

Little Thompson Watershed Coalition

CDBG-DR WATERSHED RESILIENCE & NRCS EMERGENCY WATERSHED PROTECTION
IMPLEMENTATION PROJECT: NORTH 83rd STREET

QUESTIONS (From the Pre-Bid Meeting, Site Visit and Follow-up)	ANSWERS
Bid Questions:	
Will LTWC select the lowest bidder as the contractor? –	LTWC will select the most qualified bidder per the criteria set out in the RFP.
Should the bidders just bid the total amount available for the project?	LTWC will select the most qualified bidder per the criteria set out in the RFP.
Will there be a list of subcontractors sent out so contractors can contact possible subcontractors?	Yes, LTWC will provide a list of the sub-contractors that were present at the pre-bid meeting.
Will LTWC make AutoCAD file available for bidders?	No, the AutoCAD file will only be made available to the selected contractor.
Will we make property owner’s contact information available to the bidders?	No, the property owner information will only be made available to the selected contractor.
Contract Questions:	
Are there penalties for being late on this project?	The funds expire in the end of June 2017, if the project is not complete by then the contractor can’t be paid.
What is the retainage on project?	The contract states that the retainage on the project will be 5% of the contract amount.
What are the equipment washing requirements for transport off-site?	Boulder County requires that equipment is washed and dried 48 hours before transport off-site.
Will the contractor need a haulage permit?	Yes, the contractor is required to acquire permits from Boulder and/or Larimer Counties.
Will contractor need to get a permit from the county to fill Doug’s scour area (possibly up to 3000 cy)?	Permits have already been acquired from Boulder County and Army Corps based on the proposed design. The contractor will not need to acquire additional permits.
Can the Army Corps 404 permit be made available to bidders?	Yes, the 404 permit and other updated documents are on bid net direct.

Construction Questions:	
How many yards of sediment will need to be taken off-site and where will it go?	There is an estimated 21,000 CY of material to move around the site. Roughly 30% of this material will need to be removed, the rest will be used on site to fill scour areas and build the berm on the Spence property. LTWC will work with the landowner to find drop sites for the removed fill.
What is the guard rail on N 83 rd St replacement line item?	The guard rail issue and staging off of N 83 rd St in the current bridge construction site has been removed from the staging area options. The Spence property will serve as the best staging area for the project.
Can the required topsoil be held on property? Will there be a need to import topsoil?	The Spence property has the makings of topsoil (manure piles on site can be mixed with other dirt on site to serve in topsoil areas on his property) There may be a need to import more topsoil.
Is there a revegetation cost estimate sheet addendum? – can we clarify what is fixed cost and cost changes?	The revegetation plant species will be provided by CSU extension and have set costs that include transportation and installation. The contractor will work with the design team to acquire the required vegetation. Note that the vegetation costs should assume trucking in bulk water for watering at time of installation.
Is the riffle design set in stone or is there flexibility in construction?	Please note that the riffle design is a suggested design, the location, elevations, and fish passages are required. A new design will have to be fully vetted and approved by the design engineer.
Can the contractor substitute plant species for the listed species in the revegetation plan?	No, the contractor must use the same plants identified in the design.
How much debris removal is there on the project?	There is an estimated 20 truckloads of debris to be removed, mainly consisting of dead trees and possibly one semi-buried car body.
Will the berm on the Spence property be made from sediment deposits?	Yes, potentially 2,200 cubic yards of the reinforced berm will be made up of deposited materials per the project design.

North 83rd Street – Little Thompson River

Plan Set Update Summary

Sheet ID	Sheet Title	Revision Description
01	Cover Sheet	None
02	General Notes and Legend	Minor updates to the legend
03	Control Sheet	None
04	Site Plan	Planting zone and bank treatment updates
05-06	Grading Plan and Profile	Removed soil lifts treatment, reduced berm height
07	Profile and Typical Section	None
08-09	Cross Sections	Updated bank treatment designations
10	Riffle Detail 1	None
11	Riffle Detail 2	None
12	Detail Sheet	Removed soil lift detail
13-14	Planting Plan	Zone 4 is now Zone 3 seeding only, updated bank treatments
15	Planting Sheet Detail	None
16	Planting Zone Tables	Removed Zone 4 table, updated Zone 2 and 3 tables, updated bank treatment table

EMERGENCY WATERSHED PROTECTION (EWP) PROGRAM

Draft Drawing Set for Internal Review

(NOT FOR CONSTRUCTION)

LITTLE THOMPSON RIVER ABOVE NORTH 83RD STREET RESTORATION

BOULDER COUNTY, COLORADO

PREPARED FOR:

LITTLE THOMPSON WATERSHED COALITION (LTWC)

P.O. BOX 1413

435 HIGH STREET, #201

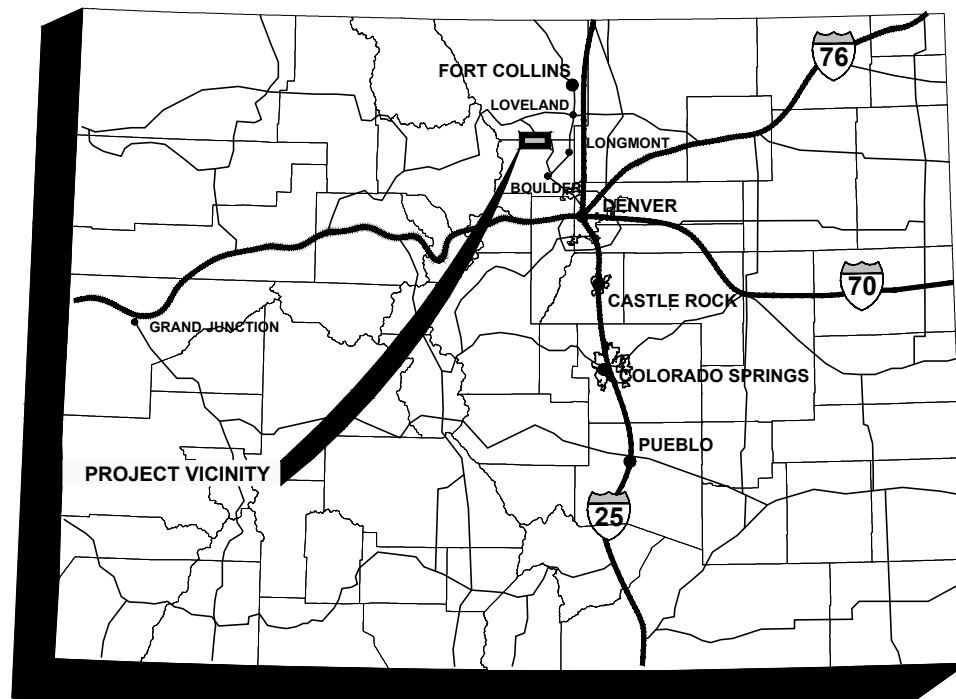
LYONS, COLORADO 80540

PREPARED BY:

RESILIENT WATERSHED PARTNERS

10106 WEST SAN JUAN WAY, SUITE 215

LITTLETON, COLORADO 80127



VICINITY MAP

NOT TO SCALE



SITE MAP

NOT TO SCALE

SHEET INDEX

01	COVER SHEET
02	GENERAL NOTES AND LEGEND
03	CONTROL SHEET
04	SITE PLAN
05-06	GRADING PLAN AND PROFILE
07	PROFILE AND TYPICAL SECTION
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10	RIFFLE DETAIL 1
11	RIFFLE DETAIL 2
12	DETAIL SHEET
13-14	PLANTING PLAN
15	PLANTING DETAIL SHEET
16	PLANTING ZONE TABLES

**FOR BIDDING PURPOSES ONLY
NOT FOR CONSTRUCTION**

THESE PLANS ARE SUBJECT TO REVISION AND ARE FOR BIDDING PURPOSES ONLY. REVISIONS TO THIS BID SET WILL BE NOTED ON FINAL CONSTRUCTION SET. CHANGES IN QUANTITIES WILL BE NOTED VIA SEPARATE ADDENDUM. ENGINEER IS NOT FINANCIALLY RESPONSIBLE FOR COSTS ASSOCIATED WITH CHANGES IN DESIGN OR QUANTITIES RELATED TO CHANGES MADE FOR THE FINAL CONSTRUCTION DOCUMENTS.



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LITTLE THOMPSON
WATERSHED COALITION
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DESIGNED: SLH
DRAWN: KAJ
CHECKED: JWS
DATE: 12/13/16

REVISION	DESCRIPTION	BY	DATE
(R-)	
(R-)	
(R-)	
(R-)	
(R-)	

CONSULTANT ENGINEER CERTIFICATION
I HEREBY AFFIRM THAT THESE BID PLANS WERE PREPARED UNDER MY DIRECT SUPERVISION, IN ACCORDANCE WITH ALL APPLICABLE LOCAL AND STATE STANDARDS AND STATUTES, RESPECTIVELY; AND THAT I AM FULLY RESPONSIBLE FOR ALL DESIGN AND REVISIONS RELATIVE TO SAID PLANS.

LITTLE THOMPSON RIVER ABOVE N 83RD ST
COVER SHEET

SHEET/REFERENCE NO.
1
OF
16

CONSTRUCTION NOTES

- Except where otherwise provided in these plans and specifications, the Colorado Department of Transportation (CDOT) Standard Specifications for Road and Bridge Construction, 2011 Edition, shall apply.
- All materials and workmanship shall be subject to inspection by the Little Thompson Watershed Coalition (LTWC) and their representatives. LTWC reserves the right to accept or reject any such materials and workmanship that does not conform to its standards, the construction plans, and the project specifications.
- A preconstruction meeting shall be scheduled a minimum of 48 hours and a maximum of 96 hours prior to the start of construction. A preconstruction meeting will not be scheduled until the grading permit and all other necessary permits have been obtained.
- LTWC shall be contacted a minimum of 24 hours prior to any necessary inspection.
- The contractor shall have one (1) signed copy of the construction plans approved by LTWC, one (1) copy of the project specifications, including the CDOT Standard Specifications.
- Topographic mapping shown on the drawings reflects 2014 LIDAR data and 2016 project survey.
- Project facilities are to be located based on the survey coordinates, elevations, dimensions, and/or geometric design data provided on the drawings.
- All trenches and excavation shall be adequately supported and the safety of workers provided for as required by the most recent Occupational Safety and Health Administration (OSHA) "Safety and Health Regulations for Construction."
- The work will take place in and around a stream, subject to periodic flooding. The Contractor shall be responsible for the control of surface and subsurface water during the course of the work. Any damage to the work resulting from surface flows, base flows or flood flows including buoyancy forces on pipelines and other facilities shall be corrected by the Contractor at the Contractor's sole cost. The Contractor shall be responsible for obtaining and satisfying the requirements of any applicable permits pertaining to water and erosion control.
- All structures shall be constructed in dewatered conditions, groundwater shall be maintained a minimum of 2 feet below the lowest point of excavation for any given structure.
- Contractor shall protect existing trees and shrubs as shown on the plans. All trees and shrubs to be removed are specifically shown on the plans and shall be staked by the contractor and approved by the engineer prior to construction. All trees and shrubs removed shall be hauled off-site. If construction activities impact or damage trees not intended to be removed, the contractor will be solely responsible for the mitigation requirements and may pay damages up to three times the market value of the tree.
- Existing topsoil shall be stripped to a depth of 6" prior to grading, stockpiled during grading, and redistributed over graded areas prior to seeding.
- Contractor shall field verify the location (horizontal and vertical) at connections to all existing infrastructure. This information shall be collected and submitted to the engineer for review prior to fabrication and/or prior to installation of any new facilities shown on these contract drawings. The engineer will determine if any minor modifications to the new facilities shown on the contract drawings are necessary such as horizontal and vertical adjustments.
- Contractor shall confine work to the construction limits shown on the plans.
- Muck excavation shall be used only as approved by the Engineer.
- All removal items shall become the contractor's property to be disposed of in accordance with specifications at no additional expense to the owners.
- The contractor shall notify the engineer immediately of any field condition not consistent with the contract documents.
- The contractor shall be responsible for the cleanup of any trash or mud on the site or adjacent streets as a result of construction. The contractor shall restore access areas to their original grades and pre-disturbance state of vegetation. The cost to restore these areas shall not be measured and paid for separately, but shall be included in the cost of the work.
- Saw cutting, removal, and disposal of all existing concrete and asphalt pavement shall not be paid for separately but shall be included in the cost of the work.
- The Contractor is responsible for implementing and maintaining erosion and sediment control measures at all times during construction. The plan may be modified as field conditions warrant with approval from the Boulder County Transportation Department.
- The Contractor shall provide, erect and maintain proper traffic control devices until the site is open to traffic. The contractor shall submit a traffic control plan to the Boulder County Transportation Department.
- Prior to fill placement, areas shall be stripped of existing vegetation and other organic or harmful materials from the construction areas. Surfaces shall be free of mounds and depressions which could prevent uniform compaction.
- Repair of any damage to existing improvements or landscaping is the responsibility of the Contractor.
- All damaged existing curb, gutter, and sidewalk shall be repaired prior to acceptance of completed improvements.
- If dewatering is required, a state construction dewatering discharge permit is required for discharges to a storm sewer, channel, irrigation ditch, any street that is a tributary to the aforementioned facilities, or any water of the United States.
- Scales shown are for full size sheets (22" x 34") and requires adjustment for half (11" x 17") size.

UTILITY NOTES

- The locations of existing utilities shown on the drawings are approximate and were based on local GIS data, as-built drawing information and/or surveyed surface features. Locations of existing utilities shall be verified by the contractor prior to actual construction. Contact the Utility Notification Center of Colorado Toll Free at 811.
- All existing utilities shall be protected by the contractor in place. The contractor is responsible for coordination of utility relocation by utility companies. The contractor shall be responsible for protecting utilities during construction and shall not hold LTWC harmless for damages arising from the contractor's failure to adequately protect existing utilities.

SURVEY NOTES

- The contractor shall preserve, relocate, or replace survey points, including property boundary corners, land corners, range points, and survey control markers and bench marks. All property boundary corners shall be placed by a Colorado Professional Land Surveyor (PLS).
- The contractor shall provide all construction surveying.

PERMITTING NOTES

- The contractor is responsible for any and all permits, license, fees, and bonds that are necessary to complete the construction of this project. The cost of these items shall not be measured and paid for separately, but shall be included in the work.
- All construction activities must comply with the State of Colorado permitting process for "Stormwater Discharges Associated with Construction Activity." For information, please contact Colorado Department of Health, Water Quality Control Division, WQCD-PE-B2, 4300 Cherry Drive South, Denver, Colorado 80222-1530. Attention: Permits and Enforcement Section. Phone (303) 692-3500.
- Construction shall not begin until a Stream Restoration Permit (combined Grading Permit and Floodplain Development Permit) is issued for the project by the Boulder County Land Use Department. The Stream Restoration Permit includes both separate Grading and Floodplain Development Permits. Conditions for Stream Restoration Permit approval are listed in items 4 to 18.
- Access locations for the project shall be shown on plans for building permits. Permission letters/easements from the respective property owners shall be provided.
- The contractor must develop a traffic control/management plan (for the accesses on County roads) approved by a Traffic Control Supervisor and submit it to the Boulder County Transportation Department for review and approval at the time of building application. The traffic control/management plan must include:
 - Haul routes to be used. Yellowstone Road shall not be used as part of the haul routes.
 - Flaggers and/or other traffic control measures must be used at the intersections of the access points on North 83rd Street during hauling operations.
 - Locations and types of warning signs along the roads shall be shown.
 - The contractor must use vehicle tracking to minimize the amount of rocks, mud, and other debris tracked onto North 83rd Street.
 - The contractor must provide a sweeping plan for the affected portion of North 83rd Street if sweeping becomes necessary.
 - Prior to project commencement, the applicant must photo-document the conditions of all County roads used for hauling. The contractor must restore all affected roadways to pre-project conditions or better.
 - 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. Parking plans shall be shown on the site plans for approval.
 - The project shall be coordinated with the Transportation Department's Public Relations Director, Andrew Barth (303-441-1032).
- Hours of hauling shall be from 8:30 AM to 4:00 PM to limit impacts on regular vehicular traffic, especially during peak commuter periods.
- Construction staging should be located in areas outside of the 100-year floodplain as best as possible, or as far away from the Little Thompson River as possible. Staging locations shall be shown on plans for building permits.
- Stream access corridors shall be shown on plans for building permits.
- Fueling areas must be located in upland sites, as far away from the stream edge as possible, and preferably in areas without porous stream deposits such as sand or cobble. Such areas should be at least 50 feet from the creek, and preferably 100 feet. County road right-of-ways can be used if approved by the Boulder County Transportation Department. Appropriate BMPs for fueling areas must be utilized. Fueling areas shall be shown on plans for building permits.
- There shall be no parking/staging in the North 83rd Street right-of-way.
- The contractor must obtain all necessary permits before commencing operations, including without limitation: 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.
- Appropriate erosion control measures shall be installed downslope and parallel to contours for all disturbed areas including staging areas. The location of erosion control shall be shown on site plans submitted for building permit approval. Stockpiled fill piles over 30 days shall be properly covered and/or stabilized with temporary vegetation. The plan may be modified as field conditions warrant with approval from Boulder County Transportation Department.
- Biodegradable hydraulic fluids must be used in all heavy machinery.
- Prior to transporting equipment to the site, all machinery must be cleaned to remove aquatic nuisance species (ANS) and weed seeds in accordance with State of Colorado ANS regulations. This involves either steam (heat) or chemical cleaning, not just power washing.
- A 'spill kit' and written clean-up procedures must be on-site during all work with heavy machinery.
- Any trees removed should be done so between September 1 and March 31, the non-nesting season for migratory birds.
- Before beginning construction, the contractor must determine the location of all the existing approved Onsite Wastewater Treatment Systems (OWTS) components in the project area. Approved OWTS can be found on www.SepticSmart.org. If there are unapproved OWTS, the information may not be online and the owner should help with the general location of the system.
- Heavy equipment should be restricted from the surface of the absorption field during stream restoration to avoid soil compaction, which could cause premature absorption field malfunction. Caution should be used in conducting trenching and excavation activities so that sewer lines and other OWTS components are not damaged.

