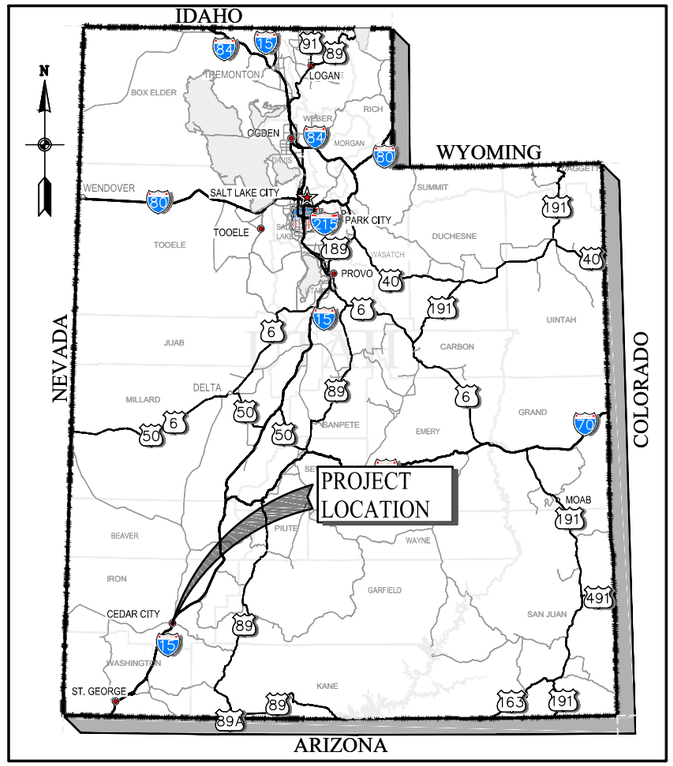
DRAWINGS FOR CONSTRUCTION OF THE

IRON COUNTY EWP PROJECT

IRON COUNTY, UTAH

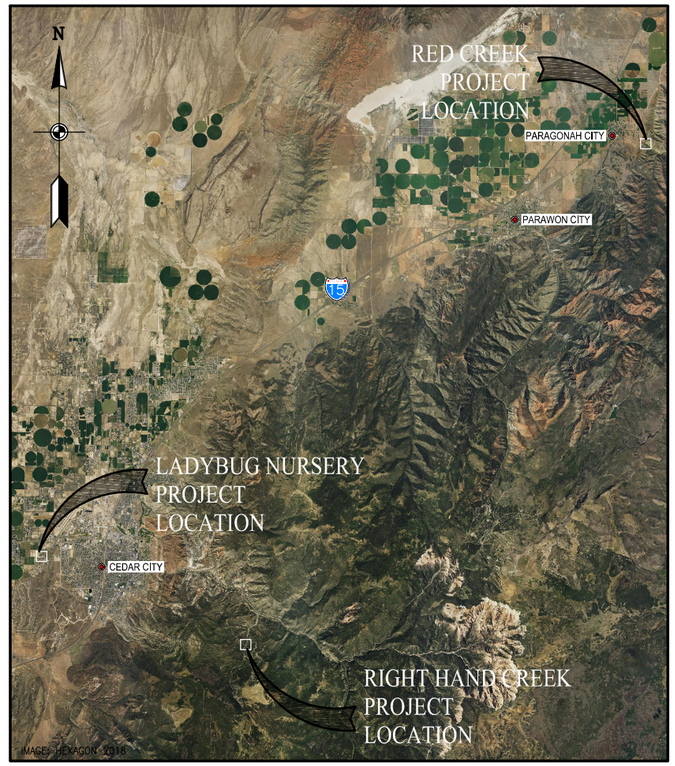
IRON COUNTY
UTAH / EST. 1851

USDA
United States Department of Agriculture
Natural Resources Conservation Service



PROJECT LOCATION MAP

SHT NO.	DWG NO.	DESCRIPTION
		GENERAL
01	G-01	TITLE PAGE, PROJECT LOCATION, INDEX OF DRAWINGS AND VICINITY MAP
02	G-02	ABBREVIATIONS
03	G-03	SYMBOLS AND NOTES
		CIVIL
04	C-01	LADYBUG NURSERY SITE IMPROVEMENTS
05	C-02	RIGHT HAND CREEK SITE PLAN AND PROFILE
06	C-03	RIGHT HAND CREEK GRADING PLAN
07	C-04	RIGHT HAND CREEK SECTION DETAILS
08	C-05	RED CREEK ROAD ROADWAY PLAN & PROFILE, AND GRADING PLAN
09	C-06	RED CREEK ROAD RECOMMENDED REPAIRS
		STRUCTURAL
10	S-01	RED CREEK ROAD STRUCTURAL DETAILS
11	S-02	RED CREEK ROAD WALL SECTIONS AND DETAILS
		GENERAL CIVIL
12	GC-01	CIVIL DETAILS – 1



PROJECT VICINITY MAP

PROFESSIONAL ENGINEER
No. 12968797
BRIANNA KNAGGS
STATE OF UTAH
9/21/2023
CIVIL

PROFESSIONAL STRUCTURAL ENGINEER
No. 318680
PRESTON WAYNE HUNTER
ELECTRONIC SEAL
STATE OF UTAH
9/21/2023
STRUCTURAL

Approved for Construction

Richard Wilson, P.E., County Engineer

To the best of my professional knowledge, judgement and belief, these plans meet applicable NRCS Standards.

Craig Bagley, P.E., Project Manager

BOWEN COLLINS & ASSOCIATES

NO.	DATE	REV. BY	DESCRIPTION

REVISIONS

IRON COUNTY/NRCS
IRON COUNTY EWP PROJECT
IRON COUNTY, UTAH

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING

DESIGN B. KNAGGS
DRAWN B. KNAGGS
REVIEW
CHECKED C. BAGLEY
APPROVED B. KNAGGS

GENERAL
TITTLE PAGE, PROJECT LOCATION INDEX OF DRAWINGS AND VICINITY MAP

DATE: SEPTEMBER 2023
PROJECT NUMBER 182-22-02

DRAWING NO.
G-01
SHEET 01 OF 12

S:\Iron County\182-22-02 Iron County EWP\2.0 Design Phase\2.7 Drawings\shts\1822202_G-01.dwg Plotted: 12/5/2023 9:22 AM By: Brianna Knaggs

©	AT
AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY TRANSPORTATION OFFICIALS
AB	ANCHOR BOLT
ABBR	ABBREVIATION
ABS	ACRYLONITRILE–BUTADIENE–STYRENE
AC	ASPHALTIC CONCRETE OR ALTERNATING CURRENT OR ACTIVATED CARBON
ACI	AMERICAN CONCRETE INSTITUTE
ACP	ASPHALTIC CONCRETE PAVEMENT
ADDL	ADDITIONAL
ADJ	ADJACENT OR ADJUSTABLE
AER	AERATION
AFF	ABOVE FINISH FLOOR
AGGR	AGGREGATE
AH	AIR HANDLER
AIR CONT	AIR CONDITIONING
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
AL	ALUMINUM, ALUM
ALTN	ALTERNATIVE, ALTERNATE
ANOD	ANODIZED
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX	APPROXIMATE
APVD	APPROVED
ARCH	ARCHITECTURAL
ARV	AIR RELEASE VALVE
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIAL
ASSY	ASSEMBLY
AUTO	AUTOMATIC
AUX	AUXILIARY
AVAR	AIR VACUUM AND AIR RELEASE VALVE
AWS	AMERICAN WELDING SOCIETY
AWWA	AMERICAN WATER WORKS ASSOCIATION
B & S	BELL & SPIGOT
BC	BEGIN CURVE, BOLT CIRCLE
BF	BLIND FLANGE, BUTTERFLY VALVE
BFG	BELOW FINISH GRADE
BFP	BACK FLOW PREVENTER
BFV	BUTTERFLY VALVE
BHD	BULKHEAD
BHP	BRAKE HORSEPOWER
BLDG	BUILDING
BLK	BLACK OR BLOCK
BLKG	BLOCKING
BLT	BOLT
BM	BEAM, BENCH MARK
BO	BLOW–OFF ASSEMBLY, BLOW–OFF
BOT	BOTTOM
BPS	BOOSTER PUMPING STATION
BPV	BACK PRESSURE VALVE
BRK	BRICK
BTU	BRITISH THERMAL UNIT
BTWN	BETWEEN
BUR	BUILT–UP ROOFING
BVC	BEGIN VERTICAL CURVE
BVCE	BEGIN VERTICAL CURVE ELEVATION
BVCS	BEGIN VERTICAL CURVE STATION
BW	BACK WASH, FILTER BACKWASH
C	CENTIGRADE OR CELSIUS
CAB	CABINET
CAP	CAPACITY
CARV	COMBINATION AIR RELEASE VALVE
CB	CATCH BASIN
CC	CENTER TO CENTER
CCP	CONCRETE CYLINDER PIPE
CD	CEILING DIFFUSER CHEMICAL DRAIN AND VENT
CER	CERAMIC
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CFR	CODE OF FEDERAL REGULATIONS
CFS	CUBIC FEET PER SECOND
CG	CHLORINE GAS
CGB	CORD GRIP BUSHING
CHBD	CHALKBOARD
CHEM	CHEMICAL
CHG	CHANGE
CHKD PL	CHECKERED PLATE
CI	CAST IRON
CIP	CAST IRON PIPE
CISP	CAST IRON SOIL PIPE
CJ	CONSTRUCTION JOINT
CJP	COMPLETE JOINT PENETRATION
CL	CHLORINATOR, CHAIN LINK, CENTERLINE OR CHLORINE

CLR	CLEAR, CLEARANCE
CLST	CEMENT LINED STEEL PIPE
CLSM	CONTROLLED LOW STRENGTH MATERIAL
CM	CENTIMETER
CML & C	CEMENT MORTAR LINED AND COATED
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CO	CLEANOUT
COL	COLUMN
COMM	COMMUNICATION
COMB	COMBINED
CONC	CONCRETE, CONCENTRIC
COND	CONDENSER, CONDENSATE
CONN	CONNECTION
CONST	CONSTRUCTION, CONSTRUCT
CONT	CONTINUED, CONTINUOUS, CONTINUATION
COORD	COORDINATE
COP	COPPER
COTG	CLEAN–OUT TO GRADE
CPLG	COUPLING
CPS	CULINARY PUMP STATION
CPVC	CHLORINATED POLYVINYL CHLORIDE
CS	CAST STEEL OR CAUSTIC SODA
CTRD	CENTERED
CTR	CENTER
CTSK	COUNTERSUNK
CU FT	CUBIC FOOT
CU IN	CUBIC INCH
CU YD	CUBIC YARD
CULV	CULVERT
CV	CHECK VALVE
CW	COLD WATER
CWO	CHAIN WHEEL OPERATOR
CYL	CYLINDER
d	PENNY
DBA	DEFORMED ANCHOR
DBL	DOUBLE
DC	DIRECT CURRENT
DEG	DEGREE
DEMO	DEMOLITION, DEMOLISH
DEQ	DEPARTMENT OF ENVIRONMENTAL QUALITY
DET	DETAIL
DI	DUCTILE IRON, DROP INLET
DIA	DIAMETER
DIAG	DIAGONAL
DIAPH	DIAPHRAGM
DIFF	DIFFUSER
DIM	DIMENSION
DIP	DUCTILE IRON PIPE
DIR	DIRECTION
DISCH	DISCHARGE
DIST	DISTANCE
DIV	DIVISION
D–LOAD	LOADING CONDITION FOR RCP
DMPR	DAMPER
DN	DOWN, DECANT
DOT	DEPARTMENT OF TRANSPORTATION
DP	DAMP PROOFING
DR	DOOR, DRAIN
DS	DRENCH SHOWER & EYE WASH, DOWNSPOUT
DWG	DRAWING
DWL	DOWEL
E(UG)	ELECTRICAL (UNDERGROUND)
E(OH)	ELECTRICAL (OVERHEAD POWER)
E	EAST
EA	EACH
EB	EXPANSION BOLT
EC	END CURVE
ECC	ECCENTRIC
EF	EACH FACE, EXHAUST FAN
EFF	EFFLUENT
EG	EXISTING GRADE
EL	ELEVATION
ELB	ELBOW
ELEV	ELEVATION
ELEC	ELECTRICAL, ELECTRONIC
EMB	EMBEDMENT
EMER	EMERGENCY
ENCL	ENCLOSURE
ENG	ENGINE
ENGR	ENGINEER
EP	EDGE OF PAVEMENT
EPDM	ETHYL PROPYLENE DIENE MONOMER
EPS	EXPANDED POLYSTYRENE
EQ	EQUAL
EQL SP	EQUALLY SPACED

