COLORADO
2013 PHASE II
EMERGENCY WATERSHED PROTECTION (EWP) PROGRAM

SPECIAL PROVISIONS
FOR
LITTLE THOMPSON RIVER AT PARRISH RANCH

GENERAL

This project incorporates by reference the Colorado Department of Transportation (CDOT) Standard Specifications for Road and Bridge Construction (2017). The Contractor shall use the 2017 CDOT specifications for the subject work. The following special provisions supplement or modify the Standard Specifications and take precedence over the Standard Specifications and plans.

PROJECT SPECIAL PROVISIONS

NOTICE TO BIDDERS

No bid bond is required.

Pursuant to Subsections 102.04 and 102.05, it is recommended that bidders on this project review the work site and plan details. Prospective bidders shall contact the following authorized Little Thompson Watershed Coalition representative with any project specific questions.

Coalition Project Manager	Contact:	Teagan Blakey
	Office Phone:	(303) 434-6293
	Mailing Address:	Little Thompson Watershed Coalition P.O. Box 1413 Lyons, Colorado 80540
	Contact:	Scott Lewis
	Cell Phone:	(303) 919-7097
	Mailing Address:	Little Thompson Watershed Coalition P.O. Box 1413 Lyons, Colorado 80540
On-Site Project Manager	Contact:	Sarah Houghland, PE
	Cell Phone:	(303) 257-2423

The above referenced individuals are the only representatives with authority to provide any information, clarification, or interpretation regarding the plans, specifications, and any other contract documents or requirements. Contact with any other employee of the coalition or any other individuals regarding this project, is not authorized. Any information obtained from other than the authorized Little Thompson Watershed Coalition representative, shall be considered invalid in the preparation of a proposal for this project.

All references to the Colorado Division of Highways, Colorado Department of Transportation, and/or Department or Division shall also mean Little Thompson Watershed Coalition.

COMMENCEMENT AND COMPLETION OF WORK

The Contractor shall substantially complete the work on or before November 30, 2018.

Salient features to be shown on the Contractor's Progress Schedule are:

1. Permitting
2. Clearing and grubbing
3. Earthwork
4. Channel work and stabilization
5. Topsoil and revegetation
6. Construction as-builts

Subsection 108.03 shall include the following:

The Contractor shall complete all work by November 30, 2018.

REVISION OF SECTION 101 - DEFINITION OF TERMS

Technical Specifications related to construction materials and methods for the Work embraced under this Contract shall consist of the "Colorado Department of Transportation's Standard Specifications for Road and Bridge Construction", dated 2017.

Certain terms utilized in the Specifications referred to in the paragraph above shall be interpreted to have different meanings within the scope of this Contract. A summary of redefinitions follows:

Subsection 101.01:	Abbreviations. "NRCS" Natural Resources Conservation Service “CWCB” Colorado Water Conservation Board
Subsection 101.28:	"Department" shall mean the Little Thompson Watershed Coalition.
Subsection 101.29:	"Chief Engineer" shall mean the Engineer, Little Thompson Watershed Coalition or their designated representative.
Subsection 101.47:	"Project Engineer" or "Project Manager" shall mean the Engineer, Little Thompson Watershed Coalition or their designated representative.
Subsection 101.68:	"State" shall mean Little Thompson Watershed Coalition (where applicable).

REVISION OF SECTION 105 - CONTROL OF WORK

Section 105 of the Standard Specifications is hereby revised for this project as follows:

105.09 COORDINATION OF PLANS, SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS

Subsection 105.08 shall have the second paragraph replaced as follows:

In case of discrepancy the order of precedence is as follows:

(a) Special Provisions
    1. Project Special Provisions
    2. Standard Special Provisions
    3. Little Thompson Watershed Coalition Special Provisions
(b) Plans
    1. Detailed Plans
    2. Standard Plans

(c) Supplemental Specifications
(d) Standard Specifications

Per CDOT Section 105.09, "the Contractor shall not take advantage of any apparent error or omission in the Contract. If the Contractor discovers as error or omissions, the Engineer shall immediately be notified. The Engineer will make corrections and interpretations as necessary to fulfill the intent of the Contract."

A hard copy of the Little Thompson Watershed Coalition Special Provisions may also be obtained from the Little Thompson Watershed Coalition.

REVISION OF SECTION 107 - LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

Section 107 of the Standard Specifications is hereby revised for this project as follows:

107.02 PERMITS, LICENSES, AND TAXES

Subsection 107.02 shall include the following:

Unless otherwise specified, the Contractor shall procure all required permits and licenses; pay all charges, fees, and taxes, including permits procured for this project by others; and give all notices necessary and incidental to the due and lawful prosecution of the work. The costs of these permits will not be paid for separately, but shall be included in the work.

Prior to beginning work, the Contractor shall furnish the Engineer with a written list of all permits required for the proper completion of the contract. The list shall clearly identify the types of permits that must be obtained before work on any particular phase or phases of work can be started. Copies of the fully executed permits shall be furnished to the Engineer upon request.

The Contractor shall obtain, but not limited to, the following permits:

1. Storm Water Discharge Permit CDPHE
2. Construction Dewatering Wastewater Discharge Permit CDPHE
3. State Department of Revenue Tax Exempt Permit (See Boilerplate)
4. Boulder County Stormwater Quality Permit
5. Boulder County Stream Restoration Permit. Floodplain Development Permit has already been applied for by the Engineer. Contractor must address remaining requirements including grading permit, erosion control, traffic management, haul routes, and all other necessary information required by Boulder County to obtain permit approval.

107.12 Protection and Restoration of Property and Landscape

Subsection 107.12 shall include the following:

The Contractor shall protect in place existing riparian, wetlands, and other vegetation, except for those what must be removed to accommodate construction of the project. The Contractor shall fence specific areas of vegetation to be protected in the field as shown in the plans or as directed by the Engineer.

The Contractor shall perform all the work in such a manner that the least environmental damage will result. Any questionable areas or items shall be brought to the attention of the Engineer for approval prior to vegetation removal or any damaging activity. Damaged or destroyed fenced trees, shrubs, or wetlands, which could have been avoided as determined by the Engineer, shall be replaced in kind at the expense of the Contractor.

