Rock Removal and Large Woody Debris Installation - Beaver to Ragged

Columbia/Snake River Salmon Recovery Program, Oregon

Specifications and Drawings
08-1678-OR-002

Prepared/Designed By:

U.S. Department of the Interior
Bureau of Reclamation
Pacific Northwest Region
Boise, Idaho

Prepared For:

Confederated Tribes
of the Warm Springs
Reservation of Oregon
68073 HWY 26
Prairie City, OR 97869

Contracting Agency:

Grant County Soil & Water
Conservation District
721 S. Canyon Road
John Day, OR 97845

June 2008

CONTENTS

SCHEDULE OF ITEMS AND PRICES

BID SCHEDULE
ROCK REMOVAL AND LARGE WOODY DEBRIS INSTALLATION
BEAVER TO RAGGED
GRANT COUNTY, OREGON

Bid Item No.	Reference Section	Work or Material	Quantity	Unit	Unit Price	Amount
1	02100	Mobilization/Demobilization	1	Lump sum		$
2	02318	Rock Removal	1	Lump sum		$
3	02318	Earthwork	1	Lump sum		$
4	02935	Placing large woody debris structures (15)	1	Lump sum		$
				TOTAL FOR SCHEDULE		$
5	01110	Equipment Hourly Rate (optional)				
a.		Excavator	hour	Up to 40 hours	$	$
b.		Front End Loader	hour	Up to 40 hours	$	$
c.		Dump Truck	hour	Up to 40 hours	$	$
d.		Other _____	hour	Up to 40 hours	$	$
e.		Other _____	hour	Up to 40 hours	$	$
f.		Other _____	hour	Up to 40 hours	$	$

Signature_____

Taxpayer Id No._____

Date_____

NOTE: ALL OTHER EXCAVATION, BACKFILLING, ETC. SHALL BE SUBSIDIARY TO ONE OR MORE OF THE PAY ITEMS ABOVE AND THERE IS NO ADDITIONAL COMPENSATION FOR THESE OPERATIONS.

Certification of Technical Specifications

Project Title: Columbia/Snake River Salmon Recovery Program

Region: Pacific Northwest Region

Technical Specifications: Rock Removal and Large Woody Debris Installation - Beaver to Ragged
08-1678-OR-002

Prepared by: */s/ jebaconguis* Date: 6/16/08

Technical Approval: */s/ TETurner* Date: 6/16/08

(1) The person signing the specifications package as "Prepared by" has developed and/or assembled the technical specifications of this solicitation.

(2) The person signing the specifications package as "Technical Approval" has been in responsible charge of the overall design including developing or assembling the technical specifications in this solicitation. By this signature, the Bureau of Reclamation (a) certifies that the specifications paragraphs convey the design intent as portrayed on the drawings included therein and (b) ensures that specifications package containing designs from multiple disciplines prepared by other professions and disciplines and depicted in the document is compatible with the overall design intent. In cases where the designs described by the specifications meet the criteria for preparation by a registered engineer or architect, the “Technical Approval” is registered as such.

GENERAL REQUIREMENTS

GENERAL REQUIREMENTS

General:

This construction plan sets forth the requirements for this installation as shown on the drawings and described in the construction specifications and material specifications. The project shall be constructed at the location and to the lines and grades as shown on the drawings in accordance with the construction and material specifications.

The work is to be performed for and under the direction of the Confederated Tribes of the Warm Springs Reservation of Oregon (Tribe). Grant County Soil & Water Conservation District, here after referred to as the "Contracting Officer" will represent the Tribe. The Contracting Officer will enter into a contract to construct the above work and will administer the contract and funds for the project.

The Middle Fork John Day Rock Removal and Large Woody Debris Installation: Beaver to Ragged Project (Project) is located in the Middle Fork John Day River between RM 56.2 and RM 55.6, approximately 28 miles east of Prairie City, OR in Grant County.

A tributary assessment is currently being completed by the Bureau of Reclamation Technical Services Center. This study will provide additional channel morphology, sediment transport, and flow information on the Middle Fork and Mainstem John Day River systems. Future work in both rivers will include reach-level assessments that involve more detailed evaluation of the Middle Fork John Day River within the Tribe's property. The results of those reach assessments may suggest that additional enhancements may be possible in the project area, including the full excavation of high flow side channels. However, that type of potential future project will require more detailed analysis that is beyond the scope of work of this project. This project is one of two projects in the Middle Fork John Day River that does not require the same degree of analysis; is intended to provide short-term biological benefit; and can be constructed in the summer of 2008 permitting funds are available.

The general intent of this project is to increase the lateral connection between the river and the floodplain by removing existing rock spurs, increasing floodplain access by excavating the inlet to a high flow side channel, and providing habitat complexity by installing large woody debris at select locations. Some of the large woody debris will also serve to promote flow into the high flow side channel and recruit spawning gravels. Other debris is intended to maintain the scour pools of some of the rock spurs that will be removed. There are 15 proposed large woody debris installations along the stretch between Beaver Creek and Ragged Creek.

Construction Plan:

a. Specifications:

The construction specifications and material specifications describe minimum acceptable quality of work and materials for the project. The material specifications may also reference a commercial standard such as the American Society for Testing and Materials, ASTM, which identifies materials. Commercial standards set forth the minimum acceptable quality of identified materials within the industry. If a conflict arises between the drawings and specifications, the specification governs the work and/or material.

b. Drawings:

The drawings are a visual representation to supplement construction and material specifications. The drawings include location, profiles, sections, details, and notes necessary to describe the work.

NO CHANGES ARE TO BE MADE IN THE DRAWINGS OR SPECIFICATIONS WITHOUT PRIOR APPROVAL OF A BUREAU OF RECLAMATION DESIGN PROFESSIONAL OR PROFESSIONAL ENGINEER.

Permits:

All permits, rights of way, and/or easements that are applicable for the construction and/or operation are the responsibility of the Contractor and shall be available for review by the Contracting Officer prior to the start of construction. Any submittals required by any permit (e.g. Erosion and Sediment Control Plan) that is part of this project shall be provided to the requesting regulatory agency within the time specified by the agency.

Safety:

The Contractor is responsible for compliance with all state and local laws, ordinances, codes, and/or regulations applicable for the installation. The inspector will document any safety violations witnessed.

Environmental Considerations and Restoration:

a. The Contractor shall, at all times, direct his/her activities in such a manner as to minimize adverse impacts to the environment.
b. Any damage to trails, roads, fences, ditches, fields, existing structures, or creek banks shall be promptly repaired by the Contractor to the condition which existed prior to the damage, or replaced at the Contractor's expense prior to final approval of the work by the Contracting Officer.
c. All toilet placements will require the approval of the private landowner.

d. Sediment release prevention measures will be taken during construction and will meet the NOAA Fisheries criteria to protect migrating adult and juvenile fish. If other, more restrictive regulations apply, the more restrictive shall govern.
e. Oregon Division of State Lands best management practices (BMPs) (e.g., straw bales, silt fences, cofferdams) will be used to minimize the risk of pollution of surface and groundwater, soil, and the atmosphere with any contaminants including hazardous or toxic materials.
f. Any release of contaminants into the environment will require immediate corrective action by the Contractor in accordance with applicable state and Federal regulations.
g. Staging, refueling, and petroleum storage areas for vehicles and equipment shall be located at least 150 feet from the stream.
h. Heavy equipment left on site will use drip pans as necessary to minimize soil contamination from leaks.
i. Equipment used in the wetted channel will be inspected by the Contracting Officer or Contracting Officer's Representative each day and when fueling occurs, to ensure there are no leaks from hydraulic lines or other locations on the equipment. Any leaks will be repaired prior to equipment entering the wetted channel.
j. Emergency spill containment equipment will be available at all times to manage any potential petroleum product spills or leaks. If a spill or leak occurs, it will be cleaned up immediately and appropriate officials notified.
k. No chemical dust suppressants will be used within 25 feet of any waterway. The use of water for dust suppression is preferred.
l. Riparian vegetation to be disturbed or removed will be directed by the Contracting Officer or Contracting Officer's representative. Herbicides must not be used to control or remove invasive and non-native vegetation.
m. Areas disturbed by construction will be replanted and/or seeded by the beginning of the next growing season, or at the end of the project if there is sufficient growing time before the onset of cold weather. Site reclamation will include replanting with native vegetation similar to types removed during construction.
n. The proposed work will occur during in-stream work windows, which are July 15 to August 15. These work windows are designed to protect incubating eggs, fry in the gravels, and spawning adults if passage is maintained at all times during construction.
o. Water will only be drawn from a site approved by NOAA Fisheries and/or USFWS fisheries biologists. Water drawn from any location will use 3/32-inch screens on the intake hose. Fish screen must be installed, operated, and maintained according to NOAA Fisheries' fish screen criteria on each water intake used for project construction, including pumps used to isolate an in-water work area.

p. Ensure that the following materials for emergency erosion control are on site: A supply of sediment control materials (e.g., silt fence, straw bales). All temporary erosion controls shall be in-place and installed downslope of the project activity within 150 feet of the river until site rehabilitation is complete. Restrict use of heavy equipment by selecting equipment that will have the least adverse effects on the environment (e.g., minimally sized, low ground pressure equipment). Complete earthwork (including drilling, excavation, dredging, filling, and compacting) as quickly as possible. During excavation, stockpile native streambed materials for later use above the bank elevation where it cannot reenter the stream. Stabilize all disturbed areas following any break in work unless construction will resume within four days. If monitoring or inspection shows that the erosion controls are ineffective, mobilize work crews immediately to make repairs, install replacement, or install additional controls as necessary.

q. Ensure that an oil-absorbing, floating boom is on site before the primary construction activities occur in the project area. In the case of a pollution event or release, including, but not limited to a fuel spill, notification of the appropriate Federal or state agency is required. Contractor shall obtain necessary contact information for relevant agencies prior to construction.

r. Complete work within the active channel during the preferred instream work windows and implement the work during daylight hours (½ hour after sunrise to ½ hour before sunset).

s. If a sick, injured, or dead specimen of a threatened or endangered species is found, the finder must notify the nearest Field Office of NOAA Fisheries Law Enforcement. Contractor shall obtain necessary contact information prior to construction. The finder must take care in handling sick or injured specimens to ensure effective treatment, and in handling dead specimens to preserve biological material in the best possible condition for later analysis of cause of death. The finder also has the responsibility to carry out instruction provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not disturbed unnecessarily.

t. Ensure the length of any sediment plume resulting from the installation and removal of the cofferdam does not exceed 100 yards.

u. Provide fish passage for any salmonid species present in the project area during construction.

v. Power is not available. All stationary power equipment (e.g. generators) operated within 150 feet of any aquatic habitat must be diapered to prevent leaks and/or enclosed in a containment device (e.g. non permeable drip pan) of adequate capacity to retain equipment fluids (e.g. gasoline, diesel fuel, and oil).

w. No in-water stream crossings are planned to complete the project although excavators may need to enter the stream to perform some tasks .

x. Preserve and protect existing wetland to the greatest extent possible and replace in-kind should damage occur. Wetland boundaries will be marked prior to construction.

y. Use of existing available public highways, roads, or bridges as haul routes subject to applicable local regulations and necessary precautions will be taken for public safety if applicable.

z. Cease project operations under high stream flow conditions that may result in inundation of the project area, except for efforts to minimize or eliminate resource damage.

aa. Project designer has not evaluated the structural integrity of the bridge access to reach Placer Gulch pit and no estimate or assurance has been given for load capacity. Construction contractor should inspect bridge and determine suitability for vehicle and loads appropriate for the project.

Allowable In-Stream Work Periods:

a. In-stream work conducted during this project is allowed in the live stream channel from July 15 through August 15.

b. During any construction in the stream, the Contractor shall provide temporary fish passage. Prior to any in-stream work, the planned temporary fish passage will be approved by the Project Engineer of the NOAA Fisheries office in Portland, Oregon, or the NOAA Fisheries approved fish passage Engineer of the Oregon State Department of Fish and Wildlife.

DIVISION 1 - GENERAL

SECTION 01110 - SUMMARY OF WORK

PART 1 GENERAL

1.01 REQUIREMENT

A. Construct and complete in accordance with the contract provisions, these specifications, and the drawings listed in Section 01111 - Drawings, Rock Removal and Large Woody Debris Installation, Beaver to Ragged, Columbia/Snake River Salmon Recovery Program, Oregon.

1.02 LOCATION

A. All work is on the John Day Middle Fork River upstream of the highway bridge between RM 56.2 and RM 55.6, approximately 28 miles east of Prairie City, OR in Grant County.

1.03 INTENT

A. The general intent of this work is to restore floodplain connection by removing existing rock spurs and excavating an area of streambank upstream of the inlet to the historic channel and to promote localized channel narrowing by creating two pilot mid-channel stream bars from native streambed material. At select locations, large woody debris installations are proposed to enhance habitat complexity and enhance or maintain the deep pools created by the rock spurs.

B. The work is to be performed for and under the direction of the Confederated Tribes of the Warm Springs Reservation of Oregon (Tribe). Grant County Soil & Water Conservation District, here after referred to as the “Contracting Officer” will represent the Tribe. The Contracting Officer will enter into a contract to construct the above work and will administer the contract and funds for the project.

1.04 SEQUENCE OF WORK

A. The in-stream work window will be from July 15 to August 15.

B. Substantial completion shall be accomplished by August 30.

1.05 PRINCIPAL COMPONENTS OF WORK

A. The work to be performed in the wet consists of the following:

1. Removing rock spurs marked for removal in the drawings.

2. Earthwork to include: bank excavation to install large woody debris; excavating scour pools at the tip of the rootwads; adding willow stakes provided by the Tribe during backfilling, per the Tribe's Planting and Rehabilitation Plan and as directed by the Contracting Officer in the field; compaction of native material for backfill; regrading the streambank where the rock spurs will be removed; removal of approximately 12 inches of streambank material off the existing ground elevation, as shown in the drawings, to promote preferential flow to the historic channel; and mounding native streambed material to create mid-channel stream bars.
3. Constructing large woody debris structures in stream bank with various methods of anchoring (pinning logs together, vertical log piling, and adding rock ballast).
4. Placement of erosion control fabric to the stream banks disturbed from the installation of the rootwads and the removal of the rock spurs and revegetation will be done be others.

