Preliminary Engineering Memo

Date:	Friday, January 10, 2025
Project:	Preliminary Bridge Study Styler Drive Bridges (MDT STR IDs 03787 & 03788)
To:	Eric Dickson, PE Missoula County Engineer
From:	Pat Joyce, PE HDR Engineering
Subject:	Replacement Options for Styler Drive Bridges (MDT STR IDs 03787 & 03788)

Introduction

The purpose of this memorandum is to summarize the existing conditions and bridge replacement options for two bridges on Styler Drive approximately one mile southwest of Condon, MT. Montana Department of Transportation (MDT) Structure ID 03787 carries Styler Drive over the main channel of Glacier Creek while MDT Structure ID 03788 which is roughly 400-FT to the west carries Styler Drive over an overflow channel of Glacier Creek.

Existing Site and Bridge Information

Styler Drive is a gravel road southwest of Condon that services private landowners. Styler Drive dead ends at a private parcel approximately 1200-FT to the west of Structure 03788. Both structures are on a tangent stretch of Styler Drive that has generally flat terrain with trees lining each side of the roadway (See Photo 1). Styler Drive is on an east-west alignment in this location while Glacier Creek flows south to north. Both overhead and underground utilities run parallel to Styler Drive and are supported across Glacier Creek from both structures. Missoula County has an existing 60-FT road easement in the vicinity of Structure 03788 and to the west where Styler Drive dead ends. The county has a 40-FT easement in the vicinity of Structure 03787. A location map and a certificate of survey showing easements is provided in Appendix A.

Structure 03787 is a single span steel girder bridge with a timber deck that was built in 1970. There are no records of any rehabilitation since its initial construction. The bridge is approximately 37-FT long and spans between vertical steel pile abutments with timber cribbing retaining the approach fill (See Photo 2). The girder ends are supported by two railroad rails that act as the abutment cap which is supported on steel W-shape columns or piles; it is unclear if the steel columns were driven, or how far they are embedded in the ground (See Photo 3). There are 4 flared timber wingwalls that are also braced by steel piles. Structure 03787 has an out-to-out width of 17’-8” with a 16’-5” roadway width provided between the faces of curbs. The timber curbs extend 10-IN above the travel way with no additional railing provided above that (See Photo 4). The bridge is skewed approximately 28 degrees to align with Glacier Creek. Glacier Creek has formed a large pool/eddy directly upstream of the existing structure (See Photo 5). Historic imagery and local landowner statements suggest the hydraulic opening appears to be undersized during high flows. The low beam chord is approximately 8-FT above the Glacier Creek channel bottom. Considerations for replacement of Structure 03787 are due to the following reasons:

- The bridge is currently load posted at 31-tons.
- The current hydraulic opening does not appear to be adequate during high flows.

- The bridge width is substandard compared to the current County minimum roadway widths.
- The bridge does not have a traffic rail extending above the timber curb and no approach guardrail.
- The beams ends are supported on steel railroad rails and the embedment depth of the supporting piles is unknown.

Structure 03788 is also a single span steel girder bridge with a timber deck that was built in 1974 that spans an overflow side channel of Glacier Creek (See Photo 6). There are no records of any rehabilitation since its initial construction. The bridge span length is approximately 30-FT between the girder bearing lines. The girder ends are supported on a large W-beam that is laying flat (web down) on grade with notches cut in its flanges to allow for the bridge girders to pass through (See Photo 7). The backwall consists of a steel plate braced by the ends of the bridge girders. There are no wingwalls on this bridge. Structure 03788 has an out-to-out width of 16'-2" with a 14'-10" roadway width provided between the faces of curbs. The timber curbs extend 10-IN above the travel way with no additional railing provided above that (See Photo 8). The Glacier Creek overflow channel flows perpendicular to the structure and the bridge is square to the channel (no skew). Timber logs are piled in front of the bridge abutments (See Photo 9). The logs have cut ends and appear to have been purposely placed to protect the abutment caps and embankment which reduce the horizontal opening of the overflow channel to approximately 20-FT wide. The low beam chord is approximately 3-FT above the channel bottom. Debris from the river has accumulated up in between the girder bays in front of the abutment (See Photo 10). This appears to indicate that historically, on at least one occasion the water surface elevation in the overflow channel has risen above the existing low chord and deposited gravel, dirt, and debris. Considerations for replacement of Structure 03788 are due to the following reasons:

- The current hydraulic opening does not appear to be adequate during high flows.
- The shallow abutment foundations are vulnerable to washout.
- The bridge width is substandard compared to the current County minimum roadway widths.
- The bridge does not have a traffic rail extending above the timber curb and no approach roadway guardrail.

Design Requirements

The replacement bridges will meet the minimum roadway width requirements of 18-FT as specified in the Missoula County Public Works Manual for Road Construction for gravel roadways. The new structures will be designed in accordance with the current AASHTO LRFD Bridge Design Specifications and will be designed to meet the AASHTO HL-93 design live load. Styler Drive is the only route serving multiple private parcels, so it is an assumed requirement to maintain traffic during construction.

Hydrologic and hydraulic analyses were not completed as part of this preliminary study and engineering memo. Both bridges and Glacier Creek are located in FEMA Zone X areas denoted as areas of minimal flood hazard for which a detailed study has not been completed. The confluence of Glacier Creek and the Swan River is located approximately one mile downstream of the bridges and includes FEMA floodplains delineated as Zone AE with a mapped regulatory floodway. A hydrologic and hydraulic analysis will be required and completed as part of this project with additional details on the required analysis and design criteria defined at that time. Consultation with the Missoula County Floodplain Administrator is also recommended prior to developing the hydrologic and hydraulic analysis. For the purposes of this evaluation and the development of conservative preliminary options, the low chord elevation for the proposed replacements are assumed to be located at or above the existing bridge low chord elevations and the proposed hydraulic openings are assumed to exceed the existing hydraulic opening widths for

improved hydraulics. The new structures will be designed to improve conveyance when compared to the existing structures and maintain or lower the upstream water surface elevations and associated risk to neighboring properties. In addition, riprap protection will be included as needed for both structures, including at Structure 03787 to protect the abutments and southwest approach embankment upstream and downstream of the proposed structure.

Environmental permits will be required from the U.S. Army Corps of Engineers (USACE) (Clean Water Act Section 404), Montana Fish, Wildlife and Parks (MFWP) (SPA 124), and the Montana Department of Environmental Quality (DEQ) (401 Certification, 318 Authorization). The Joint Application for Proposed Work in Montana's Streams, Wetlands, Floodplains & Other Water Bodies form will be used to apply for and obtain these authorizations. Areas downstream from the bridge are within a mapped floodplain and coordination with the Missoula County Floodplain Administrator will be necessary to determine the permitting requirements. Presently, no coordination has occurred with the regulatory agencies. As the project progresses, the appropriate regulatory agencies will be contacted as necessary. It should be noted that on-site wetland and stream delineations should occur prior to permitting to accurately map aquatic resources. The proposed project is anticipated to require compliance with the Montana Pollutant Discharge Elimination System (MPDES) General Permit administered by DEQ, which would be a contractor responsibility and coverage would be obtained by submitting a Notice of Intent (NOI) and Storm Water Pollution Prevention Plan (SWPPP) to DEQ. Water quality impacts would be substantially avoided and minimized using standard best management practices (BMPs). The required federal authorization from the USACE will trigger the requirement for compliance under the National Environmental Policy Act (NEPA), which includes compliance with the Endangered Species Act and National Historic Preservation Act. Coordination between Missoula County and the USACE will be necessary to determine additional analyses necessary for NEPA compliance.

A detailed geotechnical analysis and geotechnical borings were not completed as part of this evaluation. At this time, no geotechnical recommendations have been provided and assumptions were made for the pile type, size and embedment depth needed for the new bridge based on anticipated loads and the foundations for a similar bridge close by that spans the Swan River.