If the protective vegetation fence is knocked down or destroyed by the Contractor, the Engineer will suspend the work, wholly or in part, until the fence is repaired to the Engineer's satisfaction. Replacement of the protective fence shall be at the Contractor's expense. Time lost due to such suspension will not be considered a basis for adjustment of time charges, but will be charged as contract time.

107.15 RESPONSIBILITY FOR DAMAGE CLAIMS

Subsection 107.15 shall include the following:

All Insurance Policies and Certificates of Insurance issued for this project shall name as additional insured(s), the Colorado Water Conservation Board, and the Little Thompson Watershed Coalition, whether private or governmental, the Little Thompson Watershed Coalition officers and employees, and the Engineer and its agents and employees, and any other person(s), company(ies), or entity(ies) deemed necessary by the Little Thompson Watershed Coalition including:

- Officers, directors, agents, and employees of the Little Thompson Watershed Coalition
- Affected landowners

107.25 WATER QUALITY CONTROL

Subsection 107.25 (b) *Construction Requirements* is hereby revised to include the following:

25. This project is subject to permits with the Colorado Department of Health for Stormwater Discharges and Dewatering Discharges Associated with Construction Activities. The permits shall be obtained by the Contractor. The Contractor shall prepare all applications required and submit to the Colorado Department of Health. The Contractor shall submit a copy of certification of the permit to the Engineer prior to the start of construction. The Contractor is responsible for all application permit fees.

26. This project is subject to US Army Corps of Engineers Nationwide Permit 37(Corps File No. NOW-2018-00760-DEN) for Emergency Watershed Protection and the Pre-Construction Notification for the EWP Program Parrish Ranch Project dated May 2, 2018.

27. This project is subject to permits with Boulder County for Stormwater Quality Permit. This permit application must be submitted with the Boulder County Stream Restoration Permit. The permit shall be obtained by the Contractor. The Contractor shall prepare all applications required and submit to the Colorado Department of Health. The Contractor shall submit a copy of certification of the permit to the Engineer prior to the start of construction. The Contractor is responsible for all application permit fees.

For information on required steps to secure the Stormwater Discharge Permit and the Construction Dewatering Permit, the Contractor shall contact:

Colorado Department of Public Health and Environment
WQCD-P-B2
4300 Cherry Creek Drive South
Denver, CO 80246-1530
Attn: Permits Unit, ℅ Nathan Moore
Phone: (303) 692-3555

For information on required steps to secure the Boulder County Stormwater Quality Permit, the Contractor shall contact:

Land Use Department Building Safety
2525 13th Street
P.O. Box 471
Boulder County, CO 80302
Phone: (303) 441-3900
Email: transportation@bouldercounty.org
www.bouldercounty.org/transportation/permits/stormwater-quality-permit/

REVISION OF SECTION 108 - PROSECUTION AND PROGRESS

Section 108 of the Standard Specifications is hereby revised for this project as follows:

108.03 SCHEDULE

Subsection 108.03 shall include the following:

Salient features to be shown on the Contractor's Progress Schedule are as shown in Commencement and Completion of Work.

REVISION OF SECTION 201 - CLEARING AND GRUBBING

Section 201 of the Standard Specifications is hereby revised for this project as follows:

Subsection 201.01 is hereby revised to include the following:

This work includes pruning of trees, removal and disposal of existing stockpiles and trash of any kind within the limits of the right-of-way, easement areas, and other areas shown in the contract or required by the work. These items shall be removed and disposed of by the Contractor during construction and prior to final acceptance of the project.

Large tree removal is not expected for this project. If large tree removal is required, removal will be included in Section 201 – Clearing and Grubbing. Any trees and shrubs that are to be transplanted will be marked by the Engineer and Ecologist, and the property owner will transplant the trees and shrubs at locations identified by the Engineer and Ecologist.

Subsection 201.02, second paragraph, shall be deleted and replaced with the following:

Clearing and grubbing shall typically extend 10 feet beyond the toe of fill or the top of cut slopes, but shall not extend beyond the limits of disturbed area for the project.

Subsection 201.02 is hereby revised to include the following:

The Contractor shall install temporary plastic fence along the limits of work prior to commencing with the clearing and grubbing. The actual fence location shall be reviewed and approved by the Engineer prior to installation.

Subsection 201.02, delete the third paragraph and replace with the following:

The limits of clearing and grubbing shall be confined to the limits of work. Areas of protection shall be established by the Engineer prior to construction. All trees, shrubs, plants, grasses and other vegetative materials within those areas of protection shall remain, except as designated by the Engineer.

No tree or shrub shall be removed without prior approval by the Engineer. Trees removed without prior approval of the Engineer shall be replaced at the Contractor's expense. Replacement trees shall be as designated in the plans. Any object that is not designated to be removed and is damaged shall be repaired or replaced as directed by the Engineer, at the Contractor's expense.

Any surface objects, trees, stumps, shrubs, existing stockpiles and other protruding objects not designated to be protected shall be cleared and grubbed as required. Trees, stumps, and shrubs are to be removed from the site. Existing grasses do not need to be mowed or scalped and may be incorporated into the topsoil stripping of the site.

If noxious weeds are found before grading, areas to be disturbed shall be pre-treated with either an approved herbicide or mowing before grading.

Migratory birds, as well as their eggs and nests, are protected under the Migratory Bird Treaty Act (MBTA). The active nesting season for most migratory bird species in Colorado is between April 1 and August 15. To avoid a violation of the MBTA, conduct habitat-disturbing activities (tree removal, clearing and grubbing, etc.) in the non-breeding season (August 16 to March 31). If work activities are planned between April 1 and August 15, remove or alter vegetation within construction footprints and road right-of-ways (ROW) prior to April 1 to discourage nesting within areas scheduled for summer construction. If the Contractor is unable to meet these requirements,

the Contractor shall notify the Engineer prior to any vegetation removal.

Once all clearing and grubbing is completed and approved, no additional clearing shall be allowed unless approved, in writing, by the Engineer.

Subsection 201.04 shall include the following:

Payment for clearing and grubbing shall be based on quantities paid for at unit price per acre and shall include removal and disposal of trees, stumps, shrubs, existing stockpiles and protruding objects designated for removal within the project limits.

Payment for temporary fence shall be included under Item 607 Fence (Plastic) (Construction).

