENDED
SW	SOFTENED WATER
SWGR	SWITCHGEAR
SWR	SEAL WATER
SYMM	SYMMETRICAL
S/W	SIDEWALK

-T-

TBG	TUBING
TC	TOP OF CONCRETE
TD	THERMAL DISPERSION
TDR	TOWEL DISPENSER/RECEPTACLE
TE	TERTIARY EFFLUENT
TEL	TELEPHONE SERVICE OR TELEPHONE
TEMP	TEMPERATURE
TF	TOP FLAT
TFR	TRANSFORMER
TH	TOILET PAPER HOLDER
THERMO	THERMOSTAT
THK	THICK/THICKENING
THO	THICKENER OVERFLOW
THRU	THROUGH
TJB	TELEPHONE JUNCTION BOX
TM	TECHNICAL MEMORANDA
TNK	TANK
TOC	TOP OF CONCRETE
TOD	TOP OF DUCT BANK
TOS	TOP OF STEEL
TOW	TOP OF WEIR, TOP OF WALL
TPS	THICKENED PRIMARY SLUDGE
TRF	TRANSFER
TS	THICKENED SLUDGE
TWAS	THICKENED WASTE ACTIVATED SLUDGE
TYP	TYPICAL
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
TDH	TOTAL DYNAMIC HEAD
TWW	TERTIARY WASHWATER

-U-

UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTIBLE POWER SUPPLY
UR	URINAL

-V-

V OR VLV	VALVE
VAC	VACUUM
VB	VALVE BOX
VC	VICTAULIC COUPLER
VCP	VITRIFIED CLAY PIPE
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VN	VENT
VOL	VOLUME
VP	VENT PIPE
VTR	VENT THROUGH ROOF
VIB	VIBRATION

-W-

W	WEST
WAS	WASTE ACTIVATED SLUDGE
WC	WATER COLUMN
WD	WOOD
WF	WIDE FLANGE (BEAM)
WH	WATER HEATER
WLO	WASTE LUBE OIL
WO	WASTE OIL
WP	WORKING POINT OR WEATHERPROOF
WR	WETLANDS RETURN
WS	WATER SURFACE
WSW	WALL SPRAY WATER
WW	WASH WATER
WWF	WELDED WIRE FABRIC
W/	WITH
W/O	WITHOUT
W-O-L	WELD-O-LET

-X-

XFMR	TRANSFORMER

-Y-

YD	YARD

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
VALERIE A. HOLLAND
NUMBER PE-2017009358
PROFESSIONAL ENGINEER
05-04-2022

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3181
FAX 573.634.5346
CERTIFICATE OF AUTHORITY NO. 000178 RENEWAL
www.bartlettwest.com

OFFICE OF ADMINISTRATION
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OF CORRECTIONS

WASTEWATER TREATMENT
FACILITY IMPROVEMENTS

5201 SOUTH MORLEY ST
MOBERLY, MISSOURI 65270

PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:

ISSUE DATE: 05/04/2022

CAD DWG FILE: G-006.dwg

DESIGNED BY: MKA
DRAWN BY: MKA
APPROVED BY: VAH

SHEET TITLE:

PROJECT
ABBREVIATIONS

SHEET NUMBER:

G-006

EXISTING CONDITIONS PLAN
SCALE: 1"=60'
0 60' 120'

SURVEY CONTROL NOTES:

1. HORIZONTAL DATUM: THE BASIS OF BEARINGS FOR THIS PROJECT IS THE MISSOURI STATE PLANE COORDINATE SYSTEM, NAD 83, CENTRAL ZONE, USING U.S. SURVEY FEET
2. VERTICAL DATUM: THE VERTICAL DATUM FOR THIS PROJECT IS BASED ON NAVD 88, GEOID 12B. VALUES WERE DERIVED USING SURVEY GRADE GPS RECEIVERS.

GENERAL NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESETTING ANY PROPERTY OR LOT CORNERS DISTURBED DURING CONSTRUCTION. ALL PLOTTED SUBDIVISION PROPERTY CORNERS SHALL BE LOCATED PRIOR TO CONSTRUCTION, AND STAKED PRIOR TO REMOVAL AND REPLACEMENT, OR SHALL BE PROTECTED PRIOR TO CONSTRUCTION OPERATIONS. THIS WORK SHALL BE DONE BY A LICENSED LAND SURVEYOR IN ACCORDANCE WITH STATE LAW.
2. GEOTECHINCAL BORINGS WERE PERFORMED BY TERRACON CONSULTANTS, INC.

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
VALERIE A. HOLLAND
NUMBER PE-2017009358
PROFESSIONAL ENGINEER
05-04-2022

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3181
CERTIFICATE OF AUTHORITY NO. 000161-INFRASTRUCTURE
www.bartlettwest.com

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MOBERLY, MISSOURI 65270

PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

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ISSUE DATE: 05/04/2022

CAD DWG FILE: C-101.dwg

DESIGNED BY: MKA
DRAWN BY: MKA
APPROVED BY: VAH

SHEET TITLE:

EXISTING CONDITIONS PLAN

SHEET NUMBER:

C-101

DEMOLITION PLAN
SCALE: 1"=60'
0 60' 120'

GENERAL NOTES:

1. ALL UTILITY LOCATIONS ARE APPROXIMATE AND SHOULD BE FIELD VERIFIED PRIOR TO ANY WORK BEING DONE ON THE SITE.
2. CONTRACTOR SHALL COORDINATE WITH UTILITIES TO MAINTAIN SERVICE ON ANY UTILITIES THAT REQUIRE RELOCATING. CONTRACTOR SHALL GIVE OWNER WRITTEN NOTICE 48 HOURS PRIOR TO ANY SERVICE INTERRUPTIONS.
3. CONTRACTOR SHALL RESET ANY FENCES, GATES, SIGNS, OR ANY OTHER DISTURBED ITEMS THAT NEED TO BE REMOVED FOR CONSTRUCTION ACTIVITIES AT NO ADDITIONAL COST TO THE OWNER.

REFERENCE NOTES:

1. REMOVE EXISTING 8" PIPE AS NEEDED FOR NEW STRUCTURES. CONTRACTOR SHALL PLUG REMAINING ABANDONED EFFLUENT PIPE
2. REMOVE EXISTING EFFLUENT MEASURING DEVICE STRUCTURE
3. CONTRACTOR CAN REMOVE BARBED WIRE FENCE AS NEEDED TO ALLOW FOR CONSTRUCTION, BUT IT SHALL BE REPLACED AND RESTORED TO EXISTING CONDITIONS AT NO COST TO THE OWNER.
4. DO NOT DISTURB HEADWORKS BUILDING, VALVE VAULT, OR LIFT STATION WITHOUT PRIOR CONSENT FROM OWNER
5. EXISTING 30" CMP PIPE SHALL REMAIN
6. REMOVE EXISTING ROAD CULVERT PIPE AND END SECTIONS. ALTERNATE NO 1, SEE SECTION 012300 - ALTERNATES FOR A DESCRIPTION OF THE WORK INCLUDED.
7. PARTIAL DEMO STORM INLET STRUCTURE, SEE DETAIL 3 ON DRAWING C-501. ALTERNATE NO 1, SEE SECTION 012300 - ALTERNATES FOR A DESCRIPTION OF THE WORK INCLUDED.
8. REMOVE EXISTING AERATORS AND GUIDE WIRES IN CELL #1 AND CELL #2
9. REMOVE EXISTING JETTIES IN CELL #1
10. EXISTING EFFLUENT STRUCTURE SHALL BE ABANDONED IN-PLACE, SEE SPECIFICATIONS
11. CONTRACTOR SHALL PLUG EXISTING 8" PIPES AND REMOVE VALVE BOX 2 FEET BELOW GRADE AND PROVIDE COVER TO MATCH EXISTING CONDITIONS

LEGEND

DEMOLITION

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
VALERIE A. HOLLAND
NUMBER PE-2017009358
PROFESSIONAL ENGINEER
05-04-2022

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
MO STATE NUMBER 2005016346
CERTIFICATE OF AUTHORITY NO. 000158
www.bartlettwest.com

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WASTEWATER TREATMENT FACILITY IMPROVEMENTS

5201 SOUTH MORLEY ST
MOBERLY, MISSOURI 65270

PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

REVISION:
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REVISION:
DATE:
ISSUE DATE: 05/04/2022

CAD DWG FILE: C-102.dwg

DESIGNED BY: MKA
DRAWN BY: MKA
APPROVED BY: VAH

SHEET TITLE:

DEMOLITION PLAN

SHEET NUMBER:

C-102

EXISTING CONDITIONS PLAN
SCALE: 1"=60'
0 60' 120'

GENERAL NOTES:

1. ALL BURIED SEWER PIPING AND LARGER PVC PIPING PIPING WITHIN STRUCTURES SHALL BE SHALL BE SDR 26 PVC GRAVITY SEWER PIPE. PROVIDE SDR 26 GASKETED SEWER FITTINGS BY MULTI FITTINGS CORPORATION, OR APPROVED EQUAL.
2. CONTRACTOR SHALL PROVIDE PIPE SUPPORTS FOR ALL PIPING PER MANUFACTURERS RECOMMENDATIONS. ALL AIR AND LIQUID PIPING SHALL BE FULLY SUPPORTED. PROVIDED MECHANICAL PIPE SUPPORTS ANCHORED TO REINFORCED CONCRETE IN-GROUND PIERS FOR PIPING ABOVE GROUND. PIPE SUPPORTS SHALL BE INSTALLED AT CHANGES OF DIRECTION; AT EQUIPMENT AND VALVE LOCATIONS; (OR AS REQUIRED TO PROVIDE COMPLETE SYSTEM SUPPORT).
3. BAFFLE WALL SHALL BE A FLOATING BAFFLE CURTAIN BY ENGINEERED TEXTILE PRODUCTS, INC OR APPROVED EQUAL, SEE SPECIFICATIONS.

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
VALERIE A. HOLLAND
NUMBER PE-2017009358
PROFESSIONAL ENGINEER
05-04-2022

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
MISSOURI CERTIFICATE OF AUTHORITY NO. 000157-00
www.bartlettwest.com

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REVISION:
DATE:
ISSUE DATE: 05/04/2022

CAD DWG FILE: C-103.dwg

DESIGNED BY: MKA
DRAWN BY: MKA
APPROVED BY: VAH

SHEET TITLE:

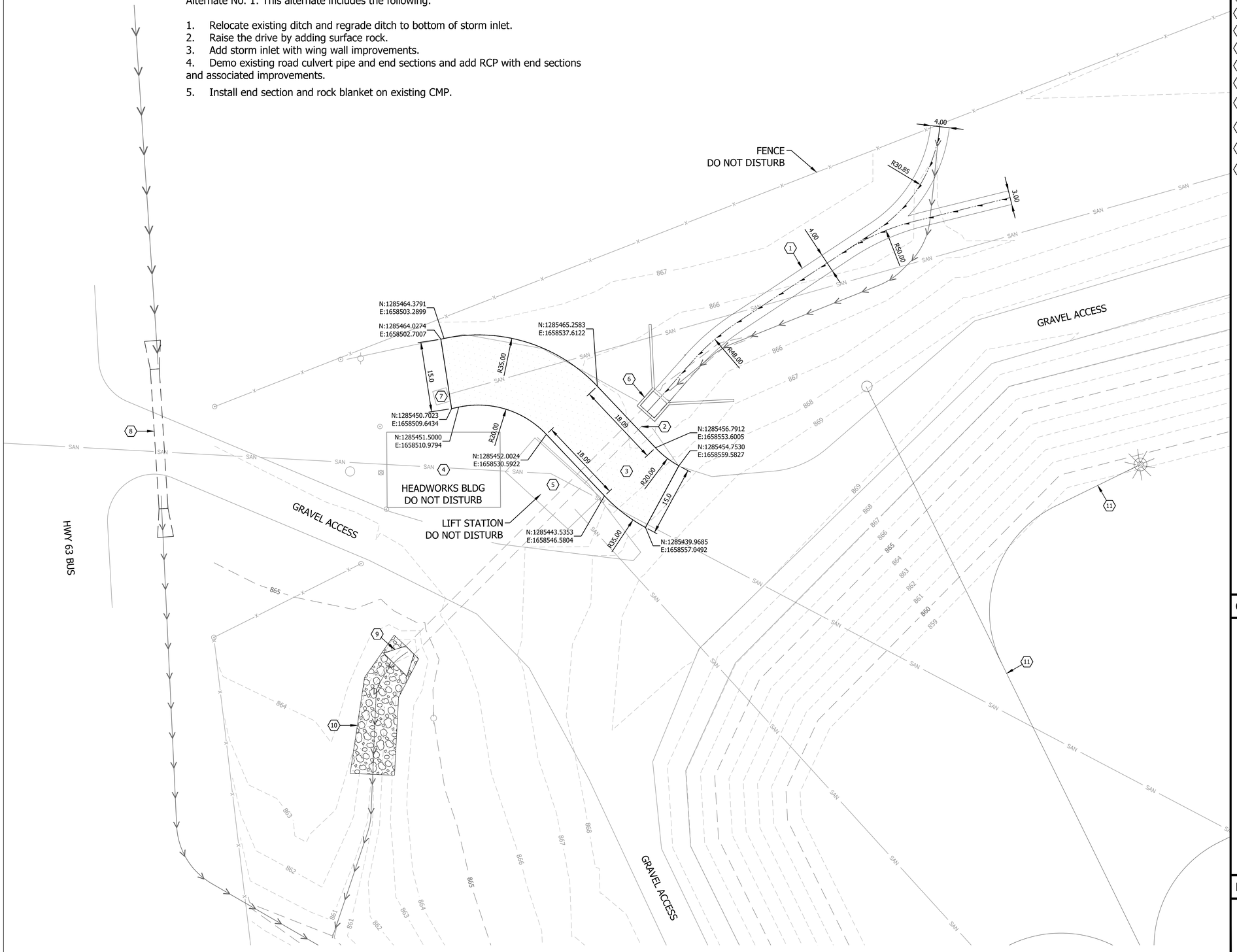
SITE PLAN - OVERALL

SHEET NUMBER:

C-103

Alternate No. 1: This alternate includes the following:

1. Relocate existing ditch and regrade ditch to bottom of storm inlet.
2. Raise the drive by adding surface rock.
3. Add storm inlet with wing wall improvements.
4. Demo existing road culvert pipe and end sections and add RCP with end sections and associated improvements.
5. Install end section and rock blanket on existing CMP.



SITE PLAN - HEADWORKS BUILDING
SCALE: 1"=10'
0 10' 20'

REFERENCE NOTES:

1. EXISTING DITCHLINE TO BE RELOCATED TO NEW DITCH. REGRADE DITCH TO BOTTOM OF STORM INLET, SEE DRAWING C-109 FOR GRADING
2. EXISTING 30" CMP, DO NOT DISTURB
3. RAISE THE DRIVE BY ADDING APPROXIMATELY 1-INCH SURFACE ROCK TO 94 SQYD GRAVEL DRIVE TO MEET ELEVATIONS ON DRAWING C-109
4. EXISTING HEADWORKS BUILDING, DO NOT DISTURB
5. EXISTING LIFT STATION, DO NOT DISTURB
6. STORM INLET WITH WING WALLS, SEE DETAIL 3 ON DRAWING C-501
7. VALVE VAULT FOR WASH DOWN, DO NOT DISTURB
8. 18" CLASS IV RCP WITH END SECTIONS, 4" MINIMUM COVER, 1.0% MIN SLOPE, GRADE TO DRAIN REESTABLISH DITCH LINE UPSTREAM AND DOWNSTREAM OF 18" RCP
9. INSTALL 30" END SECTION ON EXISTING 30" CMP, REGRADE AROUND END SECTION
10. ROCK BLANKET, SEE OUTFALL WITH RIP-RAP SCOUR PROTECTION DETAIL ON DRAWING C-501
11. SEE DRAWING C-107 SITE PLAN - AERATION PLAN FOR ADDITIONAL INFORMATION

GENERAL NOTES:

1. ALL BURIED SEWER PIPING AND LARGER PVC PIPING PIPING WITHIN STRUCTURES SHALL BE SHALL BE SDR 26 PVC GRAVITY SEWER PIPE. PROVIDE SDR 26 GASKETED SEWER FITTINGS BY MULTI FITTINGS CORPORATION, OR APPROVED EQUAL.
2. CONTRACTOR SHALL PROVIDE PIPE SUPPORTS FOR ALL PIPING PER MANUFACTURERS RECOMMENDATIONS. ALL AIR AND LIQUID PIPING SHALL BE FULLY SUPPORTED. PROVIDED MECHANICAL PIPE SUPPORTS ANCHORED TO REINFORCED CONCRETE IN-GROUND PIERS FOR PIPING ABOVE GROUND. PIPE SUPPORTS SHALL BE INSTALLED AT CHANGES OF DIRECTION; AT EQUIPMENT AND VALVE LOCATIONS; (OR AS REQUIRED TO PROVIDE COMPLETE SYSTEM SUPPORT).

LEGEND

GRAVEL

FLOWLINE

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
MICHAEL J. VAHLE
NUMBER
PE-2004020834
PROFESSIONAL ENGINEER
5-4-22

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
CERTIFICATE OF AUTHORITY NO. 000572 EXPIRES 2022
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CAD DWG FILE: C-104.dwg

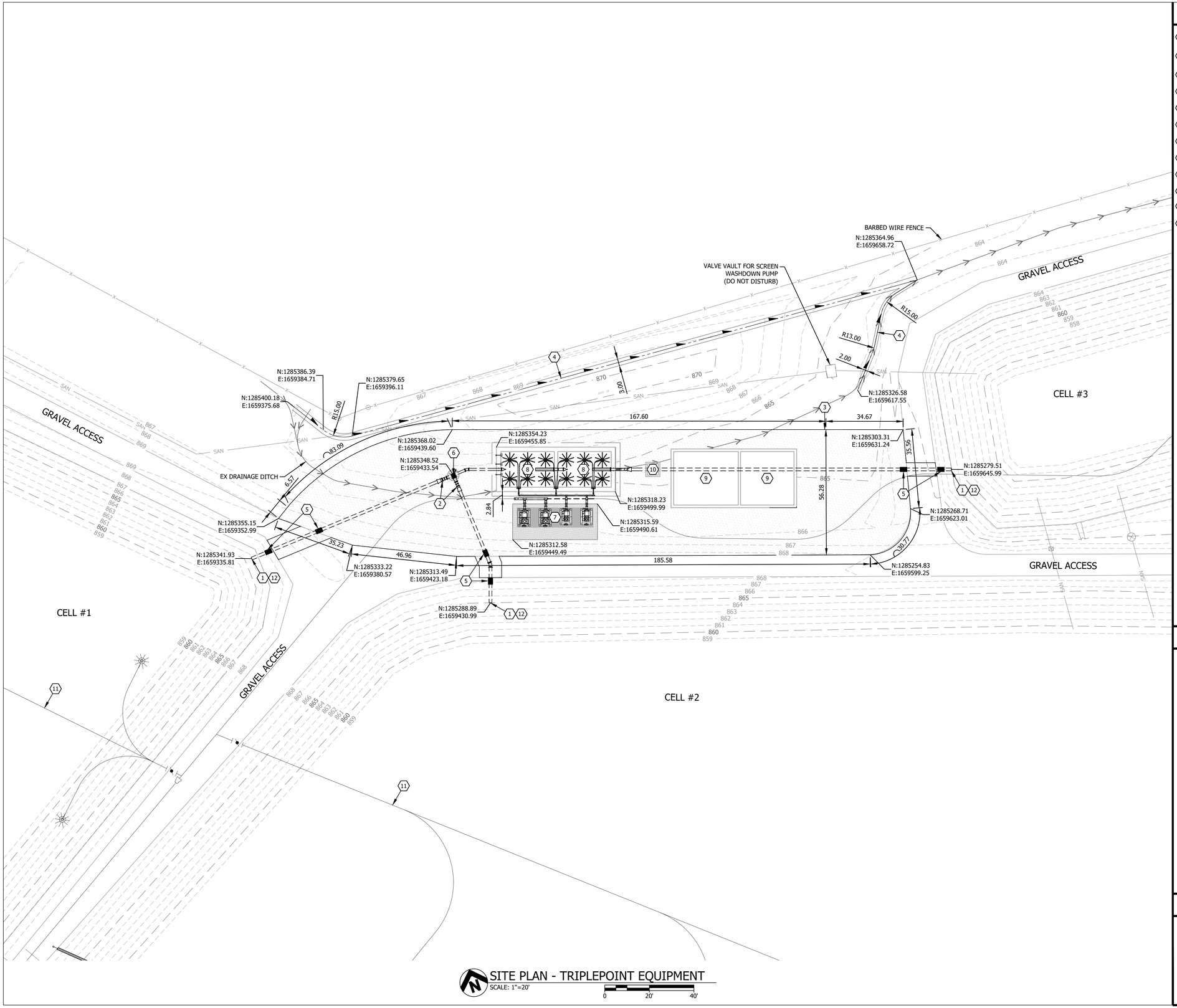
DESIGNED BY: MJV
DRAWN BY: MKA
APPROVED BY: VAH

SHEET TITLE:

SITE PLAN - HEADWORKS BUILDING

SHEET NUMBER:

C-104



REFERENCE NOTES:

1. SEE SANITARY SEWER PLAN & PROFILE ON DRAWING C-112 FOR FLOW LINE ELEVATIONS
2. 14" GATE VALVE, VALVE BOX & COVER, SEE DETAIL 1 ON DRAWING C-502
3. 1,257 SQYD GRAVEL PAD, SEE GRADING PLAN ON DRAWING C-110
4. EXISTING DITCHLINE TO BE RELOCATED TO NEW DITCH. SEE DRAWING C-110 FOR GRADING
5. WATER STOP, SEE DETAIL 6 ON DRAWING C-502
6. FLOW CONTROL STRUCTURE, SEE DRAWING D-101
7. BLOWERS AND CONTROLS, SEE DRAWING D-103
8. TRIPLEPOINT TANKS(12 ARES AERATORS), SEE DRAWING D-102
9. FUTURE DENITRIFICATION & PHOSPHORUS REMOVAL TANKS, SHOWN FOR REFERENCE ONLY
10. FUTURE LIFT STATION, SHOWN FOR REFERENCE ONLY
11. SEE DRAWING C-107 SITE PLAN - AERATION PLAN FOR ADDITIONAL INFORMATION
12. INSTALL SCREEN ON THE END OF PIPE, SEE DETAIL 4 ON DRAWING D-501

GENERAL NOTES:

1. ALL BURIED SEWER PIPING AND LARGER PVC PIPING PIPING WITHIN STRUCTURES SHALL BE SHALL BE SDR 26 PVC GRAVITY SEWER PIPE. PROVIDE SDR 26 GASKETED SEWER FITTINGS BY MULTI FITTINGS CORPORATION, OR APPROVED EQUAL.
2. CONTRACTOR SHALL PROVIDE PIPE SUPPORTS FOR ALL PIPING PER MANUFACTURERS RECOMMENDATIONS. ALL AIR AND LIQUID PIPING SHALL BE FULLY SUPPORTED. PROVIDED MECHANICAL PIPE SUPPORTS ANCHORED TO REINFORCED CONCRETE IN-GROUND PIERS FOR PIPING ABOVE GROUND. PIPE SUPPORTS SHALL BE INSTALLED AT CHANGES OF DIRECTION; AT EQUIPMENT AND VALVE LOCATIONS; (OR AS REQUIRED TO PROVIDE COMPLETE SYSTEM SUPPORT).

LEGEND

GRAVEL

FLOWLINE

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
MATTHEW VANDER TUIG
NUMBER PE-2004020834
PROFESSIONAL ENGINEER
5-4-22

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
CERTIFICATE OF AUTHORITY NO. 000548-Missouri
www.bartlettwest.com

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF CORRECTIONS

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MOBERLY, MISSOURI 65270

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CAD DWG FILE: C-105.dwg

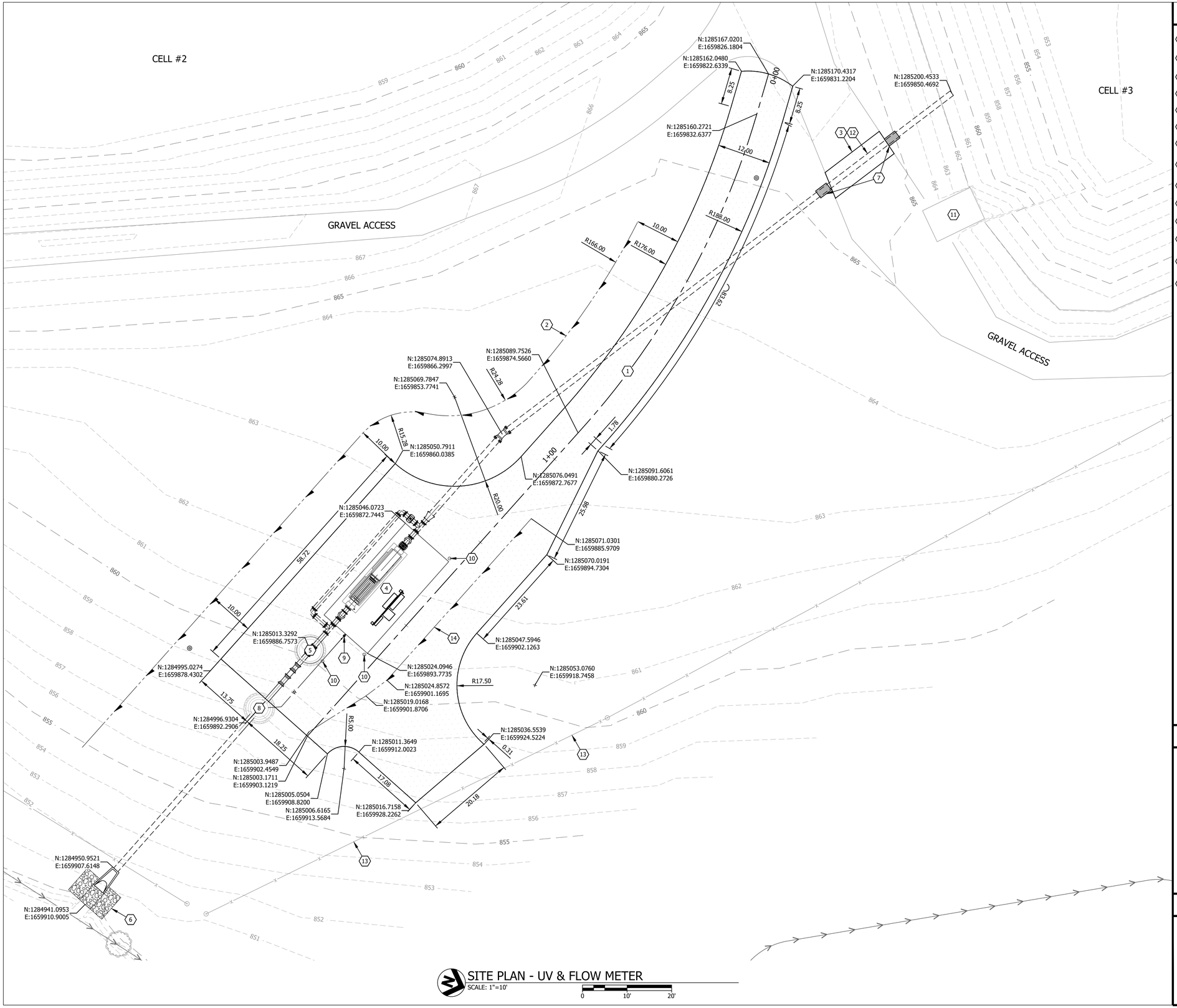
DESIGNED BY: VAH
DRAWN BY: MKA
APPROVED BY: VAH

SHEET TITLE:

SITE PLAN - TRIPLEPOINT EQUIPMENT

SHEET NUMBER:

C-105



SITE PLAN - UV & FLOW METER
SCALE: 1"=10'
0 10' 20'

REFERENCE NOTES:

1. 396 SQYD UV DISINFECTION AND MAG METER STRUCTURES GRAVEL ACCESS, SEE GRADING PLAN ON DRAWING C-111
2. DRAINAGE DITCHES, SEE GRADING PLAN ON DRAWING C-111
3. 11 SQYD PIPE TRENCHING GRAVEL ACCESS, SEE GRADING PLAN ON DRAWING C-111
4. UV DISINFECTION EQUIPMENT, SEE DRAWING D-104
5. MAGNETIC FLOWMETER STRUCTURE, SEE DRAWING D-105
6. OUTFALL STRUCTURE, SEE DETAIL 4, NOTE 3 FOR DIMENSIONS ON DRAWING C-501
7. WATER STOP, SEE DETAIL 6 ON DRAWING C-502
8. WASHDOWN MANHOLE, SEE DRAWING D-105 FOR ADDITIONAL INFORMATION; SEE DRAWING C-503 FOR ADDITIONAL MANHOLE DETAILS
9. FROST FREE YARD HYDRANT, SEE DETAIL 8 ON DRAWING C-502
10. PIPE BOLLARD - EMBED MOUNTING, SEE DETAIL 9 ON DRAWING C-502
11. ABANDONED EFFLUENT STRUCTURE, SEE DEMOLITION SPECIFICATIONS
12. SEE SANITARY SEWER PLAN & PROFILE ON DRAWING C-113 FOR FLOW LINE ELEVATIONS
13. CONTRACTOR SHALL NOT DISTURB EXISTING FENCE DURING CONSTRUCTION WITHOUT WRITTEN PERMISSION FROM LANDOWNER
14. CONTRACTOR SHALL GRADE A DRAINAGE SWALE TO PROMOTE POSITIVE DRAINAGE

GENERAL NOTES:

1. ALL BURIED SEWER PIPING AND LARGER PVC PIPING PIPING WITHIN STRUCTURES SHALL BE SHALL BE SDR 26 PVC GRAVITY SEWER PIPE. PROVIDE SDR 26 GASKETED SEWER FITTINGS BY MULTI FITTINGS CORPORATION, OR APPROVED EQUAL.
2. CONTRACTOR SHALL PROVIDE PIPE SUPPORTS FOR ALL PIPING PER MANUFACTURERS RECOMMENDATIONS. ALL AIR AND LIQUID PIPING SHALL BE FULLY SUPPORTED. PROVIDED MECHANICAL PIPE SUPPORTS ANCHORED TO REINFORCED CONCRETE IN-GROUND PIERS FOR PIPING ABOVE GROUND. PIPE SUPPORTS SHALL BE INSTALLED AT CHANGES OF DIRECTION; AT EQUIPMENT AND VALVE LOCATIONS; (OR AS REQUIRED TO PROVIDE COMPLETE SYSTEM SUPPORT).

LEGEND

GRAVEL

FLOWLINE

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
MATTHEW VANDER TUIG KOHLER
PE-2014022634
PROFESSIONAL ENGINEER
5-4-22

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
FAX 573.634.5346
CERTIFICATE OF AUTHORITY NO. 000810 - RENEWAL 2023
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DEPARTMENT OF CORRECTIONS

WASTEWATER TREATMENT FACILITY IMPROVEMENTS

5201 SOUTH MORLEY ST
MOBERLY, MISSOURI 65270

PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 05/04/2022

CAD DWG FILE: C-106.dwg

DESIGNED BY: VAH
DRAWN BY: MKA
APPROVED BY: VAH

SHEET TITLE:

SITE PLAN -
UV & FLOW METER

SHEET NUMBER:

C-106

12 of 46 SHEETS

SITE PLAN - AERATION PLAN
SCALE: 1"=60'
0 60' 120'

GENERAL NOTES:

1. DRAWING PROVIDE A GENERAL OVERVIEW OF INSTALLATION WITH TRIPLEPOINT AERATION SYSTEM. CONTRACTOR SHALL COORDINATE FINAL LOCATION OF AERATORS WITH MANUFACTURER.

TRIPLEPOINT SCOPE OF SUPPLY:

NOTE:
1. THIS SCOPE OF SUPPLY IS TYPICAL. CHECK QUOTATION FROM TRIPLEPOINT ENVIRONMENTAL, LLC FOR COMPLETE SCOPE OF SUPPLY.
   TPE = TRIPLEPOINT ENVIRONMENTAL
   BC = BY CONTRACTOR

SCOPE TABLE

ITEM	DESCRIPTION	TPE	BC
1	BLOWERS	X	
2	BLOWER PADS/BUILDING		X
3	HEADER PIPING & VALVES		X
4	LATERALS AND/OR RISER STUB		X
5	AERATOR CONTROL MANIFOLDS	X	
6	AERATOR CONTROL VALVES	X	
7	FLEXIBLE TUBING	X	
8	AERATORS	X	

MATERIAL LIST:

1. PIPE BOLLARD - SHORE ANCHORS, TYP OF 2. SEE DETAIL 10 ON DRAWING C-502. POST SHALL BE FILLED WITH CONCRETE AND PROVIDE A SHORE ANCHOR CONNECTION FOR BAFFLE WALL PER MANUFACTURE'S RECOMMENDATIONS.
2. 3" SS TH BALL VALVE ON RISER PIPE - ABOVE GRADE. SEE TRIPLEPOINT REFERENCE DRAWINGS FOR DETAILS
3. 10" x 8" DI CONCENTRIC REDUCER
4. 8" x 6" DI CONCENTRIC REDUCER
5. 2" SST PURGE VALVE, ABOVE GRADE. LOCATION OF PURGE VALVE SHALL NOT BLOCK ACCESS DRIVE. COORDINATE FINAL LOCATION WITH OWNER.
6. VALVE MANIFOLD (TYP OF 6), VALVE MANIFOLDS SHALL BE INSTALLED ON LAGOON SIDE SLOPE APPROXIMATELY 1 TO 2 FEET OFF TOP OF LAGOON. COORDINATE WITH OWNER ON FINAL LOCATION.
7. CONTRACTOR TO FIELD VERIFY CONCRETE VELOCITY DISSIPATER & SPLASH PAD. CONTRACTOR SHALL WORK WITH TRIPLEPOINT TO VERIFY ADEQUATE CLEARANCE WITH AERATORS.
8. 12" GATE VALVE - BURIED, W/ 2" NUT AND VALVE BOX, SEE DETAIL 1 ON DRAWING C-502

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
VALERIE A. HOLLAND
NUMBER PE-2017009358
PROFESSIONAL ENGINEER
05-04-2022

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
MISSOURI DEPARTMENT
CERTIFICATE OF AUTHORITY NO. 000616
www.bartlettwest.com

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DIVISION OF FACILITIES MANAGEMENT,
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WASTEWATER TREATMENT FACILITY IMPROVEMENTS

5201 SOUTH MORLEY ST
MOBERLY, MISSOURI 65270

PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:

ISSUE DATE: 05/04/2022

CAD DWG FILE: C-107.dwg

DESIGNED BY: VAH
DRAWN BY: MKA
APPROVED BY: BY OTHERS

SHEET TITLE:

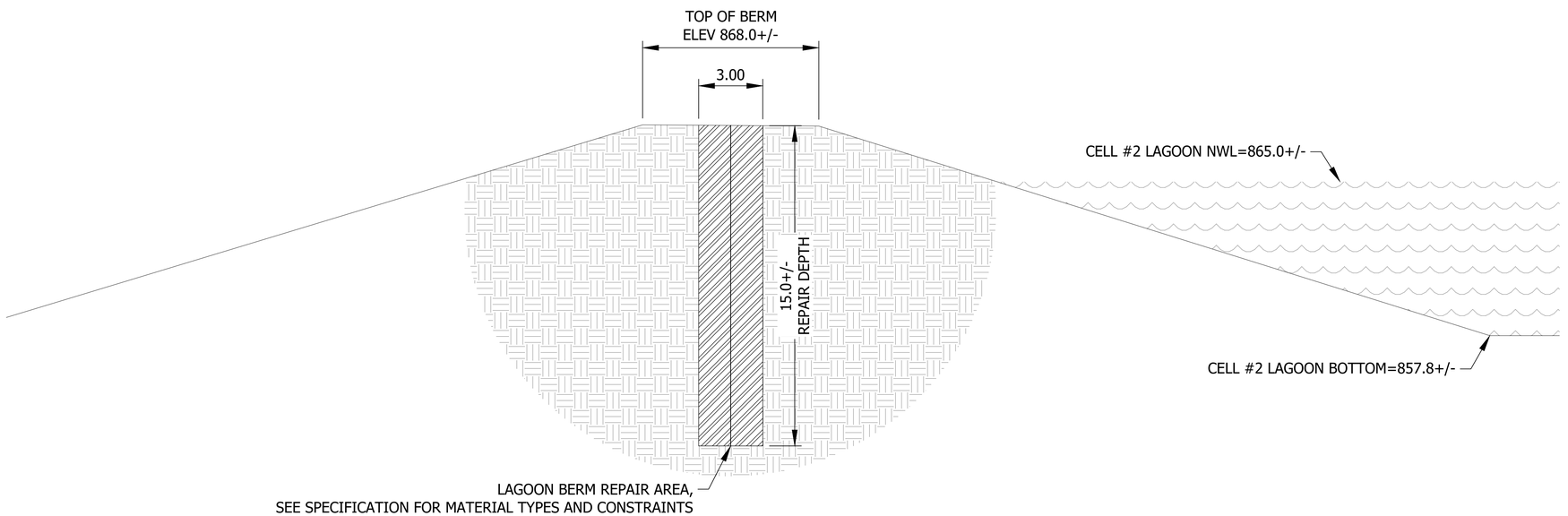
SITE PLAN - AERATION PLAN

SHEET NUMBER:

C-107

13 of 46 SHEETS

SITE PLAN - LAGOON BERM REPAIR
SCALE: 1"=30'
0 30' 60'



A C-108 LAGOON BERM REPAIR SECTION
SCALE: 1"=3'
0 3' 6'

GENERAL NOTES:

1. THE LAGOON REPAIR BACKFILL SHALL HAVE A PERMEABILITY OF NO MORE THAN 1.0 x 10-7 CM/SEC
2. THE LAGOON REPAIR BACKFILL SHALL BE REPLACED IN 6-INCH LIFTS, COMPACTED TO A MINIMUM OF 95% STANDARD PROCTOR DENSITY EACH LIFT. MATERIAL BELOW THE LAGOON REPAIR SHALL ALSO RECEIVE COMPACTION TO 95% STANDARD PROCTOR DENSITY.
3. LAGOON REPAIR BACKFILL SHALL INCORPORATE BENTONITE TO MEET PERMEABILITY REQUIREMENTS IN ACCORDANCE WITH SPECIFICATIONS.
4. CONTRACTOR SHALL TEST THE LAGOON BACKFILL MATERIAL TO CONFIRM IT MEETS THE PERMEABILITY TEST AND PROVIDE A SUBMITTAL TO THE ENGINEER PRIOR TO BACKFILLING. CONTRACTOR SHALL HAVE THE LAGOON REPAIR BACKFILL MATERIAL TESTED BY A 3RD PARTY THROUGH SHELBY TUBE SAMPLING AND LAB TESTING TO CONFIRM THE PERMEABILITY MEETS SPECIFICATION REQUIREMENTS.
5. BENTONITE QUANTITIES TO ACHIEVE REQUIRED PERMEABILITY ARE ESTIMATED AT 10 PERCENT OF THE TOTAL VOLUME OF THE LAGOON REPAIR TRENCH. ESTIMATED BENTONITE QUANTITY = 87 CY BENTONITE QUANTITIES ARE RAW QUANTITIES WITHOUT CONSIDERATION OF VARIABLE SOIL CONDITIONS OR ANY POSSIBLE UNFORESEEN UNSUITABLE MATERIALS. THE CONTRACTOR SHALL BID ACCORDINGLY.
6. CONTRACTOR IS RESPONSIBLE FOR OBTAINING BACKFILL FOR LAGOON BERM REPAIR. THE STOCKPILE FROM EXCAVATED MATERIAL IS AVAILABLE FOR BACKFILL AS LONG AS IT CAN MEET PERMEABILITY REQUIREMENTS.
7. CONTRACTOR SHALL COORDINATE WITH OWNER TO PERFORM WORK. CELL #2 SHALL BE DRAINED COMPLETELY TO MINIMIZE SEEPAGE AND TO PERFORM THE LAGOON REPAIR WORK. OWNER SHALL OPERATE LAGOONS AND CONTROL WATER LEVELS AS REQUIRED. CONTRACTOR SHALL NOTIFY OWNER 1 WEEK PRIOR TO LAGOON REPAIR WORK. WORK SHALL BE COMPLETED WITHIN ONE WEEK.

