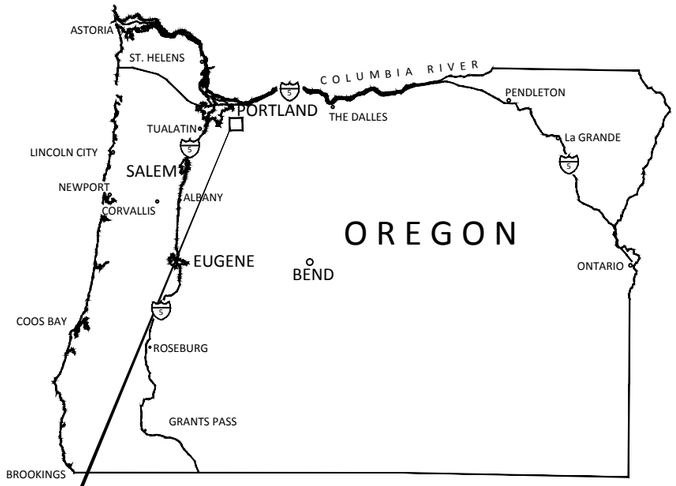
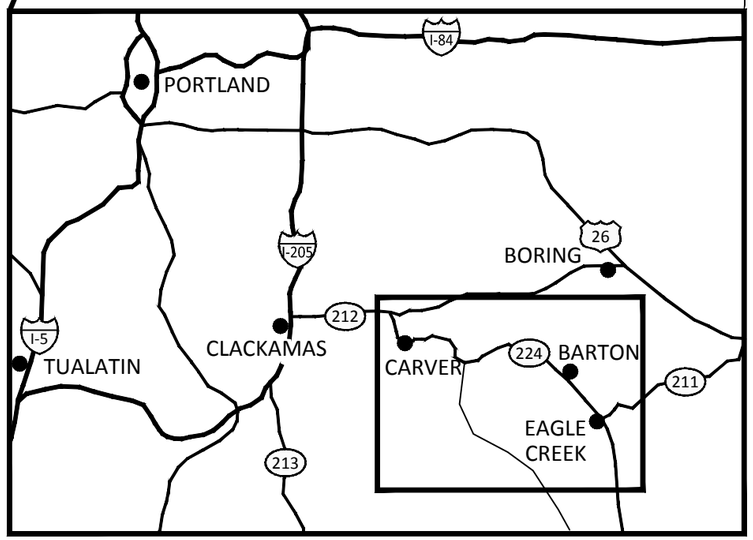
River Island South Preliminary Design
Clackamas River

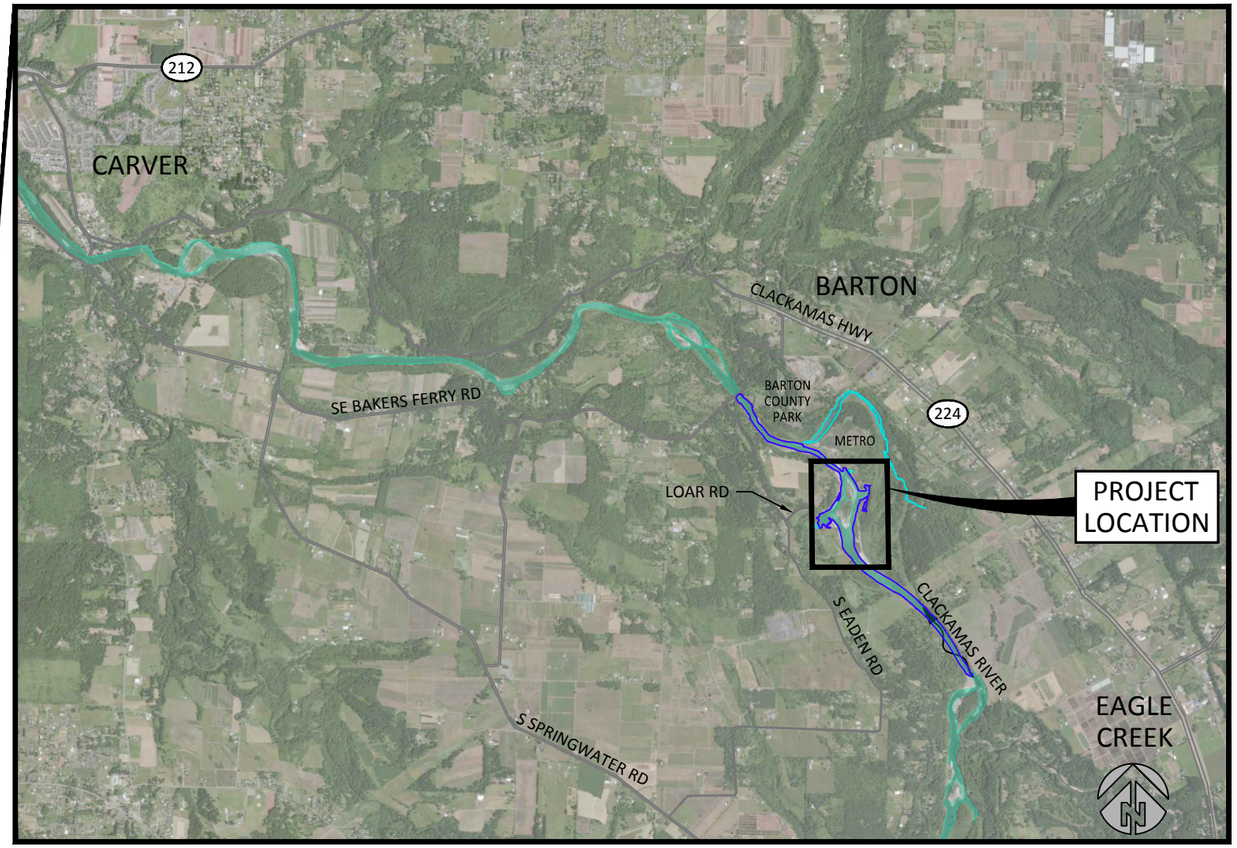
Clackamas County, Oregon - March, 2015



LOCATION MAP
STATE OF OREGON



VICINITY MAP
NTS



SITE MAP
NTS

COORDINATES:
LATITUDE 45°22'34.47" N
LONGITUDE 122°23'59.74" W

WATERBODY: CLACKAMAS RIVER
TRIBUTARY OF: WILLAMETTE RIVER

SECTION 26 TOWNSHIP 2S RANGE 3E WM

Preliminary
Not for Construction

SHEET INDEX

PERMIT SUBMITTAL

NO.	BY	DATE	REVISION DESCRIPTION

RP, LK	EA,MB, MC	MB
DRAWN	DESIGNED	CHECKED
MC	JAN 2015	130235
APPROVED	DATE	PROJECT

RIVER ISLAND SOUTH PRELIMINARY DESIGN
METRO
CLACKAMAS COUNTY, OREGON

Metro

Inter-fluve
301 Portway Avenue, Suite 101
Hood River, OR 97031
541.386.9003
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COVER, VICINITY MAP AND SHEET INDEX

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G:\M-P\METRO-River Island_130235\Drawings\IFI_RV_ISLND_South_Permit.dwg - lkonecny - 3/19/15

THE CONTRACTOR SHALL ATTEND A MANDATORY PRE-BID SITE MEETING.

THE CONTRACTOR SHALL ATTEND A PRE-CONSTRUCTION MEETING WITH OWNER AND OWNER'S REPRESENTATIVE PRIOR TO MOBILIZING TO SITE AND BEGINNING CONSTRUCTION.

ALL WORK SHALL CONFORM TO THE CURRENT EDITIONS OF STANDARD PLANS AND SPECIFICATIONS OF THE OREGON STATE DEPARTMENT OF TRANSPORTATION (ODOT), AND LOCAL STANDARDS UNLESS INDICATED OTHERWISE BY THE CONTRACT DOCUMENTS. IN CASE OF A CONFLICT BETWEEN THE REGULATORY STANDARDS OR SPECIFICATIONS, THE MORE STRINGENT WILL PREVAIL.

ODFW IN-WATER WORK PERIODS

WORK SHALL OCCUR DURING THE ODFW PERMITTED IN-WATER WORK PERIOD:
JULY 15-AUGUST 31

EXISTING DATA

TOPOGRAPHIC DATA WAS COLLECTED BY INTER-FLUVE USING RTK AND TOTAL STATION IN DECEMBER 2013 AND DECEMBER 2014. BATHYMETRIC DATA WAS COLLECTED BY INTER-FLUVE USING RTK AND SONAR IN JANUARY AND FEBRUARY OF 2014.

HORIZONTAL DATUM: STATE PLANE NAD83 OREGON NORTH
VERTICAL DATUM: NAVD88

HYDRAULIC MODELING BY INTER-FLUVE USING USACE HEC-RAS (4.1.0). MODEL CALIBRATED USING SURVEYED WATER SURFACE ELEVATIONS AND EXISTING HIGH WATER MARKS.

GIS DATA INCLUDING: AERIAL PHOTOGRAPHY, LIDAR, FISH USE, SURFACE SOILS INFORMATION, LAND OWNERSHIP, AND TRANSPORTATION ROUTES PROVIDED BY METRO.

SOILS

SUBSURFACE SOILS ARE EXPECTED TO BE SAND, GRAVEL, COBBLES, AND BOULDERS. EXCAVATIONS BELOW THE SURFACE MAY ENCOUNTER SANDY RIVER MUDSTONE AT SHALLOW DEPTHS. MUDSTONE SHALL BE KEPT SEPARATE FROM RIVER GRAVELS AND NOT USED FOR BACKFILL OF LARGE WOOD JAMS. VOLUME OF NON-NATIVE MATERIALS (E.G. ASPHALT, RIPRAP) ARE BASED ON SURVEY AND VISUAL COST ESTIMATES. CONTRACTOR SHALL CONDUCT OWN INVESTIGATIONS IF ADDITIONAL DATA IS REQUIRED AT NO ADDITIONAL COST.

UTILITIES

THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR HAVING UTILITIES LOCATED PRIOR TO CONSTRUCTION ACTIVITIES.

THE CONTRACTOR SHALL CALL (800-322-2344) FOR UTILITY LOCATE PRIOR TO CONSTRUCTION.

THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE AFFECTED UTILITY SERVICE TO REPORT ANY DAMAGED OR DESTROYED UTILITIES.

THE CONTRACTOR SHALL PROVIDE EQUIPMENT AND LABOR TO AID THE EFFECTED UTILITY SERVICE IN REPAIRING DAMAGED OR DESTROYED UTILITIES AT NO ADDITIONAL COST.

CONSTRUCTION STAKING

OWNER'S REPRESENTATIVE WILL PROVIDE STAKING OF PROJECT LIMITS, GRADE STAKES, AND ELEVATION CONTROL POINTS. SOME FIELD ADJUSTMENTS TO THE LINES AND GRADES ARE TO BE EXPECTED.

CONTRACTOR SHALL MEET WITH THE OWNER AND OWNER'S REPRESENTATIVE TO DEFINE AND MARK LIMITS OF DISTURBANCE PRIOR TO MOBILIZATION OF EQUIPMENT OR MATERIALS ONTO THE SITE.

THE CONTRACTOR SHALL REPLACE DAMAGED OR DESTROYED CONSTRUCTION STAKES AT NO ADDITIONAL COST TO THE OWNER.

CONSTRUCTION MATERIALS

CONTRACTOR SHALL ALLOW FOR EXPANSION OF EXCAVATED MATERIAL AND COMPACTION OF PLACED MATERIAL AT NO ADDITIONAL MEASURE OR COST. MEASUREMENT AND PAYMENT SHALL NOT BE BASED ON WEIGHT TICKETS OR TRUCK MEASURE WITHOUT PRIOR WRITTEN APPROVAL.

LOCATION, ALIGNMENT, AND ELEVATION OF LOGS AND LOGS WITH ROOTWADS ARE SUBJECT TO ADJUSTMENT BASED ON FIELD CONDITIONS AND MATERIAL SIZE.

ANY APPROVED NATIVE EXCESS MATERIAL SHALL BE STOCKPILED NEATLY IN AN APPROVED LOCATION OF THE STOCKPILE AND STAGING AREA. AT COMPLETION OF WORK, THE NATIVE MATERIAL SHALL BE DISPOSED OF IN THE IDENTIFIED DISPOSAL LOCATION. THE CONTRACTOR WILL DECONSTRUCT/DEMOLISH AND LEGALLY DISPOSE OF THE LOWER BARN AND ALL CONCRETE AND BUILDING MATERIALS ASSOCIATED WITH THE BARN SITE. THE CONTRACTOR WILL DISPOSE OF NON-NATIVE MATERIAL FROM THE LEFT BANK CLEANUP AREA IN AN APPROVED, LEGAL OFFSITE DISPOSAL FACILITY.

CONSTRUCTION ACCESS/TRAFFIC CONTROL

CONTRACTOR SHALL SUBMIT AN ACCESS, STAGING, AND STOCKPILE PLAN TO METRO FOR APPROVAL PRIOR TO MOBILIZATION.

PUBLIC ACCESS TO/ALONG ROADWAYS SHALL BE MAINTAINED AT ALL TIMES.

THE CONTRACTOR IS SOLELY RESPONSIBLE FOR OBTAINING ANY REQUIRED TRAFFIC CONTROL OR ACCESS PERMITS.

THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROVIDING ANY REQUIRED TRAFFIC CONTROL INCLUDING, BUT NOT LIMITED TO, SIGNAGE AND FLAGGERS.

THE CONTRACTOR SHALL PLACE SIGNAGE UPSTREAM OF WORK AREA IN A MANNER TO DISCOURAGE RIVER USERS FROM ENTERING THE WORK AREA.

ALL SAPLINGS AND TREES TO BE TRANSPLANTED OR REMOVED SHALL BE CLEARLY MARKED AND APPROVED BY METRO.

ALL EQUIPMENT, MATERIALS, AND PERSONNEL SHALL REMAIN WITHIN THE LIMITS OF DISTURBANCE.

THE CONTRACTOR SHALL KEEP THE WORK AREAS IN NEAT CONDITION, FREE OF DEBRIS AND LITTER FOR THE DURATION OF THE PROJECT.

CONTRACTOR SHALL IMPLEMENT MEASURES TO CONTROL AND MINIMIZE WIND BLOWN DUST FROM THE SITE.

ALL DISTURBED AREAS INCLUDING ROADS, DRIVEWAYS AND ACCESS ROUTES SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER AND RE-VEGETATED PER PLANS.

ALL DISTURBED AREAS OUTSIDE THE LIMITS OF DISTURBANCE SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER AT NO ADDITIONAL COST TO THE OWNER.

EROSION CONTROL

CONTRACTOR SHALL BE SOLELY RESPONSIBLE AT OWN EXPENSE FOR PROVIDING AND MAINTAINING ALL NECESSARY EROSION CONTROL FACILITIES TO COMPLY WITH APPLICABLE EROSION CONTROL REGULATIONS AND TO MAINTAIN CLEAN ACCESS ROUTES.

FISH RESCUE

ALL FISH RESCUE EFFORTS SHALL BE SUPERVISED BY THE OWNER'S REPRESENTATIVE AND SHALL BE PERFORMED BY PERSONNEL EXPERIENCED WITH THE COLLECTION AND HANDLING OF SALMONIDS FROM CONSTRUCTION SITES.

ALL FISH TRAPPED IN RESIDUAL POOLS WITHIN THE PROJECT AREA WILL BE CAREFULLY COLLECTED BY SEINE AND/OR DIP NETS AND PLACED IN CLEAN TRANSFER CONTAINERS WITH ADEQUATE VOLUME OF FRESH RIVER WATER.

CAPTURED FISH SHALL BE IMMEDIATELY RELEASED INTO THE RIVER AT AREAS SELECTED BY EXPERIENCED PERSONNEL.

WETLANDS AND WATERS OF THE US

THE ORDINARY HIGH WATER (OHW) OR APPROXIMATE LOW WATER LINES DISPLAYED IN THIS DESIGN PACKAGE WERE DELINEATED BY INTER-FLUVE STAFF IN 2014 AND 2015, AND ARE BASED UPON ANALYSIS, MODELING, AND BEST PROFESSIONAL JUDGEMENT. A WETLAND DELINEATION HAS NOT BEEN PERFORMED.

THE OHW LINES DO NOT REPRESENT JURISDICTIONAL BOUNDARIES. WITHIN THE STATE OF OREGON, THE ARMY CORPS OF ENGINEERS AND THE DEPARTMENT OF STATE LANDS HAVE THE FINAL AUTHORITY IN DETERMINING WATERS AND WETLANDS BOUNDARIES AND REGULATIONS.