BASIS OF PAYMENT

Subsection 201.04 shall include the following:

The accepted quantities to complete removals as identified will be paid for on a unit price for all work required to remove and dispose of debris from the site.

Pay Item	Pay Unit
Clearing and Grubbing	Acre

REVISION OF SECTION 203 - UNCLASSIFIED EXCAVATION (COMPLETE IN PLACE)

Section 203 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

Subsection 203.02 shall include the following:

This work consists of excavation and fills within the Little Thompson River channel and floodplain. This work includes the sorting and stockpiling of in-situ riprap, larger, alluvial rounded rock and boulder material located in the existing river bottom and revetments, to be used in later stages of construction to form river features. This also includes the selective stripping, stockpiling and replacement of existing native river bottom material (sand, gravel, cobbles) as described herein.

CONSTRUCTION REQUIREMENTS

Subsection 203.04 (General) shall include the following:

If any material needs to be transported from or to the project site, the hours of hauling shall be from 8:30 AM to 4:00 PM to limit impacts on regular vehicular traffic. Only minor transport of materials to and from the project site is expected.

Subsection 203.05 shall include the following:

Final grade cuts and fills shall not be steeper than 1.5: 1. The typical floodplain bench grading dimensions shown in the plan set shall be field fit to tie into existing topography at slopes less steep than 3:1.

Existing river conditions prior to mass grading and stream restoration shall be carefully documented with photographs or other approved method. All existing in-situ embankment protection materials shall be sorted; all rounded cobbles and boulders suitable for use with channel shaping (as shown on the river plans) shall be removed and stockpiled as close to the work area as possible. In addition, 30 feet of width (15’ on each side of existing channel thalweg/invert) of the existing river bottom material (18-inch thickness) is to be scraped and stockpiled/salvaged, on-site if practicable. This material will be replaced as the surface layer of the design channel. The proposed channel and floodplain shall be formed according to the typical sections and grading contours as shown on the plans.

The Engineer may direct the creation of micro-topography at their discretion to create small-scale stream channel and landscape features not shown on the plan set provided they are in-line with the vision of the project and not time intensive. This includes placement of habitat boulders throughout the channel.

METHOD OF MEASUREMENT

Subsection 203.13(a) shall include the following:

Channel grading is measured by the volume of material excavated in cubic yards. When grading is either partially or entirely complete and Engineer has approved grading, contractor shall estimate the volume (CY) of excavation in a method approved by the Engineer.

BASIS OF PAYMENT

Subsection 203.14 shall include the following:

Payment includes the total volume excavated and reshaped into the final dimensions of the channel and floodplain. Payment includes haul away of any excess material to an approved on-site or offsite location. Payment includes the detailed sorting, stripping, stockpiling and replacement of select existing river materials as described above.

Pay Item	Pay Unit
Unclassified Excavation (Complete in Place)	Cubic Yards

Section 203 of the Standard Specifications is hereby revised for this project to include the following:

REVISION OF SECTION 208 - COIR ROLL

Section 208 of the Standard Specifications is hereby revised for this project as follows:

Subsection 208.02 shall include the following:

(n) Coir Roll shall be a coir log made out of 100% natural coconut palm tree (Cocos nuceifera) cleaned fiber core hydraulically compacted with a density of 7.0 pounds/cubic foot evenly distributed throughout the log. Core matrix and netting material shall consist of 100% bio-degradable product without any external additives (preservatives or colorings). The coir fiber tube netting shall consist of high tensile machine spun bristle coir twine (coconut fiber) with a maximum opening of 2 inch by 2 inch hand knotted junctions and having the following properties:

Property	Requirement	Test Method
3 Ply Coir Twine Diameter	.40 (inches)	ASTM
Netting Tensile Strength	70 lbs.	ASTM D 6818

Coir Rolls shall have minimum dimensions as shown in Table 208-2, based on the diameter of the coir log.

Table 208-2
NOMINAL DIMENSIONS OF COIR ROLLS

Coir Rolls Dia. (Inches)	Length (feet)		Weight (minimum) (pounds/foot)	Stake Dimensions (Inches)
	Min.	Max.		
20	7.5	20	14.5	2 by 2 (nominal) by 18
11.5-12	7.5	20	3.0	1.5 by 1.5(nominal) by 30

Stakes to secure erosion logs shall consist of pinewood or hardwood (see detail on plans). Burlap is not an acceptable fabric and shall not be used.

One entire coir roll shall be submitted for approval by the Engineer at least two weeks prior to the start of installation.

Subsection 208.11 shall include the following:

Coir Rolls will be measured by the actual number of square yards installed and accepted.

Subsection 208.12 shall include the following:

Pay Item	Pay Unit
Coir Roll	Square Yards

REVISION TO SECTION 208 - EROSION CONTROL

DESCRIPTION

Subsection 208.01 shall include the following:

Water quality control during construction activity shall be in accordance with Section 107.25.

The Contractor shall develop a Stormwater Management Plan (SWMP) and obtain a construction stormwater permit and construction dewatering permit from CDPHE as applicable. The Contractor will also obtain a stormwater quality permit from Boulder County as applicable.

Erosion control measures (Site Erosion Control) shall be installed and maintained in the locations specified and as described in the SWMP. Erosion control measures will consist of, but is not limited to, silt fence, erosion control log, check dam, or other approved measures needed to satisfy the requirements of the stormwater and construction dewatering permits.

Stabilized staging area identification and negotiations with property owners will be the Contractor's responsibility.

Erosion log (Type 1 and Type 2) shall have minimum dimensions as shown in Table 208-1, based on the diameter of the log.

Table208-1
NOMINAL DIMENSIONS OF EROSION LOGS

Diameter Type 1 (Inches)	Diameter Type 2 (Inches)	Length (feet)		Weight (minimum) (pounds/foot)	Stake Dimensions (Inches)
		Min.	Max.		
9	8	10	180	1.6	1.5 by 1.5 (nominal) by 18
12	12	10	180	2.5	1.5 by 1.5(nominal) by 24
20	18	10	100	4.0	2 by 2 (nominal) by 30

Stakes to secure erosion logs shall consist of pinewood or hardwood.

Subsection 208.02(h) shall be replaced with the following:

All erosion logs shall be biodegradable. Photodegradable will not be accepted.