Proposed Structures and Roadway Alignment

The proposed replacement for Structure 03787 is a 75-FT long single span bridge comprised of four prestressed concrete deck bulb-tee beams. This beam type was chosen as is it reduces the construction duration since the deck is integral with the girders. The total out-to-out bridge width will be 21'-4" with 18-FT provide for the two-way travel way. The proposed structure will be skewed to match the existing structure skew of approximately 28 degrees. MDT Standard W830 steel traffic railing mounted to concrete curbs will be installed on both sides of the bridge. An asphalt overlay with a waterproof membrane is assumed between the faces of the curbs to provide protection for the concrete beams. The bridge abutments will consist of concrete integral diaphragms and caps founded on four 24-IN steel pipe piles. Matching the existing low chord elevation is proposed which results in roughly a 4-IN grade raise at this structure. The proposed bridge span is over twice the length of the existing bridge which allows for 2:1 slopes from the abutments down to Glacier Creek that will be armored with riprap. The additional span width allows for a larger hydraulic opening compared to the existing structure. Additional riprap will be provided along the southwest roadway embankment to protect the roadway adjacent to the bend in Glacier Creek. Preliminary plan, elevation, and typical section drawings are provided in Appendix D of this memo.

The proposed replacement for Structure 03788 is a 24-FT wide by 8-FT tall single cell precast reinforced concrete box culvert (RCB). The use of a RCB will aid in an accelerated construction schedule versus a bridge. Although a single cell RCB is preferable hydraulically versus a double cell, a double cell RCB (e.g., 12-FT wide by 8-FT) could also be considered. Depending on soil types, potential need for culvert subexcavation, material availability, an open-bottom structure could be used as well and would be similar in cost while providing the same hydraulic opening. Final structure details will be resolved based on final geotechnical, hydraulic, and environmental requirements. The total out-to-out culvert length will be 21'-4" which will provide an 18-FT two-way roadway width on top of the culvert. The proposed structure will be square to the Glacier Creek overflow channel (no skew) to match the existing structure. MDT Standard W830 steel traffic railing mounted to concrete curbs will be installed on both sides of the culvert. An asphalt overlay with a waterproof membrane is assumed between the faces of the curbs to provide protection to the concrete culvert surface. The proposed RCB will have wingwalls and concrete cutoff walls at the inlet and outlet. It is proposed that the RCB be embedded and backfilled with riprap and/or native streambed material for improved aquatic organism passage. This RCB increases the existing hydraulic opening height from approximately 3-FT (existing river channel to bridge low cord dimension) to 7-FT while increasing the hydraulic opening width by approximately 4-FT versus the existing hydraulic opening. Bypass pumping of the overflow channel will be required during construction, and therefore, construction during low flows is recommended. Preliminary plan, elevation, and typical section drawings are provided in Appendix D of this memo.

The preferred construction sequencing involves erecting the new structures in two phases. The first phase will be constructed to the north of the existing bridges, while a minimum 9-FT temporary single travel lane is maintained on the existing bridges. Demo of the existing bridges would then take place and traffic would be shifted to the completed first phase of the new structures. Finally, the remaining portions of the new structures would be constructed in the second phase. Construction phasing diagrams are provided in Appendix D of this memo. Depending on the timing for construction and securement of temporary easements, the contractor may prefer to detour traffic on a low water crossing and build the new structure in a single phase. Construction sequencing will be resolved during final design.

Due to the proposed phased construction plan, the proposed centerline of the Styler Drive alignment will need to be shifted to the north throughout the project limits. The approximate shift will be between 10-FT and 11-FT. The centerlines will taper back to the existing center line off the ends of the structures. The approximate length of roadway reconstruction will be 1200-FT. Geometric requirements for a low-speed rural local road will be utilized for alignment tapers and horizontal curves. An exhibit showing the extent of the roadway reconstruction is shown in Appendix D.

Cost

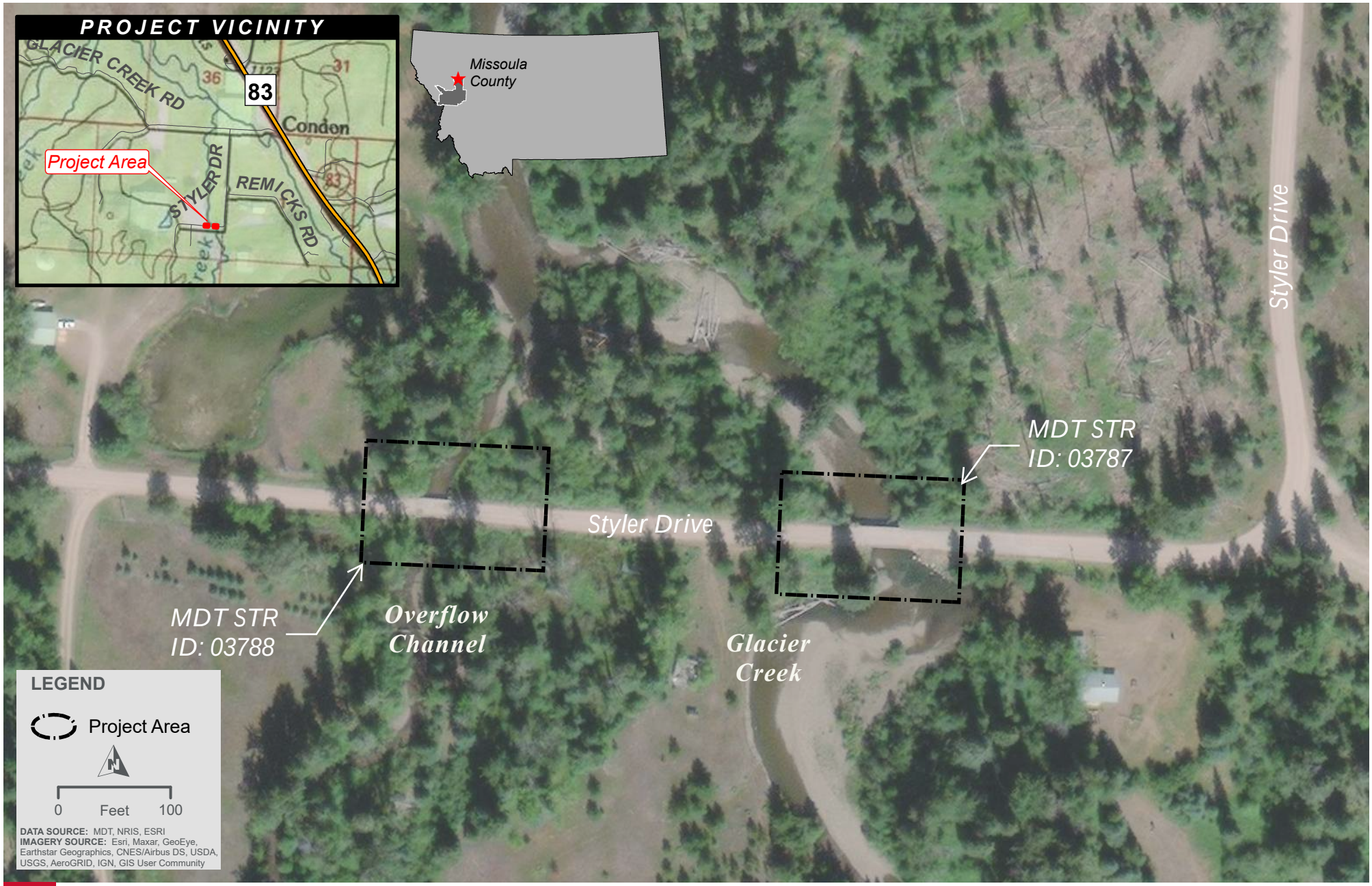
Preliminary planning level cost estimates were prepared for each structure replacement based on current average bid prices from MDT's AASHTOWare estimating software and from estimates provided by local precast concrete suppliers and fabricators. The preliminary quantity and cost estimate summaries can be found in Appendix C attached to this memo. A table of the estimated total cost is provided on the following page. Cost estimates include design engineering costs, mobilization, contingencies, and construction engineering costs based on recommendations from the MDT Cost Estimation Procedures for Highway Design Projects. Note that the total roadway reconstruction cost was split in half between the two structure replacement cost estimates.

