Revised: 5/12/2021 310 Form 270 and Instructions may be downloaded from: http://dnrc.mt.gov/licenses-and-permits/stream-permitting	**CD/AGENCY USE ONLY** Application # Li-09-05-24 Date Received 9-11-24 Date Date Accepted Date Initials Initials RR Date FW: to FWP 9-23-24 Date

This space is for all Department of Transportation and SPA 124 permits (government projects).

Project Name Click to enter text.

Control Number Click to enter text. Contract Letting Date Date

MEPA/NEPA Compliance ☐Yes ☐No If yes, #C5 of this application does not apply.

JOINT APPLICATION FOR PROPOSED WORK IN MONTANA'S STREAMS, WETLANDS, FLOODPLAINS & OTHER WATER BODIES

This is a standardized application to apply for one or all local, state, or federal permits listed below.

- Refer to instructions to determine which permits apply and submit a signed application to each applicable agency.
- Incomplete applications will result in the delay of the application process.
- The applicant is responsible for obtaining all necessary permits and landowner permission before beginning work.
- **Other laws may apply.**

	PERMIT	AGENCY	FILL OUT SECTIONS	FEE
x	310 Permit	Local Conservation District	A - E and G	Inquire locally
	SPA 124 Permit	Department of Fish, Wildlife and Parks	A - E and G	No fee
	318 Authorization 401 Certification	Department of Environmental Quality	A - E and G	$250 (318); $400 - $20,000 (401)
	Navigable Rivers Land Use License, Lease, or Easement	Department of Natural Resources and Conservation, Trust Lands Management Division	A - E and G	$50, plus additional fee
	Section 404 Permit, Section 10 Permit	U. S. Army Corps of Engineers (USACE)	A - G F1-8	Varies ($0 - $100)
	Floodplain Permit	Local Floodplain Administrator	A - G	Varies by city/county ($25 - $500+)

A. APPLICANT INFORMATION

APPLICANT NAME (person responsible for project)**:** Glen Lake Irrigation District
Has the landowner consented to this project? ☐ Yes ☐ No
Mailing Address: PO Box 297, Eureka, MT 59917
Physical Address: 111 Dewey Ave, Eureka, MT 59917
Cellphone:406-270-6722 Home Phone: Click here to enter or N/A. E-Mail:Click here to enter or N/A.

LANDOWNER NAME (if different from applicant): USFS
Mailing Address: 949 Hwy 93 N, Eureka, MT 59917
Physical Address: Click here to enter physical address or N/A.
Cellphone: Click here to enter or N/A. Home Phone:406-296-7163 E-Mail:seth.carbonari@usda.gov

CONTRACTOR/COMPANY NAME (if applicable): Click here to enter name or N/A.
PRIMARY CONTACT NAME: Click here to enter name
Mailing Address: Click here to enter name or N/A.
Physical Address: Click here to enter name or N/A.
Cellphone:Click here to enter or N/A. Home Phone:Click here to enter or N/A. E-Mail:Click here to enter or N/A.

B. PROJECT SITE INFORMATION

1. NAME OF **STREAM** or **WATER BODY** at project location Grave Creek
   Project Address/Location: Click here to enter text. Nearest Town Eureka
   County Lincoln Geocode: Click here to enter text.
   Choose.1/4 of the Choose. 1/4 of, Section Enter Township Enter., Range Enter
   Latitude Enter Latitude.Longitude Enter Longitude. Refer to section B1 in the instructions.

2. Is the proposed activity within **SAGE GROUSE** areas designated as general, connected, or core habitat?
   Yes ☐ No ☒ Attach consultation letter if required. Refer to section B2 in the instructions.

3. Is this a **STATE NAVIGABLE WATERWAY**? The state owns beds of certain navigable waterways.
   Yes ☐ No☒ If yes, send a copy of this application to the appropriate DNRC land office. Refer to section B3 in the instructions.

4. **WHAT IS THE CURRENT CONDITION** of the proposed project site? Describe the existing bank condition, bank slope, height, nearby structures, and wetlands. What vegetation is present? Refer to section B4 in the instructions.

The project site is near the point of diversion for Glen Lake Irrigation District. The project is in GLID's canal that runs under Grave Creek Road. The banks are heavily eroded.

C. PROPOSED PROJECT OR ACTIVITY INFORMATION

1. **TYPE OF PROJECT** (check all that apply) Refer to section C1 in the instructions.

☒ **Agricultural and Irrigation Projects:** Diversions, Headgates, Flumes, Riparian fencing, Ditches, etc.

☐ **Buildings/Structures:** Accessory Structures, Manufactured Homes, Residential or Commercial Buildings, etc.

☐ **Channel/Bank Projects:** Stabilization, Restoration, Alteration, Dredging, Fish Habitat, Vegetation or Tree Removal, or any other work that modifies existing channels or banks.

☒ **Crossings/Roads:** Bridge, Culvert, Fords, Road Work, Temporary Access, or any project that crosses over or under a stream or channel.

☐ **Mining Projects:** All mining related activity, including; Placer Mining, Aggregate Mining, etc.

☐ **Recreation related Projects:** Boat Ramps, Docks, Marinas, etc.

☐ **Other Projects:** Cistern, Debris Removal, Excavation/Pit/Pond, Placement of Fill, drilling or directional boring, Utilities, Wetland Alteration. Other project type not listed here _____

_____

2. **IS THIS APPLICATION FOR** an annual maintenance permit? ☐ Yes ☒ No
(If yes attach annual plan of operation to this application) – Refer to section C2 in the instructions.

3. **WHY IS THIS PROJECT NECESSARY? STATE THE PURPOSE OR GOAL** of the proposed project. Refer to section C3 in the instructions.

The purpose of this project is to replace a culvert and reduce erosion.

4. **PROVIDE A BRIEF DESCRIPTION** of the proposed project plan and how it will be accomplished. Refer to section C4 in the instructions.

This project involves replacing the existing culvert with a 112" x 72" 50' culvert and armoring the inlet and outlet with rock.The outlet will have concrete blasted in between the rocks on the downstream side. A liner will also be placed down the canal below the culver. Please see engineering plans for detailed information.

5. **WHAT OTHER ALTERNATIVES were considered to accomplish the stated purpose of the project?** Why was the proposed alternative selected? Refer to section C5 in the instructions.

Alternative 1 would be to leave the existing culvert in place

6. **NATURAL RESOURCE BENEFITS OR POTENTIAL IMPACTS. Please complete the information below to the best of your ability.**

* Explain any temporary or permanent changes in erosion, sedimentation, turbidity, or increases of potential contaminants. What will be done to minimize those impacts?

Diverted water into the canal will be reduced to minimize sedimentation and turbitidy. The purpose of this project is to reduce erosion.

- Will the project cause temporary or permanent impacts to fish and/or aquatic habitat? What will be done to protect the fisheries?

