WATER SYSTEM IMPROVEMENTS
STOCKTON STATE PARK
DADEVILLE, MISSOURI

06/24/2024

OWNERS: STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

MISSOURI DEPARTMENT OF
NATURAL RESOURCES
MISSOURI STATE PARKS

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

PROJECT #: X2323-02

SITE #: 5602

ASSET #: 7815602019

N
W E
S

SECTION 14, TOWNSHIP 33N, RANGE 26W
CEDAR COUNTY, MISSOURI

BENCHMARK/CONTROL POINT TABLE

CONTROL POINT TABLE

Point No.	Northing	Easting	Elevation	Description
1	272219.3386	1405291.7581	965.17	CP1 60D
2	272098.8723	1405097.0978	957.31	CP2 60D
3	271457.1901	1405287.2088	940.53	CP3 60D
4	271437.3401	1405108.5624	939.23	CP4 60D

DESIGNER:

GREAT RIVER ENGINEERING
2826 S. INGRAM MILL ROAD
SPRINGFIELD, MO 65804
PHONE: (417) 886-7171
www.greatriv.com

GRE GREAT RIVER ENGINEERING

Great River Engineering
Missouri State Certificate of Authority Numbers:
Engineering: 2000156885, Land Surveying: 2001011476,
Landscape Architecture: 2007013673

SHEET INDEX

UTILITY CONTACTS

ELECTRIC
OZARK ELECTRIC COOPERATIVE, INC.
PHONE: 417-466-2144

WATER & SANITARY SEWER
STOCKTON STATE PARK WATER SYSTEM
LULLEL HICKMAN
PHONE: (417) 276-4259

UTILITY DISCLAIMER
THE UNDERGROUND UTILITIES DEPICTED ON THIS SURVEY, ARE THOSE DISCOVERED BY FIELD INSPECTION, OR LOCATED BY UTILITY COMPANY REPRESENTATIVES; AND MAY NOT BE ALL THE UTILITIES ON OR NEAR THE PROPERTY. AFTER USING REASONABLE CARE IN THE LOCATION OF THOSE UTILITIES SHOWN, WE REFRAIN FROM WARRANTING EITHER THE LOCATION OF, OR COMPLETENESS OF, THOSE UTILITIES SHOWN, AS BEING ALL UTILITIES POSSIBLY AFFECTING THE SUBJECT PROPERTY.

MISSOURI ONE CALL SYSTEM, INC. 1-800-344-7483 STOP-CALL BEFORE YOU DIG!

STATE OF MISSOURI
CONNIE M. WALDEN
NUMBER PE-2022008888
6-26-2024
PROFESSIONAL ENGINEER

SHEET NUMBER:
G-001
1 OF 14 SHEETS
JUNE 24, 2024

ABBREVIATIONS:

AASHTO	AMERICAN ASSOCIAITON OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
ABS	ACRYLONITRILE BUTADIENE STYRENE
AC.	ACRE
AC	ASPHALTIC CONCRETE
AL	ALIGNMENT
AGGR	AGGREGATE
ANG	ANGLE POINT
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APWA	AMERICAN PUBLIC WORKS ASSOCIATION
APPROX	APPROXIMATE
ASPH	ASPHALT
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AVE	AVENUE
B&S	BELL AND SPIGOT
BES	BUREAU OF ENVIRONMENTAL SERVICES
BH	BOREHOLE
BOTT	BOTTOM
BDRY	BOUNDARY
BR	BRIDGE
BKFL	BACKFILL
BKWY	BIKEWAY
BLK	BLOCK
BLVD	BOULEVARD
BLDG	BUILDING
BM	BENCH MARK
BSMT	BASEMENT
BVC	BEGIN VERTICAL CURVE
BWW	BUREAU OF WATER WORKS
CB	CATCH BASIN
CFS	CUBIC FEET PER SECOND
CI	CAST IRON
CIP	CAST IRON PIPE
CIPP	CURED-IN-PLACE PIPE
CL	CENTERLINE
CLR	CLEARANCE
CLSM	CONCRETE LOW STRENGTH MIX
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT OR COUNTY
COMB	COMBINATION, COMBINATION SEWER
COMP	COMPACTED
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCT
CORR	CORRUGATED
CR,CK,CRK	CREEK
CP	CONTROL POINT
CSP	CONCRETE SEWER PIPE
CT.	COURT
CU.	CUBIC
CULV	CULVERT
CY	CUBIC YARD
D	DEGREE OF CURVE OR DELTA
DC	DIRECT CURRENT
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DIV MH	DIVERSION MANHOLE
DR	DRIVE
DWG	DRAWING
DWY	DRIVEWAY
E	EAST
EL, ELEV	ELEVATION
ELEC	ELECTRIC OR ELECTRICAL
EMB	EMBANKMENT
ESMT	EASEMENT
EW	EACH WAY
EXC.	EXCAVATION
EXIST, EXTG, EX.	EXISTING
EXP	EXPOSURE
FDTN	FOUNDATION
FFE	FINISHED FLOOR ELEVATION
FF	FUEL FILTER OR FINISHED FLOOR
FH	FIRE HYDRANT
FIN	FINISHED
FL	FLOW LINE
FM	FORCE MAIN
FRWY	FREEWAY
FT	FOOT OR FEET
G, GAS	GAS MAIN
GA.	GAUGE
GA	GUY ANCHOR
GAL	GALLONS
GALV	GALVANIZED
GEN	GENERAL
GM	GAS METER
GP	GUY POLE
GPM	GALLONS PER MINUTE
GR	GUARDRAIL
GS	GAS STANDPIPE
GV	GAS VALVE
H	HEIGHT
HDPE	HIGH-DENSITY POLYETHYLENE
HMAC	HOT-MIXED ASPHALT CONCRETE
HORIZ	HORIZONTAL
HR	HORSE RING
HWL	HIGH WATER LINE
HWY	HIGHWAY
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IN.	INCHES
INCL	INCLUDE
INST	INSTALL OR INSTRUMENT
INTER.	INTERCEPTOR
IP	IRON PIPE
IR	IRON ROD
IRRIG	IRRIGATION
J	JUNCTION BOX
JCT	JUNCTION
K	KELVIN
KM	KILOMETER
L	LENGTH OF CURVE
LH	LAMP HOLE
LIN	LINEAL, LINEAR
LOC	LOCATION
LP	LIGHT POLE
LT	LEFT
LUM	LUMINAIRE
LV	LEVEL
M	METER
MATL	MATERIAL
MAX	MAXIMUM
MBX	MAILBOX
MH	MAINTENANCE HOLE
MIN	MINIMUM
MIX	MIXTURE
MGD	MILLION GALLONS PER DAY
MOD	MODIFIED
MON. CONC.	MONOLITHIC CONCRETE
MSTF	MANUFACTURED STORMWATER TREATMENT FACILITY
MULTI	MULTIPLE
N	NORTH
NE	NORTHEAST
NO.	NUMBER
NOM	NOMINAL
NORM	NORMAL
NTS	NOT TO SCALE
NW	NORTHWEST
OC	ON CENTER
OD	OUTSIDE DIAMETER
ODOT	OREGON DEPARTMENT OF TRANSPORTATION
OF	OUTFALL
OH	OVERHEAD LINES
OPS	OPERATIONS
OSHD	OREGON STATE HIGHWAY DIVISION
P	POWER OR SIGNAL POLE
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVE
PCR	POINT OF CURB RETURN
PE	PROFESSIONAL ENGINEER
PED	PEDESTRIAN
PERF	PERFORATED
PERM	PERMANENT
PGE	PORTLAND GENERAL ELECTRIC
PH	PHASE
PI	POINT OF INTERSECTION
PL.	PLACE
PM	PARKING METER
PL, P/L	PROPERTY LINE
PLT	PLANTER TUB
POC	POINT ON CURVE
LB	POUND
PP	POWER POLE
PRC	POINT OF REVERSE CURVE
PROF	PROFILE
PS	PUMPING STATION
PSI	POUNDS PER SQUARE INCH
PT	POINT OF TANGENCY
PT&T	PUBLIC TELEPHONE & TELEGRAPH
PVC	POINT OF CURVATURE, VERTICAL CURVE OR POLYVINYL CHLORIDE
PVI	POINT OF INTERSECTION, VERTICAL CURVE
PVMT	PAVEMENT
PVT	POINT OF TANGENCY, VERTICAL CURVE
QC	QUARTER SECTION CORNER
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
RD	ROAD OR ROOF DRAIN (AT CURB)
RDWY	ROADWAY
REBAR	REINFORCING BAR (STEEL)
REINF	REINFORCE
REQ'D	REQUIRED
REV	REVISE OR REVERSE
RPM	REVOLUTIONS PER MINUTE
RR	RAILROAD
RT	RIGHT
R/W, ROW	RIGHT-OF-WAY
S	SOUTH, SLOPE OR SEWER
SALV	SALVAGE
SAN	SANITARY, SANITARY SEWER
SC	SECTION CORNER
SE	SOUTHEAST
SEC	SECTION
SED	SEDIMENTATION
SEG	SEGMENT
SF, SQ FT	SQUARE FEET
SHLDR	SHOULDER
SHT	SHEET
SL	STREET LIGHT OR SLOPE
SP	SEWER PIPE
SQ.	SQUARE
ST	STREET
STA	STATION
STD	STANDARD
STEAM	STEAM PRESSURIZED UTILITY
STL	STEEL, STEEL PIPE
STM	STORM, STORM SEWER
SU	SUMP
SURF	SURFACE, SURFACING
SW	SOUTHWEST
S/W	SIDEWALK
T	TANGENT DISTANCE
TB	TELEPHONE BOX, TELEPHONE BOOTH
TBM	TEMPORARY BENCH MARK
TC	TOP OF CURB OR TRAFFIC CONTROL
TCI	TELECOMMUNICATIONS INC.
TCP	TOPOGRAPHIC CONTROL POINTS OR TRAFFIC CONTROL PLAN
TEL	TELEPHONE
TEMP	TEMPORARY
TERR	TERRACE
THKN	THICKNESS
TOPO	TOPOGRAPHY
TP	TELEPHONE POLE OR TOP OF PAVEMENT
TR	TRASH RACK OR TRENCH
TV	TELEVISION
TYP	TYPICAL
U	UNKNOWN
UG	UNDERGROUND
UV	UNKNOWN VALUE
UVC	UNKNOWN VERTICAL CONDUIT
VAR	VARIES OR VARIABLE
VC	VERTICAL CURVE
VCP	VITRIFIED CLAY PIPE
VERT	VERTICAL
VSP	VITRIFIED CLAY SEWER PIPE
W	WEST, WIDTH OR WATER
WF	WATER FAUCET OR HOSE BIBB
WM	WATER METER
WS	WATER STANDPIPE
WT	WATER TOWER OR WEIGHT
WV	WATER VALVE
W/	WITH
W/O	WITHOUT
YD	YARD

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
CONNIE M. WALDEN
NUMBER PE-2022008888
6-26-2024
PROFESSIONAL ENGINEER

GRE GREAT RIVER ENGINEERING

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

DEPARTMENT OF NATURAL RESOURCES
MISSOURI STATE PARKS

STOCKTON STATE PARK
WATER SYSTEM
IMROVEMENTS

STOCKTON STATE PARK
CAMPGROUND AND MARINA
19100 S HIGHWAY 215
DADEVILLE, MO 65635

PROJECT # X2323-02
SITE # 5602
FACILITY # 7815602019

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 06/24/2024

CAD DWG FILE: XX2323-01_G-002
DRAWN BY: CAB
CHECKED BY: DLM
DESIGNED BY: CMW

SHEET TITLE:

ABBREVIATIONS

SHEET NUMBER:

G-002

2 OF 14 SHEETS
JUNE 24, 2024

GENERAL NOTES

1. THE CONTRACTOR SHALL HAVE ONE (1) SIGNED COPY OF THE PLANS AND ONE (1) COPY OF THE APPROPRIATE CONSTRUCTION STANDARDS AND SPECIFICATIONS ON THE JOB SITE AT ALL TIMES.
2. CONSTRUCTION OF THE IMPROVEMENTS SHOWN OR IMPLIED BY THIS SET OF DRAWINGS SHALL NOT BE INITIATED OR ANY PART THEREOF UNDERTAKEN UNTIL THE STATE OF MISSOURI IS NOTIFIED OF SUCH INTENT AND ALL REQUIRED AND PROPERLY EXECUTED BONDS AND PERMIT FEES ARE RECEIVED AND APPROVED. THE CONTRACTOR SHALL NOTIFY THE STATE NO LESS THAN FORTY-EIGHT (48) HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION.
3. CONTRACTORS ALLOWABLE WORK HOURS AT THE PROJECT SITE SHALL BE 7:00AM TO 5:30PM MONDAY THROUGH FRIDAY. NO WORK WILL BE ALLOWED ON SATURDAYS, SUNDAYS OR HOLIDAYS RECOGNIZED BY THE STATE WITHOUT PRIOR APPROVAL. ANY REQUESTS TO WORK OUTSIDE THE AFOREMENTIONED ALLOWABLE WORK HOURS MUST BE REQUESTED IN WRITING BY THE CONTRACTOR AND BE APPROVED PRIOR TO COMMENCEMENT OF WORK.
4. CONTRACTOR SHALL LIMIT WORK AREA TO RIGHT-OF-WAYS, PERPETUAL WATER EASEMENTS, AND THE TEMPORARY CONSTRUCTION EASEMENTS FOR THE PROJECT.
5. IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE, INCLUDING ADEQUATE TRAFFIC CONTROL AND SAFETY OF PERSONS AND PROPERTY DURING PERFORMANCE OF WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND WILL NOT BE LIMITED TO NORMAL WORKING HOURS.
6. A MINIMUM OF 3 BUSINESS DAYS BEFORE BEGINNING ANY CONSTRUCTION OR EXCAVATION, CONTRACTOR SHALL CALL MISSOURI ONE-CALL SYSTEM INC. AT 1-800-344-7483.
7. THE EXISTING FEATURES AND EXISTING UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE ACTUAL LOCATION OF ALL UTILITIES WITH THEIR RESPECTIVE OWNERS AS REQUIRED PRIOR TO BEGINNING CONSTRUCTION TO PREVENT DAMAGE BY CONTRACTOR'S OPERATION. ANY UTILITIES OR SERVICE LINES THAT REQUIRE PERMANENT OR TEMPORARY RELOCATION OR STABILIZATION FOR THE CONSTRUCTION OF THIS PROJECT SHALL BE THE RESPONSIBILITY AND EXPENSE OF THE CONTRACTOR. THIS SHALL BE INCIDENTAL TO THE COST OF THE PROJECT AND SHALL NOT BE PAID FOR SEPARATELY.
8. CONTRACTOR SHALL TAKE ALL APPROPRIATE STEPS TO MAINTAIN CONTINUAL SERVICE OF UTILITIES. CONTRACTOR SHALL PROVIDE SUPPORT AND PROTECTION OF ALL UTILITY LINES TO PREVENT UNDERMINING OR DAMAGING OF THE UTILITY DURING CONSTRUCTION. THE ACCEPTABILITY OF CONTRACTOR'S PROPOSED PLAN TO CROSS AND/OR SUPPORT UTILITIES SHALL BE APPROVED BY UTILITY OWNER.
9. MAINTAIN THE MAXIMUM SEPARATION DISTANCE POSSIBLE BETWEEN WATER MAINS, SEWER LINES AND OTHER UTILITY LINES. SOME MINOR DEVIATION OF WATER LINE ALIGNMENT MAY BE ALLOWED DEPENDING ON ACTUAL LOCATIONS OF EXISTING WATER, SEWER AND UTILITY LINES.
10. A MINIMUM VERTICAL SEPARATION OF 18" IS REQUIRED WHEN A WATER MAIN, SANITARY SEWER, OR STORM SEWER CROSS. IF THE MINIMUM SEPARATION CAN NOT BE ACHIEVED, NOTIFY ENGINEER FOR DEVIATION REQUIREMENTS.
11. WATER MAINS SHALL BE LAID AT LEAST TEN FEET (10') HORIZONTALLY FROM ANY EXISTING OR PROPOSED SEWER MAINS. IF THIS IS NOT PRACTICAL CONSULT THE PROJECT ENGINEER. IN THESE CASES, THE WATER MAIN MUST BE IN A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELF LOCATED ON ONE SIDE OF THE SEWER AT AN ELEVATION SUCH THAT THE BOTTOM OF THE WATER MAIN IS AT LEAST EIGHTEEN INCHES (18") ABOVE THE TOP OF THE SEWER.
12. CONTRACTOR SHALL PROVIDE PROTECTION TO PREVENT UNDERMINING OR DAMAGING THE STRUCTURAL INTEGRITY OF ALL BUILDINGS, POWER POLES, FENCES, BLOCK WALLS, SCREEN WALLS, RETAINING WALLS, HIGHWAY AND STREET SIGNS OR OTHER UTILITY POLES THAT PARALLEL OR CROSS THE WATER MAIN ALIGNMENTS, AND MAKE ARRANGEMENTS WITH THE OWNER OF SAID ITEMS AS REQUIRED TO PROVIDE TEMPORARY SUPPORT OR PROTECTION DURING CONSTRUCTION WORK. THIS REQUIREMENT AND WORK SHALL BE CONSIDERED AS INCIDENTAL TO THE COST OF THE PROJECT CONSTRUCTION AND WILL NOT BE PAID FOR SEPARATELY.
13. CONTRACTOR SHALL REMOVE MAILBOXES, WALLS, SIGNS, FENCES, GATES, ROADS AND DRIVEWAYS, CURB AND GUTTER, ROCK RIPRAP, DRAINAGE CULVERTS AND OTHER EXISTING FEATURES AS REQUIRED FOR CONSTRUCTION PURPOSES. CONTRACTOR SHALL RESTORE ALL REMOVED OR DAMAGED ITEMS TO A CONDITION EQUAL TO OR BETTER THAN PRE-PROJECT CONDITION. CONTRACTOR SHALL INSTALL AND MAINTAIN TEMPORARY FEATURES TO ACCOMMODATE PROPERTY OWNERS AND THE PUBLIC DURING CONSTRUCTION WHEN THE CONSTRUCTION NECESSITATES REMOVING AN EXISTING FEATURE. EXAMPLES OF THIS INCLUDE, BUT ARE NOT LIMITED TO: MAILBOXES, STREET SIGNS, ROADS, DRIVEWAYS, ETC.
14. EXISTING WATER MAINS AND SERVICE LINES ARE TO BE ABANDONED IN PLACE AFTER NEW MAINS ARE COMPLETED AND PLACED IN SERVICE.
15. IN ALL CASES WHERE PROPOSED WATERLINE CROSSES EXISTING, THE NEW WATERLINE MAY NEED TO BE LOWERED TO CLEAR EXISTING LINE FOR CONTINUAL WATER SERVICE DURING CONSTRUCTION.
16. ALL FITTINGS SHALL BE DUCTILE IRON MECHANICAL JOINT FITTINGS UNLESS OTHERWISE NOTED.
17. IF ASBESTOS PIPE IS EXPOSED DURING CONSTRUCTION AND MUST BE REMOVED, CONTRACTOR MUST FOLLOW MDNR GUIDELINES AND PROCEDURES FOR THE MANAGEMENT OF NON-FRIABLE ASBESTOS - CONTAINING MATERIALS (ACM).
18. CONTRACTOR SHALL COMPACT ALL BACKFILL IN ACCORDANCE WITH THE SPECIFICATIONS.
19. MINIMUM BURY DEPTH FOR WATER MAINS SHALL BE 42" UNLESS OTHERWISE APPROVED BY THE ENGINEER.
20. THE CONTRACTOR SHALL INSTALL AND PROPERLY MAINTAIN A MECHANICAL PLUG AT ALL CONNECTION POINTS WITH EXISTING LINES UNTIL SUCH TIME THAT THE NEW LINE IS TESTED.
21. IN CASES WHERE THE CONTRACTOR DAMAGES OR REMOVES A ROAD OR DRIVEWAY FOR CONSTRUCTION, CONTRACTOR SHALL REPAIR OR REPLACE THE ROAD OR DRIVEWAY TO A CONDITION EQUAL TO OR BETTER THAN THE PRE-PROJECT CONDITION. CONTRACTOR SHALL SAWCUT EXISTING CONCRETE, ASPHALT, AND CHIP SEAL SURFACES AT THE LIMITS OF THE REPAIR/REPLACEMENT. UNDER NO CIRCUMSTANCES SHALL THE REPAIRED OR REPLACED SECTION BE LESS THAN THE FOLLOWING:

A. FOR EXISTING GRAVEL SURFACES:

I. COMPACT SUBGRADE TO 95%.

II. PLACE MODOT TYPE I AGGREGATE BASE COURSE, MATCH EXISTING GRAVEL SURFACE THICKNESS PLUS 1 INCH. GRAVEL SURFACE SHALL BE A MINIMUM OF 4 INCH THICKNESS.

B. FOR EXISTING CHIP & SEAL SURFACES:

I. COMPACT SUBGRADE TO 95%.

II. PLACE AND COMPACT 4 INCHES OF MODOT TYPE 1 AGGREGATE BASE COURSE.

III. APPLY PRIME COAT

IV. PLACE A MINIMUM OF 3 INCHES MODOT BP-1 PLANT MIX BITUMINOUS PAVEMENT.

C. FOR EXISTING ASPHALT SURFACES:

I. COMPACT SUBGRADE TO 95%.

II. PLACE AND COMPACT 4 INCHES OF MODOT TYPE I AGGREGATE BASE COURSE.

III. APPLY PRIME COAT.

IV. PLACE MODOT BP-1 PLANT MIX BITUMINOUS PAVEMENT, MATCH EXISTING PAVEMENT THICKNESS PLUS 1 INCH. ASPHALT SHALL BE A MINIMUM OF 3 INCH THICKNESS AND A MAXIMUM OF 6" THICKNESS. IF BITUMINOUS SURFACE THICKNESS IS 4 INCHES OR GREATER, THE TOP 2 INCHES OF PAVEMENT SHALL BE MODOT BP-1 PLANT MIX BITUMINOUS PAVEMENT AND THE REMAINING PAVEMENT THICKNESS CAN BE MODOT MIX BITUMINOUS BASE PAVEMENT.

D. FOR EXISTING CONCRETE SURFACES:

I. COMPACT SUBGRADE TO 95%.

II. PLACE AND COMPACT 4 INCHES OF MODOT TYPE 1 AGGREGATE BASE COURSE.

III. PLACE 6 INCHES OF MODOT CLASS B CONCRETE WITH CONTRACTION JOINTS EACH WAY NOT EXCEEDING 8 FEET ON CENTER AND ISOLATION JOINTS NOT EXCEEDING 32 FEET ON CENTER. JOINTS SHALL BE PLACED AS CLOSE AS POSSIBLE TO EQUAL DISTANT IN BOTH DIRECTIONS, WITH THE DIMENSION IN ONE DIRECTION NOT BEING LESS THAN 80% OF THE DIMENSION IN THE OPPOSITE DIRECTION.

22. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO KEEP ROCK, MUD AND OTHER DEBRIS CAUSED BY CONSTRUCTION EQUIPMENT OFF OF STREETS THROUGHOUT THE DAY AND AT THE END OF THE DAY.
23. INSTALL FITTINGS AS REQUIRED AT CONTRACTOR'S SOLE EXPENSE. MAXIMUM PIPE DEFLECTION PER MANUFACTURER'S RECOMMENDATIONS. CORRESPONDING THRUST BLOCKS TO BE INSTALLED WITH FITTINGS.
24. WATERLINE DESIGN AND CONSTRUCTION SHALL COMPLY WITH ALL STATE AND LOCAL REGULATIONS AND GUIDELINES PER MDNR M

DETAIL REFERENCES

XX XXXXX
SCALE: XXX = XXX
PLAN TITLE

A A
SECTION CUT IDENTIFIER

#-####
SECTION CALL OUT IDENTIFIER

XX XXXXX
SCALE: XXX = XXX
SECTION TITLE WITH REFERENCE

X XXXX
XXXX SCALE
DETAIL TITLE WITH REFERENCE

LEGEND

- IRON PIN SET (TYPICAL) GREAT RIVER 2001011476
- IRON PIN FOUND, AS NOTED
- CUT CROSS
- RIGHT OF WAY MARKER
- STONE
- CP CONTROL POINT
- PERMANENT BENCHMARK
- CONTOUR MAJOR
- CONTOUR MINOR
- DECIDUOUS TREE, SIZE AS NOTED
- CONIFER TREE, SIZE AS NOTED
- BUSH, SIZE AS NOTED
- LIGHT POLE
- POWER POLE
- ELECTRIC RISER
- EB ELECTRIC BOX
- ELECTRIC METER
- GUT WIRE ANCHOR
- PEDESTAL, AS NOTED
- SANITARY SEWER CLEAN OUT
- GRINDER PUMP
- ST SEPTIC TANK
- S SANITARY SEWER MANHOLE
- D STORM SEWER MANHOLE
- T TELEPHONE MANHOLE
- TELEPHONE RISER
- GAS VALVE
- GAS METER
- W WELL
- WATER METER
- WATER VALVE
- FIRE HYDRANT
- WATER HYDRANT
- IRRIGATION SPRINKLER HEAD
- IRRIGATION CONTROL VALVE
- MB MAIL BOX
- SIGN
- POST
- FP FLAG POLE
- AC AIR CONDITIONING UNIT
- CABLE TV RISER
- BORE HOLE, AS NOTED
- S SANITARY SEWER LINE
- O FENCE CHAIN-LINK
- X WIRE
- WOOD
- XX WOVEN WIRE
- B POLY VINYL
- OHE ELECTRIC LINE
- UE UNDERGROUND ELECTRIC LINE
- T TELEPHONE LINE
- UT UNDERGROUND TELEPHONE LINE
- CTV CABLE TV LINE
- G GAS LINE
- W WATER LINE
- GW GAS & WATER LINE
- FO FIBER OPTIC LINE
- IRR IRRIGATION LINE
- FM FORCE MAIN LINE
- TREE LINE
- FL FLOWLINE

HATCH PATTERNS

AGGREGATE BASE COURSE
GRAVEL
ALUMINUM
GRATE
ASPHALT PAVING
LANDSCAPING
BEDROCK
RUBBER
BRONZE, BRASS, OR COPPER
SAND
CAST IRON OR FIBERGLASS
EXISTING/UNDISTURBED SOIL
CLSM
STRUCTURAL FILL/BACK FILL
CONCRETE
STEEL
DRAIN ROCK
TREAD PLATE
WOOD

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
CONNIE M. WALDEN
NUMBER PE-2022008888
6-26-2024
PROFESSIONAL ENGINEER

GRE GREAT RIVER ENGINEERING

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

DEPARTMENT OF NATURAL RESOURCES
MISSOURI STATE PARKS

STOCKTON STATE PARK
WATER SYSTEM
IMROVEMENTS

STOCKTON STATE PARK
CAMPGROUND AND MARINA
19100 S HIGHWAY 215
DADEVILLE, MO 65635

PROJECT # X2323-02
SITE # 5602
FACILITY # 7815602019

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 06/24/2024

CAD DWG FILE: XX2323-01_G-003
DRAWN BY: CAB
CHECKED BY: DLM
DESIGNED BY: CLW

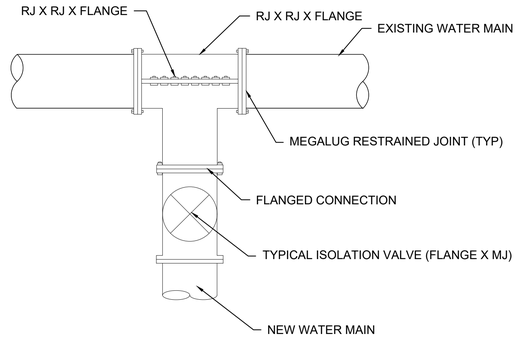
SHEET TITLE:

GENERAL NOTES AND SYMBOLS

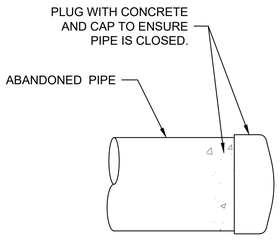
SHEET NUMBER:

G-003

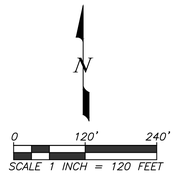
3 OF 14 SHEETS
JUNE 24, 2024



1 C101 TYPICAL "WET" TAP
NTS



2 C101 PIPE PLUG
NTS



MISSOURI ONE CALL SYSTEM, INC. 1-800-344-7483 STOP - CALL BEFORE YOU DIG!

