Riverton City Purchasing

12830 South Redwood Rd * Riverton, Utah 84065

Bid No.: CC23-422
(Show this number on envelope)

INVITATION FOR BID

BEFORE REPLYING TO THIS BID PLEASE READ THE INSTRUCTIONS AND GENERAL PROVISIONS PROVIDED WITH THIS DOCUMENT

REPLIES MUST BE LEGIBLE

Company: _____ Fed. ID No. _____

Legal Status: Sole Proprietor Non-Profit Corp. Profit Corp. Partnership Gov.

Ordering Address: _____

_____ Contact Person: _____

Department: _____ Phone: _____ Fax: _____

Requisition Number: **156251** E-Mail: _____

Inquiries Sent To: **Craig Calvert** Remit Address: _____

E-Mail: ccalvert@rivertoncity.com _____ Price Guaranteed Until - Date: _____

Phone: **801-208-3175** Date Sent: 1/24/2023 Payment Terms: _____ Shipment will be made _____ A.R.O.

1. The item(s) specified on this bid are produced, mined, grown, manufactured, or performed in Utah? Yes ☐ No ☐
   IF **No** then where produced, etc.: _____
2. bids must include manufacturer's descriptive literature & F.O.B. origin and destination freight cost or freight allowed or they may be rejected.
3. ***Terms of shipment for F.O.B. origin means: Shipper load, carrier count and stow, consignee unload, freight collect!***

RETURN BID TO:
Riverton City
Attn: Purchasing
12830 S Redwood Rd
Riverton, Utah 84065
Email: bid.submittal@rivertoncity.com

Note: Bids will be opened an read publicly at:

2:00 PM **On** **2/9/23**

THE BID NUMBER LISTED IN THE UPPER RIGHT-HAND CORNER OF THIS DOCUMENT MUST BE REFERENCED WHEN RETURNED.

Visit the Riverton City Home Page at: www.rivertoncity.com

FREIGHT INFORMATION:

Shipping point and zip code: _____

National Motor Freight Classification: _____

Shipping Weight: _____

Item(s) and Specifications	Quantity	Unit	Net Unit Price	Extended Price
Bid for the completion of the Jordan Riverbank Access Project As per attached:				

Total Price, without freight (FOB Origin) $ _____- **Total Price, with freight (FOB Destination) $ _____-**

Receipt of addendum acknowledgement. Addendum # 1___2___3___4___5___6___

The undersigned certifies that the vendor is willing and able to furnish the item(s) specified on this bid!

Vendors Authorized Agent: type or print NAME and TITLE) _____

Signature: _____ Date: _____

Please SIGN IN INK or this bid may be rejected, Your signature indicates you have read and agreed to the Instructions & General Provisions.

Riverton City
Invitation for Bid CC23-423
Jordan Riverbank Access Project

Riverton City is conducting an Invitation for Bid for the completion of the Jordan Riverbank Access Project. Work includes Constructing a river access point with crusher fines trail and slab stone terracing, regraded bank slopes, placement of buried boulder footers, rock vanes to redirect flow, removal of accumulated alluvium and woody debris, native seeding and plantings & upland seating area adjacent to the trail.

Sealed bids will be due by 2:00 pm on February 9, 2023, and may be turned in at the Purchasing Office, located at 12830 South 1700 West, Riverton, Utah 84065, or may be submitted electronically at bid.submittal@rivertoncity.com. Bids submitted after this time will not be accepted. Bids will be opened and read aloud at approximately 2:01 pm. Bidders registered on the plan holder's list, may request to attend the opening via Zoom meeting by sending a request to the purchasing department, ccalvert@rivertonutah.gov.

Bid security in the form of a certified check, cashier's check or bid bond in the amount of five percent (5%) of the bid shall accompany each bid.

An electronic format of the bid package may be obtained through the purchasing website: https://www.rivertonutah.gov/purchasing/solicitations.php.

PROJECT: Riverton Bank Access Project - Jordan River, UT **Date: January 17, 2023**
BID SCHEDULE

IN-CHANNEL IMPROVEMENTS

Item #	Description	Quantity	Unit	Unit Cost	Total Cost	*Notes / Assumptions*
	Site Preparation					
1	Mobilization/Demobilization/Bonding/Insurance	1	LS			
2	Approvals	1	LS			*Construction permits and licenses*
3	Traffic Control	1	LS			
4	Construction Survey / Stakeout	1	LS			
5	Protect In Place (PIP)	1	LS			*Tree and utility protection*
6	Construction Access and Repair - Alternative 2 (Preferred)	1	LS			*Access from Draper City side (river right). Includes revegetation and trail repair.*
7	Erosion Control and General BMPs - Furnish, Install, and Manage	1	LS			
8	Care of Water - Furnish, Install, and Manage	1	LS			
				Sub Total:		
	Bank Restoration					
9	Clear and Grub	927	SY			
10	Remove Woody Debris, Haul Off and Disposal	2	EA			*Remove dead trees from channel*
11	Unclassified Excavation, Haul Off and Disposal	881	CY			*Unclassified excavated materials from bank must be hauled off.*
12	Excavation, Haul Off and Disposal of Alluvial Material	437	CY			*Assume excavated alluvial materials from channel do not meet coarse alluvium requirements and must be hauled off.*
13	Coarse Alluvial Backfill - Import	195	CY			*6" minus gradation, imported*
14	Furnish Boulder (bank toe)	262	TON			*Assume 2.25 ton/cy*
15	Install Boulder (bank toe)	262	TON			*Assume 2.25 ton/cy*
16	Furnish Slabstone	56	TON			*Assume 2.1 ton/cy*
17	Install Slabstone	56	TON			*Assume 2.1 ton/cy*
18	Furnish Boulder (terrace)	27	TON			*Assume 2.25 ton/cy*
19	Install Boulder (terrace)	27	TON			*Assume 2.25 ton/cy*
20	Crusher Fines	7	CY			*6" thick, 6' wide*
21	Untreated Base Course (UTBC)	43	CY			*6" thick UTBC placed beneath crusher fines*
22	Furnish Boulder (rock barb)	89	TON			*Assume 2.25 ton/cy*
23	Install Boulder (rock barb)	89	TON			*Assume 2.25 ton/cy*
24	4 oz Non-Woven Filter Fabric	342	SY			*Place behind boulder toe, slabstone terrace, and under trail*
25	Type 1 Emergent Riparian Seed Mix	0.08	ACRE			*Seed from end of wetland sod to approximate elev. 4331.0'.*
26	Type 2 Upland Stabilization Seed Mix	0.10	ACRE			*Seed from approximate elev. 4331.0' to top of bank grading.*
27	Hydromulch	0.10	ACRE			*Placed with upland seeding areas*
28	Furnish and Install Topsoil	59	CY			*Placed with riparian seeding areas (6" thick)*
29	Erosion Control Blanket	371	SY			*Placed with riparian seeding areas*
30	Live Dormant Willow Staking	583	EA			*Stake to approximate OHWM. Assume 3' o.c. in triangular pattern, 2.5 average stakes per pilot hole.*
31	Native Wetland Sod	941	SF			*Assume mats at 16.2' long x 3.2' wide per NorthForkNativePlants.com*
				Sub Total:		
	Upland Improvements					
32	Clear and Grub	19	SY			
33	Unclassified Excavation, Haul Off and Disposal	5	CY			*Unclassified materials that are not allluvium*
34	Crusher Fines	3	CY			*Assume 6" thick crusher fines*
35	Untreated Base Course (UTBC)	3	CY			*Assume 6" thick UTBC placed beneath concrete*
36	4 oz Non-Woven Filter Fabric	30	SY			*Place under UTBC*
				Sub Total:		
				Construction Costs Total:		
	Add Alternatives					
AA1	Construction Access and Repair - Alternative 1	1	LS			*Access from Dr. O Roi Hardy Park (river left). Includes revegetation and trail repair.*
				Construction Costs Total with Add Alternative(s):		

RIVERTON BANK ACCESS PROJECT

BID ITEM DESCRIPTIONS

Bid Item No. 1

MOBILIZATION/ DEMOBILIZATION/ BONDING/ INSURANCE

A. Measurement is per Lump Sum (LS).

B. Work includes but is not limited to: providing all required bonds and insurance; mobilization; demobilization; installation of temporary work area facilities; protecting in place vegetation and utilities, bringing and removing all necessary construction equipment to and from the site; obtaining access permission from Riverton City and Draper City, contracting, scheduling, delays and any and all incidentals.

Bid Item No. 2

APPROVALS

A. Measurement is per Lump Sum (LS).

B. Work includes but is not limited to: seeking approvals; obtaining construction permits or licenses; associated fees; contractor submittals; meetings; maintaining licenses; adhering to requirements of permits and approvals; reporting; postings; and close out of permits as may be required; and any and all incidentals.

Bid Item No. 3

TRAFFIC CONTROL

A. Measurement is per Lump Sum (LS).

B. Work includes but is not limited to: development, implementation, maintenance and restoration of a traffic control plan for construction that addresses vehicle, bicyclist, pedestrian and river traffic on the surrounding roads, Jordan River Parkway Trail, and Jordan River. Work includes all materials, signage, labor, equipment, and any and all incidentals. Traffic control shall meet all requirements of Riverton City.

Bid Item No. 4

CONSTRUCTION SURVEY/ STAKE-OUT

A. Measurement is per Lump Sum (LS).

B. Work includes furnishing all material, equipment, labor, and incidentals necessary to complete the work as specified. No separate or additional payment will be made for any temporary protection and direction of traffic measures including flaggers and signing necessary for the performance of the construction survey work. Includes Protect In Place survey control and relocating control monuments within the limits of excavation. No separate or additional payment will be made for preparing surveying documents including but not limited: to office time, preparing and checking survey notes, and all other related preparation work. Costs incurred caused by survey errors will be at no additional cost to the OWNER. The CONTRACTOR is wholly responsible for any work, damage, and repair or modification thereof, caused by CONTRACTORS's survey errors. The ENGINEER may make an equitable adjustment, which may decrease the Contract Amount, if the required survey work is not performed.

Bid Item No. 5
PROTECT IN PLACE (PIP)
A. Measurement is per Lump Sum (LS).

B. Work covers taking necessary measures to mark in the field and ensure protection of existing utilities, structures, pavements, mature trees, vegetation, wetlands, cultural resources, properties, and other features not identified for removal or construction (resources). This includes stoppages and notifications to evaluate buried utilities or resources not identified on the plans that may be discovered during the work. Work includes but is not limited to: video documentation of preconstruction conditions; labor, equipment, invasive species control, and materials required for protecting-in-place or restoration of incidental damage. CONTRACTOR is responsible for identifying and protecting-in-place existing utilities. Any cost associated with temporary outages, environmental damage, or repairing utilities or resources, as determined by OWNER, shall be wholly the responsibility of the CONTRACTOR.

Bid Item No. 6
CONSTRUCTION ACCESS AND REPAIR – ALTERNATIVE 2 (PREFERRED)
A. Measurement is per Lump Sum (LS).

B. Work includes the installation, maintenance and removal of temporary access roads, temporary haul roads, access ramps and other access points required for construction of the project. ***Construction access for Alternative 2 shall be from Draper City property (river right) as shown in the construction drawings.*** Work covers furnishing all materials, equipment, labor, and any and all incidentals necessary to complete the work. Restoration of the temporary access is considered a part of the work, which includes but is not limited to resurfacing, seeding, revegetation, and any and all incidentals including furnishing materials and BMPs.

Bid Item No. 7
EROSION CONTROL AND GENERAL BMPS - FURNISH, INSTALL, AND MANAGE
A. Measurement is per Lump Sum (LS).

B. Work covers development of an Erosion and Sediment Control (ESC) Plan and submittal to the OWNER for review and approval.

C. Work covers the development, implementation, and management of the project's ESC program. This works includes all materials, equipment, labor and incidentals associated with implementing the ESC plan, performing regular inspections and documentation of installed ESC BMPs, and cleanout, maintenance, or replacement of ESC BMPs as required during project construction including approval delays and any and all incidentals. This also includes the removal of non-biodegradable BMPs after establishment of vegetation (approximately 1-2 years).

D. Work covers development of a Spill Prevention Control and Countermeasures (SPCC) Plan and list of Equipment Operating with Certified Biodegradable Hydraulic Fluid, and submittal to the OWNER and ENGINEER for review.

E. Work covers the development, implementation, and management of the project's SPCC program. This works includes all materials, equipment, labor and incidentals associated with finalizing the SPCC plan, installing the SPCC plan, performing regular inspections and documentation of installed SPCC BMPs and cleanout, maintenance, and/or replacement of SPCC BMPs as required during project construction, including delays and any and all incidentals.

Bid Item No. 8

CARE OF WATER - FURNISH, INSTALL, AND MANAGE

A. Measurement is per Lump Sum (LS).

B. Work covers complete cost of development, implementation, and management of the Care of Water (CW) Plan to minimize environmental impacts and simultaneously provide construction access, to the work below the Ordinary High Water Mark (OHWM). Work includes installation of turbidity curtains, cofferdams, river diversions, oil booms, pumps and filters, intermittent excavation operations of excessive turbidity, all BMPs and shoring necessary for open bank excavations and channel work in the wet, and Care of Water and 401/404 permit conditions adherence. Payment covers labor, methods, precautions, delays, installations, modifications, maintenance, replacement, and materials for water control structures and removal and disposal of structures and incidentals required to complete work.

C. Work covers maintaining necessary de-watering during construction. This may include gravity feed dewatering systems or pumped systems as the CONTRACTOR deems necessary. Work associated with this bid item also includes removal and proper disposal of equipment and materials required for de-watering once no longer required on site. Work covers furnishing all equipment, labor, and incidentals (to include but not limited to permitting and/or fuel/power to operate pumps) necessary to complete the work as specified.

D. Work covers filtering pumped water to meet local and state environmental requirements prior to returning it to the river. Work covers furnishing all equipment, labor, and incidentals necessary to complete the work as specified.

Bid Item No. 9, 32

CLEAR AND GRUB

A. Measurement per Square Yard (SY) of cleared and grubbed area.

B. Payment covers complete cost of clearing, grubbing, removing, and disposing of vegetation and debris within the limits of grading. Includes hauling to a designated onsite stockpiling area and all incidental work or materials. Vegetation and structures designated to remain protected in place shall be preserved free from damage. CONTRACTOR is responsible for identifying and protecting in place existing utilities. Any cost associated with temporary outages or repairing utility, as determined by OWNER, shall be wholly the responsibility of the CONTRACTOR.

Bid Item No. 10

REMOVE TREE, HAUL OFF AND DISPOSAL

A. Measurement is Each (EA) of tree removed.

B. Payment covers complete cost of tree removal, haul off, and disposal offsite. Work includes but is not limited to: BMPs, excavation, debris removal, cutting material; stockpiling material; dewatering material onsite; supplying equipment; loading; hauling; handling; disposal fees; and any and all incidentals. CONTRACTOR shall provide receipt of documentation of proper disposal prior to payment.

Bid Item No. 11, 33

UNCLASSIFIED EXCAVATION, HAUL OFF AND DISPOSAL

A. Measurement is per Cubic Yard (CY) of bank excavation and offsite disposal of unclassified materials per limits of excavation defined in Project Drawings.

B. Payment covers complete cost of excavation, haul off, and disposal of unclassified bank materials offsite. Work includes but is not limited to: BMPs, excavation, debris removal, sorting material; stockpiling material; dewatering material onsite; supplying equipment; loading; hauling; handling; disposal fees; and any and all incidentals. CONTRACTOR shall provide receipt of documentation of proper disposal prior to payment.