A fish screen is located at the point of diversion to prevent fish from entering the canal. Therefore, there should be no impact to fish and/or aquatic habitat.

- What will be done to minimize temporary or permanent impacts to the floodplain, wetlands, or riparian habitat?

There should be no impact to the floodplain, wetland, or riparian habitat.

- What efforts will be made to decrease flooding potential upstream and downstream of project?

The culvert is sized appropriately to decrease flooding potential.

- Explain potential temporary or permanent changes to the water flow or to the bed and banks of the waterbody. What will be done to minimize those changes?

Water flow will be reduced in the canal during the project. The banks will be armored to prevent erosion.

- How will existing vegetation be protected and its removal minimized? Explain how the site will be revegetated. Include weed control plans.

Any disturbed vegetation will be reseeded with native species. Equipment will be cleaned prior to construction.

D. CONSTRUCTION DETAILS

1. PROPOSED CONSTRUCTION DATES. Include a project timeline. Start date 10/15/2024 Finish date 12/15/2024 How long will it take to complete the project? 2 months Is any portion of the work already completed? ☐ Yes ☒ No (If yes, describe previously completed work.)
Refer to section D1 in the instructions.
Click here to enter text.

2. PROJECT DIMENSIONS. Describe length and width of the project. Refer to section D2 in the instructions.
Please see drawings.

3. EQUIPMENT. List all equipment that will be used for this project. How will the equipment be used on the bank and/or in the water? Note: All equipment used in the water must be clean, drained and dry. Refer to section D3 in the instructions.

Excavator, skidsteer, vibratory roller, paving equipment.

Will equipment from out of state be used? YES ☐ NO ☒ UNKNOWN ☐
Will the equipment cross west over the continental divide to the project site? YES ☐ NO ☒ UNKNOWN ☐
Will equipment enter the Flathead Basin? YES ☐ NO ☒ UNKNOWN ☐

4. MATERIALS. Provide the total quantity and source of materials proposed to be used or removed. Note: This may be modified during the permitting process therefore it is **recommended you do not purchase materials until all permits are issued.** List soil/fill type, cubic yards and source, culvert size, rip-rap size, any other materials to be used or removed on the project. Refer to section D4 in the instructions.

Cubic yards/Linear feet	Size and Type	Source
	D50=18 in rip rap with concrete grout	Keller's Pit
	112x72 50' culvert	
120 yards	Road base	Kootenai Sand and gravel
60 yards	¾ crush	
30 yards	asphalt	Kalispell

E. REQUIRED ATTACHMENTS

1. **PLANS AND/OR DRAWINGS** of the proposed project. **Include**:
   - Plan/Aerial view
   - an elevation or cross section view
   - dimensions of the project (height, width, depth in feet)
   - location of storage or stockpile materials dimensions and location of fill or excavation sites
   - drainage facilities
   - location of existing/proposed structures, such as buildings, utilities, roads, or bridges
   - an arrow indicating north
   - Site photos

2. **ATTACH A VICINITY MAP OR A SKETCH** which includes: The water body where the project is located, roads, tributaries, other landmarks. Place an "X" on the project location. Provide written directions to the site. This is a plan view (looking at the project from above).

3. **ATTACH ANNUAL PLAN OF OPERATION if requesting a Maintenance 310 Permit.**

4. **ATTACH AQUATIC RESOURCE MAP.** Document the location and boundary of all waters of the U.S. in the project vicinity, including wetlands and other special aquatic sites. Show the location of the ordinary high-water mark of streams or waterbodies. **if requesting a Section 404 or Section 10 Permit.** Ordinary high-water mark delineation included on plan or drawings and/or a separate wetland delineation.

F. ADDITIONAL INFORMATION FOR U.S. ARMY CORPS OF ENGINEERS (USACE) SECTION 404, SECTION 10 AND FLOODPLAIN PERMITS.

Section F should only be filled out by those needing Section 404, Section 10, and/or Floodplain permits. Applicants applying for Section 404 and/or Section 10 permits complete F 1- 8. Applicants applying for Floodplain permits, complete all of Section F. Refer to section F in the instructions.

FOR QUESTIONS RELATING TO SECTION F, QUESTIONS 1-8 PLEASE CONTACT THE USACE BY TELEPHONE AT 406-441-1375 OR BY E-MAIL MONTANA.REG@USACE.ARMY.MIL.

1. Identify the specific **Nationwide Permit(s)** that you want to use to authorize the proposed activity. Refer to section F1 in the instructions.

Click here to enter text.

2. Provide the **quantity of materials** proposed to be used in waters of the United States. What is the length and width (or square footage or acreage) of impacts that are occurring within waters of the United States? How many cubic yards of fill material will be placed below the ordinary high-water mark, in a wetland, stream, or other waters of the United States? Note: Delineations are required of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Refer to section F2 in the instructions.

Click here to enter text.

3. How will the proposed project avoid or minimize **impacts to waters of the United States?** Attach additional sheets if necessary. Refer to section F3 in the instructions.

Click here to enter text.

4. Will the project impact greater than 0.10-acre of wetland and/or more than 300 linear feet of stream or other waters? If yes, describe how the applicant is going to **compensate (mitigation bank, in-lieu fee program, or permittee responsible)** for these unavoidable impacts to waters of the United States. Refer to section F4 in the instructions.

Click here to enter text.

5. Is the activity proposed within any component of the **National Wild and Scenic River System**, or a river that has been officially designated by Congress as a **"study river"**? Refer to section F5 in the instructions.

☐ Yes ☐ No

6. Does this activity require permission from the USACE because it will alter or temporarily or permanently occupy or use a **USACE authorized civil works project? (Examples include USACE owned levees, Fort Peck Dam, and others)**? Refer to section F6 in the instructions.

☐ Yes ☐ No

7. List the **ENDANGERED AND THREATENED SPECIES** and **CRITICAL HABITAT(s)** that might be present in the project location. Refer to section F7 in the instructions.

Click here to enter text.

8. List any **HISTORIC PROPERTY(S)** that are listed, determined to be eligible or are potentially eligible (over 50 years old) for listing on the National Register of Historic Places." Refer to section F8 in the instructions.

Click here to enter text.

9. List **all applicable local, state, and federal** permits and indicate whether they were issued, waived, denied, or pending. Note: All required local, state, and federal permits, or proof of waiver must be issued prior to the issuance of a floodplain permit. Refer to section F9 in the instructions.

Click here to enter text.

10. List the **NAMES AND ADDRESSES OF LANDOWNERS** adjacent to the project site. This includes properties adjacent to and across from the project site. (Some floodplain communities require certified adjoining landowner lists).
    NAME OF **Adjacent Landowner**: Click here to enter name Click here to enter Address
    NAME OF **Adjacent Landowner**: Click here to enter name Click here to enter Address
    NAME OF **Adjacent Landowner**: Click here to enter name Click here to enter Address
    NAME OF **Adjacent Landowner**: Click here to enter name Click here to enter Address

11. **Floodplain Map Number** Click here to enter map number or N/A. Refer to section F11 in the instructions.

