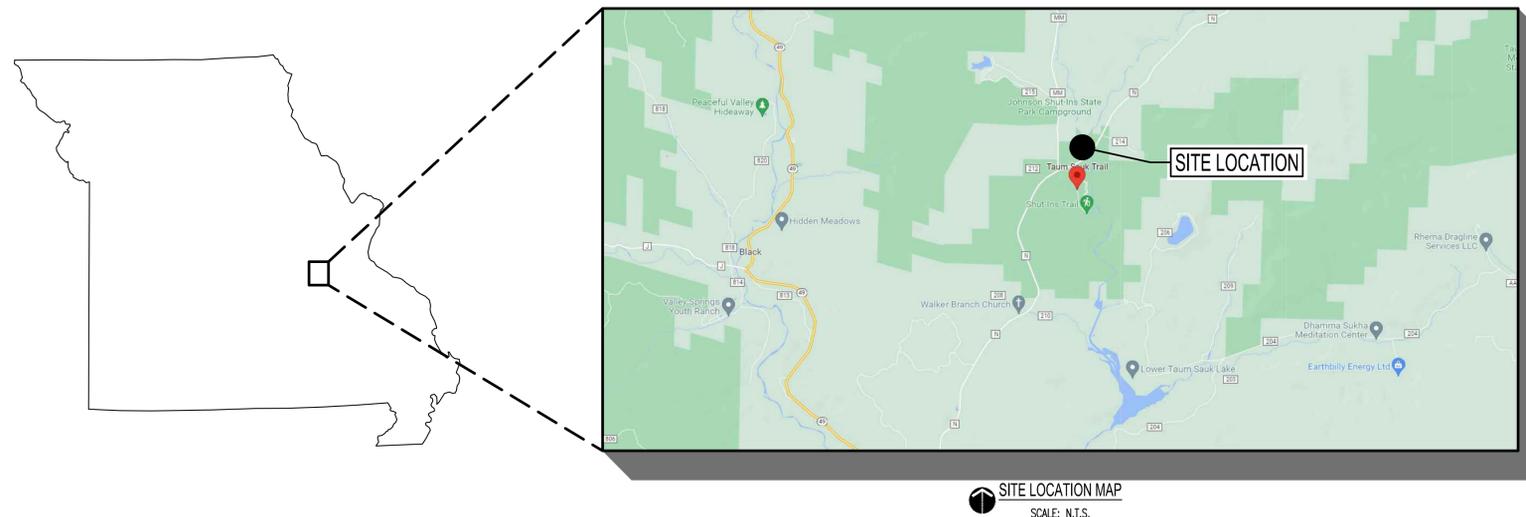


SIX NEW FULL SERVICE CABINS

JOHNSON'S SHUT-INS STATE PARK

MIDDLE BROOK, MO. 63656



OWNER: STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR

DEPARTMENT OF
NATURAL RESOURCES

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



FRONTENAC ENGINEERING GROUP
CIVIL / STRUCTURAL / LAND SURVEYING
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ST. LOUIS, MISSOURI 63143
PHONE: (314) 644-2200

WWW.FE-STL.COM
MO CERTIFICATE OF AUTHORITY:
CIVIL / STRUCTURAL ENGINEERING: 001225
LAND SURVEYING: 000282

DESIGNER: FRONTENAC ENGINEERING GROUP
2725 SUTTON BLVD.
ST. LOUIS MO. 63143

PROJECT NUMBER: X2206-01

SITE NUMBER: 5213
FACILITY NUMBER: 7815213016, 7815213017, 7815213018,
7815213019, 7815213020, 7815213021

BUILDING CODE: 2018 I.B.C.

SEISMIC REQUIREMENTS: ASCE 7-16
ZIP CODE: 63656
SITE CLASS: D
SDS: 499
CS: .186

SHEET NUMBER:

C0.0

1 OF 75 SHEETS
APRIL 11, 2023



SIX NEW FULL SERVICE CABINS

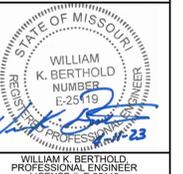
JOHNSON'S SHUT-INS STATE PARK

(PROJECT NO. X2206-01)

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR

CONSTRUCTION DOCUMENTS

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ELECTRICAL, MECHANICAL/PLUMBING
ENGINEERING: 2007023885



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OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION



SIX NEW FULL SERVICE CABINS - JOHNSON'S SHUT-INS STATE PARK

PROJECT # X2206-01
SITE # 5213
FACILITY # 7815213016, 7815213017, 7815213018, 7815213019, 7815213020, 7815213021

REVISIONS

NO.	DATE	DESCRIPTION

DATE: 04.11.2023
FE PROJECT #: 220058

CHECK: WKB

SHEET TITLE:
COVER SHEET 2

3 OF 75 SHEETS
SHEET NUMBER
C0.1

PROJECT CONTACTS

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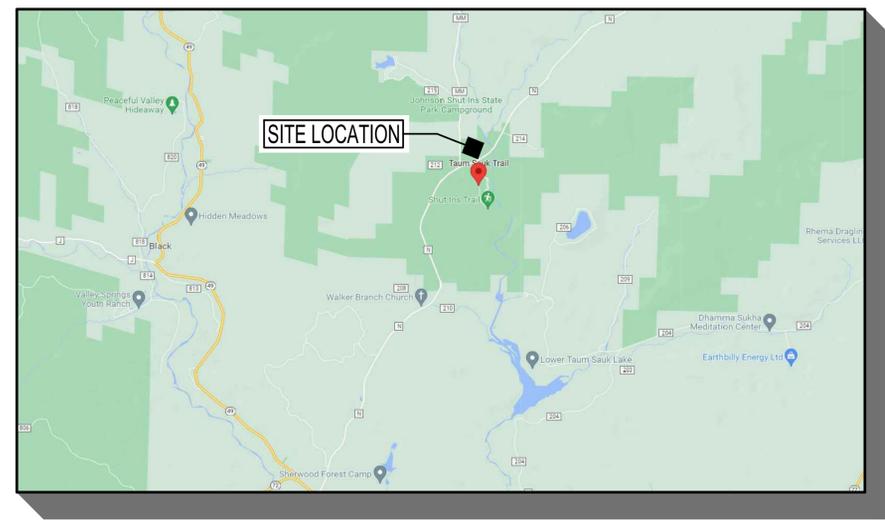
LAND SURVEYOR:
PITZMAN'S COMPANY
2725 SUTTON BLVD., ST. LOUIS, MO 63143
TEL: 314-781-5665
www.pitzmans.com

MEP ENGINEER:
303rd ENGINEERING GROUP
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TEL: 314-664-3382

FIRE PROTECTION:
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TEL: 314-965-8052

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C0.1	COVER SHEET 2
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C2.0	MASTER SITE IMPROVEMENT PLAN
C3.0	HABITAT PROTECTION PLAN
C4.0	SITE IMPROVEMENT PLAN 1
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C5.0	SITE GRADING PLAN 1
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C6.0	WALKER SITE - TEMPORARY FACILITIES
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SITE LOCATION MAP
SCALE: N.T.S.

GENERAL NOTES

- UNDERGROUND FACILITIES, STRUCTURES, AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND RECORDS. THEREFORE, THEIR LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. THERE MAY BE OTHERS, THE EXISTENCE OF WHICH IS PRESENTLY NOT KNOWN. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE ALL UNDERGROUND UTILITIES LOCATED IN THE FIELD PRIOR TO EXCAVATION OR CONSTRUCTION.
- ANY EXCESS CONSTRUCTION AND/OR EXCAVATION MATERIALS SHALL BE REMOVED FROM SITE AND DISPOSED OF PROPERLY BY THE CONTRACTOR.
- CONTRACTOR TO DISTURB AFFECTED AREAS THE MINIMUM AMOUNT NECESSARY TO COMPLETE THE WORK AND TO TAKE EXTRA CARE NOT TO DISTURB ANY AREAS OUTSIDE THE CONSTRUCTION AREA LIMITS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING EROSION CONTROL DEVICES AS NECESSARY TO CONTROL EROSION DURING THE COURSE OF CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL CONSTRUCTION PERMITS FROM THE DEPARTMENT OF NATURAL RESOURCES (M.D.N.R.) AND MODOT, AS WELL AS ANY OTHER PERMITS.
- INSTALLATION OF LANDSCAPING AND ENTRANCE SIGNAGE CONSTRUCTION BY MISSOURI DIVISION OF STATE PARKS, SHALL BE REVIEWED BY THE MODOT FOR SIGHT DISTANCE CONSIDERATION AND APPROVED PRIOR TO INSTALLATION OR CONSTRUCTION.
- INTERIM STORM WATER DRAINAGE CONTROL IN THE FORM OF EROSION AND SILTATION CONTROL MEASURES ARE REQUIRED AS INDICATED ON THE DRAWINGS AND IN THE PROJECT SPECIFIC STORMWATER POLLUTION PREVENTION PLAN (SWPPP). MISSOURI PARKS STAFF WILL PROVIDE A SPECIAL INSPECTOR TO MONITOR AND ENFORCE COMPLIANCE WITH THE SWPPP.
- ALL STORM WATER SHALL BE DISCHARGED AT AN ADEQUATE NATURAL DISCHARGE POINT.
- CONTRACTOR TO CLEAN AND MAINTAIN ALL ROADS AND HIGHWAYS USED FOR ACCESS IN A CLEAN CONDITION THROUGHOUT CONSTRUCTION.
- ALL FILLED AREAS, INCLUDING TRENCH BACK FILLS, UNDER BUILDING, PROPOSED STORM AND SANITARYSEWER LINES, PUBLIC RIGHT-OF-WAY AND PAVED AREAS SHALL BE COMPACTED TO A MINIMUM OF 90% OF MAXIMUM DRY DENSITY AS DETERMINED BY THE MODIFIED AASHTO COMPACTION TEST, ASTM D1557-78.
- CONTRACTOR TO CALL 1-800-DIG-RITE TO HAVE ALL UTILITIES LOCATED ON THE GROUND IN ALL AREAS AFFECTED BY CONSTRUCTION, PRIOR TO BEGINNING CONSTRUCTION. CONTRACTOR SHALL ALSO CALL MODOT AND M.D.N.R. TO REVIEW WORK PLAN PRIOR TO COMMENCING CONSTRUCTION AND TO REQUEST FIELD LOCATES FOR ALL UTILITIES NOT PARTICIPATING IN MISSOURI-1-CALL SYSTEM AND STATE AND PRIVATE UTILITIES.
- FOR HYDROGEN SULFIDE PROTECTION, NEW MANHOLES SHALL HAVE FLEXIBLE SHEET LINERS WITH LOCKING EXTENSIONS (AMERON PROTECTIVE LINING DIVISION, AMER-PLATE T-LOCK) MANHOLE BOTTOMS SHALL BE TREATED WITH EPOXY COATING (RAVEN LINING SYSTEMS AQUATOPOXY A-6, TERRE HILL COMPOSITES MULTIPLEX LINER THC-610-SL-68)
- THE CONTRACTOR SHALL IDENTIFY, PROTECT AND COORDINATE WITH THE OWNER TO (MAKE ADEQUATE MONUMENTS) THAT MAY BE DISTURBED PRIOR TO COMMENCING THE WORK. THE CONTRACTOR SHALL ALSO HIRE A MISSOURI PROFESSIONAL LAND SURVEYOR TO RESTORE ANY SURVEY MONUMENTS THAT ARE DISTURBED DURING CONSTRUCTION.
- THE CONTRACTOR SHALL HIRE A MISSOURI PROFESSIONAL LAND SURVEYOR TO DOCUMENT THE NEW SITE UTILITY WORK, "AS-BUILT", INCLUDING ALL SEWER STRUCTURES, WATER SUPPLY AND OTHER BURIED UTILITIES PRIOR TO COMPLETING FINISHED GRADING.
- CONTRACTOR SHALL PROVIDE MODOT A PERFORMANCE BOND FOR WORK IN THEIR RIGHT-OF-WAY

SITE ADDRESS

148 TAUM SAUK TRAIL
MIDDLE BROOK, MO. 63656

LEGENDS

EXISTING

- MANHOLE
- AIR RELEASE VALVE
- AREA/ STREET INLET
- 2 GRATE INLET
- SANITARY OR COMBINED SEWER STRUCTURE DESIGNATOR
- STORM SEWER STRUCTURE DESIGNATOR
- FLARED END SECTION
- PAD MOUNTED TRANSFORMER
- UTILITY POLE ANCHOR
- FIRE HYDRANT (FH)
- WATER METER (WM)
- WATER VALVE (WV)
- POST INDICATOR VALVE
- SIAMSE CONNECTOR
- SPOT ELEVATION
- GAS METER (GM)
- GAS VALVE (GV)
- UTILITY POLE (UP)
- SION
- RETAINING WALL DESIGNATOR
- FLOW LINE OF CREEK OR DITCH

NEW

- CONTOURS
- SANITARY SEWERS
- STORM SEWERS
- WATER
- UNDERGROUND ELEC
- OVERHEAD ELEC
- TELEPHONE
- GAS
- FENCE
- TREE LINE
- AIR CONDITION UNIT
- BENCHMARK
- BOLLARD
- CABLE TV PEDESTAL
- ELECTRIC BOX
- ELECTRIC M.H.
- ELECTRIC METER
- FLAG POLE
- TREE
- FLOW DIRECTION

ABBREVIATIONS:

- ATG ADJUST TO GRADE
- ASPH ASPHALT
- BLDG BUILDING
- BMP BEST MANAGEMENT PRACTICE
- BTM BOTTOM
- CI CURB INLET
- CMP CORRUGATED METAL PIPE
- CO CONC
- DA DAMETER
- DIP DUCTILE IRON PIPE
- ELEV ELEVATION
- ESP EDGE OF PAVEMENT
- FSMT FASMENT
- EXIST EXISTING
- FD FLOOR DRAIN
- FFE FINISH FLOOR
- FOL FIBER OPTIC LINE
- GI GRATE INLET
- MH MANHOLE
- NC NOT IN CONTRACT
- OHE OVERHEAD ELECTRIC
- OS OVERFLOW STRUCTURE
- PC PORTLAND CEMENT
- PLUM PRIVATE UNDER MSH INSPECTION
- PVC POLYVINYL CHLORIDE PIPE
- PMMI REINFORCED CONC PIPE
- RCP REQUIRED
- REQD RIGHT OF WAY
- ROW SAMPLING TEE
- TOR TO BE REMOVED & REPLACED TO BE REMOVED
- TD TRENCH DRAIN
- TEMPORARY SLOPE CONSTRUCTION LICENSE
- USE UNDERGROUND ELECTRIC
- UGT UNDERGROUND TELEPHONE
- VCP VITRIFIED CLAY PIPE
- W WISE
- WQ WATER QUALITY

PAVING LEGEND:

- NEW 4000 P.S.I. P.C. CONCRETE PAVEMENT. ALL EXTERIOR P.C. CONCRETE PAVEMENTS, SIDEWALKS & CURBS TO BE MERAMEC SAND AND GRAVEL AGGREGATE.
- NEW ASPHALT CONCRETE PAVEMENT.

DEMOLITION LEGEND:

- REMOVE AND DISPOSE OF EXISTING ASPHALTIC OR PORTLAND CEMENT CONCRETE PAVEMENT AND ROCK BASE.
- REMOVE AND DISPOSE OF EXISTING BUILDING AND FOUNDATION.
- REMOVE AND DISPOSE OF EXISTING TREES, ROOTS, AND STUMPS.

GEOTECHNICAL REPORT

PREPARED BY:
JACOBI GEOTECHNICAL ENGINEERING, INC.
PROJECT NO. 22047.1
DATE: 5/16/22

UTILITY LOCATES

CALL 1-800-DIG-RITE
(1-800-344-7483)
www.mo1call.com

CONTRACTOR TO CALL 1-800-DIG-RITE TO HAVE ALL UTILITIES LOCATED ON THE GROUND IN ALL AREAS AFFECTED BY CONSTRUCTION, PRIOR TO BEGINNING CONSTRUCTION CONTRACTOR SHALL ALSO CALL MODOT (1-888-ASK MODOT), IF WORK IS PROPOSED IN, OR ADJACENT TO A RIGHT OF WAY. IN ADDITION CONTRACTOR SHALL ALSO CONTACT THE COUNTY WHERE THE WORK IS TAKING PLACE AND ALL OTHER KNOWN UTILITIES THAT DO NOT PARTICIPATE IN THE DIG-RITE SYSTEM.

FEMA FLOOD ZONE DESIGNATION

NO FLOOD DATA IS AVAILABLE PER THE "FLOOD INSURANCE RATE MAP: No. 2908290125A DATED SEPTEMBER 30, 1988.

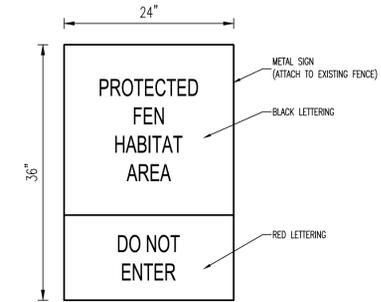
BENCHMARK

BENCHMARK:
US DEPARTMENT OF INTERIOR BM J-JDS-1967 ELEVATION = 852.00' BRASS DISK ON CENTER HEADWALL NORTH EAST CORNER OF INTERSECTIONS HWY N & HWY MM.
SURVEYOR TO CALIBRATE ELEVATION TO 852.00' AT BENCHMARK PRIOR TO CONSTRUCTION LAYOUT.
BEARING BASIS: MISSOURI GEOGRAPHIC REFERENCE SYSTEM STATION RE-061.
CONTROL POINT BENCHMARK:
NORTHING = 624729.2990
EASTING = 718315.9090
ELEVATION = 852.00' BRASS DISK



HABITAT PROTECTION KEYED NOTES:

- ◆ INSTALL & MAINTAIN HABITAT PROTECTION SIGNS FURNISHED BY OWNER.
- ◆ ATTACH SIGNS TO EXISTING FENCE AT 75 FEET ON CENTER. FIELD VERIFY OVERALL LENGTH OF FENCE AND REQUIRED SIGN QUANTITY WITH OWNER.



◆ HABITAT PROTECTION SIGN
SCALE: N.T.S.

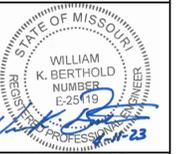
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 US DEPARTMENT OF INTERIOR BM J-JDS-1967 ELEVATION = 852.00 BRASS DISK ON CENTER HEADWALL NORTH EAST CORNER OF INTERSECTIONS HWY N & HWY MM.
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 NORTHING = 624729.2990
 EASTING = 718315.9090
 ELEVATION = 852.00 BRASS DISK

STATE OF MISSOURI
 MICHAEL L. PARSON,
 GOVERNOR

CONSTRUCTION DOCUMENTS

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WILLIAM K. BERTHOLD,
 PROFESSIONAL ENGINEER
 LICENSE # E-25119

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MO Certificate of Authority
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 ENGINEERING: 2007023885

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MO Certificate of Authority
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MISSOURI DEPARTMENT OF NATURAL RESOURCES

SIX NEW FULL SERVICE CABINS - JOHNSON'S SHUT-INS STATE PARK

PROJECT # X2206-01
 SITE # 5213
 FACILITY # 7815213016, 7815213017,
 7815213018, 7815213019,
 7815213020, 7815213021

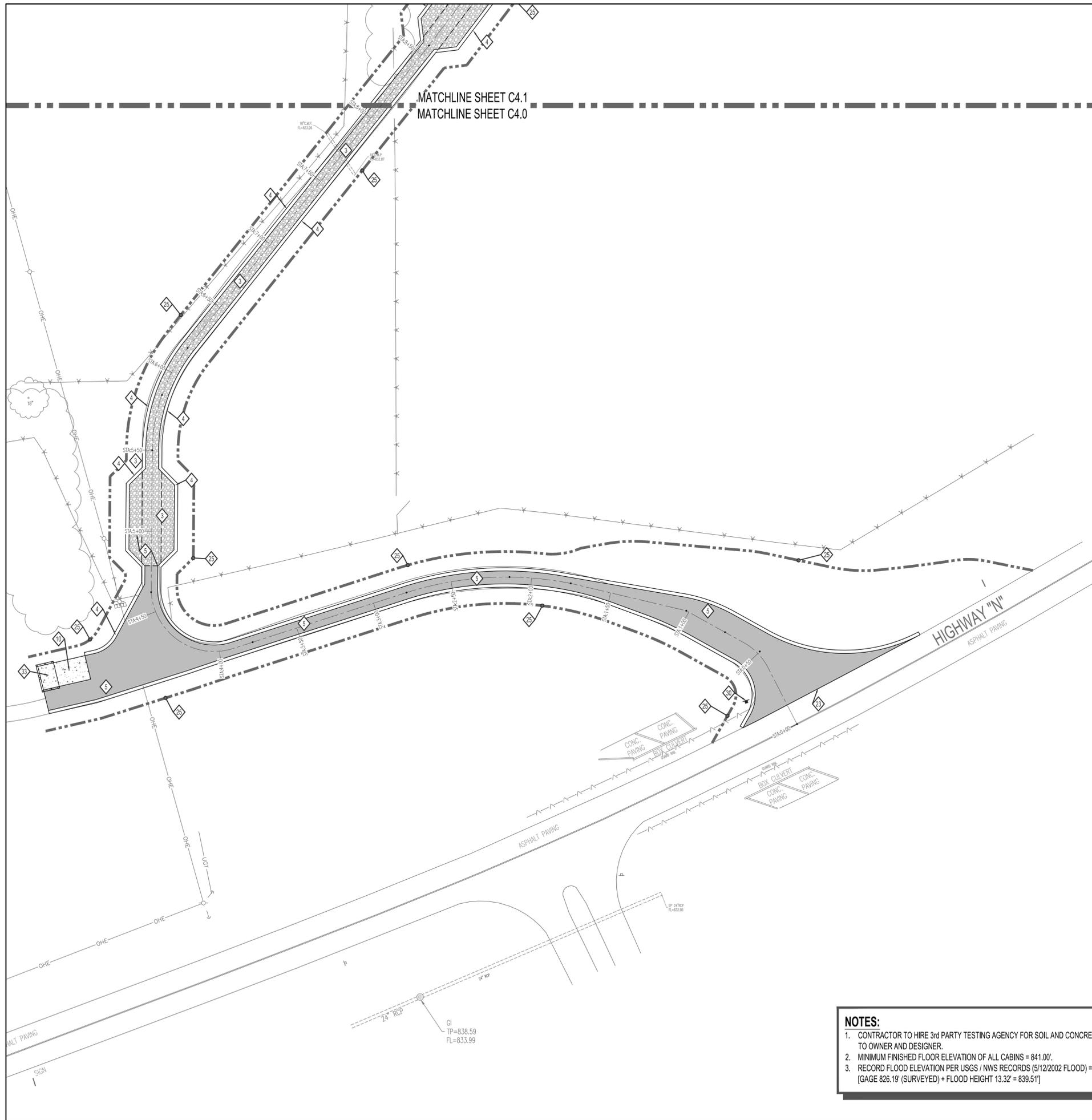
REVISIONS

NO.	DATE	DESCRIPTION

DATE: **04.11.2023**
 FE PROJECT #: **220058**
 CHECK: **WKB**

HABITAT PROTECTION PLAN

5 OF 75 SHEETS
 SHEET NUMBER
C3.0



KEYED IMPROVEMENT NOTES:

- 1 MATCH EXISTING PAVEMENT ELEVATIONS.
- 2 CONSTRUCT 4 INCH THICK P.C. CONC. SIDEWALK ON 6 INCH THICK GRANULAR BASE. REFER TO DETAIL ON SHEET C14.0 SERIES.
- 3 CONSTRUCT 4 INCH THICK CRUSHED IRON MOUNTAIN TRAP ROCK PAVEMENT OVER 8 INCHES OF COMPACTED CRUSHED LIMESTONE BASE OVER COMPACTED SUBGRADE. PLACE TRAP ROCK IN 2 SEPARATE LIFTS. REFER TO TYPICAL SECTION ON SHEET C14.0 SERIES.
- 4 CONSTRUCT 24"x6" HORIZONTAL CONCRETE CURB. REFER TO SECTION ON SHEET C14.0 SERIES TOOL CONTROL JOINTS @ 10' O.C. INSTALL EXPANSION JOINTS @ 20' O.C.
- 5 CONSTRUCT 2 INCH THICK TYPE "C" ASPHALTIC CONCRETE PAVEMENT OVER 4 INCH THICK TYPE "X" ASPHALTIC CONCRETE PAVEMENT OVER 6 INCHES OF COMPACTED CRUSHED LIMESTONE BASE OVER COMPACTED SUBGRADE. PLACE ASPHALT IN 2 SEPARATE LIFTS. REFER TO TYPICAL SECTION ON SHEET C14.0 SERIES.
- 6 CONSTRUCT 6 INCH THICK REINFORCED CONCRETE PAVEMENT. REFER TO SECTION ON SHEET C14.0 SERIES.
- 7 FURNISH AND INSTALL NEW C.M.P. STORM WATER CULVERT WITH FLARED END SECTIONS. REFER TO PROFILES ON SHEET C12.0
- 8 FURNISH AND INSTALL NEW PRECAST SANITARY SEWER MANHOLE. REFER TO SEWER PROFILES ON SHEETS C8.5.
- 9 FURNISH AND INSTALL 8 INCH SDR 26 P.V.C. SANITARY SEWER AT MINIMUM 1% SLOPE WITH RELATED CLEANOUTS.
- 10 CONSTRUCT 8-INCH THICK REINFORCED CONCRETE PAVEMENT. REFER TO SECTION AND ON SHEET C14.0 SERIES.
- 11 FURNISH AND INSTALL 2 INCH PE 3608 / 3408 IPS, DR9 (200 PS) HDPE FORCE SEWER MAIN WITH COPPER COATED STEEL TRACER WIRE COATED WITH 45 MIL HDPE COATING. INSTALL BY DIRECTIONAL BORING.
- 12 CONSTRUCT 2 INCH CLEAN TRAP ROCK SURFACE BENEATH EACH CABIN. REFER TO SECTION AND DETAILS ON SHEET C14.2.
- 13 INSTALL NEW 4" SDR 35 P.V.C. SLEEVE AND RISER. REFER TO DETAIL ON SHEET C14.0 SERIES.
- 14 CONSTRUCT NEW UNDERGROUND ELECTRICAL SERVICE. COORDINATE WITH AMEREN UE. REFER TO ELECTRICAL DRAWINGS FOR CONDUIT SIZE. INSTALL PRIMARY SERVICE CONDUIT FROM UTILITY POLE TO TRANSFORMER BY DIRECTIONAL BORING.
- 15 FURNISH AND INSTALL 3 INCH FREEZE PROOF FLUSHING HYDRANT. REFER TO DETAIL ON SHEET C11.0.
- 16 FURNISH AND INSTALL 3/4 INCH FREEZE PROOF YARD HYDRANT WITH SHUTOFF VALVE. REFER TO DETAIL ON SHEET C11.0.
- 17 OWNER TO FURNISH AND INSTALL BICYCLE TRAIL SAFETY GATES.
- 18 TAP EXISTING 4 INCH P.V.C. WATER SUPPLY LINE. FURNISH AND INSTALL 4" MUELLER RESILIENT WEDGE GATE VALVE IN PYRAMID VALVE BOX.
- 19 FURNISH AND INSTALL 4 INCH DR7.3 (254 PS) HDPE WATER SERVICE LINE WITH SHUT OFF VALVES IN CAST IRON VALVE BOX AS INDICATED. INSTALL COPPER COATED STEEL TRACER WIRE COATED WITH 45 MIL HDPE COATING. INSTALL BY DIRECTIONAL BORING.
- 20 FURNISH AND INSTALL 1 INCH DR11 HDPE WATER SERVICE LINE WITH FORGED BRASS BALL VALVE SHUT OFF VALVE IN PRE-FABRICATED VALVE BOX WITH CAST IRON LID.
- 21 REMOVE EXISTING FENCE AS REQUIRED FOR CONSTRUCTION.
- 22 FURNISH AND INSTALL NEW ADA PARKING SIGN. REFER TO DETAILS ON SHEET ON C14.0 SERIES.
- 23 CONSTRUCT M-DOT STANDARD ASPHALT COMMERCIAL DRIVEWAY APRON. MINIMUM PAVEMENT THICKNESS TO BE PER KEYED IMPROVEMENT NOTE 5.
- 24 FURNISH AND INSTALL EIGHT (8) 3'x3'x3' RHYOLITE BOULDERS WITH MAXIMUM GAP OF 6-FEET BETWEEN BOULDERS TO PREVENT VEHICLES FROM DRIVING ON TO BIKE TRAIL.
- 25 PROJECT LIMITS. FURNISH, INSTALL, AND MAINTAIN SILTATION CONTROL FILTER ROLL BMP AT PROJECT LIMIT LINE UNTIL COMPLETION OF CONSTRUCTION. CONTRACTOR SHALL ALSO PROVIDE BMP SILTATION PROTECTION AT CULVERTS IF NECESSARY. FINISH GRADE AND SEED ALL DISTURBED YARD AREAS WITHIN PROJECT LIMITS. REFER TO SHEET C6.0 SERIES DRAWINGS.
- 26 CONSTRUCT 24'x24'x6 INCH THICK REINFORCED CONCRETE SLAB FOR PICNIC AREA. REFER TO DETAILS ON C14.0 SERIES.
- 27 FURNISH AND APPLY WHITE PAVEMENT MARKING PAINT TO DELINEATE EACH NON-ADA PARKING STALL.
- 28 FURNISH AND APPLY BLUE PAVEMENT MARKING PAINT TO DELINEATE ADA PARKING STALL, SYMBOL, AND UNLOADING AREA.
- 29 CONSTRUCT BURIED ELECTRICAL SERVICE IN P.V.C. CONDUIT TO EACH CABIN. REFER TO ELECTRICAL DRAWINGS.
- 30 FURNISH AND INSTALL STOP SIGN. REFER TO DETAIL ON C14.0 SERIES.
- 31 FURNISH AND INSTALL CONCRETE WHEEL STOPS. REFER TO DETAIL ON SHEET C14.0 SERIES. TYPICAL 20 PLACES).
- 32 FURNISH AND INSTALL 8"W x 12"L x 8" THICK ROCK BLANKET OVER GEOTEXTILE FILTER FABRIC.
- 33 CONSTRUCT TRASH DUMPSTER ENCLOSURE. REFER TO DETAILS AND SECTIONS ON SHEET C14.0 SERIES.
- 34 FURNISH AND INSTALL PACKAGE SEWERAGE DUPLEX GRINDER PUMP STATION CONTROLS WITH STROBE ALARM. REFER TO DETAILS AND SECTIONS ON SHEET C10.0 SERIES.
- 35 PROTECT EXISTING CONCRETE PAVED TRAIL DURING CONSTRUCTION. REPLACE ANY DAMAGED PAVEMENT PRIOR TO SUBSTANTIAL COMPLETION OF CONSTRUCTION.

NOTES:

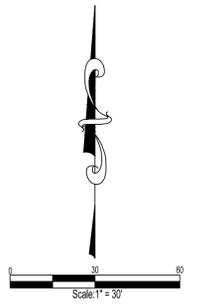
1. CONTRACTOR TO HIRE 3rd PARTY TESTING AGENCY FOR SOIL AND CONCRETE TESTING AND PROVIDE REPORTS TO OWNER AND DESIGNER.
2. MINIMUM FINISHED FLOOR ELEVATION OF ALL CABINS = 841.00'.
3. RECORD FLOOD ELEVATION PER USGS / NWS RECORDS (5/12/2002 FLOOD) = 839.51' [GAGE 826.19' (SURVEYED) + FLOOD HEIGHT 13.32' = 839.51']

BENCHMARK:

US DEPARTMENT OF INTERIOR BM J-JDS-1967 ELEVATION = 852.00' BRASS DISK ON CENTER HEADWALL NORTH EAST CORNER OF INTERSECTIONS HWY N & HWY MM. SURVEYOR TO CALIBRATE ELEVATION TO 852.00' AT BENCHMARK PRIOR TO CONSTRUCTION LAYOUT. BEARING BASIS: MISSOURI GEOGRAPHIC REFERENCE SYSTEM STATION RE-061.

CONTROL POINT BENCHMARK:

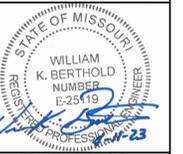
NORTHING = 624729.2990
EASTING = 718315.9090
ELEVATION = 852.00' BRASS DISK



STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR

CONSTRUCTION DOCUMENTS

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**SIX NEW
FULL SERVICE
CABINS -
JOHNSON'S
SHUT-INS
STATE PARK**

PROJECT # X2206-01
SITE # 5213
FACILITY # 7815213016, 7815213017,
7815213018, 7815213019,
7815213020, 7815213021

REVISIONS

NO.	DATE	DESCRIPTION

DATE: **04.11.2023**

FE PROJECT #: **220058**

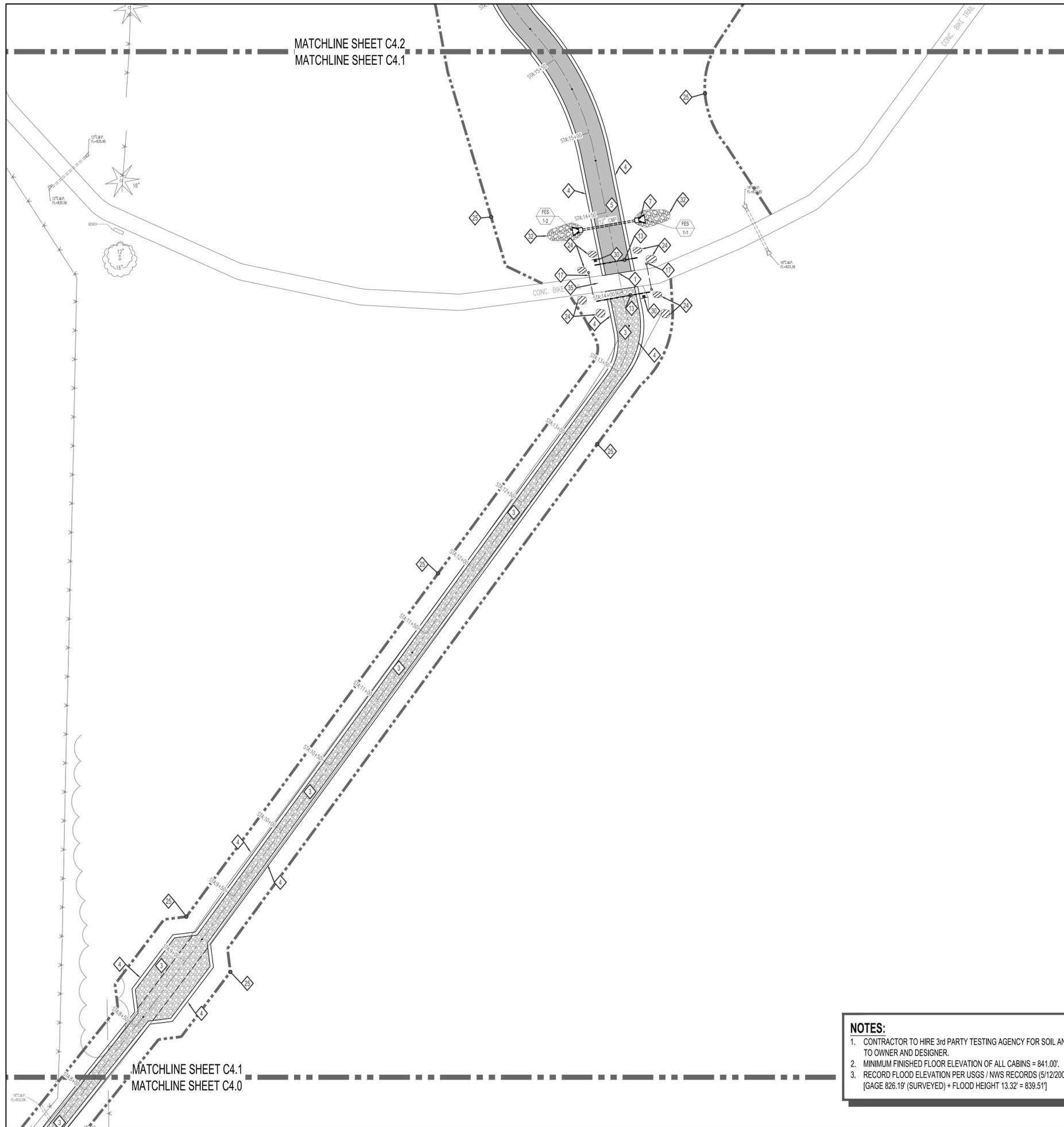
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SHEET TITLE:

**SITE
IMPROVEMENT
PLAN 1**

6 OF 75 SHEETS

SHEET NUMBER
C4.0



KEYED IMPROVEMENT NOTES:

- 1 MATCH EXISTING PAVEMENT ELEVATIONS.
- 2 CONSTRUCT 4 INCH THICK P.C. SIDEWALK ON 6 INCH THICK GRANULAR BASE. REFER TO DETAIL ON SHEET C14.0 SERIES.
- 3 CONSTRUCT 4 INCH THICK CRUSHED IRON MOUNTAIN TRAP ROCK PAVEMENT OVER 8 INCHES OF COMPACTED CRUSHED LIMESTONE BASE OVER COMPACTED SUBGRADE. PLACE TRAP ROCK IN 2 SEPARATE LIFTS. REFER TO TYPICAL SECTION ON SHEET C14.0 SERIES.
- 4 CONSTRUCT 24"x6" HORIZONTAL CONCRETE CURB. REFER TO SECTION ON SHEET C14.0 SERIES TOOL CONTROL JOINTS @ 10' O.C. INSTALL EXPANSION JOINTS @ 20' O.C.
- 5 CONSTRUCT 2 INCH THICK TYPE "C" ASPHALTIC CONCRETE PAVEMENT OVER 4 INCH THICK TYPE "X" ASPHALTIC CONCRETE PAVEMENT OVER 6 INCHES OF COMPACTED CRUSHED LIMESTONE BASE OVER COMPACTED SUBGRADE. PLACE ASPHALT IN 2 SEPARATE LIFTS. REFER TO TYPICAL SECTION ON SHEET C14.0 SERIES.
- 6 CONSTRUCT 6 INCH THICK REINFORCED CONCRETE PAVEMENT. REFER TO SECTION ON SHEET C14.0 SERIES.
- 7 FURNISH AND INSTALL NEW C.M.P. STORM WATER CULVERT WITH FLARED END SECTIONS. REFER TO PROFILES ON SHEET C12.0
- 8 FURNISH AND INSTALL NEW PRECAST SANITARY SEWER MANHOLE. REFER TO SEWER PROFILES ON SHEETS C8.5.
- 9 FURNISH AND INSTALL 8 INCH SDR 26 P.V.C. SANITARY SEWER AT MINIMUM 1% SLOPE WITH RELATED CLEANOUTS.
- 10 CONSTRUCT 8-INCH THICK REINFORCED CONCRETE PAVEMENT. REFER TO SECTION AND ON SHEET C14.0 SERIES.
- 11 FURNISH AND INSTALL 2 INCH PE 3608 / 3408 IPS, DR9 (200 PS) HDPE FORCE SEWER MAIN WITH COPPER COATED STEEL TRACER WIRE COATED WITH 45 MIL HDPE COATING. INSTALL BY DIRECTIONAL BORING.
- 12 CONSTRUCT 2 INCH CLEAN TRAP ROCK SURFACE BENEATH EACH CABIN. REFER TO SECTION AND DETAILS ON SHEET C14.2.
- 13 INSTALL NEW 4" SDR 35 P.V.C. SLEEVE AND RISER. REFER TO DETAIL ON SHEET C14.0 SERIES.
- 14 CONSTRUCT NEW UNDERGROUND ELECTRICAL SERVICE. COORDINATE WITH AMEREN UE. REFER TO ELECTRICAL DRAWINGS FOR CONDUIT SIZE. INSTALL PRIMARY SERVICE CONDUIT FROM UTILITY POLE TO TRANSFORMER BY DIRECTIONAL BORING.
- 15 FURNISH AND INSTALL 3 INCH FREEZE PROOF FLUSHING HYDRANT. REFER TO DETAIL ON SHEET C11.0.
- 16 FURNISH AND INSTALL 3/4 INCH FREEZE PROOF YARD HYDRANT WITH SHUTOFF VALVE. REFER TO DETAIL ON SHEET C11.0.
- 17 OWNER TO FURNISH AND INSTALL BICYCLE TRAIL SAFETY GATES.
- 18 TAP EXISTING 4 INCH P.V.C. WATER SUPPLY LINE. FURNISH AND INSTALL 4" MUELLER RESILIENT WEDGE GATE VALVE IN PYRAMID VALVE BOX.
- 19 FURNISH AND INSTALL 4 INCH DR7.3 (254 PSI) HDPE WATER SERVICE LINE WITH SHUT OFF VALVES IN CAST IRON VALVE BOX AS INDICATED. INSTALL COPPER COATED STEEL TRACER WIRE COATED WITH 45 MIL HDPE COATING. INSTALL BY DIRECTIONAL BORING.
- 20 FURNISH AND INSTALL 1 INCH DR11 HDPE WATER SERVICE LINE WITH FORGED BRASS BALL VALVE SHUT OFF VALVE IN PRE-FABRICATED VALVE BOX WITH CAST IRON LID.
- 21 REMOVE EXISTING FENCE AS REQUIRED FOR CONSTRUCTION.
- 22 FURNISH AND INSTALL NEW ADA PARKING SIGN. REFER TO DETAILS ON SHEET ON C14.0 SERIES.
- 23 CONSTRUCT M-DOT STANDARD ASPHALT COMMERCIAL DRIVEWAY APRON. MINIMUM PAVEMENT THICKNESS TO BE PER KEYED IMPROVEMENT NOTE 5.
- 24 FURNISH AND INSTALL EIGHT (8) 3'x3'x3' RHYOLITE BOULDERS WITH MAXIMUM GAP OF 6-FEET BETWEEN BOULDERS TO PREVENT VEHICLES FROM DRIVING ON TO BIKE TRAIL.
- 25 PROJECT LIMITS. FURNISH, INSTALL, AND MAINTAIN SILTATION CONTROL FILTER ROLL BMP AT PROJECT LIMIT LINE UNTIL COMPLETION OF CONSTRUCTION. CONTRACTOR SHALL ALSO PROVIDE BMP SILTATION PROTECTION AT CULVERTS IF NECESSARY. FINISH GRADE AND SEED ALL DISTURBED YARD AREAS WITHIN PROJECT LIMITS. REFER TO SHEET C6.0 SERIES DRAWINGS.
- 26 CONSTRUCT 24'x24'x6 INCH THICK REINFORCED CONCRETE SLAB FOR PICNIC AREA. REFER TO DETAILS ON C14.0 SERIES.
- 27 FURNISH AND APPLY WHITE PAVEMENT MARKING PAINT TO DELINEATE EACH NON-ADA PARKING STALL.
- 28 FURNISH AND APPLY BLUE PAVEMENT MARKING PAINT TO DELINEATE ADA PARKING STALL, SYMBOL, AND UNLOADING AREA.
- 29 CONSTRUCT BURIED ELECTRICAL SERVICE IN P.V.C. CONDUIT TO EACH CABIN. REFER TO ELECTRICAL DRAWINGS.
- 30 FURNISH AND INSTALL STOP SIGN. REFER TO DETAIL ON C14.0 SERIES.
- 31 FURNISH AND INSTALL CONCRETE WHEEL STOPS. REFER TO DETAIL ON SHEET C14.0 SERIES. TYPICAL 20 PLACES).
- 32 FURNISH AND INSTALL 8"W x 12"L x 8" THICK ROCK BLANKET OVER GEOTEXTILE FILTER FABRIC.
- 33 CONSTRUCT TRASH DUMPSTER ENCLOSURE. REFER TO DETAILS AND SECTIONS ON SHEET C14.0 SERIES.
- 34 FURNISH AND INSTALL PACKAGE SEWERAGE DUPLEX GRINDER PUMP STATION CONTROLS WITH STROBE ALARM. REFER TO DETAILS AND SECTIONS ON SHEET C10.0 SERIES.
- 35 PROTECT EXISTING CONCRETE PAVED TRAIL DURING CONSTRUCTION. REPLACE ANY DAMAGED PAVEMENT PRIOR TO SUBSTANTIAL COMPLETION OF CONSTRUCTION.

NOTES:

1. CONTRACTOR TO HIRE 3rd PARTY TESTING AGENCY FOR SOIL AND CONCRETE TESTING AND PROVIDE REPORTS TO OWNER AND DESIGNER.
2. MINIMUM FINISHED FLOOR ELEVATION OF ALL CABINS = 841.00'.
3. RECORD FLOOD ELEVATION PER USGS / NWS RECORDS (5/12/2002 FLOOD) = 839.51' [GAGE 826.19' (SURVEYED) + FLOOD HEIGHT 13.32' = 839.51']

BENCHMARK:

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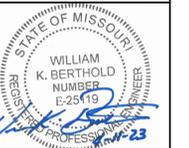
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STATE OF MISSOURI
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SIX NEW FULL SERVICE CABINS - JOHNSON'S SHUT-INS STATE PARK

PROJECT # X2206-01
 SITE # 5213
 FACILITY # 7815213016, 7815213017, 7815213018, 7815213019, 7815213020, 7815213021

REVISIONS

NO.	DATE	DESCRIPTION

DATE: 04.11.2023

FE PROJECT #: 220058

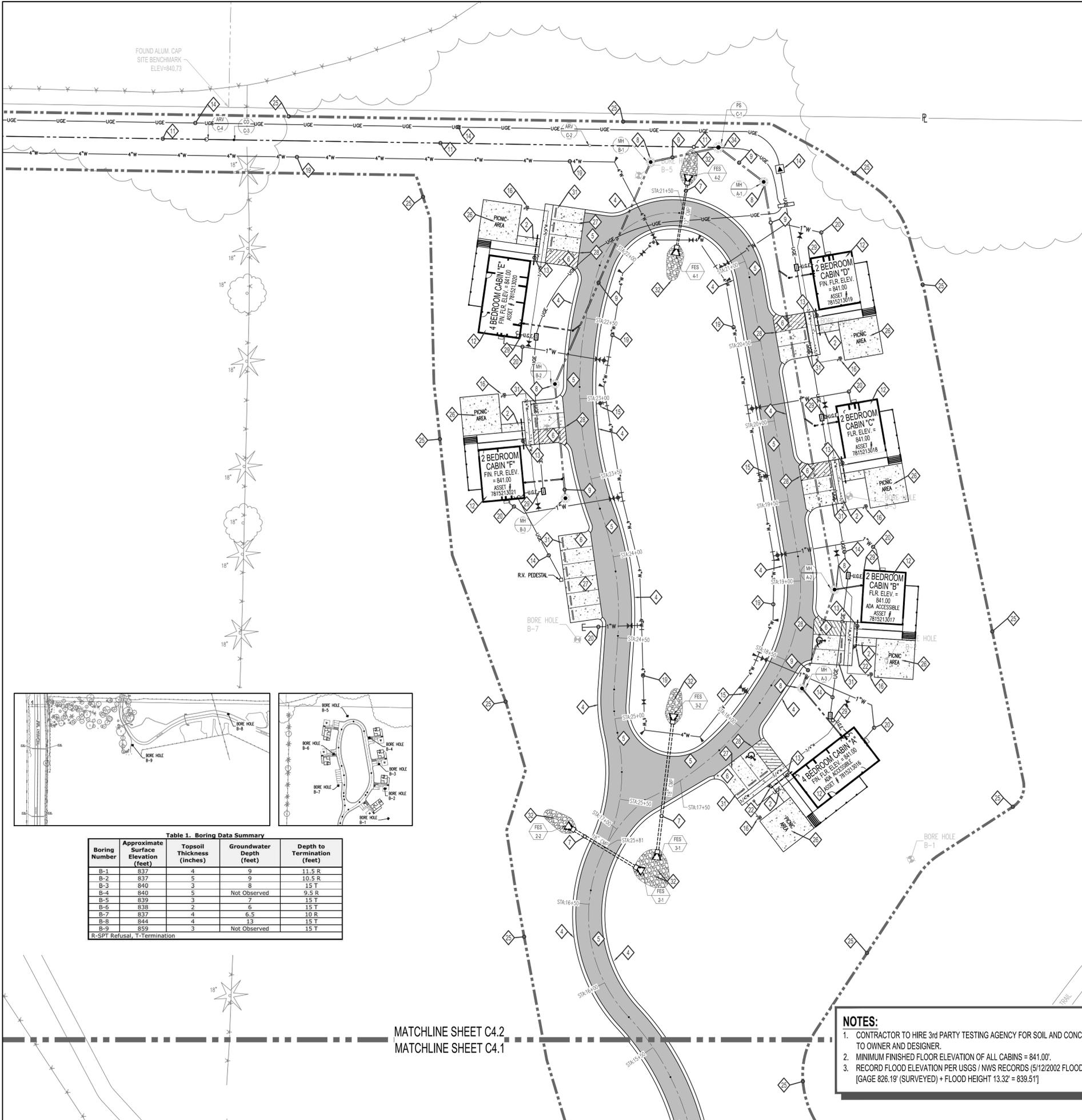
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SHEET TITLE:

SITE IMPROVEMENT PLAN 2

7 OF 75 SHEETS

SHEET NUMBER
C4.1



FOUND ALUM. CAP
SITE BENCHMARK
ELEV=840.73

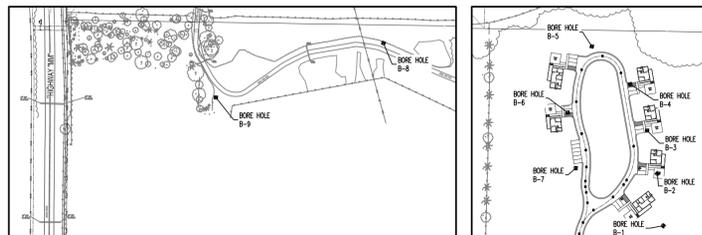
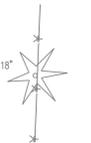


Table 1. Boring Data Summary

Boring Number	Approximate Surface Elevation (feet)	Topsoil Thickness (inches)	Groundwater Depth (feet)	Depth to Termination (feet)
B-1	837	4	9	11.5 R
B-2	837	5	9	10.5 R
B-3	840	3	8	15 T
B-4	840	5	Not Observed	9.5 R
B-5	839	3	7	15 T
B-6	838	2	6	13 T
B-7	837	4	6.5	10 R
B-8	844	4	13	15 T
B-9	859	3	Not Observed	15 T

R-SPT Refusal, T-Termination



MATCHLINE SHEET C4.2
MATCHLINE SHEET C4.1

NOTES:

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STATE OF MISSOURI
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MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

**SIX NEW
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CABINS -
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PROJECT # X2206-01
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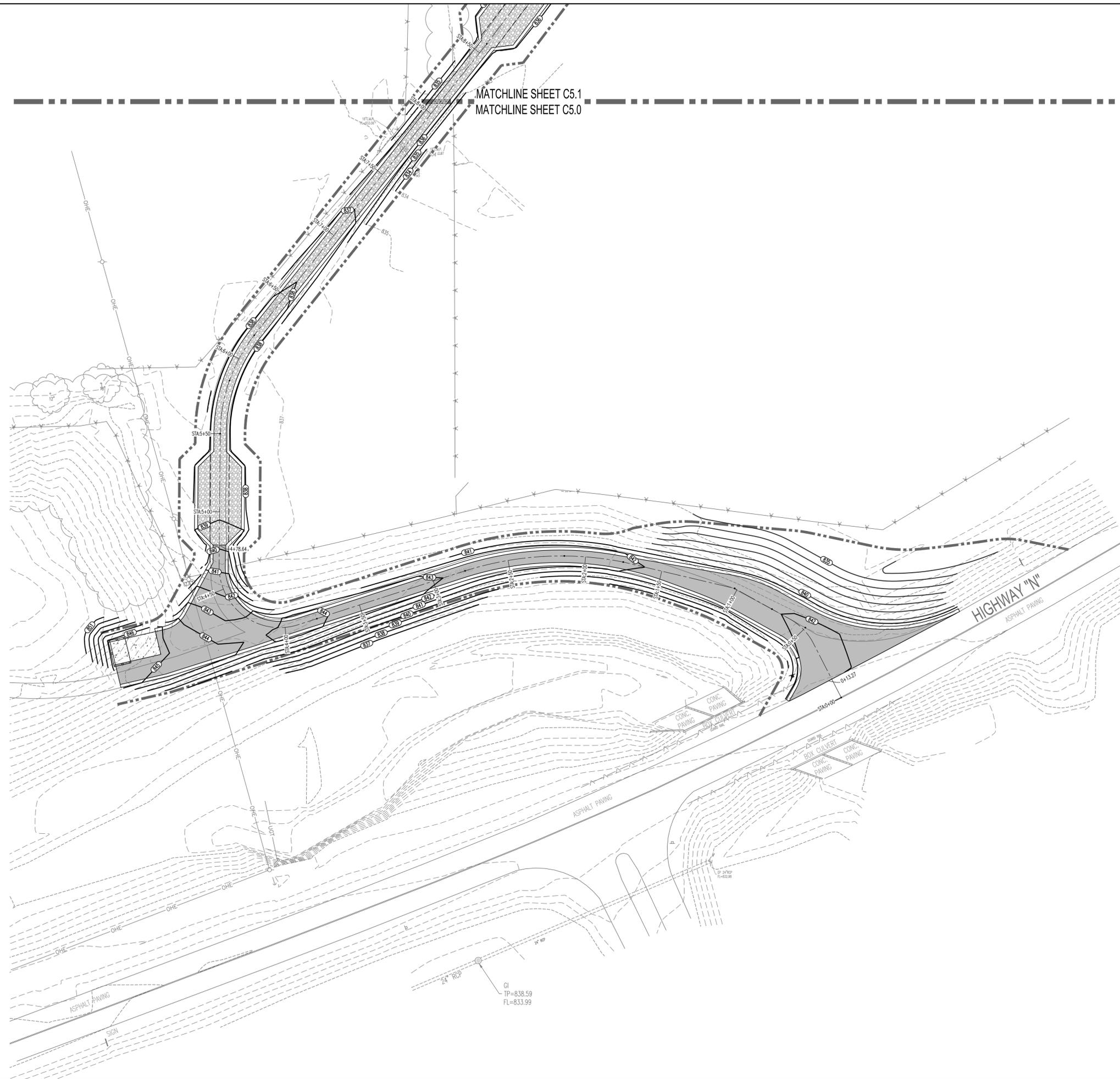
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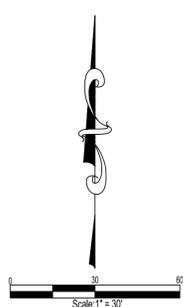
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FE PROJECT #: 220058
CHECK: WKB

SHEET TITLE:
SITE
IMPROVEMENT
PLAN 3

8 OF 75 SHEETS
SHEET NUMBER
C4.2



MATCHLINE SHEET C5.1
MATCHLINE SHEET C5.0



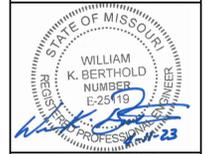
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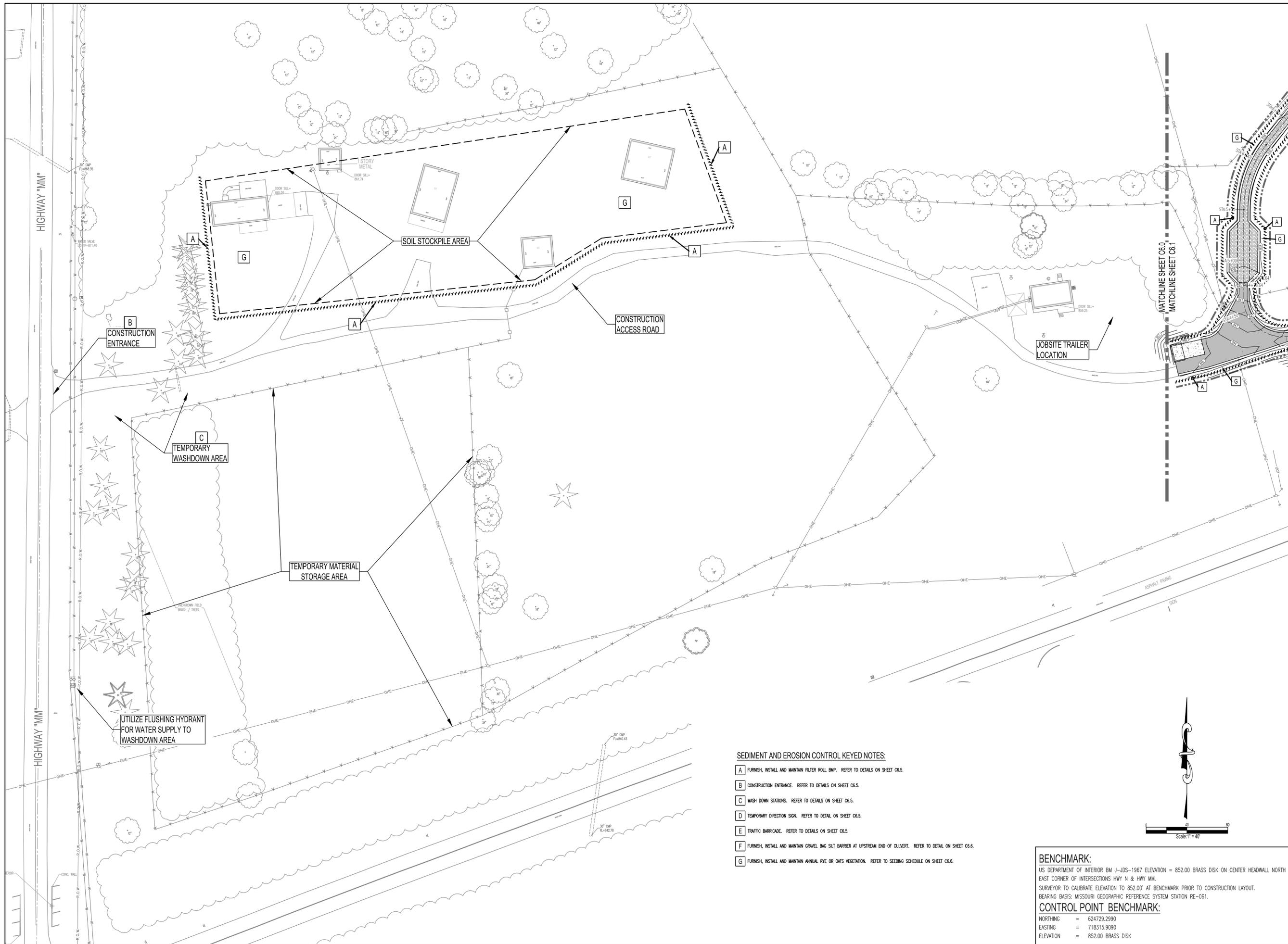
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SHEET TITLE:
**SITE GRADING
PLAN 1**

9 OF 75 SHEETS
SHEET NUMBER
C5.0

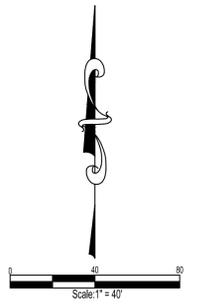


- SEDIMENT AND EROSION CONTROL KEYED NOTES:**
- A** FURNISH, INSTALL AND MAINTAIN FILTER ROLL BMP. REFER TO DETAILS ON SHEET C6.5.
 - B** CONSTRUCTION ENTRANCE. REFER TO DETAILS ON SHEET C6.5.
 - C** WASH DOWN STATIONS. REFER TO DETAILS ON SHEET C6.5.
 - D** TEMPORARY DIRECTION SIGN. REFER TO DETAIL ON SHEET C6.5.
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BENCHMARK:
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 SURVEYOR TO CALIBRATE ELEVATION TO 852.00' AT BENCHMARK PRIOR TO CONSTRUCTION LAYOUT.
 BEARING BASIS: MISSOURI GEOGRAPHIC REFERENCE SYSTEM STATION RE-061.