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
CONNIE M. WALDEN
NUMBER PE-2022008888
6-26-2024
PROFESSIONAL ENGINEER

GRE GREAT RIVER ENGINEERING

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

DEPARTMENT OF NATURAL RESOURCES
MISSOURI STATE PARKS

STOCKTON STATE PARK
WATER SYSTEM
IMPROVEMENTS

STOCKTON STATE PARK
CAMPGROUND AND MARINA
19100 S HIGHWAY 215
DADEVILLE, MO 65635

PROJECT # X2323-02
SITE # 5602
FACILITY # 7815602019

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 06/24/2024

CAD DWG FILE: XX2323-01 C-101
DRAWN BY: CAB
CHECKED BY: DLM
DESIGNED BY: CMW

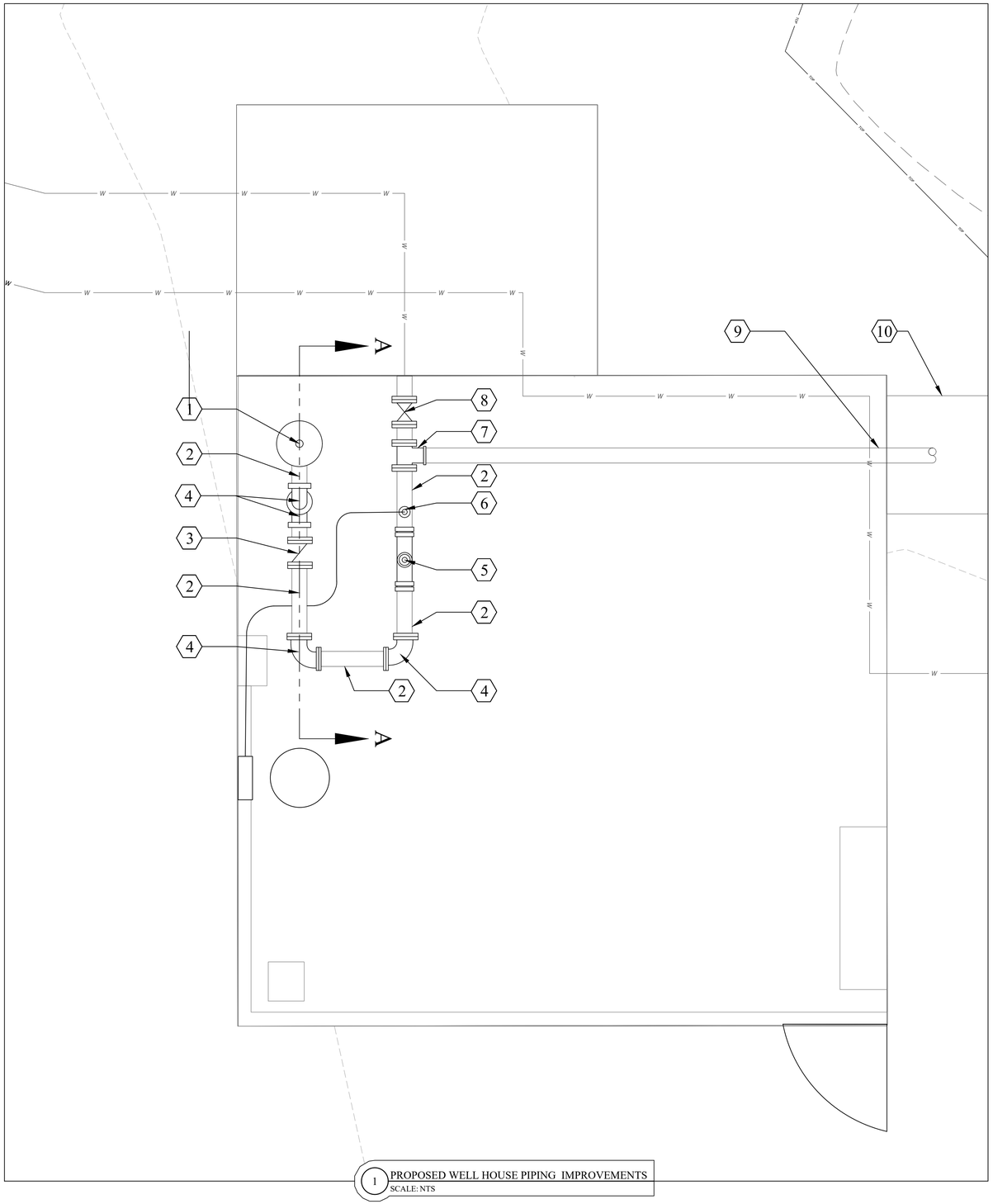
SHEET TITLE:

OVERVIEW OF IMPROVEMENTS

SHEET NUMBER:

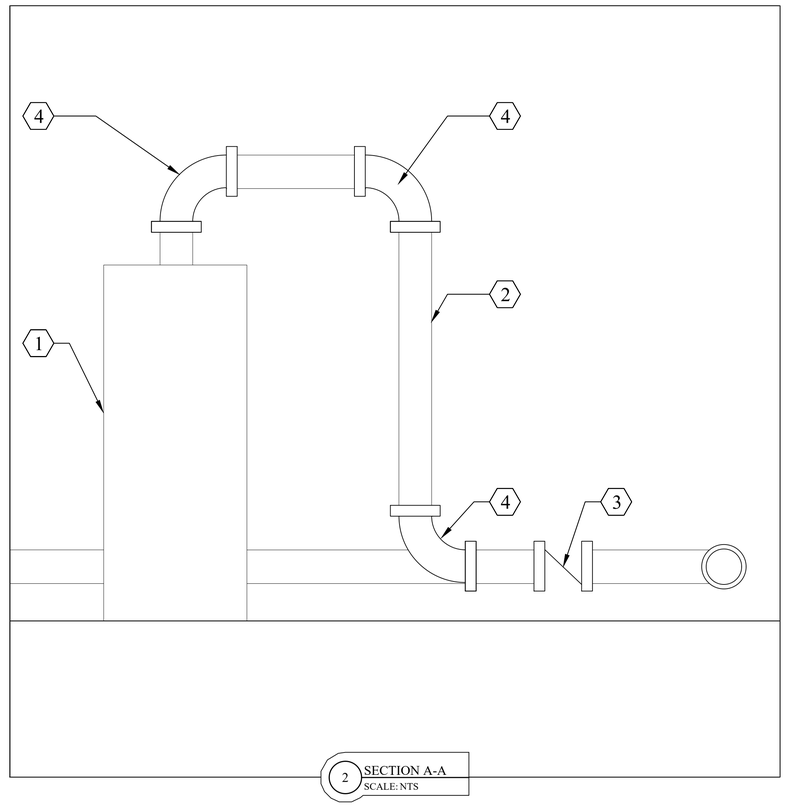
C-101

4 OF 14 SHEETS
JUNE 24, 2024



1 PROPOSED WELL HOUSE PIPING IMPROVEMENTS
SCALE: NTS

KEY NOTES	
1	EXISTING WELL CASING TO BE RAISED BY 12 INCHES.
2	2" SDR 9 PVC.
3	INSTALL 2" CHECK VALVE.
4	2" 90° BENDS.
5	INSTALL 2" TOTALIZING WATER METER. SEE SPECIFICATIONS FOR APPROVED MANUFACTURERS.
6	CHLORINE INJECTION PORT IS TO BE REPLACED. SEE DETAIL 4 SHEET C-501.
7	INSTALL 2" X 2" X 2" TEE WITH XX LF SDR 9 PVC TO DISCHARGE TO WASTE.
8	REPLACE EXISTING 2" BALL VALVE.
9	SEE DETAIL 2 SHEET C-102.
10	INSTALL 2' X 4' CONCRETE SPLASH PAD.



2 SECTION A-A
SCALE: NTS

MISSOURI ONE CALL SYSTEM, INC. 1-800-344-7483 STOP-CALL BEFORE YOU DIG!

STATE OF MISSOURI
CONNIE M. WALDEN
NUMBER PE-2022008888
6-26-2024
PROFESSIONAL ENGINEER

GRE GREAT RIVER ENGINEERING

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

DEPARTMENT OF NATURAL RESOURCES
MISSOURI STATE PARKS

STOCKTON STATE PARK
WATER SYSTEM
IMPROVEMENTS

STOCKTON STATE PARK
CAMPGROUND AND MARINA
19100 S HIGHWAY 215
DADEVILLE, MO 65635

PROJECT # X2323-02
SITE # 5602
FACILITY # 7815602019

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 06/24/2024

CAD DWG FILE: XX2323-01_C-102
DRAWN BY: CAB
CHECKED BY: DLM
DESIGNED BY: CMW

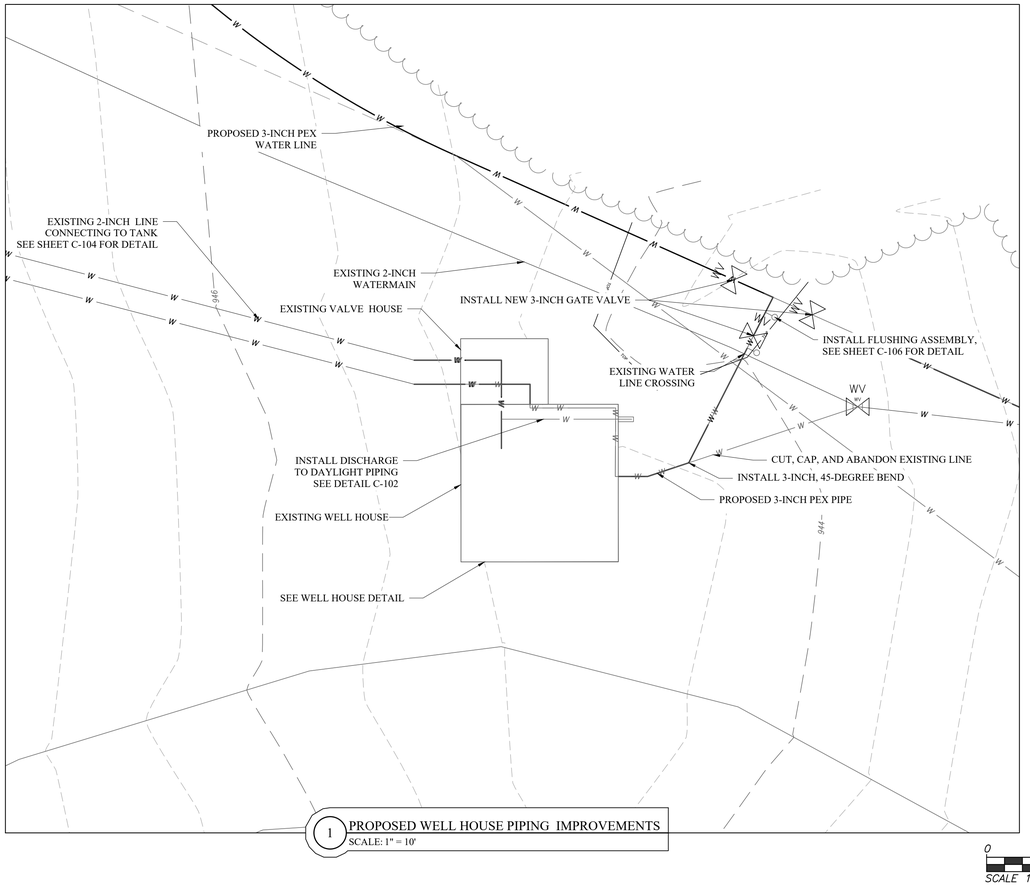
SHEET TITLE:

WELL HOUSE
SCHEMATIC PLAN

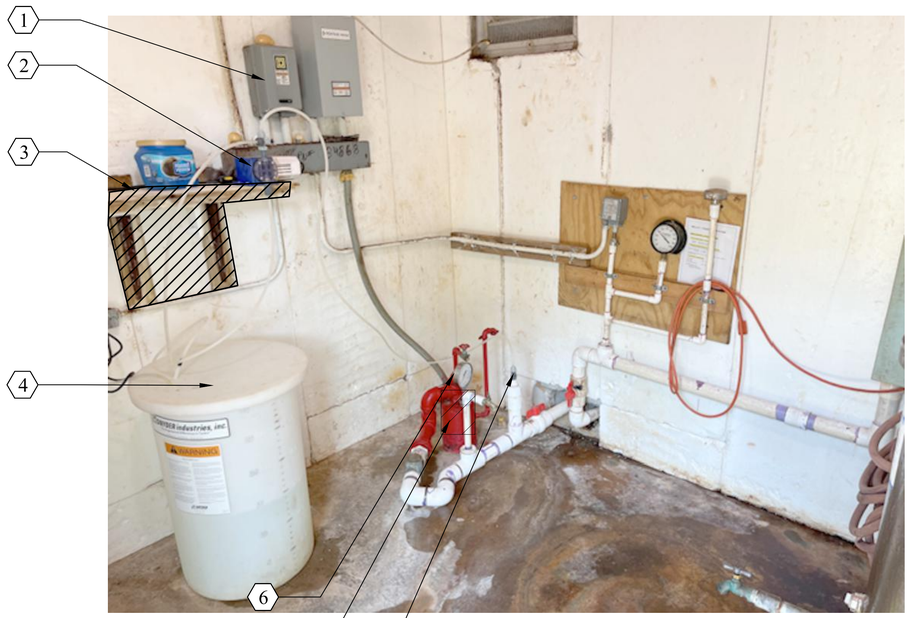
SHEET NUMBER:

C-102

5 OF 14 SHEETS
JUNE 24, 2024

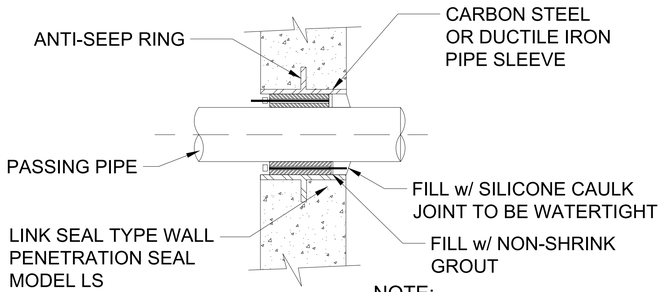


1 PROPOSED WELL HOUSE PIPING IMPROVEMENTS
SCALE: 1" = 10'

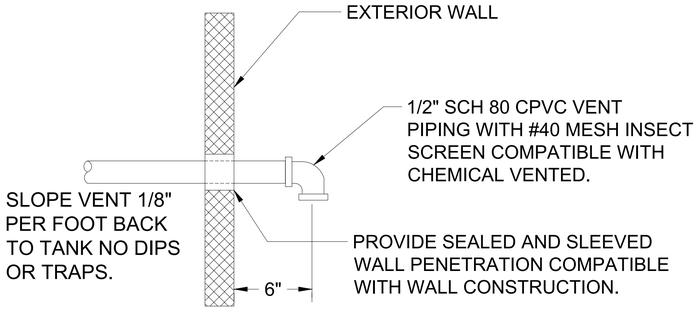


1 C102 WELL HOUSE INTERIOR IMPROVEMENTS
NTS

KEY NOTES	
1	SEE ELECTRICAL SHEETS FOR ELECTRICAL IMPROVEMENTS
2	PROVIDE A BACKUP CHEMICAL FEED PUMP.
3	REPLACE WOODEN SHELF WITH 24" x 18" STAINLESS STEEL WALL SHELF.
4	REPLACE OPEN TOP CHLORINE STORAGE WITH 30-50 GAL CLOSED TOP CHEMICAL STORAGE DRUM. INSTALL 1-INCH PIPING AS SHOWN IN DETAIL FOR GAS VENTING.
5	WELL CASING EXTENSION TO BE EXTENDED 12" WITH SIMILAR MATERIAL TO THE ORIGINAL CASING WITH HALF-WELD HALF-SCREW STEEL COUPLINGS.
6	INSTALL DRAW DOWN PRESSURE GAUGE, FLEXIBLE TUBING AIRLINE, PIPE TEE AND VALVE STEM. SEE SHEET C-501 FOR WELL AIRLINE DETAIL.
7	REPLACE CHLORINE INJECTION PIPING WITH CHLORINE INJECTOR - RETRACTABLE TYPE PORT AND PIPE TAP.



