

# STEARNS DAM

## DECONSTRUCTION, FISH PASSAGE, AND RESTORATION PLANS

### FOR CROOKED RIVER WATERSHED COUNCIL

## PERMIT DRAWINGS



#### PROJECT PARTNERS



#### PROJECT DESCRIPTION

THE STEARNS DAM IS PRIVATELY OWNED AND OPERATED UNDER A LONG-TERM LAND LEASE AGREEMENT BETWEEN THE DAM OWNERS AND THE BLM. THE LAND UNDER THE DAM AND SURROUNDING THE DAM IS BLM MANAGED PUBLIC LAND, WITH FULL COOPERATION FROM THE LANDOWNER AND THE BLM. THE CROOKED RIVER WATERSHED COUNCIL IS PROVIDING LEADERSHIP AND OVERSIGHT TO REMOVE THE FISH PASSAGE BARRIER. THE FOLLOWING OBJECTIVES ARE PROVIDED FOR THE PROJECT:

- 1) **IMPROVE FISH PASSAGE** - STEARNS DAM DOES NOT PROVIDE ADEQUATE FISH PASSAGE FOR STEELHEAD, CHINOOK, REDBAND TROUT, AND BULL TROUT; BULL TROUT AND MID-COLUMBIA SUMMER STEELHEAD ARE LISTED AS THREATENED UNDER THE FEDERAL ENDANGERED SPECIES ACT. BASED ON A PAST FEASIBILITY ANALYSIS CONDUCTED BY THE BLM, THE MOST COST EFFECTIVE OPTION FOR OBTAINING FISH PASSAGE AT THE SITE IS TO REMOVE THE STRUCTURE AND RESTORE THE CHANNEL AND RIPARIAN AREA IN THE PROJECT SITE.
- 2) **REMOVE RELIC STRUCTURES** - STEARNS DAM IS AN AGING STRUCTURE THAT IS NOT AN ACTIVE POINT OF DIVERSION, HAS REACHED THE END OF ITS USEFUL LIFE, AND IS NO LONGER NEEDED FOR THE PURPOSE FOR WHICH IT WAS ORIGINALLY BUILT.

#### SPATIAL REFERENCE

SURVEY CONTROL USED FOR THE PROJECT IS PROVIDED ON DRAWING 2.0 AND COORDINATES CORRESPOND TO THE TOP CENTER OF CONTROL MARKERS.

**LIDAR AND TOTAL STATION:**  
 HORIZONTAL PROJECTION: OREGON STATE PLANE SOUTH      LIDAR COLLECTED: JUNE 14, 2010  
 HORIZ DATUM: NAD83 (CORS 11)      UNITS: US SURVEY FEET  
 VERT DATUM: NAVD83 (GEOID 09)      UNITS: US SURVEY FEET

#### REUSE OF DRAWINGS

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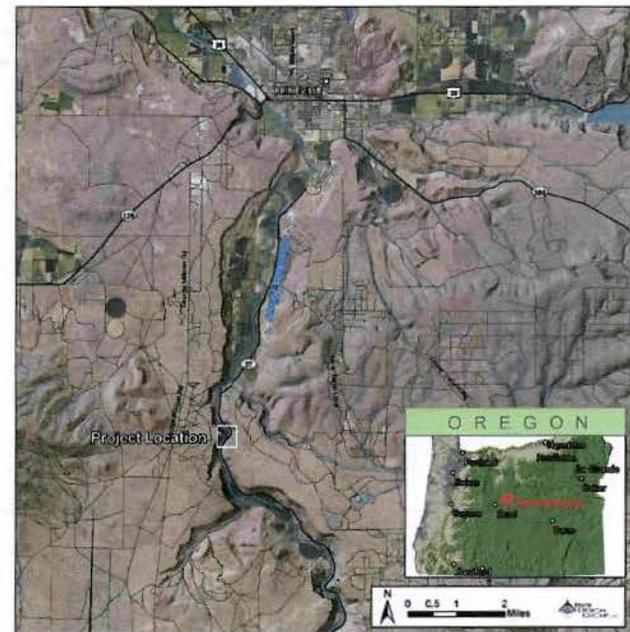
#### STANDARD OF PRACTICE

RDG WORKS EXCLUSIVELY IN THE RIVER ENVIRONMENT AND EMPLOYS THE MOST CURRENT AND ACCEPTED PRACTICES AVAILABLE FOR PLANNING AND DESIGN OF RESTORATION AND CHANNEL ENHANCEMENT PROJECTS. THE ANALYSIS FOR THE STEARNS DAM REMOVAL RELIED ON CURRENT FISH PASSAGE CRITERIA FROM ODFW AND HEC-RAS HYDRAULIC MODELING OF EXISTING AND PROPOSED CONDITIONS. ALL WORK WAS PERFORMED OR DIRECTED BY A REGISTERED PROFESSIONAL CIVIL ENGINEER WITH PAST EXPERIENCE IN THE DESIGN AND IMPLANTATION OF DAM REMOVALS.

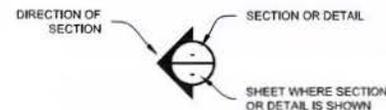
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#### PROJECT VICINITY MAP



**SW 1/4 OF THE SE 1/4 OF SECTION 01, T.16S., R.15E., WILLAMETTE MERIDIAN  
 CROOK COUNTY, OREGON  
 USGS QUADRANGLE: STEARNS BUTTE, OR**



#### CROSS-SECTION SHEET REFERENCE

### COVER PAGE AND NOTES

STEARNS DAM REMOVAL  
 CROOKED RIVER - PRINEVILLE, OREGON

NO.	DATE	BY	DESCRIPTION	CHK
1	08/20/12	RTB	30% DRAFT	SW
-	11/09/12	RTB	50% DRAFT	SW
-	01/25/13	RTB	PERMIT DRAWINGS	SW

PROJECT NUMBER  
RDG-12-006

DRAWING NUMBER  
**1.0**

Drawing 1 of 15

**GENERAL NOTES TO CONTRACTOR**

1. THE PROJECT SHALL BE CONSTRUCTED ACCORDING TO THE PLAN SET. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER OF ANY CHANGES PRIOR TO IMPLEMENTATION. THE CONSTRUCTION MANAGER, ENGINEER, AND PROJECT INSPECTOR FOR THIS PROJECT SHALL BE RIVER DESIGN GROUP, INC.
2. THE DRAWINGS INCLUDE LOCATION, PROFILES, SECTIONS, DETAILS AND NOTES NECESSARY TO DESCRIBE THE WORK. IF SITE CONDITIONS WARRANT CHANGES TO THE PLANS RIVER DESIGN GROUP, INC RESERVES THE RIGHT TO DIRECT THE CONTRACTOR TO MAKE MODIFICATIONS. NO CHANGES SHALL BE MADE TO THE DRAWINGS WITHOUT PRIOR WRITTEN APPROVAL OF RIVER DESIGN GROUP, INC.
3. IN THE EVENT THAT A PERMIT CONDITION CONFLICTS WITH THE DRAWINGS AND SPECIFICATIONS, THE ISSUE SHALL BE BROUGHT TO THE ATTENTION OF THE PROJECT ENGINEER FOR CLARIFICATION PRIOR TO PROCEEDING WITH WORK.
4. RIVER DESIGN GROUP MAKES NO REPRESENTATION OF THE EXISTENCE OR NONEXISTENCE OF UTILITIES. CONTRACTOR IS RESPONSIBLE FOR CALLING THE OREGON UTILITY NOTIFICATION CENTER (800-332-2344) AT LEAST TWO WEEKS PRIOR TO DIGGING.
5. COSTS INCURRED DUE TO PROJECT DELAYS RESULTING FROM FAILURE OF THE CONTRACTOR TO MEET THE REQUIREMENTS OF THE GENERAL NOTES TO CONTRACTOR, SAFETY, CONTRACTOR QUALIFICATIONS, MATERIAL SPECIFICATIONS, EQUIPMENT SPECIFICATIONS, CONSTRUCTION SPECIFICATIONS, AND PLAN SET SHALL BE THE EXPENSE OF THE CONTRACTOR.

**SAFETY**

1. THE CONTRACTOR IS RESPONSIBLE FOR COMPLIANCE WITH ALL STATE AND LOCAL LAWS, ORDINANCES, CODES, AND/OR REGULATIONS APPLICABLE FOR THE PROJECT. THE PROJECT INSPECTOR WILL DOCUMENT ANY SAFETY VIOLATIONS WITNESSED.

**CONTRACTOR QUALIFICATIONS**

1. THE CONTRACTOR SHALL HAVE AT LEAST TWO (2) YEARS OF RIVER RESTORATION CONSTRUCTION EXPERIENCE AND SHALL HAVE COMPLETED AT LEAST FIVE (5) RIVER RESTORATION PROJECTS. SIMILAR EXPERIENCE WILL BE EVALUATED ON A CASE BY CASE SCENARIO.
2. IF THE CONTRACTOR CHOOSES TO DESIGNATE AN EMPLOYEE WITHOUT QUALIFIED STREAM RESTORATION EXPERIENCE, THE CONTRACTOR SHALL BE ON-SITE AT ALL TIMES WHEN THE EMPLOYEE IS PERFORMING RIVER RESTORATION WORK. FAILURE TO ABIDE BY THIS CONDITION WITHOUT PREVIOUS AGREEMENT WITH THE CONSTRUCTION MANAGER WOULD BE GROUNDS FOR TERMINATION.
3. THE CONTRACTOR SHALL MAINTAIN AT LEAST \$1,000,000 IN LIABILITY INSURANCE AND HAVE PROOF OF LIABILITY INSURANCE ON-SITE DURING THE ENTIRETY OF PROJECT CONSTRUCTION.
4. THE CONTRACTOR SHALL HAVE PROOF OF WORKER'S COMPENSATION INSURANCE ON-SITE DURING THE ENTIRETY OF PROJECT CONSTRUCTION.
5. COPIES OF ALL PROJECT PERMITS SHALL BE POSTED ON-SITE IN A VISIBLE LOCATION. THE CONTRACTOR SHALL COMPLY WITH THE PROVISIONS OF THE PERMITS. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER OF ANY KNOWN CHANGES OR ACTIVITIES THAT COULD VIOLATE PERMIT REQUIREMENTS PRIOR TO IMPLEMENTATION.

**MATERIALS SPECIFICATIONS**

1. THE CONTRACTOR SHALL FURNISH ALL MATERIALS NECESSARY TO CONSTRUCT THE PROJECT UNLESS OTHER PROVISIONS HAVE BEEN AGREED UPON PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL DELIVER ALL MATERIALS TO THE DESIGNATED STOCKPILE LOCATIONS LABELED ON THE PLAN SET OR TO A LOCATION SPECIFIED BY THE CONSTRUCTION MANAGER. IF A MATERIAL SOURCE HAS BEEN PRE-DETERMINED, THE CONSTRUCTION MANAGER SHALL PROVIDE DIRECTIONS TO THE CONTRACTOR.
2. MATERIAL QUANTITIES, DIMENSIONS AND SIZES SHALL CONFORM TO THE NOTES AND SPECIFICATIONS PROVIDED ON THE PROJECT DRAWINGS OR ON THE MATERIALS LIST.
3. THE CONSTRUCTION MANAGER SHALL INSPECT AND APPROVE ALL MATERIALS PRIOR TO CONSTRUCTION. IF MATERIALS DO NOT MEET THE MINIMUM REQUIREMENTS SPECIFIED IN THE PROJECT DRAWINGS OR MATERIAL LIST, THE CONSTRUCTION MANAGER SHALL REJECT THE MATERIALS.

**EQUIPMENT SPECIFICATIONS**

1. THE CONTRACTOR SHALL FURNISH ALL EQUIPMENT NECESSARY TO CONSTRUCT THE PROJECT. AT A MINIMUM, THE CONTRACTOR SHALL PROVIDE THE FOLLOWING EQUIPMENT FOR THIS PROJECT:  
  
**EXCAVATOR** - THE EQUIPMENT SHALL BE ABLE TO RAISE AND PLACE A FILLED BULK BAG. MINIMUM BUCKET VOLUME SHALL BE ONE (1) CUBIC YARD(S). THE BUCKET SHALL BE EQUIPPED WITH A HYDRAULIC THUMB FOR GRASPING ROCKS, AND OTHER MATERIALS. THE EQUIPMENT MUST BE CAPABLE OF CROSSING WATER AND WORKING ON OR ADJACENT TO STEEP SLOPES. A CHAIN SHALL BE AVAILABLE FOR ATTACHING CULVERTS, PUMPS AND OTHER EQUIPMENT OR MATERIALS TO THE BUCKET FOR TRANSPORT ON-SITE.  
  
**DUMP TRUCK** - TRUCK SHALL HAVE A MINIMUM BED VOLUME OF EIGHT (8) CUBIC YARDS. THE TRUCK SHALL BE CAPABLE OF DRIVING ON NON-ASPHALT SURFACES AND OFF-ROAD SURFACES.  
  
**TRASH PUMP** - DISCHARGE CAPACITY SHALL BE AT LEAST 225 GPM (@ 5 CFS). TOTAL HEAD LIFT SHALL BE AT LEAST 95 FT. PUMPS SHALL BE EQUIPPED WITH AT LEAST 100 FEET OF 4" DIAMETER OUTLET HOSE. A PIPE WRENCH SHALL BE AVAILABLE FOR ATTACHING HOSES. FUEL AND OIL SHALL BE SUPPLIED FOR THE TRASH PUMPS.  
  