LEGEND

STRAW BALES

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
VALERIE A. HOLLAND
NUMBER PE-2017009358
PROFESSIONAL ENGINEER
05-04-2022

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
CERTIFICATE OF AUTHORITY NO. 000818 EXPIRES 12/31/2022
www.bartlettwest.com

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DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

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WASTEWATER TREATMENT FACILITY IMPROVEMENTS

5201 SOUTH MORLEY ST
MOBERLY, MISSOURI 65270

PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:

ISSUE DATE: 05/04/2022

CAD DWG FILE: C-108.dwg

DESIGNED BY: VAH
DRAWN BY: MKA
APPROVED BY: BY OTHERS

SHEET TITLE:

SITE PLAN - LAGOON BERM REPAIR

SHEET NUMBER:

C-108

14 of 46 SHEETS

GRADING & EROSION CONTROL PLAN HEADWORKS BUILDING AREA
SCALE: 1"=10'
0 10' 20'

GENERAL NOTES:

1. SEE APPLICABLE DETAILS ON SHEETS C-501 & C-504
2. ALL GRADING WORK SHALL BE COMPLETED IN STRICT CONFORMANCE WITH ALL PERTAINING STATE CODES, STANDARDS, ORDINANCES & REQUIREMENTS
3. ALL AREAS BENEATH PROPOSED STRUCTURES AND WITHIN 2 FEET OUTSIDE OF PROPOSED STRUCTURES SHALL BE PREPARED TO 95% STANDARD PROCTOR WITHIN ± 2% OF OPTIMUM MOISTURE CONTENT
4. FINAL GRADES WITHIN GRAVELED AREAS, AND FINAL GRADES IN ALL OTHER AREAS SHALL BE WITHIN 0.1 FEET OF PLAN ELEVATIONS AND VERIFIED BY SURVEYOR
5. IF UNSUITABLE MATERIALS IS FOUND DURING ANY EXCAVATION, IT SHALL BE REMOVED AND REPLACED WITH SELECT OR TREATED FILL PER ENGINEER'S RECOMMENDATIONS
6. ALTERNATE NO 1, SEE SECTION 012300 - ALTERNATES FOR A DESCRIPTION OF THE WORK INCLUDED.

EQUIPMENT & ITEM LIST:

1. EXISTING HEADWORKS BUILDING, DO NOT DISTURB
2. EXISTING LIFT STATION, DO NOT DISTURB
3. STORM INLET WITH WING WALL, SEE DETAIL 3 ON DRAWING C-501
4. VALVE VAULT FOR WASH DOWN, DO NOT DISTURB
5. 18" CLASS IV RCP WITH END SECTIONS, 4" MINIMUM COVER, 1.0% MIN SLOPE, GRADE TO DRAIN
6. SILT FENCE, SEE DETAIL 3 ON DRAWING C-504
7. STRAW BALES, SEE DETAIL 2 ON DRAWING C-504
8. REGRADE DITCH TO BOTTOM OF STORM INLET, 3.8' BOTTOM WIDTH TO MATCH INLET BOX
9. ROCK BLANKET, SEE OUTFALL WITH RIP-RAP SCOUR PROTECTIO DETAIL ON DRAWING C-501
10. MATCH ELEVATION AT BOTTOM OF INLET STRUCTURE

ESTIMATED EARTHWORK QUANTITY:

ESTIMATE EARTHWORK

CUT	50 CY
FILL	28 CY
NET CUT:	22 CY

NOTE:
1. EARTHWORK QUANTITIES ARE RAW QUANTITIES WITHOUT CONSIDERATION OF SHRINKAGE AND SWELL FACTORS, COMPACTION, PROPOSED PIPING AND STRUCTURES, TOPSOIL, OR ANY POSSIBLE UNFORESEEN UNSUITABLE MATERIALS. THE CONTRACTOR SHALL BID ACCORDINGLY. IT IS ANTICIPATED THAT THE SITE MAY HAVE A NET CUT FROM ALL THE EARTHWORK ON THE PROJECT. EXCESS MATERIAL SHALL BE PLACED AT AN EVEN THICKNESS AT THE LOCATION SHOWN ON DRAWING C-103, RAKED TO REMOVAL AGGREGATE MATERIAL, AND SEEDED AND MULCHED TO MEET SPECIFICATIONS REQUIREMENTS. SEDIMENT LADEN RUNOFF SHALL BE MAINTAINED FROM THE EXCESS EXCAVATION SITE MEETING EROSION CONTROL AND SWPPP SPECIFICATIONS.

LEGEND

- GRAVEL
- SILT FENCE
- STRAW BALES
- FLOWLINE

DT	DITCH FLOWLINE
ME	MATCH EXISTING
TOG	TOP OF GRAVEL

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
MATTHEW VANDELTOUR
NUMBER PE-2004029834
PROFESSIONAL ENGINEER
5-4-22

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
FAX 573.634.5860
CERTIFICATE OF AUTHORITY NO. 000548 - www.bartlettwest.com

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
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WASTEWATER TREATMENT FACILITY IMPROVEMENTS

5201 SOUTH MORLEY ST
MOBERLY, MISSOURI 65270

PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

REVISION:
DATE:
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DATE:
REVISION:
DATE:

ISSUE DATE: 05/04/2022

CAD DWG FILE: C-109.dwg

DESIGNED BY: MJV
DRAWN BY: MKA
APPROVED BY: VAH

SHEET TITLE:

SITE GRADING & EROSION CONTROL PLAN - WEST AREA

SHEET NUMBER:

C-109

GRADING & EROSION CONTROL PLAN TRIPLEPOINT EQUIPMENT AREA

SCALE: 1"=20'

0 20' 40'

GENERAL NOTES:

1. SEE APPLICABLE DETAILS ON SHEETS C-501 & C-504
2. ALL GRADING WORK SHALL BE COMPLETED IN STRICT CONFORMANCE WITH ALL PERTAINING STATE CODES, STANDARDS, ORDINANCES & REQUIREMENTS
3. ALL AREAS BENEATH PROPOSED STRUCTURES AND WITHIN 2 FEET OUTSIDE OF PROPOSED STRUCTURES SHALL BE PREPARED TO 95% STANDARD PROCTOR WITHIN ± 2% OF OPTIMUM MOISTURE CONTENT
4. FINAL GRADES WITHIN GRAVELED AREAS, AND FINAL GRADES IN ALL OTHER AREAS SHALL BE WITHIN 0.1 FEET OF PLAN ELEVATIONS AND VERIFIED BY SURVEYOR
5. IF UNSUITABLE MATERIALS IS FOUND DURING ANY EXCAVATION, IT SHALL BE REMOVED AND REPLACED WITH SELECT OR TREATED FILL PER ENGINEER'S RECOMMENDATIONS

REFERENCE NOTES:

① FLOW CONTROL STRUCTURE, SEE DRAWING D-101
② BLOWERS AND CONTROLS, SEE DRAWING D-103
③ TRIPLEPOINT TANKS(12 ARES AERATORS), SEE DRAWING D-102
④ FUTURE DENITRIFICATION & PHOSPHORUS REMOVAL TANKS, SHOWN FOR REFERENCE ONLY
⑤ NOT USED
⑥ SILT FENCE, SEE DETAIL 3 ON DRAWING C-504
⑦ STRAW BALES, SEE DETAIL 2 ON DRAWING C-504
⑧ CONSTRUCT 3'-0" WIDE x 2'-0" DEEP FLAT BOTTOM DITCH WITH 2:1 SIDE SLOPES
⑨ WATER STOP, SEE DETAIL 6 ON DRAWING C-502
⑩ FUTURE LIFT STATION, SHOWN FOR REFERENCE ONLY

ESTIMATED EARTHWORK QUANTITY:

ESTIMATE EARTHWORK FOR TRIPLEPOINT SITE	
CUT	577 CY
FILL	1,221 CY
NET FILL:	644 CY

NOTE:

1. EARTHWORK QUANTITIES ARE RAW QUANTITIES WITHOUT CONSIDERATION OF SHRINKAGE AND SWELL FACTORS, COMPACTION, PROPOSED PIPING AND STRUCTURES, TOPSOIL, OR ANY POSSIBLE UNFORESEEN UNSUITABLE MATERIALS. THE CONTRACTOR SHALL BID ACCORDINGLY. IT IS ANTICIPATED THAT THE SITE MAY HAVE A NET CUT FROM ALL THE EARTHWORK ON THE PROJECT. EXCESS MATERIAL SHALL BE PLACED AT AN EVEN THICKNESS AT THE LOCATION SHOWN ON DRAWING C-103, RAKED TO REMOVAL AGGREGATE MATERIAL, AND SEEDED AND MULCHED TO MEET SPECIFICATIONS REQUIREMENTS. SEDIMENT LADEN RUNOFF SHALL BE MAINTAINED FROM THE EXCESS EXCAVATION SITE MEETING EROSION CONTROL AND SWPPP SPECIFICATIONS.

LEGEND

▭	GRAVEL
/ / / / /	SILT FENCE
╪	STRAW BALES
▸ - -	FLOWLINE
DT	DITCH FLOWLINE
ME	MATCH EXISTING
TOG	TOP OF GRAVEL

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

MATTHEW VANDER TUIG
NUMBER PE-2004026634
5-4-22

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109.4000
PHONE 573.634.3181
CERTIFICATE OF AUTHORITY NO. 000167 - ENGINEERING
www.bartlettwest.com

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WASTEWATER TREATMENT
FACILITY IMPROVEMENTS

5201 SOUTH MORLEY ST
MOBERLY, MISSOURI 65270

PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

REVISION:
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REVISION:
DATE:
ISSUE DATE: 05/04/2022

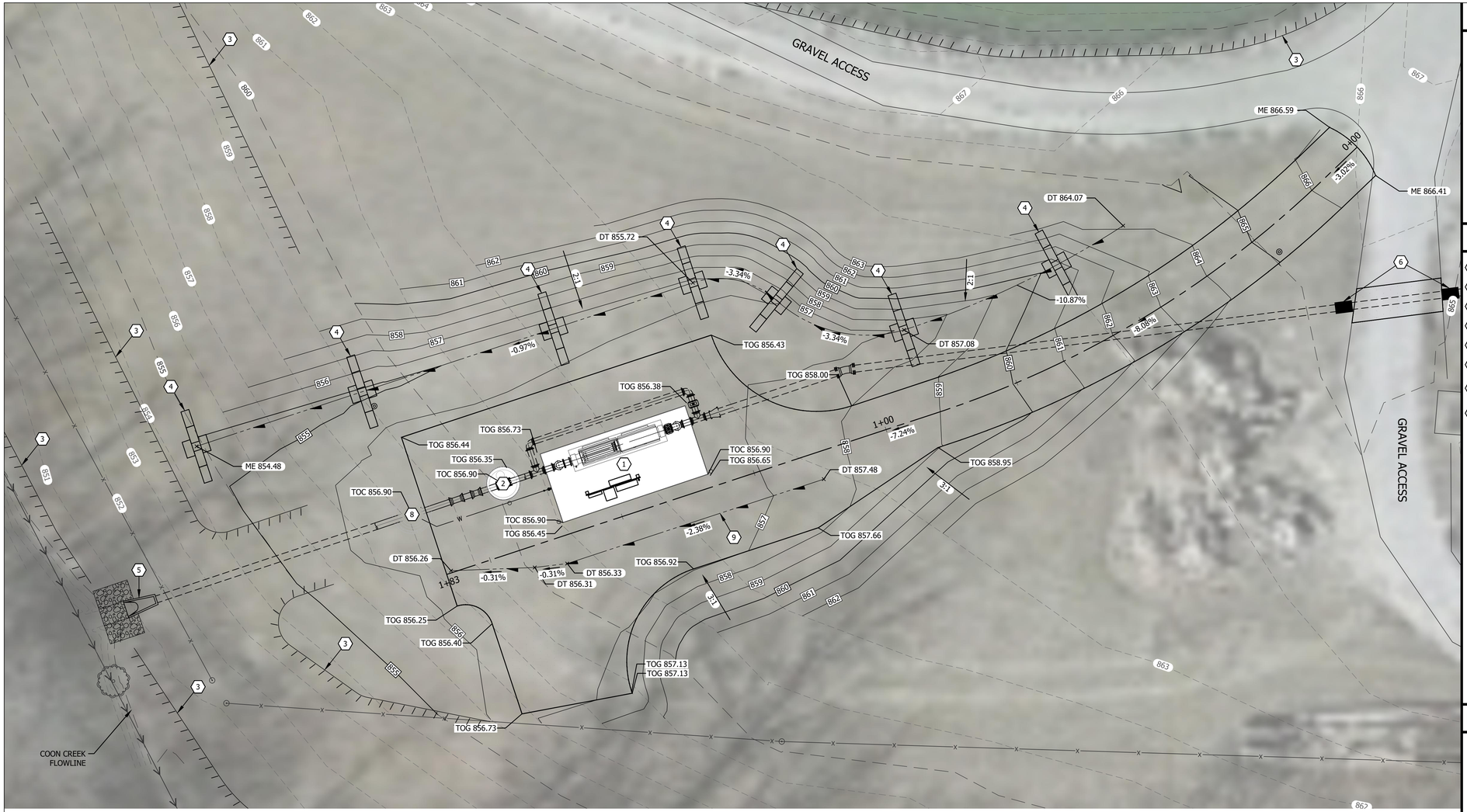
CAD DWG FILE: C-110.dwg

DESIGNED BY: MJV
DRAWN BY: MKA
APPROVED BY: VAH

SHEET TITLE:
SITE GRADING & EROSION CONTROL PLAN - EAST AREA 1

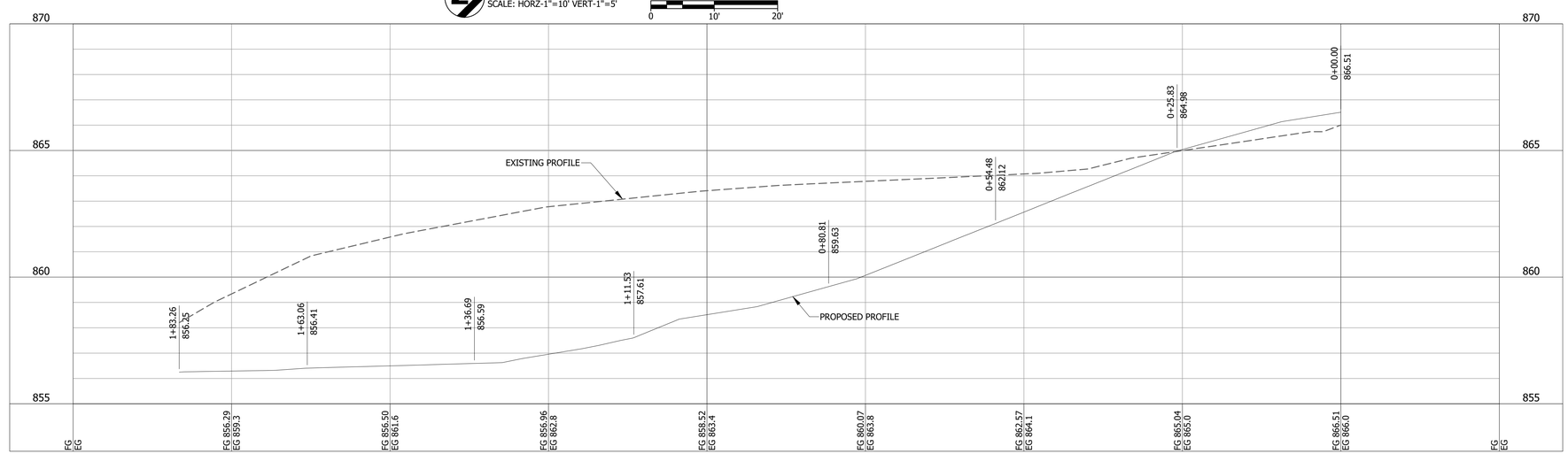
SHEET NUMBER:
C-110

16 of 46 SHEETS



GRADING & EROSION CONTROL PLAN UV DISINFECTION & FLOW METER AREA

SCALE: HORZ-1"=10' VERT-1"=5'



GENERAL NOTES:

1. SEE APPLICABLE DETAILS ON SHEETS C-501 - C-504
2. ALL GRADING WORK SHALL BE COMPLETED IN STRICT CONFORMANCE WITH ALL PERTAINING STATE CODES, STANDARDS, ORDINANCES & REQUIREMENTS
3. ALL AREAS BENEATH PROPOSED STRUCTURES AND WITHIN 2 FEET OUTSIDE OF PROPOSED STRUCTURES SHALL BE PREPARED TO 95% STANDARD PROCTOR WITHIN ± 2% OF OPTIMUM MOISTURE CONTENT
4. FINAL GRADES WITHIN GRAVELED AREAS, AND FINAL GRADES IN ALL OTHER AREAS SHALL BE WITHIN 0.1 FEET OF PLAN ELEVATIONS AND VERIFIED BY SURVEYOR
5. IF UNSUITABLE MATERIALS IS FOUND DURING ANY EXCAVATION, IT SHALL BE REMOVED AND REPLACED WITH SELECT OR TREATED FILL PER ENGINEER'S RECOMMENDATIONS

REFERENCE NOTES:

1. UV DISINFECTION EQUIPMENT, SEE DRAWING D-104
2. MAGNETIC FLOWMETER STRUCTURE, SEE DRAWING D-105
3. SILT FENCE, SEE DETAIL 3 ON DRAWING C-504
4. STRAW BALES, SEE DETAIL 2 ON DRAWING C-504
5. OUTFALL STRUCTURE, SEE DETAIL 4, NOTE 3 FOR DIMENSIONS ON DRAWING C-501
6. WATER STOP, SEE DETAIL 6 ON DRAWING C-502
8. WASHDOWN MANHOLE, SEE DRAWING D-105 FOR ADDITIONAL INFORMATION; SEE DRAWING C-503 FOR ADDITIONAL MANHOLE DETAILS
9. CONTRACTOR SHALL GRADE A SLIGHT DRAW IN THE GRAVEL PAVEMENT AS SHOWN TO PROMOTE POSITIVE DRAINAGE

ESTIMATED EARTHWORK QUANTITY:

ESTIMATE EARTHWORK FOR UV & MAG METER SITE

CUT	1,349 CY
FILL	5 CY
NET CUT:	1,344 CY

NOTE:
1. EARTHWORK QUANTITIES ARE RAW QUANTITIES WITHOUT CONSIDERATION OF SHRINKAGE AND SWELL FACTORS, COMPACTION, PROPOSED PIPING AND STRUCTURES, TOPSOIL, OR ANY POSSIBLE UNFORESEEN UNSUITABLE MATERIALS. THE CONTRACTOR SHALL BID ACCORDINGLY. IT IS ANTICIPATED THAT THE SITE MAY HAVE A NET CUT FROM ALL THE EARTHWORK ON THE PROJECT. EXCESS MATERIAL SHALL BE PLACED AT AN EVEN THICKNESS AT THE LOCATION SHOWN ON DRAWING C-103, RAKED TO REMOVAL AGGREGATE MATERIAL, AND SEEDED AND MULCHED TO MEET SPECIFICATIONS REQUIREMENTS. SEDIMENT LADEN RUNOFF SHALL BE MAINTAINED FROM THE EXCESS EXCAVATION SITE MEETING EROSION CONTROL AND SWPPP SPECIFICATIONS.

LEGEND

- GRAVEL
- SILT FENCE
- STRAW BALES
- FLOWLINE

DT	DITCH FLOWLINE
ME	MATCH EXISTING
TOG	TOP OF GRAVEL

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
MARK J. VOSSEN
NUMBER
PE-2004026634
PROFESSIONAL ENGINEER
5-4-22

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
CERTIFICATE OF AUTHORITY NO. 000810 - ENGINEERING
www.bartlettwest.com

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WASTEWATER TREATMENT FACILITY IMPROVEMENTS

5201 SOUTH MORLEY ST
MOBERLY, MISSOURI 65270

PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

REVISION:
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REVISION:
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ISSUE DATE: 05/04/2022

CAD DWG FILE: C-111.dwg

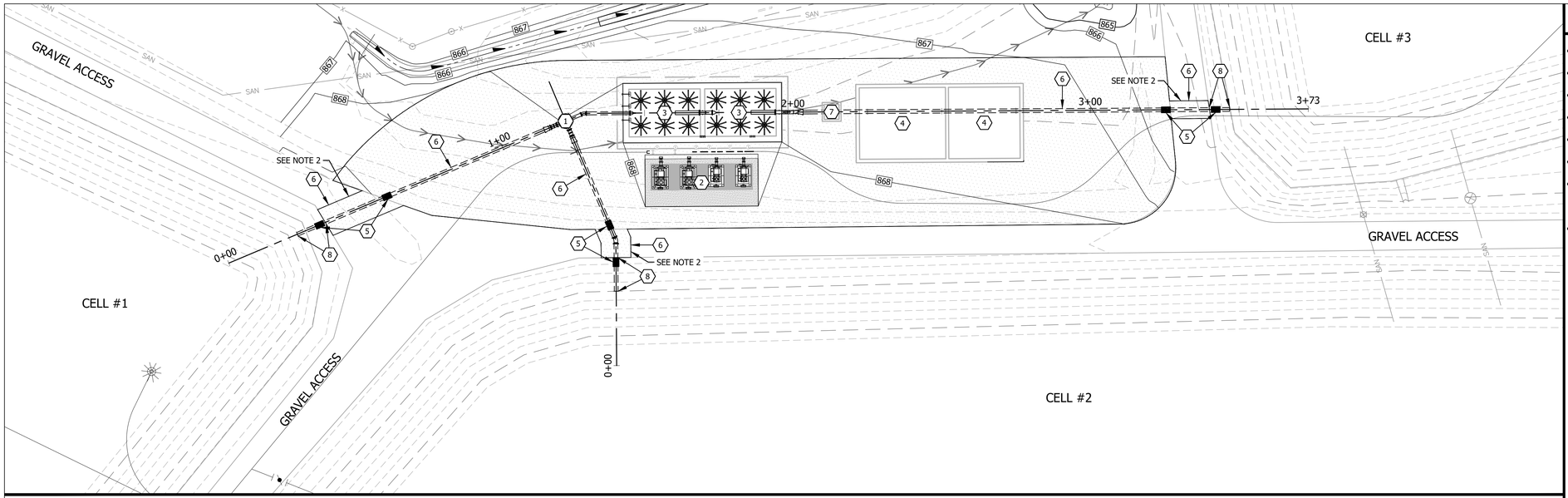
DESIGNED BY: MJV
DRAWN BY: MKA
APPROVED BY: VAH

SHEET TITLE:

SITE GRADING & EROSION CONTROL PLAN - EAST AREA 2

SHEET NUMBER:

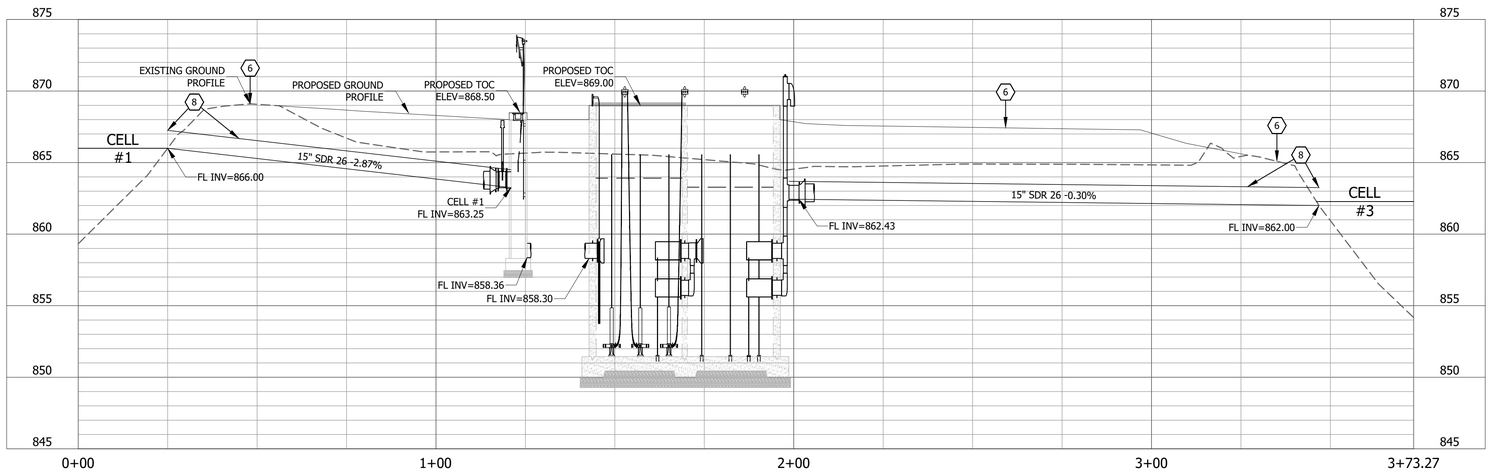
C-111



CELL 1 THROUGH TRIPLE POINT TO CELL 3 & CELL 2 TO FLOW CONTROL STRUCTURE

SCALE: HORZ-1"=20' VERT-1"=5'

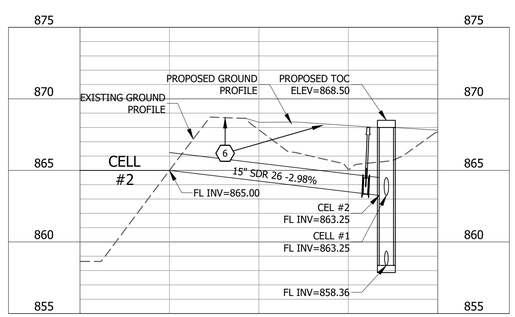
0 20' 40'



1 CELL 1 THROUGH TRIPLE POINT TO CELL 3

SCALE: HORZ-1"=20' VERT-1"=5'

0 20' 40'



2 CELL 2 TO FLOW CONTROL STRUCTURE

SCALE: HORZ-1"=20' VERT-1"=5'

0 20' 40'

REFERENCE NOTES:

1. FLOW CONTROL STRUCTURE, SEE DRAWING D-101
2. BLOWERS AND CONTROLS, SEE DRAWING D-103
3. TRIPLEPOINT TANKS(12 ARES AERATORS), SEE DRAWING D-102
4. FUTURE DENITRIFICATION & PHOSPHORUS REMOVAL TANK, SHOWN FOR REFERENCE ONLY
5. WATER STOP, SEE DETAIL 6 ON DRAWING C-502
6. ALL PIPING UNDER GRAVEL ACCESS SHALL UTILIZE DETAIL 3 ON DRAWING C-502
7. FUTURE LIFT STATION, SHOWN FOR REFERENCE ONLY
8. THE ENTIRE DEPTH OF THE PIPE TRENCH WITHIN THE INSIDE SLOPE OF THE LAGOON BERM SHALL CONSIST OF BACKFILL FROM EXCAVATED BERM SOIL, COMPACTED TO 95% STANDARD PROCTOR DENSITY. IN ADDITION, THE CONTRACTOR SHALL RE-ESTABLISH THE FULL DEPTH OF THE BASIN CLAY LINER ALONG ANY PORTION OF THE BERM SLOPE THAT IS DISTURBED.

GENERAL NOTES:

1. SEE SITE PLAN - TRIPLEPOINT EQUIPMENT DRAWING C-105, SITE GRADING & EROSION CONTROL PLAN - EAST AREA 1 DRAWING C-110, AND TRIPLEPOINT TANK PLAN & SECTIONS DRAWING D-102 FOR ADDITIONAL INFORMATION.
2. CONTRACTOR SHALL REPLACE LAGOON LINER WITH INSTALLATION OF EQUALIZATION PIPE. LINER SHALL BE REPLACED IN 6-INCH LIFTS. COMPACTION SHALL ACHIEVE 95% STANDARD PROCTOR DENSITY EACH LIFT. MATERIAL BELOW LAGOON LINER SHALL ALSO RECEIVE COMPACTION TO 95% STANDARD PROCTOR DENSITY.

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
VALERIE A. HOLLAND
NUMBER PE-2017009358
PROFESSIONAL ENGINEER
05-04-2022

Bartlett&West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
FAX 573.634.5346
CERTIFICATE OF AUTHORITY NO. 000178 RENEWAL 2022
www.bartlettwest.com

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DEPARTMENT OF CORRECTIONS

WASTEWATER TREATMENT FACILITY IMPROVEMENTS

5201 SOUTH MORLEY ST
MOBERLY, MISSOURI 65270

PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 05/04/2022

CAD DWG FILE: C-112.dwg

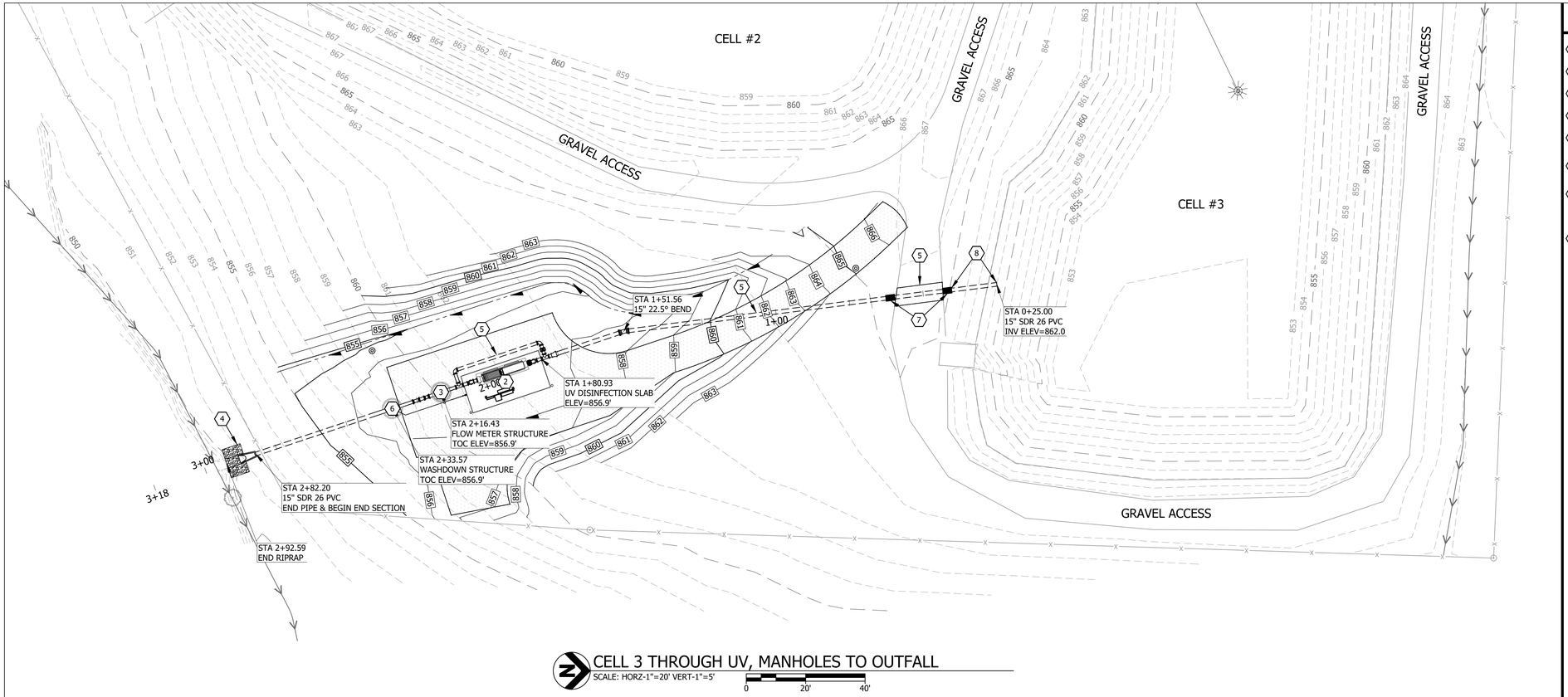
DESIGNED BY: MJV
DRAWN BY: MKA
APPROVED BY: VAH

SHEET TITLE:

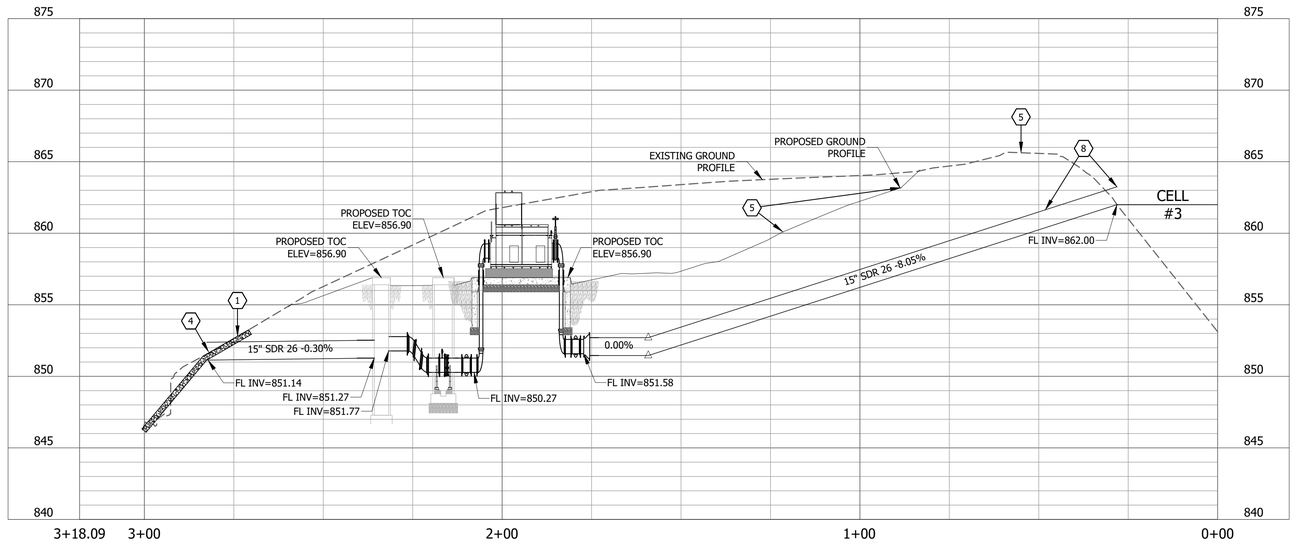
SANITARY SEWER PLAN & PROFILE

SHEET NUMBER:

C-112



CELL 3 THROUGH UV, MANHOLES TO OUTFALL
SCALE: HORZ-1"=20' VERT-1"=5'
0 20' 40'



REFERENCE NOTES:

1. OUTFALL STRUCTURE WITH RIP-RAP SCOUR PROTECTION (NOT SHOWN), SEE DETAIL 2 ON DRAWING C-501
2. UV DISINFECTION EQUIPMENT, SEE DRAWING D-104
3. MAGNETIC FLOWMETER STRUCTURE, SEE DRAWING D-105
4. OUTFALL STRUCTURE (NOT SHOWN IN PROFILE), SEE DETAIL 4, NOTE 3 FOR DIMENSIONS ON DRAWING C-501
5. ALL PIPING UNDER GRAVEL ACCESS SHALL UTILIZE DETAIL 3 ON DRAWING C-502
6. WASHDOWN MANHOLE, SEE DRAWING D-105 FOR ADDITIONAL INFORMATION; SEE DRAWING C-503 FOR ADDITIONAL MANHOLE DETAILS
7. WATER STOP, SEE DETAIL 6 ON DRAWING C-502
8. THE ENTIRE DEPTH OF THE PIPE TRENCH WITHIN THE INSIDE SLOPE OF THE LAGOON BERM SHALL CONSIST OF BACKFILL FROM EXCAVATED BERM SOIL, COMPACTED TO 95% STANDARD PROCTOR DENSITY. IN ADDITION, THE CONTRACTOR SHALL RE-ESTABLISH THE FULL DEPTH OF THE BASIN CLAY LINER ALONG ANY PORTION OF THE BERM SLOPE THAT IS DISTURBED.

GENERAL NOTES:

1. SEE SITE PLAN - UV & FLOW METER DRAWING C-106, SITE GRADING & EROSION CONTROL PLAN - EAST AREA 1 DRAWING C-110, AND FLOW METER WASHDOWN MHS PLAN & SECTION D-105 FOR ADDITIONAL INFORMATION.

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
VALERIE A. HOLLAND
NUMBER PE-2017009358
PROFESSIONAL ENGINEER
05-04-2022

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
CERTIFICATE OF AUTHORITY NO. 000548-INFORMATION
www.bartlettwest.com

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WASTEWATER TREATMENT FACILITY IMPROVEMENTS

5201 SOUTH MORLEY ST
MOBERLY, MISSOURI 65270

PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

REVISION: DATE:
REVISION: DATE:
REVISION: DATE:
ISSUE DATE: 05/04/2022

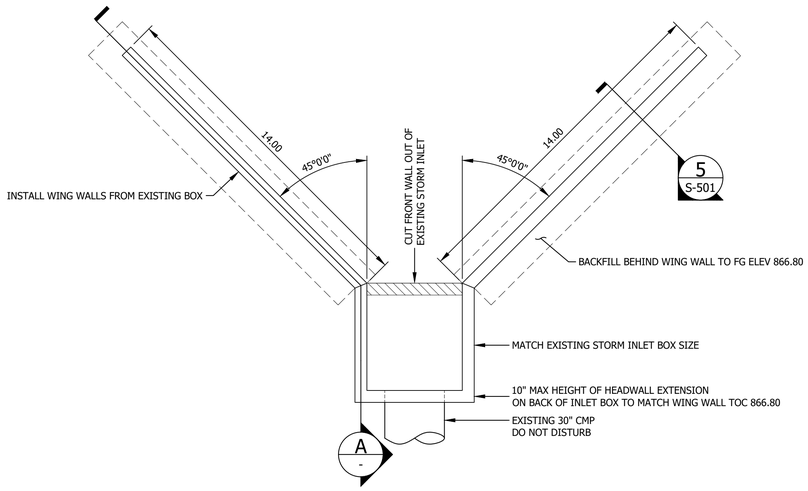
CAD DWG FILE: C-113.dwg

DESIGNED BY: MJV
DRAWN BY: MKA
APPROVED BY: VAH

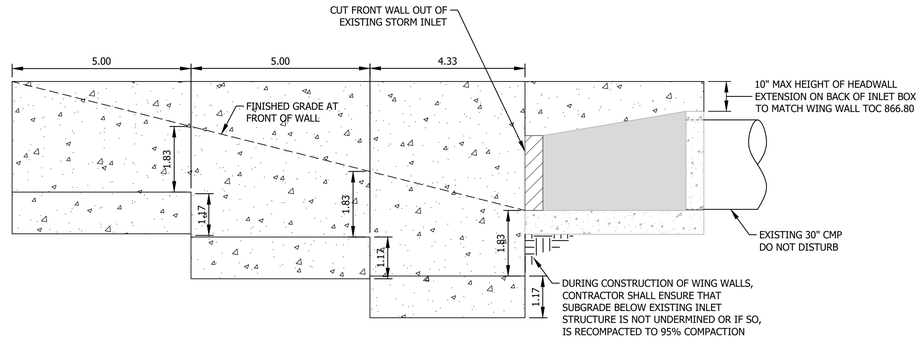
SHEET TITLE:
SANITARY SEWER PLAN & PROFILE

SHEET NUMBER:
C-113

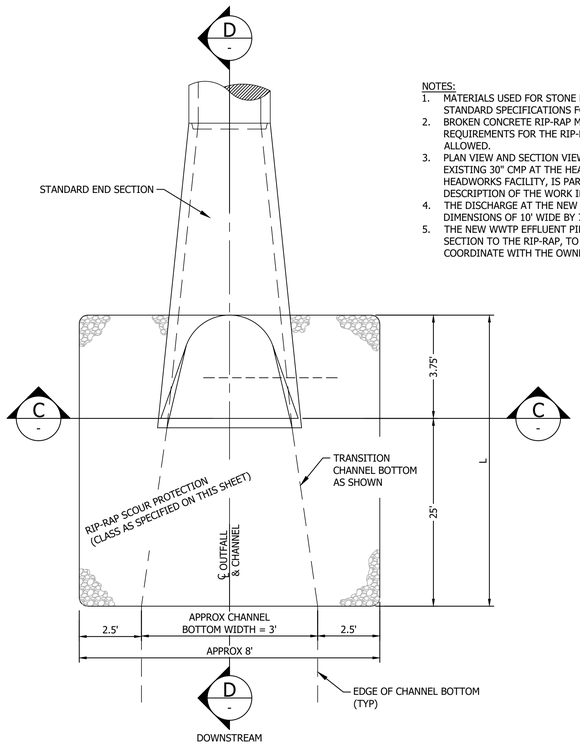
NOTES:
1. WHILE SECTION A-A SHOW THE LEFT WING WALL, THE WING WALLS ARE SYMMETRICAL ON BOTH SIDES OF THE INLET. THE MINIMUM DEPTH OF 1.83 FT TO TOP OF WALL FOOTING SHALL BE MET ON RIGHT WING WALL.
2. ALTERNATE NO 1, SEE SECTION 012300 - ALTERNATES FOR A DESCRIPTION OF THE WORK INCLUDED.