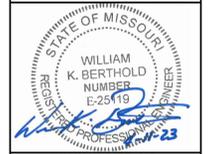
CONTROL POINT BENCHMARK:

NORTHING	=	624729.2990
EASTING	=	718315.9090
ELEVATION	=	852.00 BRASS DISK



STATE OF MISSOURI
 MICHAEL L. PARSON,
 GOVERNOR

CONSTRUCTION DOCUMENTS



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MISSOURI
 DEPARTMENT OF
 NATURAL RESOURCES

**SIX NEW
 FULL SERVICE
 CABINS -
 JOHNSON'S
 SHUT-INS
 STATE PARK**

PROJECT # X2206-01
 SITE # 5213
 FACILITY # 7815213016, 7815213017,
 7815213018, 7815213019,
 7815213020, 7815213021

REVISIONS

NO.	DATE	DESCRIPTION

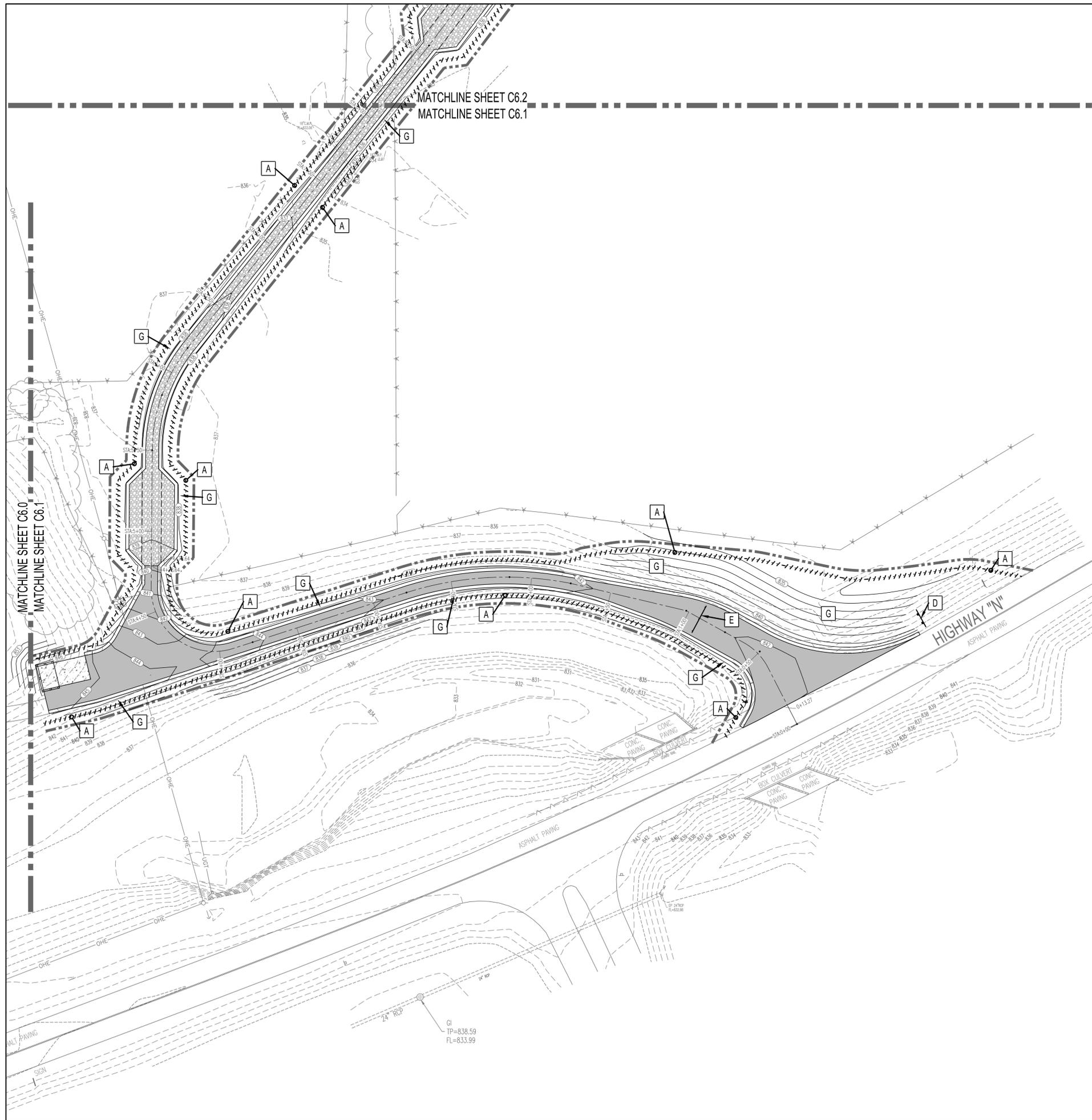
DATE: **04.11.2023**
 FE PROJECT #:
220058

CHECK: **WKB**

SHEET TITLE:

**WALKER SITE -
 TEMPORARY
 FACILITIES**

12 OF 75 SHEETS
 SHEET NUMBER
C6.0



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CONTROL POINT BENCHMARK:

NORTHING = 624729.2990
 EASTING = 718315.9090
 ELEVATION = 852.00 BRASS DISK

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 MICHAEL L. PARSON,
 GOVERNOR

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MISSOURI DEPARTMENT OF NATURAL RESOURCES

SIX NEW FULL SERVICE CABINS - JOHNSON'S SHUT-INS STATE PARK

PROJECT # X2206-01
 SITE # 5213
 FACILITY # 7815213016, 7815213017,
 7815213018, 7815213019,
 7815213020, 7815213021

REVISIONS

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DATE: **04.11.2023**

FE PROJECT #: **220058**

CHECK: **WKB**

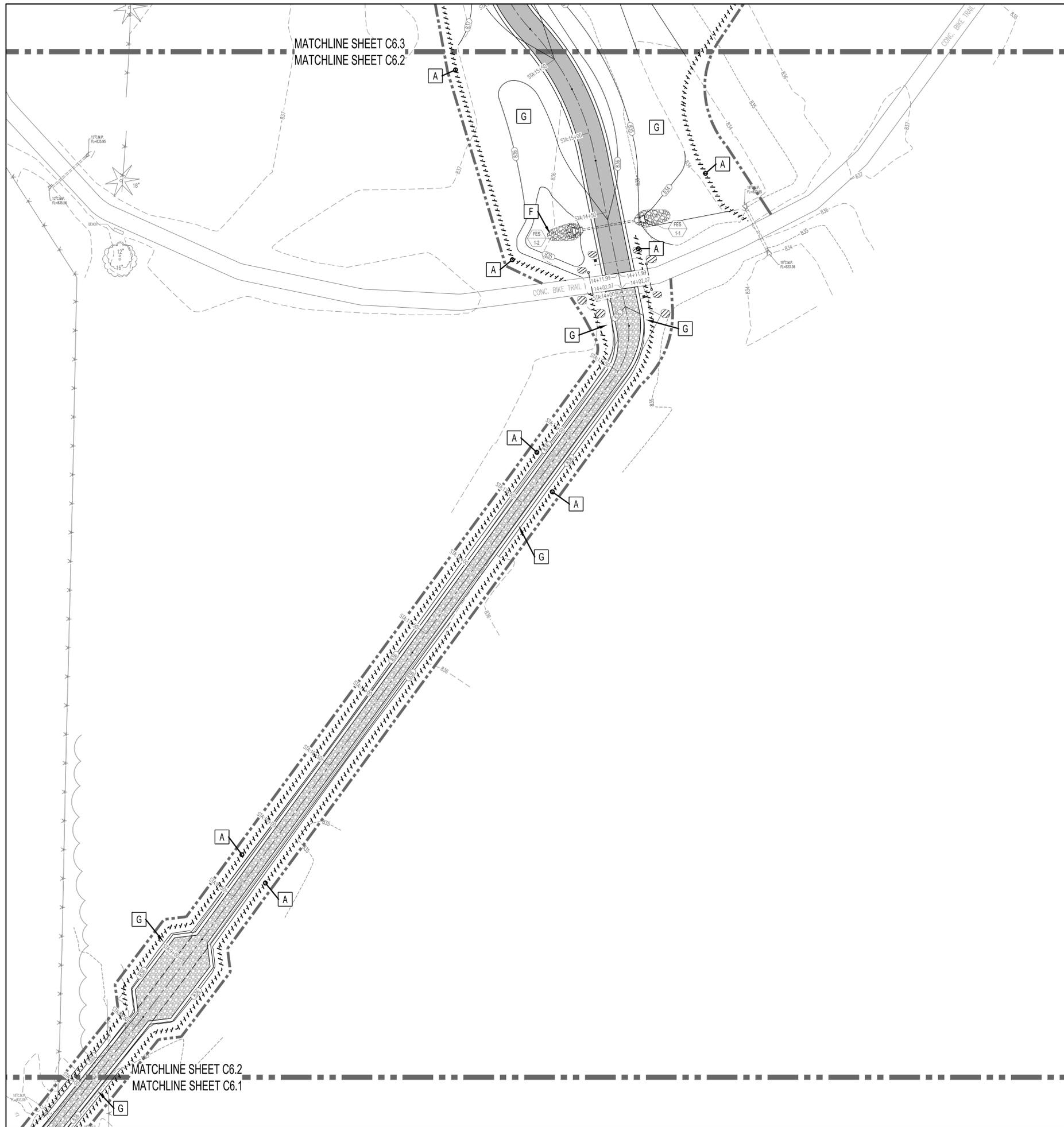
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SEDIMENT AND EROSION CONTROL PLAN 1

13 OF 75 SHEETS

SHEET NUMBER

C6.1



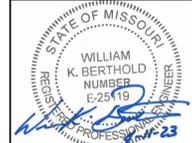
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PROJECT # X2206-01
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7815213020, 7815213021

REVISIONS

NO.	DATE	DESCRIPTION

DATE: 04.11.2023

FE PROJECT #:
220058

CHECK: WKB

SHEET TITLE:

**SEDIMENT AND
EROSION
CONTROL PLAN 2**

14 OF 75 SHEETS

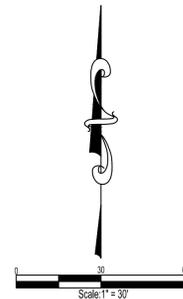
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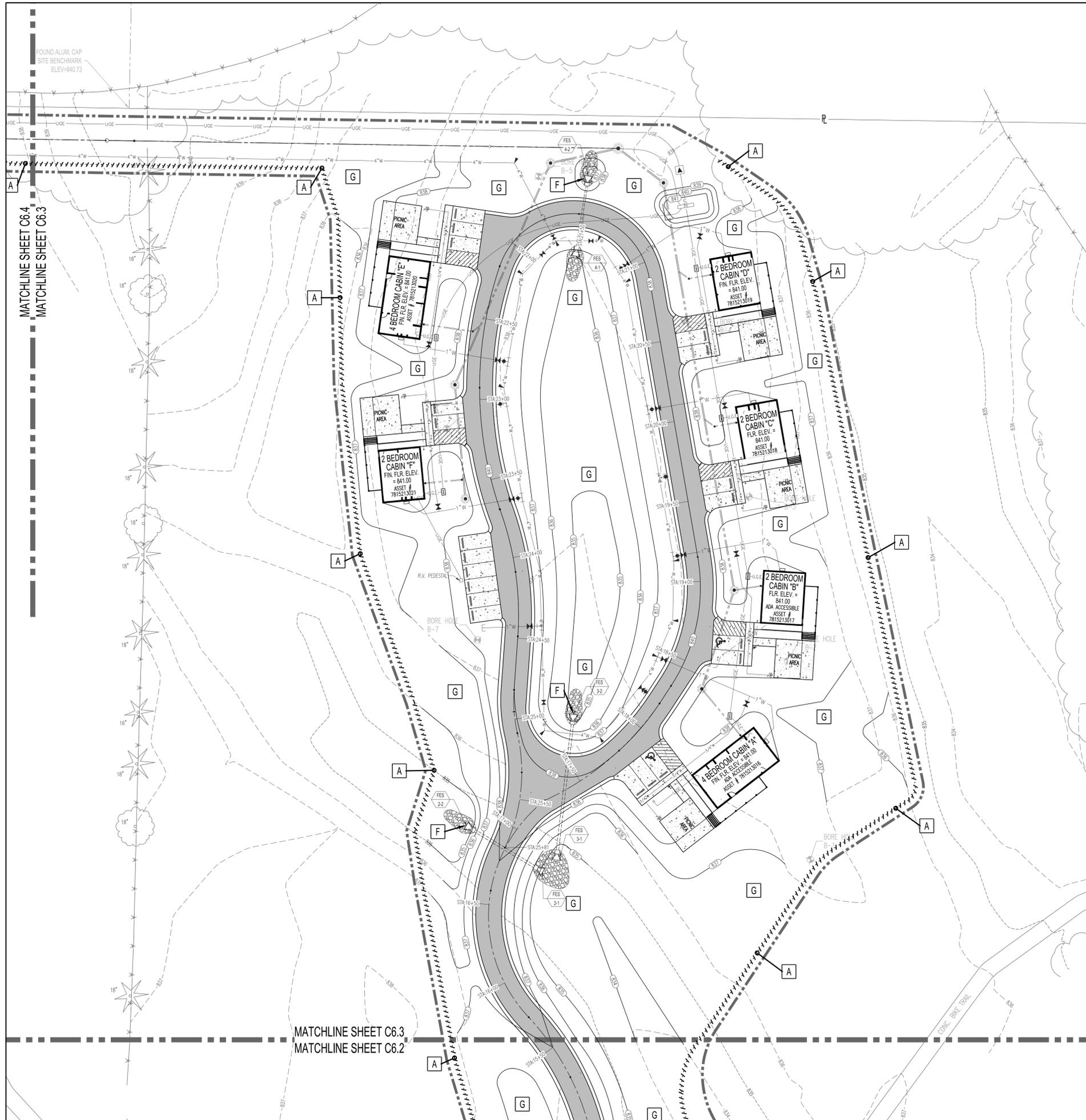
BENCHMARK:

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CONTROL POINT BENCHMARK:

NORTHING = 624729.2990
EASTING = 718315.9090
ELEVATION = 852.00 BRASS DISK





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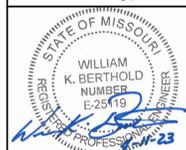
CONTROL POINT BENCHMARK:

NORTHING = 624729.2990
 EASTING = 718315.9090
 ELEVATION = 852.00 BRASS DISK

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 MICHAEL L. PARSON,
 GOVERNOR

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SIX NEW FULL SERVICE CABINS - JOHNSON'S SHUT-INS STATE PARK

PROJECT # X2206-01
 SITE # 5213
 FACILITY # 7815213016, 7815213017,
 7815213018, 7815213019,
 7815213020, 7815213021

REVISIONS

NO.	DATE	DESCRIPTION

DATE: 04.11.2023

FE PROJECT #: 220058

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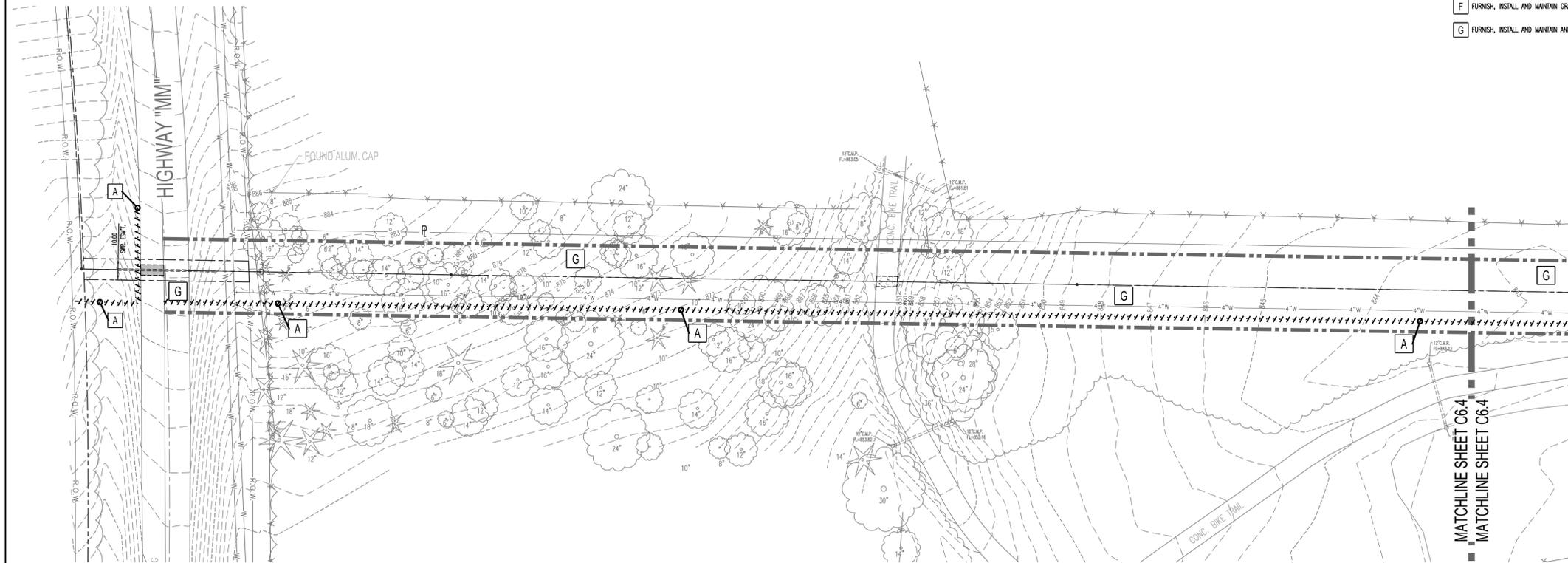
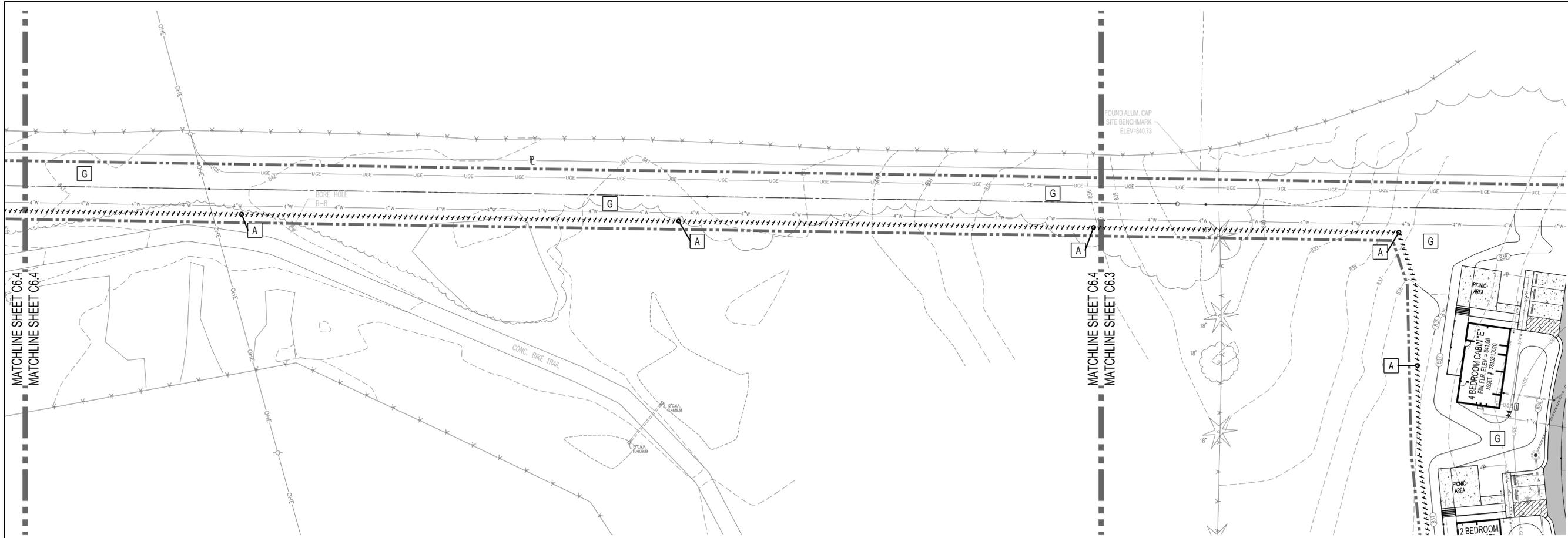
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SEDIMENT AND EROSION CONTROL PLAN 3

15 OF 75 SHEETS

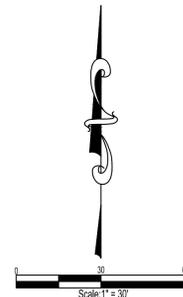
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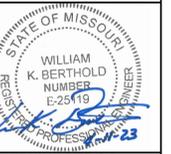
CONTROL POINT BENCHMARK:

NORTHING = 624729.2990
 EASTING = 718315.9090
 ELEVATION = 852.00 BRASS DISK

STATE OF MISSOURI
 MICHAEL L. PARSON,
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PROJECT # X2206-01
 SITE # 5213
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REVISIONS

NO.	DATE	DESCRIPTION

DATE: **04.11.2023**

FE PROJECT #:
220058

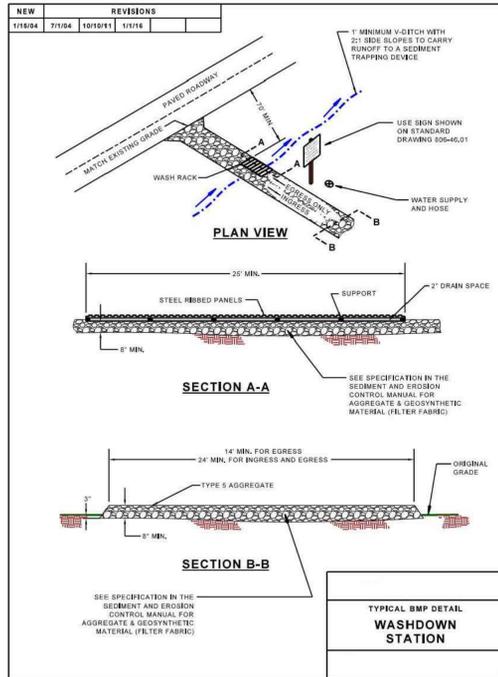
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SHEET TITLE:

**SEDIMENT AND
 EROSION
 CONTROL PLAN 4**

16 OF 75 SHEETS

SHEET NUMBER
C6.4



WASHDOWN STATION

PHYSICAL DESCRIPTION - An area located at construction entrances designed to wash sediment from the tires and undercarriage of exiting vehicles and prevent sediment from being tracked onto existing roadways.

WHERE BMP IS TO BE INSTALLED - Across or immediately adjacent to exit paths from unpaved construction sites.

CONDITIONS FOR EFFECTIVE USE OF BMPs

Drainage: Downstream BMPs sized to treat dirty runoff from washdown station

WHEN BMP IS TO BE INSTALLED - First order of work, along with construction entrance, prior to vehicles or equipment accessing unpaved areas.

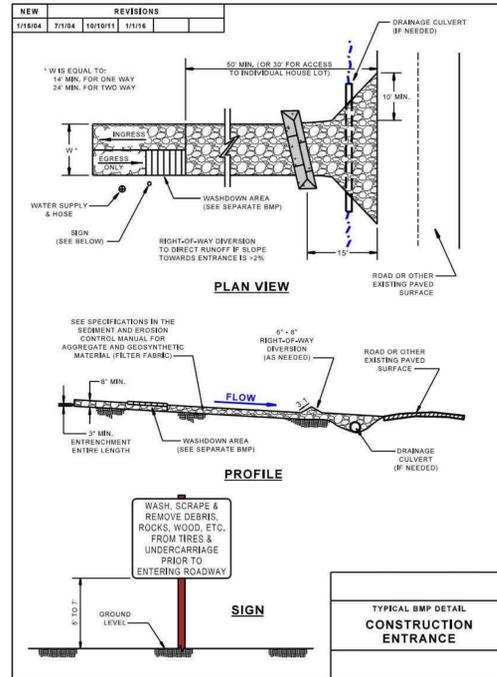
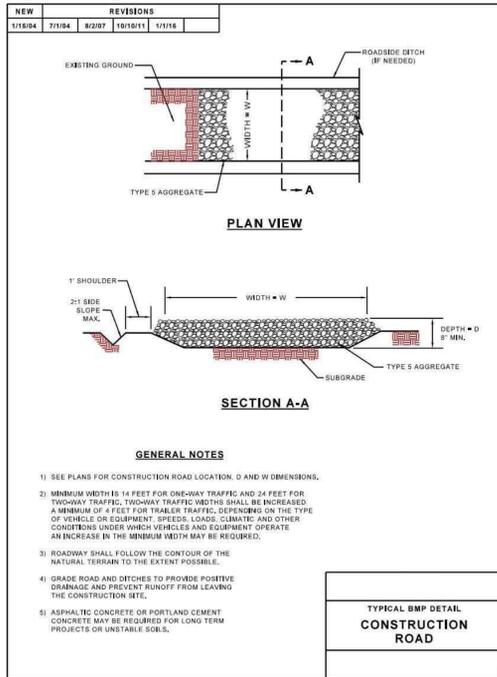
INSTALLATION/CONSTRUCTION PROCEDURES

- ✓ Grade and compact area for drainage under washdown pad.
- ✓ Install steel-ribbed plate on frame or other support to allow a 2" drain space.
- ✓ Grade and vegetate downstream BMPs (V-ditch shown on detail).
- ✓ Install water supply and hose.
- ✓ Post sign in advance of station indicating that all exiting vehicles and equipment must use station prior to exiting site.

O&M PROCEDURES:

- ✓ Remove sediment daily.
- ✓ Repair settled areas.
- ✓ Replace rock if necessary to maintain clean surface.

SITE CONDITIONS FOR REMOVAL - Remove when vehicles and equipment will no longer access unpaved areas.



CONSTRUCTION ENTRANCE

PHYSICAL DESCRIPTION - A stabilized entrance to a construction site designed to minimize the amount of sediment tracked from the site on vehicles and equipment. Stabilization generally consists of aggregate over geogrid and geosynthetic material. Mud and sediment fall off of tires as they travel along the stabilized entrance; however, additional measures in the form of a washdown area should also be included on site. The stabilized entrance also distributes the axle load of vehicles over a larger area, thereby mitigating the rutting impact vehicles normally have on unpaved areas. See additional information in the "Construction Site Access Requirements" section of this manual.

WHERE BMP IS TO BE INSTALLED - At locations where it is safe for construction vehicles and equipment to access existing streets - preferably at location of future streets or drives.

CONDITIONS FOR EFFECTIVE USE OF BMPs

Drainage: Ditches or pipes, if needed, sized for 15 year, 20 minute storm; HGL 6" below surface of entrance

WHEN BMP IS TO BE INSTALLED - First order of work, along with washdown area, prior to vehicles or equipment accessing unpaved areas.

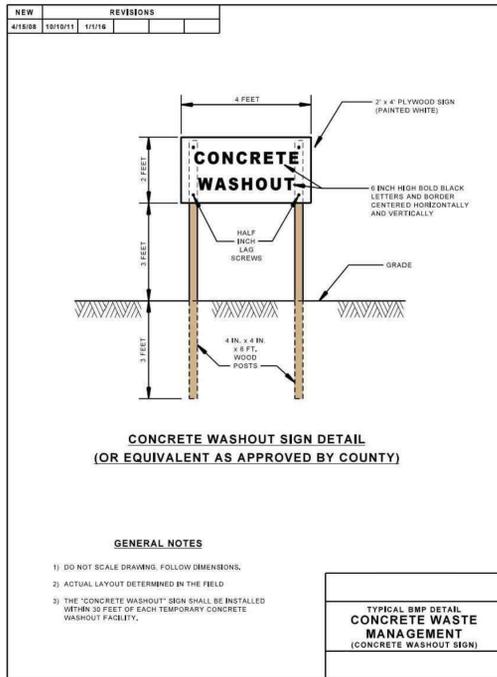
INSTALLATION / CONSTRUCTION PROCEDURES

- ✓ Grade and compact area of construction entrance.
- ✓ Install culvert under entrance if needed to maintain positive drainage.
- ✓ Place geosynthetic material next to compacted soil, lay geogrid on top of this, and cover with aggregate, forming diversion across entrance if needed to direct runoff away from roadway.
- ✓ See Washdown Station BMP for additional steps.

O&M PROCEDURES:

- ✓ Immediately remove any mud or debris tracked onto paved surfaces.
- ✓ Remove sediment and clods of dirt from construction entrance continuously.
- ✓ Replace rock if necessary to maintain clean surface.
- ✓ Repair settled areas.

SITE CONDITIONS FOR REMOVAL - Remove when vehicles and equipment will no longer access unpaved areas.



CONCRETE WASTE MANAGEMENT

DESCRIPTION - The purpose of this specification is to set forth procedures and practices designed to eliminate the discharge of concrete waste materials to storm drainage systems, drainage areas, streets or watercourses, which shall be required of the contractor.

APPROPRIATE APPLICATION OF BMP - Concrete waste management procedures and practices will be implemented on construction projects as follows:

- Where concrete is used as a construction material or where concrete dust and debris result from demolition activities.
- Where slurries containing Portland cement concrete (PCC), asphaltic concrete (AC) or bituminous concrete (BC) are generated, such as from saw cutting, coring, grinding, grooving and hydro-concrete demolition.
- Where concrete trucks and other concrete-coated equipment are washed on-site, when approved by the Resident Engineer or Construction Inspector.
- Where mortar-mixing station exist.

AWARENESS / ENFORCEMENT

- Contractor's and / or permit holder's superintendent or representative shall oversee and enforce concrete waste management procedures.
 - Discuss the concrete management techniques described in this BMP (such as handling of concrete waste and washout) with the ready-mix concrete supplier before any deliveries are made.
- The site superintendent shall make drivers aware of the presence of the concrete waste management facilities. The site superintendent should post signage indicating the location and designated use of the concrete waste management areas, and provide careful oversight to inspect for evidence of improper dumping of concrete waste and wash water.

IMPLEMENTATION

- Contractors, private individuals, public agencies, etc. using concrete material, shall incorporate requirements for concrete waste management into material supplier and subcontractor agreements. Include requirements in contracts with concrete delivery companies that drivers must use designated concrete washout facilities.
- Store dry and wet materials under cover, away from drainage areas.
- Avoid mixing excess amounts of fresh concrete.
- Do not allow excess concrete to be dumped on-site, except in designated areas.
- Cover the structures before predicted rainstorms to prevent overflows.
- Monitor on site concrete waste storage and disposal procedures at least weekly or as directed by the Resident Engineer or Construction Inspector.

- Locate concrete washout facilities in an area that allows convenient access for concrete trucks, preferably near the area where the concrete is being poured. Appropriate gravel or rock should cover paths to concrete washout facilities if the facilities are located on undeveloped property. These areas should be far enough away from other construction traffic to reduce the likelihood of accidental damage and spills. The number of facilities you install should depend on the expected demand for storage capacity. On large sites with extensive concrete work, place washouts in multiple locations for ease of use. If the dried concrete washout is buried on the site it shall have a 2-foot cover minimum. The 2-foot cover shall match with surrounding finished grade.

- Concrete washed out in areas other than those designated for such activity, shall be cleaned up by the contractor.
- Install signage adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities.
- Perform washout of concrete mixers, delivery trucks and other delivery systems in designated areas only.
- Wash out concrete from concrete pumper bins into concrete pumper trucks and discharge into designated washout area.
- Equipment that cannot be easily moved, such as concrete pavers, shall only be washed in designated areas that do not drain to waterways or storm drain systems.
- Backfill and repair holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities.
- Wash out concrete on site into a future designated final concrete pour location. This location cannot be within 50 feet of a storm or sanitary sewer, or water course; or where it can drain off site. The washout cannot jeopardize the integrity of the final concrete pour. Concrete to be removed from the site shall be disposed of in conformance with the provisions in Standard Specification Manual, Section 202, all as directed by the Engineer. No additional payment will be made for complying with the above specification.

- A self-contained and watertight container may be used to control, capture, and contain concrete wastewater and washout material. The container must be portable and temporary, damage resistant, protect against spills and leaks, and sized to handle solids and wash water to prevent overflow. The container should be emptied and cleaned when 75% of its capacity is reached. After all liquids evaporate or are pumped or vacuumed, and the remaining slurry solidified, the Contractor may bury the solids on site. On County roadway projects, the solids may be buried on site if approved by the Engineer. In either case, solids shall be buried a minimum of 2 feet below finished grade. Disposal of container contents that are removed from the site shall be made at an approved landfill. In order to prevent overflows caused by natural occurrences and to provide security for safety purposes and against acts of vandalism, the container shall be covered at the end of each workday and remain covered until the beginning of the next workday. The cover shall remain on site with the container at all times. Container shall be free of liquids during any on-site relocation process or transport to another site. On County roadway projects, location(s) for the container shall be approved by the Engineer.

BENCHMARK:

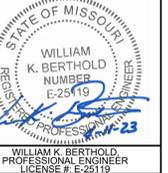
US DEPARTMENT OF INTERIOR BM J-JDS-1967 ELEVATION = 852.00 BRASS DISK ON CENTER HEADWALL NORTH EAST CORNER OF INTERSECTIONS HWY N & HWY MM. SURVEYOR TO CALIBRATE ELEVATION TO 852.00' AT BENCHMARK PRIOR TO CONSTRUCTION LAYOUT. BEARING BASIS: MISSOURI GEOGRAPHIC REFERENCE SYSTEM STATION RE-061.

CONTROL POINT BENCHMARK:

NORTHING = 624729.2990
EASTING = 718315.9090
ELEVATION = 852.00 BRASS DISK

CONSTRUCTION DOCUMENTS

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OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION



SIX NEW FULL SERVICE CABINS - JOHNSON'S SHUT-INS STATE PARK

PROJECT # X2206-01
SITE # 5213
FACILITY # 7815213016, 7815213017,
7815213018, 7815213019,
7815213020, 7815213021

REVISIONS

NO.	DATE	DESCRIPTION

DATE: 04.11.2023

FE PROJECT #: 220058

CHECK: WKB

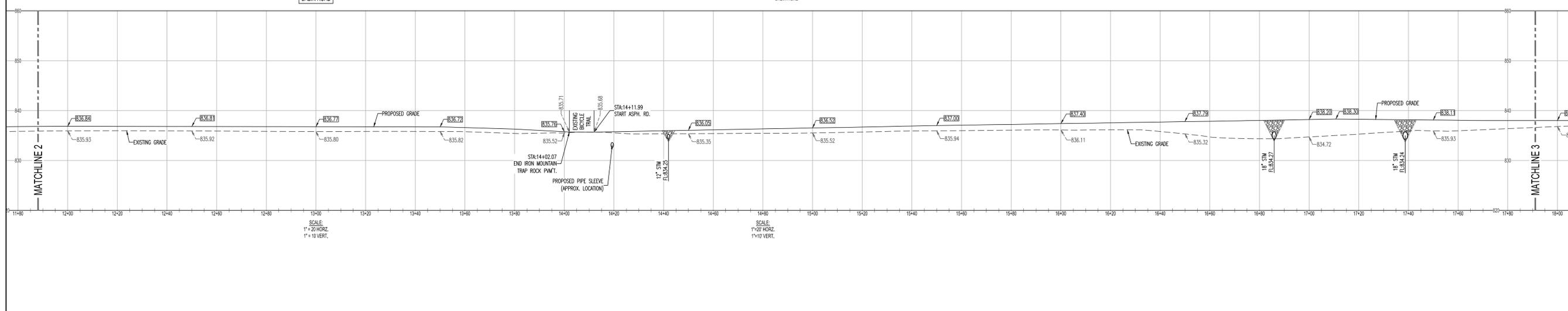
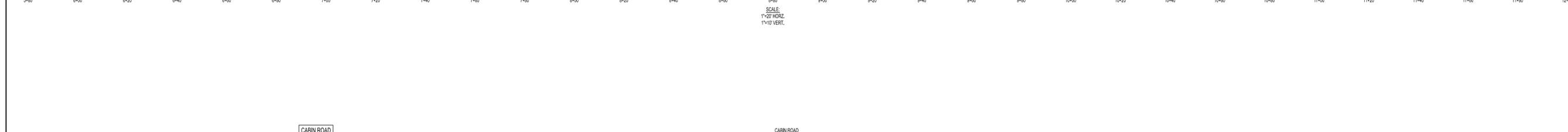
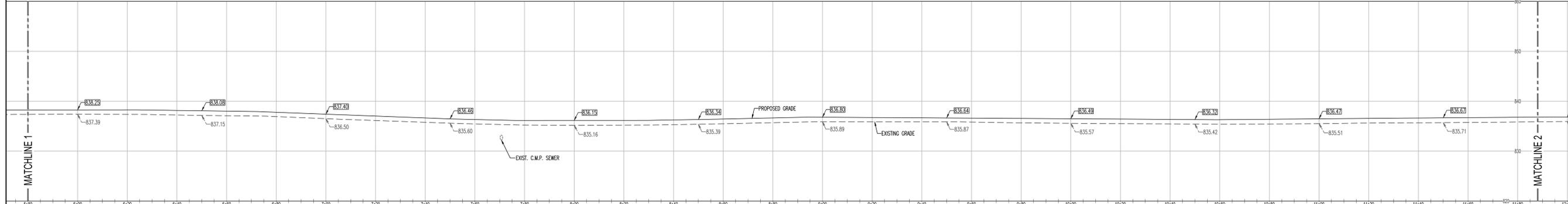
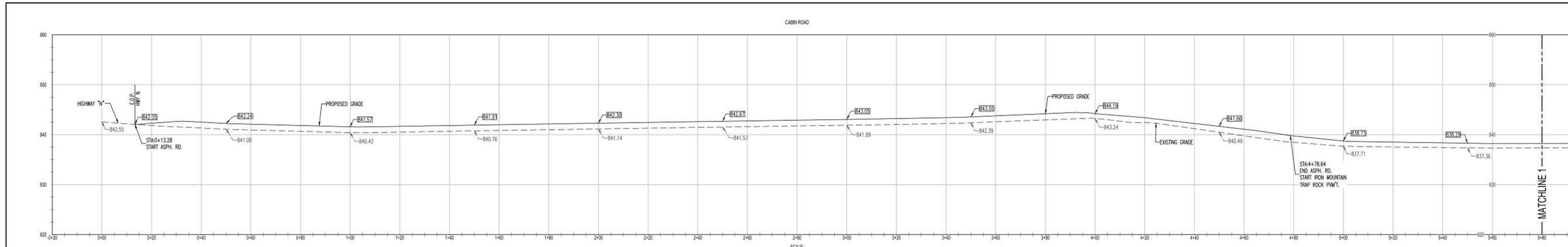
SHEET TITLE:

SWPPP DETAIL 1

17 OF 75 SHEETS

SHEET NUMBER

C6.5



BENCHMARK:
 US DEPARTMENT OF INTERIOR BM J-JDS-1967 ELEVATION = 852.00' BRASS DISK ON CENTER HEADWALL NORTH EAST CORNER OF INTERSECTIONS HWY N & HWY MM.
 SURVEYOR TO CALIBRATE ELEVATION TO 852.00' AT BENCHMARK PRIOR TO CONSTRUCTION LAYOUT.
 BEARING BASIS: MISSOURI GEOGRAPHIC REFERENCE SYSTEM STATION RE-061.

CONTROL POINT BENCHMARK:

NORTHING	=	624729.2990
EASTING	=	718315.9090
ELEVATION	=	852.00 BRASS DISK

STATE OF MISSOURI
 MICHAEL L. PARSON,
 GOVERNOR

CONSTRUCTION DOCUMENTS

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MISSOURI
 DEPARTMENT OF
 NATURAL RESOURCES

**SIX NEW
 FULL SERVICE
 CABINS -
 JOHNSON'S
 SHUT-INS
 STATE PARK**

PROJECT # X2206-01
 SITE # 5213
 FACILITY # 7815213016, 7815213017,
 7815213018, 7815213019,
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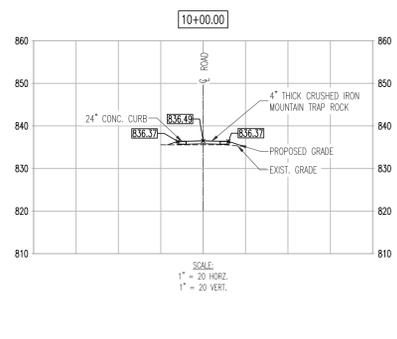
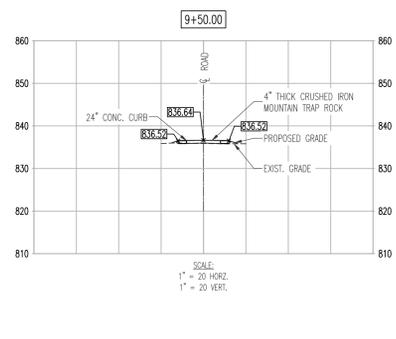
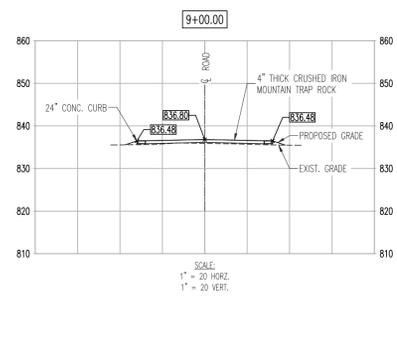
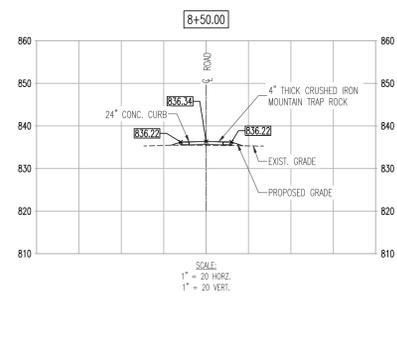
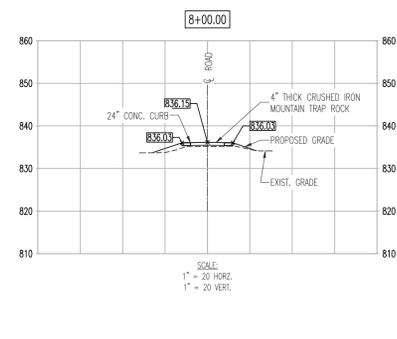
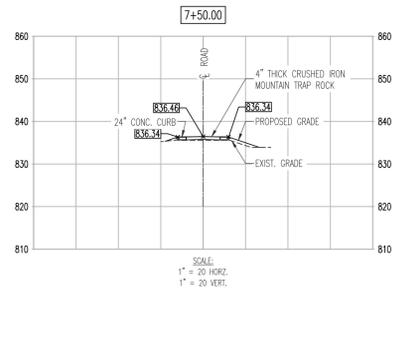
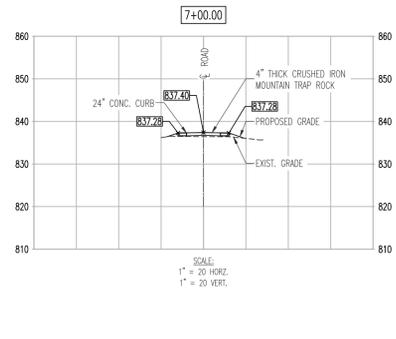
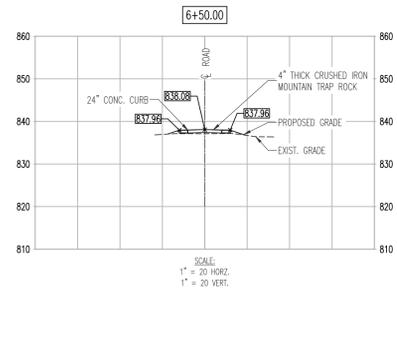
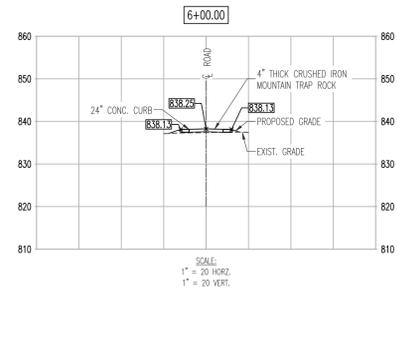
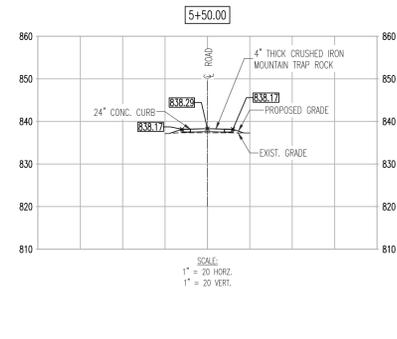
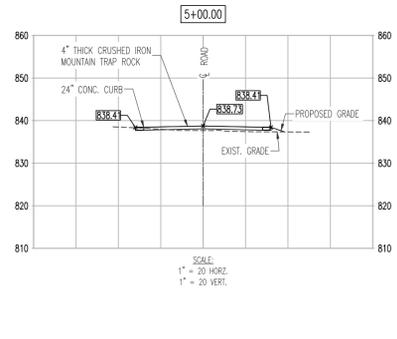
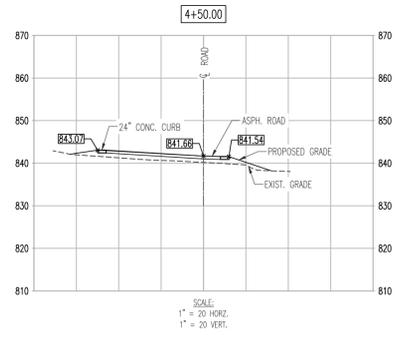
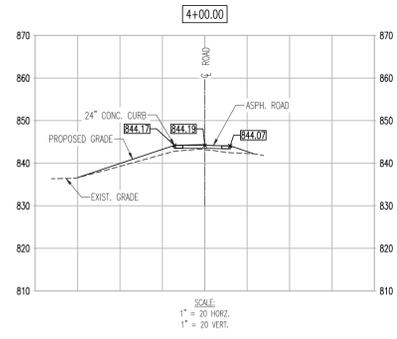
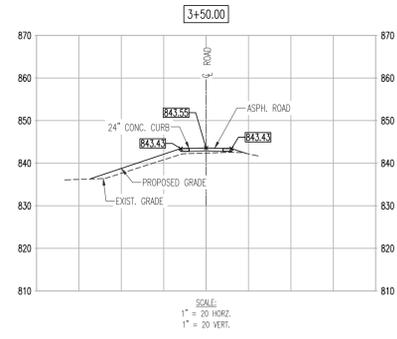
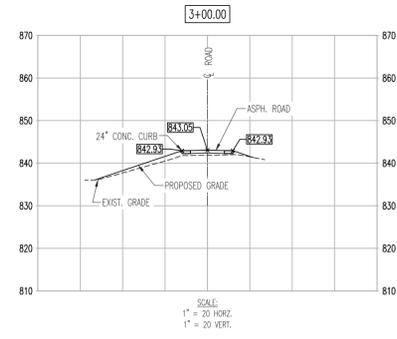
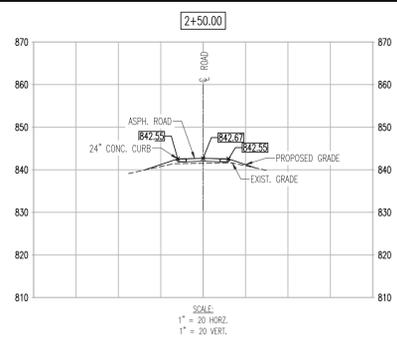
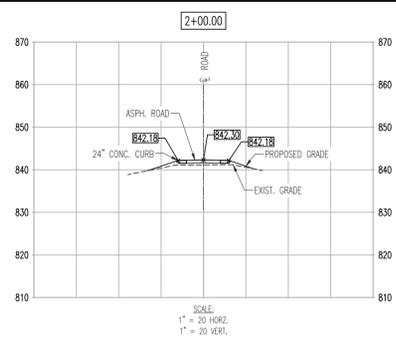
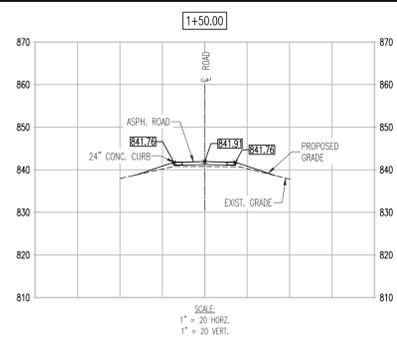
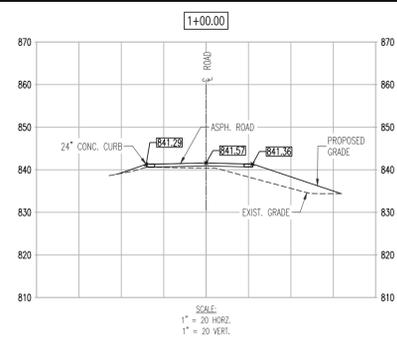
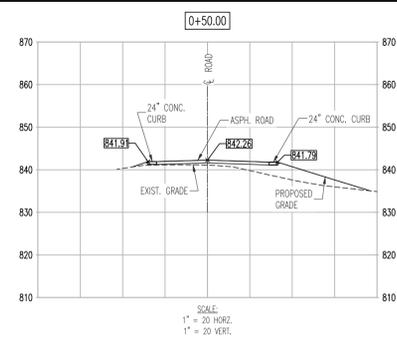
REVISIONS		
NO.	DATE	DESCRIPTION

DATE: 04.11.2023
 FE PROJECT #: 220058
 CHECK: WKB

SHEET TITLE:
ROAD PROFILES 1

19 OF 75 SHEETS

SHEET NUMBER
C7.0



BENCHMARK:
 US DEPARTMENT OF INTERIOR BM J-JDS-1967 ELEVATION = 852.00' BRASS DISK ON CENTER HEADWALL NORTH EAST CORNER OF INTERSECTIONS HWY N & HWY MM.
 SURVEYOR TO CALIBRATE ELEVATION TO 852.00' AT BENCHMARK PRIOR TO CONSTRUCTION LAYOUT.
 BEARING BASIS: MISSOURI GEOGRAPHIC REFERENCE SYSTEM STATION RE-061.