1.06 WORK TO BE PERFORMED AT AN HOURLY RATE

A. The Contractor may be called upon to perform additional tasks that are not specifically identified in the specifications or which quantities are unknown until construction is underway. These tasks may include distributing spawning-sized (0.5-inch to 4-inch diameter) native gravels and cobbles in an area designated by the Contracting Officer and placing slash in other low-lying wet areas not specified on drawings as directed by the Contracting Officer, and other related tasks.

B. All work including equipment to be used and methods, as well as switching to and from hourly rates will be discussed and agreed upon in advance between the Contractor and Contracting Officer.

C. A detailed accounting of actual equipment use time will be recorded at the end of each day and signed by the Contractor or his/her representative and the Contracting Officer.

D. Hours spent for equipment maintenance, refueling, or repair in association with the hourly rate activities shall not be billed as additional hours. This time should be built into the base contract or the hourly rates.

E. Contractor should, in his/her project schedule planning, allow for up to 40 hours of such time during the instream work window.

1.07 MINIMUM AREA

A. Construction impacts will be confined to the minimum area necessary to complete the project.

1.08 ALLOWABLE IN-STREAM WORK PERIODS

A. In-stream work is allowed in the live stream channel from July 15 through August 15. These work windows are designed to protect incubating eggs, fry in the gravels, and spawning adults if passage is maintained at all times during construction.

1.09 ISOLATION OF IN-WATER WORK AREA

A. All work is planned in the live stream without dewatering or complete isolation. Where possible, the Contracting Officer may direct the Contractor to construct temporary gravel berms to direct water velocity away from the installation site. Berms would be constructed from instream gravels and would be redistributed to pre-condition after wood installations are complete.

1.10 CULTURAL RESOURCE

A. Cultural resource monitors may be on site for any part of the work that will be adjacent to the railroad grade and when the trees for the large woody debris will be harvested. The Contractor shall keep the Contracting Officer current on the schedule so that a cultural resource monitor will be on site for those actions that need to be monitored

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01111 - DRAWINGS

PART 1 GENERAL

1.01 COST

A. Include in prices offered in the Schedule for other items of work.

1.02 QUALITY ASSURANCE

A. Inform Contracting Officer of any discrepancies, errors, or omissions discovered on drawings.

1.03 PROJECT CONDITIONS

A. Where there are minor differences, as determined by the Contracting Officer, between details and dimensions shown on drawings and details and dimensions of existing features at jobsite, use details and dimensions of existing features at jobsite.

1.04 COPIES OF DRAWINGS

A. Upon request, one set of full-size drawings will be furnished to the Contractor for construction purposes.

1.05 LIST OF DRAWINGS

A. Drawings listed in Table 0111A - List of Drawings, are made a part of these specifications.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

Table 01111A - List of Drawings

Sheet No.	Drawing No.	Title
General:		
1	1678-100-955	Title Sheet
2	1678-100-956	Site Plan
3	1678-100-957	Plan Profile 0+00 to 15+00
4	1678-100-958	Plan Profile 15+00 to 30+00
5	1678-100-959	LWD #1 and LWD #2 - Plan
6	1678-100-960	LWD #3 and LWD #4 - Plan
7	1678-100-961	LWD #5, LWD #6, LWD #7, and LWD #8 - Plan
8	1678-100-962	LWD #9, LWD #10, and LWD #11 - Plan
9	1678-100-963	LWD #12, LWD #13, LWD #14, and LWD #15 - Plan
10	1678-100-964	Stream Bar #1 and Stream Bar #2 - Plans and Sections
11	1678-100-965	Details and Section
12	1678-100-966	Staging and Access - Plan

END OF SECTION

DIVISION 2 - SITE WORK

SECTION 02100 - MOBILIZATION AND DEMOBILIZATION

PART 1 GENERAL

1.01 SCOPE

A. The work shall consist of mobilizing equipment, supplies and securing bonds and permits necessary to do the work as stated in the contract and/or agreement and demobilization of excess materials and equipment from the work site.

1.02 PAYMENT

A. Mobilization/Demobilization:

1. Payment: Lump sum price offered in the schedule.

1.03 FORCES AND EQUIPMENT

A. Mobilization may include costs for transporting personnel, equipment, operating supplies to the site, establishment of necessary facilities for the Contractor's operation and any permits, insurance and/or bonds required to do the work.

B. Demobilization may include the removal of equipment and facilities that were necessary to do the work.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 02318 - EARTHWORK

PART 1 GENERAL

1.01 GENERAL

A. Earthwork includes:

1. Removing rock spurs marked for removal in the drawings.
2. Regrading the streambank where the rock spurs have been removed.
3. Excavating the streambank to install large woody debris.
4. Excavating scour pools at the tip of the rootwads, as shown in the drawings.
5. Excavating an area of streambank to match the channel invert elevation on the upstream side of the inlet to the historic channel, as shown in the drawings.
6. Adding willow stakes per the Tribe's Planting and Rehabilitation Plan, during backfilling, as directed by the Contracting Officer.
7. Compacting native material for backfill.
8. Mounding native streambed material to create two stream bars upstream of Ragged Creek.
9. Disposal of materials generated as part of this work.

1.02 PAYMENT

A. Rock Removal:

1. Payment: Lump sum price offered in the schedule; includes removing rock, storing rock in a temporary storage area, and eventually hauling rock to pit.

B. Earthwork:

1. Payment: Lump sum price offered in the schedule; includes bank excavation to regrade and smooth the remaining streambank after the rock removal, excavation of the streambank for the large woody debris placement, excavation of the streambed for the scour pools, excavation of the inlet to the historic channel, compaction of native material for backfill, mounding native material to create two stream bars, addition of willow cuttings during backfilling, scarifying the top 6 inches of soil after compaction, and disposing of materials associated with work.

PART 2 PRODUCTS

2.01 EXCAVATED MATERIALS

A. The Contractor's operations in excavations shall be such that excavations will yield as much suitable material for use in permanent construction required under these specifications as practicable.

2.02 FILL MATERIAL

A. Native material:

1. Large wood installation:
    a. Use native streambank material to backfill the log trenches. Backfill of materials shall in the reverse order in which they where excavated.
    b. Material excavated below the ordinary high water line, including material excavated to create the scour pools, shall be backfilled first.
    c. Material excavated above the ordinary high water shall be backfilled next. Top soil ideal for revegetation shall be placed last.
    d. Plant willow stakes after the large woody debris is placed. The density of plantings will either be 12 willow cuttings per log or about 30 willow cuttings per large woody debris site, as outlined in the Planting and Rehabilitation Plan and as determined in the field by the Contracting Officer. The Contractor shall determine the most effective method of planting in the field to minimize damage to the willow stakes during backfilling and compaction. The planting method shall be approved by the Contracting Officer.
    e. Scarify the top 6 inches of top soil. Minimize disturbance to the vegetation bordering the excavated area.
    f. Erosion control fabric placement and revegetation will be done by others.
2. Rock spur removal:
    a. Use streambed material from the scour pools where necessary to fill the holes below the ordinary high water line where the rock spurs have been removed, as directed by the Contracting Officer in the field. Regrade the bare streambank to match as much as possible the surrounding undisturbed streambank.
    b. Scarify the top 6 inches of soil prior to placement of erosion control fabric and revegetation by others.
3. Excavation upstream of the inlet to the historic channel:
    a. Place 6-inch minus native material in the area upstream of the channel-spanning large woody debris for spawning gravels, as directed by the Contracting Officer.
4. Mounding the streambed material for the mid-channel stream bars:
    a. Use native streambed material from the scour pools and the area around the proposed stream bars. Native streambed material placed downstream shall gradually become smaller in size, as shown on the drawings and as directed by the Contracting Officer.

PART 3 EXECUTION

3.01 STRIPPING

A. Strip areas to remove topsoil with intact vegetation prior to excavation. Retain topsoil and vegetation in a separate pile for care by others. Topsoil with intact vegetation shall be replanted by others after backfill compaction and scarifying the top 6 inches of soil. Erosion control fabric to be placed by others.

3.02 EXCAVATION, GENERAL

A. Excavate to elevations shown on the drawings or established by the Contracting Officer.

B. During excavation, stockpile native streambed materials above the bankfull elevation, where it cannot reenter the stream, for later use.

C. The Contracting Officer, reserves the right, during progress of work, to vary slopes, grades, and dimensions of excavations from those specified.

D. Perform excavation in the wet. Direct all bank excavation landward away from the water to minimize loose material falling into the water.

E. Blasting: Not allowed.

F. Contractor shall follow OSHA Trench Safety guidelines where applicable.

3.03 COMPACTION

A. Compact with mechanical impact tampers, tamping rollers, vibrating pad foot rollers, rubber tire rollers, other suitable compaction equipment, or equipment travel.

1. Uniformly distribute equipment passes.
2. Fill and compact all voids around logs to promote moisture retention and structural integrity.
3. Compact in horizontal layers to compacted thickness of 6 inches or less.

3.04 LARGE WOODY DEBRIS

A. Excavate the trench of the large woody debris to allow placement of the base logs two (2) feet below the existing ground elevation of the toe of bank, except where the drawings show a required three (3) feet of excavation below the existing streambed elevation of the toe of bank for the trench and the scour pool. Where footer logs are required, excavate to the depths shown on the drawings. Follow OSHA Trench Safety Guidelines during trench excavation.

B. If the excavated trench does not already have gravels and cobbles to serve as a stable bedding layer for the base logs, provide six (6) inch layer of gravels and cobbles excavated from other sources in the project.

C. The Contractor will coordinate with others to add willow cuttings during backfill, as directed by the Contracting Officer. Willow cuttings will be provided by the Contracting Officer.

D. Scarify the top 6 inches of soil. Placement of erosion control fabric and revegetation by others.

3.05 ROCK SPUR REMOVAL

A. Remove rock from rock spurs marked for removal in the drawings.

B. Rock removed from the rock spurs will be stored in the temporary storage area shown on the drawings and eventually hauled to the Placer Gulch pit, 10 miles east of the project site.

3.06 ROCK SPUR BANK REGRADING

A. The resulting shaped surface along the remaining streambank after the removal of the rock spurs and installation of the large woody debris shall be reasonably smooth and match the existing slopes and elevations of the adjacent undisturbed streambanks. The transition at any grade break shall be gradual.

B. Scarify the top 6 inches of soil. Placement of erosion control fabric and revegetation by others.

3.07 SCOUR POOL CREATION

A. Excavate a scour pool two (2) feet below the existing ground elevation of the toe bank, except where the drawings show a trench and scour pool excavation of three (3) feet.

B. The extent of the rootwad shall determine the shape of the scour pool.

C. Scour pools shall be smooth, gradual, and more defined downstream of the rootwad.

3.08 STREAMBANK EXCAVATION AT THE HISTORIC CHANNEL INLET

A. The streambank excavation shall have a smooth and gradual radius of curvature, as shown in the drawings. Approximate start point of the excavation shall align with the downstream end of LWD #2.

B. Excavate 12 inches below existing ground elevation to limits shown in the drawings, or as directed by the Contracting Officer.

C. Slope back the remaining streambank at a 1.5:1 slope or flatter.

3.09 STREAM BAR CREATION

A. Excavate the streambed in the area around the proposed location of the stream bars.

B. Place the larger cobbles (6” diameter minimum) at the head of the stream bar. The size of the native material shall gradually decrease in size towards the tail of the stream bar (2” diameter minimum) as shown on Drawing 1678-100-964.

C. Place the native material at the natural angle of repose.

D. The stream bar shall be a maximum of than five (5) feet in width at the top and no higher than the bankfull elevation, as verified in the field and as approved by the Contracting Officer. The width and height of the stream bar shall taper at the head and tail ends, as shown in the drawings.

3.10 DISPOSAL OF EXCAVATED MATERIALS

A. Dispose of excavated materials which are unsuitable for or are in excess of backfill, or other earthwork requirements, as determined by the Contracting Officer, as provided in Section 02324 - Disposal of Excavated Materials.

B. Rock from the rock spurs shall be stored at the Placer Gulch pit. Reclamation has not made an assessment on the stability or safety of the bridge crossing to Placer Gulch pit.

END OF SECTION

SECTION 02324 - DISPOSAL OF EXCAVATED MATERIALS

PART 1 GENERAL

1.01 COST

A. Include cost in prices offered in the schedule for earthwork.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 MATERIAL PLACEMENT

A. Use suitable material from required excavation, or as much thereof as may be required, for backfill or other required earthwork. Temporary potential stockpile locations and procedures for stockpiling shall be subject to the approval of the Contracting Officer.

3.02 DISPOSAL OF MATERIAL

A. Dispose of material from required excavation which is not suitable or required for the above purpose by temporary storage onsite at one of the permitted storage areas or waste on site if approved by the Contracting Officer. Any onsite disposal shall be subject to approval of the Contracting Officer.

END OF SECTION

SECTION 02375 - ROCK

PART 1 GENERAL

1.01 COST

A. Include costs for placing rock ballast in the lump sum price offered in the schedule for placing large woody debris structures; includes hauling from the temporary storage areas to the large woody debris location where rock is required. The required sizes vary with each large woody debris location; follow requirements shown in the drawings, or as directed by the Contracting Officer. The rock shall meet the specifications in this Section and Section 02935 - Large Woody Debris, Article 2.01.B - Materials.

1.02 REFERENCES

A. ASTM International (ASTM)

1.	ASTM C 88-05	Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
2.	ASTM C 97-02	Absorption and Bulk Specific Gravity of Dimension Stone

PART 2 PRODUCTS

2.01 ROCK

A. Hard, dense, and durable.

1. Minimum specific gravity, ASTM C 97: 2.50.
2. Maximum absorption, ASTM C 97: 2 percent.
3. Maximum loss, sulfate soundness, ASTM C 88: 10 percent.

B. Rocks from the rock spurs that meet specifications will be used for ballast.

PART 3 EXECUTION

3.01 ROCK PLACEMENT

A. Place rocks on the rootwads as shown on the drawings.

3.02 PLACEMENT

A. Place rocks so that larger rocks are evenly distributed and small rock fragments fill the spaces.

B. Dump and smooth by moving rocks into position so that material when in place is stable and does not tend to slide.

C. Leave no unreasonably large unfilled spaces within the trees and rocks.

D. Include gravel in an amount to fill voids, as approved by the Contracting Officer.

E. Place the number and size, or equivalent weight, of rocks shown in the drawings.

END OF SECTION

SECTION 02935 - LARGE WOODY DEBRIS

PART 1 GENERAL

1.01 GENERAL

A. Install large woody debris in the stream bank as shown in drawings for the protection of stream channels and enhancement of fish habitat.