2 C102 WALL PENETRATION DETAIL
NTS



3 C102 CHEMICAL VENT DETAIL
NTS

MISSOURI ONE CALL SYSTEM, INC.
1-800-344-7483
STOP-CALL BEFORE YOU DIG!

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR

STATE OF MISSOURI
CONNIE M. WALDEN
NUMBER PE-2022008888
6-26-2024
PROFESSIONAL ENGINEER

GRE GREAT RIVER ENGINEERING

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
MISSOURI STATE PARKS

STOCKTON STATE PARK
WATER SYSTEM
IMPROVEMENTS

STOCKTON STATE PARK
CAMPGROUND AND MARINA
19100 S HIGHWAY
DADEVILLE, MO 65635

PROJECT # X2323-02
SITE # 5602
FACILITY # 7815602019

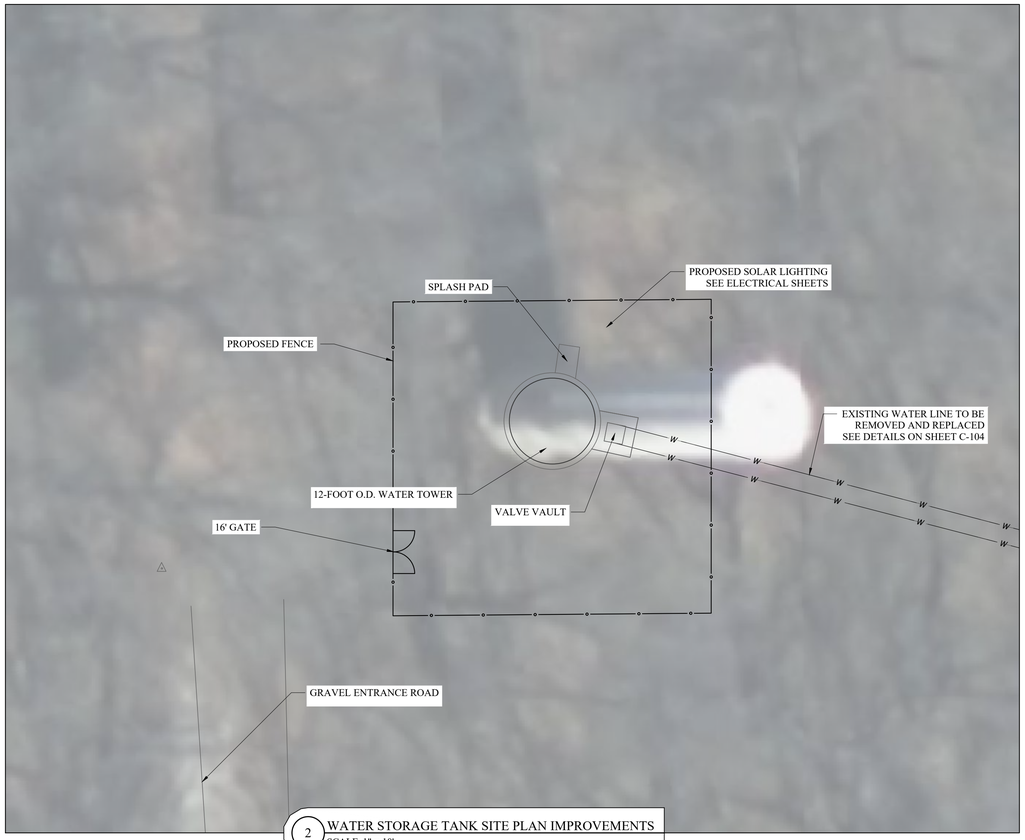
REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 06/24/2024

CAD DWG FILE: XX2323-01_C-103
DRAWN BY: CAB
CHECKED BY: DLM
DESIGNED BY: CMW

SHEET TITLE:
WELL HOUSE
SITE PLAN

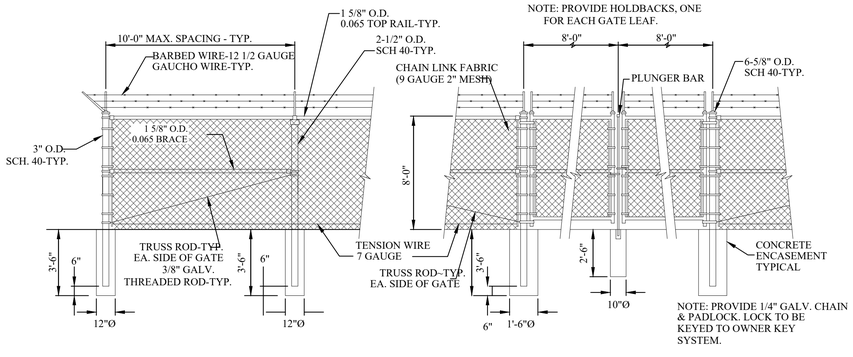
SHEET NUMBER:
C-103

6 OF 14 SHEETS
JUNE 24, 2024

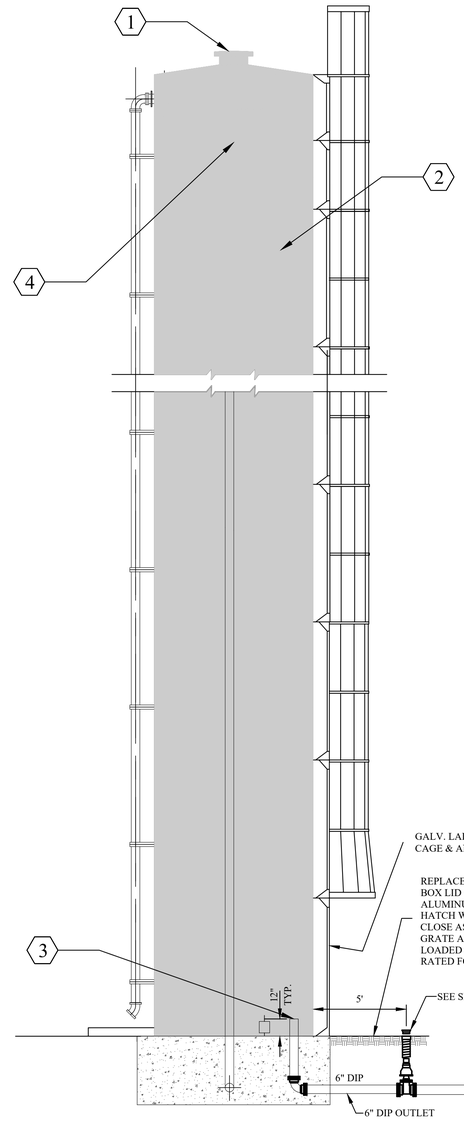


2 WATER STORAGE TANK SITE PLAN IMPROVEMENTS
SCALE: 1" = 10'

KEY NOTES	
1	REPLACE EXISTING ROOF VENT WITH ROOF VENT AND FLANGED STACK WITH WELD IN TANK CONNECTION FLANGE. ROOF VENT TO TERMINATE 24-INCHES ABOVE THE TOP OF THE TANK. INNER SCREEN EITHER DOUBLE LAYERED #16 OR SINGLE LAYERED #24. OUTER SCREEN TO BE #4 MESH. NEOPRENE GASKET AS A SEAL BETWEEN FLANGES.
2	BLAST REMOVE EXTERIOR PAINT AND RECOAT.
3	INSTALL SEDIMENT CAP AND #24 MESH SCREEN.
4	PERFORM TANK CLEANING. REMOVE INTERIOR EPOXY AND RECOAT.



2 C103 CHAINLINK FENCE DETAIL
NTS



1 C103 STANDPIPE PROFILE VIEW
NTS

MISSOURI ONE CALL SYSTEM, INC.
1-800-344-7483
STOP-CALL BEFORE YOU DIG!

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR

STATE OF MISSOURI
CONNIE M.
WALDEN
NUMBER
PE-2022008888
6-26-2024
PROFESSIONAL ENGINEER

GRE
GREAT RIVER
ENGINEERING

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
MISSOURI STATE PARKS

STOCKTON STATE PARK
WATER SYSTEM
IMPROVEMENTS

STOCKTON STATE PARK
CAMPGROUND AND MARINA
19100 S HIGHWAY 215
DADEVILLE, MO 65635

PROJECT # X2323-02
SITE # 5602
FACILITY # 7815602019

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 06/24/2024

CAD DWG FILE: XX2323-01_C-104
DRAWN BY: CAB
CHECKED BY: DLM
DESIGNED BY: CMW

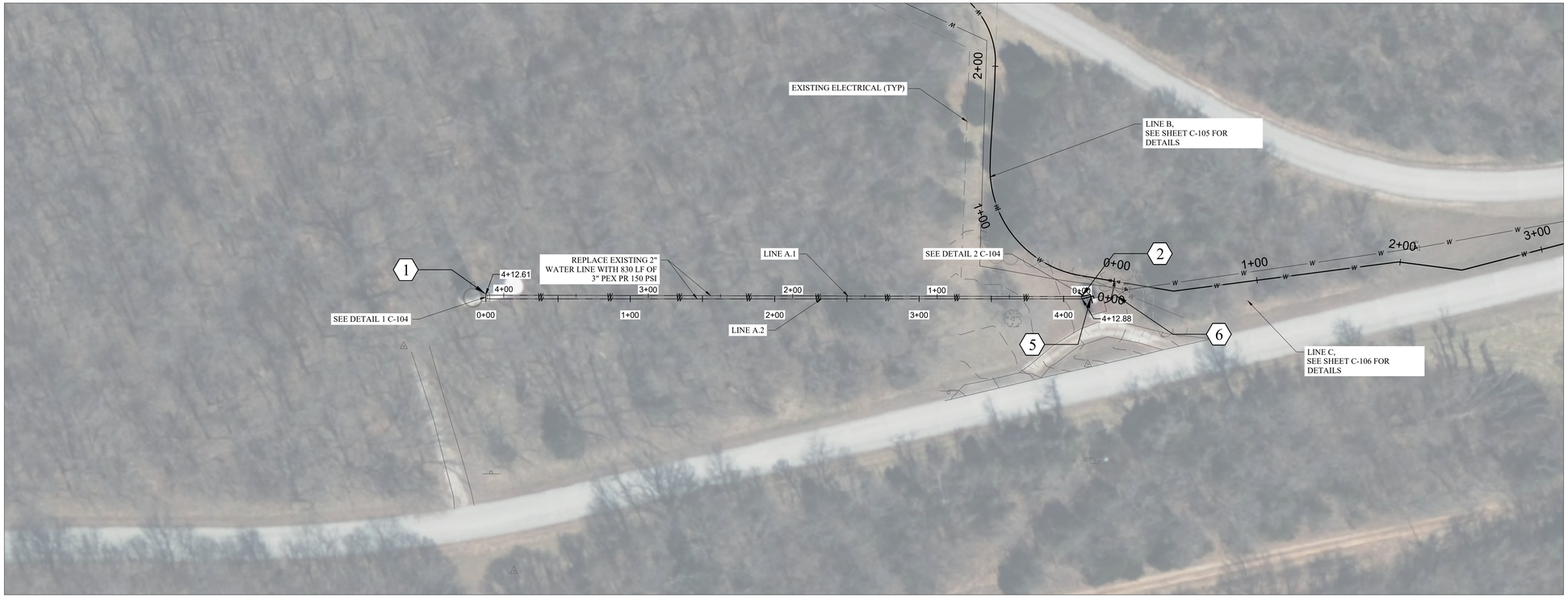
SHEET TITLE:

WATER STORAGE
TANK PLAN

SHEET NUMBER:

C-104

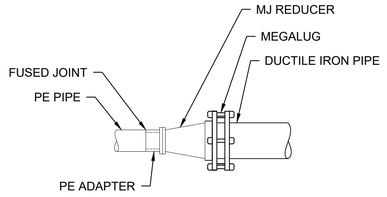
7 OF 14 SHEETS
JUNE 24, 2024



0 40' 80'
SCALE 1 INCH = 40 FEET

KEY NOTES	
1	REMOVE DIP VALVES AND REPLACE WITH DIP SPOOL. TRANSITION FROM PROPOSED 3" WATERMAN TO DIP PRIOR TO ENTERING VAULT. NEW CONNECTION OUTSIDE OF VAULT TO INCLUDE A PE ADAPTER, MJ REDUCER, AND MAGALUG FITTING AS SHOWN IN DETAIL C-104.
2	REPLACE 2-INCH WATERMAIN FROM HOUSE WALL THROUGH WELL HOUSE VAULT AND TO AND FROM STORAGE TANK.
3	INSTALL BALL VALVE.
4	INSTALL 2-2" TEE'S WITH BALL VALVE TO ALLOW FOR TANK BYPASS.
5	CONNECT TO WELL HOUSE INTERIOR PIPING WITH PE ADAPTERS.
6	CUT, CAP, AND ABANDON EXISTING WATERMAIN.