EQUIP	EQUIPMENT
ETC	ETCETERA
EVAP	EVAPORATOR
EVC	END VERTICAL CURVE
EVCE	END VERTICAL CURVE ELEVATION
EVCS	END VERTICAL CURVE STATION
EW	EACH WAY, EYE WASH
EXH	EXHAUST
EXIST	EXISTING
EXP ANR	EXPANSION BOLT, ANCHOR
EXP JT	EXPANSION JOINT
EXT	EXTERIOR, EXTENSION, EXTERNAL
F	FAHRENHEIT, FACE
F TO F	FACE TO FACE
FAB	FABRICATION, FABRICATE, OR FABRICATED
FB	FLAT BAR
FC	FLEXIBLE COUPLING
FCA	FLANGE COUPLING ADAPTER
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FDN	FOUNDATION
FDR	FEEDER
FEXT	FIRE EXTINGUISHER
FF	FLAT FACE, FAR FACE, FINISH FLOOR
FG	FINISH GRADE, FLOW GLASS
FH	FIRE HYDRANT
FLR	FLOOR
FL	FLOW LINE
FLEX	FLEXIBLE
FLG	FLANGE
FM	FORCE MAIN (SANITARY SEWER)
FND	FOUND
FNSH	FINISH
FO	FIBER OPTIC
FRP	FIBERGLASS REINFORCED PLASTIC
FW	FINISH WATER
FWR	FINISH WATER RESERVOIR
G	GAS
GA	GAGE, GAUGE
GAL	GALLON
GALV	GALVANIZED
GEN	GENERATOR
GFI	GROUND FAULT INTERRUPTER
GI	GALVANIZED IRON
GIS	GEOGRAPHIC INFORMATION SYSTEM
GL	GLASS
GLAZ	GLAZING
GLV	GLOBE VALVE
GND	GROUND
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GR	GRADE
GR BRK	GRADE BREAK, GRADE CHANGE
GRTG	GRATING
GRV	GROOVED
GSP	GALVANIZED STEEL PIPE
GV	GATE VALVE
GYP	GYPSUM BOARD
H	HEIGHT
HAS	HEADED ANCHOR STUD
HB	HOSE BIBB
HD	HUB DRAIN
HDPE	HIGH DENSITY POLYETHYLENE
HDR	HEADER
HDW	HARDWARE
HEX	HEXAGONAL
HGR	HANGER
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HP	HORSEPOWER, HIGH PRESSURE,HEAT PUMP, HIGH POINT
HR	HEATING RETURN, HOUR, HOSE RACK
HS	HIGH STRENGTH
HSS	HOLLOW STRUCTURAL SECTION
HTG	HEATING
HTR	HEATER
HV	HOSE VALVE
HVAC	HEATING, VENTILATING AND AIR CONDITIONING
HWL	HIGH WATER LEVEL
HWO	HANDWHEEL OPERATED
HYD	HYDRANT, HYDRAULIC
ICFM	INLET CUBIC FEET PER MINUTE

ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IF	INSIDE FACE
IN	INCH
IN LB	INCH–POUND
INFL	INFLUENT
INSUL	INSULATING
INVT	INVERT
IOB	INLET OUTLET BYPASS
IPS	IRON PIPE SIZE
IRR	IRRIGATION
JA	JORDAN AQUEDUCT
JT	JOINT
JTS	JOINTS
JVWTP	JORDAN VALLEY WATER TREATMENT PLANT
K	KELVIN, KILO OR THOUSAND POUNDS
KG	KILOGRAM
KV	KILOVOLT
KW	KILOWATT
KWH	KILOWATT HOUR
L	LEFT OR LITER
LAB	LABORATORY
LAV	LAVATORY
LB	POUND
LC	LENGTH OF CURVE
LF	LINEAR FEET
LG	LENGTH OR LONG
LH	LEFT HAND
LIP	LIP OF GUTTER
LL	LIVE LOAD
LLV	LONG LEG VERTICAL
LOL	LENGTH OF LINE
LP	LOW POINT
LR	LONG RADIUS
LT	LIGHT, LEFT
LVL	LEVEL
LWL	LOW WATER LEVEL
LWR	LOWER
M	METER, MALE (PIPE THREAD)
MACH	MACHINE
MAN	MAGNETIC, MANUAL
MATL	MATERIAL
MAX	MAXIMUM
MB	MACHINE BOLT
MCC	MOTOR CONTROL CENTER
MECH	MECHANICAL, MECHANISM
MEMB	MEMBRANE
MET	METAL
MFR	MANUFACTURER
MG	MILLION GALLONS
MGD	MILLION GALLONS PER DAY
MH	MANHOLE, MONORAIL HOIST
MI	MALLEABLE IRON
MID	MIDDLE
MIL	1/1,000 INCH
MIN	MINIMUM OR MINUTE
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MO	MASONRY OPENING
MPH	MILES PER HOUR
MTG	MOUNTING
MTL	METAL OR MATERIAL
MTR	MOTOR
MWS	MAXIMUM WATER SURFACE
N	NORTH
NAVD	NORTH AMERICAN VERTICAL DATUM
NBS	NATIONAL BUREAU OF STANDARDS
NC	NORMALLY CLOSED
NE	NORTHEAST
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURES ASSOCIATION
NF	NEAR FACE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NO	NUMBER OR NORMALLY OPEN
NOM	NOMINAL
NPT	NATIONAL PIPE THREAD
NS	NEAR SIDE
NSF	NATIONAL SANITATION FOUNDATION
NTS	NOT TO SCALE

NW	NORTHWEST
O TO O	OUT TO OUT
OC	ON CENTER, OVER–CROSSING
OD	OUTSIDE DIAMETER, OVERALL DIMENSION
OF	OUTSIDE FACE, OVERFLOW
OFS	OVERFLOW STRUCTURE
OH	OVERHEAD
OPER	OPERATOR, OPERATING
OPNG	OPENING
OPP	OPPOSITE
ORIG	ORIGINAL
OVHD	OVERHEAD
OZ	OUNCE
PC	PORTLAND CEMENT, POINT OF CURVE OR PRIMARY CLARIFIER
PCC	PORTLAND CEMENT CONCRETE
PCF	POUNDS PER CUBIC FOOT
PE	PLAIN END, POLYELECTROLYTE POLYMER, POLYETHYLENE
PG	PRESSURE GAUGE
pH	HYDROGEN ION CONCENTRATION
PI	PLANT INFLUENT, POINT OF INTERSECTION
PJF	PREMOLDED JOINT FILLER
PL	PLATE, PROPERTY LINE, PLACE
PLYWD	PLYWOOD
PM	PUMP, PROPELLER METER
POB	POINT OF BEGINNING
PP	POTASSIUM PERMANGANATE
PPD	POUNDS PER DAY
PPH	POUNDS PER HOUR
PPM	PARTS PER MILLION
PR	PAIR
PRC	POINT OF REVERSE CURVE
PREFAB	PREFABRICATED
PRI	PRIMARY
PRV	PRESSURE REGULATING/REDUCING VALVE
PS	PRESSURE SWITCH, PUMP STATION
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAUGE
PT	POINT OF TANGENT, PRESSURE TREATED
PTDF	PRESSURE TREATED DOUGLAS FIR
PV	PAVEMENT
PVC	POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
PW	POTABLE WATER
RAD	RADIUS
RC	REINFORCED CONCRETE
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN OR ROAD
RDCR	REDUCER, REDUCING
RECIRC	RECIRCULATION
RED	REDUCING
REF	REFERENCE, REFER
REG	REGULATING, REGISTER
REINF	REINFORCE, REINFORCED
REQD	REQUIRED
REV	REVISION
RF	ROOF, RAISED FACE
RND	ROUND
RPM	REVOLUTIONS PER MINUTE
RP	RADIUS POINT
RS	RAW SEWAGE
RST	REINFORCING STEEL, RESET
RT	REGULATING TANK, RADIOGRAPHIC, RIGHT
RV	ROOF VENT
R/W	RIGHT OF WAY
RW	RAW WATER
S	SOUTH, SECOND
SA	SAMPLE, SAMPLE LINE
SCFM	STANDARD CUBIC FEET PER MINUTE
SCH	SCHEDULE
SD	STORM DRAIN
SECT	SECTION
SHT	SHEET
SIM	SIMILAR
SLP	SLOPE
SP	SPACING, STATIC PRESSURE
SPA	SPACED

SPEC	SPECIFIED, SPECIFICATION
SPECS	SPECIFICATIONS
SPG	SPACING
SPKR	SPEAKER
SPLY	SUPPLY
SPRT	SUPPORT
SQ	SQUARE
SQ FT	SQUARE FOOT
SR	SUPPLY REGISTER
SS	SANITARY SEWER, SERVICE SINK
SST	STAINLESS STEEL
STA	STATION
STD	STANDARD
STIFF	STIFFENER
STL	STEEL
STRL	STRUCTURAL
SUC	STRUCTURAL UNDERDRAIN COLLECTOR
SWA	SOUTHWEST AQUEDUCT
SYM	SYMBOL
SYMM	SYMMETRICAL
SYS	SYSTEM
T	THICKNESS, TOP, TOILET
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
TAN	TANGENT
TBC	TOP BACK OF CURB
TBM	TEMPORARY BENCH MARK
TDH	TOTAL DYNAMIC HEAD
TECH	TECHNICAL
TEL	TELEPHONE
TEMP	TEMPERATURE, TEMPORARY
THK	THICK
THR'D	THREADED
TK	TANK
TO	TOP OF
TOC	TOP OF CONCRETE
TOG	TOP OF GRADE
TP	TELEPHONE POLE, TURNING POINT
TW	TOP OF WALL
TYP	TYPICAL
UBC	UNIFORM BUILDING CODE
UD	UNDERDRAIN
UG	UNDERGROUND
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORIES
UNO	UNLESS NOTED OTHERWISE
USBR	U.S. BUREAU OF RECLAMATION
V	VALVE, VENT, VOLT, VACUUM
VAR	VARIES, OR VARIABLE
VC	VERTICAL CURVE
VCP	VITRIFIED CLAY PIPE
VERT	VERTICAL
VIC	VICTAULIC COUPLING
VOL	VOLUME
VPI	VERTICAL POINT OF INFLECTION
VSS	VOLATILE SUSPENDED SOLIDS
VTC	VENT THROUGH CEILING
VTR	VENT THROUGH ROOF
W	WEST, WASTE, WIDE FLANGE (BEAM)
W/	WITH
W/O	WITHOUT
WC	WATER COLUMN OR WATER CLOSET
WCO	WALL CLEANOUT
WD	WOOD
WH	WATER HEATER
WS	WATER STOP, WATER SURFACE
WSP	WELDED STEEL PIPE
WSTP	WATER STOP
WT	WEIGHT
WWM	WELDED WIRE MESH
XMFR	TRANSFORMER
XMTR	TRANSMITTER
XS	EXTRA STRONG
YD	YARD
YP	YARD PIPING
YR	YEAR

BOWEN COLLINS & ASSOCIATES

PROFESSIONAL ENGINEER
No. 12968797
BRIANNA KNAGGS
STATE OF UTAH
9/21/2023

REVISIONS

NO.	DATE	REV. BY	DESCRIPTION

IRON COUNTY/NRCS
IRON COUNTY EWP PROJECT
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VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING

DESIGN B. KNAGGS
DRAWN B. KNAGGS
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GENERAL
ABBREVIATIONS

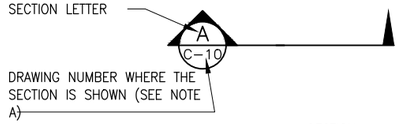
PROJECT NUMBER 182-22-02
DATE: SEPTEMBER 2023

DRAWING NO.
G-02
SHEET 02 OF 12

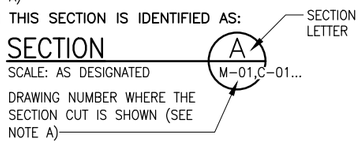
S:\Iron County\182-22-02 Iron County EWP\2.0 Design Phase\2.7 Drawings\sht\1822202_G-02.dwg Plotted: 9/21/2023 12:59 PM By: Brianna Knaggs

SECTION IDENTIFICATION

(1) SECTION CUT SHOWN ON DRAWING AS:

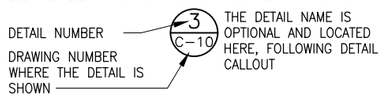


(2) THIS SECTION IS IDENTIFIED AS:



DETAIL IDENTIFICATION

(1) DETAIL IDENTIFICATION SHOWN ON DRAWING AS:



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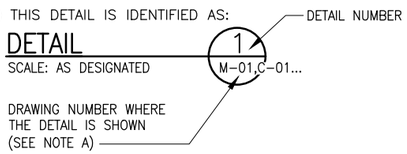
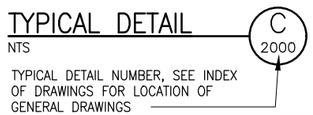


TYPICAL DETAIL IDENTIFICATION



DRAWING IDENTIFICATION SYSTEM

LETTER	DISCIPLINE
G	GENERAL
C	CIVIL
S	STRUCTURAL
GC	GENERAL CIVIL DETAILS

S-02
- S — DISCIPLINE
- 02 — INDIVIDUAL DRAWING NUMBER

NOTES:

A. IF PLAN AND SECTION (OR DETAIL CALL-OUT AND DETAIL) ARE SHOWN ON SAME DRAWING, DRAWING NUMBER IS REPLACED BY A HORIZONTAL LINE.

B. ELECTRICAL SYMBOLS SHOWN ON ELECTRICAL DRAWINGS. FOR WELDING SYMBOLS USE AMERICAN WELDING SOCIETY STANDARD SYMBOLS. SEE AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL.