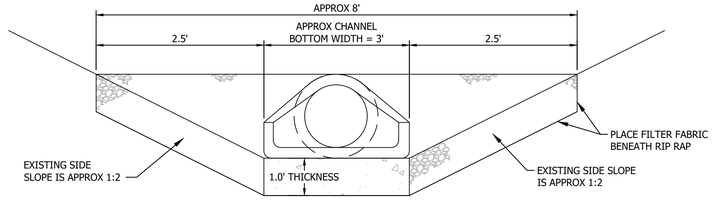
1 STORM INLET PLAN
SCALE: 1"=3'
0 3' 6'



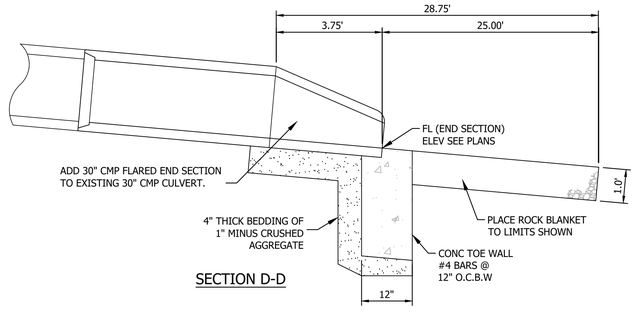
A C-501 SECTION
SCALE: 1"=2'
0 2' 4'



NOTES:
1. MATERIALS USED FOR STONE RIP-RAP SHALL CONFORM TO THE REQUIREMENTS OF THE MISSOURI STANDARD SPECIFICATIONS FOR TYPE 2 ROCK DITCH LINER.
2. BROKEN CONCRETE RIP-RAP MAY BE SUBSTITUTED FOR STONE RIP-RAP PROVIDED IT MEETS GRADATION REQUIREMENTS FOR THE RIP-RAP SPECIFIED. NO VISUAL STEEL FROM BROKEN CONCRETE SHALL BE ALLOWED.
3. PLAN VIEW AND SECTION VIEWS C-C AND D-D OF THIS DETAIL SHALL BE USED FOR PIPE DISCHARGE AT EXISTING 30" CMP AT THE HEADWORKS FACILITY. THE OUTFALL DETAIL, FOR THE 30" CMP AT THE HEADWORKS FACILITY, IS PART OF ALTERNATE NO 1, SEE SECTION 012300 - ALTERNATES FOR A DESCRIPTION OF THE WORK INCLUDED.
4. THE DISCHARGE AT THE NEW WWTP EFFLUENT DISCHARGE SHALL BE ALONG THE EXISTING SLOPE HAVING DIMENSIONS OF 10' WIDE BY 7' LONG.
5. THE NEW WWTP EFFLUENT PIPE SHALL PROVIDE SUFFICIENT DROP, FROM THE END OF THE FLARED END SECTION TO THE RIP-RAP, TO PROVIDE THE OWNER THE ABILITY TO OBTAIN EFFLUENT SAMPLES. COORDINATE WITH THE OWNER.



SECTION C-C



SECTION D-D

2 OUTFALL WITH RIP-RAP SCOUR PROTECTION
NOT TO SCALE

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
MARY HOW VANDER TUIG
NUMBER PE-2004028884
PROFESSIONAL ENGINEER
5-4-22

Bartlett&West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
FAX 573.634.8855
CERTIFICATE OF AUTHORITY NO. 000161 RENEWAL 2022
www.bartlettwest.com

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DIVISION OF FACILITIES MANAGEMENT,
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WASTEWATER TREATMENT FACILITY IMPROVEMENTS

5201 SOUTH MORLEY ST
MOBERLY, MISSOURI 65270

PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

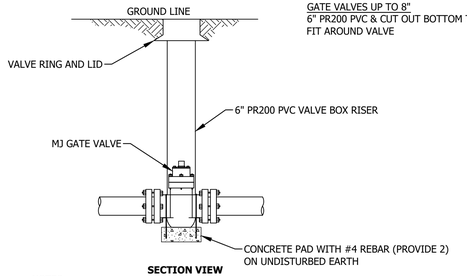
REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 05/04/2022

CAD DWG FILE: C-501.dwg

DESIGNED BY: MKA
DRAWN BY: MKA
APPROVED BY: VAH

SHEET TITLE:
CIVIL DETAILS

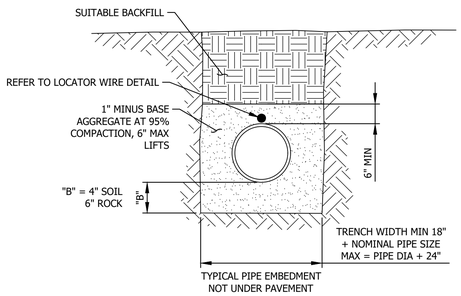
SHEET NUMBER:
C-501



SECTION VIEW

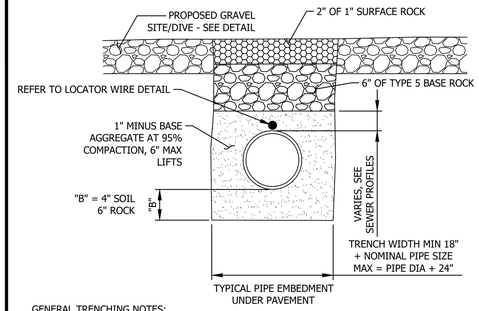
NOTES:
1. ANCHOR COUPLING OR PVC PIPE WITH TIEBACK RODS WILL BE REQUIRED BETWEEN VALVE AND FITTINGS.
2. WRAP VALVE AND JOINTS WITH VISQUEEN.
3. VALVE AND RISER SHALL BE PLUMB AND CHECKED BY A LEVEL.
4. IF VALVE BOX IS LOCATED IN PAVEMENT, VALVE BOX SHALL BE CAST IRON TWO PIECE ADJUSTABLE SCREW TYPE VALVE BOX WITH DROP LID (5 1/4" SHAFT)

1 BURIED GATE VALVE
NOT TO SCALE



GENERAL TRENCHING NOTES:
1. SUITABLE BACKFILL MATERIAL SHALL BE FREE OF LARGE ROCK (1" OR LARGER), MUCK AND DEBRIS.
2. SUITABLE MATERIAL MAY HAVE TO BE HAULED TO THE SITE WHEN ENCOUNTERING ROCK EXCAVATION. EXCAVATED ROCK WILL NOT BE ALLOWED BACK IN THE TRENCH WITHIN 3' OF THE TOP OF PIPE.
3. PIPE SHALL BE FULLY SUPPORTED FOR ITS ENTIRE LENGTH WITH APPROPRIATE COMPACTION UNDER THE PIPE HAUNCHES.
4. FINAL GRADING SHALL INCLUDE RAKE AND REMOVE ROCKS, SEED, MULCH AND FERTILIZE ALL DISTURBED AREAS; ALSO HAUL-IN AND SPREAD 2" OF SCREENED AND PULVERIZED TOPSOIL ON ALL DISTURBED AREAS AFTER RAKING AND PRIOR TO SEEDING.
5. IN AREAS OF SEWER INSTALLATIONS IN NEW FILL OR PREVIOUSLY DISTURBED FILL, SUBGRADE UNDER PIPE EMDEDMENT MUST MEET COMPACTION REQUIREMENTS OF EARTHWORK SPECIFICATION.

2 TYPICAL TRENCH DETAIL
NOT TO SCALE



GENERAL TRENCHING NOTES:
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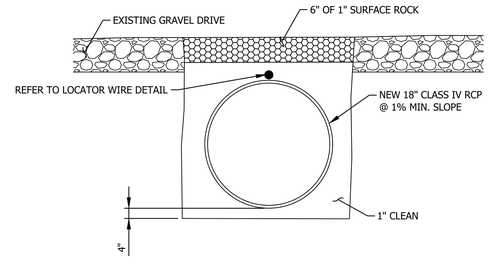
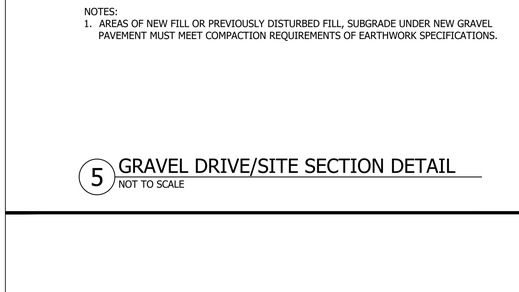
3. PIPE SHALL BE FULLY SUPPORTED FOR ITS ENTIRE LENGTH WITH APPROPRIATE COMPACTION UNDER THE PIPE HAUNCHES.
4. IN AREAS OF SEWER INSTALLATIONS IN NEW FILL OR PREVIOUSLY DISTURBED FILL, SUBGRADE UNDER PIPE EMDEDMENT MUST MEET COMPACTION REQUIREMENTS OF EARTHWORK SPECIFICATION.

3 TRENCH DETAIL UNDER PAVEMENT
NOT TO SCALE



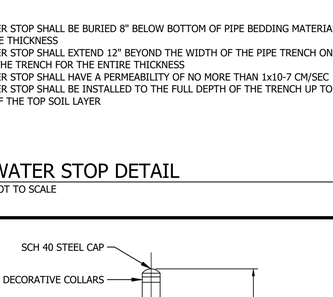
GENERAL TRENCHING NOTES:
1. SUITABLE BACKFILL MATERIAL SHALL BE FREE OF LARGE ROCK (1" OR LARGER), MUCK AND DEBRIS.
2. SUITABLE MATERIAL MAY HAVE TO BE HAULED TO THE SITE WHEN ENCOUNTERING ROCK EXCAVATION. EXCAVATED ROCK WILL NOT BE ALLOWED BACK IN THE TRENCH WITHIN 3' OF THE TOP OF PIPE.
3. PIPE SHALL BE FULLY SUPPORTED FOR ITS ENTIRE LENGTH WITH APPROPRIATE COMPACTION UNDER THE PIPE HAUNCHES.
4. IN AREAS OF SEWER INSTALLATIONS IN NEW FILL OR PREVIOUSLY DISTURBED FILL, SUBGRADE UNDER PIPE EMDEDMENT MUST MEET COMPACTION REQUIREMENTS OF EARTHWORK SPECIFICATION.
5. ALTERNATE NO 1, SEE SECTION 012300 - ALTERNATES FOR A DESCRIPTION OF THE WORK INCLUDED.

4 NEW 18" RCP TRENCH DETAIL
NOT TO SCALE



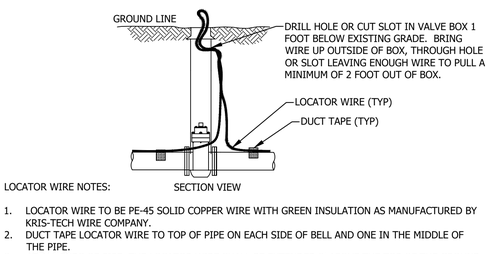
NOTES:
1. AREAS OF NEW FILL OR PREVIOUSLY DISTURBED FILL, SUBGRADE UNDER NEW GRAVEL PAVEMENT MUST MEET COMPACTION REQUIREMENTS OF EARTHWORK SPECIFICATIONS.

5 GRAVEL DRIVE/SITE SECTION DETAIL
NOT TO SCALE



NOTES:
1. CLAY WATER STOP SHALL BE BURIED 8" BELOW BOTTOM OF PIPE BEDDING MATERIAL FOR THE ENTIRE THICKNESS
2. CLAY WATER STOP SHALL EXTEND 12" BEYOND THE WIDTH OF THE PIPE TRENCH ON BOTH SIDES OF THE TRENCH FOR THE ENTIRE THICKNESS
3. CLAY WATER STOP SHALL HAVE A PERMEABILITY OF NO MORE THAN 1x10-7 CM/SEC
4. CLAY WATER STOP SHALL BE INSTALLED TO THE FULL DEPTH OF THE TRENCH UP TO THE BOTTOM OF THE TOP SOIL LAYER

6 WATER STOP DETAIL
NOT TO SCALE

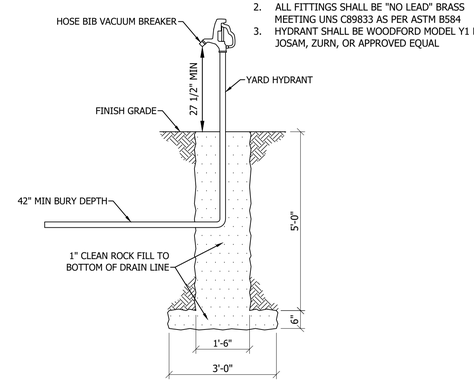


LOCATOR WIRE NOTES: SECTION VIEW

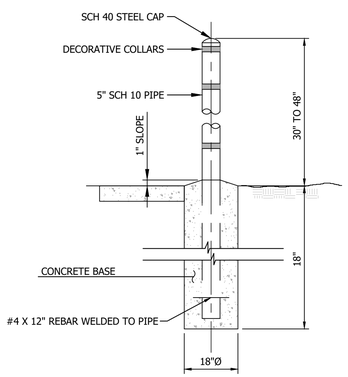
1. LOCATOR WIRE TO BE PE-45 SOLID COPPER WIRE WITH GREEN INSULATION AS MANUFACTURED BY KRIS-TECH WIRE COMPANY.
2. DUCT TAPE LOCATOR WIRE TO TOP OF PIPE ON EACH SIDE OF BELL AND ONE IN THE MIDDLE OF THE PIPE.
3. AT ALL ENDS OF PIPE, THE LOCATOR WIRE SHALL BE EXTENDED 2' ABOVE THE TOP OF THE GROUND AND BE ACCESSIBLE.
4. TWO SETS OF LOCATOR WIRE SHALL BE INSTALLED ON PIPE AT ALL BORINGS UNDER HIGHWAYS, AND CREEKS, OR AT ADDITIONAL LOCATIONS AS SHOWN ON THE PLANS.
5. DO NOT WRAP WIRE AROUND BOLTS, NUTS, ETC.
6. SPLICE LOCATOR WIRE USING SPLICING KIT 3M DBR. DUCT TAPE LOCATOR WIRE TO PIPE ON EACH END OF THE SPLICE.
7. LOCATOR WIRE SHALL BE BROUGHT INTO ALL VAULTS, MANHOLES, RISERS AND OR AIR RELEASE VALVE VAULTS FOR ACCESS, LEAVING ENOUGH WIRE TO PULL A MINIMUM OF 2 FOOT OUT.
8. WHERE CALLED FOR ON THE PLANS FOR A SPLICE BOX, THE SPLICE BOX SHALL BE IDENTICAL TO A VALVE BOX RISER AND LID WITH THE INSTALLATION OF THE WIRE IDENTICAL TO THAT IN A VALVE BOX.
9. LOCATOR WIRE INSTALLATION CONTINUITY SHALL BE WARRANTED UNDER THE SAME 1 YEAR PIPE AND WORKMANSHIP WARRANTY.

7 LOCATOR WIRE DETAIL
NOT TO SCALE

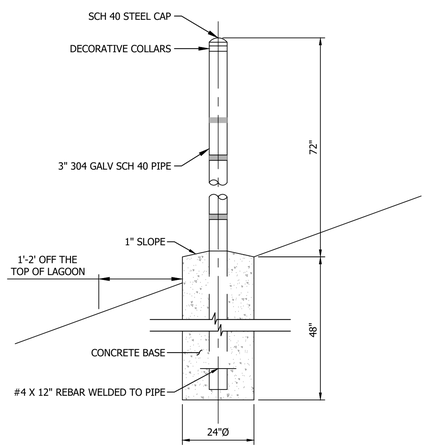
NOTES:
1. HOSE BIB SHALL ACCOMMODATE A STANDARD 3/4" GARDEN HOSE
2. ALL FITTINGS SHALL BE "NO LEAD" BRASS MEETING UNS C89833 AS PER ASTM B584
3. HYDRANT SHALL BE WOODFORD MODEL Y1 BY JOSAM, ZURN, OR APPROVED EQUAL



8 FROST FREE YARD HYDRANT
NOT TO SCALE



9 PIPE BOLLARD - EMBED MOUNTING
NOT TO SCALE



10 PIPE BOLLARD - SHORE ANCHORS
NOT TO SCALE

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
VALERIE A. HOLLAND
NUMBER PE-2017009358
PROFESSIONAL ENGINEER
05-04-2022

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
FAX 573.634.5146
CERTIFICATE OF AUTHORITY NO. 000159-00
www.bartlettwest.com

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PROJECT # C1806-01
SITE # 7005
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REVISION:
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ISSUE DATE: 05/04/2022

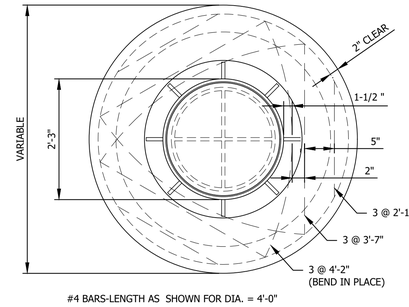
CAD DWG FILE: C-502.dwg

DESIGNED BY: MJV
DRAWN BY: MKA
APPROVED BY: VAH

SHEET TITLE:
CIVIL DETAILS

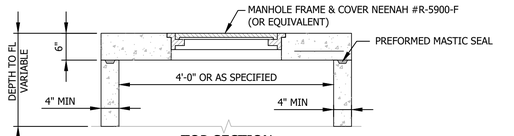
SHEET NUMBER:
C-502

21 of 46 SHEETS

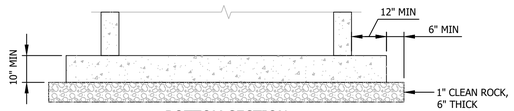


#4 BARS-LENGTH AS SHOWN FOR DIA. = 4'-0"

PLAN

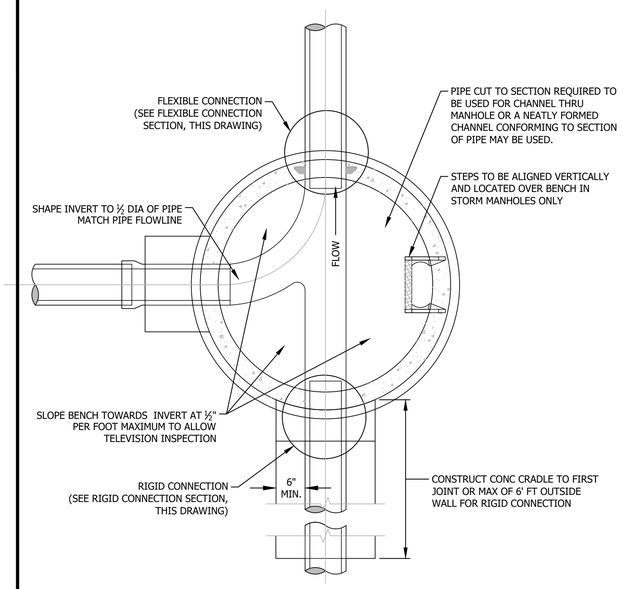


TOP SECTION



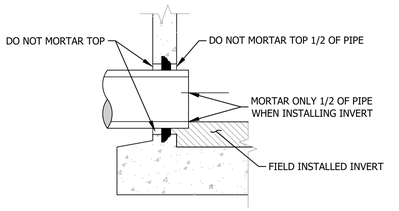
BOTTOM SECTION

1 STANDARD MANHOLE
NOT TO SCALE



2 MANHOLE BOTTOM PLAN
NOT TO SCALE

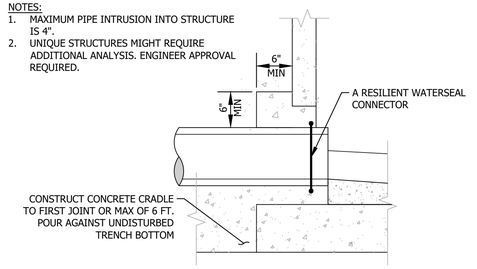
MANHOLE CONSTRUCTION NOTES
1. ALL MANHOLE CONSTRUCTION SHALL BE WATER TIGHT.
2. TOP OF 8" FLOOR SLAB TO BE 3" MIN BELOW FLOW LINE ELEV OF THE OUTLET PIPE TO INSURE SUFFICIENT MIN THICKNESS OF SHAPED INVERT.
3. ALL PRECAST CONCRETE MANHOLE SECTIONS SHALL CONFORM TO ASTM DESIGNATION C478



FLEXIBLE CONNECTIONS SHALL BE USED FOR ALL SEWER PIPE TYPES.

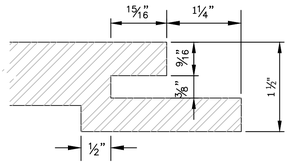
3 FLEXIBLE CONNECTION SECTION
NOT TO SCALE

NOTES:
1. MAXIMUM PIPE INTRUSION INTO STRUCTURE IS 4".
2. UNIQUE STRUCTURES MIGHT REQUIRE ADDITIONAL ANALYSIS. ENGINEER APPROVAL REQUIRED.

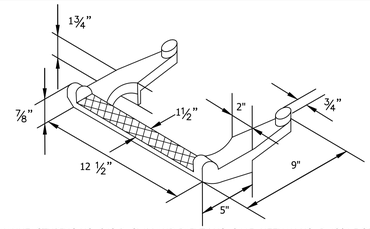


RIGID CONNECTIONS SHALL BE USED FOR CERTAIN EXISTNG MANHOLE CONNECTIONS AT ENGINEER'S DISCRETION.

4 RIGID CONNECTION SECTION
NOT TO SCALE



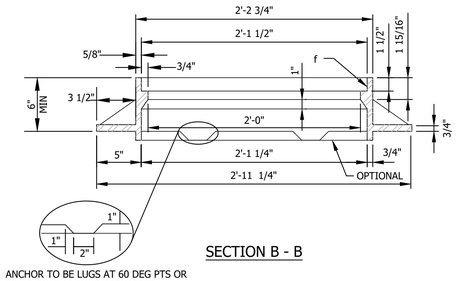
5 CONCEALED PICKSLOT DETAIL
NOT TO SCALE



VESTAL MANUFACTURING NO. 918-P, CLAY AND BAILEY NO. 2115, NEENAH NO. R-1981-I OR EQUAL AS FURNISHED BY MANUFACTURER OF PRECAST MANHOLE.

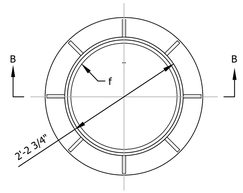
COPOLYMER POLYPROPYLENE PLASTIC STEP, PS1-PF or PS2-PF, MANUFACTURED BY M.A. IND. INC. OR APPROVED EQUAL MAY BE USED AS AN ALTERNATE TO DETAILED CASTING. THIS STEP MAY BE CAST IN PLACE OR INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDED INSTALLATION PROCEDURE.

6 RIGID CONNECTION SECTION
NOT TO SCALE



SECTION B - B

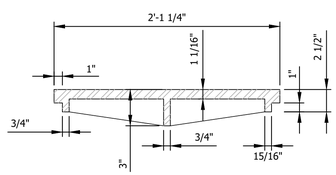
ANCHOR TO BE LUGS AT 60 DEG PTS OR SOLID RING AROUND PERIMETER.



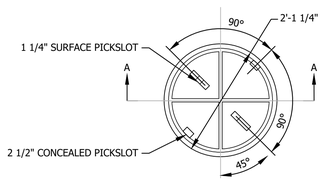
MANHOLE RING

7 MANHOLE RING DETAILS
NOT TO SCALE

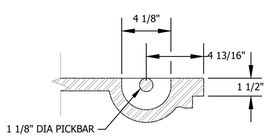
NOTES:
1. CASTINGS SHALL CONFORM TO THE REQUIREMENTS OF "SPECIFICATIONS FOR GRAY IRON CASTINGS" IN ACCORDANCE WITH ASTM A 48, CLASS 35B.
2. MINIMUM TENSILE STRENGTH OF EACH CASTING SHALL BE AT LEAST 30,000 PSI.
3. AVERAGE WT. COVER 185 LBS, RING 220 LBS. VARIATION IN WEIGHT WILL NOT EXCEED THE SPECIFIED WEIGHTS BY MORE THAN 4%.
4. CASTINGS ARE TO BE MANUFACTURED TRUE TO PATTERN AND WITH SATISFACTORY FIT OF COMPONENT PARTS. CASTINGS SHALL BE FREE OF DEFECTS. DIMENSIONS AS DETAILED ON PLAN SHALL NOT DEVIATE BY MORE THAN 1/16" PER FOOT.
5. SEATING SURFACES OF CASTINGS SHALL BE MACHINED AS REQUIRED TO PREVENT ROCKING.
6. ALL CASTINGS SHALL BE FURNISHED IN BARE METAL AND SHALL HAVE MANUFACTURER'S NAME CAST INTO CASTING.
7. CASTINGS SHALL CONFORM TO THE PROVISIONS OF UNITED STATES CUSTOMS REGULATIONS. CASTING MANUFACTURER SHALL CARRY AT LEAST $3,000,000 PRODUCT LIABILITY INSURANCE.
8. TO INSURE CONFORMANCE TO TENSILE STRENGTH REQUIREMENTS, THE FOLLOWING PROCEDURE WILL BE FOLLOWED FOR EACH LOT OF CASTINGS USED.
   A. ALL CASTINGS SHALL BE JULIAN HEAT DATED.
   B. TEST REPORT FROM A CITY APPROVED INDEPENDENT LABORATORY VERIFYING TENSILE STRENGTH CHEMISTRY OR BRINELL HARDNESS SHALL ACCOMPANY EACH SHIPMENT OF CASTINGS. IF REQUESTED TEST REPORT SHALL BE PAID FOR BY THE SUPPLIER. THE HEAT DATE(S) ON CASTINGS SHALL CORRESPOND TO THE TENSILE STRENGTH REPORT(S).



SECTION A - A



COVER



SURFACE PICKSLOT

8 MANHOLE COVER DETAILS
NOT TO SCALE

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
VALERIE A. HOLLAND
NUMBER PE-2017009358
PROFESSIONAL ENGINEER
05-04-2022

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
MISSOURI RE#2001016346
CERTIFICATE OF AUTHORITY NO. 000158
www.bartlettwest.com

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT
OF CORRECTIONS

WASTEWATER TREATMENT
FACILITY IMPROVEMENTS

5201 SOUTH MORLEY ST
MOBERLY, MISSOURI 65270

PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

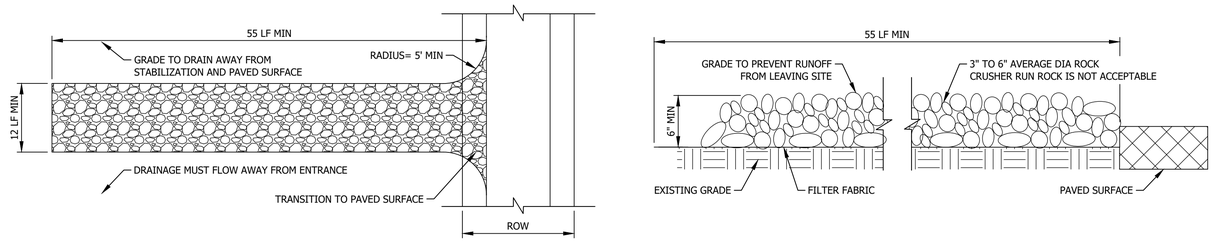
REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 05/04/2022

CAD DWG FILE: C-503.dwg

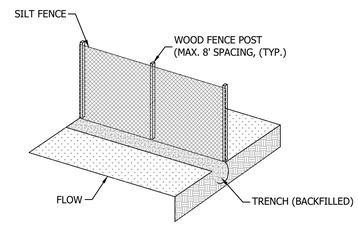
DESIGNED BY: MKA
DRAWN BY: MKA
APPROVED BY: VAH

SHEET TITLE:
CIVIL DETAILS

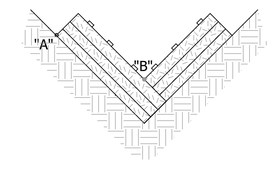
SHEET NUMBER:
C-503



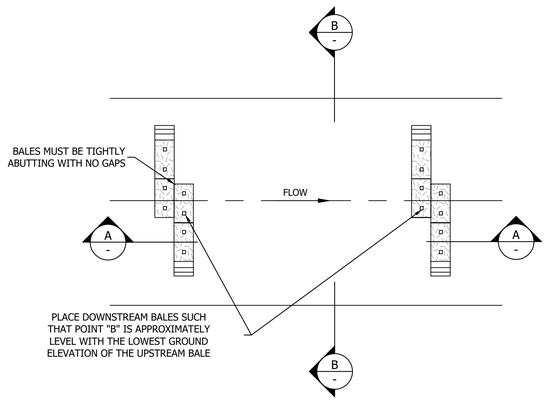
1 STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE



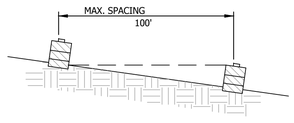
3 SILT FENCE DETAILS
NOT TO SCALE



A SECTION
C-504 NOT TO SCALE



NARROW CHANNELS



B SECTION
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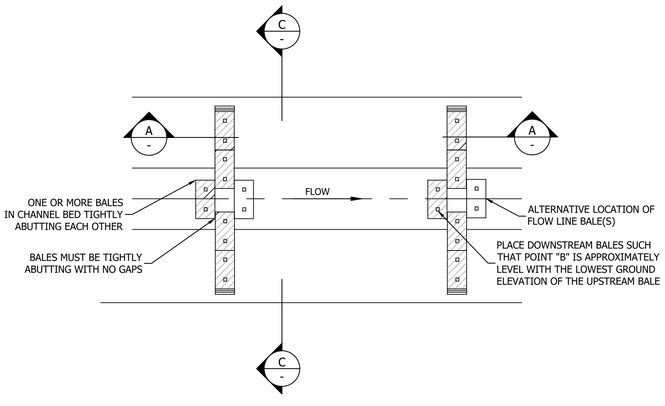
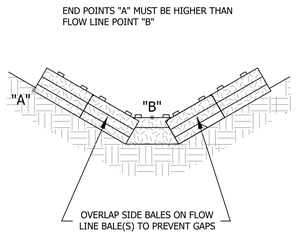
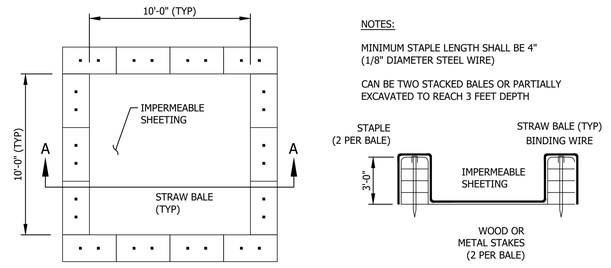


WIDE CHANNELS



C SECTION
C-504 NOT TO SCALE

2 STRAW BALE DETAILS
NOT TO SCALE



WASHOUT STRUCTURE WITH STRAW BALES

CONSTRUCTION SPECICATIONS:

1. LOCATE WASHOUT STRUCTURE A MINIMUM OF 50 FFET AWAY FROM OPEN CHANNELS, STORM DRAIN INLETS, SENSITIVE AREAS, WETLANDS, BUFFERS AND WATER COURSES AND AWAY FROM CONSTRUCTION TRAFFIC.
2. SIZE WASHOUT STRUCTURE FOR VOLUME NECESSARY TO CONTAIN WASH WATER AND SOLIDS AND MAINTAIN AT LEAST 4 INCHS OF FREEBOARD. TYPICAL DIMENSIONS ARE 10 FEET x 10 FEET x 3 FEET DEEP.
3. PREPARE SOIL BASE FEE OF ROCKS OR OTHER DEBRIS THAT MAY CAUSE TEARS OR HOLES IN THE LINER. FOR LINER, USE 10 MIL OR THICKER UV RESISTANT, IMPERMEABLE SHEETING, FREE OF HOLES AND TEARS OR OTHER DEFECTS THAT COMPROMISE IMPERMEABILITY OF THE MATERIAL.
4. PROVIDE A SIGN FOR THE WASHOUT IN CLOSE PROXIMITY OF THE FACILITY.
5. KEEP CONCRETE WASHOUT STRUCTURE WATER TIGHT. REPLACE IMPERMEABLE LINE IF DAMAGED (E.G., RIPPED OR PUNCTURED). EMPTY OR REPLACE WASHOUT STRUCTURE THAT IS 75 PERCENT FULL AND DISPOSE OF ACCUMULATED MATERIAL PROPERLY. DO NOT REUSE PLASTIC LINER. WET-VACUUM STORED LIQUIDS THAT HAVE NOT EVAPORATED AND DISPOSE OF IN AN APPROVED MANNER. PRIOR TO FORECASTED RAINSTORMS REMOVE LIQUIDS OR COVER STRUCTURE TO PREVENT OVERFLOWS. REMOVE HARDENED SOLIDS, WHOLE OR BROKEN UP, FOR DISPOSAL OR RECYLING. MAINTAIN RUNOFF DIVERSION AROUND EXCAVATED WASHOUT STRUCTURE UNTIL STRUCTURE IS REMOVED.

NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A TEMPORARY COVER OF WHEAT OR OATS AS AN EROSION CONTROL METHOD AS DIRECTED BY THE OWNER.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF ALL EROSION CONTROL MEASURES. CONTRACTOR SHALL MAINTAIN SLOPE INCLUDING GRADING OF ALL RILLS AND GULLEYS RESULTING FROM EROSION.
3. OWNER RESERVES THE RIGHT TO REQUIRE ADDITIONAL SILT FENCE AS THE NEED ARISES.

4 CONCRETE WASHOUT
NOT TO SCALE

EROSION CONTROL NOTES:

1. THE CONTRACTOR SHALL PROVIDE ALL MATERIALS, TOOLS, EQUIPMENT AND LABOR AS NECESSARY TO INSTALL AND MAINTAIN ADEQUATE EROSION CONTROL TO PREVENT SOIL FROM LEAVING THE PROJECT SITE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO INSURE THAT THE METHODS UTILIZED COMPLY WITH THE REQUIREMENTS OF THE GOVERNMENTAL AGENCIES HAVING JURISDICTION OVER THE WORK.
2. THE CONTRACTOR SHALL CONTROL THE GRADING OPERATION SO THAT THE SITE IS WELL DRAINED AT ALL TIMES AND SHALL SCHEDULE THE WORK TO MINIMIZE THE EROSION OF MATERIAL BY THE USE OF STAKED STRAW BALES AND OTHER ACCEPTABLE METHODS TO PROTECT THE ABUTTING PROPERTIES, STREETS, AND ALL UTILITIES.
3. THE CONTRACTOR SHALL SEED/MULCH AND OR SOD ALL AREAS DISTURBED DURING THE CONSTRUCTION ACTIVITIES.
4. INSPECTIONS OF THE SITE EROSION AND SEDIMENT CONTROL SHALL BE INSPECTED AT A MINIMUM MONTHLY AND WITHIN 24 HOURS AFTER A ½ INCH OR GREATER STORM EVENT.

SLOPE PROTECTION NOTES:

1. THE EROSION CONTROL SHOWN SHALL BE SILT FENCE UNLESS NOTED DIFFERENTLY. DON'T INSTALL SILT FENCE IN DITCHES, CHANNELS, OR AREAS OF CONCENTRATED FLOW.
2. WOOD POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE.
3. SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER SO THAT THE DOWN SLOPING FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW.
4. THE TRENCH SHOULD BE A MINIMUM OF 6" DEEP AND 3-4" WIDE TO ALLOW FOR THE SILT FENCE TO BE LAID IN THE GROUND AND BACKFILLED.
5. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH WOOD SUPPORT POST OR TO WOVEN WIRE WHICH IS IN TURN ATTACHED TO THE WOOD FENCE POSTS.
6. SILT FENCE SHALL BE REMOVED WHEN IT HAS SERVED ITS USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
7. SEDIMENT TRAPPED BY THIS PRACTICE SHALL BE UNIFORMLY DISTRIBUTED ON THE SOURCE AREA PRIOR TO TOP SOILING.
8. PROVIDE SOIL STABILIZATION MATERIALS BEFORE REMOVAL OF EROSION CONTROL MATERIAL OR UPON COMPLETION OF CONSTRUCTION.

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
VALERIE A. HOLLAND
NUMBER PE-2017009358
PROFESSIONAL ENGINEER
05-04-2022

Bartlett&West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
MO CERTIFICATE OF AUTHORITY NO. 000578
CERTIFICATE OF AUTHORITY NO. 000578 - FAX 573.634.5346
www.bartlettwest.com

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DEPARTMENT OF CORRECTIONS

WASTEWATER TREATMENT FACILITY IMPROVEMENTS

5201 SOUTH MORLEY ST
MOBERLY, MISSOURI 65270

PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 05/04/2022

CAD DWG FILE: C-504.dwg

DESIGNED BY: MKA
DRAWN BY: MKA
APPROVED BY: VAH

SHEET TITLE:
EROSION CONTROL DETAILS

SHEET NUMBER:
C-504

GENERAL STRUCTURAL NOTES

A. DESIGN CRITERIA

1. BUILDING CODE:
   a. INTERNATIONAL BUILDING CODE (IBC), 2015 EDITION, INCLUDING LOCAL SUPPLEMENTS.
   b. ACI 318-14
   c. ACI 350-06

2. RISK CATEGORY III

B. SOIL PREPARATION AND FOUNDATIONS

1. THE FOUNDATION SYSTEM IS DESIGNED AS RECOMMENDED IN THE GEOTECHNICAL INVESTIGATION PREPARED BY TERRACON, JOB NO. PROJECT NUMBER 15215072, DATED 10/22/2021. A COPY IS IN THE SPECIFICATIONS OR IS AVAILABLE FOR INSPECTION AT THE ARCHITECT'S/ENGINEER'S PLACE OF BUSINESS.

2. REMOVE TOP SOIL CONTAINING ORGANIC MATERIAL AND PREPARE THE BUILDING PAD IN ACCORDANCE WITH THE GEOTECHNICAL INVESTIGATION.

3. SOIL SUPPORTED FOUNDATIONS:

   a. DESIGN BEARING PRESSURE (NET) IS 2,000 PSF FOR FOUNDATIONS BEARING ON UNDISTURBED SOIL OR APPROVED ENGINEERED FILL MATERIAL. BEARING MATERIALS SHALL BE VERIFIED BY A LICENSED GEOTECHNICAL ENGINEER.

   b. ALL FOUNDATIONS ARE ASSUMED TO HAVE EARTH FORMED SIDES; THE TOP 6 OF THE FOUNDATION SHALL BE FORMED TO THE DESIGN DIMENSION. THE CONSTRUCTED FOUNDATION DIMENSION SHALL BE NO LESS THAN THE DESIGN DIMENSION, AND NO MORE THAN 6" GREATER THAN THE DESIGN DIMENSION.

4. DO NOT BACKFILL RETAINING/FOUNDATION WALLS UNTIL THE RESTRAINING SLABS OR ADEQUATE BRACING ARE IN PLACE. ALL BACKFILL SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH THE SPECIFICATION.

