MOSCOW
Urban Renewal Agency

Meeting Agenda: Thursday, October 4, 2018, 7:00

City of Moscow Council Chambers • 206 E 3rd Street • Moscow, ID 83843
(A) = Board Action Item

1. **Consent Agenda (A)**- Any item will be removed from the consent agenda at the request of any member of the Board and that item will be considered separately later.
   - **A.** Minutes from September 6, 2018
   - **B.** August 2018 Financials
   - **C.** August 2018 Payables

   ACTION: Approve the consent agenda or take such other action deemed appropriate.

2. **Public Comment for items *not on agenda***: Three minute limit

3. **Report on Council Consideration of the Amended and Restated Legacy Crossing Urban Renewal District Plan (A) - Bill Belknap**
   The Council will conduct the public hearing and consider approval of the Amended and Restated Legacy Crossing Urban Renewal Redevelopment Plan at their October 1, 2018 meeting. Staff will provide a report on the Council's action to the Board.

   ACTION: Receive report and provide Staff with direction as deemed appropriate.

4. **South Main Pedestrian Underpass Study Report (A) – Bill Belknap**
   On May 17, 2018 the MURA Board agreed to jointly fund a study to assess the feasibility of the construction of a pedestrian underpass of South Main near the south couplet intersection within the Legacy Crossing District. The MURA and City have recently completed a floodplain assessment work in the vicinity of the south couplet. During the assessment process, the City Council expressed interest in exploring the construction of a pedestrian underpass of South Main/U.S. 95. It would be similar to the underpass currently in construction under State Highway 8 at the Styner/White intersection and would significantly improve pedestrian connectivity and safety within the Legacy Crossing District. The Study has been completed and Staff will present the results for the Board's consideration.

   ACTION: Receive report and provide Staff with direction as deemed appropriate.

5. **General Agency Updates – Bill Belknap**
   - Legacy Crossing District
   - Alturas District
   - General Agency Business

NOTICE: Individuals attending the meeting who require special assistance to accommodate physical, hearing, or other impairments, please contact the City Clerk, at (208) 883-7015 or TIDD 883-7019, as soon as possible so that arrangements may be made.

MOSCOW
Urban Renewal Agency

Meeting Minutes: September 6, 2018, 7:00 a.m.

City of Moscow Council Chambers • 206 E 3rd Street • Moscow, ID 83843

Commissioners Present	Commissioners Absent	Also in Attendance
Steve McGeehan, Chair	Art Bettge	Bill Belknap, MURA Executive Director
Trent Bice	Steve Drown	Anne Peterson, MURA Clerk
Dave McGraw		Brittany Gunderson, Treasurer
Ron Smith		
Brandy Sullivan		

McGeehan called the meeting to order at 7:01 a.m.

1. **Consent Agenda** - Any item will be removed from the consent agenda at the request of any member of the Board and that item will be considered separately later.
   A. *Minutes from July 19, 2018*

Smith moved approval, seconded by Sullivan. Motion carried.

2. **Public Comment for items *not on agenda***: Three minute limit

Garrett Thompson thanked Belknap, Gina Taruscio, the Agency, Moscow City Council and others involved in helping him get the triangle of property at Spotswood and the Troy Highway ready for development.

BJ Swanson introduced herself as a candidate for Latah County Treasurer, stated her confidence in stepping into the Treasurer position, and also her knowledge of urban renewal. She thought the Sixth & Jackson lot was the perfect location for a UI Welcome Center.

Rod Wakefield, candidate for Latah County Assessor, mentioned his 38 years of public service experience and familiarity with urban renewal.

3. **Sixth and Jackson RFP Report – Bill Belknap**

   Beginning on June 9th, the Agency published a Request for Proposals (RFP) for the disposition and development of the remnant portions of the Sixth and Jackson property. Proposals were due by August 10th and the Agency received one proposal from Mr. Rusty Olps. After meeting with Mr. Olps to discuss his proposal, Mr. Olps chose to withdraw his proposal. As a result, staff is recommending that the Agency re-advertise the RFP beginning on September 8th with a proposal due date of November 16th.

Following Belknap's explanation of the above, McGraw asked how the Agency could pursue Swanson's suggestion of a university welcome center on the site. Belknap said as part of their real estate services contract with the Agency, Palouse Commercial had previously approached the University about the idea but the University was not in a position to respond to the RFP within the Agency's advertised timeline. McGraw and Bice didn't see a rush to publish another RFP and were willing to wait and see if the University had any interest in discussing possibilities. Sullivan suggested publishing an RFP now with a 90-day deadline, and request that applicants include any extension they might need to finalize their proposals. Belknap said it would be difficult to rate submissions against one another if some applications weren't as complete as others. McGeehan said he preferred to delay publishing another RFP until the University idea could be explored further. Brenda von Wandruszka stated as a member of the public that

it didn't appear fair for the Agency to discuss preferential interest for a particular entity. McGraw stated the university was a community-wide entity and Belknap assured her that any RFP would be an open, competitive process. Swanson said the best way to retain the intention of Hello Walk would be to combine it with another university-related entity on the corner, and a welcome center and Hello Walk would both be good investments for the entire community. Smith noted that with the UI leadership in flux it could be a year or more before it would be in a position to participate. Sullivan said even if the Agency thinks a UI project would be ideal, she didn't want to hold off on an RFP simply in hopes the University would submit a proposal. Sullivan moved authorization of re-advertising the RFP this month with a 90-day deadline. Smith seconded the motion, which carried 4-1 (McGraw).

4. Amendment to the Schedule of Performance for the Needham Exclusive Negotiation Agreement – Bill Belknap

On July 19th, 2018 the Board approved an Exclusive Negotiation Agreement (ENA) with Shane and Janet Needham for the disposition and development of Lots 2 and 3, Block 1, Alturas Business Park Phase II. Mr. Needham has reported that due to the unavailability of local design professionals, he will not be able to meet the schedule of performance requirement of the ENA and submit his development plans to the Agency by November 15th. Mr. Needham has requested to amend the schedule of performance to shift the schedule back by 60 days. The proposed First Amended ENA is attached for the Board's review and approval.

Belknap reviewed the above information and said staff recommended approval. Bice moved approval of the First Amended ENA with a 60-day extension, seconded by Smith. Motion carried unanimously.

5. General Agency Updates – Bill Belknap

None.

The meeting adjourned at 7:28 AM.

_____ _____

Steve McGeehan, Agency Chair Date

MOSCOW
Urban Renewal Agency

Balance Sheet
August 31, 2018

ASSETS		
Cash		5,970
Investments-LGIP		393,890
Investments-Zions Debt Reserve		44,361
Other assets		5,260
Land Held For Resale		531,256
Land		679,420
Total Assets	$	1,660,157
LIABILITIES		
Deposit Payable		5,000
Series 2010 Bond - due within one year		28,000
Latah County payback agreement - due within one year		3,500
Series 2010 Bond - due after one year		319,000
Latah County payback agreement - due after one year		101,537
Total Liabilities		457,037
FUND BALANCES		
Net Assets Invest. Cap Assets		332,420
Restricted Fund Balance		44,312
Unrestricted Fund Balance		858,616
Total Fund Balance		1,235,348
Retained Earnings:		(32,228)
Total Fund Balance and Retained Earnings:		1,203,120
Total Liabilities, Fund Balance and Retained Earnings:	$	1,660,157

August-18
Checks by Date

MOSCOW
Urban Renewal Agency

Check Number	Vendor	Description	Check Date	Check Amount
4569	UALTASCI	Alta Science & Engineering	8/3/2018	
	A1548	South Main Underpass Study - 50% paid by URA		1,726.88
Total for Check Number 4569:				1,726.88
4570	UROSAUERS	Rosauers	8/3/2018	
	02-817356	Meeting Materials		5.41
Total for Check Number 4570:				5.41
4571	UALTASCI	Alta Science & Engineering	8/17/2018	
	A1578	South Main Underpass Study		2,493.63
Total for Check Number 4571:				2,493.63
4572	UANDERCL	Calyton Anderson	8/17/2018	
		Anderson OPA Payment Second 1/2 of 2017 Tax Increment		8.48
Total for Check Number 4572:				8.48
4573	UAVISTA	Avista	8/17/2018	
	July 2018	6th & Jackson Service		41.53
Total for Check Number 4573:				41.53

August-18
Checks by Date

MOSCOW Urban Renewal Agency

Check Number	Vendor	Description	Check Date	Check Amount
4574	UBINGHAM	Darold Bingham	8/17/2018	
		Bingham OPA Payment Second 1/2 of 2017 Tax Increment		1,580.85
Total for Check Number 4574:				1,580.85
4575	UCITYMOS	City of Moscow	8/17/2018	
	August 2018	City Admin Services - August 2018		3,978.42
	July 2018	City Utilities - July 2018		204.25
Total for Check Number 4575:				4,182.67
4576	UGRITMAN	Gritman Medical Park LLC	8/17/2018	
		Gritman OPA Payment Second 1/2 of 2017 Tax Increment		4,881.56
Total for Check Number 4576:				4,881.56
4577	UMOSPULD	News Review Publishing Co.	8/17/2018	
	145515	Proposed Budget PHN 7-21 + 7-28		198.00
Total for Check Number 4577:				198.00
4578	UROASUERS	Rosauers	8/17/2018	
	10-1679566	Meeting Materials		8.40
Total for Check Number 4578:				8.40
4579	USWANGER	Larry Swanger	8/17/2018	
		Swanger OPA Payment Second 1/2 of 2017 Tax Increment		258.93
Total for Check Number 4579:				258.93
4580	UZIONS	Zions First National Bank	8/17/2018	
	8/8/2018	Annual Trustee Fee for Legacy Bond		1,500.00
Total for Check Number 4580:				1,500.00

August-18
Checks by Date

MOSCOW
Urban Renewal Agency

Check Number	Vendor	Description	Check Date	Check Amount
ACH	UZIONS	Zions First National Bank	8/24/2018	
	5854650	Legacy Bond Principal		28,000.00
	5854650	Legacy Bond Interest		6,652.70
	5854650	Less: Escrow Interest Earnings		(260.37)
Total for ACH payment				34,392.33
Total bills for August 2018:				**$ 51,278.67**

August-18

Accounts Payable Checks for Approval

Check	Check Date	Fund Name	Vendor	Void	Amount
4569	08/03/2018	Moscow Urban Renewal Agency	Alta Science & Engineering		1,726.88
4570	08/03/2018	Moscow Urban Renewal Agency	Rosauers		5.41
4571	08/17/2018	Moscow Urban Renewal Agency	Alta Science & Engineering		2,493.63
4572	08/17/2018	Moscow Urban Renewal Agency	Clayton Anderson		8.48
4573	08/17/2018	Moscow Urban Renewal Agency	Avista		41.53
4574	08/17/2018	Moscow Urban Renewal Agency	Darold Bingham		1,580.85
4575	08/17/2018	Moscow Urban Renewal Agency	City of Moscow		3,978.42
4575	08/17/2018	Moscow Urban Renewal Agency	City of Moscow		204.25
4576	08/17/2018	Moscow Urban Renewal Agency	Gritman Medical Park LLC		4,881.56
4577	08/17/2018	Moscow Urban Renewal Agency	News Review Publishing Co.		198.00
4578	08/17/2018	Moscow Urban Renewal Agency	Rosauers		8.40
4579	08/17/2018	Moscow Urban Renewal Agency	Larry Swanger		258.93
4580	08/17/2018	Moscow Urban Renewal Agency	Zions First National Bank		1,500.00
ACH	08/24/2018	Moscow Urban Renewal Agency	Zions First National Bank		34,392.33
			Report Total:	0.00	51,278.67

Steve McGeehan, Chairperson

Accounts payable expenditures as contained herein were made in compliance with the duly adopted budget for the current fiscal year and according to Idaho law.

Bill Belknap, Executive Director

Brittany Gunderson, Treasurer

General Ledger
Revenue Analysis

August 2018

Account Number	Description	Budgeted Revenue	Period Revenue	YTD Revenue	Variance	Uncollected Bal	% Avail/Uncollec	% Received
890	**Moscow Urban Renewal Agency**							
890-000-00-410-00	Property Taxes - Alturas	$ -	$ -	$ -	$ -	$ -	0.00%	0.00%
890-000-00-410-01	Property Taxes - Legacy	$ 228,980.00	$ 6,962.96	$ 222,949.93	$ 6,030.07	$ 6,030.07	2.63%	97.37%
890-000-00-431-11	EPA Clean-up Grant - Legacy	$ -	$ -	$ -	$ -	$ -	0.00%	0.00%
890-000-00-471-00	Investment Earnings	$ 1,000.00	$ 874.30	$ 5,830.20	$ (4,830.20)	$ (4,830.20)	-483.02%	583.02%
890-000-00-478-10	Sale of Land - Alturas	$ -	$ -	$ -	$ -	$ -	0.00%	0.00%
890-000-00-478-11	Sale of Land - Legacy	$ -	$ -	$ -	$ -	$ -	0.00%	0.00%
890	**Moscow Urban Renewal Agency**	**$ 229,980.00**	**$ 7,837.26**	**$ 228,780.13**	**$ 1,199.87**	**$ 1,199.87**	**0.52%**	**99.48%**
Revenue Total		**$ 229,980.00**	**$ 7,837.26**	**$ 228,780.13**	**$ 1,199.87**	**$ 1,199.87**	**0.52%**	**99.48%**

