J-751

STATE OF MONTANA
DEPARTMENT OF ENVIRONMENTAL QUALITY
CERTIFICATE OF SUBDIVISION PLAT APPROVAL
(Section 76-4-101 et seq.)

TO: County Clerk and Recorder
Gallatin County
Bozeman, Montana

E.Q. # 22-1942

THIS IS TO CERTIFY THAT the plans and supplemental information relating to the subdivision known as:

Bridger Shadows West, Phase 1

LOT 3 of MINOR SUBDIVISION NO. 502, located in the NE¼ of Section 19 and the NW¼ of Section 20, Township 1 South, Range 5 East, P.M.M., Gallatin County, Montana as found in the records of the Gallatin County Clerk & Recorder, containing 57.10 acres and subject to any existing easement of record.

Consisting of 20 lots (Lots 1-4, Lots 13-27, and Open Space) having been reviewed by personnel of the Water Quality Division, and,

THAT the land designated as "Lot A" on the Plat is exempt from review by Administrative Rules of Montana 17.36.605(2)(a) "a parcel that has no facilities for water supply, wastewater disposal, storm drainage, or solid waste disposal, if no facilities will be constructed on the parcel," and,

THAT the documents and data required by ARM Chapter 17 Section 36 have been submitted and found to be in compliance therewith, and,

THAT the purpose of this proposal is to lift sanitary restrictions from the lots, and,

THAT the approval of the Plat is made with the understanding that the following conditions shall be met:

THAT the lot sizes as indicated on the Plat to be filed with the county clerk and recorder will not be further altered without approval, and,

THAT the Open Space Lot shall only be used for stormwater retention pond, fire pond, and an easement for the fire supply line and the sewer main, and,

THAT each lot shall be used for one living unit, and,

THAT the approved proposed locations of the individual drinking water well shall be staked by the engineer or site evaluator prior to any construction on the lot, and,

THAT the proposed individual drinking water system will consist of a well drilled to a minimum depth of 25 feet constructed in accordance with the criteria established in Title 17, Chapter 36, Sub-Chapters 1, 3, and 6 ARM and the most current standards of the Department of Environmental Quality, and,

THAT data provided indicates an acceptable water source at a depth of approximately 60-feet, and,

THAT the top of the well casing shall be sealed with a screened, vented sanitary well seal which, when installed, creates a watertight seal to prevent the entrance of water or foreign materials into the well, and,

THAT the public wastewater collection, treatment, and disposal system and the storm drainage system will be in accordance with the approval issued under EQ 22-1974, and,

THAT the bottom of the drainfield shall be at least four feet above the seasonal high groundwater table, and,

THAT no sewage treatment system shall be constructed within 100 feet of the maximum high-water level of a 100-year flood of any stream, lake, watercourse, or irrigation ditch, nor within 100 feet of any domestic water supply source, and,

THAT water supply systems, sewage treatment systems and storm drainage systems will be located as shown on the approved plans, and,

THAT the operation and maintenance of water supply, sewage treatment system, and stormwater facilities shall be the responsibility of the lot owner, and,

THAT the storm drainage facilities will be in accordance with the approval issued under EQ#22-1974, and,

THAT if construction disturbance will exceed 1-acre, a construction stormwater permit from the Department will be required, and,

THAT the developer and/or owner of record shall provide each purchaser of property with a copy of the Plat approved location of water supply, sewage treatment system and storm drainage structures as shown on the attached lot layout, and a copy of this document, and,

THAT instruments of transfer for this property shall contain reference to these conditions, and,

THAT plans and specifications for any proposed sewage treatment systems will be reviewed and approved by the county health department and will comply with local regulations and ARM, Title 17, Chapter 36, Subchapters 3 and 9, in effect when the subdivision application was submitted, and,

THAT departure from any criteria set forth in the approved plans and specifications and Title 17, Chapter 36, Sub-Chapters 1, 3, and 6 ARM when erecting a structure and appurtenant facilities in said subdivision without Department approval, is grounds for injunction by the Department of Environmental Quality, and,

Pursuant to Section 76-4-122 (2)(a), MCA, a person must obtain the approval of both the State under Title 76, Chapter 4, MCA, and local Board of Health under section 50-2-116(1)(i), before filing a subdivision plat with the county clerk and recorder.

YOU ARE REQUESTED to record this certificate by attaching it to the Plat filed in your office as required by law.

DATED this 1st day of November, 2023.

REVIEWED AND APPROVED BY:

Lori Christenson, MPH
Health Officer
Gallatin City-County Health Department

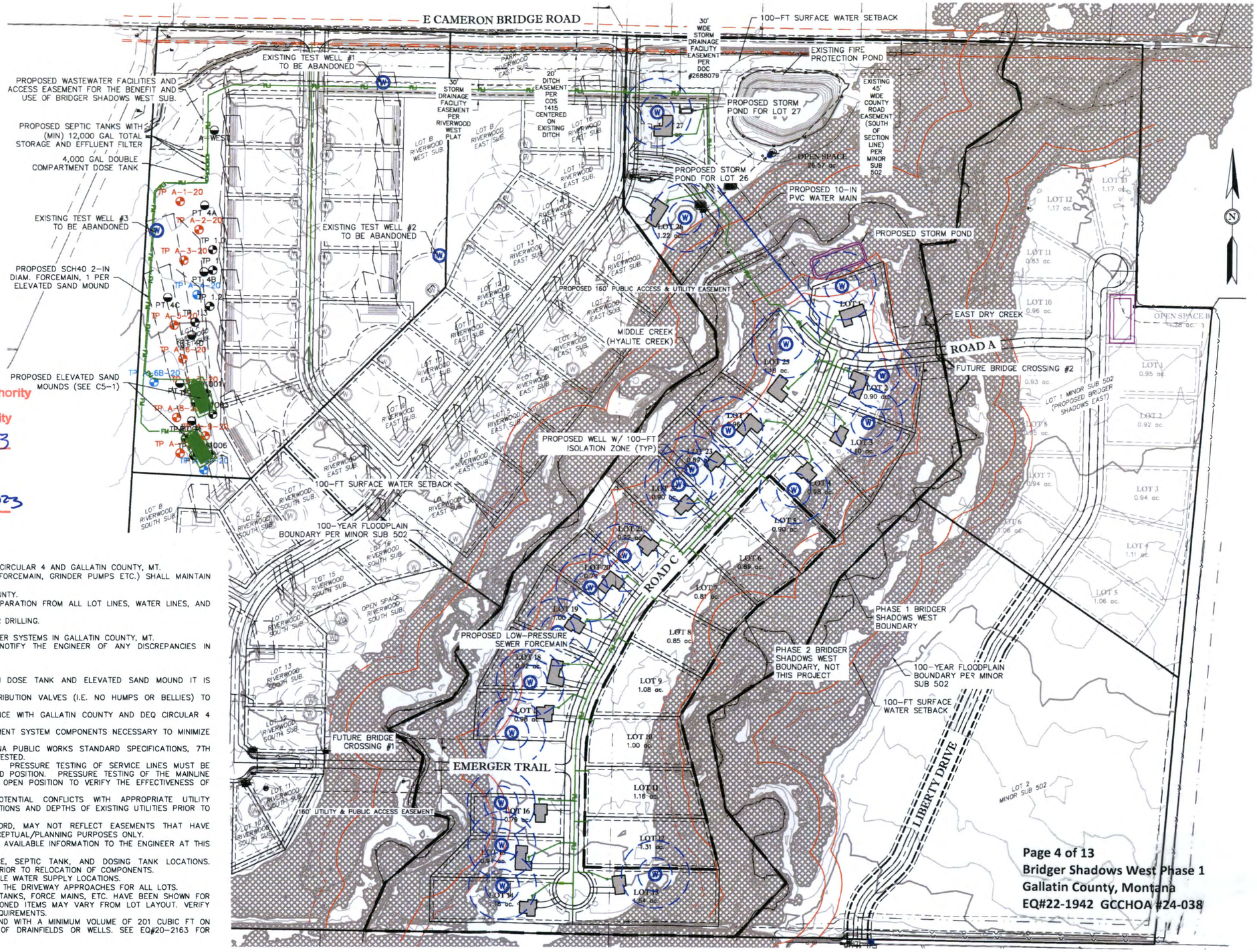
CHRISTOPHER DORRINGTON,
DIRECTOR

FOR Shawn Rowland, MS RS, Section Supervisor
Subdivision Section
Engineering Bureau
Water Quality Division
Department of Environmental Quality

Owner's Name: Riverwood One, LLC (Chris Murphy)

LEGEND

- PROPOSED WELL WITH 50-FT AND 100-FT ISOLATION ZONE
- APPROVED WELL LOCATION PER EQ#20-1385 AND #20-1387, #21-1248, #21-1798. #21-1914
- CONCEPTUAL LOCATION OF SINGLE FAMILY HOME W/ UP TO 5-BEDROOMS AND DRIVEWAY
- APPROVED DRAINFIELD LOCATION PER EQ#20-1385
- APPROVED ELEVATED SAND MOUND LOCATION PER EQ#20-1387 & EQ#21-1914
- FM — PROPOSED SEWER FORCEMAIN
- PROPOSED E-ONE SIMPLEX GRINDER PUMP
- PROPOSED 18-IN CULVERT (OR APPROVED EQUIVALENT)



Reviewed by the Local Reviewing Authority
Under contract with the
Department of Environmental Quality

Local Reviewer — Date 11/1/23

*well conversion only

Accepted under contract

M. Waite — DEQ Representative — Date 11/7/2023

GENERAL NOTES:
- NO WELLS OR SURFACE WATER WITHIN 100' OF DRAINFIELD AREAS.
- WORK SHALL BE PERFORMED IN ACCORDANCE TO MDEQ CIRCULAR 2, CIRCULAR 4 AND GALLATIN COUNTY, MT.
- CLOSED COMPONENTS (SEPTIC TANK, DOSING TANK, SERVICE PIPE, FORCEMAIN, GRINDER PUMPS ETC.) SHALL MAINTAIN 50' MINIMUM FROM SURFACE WATER AND WELLS.
- INSTALL SEWER SERVICE CLEAN-OUTS AS REQUIRED BY GALLATIN COUNTY.
- WASTEWATER SYSTEM COMPONENTS SHALL MAINTAIN 10' MINIMUM SEPARATION FROM ALL LOT LINES, WATER LINES, AND STRUCTURES.
- CONTRACTOR RESPONSIBLE FOR UTILITY LOCATE PRIOR TO DIGGING OR DRILLING.
- CONTRACTOR RESPONSIBLE FOR MEETING ALL UTILITY REQUIREMENTS.
- INSTALLER SHALL BE LICENSED AND QUALIFIED TO INSTALL WASTEWATER SYSTEMS IN GALLATIN COUNTY, MT.
- CONTRACTOR SHALL VERIFY ALL PROJECT SITE CONDITIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES IN WRITING.