B. Place woody material such as branches and tree top (slash) where needed, as directed by the Contracting Officer

C. Installation shall be to the lines and grades as shown on the drawings and to the requirements of this Section.

D. Harvesting, processing, and transportation of trees and slash from the source to the project site.

1.02 PAYMENT

A. Placing Large Woody Debris Structures:

1. Payment: Lump sum price offered in the schedule:
   a. Includes harvesting, processing, and transportation of trees from the source to the project site. The source of trees is approximately one (1) mile from the project site.
   b. Includes placing (Contracting Officer-furnished) untreated green trees with and without rootwads, branches, and tops.
   c. Includes placing slash at crossings identified by the Contracting Officer in the field.
   d. Includes placing rock ballast.
   e. Includes placing native material bedding, rebar pins at the specified cross points, and rock material associated with installation.

1.03 REFERENCES

A. ASTM International (ASTM)

1.	ASTM A 615/A 615M-07	Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
2.	ASTM A 996/A 996M-06a	Rail-Steel and Axle-Steel Deformed Bars for Concrete Reinforcement

PART 2 PRODUCTS

2.01 MATERIALS

A. Trees (to be furnished by the Contracting Officer):

1. Douglas fir or ponderosa pine shall be sound, and free of excessive decay.
2. They shall be green cut and installed within 120 days of felling.
3. They shall have a minimum diameter at breast height (DBH) as specified in the drawings and in the attached tree inventory list. Non-mobile or static logs shall have a minimum diameter of 5 inches at 30 feet above the rootwad.
4. Minimum effective length of tree with rootwad is 30 feet, unless otherwise shown in the drawings.
5. Branches shall remain intact as much as possible. Trim branches as needed to facilitate transportation to the project site and to facilitate proper installation.

B. All ballast rocks shall be added at the large woody debris locations shown on the drawing.

C. Bedding material for large woody debris structure:

1. Bedding material shall be native gravels and cobbles material.
2. Bedding material shall be obtained from the project excavation.
3. Bedding material shall be well-graded from course to fine.

D. Backfill about the large woody debris structure:

1. Required backfill shall be obtained from the on-site excavation.

E. Reinforcing bars:

1. ASTM A 615, Grade 60; or ASTM A 996, Type A, Grade 60.
2. Deformed No. 6 steel bar.

F. Slash:

1. Branches and tops required for slash for wetland crossings shall be obtained from harvested trees or from existing slash piles nearby as directed by the Contracting Officer.

PART 3 EXECUTION

3.01 TREE HARVESTING

A. Trees shall be harvested from surveyed locations on the property and will be clearly marked by the Contracting Officer. The Contractor shall keep the Contracting Officer updated of the schedule so that an archaeologist may be on site to monitor for potential cultural resources.

B. Smooth and compact the ground surface after the tree extraction. Scarify the top 6 inches of soil.

C. Rehabilitate skidtrails greater than ten (10) percent slope to contain drainage features, such as water bars or dips, and dispersal of light slash.

D. Skid or carry trees whole to landings before bucking to length or trimming, so that all materials are accessible for different project features and to reduce skidding trips.

E. Pile excess slash in open areas (without overhead branches) in dense piles with a diameter of less than 16 feet.

F. Fell trees to minimize breakage and in a direction that will facilitate skidding.

G. Tree limbs and roots shall be kept intact as much as possible.

H. Revegetation of skid trails to be done by others.

I. Road hauling shall be in accordance with relevant permits and regulations.

3.02 SITE PREPARATION

A. Shape the bank to the lines and grades shown in the drawings. Contractor shall be required to follow OSHA Trench Safety Guidelines.

B. Dispose of excess material as provided in Section 02324 - Disposal of Excavated Materials.

3.03 INSTALLATION

A. Excavate to the extent shown on the drawings and reuse material when possible, or dispose on site for other uses in the project, including as spawning gravels around the rootwads, fill for the rock spur removal sites, material for the stream bars, first layer of backfill over the large woody debris, or for any other purpose as directed by the Contracting Officer prior to stockpiling in the designated project site stockpile area.

B. Place selected trees as shown on the drawings.

1. Basic orientation, excavation depth, and depth of cover shall be performed as shown on drawings for the base members and footers.
2. Field adjustments to fit logs together and to the bank conditions may be necessary.
3. Mobile wood pieces shall be woven into non-mobile or static members or embedded into banks similar to the Mobile Wood Typical Detail shown on Drawing 1678-100-964. Final location and installation of the mobile wood pieces will be directed by Contracting Officer to achieve a natural appearance and further increase habitat features.
4. Break or deform saw cut ends on all logs or tops that will be exposed, so as to provide a more natural appearance.
5. In the event that the vertical wood piling cannot be driven into the streambed, pin specified log cross points as shown in the drawings.
6. Drill a pilot hole through the specified logs. The drill hole shall be no larger than 3/4-inch in diameter.
7. Drive the required length of rebar to go through both holes of the crossing logs. Leave 6-inch minimum exposed rebar and bend at the top.
8. Secure the reabr pin with a washer and wire clamp that fit a 5/8-inch rebar diameter.

C. Place backfill in the wet and compact with mechanical impact tampers, tamping rollers, vibrating pad foot rollers, rubber tire rollers, other suitable compaction equipment, or equipment travel.

1. Uniformly distribute equipment passes.
2. Fill and compact all voids around logs to promote moisture retention and structural integrity.
3. Compact in horizontal layers to compacted thickness of 6 inches or less.
4. Blend the backfill slope and elevation with the adjacent undisturbed streambank.
5. Coordinate with others to place willow cuttings during backfill.

D. Scarify the top 6 inches of soil. Contractor shall place any sod mats set aside during initial excavation back into excavation as directed by Contracting Officer and firmly compact into place to provide good soil contact. Placement of erosion control fabric and revegetion to be done by others.

E. Place slash materials, as needed and as directed by the Contracting Officer

END OF SECTION

DIVISIONS 3 THROUGH 16 - NOT USED

APPENDIX A - MATERIALS

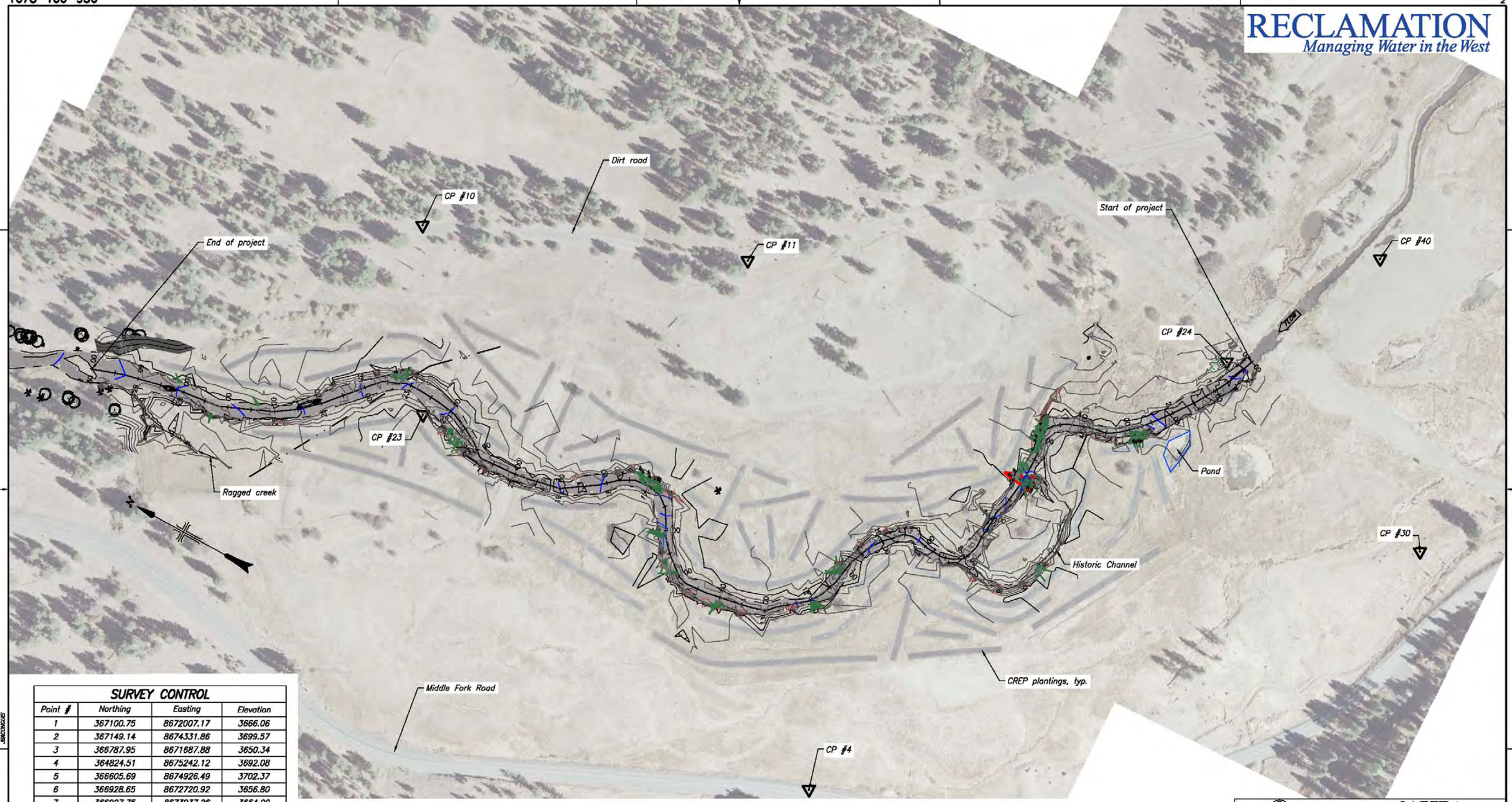
LWD	Static Wood (sizes vary)	Mobile Wood (<6" DBH)	logs (lengths vary, 12" max Ø)	Vertical wood pile	# of Rock	Rock Size (Ø in ft)	Equiv. ballast weight (lb)	4' LF Rebar Pin
#1	8	8	2	0	0	0	0	0
#2	12	12	6	5	0	0	0	0
#3	11	11	0	12	16	2	16000	0
#4	4	4	1	1	0	0	0	0
#5	2	2	0	0	0	0	0	0
#6	3	3	2	0	0	0	0	0
#7	4	4	3	0	0	0	0	0
#8	3	3	1	0	0	0	0	0
#9	9	9	4	5	3	3	10000	0
#10	4	4	1	0	0	0	0	0
#11	5	5	2	2	1	2	1000	0
#12	2	2	1	0	0	0	0	0
#13	2	2	1	0	0	0	0	0
#14	2	2	1	0	0	0	0	0
#15	3	3	1	0	0	0	0	0
Total	74	74	26	25	20	---	---	0

NOTES:
Mobile pieces do not include the much smaller pieces, such as branches that are removed during the installation process, that may be added to the LDW.
The Beaver to Ragged project has rock ballast in three out of 15 structures. The pins have been removed from all 15 structures.
However, if the vertical wood piling in LWD#3 cannot be driven to the depth shown, use of pins may be necessary in two locations (at intersecting logs embedded in bank).
Ballast should be distributed evenly over the logs. Details show approximate placement.

APPENDIX B - RE-VEGETATION AND SITE IMPACT REMEDIATION FRAMEWORK

DRAWINGS

RECLAMATION
Managing Water in the West



SURVEY CONTROL

Point #	Northing	Easting	Elevation
1	367100.75	8672007.17	3666.06
2	367149.14	8674331.86	3699.57
3	366787.95	8671687.88	3650.34
4	364824.51	8675242.12	3692.08
5	366605.69	8674926.49	3702.37
6	366928.65	8672720.92	3656.80
7	366997.75	8673937.26	3664.99
8	367333.46	8674246.83	3703.67
9	367251.85	8675029.06	3713.82
10	366117.98	8675896.01	3711.93
11	365477.76	8676162.53	3713.82
20	367042.77	8672759.47	3654.13
21	367180.84	8673387.13	3661.36
22	366977.50	8674308.67	3666.73
23	365924.19	8675544.67	3682.01
24	364484.15	8676462.70	3693.58
30	363932.23	8676307.22	3703.07
40	364305.21	8676810.63	3696.84

Datum and Projection: NAD 83, Oregon SPC North

SITE PLAN

100 0 100 200 300
SCALE OF FEET

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BUREAU OF RECLAMATION

COLUMBIA/SNAKE RIVER SALMON RECOVERY PROJECT
JOHN DAY SUBBASIN – OREGON

OXBOW CONSERVATION PROPERTY RESTORATION

MIDDLE FORK JOHN DAY RIVER – BEAVER TO RAGGED

SITE PLAN

DESIGNED Jebaconsgide CHECKED TE Turner
DRAWN L. Boskeng TECH. APPR. TE Turner
APPROVED Dave Jennings
ADMINISTRATIVE APPROVAL – NAME – TITLE