- 1 — COORDINATE IDENTIFICATION
- ELEVATION INDICATOR
- SECTION CORNER
- BENCH MARK
- MONUMENT INDICATOR
- POTHOLE
- TEST HOLE
- BORING HOLE
- SECTION LINE
- PROPERTY LINE
- EASEMENT
- PARCEL
- R/W — RIGHT-OF-WAY
- NEW ASPHALT
- EXISTING ASPHALT
- CENTERLINE
- 4500 — CONTOUR LINE, FINISHED GRADE
- 4500 — CONTOUR LINE, EXISTING GRADE
- 4500.20 — FINISHED ELEVATION
- (4500.20) — EXISTING ELEVATION
- TOP / TOE — CUT OR FILL SLOPE TO BE CONSTRUCTED
- SILT FENCE
- X — X — FENCE
- RAILING
- DITCH
- CULVERT
- RIPRAP
- TREE LINE/VEGETATION
- EXISTING STRUCTURE OR FACILITY
- NEW STRUCTURE OR FACILITY
- FUTURE STRUCTURE OR FACILITY
- NEW PIPELINE (CIVIL SHEETS)
- NEW PIPELINE 10" DIA AND SMALLER (CIVIL SHEETS)
- EXISTING UTILITY PIPELINE
- ATMS — ATMS
- CTV — CABLE
- C(ug) — COMMUNICATION BURIED
- COMM — COMMUNICATION OVERHEAD
- P(ug) — ELECTRICAL BURIED
- OHP — ELECTRICAL OVERHEAD
- FO — FIBER OPTICS OVERHEAD
- FO(ug) — FIBER OPTICS UNDERGROUND
- G — GAS
- IRR — IRRIGATION
- PETRO — PETROLEUM LINE
- SS — SANITARY SEWER
- SD — STORM DRAIN
- T(ug) — TELEPHONE BURIED
- TEL — TELEPHONE OVERHEAD
- W — WATERLINE
- Tv — CABLE BOX
- CATCH BASIN
- EB — ELECTRICAL BOX
- HYDRANT
- G — GAS MANHOLE
- S — SEWER MANHOLE
- D — STORM DRAIN MANHOLE
- TELEPHONE MANHOLE
- W — WATER MANHOLE
- WM — WATER METER

- POWER POLE
- TB — TELEPHONE BOX
- LIGHT POLE ONE LUMINAIRE
- LIGHT POLE TWO LUMINAIRS
- LIGHT POLE
- STREET LIGHT WITH BRACKET
- TO BE REMOVED OR ABANDONED
- MASONRY
- STEEL
- INSULATION
- GRAVEL
- CONCRETE
- EARTH
- SAND
- ALUMINUM OR METAL DECKING
- CHECKERED PLATE
- SPAN — GRATING
- PLASTIC, RUBBER OR NEOPRENE
- WOOD (ROUGH FRAMING) OR, OPENING OR DEPRESSION IN SLAB OR WALL
- FHC — FIRE HOSE CABINET
- FE — FIRE EXTINGUISHER
- UNIT HEATER
- PCOTG — PRESSURE CLEANOUT TO GRADE
- WCO — WALL CLEANOUT
- FCO — FLOOR CLEANOUT
- COTG — CLEANOUT TO GRADE
- BLOW OFF ASSEMBLY
- HUB DRAIN
- FLOOR DRAIN
- FLOOR SINK
- DRAIN TRAP
- CHANGE IN PIPING MATERIAL
- 24" RCP-RW — PIPE SIZE AND TYPE/FLUID ABBREVIATION (USE FOR EXISTING PIPE CALLOUT)
- 10" PW (2) — PIPE CALLOUT (SEE PIPING SCHEDULE)
- ME-2 — EQUIPMENT NUMBER (SEE EQUIPMENT SCHEDULE)
- STOP GATE
- SLIDE GATE
- SLUICE GATE
- GATE VALVE
- HOSE BIBB (H/B)
- REDUCER OR INCREASER
- LIQUID SURFACE EL
- 1 — REVISION WORK
- 3 — REFERENCE TO NOTE

GENERAL NOTES

1. SYMBOLS FOR STRUCTURES, PIPE, ETC. USED FOR IDENTIFICATION ARE SHOWN IN LEGENDS AND SHALL BE FOLLOWED THROUGHOUT THE PLANS WHENEVER APPLICABLE. NOT ALL OF THE VARIOUS COMPONENTS SHOWN IN THESE LEGENDS ARE NECESSARILY USED IN THE PROJECT.
2. SCALES OF THE DRAWINGS AND DETAILS ARE SHOWN IN TITLE BLOCK OR DIRECTLY UNDER THE PLAN OR DETAIL. THE SIZE OF THE ORIGINAL PLOTTED DRAWINGS IS 22"X34". CARE SHOULD BE TAKEN TO REVIEW AND VERIFY SCALE BAR IN THE TITLE BLOCK AREA TO DETERMINE THE SCALE OF REDUCED REPRODUCTIONS.
3. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PERFORM CONSTRUCTION ACTIVITIES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. ANY ADDITIONS, DELETIONS, OR MODIFICATIONS SHALL FIRST MEET WITH THE WRITTEN APPROVAL OF THE ENGINEER AND THE OWNER.
4. CONTRACTOR SHALL COMPLY WITH OWNER-OBTAINED PERMIT(S) AND COMPLY WITH ALL REQUIREMENTS OF GOVERNING AGENCIES.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR WETTING DOWN DRY MATERIAL AND CONTROLLING RUBBISH TO PREVENT BLOWING. DUST CONTROL REQUIREMENTS WILL BE IN ACCORDANCE TO THE GOVERNING AGENCY STANDARDS.
6. THE CONTRACTOR SHALL KEEP ALL CONSTRUCTION ACTIVITIES WITHIN THE ESTABLISHED RIGHT-OF-WAY AND CONSTRUCTION EASEMENTS AS SHOWN ON THE DRAWINGS. THIS SHALL INCLUDE BUT NOT BE LIMITED TO VEHICLES AND EQUIPMENT, LIMITS OF EXCAVATION, AND EXCAVATED MATERIAL AND BACKFILL STORAGE. IF THE CONTRACTOR REQUIRES ADDITIONAL WORK AREA TO FACILITATE CONSTRUCTION, IT SHALL BE SOLELY THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN SUCH EASEMENTS OR AGREEMENTS FROM INDIVIDUAL PROPERTY OWNERS.
7. EXISTING UTILITIES SHOWN ON DRAWINGS ARE BASED ON A RECORD SEARCH BY LOCAL CONTROLLING AGENCIES AND ARE APPROXIMATELY LOCATED. EXISTING UTILITIES ARE SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION OF AND PRESERVING ALL UTILITIES INCLUDING THOSE NOT SHOWN OR INCORRECTLY SHOWN ON THE DRAWINGS. CONTRACTOR SHALL NOTIFY UTILITY COMPANIES AT LEAST TWO (2) WEEKS IN ADVANCE OF UTILITY CONFLICTS REQUIRING RELOCATION OF MAIN LINES, AND AT LEAST ONE (1) WEEK IN ADVANCE OF CONFLICTS REQUIRING RELOCATION OF SERVICE LATERALS.
8. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING FACILITIES WHICH ARE TO REMAIN IN PLACE FROM DAMAGE, INCLUDING EXISTING ACCESS ROADS. ALL SUCH FACILITIES OR STRUCTURES DAMAGED BY THE CONTRACTORS OPERATIONS SHALL BE REPAIRED OR RECONSTRUCTED TO ORIGINAL OR BETTER CONDITION TO THE SATISFACTION OF THE OWNER AT THE EXPENSE OF THE CONTRACTOR.
9. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING UTILITIES AND REPAIRING DAMAGE TO SUCH LINES AS A RESULT OF THE CONTRACTOR'S OPERATIONS. IN GENERAL, SERVICE CONNECTIONS FOR UTILITIES ARE NOT SHOWN ON THE DRAWINGS.
10. CONTRACTOR SHALL PRESERVE ALL SURVEY MONUMENTS, CONTROL POINTS AND TEMPORARY BENCH MARKS. ANY MONUMENTS OR CONTROL POINTS DAMAGED BY THE CONTRACTOR SHALL BE REPLACED AT CONTRACTOR'S EXPENSE.
11. EXCAVATION LIMITS SHOWN ON THE DRAWINGS ARE GRAPHICAL REPRESENTATIONS ONLY, AND DO NOT REPRESENT ACTUAL EXCAVATION LIMITS REQUIRED TO COMPLETE THE WORK. CONTRACTOR IS SOLELY RESPONSIBLE FOR CONFORMANCE WITH LOCAL AND FEDERAL CODES GOVERNING EXCAVATIONS AND TRENCHES. CONTRACTOR IS RESPONSIBLE FOR THE SAFETY OF THE PUBLIC AND PROTECTION OF PERSONNEL AND WORKERS.
12. CONTRACTOR SHALL CONTACT BLUE STAKES AT 1-800-662-4111 FOR MARKING OF EXISTING UTILITIES PRIOR TO PERFORMING ANY EXCAVATION. CALL FOR UNDERGROUND LOCATING TWO WORKING DAYS PRIOR TO ANY EXCAVATION.
13. CONTRACTOR SHALL BE SOLELY RESPONSIBLE TO PROVIDE ALL TEMPORARY EROSION CONTROL AND MAINTENANCE AND SHALL PROVIDE EROSION AND SEDIMENT CONTROL PLANS TO ENGINEER FOR REVIEW.
14. NO CHANGE IN DESIGN LOCATION OR GRADE SHALL BE MADE BY THE CONTRACTOR WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER OR THEIR AUTHORIZED REPRESENTATIVE.
15. CONTRACTOR SHALL CONSTRUCT BERMS AND/OR DRAINAGE DITCHES AS NEEDED TO KEEP STORM RUNOFF AND IRRIGATION FLOWS FROM ENTERING CONSTRUCTION EXCAVATIONS OR INTERFERING WITH CONSTRUCTION EFFORTS.
16. CONTRACTOR SHALL COORDINATE FINAL EXTENTS OF BANK STABILIZATION WITH ENGINEER PRIOR TO CONSTRUCTION.
17. TEMPORARY CHANNEL ACCESS. WITH APPROVAL OF THE ENGINEER, THE CONTRACTOR MAY CONSTRUCT TEMPORARY ACCESS POINTS TO THE WORK AREAS IN ADDITION TO THOSE SHOWN ON THE DRAWINGS TO FACILITATE CONSTRUCTION. DISTURBED AREAS SHALL BE RESTORED AND RESEEDED AFTER CONSTRUCTION. SEE SPECIFICATIONS FOR RESEEDING REQUIREMENTS.
18. RIGHT HAND CREEK AND RED CREEK CAN EXPERIENCE UNREGULATED MOUNTAIN RUNOFF. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR DEWATERING AND WATER MANAGEMENT DURING THE CONSTRUCTION PERIOD.
19. BANK STABILIZATION WORK MAY BE PREFORMED WHEN WATER IS IN THE RIVER, AS LONG AS THE WATER IS MAINTAINED AT A DEPTH OF 2-FT BELOW ANY EXCAVATION OR SUBGRADE PREPARATION.
20. TOPOGRAPHIC CONTOURS SHOWN ON DESIGN DRAWINGS ARE REPRESENTATIONS OF CONDITION THAT EXISTED IN JULY 2022. EROSION, SEDIMENT DEPOSTIION, AND CHANNEL MAINTENANCE ACTIVITIES MAY HAVE RESULTED IN MODIFICATIONS TO THE TOPOGRAPHY.

BOWEN COLLINS & ASSOCIATES

PROFESSIONAL ENGINEER — No. 12968797 — BRIANNA KNAGGS — STATE OF UTAH — 9/21/2023

NO.	DATE	REV. BY	DESCRIPTION
			REVISIONS

PROJECT
IRON COUNTY/NRCS
IRON COUNTY EWP PROJ
IRON COUNTY, UTAH

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING

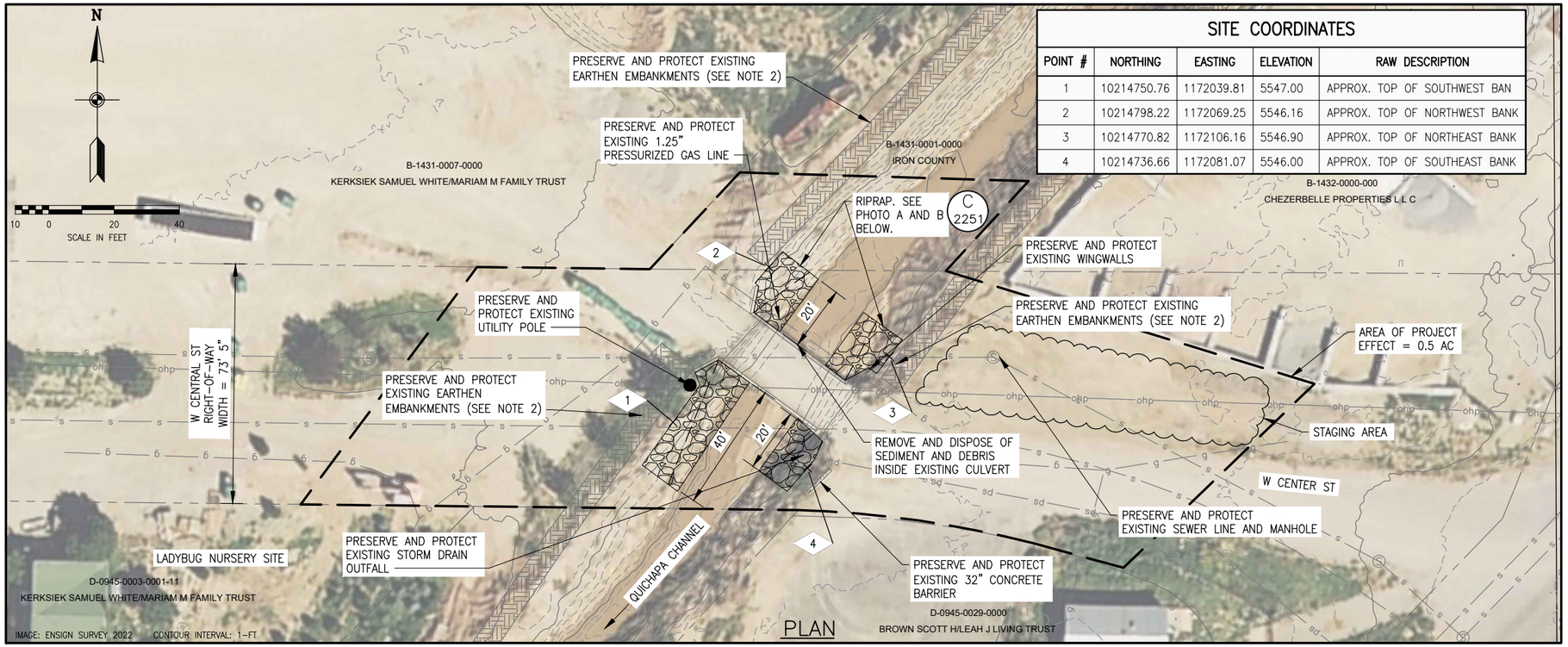
DESIGN
DESIGN B. KNAGGS
DRAWN B. KNAGGS
CHECKED C. BAGLEY
APPROVED B. KNAGGS
REVIEW