Subsection 208.02 (k) is hereby revised to include the following:

Prior to the initial arrival onto the project site, all equipment shall be thoroughly steam cleaned, including the undercarriages and tires. Equipment must be clean of mud, vegetative matter, and other debris to prevent importation of non-native and noxious weed seeds and aquatic nuisance species from other project sites.

Subsection 208.02 is hereby revised to include the following:

(n) Straw wattle. Shall be the following types unless otherwise shown on the plans:

100% biodegradable netting with a core of noxious weed free rice, wheat or barley straw. Photodegrable netting shall not be allowed. Straw wattles must be certified weed free.

Subsection 208.03 (c) is hereby revised to include the following:

Any loss of time or materials related to erosion shall be the sole responsibility of the Contractor. Any damage to surrounding properties or facilities (either on site or off site) related to erosion caused by construction of this project, will be the sole responsibility of the Contractor.

Subsection 208.04 is hereby revised to include the following:

(f) *2013 Flood Maintenance*. Sediment and debris removal shall be planned and performed according to Colorado NRCS Conservation Practice Standard 326- Clearing and Snagging.
(Website Link: Colorado eFOTG- https://efotg.sc.egov.usda.gov/efotg_locator.aspx?map=US), and the following:

The contractor must provide a disposal plan for clearing and snagging for review and approval by the NRCS/sponsor/owner's representative. The disposal plan for anthropogenic debris must be according to all applicable local regulations and Colorado Department of Health and Environment requirements titled: 2013 Floods - Guidance: Management and Disposal of Flood Debris.

Excavation of sediment is limited to the quantity necessary to meet hydraulic requirements of design flows for the channel and floodplain. Where the extent of flood damage makes it difficult to identify the pre-flood channel capacity, excavation shall be limited to the quantity necessary to construct a stable channel and floodplain with capacity to safely pass the design flow. "Safely" refers to a flow depth and velocity that will not damage the property being protected.

Sediment excavation must be planned to avoid leaving an unstable headcut at the upstream end of the excavated reach, and may include constructing grade control structures where necessary. When the streambed requires reconstruction, a thalweg channel should be provided in the design to provide aquatic organism passage during low flow periods.

Clearing and snagging should only remove as much large wood as needed to reestablish the pre-flood capacity of the channel and floodplain. Leave large wood in the riparian zone where it does not create a risk to life or property, and where possible consider using logs to construct channel and bank stabilization measures. The following are some additional guidelines with regard to large woody debris: To the extent possible, leave logs with a diameter greater than 1/3 the flow depth that are aligned or can be realigned at an angle less than 30 degrees with the direction of flow.

Large wood with a diameter of less than 1/3 the flow depth left in the floodplain should be anchored. All flood deposited woody debris within 20 channel bankfull widths upstream from a bridge, culvert, or other infrastructure at risk may be removed to reduce potential for damaging or impairing the functions of the structure.

(g) *Water Control*. The Contractor is responsible for control of all surface and subsurface water, which may flow across the project site, during normal or storm conditions, throughout the duration of the project as required eliminating or minimizing erosion and sediment. The Contractor shall obtain a Construction Dewatering (CDW) Permit any time groundwater is comingled with stormwater or surface water during construction activities.

Subsection 208.05 shall include the following:

(5) (n) *Straw wattles*. Straw wattles shall be installed according to manufacturer recommendations and be anchored securely to the ground with wood stakes. *Wood Stakes* stake shall be constructed out of untreated wood at a minimum nominal dimensions of 1.5 inches by 1.5 inches by 18 inches long. If used on slopes,

straw wattles shall be installed in a 2-3 inch deep trench. Certified weed-free straw wattles may be used in place of silt fencing.

CONSTRUCTION REQUIREMENTS

Subsection 208.06 shall include the following:

1. Biodegradable hydraulic fluids must be used in all equipment and machinery operating in surface waters; all other requirements in the Boulder County Storm Drainage Criteria Manual must be observed.
2. All equipment must be cleaned and disinfected in accordance with state Division of Parks and Wildlife protocols to prevent aquatic nuisance species (ANS) and weed seeds in accordance with State of Colorado ANS regulations. This involes either steam (heat) or chemical cleaning, not just power washing before entering the construction site.
3. A "spill kit" for emergency pollutant isolation and written clean-up procedures must be onsite at all times during construction activity.
4. Maintenance of new vegetation and plantings should include noxious weed control and if straw is used it must be certified weed-free.
5. Tree removal must comply with the federal Migratory Bird Treaty Act.
6. Prior to commencement of site disturbance, the applicant's contractor must identify and mark the location of all existing OWTS components in the project area and prohibit heavy equipment from the surface of nearby absorption fields. The property owner has agreed to assist the contractor with identifying and marking the location of the OTWS prior to the start of construction.

METHOD OF MEASUREMENT

Any items not specifically called out on the plans are to be included in Site Erosion Control.

BASIS OF PAYMENT

Subsection 208.12 shall include the following:

Pay Item	Pay Unit
Site Erosion Control	Lump Sum
Vehicle Tracking Pad	Square Yard
Stabilized Staging Area	Square Yard

REVISION OF SECTION 211 - DEWATERING

Section 211 is hereby added to the Standard Specifications for this project as follows:

DESCRIPTION

This work consists of dewatering temporary excavations in accordance with Colorado Department of Health and Environment dewatering regulations to facilitate construction activities.

MATERIALS

The Contractor shall provide all required materials and equipment to facilitate dewatering. On-site materials meeting specifications may be used within the limits of construction to construct temporary dams and berms. Other materials such as plastic sheeting and sand bags may also be used if desired by the Contractor.

CONSTRUCTION REQUIREMENTS

The Contractor shall dewater, by pumping or by excavating trenches leading to a positive gravity outlet.

General: For all work, the Contractor shall provide suitable equipment and labor to remove water, and he shall keep the excavations dewatered so that construction can be carried on under dewatered conditions where required by the Drawings and Specifications. Water control shall be accomplished such that no damage is done to adjacent banks or structures. The Contractor is responsible for investigating and familiarizing himself with all site conditions that may affect the work including surface water, level of groundwater and the time of year the work is to be done. All excavations made as part of dewatering operations shall be backfilled with the same type material as was removed and compacted to 95 percent of maximum density (ASTM D698) or to 75 percent relative density (ASTM D2049), except where replacement by other materials and/or methods are required.