 2. ALL EQUIPMENT SHALL BE WASHED PRIOR TO MOBILIZATION TO THE SITE TO MINIMIZE THE INTRODUCTION OF FOREIGN MATERIALS AND FLUIDS TO THE PROJECT SITE. ALL EQUIPMENT SHALL BE FREE OF OIL, HYDRAULIC FLUID, AND DIESEL FUEL LEAKS. TO PREVENT INVASION OF NOXIOUS WEEDS OR THE SPREAD OF WHIRLING DISEASE SPORES, ALL EQUIPMENT SHALL BE POWER WASHED OR CLEANED TO REMOVE MUD AND SOIL PRIOR TO MOBILIZATION INTO THE PROJECT AREA. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO INSURE THAT ADEQUATE MEASURES HAVE BEEN TAKEN.  
  
 3. EQUIPMENT SHALL BE IN A WELL-MAINTAINED CONDITION TO MINIMIZE THE LIKELIHOOD OF A FLUID LEAK. IF A FLUID LEAK DOES OCCUR, THE PROJECT INSPECTOR SHALL BE NOTIFIED IMMEDIATELY, AND ALL WORK CEASED UNTIL THE LEAK HAS BEEN RECTIFIED. AT ALL TIMES DURING THE CONSTRUCTION PHASE, FLUID SPILL CONTAINMENT EQUIPMENT SHALL BE PRESENT ON-SITE AND READY FOR DEPLOYMENT SHOULD AN ACCIDENTAL SPILL OCCUR. PROJECT INSPECTOR RESERVES THE RIGHT TO REFUSE EQUIPMENT THAT DOES NOT MEET THE PREVIOUS CRITERIA.  
  
 4. THE CONTRACTOR SHALL MAINTAIN A COMPLETE TOOL SET WITH COMMONLY REPLACED PARTS (E.G. O-RINGS) TO MINIMIZE DOWNTIME IN THE EVENT OF EQUIPMENT MALFUNCTION. THE CONTRACTOR SHALL HAVE AN EMERGENCY SPILL KIT ON SITE DURING THE PROJECT.

**MOBILIZATION SPECIFICATIONS**

1. ALL MOBILIZATION AND DEMOBILIZATION WILL BE PERFORMED IN A SAFE AND ORDERLY MANNER WITH PARTICULAR CARE NOT TO DAMAGE EXISTING VEGETATION OR UNDUE DISTURBANCE TO THE INGRESS-EGRESS ROUTE.
2. THE CONTRACTOR IS RESPONSIBLE FOR DAMAGE INCURRED TO PROPERTY RESOURCES DURING MOBILIZATION AND DE-MOBILIZATION. VEGETATION THAT MAY BE CAUSE FOR CONCERN DURING MOBILIZATION SHALL BE IDENTIFIED BY THE CONTRACTOR AND FLAGGED BY THE CONSTRUCTION MANAGER AT THE TIME OF THE PRE-CONSTRUCTION MEETING.
3. INGRESS AND EGRESS ROUTES TO THE PROJECT SITE WILL BE IDENTIFIED DURING THE PRE-CONSTRUCTION MEETING.
4. UPON COMPLETION OF CONSTRUCTION AND DEMOBILIZATION ACTIVITIES THE CONTRACTOR SHALL PERFORM SITE RESTORATION. ALL COMPACTED SURFACES ARE TO BE RIPPED TO A MINIMUM DEPTH OF 8 INCHES FOR SEEDING PREPARATION. ORGANIC CONSTRUCTION DEBRIS SHALL BE PLACED AT THE DIRECTION OF THE CONSTRUCTION MANAGER ON SURFACES EXPOSED DURING CONSTRUCTION. SITE RESTORATION SHALL BE CERTIFIED COMPLETE IN WRITING BY THE PROJECT INSPECTOR UPON COMPLETION OF CONSTRUCTION ACTIVITIES.

**CONSTRUCTION SPECIFICATIONS**

1. CONSTRUCTION SHALL OCCUR IN ACCORDANCE WITH THE PLAN SET, CONSTRUCTION SPECIFICATIONS, EQUIPMENT SPECIFICATIONS, MATERIAL SPECIFICATIONS, REVEGETATION SPECIFICATIONS AND GENERAL SPECIFICATIONS.
2. PRIOR TO CONSTRUCTION, CONSTRUCTION AREAS WILL BE STAKED OUT USING A SURVEY GRADE GLOBAL POSITIONING SYSTEM (GPS), TOTAL STATION, OR SURVEY LASER. THE CONSTRUCTION MANAGER SHALL STAKE THE LOCATIONS OF THE CONSTRUCTION ACCESS, STOCKPILE LOCATIONS, LIMITS OF DISTURBANCE, FLOODPLAIN EXTENTS, AND ALL STRUCTURES ACCORDING TO THE PLAN SET. THE CONTRACTOR SHALL MINIMIZE DISTURBANCE TO GRADE STAKES. IF EXCESSIVE DISTURBANCE TO GRADE STAKES BY THE CONTRACTOR OCCURS, IT SHALL BE THE CONTRACTOR'S EXPENSE TO RE-STAKE THE PROJECT.  
  
 3. CONSTRUCTION ACCESS SHALL BE DETERMINED BY THE CONSTRUCTION MANAGER. CONSTRUCTION EQUIPMENT SHALL NOT CROSS PRIVATE LAND UNLESS PERMISSION IS OBTAINED FROM THE LANDOWNER. THE CONTRACTOR SHALL LEAVE ALL GATES, WHETHER OPEN OR CLOSED, AS FOUND.  
  
 4. STREAM CROSSINGS SHALL BE MINIMIZED DURING CONSTRUCTION. IF MULTIPLE CROSSINGS (10 OR MORE) ARE EXPECTED, THE CONTRACTOR SHALL PROVIDE AND INSTALL TEMPORARY CULVERTS SO THAT EQUIPMENT CAN CROSS THE STREAM WITHOUT GENERATING EXCESS TURBIDITY. TEMPORARY CULVERT SIZES SHALL ACCOMMODATE 150% OF EXPECTED BASE FLOW DURING CONSTRUCTION. THE CONSTRUCTION MANAGER SHALL SPECIFY THE SIZES AND LOCATIONS OF THE TEMPORARY CULVERTS.  
  
 5. STRAW BALES AND SILT FENCING SHALL BE AVAILABLE AND INSTALLED BY THE CONTRACTOR IF DEEMED NECESSARY BY THE CONSTRUCTION MANAGER. CONSTRUCTION FENCING (LIMITS OF DISTURBANCE) SHALL BE INSTALLED BY THE CONTRACTOR IF DEEMED NECESSARY BY THE CONSTRUCTION MANAGER.  
  
 6. THE CONTRACTOR SHALL EXCAVATE THE CHANNEL TO DESIGN DIMENSIONS USING THE EXCAVATOR. EXCAVATION SHALL COMPLY WITH CONSTRUCTION STAKES AND THE PLAN SET. EXCAVATION SHALL ESTABLISH CHANNEL ELEVATIONS TO FINAL ELEVATIONS. THE PROJECT INSPECTOR SHALL INSPECT THE CHANNEL EXCAVATION FOR COMPLIANCE WITH THE PLAN SET. ALL EXCAVATED MATERIALS SHALL BE STOCKPILED ON-SITE, ABOVE THE BANKFULL CHANNEL UNTIL HAULED OFF-SITE OR USED ON-SITE. DISTURBANCE TO RIPARIAN VEGETATION, CHANNEL BANKS AND SOD SHALL BE MINIMIZED. EXCAVATED SOD AND RIPARIAN SHRUB TRANSPLANTS SHALL BE CAREFULLY STOCKPILED AND REUSED FOR PLANTING FLOODPLAINS OR STREAM BANKS.  
  
 7. THE CONTRACTOR SHALL REMOVE EXCESS MATERIALS, TEMPORARY CROSSINGS AND EQUIPMENT FROM THE SITE. THE CONTRACTOR SHALL REGRADE DISTURBED AREAS AND CONSTRUCTION ACCESS ROADS TO THEIR ORIGINAL GRADES. THE CONTRACTOR SHALL TREAT COMPACTED SOIL AREAS INCLUDING ACCESS ROADS AND MATERIAL STOCKPILE AREAS. THE CONTRACTOR SHALL REMOVE SOIL FROM THE PROJECT SITE IF THE SOIL IS TAINTED WITH PETROLEUM-BASED FLUIDS. A STRAW MULCH IS TO BE APPLIED OVER ALL DISTURBED AREAS FOLLOWING OTHER TREATMENTS.



**PROJECT SPECIFICATIONS**  
STEARNS DAM REMOVAL  
CROOKED RIVER - PRINEVILLE, OREGON

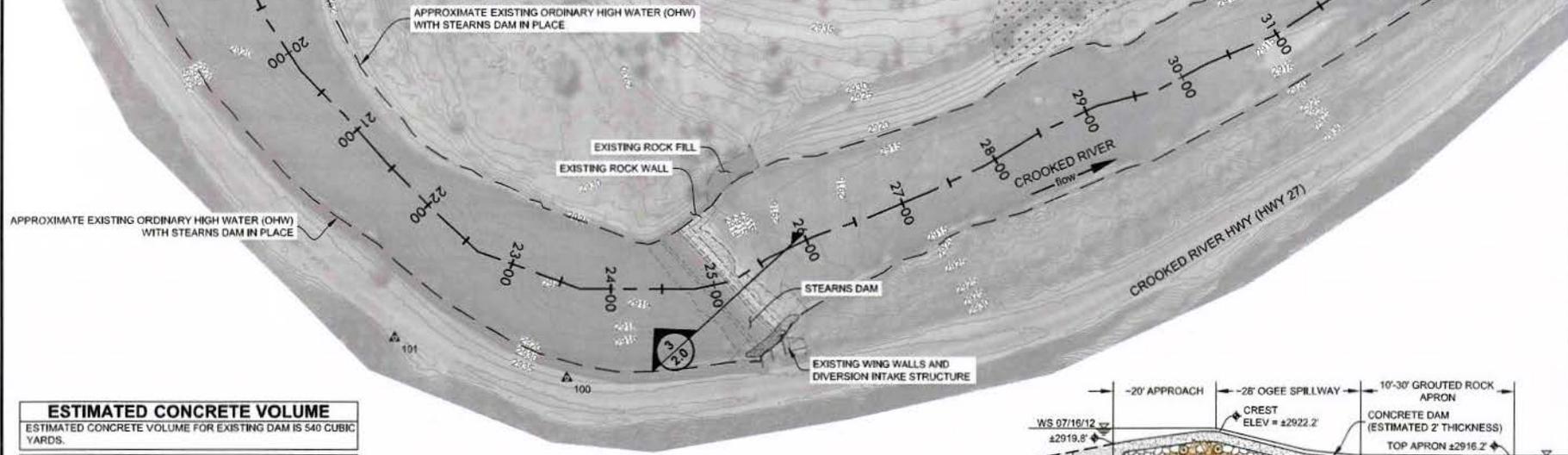
NO.	DATE	BY	DESCRIPTION	CHK
1	08/20/12	RTB	30% DRAFT	SW
2	11/09/12	RTB	60% DRAFT	SW
3	01/25/13	RTB	PERMIT DRAWINGS	SW
PROJECT NUMBER RDG-12-036				
DRAWING NUMBER <b>1.1</b>				
Drawing 2 of 15				

CONTROL NETWORK				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	924166.67	4822554.88	2929.35	SET RDG HYDRO
100	924914.07	4823079.95	2934.16	SET RDG HYDRO
101	924745.04	4823100.54	2935.48	SET RDG HYDRO
102	929793.34	4822929.83	2966.52	SET MAG NAIL

NOTE:  
INFORMATION IS NOT A LAND SURVEY AND IS PRIMARILY A TOPOGRAPHIC ANALYSIS FOR RESTORATION DESIGN PURPOSES

COORDINATE SYSTEM: OREGON STATE PLANE SOUTH  
HORIZ DATUM: NAD83 (CORS 11)  
VERT DATUM: NGVD85 (GEOID 09)  
UNITS: U.S. SURVEY FEET

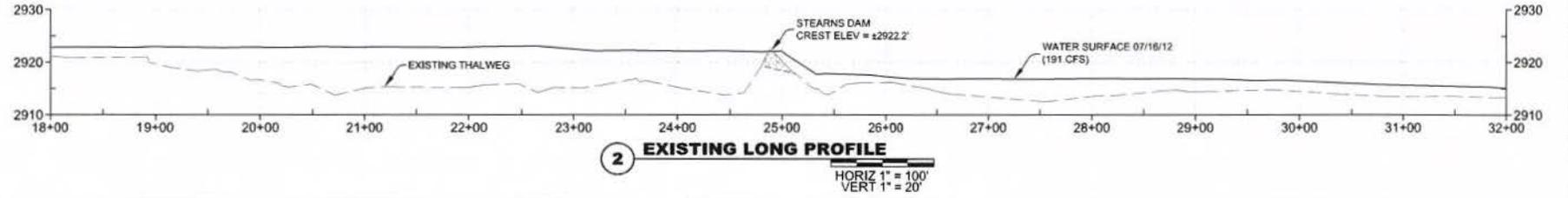
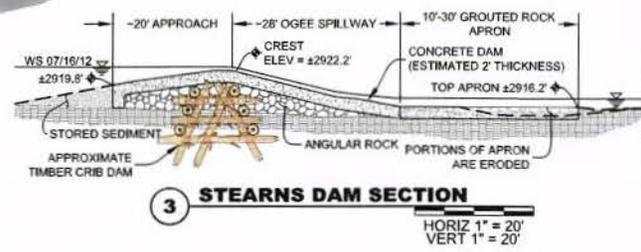
STREAM REACH CHARACTERISTICS POST BOWMAN DAM CONSTRUCTION	
DRAINAGE AREA	2635 SQ. MILES
AVERAGE REACH SLOPE	0.0024 FT/FT
ACTIVE CHANNEL WIDTH	80 - 100 FT
2-YEAR FLOW	1,715 cfs
10-YEAR FLOW	4,200 cfs
25-YEAR FLOW	5,265 cfs
100-YEAR FLOW	6,580 cfs
MEAN OCTOBER FLOW	160 CFS
IN WATER WORK PERIOD	JULY 1 - OCTOBER 31



**ESTIMATED CONCRETE VOLUME**  
ESTIMATED CONCRETE VOLUME FOR EXISTING DAM IS 540 CUBIC YARDS.

**ESTIMATED STORED SEDIMENT**  
A PORTION OF THE SEDIMENT WITHIN THE RESERVOIR WILL MOBILIZE ONCE THE DAM IS REMOVED. THE EXISTING RIVER CHANNEL WIDTH RANGES BETWEEN 80 FEET AND 100 FEET. MOBILE SEDIMENT VOLUME IN THE RESERVOIR WAS DETERMINED BY ESTIMATING THE SLOPE OF THE RIVER AFTER DAM REMOVAL AND USING A TYPICAL RIFFLE AND POOL CHANNEL THROUGH THE RESERVOIR AREA AT THE ESTIMATED SLOPE. THE MOBILE SEDIMENT VOLUME IS ESTIMATED AT 15,000 CUBIC YARDS.