CONTROL POINT BENCHMARK:
 NORTHING = 624729.2990
 EASTING = 718315.9090
 ELEVATION = 852.00 BRASS DISK

STATE OF MISSOURI
 MICHAEL L. PARSON,
 GOVERNOR

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 WILLIAM K. BERTHOLD
 NUMBER
 E-25119
 PROFESSIONAL ENGINEER

WILLIAM K. BERTHOLD,
 PROFESSIONAL ENGINEER
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MISSOURI
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 OF
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**SIX NEW
 FULL SERVICE
 CABINS -
 JOHNSON'S
 SHUT-INS
 STATE PARK**

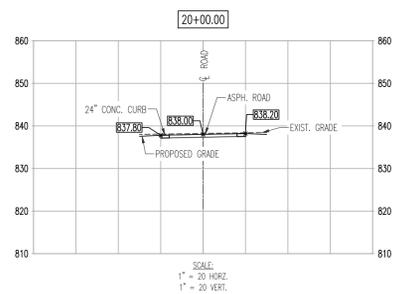
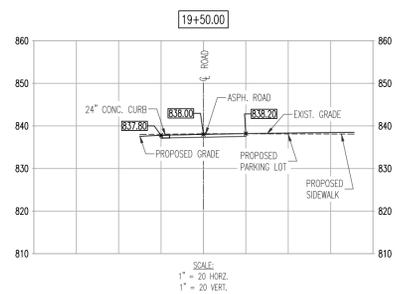
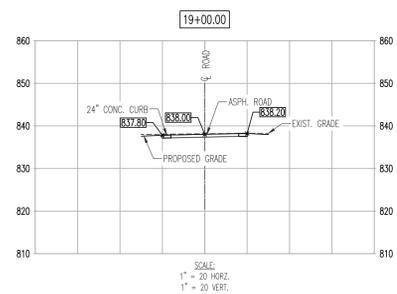
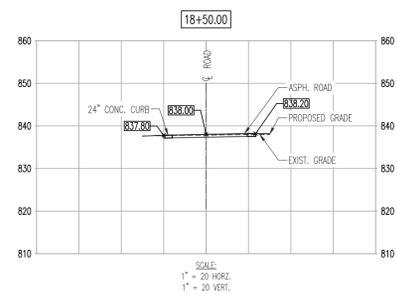
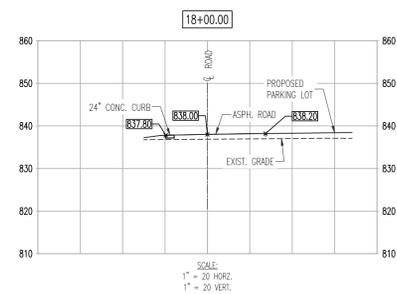
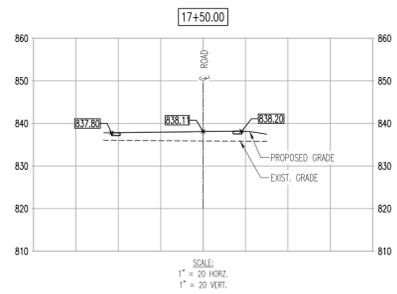
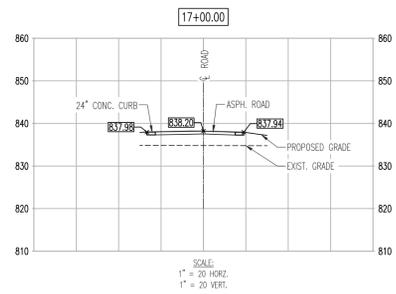
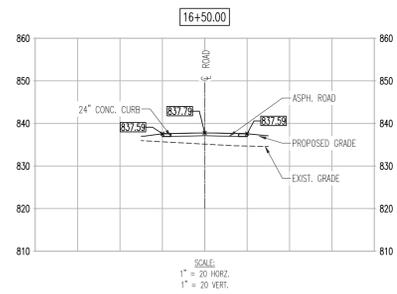
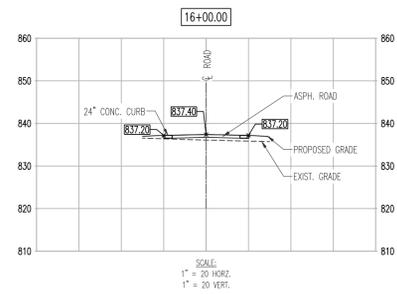
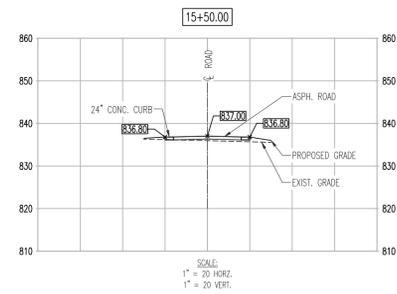
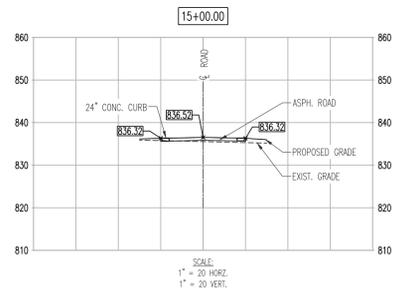
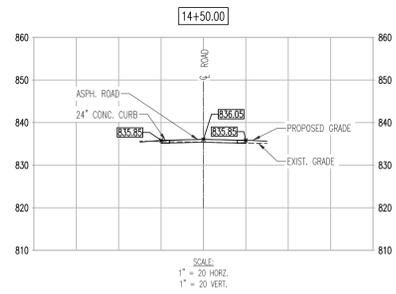
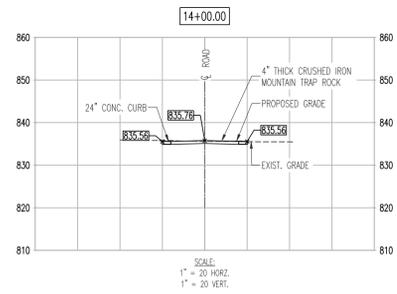
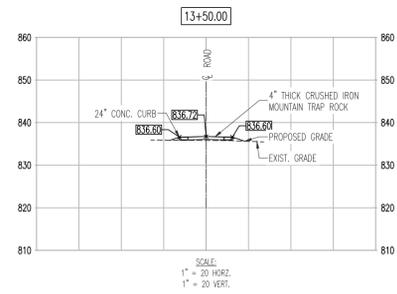
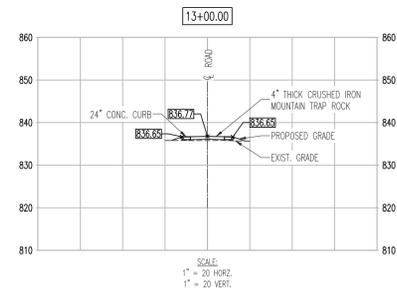
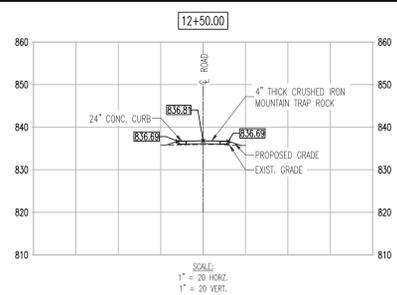
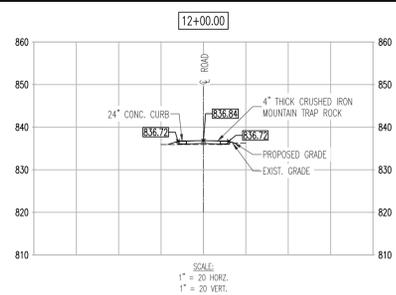
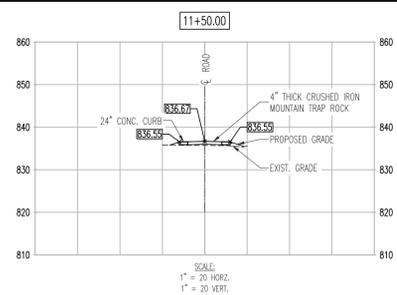
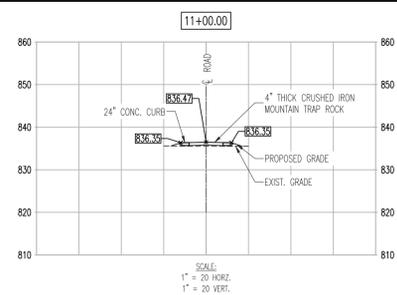
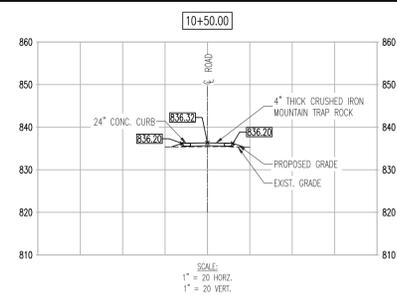
PROJECT # X2206-01
 SITE # 5213
 FACILITY # 7815213016, 7815213017,
 7815213018, 7815213019,
 7815213020, 7815213021

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NO.	DATE	DESCRIPTION

DATE: 04.11.2023
 FE PROJECT #: 220058
 CHECK: WKB

SHEET TITLE:
ROAD SECTIONS 1

31 OF 75 SHEETS
 SHEET NUMBER
C7.2



BENCHMARK:
 US DEPARTMENT OF INTERIOR BM J-JDS-1967 ELEVATION = 852.00' BRASS DISK ON CENTER HEADWALL NORTH EAST CORNER OF INTERSECTIONS HWY N & HWY MM.
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STATE OF MISSOURI
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SIX NEW FULL SERVICE CABINS - JOHNSON'S SHUT-INS STATE PARK

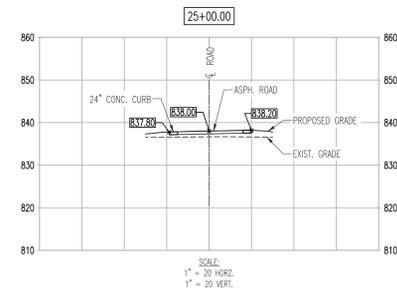
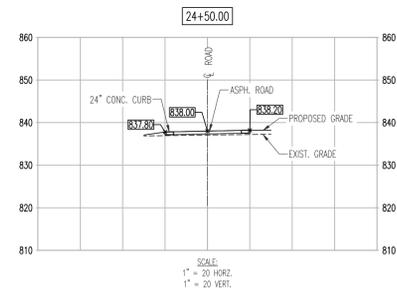
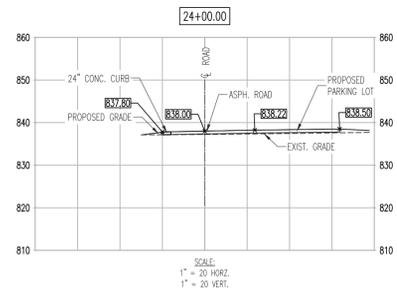
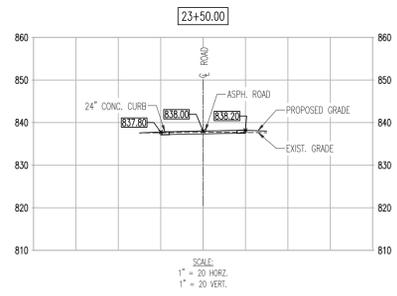
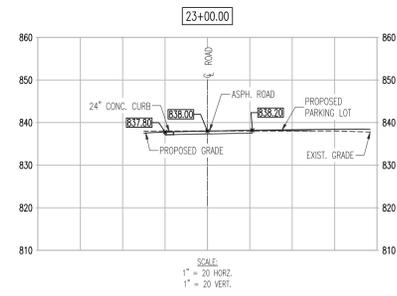
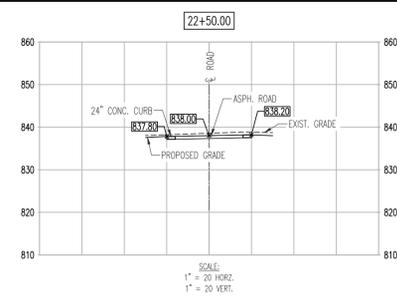
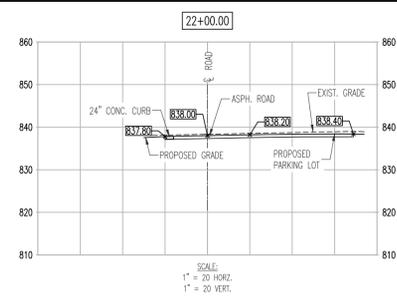
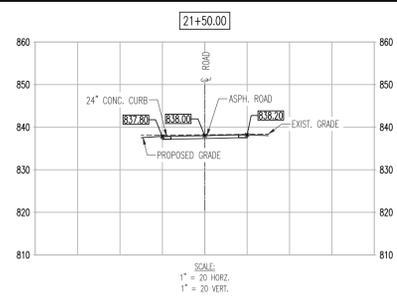
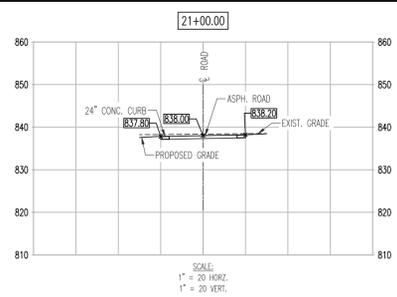
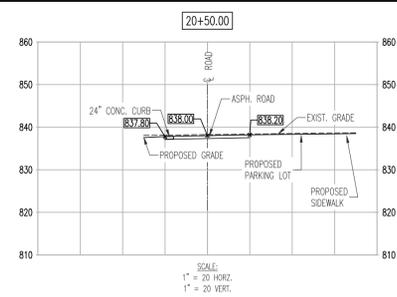
PROJECT # X2206-01
 SITE # 5213
 FACILITY # 7815213016, 7815213017,
 7815213018, 7815213019,
 7815213020, 7815213021

REVISIONS		
NO.	DATE	DESCRIPTION

DATE: 04.11.2023
 FE PROJECT #: 220058
 CHECK: WKB

SHEET TITLE:
ROAD SECTIONS 2

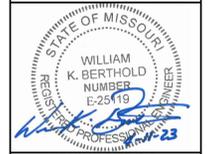
22 OF 75 SHEETS
 SHEET NUMBER
C7.3



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GOVERNOR

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SIX NEW
FULL SERVICE
CABINS -
JOHNSON'S
SHUT-INS
STATE PARK

PROJECT # X2206-01
SITE # 5213
FACILITY # 7815213016, 7815213017,
7815213018, 7815213019,
7815213020, 7815213021

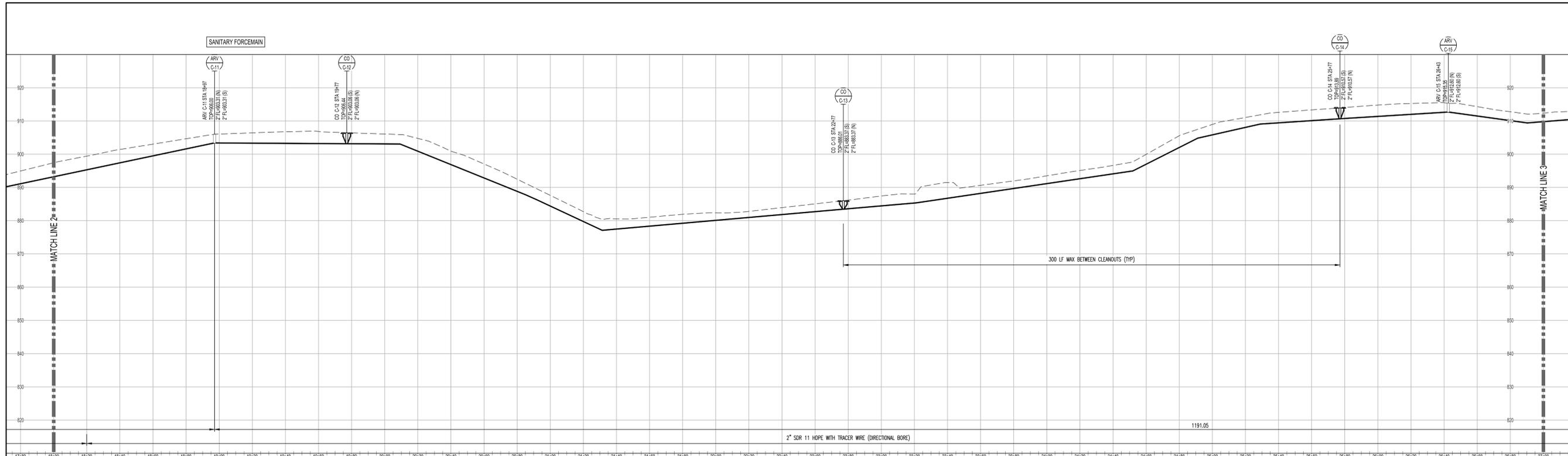
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NO.	DATE	DESCRIPTION

DATE: 04.11.2023
FE PROJECT #: 220058
CHECK: WKB

SHEET TITLE:
ROAD SECTIONS 3

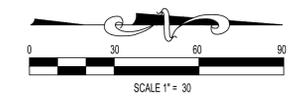
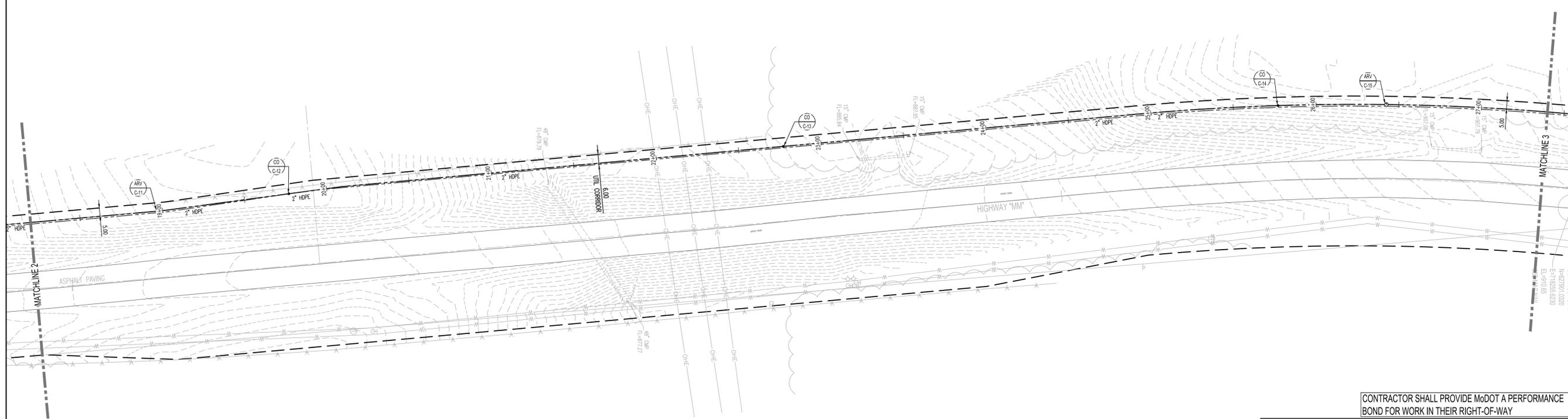
33 OF 75 SHEETS
SHEET NUMBER
C7.4

BENCHMARK:
US DEPARTMENT OF INTERIOR BM J-JDS-1967 ELEVATION = 852.00' AT BRASS DISK ON CENTER HEADWALL NORTH EAST CORNER OF INTERSECTIONS HWY N & HWY MM.
SURVEYOR TO CALIBRATE ELEVATION TO 852.00' AT BENCHMARK PRIOR TO CONSTRUCTION LAYOUT.
BEARING BASIS: MISSOURI GEOGRAPHIC REFERENCE SYSTEM STATION RE-061.
CONTROL POINT BENCHMARK:
NORTHING = 624729.2990
EASTING = 718315.9090
ELEVATION = 852.00 BRASS DISK



SCALE
1" = 30' HORIZ.
1" = 15' VERT.

- LEGEND:**
(REFER TO SOIL REPORT FOR FULL SOIL PROFILE)
- = WATER LEVEL AT TIME OF DRILLING
 - = WATER LEVEL AT END OF DRILLING
 - = AIR RELEASE VALVE
 - = FORCE MAIN CLEANOUT



BENCHMARK:
US DEPARTMENT OF INTERIOR BM J-JDS-1967 ELEVATION = 852.00' BRASS DISK ON CENTER HEADWALL NORTH EAST CORNER OF INTERSECTIONS HWY N & HWY MM.
SURVEYOR TO CALIBRATE ELEVATION TO 852.00' AT BENCHMARK PRIOR TO CONSTRUCTION LAYOUT.
BEARING BASIS: MISSOURI GEOGRAPHIC REFERENCE SYSTEM STATION RE-061.

CONTROL POINT BENCHMARK:
NORTHING = 624729.2990
EASTING = 718315.9090
ELEVATION = 852.00 BRASS DISK

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR

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LICENSE # E-25119

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ENGINEERING: 2007023885

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MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

**SIX NEW
FULL SERVICE
CABINS -
JOHNSON'S
SHUT-INS
STATE PARK**

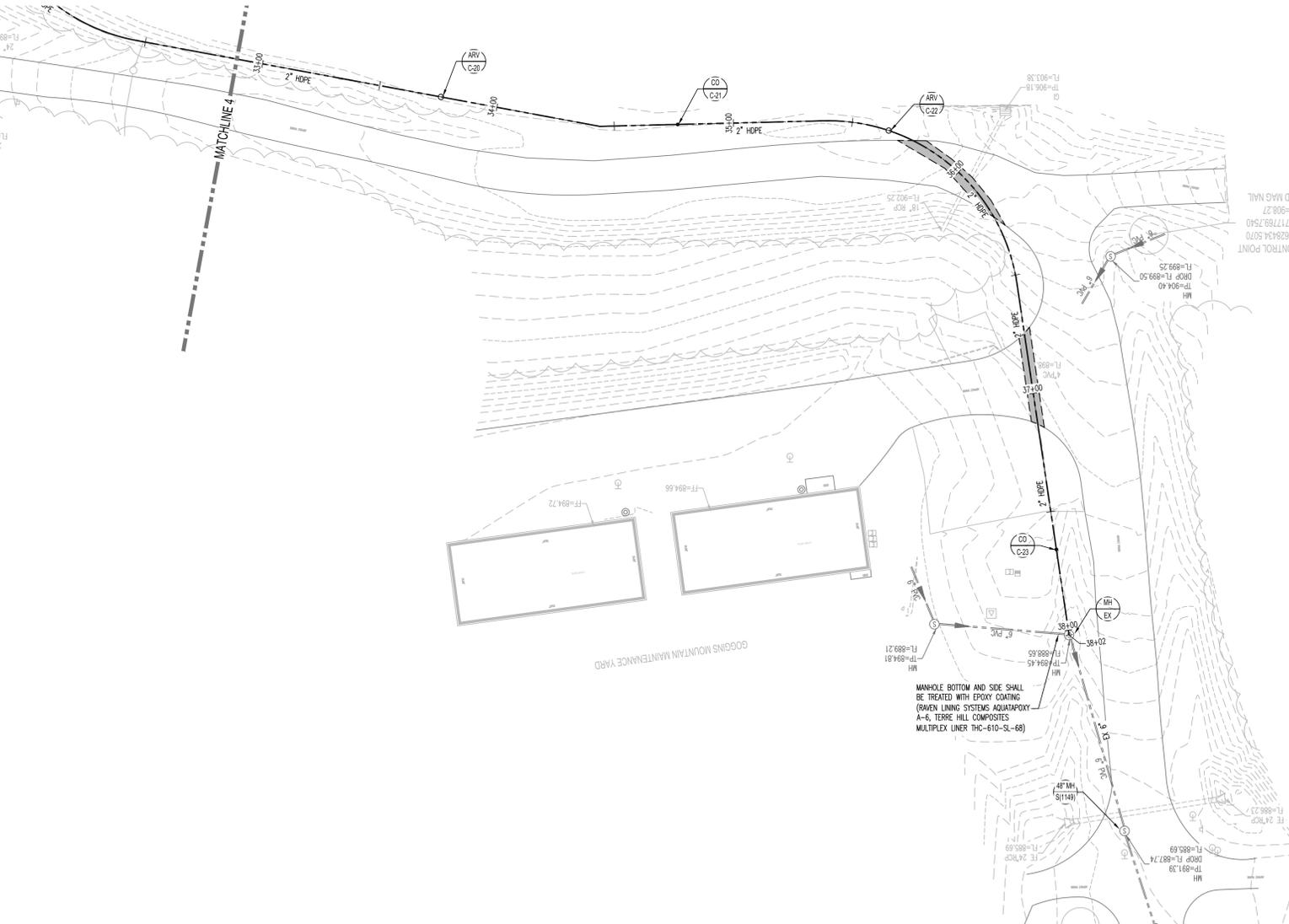
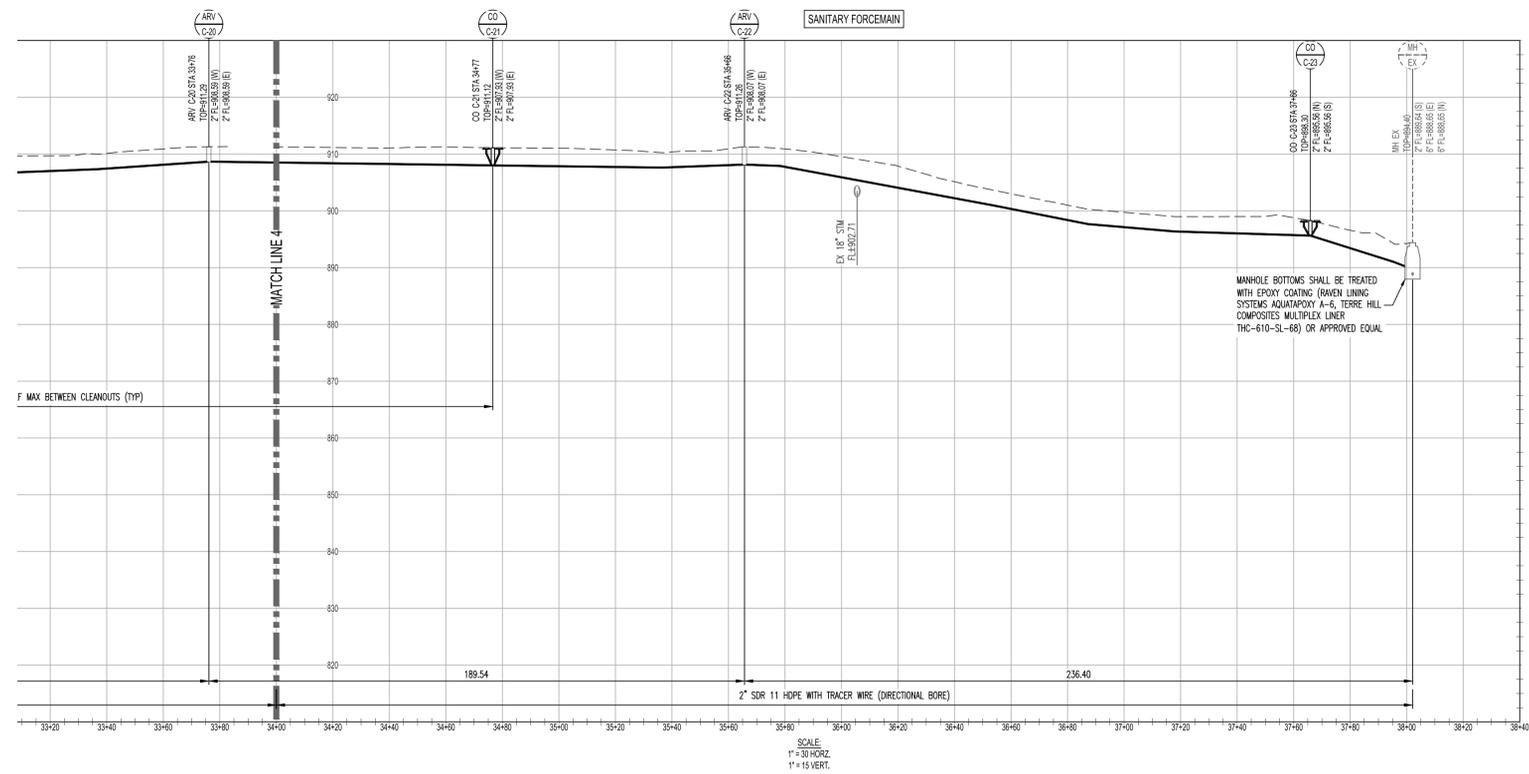
PROJECT # X2206-01
SITE # 5213
FACILITY # 7815213016, 7815213017,
7815213018, 7815213019,
7815213020, 7815213021

REVISIONS		
NO.	DATE	DESCRIPTION

DATE: 04.11.2023
FE PROJECT #: 220058
CHECK: WKB

SHEET TITLE:
**SANITARY FORCE
MAIN - PLAN AND
PROFILE 3**

36 OF 75 SHEETS
SHEET NUMBER
C8.2



- LEGEND:**
(REFER TO SOIL REPORT FOR FULL SOIL PROFILE)
- = WATER LEVEL AT TIME OF DRILLING
 - = WATER LEVEL AT END OF DRILLING
 - = AR RELEASE VALVE
 - = FORCE MAIN CLEANOUT

BENCHMARK:
US DEPARTMENT OF INTERIOR BM J-JDS-1967 ELEVATION = 852.00' BRASS DISK ON CENTER HEADWALL NORTH EAST CORNER OF INTERSECTIONS HWY N & HWY MM.
SURVEYOR TO CALIBRATE ELEVATION TO 852.00' AT BENCHMARK PRIOR TO CONSTRUCTION LAYOUT.
BEARING BASIS: MISSOURI GEOGRAPHIC REFERENCE SYSTEM STATION RE-061.

CONTROL POINT BENCHMARK:
NORTHING = 624729.2990
EASTING = 718315.9090
ELEVATION = 852.00' BRASS DISK

CONTRACTOR SHALL PROVIDE MoDOT A PERFORMANCE BOND FOR WORK IN THEIR RIGHT-OF-WAY

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MICHAEL L. PARSON,
GOVERNOR

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RECORDS
WILLIAM K. BERTHOLD
NUMBER
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Professional Engineer License # E-2519

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PROFESSIONAL ENGINEER
LICENSE # E-2519

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SIX NEW FULL SERVICE CABINS - JOHNSON'S SHUT-INS STATE PARK

PROJECT # X2206-01
SITE # 5213
FACILITY # 7815213016, 7815213017,
7815213018, 7815213019,
7815213020, 7815213021

REVISIONS		
NO.	DATE	DESCRIPTION

DATE: 04.11.2023
FE PROJECT #: 220058
CHECK: WKB

SHEET TITLE:
**SANITARY FORCE
MAIN - PLAN AND
PROFILE 5**

38 OF 75 SHEETS
SHEET NUMBER
C8.4

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PROJECT # X2206-01
SITE # 5213
FACILITY # 7815213016, 7815213017,
7815213018, 7815213019,
7815213020, 7815213021

REVISIONS

NO.	DATE	DESCRIPTION

DATE: 04.11.2023

FE PROJECT #:
220058

CHECK: WKB

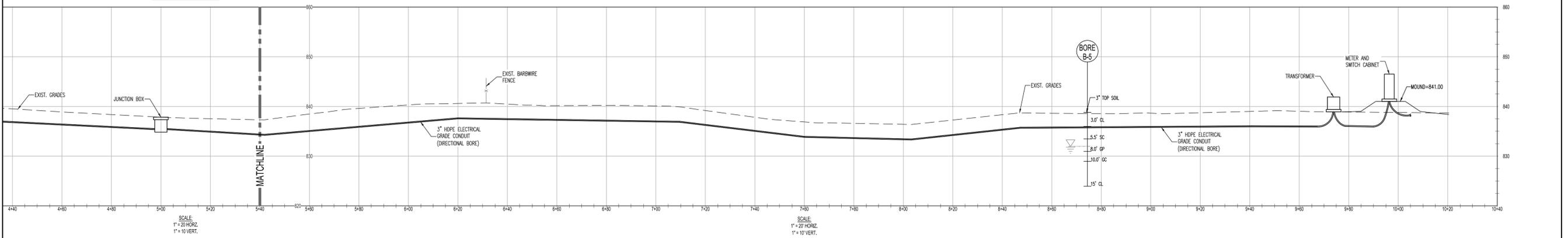
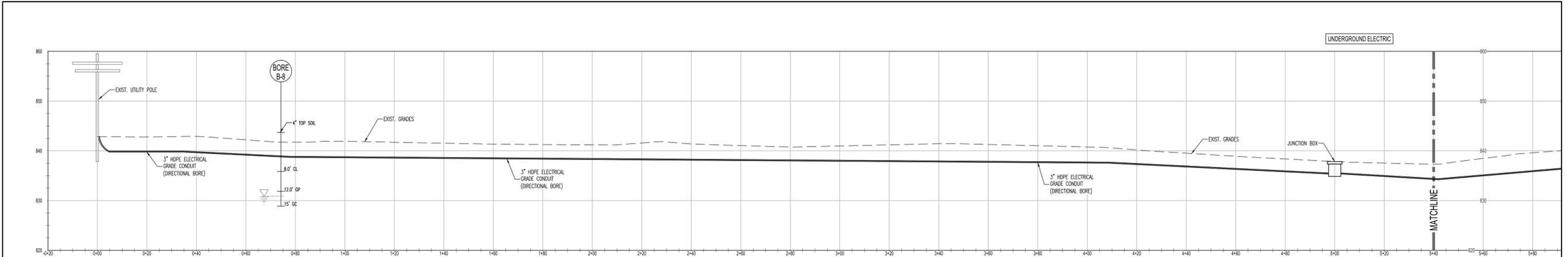
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UNDERGROUND ELECTRIC PROFILES

30 OF 75 SHEETS

SHEET NUMBER

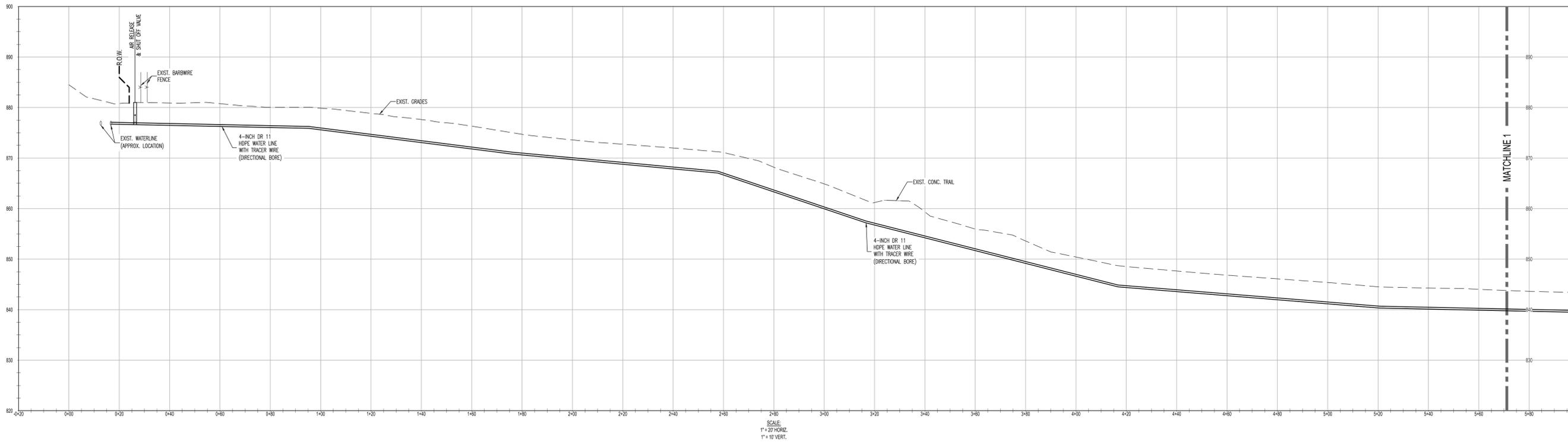
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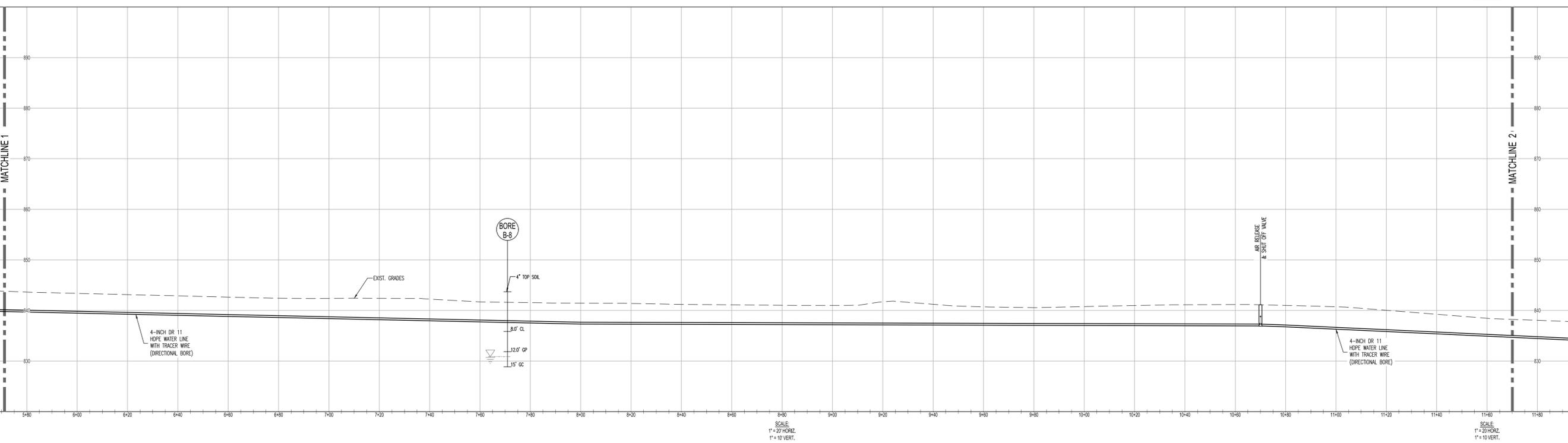
BENCHMARK:
US DEPARTMENT OF INTERIOR BM J-JDS-1967 ELEVATION = 852.00 BRASS DISK ON CENTER HEADWALL NORTH EAST CORNER OF INTERSECTIONS HWY N & HWY MM.
SURVEYOR TO CALIBRATE ELEVATION TO 852.00' AT BENCHMARK PRIOR TO CONSTRUCTION LAYOUT.
BEARING BASIS: MISSOURI GEOGRAPHIC REFERENCE SYSTEM STATION RE-061.

CONTROL POINT BENCHMARK:
NORTHING = 624729.2990
EASTING = 718315.9090
ELEVATION = 852.00 BRASS DISK

WATERLINE



WATERLINE



BENCHMARK:
 US DEPARTMENT OF INTERIOR BM J-JDS-1967 ELEVATION = 852.00 BRASS DISK ON CENTER HEADWALL NORTH EAST CORNER OF INTERSECTIONS HWY N & HWY MM.
 SURVEYOR TO CALIBRATE ELEVATION TO 852.00' AT BENCHMARK PRIOR TO CONSTRUCTION LAYOUT.
 BEARING BASIS: MISSOURI GEOGRAPHIC REFERENCE SYSTEM STATION RE-061.

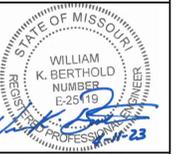
CONTROL POINT BENCHMARK:

NORTHING	=	624729.2990
EASTING	=	718315.9090
ELEVATION	=	852.00 BRASS DISK

STATE OF MISSOURI
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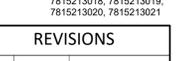
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SIX NEW FULL SERVICE CABINS - JOHNSON'S SHUT-INS STATE PARK

PROJECT # X2206-01
 SITE # 5213
 FACILITY # 7815213016, 7815213017,
 7815213018, 7815213019,
 7815213020, 7815213021

REVISIONS

NO.	DATE	DESCRIPTION

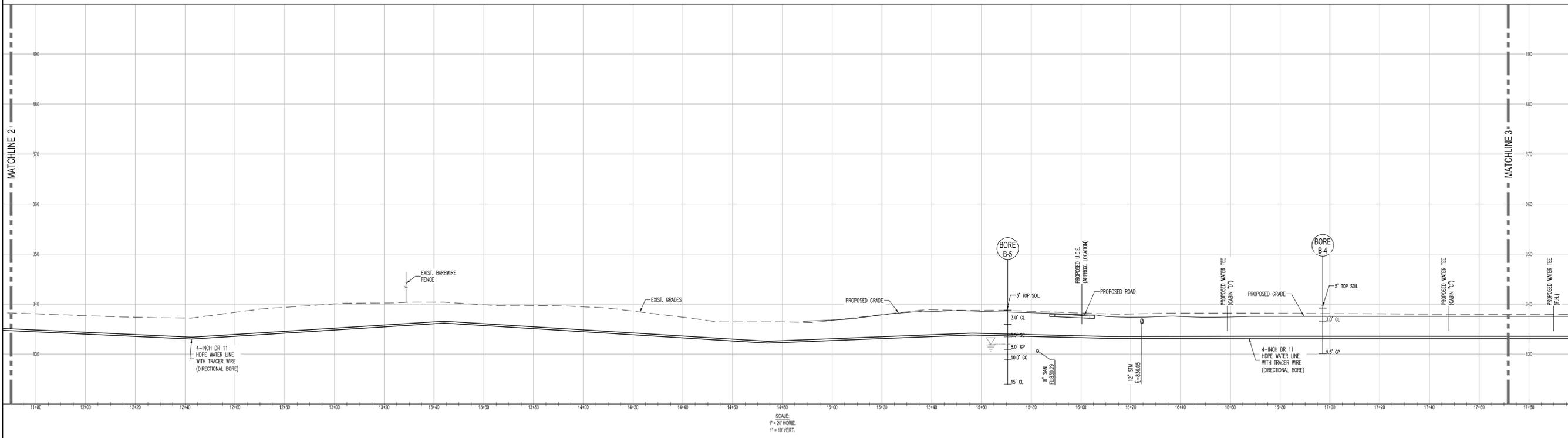
DATE: 04.11.2023
 FE PROJECT #: 220058

CHECK: WKB

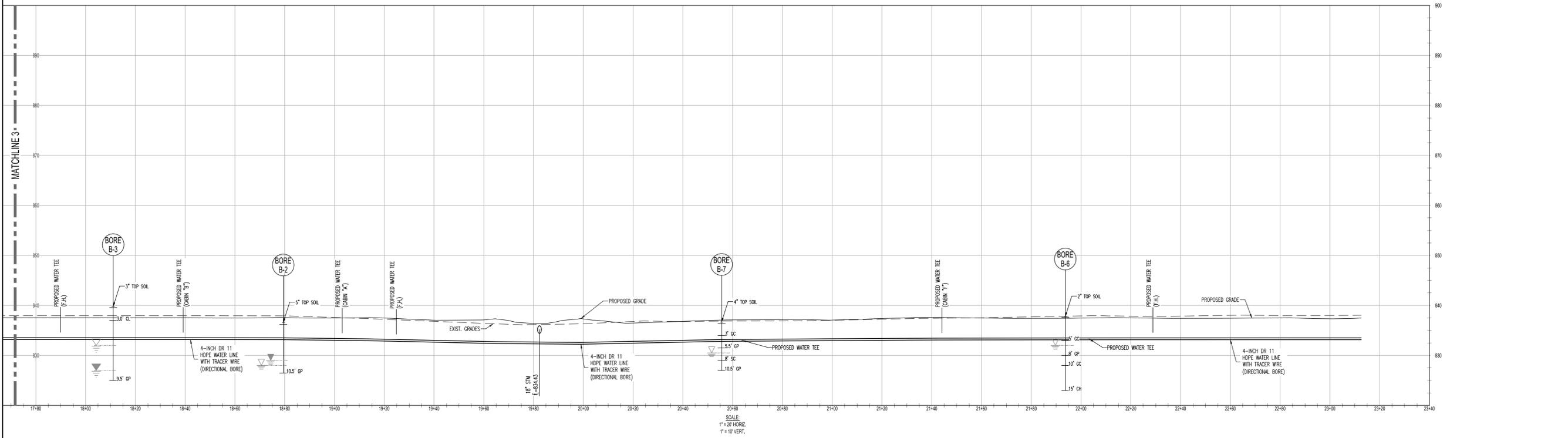
SHEET TITLE:
WATERLINE PROFILES 1

31 OF 75 SHEETS
 SHEET NUMBER
C9.1

WATERLINE



WATERLINE



BENCHMARK:
 US DEPARTMENT OF INTERIOR BM J-JDS-1967 ELEVATION = 852.00' BRASS DISK ON CENTER HEADWALL NORTH EAST CORNER OF INTERSECTIONS HWY N & HWY MM.
 SURVEYOR TO CALIBRATE ELEVATION TO 852.00' AT BENCHMARK PRIOR TO CONSTRUCTION LAYOUT.
 BEARING BASIS: MISSOURI GEOGRAPHIC REFERENCE SYSTEM STATION RE-061.

CONTROL POINT BENCHMARK:
 NORTHING = 624729.2990
 EASTING = 718315.9090
 ELEVATION = 852.00 BRASS DISK

STATE OF MISSOURI
 MICHAEL L. PARSON,
 GOVERNOR

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MISSOURI
 DEPARTMENT OF
 NATURAL RESOURCES

**SIX NEW
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 SHUT-INS
 STATE PARK**

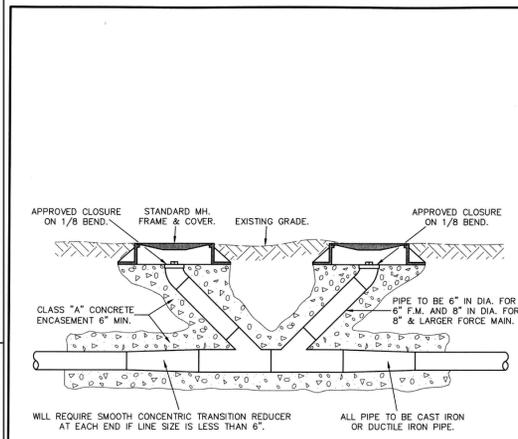
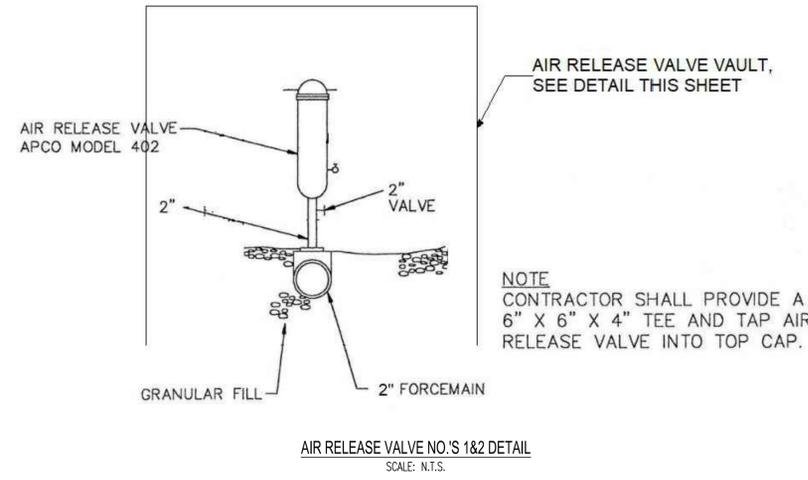
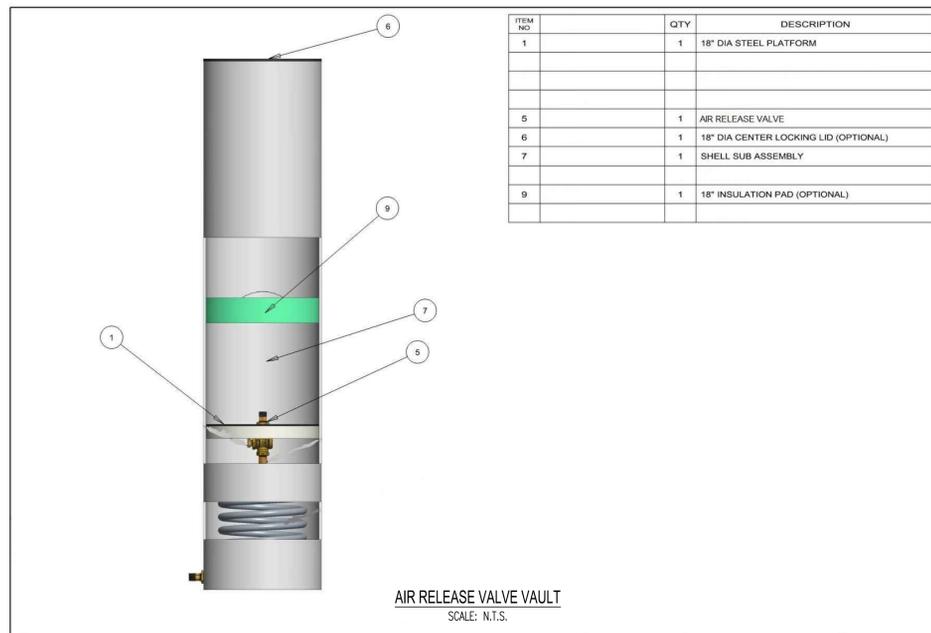
PROJECT # X2206-01
 SITE # 5213
 FACILITY # 7815213016, 7815213017,
 7815213018, 7815213019,
 7815213020, 7815213021

REVISIONS		
NO.	DATE	DESCRIPTION

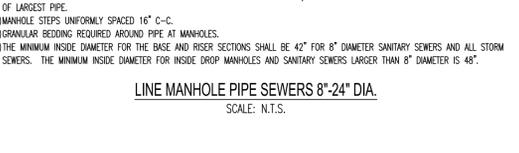
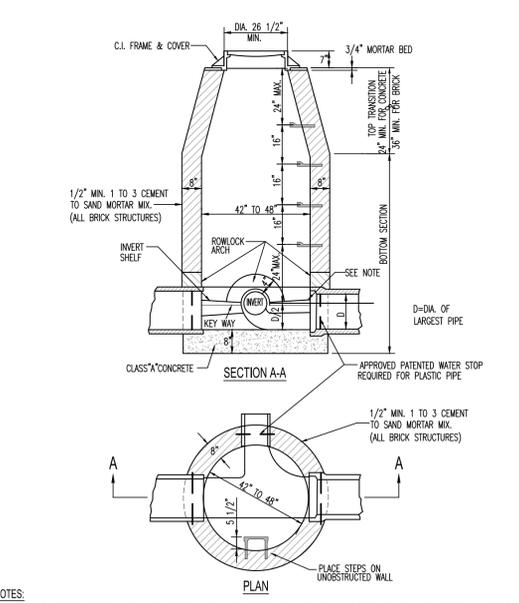
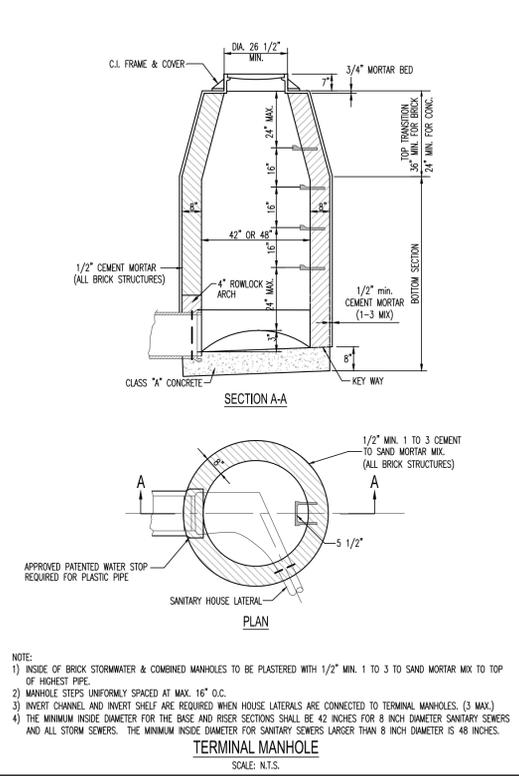
DATE: 04.11.2023
 FE PROJECT #: 220058
 CHECK: WKB

SHEET TITLE:
**WATERLINE
 PROFILES 2**

32 OF 75 SHEETS
 SHEET NUMBER
C9.2

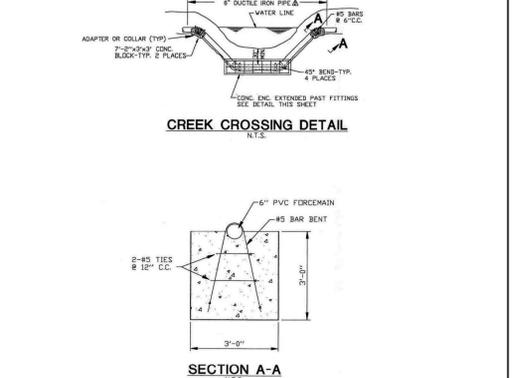
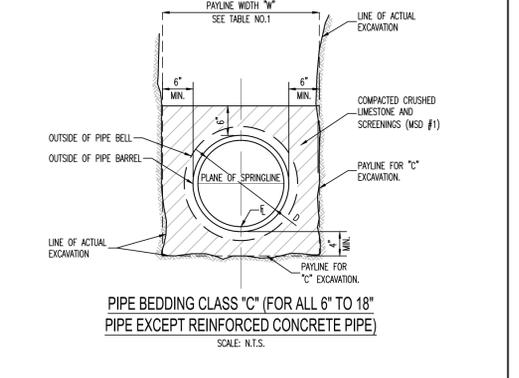
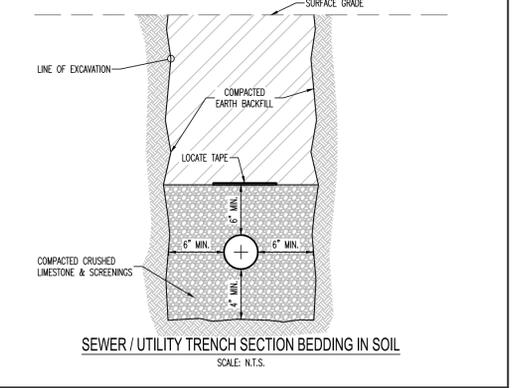
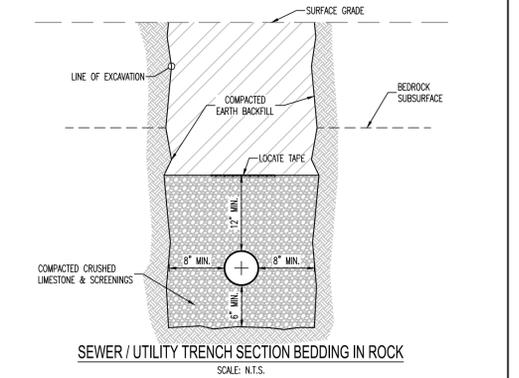


FORCE MAIN CLEANOUT (6" DIA. & SMALLER)	



BENCHMARK:
US DEPARTMENT OF INTERIOR BM J-JDS-1967 ELEVATION = 852.00' BRASS DISK ON CENTER HEADWALL NORTH EAST CORNER OF INTERSECTIONS HWY N & HWY MM.
SURVEYOR TO CALIBRATE ELEVATION TO 852.00' AT BENCHMARK PRIOR TO CONSTRUCTION LAYOUT.
BEARING BASIS: MISSOURI GEOGRAPHIC REFERENCE SYSTEM STATION RE-061.

CONTROL POINT BENCHMARK:
NORTHING = 624729.2990
EASTING = 718315.9090
ELEVATION = 852.00' BRASS DISK



STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR

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MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

**SIX NEW
FULL SERVICE
CABINS -
JOHNSON'S
SHUT-INS
STATE PARK**

PROJECT # X2206-01
SITE # 5213
FACILITY # 7815213016, 7815213017,
7815213018, 7815213019,
7815213020, 7815213021

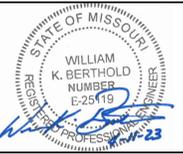
REVISIONS		
NO.	DATE	DESCRIPTION

DATE: **04.11.2023**
FE PROJECT #: **220058**
CHECK: **WKB**

SHEET TITLE:
**UTILITY DETAILS 1
- SEWER**

33 OF 75 SHEETS
SHEET NUMBER
C10.0

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SITE # 5213
FACILITY # 7815213016, 7815213017, 7815213018, 7815213019, 7815213020, 7815213021

REVISIONS

NO.	DATE	DESCRIPTION

DATE: 04.11.2023
FE PROJECT #: 220058

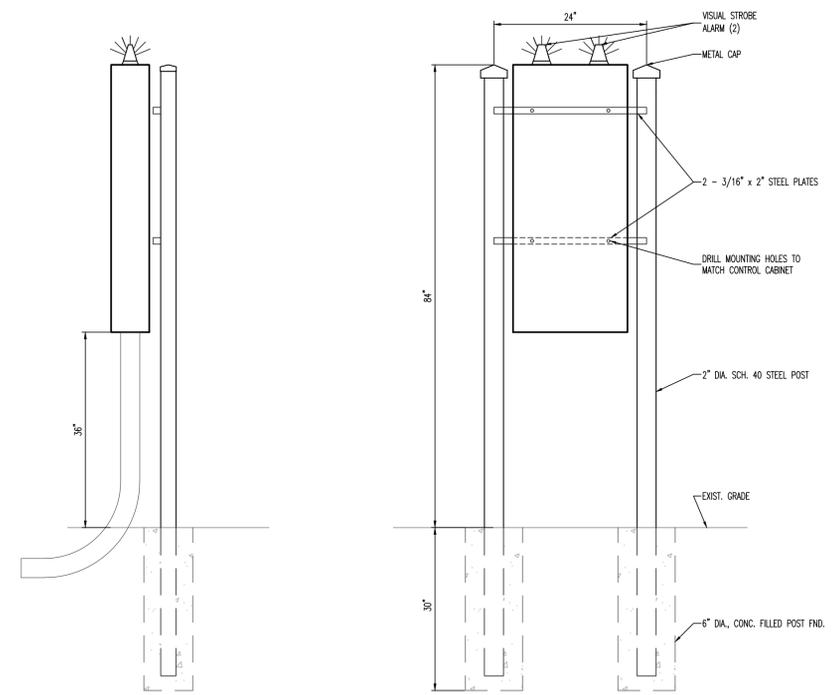
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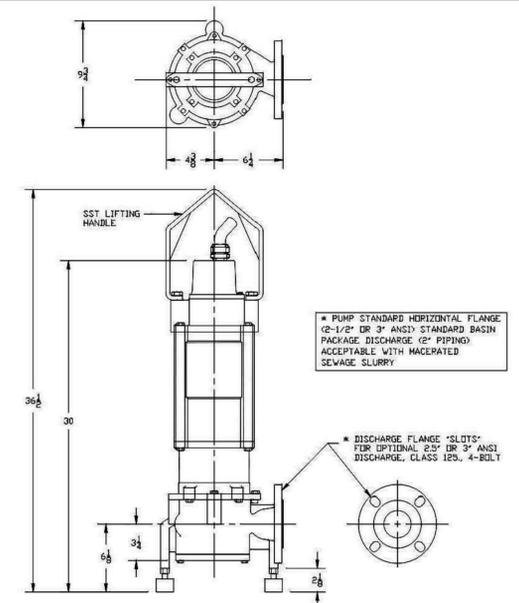
UTILITY DETAILS 2 - SEWER

34 OF 75 SHEETS

SHEET NUMBER
C10.1



PANEL DETAIL WITH STROBE
SCALE: N.T.S.

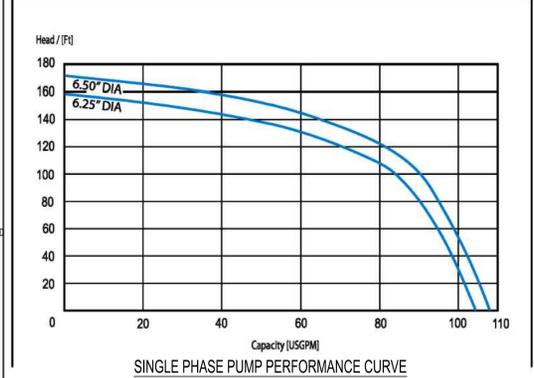


SEWAGE GRINDER 7.5 HP HIGH HEAD GRINDER PUMP

- INTERCHANGEABLE WITH COMPETITOR INSTALLATIONS:
DUAL SILICON-CARBIDE MECHANICAL SHAFT SEALS W/ VITON® ELASTOMERS
PRESSED-IN MOTOR WITH INTERNAL OVERLOAD PROTECTION
3-BEARING SHAFT SUPPORT (UPPER / LOWER / SLEEVE)
INTERNAL MOISTURE DETECTION
STRONG MOTOR, 1-PHASE (208/230) VOLT
- PUMP SHALL HAVE:
- WATERTIGHT CABLE ENTRANCE: AGENCY-APPROVED, WATERTIGHT STRAIN RELIEF CORD GRIP WITH COMPRESSION GROMMET PROTECTS OUTER CORD JACKET (FM EXPLOSION-PROOF) OR HEAVY-DUTY MOLDED COMPRESSION GROMMET PROTECTS OUTER CORD JACKET. EPOXY-FILLED INNER CORD CAP PROVIDES ANTI-WICKING MOISTURE PROTECTION TO THE MOTOR EVEN IF POWER CABLE IS CUT OR DAMAGED.
 - MODULAR PUMP DESIGN: COMMONALITY OF PARTS ACROSS THE KEEN PRODUCT LINE MINIMIZES THE AMOUNT OF PARTS REQUIRED FOR SERVICING. HEAVY-DUTY ASTM A48, CLASS 35 CAST IRON COMPONENTS.
 - STRONG MOTOR: POWERFUL, HIGH-TORQUE MOTOR FOR RELIABLE PUMP OPERATION. PRESSED STATOR SECURELY HOLDS MOTOR AND EFFICIENTLY TRANSFERS HEAT. CLASS F INSULATION WITH OVERLOAD PROTECTION IN OIL-FILLED CHAMBER FOR COOL OPERATION AND LONG MOTOR LIFE.
 - 3-BEARING SUPPORT MOTOR / PUMP SHAFT SECURELY HELD WITH UPPER AND LOWER BALL BEARING PLUS ADDITIONAL SLEEVE BEARING IN LOWER SEAL CHAMBER. LONG 100,000 HOUR L-10 BEARING LIFE.
 - DOUBLE MECHANICAL SEAL PROTECTION: DUAL SILICON-CARBIDE MECHANICAL SHAFT SEALS W/ VITON® ELASTOMERS PROVIDE TWICE THE MOISTURE PROTECTION FOR THE MOTOR. DUAL SEALS ARE HOUSED IN A SECONDARY OIL-FILLED SEAL CHAMBER. TOUGHER SILICON-CARBIDE SEALS BETTER HANDLE SAND, GRIT AND ABRASIVE MATERIALS.
 - MOISTURE DETECTION: DUAL SEAL LEAK PROBE SIGNALS ALARM IN CONTROL PANEL FOR SCHEDULED MAINTENANCE.
 - NON-OVERLOADING HYDRAULIC DESIGN: THE RECESSED CENTRIFUGAL IMPELLER ALLOWS 100% PERFORMANCE CURVE OPERATION FROM SHUT-OFF TO MAXIMUM FLOW WITHOUT DAMAGE TO THE PUMP OR SYSTEM. THE RECESSED VORTEX IMPELLER IS OUT OF THE PASSAGEWAY OF FLOW FLUID, ELIMINATING CONCERNS OF BLOCKAGE OR WEAR.
 - PROVEN GRINDER ASSEMBLY: HARDENED (ROCKWELL 56-60) STAINLESS STEEL GRINDER ASSEMBLY HAS 30+ YEARS PROVEN FIELD EXPERIENCE. THE REVERSIBLE GRINDER RING AND GRINDER IMPELLER EFFECTIVELY REDUCE SOLIDS INTO A FINE SLURRY, EASILY PASSABLE IN A PIPING SYSTEM WITHOUT CONCERNS OF CLOGGING. HIGHLY EFFICIENT 12,400 CUTS/SECOND.
 - VERSATILE FLANGE CONNECTION COMBINATION: 2-1/2" AND 3" HORIZONTAL FLANGE, INDUSTRY-STANDARD ANSI CLASS 125 DIMENSIONS.