Surface Water Control: Surface water control generally falls in to the following categories:

1) Normal low flows along the Little Thompson River;
2) Storm/flood flows along the Little Thompson River;
3) Flows from existing storm drain pipelines; and
4) Local surface inflows.

The Contractor shall coordinate, evaluate, design, construct, and maintain temporary water control conveyance systems. These systems will not worsen flooding, alter major flow paths, or worsen flow characteristics during construction. The Contractor is responsible to ensure that any such worsening of flooding does not occur. The following approximate storm flow data for the Little Thompson River is for information only. This information was obtained from the CH2M study *Little Thompson River Analysis, Phase 2: Little Thompson River above Big Thompson River*.

2-year Flood	NA
5-year Flood	NA
10-year Flood	2,998 cfs
25-year Flood	NA
50-year Flood	9,047 cfs
100-year Flood	13,134 cfs
500-year Flood	26,665 cfs

The 100-year flood flow of 13,134 cfs has a one percent probability of being equaled or exceeded in any given year.

The Contractor will be responsible for diverting surface flow around the construction area so that the excavation for boulders and riprap remain free of surface water for the time it takes to install these materials, and the time required for curing of the concrete in the channel structures.

The Contractor shall, at all times, maintain a flow channel or route for the Little Thompson River. Temporary structures such as berms, sandbags, pipeline diversions, etc., shall be permitted for the control of creek flow, as long as such measures are not a major obstruction to flood flows, do not worsen flooding, or alter historic flow routes. Existing trees and vegetation should be preserved as possible.

Groundwater Control: The Contractor shall install adequate measures to maintain the level of groundwater below the foundation subgrade elevation and maintain sufficient bearing capacity for structures, pipelines, earthwork, and rock work. Such measures may include, but are not limited to, installation of perimeter subdrains, pumping from drilled holes or by pumping from sumps excavated below the subgrade elevation. The foundation bearing surfaces are to be kept dewatered and stable until the structures or other types of work are complete and backfilled. Disturbance of foundation subgrade by Contractor operations shall not be considered as originally unsuitable foundation subgrade and shall be repaired at Contractor's expense.

Special Dewatering Provisions for Instream Structures: The Contractor shall isolate the work area from surface waters, and then draw down the groundwater level to an elevation below subgrade in a manner which will prevent "quick" conditions. The dewatering operation will be continuous, 24 hours per day, until the affected portion of the drop structures is complete and the groundwater level can be allowed to rise without endangering the stability of existing or new structures.

The Contractor should anticipate that even with the groundwater level lowered below subgrade where concrete and riprap is to be placed, conditions will be moist and possibly soft and easily disturbed by his activities. The Contractor is responsible to control such conditions and prevent loosening of the subgrade material and refrain from activities which would make the materials more permeable and/or inadequate to support the structure.

The Contractor may use special drain zones in his design for dewatering trenches or well points, as long as the system does not harm the permanent weep drain system or toe drain filter system's effectiveness. Any temporary dewatering trenches or well points will be restored following dewatering operations to reduce permeability in those areas as approved by the Engineer. Dewatering trenches are not acceptable on the drop slope where they may compromise the integrity of the sloped subgrade material.

METHOD OF MEASUREMENT

Dewatering will not be measured, but will be paid for on a Lump Sum basis.

BASIS OF PAYMENT

Payment will be made under:

Pay Item	Pay Unit
Dewatering/Water Control	Lump Sum

REVISION OF SECTION 212 - SEED AND SOIL CONDITIONING

DESCRIPTION

Section 212 of the Standard Specifications is hereby revised for this project as follows:

The work consists of revegetating areas that have been disturbed as part of floodplain benching, channel grading, debris removal, staging, construction access, or otherwise. This work also includes revegetation that is specified as part of bank stabilization treatments (refer to Revision of Section 506). Refer to the plans for the seed mix and soil conditioning specifications. The property owner will be responsible for seeding Zone 4 areas.

CONSTRUCTION REQUIREMENTS

Subsection 212.06 shall include the following:

Onsite soil shall be amended with 600 lbs of Biosol or approved alternative per acre for Zones 2 and 3. Biosol shall be applied and integrated into the top 3-inch layer of soil by raking.

METHOD OF MEASUREMENT

Section 212.07 shall include:

Payment for Soil Conditioning shall include application and materials.

BASIS OF PAYMENT

Subsection 212.08 shall include the following:

Pay Item	Pay Unit
Seeding (Native) Zone 2	Acre
Seeding (Native) Zone 3	Acre
Soil Conditioning (Biosol)	Acre

Payment will be full compensation for all work necessary to furnish seed and amendments and complete the work.

REVISION OF SECTION 213 - MULCHING

Section 213 of the Standard Specifications is hereby revised for this project as follows:

BASIS OF PAYMENT

Subsection 213.05 shall include the following:

Pay Item	Pay Unit
Mulching (Hydromulch) with 24-month tackifier	Acre

Payment for Hydromulch will be full compensation for all work and materials necessary to furnish and apply the hydromulch with 24-month longevity tackifier per acre (3000 lb).

REVISION OF SECTION 214 - PLANTING

Section 214 of the Standard Specifications is hereby revised for this project as follows:

DESCRIPTION

Subsection 214.01 shall include the following:

The work consists of furnishing all plants, labor, materials and equipment and performing all work necessary and incidental to installing container stock, piles and live cuttings as indicated in the plan set. Irrigation will be required when the container stock and cuttings are installed.

CONSTRUCTION REQUIREMENTS

Subsection 214.03 shall include the following:

It is recommended that the contractor source as much of the plant material as possible through the Colorado State Forest Service (CSFS). Willow cuttings may also be harvested on site if available.

The Contractor shall furnish water for seeding, mulching, planting, transplanting, and any other landscape work required for the project at the time of installation at the direction of the Engineer and/or Ecologist. The Contractor will not be responsible for watering after final acceptance of the project. For containerized stock installation, contractors should dig planting holes to twice the width and equal to the depth of the root ball of the plant. Holes will be watered before planting, then filled, tamping down the soil to remove air pockets, and watered again immediately. At each watering, containers shall receive a minimum of 2.5 gallons of water, or an amount sufficient to saturate the soil to a depth of ~12 inches. The contractor shall be responsible for identifying the water source, obtaining of all approvals and permits to use a water source, and delivery of the water to the site (if required).