General Ledger
Expense vs. Budget

August-18

Sort Level	Description	Budget	Period Amt	End Bal	Variance	Avail/Uncollect	% Expend/Collect
890	Moscow Urban Renewal Agency						
880	URA - General Agency						
890-880-10-642-00	Administrative Services	$ 47,741.00	$ 3,978.42	$ 43,762.62	$ 3,978.38	$ 3,978.38	91.67%
890-880-10-642-10	Professional Services-Exec Dir	$ -	$ -	$ -	$ -	$ -	0.00%
890-880-10-642-15	Professional Services-Other	$ 6,000.00	$ -	$ 2,350.00	$ 3,650.00	$ 3,650.00	39.17%
890-880-10-642-20	Professional Services-Auditing	$ 5,000.00	$ -	$ 4,800.00	$ 200.00	$ 200.00	96.00%
890-880-10-642-30	Professional Services-Computer	$ 1,000.00	$ -	$ 300.00	$ 700.00	$ 700.00	30.00%
890-880-10-644-10	Marketing Expense-General	$ 1,000.00	$ 198.00	$ 585.32	$ 414.68	$ 414.68	58.53%
890-880-10-668-10	Liability Insurance-General	$ 1,650.00	$ -	$ 1,507.00	$ 143.00	$ 143.00	91.33%
E02	Contractual	$ 62,391.00	$ 4,176.42	$ 53,304.94	$ 9,086.06	$ 9,086.06	85.44%
890-880-10-631-10	Postage Expense	$ 100.00	$ -	$ -	$ 100.00	$ 100.00	0.00%
890-880-10-631-20	Printing and Binding	$ 400.00	$ -	$ -	$ 400.00	$ 400.00	0.00%
890-880-10-644-15	Alturas Marketing/Maintenance	$ 4,500.00	$ -	$ 1,380.00	$ 3,120.00	$ 3,120.00	30.67%
890-880-10-647-10	Travel & Meetings-General	$ 1,000.00	$ -	$ -	$ 1,000.00	$ 1,000.00	0.00%
890-880-10-649-10	Professional Development	$ 1,000.00	$ -	$ -	$ 1,000.00	$ 1,000.00	0.00%
890-880-10-669-10	Misc. Expense-General	$ 500.00	$ 13.81	$ 131.22	$ 368.78	$ 368.78	26.24%
E03	Commodities	$ 7,500.00	$ 13.81	$ 1,511.22	$ 5,988.78	$ 5,988.78	20.15%
880	URA - General Agency	$ 69,891.00	$ 4,190.23	$ 54,816.16	$ 15,074.84	$ 15,074.84	78.43%

General Ledger
Expense vs. Budget

August-18

Sort Level	Description	Budget	Period Amt	End Bal	Variance	Avail/Uncollect	% Expend/Collect
890	Urban Renewal Agency						
890-890-10-642-10	Professional Services-Alturas	$ -	$ -	$ -	$ -	$ -	0.00%
890-890-10-642-12	Land Sale Expense-Alturas	$ -	$ -	$ -	$ -	$ -	0.00%
890-890-10-644-10	Marketing Expense-Alturas	$ -	$ -	$ -	$ -	$ -	0.00%
E02	Contractual	$ -	$ -	$ -	$ -	$ -	0.00%
890-890-10-647-10	Travel & Meetings-Alturas	$ -	$ -	$ -	$ -	$ -	0.00%
890-890-10-658-10	Repairs & Maintenance	$ -	$ -	$ -	$ -	$ -	0.00%
890-890-10-669-10	Misc. Expense-Alturas	$ -	$ -	$ -	$ -	$ -	0.00%
E03	Commodities	$ -	$ -	$ -	$ -	$ -	0.00%
890-890-10-770-73	Improvements-Alturas	$ -	$ -	$ -	$ -	$ -	0.00%
E04	Capital Outlay	$ -	$ -	$ -	$ -	$ -	0.00%
890-890-10-800-00	Termination Plan	$ -	$ -	$ -	$ -	$ -	0.00%
E20	Other Financing Uses	$ -	$ -	$ -	$ -	$ -	0.00%
890-890-10-699-74	Depreciation Expense	$ -	$ -	$ -	$ -	$ -	0.00%
890-890-10-699-99	Amortization Expense	$ -	$ -	$ -	$ -	$ -	0.00%
E81	Depreciation & Amortization	$ -	$ -	$ -	$ -	$ -	0.00%

General Ledger
Expense vs. Budget

August-18

Sort Level	Description	Budget	Period Amt	End Bal	Variance	Avail/Uncollect	% Expend/Collect
890-890-10-900-01	Contingency - Alturas	$ -	$ -	$ -	$ -	$ -	0.00%
E90	Contingency	$ -	$ -	$ -	$ -	$ -	0.00%
890	Urban Renewal Agency	$ -	$ -	$ -	$ -	$ -	0.00%
895	URA - Legacy Crossing						
890-895-10-642-10	Professional Services-Legacy	$ 10,000.00	$ 4,220.51	$ 27,512.67	$ (17,512.67)	$ (17,512.67)	275.13%
890-895-10-642-12	Land Sale Expense-Legacy	$ -	$ -	$ -	$ -	$ -	0.00%
890-895-10-644-10	Marketing Expense-Legacy	$ 2,000.00	$ -	$ -	$ 2,000.00	$ 2,000.00	0.00%
E02	Contractual	$ 12,000.00	$ 4,220.51	$ 27,512.67	$ (15,512.67)	$ (15,512.67)	229.27%
890-895-10-647-10	Travel & Meetings-Legacy	$ 1,000.00	$ -	$ -	$ 1,000.00	$ 1,000.00	0.00%
890-895-10-652-10	Heat, Lights & Utilities	$ 2,000.00	$ 245.78	$ 2,506.62	$ (506.62)	$ (506.62)	125.33%
890-895-10-658-10	Repairs & Maintenance	$ -	$ -	$ -	$ -	$ -	0.00%
890-895-10-658-51	Development Participation	$ -	$ -	$ 63,753.63	$ (63,753.63)	$ (63,753.63)	0.00%
890-895-10-669-10	Misc. Expense-Legacy	$ 1,000.00	$ -	$ 9.00	$ 991.00	$ 991.00	0.90%
890-895-10-675-00	Fiscal Agent Trustee fees	$ 1,750.00	$ 1,500.00	$ 1,500.00	$ 250.00	$ 250.00	85.71%
890-895-10-676-15	Latah County Reimb. Agreement	$ 3,500.00	$ -	$ 3,500.00	$ -	$ -	100.00%
890-895-10-676-17	Owner Participation Agreements	$ 21,385.00	$ 6,729.82	$ 66,252.60	$ (44,867.60)	$ (44,867.60)	309.81%

General Ledger
Expense vs. Budget

August-18

Sort Level	Description	Budget	Period Amt	End Bal	Variance	Avail/Uncollect	% Expend/Collect
E03	Commodities	$ 30,635.00	$ 8,475.60	$ 137,521.85	$ (106,886.85)	$ (106,886.85)	448.90%
890-895-10-770-35	1% Public Art	$ -	$ -	$ -	$ -	$ -	0.00%
890-895-10-770-71	Land-Legacy	$ -	$ -	$ -	$ -	$ -	0.00%
890-895-10-770-73	Improvements-Legacy	$ -	$ -	$ -	$ -	$ -	0.00%
890-895-10-770-97	Infrastructure Improvements	$ -	$ -	$ -	$ -	$ -	0.00%
E04	Capital Outlay	$ -	$ -	$ -	$ -	$ -	0.00%
890-895-10-676-10	Bond Issuance Cost	$ -	$ -	$ -	$ -	$ -	0.00%
E05	Debt Service	$ -	$ -	$ -	$ -	$ -	0.00%
890-895-10-890-00	Transfer To: General Fund	$ 65,391.00	$ -	$ -	$ 65,391.00	$ 65,391.00	0.00%
890-895-10-890-01	Transfer To: Capital Fund	$ 232,310.00	$ -	$ -	$ 232,310.00	$ 232,310.00	0.00%
E10	Transfers To	$ 297,701.00	$ -	$ -	$ 297,701.00	$ 297,701.00	0.00%
890-895-10-900-01	Contingency - Legacy	$ 15,000.00	$ -	$ -	$ 15,000.00	$ 15,000.00	0.00%
E90	Contingency	$ 15,000.00	$ -	$ -	$ 15,000.00	$ 15,000.00	0.00%

General Ledger
Expense vs. Budget

August-18

Sort Level	Description	Budget	Period Amt	End Bal	Variance	Avail/Uncollect	% Expend/Collect
895	URA - Legacy Crossing	$ 355,336.00	$ 12,696.11	$ 165,034.52	$ 190,301.48	$ 190,301.48	46.44%
899	Dept						
890-899-11-790-01	Bond Principal - Alturas	$ -	$ -	$ -	$ -	$ -	0.00%
890-899-11-791-01	Bond Interest-Alturas	$ -	$ -	$ -	$ -	$ -	0.00%
890-899-12-790-01	Bond Principal - Legacy	$ -	$ 28,000.00	$ 28,000.00	$ (28,000.00)	$ (28,000.00)	0.00%
890-899-12-791-01	Bond Interest - Legacy	$ -	$ 6,652.70	$ 13,157.24	$ (13,157.24)	$ (13,157.24)	0.00%
E05	Debt Service	$ -	$ 34,652.70	$ 41,157.24	$ (41,157.24)	$ (41,157.24)	0.00%
890-899-10-990-00	Ending Fund Bal Unassigned	$ 18,681.00	$ -	$ -	$ 18,681.00	$ 18,681.00	0.00%
890-899-10-990-01	Ending Fund Balance Alturas	$ 26,400.00	$ -	$ -	$ 26,400.00	$ 26,400.00	0.00%
890-899-11-990-00	End Fund Bal Assigned-Alturas	$ -	$ -	$ -	$ -	$ -	0.00%
890-899-11-990-01	End Fund Bal Res-Alturas	$ -	$ -	$ -	$ -	$ -	0.00%
890-899-12-990-00	End Fund Bal Assigned-Legacy	$ 55,443.00	$ -	$ -	$ 55,443.00	$ 55,443.00	0.00%
890-899-12-990-01	End Fund Bal Res-Legacy	$ -	$ -	$ -	$ -	$ -	0.00%
E95	Ending Fund Balance	$ 100,524.00	$ -	$ -	$ 100,524.00	$ 100,524.00	0.00%
899	Dept	$ 100,524.00	$ 34,652.70	$ 41,157.24	$ 59,366.76	$ 59,366.76	40.94%
890	Moscow Urban Renewal Agency	$ 525,751.00	$ 51,539.04	$ 261,007.92	$ 264,743.08	$ 264,743.08	49.64%

Alta Science & Engineering, Inc.

alta-se.com

220 East Fifth Street, Suite 325
Moscow, Idaho 83843
Ph: (208) 882-7858; Fax: (208) 883-3785

M E M O R A N D U M

To: Bill Belknap, City of Moscow, Moscow, ID

From: Jess Dzara, Alta Science & Engineering, Moscow, ID
Susan Firor, Alta Science & Engineering, Moscow, ID

Date: July 2, 2018

Job Code: 18059

Subject: **City of Moscow US95 Underpass Feasibility Memo**

The City of Moscow is investigating the feasibility of constructing a bike/pedestrian underpass on existing streambanks and within the current concrete bridge for Paradise Creek at the US Highway 95 (US 95) crossing. This underpass would allow pedestrians and bike traffic to cross under US 95 on Paradise Path without needing to cross US 95, disrupting traffic flow on the highway. A similar underpass was designed and is being built in summer 2018 in the concrete bridge for Paradise Creek at the intersection of Highway 8 and White Avenue/Styner Avenue. The success of this project has motivated the City of Moscow to consider additional underpass opportunities to enhance pedestrian movement and safety in Moscow.

Alta Science & Engineering (Alta) was tasked to complete a review of the site hydrology and develop a hydraulic model to ensure project feasibility prior to engineering design. This memorandum summarizes the tasks and analyses completed. Elements necessary for this analysis include existing field survey, hydrologic estimates, and developing and interpreting the hydraulic model.

In order to move forward with this project, it is assumed the proposed condition must have no negative effects on the existing bridge during the 50-year flood event. The modeled proposed condition is a concrete and asphalt path approximately 10 feet wide, with a top finished grade surface 8 feet below the bottom chord of the bridge, located along the left (southwest) side of the bridge. Alta assumed the following project constraints and conditions for this analysis:

- The underpass trail shall be a minimum of 8 feet wide.
- The trail surface shall be a minimum of 8 feet below the low chord of the bridge.
- The trail shall be placed along the south bank of the stream and inside the bridge.
- The project shall cause no new flooding impacts upstream or downstream of the project.
- The project shall meet FEMA requirements for construction in a floodway.

Section 1 Field Survey

Alta completed a topographic and cross-sectional survey in February 2018 as part of the LOMR analysis on Paradise Creek. Existing survey data were used to model and analyze the bridge, associated infrastructure, and Paradise Creek for the existing condition and proposed US 95 underpass. This survey included stream channel cross-sections, a thalweg profile, and infrastructure inventory. The US 95 bridge structure was surveyed, including the concrete wingwalls, road surface elevation, bridge bottom chord elevation, width, and height of the

structure. All of this information was used in the hydraulic model to assess the hydraulic capacity of the existing structure. A supplemental survey is tentatively planned for the beginning of July 2018 to survey the existing sidewalk, path, and topography for conceptual design.

Section 2 Hydrologic Analysis

The objectives of hydrologic modeling are to determine reasonable estimates of peak flood flows and ensure that the proposed project will meet the requirements set forth by the City of Moscow and Idaho Transportation Department (ITD) for the modified bridge structure. Alta used several methods to estimate peak flows for use in the hydraulic model. The same methods were used in the Highway 8 Paradise Creek underpass design, but this analysis adds four years of flow data.

A real-time U.S. Geological Survey (USGS) gauge, #13346800 (USGS 1979–Current), is located on Paradise Creek in Moscow at the University of Idaho. This gauge has been in operation since 1979 and collects daily streamflow data from which USGS derives annual peak streamflows. These 39 years of peak streamflow data were used in accordance with Bulletin 17b (Interagency Advisory Committee on Water Data 1982) to estimate the 10-, 25-, 50-, and 100-year (Q_{10}, Q_{25}, Q_{50}, and Q_{100}) return interval flood flows at the gauge. See Attachment A for a complete list of recorded peak flows and storm event estimates. Because the site is upstream from the gauge, Alta adjusted these data to the specific project location using the similar watersheds method (Berenbrock 2002) for this region. Table 1 summarizes the peak streamflows calculated using the gauge data.

Peak flows were also estimated using regional regression equations developed by the USGS for Idaho (Berenbrock 2002) using the web-based StreamStats program (USGS, 2009). This analysis resulted in the peak streamflow values shown in Table 1 and complete output is included in Attachment A.

Table 1. Peak Flow Estimates at US Highway 95 Paradise Creek Bridge

Peak Flow Estimates at US Highway 95 Paradise Creek Bridge				
Method	**Q_{10}**	**Q_{25}**	**Q_{50}**	**Q_{100}**
Gage Data Corrected for Watershed Size (cfs)	489	630	737	846
Regional Regression - StreamStats (cfs)	409	589	743	904
ITD Structure Survey (cfs)	n/a	n/a	890	1100
FEMA Flood Insurance Study (cfs)	540	n/a	890	1070

As shown in Table 1, the peak flow estimates for the 50- and 100-year storm events vary significantly. The ITD structure survey (included in Attachment A) has the highest flow rates of all methods compared (ITD 1978). It is not known what methods and calculations ITD used. The analysis was done over 30 years ago; since then, much more stream gauge data have been collected and can be used to refine the analysis. The FEMA Flood Insurance Study for the City of Moscow has similar 50- and 100-year flow rates to the ITD structure survey (City of Moscow, 2002). Therefore, the maximum 50-yr storm event, 890 cubic feet per second (cfs), and the 100-year FEMA FIS flow of 1070 cfs were chosen as the design flows to provide the

most conservative model results and to remain consistent with the method used in the Paradise Creek Highway 8 Underpass hydraulic analysis.