Bid Item No. 12

EXCAVATION, HAUL OFF AND DISPOSAL OF ALLUVIAL MATERIAL

A. Measurement is per Cubic Yard (CY) of channel excavation and offsite disposal of alluvial materials that do not meet the material requirements of coarse alluvial backfill per limits of excavation defined in Project Drawings.

B. Payment covers complete cost of excavation, haul off, and disposal of alluvial materials offsite. Work includes but is not limited to: BMPs, excavation, sorting material; stockpiling material; dewatering material onsite; supplying equipment; loading; hauling; handling; disposal fees; and any and all incidentals. CONTRACTOR shall provide receipt of documentation of proper disposal prior to payment.

Bid Item No. 13

COARSE ALLUVIAL BACKFILL - IMPORT

A. Measurement per Cubic Yard (CY) of alluvial cobble / pit-run installed.

B. Payment covers complete cost furnishing, delivering, excavating, and placing alluvial cobble as shown on the Project Drawings and described in the technical specifications. Work includes but is not limited to all equipment, materials, labor and incidentals associated with: BMPs; care of water, vegetation clearing; loading, hauling, handling and stockpiling material; placement of material. Cost includes all labor, equipment and materials required to complete the work.

Bid Item No. 14, 18, 22

FURNISH BOULDER

A. Measurement is per Ton (TON) of furnished boulders per certified scale tickets.

B. Payment covers complete cost of furnishing boulder as shown in the Project Drawings and described in the technical specifications. Boulder structures pertaining to this item includes buried boulder toe bank treatment, rock barbs, and boulder terraces. Work includes all equipment, materials and labor required to purchase boulder, deliver boulder, stockpile boulder, sort boulder and dispose of excess boulder. Payment for this line item will only cover boulder installed at the site per the Project Drawings and the ENGINEER'S direction. Excess, poor quality or rejected boulder delivered to the site will be at the CONTRACTOR's expense. Furnishing and aggregate bedding/backing as shown in plans is considered incidental to the work.

Bid Item No. 15, 19, 23
INSTALL BOULDER

A. Measurement is per Ton (TON) installed boulders per certified scale tickets.

B. Payment covers complete cost of placement of existing or imported boulder in structures with furnished or stockpiled boulder as shown in the Project Drawings and described in the technical specifications. Boulder structures pertaining to this item includes buried boulder toe bank treatment, rock barbs, and boulder terraces. Work includes all equipment, materials and labor required to sort boulder, and place and adjust boulder. Payment for this line item will only cover boulder installed at the site per the Project Drawings and the ENGINEER'S direction. Excess, poor quality or rejected boulder delivered to the site will be at the CONTRACTOR's expense.

Bid Item No. 16
FURNISH SLABSTONE

A. Measurement is per Ton (TON) of furnished slabstone per certified scale ticket.

B. Payment covers complete cost of furnishing slabstone as shown in the Project Drawings and described in the technical specifications. Work includes all equipment, materials and labor required to purchase slabstone, deliver slabstone, and stockpile slabstone. Payment for this line item will only cover slabstone installed at the site per the Project Drawings and the ENGINEER'S direction. Excess, poor quality or rejected slabstone delivered to the site will be at the CONTRACTOR's expense.

Bid Item No. 17
INSTALL SLABSTONE

A. Measurement is per Ton (TON) of installed slabstone per certified scale ticket.

B. Payment covers complete cost of installing slabstone as shown in the Project Drawings and described in the technical specifications. Work includes all equipment, materials and labor required to place and adjust slabstone. Payment for this line item will only cover slabstone installed at the site per the Project Drawings and the ENGINEER'S direction. Excess, poor quality or rejected slabstone delivered to the site will be at the CONTRACTOR's expense

Bid Item No. 20, 34
CRUSHER FINES

A. Measurement is per Cubic Yard (CY) of installed crusher fines material.

B. Payment covers complete cost of installation of crusher fines material as shown in the Project Drawings and described in the technical specifications. Cost includes all labor, equipment, and materials required to complete the work. Work includes sorting material to specified gradation and installation of sorted material where identified. Work includes stockpiling, handling, work area isolation (as required), installation, and compaction. Excess, poor quality or rejected crusher fines material delivered to the site will be removed at the CONTRACTOR's expense.

Bid Item No. 21, 35
UNTREATED BASE COURSE (UTBC)

A. Measurement is per Cubic Yard (CY) of installed material.

B. Payment covers complete cost of furnishing and installation of UTBC material as shown in the Project Drawings and described in the technical specifications. Cost includes all labor, equipment, and materials required to complete the work. Work includes sorting material to specified gradation and installation of sorted material where identified. Work includes stockpiling, handling, work area isolation (as required), installation, and compaction. Excess, poor quality or rejected UTBC material delivered to the site will be removed at the CONTRACTOR's expense.

Bid Item No. 24, 36
4 OZ NON-WOVEN FILTER FABRIC

A. Measurement is per square yard (SY) of installed 4oz non-woven filter fabric installed between undisturbed subgrade and untreated base course and boulders. Embedded lengths of fabrics, vertical faces, and overlapped fabric shall not be measured for payment.

B. Payment covers the complete cost of installing non-woven filter fabric as shown in the Project Drawings and described in the technical specifications. Work includes providing all necessary good quality materials; furnishing and installing gravel bedding; labor; fasteners; excavation; installation per manufacturers recommendations; and any and all incidentals such as overlap and tucking into ground; storing and protecting fabric from tears; or damage replacement throughout construction.

Bid Item No. 25
TYPE 1 EMERGENT RIPARIAN SEED MIX

A. Measurement is per Acre (ACRE) of seeded area as measured in place.

B. Payment covers the complete cost of furnishing and installing Type 1 Emergent Riparian Seed Mix as shown in the Project Drawings and described in the technical specifications. Work includes: BMPs; loading, hauling, handling and stockpiling material; supplying equipment; seeding (drilling or raking); special guarantees; any and all incidentals such as initial watering. Includes all equipment, labor, materials and incidentals needed to complete the work.

Bid Item No. 26
TYPE 2 UPLAND STABILIZATION SEED MIX

A. Measurement is per Acre (ACRE) of seeded area as measured in place.

B. Payment covers the complete cost of furnishing and installing Type 2 Upland Stabilization Seed Mix as shown in the Project Drawings and described in the technical specifications. Work includes: BMPs; loading, hauling, handling and stockpiling material; supplying equipment; seeding (drilling or raking); special guarantees; any and all incidentals such as initial watering. Includes all equipment, labor, materials and incidentals needed to complete the work.

Bid Item No. 27
HYDROMULCH
A. Measurement is per Acre (ACRE) of seeded area as measured in place.

B. Payment covers the complete cost of furnishing and installing hydromulch with the Type 2 upland stabilization mix as shown in the Project Drawings and described in the technical specifications. Work includes: BMPs; loading, hauling, handling and stockpiling material; supplying equipment; spreading, raking, tackifier, and fertilizer; special guarantees; any and all incidentals such as initial watering. Includes all equipment, labor, materials, and incidentals needed to complete the work.

Bid Item No. 28
FURNISH AND INSTALL TOPSOIL
A. Measurement is per Cubic Yard (CY) of furnished and installed topsoil.

B. Payment covers complete cost of furnishing, stockpiling, and installing topsoil to extents and depths shown in Project Drawings and described in the technical specifications. Work includes but is not limited to: BMPs; erosion and sediment control; excavation; loading, hauling, handling and stockpiling material; placement of all materials; and any and all incidentals. Includes all equipment, labor, materials and incidentals needed to complete the work.

Bid Item No. 29
EROSION CONTROL BLANKET
A. Measurement is per square yard (SY) of installed erosion control blanket surface (including landscaping stakes). Embedded lengths of erosion control fabrics, vertical faces, and overlapped fabric shall not be measured for payment.

B. Payment covers the complete cost of installing erosion control blankets. Work includes providing all necessary good quality materials; labor; excavation; installation; and any and all incidentals such as key downs at edges and stakes; differing fabrics and installations for appropriate application.

Bid Item No. 30
LIVE DORMANT WILLOW STAKING
A. Measurement is per Each (EA) live dormant willow stake installed.

B. Payment covers the complete cost of furnishing and installing live dormant willow staking as shown on the plans. Work includes: BMPs; harvesting, loading, hauling, handling and stockpiling material; supplying equipment; over-excavation; backfill; planting; staking, fertilizing; final grading; mulching; special guarantees; any and all incidentals such as providing water for establishment. Includes all equipment, labor, materials and incidentals needed to complete the work.

Bid Item No. 31
NATIVE WETLAND SOD
A. Measurement is per Each (EA) wetland sod mat installed.

B. Payment covers the complete cost of furnishing and installing wetland sod matting. Work includes but is not limited to: BMPs; loading, hauling, handling and stockpiling material; supplying equipment; excavation; planting; final grading; fasteners; special guarantees; and any and all incidentals such as providing water necessary for establishment. Includes all equipment, labor, materials and incidentals needed to complete the work.

---------- **ADD ALTERNATIVES (NOT INCLUDED IN BASE BID)** ----------

Add Alternative No. AA1

CONSTRUCTION ACCESS AND REPAIR – ALTERNATIVE 1

A. Measurement is per Lump Sum (LS).

B. Work includes the installation, maintenance and removal of temporary access roads, temporary haul roads, access ramps and other access points required for construction of the project. ***Construction access for Alternative 1 shall be from Dr. O Roi Hardy Park along the Jordan River Parkway Trail (river left) as shown in the construction drawings.*** Work covers furnishing all materials, equipment, labor, and any and all incidentals necessary to complete the work. Restoration of the temporary access is considered a part of the work, which includes but is not limited to resurfacing, seeding, revegetation, and any and all incidentals including furnishing materials and BMPs.

TERMS & CONDITIONS

General

Bidders must meet or exceed all specifications and requirements as set forth in bidding documents. Contractor must furnish all equipment, materials, labor, tools, transportation, supplies and incidentals necessary to complete the entire project.

1. Amendments to invitation for bid

Any changes in quantity, specifications, schedules, opening date, corrections, clarifications, etc. will be in the form of an addendum. Addendums will be in writing, will be distributed to all bidders by the purchasing department and will become part of this bid. Any attempts to alter this bid verbally should be ignored.

2. Bonding

Bidders will be required to provide a **bid bond** or certified check, attached to this bid made payable to Riverton City in the amount of not less than five percent (**5%**) of the amount of the bid price. The bid bond or check of the accepted bidder shall be forfeited in the event said bidder fails or refuses to enter into a contract and/or fails to furnish the additional bonds required herein. Checks submitted in lieu of bid bonds from unsuccessful bidders will be returned upon request.
The successful bidder must submit to Riverton City full **performance and payment bonds** in amounts equal to one hundred percent (**100%**) of the contract price. Work cannot begin until bonds have been received by the City. Bonding costs must be included in bid price.

3. Conflict with submittals/inconsistencies in conditions

In the event of conflict with submittals from bidders or inconsistencies in bidding documents, this bid document will take precedence.

4. Consideration, award and rejection of bids

All bidders must be able to demonstrate that they are responsible, competent contractors with the resources to complete a project of this magnitude and must be prepared to provide documented proof of such upon request including **references and financial statements**. The contractor's past performance history, organization, equipment and demonstrated ability to perform and complete their contracts in the manner and within the time limit specified will be elements along with the dollar amount of the bid which will be considered by the City in the letting of the contract, if any award is made. The City reserves the right to reject any and all bids by reason of this paragraph.

5. Construction dates/ deadlines

Contractor is required to complete the project within specified dates stated within the bid documents.

6. Contact

Direct any questions regarding this project to attention Craig Calvert at ccalvert@rivertonutah.gov

7. Contract clauses

Any contract arising from this invitation to bid will include the following:

A. The unilateral right of the City to order written changes in the work and/or time of performance (change order);
B. Liquidated damages as appropriate;
C. Specific excusable delays are as follows: if the contractor is delayed by the City by change orders.
D. The City may terminate the contract for any reason at any time if the contractor fails to perform (default) or if it is in the best interest of the City (convenience).

8. Inspections

Contractor must be prepared, willing and accommodating to on-site inspection of all work, at any time, by a City representative, during job progress.

9. Liability

Any damages occurring from the execution of the contract, incidental or otherwise, to City or private properties must be repaired, at the contractor's expense, to the owner's satisfaction.

10. Indemnification

The contractor agrees to protect, indemnify and hold Riverton City, the City Council, the Mayor, and all employees (collectively the "Indemnities") free and harmless from and against all losses, claims liens, demands and causes of action of every kind and character arising out of performance of the Work by the contractor or by its subcontractors, including the amount of judgment, penalties, interest, court costs and legal fees incurred by the Indemnities or any of them in defense of the same, arising in favor of any party, including governmental agencies or bodies, on account of, but not limited to, taxes, claims, liens, debts, personal injuries, death or damages to property (including property of Indemnities).
The Contractor further agrees to; investigate, handle, respond to, provide defense for and defend any such claim, demand or cause of action at its sole expense, and agrees to bear all other costs and expenses related thereto, even if such claim, demand or cause of action is due solely to the fault of Riverton City and, release, indemnify and hold the Buyer, its officers, agents and employees harmless from liability of any kind or nature, including the contractor's use of any copyrighted or uncopyrighted composition, secret process, patented or unpatented invention, article or appliance furnished or used in the performance of this contract.
Riverton City is a governmental entity under the Governmental Immunity Act and waives no defenses, limits of liability or other rights.

11. Insurance

An ACORD CERTIFICATE must be submitted. The following information must be on the ACORD.

Description of Operations:

Certificate Holder:
Riverton City, its elected officials, appointed officials, officers, employees and volunteers. Coverage is for all operation performed by or on behalf of the named insured.
REQUIREMENTS:
Workers Compensation insurance, sufficient to cover all employees in the employ during the term of the contract including any renewal thereof must be maintained. Coverage amount should be in the amount required by Utah Workmen's Compensation Laws. Liability insurance (general and auto) in the amount of $1,000,000.00 per occurrence with an aggregate of $2,000,000.00 must be maintained during the term of the contract including and renewals.

Insurance needs to include Project Name with the location and description of the project, and the Project Number and Bid Number (if known). Insurance must name as the certificate holder; Riverton City, its elected officials, appointed officials, officers, employees and volunteers. Coverage is for all operation performed by or on behalf of the named insured.

Insurance provided is required to be primary and non-contributory.

Proof of coverage must be provided before work can begin, and the Contractor agrees to provide proof of insurance upon demand by the City throughout the terms of the contract. The insurance must have a 30 day written cancelation notice. If any of the required insurance coverage is cancelled or lapse, the City may at the City's discretion, obtain substitute coverage at reasonable rates. The City may deduct the cost of such coverage, plus 10% for administrative charges, from any monies that are owing to contractor.

Riverton City will assume no liabilities for the contractor including any of the contractor's representatives, employees or properties, and agrees to, at all times, protect, indemnify, defend and hold harmless the City and city employees from any and all claims.
Contractor shall, at all times, keep the work area in a neat, clean, safe and secure condition to avoid the risk of loss, theft, vandalism or sabotage.

Any damages occurring during the completion of this project, incidental or otherwise, to city or adjacent properties must be repaired, at the contractor's expense, to the owner's satisfaction.

12. Independent Contract

It is understood and agreed by the parties that the contractor is to act in the capacity of an independent contractor and as such will have no authorization, express or implied to bind Riverton City to any agreements. Contractor's officers and employees shall not be considered as employees or officers of the City and shall not be entitled to any employee benefits as City employees as a result of the execution of this agreement.