BASIS OF PAYMENT

Subsection 214.06 shall include the following:

Payment will be made under:

Pay Item	**Pay Unit**
Nursery Container Stock (DRC #10)	EA
Nursery Container Stock (DRC #60)	EA

Payment for plantings will be full compensation for all work and materials necessary to furnish and install said plant, including irrigation at installation.

REVISION OF SECTION 214 - WILLOW CUTTING AND WATTLES

Section 214 of the Standard Specifications is hereby revised for this project as follows:

Subsection 214.01 shall include the following:
The willow cuttings will be harvested on-site and stored for installation by the contractor. Willow cuttings will be installed at the rootwad bank treatment locations only.

This work consists of furnishing all labor, materials and equipment and performing all work necessary and incidental to installing live willow cuttings at the rootwads bank treatments for the stabilization of soil. Work shall be completed in accordance with other contract documents and as directed by the Ecologist.

Subsection 214.02 shall include the following:

(e) *Willow Stakes* – Willow stakes will be harvested on site by the contractor.

Subsection 214.03 shall include the following:

(k) *Transportation*. The harvested willows will be storaged at the project site and the contractor will not be responsible for transportation.

(l) *Installation*. Using a piece of rebar or other mechanical method such as a stinger backhoe attachment or trenching equipment, create a vertical hole or trench deep enough to reach the water table throughout the growing season. Insert about 2/3 of the cutting into the hole/trench so that the end of the cutting is in contact with the water table.

The root end of cuttings shall be tamped into the pilot hole/trench to a minimum depth of 2 feet, or until the root-end of the cutting meets elevation at which groundwater will be present at the driest point of the growing season. Note that some water tables will vary greatly from April to October, consult with the Ecologist to determine proper rooting depth.

The top of the cutting shall protrude a minimum of 1 foot, with at least 2 live buds showing above ground. Dead blow hammers or rubber mallets shall be used to tamp in the cuttings into holes, in such manner as to not cause the wood to split. Trench planting should not require any tamping.

Soil shall be placed/backfilled in any spaces around the cuttings and tamped into place to remove any air pockets.

The Contractor shall furnish water for seeding, mulching, planting, transplanting, and any other landscape work required for the project at the time of installation at the direction of the Engineer and/or Ecologist. The Contractor will not be responsible for watering after final acceptance of the project. The contractor shall be responsible for identifying the water source, obtaining of all approvals and permits to use a water source, and delivery of the water to the site (if required).

Subsection 214.06 shall include the following:

Payment will be made under:

Pay Item	Pay Unit
Willow Cuttings	Each

Payment for willow cuttings will be full compensation for all work and materials necessary to furnish and install said plant, including irrigation at installation.

REVISION OF SECTION 214 - LARGE WOODY MATERIAL FEATURE ELEMENT

Section 214 is hereby added to the Standard Specifications for this project and shall include the following

DESCRIPTION

Subsection 214.01 shall include the following:

Large Woody Material (LWM). This work includes all equipment, materials, labor, and other costs associated with supplying and installing large woody material as indicated in the plans. All LWM will be harvested from the project site.

MATERIALS

Subsection 214.02 shall include the following:

Large woody material (LWM) are trees or tree trunks, preferentially sourced with intact root mass, used to develop riparian habitat features and for low-flow to bankfull-discharge stabilization of channel features.

LWM elements shall not be hollow or rotten, and shall include bark.

Tree trunks without intact root mass may be substituted with approval of the Engineer if suitable LWM with intact root mass is not available.

LWM shall be sourced from within the Project and be of non-invasive species. If insufficient LWM elements are generated by the Project, the Engineer will evaluate the design make necessary adjustments so that import of LWM is not required.

Delivery, Storage, and Handling

LWM shall be harvested, handled, and stored according to subsection 201 – Clearing and Grubbing.

Large woody material for structures shall be secured from the following sources:
(1) Large wood stockpiles on the project site
(2) Salvaged trees removed during Project activities, as approved by the Engineer

The contractor shall take care to protect the root wads and branches from damage during handling and installation of large woody material.

CONSTRUCTION REQUIREMENTS

Subsection 214.04 shall include the following:

Add the following subsections immediately following subsection 214.04 as follows:

214.041 Large woody material (LWM) placement. Large woody material shall be placed per the following:

(a) Place LWM as specified and indicated in the Plans.
(b) The contractor shall immediately notify the engineer if a specified log size is not available.

(c) The location, element number, and configuration of large wood structures may vary in field due to site conditions, and the final location of these structures will be approved by the Engineer in the field prior to construction. After construction, final large wood element number shall be totaled for payment.
(d) Material of LWM minimum diameter but shorter than minimum specified length shall not be included in final element count for payment, but shall be retained and used on-site for feature enhancement.
(e) Burial depth/length shall be 1/3-2/3 of total log length. A log with an orientation angle of 0 degrees shall be placed parallel to the bank, and a log with a 90-degree orientation shall be placed perpendicular to the bank. Orientation of logs shall be within 10 degrees of the specified orientation angle, unless approved by the engineer in the field.
(f) Large wood shall be secured in placement locations by designated anchoring method listed on the plans. The contractor shall notify the engineer of additional measures needed to secure elements beyond those outlined in the plans.
(g) The contractor shall take care to minimize bank disturbance. Following construction, the contractor shall stabilize any disturbed banks using methods noted on the plans.

214.042 Large woody material (LWM) Quality Control and Acceptance. Large woody material shall be accepted per the following:

(a) Verify that LWM delivered to the placement site meets the applicable quality, size, type, and number of elements presented in the Plans. Verification of materials sourced within Project limits shall be by visual inspection of quality and by measurement of trunk length/diameter.
(b) Rejected materials shall be transported off-site and disposed of at Contractor expense outside of Project limits – to be included in Section 201 – Clearing and Grubbing.
(c) Verify that LWM has been placed to lines and grades indicated in plans. Verification shall be by visual inspection and survey of grade if specific elevations are identified on the Plans.
(d) Verify LWM count. Verification shall be by visual inspection. Elements not visible shall be counted prior to burial. LWM count of any individual installation shall not vary by more than +/-10% of element counts presented in the Plans.