LEGEND

- Existing Major Contour Line
- Existing Minor Contour Line
- Proposed Major Contour Line
- Proposed Minor Contour Line
- Property Line
- Temporary Fence Location
- Tree
- Tree (Group)
- Pedestrian Access to Channel
- Lowflow Channel
- Floodplain Bench
- Pool Location
- In Stream Structure
- Soil Riprap Extents
- 1' Drop Riffle
- Vehicle Tracking Pad
- Debris Removal Area
- Potential Staging Area
- Structure
- Denotes Areas Where No Work is to Occur

PLANTING ZONE LEGEND

- Zone 1: 70% - 100% Wet
- Zone 2: 40% - 70% Wet
- Zone 3: 40% Wet to Bankfull/Transitional
- Zone 4: Upland

SPECIAL TREATMENT LEGEND

- Riffle Crest Key-In Cuttings
- Bio-Stabilization Bank Protection
- Willow Stakes
- Willows
- Coir Mat
- Soil Lift
- Rootwad

ABBREVIATIONS

- CFS Cubic Feet Per Second
- CLR Clear
- CY Cubic Yards
- EA Each
- EL Elevation
- ELEV Elevation
- FT Feet
- HORIZ Horizontal
- LF Linear Feet
- LT Left
- MAX Maximum
- MIN Minimum
- RT Right
- SHT Sheet
- TYP Typical
- VERT Vertical
- WSE Water Surface Elevation
- WSEL Water Surface Elevation

HYDRAULIC INFORMATION

- Drainage Area = 107.7 Square Miles
- 2-Year Flow Rate = 232 cfs
- 10-Year Flow Rate = 3,100 cfs
- 25-Year Flow Rate = 6,186 cfs
- 50-Year Flow Rate = 9,100 cfs
- 100-Year Flow Rate = 13,000 cfs
- 500-Year Flow Rate = 17,500 cfs



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PREPARED FOR:
LITTLE THOMPSON WATERSHED COALITION
P.O. BOX 1413
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LYONS, COLORADO 80540

PREPARED BY:

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DESIGNED:	REVISION	DESCRIPTION	BY	DATE
SLH	(R-1)	LEGEND UPDATES	SLH	12/28/16
DRAWN:	(R-)	
CHECKED:	(R-)	
DATE:	(R-)	
	(R-)	

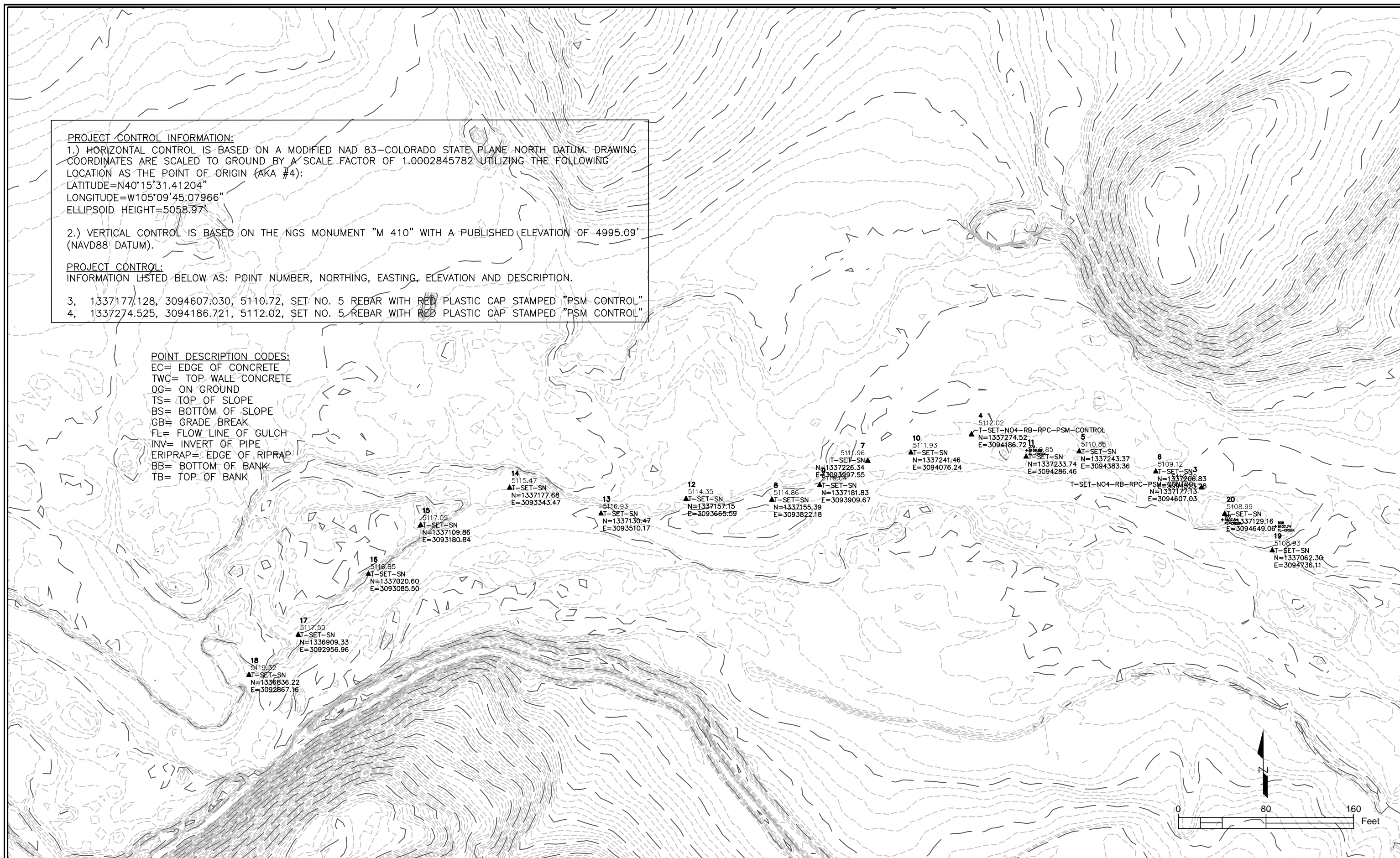
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LITTLE THOMPSON RIVER ABOVE N 83RD STREET
GENERAL NOTES

SHEET/REFERENCE NO.
2 OF 16

PROJECT CONTROL INFORMATION:
 1.) HORIZONTAL CONTROL IS BASED ON A MODIFIED NAD 83-COLORADO STATE PLANE NORTH DATUM. DRAWING COORDINATES ARE SCALED TO GROUND BY A SCALE FACTOR OF 1.0002845782 UTILIZING THE FOLLOWING LOCATION AS THE POINT OF ORIGIN (AKA #4):
 LATITUDE=N40°15'31.41204"
 LONGITUDE=W105°09'45.07966"
 ELLIPSOID HEIGHT=5058.97'
 2.) VERTICAL CONTROL IS BASED ON THE NGS MONUMENT "M 410" WITH A PUBLISHED ELEVATION OF 4995.09' (NAVD88 DATUM).
PROJECT CONTROL:
 INFORMATION LISTED BELOW AS: POINT NUMBER, NORTHING, EASTING, ELEVATION AND DESCRIPTION.
 3, 1337177.128, 3094607.030, 5110.72, SET NO. 5 REBAR WITH RED PLASTIC CAP STAMPED "PSM CONTROL"
 4, 1337274.525, 3094186.721, 5112.02, SET NO. 5 REBAR WITH RED PLASTIC CAP STAMPED "PSM CONTROL"

POINT DESCRIPTION CODES:
 EC= EDGE OF CONCRETE
 TWC= TOP WALL CONCRETE
 OG= ON GROUND
 TS= TOP OF SLOPE
 BS= BOTTOM OF SLOPE
 GB= GRADE BREAK
 FL= FLOW LINE OF GULCH
 INV= INVERT OF PIPE
 ERIPRAP= EDGE OF RIPRAP
 BB= BOTTOM OF BANK
 TB= TOP OF BANK



- 14 5115.47
▲T-SET-SN
N=1337177.68
E=3093343.47
- 15 5117.05
▲T-SET-SN
N=1337109.86
E=3093180.84
- 16 5116.85
▲T-SET-SN
N=1337020.60
E=3093085.50
- 17 5117.50
▲T-SET-SN
N=1336909.33
E=3092956.96
- 18 5119.32
▲T-SET-SN
N=1336836.22
E=3092867.16
- 13 5116.93
▲T-SET-SN
N=1337130.47
E=3093510.17
- 12 5114.35
▲T-SET-SN
N=1337157.15
E=3093665.59
- 8 5114.86
▲T-SET-SN
N=1337155.39
E=3093822.18
- 7 5111.96
T-SET-SN
N=1337226.34
E=3093497.55
- 10 5111.93
▲T-SET-SN
N=1337241.46
E=3094076.24
- 4 5112.02
T-SET-NO4-RB-RPC-PSM-CONTROL
N=1337274.52
E=3094186.72
- 5 5110.86
▲T-SET-SN
N=1337243.37
E=3094383.36
- 6 5109.12
▲T-SET-SN
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E=3094286.46
- 3 5108.83
▲T-SET-SN
N=1337177.13
E=3094607.03
- 20 5108.99
▲T-SET-SN
N=1337129.16
E=3094649.06
- 19 5108.93
▲T-SET-SN
N=1337062.30
E=3094736.11

PREPARED FOR:

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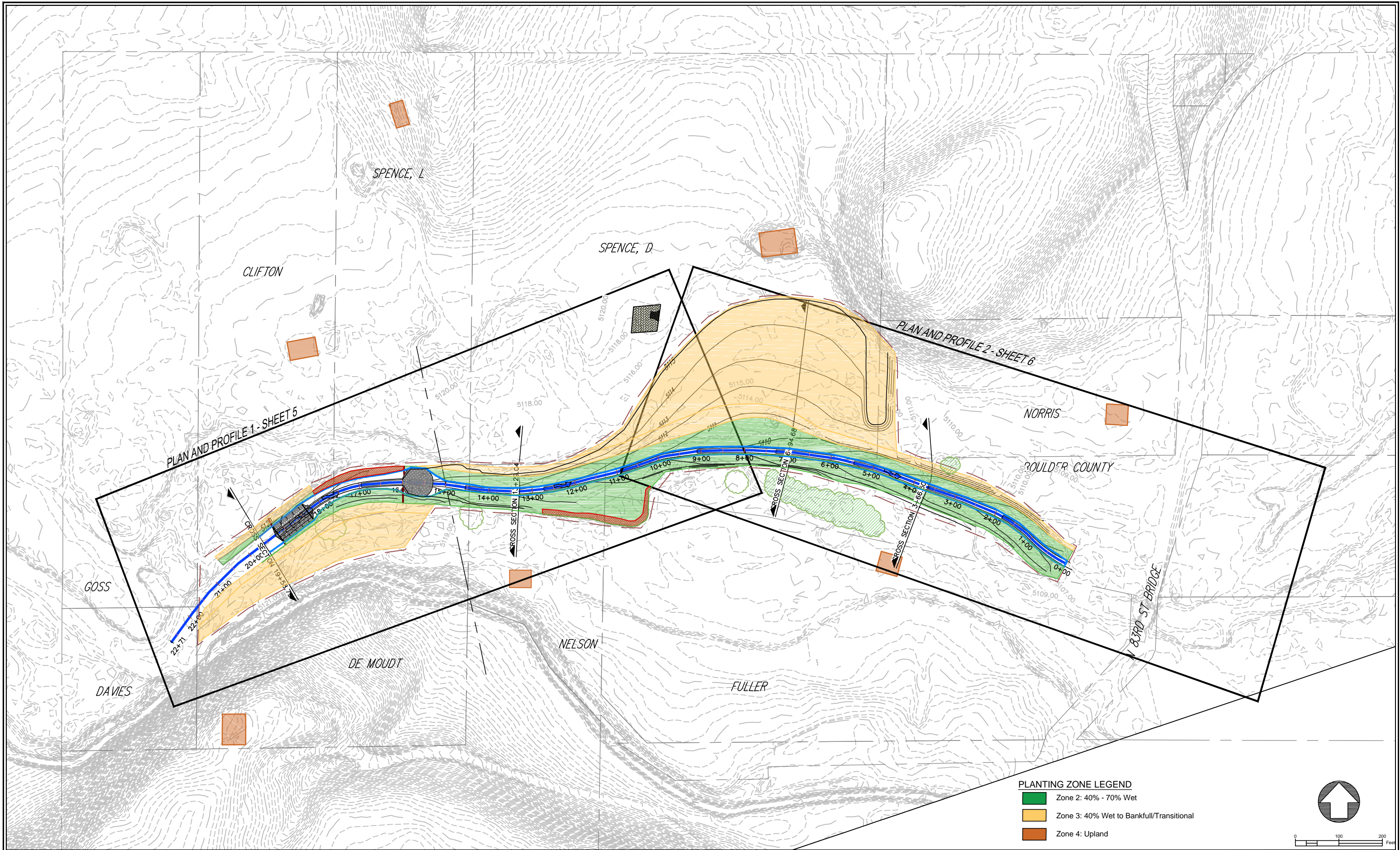
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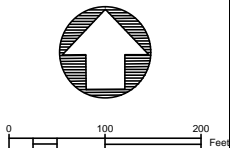
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**LITTLE THOMPSON ABOVE N 83RD ST
 CONTROL PLAN SHEET**

SHEET/REFERENCE NO.
**3
 OF
 16**



- PLANTING ZONE LEGEND**
- Zone 2: 40% - 70% Wet
 - Zone 3: 40% Wet to Bankfull/Transitional
 - Zone 4: Upland