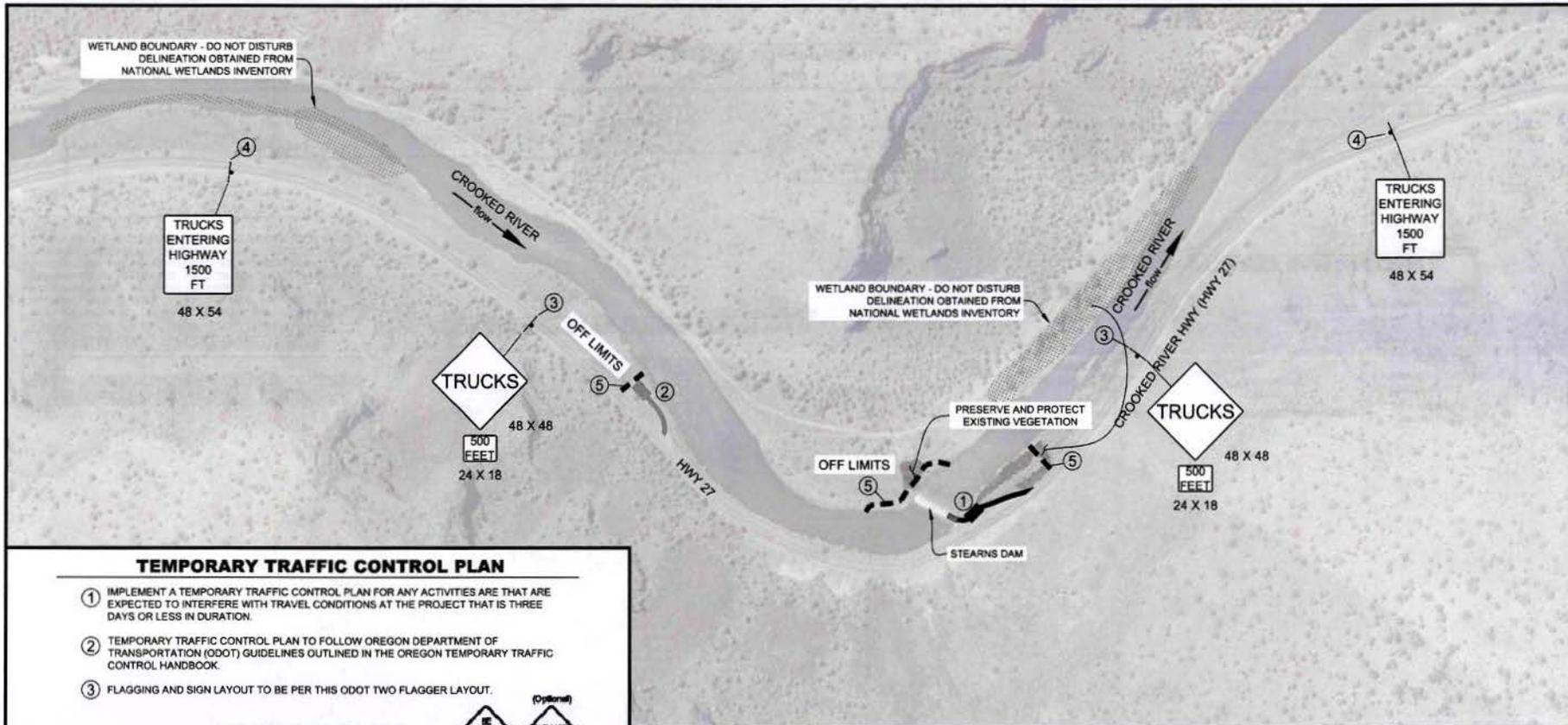
**1 EXISTING CONDITIONS - PLAN VIEW**  
1" = 100'



**EXISTING SITE LAYOUT**  
STEARNS DAM REMOVAL  
CROOKED RIVER - PRINEVILLE, OREGON

NO.	DATE	BY	DESCRIPTION	CHK
1	08/20/12	RTB	30% DRAFT	SW
2	11/09/12	RTB	60% DRAFT	SW
3	01/25/13	RTB	PERMIT DRAWINGS	SW

PROJECT NUMBER: RDG-12-036  
DRAWING NUMBER: **2.0**  
Drawing 3 of 15



**SITE ACCESS AND TRAFFIC PLAN**  
 STEARNS DAM REMOVAL  
 CROOKED RIVER - PRINEVILLE, OREGON

### TEMPORARY TRAFFIC CONTROL PLAN

- IMPLEMENT A TEMPORARY TRAFFIC CONTROL PLAN FOR ANY ACTIVITIES ARE THAT ARE EXPECTED TO INTERFERE WITH TRAVEL CONDITIONS AT THE PROJECT THAT IS THREE DAYS OR LESS IN DURATION.
- TEMPORARY TRAFFIC CONTROL PLAN TO FOLLOW OREGON DEPARTMENT OF TRANSPORTATION (ODOT) GUIDELINES OUTLINED IN THE OREGON TEMPORARY TRAFFIC CONTROL HANDBOOK.
- FLAGGING AND SIGN LAYOUT TO BE PER THIS ODOT TWO FLAGGER LAYOUT.

Posted Speed	Spacing Between Signs (feet)			Buffer Space
	A	B	C	
25				50
35	100	100	100	75
45	150	150	150	100
55	200	200	200	125
65	250	250	250	150
75	300	300	300	175
85	350	350	350	200

**Two Flagger Operation**

**1 SITE ACCESS AND TRAFFIC PLAN**  
 1" = 300'



**SITE ACCESS AND PROJECT TRAFFIC CONTROL PLAN**

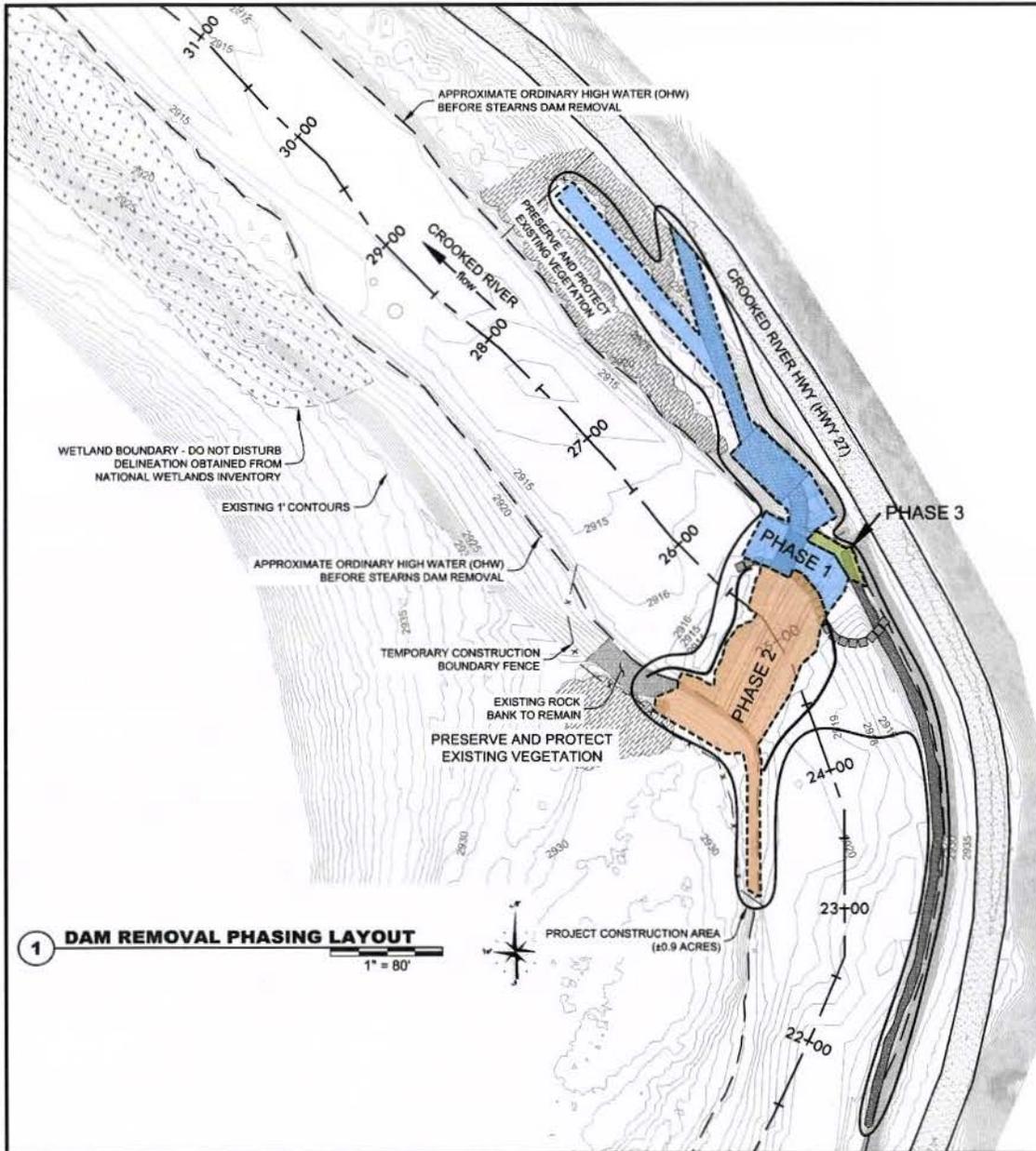
- PRIMARY ACCESS IS FROM THE NORTHEAST SIDE OF EXISTING DAM ALONG HIGHWAY 27. CONSTRUCT GRAVEL ENTRANCE PER DETAIL 2. INSTALL A TEMPORARY BRIDGE FOR ACCESS TO THE LEFT SIDE OF THE EXISTING DAM FOR PHASE 2 OF DAM REMOVAL.
- THE EXISTING TURNOUT APPROXIMATELY 1000 FT UPSTREAM OF THE EXISTING DAM WILL BE USED AS A TEMPORARY STAGING AND STOCKPILING LOCATION.
- INSTALL 48 INCH "TRUCKS" SIGN WITH 18 INCH "500 FEET" RIDER PER ODOT AND MUTCD STANDARDS. CONTRACTOR SHALL REMOVE SIGN AT PROJECT COMPLETION. SIGN TO BE INSTALLED ON 4" X 6" WOOD POST PER TEMPORARY SIGN PLACEMENT ODOT STANDARD DETAIL TM821 AND WOOD POST SIGN SUPPORTS STANDARD DETAILS TM 670, TM671.
- INSTALL 54 INCH "TRUCKS ENTERING HIGHWAY 1500 FT" SIGN PER ODOT AND MUTCD STANDARDS. CONTRACTOR SHALL REMOVE SIGN AT PROJECT COMPLETION. SIGN TO BE INSTALLED ON 4" X 6" WOOD POST PER TEMPORARY SIGN PLACEMENT ODOT STANDARD DETAIL TM821 AND WOOD POST SIGN SUPPORTS STANDARD DETAILS TM 670, TM671.
- INSTALL CONSTRUCTION FENCING PER DETAIL 3 DRAWING 2.2

CHK	NO.	DATE	BY	DESCRIPTION
		08/07/12	RTB	30% DRAFT
		11/20/12	RTB	60% DRAFT
		01/25/13	RTB	PERMIT DRAWINGS

PROJECT NUMBER  
RDG-12-036

DRAWING NUMBER  
**2.1**

Drawing 4 of 15



## PROPOSED PROJECT PHASING

### PHASE 1

- 1.1 INSTALL TRAFFIC SAFETY FEATURES IN ACCORDANCE WITH THE APPROVED ODOT TRAFFIC PLAN, DRAWING 2.1.
- 1.2 MOBILIZE CONSTRUCTION EQUIPMENT AND FACILITIES ON SITE.
- 1.3 INSTALL CONSTRUCTION ENTRANCE AND PROVIDE SITE ACCESS TO THE EXISTING DAM.
- 1.4 INSTALL TEMPORARY SAND BAGS/BULK BAGS ON RIGHT PORTION OF DAM TO TEMPORARILY DIVERT WATER UPSTREAM OF NOTCH LOCATION TO ISOLATE SECTION OF CONCRETE STRUCTURE FOR REMOVAL. INSTALL TEMPORARY BRIDGE CROSSING FOR ACCESS TO RIVER LEFT SIDE OF STRUCTURE.
- 1.5 PERFORM FISH SALVAGE IN ISOLATED AREA.
- 1.6 EXCAVATE RIVER PILOT CHANNEL (APPROXIMATELY 20 FT BOTTOM WIDTH) UPSTREAM OF DAM TO AN ELEVATION OF 2916.0 FT AND NOTCH RIGHT SIDE OF EXISTING CONCRETE DAM STRUCTURE TO SAME ELEVATION. RIVER SHALL FLOW THROUGH NOTCH AND UNDER TEMPORARY BRIDGE. EXCAVATED MATERIAL SHALL BE USED TO FILL APPROXIMATELY 160 FT OF EXISTING DIVERSION DITCH ADJACENT TO HWY 27 DOWNSTREAM OF DAM STRUCTURE. APPROXIMATELY ±100 CUBIC YARDS CONCRETE, ±200 CUBIC YARDS ANGULAR ROCK, AND ±75 CUBIC YARDS OF GROUTED APRON ROCK.
- 1.7 ACTIVATE BYPASS CHANNEL BY REMOVING SAND BAGS/BULK BAGS THAT ARE ISOLATING THE BYPASS CHANNEL. ISOLATE LEFT SIDE OF DAM UPSTREAM AND DOWNSTREAM OF STRUCTURE AND PERFORM FISH SALVAGE IN ISOLATED AREAS.