METHOD OF MEASUREMENT

Subsection 204.05 shall include the following:

Large Woody Material shall be measured by the number of installed LWM elements as indicated in the Plans.

BASIS OF PAYMENT

Subsection 204.06 shall include the following:

The accepted quantities will be paid for at the contract unit price for each of the pay items listed below that appear in the bid schedule.

Pay Item	Pay Unit
Rootwad	Each
Log Vane	Each

REVISION OF SECTION 506 – BOULDERS

Section 506 of the Standard Specifications is hereby revised for this project as follows:

GENERAL

Subsection 506.01 is hereby replaced with the following:

This work includes construction of an in-channel log vane and three rootwad structures that will use Boulders (18" to 24") and Boulders (30" to 42") as part of the design. Habitat boulders (Boulders 18" to 24") will also be installed as part of channel shaping. Work includes the selection and placement of approved boulders and cobbles into distinct features as shown on the plans.

MATERIALS

Subsection 506.02 is shall be modified to include the following:

1. The boulders will be harvested on-site by the property owner and approved by the Engineer prior to installation. Boulders will not be imported to the project site.

Subsection 506.03 is shall be modified to include the following:

1. Following excavation and acceptance of subgrade by Engineer, boulder placement shall commence as follows:

    i. Boulders shall be placed on the prepared subgrade in a manner which will minimize voids.
    ii. Voids between boulders exceeding 4" shall be chinked with on-site cobble material.

2. Habitat boulders serve an aesthetic function and as such shall be placed and rotated into final position as directed by Engineer in order to achieve the desired results.

3. Arrangement of boulders within each feature and spacing between log vane and rootwad features will be as shown in the Plans and per the Engineer's direction.

4. Any dewatering required during construction shall follow Revision of Section 211, the approved construction dewatering permit requirements and/or water control plan.

METHOD OF MEASUREMENT

Subsection 506.04 is shall be modified to include the following:

The quantity to be paid for boulders shall not be re-measured but will be the number of boulders designated in the contract and installed to the thickness shown on the contract plans. There will be no separate measurement unless there is an ordered change.

BASIS OF PAYMENT

Subsection 506.05 is shall be modified to include the following:

The accepted quantity of 24" to 42" boulders will be paid for at the contract unit price per on-site transport and installation of boulders since the boulders will be harvested from on-site sources only.

Payment shall be made under:

Pay Item	Pay Unit
Boulders (18" to 24") – On-Site Transport & Installation Only	EA
Boulders (30" to 42") – On-Site Transport & Installation Only	EA

Payment shall be full compensation for all materials, equipment and labor necessary to complete this work. This shall include but not be limited to the following:

(a) Subgrade Preparation
(b) Boulders – To be harvested on-site by the property owner only
(c) All other necessary items specified in the plans to complete placement of boulders.

REVISION OF SECTION 625 - CONSTRUCTION LAYOUT AND SURVEYING

DESCRIPTION

Subsection 625.01 shall include the following:

This work consists of pre-construction surveying, calculating, and staking necessary for the construction of all elements of the project. Following the completion of the project, as-built surveys will be required. This work shall be done under the supervision of a Professional Land Surveyor (PLS) or Professional Engineer (PE) who is experienced and competent in road and bridge construction surveying and licensed in the State of Colorado.

CONSTRUCTION REQUIREMENTS

Subsection 625.03 shall include the following:

A pre-construction survey shall be conducted by a licensed Professional Land Surveyor to mark the limits of grading and location of proposed in-stream features as indicated in the construction plan set.

A post-construction (as-built) survey shall be conducted by a licensed Professional Land Surveyor to survey the final stations, elevations, and dimensions of constructed in-channel features and bench grading. The as-built survey shall include the following requirements:

1. Surveyor must coordinate with Engineer prior to commencing work.
2. Surveyor will verify or establish horizontal and vertical control for the project prior to commencement of work.
3. Survey will provide a Topographic Survey (including a DTM with 1 foot contour map) of the Limits of Disturbance.
4. Breaklines should be placed within the DTM file to represent the top, toe, and thalweg of the bankfull channels, as well as toe and top of bench excavation.
5. Surveyor will ensure all above ground improvements are located in the field.
6. At a minimum, the Surveyor is responsible for collecting and producing the following data:
   a. Clear delineation of these boundary features:
      - Top and toe of bank and terrace.
      - Channel boundary – shots along the stream channel shall be sufficient enough to map the pattern of the channel as it appears on the ground.
      - At a minimum, shots along the meander bend shall be taken at the PC and PT points, as well as the mid-point and quarter points of the curve.
      - Additional shots along the meander bend may be necessary such that the shots are spaced approximately 1/3 of the designed bankfull width, enough shots shall be obtained to fit a curve along the top, toe, and thalweg.
      - Bankfull.
      - Thalweg (deepest part of the channel).
      - Excavated floodplain.
      - Beginning and ending of the log vane structure.
      - Beginning and ending of all rootwad segments.

Prior to mobilization of construction equipment, Ecologists on the Emergency Watershed Protection (EWP) team shall field flag critical stands of existing vegetation which are not to be disturbed. The Engineer shall review flagged areas with the Contractor prior to initiation of construction activities. Construction equipment shall not be mobilized before the Contractor has reviewed the flagged vegetation with the Engineer.

The Contractor shall be responsible for coordinating with local Utility owners (i.e. Colorado811) and property owners and conducting a private utility survey to locate utilities on-site prior to commencing work.

Subsection 625.13 shall be modified to include:

Payment for construction surveying will be the contracted lump sum bid.

Pay Item	Pay Unit
Pre-Construction Surveying	Lump Sum
Construction Surveying (As-builts)	Lump Sum

REVISION OF SECTION 626 – MOBILIZATION AND DEMOBILIZATION

Section of the Standard Specifications is hereby revised for and shall include the following:

Subsection 626.01 shall be modified to include:

Mobilization shall cover all work including labor, material and any incidental work and equipment necessary for mobilization of personnel, equipment and supplies at the project site. This item shall also include the establishment of the Contractor's offices, buildings, and other necessary facilities. This item may also include providing of required bonds, insurance and preparation of the project schedule. The removal of the Contractor's equipment, supplies, excess materials, and cleanup of the site is also included in this item.