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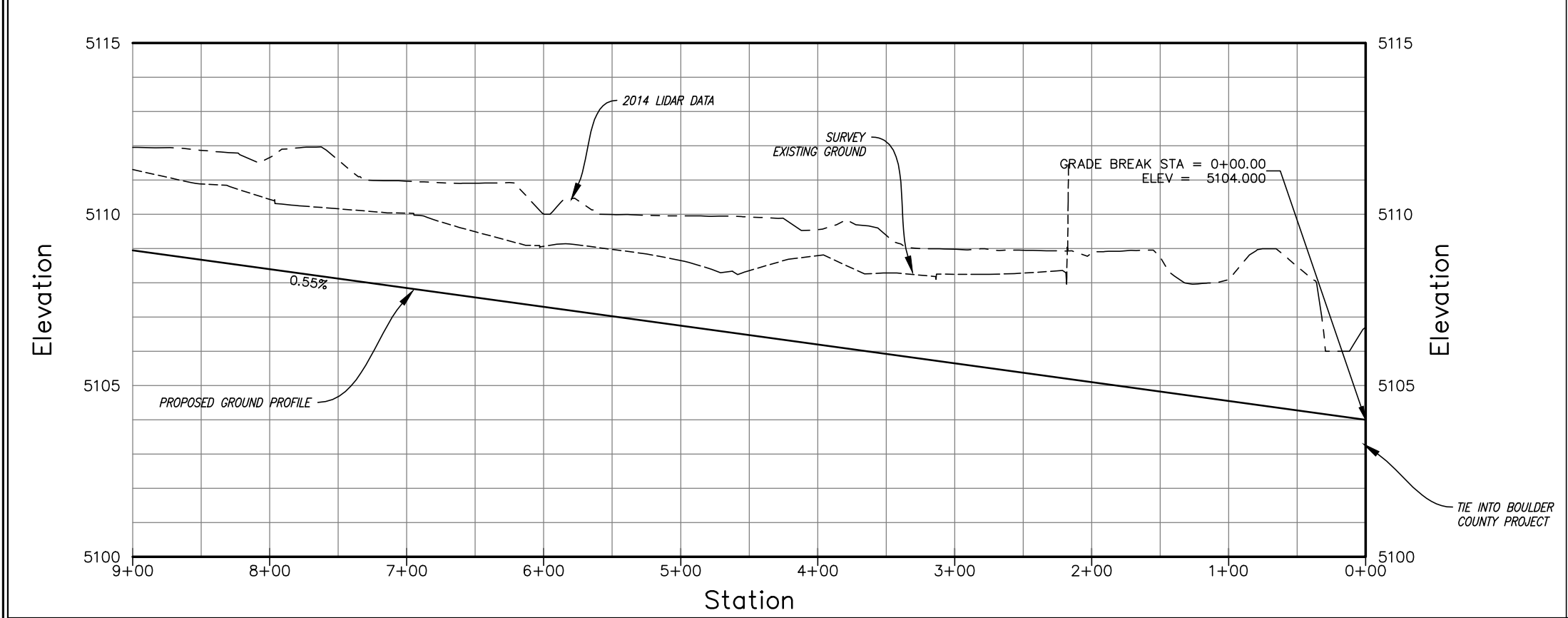
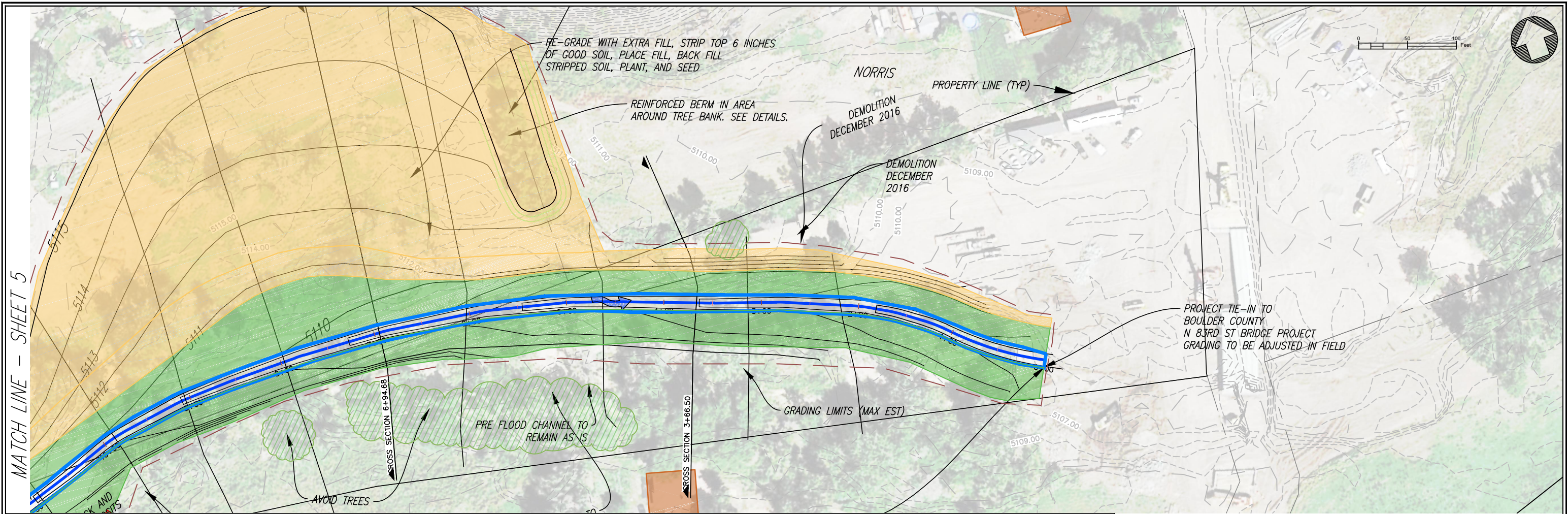


DESIGNED: SLH
 DRAWN: KAJ
 CHECKED: JWS
 DATE: 12/13/16

REVISION	DESCRIPTION	BY	DATE
(R-1)	BANK TREATMENTS & PLANTING	SLH	12/29/16
(R-2)			
(R-3)			
(R-4)			
(R-5)			

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**LITTLE THOMPSON ABOVE N 83RD ST
 SITE PLAN**



TABULATION OF EARTHWORK

EARTHWORK QUANTITY ESTIMATES:

TOTAL EARTHWORK
 TOTAL CUT = 12000 CY
 TOTAL STRIPPING = 3200 CY
 TOTAL FILL = 2200 CY

PAY ITEM:
 STRIPPING = 3200 CY
 UNCLASSIFIED EXCAVATION = 12000 CY

TABULATION OF CHANNEL WORK, BANK TREATMENTS, AND ESTIMATED QUANTITIES

Location	Bank	Bank Treatment	Item No.	Item Description	Quantity	Unit
5+50	North	Flood Protection Berm	CH-01	Buried Soil Riprap (12 Inch)	102	CY
10+50 TO 12+75	South	Vegetated Soil Riprap Toe	CH-01	Soil Riprap Toe (12 Inch)	105	CY
10+50 TO 12+75	South	Vegetated Soil Riprap Toe		Soil Retention Blanket	3860	SF
10+50 TO 12+75	South	Vegetated Soil Riprap Toe		Willow Staked Toe	315	LF
16+00	Channel	Riffle - Detail 2	CH-02	Void Filled Riprap (12 Inch)	600	CY
19+25	Channel	Riffle - Detail 1	CH-02	Void Filled Riprap (12 Inch)	450	CY

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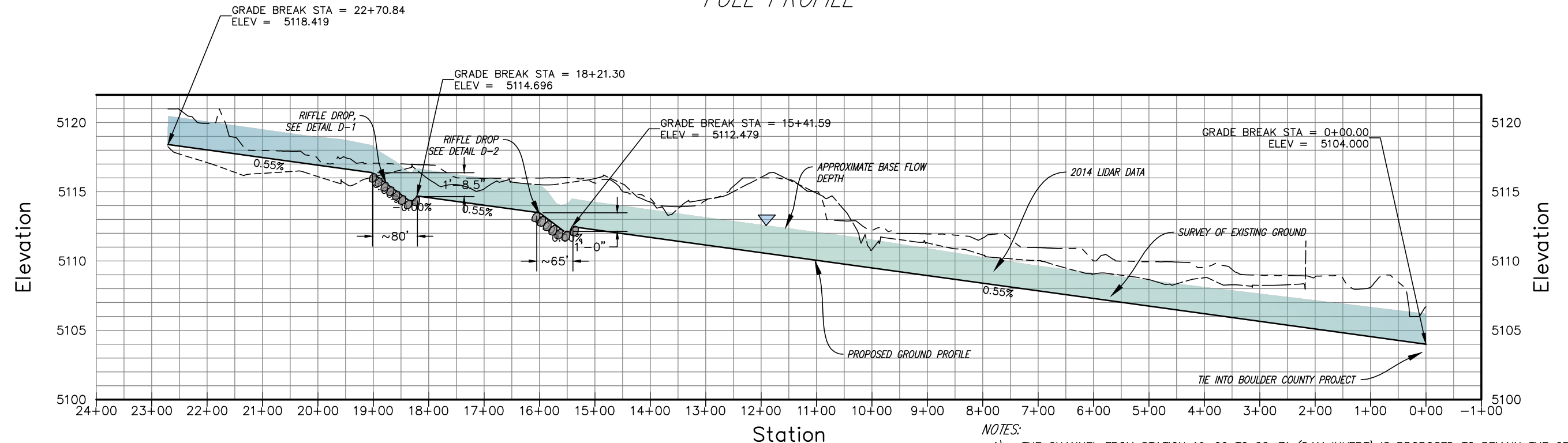
DESIGNED: SLH
 DRAWN: KAJ
 CHECKED: JWS
 DATE: 12/13/16

REVISION	DESCRIPTION	BY	DATE
(R-1)	PLANTING & BANK TREATMENT	SLH	12/28/16
(R-2)			
(R-3)			
(R-4)			
(R-5)			

CONSULTANT ENGINEER CERTIFICATION
 I HEREBY AFFIRM THAT THESE BID PLANS WERE PREPARED UNDER MY DIRECT SUPERVISION, IN ACCORDANCE WITH ALL APPLICABLE LOCAL AND STATE STANDARDS AND STATUTES, RESPECTIVELY; AND THAT I AM FULLY RESPONSIBLE FOR ALL DESIGN AND REVISIONS RELATIVE TO SAID PLANS.

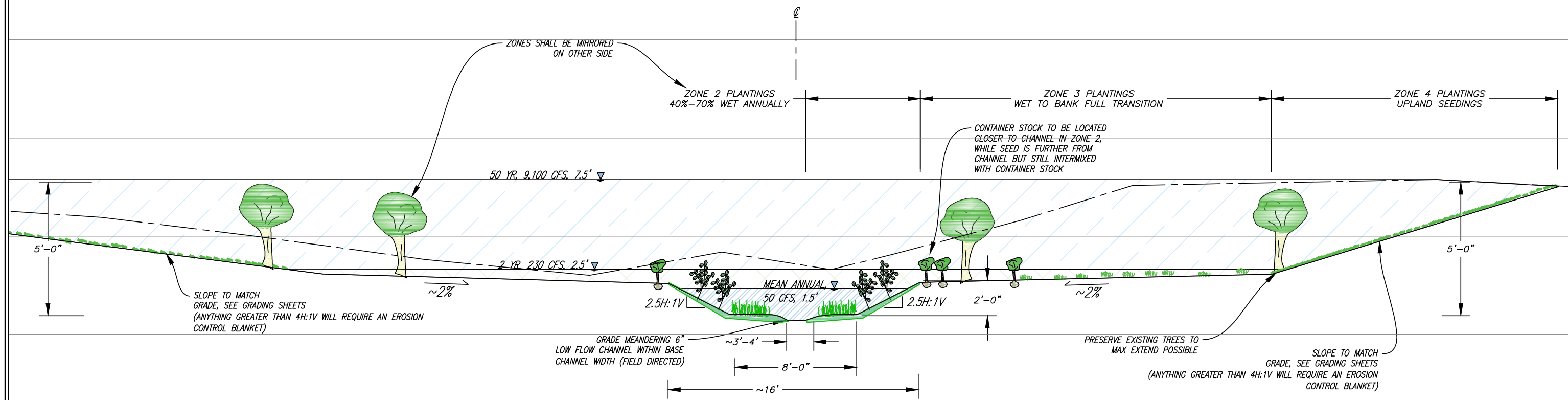
**LITTLE THOMPSON ABOVE N 83RD ST
 PLAN AND PROFILE 2**

FULL PROFILE



- NOTES:**
- 1) THE CHANNEL FROM STATION 19+00 TO 22+71 (DAM INVERT) IS PROPOSED TO REMAIN THE GRADE OF THE EXISTING SURVEYED GROUND.
 - 2) GRADING AND BIO-STABILIZATION MEASURES ARE PROPOSED ALONG THE NEW CHANNEL PROFILE WHERE INDICATED IN GRADING PLANS.

TYPICAL CROSS SECTION (NTS)



PREPARED FOR:
Little Thompson Watershed Coalition
 LITTLE THOMPSON WATERSHED COALITION
 P.O. BOX 1413
 435 HIGH STREET, #201
 LYONS, COLORADO 80540

PREPARED BY:
Enginuity
 ENGINUITY ENGINEERING SOLUTIONS
 10106 WEST SAN JUAN WAY, SUITE 215
 LITTLETON, COLORADO 80127
 PH : 303-872-9112
 FX : 303-872-9104

DESIGNED: SLH
 DRAWN: KAJ
 CHECKED: JWS
 DATE: 12/13/16

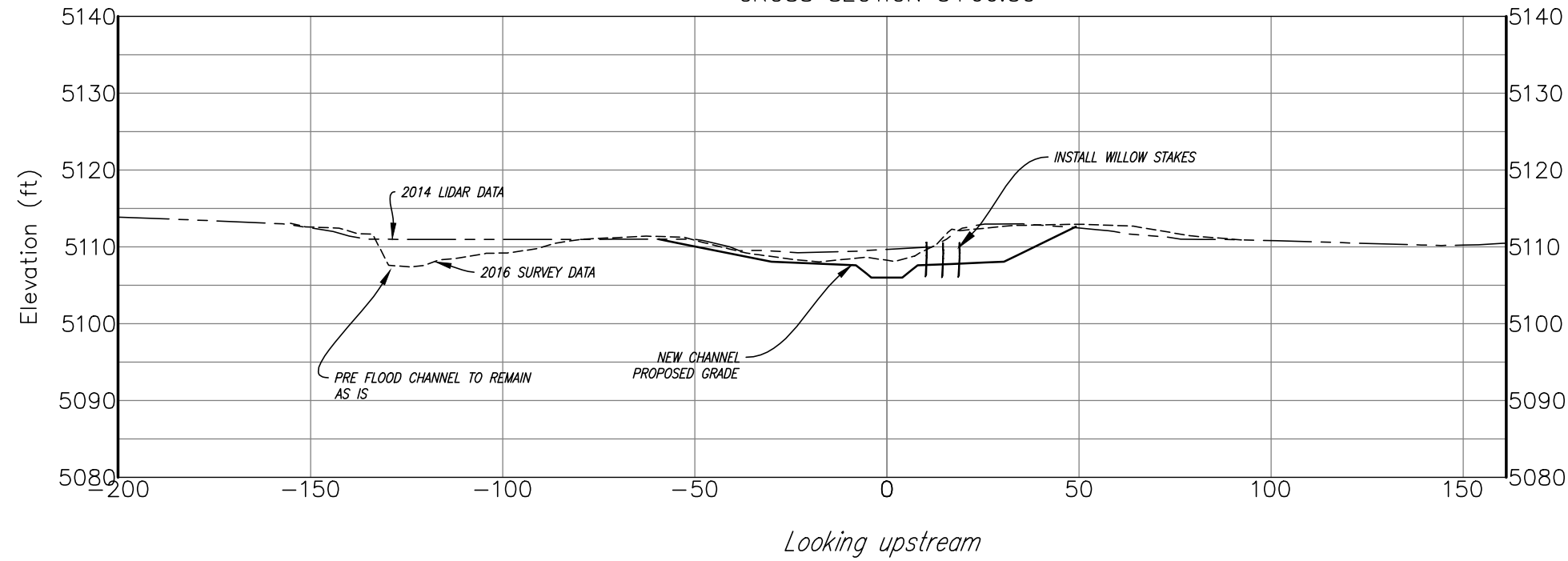
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CONSULTANT ENGINEER CERTIFICATION
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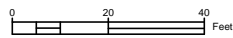
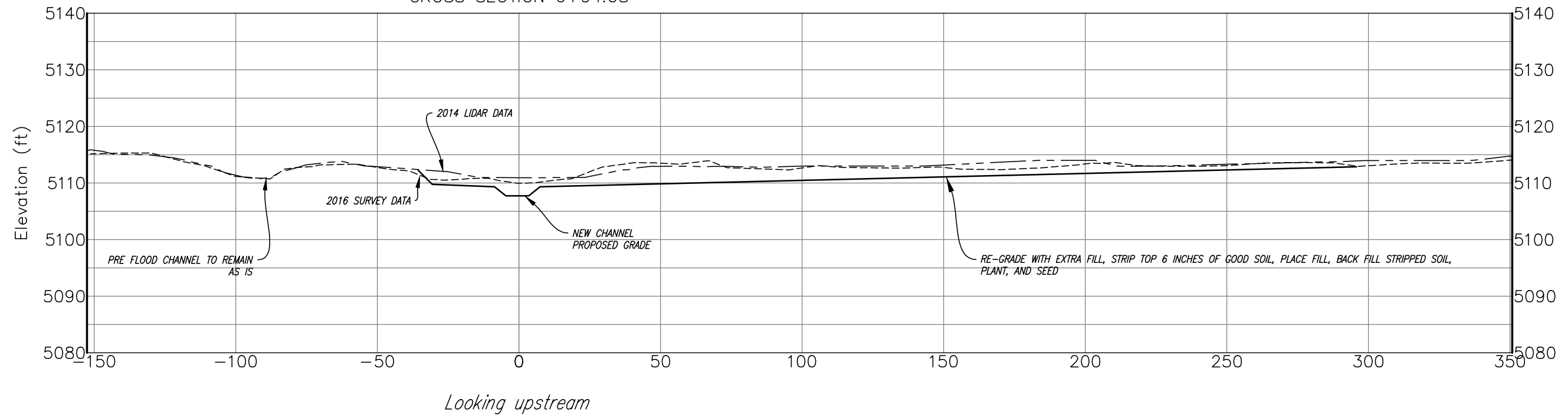
**LITTLE THOMPSON ABOVE N 83RD ST
 PROFILE AND TYPICAL SECTION**