5. A 2'-0" THICK VERTICAL LAYER OF FREE-DRAINING, GRANULAR MATERIAL SHALL BE PLACED BEHIND ALL WALLS RETAINING SOIL.

6. EXTERIOR SLABS SHALL SLOPE AWAY FROM THE STRUCTURE A MINIMUM OF 1/4" PER FOOT UNLESS NOTED OTHERWISE.

C. CAST-IN-PLACE CONCRETE

1. ALL STRUCTURAL CONCRETE HAS BEEN DESIGNED IN ACCORDANCE WITH THE ACI 318 AND THE BUILDING CODE, AND IN CONFORMANCE WITH THE CURRENT "ACI MANUAL OF CONCRETE PRACTICE."

2. THE CONCRETE REQUIREMENTS ARE:

   a. CEMENT SHALL BE TYPE I/II CONFORMING TO ASTM C150. FLY ASH CONFORMING TO ASTM C618 TYPE C OR F MAY BE USED TO REPLACE A MAXIMUM OF 20% OF THE CEMENT (BY WEIGHT).

   b. FINE AND COARSE AGGREGATES FOR NORMAL WEIGHT CONCRETE SHALL CONFORM TO ASTM C33 AND MEET #67 GRADATION REQUIREMENTS. COARSE AGGREGATES SHALL BE NO LESS THAN 50% OF THE TOTAL AGGREGATE BY WEIGHT, UNLESS APPROVED BY THE ENGINEER PRIOR TO MIX DESIGN SUBMITTAL.

   e. MIX REQUIREMENTS ARE:

LOCATION	MIN. 28 DAY F'C PSI	AIR ENT.	MAX W/CM RATIO
FOOTINGS	4500	6%±/-1%	0.45
RETAINING WALLS	5000	6%±/-1%	0.40
MAT SLABS	5000	6%±/-1%	0.40
SLABS ON GRADE	5000	6%±/-1%	0.40

3. SUBMITTALS

   a. PRODUCT DATA FOR PROPRIETARY MATERIALS AND ITEMS, INCLUDING REINFORCEMENT AND FORMING ACCESSORIES, ADMIXTURES, PATCHING COMPOUNDS, WATERSTOPS, JOINT SYSTEMS, CURING COMPOUNDS, MISCELLANEOUS MATERIALS, AND OTHERS IF REQUESTED BY ENGINEER.

   b. SHOP DRAWINGS FOR REINFORCEMENT DETAILING FABRICATING, BENDING, AND PLACING CONCRETE REINFORCEMENT. COMPLY WITH ACI 315 "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE "STRUCTURES" SHOWING BAR SCHEDULES, STIRRUP SPACING, BENT BAR DIAGRAMS, AND ARRANGEMENT OF CONCRETE REINFORCEMENT. INCLUDE SPECIAL REINFORCING REQUIRED FOR OPENINGS THROUGH CONCRETE STRUCTURES.

   c. LABORATORY TEST REPORTS FOR CONCRETE MATERIALS AND MIX DESIGN TEST.

   d. MATERIAL CERTIFICATES IN LIEU OF MATERIAL LABORATORY TEST REPORTS. MANUFACTURER AND CONTRACTOR, CERTIFYING THAT EACH MATERIAL ITEM COMPLIES WITH OR EXCEEDS SPECIFIED REQUIREMENTS, SHALL SIGN MATERIAL CERTIFICATES. PROVIDE CERTIFICATION FROM ADMIXTURE MANUFACTURERS THAT ADMIXTURES DO NOT CONTAIN CALCIUM CHLORIDE.

4. DESIGN MIXES

   a. PREPARE DESIGN MIXES FOR EACH TYPE AND STRENGTH OF CONCRETE BY EITHER LABORATORY TRIAL BATCH OR FIELD EXPERIENCE METHODS AS SPECIFIED IN ACI 301.

   b. SUBMIT WRITTEN REPORTS TO ENGINEER OF EACH PROPOSED MIX FOR EACH CLASS OF CONCRETE AT LEAST 15 DAYS PRIOR TO START OF WORK. DO NOT BEGIN CONCRETE PRODUCTION UNTIL ENGINEER HAS REVIEWED PROPOSED MIX DESIGNS.

5. MISCELLANEOUS CONCRETE DETAILS:

   a. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4" INSIDE FORMS OR TOOLED TO 3/4" RADIUS U.N.O.

   b. SLABS ON GRADE SHALL HAVE CONSTRUCTION JOINTS AND CONTROL JOINTS (SAWN JOINTS) TO DIVIDE THE SLAB INTO PANELS, NOT TO EXCEED 256 SQUARE FEET. THE LONG DIMENSION SHALL NOT EXCEED THE SHORT DIMENSION BY MORE THAN 20%. JOINTS SHOWN ON THE DRAWINGS ARE RECOMMENDATIONS. PROPOSED LOCATIONS FOR ACTUAL JOINTS SHALL BE SUBMITTED BY THE CONTRACTOR FOR APPROVAL.

   c. VERTICAL CONSTRUCTION JOINTS SHALL BE LOCATED AT MIDSPAN OF BEAMS AND SLABS. ALL JOINTS SHALL BE THOROUGHLY CLEANED AND PURPOSELY ROUGHENED TO 1/4" AMPLITUDE PRIOR TO PLACING ADJACENT CONCRETE.

   d. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF ALL FORMING, TEMPORARY BRACING AND SHORING.

   e. NO ALUMINUM SHALL BE EMBEDDED IN CONCRETE.

   f. CONDUITS AND PIPING EMBEDDED IN CONCRETE SHALL BE SPACED A MINIMUM OF FOUR DIAMETERS CENTER TO CENTER. OUTSIDE DIAMETERS SHALL BE LESS THAN 30% OF THE MEMBER THICKNESS. EMBEDDED ITEMS SHALL BE PLACED BETWEEN LAYERS OF REINFORCING. NO CONDUIT MAY BE EMBEDDED IN SLABS ON METAL DECK.

D. CONCRETE REINFORCING (CAST-IN-PLACE, PRECAST, & POST-TENSIONED)

1. MATERIALS:

	ASTM	GRADE
REINFORCING BARS:	A615	60
WELDABLE REINFORCING BARS:	A706	60
WELDED WIRE FABRIC (WWF):	A185	60 (MIN.)
PRESTRESSING STRAND (LOW-RELAX):	A416	270
HEADED STUDS:	A108	---
DEFORMED BAR ANCHORS:	A706	60
ANCHOR RODS (BOLTS):	F1554	36
[ANCHOR RODS (BOLTS):	F1554	W/S155]
[ANCHOR RODS (BOLTS):	F1554	W/S3 PERM. GRADE ID, IF NOT PAINTED.]

2. DETAILS:

   a. WELDING OF REINFORCING BARS IS PROHIBITED UNLESS NOTED OTHERWISE. WHEN WELDING IS APPROVED, WELDING SHALL BE IN ACCORDANCE WITH AWS D1.4 "WELDING REINFORCING STEEL, ETC."

   b. WELDED WIRE FABRIC SHALL BE FURNISHED IN FLAT SHEETS.

   c. SHOP DRAWINGS SHALL BE SUBMITTED WITH REINFORCING STEEL IN ACCORDANCE WITH ACI 315.

   d. WHEN MECHANICAL SPLICES ARE INDICATED ON THE PLANS, THE SPLICE SHALL DEVELOP 125% OF THE SPECIFIED YIELD STRENGTH OF THE BAR.

3. PLACEMENT

   a. ALL REINFORCING (BARS, EMBEDMENTS, WWF, ETC.) SHALL BE SUPPORTED ON CHAIRS/BOLSTERS TO THE DESIGN DIMENSIONS. SPACING SHALL BE SUFFICIENTLY CLOSE TO PREVENT DISPLACEMENT OR PERMANENT DEFORMATION DUE TO CONCRETE PLACEMENT, FOOT TRAFFIC, OR VIBRATION. "PUDDLING IN" OR "PULLING UP" REINFORCING IS NOT AN ACCEPTABLE METHOD FOR PLACING REINFORCING. CHAIRS/BOLSTERS SHALL HAVE PLASTIC COATED FEET OR BE MADE OF STAINLESS STEEL. CHAIRS/BOLSTERS IN CONTACT WITH EARTH SHALL HAVE BOTTOM PLATES AND BE COATED TO PREVENT CORROSION. ANCHOR BOLTS SHALL BE HELD IN PLACE WITH TEMPLATES SUFFICIENTLY STRONG TO PREVENT DISPLACEMENT.

   b. MAINTAIN ACI CLEAR COVER ON REINFORCING AS LISTED BELOW UNLESS NOTED OTHERWISE.

CAST AGAINST EARTH (BOTTOM OR SIDES):	3"
FORMED – EXPOSED TO SOIL, WEATHER OR LIQUIDS:	2"
FORMED SLABS – INTERIOR:	1"
FORMED MEMBERS – INTERIOR:	1.5"
SLABS ON GRADE (FROM BOTTOM OF SLAB):	3"

   c. PROVIDE CORNER BARS OF THE SAME SIZE AND SPACING AS ADJACENT REINFORCING. REFERENCE DETAILS.

   d. OPENINGS IN WALLS OR STRUCTURAL SLABS SHALL BE REINFORCED PER DETAIL.

   e. ALL REINFORCING BARS ARE TO BE MADE CONTINUOUS OR LAPPED PER ACI 318.

   f. WELDED WIRE FABRIC SHALL BE MADE CONTINUOUS BY LAPPING ONE FULL SQUARE PLUS 2".

E. MISCELLANEOUS

1. THE SPECIFICATIONS ARE PART OF THE CONSTRUCTION DOCUMENTS AND MUST BE USED IN CONJUNCTION WITH THE PLANS. WHERE CONFLICTS OCCUR, THE MOST STRINGENT REQUIREMENT SHALL CONTROL.

2. DO NOT SCALE PLANS FOR THE PURPOSE OF ESTABLISHING DIMENSIONS.

3. DETAILS LABELED "TYPICAL" ARE INTENDED TO REPRESENT A CONDITION THAT OCCURS AT SEVERAL LOCATIONS IN THE PLANS WHETHER OR NOT THE DETAIL WAS REFERENCED.

4. THE STRUCTURAL PLANS REPRESENT THE STRUCTURE IN THE COMPLETED CONDITION. IT IS THE CONTRACTOR'S RESPONSIBILITY FOR THE MEANS AND METHODS OF CONSTRUCTING THE STRUCTURE. THE CONTRACTOR SHALL DESIGN AND PROVIDE ALL TEMPORARY SHORING OR BRACING REQUIRED TO SAFELY CONSTRUCT THE STRUCTURE AND PREVENT DAMAGE TO THE STRUCTURE DURING CONSTRUCTION.

5. SLABS ON GRADE AND ELEVATED SLABS ARE NOT DESIGNED TO SUPPORT CRANES, FORKLIFTS, MANLIFTS, OR TRUCK TRAFFIC UNLESS NOTED AS SUCH. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE IF CONSTRUCTION EQUIPMENT CAN BE SAFELY OPERATED ON SLABS ON GRADE AND ELEVATED SLABS AND TO REPAIR ANY DAMAGE SUCH EQUIPMENT MAY CAUSE.

6. THE CONTRACTOR SHALL REVIEW AND APPROVE ALL SHOP DRAWINGS PRIOR TO SUBMITTAL, NOTING ALL CHANGES MADE THAT DO NOT COMPLY WITH THE CONSTRUCTION DOCUMENTS.

8. ON NEW CONSTRUCTION, THE CONTRACTOR SHALL VERIFY ALL ARCHITECTURAL, ELECTRICAL, AND MECHANICAL OPENINGS AND EQUIPMENT WEIGHTS PRIOR TO COMMENCING CONSTRUCTION.

9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ATTACHING NON-STRUCTURAL ELEMENTS TO THE STRUCTURE TO RESIST ALL LOADS INCLUDING SEISMIC FORCES IN A WAY THAT DOES NOT OVERSTRESS STRUCTURAL MEMBERS. NON-STRUCTURAL ELEMENTS CAN BE FOUND IN THE ARCHITECTURAL, ELECTRICAL, OR MECHANICAL PLANS.

10. WHEN THE CONTRACTOR OR HIS SUBCONTRACTOR(S) FAILS TO CONSTRUCT ANY PORTION OF THE STRUCTURE IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS, THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE REMEDIATION OF THE DEFECT AND ALL RELATED COSTS INCLUDING ENGINEERING SERVICES. WHEN A DEFECT IS FIRST IDENTIFIED, IT SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION. THE ENGINEER MAY THEN REQUIRE THE CONTRACTOR TO MODIFY/REPLACE THE ELEMENT TO RECTIFY THE SITUATION, OR REQUIRE THE CONTRACTOR TO SUBMIT A RECOMMENDED REPAIR SEALED BY A LICENSED ENGINEER FOR APPROVAL.

11. WHEN THE CONTRACTOR, SUB-CONTRACTOR, OR MATERIAL SUPPLIER PROVIDES A PIECE OF EQUIPMENT THAT IS DIFFERENT FROM THE EQUIPMENT THAT THE STRUCTURE IS DESIGNED FOR BY EITHER SIZE, WEIGHT, OR CONFIGURATION, THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH REMEDYING THE SITUATION. THOSE COSTS SHALL INCLUDE THE COSTS TO HIRE A LICENSED ENGINEER TO REDESIGN PORTIONS OF THE STRUCTURE OR THE COSTS OF THE ENGINEER OF RECORD TO REDESIGN PORTIONS OF THE STRUCTURE TO ACCOMMODATE THE SUBSTITUTED PIECE OF EQUIPMENT.

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
MICHAEL J. NEUFELD
NUMBER PE-2019038870
PROFESSIONAL ENGINEER
05-04-2022

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
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WASTEWATER TREATMENT FACILITY IMPROVEMENTS

5201 SOUTH MORLEY ST
MOBERLY, MISSOURI 65270

PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:

ISSUE DATE: 05/04/2022

CAD DWG FILE: S-001.dwg

DESIGNED BY: MJN
DRAWN BY: JRW
APPROVED BY: VAH

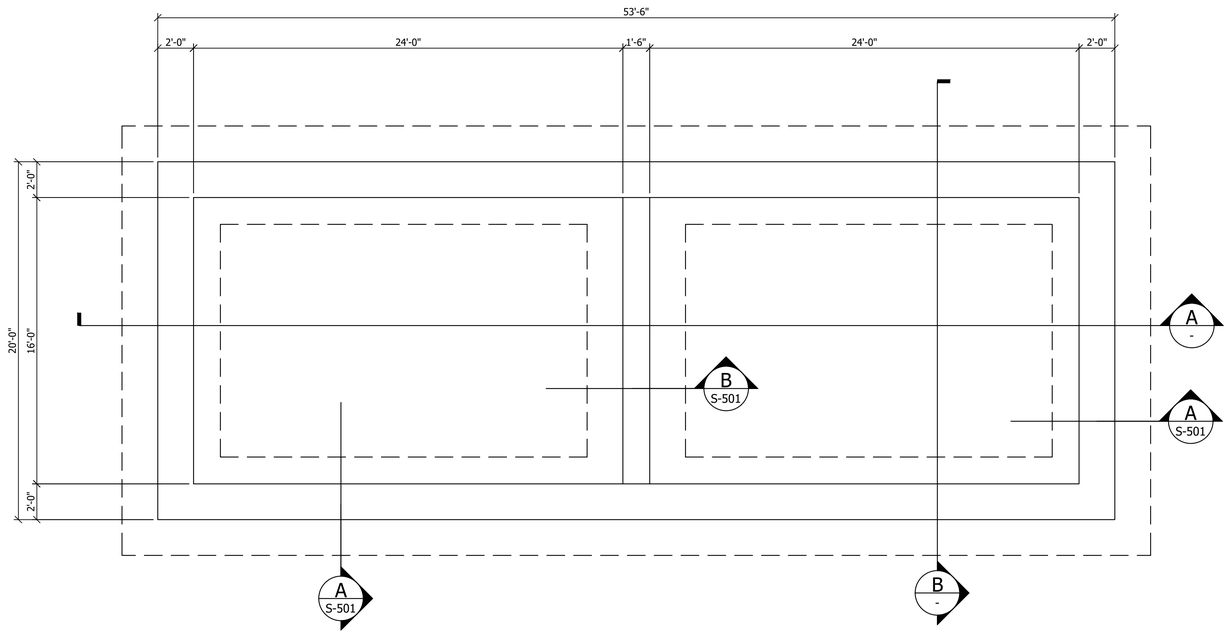
SHEET TITLE:

STRUCTURAL NOTES

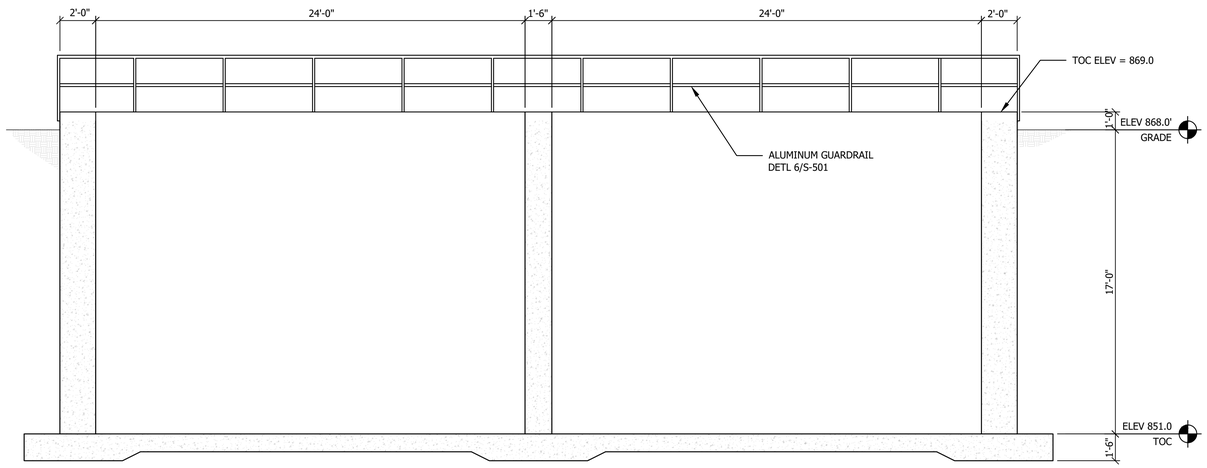
SHEET NUMBER:

S-001

24 of 46 SHEETS



TRIPLEPOINT TANK PLAN
SCALE: 1/4"=1'-0"



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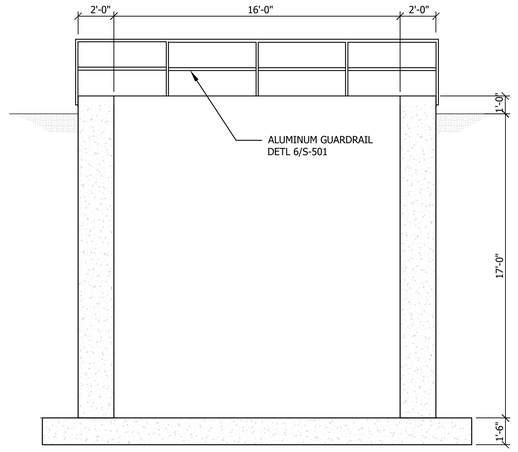

B S-101 TRIPLEPOINT TANK SECTION
SCALE: 1/4"=1'-0"

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MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
MICHAEL J. NEUFELD
NUMBER PE-2019038870
PROFESSIONAL ENGINEER
05-04-2022

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
CERTIFICATE OF AUTHORITY NO. 000677 RENEWAL 2022
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SITE # 7005
ASSET # 9327005058

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REVISION:
DATE:
ISSUE DATE: 05/04/2022

CAD DWG FILE: S-101.dwg

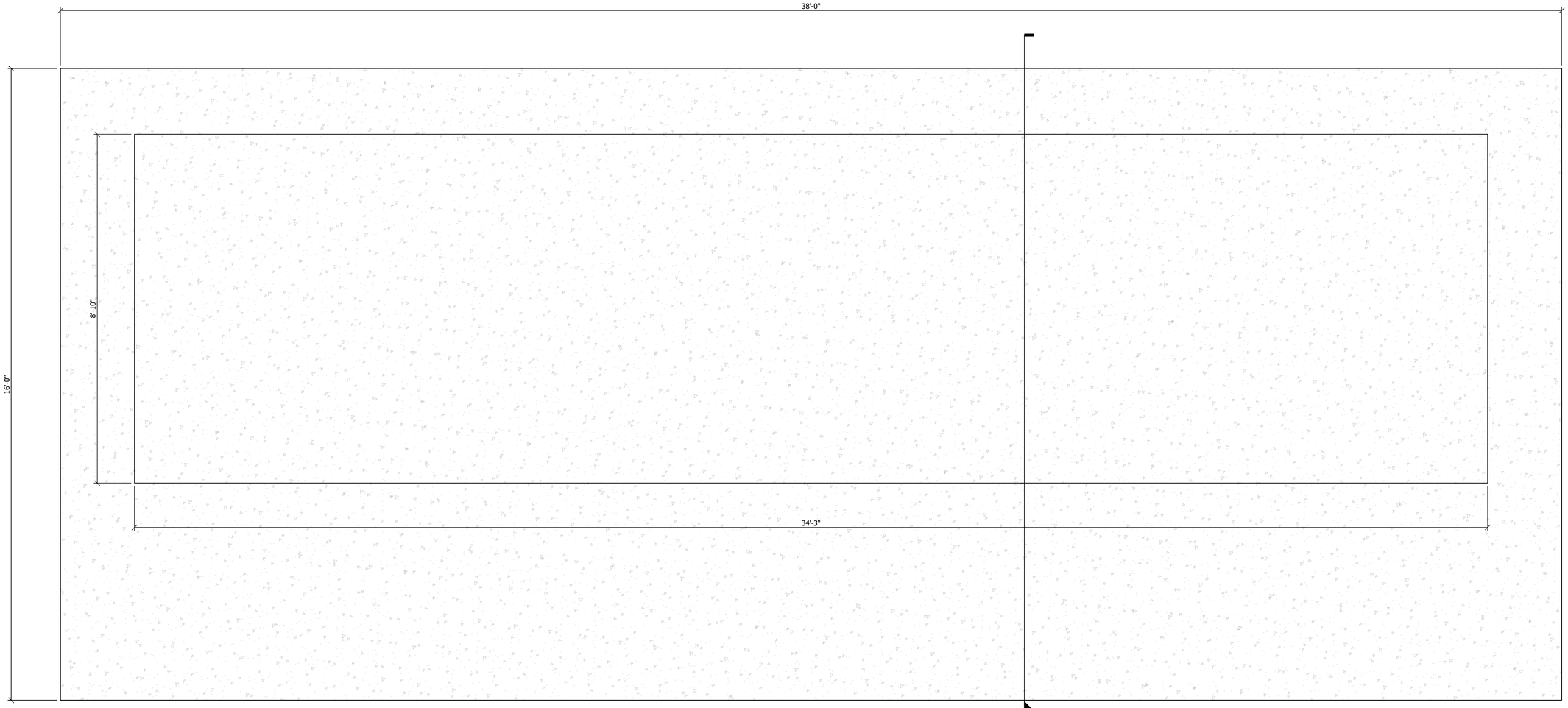
DESIGNED BY: MJN
DRAWN BY: JRW
APPROVED BY: VAH

SHEET TITLE:

TRIPLEPOINT TANK STRUCTURAL PLANS

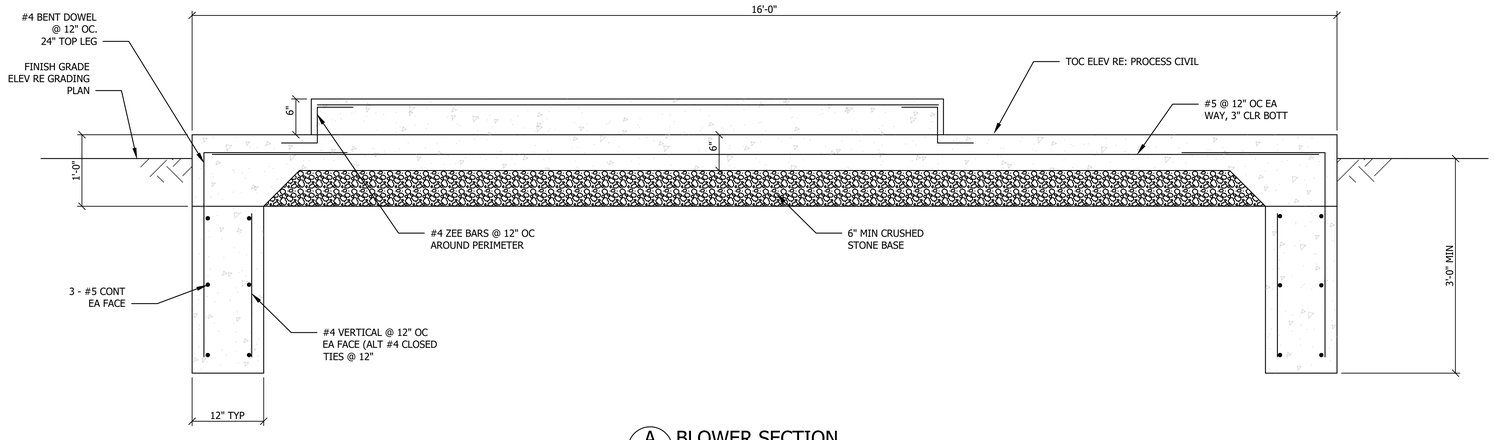
SHEET NUMBER:

S-101



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

A
-



A
S-102
BLOWER SECTION
SCALE: 1"=1'-0"

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MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
MICHAEL J.
NEUFELD
NUMBER
PE-2019038870
PROFESSIONAL ENGINEER

05-04-2022

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PHONE 573.634.3161
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ASSET # 9327005058

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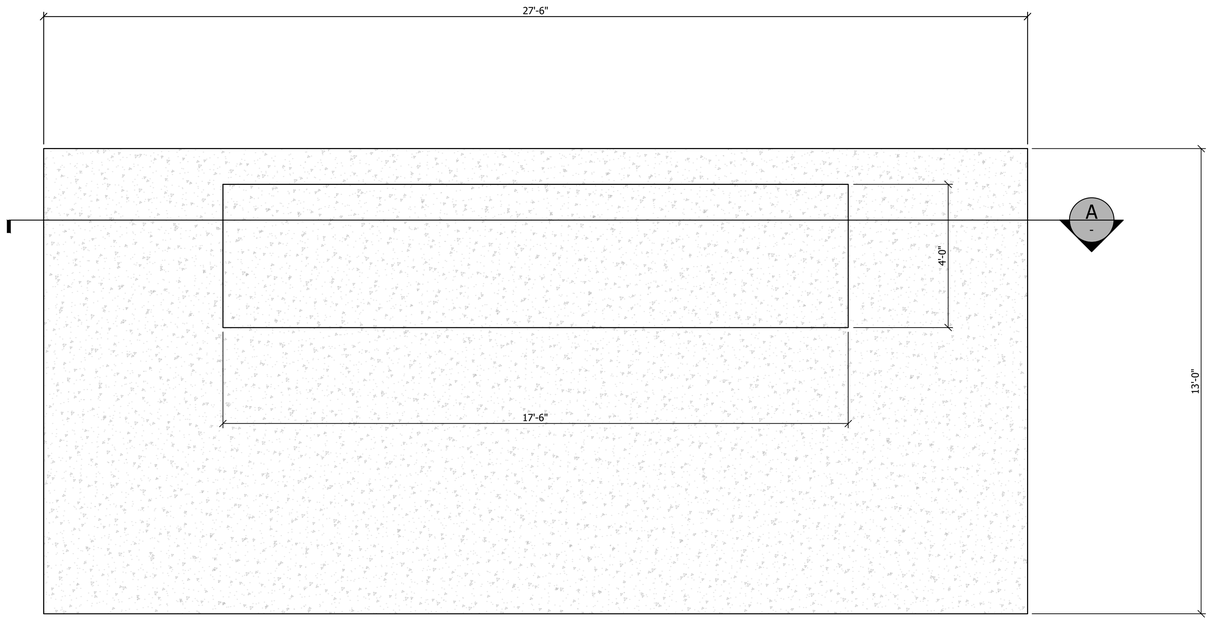
DRAWN BY: JRW
APPROVED BY: VAH

SHEET TITLE:

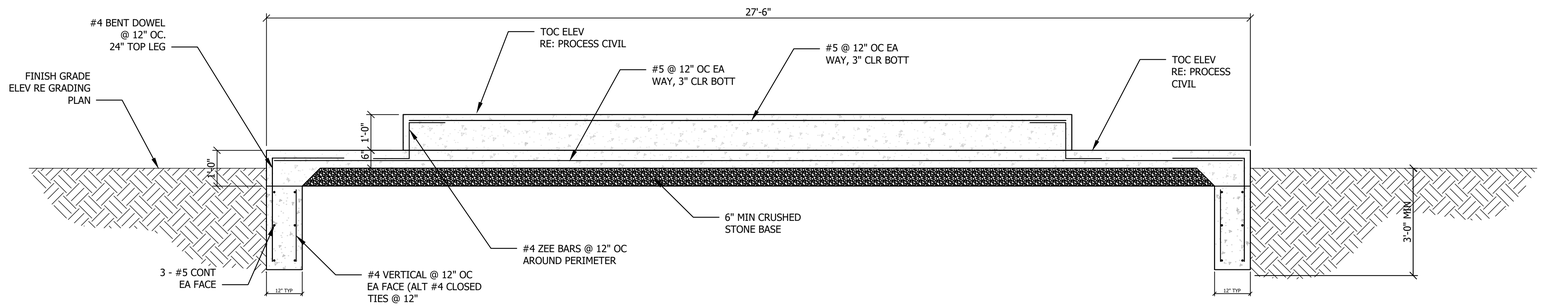
BLOWER PAD
STRUCTURAL
PLAN

SHEET NUMBER:

S-102



UV DISINFECTION EQUIPMENT PLAN
SCALE: 3/8"=1'-0"



A S-103 UV DISINFECTION EQUIPMENT SECTION
SCALE: 1/2"=1'-0"

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MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
MICHAEL J. NEUFELD
NUMBER PE-2019038870
PROFESSIONAL ENGINEER

05-04-2022

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
MO DEPT. OF INSURANCE NO. 000547-PROFENGCORP
CERTIFICATE OF AUTHORITY NO. 000547-PROFENGCORP
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PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

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REVISION:
DATE:
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CAD DWG FILE: S-103.dwg

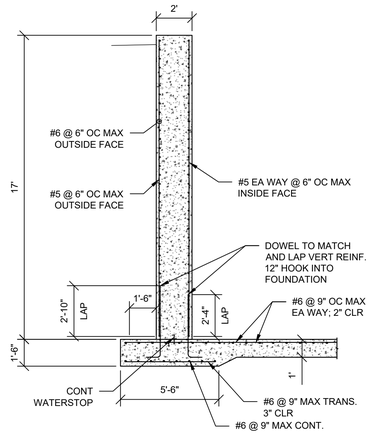
DESIGNED BY: MJN
DRAWN BY: JRW
APPROVED BY: VAH

SHEET TITLE:

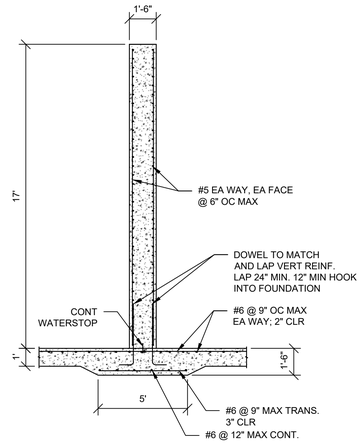
UV PAD STRUCTURAL PLAN

SHEET NUMBER:

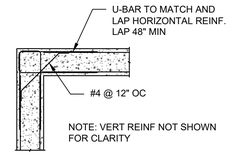
S-103



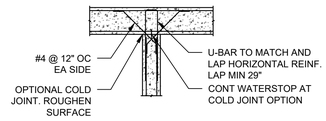
A S-501 TANK FOUNDATION SECTION
NOT TO SCALE



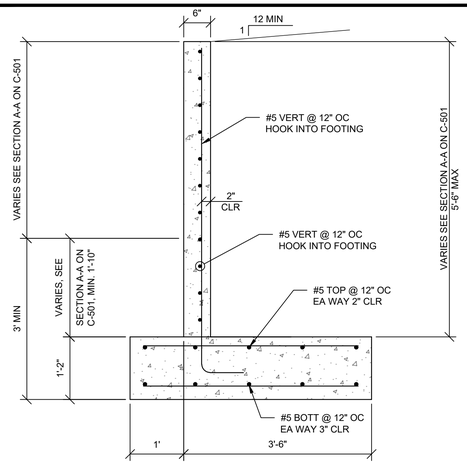
B S-501 TANK FOUNDATION SECTION
NOT TO SCALE



1 WALL CORNER REINFORCEMENT DETAIL
NOT TO SCALE

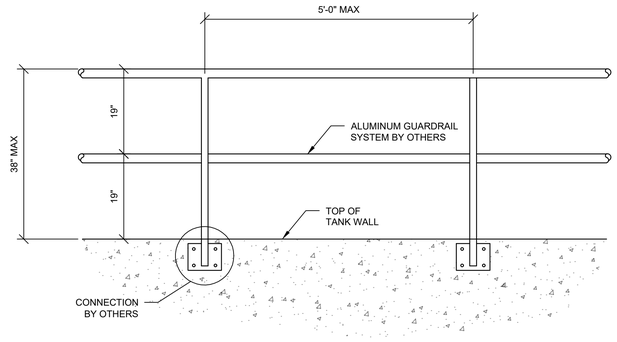


2 WALL CORNER REINFORCEMENT DETAIL
NOT TO SCALE



NOTE: ALTERNATE NO. 1, SEE SECTION 012300 - ALTERNATES FOR A DESCRIPTION OF WORK INCLUDED.

3 RETAINING WALL DETAIL
NOT TO SCALE



4 GUARDRAIL DETAIL
NOT TO SCALE

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
MICHAEL J.
NEUFELD
NUMBER
PE-2019038870
PROFESSIONAL ENGINEER

05-04-2022

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
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PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

REVISION:
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REVISION:
DATE:
ISSUE DATE: 05/04/2022

CAD DWG FILE: S-501.dwg

DESIGNED BY: MJN
DRAWN BY: JRW
APPROVED BY: VAH

SHEET TITLE:
STRUCTURAL
DETAILS

SHEET NUMBER:
S-501

VALVE SYMBOLS

- GV - GATE VALVE
- BURIED GATE VALVE
- KGV - KNIFE GATE VALVE
- BFV - BUTTERFLY VALVE
- BURIED BUTTERFLY VALVE
- BLV - BALL VALVE
- BURIED BALL VALVE
- VBLV - VEE BALL VALVE
- PV - PLUG VALVE
- BURIED PLUG VALVE
- DV - DIAPHRAGM VALVE
- CV - CHECK VALVE
- CV - SWING CHECK VALVE
- BCV - BALL CHECK VALVE
- FLCV - FLAPPER CHECK VALVE
- TDV - TRIPLE DUTY VALVE
- FCV - FLOW CONTROL VALVE
- PIV - PINCH VALVE
- NV - NEEDLE VALVE
- RV - ROTARY VALVE
- PRV - PRESSURE REDUCING VALVE : IN-LINE GENERIC
- AVV - AIR / VACUUM VALVE
- ARV - AIR RELEASE VALVE
- FCV - FLOW CONTROL VALVE
- PRV - PRESSURE RELIEF VALVE
- VRV - VACUUM RELIEF VALVE
- BBV - BLOCK AND BLEED VALVE
- GENERIC VALVE
- ANGLE VALVE
- 3-WAY VALVE
- 4-WAY VALVE
- REGULATING CONTROL VALVE
- PRESSURE CONTROL VALVE
- PRESSURE REGULATOR
- BACK PRESSURE REGULATOR
- BACK PRESSURE REGULATING SELF CONTAINED
- BACK PRESSURE REGULATING EXTERNAL TAP
- PRESSURE REDUCING SELF CONTAINED
- PRESSURE REDUCING EXTERNAL TAP
- BFP - BACK FLOW PREVENTER

VALVE DESIGNATIONS	
NO	NORMALLY OPEN
NC	NORMALLY CLOSED
FO	FAIL OPEN
FC	FAIL CLOSE
FLP	FAIL LAST POSITION
LO	LOCKED OPEN
LC	LOCKED CLOSED

VALVE TAG EXAMPLES

4" BLV-101 or 4" LO BLV-101

4" ABFV-101 or 4" FO ABFV-101

MEASUREMENT / PRIMARY ELEMENTS

- SINGLE ELEMENT SENSING PROBE
- DUAL ELEMENT SENSING PROBE
- FIBEROPTIC SENSING PROBE
- ULTRAVIOLET FLAME DETECTOR
- FLAME ROD FLAME DETECTOR
- GENERIC ORIFICE PLATE
- ORIFICE PLATE IN QUICK-CHANGE FITTING
- CONCENTRIC CIRCLE ORIFICE PLATE
- ECCENTRIC CIRCLE ORIFICE PLATE
- CIRCLE QUADRANT ORIFICE PLATE
- MULTI-HOLE CIRCLE ORIFICE PLATE
- GENERIC VENTURI TUBE, FLOW NOZZLE, OR FLOW TUBE
- VENTURI TUBE
- FLOW NOZZLE
- FLOW TUBE
- INTEGRAL ORIFICE PLATE
- STANDARD PITOT TUBE
- AVERAGING PITOT TUBE
- TURBINE OR PROPELLER FLOWMETER
- VORTEX SHEDDING FLOWMETER
- TARGET FLOWMETER
- MAGNETIC FLOWMETER
- THERMAL MASS FLOWMETER
- POSITIVE DISPLACEMENT FLOWMETER
- CONE METER
- WEDGE METER
- CORIOLLIS FLOWMETER
- ULTRASONIC FLOWMETER
- VARIABLE AREA FLOWMETER
- OPEN CHANNEL WEIR PLATE
- OPEN CHANNEL FLUME / V-CONE
- DISPLACER INTERNALLY MOUNTED VESSEL
- BALL FLOAT INTERNALLY MOUNTED VESSEL
- RADIATION, SINGLE POINT
- RADIATION, MULTI-POINT OR CONTINUOUS
- DIP TUBE OR OTHER PRIMARY ELEMENT AND STILLING WELL
- FLOAT WITH GUIDE WIRES
- INSERT PROBE
- RADAR
- STRAIN GAGE OR OTHER ELECTRONIC TYPE SENSOR

MEASUREMENT/SECONDARY ELEMENTS

- FI — SIGHT FLOW
- LI — GAGE INTEGRALLY MOUNTED ON VESSEL
- LI — GAGE GLASS EXTERNALLY MOUNTED ON VESSEL
- PI — PRESSURE GAGE
- TI — THERMOMETER
- INJECTION QUILL

LEVEL SYMBOLS

- LEVEL (BUBBLER TUBE)
- FLOAT
- INVERTED COLUMN
- RADAR
- SUSPENDED / SUBMERSIBLE
- ULTRASONIC

GATE SYMBOLS

- SLUICE GATE
- BUTTERFLY GATE
- SLIDE GATE
- FLAP GATE
- STOP GATE

MIXERS

- MIXER, TOP VIEW
- MIXER, SIDE VIEW
- MIXING TEE
- MECHANICAL SURFACE AERATOR

- FS — FLOW SWITCH
- FLAME ARRESTOR
- GENERIC ELEMENT WITHOUT THERMOWELL
- ROTAMETER
- PADDLE WHEEL METER
- BATCH

ACTUATOR SYMBOLS

- X — PNEUMATIC DIAPHRAGM SPRING-OPPOSED, SINGLE OR DOUBLE ACTING
- X — PNEUMATIC CYLINDER, SINGLE OR DOUBLE ACTING ACTUATED BY ONE INPUT
- M X — ELECTRIC MOTOR
- S — SOLENOID
- H — HYDRAULIC
- DIAPHRAGM, DIFFERENTIAL PRESSURE
- MANUAL / HAND
- PNEUMATIC VALVE CONTROLLER
- X — AIR OVER OIL ACTUATOR

