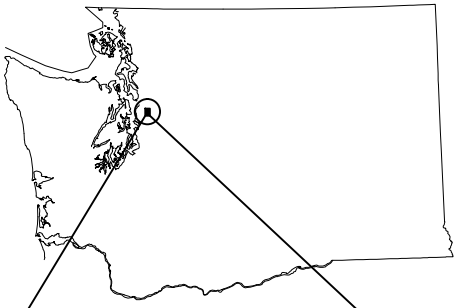
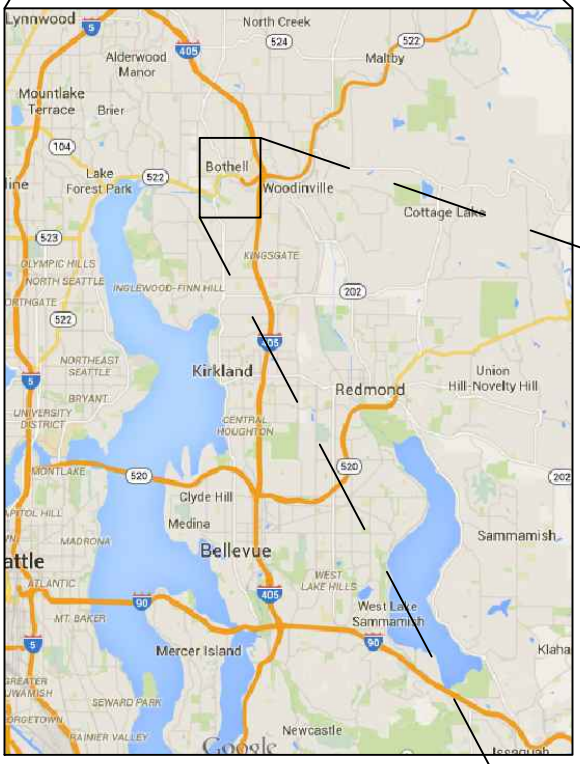
CITY OF BOTHELL - SAMMAMISH RIVER OFF-CHANNEL HABITAT RESTORATION PROJECT: 90% DESIGN