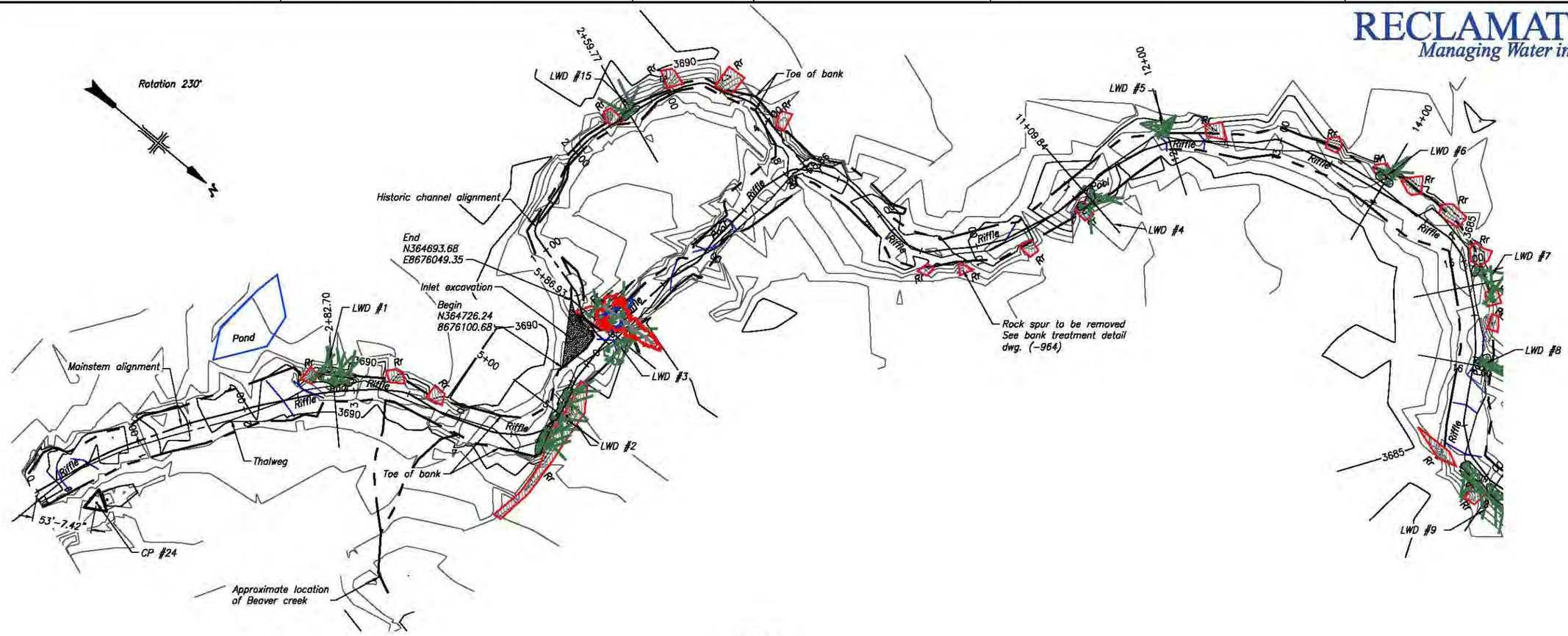
BOISE, IDAHO SHEET 1 OF 1 2007-08-28 1678-100-956

DATE AND TIME PLOTTED
JUNE 16, 2008 15:28
PLOTTED BY
JBACONGUIS

CAD SYSTEM
AutoCAD Rel. 17.1s
CAD FILENAME
1678-100-956.DWG

1678-100-957

RECLAMATION
Managing Water in the West



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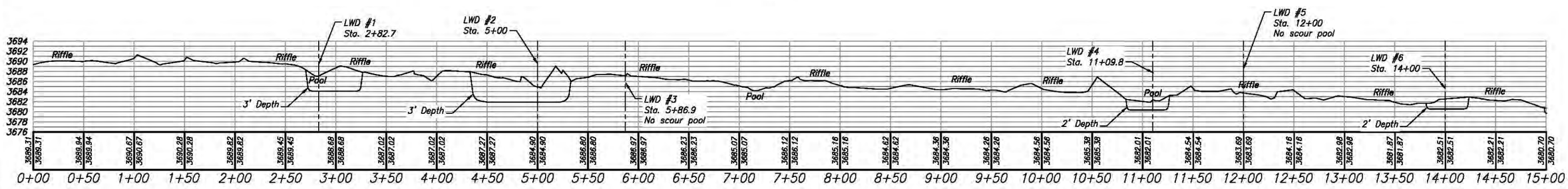
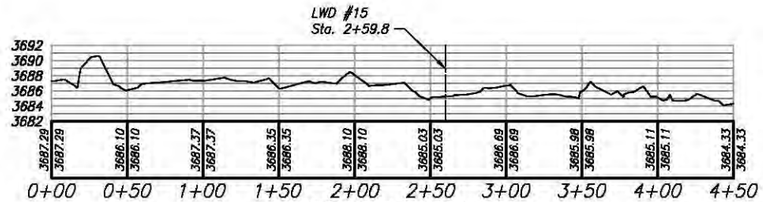


PROFILE
STA. 0+00 TO 15+00



HISTORIC CHANNEL PROFILE
STA. 0+00 TO 4+50

NOTE:

1. Profile shown is based on mainstem alignment. Pools and riffles may not be shown accurately.

10 0 10 20 30
SCALE OF FEET
VERTICAL

50 0 50 100 150
SCALE OF FEET
HORIZONTAL

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COLUMBIA/SNAKE RIVER SALMON RECOVERY PROJECT
JOHN DAY SUBBASIN – OREGON

OXBOW CONSERVATION PROPERTY RESTORATION

MIDDL FORK JOHN DAY RIVER – BEAVER TO RAGGED

PLAN PROFILE SHEET
STA. 0+00 TO 15+00

DESIGNED Jabaconguis — CHECKED TE Turner
DRAWN L. Boehning — TECH. APPR. TE Turner (NAME – TITLE)
APPROVED Dave Jennings (ADMINISTRATIVE APPROVAL – NAME – TITLE)
BOISE, IDAHO — 2008-01-08 — SHEET 1 OF 1

1678-100-957

DATE AND TIME PLOTTED
JUNE 16, 2008 15:33
PLOTTED BY
JJANCONGUIS

CAD SYSTEM
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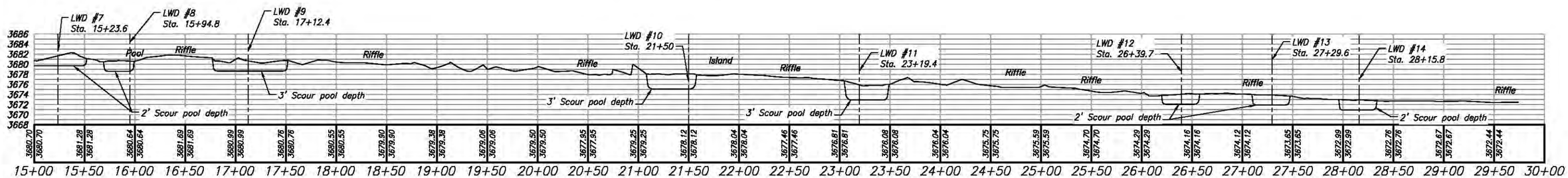
CAD FILENAME
1678-100-957.DWG

RECLAMATION
Managing Water in the West



PROFILE
STA. 15+00 TO 30+00

SCALE OF FEET
VERTICAL
SCALE OF FEET
HORIZONTAL

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COLUMBIA/SNAKE RIVER SALMON RECOVERY PROJECT
JOHN DAY SUBBASIN - OREGON

OXBOW CONSERVATION PROPERTY RESTORATION

MIDDLE FORK JOHN DAY RIVER - BEAVER TO RAGGED
PLAN PROFILE SHEET
STA. 15+00 TO 30+00

DESIGNED Jebaconguis CHECKED TE Turner
DRAWN L Boelweg TECH. APPR. TE Turner (NAME - TITLE)
APPROVED Dave Jennings (ADMINISTRATIVE APPROVAL - NAME - TITLE)
BOISE, IDAHO 2008-01-08
SHEET 1 OF 1
1678-100-958

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PLOTTED BY
JBACONGUIS

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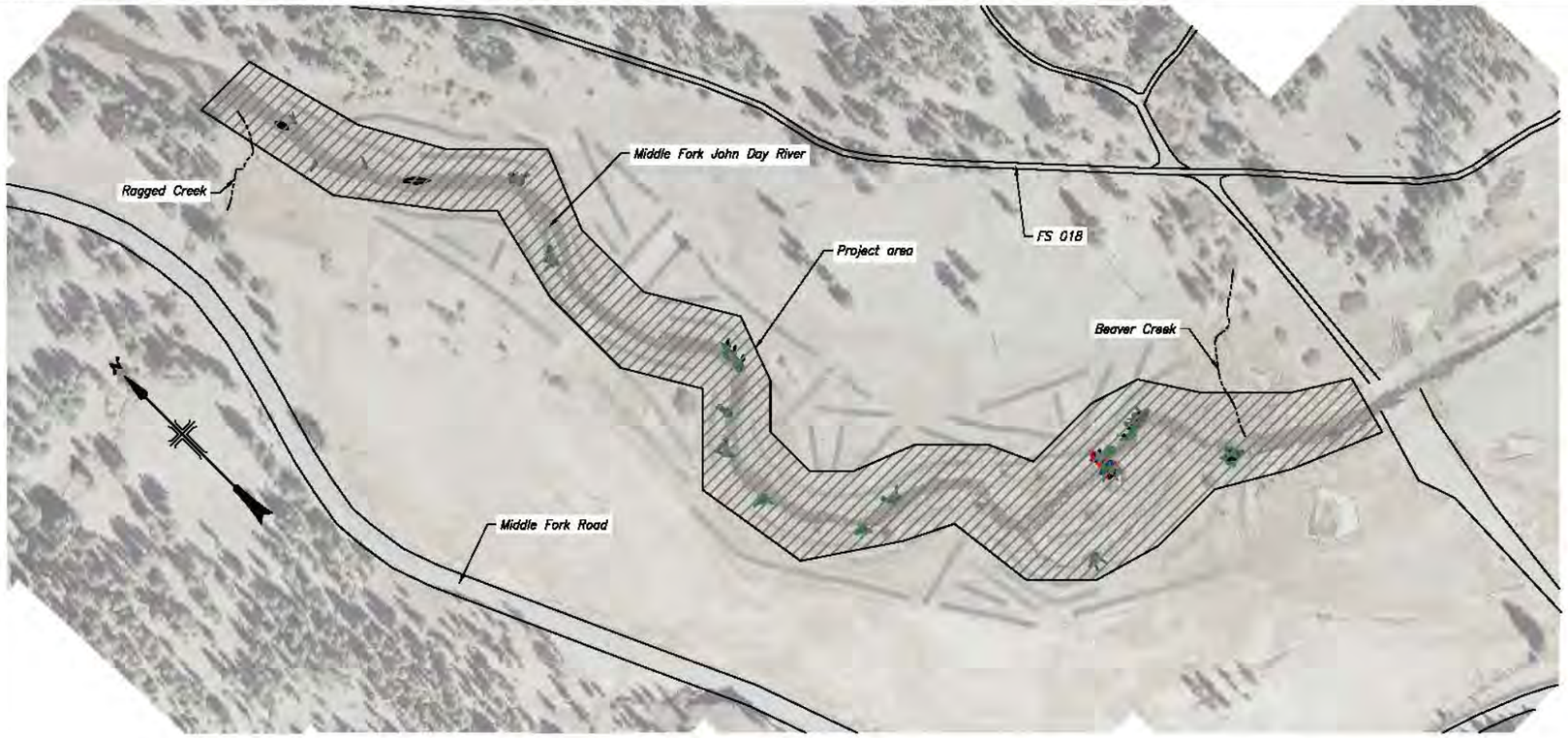
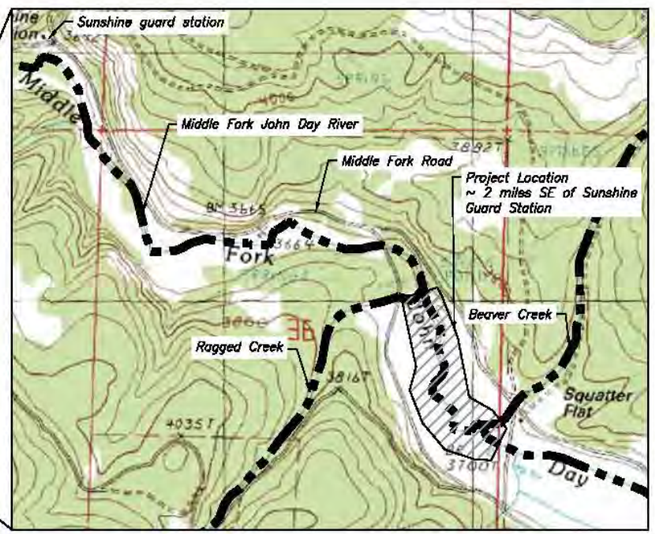


LOCATION MAP

SCALE OF FEET 150 0 150 300 450



VICINITY MAP

SCALE OF FEET 1000 0 1000 2000 3000

ABBREVIATIONS:

El. – Elevation
(typ.) – Typical
OHWL – Ordinary High Water Line
RM – River Mile
Rr – Riprap
DBH – Diameter at breast height

GENERAL LEGEND

- Rr — Rr to be removed
- Riffle — Riffle
- Thalweg
- Toe of bank
- Large woody debris (LWD)

RECLAMATION
Managing Water in the West

GENERAL NOTES:

1. Remove all rock spurs in Beaver to Ragged project area. Rocks removed shall be placed in temporary storage area as needed to expedite rock spur removal (Dwg. 1678-100-966). All riprap shall be hauled to the Placer Gulch pit 10 miles from the project site. Bank areas exposed after the rock spurs are removed shall be graded back and blended with adjacent undisturbed banks. Drawing (-965). Application of erosion control fabric and revegetation will be done by others.
2. Excavate 3' maximum below existing streambed elevation in area shown around the rootwads and create a gradually-sloped scour hole.
3. Excavated streambed material from pool creation shall be used where possible in the project, such as for bedding material in the log cradle; as base material in areas where the rock spur has been removed; as extra base soil cover over the rootwads; or for any other purpose as directed by the Contracting Officer.
4. All trees shall be a minimum of 30 feet, unless otherwise shown in the drawings. Trees will vary in DBH from 6"ø to 18"ø. Contractor shall keep as many branches intact as possible during processing, as directed by the Contracting Officer. Contractor shall retain all branches and tops that are removed during processing of trees. Tuck branches and tops in spaces between logs after static trees are embedded, as directed by the Contracting Officer.
5. Drawings show all trees with rootwads. However, rootwads are optional. Trees without rootwads will be "roughened" by breaking off the stub end prior to placement.
6. Structures have ± 5' of horizontal tolerance and ± 0.5' of vertical tolerance.
7. Provide a minimum of 2.5' of soil cover over logs in the top layer.
8. Large woody debris structures shall not exceed more than 50% of the channel width from toe to toe.