ABBREVIATIONS

BMPs	BEST MANAGEMENT PRACTICES
CY	CUBIC YARDS
DBH	DIAMETER AT BREAST HEIGHT
DIA	DIAMETER
E	EAST
EA	EACH
FT	FOOT
FTR	FULLY THREADED ROD
HORIZ	HORIZONTAL
NTS	NOT TO SCALE
N	NORTH
LB	POUND
LW	LARGE WOOD
MAX	MAXIMUM
MIN	MINIMUM
ODFW	OREGON DEPARTMENT OF FISH AND WILDLIFE
RD	ROAD
RW	ROOTWAD
S	SOUTH
TYP	TYPICAL
VERT	VERTICAL
W	WEST

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GENERAL NOTES AND ABBREVIATIONS

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TURTLE BEST MANAGEMENT PRACTICES

A. ALL WORK SHALL CONFORM TO THE BELOW LIST OF OREGON DEPARTMENT OF FISH AND WILDLIFE (ODFW) TURTLE BEST MANAGEMENT PRACTICES TO THE EXTENT PRACTICABLE. THE CONTRACTOR SHALL WORK WITH THE OWNER'S REPRESENTATIVE TO PROTECT TURTLE AND TURTLE HABITAT THROUGHOUT THE CONSTRUCTION PROJECT.

1. CONTRACTOR SHALL MINIMIZE TEMPORARY CHANGES TO THE HYDROLOGY OR SEDIMENTATION RATES OF WATERBODIES SUPPORTING TURTLES FROM GROUND DISTURBANCES WITHIN 500 FT OF NATIVE TURTLE HABITAT OR WITHIN 150 FEET OF WATERWAYS THAT FLOW TO NATIVE TURTLE HABITAT.
2. CONTRACTOR SHALL USE JUTE MATTING, WEED FREE NATIVE STRAW, MULCH BERMS OR OTHER NATURAL FIBER EROSION CONTROL PRODUCTS ON DISTURBED AREAS.
3. CONTRACTOR SHALL NOT USE PRODUCTS WITH PLASTIC MESH THAT CAN ENTANGLE WILDLIFE.
4. CONFIRMED TURTLE NESTS SHALL BE MARKED WITH TEMPORARY FLAGGING AND EXCLUDED FROM THE WORK ARE WITH SILT FENCE. FLAGGING AND FENCING SHALL BE REMOVED IMMEDIATELY UPON PROJECT COMPLETION.
5. MINIMIZE THE FOOTPRINT OF GROUND DISTURBANCE DURING ACCESS TO THE EXTENT PRACTICABLE.
6. LOCATE PROJECT STAGING AREA AND OTHER CONSTRUCTION RELATED SUPPORT FEATURES (E.G. EQUIPMENT FUELING STATIONS) AT LEAST 50 FEET FROM WATERBODIES AND IDENTIFIED TURTLE NESTING HABITAT.
7. IF SMALL ENGINE EQUIPMENT SUCH AS PUMPS FOR TEMPORARY WATER MANAGEMENT MUST BE USED WITHIN 50 FEET OF A WATERBODY OF KNOWN OR SUSPECTED TURTLE NEST SITES, PLACE IN A LEAK PROOF CONTAINER TO CONTAIN SPILLS FROM BROKEN FUEL LINES OR ACCIDENTAL SPILLS.

B. INSPECTION

1. CONTRACTOR SHALL ANTICIPATE THAT ALL WORK AREAS WILL BE INSPECTED BY A QUALIFIED BIOLOGIST EXPERIENCED WITH TURTLES BEFORE CONSTRUCTION AND AT LEAST ONCE DURING CONSTRUCTION.
2. QUALIFIED BIOLOGIST SHALL PROVIDE OWNER AND OWNER'S REPRESENTATIVE WITH SUGGESTED VISUAL SURVEY AND TURTLE HABITAT EVALUATION PROTOCOL FOR ONGOING MONITORING DURING THE PROJECT

TREE SALVAGE

ALL TREES AND SLASH REMOVED FOR CONSTRUCTION SHALL BE TEMPORARILY STOCKPILED WITHIN LIMITS OF DISTURBANCE. STOCKPILED TREE/SLASH SHALL BE REINCORPORATED INTO FINISHED PROJECT.

ALL TREES REMOVED WITHIN CLEARING LIMITS SHALL BE REMOVED WHOLE WITH ROOTWAD AND UTILIZED IN THE LOGJAMS AS DIRECTED BY OWNER'S REPRESENTATIVE.

LIVE TREES

ALL TREES NOT MARKED FOR REMOVAL SHALL BE LEFT STANDING UNDISTURBED. CONSTRUCTION ACTIVITY SHALL NOT DEBARK OR DAMAGE LIVE TREES.

KEEP HEAVY EQUIPMENT OUT OF CANOPY DRIP LINE OF EXISTING TREES TO REMAIN.

PRELIMINARY QUANTITIES TABLES:

Fill Volumes

Wetland/Waterbody Name	Fill Dimensions[1]					Duration of impact (days)	Material
	Length (ft)	Width (ft)	Depth (ft)	Area[2] (sq. ft.)	Volume (c.y.)		
Clackamas River - Shoe Island Area	260	45	1.5 - 10.5	11700	1800 (1350 below OHW)	permanent	Native gravel and cobble and 146 logs
Clackamas River - Alcove Area	400	45	1.5 - 5	18000	1040 (650 below OHW)	permanent	Native gravel and cobble and 151 logs
Clackamas River - Left Bank Area	270	40	1.5 - 5	10800	2010 (1490 below OHW)	permanent	Native Material (gravel, cobble soil and mudstone) and 179 logs

Notes:
[1] Fill dimensions represent the summation of discontinguous areas.
[2] Fill area includes spaces between placed logs(e.g. the entire footprint of the log jam)

Removal Volumes

Wetland/Waterbody Name	Removal Dimensions[1]					Duration of impact (days)	Material
	Length (ft)	Width (ft)	Depth (ft)	Area (sq. ft.)	Volume (c.y.)		
Clackamas River - Shoe Island Area	470	50	10.5	23500	3840 (3190 below OHW)	7-10	Native gravel and cobble
Clackamas River - Alcove Area	240	40	3 - 6	9600	1720 (1070 below OHW)	10-15[2]	Road fill/native gravel and cobble
Clackamas River - Left Bank Area	700	40	2 - 5	28000	4940 (3700 below OHW)	10-15[3]	Road fill/concrete trash/native material(gravel,cobble soil and mudstone)

Notes:
[1]Removal dimensions represent the summation of discontinguous areas.
[2]Removal of road fill in the alcove area will be permanent
[3]Removal of remnant quarry material will be permanent

Preliminary
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GENERAL NOTES

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EROSION/SEDIMENTATION CONTROL (ESC) PLAN

THE EROSION AND SEDIMENT CONTROL (ESC) PLAN PROVIDED IS FOR INFORMATIONAL PURPOSES ONLY, THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR PROVIDING EROSION CONTROL MEASURES TO COMPLY WITH APPLICABLE REGULATIONS.

THE RECOMMENDATIONS FOR AN ESC PLAN INCLUDED HEREIN WILL PROVIDE A GUIDELINE FOR THE CONTRACTOR TO DEVELOP AND IMPLEMENT AN ESC PLAN.

A. THE IMPLEMENTATION OF AN ESC PLAN AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED AND VEGETATION/LANDSCAPING IS ESTABLISHED.

B. THE BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THIS PLAN SHALL BE CLEARLY FLAGGED IN THE FIELD PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE FLAGGED CLEARING LIMITS SHALL BE PERMITTED. THE FLAGGING SHALL BE MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF CONSTRUCTION.

C. ESC FACILITIES AS APPROXIMATELY SHOWN ON THIS PLAN ARE TO BE CONSTRUCTED PRIOR TO CLEARING AND GRADING ACTIVITIES, AND IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT ENTER SURFACE WATERS, THE DRAINAGE SYSTEM, OR VIOLATE APPLICABLE WATER STANDARDS.

D. THE ESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESC FACILITIES SHALL BE UPGRADED AS NEEDED AT NO ADDITIONAL COST FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT LEAVE THE SITE.

E. THE ESC FACILITIES SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING.

F. THE ESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN THE 24 HOURS FOLLOWING A STORM EVENT.

G. STABILIZED CONSTRUCTION ENTRANCES AND ADDITIONAL MEASURES MAY BE REQUIRED AND SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT TO ENSURE ALL ACCESS ROADS ARE KEPT CLEAN AT NO ADDITIONAL COST.

INSPECTION AND MAINTENANCE

ALL ESC FACILITIES SHALL BE INSPECTED, MAINTAINED, AND REPAIRED AS NEEDED TO ASSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION. ALL ESC FACILITIES SHALL BE INSPECTED DAILY AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCHES OF RAIN PER 24 HOUR PERIOD AND AFTER EVENTS EXCEEDING 2 HOURS DURATION.

CONTRACTOR'S ESC RECORD

WEEKLY REPORTS SUMMARIZING THE SCOPE OF INSPECTIONS, THE PERSONNEL CONDUCTING THE INSPECTION, THE DATE(S) OF THE INSPECTION, MAJOR OBSERVATIONS RELATING TO THE IMPLEMENTATION OF THE CONTRACTOR'S EROSION AND SEDIMENT CONTROL PLAN, AND ACTIONS TAKEN AS A RESULT OF THESE INSPECTIONS SHALL BE PREPARED AND RETAINED ON SITE BY THE CONTRACTOR. IN ADDITION, A RECORD OF THE FOLLOWING DATES SHALL BE INCLUDED IN THE REPORTS:

1. WHEN MAJOR GRADING ACTIVITIES OCCUR.
2. DATES OF RAINFALL EVENTS EITHER EXCEEDING 2 HOURS DURATION OR MORE THAN 0.5 INCHES/24 HOURS.
3. WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON SITE, OR ON A PORTION OF THE SITE.
4. WHEN STABILIZATION MEASURES ARE INITIATED FOR PORTIONS OF THE SITE.
5. ESC RECORDS SHALL BE MADE AVAILABLE TO THE OWNER AND OWNER'S REPRESENTATIVE ON REQUEST AND SHALL BE PROVIDED FOR REVIEW AND APPROVAL PRIOR TO APPLICATION FOR PAYMENT.

STABILIZE SOILS AND PROTECT SLOPES

FROM MAY 1 THROUGH SEPTEMBER 30, ALL EXPOSED SOILS SHALL BE PROTECTED FROM EROSION BY MULCHING, HYDROSEED COVERING, OR OTHER APPROVED MEASURES WITHIN THREE DAYS OF GRADING. FROM OCTOBER 1 THROUGH APRIL 30, ALL EXPOSED SOILS MUST BE PROTECTED WITHIN 2 DAYS OF GRADING. SOILS SHALL BE STABILIZED BEFORE A WORK SHUTDOWN, HOLIDAY OR WEEKEND IF NEEDED BASED ON THE WEATHER FORECAST. SOIL STOCKPILINGS MUST BE STABILIZED AND PROTECTED WITH SEDIMENT TRAPPING MEASURES. HYDROSEED ALL DISTURBED AREAS AS SOON AS PRACTICAL NOT INDICATED IN THE CONTRACT DOCUMENTS FOR OTHER PERMANENT STABILIZATION MEASURES.

DESIGN, CONSTRUCT, AND PHASE CUT AND FILL SLOPES IN A MANNER THAT WILL MINIMIZE EROSION. REDUCE SLOPE VELOCITIES ON DISTURBED SLOPES BY PROVIDING TEMPORARY BARRIERS. STORMWATER FROM OFF SITE SHOULD BE HANDLED SEPARATELY FROM STORMWATER GENERATED ON SITE.

AFTER FINAL SITE STABILIZATION

ALL TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION IS ACHIEVED OR AFTER THE TEMPORARY BEST MANAGEMENT PRACTICES (BPMs) ARE NO LONGER NEEDED. TRAPPED SEDIMENT SHALL BE REMOVED FROM THE SITE OR INCORPORATED INTO FINISHED GRADING. DISTURBED SOIL AREAS RESULTING FROM REMOVAL SHALL BE PERMANENTLY STABILIZED.

RIVER DIVERSION

DIVERSION MAY BYPASS THE RIVER AROUND SMALLER WORK AREAS AT CONTRACTOR'S DISCRETION.

DEWATERING OF IN-CHANNEL WORK AREA(S) SHALL OCCUR CONCURRENT WITH FISH RESCUE. CONTRACTOR SHALL COORDINATE WITH METRO FOR FISH RESCUE. CONTRACTOR SHALL PROVIDE METRO AMPLE TIME TO SCHEDULE FISH RESCUE. IF DIVERSION FAILS DUE TO CONTRACTOR NEGLIGENCE, FISH RESCUE SHALL BE REPEATED BY METRO'S REPRESENTATIVE AT CONTRACTOR'S EXPENSE.

IF ADDITIONAL PUMPING IS REQUIRED TO DEWATER DURING CONSTRUCTION, PUMPED DISCHARGE SHALL RELEASE SEDIMENT-LADEN WATER AT AN UPLAND DISCHARGE LOCATION IN A MANNER THAT DOES NOT CAUSE EROSION, CONTAMINATION OR INCREASE TURBIDITY OF SURFACE WATERS. (SEE CONSTRUCTION DEWATERING).

OWNER'S REPRESENTATIVE SHALL APPROVE DEWATERING DISCHARGE LOCATION PRIOR TO IMPLEMENTATION.

CONSTRUCTION DEWATERING

CONTRACTOR SHALL PERFORM CONSTRUCTION DEWATERING IN SUCH A MANNER AS TO AVOID THE RELEASE OF SEDIMENT-LADEN WATER TO SURFACE WATERS. SEDIMENT LADEN WATER MAY BE PUMPED TO AN UPLAND DISCHARGE LOCATION AND ALLOWED TO SHEET FLOW THROUGH EXISTING VEGETATION BEFORE INFILTRATING INTO THE GROUND. IF THIS METHOD IS NOT SUFFICIENT TO PREVENT RETURN OF TURBID WATER TO THE RIVER, A 'DIRT-BAG' OR SEDIMENT RETENTION STRUCTURE MAY BE REQUIRED AS NECESSARY TO COMPLY WITH LAWS AND PERMIT REQUIREMENTS AT NO ADDITIONAL COST TO THE OWNER.

CONTRACTOR SHALL PROVIDE VISQUINE OR GEOTEXTILE LINER OR PLYWOOD OR METAL PLATING AS NECESSARY TO DISSIPATE PUMP DISCHARGE JET TO PREVENT EROSION.

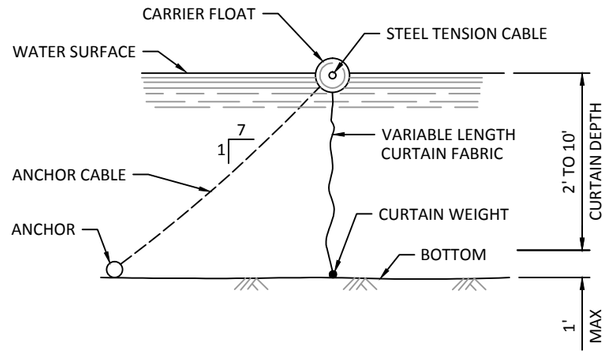
EROSION CONTROL SEED MIX:

SEED MIX SPECIFICATION

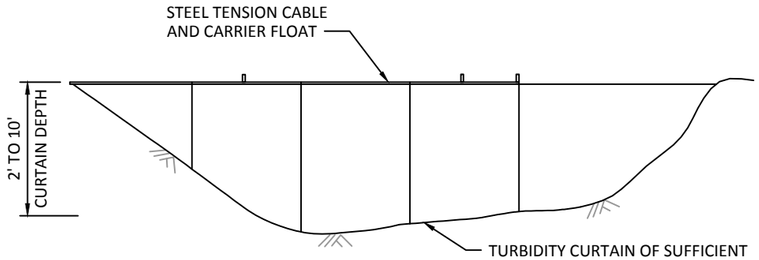
Scientific name	Common name	% of Mix
Deshampsia elongata	Slender hairgrass	60
Agrostis exarata	Spike bentrgrass	30
Prunella vulgaris	Self-heal	10

SEED MIX APPLICATION

APPLY AT 14LB/ACRE WITH 50:50 CRACKED CORN TO FACILITATE EVEN DISTRIBUTION IN LIMITS OF DISTURBANCE ABOVE OHW.