TYPICAL PUMP AND PUMP SPECIFICATIONS

PUMP DATA		MOTOR DATA	
Date	10/16/2017	HP / Power Supply	7.5HP / 1 φ, 60 Hz
Discharge Flange	2-1/2" & 3" ANSI Horizontal	Full Load Amps 208V	52 Amps
Grinder Ring	25 Slots	Start Amps 208V	260 Amps
Impeller Type / Std. Dia.	Recessed / 6.50"	Full Load Amps 230V	47 Amps
		Start Amps 230V	235 Amps
		Poles / Rated Speed	2 P / 3450 rpm
		Insulation Class	F Class
		Start Capacitor	300 ufd, 250 VAC
		Run Capacitor	30 ufd, 370 VAC



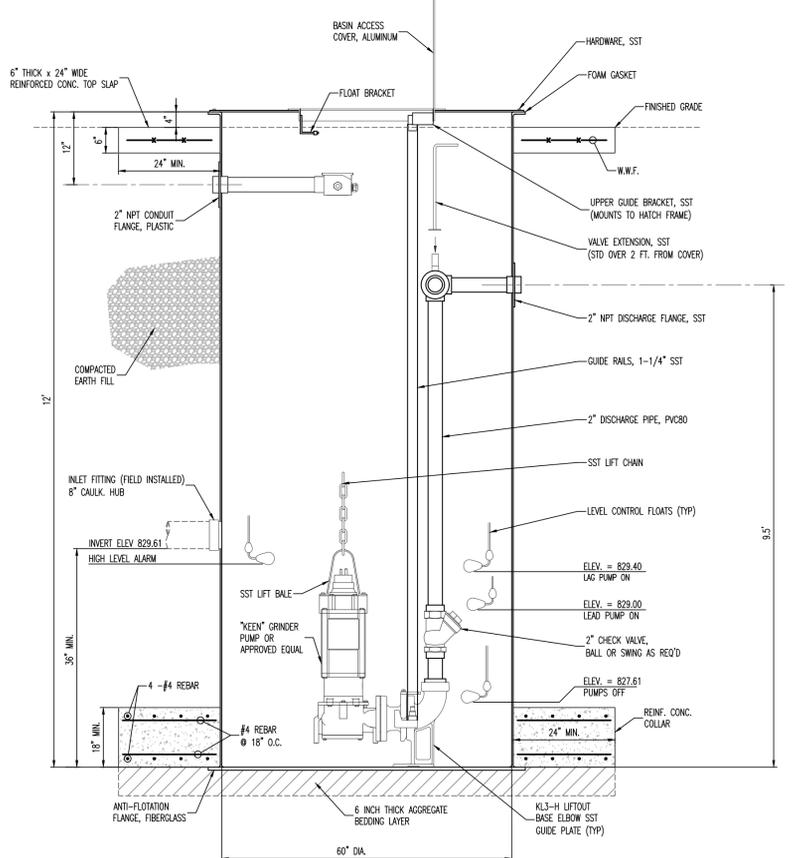
SINGLE PHASE PUMP PERFORMANCE CURVE

BENCHMARK:

US DEPARTMENT OF INTERIOR BM J-JDS-1967 ELEVATION = 852.00' BRASS DISK ON CENTER HEADWALL NORTH EAST CORNER OF INTERSECTIONS HWY N & HWY MM.
SURVEYOR TO CALIBRATE ELEVATION TO 852.00' AT BENCHMARK PRIOR TO CONSTRUCTION LAYOUT.
BEARING BASIS: MISSOURI GEOGRAPHIC REFERENCE SYSTEM STATION RE-061.

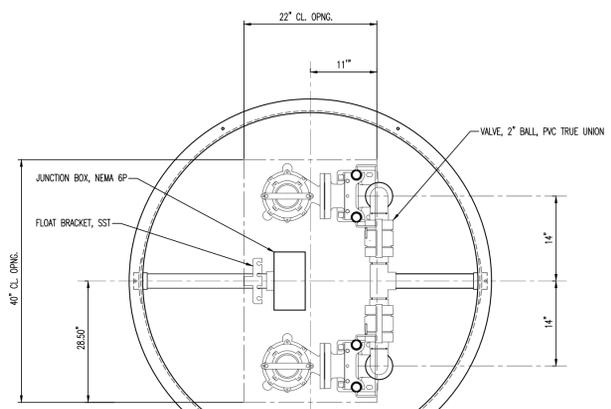
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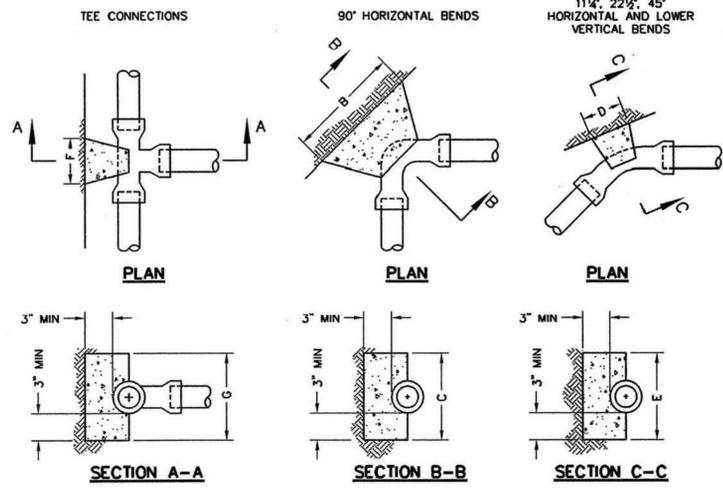
NORTHING = 624729.2990
EASTING = 718315.9090
ELEVATION = 852.00' BRASS DISK



PUMP STATION STRUCTURE

SCALE: N.T.S.



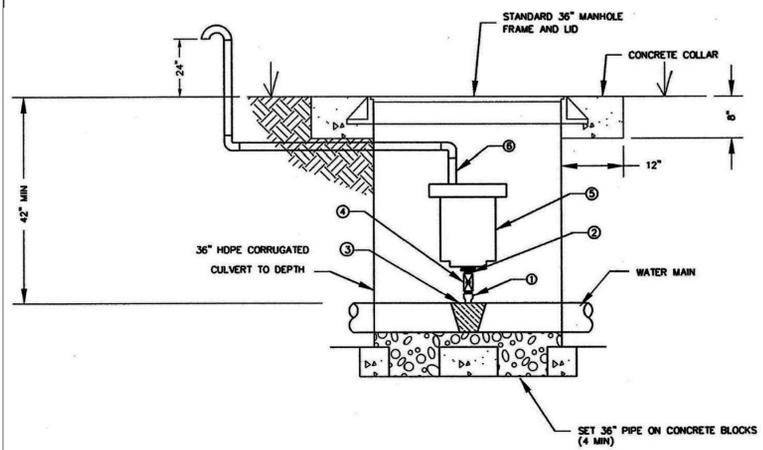


BLOCKING SCHEDULE

PIPE SIZE	B	C	D	E	F	G
1 1/4" & 1 1/2"	8"	8"	10"	5"	6"	6"
2"	10"	10"	14"	7"	10"	10"
2 1/2"	10"	10"	14"	7"	10"	10"
3"	12"	12"	18"	9"	12"	12"
4"	13"	12"	24"	12"	16"	16"
6"	27"	27"	30"	15"	21"	21"

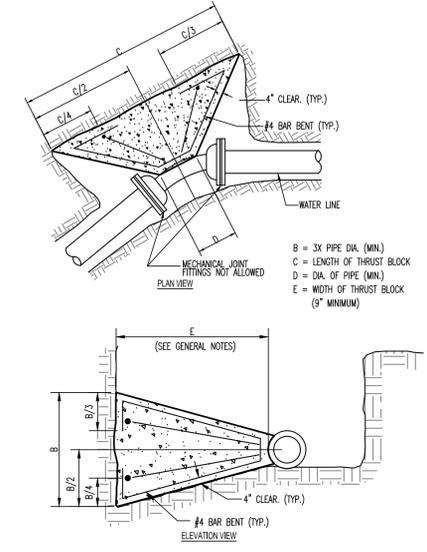
- NOTES:**
- USE TYPE I OR II CONCRETE (SPECIFICATION 02510).
 - CARRY ALL BEARING SURFACES TO UNDISTURBED GROUND OR FIRM SUBSURFACE.
 - BUTTRESS SIZED FOR 160 PSI.
 - DO NOT ENCASE JOINTS.
 - ONLY MIX WITH POTABLE WATER.

THRUST BLOCKS
SCALE: NTS



- 1" CORPORATION STOP 1" MIP THREAD
- 1" NPT BY 1" NPT NIPPLE
- ALL BRASS SADDLE FOR 1" CORP. STOP, FORD STYLE S70 OR S71
- 1" BRASS BALL VALVE FPT X FPT
- 1" COMBINATION AIR VALVE
- 1" THREADED BRASS PIPE & FITTINGS WITH SCREENED DISCHARGE

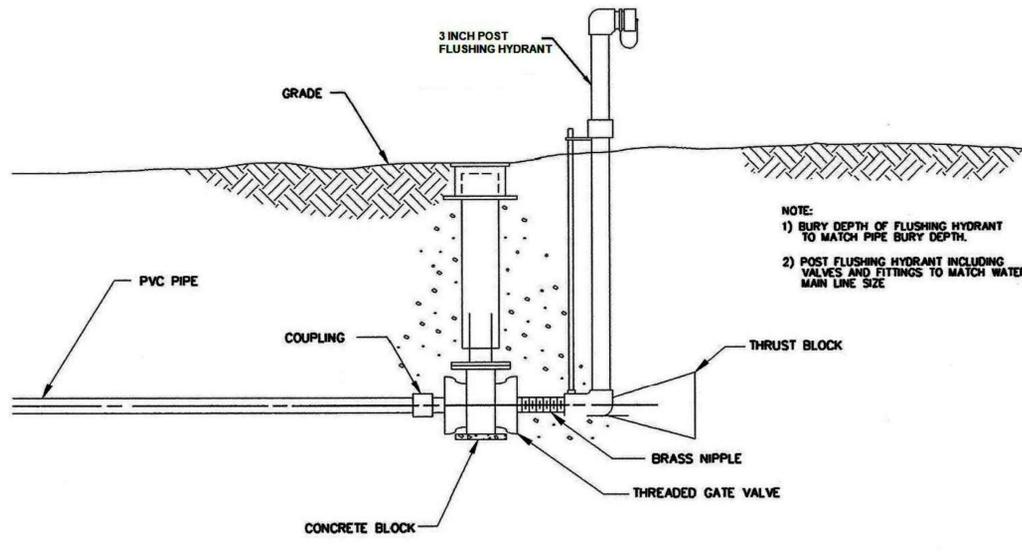
AIR RELEASE VALVE MANHOLE
SCALE: NTS



MINIMUM BEARING AREA IN SQ. FT.*

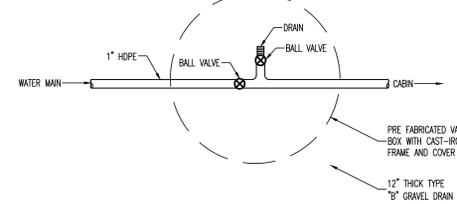
PIPE SIZE	BENDS (DEGREES)		TEE	DEAD-END
	45	90		
≤ 6"	1.0	3.5	4.5	8.0
8"	2.0	4.0	7.5	10.0
10"-12"	4.0	8.0	16	20.0

THRUST BLOCK DETAILS & HORIZ. BENDS
SCALE: N.T.S.

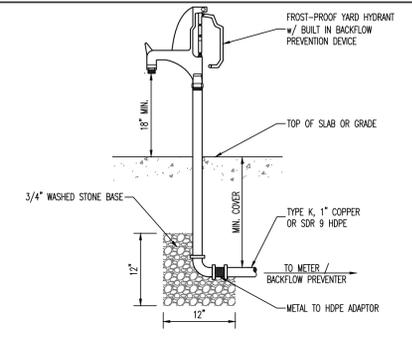


- NOTE:**
- BURY DEPTH OF FLUSHING HYDRANT TO MATCH PIPE BURY DEPTH.
 - POST FLUSHING HYDRANT INCLUDING VALVES AND FITTINGS TO MATCH WATER MAIN LINE SIZE.

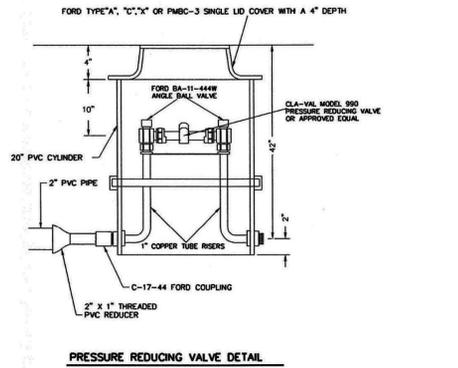
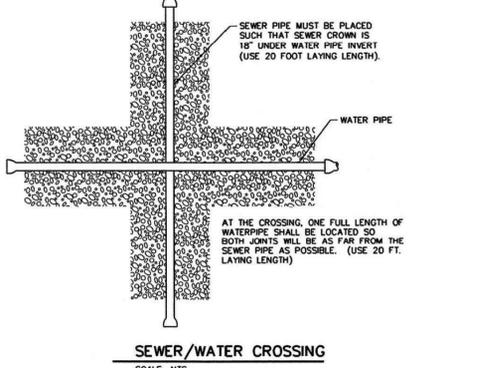
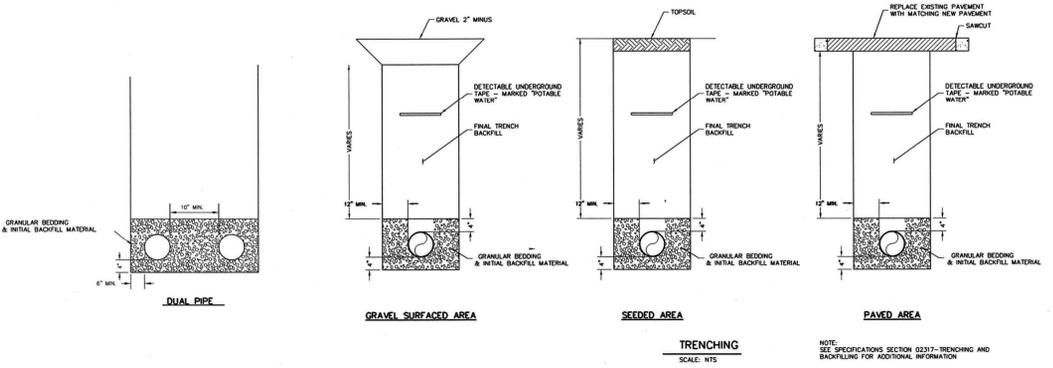
FLUSHING ASSEMBLY



1" WATER SERVICE SHUT-OFF
SCALE: N.T.S.



YARD HYDRANT
SCALE: N.T.S.



BENCHMARK:
US DEPARTMENT OF INTERIOR BM J-JDS-1967 ELEVATION = 852.00' BRASS DISK ON CENTER HEADWALL NORTH EAST CORNER OF INTERSECTIONS HWY N & HWY MM.
SURVEYOR TO CALIBRATE ELEVATION TO 852.00' AT BENCHMARK PRIOR TO CONSTRUCTION LAYOUT.
BEARING BASIS: MISSOURI GEOGRAPHIC REFERENCE SYSTEM STATION RE-061.

CONTROL POINT BENCHMARK:
NORTHING = 624729.2990
EASTING = 718315.9090
ELEVATION = 852.00' BRASS DISK

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR

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MISSOURI DEPARTMENT OF NATURAL RESOURCES

SIX NEW FULL SERVICE CABINS - JOHNSON'S SHUT-INS STATE PARK

PROJECT # X2206-01
SITE # 5213
FACILITY # 7815213016, 7815213017, 7815213018, 7815213019, 7815213020, 7815213021

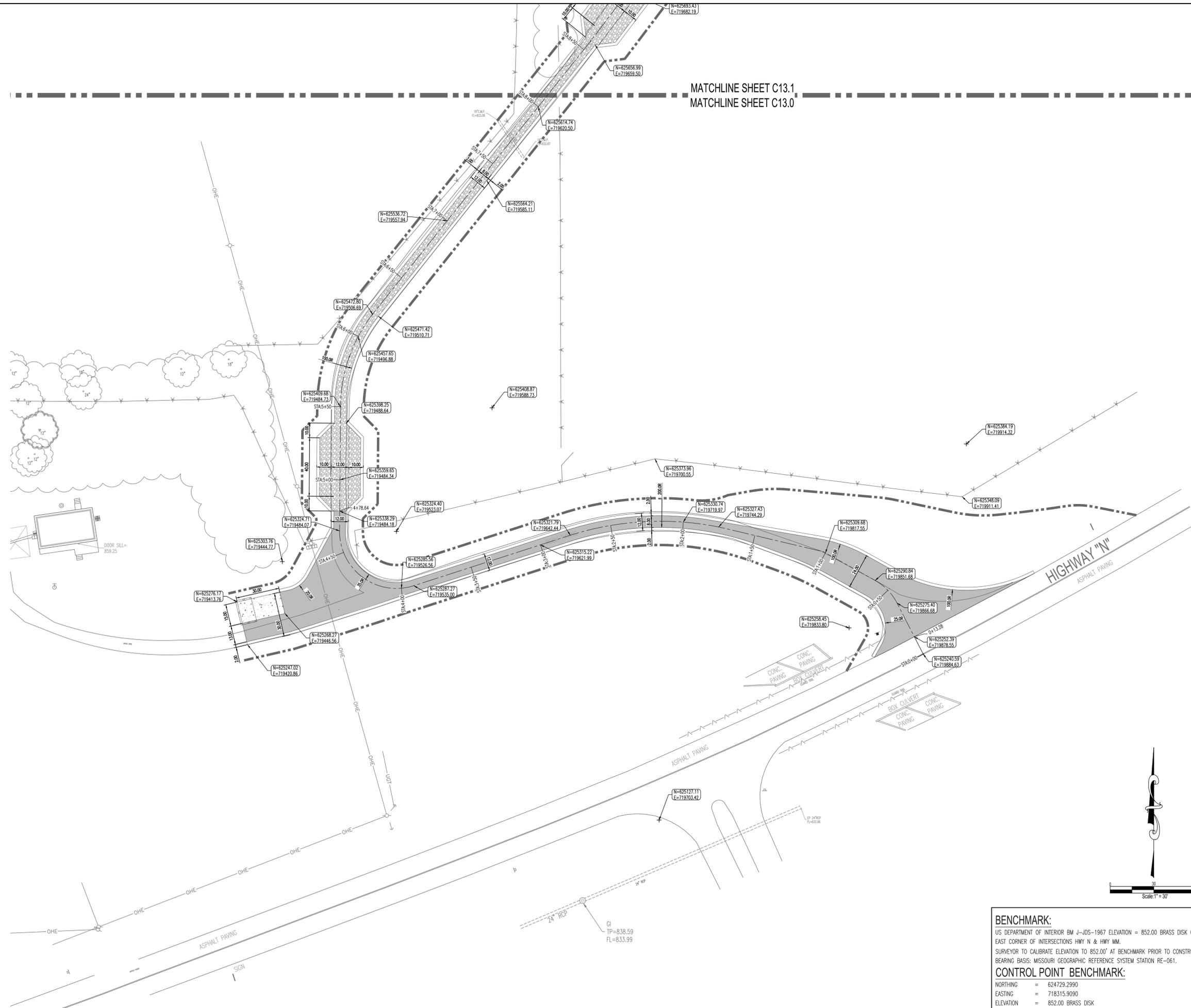
REVISIONS

NO.	DATE	DESCRIPTION

DATE: 04.11.2023
FE PROJECT #: 220058
CHECK: WKB

SHEET TITLE:
UTILITY DETAILS - WATER

35 OF 75 SHEETS
SHEET NUMBER
C11.0



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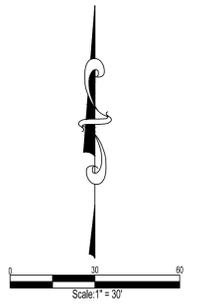
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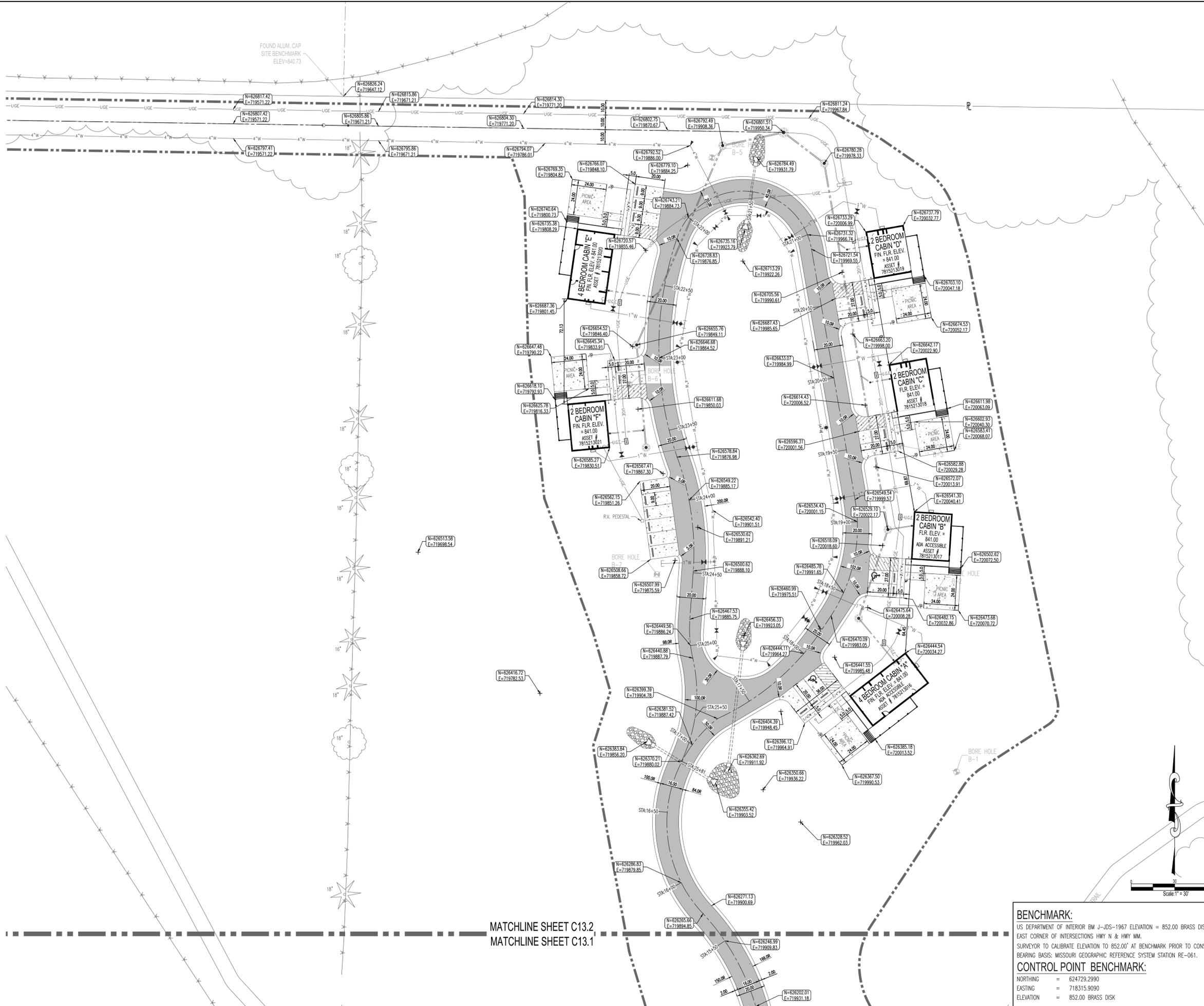
SHEET TITLE:
LAYOUT PLAN 1

37 OF 75 SHEETS
SHEET NUMBER
C13.0

BENCHMARK:
US DEPARTMENT OF INTERIOR BM J-JDS-1967 ELEVATION = 852.00' BRASS DISK ON CENTER HEADWALL NORTH EAST CORNER OF INTERSECTIONS HWY N & HWY MM.
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BEARING BASIS: MISSOURI GEOGRAPHIC REFERENCE SYSTEM STATION RE-061.

CONTROL POINT BENCHMARK:
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EASTING = 718315.9090
ELEVATION = 852.00 BRASS DISK





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REVISIONS

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DATE: 04.11.2023

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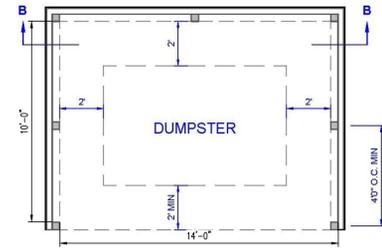
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LAYOUT PLAN 3

39 OF 75 SHEETS
SHEET NUMBER
C13.2

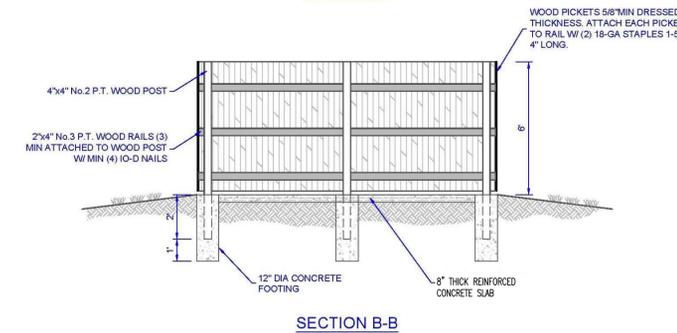
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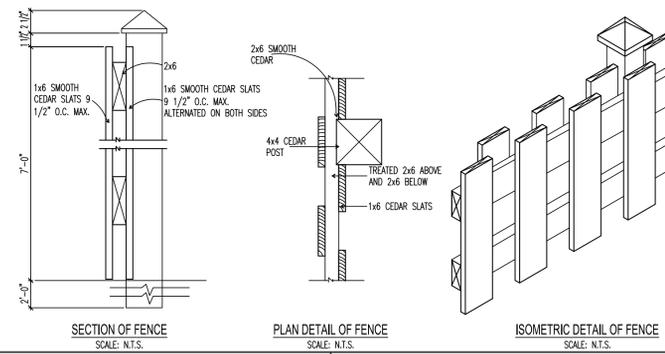
WOODEN FENCE DUMPSTER ENCLOSURE



PLAN VIEW



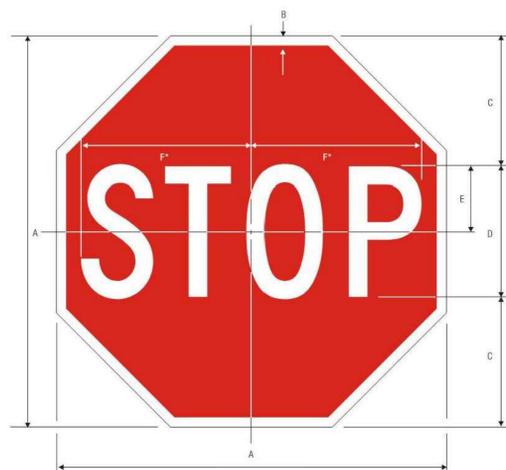
SECTION B-B



SECTION OF FENCE
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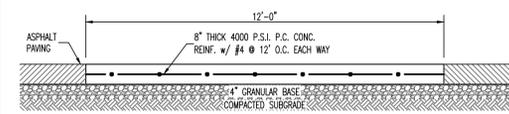
PLAN DETAIL OF FENCE
SCALE: N.T.S.

ISOMETRIC DETAIL OF FENCE
SCALE: N.T.S.

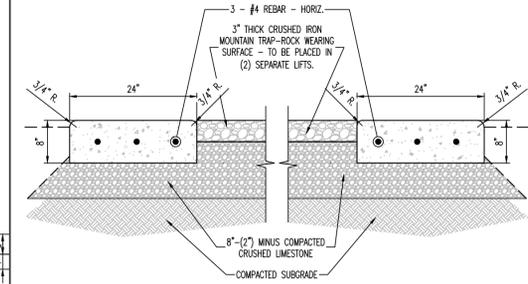


A	B	C	D	E	F
18	375	6	6 C	3	7.75
24	.625	8	8 C	4	10
30	.75	10	10 C	5	12.5
36	.875	12	12 C	6	15
48	1.25	16	16 C	8	20

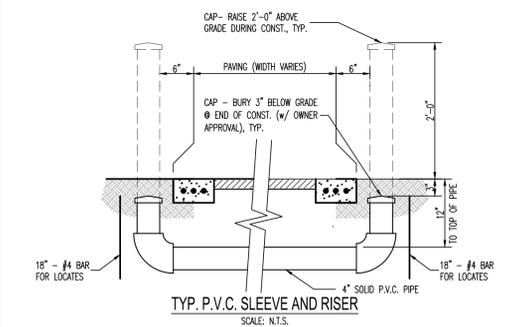
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BACKGROUND - RED (RETROREFLECTIVE)



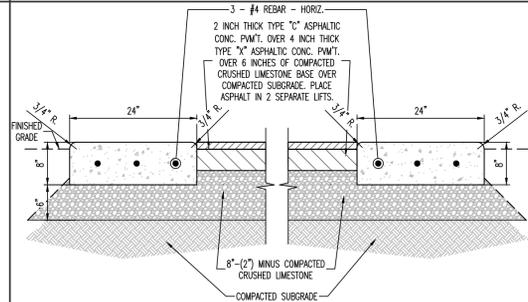
DUMPSTER APPROACH AND ENCLOSURE SLAB - (SINGLE ENCLOSURE)
SCALE: N.T.S.



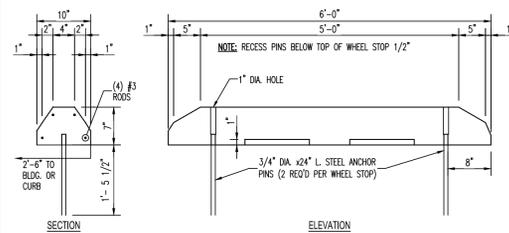
TYPICAL PAVEMENT SECTION THRU ROAD - TRAP ROCK
SCALE: N.T.S.



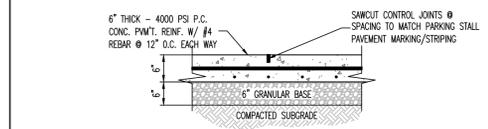
TYP. P.V.C. SLEEVE AND RISER
SCALE: N.T.S.



TYPICAL PAVEMENT SECTION THRU ROAD - ASPHALT
SCALE: N.T.S.



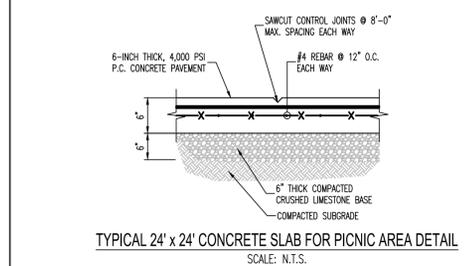
CONCRETE WHEEL STOP DETAIL
SCALE: N.T.S.



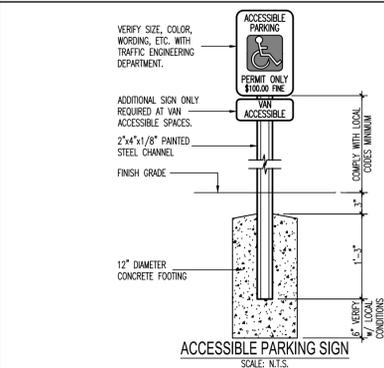
TYPICAL CONCRETE PAVEMENT SECTION - PARKING AREAS
SCALE: N.T.S.



ACCESSIBLE PARKING PAVEMENT MARKING
SCALE: N.T.S.



TYPICAL 24' x 24' CONCRETE SLAB FOR PICNIC AREA DETAIL
SCALE: N.T.S.



ACCESSIBLE PARKING SIGN
SCALE: N.T.S.

BENCHMARK:

US DEPARTMENT OF INTERIOR BM J-JDS-1967 ELEVATION = 852.00' BRASS DISK ON CENTER HEADWALL NORTH EAST CORNER OF INTERSECTIONS HWY N & HWY MM.
SURVEYOR TO CALIBRATE ELEVATION TO 852.00' AT BENCHMARK PRIOR TO CONSTRUCTION LAYOUT.
BEARING BASIS: MISSOURI GEOGRAPHIC REFERENCE SYSTEM STATION RE-061.

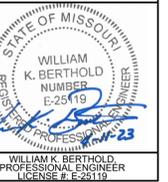
CONTROL POINT BENCHMARK:

NORTHING = 624729.2990
EASTING = 718315.9090
ELEVATION = 852.00' BRASS DISK

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR

CONSTRUCTION DOCUMENTS

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ENGINEERING: 2007023885



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DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION



SIX NEW FULL SERVICE CABINS - JOHNSON'S SHUT-INS STATE PARK

PROJECT # X2206-01
SITE # 5213
FACILITY # 7815213016, 7815213017,
7815213018, 7815213019,
7815213020, 7815213021

REVISIONS

NO.	DATE	DESCRIPTION

DATE: 04.11.2023

FE PROJECT #: 220058

CHECK: WKB

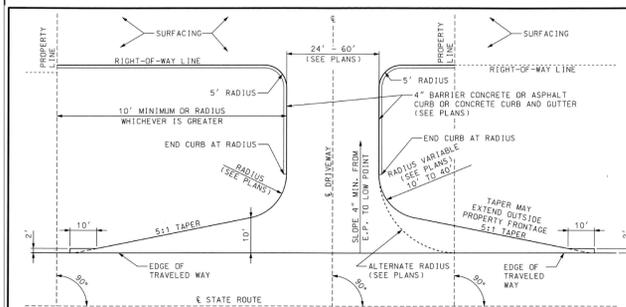
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SITE DETAILS AND SECTIONS 1

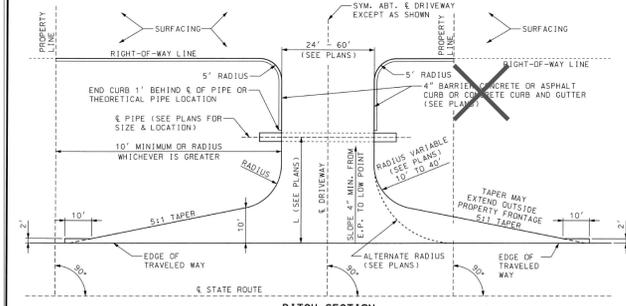
40 OF 75 SHEETS

SHEET NUMBER

C14.0



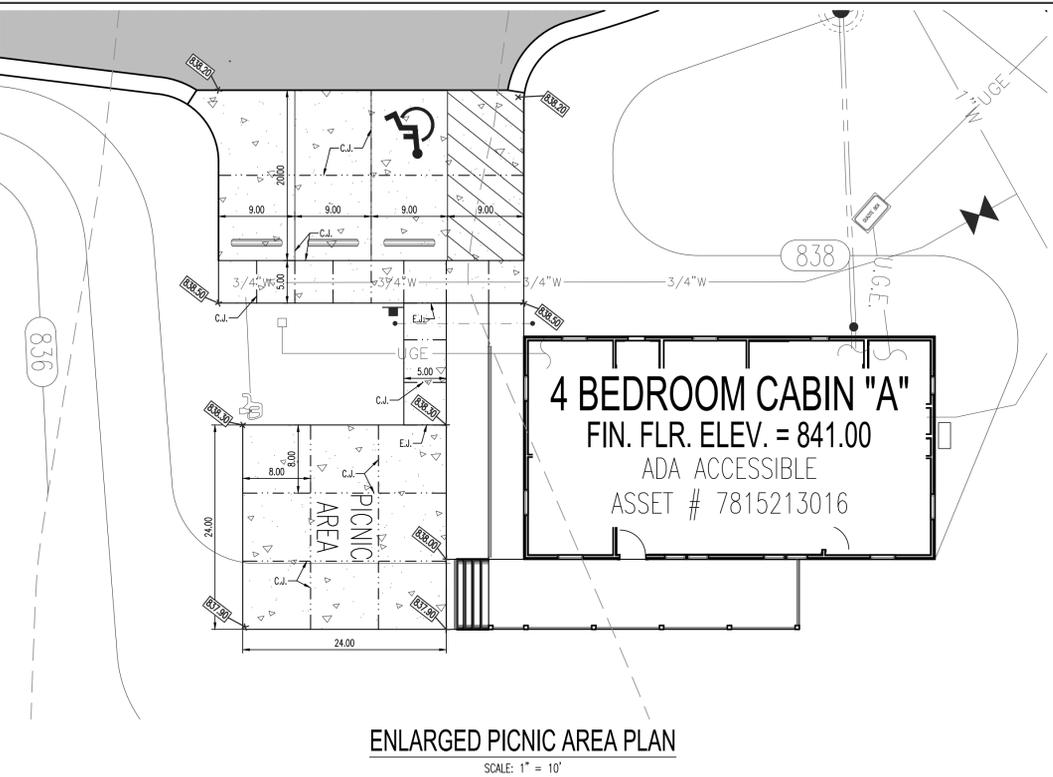
FILL SECTION OR CROWN SECTION (WITHOUT PIPE) PLAN VIEW



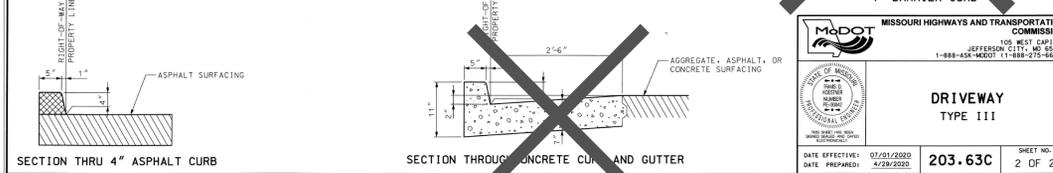
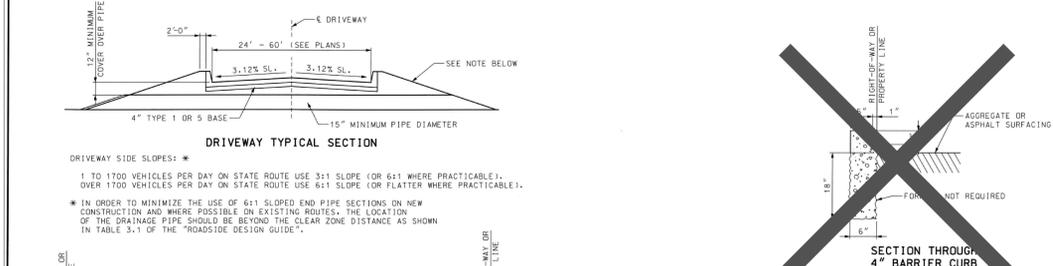
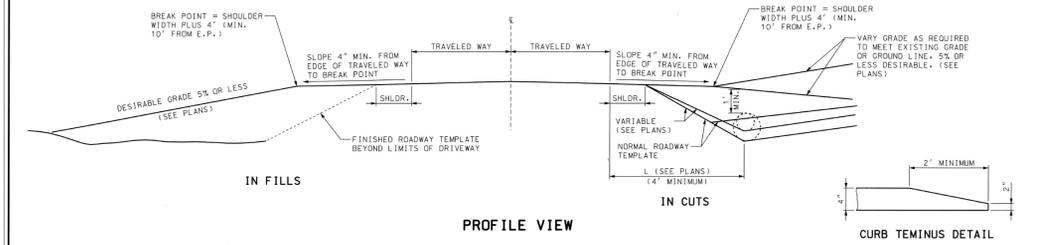
DITCH SECTION (WITH PIPE) PLAN VIEW

GENERAL NOTES:
 FOR LIGHT DUTY PAVEMENT (<3500 ADT) DRIVEWAY BEGINS AT EDGE OF PAVEMENT.
 RECOMMENDED WIDTH OF DRIVEWAY = 40'. SKETCH OR PLAN REQUIRED.
 NO PART OF THE DRIVEWAY EXCLUDING TAPERS SHALL BE CONSTRUCTED OUTSIDE OF THE PROPERTY FRONTAGE.
 SURFACING SHALL BE AS SHOWN ON THE PLANS OR PERMIT.
 4 INCHES OF TYPE 1 OR 5 BASE SHALL BE PLACED AND COMPACTED BENEATH THE AREAL SURFACE OF CONCRETE AND ASPHALT DRIVEWAYS.
 LENGTH OF PIPE SHALL BE DETERMINED BY DEPTH AND LOCATION OF DITCH. (SEE PLANS).
 IF A PAVED APPROACH IS REQUIRED, REFER TO STANDARD PLAN 608.00 FOR CONSTRUCTION DETAILS AND CONSTRUCT CURB (IF REQUIRED) TO MEET CURB ON PAVED APPROACH. TRANSITION REQUIRED FROM 4" CURB TO 6" CURB.
 CURB OR CURB AND GUTTER BETWEEN RIGHT-OF-WAY LINE AND PIPE MAY MEET LOCAL AGENCY STANDARDS.
 PIPE SIZE AND LOCATION TO BE DETERMINED BY GEOMETRICS AND DRAINAGE CONDITIONS (SEE PLANS).
 THIS DRAWING ILLUSTRATES DRIVEWAY DETAILS FOR MINIMUM SITUATIONS. TRAFFIC VOLUMES, SAFETY CONSIDERATIONS, DRAINAGE CONSIDERATIONS, LOCAL REQUIREMENTS, ETC., MAY DICTATE MORE EXTENSIVE IMPROVEMENTS THAN ILLUSTRATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
 DRIVEWAY TYPE III
 DATE EFFECTIVE: 07/01/2020
 DATE PREPARED: 4/20/2022
 SHEET NO. 1 OF 2
 203.63C



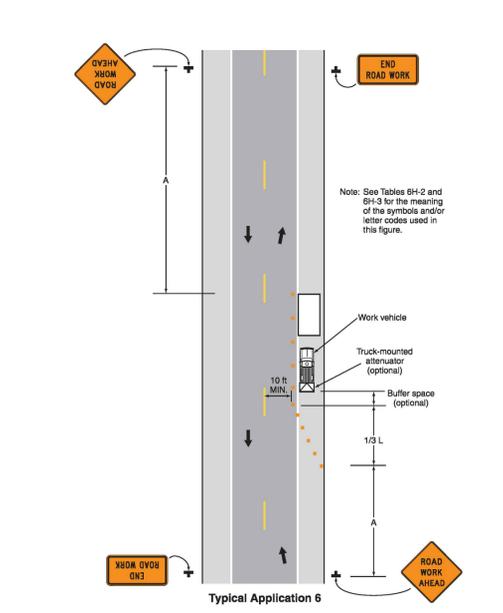
ENLARGED PICNIC AREA PLAN
 SCALE: 1" = 10'



MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
 DRIVEWAY TYPE III
 DATE EFFECTIVE: 07/01/2020
 DATE PREPARED: 4/20/2022
 SHEET NO. 2 OF 2
 203.63C

- Notes for Figure 6H-6—Typical Application 6
 Shoulder Work with Minor Encroachment
- Guidance:
- All lanes should be a minimum of 10 feet in width as measured to the near face of the channelizing devices.
 - The treatment shown should be used on a minor road having low speeds. For higher-speed traffic conditions, a lane closure should be used.
- Option:
- For short-term use on low-volume, low-speed roadways with vehicular traffic that does not include longer and wider heavy commercial vehicles, a minimum lane width of 9 feet may be used.
 - Where the opposite shoulder is suitable for carrying vehicular traffic and of adequate width, lanes may be shifted by use of closely-spaced channelizing devices, provided that the minimum lane width of 10 feet is maintained.
 - Additional advance warning may be appropriate, such as a ROAD NARROWS sign.
 - Temporary traffic barriers may be used along the work space.
 - The shadow vehicle may be omitted if a taper and channelizing devices are used.
 - A truck-mounted attenuator may be used on the shadow vehicle.
 - For short-duration work, the taper and channelizing devices may be omitted if a shadow vehicle with activated high-intensity rotating, flashing, oscillating, or strobe lights is used.
 - Vehicle hazard warning signals may be used to supplement high-intensity rotating, flashing, oscillating, or strobe lights.
- Standard:
- Vehicle-mounted signs shall be mounted in a manner such that they are not obscured by equipment or supplies. Sign legends on vehicle-mounted signs shall be covered or turned from view when work is not in progress.
 - Shadow and work vehicles shall display high-intensity rotating, flashing, oscillating, or strobe lights.
 - Vehicle hazard warning signals shall not be used instead of the vehicle's high-intensity rotating, flashing, oscillating, or strobe lights.

Figure 6H-6. Shoulder Work with Minor Encroachment (TA-6)



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 SURVEYOR TO CALIBRATE ELEVATION TO 852.00' AT BENCHMARK PRIOR TO CONSTRUCTION LAYOUT.
 BEARING BASIS: MISSOURI GEOGRAPHIC REFERENCE SYSTEM STATION RE-061.
 CONTROL POINT BENCHMARK:
 NORTHING = 624729.2990
 EASTING = 718315.9090
 ELEVATION = 852.00' BRASS DISK

STATE OF MISSOURI
 MICHAEL L. PARSON,
 GOVERNOR

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STATE OF MISSOURI REGISTERED PROFESSIONAL ENGINEER
 WILLIAM K. BERTHOLD
 NUMBER E-25119
 WILLIAM K. BERTHOLD, PROFESSIONAL ENGINEER LICENSE # E-25119

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 MISSOURI DEPARTMENT OF NATURAL RESOURCES

SIX NEW FULL SERVICE CABINS - JOHNSON'S SHUT-INS STATE PARK

PROJECT # X2206-01
 SITE # 5213
 FACILITY # 7815213016, 7815213017, 7815213018, 7815213019, 7815213020, 7815213021

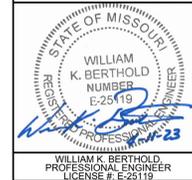
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NO.	DATE	DESCRIPTION

DATE: 04.11.2023
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 CHECK: WKB

SHEET TITLE:
 SITE DETAILS AND SECTIONS 2

41 OF 75 SHEETS
 SHEET NUMBER
C14.1

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SIX NEW
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PROJECT # X2206-01
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REVISIONS

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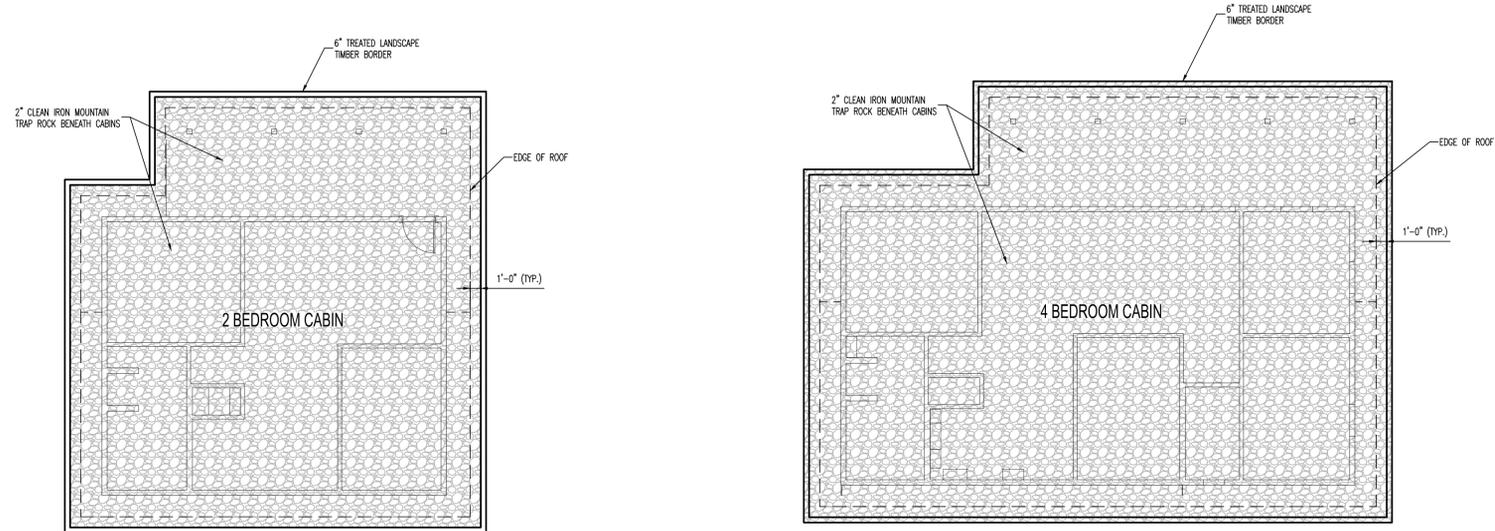
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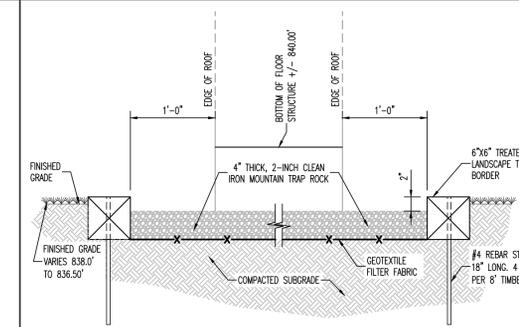
SITE DETAILS AND
SECTIONS 3

42 OF 75 SHEETS

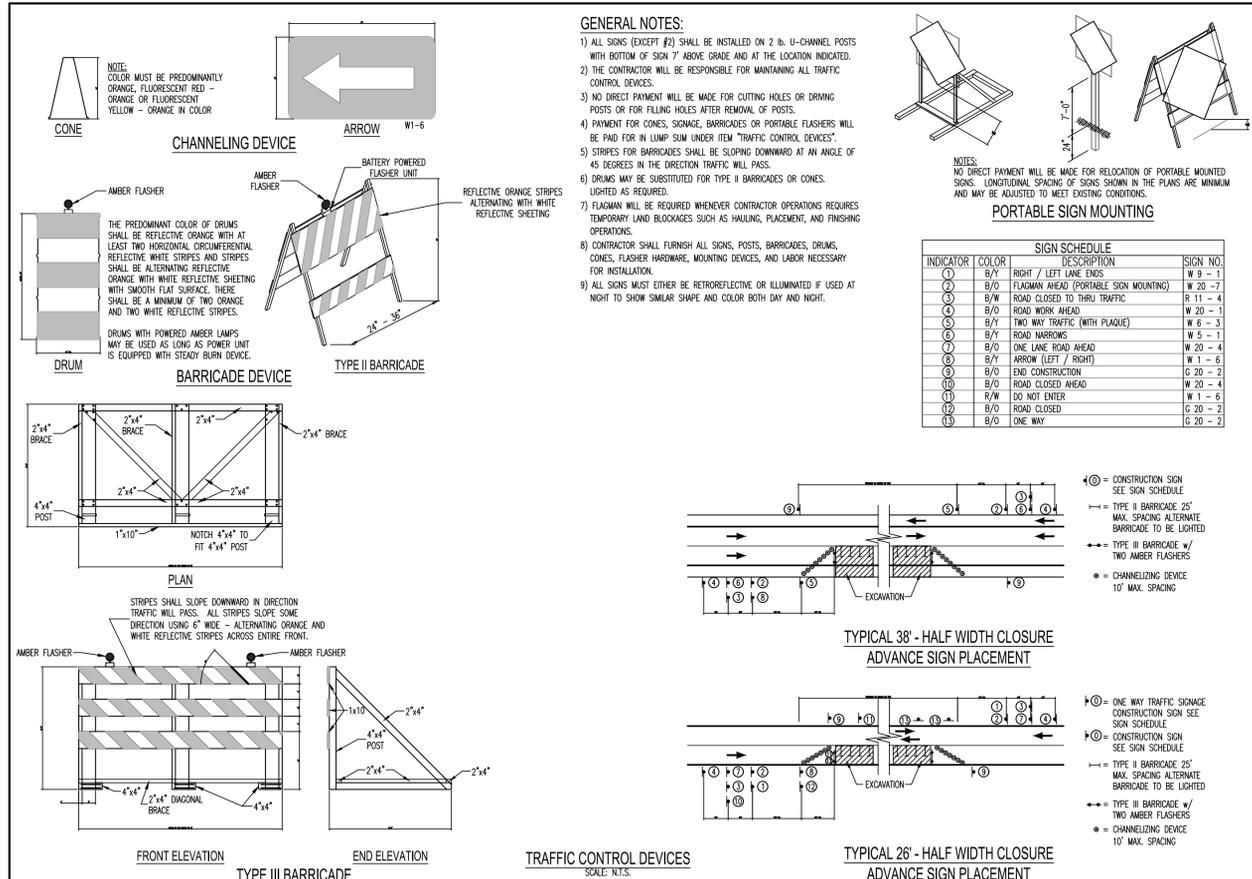
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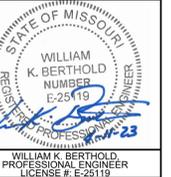
TRAP ROCK SURFACE BENEATH CABINS PLAN
SCALE: 1/8" = 1'-0"



TRAP ROCK SURFACE BENEATH CABINS - SECTION
SCALE: 1" = 1'-0"



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CABINS -
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SHUT-INS
STATE PARK**

PROJECT # X2206-01
SITE # 5213
FACILITY # 7815213016, 7815213017,
7815213018, 7815213019,
7815213020, 7815213021

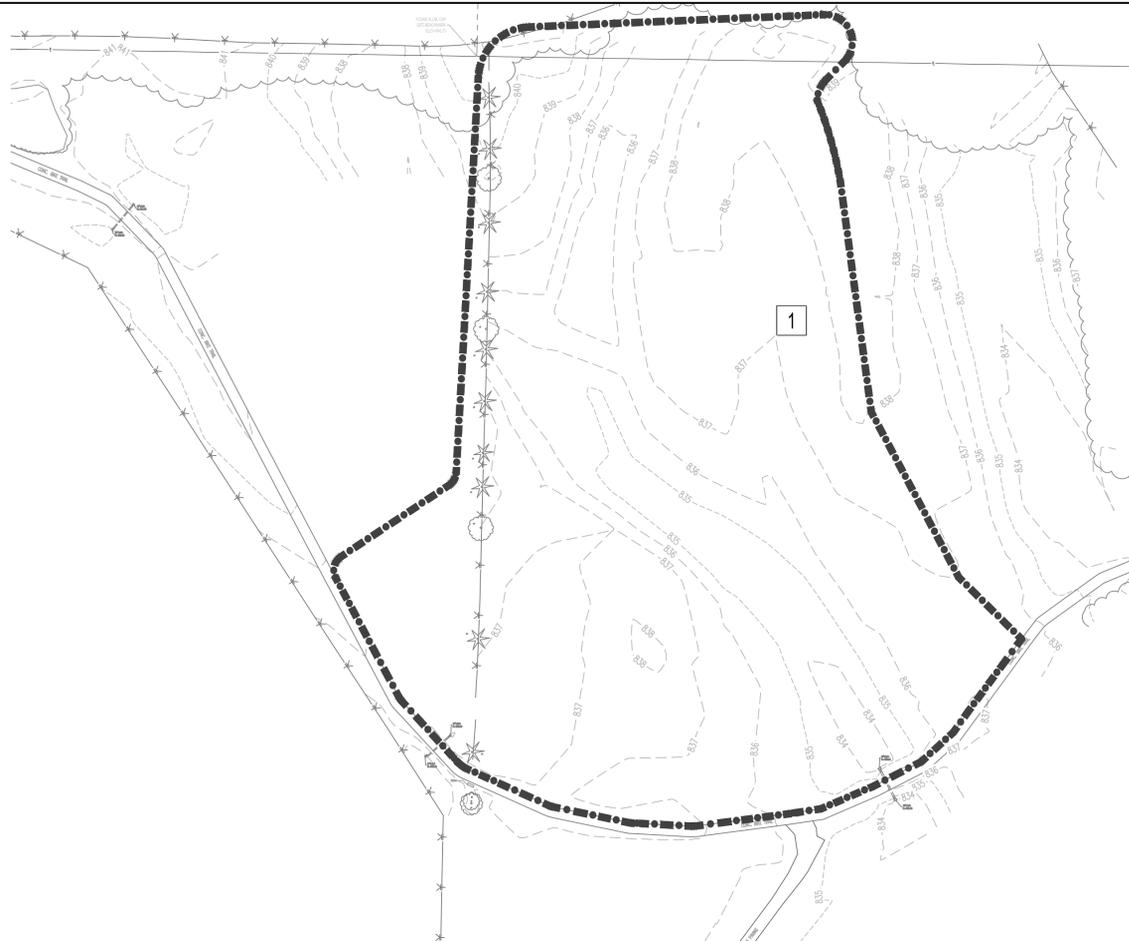
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NO.	DATE	DESCRIPTION