SHEET INDEX

SITE SUMMARY

Beaver Creek to Ragged Creek
T10S, R33E, S36
RM 56.2 to RM 55.6
Grant County, Oregon

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COLUMBIA/SNAKE RIVER SALMON RECOVERY PROJECT
JOHN DAY SUBBASIN – OREGON

OXBOW CONSERVATION PROPERTY RESTORATION

MIDDLE FORK JOHN DAY RIVER – BEAVER TO RAGGED
TITLE SHEET

DESIGNED Jabcoregrain — CHECKED TE Turner
DRAWN L Beahrens — TECH. APPR. TE Turner (NAME – TITLE)
APPROVED Dave Jennings (ASSOCIATE APPROVAL – NAME – TITLE)

BOISE, IDAHO — 2007-11-23 — SHEET 1 OF 1 — 1678-100-955

DATE AND TIME PLOTTED
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PLOTTED BY
ABHOWARD

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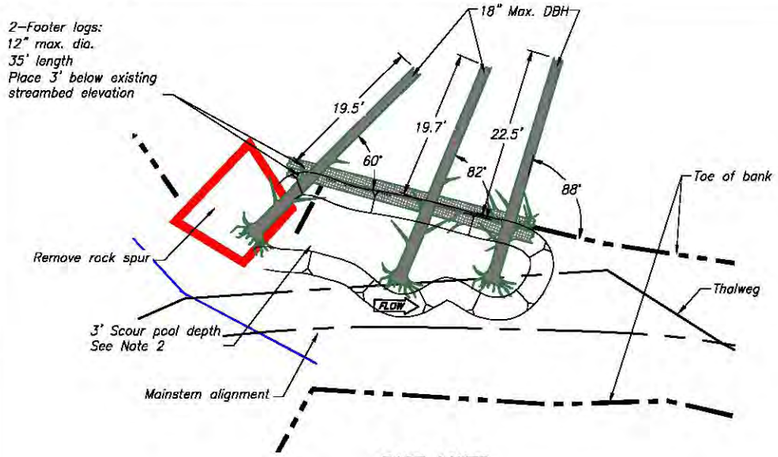

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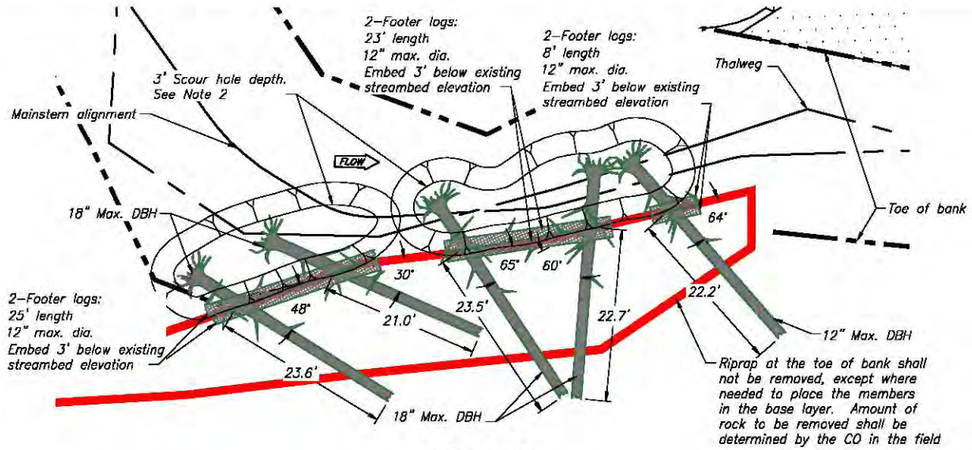

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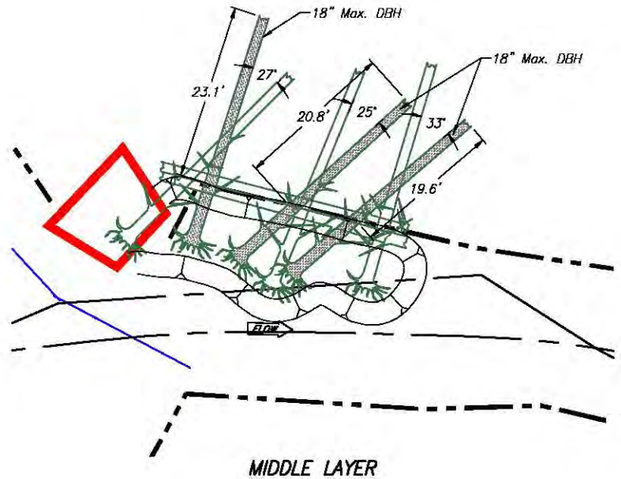

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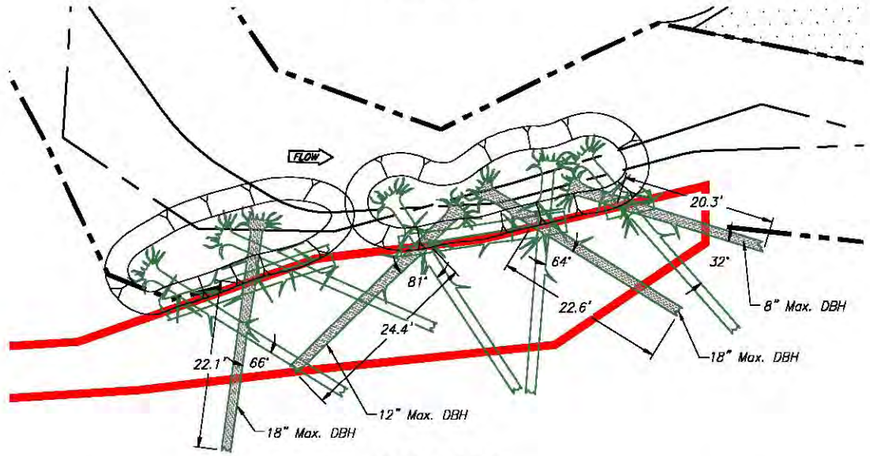

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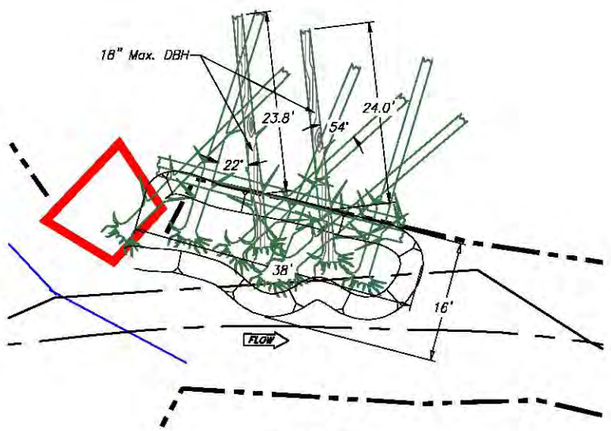
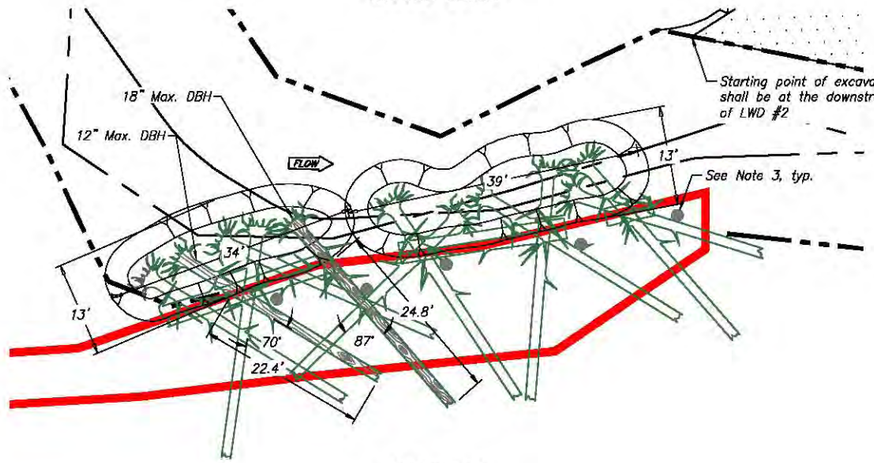


TOP LAYER

LWD #1 PLAN



TOP LAYER

LWD #2 PLAN

SCALE OF FEET: 10 0 10 20 30

RECLAMATION
Managing Water in the West

NOTE:

1. *Refer to general notes on Title Sheet, Drawing (-955).*
2. *Excavate gradual scour hole to approximate extents shown. See detail, Drawing (-965).*
3. *See vertical pile detail, Drawing (-965).*
4. *Each structure shall have additional small-sized wood that are <6" diameter, 20' maximum length logs. The number of small-sized wood shall equal the number of logs shown per LWD site, excluding the footer logs. See mobile wood detail (-965).*

REV NO		
1	2009-02-11 100 JDB	Added dimensions to scour pools

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JOHN DAY SUBBASIN - OREGON

OXBOW CONSERVATION PROPERTY RESTORATION
MIDDLE FORK JOHN DAY RIVER - BEAVER TO RAGGED
LWD #1 AND LWD #2
PLAN

DESIGNED Jabaconguis CHECKED TE Turner
DRAWN L. Boekweg TECH. APPR. TE Turner (NAME - TITLE)
APPROVED Dave Jennings (ADMINISTRATIVE APPROVAL - NAME - TITLE)
BOISE, IDAHO SHEET 1 OF 1 2007-11-23

1678-100-959

DATE AND TIME PLOTTED: FEBRUARY 11, 2009 11:14
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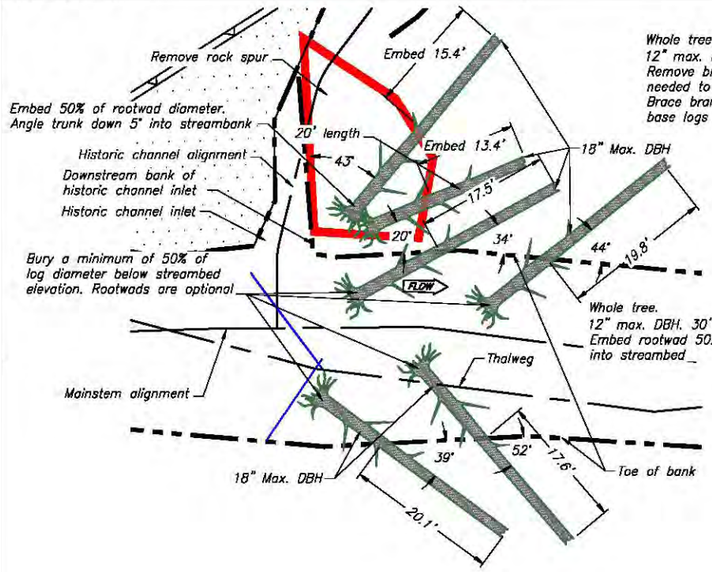

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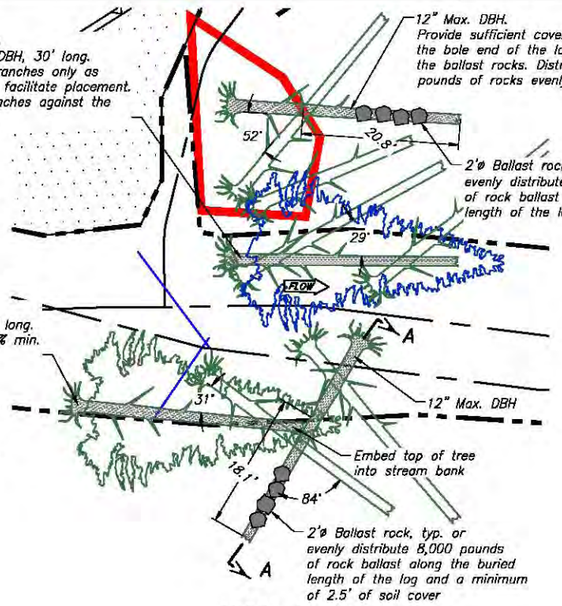

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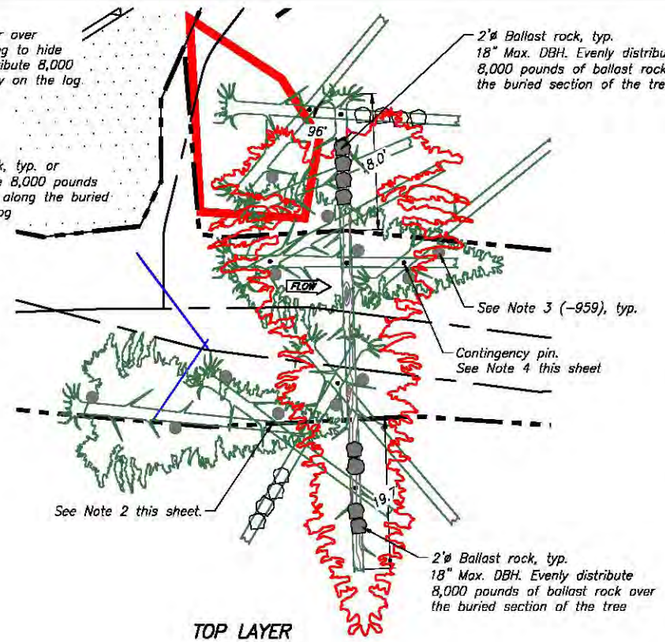


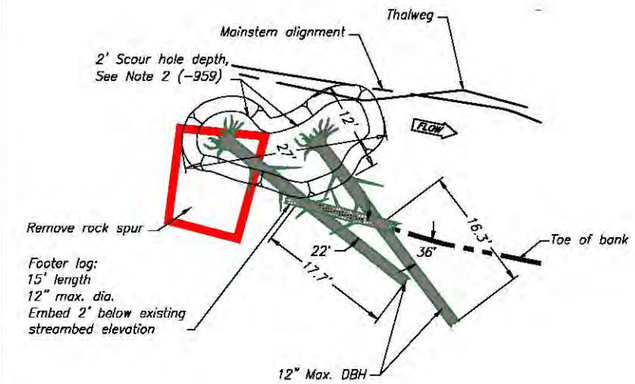
TOP LAYER

LWD #3 PLAN

RECLAMATION
Managing Water in the West

NOTES: (LWD #3 only)

1. Place spawning-sized gravels excavated from the inlet of the historic channel to the area around LWD#3, as directed by the Contracting Officer.
2. The implementation of rebar pinning to anchor LWD#3 is contingent upon the ability to drive the vertical wood pile into the streambed. If the vertical wood pile cannot be driven into the streambed, the Contractor must pin the logs together at the joints shown.
3. Vertical wood piles shall be used to brace log members and prevent lateral movement downstream. If logs cannot be driven into the streambed, pin the joints of the logs together where shown. Provide 0.5" gap between the surfaces of the wood pile and the log member.
4. Contingency pins shown shall be implemented only in the event that the Contractor is unable to drive the vertical wood pile into the streambed. See contingency pin detail, Dwg (-965).
5. LWD #3 shall be placed 5'-10' from the downstream bank of the historic channel inlet.