CROSS SECTION VIEW



ELEVATION VIEW

1/G4 DETAIL - TYPICAL TURBIDITY CURTAIN

NTS

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EROSION CONTROL DETAILS

SHEET
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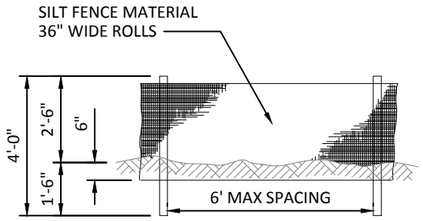
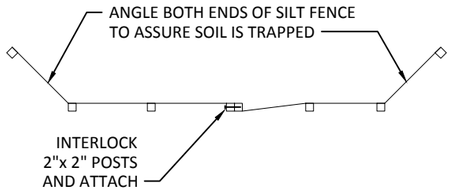
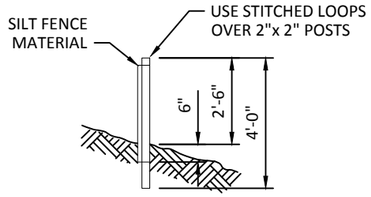


FRONT VIEW



TOP VIEW

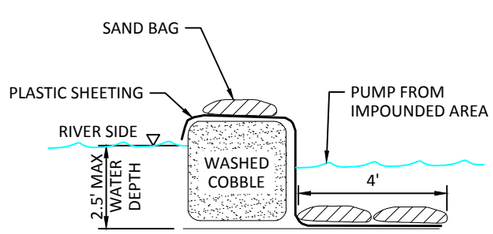


SIDE VIEW

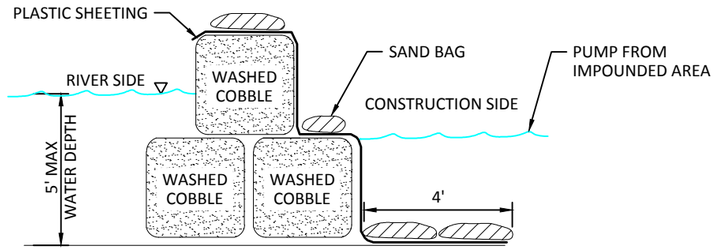
SILT FENCES:

1. THE SILT FENCE SHALL BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID USE OF JOINTS. WHEN JOINTS ARE NECESSARY, SILT FENCE SHALL BE SPLICED TOGETHER ONLY AT A SUPPORT POST, WITH A MINIMUM 6 INCH OVERLAP, AND BOTH ENDS SECURELY FASTENED TO THE POST. ALTERNATIVELY, OVERLAP AND INTERLOCK TWO POSTS WITH ATTACHED FABRIC AS REQUIRED TO MEET APPLICABLE REGULATIONS.
2. THE SILT FENCE IS TO BE INSTALLED AT LOCATIONS SHOWN ON THE PLAN. THE FENCE POSTS SHALL BE SPACED A MAXIMUM OF 6 FEET APART AND DRIVEN SECURELY INTO THE GROUND A MINIMUM OF 18 INCHES.
3. THE SILT FENCE SHALL HAVE A MINIMUM VERTICAL BURIAL OF 6 INCHES. ALL EXCAVATED MATERIAL FROM SILT FENCE INSTALLATION SHALL BE BACK-FILLED AND COMPACTED ALONG THE ENTIRE DISTURBED AREA.
4. STANDARD OR HEAVY DUTY SILT FENCE SHALL HAVE MANUFACTURED STITCHED LOOPS FOR 2 INCHES X 2 INCHES POST INSTALLATION.
5. SILT FENCES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY PROTECTED AND STABILIZED, OR AS DIRECTED BY OWNER'S REPRESENTATIVE.

1 / G5 TYPICAL SILT FENCE
NOT TO SCALE



SINGLE LAYER COFFERDAM
(WATER DEPTH LESS THAN 2.5')



STACKED BULK BAG COFFERDAM
(WATER DEPTH LESS THAN 5')

BULK BAG NOTES:

1. BULK BAG COFFERDAM SHALL BE CONSTRUCTED OF SEVERAL UNITS OF BULK BAGS FILLED WITH WASHED GRAVEL, AND ABUTTED SIDE BY SIDE TO CREATE A ROW THAT ISOLATES THE CONSTRUCTION SITE FROM THE RIVER.
2. IF WATER DEPTH EXCEEDS 85% OF THE BULK BAG HEIGHT, AN ADDITIONAL TOP ROW OF BULK BAGS SHALL BE INSTALLED, SUPPORTED BY TWO BOTTOM ROWS OF BULK BAGS.
3. BULK BAG COFFERDAM SHALL BE SEALED BY COVERING THE COFFERDAM WITH PLASTIC SHEETING HELD IN PLACE BY STANDARD SANDBAGS PLACED IN ROWS ON TOP OF COFFERDAM, AND AT TOE OF COFFERDAM. THE PLASTIC SHEETING SHALL BE DRAPED ALONG THE CHANNEL BOTTOM ON THE WORK AREA SIDE OF THE COFFERDAM WITH OUTWARD EDGE OF SHEETING MINIMUM 4-FEET FROM TOE OF COFFERDAM. THE DRAPED PORTION OF PLASTIC SHEETING SHALL BE PINNED TO THE CHANNEL BED BY MINIMUM TWO ROWS OF STANDARD SANDBAGS.
4. THE OUTWARD EDGE OF PLASTIC SHEETING ON WORK AREA SIDE SHALL BE TOED INTO THE CHANNEL BED MINIMUM 1-FT. TOEING IN THE OUTWARD EDGE OF PLASTIC SHEETING SHALL OCCUR AFTER THE COFFERDAM IS CLOSED TO PREVENT TURBIDITY RELEASE TO THE WATERWAY.
5. IF POSSIBLE, THE COFFERDAM SHALL BE EXTENDED ONTO A GRAVEL BAR AND OUT OF THE WATER. IF THE END MUST BE TERMINATED AT THE RIVERBANK, THE COFFERDAM SHALL BE TIGHTLY SEALED TO THE GROUND BY PLASTIC SHEETING AND STANDARD SANDBAGS. MULTIPLE LAYERS OF SANDBAGS MAY BE REQUIRED TO FORM A WATERTIGHT SEAL.
6. BULK BAGS SHALL BE WATERPROOF CUBE-SHAPED POLYPROPYLENE WOVEN FABRIC BAGS WITH FULLY OPEN TOP, FLAT BOTTOM, FOUR LOOPS, MINIMUM 2-TON WEIGHT CAPACITY, MINIMUM 5:1 SAFETY FACTOR.
7. PLASTIC SHEETING SHALL BE MINIMUM 6-MIL THICKNESS. ROLL LENGTH SHALL BE LONG ENOUGH TO ENSURE THAT ENTIRE LENGTH OF COFFERDAM WILL BE COVERED WITHOUT A SEAM. MINIMUM 12-FT WIDE ROLL SHALL BE USED FOR SINGLE LAYER BULK BAG COFFERDAM. MINIMUM 16-FT WIDE ROLL SHALL BE USED FOR 2-LAYER STACKED BULK BAG COFFERDAM.
8. CONTRACTOR SHALL PROVIDE PUMPING SUFFICIENT FOR A NET INFLOW TO THE WORK AREA, AND DISCHARGE TURBID WATER TO UPLAND FLOODPLAIN.
9. BULK BAG COFFERDAM SHALL BE COMPLETELY REMOVED AFTER CONSTRUCTION IS COMPLETED AND TURBIDITY HAS BEEN REMOVED.
10. ALTERNATE COFFERDAM MATERIALS AND CONFIGURATIONS MAY BE ALLOWED BUT SHALL NOT BE IMPLEMENTED WITHOUT REVIEW AND APPROVAL BY THE OWNER OR OWNER'S REPRESENTATIVE. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS AND/OR VENDOR CUT SHEETS FOR SUBSTITUTIONS.
11. IF NECESSARY, GAPS BETWEEN BULK BAGS SHALL BE FILLED WITH WASHED STREAM GRAVEL TO IMPROVE COFFERDAM SEAL.

Preliminary
Not for Construction

2 / G5 TEMPORARY COFFERDAM
NOT TO SCAL

NO.	BY	DATE	REVISION DESCRIPTION

RP, LK	EA,MB, MC	MB
DRAWN	DESIGNED	CHECKED
MC	JAN 2015	130235
APPROVED	DATE	PROJECT

RIVER ISLAND SOUTH PRELIMINARY DESIGN
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CLACKAMAS COUNTY, OREGON

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EROSION CONTROL DETAILS

SHEET
G5 OF 22

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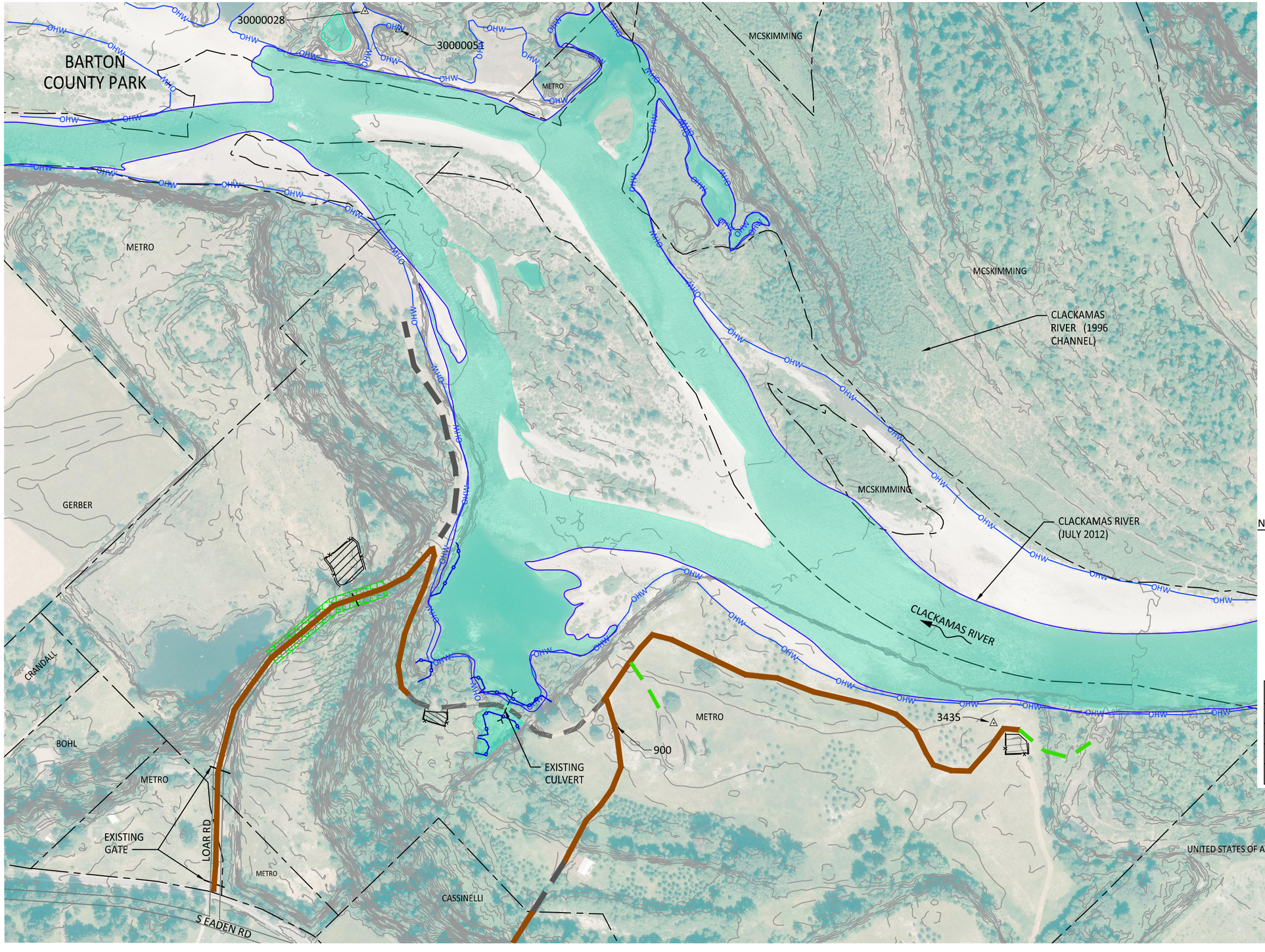

0 300 600

SCALE IN FEET

LEGEND

- TEMPORARY CONSTRUCTION STAGING
- TURTLE CROSSING BMPs (TO BE INITIATED SPRING 2015)
- EXISTING CONTOURS (1 FT. INTERVALS)
- PROPERTY LINES
- OHW — ORDINARY HIGH WATER
- EXISTING ROAD
- TEMPORARY ACCESS
- EXISTING ROAD TO BE DECOMMISSIONED
- EXISTING CULVERT
- TEMPORARY COFFERDAM, SEE 2/G5
- TURBIDITY CURTAIN, SEE 1/G4
- SILT FENCE, SEE 1/G5
- 900 — SURVEY BENCHMARK

NOTES:

1. NATURAL COLOR ORTHO-RECTIFIED AERIAL IMAGERY FOR THE PORTLAND METROPOLITAN AREA COLLECTED JULY 6 THROUGH 14, 2012.
2. EXISTING CONTOURS DERIVED FROM LIDAR DATA COLLECTED IN 2007.
3. PROPERTY LINES ARE APPROXIMATE.

SELECTED SURVEY BENCHMARKS

Point #	Northing	Easting	Elevation	Description
900	626562.6540	713311.7400	190.417	BM
3435	625763.030	714122.357	193.381	TBM
30000028	628619.094	714299.481	195.435	REBAR
30000051	628507.282	714333.521	192.740	REBAR

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APPROVED	DATE	PROJECT

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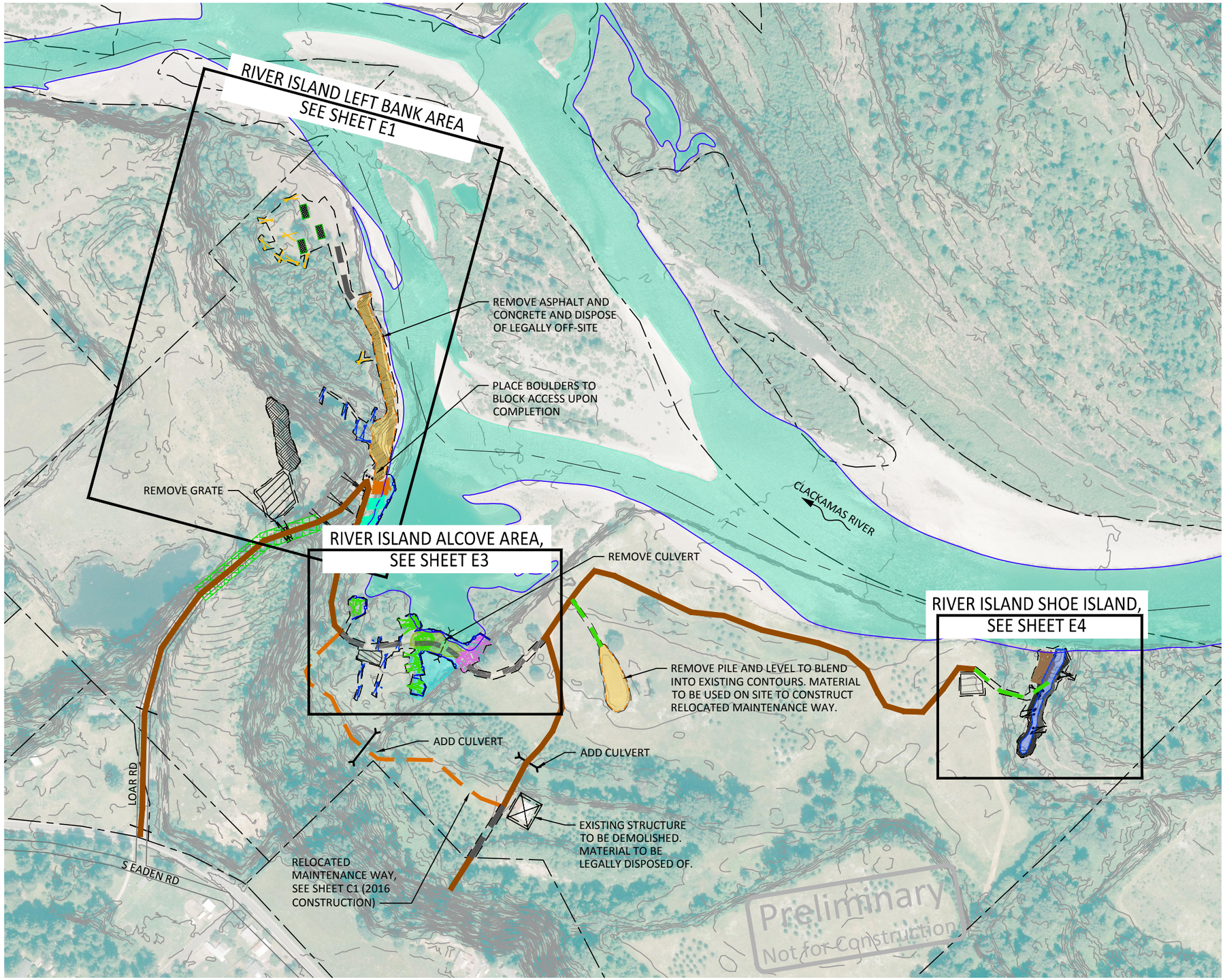
EXISTING SITE, ACCESS AND STAGING, EROSION AND SURVEY CONTROL

SHEET G6 OF 22



0 300 600

SCALE IN FEET

LEGEND

- TEMPORARY CONSTRUCTION STAGING
- NATIVE SOILS DISPOSAL AREA
- PROPOSED SELECTIVE GRADING AND ASPHALT REMOVAL AREA
- FILL REMOVAL AREA
- PROPOSED SHOE ISLAND ALCOVE
- PROPOSED ROAD PRISM REMOVAL
- PROPOSED TURTLE NESTING AREA
- EXISTING CONTOURS (1 FT. INTERVALS)
- PROPERTY LINES
- TEMPORARY COFFERDAM
- TURBIDITY CURTAIN
- APPROXIMATE LOW WATER
- LIMITS OF DISTURBANCE
- EXISTING ROAD TO BE DECOMMISSIONED
- EXISTING ACCESS ROAD
- TEMPORARY ACCESS ROAD
- RELOCATED MAINTENANCE WAY
- BURIED LOG JAM, SEE SHEET D1
- TYPE 1 LOG JAM, SEE SHEET D2
- TYPE 2 LOG JAM, SEE SHEET D3
- TYPE 3 LOG JAM, SEE SHEET D4
- SHOE ISLAND ALCOVE LOG JAM, SEE SHEET D5
- SHOE ISLAND LARGE WOOD, SEE 1/D6
- FOREST WOOD PLACEMENT
- FLOODPLAIN LARGE WOOD, SEE 2/D6

NOTES:

1. NATURAL COLOR ORTHO-RECTIFIED AERIAL IMAGERY FOR THE PORTLAND METROPOLITAN AREA COLLECTED JULY 6 THROUGH 14, 2012.
2. EXISTING CONTOURS DERIVED FROM LIDAR DATA COLLECTED IN 2007.
3. PROPERTY LINES ARE APPROXIMATE.

