

# SEWER RENOVATIONS - TRACK LAGOON

## FINGER LAKES STATE PARK

### COLUMBIA, MISSOURI

OWNER: STATE OF MISSOURI  
 MICHAEL L. PARSON,  
 GOVERNOR  
 DEPARTMENT OF  
 NATURAL RESOURCES  
 MISSOURI STATE PARKS

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

PROJECT NUMBER: X2334-01

SITE NUMBER: 5108  
 ASSET NUMBER: 7815108005

#### LOCATION MAP



#### SHEET INDEX

G001 - COVER SHEET  
 G002 - SITE LOCATION PLAN AND GENERAL NOTES

D101 - DEMOLITION PLAN - LAGOON  
 D102 - DEMOLITION PLAN - DRIP IRRIGATION FIELD

C101 - LAGOON SITE PLAN  
 C102 - FORCE MAIN SITE PLAN  
 C103 - DRIP IRRIGATION SITE PLAN

C201 - FILTRATION EQUIPMENT DETAILS  
 C202 - SEPTIC TANK AND PUMP VAULT DETAILS  
 C203 - DRIP IRRIGATION DETAILS (1 OF 2)  
 C204 - DRIP IRRIGATION DETAILS (2 OF 2)  
 C205 - SITE CONSTRUCTION DETAILS

E-101 - ELECTRICAL PLAN

#### DESIGNER:

Crockett Engineering  
 1000 W. Nifong Building 1  
 Columbia, MO 65203  
 573-447-0292



JESSE RAY STEPHENS  
 MO LICENSE - 201000868

SITE/CIVIL ENGINEER:

**CROCKETT**

ENGINEERING CONSULTANTS  
 1000 West Nifong, Building 1  
 Columbia, Missouri 65203  
 (573) 447-0292

www.crockettengineering.com

Crockett Engineering Consultants, LLC  
 Missouri Certificate of Authority  
 #2000151301

SHEET NUMBER:

**G-001**

1 OF 13 SHEETS  
 OCTOBER 2ND, 2024



**LOCATES:**  
 MISSOURI ONE CALL INC.  
 1022 B NORTHEAST DRIVE  
 JEFFERSON CITY, MO 65109  
 1-800-344-7483



**WATER:**  
 PUBLIC WATER SUPPLY DISTRICT NO. 4  
 14530 N. ROUTE U  
 HALLSVILLE, MO 65255  
 573-696-3511

**TELEPHONE:**  
 BRIGHTSPEED  
 625 CHERRY STREET  
 COLUMBIA, MO 65205  
 573-886-3700

**ELECTRIC:**  
 BOONE ELECTRIC COOPERATIVE  
 1413 RANGE LINE STREET  
 COLUMBIA, MO 65201  
 573-449-4181

**WATER/SEWER SYSTEM DESIGN LOADS:**

**CAMPGROUND AREA**

- PUBLIC PARK PATRONS WITH BATHHOUSE (60 EACH @ 15 GPD) = 900 GPD - BASED ON CURRENT EXISTING WATER METER DATA.
- TOTAL ACTUAL SEWER LOAD ASSUMED = 1000 GALLONS PER DAY
- ADDITIONAL CAPACITY BEING ADDED TO ALLOW FOR FUTURE EXPANSION OF THE CAMPGROUND.

INITIAL ASSUMPTION IS THAT 1,000 GPD SYSTEM IS SUFFICIENT FOR PARK NEEDS WITH THE CURRENT 36 CAMPSITES. WATER METER DATA INDICATE AVERAGE ANNUAL USAGE OF 900 GPD, HOWEVER CERTAIN SUMMER MONTHS, THE AVERAGE USAGE IS CLOSER TO 2,000 GPD. DUE TO THE LARGE VOLUMES, THE EXISTING LAGOON CELLS ARE BEING REMEDIATED AND USED AS FLOW EQUALIZATION.

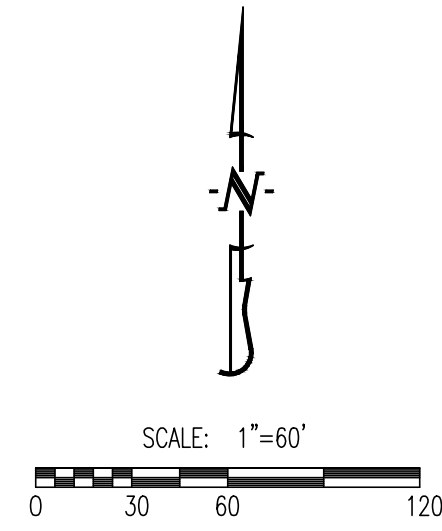
SOILS INFORMATION: SOILS LOADIN DESIGN RATE IS .05 GALLONS PER SQUARE FOOT PER DAY ON AVERAGE FOR DRIP IRRIGATION.

**OVERALL WETTED APPLICATION AREA REQUIREMENTS:**

- REQUIRED = 900/.05 = 18,000 SQUARE FEET
- PROVIDED = 3,200/.05 = 64,000 SQUARE FEET

**LEGEND OF SYMBOLS:**

---	EXISTING CURB	○	EXISTING SIGNS
---	PROPOSED CURB	⊗	EXISTING POWER POLE
▨	RIP RAP	⊕	EXISTING GAS VALVE
⊕	EXISTING STRUCTURE	⊗	EXISTING WATER VALVE
---	EXISTING TREELINE	⊙	EXISTING GAS METER
---	PROPOSED TREELINE	⊗	EXISTING WATER METER
---	EDGE OF WATERWAY	⊗	EXISTING FIRE HYDRANT
---	EXISTING WATERLINE	⊙	MANHOLE
---	PROPOSED WATERLINE	---	EXISTING SANITARY SEWER LATERAL
---	EXISTING GAS LINE	---	PROPOSED SANITARY SEWER LATERAL
---	PROPOSED GAS LINE	⊙	PROPOSED TRACER WIRE TEST STATION BOX
---	EXISTING UNDERGROUND TELEPHONE	⊙	EXISTING AIR CONDITIONER
---	EXISTING UNDERGROUND CABLE TELEVISION	⊙	EXISTING TELEPHONE PEDESTAL
---	EXISTING HIGH VOLTAGE ELECTRIC	⊙	EXISTING ELECTRICAL TRANSFORMER
---	EXISTING OVERHEAD ELECTRIC	⊙	EXISTING ELECTRIC METER
---	EXISTING UNDERGROUND ELECTRIC	⊙	EXISTING LIGHT POLE
---	EXISTING OVERHEAD ELEC. & TV	⊙	EXISTING GUY WIRE
---	EXISTING OVERHEAD ELEC., TV & TELE.		
---	EXISTING SANITARY SEWER		
---	PROPOSED SANITARY SEWER		
---	EXISTING MINOR CONTOUR		
---	EXISTING MAJOR CONTOUR		
---	PROPOSED MINOR CONTOUR		
---	PROPOSED MAJOR CONTOUR		
---	100 YEAR FLOOD PLAIN		
---	FLOODWAY		
---	ORDINARY HIGH WATER MARK		
---	STREAM SIDE BUFFER		
---	OUTER STREAM BUFFER		



STATE OF MISSOURI  
 MICHAEL L. PARSON,  
 GOVERNOR



JESSE RAY STEPHENS  
 MO LICENSE - 200000968



1000 W. Nifong Blvd., Bldg. 1  
 Columbia, Missouri 65203  
 (573) 447-0292  
 www.crockettengineering.com  
 Crockett Engineering Consultants, LLC  
 Missouri Certificate of Authority #200015101

OFFICE OF ADMINISTRATION  
 DIVISION OF FACILITIES  
 MANAGEMENT,  
 DESIGN AND CONSTRUCTION

DEPARTMENT OF  
 NATURAL RESOURCES  
 MISSOURI STATE PARKS

SEWER RENOVATIONS  
 TRACK LAGOON

FINGER LAKES STATE PARK  
 1505 PEABODY ROAD  
 COLUMBIA, MO 65202

PROJECT # X2334-01  
 SITE # 5108  
 ASSET # 7815108005

REVISION: \_\_\_\_\_  
 DATE: \_\_\_\_\_  
 REVISION: \_\_\_\_\_  
 DATE: \_\_\_\_\_  
 REVISION: \_\_\_\_\_  
 DATE: \_\_\_\_\_  
 ISSUE DATE: 10/02/2024

CAD DWG FILE: C-SIT-G002  
 DRAWN BY: JRS  
 CHECKED BY: ATG  
 DESIGNED BY: JRS

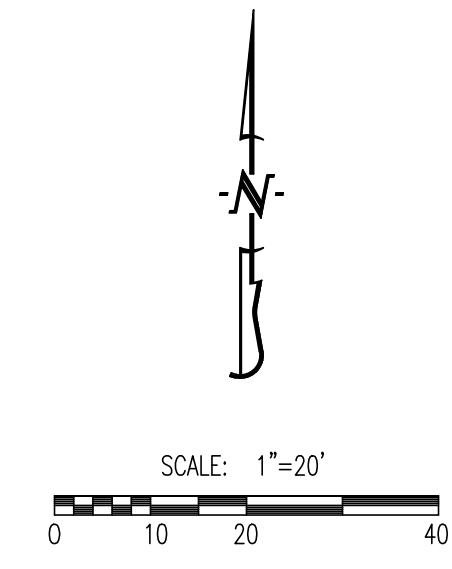
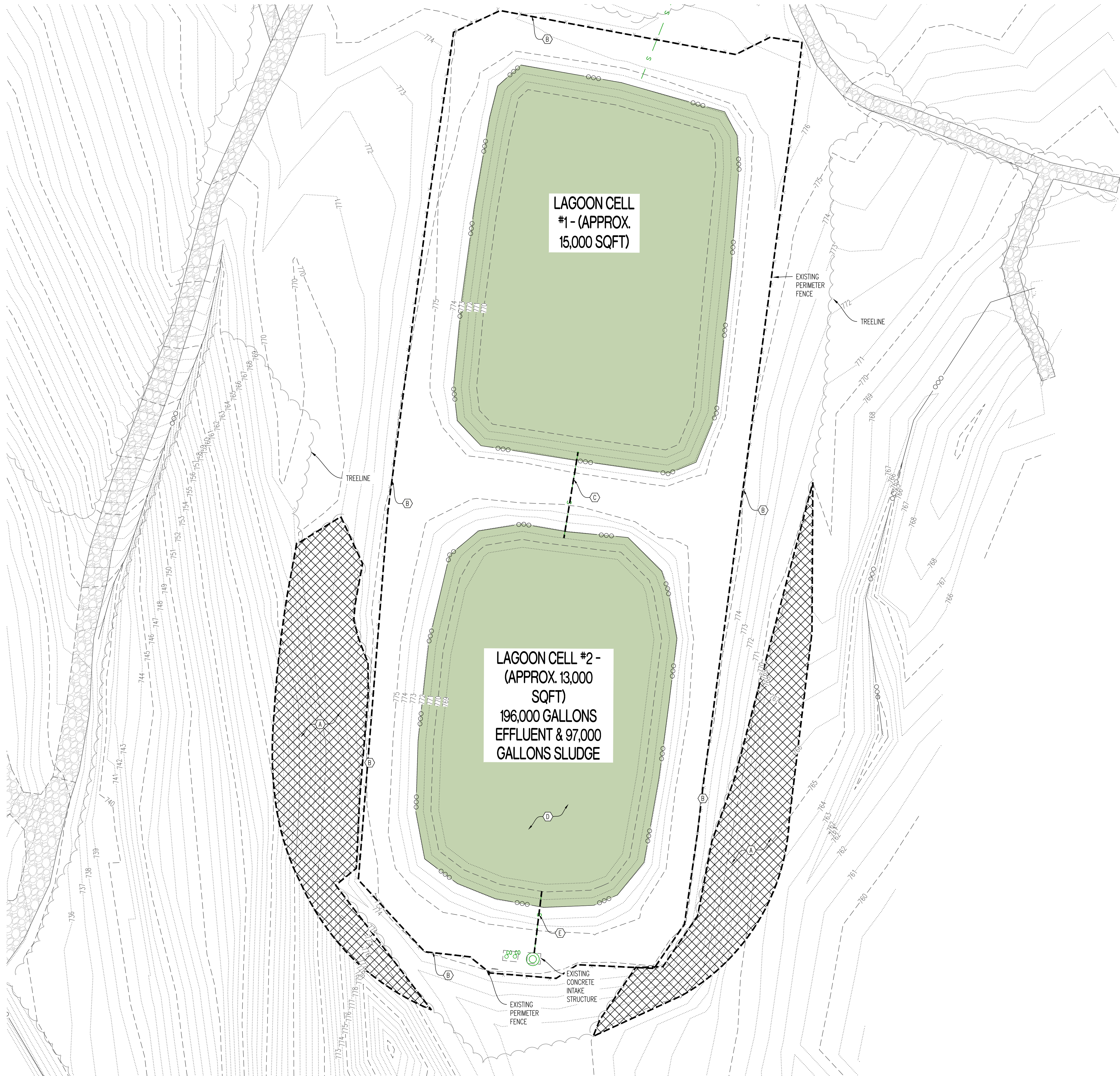
SHEET TITLE:

SITE LOCATION PLAN  
 AND GENERAL NOTES

SHEET NUMBER:

G-002





- LEGEND OF LABELS:**
- (A) REMOVE EXISTING TREES IN HATCHED AREAS. TREES MUST BE CUT DOWN AND STUMP GROUND OR MULCHED WITH A MULCHING HEAD, WITH MULCH DISPOSED OFF-SITE. NO DISTURBANCE OF ANY EXISTING ROOT BALLS IS ALLOWED. APPROXIMATELY 9,000 SQFT AROUND LAGOON BERMS.
  - (B) CONTRACTOR TO REMOVE EXISTING FENCE. SEE SITE PLAN FOR INSTALLATION OF NEW FENCE.
  - (C) CONTRACTOR TO REMOVE THE EXISTING CONNECTING PIPE BETWEEN THE LAGOON CELLS AND REPLACE WITH A NEW 6" C-900 PVC PIPE AND 6" GATE VALVE CENTERED BETWEEN LAGOON BERMS. PROVIDE CAST-IRON CLEANOUT COVER AND PVC PIPE FROM GATE VALVE STEM UP TO FINISH GRADE.
  - (D) CONTRACTOR SHALL TEMPORARILY VALVE SHUT THE CONNECTING PIPE BETWEEN THE LAGOON CELLS AND EITHER PUMP WATER FROM CELL #2 BACK INTO CELL #1 AS SPACE PERMITS. ALTERNATIVELY, THE CONTRACTOR SHALL PUMP AND HAUL EXCESS EFFLUENT TO A PERMITTED TREATMENT FACILITY. SEE PLAN FOR APPROXIMATE QUANTITIES OF EFFLUENT AND SLUDGE. ONCE EFFLUENT AND SLUDGE HAVE BEEN REMOVED FROM LAGOON CELL #2, THE BOTTOM AND SIDE WALLS SHALL BE OVEREXCAVATED A MINIMUM OF TWO FEET THICK, AND SOIL REMOVED AND HAULED OFF-SITE. ALTERNATIVELY, THE CONTRACTOR MAY CHOOSE TO HAVE MATERIAL EVALUATED BY A GEOTECHNICAL ENGINEER TO DETERMINE SUITABILITY FOR RE-USE AS A COMPACTED CLAY LINER. IF MATERIAL IS NOT REUSABLE, IT SHALL BE HAULED OFF AT THE CONTRACTOR'S EXPENSE AND SUITABLE CLAY LAGOON LINER MATERIAL SHALL BE HAULED IN AND COMPACTED IN LIFTS TO 98% STANDARD PROCTOR DENSITY AND MOISTURE REQUIREMENTS AS OUTLINED IN THE GEOTECHNICAL REPORT. ALL LAGOON LINER MATERIAL SHALL MEET THE REQUIREMENTS OF THE GEOTECHNICAL REPORT.
  - (E) EXISTING PIPING TO INTAKE STRUCTURE TO BE REMOVED AND REPLACED. REFER TO SITE PLAN.



JESSE RAY STEPHENS  
MO LICENSE - 200000968

**CROCKETT**  
ENGINEERING CONSULTANTS  
1000 W. Nifong Blvd., Bldg. 1  
Columbia, Missouri 65203  
(313) 447-0292  
www.crockettengineering.com  
Crockett Engineering Consultants, LLC  
Missouri Certificate of Authority #200015101

OFFICE OF ADMINISTRATION  
DIVISION OF FACILITIES  
MANAGEMENT,  
DESIGN AND CONSTRUCTION

DEPARTMENT OF  
NATURAL RESOURCES  
MISSOURI STATE PARKS

SEWER RENOVATIONS  
TRACK LAGOON

FINGER LAKES STATE PARK  
1505 PEABODY ROAD  
COLUMBIA, MO 65202

PROJECT # X2334-01  
SITE # 5108  
ASSET # 7815108005

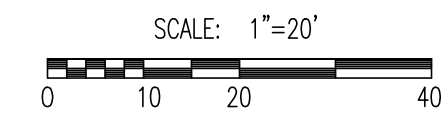
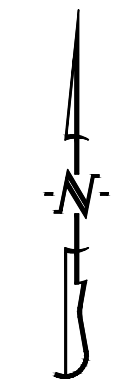
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
ISSUE DATE: 10/02/2024

CAD DWG FILE: C-SIT-D101  
DRAWN BY: JRS  
CHECKED BY: ATG  
DESIGNED BY: JRS

SHEET TITLE:  
  
DEMOLITION PLAN  
LAGOON

SHEET NUMBER:  
  
D-101





**LEGEND OF LABELS:**

- (A) REMOVE EXISTING TREES IN HATCHED AREAS. TREES MUST BE CUT DOWN AND STUMP GROUND OR MULCHED WITH A MULCHING HEAD, WITH MULCH DISPOSED OFF-SITE OR DELIVERED TO A LOCATION WITHIN THE PARK AS DESIGNATED BY THE PARK STAFF. NO DISTURBANCE OF ANY EXISTING ROOT BALLS IS ALLOWED. APPROXIMATELY 63,000 SQFT IN IRRIGATION FIELD AREAS.
- (B) REMOVE EXISTING INDIVIDUAL TREE AND STUMP GRIND.
- (C) EXISTING DRIP TUBING PLOWED IN THE GROUND MAY BE LEFT IN PLACE AND ABANDONED.
- (D) REMOVE AND DISPOSE OF EXISTING DRIP IRRIGATION FIELD SIGNAGE/MARKERS

PROPERTY LINE



JESSE RAY STEPHENS  
MO LICENSE - 200000968



1000 W. Nifong Blvd., Bldg. 1  
Columbia, Missouri 65203  
(314) 447-0292  
www.crockettengineering.com  
Crockett Engineering Consultants, LLC  
Missouri Certificate of Authority #200015101

OFFICE OF ADMINISTRATION  
DIVISION OF FACILITIES  
MANAGEMENT,  
DESIGN AND CONSTRUCTION

DEPARTMENT OF  
NATURAL RESOURCES  
MISSOURI STATE PARKS

SEWER RENOVATIONS  
TRACK LAGOON

FINGER LAKES STATE PARK  
1505 PEABODY ROAD  
COLUMBIA, MO 65202

PROJECT # X2334-01  
SITE # 5108  
ASSET # 7815108005

REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_

ISSUE DATE: 10/02/2024

CAD DWG FILE: C-SIT-D102  
DRAWN BY: JRS  
CHECKED BY: ATG  
DESIGNED BY: JRS

SHEET TITLE:

DEMOLITION PLAN  
IRRIGATION FIELD

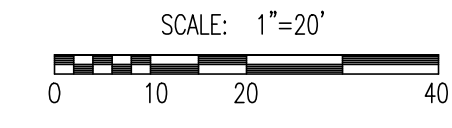
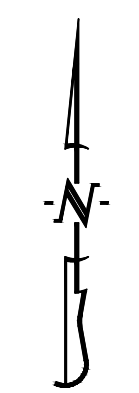
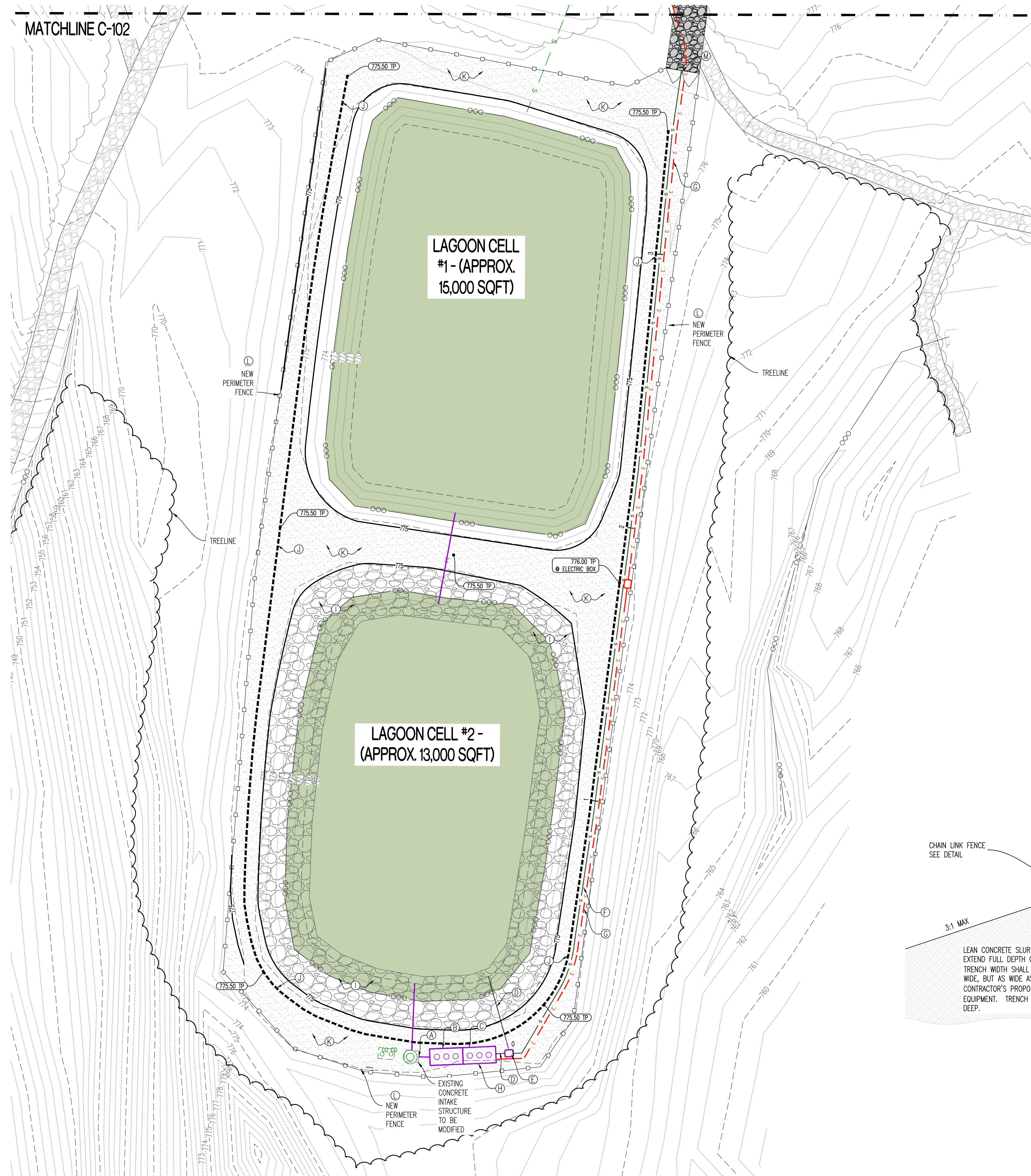
SHEET NUMBER:

**D-102**



MATCHLINE C-102

MATCHLINE C-102



**LEGEND OF LABELS**

- (A) CORE HOLE FOR 4" SCHEDULE 40 PVC PIPE FROM EXISTING INTAKE STRUCTURE TO NEW SEPTIC TANK. INSTALL 4" SCHEDULE 40 PIPE BETWEEN STRUCTURES. SEE DETAIL 1 ON C-202.
- (B) INSTALL 2500 GALLON SEPTIC TRASH TANK. SEE DETAIL 2 ON C-202.
- (C) INSTALL 2500 GALLON DOSING TANK WITH PUMP ASSEMBLY. SEE DETAIL 2 ON C-202.
- (D) INSTALL 1.5" DIAMETER SDR21 PIPING FROM DOSING TANK TO FILTRATION CHAMBER AND FROM FILTRATION CHAMBER TO LAGOON FILTER DISCHARGE
- (E) INSTALL DRIPTech C-200 SELF CONTAINED FILTRATION UNIT AND CONTROL PANEL. CHAMBER SHALL HAVE A MINIMUM OF TWO REDUNDANT 100-MICRON SELF-CLEANING DISC FILTERS. PRODUCT AS MANUFACTURED BY JNM TECHNOLOGIES. SEE DETAILS ON C-201
- (F) INSTALL 2" DIAMETER SDR 21 PIPING FROM FILTRATION UNIT TO DRIP FIELD
- (G) PROVIDE POWER AND CONTROL WIRING TO PUMP/ALARM PANEL. REFER TO E-101 FOR ELECTRICAL PLAN AND DETAILS.
- (H) PROVIDE DOSING EQUIPMENT IN DOSING SEPTIC TANK CHAMBER. INCLUDE (2) REDUNDANT 1 HP EQUAL TO FRANKLIN 20 GPM 1 H.P., TURBINE PUMP. INCLUDE SM/TECH PUMP FILTER OR APPROVED EQUAL. ROUTE POWER AND FLOAT WIRING TO CONTROL PANEL SUPPLIED BY JNM TECHNOLOGIES.
- (I) INSTALL RIP-RAP LAGOON LINER. SEE DETAIL THIS SHEET.
- (J) INSTALL CONCRETE CUT-OFF TRENCH FOR MUSKRAT CONTROL. SEE DETAIL THIS SHEET.
- (K) INSTALL 6" THICK TYPE 1 OR TYPE 5 BASE ROCK ON TOP OF LAGOON BERM. SEE DETAIL THIS SHEET.
- (L) INSTALL NEW CHAIN LINK FENCE. SEE DETAIL ON C-205
- (M) INSTALL 12' WIDE GATE OPENING. 2 LEAFS EACH 6' WIDE. SEE DETAIL ON C-205.

STATE OF MISSOURI  
MICHAEL L. PARSON,  
GOVERNOR



JESSE RAY STEPHENS  
MO LICENSE - 200000968

**CROCKETT**  
ENGINEERING CONSULTANTS  
1000 W. Nifong Blvd., Bldg. 1  
Columbia, Missouri 65203  
(573) 447-0292  
www.crockettengineering.com  
Crockett Engineering Consultants, LLC  
Missouri Certificate of Authority  
#200015101

OFFICE OF ADMINISTRATION  
DIVISION OF FACILITIES  
MANAGEMENT,  
DESIGN AND CONSTRUCTION

DEPARTMENT OF  
NATURAL RESOURCES  
MISSOURI STATE PARKS

SEWER RENOVATIONS  
TRACK LAGOON

FINGER LAKES STATE PARK  
1505 PEABODY ROAD  
COLUMBIA, MO 65202

PROJECT # X2334-01  
SITE # 5108  
ASSET # 7815108005

REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
ISSUE DATE: 10/02/2024

CAD DWG FILE: C-SIT-C101  
DRAWN BY: JRS  
CHECKED BY: ATG  
DESIGNED BY: JRS

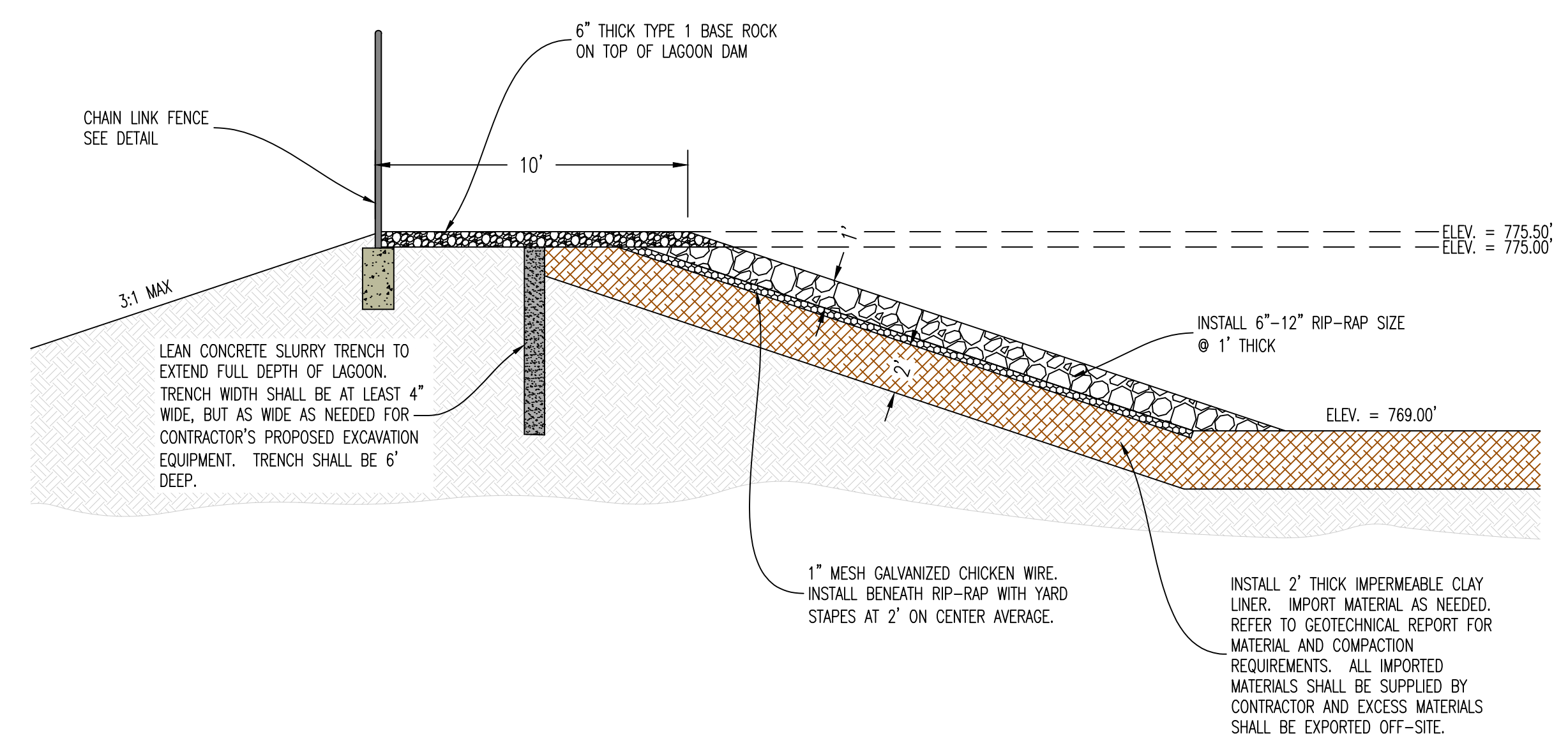
SHEET TITLE:

LAGOON SITE PLAN

SHEET NUMBER:

C-101

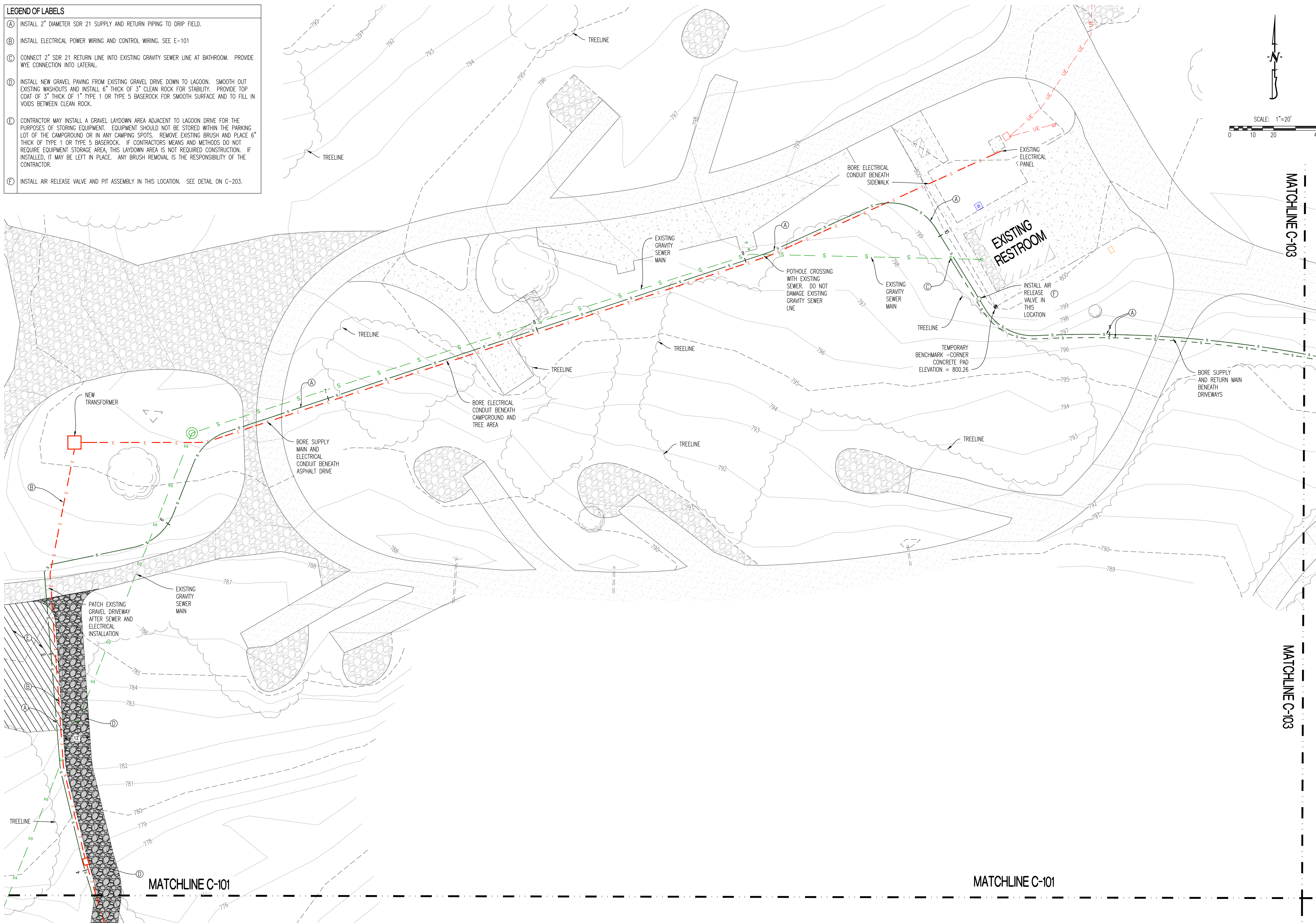
5 of 13 SHEETS



01 LAGOON REMEDIATION DETAIL  
SCALE: NONE



- LEGEND OF LABELS**
- (A) INSTALL 2" DIAMETER SDR 21 SUPPLY AND RETURN PIPING TO DRIP FIELD.
  - (B) INSTALL ELECTRICAL POWER WIRING AND CONTROL WIRING. SEE E-101
  - (C) CONNECT 2" SDR 21 RETURN LINE INTO EXISTING GRAVITY SEWER LINE AT BATHROOM. PROVIDE WYE CONNECTION INTO LATERAL.
  - (D) INSTALL NEW GRAVEL PAVING FROM EXISTING GRAVEL DRIVE DOWN TO LAGOON. SMOOTH OUT EXISTING WASHOUTS AND INSTALL 6" THICK OF 3" CLEAN ROCK FOR STABILITY. PROVIDE TOP COAT OF 3" THICK OF 1" TYPE 1 OR TYPE 5 BASEROCK FOR SMOOTH SURFACE AND TO FILL IN VOIDS BETWEEN CLEAN ROCK.
  - (E) CONTRACTOR MAY INSTALL A GRAVEL LAYDOWN AREA ADJACENT TO LAGOON DRIVE FOR THE PURPOSES OF STORING EQUIPMENT. EQUIPMENT SHOULD NOT BE STORED WITHIN THE PARKING LOT OF THE CAMPGROUND OR IN ANY CAMPING SPOTS. REMOVE EXISTING BRUSH AND PLACE 6" THICK OF TYPE 1 OR TYPE 5 BASEROCK. IF CONTRACTORS MEANS AND METHODS DO NOT REQUIRE EQUIPMENT STORAGE AREA, THIS LAYDOWN AREA IS NOT REQUIRED CONSTRUCTION. IF INSTALLED, IT MAY BE LEFT IN PLACE. ANY BRUSH REMOVAL IS THE RESPONSIBILITY OF THE CONTRACTOR.
  - (F) INSTALL AIR RELEASE VALVE AND PIT ASSEMBLY IN THIS LOCATION. SEE DETAIL ON C-203.