### PHASE 2

- 2.1 ACCESS RIVER LEFT SIDE OF STRUCTURE BY MEANS OF TEMPORARY BRIDGE INSTALLED DURING PHASE 1 OF CONSTRUCTION.
- 2.2 REMOVE EXISTING CONCRETE DAM STRUCTURE, TIMBER CRIB STRUCTURE, AND RIVER LEFT ROCK WALL BY STARTING AT THE RIVER LEFT EDGE OF STRUCTURE AND MOVING TOWARDS THE CENTER OF THE CHANNEL. ALL RUBBLE TO BE HAILED OFFSITE TO APPROVED DISPOSAL LOCATION. APPROXIMATELY ±400 CUBIC YARDS CONCRETE, ±570 CUBIC YARDS ANGULAR ROCK, ±90 CUBIC YARDS OF GROUTED APRON ROCK, AND ±50 CUBIC YARDS OF MORTARED WALL ROCK.
- 2.3 EXCAVATE LEFT HALF OF FISH PASSAGE PILOT CHANNEL TO LINES AND GRADES ON PLANS.
- 2.4 GRADE AND VEGETATE RIVER LEFT BANK PER DRAWINGS 5.0 AND 5.1.
- 2.5 REMOVE PROJECT ISOLATION MEASURES, TEMPORARY BRIDGE AND ASSOCIATED FOOTINGS.

### PHASE 3

- 3.1 REMOVE REMAINING RIVER RIGHT PORTION OF EXISTING CONCRETE DAM. RIVER RIGHT WING WALL STRUCTURE TO REMAIN IN PLACE. ALL RUBBLE TO BE HAILED OFFSITE TO APPROVED DISPOSAL LOCATION. APPROXIMATELY ±40 CUBIC YARDS CONCRETE, ±85 CUBIC YARDS OF ANGULAR ROCK.
- 3.2 EXCAVATE RIGHT HALF OF FISH PASSAGE PILOT CHANNEL TO LINES AND GRADES ON PLANS.
- 3.3 AUGMENT EXISTING RIPRAP ALONG HIGHWAY 27 FOR BANK STABILIZATION PER DRAWING 4.0. TREATMENT LENGTH ±400 LINEAL FEET.
- 3.4 RESTORE STAGING AREA AND ACCESS ROUTE TO ORIGINAL CONDITIONS AND PLANT WITH NATIVE PLANTS PER DRAWINGS 5.0 AND 5.1.



## DAM REMOVAL PHASING

STEARNS DAM REMOVAL

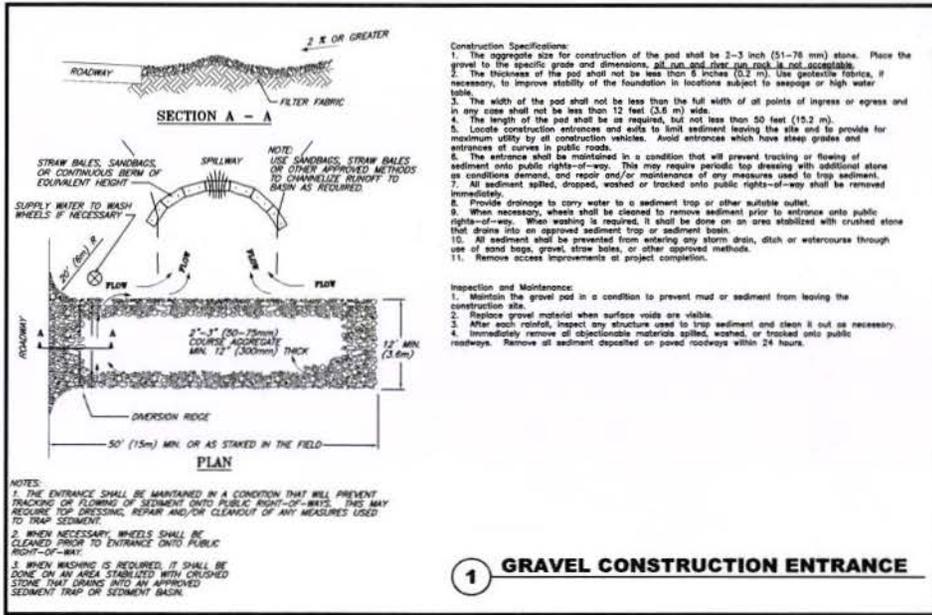
CROOKED RIVER - PRINEVILLE, OREGON

NO.	DATE	BY	DESCRIPTION	CHK
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2	11/20/12	RTB	60% DRAFT	SW
3	01/25/13	RTB	PERMIT DRAWINGS	SW

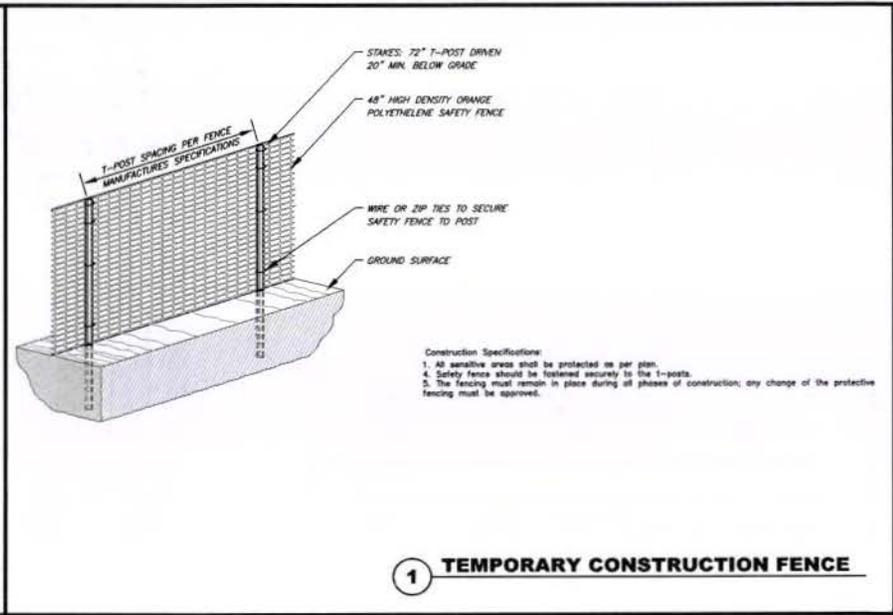
PROJECT NUMBER  
RDG-12-036

DRAWING NUMBER  
**3.0**

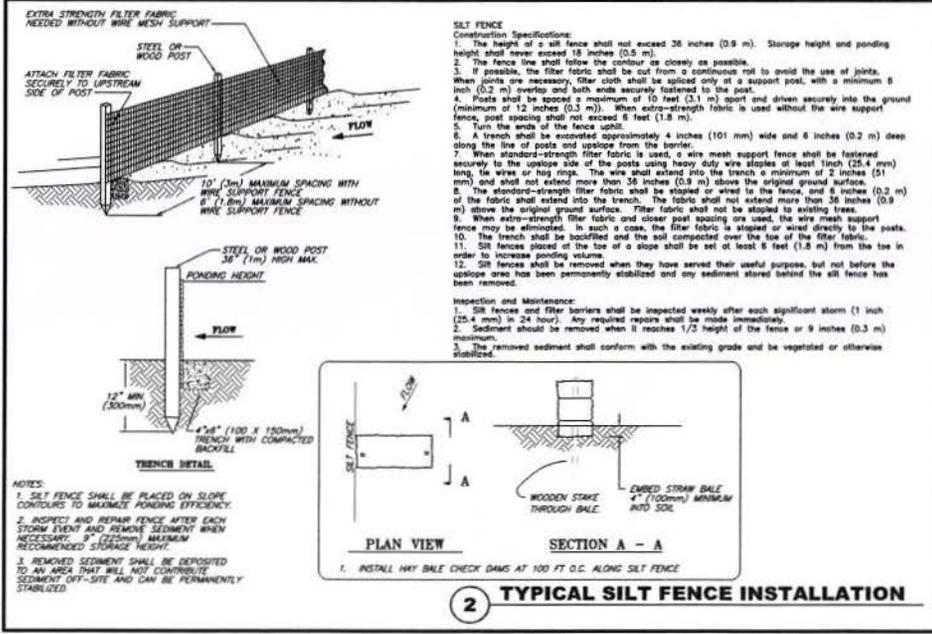
Drawing 6 of 15



**1 GRAVEL CONSTRUCTION ENTRANCE**



**1 TEMPORARY CONSTRUCTION FENCE**



**2 TYPICAL SILT FENCE INSTALLATION**



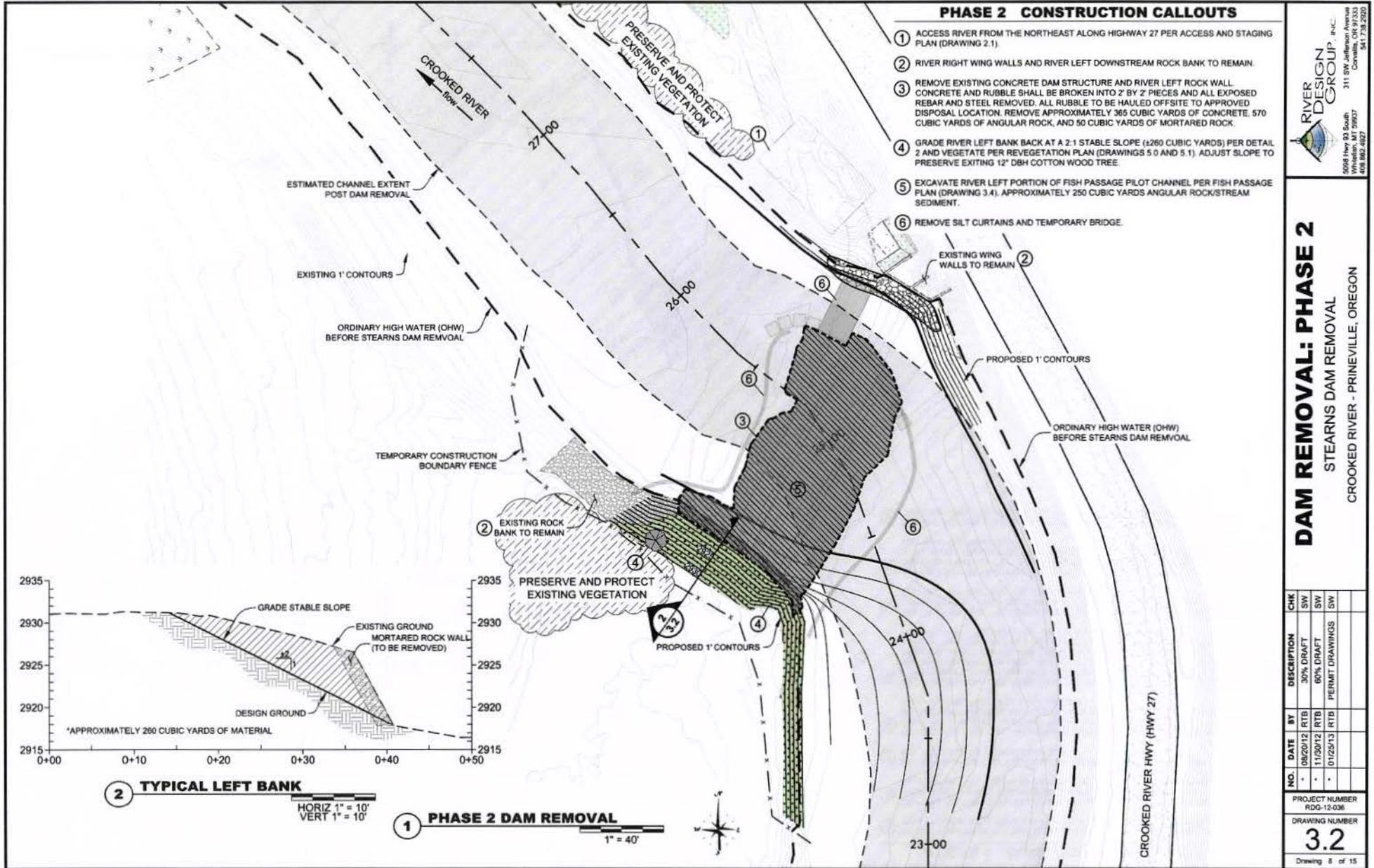
**SITE ACCESS DETAILS**  
 STEARNS DAM REMOVAL  
 CROOKED RIVER - PRINEVILLE, OREGON

NO.	DATE	BY	DESCRIPTION	CHK
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2	11/03/12	RTB	60% DRAFT	SW
3	01/25/13	RTB	PERMIT DRAWINGS	SW