NO.	BY	DATE	REVISION DESCRIPTION

DRAWN	DESIGNED	CHECKED
RP, LK	EA,MB, MC	MB
APPROVED	DATE	PROJECT
MC	JAN 2015	130235

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PROPOSED CONDITIONS AND SHEET KEY

SHEET G7 OF 22

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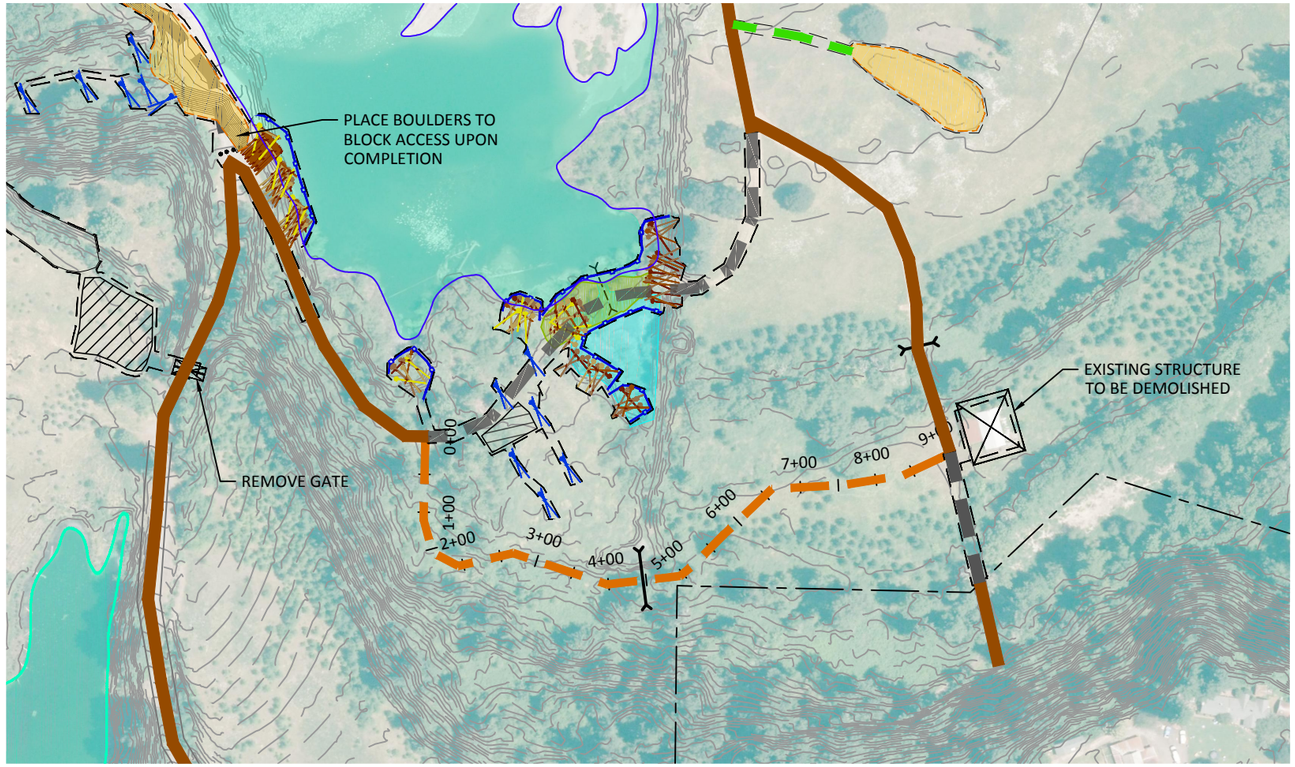


PLAN - RELOCATED MAINTENANCE WAY

1"=100'

0 200 400

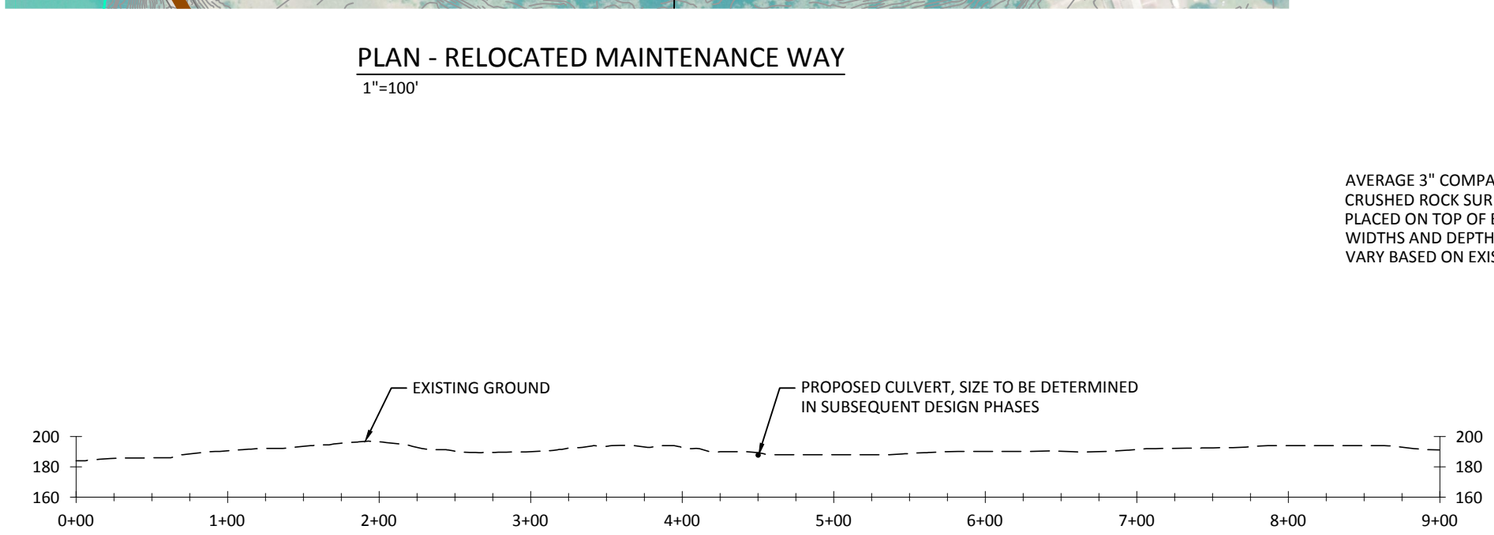
SCALE IN FEET

NOTES:

1. NATURAL COLOR ORTHO-RECTIFIED AERIAL IMAGERY FOR THE PORTLAND METROPOLITAN AREA COLLECTED JULY 6 THROUGH 14, 2012.
2. EXISTING CONTOURS DERIVED FROM LIDAR DATA COLLECTED IN 2007.
3. PROPERTY LINES ARE APPROXIMATE.

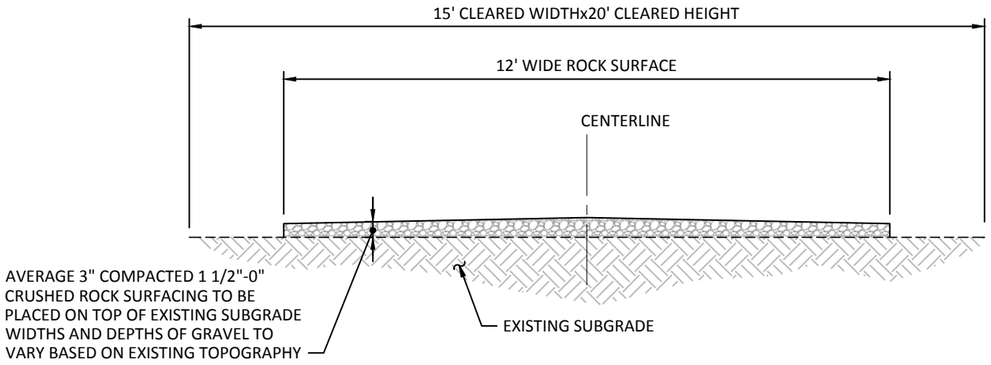
LEGEND

- TEMPORARY CONSTRUCTION STAGING
- PROPOSED SELECTIVE GRADING AND ASPHALT REMOVAL AREA
- EXISTING CONTOURS (1 FT. INTERVALS)
- ROLLING WATER BAR
- EXISTING CULVERT
- PROPOSED CULVERT
- PROPERTY LINES
- TURBIDITY CURTAIN
- RELOCATED MAINTENANCE WAY
- EXISTING ROAD TO BE DECOMMISSIONED
- EXISTING ACCESS ROAD



PROFILE - RELOCATED MAINTENANCE WAY

1"=100'



NOTES:

1. FINAL MAINTENANCE WAY DESIGN TO BE COMPLETED BY A CIVIL ENGINEERING FIRM.
2. MAINTENANCE WAY TO BE COMPLETED IN 2016.

A / C1 TYPICAL CROSS SECTION - RELOCATED MAINTENANCE WAY

NOTIZ: 1"=50' VERT: 1"=5'

Preliminary
Not for Construction

NO.	BY	DATE	REVISION DESCRIPTION

RP, LK	EA,MB, MC	MB
DRAWN	DESIGNED	CHECKED
MC	JAN 2015	130235
APPROVED	DATE	PROJECT

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RELOCATED MAINTENANCE WAY PLAN, PROFILE AND SECTION

SHEET C1 OF 22

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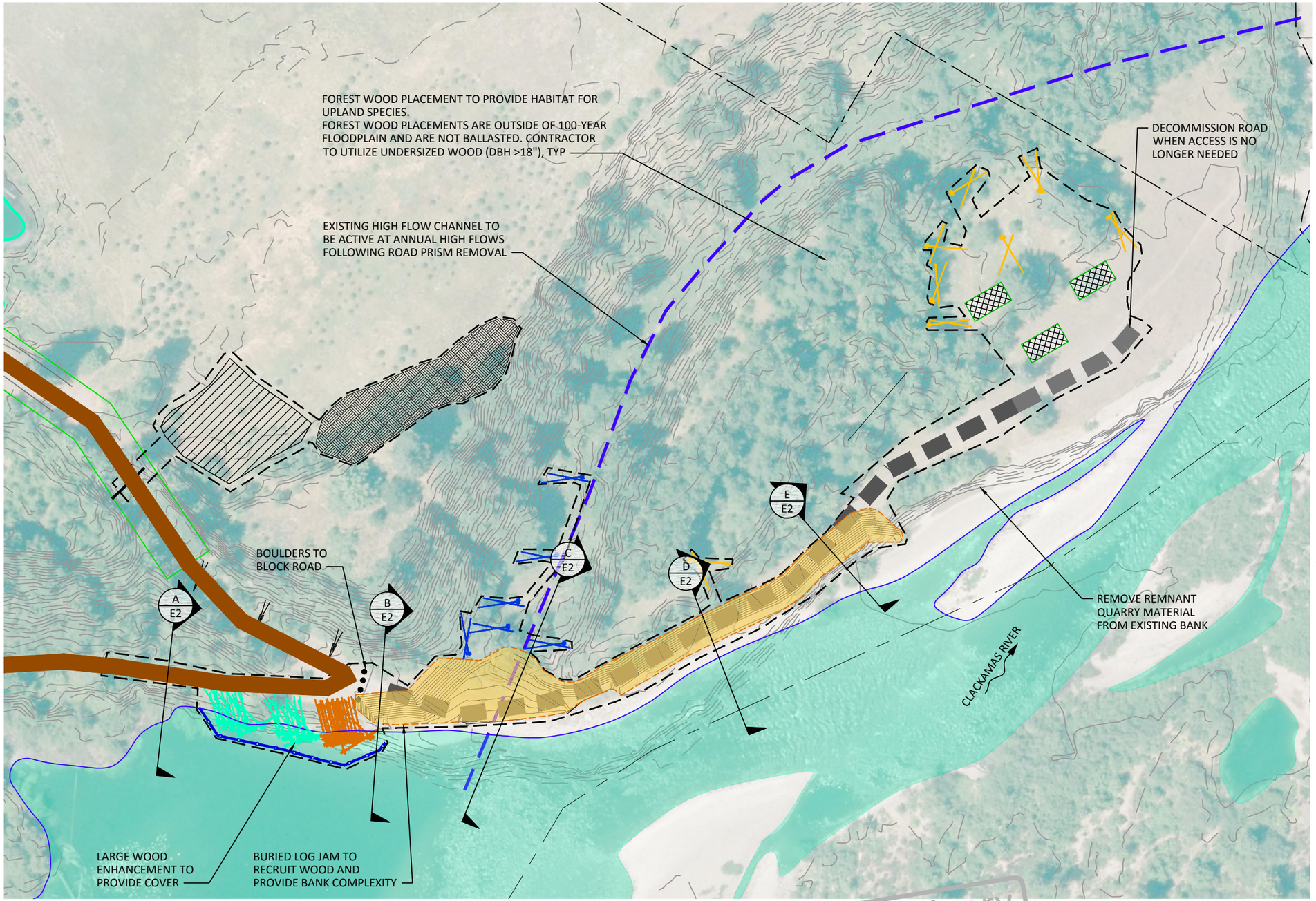

0 100 200

SCALE IN FEET

LEGEND

- CLACKAMAS RIVER
- TEMPORARY CONSTRUCTION STAGING
- NATIVE SOILS DISPOSAL AREA
- PROPOSED SELECTIVE GRADING AND ASPHALT REMOVAL AREA
- PROPOSED TURTLE NESTING AREA
- EXISTING CONTOURS (1 FT. INTERVALS)
- PROPOSED CONTOURS (1 FT. INTERVALS)
- EXISTING HIGH FLOW CHANNEL
- LIMITS OF DISTURBANCE
- TURBIDITY CURTAIN, SEE 1/G4
- EXISTING ROAD TO BE DECOMMISSIONED
- TEMPORARY ACCESS, TRIPS TO BE MINIMIZED
- EXISTING ACCESS ROAD
- ROLLING WATER BAR (APPROXIMATE)
- BURIED LOG JAM, SEE SHEET D1
- TYPE 2 LOG JAM, SEE SHEET D3
- FOREST WOOD PLACEMENT
- FLOODPLAIN LARGE WOOD, SEE 2/D6

NOTES:

1. NATURAL COLOR ORTHO-RECTIFIED AERIAL IMAGERY FOR THE PORTLAND METROPOLITAN AREA COLLECTED JULY 6 THROUGH 14, 2012.
2. EXISTING CONTOURS DERIVED FROM LIDAR DATA COLLECTED IN 2007.
3. PROPERTY LINES ARE APPROXIMATE.
4. EXISTING CONTOURS DERIVED FROM LIDAR DATA COLLECTED IN 2007. CURRENT RIVERBANK DIFFERS SIGNIFICANTLY FROM 2007 CONTOURS IN THIS AREA.