Section 3 Hydraulic Analysis

The steady-state hydraulic analyses for the existing and proposed conditions were modeled using HEC-RAS 4.1.0 (USACE 2010). The existing survey data and hydrologic analyses described above were used to develop the base existing condition model to define the current conditions of Paradise Creek and the bridge. The proposed condition was modeled by modifying the cross-sections immediately upstream and downstream of the bridge with the addition of the trail.

The existing conditions for Paradise Creek at the US 95 Highway bridge consist of a fairly deep channel, nearly trapezoidal in shape, with a smaller, low-flow channel at the bottom that conveys the summer baseflow. Channel slopes range from adverse to 1.2% in the project reach. Alta assumed Manning's roughness coefficients (Manning's n) ranging from 0.013 for concrete or asphalt to 0.060 where thick reed canarygrass covers the streambanks.

The hydraulic model was run for the range of peak flows for both the existing and proposed conditions but, for the purpose of this memorandum, the focus is on the 50-year event, which is the required design flood event set forth by ITD; the highest estimated 50-year flood event (ITD and FEMA Flood Insurance Survey) was used to get the most conservative model results.

Section 4 Results

After completion of the full hydraulic analysis for the existing bridge with and without the proposed underpass, Alta concludes the project will result in minimal change in flow characteristics as a result of changes through the structure. This conclusion is based on comparison of the 50-year and 100-year return interval flows in existing and proposed conditions. At Q_{50}, the model indicates the proposed project will increase water surface elevation by a maximum of 0.10 feet, while velocity increases by a maximum of 1.07 feet per second. At Q_{100}, the model shows an increase of 0.10 feet in water surface elevation at the cross section 13 feet upstream of the bridge inlet. This minimal increase is not considered an issue at this phase of the design and will be minimized as the design progresses. Complete HEC-RAS model output is provided in Attachment B.

The proposed path is expected to flood for at least a few days almost every year. Based on 39 years of mean daily discharge records from the USGS gauge, the trail would be inundated for an average of 4.1 days per year (Table 2). This analysis was based upon a project site flow rate of 73 cfs, which correlates to a gauge flow rate of 85 cfs. It is noteworthy that these flooding events mainly occur between January and April when pedestrian and bicycle activity is at its lowest due to inclement weather.

Table 2. Bike Path Inundation at the Upstream End of US Highway 95 Paradise Creek Bridge

Bike Path Inundation at US Highway 95 Paradise Creek Bridge			
Days with Mean Daily Discharge Above 85 cfs	**Minimum (Days/Year)**	**Maximum (Days/Year)**	**Average (Days/Year)**
Total Days	0	17	4.1
Consecutive Days	0	8	2.1

Section 5 References

Berenbrock, Charles, 2002. Estimating the Magnitude of Peak Flows at Selected Recurrence Intervals for Streams in Idaho, USGS Water-Resources Investigations Report 02–4170.

City of Moscow, 2002. Flood Insurance Study, Revised April 15, 2002. Federal Emergency Management Agency Community Number 160090V000.

Idaho Transportation Department (ITD), 1978. Hydraulic Structure Survey: Paradise Creek Bridge, July 18, 1978.

Interagency Advisory Committee on Water Data, 1982. Guidelines for determining flood flow frequency Bulletin 17B of the Hydrology Subcommittee: U.S. Geological Survey, Office of Water Data Coordination, 183 p.

U.S. Army Corps of Engineers (USACE), 2010. HEC-RAS, River Analysis System. Version 4.1.0

U.S. Geological Survey (USGS), 1979–Current. "USGS 13346800 Paradise Cr at University of Idaho at Moscow ID" <http://waterdata.usgs.gov/nwis/uv/?site_no=13346800&agency_cd=USGS> accessed June 2018.

USGS, 2009. "StreamStats for Idaho" < http://water.usgs.gov/osw/streamstats/index.html>, accessed June 2018.

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Attachment A

Hydrology

```
Z13346800                      USGS
H13346800       4643551170127001616057SW1706010817.7   17.7    2543.46
N13346800       PARADISE CR AT UNIVERSITY OF IDAHO AT MOSCOW ID
Y13346800
313346800       19790226    307                7.96
313346800       19800218    287                7.85
313346800       19810214    290                7.78
313346800       19820220    386                8.88
313346800       19830218    368                8.58
313346800       19840124    429                9.18
313346800       19850318    211                6.61
313346800       19860223    414                9.07
313346800       19870201    392                8.84
313346800       19871210    135                6.09
313346800       19890309    436                9.38
313346800       19900108    534               10.27
313346800       19910115    412                9.00
313346800       19920822    184                6.64
313346800       19930504    260                7.44
313346800       19940517   92.0                5.55
313346800       19950219    332                8.19
313346800       19960209    970               11.26
313346800       19970101    753               10.44
313346800       19971030    186                6.85
313346800       19981228    428                8.89
313346800       20000202    306                8.11
313346800       20010627    130                6.83
313346800       20020223    382                8.62
313346800       20030131    378                8.98
313346800       20040218    258                8.27
313346800       20050118     721
313346800       20060117    1101
313346800       20070103    1471
313346800       20080229    202                8.30
313346800       20090108    273                9.01
313346800       20100105    182                8.07
313346800       20110116    339                9.58
313346800       20120326    398               10.04
313346800       20130930    111                7.15
313346800       20140309    152                8.05
313346800       20150209    181                8.54
313346800       20151207     73                8.59
313346800       20170310    735               10.86
```

U OF I GAGE PEAK FLOWS_PEAKFQ_same specs as Uderpass 2014.PRT.txt
1
Program PeakFq U. S. GEOLOGICAL SURVEY Seq.002.000
Version 7.2 Annual peak flow frequency analysis Run Date / Time
3/28/2018 06/14/2018 09:01

--- PROCESSING OPTIONS ---

Plot option = Graphics device
Basin char output = None
Print option = Yes
Debug print = No
Input peaks listing = Long
Input peaks format = WATSTORE peak file

Input files used:
peaks (ascii) - P:\Engineering\City of Moscow US95 Underpass\Hydrology\Gage\PeakFQ\U OF I GAGE PEAK FLOWS_PEAKFQ.TXT

specifications - P:\Engineering\City of Moscow US95 Underpass\Hydrology\Gage\PeakFQ\PKFQWPSF.TMP

Output file(s):
main - P:\Engineering\City of Moscow US95 Underpass\Hydrology\Gage\PeakFQ\U OF I GAGE PEAK FLOWS_PEAKFQ.PRT

*** User responsible for assessment and interpretation of the following analysis ***

1

Program PeakFq U. S. GEOLOGICAL SURVEY Seq.001.001
Version 7.2 Annual peak flow frequency analysis Run Date / Time
3/28/2018 06/14/2018 09:01

Station - 13346800 PARADISE CR AT UNIVERSITY OF IDAHO AT MOSCOW ID

TABLE 1 - INPUT DATA SUMMARY

Number of peaks in record	=	39
Peaks not used in analysis	=	0
Gaged peaks in analysis	=	39
Historic peaks in analysis	=	0
Beginning Year	=	1979
Ending Year	=	2017

U OF I GAGE PEAK FLOWS_PEAKFQ_same specs as Uderpass 2014.PRT.txt

Historical Period Length	=	39
Skew option	=	WEIGHTED
Regional skew	=	-0.293
Standard error	=	0.550
Mean Square error	=	0.303
Gage base discharge	=	0.0
User supplied high outlier threshold	=	--
User supplied PILF (LO) criterion	=	--
Plotting position parameter	=	0.00
Type of analysis		BULL.17B
PILF (LO) Test Method		GBT
Perceptible Ranges	=	Not Applicable
Interval Data	=	Not Applicable

TABLE 2 - DIAGNOSTIC MESSAGE AND PILF RESULTS

WCF134I-NO SYSTEMATIC PEAKS WERE BELOW GAGE BASE. 0.0
WCF195I-NO LOW OUTLIERS WERE DETECTED BELOW CRITERION. 49.9
WCF163I-NO HIGH OUTLIERS OR HISTORIC PEAKS EXCEEDED HHBASE. 1383.0
**WCF164W-HISTORIC PERIOD IGNORED. 39.0
WCF002J-CALCS COMPLETED. RETURN CODE = 2

Kendall's Tau Parameters

	TAU	P-VALUE	MEDIAN SLOPE	No. of PEAKS
GAGED PEAKS	-0.217	0.053	-4.000	39

1

Program PeakFq U. S. GEOLOGICAL SURVEY Seq.001.002
Version 7.2 Annual peak flow frequency analysis Run Date / Time
3/28/2018 06/14/2018 09:01

Station - 13346800 PARADISE CR AT UNIVERSITY OF IDAHO AT MOSCOW ID

TABLE 3 - ANNUAL FREQUENCY CURVE PARAMETERS -- LOG-PEARSON TYPE III

	FLOOD BASE	LOGARITHMIC

	DISCHARGE	EXCEEDANCE PROBABILITY	MEAN	STANDARD DEVIATION	SKEW
SYSTEMATIC RECORD	0.0	1.0000	2.4193	0.2701	-0.249
BULL.17B ESTIMATE	0.0	1.0000	2.4193	0.2701	-0.263

BULL.17B ESTIMATE OF MSE OF AT-SITE SKEW 0.1488

TABLE 4 - ANNUAL FREQUENCY CURVE -- DISCHARGES AT SELECTED EXCEEDANCE PROBABILITIES

ANNUAL EXCEEDANCE PROBABILITY	BULL.17B ESTIMATE	SYSTEMATIC RECORD	<-- FOR BULLETIN 17B ESTIMATES --> LOG VARIANCE OF EST.	CONFIDENCE INTERVALS 5% LOWER	95% UPPER
0.9950	45.4	45.8	----	29.0	62.3
0.9900	54.8	55.2	----	36.5	73.4
0.9500	90.3	90.5	----	66.4	113.4
0.9000	116.5	116.6	----	89.8	142.4
0.8000	157.1	157.0	----	126.8	187.3
0.6667	205.5	205.3	----	171.2	242.3
0.5000	269.8	269.4	----	228.6	319.2
0.4292	301.1	300.7	----	255.6	358.4
0.2000	446.1	445.9	----	373.7	553.6
0.1000	571.4	572.1	----	469.2	737.1
0.0400	735.9	738.4	----	588.4	993.2
0.0200	861.4	865.8	----	676.1	1198.0
0.0100	988.6	995.3	----	762.6	1413.0
0.0050	1118.	1127.	----	848.6	1638.0
0.0020	1292.	1306.	----	961.8	1951.0

1

Program PeakFq U. S. GEOLOGICAL SURVEY Seq.001.003
Version 7.2 Annual peak flow frequency analysis Run Date / Time
3/28/2018 06/14/2018 09:01

Station - 13346800 PARADISE CR AT UNIVERSITY OF IDAHO AT MOSCOW ID

TABLE 5 - INPUT DATA LISTING

WATER YEAR	PEAK VALUE	PEAKFQ CODES	REMARKS
1979	307.0		

1980	287.0
1981	290.0
1982	386.0
1983	368.0
1984	429.0
1985	211.0
1986	414.0
1987	392.0
1988	135.0
1989	436.0
1990	534.0
1991	412.0
1992	184.0
1993	260.0
1994	92.0
1995	332.0
1996	970.0
1997	753.0
1998	186.0
1999	428.0
2000	306.0
2001	130.0
2002	382.0
2003	378.0
2004	258.0
2005	72.0
2006	110.0
2007	147.0
2008	202.0
2009	273.0
2010	182.0
2011	339.0
2012	398.0
2013	111.0
2014	152.0
2015	181.0
2016	73.0
2017	735.0

Explanation of peak discharge qualification codes

PeakFQ CODE	NWIS CODE	DEFINITION
D	3	Dam failure, non-recurrent flow anomaly
G	8	Discharge greater than stated value
X	3+8	Both of the above

U OF I GAGE PEAK FLOWS_PEAKFQ_same specs as Uderpass 2014.PRT.txt
 L   4   Discharge less than stated value
 K   6 OR C Known effect of regulation or urbanization
 H   7   Historic peak

 - Minus-flagged discharge -- Not used in computation
       -8888.0 -- No discharge value given
 - Minus-flagged water year -- Historic peak used in computation

1

Program PeakFq U. S. GEOLOGICAL SURVEY Seq.001.004
Version 7.2 Annual peak flow frequency analysis Run Date / Time
3/28/2018 06/14/2018 09:01

Station - 13346800 PARADISE CR AT UNIVERSITY OF IDAHO AT MOSCOW ID

TABLE 6 - EMPIRICAL FREQUENCY CURVES -- WEIBULL PLOTTING POSITIONS

WATER YEAR	RANKED DISCHARGE	SYSTEMATIC RECORD	B17B ESTIMATE
1996	970.0	0.0250	0.0250
1997	753.0	0.0500	0.0500
2017	735.0	0.0750	0.0750
1990	534.0	0.1000	0.1000
1989	436.0	0.1250	0.1250
1984	429.0	0.1500	0.1500
1999	428.0	0.1750	0.1750
1986	414.0	0.2000	0.2000
1991	412.0	0.2250	0.2250
2012	398.0	0.2500	0.2500
1987	392.0	0.2750	0.2750
1982	386.0	0.3000	0.3000
2002	382.0	0.3250	0.3250
2003	378.0	0.3500	0.3500
1983	368.0	0.3750	0.3750
2011	339.0	0.4000	0.4000
1995	332.0	0.4250	0.4250
1979	307.0	0.4500	0.4500
2000	306.0	0.4750	0.4750
1981	290.0	0.5000	0.5000
1980	287.0	0.5250	0.5250
2009	273.0	0.5500	0.5500
1993	260.0	0.5750	0.5750
2004	258.0	0.6000	0.6000

U OF I GAGE PEAK FLOWS_PEAKFQ_same specs as Uderpass 2014.PRT.txt

1985	211.0	0.6250	0.6250
2008	202.0	0.6500	0.6500
1998	186.0	0.6750	0.6750
1992	184.0	0.7000	0.7000
2010	182.0	0.7250	0.7250
2015	181.0	0.7500	0.7500
2014	152.0	0.7750	0.7750
2007	147.0	0.8000	0.8000
1988	135.0	0.8250	0.8250
2001	130.0	0.8500	0.8500
2013	111.0	0.8750	0.8750
2006	110.0	0.9000	0.9000
1994	92.0	0.9250	0.9250
2016	73.0	0.9500	0.9500
2005	72.0	0.9750	0.9750

1

End PeakFQ analysis.
Stations processed : 1
Number of errors : 0
Stations skipped : 0
Station years : 39

Data records may have been ignored for the stations listed below.
(Card type must be Y, Z, N, H, I, 2, 3, 4, or *.)
(2, 4, and * records are ignored.)