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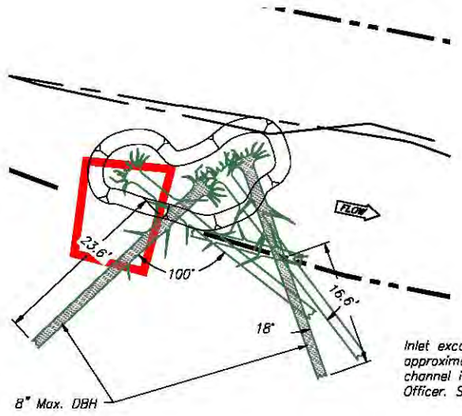
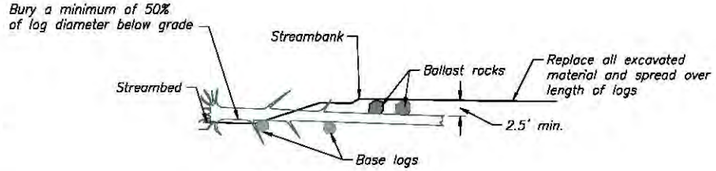


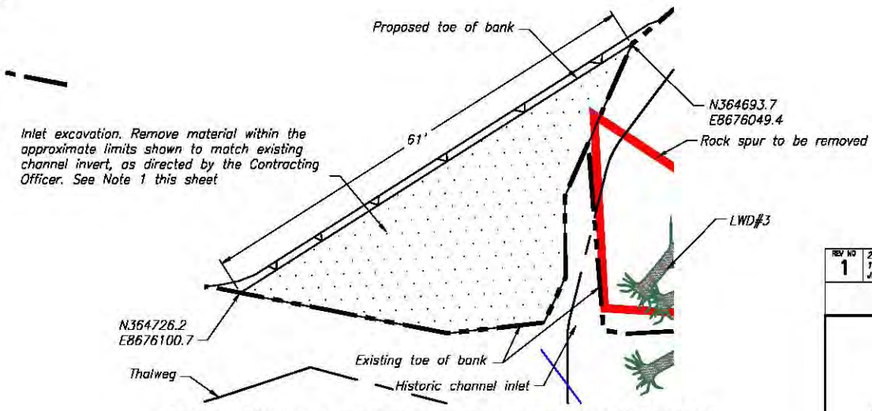
TOP LAYER

LWD #4 PLAN



SECTION A-A

* NOTE: This section is typical in the base layer of LWD #3



APPROXIMATE EXTENT OF INLET EXCAVATION

SCALE OF FEET: 10 0 10 20 30

REV NO		
1	2008-02-11 100 JBR	Added dimensions to scour pool

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COLUMBIA/SNAKE RIVER SALMON RECOVERY PROJECT
JOHN DAY SUBBASIN - OREGON

OXBOW CONSERVATION PROPERTY RESTORATION

MIDDLE FORK JOHN DAY RIVER - BEAVER TO RAGGED

LWD #3 AND LWD #4

PLAN

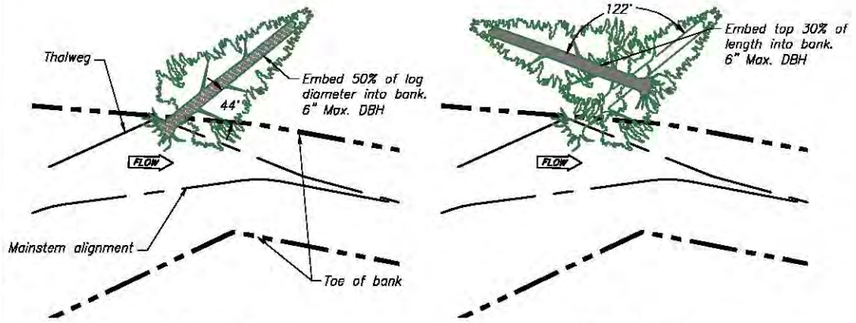
DESIGNED: Jebaconguis — CHECKED: TE Turner
DRAWN: L. Boskwes — TECH. APPR.: TE Turner (NAME - TITLE)
APPROVED: Dave Jennings (ADMINISTRATIVE APPROVAL - NAME - TITLE)
BOISE, IDAHO — 2007-11-23 — SHEET 1 OF 1

1678-100-960

DATE AND TIME PLOTTED: FEBRUARY 11, 2008 11:05
PLOTTED BY: LBOEHMKE
CAD SYSTEM: AutoCAD Rel. 17.2s
CAD FILENAME: 1678-100-960.DWG

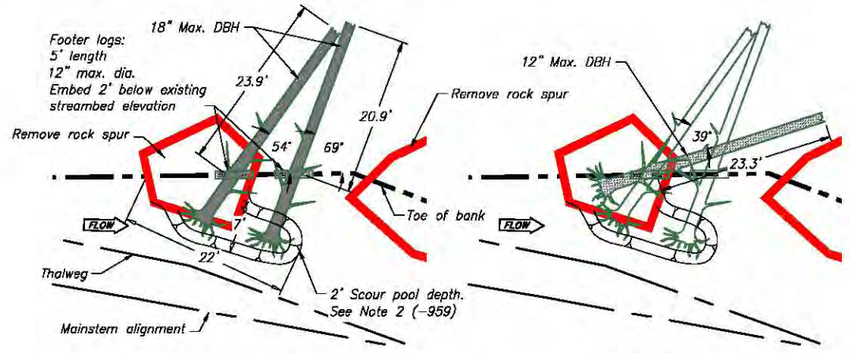
1678-100-961

RECLAMATION
Managing Water in the West



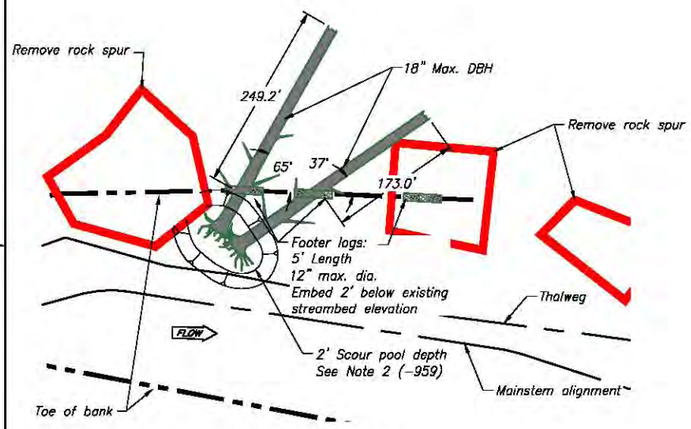
BASE LAYER TOP LAYER

LWD #5 PLAN

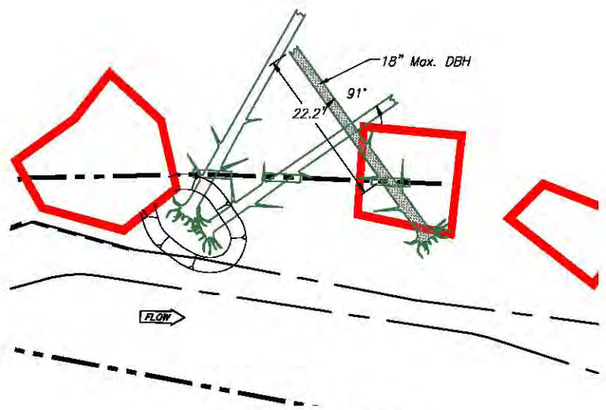


BASE LAYER TOP LAYER

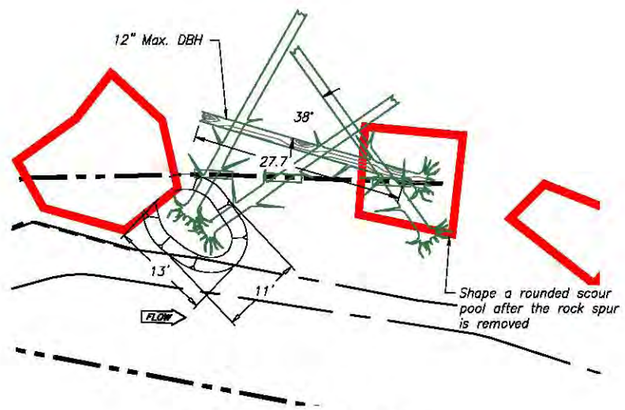
LWD #6 PLAN



BOTTOM LAYER

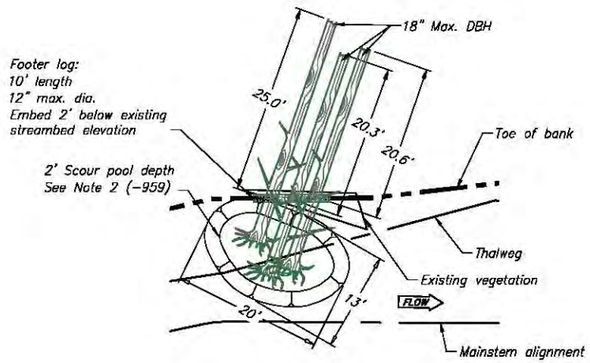


MIDDLE LAYER



TOP LAYER

LWD #7 PLAN



TOP LAYER

LWD #8 PLAN

10 0 10 20 30
SCALE OF FEET

REV NO	DATE	DESCRIPTION
1	2008-02-11 100 JAH	Added dimensions to scour pools

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
COLUMBIA/SNAKE RIVER SALMON RECOVERY PROJECT
JOHN DAY SUBBASIN - OREGON

OXBOW CONSERVATION PROPERTY RESTORATION

MIDDLE FORK JOHN DAY RIVER - BEAVER TO RAGGED
LWD #5, LWD #6, LWD #7, AND LWD #8
PLAN

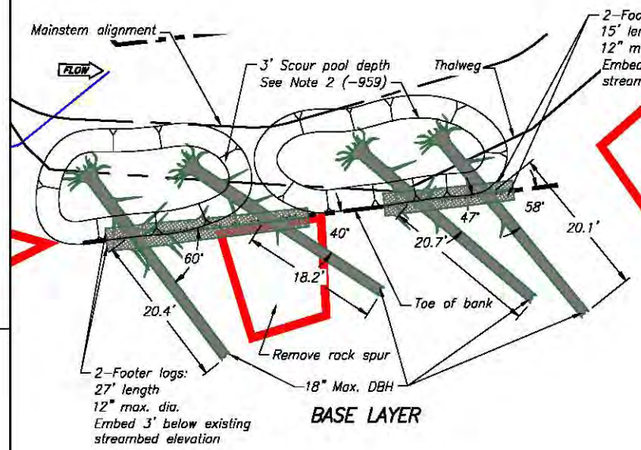
DESIGNED: Jabaconguio CHECKED: TE Turner
DRAWN: L. Boskweg TECH. APPR.: TE Turner (NAME - TITLE)
APPROVED: Dave Jennings (ADMINISTRATIVE APPROVAL - NAME - TITLE)

BOISE, IDAHO SHEET 1 OF 1 2007-11-23

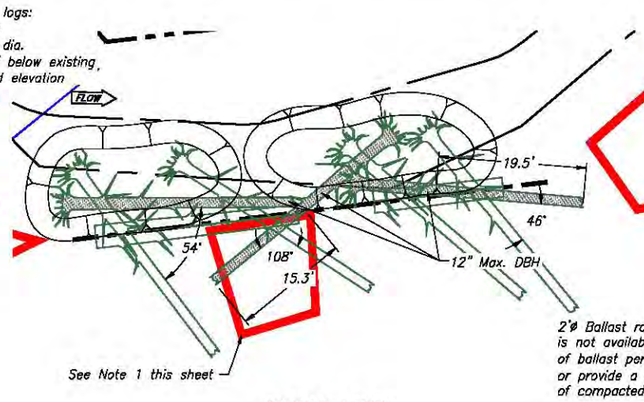
1678-100-961

DATE AND TIME PLOTTED: FEBRUARY 11, 2008 11:03
PLOTTED BY: LBOSKWEG
CAD SYSTEM: AutoCAD Rel. 17.2s
CAD FILENAME: 1678-100-961.DWG

RECLAMATION
Managing Water in the West

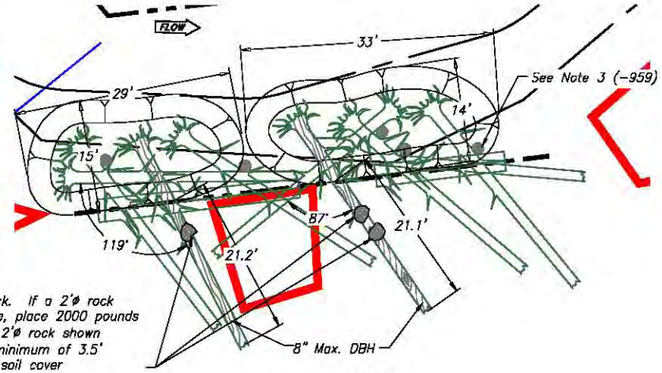


BASE LAYER



MIDDLE LAYER

2'ø Ballast rock. If a 2'ø rock is not available, place 2000 pounds of ballast per 2'ø rock shown or provide a minimum of 3.5' of compacted soil cover

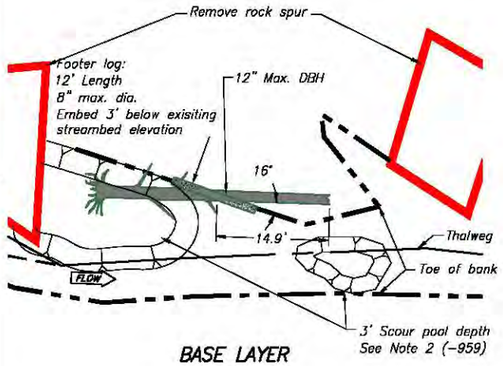


TOP LAYER

LWD #9 PLAN

NOTE:

1. Hole remaining after the removal of the rock spur shall be filled with native material after the logs are placed. Sources of native material include streambed material excavated from the scour pools. Regrade to blend as best as possible with adjacent banks.