13. Workforce

The Contractor agrees to register and participate in the status verification system to verify the work eligibility status of the Contractor's new employees that are employed in the state. The Contractor further agrees to have each contractor or subcontractor who works for or under main contractor, certify by affidavit that the contractor or subcontractor has

verified through the status verification system the employment status of each new employee of the respective contractor or subcontractor.

14. Laws/codes

Contractor must abide by all federal, state and local laws including, but not limited to, employment laws such as the *Americans with Disabilities Act* and meet or exceed all applicable building codes and Utah state energy code requirements.

15. OSHA Requirements

Contractor agrees to comply with all OSHA requirements that may be associated with this project. For any OSAH violation that occurs with this project the Contractor agrees to pay any fine accessed to the City and the City will not accept any bids from the contractor on any project for the next year.

16. Permits

The Contractor is responsible to obtain the following Riverton City Permits. Permits can be viewed at the following web sites:

1. Encroachment Permit (bonding is a requirement of this permit)
   http://www.rivertoncity.com/departments/public_works/engineering/index.php
2. Land Disturbance Permit
   http://www.rivertoncity.com/departments/public_works/engineering/index.php

17. Licensing

Bidders must meet all current licensing requirements of the City, County and State of Utah to do the type of work required under this bid including the proper license classifications with a sufficient monetary limit as established and issued by the division of occupational and professional licensing, state department of commerce. Licensing must be current and valid at the date of bid opening.

18. Liquidated damages

Time is the essence of the Contract Documents. Contractor agrees that the City will suffer damage or financial loss if the project is not completed on the agreed completion time or within any time extensions that are allowed by written pre approval. The Contractor and the City agree that proof of the exact amount of any such damage or loss is difficult to determine. Accordingly, instead of requiring any such proof of damage or specific financial loss or late completion, the Contractor agrees to pay the following sums to the City as liquidated damages and not as a penalty.

1. Late Time Completion:
   Five hundred dollars and no cents ($500.00) for each day or part thereof that expires after the completion time until the work is accepted as substantially complete.

2. Late Punch List Time:
   Punch list items must be completed within 30 calendar days after the list is delivered. 50% of the amount specified for Late Time Completion for each day or part thereof if the work remains incomplete after the Punch List Time. The Punch List shall be considered delivered on the date it is transmitted by

facsimile, hand delivery, or received by the Contractor by certified mail.

3. Interruption of Public Services:
   No interruption of public services shall be caused by the Contractor, its agents or employees, without the engineer's prior written approval. The City and Contractor agree that in the event the City suffers damages from such interruption, the amount of liquidated damages stipulated below shall not be deemed to be a limitation upon the Cities right to recover the full amount of such damages. One thousand dollars and no cents ($1,000.00) for each day or part thereof of any utility interruption caused by the Contractor without prior written authorization.

4. Survey Monuments:
   No land survey monument shall be disturbed or moved until the City Engineer has been properly notified and the City Engineer's surveyor has referenced the survey monument for resetting. The parties agree that upon such an unauthorized disturbance it is difficult to determine the damages from such a disturbance, and the parties agree that Contractor will pay as liquidated damages the sum of one thousand dollars and no cents ($1000.00) to cover such damage and expense.

Time completion may be applied to individual work sequences throughout the project. If it is determined that there will be a number of completion sequences within the project, the above damages will apply to each sequence. The City shall be entitled to deduct and retain liquidated damages out of any money which may be due or become due the Contractor. To the extent that the liquidated damages exceed any amounts that would otherwise be due the Contractor, the Contractor shall be liable for such amounts and shall return such excess to the City.

19. Notice to proceed

Notice to proceed will be in the form of a purchase order from the city purchasing department. Do not proceed without a purchase order.

20. Payment

The city agrees to pay the contractor as the work progresses, but not more than once each month and only upon presentation of an "application and certificate for payment" (AIA document g702) for work performed during the preceding calendar month. **Five-percent (5%) of the earned amount shall be retained** from each monthly payment. Final payment (retained amount) will be held by the city until project completion, clean-up, inspection and approval (signing of the invoice) is made by Mr. Jim Katzdorn. No prepayments or "Draws" against anticipated (future) work will be allowed.

Riverton City reserves the right to make payments with a credit card. If the prices change because of a credit card payment bidder must provide two prices, a price for payment by credit card and a price for payment by check.

21. Subcontractors

Riverton City reserves the right to approve or reject any subcontractor. The City will not provide drawings, bidder's lists, etc. to subcontractors or suppliers.

22. Submittals

- Complete, sign and return the bid sheet with bid schedule.
- Bid Bond or Cashier's Check.
- Certificate of Non-Collusion and Certificate of Non-Discrimination.
- Acknowledgement of Addendums.

23. Terms and conditions

In the event of breach, the prevailing party will be entitled to attorneys fees, regardless of whether the issue is brought to court.
Riverton City requests assignment of rights to recover damages from any antitrust violations.

24. Warranty

Contractor warrants all equipment, materials, and labor furnished or performed will be free from defects for a period of twelve (12) months from date of acceptance. The Performance Bond must extend through the warranty period. Upon notice from the City of any defect during the applicable warranty period, the affected item, parts or work shall be redone, redesigned, repaired or replaced by contractor (at contractor's expense). Warranty repairs must be completed within 10 calendar days after notice or a negotiated time that is acceptable to the City. All liquidated damages specified for original work will apply on warranty repairs.

Invitation for Bid Instructions and General Provisions

"Failure to comply with the following instructions may cause rejection of this bid"

1. **Administrative Authority:**
   The administration of this purchasing process is conducted by the Riverton City Purchasing Agent. No contact of the City Mayor, City Council or any employee in regards to this solicitation other than those listed herein.
2. **No Obligation Implied:**
   This Invitation for Bid implies no obligation on the part of Riverton City.
3. **Contract requirements:**
   Any contract that may arise from this Invitation for Bid is subject to the following Terms and Conditions:
   INDEMNIFICATION - The contractor agrees to protect, indemnify and hold Riverton City, the City Council, the Mayor, and all employees (collectively the "Indemnities") free and harmless from and against all losses, claims liens, demands and causes of action of every kind and character arising out of performance of the Work by the contractor or by its subcontractors, including the amount of judgment, penalties, interest, court costs and legal fees incurred by the Indemnities or any of them in defense of the same, arising in favor of any party, including governmental agencies or bodies, on account of, but not limited to, taxes, claims, liens, debts, personal injuries, death or damages to property (including property of Indemnities). The Contractor further agrees to; investigate, handle, respond to, provide defense for and defend any such claim, demand or cause of action at its sole expense, and agrees to bear all other costs and expenses related thereto, even if such claim, demand or cause of action is due solely to the fault of Riverton City and, release, indemnify and hold the Buyer, its officers, agents and employees harmless from liability of any kind or nature, including the contractor's use of any copyrighted or uncopyrighted composition, secret process, patented or unpatented invention, article or appliance furnished or used in the performance of this contract. Riverton City is a governmental entity under the Governmental Immunity Act and waives no defenses, limits of liability or other rights.
   INDEPENDENT CONTRACT - It is understood and agreed by the parties that the contractor is to act in the capacity of an independent contractor and as such will have no authorization, express or implied to bind Riverton City to any agreements. Contractor's officers and employees shall not be considered as employees or officers of the City and shall not be entitled to any employee benefits as City employees as a result of the execution of this agreement.
   INSURANCE - The contractor agrees to acquire and maintain the appropriate insurance, in the appropriate amounts, for the service(s) provided. This may include, but not limited to workers compensation, liability and errors in omission. Proof of insurance will be provided to the City upon request.
   WORKFORCE - The Contractor agrees to register and participate in the Status Verification System to verify the work eligibility status of the Contractor's new employees that are employed in the state. The Contractor further agrees to have each contractor or subcontractor who works for or under main contractor, certify by affidavit that the contractor or subcontractor has verified through the Status Verification System the employment status of each new employee of the respective contractor or subcontractor.
4. **Riverton City Reservations:**
   The right is reserved to cancel this Invitation for Bid or to accept or reject any or all bids, and to waive any informality or technicality in any bid, in the interest of Riverton City. Riverton City reserves the right to award multiple contracts to more than one vendor for the same or similar items. Riverton City reserves the right for an option to renew or extend any contract that may arise from this Invitation for Bid, not to exceed four (4) renewals or extensions. Unless specifically provided for elsewhere in this bid, multiple or alternate bids will not be accepted. The City Mayor and City Council reserves the right to purchase such brands as they desires, irrespective of price. The right is reserved, unless supplier countermands, to increase or decrease the quantity of any item(s) as the bid price. Riverton City reserves the right to cancel any item(s) not delivered after the purchase order issued. Riverton City reserves the right to select some or all of the items from any vendor unless an "all or nothing" statement is included in the bid. Riverton City does not guarantee to make any purchase from this bid. Estimated quantities are for bidding purposes only and are not to be interpreted as a guarantee to purchase any amount.
5. **Failure to Respond:**
   Failure to respond may result in the removal of your firm from the vendor's list for the commodity(s) listed. Unless you advise the Purchasing Agent prior to the bid due date that you desire to receive future invitations to bid on this commodity. Three consecutive no responses will result in removal
6. **Bid Preparation:**
   A. Fill out this bid form completely filling in all blanks, either in ink or typewritten. All information provided must be legible.
   B. Errors may be crossed out and corrections made in ink or typewritten (no type covers) adjacent and must be initialed in ink by the person signing the bid.
   C. Any manufacturer's name, trade names, brand names or catalog number(s) used in this specification are there for the purpose of establishing and describing general performance and quality levels. Such references are not intended to be restrictive, and bids are invited on these and comparable brands or products by any manufacturer. All items will be evaluated on an ***"acceptable substitute"*** basis unless stated otherwise, Riverton City determining acceptability.
   D. Price each item separately and extend, unless each item makes up a complete system or a lot price requested. Unit price will govern if there is an error in the extension.
   E. Furnish descriptive literature for each item bid. If a substitute is offered make a full written explanation on the bid as to its brand name, model number etc.
   F. Submit your bid on the documents furnished herein.
   G. Do not bid on items you cannot supply promptly.
   H. Provide information on local availability of parts and service for all items bid and service literature to allow for in-house maintenance and repairs
7. **Bid Submittal:**
   A. The bid must be signed in ink and delivered to Purchasing by the *"Due Date & Time."* The bid number must appear on the outside of the envelope. **Fax bids will not be accepted**.
   B. Bids, modifications, or corrections received after the closing time on the *"Due Date"* will be considered late.
   C. All purchases are subject to Riverton City purchasing ordinance.
8. **Warranties:**
   Contractor warrants that all equipment, and/or materials, and/or labor that is furnished or performed will be free from defects for a minimum period of twelve (12) months from date of acceptance. Upon notice from the City of any defect during the applicable warranty period, the affected item, parts or work shall be redone, redesigned, repaired or replaced by contractor (at contractor's expense) at a time acceptable to the City.
9. **Conformance Warranty:**
   Vendor warrants the item(s) bid will conform to the description as bid, and applicable specifications, and shall be of good and merchantable quality for the known purpose for which it is sold.
10. **Bid Evaluation:**
    Any item bid is subject to evaluation. Any item which fails to qualify for approval when evaluated shall not be accepted regardless of compliance to bid requirements. Bids ***will not be accepted from vendors who require assignment of payment to another agent.*** **Note:** ***Riverton City will only pay the vendor named on the order. Riverton City will not deal with a factor or make payment to such.***
11. **Collusion:**
    The vendor agrees and certifies that there has been no collusion or other anticompetitive practices. If any are suspected among bidders or offerors, a notice of the relevant facts shall be transmitted to the attorney general.
12. **Antidiscrimination Act:**
    The vendor agrees to abide by the provisions of the Utah Antidiscrimination Act, Title 34 Chapter 35, U.C.A. 1953, as amended, and Title VI and Title VII of the Civil Rights Act of 1964 (USC 2000e), which prohibit discrimination against any employee or applicant for employment, or any applicant or recipient of services, on the basis of race, religion, color, or national origin: and further agrees to abide by Executive Order No. 11246, as amended, which prohibits discrimination on the basis of sex: 45 CFR 90 which prohibits discrimination on the basis of age, and Section 504 of the Rehabilitation Act of 1973, which prohibits discrimination on the basis of handicap. This purchase may be canceled if the vendor fails to comply with the provisions of these laws and regulations. **Vendor must include this provision in every subcontract or purchase order relating to purchases by Riverton City to insure that subcontractors and vendors are bound by this provision.**

TECHNICAL SPECIFICATIONS

RIVERTON BANK ACCESS PROJECT

JORDAN RIVER – RIVERTON, UTAH

PREPARED BY:
RiverRestoration.org, LLC

January 19, 2023

This document supplements APWA 2017 Standard Specifications.
Meet or exceed all APWA Standard Specifications and those supplemented herein, including but not limited to:

015526, 015700, 017113, 017123, 017124, 310510, 310513, 310519, 310521, 311100, 312316, 312317, 312323, 312326, 312500, 313119, 320130, 320190, 320191, 320193, 328423, 329119, 329200, 329313, 329343.

Utah Department of Transportation 2012 Individual Standard Specifications (http://udot.utah.gov) are also referenced herein, including but not limited to Section 02743 and other sections referenced therein.

TABLE OF CONTENTS

SECTION 1 SCOPE OF WORK

1.01 INTRODUCTION

These contract documents are for construction of the Riverton Bank Access Project, owned and maintained by Riverton City. The Project is located on the west bank of the Jordan River downstream of Dr. O Roi Hardy Park, approximately 0.5 mile north of 12600 South, 0.8 mile south of 11400 South, and 1.5 miles west of Interstate Highway 15.

Coordinates are 40° 31’ 52.39” N latitude, 111° 55’ 16.26” W longitude.

1.02 GENERAL

The purpose of the Riverton Bank Access Project is to protect the Jordan River Parkway Trail from further lateral migration of the river, reduce sediment loading to the river, and improve river access for trail users. Key project elements include:

- **a)** Constructing a river access point with crusher fines trail and slabstone terracing
- **b)** Regraded bank slopes of 3:1 or flatter
- **c)** Placement of buried boulder footers for scour protection
- **d)** Rock vanes to redirect flow away from the currently eroding bank.
- **e)** Removal of accumulated alluvium and woody debris in the main channel
- **f)** Native seeding and plantings
- **g)** An upland seating area adjacent to the trail

It is Riverton City’s expectation that the Project is completed prior to **June 30, 2023**. This deadline may be extended for up to one (1) year to allow for shared mobilization and construction access costs with an adjacent project in Draper City. In this case, Riverton City may request the CONTRACTOR to delay construction start time so that both projects may be constructed under the same contract.

The CONTRACTOR shall be responsible for monitoring weather patterns, high water, and storm flow events. Construction sequencing and Best Management Practices (BMPs) shall be implemented at all times during construction to minimize impacts to aquatic and riparian resources.

The General Scope of the Project shall be completed in accordance with these Technical Specifications and as shown on the Project Drawings. Project Drawings prepared by RiverRestoration include:

Sheet No.	Title
G01	Cover Sheet
G02	Construction Access & Horizontal Control Plan
CW01	Care of Water Plan Stage 1
CW02	Care of Water Plan Stage 2
CW03	Construction Access Details
CW04	Erosion Control Details
CW05	Care of Water Details
CW06	Cofferdam Option Details
R01	Bank Grading Plan
R02	Grading Sections 1
R03	Grading Sections 2
L01	Planting Plan - South
L02	Planting Plan - North
D01	Boulder Toe & Terrace Details
D02	Slabstone Terrace & Step Details
D03	Access Trail & Upland Feature Details
D04	Erosion Control Blanket Details
D05	Rock Barb & Live Staking Details

END OF DRAWING LIST

1.02.01 Reference Drawings

a. Manual of Standard Plans published in 2017 by the Utah Chapter of the American Public Works Association.