PROJECT NUMBER  
RDG-12-036

DRAWING NUMBER  
**2.2**

Drawing 5 of 15

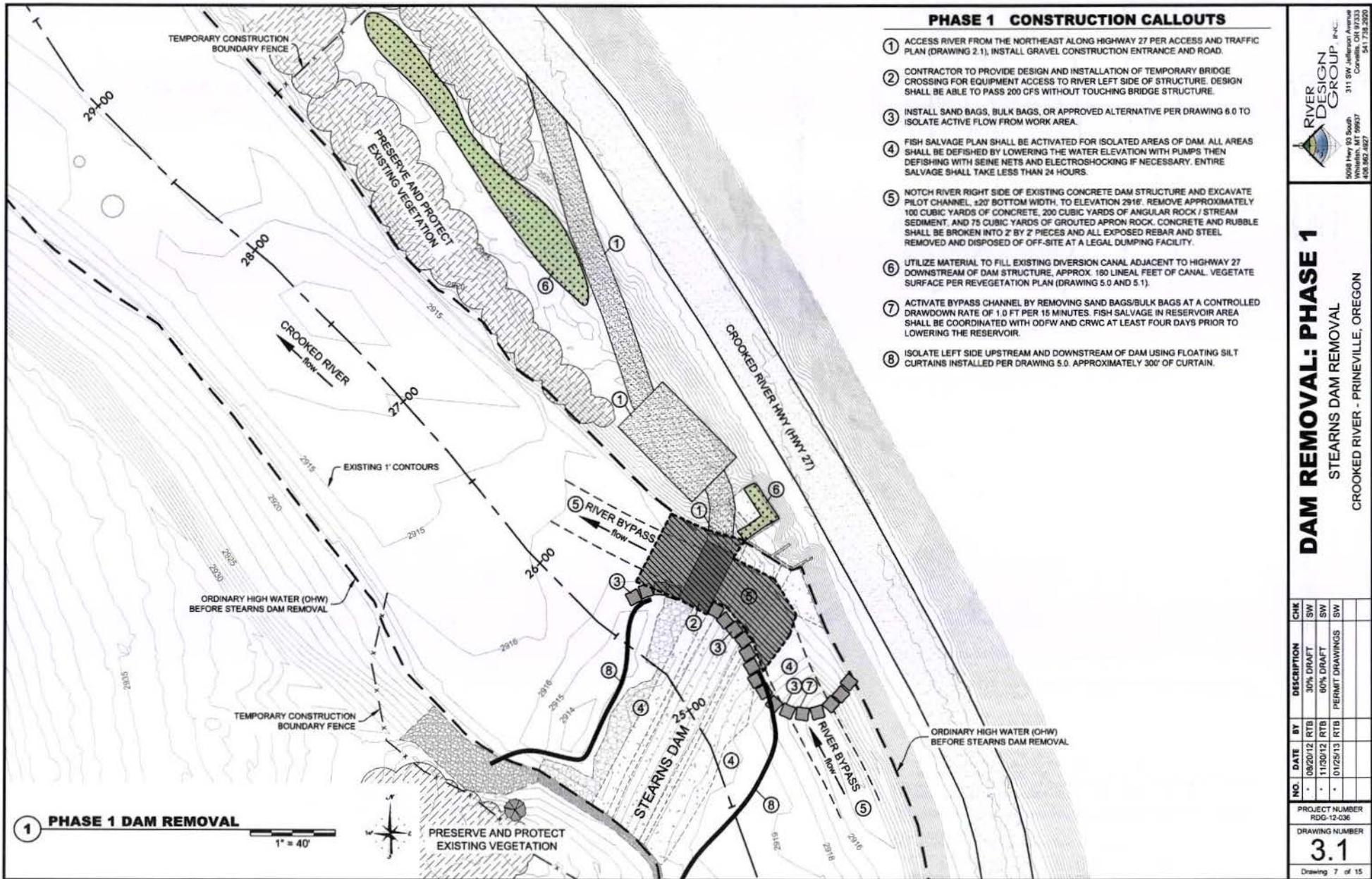


RIVER DESIGN GROUP, P.C.  
311 SW Jefferson Avenue  
Corvallis, OR 97333  
541.738.2920

**DAM REMOVAL: PHASE 2**  
**STEARNS DAM REMOVAL**  
CROOKED RIVER - PRINEVILLE, OREGON

NO.	DATE	BY	DESCRIPTION	CHK
1	08/20/12	RTB	30% DRAFT	SW
2	11/30/12	RTB	60% DRAFT	SW
3	01/25/13	RTB	PERMIT DRAWINGS	SW

PROJECT NUMBER: RDG-12-036  
DRAWING NUMBER: **3.2**  
Drawing 8 of 15



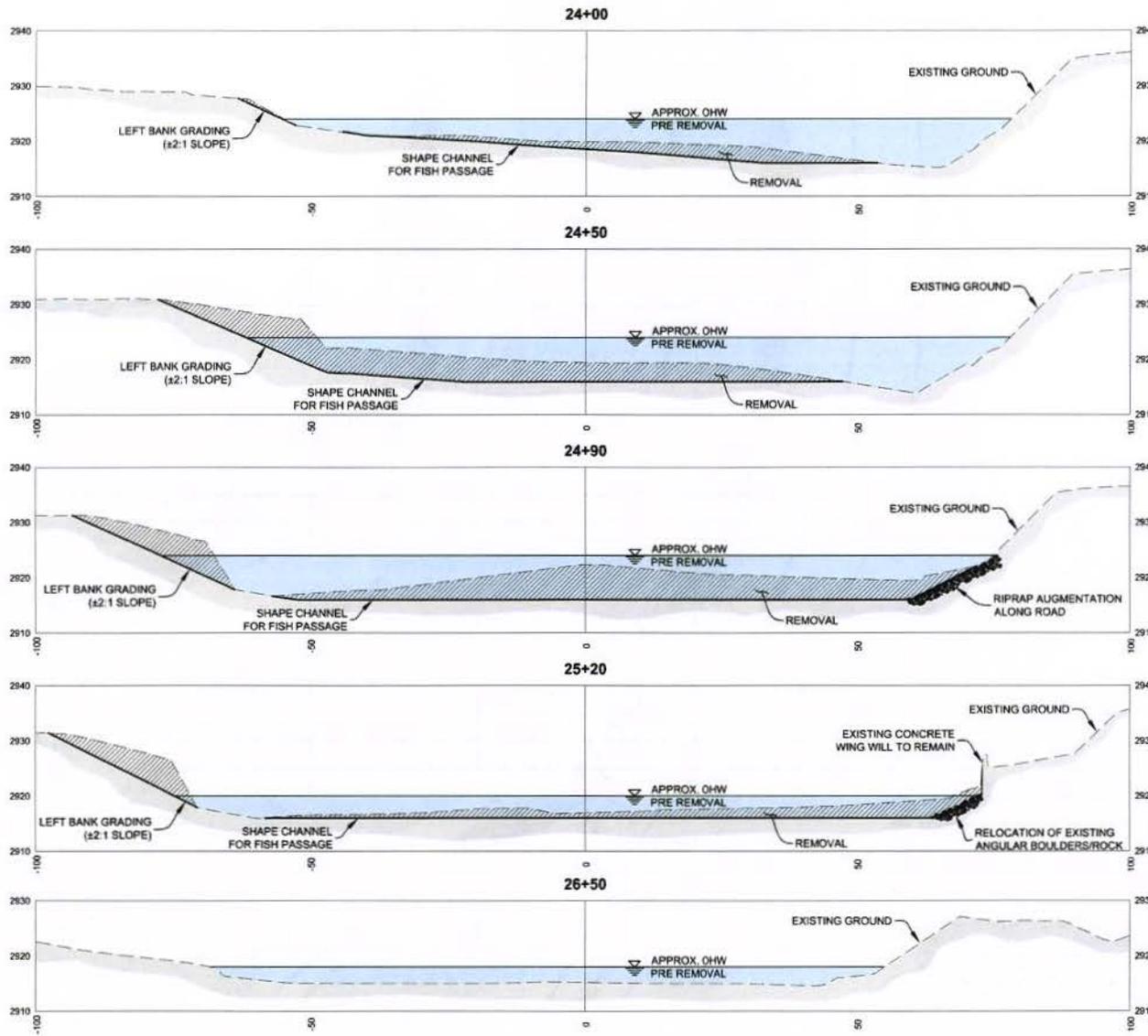
**PHASE 1 CONSTRUCTION CALLOUTS**

- ① ACCESS RIVER FROM THE NORTHEAST ALONG HIGHWAY 27 PER ACCESS AND TRAFFIC PLAN (DRAWING 2.1), INSTALL GRAVEL CONSTRUCTION ENTRANCE AND ROAD.
- ② CONTRACTOR TO PROVIDE DESIGN AND INSTALLATION OF TEMPORARY BRIDGE CROSSING FOR EQUIPMENT ACCESS TO RIVER LEFT SIDE OF STRUCTURE. DESIGN SHALL BE ABLE TO PASS 200 CFS WITHOUT TOUCHING BRIDGE STRUCTURE.
- ③ INSTALL SAND BAGS, BULK BAGS, OR APPROVED ALTERNATIVE PER DRAWING 6.0 TO ISOLATE ACTIVE FLOW FROM WORK AREA.
- ④ FISH SALVAGE PLAN SHALL BE ACTIVATED FOR ISOLATED AREAS OF DAM. ALL AREAS SHALL BE DEFISHED BY LOWERING THE WATER ELEVATION WITH PUMPS THEN DEFISHING WITH SEINE NETS AND ELECTROSHOCKING IF NECESSARY. ENTIRE SALVAGE SHALL TAKE LESS THAN 24 HOURS.
- ⑤ NOTCH RIVER RIGHT SIDE OF EXISTING CONCRETE DAM STRUCTURE AND EXCAVATE PILOT CHANNEL, ±20' BOTTOM WIDTH, TO ELEVATION 2916'. REMOVE APPROXIMATELY 100 CUBIC YARDS OF CONCRETE, 200 CUBIC YARDS OF ANGULAR ROCK / STREAM SEDIMENT, AND 75 CUBIC YARDS OF GROUTED APRON ROCK. CONCRETE AND RUBBLE SHALL BE BROKEN INTO 2' BY 2' PIECES AND ALL EXPOSED REBAR AND STEEL REMOVED AND DISPOSED OF OFF-SITE AT A LEGAL DUMPING FACILITY.
- ⑥ UTILIZE MATERIAL TO FILL EXISTING DIVERSION CANAL ADJACENT TO HIGHWAY 27 DOWNSTREAM OF DAM STRUCTURE. APPROX. 180 LINEAL FEET OF CANAL. VEGETATE SURFACE PER REVEGETATION PLAN (DRAWING 5.0 AND 5.1).
- ⑦ ACTIVATE BYPASS CHANNEL BY REMOVING SAND BAGS/BULK BAGS AT A CONTROLLED DRAWDOWN RATE OF 1.0 FT PER 15 MINUTES. FISH SALVAGE IN RESERVOIR AREA SHALL BE COORDINATED WITH ODPW AND CRWC AT LEAST FOUR DAYS PRIOR TO LOWERING THE RESERVOIR.
- ⑧ ISOLATE LEFT SIDE UPSTREAM AND DOWNSTREAM OF DAM USING FLOATING SILT CURTAINS INSTALLED PER DRAWING 5.0. APPROXIMATELY 300' OF CURTAIN.



**DAM REMOVAL: PHASE 1**  
**STEARNS DAM REMOVAL**  
 CROOKED RIVER - PRINEVILLE, OREGON

NO.	DATE	BY	DESCRIPTION	CHK
1	08/20/12	RTB	30% DRAFT	SW
2	11/30/12	RTB	60% DRAFT	SW
3	01/25/13	RTB	PERMIT DRAWINGS	SW
PROJECT NUMBER RDG-12-036				
DRAWING NUMBER <b>3.1</b>				
Drawing 7 of 15				