1 C104 VALVE VAULT DIP EAST WALL CONNECTION TO DISTRIBUTION
NTS



3 C104 PE TO DIP TRANSITION
NTS

2 C104 PIPE VAULT AT WELL HOUSE
NTS

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR

GRE
GREAT RIVER
ENGINEERING

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
MISSOURI STATE PARKS

STOCKTON STATE PARK
WATER SYSTEM
IMPROVEMENTS

STOCKTON STATE PARK
CAMPGROUND AND MARINA
19100 S HIGHWAY 215
DADEVILLE, MO 65635

PROJECT # X2323-02
SITE # 5602
FACILITY # 7815602019

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 06/24/2024

CAD DWG FILE: XX2323-01_C104
DRAWN BY: CAB
CHECKED BY: DLM
DESIGNED BY: CMW

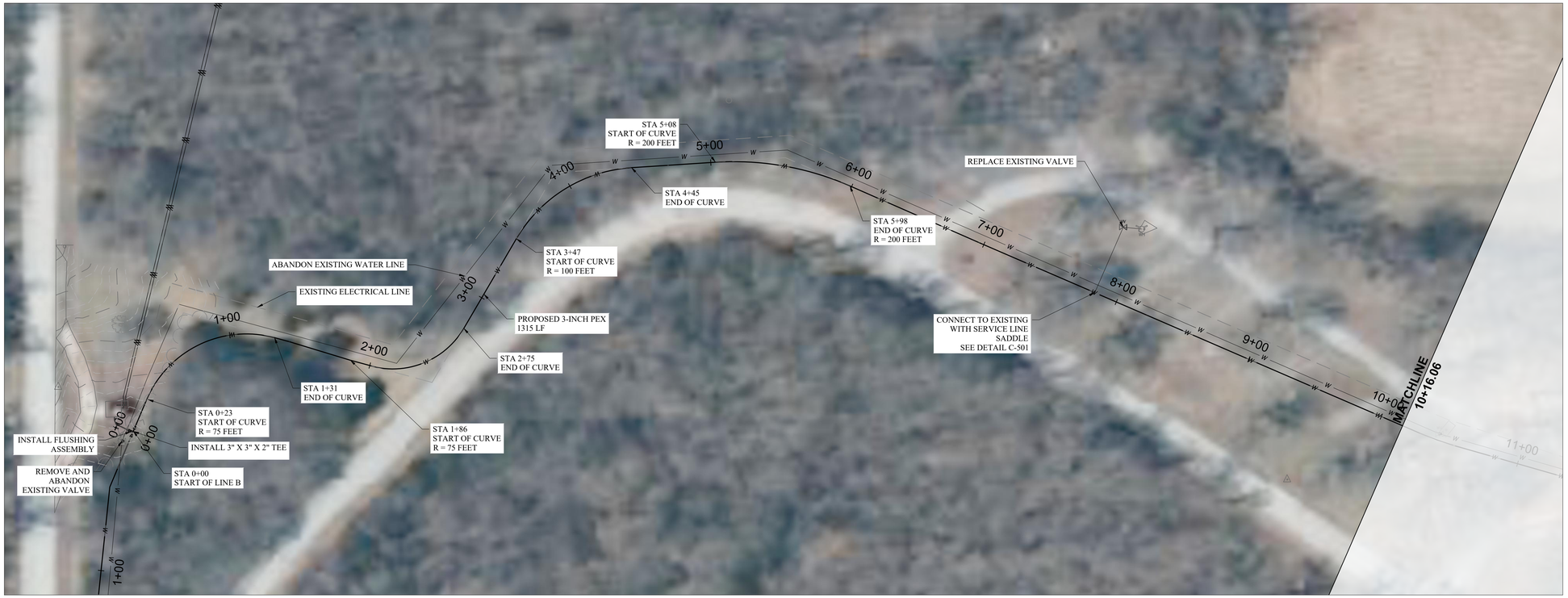
SHEET TITLE:

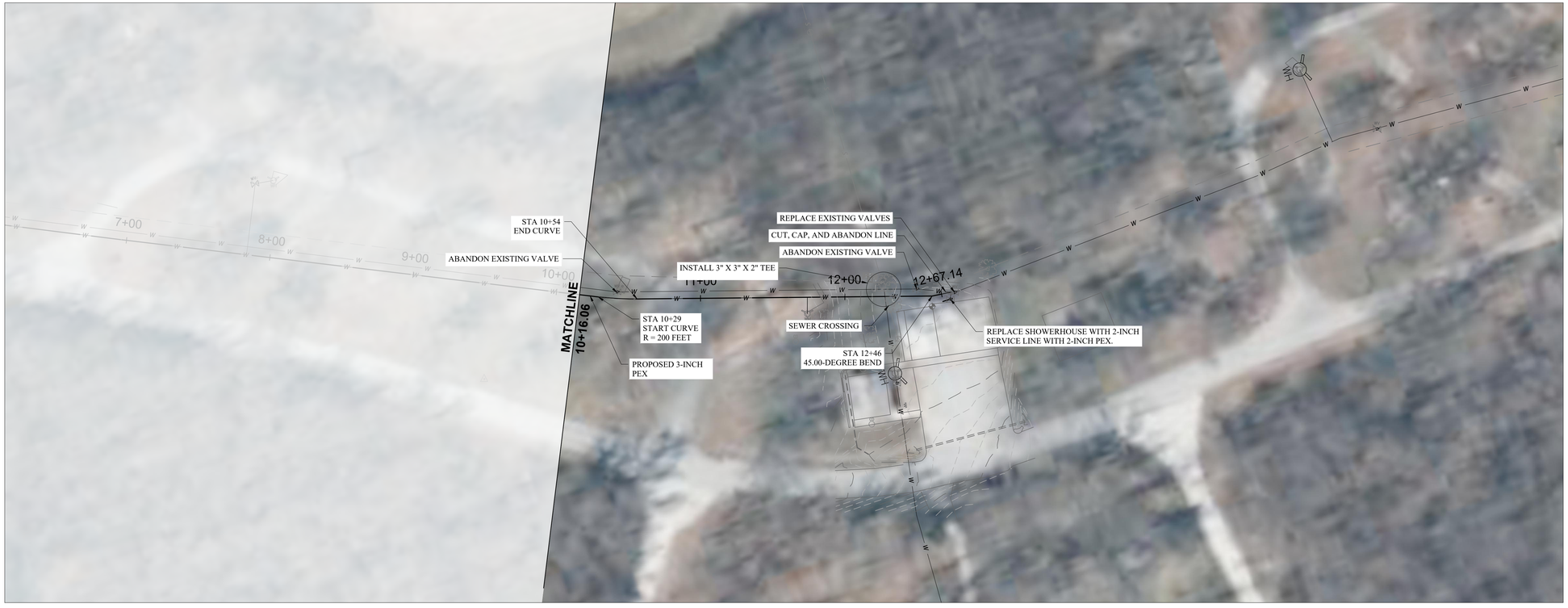
LINES A.1 & A.2
A1: STA. 0+00 - 4+13
A2: STA 0+00 - 4+13

SHEET NUMBER:

C-105

8 OF 14 SHEETS
JUNE 24, 2024





MISSOURI ONE CALL SYSTEM, INC.
1-800-344-7483
STOP-CALL BEFORE YOU DIG!

N

0 40' 80'
SCALE 1 INCH = 40 FEET

N

0 40' 80'
SCALE 1 INCH = 40 FEET

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
CONNIE M. WALDEN
NUMBER PE-2022008888
6-26-2024
PROFESSIONAL ENGINEER

GRE GREAT RIVER ENGINEERING

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

DEPARTMENT OF NATURAL RESOURCES
MISSOURI STATE PARKS

STOCKTON STATE PARK
WATER SYSTEM
IMPROVEMENTS

STOCKTON STATE PARK
CAMPGROUND AND MARINA
ROUTE 1 BOX 1715
DADEVILLE, MO 65635

PROJECT # X2323-02
SITE # 5602
FACILITY # 7815602019

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 06/24/2024

CAD DWG FILE: XX2323-01
DRAWN BY: CAB
CHECKED BY: DLM
DESIGNED BY: CMW

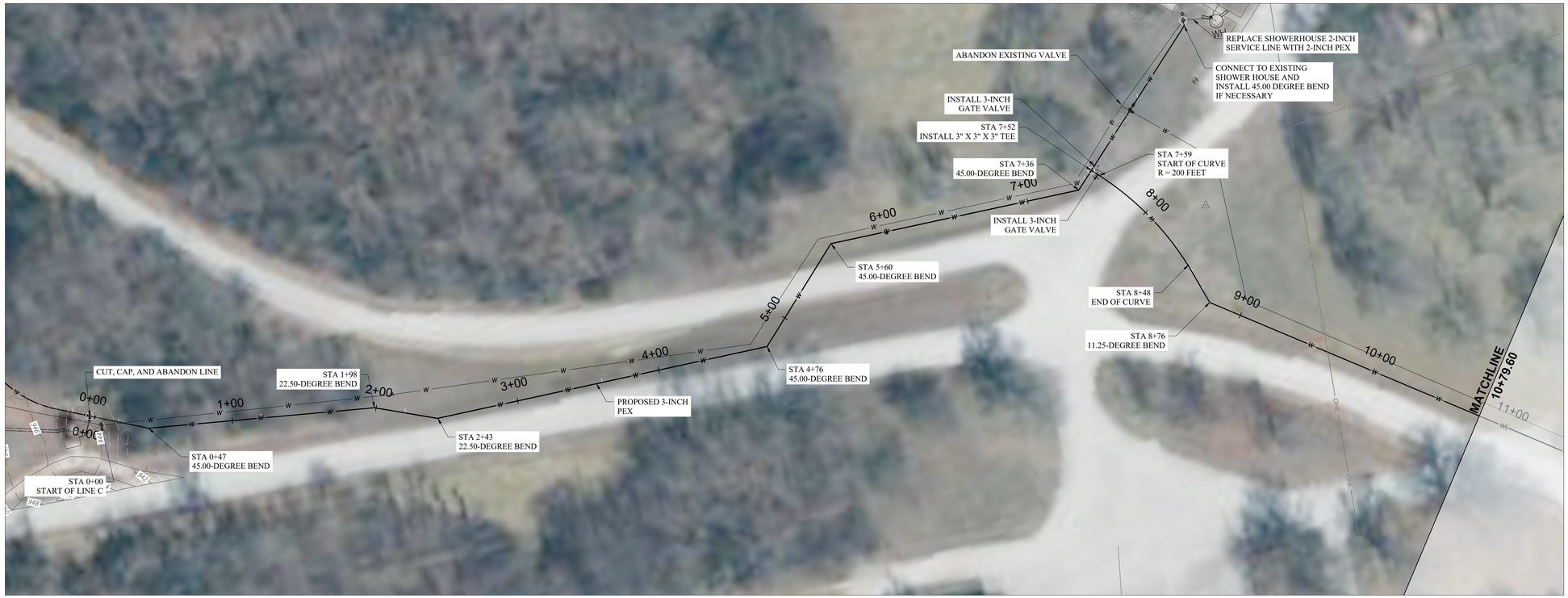
SHEET TITLE:

LINE B
STA. 0+00 - 12+67

SHEET NUMBER:

C-106

9 OF 14 SHEETS
JUNE 24, 2024



MISSOURI ONE CALL SYSTEM, INC.
1-800-344-7483
STOP-CALL BEFORE YOU DIG!

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
CONNIE M. WALDEN
NUMBER PE-2022008888
6-26-2024
PROFESSIONAL ENGINEER

GRE GREAT RIVER ENGINEERING

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

DEPARTMENT OF NATURAL RESOURCES
MISSOURI STATE PARKS

STOCKTON STATE PARK
WATER SYSTEM
IMPROVEMENTS

STOCKTON STATE PARK
CAMPGROUND AND MARINA
19100 S HIGHWAY 215
DADEVILLE, MO 65635

PROJECT # X2323-02
SITE # 5602
FACILITY # 7815602019

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 06/24/2024

CAD DWG FILE: XX2323-01
DRAWN BY: CAB
CHECKED BY: DLM
DESIGNED BY: CMW

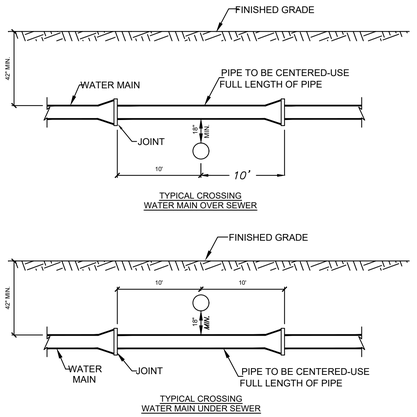
SHEET TITLE:

LINE C
STA. 0+00 - 15+70

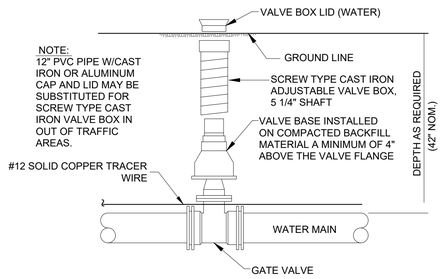
SHEET NUMBER:

C-107

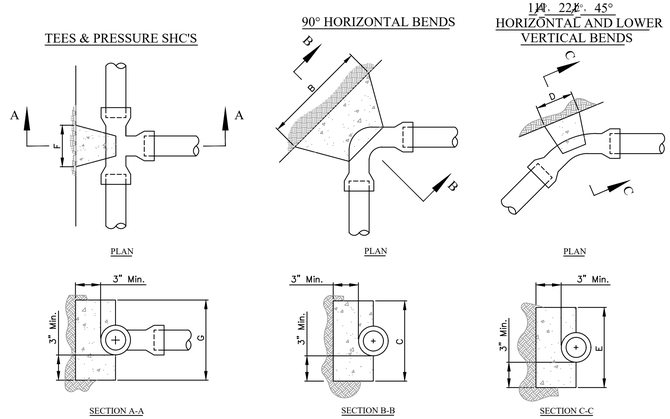
10 OF 14 SHEETS
JUNE 24, 2024



1 C501 WATER/SEWER CROSSING
NTS



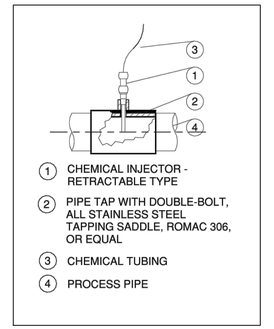
2 C501 TYPICAL GATE VALVE INSTALLATION
NTS



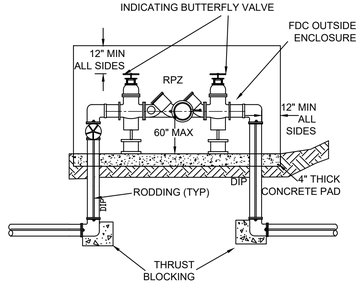
BLOCKING SCHEDULE						
PIPE SIZE	B	C	D	E	F	G
1" THRU 1 1/2"	8"	8"	10"	5"	6"	6"
2"	10"	10"	14"	7"	10"	10"
2 ½"	10"	10"	14"	7"	10"	10"
3"	12"	12"	18"	9"	12"	12"
4"	13"	12"	24"	12"	16"	16"

NOTES:
1. USE TYPE 1 CONCRETE
2. CARRY ALL BEARING SURFACES TO UNDISTURBED GROUND OR FIRM SUBGRADE.
3. BUTTRESS SIZED FOR 160 PSI.
4. DO NOT ENCASE JOINTS.
5. ONLY MIX POTABLE WATER.