GENERAL
SYMBOLS AND NOTES

PROJECT NUMBER 182-22-02
DATE: SEPTEMBER 2023

DRAWING NO.
G-03
SHEET 03 OF 12

S:\Iron County\182-22-02 Iron County EWP\2.0 Design Phase\2.7 Drawings\shl\1822202_G-03.dwg Plotted: 9/21/2023 1:03 PM By: Brianna Knaggs



PLAN

SITE COORDINATES				
POINT #	NORTHING	EASTING	ELEVATION	RAW DESCRIPTION
1	10214750.76	1172039.81	5547.00	APPROX. TOP OF SOUTHWEST BAN
2	10214798.22	1172069.25	5546.16	APPROX. TOP OF NORTHWEST BANK
3	10214770.82	1172106.16	5546.90	APPROX. TOP OF NORTHEAST BANK
4	10214736.66	1172081.07	5546.00	APPROX. TOP OF SOUTHEAST BANK

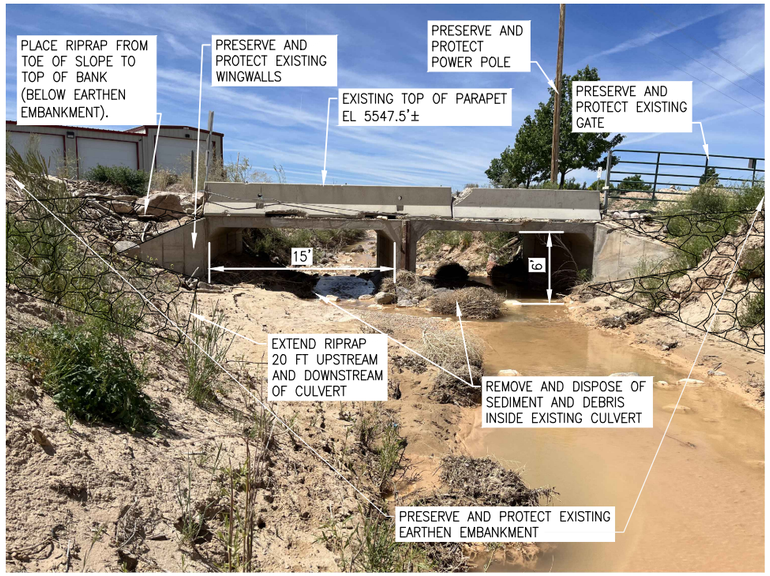


PHOTO A – UPSTREAM FACE (A)

SCALE: NTS

PHOTO B–UPSTREAM FACE (B)

SCALE: NTS

NOTES:

1. ESTIMATED RIPRAP QUANTITY = 110 CU. YD. THIS VOLUME IS BASED SOLELY ON NEAT LINE VOLUME DIFFERENCES AND DO NOT ACCOUNT FOR CLEARING AND GRUBBING, BULKING OR SHRINKAGE, OVER EXCAVATION, EXCAVATION FOR STRUCTURE, WALLS, OR FOOTINGS, EXCAVATION FOR UTILITIES, ETC. THE VOLUMES PROVIDED ARE FOR REFERENCE ONLY AND SHALL BE VERIFIED BY THE CONTRACTOR.
2. EXISTING EARTHEN EMBANKMENTS ARE NOT PERMITTED BY THE STATE OF UTAH. PRESERVE AND PROTECT THE EXISTING SPOIL BERMS PLACED ALONG THE BANK.

BOWEN COLLINS & ASSOCIATES

PROFESSIONAL ENGINEER No. 12968797 BRIANNA KNAGGS STATE OF UTAH 9/21/2023

NO.	DATE	REV. BY	DESCRIPTION
			REVISIONS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING

IRON COUNTY/NRCS
IRON COUNTY EWP PROJECT
IRON COUNTY, UTAH

REVIEW CHECKED C. BAGLEY APPROVED B. KNAGGS

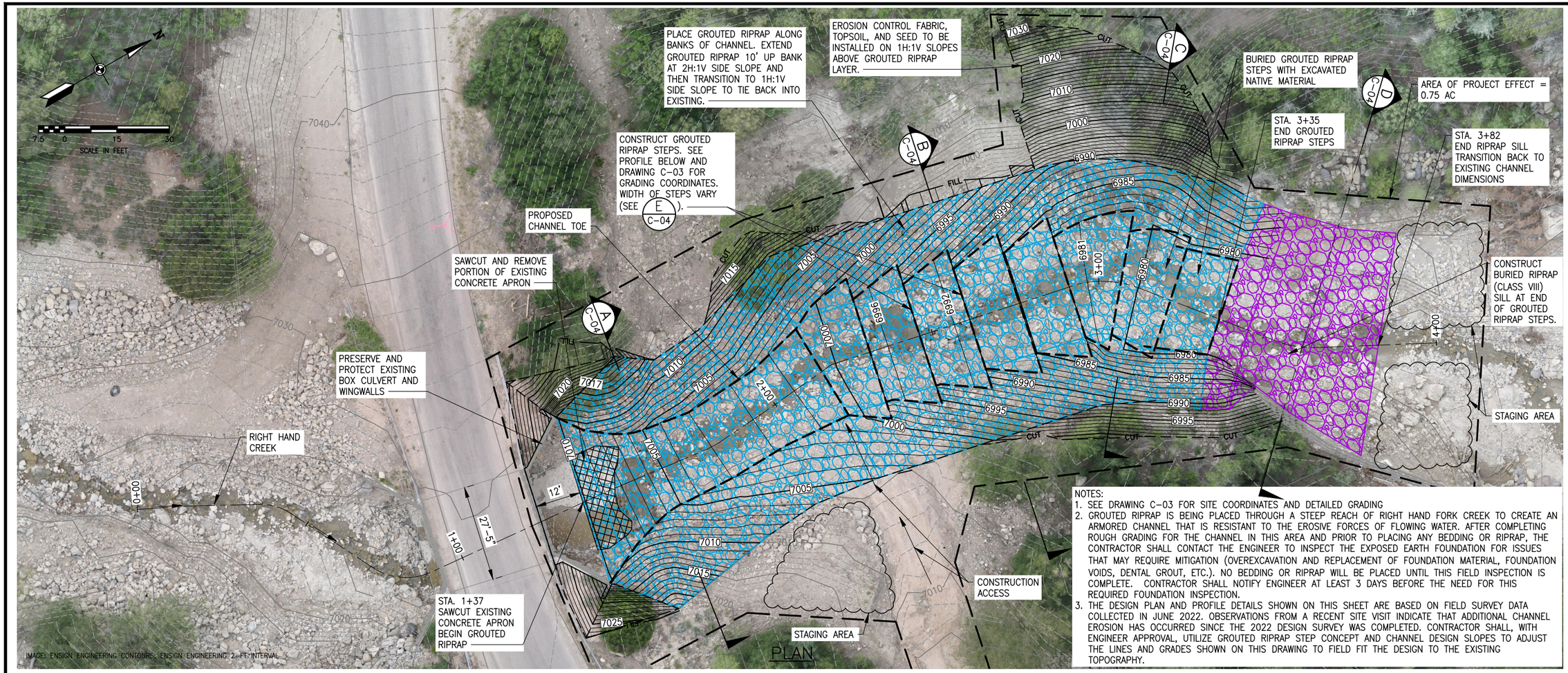
DESIGN DESIGN B. KNAGGS DRAWN B. KNAGGS

CIVIL
LADYBUG NURSERY SITE IMPROVEMENTS

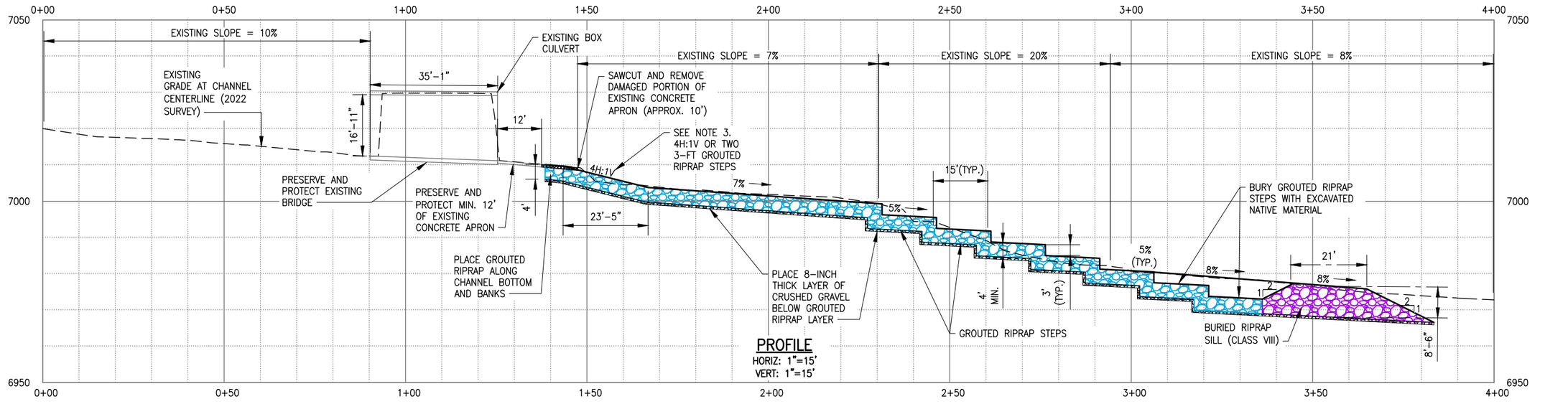
DATE: SEPTEMBER 2023 PROJECT NUMBER 182-22-02

DRAWING NO. C-01

SHEET 04 OF 12



NOTES:
1. SEE DRAWING C-03 FOR SITE COORDINATES AND DETAILED GRADING
2. GROUTED RIPRAP IS BEING PLACED THROUGH A STEEP REACH OF RIGHT HAND FORK CREEK TO CREATE AN ARMORED CHANNEL THAT IS RESISTANT TO THE EROSIVE FORCES OF FLOWING WATER. AFTER COMPLETING ROUGH GRADING FOR THE CHANNEL IN THIS AREA AND PRIOR TO PLACING ANY BEDDING OR RIPRAP, THE CONTRACTOR SHALL CONTACT THE ENGINEER TO INSPECT THE EXPOSED EARTH FOUNDATION FOR ISSUES THAT MAY REQUIRE MITIGATION (OVEREXCAVATION AND REPLACEMENT OF FOUNDATION MATERIAL, FOUNDATION VOIDS, DENTAL GROUT, ETC.). NO BEDDING OR RIPRAP WILL BE PLACED UNTIL THIS FIELD INSPECTION IS COMPLETE. CONTRACTOR SHALL NOTIFY ENGINEER AT LEAST 3 DAYS BEFORE THE NEED FOR THIS REQUIRED FOUNDATION INSPECTION.
3. THE DESIGN PLAN AND PROFILE DETAILS SHOWN ON THIS SHEET ARE BASED ON FIELD SURVEY DATA COLLECTED IN JUNE 2022. OBSERVATIONS FROM A RECENT SITE VISIT INDICATE THAT ADDITIONAL CHANNEL EROSION HAS OCCURRED SINCE THE 2022 DESIGN SURVEY WAS COMPLETED. CONTRACTOR SHALL, WITH ENGINEER APPROVAL, UTILIZE GROUTED RIPRAP STEP CONCEPT AND CHANNEL DESIGN SLOPES TO ADJUST THE LINES AND GRADES SHOWN ON THIS DRAWING TO FIELD FIT THE DESIGN TO THE EXISTING TOPOGRAPHY.