EXAMPLE

PNEUMATIC DIAPHRAGM SPRING-OPPOSED, SINGLE OR DOUBLE ACTING
LOSS OF PRIMARY POWER (NOTE 2)
XX — VALVE POSITIONER
X — ACTUATOR TYPE (NOTE 1)

NOTE:
1. SEE VALVE DETAIL SHEET FOR VALVE ACTUATOR TYPES.
2. ON LOSS OF PRIMARY POWER; (PNEUMATIC, ELECTRICAL, OR HYDRAULIC)

XX: FO FAIL OPEN
FC FAIL CLOSED
FLP FAIL TO LAST POSITION
LO LOCKED OPEN
LC LOCKED CLOSED

HEAT EXCHANGERS

- SHELL AND TUBE HEAT EXCHANGER
- SPIRAL EXCHANGER
- PLATE AND FRAME EXCHANGER
- DOUBLE PIPE EXCHANGER
- AIR COOLED EXCHANGER
- SHELL & TUBE HEAT EXCHANGER
- GENERIC HEAT EXCHANGER

PUMP SYMBOLS

- P — GENERIC PUMP SYMBOL
- CENTRIFUGAL PUMP
- CHOPPER SCUM PUMP
- CHEMICAL FEED DIAPHRAGM PUMP
- PERISTALTIC PUMP
- INLINE PUMP
- VERTICAL MULTI-STAGE PUMP
- SUBMERSIBLE PUMP
- SUBMERSIBLE WELL PUMP
- VERTICAL TURBINE PUMP
- GEAR PUMP
- PROGRESSIVE CAVITY PUMP
- PISTON PUMP
- EDUCTOR
- AIR OPERATED DIAPHRAGM PUMP
- PROGRESSIVE CAVITY PUMP
- SCREW PUMP
- VERTICAL CAN PUMP
- ROTARY LOBE PUMP

MISC. SYMBOLS

- MEMBRANE CARTRIDGE
- O2 CYLINDER
- ELECTRICAL COOLER
- DISCONNECT SWITCH
- T — DRIP TRAP
- RUPTURE DISC (PRESSURE)
- RUPTURE DISC (VACUUM)
- VENT TO ATMOSPHERE
- AIR GAP / DRAIN
- DRAIN
- ANNULAR DIAPHRAGM SEAL
- DIFFUSER
- AIR FILTER
- ELECTRIC MOTOR
- EXPANSION CHAMBER
- PULSATION DAMPENER
- AIR SEPARATOR
- POT FEEDER
- GRINDER
- CALIBRATION COLUMN

BLOWERS / COMPRESSORS

- FAN
- ROTARY LOBE BLOWER
- MULTI-STAGE CENTRIFUGAL BLOWER
- BLOWER
- RECIPROCATING COMPRESSOR
- LIQUID RING COMPRESSOR
- RECIPROCATING COMPRESSOR WITH RECEIVER
- SCREW COMPRESSOR

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
VALERIE A. HOLLAND
NUMBER PE-2017009358
PROFESSIONAL ENGINEER
05-04-2022

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3101
MO CERTIFICATE OF AUTHORITY NO. 000161 EXPIRES 07-31-2023
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PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

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REVISION:
DATE:
ISSUE DATE: 05/04/2022

CAD DWG FILE: D-001.dwg

DESIGNED BY: MKA
DRAWN BY: MKA
APPROVED BY: VAH

SHEET TITLE:
SYMBOLS
1 OF 2

SHEET NUMBER:
D-001

29 of 46 SHEETS

TANK SYMBOLS

STORAGE TANK

NOZZLES
DOUBLE LINE NOZZLES
SINGLE LINE NOZZLES
FLANGED NOZZLES

FLAT BOTTOM DOMED TOP

FLAT BOTTOM DOMED TOP - DUAL WALL

FLAT BOTTOM OPEN TOP

FLAT BOTTOM CONED TOP

CONED BOTTOM DOMED TOP

INTERNAL FLOATING ROOF TANK

HORIZONTAL TANK

CHEMICAL TOTE

FILTER / STRAINER SYMBOLS

FILTER

WATER SEPARATOR

CONDENSATE AND SEDIMENT TRAP

AUTOMATIC DRIP TRAP

Y-STRAINER W/ BLOW-OFF VALVE

SEPARATOR

ROTARY SEPARATOR

VACUUM FILTER

BASKET STRAINER - FLANGED

Y-STRAINER

DUPLEX STRAINER

DRIER

COALESCING FILTER

PIPE & FITTING SYMBOLS

UNION

THREADED PLUG

QUICK DISCONNECT

GAP IN THE LINE

FLEXIBLE HOSE

FLEXIBLE COUPLING

FLEXIBLE COUPLING

FLEXIBLE COUPLING, REDUCER

WELDED JOINT

GROOVED END JOINT

FLANGED JOINT

BLIND FLANGE

MECHANICAL JOINT

BELL & SPIGOT JOINT

FLANGE x HUG ADAPTER

FLANGED COUPLING ADAPTER

GROOVED END ADAPTER FLANGE

FLEXIBLE COUPLING

FLEXIBLE COUPLING WITH TIE RODS

THREADED FITTINGS

CONCENTRIC REDUCER

ECCENTRIC REDUCER

SPECTACLE BLIND CLOSE

SPECTACLE BLIND OPEN

COMMUNICATION SYMBOLS

ALARM HORN

HMI — HMI SCREEN

ALARM LIGHT
X = LENS COLOR
R = RED
G = GREEN
W = WHITE
A = AMBER

PILOT LIGHT
X = LENS COLOR
R = RED
G = GREEN
W = WHITE
A = AMBER

MISC. SYMBOLS

SILENCER

PURGE VALVE
1" — BLV-XXXX
PURGE VALVE ASSEMBLY

PIT XXXX
1/2" — BBV-XXXX
1/2" — BLV-XXXX
PRESSURE GAUGE / TRANSMITTER ASSEMBLY

TRUCK

RNG TRAILER

FLARE

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
VALERIE A. HOLLAND
NUMBER PE-2017009358
PROFESSIONAL ENGINEER
05-04-2022

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
OFFICE AUTHORIZATION NO. 000548
CERTIFICATE OF AUTHORITY NO. 000548-INTERSTATE
www.bartlettwest.com

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ISSUE DATE: 05/04/2022

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DRAWN BY: MKA
APPROVED BY: VAH

SHEET TITLE:
SYMBOLS
2 OF 2

SHEET NUMBER:
D-002

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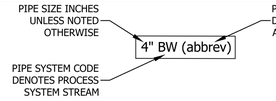
PIPE SYSTEM CODES

ABBREVIATION	PROCESS SYSTEM
A	AMBIENT AIR or AIR
AA	AERATION WATER
ABSC	AIR SCRUB
ABW	AIR BACKWASH
ALS	ALUMINUM SULFATE SOLUTION
ALUM	ALUM SOLUTION
AM or AMS	AMMONIA SOLUTION
AMG	AMMONIA GAS
AML	AERATION MIXED LIQUOR
ANS	ANTI-SCALANT SOLUTION
APS	ANIONIC POLYMER SOLUTION
ARAS	ANAEROBIC RETURN ACTIVATED SLUDGE
AS-FW	AMMONIUM SULFATE TO FINISHED WATER
AV	AIR VENT
BFD	BACK FLUSH OUTLET
BFS	BACK FLUSH SUPPLY
BG	BIOGAS
BLW	BLENDED WATER
BO	BLEACHED OIL
BW	BACKWASH
BWR	BACKWASH RECYCLE
BWS	BACKWASH SUPPLY
BWW	BACKWASH-TO-WASTE
BYP or BPS	BY-PASS
C or CENT	CENTRATE
CA or CPA	COMPRESSED AIR
CAS	CITRIC ACID SOLUTION
CAU	CAUSTIC
CC	CLOSED COOLING WATER
CD	CONDENSATE or CONDENSATE DRAIN
CDG	CARBON DIOXIDE GAS
CDS	CARBON DIOXIDE SOLUTION
CDW	COLD WATER
CF	CHEMICAL FEED or CONCENTRATE FEED
CFW	CHEMICAL FEED WATER
CGS	COAGULANT SOLUTION
CGV	CHLORINE GAS VACUUM
CHR or CHWR	CHILLED WATER RETURN
CHS or CHWS	CHILLED WATER SUPPLY
CL	CHLORINE
CLG	CHLORINE GAS
CLS	CHORINE SOLUTION
CO	CARBON MONOXIDE or CRUDE OIL
CO2	CARBON DIOXIDE
CON	CONCENTRATE
CPS	CATIONIC POLYMER SOLUTION
CRH	COLD REHEAT
CS	CAUSTIC SODA
CSS	CAUSTIC SODA SOLUTION
CS-FW	CAUSTIC SODA TO FINISHED WATER
CS-NEUT	CAUSTIC SODA TO NEUTRALIZATION
CS-ROCIP	CAUSTIC SODA TO RO CIP SYSTEM
CW	CITY WATER or COLD WATER
DC or DCT	DECANT
DE	DEWATERED CAKE
DF	DEFOAMER
DG	DIGESTER GAS
DGH	DIGESTER GAS HIGH
DI	DEIONIZED WATER
DIS	DISCHARGE TO LAKE
DIS-CONC	CONCENTRATE DISCHARGE TO LAKE
DIS-SL	DISCHARGE TO SLUDGE PONDS
DMW	DOMESTIC WATER
DO	DEGUMMED OIL
DR	DRAIN
DRL	DRAIN LINE
DS	DIGESTED SLUDGE
DSR	DIGESTED SLUDGE RECYCLE
DSS	DIGESTED SLUDGE SUPERNATANT
DW	DOMESTIC WATER or DILUTION WATER
DWS	DEWATERED SLUDGE
ED	EQUIPMENT DRAIN
EFF	EFFLUENT
ERP	EFFLUENT RETURN PRIMARY
EW	EVAPORATOR WATER
EXH	ENGINE or BOILER EXHAUST
EXH-PF	PIPE FILTER EXHAUST
F	FIRE SUPPRESSION
FA	FATTY ACID or FOUL AIR
FAD	FOUL AIR DUCT
FAP	FOUL AIR PIPE
FC or FECL	FERRIC CHLORIDE
FD	FLOOR DRAIN
FED	FEED
FI	FILTER INFLUENT
FIL	FILL LINE
FIRE	FIRE LINE
FL	FLUORIDE
FLS	FLUORIDE SOLUTION
FL-FW	FLUORIDE TO FINISHED WATER
FLT	FILTRATE
FM	FORCE MAIN
FO	FUEL OIL
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
FTW	FILTERED WATER
FW	FINISHED WATER or FEED WATER or FIRE WATER
FW-BW	FILTERED WATER / BACKWASH
FWW	FILTERED WATER-TO-WASTE
G	GRIT
GL	GLYCOL
GY	GLYCERINE
HA	HYDROCHLORIC ACID
HCL-NEUT	HYDROCHLORIC ACID TO NEUTRALIZATION
HCL-ROCIP	HYDROCHLORIC ACID TO RO CIP SYSTEM
HCL-UFCIP	HYDROCHLORIC ACID TO UF CIP SYSTEM
HPC	HIGH PRESSURE CONDENSATE
HPS	HIGH PRESSURE STEAM (175#)
HPW	HIGH PRESSURE WATER
HRH	HOT RETREAT
HSV	HIGH SERVICE
HSW	HIGH STRENGTH WASTE
HTPW	HOT PROCESS WATER
HW	HOT WATER
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
IA	INSTRUMENT AIR
INF	INFLUENT
IPC	INTERMEDIATE PRESSURE CONDENSATE
IPS	INTERMEDIATE PRESSURE STEAM (60#)
LIM	LIME
LO	LUBRICATING OIL
LPC	LOW PRESSURE CONDENSATE
LPG	LIQUEFIED PETROLEUM GAS
LPS	LOW PRESSURE STEAM (30#)
LSLG	LIME SLUDGE
MA	METHANOL
ME	METHYL ESTER (BODIES)
MET	METHANE
ML	MIXED LIQUOR
MM	METHYL-MERCAPTAN (ODORANT)
MPC	MEDIUM PRESSURE CONDENSATE
MPS	MEDIUM PRESSURE STEAM (150#)
MS	DIGESTER MIXING SLUDGE
MUW	MAKE-UP WATER
N or N2	NITROGEN
NE	NITRIFICATION EFFLUENT
NEUT-CIRC	NEUTRALIZATION CIRCULATION
NEUT-W	NEUTRALIZATION WASTE
NG	NATURAL GAS
O2	OXYGEN
OC	ODOR CONTROL
OVF or OF	OVERFLOW
OZA	OZONE MAKE-UP AIR
OZG	OZONE GAS
OZS	OZONE SOLUTION
OZW	OZONE INJECTOR WATER
P	PROCESS
PA	PLANT AIR
PAA	POST AERATION AIR
PAC	POWDERED ACTIVATED CARBON SOLUTION
PAS	PHOSPHORIC ACID SOLUTION
PD	PROCESS DRAIN
PE	PRIMARY EFFLUENT
PEW	PLANT EFFLUENT WATER
PI	PRIMARY INFLUENT
PLS	POLYMER SOLUTION
PLW	PLANT WATER
PMW	PROCESS MAKE-UP WATER
POL	POLYMER
POLS or PLS	POLYMER SOLUTION
POS	PERMANGANATE SOLUTION
PP	PROPANE or PHOSPHORUS PRECIPITATE
PRF	PRESSURE RELIEF
PRM	PERMEATE
PRS	PHOSPHORUS-RICH SUPERNATANT
PS	PRIMARY SLUDGE
PW	POTABLE WATER (CITY WATER)
R	RECIRCULATION
RAS	RETURN ACTIVATED SLUDGE
RAW	RAW WATER
RD	ROOF DRAIN
REW	RECYCLED or RECLAIMED WATER
RF	REFRIGERANT
RL	REFRIGERANT LIQUID
RNG	RENEWABLE NATURAL GAS
RO-CIPC	RO CIP CONCENTRATE CIP OUTLET TO RO CIP TANK
RO-CIPD	RO CIP DRAIN
RO-CIPF	RO CIP FEED
RO-CIPN	RO CIP TO NEUTRALIZATION
RO-CIPP	RO PERMEATE CIP OUTLET TO RO CIP TANK
RO-CIPTF	RO CIP TANK FILL
RO-CIRC	RO CIP CIRCULATION
RO-CONC	RO CONCENTRATE
RO-FD	RO FEED
RO-FDD	RO FEED HIGH DIVERT TO RO BUFFER BASIN
RO-IA	RO INSTRUMENT AIR
RO-PE	RO PERMEATE
RO-PED	RE PERMEATE DIVERT TO RO BUFFER BASIN
RO-PEF	RE PERMEATE FLUSH TANK FILL
RO-PFR	RO PERMEATE FLUSH RINSE WATER
RS	RECIRCULATION PUMP SUCTION or RAW SEWAGE
RSD	RECIRCULATED SLUDGE
RTN	RETURN
RV	REFRIGERANT VAPOR
RVF	REVERSE FLOW
RWF	REW WATER FLUSH
SA	SERVICE AIR
SA or SAM	SAMPLE
SAN	SANITARY SEWER
SAS	SULFURIC ACID SOLUTION
SB-NEUT	SODIUM BISULFITE TO NEUTRALIZATION SYSTEM
SB-RO	SODIUM BISULFITE TO RO FEED PIPING
SB-UF4	SODIUM BISULFITE TO UF SECONDARY SYSTEM
SBS	SODIUM BISULFITE SOLUTION
SC	SCUM
SCS	SODIUM CARBONATE SOLUTION
SD	STORM DRAIN (GRAVITY)
SE	SECONDARY EFFLUENT
SEP	SEPTAGE
SGR	SURGE RELIEF
SHD	SODIUM HYDROXIDE
SHS	SODIUM HYPOCHLORITE SOLUTION
SH-TMC	SODIUM HYPOCHLORITE TO UF SECONDARY SKID FOR TMC
SH-UFCIP	SODIUM HYPOCHLORITE TO UF CIP SYSTEM
SI	SECONDARY INFLUENT
SLG	SLUDGE
SLG-BYP	SLUDGE BYPASS
SPD	SUMP PUMP DRAIN
SPS	SCREENED PRIMARY SLUDGE
SS	SANITARY SEWER
ST	STEAM
SU	DIGESTED SLUDGE SUPERNATANT
STM	STORM WATER
SW	SEAL WATER
T	SLUDGE TRANSFER
TD	TANK DRAIN
TG	TAIL GAS
TPS	THICKENED PRIMARY SLUDGE
TRW	TREATED WATER
TWAS	THICKENED WASTE ACTIVATED SLUDGE
UFP-BWAS	UF PRIMARY BACKWASH AIR SCOUR
UFP-BWDV	UF PRIMARY BACKWASH DRAIN VENT
UFP-BWW	UF PRIMARY BACKWASH TO WASTE
UFP-CIRC	UF PRIMARY CIP CIRCULATION
UFP-CIPF	UF PRIMARY CIP FEED
UFP-CIPR	UF PRIMARY CIP RETURN
UFP-CIPTF	UF PRIMARY CIP TANK FILL
UFP-CIPN	UF PRIMARY CIP TO NEUTRALIZATION SYSTEM
UFP-DR	UF PRIMARY DRAIN
UFP-FD	UF PRIMARY FEED
UFP-FI	UF PRIMARY FILTRATE
UFP-IA	UF PRIMARY INSTRUMENT AIR
UFP-ITA	UF PRIMARY INTEGRITY TEST AIR
UFP-RFBW	UF PRIMARY REVERSE FLOW BACKWASH
UFP-RFFBWF	UF PRIMARY REVERSE FLOW BACKWASH FILL
UFS-BWAS	UF SECONDARY BACKWASH AIR SCOUR
UFS-BWDV	UF SECONDARY BACKWASH DRAIN VENT
UFS-BWW	UF SECONDARY BACKWASH TO WASTE
UFS-CIRC	UF SECONDARY CIP CIRCULATION
UFS-CIPF	UF SECONDARY CIP FEED
UFS-CIPR	UF SECONDARY CIP RETURN
UFS-CIPTF	UF SECONDARY CIP TANK FILL
UFS-CIPN	UF SECONDARY CIP TO NEUTRALIZATION SYSTEM
UFS-DR	UF SECONDARY DRAIN
UFS-FD	UF SECONDARY FEED
UFS-FI	UF SECONDARY FILTRATE
UFS-IA	UF SECONDARY INSTRUMENT AIR
UFS-ITA	UF SECONDARY INTEGRITY TEST AIR
UFS-RFBW	UF SECONDARY REVERSE FLOW BACKWASH
UFS-RFFBWF	UF SECONDARY REVERSE FLOW BACKWASH FILL
VAC	VACUUM
VNT or V	VENT
VTR	VENT THROUGH ROOF
WAS	WASTE ACTIVATED SLUDGE
WASS	WASTE ACTIVATED SLUDGE THICKENER SUBNATE
WTL	WASTE LINE
WW	WASTE WATER
1W	NO. 1 WATER, POTABLE WATER
2W	NO. 2 WATER, RECLAIMED EFFLUENT
3W	NO. 3 WATER, HIGH PRESSURE RECLAIMED EFFLUENT

NOTES:
1. ALL SERVICES LISTED MAY NOT BE USED ON THIS PROJECT.
2. SEE PLANS FOR TRANSITIONS BETWEEN PIPE MATERIAL.
3. CONTRACTOR SHALL VERIFY THE PIPE SHOWS NO LEAKAGE UNDER NORMAL OPERATING CONDITIONS.
4. SHOW DIRECTION OF FLOW AND NAME OF CONTENTS ON ALL LINES. COLOR CODING FOLLOWS TEN STATE STANDARDS WERE APPLICABLE.
5. DO NOT PAINT PVC, ALUMINUM, COPPER, GALVANIZED, OR STAINLESS STEEL PIPING.

PIPE DESIGNATION SYSTEM



PIPE MATERIAL CODES

ABBREVIATION	PIPE DESCRIPTION	SPEC. SECTION
DI	DUCTILE IRON	402040
DIGL	DUCTILE IRON GLASS LINED	402040
WS-CL	WELDED STEEL CEMENT LINED	402066
PVC C90_	PLASTIC PVC AWWA C900/C905	402092
PVC SCH __	PLASTIC, PVC SCH 40 OR 80	402090/402091
DWV	PLASTIC, PVC DWV	221316
PVC CL___	PLASTIC, PVC CLASS 160 (SDR 26)	402092
SS ___L	STAINLESS STEEL 304L, 316L	402076
PVC SAN or FM	PVC SEWER PIPE	333100
PE	POLYETHYLENE TUBING	433300
CPVC	CHLORINATED POLYVINYL CHLORIDE	402090/402091
HDPE	HIGH DENSITY POLYETHYLENE PIPE	400519
CS	CARBON STEEL	402077
FRP	FIBER REINFORCED PLASTIC	402099
GALV	GALVANIZED STEEL	

ALL PIPE MATERIALS LISTED MAY NOT BE USED ON THIS PROJECT.

ANSI PIPE PRESSURE CLASS

1ST LETTER = ANSI CLASS

A	150 CLASS
B	300 CLASS
D	600 CLASS
E	900 CLASS

GENERAL NOTES

1. THE PROCESS SYMBOLS AND DEVICE IDENTIFICATIONS ARE BASED ON INTERNATIONAL SOCIETY OF AUTOMATION, STANDARD PRACTICE ISA-S5.1 (1988). MODIFICATIONS MAY HAVE BEEN MADE FOR SPECIFIC PROJECT REQUIREMENTS.
2. THIS LEGEND SHEET IS GENERAL IN NATURE. SOME SYMBOLS AND ABBREVIATIONS MAY NOT BE UTILIZED ON THIS SPECIFIC PROJECT. PIPING AND EQUIPMENT LEGEND APPLIES TO PROCESS SHEETS.
3. PIPING AND EQUIPMENT LEGEND APPLIES TO PROCESS SHEETS ONLY AND MAY DIFFER FROM LEGENDS AND OTHER DISCIPLINES.
4. SOME CONTROL AND INTERLOCKING REQUIREMENTS WHICH CAN BE MORE CLEARLY ILLUSTRATED ON SCHEMATIC DRAWINGS MAY HAVE BEEN OMITTED FROM THE PROCESS.

EQUIPMENT TAG DESIGNATIONS

AC	AIR COMPRESSOR
ABFV	ACTUATED BUTTERFLY VALVE
ABLV	ACTUATED BALL VALVE
AG	AGITATOR
AS	ABSORPTION SYSTEM
AV	ACTUATED VALVE
B	BOILER
BL	BLOWER
BFV	BUTTERFLY VALVE
BKS	BASKET STRAINER
BLV	BALL VALVE
C	COMPRESSOR
CENT	CENTRIFUGE
CF	CHEMICAL FEED SYSTEM
CH	CHILLER
CKP	CAKE PUMP
CLF	COALESCING FILTER
CON	CONDENSER
COV	CONTROL VALVE
CFP or CP	CENTRIFUGAL PUMP
CP	CONTROL PANEL
CTP	CHEMICAL TRANSFER PUMP
CV	CHECK VALVE
DA	DEAERATOR
DF	DUPLEX FILTER
DMIN	DEMINERALIZER
DP	DIAPHRAGM PUMP
DR	DRIER
DV	DIAPHRAGM VALVE
EM	ELECTRIC MOTOR
F	FILTER
FAN	FAN
FD	CHEMICAL FEEDER
FM	FLOW METER
GB	GEAR BOX
GCA	GRANULAR CARBON ADSORPTION
GV	GATE VALVE
HC	HYPROCYCLONE
HTR	HEATER
HX	HEAT EXCHANGER
HSP	HIGH SERVICE PUMP
HST	HOIST
HV	HAND VALVE
IA	INSTRUMENT AIR SYSTEM
IS	IRON SPONGE
KG	KNIFE GATE
KOP	KNOCK OUT POT
KV	KNIFE VALVE
MA	MOTOR ACTUATOR
ME	MISC EQUIPMENT
MV	MANUAL VALVE
MX	MIXER
MXP	MIXING PUMP
P	PUMP
PA	PROCESS ANALYZER
PF	PRE-FILTER
PIV	PINCH VALVE
PMP	PERISTALTIC METERING PUMP
PV	PLUG VALVE
PVS	PRESSURE VESSEL
SCN	SCREW CONVEYOR
SG	SLIDE GATE
SKD	SKID
SLG	SLUICE GATE
SP	STOP GATE
STR	STRAINER
SV or SOV	SOLENOID VALVE
SXR	SILOXANE REMOVAL
TK	TANK
UPS	UNINTERRUPTIBLE POWER SUPPLY
VFD	VARIABLE FREQUENCY DRIVE
VTP	VERTICAL TURBINE PUMP
XFMR	TRANSFORMER

EQUIPMENT TAG

SLG-123
- INDIVIDUAL EQUIPMENT OR LOOP NUMBER
- EQUIPMENT TYPE DESIGNATION

VALVE TAG

BFV-123
- INDIVIDUAL VALVE OR LOOP NUMBER
- VALVE TYPE (I.E. BUTTERFLY VALVE)

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
VALERIE A. HOLLAND
NUMBER PE-2017009358
PROFESSIONAL ENGINEER
05-04-2022

Bartlett&West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
FAX 573.634.5346
CERTIFICATE OF AUTHORITY NO. 000548 - RENEWAL
www.bartlettwest.com

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

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MOBERLY, MISSOURI 65270

PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

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DATE: _____
REVISION: _____
DATE: _____
ISSUE DATE: 05/04/2022

CAD DWG FILE: D-003.dwg

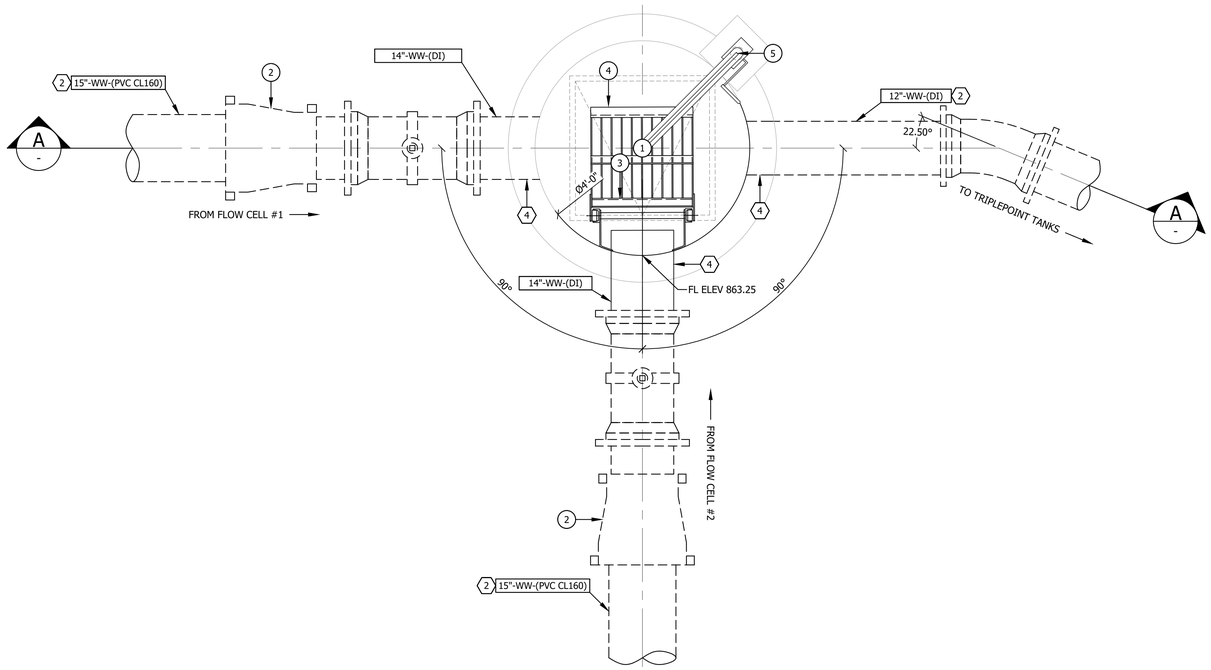
DESIGNED BY: MKA
DRAWN BY: MKA
APPROVED BY: VAH

SHEET TITLE:

PIPE SYSTEM CODES AND EQUIPMENT ABBREVIATIONS

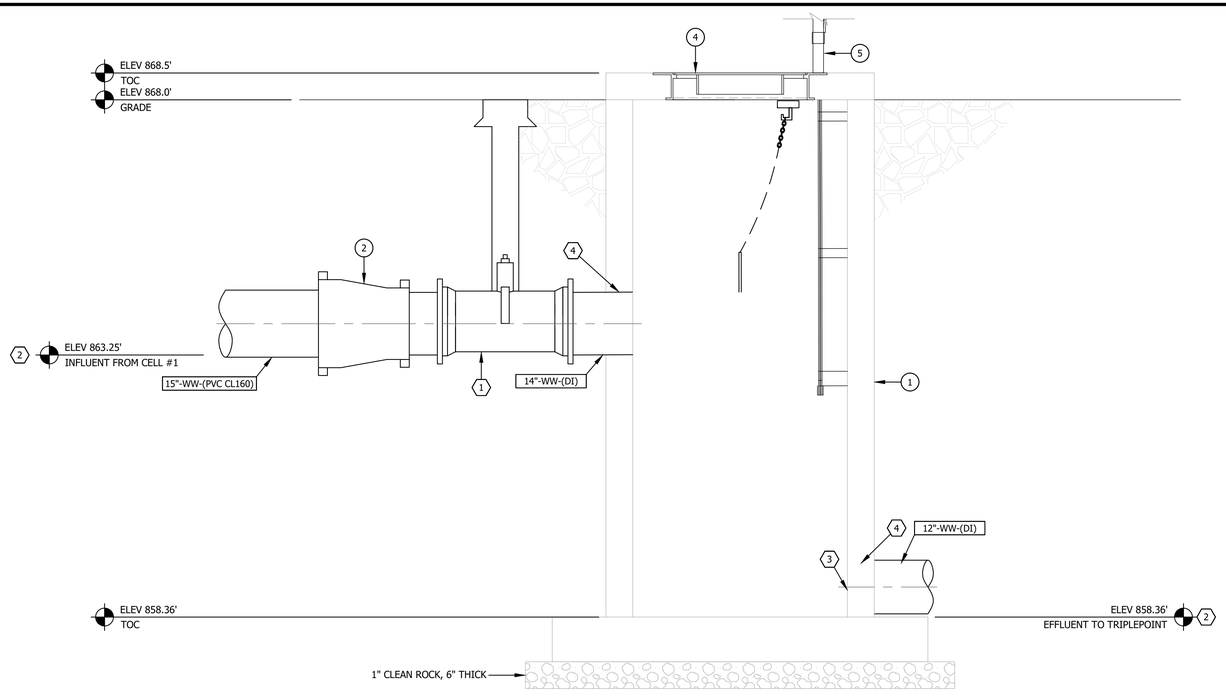
SHEET NUMBER:

D-003



FLOW CONTROL PLAN

SCALE: 3/4"=1'-0"



A FLOW CONTROL SECTION

D-101 SCALE: 3/4"=1'-0"

MATERIAL LIST:

1. 4'-0" PRECAST MANHOLE, SEE DRAWING C-503 FOR ADDITIONAL INFORMATION
2. FLEXIBLE COUPLING, CONNECT TO 14" DI TO 15" PVC SDR 26
3. HALLIDAY TRASH BASKET B1B SERIES OR APPROVED EQUAL. TRASH BASKET SHALL INCLUDE SST HANGER, ALUMINUM GUIDE RAILS, AND SST CHAIN WITH SST KELLUM GRIP.
4. HALLIDAY S1R3030 ALUMINUM ACCESS HATCH WITH SAFETY GRATING OR APPROVED EQUAL
   HALIDAY PRODUCTS D1B36 PORTABLE ADJUSTABLE HOIST WITH 310 LB LIFTING CAPACITY AND D1R IN BED MOUNT AND CAP OR APPROVED EQUAL. MOUNT HOIST ON EXTERIOR MANHOLE LID SUCH THAT LIFTING HOOK IS CENTERED ON THE TRASH BASKET. CONTRACTOR SHALL COORDINATE W/ SUPPLIER , PRECASTER, AND PORTABLE HOIST SUPPLIER ON FINAL LOCATION OF TOP MOUNT SOCKET. CONTRACTOR SHALL ENSURE THAT FINAL LOCATION ALLOWS FOR THE RETRIEVAL AND REMOVAL OF THE TRASH BASKET. COORDINATE WITH PRECASTER PRIOR TO SUBMITTAL/SHOP DRAWINGS.
5.

REFERENCE NOTES:

1. BURIED GATE VALVE, SEE DETAIL 1 ON DRAWING C-501
2. SEE CIVIL DRAWING C-105 FOR PIPE CONTINUATIONS
3. INTAKE SCREEN (NOT SHOWN), SEE DETAIL 4 ON DRAWING D-501
4. A-LOK GASKET AS MANUFACTURED BY A-LOK OR APPROVED EQUAL

GENERAL NOTES:

1. PIPE, FITTINGS, VALVES, EQUIPMENT, ETC., TAGS AND LABELS ARE PROVIDED AS A COURTESY FOR THE CONTRACTOR. IT IS NOT THE INTENT OF THESE CALLOUTS, LABELS, AND TAGS TO BE A BILL OF MATERIALS LIST. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ITEMS EITHER CALLED OUT OR SHOWN IN THE DRAWINGS AND OR SPECIFICATIONS.
2. NOT ALL PIPE SUPPORTS AND HANGERS ARE SHOWN. CONTRACTOR SHALL ADEQUATELY SUPPORT ALL PIPING PER SPECIFICATIONS.

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
VALERIE A. HOLLAND
NUMBER PE-2017009358
PROFESSIONAL ENGINEER
05-04-2022

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
FAX 573.634.5960
CERTIFICATE OF AUTHORITY NO. 000572 RENEWAL 2022
www.bartlettwest.com

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MOBERLY, MISSOURI 65270

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ASSET # 9327005058

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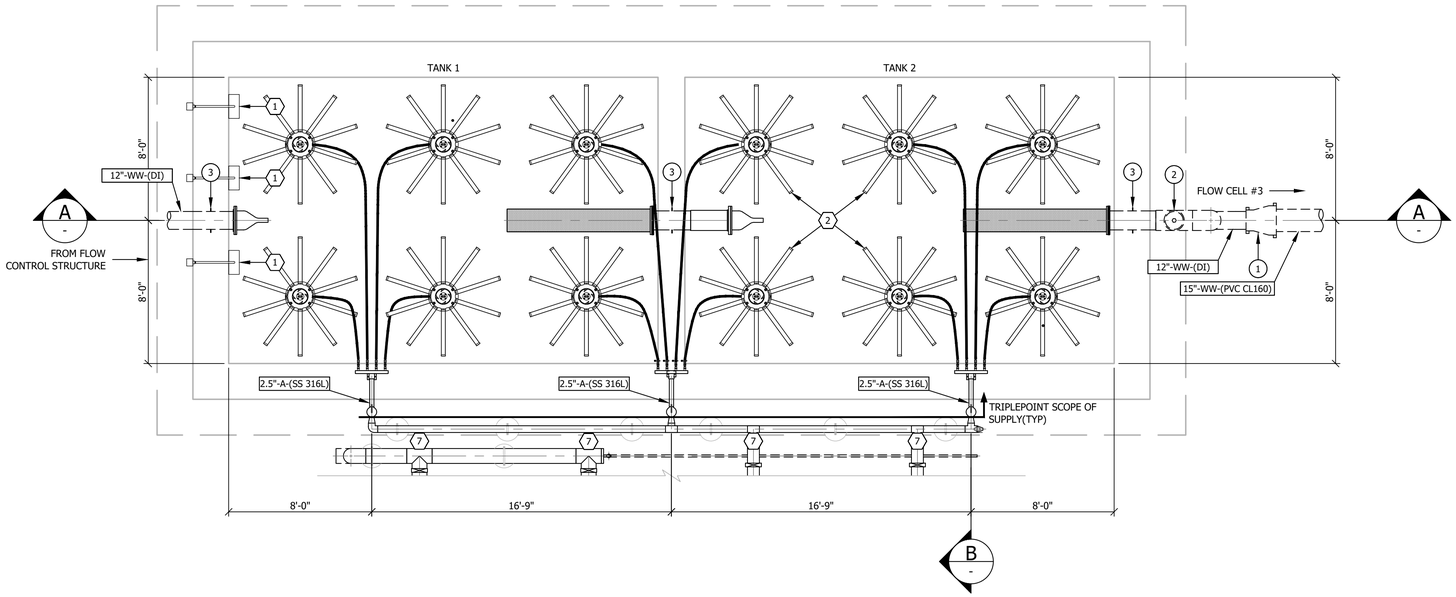
DRAWN BY: MKA
APPROVED BY: VAH

SHEET TITLE:

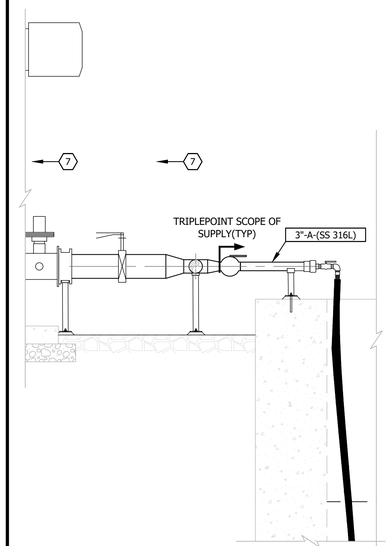
FLOW CONTROL STRUCTURE PLAN

SHEET NUMBER:

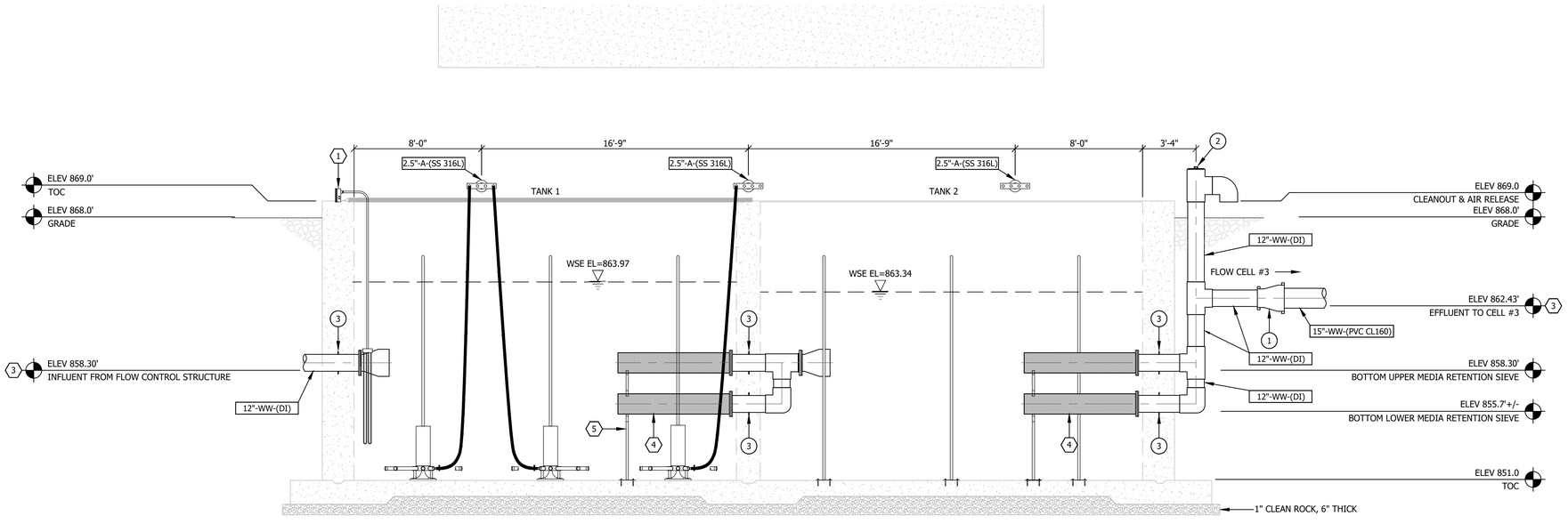
D-101



TRIPLEPOINT TANK PLAN
SCALE: 1/4"=1'-0"



B D-102 AIR PIPING SECTION
SCALE: 3/4"=1'-0"



A D-102 TRIPLEPOINT TANK SECTION
SCALE: 1/4"=1'-0"

MATERIAL LIST:

1. FLEXIBLE COUPLING, CONNECT TO 12" DI TO 15" PVC SDR 26
2. 12" DI CLEANOUT & AIR RELEASE WITH SST #24 INSECT SCREEN
3. 12" WS WALL PIPE, SEE DETAIL 1 ON DRAWING D-501

REFERENCE NOTES:

1. HEATER W/ HEATER J-BOX (3), VENDOR SUPPLIED
2. ARES 750T AERATOR (12), VENDOR SUPPLIED
3. SEE CIVIL DRAWING C-105 FOR PIPE CONTINUATIONS
4. MEDIA RETENTION SIEVE (4), VENDOR SUPPLIED
5. SIEVE SUPPORT BRACKETS (4), VENDOR SUPPLIED
6. NOT USED
7. BLOWERS FOR TRIPLEPOINT TANKS AND LAGOONS(NOT SHOWN), SEE DRAWING D-103

GENERAL NOTES:

1. PIPE, FITTINGS, VALVES, EQUIPMENT, ETC., TAGS AND LABELS ARE PROVIDED AS A COURTESY FOR THE CONTRACTOR. IT IS NOT THE INTENT OF THESE CALLOUTS, LABELS, AND TAGS TO BE A BILL OF MATERIALS LIST. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ITEMS EITHER CALLED OUT OR SHOWN IN THE DRAWINGS AND OR SPECIFICATIONS.
2. NOT ALL PIPE SUPPORTS AND HANGERS ARE SHOWN. CONTRACTOR SHALL ADEQUATELY SUPPORT ALL PIPING PER SPECIFICATIONS.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR A COMPLETE AND OPERATIONAL SYSTEM. THE SCOPE OF ITEMS FROM THE MANUFACTURE SHALL VARY AND THE CONTRACTOR SHALL SUPPLY ANY ADDITIONAL ITEMS AT NO ADDITIONAL COST TO THE OWNER. ALL PIPE CONNECTIONS WILL BE DONE BY THE CONTRACTOR.