12. Does this project comply with **local planning or zoning regulations**? Refer to section F12 in the instructions.
    ☒ Yes ☐ No

G. SIGNATURES/AUTHORIZATIONS

Some agencies require original signatures. **After completing the form**, make the required number of copies and **then sign each copy.** Send the copies with original signatures and additional information required directly to each applicable agency.

The statements contained in this application are true and correct. The applicant possess' the authority to undertake the work described herein or is acting as the duly authorized agent of the landowner. The applicant understands that the granting of a permit does not include landowner permission to access land or construct a project. Inspections of the project site after notice by inspection authorities are hereby authorized. Refer to section G in the instructions.

APPLICANT (Person responsible for project):
Print Name: Joe McAfee

Signature of Applicant Date

LANDOWNER:
Print Name: USFS – Seth Carbonari

Signature of Landowner Date

*CONTRACTOR'S PRIMARY CONTACT (if applicable):
Print Name: Click here to enter name.

Signature of Contractor/Agent Date
*Contact agency to determine if contractor signature is required.

G. SIGNATURES/AUTHORIZATIONS

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APPLICANT (Person responsible for project):
Print Name: Joe McAfee

Joe McAfee 9-10-24
Signature of Applicant Date

LANDOWNER:
Print Name:

Signature of Landowner Date

*CONTRACTOR'S PRIMARY CONTACT (if applicable):
Print Name: Click here to enter name.

Signature of Contractor/Agent Date
*Contact agency to determine if contractor signature is required.

Sheet List Table	
Sheet Number	Sheet Title
1	COVER
2	GENERAL NOTES
3	OVERALL SITE PLAN
4	EXISTING CONDITIONS - GRAVE CREEK RD
5	PLAN - GRAVE CREEK RD
6	PROFILE - GRAVE CREEK RD
7	BMP PLAN - GRAVE CREEK RD
8	EXISTING CONDITIONS - STOKEN CREEK RD
9	PLAN - STOKEN CREEK DR
10	PROFILE - STOKEN CREEK RD
11	BMP PLAN - STOKEN CREEK RD
12	EXISTING CONDITIONS - ASPEN GLEN RD
13	EXISTING CONDITIONS - CORVETTE DR
14	PLAN - CORVETTE DR
15	PROFILE - CORVETTE DR
16	BMP PLAN - CORVETTE DR
17	EXISTING CONDITIONS - GLEN LAKE RD
18	PLAN - GLEN LAKE RD
19	PROFILE - GLEN LAKE RD
20	BMP PLAN - GLEN LAKE RD
21	OVERVIEW - GLEN LAKE INLET STABILIZATION
22	PLAN & PROFILE - GLEN LAKE INLET STABILIZATION
23	XS1 - GLEN LAKE INLET STABILIZATION
24	OVERVIEW - THERRIAULT LOOP STABILIZATION
25	PLAN & PROFILE 1 - THERRIAULT LOOP STABILIZATION
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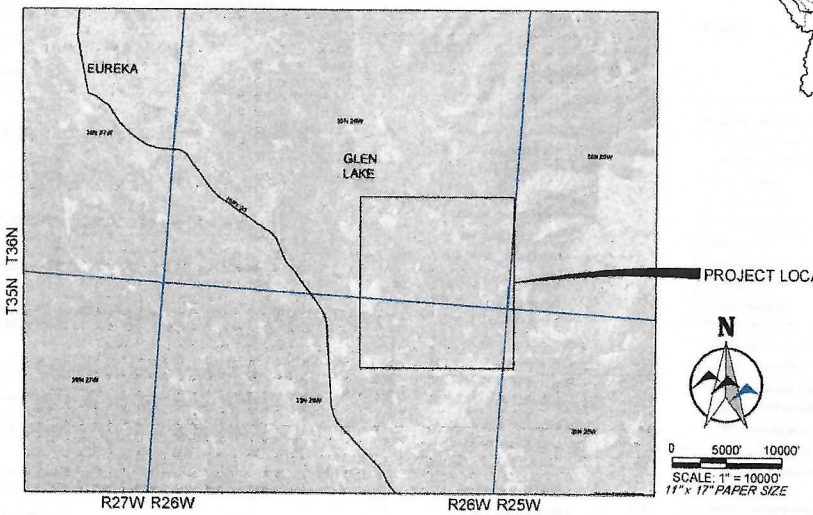
36	XS9 - THERRIAULT LOOP STABILIZATION
37	XS10 - THERRIAULT LOOP STABILIZATION
38	XS11 - THERRIAULT LOOP STABILIZATION
39	CULVERT DETAILS

CONSTRUCTION DRAWINGS

GLEN LAKE IRRIGATION DISTRICT
MAIN CANAL IMPROVEMENTS

LINCOLN COUNTY, MONTANA



LOCATION MAP

811 Know what's below. Call before you dig.

PRELIMINARY

PREPARED FOR:
GLEN LAKE IRRIGATION DISTRICT
PO BOX 237
EUREKA, MT 59917
(406) 251-5537

PREPARED BY:
WWC ENGINEERING
1275 MAPLE STREET, SUITE F
HELENA, MT 59601
(406) 443-3962
www.wwcengineering.com

PROJECT NO. 2023-505

NO.	REVISION	BY	DATE

DESIGNED BY: SLK
DRAWN BY: SLK
CHECKED BY: SH
DATE: 08/20/2024

DRAWING NO. 1

\\www.local\work\Helena\GLID\2023505 lincoln county canal improvements\05CAD\Sheets\1 - COVER\23505-COVR.dwg 2 GENERAL NOTES 9/3/2024 5:00:55 PM