STATE OF MISSOURI  
MICHAEL L. PARSON,  
GOVERNOR



JESSE RAY STEPHENS  
MO LICENSE #200000868

**CROCKETT**  
ENGINEERING CONSULTANTS  
1000 W. Nifong Blvd., Bldg. 1  
Columbia, Missouri 65203  
(313) 447-0292  
www.crockettengineering.com  
Crockett Engineering Consultants, LLC  
Missouri Certificate of Authority #200015101

OFFICE OF ADMINISTRATION  
DIVISION OF FACILITIES  
MANAGEMENT,  
DESIGN AND CONSTRUCTION

DEPARTMENT OF  
NATURAL RESOURCES  
MISSOURI STATE PARKS

SEWER RENOVATIONS  
TRACK LAGOON

FINGER LAKES STATE PARK  
1505 PEABODY ROAD  
COLUMBIA, MO 65202

PROJECT # X2334-01  
SITE # 5108  
ASSET # 7815108005

REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
ISSUE DATE: 10/02/2024

CAD DWG FILE: C-SIT-C102  
DRAWN BY: JRS  
CHECKED BY: ATG  
DESIGNED BY: JRS

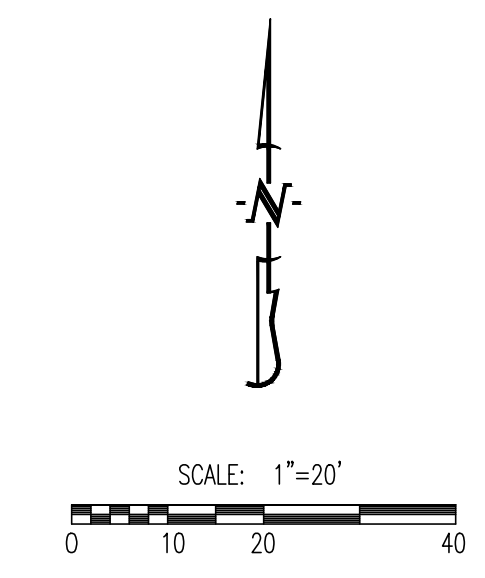
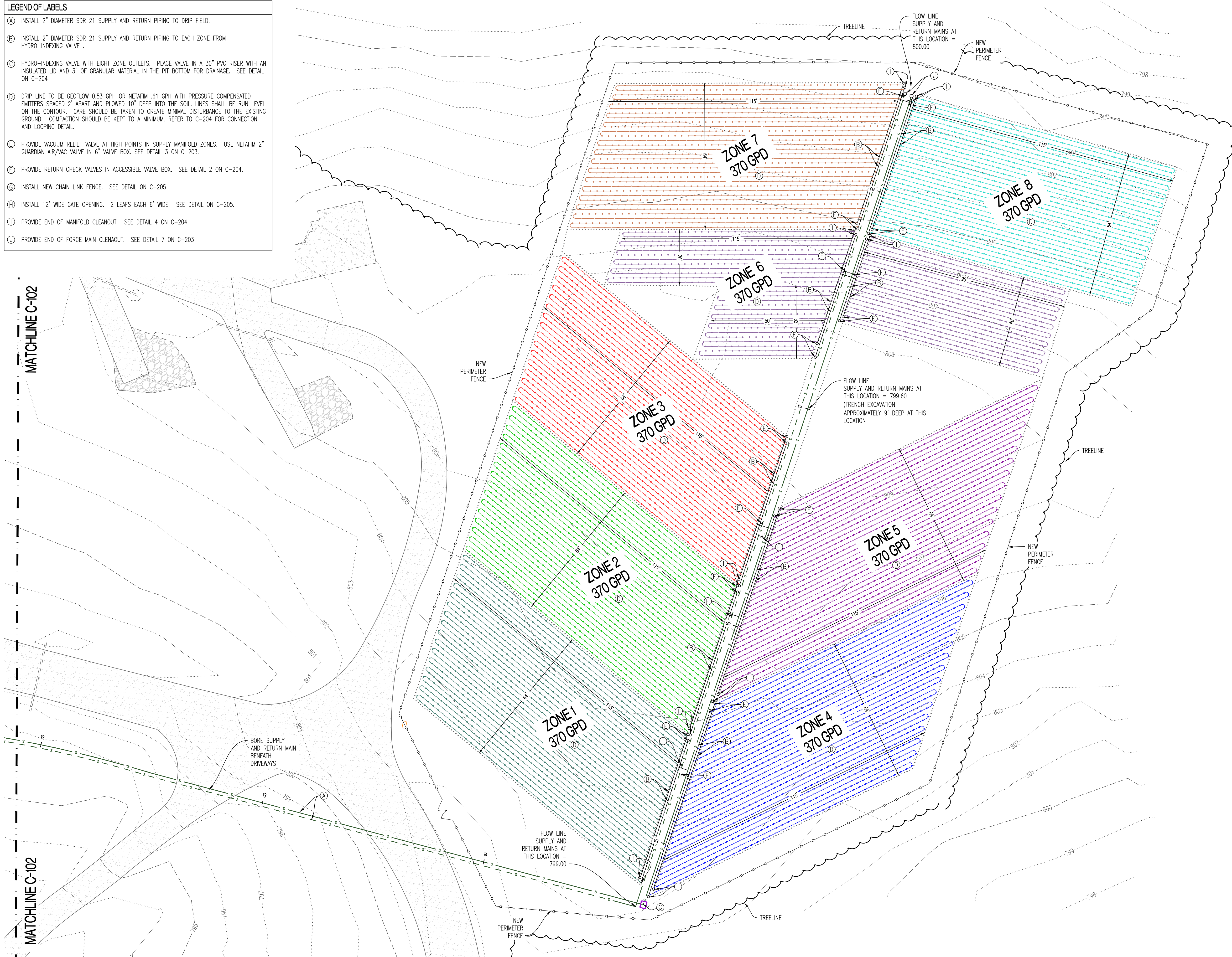
SHEET TITLE:  
  
FORCE MAIN  
SITE PLAN

SHEET NUMBER:

**C-102**



- LEGEND OF LABELS**
- (A) INSTALL 2" DIAMETER SDR 21 SUPPLY AND RETURN PIPING TO DRIP FIELD.
  - (B) INSTALL 2" DIAMETER SDR 21 SUPPLY AND RETURN PIPING TO EACH ZONE FROM HYDRO-INDEXING VALVE.
  - (C) HYDRO-INDEXING VALVE WITH EIGHT ZONE OUTLETS. PLACE VALVE IN A 30" PVC RISER WITH AN INSULATED LID AND 3" OF GRANULAR MATERIAL IN THE PIT BOTTOM FOR DRAINAGE. SEE DETAIL ON C-204.
  - (D) DRIP LINE TO BE GEOFLOW 0.53 GPH OR NETAFIM .61 GPH WITH PRESSURE COMPENSATED EMITTERS SPACED 2' APART AND PLOWED 10" DEEP INTO THE SOIL. LINES SHALL BE RUN LEVEL ON THE CONTOUR. CARE SHOULD BE TAKEN TO CREATE MINIMAL DISTURBANCE TO THE EXISTING GROUND. COMPACTION SHOULD BE KEPT TO A MINIMUM. REFER TO C-204 FOR CONNECTION AND LOOPING DETAIL.
  - (E) PROVIDE VACUUM RELIEF VALVE AT HIGH POINTS IN SUPPLY MANFOLD ZONES. USE NETAFIM 2" GUARDIAN AIR/VAC VALVE IN 6" VALVE BOX. SEE DETAIL 3 ON C-203.
  - (F) PROVIDE RETURN CHECK VALVES IN ACCESSIBLE VALVE BOX. SEE DETAIL 2 ON C-204.
  - (G) INSTALL NEW CHAIN LINK FENCE. SEE DETAIL ON C-205.
  - (H) INSTALL 12" WIDE GATE OPENING. 2 LEAFS EACH 6' WIDE. SEE DETAIL ON C-205.
  - (I) PROVIDE END OF MANFOLD CLEANOUT. SEE DETAIL 4 ON C-204.
  - (J) PROVIDE END OF FORCE MAIN CLEANOUT. SEE DETAIL 7 ON C-203.



STATE OF MISSOURI  
MICHAEL L. PARSON,  
GOVERNOR



JESSE RAY STEPHENS  
MO LICENSE: 200000968

**CROCKETT**  
ENGINEERING CONSULTANTS  
1000 W. Nifong Blvd., Bldg. 1  
Columbia, Missouri 65203  
(573) 447-0292  
www.crockettengineering.com  
Crockett Engineering Consultants, LLC  
Missouri Certificate of Authority #200015101

OFFICE OF ADMINISTRATION  
DIVISION OF FACILITIES  
MANAGEMENT,  
DESIGN AND CONSTRUCTION

DEPARTMENT OF  
NATURAL RESOURCES  
MISSOURI STATE PARKS

SEWER RENOVATIONS  
TRACK LAGOON

FINGER LAKES STATE PARK  
1505 PEABODY ROAD  
COLUMBIA, MO 65202

PROJECT # X2334-01  
SITE # 5108  
ASSET # 7815108005

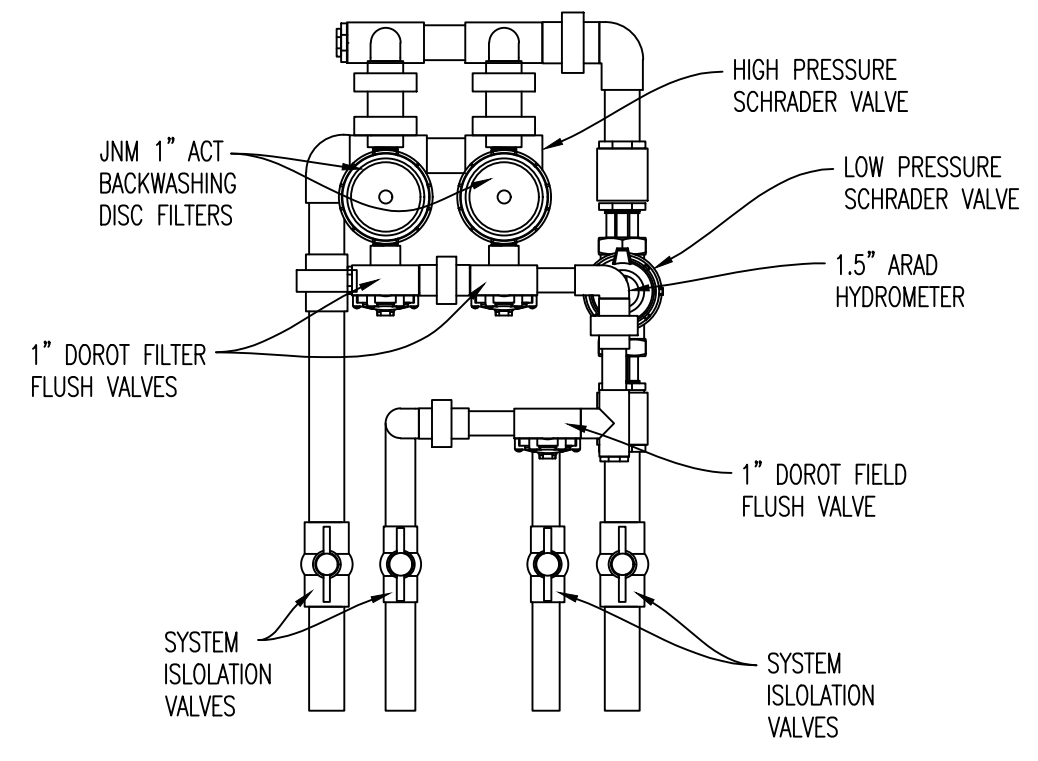
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
ISSUE DATE: 10/02/2024

CAD DWG FILE: C-SIT-C103  
DRAWN BY: JRS  
CHECKED BY: ATG  
DESIGNED BY: JRS

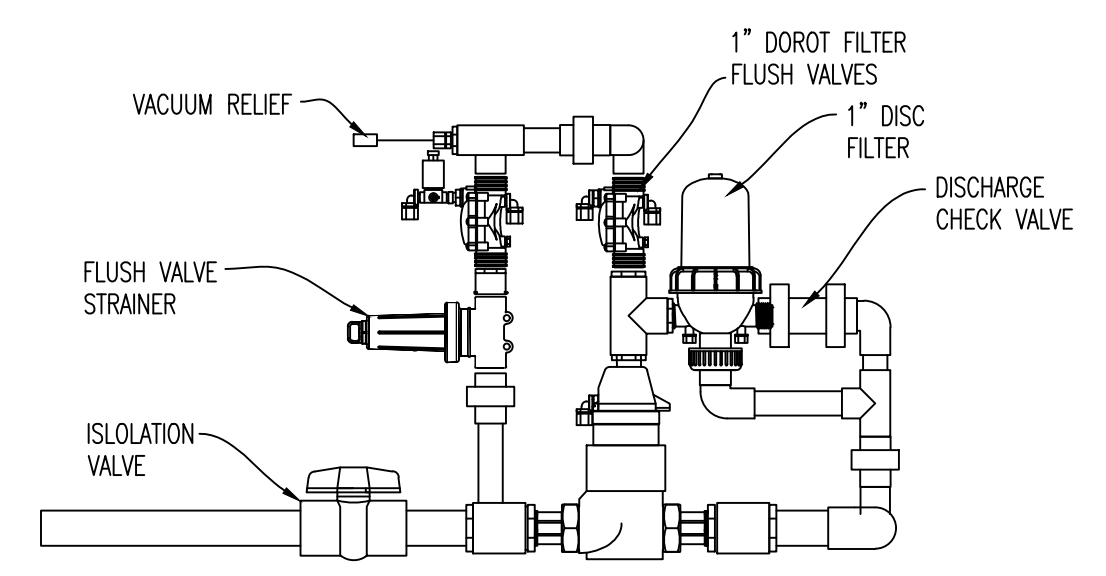
SHEET TITLE:  
  
DRIP IRRIGATION  
SITE PLAN

SHEET NUMBER:  
  
**C-103**

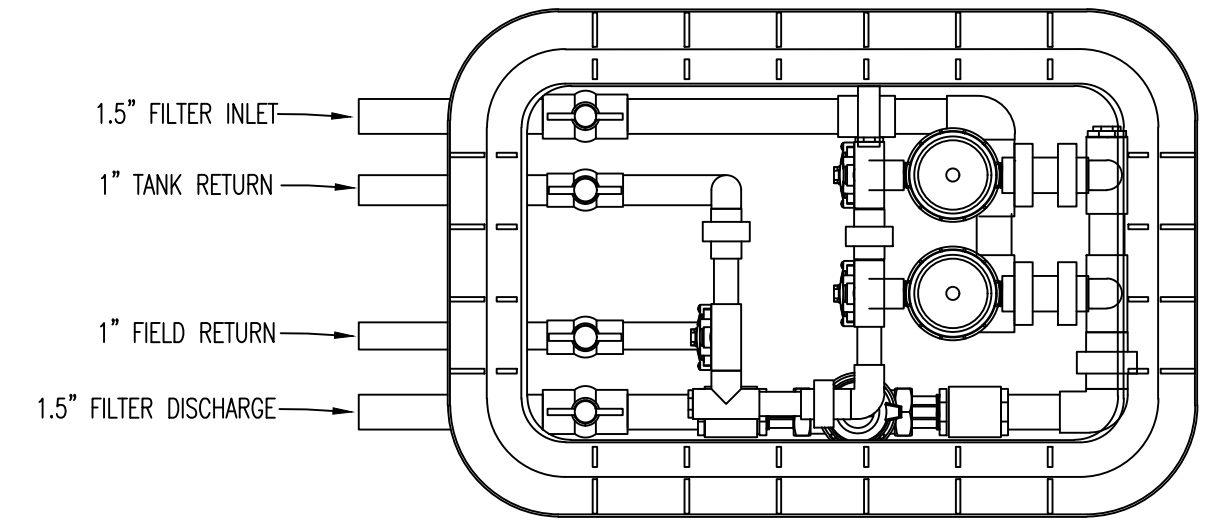




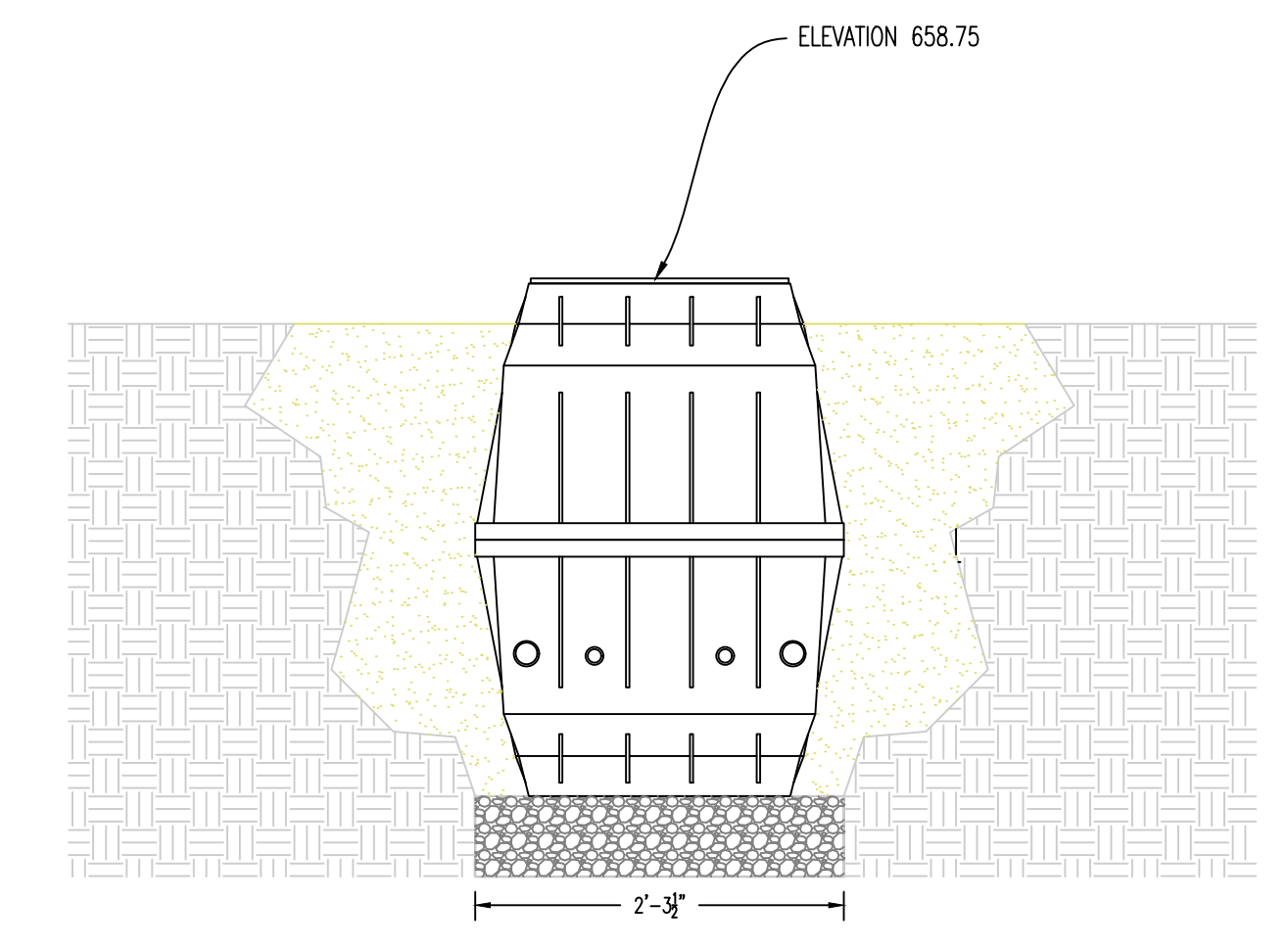
01 DRIP-TECH C200 - PLAN VIEW  
SCALE: NONE



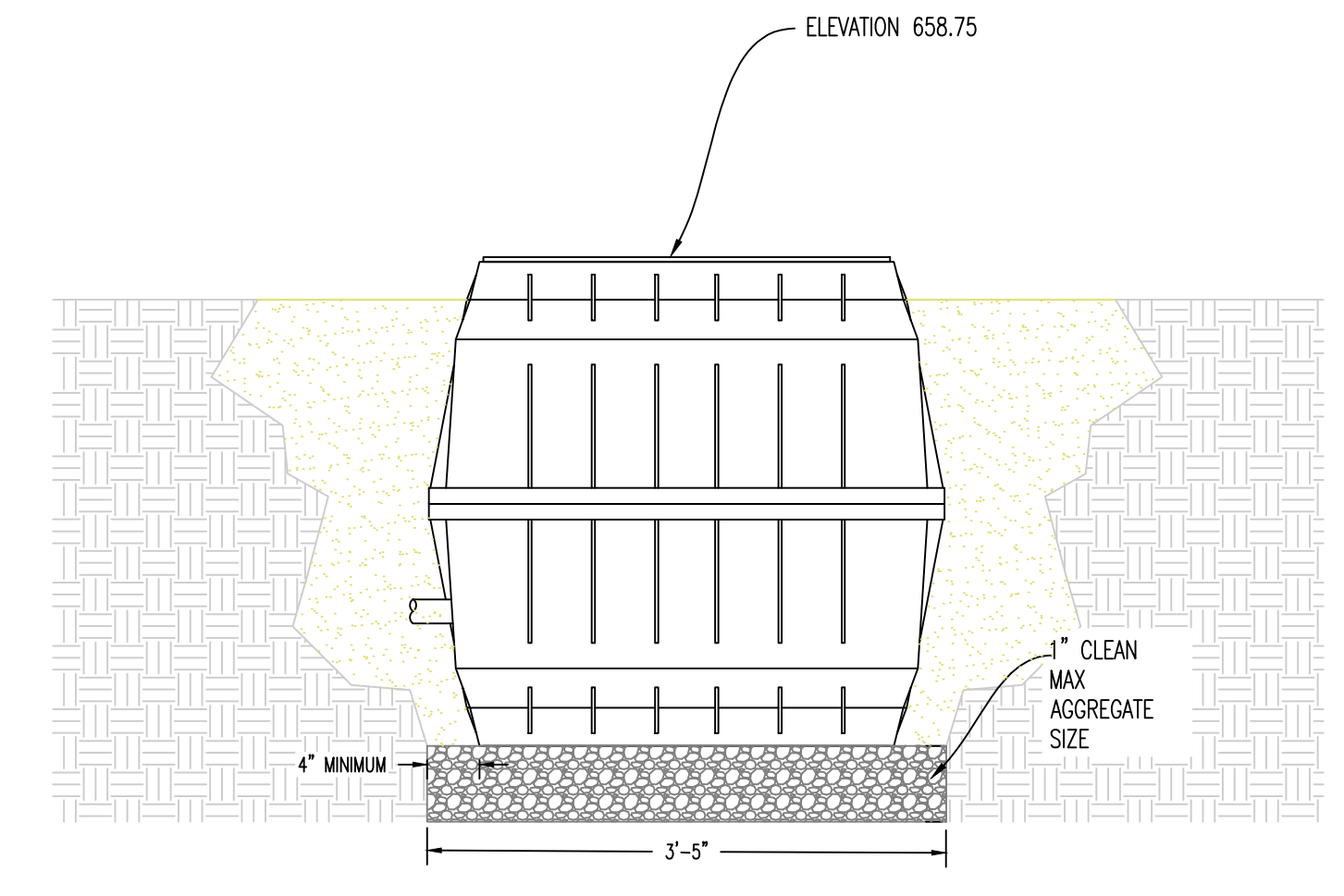
02 DRIP-TECH C200 - PROFILE VIEW  
SCALE: NONE