PROFILE
HORIZ: 1"=15'
VERT: 1"=15'

BOWEN COLLINS & ASSOCIATES

PROFESSIONAL ENGINEER No. 12968797 BRIANNA KNAGGS STATE OF UTAH 9/21/2023

REVISIONS			
NO.	DATE	REV. BY	DESCRIPTION

IRON COUNTY/NRCS
IRON COUNTY EWP PROJECT
IRON COUNTY, UTAH

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING

REVIEW CHECKED C. BAGLEY APPROVED B. KNAGGS

DESIGN DESIGN B. KNAGGS DRAWN B. KNAGGS

CIVIL
RIGHT HAND CREEK
SITE PLAN AND PROFILE

PROJECT NUMBER 182-22-02
DATE: SEPTEMBER 2023

DRAWING NO. C-02
SHEET 05 OF 12

S:\Iron County\182-22-02 Iron County EWP\2.0 Design Phase\2.7 Drawings\ref\Right Hand Creek2.dwg Plotted: 11/17/2023 11:55 AM By: Brianna Knaggs

NOTES:
1. ESTIMATED RIPRAP QUANTITIES:
   GROUTED RIPRAP = 1980 CU. YD.
   RIPRAP SILL = 640 CU. YD.
   GRUSHED GRAVEL = 400 CU.YD.
   THESE VOLUMES ARE BASED SOLELY ON NEAT LINE VOLUME DIFFERENCES AND DO NOT ACCOUNT FOR CLEARING AND GRUBBING, BULKING OR SHRINKAGE, OVER EXCAVATION, ETC. THE VOLUMES PROVIDED ARE FOR REFERENCE ONLY AND SHALL BE VERIFIED BY THE CONTRACTOR.

PRESERVE AND PROTECT EXISTING BOX CULVERT AND WINGWALLS

RIGHT HAND CREEK

CONSTRUCTION ACCESS

SCALE IN FEET: 7.5 0 15 30

SITE COORDINATES

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	10199379.55	1207773.46	7010.1	START GROUTED RIPRAP
2	10199384.51	1207773.93	7009.7	START 4H:1V SLOPE
3	10199405.36	1207776.45	7004.4	END 4H:1V SLOPE
4	10199457.07	1207775.16	7003.0	BEGIN GROUTED RIPRAP STEPS
5	10199471.77	1207777.23	6999.3	TOP OF DROP #1
6	10199486.45	1207780.34	6995.5	TOP OF DROP #2
7	10199501.12	1207783.44	6991.8	TOP OF DROP #3
8	10199515.80	1207786.54	6988.0	TOP OF DROP #4
9	10199530.48	1207789.64	6984.3	TOP OF DROP #5
10	10199543.85	1207796.02	6980.5	TOP OF DROP #6
11	10199553.65	1207807.34	6976.8	TOP OF DROP #7
12	10199563.10	1207819.06	6973.0	END GROUTED RIPRAP STEPS
13	10199568.62	1207825.91	6977.5	BEGIN BURIED RIPRAP SILL TOP
14	10199581.74	1207839.26	6975.8	END BURIED RIPRAP SILL TOP
15	10199384.61	1207748.46	7010.1	TIE INTO EXISTING WINGWALL (WEST)

SITE COORDINATES

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
16	10199374.31	1207797.21	7010.1	TIE INTO EXISTING WINGWALL (EAST)
17	10199377.23	1207732.57	7030.7	TIE INTO EXISTING GRADE (WEST)
18	10199360.39	1207807.44	7028.3	TIE INTO EXISTING GRADE (EAST)

LINE TABLE

LINE	LENGTH	BEARING
L1	13.18'	N 25° 47' 11" E
L2	21.95'	N 28° 41' 48" E
L3	28.17'	N 63° 27' 54" E
L4	56.92'	N 05° 23' 53" E
L5	7.34'	N 07° 12' 38" E
L6	11.68'	N 07° 12' 38" E
L7	7.15'	N 07° 12' 38" E
L8	11.31'	N 03° 45' 30" W
L9	24.21'	N 05° 08' 20" W
L10	50.59'	N 11° 55' 48" E
L11	24.24'	N 11° 55' 48" E
L12	42.80'	N 51° 07' 19" E
L13	34.52'	N 27° 46' 04" E

CURVE TABLE

CURVE	DELTA	RADIUS	LENGTH	TANGENT	CHORD	BEARING
C1	371° 42' 05"	15.41	9.35	4.83	9.21	N 46° 04' 51" E
C2	332° 09' 02"	17.25	17.48	9.57	16.74	N 34° 25' 54" E
C3	198° 37' 44"	28.85	11.76	5.96	11.68	N 39° 26' 41" E
C4	187° 26' 58"	30.57	16.29	8.34	16.10	N 33° 34' 38" E
C5	151° 34' 49"	37.80	11.07	5.57	11.03	N 1° 03' 24" E

IMAGE: HEXAGON CONTOURS: ENSIGN ENGINEERING 2-FT INTERVAL

PLAN

BOWEN COLLINS & ASSOCIATES

PROFESSIONAL ENGINEER No. 12968797 BRIANNA KNAGGS STATE OF UTAH 9/21/2023

REVISIONS

NO.	DATE	REV. BY	DESCRIPTION

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING

IRON COUNTY EWP PROJECT
IRON COUNTY, UTAH
IRON COUNTY\NRCS

REVIEW
CHECKED C. BAGLEY
APPROVED B. KNAGGS

DESIGN
DESIGN B. KNAGGS
DRAWN B. KNAGGS

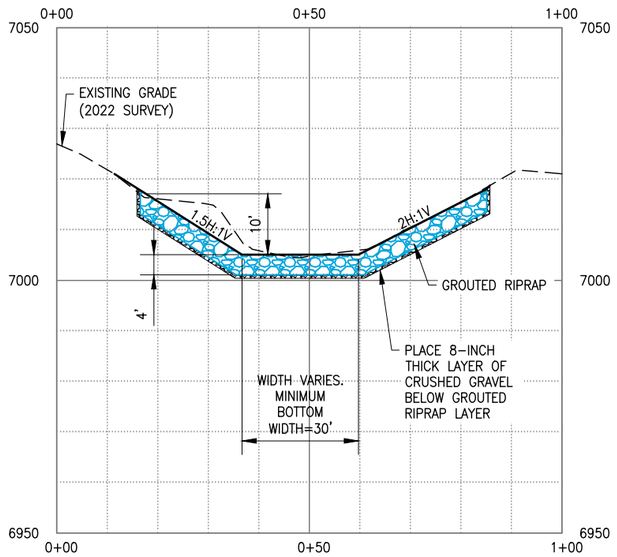
CIVIL

RIGHT HAND CREEK GRADING PLAN

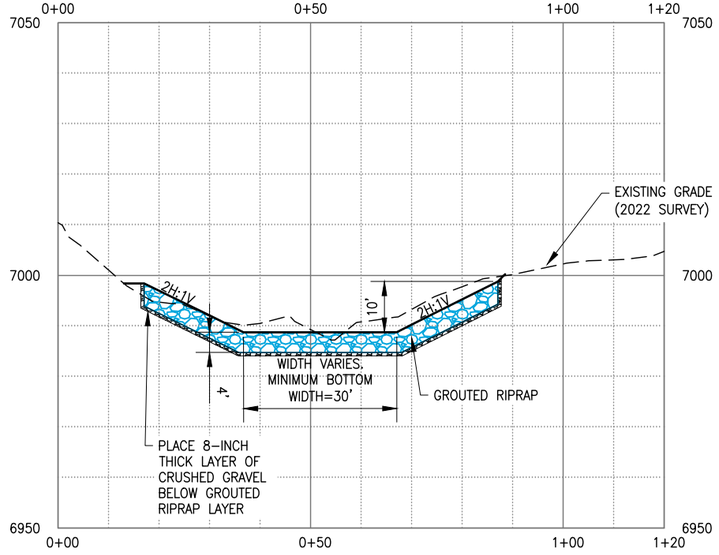
PROJECT NUMBER 182-22-02
DATE: SEPTEMBER 2023

DRAWING NO. C-03
SHEET 06 OF 12

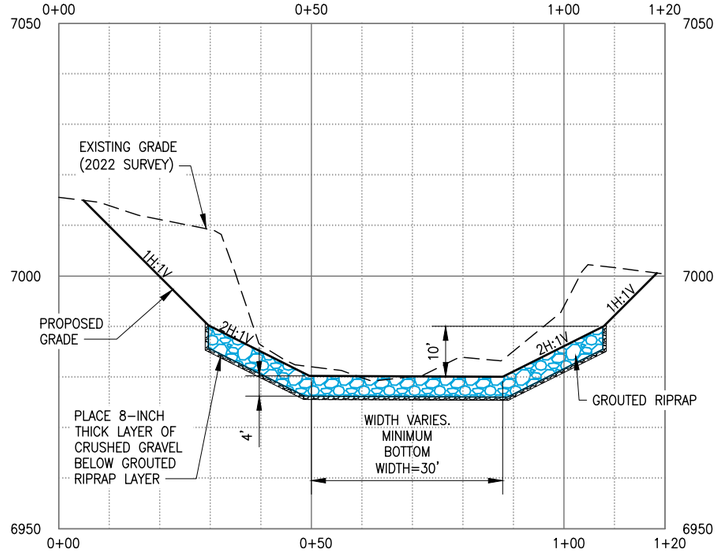
S:\Iron County\182-22-02 Iron County EWP\2.0 Design Phase\2.7 Drawings\ref\Right Hand Creek2.dwg Plotted: 9/21/2023 3:37 PM By: Brianna Knaggs