MDT Structure	Replacement Costs
03787	**$2,230,000**
03788	**$1,510,000**

The following appendices are attached to this memo:

- Appendix A: Location Map and Certificates of Survey
- Appendix B: Report Photos
- Appendix C: Cost Estimates
- Appendix D: Plan Exhibits

Appendix A: Location Map & Certificates of Survey

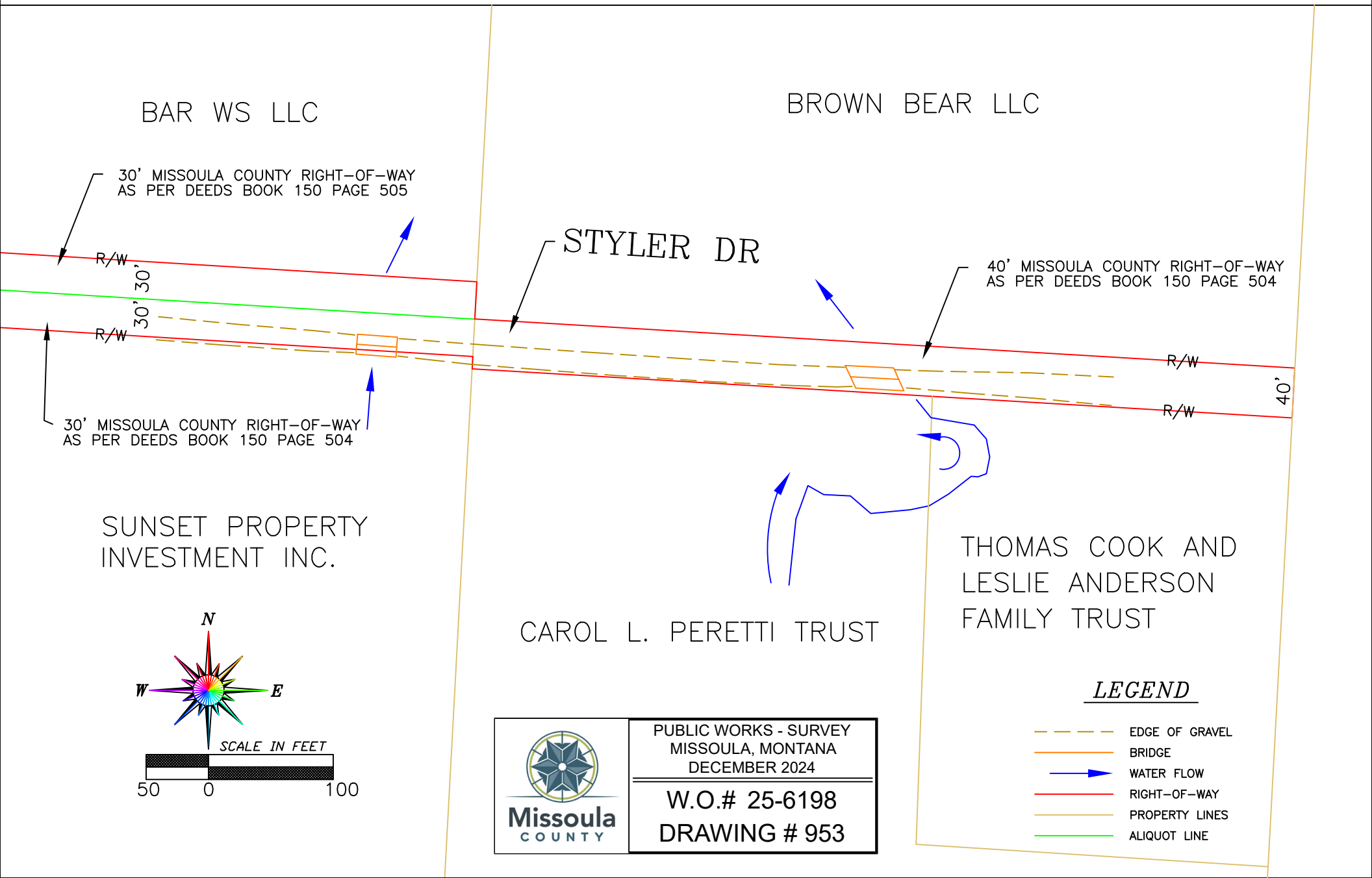


STYLER DRIVE ROAD BRIDGES

PROJECT LOCATION MAP

STYLER DRIVE BRIDGES

SE 1/4 S2 T20N R17W



Missoula COUNTY

PUBLIC WORKS - SURVEY
MISSOULA, MONTANA
DECEMBER 2024

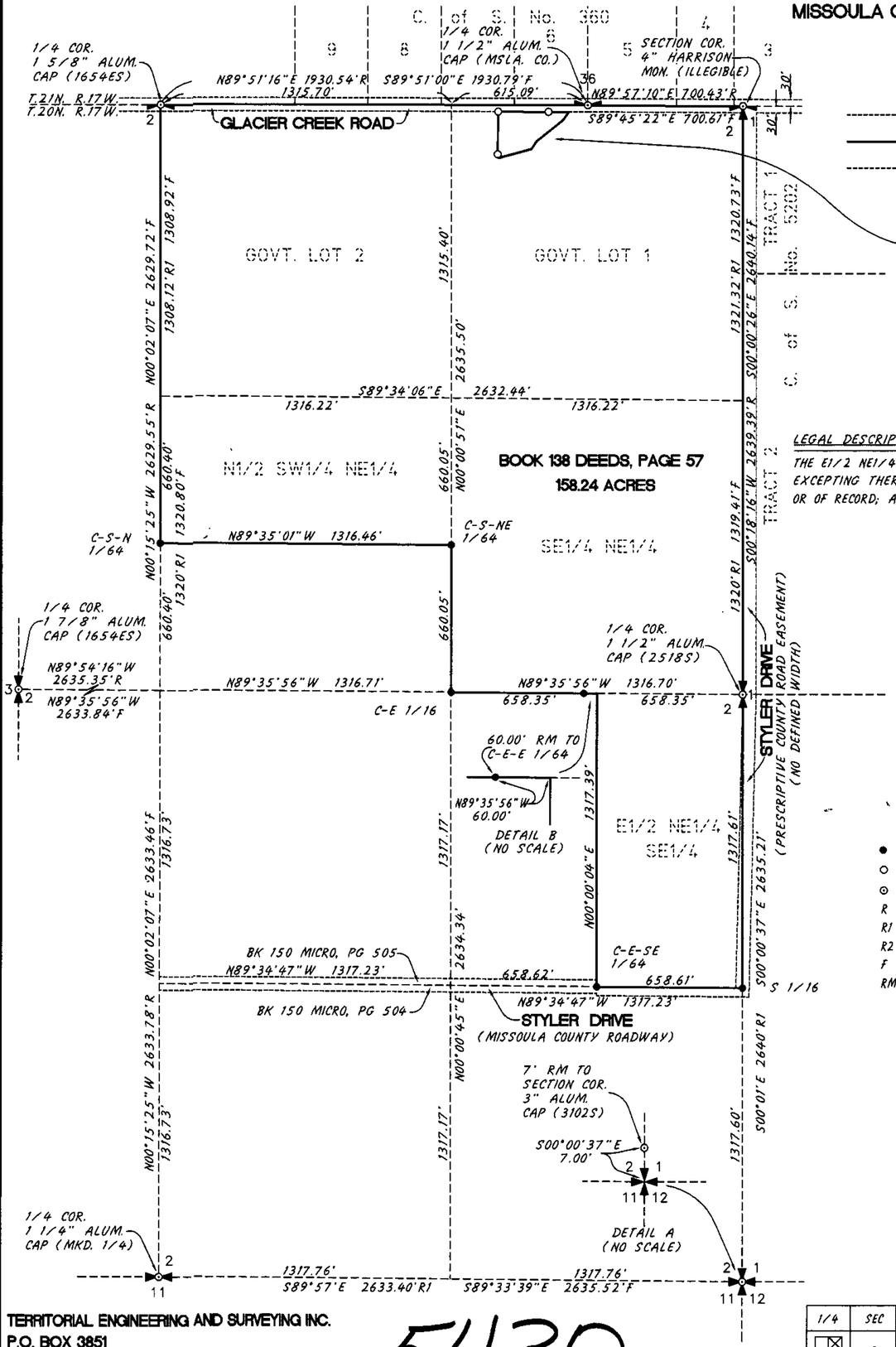
W.O.# 25-6198

DRAWING # 953

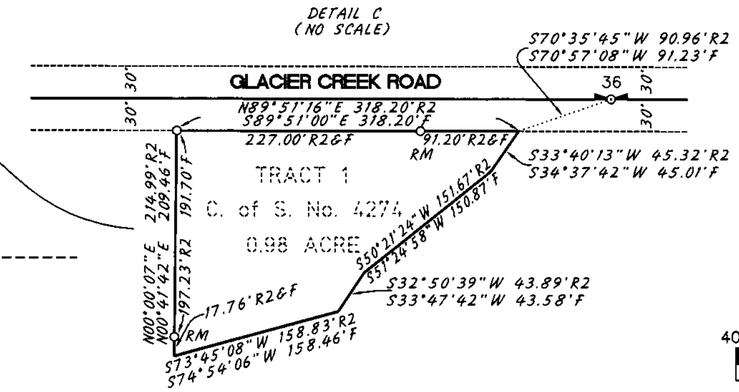
CERTIFICATE OF SURVEY

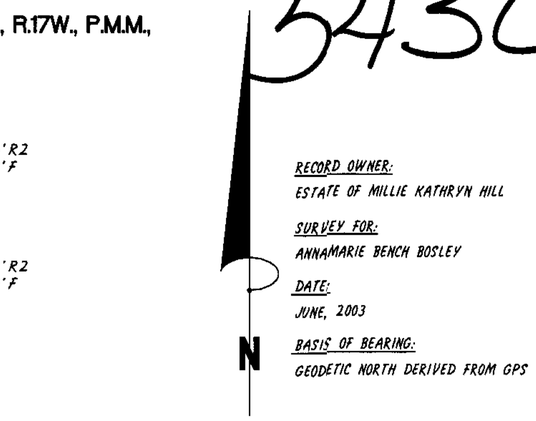
SHOWING A RETRACEMENT SURVEY OF AN EXISTING TRACT OF LAND LOCATED IN THE E1/2 OF SECTION 2, T.20N., R.17W., P.M.M., MISSOULA COUNTY, MONTANA

5430



DETAIL C (NO SCALE)





LEGAL DESCRIPTIONS:

THE E1/2 NE1/4 SE1/4, THE SE1/4 NE1/4, THE N1/2 SW1/4 NE1/4, AND GOVERNMENT LOTS 1 AND 2, ALL IN SECTION 2, T.20N., R.17W., P.M.M., MISSOULA COUNTY, MONTANA; EXCEPTING THEREFROM TRACT 1 OF CERTIFICATE OF SURVEY No. 4274; CONTAINING 158.24 ACRES; BEING SUBJECT TO ALL EASEMENTS EXISTING, SHOWN, APPARENT OR OF RECORD; ALL ACCORDING TO THIS CERTIFICATE OF SURVEY.

SURVEYOR'S CERTIFICATION:

MONTANA
EDWARD J. FLEMING
9747 LS
LICENSED PROFESSIONAL LAND SURVEYOR

SS _____ DATE 6/19/03

EDWARD J. FLEMING
MONTANA REGISTRATION No. 9747LS

UNLESS SIGNED, SEALED AND DATED, THIS IS A PRELIMINARY OR UNOFFICIAL DOCUMENT, AND CANNOT BE RELIED UPON IN WHOLE OR IN PART.

APPROVAL STATEMENTS:

SS _____ DATE 6-20-03
MISSOULA COUNTY - DEPARTMENT OF PUBLIC WORKS

SS _____ DATE 6/23/03
MISSOULA CITY-COUNTY HEALTH DEPT.

LEGEND

- ● = SET 5/8" X 24" REBAR W/ 2" ALUM. CAP (9747LS)
- ○ = FOUND 5/8" REBAR W/ 1 1/4" YPC (DUNCAN 4123S)
- ⊙ = FOUND MONUMENT AS NOTED
- R = RECORD PER CERTIFICATE OF SURVEY No. 2731
- R1 = RECORD PER GLO 1902
- R2 = RECORD PER CERTIFICATE OF SURVEY No. 4274
- F = FOUND
- RM = REFERENCE MONUMENT