1.03 KEY PROJECT PERSONNEL CONTACTS

The following is a list of Project stakeholders and their contact information. CONTRACTOR shall notify all stakeholders seven (7) days prior to construction via email with read receipt confirmation. References to the OWNER are to Riverton City.

1.03.01 OWNER

Riverton City
12830 S Redwood Rd
Riverton, UT 84065

OWNERS CONTACT:
Cary Necaise
Public Works Director
(801) 208-3169 (w)
cnecaise@rivertonutah.gov

1.03.02 ENGINEER

RiverRestoration.org, LLC
PO Box 248
Carbondale, CO 81623

PROJECT ENGINEER:
Quinn Donnelly, PE
Project Engineer
(970) 947-9568 (w)
quinn.donnelly@riverrestoration.org

ENGINEER'S REPRESENTATIVES:
Alexandra Heller, PE
River Engineer
(970) 947-9568 (w)
alex.heller@riverrestoration.org

Jack Dahlquist
Watershed Scientist
(210) 246-3581 (c)
jack.dahlquist@riverrestoration.org

SECTION 2 GENERAL CONSTRUCTION METHODS

2.01 GENERAL CONSTRUCTION METHODS

This section provides additional detail to the Manual of Standard Specifications (APWA, 2017) for general work necessary for the construction including, but not limited to, permits; setting up and taking down temporary offices, buildings, utilities, and sanitary facilities; equipment and materials to and from the site; and preparation of the site for construction as specified. General construction includes: Permits, Project Limits, Site Integrity, Temporary Facilities, Traffic Control, Utility Locates, Manufactured Goods, Construction Staking and Special Guarantees.

2.02 PROJECT LIMITS

Meet or Exceed APWA 2017 Standard Specification 01 71 23 or as modified herein.

All construction activity shall be confined to the Project Limits as defined on the Plans. There are several different Property owners adjacent to the Project. The locations of the Project Limits shall be marked by the CONTRACTOR prior to construction activities.

Active Project Limits shall be flagged by CONTRACTOR in field for each setup. The CONTRACTOR is wholly responsible for maintaining property lines and to limit disturbances to within defined Project Limits.

2.03 PERMITS AND REQUIREMENTS

The CONTRACTOR shall comply with all applicable requirements set forth in all permits obtained for this project. Required permits, with associated terms and conditions, include:

2.03.01 Joint Stream Alteration Permit

This project required a Joint Stream Alteration Permit (Clean Water Act Section 404 and State Water Quality Certificate 401) issued by the Utah Division of Water Rights for discharge of materials into the waters of the United States. **The permit (No. 22-59-07SA) was approved November 1st, 2022 and will expire on November 1st, 2024**. It is Riverton City's expectation that the Project is completed prior to June 30, 2023. The CONTRACTOR shall adhere to all general and special conditions of the permit when authorized. The CONTRACTOR is responsible for compliance with the Joint Stream Alteration Permit which have term limits and the CONTRACTOR is responsible for obtaining necessary extensions. The CONTRACTOR is responsible for time changes to the Project permits.

2.03.02 UPDES General Permit No. UTG070000

A construction dewatering permit (UPDES General Permit No. UTG070000) from the STATE OF UTAH, DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER QUALITY may be required if CONTRACTOR chosen construction methods include returning any pumped water is to the river or routed to storm water inlets. **This permit is wholly the responsibility of the CONTRACTOR.**

2.03.03 UPDES General Permit for Construction Activities UTRC00000

A general construction activities stormwater discharge permit (UPDES General Permit No. UTRC00000) from the STATE OF UTAH, DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER QUALITY is required if construction disturbance is required greater than 1.0 acres. The CONTRACTOR is responsible for being in compliance with all regulatory requirements. The estimated disturbance area due to grading activities, construction access, and staging area for this Project is 0.9 acres. A Storm Water Pollution Prevention Plan (SWPPP) not required. **This permit is wholly the responsibility of the CONTRACTOR.**

2.03.04 UDOT Right-of-Way Encroachment Permit

A UDOT Right-of-Way Encroachment Permit is not required for this Project.

2.03.05 Local Construction Permits

The CONTRACTOR is responsible for compliance with access agreements and obtaining all other local permits necessary for construction.

2.04 CONTRACTOR SUBMITTALS

Meet or Exceed APWA 2017 Standard Specification 01 33 00 or as modified herein

The CONTRACTOR shall submit for review by the OWNER the following operating plans, schedules, and documentation. All plans and documentation shall be submitted a minimum of 14 days prior to beginning construction. Rejected plans and documentation shall be modified per review comments and re-submitted. Final plans and documentation must be accepted seven (7) days prior to construction. Plans shall incorporate all appropriate detailed BMPs, means, methods, and materials necessary for achieving project performance, safety, and protection targets.

Table 2.1. Contractor Submittals

Section Reference	Submittal	Timing
2.04.01	Erosion and Sediment Control (ESC) Plan	7 calendar days prior to construction start
2.04.02	Spill Prevention, Control, and Countermeasures (SPCC) Plans	7 calendar days prior to construction start
2.04.03	Traffic Control (TC) Plan	7 calendar days prior to construction start
2.04.04	Care of Water (CW) Plans	7 calendar days prior to construction start
2.04.05	Two Week Look Ahead Construction Schedule	7 calendar days prior to start of any given stage of construction
2.04.06	Construction Materials and Products Approval	7 calendar days prior to delivery
2.04.07	Qualified Subcontractors List	At start of construction. Changes/additions should be submitted 3 days prior to start of work by specific subcontractor
2.05	Existing Conditions Documentation	Prior to the start of construction activities
3.02	Overall Project Schedule	7 calendar days prior to the start of construction
3.04	Bio-Degradable fluid equipment list	Prior to the start of in-channel construction activities

2.04.01 Erosion and Sediment Control (ESC) Plan

Meet or Exceed APWA 2017 Standard Specification 01 57 00 or as modified herein.

CONTRACTOR shall submit an Erosion and Sediment Control (ESC) Plan seven (7) calendar days prior to the start of construction, which shall detail all of the proposed BMPs, means, methods, and materials used to prevent and/or control storm water and potential erosion and sediment mobilization above the OHWM including surrounding construction, dewatering, and staging areas. The ESC Plan shall include a detailed narrative as well as specific Locations, Maps, and Schedules for all stages of construction, and shall identify and provide contacts for all Qualified Subcontractors. The ESC Plan shall include BMPs, means, methods, and materials used to Protect-In-Place and maintain Vegetation, Wetlands, Riparian Corridor, Soils and Waters, and Cultural Resources on and surrounding all disturbed areas prior to and during all stages of construction. A hand marked up copy of the plans is acceptable.

2.04.02 Spill Prevention, Control and Countermeasure (SPCC) Plan

CONTRACTOR shall submit a Spill Prevention, Control and Countermeasures (SPCC) Plan seven (7) calendar days prior to the start of construction, which shall detail all of the proposed

BMPs, means, methods, and materials used to prevent and/or mitigate spills or other releases of fuels, chemicals, oils, sewage, and other contaminants within and surrounding all in-channel and upland construction and staging areas, and from entering Waters of the US. SPCC Plan shall include a detailed Narrative as well as specific Locations, Maps, and Schedules for all stages of construction. SPCC Plan shall identify and provide contacts for all Qualified Subcontractors, OWNER, Utah Department of Environmental Quality (UDEQ) REPRESENTATIVE, and ENGINEER. SPCC Plan shall be posted on-site at all times during construction.

A release of any chemical, oil, petroleum product, sewage, etc., which may enter waters of the State of Utah (which include surface water, ground water and dry gullies or storm sewers leading to surface water) shall be reported to UDEQ. It is wholly the responsibility of the CONTRACTOR to identify and notify the appropriate agencies in the event of a spill or release.

Releases of petroleum products and certain hazardous substances listed under the Federal Clean Water Act (40 CFR Part 116) must be reported to the National Response Center as well as to UDEQ as required under the Clean Water Act and the Oil Pollution Act. Furthermore, contact must be made immediately, reporting any spill incident, with UDEQ, the OWNER, and ENGINEER.

2.04.03 Traffic Control (TC) Plan

Meet or Exceed APWA 2017 Standard Specification 01 55 26 or as modified herein.

CONTRACTOR shall submit a Traffic Control (TC) Plan seven (7) calendar days prior to the start of construction, to include any Roads, Parking Areas, Walking Paths, Boat Ramps, River Navigation, and Construction Access to be approved by the OWNER. The TC Plan shall detail all of the proposed BMPs, means, methods and materials used to maintain street traffic surrounding all construction and staging areas, and to isolate construction and staging areas from the public. TC Plan shall include Site Access, Traffic Control, and Public Safety plans for all stages of construction, and shall include a detailed Narrative as well as specific Locations, Maps, and Schedules. TC Plan shall identify any required approvals, licenses or permits. TC Plan shall identify and provide contacts for all Qualified Subcontractors, OWNER, ENGINEER, and 24-Hour Emergency Traffic Control Technician. No construction activities shall impede public traffic patterns prior to written approval from the OWNER. If CONTRACTOR finds it necessary to close any Paths or re-route traffic, the OWNER shall work with CONTRACTOR approve a reasonable alternative route.

2.04.04 Care of Water (CW) Plan

Meet or Exceed APWA 2017 Standard Specification 01 57 00 or as modified herein.

CONTRACTOR shall submit a Care of Water (CW) Plan seven (7) calendar days prior to the start of construction, which details all of the proposed BMPs, means, methods, and materials used to protect, manage and treat surface waters in all construction and staging areas. On-site waters could include surface waters, the river, and groundwater. The ENGINEER will provide a recommended construction sequencing strategy and typical on-site water management details in

the project plans for reference; however, it is wholly the responsibility of the CONTRACTOR to design, submit for approval, and implement a comprehensive and site-specific CW Plan. The CW Plan shall include a detailed Narrative as well as specific Locations, Maps, and Schedules for all stages of construction, and shall identify and provide contacts for all Qualified Subcontractors. The CW Plan shall include a specific and detailed plan for returning on-site waters to the active channel which includes settling, pumping, and filtration methods and locations. The final accepted CW Plan shall provide a reliable means to conform to allowable construction discharge turbidity regulations and shall include methods and schedules for turbidity monitoring if required by Project permits.

2.04.05 Two Week Look Ahead Construction Schedule

The CONTRACTOR shall submit construction Two Week Look Ahead Schedules seven (7) calendar days prior to the start of any given stage of construction, as well as bi-weekly during active construction. Schedules should include the following:

- **a)** All forecasted tasks associated with in-channel and upland construction, mobilization, staging and access, and materials acquisition and delivery
- **b)** Completed construction tasks
- **c)** Report submittals
- **d)** Permit timeframes and deadlines
- **e)** Potential disruptions to local community/land owners that would require coordination or notification
- **f)** Anticipated inspections

2.04.06 Construction Materials and Products Approval

All construction materials shall conform to the requirements detailed in Project Drawings and these Technical Specifications. All imported materials shall be submitted to the OWNER and ENGINEER for approval at least seven (7) days prior to delivery to the construction site. Materials requiring approval include but are not limited to: Boulder, Coarse Alluvium, Slabstone, Filter Fabric, Crusher Fines, UTBC, concrete mix, live willow stakes, and native seed mix. Construction Material Approval Submittal shall include all available manufacturers material definition and performance information including at minimum the specified material requirements in these Technical Specifications.

2.04.07 List of Qualified Subcontractors

At the start of construction, the CONTRACTOR shall submit a list of all Qualified Subcontractors to be used during any and all stages of Mobilization, Site Access, and Construction. The List shall include Subcontractor license numbers and contact phone numbers and email addresses. If changes or additions are needed, these modifications shall be submitted to the OWNER and ENGINEER for approval at least three (3) calendar days prior to that specific Subcontractor beginning work on the Project.

2.05 SITE INTEGRITY

Meet or Exceed APWA 2017 Standard Specification 01 71 13 or as modified herein.

The CONTRACTOR is required to document the condition of utilities, streets and sidewalks, paved and unpaved trails, recreation area facilities, construction access areas on the banks, wetlands, riparian areas, mature vegetation, PIP concerns, and the general area with pictures and video recordings, submitted to ENGINEER prior to any construction phase and after each phase of construction is completed. The pictures and video recording shall document the surface integrity of the structures with clear and recognizable reference features or established and repeatable reference markers in the field of view. The CONTRACTOR is responsible for rehabilitating, repairing or replacing, to better than pre-construction conditions, any damage to the structures, roads, trails, and vegetation not specifically identified for disturbance.

2.06 UTILITIES

Meet or Exceed APWA 2017 Standard Specification 01 31 13 or as modified herein.

CONTRACTOR shall field-locate and mark all utilities within or adjacent to Project Limits. Any utility locations marked on plans are approximate and actual field location of any utility is wholly the responsibility of the CONTRACTOR. **Overhead powerlines shall be marked at ground level with warning signs where they cross haul routes.** CONTRACTOR shall protect in-place all utilities. Known Utility contacts include, but are not limited to:

Bluestakes of Utah
www.bluestakes.org
800-662-4111
801-208-2100

Riverton City Utility Billing Department
https://www.rivertonutah.gov/utilities/
(801) 208-3133

2.07 TEMPORARY FACILITIES

Meet or Exceed APWA 2017 Standard Specification 01 71 13 or as modified herein.

CONTRACTOR shall provide all temporary facilities required for performing the work. Temporary construction facilities and utility connections are solely the CONTRACTOR's responsibility based on his selected method of operation and schedule. CONTRACTOR is responsible for providing a clean and safe environment for all workers on the job site. CONTRACTOR is responsible for providing sanitary facilities. CONTRACTOR shall follow Occupational Safety and Health Administration (OSHA) regulations. CONTRACTOR is responsible for providing all electrical, water and utility needs. CONTRACTOR shall keep the Project Limits in a neat and orderly manner. CONTRACTOR is responsible for removing temporary facilities and controls after completion of all Work.

2.07.01 Staging Areas

Preliminary Staging Areas are shown on the Plans. Final staging and access are to be pre-approved in writing by the OWNER. All construction staging, stockpiling of materials, equipment storage, equipment fueling and maintenance, and other, shall take place in designated

areas with adequate barriers to protect the public from entry. Staging areas shall have a designated office or contact information posted for public inquires. Staging areas shall provide employees all necessary facilities, legal postings, and safety protocol. Staging area shall include trash and recycling disposal containers and temporary restroom facilities maintained and serviced as necessary. The CONTRACTOR is responsible for maintaining a clean and organized staging area and restoring all disturbed areas equal to pre-project conditions.

2.07.02 Dewatering Areas

Construction activities are anticipated to produce clean fill materials, as well as some other waste materials. All excess materials produced by construction activities shall be properly disposed. Prior to construction activities CONTRACTOR shall report any materials disposal locations to the OWNER. All disposal locations, and means and methods of disposal, shall be in accordance with any applicable regulations and permits, and it is solely the responsibility of the CONTRACTOR to acquire any applicable permits.

Dewatering areas shall have adequate BMPs in place to stockpile material prior to disposal. Dewatering areas may also be configured to include a Washout Area for concrete pours. Pours shall not be conducted during or before an anticipated storm event. All excess concrete and concrete washout slurries from the concrete mixer trucks and chutes shall be discharged off site, or temporarily into a washout area designated in an unvegetated upland location and completely isolated from stormwater and drainage. All concrete residues shall be hauled off-site and properly disposed. Returning water from dewatering areas to surface flow routes may require a dewatering permit from the UDEQ and is wholly the responsibility of the CONTRACTOR.