For the station below, the following records were ignored:

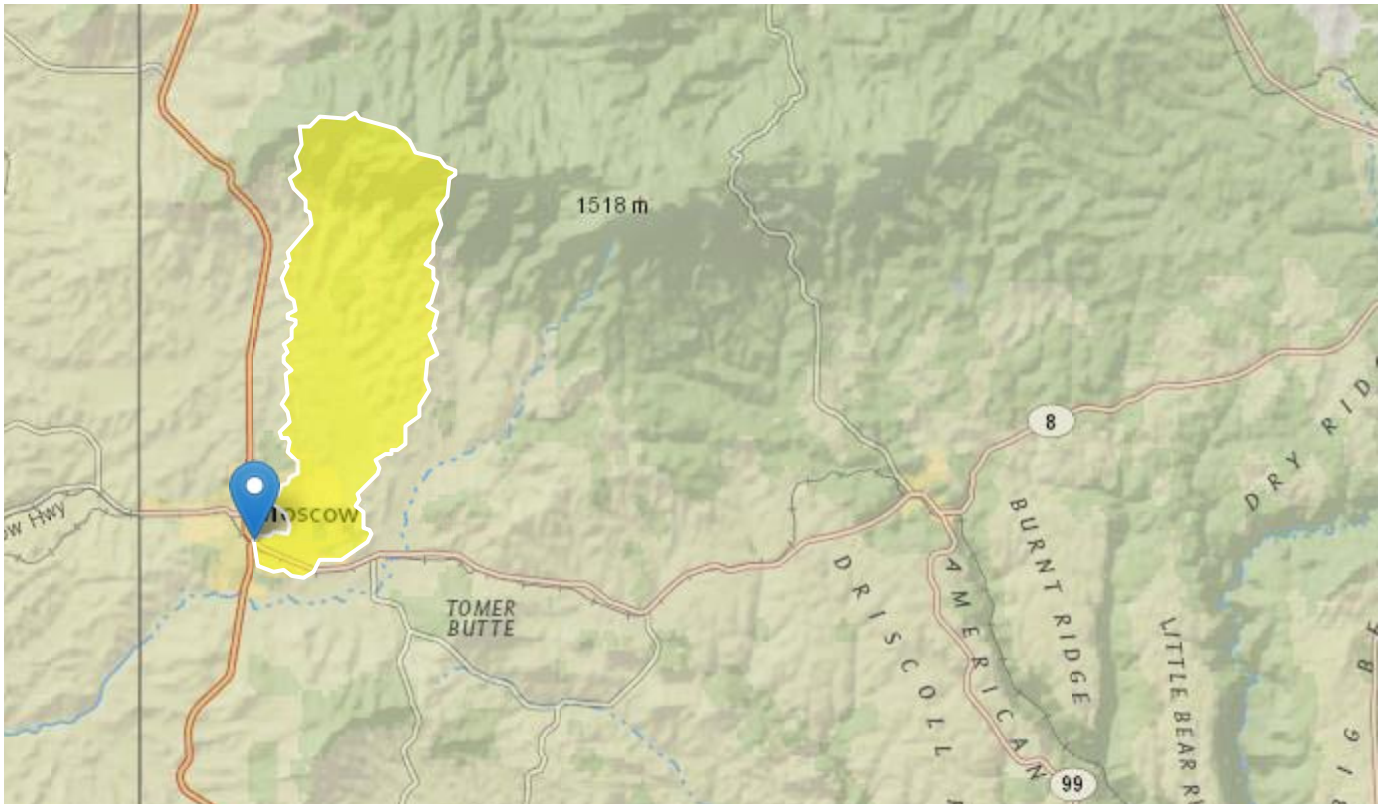
FINISHED PROCESSING STATION: 13346800 USGS PARADISE CR AT UNIVERSITY OF

For the station below, the following records were ignored:

FINISHED PROCESSING STATION:

Hwy 95 Underpass StreamStats Report with Basin Characteristics

Region ID: ID
Workspace ID: ID20180613184445174000
Clicked Point (Latitude, Longitude): 46.72593, -117.00027
Time: 2018-06-13 11:45:01 -0700



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	14.68	square miles
AG_OF_DA	Agricultural Land in Percentage of Drainage Area (Idaho Logistic Regression Equations SIR 2006-5035	68.9	percent
BSLDEM10M	Mean basin slope computed from 10 m DEM	15	percent
BSLDEM30M	Mean basin slope computed from 30 m DEM	13.6	percent

Parameter Code	Parameter Description	Value	Unit
DV_OF_DA	Developed Land in Percentage of Drainage Area (Idaho Logistic Regression Equations SIR 2006-5035	11.6	percent
ELEV	Mean Basin Elevation	2890	feet
ELEVMAX	Maximum basin elevation	4350	feet
FOREST	Percentage of area covered by forest	15	percent
MINBELEV	Minimum basin elevation	2560	feet
RELIEF	Maximum - minimum elevation	1800	feet

Peak-Flow Statistics Parameters [Peak Flow Region 3 2016 5083]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	14.68	square miles	2.13	2500

Peak-Flow Statistics Flow Report [Peak Flow Region 3 2016 5083]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	PIu	SEp
1.25 Year Peak Flood	73.4	ft^3/s	13.9	388	114
1.5 Year Peak Flood	102	ft^3/s	21.7	481	103
2 Year Peak Flood	146	ft^3/s	35.6	599	91.2
2 33 Year Peak Flood	169	ft^3/s	43.3	658	86.7
5 Year Peak Flood	287	ft^3/s	90.2	913	70.4
10 Year Peak Flood	409	ft^3/s	148	1130	60.4
25 Year Peak Flood	589	ft^3/s	251	1380	48.8
50 Year Peak Flood	743	ft^3/s	355	1550	41.5
100 Year Peak Flood	904	ft^3/s	482	1700	34.5
200 Year Peak Flood	1080	ft^3/s	624	1880	29.1
500 Year Peak Flood	1330	ft^3/s	853	2080	22.8

Peak-Flow Statistics Citations

Wood, M.S., Fosness, R.L., Skinner, K.D., and Veilleux, A.G.,2016, Estimating peak-flow frequency statistics for selected gaged and ungaged sites in naturally flowing streams and rivers in Idaho: U.S. Geological Survey Scientific Investigations Report 2016–5083, 56 p. (http://dx.doi.org/10.3133/sir20165083)

Application Version: 4.2.1

210 3-77

HYDRAULIC STRUCTURES SURVEY

BRIDGE ☒
CULVERT ☐

PROJECT NO. BRM-7744(1) STATION 30+62 DATE OF SURVEY July 18, 1978

PROJECT TITLE Paradise Creek Bridge LOCAL NAME _____

LOCATION South-East portion of Moscow COUNTY Latah

ROADWAY IDENTIFICATION S.H. 8 CROSSING Paradise ☒ CREEK ☐ RIVER A TRIBUTARY OF Palouse River

HYDROLOGIC DATA

FOR: UNOBSTRUCTED STREAM (PREFERRED) ____ EXISTING STRUCTURE X ANTICIPATED STRUCTURE ____

Q_{MIN} - 0 - CFS; V - 0 - FPS; ELEV 2569.2 FT; SOURCE "A flood analysis of

*Q_{50} 890 CFS; V 3.68 FPS; ELEV 2578.4 FT; SOURCE Paradise Creek, an

Q_{100} 1,100 CFS; V 4.55 FPS; ELEV 2579.5 FT; SOURCE ungaged stream near

$Q_{MAX\ RECORDED}$ 680+ CFS; V 3.04 FPS; ELEV 2578.0^ FT; DATE 1/29/65 Moscow, Idaho", by

+estimate by Abbott, 1968 ^measured from photographs J.W. Abbott, 1968

CHARACTER OF WATERSHED 19% Forest, 81% Palouse Prairie DRAINAGE AREA 14.5 ☐ ACRES ☒ SQ MI

*(IF 500 CFS OR GREATER, A HYDRAULIC REPORT SHOULD ACCOMPANY THIS FORM)

HYDRAULIC DATA

NATURAL STREAM OR CANAL Natural stream (with rechanneled sections) MONTHS DRY, IF ANY Summer (some years)

IS STREAM CUTTING OR FILLING filling STREAMBED ELEV 2569.2 ℄

DOES STREAM CARRY AN APPRECIABLE AMOUNT OF ICE No ICE THICKNESS --- IN

DOES STREAM CARRY AN APPRECIABLE AMOUNT OF DRIFTWOOD No

CHARACTER OF STREAMBED MATERIAL silty-sand

IS FLOW CONTROLLED No IF SO, DESCRIBE MANNER AND DEGREE OF CONTROL: ----

AVERAGE GRADIENT OF EXISTING CHANNEL TO BE ALTERED 3.22 FEET PER THOUSAND FEET. DESCRIBE THE SECTION OF THE STREAM TO BE ALTERED BY REFERENCE TO A SECTION CORNER, OR OTHER PERMANENT REFERENCE.

PRESENT STRUCTURE

DESCRIPTION (BRIDGE, CULVERT SIZE, LENGTH, ETC) Bridge; 34.5' span, 29.8' wide, 30° skew

CONDITION Insufficient width for traffic volumes

BRIDGE: NUMBER AND TYPE OF PIERS None EFFECTIVE WATERWAY AREA 224 sq. ft.

SPREAD FOOTING OR PILES Piles CLEARANCE ABOVE DESIGN HIGH WATER ---

CULVERT: HAS EXISTING CULVERT CARRIED FLOW ADEQUATELY -----

REMARKS: Photographs of flood indicate that the existing effective waterway area should be retained if not increased.

PROPOSED STRUCTURE

REVERSE SIDE OF DH-210

TYPE RECOMMENDED Bridge, single span

BRIDGE: NUMBER AND LENGTH OF SPANS one, 34.5' span, (minimum) SKEW 30°

CLEARANCE ABOVE DESIGN HIGH WATER -0.0- WATERWAY AREA 224.0 min. F.

NUMBER OF PIERS -0- TYPE OF PIERS --- FLOW ANGLE TO PIERS ---

CHARACTER OF FOUNDATION MATERIAL blue clay*

*(From File No. 604, Drawing No. 2724, Proj. No. 190-A, 1935)

CULVERT: TYPE --- DIMENSIONS --- TYPE INLET ---

INLET ELEV --- OUTLET ELEV --- AVAILABLE HEADWATER --- FT

CULVERT FLOWING UNDER ☐ INLET CONTROL ☐ OUTLET CONTROL TAILWATER DEPTH --- FT

WILL ALL FLOOD WATER PASS THROUGH THE PROPOSED STRUCTURE Yes IF NOT, ATTACH PROVISIONS FOR OVERFLOW

MINIMUM ACCEPTABLE BALLAST AT SHOULDER _____ IS PAINTING OF CONCRETE RECOMMENDED _____

RECOMMENDED FILL SLOPE: UNDER STRUCTURE 2:1 max. AT WINGS 2:1 max.

IS RIPRAP REQUIRED Outlet channel IF SO, ATTACH RECOMMENDED SECTION, LIMITS, SIZE, TOE EMBEDMENT)

IS CANAL LINING REQUIRED --- (IF SO, ATTACH TYPICAL SECTION OF LINING AND LIMITS)

WILL STRUCTURE REQUIRE CANAL COMPANY APPROVAL --- COMPANY NAME ---

IN ADDITION TO THE ABOVE INFORMATION, SUBMIT AND CHECK EACH OF THE FOLLOWING:

- ☒ A TYPICAL PROPOSED ROADWAY SECTION AT THE STRUCTURE
- ☒ A 22"x36" CONTOUR MAP OF A (BRIDGE)(~~CULVERT~~) SITE; ~~A CANAL USED FOR NAVIGATION; OR THE EFFECTS OF A DIVERSION STRUCTURE~~; SHOWING 1-FOOT CONTOURS. IF THE STRUCTURE CROSSES A NATURAL STREAM, SHOW ON THE MAP THE NAMES AND ADDRESSES OF PROPERTY OWNERS WHO ADJOIN THE WATERWAY
- ☒ A CENTERLINE PROFILE TO THE SAME SCALE AS THE CONTOUR MAP
- ☒ IF THE STRUCTURE PROFILE CROSSES A NATURAL STREAM, A REPRODUCIBLE OF AN AREA MAP, SUCH AS A COUNTY MAP, WITH THE LOCATION OF THE STRUCTURE CLEARLY INDICATED
- ☒ A STREAMBED PROFILE 1000 FEET ABOVE AND BELOW THE STRUCTURE (OR WATERLINE PROFILE)
- ☐ IF PRACTICAL, PHOTOGRAPHS OF EXISTING STRUCTURE AND CHANNEL UPSTREAM & DOWNSTREAM FROM SITE

A LEGAL DESCRIPTION OF THE LOCATION

LOCATED IN THE NE 1/4, SW 1/4 (1/16 SECTION OR LOT NO.)
OF SECTION 17, TOWNSHIP 39N, RANGE 5 W, B.M.
IN Latah COUNTY.