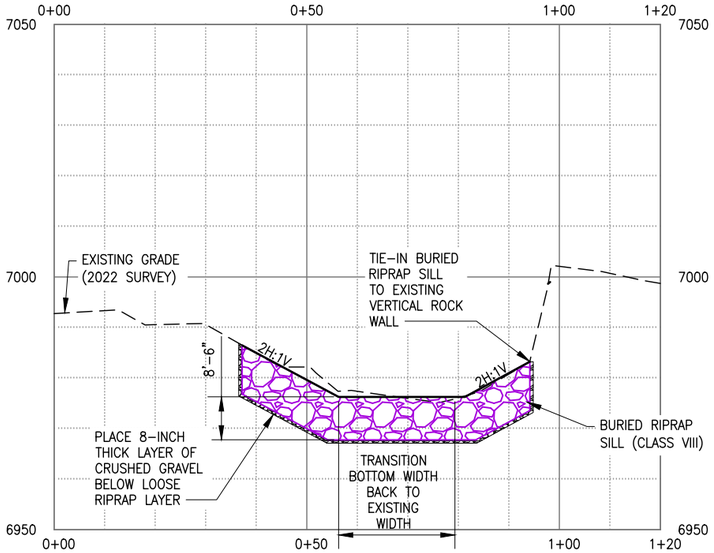
SECTION A
NTS
C-02



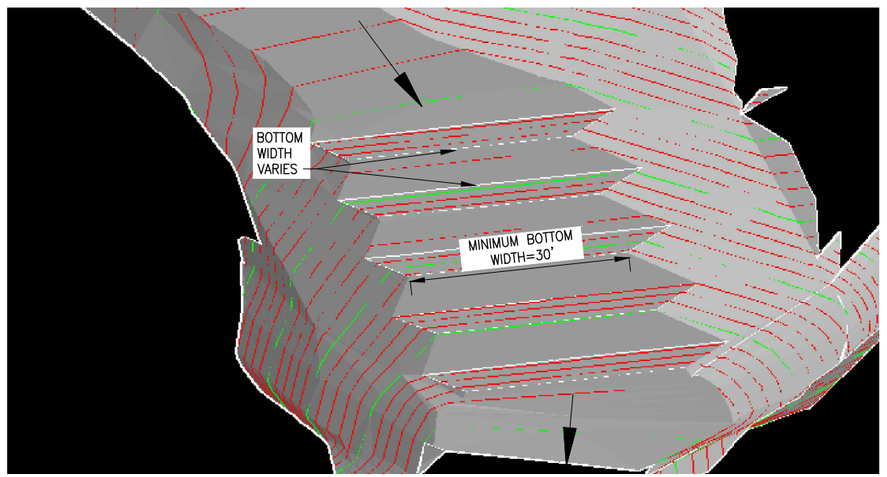
SECTION B
NTS
C-02



SECTION C
NTS
C-02



SECTION D
NTS
C-02



3D VIEW OF STEP STRUCTURE
NTS
E
C-02

BOWEN COLLINS & ASSOCIATES

PROFESSIONAL ENGINEER
No. 12968797
BRIANNA
KNAGGS
STATE OF UTAH
9/21/2023

REVISIONS

NO.	DATE	REV. BY	DESCRIPTION

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING

IRON COUNTY/NRCS
IRON COUNTY EWP PROJECT
IRON COUNTY, UTAH

REVIEW
CHECKED C. BAGLEY
APPROVED B. KNAGGS

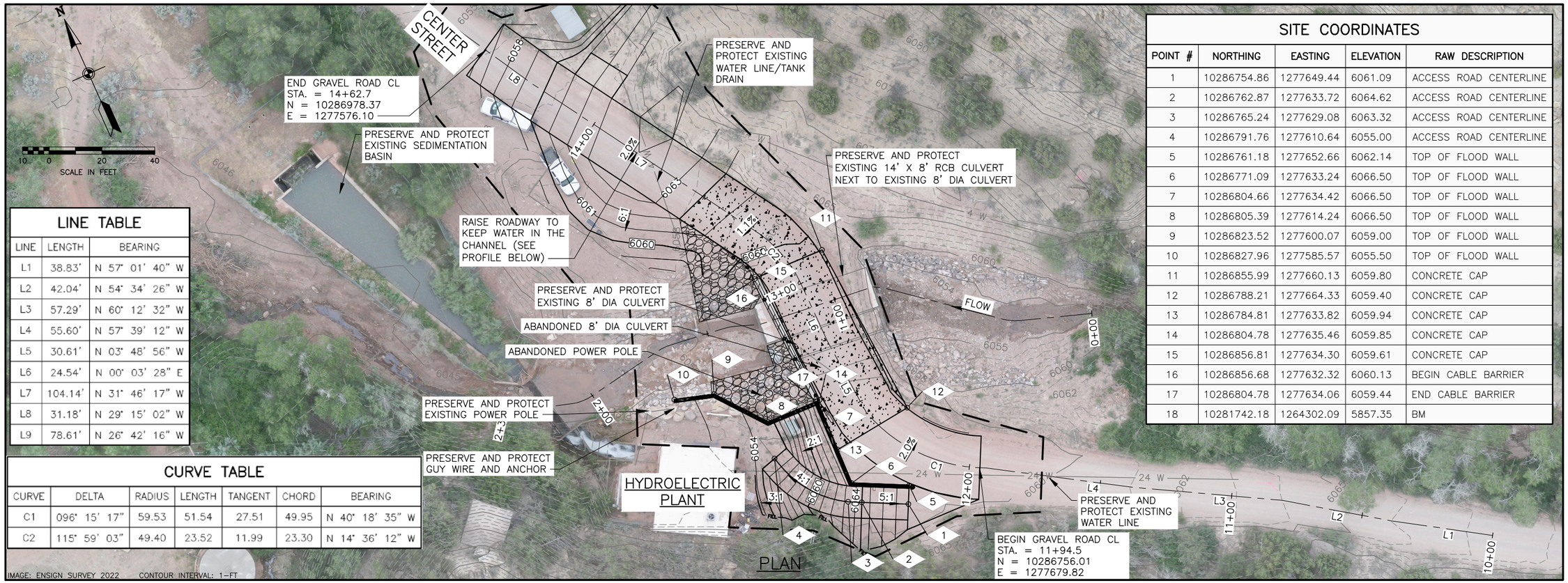
DESIGN
DESIGN B. KNAGGS
DRAWN B. KNAGGS

CIVIL
RIGHT HAND CREEK
SECTION DETAILS

PROJECT NUMBER 182-22-02
DATE: SEPTEMBER 2023

DRAWING NO.
C-04
SHEET 07 OF 12

S:\Iron County\182-22-02 Iron County EWP\2.0 Design Phase\2.7 Drawings\ref\Right Hand Creek2.dwg Plotted: 9/21/2023 2:55 PM By: Brianna Knaggs



LINE TABLE

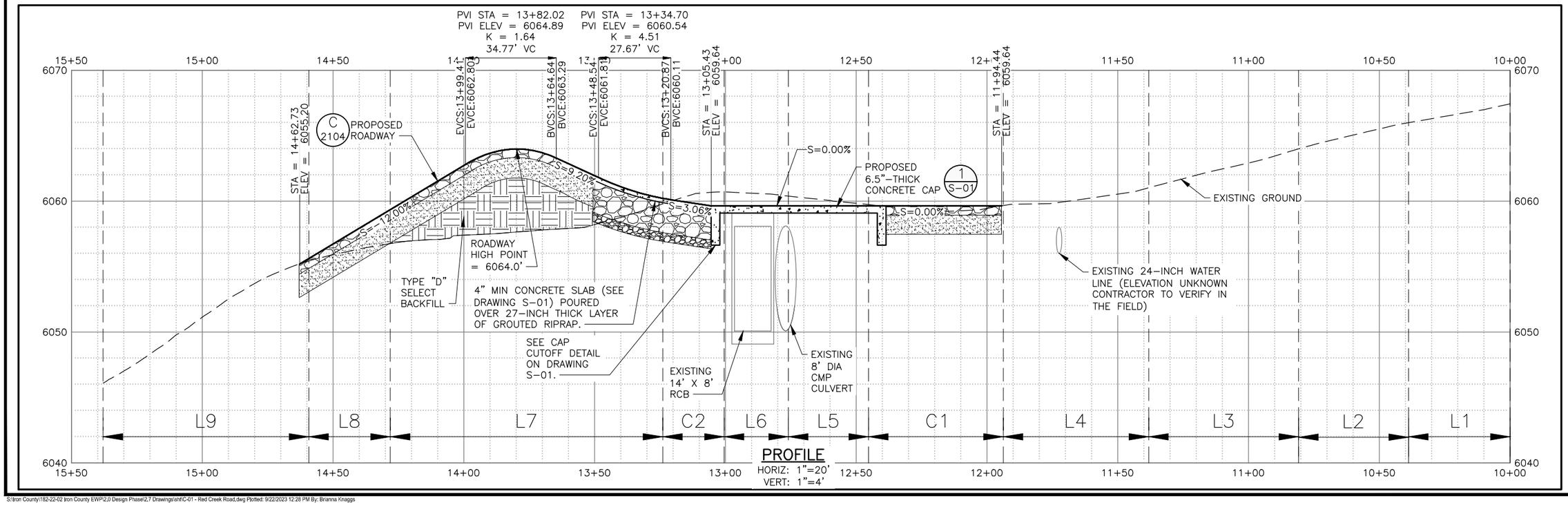
LINE	LENGTH	BEARING
L1	38.83'	N 57° 01' 40" W
L2	42.04'	N 54° 34' 26" W
L3	57.29'	N 60° 12' 32" W
L4	55.60'	N 57° 39' 12" W
L5	30.61'	N 03° 48' 56" W
L6	24.54'	N 00° 03' 28" E
L7	104.14'	N 31° 46' 17" W
L8	31.18'	N 29° 15' 02" W
L9	78.61'	N 26° 42' 16" W

CURVE TABLE

CURVE	DELTA	RADIUS	LENGTH	TANGENT	CHORD	BEARING
C1	096° 15' 17"	59.53	51.54	27.51	49.95	N 40° 18' 35" W
C2	115° 59' 03"	49.40	23.52	11.99	23.30	N 14° 36' 12" W

SITE COORDINATES

POINT #	NORTHING	EASTING	ELEVATION	RAW DESCRIPTION
1	10286754.86	1277649.44	6061.09	ACCESS ROAD CENTERLINE
2	10286762.87	1277633.72	6064.62	ACCESS ROAD CENTERLINE
3	10286765.24	1277629.08	6063.32	ACCESS ROAD CENTERLINE
4	10286791.76	1277610.64	6055.00	ACCESS ROAD CENTERLINE
5	10286761.18	1277652.66	6062.14	TOP OF FLOOD WALL
6	10286771.09	1277633.24	6066.50	TOP OF FLOOD WALL
7	10286804.66	1277634.42	6066.50	TOP OF FLOOD WALL
8	10286805.39	1277614.24	6066.50	TOP OF FLOOD WALL
9	10286823.52	1277600.07	6059.00	TOP OF FLOOD WALL
10	10286827.96	1277585.57	6055.50	TOP OF FLOOD WALL
11	10286855.99	1277660.13	6059.80	CONCRETE CAP
12	10286788.21	1277664.33	6059.40	CONCRETE CAP
13	10286784.81	1277633.82	6059.94	CONCRETE CAP
14	10286804.78	1277635.46	6059.85	CONCRETE CAP
15	10286856.81	1277634.30	6059.61	CONCRETE CAP
16	10286856.68	1277632.32	6060.13	BEGIN CABLE BARRIER
17	10286804.78	1277634.06	6059.44	END CABLE BARRIER
18	10281742.18	1264302.09	5857.35	BM



PROFILE
HORIZ: 1"=20'
VERT: 1"=4'

S:\Iron County\182-22-02 Iron County EWP\2.0 Design Phase\2.7 Drawings\shf\C-01 - Red Creek Road.dwg Plotted: 9/22/2023 12:28 PM By: Brianna Knaggs

BOWEN COLLINS & ASSOCIATES

PROFESSIONAL ENGINEER No. 12968797 BRIANNA KNAGGS STATE OF UTAH 9/21/2023

NO.	DATE	REV. BY	DESCRIPTION
			REVISIONS

IRON COUNTY/NRCS
IRON COUNTY EWP PROJECT
IRON COUNTY, UTAH

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING

REVIEW CHECKED C. BAGLEY APPROVED B. KNAGGS

DESIGN DESIGN B. KNAGGS DRAWN B. KNAGGS

CIVIL
RED CREEK ROAD
ROADWAY PLAN & PROFILE, AND GRADING PLAN

DATE: SEPTEMBER 2023 PROJECT NUMBER 182-22-02

DRAWING NO. C-05

SHEET 08 OF 12

NOTES:
1. ESTIMATED GROUTED RIPRAP QUANTITY = 190 CU. YD. THIS VOLUME IS BASED SOLELY ON NEAT LINE VOLUME DIFFERENCES AND DO NOT ACCOUNT FOR CLEARING AND GRUBBING, BULKING OR SHRINKAGE, OVER EXCAVATION, ETC. THE VOLUMES PROVIDED ARE FOR REFERENCE ONLY AND SHALL BE VERIFIED BY THE CONTRACTOR.

CENTER STREET

AREA OF PROJECT EFFECT = 0.5 AC

MAINTAIN PULL-OFF FOR MAINTENANCE VEHICLES

PROPOSED GRAVEL ROAD

C 2104

INSTALL 4" MIN CONCRETE SLAB (SEE DRAWING S-01) OVER 27-INCH THICK LAYER OF GROUTED RIPRAP.

REMOVE EXISTING JERSEY BARRIER (SALVAGE BARRIER TO BE RETURNED TO IRON COUNTY) AND REPLACE WITH LOW TENSION CABLE BARRIER (APPROX. 73 LF). SEE STRUCTURAL DETAIL ON DRAWING S-01.

LOWER ROADWAY AND PLACE CONCRETE CAP OVER EXISTING CULVERTS TO ALLOW FLOODWATER TO OVERTOP ROADWAY AT THIS LOCATION. SEE STRUCTURAL DETAILS ON DRAWING S-01.

STAGING AREA

PLACE GROUTED RIPRAP ALONG BANKS OF CHANNEL.

CONSTRUCT FLOOD WALL ALONG TOP OF BANK AND IN FRONT OF TRANSFORMER TO PROTECT HYDROELECTRIC PLANT. SEE STRUCTURAL DETAIL ON DRAWING S-02. TOP OF WALL ELEVATIONS VARY. SEE DRAWING C-05 FOR DESIGN COORDINATES OF FLOODWALL.

WALL SECTION 2A. SEE DRAWING S-02

WALL SECTION 1. SEE DRAWING S-02.

RED CREEK CHANNEL ℄ SEE PROFILE A.

RAISE THIS SIDE OF ROAD TO APPROX. ELEVATION OF 6060' AND SLOPE AT 2% TOWARDS EAST TO DIRECT FLOODWATER BACK TOWARDS CHANNEL

SEE ROADWAY PROFILE ON DRAWING C-05.

MAINTAIN MINIMUM OF 12-FT BETWEEN FLOODWALL AND HYDROELECTRIC PLANT

HYDROELECTRIC PLANT

ACCESS RAMP TO HYDROELECTRIC PLANT. CONSTRUCT USING TYPE "I" LEVEE MATERIAL AS FILL WITH 8-INCH LAYER OF TYPE "G" BASE COURSE AS ROAD SURFACE. SEE DRAWING C-05 FOR GRADING COORDINATES

WALL SECTION 2B. SEE DRAWING S-02.