2.07.03 Equipment Fueling, Greasing, and Maintenance Areas

Any and all fueling and greasing of equipment shall be in designated upland locations, with adequate BMP's to contain any potential spill. All major equipment/vehicle maintenance shall be performed off-site. Fuel tank may be kept on-site in the staging area with drip pans underneath the fueling area. All equipment fluids generated from maintenance activities shall be disposed of into designated drums stored on spill pallets in accordance with hazardous waste management practices. Drip pans shall be placed under all equipment receiving minor or routine maintenance. All equipment shall be inspected daily for leaks and proper function. Leaking or otherwise improperly functioning equipment shall not be used in any capacity for construction activities. Any equipment found to be leaking upon inspection shall be immediately taken out of service for maintenance.

- **a)** An **SPCC Plan** is wholly the responsibility of the CONTRACTOR and shall be posted and available at all times on site for all work areas prior to any construction activities and shall include coordination with local emergency response agencies. See Section 2.04.02.
- **b)** A release of any chemical, oil, petroleum product, sewage, etc., which may enter waters of the State of Utah (which include surface water, ground water and dry gullies or storm sewers leading to surface water) shall be reported to the National Response Center (NRC) (800-424-8802) in accordance with the requirements of 40 CFR 117, 40 CFR 110, and 40

CFR 302 and the Division of Water Quality (DWQ) (801-538-6146) or the 24 hour DWQ answering service at 801-536-4123 as soon as he or she has knowledge of the discharge as required under the Clean Water Act and the Oil Pollution Act.

c) Any incident spills that do not threaten water resources shall be reported to: Utah State Emergency Response Commission (members include UDEQ, DERR, Utah Department of Public Safety, and the Division of Emergency Services & Homeland Security), at **Toll-Free 24-hour Environmental Emergency Spill Reporting Line 1-801-538-4123,** http://www.environmentalresponse.utah.gov. Furthermore, contact must be made immediately, reporting any spill incident, with the OWNER and ENGINEER. The CONTRACTOR shall submit within 14 calendar days of knowledge of the release a written description of: the release (including the type and estimate of the amount of material released), the date that such release occurred, the circumstances leading to the release, the measures taken and/or planned to be taken to clean up the release, and steps to be taken to minimize the chance of future occurrences.

2.07.04 Hauling Routes

The import and export of materials from the Project Limits shall occur at designated locations on defined haul routes. Haul routes shall be approved by the OWNER prior to commencement of the work. The access routes to construction sites shall be maintained by the CONTRACTOR with maintenance activities, including minimizing and mitigating for equipment tracking of mud. Haul routes shall be graded and maintained to drain and not pool water. Haul routes shall have tracking pads at the junction of paved surfaces. Paved surfaces such as parking lots, streets, and trails along the haul routes shall be protected in place. Damage and repairs to these surfaces shall be the responsibility of the CONTRACTOR. Haul routes shall also be flagged by the CONTRACTOR within the Project Limits and random access of equipment shall be prevented. Adequate dust suppression, such as watering of haul routes, shall be maintained at all times. Loads shall be covered while hauling where necessary. Haul routes shall be repaired, at the completion of the work, to pre-project conditions as determined by OWNER.

A Preferred Alternative (Alternative 2) from Draper City property is shown on sheet G02 in the construction drawings. Use of this Preferred Alternative may be dependent on Draper City and Riverton City's decision to extend the contract to include design and construction of an adjacent bank stabilization project on Draper City property. An Alternative 1 access route from Dr. O Roi Hardy Park (river left) is included in the bid schedule as an add alternative.

2.07.05 Channel Access Areas

CONTRACTOR shall be responsible for establishing and maintaining channel access sites for equipment and workers within Project Limits as defined on the Project Drawings and for rehabilitating access sites once construction is complete. Channel access ramps will be graded per Project Drawings in order to protect banks from equipment damage. Gravel berms shall be installed at the top of the access ramp and other areas to eliminate sheet flow or drainage onto the exposed or disturbed riverbanks. A silt barrier shall be erected along the toe of any and all out-of-channel open cuts to eliminate the migration of material outside of the limits of work. Straw

Wattles or Straw Bales shall be used at the toe of the ramp when the access is not in use to prevent the migration of material into the channel.

2.07.06 Temporary Bridges

Coffered, in-channel construction areas may require access through the use of temporary culvert or bridges spanning the remaining active channel. The CONTRACTOR is solely responsible for installing and maintaining temporary culverts/bridges where necessary. Culverts/bridges must adequately sized and load rated to safely accommodate the planned equipment traffic. The CONTRACTOR is responsible for obtaining any necessary permits for the installation and operation of temporary culverts/bridges and is responsible for facilitating any required inspections.

2.07.07 Disposal Area

CONTRACTOR to provide for an offsite disposal area for inert, clean fill materials required to be removed from the site such as alluvium and bank material. Material shall be sorted and neatly stockpiled at Disposal Area clear of all haul routes.

2.08 CONSTRUCTION STAKING

Meet or Exceed APWA 2017 Standard Specification 01 71 24 or as modified herein.

2.08.01 Control Points General

The ENGINEER shall provide adequate horizontal and vertical control points for the CONTRACTOR to establish the lines and grades shown on the plans. Initial construction staking of control lines and hydraulic features shall be provided by the CONTRACTOR prior to construction activities. Replacement of stakes, grade, elevations, and additional construction staking shall be wholly the responsibility of the CONTRACTOR.

2.08.02 Control Establishment

Established control points shall be provided marked with special colored flagging and it shall be the responsibility of the CONTRACTOR to protect those control points in place. In the event they are lost, due to any cause, the CONTRACTOR shall re-establish adequate and permanent control markers.

2.08.03 Survey Control Monument Coordinates

Table 2.2 Local Survey Control Monuments (see sheet G02 in Project Drawings)

Point #	Northing	Easting	Elevation	Description
101	7362347.2650	1523157.6760	4335.45	CP-01 MAG 2
102	7362635.0650	1523386.1700	4334.63	CP-02 MAG 2

2.08.04 Survey Coordinate System and Datum

Coordinate System: Utah State Plane, NAD83 datum, Central Zone, US foot, (UT83-CF)
Vertical Datum: NAVD88

2.09 SITE GRADING

The CONTRACTOR shall establish and identify required lines, levels, contours, and datum. The CONTRACTOR shall grade the Project Site to match all lines, elevations and grades shown on the Project Drawings. The CONTRACTOR is required to accomplish all site grading through the use of GPS Control. The ENGINEER will provide a proposed XML-compatible digital surface model and alignments to the CONTRACTOR. The CONTRACTOR shall have the means to load the alignments and surface into handheld and/or machine mounted field survey controllers to establish proposed elevations and grades. Prior to construction grading activities, CONTRACTOR'S site localized survey/stake-out equipment must be validated as accurate with the ENGINEER or Surveyor's equipment. The ENGINEER or ENGINEER'S REPRESENTATIVE may be present during select construction activities to inspect grading against the proposed elevations, alignments, and grades.

2.10 SPECIAL GUARANTEE TERMS

Meet or exceed 2017 APWA Standard Specs, Section 00 72 00 and 32 01 90

2.10.01 Protect-in-Place Trees and Shrubs

- **a)** CONTRACTOR guarantees that care, caution, and best management techniques are implemented to maximize the survivability of native mature trees not specifically designated for removal.
- **b)** All Protect-in-Place vegetation shall have 100% success rate, showing vigor and general health, for one year after PIP measures are conducted.
- **c)** Post-construction monitoring may recommend additional pruning, irrigation, or fertilizer to restore health to the marked tree. The CONTRACTOR is responsible for all measures to restore the health of vegetation for one year after construction disturbances around protect-in-place vegetation.
- **d)** If negligence results in potential mortality of trees, as determined by the ENGINEER, the CONTRACTOR shall replace all damaged trees with new native trees to reclaim an equivalent canopy cover at CONTRACTOR'S sole expense.

2.10.02 Structures/Channel Work

- **a)** All constructed in-channel and bank features shall be functioning in accordance with the Plans and Specifications for one year after installation. The CONTRACTOR is responsible for the repair or replacement of in-channel and bank features to proper functioning conditions. CONTRACTOR is responsible for all incidentals such as permit authorizations, BMPs, channel access and any incidental damage caused by repair.

b) Settlement in backfill, fill, or in structures and paving built over compacted fill, which may occur within one-year warranty period, shall be corrected at no cost to the OWNER. Restore any structures damaged by settlement to their original condition at no cost to the OWNER.

c) All damage caused to the Jordan River Parkway Trail or adjacent streambanks as a result of improper construction is wholly the responsibility of the CONTRACTOR. The CONTRACTOR shall replace all trails and streambank that are dilapidated as a result from improper installation or construction activities.

2.10.03 Seeding

a) Prior to final acceptance seeded areas shall be reviewed during the inspection period by the ENGINEER for bare soils caused by surface or wind erosion. Bare areas caused by surface or gully erosion, blown away mulch, etc. shall be regraded, seeded, hydromulched and have mulch tackifier (or erosion control fabric) applied as necessary.

b) Areas where seed has not germinated after one growing season shall be evaluated by the ENGINEER. Areas that have not germinated shall have seed, mulch and mulch tackifier or (erosion control fabric) reapplied at CONTRACTOR'S expense.

c) Weed infestations shall be treated in accordance with the specifications, as directed by the project ENGINEER, and shall be considered incidental to the work. Weed control shall be treated for the 12-month warranty period.

d) Native seed areas shall have a minimum of 85 percent coverage, with weed control, prior to final acceptance. Any seed areas having poor germination (less than 85 percent coverage) shall be re-seeded at no additional cost to the project.

2.10.04 Live Stake and Container Planting

a) Replace all poles and stakes that do not sprout after 45 days if possible or wait until the following dormant season to harvest and replant.

b) Periodic inspection repair and maintenance shall be required during the first two years or until vegetation is established to an overall 70% success rate as determined by a qualified representative.

c) Live stake and pole planting vegetation shall have 80% success rate, showing vigor and general health, for one year after installation.

d) Containerized planting vegetation shall have 80% success rate, showing vigor and general health, for one year after installation.

2.11 ACCEPTABLE AS BUILT ELEVATION TOLERANCE

Average Elevations across each Cross-Section shall be exact according to Project Drawings. With natural building materials variances are expected and shall be allowed for average locations of individual particles. The following As-Built tolerances are allowed.

Table 2.3 Acceptable As-Built Tolerances for Average Locations of Individual Particles

Description	Tolerance Elevation (feet)	Tolerance Horizontal (feet)
Boulder Footers (Bank and Rock Vanes)	+0.0, -0.5	+/- 0.5 channel alignment
Bank Boulders	+/- 0.5	+/- 1.0 channel alignment
Boulder Terrace	+/- 0.5	+/- 2.0 channel alignment
Rock Vanes	+/- 0.25	+/- 1.0 channel alignment
Slabstone Terrace & Steps	+/- 0.25	+/- 0.5 trail alignment
Finished Grade - Trail Surface (crusher fines)	+/- 0.25	+/- 0.5 trail alignment

Note: See Table 5.3 for crusher fines gradation information

2.12 TURBIDITY MONITORING

During periods of in-river construction turbidity of the water 200 yards downstream of the Project Limits shall not be visually greater than the turbidity of the water upstream of the Project Limits. BMPs to limit turbidity increases shall include: intermittent excavation; construction during periods of elevated background turbidity; Care of Water, and structural BMPs such as turbidity curtains.

CONTRACTOR shall regularly monitor and daily record any turbidity increases. ENGINEER or OWNER may stop construction during ineffective BMPs and visual increases of downstream turbid conditions. The CONTRACTOR is wholly responsible for time delays associated with inadequate BMPs, inadequate Care of Water, or stopped work. CONTRACTOR is wholly responsible for environmental damage associated with uncontrolled sedimentation outside of the Project Limits that is directly related to the work being performed by the CONTRACTOR.

2.13 UTILIZING IN-CHANNEL MATERIALS

Clean Native Alluvium that is excavated for structure placement and is to be backfilled in the channel may be utilized in channel as temporary cofferdams or for other water control practices. Exposed Alluvium resulting in noticeable downstream turbidity shall be isolated from the flow of the channel.

Excavated clean native alluvium, boulders and clean bedrock may be allowed to be backfilled in the channel around structures within the limits of excavation as defined in plans**.** All other excavated material including fines and bank material shall not be placed in any flow path, shall be properly disposed of in designated disposal area and shall have appropriate erosion control measures in place**.** All in-stream structures shall be constructed in sections sized to minimize open excavation area**.** Each day of work shall be a completed work and no excavations of the bank or streambed shall be left open to erosion**.**

SECTION 3 BEST MANAGEMENT PRACTICES

Meet or Exceed APWA 2017 Standard Specification 01 57 00, 31 05 19, 31 23 16, 31 25 00 or as modified herein.

3.01 GENERAL

The Work covered by this section includes the furnishing of all labor, materials, equipment and incidentals for installation, maintenance and inspection of all on shore and in-channel BMPs. Within the Project Limits all disturbed surfaces shall utilize best management practices such as Turbidity Curtains, Silt Fences, Construction Sequencing, Care of Water, etc.; to minimize potential environmental damage, turbid conditions, locations of ponding, sediment loading in any flow path, dust, noise, light, etc. Adequate numbers, locations and properly functioning BMPs and erosion control are wholly the responsibility of the CONTRACTOR. CONTRACTOR is responsible for maintaining all BMPs during construction activities, and for the removal post-construction activities and/or adequate stabilization periods. All construction activities shall be performed in accordance with; guidelines set out in the project plans and specifications, specifications in applicable permits, and any local, state, and federal regulations. The OWNER or ENGINEER may stop work in any area due to improperly installed, inadequate, or non-functioning BMPs based on OWNER'S or ENGINEER'S sole discretion. CONTRACTOR is responsible for coordinating and participating in any inspections of BMPs by appropriate regulatory authorities.

3.02 CONSTRUCTION SEQUENCING

Prior to starting construction, the CONTRACTOR shall notify the ENGINEER and the OWNER of the date the CONTRACTOR intends to start construction with a written notice delivered a minimum seven (7) days in advance. Additionally, Two Week Look-Ahead schedules shall be submitted every seven (7) days prior to the start of any given stage of construction as described in Section 2.04.05.

The Project Drawings show a recommended construction sequencing strategy and typical on-site water management details; however, it is wholly the responsibility of the CONTRACTOR to design, submit for approval, and implement a comprehensive and site-specific CW Plan as described in Section 2.04.04. Seven (7) calendar days prior to the start of the project, the CONTRACTOR shall provide the ENGINEER an overall schedule for the project implementation, including setup, staging, material delivery, in-channel construction and phasing, upland improvements, revegetation, and site restoration.

3.03 CHANNEL ACCESS

Grading on berms shall be installed at the top of the access ramp and other areas to eliminate sheet flow or drainage onto the exposed or disturbed banks. A silt barrier shall be erected along the toe of any and all out-of-channel open cuts to eliminate the migration of material outside of the limits of work. Straw Bales and/or straw wattles shall be used at the toe of the ramp when the access is not in use to prevent the migration of material into the body of water.

3.04 EQUIPMENT OPERATING IN WET CHANNELS

Meet or Exceed APWA 2017 Standard Plan No. 125 or as modified herein.