GENERAL CONSTRUCTION NOTES

1. UNLESS SPECIFICALLY SHOWN ON THE DRAWINGS, ALL WORK SHALL CONFORM TO MPWSS, LATEST EDITION AND THESE PLANS
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PERMITS REQUIRED AND CONSTRUCTION TESTING FOR CONSTRUCTION ACTIVITIES
3. THE CONTRACTOR SHALL RESTORE ALL ROADWAYS TO EQUAL OR BETTER CONDITION THAN EXISTED PRIOR TO CONSTRUCTION, AS DETERMINED BY THE OWNER AND THE ENGINEER.
4. THE LOCATION, DEPTH AND SIZE OF EXISTING UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE. THE CONTRACTOR SHALL FIELD VERIFY THE EXISTENCE, LOCATION, DEPTH, SIZE, LINE AND GRADE OF EXISTING UTILITY CONNECTIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THE EXISTING FACILITIES DUE TO FAILURE TO LOCATE OR PROVIDE PROPER PROTECTION WHEN LOCATION IS KNOWN.
5. THE CONTRACTOR SHALL SUPPLY ALL NECESSARY FITTINGS, COUPLINGS AND SPOOL PIECES FOR CONNECTING NEW UTILITIES TO EXISTING UTILITIES. THESE PLANS MAY NOT SHOW ALL REQUIRED COMPONENTS FOR MAKING THE CONNECTIONS.
6. ALL BACKFILL FOR UTILITY TRENCHES SHALL BE TYPE "A," UTILIZING TYPE 1 BEDDING, UNLESS DIRECTED OTHERWISE BY ENGINEER. SPECIFIED BEDDING SHALL BE FROM 4" BENEATH THE PIPE TO 6" ABOVE THE TOP OF PIPE (SEE MPWSS STANDARD DRAWING 02221-1). THE COST OF THIS ADDITIONAL BEDDING SHALL BE INCLUDED IN THE UNIT PRICE BID.
7. PIPE BEDDING (TYPE 1) AND TRENCH BACKFILL (TYPE B) SHALL BE IN ACCORDANCE WITH MPW STANDARD SPECIFICATION 02221, STANDARD DRAWING 02221-1.
8. THE CONTRACTOR IS RESPONSIBLE FOR CONTROLLING DUST AND EROSION DURING CONSTRUCTION AT CONTRACTOR'S EXPENSE. EROSION SHALL BE CONTROLLED IN ACCORDANCE WITH MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY REGULATIONS
9. ALL PROFILES REPRESENT EXISTING GROUND (DASHED LINE) AND FINISHED GRADE (SOLID LINE) ALONG THE ALIGNMENTS INDICATED ON THE PLANS. ELEVATIONS ARE FINISHED GROUND ELEVATIONS
10. ALL DISTURBED AREAS SHALL BE SEEDED BY THE CONTRACTOR USING A SEED MIX APPROVED BY THE OWNER OR THE LOCAL USDA OFFICE.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF UTILITY (PHONE/POWER/CATV) INSTALLATION WITH LOCAL UTILITY COMPANIES
12. THE CONTRACTOR SHALL NOTIFY ONE CALL @ 1-800-424-5555 FOR ONSITE UTILITY LOCATION. ALL EXISTING UTILITIES SHALL BE MARKED BEFORE DIGGING
13. THE CONTRACTOR SHALL MAINTAIN SERVICE OF ALL EXISTING UTILITIES. IF SAID SERVICE IS DAMAGED, THE CONTRACTOR SHALL IMMEDIATELY REPAIR THE DAMAGE AT THE CONTRACTOR'S EXPENSE.
14. THE CONTRACTOR SHALL NOTIFY THE ENGINEER A MINIMUM OF 48 HOURS PRIOR TO BEGINNING ANY WORK.
15. ALL UTILITY CONDUITS FOR IRRIGATION, ELECTRICAL, GAS, PHONE, CATV, ETC. SHALL BE BURIED A MINIMUM 24" FROM FINISHED GRADE WITH TYPE A BACKFILL, UTILIZING TYPE 1 BEDDING, UNLESS DIRECTED OTHERWISE BY ENGINEER.
16. IF THE CONTRACTOR DETERMINES THE NEED TO DISTURB MORE THAN 1.0 ACRE DURING THE CONSTRUCTION OF THE PROJECT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AN MPDES PERMIT AND COMPLYING WITH ALL TERMS OF THE PERMIT. NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK.
17. QUANTITIES SHOWN IN THESE PLANS ARE FOR INFORMATIONAL PURPOSES ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING ACTUAL QUANTITIES.

DRAWING NOTATION

A / 10 — INDICATES CROSS SECTION LOCATION. "A" REFERS TO THE CROSS SECTION DESIGNATION. "10" REFERS TO THE SHEET NUMBER WHERE THE SECTION IS CUT OR SHOWN

1 / 12 — INDICATES DETAIL LOCATION. "1" REFERS TO THE DETAIL DESIGNATION. "12" REFERS TO THE SHEET NUMBER WHERE THE DETAIL IS INDICATED OR SHOWN

ABBREVIATIONS

ACI	AMERICAN CONCRETE INSTITUTE	HWY	HIGHWAY
BAR	REBAR	INV	INVERT ELEVATION
BMP	BEST MANAGEMENT PRACTICES	LF	LINEAR FEET
BOT	BOTTOM	MH	MANHOLE
BVC	BEGIN VERTICAL CURVE	MJ	MECHANICAL JOINT
CFS	CUBIC FEET PER SECOND	O.C.	ON CENTER
CL	CENTERLINE	O.C.E.F.	ON CENTER EACH FACE
CMP	CORRUGATED METAL PIPE	OHP	OVERHEAD POWER
CONC	CONCRETE OR CONCENTRIC	PI	POINT OF INTERSECTION
CP	CONTROL POINT	POT	POINT ON TANGENT
CSP	CORRUGATED STEEL PIPE	PS	PIPE SUPPORT
CTR	CENTER	PT	POINT, POINT OF TANGENCY
CU FT	CUBIC FEET	PVC	POLYVINYL CHLORIDE
CULV	CULVERT	PWR	POWER
DI	DUCTILE IRON OR DRAIN INLET	RCP	REINFORCED CONCRETE PIPE
DIA	DIAMETER	RAW OR ROW	RIGHT OF WAY
EA	EACH	SAN	SANITARY
E.F.	EACH FACE	SST	STAINLESS STEEL
EL, ELEV	ELEVATION	STA	STATION
EOP	EDGE OF PAVEMENT	TBC	TOP BACK OF CURB
EVC	END VERTICAL CURVE	TYP	TYPICAL
FT	FOOT OR FEET	UG	UNDERGROUND
GPM	GALLONS PER MINUTE	WTR	WATER
HP	HORSEPOWER		

BLOCK LEGEND

EXISTING / PROPOSED

- SANITARY SEWER MANHOLE
- SANITARY SEWER CLEANOUT
- SANITARY SEWER CAP
- SANITARY SEWER METER VAULT
- SANITARY SEWER LIFT STATION
- SANITARY SEWER FM (TEE)
- SANITARY SEWER FM (11.25°)
- SANITARY SEWER FM (22.5°)
- SANITARY SEWER FM (45°)
- SANITARY SEWER FM (90°)
- SANITARY SEWER FM (CROSS)
- SANITARY SEWER FM FLANGE
- SANITARY SEWER FM VALVE
- SANITARY SEWER FM REDUCER
- SANITARY SEWER FM BF PREV.
- STORMWATER AREA INLET
- STORMWATER COMBO INLET
- STORMWATER FLARED END
- STORMWATER MANHOLE
- STORMWATER PUMP STATION
- STORM SEWER HEAD WALL
- WATER FITTING BEND 11.25°
- WATER FITTING BEND 22.5°
- WATER FITTING BEND 45°
- WATER FITTING BEND 90°
- WATER FITTING CAP
- WATER FITTING CROSS
- WATER FITTING FLANGE
- WATER FITTING TEE
- WATER FITTING VALVE