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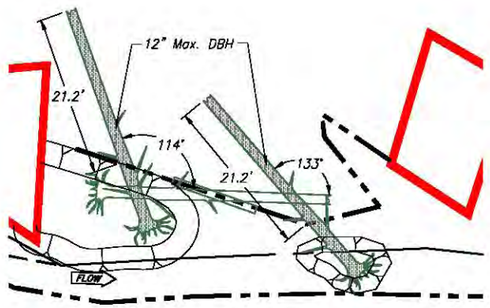
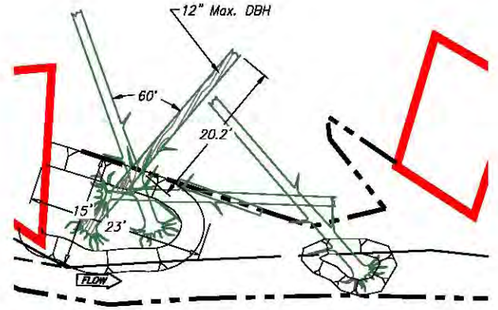
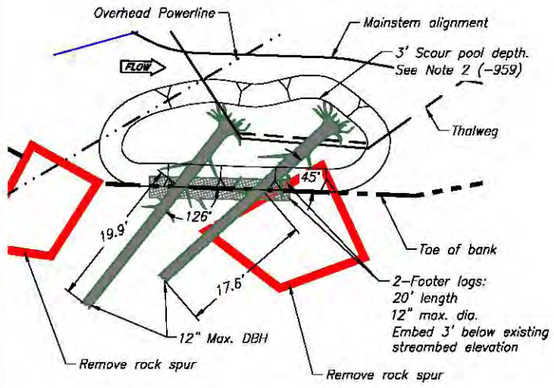


MIDDLE LAYER



TOP LAYER

LWD #10 PLAN



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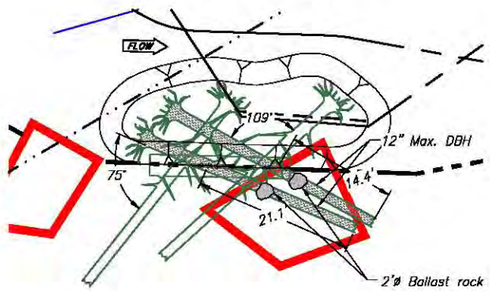
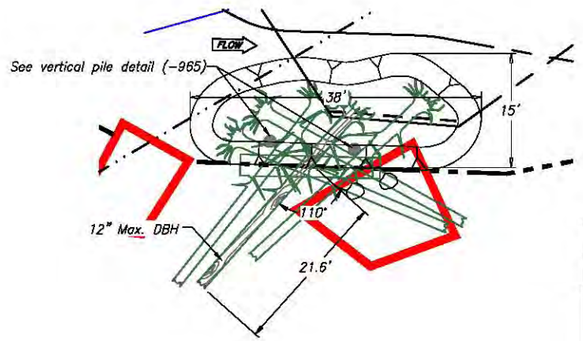


2'ø Ballast rock or 2000 pounds of ballast or provide a minimum of 3.5' of compacted soil cover

MIDDLE LAYER

LWD #11 PLAN



TOP LAYER

10 0 10 20 30
SCALE OF FEET

REV NO		
1	2008-02-11 100 JDB	Added dimensions to scour pools

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
COLUMBIA/SNAKE RIVER SALMON RECOVERY PROJECT
JOHN DAY SUBBASIN - OREGON

OXBOW CONSERVATION PROPERTY RESTORATION

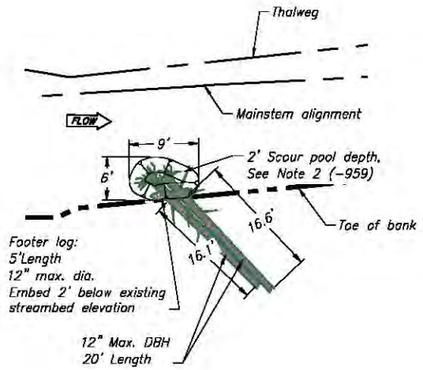
MIDDLE FORK JOHN DAY RIVER - BEAVER TO RAGGED
LWD #9, LWD #10, AND LWD #11
PLAN

DESIGNED: Jabaconguis — CHECKED: TE Turner
DRAWN: L. Boekweg — TECH. APPR.: TE Turner (NAME - TITLE)
APPROVED: Dave Jennings (ADMINISTRATIVE APPROVAL - NAME - TITLE)

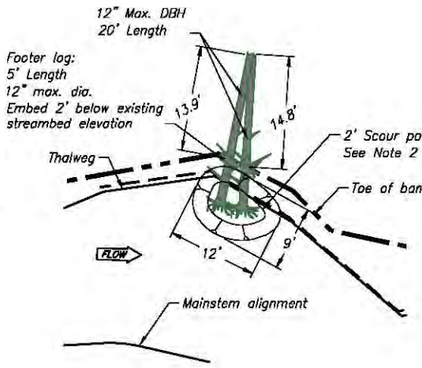
BOISE, IDAHO — SHEET 1 OF 1 — 2007-11-23 — 1678-100-962

DATE AND TIME PLOTTED: FEBRUARY 11, 2008 10:58
PLOTTED BY: LBOEKWEG
CAD SYSTEM: AutoCAD Rel. 17.2s
CAD FILENAME: 1678-100-962.DWG

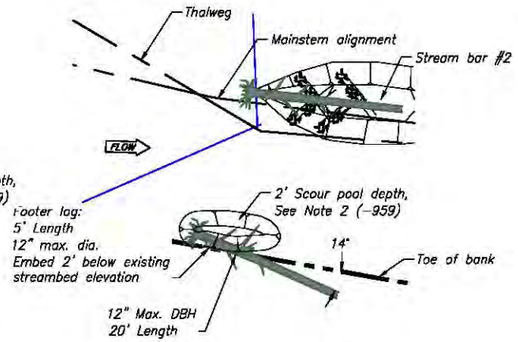
RECLAMATION
Managing Water in the West



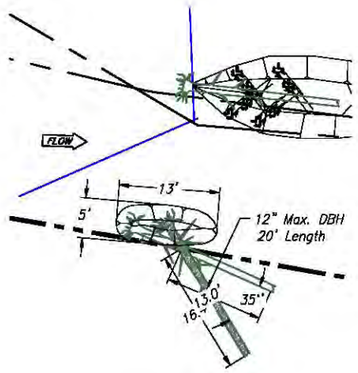
LWD #12 PLAN



LWD #13 PLAN

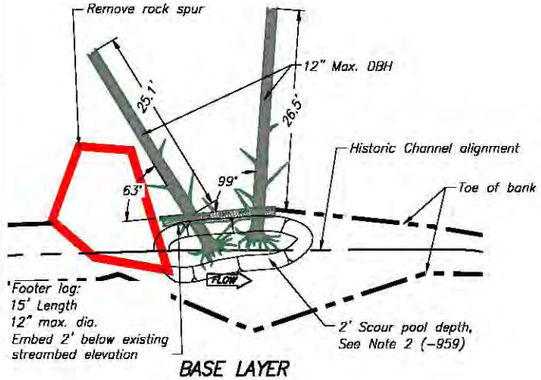


BASE LAYER



TOP LAYER

LWD #14 PLAN



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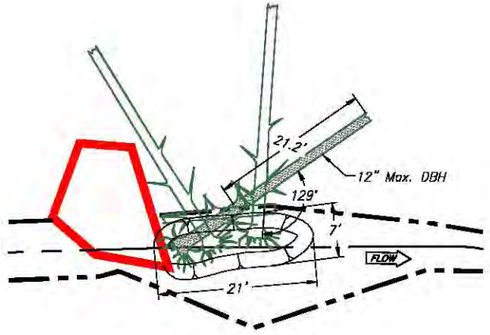

TOP LAYER

LWD #15 PLAN

REV NO	DATE	DESCRIPTION
1	2009-02-11	Added dimensions to scour pools

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U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
COLUMBIA/SNAKE RIVER SALMON RECOVERY PROJECT
JOHN DAY SUBBASIN - OREGON

OXBOW CONSERVATION PROPERTY RESTORATION

MIDDLE FORK JOHN DAY RIVER - BEAVER TO RAGGED
LWD #12, LWD #13, LWD #14, AND LWD #15 PLAN

DESIGNED Jabocowski CHECKED TE Turner
DRAWN L. Boekweg TECH. APPR. TE Turner (NAME - TITLE)
APPROVED Dave Jennings (ADMINISTRATIVE APPROVAL - NAME - TITLE)

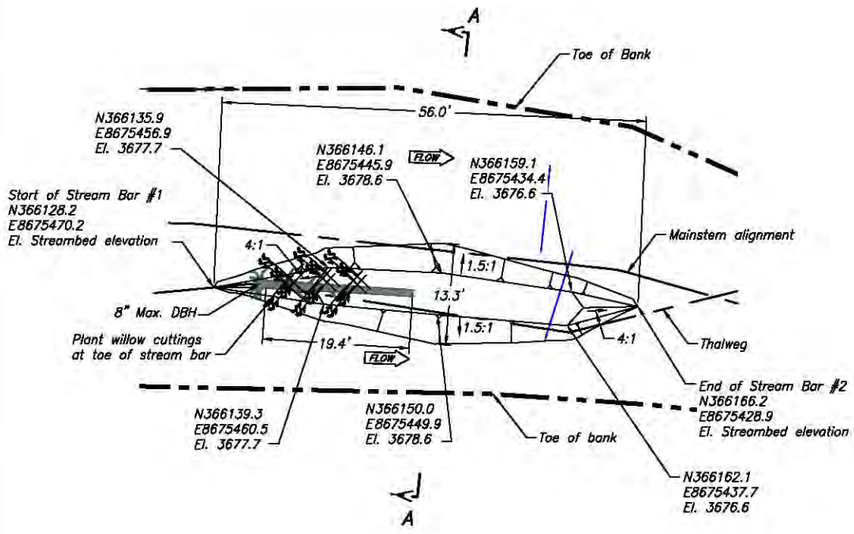
BOISE, IDAHO SHEET 1 OF 1 2007-11-23 1678-100-963

10 0 10 20 30
SCALE OF FEET

DATE AND TIME PLOTTED
FEBRUARY 11, 2009 10:50
PLOTTED BY
LBOEKWEG

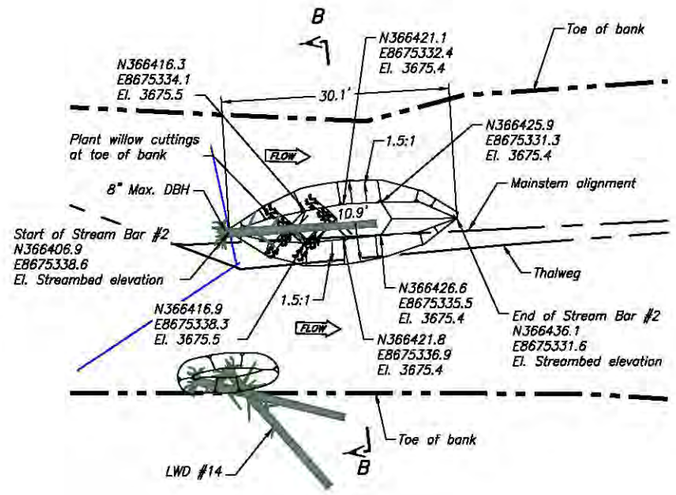
CAD SYSTEM
AutoCAD Rel. 17.2x
CAD FILENAME
1678-100-963.DWG

RECLAMATION
Managing Water in the West



STREAM BAR #1

10 0 10 20 30
SCALE OF FEET

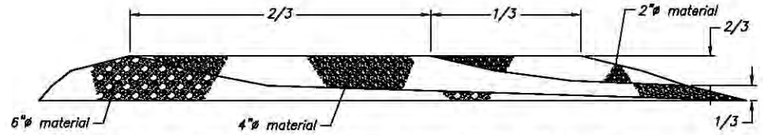


STREAM BAR #2

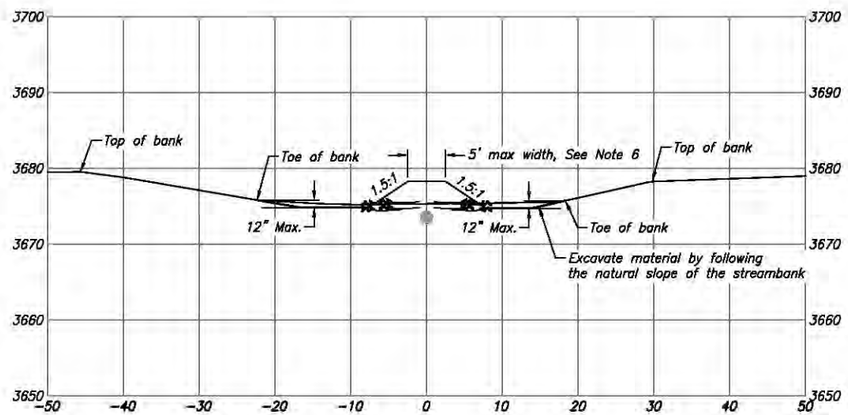
10 0 10 20 30
SCALE OF FEET

NOTE:

1. Place larger material, 6" minimum diameter cobbles, at the head of the stream bar. Material shall gradually become finer toward the tail of the stream bar and be no smaller than 2" diameter gravels.
2. For the stream bar material, use material excavated around the proposed stream bar site and from other project site excavations. Excavate a maximum of 12" below the toe of bank and the mound the material to build the stream bar as shown. To excavate the streambank side, follow the natural slope of the streambank down to 12" below the existing streambed. From the stream bar side, excavate at an approximate 1.5:1 slope to 12" below the existing streambed.
3. Place 6" maximum DBH tree at the head of Stream Bar #1. Tree shall have an intact rootwad and as many branches as possible. Rootwad shall be buried 50% into the existing streambed with the bole angled downward 5°.
4. Revegetate stream bars as outlined in the Planting and Rehabilitation Plan by Others, and as directed by the Contracting Officer.
5. The location of the stream bars may be adjusted 25' upstream or downstream from its proposed location.
6. The stream bar height shall match bankfull height, as determined in the field by the Contracting Officer.