DATE: **04.11.2023**
FE PROJECT #:
220058

CHECK: **WKB**

SHEET TITLE:
**DRAINAGE AREA
MAPS**

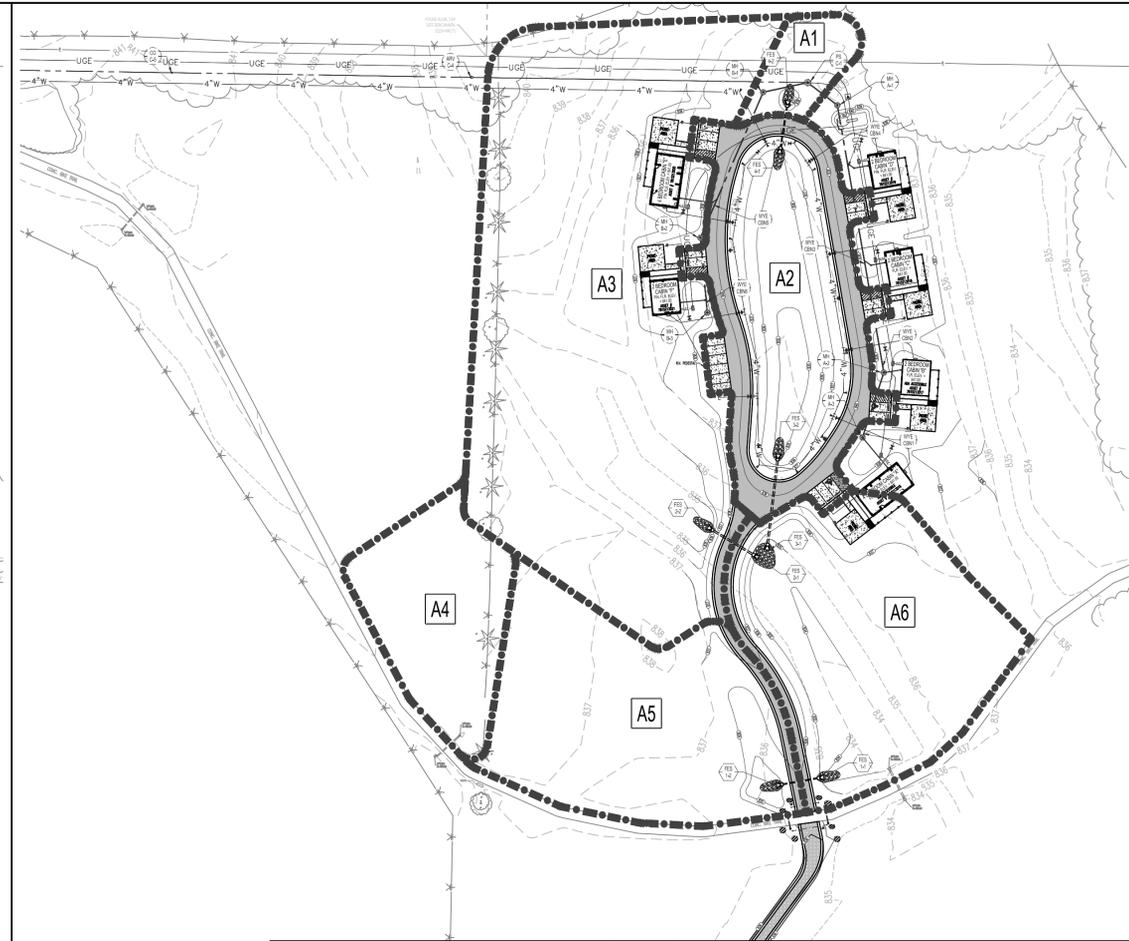
43 OF 75 SHEETS
SHEET NUMBER
C15.0



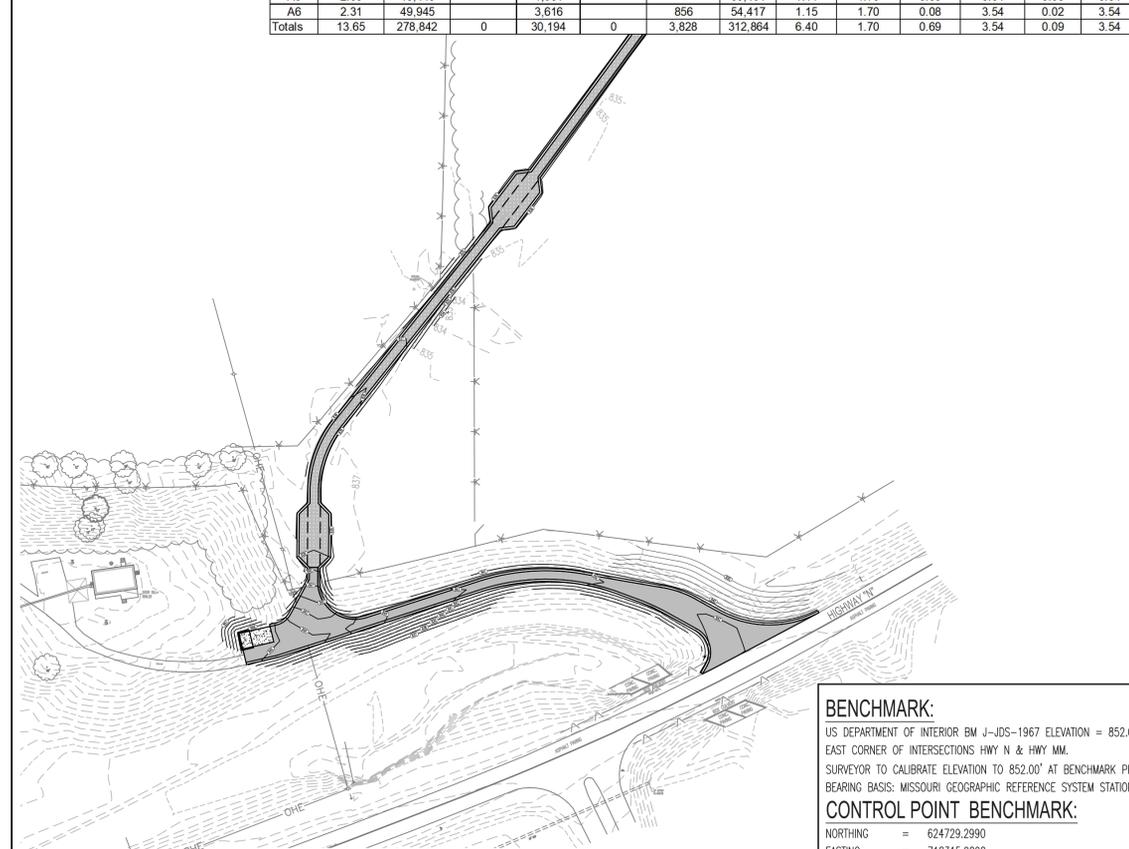
EXISTING DRAINAGE AREAS - 15YR-20MIN STORM														
Subarea	Q15yr-20min (cfs)	Landscape (sf)	Porous Pvmnt (sf)	Impervious Pvmnt (sf)	Connected Roof (sf)	Disconnected Roof (sf)	Landscape		Impervious Pvmnt		Disconnected Roof		Total (ac)	
							Total (sf)	Area (ac)	PI (cfs/ac)	Area (ac)	PI (cfs/ac)	Area (ac)		PI (cfs/ac)
1A	12.40	317,611	0	0	0	0	317,611	7.29	1.70	0.00	3.54	0.00	3.54	7.29
Totals	12.40	317,611	0	0	0	0	317,611	7.29	1.70	0.00	3.54	0.00	3.54	7.29



EXISTING DRAINAGE AREA MAP



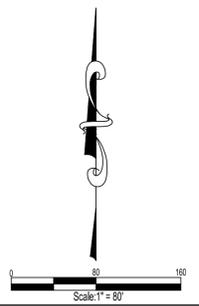
PROPOSED DRAINAGE AREAS - 15YR-20MIN STORM														
Subarea	Q15yr-20min (cfs)	Landscape (sf)	Permeable Pvmnt (sf)	Impervious Pvmnt (sf)	Connected Roof (sf)	Disconnected Roof (sf)	Landscape		Impervious Pvmnt		Disconnected Roof		Total (ac)	
							Total (sf)	Area (ac)	PI (cfs/ac)	Area (ac)	PI (cfs/ac)	Area (ac)		PI (cfs/ac)
A1	0.28	7,067	0	0	0	0	7,067	0.16	1.70	0.00	3.54	0.00	3.54	0.16
A2	2.95	27,115	0	23,235	0	0	50,350	0.62	1.70	0.53	3.54	0.00	3.54	1.16
A3	5.11	121,913	0	1,382	0	2,972	126,267	2.80	1.70	0.03	3.54	0.07	3.54	2.90
A4	0.95	24,362	0	0	0	0	24,362	0.56	1.70	0.00	3.54	0.00	3.54	0.56
A5	2.05	48,440	0	1,961	0	0	50,401	1.11	1.70	0.05	3.54	0.00	3.54	1.16
A6	2.31	49,945	0	3,616	0	856	54,417	1.15	1.70	0.08	3.54	0.02	3.54	1.25
Totals	13.65	278,842	0	30,194	0	3,828	312,864	6.40	1.70	0.69	3.54	0.09	3.54	7.18

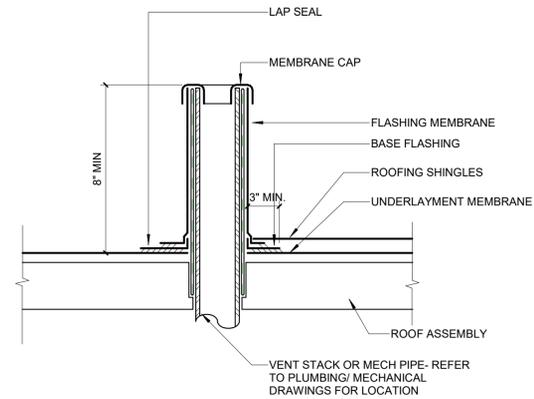


PROPOSED DRAINAGE AREA MAP

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CONTROL POINT BENCHMARK:
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ELEVATION = 852.00' BRASS DISK





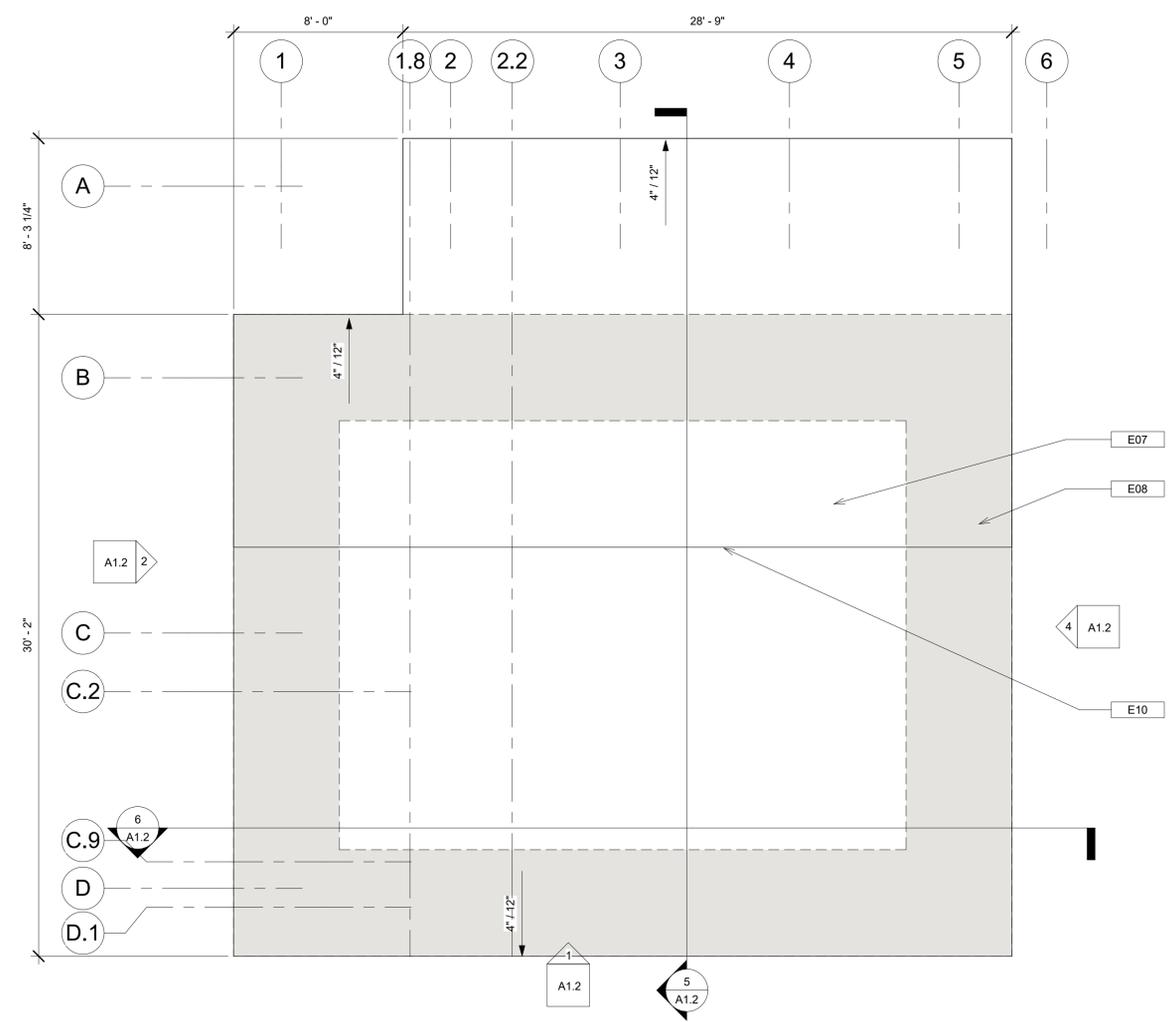
3 Vent Stack/ Mechanical Penetration Flashing
 A1.1 SCALE: 1 1/2" = 1'-0"

REFLECTED CEILING PLAN LEGEND

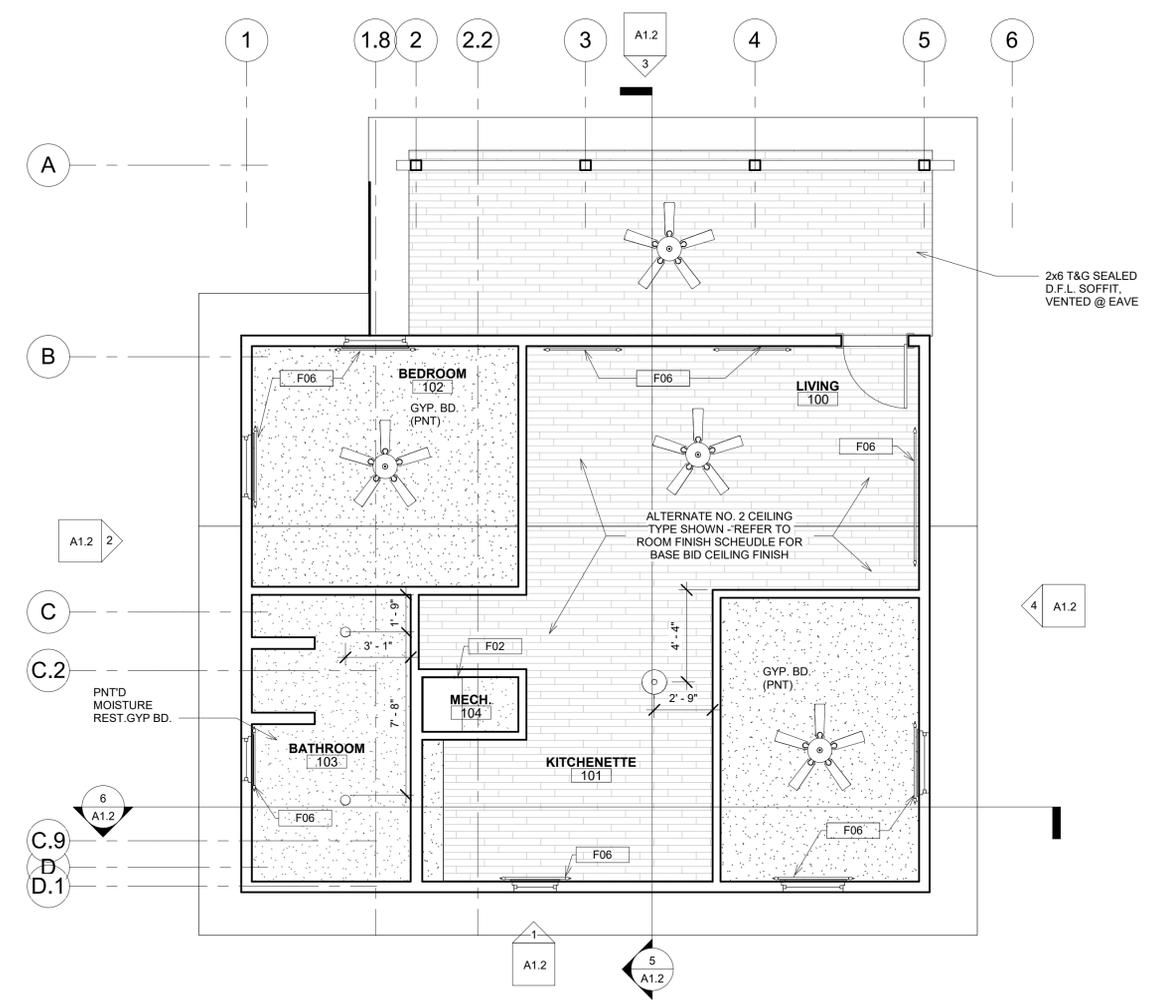
Note: HVAC diffusers and exhaust fans are not shown on this plan, reference Mechanical drawings for location and sizes. Final locations should be confirmed with the Owner and design team.

- PAINTED GYPSUM BOARD
- WOOD CEILING
- SURFACE-MOUNTED CEILING LIGHT
- PENDANT LIGHT
- CEILING FAN - SEE ELECTRICAL FOR LIGHTING
- FLUSH ACCESS PANEL

KEYED NOTES	
E07	ASPHALT SHINGLE ROOFING
E08	ICE AND WATER MEMBRANE-5'-0" WIDE
E10	VENTED RIDGE CAP
F02	22" X 30" ATTIC ACCESS PANEL.
F06	DECORATIVE CURTAIN ROD WITH BALL FINIAL AND FIXED BRACKETS - SPRING WINDOW FASHIONS #220 OR APPROVED EQUAL (CFC). COLOR TO BE SELECTED BY ARCHITECT FROM MANUFACTURER'S STANDARD COLORS. COORDINATE CURTAIN ROD LENGTH WITH WINDOW SIZE. CURTAINS TO BE FURNISHED AND INSTALLED BY OWNER.



2 ROOF PLAN
 A1.1 SCALE: 1/4" = 1'-0"



1 FIRST FLOOR RCP
 A1.1 SCALE: 1/4" = 1'-0"

STATE OF MISSOURI
 MICHAEL L. PARSON,
 GOVERNOR

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JOHNSON'S SHUT-INS STATE PARK
 148 TAUM SAUK TRAIL, MIDDLE BROOK, MO 63656

PROJECT # X2206-01
 SITE # 5213
 FACILITY # 7815213017, 7815213018,
 7815213019, 7815213021

REVISIONS

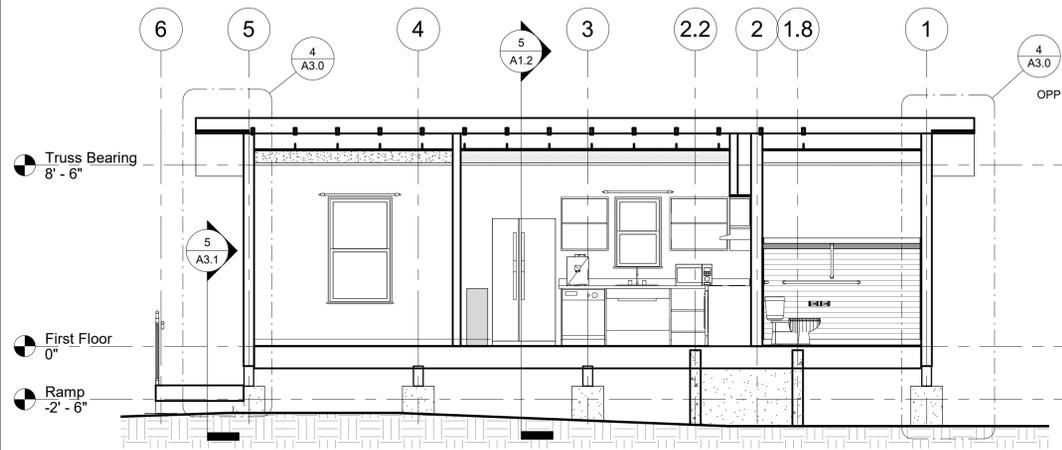
NO.	DATE	DESCRIPTION

DATE: 04.11.2023
 KWK PROJECT #: 22030
 CHECK: RMB

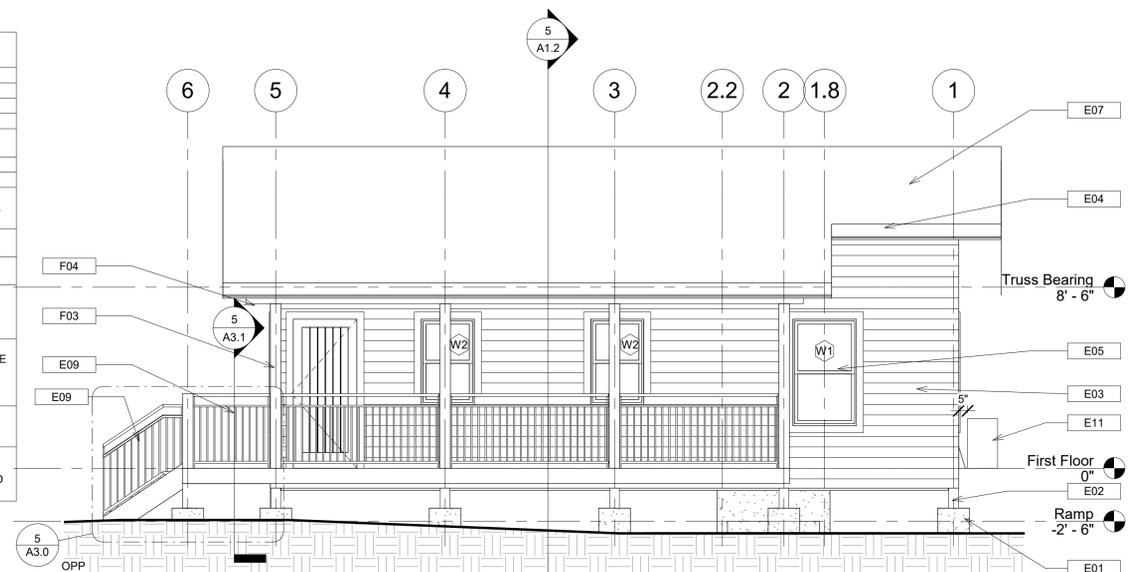
SHEET TITLE:
2 BR REFLECTED CEILING + ROOF PLAN
 46 OF 75 SHEETS

SHEET NUMBER
A1.1

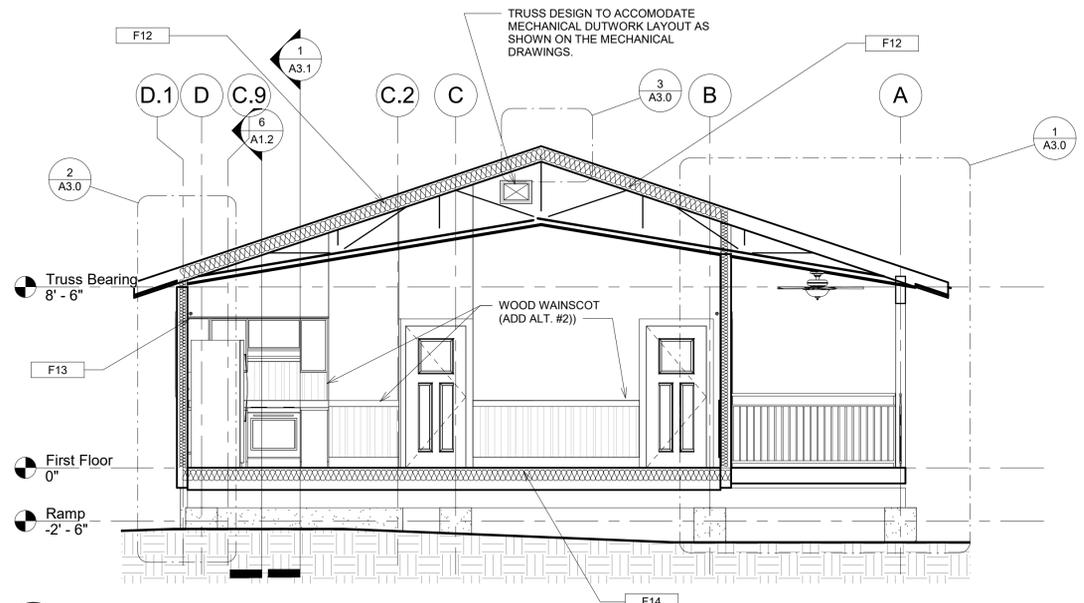
KEYED NOTES	
E01	CONCRETE PIERS-SONOTUBE-REFER TO STRUCT.
E02	CLEAR SEALED BEAM-REFER TO STRUCT.
E03	HORIZONTAL CEMENT LAP SIDING & TRIM
E04	CLEAR SEALED D.F.L. FASCIA BOARD
E05	FIBERGLASS WINDOWS W/ 4" CEMENT TRIM- CLEAR WD INTERIOR (TYP)
E07	ASPHALT SHINGLE ROOFING
E09	WELDED & GALVANIZED STEEL GUARDRAILING SYSTEM
E11	MECHANICAL UNIT MOUNTED TO GALVANIZED BRACKET AND EXTERIOR WALL WITH BLOCKING BACKUP TO STUDS. REFER TO STRUCTURAL AND MECHANICAL DWGS.
F03	D.F. LARCH COLUMN WITH CLEAR SEALER- REFER TO STRUCTURAL.
F04	D.F. LARCH BEAM WITH CLEAR SEALER- REFER TO STRUCTURAL.
F09	1 1/2" O.D. GALVANIZED STEEL HANDRAIL AND BRACKETS. WELDED TO GUARDRAILING OR MOUNTED TO WALL. PROVIDE BLOCKING IN WALL FOR BRACKET WHERE ATTACHMENT OCCURS.
F12	5 1/2" MIN 2 LB CLOSED CELL SPRAY APPLIED POLYURETHANE FOAM INSULATION COVERED WITH FLAME SEAL (R-38) OR 7" 2 PART BIOBASED SPRAY (R-38)- OPTION TO INSTALL 3" OF MINERAL WOOL BOARD OR BLANKET TO THE UNDERSIDE WITH SPINDLE ANCHORS.
F13	R-6 INSULATED ZIP PANEL SYSTEM + R-13 MINERAL WOOL BOARD OR BLANKET INSULATION, AND 10 MIL VAPOR BARRIER. (R-21 TOTAL).
F14	5 1/2" MIN CLOSED CELL SPRAY APPLIED POLYURETHANE FOAM INSULATION COVERED WITH FLAME SEAL OR 1/2" EXT. GYP BOARD (R-38) OR 6" POLYSTY INSULATION BOARD ADHERED TO BOTTOM OF FLOOR SHEATHING (R-39).



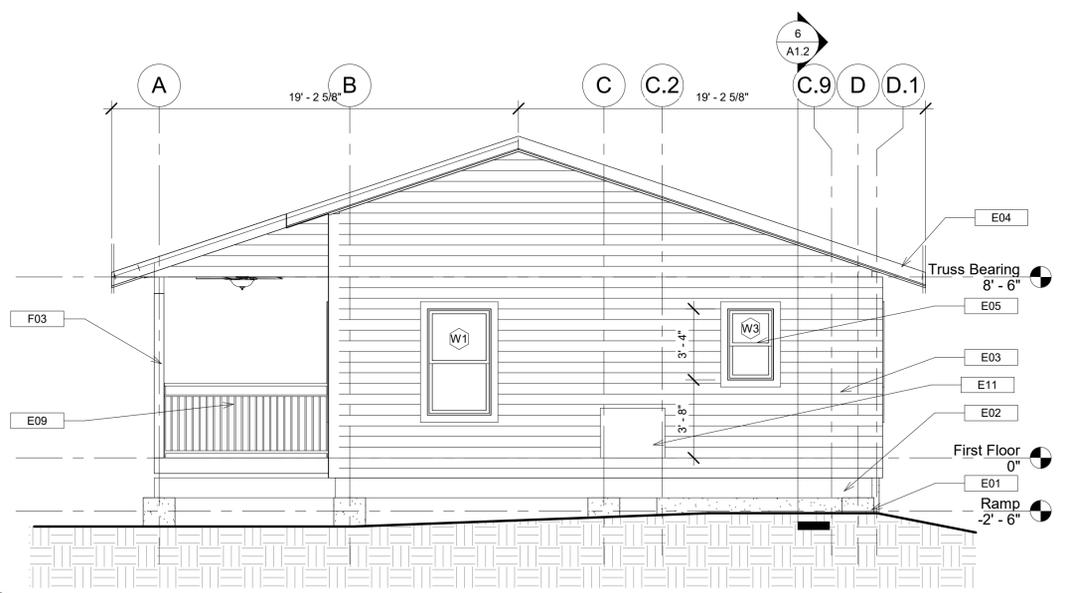
6 SECTION 1
A1.2 SCALE: 1/4" = 1'-0"



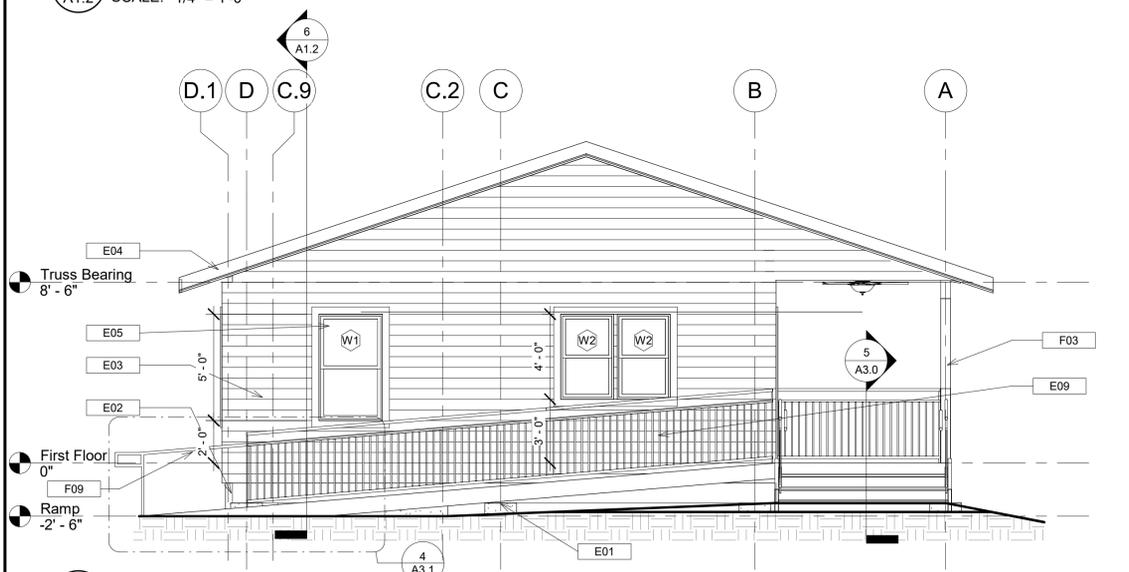
3 ELEVATION-PORCH
A1.2 SCALE: 1/4" = 1'-0"



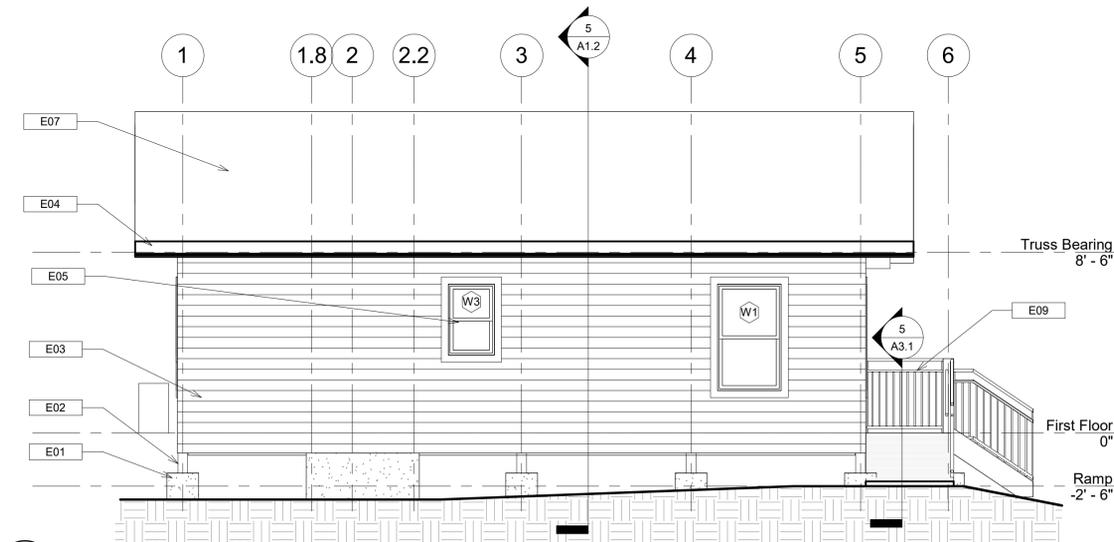
5 SECTION 2
A1.2 SCALE: 1/4" = 1'-0"



2 ELEVATION LOOKING NORTH
A1.2 SCALE: 1/4" = 1'-0"



4 ELEVATION-RAMP
A1.2 SCALE: 1/4" = 1'-0"



1 ELEVATION-ENTRY
A1.2 SCALE: 1/4" = 1'-0"

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DESIGN AND CONSTRUCTION



**JOHNSON'S
SHUT-INS
STATE PARK**
148 TAUM SAUK
TRAIL, MIDDLE
BROOK, MO
63656

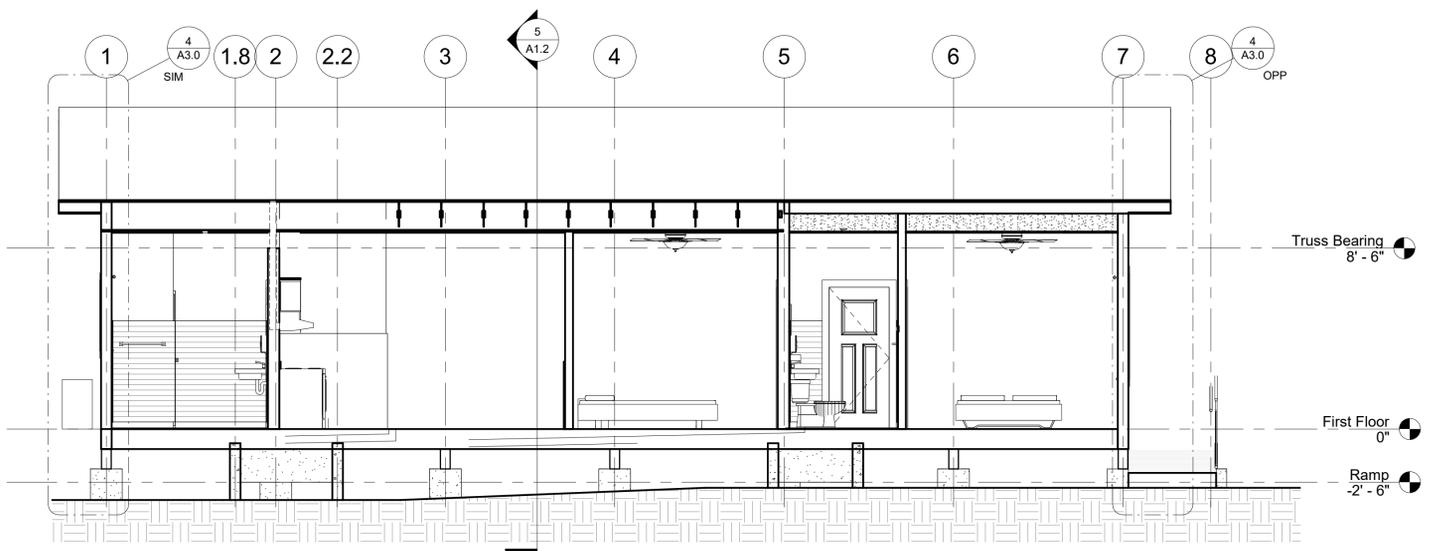
PROJECT # X2206-01
SITE # 5213
FACILITY # 7815213017, 7815213018,
7815213019, 7815213021

REVISIONS		
NO.	DATE	DESCRIPTION

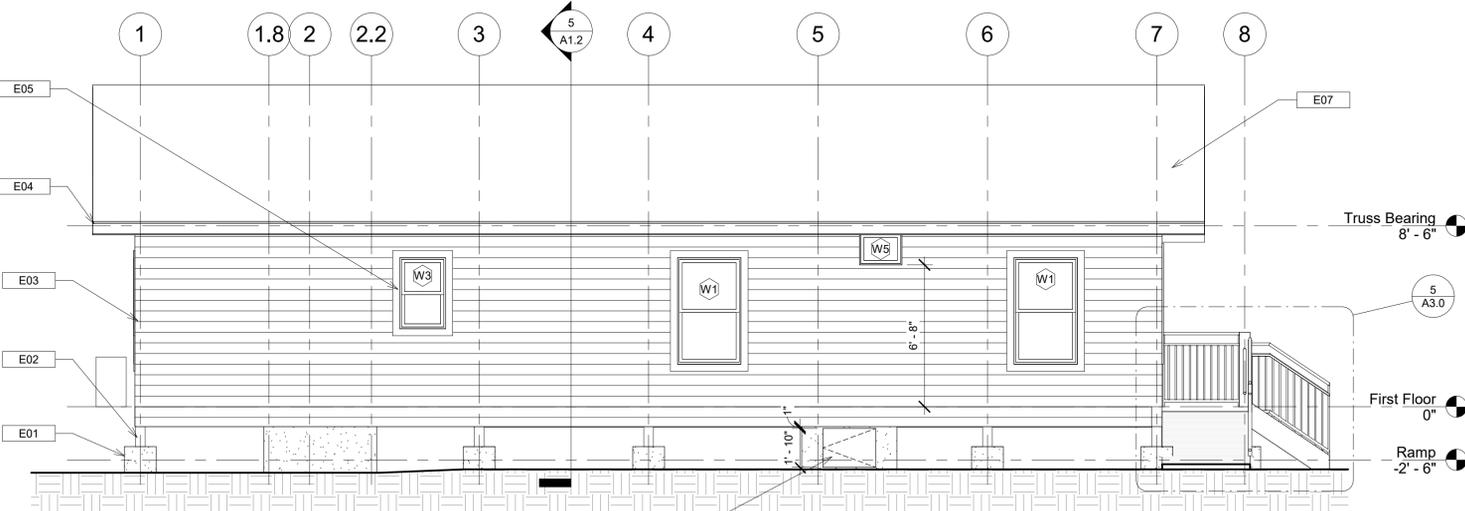
DATE: 04.11.2023
KWK PROJECT #: 22030
CHECK: RMB

SHEET TITLE:
**2 BR
ELEVATIONS+
SECTIONS**
47 OF 75 SHEETS

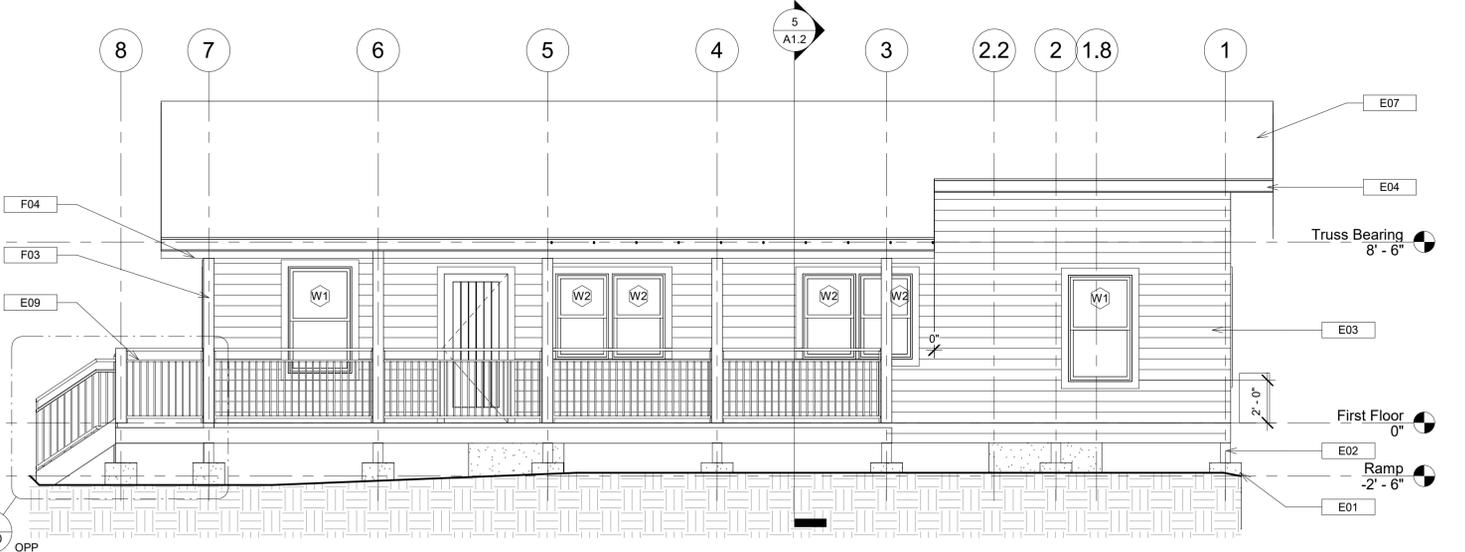
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A1.2



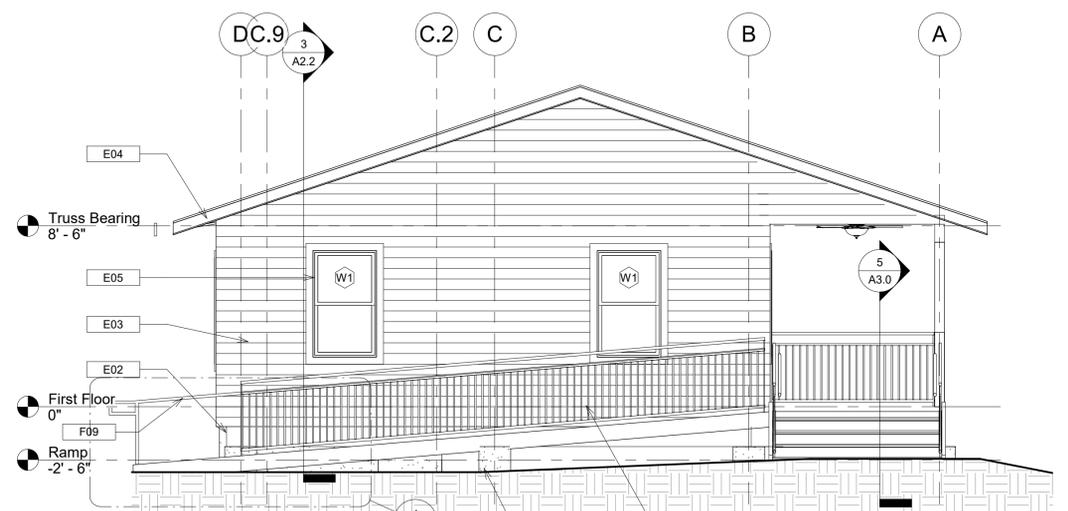
3 SECTION 1
A2.2 SCALE: 1/4" = 1'-0"



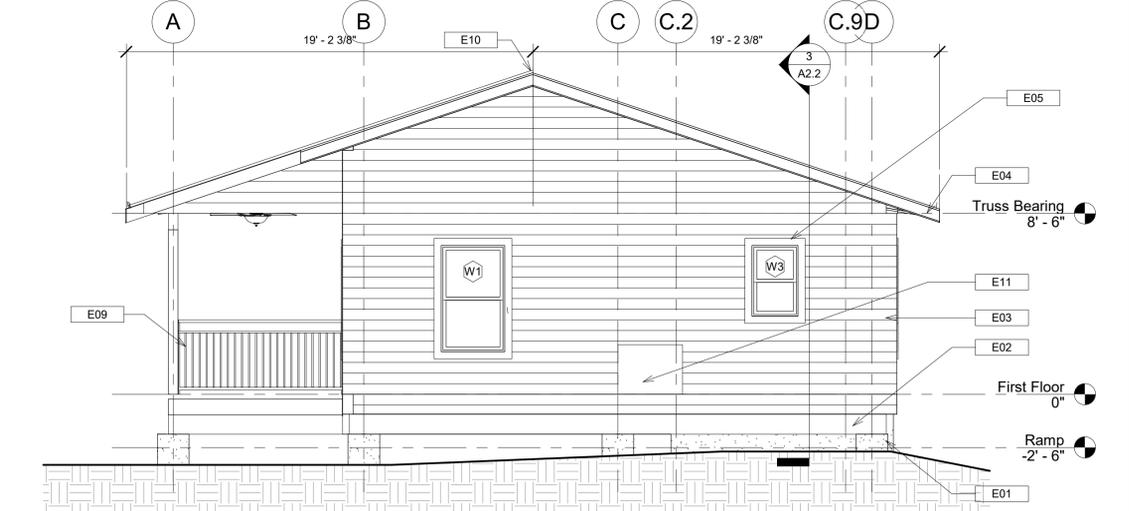
4 ELEVATION-REAR
A2.2 SCALE: 1/4" = 1'-0"



5 ELEVATION -PORCH
A2.2 SCALE: 1/4" = 1'-0"



2 ELEVATION-RAMP
A2.2 SCALE: 1/4" = 1'-0"



1 ELEVATION-SIDE
A2.2 SCALE: 1/4" = 1'-0"

KEYED NOTES

E01	CONCRETE PIERS-SONOTUBE-REFER TO STRUCT.
E02	CLEAR SEALED BEAM-REFER TO STRUCT.
E03	HORIZONTAL CEMENT LAP SIDING & TRIM
E04	CLEAR SEALED D.F.L. FASCIA BOARD
E05	FIBERGLASS WINDOWS W/ 4" CEMENT TRIM- CLEAR WD INTERIOR (TYP)
E07	ASPHALT SHINGLE ROOFING
E09	WELDED & GALVANIZED STEEL GUARDRAILING SYSTEM
E10	VENTED RIDGE CAP
E11	MECHANICAL UNIT MOUNTED TO GALVANIZED BRACKET AND EXTERIOR WALL WITH BLOCKING BACKUP TO STUDS. REFER TO STRUCTURAL AND MECHANICAL DWGS.
F03	D.F. LARCH COLUMN WITH CLEAR SEALER- REFER TO STRUCTURAL.
F04	D.F. LARCH BEAM WITH CLEAR SEALER- REFER TO STRUCTURAL.
F08	22" x 30" INSULATED STAINLESS STEEL ACCESS DOOR AND FRAME. LOCKABLE.
F09	1 1/2" O.D. GALVANIZED STEEL HANDRAIL AND BRACKETS. WELDED TO GUARDRAILING OR MOUNTED TO WALL. PROVIDE BLOCKING IN WALL FOR BRACKET WHERE ATTACHMENT OCCURS.

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR

CONSTRUCTION DOCUMENTS

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Professional Architect's seal and signature: MICHAEL L. PARSON, ARCHITECT, No. 4671468, dated 4/11/2023.

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FIRE PROTECTION ENGINEERING:
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MANAGEMENT,
DESIGN AND CONSTRUCTION

MISSOURI DEPARTMENT OF NATURAL RESOURCES

JOHNSON'S SHUT INS STATE PARK
148 TAUM SAUK TRAIL, MIDDLE BROOK, MO 63656

PROJECT # X2206-01
SITE # 5213
FACILITY # 7815213016, 7815213020

REVISIONS

NO.	DATE	DESCRIPTION

DATE: 04.11.2023
KWK PROJECT #: 22030
CHECK: RMB

SHEET TITLE:
4 BR ELEVATIONS+ SECTIONS
51 OF 75 SHEETS

SHEET NUMBER
A2.2

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DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION



**JOHNSON'S
SHUT-INS**
STATE PARK
148 TAUM SAUK
TRAIL, MIDDLE
BROOK, MO
63656

PROJECT # X2206-01
SITE # 5213
FACILITY # 7815213016, 7815213017,
7815213018, 7815213019,
7815213020, 7815213021

REVISIONS		
NO.	DATE	DESCRIPTION

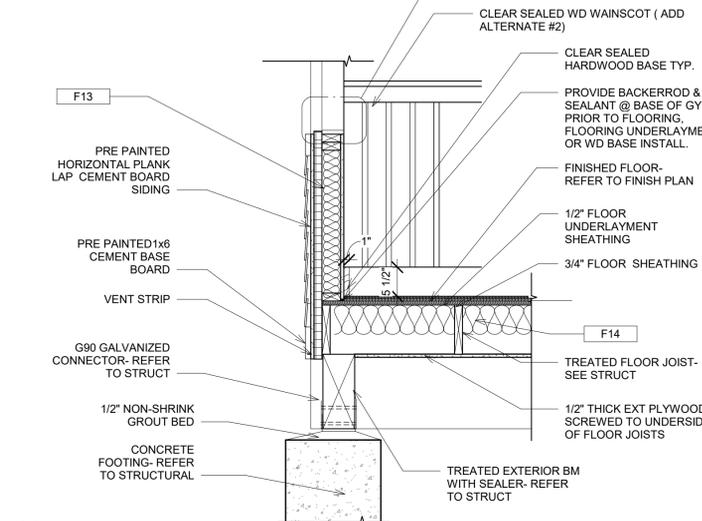
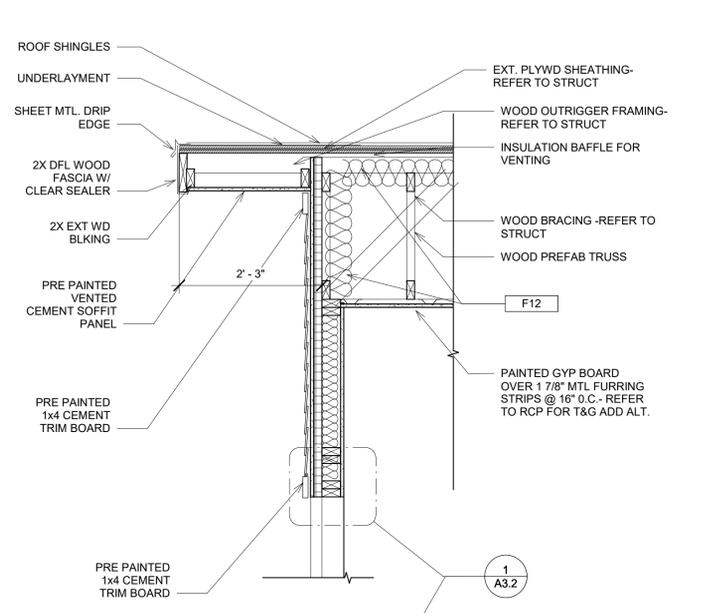
DATE: 04.11.2023
KWK PROJECT #: 22030
CHECK: RMB

SHEET TITLE:
WALL SECTIONS,
DETAILS

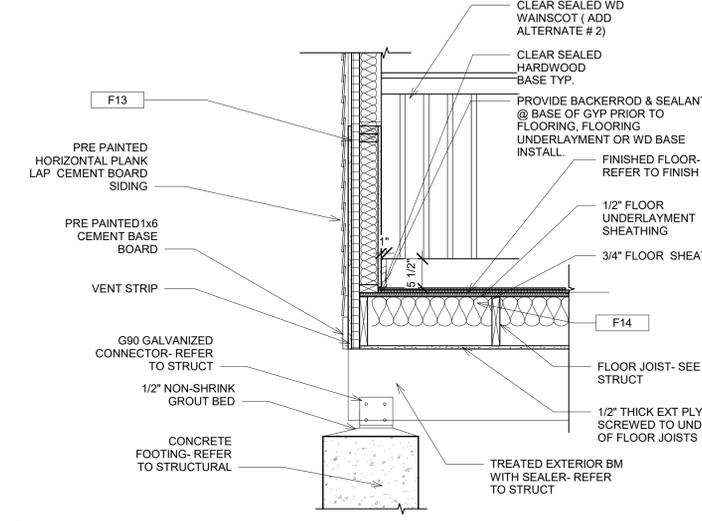
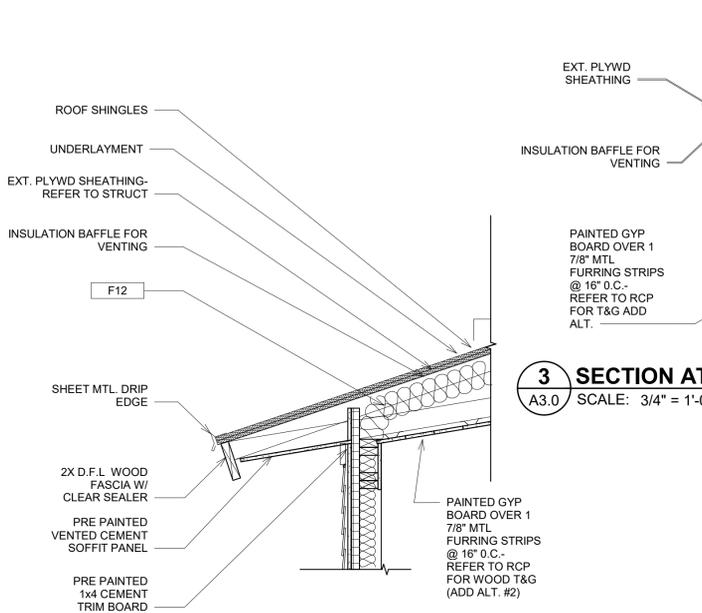
53 OF 75 SHEETS

SHEET NUMBER
A3.0

KEYED NOTES	
F12	5 1/2" MIN 2 LB CLOSED CELL SPRAY APPLIED POLYURETHANE FOAM INSULATION COVERED WITH FLAME SEAL (R-38) OR 2" PART BIOBASED SPRAY (R-39) OPTION TO INSTALL 9" OF MINERAL WOOL BOARD OR BLANKET TO THE UNDERSIDE WITH SPINDLE ANCHORS.
F13	R-6 INSULATED ZIP PANEL SYSTEM + R-13 MINERAL WOOL BOARD OR BLANKET INSULATION, AND 10 MIL VAPOR BARRIER (R-21 TOTAL).
F14	5 1/2" MIN CLOSED CELL SPRAY APPLIED POLYURETHANE FOAM INSULATION COVERED WITH FLAME SEAL OR 12" EXT. GYP BOARD (R-38) or 6" POLYISO INSULATION BOARD ADHERED TO BOTTOM OF FLOOR SHEATHING (R-39).