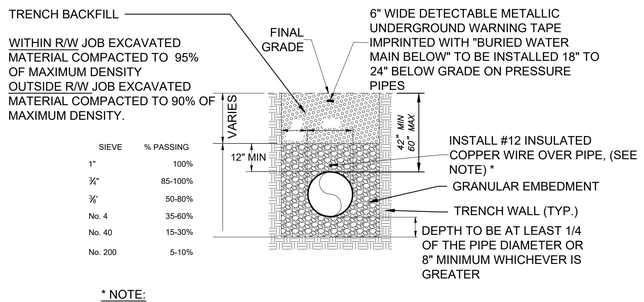
3 C501 THRUST BLOCKING
NTS



4 C501 CHEMICAL INJECTOR
NTS



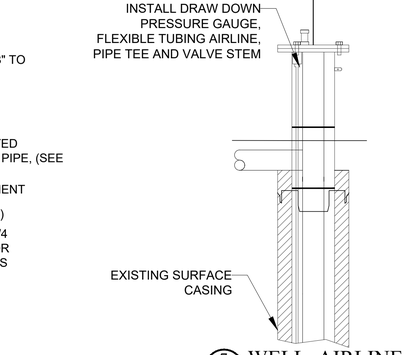
5 C501 TYPICAL BACKFLOW PREVENTER
NTS



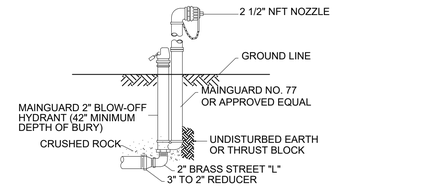
SIEVE	% PASSING
1"	100%
¾"	85-100%
⅜"	50-80%
No. 4	35-60%
No. 40	15-30%
No. 200	5-10%

* NOTE:
ENDS OF LOCATOR WIRE SHALL BE PLACED IN A 6" SDR 18 PVC RISER PIPE WITH CAST IRON LIDS AT 500' MIN. SPACING AND SHALL BE GROUNDED TO A 4'x1/2" DIA. COPPER ROD AT RISERS. ALL WIRE SPLICES SHALL USE BRASS/COPPER SPLIT-BOLT CONNECTORS.

6 C501 PIPE INSTALLATION DETAIL
NTS

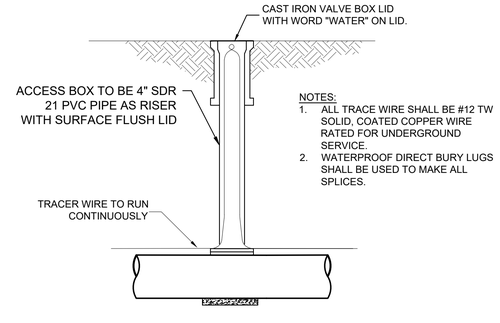


7 C501 WELL AIRLINE
NTS

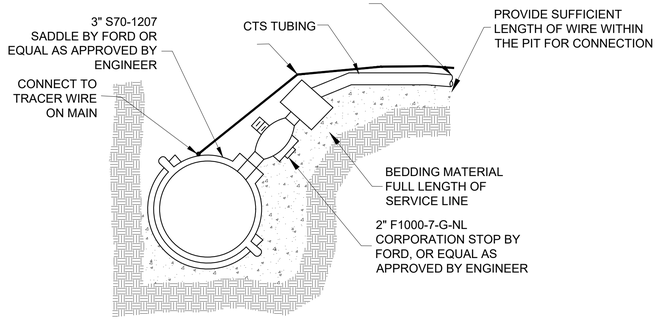


POST HYDRANTS SHALL BE NON-FREEZING, SELF DRAINING TYPE WITH A BURY. THESE HYDRANTS WILL BE FURNISHED WITH A 2" FIP INLET, A NON-TURNING OPERATING ROD, AND SHALL OPEN TO THE LEFT. ALL OF THE WORKING PARTS SHALL BE OF BRONZE-TO-BRONZE DESIGN, AND BE SERVICABLE FROM ABOVE GRADE WITH NO DIGGING. THE OUTLET SHALL ALSO BE BRONZE AND BE 2-1/2" NST> HYDRANTS SHALL BE LOCKABLE TO PREVENT UNAUTHORIZED USE AS MANUFACTURED BY KUPFERLE FOUNDRY CO., ST LOUIS, MO OR APPROVED EQUAL.

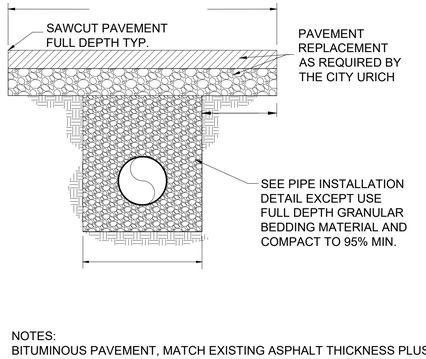
8 C501 TYPICAL FLUSHING VALVE
NTS

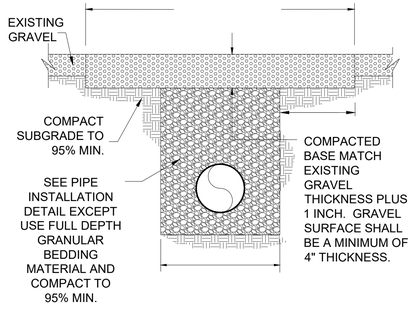


9 C501 TRACE WIRE INSTALLATION
NTS



10 C501 SADDLE WITH CORPORATION STOP
NTS





NOTES:
BITUMINOUS PAVEMENT, MATCH EXISTING ASPHALT THICKNESS PLUS 1 INCH. ASPHALT SHALL BE A MINIMUM OF 3" THICKNESS AND A MAXIMUM OF 6" THICKNESS. IF BITUMINOUS SURFACE THICKNESS IS 4 INCHES OR GREATER.

NO OPEN CUTTING OF PAVEMENT ON MODOT RIGHT OF WAY WITHOUT PRIOR PERMISSION AND AGREED UPON LIMITS AND MATERIALS.

11 C501 TYPICAL WATER MAIN TRENCH
NTS

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
CONNIE M. WALDEN
NUMBER PE-2022008888
6-28-2024
PROFESSIONAL ENGINEER

MISSOURI ONE CALL SYSTEM, INC.
1-800-344-7483
STOP-CALL BEFORE YOU DIG!

GRE GREAT RIVER ENGINEERING

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF NATURAL RESOURCES
MISSOURI STATE PARKS

STOCKTON STATE PARK
WATER SYSTEM IMPROVEMENTS

STOCKTON STATE PARK
CAMPGROUND AND MARINA
ROUTE 1 BOX 1715
DADEVILLE, MO 65635

PROJECT # X2323-02
SITE # 5602
FACILITY # 7815602019

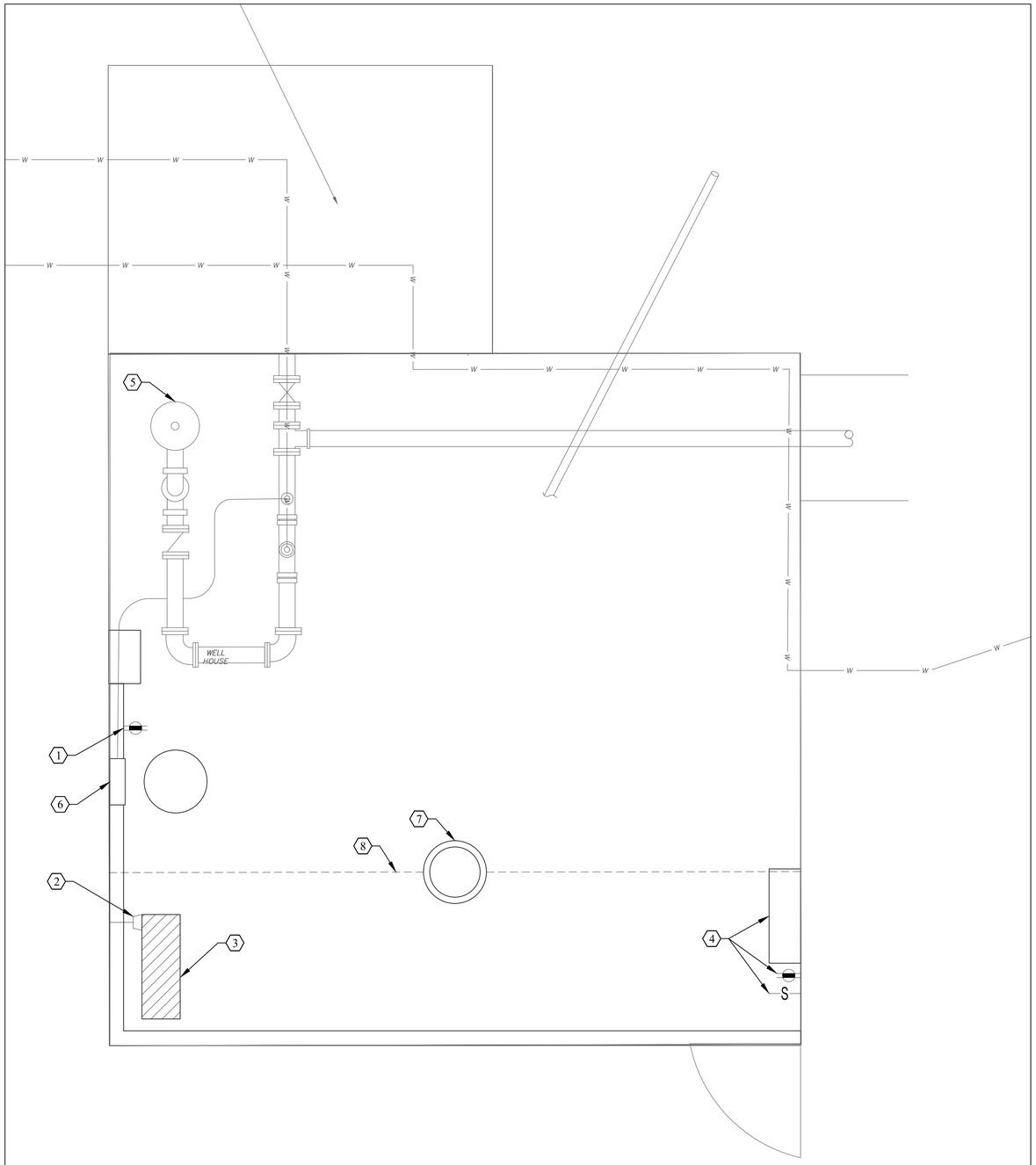
REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 06/24/2024

CAD DWG FILE: XX2323-01_C501
DRAWN BY: CAB
CHECKED BY: DLM
DESIGNED BY: CMW

SHEET TITLE:
WATER DETAILS

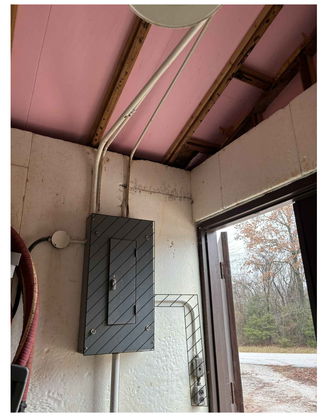
SHEET NUMBER:
C-501

11 OF 14 SHEETS
JUNE 24, 2024

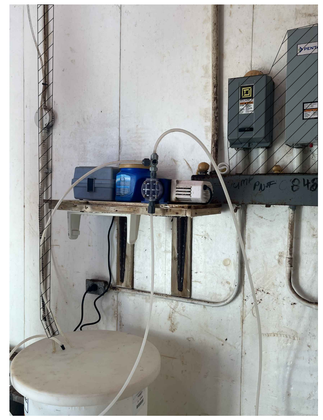


1 PROPOSED WELL HOUSE ELECTRICAL IMPROVEMENTS
SCALE: NTS

KEY NOTES	
1	PROPOSED GCFI OUTLET FOR CHLORINATION PUMP
2	PROPOSED UNIT HEATER COLLECTION
3	2 kW - 700 CFM; 240 V, SINGLE PHASE UNIT HEATER
4	PROPOSED ELECTRICAL PANEL BOARD WITH NEW GCFI OUTLET
5	EXISTING WELL HOUSE MOTOR
6	PROPOSED CHLORINE PUMP
7	EXISTING LIGHT FIXTURE TO REMAIN
8	EXISTING WIRING CONDUIT



1 E101 WELL HOUSE PANEL BOARD (TBR)
NTS



2 E101 WELL HOUSE ELECTRICAL (TBR)
NTS

CUSTOM ENGINEERING
MECHANICAL & ELECTRICAL ENGINEERING
12760 EAST 40 HIGHWAY
Independence, Missouri 64055
816.350.1473
www.CUSTOMENGR.COM
MISSOURI CERTIFICATE OF AUTHORITY #000239

MISSOURI ONE CALL SYSTEM, INC.
1-800-344-7483
STOP-CALL BEFORE YOU DIG!