PURPOSE OF SURVEY:

THIS SURVEY IS FILED AS A RETRACEMENT SURVEY OF AN EXISTING TRACT OF LAND PURSUANT TO SECTION 76-3-404 M.C.A., AND IS NOT INTENDED TO CREATE NEW PARCELS OR AGGREGATE EXISTING PARCELS OF RECORD.

COS005430
Page: 1 of 1
05/23/2003 01:49P
Missoula County Vickie M Zeier COS

SAC Book 709 Page 1308

TERRITORIAL ENGINEERING AND SURVEYING INC.
P.O. BOX 3851
MISSOULA, MONTANA 59806 (406)721-0142
C:\PROJECTS\ANDERSON\DWG\02-125A.DWG 02-125

5430

1/4	SEC	T	R
	2	20N	17W

P.M.M.

SHEET No. 1 of 1

CERTIFICATE OF SURVEY No. 5430
MISSOULA COUNTY, MONTANA

(HD 6170)

WARRANTY DEED (S. F.)

Compared
79163

This Indenture, Made the 19th day of August A. D. One thousand Nine hundred and Forty-eight between

BOOK 150 PAGE 504

of Victor Wise and Myrtle C. Wise, his wife Missoula County part ies of the first part, and

of Missoula County, a political subdivision Missoula county the part y of the second part;

WITNESSETH, That the said part ies of the first part, for an in consideration of the sum of One and no/100 DOLLARS ($ 1.00) lawful money of the United States of America, to them in hand paid by the said part y of the second part, the receipt whereof is hereby acknowledged, do by these presents, grant, bargain, sell, convey, warrant, and confirm unto the said part ies of the second part, and to their heirs and assigns, forever, the hereinafter described real estate, situated in the City or Town of County of Missoula and state of Montana, to-wit:

A strip piece or parcel of land situated in the SE¼ SE¼ of Section 2, T. 20 N., R. 17 W., and more particularly described as follows:

Tract #1 -- Being the north 40.0 feet of the E½ SE¼ SE¼ of said Section 2 above mentioned township & range.

Tract #2 -- Being the north 30.0 feet of the W½ SE¼ SE¼ and north 30 feet of the SW¼ SE¼ of said Section 2 above mentioned township and range.

Contains 2.0 acres, more or less, and is to be used for highway purposes only.

Consideration less than $100, no revenue stamps necessary.