SHEET/REFERENCE NO.
**7
 OF
 16**

CROSS SECTION 3+66.50



CROSS SECTION 6+94.68



PREPARED FOR:
Little Thompson Watershed Coalition
 LITTLE THOMPSON WATERSHED COALITION
 P.O. BOX 1413
 435 HIGH STREET, #201
 LYONS, COLORADO 80540

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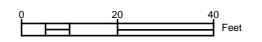
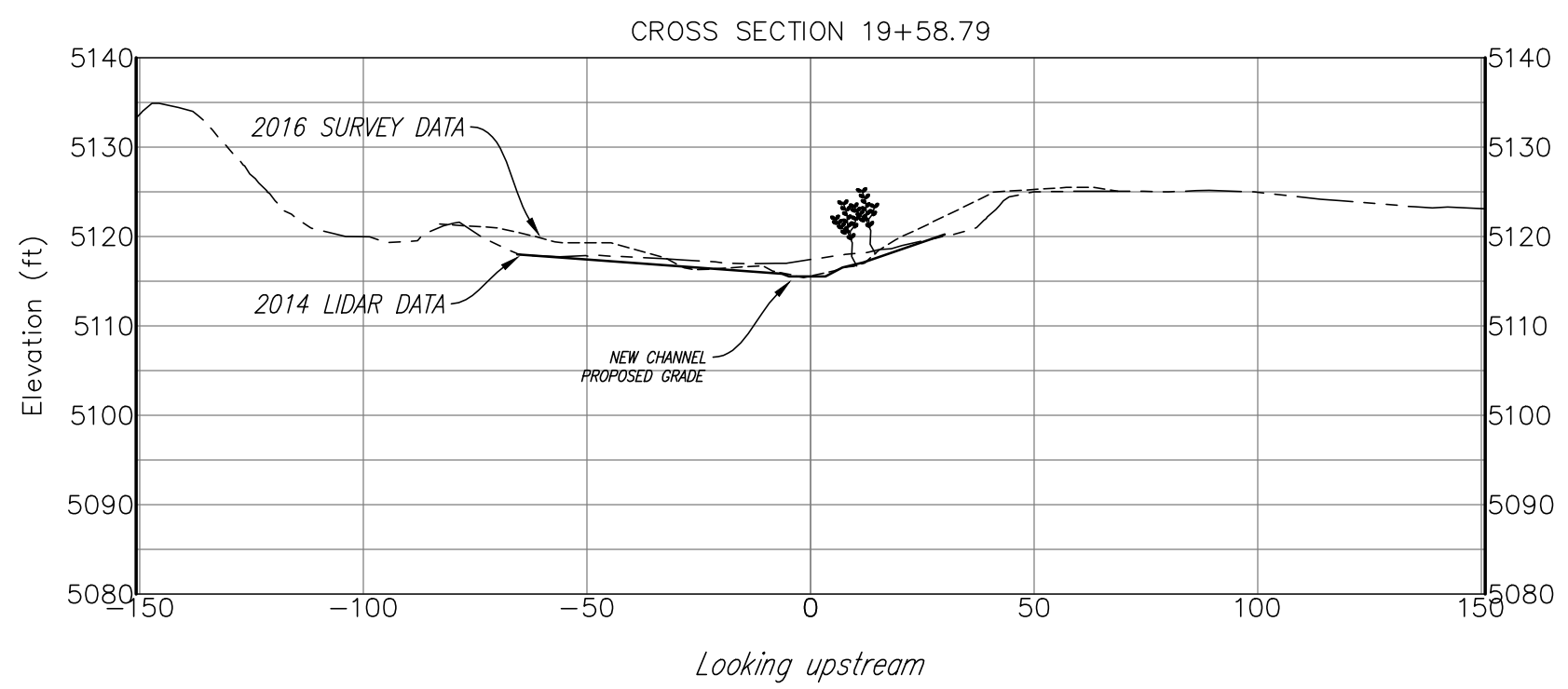
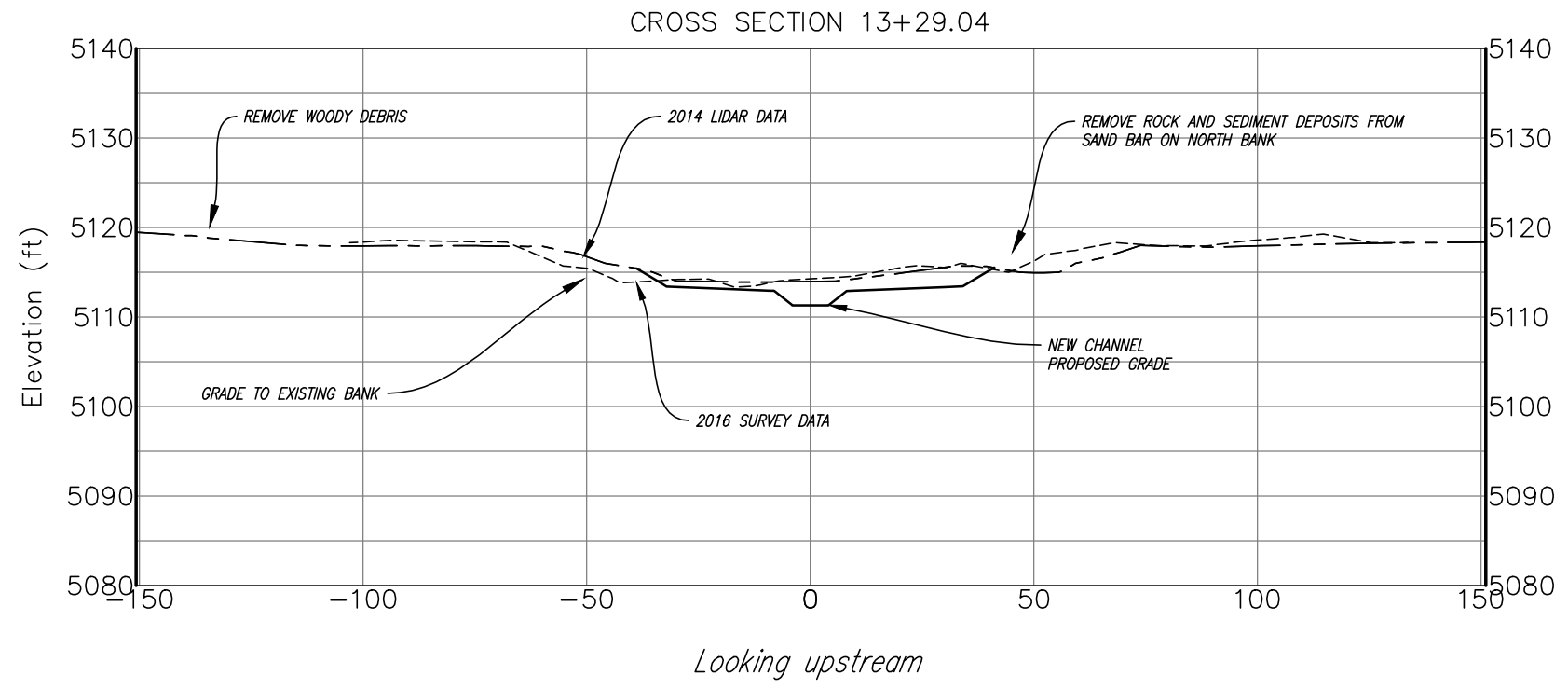
DESIGNED: SLH
 DRAWN: KAJ
 CHECKED: JWS
 DATE: 12/13/16

REVISION	DESCRIPTION	BY	DATE
(R-1)	NOTATION UPDATES	SLH	12/28/16
(R-...)	
(R-...)	
(R-...)	
(R-...)	

CONSULTANT ENGINEER CERTIFICATION
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**LITTLE THOMPSON ABOVE N 83RD ST
 CROSS SECTION 1**

SHEET/REFERENCE NO.
**8
 OF
 16**



PREPARED FOR:
Little Thompson Watershed Coalition
 LITTLE THOMPSON WATERSHED COALITION
 P.O. BOX 1413
 435 HIGH STREET, #201
 LYONS, COLORADO 80540

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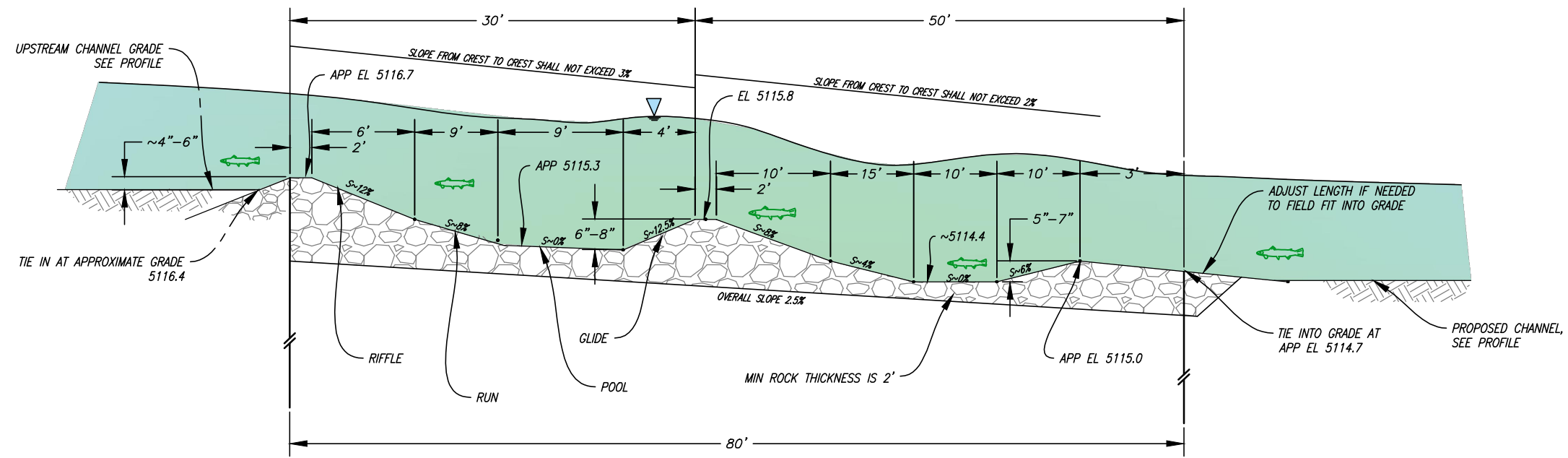
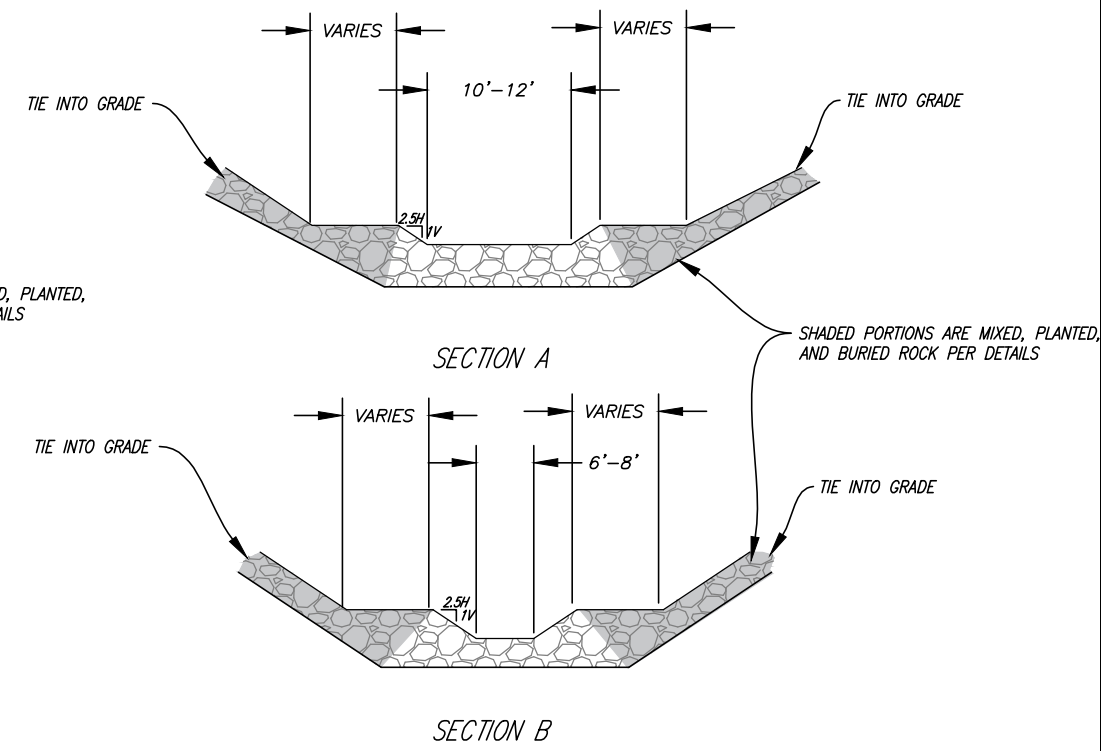
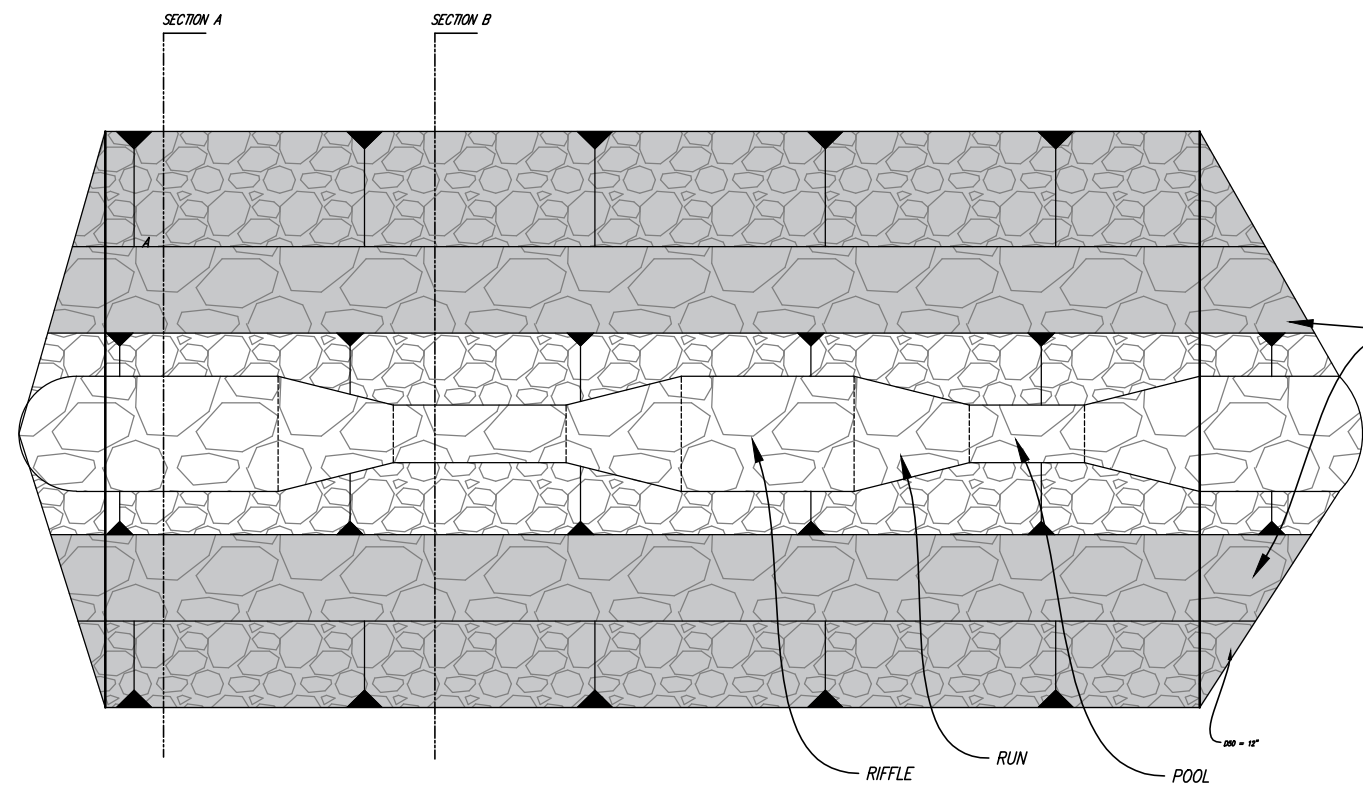
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 DRAWN: KAJ
 CHECKED: JWS
 DATE: 12/13/16

REVISION	DESCRIPTION	BY	DATE
(R-1)	NOTATION UPDATES	SLH	12/28/16
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(R-...)	
(R-...)	
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**LITTLE THOMPSON ABOVE N 83RD ST
 CROSS SECTION 2**