EXISTING / PROPOSED

- WATER VENT
- WATER MANHOLE
- WATER REDUCER
- WATER MARKER
- FIRE HYDRANT
- WATER CURB STOP
- WATER METER
- WATER VAULT
- WATER BOOSTER STATION
- WATER WELL
- WATER MONITORING WELL
- WATER TEST STATION
- CABLE TELEVISION MARKER
- CABLE TELEVISION PULL BOX
- CABLE TELEVISION PEDESTAL
- CABLE TELEVISION VAULT
- POWER GUY ANCHOR
- POWER GUY POLE
- POWER MANHOLE
- POWER MARKER
- ELECTRIC POWER METER
- POWER POLE
- POWER TRANSFORMER
- POWER VAULT
- STREET LIGHT
- IRRIGATION PULL BOX
- IRRIGATION SPRINKLER HEAD
- IRRIGATION VALVE
- IRRIGATION VAULT

EXISTING / PROPOSED

- FIBER OPTIC MANHOLE
- FIBER OPTIC MARKER
- FIBER OPTIC PULL BOX
- FIBER OPTIC PEDESTAL
- FIBER OPTIC VAULT
- NATURAL GAS MARKER
- NATURAL GAS METER
- NATURAL GAS VALVE
- TELEPHONE MANHOLE
- TELEPHONE MARKER
- TELEPHONE PULL BOX
- TELEPHONE PEDESTAL
- TELEPHONE VAULT
- TREE (DECIDUOUS)
- TREE (CONIFER)
- ADA RAMP
- SIGN
- BOLLARD
- MILEPOST
- CATTLE GUARD
- BORE LOCATION
- PROP CORNER ALUMINUM CAP
- PROP CORNER BRASS CAP
- PROP CORNER CHISELED X
- HIGHWAY ROW MONUMENT
- PROP CORNER IRON PIPE
- PROP CORNER LEAD & TACK
- PROP CORNER REBAR
- PROP CORNER STONE
- CONTROL POINT
- PROP CORNER PLASTIC CAP

LINE STYLE LEGEND

EXISTING	PROPOSED	
		MAJOR CONTOUR
		MINOR CONTOUR
OHT	OHT	OVERHEAD TELEPHONE
OHP	OHP	OVERHEAD POWER
NG	NG	NATURAL GAS
IR	IR	IRRIGATION LINE
FO	FO	FIBER OPTIC
FM	FM	FORCEMAIN
O	O	FENCE (CHAIN)
X	X	FENCE (BARBED)
[]	[]	FENCE (PRIVACY)
F	F	FIRE LINE
OHTV	OHTV	OVERHEAD TV
RW	RW	RAW WATER
SS	SS	SEWER
ST	ST	STORM
UGP	UGP	UNDERGROUND POWER
UGT	UGT	UNDERGROUND TELEPHONE
UGTV	UGTV	UNDERGROUND TV
W	W	WATER

PRELIMINARY

NO.	REVISION	BY	DATE

PREPARED BY

WWC ENGINEERING
1275 MAPLE STREET, SUITE F
HELENA, MT 59601
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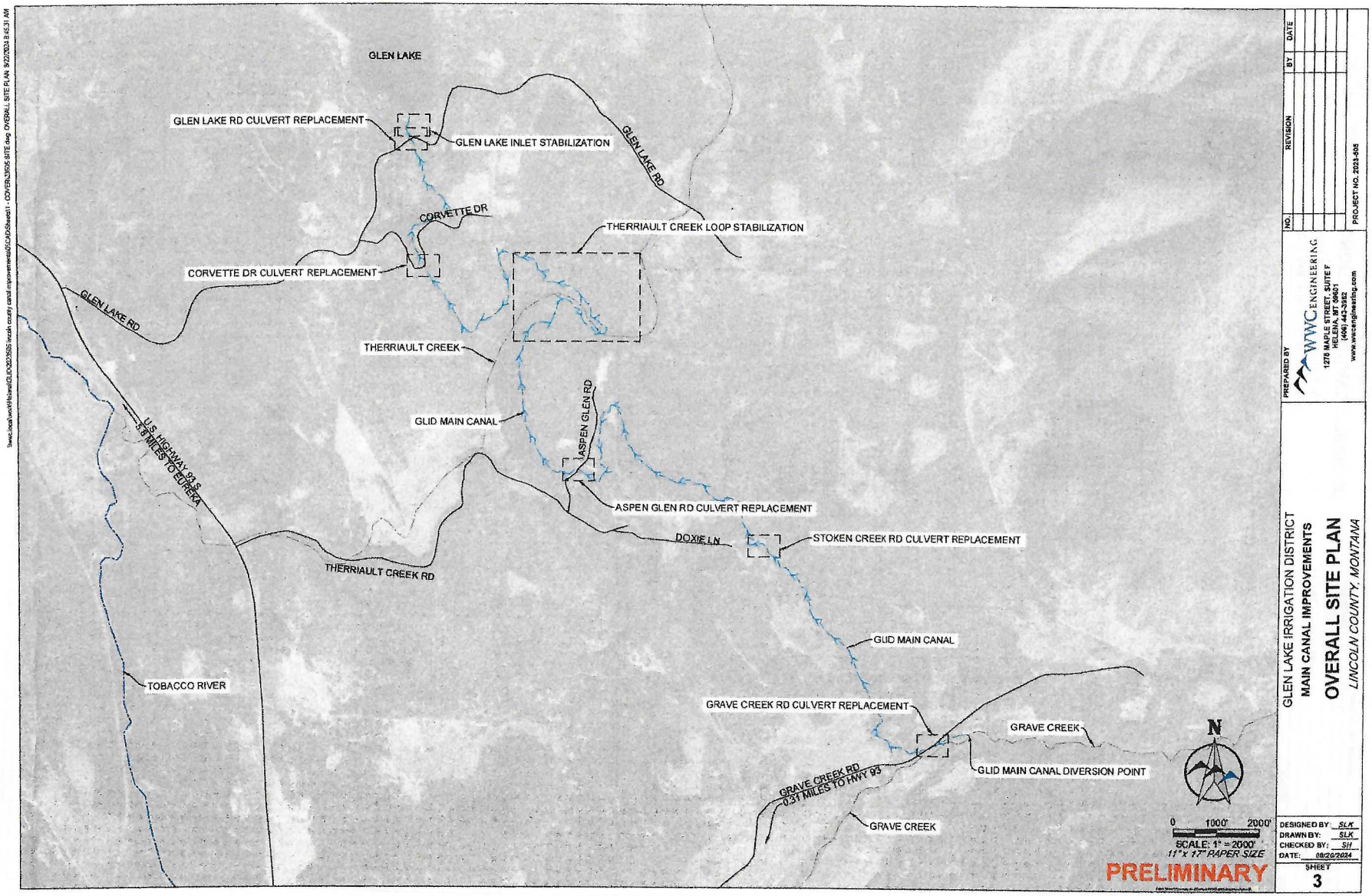
www.wwcengineering.com