Equipment shall be allowed to operate in the wet channels. Equipment operating in or adjacent to any wet channels shall be free of any fluid leaks and in excellent operating condition. **Biodegradable hydraulic fluids** shall be utilized for any equipment operating in the flowing river channel. CONTRACTOR shall submit a list of equipment operating with certified bio degradable hydraulic fluids to the ENGINEER prior to use of the equipment in the flowing channel. No equipment shall be left unattended at any time in any wet channel or below the Ordinary High Water Mark. Any and all fueling and oiling of equipment shall be in a designated upland location, with adequate BMPs to contain any potential spill.

All equipment shall be cleaned prior to being on-site to minimize potential for spreading of invasive species. Equipment shall be power-sprayed and free of weeds, soil and untreated water. If any equipment being used for the Project has been previously working in another stream, river, lake, pond or wetland, one of the following disinfection practices is necessary prior to construction to prevent the spread of whirling disease, New Zealand mud snails, zebra mussels, didymosphenia, and other aquatic hitchhikers. These practices are also necessary after project completion, prior to the equipment being used in another stream, river, lake, pond, or wetland, for the same purpose:

> Offsite, remove all mud and debris from equipment (tracks, turrets, buckets, drags, teeth, hand tools, boots, etc.) and spray/soak equipment in a 1:15 solution of Sparquat institutional cleaner and water. Keep equipment moist for at least 10 minutes; or
>
> Offsite, remove all mud and debris from equipment (tracks, turrets, buckets, drags, teeth, hand tools, boots, etc.) and spray/soak equipment with water greater than 140 degrees Fahrenheit for at least 10 minutes.

The excavators and backhoes may need to be cleaned on site to remove excess native sediments stuck to the track or hoes. Sediments that are removed with a shovel shall be placed in designated clean fill material storage areas. Sediments removed with clean water shall be washed into the dewatering area. All dewatering areas shall have erosion control logs to filter water at flow lines before discharge into.

3.05 IN-CHANNEL CONSTRUCTION TIMING

The CONTRACTOR shall time in-channel and open bank excavation work to be completed prior to **June 30, 2023**. The CONTRACTOR shall coordinate with the Division of Wildlife Resources on time extensions and install other necessary BMPs required to minimize turbidity transported downstream. The CONTRACTOR shall be responsible to plan accordingly and monitor the weather forecast for storm events, snow accumulation, runoff, and temperature to anticipate for high flow events.

Real-time streamflow gage information for the Jordan River is available through the Salt Lake County Watershed's Streamflow and Precipitation monitoring website (links provided below). The Project is located upstream of the Midas Creek confluence with the Jordan River. Therefore, both gages should be used to monitor and predict river flow rates at the Project site during construction.

Jordan River @ 9000 South:
https://rain-flow.slco.org/site.php?site_id=70&view=c61aef6f-5a00-4af2-ab53-3f0d8e009a1a

Midas Creek @ The Jordan River:
https://rain-flow.slco.org/site/?site_id=62&site=6d346231-a49e-4fab-a923-e53bb15a2d5f

Water Surface Elevations (WSEL) are based on limited survey and two-dimensional hydraulic modeling. Actual WSELs in the field may vary from those listed herein. Base flows in this reach of the Jordan River typically average between 50-270 cfs during the construction period (January-June). It is recommended that the CONTRACTOR avoid in-stream construction for flows exceeding 270 cfs. Approximate WSELs are provided in Table 3.1 solely for the information of the CONTRACTOR. The CONTRACTOR is wholly responsible for monitoring and controlling WSELs during construction and any associated erosion, flooding, structure integrity or environmental damage.

Table 3.1 Existing Jordan River Water Surface Elevations at Project Site

Flowrate (cfs)	Water Surface Elevation (ft) -NAVD88	Notes
10	4327.28	
40	4327.72	
90	4328.16	
150	4328.53	
277	4329.13	OHWM
500	4329.92	
800	4330.72	
1260	4331.59	10-year

Note: Computed water surface elevations based on 1D HEC-RAS modeling

3.06 OIL BOOM

An adequate number of oil booms, PS-8W-S12G, manufactured by SPC (http://www.sorbentproducts.com), or equivalent, shall be placed in a designated location onsite, visible and unobstructed at all times. Any spills shall be contained and cleaned by the CONTRACTOR. Oil booms shall be installed at the downstream end of the Project Limits, and at all times when equipment is working in or adjacent to flowing waters. Velocities of the Jordan River likely require Oil Booms to be installed as deflector booms. All Booms shall be replaced as needed, approximately weekly, with new Oil Booms.

3.07 PERMEABLE TURBIDITY BARRIER

River bank excavations open to the flow shall have Permeable (Non-Woven, Medium Weight Geotextile) Turbidity Curtains isolating all bank excavations from the Jordan River (see Drawing Detail). Silt master Turbidity Curtain Type II by Parker Systems, (www.parkersystemsinc.com) or equivalent.

3.08 FILTERING OF PUMPED WATER

Pumping of groundwater or surface water may occur during construction. Any pumped water being returned to the main flow of the river, without sufficient detention, shall first be dewatered or processed through a filter system. The filter may be a GEOTUBE by US Fabrics or equivalent. Flows exiting the detention or filter systems shall be controlled to prevent erosion and shall be observed and cared for the entire course to the river. Dewatering permits may be required. It is the responsibility of the CONTRACTOR to obtain these permits.

3.09 TEMPORARY DIVERSION STRUCTURES

Control of the River stage and associated access to work during construction is wholly the responsibility of the CONTRACTOR. The CONTRACTOR is responsible for designing, installing and maintaining any temporary flow diversion structures and cofferdams. Natural Boulder Construction tasks may be performed in the wet channel, however, if the CONTRACTOR decides to construct any in-channel work in an isolated area, it is the responsibility of the CONTRACTOR to design and implement any isolation and dewatering measures. The project plans provide acceptable means, methods, and materials for cofferdam construction for CONTRACTOR'S reference. However, the CONTRACTOR shall be wholly responsible for designing and implementing the final in-channel work isolation plan.
In addition to controlling the stage of the river, seepage and ground water will likely require additional control methods such as pumping, sand bagging, impermeable membranes and jersey barriers. The CONTRACTOR shall be wholly responsible for the selection of suitable method(s), and for design, installation, and operation of the diversion and care of the river required during the performance of the work under these specifications. The CONTRACTOR is required to design and install adequate diversion and care of water facilities in a timely fashion in accordance with his/her schedule of construction and the requirements, permits and of these specifications. All means, methods, and materials used for work area isolation and for the care of water shall be included in the Care of Water (CW) Plan submitted by the CONTRACTOR. Areas disturbed for diversion practices shall be restored and stabilized to pre-project conditions. Failure of the CONTRACTOR to become adequately familiar with and address the existing structures, access and river conditions which impact the work may result in construction delays and associated increased efforts for which the CONTRACTOR shall be solely responsible. Pumping and returning of coffered water may require a dewatering permit from the UDEQ and is wholly the responsibility of the CONTRACTOR.

3.10 SHORING

Shoring for open excavations shall conform to all Occupational Safety and Health Administration (OSHA) requirements in the state of Utah. The CONTRACTOR shall be responsible for adequately shoring and bracing excavations for excavation depths exceeding four (4) feet, including obtaining and paying for any permits related such work. The CONTRACTOR shall install shoring such that the earth will not slide, move, or settle, for the safety of workers and so that any existing infrastructure of any kind will be fully protected from damage. No shoring shall be removed until the trench has been sufficiently backfilled as shown on the Project Drawings. Removal of shoring shall be accomplished in such a manner as to prevent any movement of the ground or damage to the installed structures.

3.11 STRAW WATTLES

Meet or Exceed APWA 2017 Standard Plan No. 121 or as modified herein.

Straw Wattles (Wattles) shall be certified "Weed-Free" and in sound new condition. Temporary Wattles are to be removed within one year of installation. Any non-temporary Wattles shall be fully biodegradable and have Burlap or Jute fabric netting. Wattles shall be installed in an approximately 2" – 3" deep rounded trench. Spoils from the excavated trench should be deposited and "Knifed In" on the up-hill side of the Wattle to direct flow into the Wattle and prevent under-cutting. Ends should overlap by 1'. Wattles shall be staked at approximately 4' o.c. and at every end with 1" width 16" long wood stakes.

3.12 SILT FENCE

Meet or Exceed APWA 2017 Standard Plan No. 122 or as modified herein.

Silt Fences shall be placed to contain construction activities on land. Silt Fence shall be constructed with 4oz. non-woven Geotextile or equivalent, with a 6 inch by 6 inch anchor trench up-grade (i.e. uphill) of the fence line and fence posts in 6 ft centers. The anchor trench shall be backfilled to existing grade with native material sufficiently tamped or compacted to prevent flow from migrating under the silt fence.

3.13 EROSION CONTROL LOGS

The CONTRACTOR may choose to place Erosion Control logs at drainage exits for Staging Area, Stormwater Inlets, Dewatering Activities, and Channel Access Roads in place of Straw Bales. Erosion Control Logs shall be 8 inches in diameter and staked every 1 foot on center.

3.14 DUST CONTROL

Dust control shall be implemented as needed. Spraying of potable water at a rate of 300 gallons per acre or less shall be performed by a mobile pressure-type distributor truck whenever the dryness of the soil warrants it.

3.15 PLASTIC SHEETING

If clay stockpiles exist as a result of construction activity and to remain on-site, plastic sheeting shall be installed over clay materials stockpiles after final grading. Plastic sheeting material shall be durable UV resistant polyethylene plastic in new condition. Sheeting shall be a minimum of 6 mil thickness and sheets shall be a minimum of 10 feet wide. Sheeting shall be installed over the short axis of the stockpiles. Each individual run of sheeting over the stockpile shall be unbroken and have no seams. Seams between adjoining runs of sheeting shall be lapped by a minimum of 12 inches and lapped in the direction to deflect prevailing winds. All seams shall be taped. Sandbags shall be installed over seams and along the toe of slope for ballast. Sandbags shall be a minimum of 30 pounds and shall be lashed together with rope. Sandbag spacing shall be a maximum of 6 feet on center. Any sheets torn or otherwise damaged during installation must be replaced.

3.16 STORM INLETS

Meet or Exceed APWA 2017 Standard Plan No. 124 or as modified herein.

All storm water inlets shall have 6'' gravel or bark filled wattles, or an equivalent BMP that is adequate to prevent sediment or containment loading.

3.17 OVERLAND FLOW

Meet or Exceed APWA 2017 Standard Plan No. 123 or as modified herein.

All bank excavations shall have adequate BMPs to prevent overland flow from eroding the disturbed soils.

3.18 REMOVAL OF BMPs

Any non-erosion control BMPs (including trash bins, material storage areas, and sanitary toilets) shall be removed immediately after construction activities are complete at the staging area. All Erosion and Sediment Control measures are to remain in place until the establishment of vegetation. All non-biodegradable BMPs are the property of the CONTRACTOR. Any non-biodegradable BMPs shall be removed after vegetation has established at least 85% cover (approximately 1 year).

3.19 RIPARIAN PROTECTION

Any and all riparian areas and riparian vegetation outside of the limits of disturbance shall be protected in place. No construction supplies, fuels nor oils shall be stored in riparian areas, no vehicles nor heavy equipment shall be allowed into riparian areas other than the designated channel access sites. No discharge of any materials shall be allowed into any riparian areas. Riparian areas shall be traversed only by foot and leak free hoses may cross riparian vegetation. Any incidentally disturbed riparian areas shall be restored to better than pre-construction conditions.

3.20 ENVIRONMENTAL PROTECTION

The construction site shall be maintained to minimize dust, noise, erosion, and water ponding. Any and all fuel operated equipment near or within drainage areas, wetlands, riparian areas or open water areas shall be leak-free and in excellent operational condition. Equipment operating in the riparian zone shall also use biodegradable fluids when feasible. The CONTRACTOR is wholly responsible for any environmental damage directly or indirectly related to storage of supplies and equipment, equipment operation, any fluid spills or any other construction activities.

3.21 BARRIERS AND SIGNAGE

The CONTRACTOR shall furnish, install and maintain suitable barriers as required to prevent public entry, and to protect the work, facilities, trees and wetland areas from any associated construction activities. The CONTRACTOR shall provide necessary signage informing the public of trail closures. Remove temporary barriers and signage at the completion of work.

3.22 PROJECT SITE REHABILITATION

After all other construction activities are completed; all disturbed areas are to be rehabilitated to pre-construction conditions. Clean the site of trash and debris and remove all construction measures, equipment and supplies. Permanent riparian plantings and seeding shall be installed immediately after the final design grades are achieved, but no later than 14 days after construction activities have permanently ceased at the disturbed area. CONTRACTOR shall seed and plant in the early spring to take advantage of the cool weather and moist conditions. The CONTRACTOR shall provide temporary water for adequate establishment of all seeding and container plantings. The CONTRACTOR shall use a water truck to periodically water and establish plants for site restoration.

3.23 CULTURAL RESOURCES

No cultural resources are anticipated to be impacted by the project. If potential cultural resources in the project area are discovered during construction and cannot be avoided, CONTRACTOR shall suspend construction activities in that area until the area can be evaluated by the ENGINEER and staff from the Utah State Historical Preservation Office (SHPO). The CONTRACTOR shall notify the ENGINEER and OWNER immediately if potential cultural resources are discovered during construction.

3.24 OTHER SITE SECURITY

If required by the Project, the CONTRACTOR shall furnish, install and maintain suitable barriers, gates, locks, surveillance measures, as required to prevent public entry, and to protect the work, facilities, trees and wetland areas from foot traffic and vandalism. Remove temporary barriers at the completion of work. The CONTRACTOR shall keep the site secure from beginning of construction until completion of the project. Onsite security can be in the form of cameras with views of the project limits, or other forms of security.

SECTION 4 IN-CHANNEL AND BANK CONSTRUCTION

4.01 CONSTRUCTION OF BOULDER STRUCTURES

Boulder Structures (buried boulder footer, rock vanes, and boulder terraces) shall be constructed by placing individual boulders in designed sections. Each boulder shall include selection, rotation, placement and adjustment of each individual rock to minimize void spaces and maximize interlocking of boulders. Each section has specific elevations and alignments for the placement of rock as well as spot elevations as shown on the Project Drawings. Footer boulders shall be placed at least to depth shown on Project Drawings and placed on 4oz Filter Fabric. Filter Fabric shall not be torn or ripped and preventative measures such as 6 inches of washed gravel or native alluvium bedding material shall be used. See Table 4.1 for gradation details.

Figure 4.1. Boulder terracing structure example

4.03 BOULDER SPECIFICATION

Boulders may be quarried or excavated and generally smooth in shape with the largest rock faces being approximately flat. Boulders shall be of a consistent material for the entire project and shall be a color that is aesthetically neutral with the native landscape. Boulder gradations shall conform to Table 4.1 by number, and measurement of the intermediate axis ("B"-Axis). The minor axis (shortest dimension or "C"-Axis) shall not be less than indicated in Table 4.1.