SHEET/REFERENCE NO.
**9
 OF
 16**



D-1 STABILIZED RIFFLE DETAIL 1

NTS

- NOTES:
- 1.) MINIMUM ROCK THICKNESS IS 2' AT ANY POINT ACROSS THE RIFFLE
 - 2.) OVERALL SLOPE SHALL NOT EXCEED 3%
 - 3.) TYPE M (12" D50) ROCK IMPORTED ACCORDING TO SPECIFICATIONS
 - 4.) SIDES OF RIFFLE SHALL BE BURIED, MIXED, AND PLANTED TYPE M ROCK

PREPARED FOR:
Little Thompson Watershed Coalition
 LITTLE THOMPSON WATERSHED COALITION
 P.O. BOX 1413
 435 HIGH STREET, #201
 LYONS, COLORADO 80540

PREPARED BY:
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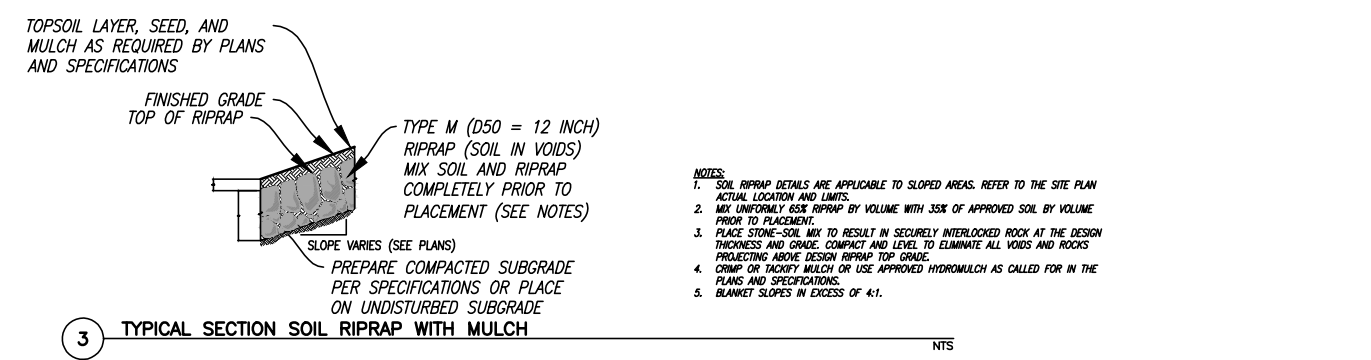
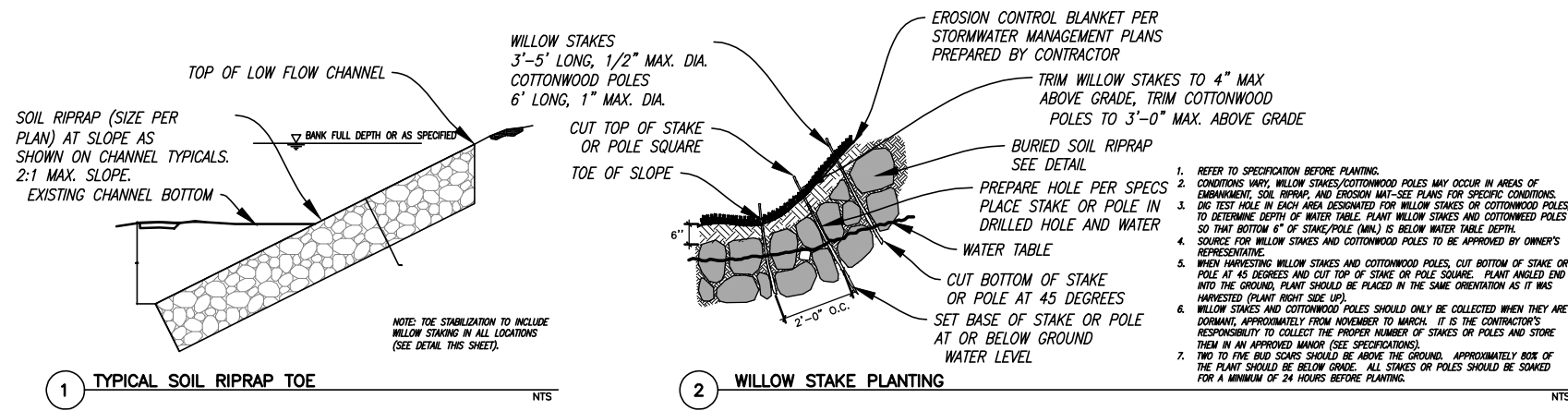
DESIGNED: SLH
 DRAWN: KAJ
 CHECKED: JWS
 DATE: 12/13/16

REVISION	DESCRIPTION	BY	DATE
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R-2			
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R-4			
R-5			

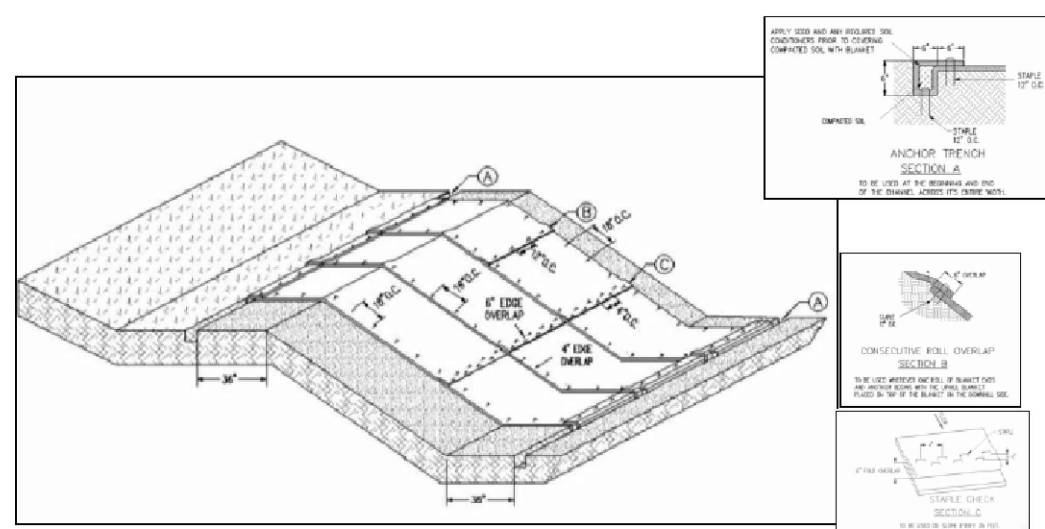
CONSULTANT ENGINEER CERTIFICATION
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**LITTLE THOMPSON ABOVE N 83RD ST
 RIFFLE DETAIL SHEET-1**

SHEET/REFERENCE NO.
**10
 OF
 16**

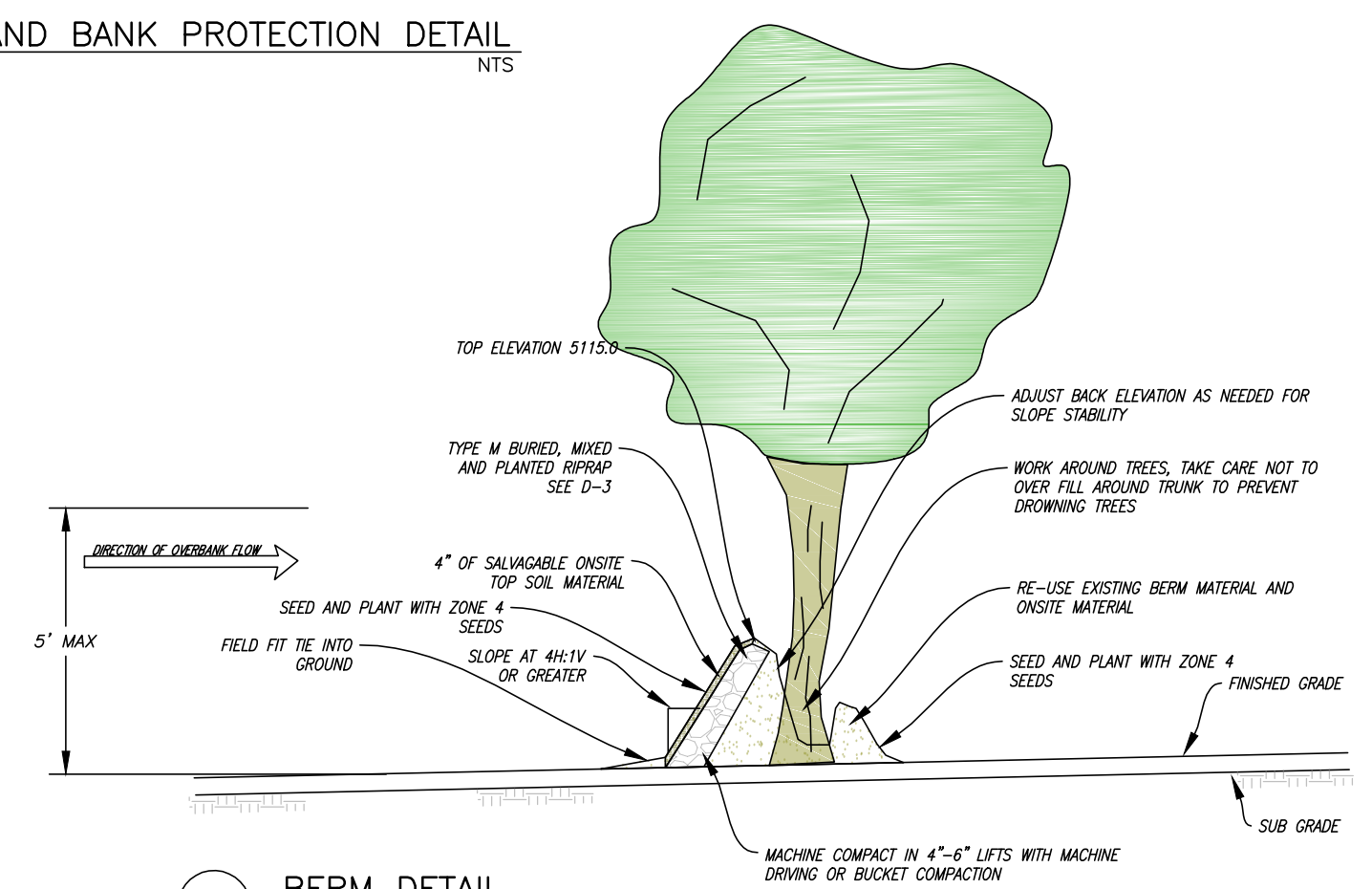


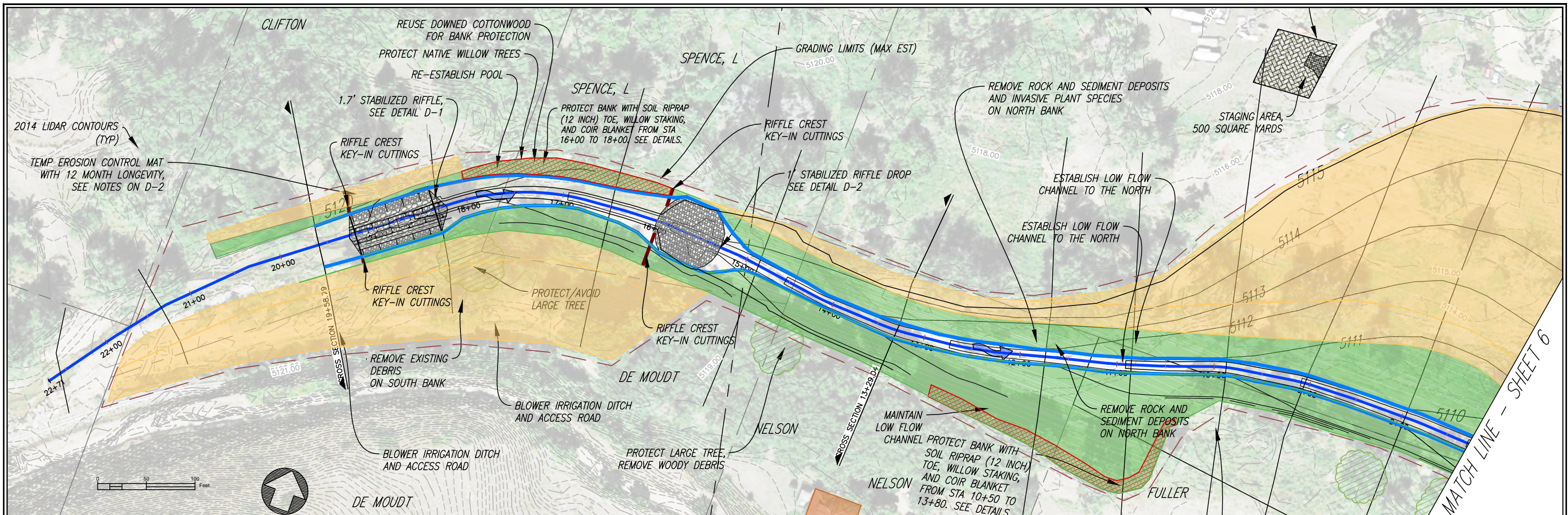
D-3 BURIED SOIL RIPRAP TOE WITH STAKING AND BANK PROTECTION DETAIL NTS



D-4 NOTES:

- BLANKETS SHALL BE INSTALLED PER MANUFACTURER RECOMMENDATIONS OVER THIS DETAIL.
- BLANKET SHALL BE COMPOSED OF SLOW DEGRADING NATURAL FIBERS MECHANICALLY BOUND TOGETHER BETWEEN TWO SLOW DEGRADING NATURAL FIBER NETTINGS TO FORM A CONTINUOUS MATRIX. THE MATERIAL MUST HAVE A TYPICAL 24 MONTH LONGEVITY DESIGNED FOR USED ON SLOPES UP TO 1.5H:1V AND CHANNELS WITH SHEAR STRESS UP TO 2.0 POUNDS PER SQUARE FOOT.





PLANTING ZONE LEGEND

- Zone 1: 0-1 Feet Above Base Flow Water Surface Elevation
- Zone 2: 1-3 Feet Above Base Flow Water Surface Elevation
- Zone 3: 2-4 Feet Above Base Flow Water Surface Elevation
- Zone 4: 4+ Feet Above Base Flow Water Surface Elevation