SITE SPECIFIC NOTES:
- DISTRIBUTION VALVES SHALL BE PLACED AT HIGH POINT BETWEEN DOSE TANK AND ELEVATED SAND MOUND IT IS SERVING.
- THE 2" SCH40 PVC FORCEMAINS SHALL MAINTAIN GRADE TO DISTRIBUTION VALVES (I.E. NO HUMPS OR BELLIES) TO MINIMIZE FREEZING POTENTIAL.
- CONTRACTOR SHALL INSTALL ALL OTHER COMPONENTS IN COMPLIANCE WITH GALLATIN COUNTY AND DEQ CIRCULAR 4 REGULATIONS.
- CONTRACTOR SHALL INSULATE ALL APPLICABLE WASTEWATER TREATMENT SYSTEM COMPONENTS NECESSARY TO MINIMIZE FREEZING POTENTIAL.
- CONTRACTOR TO TEST WATER MAIN IN ACCORDANCE WITH MONTANA PUBLIC WORKS STANDARD SPECIFICATIONS, 7TH EDITION SECTION 02660 PART 3.4. WATER MAIN SHALL BE LEAKAGE TESTED.
- CONTRACTOR SHALL AIR TEST SEWER FORCEMAIN PER UNI-B-690. PRESSURE TESTING OF SERVICE LINES MUST BE COMPLETED WITH THE BALL VALVE AT THE MAINLINE IN THE CLOSED POSITION. PRESSURE TESTING OF THE MAINLINE MUST BE COMPLETED WITH THE SERVICE LINE BALL VALVES IN THE OPEN POSITION TO VERIFY THE EFFECTIVENESS OF CHECK VALVES.
- CONTRACTOR TO COORDINATE ALL UTILITY CROSSINGS AND POTENTIAL CONFLICTS WITH APPROPRIATE UTILITY AGENCIES/COMPANIES. CONTRACTOR TO FIELD VERIFY ACTUAL LOCATIONS AND DEPTHS OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.
- EASEMENTS SHOWN MAY NOT INCLUDE ALL EASEMENTS OF RECORD, MAY NOT REFLECT EASEMENTS THAT HAVE SUBSEQUENTLY BEEN VACATED/REMOVED, AND ARE SHOWN FOR CONCEPTUAL/PLANNING PURPOSES ONLY.
- SETBACKS SHOWN MAY NOT BE ALL INCLUSIVE, REPRESENT THE BEST AVAILABLE INFORMATION TO THE ENGINEER AT THIS TIME, AND ARE SHOWN FOR CONCEPTUAL/PLANNING PURPOSES ONLY.
- ON-SITE GRADING MAY REQUIRE MODIFICATION TO SEWER SERVICE, SEPTIC TANK, AND DOSING TANK LOCATIONS. ENGINEER MUST BE CONTACTED TO CONDUCT A PRESSURE DESIGN PRIOR TO RELOCATION OF COMPONENTS.
- CONTRACTOR TO FIELD VERIFY ALL EXISTING WASTEWATER AND POTABLE WATER SUPPLY LOCATIONS.
- INSTALL 18" DIAMETER CMP CULVERT (OR APPROVED EQUIVALENT) AT THE DRIVEWAY APPROACHES FOR ALL LOTS.
- POTENTIAL LOCATIONS OF HOMES, DRIVEWAYS, SEPTIC TANKS, DOSE TANKS, FORCE MAINS, ETC. HAVE BEEN SHOWN FOR CONCEPTUAL PURPOSES ONLY. FUTURE LOCATIONS OF AFOREMENTIONED ITEMS MAY VARY FROM LOT LAYOUT. VERIFY SETBACKS WITH ZONING REQUIREMENTS AND ANY OTHER SETBACK REQUIREMENTS.
- GRADE DRAINAGE FROM IMPERVIOUS SURFACES TO STORMWATER POND WITH A MINIMUM VOLUME OF 201 CUBIC FT ON DOWNSTREAM SIDE OF LOT. PONDS SHALL NOT BE WITHIN 25 FT OF DRAINFIELDS OR WELLS. SEE EQ#20-2163 FOR OVERALL STORM DESIGN.

Page 4 of 13
Bridger Shadows West Phase 1
Gallatin County, Montana
EQ#22-1942 GCCHOA #24-038

NO.	REVISIONS	DRAWN BY	DATE

0 150 300 450
SCALE (FEET)

PROJECT ENGINEER: MAF | DRAWN BY: EVR, ARS
DESIGNED BY: EVR, ARS | REVIEWED BY: MAF

MONTANA MARK A. HASTING No. 12071 PE REGISTERED PROFESSIONAL ENGINEER

BRIDGER SHADOWS WEST - PH. 1
WASTEWATER SITE PLAN
NE 1/4 SEC 19 & NW 1/4 SEC 20, T1S, R5E, P.M.M., GALLATIN COUNTY

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5770
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PROJECT #:18-014.20
DATE: 08/01/2023
SHEET C5-0
BRIDGER SHADOWS WEST

DRY FLY LANE

RIVERWOOD WEST LOT 2

RIVERWOOD WEST LOT 3

RIVERWOOD WEST LOT 4

RIVERWOOD WEST LOT 5

RIVERWOOD WEST LOT 6

RIVERWOOD WEST LOT 7

LOT 8 RIVERWOOD EAST SUB

LOT 1 RIVERWOOD EAST SUB

LOT LINE, TYP.

APPROVED ELEVATED SAND MOUND LOCATION PER EQ# 21-1914 (TYP.)

100-FT MIXING ZONE PER EQ# 20-1385 (TYP.)

APPROXIMATE LOCATION OF PROPOSED 4,000-GAL CONCRETE DUPLEX DOSE TANK. INSTALL TWO (2) ORENCO PFEF100-B SUBMERSIBLE EFFLUENT PUMPS (OR APPROVED EQUIVALENT) WITH AN ORENCO S1 CONTROL PANEL AND ANCHOR BRAND 10' MINI FLOATS.

PROPOSED ELEVATED SAND MOUNDS (SEE DETAILS)

APPROXIMATE LOCATION OF PROPOSED SEPTIC TANKS WITH TOTAL MIN. STORAGE VOLUME OF 12,000 GAL. PROPOSED CONFIGURATION TO CONSIST OF THREE (3) 5,000-GALLON SINGLE COMPARTMENT CONCRETE SEPTIC TANKS INSTALLED IN SERIES. INSTALL BAFFLES AT OUTLETS OF FIRST AND SECOND TANKS. INSTALL ORENCO BIOTUBE FILTER (FT1254-36AR OR APPROVED EQUIVALENT) AT OUTLET OF LAST SEPTIC TANK.

EXISTING TEST WELL LOCATION (TO BE ABANDONED)

RIVERWOOD WEST LOT A

INSTALL TWO (2) ORENCO V6403 DISTRIBUTING VALVES (SEE DETAILS)

500-FT MIXING ZONE (TYP)

PROPOSED WASTEWATER EASEMENT FOR THE BENEFIT AND USE OF BRIDGER SHADOWS WEST SUBDIVISION

LOT 5 MINOR SUB. NO. 487

INSTALL TWO (2) 2" DIA. SCH 40 PVC FORCEMAINS TO ELEVATED SAND MOUNDS.

(M) N03°08'29"E 2657.56'

NOTES:
- FOR EACH ELEVATED SAND MOUND INSTALL TWELVE (12) 84-FT LONG 1.5" DIA. SCH40 PVC LATERALS WITH $\frac{1}{8}$" DIA. ORIFICES IN 3-FT WIDE GRAVELLESS CHAMBERS.
- ELEVATED SAND MOUNDS SHALL BE SEPARATED INTO THREE (3) ZONES WITH FOUR (4) 84-FT LONG LATERALS PER ZONE.

Bridger Shadows West Phase 1
Gallatin County, Montana
EQ#22-1942 GCCHOA #24-038

NO.	REVISIONS	DRAWN BY	DATE

0 40 80 120
SCALE (FEET)

PROJECT ENGINEER: MAF | DRAWN BY: EVR
DESIGNED BY: EVR | REVIEWED BY: MAF

MONTANA MARK A. FASTING No. 12071 PE PROFESSIONAL ENGINEER

BRIDGER SHADOWS WEST - PH. 1
ELEVATED SAND MOUNDS PLAN
NE 1/4 SEC 19 & NW 1/4 SEC 20, T1S, R5E, P.M.M., GALLATIN COUNTY

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
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FAX (406) 582-5770
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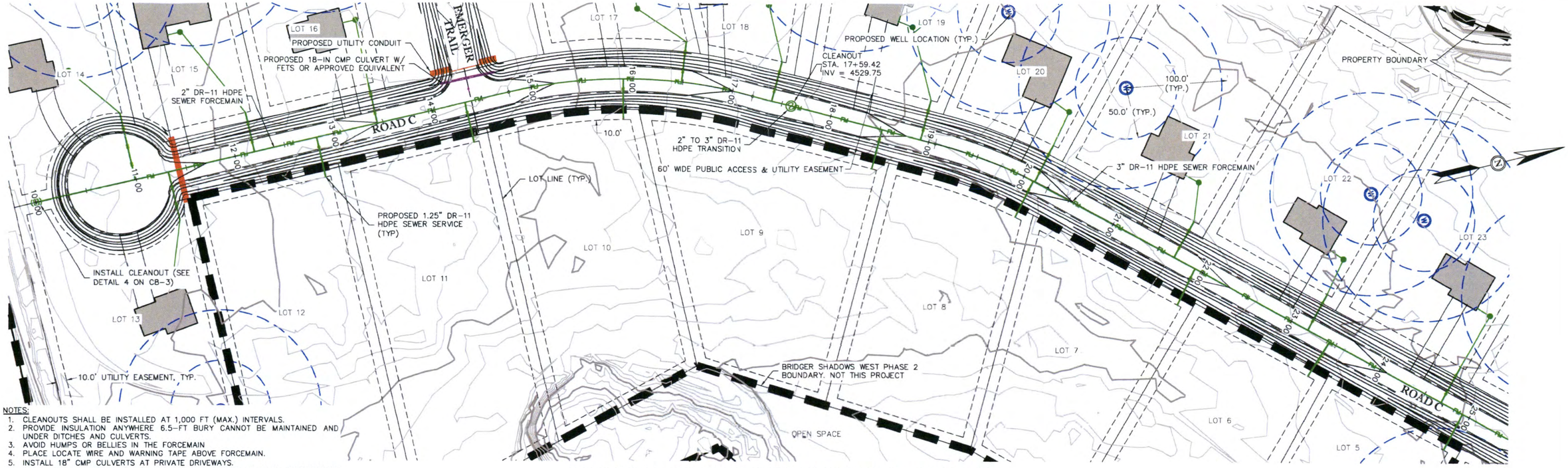
PROJECT #:18-014.20
DATE: 08/01/2023

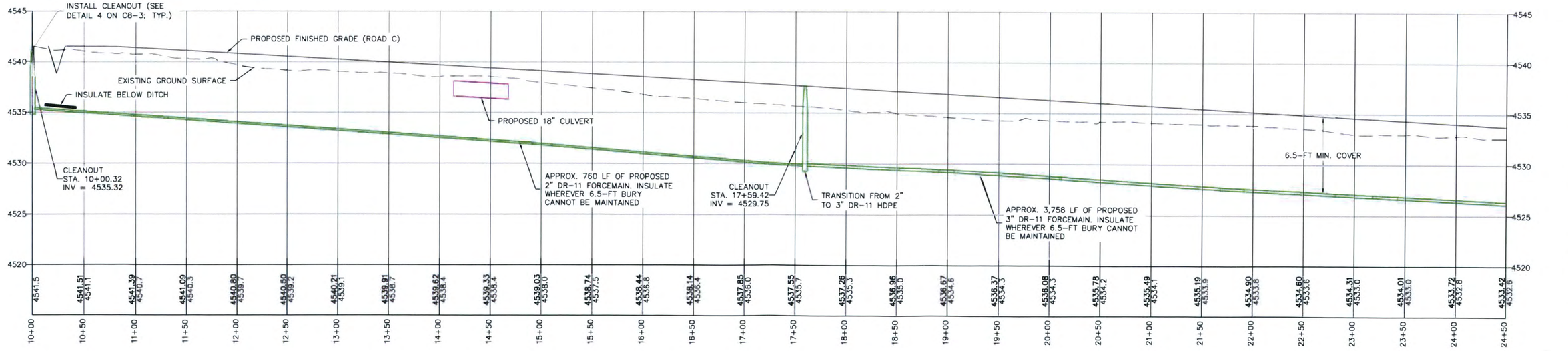
SHEET
C5-1

BRIDGER SHADOWS WEST



PLAN VIEW - SEWER FORCEMAIN (STA 10+00 - STA 24+50)

NOTES:
1. CLEANOUTS SHALL BE INSTALLED AT 1,000 FT (MAX.) INTERVALS.
2. PROVIDE INSULATION ANYWHERE 6.5-FT BURY CANNOT BE MAINTAINED AND UNDER DITCHES AND CULVERTS.
3. AVOID HUMPS OR BELLIES IN THE FORCEMAIN
4. PLACE LOCATE WIRE AND WARNING TAPE ABOVE FORCEMAIN.
5. INSTALL 18" CMP CULVERTS AT PRIVATE DRIVEWAYS.
6. WELLS SHALL MAINTAIN 50-FT MINIMUM FROM CLOSED COMPONENTS INCLUDING SEWER SERVICES, FORCEMAINS, GRINDER PUMPS, ETC.
7. FOR CLEANOUT INSTALLATION SEE DETAIL 4 ON CB-3.
8. SEWER FORCEMAIN GENERAL APPROXIMATE PLUMBED DEPTH IS 7.5-FT BURY, BUT MAY VARY THROUGHOUT (6.5-FT MINIMUM BURY DEPTH REQUIRED).
9. SERVICES SHOWN FOR PHASE 2 (LOTS 5-12) NOT CONNECTED TO PHASE 1 SEWER FORCEMAIN (SHOWN FOR PLANNING PURPOSES ONLY).