UPSTREAM



DOWNSTREAM

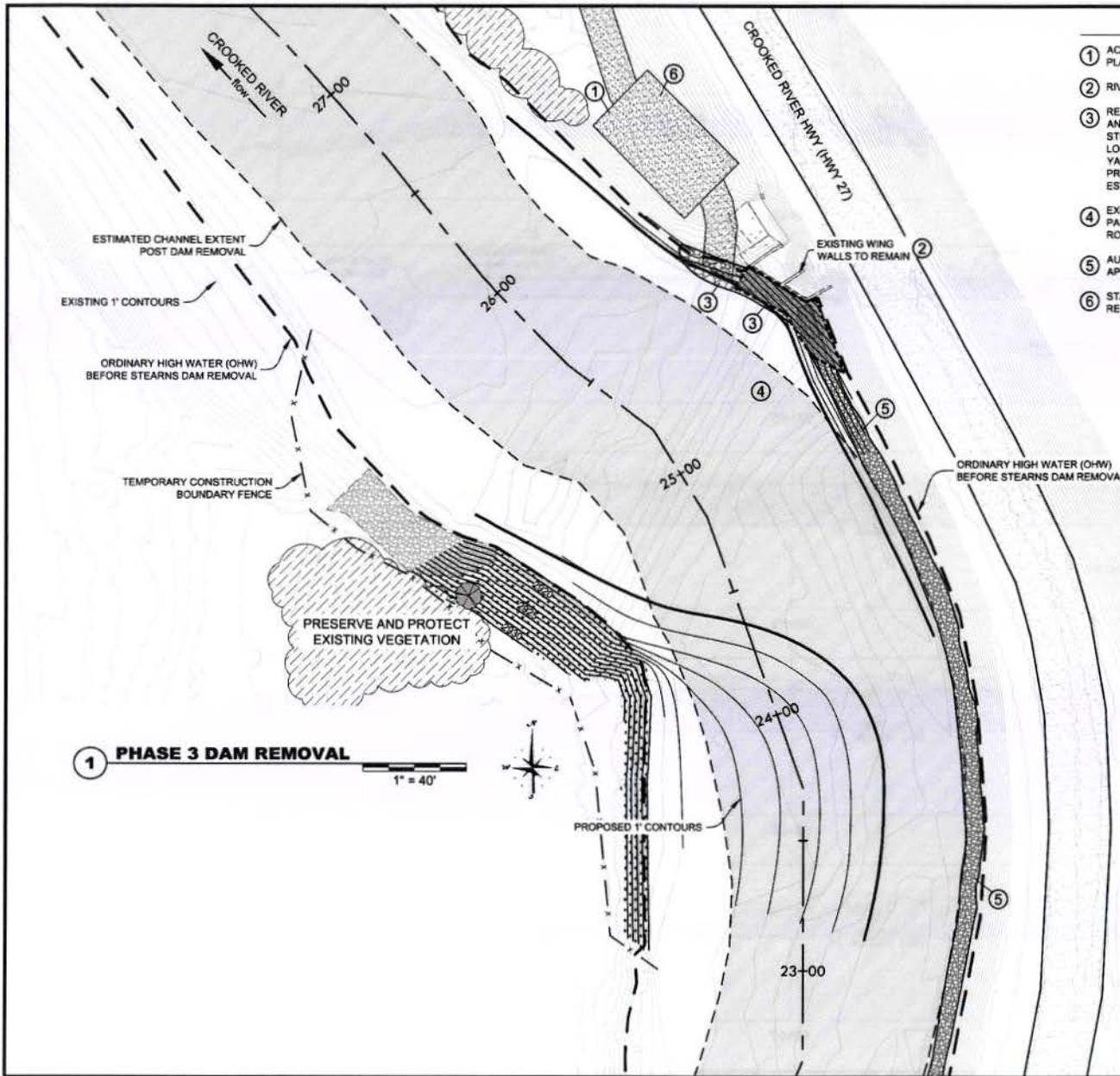


**RIVER CROSS-SECTIONS**  
**STEARNS DAM REMOVAL**  
 CROOKED RIVER - PRINEVILLE, OREGON

NO.	DATE	BY	DESCRIPTION	CHK
1	06/20/12	RTB	30% DRAFT	SW
2	11/20/12	RTB	60% DRAFT	SW
3	01/25/13	RTB	PERMIT DRAWINGS	SW

PROJECT NUMBER  
RDG-12-036

DRAWING NUMBER  
**3.4**  
Drawing 10 of 15



**PHASE 3 CONSTRUCTION CALLOUTS**

- ① ACCESS RIVER FROM THE NORTHEAST ALONG HIGHWAY 27 PER ACCESS AND STAGING PLAN (DRAWING 2.1).
- ② RIVER RIGHT WING WALLS TO REMAIN, ENSURE CONCRETE EDGES ARE SMOOTH.
- ③ REMOVE REMAINING PORTION OF EXISTING CONCRETE DAM STRUCTURE. CONCRETE AND RUBBLE SHALL BE BROKEN INTO 2' BY 2' PIECES AND ALL EXPOSED REBAR AND STEEL REMOVED. ALL RUBBLE TO BE HAULED OFFSITE TO APPROVED DISPOSAL LOCATION. REMOVE APPROXIMATELY 40 CUBIC YARDS OF CONCRETE, AND 85 CUBIC YARDS OF ANGULAR ROCK. REPOSITION EXISTING ANGULAR BOULDERS/ROCK TO PROTECT EXPOSED BANK AND BLEND INTO REMAINING CONCRETE STRUCTURE. ESTIMATED QUANTITY 50 CUBIC YARDS.
- ④ EXCAVATE RIVER RIGHT PORTION OF FISH PASSAGE PILOT CHANNEL PER FISH PASSAGE PLAN (DRAWING 3.4). APPROXIMATELY 250 CUBIC YARDS ANGULAR ROCK/STREAM SEDIMENT.
- ⑤ AUGMENT EXISTING RIP RAP BANK ALONG HIGHWAY 27 TOE PER DRAWING 4.0. APPROXIMATELY 400 CUBIC YARDS OF CLASS 200 RIP RAP.
- ⑥ STAGING AREA AND ACCESS ROUTE TO BE RESTORED TO ORIGINAL CONDITIONS BY REMOVING GRAVELS AND PLANTING WITH NATIVE PLANTS.

**1 PHASE 3 DAM REMOVAL**



**DAM REMOVAL: PHASE 3**  
**STEARNS DAM REMOVAL**  
 CROOKED RIVER - PRINEVILLE, OREGON

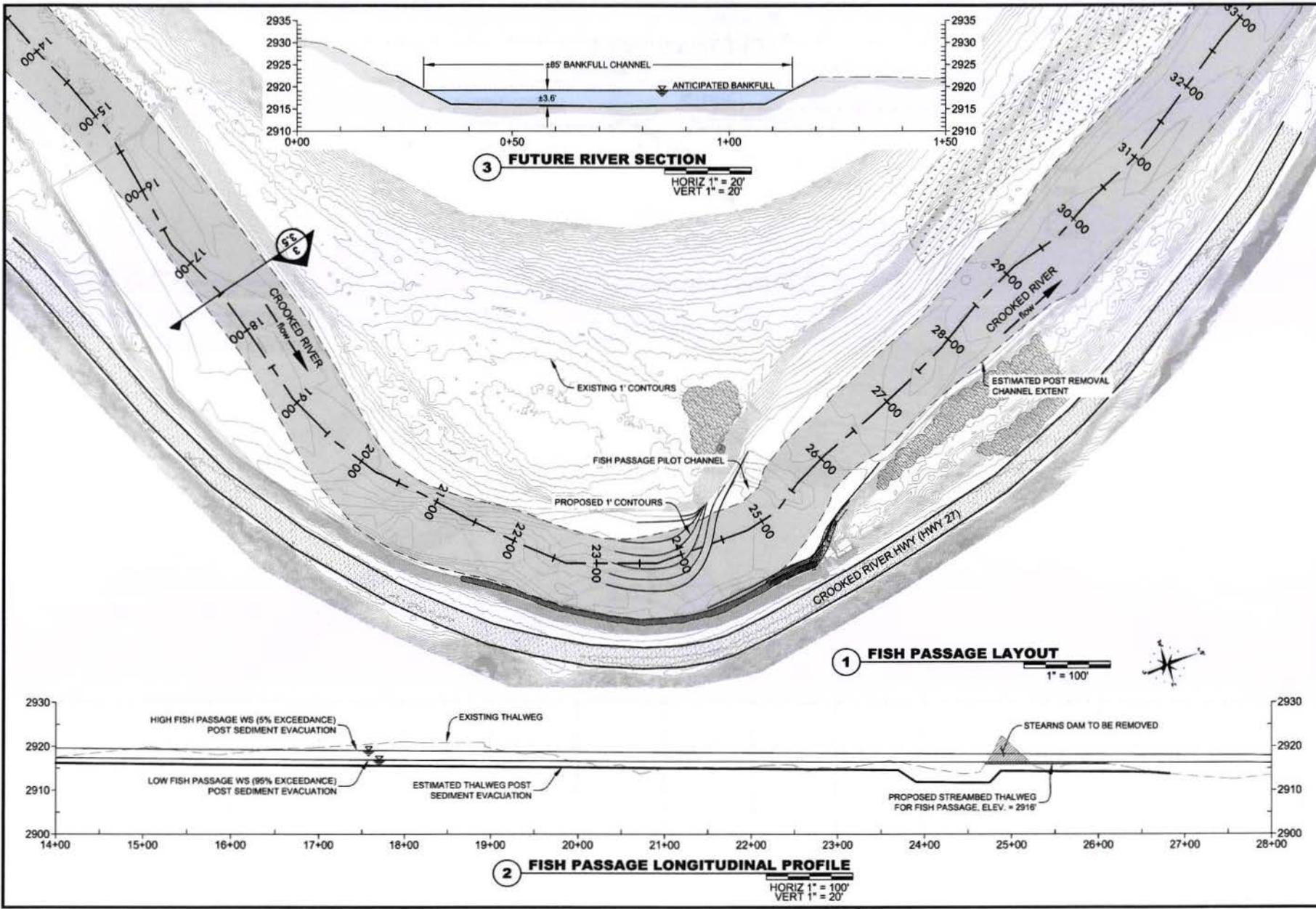
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•	08/20/12	RTB	30% DRAFT	SW
•	11/30/12	RTB	60% DRAFT	SW
•	01/25/13	RTB	PERMIT DRAWINGS	SW

PROJECT NUMBER  
RDG-12-036

DRAWING NUMBER  
**3.3**

Drawing 9 of 15





**RIVER DESIGN GROUP, INC.**  
 5090 Hwy 93 South  
 Corvallis, OR 97331  
 541.862.4827

**FUTURE FISH PASSAGE CONDITIONS**  
 STEARNS DAM REMOVAL  
 CROOKED RIVER - PRINEVILLE, OREGON

NO.	DATE	BY	DESCRIPTION	CHK
1	08/20/13	RTB	30% DRAFT	SW
2	11/30/13	RTB	60% DRAFT	SW
3	01/25/13	RTB	PERMIT DRAWINGS	SW

PROJECT NUMBER  
RDG-12-036

DRAWING NUMBER  
**3.5**

Drawing 11 of 15

## REVEGETATION NOTES

### GENERAL NOTES

- ALL PLANT MATERIAL MUST BE CLASSIFIED AS NATIVE FROM THIS REGION AND NON-CLONAL IN ORIGIN. ALL NATIVE PLANT MATERIAL TO BE USED IN PLANTING AREAS TO ORIGINATE FROM PARENT SOURCES WITHIN 50 MILES OF SITE. SEED SOURCE MUST BE AS LOCAL AS POSSIBLE.
- INSTALL TREE AND SHRUB SPECIES IN RANDOM GROUPINGS, AVOIDING LINEAR ROWS OR AS DIRECTED IN FIELD, WITHIN CLOSE PROXIMITY OF EXISTING PLANTINGS OR NEWLY PLANTED MATERIAL. THE INTENT IS TO REPLICATE NATURAL PLANT COMMUNITIES BY PROVIDING A LAYERED UNDERSTORY CANOPY WITH A MIXTURE OF TREES.
- THE PLANTING AND SEEDING AREA IS TO COVERED WITH TOPSOIL. IF THIS TOPSOIL IS DEEMED BY PROJECT ENGINEER TO BE INADEQUATE, IMPORTED MATERIAL SHALL BE USED TO POCKET PLANT THE PLANTS IN UPLAND, RIPARIAN, EMERGENT, AND WETLAND SITES.
- THOROUGHLY WATER ALL PLANTS IMMEDIATELY FOLLOWING INSTALLATION TO PROVIDE MAXIMUM SOIL CONTACT AND TO ELIMINATE AIR POCKETS. AFTER PLANTING EACH PLANT, PROVIDE A TWO (2) INCH LAYER OF MULCH AROUND DISTURBED AREA.

### WILLOW STAKE PLANTING

- WILLOW STAKES SHALL HAVE MINIMUM DIAMETER OF 1.5" AND MINIMUM LENGTH 4'. THE STAKES SHALL BE CUT FROM NEARBY PLANTS TO ENSURE COMPATIBILITY IF POSSIBLE, OR LOCAL ECOTYPES. STAKES SHALL HAVE SIDE BRANCHES CLEANLY REMOVED WITH BARK INTACT, BASAL ENDS CUT AT AN ANGLE AND TOPS CUT SQUARE.
- STAKES SHALL BE CUT AND INSTALLED ON THE SAME DAY.
- STAKES SHALL BE INSTALLED WHILE IN THE DORMANT STAGE, NOVEMBER 1 TO FEBRUARY 15 IN THE ROGUE VALLEY, UNLESS IRRIGATION IS PROVIDED. STAKES SHOULD BE DEEP ENOUGH TO CONTACT THE LOW SUMMER WATER LEVEL.
- STAKES SHALL BE INSTALLED ON 2' CENTERS WITH 80% OF THE STAKE LENGTH INSTALLED INTO THE GROUND WITH FIRM SOIL IN CONTACT WITH THE WILLOW STAKE. A PIECE OF REBAR SHOULD BE USED AS A PILOT HOLE FOR THE STAKE.
- TAMP STAKES INTO GROUND WITH A DEAD BLOW HAMMER (HAMMER HEAD FILLED WITH SHOT OR SAND).
- WILLOW CLUMPS ARE PREFERRED TO LIVE STAKES ON THE LOWER HALF OF THE STREAMBANK. INSTALL PER NRCS PLANT MATERIALS TECHNICAL NOTE 42.
- ALTERNATE INSTALLATION PROCEDURES MAY BE USED UPON CONSULTATION WITH RIVER DESIGN GROUP PROJECT ENGINEER.

### WILLOW CLUMP PLANTING

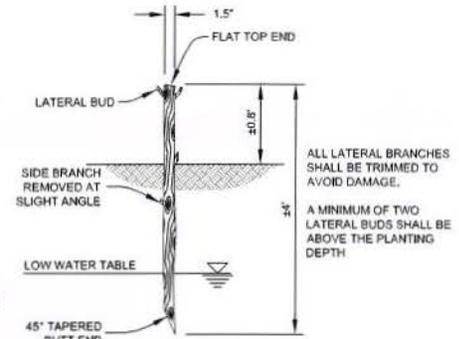
- WILLOW CLUMPS SHALL BE SALVAGED FROM THE EXCAVATED CHANNEL AREA. FILL IN ANY HOLES WHERE DONOR CLUMPS ARE EXTRACTED IF OUTSIDE THE CHANNEL EXCAVATION LIMITS.
- WILLOW CLUMP PLANTINGS SHALL FOLLOW THE NATURAL RESOURCE CONSERVATION SERVICE (NRCS) PLANT MATERIALS TECHNICAL NOTE 42 (2003).
- LOCATE AND UTILIZE YOUNG AND VIGOROUS (8' - 20' TALL) WILLOW CLUMPS IN CONSULTATION WITH THE PROJECT ENGINEER. DIG THE WILLOW CLUMP UTILIZING A TRACKHOE BUCKET AND OBTAIN AT LEAST 75% OF THE ROOT MASS. DO NOT ALLOW CLUMPS TO SIT MORE THEN 1 HOUR OR DRY OUT. TRANSPORT CLUMPS TO PLANTING SITE.
- DIG A HOLE UTILIZING THE TRACKHOE BUCKET TO THE SAME SIZE AND SHAPE OF THE CLUMP. HOLE SHALL BE TO A DEPTH JUST ABOVE THE STANDING WATER TABLE AND NOT INTO THE WATER TABLE. PACK THE SOIL FIRMLY IN THE EXCAVATED HOLE UPON INSTALLATION.
- AFTER INSTALLATION, CUT OFF APPROXIMATELY 33%-50% OF THE WILLOW TOPS STRAIGHT ACROSS. WILLOW CLUMPS SHALL BE PLACED APPROXIMATELY 15 FEET APART.