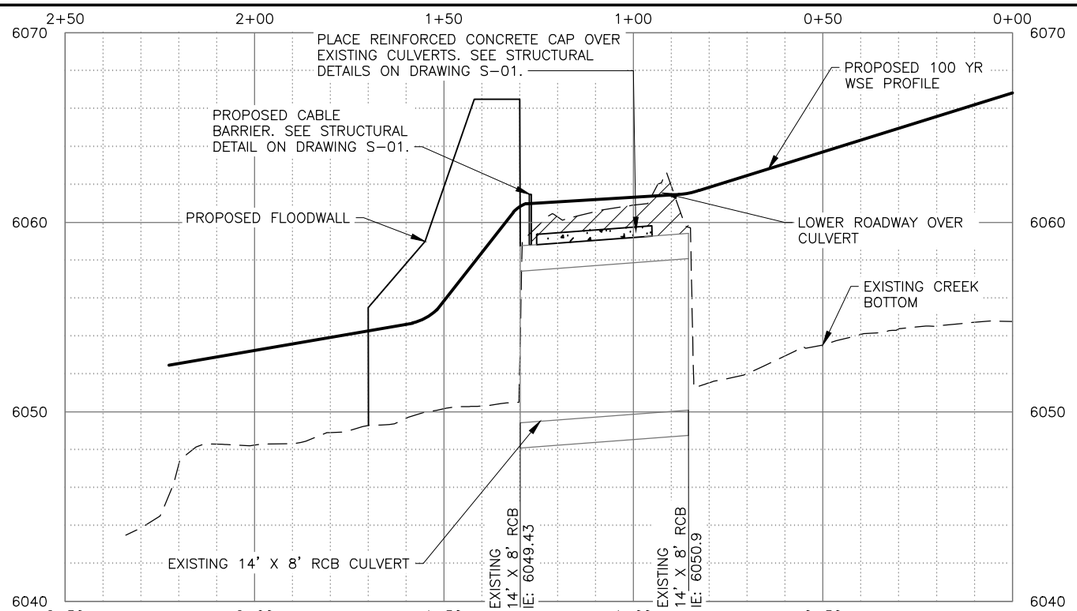
EXISTING TRANSFORMER TO BE RELOCATED BY OTHERS

PLAN

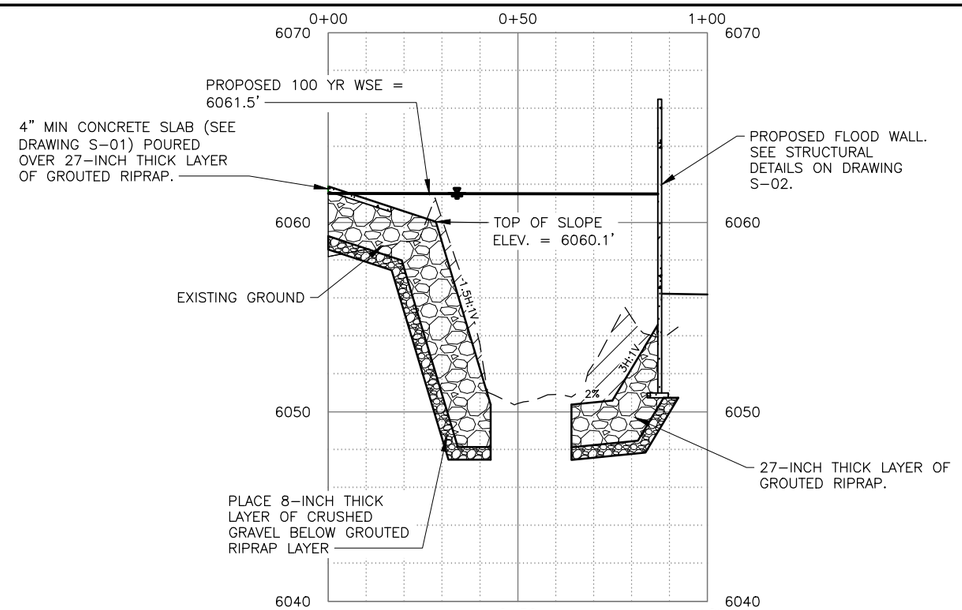
FLOW

SCALE IN FEET

IMAGE: ENSIGN SURVEY 2022 CONTOUR INTERVAL: 1-FT



RED CREEK PROFILE A
HORIZ 1" = 20'
VERT 1" = 4'



SECTION B
HORIZ 1" = 20'
VERT 1" = 4'

S:\Iron County\182-22-02 Iron County EWP\2.0 Design Phase\2.7 Drawings\sht\C-02 - Red Creek Road.dwg Plotted: 9/22/2023 12:32 PM By: Brianna Knaggs

BOWEN COLLINS & ASSOCIATES

PROFESSIONAL ENGINEER No. 12968797 BRIANNA KNAGGS STATE OF UTAH
9/21/2023

NO.	DATE	REV. BY	DESCRIPTION
			REVISIONS

IRON COUNTY EWP PROJECT
IRON COUNTY, UTAH
IRON COUNTY\NRCS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING

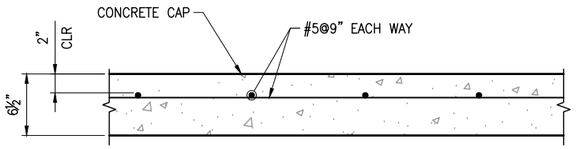
REVIEW CHECKED C. BAGLEY APPROVED B. KNAGGS

DESIGN DESIGN B. KNAGGS DRAWN B. KNAGGS

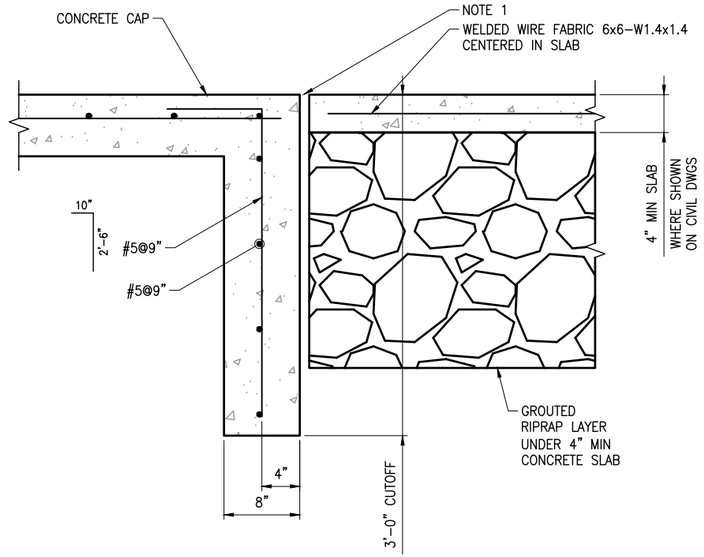
CIVIL
RED CREEK ROAD
RECOMMENDED REPAIRS

DATE: SEPTEMBER 2023
PROJECT NUMBER 182-22-02

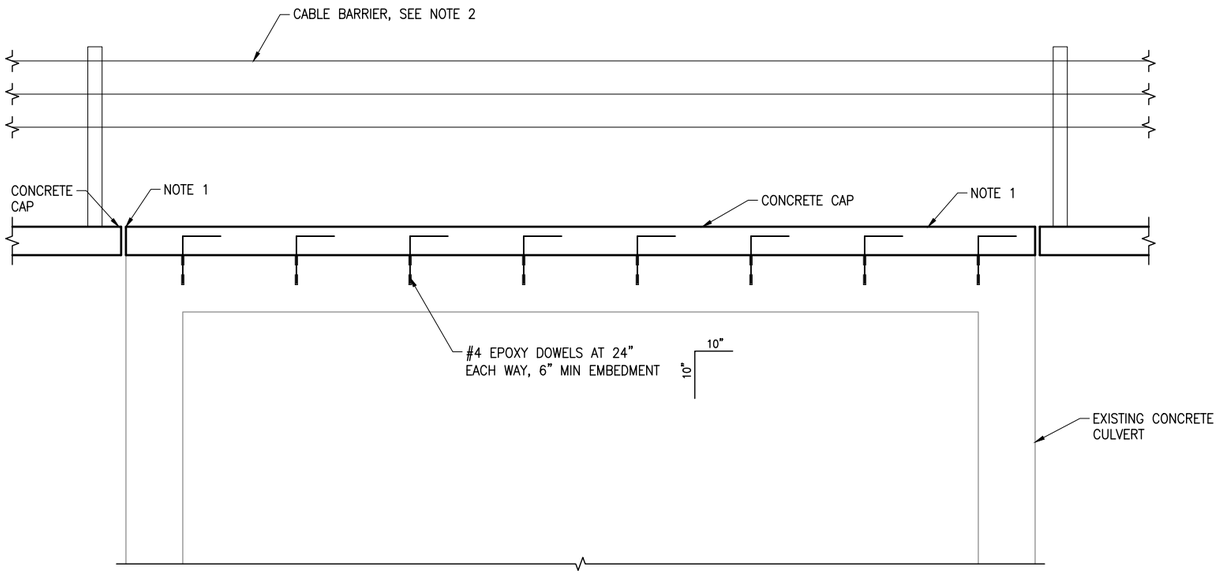
DRAWING NO. C-06
SHEET 09 OF 12



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



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



CAP CONNECTION AT CULVERT
SCALE: 3/4"=1'-0"

NOTES:
1. 1" OPEN JOINT IN CONCRETE CAP. DO NOT CONTINUE REINFORCING THROUGH JOINT. FILL GAP WITH PREMOLDED JOINT FILLER. TYPICAL EACH END OF CULVERT.
2. NUCOR NU-CABLE LOW-TENSION 3-WIRE CABLE BARRIER OR EQUAL. FOR END TREATMENT LOCATIONS SEE CIVIL DRAWINGS.

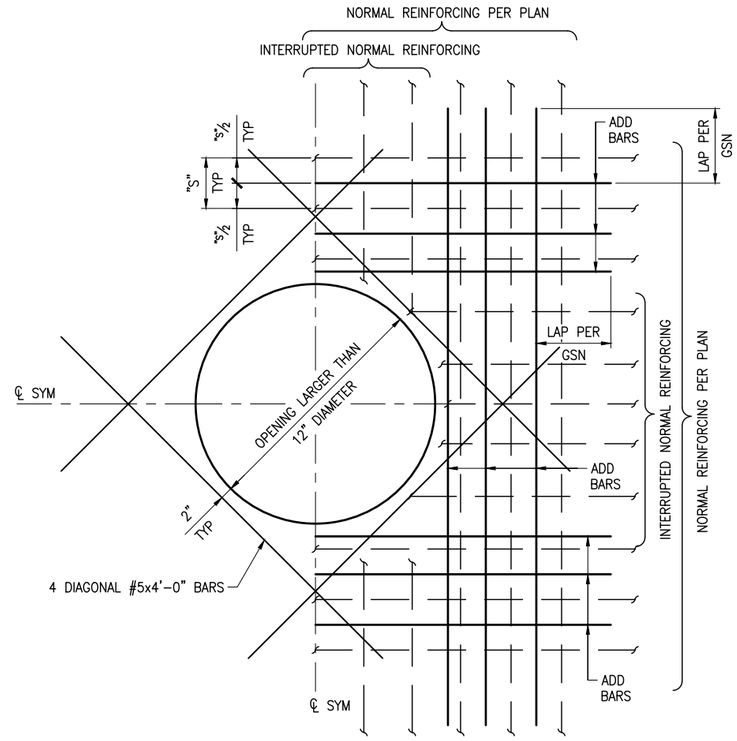
GENERAL STRUCTURAL NOTES:

1. USE DEFORMED CARBON STEEL BARS CONFORMING TO ASTM A615 GRADE 60, UNLESS SHOWN OTHERWISE.
2. UNLESS SHOWN OTHERWISE, ALL HOOKS ARE 90° STANDARD HOOKS AS DEFINED IN ACI 318.
3. LIMIT CONCRETE FREE-FALL HEIGHT FROM POINT OF DISCHARGE TO 5 FEET.
4. PROVIDE 2 INCH MINIMUM CONCRETE COVER TO REINFORCING STEEL UNLESS SHOWN OTHERWISE.
5. VERIFY UTILITY LOCATIONS BEFORE CONSTRUCTION. PROTECT EXISTING UTILITIES IN PLACE UNLESS SHOWN OTHERWISE.
6. DO NOT SCALE DRAWINGS. HORIZONTAL DIMENSIONS ARE PLAN. VERTICAL DIMENSIONS ARE PLUMB.

DESIGN DATA:

CONCRETE WEIGHT FOR LOADS IS 150 PCF UNLESS SHOWN OTHERWISE

STRUCTURAL CONCRETE	f'c = 4.5 KSI
THRUST BLOCK CONCRETE	f'c = 4.0 KSI
REINFORCING STEEL	fy = 60 KSI



ADDITIONAL REINFORCING AT CIRCULAR WALL OPENINGS
NOT TO SCALE

DETAIL NOTES:

1. AREA OF ADD BARS AT EACH EDGE OF OPENING IN EACH DIRECTION SHALL MATCH ½ THE CROSS SECTIONAL AREA OF THE INTERRUPTED BARS. BARS UP TO TWO BAR SIZES LARGER THAN NORMAL REINFORCING MAY BE USED. FIT ADD BARS WITHIN A DISTANCE OF 2X WALL/SLAB THICKNESS FROM EDGE OF OPENING.
2. CUT NORMAL REINFORCING 2" CLEAR OF OPENING.
3. PROVIDE STANDARD ACI HOOKS ON BARS/DOWELS IF STRAIGHT EXTENSION PAST THE OPENING CANNOT BE ACHIEVED.
4. PLACE ADD BARS IN SAME PLANES AS NORMAL REINFORCING INDICATED.
5. PLACE #5 ADD DIAGONAL CORNER BARS UNDER NORMAL REINFORCING INDICATED.