PROFILE VIEW - SEWER FORCEMAIN (STA 10+00 - STA 24+50)

NO.	REVISIONS	DRAWN BY	DATE

HORIZONTAL SCALE FEET 0 50 100 | VERTICAL SCALE FEET 0 5 10

PROJECT ENGINEER: MAF | DRAWN BY: EVR, ARS
DESIGNED BY: EVR, ARS | REVIEWED BY: MAF

MONTANA MARK A. FASTING No. 12071 PE REGISTERED PROFESSIONAL ENGINEER

BRIDGER SHADOWS WEST - PH. 1
SEWER FORCEMAIN - PLAN & PROFILE
NE 1/4 SEC 19 & NW 1/4 SEC 20, T1S, R5E, P.M.M., GALLATIN COUNTY

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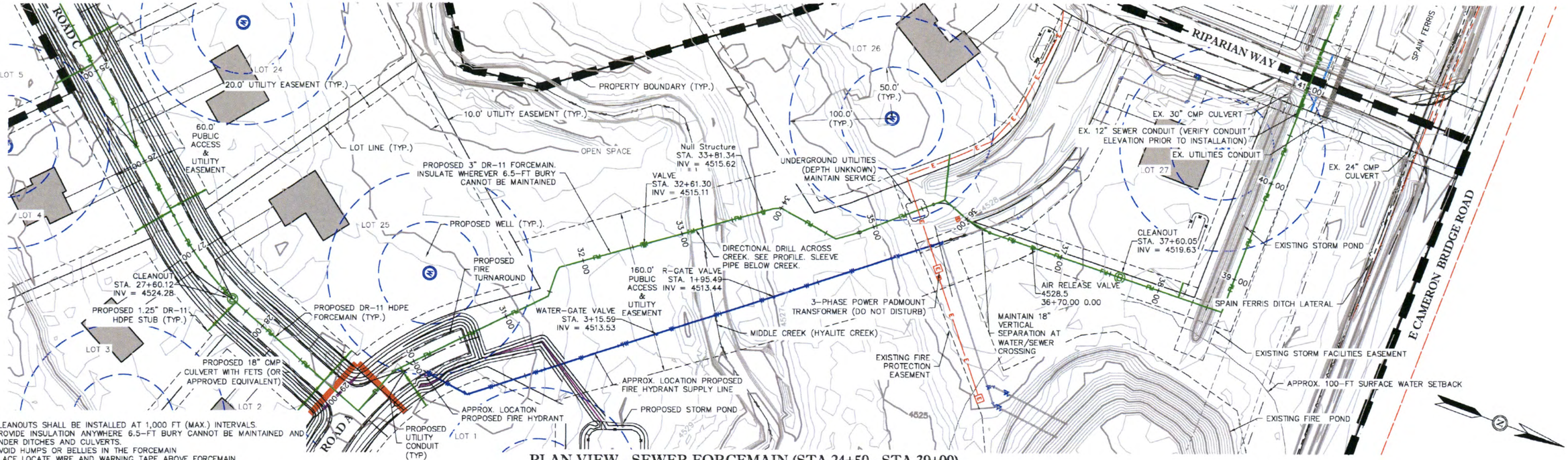
PROJECT #:18-014.20
DATE: 08/01/2023
SHEET C5-3
BRIDGER SHADOWS SEWER



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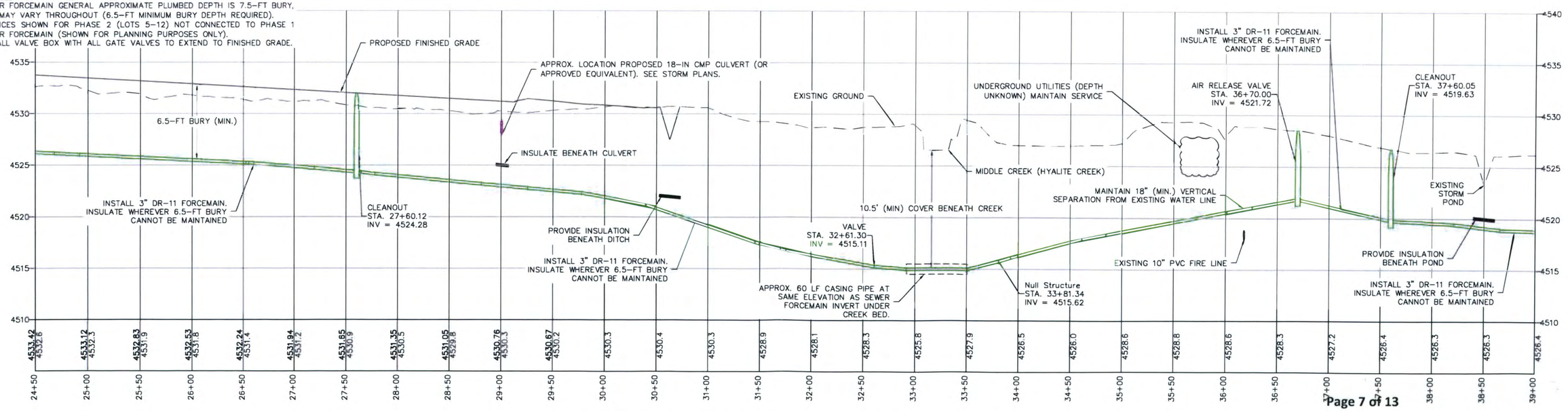
8. SEWER FORCEMAIN GENERAL APPROXIMATE PLUMBED DEPTH IS 7.5-FT BURY, BUT MAY VARY THROUGHOUT (6.5-FT MINIMUM BURY DEPTH REQUIRED).
9. SERVICES SHOWN FOR PHASE 2 (LOTS 5-12) NOT CONNECTED TO PHASE 1 SEWER FORCEMAIN (SHOWN FOR PLANNING PURPOSES ONLY).
10. INSTALL VALVE BOX WITH ALL GATE VALVES TO EXTEND TO FINISHED GRADE.

PLAN VIEW - SEWER FORCEMAIN (STA 24+50 - STA 39+00)



PROFILE VIEW - SEWER FORCEMAIN (STA 24+50 - STA 39+00)

Bridger Shadows West Phase 1
Gallatin County, Montana
EQ#22-1942 GCCHOA #24-038

NO.	REVISIONS	DRAWN BY	DATE

HORIZONTAL SCALE FEET 0 50 100 VERTICAL SCALE FEET 0 5 10

PROJECT ENGINEER: MAF | DRAWN BY: EVR, ARS
DESIGNED BY: EVR, ARS | REVIEWED BY: MAF

MONTANA MARK A. FASTING No. 12071 PE

BRIDGER SHADOWS WEST - PH. 1
SEWER FORCEMAIN- PLAN & PROFILE
NE 1/4 SEC 19 & NW 1/4 SEC 20, T1S, R5E, P.M.M., GALLATIN COUNTY

32 DISCOVERY DRIVE
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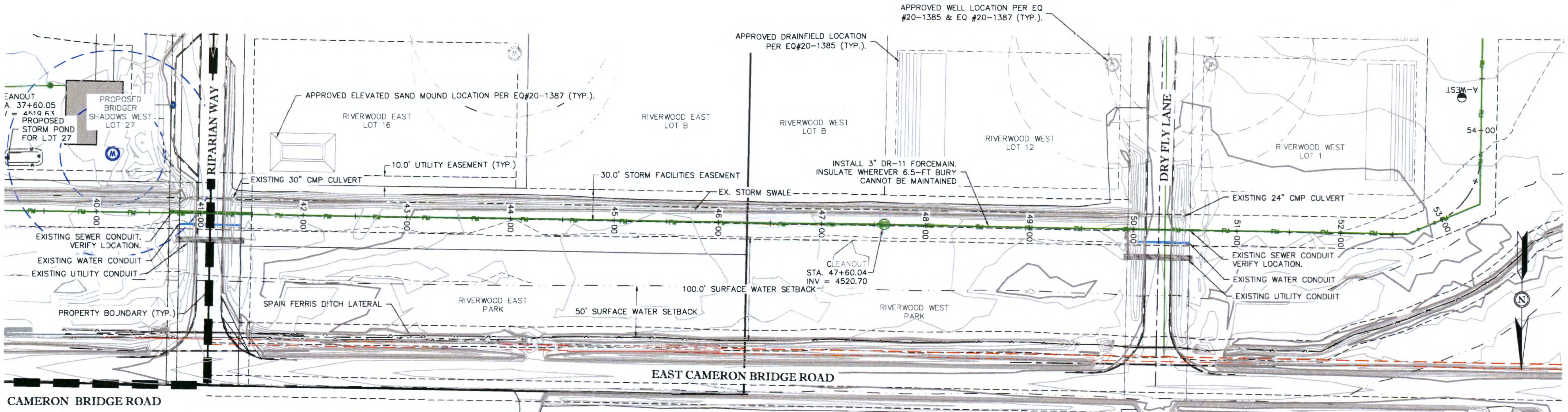
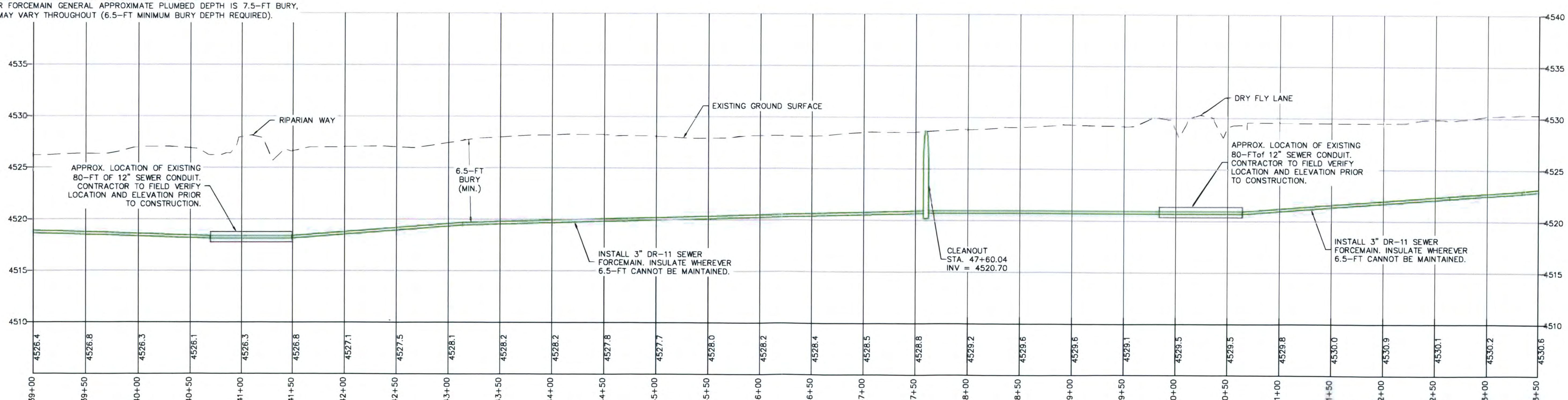
PROJECT #:18-014.20
DATE: 08/01/2023
SHEET C5-4
BRIDGER SHADOWS SEWER



NOTES:
1. CLEANOUTS SHALL BE INSTALLED AT 1,000 FT (MAX.) INTERVALS.
2. PROVIDE INSULATION ANYWHERE 6.5-FT BURY CANNOT BE MAINTAINED AND UNDER DITCHES AND CULVERTS.
3. AVOID HUMPS OR BELLIES IN THE FORCEMAIN
4. PLACE LOCATE WIRE AND WARNING TAPE ABOVE FORCEMAIN.
5. INSTALL 18" CMP CULVERTS AT PRIVATE DRIVEWAYS.
6. WELLS SHALL MAINTAIN 50-FT MINIMUM FROM CLOSED COMPONENTS INCLUDING SEWER SERVICES, FORCEMAINS, GRINDER PUMPS, ETC.
7. FOR CLEANOUT INSTALLATION SEE DETAIL 4 ON C8-3.
8. SEWER FORCEMAIN GENERAL APPROXIMATE PLUMBED DEPTH IS 7.5-FT BURY, BUT MAY VARY THROUGHOUT (6.5-FT MINIMUM BURY DEPTH REQUIRED).