Table 4.1 B-Axis Rock Gradations (Inches)

Percent of Stones	Indicator	24 inch	30 inch	36 inch	48 inch	72 inch
< 10%	Greater	36	42	48	60	84
> 75%	Between	32&18	36&24	42&30	54&36	78&60
0%	Less	15	24	21	28	48
C-Axis	Greater	12	16	18	24	36

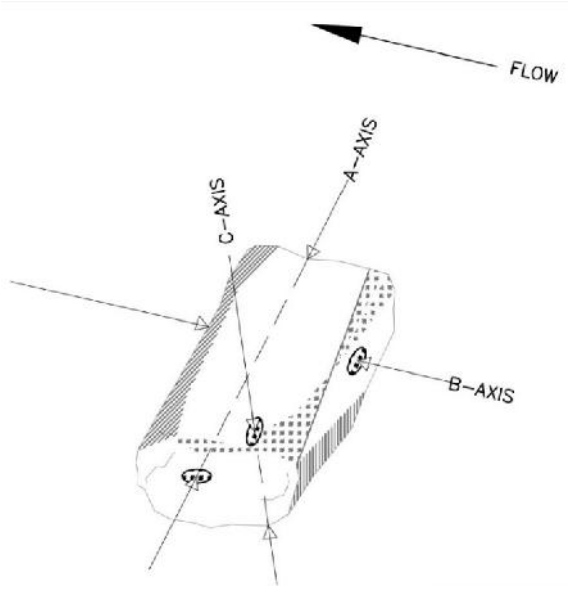

Figure 4.1. Dimensional axes of a boulder

Imported Boulders shall consist of hard, dense durable stone, resistant to weathering. Surface stones must have an aesthetic neutral color. Stone shall be suitable for incidental human contact. CONTRACTOR shall submit source information and samples to ENGINEER. The ENGINEER shall approve Boulder material. Granitic and Basaltic boulders subjected to weathering such as glacial or alluvial flows are preferred.

The ENGINEER may require CONTRACTOR to furnish laboratory results if, in the ENGINEER'S opinion, the material is marginal or unacceptable. At the request of the ENGINEER, the CONTRACTOR shall furnish laboratory test results indicating that the material meet the requirements including those for abrasion resistance and soundness as indicated below:

---Boulders shall have a minimum specific gravity of 2.65.

---Abrasion resistance by Los Angeles Machine; Test Method ASTM C535; Specification Requirement: 15% loss, maximum.

---Soundness by use of Sodium/Magnesium Sulfate, Test Method ASTM D5240-04 Standard Test Method for Testing Rock Slabs to Evaluate Soundness of Riprap by Use of Sodium Sulfate or Magnesium Sulfate; Specification Requirement: 5% loss, maximum.

---Soundness by Freezing and Thawing, Test Method ASTM D5312-04 Standard Test Method for Evaluation of Durability of Rock for Erosion Control Under Freezing and Thawing Conditions; Specification Requirement: 5% loss, maximum.

4.02 COARSE ALLUVIUM

Imported Coarse Alluvium is required in designated areas for backfill as shown on the Project Drawings. Excavated, clean, native alluvium may be utilized if it meets the requirements of the Coarse Alluvium specification listed below. The material may be produced by sorting excavated alluvium through a grizzly or other mechanical device. The spacing between the bars shall be set to 6 inches. Material not passing through the grizzly (i.e. diameter greater than 6 inches) shall be collected and used as Coarse Alluvium. If size requirement is not achievable from onsite materials, imported Coarse Alluvium will be required.

---Minimum specific gravity of 2.55.

---Abrasion resistance by Los Angeles Machine; Test Method ASTM C535; Specification Requirement: 28% loss, maximum.

---Soundness by use of Sodium/Magnesium Sulfate, Test Method ASTM D5240-04 Standard Test Method for Testing Rock Slabs to Evaluate Soundness of Riprap by Use of Sodium Sulfate or Magnesium Sulfate; Specification Requirement: 10% loss, maximum.

---Soundness by Freezing and Thawing, Test Method ASTM D5312-04 Standard Test Method for Evaluation of Durability of Rock for Erosion Control Under Freezing and Thawing Conditions; Specification Requirement: 10% loss, maximum.

Table 4.2 Coarse Alluvium Material Gradations (inches)

Weight	Indicator	Size
100%	Passing	24”
80%-95%	Passing	18”
65%-85%	Passing	12”
35%-65%	Passing	6”
10%-35%	Passing	3”
0%-5%	Passing	1”
	D85	18”
	D50	6”
	D30	2.5”

Figure 4.2. Coarse alluvium gradation example

4.03 FILTER FABRIC (GEOTEXTILE)

An undamaged Filter Fabric with Geo-Composite shall underlay all exposed earthen embankment materials. Filter Fabric shall be placed to eliminate migration of fines through the boulder structures and allow water to drain from structure. An acceptable non-woven 4oz Filter Fabric, Mirafi 140N or equivalent, may be used for the bank coverage not overlaid by drainage. Filter Fabric shall be placed to have intimate contact with intact bank material. Washed Gravel bedding may be used to protect Filter Fabric from damage during boulder placement.

Figure 4.3. Filter fabric installation example

SECTION 5 UPLAND CONSTRUCTION

The CONTRACTOR shall construct the accessible trail, slabstone terracing, steps, and overlook seating area as shown on the Project Drawings and to the acceptable tolerances provided in Table 2.3. Upland construction materials consist of filter fabric, untreated base course (UTBC), crusher fines, and slabstone which are further described below.

5.01 CONSTRUCTION OF SLABSTONE TERRACING

CONTRACTOR shall level, fit and stack individual slabs to maximize aesthetic value of finished wall face, seating surfaces and steps. Slabs shall be stacked with a minimum of 18" of intimate contact between successive slabs for terracing. At least 1 landing shall be provided in addition to and an intermediate landing shall be provided for every 5 feet maximum in total rise.

Figure 4.1. Slabstone terracing example

5.02 SLABSTONE SPECIFICATION

Slabstone shall consist of hard, dense durable stone, resistant to weathering. CONTRACTOR shall submit source information and samples to ENGINEER prior to delivery. Material may be approved by the ENGINEER if, by visual inspection, the material is determined to be sound and durable. The ENGINEER may require CONTRACTOR to furnish laboratory results if, in the ENGINEER'S opinion, the material is marginal or unacceptable. At the request of the ENGINEER, the CONTRACTOR shall furnish laboratory test results indicating that the material meets the requirements including those for abrasion resistance and soundness.

---Minimum specific gravity of 2.40.

---Abrasion resistance by Los Angeles Machine; Test Method ASTM C535; Specification Requirement: 40% loss, maximum.

--Soundness by use of Sodium/Magnesium Sulfate, Test Method ASTM D5240-04 Standard Test Method for Testing Rock Slabs to Evaluate Soundness of Riprap by Use of Sodium Sulfate or Magnesium Sulfate; Specification Requirement: 10% loss, maximum.

--Soundness by Freezing and Thawing, Test Method ASTM D5312-04 Standard Test Method for Evaluation of Durability of Rock for Erosion Control Under Freezing and Thawing Conditions; Specification Requirement: 10% loss, maximum.

Surface stones must have an aesthetic, neutral color unless otherwise specified in drawings. Stone shall be suitable for incidental human contact. Steps shall be constructed of natural stone slabs with dimensions per Table 5.1. Stones shall be generally flat and slab like.

Figure 5.2. Slabstone representative image

Table 5.1. Slabstone Material Dimensions and Variances (inches)

Face	Indicator	Min	Max	Avg	Variance
Thickness	Between	6	12	8	20
Length	Between	36	192	96	100

5.03 FILTER FABRIC (GEOTEXTILE)

A non-woven Filter Fabric shall underlay all UTBC material to eliminate migration of sand or fines. An acceptable non-woven 4oz Filter Fabric, Mirafi 140N or equivalent, may be used. Filter Fabric shall be placed to have intimate contact with intact existing subgrade. See Section 4.03 for more information.

5.04 UNTREATED BASE COURSE (UTBC)

Meet or Exceed UDOT Standard Specification Section 02721 or as modified herein.

Excavated alluvial materials from existing stockpiles may be mixed with the UTBC as long as materials meet specifications in UDOT Standard Specification 02721.

5.05 CRUSHER FINES

Crusher Fines screenings shall consist of clean, hard, durable particles or fragments of 3/8 inch minus select brown crushed limestone. Fines shall be evenly mixed throughout the aggregate.

a. When produced from gravel, fifty percent (50%) by weight, of the material retained on a Number four (4) sieve shall have one fractured face.
b. The portion retained on the Number four (4) sieve shall have a maximum percentage of wear of fifty (50) at five hundred (500) revolutions as determined by AASHTO T96-77.
c. The portion passing a Number forty (40) sieve shall have a maximum liquid limit of twenty-five (25) and a maximum plasticity index of seven (7), as determined by AASHTO T89-81, respectively.
d. The crushed aggregate screenings shall be free from clay lumps, vegetative matter, and deleterious material.

Grading requirements are as follows:

1. Percentage of Weight Passing a Square Mesh Sieve
2. AASHTO T11-82 and T27-82

Table 5.2. Crusher Fines Gradation

Sieve Designation	Percent Passing
3/8 inch (9.52 mm)	100
No. 4 (4.76 mm)	75 – 92
No. 8 (2.38 mm)	50 - 72
No. 16 (1.19 mm)	38 - 55
No. 40 (0.42 mm)	20 - 40
No. 100 (0.149 mm)	10 - 22
No. 200 (0.074 mm)	8 - 15

SECTION 6 VEGETATION PROTECTION, PRUNING OPERATIONS, AND DEBRIS REMOVAL

Meet or exceed APWA Standard Specifications 32 01 91 & 32 01 93

6.01 GENERAL VEGETATION PROTECTION

The preservation of existing mature riparian vegetation is an essential component of the work and a measure of the successful completion thereof. Healthy root mass is essential to the stability of the banks and channel of the Jordan River. The CONTRACTOR is responsible for the survivability of mature vegetation. Any vegetation lost or damaged due to construction activities shall be replaced by the CONTRACTOR at no expense to the OWNER.

6.02 VEGETATION ROOT CUTTING

The Work covered by this section includes the furnishing of all labor, materials, equipment and incidentals for all tree root cutting necessary for excavation purposes with the goal of minimizing the impact to the existing environment. Excavation shall be limited to areas as shown on the Plans and described in these specifications.

6.02.01 Excavation Work Near Trees and Shrubs

Excavation work near trees and shrubs shall be outside of the drip line. Prune tree to allow for adequate viewing of base of tree and prevent damage. Roots exposed during excavation shall be cleanly cut.

6.02.02 Hand Excavations Under the Drip Line

Under the drip line, or at a minimum of 10 feet from the base of a Protect-In-Place Tree, all necessary excavating activities shall be done by hand to expose the roots.

- **a)** Expose all roots greater than 1'' and preserve.
- **b)** If it is necessary to achieve grades, the roots may be cleanly cut, and shall not be ripped or torn.

6.02.03 Treatment of Cut and Exposed Roots

Backfill all cut and exposed roots the same day of root cutting, or cover with wood chips, mulch and water until backfilling is accomplished.

6.02.04 Root Care

Roots can be up to 2-3 times the diameter of the drip line. The CONTRACTOR shall take as much care as possible to preserve roots.

- **a)** All roots that are necessary to remove for excavation activities shall be cleanly cut.
- **b)** The CONTACTOR shall apply all root cuts with approved root stimulator.

6.02.05 Areas of Cut Near Marked Trees

a) If necessary, any cut slope areas shall be held away from marked trees with a boulder retaining wall with a discontinuous footing.

b) No soils shall be compacted under the drip line without ENGINEER approval.

6.02.06 Pruning of Trees and Shrubs

Pruning shall follow Utah Shade Tree Pruning Standards as well as the American National Standards for tree care operations. Class II, medium pruning, is generally for lifting the lower bottom branches of trees for under clearance. All Class II pruning cuts shall be less than 12 feet above the ground. Pruned limbs shall be less than 1 inch in diameter. Class II Pruning is intended to clear obstructions for equipment access and excavation areas.

6.02.07 Medium Pruning

Medium pruning shall consist of the removal of dead, dying, diseased, interfering, objectionable and weak branches on the main trunks as well as those within the leaf area. An occasional branch up to one inch in diameter may remain within the main leaf area where it is not practical to remove it. The following specifications shall apply:

a) All cuts shall be made sufficiently close to the trunk or parent limb, without cutting into the branch collar or leaving a protruding stub, so that closure can readily start under normal conditions. Clean cuts shall be made at all times.

b) It is necessary to precut branches too heavy to handle to prevent splitting or peeling the bark. Where necessary to prevent tree or property damage, branches shall be lowered to the ground by proper ropes or equipment.

c) On trees known to be diseased, tools are to be disinfected with methyl alcohol at 70% (denatured wood alcohol diluted appropriately with water) or Clorox solution after each cut and between trees where there is known to be a danger of transmitting the disease on tools.

d) Old injuries are to be inspected. Those not closing properly and where the callus growth is not already completely established and show signs of extensive rot shall be reported to the OWNER.

e) All girdling roots visible to the eye are to be reported to a supervisor and/or the OWNER. The presence of any structural weakness, disease conditions, decayed trunk or branches, split crotches or branches should be reported in writing to a supervisor and/or the OWNER, and corrective measures recommended.

6.02.08 Class IV Pruning and Debris Removal

Excavation of the fill material to establish design grade will require the removal of trees and shrubs and associated debris. Class IV pruning may be required for equipment access and to protect adjacent vegetation and utilities. Class IV pruning shall follow Utah Shade Tree Pruning Standards as well as the American National Standards for tree care operations. Class IV pruning typically requires a lift and chainsaw work to remove the upper limbs to prepare the tree for removal and stumping.

a) Appropriate safety procedures shall be implemented at all times during Class IV pruning operations.
b) Debris shall be stored in the Staging Area with adequate BMPs until hauled off-site.

SECTION 7 PLANTING AND SEEDING

Meet or Exceed APWA 2017 Standard Specification 32 01 90, 32 91 19, 32 92 00, 32 93 13, 32 93 43, 32 98 00 or as modified herein

7.01 GENERAL PLANT MATERIALS

All Plant materials shall be native to the Great Basin Region and ideally native to the Jordan River Watershed or approved by ENGINEER. Plant materials shall be live, viable vegetation free of insects and diseases. All trees and shrubs shall be of standard quality as set forth by the American Association of Nurserymen Standards and shall be true to their names, types and true native strands of their species. The CONTRACTOR shall notify the ENGINEER of the delivery schedule in advance so the plant materials may be inspected upon arrival at the job site. Plants that cannot be planted the day of arrival shall be protected from wind, direct sunlight, drying out or other damage. The only pruning that should be carried out upon new delivered plants is: 1) broken branches as a result of transporting or planting operation; 2) dead or diseased branches; 3) stubs and basal sprouts.

7.02 GENERAL PLANTING

7.02.01 Installation of Plant Material

Plants shall be installed as marked on the Project Drawings. The layout of the shrubs shall be planted staggered (not horizontal or vertical lines) and field fit per direction of ENGINEER. Any plant materials damaged during installation or determined to be unsuitable by the ENGINEER shall be removed and replaced at the CONTRACTOR'S expense. All trees shall be planted so the root collar is at the soil or grade level.

7.02.02 Water

The CONTACTOR is responsible to provide water suitable for establishment of vegetation. It is advisable to water plants immediately after planting to reduce shock and assist in soil-root contact. Available soil moisture in riparian areas shall vary greatly depending upon the relation (topographic elevation) of the planting site to the river, the moisture retention properties of the soil, and the species being planted. Plantings are required to be installed early in the fall during appropriate temperature and soil moisture conditions to maximize survivability without supplemental irrigation water.