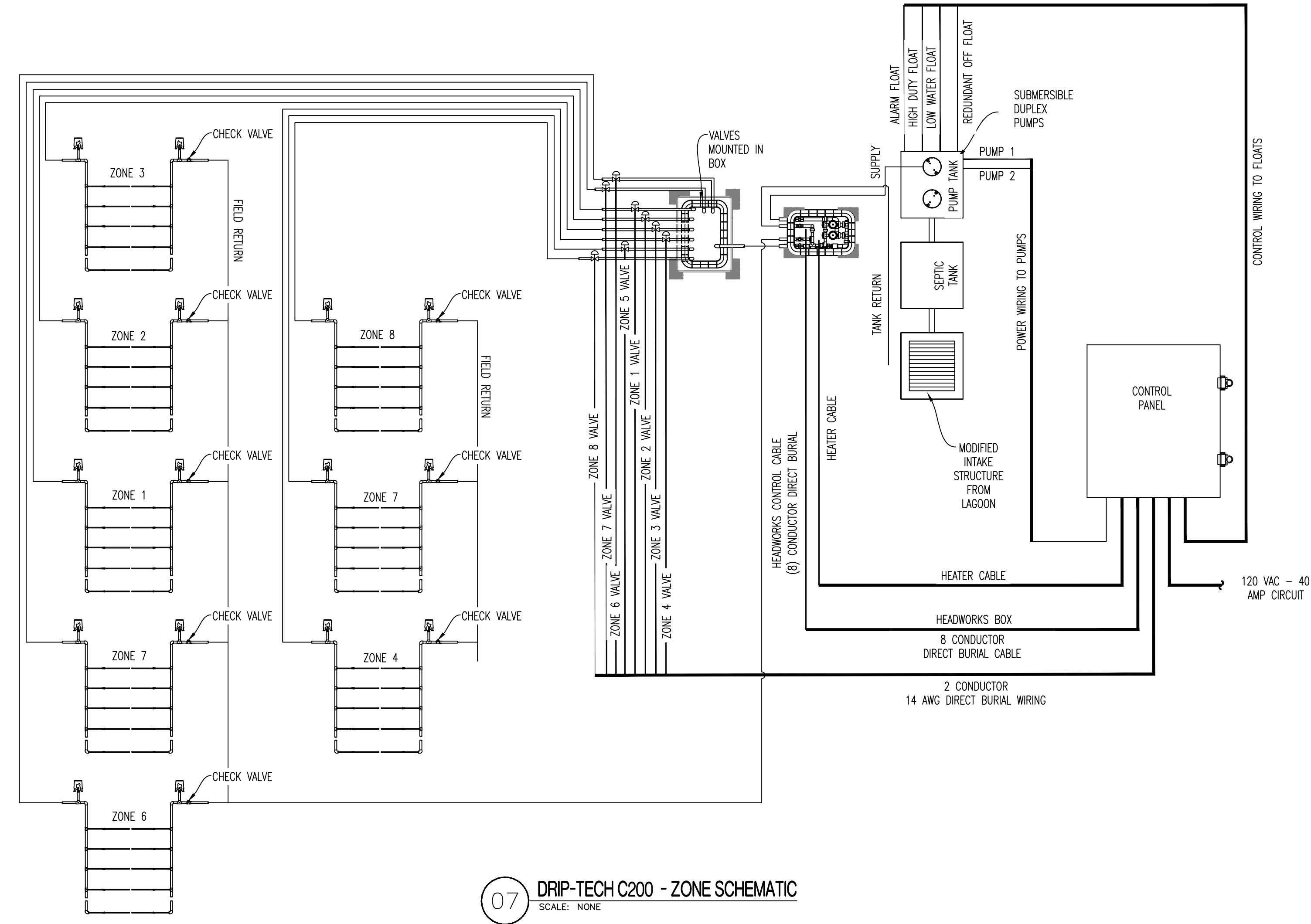
03 DRIP-TECH C200 - ENCLOSURE PLAN VIEW  
SCALE: NONE



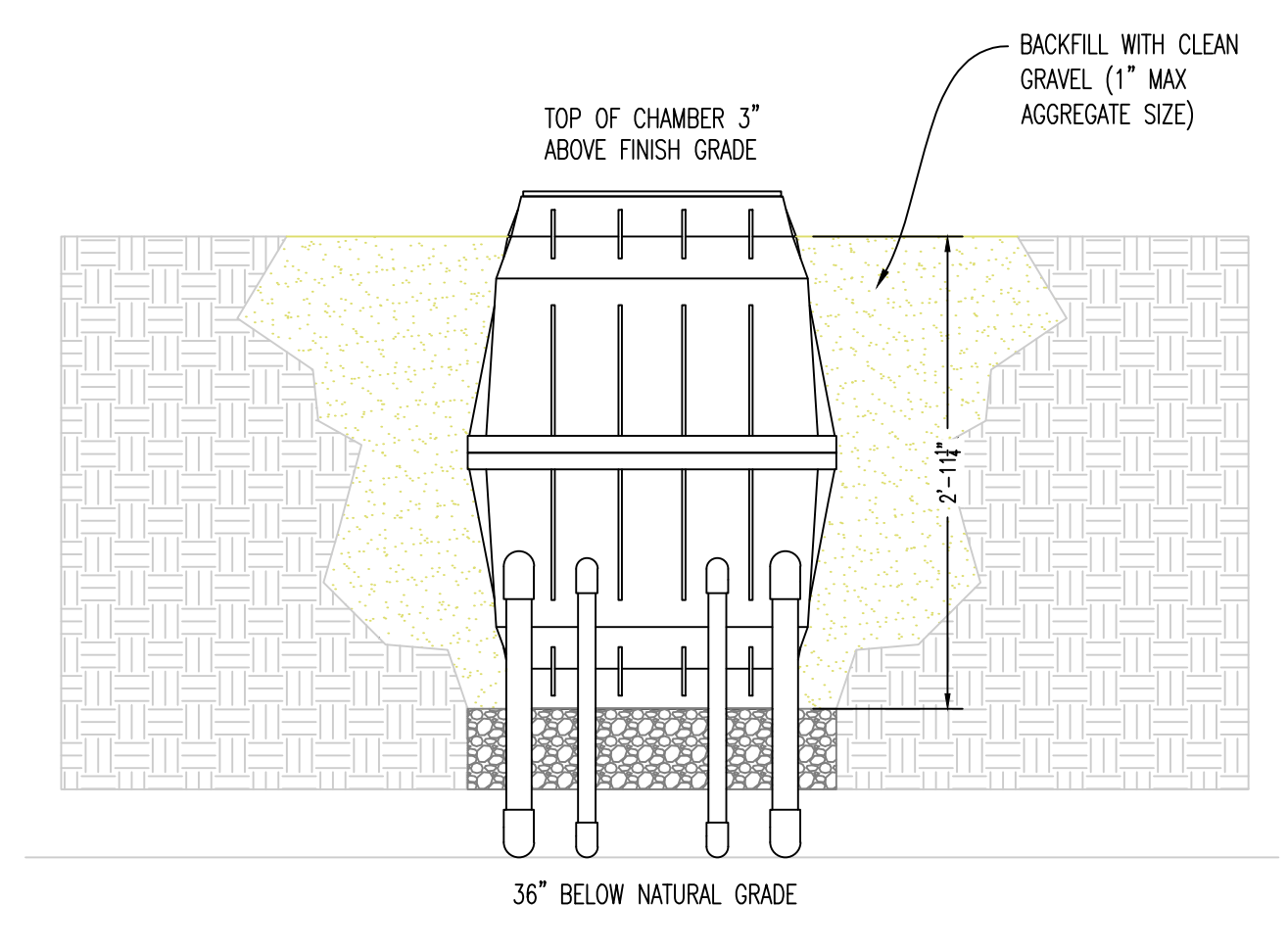
04 DRIP-TECH C200 - ELEVATION #1  
SCALE: NONE



05 DRIP-TECH C200 - ELEVATION #2  
SCALE: NONE



07 DRIP-TECH C200 - ZONE SCHEMATIC  
SCALE: NONE



06 DRIP-TECH C200 - ELEVATION #3  
SCALE: NONE

STATE OF MISSOURI  
MICHAEL L. PARSON,  
GOVERNOR



JESSE RAY STEPHENS  
MO LICENSE - 200000968



www.crockettengineering.com  
Crockett Engineering Consultants, LLC  
Missouri Certificate of Authority #200015101

OFFICE OF ADMINISTRATION  
DIVISION OF FACILITIES  
MANAGEMENT,  
DESIGN AND CONSTRUCTION

DEPARTMENT OF  
NATURAL RESOURCES  
MISSOURI STATE PARKS

SEWER RENOVATIONS  
TRACK LAGOON

FINGER LAKES STATE PARK  
1505 PEABODY ROAD  
COLUMBIA, MO 65202

PROJECT # X2334-01  
SITE # 5108  
ASSET # 7815108005

REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
ISSUE DATE: 10/02/2024

CAD DWG FILE: C-SIT-C201  
DRAWN BY: JRS  
CHECKED BY: ATG  
DESIGNED BY: JRS

SHEET TITLE:

FILTRATION  
EQUIPMENT  
DETAILS

SHEET NUMBER:

C-201





JESSE RAY STEPHENS  
MO LICENSE - 200000868



1000 W. Nifong Blvd., Bldg. 1  
Columbia, Missouri 65203  
(313) 447-0292  
www.crockettengineering.com  
Crockett Engineering Consultants, LLC  
Missouri Certificate of Authority #200015101

OFFICE OF ADMINISTRATION  
DIVISION OF FACILITIES  
MANAGEMENT,  
DESIGN AND CONSTRUCTION

DEPARTMENT OF  
NATURAL RESOURCES  
MISSOURI STATE PARKS

SEWER RENOVATIONS  
TRACK LAAGOON

FINGER LAKES STATE PARK  
1505 PEABODY ROAD  
COLUMBIA, MO 65202

PROJECT # X2334-01  
SITE # 5108  
ASSET # 7815108005

REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
ISSUE DATE: 10/02/2024

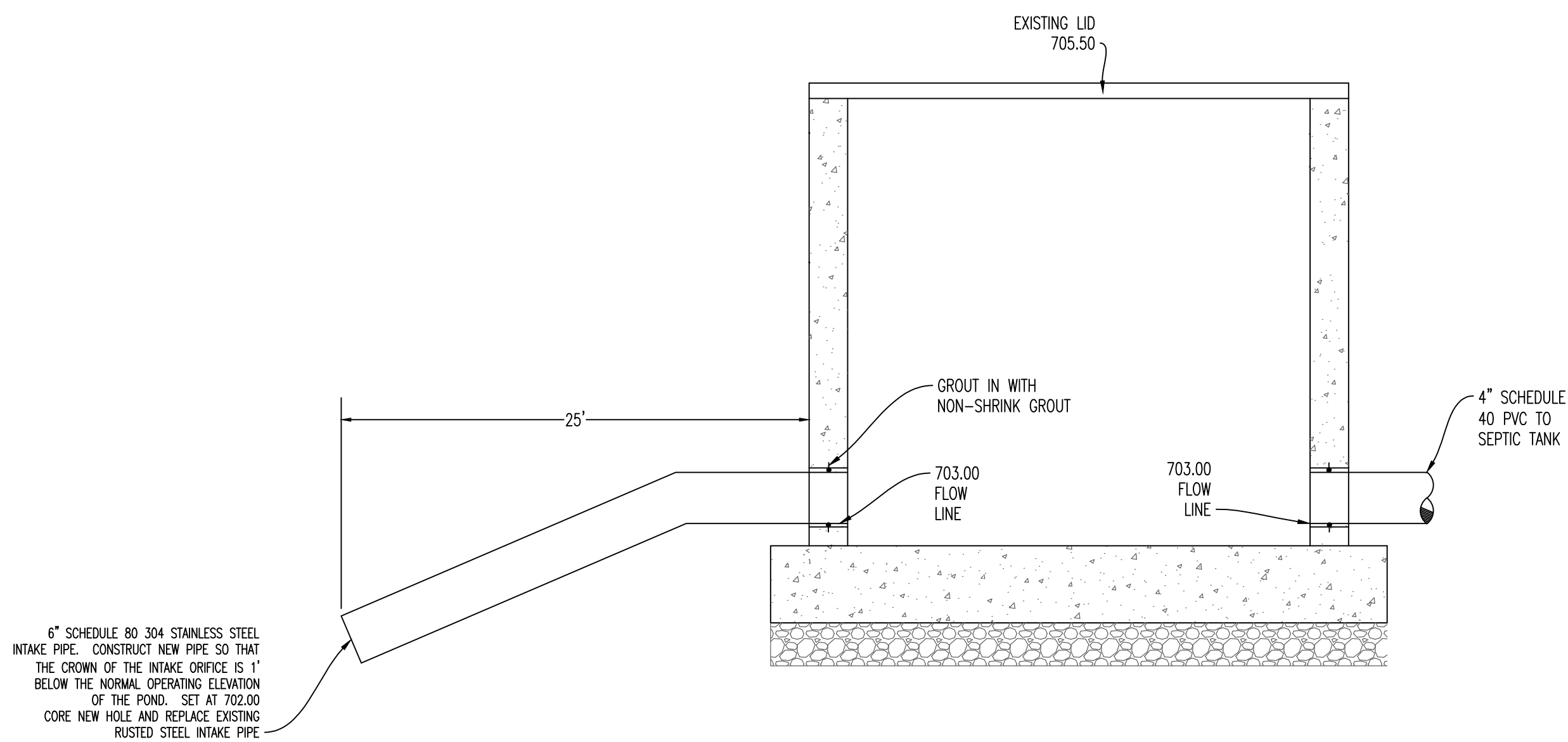
CAD DWG FILE: C-SIT-C202  
DRAWN BY: JRS  
CHECKED BY: ATG  
DESIGNED BY: JRS

SHEET TITLE:

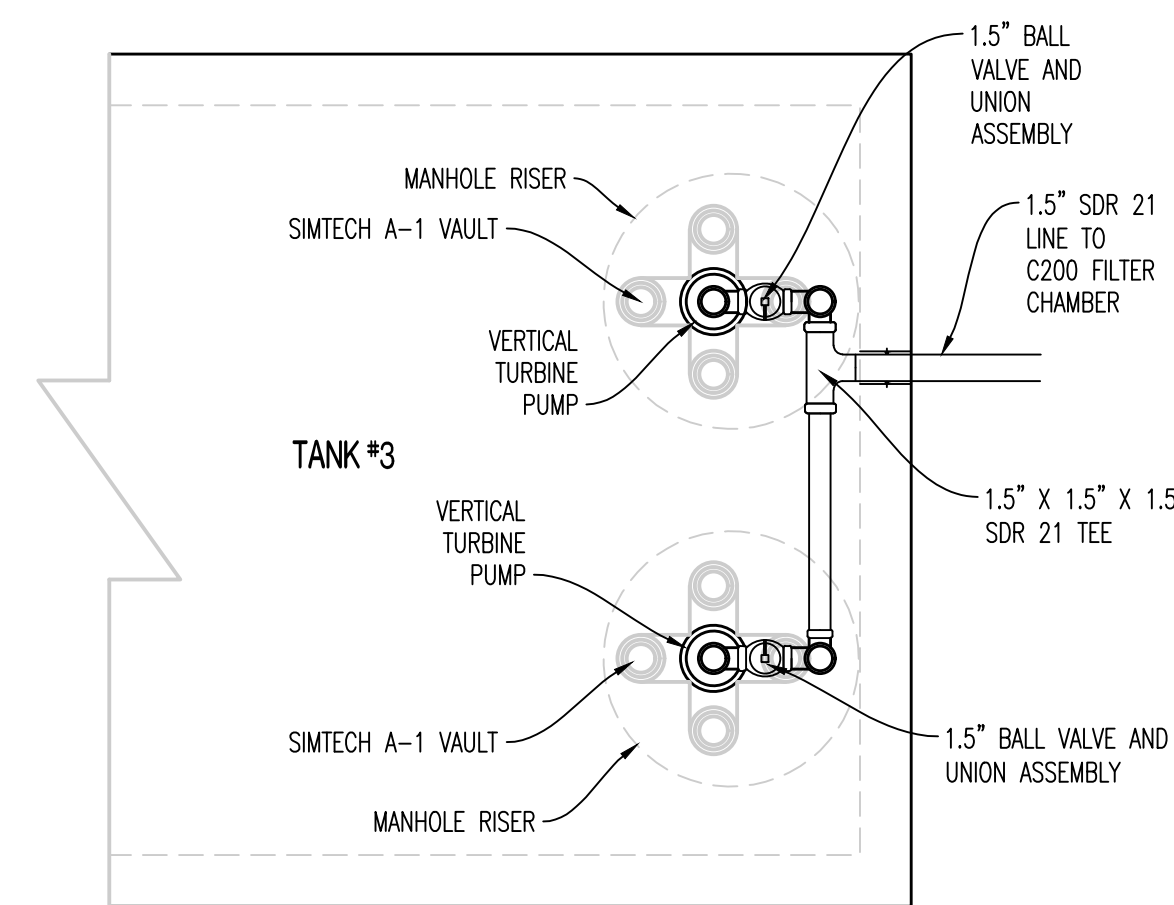
SEPTIC TANK AND  
PUMP VAULT  
DETAILS

SHEET NUMBER:

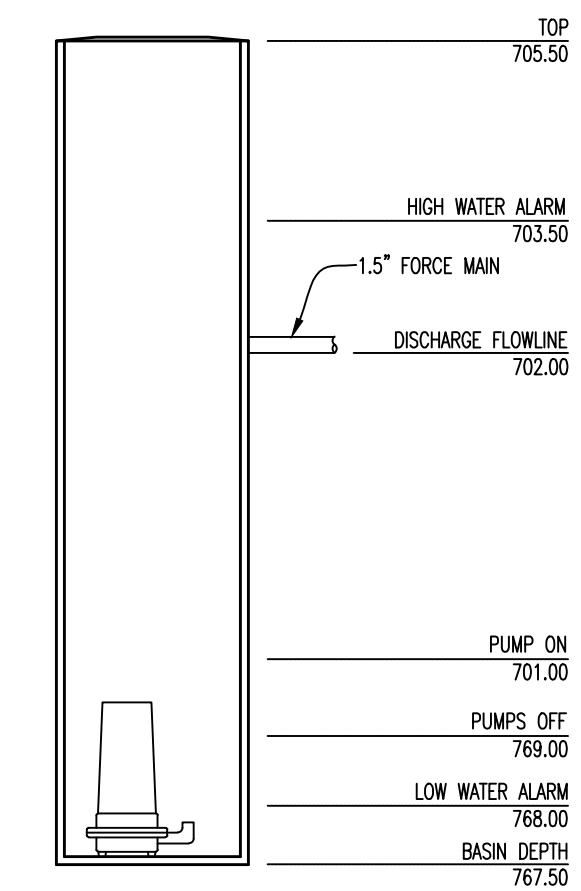
C-202



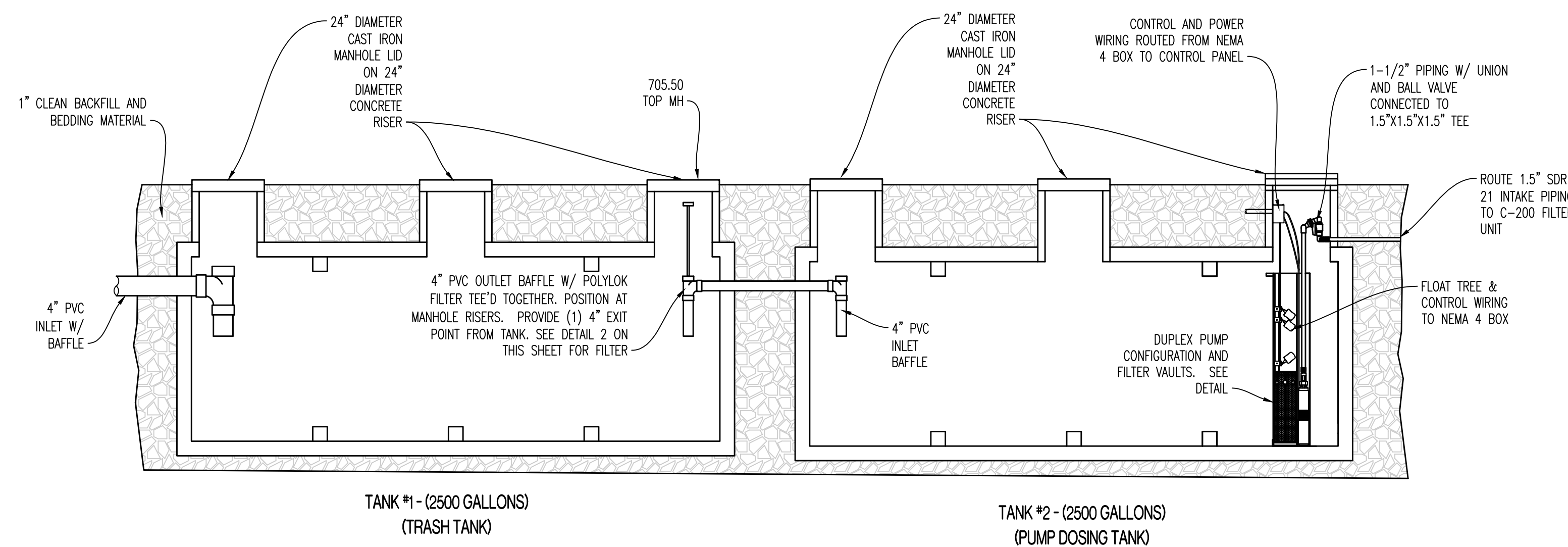
01 INTAKE STRUCTURE MODIFICATION DETAIL  
SCALE: NONE



03 DOSING PUMP FILTERS DETAIL  
SCALE: NONE



04 FLOAT ELEVATIONS  
SCALE: NONE



02 SEPTIC TANK AND PUMP SCHEMATIC  
SCALE: NONE

GENERAL NOTES:

CONTRACTOR SHALL PROVIDE (2) 2500 GALLON PRECAST CONCRETE SEPTIC TANKS WITH CONCRETE RISERS AND CAST IRON LIDS. PROVIDE A-LOK OR LINK SEAL PIPING CONNECTIONS AT ALL PENETRATIONS. PROVIDE SHOP DRAWING FOR EACH TANK AND PROVIDE ANTI-FLOTATION ANCHORAGE OR CALCULATIONS PROVING FLOTATION IS NOT POSSIBLE.

BOTH PUMPS SHALL BE FRANKLIN E-SERIES 1 H.P. FILTERED EFFLUENT PUMP - 120 VOLT SINGLE PHASE.

CONTRACTOR SHALL PROVIDE ALL NECESSARY SCHEDULE 80 PVC PIPING, COUPLINGS, FITTINGS, VALVES, AND ALL APPURTENANCES, EXCAVATING, BACKFILL, ETC. TO COMPLETE THE PUMP INSTALLATION AND CONSTRUCTION.

ALL ELECTRIC WORK SHALL COMPLY WITH NATIONAL ELECTRIC CODE. PUMP SUPPLIER SHALL PROVIDE WIRING DIAGRAMS FOR ALL COMPONENTS.

ALL BOLTS, NUTS, FASTENERS, BRACKETS, MOUNTS AND OTHER APPURTENANCES IN THE WET WELL SHALL BE STAINLESS STEEL.

PUMP SUPPLIER TO PROVIDE LEVEL CONTROL FLOATS AS SHOWN ON WET WELL SCHEMATIC. THESE FLOATS SHALL INTEGRATE WITH THE CONTROL PANEL.

PUMP STATION CONTROL PANEL ASSEMBLY SHALL INCLUDE A 120 VOLT GFCI DUPLEX SERVICE OUTLET, EXTERIOR ALARM WITH HORN AND STROBE, & LIGHTNING PROTECTION.

ALL PUMP EQUIPMENT AND INSTALLATION SHALL BE CERTIFIED BY THE EQUIPMENT SUPPLIER. PUMP MANUFACTURER AND CONTRACTOR SHALL PROVIDE A FACTORY START-UP AND TRAINING IN THE PRESENCE OF THE OWNERS REPRESENTATIVE.

THE CONTRACTOR SHALL WARRANTY THE PUMPS FOR A PERIOD OF ONE YEAR FOLLOWING START-UP.

COMPLETE OPERATION AND MAINTENANCE MANUALS SHALL BE PROVIDED TO THE OWNERS REPRESENTATIVE PRIOR TO ACCEPTANCE OF PUMPS.

SEPTIC TANK LIDS SHALL BE CAST IRON. ALL TANK RISERS SHOULD BE CONCRETE.

CONTROL PANEL SHALL BE CONFIGURED WHERE BOTH PUMPS ARE TO ALWAYS ALTERNATING AND NOT RUN SIMULTANEOUSLY. IT IS REQUIRED FOR PUMPS TO ALTERNATE USAGE TO ENSURE EVEN WEAR ON THE PUMPS.

NEW PIPE PENETRATIONS IN CONCRETE SHALL HAVE A LINK SEAL AT EACH PIPE PENETRATION.





JESSE RAY STEPHENS  
MO LICENSE - 200000968



OFFICE OF ADMINISTRATION  
DIVISION OF FACILITIES  
MANAGEMENT,  
DESIGN AND CONSTRUCTION

DEPARTMENT OF  
NATURAL RESOURCES  
MISSOURI STATE PARKS

SEWER RENOVATIONS  
TRACK LAAGOON

FINGER LAKES STATE PARK  
1505 PEABODY ROAD  
COLUMBIA, MO 65202

PROJECT # X2334-01  
SITE # 5108  
ASSET # 7815108005

REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
ISSUE DATE: 10/02/2024

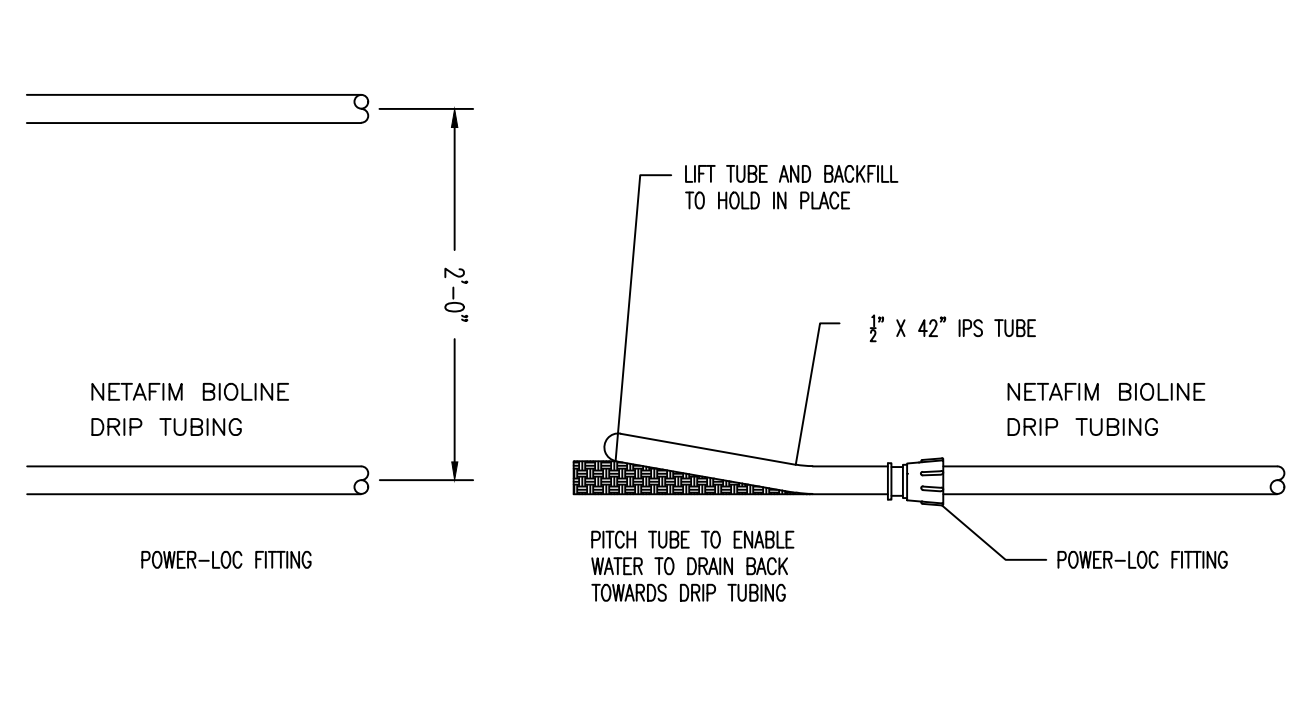
CAD DWG FILE: C-SIT-C203  
DRAWN BY: JRS  
CHECKED BY: ATG  
DESIGNED BY: JRS

SHEET TITLE:

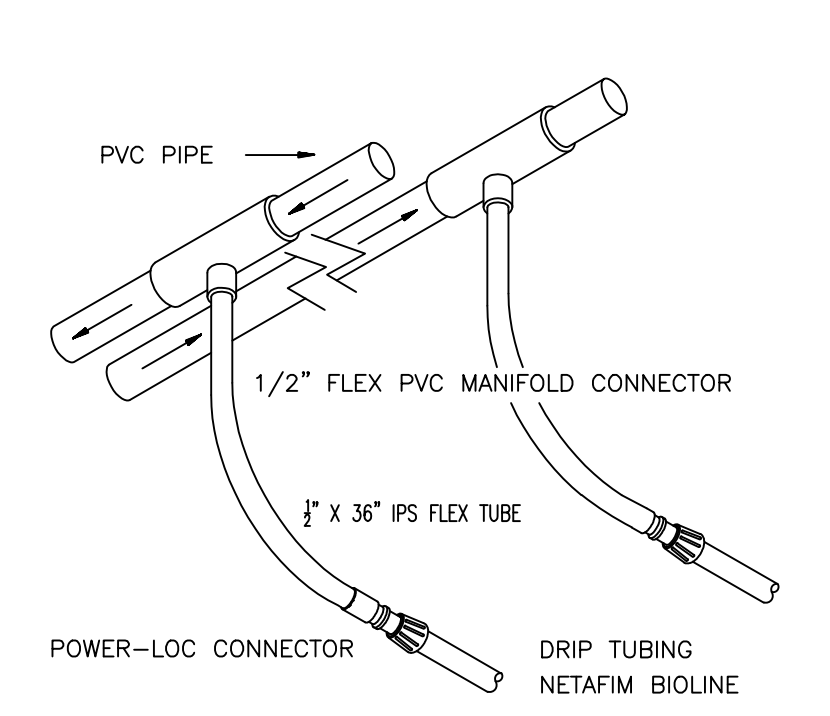
D RIP IRRIGATION  
DETAILS (1 OF 2)

SHEET NUMBER:

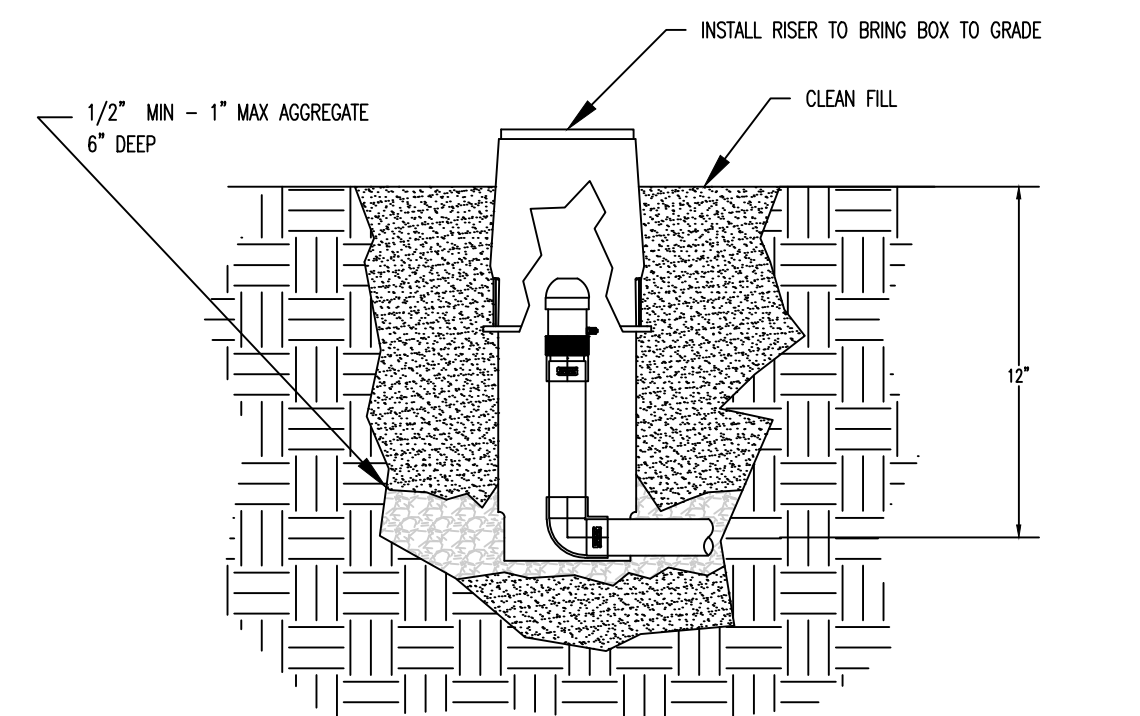
C-203



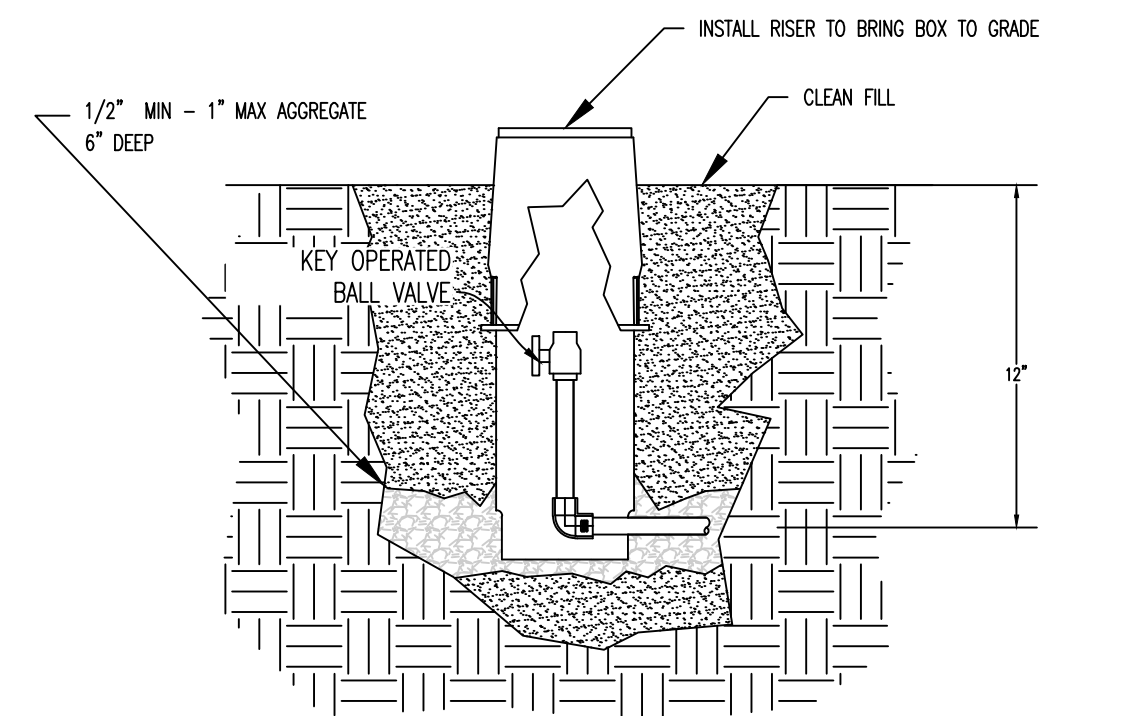
01 TYPICAL 2 FT LOOP  
INSTALLATION DETAIL  
SCALE: NONE



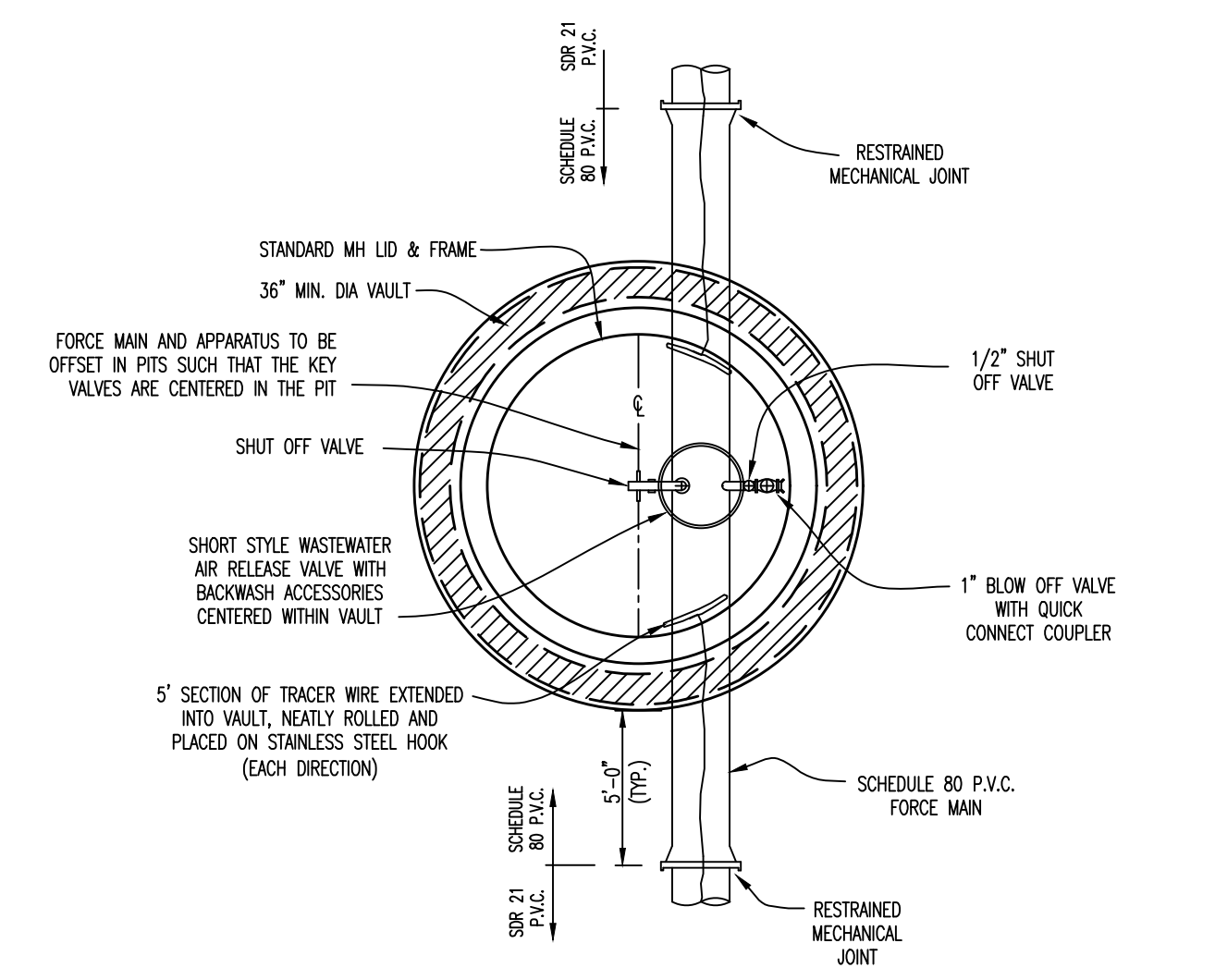
02 MANIFOLD CONNECTION  
LOOPED FIELD  
SCALE: NONE



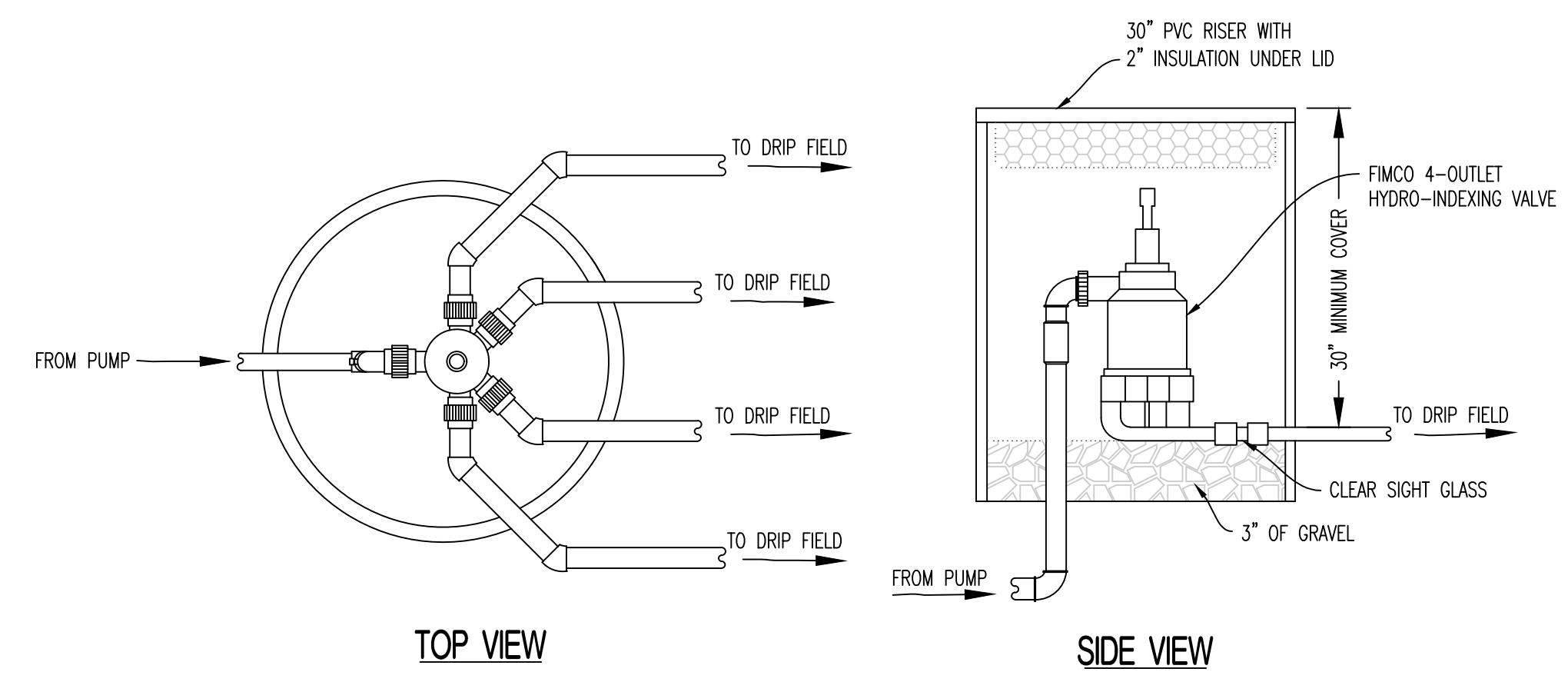
03 2' ARI GUARDIAN AV DETAIL  
SCALE: NONE



04 CLEAN OUT DETAIL  
SCALE: NONE

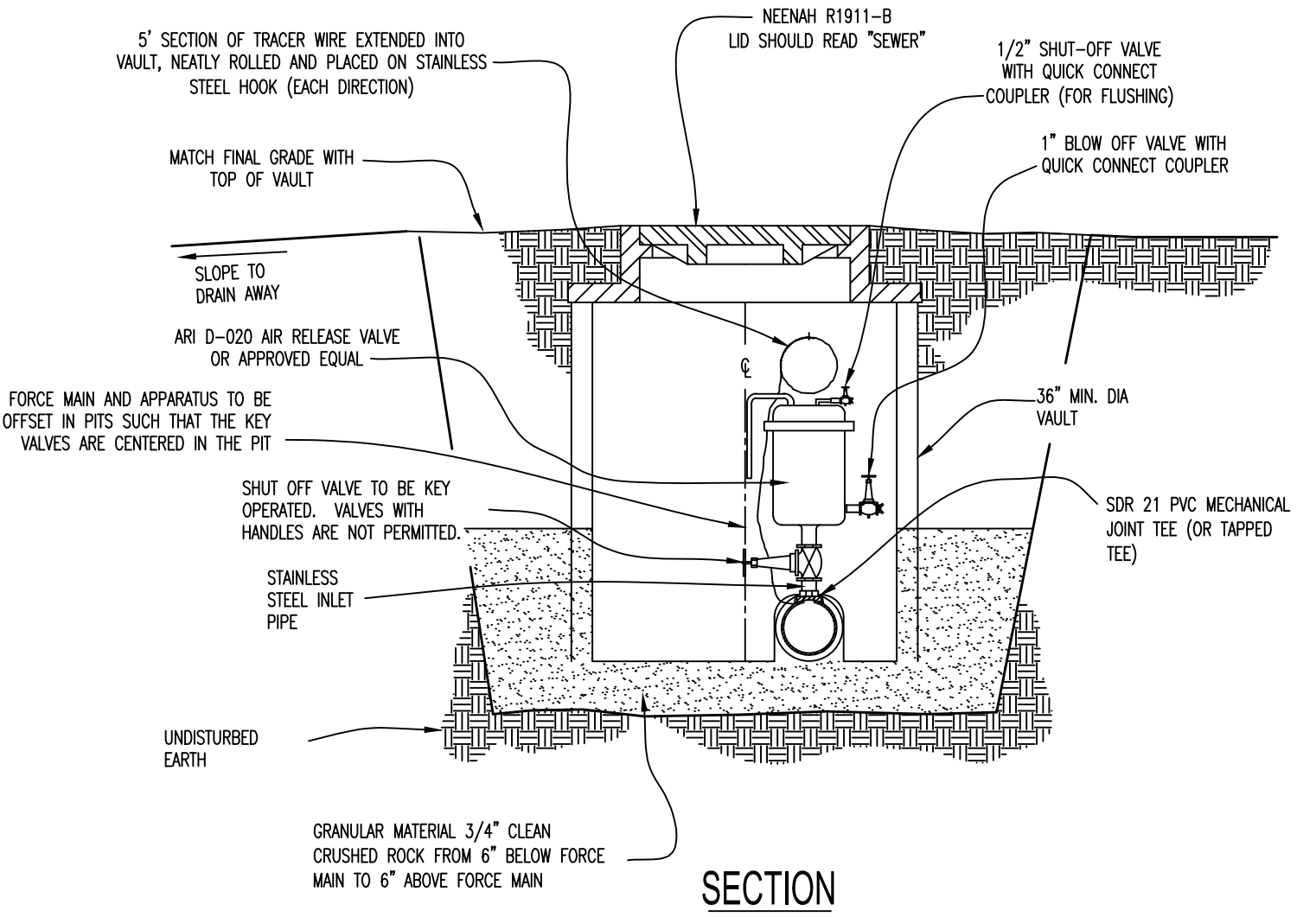


AIR RELEASE VALVE VAULT (PLAN VIEW)

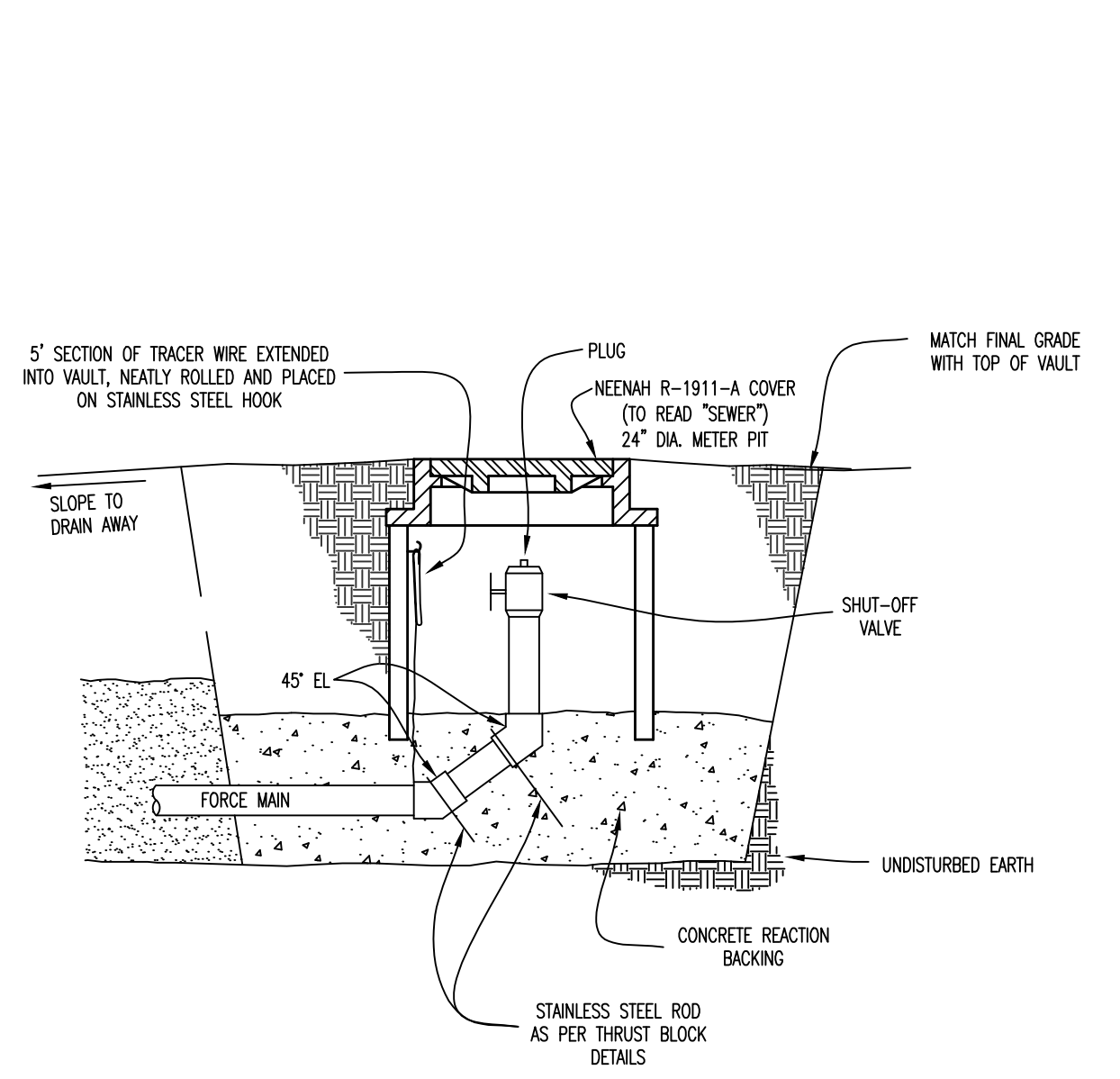


NOTE:  
1. REFER TO PLANS FOR QUANTITY OF VALVE OUTLETS

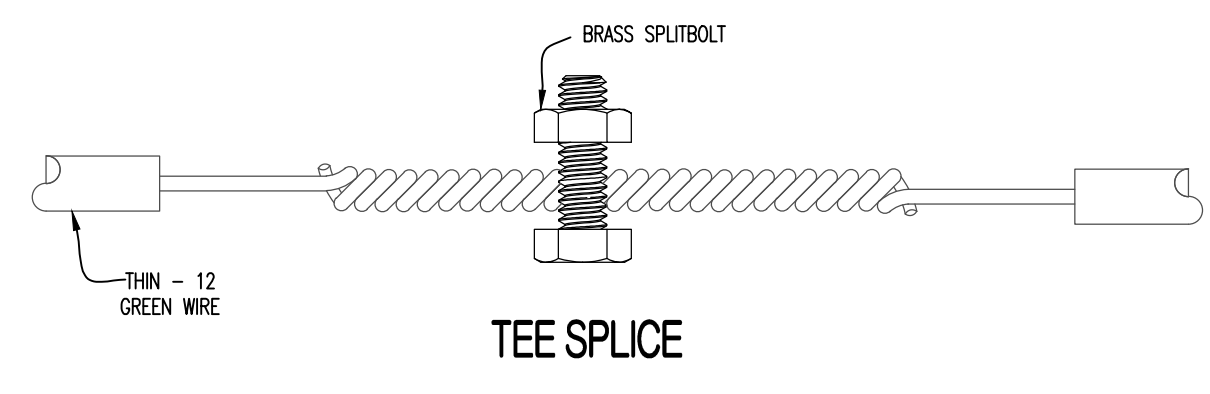
05 HYDRO-INDEXING VALVE AND VALVE PIT  
SCALE: NONE



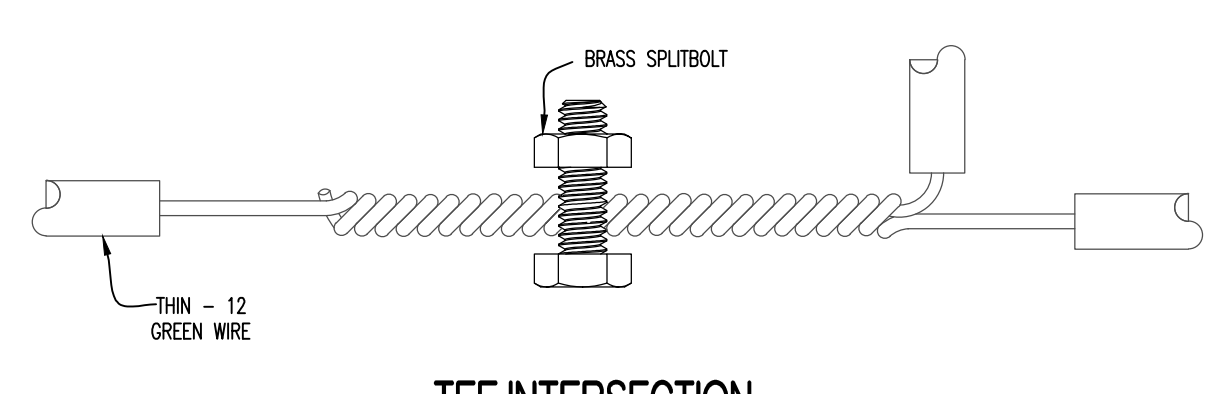
06 FORCE MAIN  
AIR RELEASE DETAIL  
SCALE: NONE



07 END OF FORCE MAIN  
CLEANOUT DETAIL  
SCALE: NONE



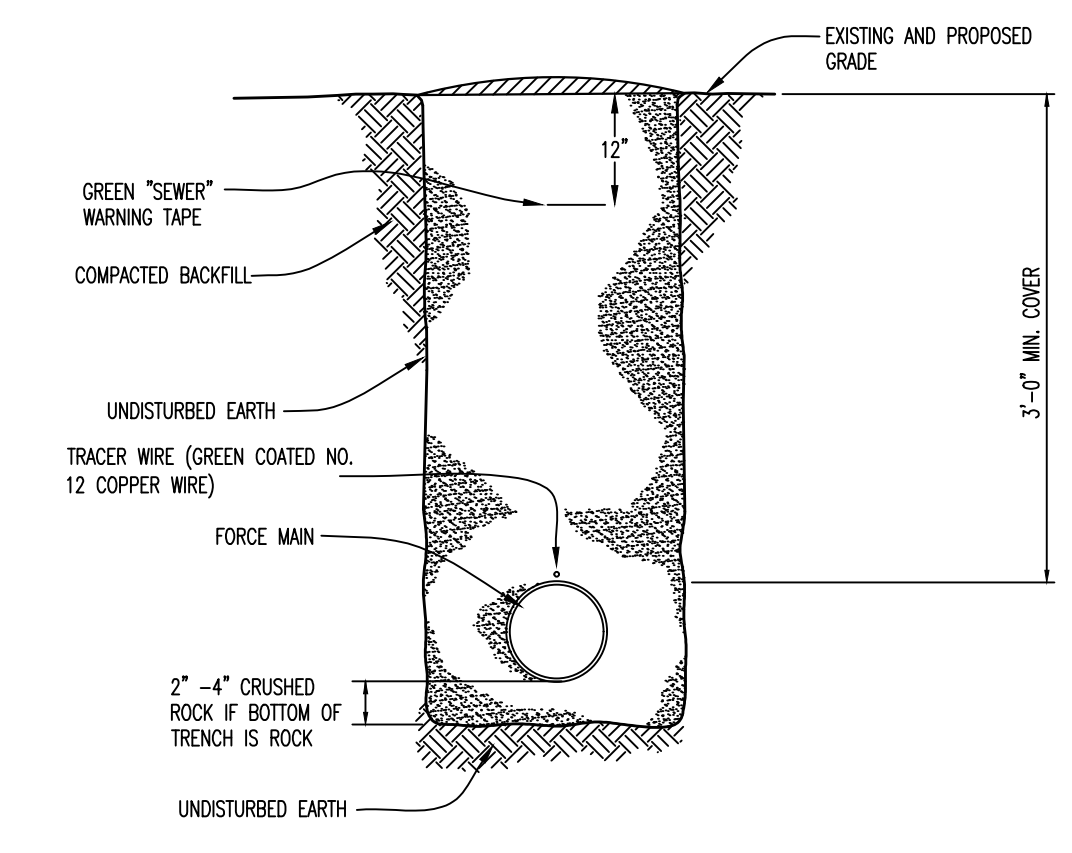
TEE SPLICE



TEE INTERSECTION

NOTE: AT TEE INTERSECTION, REMOVE INSULATION ONLY. DO NOT CUT MAIN LOCATOR WIRE.  
WIRE TO BE 12 GAUGE SOLID COPPER WITH THIN GREEN INSULATION.  
SPLICE OR CONNECTION TO BE DOUBLE WRAP TAPED WITH 4\"

08 TRACER WIRE  
SPlicing  
SCALE: NONE



09 DISTRIBUTION AND  
RETURN MAINS TRENCH DETAIL  
SCALE: NONE





JESSE RAY STEPHENS  
MO LICENSE - 200000968



1000 W. Nifong Blvd., Bldg. 1  
Columbia, Missouri 65203  
(573) 447-0292

www.crockettengineering.com

Crockett Engineering Consultants, LLC  
Missouri Certificate of Authority #200015101