PROJECT NO. 2023-505

GLEN LAKE IRRIGATION DISTRICT
MAIN CANAL IMPROVEMENTS
GENERAL NOTES
LINCOLN COUNTY, MONTANA

DESIGNED BY: SLK
DRAWN BY: SLK
CHECKED BY: SH
DATE: 08/20/2024
SHEET 2



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PROJECT NO. 2023-505

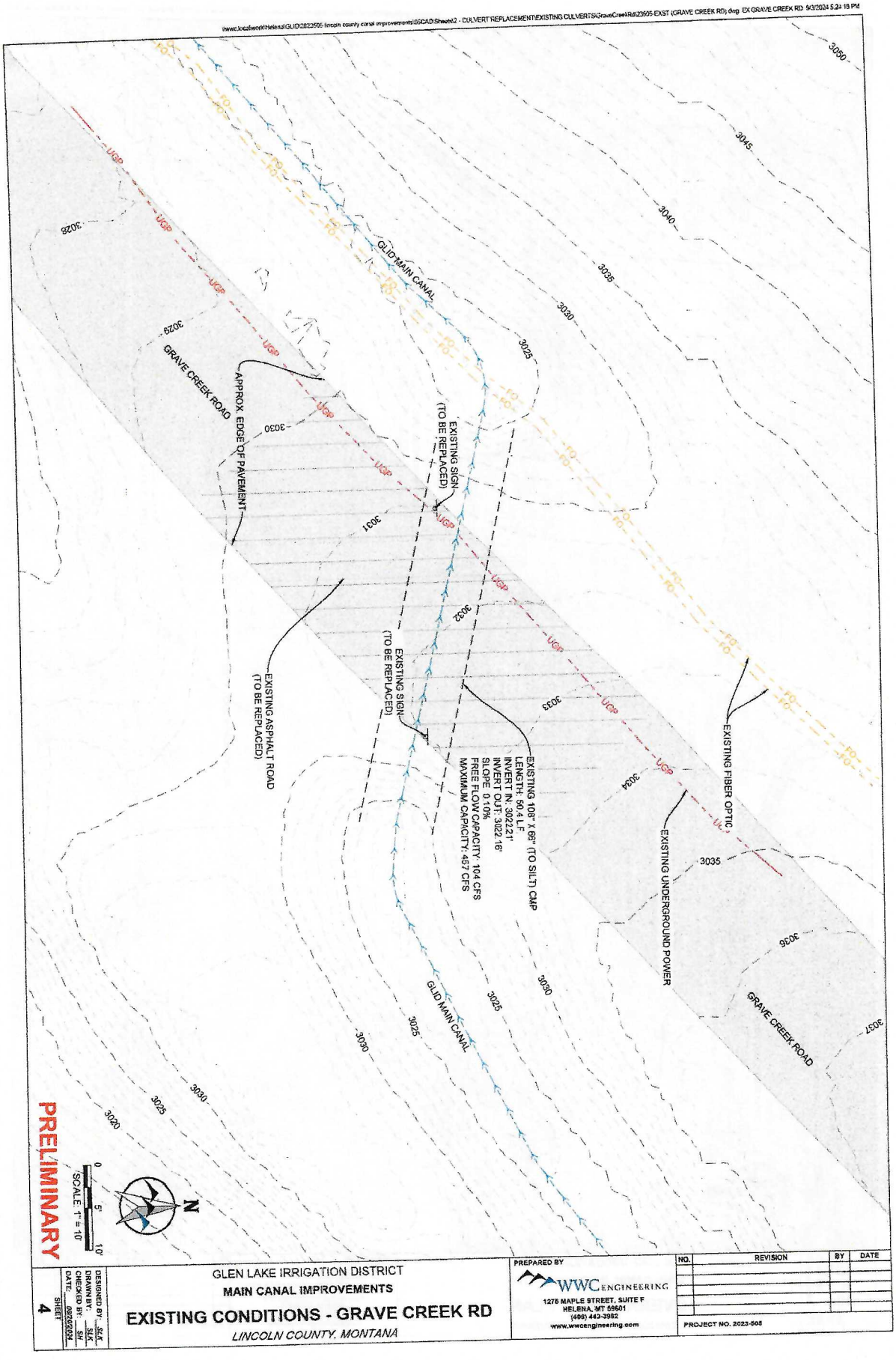
GLEN LAKE IRRIGATION DISTRICT
MAIN CANAL IMPROVEMENTS

OVERALL SITE PLAN

LINCOLN COUNTY, MONTANA

DESIGNED BY: SLK
DRAWN BY: SLK
CHECKED BY: SH
DATE: 08/20/2024

SHEET
3



PRELIMINARY

SCALE: 1" = 10'