SPECIAL TREATMENT LEGEND

- RIFFLE CREST KEY-IN CUTTINGS
- BIO-STABILIZATION EMBANKMENT PROTECTION
- WILLOW STAKES

GENERAL PLANTING NOTES

1. The hydrologic zones will be flagged and identified by the EWP restoration team (including design and revegetation specialists), prior to planting. Hydrologic zones are based on relative depth of base flow water surface elevation (WSEL).
2. For all areas within Zones 2 and 3, disturbed by restoration activities, the soil will be amended using Biocomp/Biosol with a recommended application rate of 1,300 lbs/ac. Biocomp/Biosol should be incorporated into the site through raking from 1/4-inch to a maximum of 3/8th-inch in depth.
3. All containerized herbaceous plant materials (grasses and grass-like) will be planted within Zone 2, and Zone 3 on 4-foot spacing. All shrubs (including willows) will be planted within Zone 2 and Zone 3 on 6-foot spacing, and all trees (including large cottonwoods) should be installed within Zone 3 on 8-foot centers. No containerized plants or stakes will be planted within the Zone 3 "Seeding Only Treatment Area". Woody plant material installed within designated "Boulder Cobble Toe Treatment Areas," "Riffle Crest Key-In Areas," and "Soil Biostabilization Treatment Areas" will be installed on 2-foot spacing. When installing stakes and poles within the Bank Treatment Areas, if the base of the stem is below bankfull (Zone 1), then the contractor is recommended to use *Salix exigua* (sandbar willow); however, if base of the stem is above bankfull (Zones 2 and 3), the contractor is recommended to use other *Salix* species preferentially instead of *S. exigua*. The exact location of live plant material will be based on final grading, as determined EWP revegetation ecologist who will be onsite to assist with project implementation.
4. Given that the timing of installation will occur prior to spring runoff, and the associated high water velocity of Little Thompson River through project area, Zone 1 will not be seeded or covered with woodstraw prior to the Spring 2017 runoff. Instead, it is recommended by the EWP revegetation ecologist that the Little Thompson Watershed Coalition should install seed and woodstraw within Zone 1 after spring runoff between September 1 and when the ground freezes, if possible.
5. For live cutting material, the contractor should either: (1) harvest material from pre-identified site-specific collection locations for installation up to two weeks prior to planting between fall dormancy and spring bud break, trimmed of side branches and apical growth, then soaked from five to seven days prior to planting; or (2) purchase professionally harvested cuttings through reputable vendors including, but not limited to, Colorado State Forest Service. All stakes should be of an adequate length to reach six inches into the low-season water table, with enough stem remaining such that no fewer than three to four live buds remaining above the ground surface. Lateral branches removed to 1/2-inch of the main stake.
6. To establish vegetation on riprap located above bankfull lacking in underlayment, six inches of soil will be placed over the riprap to allow for establishment of containerized stock, stakes, poles, and seedlings. Live stakes and/or poles will be installed between joints or open spaces of riprap (joint planting). A stinger (deep-reaching hydraulic probe or manual probe) and/or hammer-drill can also be used if joint planting will not allow stakes and/or poles to reach the appropriate depth. All stakes should be placed of an adequate length to reach six inches into the low-season water table, with stems trimmed such that no fewer than three to four live buds remaining above the ground surface ensuring good hydration and to assist with survival.
7. For all zones, the finish grades will be left natural and rough with no smooth surfaces, right angles, or straight edges.
8. All seed recommendations within Zones 2 and 3 are based on the 150 PLS per square foot, as determined on a percentage basis by species. All zones will be broadcast seeded with the appropriate seed mix specified for each zone and should represent the species and quantities presented in the construction documents.
9. The seed should be applied through broadcast seeding, hand-raked to 3/8-to 1/2-inch depth to minimize seed loss, then surface-pressed through a water-filled press-wheel to facilitate good seed-to-soil contact. All seed must be labeled as "certified" and should not include the presence of noxious or invasive species prohibited under the Colorado Seed Act (as indicated on the tag by the Colorado Seed Growers Association approved labeling). All seed should be inspected by the revegetation ecologist and/or watershed coordinator prior to installation and all tags must be maintained for documentation by the watershed coordinator, or their designee. Prior to delivery, seed should be processed by the seed provider on a "gravity-table" to remove non-target seed types, such as yellow sweetclover, alfalfa, wood sorrel, and other potentially invasive species. Seeding will only be performed between September 1 and when the ground freezes and when the ground thaws and June 1st, unless approved by a trained ecologist.
10. After seeding, the contractor should apply woodstraw or biodegradable 24-month erosion control blankets (e.g. jute fiber) within 24 hours of seed application as necessary to all zones disturbed by restoration. Biodegradable erosion control blanketing will be placed on "Bio-stabilization Embankment Protection Areas." The remainder of the site will be hand-mulched using woodstraw applied at approximately 5,000 lbs per acres or 75% cover.
11. No equipment will be allowed in the restoration area after seeding or planting.
12. Chemical and/or mechanical weed abatement should be facilitated by the watershed coordinator to assist in eradication of invasive and noxious weeds. The control of noxious and/or invasive species should be based upon site monitoring for a minimum of three-growing seasons following establishment. An iterative weed management plan should be implemented by the watershed coordinator based upon the results of monitoring.
13. Much of the ecotypic woody plant material can be provided by Colorado State Forest Service (CSFS) and potentially by private entities throughout Colorado and Rocky Mountain region. Herbaceous materials (forbs, grasses, and grasslikes) will be available through a combination of CSFS and private nurseries.
14. Construction equipment, fuels, and other petroleum products shall not be stored or stockpiled with 50 feet of the creek or other aquatic habitats. Fueling should only occur within approved designated areas.

PREPARED FOR:
LITTLE THOMPSON WATERSHED COALITION
 P.O. BOX 1413
 435 HIGH STREET, #201
 LYONS, COLORADO 80540

PREPARED BY:
Enginuity
 ENGINUITY ENGINEERING SOLUTIONS
 10106 WEST SAN JUAN WAY, SUITE 215
 LITTLETON, COLORADO 80127
 PH : 303-872-9112
 FX : 303-872-9104

RWP
 RESILIENT WATERSHED PARTNERS

DESIGNED BY: SLH
 DRAWN BY: KAJ
 CHECKED BY: JWS
 DATE: 12/13/16

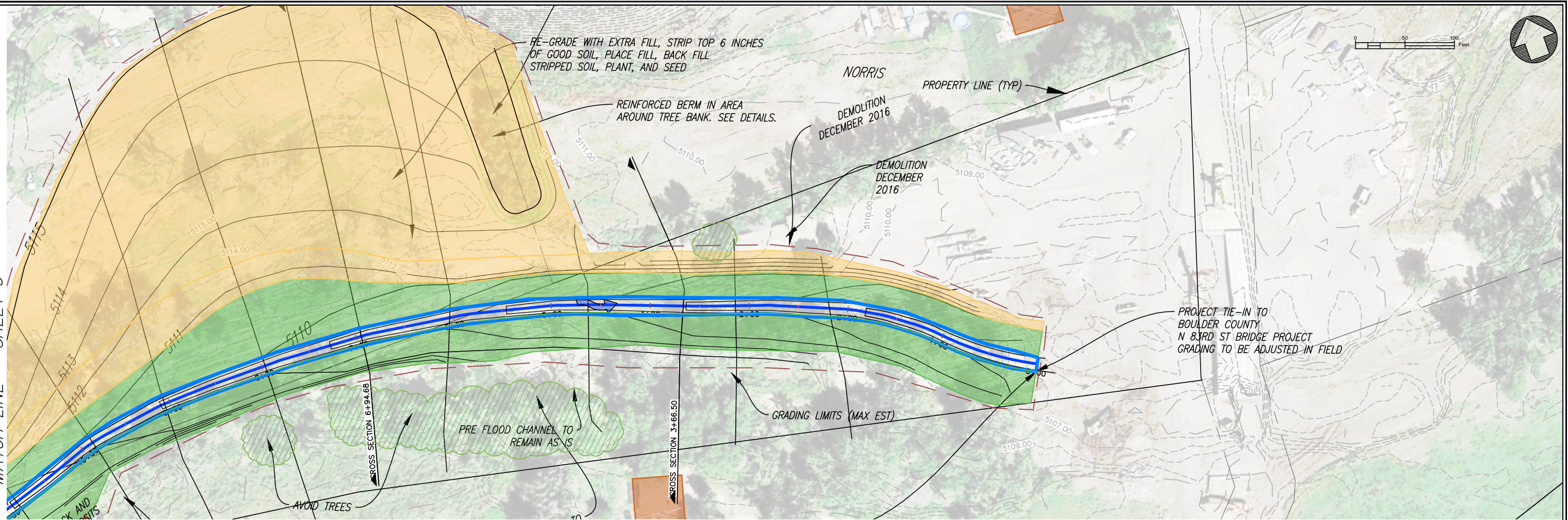
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(R-1)	PLANTING ZONES & NOTES	SLH	1/4/17
(R-2)			
(R-3)			
(R-4)			
(R-5)			

CONSULTANT ENGINEER CERTIFICATION
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**LITTLE THOMPSON ABOVE N 83RD ST
 PLANTING PLAN 1**

SHEET/REFERENCE NO.
**13
 OF
 16**

MATCH LINE - SHEET 5



PLANTING ZONE LEGEND

- Zone 1: 0-1 Feet Above Base Flow Water Surface Elevation
- Zone 2: 1-3 Feet Above Base Flow Water Surface Elevation
- Zone 3: 2-4 Feet Above Base Flow Water Surface Elevation
- Zone 4: 4+ Feet Above Base Flow Water Surface Elevation

SPECIAL TREATMENT LEGEND

- RIFFLE CREST KEY-IN CUTTINGS
- BIO-STABILIZATION EMBANKMENT PROTECTION
- WILLOW STAKES

PREPARED FOR:

LITTLE THOMPSON WATERSHED COALITION
 P.O. BOX 1413
 435 HIGH STREET, #201
 LYONS, COLORADO 80540

PREPARED BY:

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 PH : 303-872-9112
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DESIGNED:	SLH
DRAWN:	KAJ
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DATE:	12/13/16

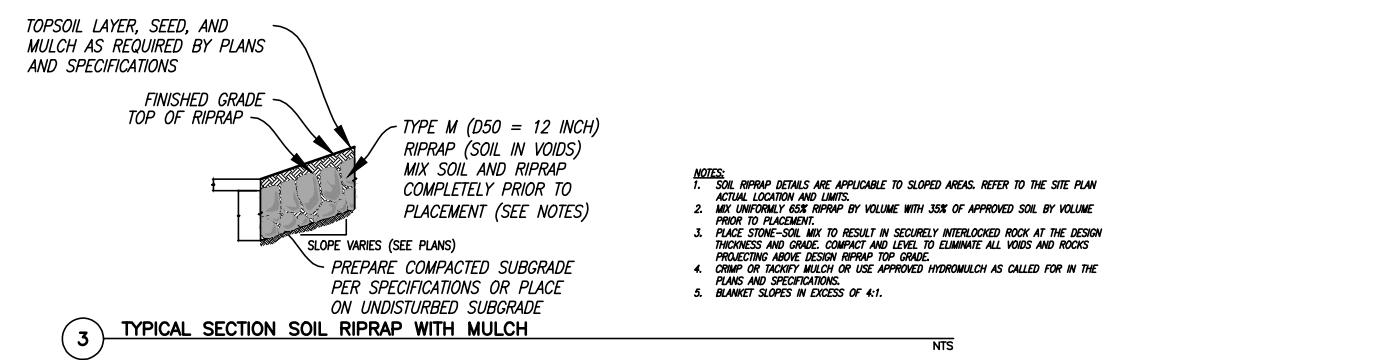
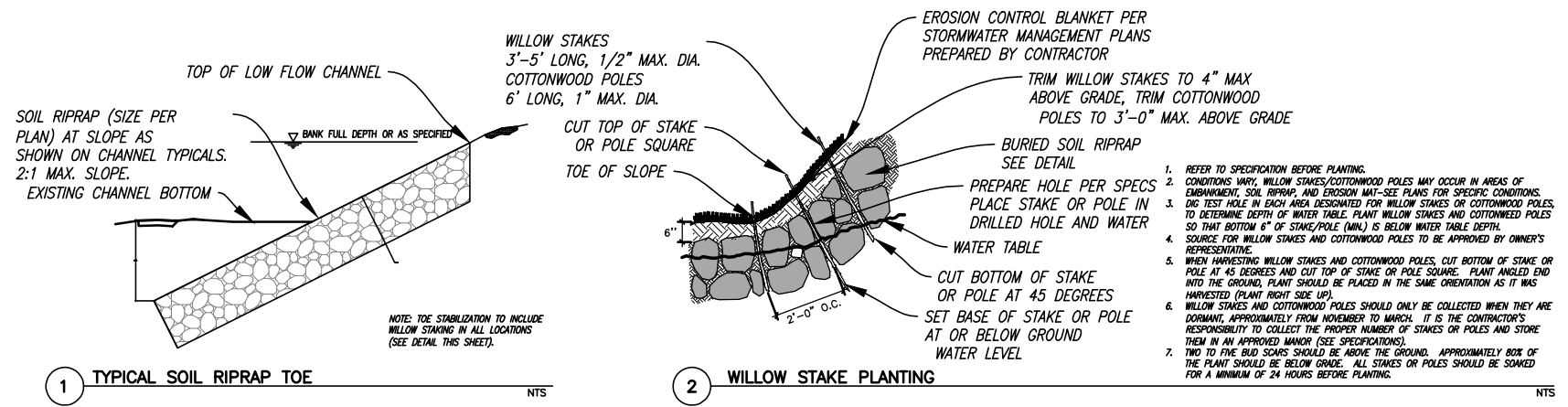
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CONSULTANT ENGINEER CERTIFICATION

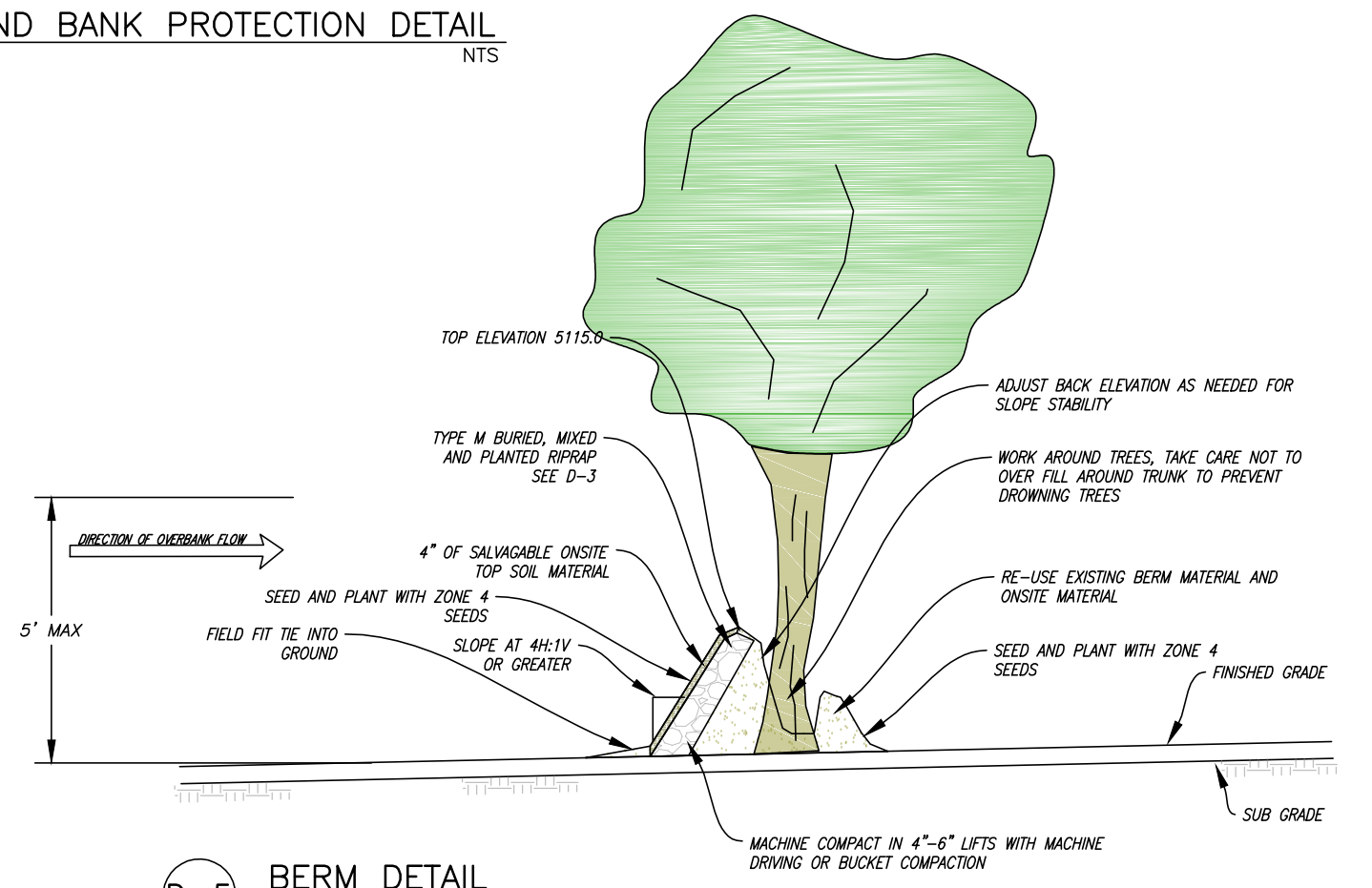
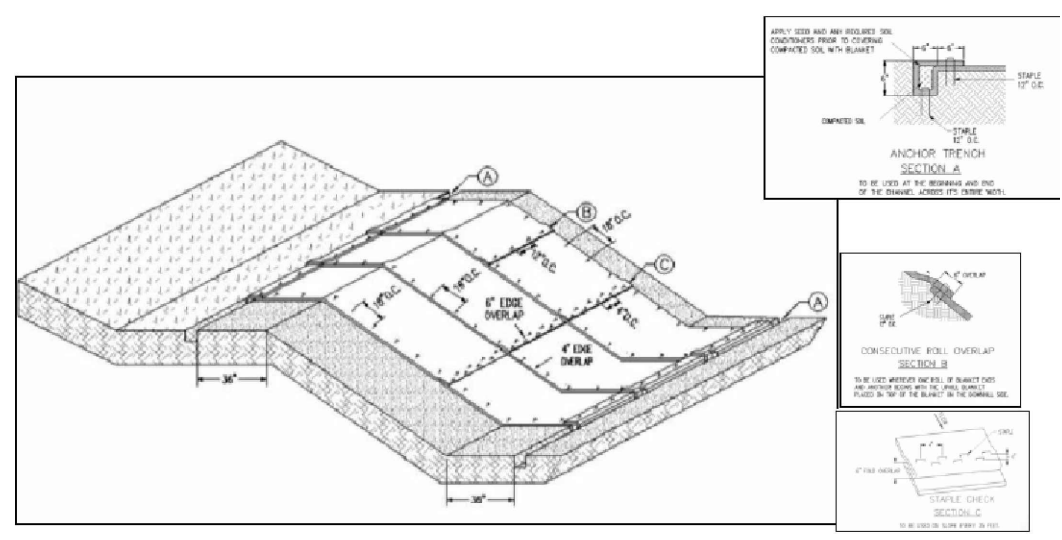
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**LITTLE THOMPSON ABOVE N 83RD ST
 PLANTING PLAN 2**

SHEET/REFERENCE NO.
**14
 OF
 16**



D-3 BURIED SOIL RIPRAP TOE WITH STAKING AND BANK PROTECTION DETAIL NTS



NOTES:

- BLANKETS SHALL BE INSTALLED PER MANUFACTURER RECOMMENDATIONS OVER THIS DETAIL.
- BLANKET SHALL BE COMPOSED OF SLOW DEGRADING NATURAL FIBERS MECHANICALLY BOUND TOGETHER BETWEEN TWO SLOW DEGRADING NATURAL FIBER NETTINGS TO FORM A CONTINUOUS MATRIX. THE MATERIAL MUST HAVE A TYPICAL 24 MONTH LONGEVITY DESIGNED FOR USED ON SLOPES UP TO 1.5H:1V AND CHANNELS WITH SHEAR STRESS UP TO 2.0 POUNDS PER SQUARE FOOT.