### SOD & SOIL SALVAGE

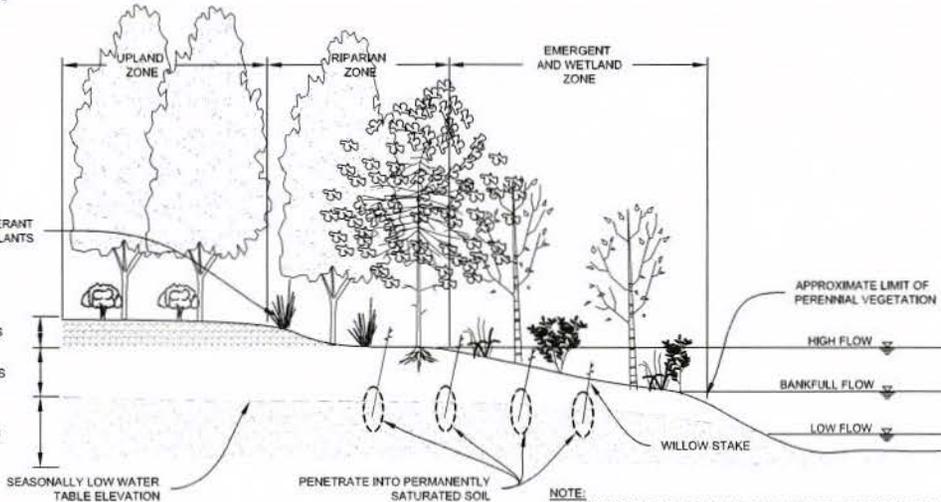
FLOODPLAIN SOD AND SOIL SHALL BE SALVAGED TO THE MAXIMUM EXTENT PRACTICABLE IN AREAS THAT ARE TO BE DISTURBED. SOD AND SOIL SHALL BE TRANSPORTED AND STOCKPILED AT A CONVENIENT LOCATION DETERMINED BY THE PROJECT ENGINEER AND CLEARLY FLAGGED. STOCKPILE SHALL BE IRRIGATED ON A REGULAR BASIS AS NECESSARY TO MAINTAIN MOISTURE IN THE SOD AND SOIL. THE SOD AND SOIL SHALL BE USED TO COVER DISTURBED AREAS OR AS DIRECTED BY THE FIELD ENGINEER TO PREPARE AREAS FOR PLANTING. TRANSPLANTED SOD AND SOIL SHALL BE TRACKED OVER WITH AN EXCAVATOR AND GAPS BETWEEN SOD STRIPS SHALL BE FILLED WITH NATIVE SOILS AND SEEDED WITH A NATIVE SEED MIX.

### EROSION CONTROL SEEDING

ALL DISTURBED AREAS SHALL BE BROADCAST SEEDED WITH AN 'EROSION CONTROL' SEED MIX AND COVERED WITH STERILE STRAW. AREAS SHALL BE BROADCAST SEEDED WITH A SEED MIX CONTAINING NATIVE SEED (SEE RIPARIAN REVEGETATION SCHEDULE THIS SHEET) AND STERILE CEREAL RYES. THIS SHALL BE ACCOMPLISHED WITH A HAND/BROADCAST SEEDING METHOD AND THE SEED SHALL BE RAKED ONE QUARTER (.25) INCH INTO THE SOIL AND COMPACTED WITH A 5,000 POUND OR LESS TRACKED VEHICLE AND THEN COVERED WITH STERILE STRAW. THE MINIMUM APPLICATION RATE WILL BE THE MANUFACTURER'S RATE OR 30 LBS PER ACRE. CONTRACTOR WILL PROVIDE SEED MIX CONSTITUENTS TO PROJECT INSPECTOR FOR APPROVAL.



**2 WILLOW STAKING DETAIL**  
NOT TO SCALE



**1 PLANTING GUIDELINES**  
NOT TO SCALE

### RIPARIAN REVEGETATION SCHEDULE

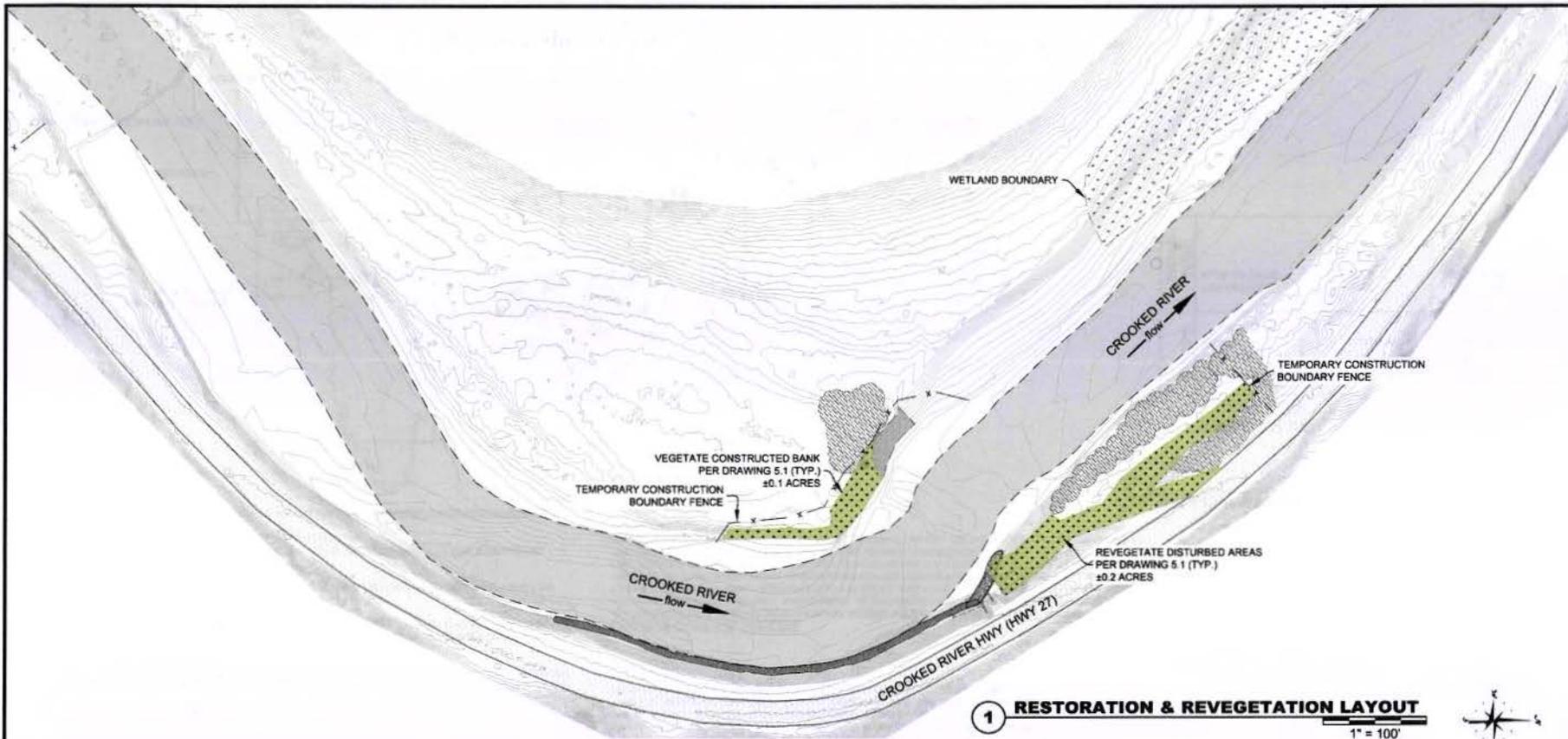
	COMMON NAME	SIZE	INSTALLATION
SHRUBS	RED-OSIER DOGWOOD	2 TO 5 GALLON	±60/ACRE
	SNOW BERRY	2 TO 5 GALLON	±60/ACRE
	ROSE	1 GALLON	±60/ACRE
NATIVE SEED	RED FESCUE	SEED	7 LBS/ACRE
	BLUE WILDRYE	SEED	15 LBS/ACRE



**REVEGETATION NOTES**  
STEARNS DAM REMOVAL  
CROOKED RIVER - PRINEVILLE, OREGON

NO.	DATE	BY	DESCRIPTION	CHK	SW
1	01/25/13	RTB			

PROJECT NUMBER: RDG-12-036  
DRAWING NUMBER: **5.1**  
Drawing 14 of 15



**1 RESTORATION & REVEGETATION LAYOUT**  
1" = 100'

**SITE RESTORATION NOTES**

ALL DAMAGED OR DISTURBED STREAMBANKS ARE TO BE RESTORED TO A NATURAL SLOPE PATTERN AND PROFILE SUITABLE FOR ESTABLISHMENT OF PERMANENT WOODY VEGETATION.

ALL DISTURBED STREAMBANK VEGETATION IS TO BE REPLACED. USE A VARIETY OF SPECIES NATIVE TO THE PROJECT ARE PER DRAWING 5.1, REPLANT AND RESEED EACH AREA REQUIRING REVEGETATION BEFORE THE END OF THE FIRST PLANTING SEASON FOLLOWING CONSTRUCTION.

NO PESTICIDES, INCLUDING HERBICIDES, WILL BE ALLOWED WITHIN 150 FEET OF WATERS OF THE STATE. MECHANICAL, HAND, OR OTHER METHODS MAY BE USED TO CONTROL WEEDS AND UNWANTED VEGETATION. FERTILIZER APPLICATION WITHIN 50 FEET OF ANY STREAM CHANNEL WILL NOT BE AUTHORIZED.

STOCKPILE ALL WOODY MATERIAL, NATIVE VEGETATION, TOPSOIL, AND NATIVE CHANNEL MATERIAL DISPLACED BY CONSTRUCTION, AND USE AS APPROPRIATE FOR SITE RESTORATION ACTIVITIES. THE RESTORED SITE SHOULD SHOW THE FOLLOWING FEATURES, AS APPROPRIATE, AT THE END OF THE MONITORING PERIOD: BARE SOIL SPACES SHALL APPROXIMATE THE SIZE AND DISPERSAL PATTERN OF PRE-EXISTING CONDITIONS; SOIL MOVEMENT, SUCH AS ACTIVE RILLS OR GULLIES AND SOIL DEPOSITION AROUND PLANTS OR IN SMALL BASINS, SHOULD BE ABSENT OR SLIGHT AND LOCAL.

PRE-PROJECT ERODED AREAS SHOULD BE STABILIZED. PLANT MATERIAL, E.G. LEAVES, BRANCHES, ETC., SHOULD BE WELL DISTRIBUTED AND EFFECTIVE IN PROTECTING THE SOIL WITH FEW OR NO LITTER DAMS PRESENT. NATIVE WOODY AND HERBACEOUS VEGETATION, AS APPROPRIATE FOR THE SITE CONDITIONS, SHOULD BE PRESENT AND WELL DISTRIBUTED ACROSS THE SITE PER DRAWING 5.1. VEGETATION STRUCTURE SHOULD RESULT IN ROOTING THROUGHOUT THE AVAILABLE SOIL PROFILE. PLANTS SHOULD HAVE NORMAL, VIGOROUS GROWTH FORM, AND A HIGH PROBABILITY OF REMAINING VIGOROUS, HEALTHY AND DOMINANT OVER UNDESIRABLE COMPETING VEGETATION. STREAMBANKS SHALL HAVE LESS THAN 5% EXPOSED SOIL WITH MARGINS ANCHORED BY DEEPLY ROOTED VEGETATION OR COARSE-GRAINED ALLUVIAL MATERIAL.

TEMPORARY ACCESS ROUTES AND OTHER AREAS DISTURBED DURING CONSTRUCTION WILL BE REHABILITATED TO SIMILAR OR BETTER THAN PRE-WORK CONDITIONS. AT A MINIMUM SITE RECLAMATION ACTIVITIES SHALL RESULT IN PLANT DISTRIBUTION AND DENSITY THAT MATCH PRE-PROJECT CONDITIONS IN ACCORDANCE WITH DRAWING 5.1.

SHORT-TERM STABILIZATION MEASURES WILL BE IMPLEMENTED UNTIL PERMANENT EROSION CONTROL MEASURES (PLANT RESTORATION) ARE EFFECTIVE. RECLAMATION PLANTING PER DRAWING 5.1 SHALL BE COMPLETED NO LATER THAN SPRING PLANTING SEASON OF THE YEAR FOLLOWING COMPLETION OF CONSTRUCTION.

**RIVER DESIGN GROUP, P.C.**  
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**SITE RESTORATION & REVEGETATION**  
STEARNS DAM REMOVAL  
CROOKED RIVER - PRINEVILLE, OREGON

NO.	DATE	BY	DESCRIPTION	CHK
1	01/25/13	RTB	PERMIT DRAWINGS	SW

PROJECT NUMBER  
RDG-12-036

DRAWING NUMBER  
**5.0**

Drawing 13 of 15

**EROSION CONTROL NOTES**

AT A MINIMUM, EROSION CONTROL MEASURES SHOWN ON THIS PLAN SHALL BE IN PLACE PRIOR TO COMMENCING CONSTRUCTION. DURING CONSTRUCTION, ALL EROSION CONTROLS SHALL BE INSPECTED BY THE PROJECT INSPECTOR DAILY TO ENSURE THEY ARE WORKING ADEQUATELY.