Together with all and singular the hereinbefore described premises, together with all tenements, hereditaments and appurtenances thereto belonging or in anywise appertaining, and the reversion and reversions, remainder and remainders, rents, issues, and profits thereof, and also the estate, right, title, interest, right of dower and right of homestead, possession, claim and demand whatsoever, as well in law as in equity, of the said part ies of the first part, of, in or to the said premises and every part and parcel thereof, with the appurtenances thereto belonging. TO HAVE AND TO HOLD, all and singular the above mentioned and described premises unto the said part y of the second part, and to its heirs and assigns forever. And the said part ies of the first part and their heirs do hereby covenant that they will forever warrant and defend all right, title and interest in and to the said premises and the quiet and peaceable possession thereof unto the said part y of the second part, its heirs and assigns, against the acts and deeds of the said part ies of the first part, and all and every person and persons whomsoever lawfully claiming or to claim the same.

IN WITNESS WHEREOF, the said part ies of the first part ha ve hereunto set their hand s and seal s the day and year first hereinbefore written.

Signed, Sealed and Delivered in the Presence of

Victor Wise (SEAL)

Myrtle C. Wise (SEAL)

(SEAL)

(SEAL)

STATE OF MONTANA }
County of Missoula } ss.

On this 28th day of August in the year nineteen hundred and forty eight before me, Arthur M. Woods, Notary Public for the State of Montana, personally appeared Victor Wise and Myrtle C. Wise (his wife)

Known to me to be the person s whose name are subscribed to the within instrument; and acknowledged to me that they executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Notarial seal, the day and year in this certificate first above written.

(NOTARIAL SEAL)

Arthur M. Woods
Notary Public for the State of Montana, residing at Missoula, Montana.

My Commission expires Jan. 7 19 49

Filed for record this 28th day of August A.D., 19 48 at 3:15 o'clock P. M.

BJM
PROOFREAD BMP TO LDH

By W. J. Babington, County Recorder.
Iva D. Hunt, Deputy.

This Indenture, Made the 19th day of August A. D. One thousand Nine hundred and Forty-Eight between

BOOK 150 PAGE 505

of Cathrina Sophia Haasch Missoula County part y of the first part, and

Missoula County, a political subdivision

of Missoula County the part y of the second part;

WITNESSETH, That the said part y of the first part, for an in consideration of the sum of One and no/100 DOLLARS ($1.00) lawful money of the United States of America, to her in hand paid by the said part y of the second part, the receipt whereof is hereby acknowledged, do by these presents, grant, bargain, sell, convey, warrant, and confirm unto the said part y of the second part, and to its heirs and assigns, forever, the hereinafter described real estate, situated in the City or Town of County of Missoula and state of Montana, to-wit:

A strip, piece or parcel of land situated in the N½ SE¼ of Section 2, T. 20 N., R. 17 W., and more particularly described as follows:

Being the south 30 feet of the W½ NE¼ SE¼ and the south 30 feet of the NW¼ SE¼ of said Section 2, T. 20 N., R. 17 W.

Contains 1.27 acres more or less and is to be used for highway purposes only.

Consideration less than $100, no revenue stamps necessary.

Together with all and singular the hereinbefore described premises, together with all tenements, hereditaments and appurtenances thereto belonging or in anywise appertaining, and the reversion and reversions, remainder and remainders, rents, issues, and profits thereof, and also the estate, right, title, interest, right of dower and right of homestead, possession, claim and demand whatsoever, as well in law as in equity, of the said part y of the first part, of, in or to the said premises and every part and parcel thereof, with the appurtenances thereto belonging. TO HAVE AND TO HOLD, all and singular the above mentioned and described premises unto the said part y of the second part, and to its heirs and assigns forever.

And the said part y of the first part and her heirs do hereby covenant that they will forever warrant and defend all right, title and interest in and to the said premises and the quiet and peaceable possession thereof unto the said part y of the second part, its heirs and assigns, against the acts and deeds of the said part y of the first part, and all and every person and persons whomsoever lawfully claiming or to claim the same.

IN WITNESS WHEREOF, the said part y of the first part ha s hereunto set her hand and seal the day and year first hereinbefore written.

Signed, Sealed and Delivered in the Presence of

Cathrina Sophia Haasch (SEAL)

(SEAL)

(SEAL)

(SEAL)

STATE OF MONTANA }
County of Missoula } ss.

On this 28th day of August in the year nineteen hundred and forty eight before me, Arthur M. Woods, Notary Public for the State of Montana, personally appeared Cathrina Sophia Haasch

Known to me to be the person whose name is subscribed to the within instrument; and acknowledged to me that she executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Notarial seal, the day and year in this certificate first above written.

(NOTARIAL SEAL)

Arthur M. Woods
Notary Public for the State of Montana, residing at Missoula, Montana.

My Commission expires Jan. 7 19 49

Filed for record this 28th day of August A.D., 19 48 at 3:20 o'clock P. M.

Fee: None

By W. J. Babington, County Recorder. Iva D. Hunt, Deputy.

BJM PROOFREAD 8MP TO 204

Appendix B: Report Photos

Photo 1: Styler Drive Approach to 03787

Photo 2: Elevation View of 03787 Looking Upstream

Photo 3: Non-Standard Railroad Rail Cap Beam at 03787

Photo 4: Top of Deck at 03787. Note substandard traffic rail, lack of approach guardrail, and load posting sign.

Photo 5: Large Eddy Directly upstream of 03787

Photo 6: Elevation View of 03788 Looking Upstream

Photo 7: Abutment at 03788: Flat W Beam that support beam ends and steel plate backwall.

Photo 8: Top of Deck at 03788. Note substandard traffic rail and lack of approach guardrail.

Photo 9: Example of timber logs that have been piled up in front of the bridge abutments at 03788.

Photo 10: Example of debris build up extending above low chord at 03788.

Appendix C: Cost Estimates

Preliminary Construction Cost Estimate for

Styler Drive 03787

Bridge Replacement

Prepared By: HDR

Job No.	10415055		
Computed	PCJ	Date	12/10/2024
Checked	JBF	Date	12/12/2024
Sheet No.	1	Of	1

ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
Remove Structure	LS	1	$50,000	$50,000
Temporary Shoring	LS	1	$75,000	$75,000
Asphalt Concrete Pavement	TON	16.7	$300	$5,022
Emulsified Asphalt - Tack Coat	GAL	15.5	$25.00	$387
Concrete - Class Stucture	CY	46.6	$1,025	$47,770
Prestressed Beam - Bulb Tee	LNFT	300	$975	$292,500
Reinforcing Steel	LB	7345	$3.50	$25,706
Reinforcing Steel-Epoxy Coated	LB	1976	$4.50	$8,893
Bridge Rail - Type W830	LNFT	155	$350	$54,250
Structural Steel - Misc	LS	1	$5,000	$5,000
Re-Drive Test Pile	EACH	2	$3,650	$7,300
Dynamic Load Test	EACH	2	$6,400	$12,800
Furnish Steel Pile-Pipe	LB	41867	$2.00	$83,734
Drive Steel Pile	LNFT	320	$50	$16,000
Pile Conical Driving Point	EACH	8	$800	$6,400
Waterproof Membrane	SY	155	$95	$14,725
Riprap - Class 3 Random	CY	402	$275	$110,583
Perm Erosion Control - High Surv	SY	402	$8	$3,217
Approach Roadway Improvement Costs	LS	1	$200,000	$200,000

BASE CONSTRUCTION SUBTOTAL		**$1,019,287**
MOBILIZATION (20%)		$203,857
	SUBTOTAL	**$1,223,144**
CONTINGENCIES (40%)		$489,258
DESIGN ENGINEERING (18%)		$308,232
CONSTRUCTION ENGINEERING (12%)		$205,488