PLAN - RIVER ISLAND LEFT BANK
1"=100'

NO.	BY	DATE	REVISION DESCRIPTION

RP, LK (DRAWN)	EA,MB, MC (DESIGNED)	MB (CHECKED)
MC (APPROVED)	JAN 2015 (DATE)	130235 (PROJECT)

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RIVER ISLAND LEFT BANK AREA PLAN

SHEET
E1 OF 22

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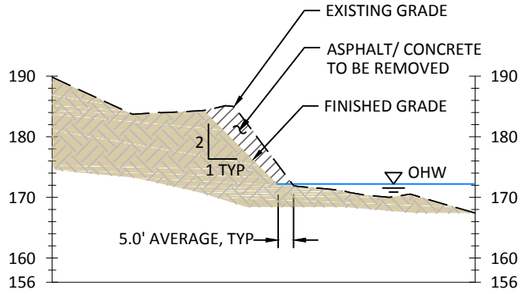
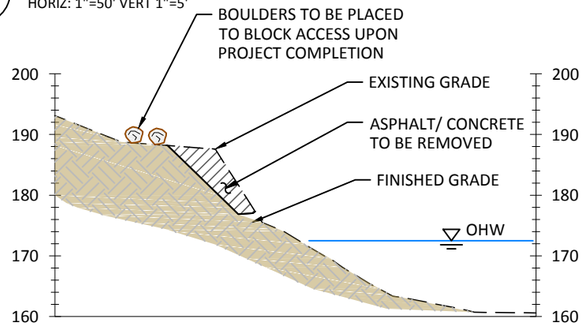


NOTE:

WIDTH AND EXTENT OF ASPHALT/CONCRETE REMOVED VARIES BY CROSS SECTION

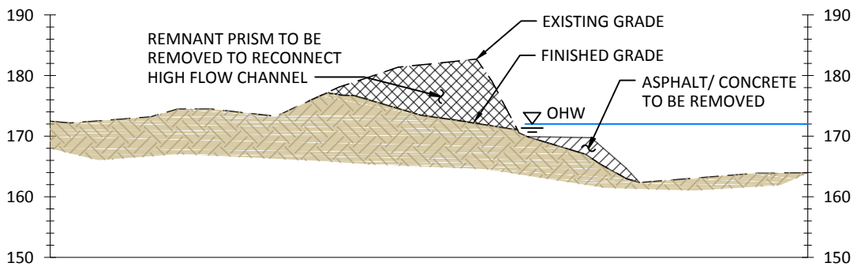
A / E2 CROSS SECTION - LEFT BANK REGRADING

HORIZ: 1"=50' VERT 1"=5'



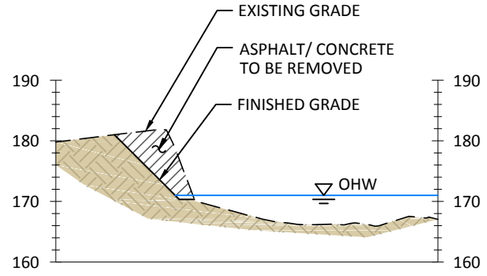
B / E2 CROSS SECTION - LEFT BANK REGRADING

HORIZ: 1"=50' VERT 1"=5'



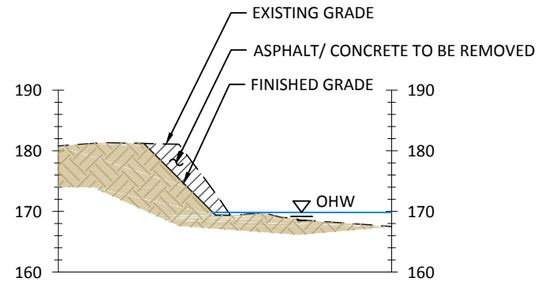
C / E2 CROSS SECTION - LEFT BANK REGRADING

HORIZ: 1"=50' VERT 1"=5'



D / E2 CROSS SECTION - LEFT BANK REGRADING

HORIZ: 1"=50' VERT 1"=5'



E / E2 CROSS SECTION - LEFT BANK REGRADING

HORIZ: 1"=50' VERT 1"=5'

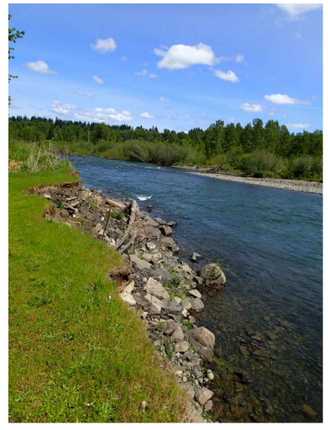


PHOTO - EXISTING LEFT BANK CONDITIONS

BETWEEN C/E2 AND D/E2

NO.	BY	DATE	REVISION DESCRIPTION

RP, LK (DRAWN)	EA,MB, MC (DESIGNED)	MB (CHECKED)
MC (APPROVED)	JAN 2015 (DATE)	130235 (PROJECT)

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RIVER ISLAND LEFT BANK AREA CROSS SECTIONS

SHEET
E2 OF 22

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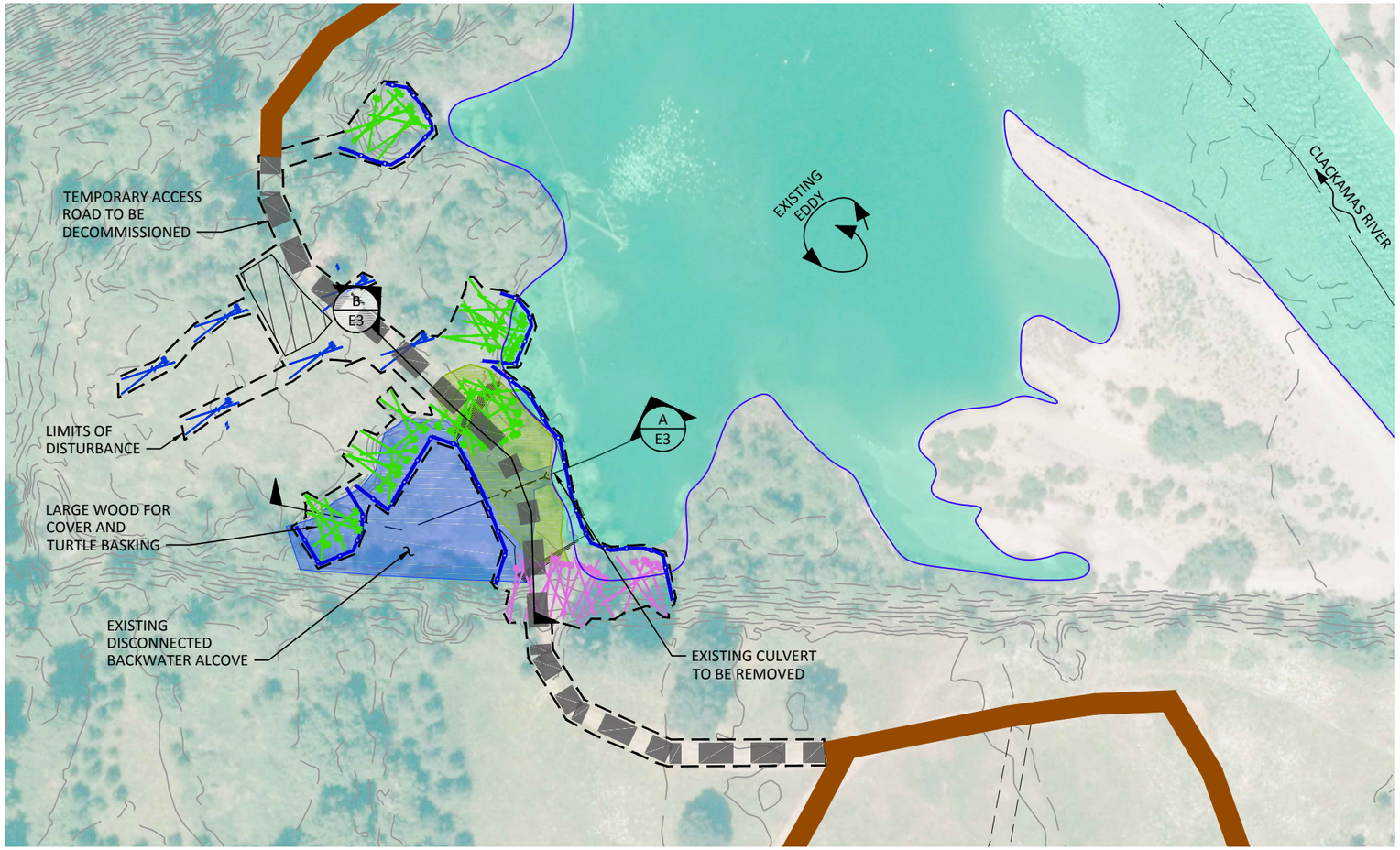
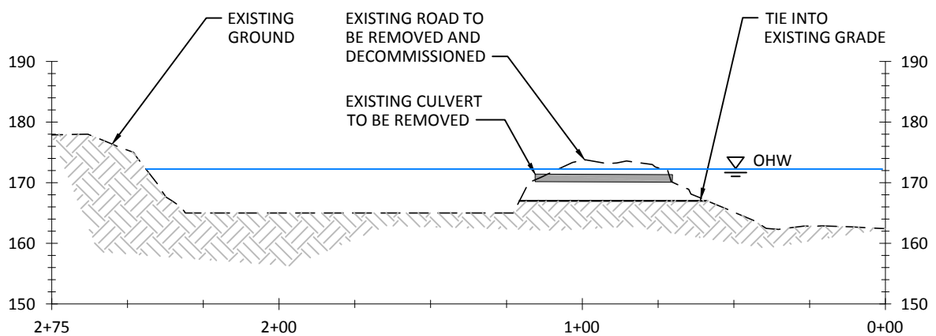


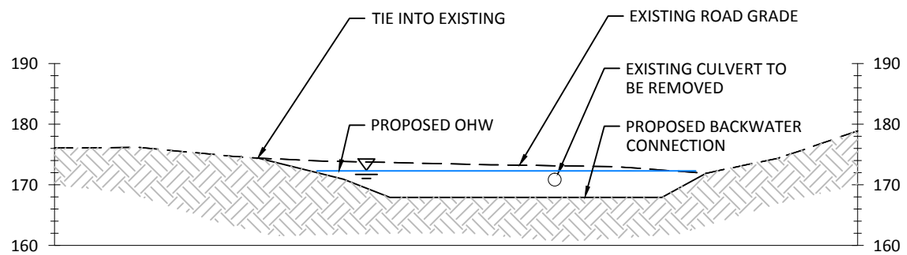
PLAN - RIVER ISLAND ALCOVE

1"=100'



A / E3 PROFILE - BACKWATER ALCOVE

HORIZ: 1"=50' VERT 1"=5'



B / E3 CROSS SECTION - RIVER ISLAND ALCOVE AREA

HORIZ: 1"=50' VERT 1"=5'

0 100 200

SCALE IN FEET

LEGEND

- CLACKAMAS RIVER
- EXISTING DISCONNECTED BACKWATER ALCOVE
- REMOVE EXISTING ROAD FILL AND CULVERT
- EXISTING CONTOURS (1 FT. INTERVALS)
- PROPOSED CONTOURS (1 FT. INTERVALS)
- EXISTING CULVERT
- LIMITS OF DISTURBANCE
- TURBIDITY CURTAIN, SEE 1/G4
- EXISTING ROAD TO BE DECOMMISSIONED
- EXISTING ACCESS ROAD
- TYPE 1 LOG JAM, SEE SHEET D2
- TYPE 3 LOG JAM, SEE SHEET D4
- FLOODPLAIN LARGE WOOD, SEE 2/D6

NOTES:

1. NATURAL COLOR ORTHO-RECTIFIED AERIAL IMAGERY FOR THE PORTLAND METROPOLITAN AREA COLLECTED JULY 6 THROUGH 14, 2012.
2. EXISTING CONTOURS DERIVED FROM LIDAR DATA COLLECTED IN 2007.
3. PROPERTY LINES ARE APPROXIMATE.

Preliminary
Not for Construction

NO.	BY	DATE	REVISION DESCRIPTION

RP, LK	EA,MB, MC	MB
DRAWN	DESIGNED	CHECKED
MC	JAN 2015	130235
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RIVER ISLAND BACKWATER ALCOVE PLAN, PROFILE AND CROSS SECTION

SHEET E3 OF 22

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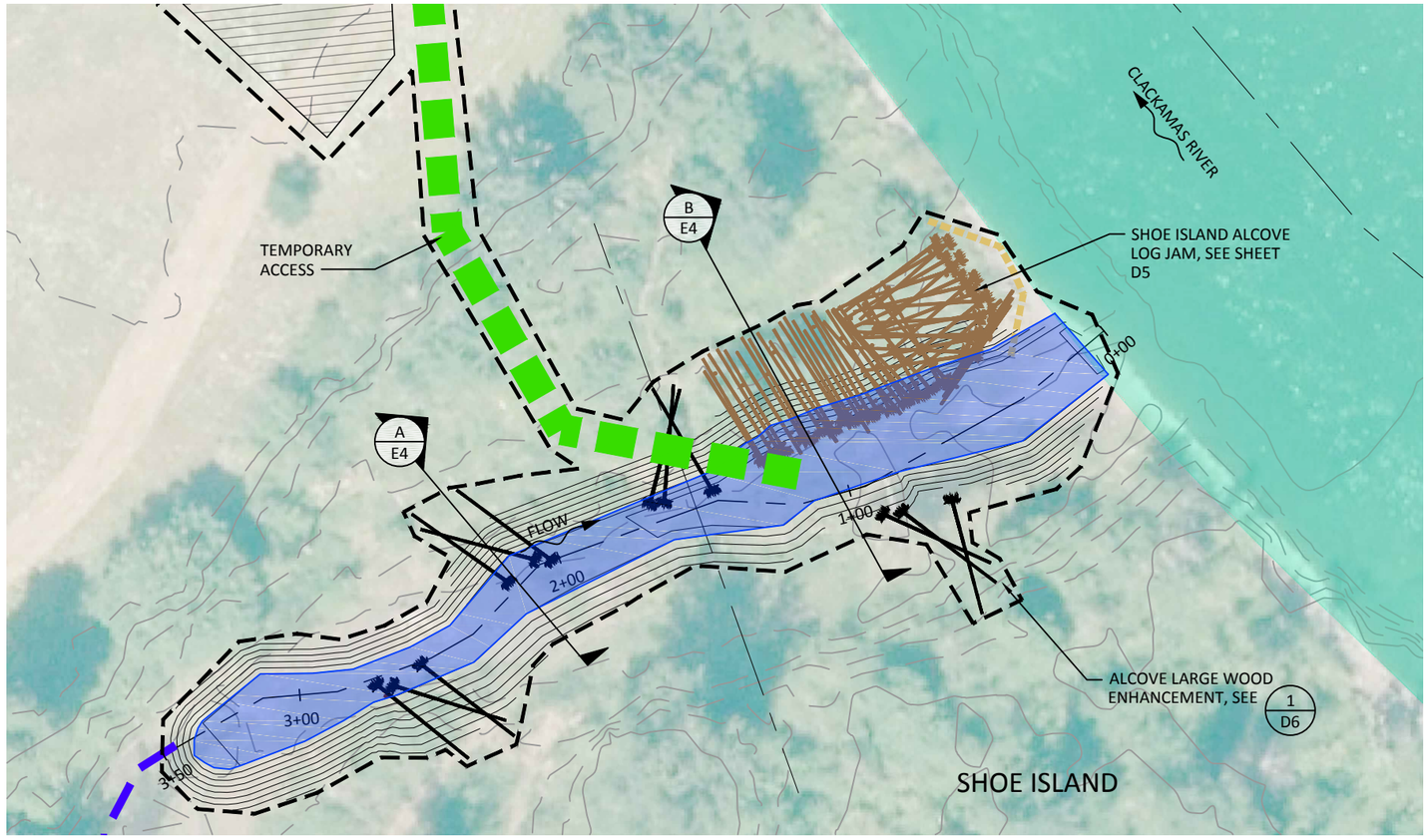
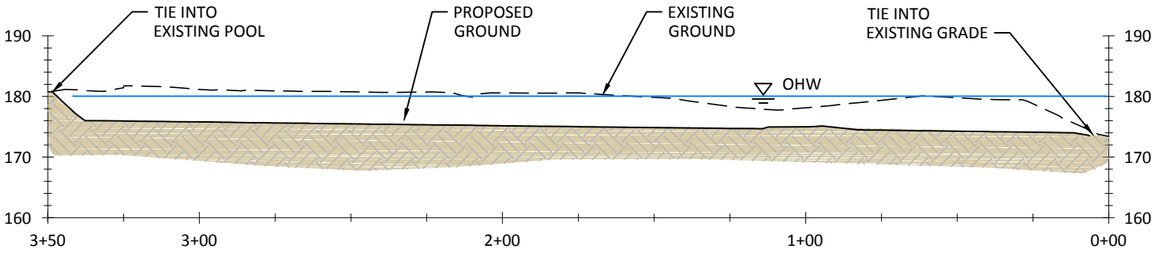


PLAN - SHOE ISLAND
1"=100'



PROFILE - SHOE ISLAND ALCOVE
HORIZ: 1"=50' VERT: 1"=5'

LEGEND

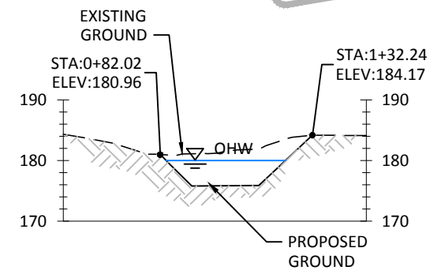
- CLACKAMAS RIVER
- ENHANCED BACKWATER ALCOVE
- EXISTING CONTOURS (1 FT. INTERVALS)
- PROPOSED CONTOURS (1 FT. INTERVALS)
- EXISTING HIGH FLOW CHANNEL
- LIMITS OF DISTURBANCE
- TEMPORARY COFFERDAM, SEE 2 G5
- TEMPORARY ACCESS
- EXISTING ACCESS
- SHOE ISLAND ALCOVE LOG JAM, SEE SHEET D5
- SHOE ISLAND LARGE WOOD, SEE 1 D6

0 100 200
SCALE IN FEET

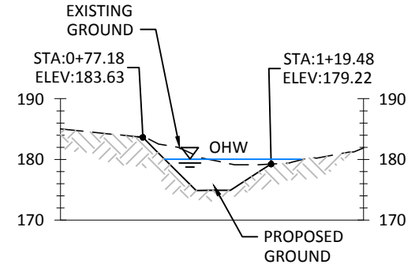
NOTES:

1. NATURAL COLOR ORTHO-RECTIFIED AERIAL IMAGERY FOR THE PORTLAND METROPOLITAN AREA COLLECTED JULY 6 THROUGH 14, 2012.
2. EXISTING CONTOURS DERIVED FROM LIDAR DATA COLLECTED IN 2007.
3. PROPERTY LINES ARE APPROXIMATE.