COLORADO
2013 PHASE II
EMERGENCY WATERSHED PROTECTION (EWP) PROGRAM

SPECIAL PROVISIONS

North 83rd Street – Little Thompson River

This project incorporates by reference the Colorado Department of Transportation (CDOT) Standard Specifications for Road and Bridge Construction (2011). The Contractor shall use the 2011 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

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REVISION OF SECTION 201 - REMOVAL OF DEBRIS.....	11
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NOTICE TO BIDDERS

The proposal guaranty shall be a bid bond in the amount of five percent (5%) of the Contractor's total bid.

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:	Allison Ham
	Office Phone:	(303) 823-2370
	Address:	435 High Street, #201 P.O. Box 1413 Lyons, Colorado 80540
On-Site Project Manager	Contact:	Sarah Houghland
	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 June 30, 2017, except for temperature sensitive landscaping items.

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 within 220 working days from the date of signature on the Financial Assistance (FA) agreement between the Natural Resources Conservation Service (NRCS) and the Colorado Water Conservation Board (CWCB) in accordance with the "Notice to Proceed."

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 2011.

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. CDOT Standard Plans
- (d) Supplemental Specifications
- (e) Standard Specifications

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 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 (except Workers Compensation and Professional Liability) and Certificates of Insurance issued for this project shall include the Little Thompson Watershed Coalition and its officers, directors, agents and employees, the Engineer and its agents and employees, the State of Colorado Department of Local Affairs, and the State of Colorado Water Conservation Board as additional insureds.

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 for Emergency Watershed Protection and the Pre-Construction Notification for the EWP Program North 83rd Street Bridge Project dated October 24, 2016.

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

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.

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.

The Contractor shall remove and dispose of all visible abandoned utility appurtenances that are located within the work area or right-of-way and abandoned as a result of this project. These items shall not be disposed of within the project limits. Removal of utility appurtenances shall not be measured and paid for separately, but shall be included in the work for Item 201, Clearing and Grubbing.

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.

The Contractor shall identify and mark each tree to be removed. The Engineer shall be notified for inspection and approval of these marked trees. 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, SB-40 and upland 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.

Full removal of tree roots will be required for all trees that are in conflict with structure excavation limits.

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

Clearing and grubbing shall include the pruning of all trees that will remain within the final right-of-way. Pruning of trees shall include removal of all branches that conflict with construction of the proposed improvements and all dead branches. Pruning of tree will be in accordance with Revision of Section 202 – Pruning of Trees.

Avoid the unnecessary removal of trees or shrubs; for example, prune the aerial portions of trees and shrubs that hang over a project area and interfere with equipment.

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 (Temporary).

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 201 - REMOVAL OF DEBRIS

Section 201 of the Standard Specifications is hereby revised for this project to include the following:

Subsection 201.01 shall include the following:

The work consists of clearing (light density) of vegetation and within the limits of grading areas, staging areas, and access routes. The work also includes landfill disposal of debris (i.e. trash or vegetation that is not salvageable) that cannot be beneficially reused onsite. Vegetation and objects designated to remain shall be preserved free from injury or defacement, including the limbs and rootwads of large wood. No chipping will be required as all woody material shall be reused onsite or in the vicinity.

CONSTRUCTION REQUIREMENTS

Subsection 201.02 shall include the following:

The contractor shall retain and stockpile large boulders encountered during clearing and grubbing for reuse in step structures and bank protection (Refer to Revision of Section 506—Riprap and Soil Riprap). Management of large boulders for reuse will be paid for under Section 203.

The Contractor shall retain and stockpile large wood encountered during clearing and grubbing for reuse in other stream restoration projects or for landowner use (refer to Revision of Section 202). The limbs and rootwads of large wood material shall remain intact. Removal of large wood for reuse will be paid for under Section 202.

The Engineer and/or Ecologist shall flag vegetation that shall not be disturbed before construction begins. The Contractor shall not disturb existing stands of vegetation that have been flagged for protection. The Contractor shall review flagged vegetation stands with the Engineer and/or Ecologist prior to the start of work.

METHOD OF MEASUREMENT

Subsection 201.03 shall include the following:

Removal of debris will be measured per load based on a standard tandem dump truck est. at 10 cubic yards.

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
Removal of Debris	Load

Removal of woody material for beneficial reuse onsite or in the vicinity will be paid for under Section 202.

REVISION OF SECTION 202 - REMOVAL OF TREE

Section 202 of the Standard Specifications is hereby revised for this project as follows:

Add the following subsection immediately following subsection 202.10 as follows:

202.101 Removal of Trees.

The work consists of the removal and re-use of the downed tree on the north bank of the Little Thompson River at approximate Station 18+50. The tree will be retained for potential re-use for the project. The tree is already downed in the river. It should be removed and stored intact until the location of re-use is identified.

METHOD OF MEASUREMENT

Subsection 202.12 shall include the following:

The tree at approximate Station 18+50 is on the north bank of the Little Thompson River. Removal of the remaining tree will be measured and paid for at the contract unit price by the quantity as shown in the bid schedule or approved by the Engineer.

BASIS OF PAYMENT

Pay Item	Pay Unit
Removal of Tree	Each

Payment includes moving and storing salvaged materials, and disposal of remaining materials not designated for use elsewhere on the project.

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 (Section 506–Riprap and Soil Riprap). This also includes the selective stripping, stockpiling and replacement of existing native river bottom material (sand, gravel, cobbles) as described herein. This work also consists of sorting and stockpiling suitable fill material to construct the berm on the north bank of the Little Thompson River at approximate Station 5+50.

CONSTRUCTION REQUIREMENTS

Subsection 203.04 (General) shall include the following:

The proposed haul route shall not include Yellowstone Road. Hours of hauling shall be from 8:30 AM to 4:00 PM to limit impacts on regular vehicular traffic.

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. The grading limits shown in the plan set shall be field fit based on site specific conditions at the direction of the Engineer.

Existing river conditions prior to installation of roadway revetment and mass grading shall be carefully documented with photographs or other approved method. All existing in-situ embankment protection materials shall be sorted; riprap materials (competent angular or sub-angular materials conforming to the rock quality and aspect ratio requirements of Section 506 (Riprap)) shall be retained for re-grading and re-use on the Project; All rounded cobbles and boulders suitable for use with in-channel Boulder Features (as shown on the river plans; see Section 506 (Riprap)) 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.

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

Unclassified Excavation (Complete in Place)

Pay Unit

Cubic Yards

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

REVISION OF SECTION 203 - STRIPPING

DESCRIPTION

Subsection 203.02 shall include the following:

Stripping. This work consists of the removing overburden or other specified material from the overbank area, and the replacement of overburden or other specified material over the disturbed area of the site after the underlying material has been removed from approximate Stations 5+00 to 11+0 on the north bank of the Little Thompson River.

CONSTRUCTION REQUIREMENT

Subsection 203.05 shall include the following:

Stripping. Stripping is performed in multiple steps. First the top 6-inches of good topsoil will be removed, then the overland area will be graded in a gradual slope to the Little Thompson River as shown on the plans. The soil will then be amended with on-site materials, and the topsoil will be replaced. Graded channel elements shall be inspected and approved by the Engineer. Contractor shall confirm existing conditions represent design plans prior to all road revetment and mass grading activity.

METHOD OF MEASUREMENT

Subsection 203.13(a) shall include the following:

Stripping. Stripping is measured by the cubic yard volume of material excavated overland bank grading. This will not be measured in the field, but will be by plan quantity.

BASIS OF PAYMENT

Subsection 203.14 shall include the following:

Payment includes the excavation removing of overburden (topsoil), grading according to the plans, adding on-site soil amendments, and replacing the overburden (topsoil), based on plan quantity.

Pay Item
Stripping

Pay Unit
Cubic Yard

REVISION OF SECTION 203 - EMBANKMENT MATERIAL (COMPLETE IN PLACE)

DESCRIPTION

Subsection 203.03, first paragraph shall include the following:

Embankment Material. Embankment material shall consist of approved material acquired from excavations, hauled and placed in embankments. Approval of the embankment material will be contingent on the material have a resistance value when tested by the Hveem Stabilometer, or equivalent resilient modulus value, of at least that specified in the Contract, and a maximum dry density of not less than 90 pounds per cubic foot. The material must be stable when tested in accordance with Colorado Procedure L-3102. This work consists of constructing a 220-foot berm at approximate River Station 5+50 on the north bank of the Little Thompson River. The soil riprap included in the berm design will be paid for under 506 – Riprap and Soil Riprap.

BASIS OF PAYMENT

Subsection 203.14 shall include the following:

Compaction will not be measured and paid for separately, but shall be included in the work.

Pay Item

Embankment Material (Complete in Place)

Pay Unit

Cubic Yard

REVISION OF SECTION 207 - TOPSOIL

Section 207 of the Standard Specifications is hereby revised for this project as follows:

Delete Subsection 207.01 and replace with the following:

This work includes topsoil material that is to be placed without compaction on disturbed areas within the project limits to be seeded. It shall include placing topsoil upon constructed shoulder and fill slopes after grading operations are completed. Placement of topsoil on 20 foot rounded areas at top of cuts will only be required when conditions and accessibility permit, and when directed by the engineer.

Subsection 207.02 shall include the following:

If topsoil cannot be salvaged on site, the Contractor shall prepare topsoil using a combination of one or all of the following: overburden, native material generated from rock excavation, and alluvial material, as approved by the Project Engineer. Topsoil shall be 6 inch minus and contain 25% material passing the #4 sieve.

Delete the first three paragraphs and the last paragraph in subsection 207.04 and replace with the following:

Topsoil will be measured as cubic yards in place. Depths will be verified by the Engineer. 6 inches minimum depth shall be placed on disturbed ground to be seeded. 12 inches minimum depth shall be placed over riprap required in the plans, above the flowline of any outfall or water conveyance, or above the ordinary high water mark along the stream. Riprap void fill will not be measured and included in this work.

REVISION TO SECTION 208 - EROSION CONTROL

DESCRIPTION

Subsection 208.01 shall include the following:

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

Erosion control measures 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.

CONSTRUCTION REQUIREMENTS

Subsection 208.06 shall include the following:

- Biodegradable hydraulic fluids shall be used for all heavy machinery.
- Contractor will comply with equipment cleaning protocols to prevent the spread of New Zealand Mud Snails, other aquatic nuisance species (hitchhikers) , and noxious plant species prior to entering the site per requirements of the 404 Permits(details provided at the end of this specifications package).
- A spill kit, including absorbent socks and booms, shall be kept onsite during all work with machinery (emergency pollutant isolation and clean-up materials, with procedures). All crew members shall be trained on how to use the spill kit equipment and where the materials are kept onsite. Engineer to approve Contractor plan for leaking equipment extraction from river (spill plan information to be included in SWMP).
- Vehicle tracking pads are required to prevent tracking debris on North 83rd Street.
- If sweeping becomes necessary, the Contractor must provide a sweeping plan for North 83rd Street.
- Appropriate erosion control measures shall be installed downslope and parallel to contours for all disturbed areas including staging areas. The location of erosion control shall be shown on site plans submitted for building permit approval. Stockpiled fill piles over 30 days shall be properly covered and/or stabilized with temporary vegetation.

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 209 - WATERING AND DUST PALLIATIVES

Section 209 of the Standard Specifications are hereby revised for this project as follows:

CONSTRUCTION REQUIREMENTS

Delete Subsection 209.06, Landscaping and replace with the following:

209.06 Landscaping. The Contractor shall furnish water for seeding, mulching, planting, transplanting, and any other landscape work required for the project at the time of installation. The Contractor will not be responsible for watering after final acceptance of the project.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

In Subsection 209.07 and 209.08 delete both sections and replace with the following:

Measurement and Payment: There will be no separate measurement of water used for soil aggregates for moisture and density control, prewetting an excavated area, dust palliatives, and temporary irrigation (water (landscaping)).

Full compensation for compliance, as required by this section, shall be considered to be in the prices paid for all contract items listed on the bid schedule, and no additional compensation will be allowed.

BASIS OF PAYMENT

Subsection 209.08 shall include the following:

Pay Item	Pay Unit
Temporary Irrigation	Lump Sum

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 is 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 Little Thompson River*.

2-year Flood	232 cfs*
5-year Flood	1,406 cfs
10-year Flood	3,100 cfs
25-year Flood	6,168 cfs
50-year Flood	9,100 cfs
100-year Flood	13,000 cfs

The 100-year flood flow of 13,000 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	Each

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.

CONSTRUCTION REQUIREMENTS

Subsection 212.06 shall include the following:

Onsite soil shall be amended with Biocomp/Biosol. 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:

<u>Pay Item</u>	<u>Pay Unit</u>
Seeding (Native) Zone 2	Acre
Seeding (Native) Zone 3	Acre
Seeding (Native) Zone 4	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	Pay Unit
Mulching (Weed Free Straw/WoodStraw)	Acre

Payment for wood straw mulch will be full compensation for all work and materials necessary to furnish and apply the mulch.

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.

CONSTRUCTION REQUIREMENTS

Subsection 214.03 shall include the following:

Predation protection fencing shall be placed around tree plantings per Engineer and/or Ecologist direction.

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 #40)	EA
Nursery Container Stock (DRC #60)	EA
Cottonwood Cuttings	EA

REVISION OF SECTION 214 - WILLOW CUTTING

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

Subsection 214.01 shall include the following:

This work consists of furnishing all plants, labor, materials and equipment and performing all work necessary and incidental to installing live willow cuttings and live brush mattress for the stabilization of soil. Work shall be completed in accordance with other contract documents and as directed by Region 4 Environmental Staff. Willows must be harvested from parent material identified by Region 4 Environmental Staff. It is anticipated that harvesting will happen within the construction boundary or within a 1,000 horizontal feet of the construction boundary with appropriate property access permission.

Subsection 214.02 shall include the following:

Live Willow Stakes – Willow stakes shall be approximately 3 feet long and between ½ and ¾ inches in diameter.

All side branches shall be trimmed. Willow cuttings shall be cut from branches with smooth undamaged bark.

Branches with thick, cracked bark shall not be used because there will not re-sprout effectively. Cuttings shall be cut about one foot from the ground. Cuts must be clean, without stripping the bark or splitting the wood. The base cuts shall be at a 45 degree angle to identify the root end of the cutting, the top shall be cut off, with a square cut so that the top of the stake is easily distinguishable from the bottom. Willow cuttings for use in brush mattress do not require specific measurements or trimming.

Subsection 214.03 shall include the following:

(k) *Transportation*. Immediately after cutting, all live cuttings shall be placed in water so that the cut ends are covered in water, and the cuttings shall be stored in a cool location. Plants shall be stored in containers with water at least one foot deep. The containers shall be continuously shaded and protected from the wind. Cuttings shall be protected from drying at all times.

During transportation, the cuttings shall be placed in containers with water at least 1 foot deep in orderly fashion to prevent damage and to facilitate handling.

Upon arrival at the construction site, cuttings shall be inspected for acceptability. Only healthy, undamaged material will be accepted.

(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 CDOT biologist 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.

Subsection 214.06 shall include the following:

Payment will be made under:

Pay Item	Pay Unit
Willow Cuttings	Each

REVISION OF SECTION 216 - SOIL RETENTION COVERING

Section 216 of the Standard Specifications is hereby revised for this project as follows:

Subsection 216.02 (a), Part 2. is deleted and replaced with the following:

2. Soil Retention Blanket (coconut) shall be C400B coconut fiber blanket with biodegradable netting on both sides as manufactured by Nedia Enterprises, Inc. or approved equivalent.

Subsection 216.02 (a) is revised to include the following:

- (a) *Covering.* Covering shall be coir mat, which shall be KoirMat 700 coconut fiber erosion control matting (woven matting of coir yarn) manufactured by Nedia Enterprises, Inc. or approved equivalent.

Subsection 216.02 (b) is deleted and replaced with the following:

- (b) Wood stakes shall be used to secure and anchor blankets as shown on the Contract Drawings. Lengths of wood stakes are indicated on the Contract Drawings for securing and anchoring coir mat and coconut blankets.