(1) IF INSPECTION SHOWS THAT THE EROSION CONTROLS ARE INEFFECTIVE, WORK CREWS WILL BE MOBILIZED IMMEDIATELY TO MAKE REPAIRS, INSTALL REPLACEMENTS, OR INSTALL ADDITIONAL CONTROLS AS NECESSARY.

(2) SEDIMENT MUST BE REMOVED FROM EROSION CONTROLS ONCE IT HAS REACHED 1/3 OF THE EXPOSED HEIGHT OF THE CONTROL.

CONTRACTOR SHALL PROVIDE MEASURES TO PREVENT MOVEMENT OF SOIL INTO WATERWAYS OR WETLANDS, E.G. FILTER BAGS, SEDIMENT TRAPS OR CATCH BASINS, VEGETATIVE STRIPS, BERMS, JERSEY BARRIERS, FIBER BLANKETS, BONDED FIBER MATRICES, GEOTEXTILES, MULCHES OR COMPOST, WATTLES AND SEDIMENT FENCES.

CONTRACTOR SHALL PROVIDE MEASURES TO PREVENT STOCKPILE EROSION DURING RAIN EVENTS OR WHEN THE STOCKPILE SITE IS NOT MOVED OR RESHAPED FOR MORE THAN 48 HOURS, BY SURROUNDING PILES WITH COMPOST BERMS, COVERING PILES WITH IMPERVIOUS MATERIALS OR OTHER EQUALLY EFFECTIVE METHODS.

CONTRACTOR SHALL PROVIDE MEASURES TO PREVENT CONSTRUCTION VEHICLES FROM TRACKING SEDIMENT OFFSITE OR ONTO ROADWAYS WHERE IT IS SUBJECT TO WASHING INTO STORM DRAINS, WATERWAYS, OR WETLANDS, INCLUDING GRAVEL ACCESS PADS, WHEEL WASH STATIONS, OR OTHER EQUALLY EFFECTIVE METHODS.

CONTRACTOR SHALL INSTALL REMOVABLE PADS OR MATS TO PREVENT SOIL COMPACTION IN ALL TEMPORARY CONSTRUCTION ACCESS POINTS AND STAGING AREAS IN RIPARIAN OR WETLAND AREAS.

CONTRACTOR SHALL PREPARE AND HAVE ON-SITE A SPILL CONTAINMENT AND CONTROL PLAN WITH NOTIFICATION PROCEDURES, EQUIPMENT, SPECIFIC CLEANUP AND DISPOSAL INSTRUCTIONS FOR ALL PRODUCTS USED ON SITE.

CONTRACTOR SHALL HAVE AN EMERGENCY SUPPLY OF SEDIMENT CONTROL MATERIALS ON HAND (SILT FENCE, STRAW BALES, ETC.), AN OIL ADSORBING FLOATING BOOM, AND ABSORBENT PADS.

STATIONARY POWER EQUIPMENT, SUCH AS GENERATORS, WITHIN 150 FEET OF THE WATER SHALL BE DIAPERED TO PREVENT LEAKS.

ALL POWER EQUIPMENT WITHIN 150 FEET OF THE WATER SHALL BE INSPECTED DAILY FOR FLUID LEAKS AND REPAIRED. THE CONTRACTOR MUST KEEP DAILY INSPECTION REPORTS IN A DIARY.

ALL EQUIPMENT TO REMAIN WITHIN THE BOUNDS OF THE CONSTRUCTION STAGING AREA, ACCESS ROADS, OR PROJECT CONSTRUCTION AREA.

DUST CONTROL: ALL HEAVY USE AREAS ARE TO BE MAINTAINED IN A CONDITION THAT MINIMIZES DUST ON THE PROJECT SITE AND THE CONTRACTOR SHALL HAVE ACCESS TO A WATER TRUCK FOR DUST MANAGEMENT IF REQUIRED. THE PROJECT INSPECTOR WILL NOTIFY THE CONTRACTOR TO MOBILIZE DUST CONTROL ACTIVITIES (INCLUDING WATERING) IF CONDITIONS REQUIRE.

**BULK BAG NOTES**

BULK BAGS ARE ALSO CALLED FLEXIBLE INTERMEDIATE BULK CONTAINERS (FIBC) THAT CAN BE CUSTOM MADE FROM VARIOUS FABRIC. THE FOLLOWING REQUIREMENTS ARE NECESSARY FOR THE RIVER ENVIRONMENT:

BULK BAGS SHALL BE CONSTRUCTED OF 8 oz WOVEN FABRIC, 1200 HOUR UV RESISTANT WITH SEWN LIFTING LOOPS. WHEN FILLED WITH NATIVE RIVER SAND AND GRAVEL, THE BAGS ARE APPROXIMATELY 6' WIDE x 6' LONG x 4' HIGH.

BULK BAGS SHALL BE CAREFULLY PLACED TO ENSURE NO TEARING OR CUTTING OF THE BAGS OCCURS.

BULK BAGS SHALL BE PLACED USING A HYDRAULIC CRANE OR TRACKHOE USING LIFTING BARS AND STEEL CABLES TO EQUALIZE LOAD ON LIFTING LOOPS.

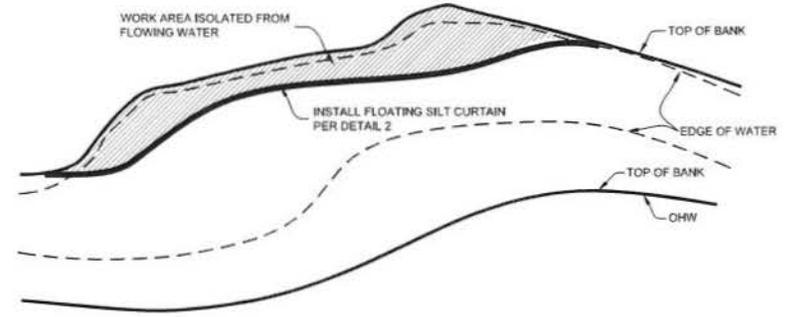


NO.	DATE	BY	DESCRIPTION	CHK
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3	01/25/13	RTB	PERMIT DRAWINGS	SW

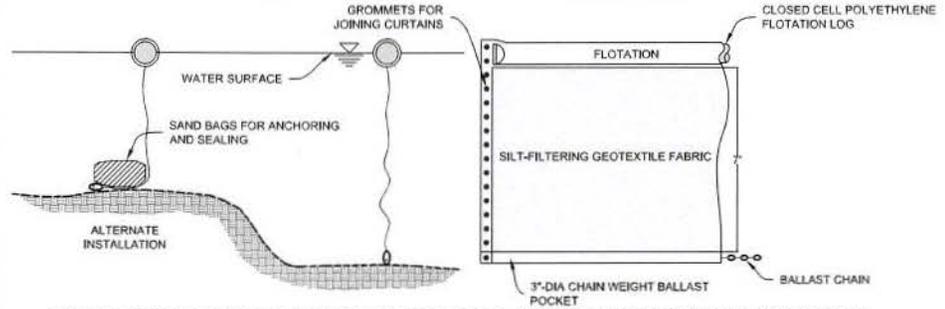
PROJECT NUMBER  
RDG-12-036

DRAWING NUMBER  
**6.0**

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**1 WORK AREA ISOLATION - TYPICAL**  
NOT TO SCALE

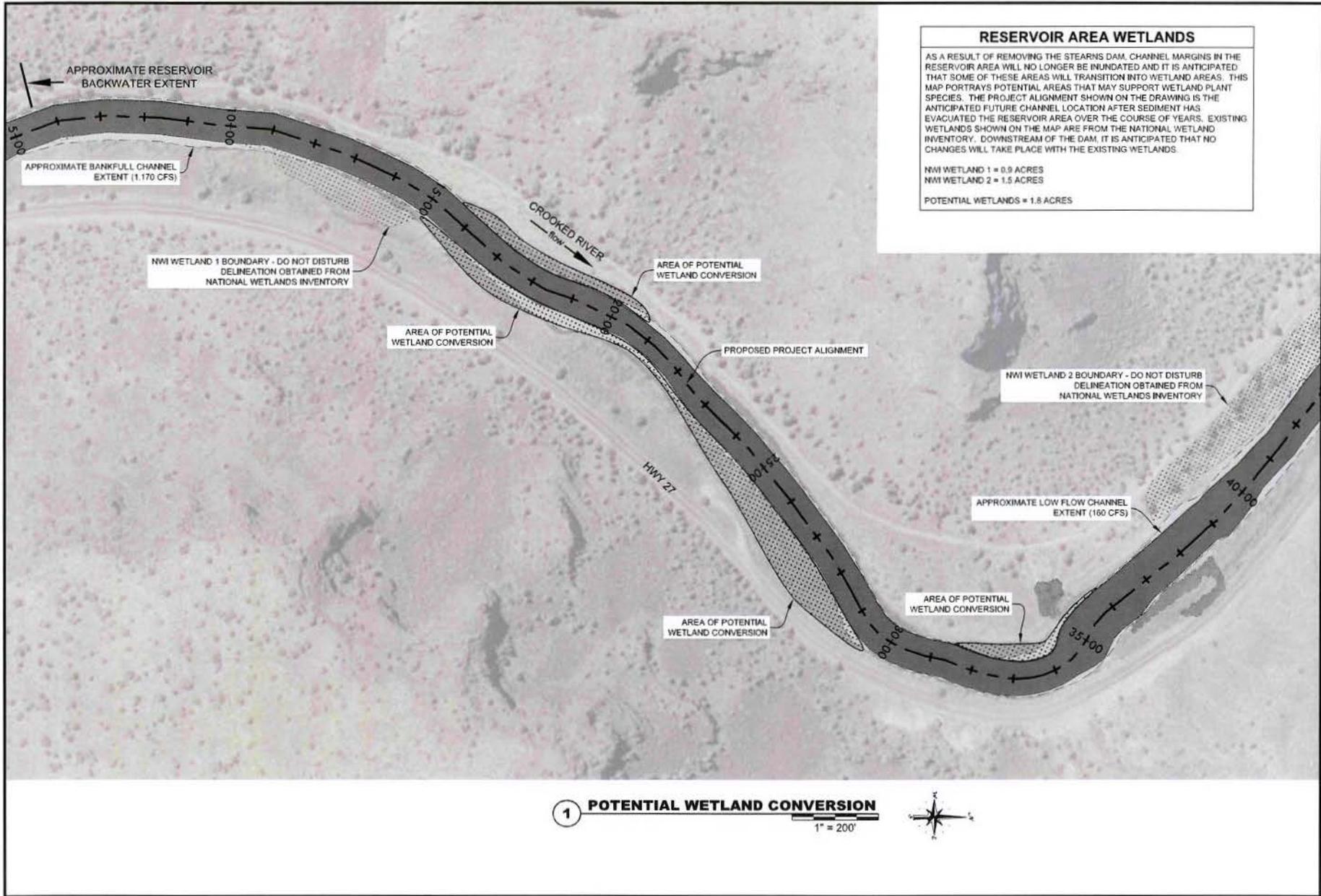


FLOATING SILT CURTAIN SHALL BE A 'LAYFIELD FSC 13' OR APPROVED EQUAL. THE BODY OF THE FLOATING SILT CURTAIN IS MADE FROM A STRONG, HIGH-FILTRATION FABRIC THAT RETAINS FINE SILTS AND SEDIMENTS ON-SITE. THE FLOAT AND BOTTOM SLEEVE ARE CONSTRUCTED FROM A UV-STABLE, HIGH-STRENGTH POLYETHYLENE (I.E. RIPSTOP-TYPE MATERIAL). THE FLOATING SILT CURTAIN IS INCREASED IN LENGTH BY JOINING ADDITIONAL SECTIONS OF CURTAIN, WHICH TYPICALLY COMES IN 50' LENGTHS.

**2 FLOATING SILT CURTAIN**



EXAMPLE OF FLOATING SILT CURTAIN PLACEMENT



**RESERVOIR AREA WETLANDS**

AS A RESULT OF REMOVING THE STEARNS DAM, CHANNEL MARGINS IN THE RESERVOIR AREA WILL NO LONGER BE INUNDATED AND IT IS ANTICIPATED THAT SOME OF THESE AREAS WILL TRANSITION INTO WETLAND AREAS. THIS MAP PORTRAYS POTENTIAL AREAS THAT MAY SUPPORT WETLAND PLANT SPECIES. THE PROJECT ALIGNMENT SHOWN ON THE DRAWING IS THE ANTICIPATED FUTURE CHANNEL LOCATION AFTER SEDIMENT HAS EVACUATED THE RESERVOIR AREA OVER THE COURSE OF YEARS. EXISTING WETLANDS SHOWN ON THE MAP ARE FROM THE NATIONAL WETLAND INVENTORY. DOWNSTREAM OF THE DAM, IT IS ANTICIPATED THAT NO CHANGES WILL TAKE PLACE WITH THE EXISTING WETLANDS.

NMI WETLAND 1 = 0.9 ACRES  
 NMI WETLAND 2 = 1.5 ACRES  
 POTENTIAL WETLANDS = 1.8 ACRES

**1 POTENTIAL WETLAND CONVERSION**

1" = 200'



**POTENTIAL WETLAND CONVERSION**  
 STEARNS DAM REMOVAL  
 CROOKED RIVER - PRINEVILLE, OREGON

NO.	DATE	BY	DESCRIPTION	CHK
1	01/03/13	RTB	PERMIT DRAWINGS	SW

PROJECT NUMBER: RDG-12-036  
 DRAWING NUMBER: **A**  
 Drawing 1 of 1