TOTAL ESTIMATED COST	**$2,230,000**

Preliminary Construction Cost Estimate for

Styler Drive 03788

Bridge Replacement

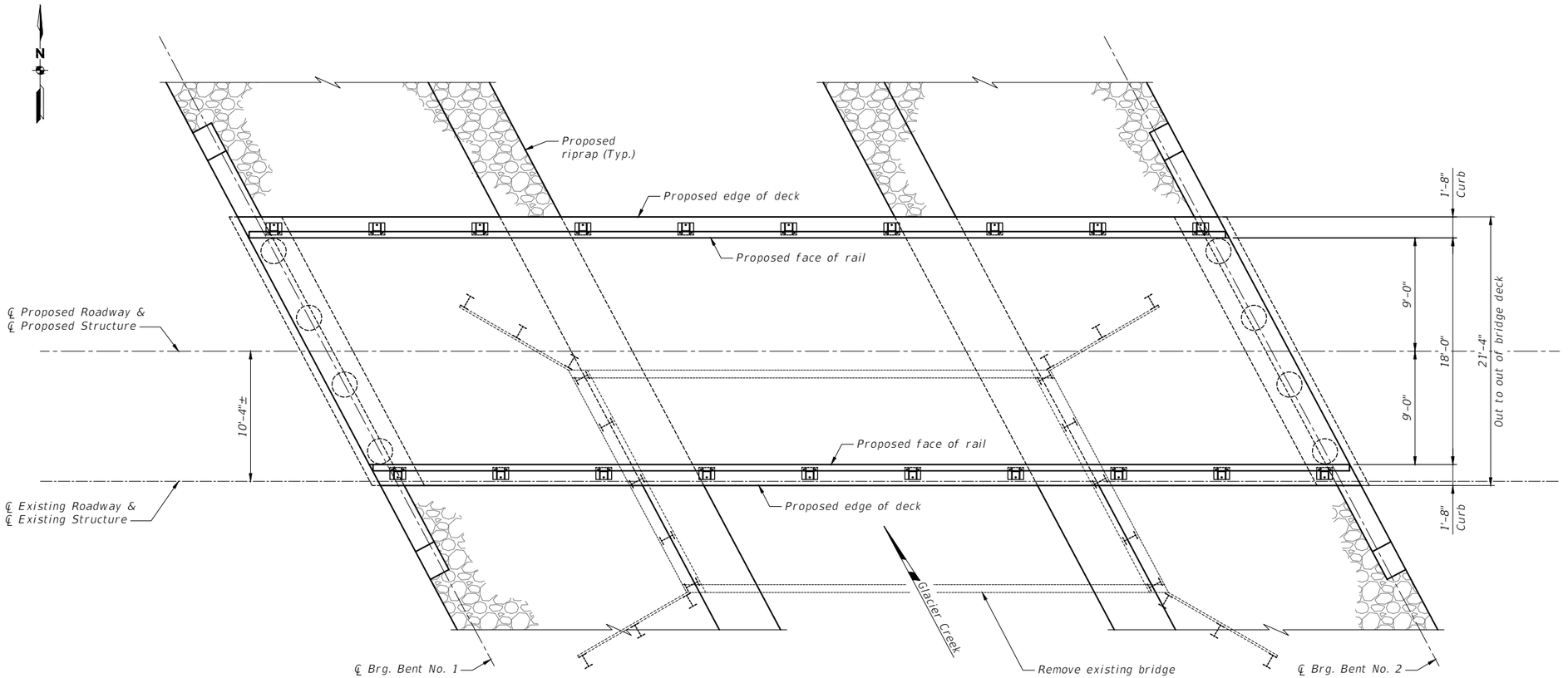
Prepared By: HDR

Job No.	10415055		
Computed	PCJ	Date	12/10/2024
Checked	JBF	Date	12/13/2024
Sheet No.	1	Of	1

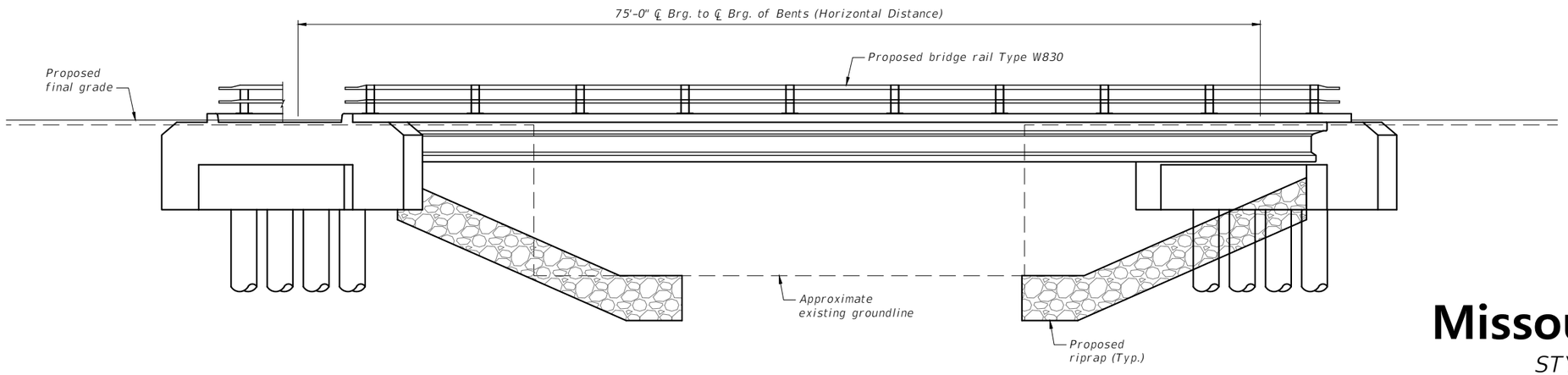
ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
Remove Structure	LS	1	$40,000	$40,000
Temporary Shoring	LS	1	$50,000	$50,000
Special Backfill	CY	351	$90	$31,562
Asphalt Concrete Pavement	TON	5.6	$300	$1,685
Emulsified Asphalt - Tack Coat	GAL	5.2	$25.00	$130
Concrete - Class Stucture	CY	28.3	$1,025.00	$29,042
Reinforced Concrete Box 24 x 8	LNFT	21.3	$7,500.00	$160,000
Reinforcing Steel	LB	5666.7	$3.50	$19,833
Bridge Rail - Type W830	LNFT	52.0	$350.00	$18,200
Waterproof Membrane	SY	52.0	$95.00	$4,940
Granular Bedding Material	CY	25.3	$150.00	$3,789
Foundation Material	CY	43.0	$90.00	$3,867
Bypass Pumping	LS	1.0	$125,000	$125,000
Geotextile Stabilization	SY	176.3	$6	$1,058
Approach Roadway Improvement Costs	LS	1.0	$200,000	$200,000

BASE CONSTRUCTION SUBTOTAL		**$689,105**
MOBILIZATION (20%)		$137,821
	SUBTOTAL	**$826,926**
CONTINGENCIES (40%)		$330,771
DESIGN ENGINEERING (18%)		$208,385
CONSTRUCTION ENGINEERING (12%)		$138,924
	TOTAL ESTIMATED COST	**$1,510,000**