PLAN VIEW - SEWER FORCEMAIN (STA 39+00 - STA 53+50)



PROFILE VIEW - SEWER FORCEMAIN (STA 39+00 - STA 53+50)

Page 8 of 13
Bridger Shadows West Phase 1
Gallatin County, Montana
EQ#22-1942 GCCHOA #24-038

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HORIZONTAL SCALE FEET 0 50 100 — VERTICAL SCALE FEET 0 5 10

PROJECT ENGINEER: MAF — DRAWN BY: EVR, ARS
DESIGNED BY: EVR, ARS — REVIEWED BY: MAF

MONTANA MARK A. FASTING No. 12071 PE

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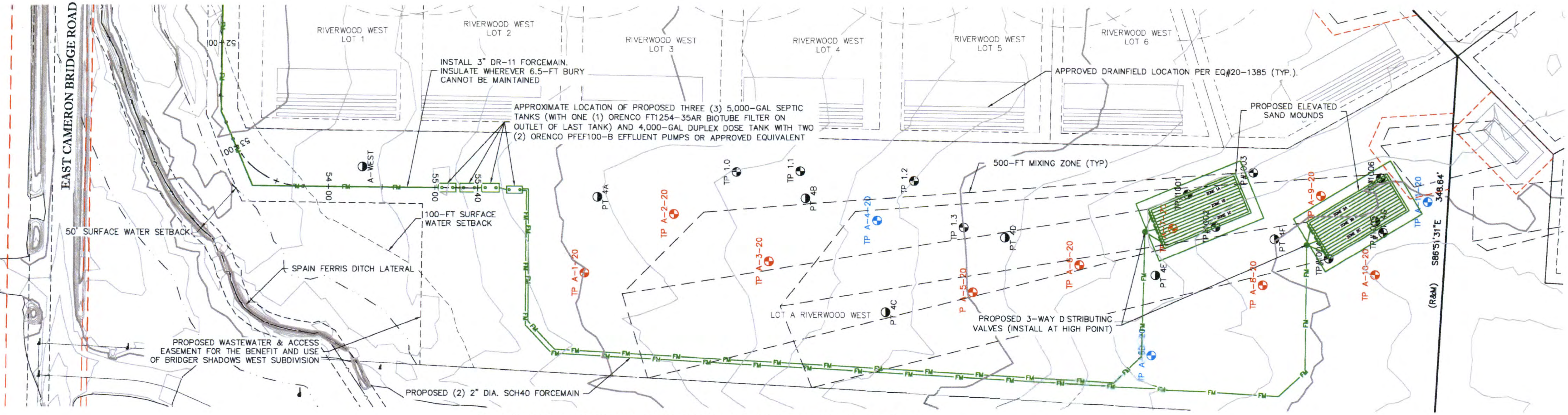
PROJECT #:18-014.20
DATE: 08/01/2023
SHEET C5-5
BRIDGER SHADOWS SEWER



PLAN VIEW - SEWER FORCEMAIN (STA 53+50 - STA 55+40)

NOTES:

1. CLEANOUTS SHALL BE INSTALLED AT 1,000 FT (MAX.) INTERVALS.
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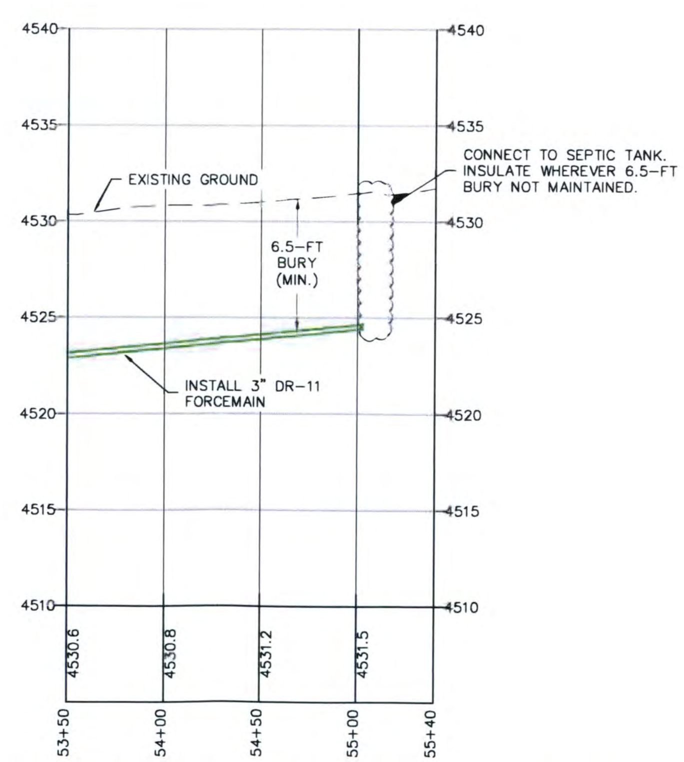

PROFILE VIEW - SEWER FORCEMAIN (STA 53+50 - STA 55+40)

Page 9 of 13
Bridger Shadows West Phase 1
Gallatin County, Montana
EQ#22-1942 GCCHOA #24-038

NO.	REVISIONS	DRAWN BY	DATE

HORIZONTAL SCALE FEET 0 50 100 — VERTICAL SCALE FEET 0 5 10

PROJECT ENGINEER: MAF | DRAWN BY: EVR, ARS
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SEWER FORCEMAIN- PLAN & PROFILE
NE 1/4 SEC 19 & NW 1/4 SEC 20, T1S, R5E, P.M.M., GALLATIN COUNTY

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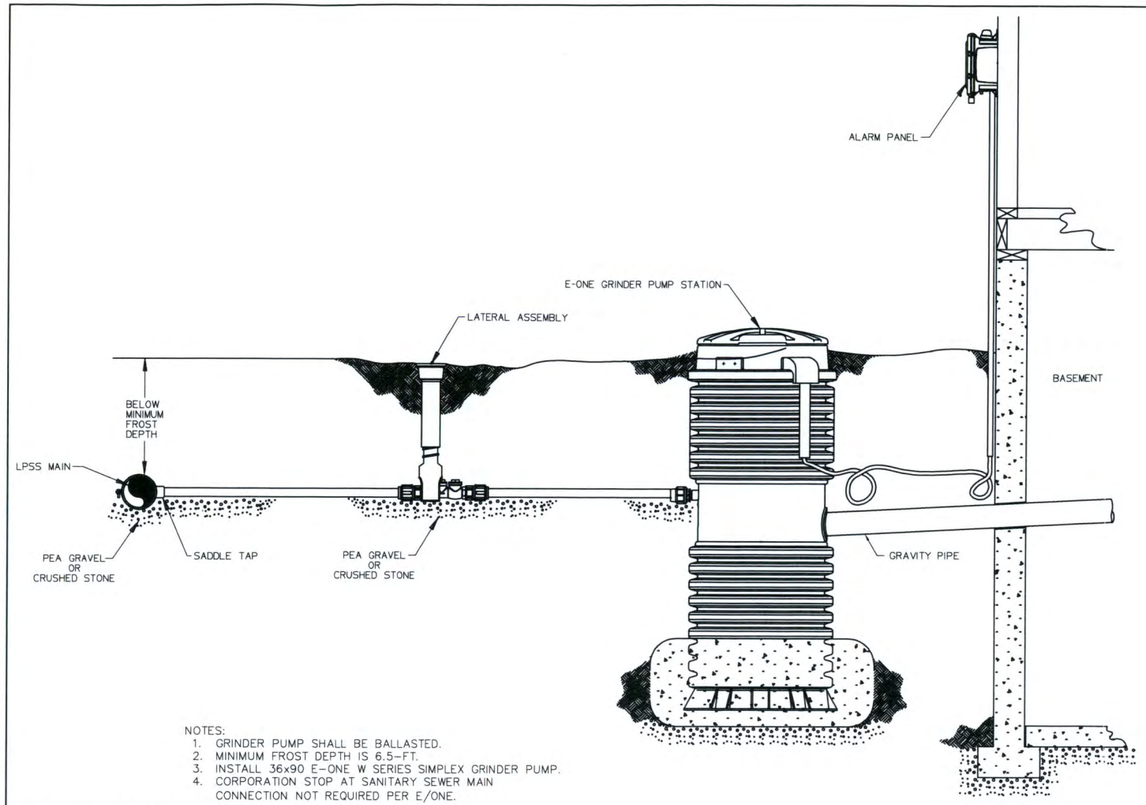
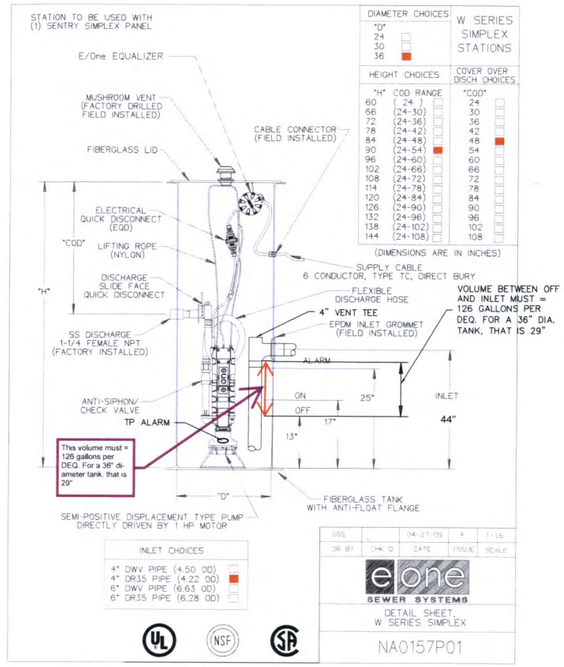
PROJECT #18-014.20
DATE: 08/01/2023
SHEET C5-6
BRIDGER SHADOWS SEWER

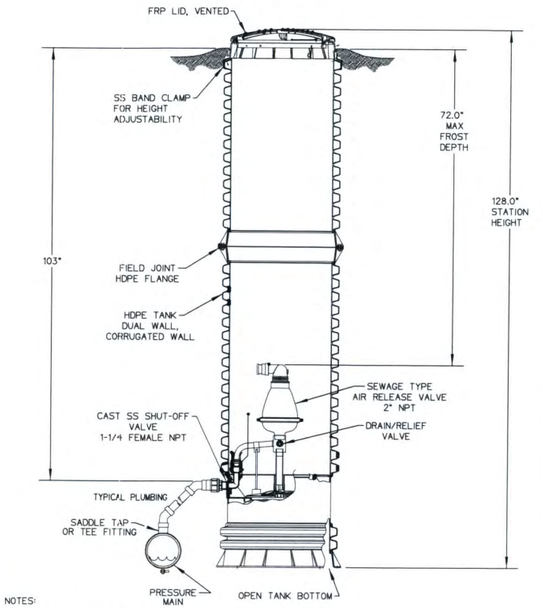


NOTES:
1. GRINDER PUMP SHALL BE BALLASTED.
2. MINIMUM FROST DEPTH IS 6.5-FT.
3. INSTALL 36x90 E-ONE W SERIES SIMPLEX GRINDER PUMP.
4. CORPORATION STOP AT SANITARY SEWER MAIN CONNECTION NOT REQUIRED PER E/ONE.