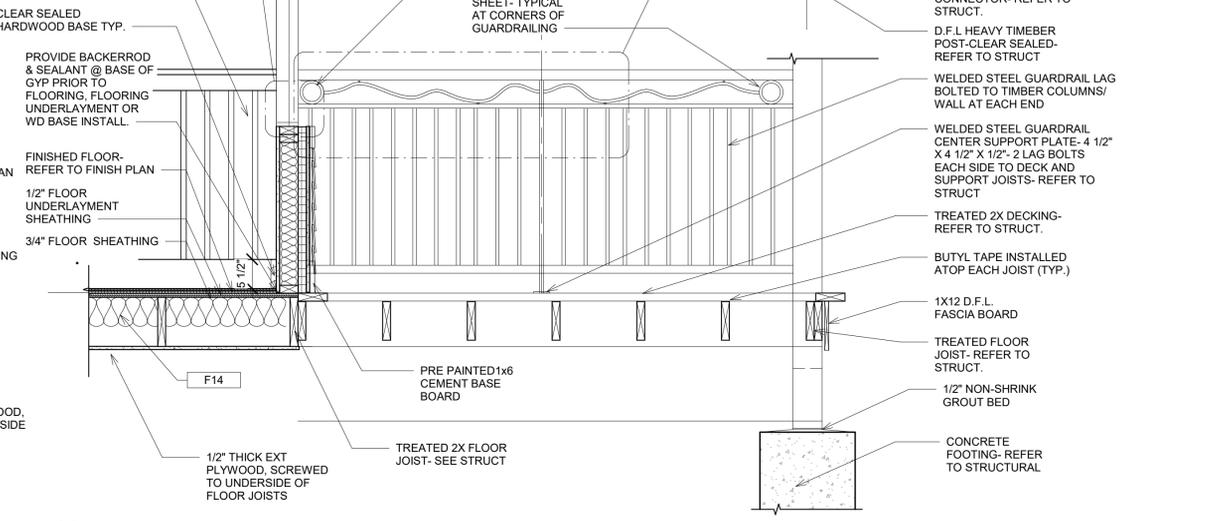
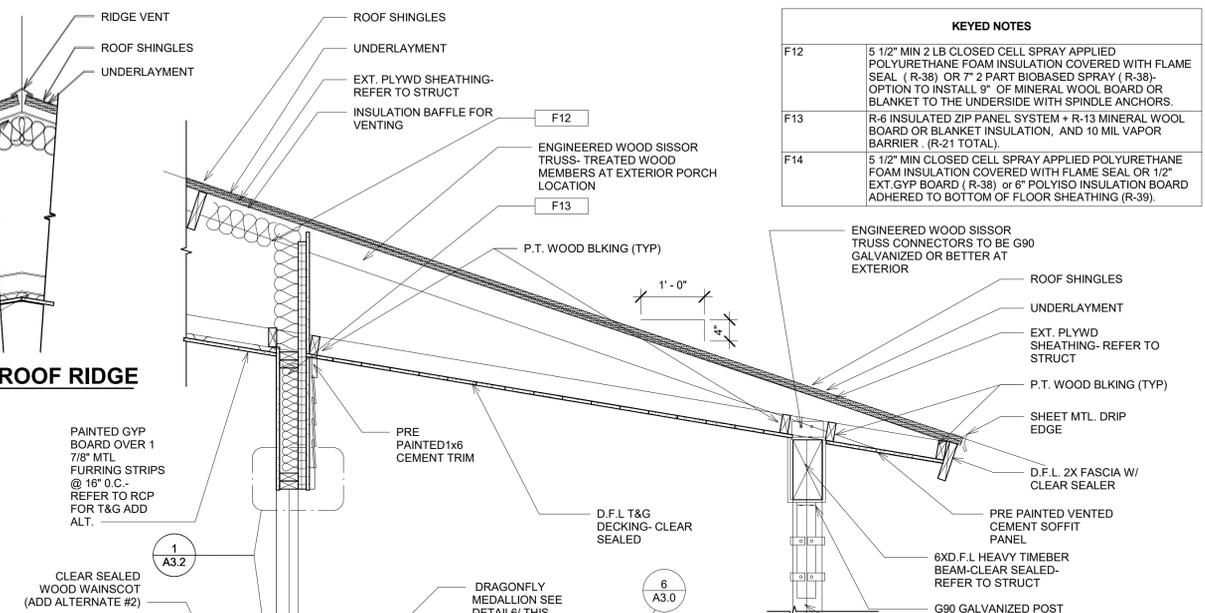


4 WALL SECTION AT RAKE/ SIDEWALL
A3.0 SCALE: 3/4" = 1'-0"

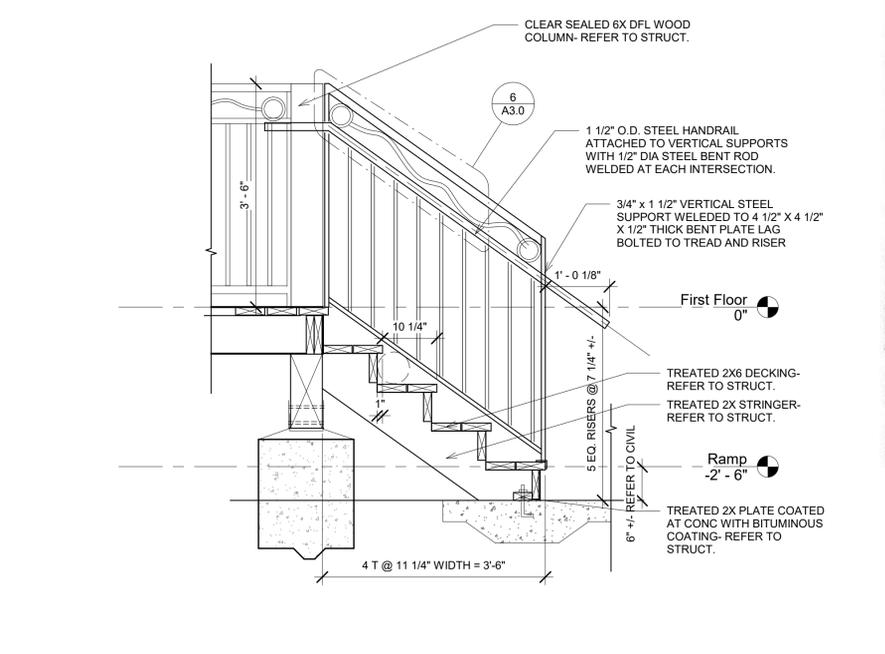


2 WALL SECTION AT EAVE
A3.0 SCALE: 3/4" = 1'-0"

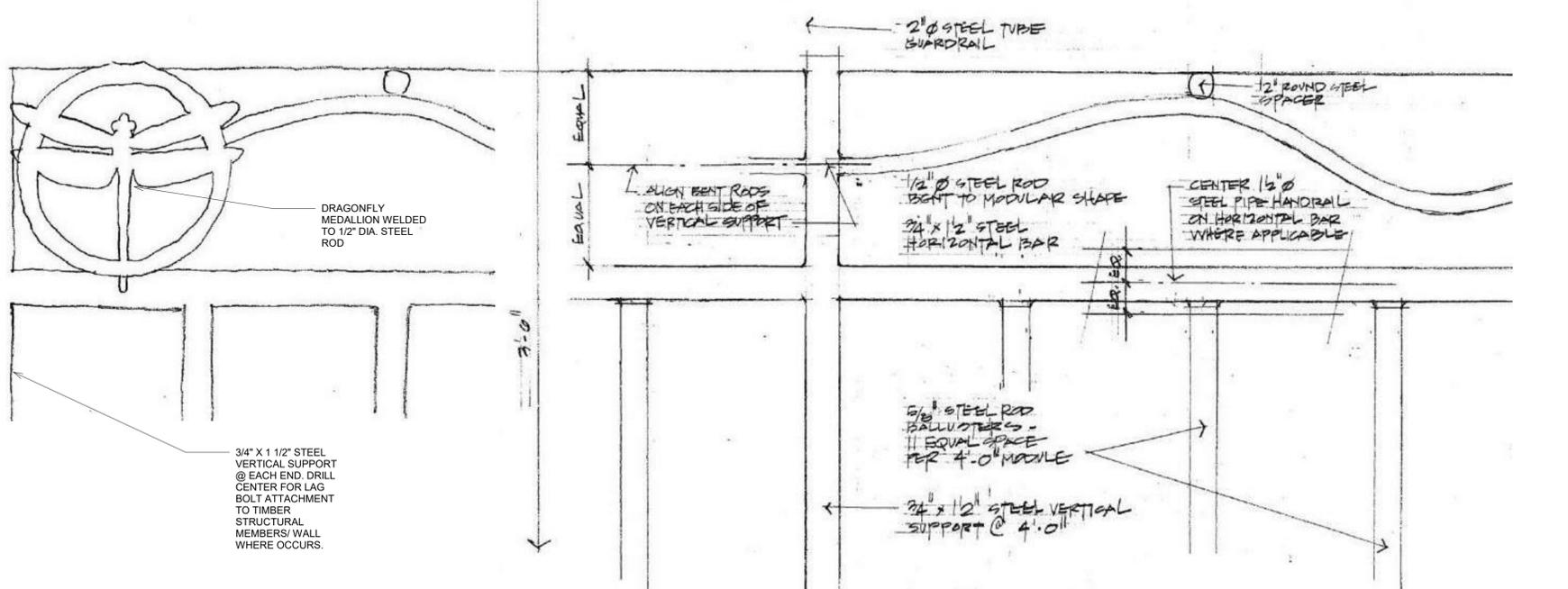
3 SECTION AT ROOF RIDGE
A3.0 SCALE: 3/4" = 1'-0"



1 WALL SECTION @ FRONT PORCH
A3.0 SCALE: 3/4" = 1'-0"



5 SECTION AT STAIR
A3.0 SCALE: 3/4" = 1'-0"



6 STEEL GUARDRAIL DETAIL
A3.0 SCALE: 6" = 1'-0"

GENERAL REQUIREMENTS

CONSTRUCTION MEANS AND METHODS:

- Contractor agrees that Contractor shall assume sole and complete responsibility for job site conditions during the course of the work, including safety of all persons and property; that this requirement shall apply continuously and not be limited to normal working hours; and that Contractor shall defend, indemnify, and hold Owner and Structural Engineer harmless from any and all liability, real or alleged, in connection with the performance of the Work on this Project, excepting for liability arising from the sole negligence of Owner or Structural Engineer.
- The Contract Documents represent the finished structure. They do not include the method of construction. Contractor shall provide all measures necessary to protect the structure during construction. Such measures shall include, but not be limited to: bracing, shoring for loads due to construction equipment, temporary structures, and partially completed work. Observation visits to the site by Structural Engineer shall not include inspection of the above items.
- Frontenac Engineering Group shall not have control over, or charge of, and shall not be responsible in any way for construction means, methods, techniques, sequences, or procedures, or for safety or safety precautions and programs in connection with any construction activities, since these are solely Contractor's responsibility under the Contract.
- Frontenac Engineering Group shall not be responsible for Contractor's schedule or failures to carry out any construction activities in accordance with the Contract Documents. Frontenac Engineering Group shall not have control over or charge of actions of Contractor, Subcontractor, or any of their Agents, or employees, or any other persons performing portions of any construction activities.
- The structure is stable only in its completed form. Temporary supports required for stability of the structure during all intermediate stages of construction shall be designed and provided by Contractor.

SUBMITTALS:

- Submittals prepared by Subcontractors shall be reviewed by Contractor prior to submitting to Architect.
- Reproduction of the Contract Documents for Shop Drawings is not permitted. Electronic drawing files will not be provided to Contractor.
- Contractor shall verify the structurally supported equipment weights, opening sizes, and locations indicated on the Structural Drawings with documents from other disciplines and notify Architect of any discrepancies.
- Contractor shall submit Shop Drawings showing size, method of anchorage, weight, openings, and locations of equipment not indicated on the Structural Drawings prior to ordering for review by Structural Engineer to determine adequacy of the structure.
- All submittals reviewed by Structural Engineer are reviewed for general conformance with design concept only and does not relieve the fabricator/vendor of responsibility for conformance with design drawings and Specifications, all of which have priority over submittals.
- Submittals shall be reviewed within 10 working days after being received by Structural Engineer.

QUALITY REQUIREMENTS:

- Reference to standard specifications or codes of any technical society, organization, or association or to codes of local or state authorities, shall mean the standards in effect as of date of the Contract Documents, unless otherwise noted.
- Contract Documents shall govern in the event of a conflict with standard specifications or codes of any technical society, organization, or association.
- No provision of any referenced standard specification or code, whether or not specifically incorporated by reference in the Contract Documents, shall be effective to change the duties and responsibilities of Owner, Architect, Structural Engineer, Contractor, or any of their Consultants, Agents, or employees from those set forth in the Contract Documents, nor shall it be effective to assign to Structural Engineer or any of Structural Engineer's Consultants, Agents, or employees any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibilities contrary to the provisions of the Contract Documents.
- If Structural Documents are being released prior to Documents of other disciplines, Contractor shall coordinate Structural Documents with other portions of the Contract Documents as they are released. Report any discrepancy or omission to Architect.
- All omissions and conflicts within the Contract Documents shall be brought to the attention of Architect prior to proceeding with the Work.
- Contractor shall verify dimensions and conditions at the job site. Any discrepancies between the conditions found and those indicated in the Contract Documents shall be brought to the attention of Architect prior to proceeding with the Work.
- See Documents by other disciplines for floor, wall, and roof openings, trenches, pits, pipe sleeves, equipment pads, metal pan stairs, miscellaneous iron, etc.
- No pipes, ducts, chases, etc. shall be placed in structural beam and column members nor shall any structural member be cut for pipes, ducts, etc., unless noted otherwise. Notify Structural Engineer when Documents by other disciplines show openings, pockets, etc. not indicated in the Structural Drawings, but are located in structural members. Contractor shall obtain prior approval from Structural Engineer for installation of such pipes, ducts, chases, etc.
- Details labeled "Typical" on the Structural Drawings apply to all situations occurring on Project that are the same or similar to those locations specifically indicated. Where a detail is not indicated, the detail shall be the same as for other similar conditions.
- Contractor designed elements shall be designed by licensed Professional Engineers registered in the State where Project is located. Contractor shall submit Shop Drawings, design load data, support reactions, and certification that elements were designed for loads specified in the Contract Documents or in the Building Code. All documents noted shall be sealed by the licensed Engineer. If criteria indicated are not sufficient, submit a written request for additional information to Architect. The following elements and their connections shall be Contractor designed:
 - Structural steel connections, if alternate design shown on the Structural Drawings
 - Stairs
 - Window and curtain wall systems
 - Skylights

DEFERRED SUBMITTALS:

- Contractor designed elements shall be designed by licensed Professional Engineers registered in the State where Project is located. Contractor shall submit Shop Drawings, design load data, support reactions, and certification that elements were designed for loads specified in the Contract Documents or in the Building Code. All documents noted shall be sealed by the licensed Engineer. If criteria indicated are not sufficient, submit a written request for additional information to Architect/Engineer. The following elements and their connections shall be "Contractor designed":
 - Temporary bracing and shoring
 - Structural steel connections if alternate to the design shown on the Structural Drawings
 - Steel Braced Frames
 - Steel Moment Frames
 - Stairs, landings, and handrails
 - Window and curtain wall systems
 - Cold-formed steel framing
 - Prestressed concrete (hollow-core, double tee, etc.)

SPECIAL INSPECTIONS:

- Special Inspections shall be in accordance with the 2018 International Building Code, Ch.17.
- Special inspection reports shall be furnished to Building Official, Owner, Architect, Structural Engineer, and Contractor. Discrepancies shall be brought to the attention of Contractor, and if not corrected, shall be reported to Building Official, Owner, Architect, and Structural Engineer.
- The Special Inspector shall submit a final report stating that the structural work was, to the best of the Special Inspector's knowledge, performed in accordance with the Contract Documents.
- The following types of work require Special Inspections: (Refer to the Building Code and Specifications for detailed inspection requirements.)
 - Prepared Soil Fill
 - Concrete Construction
 - Steel Construction
 - Masonry Construction

DESIGN CRITERIA:

- The structure is designed in accordance with the International Building Code, 2018 Edition.
- No Provisions have been made for future building horizontal or vertical expansion.
- Gravity Loads:
 - Uniform Roof Live Loads:
 - Live Load: 20 psf
 - Snow Load:
 - Ground Snow Load: 20 psf
 - Flat Roof Snow Load: 20 psf
 - Snow Exposure Factor: 1.0
 - Snow Importance Factor: 1.0
 - Snow Thermal Factor: 1.0
 - Uniform Floor Live Loads (reduced as allowed by the Building Code, unless noted otherwise):
 - Residential Occupancy: 40 psf
 - Decks: 60 psf
 - Concentrated Floor Live Loads:
 - Loads are distributed over an area of 2 1/2 sq ft, unless noted otherwise
 - All areas: 2000 lb
 - Stairs: 300 lb (over 4 sq in)
 - Concentrated Lateral Live Loads:
 - Handrails assemblies:
 - Top Rail: 200 lb or 50 lb/ft applied non-concurrently in any direction
 - Infill: 50 lb applied over 1 sq ft applied non-concurrently with the top rail load
 - Vehicle Barrier Systems: 6,000 lb applied over an area of 1 sq ft at 18" above the floor
- Lateral Loads:
 - Wind Load:
 - Basic Wind Speed: 106 MPH
 - Wind Importance Factor: 1.0
 - Wind Exposure: Type B
 - Simplified Wind Pressure: 13.7 psf
 - Seismic Load:
 - Basic Structural System: Concrete Load Bearing Piers and Wood Frame
 - Seismic Resisting System: Ordinary Steel Moment Frames
 - Response Modification Coefficient, R: 3.5
 - Deflection Amplification Factor, C_d: 3
 - Analysis Procedure: Equivalent lateral force procedure
 - Zip Code: 63656
 - Occupancy Category II
 - Site Class D
 - MCE short periods spectral response acceleration, S_s: 0.551
 - MCE 1.0 second period spectral response acceleration, S₁: 0.21
 - 0.3 seconds acceleration-based site coefficient, F_a: 1.359
 - 1.0 seconds velocity-based site coefficient, F_v: 1.398
 - Short periods spectral response acceleration for site class effects, S_{ms}: 0.749
 - 1.0 second period spectral response acceleration, S_{ms1}: 0.416

- Short periods spectral response acceleration, S_s: 0.499
- 1.0 second period spectral response acceleration for site class effects, S_{s1}: 0.277
- Occupancy Importance Factor: I: 1.100
- Seismic Design Category: D
- Allowable Story Drift, 0.015h
- Seismic Design Coefficient, C_s: 0.186
- Design is Wind Governed

FOUNDATION

GENERAL:

- Soils Engineer: Allen G. Mirks, P.E.
Jacobi Geotechnical Engineering
798 Hoff Road
O'Fallon, Missouri 63366
Phone: 636-978-7112
www.jacobiengineer.com

- Foundation design is based on soils report dated: (June 1, 2022) Soils Engineer/Owner's Geotechnical Representative is sole judge of suitability of underlying material to support foundations and shall approve bearing material before foundation installation. Structural Engineer is not responsible for subsurface conditions encountered in the field that are different from those assumed in design.
- Prepare site and place fill in accordance with the recommendations in the soils report noted above. Observe construction recommendations noted in the soils report. All fill material shall be in accordance with the soils report recommendations.
 - Construct non-basement floor slabs on the granular fill layer required by the plan notes. Granular fill shall be placed on an 18 inch layer of non-expansive soil which has been placed in accordance with the soils report.
 - Backfill basements and retaining walls with ASTM A48 No. 57 stone or equivalent approved by the Soils Engineer. Extend stone from the base of the walls outward at a 45 degree angle to the vertical and provide toe drain wading in filter fabric.
 - Remove and replace soils within 2 feet of the foundation subgrade. The over-excavation should extend 2 feet beyond the edges of foundations if non-expansive soil is used as the replacement material. The over-excavation should be backfilled with properly compacted, non-expansive fill materials such as low plastic soil, lime stabilized clay or 1-inch minus gradation crushed limestone. The excavation for the concrete can be the same width as the planned foundation.

Backfilling:

- Do not backfill basement wall and grade beams until bracing floors are in place and adequate temporary bracing is installed.
- Backfill in even lifts alternating from side to side with 2 foot maximum difference in lifts.
- Backfill under foundations with concrete or as approved by Soils Engineer.
- Earth Trenches may be used for forming footings only, in accordance with the above referenced soils report.

FOOTINGS:

- Total load soil bearing pressure used in design: 2500 psf
- Slab on grade Subgrade Reaction Modulus: 100 psi
- Coefficient of horizontal friction between concrete and soil = 0.30
- Minimum depth from exterior ground surface to bottom of foundations = 54 inches

CONCRETE

GENERAL:

- SUBMITTALS:
 - Submit a copy of each concrete mixture, including data and submittals to comply with the requirements in ACI 301.
- QUALITY ASSURANCES:
 - Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C requirements for production facilities and equipment.
 - Source Limitations: Obtain each type of cement of the same brand from the same manufacturer's plant, obtain aggregates from one source, and obtain admixtures through one source from a single manufacturer.
 - Comply with the current version of ACI 301, "Specifications for Structural Concrete."
 - Comply with the current version of ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
 - Minimum concrete coverage, unless otherwise noted:
 - Unformed surfaces in contact with the ground: 3 in.
 - Formed surfaces exposed to ground or weather: 2 in.
 - Formed surfaces not exposed to ground or weather:
 - Walls and slabs: 1 in.
 - Beams, girders, and columns (to ties and stirrups): 1 1/2 in.
 - Locate Construction Joints as shown or noted and to least impair strength of structure. Construction Joints not shown on the Structural Drawings are Subject to approval by the Structural Engineer.
 - Horizontal Joints:
 - Locate in Walls and Columns at the underside of the lowest Slab, Beam, Joist or Girder intersecting each Wall or Column.
 - Unless noted otherwise, roughen entire Joint Surface to 1/2" amplitude using a hand rake before Concrete sets or, if sets, mechanically roughen to expose coarse aggregate and to achieve 1/4" amplitude roughness.
 - At Bentonite waterstops leave a smooth troweled path between roughened areas to the width of the waterstop. Horizontal Joints not permitted within the height of: Footings, Caps, Tie Beams, Grade Beams, Stem Walls, Beams, Girders, Joists, Slabs, or in Columns and Walls between levels.
 - Vertical Joints:
 - Locate at midspan of Slab, Joists, Beams, and Girders.
 - Make joints perpendicular to main reinforcing.
 - If Members intersect at midspan, Offset Joint by twice the width of the wider member.
 - In Joists, Beams, and Girders use 3 1/2" high horizontal keys across the width of the member spaced 8" vertical leave gap in keys at water stops.
 - At Metal Deck Slabs, Generally layout Joints midway between Beams and 5 feet before Girders. Submit proposed layout for approval by owner.
- POST-INSTALLED ANCHORS
 - All post-installed anchors shall meet the requirements of the code-cited edition of ACI 308, Appendix D, and shall be acceptable for both cracked and uncracked concrete.
 - Post installed anchors shall be installed per the manufacturer's recommendations.
 - Equivalent anchors may be substituted for the engineer's approval. Substitution requests shall be submitted by the contractor to the engineer-of-record along with calculations that are prepared & sealed by a registered professional engineer. The calculations shall demonstrate that the substituted product is capable of achieving the pertinent equivalent performance values (minimum) of the specified product using the appropriate design procedure and/or standard(s) as required by the building.
 - Post-installed anchors shall only be used where specified on the drawings. The contractor shall obtain approval from the engineer prior to using post-installed anchors for missing or misplaced cast-in-place anchors. Care shall be taken to avoid conflicts with existing reinforcing bars.

WOOD

ROUGH CARPENTRY

- Wood construction materials and methods to conform to the National Forest Products Association "National Specifications for Wood Construction."
 - Contractor is responsible to adequately shore and brace all floor and roof framing and walls during construction.
 - Materials:
 - Framing Lumber
 - Timber beams: #1 Dense Douglas Fir-Larch or Douglas Fir-Larch (North)
 - Joists, rafter, headers, 2x and larger shall be No. 1 Southern Pine
 - Studs and bearing walls. See plan for size
 - 2x4 or 2x6 lengths up to 8 feet: SPF Stud Grade
 - 2x4 or 2x6 lengths 8 feet and up: SPF No. 2 Grade
 - Species and grades shown are the minimum acceptable. Better grades may be substituted.
 - Lumber exposed to the weather to be pressure treated to resist decay.
 - Laminated Veneer Lumber (LVL):
 - Allowable flexural stress, F_b = 2600psi for headers and beams.
 - Modulus of elasticity, E = 2,000,000psi.
 - Must have valid evaluation report from approved 3rd party evaluation agency, such as ICC-ES.
 - Sheathing
 - Roof Sheathing: 3/4" (Nominal) rated
 - Floor Sheathing: 3/4" (Nominal) rated for maximum joist spacing. Tongue-and-groove glued to supports. Acceptable for use with lightweight concrete fill.
 - Wall Sheathing: Zip Systems R-Sheathing as manufactured by Huber Engineered Woods; air infiltration barrier is built into the wall panel. Proprietary accessories to complete installation.
 - R-6 Insulated panel, 1 1/2" x 8, 9, or 10"
 - Zip System flashing tape, Zip System stretch tape, and Zip System liquid flash
 - Application: Provide at all exterior wood stud walls unless otherwise indicated on drawings.
 - All plywood to be APA Rated and Exterior Grade
- Hardware:
 - Bolts and Threaded Rods: ASTM A307
 - Prefabricated Connections: "Simpson Strong-Tie" or equivalent
 - Nails: Common Wire Nails
 - Use galvanized hardware for exterior framing.
 - Bearing walls are to have 2x horizontal bridging at mid-height in those walls that do not have sheathing or drywall on both sides.
 - Nailing shall be per fastening schedule of the 2016 IRC (International Residential Code) or the 2016 IBC (International Building Code), whichever code governs.
 - All post and jamba are to be blocked solid with the same size and number of piles as the post or jamb within the floor space. Blocking is to align with posts or jamba.

WOOD TRUSSES

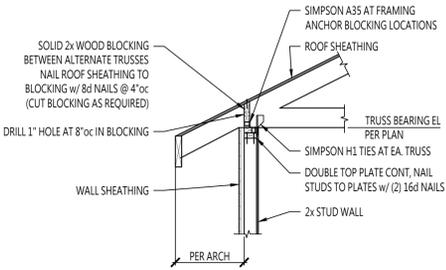
- Trusses to be designed and erected in conformance with Truss Plate Institute specifications and recommendations and in accordance with local building codes.
- Connector Plates - TPI 1, fabricated from hot-dip galvanized steel complying with ASTM A653, G90 coating.
- Trusses to be braced during erection. Refer to Truss Plate Institute "Commentary and Recommendations for Bracing Wood Trusses" BWT-76.

- Truss manufacturer is to submit layout plans and calculations for all trusses. The calculations are to bear a Missouri professional engineer's seal. Calculations are to show loadings, spacing, stresses, configuration, connections, grade of lumber, camber, and deflections.
- The truss supplier shall design the trusses for the following loading:
 - Dead Load: 10 psf top chord and 10 psf bottom chord
 - Live Load: 20 psf top chord
 - Snow Load: 20 psf top chord plus snow drift per ASCE 7-16
 - Wind Load Per ASCE 7-16
 - Roof Top Equipment: Actual weight of equipment on roof. Contractor shall provide final sizes, weights and locations of roof top equipment to truss fabricator and Structural Engineer of record prior to truss fabrication to ensure proper truss design criteria
- Roof truss top chords shall be 2x6 minimum.

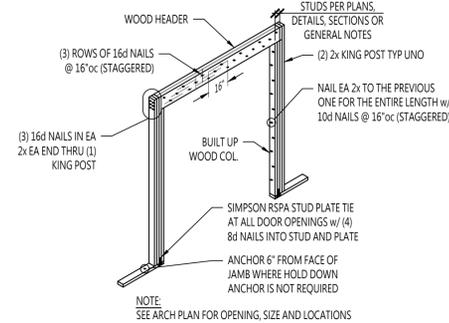
MISCELLANEOUS

A. GENERAL:

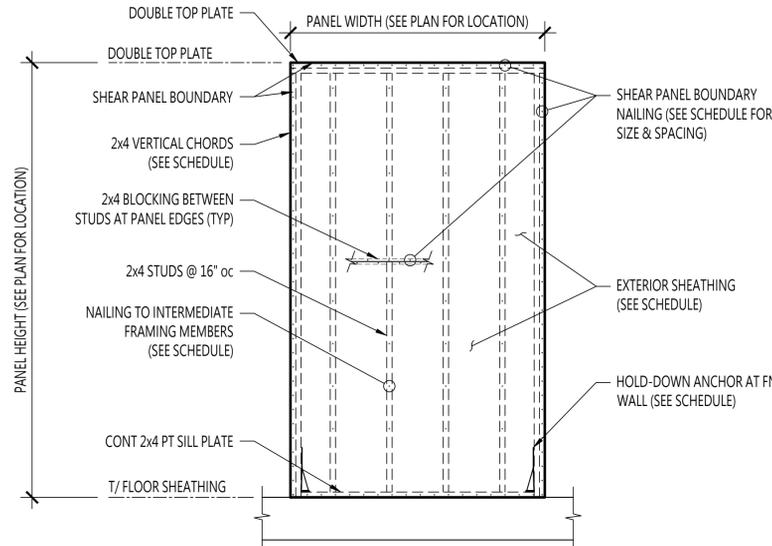
- Become thoroughly familiar with the contract documents during the bid period. resolve apparent deficiencies, omissions, contradictions, inconsistencies and ambiguities in contract documents with architect/engineer during the bid period. if any such condition cannot be resolved during the bid period, submit bid using the interpretation resulting in the greatest cost and resolve such items prior to beginning the work.
- Prior to starting construction, excavation, shop drawings, and prior to ordering materials:
 - Check dimensions and elevations shown on structural drawings against architectural drawings, secure direction concerning missing or conflicting information from owner's authorized representative.
 - Survey and report floor and roof elevations of the existing building(s) with connections to this building.
 - Field verify dimensions and elevations relating to existing conditions, adjustments to plan dimensions and elevations of less than 6" to accommodate existing conditions shall be included in the contractor's bid and will not be considered a change in the work.
- Use structural drawings with other contract documents, including those issued before and after the structural documents, and combine requirements into shop drawings and work.
- Typical details, typical notes and general notes are applicable to all occurrences of the conditions depicted in the details or described in the notes unless other details or notes are provided for the condition.
- No repair, correction, modification, or alteration, shall be made without prior review and acceptance of the structural engineer. Submit details and calculations prepared by a professional engineer registered in the state where the project is located and employed by contractor. A/E review is contractor's expense.
- The structure is designed to function as a unit upon the completion of construction for the entire project and then only to support the design loads indicated. Contractor is responsible for determining loadings occurring during construction, and for coordinating loadings with other contractors, and for determining and not exceeding the capacity of the structure at any time prior to completion of the entire project. Contractor is responsible for procedures, means, methods and sequences of construction. Design and provide all temporary bracing shoring, and/or supports).
- Review by owner's authorized representative of redundant submittals from backup, second source or replacement suppliers/contractors is contractor's expense.
- A/E services related to substitutions or changes proposed by the contractor are the contractor's expense. Do not rely on acceptance in preparing bids. The A/E may reject these without cause.
- SUPPORT AND BRACING OF WORK NOT SHOWN ON STRUCTURAL DRAWINGS:
 - Do not induce loads on or hang loads from deck, unless shown on drawings, including but not limited to these items: ceilings, pipes, ducts, equipment, etc. Contractor or sub-contractor installing such items shall provide sub-framing to transfer load to the structure supporting deck.
 - Do not suspend point loads from slabs totaling more than 500 lbs within any 50 square feet of continuous floor slab area. Engineer and provide sub-framing and bracing to transfer such loads to joists, beams, or girders at the expense of trade contractor suspending loads.
 - Supports, bracing, sub-framing, light gage framing, miscellaneous steel, bracket connectors and attachments not shown on the structural drawings are the contractor's responsibility and shall be engineered and provided by the trade contractor with items being supported or braced at the trade contractor's expense.
 - If structural drawings are referenced on other drawings for items not fully defined on Structural Drawings (and associated specifications) then engineer and provide such items on a performance basis in compliance with the governing building code. all costs shall be born by the trade contractor attaching to or bearing upon such items.
 - Support and bracing systems shall not transmit lateral loads to columns between floors or to the bottoms or sides of steel beams or joists. If other contract drawings indicate bracing or attachment details which would result in lateral loads being transmitted to the sides of columns or to the bottoms or sides of beams or joists then the trade contractor responsible for the items transmitting such lateral loads shall include the cost in the bid for engineering and providing bracing from the point of attachment to the top of the next adjacent beam or joist.
 - Facade and wall system attachments to the structure: (Excluding stone panel systems and sculptures where indicated):
 - Shall not assume the structure provides moment resistance at the point of attachment.
 - Shall be to the edge of the floor slab or roof deck only unless noted on the Structural Drawings.
 - Shall not restrict independent vertical or lateral movement of the building levels.
 - Where dimensions or weights of equipment or systems are variable from manufacturer to manufacturer, verify dimensions and weights shown on drawings with selected manufacturer prior to ordering materials. Notify structural engineer of discrepancies.
 - Do not place equipment when shipping or operating weight exceeds weight indicated on Structural Drawings.
 - Contractor is responsible for all costs associated with adapting structure to accommodate selected elevator manufacturer's equipment, loadings and other requirements. Submit details and calculations prepared by a professional engineer registered in the state where the project is to be constructed and employed by contractor. The contractor is responsible for the means and methods of hoisting elevator equipment into place including hoist beams, whether or not shown or noted on any contract document.
 - Where engineering is required, the service shall be provided by an Engineer, registered in the state where the project is to be constructed.



TYPICAL WOOD TRUSS BEARING ON WOOD STUD WALL DETAIL
SCALE: NTS



TYPICAL BUILT-UP HEADER AT WINDOW AND DOOR JAMBS
SCALE: NTS



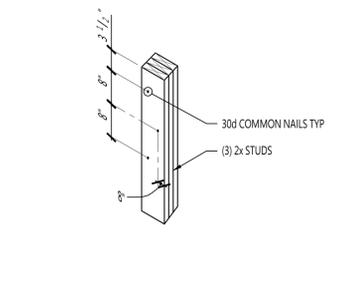
SHEAR WALL SCHEDULE				
SHEATHING	BOUNDARY NAILING	INTERMEDIATE NAILING	VERTICAL CHORDS	HOLD-DOWN ANCHORS
ZIP SYSTEM R-6	0.131"x3" SHANK NAILS @ 4" oc	0.131"x3" SHANK NAILS @ 12" oc	(2) 2x4 NO. 2 SO PINE	SIMPSON "H6"

NOTES:

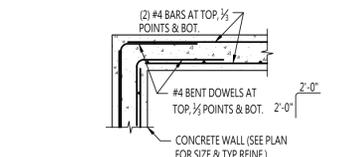
- ALL NAILS TO BE COMMON OR GALVANIZED BOX 10d (128#) (MIN) x 3" PNEUMATIC DRIVEN NAILS CAN USED IN LIEU OF 10d GALVANIZED BOX
- AIR INFILTRATION BARRIER NOT TO BE INSTALLED UNTIL BUILDING OFFICIAL HAS VERIFIED PROPER NAILING OF SHEAR-WALL SHEATHING

WOOD FRAME SHEARWALL

SCALE: NTS



TYPICAL BUILT-UP POST DETAIL
SCALE: NTS



REINFORCING AT CORNERS OF 6" THICK CONC. WALLS
SCALE: N.T.S.

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR

CONSTRUCTION DOCUMENTS

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AARON S. ODLE
PROFESSIONAL ENGINEER
LICENSE # PE-2014000065

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ELECTRICAL, MECHANICAL, PLUMBING
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OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT
DESIGN AND CONSTRUCTION

MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

SIX NEW FULL SERVICE CABINS - JOHNSON'S SHUT-INS STATE PARK

PROJECT # X2206-01
SITE # 5213
FACILITY # 781521016, 781521017,
781521018, 781521019,
781521020, 781521021

DATE: 04.11.2023

FE PROJECT #: 220058

CHECK: ASO

SHEET TITLE:

REVISIONS

NO.	DATE	DESCRIPTION

DATE: 04.11.2023

FE PROJECT #: 220058

CHECK: ASO

SHEET TITLE:

GENERAL NOTES/ TYPICAL DETAIL

57 OF 75 SHEETS

SHEET NUMBER

S0.0

GENERAL NOTES

- Contractor shall field verify dimensions and conditions at the job site. Any discrepancies between the conditions found and those indicated in the Contract Documents shall be brought to the attention of Architect & Engineer prior to proceeding with Work.
- No repair, correction, modification, or alteration, shall be made without prior review and acceptance of the structural engineer. Engineer review at contractor's expense.
- The Contract Documents, represent the finished structure. The structure is designed to function as a unit upon completion of construction for the entire project and then only to support the design loads indicated. Contractor is responsible for determining loadings occurring during construction, and for coordinating loadings with other contractors, and for determining and not exceeding the capacity of the structure at any time prior to completion of the entire project prior to the completion of the project.
- Frontenac Engineering Group shall not have control over, or charge of, and shall not be responsible in any way for construction means, methods, techniques, sequences, or procedures, or for safety or safety precautions and programs in connection with any construction activities, since these are solely Contractor's responsibility under the Contract.
- The Structure is stable only in its completed form. Contractor shall provide temporary supports required for the stability of the Structure and take all measures necessary to project the structure during all intermediate stages of construction. Such measures shall include, but not be limited to: bracing, shoring for loads due to construction equipment, temporary structures, and partially completed work. Observation visits on site by Structural Engineer shall not include inspection of the above items.
- Elements that are not dimensioned may not be represented accurately on the plan. Do not use the plan for measurements other than those specified.
- Provide construction or control joints in slab-on-grade as indicated in the Structural Drawings. If joint pattern is not indicated, provide joints at a maximum spacing of 15'-0" in both direction and located to conform to bay spacing wherever possible (at column centerlines, half bays, third bays, etc.)

GENERAL CONCRETE FOUNDATION NOTES

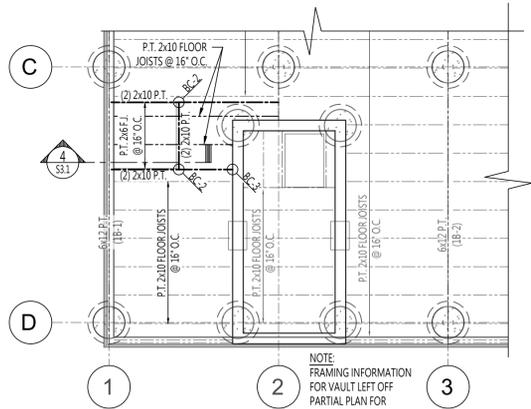
- Reinforced concrete shall have the following minimum 28-day compressive strengths:
 - 3000psi - foundation and basement walls, footing and piers.
 - 3500psi - porches, walks, patios, steps, garage slabs, and driveways.
- Reinforcing steel to be ASTM A615, grade 60. Welding of ASTM A615, grade 60 reinforcing is not allowed.
- Welded wire fabric to be ASTM A185, Lap fabric 6" min.
- Reinforcing shall be continuous wherever possible. Splices and laps shall conform to ACI 318 requirements.
- Provide the following additional reinforcing unless otherwise called for on structural plans.
 - 2 - #4 Bars each side of openings 1'-0" or larger in slabs or walls.
 - 2'-0" x 2'-0" Corner bars in outer face of all walls to match size and spacing of horizontal reinforcing bars in walls.
- All abutting concrete members shall be doweled together unless poured monolithically. Dowels shall be equal in size and spacing to the bars in the adjacent walls.
 - Minimum concrete cover, unless noted otherwise:
 - Unformed concrete surface in contact w/ earth: 3"
 - Formed surfaces exposed to ground or weather: 2"
 - Formed surfaces not exposed to ground or weather: Walls, slabs: 3/4"
Beams, columns: 1 1/2"
- Refer to drawings by others for waterproofing and drainage at foundation.
- Unless otherwise shown in the architectural drawings, provide 3/4" chamfers at all edges that are exposed to view in the finished surface.
- Cast-in-place anchors shall be carefully placed per contractor measurements. They must be installed correctly, as there is no epoxy-set alternative.
- All footings to extend a minimum of 30" below grade, unless noted otherwise.

1st FLOOR FRAMING NOTES

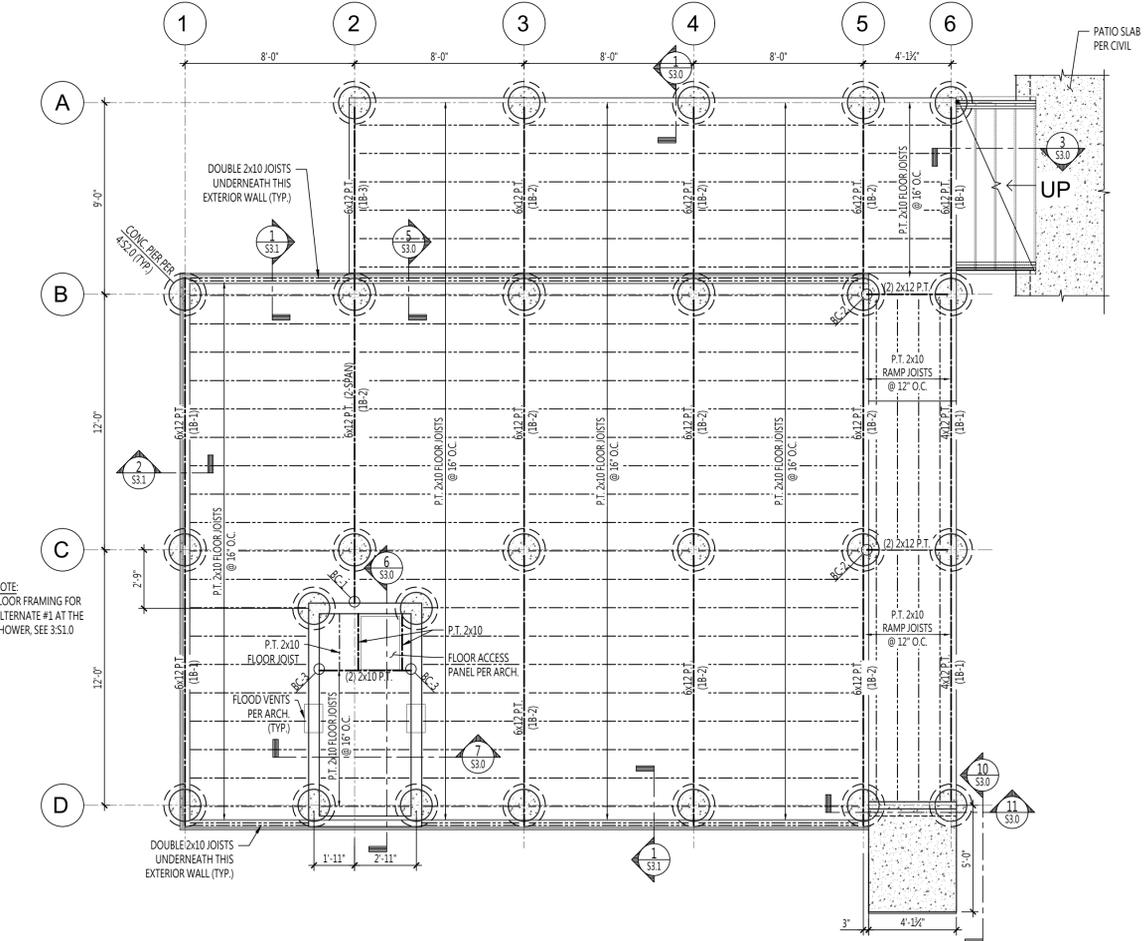
- Beams & Headers: 2-2x10s unless noted otherwise.
- Wood species:
 - Southern Pine: 2x6, 2x8, 2x10, 2x12 framing members
 - Spruce Pine Fir: 2x4, 2x6 Studs
 - Douglas Fir-Larch: Timber Beams and 6x6 OR 8x8 Posts
- Laminated Veneer Lumber (LVL):
 - Allowable flexural stress, $F_b = 2600psi$ for headers and beams.
 - Modulus of elasticity, $E = 2,000,000psi$.
 - Must have valid evaluation report from approved 3rd party evaluation agency, such as ICC-ES.
- Posts:
 - 2-2x4 or 2-2x6 unless noted otherwise.
 - 3-2x to be interpreted as 2-2x "triples", glued and nailed, plus a minimum (1) full height unbroken stud. All posts to be blocked solid to top of structure below.
- Use Simpson or similar metal framing anchors and connectors as noted and as required for wood-to-wood, wood-to-concrete, and wood-to-masonry connections. Connectors shall be hot-dip galvanized steel of structural capacity. Install per manufacturers specifications.
- Exterior stud wall construction: 3/4" plywood or OSB sheathing fastened to 2x4 or 2x6 studs @ 16" O.C. w/ 8d nails at 6" O.C. at panel edges and 12" O.C. at intermediate supports unless noted otherwise.
- Interior walls: to be framed with a minimum 2x4 or 2x6 studs at 16" O.C. unless noted otherwise.
- Floor construction: 3/4" T.&G. plywood glued and fastened to 2x floor joists w/ 8d nails at 6" O.C. at panel edges and 12" O.C. at intermediate supports.
- All floor framing to be spaced at 16" O.C. maximum, unless noted otherwise.
- All exterior lumber to be pressure treated.
- Double floor joists around stair openings, fireplace hearths, at corners of cantilevered bays and under load bearing parallel partitions. (Typical at all openings, unless noted otherwise) Bearing partitions and post shall be unbroken (run continuous) from bearing to structure below.
- Under non-load-bearing parallel partitions, provide double joists separated by solid blocking at 16 inches on center equal to depth of studs above.
- Provide solid wood blocking through floor at all posts above.
- Steel designations:
 - A36: Plates, Structural angles
 - A500 Gr. B: HSS Structural tubes
 - A992: W Shapes
- All steel elements permanently exposed to weather shall be hot-dipped galvanized.
- Adhesive anchor shall be Hilti HIT-HY or Simpson SET-3G adhesive anchors or approved equal.

BEAM CONNECTION SCHEDULE		
MARK	SUPPLIER	CONNECTOR
BC-1	SIMPSON	MBHUS50/11.88KT w/ (2) SIMPSON "HD75400H" FASTENERS
BC-2	SIMPSON	HUZ10-2
BC-3	SIMPSON	HUS212-2TF

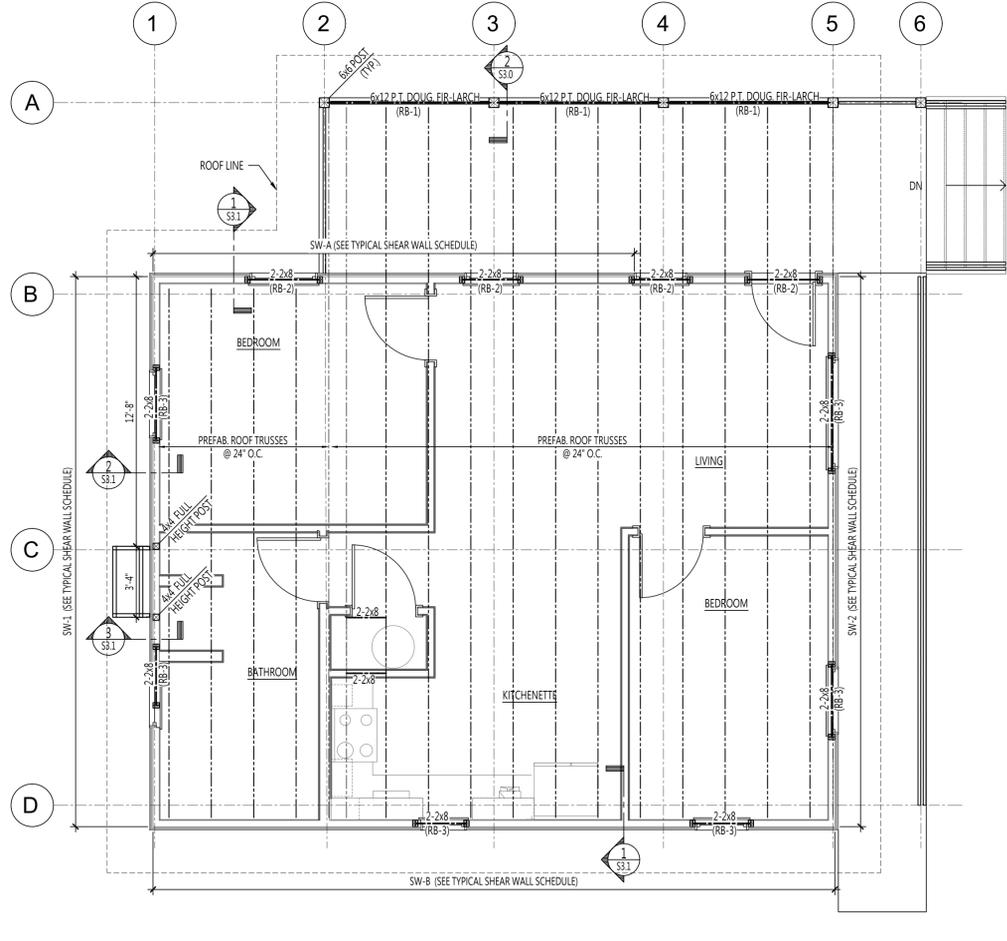
NOTE:
CONNECTOR DESIGNATIONS PROVIDED IN SCHEDULE ARE FOR SIMPSON MANUFACTURED PRODUCTS. SIMILAR METAL FRAMING ANCHORS AND CONNECTORS BY OTHER MANUFACTURERS ARE PERMITTED.



3 ALTERNATE #1 PARTIAL FLOOR FRAMING PLAN
SCALE: 3/4"=1'-0"



1 FOUNDATION AND FIRST FLOOR FRAMING PLAN
SCALE: 3/4"=1'-0"



2 ROOF FRAMING PLAN
SCALE: 3/4"=1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR

CONSTRUCTION DOCUMENTS

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LICENSE # PE-2014000065

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MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

SIX NEW FULL SERVICE CABINS - JOHNSON'S SHUT-INS STATE PARK

PROJECT # X2206-01
SITE # 5213
FACILITY # 7815213017, 7815213018, 7815213019, 7815213021

REVISIONS		
NO.	DATE	DESCRIPTION

DATE: 04.11.2023
FE PROJECT #: 220058
CHECK: ASO

2 BEROOM CABIN FOUNDATION & FRAMING PLAN

SHEET NUMBER
S1.0

GENERAL NOTES

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- Provide construction or control joints in slab-on-grade as indicated in the Structural Drawings. If joint pattern is not indicated, provide joints at a maximum spacing of 15'-0" in both direction and located to conform to bay spacing wherever possible (at column centerlines, half bays, third bays, etc.)

GENERAL CONCRETE FOUNDATION NOTES

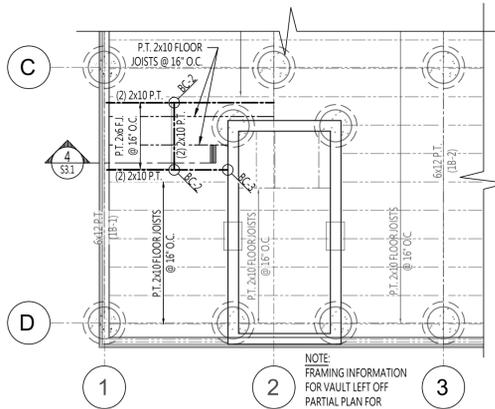
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- Welded wire fabric to be ASTM A185, Lap fabric 6" min.
- Reinforcing shall be continuous wherever possible. Splices and laps shall conform to ACI 318 requirements.
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 - 2'-0" x 2'-0" Corner bars in outer face of all walls to match size and spacing of horizontal reinforcing bars in walls.
- All abutting concrete members shall be doweled together unless poured monolithically. Dowels shall be equal in size and spacing to the bars in the adjacent walls.
 - Minimum concrete cover, unless noted otherwise:
 - Unformed concrete surface in contact w/ earth: 3"
 - Formed surfaces exposed to ground or weather: 2"
 - Formed surfaces not exposed to ground or weather:
 - Walls, slab: 3/4"
 - Beams, columns: 1 1/2"
- Refer to drawings by others for waterproofing and drainage at foundation.
- Unless otherwise shown in the architectural drawings, provide 3/4" chamfers at all edges that are exposed to view in the finished surface.
- Cast-in-place anchors shall be carefully placed per contractor measurements. They must be installed correctly, as there is no epoxy-set alternative.
- All footings to extend a minimum of 30" below grade, unless noted otherwise.

1st FLOOR FRAMING NOTES

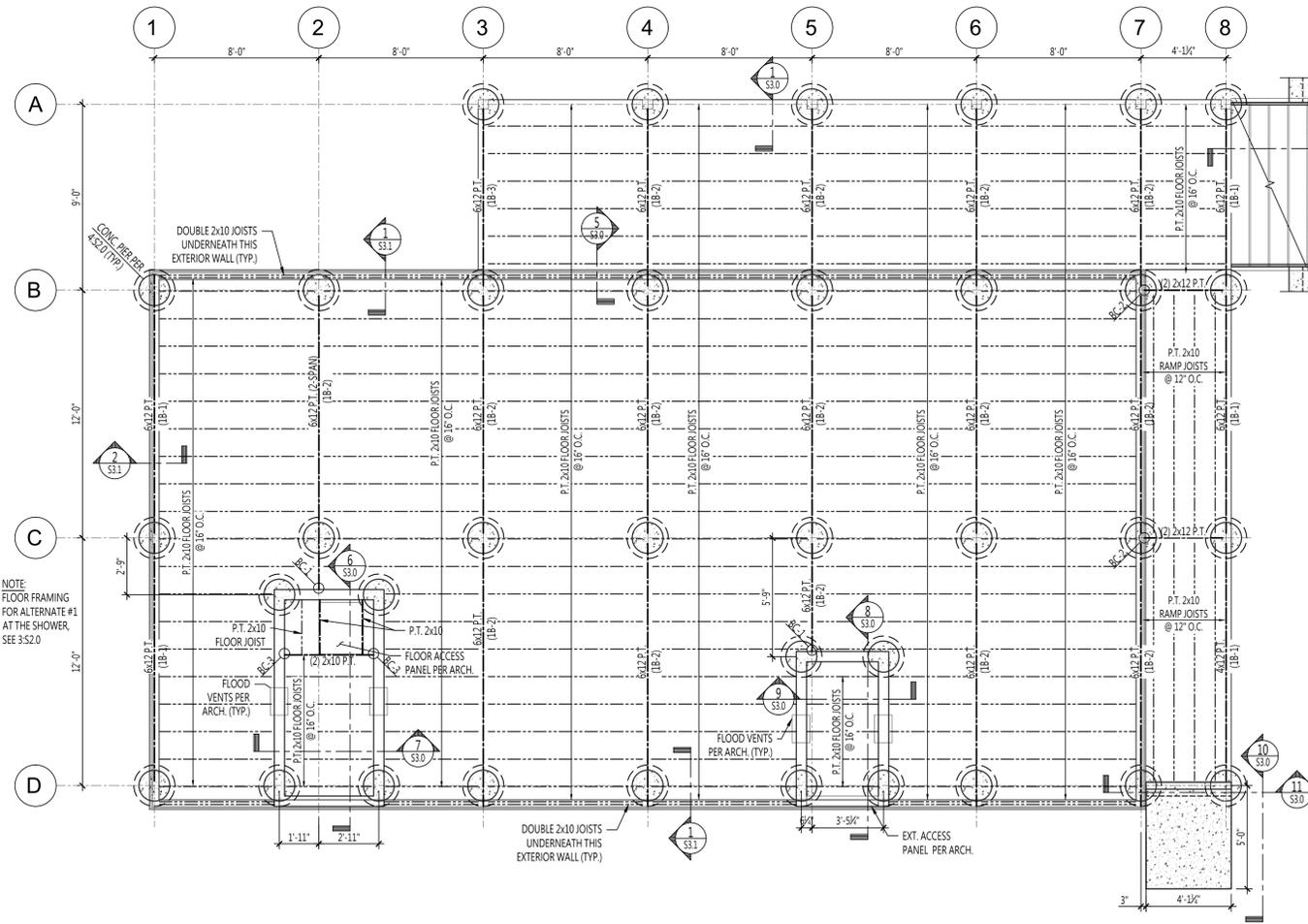
- Beams & Headers: 2-2x10s unless noted otherwise.
- Wood species:
 - Southern Pine: 2x6, 2x8, 2x10, 2x12 framing members
 - Spruce Pine Fir: 2x4, 2x6 Studs
 - Douglas Fir-Larch: Timber Beams and 6x6 OR 8x8 Posts
- Laminated Veneer Lumber (LVL):
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 - 3-2x to be interpreted as 2-2x "triples", glued and nailed, plus a minimum (1) full height unbroken stud. All posts to be blocked solid to top of structure below.
- Use Simpson or similar metal framing anchors and connectors as noted and as required for wood-to-wood, wood-to-concrete, and wood-to-masonry connections. Connectors shall be hot-dip galvanized steel of structural capacity. Install per manufacturers specifications.
- Exterior stud wall construction: 3/4" plywood or OSB sheathing fastened to 2x4 or 2x6 studs @ 16" O.C. w/ 8d nails at 6" O.C. at panel edges and 12" O.C. at intermediate supports unless noted otherwise.
- Interior walls: to be framed with a minimum 2x4 or 2x6 studs at 16" O.C. unless noted otherwise.
- Floor construction: 3/4" T&G plywood glued and fastened to 2x floor joists w/ 8d nails at 6" O.C. at panel edges and 12" O.C. at intermediate supports.
- All floor framing to be spaced at 16" O.C. maximum, unless noted otherwise.
- All exterior lumber to be pressure treated.
- Double floor joists around stair openings, fireplace hearths, at corners of cantilevered bays and under load bearing parallel partitions. (Typical at all openings, unless noted otherwise) Bearing partitions and post shall be unbroken (run continuous) from bearing to structure below.
- Under non-load-bearing parallel partitions, provide double joists separated by solid blocking at 16 inches on center equal to depth of studs above.
- Provide solid wood blocking through floor at all posts above.
- Steel designations:
 - A36: Plates, Structural angles
 - A500 Gr. B: HSS Structural tubes
 - A992: W Shapes
- All steel elements permanently exposed to weather shall be hot-dipped galvanized.
- Adhesive anchor shall be Hilti HIT-HY or Simpson SET-3G adhesive anchors or approved equal.

BEAM CONNECTION SCHEDULE		
MARK	SUPPLIER	CONNECTOR
BC-1	SIMPSON	MBHUS 50/11.88KT w/ (2) SIMPSON "THD7540H" FASTENERS
BC-2	SIMPSON	HUZ10-2
BC-3	SIMPSON	HUS212-2TF

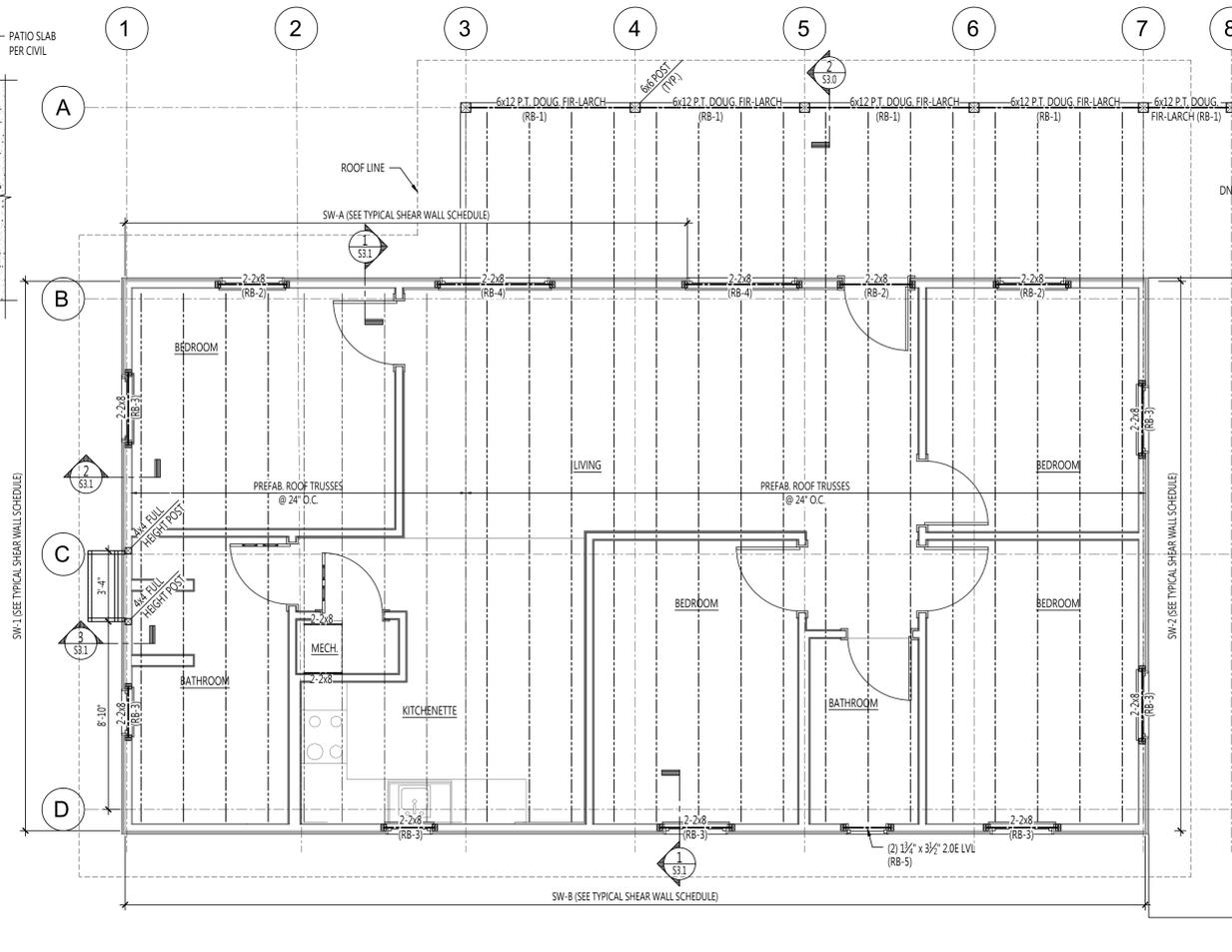
NOTE:
CONNECTOR DESIGNATIONS PROVIDED IN SCHEDULE ARE FOR SIMPSON MANUFACTURED PRODUCTS. SIMILAR METAL FRAMING ANCHORS AND CONNECTORS BY OTHER MANUFACTURERS ARE PERMITTED.