Preliminary
Not for Construction



A E4 CROSS SECTION - SHOE ISLAND ALCOVE
HORIZ: 1"=50' VERT: 1"=5'



B E4 CROSS SECTION - SHOE ISLAND ALCOVE
HORIZ: 1"=50' VERT: 1"=5'

NO.	BY	DATE	REVISION DESCRIPTION

RP, LK (DRAWN)	EA,MB, MC (DESIGNED)	MB (CHECKED)
MC (APPROVED)	JAN 2015 (DATE)	130235 (PROJECT)

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SHOE ISLAND PLAN, PROFILE AND CROSS SECTIONS

SHEET
E4 OF 22

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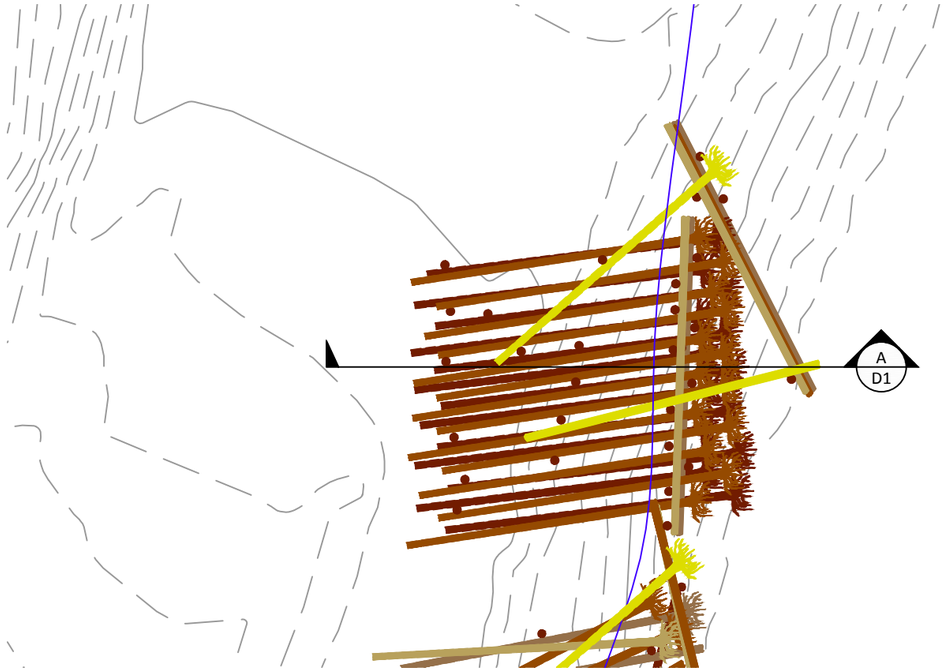
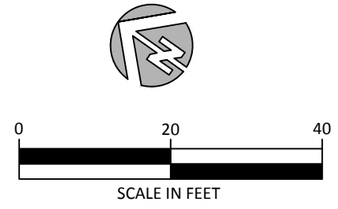
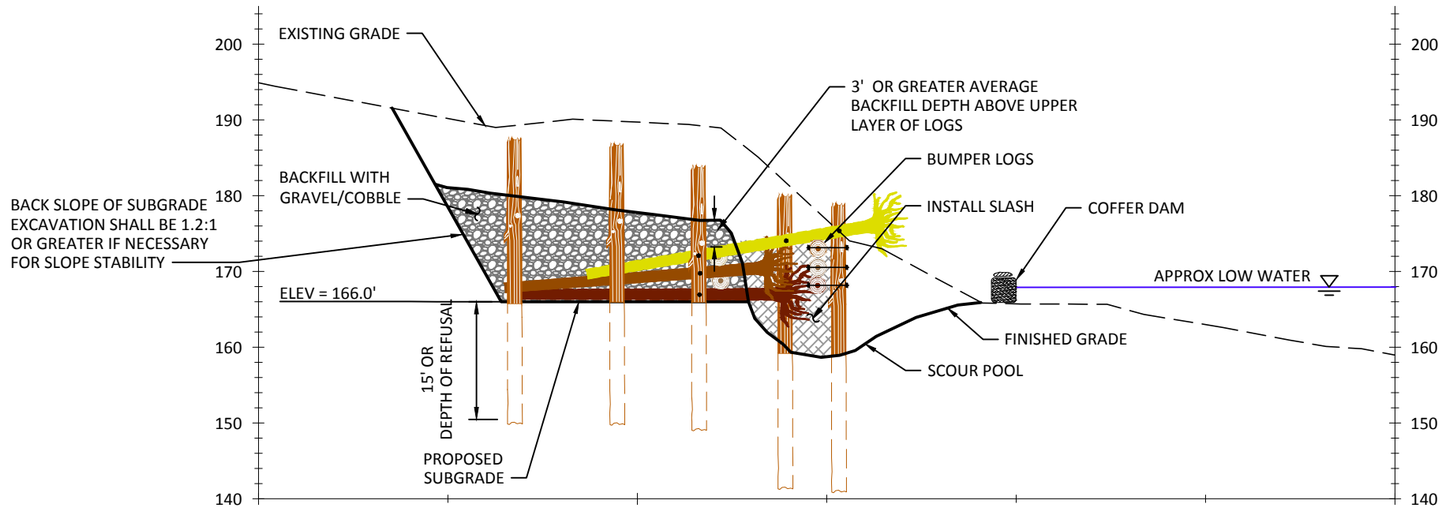


1/D1 PLAN - BURIED LOG JAM



LEGEND

- LOG JAM WOOD LAYER 1
- LOG JAM WOOD LAYER 2
- LOG JAM WOOD LAYER 3
- LOG JAM WOOD LAYER 4
- LOG JAM WOOD LAYER 5
- EXISTING CONTOURS (1FT INTERVAL)
- APPROXIMATE LOW WATER



A/D1 SECTION - BURIED LOG JAM

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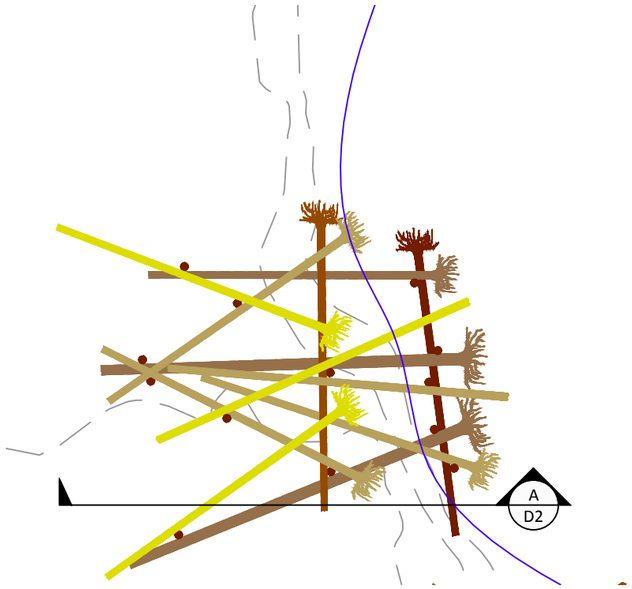
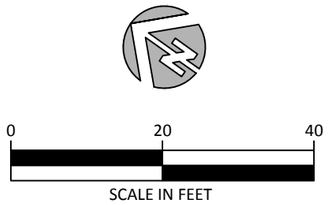
TYPICAL BURIED LOG JAM DETAILS

SHEET
D1 OF 22

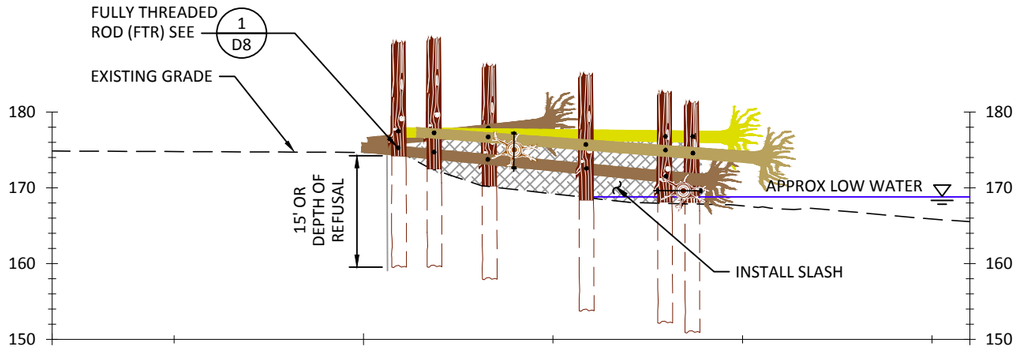




LEGEND

- LOG JAM WOOD LAYER 1
- LOG JAM WOOD LAYER 2
- LOG JAM WOOD LAYER 3
- LOG JAM WOOD LAYER 4
- LOG JAM WOOD LAYER 5
- EXISTING CONTOURS (1FT INTERVAL)
- APPROXIMATE LOW WATER

1/D2 PLAN - TYPICAL TYPE 1 LOG JAM



A/D2 SECTION - TYPICAL TYPE 1 LOG JAM

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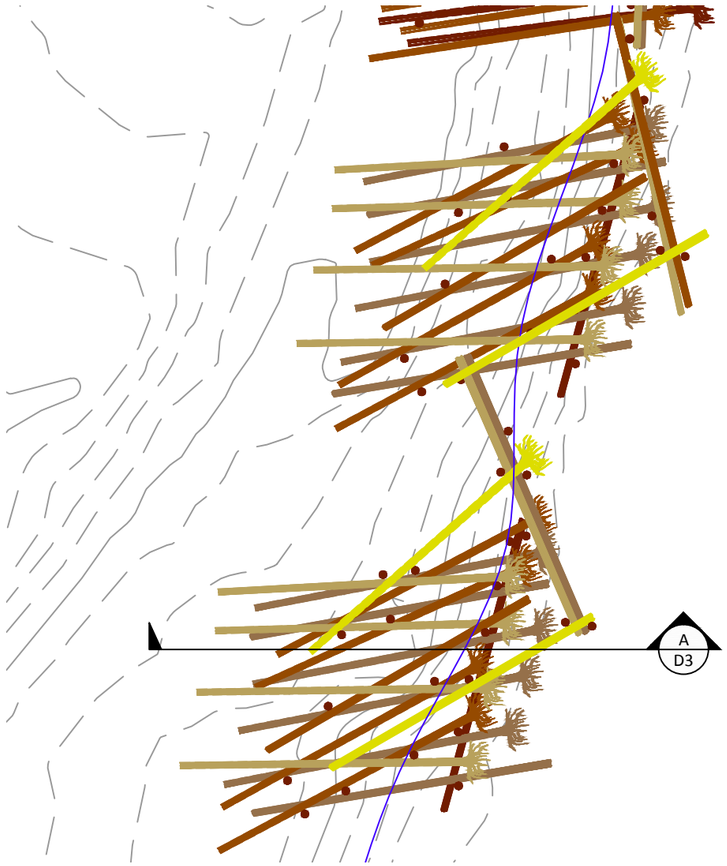
TYPICAL TYPE 1 LOG JAM DETAILS

SHEET
D2 OF 22



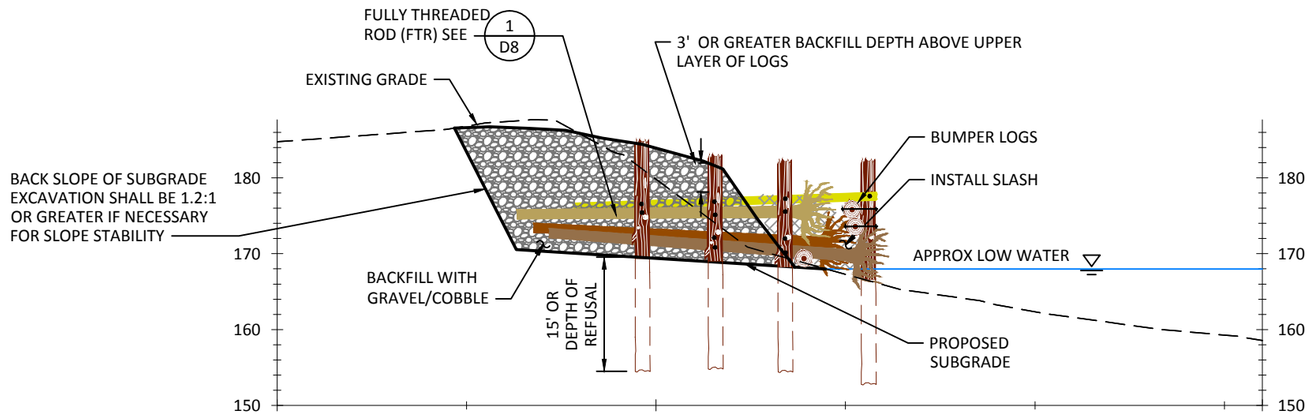
0 20 40

SCALE IN FEET

LEGEND

- LOG JAM WOOD LAYER 1
- LOG JAM WOOD LAYER 2
- LOG JAM WOOD LAYER 3
- LOG JAM WOOD LAYER 4
- LOG JAM WOOD LAYER 5
- EXISTING CONTOURS (1FT INTERVAL)
- APPROXIMATE LOW WATER

1 / D3 PLAN - TYPE 2 LOG JAM



A / D3 SECTION - TYPE 2 LOG JAM

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DRAWN	DESIGNED	CHECKED
MC	JAN 2015	130235
APPROVED	DATE	PROJECT

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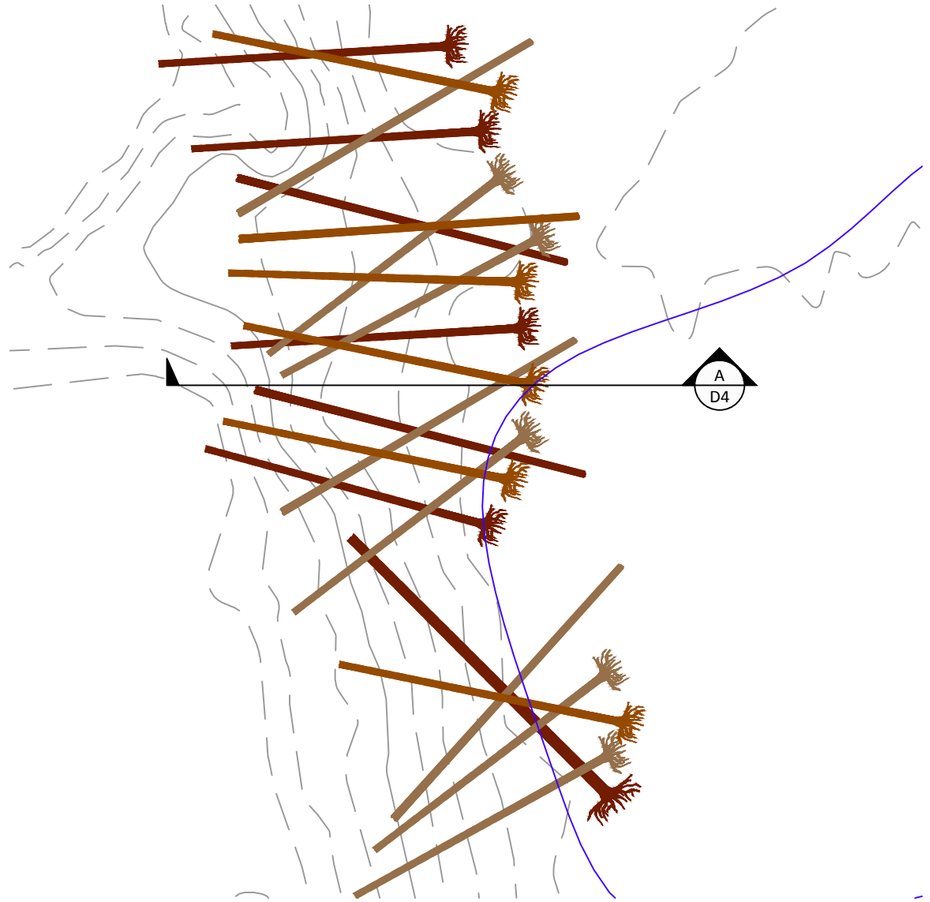
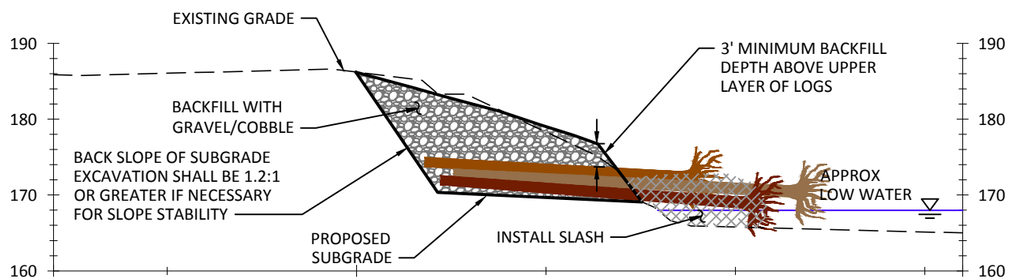
TYPICAL TYPE 2 LOG JAM DETAILS