Appendix D: Plan Exhibits



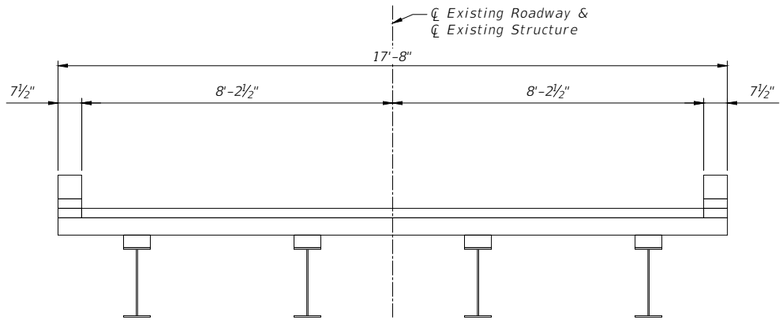
PLAN



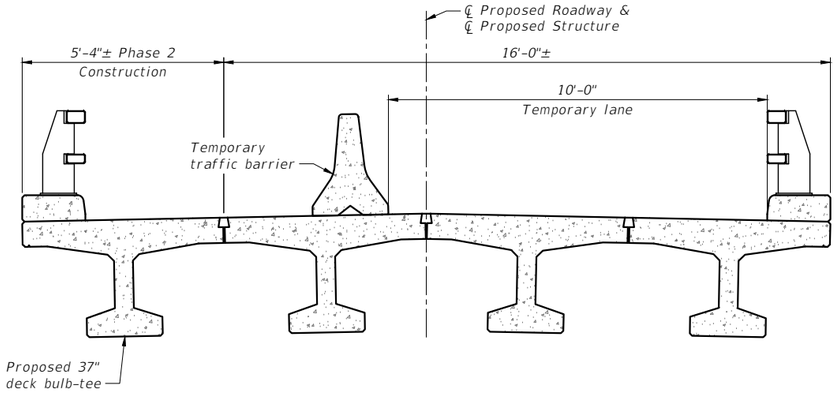
ELEVATION

Missoula COUNTY

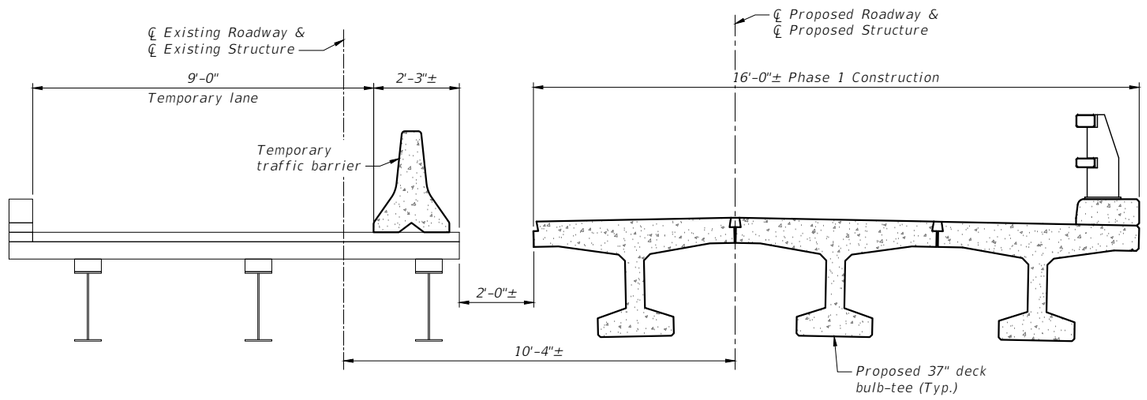
STYLER DRIVE
STRUCTURE 03787
JANUARY 2025
SCALE ~ 1" = 10'-0"



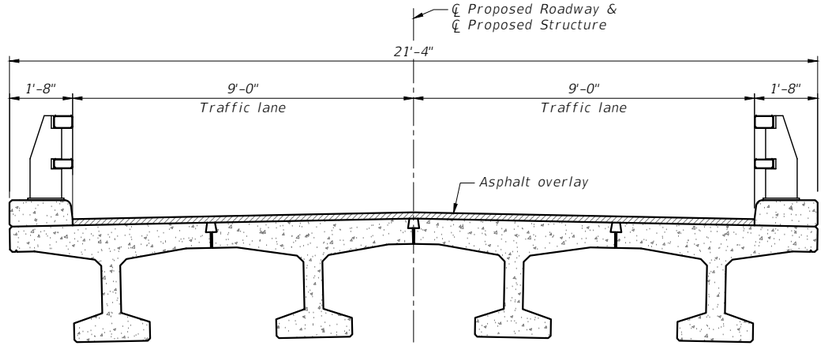
EXISTING BRIDGE
(Looking Ahead on Line)



PHASE 2
(Looking Ahead on Line)



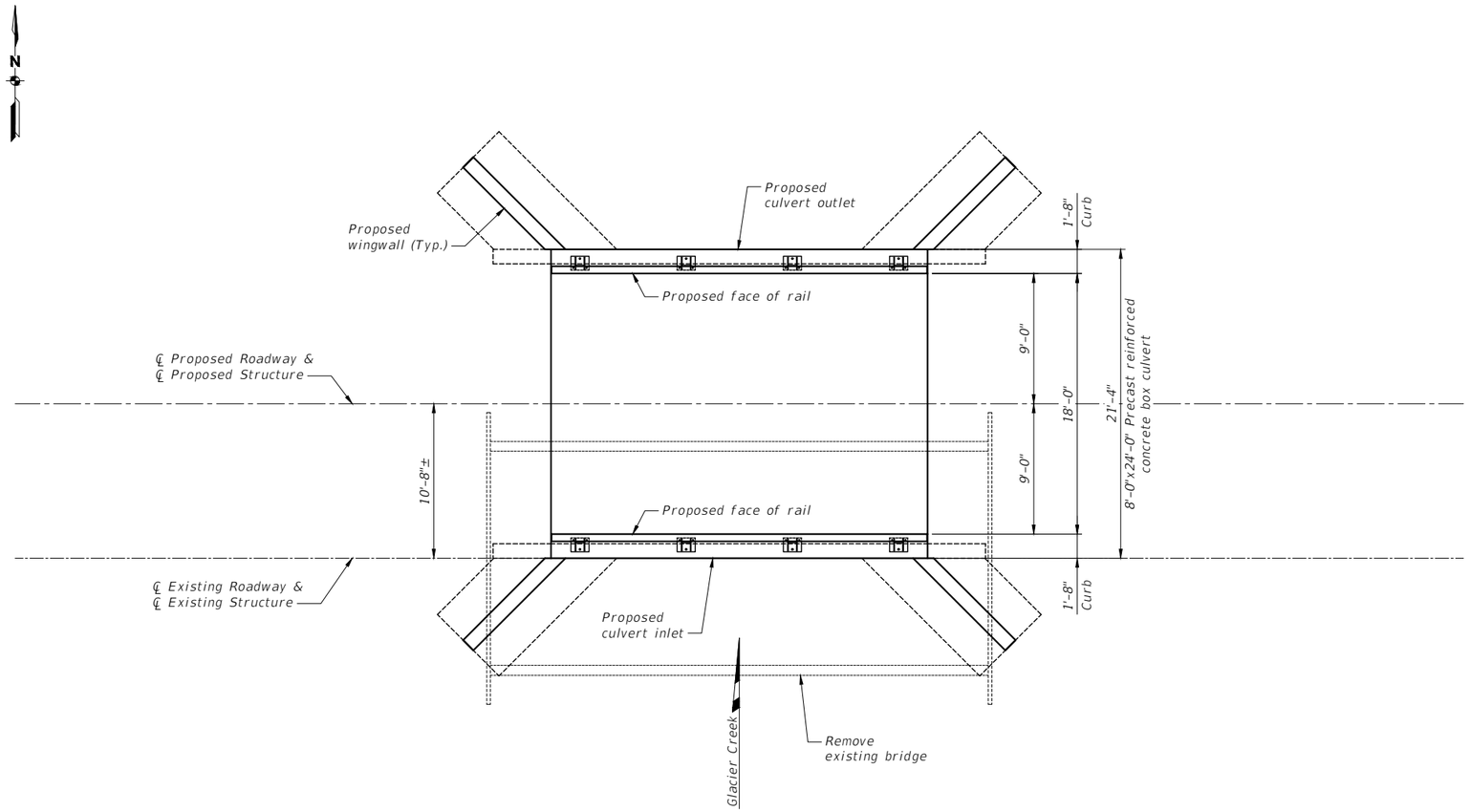
PHASE 1
(Looking Ahead on Line)