In addition, mobilization shall cover all outstanding items listed as a condition of Boulder County's Stream Restoration Permit approval that the Contractor is responsible for not specifically listed in 630- Construction Zone Traffic Control and Section 208 – Erosion Control.

Subsection 626.02 shall be modified to include:

No measurement for payment shall be made of any of the work, materials, and equipment required for mobilization. Payment will be made as the work progresses. Fifty-percent (50%) of the lump sum bid price will be paid at the time of the first monthly progress payment. An additional thirty-percent (30%) will be paid when one-half the original contract amount is earned. The remaining twenty percent (20%) will be paid upon final acceptance of the project.

The lump sum bid price shall include all of the Contractor's costs of whatsoever nature including labor, material, and any incidental work and equipment necessary for mobilization of personnel, equipment and supplies at the project site. This item shall also include the establishment of the Contractor's offices, buildings and other necessary facilities, and all other costs incurred of labor and operations which must be performed prior to beginning the other items under this Contract. This item may also include provision of required bonds, insurance and preparation of the project schedule. The removal of the Contractor's equipment, supplies, excess materials, and cleanup of the site is also included in this item. Mobilization shall not exceed 10% of the total contract.

Pay Item	Pay Unit
Mobilization and Demobilization	Lump Sum

REVISION OF SECTION 630 - CONSTRUCTION ZONE TRAFFIC CONTROL

Section 630 of the Standard Specifications is hereby revised for this project to include the following:

The Contractor shall submit five (5) copies of a Traffic Control Plan (TCP) to the Engineer for approval at the preconstruction meeting. The TCP shall be in conformance to the Manual of Uniform Traffic Control Devices (MUTCD) and the CDOT standards. The TCP will be reviewed by the Boulder County Transportation Department and the Engineer.

The TCP should include at a minimum:

1. Final access locations and staging and refueling areas for the project shall be shown on plans for building permits along with the permission letters or easements from the respective property owners.
2. The project site will be accessed from public roads in Larimer County. The applicant shall be in conformance with Larimer County requirements regarding: accesses, hauling hours and routes, and traffic control.
3. The applicant shall ensure that vehicle tracking is included in the erosion and sediment control plan. Vehicle tracking shall be located so as to keep access roads clean of any soil from the site.
4. A qualified Professional Engineer registered in the State of Colorado shall provide stamped engineered plans at the time of building permit application.
5. Construction staging shall be located in areas outside of the 100 – year flood plain as best as possible, or as far away from the creek as possible.
6. The applicant shall refer to the State of Colorado stormwater management plan for appropriate erosion control and vegetation measures. The location of erosion control shall be shown on site plans submitted for building permit approval.
7. Parking plans shall be shown on the site plans for approval. Otherwise, workers' vehicles can be parked in designated approved areas that are outside of the road traveled way which do not conflict with the project work.
8. The applicant shall obtain all necessary permits before commencing operations, including without limitations : United States Army Corps of Engineers Permits, a stormwater permit from the State of Colorado (for over 1 acre of disturbance), and Oversize/Overweight permits from the Transportation Department (contact Rocky Milano at 303-682-6737) if applicable.
9. An application for a Boulder County Stormwater Quality Permit (SWQP) will be required with the building permit application.
10. Boulder County's Oversize/Overweight Permit Application. This permit is required as a condition of the Stream Restoration Permit approval and is required to operate vehicles of a size, weight, or load exceeding the maximum specified in the Colorado Vehicle Code.
11. The applicant must conform to Larimer County requirements for accesses, staging, refueling, haul hours and routes, worker vehicle parking, and traffic control within Larimer County.

Subsection 630.15, delete all paragraphs and replace with the following:

No measurement for payment shall be made for any of the materials, work, and equipment required. Payment will be made as work progresses. 50% of the lump sum bid price will be paid in the first monthly progress payment; an additional 30% will be paid when one-half of original contract amount is earned; and the remaining 20% will be paid upon final acceptance of the project.

Subsection 630.16 is hereby revised to include the following:

The payment shall be total compensation for all labor, equipment, materials, maintenance, and all incidentals necessary to prepare, implement, and maintain the approved traffic control plan in accordance with the plans and accepted. The removal of all TCP devices and materials is also included in the lump sum price for this bid item.

Pay Item	Pay Unit
Traffic Control	Lump Sum

REQUIREMENTS OF THE USACE 404 PERMIT REGARDING PREVENTION OF THE SPREAD OF AQUATIC INVASIVE SPECIES

Equipment and gear that were previously used in another stream, river, lake, pond or wetland, and that are to be used in or near the waters on the project, shall be treated to prevent the spread of aquatic invasive species. These species include, but are not limited to:

(1) Eurasian watermilfoil
(2) Zebra mussel
(3) Quagga mussel
(4) New Zealand mudsnail

Equipment that shall be treated includes all parts of machinery and vehicles of all types and sizes that came into contact with the live water.

Gear that must be treated includes boots, waders, hand tools, and all other materials and attire used previously in the live water.

The Contractor shall use one of the following two treatments:

First Treatment

- Remove all mud and debris from equipment (tracks, turrets, buckets, drags, teeth, etc.)
- Spray/soak equipment with a solution of commercial grade quaternary ammonium disinfectant compound containing at least 8.0% active ingredient diluted in solution to achieve at least 0.8% concentration (roughly 12 ounces of product per gallon of water). Specifically, a 1:15 solution of Quat 4 or Super HDQ Neutral institutional cleaner and water, could be used for effective treatment.
- Treated equipment should be kept moist for at least 10 minutes, managing rinsate as a solid waste in accordance with local, county, state, or federal regulations

Second Treatment

- Remove all mud and debris from equipment (tracks, turrets, buckets, drags, teeth, etc.)
- Spray/soak equipment with water hotter than 140 degrees Fahrenheit for at least 10 minutes.
- Do not move water from one water body to another
- Be sure Equipment is dry before use.

Prior to moving such equipment onto the project, the Contractor shall submit to the Engineer a written list of the equipment and a signed certification that it was treated using one of the two methods specified above.

After project completion, this equipment shall be treated prior to its use in another stream, river, lake, pond of wetland.

The USACE 404 Nationwide Permit Verification, Corps File NO. NOW-2018-00760-DEN, for the EWP Program. Parrish Ranch Project was issued on May 2, 2018.