1a C8-3 **SECTION**
E-ONE TYPICAL GRINDER PUMP & LATERAL INSTALLATION
NOT TO SCALE



1b C8-3 **SECTION**
E-ONE GRINDER STATION
NOT TO SCALE



NOTES:
1. ALL ITEMS SHOWN IN DASHED LINES ARE FOR REFERENCE ONLY, AND ARE SUPPLIED BY OTHERS

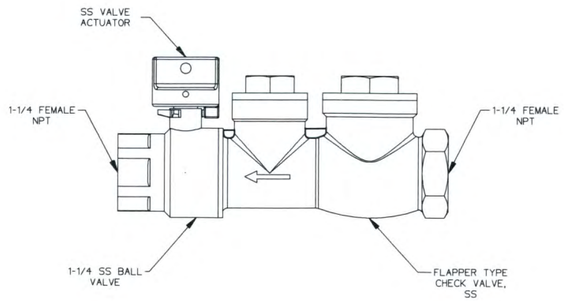
2 C8-3 **DETAIL**
E-ONE AIR RELEASE SYSTEM FOR 6-FT FROST DEPTH
NOT TO SCALE

GENERAL NOTES:

1. WORK SHALL BE PERFORMED IN ACCORDANCE WITH CIRCULAR DEQ 4, AND GALLATIN COUNTY REGULATIONS.
2. CONTRACTOR SHALL BE LICENSED AND QUALIFIED TO INSTALL WASTEWATER TREATMENT SYSTEMS IN GALLATIN COUNTY, MONTANA.
3. NO WELLS OR SURFACE WATER EXIST WITHIN 100 FEET OF PRIMARY ABSORPTION AREA OR 100% REPLACEMENT AREA.
4. NO WELLS OR SURFACE WATER EXIST WITHIN 50 FEET OF WASTEWATER TREATMENT SYSTEM'S SEALED COMPONENTS.
5. SURFACE DRAINAGE IS ADEQUATE.

NOTES TO INSTALLER:

1. CONTRACTOR TO VERIFY LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION ACTIVITIES.
2. CONTRACTOR TO VERIFY SEWER STUB LOCATIONS PRIOR TO INSTALLATION OF WASTEWATER TREATMENT SYSTEM.
3. CONTRACTOR TO FIELD VERIFY ALL APPLICABLE SETBACKS PRIOR TO INSTALLATION OF WASTEWATER TREATMENT SYSTEM. IF ANY DISCREPANCIES ARE DETERMINED BY CONTRACTOR, ENGINEER SHALL BE NOTIFIED IMMEDIATELY IN WRITING.
4. 10 FEET (MIN.) SEPARATION BETWEEN WATER AND SEWER LINES SHALL BE MAINTAINED.
5. THERE IS THREE INCHES (3") OF FALL BETWEEN INLET AND OUTLET OF TANKS. INSTALLER TO PROVIDE 1% (MIN.) SLOPE BETWEEN OUTLET OF SEPTIC TANK AND INLET OF DOSE TANK.
6. ANY DESIGN CHANGES WITH RESPECT TO ORIENTATION, LAYOUT, MATERIALS, ETC. MUST BE APPROVED BY ENGINEER.
7. THE PRIMARY ABSORPTION AREA HAS BEEN DESIGNED TO COMPLETELY DRAIN TO THE DOSE TANK BETWEEN DOSES. CONTRACTOR SHALL INSTALL FORCEMAIN AT CONSTANT GRADE (I.E. NO HUMPS OR BELLIES) TO ALLOW FOR DRAINAGE.
8. CONTRACTOR SHALL INSULATE ALL APPLICABLE WASTEWATER TREATMENT SYSTEM COMPONENTS TO PROHIBIT FREEZING OF ANY AND ALL SYSTEM COMPONENTS.
9. ALL TANK DETAILS REFLECT STANDARD TANK CONSTRUCTION. CONTRACTOR MAY CHOOSE ALTERNATIVE. IF ALTERNATIVE IS CHOSEN, CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER PRIOR TO CONSTRUCTION.



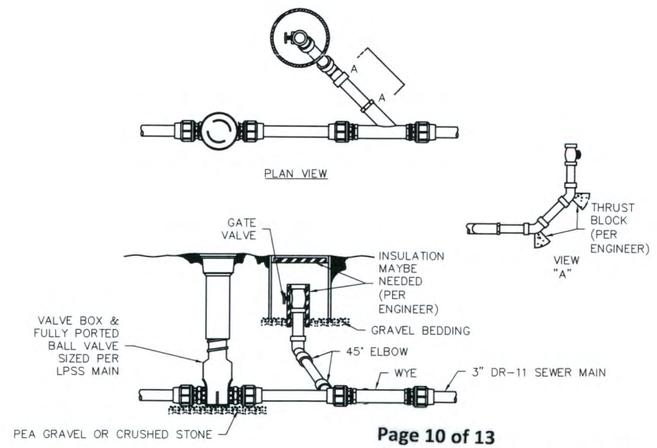
PART IS A BALL VALVE CURB STOP WITH FEMALE PIPE THREADS, VALVE POSITION STOPS (OPEN/CLOSED), AND INTEGRAL CHECK VALVE MATERIAL: STAINLESS STEEL

NOTES:
1. FOR SS FITTING INTO SS THREAD, USE PIPE DOPE OR TEFLON TAPE, NOT BOTH
2. FOR PLASTIC FITTINGS INTO SS THREAD, USE BOTH PIPE DOPE AND 2 LAYERS OF TEFLON TAPE

PRESSURE RATING: 235 PSI

TO ORDER SS LATERAL, NO FITTINGS USE PART NUMBER NB0184P01

3 C8-3 **DETAIL**
LATERAL ASSEMBLY (E-ONE)
NOT TO SCALE



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Bridger Shadows West Phase 1
Gallatin County, Montana
EQ#22-1942 GCCHOA #24-038

4 C8-3 **DETAIL**
TYPICAL FLUSHING CONNECTION ON SEWER MAIN (E-ONE)
NOT TO SCALE

NO.	REVISIONS	DRAWN BY	DATE

SCALE AS NOTED

PROJECT ENGINEER: MAF	DRAWN BY: EVR
DESIGNED BY: EVR	REVIEWED BY: MAF

MONTANA MARK A. FASTHUBER No. 12071 REGISTERED PROFESSIONAL ENGINEER

BRIDGER SHADOWS WEST - PH. 1
GENERAL DETAILS
NE 1/4 SEC 19 & NW 1/4 SEC 20, T1S, R5E, P.M.M., GALLATIN COUNTY

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5770
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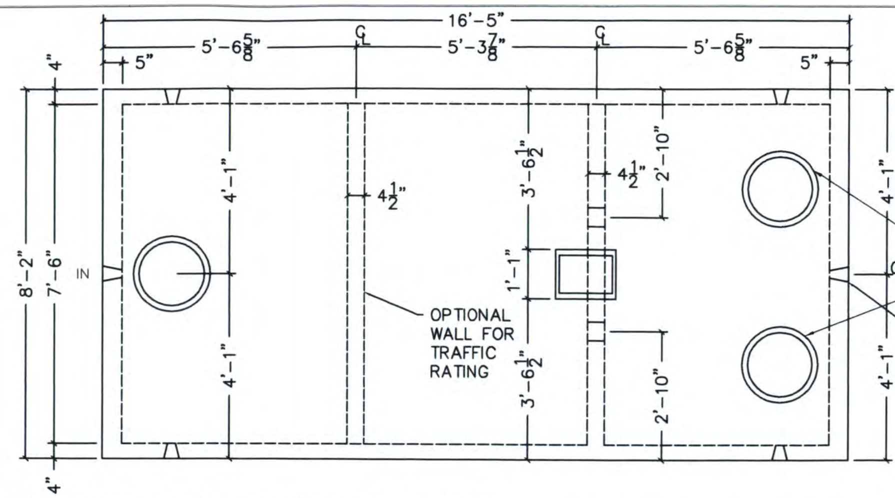
PROJECT #:18-014.20
DATE: 08/01/2023
SHEET C8-3

BRIDGER SHADOWS
DETAILS



NOTE: 5,000 GAL TANK SHOWN FOR REFERENCE ONLY. CONFIGURATION/SIZE OF SEPTIC TANKS SUBJECT TO CHANGE. MINIMUM TOTAL SEPTIC STORAGE IS 12,000 GAL.

*INSTALL SAFETY GRATES AT ALL SEPTIC TANK/DOSING TANK OPENINGS. CUT TO FIT AROUND EFFLUENT FILTER HANDLE AND PUMP DISCHARGE PIPING (IF NECESSARY).

ALTERNATE
*OWNER MAY INSTALL FIBERGLASS RISERS AND LIDS IN LIEU OF CONCRETE. RISERS AND LIDS (TYPICAL ALL TANKS)

*PRIOR TO PLACEMENT OF TANKS CONTACT ENGINEER IF TANK DEPTHS ARE ANTICIPATED TO EXCEED 4' BURY DEPTH.

MDEQ4 5.1.2.1.:

LIQUID CONNECTION BETWEEN COMPARTMENTS SHALL CONSIST OF A SINGLE OPENING COMPLETELY ACROSS THE COMPARTMENT WALL OR TWO OR MORE OPENINGS EQUALLY SPACED ACROSS THE WALL. THE TOTAL AREA OF THE OPENINGS SHALL BE AT LEAST THREE TIMES THE AREA OF THE INLET PIPE.

ALL SEPTIC AND DOSING TANKS MUST BE TESTED IN ACCORDANCE WITH MDEQ4 CHAPTER 5 FOR WATERTIGHTNESS.

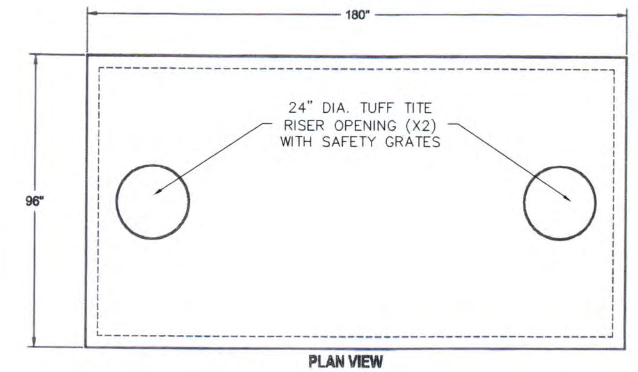
WATER TESTING MUST BE CONDUCTED BY SEALING THE OUTLETS, FILLING THE SEPTIC TANK TO ITS OPERATIONAL LEVEL, AND ALLOWING THE TANK TO STAND FOR AT LEAST 24 HOURS. IF THERE IS A MEASURABLE LOSS (2 INCHES OR MORE), REFILL THE TANK AND LET STAND FOR ANOTHER 24 HOURS. IF THERE IS AGAIN A MEASURABLE LOSS, THE TANK MUST BE REJECTED.