APPROVALS

NOTES BY Lane Fortin

CONSULTANT'S SIGNATURE AND SEAL _____

NOTES AND RECOMMENDATIONS APPROVED BY D. J. McAtee

DISTRICT DESIGN ENGINEER

HYDRAULICS-RELATED DATA APPROVED BY _____

WATER RESOURCE ENGINEER

APPROVED _____

ROADWAY DESIGN SUPERVISOR

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Moscow, Idaho 83843
Ph: (208) 882-7858; Fax: (208) 883-3785

Attachment B

Hydraulics

50-yr Flow Event Hydraulic Model Outputs

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	W.S. Elev Diff	Vel Chnl	Vel Chnl Diff	Flow Area	Top Width
				(cfs)	(ft)	(ft)	(ft)	(ft/s)	(ft/s)	(sq ft)	(ft)
PARADISECR	4099.7	FIS 50-yr	Existing	890	2570.39	2580.04		4.77		189.7	34
PARADISECR	4099.7	FIS 50-yr	Design	890	2570.39	2580.04	0.00	4.77	0.00	189.7	34
PARADISECR	4074	FIS 50-yr	Existing	890	2571.35	2579.98		4.82		186.2	39
PARADISECR	4074	FIS 50-yr	Design	890	2571.35	2579.98	0.00	4.82	0.00	186.2	39
PARADISECR	4026.7	FIS 50-yr	Existing	890	2571.02	2579.77		5.15		175.0	38
PARADISECR	4026.7	FIS 50-yr	Design	890	2571.02	2579.77	0.00	5.15	0.00	175.0	38
PARADISECR	3774.6	FIS 50-yr	Existing	890	2569.77	2579.10		4.56		200.4	42
PARADISECR	3774.6	FIS 50-yr	Design	890	2569.77	2579.10	0.00	4.56	0.00	200.4	42
PARADISECR	3588	FIS 50-yr	Existing	890	2569.20	2578.54		4.55		199.4	69
PARADISECR	3588	FIS 50-yr	Design	890	2569.20	2578.54	0.00	4.55	0.00	199.4	69
PARADISECR	3475.6	FIS 50-yr	Existing	890	2570.13	2578.03		5.12		175.0	40
PARADISECR	3475.6	FIS 50-yr	Design	890	2570.13	2578.03	0.00	5.12	0.00	175.0	40
PARADISECR	3368.5	FIS 50-yr	Existing	890	2569.34	2577.80		4.49		206.5	49
PARADISECR	3368.5	FIS 50-yr	Design	890	2569.34	2577.80	0.00	4.49	0.00	206.5	49
PARADISECR	3230.7	FIS 50-yr	Existing	890	2569.24	2577.25		5.30		170.3	48
PARADISECR	3230.7	FIS 50-yr	Design	890	2569.24	2577.25	0.00	5.30	0.00	170.3	48
PARADISECR	3147	FIS 50-yr	Existing	890	2571.97	2577.34		2.89		331.3	122
PARADISECR	3147	FIS 50-yr	Design	890	2571.97	2577.34	0.00	2.89	0.00	331.3	122
PARADISECR	3132.4	FIS 50-yr	Existing	890	2570.41	2577.13		4.40		227.4	106
PARADISECR	3132.4	FIS 50-yr	Design	890	2570.41	2577.13	0.00	4.40	0.00	227.5	106
PARADISECR	2954.9	FIS 50-yr	Existing	890	2566.39	2576.74		3.99		275.0	114
PARADISECR	2954.9	FIS 50-yr	Design	890	2566.39	2576.74	0.00	3.99	0.00	275.1	114
PARADISECR	2649.9	FIS 50-yr	Existing	890	2567.77	2576.28		3.11		413.1	244
PARADISECR	2649.9	FIS 50-yr	Design	890	2567.77	2576.28	0.00	3.11	0.00	413.4	244
PARADISECR	2375.9	FIS 50-yr	Existing	890	2565.97	2575.87		3.20		287.6	82
PARADISECR	2375.9	FIS 50-yr	Design	890	2565.97	2575.87	0.00	3.20	0.00	287.7	82
PARADISECR	2293.5	FIS 50-yr	Existing	890	2566.76	2575.58		4.30		206.9	51
PARADISECR	2293.5	FIS 50-yr	Design	890	2566.76	2575.58	0.00	4.30	0.00	207.0	51
PARADISECR	2140.8	FIS 50-yr	Existing	890	2566.79	2575.07		4.63		203.4	100
PARADISECR	2140.8	FIS 50-yr	Design	890	2566.79	2575.07	0.00	4.62	-0.01	203.7	100
PARADISECR	1977.7	FIS 50-yr	Existing	890	2566.44	2573.66		8.01		117.1	26
PARADISECR	1977.7	FIS 50-yr	Design	890	2566.44	2573.67	0.01	7.99	-0.02	117.4	26
PARADISECR	1723.3	FIS 50-yr	Existing	890	2564.70	2572.96		5.68		174.0	56
PARADISECR	1723.3	FIS 50-yr	Design	890	2564.70	2572.98	0.02	5.63	-0.05	175.6	56
PARADISECR	1453.9	FIS 50-yr	Existing	890	2563.95	2571.78		6.47		138.5	31
PARADISECR	1453.9	FIS 50-yr	Design	890	2563.95	2571.84	0.06	6.38	-0.09	140.6	31
PARADISECR	1413.65*	FIS 50-yr	Existing	890	2564.05	2571.75		5.44		164.0	40
PARADISECR	1413.65*	FIS 50-yr	Design	890	2564.05	2571.83	0.08	5.35	-0.09	166.9	40
PARADISECR	1373.4	FIS 50-yr	Existing	890	2564.15	2571.23		6.85		129.9	44
PARADISECR	1373.4	FIS 50-yr	Design	890	2564.15	2571.33	0.10	6.71	-0.14	132.7	45
PARADISECR	1360.4	FIS 50-yr	Existing	890	2564.04	2571.41		4.47		199.1	27
PARADISECR	1360.4	FIS 50-yr	Design	890	2564.04	2571.40	-0.01	5.54	1.07	160.6	27
PARADISECR	1313			Bridge							
PARADISECR	1266.4	FIS 50-yr	Existing	890	2562.91	2571.36		3.90		228.2	27
PARADISECR	1266.4	FIS 50-yr	Design	890	2562.91	2571.24	-0.12	4.73	0.83	188.0	27
PARADISECR	1246	FIS 50-yr	Existing	890	2562.66	2570.73		7.10		125.4	44
PARADISECR	1246	FIS 50-yr	Design	890	2562.66	2570.73	0.00	7.10	0.00	125.4	44
PARADISECR	1191.6	FIS 50-yr	Existing	890	2563.17	2569.61		9.05		99.0	30
PARADISECR	1191.6	FIS 50-yr	Design	890	2563.17	2569.61	0.00	9.05	0.00	99.0	30
PARADISECR	1111.1	FIS 50-yr	Existing	890	2564.17	2569.76		5.77		176.1	49
PARADISECR	1111.1	FIS 50-yr	Design	890	2564.17	2569.76	0.00	5.77	0.00	176.1	49
PARADISECR	1064.45*	FIS 50-yr	Existing	890	2563.05	2570.00		2.34		390.1	81
PARADISECR	1064.45*	FIS 50-yr	Design	890	2563.05	2570.00	0.00	2.34	0.00	390.1	81
PARADISECR	1017.8	FIS 50-yr	Existing	890	2561.92	2569.87		3.25		273.7	119
PARADISECR	1017.8	FIS 50-yr	Design	890	2561.92	2569.87	0.00	3.25	0.00	273.7	119
PARADISECR	972			Bridge							
PARADISECR	906.3	FIS 50-yr	Existing	890	2563.22	2568.52		7.72		115.3	36
PARADISECR	906.3	FIS 50-yr	Design	890	2563.22	2568.52	0.00	7.72	0.00	115.3	36
PARADISECR	817.4	FIS 50-yr	Existing	890	2560.97	2568.48		3.88		239.7	92
PARADISECR	817.4	FIS 50-yr	Design	890	2560.97	2568.48	0.00	3.88	0.00	239.7	92
PARADISECR	607.4	FIS 50-yr	Existing	890	2560.50	2568.31		2.56		362.2	109
PARADISECR	607.4	FIS 50-yr	Design	890	2560.50	2568.31	0.00	2.56	0.00	362.2	109

100-yr Flow Event Hydraulic Model Outputs

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	W.S. Elev Diff	Vel Chnl	Vel Chnl Diff	Flow Area	Top Width
				(cfs)	(ft)	(ft)	(ft)	(ft/s)	(ft/s)	(sq ft)	(ft)
PARADISECR	4099.7	FIS 100-yr	Existing	1070	2570.39	2580.58		5.25		208.2	35
PARADISECR	4099.7	FIS 100-yr	Design	1070	2570.39	2580.58	0.00	5.25	0.00	208.2	35
PARADISECR	4074	FIS 100-yr	Existing	1070	2571.35	2580.52		5.22		207.8	41
PARADISECR	4074	FIS 100-yr	Design	1070	2571.35	2580.52	0.00	5.22	0.00	207.8	41
PARADISECR	4026.7	FIS 100-yr	Existing	1070	2571.02	2580.30		5.57		195.5	40
PARADISECR	4026.7	FIS 100-yr	Design	1070	2571.02	2580.30	0.00	5.57	0.00	195.5	40
PARADISECR	3774.6	FIS 100-yr	Existing	1070	2569.77	2579.58		5.00		221.6	47
PARADISECR	3774.6	FIS 100-yr	Design	1070	2569.77	2579.58	0.00	5.00	0.00	221.6	47
PARADISECR	3588	FIS 100-yr	Existing	1070	2569.20	2579.06		4.68		240.0	97
PARADISECR	3588	FIS 100-yr	Design	1070	2569.20	2579.06	0.00	4.68	0.00	240.0	97
PARADISECR	3475.6	FIS 100-yr	Existing	1070	2570.13	2578.49		5.59		193.8	42
PARADISECR	3475.6	FIS 100-yr	Design	1070	2570.13	2578.49	0.00	5.59	0.00	193.8	42
PARADISECR	3368.5	FIS 100-yr	Existing	1070	2569.34	2578.25		4.90		229.1	50
PARADISECR	3368.5	FIS 100-yr	Design	1070	2569.34	2578.25	0.00	4.90	0.00	229.1	50
PARADISECR	3230.7	FIS 100-yr	Existing	1070	2569.24	2577.62		5.84		193.4	72
PARADISECR	3230.7	FIS 100-yr	Design	1070	2569.24	2577.62	0.00	5.84	0.00	193.4	72
PARADISECR	3147	FIS 100-yr	Existing	1070	2571.97	2577.74		3.09		383.5	137
PARADISECR	3147	FIS 100-yr	Design	1070	2571.97	2577.74	0.00	3.09	0.00	383.6	137
PARADISECR	3132.4	FIS 100-yr	Existing	1070	2570.41	2577.52		4.69		273.5	125
PARADISECR	3132.4	FIS 100-yr	Design	1070	2570.41	2577.52	0.00	4.69	0.00	273.5	125
PARADISECR	2954.9	FIS 100-yr	Existing	1070	2566.39	2577.14		4.17		323.3	126
PARADISECR	2954.9	FIS 100-yr	Design	1070	2566.39	2577.14	0.00	4.17	0.00	323.4	126
PARADISECR	2649.9	FIS 100-yr	Existing	1070	2567.77	2576.82		2.77		546.3	249
PARADISECR	2649.9	FIS 100-yr	Design	1070	2567.77	2576.82	0.00	2.77	0.00	546.6	249
PARADISECR	2375.9	FIS 100-yr	Existing	1070	2565.97	2576.43		3.40		337.2	97
PARADISECR	2375.9	FIS 100-yr	Design	1070	2565.97	2576.43	0.00	3.40	0.00	337.4	97
PARADISECR	2293.5	FIS 100-yr	Existing	1070	2566.76	2576.12		4.52		246.5	94
PARADISECR	2293.5	FIS 100-yr	Design	1070	2566.76	2576.13	0.01	4.52	0.00	246.7	94
PARADISECR	2140.8	FIS 100-yr	Existing	1070	2566.79	2575.73		4.56		278.2	128
PARADISECR	2140.8	FIS 100-yr	Design	1070	2566.79	2575.73	0.00	4.56	0.00	278.7	128
PARADISECR	1977.7	FIS 100-yr	Existing	1070	2566.44	2574.20		8.62		131.6	28
PARADISECR	1977.7	FIS 100-yr	Design	1070	2566.44	2574.21	0.01	8.60	-0.02	132.0	28
PARADISECR	1723.3	FIS 100-yr	Existing	1070	2564.70	2573.64		5.46		215.7	65
PARADISECR	1723.3	FIS 100-yr	Design	1070	2564.70	2573.67	0.03	5.41	-0.05	217.5	65
PARADISECR	1453.9	FIS 100-yr	Existing	1070	2563.95	2572.40		6.82		160.4	41
PARADISECR	1453.9	FIS 100-yr	Design	1070	2563.95	2572.48	0.08	6.73	-0.09	163.4	42
PARADISECR	1413.65*	FIS 100-yr	Existing	1070	2564.05	2572.42		5.64		191.4	44
PARADISECR	1413.65*	FIS 100-yr	Design	1070	2564.05	2572.49	0.07	5.55	-0.09	194.7	44
PARADISECR	1373.4	FIS 100-yr	Existing	1070	2564.15	2571.80		7.36		145.4	48
PARADISECR	1373.4	FIS 100-yr	Design	1070	2564.15	2571.90	0.10	7.22	-0.14	148.1	48
PARADISECR	1360.4	FIS 100-yr	Existing	1070	2564.04	2572.00		4.98		215.0	27
PARADISECR	1360.4	FIS 100-yr	Design	1070	2564.04	2571.98	-0.02	6.07	1.09	176.2	27
PARADISECR	1313			Bridge							
PARADISECR	1266.4	FIS 100-yr	Existing	1070	2562.91	2571.94		4.39		243.9	27
PARADISECR	1266.4	FIS 100-yr	Design	1070	2562.91	2571.80	-0.14	5.27	0.88	203.1	27
PARADISECR	1246	FIS 100-yr	Existing	1070	2562.66	2571.19		7.81		137.2	46
PARADISECR	1246	FIS 100-yr	Design	1070	2562.66	2571.19	0.00	7.81	0.00	137.2	46
PARADISECR	1191.6	FIS 100-yr	Existing	1070	2563.17	2570.10		9.54		114.3	33
PARADISECR	1191.6	FIS 100-yr	Design	1070	2563.17	2570.10	0.00	9.54	0.00	114.3	33
PARADISECR	1111.1	FIS 100-yr	Existing	1070	2564.17	2570.34		6.07		204.9	52
PARADISECR	1111.1	FIS 100-yr	Design	1070	2564.17	2570.34	0.00	6.07	0.00	204.9	52
PARADISECR	1064.45*	FIS 100-yr	Existing	1070	2563.05	2570.60		2.51		439.1	84
PARADISECR	1064.45*	FIS 100-yr	Design	1070	2563.05	2570.60	0.00	2.51	0.00	439.1	84
PARADISECR	1017.8	FIS 100-yr	Existing	1070	2561.92	2570.43		3.63		295.0	120
PARADISECR	1017.8	FIS 100-yr	Design	1070	2561.92	2570.43	0.00	3.63	0.00	295.0	120
PARADISECR	972			Bridge							
PARADISECR	906.3	FIS 100-yr	Existing	1070	2563.22	2569.00		8.11		132.0	38
PARADISECR	906.3	FIS 100-yr	Design	1070	2563.22	2569.00	0.00	8.11	0.00	132.0	38
PARADISECR	817.4	FIS 100-yr	Existing	1070	2560.97	2569.07		3.82		295.0	96
PARADISECR	817.4	FIS 100-yr	Design	1070	2560.97	2569.07	0.00	3.82	0.00	295.0	96
PARADISECR	607.4	FIS 100-yr	Existing	1070	2560.50	2568.92		2.61		429.7	113
PARADISECR	607.4	FIS 100-yr	Design	1070	2560.50	2568.92	0.00	2.61	0.00	429.7	113

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M E M O R A N D U M

To: Bill Belknap, City of Moscow

From: Tom Jenkins, Alta
Susan Firor, Alta

Date: July 16, 2018

Job Code: 18059

Subject: **Wetland Investigation – City of Moscow US-95 Path Underpass**

Section 1 Introduction

The City of Moscow is investigating the feasibility of constructing a bike/pedestrian underpass on existing streambanks and within the current concrete bridge for Paradise Creek at the US Highway 95 (US 95) crossing. In consideration of potential underpass construction, Alta has been tasked to perform a wetland investigation/delineation. The approximate project footprint is located in Moscow, Idaho, to the east and west of the bridge on US 95, and between Sweet Avenue and the existing Paradise Path to the south and Highway 8 to the northeast. Figure 1 shows the spatial extent of this wetland investigation.