BOWEN COLLINS & ASSOCIATES

STRUCTURAL ENGINEER
No. 318001
PRESTON J. BAXTER
STATE OF UTAH
PROFESSIONAL ENGINEER
9/21/2023

NO.	DATE	REV. BY	DESCRIPTION
			REVISIONS

IRON COUNTY/NRCS
IRON COUNTY EWP PROJECT
IRON COUNTY, UTAH

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING

REVIEW
CHECKED C. BAGLEY
APPROVED P. BAXTER

DESIGN
DESIGN P. BAXTER
DRAWN P. BAXTER

STRUCTURAL

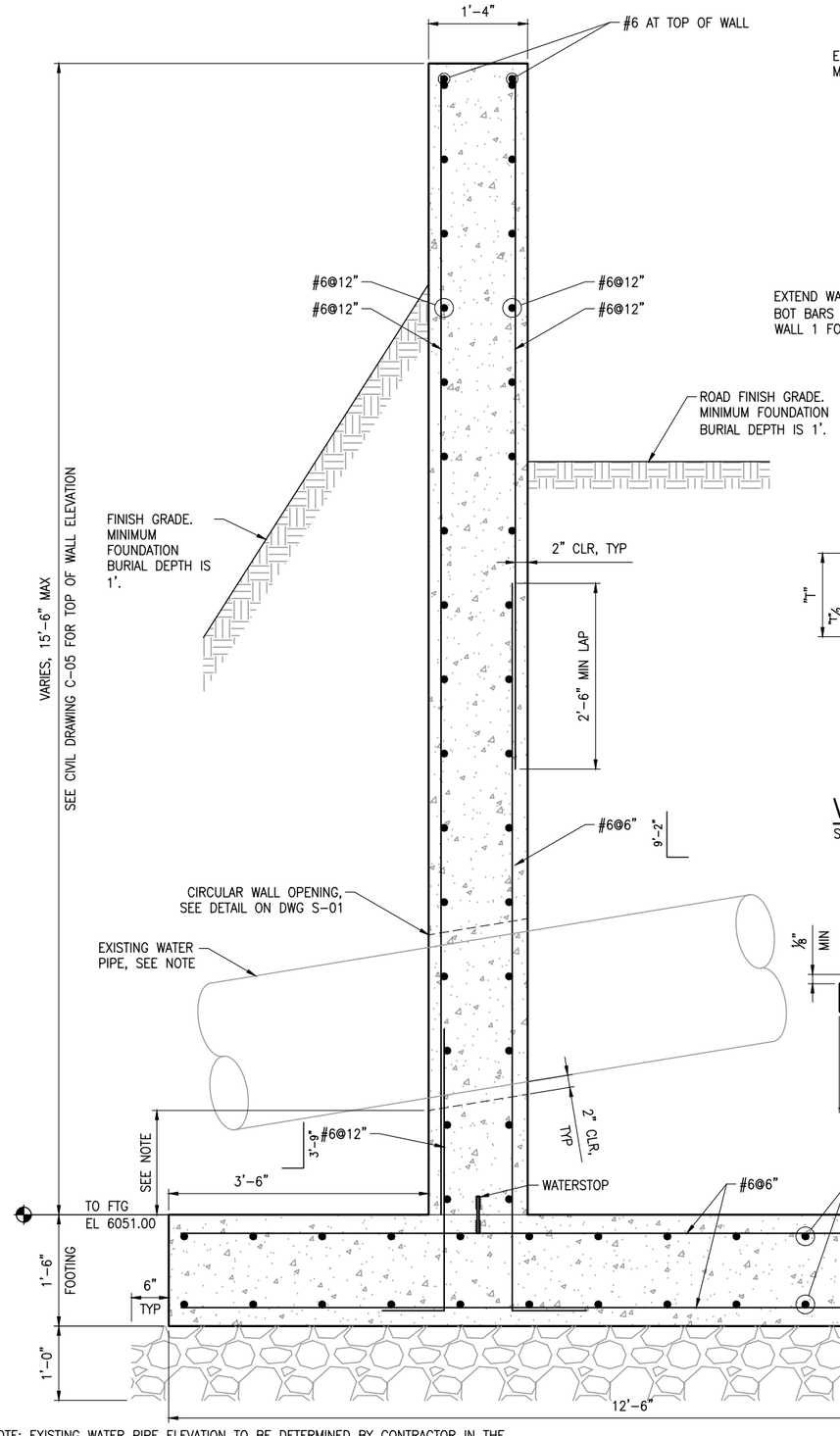
RED CREEK ROAD
STRUCTURAL DETAILS

DATE: SEPTEMBER 2023
PROJECT NUMBER 182-22-02

DRAWING NO.
S-01

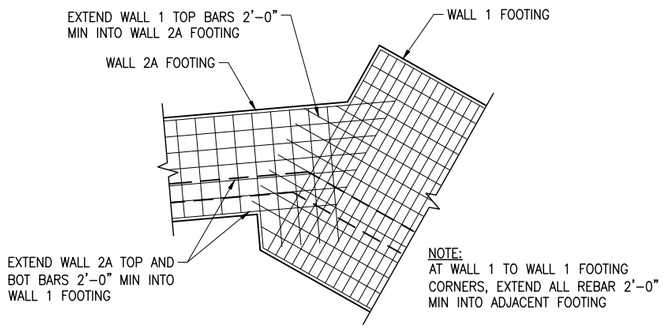
SHEET 10 OF 12

S:\Iron County\182-22-02 Iron County EWP\2.0 Design Phase\2.7 Drawings\sht\1822202_S-01.dwg Plotted: 9/21/2023 1:47 PM By: Preston Baxter

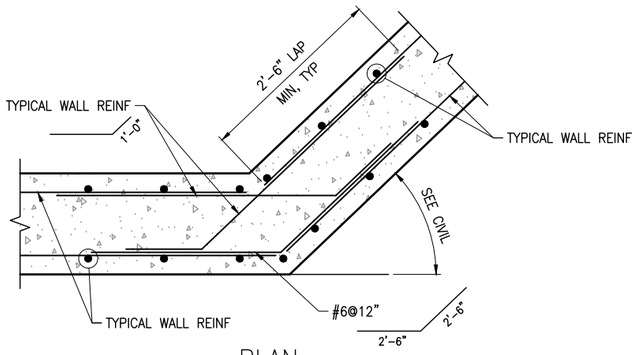


NOTE: EXISTING WATER PIPE ELEVATION TO BE DETERMINED BY CONTRACTOR IN THE FIELD. IF THE INDICATED DIMENSION IS LESS THAN 8" OR IF THE PIPE IS WITHIN OR BELOW THE FOOTING, CONTACT THE ENGINEER FOR REVISED CONSTRUCTION DETAILING.

WALL 1 SECTION
SCALE: 1"=1'-0"

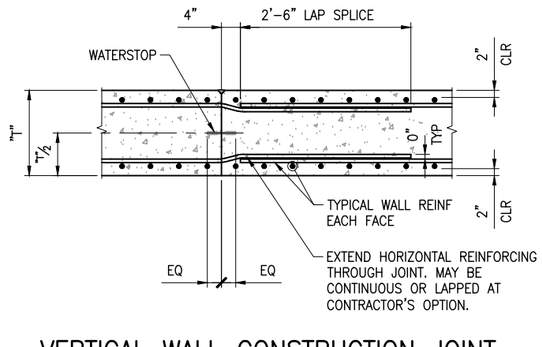


FOOTING CORNER
SCALE: 1/4"=1'-0"

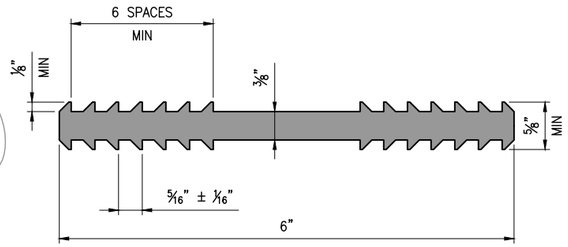


PLAN

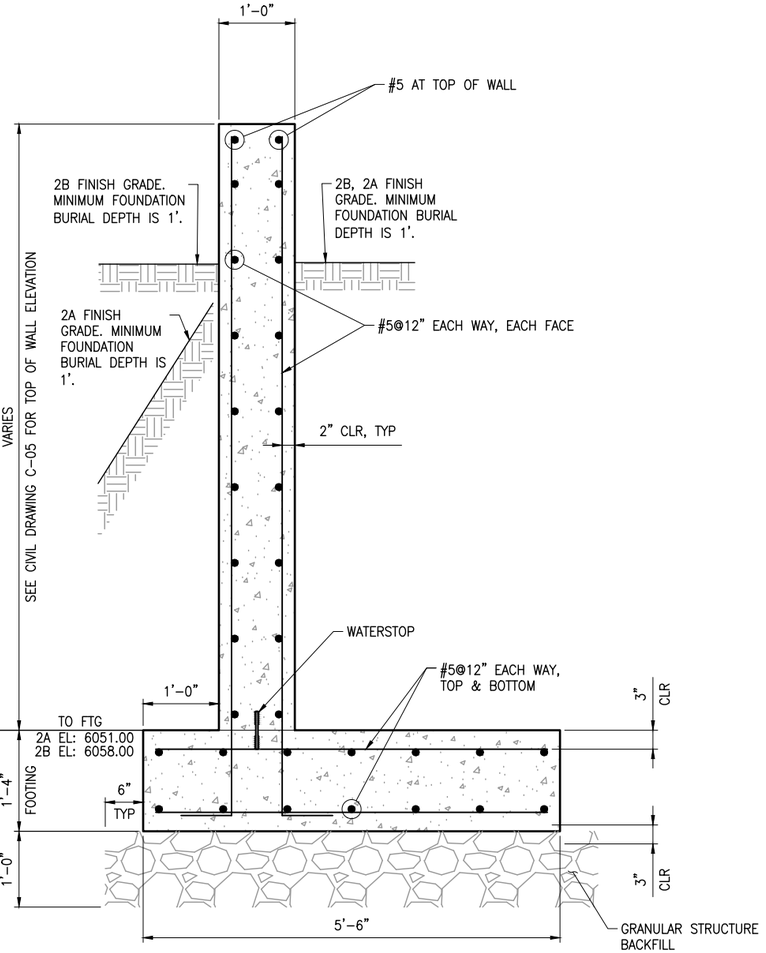
WALL CORNER
SCALE: 1"=1'-0"



VERTICAL WALL CONSTRUCTION JOINT
SCALE: 3/4"=1'-0"



PVC WATERSTOP
SCALE: 1"=1'-0"



WALL 2A, 2B SECTION
SCALE: 1"=1'-0"

BOWEN COLLINS & ASSOCIATES

STRUCTURAL ENGINEER — No. 318001 — STATE OF UTAH — REGISTERED PROFESSIONAL ENGINEER — 9/21/2023

REVISIONS

NO.	DATE	REV. BY	DESCRIPTION

IRON COUNTY/NRCS

IRON COUNTY EWP PROJECT

IRON COUNTY, UTAH

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING

REVIEW
CHECKED C. BAGLEY
APPROVED P. BAXTER

DESIGN
DESIGN P. BAXTER
DRAWN P. BAXTER

STRUCTURAL

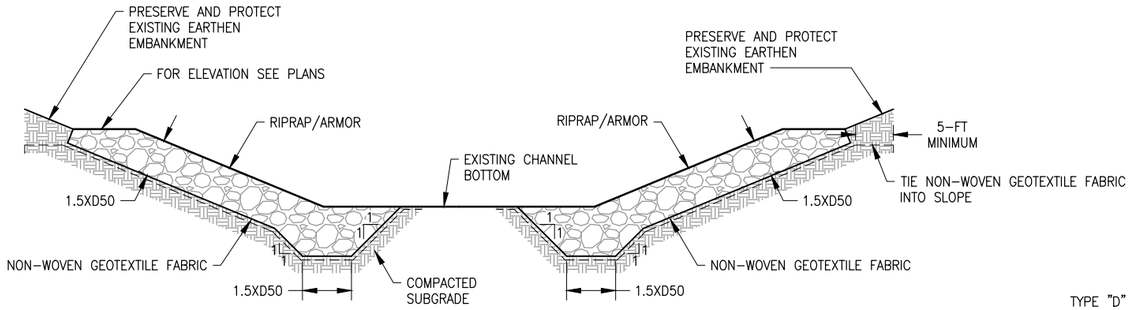
RED CREEK ROAD WALL SECTIONS AND DETAILS

DATE: SEPTEMBER 2023
PROJECT NUMBER 182-22-02

DRAWING NO.
S-02

SHEET 11 OF 12

S:\Iron County\182-22-02 Iron County EWP\2.0 Design Phase\2.7 Drawings\sht\1822202_S-02.dwg Plotted: 9/21/2023 1:34 PM By: Preston Baxter

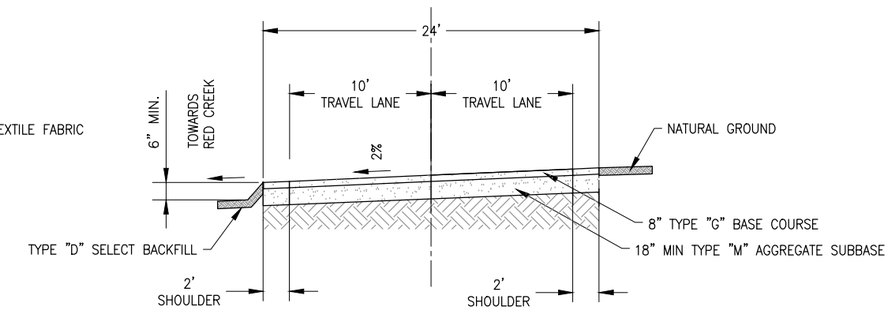


NOTES:
1. D50 = 24-INCH
2. EXCAVATE AS NEEDED TO MAINTAIN EXISTING CHANNEL CROSS SECTIONAL AREA PRIOR TO PLACING RIPRAP

RIPRAP AND ARMOR PROTECTION

SCALE: NTS

C 2251



GRAVEL ROAD SECTION

SCALE: NTS

C 2104

BOWEN COLLINS & ASSOCIATES

PROFESSIONAL ENGINEER No. 12968797 BRIANNA KNAGGS STATE OF UTAH 9/21/2023

REVISIONS

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IRON COUNTY/NRCS
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IRON COUNTY, UTAH

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APPROVED B. KNAGGS

DESIGN
DESIGN B. KNAGGS
DRAWN B. KNAGGS

GENERAL CIVIL DETAILS

CIVIL DETAILS - 1

DATE: SEPTEMBER 2023
PROJECT NUMBER 182-22-02

DRAWING NO.
GC-01

SHEET 12 OF 12

S:\Iron County\182-22-02 Iron County EWP\2,0 Design Phase\2,7 Drawings\shf\GC-01 - Ladybug.dwg Plotted: 9/21/2023 2:45 PM By: Brianna Knaggs