OFFICE OF ADMINISTRATION  
DIVISION OF FACILITIES  
MANAGEMENT,  
DESIGN AND CONSTRUCTION

DEPARTMENT OF  
NATURAL RESOURCES  
MISSOURI STATE PARKS

SEWER RENOVATIONS  
TRACK LAGOON

FINGER LAKES STATE PARK  
1505 PEABODY ROAD  
COLUMBIA, MO 65202

PROJECT # X2334-01  
SITE # 5108  
ASSET # 7815108005

REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_

ISSUE DATE: 10/02/2024

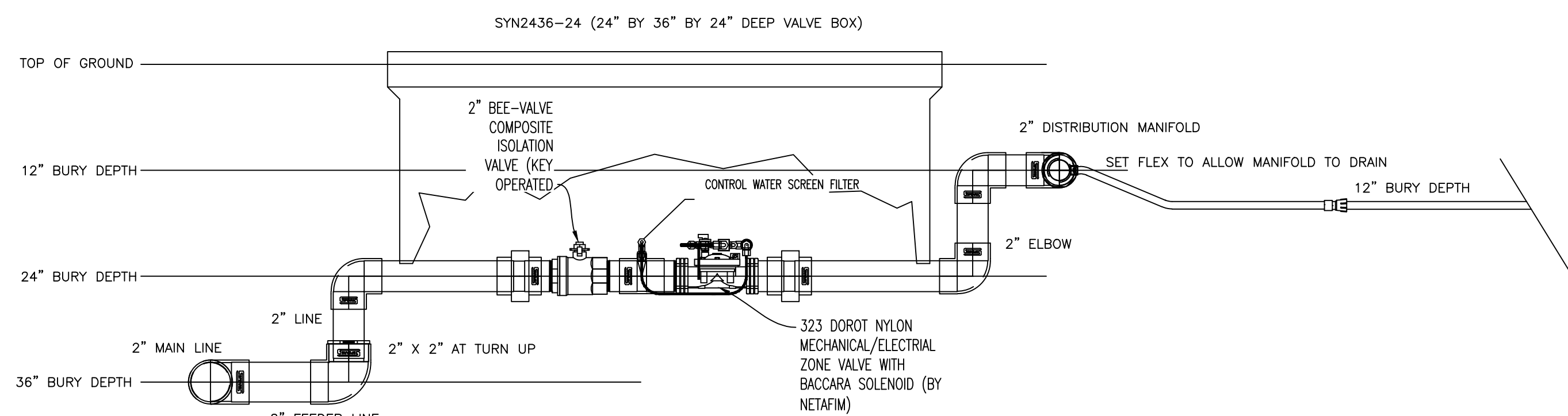
CAD DWG FILE: C-SIT-C204  
DRAWN BY: JRS  
CHECKED BY: ATG  
DESIGNED BY: JRS

SHEET TITLE:

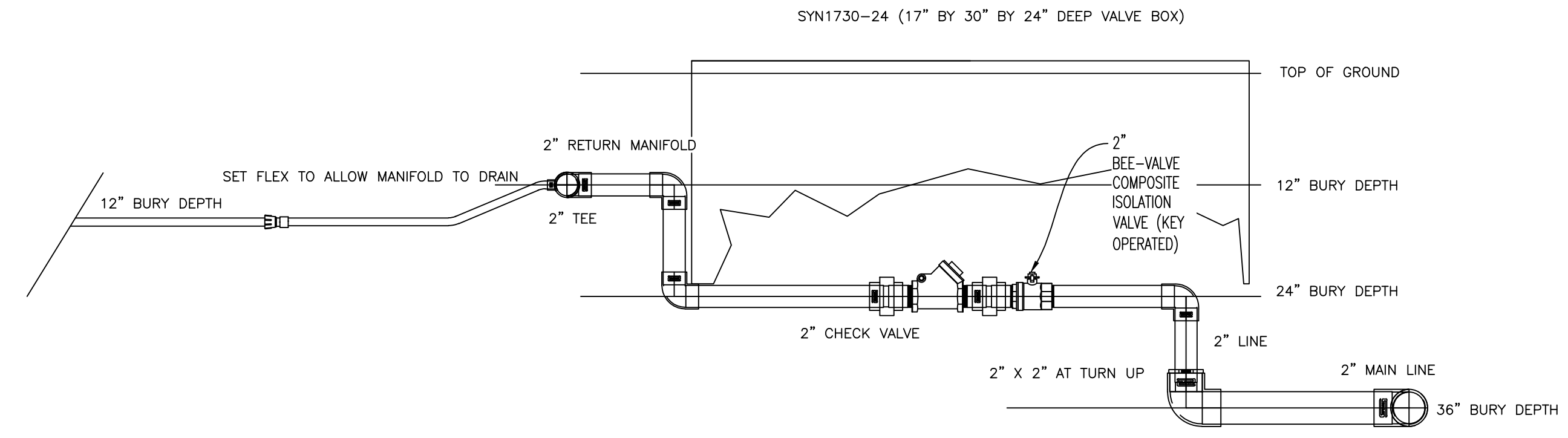
DRIP IRRIGATION  
DETAILS (2 OF 2)

SHEET NUMBER:

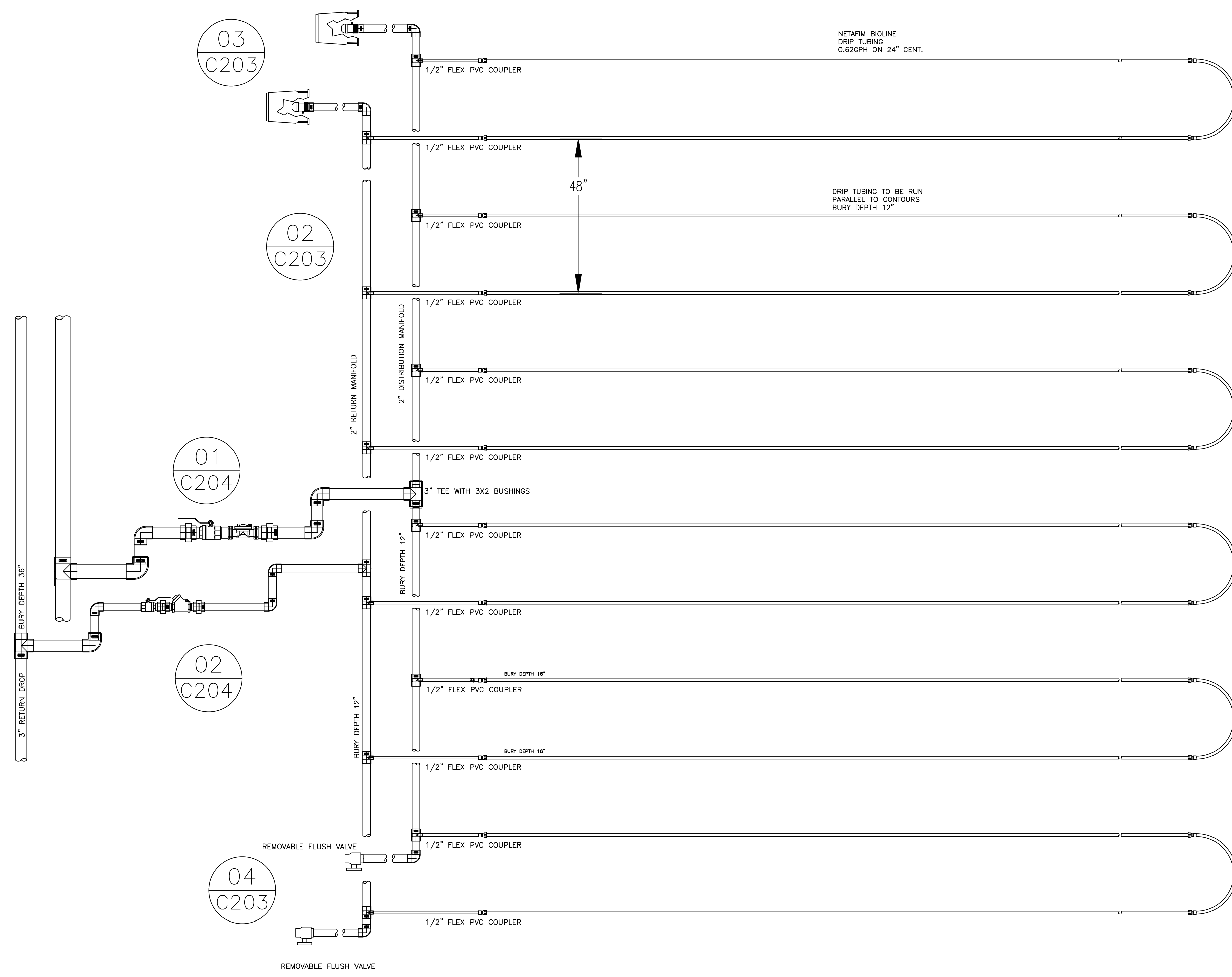
C-204



01 SUPPLY VALVE DETAIL FOR  
TYPICAL STANDARD MANIFOLD  
SCALE: NONE



02 RETURN CHECK VALVE DETAIL FOR  
TYPICAL STANDARD MANIFOLD  
SCALE: NONE



03 TYPICAL STANDARD MANIFOLD LOOPED  
SCALE: NONE





JESSE RAY STEPHENS  
MO LICENSE - 200000868



www.crockettengineering.com  
Crockett Engineering Consultants, LLC  
Missouri Certificate of Authority #200015101

OFFICE OF ADMINISTRATION  
DIVISION OF FACILITIES  
MANAGEMENT,  
DESIGN AND CONSTRUCTION

DEPARTMENT OF  
NATURAL RESOURCES  
MISSOURI STATE PARKS

SEWER RENOVATIONS  
TRACK LAGOON

FINGER LAKES STATE PARK  
1505 PEABODY ROAD  
COLUMBIA, MO 65202

PROJECT # X2334-01  
SITE # 5108  
ASSET # 7815108005

REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_  
REVISION: \_\_\_\_\_  
DATE: \_\_\_\_\_

ISSUE DATE: 10/02/2024

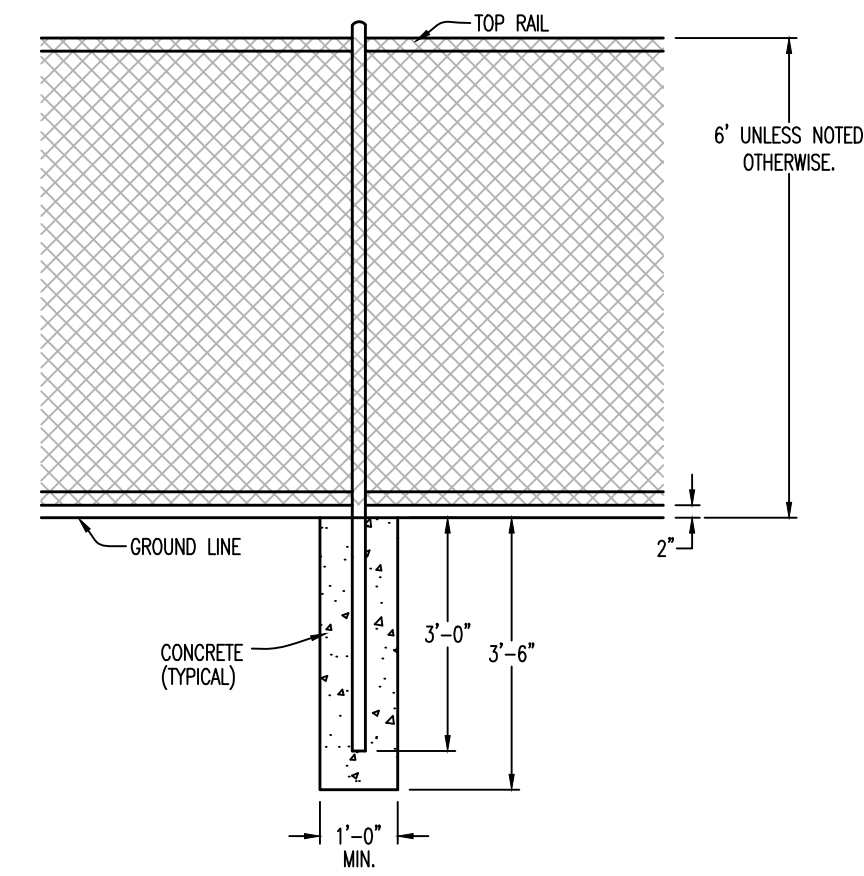
CAD DWG FILE: C-SIT-C205  
DRAWN BY: JRS  
CHECKED BY: ATG  
DESIGNED BY: JRS

SHEET TITLE:

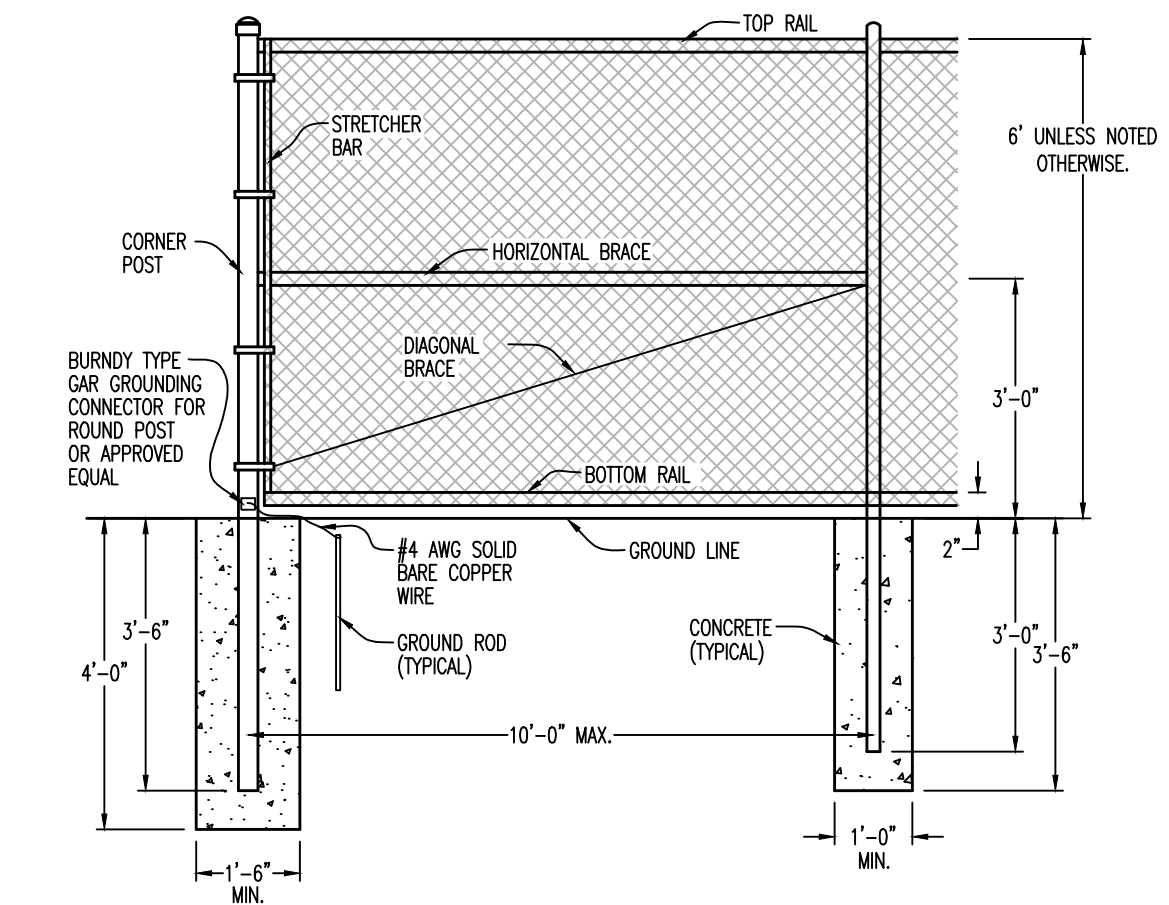
SITE  
CONSTRUCTION  
DETAILS

SHEET NUMBER:

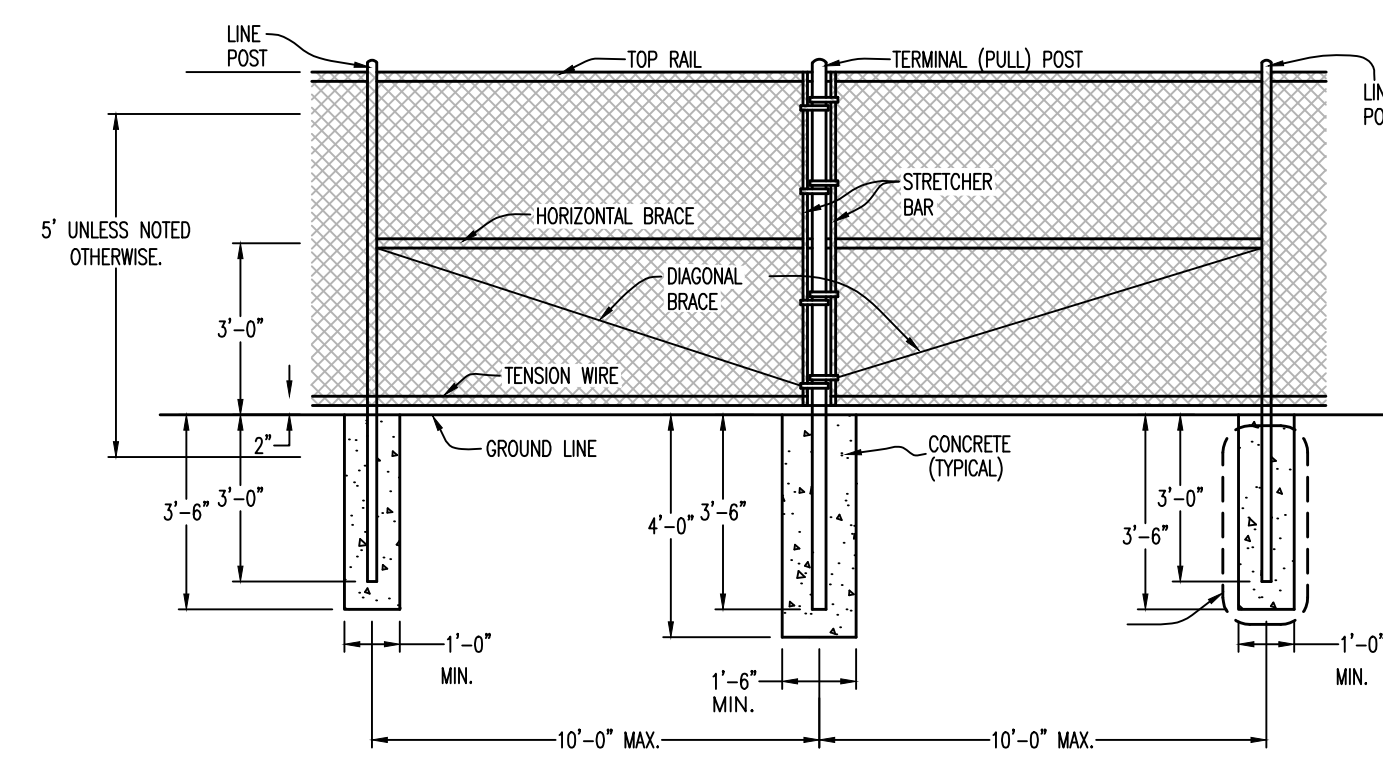
C-205



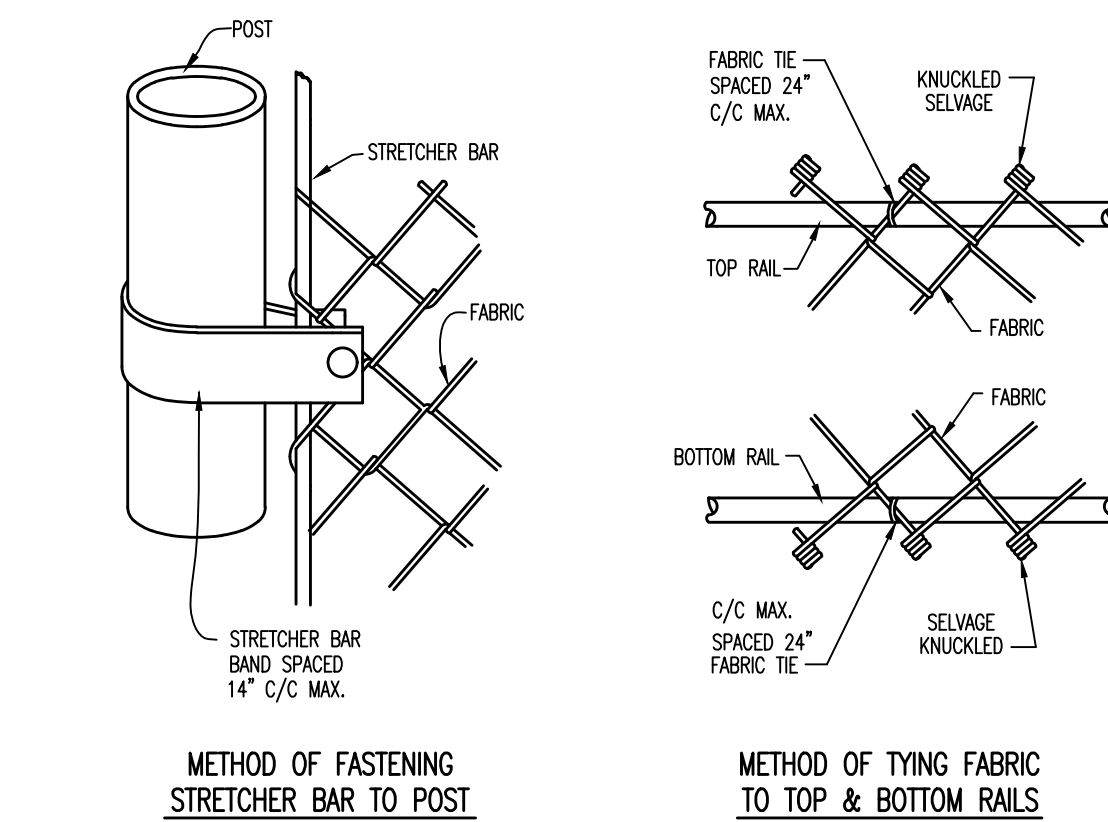
STANDARD LINE POST



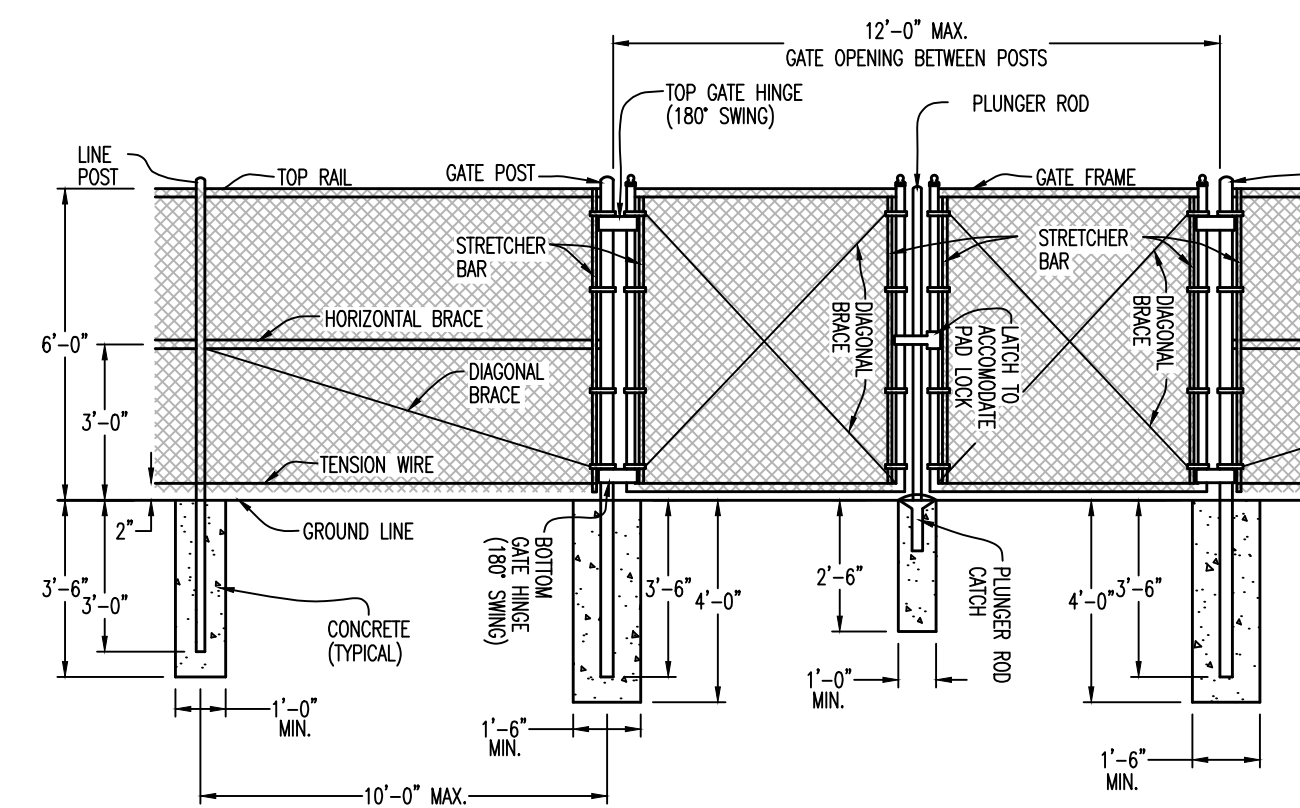
STANDARD CORNER



STANDARD PULL POST



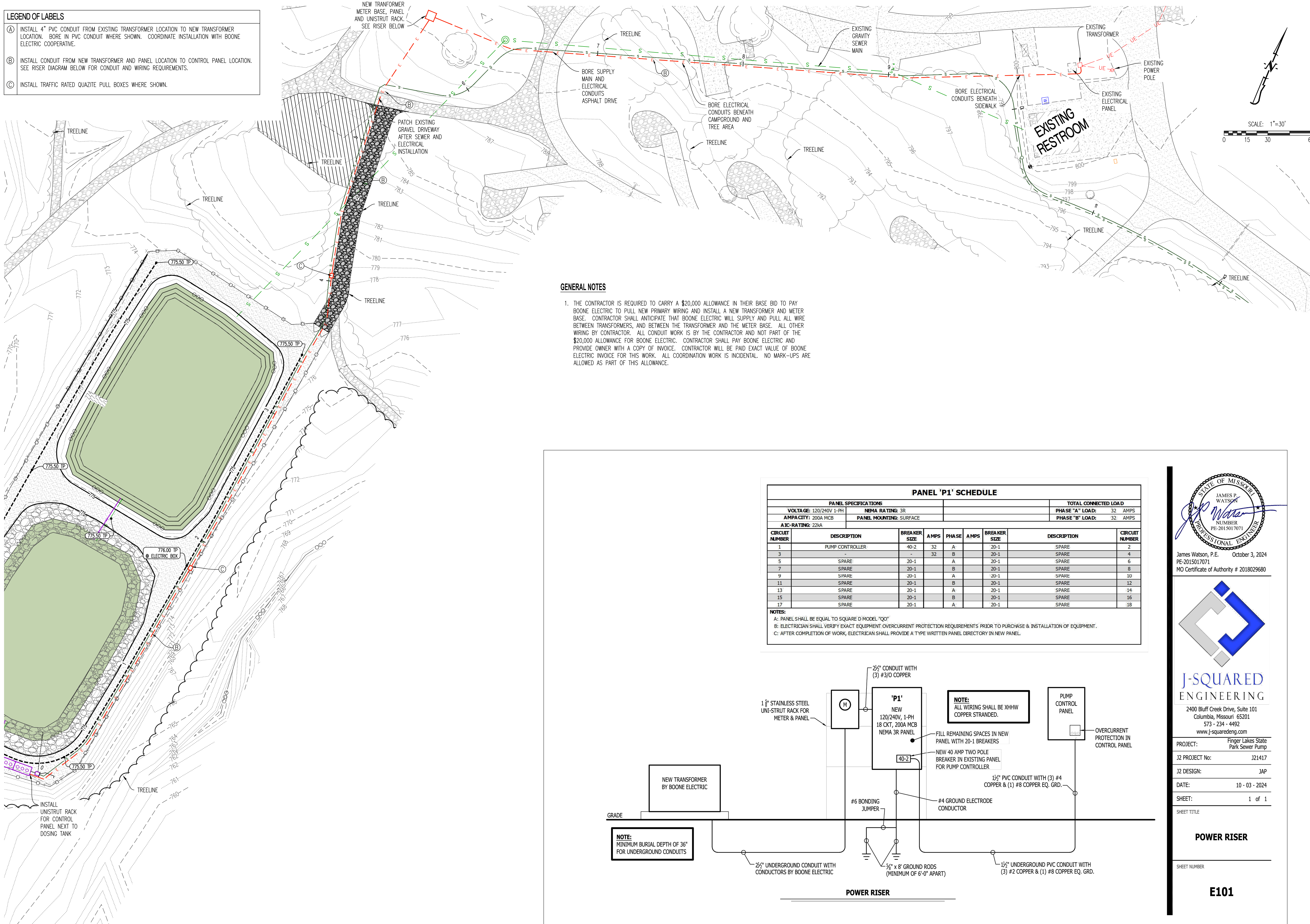
FASTENING & TYING



STANDARD PULL GATE  
CHAIN LINK FENCE DETAILS



- LEGEND OF LABELS**
- (A) INSTALL 4" PVC CONDUIT FROM EXISTING TRANSFORMER LOCATION TO NEW TRANSFORMER LOCATION. BORE IN PVC CONDUIT WHERE SHOWN. COORDINATE INSTALLATION WITH BOONE ELECTRIC COOPERATIVE.
  - (B) INSTALL CONDUIT FROM NEW TRANSFORMER AND PANEL LOCATION TO CONTROL PANEL LOCATION. SEE RISER DIAGRAM BELOW FOR CONDUIT AND WIRING REQUIREMENTS.
  - (C) INSTALL TRAFFIC RATED QUARTZITE PULL BOXES WHERE SHOWN.

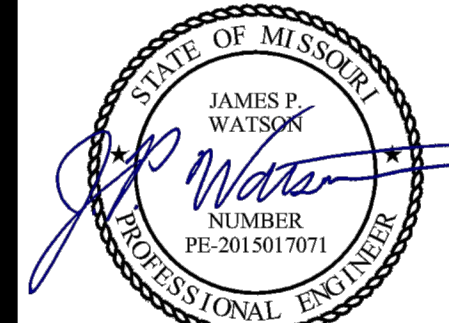
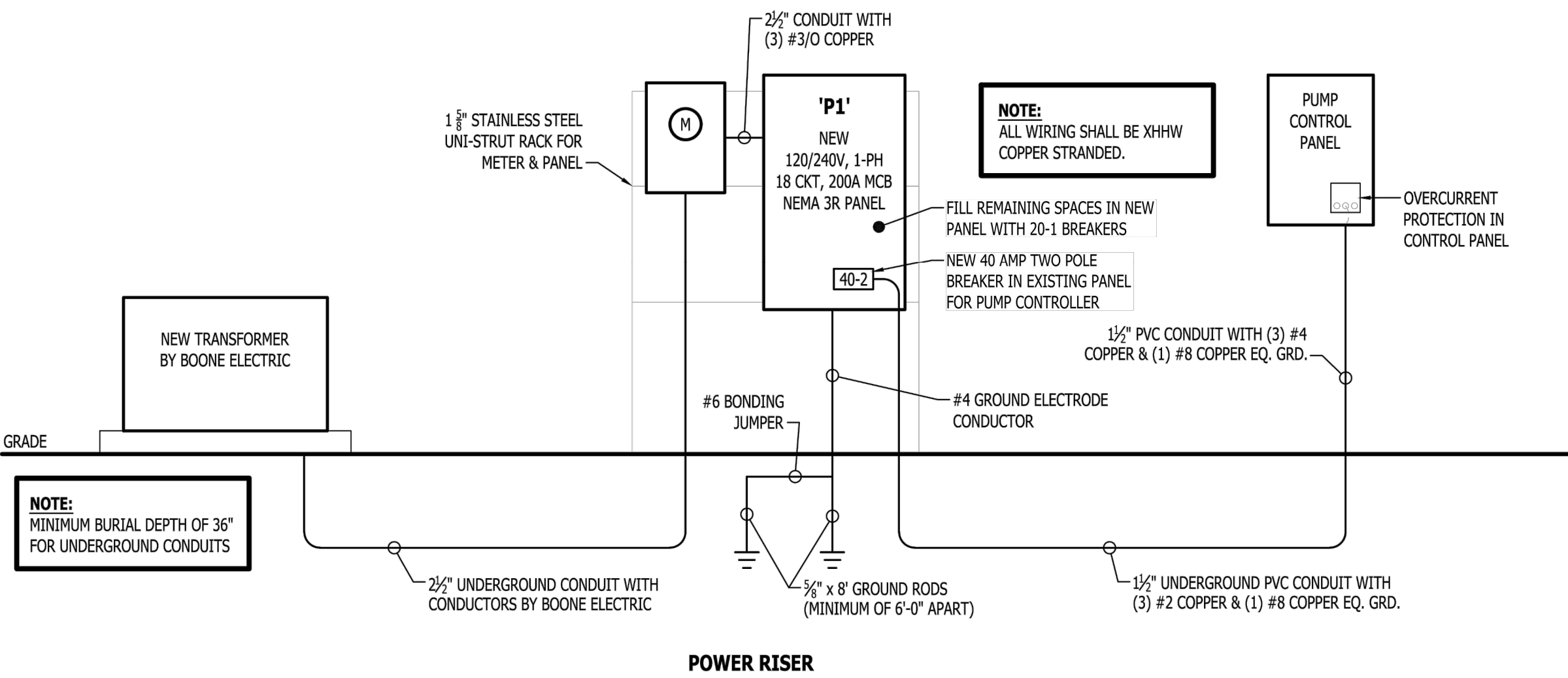


**GENERAL NOTES**

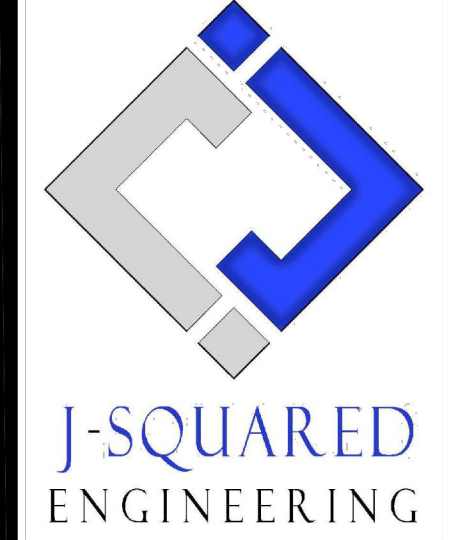
1. THE CONTRACTOR IS REQUIRED TO CARRY A \$20,000 ALLOWANCE IN THEIR BASE BID TO PAY BOONE ELECTRIC TO PULL NEW PRIMARY WIRING AND INSTALL A NEW TRANSFORMER AND METER BASE. CONTRACTOR SHALL ANTICIPATE THAT BOONE ELECTRIC WILL SUPPLY AND PULL ALL WIRE BETWEEN TRANSFORMERS, AND BETWEEN THE TRANSFORMER AND THE METER BASE. ALL OTHER WIRING BY CONTRACTOR. ALL CONDUIT WORK IS BY THE CONTRACTOR AND NOT PART OF THE \$20,000 ALLOWANCE FOR BOONE ELECTRIC. CONTRACTOR SHALL PAY BOONE ELECTRIC AND PROVIDE OWNER WITH A COPY OF INVOICE. CONTRACTOR WILL BE PAID EXACT VALUE OF BOONE ELECTRIC INVOICE FOR THIS WORK. ALL COORDINATION WORK IS INCIDENTAL. NO MARK-UPS ARE ALLOWED AS PART OF THIS ALLOWANCE.

PANEL 'P1' SCHEDULE							
PANEL SPECIFICATIONS						TOTAL CONNECTED LOAD	
VOLTAGE: 120/240V 1-PH		NEMA RATING: 3R				PHASE 'A' LOAD: 32 AMPS	
AMPACITY: 200A MCB		PANEL MOUNTING: SURFACE				PHASE 'B' LOAD: 32 AMPS	
AIC-RATING: 22KA							
CIRCUIT NUMBER	DESCRIPTION	BREAKER SIZE	AMPS	PHASE	BREAKER SIZE	DESCRIPTION	CIRCUIT NUMBER
1	PUMP CONTROLLER	40-2	32	A	20-1	SPARE	2
3				B	20-1	SPARE	4
5	SPARE	20-1		A	20-1	SPARE	6
7	SPARE	20-1		B	20-1	SPARE	8
9	SPARE	20-1		A	20-1	SPARE	10
11	SPARE	20-1		B	20-1	SPARE	12
13	SPARE	20-1		A	20-1	SPARE	14
15	SPARE	20-1		B	20-1	SPARE	16
17	SPARE	20-1		A	20-1	SPARE	18

**NOTES:**  
 A: PANEL SHALL BE EQUAL TO SQUARE D MODEL 'QO'  
 B: ELECTRICIAN SHALL VERIFY EXACT EQUIPMENT OVERCURRENT PROTECTION REQUIREMENTS PRIOR TO PURCHASE & INSTALLATION OF EQUIPMENT.  
 C: AFTER COMPLETION OF WORK, ELECTRICIAN SHALL PROVIDE A TYPE WRITTEN PANEL DIRECTORY IN NEW PANEL.



James Watson, P.E. October 3, 2024  
 PE-2015017071  
 MO Certificate of Authority # 2018029680



2400 Bluff Creek Drive, Suite 101  
 Columbia, Missouri 65201  
 573 - 234 - 4492  
 www.j-squaredeng.com  
 PROJECT: Finger Lakes State Park Sewer Pump  
 J2 PROJECT No: J21417  
 J2 DESIGN: JAP  
 DATE: 10 - 03 - 2024  
 SHEET: 1 of 1  
 SHEET TITLE

**POWER RISER**  
**E101**

STATE OF MISSOURI  
 MICHAEL L. PARSON,  
 GOVERNOR



JESSE RAY STEPHENS  
 MO LICENSE # 200000968

**CROCKETT**  
 ENGINEERING CONSULTANTS  
 1000 W. Nifong Blvd., Bldg. 1  
 Columbia, Missouri 65203  
 (573) 447-0292  
 www.crockettengineering.com  
 Crockett Engineering Consultants, LLC  
 Missouri Certificate of Authority #200015101

OFFICE OF ADMINISTRATION  
 DIVISION OF FACILITIES  
 MANAGEMENT,  
 DESIGN AND CONSTRUCTION

DEPARTMENT OF  
 NATURAL RESOURCES  
 MISSOURI STATE PARKS

SEWER RENOVATIONS  
 TRACK LAAGOON

FINGER LAKES STATE PARK  
 1505 PEABODY ROAD  
 COLUMBIA, MO 65202

PROJECT # X2334-01  
 SITE # 5108  
 ASSET # 7815108005

REVISION: \_\_\_\_\_  
 DATE: \_\_\_\_\_  
 REVISION: \_\_\_\_\_  
 DATE: \_\_\_\_\_  
 REVISION: \_\_\_\_\_  
 DATE: \_\_\_\_\_  
 ISSUE DATE: 10/02/2024

CAD DWG FILE: C-SIT-E-101  
 DRAWN BY: JRS  
 CHECKED BY: ATG  
 DESIGNED BY: JRS

SHEET TITLE:  
 ELECTRICAL PLAN

SHEET NUMBER:

**E-101**