The National Wetlands Inventory (USFWS 2018) indicates the potential for riverine wetlands to occur along the banks of Paradise Creek.

On July 5, 2018, field personnel conducted a visual assessment to determine whether wetlands occur in the project area. Determinations were based on the US Army Corps of Engineers guidance in the Wetland Delineation Manual (USACE 1987).

Section 2 Wetland Indicators

The presence of a wetland is determined based on three main characteristics as described in the Western Mountains, Valleys, and Coast Regional Supplement (USACE 2010): (1) site must exhibit dominance of hydrophytic vegetation, (2) site must have hydric soils, and (3) site must have evidence of wetland hydrology. This section presents observed site information for each of these wetland indicators.

2.1 Vegetation

Non-native vegetation is dominant within the proposed boundaries of the project area. Non-native species include reed canarygrass (*Phalaris arundinacea*), prickly lettuce (*Lactuca serriola*), stinking chamomile (*Anthemis cotula*), oxeye daisy (*Leucanthemum vulgare*), and spotted knapweed (*Centaurea stoebe*). Vegetation facultative to wetlands primarily exists within the stream channel and low stream banks. The dominant species within the stream channel is Pacific willow (*Salix lucida*). Identification of grasses outside the stream channel is made difficult due to regular mowing activities that occur during the growing season. Reed canarygrass and Pacific willow are both wetland plant species found within the banks of the creek.

2.2 Hydric Soils

A brief check of the U.S. Department of Agriculture (USDA) Web Soil Survey for this site indicates the soil properties have no hydric soil rating (USDA 2018). The man-made banks of Paradise Creek in the project reach consist primarily of riprap and do not promote water storage in the soils or flooding outside the existing stream channel. Within the channel, soils are too rocky to dig test pits and show no indicators of wetland hydrology. Hydrologic conditions that promote hydric soils along the banks are very short lived in this reach in most years. Visual observations made during annual peak-flow periods indicate no water migration beyond the banks of Paradise Creek. Due to a lack of inundation, soils outside the stream channel are not exposed to anaerobic conditions for periods long enough to develop hydric indicators.

2.3 Hydrology

Typical hydrologic indicators of wetlands include surface water, saturation, drainage patterns, and others as listed in the supplement (USACE 2010). None of these indicators were present at this site during the field visit. Even during wetter periods of the year, due to the hydrology of the Paradise Creek, no substantial water storage is likely to occur beyond the lowest portion of the stream channel.

Section 3 Conclusions

The presence or occurrence of wetlands in the project area is unlikely due to the factors discussed in Section 2. No formal wetland delineation is recommended due to conditions observed in the field.

Section 4 References

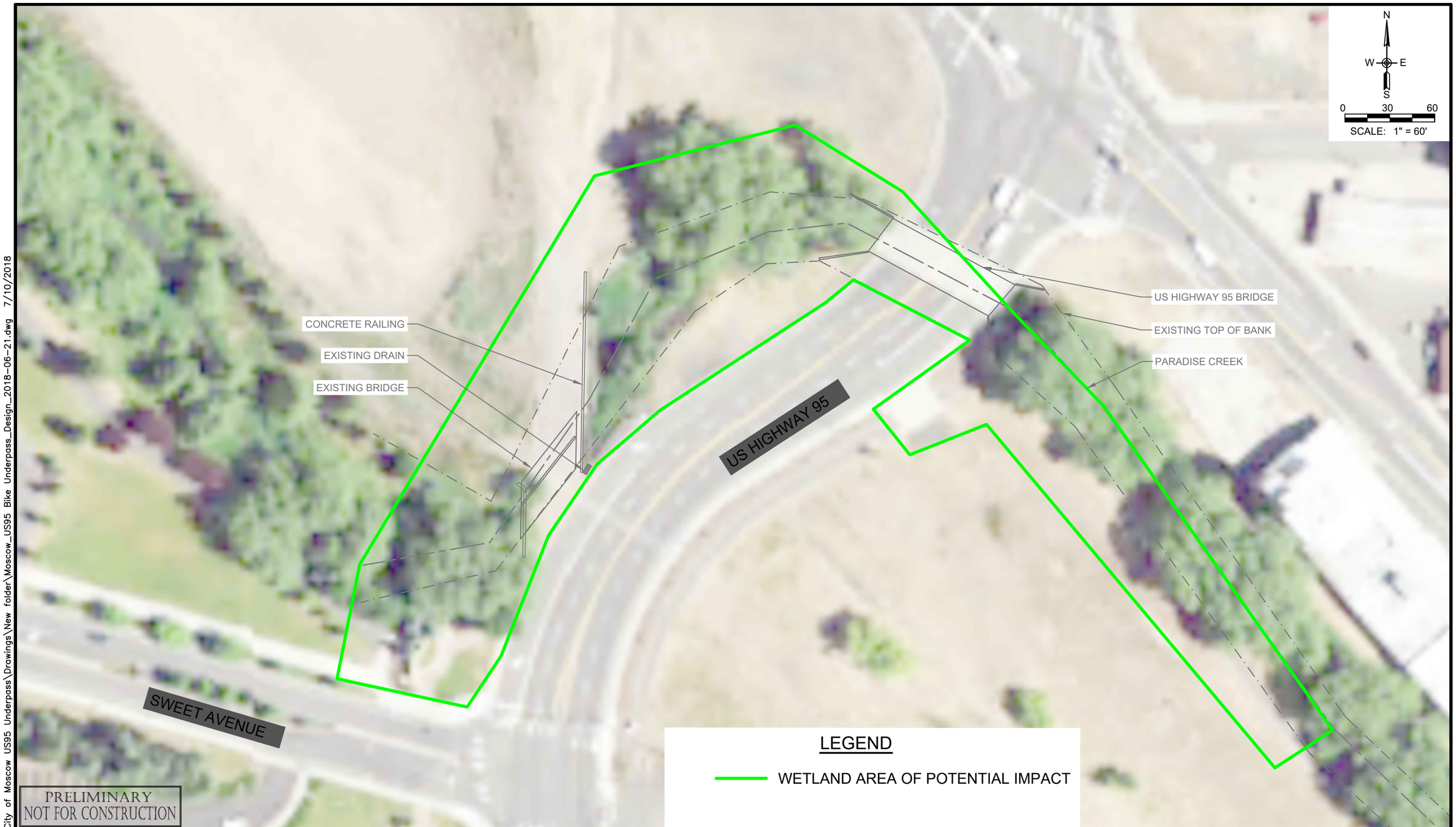
U.S. Army Corps of Engineers (USACE), 1987. Corps of Engineers Wetlands Delineation Manual.

USACE, 2010. Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0).

U.S. Department of Agriculture (USDA), 2018. Plants Database. Accessed July 12, 2018. https://plants.usda.gov/core/profile?symbol=RAAC3

USDA. 2018. Web Soil Survey website. Accessed July 5, 2018. http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory wetland mapper. Accessed July 5, 2018, at http://www.fws.gov/wetlands/Data/Mapper.html



PRELIMINARY
NOT FOR CONSTRUCTION

NO.	DATE	REVISIONS	BY	CHK
A	XX/XX/XX	XXXX	XX	XX

DRAFTER:	J. DZARA	COORDINATE SYSTEM:	NA
DESIGNER:	B. DAVIS	SCALE:	1" = 60'
CHECKED:	S. FIROR	APPROVED:	----
DATE:	07/02/18	DATE:	----

Alta Science & Engineering, Inc.

CITY OF MOSCOW US95 PATH UNDERPASS

MOSCOW, IDAHO

FIGURE 1. US95 PARADISE PATH WETLAND INVESTIGATION AREA

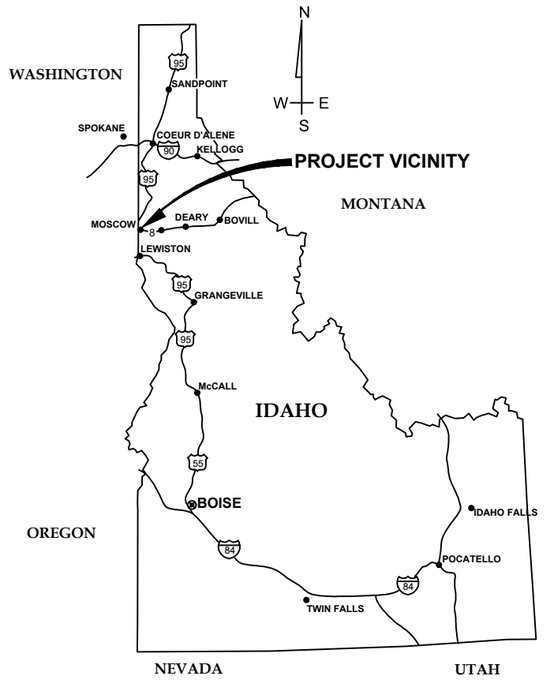
SHEET:	1
DATE:	7/10/2018
PROJECT NO.:	18059
SHEET NO.:	1 OF 1

P:\Engineering\City of Moscow US95 Underpass\Drawings\New folder\Moscow_US95 Bike Underpass_Design_2018-06-21.dwg 7/10/2018

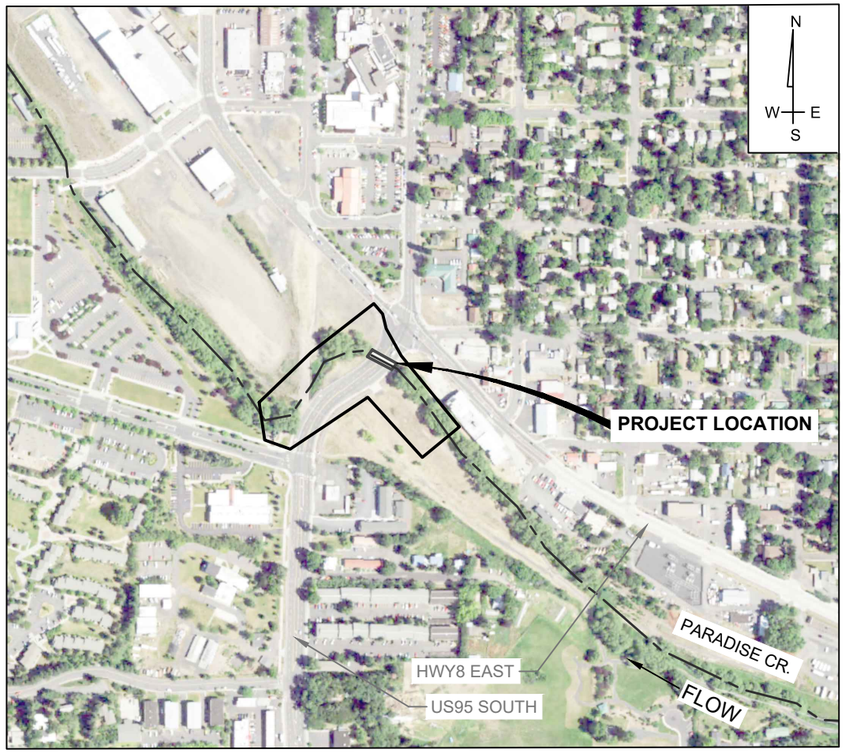
CITY OF MOSCOW BIKE PATH US95 UNDERPASS

CONCEPTUAL DESIGN

AUGUST 2018



VICINITY MAP
SCALE: NTS



LOCATION MAP
SCALE: 1" = 500'

PREPARED FOR:

CITY OF MOSCOW
206 EAST 3RD STREET
MOSCOW, IDAHO 83843
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MOSCOW, IDAHO 83843
TELEPHONE: (208) 882-7858

SHEET INDEX

SHEET #	SHEET NAME	SHEET INDEX
1	COVER SHEET	CS
2	PROJECT OVERVIEW & SHEET INDEX	C1
3	PATH PLAN & PROFILE - STA 0+00 TO 3+00	C2
4	PATH PLAN & PROFILE - STA 3+00 TO 7+00	C3
5	DETAILS	D1

PRELIMINARY
NOT FOR CONSTRUCTION

NO.	DATE	REVISIONS	BY	CHK

DRAWN BY: J. DZARA
ENGINEER: B. DAVIS
CHECKED: S. FIROR
DATE: 08/15/2018

COORDINATE SYSTEM: ISP WEST, NAD 83, US FT
SCALE: AS SHOWN
APPROVED: X. XXXX
DATE: XX/XX/XXXX

Alta Science & Engineering, Inc.