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR

STATE OF MISSOURI
CRAIG KEITH BREWSTER
NUMBER E-2000150002
REGISTERED PROFESSIONAL ENGINEER
Craig Brewster
06-24-2024

GRE GREAT RIVER ENGINEERING

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
MISSOURI STATE PARKS

STOCKTON STATE PARK
WATER SYSTEM
IMPROVEMENTS

STOCKTON STATE PARK
CAMPGROUND AND MARINA
ROUTE 1 BOX 1715
DADEVILLE, MO 65635

PROJECT # X2323-02
SITE # 5602
FACILITY # 7815602019

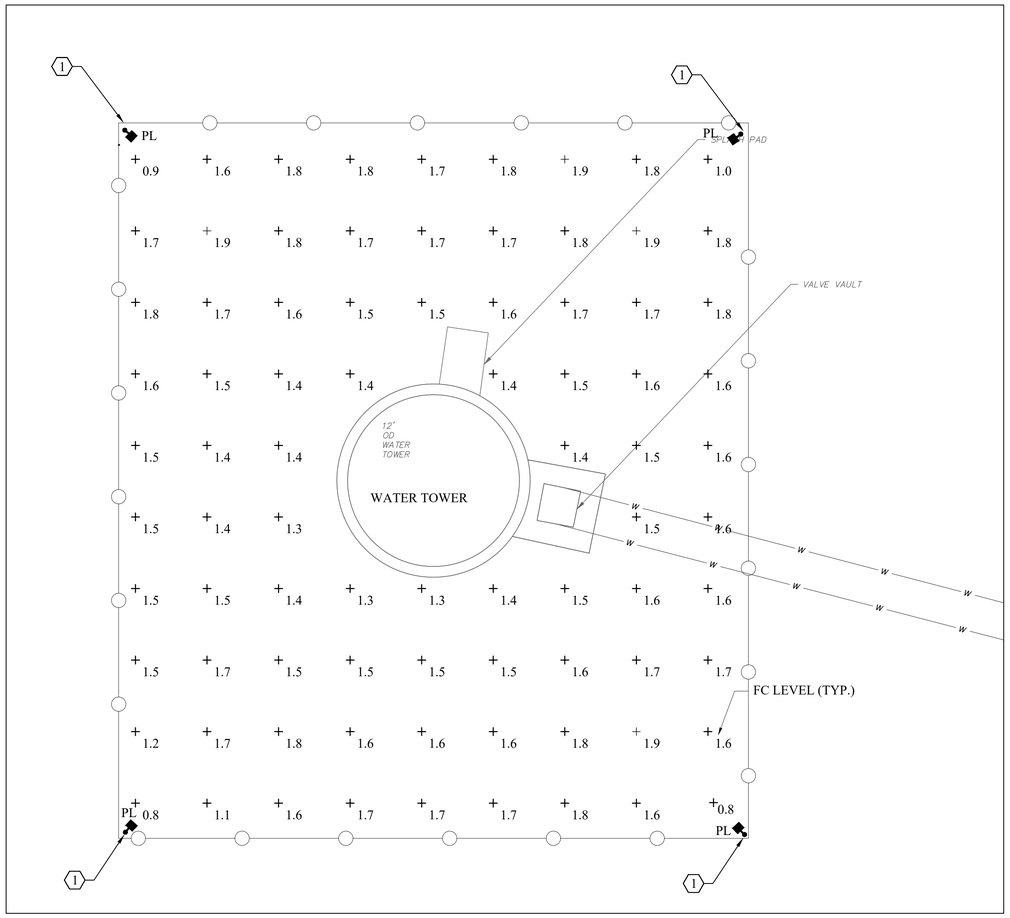
REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 06/24/2024

CAD DWG FILE: XX2323-01_E-101
DRAWN BY: MCC
CHECKED BY: GL
DESIGNED BY: CKB

SHEET TITLE:
ELECTRICAL PLAN

SHEET NUMBER:
E-101

12 OF 14 SHEETS
JUNE 24, 2024



1 WATER TOWER SOLAR SITE LIGHTING PLAN
SCALE: 1"=5'

KEY NOTES	
1	PROPOSED LOCATION OF SOLAR LED LIGHT POLE. REFER TO DETAIL 02 ON THIS SHEET FOR SOLAR LED LIGHT POLE SPECIFICATIONS.

IES RECOMMENDED MAINTAINED ILLUMINANCE VALUE FOR SITE AREA			
LABEL	UNITS	MIN	MAN/MAX
SITE AREA	FC	0.2	20.1

CALCULATION SUMMARY						
LABEL	UNITS	AVG	MAX	MIN	AVG/MIN	MAX/MIN
SITE AREA	+ FC	1.5	1.9	0.8	1.9	2.41

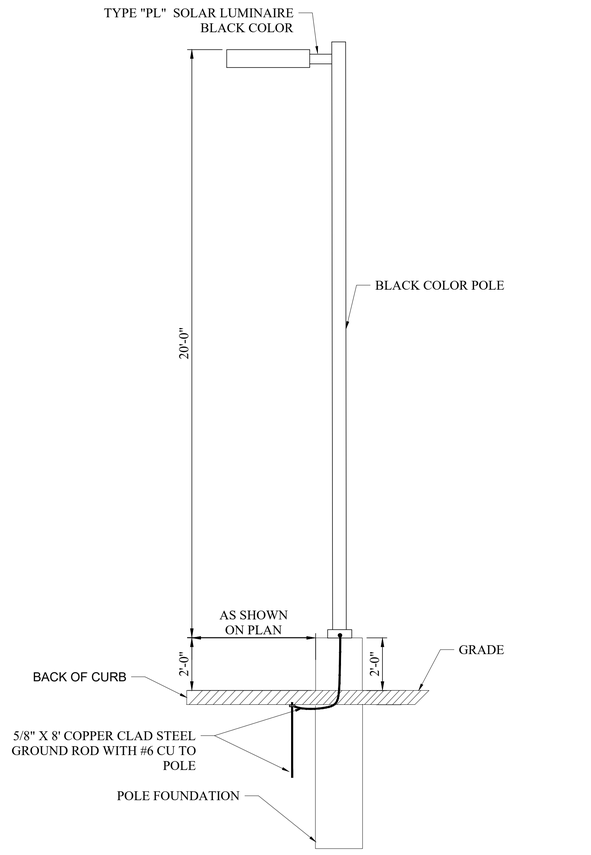
LUMINAIRE SCHEDULE						
SYMBOL	LABEL	DESCRIPTION	MANUFACTURE	MODEL	LUMENS	
	PL	SOLAR LED INTEGRATED COMMERCIAL AREA LIGHT WITH 20' POLE OR APPROVED EQUAL	FIRST LIGHT TECHNOLOGIES	SCL2-SPMU-BK-T3-WW-00	3250	

SOLAR LIGHT POLE AND DESIGN PARAMETERS

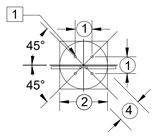
1. LUMINARE TYPE:
TYPE "PL"

FIRST LIGHT TECHNOLOGIES, CATALOG
#SCL2-SPMU-BK-T3-WW-00 OR APPROVED EQUAL.

2. POLE:
POLE "PL" COOPER LIGHTING, MODEL # SSX-5-A-20-S-BK-M-2
20 FT SQUARE STRAIGHT STEEL OR APPROVED EQUAL.



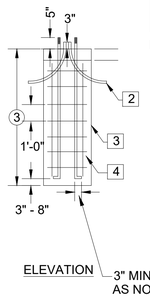
2 SOLAR SITE LIGHTING LUMINAIRE POLE DETAIL LUMINAIRE TYPE 'PL'
SCALE: NOT TO SCALE



DIMENSIONS

NO.	ITEM	DIMENSIONS
1	BOLT SPACING	USE MANUFACTURE TEMPLATE
2	DIAMETER OF FOUNDATION	24"
3	DEPTH OF FOUNDATION	6'-0"
4	BOLT CIRCLE DIAMETER	USE MANUFACTURE TEMPLATE

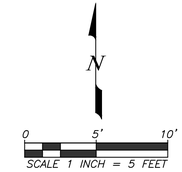
NOTE: REFER TO THE SHOP DRAWINGS FOR BOLT SPACING.
CONCRETE SHALL BE PER APWA REQUIREMENTS.



PARKING LOT LIGHT POLE FOUNDATIONS NOTES:

1. 1" DIAMETER ANCHOR BOLTS EXTENDED WITH #6 REBAR AS REQUIRED
2. PLUG ALL CONDUIT OPENINGS WITH DUXSEAL OR EQUIVALENT BEFORE PLACING CONCRETE & AFTER CABLE INSTALLATION. SEE PLANS FOR NUMBER & DIRECTION OF BENDS.
3. FURNISH AND INSTALL CONCRETE PER APWA REQUIREMENTS (MINIMUM OF 3000 PSI).
4. FURNISH AND INSTALL (7) #3 REBAR WITH 1' SPACING BETWEEN REBAR.

3 SITE LIGHTING LUMINAIRE POLE TYPE 'PL' FOUNDATION DETAIL
SCALE: NOT TO SCALE



CUSTOM ENGINEERING
MECHANICAL & ELECTRICAL ENGINEERING
12760 EAST 40 HIGHWAY
Independence, Missouri 64055
816.350.1473
www.CUSTOMENGR.COM
MISSOURI CERTIFICATE OF AUTHORITY #000239

MISSOURI ONE CALL SYSTEM, INC.
1-800-344-7483
STOP-CALL BEFORE YOU DIG!

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR

STATE OF MISSOURI
CRAIG KEITH BREWSTER
NUMBER
E-2000150002
REGISTERED PROFESSIONAL ENGINEER
Craig Brewster
06-24-2024

GRE GREAT RIVER ENGINEERING

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
MISSOURI STATE PARKS

STOCKTON STATE PARK
WATER SYSTEM
IMPROVEMENTS

STOCKTON STATE PARK
CAMPGROUND AND MARINA
ROUTE 1 BOX 1715
DADEVILLE, MO 65635

PROJECT # X2323-02
SITE # 5602
FACILITY # 7815602019

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 06/24/2024

CAD DWG FILE: XX2323-01_E-102
DRAWN BY: AAS
CHECKED BY: GL
DESIGNED BY: AAS

SHEET TITLE:
WATER TOWER
SITE LIGHTING
PLAN

SHEET NUMBER:
E-102

13 OF 14 SHEETS
JUNE 24, 2024

GENERAL ELECTRICAL NOTES:

1. ALL WORK SHALL CONFORM WITH THE NATIONAL ELECTRICAL CODE AND ALL STATE AND LOCAL CODES AND ORDINANCES AND O.S.H.A. WHERE MINIMUM CODE REQUIREMENTS ARE EXCEEDED BY THE REQUIREMENTS INDICATED IN THE SPECIFICATIONS AND ON THESE DRAWINGS, THE DRAWINGS AND SPECIFICATIONS SHALL TAKE PRECEDENCE. (IN THE CASE OF CODE CONFLICT DIRECTION SHALL BE TAKEN FROM THE MORE STRICT OF THE CONFLICTING CODES).

2. CAREFULLY REVIEW CONTRACT DOCUMENTS INCLUDING DRAWINGS & PROJECT MANUAL. INFORMATION REGARDING WORK OF THE VARIOUS TRADES & SUBCONTRACTORS ARE DISPERSED THROUGHOUT THE DOCUMENTS & CANNOT BE ACCURATELY DETERMINED WITHOUT REFERENCE TO THE FULL SET OF DOCUMENTS. CONTRACTOR SHALL COORDINATE INSTALLATION OF UTILITIES TO PROVIDE THE GREATEST POSSIBLE CLEARANCE FOR INSTALLATION OF THE MECHANICAL, PLUMBING, & ETC. CONDUIT & PIPE TO BE RUN TO MAXIMIZE USE OF CEILING SPACE FOR USE BY OTHER TRADES.

3. ALL EMPTY CONDUITS SHALL BE PROVIDED WITH A PULL WIRE OR STRING.

4. AT THE CONCLUSION OF THIS PROJECT PROVIDE AN UPDATED TYPEWRITTEN, AS-BUILT DIRECTORY INSIDE EACH PANELBOARD PROPERLY IDENTIFYING EACH CIRCUIT USED & THE SPECIFIC LOAD SERVED. ALSO PROVIDE SCHEDULES ON CD DISK.

5. OPENINGS SHALL BE CUT TO THE EXACT SIZE REQUIRED IN ORDER TO MAINTAIN ANY MATERIAL RATINGS AND SEALED TO MAINTAIN RATING.

6. CONCEAL ALL ELECTRICAL WIRING AND RACEWAYS WHERE CONSTRUCTION PERMITS. EXPOSED RACEWAY SHALL BE MINIMIZED WHERE STRUCTURE IS EXPOSED TO VIEW. WHERE NECESSARY, CAREFULLY INSTALL RACEWAYS PARALLEL TO WALLS, BEAMS AND COLUMNS. EXPOSED RACEWAY SHALL BE HELD TIGHT TO STRUCTURE & LOCATED SO AS TO KEEP IT AS INCONSPICUOUS AS POSSIBLE.

7. INSTALL ANY/ALL CORD SETS SUPPLIED WITH THE EQUIPMENT.

8. PROVIDE A DISCONNECT SWITCH AND HARD WIRED CONNECTION USING FLEXIBLE LIQUID-TIGHT CONDUIT AND FITTINGS, TO ANY EQUIPMENT THAT IS NOT SHOWN TO HAVE A POWER RECEPTACLE.

9. ALL EXTERIOR MOUNTED ELECTRICAL DEVICES AND EQUIPMENT SHALL BE IN WEATHERPROOF ENCLOSURE AND U.L. LISTED FOR WET LOCATION AND/OR UL/NEMA 3R LISTED.

10. CONTRACTOR SHALL REFER TO ARCHITECTS DETAILS AND ELEVATIONS FOR COORDINATION OF LOCATION OF ALL WIRING DEVICES BEFORE ROUGH-IN OF J-BOXES.

11. PROVIDE FIRESTOPPING TO MAINTAIN FIRE RATINGS AT ALL PENETRATIONS OF RATED CONSTRUCTION.

12. COORDINATE LOCATIONS OF THERMOSTATS WITH THE MECHANICAL CONTRACTOR.

13. MOUNT DISCONNECT SWITCHES AND COMBINATION STARTERS AT 65" AFF. TO TOP OF ENCLOSURE UNLESS OTHERWISE INDICATED.

14. PROVIDE ALL NECESSARY FLOOR CUTTING/PENETRATIONS AND ALL OF THE REPATCHING NECESSARY FOR THE PROPER EXECUTION OF THIS WORK.

15. ALL PANELBOARDS SHALL HAVE SEPARATE GROUNDING AND NEUTRAL BUSSES. ALL GROUNDING AND NEUTRAL WIRING SHALL BE TERMINATED ON THE PROPER BUS.