GLEN LAKE IRRIGATION DISTRICT

MAIN CANAL IMPROVEMENTS

EXISTING CONDITIONS - GRAVE CREEK RD

LINCOLN COUNTY, MONTANA

DESIGNED BY: SLK
DRAWN BY: SLK
CHECKED BY: SN
DATE: 09/25/2024
SHEET 4

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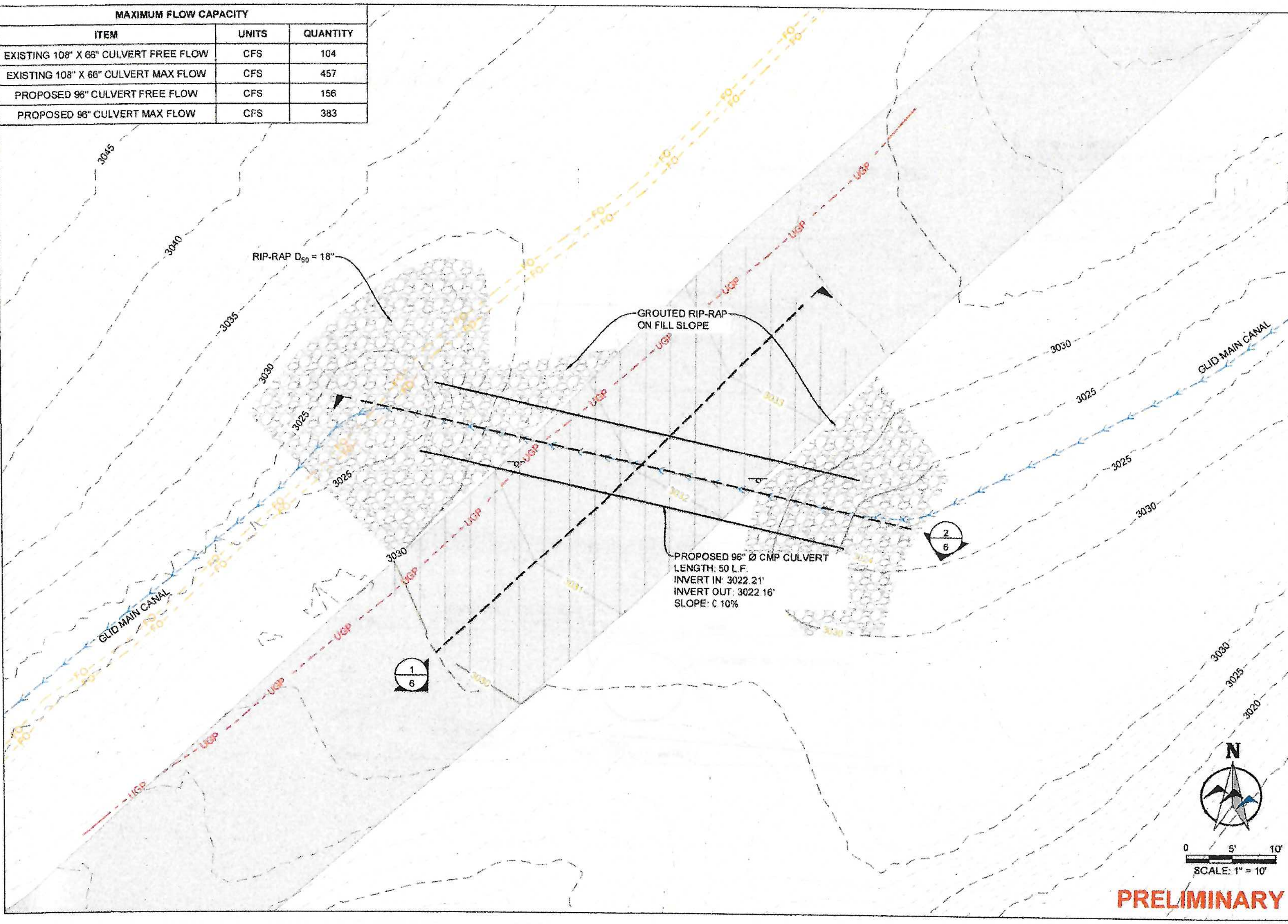
PROJECT NO. 2022-505

MAXIMUM FLOW CAPACITY		
ITEM	UNITS	QUANTITY
EXISTING 108" X 66" CULVERT FREE FLOW	CFS	104
EXISTING 108" X 66" CULVERT MAX FLOW	CFS	457
PROPOSED 96" CULVERT FREE FLOW	CFS	156
PROPOSED 96" CULVERT MAX FLOW	CFS	383



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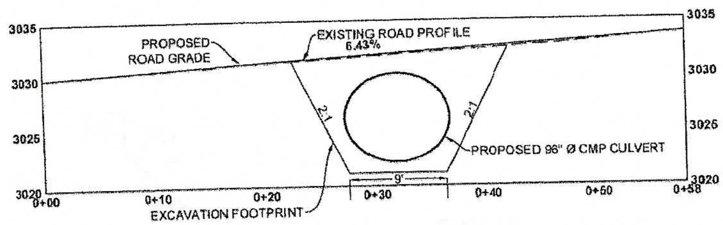
GLEN LAKE IRRIGATION DISTRICT
MAIN CANAL IMPROVEMENTS
PLAN - GRAVE CREEK RD
LINCOLN COUNTY, MONTANA

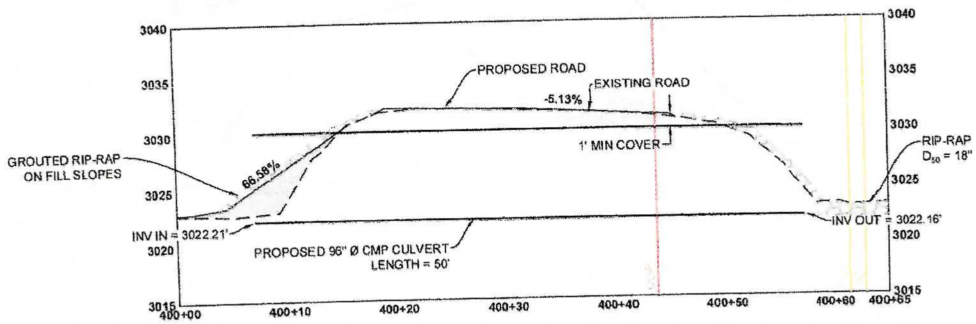
NO.	REVISION	BY	DATE

PROJECT NO. 2023-505

DESIGNED BY: SLK
DRAWN BY: SLK
CHECKED BY: SH
DATE: 08/20/2024
SHEET 5



1/5 GRAVE CREEK ROAD CULVERT SECTION VIEW
SCALE: NOT TO SCALE



2/5 GRAVE CREEK ROAD CULVERT PROFILE VIEW
SCALE: NOT TO SCALE

NOTES:
1) FETS, CUTOFF WALL, AND BEDDING NOT SHOWN FOR CLARITY.
2) CONTRACTOR TO GRADE CHANNEL UPSTREAM AND DOWNSTREAM OF PROPOSED CULVERT TO FACILITATE POSITIVE DRAINAGE THROUGH THE CHANNEL AND CULVERT.
3) CONTRACTOR TO INSTALL 8-OZ NON-WOVEN GEOTEXTILE UNDER THE PROPOSED RIPRAP SECTIONS. ALL RIPRAP TO BE INSTALLED TO A DEPTH OF 3'.

PRELIMINARY

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GLEN LAKE IRRIGATION DISTRICT
MAIN CANAL IMPROVEMENTS
PROFILE - GRAVE CREEK RD
LINCOLN COUNTY, MONTANA