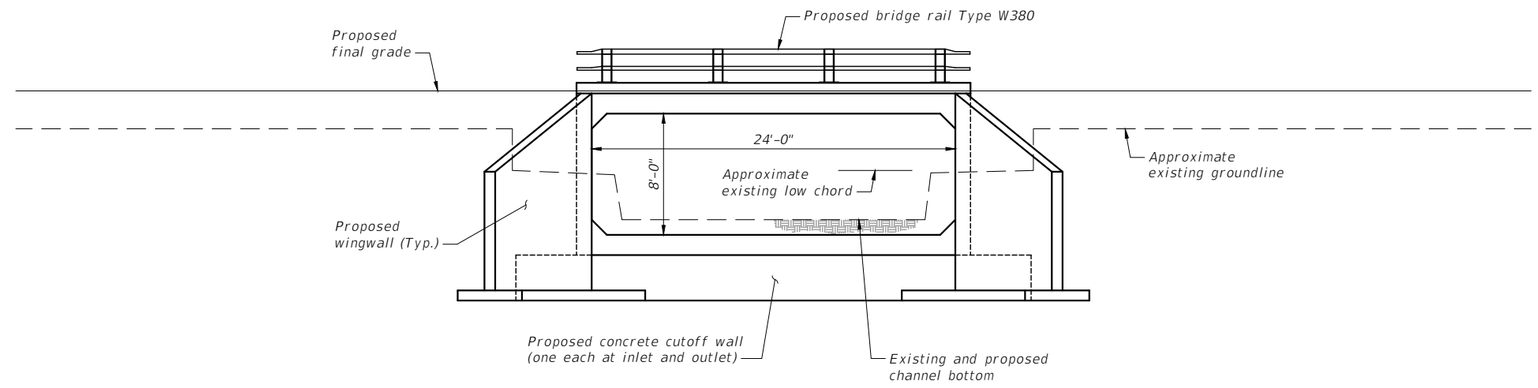
COMPLETED BRIDGE
(Looking Ahead on Line)

Missoula COUNTY

STYLER DRIVE
STRUCTURE 03787 CONSTRUCTION PHASING
JANUARY 2025
SCALE ~ ¼" = 1'-0"



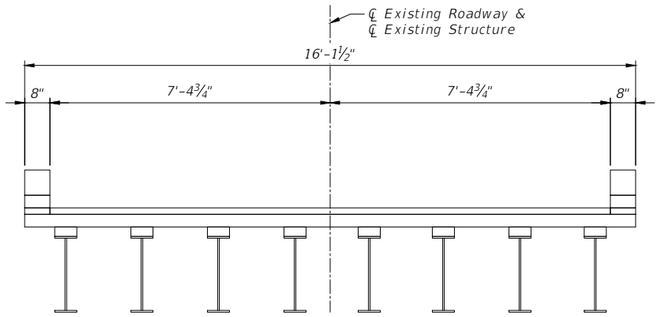
PLAN



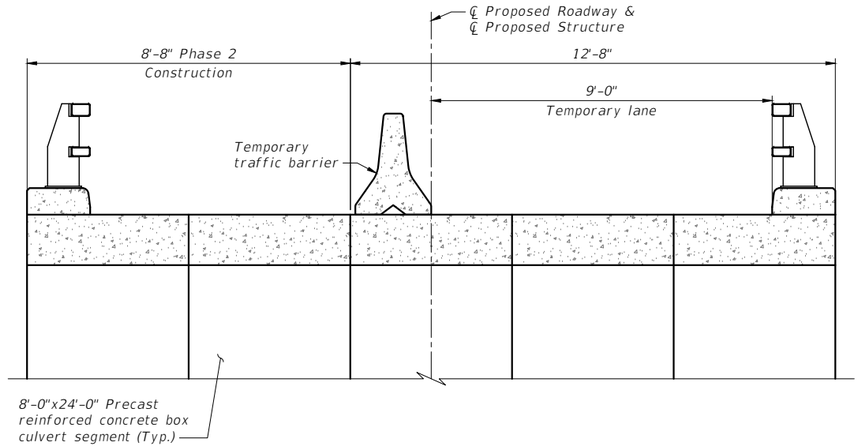
ELEVATION

Missoula COUNTY

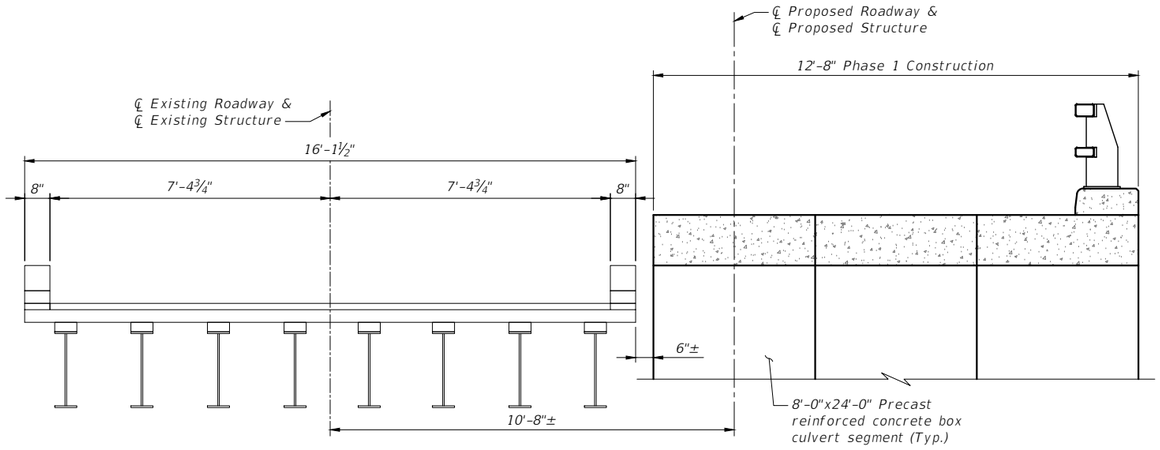
STYLER DRIVE
STRUCTURE 03788
JANUARY 2025
SCALE ~ 1" = 10'-0"



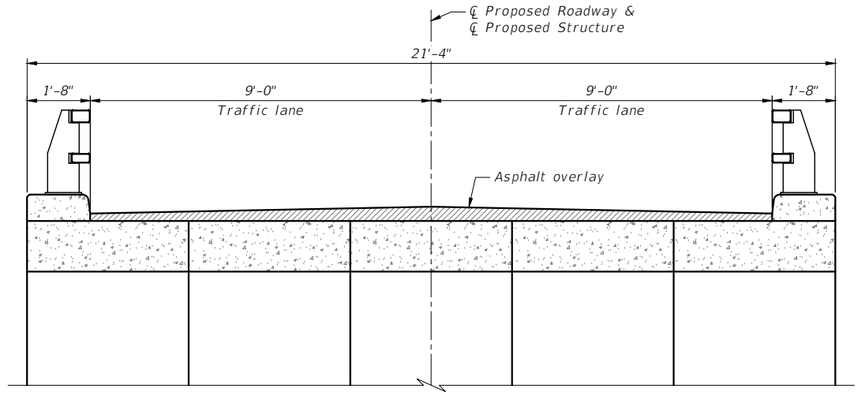
EXISTING BRIDGE
(Looking Ahead on Line)



PHASE 2
(Looking Ahead on Line)



PHASE 1
(Looking Ahead on Line)



COMPLETED BRIDGE
(Looking Ahead on Line)

Missoula COUNTY

STYLER DRIVE
STRUCTURE 03788 CONSTRUCTION PHASING
JANUARY 2025
SCALE ~ ¼" = 1'-0"

Missoula COUNTY

STYLER DRIVE
ROADWAY AERIAL EXHIBIT
JANUARY 2025

HDR