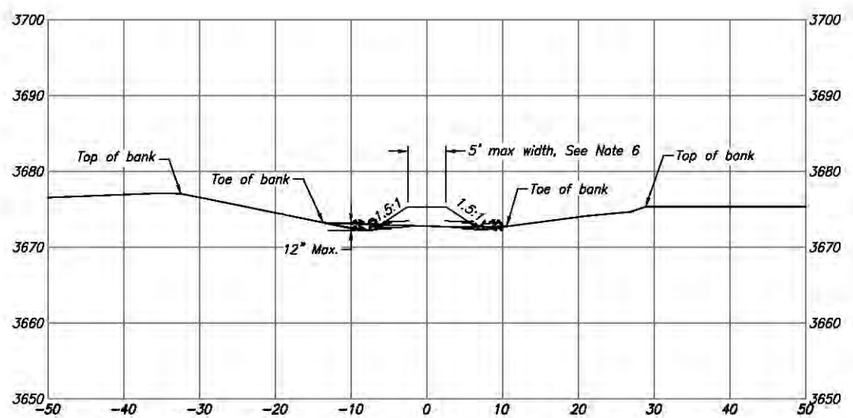


CONCEPTUAL MATERIAL DISTRIBUTION DETAIL



SECTION A–A

10 0 10 20 30
SCALE OF FEET



SECTION B–B

10 0 10 20 30
SCALE OF FEET

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
COLUMBIA/SNAKE RIVER SALMON RECOVERY PROJECT
JOHN DAY SUBBASIN – OREGON

OXBOW CONSERVATION PROPERTY RESTORATION

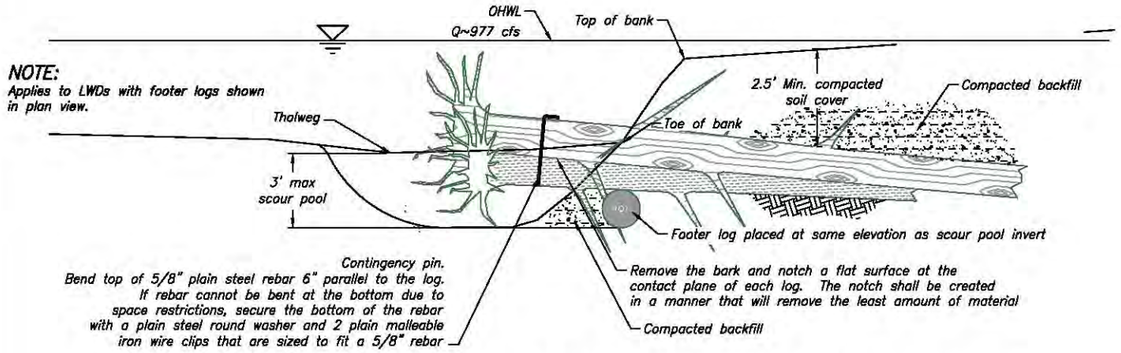
MIDDLE FORK JOHN DAY RIVER – BEAVER TO RAGGED
STREAM BAR #1 AND STREAM BAR #2
PLANS AND SECTIONS

DESIGNED Jabaconguis	CHECKED TE Turner	
DRAWN L. Boelkens	TECH. APPR. TE Turner (NAME – TITLE)	
APPROVED Dave Jennings (ADMINISTRATIVE APPROVAL – NAME – TITLE)		
BOISE, IDAHO	2008-01-31	1678-100-964
SHEET 1 OF 1		

DATE AND TIME PLOTTED
JUNE 16, 2008 15:46
PLOTTED BY
JBACONGUIS

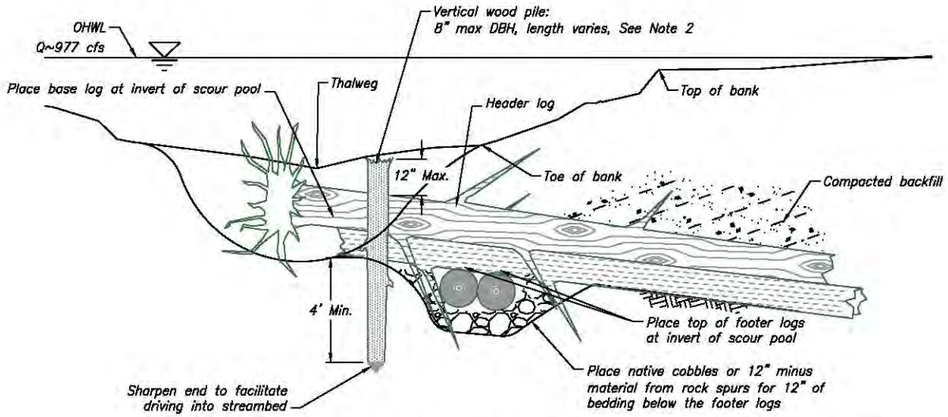
CAD SYSTEM
AutoCAD RM 17.1s
CAD FILENAME
1678-100-964.DWG

RECLAMATION
Managing Water in the West



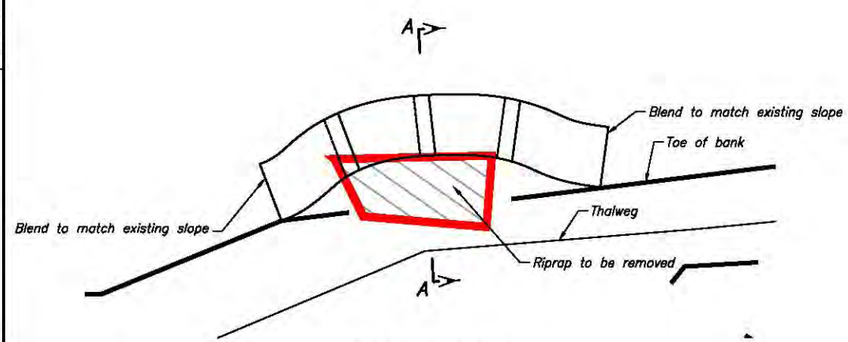
SCOUR POOL, FOOTER LOG, and CONTINGENCY PIN DETAIL

3 0 3 6 9
SCALE OF FEET



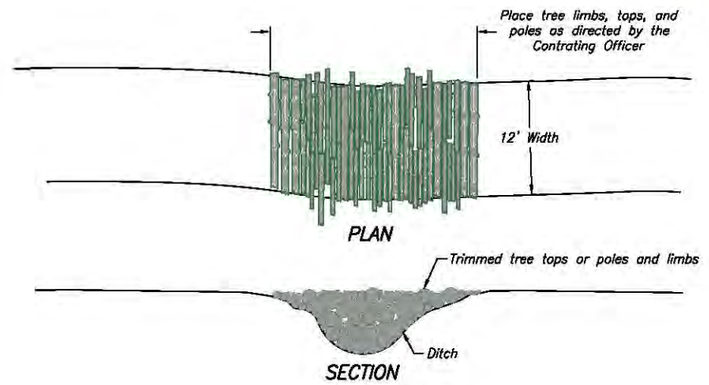
TWO FOOTER LOGS AND VERTICAL WOOD PILE DETAIL

3 0 3 6 9
SCALE OF FEET



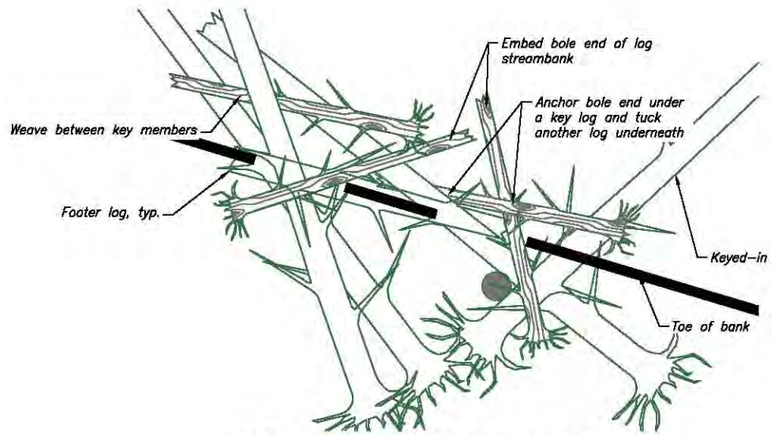
GRADING DETAIL

10 0 10 20 30
SCALE OF FEET



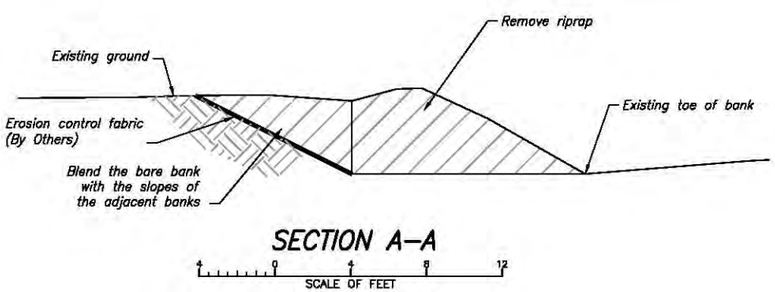
DITCH CROSSING: SLASH DETAIL

1 0 1 2
SCALE OF FEET



MOBILE WOOD TYPICAL DETAIL

4 0 4 8 12
SCALE OF FEET



SECTION A-A

4 0 4 8 12
SCALE OF FEET

NOTES:

1. Add an equal number of small logs (<6" diameter, <20' length) as the number of logs shown for each LWD. Small logs shall be partially anchored by weaving and tucking them between big logs and partially embedding them into the streambank or streambed, as directed by the Contracting Officer.
2. Top of wood pile shall not be more than 12" above the crown of the header log. Contractor shall implement contingency pinning in the event that the wood pile can not be driven into the streambed.

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BUREAU OF RECLAMATION

COLUMBIA/SNAKE RIVER SALMON RECOVERY PROJECT
JOHN DAY SUBBASIN – OREGON

OXBOW CONSERVATION PROPERTY RESTORATION

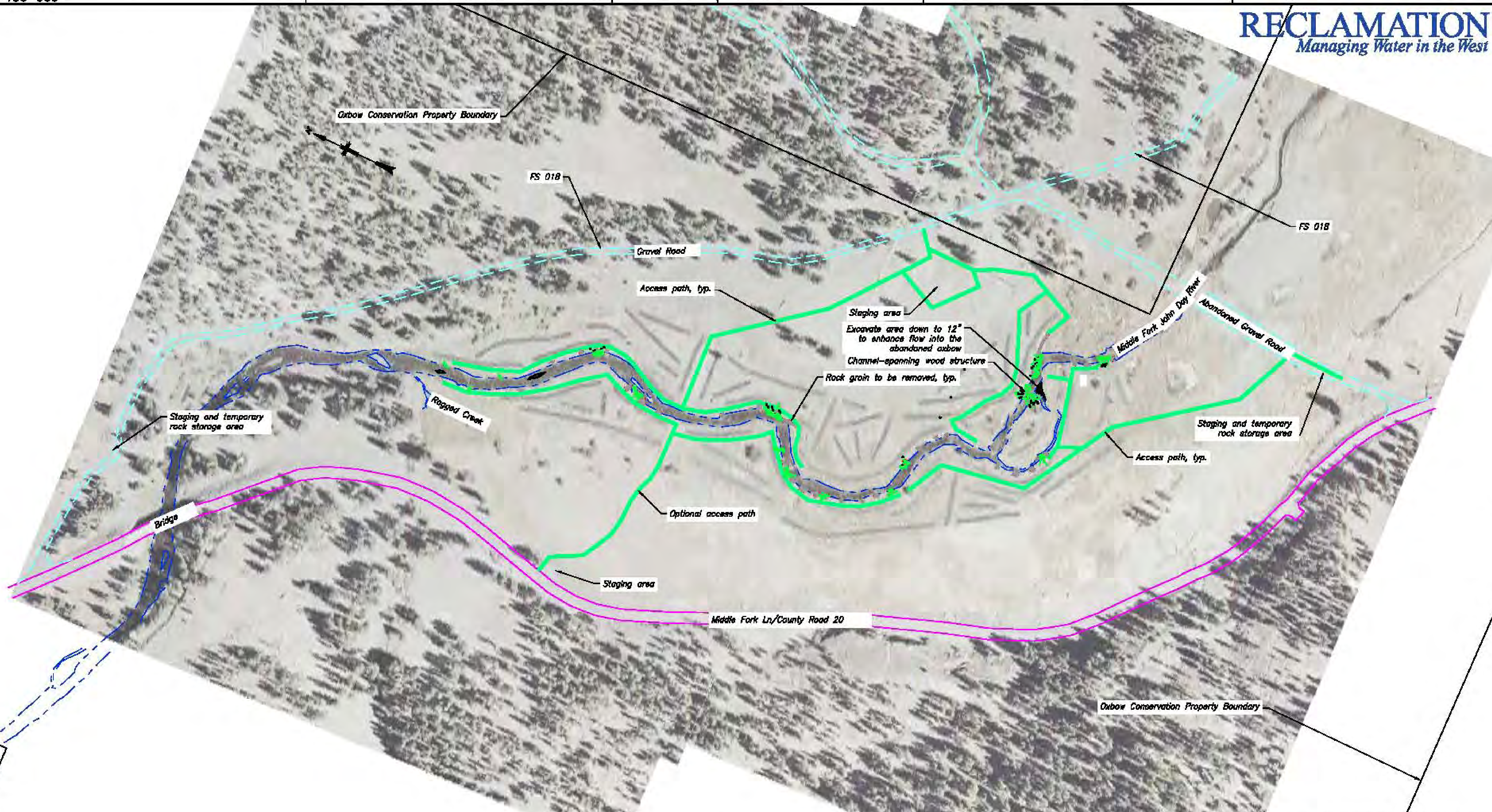
MIDDLE FORK JOHN DAY RIVER – BEAVER TO RAGGED

DETAILS AND SECTION

DESIGNED Jabaconguis	CHECKED TE Turner	
DRAWN L. Boelkweg	TECH. APPR. TE Turner (NAME – TITLE)	
APPROVED Dave Jennings (ADMINISTRATIVE APPROVAL – NAME – TITLE)		
BOISE, IDAHO	2007-11-23	1678-100-965
SHEET 1 OF 1		

DATE AND TIME PLOTTED: JUNE 18, 2008 15:47
PLOTTED BY: JBACONGUIS
CAD SYSTEM: AutoCAD IM. 17.1s
CAD FILENAME: 1678-100-965.DWG

1678-100-966



PLAN

300 0 300 600 900
SCALE OF FEET

NOTE:

1. Contractor shall walk through project to evaluate the usability of access roads shown and obtain approval from the Contracting Officer if other routes are proposed.

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
COLUMBIA/SNAKE RIVER SALMON RECOVERY PROJECT
JOHN DAY SUBBASIN – OREGON

OXBOW CONSERVATION PROPERTY RESTORATION

MIDDLE FORK JOHN DAY RIVER – BEAVER TO RAGGED
STAGING AND ACCESS
PLAN

DESIGNED Jabacangela CHECKED TE Turner
DRAWN L. Boshnog TECH. APPR. TE Turner
APPROVED Dave Jennings

BOISE, IDAHO 2007-11-30
SHEET 1 OF 1

1678-100-966

12