DESIGNED BY: SLK
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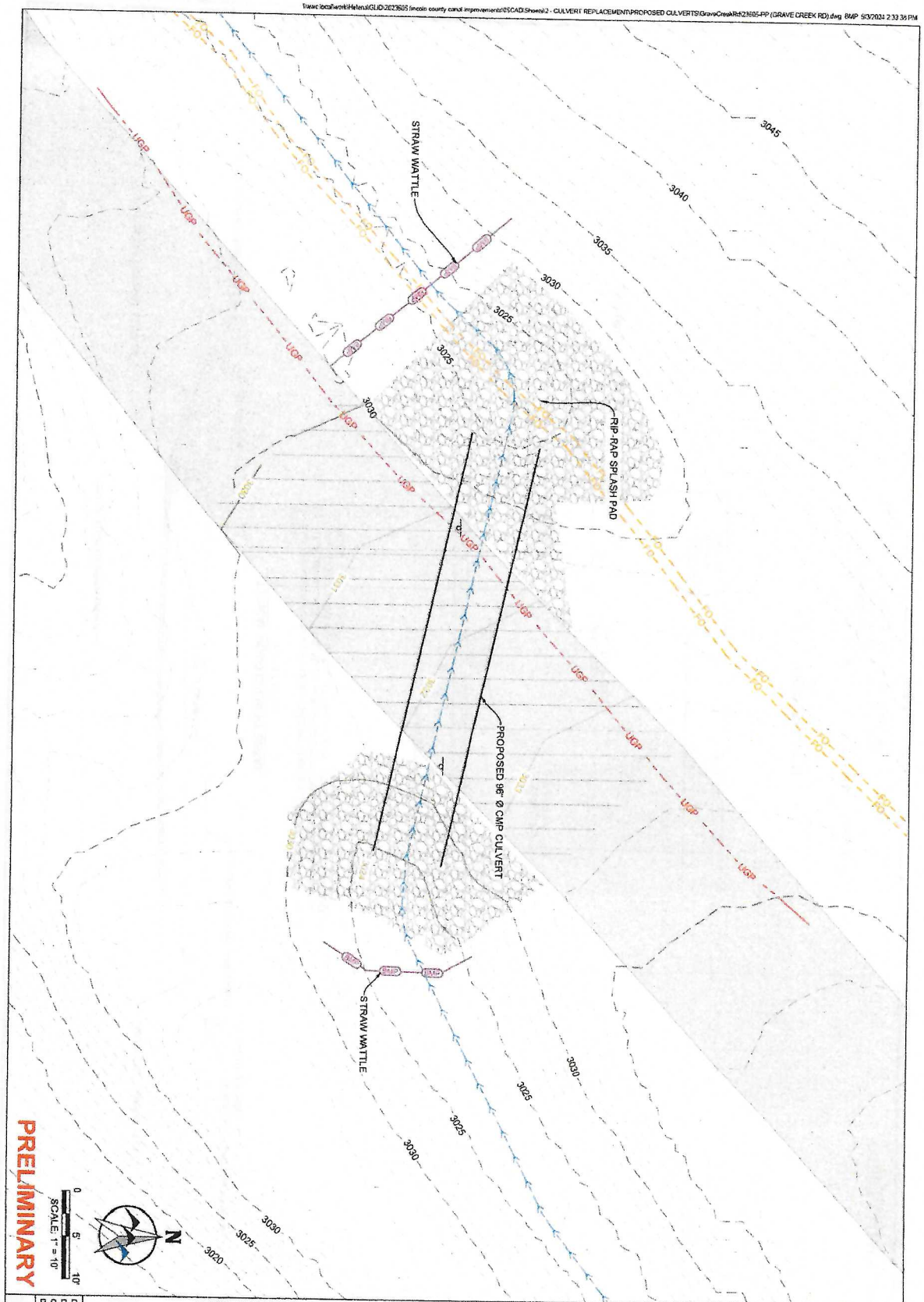
DATE: 08/20/2024
SHEET 6



PRELIMINARY

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DATE:	09/20/2024

GLEN LAKE IRRIGATION DISTRICT

MAIN CANAL IMPROVEMENTS

BMP PLAN - GRAVE CREEK RD

LINCOLN COUNTY, MONTANA

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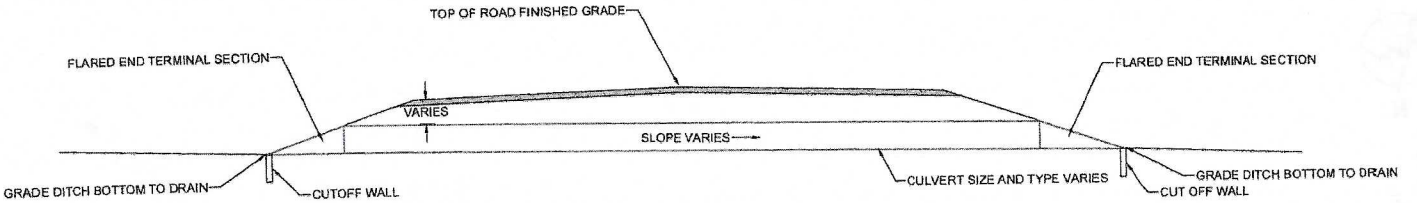
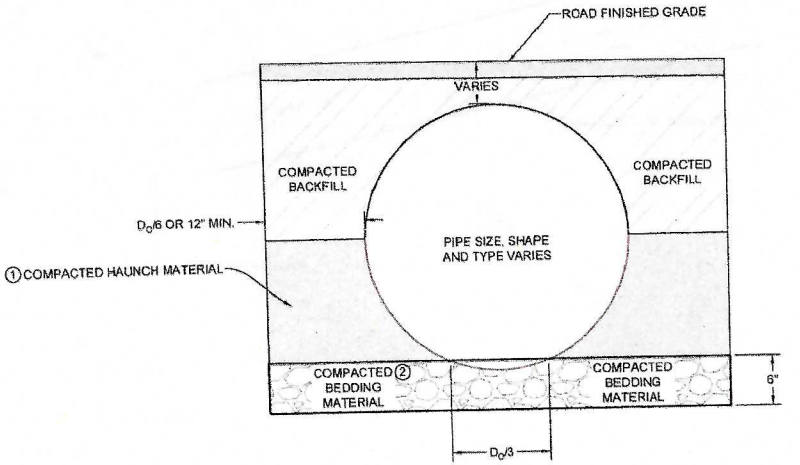
PROJECT NO. 2023-505



TYPICAL ROAD CULVERT DETAIL

NOT TO SCALE

NOTES.
1. CMP MINIMUM BURY DEPTH = 12"-24" FINISHED GRADE TO TOP OF PIPE.
2. ALL ROAD CULVERTS INSTALLED W/ FLARED END TERMINAL SECTIONS PER MDT DRAWINGS 603-08 & 603-10. CUTOFF WALLS TO BE INSTALLED PER MDT DRAWING NO. 603-30



CULVERT TYPICAL SECTION

NOT TO SCALE

MATERIAL NOTES:
1. HAUNCH MATERIAL TO BE GM, SM, ML OR GC, SC WITH LESS THAN 20% PASSING THE #200 SIEVE.
2. BEDDING MATERIAL TO BE SW, SP, GW, OR GP.
3. NO PARTICLE LARGER THAN 1.0" TO BE WITHIN 12" OF THE PIPE.

PRELIMINARY

NO.	REVISION	BY	DATE

PROJECT NO. 2023-305

PREPARED BY

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GLEN LAKE IRRIGATION DISTRICT
MAIN CANAL IMPROVEMENTS
CULVERT DETAILS
LINCOLN COUNTY, MONTANA

DESIGNED BY: SLK
DRAWN BY: SLK
CHECKED BY: SN
DATE: 08/20/2024

SHEET
39