16. ALL SINGLE-PHASE CIRCUITS SHALL HAVE A DEDICATED NEUTRAL CONDUCTOR.

17. ALL EXTERIOR DEVICE FACEPLATES SHALL BE WEATHERPROOF DIE CAST METAL.

18. RENEWABLE FUSES SHALL NOT BE USED.

19. PROVIDE FUSIBLE EQUIPMENT WITH FUSE HOLDERS THAT WILL ACCEPT FUSES THAT ARE DIMENSIONALLY THE SAME AS CLASS H FUSES.

20. SAFETY SWITCHES IN MECHANICAL ROOMS SHALL HAVE NEMA 3R ENCLOSURES UNLESS NOTED OTHERWISE.

21. ALL SAFETY SWITCHES SHALL HAVE A GROUNDING BAR.

22. ALL SAFETY FUSES/DISCONNECT SWITCHES SHALL BE HEAVY-DUTY GRADE.

23. ALL FEEDERS SHALL HAVE A SEPARATE COPPER GROUNDING CONDUCTOR INSTALLED. IN NO CASE SHALL THE CONDUIT OR RACEWAY BE USED AS THE GROUNDING CONDUCTOR.

24. ALL SERVICE, FEEDER, AND BRANCH CIRCUIT CONDUCTORS SHALL HAVE TYPE THWN/THHN (75 DEGREE) INSULATION.

25. COORDINATE ALL DEVICES AND WIRING WITH EQUIPMENT NAMEPLATE DATA. VERIFY THE ELECTRICAL LOADS, MOUNTING HEIGHTS AND NEMA CONFIGURATIONS WITH THE MECHANICAL, PLUMBING, AND OTHER CONTRACTORS AND SUPPLIERS PRIOR TO ROUGH-IN.

26. PROVIDE FINAL CONNECTION, WIRING, HOOK-UP, ETC. FOR ALL EQUIPMENT AND CONTROLS REQUIRING ELECTRICAL POWER TO OPERATE. REFER TO THE MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

27. FURNISH AND INSTALL ALL WIRE, WIREWAY, CONDUIT, CONNECTORS, OUTLETS, ETC, NECESSARY TO ACHIEVE A COMPLETE AND WORKING INSTALLATION.

GENERAL CONSTRUCTION NOTES:

1. ALL ELECTRICAL POWER WIRE SHALL NOT BE SMALLER THAN #12 A.W.G. COPPER. ALUMINUM CONDUCTORS SHALL NOT BE PERMITTED. ALL SERVICE, FEEDER, AND BRANCH CIRCUIT CONDUCTORS SHALL HAVE TYPE THWN/THHN (90 DEGREE) INSULATION.

2. THE TERM "E.C." IN THESE NOTES REFERS TO THE ELECTRICAL CONTRACTOR.

3. ELECTRICAL CONTRACTOR SHALL COORDINATE THIS WORK WITH THE MECHANICAL CONTRACTOR.

4. ELECTRICAL CONNECTION TO ALL EQUIPMENT SUPPLIED BY OTHERS SHALL BE THE RESPONSIBILITY OF THE E.C. UNLESS OTHERWISE NOTED.

5. COORDINATE WIRING OF THERMOSTATS WITH THE MECHANICAL CONTRACTOR.

6. COORDINATE ALL ELECTRICAL/UTILITY REQUIREMENTS WITH THE UTILITY.

DEMOLITION NOTES:

1. DEMOLITION PLANS SHOW THE GENERAL EXTENT OF THE ELECTRICAL DEMOLITION WORK. THE ELECTRICAL CONTRACTOR SHALL DISCONNECT ELECTRICAL SERVICE TO EQUIPMENT BEING REMOVED. OWNER SHALL HAVE THE OPTION TO RETAIN REUSABLE ITEMS, SUCH AS COVERPLATES, RECEPTACLES, LIGHTS, PANELS, ETC. NOT BEING USED IN THE FINISHED WORK. COORDINATE WITH OWNER PRIOR TO STARTING DEMOLITION. PROPERLY AND LEGALLY DISPOSE OF ALL EQUIPMENT AND MATERIALS BEING REMOVED.

2. REMOVE ALL CONDUIT LEFT EXPOSED BY REMODELED AREAS. PLUG BOTH ENDS OF REMAINING CONDUIT IN WALL OR FLOOR WHERE CUT.

3. ELECTRICAL OUTLETS, ETC. POSSIBLY CONCEALED BY STORAGE SHELVING, CASEWORK, FURNITURE, ETC. ARE NOT SHOWN AND MAY REQUIRE REMOVAL.

4. CONTRACTOR SHALL BE RESPONSIBLE PATCHING ALL OPENINGS IN EXISTING CONSTRUCTION AFTER REMOVAL OF EQUIPMENT AND ELECTRICAL DEVICES ETC.

5. WHERE EQUIPMENT AND OTHER DEVICES ARE BEING REMOVED, THE CIRCUITING SHALL BE REMOVED, IF POSSIBLE, BACK TO POINT OF SUPPLY. WHERE REQUIRED, CIRCUITING SHALL BE EXTENDED TO MAINTAIN CONTINUITY OF THE CIRCUIT OR OPERATION OF THE SYSTEM.

6. ALL DEVICES SHOWN DASHED ON THE PLAN(S) SHALL BE REMOVED, UNLESS OTHERWISE NOTED.

7. PROVIDE MATCHING BLANK COVERPLATES WHERE DEVICES ARE BEING REMOVED FROM EXISTING WALL TO REMAIN.

8. FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO BEGINNING OF WORK.

ABBREVIATIONS

AC	ABOVE COUNTER
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
DISP	DISPOSAL
DWG	DRAWING
EC	ELECTRICAL CONTRACTOR
EXIST	EXISTING
FACP	FIRE ALARM CONTROL PANEL
GC	GENERAL CONTRACTOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFI	GROUND FAULT INTERRUPTER
GND	GROUNDED
KVA	KILOVOLT
KW	KILOWATT
MDP	MAIN DISTRIBUTION PANEL
M.L.O.	MAIN LUGS ONLY
N.E.C.	NATIONAL ELECTRICAL CODE
NTS	NOT TO SCALE
PNL	PANELBOARD
S/E	SERVICE ENTRANCE LISTED LABELED
TYP	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
WP	WEATHERPROOF

NEW PANELBOARD ID : PNL-1 S/E RATED

VOLTAGE : 240 / 120 V — LOCATION : WELL HOUSE
PHASE / WIRE : 1 PHASE, 3 WIRE — ENCLOSURE : NEMA 4X
RATED AMPERAGE : 100 AMPS. — MOUNTING : WALL MOUNTED
MAIN : 100 MAIN BREAKER
A.I.C. (RMS SYM. AMPS.) : 22 kA

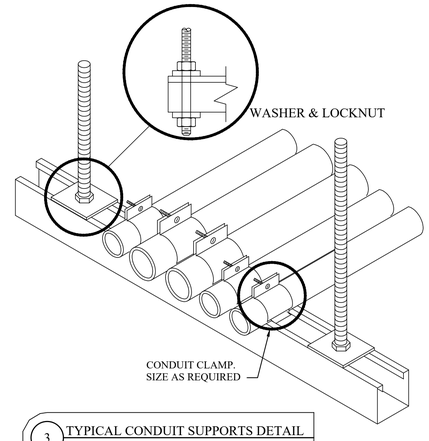
CKT. #	LOAD DESCRIPTION	CKT. VA	BREAKER AMPS.	BREAKER P	PHASE LOADS VA A	PHASE LOADS VA B	PHASE LOADS VA C	BREAKER P	BREAKER AMPS.	CKT. VA	LOAD DESCRIPTION	CKT. #
1	CL2 PUMP	528	20	1	528	-	360	1	20	360	LIGHT & RECEPTACLE	2
3	GFIC NEAR PANEL	180	20	1	180	-	0	1	20	0	SPARE	4
5	SPARE	0	20	1	0	-	1000	2	20	1000	2KW UNIT HEATER	6
7	WELL PUMP MOTOR 5HP LOCKABLE BREAKER	1748	40	2	1748	-	1000			1000		8
9		1748			1748	-	0	1	20	0	SPARE	10
11	SPACE	0	-	1	0	-	0	1	-	0	SPACE	12
13	SPACE	0	-	1	0	-	0	1	-	0	SPACE	14
15	SPACE	0	-	1	0	-	0	1	-	0	SPACE	16
17	SPACE	0	-	1	0	-	0	1	-	0	SPACE	18
					4204	0	2360					

TOTAL CONNECTED KVA : 6.6 — TOTAL DEMAND KVA : 6.6
TOTAL CONNECTED AMPERES : 27.4 — TOTAL DEMAND AMPERES : 27.5

PNL-1 FEEDER SCHEDULE

CIRCUIT #NO	EQUIPMENT SERVED DESCRIPTION	CONDUCTORS SETS	CONDUCTORS NO.	CONDUCTORS SIZE	GROUND SIZE PER SET	CONDUIT SIZE PER SET	SPARE CONDUIT
PNL-1:1	CL2 PUMP	1	2	#12 CU THHN	#12	1/2"	
PNL-1:3	GFCI NEAR PANEL	1	2	#12 CU THHN	#12	1/2"	
PNL-1:7,9	WELL PUMP MOTOR 5HP	1	2	#12 CU THHN	#12	1/2"	
PNL-1:2	LIGHT & RECEPTACLE	1	2	#12 CU THHN	#12	1/2"	
PNL-1:6,8	2KW UNIT HEATER	1	2	#12 CU THHN	#12	1/2"	

GENERAL NOTES:
1. REFER TO ELECTRICAL DETAILS BELOW FOR TYPICAL GROUNDING DETAIL.

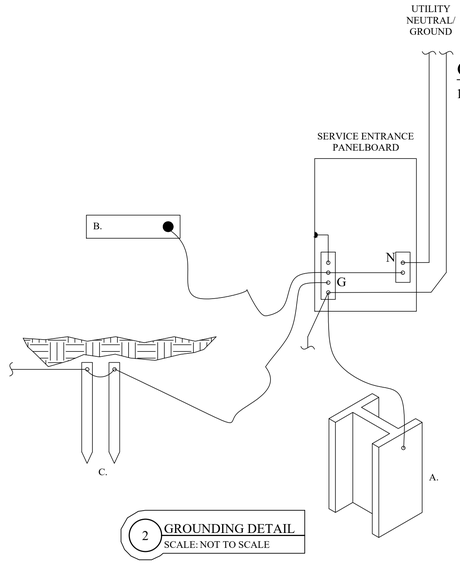


3 TYPICAL CONDUIT SUPPORTS DETAIL
SCALE: NOT TO SCALE

CONDUIT SUPPORT NOTES:

1. METAL CHANNEL STRUT SUPPORT LONGER THAN THAN 36" SHALL BE INSTALLED WITH A CENTER SUPPORT ROD.

2. FASTEN THREADED ROD TO STRUCTURE BY APPROVED METHOD PER SPECIFICATION 26 0533, RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS. FIELD VERIFY EXACT CONDITIONS.



2 GROUNDING DETAIL
SCALE: NOT TO SCALE

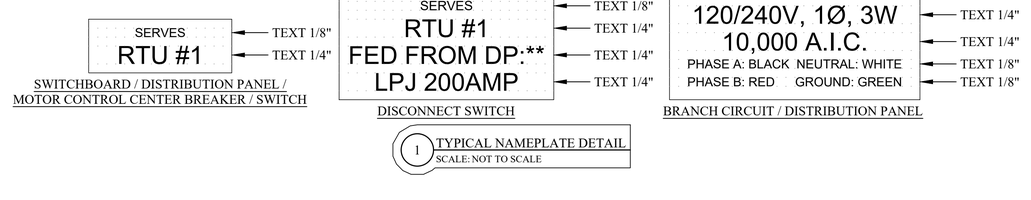
GROUNDING DETAIL NOTES:

1. PROVIDE CONDUIT, #6 GND GROUNDING ELECTRODE CONDUCTOR AND FITTINGS, AND LABOR NEEDED TO BOND TOGETHER GROUNDING ELECTRODES PRESENT IN THE BUILDING AS DESCRIBED IN 250.52(A) OF THE 2023 EDITION OF THE NATIONAL ELECTRICAL CODE TO FORM THE GROUNDING ELECTRODE SYSTEM FOR THE BUILDING. ELECTRODES SHALL INCLUDE:

   A. METAL FRAME OF THE STRUCTURE IN DIRECT CONTACT WITH THE EARTH OR ENCASED IN CONCRETE IN DIRECT CONTACT WITH THE EARTH, OR BONDED TO CONCRETE-ENCASED ELECTRODE IN CONTACT WITH THE EARTH.

   B. CONCRETE-ENCASED ELECTRODE (ONE OR MORE CONTINUOUS OR TIED 20' REINFORCING ROD) ENCASED BY AT LEAST 2" OF CONCRETE LOCATED AT THE BOTTOM OF THE STRUCTURAL FOUNDATION.

   C. (2) - 10' X 3/4" DIA. DRIVEN GROUND RODS 6' APART. REFER TO GROUNDING SYSTEM DETAIL ON THIS SHEET.



1 TYPICAL NAMEPLATE DETAIL
SCALE: NOT TO SCALE

CUSTOM ENGINEERING
MECHANICAL & ELECTRICAL ENGINEERING
12760 EAST 40 HIGHWAY
Independence, Missouri 64055
816.350.1473
www.CUSTOMENGR.COM
MISSOURI CERTIFICATE OF AUTHORITY #000239

MISSOURI ONE CALL SYSTEM, INC.
1-800-344-7483
STOP - CALL BEFORE YOU DIG!

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

GRE GREAT RIVER ENGINEERING

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

DEPARTMENT OF NATURAL RESOURCES
MISSOURI STATE PARKS

STOCKTON STATE PARK
WATER SYSTEM IMPROVEMENTS

STOCKTON STATE PARK
CAMPGROUND AND MARINA
ROUTE 1 BOX 1715
DADEVILLE, MO 65635

PROJECT # X2323-02
SITE # 5602
FACILITY # 7815602019

REVISION:
DATE:
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 06/24/2024

CAD DWG FILE: XX2323-01_E-301
DRAWN BY: MCC
CHECKED BY: GL
DESIGNED BY: CKB

SHEET TITLE:
ELECTRICAL SCHEDULES

SHEET NUMBER:
E-103

14 OF 14 SHEETS
JUNE 24, 2024