7.03 SEED

All soil areas within the Project Limits, disturbed by construction activities, shall be seeded with the Upland Stabilization Seed Mix or Emergent Riparian Seed Mix as shown on Project Drawings. Slope Stabilization areas may require the use of a water truck to ensure establishment. All mixes shall be Certified Seed that is weed free and native strands of Pure Live Seed (PLS). Table 7.1 provides the seed type and rate for Type 1 Riparian Mix Species and Table 7.2 provides the seed type and rate for Type 2 Upland Stabilization Mix Species. The Upland Stabilization Mix is the

Riparian Mix with 50% of the upland species quantities substituted for a stabilization species that are tolerant to drought or low available water.

a) Soil Preparation: Where topsoil is specified place stored topsoil to a minimum of 6 inches in depth. Soil shall be graded and raked to a depth of 0.25'' to 0.5'' to create a seed bed. Soils must be moist prior to seed application. Sprinkle areas to be seeded with water, using fine spray to avoid washing or erosion of soil.

b) Seed Application: Within 48 hours of soil placement, broadcast seed at the specified rate and lightly rake into soil. Do not apply seeds when weather is too windy, hot or drying, or other adverse conditions exist.

c) Apply hydromulch to all specified areas.

Table 7.1 Type 1 Emergent Riparian Mix Application

Emergent Riparian Mix Application		
Common Name	**Scientific Name**	**pls/acre***
Inland saltgrass	*Distichlis spicata*	25%
Creeping spikebrush	*Eleocharis palustris*	25%
Spike muhly	*Muhlenbergia wrightii*	25%
Nuttal's alkaligrass	*Puccinellia nuttalliana*	25%
*Broadcast Application=15 lbs/acre		100%

Table 7.2 Type 2 Upland Stabilization Mix Application

Upland Stabilization Mix Application		
Common Name	**Scientific Name**	**pls/acre***
Sand dropseed	*Sporobolus cryptandrus*	1%
Blanket flower	*Gaillardia aristata*	6.4%
Rocky Mountain beeplant	*Cleome serrulata*	19.2%
Scarlet globemallow	*Sphaeralcea coccinea*	3.2%
Alkali sacaton	*Sporobolus airoides*	3.2%
Great Basin wildrye	*Leymus cinereus*	25.5%
Western wheatgrass	*Pascopyrum smithii*	25.5%
Sandberg bluegrass	*Poa secunda ssp. Sandbergii*	6.4%
Inland saltgrass	*Distichlis spicata*	3.2%
Lewis blue flax	*Linum lewisii*	6.4%
*Broadcast Application=60 lbs/acre		100%

7.03 HYDROMULCH

Any disturbed areas are to be covered before the completion of the project. Disturbed areas that are not covered by Erosion Control Blanket must be properly prepared for seeding and then adequately covered by hydromulching technique. The CONTRACTOR shall submit their plan to the ENGINEER for approval before work is to be completed.

7.04 EROSION CONTROL BLANKET

All-natural biodegradable Erosion Control Blankets (ECB) shall be placed on all cut bank slopes as shown in DRAWINGS or as directed by the ENGINEER.

Material shall be North American Green C700BN, or approved equivalent, that is multilayer with a non-woven coconut fiber matrix and heavy woven coir top net. Material shall be all-natural coir fabric with a tensile strength 1271 lbs./ft, permissible shear force of 2.3 lbs./sq.ft., and mass of 26.61 oz./sq.yd. No plastic components or netting permissible.

North American Green Contact Info: (800) 772-2040
https://nagreen.com/erosion-control-products/RollMax/BioNet

Install ECB per manufactures recommendations. Store all coir fabric elevated off the ground and ensure that it is adequately covered to protect the material from damage. Protect fabric from sharp objects that may damage the material. Materials damaged during transport, storage or placement shall be replaced at the CONTRACTOR expense. The ENGINEER shall inspect and approve all materials prior to installation.

7.05 WETLAND SOD

Wetland sod matting shall consist of the specified species in the plans which are native to the Jordan River Watershed. Each wetland sod matting shall be installed at the appropriate water surface elevation, determined by the ENGINEER during installation. Delivery of the Wetland sod matting shall be scheduled to coincide with immediate job site installation. If mats cannot be immediately installed, they can be stored in a shady location for no more than three days and must be kept thoroughly saturated and covered (tarped) during that time. In hot, dry weather mats should be stored under the same conditions for no more than two days.

For additional installation details, please refer to:
http://www.northforknativeplants.com/sod_installation.php.

7.05.01 Wetland Sod Installation

1. Mats are simply moved to the installation site, unrolled and then staked down. Ensure that the plant roots and the bottom of the mat are in direct contact with the soil. Space between the mat bottom and ground caused by folds, wrinkles or upturned mat edges will create a void that will allow the root system to dry out. Installing mats over large rocks, tree branches, very rough ground or anything that prevents root-to-soil contact should be avoided or remedied prior to installation.
2. Mats should not be installed on slopes steeper than 2.5:1. Some die-back can be expected when slopes exceed 3:1 steepness.
3. Recommended staking pattern for Wetland Sod installation:
   - Drive stakes through the mat at a slight angle and leave about 4” of the stake protruding above the mat.

- Use eight to twelve, 16” wooden stakes per mat for installations involving moving water (i.e. stream channels, windward lake shores, storm water retention areas).
- Use six to eight, 16” wooden stakes per mat for site conditions without erosive characteristics (i.e. pond and lake shorelines, wetland areas).

4. Ideally, mats should be installed in water depths of 2 to 4 inches. If site hydrology at the time of installation is lacking, plants will need supplemental irrigation. Additional irrigation will need to be provided during the first 3-4 weeks in order to ensure plant root establishment in surrounding soils. Conversely, if water levels are too deep at installation or during the first month after installation, the plants can die. After roots are well established, plants can tolerate periodic hydrologic famine or deeper water conditions.

7.05.02 Wetland Sod Equipment List

- Hay hooks – 1 hook per laborer
- 16” wooden stakes – 6-12 per mat (see installation instructions)
- Mallet(s) - 1 per laborer to drive stakes
- Leatherman (or other sharp implement for cutting)
- Steel rake to level / prepare site
- Spade Shovel to remove large cobble

7.06 TRANSPLANTING ON-SITE VEGETATION

Vegetation to be disturbed by excavation activities should be transplanted when feasible. Vegetation suitable for transplants should be healthy native species. Prune shrub or tree to approximately 6 feet in height. Cleanly cut all broken and damaged limbs. Herbaceous clusters are also suitable for transplants. Excavate a hole that is larger, but not deeper, than the transplant rootball. Scoop the entire root mass of the transplant with the bucket of a trackhoe, keeping intact the rootball and soils. Immediately place transplant in the excavated hole and hand backfill lightly compacting the soil. Water transplant as necessary to ensure survival.

7.07 LIVE STAKE/POLE PLANTING

7.07.01 Live Dormant Willow/Dogwood Stake Plant Harvesting

All live stakes shall be harvested during the dormant season. All live stakes shall be harvested from a healthy parent that does not have serious injuries, insect pests, diseases or shriveled. No more than one-third of the donor shrub should be harvested. The CONTRACTOR shall take care to not damage the donor shrub; cuts shall be made smooth without damage to the bark of the donor shrub. Cuts shall be made at an angle of approximately 45 degrees, 6 to 8 inches above the ground, to assist rapid regeneration. The minimum diameter of the cuttings should be 0.75 inch and the minimum length should be 36 inches; larger live stakes contain a greater amount of the stored energy required to form leaves, stems and roots. Recommended length of live stakes should be 36 to 60 inches. The top ends shall be blunt; butt ends shall be angled at 45 degrees. Stakes shall be stripped of all stems, leaders, and dry leaves, taking care to minimize scarring or bruising of the stakes. Immediately upon cutting, stakes shall be placed in water in a shaded area. The live cuttings shall be planted within 6 hours, or must be carefully bound, secured, and stored

for at least 48 hours and no more than 60 days with the 45° angled ends submerged in clean fresh water.

7.07.02 Live Cottonwood Pole Plant Harvesting

shall be harvested during the dormant season. All poles shall be a minimum of 2 inches in diameter and 8 feet in length. The selected Poles shall be healthy, live wood that is reasonably straight. Use live wood at least 2 year or older, with smooth bark that is not deeply furrowed. Avoid suckers of current years growth. Cottonwood Poles must be harvested during the dormant season and planted in the late fall or early winter; prior to bud break and spring runoff flows. Make clean cuts with unsplit ends; top ends should be cut straight and butt-ends should be cut with a 45 degree angle. Paint top ends with a paint and water mixture (50/50) to indicate which end is the top and to prevent moisture loss. Trim branches from cutting as close as possible to trunk. Holes must be dug to a depth of 1.5 feet below the OHWM line shown on Project Drawings, or a minimum of 1.5 feet in moist soil. The use of a "Stinger" may be required to dig the holes. Place Poles in hole with butt-end down. The Cottonwood Poles shall be backfilled with a minimum of 3 feet of aerated soil above the moist soil. The Poles shall be 2/3 below ground with 2-5 leaders above the ground level. Poles shall be planted with 6 feet maximum spacing. Cottonwood pole tops should be painted with a latex light color paint 50/50 mix water/paint to prevent water loss.

7.07.03 Pole Planting Installation

Planting from live poles shall be planted to a depth where the roots are able to reach the water table during all seasons. Poles must be harvested and planted when the mother plant is dormant. This period is generally from late fall to early spring, or before the buds start to break.

- **a)** Insert the cutting vertically (i.e., oriented in the same direction which it grew on the shrub) into the substrate so that approximately two-thirds of the total length is below the surface.
- **b)** Make pilot hole for all installation with an auger or stinger. Holes should be no greater than 15% of the size of the pole. Poles should be placed randomly at a spacing of 1 foot on center per square yard. Install three live willow/dogwood poles per hole (where possible), and one cottonwood pole per hole.
- **c)** The cutting must be inserted deep enough to ensure that it reaches the water table throughout the entire growing season.
- **d)** After the live poles are inserted, the planting hole must be backfilled with native soil and lightly tamped to prevent air pockets.

SECTION 8 TOPSOIL

8.01 GENERAL TOPSOIL PRESERVATION

Topsoil shall be salvaged a minimum of 6 inches in depth from all disturbed areas. Salvaged topsoil shall be stockpiled in areas that shall not interfere with construction phases and at least 15 feet away from areas of concentrated flows or pavement. The slopes of the stockpile shall not exceed 2:1 horizontal to vertical. A silt fence or other adequate erosion control shall be installed around the perimeter of each stockpile. If there is no salvageable topsoil onsite, imported Topsoil will be required.

8.01.01. Topsoil Application

Topsoil shall be applied to all areas for seeding and planting. Topsoil shall be applied at a minimum of 6 inches depth on all seeded areas and shall be used to backfill all shrub and tree plantings to the depth and twice the width of the root ball. Topsoil shall not be placed when the ground or Topsoil is frozen, or excessively wet. Following the spreading operation, the Topsoil surface shall be raked to final grades without surface irregularities that could contribute to concentrated waterflow downslope. Topsoil shall be raked with 0.5 inch undulations for a seed bed.

8.01.02. Topsoil Material

Imported topsoil shall be a natural sandy loam that is weed free. Imported Topsoil shall be properly stored and protected, and shall be free of roots, hard clay and stones which shall not pass through a 1-inch square opening. It shall be a loamy mixture having at least 90 percent passing No. 10 sieve. Below list the soil properties:

a) Contain no less than 2 percent nor more than 13 percent organic matter, as determined by the test for organic matter in accordance with ASTM D2974.

b) Contain no less than 12 percent or more than 40 percent clay, as determined in accordance with ASTM D422.

c) Sand content shall not exceed 55 percent, as determined in accordance with ASTM D422.

d) The pH shall not be lower than 5.0 or higher than 8.0. The pH shall be determined with an acceptable pH meter on that portion of the sample passing the No. 10 sieve, in accordance with the —Suggested Methods of Tests for Hydrogen Ion Concentration (pH) of Soils, included in the ASTM Procedures for Testing Soils issued December 1964.

e) One hundred percent shall pass the 1-inch screen; 97-100 percent shall pass the 1.5-inch screen, and 40-60 percent shall pass the No. 100 mesh sieve.

f) Topsoil shall be free of clods, gravel, and other inert material. It shall be free of thistle, reed canary grass, creeping foxtail, noxious vegetation and seed. Should such regenerative material be present in the soil, the CONTRACTOR shall remove, at his expense and in a manner satisfactory to the Owner's Representative, all such growth,

both surface and root, which may appear in the imported Topsoil within 1 year following acceptance of the work.

g) All soil to be seeded shall be amended with Humate and fertilizer product. The method of incorporation of amendments shall result in a uniform application of material as approved. Humate shall be applied at a rate of 1500 pounds per acre. The humate shall be applied using approximately 1 gallon of water for 1 pound of dry powder. The fertilizer product shall be applied at a rate of 2000 pounds per acre.

SECTION 9 INVASIVE SPECIES CONTROL

9.01 GENERAL INVASIVE VEGETATION SPECIES CONTROL

Meet or Exceed APWA 2017 Standard Specification 31 31 19 or as modified herein.

All equipment entering the site shall be clean of mud, debris, organic matter or other material that may contain weed seeds. Equipment cleaning shall adhere to Section 3.04.

SECTION 10 MODIFICATIONS TO TIME OF COMPLETION

10.01 CONSTRUCTION WINDOW

Riverton City expects all construction to be completed by **June 30, 2023**, unless otherwise specified by the OWNER (see Section 1.02**)**. If construction is anticipated to take place outside of this date, CONTRACTOR shall notify OWNER in writing. ENGINEER shall be notified of any work anticipated outside of these dates. The project's Stream Alternation Permit is valid from November 1st, 2022 through November 1st, 2024.

No construction activities shall be performed on soil during periods when the soil is too wet to adequately support construction equipment as measured by ruts greater than 4 inches deep.

The date of beginning and the time for completion of the work are essential conditions of the Contract Documents and the work embraced shall be commenced on a date specified in the Notice to Proceed. The CONTRACTOR will proceed with the work at such rate of progress to ensure full completion within the Contract time. It is expressly understood and agreed, by and between the CONTRACTOR and the OWNER, that the Contract time for the completion of the work described herein is a reasonable time, taking into consideration the climatic and other factors prevailing in the locality of the work. Every effort shall be made by the CONTRACTOR to complete the project within the "Contract Time" shown in the bid, quote or proposal. The "Contract Time" anticipates "Normal" weather and climate conditions in and around the vicinity of the Project site during the times of year that the construction will be carried out.

SECTION 11 DEFINITIONS

B-Axis - The intermediate (and overturning) axis on a boulder.

Best Management Practices (BMPs) - Water and Soil Care Measures designed to prevent sediment soil erosion, minimize turbidity and protect wetlands.

Cofferdam - Structure used to isolate an area for dewatering.

Diameter at Breast Height (DBH) – diameter of standing tree at breast height, not including the rootwad.

Diversion – Relocating the flow of surface water.

Ordinary High Water Mark (OHWM) - Approximate Water Surface Elevation at the 1 ½ year Flood.

In-Channel Work - All construction work occurring below the ordinary high water mark or one and a half year flood or in a wet channel.

Invert - The cross-section that controls water flow.

On-Shore Work - All construction work occurring above the ordinary high water mark or one and a half year flood.

Protect-In-Place - Protection of Structures or Vegetation by not disturbing them with adjacent construction activities.

Thalweg - Lowest elevation of the river channel in cross section perpendicular to the direction of the main current flow.

Toe - Point where a ground slope meets a low point and flattens out. Most commonly in rivers it refers to the point where the bank slope meets the channel bottom slope.

River Right - The right side of the channel when looking downstream.

River Left - The left side of the channel when looking downstream.

Riparian Vegetation - Vegetation which is rooted in the water table of the adjacent river.

Water Surface Elevation (WSEL)- Elevation on the project datum, of the surface of water at a specified location and flow rate.

END OF DOCUMENT