SHEET D3 OF 22



1 D4 PLAN - TYPE 3 LOG JAM



A D4 SECTION - TYPE 3 LOG JAM

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NO.	BY	DATE	REVISION DESCRIPTION

RP, LK	EA,MB, MC	MB
DRAWN	DESIGNED	CHECKED
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TYPICAL TYPE 3 LOG JAM DETAILS

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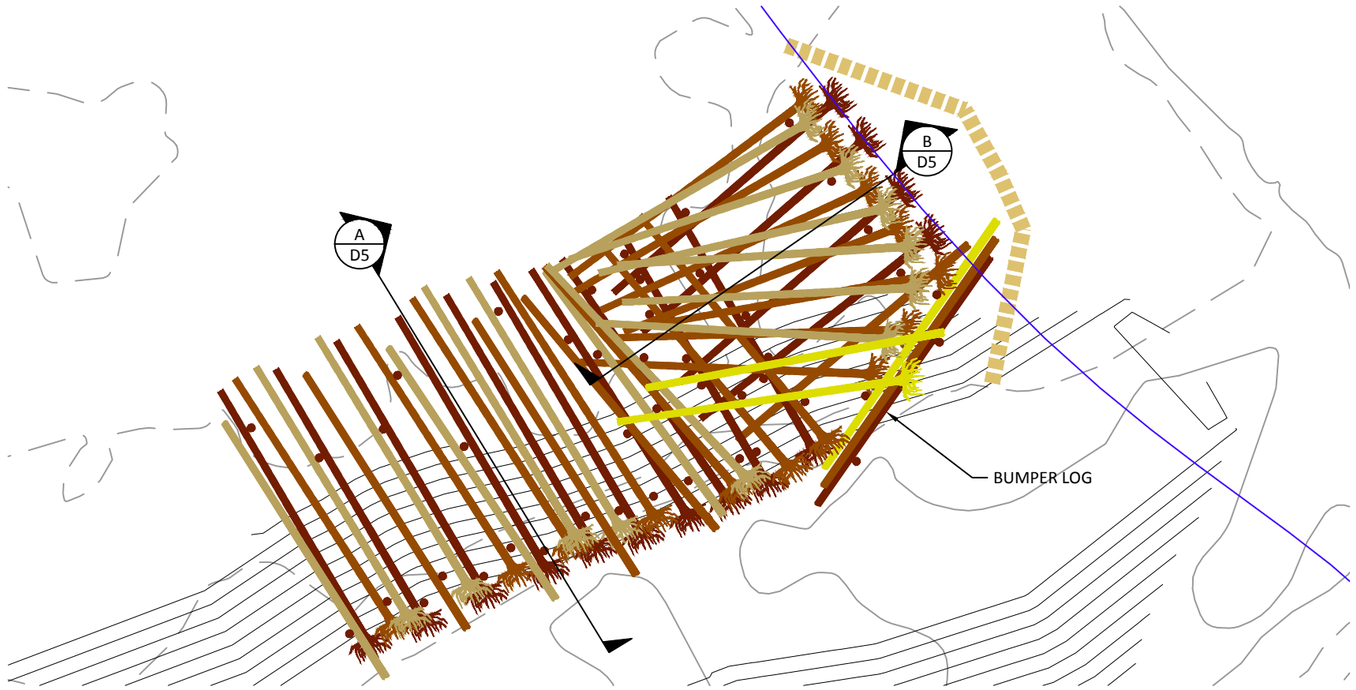

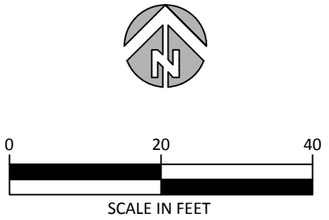

LEGEND

- LOG JAM WOOD LAYER 1
- LOG JAM WOOD LAYER 2
- LOG JAM WOOD LAYER 3
- LOG JAM WOOD LAYER 4
- LOG JAM WOOD LAYER 5
- TEMPORARY COFFERDAM
- PROPOSED CONTOURS (1FT INTERVALS)
- APPROXIMATE LOW WATER

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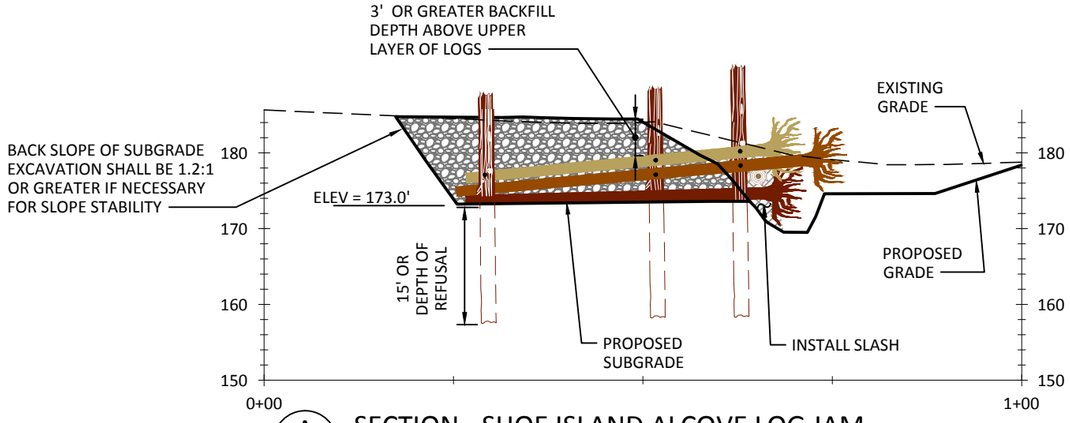
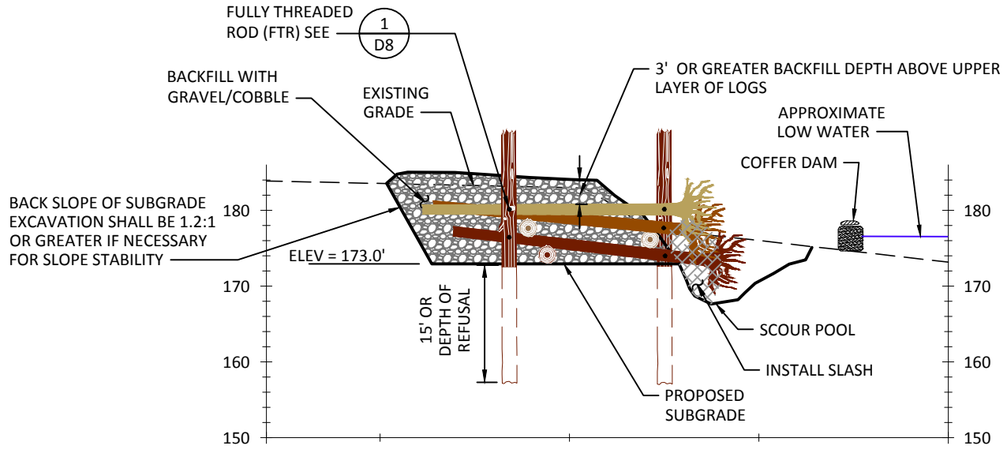
1/D5 PLAN - SHOE ISLAND ALCOVE LOG JAM



A/D5 SECTION - SHOE ISLAND ALCOVE LOG JAM



B/D5 SECTION - SHOE ISLAND ALCOVE LOG JAM

NO.	BY	DATE	REVISION DESCRIPTION

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TYPICAL SHOW ISLAND ALCOVE LOG JAM DETAILS

SHEET
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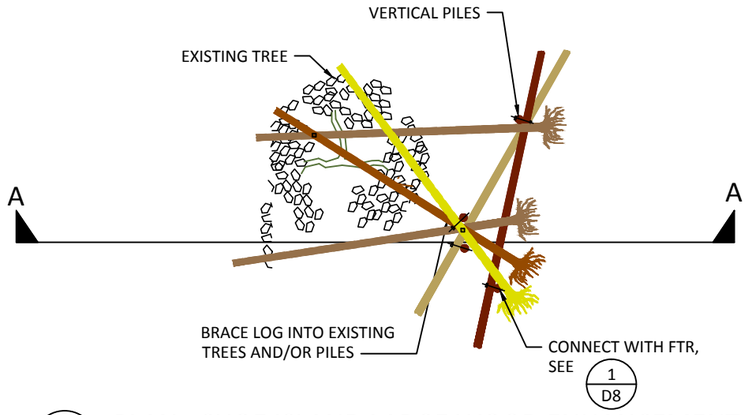
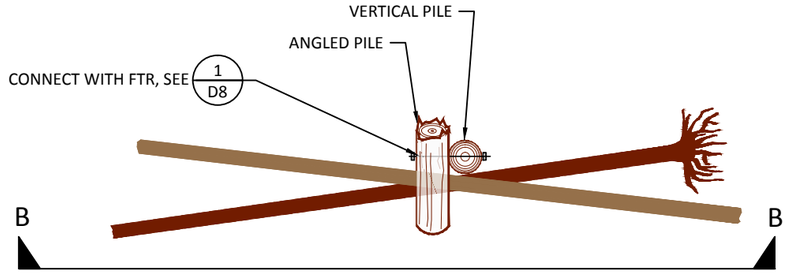
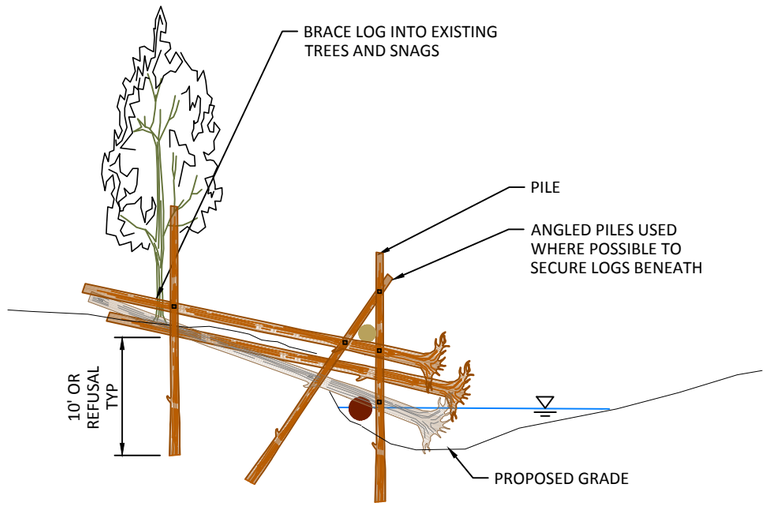


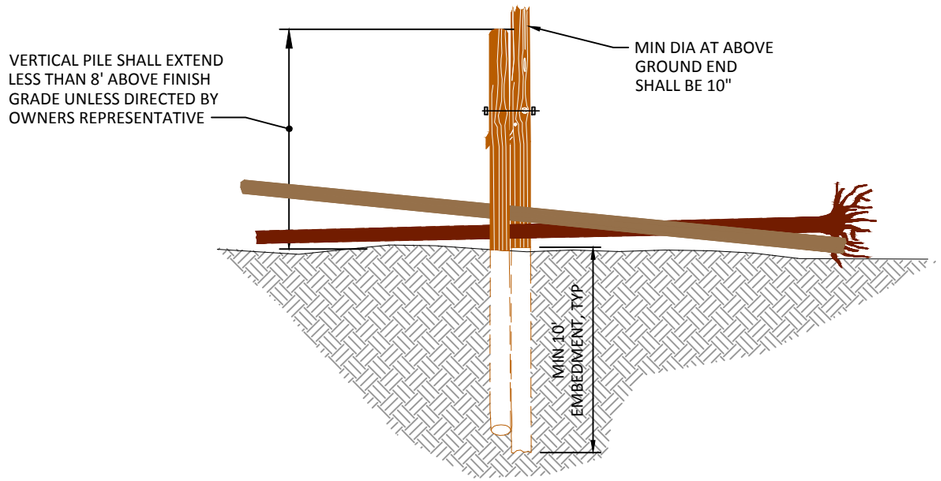
1/D6 PLAN - SHOE ISLAND LARGE WOOD ENHANCEMENT
NTS



2/D6 PLAN - FLOODPLAIN LARGE WOOD
NTS



A/D6 SECTION - SHOE ISLAND LARGE WOOD ENHANCEMENT
NTS



B/D6 SECTION - FLOODPLAIN LARGE WOOD
NTS

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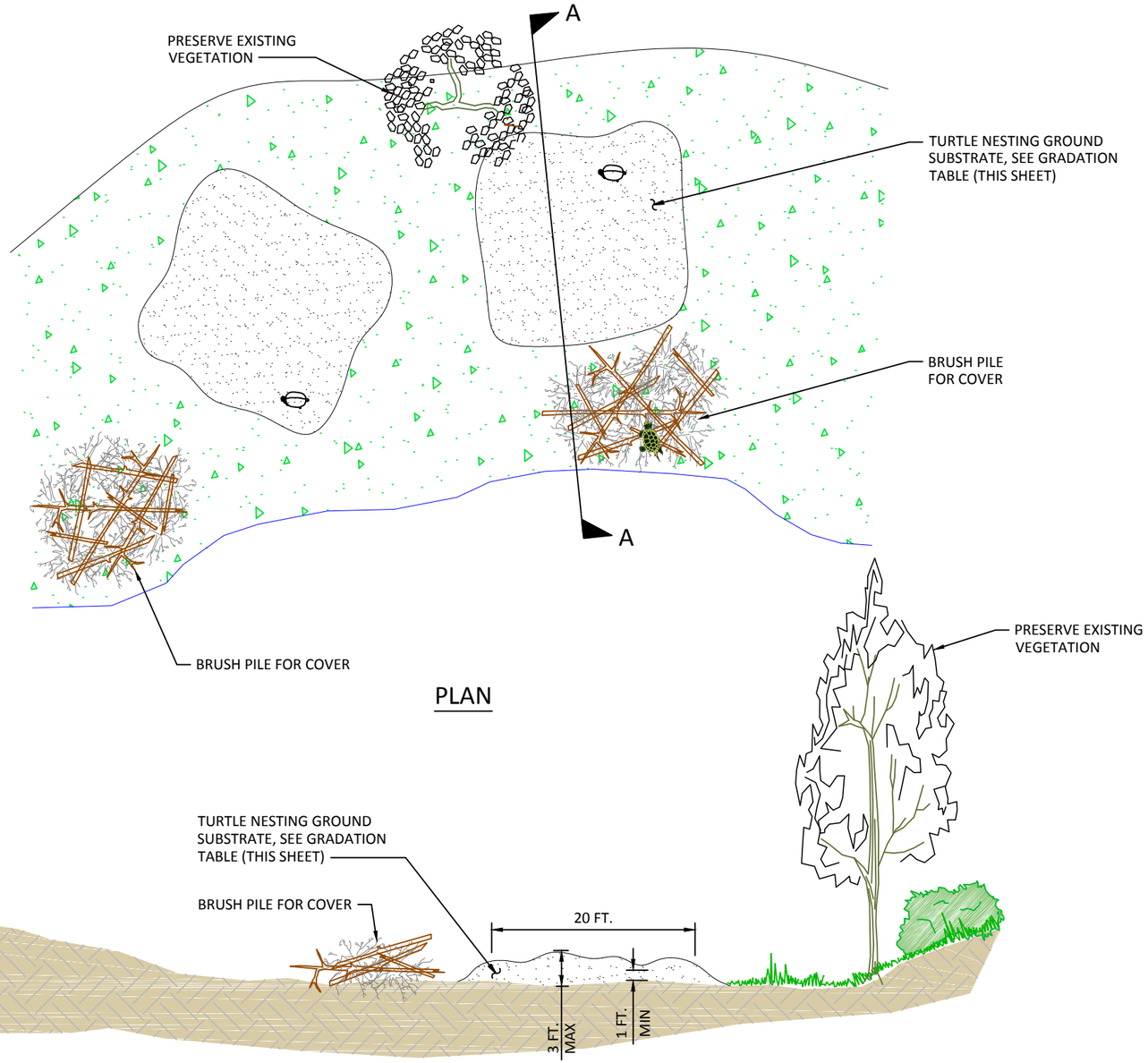
TYPICAL ALCOVE LARGE WOOD AND FLOODPLAIN WOOD DETAILS

SHEET
D6 OF 22



PLAN

SECTION A-A

1/D7 TYPICAL DETAIL - TURTLE NESTING AREA
SCALE

GRADATION TABLE

TURTLE NESTING GROUND SUBSTRATE	
SOIL/SUBSTRATE	% OF TOTAL MIX
FINE CLAY	25 OR LESS
LOAM	25
SAND	25-50
1/4" ROUNDED AGGREGATE*	25 OR LESS

* ROUNDED AGGREGATE SHALL NOT INCLUDE FINES

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MC (APPROVED)	JAN 2015 (DATE)	130235 (PROJECT)

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TYPICAL TURTLE HABITAT ENHANCEMENT DETAILS

SHEET
D7 OF 22

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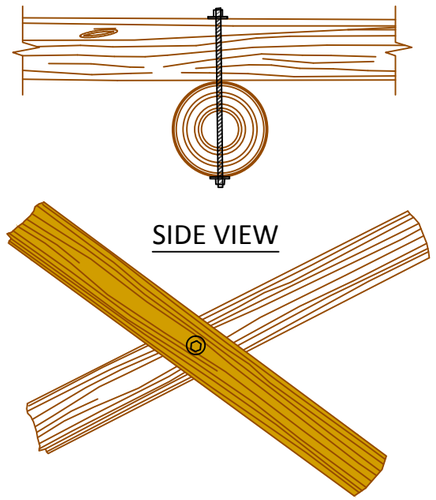
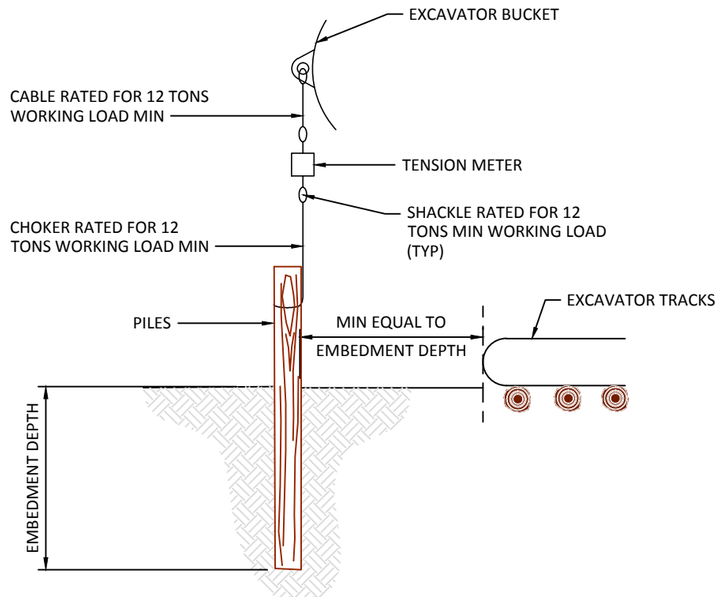


SIDE VIEW

END VIEW

1. PIN LOGS TO LW OR PILE
2. DRILL 1-3/8" HOLE THROUGH LW OR PILE
3. INSERT 1-1/4" DIA FTR
4. INSTALL WASHER AND NUT
5. FILE OR GRIND OFF SHARP EDGES

1/D8 FULLY THREADED ROD (FTR) CONNECTION
NTS



2/D8 PILE TESTING
NTS

PILES

ALL VERTICAL PILES SHALL BE INSTALLED USING VIBRASONIC PILE DRIVING EQUIPMENT. INSTALLATION BY EXCAVATION OR HAMMERING WILL NOT BE ALLOWED.