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
VALERIE A. HOLLAND
NUMBER PE-2017009358
PROFESSIONAL ENGINEER
05-04-2022

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
FAX 573.634.8616
CERTIFICATE OF AUTHORITY NO. 000178 RENEWED 2016
www.bartlettwest.com

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
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5201 SOUTH MORLEY ST
MOBERLY, MISSOURI 65270

PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

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TRIPLEPOINT TANK PLAN & SECTIONS

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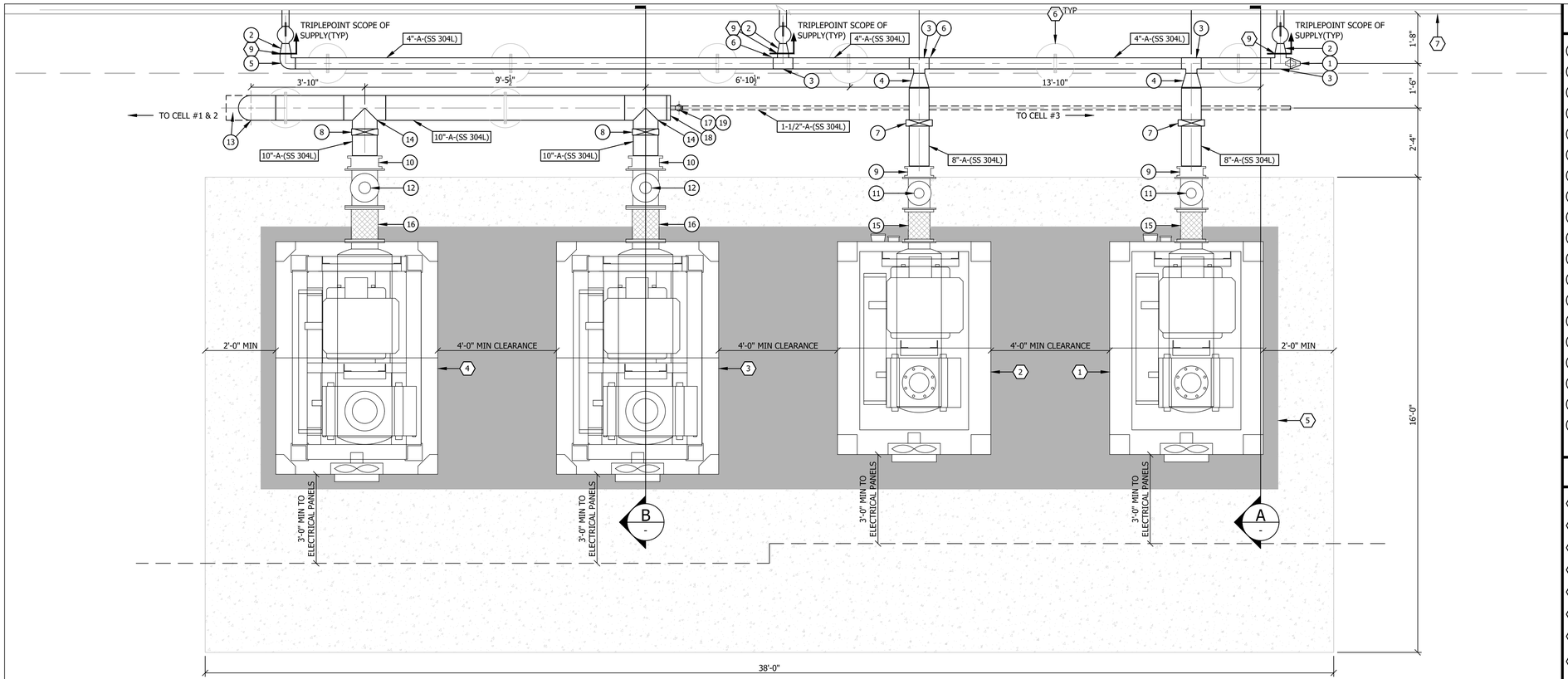
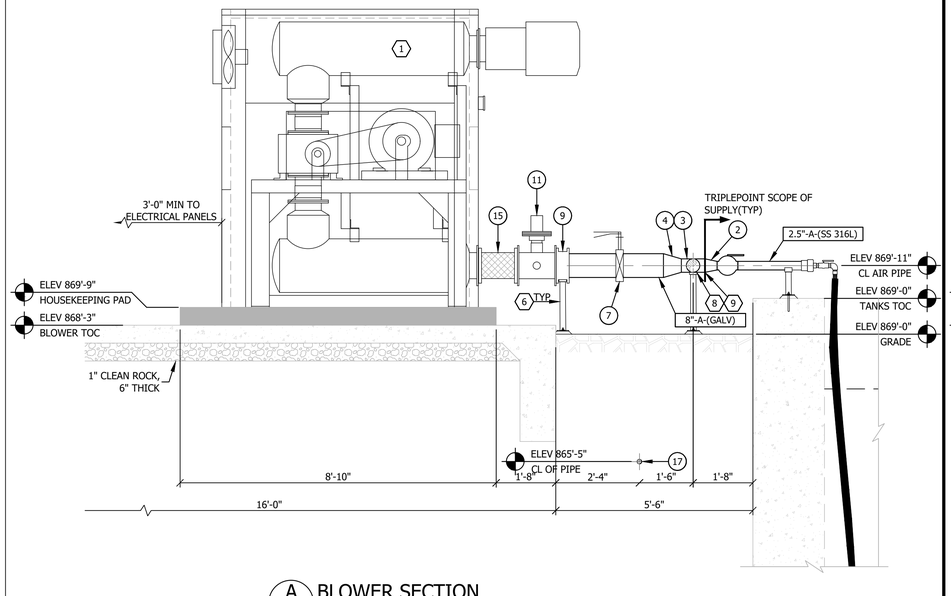
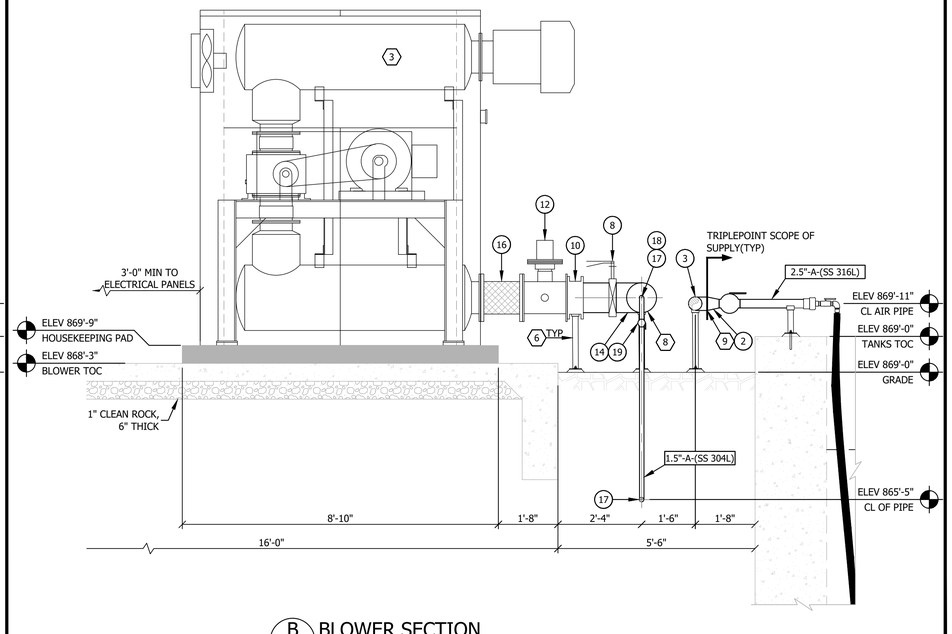
D-102



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



A BLOWER SECTION
D-103 SCALE: 1/2"=1'-0"



B BLOWER SECTION
D-103 SCALE: 1/2"=1'-0"

MATERIAL LIST:

1. 2" BLEED VALVE
2. 4" x 2.5" SST CONCENTRIC REDUCER, PROVIDED BY TPE
3. 4" x 4" x 4" SS 304L TEE
4. 8" x 4" 304 SS 304L CONCENTRIC REDUCER
5. 4" 90° 304 SS 304L BEND
6. 4" SST BUTTERFLY VALVE
7. 8" SST BUTTERFLY VALVE
8. 10" SST BUTTERFLY VALVE
9. 8" CHECK VALVE, PROVIDED BY TPE
10. 10" CHECK VALVE, PROVIDED BY TPE
11. 8" PRESSURE RELIEF VALVE & PRESSURE GAUGE, PROVIDED BY TPE
12. 10" PRESSURE RELIEF VALVE & PRESSURE GAUGE, PROVIDED BY TPE
13. 10" 90° SS 304L BEND
14. 10" x 10" x 10" SS 304L TEE
15. 8" SST BRAIDED FLEXIBLE CONNECTOR, PROVIDED BY TPE
16. 10" SST BRAIDED FLEXIBLE CONNECTOR, PROVIDED BY TPE
17. 1.5" 90° SS 304L BEND
18. 10" SS 304L BLIND FLANGE
19. 1.5" SS 304L BALL VALVE, THREADED

REFERENCE NOTES:

1. BLOWER #1, HF 616 BY EXCELSIOR BLOWER SYSTEMS
2. BLOWER #2, HF 616 BY EXCELSIOR BLOWER SYSTEMS
3. BLOWER #3, HF 624 BY EXCELSIOR BLOWER SYSTEMS
4. BLOWER #4, HF 624 BY EXCELSIOR BLOWER SYSTEMS
5. 6" HOUSEKEEPING PAD, 34'-3" LENGTH x 8'-10" WIDTH
6. ADJUSTABLE PIPE SUPPORT, SEE DETAIL 3 ON DRAWING D-501
7. TRIPLEPOINT TANKS (NOT SHOWN), SEE DRAWING D-102
8. CONDENSATE DRAIN TRAP & OUTLET POINT ON EACH BLOWER LINE. PROVIDE 1" TH TAP AND 1" TH SST BALL VALVE, TYPICAL FOR EACH BLOWER
9. INSTALL INSULATION KIT, SEE NOTE 5

GENERAL NOTES:

1. PIPE, FITTINGS, VALVES, EQUIPMENT, ETC., TAGS AND LABELS ARE PROVIDED AS A COURTESY FOR THE CONTRACTOR. IT IS NOT THE INTENT OF THESE CALLOUTS, LABELS, AND TAGS TO BE A BILL OF MATERIALS LIST. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ITEMS EITHER CALLED OUT OR SHOWN IN THE DRAWINGS AND OR SPECIFICATIONS.
2. NOT ALL PIPE SUPPORTS AND HANGERS ARE SHOWN. CONTRACTOR SHALL ADEQUATELY SUPPORT ALL PIPING PER SPECIFICATIONS.
3. BLOWER AWNING STRUCTURE: CONTRACTOR SHALL PROVIDE A BLOWER AWNING STRUCTURE WITH EQUAL DIMENSIONS OF BLOWER EQUIPMENT PAD AND A MINIMUM OF 12 FOOT CLEAR HEIGHT FROM CONCRETE PAD TO ROOF SHALL BE PROVIDED. CONTRACTOR SHALL CONFIRM CLEAR HEIGHT WITH THE BLOWER AND PANEL SUPPLIERS. ROOF SHALL BE G-RIB 40 YR. 29-GAUGE METAL SIDING, FACTORY PAINTED WITH GALVALUME ALUMINUM-ZINC COATING, URETHANE PRIMER, AND SILICONE POLYESTER BAKED ENAMEL (COLOR: OWNER CHOICE) OR APPROVED EQUAL. SOFFIT SHALL BE G-RIB VENTED SOFFIT WITH PAINTED TRIM. FOUNDATION CONNECTION SHALL BE SW66 STURDIWALL BRACKET. ROOF SHALL BE GABLE 4/12 PITCH. ROOF FRAMING DETAILS TO BE SUPPLIED BY CONTRACTOR FOR ENGINEER REVIEW
4. THE CONTRACTOR SHALL COORDINATE AND INSTALL ALL REQUIRED EQUIPMENT, INTERCONNECTING PIPING, FITTINGS, VALVES AND APPURTENANCES REQUIRED TO FACILITATE A COMPLETE AND FUNCTIONING SYSTEM.
5. BURIED AIR PIPE SHALL BE UNLINED DUCTILE IRON PIPE WITH EPDM GASKETS. CONTRACTOR SHALL INSTALL INSULATION KIT FOR PIPE MATERIAL TRANSITIONS.
6. CONTRACTOR SHALL FULLY SUPPORT ALL AIR PIPING AT ALL EQUIPMENT CONNECTIONS, TANK CONNECTIONS, CHANGES IN DIRECTION AT LEAST EVERY 10 LF.
7. BLOWERS TO BE PROVIDED BY TRIPLEPOINT ENVIRONMENTAL. REFER TO THE SPECIFICATIONS FOR SCOPE OF SUPPLY.
8. INSTALL UNIONS IN AIR PIPING TO PROVIDE ADEQUATE MAINTENANCE.
9. ALL GALVANIZED AIR PIPING SHALL BE THREADED UNLESS OTHERWISE NOTED.
10. PROVIDE AIR BLOW OFF VALVES AT EVERY CHANGE IN AIR PIPE DIAMETER AND LOW POINTS.

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
VALERIE A. HOLLAND
NUMBER PE-2017009358
PROFESSIONAL ENGINEER
05-04-2022

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3181
FAX 573.634.5860
www.bartlettwest.com
CERTIFICATE OF AUTHORITY NO. 000615-INGENIERO

OFFICE OF ADMINISTRATION
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DEPARTMENT OF CORRECTIONS

WASTEWATER TREATMENT FACILITY IMPROVEMENTS

5201 SOUTH MORLEY ST
MOBERLY, MISSOURI 65270

PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

REVISION:
DATE:
REVISION:
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REVISION:
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CAD DWG FILE: D-103.dwg

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DRAWN BY: MKA
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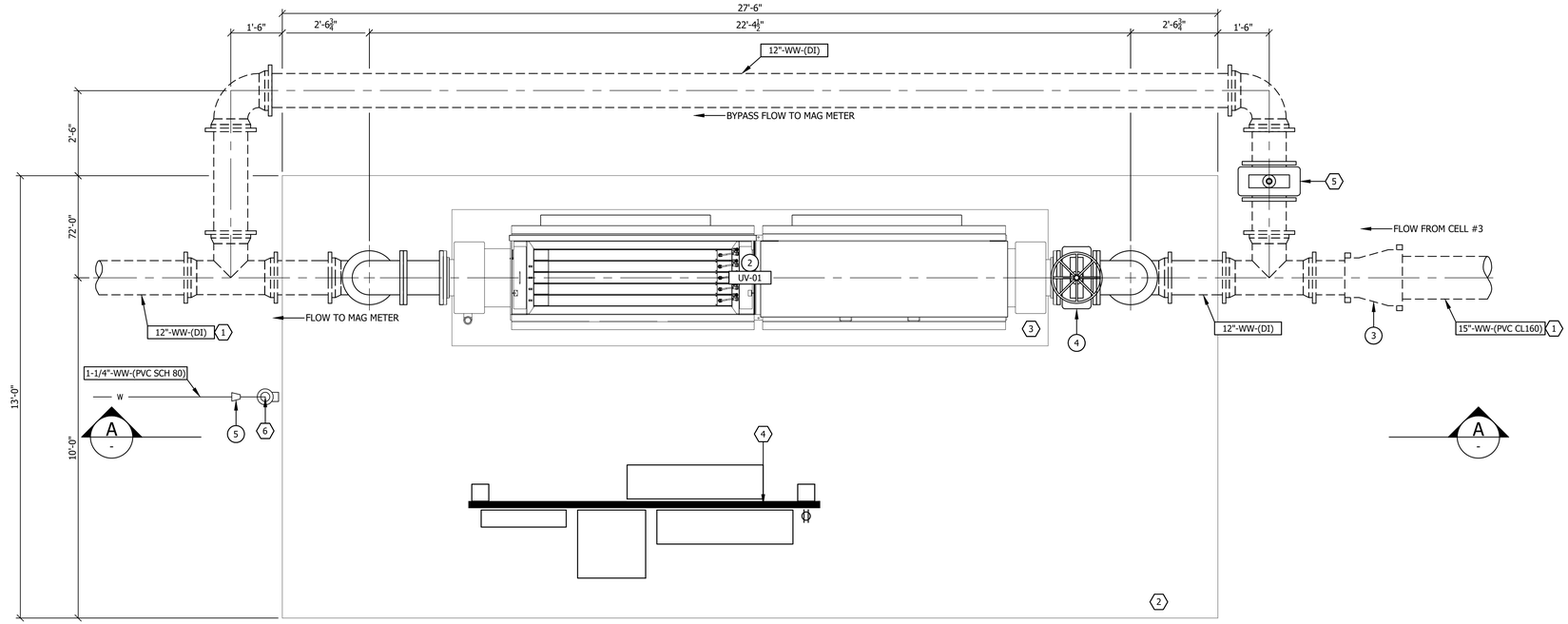
SHEET TITLE:

BLOWER PLAN & SECTIONS

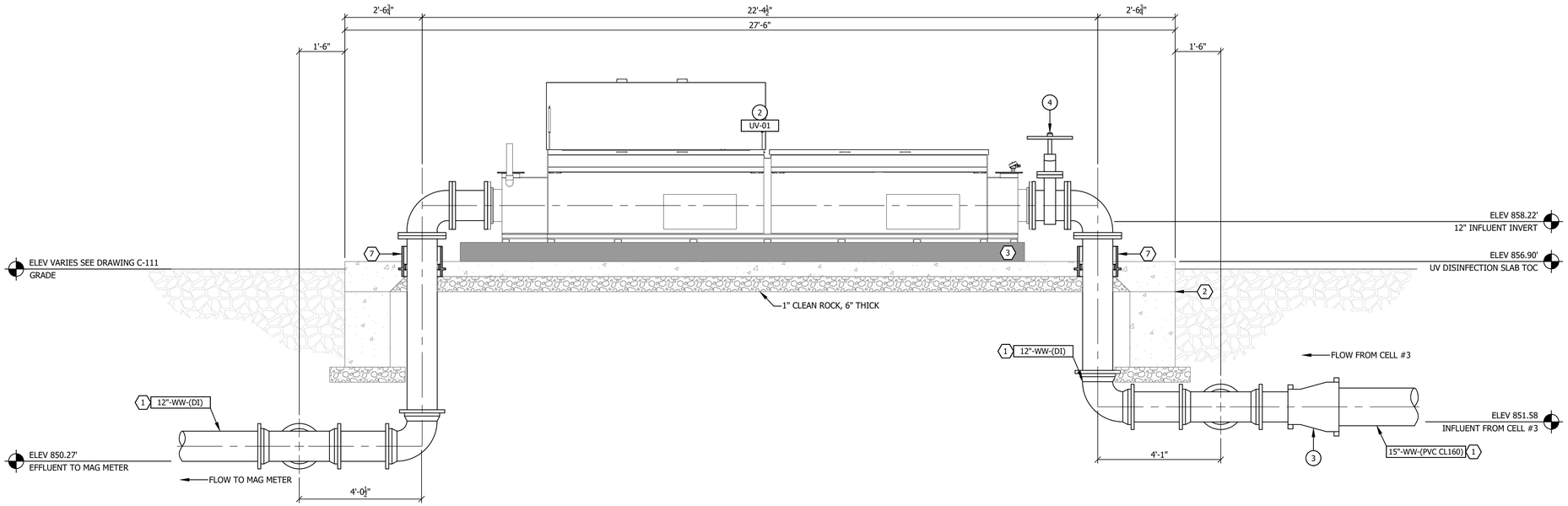
SHEET NUMBER:

D-103



UV DISINFECTION EQUIPMENT PLAN

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



A UV DISINFECTION EQUIPMENT SECTION

D-104 SCALE: 1/2"=1'-0"

MATERIAL LIST:

1. 12" GATE VALVE, BURIED W/ VALVE EXTENSION
2. UV DISINFECTION EQUIPMENT C2T.06042 BY ENAQUA OR APPROVED EQUAL
3. FLEXIBLE COUPLING, CONNECT TO 12" DI TO 15" PVC SDR 26
4. 12" GATE VALVE
5. 1-1/4" x 1" PVC SCH 80 REDUCER

REFERENCE NOTES:

1. SEE CIVIL DRAWING C-106 FOR PIPE CONTINUATIONS
2. SEE STRUCTURAL DRAWING S-103 FOR ADDITIONAL INFORMATION ON UV DISINFECTION SLAB
3. 17'-6" x 4'-0" UV EQUIPMENT HOUSEKEEPING PAD. THE CONTRACTOR SHALL COORDINATE FINAL PAD HEIGHT WITH EQUIPMENT AND PIPE CENTERLINES, MINIMUM DIMENSION SHALL NOT BE LESS THAN 9 INCHES.
4. UV DISINFECTION ELECTRICAL EQUIPMENT, SEE ELECTRICAL DRAWING E-104
5. BURIED GATE VALVE, SEE DETAIL 1 ON DRAWING C-501
6. FROST FREE YARD HYDRANT, SEE DETAIL 8 ON DRAWING C-502. YARD HYDRANT PIPING SHALL BE AS SPECIFIED IN SECTION 402090 FOR RECLAIMED WATER SERVICE. THE PIPING AND HYDRANT SHALL BE MARKED WITH A SIGN STATING "CAUTION: RECLAIMED WATER -- DO NOT DRINK".
7. FLOOR PENETRATION SEAL, SEE DETAIL 7 ON DRAWING D-501

GENERAL NOTES:

1. PIPE, FITTINGS, VALVES, EQUIPMENT, ETC., TAGS AND LABELS ARE PROVIDED AS A COURTESY FOR THE CONTRACTOR. IT IS NOT THE INTENT OF THESE CALLOUTS, LABELS, AND TAGS TO BE A BILL OF MATERIALS LIST. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ITEMS EITHER CALLED OUT OR SHOWN IN THE DRAWINGS AND OR SPECIFICATIONS.
2. NOT ALL PIPE SUPPORTS AND HANGERS ARE SHOWN. CONTRACTOR SHALL ADEQUATELY SUPPORT ALL PIPING PER SPECIFICATIONS.
3. PIPING LAYOUT BASED ON ENAQUA UV SYSTEM. IF OTHER UV SYSTEM IS SUBMITTED AND APPROVED BY THE ENGINEER, CONTRACTOR SHALL ADAPT PIPING, EQUIPMENT, AND HYDRAULICS TO SUIT UV SYSTEM AT HIS OWN EXPENSE. UV UNITS SHALL BE EQUIVALENT IN PERFORMANCE AND DIMENSIONS.
4. CONTRACTOR SHALL PROVIDE A UV AWNING STRUCTURE WITH EQUAL DIMENSIONS OF UV EQUIPMENT PAD AND A MIN OF 8 FOOT CLEAR HEIGHT FROM CONCRETE PAD TO ROOF. STRUCTURE DIMENSIONS ARE BASED ON ENAQUA UV EQUIPMENT. IF ANOTHER MANUFACTURER IS SELECTED, THE CONTRACTOR SHALL PROVIDE A UV STRUCTURE, AT OWN EXPENSE, AND COORDINATE WITH UV MANUFACTURER TO CONFIRM OVERALL DIMENSIONS REQUIRED FOR LIFTING HEIGHT FOR MODULES AND PORTABLE HOIST. ROOF SHALL BE G-RIB 40 YR. 29-GAUGE METAL SIDING, FACTORY PAINTED WITH GALVALUME ALUMINUM-ZINC COATING, URETHANE PRIMER, AND SILICONE POLYESTER BAKED ENAMEL (COLOR: OWNER CHOICE) OR APPROVED EQUAL. SIDING SHALL BE G-RIB 40 YR. 29-GAUGE METAL SIDING, FACTORY PAINTED WITH GALVALUME ALUMINUM-ZINC COATING, URETHANE PRIMER, AND SILICONE POLYESTER BAKED ENAMEL (COLOR: OWNER CHOICE) OR APPROVED EQUAL. THE STRUCTURE SHALL HAVE WALLS/SIDING ALONG THREE SIDES OF THE EQUIPMENT PAD. THE EAST SIDE SHALL HAVE NO WALL TO MAINTAIN ACCESS TO THE CONTROL PANELS. SOFFIT SHALL BE G-RIB VENTED SOFFIT WITH PAINTED TRIM. FOUNDATION CONNECTION SHALL BE SW66 STURDIWALL BRACKET. ROOF SHALL BE GABLE 4/12 PITCH. ONE ENTRY DOOR 3 FOOT BY 7 FOOT SHALL BE PROVIDED. ROOF/WALL FRAMING DETAILS TO BE SUPPLIED BY CONTRACTOR FOR ENGINEER REVIEW.

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
VALERIE A. HOLLAND
NUMBER PE-2017009358
PROFESSIONAL ENGINEER
05-04-2022

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3181
CERTIFICATE OF AUTHORITY NO. 000819 RENEWAL 2022
www.bartlettwest.com

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DEPARTMENT OF CORRECTIONS

WASTEWATER TREATMENT FACILITY IMPROVEMENTS

5201 SOUTH MORLEY ST
MOBERLY, MISSOURI 65270

PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:

ISSUE DATE: 05/04/2022

CAD DWG FILE: D-104.dwg

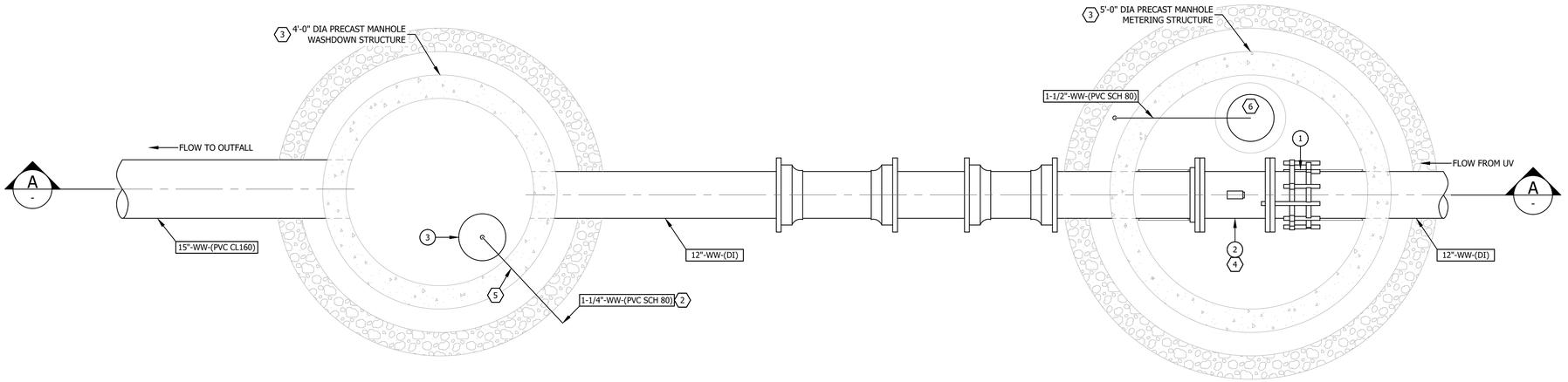
DESIGNED BY: VAH
DRAWN BY: MKA
APPROVED BY: VAH

SHEET TITLE:

UV PLAN & SECTION

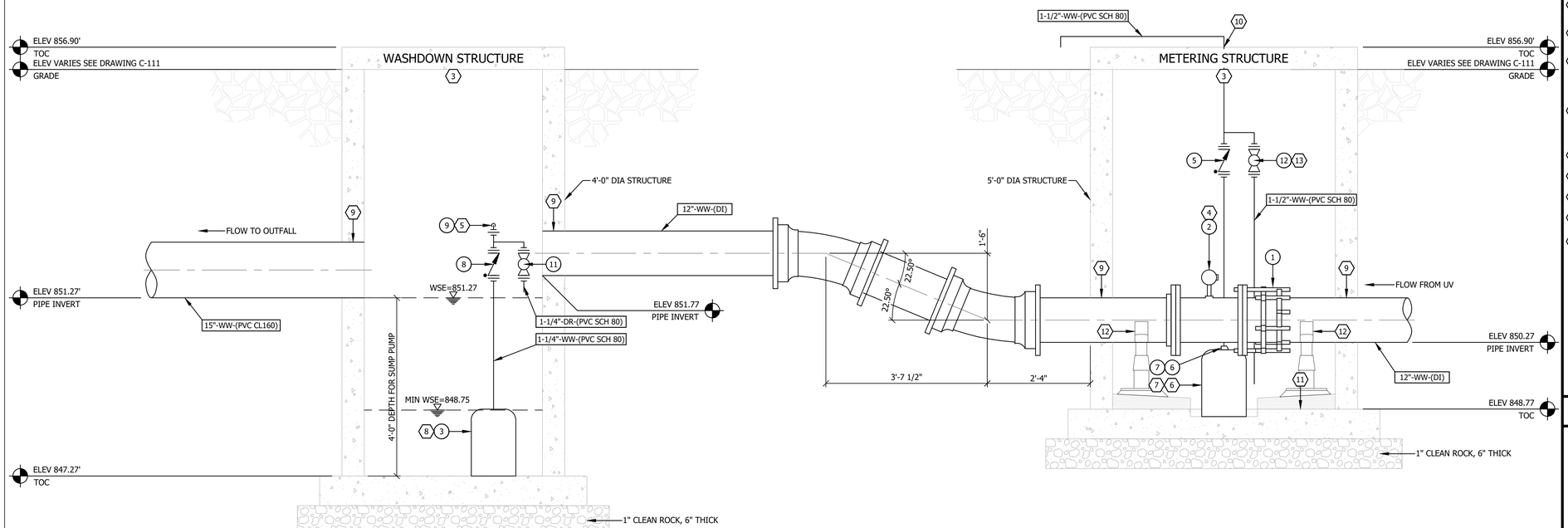
SHEET NUMBER:

D-104



FLOW METER & WASHDOWN MHS PLAN

SCALE: 3/4"=1'-0"



A FLOW METER & WASHDOWN MHS SECTION

D-105 SCALE: 3/4"=1'-0"

MATERIAL LIST:

1. 12" ⌀ DISMANTLING JOINT
2. 12" MAG METER
3. SUBMERSIBLE PUMP AND MOTOR
4. NOT USED
5. 1-1/2" TRUE UNION PVC SWING CHECK VALVE
6. 1-1/2" x 2" ECCENTRIC REDUCER
7. 2" NPT CONNECTION
8. 1-1/4" TRUE UNION SST TH SWING CHECK VALVE
9. 1-1/4" TRUE UNION PVC
10. 1/4" TRUE UNION PVC SWING CHECK VALVE
11. 1-1/4" TRUE UNION PVC BALL VALVE
12. 1-1/2" TRUE UNION PVC BALL VALVE

REFERENCE NOTES:

1. NOT USED
2. PIPE TO UV DISINFECTION YARD HYDRANT, SEE DRAWING C-106
3. SEE DRAWING C-503 FOR MANHOLE DETAILS
4. CONTRACTOR SHALL MAINTAIN 5'-0" UPSTREAM AND 3'-0" DOWNSTREAM OF CONTINUOUS PIPE FROM MAG METER
5. CORE DRILL OPENING FOR WASHDOWN PIPING TO YARD HYDRANT A MIN OF 42" COVER, GROUT IN PLACE WITH NON-SHRINK GROUT
6. SUMP PUMP, SEE DETAIL 5 ON DRAWING D-501. DAYLIGHT PIPE TO THE WEST SIDE OF THE METERING STRUCTURE.
7. SUMP PUMP SHALL BE A SUBMERSIBLE PUMP ABS MODEL EF 03W-2, 60 HZ, 0.33 HP MOTOR, 3,450 RPM, 1 PHASE, 120V OR APPROVED EQUAL
8. WASHDOWN PUMP WITH A DUTY POINT OF 13.5 GPM AT 112 FT AND SHALL BE A SUBMERSIBLE PUMP ABS MODEL EF 10W, 60 HZ, 1 HP MOTOR, 3,490 RPM, 1 PHASE, 120V OR EQUAL. PUMP PANEL SHALL INCLUDE A PUSH BUTTON TO START WITH AN ADJUSTABLE TIMER AND FLOAT FOR LOW LEVEL SHUTOFF. 1-1/4" NPT PIPE CONNECTION
9. A-LOK GASKET AS MANUFACTURED BY A-LOK OR APPROVED EQUAL
10. GROUT WITH NON-SHRINK GROUT
11. CONTRACTOR SHALL PLACE NON-SHRINK GROUT (TYP) MIN 3" THICK AND TAPERED TO SUMP PUMP, 1/4" PER FOOT
12. ADJUSTABLE PIPE SUPPORT, SEE DETAIL 3 ON DRAWING D-501
13. TRUE UNION BALL VALVE SHALL BE LOCATED A MAXIMUM OF 5'-0" ABOVE FINISHED FLOOR

GENERAL NOTES:

1. PIPE, FITTINGS, VALVES, EQUIPMENT, ETC., TAGS AND LABELS ARE PROVIDED AS A COURTESY FOR THE CONTRACTOR. IT IS NOT THE INTENT OF THESE CALLOUTS, LABELS, AND TAGS TO BE A BILL OF MATERIALS LIST. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ITEMS EITHER CALLED OUT OR SHOWN IN THE DRAWINGS AND OR SPECIFICATIONS.
2. NOT ALL PIPE SUPPORTS AND HANGERS ARE SHOWN. CONTRACTOR SHALL ADEQUATELY SUPPORT ALL PIPING PER SPECIFICATIONS.
3. SEE SITE PLAN - UV & FLOW METER DRAWING C-106 FOR LOCATION

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
VALERIE A. HOLLAND
NUMBER PE-2017009358
PROFESSIONAL ENGINEER
05-04-2022

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3181
CERTIFICATE OF AUTHORITY NO. 000016 - RENEWAL 2022
www.bartlettwest.com

OFFICE OF ADMINISTRATION
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DEPARTMENT OF CORRECTIONS

WASTEWATER TREATMENT FACILITY IMPROVEMENTS

5201 SOUTH MORLEY ST
MOBERLY, MISSOURI 65270

PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

REVISION:
DATE:
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ISSUE DATE: 05/04/2022

CAD DWG FILE: D-105.dwg

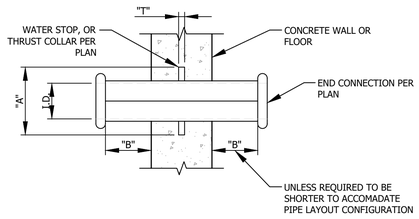
DESIGNED BY: VAH
DRAWN BY: MKA
APPROVED BY: VAH

SHEET TITLE:

FLOW METER & WASHDOWN MHS PLAN & SECTION

SHEET NUMBER:

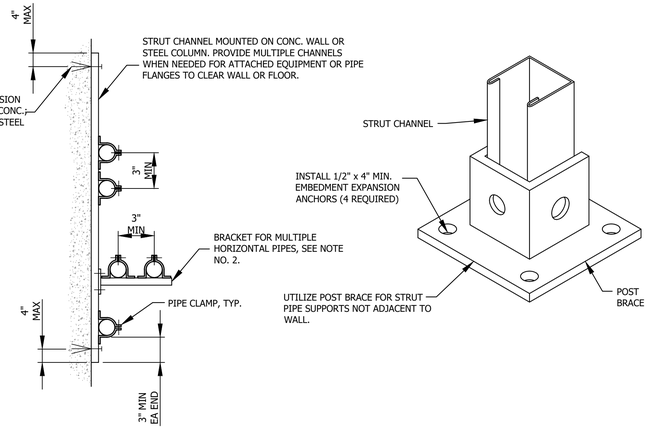
D-105



FLOOR & WALL PIPE TABLE					
PIPE SIZE I.D. (IN.)	DIM. "A" MIN.(IN.)		DIM. "B" MIN. (IN.)	DIM. "T" MIN.(IN.)	
	WS	TC		WS	TC
6	10½	10	8	⅜	½
8	13	12½	8	⅜	½
10	15	14½	9	⅜	½
12	17	16½	9	⅜	½
14	20	19½	9	⅜	¾
16	22	21¾	9	⅜	¾
18	25½	23¾	9	⅜	¾
20	27½	25¾	9	⅜	¾
24	31½	30¼	12	⅜	¾
30	38	36½	12	⅜	1
36	44	43	12	⅜	1

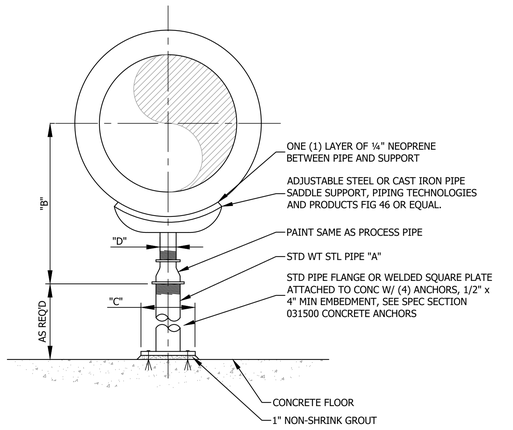
NOTES:
1. WALL PIPE SHALL BE STEEL OR DUCTILE IRON AS DEFINED BY THE PIPING SERVICE.
2. WALL PIPES SHALL BE CONSTRUCTED PER SPEC. SECTION 15062.
   WS = WATER STOP
   TC = THRUST COLLAR

1 WALL PIPE DETAIL
NOT TO SCALE



1. SEE PLANS FOR NUMBER AND MATERIAL OF PIPES.
2. FOR INSTALLATION REQUIRING A BRACKET LONGER THAN 18" USE DOUBLE CHANNEL COMBINATION.
3. PROVIDE NEOPRENE ISOLATING SLEEVE AT EACH CLAMP, FOR METAL PIPES.
4. MAX. SPACING PER SPEC SECTION 15140.
5. COAT ALL CUT ENDS.
6. CABLE TRAY CAN BE USED TO SUPPORT MULTIPLE HORIZONTAL PVC PIPES INSTEAD OF STRUT AT CONTRACTOR'S OPTION.