3 S2.0
ALTERNATE #1 PARTIAL FLOOR FRAMING PLAN
SCALE: 3/4"=1'-0"



1 S2.0
FOUNDATION AND FIRST FLOOR FRAMING PLAN
SCALE: 3/4"=1'-0"

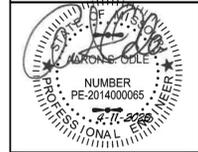


2 S2.0
LOWER ROOF FRAMING PLAN
SCALE: 3/4"=1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON,
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**SIX NEW
FULL SERVICE
CABINS -
JOHNSON'S
SHUT-INS
STATE PARK**

PROJECT # X2206-01
SITE # 5213
FACILITY # 781521016, 7815213020

REVISIONS

NO.	DATE	DESCRIPTION

DATE: 04.11.2023

FE PROJECT #: 220058

CHECK: ASO

SHEET TITLE:

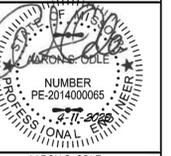
**4 BEROOM CABIN
FOUNDATION &
FRAMING PLAN**

59 OF 75 SHEETS

SHEET NUMBER

S2.0

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MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

SIX NEW FULL SERVICE CABINS - JOHNSON'S SHUT-INS STATE PARK

PROJECT # X2206-01
SITE # 5213
FACILITY # 7815213016, 7815213017,
7815213018, 7815213019,
7815213020, 7815213021

REVISIONS		
NO.	DATE	DESCRIPTION

DATE: 04.11.2023

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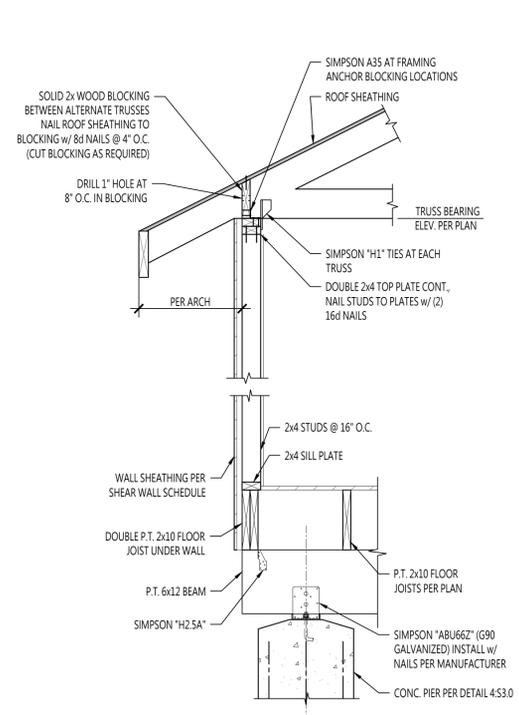
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STRUCTURAL SECTIONS & DETAILS

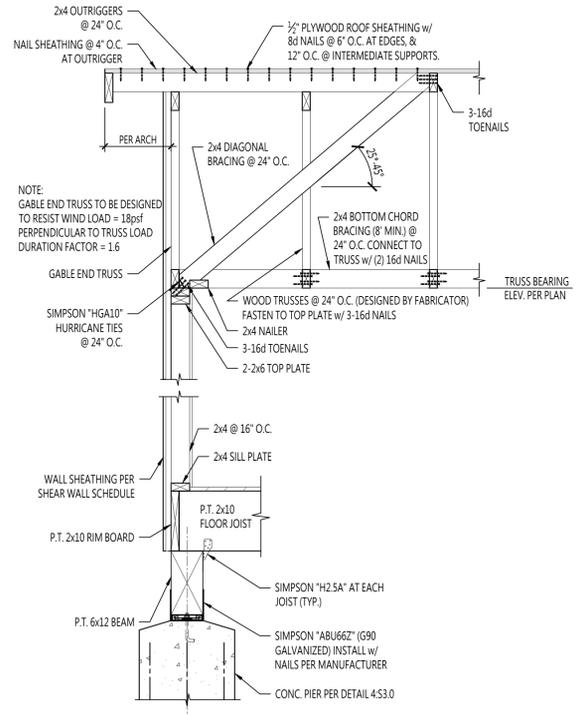
61 OF 75 SHEETS

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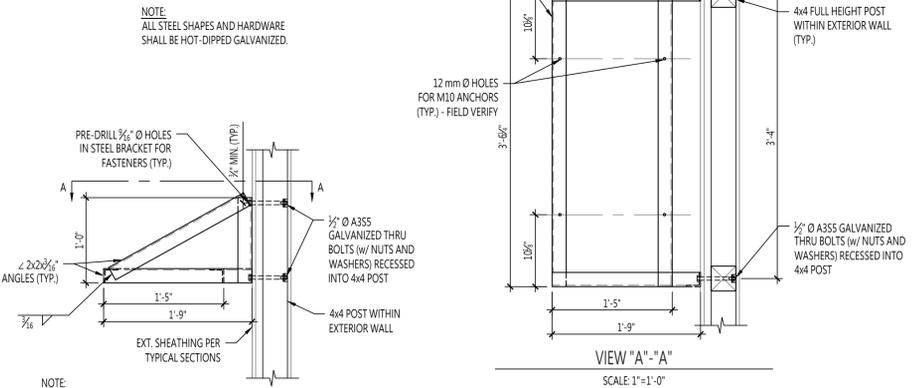
S3.1



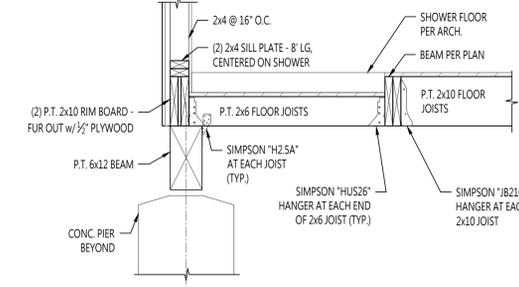
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S3.1
TYPICAL EXTERIOR WALL SECTION
SCALE: 3/4"=1'-0"



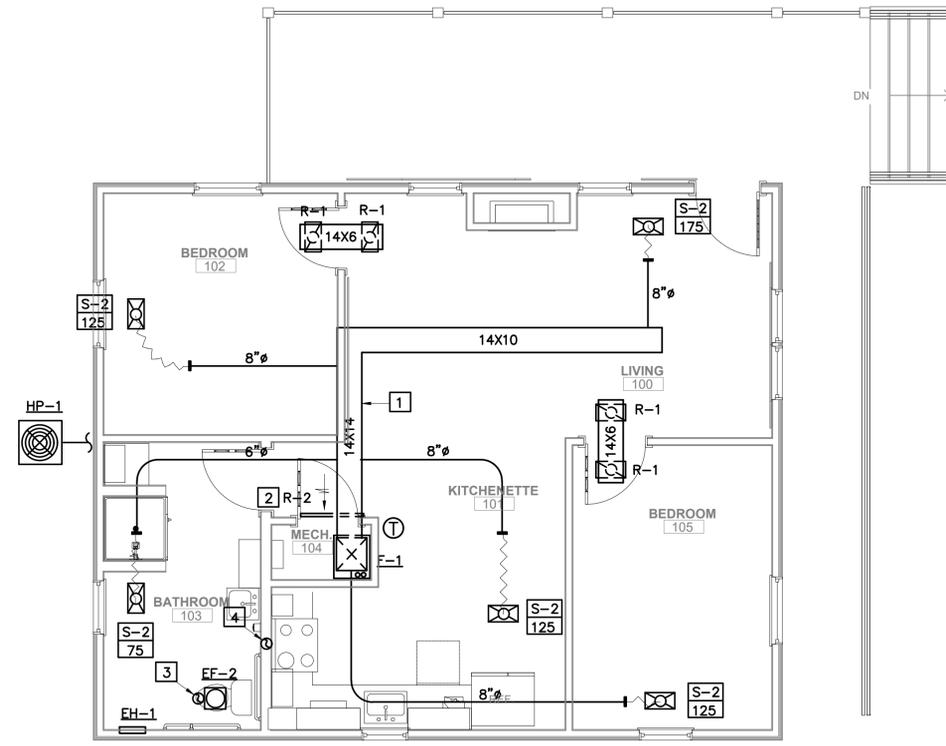
2
S3.1
TYPICAL EXTERIOR WALL SECTION
SCALE: 3/4"=1'-0"



3
S3.1
SECTION AT HVAC SUPPORT
SCALE: 1"=1'-0"



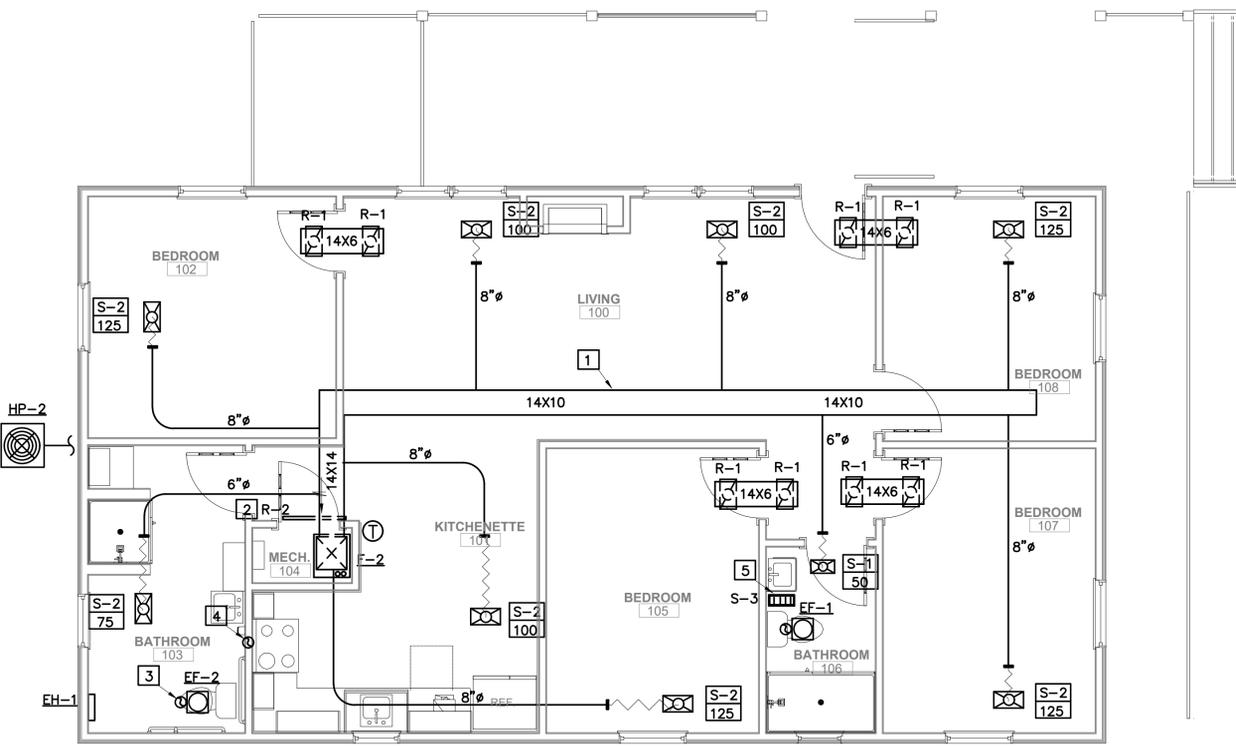
4
S3.1
SECTION AT ALTERNATE #1 FLOOR FRAMING
SCALE: 3/4"=1'-0"



2 BEDROOM CABIN PLAN

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

HVAC



4 BEDROOM CABIN PLAN

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

HVAC

MECHANICAL GENERAL NOTES:

- PROVIDE ALL WORK AND MATERIALS AS REQUIRED HEREIN AND ON THE DRAWINGS IN FULL ACCORDANCE WITH NATIONAL, STATE, LOCAL CODES, ORDINANCES AND/OR REGULATIONS HAVING JURISDICTION OVER THIS WORK.
- DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO SHOW APPROXIMATE LOCATIONS UNLESS SPECIFICALLY DIMENSIONED. COORDINATE WITH THE OTHER TRADES TO AVOID INTERFERENCE. SHOULD MECHANICAL WORK BE INSTALLED WHICH INTERFERES WITH THE WORK OF OTHER CONTRACTORS, SUCH WORK SHALL BE CHANGED AT NO ADDITIONAL COST TO THE OWNER.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF ANY FRAMING REVISIONS, EQUIPMENT LOCATION, ADDITION OF CONTROLS, ELECTRICAL CIRCUITING REVISIONS, ETC., THAT ARE A RESULT OF USING EQUIPMENT OTHER THAN THOSE INDICATED ON THE DRAWINGS. APPROVAL OF THE SHOP DRAWINGS BY THE ARCHITECT/ENGINEER WILL NOT WAIVE THE CONTRACTOR OF THIS RESPONSIBILITY.
- ALL EQUIPMENT, MATERIALS, AND WORKMANSHIP TO BE WARRANTED FOR ONE YEAR FROM DATE OF FINAL ACCEPTANCE OF THIS WORK.
- CONTRACTOR SHALL PROVIDE AND INSTALL ALL EQUIPMENT AS SHOWN ON PLANS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ALL NECESSARY ADJUSTMENTS, CALIBRATION AND MATERIAL AS REQUIRED SO THAT THE SYSTEM IS FULLY OPERATIONAL.
- ALL MECHANICAL PENETRATIONS THROUGH THE ROOF SHALL BE MADE WATER TIGHT WITH THE ROOF BY PROPER FLASHING. ROOF FLASHING BY ROOF CONTRACTOR.
- MECHANICAL DRAWINGS AND SPECIFICATIONS HAVE BEEN PREPARED UTILIZING EXISTING DRAWINGS AND BUILDING SURVEYS AND MAY NOT SHOW ALL CONDITIONS. CONTRACTOR SHALL VISIT THE BUILDING PRIOR TO SUBMISSION TO BECOME FAMILIAR WITH ALL CONDITIONS. CONTRACTOR WILL NOT BE ALLOWED ADDITIONAL FUNDS AND TIME DUE TO CONTRACTOR'S FAILURE TO BECOME FAMILIAR WITH ALL EXISTING CONDITIONS.
- INSTALL THERMOSTATS 48 INCHES ABOVE FINISHED FLOOR, THERMOSTAT WIRING BY HVAC CONTRACTOR.
- THE MECHANICAL CONTRACTOR SHALL HAVE THE FINAL RESPONSIBILITY FOR SYSTEM START UP AND TURN OVER TO THE OWNER.
- WORK SHALL BE CONSIDERED AS DIAGRAMMATIC AND REFLECT A MINIMUM ACCEPTABLE STANDARD. ALL WORK SHALL CONFORM TO THE LOCAL CODE.
- WHEN INSTALLING ANY MECHANICAL EQUIPMENT, G.C. SHALL PROPERLY SHORE, BRACE, SUPPORT, ETC., ANY CONSTRUCTION TO GUARD AGAINST CRACKING, SETTLING, COLLAPSING, DISPLACING OR WEAKENING. NO STRUCTURAL MEMBER SHALL BE CUT WITHOUT THE WRITTEN CONSENT OF THE ARCHITECT.
- ROUTE REFRIGERANT PIPING OUT OF SIGHT TO ASSOCIATED FURNACE. REFRIGERANT PIPING TO BE SIZED PER MFR'S INSTRUCTIONS.
- ALL DUCTWORK PENETRATING DRAFT STOPPING SHALL BE SEALED WITH CALKING TO BE AIR TIGHT AT PENETRATION. NO DAMPER REQUIRED. REFERENCE LIFE SAFETY PLAN ON ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS.
- ALL RECTANGULAR 90 DEGREE ELBOWS AND TEE'S SHALL BE EQUIPPED WITH SINGLE THICKNESS TURNING VANES MOUNTED TO A PREFABRICATED VAN.
- REGISTER, GRILLES AND DIFFUSERS SHALL BE THE SIZE, TYPE AND FINISH SHOWN ON THE EQUIPMENT SCHEDULE. LOCATIONS SHOWN ON PLANS ARE APPROXIMATE. CONTRACTOR SHALL MAKE ADJUSTMENTS AS NECESSARY TO FIT CONSTRUCTION.
- ALL DUCTWORK SHALL BE SUPPORTED FROM ROOF OR FLOOR STRUCTURE ABOVE. DUCTWORK SHALL NOT LAY ON TOP OF CEILING OR LIGHT FIXTURES.
- FLEXIBLE DUCT RUN OUTS TO AIR DEVICES SHALL NOT EXCEED 5'-0" IN LENGTH.
- FLEXIBLE DUCTS SHALL BE INSTALLED TO PROVIDE SWEEPING CONFIGURATIONS WITH NOT LESS THAN MANUFACTURER'S RECOMMENDED BEND RADIUS. FLAT BANDING MATERIAL NOT LESS THAN 1-1/2" WIDE SHALL BE USED TO SUSPEND FLEXIBLE DUCTS. DUCTING FURNISHED WITH FACTORY INSTALLED GROMMETS SHALL BE SUSPENDED BY WIRE ATTACHED TO GROMMETS.
- COORDINATION OF DUCT SYSTEM INSTALLATION WITH OTHER TRADES SHALL BE PERFORMED PRIOR TO FABRICATION. NOTIFY THE ARCHITECT/ENGINEER OF THOSE THAT REQUIRE DIMENSIONAL CHANGES OR MAJOR RELOCATION OF DUCTWORK.
- TRANSITION DUCT WHERE REQUIRED TO NECK SIZE ON AIR DEVICE.
- AIR CONDITIONING AND VENTILATION SYSTEMS SHALL BE INSTALLED AS REQUIRED BY THE NATIONAL FIRE PROTECTION ASSOCIATION STANDARD 90A.
- PROVIDE 2" THICK FIBERGLASS DUCT WRAP ON ALL RIDGED SUPPLY AND RETURN AIR DUCTWORK.
- TAKE-OFFS SERVING AIR DEVICES SHALL BE SAME DIMENSION AS NECK SIZE ON AIR DEVICE IT'S SERVING UNLESS SHOWN OTHERWISE.
- DUCTWORK SHALL BE FABRICATED AND SUPPORTED PER SMACNA STANDARDS. TRANSITIONS SHALL BE MADE PER SMACNA STANDARDS.
- FIELD VERIFY BUILDING CONDITIONS TO INSURE AIR DEVICES WILL FIT BUILDING CONSTRUCTION BEFORE ORDERING. NOTIFY ENGINEER IF ANY OF DEVICES DO NOT FIT.
- REFRIGERANT PIPING AND SIZES SHALL BE SIZED BY EQUIPMENT MANUFACTURER AND INSTALLED BY CONTRACTOR.
- ALL DUCTWORK PENETRATING FIRE OR COMBINATION FIRE/SMOKE RATED WALLS OR CEILINGS SHALL HAVE FIRE OR COMBINATION FIRE/SMOKE DAMPERS.
- PROVIDE OWNER WITH A CERTIFIED LETTER THAT THE MECHANICAL SYSTEM HAS BEEN INSTALLED PER THE PLANS, SPECIFICATIONS AND CHANGE ORDER COMPLYING WITH ALL APPLICABLE CODES AND STANDARDS FOR THE CITY, COUNTY, AND STATE HEALTH AND BUILDING CODES AND ORDINANCES.
- ALL ELBOWS, FITTINGS, ETC., IN PIPING AND DUCTWORK REQUIRED TO CLEAR ALL JOB OBSTRUCTIONS ARE NOT NECESSARILY INDICATED. ALL NECESSARY TRANSITIONS, FITTINGS AND OFFSETS ARE REQUIRED WHETHER SHOWN ARE NOT.
- ACCESS PANELS REQUIRED TO SERVICE MECHANICAL EQUIPMENT SHALL BE PROVIDED BY G.C. MECHANICAL CONTRACTOR TO COORDINATE WITH G.C. ON LOCATIONS WERE NEEDED.
- UPON SELECTION OF THE MECHANICAL APPLIANCES SUBMIT THE MANUFACTURER'S INSTALLATION INSTRUCTIONS TO THE BUILDING DEPARTMENT, INCLUDING LISTING FOR OUTSIDE INSTALLATION WHEN APPLICABLE.
- MECHANICAL CONTRACTOR SHALL ENGAGE A TESTING, ADJUSTING AND BALANCING AGENT CERTIFIED BY EITHER ASBC OR NEBB, TO BALANCE AIR FLOWS AS INDICATED ON PLANS.
- DESIGN AND OBTAIN APPROVAL FROM AUTHORITIES HAVING JURISDICTION FOR SEISMIC RESTRAINT HANGERS AND SUPPORTS FOR PIPING AND EQUIPMENT. PROVIDE SUBMITTAL TO ENGINEER FOR APPROVAL.
- ALL MECHANICAL WORK SHALL COMPLY WITH IMC-2012.
- MECHANICAL CONTRACTOR PROVIDE O&M MANUAL AT CLOSEOUT AND TRAINING OF PERSONNEL.

MECHANICAL SYMBOLS LEGEND

①	TEMPERATURE SENSOR	—	SIDEWALL RETURN AIR GRILLE
②	HUMIDITY SENSOR	— D —	CONDENSATE DRAIN (C.D.)
⊘	90 DEGREE ELBOW DOWN, ROUND DUCT	— C —	NATURAL GAS PIPING
⊙	90 DEGREE ELBOW UP, ROUND DUCT	— O —	PIPE TURNING DOWN
⊖	ROUND DUCT OFFSET	— ⊙ —	PIPE TURNING UP
⊘	ROUND RADIUS ELBOW	— ⊙ —	GAS COCK
⊘	90 DEGREE ELBOW DOWN, RECTANGULAR SUPPLY DUCT	— ⊙ —	GAS REGULATOR
⊙	90 DEGREE ELBOW UP, RECTANGULAR SUPPLY DUCT	— ⊙ —	UNION
⊖	90 DEGREE ELBOW DOWN, RECTANGULAR RETURN DUCT	— ⊙ —	AIR DEVICE TAG
⊙	90 DEGREE ELBOW UP, RECTANGULAR RETURN DUCT	— ⊙ —	CFM
⊖	RECTANGULAR ELBOW WITH TURNING VANES	[S-1] [100]	
— W —	FLEXIBLE DUCT	RTU-1	EQUIPMENT IDENTIFICATION
— D —	VOLUME DAMPER	OA	OUTSIDE AIR
— F —	FIRE DAMPER	EA	EXHAUST AIR
⊘	CEILING SUPPLY AIR DIFFUSER		
⊘	CEILING RETURN/EXHAUST AIR GRILLE		

KEYED NOTES:

- ROUTE DUCTWORK IN ATTIC AREA (TYP.).
- MOUNT RETURN GRILLE (R-2) ABOVE DOOR.
- ROUTE FULL SIZE BATHROOM EXHAUST DUCT UP THRU ROOF TO ROOF CAP.
- ROUTE FULL SIZE KITCHEN EXHAUST DUCT UP THRU ROOF TO ROOF CAP.
- FLOOR GRILLE (S-3) FOR VENTILATION PURPOSES OF PLUMBING CHASE. PROVIDE SHEET METAL BOOT TO FLOOR GRILLE TO ELIMINATE LINE OF SIGHT.

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR

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SIX NEW FULL SERVICE CABINS - JOHNSON'S SHUT-INS STATE PARK

PROJECT # X2206-01
SITE # 5213
FACILITY # 7815213016, 7815213017,
7815213018, 7815213019,
7815213020, 7815213021

REVISIONS

NO.	DATE	DESCRIPTION

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FE PROJECT #: 220058

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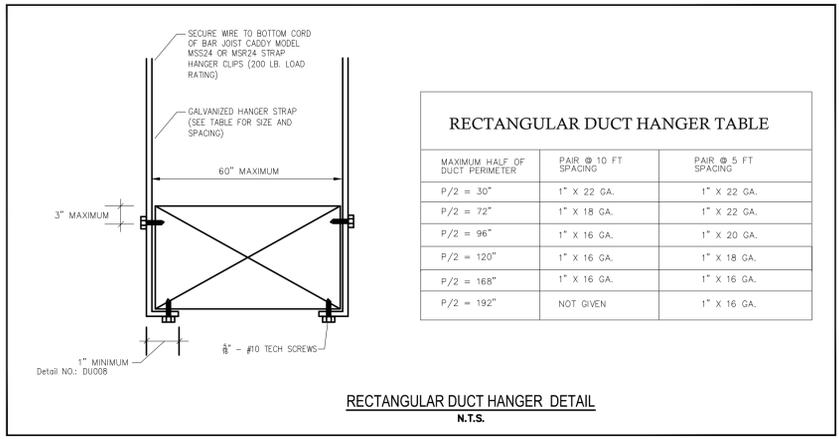
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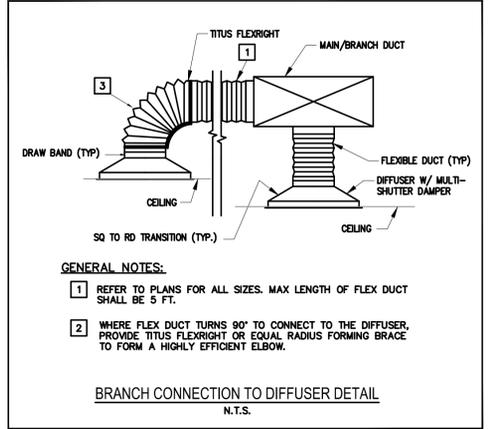
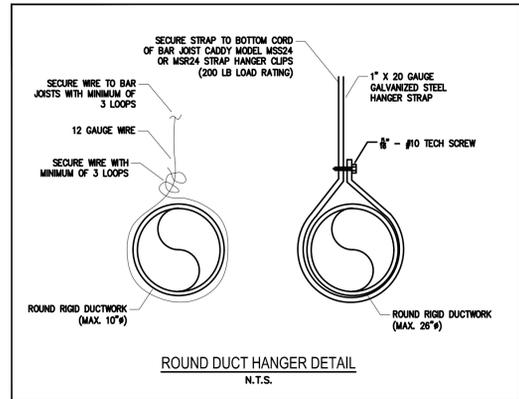
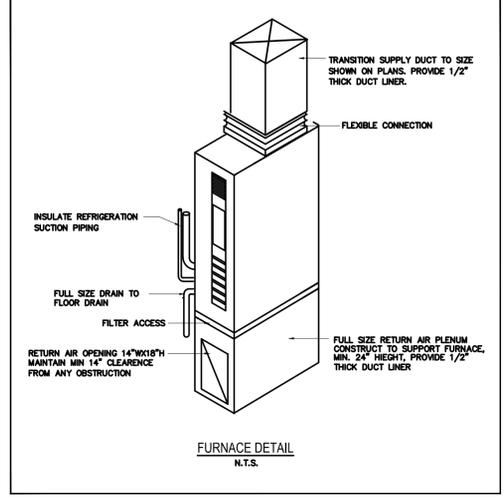
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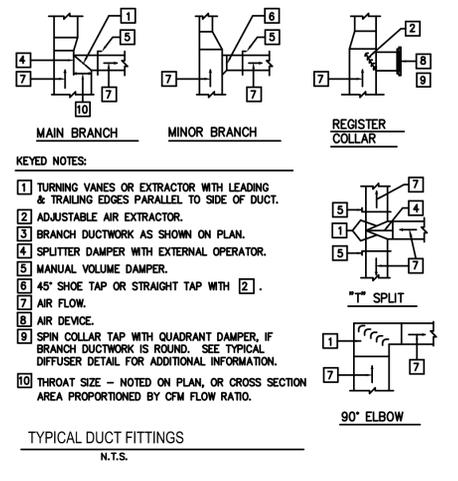
M1



MAXIMUM HALF OF DUCT PERIMETER	PAIR @ 10 FT SPACING	PAIR @ 5 FT SPACING
P/2 = 30"	1" X 22 GA.	1" X 22 GA.
P/2 = 72"	1" X 18 GA.	1" X 22 GA.
P/2 = 96"	1" X 16 GA.	1" X 20 GA.
P/2 = 120"	1" X 16 GA.	1" X 18 GA.
P/2 = 168"	1" X 16 GA.	1" X 16 GA.
P/2 = 192"	NOT GIVEN	1" X 16 GA.



- GENERAL NOTES:**
- REFER TO PLANS FOR ALL SIZES. MAX LENGTH OF FLEX DUCT SHALL BE 5 FT.
 - WHERE FLEX DUCT TURNS 90° TO CONNECT TO THE DIFFUSER, PROVIDE TITUS FLEXRIGHT OR EQUAL RADIUS FORMING BRACE TO FORM A HIGHLY EFFICIENT ELBOW.



- KEYED NOTES:**
- TURNING VANES OR EXTRACTOR WITH LEADING & TRAILING EDGES PARALLEL TO SIDE OF DUCT.
 - ADJUSTABLE AIR EXTRACTOR.
 - BRANCH DUCTWORK AS SHOWN ON PLAN.
 - SPLITTER DAMPER WITH EXTERNAL OPERATOR.
 - MANUAL VOLUME DAMPER.
 - 45° SHOE TAP OR STRAIGHT TAP WITH [2].
 - AIR FLOW.
 - AIR DEVICE.
 - SPIN COLLAR TAP WITH QUADRANT DAMPER, IF BRANCH DUCTWORK IS ROUND. SEE TYPICAL DIFFUSER DETAIL FOR ADDITIONAL INFORMATION.
 - THROAT SIZE - NOTED ON PLAN, OR CROSS SECTION AREA PROPORTIONED TO CFM FLOW RATIO.

FURNACE SCHEDULE										
MARK	MFR.	MODEL	TYPE	HEATING CAPACITY	COOLING CAPACITY	NOM. CFM	E.S.P.	FAN HP	VOLT/PH	ACCESSORIES
F-1	DAIKIN	DV24FECB	UP-FLOW	8 KW	18 MBH	600	.5	1/2	240/1	[1] [2] [3] [4] [5]
F-2	DAIKIN	DV24FECB	UP-FLOW	10 KW	24 MBH	800	.5	1/2	240/1	[1] [2] [3] [4] [5]

- ROUTE FULL SIZE CONDENSATE DRAIN PIPE FROM FURNACE TO NEAREST DRAIN, INDIRECT CONNECTION
- VARIABLE SPEED BLOWER MOTOR
- FILTER RACK W/ 1" THICK DISPOSABLE FILTER
- ADJUSTABLE BLOWER SPEED FOR COOLING, CONTINUOUS FAN AND DEHUMIDIFICATION.
- DAIKIN CTX04 COMFORTNET DM96V, 7 DAY PROGRAMMABLE TEMPERATURE AND HUMIDITY CONTROL, BACKLIT LIQUID CRYSTAL DISPLAY, HUMIDITY CONTROL OR EQUAL.

HEAT PUMP SCHEDULE										
MARK	MFR.	MODEL	NOM. TONNAGE	SEER	VOLT/PH	MCA	MOCP	SEERVING	ACCESSORIES	
HP-1	DAIKIN	DZ17VSA	1.5	17.0	240/1	12.7	15	F-1	[1] [2] [3] [4] [5]	
HP-2	DAIKIN	DZ17VSA	2	17.0	240/1	17.4	20	F-2	[1] [2] [3] [4] [5]	

- INVERTER COMPRESSOR
- FILTER DRIER & LINE SET
- MOUNT ON CONCRETE HOUSEKEEPING PAD
- R-410A REFRIGERANT
- ENERGY STAR

AIR DEVICE SCHEDULE											
MARK	MFR.	MODEL	FUNCTION	THROW	NECK SIZE (DIA. OR WxH)	FACE SIZE (WxH)	MAX CFM	NC (DB)	MATERIAL	COLOR	ACCESSORIES
S-1	CONTINENTAL	22	SUPPLY	2-WAY	8X6	10X8	100	25	STEEL	WHITE	[1] [2] [3] [4]
S-2	CONTINENTAL	22	SUPPLY	2-WAY	12X8	14X10	200	25	STEEL	WHITE	[1] [2] [3] [4]
S-3	CONTINENTAL	F20	SUPPLY	1-WAY	6X14	8X16	-	25	STEEL	BROWN	[1]
R-1	TITUS	350	RETURN	1-WAY	10x6	12x8	200	25	STEEL	WHITE	[1] [2]
R-2	TITUS	350	RETURN	1-WAY	36x6	36x8	800	25	STEEL	WHITE	[1] [2]

- FRAME STYLE TO MATCH SURFACE
- BLADES AT 3/4" SPACING AT 0° DEFLECTION BLADES ARE TO RUN HORIZONTAL ON LONG SIDE, INDIVIDUALLY ADJUSTABLE BLADES
- PROVIDE INSULATED SQUARE TO ROUND TRANSITION
- MULTI SHUTTER DAMPER, KNOB OPERATED

H.V.A.C. DUCTWORK SCHEDULE												
DUCT SYSTEM	FUNCTION	PRESSURE CLASS "wg	MATERIAL	GAGE	LINER			INSULATION			NOTES	
					TH	TYPE	D	TH	TYPE	D		JACKET
INTERIOR	SUPPLY	2"	GS	*	-	-	-	2"	FGW	1	FFJ	1, 2
INTERIOR	RETURN	2"	GS	*	-	-	-	2"	FGW	1	FFJ	1, 2
INTERIOR	EXHAUST	1"	GS	*	-	-	-	-	-	-	-	1

- NOTES:**
- SEAL ALL JOINTS AND SEAMS WITH TAPE AND MASTIC
 - ALL RIDGED SUPPLY AIR DUCT AND RETURN AIR DUCT SHALL BE WRAPPED WITH 2" THICK FIBERGLASS INSULATION.

- LEGEND:**
- GS GALVANIZED STEEL
 - FGSS PAINT DRIP GALVANIZED STEEL
 - CS CARBON STEEL
 - ALUM ALUMINUM
 - SS STAINLESS STEEL
 - FGW FIBERGLASS WRAP
 - D DENSITY
 - TH THICKNESS
 - FF FIBERGLASS BOARD
 - FFJ FOIL FACED FIBERGLASS BOARD
 - FE FIBERGLASS BOARD
 - ASJ ALL SERVICE JACKET
 - FFJ FOIL FACED JACKET

ELECTRIC HEATER SCHEDULE							
MARK	MFR.	MODEL	TYPE	WATTS	CFM	VOLT/PH	ACCESSORIES
EH-1	QMARK	CWH1101	WALL MNT	1000	-	120/1	[1] [2] [3]

- MOUNT UNIT ON WALL APPROX. 12" AFF.
- RECESSED IN WALL
- INTEGRAL THERMOSTAT

EXHAUST FAN SCHEDULE											
MARK	MFR.	MODEL	TYPE	CFM	E.S.P.	FAN R.P.M.	DRIVE	HP	WATTS	VOLTS/PHASE	ACCESSORIES
EF-1	COOK	GC	CEILING MNT.	50	.25	1300	DIRECT	--	--	120/1	[1] [2] [3]
EF-2	COOK	GC	CEILING MNT.	75	.25	1300	DIRECT	--	--	120/1	[1] [2] [3]

- BACK DRAFT DAMPER
- MOUNTING BRACKETS
- WALL MOUNTED ON/OFF SWITCH

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WILLIAM K. BERTHOLD
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SIX NEW
FULL SERVICE
CABINS -
JOHNSON'S
SHUT-INS
STATE PARK

PROJECT # X2206-01
SITE # 5213
FACILITY # 7815213016, 7815213017,
7815213018, 7815213019,
7815213020, 7815213021

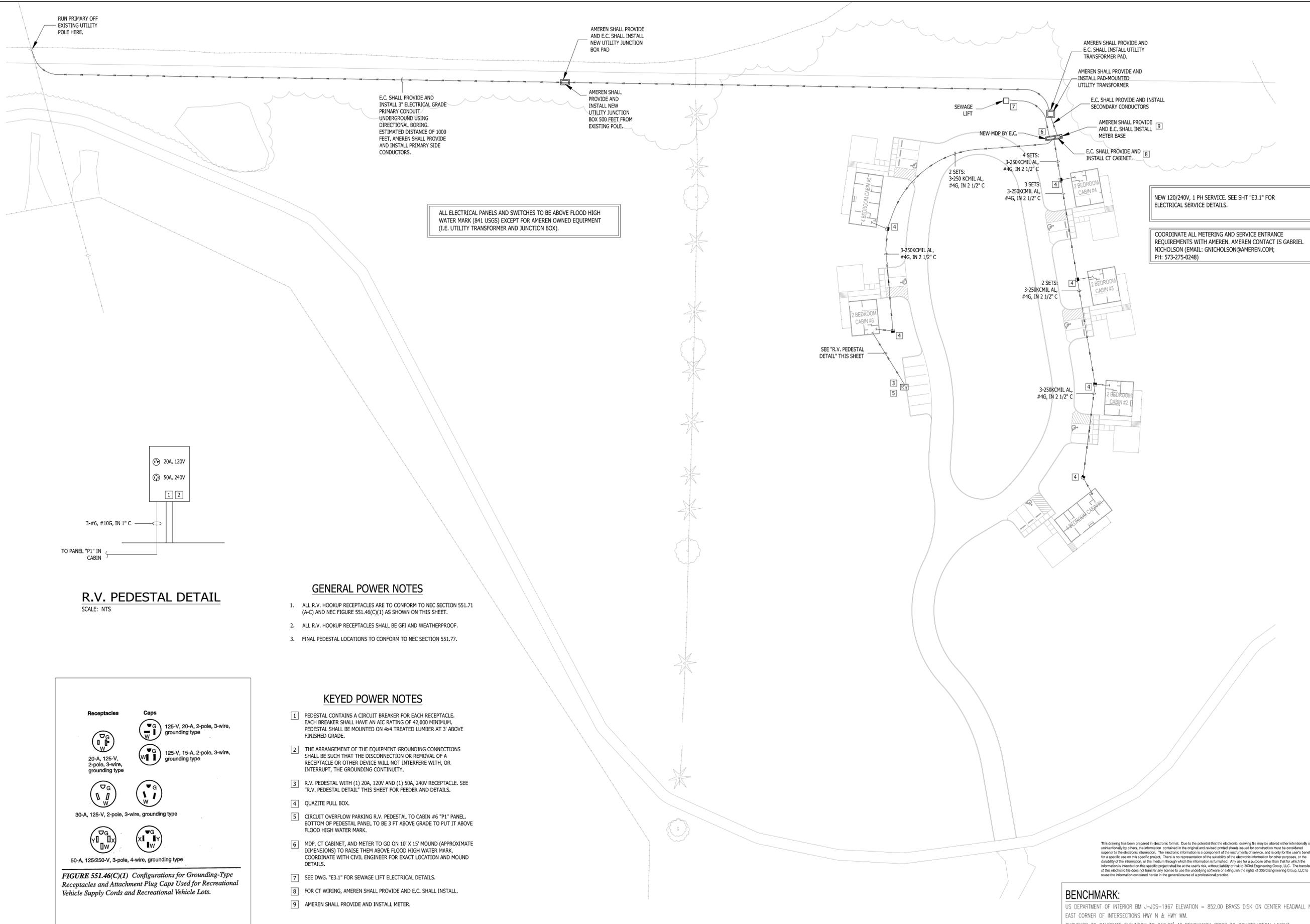
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NO.	DATE	DESCRIPTION

DATE: 04.11.2023
FE PROJECT #: 220058

CHECK: GRS

SHEET TITLE:
MECHANICAL
SCHEDULES AND
DETAILS



ALL ELECTRICAL PANELS AND SWITCHES TO BE ABOVE FLOOD HIGH WATER MARK (841 USGS) EXCEPT FOR AMEREN OWNED EQUIPMENT (I.E. UTILITY TRANSFORMER AND JUNCTION BOX).

NEW 120/240V, 1 PH SERVICE. SEE SHT "E3.1" FOR ELECTRICAL SERVICE DETAILS.

COORDINATE ALL METERING AND SERVICE ENTRANCE REQUIREMENTS WITH AMEREN. AMEREN CONTACT IS GABRIEL NICHOLSON (EMAIL: GNICHOLSON@AMEREN.COM; PH: 573-275-0248)

RUN PRIMARY OFF EXISTING UTILITY POLE HERE.

E.C. SHALL PROVIDE AND INSTALL 3" ELECTRICAL GRADE PRIMARY CONDUIT UNDERGROUND USING DIRECTIONAL BORING. ESTIMATED DISTANCE OF 1000 FEET. AMEREN SHALL PROVIDE AND INSTALL PRIMARY SIDE CONDUCTORS.

AMEREN SHALL PROVIDE AND E.C. SHALL INSTALL NEW UTILITY JUNCTION BOX PAD

AMEREN SHALL PROVIDE AND E.C. SHALL INSTALL NEW UTILITY JUNCTION BOX 500 FEET FROM EXISTING POLE.

AMEREN SHALL PROVIDE AND E.C. SHALL INSTALL UTILITY TRANSFORMER PAD.

AMEREN SHALL PROVIDE AND E.C. SHALL INSTALL UTILITY TRANSFORMER

E.C. SHALL PROVIDE AND INSTALL PAD-MOUNTED UTILITY TRANSFORMER

AMEREN SHALL PROVIDE AND E.C. SHALL INSTALL SECONDARY CONDUCTORS

AMEREN SHALL PROVIDE AND E.C. SHALL INSTALL METER BASE

E.C. SHALL PROVIDE AND INSTALL CT CABINET.

NEW MDP BY E.C.

4 SETS: 3-250KCMIL AL, #4G, IN 2 1/2" C

3 SETS: 3-250KCMIL AL, #4G, IN 2 1/2" C

2 SETS: 3-250 KCMIL AL, #4G, IN 2 1/2" C

3-250KCMIL AL, #4G, IN 2 1/2" C

2 SETS: 3-250KCMIL AL, #4G, IN 2 1/2" C

2 SETS: 3-250KCMIL AL, #4G, IN 2 1/2" C

3-250KCMIL AL, #4G, IN 2 1/2" C

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3-250KCMIL AL, #4G, IN 2 1/2" C

2 SETS: 3-250KCMIL AL, #4G, IN 2 1/2" C

3-250KCMIL AL, #4G, IN 2 1/2" C

2 SETS: 3-250KCMIL AL, #4G, IN 2 1/2" C

3-250KCMIL AL, #4G, IN 2 1/2" C

2 SETS: 3-250KCMIL AL, #4G, IN 2 1/2" C

3-250KCMIL AL, #4G, IN 2 1/2" C

2 SETS: 3-250KCMIL AL, #4G, IN 2 1/2" C

3-250KCMIL AL, #4G, IN 2 1/2" C

2 SETS: 3-250KCMIL AL, #4G, IN 2 1/2" C

3-250KCMIL AL, #4G, IN 2 1/2" C

2 SETS: 3-250KCMIL AL, #4G, IN 2 1/2" C

3-250KCMIL AL, #4G, IN 2 1/2" C

2 SETS: 3-250KCMIL AL, #4G, IN 2 1/2" C

3-250KCMIL AL, #4G, IN 2 1/2" C

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3-250KCMIL AL, #4G, IN 2 1/2" C

2 SETS: 3-250KCMIL AL, #4G, IN 2 1/2" C

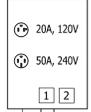
3-250KCMIL AL, #4G, IN 2 1/2" C

2 SETS: 3-250KCMIL AL, #4G, IN 2 1/2" C

3-250KCMIL AL, #4G, IN 2 1/2" C

2 SETS: 3-250KCMIL AL, #4G, IN 2 1/2" C

3-250KCMIL AL, #4G, IN 2 1/2" C



R.V. PEDESTAL DETAIL

SCALE: NTS

GENERAL POWER NOTES

- ALL R.V. HOOKUP RECEPTACLES ARE TO CONFORM TO NEC SECTION 551.71 (A-C) AND NEC FIGURE 551.46(C)(1) AS SHOWN ON THIS SHEET.
- ALL R.V. HOOKUP RECEPTACLES SHALL BE GFI AND WEATHERPROOF.
- FINAL PEDESTAL LOCATIONS TO CONFORM TO NEC SECTION 551.77.

KEYED POWER NOTES

- PEDESTAL CONTAINS A CIRCUIT BREAKER FOR EACH RECEPTACLE. EACH BREAKER SHALL HAVE AN AIC RATING OF 42,000 MINIMUM. PEDESTAL SHALL BE MOUNTED ON 4x4 TREATED LUMBER AT 3' ABOVE FINISHED GRADE.
- THE ARRANGEMENT OF THE EQUIPMENT GROUNDING CONNECTIONS SHALL BE SUCH THAT THE DISCONNECTION OR REMOVAL OF A RECEPTACLE OR OTHER DEVICE WILL NOT INTERFERE WITH, OR INTERRUPT, THE GROUNDING CONTINUITY.
- R.V. PEDESTAL WITH (1) 20A, 120V AND (1) 50A, 240V RECEPTACLE. SEE "R.V. PEDESTAL DETAIL" THIS SHEET FOR FEEDER AND DETAILS.
- QUAZITE PULL BOX.
- CIRCUIT OVERFLOW PARKING R.V. PEDESTAL TO CABIN #6 "P1" PANEL. BOTTOM OF PEDESTAL PANEL TO BE 3 FT ABOVE GRADE TO PUT IT ABOVE FLOOD HIGH WATER MARK.
- MDP, CT CABINET, AND METER TO GO ON 10' X 15' MOUND (APPROXIMATE DIMENSIONS) TO RAISE THEM ABOVE FLOOD HIGH WATER MARK. COORDINATE WITH CIVIL ENGINEER FOR EXACT LOCATION AND MOUND DETAILS.
- SEE DWG. "E3.1" FOR SEWAGE LIFT ELECTRICAL DETAILS.
- FOR CT WIRING, AMEREN SHALL PROVIDE AND E.C. SHALL INSTALL.
- AMEREN SHALL PROVIDE AND INSTALL METER.

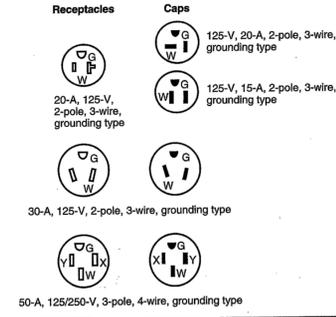


FIGURE 551.46(C)(1) Configurations for Grounding-Type Receptacles and Attachment Plug Caps Used for Recreational Vehicle Supply Cords and Recreational Vehicle Lots.

NEC FIGURE 551.46(C)(1)

SITE PLAN

SCALE: 1" = 40'

BENCHMARK:

US DEPARTMENT OF INTERIOR BM J-JDS-1967 ELEVATION = 852.00' BRASS DISK ON CENTER HEADWALL NORTH EAST CORNER OF INTERSECTIONS HWY N & HWY MM. SURVEYOR TO CALIBRATE ELEVATION TO 852.00' AT BENCHMARK PRIOR TO CONSTRUCTION LAYOUT. BEARING BASIS: MISSOURI GEOGRAPHIC REFERENCE SYSTEM STATION RE-061.

CONTROL POINT BENCHMARK:

NORTHING = 624729.2990
EASTING = 718315.9090
ELEVATION = 852.00' BRASS DISK

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STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR

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SIX NEW FULL SERVICE CABINS - JOHNSON'S SHUT-INS STATE PARK

PROJECT # X2206-01
SITE # 5213
FACILITY # 7815213016, 7815213017, 7815213018, 7815213019, 7815213020, 7815213021

REVISIONS

NO.	DATE	DESCRIPTION

DATE: 04.11.2023
303 PROJECT #: 058A-2012

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SHEET TITLE:

SITE PLAN

65 OF 75 SHEETS
SHEET NUMBER

E1.2

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**SIX NEW
FULL SERVICE
CABINS -
JOHNSON'S
SHUT-INS
STATE PARK**

PROJECT # X2206-01
SITE # 5213
FACILITY # 7815213017, 7815213018,
7815213019, 7815213021

REVISIONS

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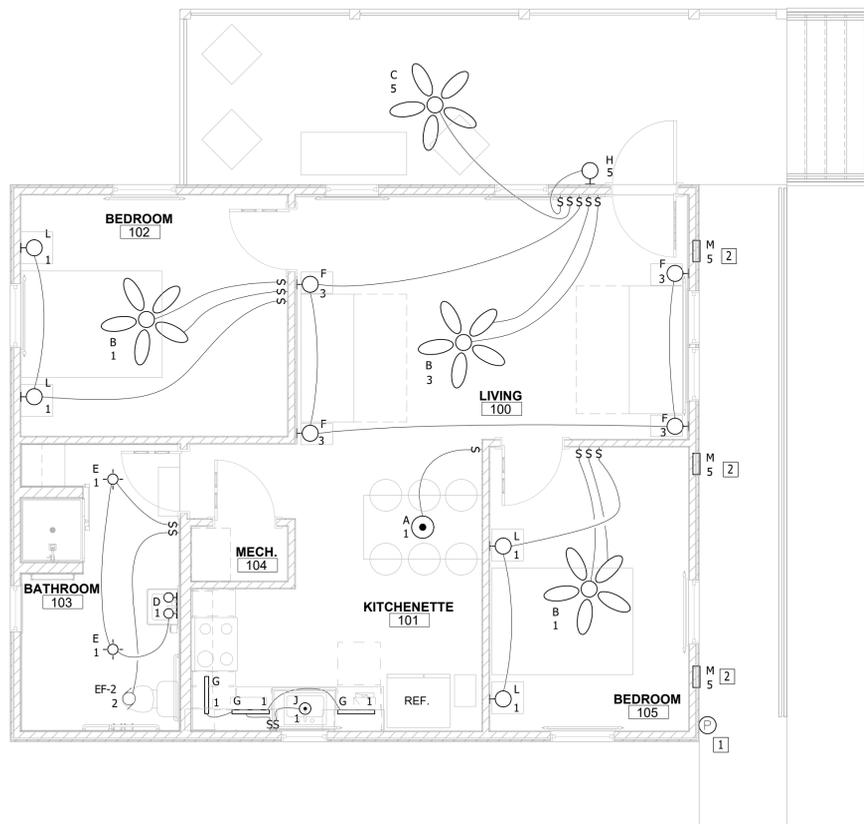
SHEET TITLE:

**2 BEDROOM
CABIN FLOOR
PLAN**

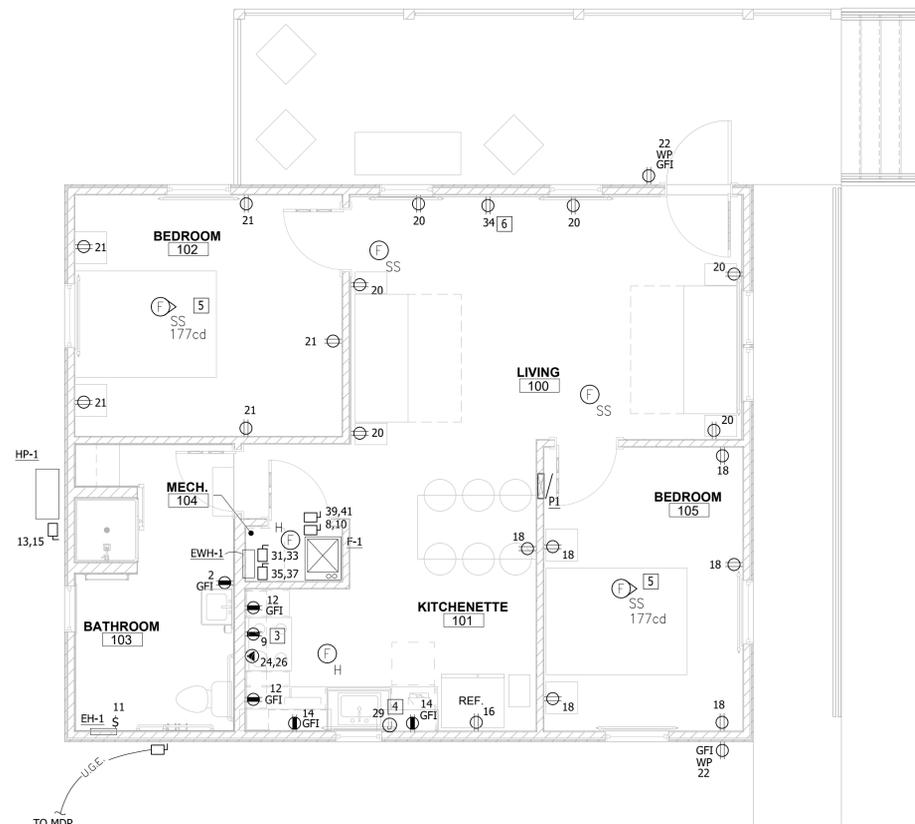
66 OF 75 SHEETS

SHEET NUMBER

E2.1



2 BR CABIN PLAN - LIGHTING
SCALE: 1/4" = 1'-0"



2 BR CABIN PLAN - POWER
SCALE: 1/4" = 1'-0"

GENERAL NOTES

- SEE ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF LIGHT FIXTURES.
- CONNECT ALL EXIT SIGNS TO AN UNSWITCHED LEG OF CIRCUIT SHOWN.
- CONNECT NIGHT LIGHTS TO AN UNSWITCHED LEG OF CIRCUIT SHOWN.
- FOR LIGHTS WITH EMERGENCY BATTERY BACK-UP: NORMAL DUTY BALLAST TO BE SWITCHED. EMERGENCY BALLAST TO OPERATE UPON POWER FAILURE ONLY.
- PROVIDE WIRING AS REQUIRED BY MANUFACTURER FOR ALL DIMMABLE LED LIGHTING FIXTURES. WIRING WILL VARY DEPENDING ON TYPE OF DIMMING UTILIZED.
- ALL FIRE ALARM SINGLE STATION DETECTORS TO HAVE 120V CONNECTION (SEE PANEL SCHEDULE FOR CIRCUIT #) AND BATTERY BACKUP. ALL DETECTORS TO BE INTERCONNECTED TO ALLOW SIMULTANEOUS ALARM WHEN ANY ONE GOES INTO ALARM.
- PROVIDE HEAT TRACE ON EVERY DRAIN "P-TRAP" BENEATH CABIN FLOOR OUTSIDE OF THE VAULT. HEAT TRACE TO BE 20W/FT MAX, SELF REGULATING WITH THERMOSTAT TO TURN ON AT 40°F. COVER AREA WITH 1" INSULATION. PROVIDE CIRCUIT ON 30mA GCFI CIRCUIT BREAKER. SEE PANEL SCHEDULE FOR CIRCUIT DETAILS.
- DESIGN TEAM AND OWNER TO APPROVE LOCATIONS OF ALL LIGHTS, FANS, SWITCHES, RECEPTACLES, THERMOSTATS, FIRE ALARM DEVICES, AND ANY OTHER APPLICABLE DEVICE PRIOR TO ROUGH-IN.

KEYED NOTES

- MOUNT PHOTOCELL UNDER ROOF EAVE ON NORTH SIDE OF CABIN (LOCATION SHOWN ON DWG. FOR REFERENCE ONLY). PHOTOCELL ONLY OPERATES RECESSED STEPLIGHTS "M".
- RECESS STEPLIGHT 6" ABOVE FINISHED FLOOR.
- POWER AT 60" AFF FOR RANGE HOOD. E.C. TO FIELD VERIFY FINAL HEIGHT. RANGE HOOD IS OWNER FURNISHED, CONTRACTOR INSTALLED.
- J-BOX UNDER CABINET FOR DISHWASHER. E.C. TO COORDINATE FINAL LOCATION WITH OWNER/ARCHITECT.
- PROVIDE 177 CANDELA SINGLE STATION FIRE ALARM STROBES ABOVE BEDS IN BEDROOMS OF ADA/HEARING IMPAIRED UNITS AND SINGLE STATION HORNS IN OTHER UNITS.
- DEDICATED 120V OUTLET (NEMA 5-20R) SWITCHED AT THE BREAKER BOX FOR FUTURE LOW WATTAGE ELECTRIC FIRE PLACE. WATTAGE NOT TO EXCEED 1500W.

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CONTROL POINT BENCHMARK:

NORTHING = 624729.2990
EASTING = 718315.9090
ELEVATION = 852.00' BRASS DISK

NEW MDP PANEL																			
LOAD	LOAD, KVA					O.C.P.		CKT	PH	CKT	LOAD, KVA					LOAD			
	LTG	REC	MTR	HEAT	A/C	A	P				LTG	REC	MTR	HEAT	A/C				
CABIN #1 (4BR) PANEL "P2"	**	**	**	**	**	200	2	1	A	2	1	20							
CABIN #2 (2BR) PANEL "P1"	**	**	**	**	**	200	2	3	B	4	1	20							
CABIN #3 (2BR) PANEL "P1"	**	**	**	**	**	200	2	5	A	6	1	20							
CABIN #4 (2BR) PANEL "P1"	**	**	**	**	**	200	2	7	B	8	1	20							
CABIN #5 (4BR) PANEL "P2"	**	**	**	**	**	200	2	9	A	10	1	20							
CABIN #6 (2BR) PANEL "P1"	**	**	**	**	**	200	2	11	B	12	1	20							
						200	2	13	A	14	1	20							
						200	2	15	B	16	1	20							
						200	2	17	A	18	1	20							
						200	2	19	B	20	1	20							
						200	2	21	A	22	1	20							
						200	2	23	B	24	1	20							
SEWAGE EJECTOR SYSTEM				24.0		125	2	25	A	26	1	20							
						20	1	27	B	28	1	20							
						20	1	29	A	30	1	20							
ODD CIRCUIT CONNECTED, KVA	*	*	*	*	*								*	*	*	*	*		EVEN CIRCUIT CONNECTED KVA
ODD & EVEN CONNECTED KVA	*	*	*	*	*								*	*	*	*	*		
DEMAND FACTOR	*	*	*	*	*								*	*	*	*	*		
TOTAL DEMAND KVA	*	*	*	*	*								*	*	*	*	*		

* SEE "800A MDP CALCULATION" TABLE FOR MDP LOADS
** SEE CABIN LOAD CALCULATIONS FOR CABIN LOADS

PANEL DESCRIPTION	
AMPS	800
VOLTAGE	120 / 240
PHASE	1PH, 3W
MAIN CIRCUIT BREAKER	800
FEED	
AIC RATING	65,000
LOCATION	SEE SITE PLAN

ALL CIRCUIT BREAKERS SHALL BE SERIES RATED FOR 65,000 AIC WITH MAIN CIRCUIT BREAKER.