RIGGING

RIGGING FOR PILE TESTING SHALL CONFORM TO THE TENSION SCALE MANUFACTURER'S RECOMMENDATIONS.

CHOKERS, CABLES AND SHACKLES SHALL HAVE MINIMUM WORKING LOAD RATING OF 12 TONS. FITTINGS SHALL BE SIZED ACCORDINGLY

TESTING

TESTING OF PILES SHALL BE PERFORMED IN THE PRESENCE OF THE ENGINEER OR OTHER QUALIFIED PERSONNEL.

EACH PILE TEST SHALL HAVE UPWARD LOAD GRADUALLY INCREASED AND AS CLOSELY ALIGNED TO AXIS OF PILE AS POSSIBLE. RECORD THE PILE DIAMETER, EMBEDMENT DEPTH AND MAXIMUM FORCE REQUIRED TO MOVE THE PILE . UP TO A TOTAL OF THREE LOADINGS MAY BE REQUIRED AT EACH EMBEDMENT DEPTH.

PROOF TESTS SHALL BE MADE AT UP TO FOUR EMBEDMENT DEPTHS TO BE DETERMINED IN THE FIELD. AS A GUIDELINE TEST EMBEDMENT DEPTHS MAY INCLUDE 6', 8', 10', AND 12'.

EXCAVATOR CONDUCTING PULL OUT LOADING SHALL BE POSITIONED NO CLOSER THAN EMBEDMENT DEPTH OF PILE IF POSSIBLE. IF A CLOSER POSITIONING IS REQUIRED, EXCAVATOR SHALL BE NO CLOSER THAN THAT REQUIRED TO GENERATE DESIRED LOADING WITH DISTANCE FROM PILE NOTED IN THE TEST RECORD. LOAD MAY BE SPREAD IN THIS SITUATION BY POSITIONING THE EXCAVATOR ACROSS HORIZONTAL LOGS, WITH DISTANCE FROM PILE, LOG NUMBERS AND LENGTH NOTED IN THE TEST RECORD.

PULL OUT RESISTANCE READING SHALL BE COMPARED AGAINST EXCAVATOR MAX LIFT OFFSET TABLE.

10% OF PRODUCTION PILINGS SHALL BE PROOF TESTED. IF RESULTS VARY MORE THAN 50% THEN IT SHOULD BE ANTICIPATED THAT UP TO 25% OF THE PRODUCTION PILINGS SHALL BE PROOF TESTED. IF THE PILE EMBEDDMENT DEPTH DOES NOT MEET MINIMUM, OWNERS REPRESENTATIVE MAY REQUEST ADDITIONAL PULLOUT TESTING.

CONSTRUCTED DRIVEN PILE EMBEDMENT DEPTH SPECIFIED IN THE DRAWINGS MAY BE REDUCED OR INCREASED, PENDING PULL OUT TEST RESULTS, AT THE CONTRACTOR'S EXPENSE.

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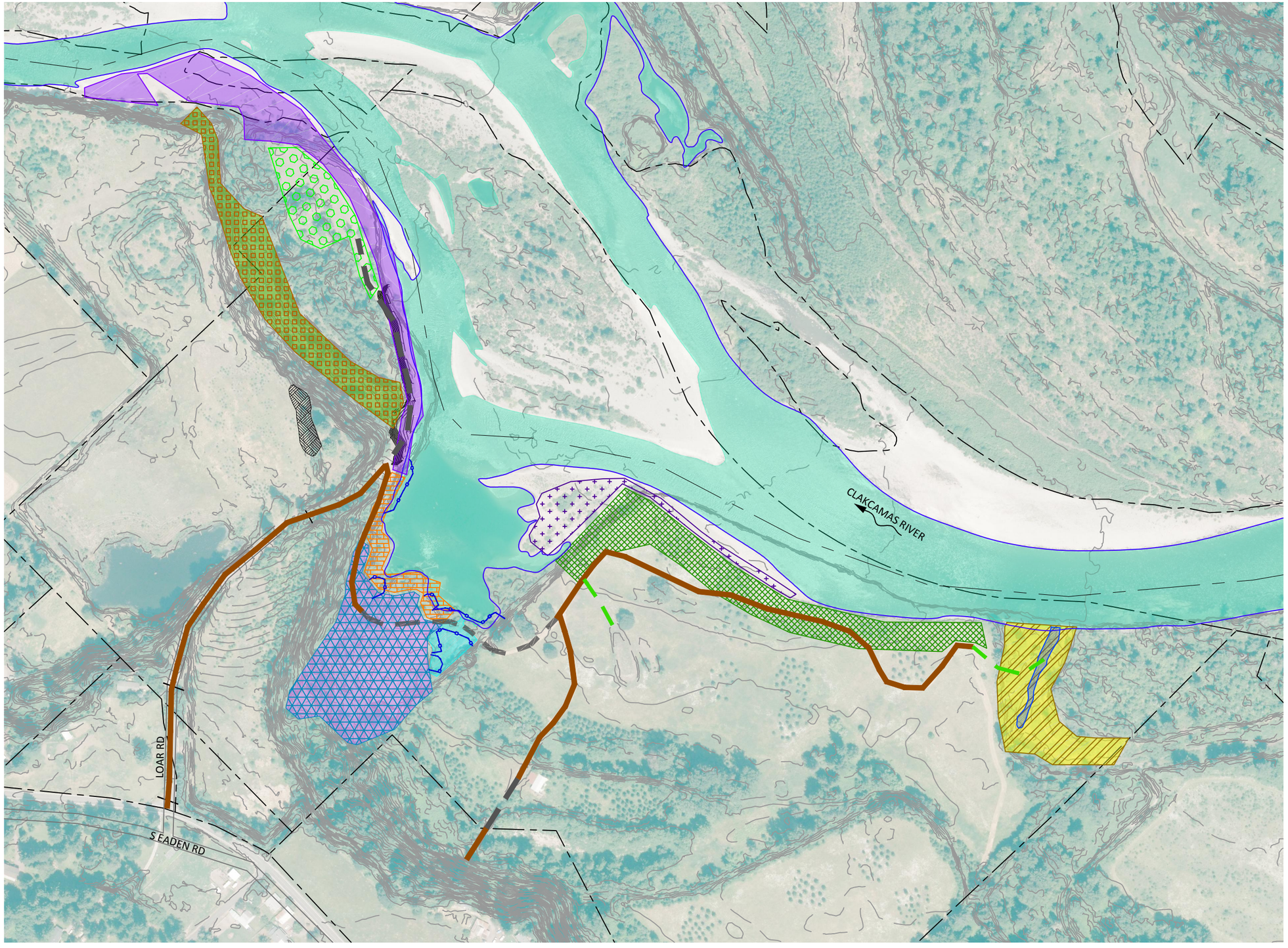
TYPICAL DETAILS

SHEET
D8 OF 22



0 300 600

SCALE IN FEET

LEGEND

METRO REVEGETATION MANAGEMENT UNITS

- UNIT 1
- UNIT 2
- UNIT 4
- UNIT 5
- UNIT 6
- UNIT 7
- UNIT 9
- TURTLE AREA - BARE GROUND TO BE MAINTAINED, SEE SHEET E1

SEE SHEET V2 FOR METRO REVEGETATION SPECIFICATIONS

NOTE:

1. SPECIES MIX TO VARY BY PLANTING UNIT. PLANTING WILL BE BY BARE ROOT, 12-18" NATIVE STOCK, NATIVE WILLAMETTE VALLEY SEED STOCK TO BE PLANTED BY PROFESSIONAL REFORESTATION CONTRACTOR.
2. REVEGETATION AREAS AND SPECIFICATIONS HAVE BEEN DEVELOPED BY METRO STAFF.
3. REVEGETATION TO OCCUR ONLY ABOVE OHW.
4. UNIT 3 AND UNIT 8 ARE LOCATED OUTSIDE WORK AREA.

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REVEGETAION PLAN

SHEET V1 OF 22

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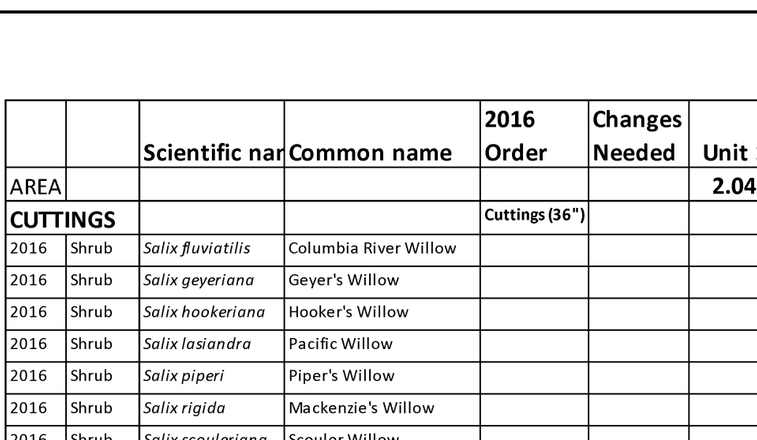
METRO REVEGETATION SPECIFICATIONS

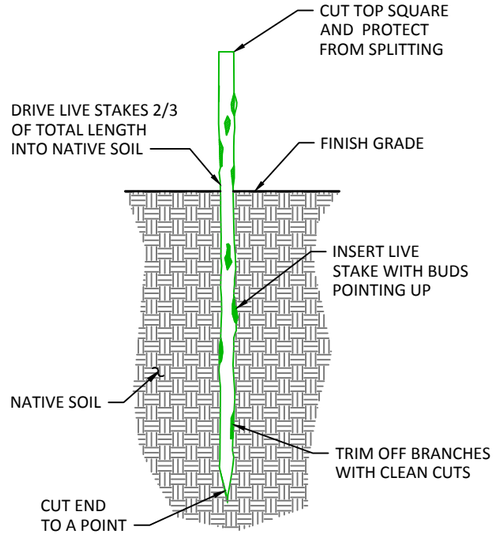
		Scientific name	Common name	Unit 1	Unit 2	Unit 4	Unit 5	Unit 6	Unit 7	Unit 9
AREA				2.04	3.2	1.01	3.33	2.96	2.28	0.7
TREES										
2016	Tree	*Abies grandis*	Grand Fir	100			100			
2016	Tree	*Alnus rubra*	Red Alder			300		200		
2016	Tree	*Fraxinus latifolia*	Oregon Ash	100	200		300	200	300	300
2016	Tree	*Populus trichocarpa*	Black Cottonwood			300	200	200		200
2016	Tree	*Psuedotsuga menziesii*	Douglas Fir	200	400			200		
2016	Tree	*Quercus garryana*	Oregon Oak		700					
2016	Tree	*Rhamnus purshiana*	Cascara		700					
2016	Tree	*Thuja plicata*	Western Red Cedar	200			200		200	
2016	Tree	*Tsuga heterophylla*	Western Hemlock	100			200		200	
		Total Trees		**700**	**2,000**	**600**	**1,000**	**800**	**700**	**500**
SHRUBS										
2016	Shrub	*Acer circinatum*	Vine Maple						200	
2016	Shrub	*Amelanchier alnifolia*	Serviceberry		400					
2016	Shrub	*Cornus sericea*	Red Osier Dogwood	400			700	500	500	300
2016	Shrub	*Euonymus occidentalis*	Western Wahoo							
2016	Shrub	*Holodiscus discolor*	Oceanspray		700			500		
2016	Shrub	*Lonicera involucrata*	Twinberry							
2016	Shrub	*Mahonia aquifolium*	Tall Oregon Grape		700		300	500		
2016	Shrub	*Mahonia nervosa*	Dull Oregon Grape							
2016	Shrub	*Oemleria cerasiformis*	Indian Plum		300			200		
2016	Shrub	*Philadelphus lewisii*	Mock Orange		400			300		
2016	Shrub	*Physocarpus capitatus*	Ninebark	400		300	600	500	500	300
2016	Shrub	*Ribes sanguineum*	Red flowering currant		300					
2016	Shrub	*Rosa nutkana*	Nutka Rose		300			500		
2016	Shrub	*Rosa pisocarpa*	Swamp Rose	200			400		300	300
2016	Shrub	*Rubus parviflorus*	Thimbleberry		400			500		
2016	Shrub	*Rubus spectabilis*	Salmonberry						300	
2016	Shrub	*Salix lasiandra*	Pacific Willow				700			
2016	Shrub	*Salix sitchensis*	Sitka Willow				800			
2016	Shrub	*Sambucus cerulea*	Blue Elderberry		400					
2016	Shrub	*Sambucus racemosa*	Red Elderberry				400			
2016	Shrub	*Spiraea douglasii*	Spiraea	400	400	300	600	500	500	400
2016	Shrub	*Symphoriocarpus albus*	Snowberry	200	700		500	1,000	300	
		SHRUB TOTAL		**1,600**	**5,000**	**600**	**5,000**	**5,000**	**2,600**	**1,300**
		PLANT TOTAL		**2,300**	**7,000**	**1,200**	**6,000**		**3,300**	**1,800**

		Scientific nar	Common name	2016 Order	Changes Needed	Unit 1	Unit 2	Unit 4	Unit 5	Unit 6	Unit 7	Unit 9
AREA						2.04	3.2	1.01	3.33	2.96	2.28	0.7
CUTTINGS				Cuttings (36")								
2016	Shrub	*Salix fluviatilis*	Columbia River Willow					600		1,500	500	
2016	Shrub	*Salix geyeriana*	Geyer's Willow									
2016	Shrub	*Salix hookeriana*	Hooker's Willow									
2016	Shrub	*Salix lasiandra*	Pacific Willow							1,000	1,000	
2016	Shrub	*Salix piperi*	Piper's Willow									
2016	Shrub	*Salix rigida*	Mackenzie's Willow									
2016	Shrub	*Salix scouleriana*	Scouler Willow							1,000		
2016	Shrub	*Salix sessilifolia*	Soft-Leaved Willow									
2016	Shrub	*Salix sitchensis*	Sitka Willow					600		1,500	1,000	
2016 Cuttings Totals												



BARE ROOT DETAIL

NOT TO SCALE



LIVE CUTTING DETAIL

NOT TO SCALE

Preliminary
Not for Construction

G:\M-P\METRO-River Island_130235\Drawings\IFI_RV_ISLND_South_Permit.dwg - lkonecny - 3/19/15

NO.	BY	DATE	REVISION DESCRIPTION

DRAWN	DESIGNED	CHECKED
RP, LK	EA,MB, MC	MB
APPROVED	DATE	PROJECT
MC	JAN 2015	130235

RIVER ISLAND SOUTH PRELIMINARY DESIGN
METRO
CLACKAMAS COUNTY, OREGON

Metro

Interfluve
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Hood River, OR 97031
541.386.9003
www.interfluve.com

REVEGETATION DETAILS

SHEET
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