OR

VACUUM TESTING MUST BE CONDUCTED BY SEALING ALL INLETS, OUTLETS, AND ACCESSES, THEN INTRODUCING A VACUUM OF 4 INCHES OF MERCURY, IF THE VACUUM DROPS IN THE FIRST 5 MINUTES IT MUST BE BROUGHT BACK TO 4 INCHES OF MERCURY. IF THE SEPTIC TANK FAILS TO HOLD THE VACUUM AT 4 INCHES OF MERCURY FOR 5 MINUTES, THE TANK MUST BE REJECTED.

1 (C8-4) DETAIL (PLAN VIEW)

5,000 GALLON SINGLE COMPARTMENT DUPLEX DOSE TANK (NOT TRAFFIC RATED)
NOT TO SCALE



*INSTALL SAFETY GRATES AT ALL SEPTIC TANK/DOSING TANK OPENINGS. CUT TO FIT AROUND EFFLUENT FILTER HANDLE AND PUMP DISCHARGE PIPING (IF NECESSARY).

ALTERNATE
*OWNER MAY INSTALL FIBERGLASS RISERS AND LIDS IN LIEU OF CONCRETE. RISERS AND LIDS (TYPICAL ALL TANKS)

*PRIOR TO PLACEMENT OF TANKS CONTACT ENGINEER IF TANK DEPTHS ARE ANTICIPATED TO EXCEED 4' BURY DEPTH.

MDEQ4 5.1.2.1:

LIQUID CONNECTION BETWEEN COMPARTMENTS SHALL CONSIST OF A SINGLE OPENING COMPLETELY ACROSS THE COMPARTMENT WALL OR TWO OR MORE OPENINGS EQUALLY SPACED ACROSS THE WALL. THE TOTAL AREA OF THE OPENINGS SHALL BE AT LEAST THREE TIMES THE AREA OF THE INLET PIPE.

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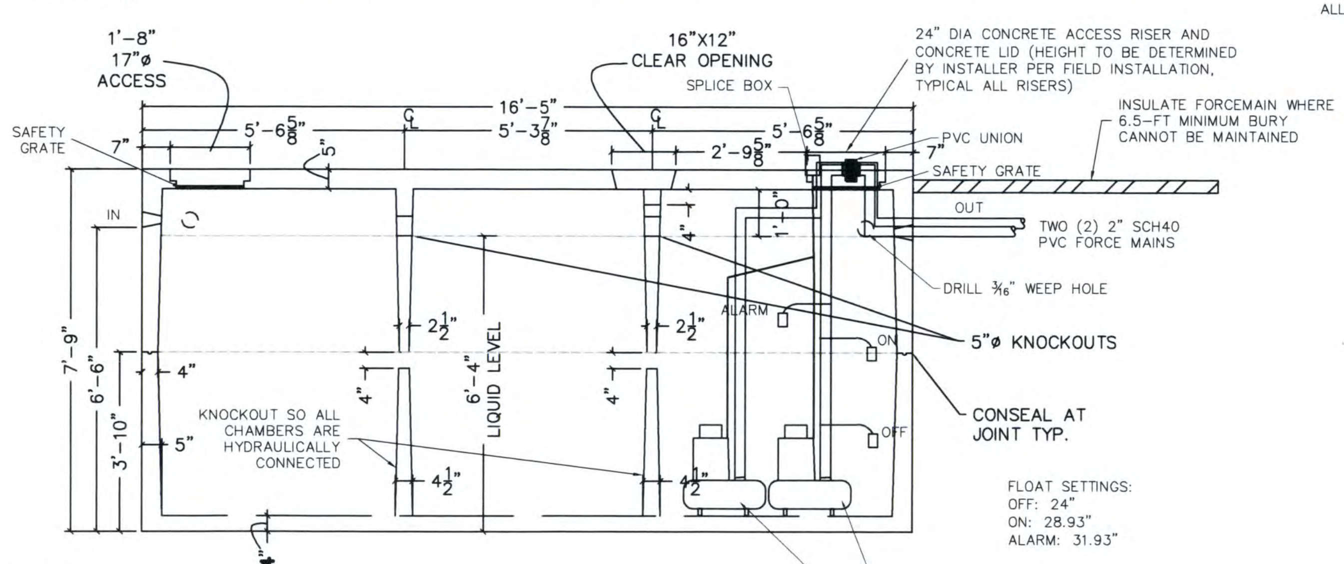
OR

VACUUM TESTING MUST BE CONDUCTED BY SEALING ALL INLETS, OUTLETS, AND ACCESSES, THEN INTRODUCING A VACUUM OF 4 INCHES OF MERCURY, IF THE VACUUM DROPS IN THE FIRST 5 MINUTES IT MUST BE BROUGHT BACK TO 4 INCHES OF MERCURY. IF THE SEPTIC TANK FAILS TO HOLD THE VACUUM AT 5 INCHES OF MERCURY FOR 5 MINUTES, THE TANK MUST BE REJECTED.

NOTES:
- QUANTITY AND LOCATION OF RISERS & LIDS PENDING.
- SAFETY GRATES SHALL BE INSTALLED AT ALL TANK LID LOCATIONS.
- A HIGH LEVEL ALARM SHALL BE INSTALLED.
- EFFLUENT FILTER SHALL BE INSTALLED AT PIPE OUTLET LOCATION.
- SEE PLANS FOR PIPE INVERTS AT INLET & OUTLET LOCATIONS.
- SEE PLANS FOR PROPOSED BURY DEPTH OF TANK. INSTALLER SHALL COORDINATE WITH MANUFACTURER & ENGINEER REGARDING BACKFILL MATERIAL AND ALTERNATE TANK LOCATION(S).
- TUFF-TITE T-BAFFLE SHALL BE INSTALLED AT TANK INLET (OR APPROVED EQUIVALENT).

3 (C8-4) DETAIL (SECTION VIEW) - SEPTIC TANK

5,000 GALLON CONCRETE SEPTIC TANK (NOT TRAFFIC RATED)
NOT TO SCALE

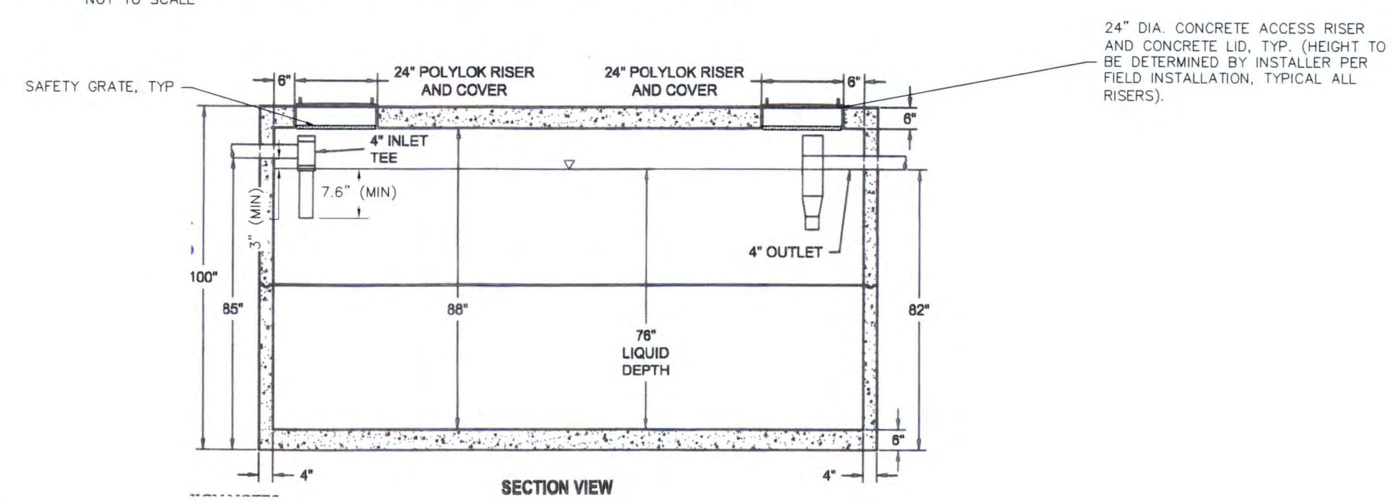


TANK NOTES:

1. CONCRETE IS 5,000 PSI AT 28 DAYS
2. TANK MUST BE PLACED ON COMPACTED ¾" ROAD-BASE MATERIAL TO A RELATIVE MINIMUM COMPACTION OF 95%. FLOWABLE BACKFILL SHALL NOT BE ALLOWED.
3. INLET AND OUTLET HAVE PLASTIC SEAL WHICH ACCEPTS SCH40 SEWER PIPE.
4. NORMALLY SET IN ONE PIECE
5. SIDE INLET (KNOCK-OUTS) PROVIDED.
6. EACH SEGMENT IS POURED MONOLITHICALLY.
7. ALL HANDLES ARE 1/4" SMOOTH STEEL.
8. WEIGHT OF TANK IS 32,000 LBS.
9. ACTUAL CAPACITY = ±4,000 GALLONS.
10. MAXIMUM EARTH COVER IS 6 FEET.
11. CONTRACTOR SHALL BALLAST TANK IF HIGH GROUNDWATER OR POTENTIAL SIGNS OF HIGH GROUNDWATER ARE ENCOUNTERED DURING FIELD EXCAVATION.
12. DOSE TANK DIMENSIONS HAVE BEEN SUPPLIED BY THREE FORKS READY MIX (THREE FORKS, MT). CONTRACTOR MAY PROPOSE TO USE ALTERNATIVE SUPPLIER, IN WHICH CASE CONTRACTOR SHALL SUBMIT STANDARD TANK DETAILS PRIOR TO INSTALLATION.

2 (C8-4) DETAIL (SECTION VIEW)

5,000 GALLON SINGLE COMPARTMENT DUPLEX DOSE TANK (NOT TRAFFIC RATED)
NOT TO SCALE



NOTES:
- SEPTIC TANK DIMENSIONS HAVE BEEN SUPPLIED BY MONTANA PRE-CAST CONCRETE LLC (MISSOULA, MT). CONTRACTOR MAY PROPOSE TO USE ALTERNATIVE SUPPLIER, IN WHICH CASE CONTRACTOR SHALL SUBMIT STANDARD SEPTIC TANK DETAILS PER SUPPLIERS PROPOSED CONSTRUCTION PRIOR TO INSTALLATION.
- CONTRACTOR SHALL BALLAST TANK IF HIGH GROUNDWATER OR POTENTIAL SIGNS OF HIGH GROUNDWATER ARE ENCOUNTERED DURING FIELD EXCAVATION.
- THREE (3) 5,000-GALLON TANKS SHALL BE USED, WITH BAFFLE IN OUTLET OF FIRST TWO TANKS AND EFFLUENT FILTER IN OUTLET OF THIRD TANK TO DOSE TANK. INLET BAFFLE INSTALLED IN ALL THREE TANKS.
- INSTALL INLET TEES PER CIRCULAR DEQ-4 5.1.3.
- WE RECOMMEND THE USE OF A HIGH LEVEL ALARM.

TANK NOTES:

1. CONCRETE IS 5000 PSI @ 28 DAYS. CEMENT IS TYPE V, WITH MAX C3A OF 8%, PER MT DEQ-4. 2. SET IN PLACE W/CONSEAL CS-102 OR CS-202.
2. REINFORCEMENT – PER ENGINEER.
3. MAXIMUM EARTH COVER IS 6'-0" FEET.
4. THIS TANK MUST BE PLACED ON COMPACTED 3/4" ROAD-BASE OR SIMILAR MATERIAL. MINIMUM RELATIVE COMPACTION IS 95%. DO NOT USE FLOWABLE BACKFILL MATERIALS SUCH AS 3/4" WASHED GRAVELS.
5. TANK MUST BE BACKFILLED TO TOP BEFORE WATER TESTING.
6. BUILT TO MT DEQ-4.