Subsection 216.03 (b) is deleted and replaced with the following:

Areas to be covered with coir mat or Soil Retention Blanket (coconut) shall be properly prepared, seeded, and mulched before blankets are placed. Contour furrowing shall not be done in areas where blankets are to be placed. The soil shall be free of clods, rocks, wood, and other obstructions so that the blankets are in direct contact with soil. No gaps or voids shall exist under the blankets.

Blankets shall be installed starting at the upstream end and unrolled in the direction of the flow of water. Blankets shall be placed smoothly but loosely on the soil surface without stretching. Blankets shall be staked and anchored according to the details shown on the Contract Drawings. A minimum edge distance of 2-inches from the edge of blanket to the edge of stake shall be maintained.

See the Contract Drawings for installation details. Initial and terminal anchor trenches shall be used at the upstream and downstream ends of all installations. Longitudinal trenches shall be installed at the toe and top of slopes.

When blankets/mats need to be spliced at ends, place upstream blanket/mat over the downstream blanket/mat with an overlap of 12 inches and stake using 18-inch long wood stakes at one-foot transverse spacing. Intermediate staking using one-foot transverse spacing and 18 inch long wood stakes shall be completed at 50-foot intervals (longitudinally).

Any areas disturbed during installation of the blankets shall be reseeded and mulched.

Subsection 216.05 shall include the following:

Pay Item

Soil Retention Blanket (coconut)

Pay Unit

Square yard

REVISION OF SECTION 218 - NOXIOUS WEED MANAGEMENT

Section 218 is hereby added to the Standard Specifications for this project and shall include the following

DESCRIPTION

218.01 This work includes the prevention, control, and monitoring of noxious weeds through an Integrated Weed Management Plan using all methods that are available for the targeted weed species. Noxious weed management will include the prevention and control of noxious weeds identified in the project area. Effective noxious weed management procedures shall use a combination of the four basic methods: chemical, mechanical, cultural, or biological techniques, including prevention and monitoring.

The Contractor shall control and prevent the spread of noxious weeds throughout construction to comply with Title CRS 35-5.5, Colorado Weed Management Act.

MATERIALS

218.02 Chemical Treatment, Mechanical Control, Cultural Control and Biological Control.

The material for Noxious Weed Management shall conform to the following:

(a) Chemical Control. Incorporate herbicide treatment in accordance to CDOT Standard Specification, Section 217, Herbicide Treatment. The pesticide applicator shall consult the most recent publication of the Colorado Weed Management Guide available on-line at <http://www.cerc.colostate.edu/titles/XCM205.html> through Colorado State University's Cooperative Extension Program. Changes by the Contractor to the provisions of the CWMG shall be pre-approved by the Engineer a minimum of 10 days prior to application.

Herbicides shall be labeled as described in Section 217, subsection 217.02 of the Standard Specifications, and Labeling information shall be provided to the Engineer in accordance with subsection 217.03.

The contractor is required to follow federal, state, and local regulations regarding herbicide materials and use.

(b) Mechanical Control. Mechanical control shall consist of mowing and brush cutting, hand pulling, blading, grubbing, and the use of hand operated tools, such as power weeders, string trimmers, chain saws, brushhooks, or heavy equipment.

(c) Cultural Control. Cultural control to enhance the vigor of desirable plants shall consist of native seeding and plantings using the appropriate project seed mix(es), mulching, and fertilizing, as appropriate in accordance with CDOT Standard Specifications, Sections 212, 213, 214, 216, and as shown on the plans.

(d) Biological Control. Biological control shall consist of the use of approved living organisms (insects, animals, or pathogens) with assistance provided by the Colorado Department of Agriculture's Division of Plant Industry or Colorado State University Cooperative Extension.

CONSTRUCTION REQUIREMENTS

218.03 Integrated Noxious Weed Management Plan. The Contractor shall follow the project specific Integrated Noxious Weed Management Plan, provided by CDOT. Once work has started, and during the active construction period, the Contractor shall update the schedule for noxious weed management work on a monthly basis, and submit the updated schedule to the Project Engineer. Revisions to the plan and schedule shall not be implemented until the proposed measures have been approved in writing by the Engineer

The plan will consist of the following elements:

- (1) Identification of Colorado's List A, B, and C noxious weed species).
- (2) Schedule of controls prior to topsoil salvage or earthwork operations.
- (3) Noxious weed management practices in sensitive areas, and for on-site wetlands and riparian habitat.
- (4) Schedule of onsite monitoring for List A, B, and C noxious weeds.

The Contractor shall submit post construction mapping of those weeds listed in the Colorado Noxious Weed Act List A, B, and C that are present onsite at the time of project acceptance by the Engineer, and at other times as directed by the Engineer. This mapping shall be completed by the by the Noxious Weed Management Supervisor.

218.04 Noxious Weed Management

(a) *Certifications.* All methods of seeding shall be in accordance with Section 212. All methods of mulching shall be in accordance with Section 213. All methods of herbicide application shall be in accordance with Section 217.

(b) *Procedures to Minimize Spread of Noxious Weeds.* The Contractor shall treat the weeds in accordance with the Integrated Noxious Weed Management Plan. Noxious weed plants and plant parts, including seed heads, that have been mechanically removed, shall be placed in appropriate bags or other suitable containers that can be tightly closed or sealed and shall be disposed of at a solid waste disposal facility. Topsoil infested with List A, B, and C noxious weeds shall be disposed of at a solid waste disposal facility.

Noxious weed management, after earthwork operations and stabilizing has been completed, shall not result in non-target injury. Any non-target injury shall be reseeded and re-mulched in accordance with Section 212 and 213 at no cost to the project.

Weed management practices for staging areas are to be approved by the Engineer prior to their construction. Project stage areas will be cleared of noxious weeds prior to mobilizing construction equipment. Weed infested staging areas shall be mowed and cleared of noxious weeds as described in Section 201, and sprayed with the appropriate herbicide as described in the Integrated Noxious Weed Management Plan.

If borrow material is used for any part of the project, the borrow material shall be weed-free and shall be obtained from a site preapproved by the Engineer. If the borrow is stockpiled it shall be stabilized and remain weed free for the duration of the project.

If imported topsoil is used for any part of the project, the topsoil shall be inspected by the Noxious Weed Management Supervisor and certified noxious weed free by the Noxious Weed Management Supervisor. If List A, B, and C noxious weeds are found in the topsoil, the material shall not be used on the project.

METHOD OF MEASUREMENT

218.05 Noxious Weed Management will not be measured separately, but will be paid for on a lump sum basis. The lump sum price will be full compensation for all work and personnel required to complete the item. The Contractor shall provide the Noxious Weed Management Supervisor. Herbicide treatment will be paid for in accordance with Section 217. Stripping of topsoil infested with noxious weeds will be paid for in accordance to Section 207. Mechanical removal of noxious weeds will not be measured, but shall be included in the work. Solid waste disposal shall be paid for in accordance to Section 250.

BASIS OF PAYMENT

218.06 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.

<u>Pay Item</u>	<u>Pay Unit</u>
Noxious Weed Management	Lump Sum

REVISION OF SECTION 506 - RIPRAP AND SOIL RIPRAP

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

Subsection 506.02 shall be modified to include the following:

Existing riprap removed during construction may be reused for "soil riprap" if it is free from deleterious materials and satisfies the specifications herein as determined by the Engineer.

The color of riprap shall be gray with blue/gray hues and shall be uniform. Samples of riprap shall be submitted for the review and approval by the Engineer prior to construction.

Subsection 506.03 shall be modified to include:

Where "soil riprap" is designated on the Contract Drawings, riprap voids are to be filled with native soil material. The riprap shall be pre-mixed with the native soil at the following proportions by volume: 70 percent riprap and 30 percent soil. The soil used for mixing shall be native topsoil, as defined in Section 207, stripped from the channel banks and shall have a minimum fines content of 15 percent. The clean sandy soil in the channel bottom shall not be used for mixing with the riprap. The soil riprap shall be installed in a manner that results in a dense, interlocked layer of riprap with riprap voids filled completely with soil. Segregation of materials shall be avoided and in no case shall the combined material consist primarily of soil; the density and interlocking nature of riprap in the mixed material shall essentially be the same as if the riprap was placed without soil.

A surface layer of moist topsoil shall be placed over the soil riprap ("buried soil riprap") according to the thickness specified on the Contract Drawings (minimum of 6 inches thick if not specified otherwise). The topsoil surface layer shall be compacted to approximately 85 percent of maximum density and within two percentage points of optimum moisture in accordance with ASTM D698. Topsoil shall be added to any areas that settle.

The Contractor shall install a test section of at least 60 square feet of soil riprap for the review and approval of the Engineer prior to installation of the remaining soil riprap.

Subsection 506.04 shall include the following:

The quantity to be paid for riprap, soil riprap shall not be re-measured but will be the number of cubic yards 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.

The riprap quantity associated with the Swale Protection bid items shall not be accounted for separately, but shall be accounted for in the Swale Protection and Streambank Stabilization bid items as described in Revision of Section 208.

Subsection 506.05 shall include the following:

Payment for riprap, soil riprap, shall include but is not limited to excavation for riprap and void filled material; subgrade preparation, furnishing and placing riprap and filling voids of riprap as specified; and disposal of excess excavated material onsite. Payment shall be made at the contract unit price for rip rap and shall include full compensation for all labor, equipment, materials, transportation, and all other appurtenant items to complete the work.

<u>Pay Item</u>	<u>Pay Unit</u>
Soil Riprap (12 inch)	Cubic Yards
Soil Riprap (24 inch)	Cubic Yards

Payment for Filter Material (Class A) under the riprap shall be in accordance with the Revision to Section 206.

Geotextile under riprap installations shall not be paid for separately, but shall be included in the cost for riprap and soil riprap.

Payment for soil riprap within the Swale Protection and Streambank Stabilization installations shall be in accordance with the Revision to Section 208.

REVISION OF SECTION 506 - RIPRAP (SPECIAL)

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

Subsection 506.01 shall be modified to include the following:

Riprap (Special) shall also be referred to as Void-filled Riprap.

Subsection 506.02 shall be modified to include the following:

Existing riprap removed during construction may be reused for "void-filled riprap" if it is free from deleterious materials and satisfies the specifications herein as determined by the Engineer.

The color of riprap and void-fill materials used to fill the riprap voids shall be gray with blue/gray hues or tan and shall be uniform. Samples of riprap and void-fill materials shall be submitted for the review and approval of the Engineer prior to construction.

Where "Void-Filled Riprap" is designated on the Contract Drawings, riprap shall be mixed with the materials and associated proportions listed in the table below to the fill the voids of the riprap:

Approximate Proportions (loader buckets)	Material Type	Material Description
1	Riprap	D50 = 12"
5	Riprap	D50 = 18"
3	Void-fill material	7-inch minus crushed rock surge (100% passing 7-inch sieve, 80-100% passing 6-inch sieve, 35-50% passing 3-inch sieve, 10-20% passing 1.5-inch sieve)
1	Void-fill material	2 to 4-inch cobble (round washed river rock that is well-graded, 100% passing 6-inch sieve, 35-50% passing 3-inch sieve, 5-20% passing 2-inch sieve)
1	Void-fill material	4-inch minus pit run surge (round river rock and sand, well graded, 90-100% passing 4-inch sieve, 70-80% passing 1.5-inch sieve, 40-60% passing 3/8-inch sieve, 10-30% passing #16 sieve).
1	Void-fill material	Type II bedding
½ to 1	Void-fill material	Native topsoil
Top layer	Top dressing	Additional 4 to 12-inch cobbles (round washed river rock that is well graded, 80-100% passing 12-inch sieve, 35-50% passing 6-inch sieve, 5-20% passing 4-inch sieve) shall be mixed in on the surface of the void-filled riprap (covering approximately 50% of the surface) prior to compaction of the void-filled riprap. Cobbles shall be fully embedded into the mass of the void-filled riprap.

Note: Mix proportions and material gradations are approximate and are subject to adjustment by the Engineer. No adjustment in unit price for void-filled riprap will be allowed based on modifications to the mix proportions.

Subsection 506.03 shall be modified to include:

Elevation tolerance for the void-filled riprap shall be 0.10 feet. Thickness of void-filled riprap shall be no less than thickness shown and no more than 2-inches greater than the thickness shown.

The riprap and void-fill materials shall be thoroughly mixed prior to placement and shall be installed and compacted so that a dense, interlocked layer of riprap and void-fill material is provided with riprap voids completely filled. The loose material shall be placed in a single lift of sufficient height such that final grade will be achieved upon compaction. If the compacted material is below final grade, placement of only the smaller void-fill materials to achieve final grade will not be permitted. Segregation of materials shall be avoided and in no case shall the combined material consist primarily of the void-fill materials. The density and interlocking nature of riprap in the mixed material shall essentially be the same as if the riprap was placed without filling the voids.

A top dressing of cobbles shall be mixed in on the surface of the void-filled riffle material prior to compaction of the riffle material. The cobbles shall consist of rounded river rock that is well graded, ranging in size from 4 to 12 inches, and of uniform gray or tan color.

Compaction of the void-filled riprap shall be performed by wheel rolling with heavy rubber-tired equipment (e.g., front end loader). The moisture content of the mixture shall be at optimum conditions prior to compaction and water shall be added, as necessary, at the direction of the Engineer.

Where indicated on the Drawings, a surface layer of moist topsoil shall be placed over the void-filled riprap. The topsoil surface layer shall be compacted to approximately 85% of maximum density and within two percentage points of optimum moisture in accordance with ASTM D698. Topsoil shall be added to any areas that settle.

The Contractor shall install a test section of at least 60 square feet of void-filled riprap for the review and approval of the Engineer prior to installation of the remaining void filled-riprap.

Elevation tolerance for the void-filled riprap shall be 0.10 feet. Thickness of void-filled riprap shall be no less than thickness shown and no more than 2-inches greater than the thickness shown.

Subsection 506.04 shall include the following:

The quantity to be paid for void filled riprap shall not be remeasured but will be the number of cubic yards 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.

The riprap quantity associated with the Swale Protection and Streambank Stabilization bid items shall not be accounted for separately, but shall be accounted for in the Swale Protection and Streambank Stabilization bid items as described in Revision of Section 208.

Subsection 506.05 shall include the following:

Payment for void filled riprap shall include but is not limited to excavation for riprap and void filled material; subgrade preparation, furnishing and placing riprap and filling voids of riprap as specified; and disposal of excess excavated material onsite. Payment shall be made at the contract unit price for riprap and shall include full compensation for all labor, equipment, materials, transportation, and all other appurtenant items to complete the work.

Payment for soil riprap within the Swale Protection and Streambank Stabilization installations shall be in accordance with the Revision to Section 208.

Pay Item

Riprap (Special)

Pay Unit

Cubic Yards

REVISION OF SECTION 625 - CONSTRUCTION SURVEYING

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

Subsection 625.01, first paragraph shall be modified to include:

This work consists of the construction surveying, calculating, staking necessary, and utility locating 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 to mark the limits of grading and location of proposed in-stream features as indicated in the construction plan set.

A post-construction survey shall be conducted to survey the final stations, elevations, and dimensions of constructed in-channel features and bench grading, at a minimum.

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 conducting a private utility survey to locate utilities on-site.

Subsection 625.13 shall be modified to include:

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

<u>Pay Item</u>	<u>Pay Unit</u>
Construction Surveying	Lump Sum
Construction Surveying (As-builts)	Lump Sum

REVISION OF SECTION 626 - MOBILIZATION

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.

<u>Pay Item</u>	<u>Pay Unit</u>
Mobilization	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. Proposed hauling routes. Yellowstone Road shall not be used as part of the haul routes.
2. Flaggers and/or other traffic control measures must be used at the intersections of the access points on North 83rd Street during hauling operations. All necessary traffic control devices shall be supplied and installed by the Contractor.
3. Locations and types of warning signs along the roads shall be shown.
4. Prior to project commencement, the applicant must photo-document the conditions of all Boulder County roads used for hauling. The applicant must restore all affected roadways to pre-project conditions or better.
5. Due to the project’s proximity to Larimer County, items 2 to 4 should be evaluated for impacts to Larimer County infrastructure.
6. Construction staging should be located in areas outside of the 100-year floodplain as best as possible, or as far away from the Little Thompson River as possible.
7. There shall be no parking/staging in the North 83rd Street Right-of-Way.
8. 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.

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.

<u>Pay Item</u>	<u>Pay Unit</u>
Construction Zone 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:

- 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
- 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 or wetland.

The USACE 404 Individual Permit (IP) is still in Agency Review, and applies to all work that impacts Waters of the US. It is expected that this permit will not be signed until March 1, 2017.

Work below Ordinary High Water Mark (OHWM) in the Little Thompson River, in other drainage tributaries shown in the plans as jurisdictional waters, or in wetlands areas, will not be allowed until the 404 Individual Permit (IP) is signed. Other work, including excavation and walls construction in upland areas, can be started prior to the IP being signed.