CITY OF MOSCOW US95 PATH UNDERPASS
MOSCOW, IDAHO

COVER SHEET

SHEET NAME: CS
DATE: 8/14/2018
PROJECT NO.: 18059
SHEET: 1 OF 05

P:\Engineering\City of Moscow US95 Underpass\Drawings\Conceptual\Moscow_US95 Bike Underpass_Cover_2018-08-14.dwg 8/14/2018

N
W E
S
0 30 60
SCALE: 1" = 60'

PROPOSED SIDEWALK

SHEET C3 - PLAN & PROFILE STA 3+00 TO 7+00

PROPOSED US95 UNDERPASS

EXISTING US HIGHWAY 95 BRIDGE

EXISTING TOP OF BANK

EXISTING THALWAG

EXISTING PATH

PROPOSED RIPARIAN REVEGETATION

EXISTING BRIDGE

EXISTING SIDEWALK

EXISTING PATH

4+00

5+00

3+00

6+00

2+00

US95 SOUTH

HWY 8 EAST

7+00

1+00

SHEET C2 - PLAN & PROFILE STA 0+00 TO 3+00

0+00

PROPOSED RETAINING WALL

PROPOSED SHARED USE PATH

FLOW

PARADISE CR.

SWEET AVE.

PRELIMINARY
NOT FOR CONSTRUCTION

P:\Engineering\City of Moscow US95 Underpass\Drawings\Conceptual\Moscow_US95 Bike Underpass_Design_2018-08-14.dwg 8/14/2018

NO.	DATE	REVISIONS	BY	CHK

DRAFTER:	J. DZARA	COORDINATE SYSTEM:	ISP WEST, NAD 83, US FT
DESIGNER:	B. DAVIS	SCALE:	1" = 60'
CHECKED:	S. FIROR	APPROVED:	X. XXXX
DATE:	8/15/2018	DATE:	XX/XX/XXXX

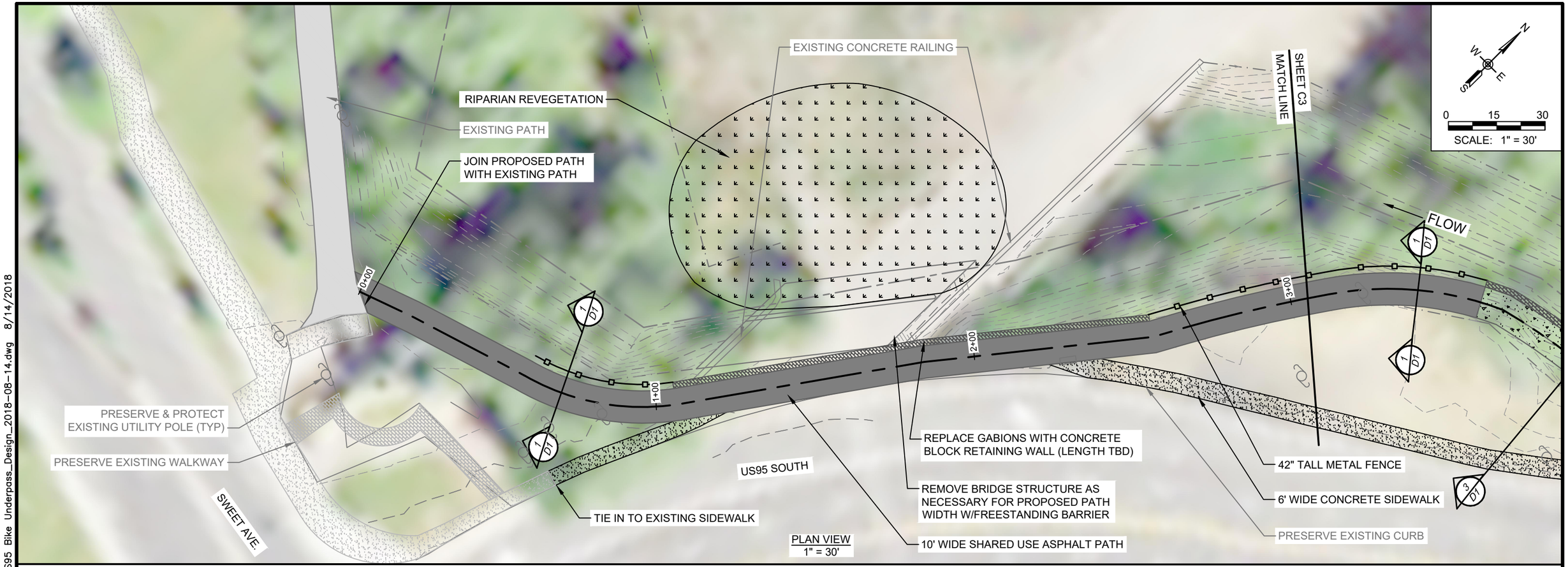
Alta Science & Engineering, Inc.

CITY OF MOSCOW US95 PATH UNDERPASS

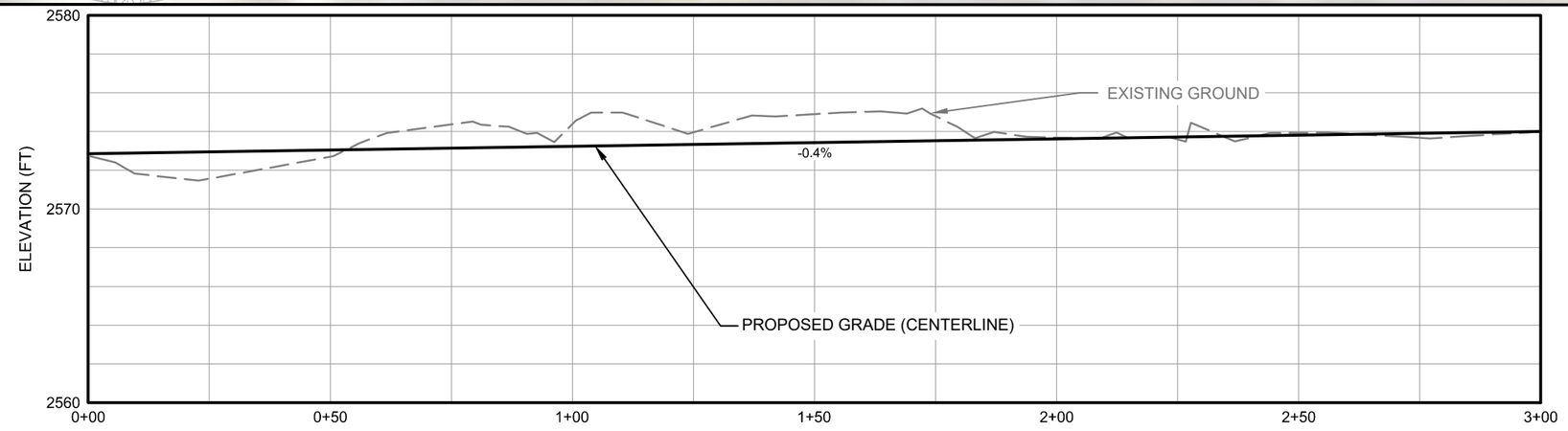
MOSCOW, IDAHO

PROJECT OVERVIEW & SHEET INDEX

SHEET:	C1
DATE:	8/14/2018
PROJECT NO.:	18059
SHEET NO.:	02 OF 05



PLAN VIEW
1" = 30'



1 - PROFILE VIEW
SCALE: 1"=30' HORIZONTAL, 1"=7.5' VERTICAL

PRELIMINARY
NOT FOR CONSTRUCTION

NO.	DATE	REVISIONS	BY	CHK

DRAFTER:	J. DZARA	COORDINATE SYSTEM:	ISP WEST, NAD 83, US FT
DESIGNER:	B. DAVIS	SCALE:	1" = 30'
CHECKED:	S. FIROR	APPROVED:	X. XXXX
DATE:	8/15/2018	DATE:	XX/XX/XXXX

Alta Science & Engineering, Inc.

CITY OF MOSCOW US95 PATH UNDERPASS

MOSCOW, IDAHO

PATH PLAN & PROFILE
STA 0+00 TO 3+00

SHEET:	C2
DATE:	8/14/2018
PROJECT NO.:	18059
SHEET NO.:	03 OF 05

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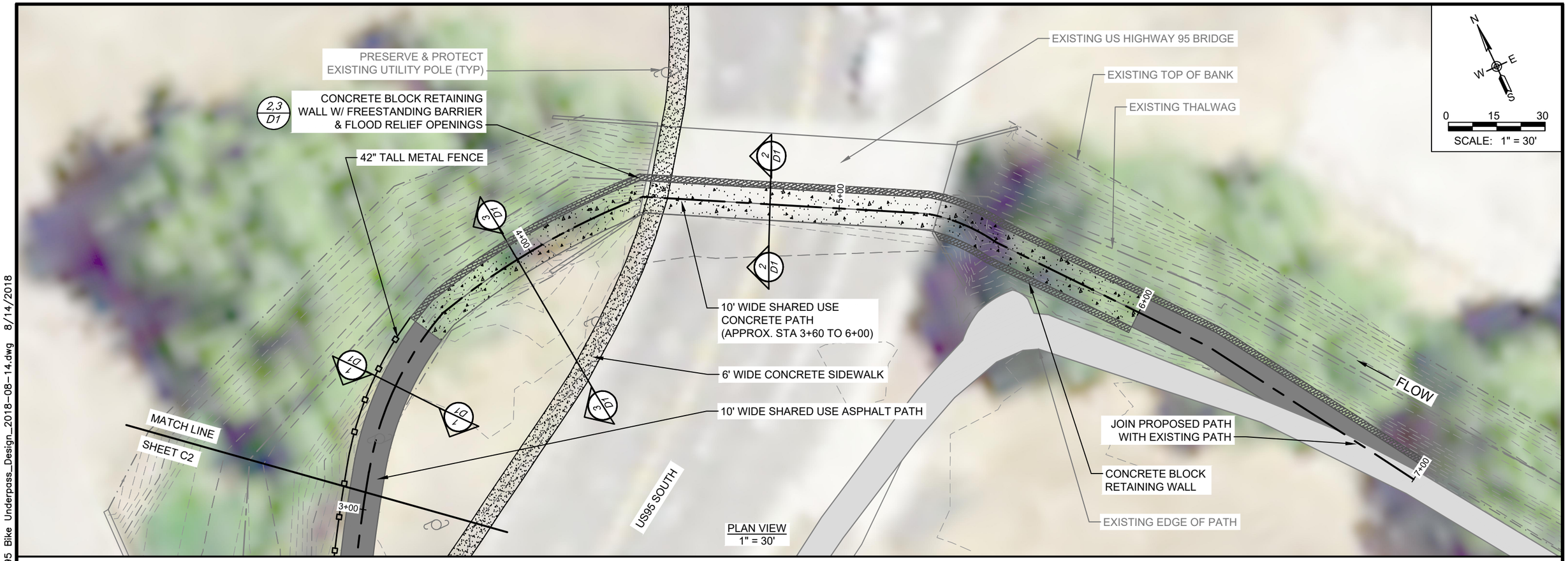
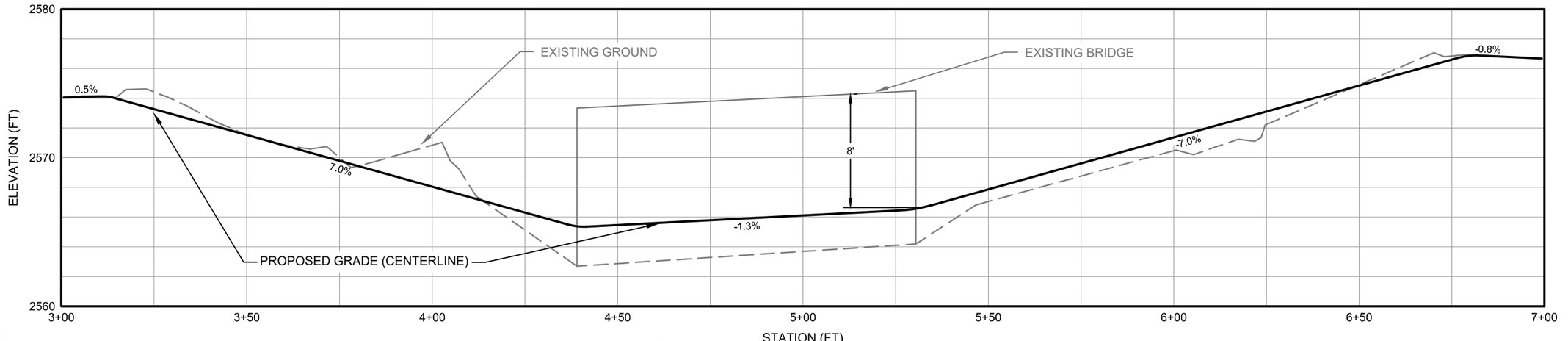


PLAN VIEW
1" = 30'



1 / - PROFILE VIEW
SCALE: 1"=30' HORIZONTAL, 1"=7.5' VERTICAL

PRELIMINARY
NOT FOR CONSTRUCTION

NO.	DATE	REVISIONS	BY	CHK

DRAFTER: J. DZARA
DESIGNER: B. DAVIS
CHECKED: S. FIROR
DATE: 8/15/2018

COORDINATE SYSTEM: ISP WEST, NAD 83, US FT
SCALE: 1" = 30'
APPROVED: X. XXXX
DATE: XX/XX/XXXX

Alta Science & Engineering, Inc.