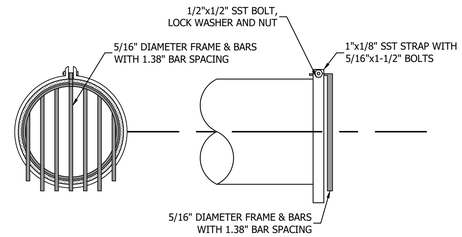
2 STRUT PIPE SUPPORT WALL DETAIL
NOT TO SCALE



STEEL PIPE SUPPORT TABLE						
PIPE SIZE	A (IN.)	B (IN.)		C (IN.)	D (IN.)	MAX. SUPPORT SPACING (DIP) (FT.)
		MIN.	MAX.			
4	3	9¼	14	9	2½	10
6	3	10½	15¼	9	2½	10
8	3	11¾	16½	9	2½	10
10	3	13½	18¼	9	2½	12
12	3	15	19¾	9	2½	12
14	4	16¾	20⅞	11	3	14
16	4	17¾	22¼	11	3	14
18	6	19½	24	13½	3½	14
20	6	21	25½	13½	3½	16
24	6	23¾	28¼	13½	4	16
30	6	27	31½	13½	4	16
36	6	30¼	34¾	13½	4	16

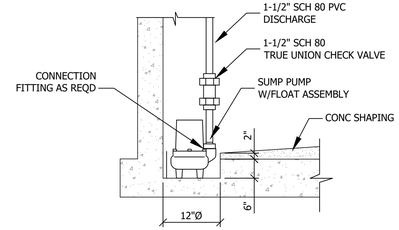
NOTE:
1. SUPPORTS TO BE LOCATED AS SHOWN ON PLANS. IF PRECISE LOCATION IS NOT SHOWN, DO NOT EXCEED MAX. SPACING SHOWN IN TABLE.

3 ADJUSTABLE PIPE SUPPORT
NOT TO SCALE



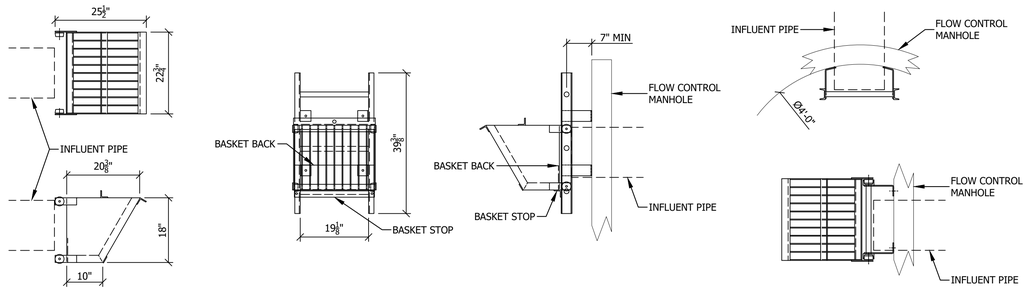
NOTE:
1. SCREEN SHALL BE STAINLESS STEEL RAT GUARDS FOR 15-INCH SDR PIPES MANUFACTURED BY AGRI DRAIN CORPORATION, ADAIR, IOWA

4 SCREEN DETAIL
NOT TO SCALE



5 SUMP PUMP DETAIL
NOT TO SCALE

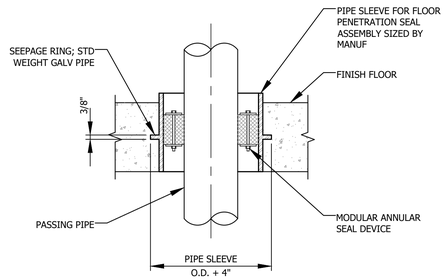
NOTES:
1. BASKET AND RAILS SHALL BE ALUMINUM
2. SOLID ALUMINUM WHEELS AND SST AXLES
3. HEAVY DUTY LADDER/GUARDRAIL COMBINATION
4. 1-3/8" TYPE "D" RUNG WITH FLAT SLIP RESISTANT SURFACE
5. BAR SCREEN STYLE BASKET



BASKET

BASKET AND RAILS

6 TRASH BASKET
NOT TO SCALE



NOTES:
1. PIPE SLEEVE SHALL BE CONSTRUCTED PER SPECIFICATION SECTION 15062.
2. EXTEND PIPE SLEEVE 6 INCHES ABOVE FINISHED FLOORS.

7 FLOOR PENETRATION SEAL
NOT TO SCALE

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
VALERIE A. HOLLAND
NUMBER PE-2017009358
PROFESSIONAL ENGINEER
05-04-2022

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
CERTIFICATE OF AUTHORITY NO. 000158 RENEWAL 2022
www.bartlettwest.com

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MOBERLY, MISSOURI 65270

PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

REVISION:
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DESIGNED BY: MKA
DRAWN BY: MKA
APPROVED BY: VAH

SHEET TITLE:
PROCESS DETAILS

SHEET NUMBER:
D-501

37 of 46 SHEETS

MOBERLY WASTEWATER TREATMENT FACILITY IMPROVEMENTS I/O SCHEDULE

Tag Number	Instrument Description	I/O Type	Voltage	Controller	Calibration/Range (*Units)	External Power Requirement (Y/N)	Air/Tubing Required (Y/N)	Wires Per Signal[1,2,3]	Instrument Location	Comments
XI-1.1	Tank Heater Alarm	DI	24VDC	BLOWER PANEL	-	N	N	PAIR, 14 GA.	Blower Panel	Package Vendor Instrument to Triplepoint Panel
XI-001	Tank Heater Alarm	DI	24VDC	PLC-01	-	N	N	PAIR, 14 GA.	Blower Panel	Signal Between Controllers (Blower Panel & PLC-01)
XI-003	Blower 001 Fault	DI	24VDC	PLC-01	-	N	N	PAIR, 14 GA.	Blower Panel	Signal Between Controllers (Blower Panel & PLC-01)
XI-004	Blower 002 Fault	DI	24VDC	PLC-01	-	N	N	PAIR, 14 GA.	Blower Panel	Signal Between Controllers (Blower Panel & PLC-01)
XI-005	Blower 003 Fault	DI	24VDC	PLC-01	-	N	N	PAIR, 14 GA.	Blower Panel	Signal Between Controllers (Blower Panel & PLC-01)
XI-006	Blower 004 Fault	DI	24VDC	PLC-01	-	N	N	PAIR, 14 GA.	Blower Panel	Signal Between Controllers (Blower Panel & PLC-01)
XI-1.2	Blower 001 Fault	DI	24VDC	BLOWER PANEL	-	N	N	PAIR, 14 GA.	Blower Panel	Package Vendor Instrument to Triplepoint Panel
XI-1.3	Blower 002 Fault	DI	24VDC	BLOWER PANEL	-	N	N	PAIR, 14 GA.	Blower Panel	Package Vendor Instrument to Triplepoint Panel
XI-1.4	Blower 003 Fault	DI	24VDC	BLOWER PANEL	-	N	N	PAIR, 14 GA.	Blower Panel	Package Vendor Instrument to Triplepoint Panel
XI-1.4	Blower 004 Fault	DI	24VDC	BLOWER PANEL	-	N	N	PAIR, 14 GA.	Blower Panel	Package Vendor Instrument to Triplepoint Panel
XI-1.5	Blower 001 Running	DI	24VDC	BLOWER PANEL	-	N	N	PAIR, 14 GA.	Blower Panel	Package Vendor Instrument to Triplepoint Panel
XI-1.6	Blower 002 Running	DI	24VDC	BLOWER PANEL	-	N	N	PAIR, 14 GA.	Blower Panel	Package Vendor Instrument to Triplepoint Panel
XI-1.7	Blower 003 Running	DI	24VDC	BLOWER PANEL	-	N	N	PAIR, 14 GA.	Blower Panel	Package Vendor Instrument to Triplepoint Panel
XI-1.8	Blower 004 Running	DI	24VDC	BLOWER PANEL	-	N	N	PAIR, 14 GA.	Blower Panel	Package Vendor Instrument to Triplepoint Panel
XO-1.1	Thermocouple	AI	24VDC	BLOWER PANEL	TriplePoint Vendor TBD	N	N	N/A	Blower Panel	Package Vendor Instrument to Blower Panel
DIT-1.1	Dissolved Oxygen Transmitter	AI	24VDC	BLOWER PANEL	TriplePoint Vendor TBD	Y(24VAC)	Y	TSP	Blower Panel	Package Vendor Instrument to Blower Panel
FIT-010	Flow Indicating Transmitter (Totalized Flow)	DI	PULSED	PLC-01	TBD	Y(24VAC)	N	TSP	UV System	Field Instrument to PLC-01
FIT-010A	Flow Indicating Transmitter (Instantaneous Flow)	AI	24VDC	UV Panel	TBD	Y(24VAC)	N	TSP	UV System	Field Instrument to UV Panel
FIT-010B	Flow Indicating Transmitter (Instantaneous Flow)	AI	24VDC	PLC-01	TBD	Y(24VAC)	N	TSP	UV System	Repeater Signal Between Controllers (UV Panel & PLC-01)
XIA-010	UV-01 Reactor Minor Alarm	DI	24VDC	PLC-01	-	N	N	PAIR, 14 GA.	UV System	Signal Between Controllers (UV Panel & PLC-01)
XIAH-010	UV-01 Reactor Major Alarm	DI	24VDC	PLC-01	-	N	N	PAIR, 14 GA.	UV System	Signal Between Controllers (UV Panel & PLC-01)
TSH-1.10	Temperature Switch High	DI	24VDC	UV Panel	UV Vendor TBD	Loop Powered	N	PAIR, 14 GA.	UV System	Package Vendor Instrument to UV Panel
TSH-1.20	Temperature Switch High	DI	24VDC	UV Panel	UV Vendor TBD	Loop Powered	N	PAIR, 14 GA.	UV System	Package Vendor Instrument to UV Panel
LT-1.20	Level Transmitter	AI	24VDC	UV Panel	UV Vendor TBD	Loop Powered	N	TSP	UV System	Package Vendor Instrument to UV Panel
TIH-01A	UV-01 UPS Panel High Temp Alarm	DI	24VDC	UV Panel	UV Vendor TBD	N	N	PAIR, 14 GA.	UV System	Bank 1 UPS Alarm 1 to UV Panel
TIH-01B	UV-01 UPS Panel High Temp Alarm	DI	24VDC	UV Panel	UV Vendor TBD	N	N	PAIR, 14 GA.	UV System	Bank 1 UPS Alarm 2 to UV Panel
XSA-011	Generator Status	DI	24VDC	PLC-01	-	N	N	PAIR, 14 GA.	Transfer Switch	Signal Between Controllers (ATS & PLC-01)
XSA-012	Generator Alarm	DI	24VDC	PLC-01	-	N	N	PAIR, 14 GA.	Transfer Switch	Signal Between Controllers (ATS & PLC-01)
UV B2 Cable	UV-Bank 2 to UV Panel	Serial	N/A	UV Panel	-	N	N	CAT 6E	N/A	UV-Bank2 to UV Panel
UV B1 Cable	UV-Bank 1 to UV Panel	AI	24VDC	UV Panel	-	N	N	2 x TSP	N/A	UV-Bank1 to UV Panel

NOTES:

[1] TSP = 1-PR #16 TWISTED W/SHIELD

[2] If #14 Control Wires are 120V signals, separate conduit will be required for the TSP

[3] Above list does not cover 3-phase power wiring or 120V power wiring that may be required

GENERAL NOTES:

1. THE PLC-01 SHALL BE A HIGH TIDE PANEL HT-1100 OR APPROVED EQUAL. THE TELEMETRY UNIT SHALL BE EQUIPMENT WITH A NEMA 4X FRP ENCLOSURE WITH CELLULAR COMMUNICATION AND BATTERY BACKUP.

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
VALERIE A. HOLLAND
NUMBER PE-2017009358
PROFESSIONAL ENGINEER
05-04-2022

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
CERTIFICATE OF AUTHORITY NO. 000158 - RENEWAL 2022
www.bartlettwest.com

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

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WASTEWATER TREATMENT FACILITY IMPROVEMENTS

5201 SOUTH MORLEY ST
MOBERLY, MISSOURI 65270

PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 05/04/2022

CAD DWG FILE: D-601.dwg

DESIGNED BY: MKA
DRAWN BY: MKA
APPROVED BY: VAH

SHEET TITLE:

IO SCHEDULES

SHEET NUMBER:

D-601

LIGHTING / ELECTRICAL

- "A" — POLE MOUNTED LIGHTING FIXTURE
- "A" — CEILING MOUNTED LIGHTING FIXTURE 1x4 AND ID TAG
- "A" — CEILING MOUNTED LIGHTING FIXTURE 2x2 AND ID TAG
- "A" — CEILING MOUNTED LIGHTING FIXTURE 2x4 AND ID TAG
- "A" — EMERGENCY LIGHTING FIXTURE
- "A" — CEILING MOUNTED DAYLIGHT CONTROLLED
- "A" — CEILING MOUNTED WITH EMERGENCY BALLAST
- "A" "NL" — CEILING MOUNTED LIGHT FIXTURE WITH NIGHT LIGHT
- PADDLE CEILING FAN
- CEILING MOUNTED EXIT LIGHT
- EXIT LIGHT (WALL MOUNTED)
- CEILING MOUNT
- WALL MOUNT
- "D","E","E" — LIGHT TRACK WITH LIGHT TYPES AS INDICATED
- SINGLE RECEPTACLE
- DUPLEX RECEPTACLE
- FOURPLEX RECEPTACLE
- RECESSED FLOOR MOUNTED JUNCTION BOX
- SURFACE MOUNTED JUNCTION BOX
- CEILING MOUNTED JUNCTION BOX
- PC — PHOTOCELL
- J — JUNCTION BOX
- TYPE 1 JUNCTION BOX
- TYPE 2 JUNCTION BOX
- PLUGMOLD - OUTLETS AT 12" O.C. UNLESS OTHERWISE NOTED
- T — TIME SWITCH
- L — LIGHTING CONTACTOR
- $OT — SPRING WOUND TIMER
- $HOA — HAND-OFF-AUTO SELECTOR SWITCH
- $TO — MANUAL STARTER WITH THERMAL OVERLOADS
- LIGHTING PANEL
- DISTRIBUTION PANEL
- TELEPHONE TERMINAL PANEL
- T — THERMOSTAT
- H — HUMIDISTAT
- (1) RJ-45 COMMUNICATION/DATA OUTLET
- 2 — (2) RJ-45 COMMUNICATION/DATA OUTLET
- 4 — (4) RJ-45 COMMUNICATION/DATA OUTLET
- CEILING MOUNTED COMMUNICATION/DATA OUTLET
- FLOOR MOUNTED COMMUNICATION/DATA OUTLET
- TV — TELEVISION OUTLET
- WALL SPEAKER
- CEILING SPEAKER
- COLUMN SPEAKER
- HORN SPEAKER
- C — CALL-IN STATION
- M — MOTION DETECTOR
- C — CLOSED CIRCUIT TELEVISION OUTLET
- PB — PUSHBUTTON STATION
- RC — RELAY CABINET
- C — CLOCK SPEAKER
- CR — CARD READER
- M — MAGNETIC LOCK
- A — ALARM CONTACTS
- SECURITY CAMERA
- $ — SINGLE POLE SWITCH
- $2 — DOUBLE POLE SWITCH
- $3 — 3-WAY SWITCH
- $4 — 4-WAY SWITCH
- $P — SINGLE POLE SWITCH WITH PILOT LAMP
- $M — MOMENTARY CONTACT
- $K — SINGLE POLE SWITCH, KEY OPERATED
- $D — DIMMER SWITCH
- $LV — LOW VOLTAGE SWITCH
- $VA — VACANCY SENSOR SWITCH
- OC — OCCUPANCY SENSOR
- PP — POWER PACK

- BRANCH CIRCUIT IN CONDUIT CONCEALED IN CEILING OR WALL
- BRANCH CIRCUIT BELOW GRADE OR SLAB
- BRANCH CIRCUIT IN EXPOSED CONDUIT
- BRANCH CIRCUIT HOMERUN TO PANEL
- DIAGONAL LINES INDICATE NUMBER OF CONDUCTORS
- GROUND WIRE - INCLUDED IN ALL BRANCH CIRCUITS UNLESS OTHERWISE NOTED
- #18 WIRE
- #16 WIRE
- #14 WIRE
- #12 WIRE
- 1 — BRANCH CIRCUIT OR FEEDER - SEE SCHEDULE FOR CONDUCTOR & CONDUIT QUANTITY & SIZE
- FLEXIBLE CONDUIT
- TWISTED PAIR
- LIGHTING CONTROL WIRING
- MOTOR CONTROLLER
- MANUAL MOTOR CONTROLLER
- COMBINATION MOTOR CONTROLLER
- DISCONNECT SWITCH
- EQUIPMENT MOTOR
- UTILITY METER

GENERAL SYMBOLS

- INDICATES DIRECTION OF PLAN NORTH
- 1 / M100 — DETAIL REFERENCE - UPPER NUMBER INDICATES DETAIL NUMBER, LOWER NUMBER INDICATES SHEET NUMBER
- 1 — PLAN NOTE REFERENCE
- 1 — REVISION DELTA
- 100 — ROOM NUMBER REFERENCE
- 1 / M100 — SECTION CUT REFERENCE - UPPER NUMBER INDICATES DETAIL NUMBER, LOWER NUMBER INDICATES SHEET NUMBER
- CONTINUATION
- INDICATES CONNECTION TO EXISTING SYSTEM
- BREAK LINE
- MATCHLINE

ABBREVIATIONS

GENERAL:

AFF	ABOVE FINISHED FLOOR	G/C	GENERAL CONTRACTOR
AFG	ABOVE FINISHED GRADE	M/C	MECHANICAL CONTRACTOR
CL	CENTERLINE ELEVATION	E/C	ELECTRICAL CONTRACTOR
DN	DOWN	P/C	PLUMBING CONTRACTOR
EX	EXISTING		

ELECTRICAL:

AC	ALTERNATING CURRENT
BKR	BREAKER
CTCB	CONTROL TRANSFORMER CIRCUIT BREAKER
DISC	DISCONNECT SWITCH
DR	DUPLEX RECEPTACLE, GFI
DCB	DISCONNECT CIRCUIT BREAKER
GFCB	GROUND FAULT CIRCUIT BREAKER
HBCB	HOT BOX CIRCUIT BREAKER
LCB	LIGHT CIRCUIT BREAKER
MCB	MAIN CIRCUIT BREAKER
MD	MOTORIZED DAMPER
MPCB	MOTOR POWER CIRCUIT BREAKER
PCB	PUMP CIRCUIT BREAKER
PHCB	PANEL HEATER CIRCUIT BREAKER
RCB	RECEPTACLE CIRCUIT BREAKER
SCB	SPARE CIRCUIT BREAKER
TR	TRANSFORMER
TCB	TRANSFORMER CIRCUIT BREAKER
TR	TELEMETRY RADIO
VCCB	VALVE CONTROLS CIRCUIT BREAKER
VFD	VARIABLE FREQUENCY DRIVE

" "	QUOTATION AROUND TEXT INDICATES A SCHEDULED ITEM
*	THESE LETTERS ADJACENT TO ANY SYMBOL INDICATES DEVICE BOTTOM TO BE MOUNTED 4" ABOVE COUNTER TOP BACKSPLASH
GFI	THESE LETTERS ADJACENT TO ANY SYMBOL INDICATES GROUND FAULT INTERRUPTER
IG	THESE LETTERS ADJACENT TO ANY SYMBOL INDICATES ISOLATED GROUND SERVICE
TL	THESE LETTERS ADJACENT TO ANY SYMBOL INDICATES LOCKING OR TWIST-LOCK TYPE DEVICE
WP	THESE LETTERS ADJACENT TO ANY SYMBOL INDICATES WEATHER-PROOF ENCLOSURE
XP	THESE LETTERS ADJACENT TO ANY SYMBOL INDICATES EXPLOSION-PROOF ENCLOSURE
##"	THESE NUMBERS ADJACENT TO ANY SYMBOL INDICATES THE MOUNTING HEIGHT AFF TO TOP OF OF DEVICE
TP	THESE LETTERS ADJACENT TO ANY SYMBOL INDICATES TAMPER PROOF

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI — JENNIFER L. MCVEY — NUMBER PE-2010007729 — 05/04/22 — PROFESSIONAL ENGINEER

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3101
FAX 573.634.5946
CERTIFICATE OF AUTHORITY NO. 000178 MISSOURI
www.bartlettwest.com

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF CORRECTIONS

WASTEWATER TREATMENT FACILITY IMPROVEMENTS

5201 SOUTH MORLEY ST
MOBERLY, MISSOURI 65270

PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

REVISION:
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DATE:
REVISION:
DATE:

ISSUE DATE: 05/04/2022

CAD DWG FILE: E-001.dwg

DESIGNED BY: JLM
DRAWN BY: TJP
APPROVED BY: VAH

SHEET TITLE:

ELECTRICAL SYMBOLS LEGEND & ABBREVIATIONS

SHEET NUMBER:

E-001

SITE ELECTRICAL DEMOLITION PLAN
SCALE: 1"=60'
0 60' 120'

REFERENCE NOTES:

1. DISCONNECT AND REMOVE EXISTING DISCONNECT SWITCH, METER, AND WEATHERHEAD, AND ALL ASSOCIATED WIRE AND CONDUIT. REFER TO DEMOLITION RISER DIAGRAM 1/E-401.
2. DISCONNECT AND REMOVE EXISTING MANUAL TRANSFER SWITCH, ALL ASSOCIATED WIRE AND CONDUIT. REFER TO DEMOLITION RISER DIAGRAM 1/E-401.
3. DISCONNECT AND REMOVE EXISTING AUTOMATIC TRANSFER SWITCH, ALL ASSOCIATED CONDUIT AND WIRE. CONDUIT AND WIRE TO MCC BUILDING THAT IS BELOW GRADE SHALL BE ABANDONED IN PLACE. REFER TO DEMOLITION RISER DIAGRAM 1/E-401.
4. DISCONNECT AND REMOVE EXISTING PANEL, ASSOCIATED FEEDER WIRE AND CONDUIT. EXISTING BELOW GRADE CONDUIT SHALL BE ABANDONED IN PLACE. EXISTING HEADWORKS BRANCH CIRCUITS TO REMAIN AND BE EXTENDED TO NEW "MDP1". REFER TO PANEL SCHEDULES AND IMPROVEMENT RISER DIAGRAM 2/E-401. REFER TO DEMOLITION RISER DIAGRAM 1/E-401.
5. DISCONNECT AND REMOVE EXISTING MOTOR STARTER PANEL, ASSOCIATED WIRE AND EXPOSED CONDUIT. EXISTING BELOW GRADE CONDUIT SHALL BE ABANDONED IN PLACE.
6. DISCONNECT AND REMOVE EXISTING PANEL, ASSOCIATED WIRE AND EXPOSED CONDUIT. EXISTING BELOW GRADE CONDUIT SHALL BE ABANDONED IN PLACE.

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
JENNIFER L. MCVEY
NUMBER PE-2010007729
05/04/22
PROFESSIONAL ENGINEER

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
FAX 573.634.8060
CERTIFICATE OF AUTHORITY NO. 000078 - RENEWAL 2022
www.bartlettwest.com

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DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

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MOBERLY, MISSOURI 65270

PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

REVISION:
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REVISION:
DATE:

ISSUE DATE: 05/04/2022

CAD DWG FILE: E-101.dwg

DESIGNED BY: JLM
DRAWN BY: TJP
APPROVED BY: VAH

SHEET TITLE:

SITE ELECTRICAL DEMOLITION PLAN

SHEET NUMBER:

E-101

SITE ELECTRICAL IMPROVEMENT PLAN
SCALE: 1"=60'
0 60' 120'

REFERENCE NOTES:

1. NEW UTILITY TRANSFORMER. PROVIDE CONCRETE PAD. COORDINATE WITH UTILITY FOR PAD REQUIREMENTS.
2. PROVIDE IN-GRADE J-BOX TO INTERCEPT EXISTING FEEDER TO SHOP. PROVIDE NEW CONNECTIONS. FIELD VERIFY EXACT LOCATION. REFER TO DETAIL 2/E-501.
3. PROVIDE UNI-STRUT MOUNTING RACK. REFER TO DETAIL 1/E-501.
4. PROVIDE IN-GRADE J-BOX FOR FEEDERS TO PANELS. FIELD VERIFY EXACT QUANTITY AND LOCATION. REFER TO DETAIL 2/E-501.
5. REFER TO SHEET E-103 FOR WORK IN THIS AREA.
6. REFER TO SHEETS E-104 & E-105 FOR WORK IN THIS AREA.
7. PROVIDE CONCRETE PAD FOR GENERATOR "G1". REFER TO DETAIL 3/E-501.
8. BATTERY CHARGER POWER CONNECTION. COORDINATE CONDUIT STUB UP LOCATION WITH GENERATOR MANUFACTURER.
9. BLOCK HEATER POWER CONNECTION. COORDINATE CONDUIT STUB UP LOCATION WITH GENERATOR MANUFACTURER.

GENERAL NOTES:

1. COORDINATE ROUTING OF BELOW GRADE CONDUIT WITH UTILITIES, PROCESS PIPING AND EQUIPMENT.
2. COORDINATE ELECTRICAL UTILITY REQUIREMENTS WITH UTILITY. E/C SHALL PAY ALL REQUIRED FEES AND COSTS ASSOCIATED WITH UTILITY SERVICE. CONTACT BRIAN BLACKBURN, AMEREN MISSOURI, 573-473-2763.

FEEDER SCHEDULE:

1. REFER TO IMPROVEMENT RISER DIAGRAM ON SHEET E-401.
2. 3-350 & 1-2/0G IN 2 SETS OF 3"C.
3. 3-2/0 & 1-4G IN 2"C.

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
JENNIFER L. MCVEY
NUMBER PE-2010007729
05/04/22
PROFESSIONAL ENGINEER

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
FACSIMILE 573.635.3160
CERTIFICATE OF AUTHORITY NO. 000001 RENEWAL 2022
www.bartlettwest.com

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

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5201 SOUTH MORLEY ST
MOBERLY, MISSOURI 65270

PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

REVISION:
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REVISION:
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CAD DWG FILE: E-102.dwg

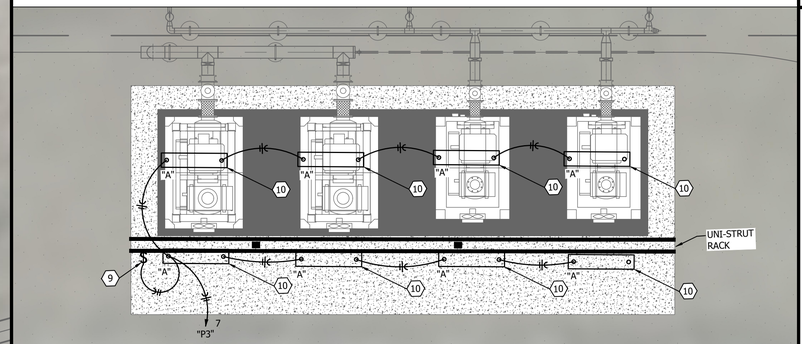
DESIGNED BY: JLM
DRAWN BY: TJP
APPROVED BY: VAH

SHEET TITLE:

SITE ELECTRICAL IMPROVEMENT PLAN

SHEET NUMBER:

E-102



ENLARGED CANOPY LIGHTING PLAN
SCALE: 1"=5'
0 5' 10'

TRIPLEPOINT SYSTEM ELECTRICAL PLAN
SCALE: 1"=10'
0 10' 20'

REFERENCE NOTES:

1. PROVIDE WP J-BOX FOR POWER CONNECTION TO TANK HEATER. FIELD VERIFY MOUNTING. MAKE FINAL CONNECTION FROM J-BOX TO TANK HEATER AS REQUIRED BY TANK MANUFACTURER.
2. PROVIDE UNI-STRUT MOUNTING RACK. REFER TO DETAIL 1/E-501.
3. PROVIDE WP, GFI DUPLEX RECEPTACLE MOUNTED TO UNI-STRUT RACK.
4. BLOWER CONTROL PANEL, FURNISHED BY TRIPLEPOINT, INSTALLED BY E/C. MAKE ALL FINAL CONNECTIONS.
5. PROVIDE WP J-BOX FOR POWER CONNECTION TO ENCLOSURE FAN. FIELD VERIFY EXACT LOCATION AND MOUNTING. MAKE FINAL CONNECTION FROM J-BOX TO ENCLOSURE FAN AS REQUIRED BY BLOWER MANUFACTURER.
6. ROUTE TO BLOWER CONTROL PANEL FOR CONTROLS. MAKE ALL FINAL CONNECTIONS.
7. EXTEND AND CONNECT TO BLOWER. FIELD VERIFY EXACT LOCATION.
8. REFER TO ENLARGED CANOPY LIGHTING PLAN FOR ADDITIONAL WORK IN THIS AREA.
9. PROVIDE WP LIGHT SWITCH MOUNTED TO UNI-STRUT RACK.
10. MOUNT LIGHTING FIXTURE TO BOTTOM OF AWNING STRUCTURE.

GENERAL NOTES:

1. COORDINATE ROUTING OF BELOW GRADE CONDUIT WITH UTILITIES, PROCESS PIPING AND EQUIPMENT.
2. PROVIDE CONDUIT & WIRING FOR CONTROLS. REFER TO I/O SCHEDULE ON SHEET D-603. CONDUIT SHALL BE 1" MINIMUM.

FEEDER SCHEDULE:

1. 3-4 & 1-10G IN 1.5"C.
2. 3-1/0 & 1-6G IN 1.5"C.
3. 1"C WITH PULL STRING.

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

JENNIFER L. MCVEY
NUMBER PE-2010007729
05/04/22
PROFESSIONAL ENGINEER
STATE OF MISSOURI

Bartlett&West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
CERTIFICATE OF AUTHORITY NO. 000819 FAX 573.635.3946
www.bartlettwest.com

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

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MOBERLY, MISSOURI 65270

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ASSET # 9327005058

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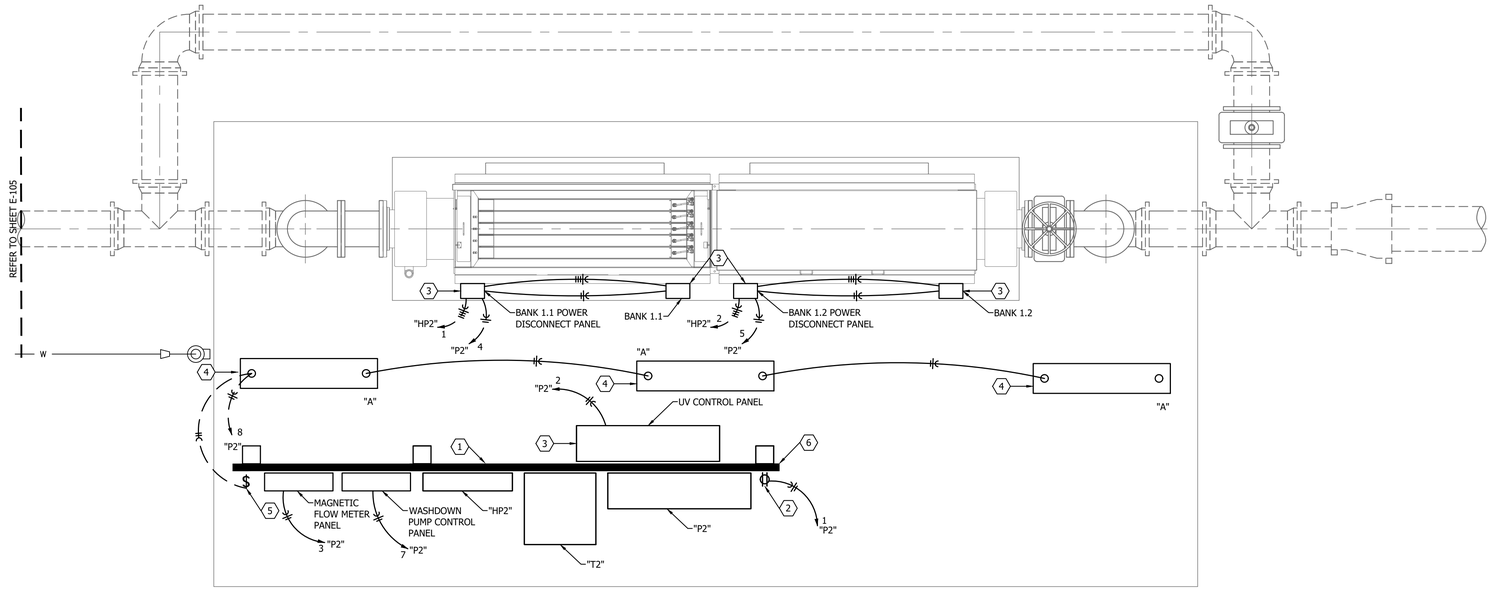
DESIGNED BY: JLM
DRAWN BY: TJP
APPROVED BY: VAH

SHEET TITLE:
TRIPLEPOINT SYSTEM ELECTRICAL PLAN

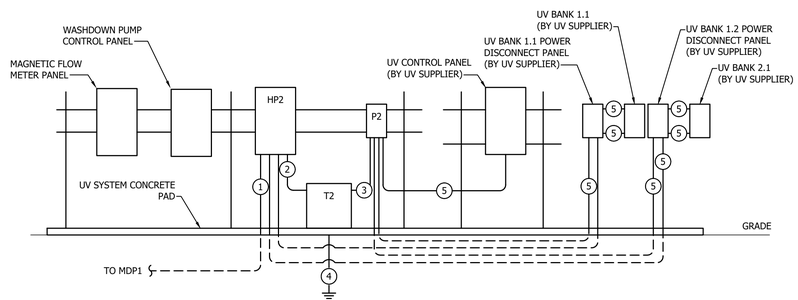
SHEET NUMBER:
E-103

42 of 46 SHEETS



UV DISINFECTION EQUIPMENT PLAN

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



1 UV SYSTEM RISER DIAGRAM

NOT TO SCALE

REFERENCE NOTES:

1. PROVIDE STAINLESS STEEL UNI-STRUT MOUNTING RACK. REFER TO DETAIL 1, SHEET E-501.
2. PROVIDE WP, GFI DUPLEX RECEPTACLE MOUNTED TO UNI-STRUT RACK.
3. PANEL FURNISHED BY UV SUPPLIER, INSTALLED BY E/C. E/C SHALL MAKE ALL FINAL CONNECTIONS.
4. MOUNT LIGHTING FIXTURE TO BOTTOM OF STRUCTURE.
5. PROVIDE WP LIGHT SWITCH MOUNTED TO UNI-STRUT RACK.
6. REFER TO UV SYSTEM RISER DIAGRAM 1/E-104.

GENERAL NOTES:

1. COORDINATE ROUTING OF BELOW GRADE CONDUIT WITH UTILITIES, PROCESS PIPING AND EQUIPMENT.
2. PROVIDE CONDUIT & WIRING FOR CONTROLS. REFER TO I/O SCHEDULE ON SHEET D-603. CONDUIT SHALL BE 1" MINIMUM.

FEEDER SCHEDULE:

1. 3-1 & 1-8G IN 1 1/2"C.
2. 2-10 & 1-10G IN 3/4"C.
3. 3-4 & 1-10G IN 1"C.
4. 1-8G IN 3/4"C.
5. REFER TO UV DISINFECTION EQUIPMENT PLAN.

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
JENNIFER L. MCVEY
NUMBER PE-2010007729
05/04/22
PROFESSIONAL ENGINEER

Bartlett&West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
FAX 573.635.6946
CERTIFICATE OF AUTHORITY NO. 000161-EE-NG
www.bartlettwest.com

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

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DESIGNED BY: JLM
DRAWN BY: TJP
APPROVED BY: VAH

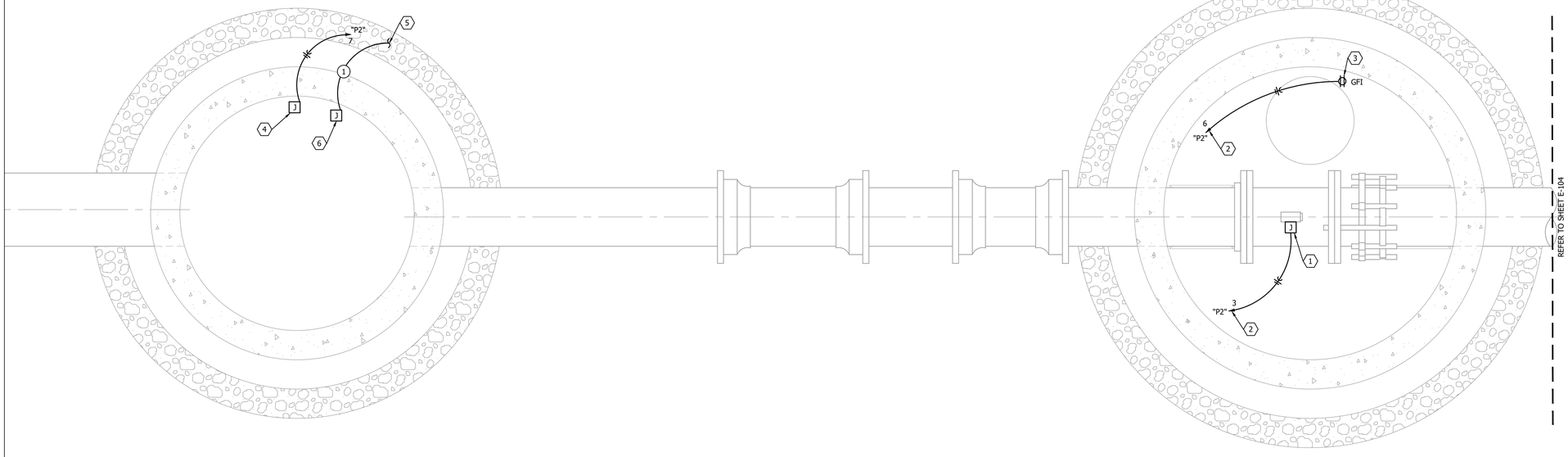
SHEET TITLE:

UV SYSTEM ELECTRICAL PLAN

SHEET NUMBER:

E-104

43 of 46 SHEETS



MAGNETIC FLOW METER PLAN
SCALE: 1"=1'-0"

REFERENCE NOTES:

1. PROVIDE WP J-BOX FOR POWER CONNECTION TO MAGNETIC FLOW METER.
2. ROUTE TO PANEL "P2" SHOWN ON SHEET E-104.
3. PROVIDE GFI, DUPLEX RECEPTACLE FOR SUMP PUMP. FIELD VERIFY EXACT LOCATION.
4. PROVIDE WP J-BOX FOR POWER CONNECTION TO WASHDOWN PUMP. FIELD VERIFY FOR EXACT LOCATION.
5. EXTEND AND CONNECT TO WASHDOWN PUMP CONTROL PANEL. REFER TO SHEET E-104.
6. PROVIDE WP J-BOX FOR CONTROLS CONNECTION TO WASHDOWN PUMP.

GENERAL NOTES:

1. COORDINATE ROUTING OF BELOW GRADE CONDUIT WITH UTILITIES, PROCESS PIPING AND EQUIPMENT.
2. PROVIDE CONDUIT & WIRING FOR CONTROLS. REFER TO I/O SCHEDULE ON SHEET D-603. CONDUIT SHALL BE 1" MINIMUM.