4 (C8-4) DETAIL (SECTION VIEW) - SEPTIC TANK

5,000 GALLON CONCRETE SEPTIC TANK (NOT TRAFFIC RATED)
NOT TO SCALE

NO.	REVISIONS	DRAWN BY	DATE

SCALE AS NOTED

PROJECT ENGINEER: MAF | DRAWN BY: EVR
DESIGNED BY: EVR | REVIEWED BY: MAF

BRIDGER SHADOWS WEST - PH. 1
GENERAL DETAILS

NE 1/4 SEC 19 & NW 1/4 SEC 20, T1S, R5E, P.M.M., GALLATIN COUNTY

32 DISCOVERY DRIVE
BOZEMAN, MT 59718
PHONE (406) 582-0221
FAX (406) 582-5770
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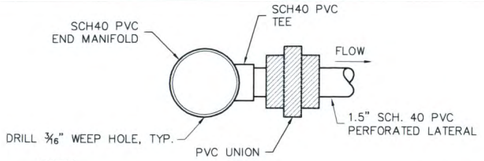
PROJECT #:18-014.20
DATE: 08/01/2023

SHEET C8-4

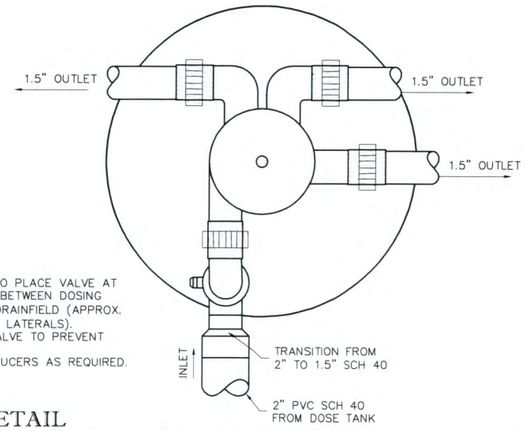
BRIDGER SHADOWS DETAILS



NOTES:

1. FORCEMAIN & MANIFOLD SHALL BE INSTALL TO ALLOW FOR ALL EFFLUENT TO DRAIN IN BETWEEN DOSE CYCLES.
2. ALL PIPE TO BE SCHEDULE 40 UNLESS SPECIFICALLY APPROVED BY DESIGNER.
3. A SUCCESSFUL SQUIRT TEST WILL DEMONSTRATE LESS THAN 10% VARIATION IN FLOW ACROSS THE FIELD.

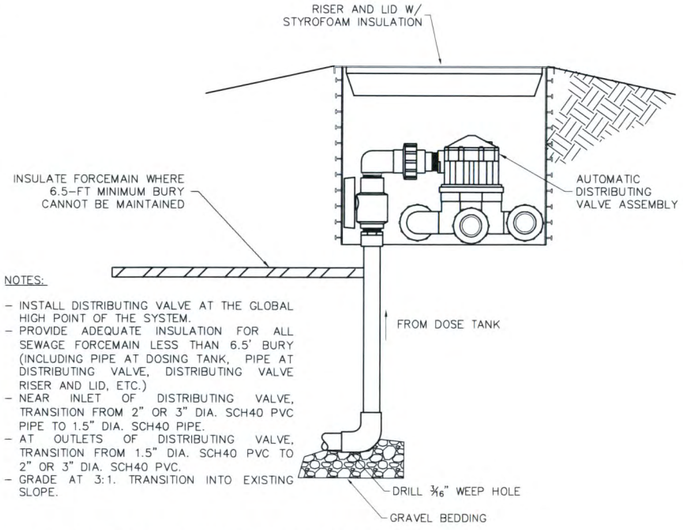
1 / C7-3 **DETAIL**
END MANIFOLD CONNECTION
NOT TO SCALE



NOTES:

1. INSTALLER TO PLACE VALVE AT HIGH POINT BETWEEN DOSING TANK AND DRAINFIELD (APPROX. 1-FT ABOVE LATERALS).
2. INSULATE VALVE TO PREVENT FREEZING.
3. INSTALL REDUCERS AS REQUIRED.

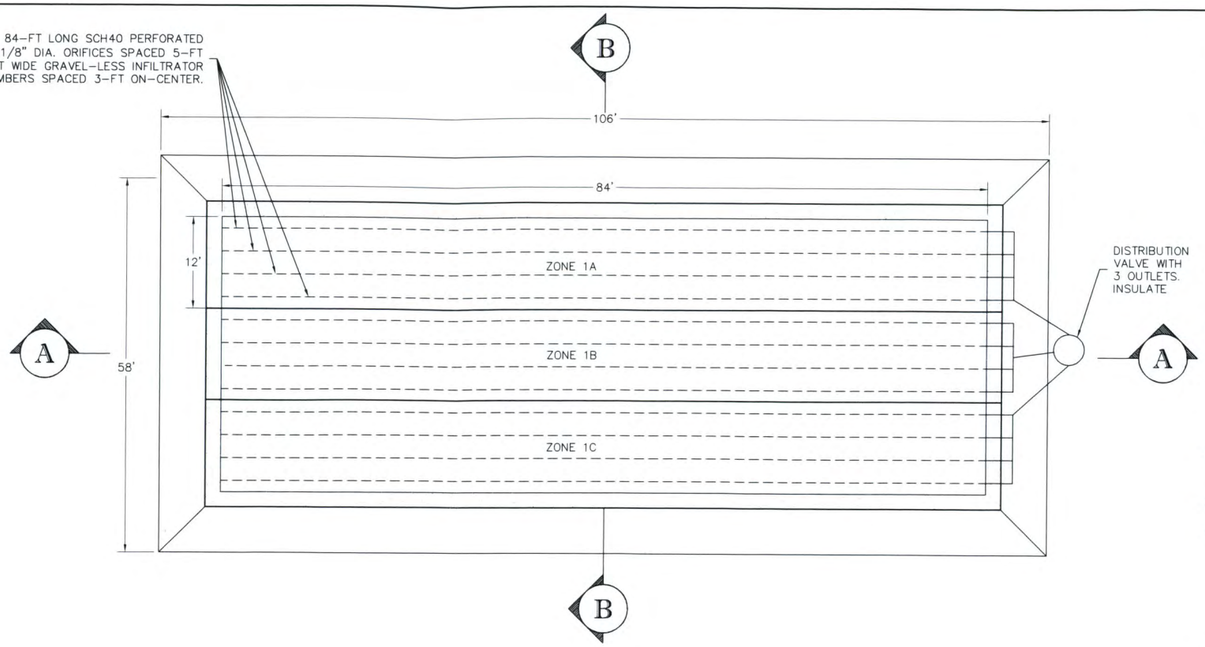
2 / C8-5 **DETAIL**
ORENCO V6403 DISTRIBUTING VALVE
NOT TO SCALE



NOTES:

- INSTALL DISTRIBUTING VALVE AT THE GLOBAL HIGH POINT OF THE SYSTEM.
- PROVIDE ADEQUATE INSULATION FOR ALL SEWAGE FORCEMAIN LESS THAN 6.5' BURY (INCLUDING PIPE AT DOSING TANK, PIPE AT DISTRIBUTING VALVE, DISTRIBUTING VALVE RISER AND LID, ETC.)
- NEAR INLET OF DISTRIBUTING VALVE, TRANSITION FROM 2" OR 3" DIA. SCH40 PVC PIPE TO 1.5" DIA. SCH40 PIPE.
- AT OUTLETS OF DISTRIBUTING VALVE, TRANSITION FROM 1.5" DIA. SCH40 PVC TO 2" OR 3" DIA. SCH40 PVC.
- GRADE AT 3:1. TRANSITION INTO EXISTING SLOPE.

3 / C8-5 **DETAIL (SECTION VIEW)**
OSI DISTRIBUTING VALVE - MODEL V6403
NOT TO SCALE



SAND SPECIFICATIONS:

1. SAND MUST BE WASHED FREE OF SILTS AND CLAYS. THE IN-PLACE FILL MATERIAL MUST MEET ONE OF THE FOLLOWING SPECIFICATIONS.

A. ASTM C-33 FOR FINE AGGREGATE, WITH A MAXIMUM OF 2-PERCENT PASSING THE No. 100 SIEVE.

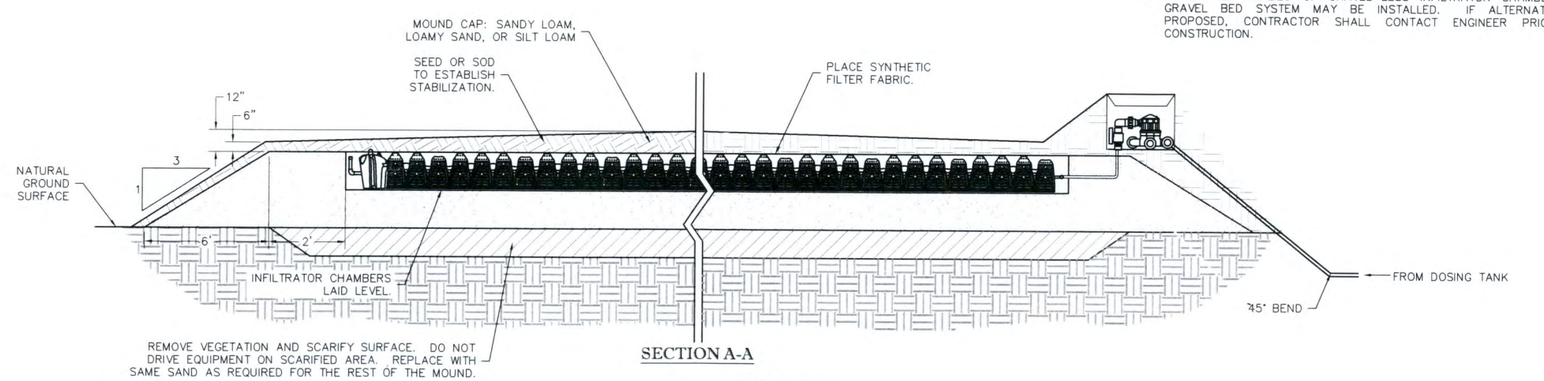
B. FIT WITHIN THE FOLLOWING PARTICLE SIZE DISTRIBUTION:

SIEVE	PARTICLE SIZE(mm)	PERCENT PASSING
3/8 in.	9.5	100
No. 4	4.75	95-100
No. 8	2.36	80-100
No. 16	1.18	45-85
No. 30	0.60	20-60
No. 50	0.30	10-30
No. 100	0.15	0-2

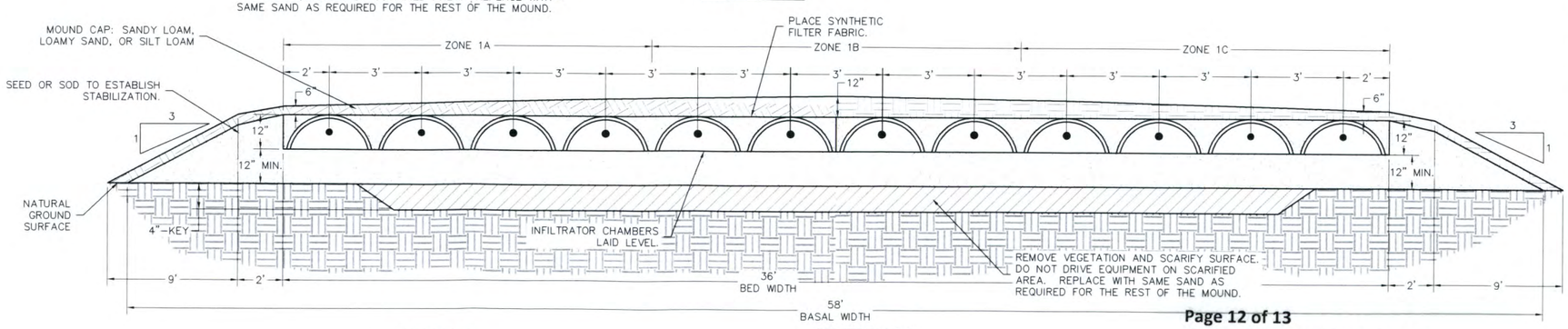
C. HAVE AN EFFECTIVE SIZE (D10) OF 0.15-mm TO 0.30-mm WITH A UNIFORMITY COEFFICIENT (D60/D10) OF 4 TO 6, WITH A MAXIMUM OF 3-PERCENT PASSING THE No. 100 SIEVE.