CONNECTED KVA	*	KVA
DEMAND KVA	*	KVA
CONNECTED AMPS	*	AMPS
DEMAND AMPS	*	AMPS

PANEL "P1"																			
LOAD	LOAD, KVA					O.C.P.		CKT	PH	CKT	LOAD, KVA					LOAD			
	LTG	REC	MTR	HEAT	A/C	A	P				LTG	REC	MTR	HEAT	A/C				
INT. LIGHTING	0.5					20	1	1	A	2	1	20	0.2	0.2					103 EF-2 & REC.
INT. LIGHTING	0.2					20	1	3	B	4	2	60			10.0				RV PEDESTAL (CABIN #6 ONLY)
EXT. LIGHTING	0.5					20	1	5	A	6	2	45							
SPARE						20	1	7	B	8	2	45							
RANGE HOOD		1.5				20	1	9	A	10	2	45			8.0				F-1 (HEATING KIT)
EH-1				1.0		20	1	11	B	12	1	20	1.5						KIT. CONV. REC.
HP-1			2.7			15	2	13	A	14	1	20	1.5						KIT. CONV. REC.
SPARE						20	1	15	B	16	1	20	0.8						FRIDGE
SPARE						20	1	17	A	18	1	20	1.1						CONV. REC.
CONV. REC.		0.9				20	1	19	B	20	1	20	1.1						CONV. REC.
SPARE						20	1	21	A	22	1	20	0.4						EX. CONV. REC.
SPARE						20	1	23	B	24	2	40			8.0				RANGE
SPARE						20	1	25	A	26	2	40							
SPARE						20	1	27	B	28	1	20	0.5						FIRE ALARM STATIONS
DISHWASHER			1.8			20	1	29	A	30	1	20	0.2						FIRE SPRINKLER ALARM
EWH-1 (1ST CHAMBER)			9.0			50	2	31	B	32	1	20			0.1				HEAT TAPE ON P-TRAPS
						50	2	33	A	34	1	20	1.5						REC - FUTURE FIRE PLACE
EWH-1 (2ND CHAMBER)			9.0			50	2	35	B	36	1	20							SPARE
						50	2	37	A	38	1	20							SPARE
						50	2	39	B	40	1	20							SPARE
F-1 (AIR HANDLER)			1.2			15	2	41	A	42	1	20							SPARE
ODD CIRCUIT CONNECTED, KVA	1	2	24	1	0														PASS THRU LOAD
ODD & EVEN CONNECTED KVA	1	11	42	9	0								0	9	18	8	0		EVEN CIRCUIT CONNECTED KVA
DEMAND FACTOR	*	*	*	*	*								*	*	*	*	*		
TOTAL DEMAND KVA	*	*	*	*	*								*	*	*	*	*		

* SEE "2BR CABIN LOAD CALCULATIONS" TABLE FOR DEMAND LOADS

PANEL DESCRIPTION	
AMPS	200
VOLTAGE	120 / 240
PHASE	1PH 3W
MAIN CIRCUIT BREAKER	200
FEED	SEE RISER
AIC RATING	65,000
LOCATION	2BR CAB.

ALL CIRCUIT BREAKERS SHALL BE SERIES RATED FOR 65,000 AIC WITH MAIN CIRCUIT BREAKER.

CONNECTED KVA	63.3	KVA
DEMAND KVA	*	KVA
CONNECTED AMPS	263.8	AMPS
DEMAND AMPS	*	AMPS

PANEL "P2"																			
LOAD	LOAD, KVA					O.C.P.		CKT	PH	CKT	LOAD, KVA					LOAD			
	LTG	REC	MTR	HEAT	A/C	A	P				LTG	REC	MTR	HEAT	A/C				
INT. LIGHTING	1.0					20	1	1	A	2	1	20	0.2	0.2					103 EF-2 & REC.
INT. LIGHTING	1.0					20	1	3	B	4	1	20							SPARE
EXT. LIGHTING	0.5					20	1	5	A	6	1	20							SPARE
SPARE						20	1	7	B	8	2	55							
RANGE HOOD		1.5				20	1	9	A	10	2	55			10.0				F-2 (HEATING KIT)
EH-1				1.0		20	1	11	B	12	1	20	1.5						KIT. CONV. REC.
HP-2			3.7			20	2	13	A	14	1	20	1.5						KIT. CONV. REC.
106 EF-1 & REC	0.2	0.2				20	1	15	B	16	1	20	0.8						FRIDGE
CONV. REC.		1.8				20	1	17	A	18	1	20	1.3						CONV. REC.
CONV. REC.		0.9				20	1	19	B	20	1	20	0.9						CONV. REC.
SPARE						20	1	21	A	22	1	20	0.4						EX. CONV. REC.
SPARE						20	1	23	B	24	2	40			8.0				RANGE
SPARE						20	1	25	A	26	2	40							
SPARE						20	1	27	B	28	1	20	0.5						FIRE ALARM STATIONS
DISHWASHER			1.8			20	1	29	A	30	1	20	0.2						FIRE SPRINKLER ALARM
EWH-2 (1ST CHAMBER)			8.0			45	2	31	B	32	1	20			0.1				HEAT TAPE ON P-TRAPS
						45	2	33	A	34	2	15			1.2				F-2 (AIR HANDLER)
EWH-2 (2ND CHAMBER)			8.0			45	2	35	B	36	1	20	1.5						REC - FUTURE FIRE PLACE
						45	2	37	A	38	1	20							SPARE
EWH-2 (3RD CHAMBER)			8.0			45	2	39	B	40	1	20							SPARE
ODD CIRCUIT CONNECTED, KVA	3	4	30	1	0														PASS THRU LOAD
ODD & EVEN CONNECTED KVA	3	13	39	11	0								0	9	9	10	0		EVEN CIRCUIT CONNECTED KVA
DEMAND FACTOR	*	*	*	*	*								*	*	*	*	*		
TOTAL DEMAND KVA	*	*	*	*	*								*	*	*	*	*		

* SEE "4BR CABIN LOAD CALCULATIONS" TABLE FOR DEMAND LOADS

PANEL DESCRIPTION	
AMPS	200
VOLTAGE	120 / 240
PHASE	1PH 3W
MAIN CIRCUIT BREAKER	200
FEED	SEE RISER
AIC RATING	65,000
LOCATION	4BR CAB.

ALL CIRCUIT BREAKERS SHALL BE SERIES RATED FOR 65,000 AIC WITH MAIN CIRCUIT BREAKER.

CONNECTED KVA	65.8	KVA
DEMAND KVA	*	KVA
CONNECTED AMPS	274.1	AMPS
DEMAND AMPS	*	AMPS

2 BR Cabin Load Calculations

This table is based on the National Electrical Code (NEC), section 220.82.

General Information	
Voltage	120/240, 1 phase
Cabin Square Feet	900
Num. of Small Appliance Circuits	4

General Loads	
Type	Load [VA]
Lighting/Gen. Receptacles	2700
Small Appliance Circuits	6000
Range	8000
Dishwasher	1800
Water Heater	18000
RV Pedestal (only for cabin #6)	10000
Sub-total before Demand Factor	46500
Sub-total after Demand Factor*	24600

Heating and Air Conditioning Loads	
Type	Load [VA]
Heat Pump Load	3000
Supplemental Heat Load	9200
Sub-total before Demand Factor	12200
Sub-total after Demand Factor**	8980

TOTAL CABIN LOAD IN AMPS* 140**

Notes
* General Load Demand Factor is the first 10KVA plus 40% of the remainder of the load
** Heating and A/C Demand Factor is 100% of the heat pump load plus 65% of Supplemental Heat
*** Sub-totals after demand factors divided by 240

4 BR Cabin Load Calculations

This table is based on the National Electrical Code (NEC), section 220.82.

General Information	
Voltage	120/240, 1 PHASE
Cabin Square Feet	1270
Num. of Small Appliance Circuits	4

General Loads	
Type	Load [VA]
Lighting/Gen. Receptacles	3810
Small Appliance Circuits	6000
Range	8000
Dishwasher	1800
Water Heater	24000
Sub-total before Demand Factor	436

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SIX NEW
FULL SERVICE
CABINS -
JOHNSON'S
SHUT-INS
STATE PARK

PROJECT # X2206-01
SITE # 5213
FACILITY # 7815213017, 7815213018,
7815213019, 7815213021

REVISIONS		
NO.	DATE	DESCRIPTION

DATE: 04.11.2023

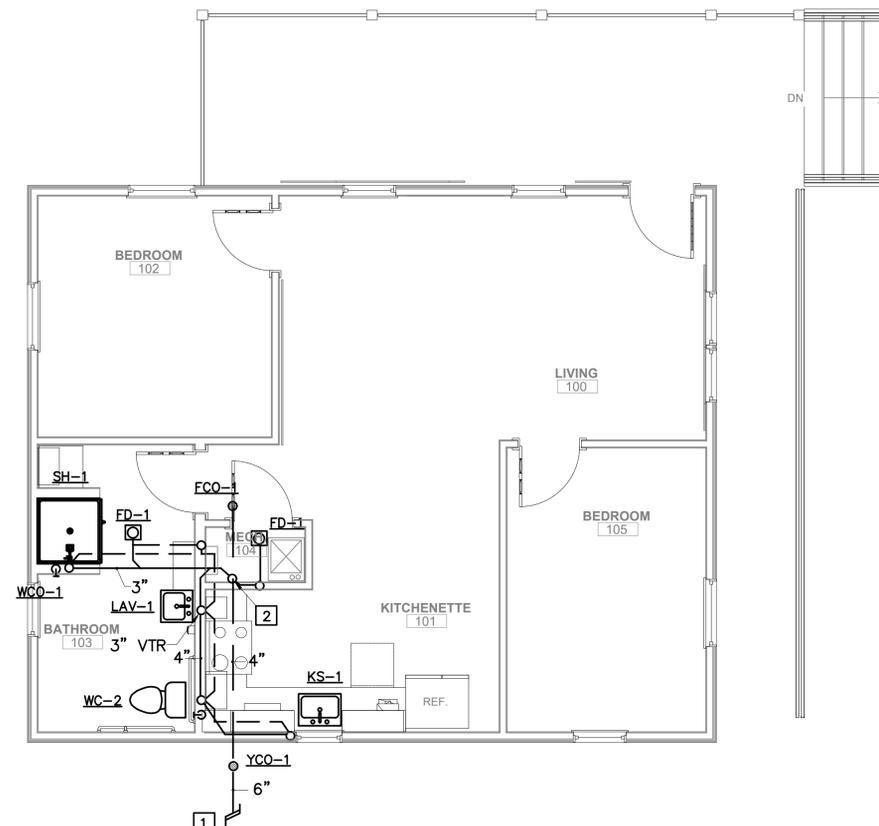
FE PROJECT #:
220058

CHECK: GRS

SHEET TITLE:
2 BEDROOM
PLUMBING PLANS

70 OF 75 SHEETS
SHEET NUMBER

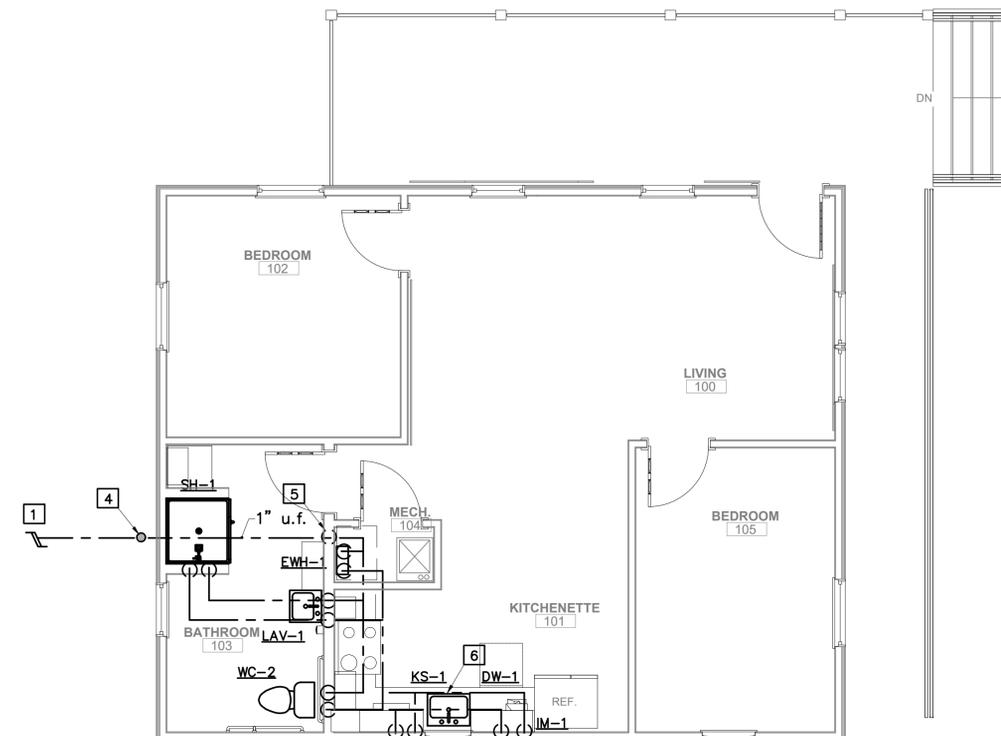
P1



2 BEDROOM CABIN PLAN

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

DWV



2 BEDROOM CABIN PLAN

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

DOMESTIC WATER

KEYED NOTES:

- 1 SEE CIVIL PLANS FOR CONTINUATION.
- 2 4" SANITARY DOWN PLUMBING CHASE.
- 3 4" SANITARY UNDERGROUND TO PLUMBING CHASE.
- 4 EXTERIOR WATER SHUT-OFF VALVE WITH DRAIN IN VALVE BOX, SEE "VALVE BOX DETAIL".
- 5 1" WATER SERVICE UP PLUMBING CHASE INTO BUILDING, INSTALL SHUT-OFF VALVE IN WALL, G.C. PROVIDE ACCESS PANEL TO VALVE.
- 6 ROUTE WATER PIPING UP HIGH UNDER COUNTER TOP.

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PROJECT # X2206-01
SITE # 5213
FACILITY # 7815213016, 7815213020

REVISIONS

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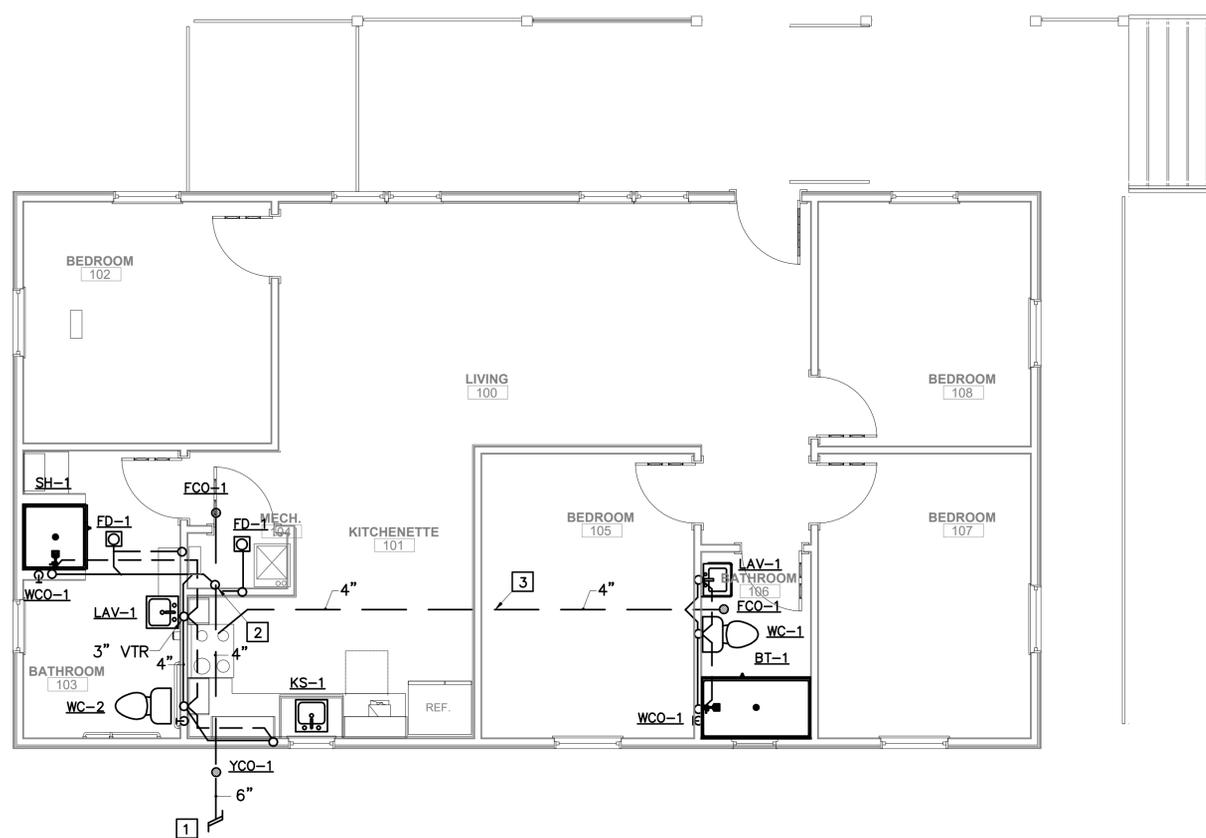
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SHEET TITLE:
4 BEDROOM
PLUMBING PLANS

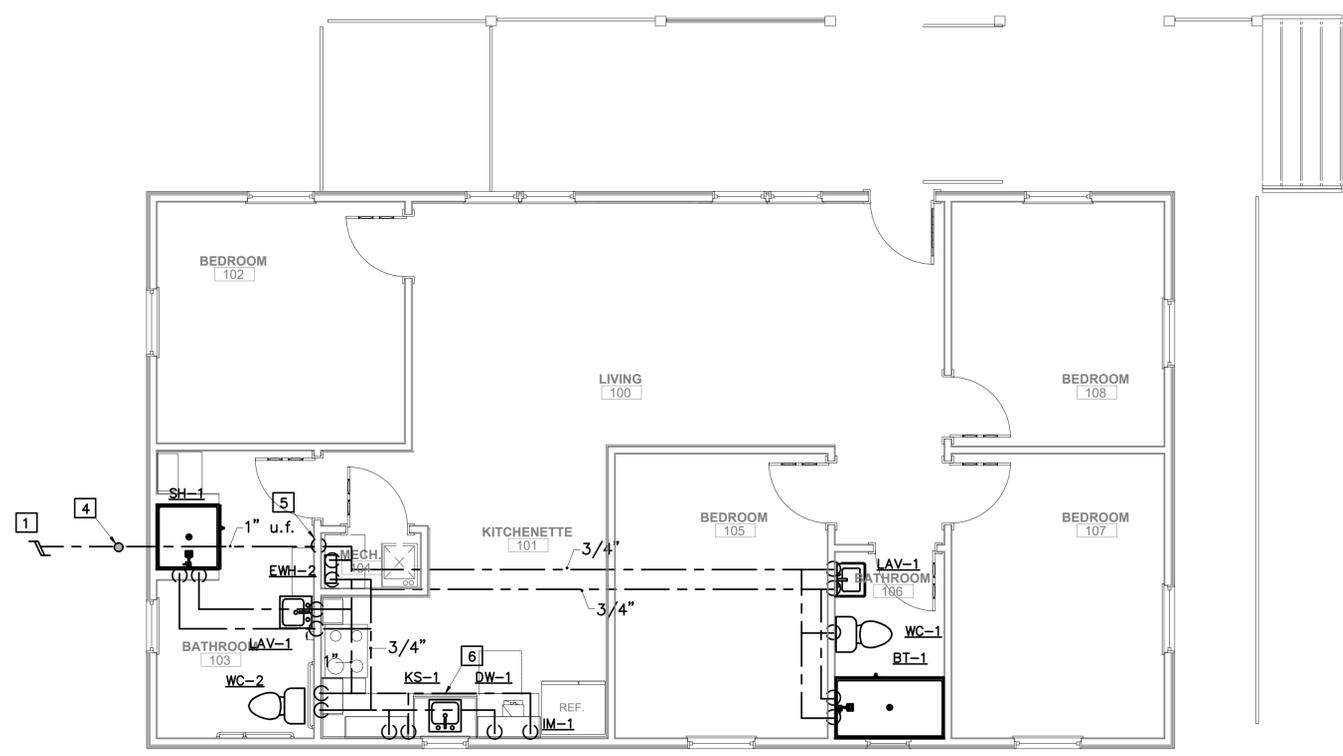
71 OF 75 SHEETS
SHEET NUMBER

P2



4 BEDROOM CABIN PLAN

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

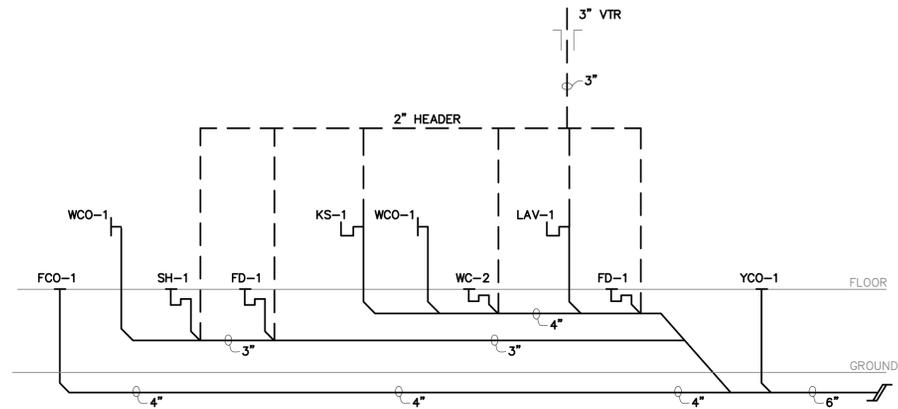


4 BEDROOM CABIN PLAN

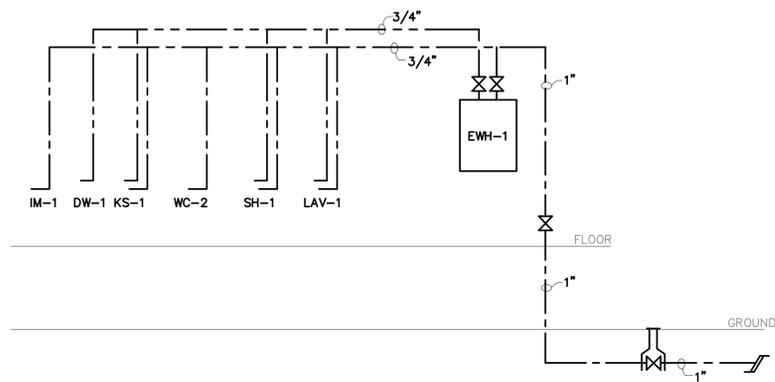
SCALE: 1/4"=1'-0" DOMESTIC WATER

KEYED NOTES:

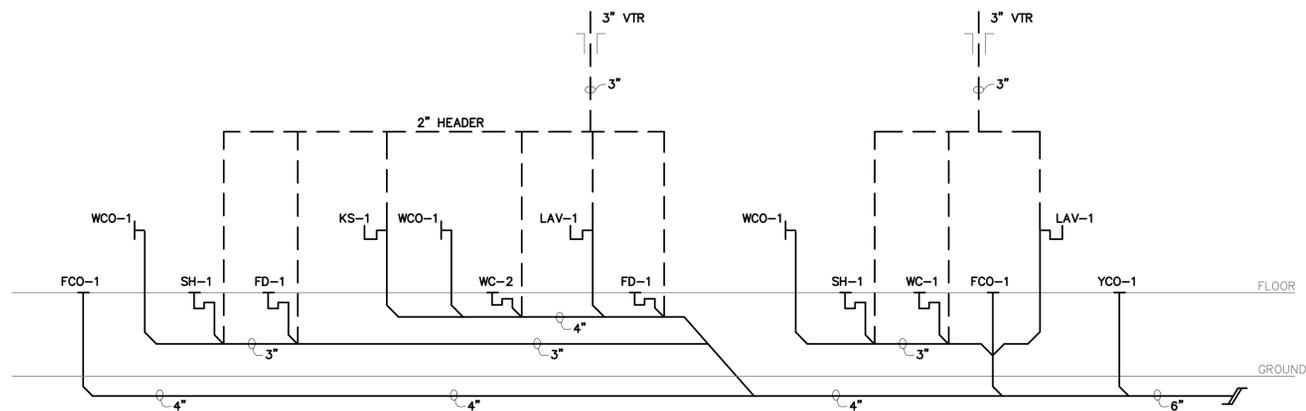
- 1 SEE CIVIL PLANS FOR CONTINUATION.
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- 6 ROUTE WATER PIPING UP HIGH UNDER COUNTER TOP.



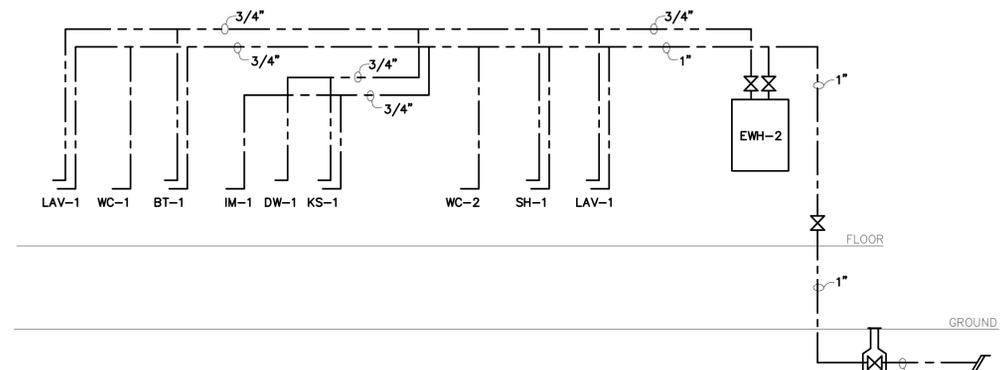
2 BEDROOM DOMESTIC WASTE AND VENT RISER DIAGRAM
NTS



2 BEDROOM DOMESTIC WATER RISER DIAGRAM
NTS



4 BEDROOM DOMESTIC WASTE AND VENT RISER DIAGRAM
NTS



4 BEDROOM DOMESTIC WATER RISER DIAGRAM
NTS



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STATE PARK**

PROJECT # X2206-01
SITE # 5213
FACILITY # 7815213016, 7815213017,
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REVISIONS		
NO.	DATE	DESCRIPTION

DATE: 04.11.2023

FE PROJECT #:
220058

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SHEET TITLE:
**PLUMBING RISER
DIAGRAMS**

72 OF 75 SHEETS
SHEET NUMBER

P3

PLUMBING PIPING SCHEDULE

PIPING SYSTEM	LOCATION	PIPE MATERIALS				JOINING METHOD				INSULATION			NOTES			
		SIZE	MAT.	T/S	>SIZE MAT. T/S	SIZE	METHOD	>SIZE METHOD	HEAT TRACE	TH	TYPE	JACKET				
POTABLE WATER	ABOVE GROUND	2-1/2"	CJ	"L"	3"	CJ	SERV	2-1/2"	SW	3"	GR	-	1"	FG/FE	ASA/-	1
POTABLE WATER	BELOW GRADE	3"	CJ	"K"	4"	DI	SERV	4"	SW/MECH	6"	MECH	-	-	-	-	-
WASTE & VENT	R. A. PLENUM	8"	CI	SERV	8"	CI	SERV	8"	NH/HS	8"	NH/HS	-	-	-	-	-
WASTE & VENT	ABOVE & BELOW FLOOR	8"	PVC	40	8"	PVC	40	8"	SOL	8"	SOL	-	-	-	-	-

NOTES:
1) INSULATE ALL HOT WATER PIPING AND ALL WATER PIPING LOCATED IN EXTERIOR WALLS.

<p>LEGEND:</p> <p>ASJ ALL SERVICE JACKET BR BRAZED BS BLACK STEEL CPVC CHLORINATED POLYVINYL CHLORIDE CS CARBON STEEL CJ CAST IRON CU COPPER DI DUCTILE IRON FE FIBERGLASS ELASTOMETRIC FG FUSION WELDED FR GROOVED GR GALVANIZED STEEL HT HIGH TEMPERATURE (PLENUM RATED)</p>	<p>HVY HEAVY DUTY HUB & SPOOT HS MECHANICAL NO-HUB NH POLYPROPYLENE PP POLYVINYL CHLORIDE PVC SOLVENT WELDED SCR SCREENED SOL SOLVENT WELDED SS STAINLESS STEEL SERV SERVICE WEIGHT SW SWEAT T/S TYPE OR SCHEDULE WLD WELDED</p>
---	--

ELECTRIC WATER HEATER SCHEDULE

MARK	MANF.	MODEL	TANK CAPACITY	KW	VOLT/PH	TEMP RISE AT 2 GPM	TURN ON (GPM)	MAX FLOW (GPM)	ACCESSORIES
EW1-1	EEMAX	EX180	TANKLESS	18	240/1	61F	.7	4	1 2 3 4
EW1-2	EEMAX	EX240	TANKLESS	24	240/1	82F	.7	5	1 2 3 4

- 1 SHUT-OFF VALVES AT CONNECTION 5 SUBSTITUTE FOR WATER HEATER OTHER THAN WHATS SPECIFIED SHALL BE AVAILABLE "OFF THE SHELF" FROM NATIONAL HOME IMPROVEMENT CENTERS.
- 2 BUILT IN OVER TEMP PROTECTION
- 3 MOUNT ON WALL
- 4 MICROPROCESSOR CONTROL
- 5 FLOW SWITCH TO ACTIVATE HEATER

PLUMBING FIXTURE SCHEDULE

WC-1	WATER CLOSET (WC-1) - AMERICAN STANDARD CADET #3517C.101, 1.28 GPF, VITREOUS CHINA, ELONGATED BOWL, WHITE, BOLT CAPS, TANK TYPE, ANTIBACTERIAL TOILET SEAT, HARDWARE TO BE STEEL.
WC-2	ADA WATER CLOSET (WC-2) - AMERICAN STANDARD CADET #3517A.001, ADA COMPLIANT, 1.28 GPF, VITREOUS CHINA, ELONGATED BOWL, WHITE, BOLT CAPS, TANK TYPE, ANTIBACTERIAL TOILET SEAT, HARDWARE TO BE STEEL.
LAV-1	WALL HUNG LAVATORY (LAV-1) - AMERICAN STANDARD LUCERNE #0355.012, FAUCET HOLES 4" ON CENTER, WHITE ADA COMPLIANT, VITREOUS CHINA WITH CARRIER, OFFSET P-TRAP, FAUCET: MOEN CAL #84502 SINGLE HANDLE FAUCET, WITH POP-UP, CHROME, ADA COMPLIANT AND ALL NECESSARY PIPING, INSULATE PIPING PER ADA REQUIREMENTS WITH "TRU BRO" INSULATION KIT.
SK-1	KITCHEN SINK (SK-1) - ELKAY #125224 SINGLE BOWL SINK, DROP IN, ADA COMPLIANT, 18 GAUGE 304 STAINLESS STEEL, DECK MOUNT, ADA COMPLIANT, CHROME PLATED, BASKET STRAINERS.
SK-1	KITCHEN SINK (SK-1) - ELKAY #125224 SINGLE BOWL SINK, DROP IN, ADA COMPLIANT, 18 GAUGE 304 STAINLESS STEEL, OVERALL SINK DIMENSIONS 25"x22"x6", SATIN FINISH, FAUCET: MOEN #8720 SINGLE HANDLE FAUCET, SWIVEL GOOSENECK SPOUT, DECK MOUNT, ADA COMPLIANT, CHROME PLATED, BASKET STRAINERS.
BT-1	BATHTUB (BT-1) - AMERICAN STANDARD #2394.202 BATHTUB, WHITE ACID RESISTANT PORCELAIN FINISH WITH CHROME PLATED POP-UP DRAIN AND OVERFLOW, FAUCET: MOEN #8339 ADA COMPLIANT SINGLE HANDLE PRESSURE BALANCING TUB-SHOWER VALVE, DIVERTER SPOUT AND SHOWER HEAD, WITH AMERICAN STANDARD 60306SWS FIBERGLASS SHOWER TUB ENCLOSURE.
SH-1	SHOWER (SH-1) - BEST BATH #4LRS363685B BARRIER FREE SHOWER, ADA COMPLIANT, GRAB BARS, FOLDING SEAT, MOLDED FOUR PIECE GELCOAT/FIBERGLASS SHOWER MODULE, CHROME DRAIN, 1" SHAPED RUBBER WATER STOPPER KIT, SOAP TRAY(S), SHOWER CURTAIN ROD, FAUCET: MOEN #F934228M25, THREE FUNCTION SHOWER SYSTEM, PRESSURE BALANCING VALVE, DIVERTER VALVE, TEMPERATURE LIMIT STOP, STATIONARY SHOWER HEAD AND HAND HELD SHOWER WITH INTEGRATED BACKFLOW PREVENTION, SHOWER HOSE AND GRAB BAR, REFER TO ARCHITECTURAL PLANS FOR SHOWER DIMENSIONS AND DETAILS
IM-1	ICE MACHINE VALVE BOX (IM-1) - OATLEY #12K ICE MAKER BOX, HIGH IMPACT POLYSTYRENE BOX, 1/2" BRASS VALVE WITH COPPER CONNECTION, SNAP ON FACEPLATE FRAME.
FD-1	FLOOR DRAIN (FD-1) ZURN #Z4158, DURA COATED CAST IRON BODY WITH BRONZE TOP, ADJUSTABLE COLLAR, 2" OUTLET.
FCO-1	FLOOR CLEANOUT (FCO-1) - ZURN #Z1400 EXTRA HEAVY DUTY LEVEL-TROL ADJUSTABLE FLOOR CLEANOUT, WITH POLISHED NICKEL BRONZE TOP.
WCO-1	WALL CLEANOUT (WCO-1) - ZURN #Z1400 EXTRA HEAVY DUTY LEVEL-TROL ADJUSTABLE FLOOR CLEANOUT, WITH POLISHED NICKEL BRONZE TOP.
YCO-1	YARD CLEANOUT (YCO-1) - JAY R SMITH #851-46N, SEE FINISHED GRADE CLEANOUT DETAIL.

NOTES:
1. WATER HAMMER ARRESTORS: J.R. SMITH, #5005 WATER HAMMER ARRESTOR, FURNISH AT RISER ON ALL BRANCHES.
2. ALL PLUMBING FIXTURES SHALL COMPLY WITH ALL STATE AND LOCAL CODES.
3. INSTALL ALL VACUUM BREAKERS, BACK FLOW DEVICES, QUICK OPENING VALVES, HOSES, BRACKETS, FITTINGS, AND MATERIAL REQUIRED BY STATE AND LOCAL CODES. INSTALL AS REQUIRED BY MANUFACTURER'S RECOMMENDATIONS.
4. PLUMBING CONTRACTOR TO LEAVE ALL PLUMBING FIXTURES CLEAN AND READY FOR OPERATION.

PLUMBING FIXTURE PIPING SCHEDULE

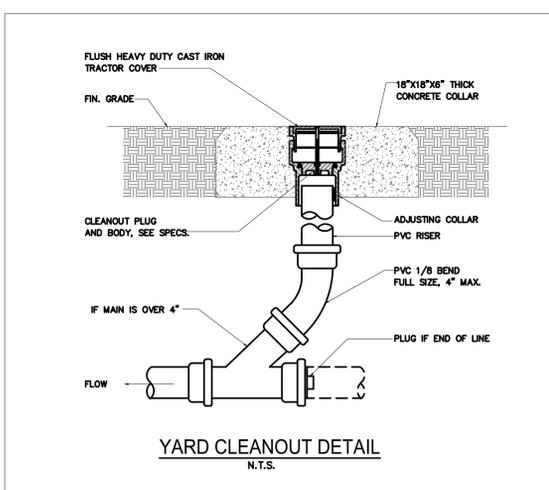
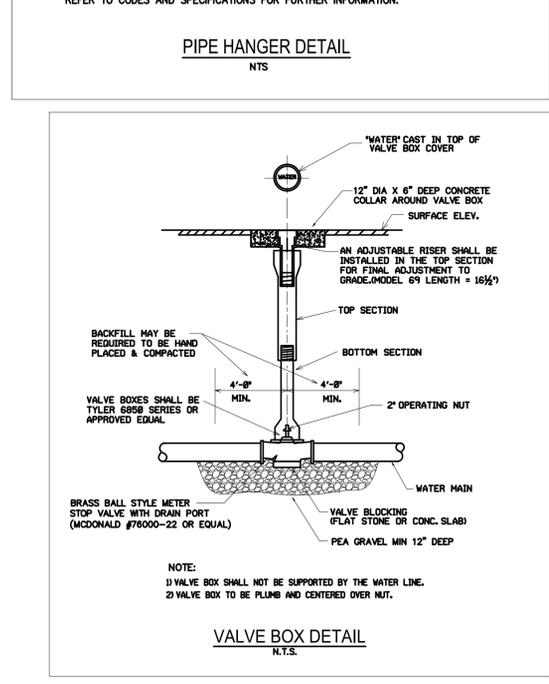
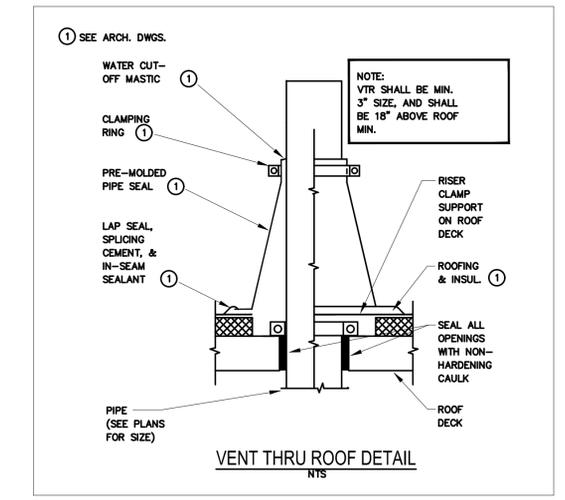
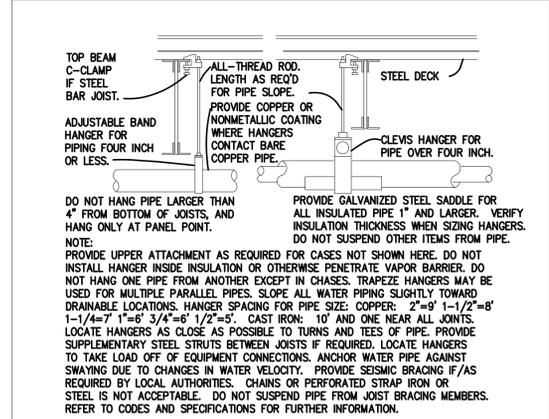
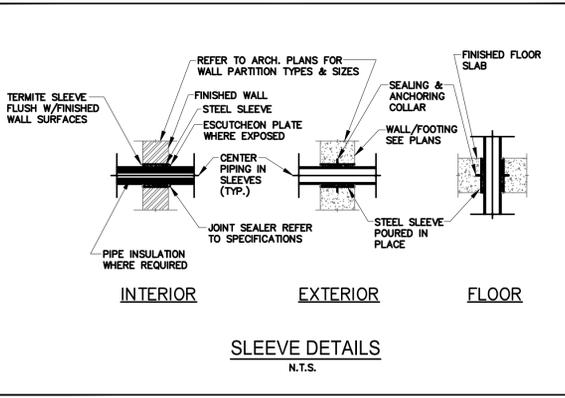
MARK	TYPE OF FIXTURE	DRAINAGE		WATER		REMARKS
		W.P.	V.P.	C.W.	H.W.	
WC-1	WATER CLOSET	3"	2"	1"	-	
WC-2	ADA WATER CLOSET	3"	2"	1"	-	
LAV-1	LAVATORY	1 1/2"	1 1/2"	1/2"	1/2"	
SK-1	KITCHEN SINK	1 1/2"	1 1/2"	1/2"	1/2"	
BT-1	BATHTUB	2"	1 1/2"	1/2"	1/2"	
SH-1	SHOWER	2"	1 1/2"	1/2"	1/2"	
WH-1	WALL HYDRANT	-	-	3/4"	-	
FD-1	FLOOR DRAIN	2"	1 1/2"	-	-	
IM-1	ICE MACHINE VALVE BOX	-	-	1/2"	-	
DW-1	DISHWASHER	-	-	-	1/2"	

PLUMBING NOTES:

- PROVIDE A COMPLETE AND OPERATING PLUMBING SYSTEM AS INDICATED ON THE DRAWINGS. THE INSTALLATION SHALL BE COMPLETE WITH ALL FIXTURES, FITTINGS TRIM AND ACCESSORIES TO PROVIDE A COMPLETE FUNCTIONING SYSTEM.
- WORK PLANS TO BE CONSIDERED AS DIAGRAMMATIC AND REFLECT A MINIMUM ACCEPTABLE STANDARD. ALL WORK SHALL CONFORM TO THE PLUMBING CODE, AND THE AMERICANS WITH DISABILITIES ACCESSIBILITY GUIDELINES.
- PROVIDE ALL WORK AND MATERIALS AS REQUIRED HEREIN AND ON THE DRAWINGS IN FULL ACCORDANCE WITH STATE AND LOCAL CODES, ORDINANCES AND/OR REGULATIONS HAVING JURISDICTION OVER THIS WORK.
- INTERIOR WATER PIPING TO BE TYPE "L" COPPER WITH LEAD FREE SOLDER JOINTS.
- ALL FIXTURES AND ROUGH INS TO BE COMPLETE WITH SUPPLY PIPES WITH STOPS. ALL PIPING AND STOPS TO BE CHROME PLATED WERE EXPOSED TO VIEW.
- AIR CHAMBERS SHALL BE PROVIDED AT WATER SUPPLY CONNECTIONS TO EACH FIXTURE OR PROVIDE SHOCK ARRESTORS PER FIXTURE GROUP AS RECOMMENDED BY PDI INSTITUTE AND MANUFACTURER.
- ALL LAVATORY FAUCETS AND HAND WASHING SINKS TO BE PROVIDED WITH AN AUTOMATIC SAFETY WATER-MIXING DEVICE. THE DEVICE SHALL BE EITHER THERMOSTATIC PRESSURE BALANCED OR COMBINATION CONTROLLED WHICH SHALL BE ADJUSTED TO A MAXIMUM SETTING OF 115° WATER AT THE TIME OF INSTALLATION.
- ACCESSIBLE SHUTOFF VALVES TO BE PROVIDED FOR EACH TOILET ROOM, GENERAL CONTRACTOR TO PROVIDE 8"x8" (MIN.) ACCESS PANEL FOR SHUTOFF VALVES WHERE REQUIRED.
- INSULATE ALL HOT WATER PIPING AND ALL PIPING LOCATED IN EXTERIOR WALLS.
- LOCATIONS OF NEW FIXTURES, EQUIPMENT, PIPING AND ASSOCIATED ITEMS SHOWN ON THE DRAWINGS ARE SCHEMATIC. CONTRACTOR SHALL SEE ARCHITECTURAL PLANS AND FIELD VERIFY EXACT LOCATION AND ELEVATION OF ALL WORK. PROVIDE OFFSETS FITTINGS, TRANSITIONS, EXTENSIONS, ETC. REQUIRED FOR A COMPLETE SYSTEM.
- ALL SANITARY PIPING BELOW CONCRETE SLAB FLOOR SHALL BE 2" MIN.
- ISOLATE COPPER PIPE FROM HANGER OR SUPPORTS WITH ISOLATOR PAD, FILL VOIDS BETWEEN PIPING AND WALL/FLOOR SLEEVES WITH FIRE RATED FOAM.
- COORDINATE ALL SANITARY AND WATER WORK WITH LOCAL UTILITY COMPANY OR AUTHORITIES HAVING JURISDICTION.
- DIELECTRIC COUPLINGS ARE REQUIRED BETWEEN ALL DISSIMILAR METAL IN PIPING AND EQUIPMENT CONNECTIONS.
- REFER TO PLUMBING FIXTURE SCHEDULE FOR FIXTURE PIPE SIZE CONNECTIONS.
- WHERE PVC PIPING PASSES THROUGH RATED BARRIERS, FIRE STOPPING WILL BE REQUIRED, INCLUDING BUT NOT LIMITED TO FIRE CAULKING AND INTUMESCENT COLLARS AS APPROPRIATE.
- NO CHANGES IN CONTRACT PRICE WILL BE ALLOWED FOR MINOR CHANGES IN LAYOUT OR LOCATION REQUIRED TO AVOID INTERFERENCES, OBSTRUCTIONS, ETC. CONTRACT PRICE CHANGES WILL BE CONSIDERED ONLY FOR CHANGES IN THE SCOPE OF THE PROJECT REQUIREMENTS. ALL SUCH SCOPE CHANGES AND PRICE REVISIONS MUST BE AUTHORIZED IN WRITING.
- ALL WATER CLOSET VENTS SHALL BE A MINIMUM OF 2" IN SIZE.
- INSTALL ALL PLUMBING VENTS THRU ROOF WITH PROPER ROOF FLASHING AND ARE TO BE A MIN. 10 FT FROM ANY HVAC FRESH AIR INTAKE.
- CONTRACTOR SHALL PROVIDE CLEANOUTS WERE EVER REQUIRED BY CODE WETHER INDICATED ON PLANS OR NOT.
- INSTALL ALL VACUUM BREAKERS, BACK FLOW DEVICES, QUICK OPENING VALVES, HOSES, BRACKETS, FITTINGS, AND MATERIAL WERE REQUIRED BY LOCAL CODES. INSTALL PER MANUFACTURERS RECOMMENDATION.
- NO PIPING SHALL BE INSTALLED ABOVE ELECTRICAL PANELS.
- EXPOSED PIPING IS ONLY ALLOWED IN MECHANICAL ROOMS, JANITORS ROOMS, WAREHOUSE AND STORAGE CLOSETS.
- ALL ELBOWS, FITTINGS, ETC., IN PIPING REQUIRED TO CLEAR ALL JOB OBSTRUCTIONS ARE NOT NECESSARILY INDICATED. ALL NECESSARY TRANSITIONS, FITTINGS AND OFFSETS ARE REQUIRED WHETHER SHOWN ARE NOT.
- MAINTAIN INDICATED FIRE RATING OF WALLS, PARTIONS AND CEILINGS, AND FLOORS AT FIRE RATED PIPE PENETRATIONS WITH APPROVED FIRESTOPPING MATERIALS.
- PIPE INSULATION, COVERINGS, LININGS AND ADHESIVES WHEN USED SHALL HAVE A FLAME SPREAD INDEX NOT MORE THAN TWENTY-FIVE (25) AND A SMOKE DEVELOPED INDEX NOT MORE THAN FIFTY (50) WHEN TESTED IN ACCORDANCE WITH ASTM E 84.
- SEE ADD ALTERNATE #1 FOR THE SHOWER AND SHOWER/TUB SURROUND, REFERENCE ARCHITECTURAL DRAWINGS FOR DETAILS.
- PLUMBING CONTRACTOR SHALL ACCESS AND ASSESS WATER QUALITY REPORTS FOR COMPLIANCE WITH WITH SPECIFIED MODELS TO DETERMINE THE NEED FOR ANY WATER CONDITIONING.

PIPING SYMBOLS

—○—	TEE DOWN	— —	GATE OR BALL VALVE
—●—	TEE UP	- - - - -	SANITARY BELOW FLOOR
—○—	ELBOW DOWN	- - - - -	VENT
—●—	ELBOW UP	- - - - -	COLD WATER
— —	UNION	- - - - -	HOT WATER



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OFFICE OF ADMINISTRATION
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DESIGN AND CONSTRUCTION



SIX NEW FULL SERVICE CABINS - JOHNSON'S SHUT-INS STATE PARK

PROJECT # X2206-01
SITE # 5213
FACILITY # 7815213016, 7815213017, 7815213018, 7815213019, 7815213020, 7815213021

REVISIONS

NO.	DATE	DESCRIPTION

DATE: 04.11.2023
FE PROJECT #: 220058

CHECK: GRS

SHEET TITLE:
PLUMBING NOTES,
SCHEDULES AND
DETAILS

73 OF 75 SHEETS
SHEET NUMBER

FIRE PROTECTION LEGEND

10'-0" ELEVATION FROM FLOOR TO CENTERLINE OF PIPE

0'-0" ELEVATION DOWN FROM DECK TO CENTERLINE OF PIPE

TS	CONTROL VALVE TAMPER SWITCH
FS	WATERFLOW SWITCH
	BUTTERFLY VALVE
	GATE VALVE
	CHECK VALVE
	RISER CHECK VALVE
	EXTERIOR ELECTRIC BELL
	REQUIRED PIPE SLEEVE
	HYDRAULIC REFERENCE POINT
	RIGID PIPE STANDARD UNLESS NOTED OTHERWISE
	FLEXIBLE OR REDUCER PIPE
	BALL VALVE LOCATION
	BRANCHLINE RESTRAINT
	4-WAY TOP OF RISER SEISMIC BRACE
	LATERAL SEISMIC BRACE
	LONGITUDINAL SEISMIC BRACE
AFF	ABOVE FINISHED FLOOR
S.C.	SPRINKLER CONTRACTOR
G.C.	GENERAL CONTRACTOR
E.C.	ELECTRICAL CONTRACTOR
F.A.C.	FIRE ALARM CONTRACTOR
QR	QUICK RESPONSE



1 2 BEDROOM CABIN FIRE PROTECTION PLAN
1/4" = 1'-0"

SCOPE OF WORK

INSTALL A LIMITED AREA SPRINKLER SYSTEM FOR THE NEW CABINS AT JOHNSON'S SHUT-INS STATE PARK. SPRINKLER PROTECTION WILL BE LIMITED TO ONE SPRINKLER IN THE MECHANICAL ROOM OF EACH CABIN. THE SPRINKLER TO BE SUPPLIED FROM THE DOMESTIC WATER SYSTEM AND WILL BE CONSIDERED A MULTIPURPOSE PIPING SYSTEM IN ACCORDANCE WITH SECTION 6.3 OF NFPA 13D.

APPLICABLE CODES

2018 INTERNATIONAL BUILDING CODE
2016 NFPA 13- STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS
2016 NFPA 13D- STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS IN ONE- AND TWO-FAMILY DWELLINGS AND MANUFACTURED HOMES

FIRE PROTECTION GENERAL NOTES

- INSTALL ALL WORK IN STRICT COMPLIANCE WITH THE NFPA 13D, NFPA 13, AND ALL APPLICABLE STATE AND LOCAL LAWS.
- INSTALL ALL SYSTEM COMPONENTS IN STRICT ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.
- PIPING SHALL BE COPPER AND SHALL MEET NFPA 13D AND NFPA 13 REQUIREMENTS.
- INSTALL HANGERS IN ACCORDANCE WITH NFPA 13 AND THE MANUFACTURER'S SPECIFICATIONS.
- INSTALL SEISMIC BRACING OF ALL SPRINKLER SYSTEM PIPING IN ACCORDANCE WITH NFPA 13.
- PROVIDE UL LISTED FIRESTOP SYSTEM AT ANY PIPING PENETRATION OF RATED WALLS, FLOORS OR CEILINGS.
- CLEARANCE SHALL BE PROVIDED AROUND ALL PIPING EXTENDING THROUGH WALLS, FLOORS, PLATFORMS, AND FOUNDATIONS, INCLUDING DRAINS, FIRE DEPARTMENT CONNECTIONS, AND OTHER AUXILIARY PIPING IN ACCORDANCE WITH NFPA 13.
- ALL CONTROL VALVES, DRAIN VALVES, TEST CONNECTION VALVES AND FIRE DEPARTMENT CONNECTION SHALL BE PROVIDED WITH PERMANENTLY MARKED WEATHERPROOF METAL OR RIGID PLASTIC IDENTIFICATION SIGNS.
- A STOCK OF SPARE SPRINKLERS SHALL CONSIST OF AT LEAST TWO SPRINKLERS OF EACH TYPE AND TEMPERATURE RATING ALONG WITH THE MANUFACTURER'S SPECIFIED WRENCH FOR EACH SPRINKLER HEAD. THE SPRINKLERS SHALL BE KEPT IN A CABINET LOCATED WHERE THE TEMPERATURE TO WHICH THEY ARE SUBJECTED WILL AT NO TIME EXCEED 100°F PER NFPA 13.
- THE UNDERGROUND MAIN SHALL BE THOROUGHLY FLUSHED BY THE INSTALLING CONTRACTOR IN ACCORDANCE WITH NFPA 24. THE CONTRACTOR CANNOT CONNECT TO THE UNDERGROUND FIRE SERVICE MAIN UNTIL THIS FLUSHING IS COMPLETED AND DOCUMENTED.
- PROPER SPRINKLER TEMPERATURE RATING SHALL BE VERIFIED IN FIELD BY THE INSTALLING CONTRACTOR AND SHALL COMPLY WITH NFPA 13.
- PERFORM A 200 PSI HYDROSTATIC TEST AS REQUIRED BY NFPA 13D.

FIRE PROTECTION KEYED NOTES

- 1 BRASS PENDENT OR UPRIGHT SPRINKLER SUPPLIED FROM DOMESTIC WATER PIPING SYSTEM. ARRANGE SYSTEM AS A "MULTIPURPOSE PIPING SYSTEM" IN ACCORDANCE WITH SECTION 6.3 OF NFPA 13D. FINAL LOCATION OF THE SPRINKLER SHALL BE DETERMINED BY THE CONTRACTOR.

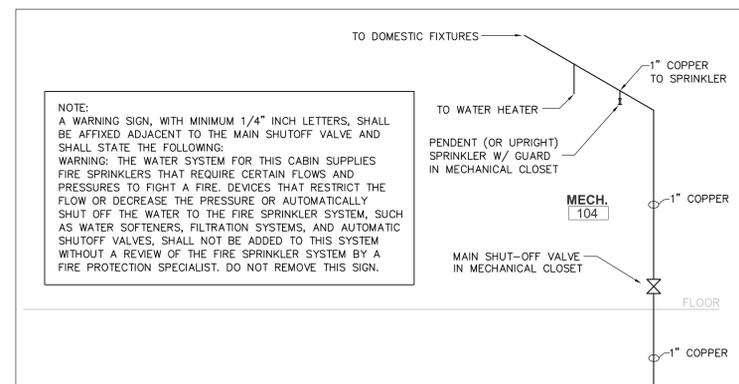
WATER SUPPLY

THE PARK HAS A WATER SUPPLY SYSTEM CONSISTING OF A WELL AND WELL PUMP THAT SUPPLIES AN ELEVATED WATER STORAGE TANK. A 4" MAIN FROM THE WATER STORAGE TANK SUPPLIES DOMESTIC WATER TO SOME AREAS OF THE PARK. A NEW UNDERGROUND MAIN WILL CONNECT TO THAT EXISTING 4" MAIN TO SUPPLY DOMESTIC/FIRE PROTECTION WATER TO THE NEW CABINS. A FLOW TEST WAS PERFORMED ON THE 4" MAIN WITH THE FOLLOWING RESULTS:
DATE: JUNE 7, 2022
TIME: 11:00 AM
FLOW HYDRANT: FLUSHING HYDRANT LOCATED NEAR THE INTERSECTION OF HIGHWAYS N AND MM. (APPROX. ELEVATION 851 FT.)
GAUGE HYDRANT: FLUSHING HYDRANT APPROXIMATELY 2625 FT. NORTH OF FLOW HYDRANT (APPROX. ELEVATION 885 FT.)

STATIC: 54 PSI
FLOW: 188 GPM
RESIDUAL: 30 PSI

SYMBOL	MAKE	MODEL	THREAD SIZE	DESCRIPTION	FINISH	TEMP	K-FACTOR	TOTAL
○	TYCO	TY2131	1/2"	QUICK RESPONSE UPRIGHT SPRINKLER	BRASS	200 F	4.2	1
TOTAL SPRINKLERS								1

NOTES:
1. ACCEPTABLE SPRINKLER MANUFACTURERS ARE TYCO, RELIABLE AND METCALIC.
2. EQUIVALENT PENDENT SPRINKLER IS ALSO ACCEPTABLE.
3. INSTALL RED SPRINKLER GUARD TO PROTECT SPRINKLER.



2 SPRINKLER RISER DIAGRAM
NO SCALE

BENCHMARK:

US DEPARTMENT OF INTERIOR BM J-JDS-1967 ELEVATION = 852.00 BRASS DISK ON CENTER HEADWALL NORTH EAST CORNER OF INTERSECTIONS HWY N & HWY MM.

SURVEYOR TO CALIBRATE ELEVATION TO 852.00' AT BENCHMARK PRIOR TO CONSTRUCTION LAYOUT.

BEARING BASIS: MISSOURI GEOGRAPHIC REFERENCE SYSTEM STATION RE-061.

CONTROL POINT BENCHMARK:

NORTHING = 624729.2990
EASTING = 718315.9090
ELEVATION = 852.00 BRASS DISK

STATE OF MISSOURI
MICHAEL L. PARSON
GOVERNOR

CONSTRUCTION DOCUMENTS

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2 BR CABIN
FIRE PROTECTION

74 OF 75 SHEETS

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FP1.0