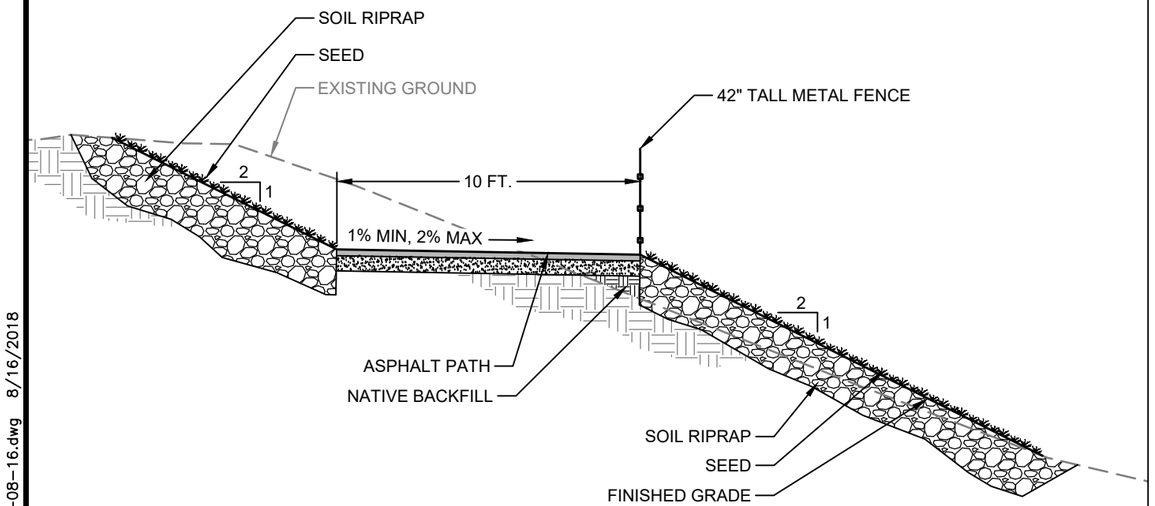
CITY OF MOSCOW US95 PATH UNDERPASS

MOSCOW, IDAHO

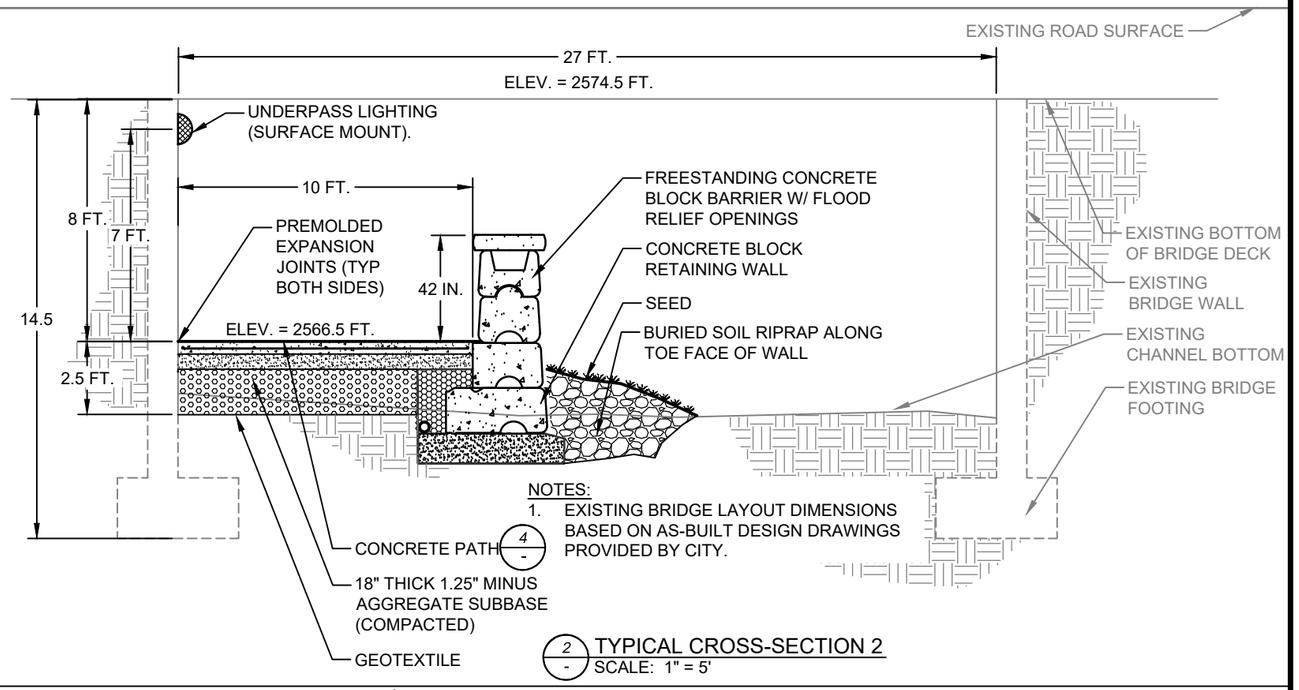
PATH PLAN & PROFILE
STA 3+00 TO 7+00

SHEET: C3
DATE: 8/14/2018
PROJECT NO.: 18059
SHEET NO.: 04 OF 05

P:\Engineering\City of Moscow US95 Underpass\Drawings\Conceptual\Moscow_US95 Bike Underpass_Design_2018-08-14.dwg 8/14/2018

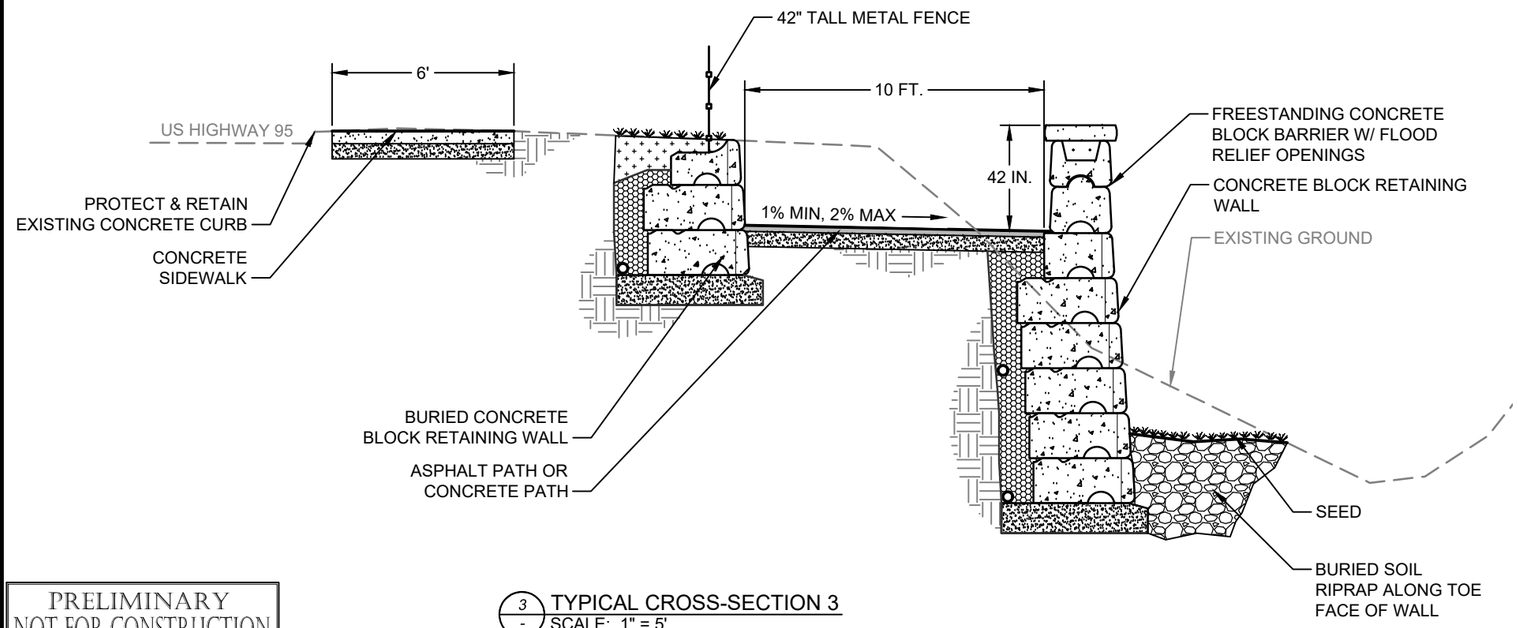


1 - TYPICAL CROSS-SECTION 1
SCALE: 1" = 5'

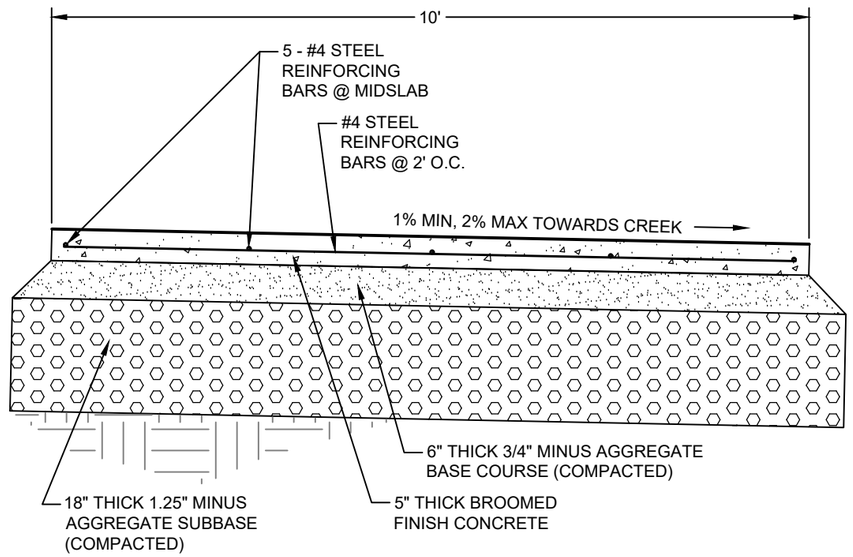


NOTES:
1. EXISTING BRIDGE LAYOUT DIMENSIONS BASED ON AS-BUILT DESIGN DRAWINGS PROVIDED BY CITY.

2 - TYPICAL CROSS-SECTION 2
SCALE: 1" = 5'



3 - TYPICAL CROSS-SECTION 3
SCALE: 1" = 5'



4 - TYPICAL CONCRETE PATH SECTION
SCALE: 1" = 2'

PRELIMINARY
NOT FOR CONSTRUCTION

NO.	DATE	REVISIONS	BY	CHK

DRAFTER: J. DZARA	COORDINATE SYSTEM: NAD83, ISP WEST, US FT	CITY OF MOSCOW US95 PATH UNDERPASS	SHEET: D1
DESIGNER: B. DAVIS	SCALE: AS SHOWN	MOSCOW, IDAHO	DATE: 8/16/2018
CHECKED: S. FIROR	APPROVED: XXXX	DETAILS	PROJECT NO.: 18059
DATE: 8/15/2018	DATE: XX/XX/XXXX		SHEET NO.: 05 OF 05

Alta Science & Engineering, Inc.

CITY OF MOSCOW IDAHO

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ENGINEER'S OPINION OF PROBABLE COST
Based on Conceptual Design

Project Name: US95 Path Underpass, Moscow
Project #: 18059
Prepared by: Jess Dzara, E.I.T.
Date: 8/10/2018
Reviewed by: Ben Davis, P.E.
Date: 8/13/2018

BID ITEM	DESCRIPTION	EST. QUANTITY	UNITS	UNIT PRICE	TOTAL
1	**Mobilization**	**1**	**LS**	**$49,490.00**	**$49,490.00**
2	**10' Asphalt Path**	**460**	**LF**	**$43.23**	**$19,888.00**
	Site Prep/Grading	*520*	*SY*	*$3.40*	*$1,768.00*
	Excavation, Haul, and Disposal	*200*	*CY*	*$15.00*	*$3,000.00*
	Geotextile - Woven, 200 lb tensile	*520*	*SY*	*$2.50*	*$1,300.00*
	Aggregate base, 6" thick base, compacted, 3/4" minus	*90*	*CY*	*$38.00*	*$3,420.00*
	Asphalt Paving - 2.5" HMA mat	*520*	*SY*	*$20.00*	*$10,400.00*
3	**10' Concrete Path**	**240**	**LF**	**$117.22**	**$28,133.00**
	Site Prep/Grading	*270*	*SY*	*$3.40*	*$918.00*
	Excavation, Haul, and Disposal	*160*	*CY*	$15.00	*$2,400.00*
	Geotextile - Woven, 200 lb tensile	*270*	*SY*	$2.50	*$675.00*
	Aggregate subbase - 18" thick, compacted, 1-1/4" minus	*140*	*CY*	*$33.50*	*$4,690.00*
	Aggregate base - 6" thick, compacted, 3/4" minus	*50*	*CY*	*$38.00*	*$1,900.00*
	Concrete - 5" thick, reinforced, broom finish	*270*	*SY*	*$65.00*	*$17,550.00*
4	**Concrete Block Retaining Wall**	**540**	**LF**	**$445.47**	**$240,554.00**
	Excavation, Haul, and Disposal	*310*	*CY*	*$20.00*	*$6,200.00*
	Geotextile - Nonwoven, 115 lb tensile	*740*	*SY*	*$1.60*	*$1,184.00*
	Aggregate base - 24" thick, compacted, 3/4" minus	*220*	*CY*	*$33.00*	*$7,260.00*
	Drain Rock - 1" clean	*140*	*CY*	*$40.00*	*$5,600.00*
	Perforated Drain Pipe	*540*	*LF*	*$1.50*	*$810.00*
	Concrete Block Wall & Freestanding Barrier - Materials	*1*	*LS*	*$80,000.00*	*$80,000.00*
	Concrete Block Wall - Installation	*3,690*	*SFF*	*$25.00*	*$92,250.00*
	Freestanding Concrete Block Barrier - Installation	*1,890*	*SFF*	*$25.00*	*$47,250.00*
5	**6' Wide Sidewalk**	**400**	**LF**	**$46.42**	**$18,568.00**
	Excavation, Haul, and Disposal	*60*	*CY*	*$15.00*	*$900.00*
	Site Prep/Grading	*270*	*SY*	*$3.40*	*$918.00*
	Aggregate base - 6" thick, compacted, 3/4" minus	*50*	*CY*	*$38.00*	*$1,900.00*
	Concrete Sidewalk - 5" thick, reinforced	*270*	*SY*	*$55.00*	*$14,850.00*
6	**Underpass Lighting - Surface Mount**	**4**	**EA**	**$2,350.00**	**$9,400.00**
	Holophane HLWPC2 Wallpack LED Lights, Delivered	*4*	*EA*	*$600.00*	*$2,400.00*
	Installation - Electrician	*1*	*LS*	*$7,000.00*	*$7,000.00*
7	**42" Steel Fence**	**150**	**LF**	**$140.00**	**$21,000.00**
8	**Remove and Dispose of Existing Bridge**	**1**	**LS**	**$100,000.00**	**$100,000.00**
9	**Tree Removal**	**3**	**EA**	**$500.00**	**$1,500.00**
10	**Provide and Place Soil Riprap**	**100**	**CY**	**$75.00**	**$7,500.00**
11	**Seeding**	**11,000**	**SF**	**$0.30**	**$3,300.00**
12	**Stormwater BMPs**	**1**	**LS**	**$10,000.00**	**$10,000.00**
13	**Water Management**	**1**	**LS**	**$15,000.00**	**$15,000.00**
14	**Construction Traffic Control**	**1**	**LS**	**$20,000.00**	**$20,000.00**

SUBTOTAL	$544,333.00
CONTINGENCY 15%	$81,649.95
TOTAL	$625,982.95
Construction Cost (Rounded)	**$626,000**