GENERAL MOUND NOTES:

1. MINIMUM 4:1 SLOPES REQUIRED. CONTRACTOR MAY PROVIDE FLATTER SLOPES AS DIRECTED BY ENGINEER.
2. MOUND MUST BE COVERED BY A MINIMUM OF 12" (AT THE CENTER OF THE MOUND) AND 6" (AT THE EDGE OF THE MOUND) OF A SUITABLE MEDIUM, SUCH AS SANDY LOAM, LOAMY SAND OR SILT LOAM, TO PROVIDE DRAINAGE AND AERATION.
3. THE LAND AREA 25-FEET DOWN SLOPE OF THE ELEVATED SAND MOUND MAY NOT BE REMOVED OR DISTURBED.
4. CONSTRUCTION SHALL OCCUR ON DRY DAYS. NOTE: IF A SAMPLE OF SOIL WITHIN THE WORKING DEPTH CAN BE EASILY ROLLED INTO THE SHAPE OF A WIRE OR CAST, THE SOIL MOISTURE CONTENT IS TOO HIGH FOR CONSTRUCTION.
5. THE AREA SURROUNDING THE ELEVATED SAND MOUND MUST BE GRADED TO PROVIDE FOR DIVERSION OF SURFACE RUNOFF WATERS.
6. AFTER INSTALLATION OF THE DISTRIBUTION SYSTEM, THE ENTIRE MOUND SHOULD BE COVERED WITH 6" OF A FINER TEXTURED SOIL MATERIAL, SUCH AS SAND LOAM TO LOAM. A 6" LAYER OF TOPSOIL SHOULD THEN BE ADDED. THE ENTIRE MOUND SHOULD BE SLOPED TO DRAIN, EITHER BY PROVIDING A CROWN AT THE CENTER OR A UNIFORM SLOPE ACROSS THE MOUND, WITH A MINIMUM SLOPE OF 1-PERCENT IN EITHER CASE. THE ENTIRE MOUND MUST BE SEEDED, SODDED, OR OTHERWISE PROVIDED WITH SHALLOW-ROOTED VEGETATIVE COVER TO ENSURE STABILITY OF THE INSTALLATION.
7. CONTRACTOR TO INSTALL NON-WOVEN FABRIC ACROSS SAND MOUND TO MINIMIZE POTENTIAL OF WILDLIFE DISTURBANCE.
8. ALTERNATE: IN LIEU OF GRAVEL-LESS INFILTRATOR CHAMBERS, A GRAVEL BED SYSTEM MAY BE INSTALLED. IF ALTERNATIVE IF PROPOSED, CONTRACTOR SHALL CONTACT ENGINEER PRIOR TO CONSTRUCTION.



SECTION A-A



SECTION B-B

4 / C8-5 **DETAIL**
ELEVATED SAND MOUND
NOT TO SCALE

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Bridger Shadows West Phase 1
Gallatin County, Montana
EQ#22-1942 GCCHOA #24-038

NO.	REVISIONS	DRAWN BY	DATE

SCALE AS NOTED

PROJECT ENGINEER: MAF	DRAWN BY: EVR
DESIGNED BY: EVR	REVIEWED BY: MAF

MONTANA — MARK A. FASTUCA — No. 12371PE — REGISTERED PROFESSIONAL ENGINEER

BRIDGER SHADOWS WEST - PH. 1
GENERAL DETAILS
NE 1/4 SEC 19 & NW 1/4 SEC 20, T1S, R5E, P.M.M., GALLATIN COUNTY

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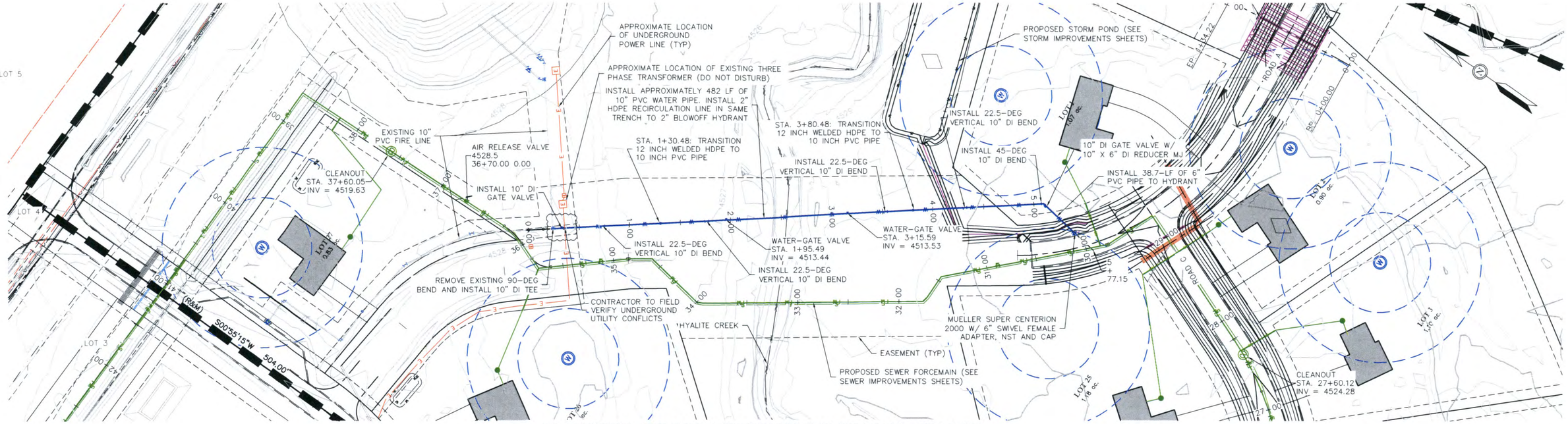
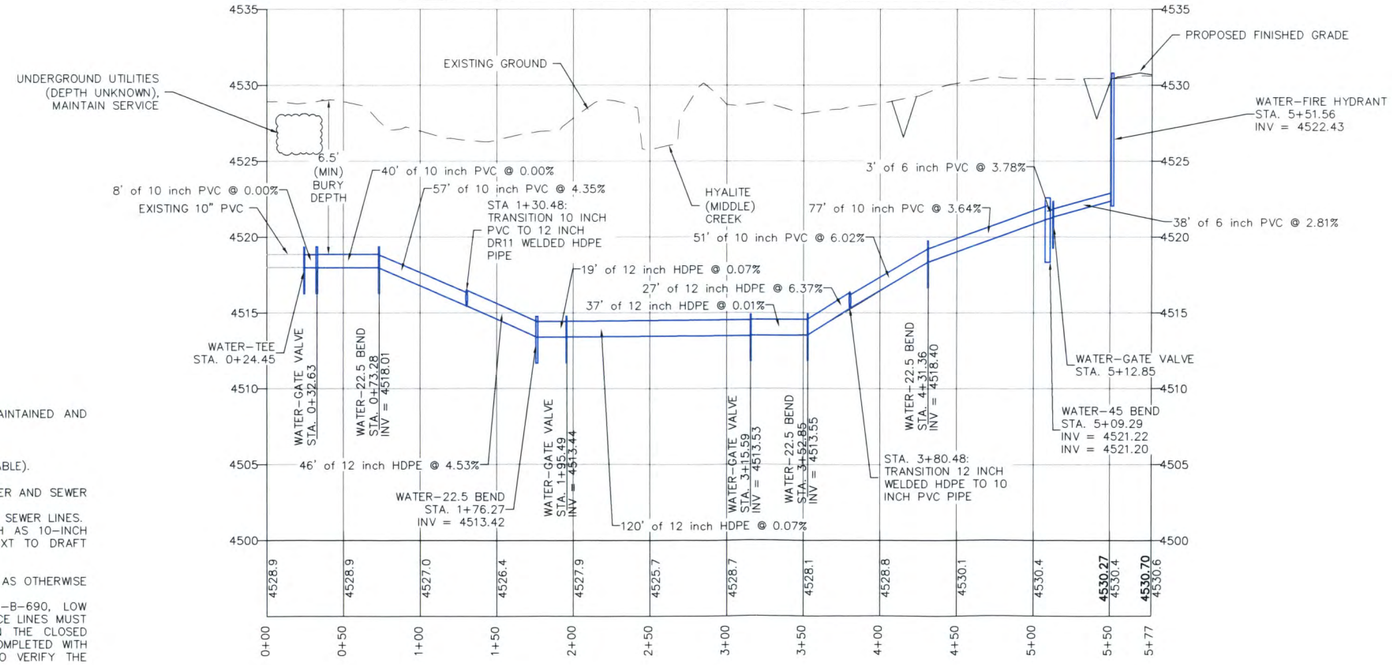
PROJECT #:18-014.20
DATE: 08/01/2023
SHEET C8-5

BRIDGER SHADOWS
DETAILS



PLAN VIEW - FIRE PROTECTION LINE (STA 0+00 - STA 5+77)



PROFILE VIEW - FIRE PROTECTION LINE (STA 0+00 - STA 5+77)

NOTES:
1. PROVIDE INSULATION ANYWHERE 6.5-FT BURY CANNOT BE MAINTAINED AND UNDER DITCHES AND CULVERTS.
2. MAINTAIN POSITIVE GRADE TO HYDRANT.
3. PLACE LOCATE WIRE AND WARNING TAPE ABOVE WATER PIPE.
4. INSULATE PIPE UNDER DITCHES AND CULVERTS (WHERE APPLICABLE).
5. SEE DETAIL SHEETS FOR HYDRANT DETAIL.
6. MAINTAIN 10-FT (MIN) HORIZONTAL SEPARATION BETWEEN WATER AND SEWER LINES.
7. MAINTAIN 18-INCH VERTICAL SEPARATION BETWEEN WATER AND SEWER LINES.
8. INSTALL 2-INCH HDPE RECIRCULATION LINE IN SAME TRENCH AS 10-INCH PVC DRAFT LINE. INSTALL 2-INCH BLOWOFF HYDRANT NEXT TO DRAFT HYDRANT.
9. CONTRACTOR TO VERIFY UNDERGROUND UTILITY CONFLICTS.
10. RESTRAIN ALL JOINTS 60-LF EACH SIDE OF CREEK BED AND AS OTHERWISE NOTED.
11. CONTRACTOR SHALL AIR TEST SEWER FORCEMAIN PER UNI-B-690, LOW PRESSURE TEST FOR PVC PIPE. PRESSURE TESTING OF SERVICE LINES MUST BE COMPLETED WITH THE BALL VALVE AT THE MAINLINE IN THE CLOSED POSITION. PRESSURE TESTING OF THE MAINLINE MUST BE COMPLETED WITH THE SERVICE LINE BALL VALVES IN THE OPEN POSITION TO VERIFY THE EFFECTIVENESS OF CHECK VALVES.

NO.	REVISIONS	DRAWN BY	DATE

HORIZONTAL SCALE FEET 0 50 100
VERTICAL SCALE FEET 0 5 10

PROJECT ENGINEER: MAF | DRAWN BY: ARS
DESIGNED BY: ARS | REVIEWED BY: MAF

MONTANA MARK A. FASTING No. 12071 REGISTERED PROFESSIONAL ENGINEER

BRIDGER SHADOWS WEST - PH. 1
FIRE PROTECTION - PLAN & PROFILE
NE 1/4 SEC 19 & NW 1/4 SEC 20, T1S, R5E, P.M.M., GALLATIN COUNTY

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BOZEMAN, MT 59718
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DATE: 06/20/2023
SHEET F1-0

BRIDGER SHADOWS
FIRE PROTECTION