FEEDER SCHEDULE:

1. 1" C WITH PULL STRING

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
JENNIFER L. MCVEY
NUMBER PE-2010007729
05/04/22
PROFESSIONAL ENGINEER

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
FAX 573.634.5860
CERTIFICATE OF AUTHORITY NO. 000572 - RENEWED 2021
www.bartlettwest.com

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF CORRECTIONS

WASTEWATER TREATMENT FACILITY IMPROVEMENTS

5201 SOUTH MORLEY ST
MOBERLY, MISSOURI 65270

PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 05/04/2022

CAD DWG FILE: E-105.dwg

DESIGNED BY: JLM
DRAWN BY: TJP
APPROVED BY: VAH

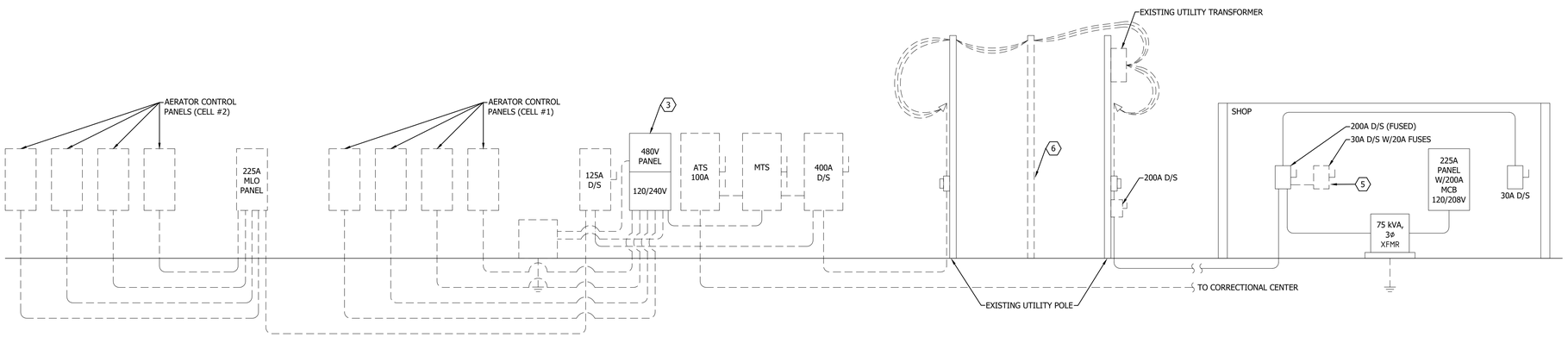
SHEET TITLE:

FLOW METER ELECTRICAL PLAN

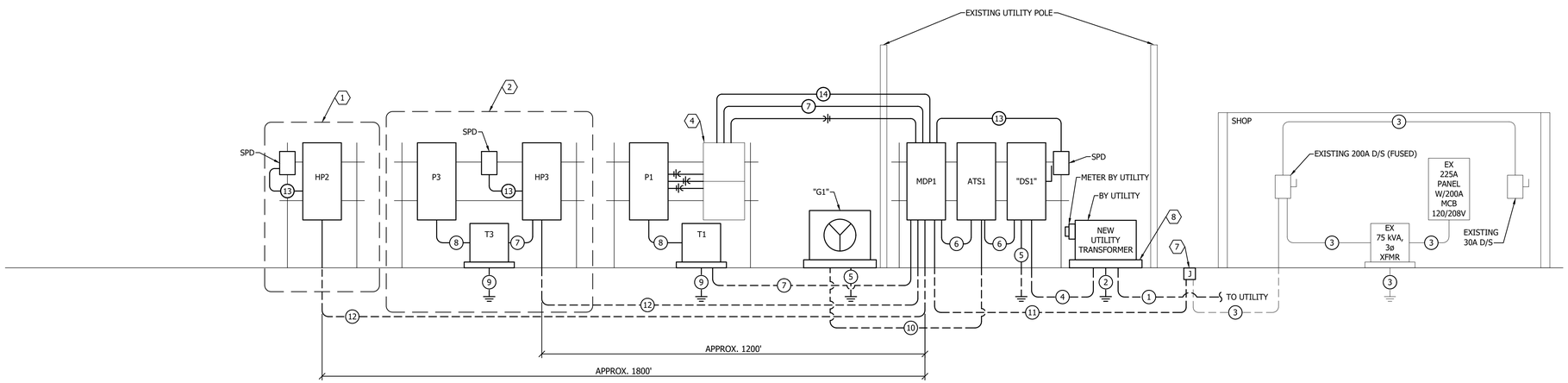
SHEET NUMBER:

E-105

44 of 46 SHEETS



1 DEMOLITION RISER DIAGRAM
NOT TO SCALE



2 IMPROVEMENT RISER DIAGRAM
NOT TO SCALE

REFERENCE NOTES:

1. REFER TO UV SYSTEM RISER DIAGRAM ON SHEET E-104.
2. REFER TO TRIPLEPOINT SYSTEM ELECTRICAL PLAN ON SHEET E-103.
3. DISCONNECT AND REMOVE EXISTING PANEL. EXISTING HEADWORKS BRANCH CIRCUITS TO BE RETAINED FOR CONNECTION TO "MDP1". ENCLOSURE FOR PANEL SHALL REMAIN TO BE USED AS A PULL BOX.
4. EXISTING PANEL ENCLOSURE. EXTEND HEADWORKS BRANCH CIRCUITS TO NEW "MDP1" AND "P1". PROVIDE BARRIER TO SEPARATE VOLTAGES. REFER TO SITE ELECTRICAL DEMOLITION PLAN E-101 AND PANEL SCHEDULES.
5. DISCONNECT AND REMOVE EXISTING 30A DISCONNECT SWITCH, ASSOCIATED CONDUIT AND WIRE
6. EXISTING UTILITY POLE TO BE REMOVED. COORDINATE WITH UTILITY.
7. PROVIDE NEW IN-GRADE J-BOX TO INTERCEPT EXISTING FEEDERS. REFER TO SITE ELECTRICAL IMPROVEMENT PLAN E-102.
8. E/C SHALL PROVIDE NEW UTILITY TRANSFORMER PAD. PAD SHALL MEET ALL UTILITY COMPANY REQUIREMENTS. REFER TO SITE ELECTRICAL IMPROVEMENT PLAN E-102.

FEEDER SCHEDULE:

1. UTILITY SERVICE FEEDERS. COORDINATE WITH UTILITY.
2. UTILITY SERVICE GROUND. COORDINATE WITH UTILITY.
3. EX WIRE AND CONDUIT TO REMAIN.
4. 4-3/0 IN 4 SETS OF 2"C.
5. 1-2/0G IN 1"C.
6. 4-3/0 & 1-1/0G IN 4 SETS OF 2"C.
7. 2-10 & 1-10 IN 3/4"C.
8. 3-4 & 1-10G IN 1"C.
9. 1-8G IN 3/4"C.
10. 3-3/0 & 1-1/0G IN (4) SETS OF 2" C.
11. MATCH EXISTING FEEDER SIZE, QUANTITY AND TYPE. FIELD VERIFY. WIRE SHALL BE A MINIMUM OF 4-1/0 & 1-6G IN 1.5"C.
12. REFER TO SITE ELECTRICAL IMPROVEMENT PLAN ON SHEET E-102 FOR FEEDER SIZE.
13. 4-4 & 1-10G IN 1.5"C.
14. 3-4 & 1-10G IN 1"C.

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

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JENNIFER L. MCVEY
NUMBER PE-2010007729
05/04/22
PROFESSIONAL ENGINEER

Bartlett&West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
CERTIFICATE OF AUTHORITY NO. 000178 EXPIRES 07/31/2023
www.bartlettwest.com

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DEPARTMENT OF CORRECTIONS

WASTEWATER TREATMENT FACILITY IMPROVEMENTS

5201 SOUTH MORLEY ST
MOBERLY, MISSOURI 65270

PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:

ISSUE DATE: 05/04/2022

CAD DWG FILE: E-401.dwg

DESIGNED BY: RCS
DRAWN BY: TJP/SDM
APPROVED BY: VAH

SHEET TITLE:

ELECTRICAL RISER DIAGRAMS

SHEET NUMBER:

E-401

45 of 46 SHEETS

CIRCUIT BREAKER DISTRIBUTION PANEL SCHEDULE

MARK:	MDP1			MAIN BUSS:	800 AMP
VOLTAGE:	480/277	PHASE: 3	WIRE: 4	GROUND BUS:	800 AMP

		CIRCUIT BREAKER	
UNIT NO.	EQUIPMENT SERVED	AMP	POLE
*1	EX 10 HP SCREEN/HEADWORKS	25	3
*2	EX 5 HP AUGER/HEADWORKS	15	3
*3	EX LIFT STATION/HEADWORKS	60	3
4	NEW T1/HEADWORKS CONTROLS, LIGHTS, RECEPTS	30	2
5	75 kVA TRANSFORMER/SHOP	125	3
6	"HP3"	600	3
7	"HP2"	100	3
8	SPD	60	3
9	MAIN	800	3
10			
11			
12			

ACCESSORIES:
65k AIC RATING (MINIMUM)

* EXISTING CIRCUIT EXTENDED TO THIS PANEL

CIRCUIT BREAKER DISTRIBUTION PANEL SCHEDULE

MARK:	HP2			MAIN BUSS:	100 AMP
VOLTAGE:	480/277	PHASE: 3	WIRE: 4	GROUND BUS:	100 AMP

		CIRCUIT BREAKER	
UNIT NO.	EQUIPMENT SERVED	AMP	POLE
1	UV BANK 1.1 LAMP POWER	15	3
2	UV BANK 1.2 LAMP POWER	15	3
3	"T2"	30	2
4	SPD	60	3
5	MAIN	100	3
6			
7			
8			
9			
10			
11			
12			

ACCESSORIES:
65k AIC RATING (MINIMUM)

CIRCUIT BREAKER DISTRIBUTION PANEL SCHEDULE

MARK:	HP3			MAIN BUSS:	600 AMP
VOLTAGE:	480/277	PHASE: 3	WIRE: 4	GROUND BUS:	600 AMP

		CIRCUIT BREAKER	
UNIT NO.	EQUIPMENT SERVED	AMP	POLE
1	75 HP BLOWER	125	3
2	75 HP BLOWER	125	3
3	25 HP BLOWER	60	3
4	25 HP BLOWER	60	3
5	TANK HEATER	15	3
6	TANK HEATER	15	3
7	TANK HEATER	15	3
8	SPARE	15	3
9	"T3"	30	2
10	SPARE	20	3
11	SPD	60	3
12	MAIN	600	3

ACCESSORIES:
65k AIC RATING (MINIMUM)

DISCONNECT SWITCH SCHEDULE

	EQUIPMENT	SWITCH			FUSE			ENCLOSURE	NOTES
MARK	SERVED	VOLTAGE	AMP	POLE	AMP	TYPE		NEMA TYPE	
"DS1"	"MDP1"	480	800	4	800	FRSRK		NEMA 4X	1

NOTES:
1. PROVIDE SERVICE ENTRANCE RATED.

LIGHTING FIXTURE SCHEDULE

			MOUNTING			FINISH	LAMP		
MARK	MANUFACTURER	CATALOG NUMBER	REC	SURF	WALL		TYPE	WATTS	EQUIVALENT MANUFACTURERS
A	H.E. WILLIAMS	96-4-L62-8-35-HIAFR-WET/2-DRV-120		X		WHITE	LED	48	COLUMBIA LXEM LITHONIA CSVT

NOTES:

COMBINATION MOTOR STARTER SCHEDULE

	LOAD				SWITCH		FUSE		STARTER				INTERLOCK		NOTES
MARK	EQUIPMENT SERVED	HP	VOLTAGE	FLA	AMP	POLE	AMP	TYPE	SIZE	TYPE	ACCESSORIES	STARTS	STARTED BY		
CMS1	75 HP BLOWER	75	480	96	200	3	-	-	4	FVNR	HOA, RP, AC	BLOWER	CONTROL PANEL		1
CMS2	75 HP BLOWER	75	480	96	200	3	-	-	4	FVNR	HOA, RP, AC	BLOWER	CONTROL PANEL		1
CMS3	25 HP BLOWER	25	480	34	60	3	-	-	2	FVNR	HOA, RP, AC	BLOWER	CONTROL PANEL		1
CMS4	25 HP BLOWER	25	480	34	60	3	-	-	2	FVNR	HOA, RP, AC	BLOWER	CONTROL PANEL		1

ABBREVIATIONS:

FVNR - FULL VOLTAGE NON-REVERSING
HOA - HAND-OFF-AUTO SWITCH
RP - RED PILOT LIGHT IN COVER
TC - TEMPERATURE CONTROLS
WS - WALL SWITCH
AC - AUXILIARY CONTACTS (2-N.O., 2-N.C.)
SS - START-STOP SWITCH
MD - MOTORIZED DAMPER
PLC - PROGRAMMED LOGIC CONTROLS

NOTES:
1. PROVIDE NEMA 4X ENCLOSURE

GENERATOR SET SCHEDULE

MARK	MFGR	DUTY	RATED OUTPUT (KW)	VOLTAGE	POLES	EPA RATING	ALTERNATOR TEMP RISE (C)	FUEL TYPE	MOCP (AMPS)	ENCLOSURE TYPE
"G1"	CUMMINS	STANDBY	600	480/277	3	TIER 2	125	DIESEL	800	WEATHER-PROTECTIVE

NOTES:
1. MOCP TO BE 100% RATED.

CIRCUIT BREAKER PANELBOARD SCHEDULE

MARK:	"P1"					MOUNTING:	SURFACE		10k AIC RATING (MINIMUM)		
VOLTAGE:	120/240	PHASE: 1	WIRE: 3	POLES: 12		MAIN BUSS:	100 AMP		MAIN C/B:	60 AMP	

CIRC. NO.	LOAD DESCRIPTION	CIRC. BRKR	LOAD (VA)	PHASE LOAD IN VA A	PHASE LOAD IN VA B	LOAD (VA)	CIRC. BRKR.	LOAD DESCRIPTION	CIRC. NO.
*1	HEADWORKS RECEPTACLES	15A1P	180	680		500	20A1P	HEADWORKS LIGHTING	*2
*3	HEADWORKS CONTROLS	20A1P	500		1000	500	20A1P	"G1" BATTERY CHARGER	4
5	"G1" BLOCK HEATER	35A2P	3210	3210					6
7	-	-	3210		3210				8
9				0					10
11					0				12
TOTALS:				3890	4210				

MAX. PHASE VA: 4210 MAX. PHASE AMPS: 35 MAX. PHASE DIVERSIFIED VA: 4210 MAX. PHASE DIVERSIFIED AMPS: 35

* EXISTING CIRCUIT EXTEND TO THIS PANEL

CIRCUIT BREAKER PANELBOARD SCHEDULE

MARK:	"P2"					MOUNTING:	SURFACE		10k AIC RATING (MINIMUM)		
VOLTAGE:	120/240	PHASE: 1	WIRE: 3	POLES: 12		MAIN BUSS:	100 AMP		MAIN C/B:	60 AMP	

CIRC. NO.	LOAD DESCRIPTION	CIRC. BRKR	LOAD (VA)	PHASE LOAD IN VA A	PHASE LOAD IN VA B	LOAD (VA)	CIRC. BRKR.	LOAD DESCRIPTION	CIRC. NO.
1	RECEPTACLES	15A1P	180	1380		1200	20A1P	UV CONTROL PANEL	2
3	MAGNETIC FLOW METER	20A/1P	500		1100	600	15A/1P	BANK 1.1 POWER DISCONNECT PNL	4
5	BANK 1.2 POWER DISCONNECT PNL	15A1P	600	1776		1176	20A1P	SUMP PUMP	6
7	WASHDOWN PUMP	20A2P	960		1460	500	20A1P	LIGHTING	8
9	-	-	960	960					10
11					0				12
TOTALS:				4116	2560				

MAX. PHASE VA: 4116 MAX. PHASE AMPS: 34 MAX. PHASE DIVERSIFIED VA: 4116 MAX. PHASE DIVERSIFIED AMPS: 43

CIRCUIT BREAKER PANELBOARD SCHEDULE

MARK:	"P3"					MOUNTING:	SURFACE		10k AIC RATING (MINIMUM)		
VOLTAGE:	120/240	PHASE: 1	WIRE: 3	POLES: 12		MAIN BUSS:	100 AMP		MAIN C/B:	60 AMP	

CIRC. NO.	LOAD DESCRIPTION	CIRC. BRKR	LOAD (VA)	PHASE LOAD IN VA A	PHASE LOAD IN VA B	LOAD (VA)	CIRC. BRKR.	LOAD DESCRIPTION	CIRC. NO.
1	RECEPTACLES	15A1P	180	680		500	20A1P	BLOWER CONTROLS	2
3	ENCLOSURE FAN	20A1P	1000		2000	1000	20A1P	ENCLOSURE FAN	4
5	ENCLOSURE FAN	20A1P	1000	2000		1000	20A1P	ENCLOSURE FAN	6
7	LIGHTING	20A1P	1500		2500	1000	20A1P	HIGH TIDE PANEL	8
9				0					10
11					0				12
TOTALS:				2680	4500				

MAX. PHASE VA: 4500 MAX. PHASE AMPS: 38 MAX. PHASE DIVERSIFIED VA: 4500 MAX. PHASE DIVERSIFIED AMPS: 47

TRANSFORMER SCHEDULE

MARK	RATING		TYPE MOUNTING				TEMP.	PRIMARY		SECONDARY	
	KVA	PHASE	FLOOR	WALL	PAD	UNISTRUT	RISE (°C)	VOLTAGE	CONNECTION	VOLTAGE	CONNECTION
T1	10	1				X	150	480	1 PHASE	120/240	1 PHASE
T2	10	1				X	150	480	1 PHASE	120/240	1 PHASE
T3	10	1				X	150	480	1 PHASE	120/240	1 PHASE

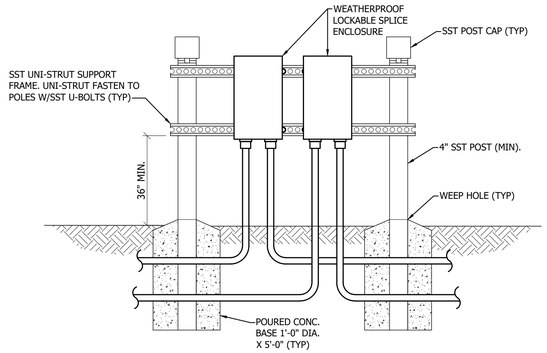
NOTES:
1. PROVIDE NEMA 3R ENCLOSURE FOR T1, T2, & T3

TRANSFER SWITCH SCHEDULE

MARK	MFGR	OPERATION AUTO/MANUAL	MODEL	ACCESSORIES	POLES	AMP	VOLTAGE	ENCLOSURE NEMA TYPE
"ATS1"	ASCO	AUTO	7000	SP, IL, MH, ES, SE	4	800	480	4X

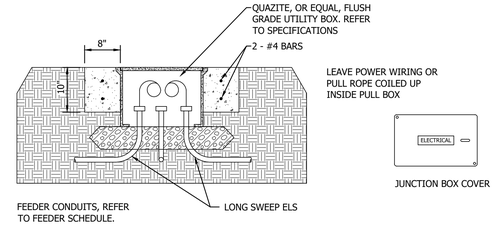
ABBREVIATIONS

B - BYPASS-ISOLATION SWITCH
SP - SWITCH POSITION CONTACTS
IL - INDICATOR LAMPS
MH - MECHANICALLY HELD-ELECTRICALLY OPERATED
ES - ENGINE START CONTACTS
TD - TIME DELAY TRANSFER (ADJUSTABLE)
(ENGINE START TIME DELAY- 0-30 MIN)
(TRANSFER TIME DELAY- 0-10 MIN)
SE - SERVICE ENTRANCE RATED

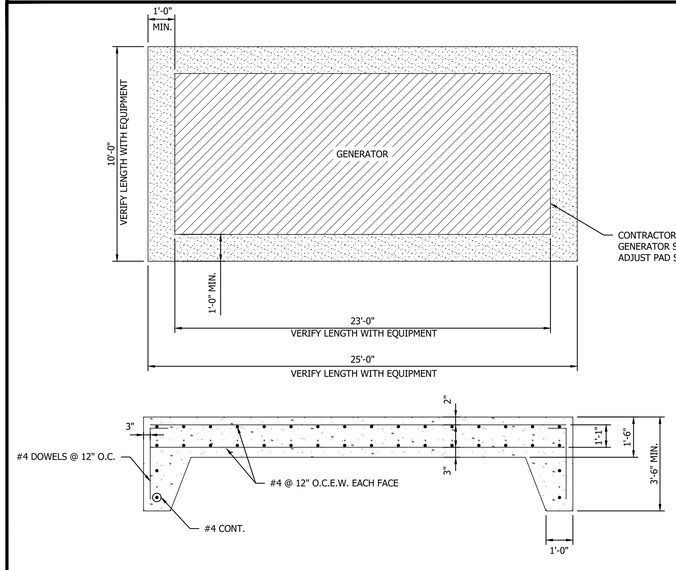


NOTE: SIMILAR FOR VARIOUS RACKS. VERIFY ELECTRICAL EQUIPMENT TO BE MOUNTED ON RACK AND PROVIDE RACK SIZE SUFFICIENT FOR MOUNTING REQUIRED EQUIPMENT.

1 UNI - STRUT MOUNTING RACK DETAIL
NOT TO SCALE



2 IN-GRADE J-BOX DETAIL
NOT TO SCALE



3 GENERATOR PAD DETAIL
NOT TO SCALE

STATE OF MISSOURI
MICHAEL L PARSON
GOVERNOR

STATE OF MISSOURI
JENNIFER L. MCVEY
NUMBER PE-2010007729
05/04/22
PROFESSIONAL ENGINEER

Bartlett & West
1719 SOUTHRIDGE DR., SUITE 100 - JEFFERSON CITY MO 65109-4000
PHONE 573.634.3161
FAX 573.634.5146
CERTIFICATE OF AUTHORITY NO. 000151-EFIRM-E2016
www.bartlettwest.com

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
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WASTEWATER TREATMENT FACILITY IMPROVEMENTS

5201 SOUTH MORLEY ST
MOBERLY, MISSOURI 65270

PROJECT # C1806-01
SITE # 7005
ASSET # 9327005058

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:

ISSUE DATE: 05/04/2022

CAD DWG FILE: E-501.dwg

DESIGNED BY: RCS
DRAWN BY: RCS
APPROVED BY: VAH

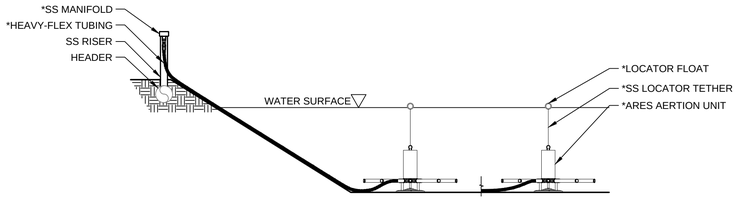
SHEET TITLE:
ELECTRICAL SCHEDULES & DETAILS

SHEET NUMBER:
E-501

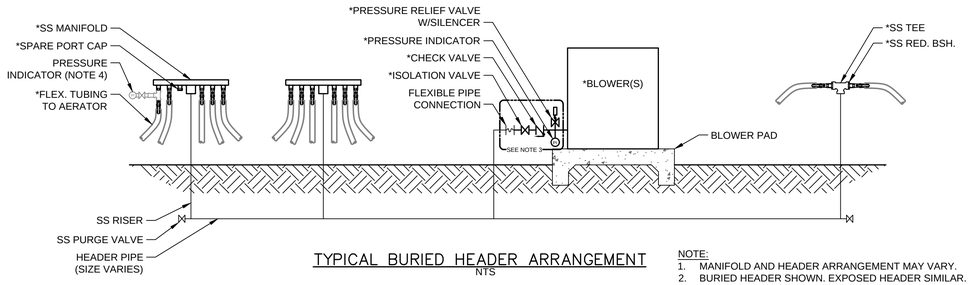
ARES AERATOR

TYPICAL INSTALLATION ARRANGEMENT
WITH MANIFOLDS AND HEAVYFLEX

REFERENCE DRAWING

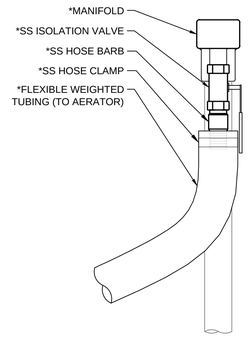


TYPICAL POND CROSS–SECTION
NTS

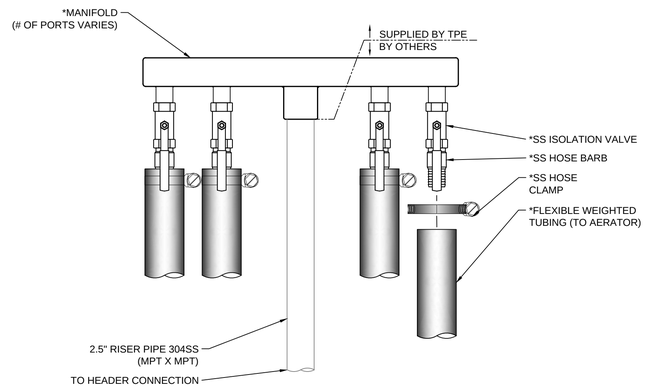


TYPICAL BURIED HEADER ARRANGEMENT
NTS

NOTE:
1. MANIFOLD AND HEADER ARRANGEMENT MAY VARY.
2. BURIED HEADER SHOWN. EXPOSED HEADER SIMILAR.
3. VERIFY BLOWER PACKAGE INCLUSIONS.
4. CONTRACTOR SHALL PROVIDE PRESSURE INDICATORS WHERE REQ'D TO ACHIEVE AIR BALANCING.
5. ITEMS MARKED WITH AN ASTERISK (*) TYPICALLY PROVIDED BY TPE. CHECK SCOPE OF SUPPLY DOCUMENTS TO VERIFY.



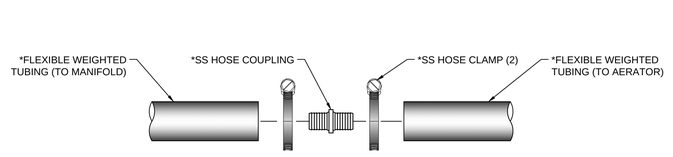
SIDE VIEW



FRONT VIEW

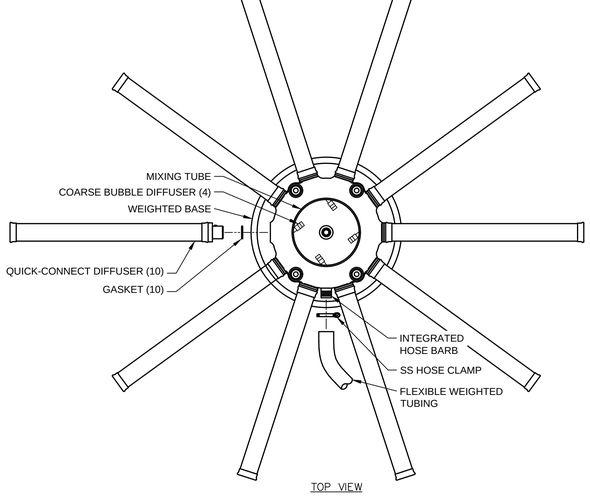
4 PORT MANIFOLD DETAIL
NTS

NOTE:
1. 4- PORTS SHOWN. OTHER PORT QUANTITIES SIMILAR. SEE PLANS FOR QUANTITY, SIZE AND LOCATION OF MANIFOLDS.
2. CAP OFF UNUSED PORTS.



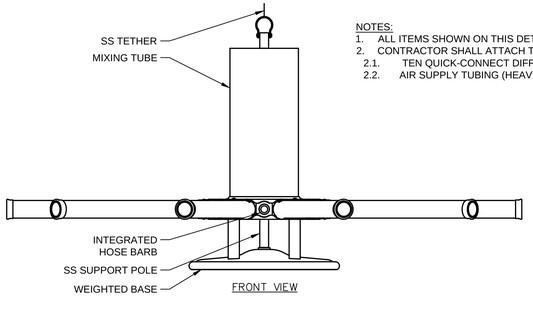
TUBE COUPLING DETAIL
NTS

NOTE:
1. TUBING TYPICALLY PROVIDED IN 100' COILS. ONSITE COUPLING MAY BE REQUIRED. REFER TO LAYOUT.

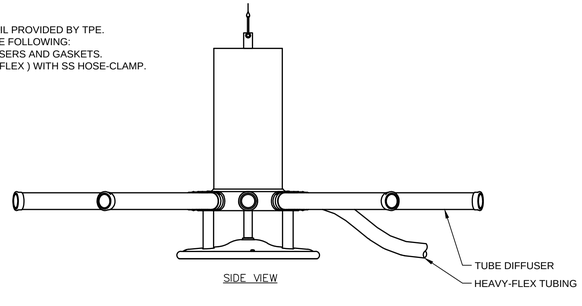


TOP VIEW

3D MODEL RENDERING



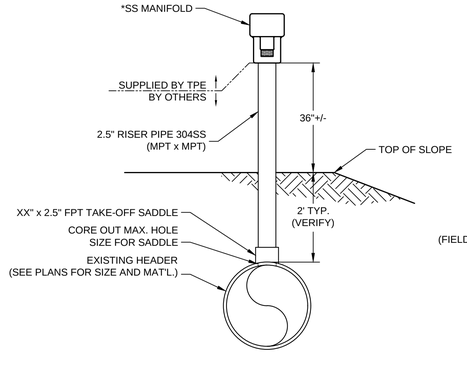
FRONT VIEW



SIDE VIEW

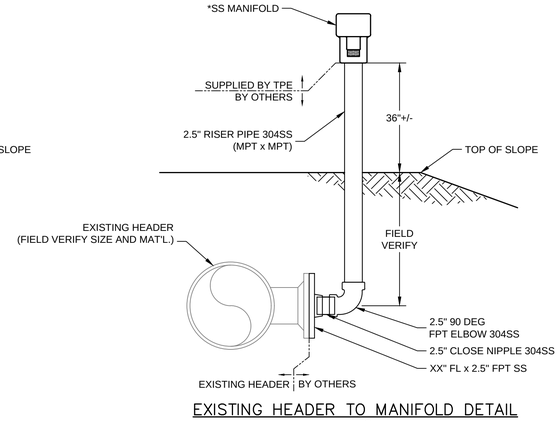
NOTES:
1. ALL ITEMS SHOWN ON THIS DETAIL PROVIDED BY TPE.
2. CONTRACTOR SHALL ATTACH THE FOLLOWING:
   2.1. TEN QUICK-CONNECT DIFFUSERS AND GASKETS.
   2.2. AIR SUPPLY TUBING (HEAVY-FLEX) WITH SS HOSE-CLAMP.

ARES AERATOR
NTS



NEW HEADER TO MANIFOLD DETAIL
NTS

NOTE:
1. BURIED HEADER SHOWN. EXPOSED HEADER SIMILAR.



EXISTING HEADER TO MANIFOLD DETAIL
NTS

NOTE:
1. BURIED HEADER SHOWN. EXPOSED HEADER SIMILAR.
2. VERIFY BRANCH SIZE, LOCATION AND TYPE..

triplepoint ENVIRONMENTAL
TRIPLEPOINT ENVIRONMENTAL, LLC
1010 LAKE STREET, SUITE 503, OAK PARK, IL 60301
(312) 428-4634

REVISIONS

REV #	DESCRIPTION	DATE
A	FOR BID	10/10/19

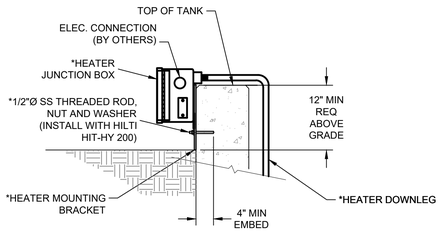
DRAFTING:
DESIGN:

ARES AERATOR AND MANIFOLD – TAVISTOCK INSTALLATION ARRANGEMENT

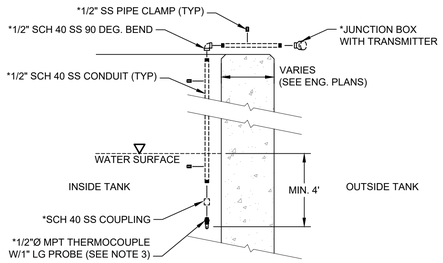
TAVISTOCK AERATOR INSTALLATION TYPICAL

DATE: 8-MAY-2020
PROJECT NO:
CAD: TYPICAL ARRANGEMENT
SHEET: 1 OF 1

5/8/2020 3:02 PM

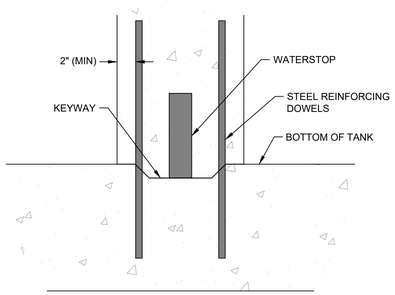


DETAIL 1 / -
HEATER MOUNT
SCALE: NTS



NOTE: INSTALL THERMOCOUPLE AT MID-DEPTH OF TANK

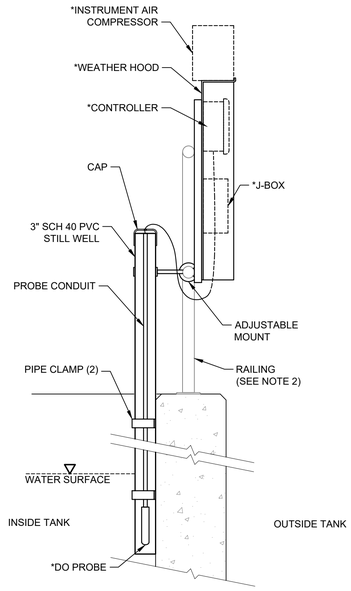
DETAIL 2 / -
THERMOCOUPLE MOUNT
SCALE: NTS



NOTE: CONCRETE AND STRUCTURAL DESIGN BY OTHERS.
ALL DIMENSIONS PROVIDED FOR REFERENCE ONLY.
SEE ENGINEERING PLANS.

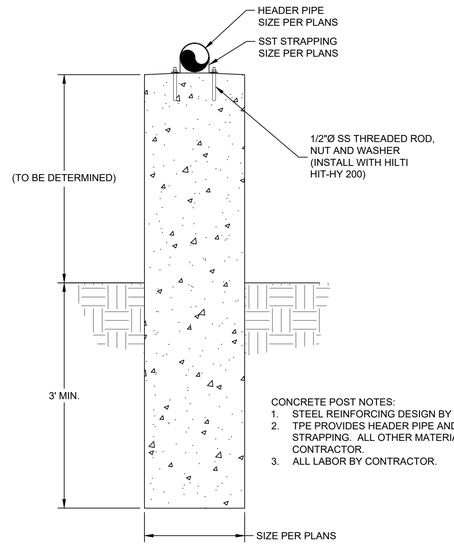
DETAIL 3 / -
KEYWAY AND WATERSTOP
SCALE: NTS

OPTIONAL



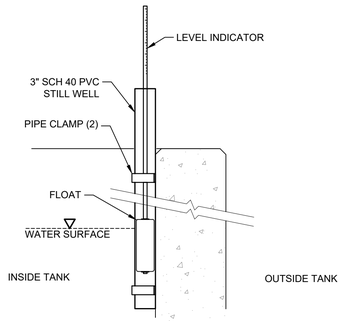
NOTES:
1. INSTALL DO PROBE AT MID-DEPTH OF TANK
2. IF NO RAILING, CONTRACTOR SHALL MOUNT INSTRUMENTATION WITH SUITABLY SIZED UNISTRUT AND PIPE.

DETAIL 4 / -
DO PROBE (OPTIONAL)
SCALE: NTS

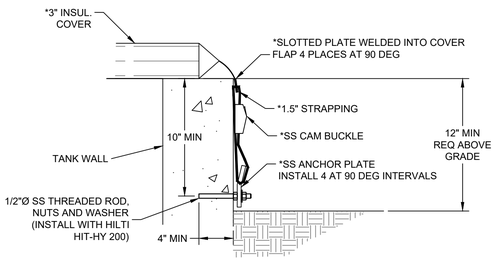


CONCRETE POST NOTES:
1. STEEL REINFORCING DESIGN BY OTHERS.
2. TPE PROVIDES HEADER PIPE AND STRAPPING. ALL OTHER MATERIALS BY CONTRACTOR.
3. ALL LABOR BY CONTRACTOR.

SECTION C / -
HEADER PIPE SUPPORT
SCALE: NTS

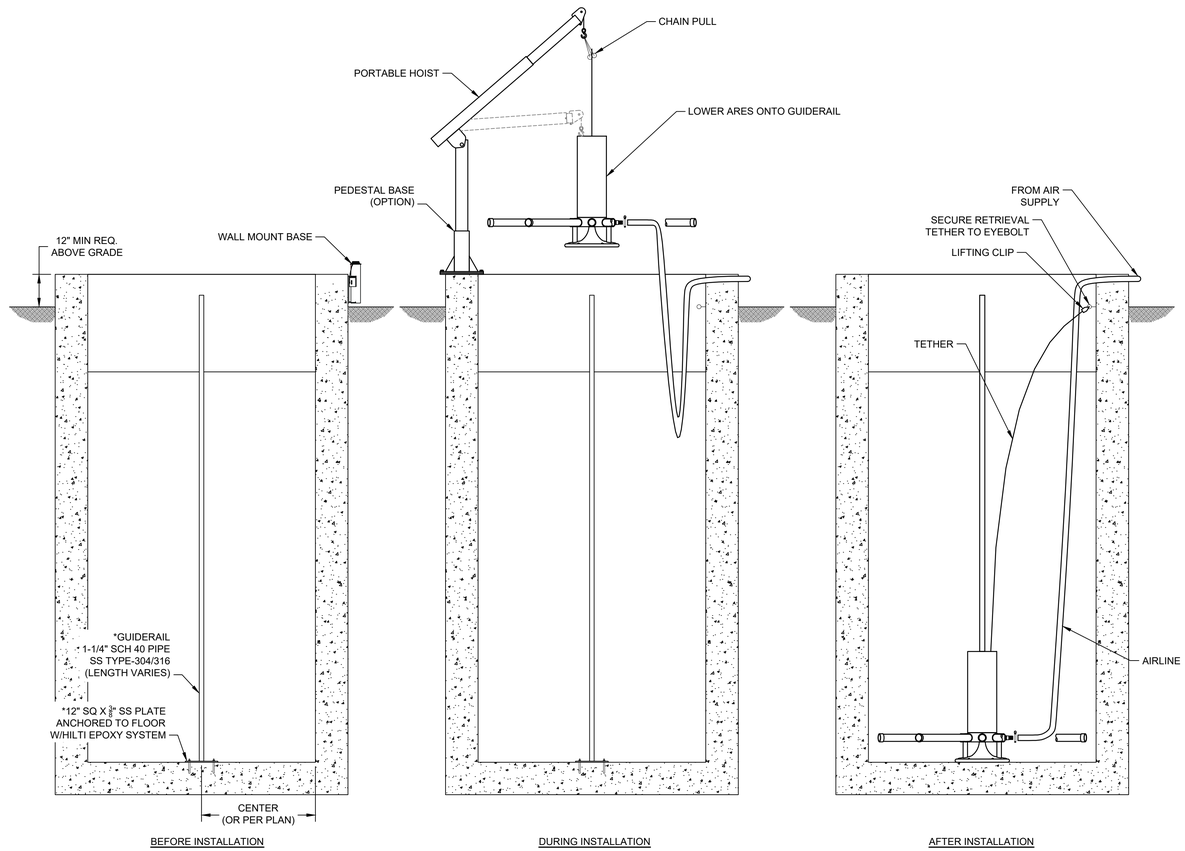


DETAIL 5 / -
LEVEL INDICATOR
SCALE: NTS



DETAIL 6 / -
COVER HOLD-DOWN
SCALE: NTS

REFERENCE DRAWING



AERATOR INSTALLATION
SCALE: NTS

triplepoint ENVIRONMENTAL
TRIPLEPOINT ENVIRONMENTAL, LLC
1010 LAKE STREET, SUITE 503, OAK PARK, IL 60301
(312) 428-4634

REVISIONS

REV. #	DATE	DESCRIPTION
A	11/15/21	PRELIMINARY LAYOUT
B	11/20/21	REVISED DETAILS

DRAFTING: PAR
DESIGN:

MARBLE HILL, MO
WASTEWATER TREATMENT SYSTEM
GENERAL ARRANGEMENT

TYPICAL INSTALLATION ARRANGEMENT

DATE: 11/5/21
PROJECT NO:
CAD: TYPICAL ARRANGEMENT
SHEET: 2 OF 2

12/3/2021 10:27 AM