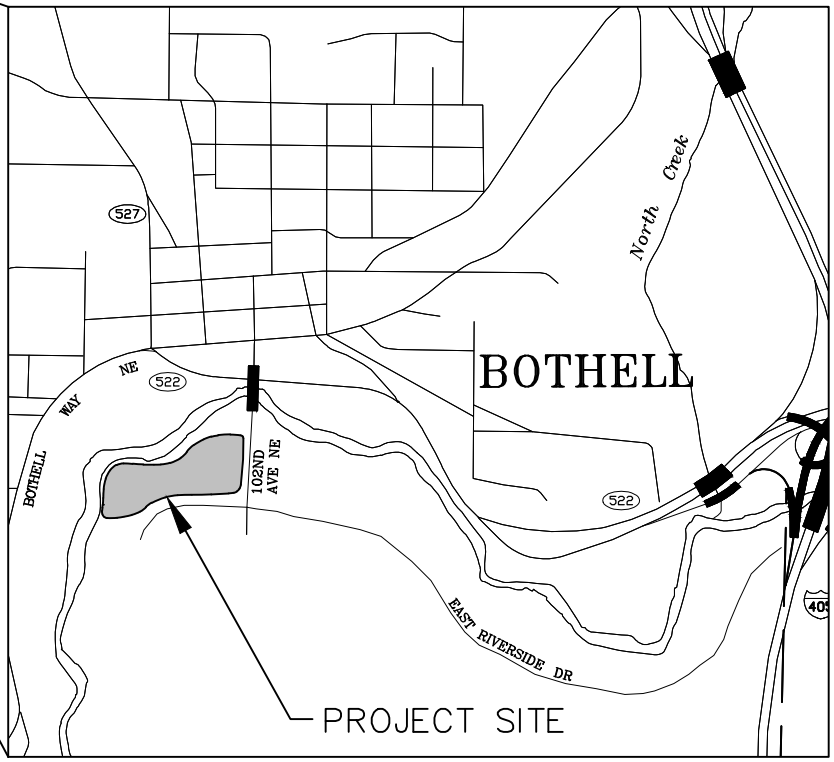




VICINITY MAP

SHEET INDEX

SHEET NAME	SHEET #	SHEET NAME	SHEET #
COVER SHEET	1	CULVERT/RAILING DETAILS 1 OF 2	19
SURVEY DATUM	2	CULVERT/RAILING DETAILS 2 OF 2	20
LEGEND AND ABBREVIATIONS	3	PATH DETOUR PLAN & SECTION 1 OF 2	21
SITE PLAN; ACCESS/STAGING PROPERTY BOUNDARIES	4	PATH DETOUR PLAN & SECTION 2 OF 2	22
CHANNEL EXCAVATION PLAN 1 OF 2	5	FLOODPLAIN FILL/GRADING PLAN 1 OF 2	23
CHANNEL EXCAVATION PLAN 2 OF 2	6	FLOODPLAIN FILL/GRADING PLAN 2 OF 2	24
PROPOSED CHANNEL PROFILE 1 OF 2	7	TESC/WATER MANAGEMENT PLAN 1 OF 2	25
PROPOSED CHANNEL PROFILE 2 OF 2	8	TESC/WATER MANAGEMENT PLAN 2 OF 2	26
PROPOSED CHANNEL SECTIONS LOG INSTALLATION DETAIL 1 OF 2	9	PLANTING PLAN VIEW 1 OF 2	27
PROPOSED CHANNEL SECTIONS LOG INSTALLATION DETAIL 2 OF 2	10	PLANTING PLAN VIEW 2 OF 2	28
UPSTREAM CULVERT PLAN	11	PLANTING PLAN, SECTIONS, & DETAILS 1 OF 2	29
DOWNSTREAM CULVERT PLAN	12	PLANTING PLAN, SECTIONS, & DETAILS 2 OF 2	30
CULVERT SECTIONS I 1 OF 2	13	PLANTING SPECIFICATIONS 1 OF 2	31
CULVERT SECTIONS I 2 OF 2	14	PLANTING SPECIFICATIONS 2 OF 2	32
CULVERT SECTIONS II 1 OF 2	15		
CULVERT SECTIONS II 2 OF 2	16		
CULVERT SPECIFICATIONS UPSTREAM	17		
CULVERT SPECIFICATIONS DOWNSTREAM	18		



SITE MAP

PROJECT MANAGER

ANDY LOCH
CITY OF BOTHELL
DEPARTMENT OF PUBLIC WORKS
9654 NE 182nd ST
BOTHELL WA 98011

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PAUL EDWARD DEVRIES
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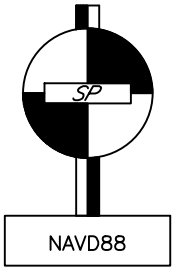
REDMOND, WA.

CITY OF BOTHELL
SAMMIMISH RIVER OFF-CHANNEL HABITAT RESTORATION

COVER SHEET

SURVEY NOTES

SURVEY HORIZONTAL DATUM FOR THIS PROJECT IS WASHINGTON STATE PLANE NORTH ZONE COORDINATES, NORTH AMERICAN DATUM NAD83/07; VERTICAL DATUM IS NAVD88.



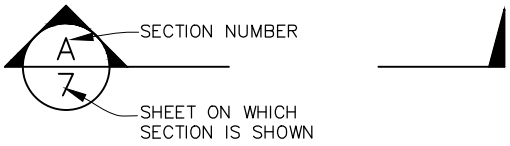
WSDOT SURVEY CONTROL POINT DATA

PROJECT CONTROL POINTS:	#1	#2
POINT ID#	R2 MON-1	R2 MON-2
NORTHING (FT)	279357.62	278761.23
EASTING (FT)	1302567.19	1302035.94
ELEVATION (FT; NAVD88)	25.56	23.86

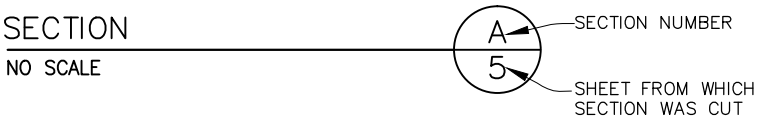
DRAWING REFERENCES

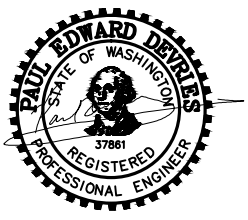
THE DRAWINGS ARE REFERENCED IN THE FOLLOWING MANNER

SECTION CUT ON SHEET 5, SHOWN ON SHEET 7:



ON SHEET 7 THIS SECTION IS DEFINED AS:





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SAMMIMISH RIVER OFF-CHANNEL HABITAT RESTORATION

SURVEY DATUM

LEGEND

- APPROXIMATE PARCEL LINES
- FEMA MAP 100 YR FLOOD EXTENT
- PRESENT SAMMAMISH RIVER ALIGNMENT
- 26 EXISTING CONTOURS
- OB OB CONSTRUCTION FENCING
- SF SF SILT FENCING
- VEGETATION ZONE BOUNDARY
- OHW OHW ORDINARY HIGH WATER LINE
- WET WET WATERS/WETLAND BOUNDARY
- SIGNIFICANT TREE
- SURVEY CONTROL POINT

- TRAIL
- POOL
- WOOD
- UNDISTURBED EARTH
- GRAVEL FILL
- STAGING AREA
- CUT
- FILL
- BLACKBERRY RESTORATION AREA
- REVEGETATION AREA (GENERAL)
- REED CANARY GRASS RESTORATION AREA

ABBREVIATIONS

BM	BENCH MARK
CG	CENTER OF GRAVITY
CL, ℄	CENTERLINE
CP	CONTROL POINT
CS	CROSS SECTION
CY	CUBIC YARD
DBH	DIA AT BREAST HEIGHT
DIA	DIAMETER
DS, D/S	DOWNSTREAM
DSEL	DOWNSTREAM ELEVATION
DWG	DRAWING
E	EAST
EA	EACH
ELEV, EL	ELEVATION
ELJ	ENGINEERED LOG JAM
EXIST	EXISTING
FIRM	FLOOD INSURANCE RATE MAP
FT	FOOT, FEET
HORZ	HORIZONTAL
HPA	HYDRAULIC PROJECT APPROVAL
ID	IDENTIFICATION, INNER DIA
IN	INCH, INCHES
LB	POUNDS
LT	LEFT
LF	LINEAR FOOT
LWD	LARGE WOODY DEBRIS
MAX	MAXIMUM
MIN	MINIMUM
MISC	MISCELLANEOUS
MON	MONUMENT
N	NORTH
NO	NUMBER
NTS	NOT TO SCALE
OC	ON CENTER
OHWL	ORDINARY HIGH WATER LEVEL
OHWM	ORDINARY HIGH WATER MARK
RT	RIGHT
S	SLOPE, SOUTH
SHT	SHEET
SP	STATE PLANE COORDINATES
SPEC	SPECIFICATION
STA	STATION
STD	STANDARD
SF	SQUARE FOOT
SY	SQUARE YARD
TESC	TEMPORARY EROSION AND SEDIMENT CONTROL
TYP	TYPICAL
USEL	UPSTREAM ELEVATION
VAR	VARIES
VERT	VERTICAL
W	WEST, WIDE
W/	WITH
WM	WATER MARK
W/O	WITHOUT
WSDOT	WA DEPT OF TRANSPORTATION
WSEL	WATER SURFACE ELEVATION
WT	WEIGHT
YR	YEAR

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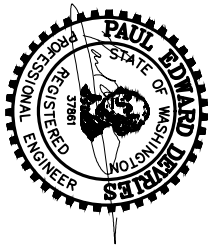
LEGEND AND ABBREVIATIONS



PARCEL 0826059139
CITY OF BOTHELL

SAMMAMISH RIVER

EXISTING PEDESTRIAN BRIDGE

STAGING AREA FOR CULVERT CONSTRUCTION

SURVEY CONTROL POINT #1

NEW CULVERT SHEETS 11–22

ACCESS VIA EXISTING SAMMAMISH RIVER TRAIL

PARCEL 0826059032
KING COUNTY

EXISTING PARKING AREA

ACCESS FROM 102ND AVE NE

STAGING AREA FOR CULVERT CONSTRUCTION

STAGING AREA FOR EQUIPMENT, MATERIALS

FLOODPLAIN REVEGETATION SHEETS 27–32

PARCEL 0726059054
CITY OF BOTHELL

PARCEL 0726059376
CITY OF BOTHELL

FLOODPLAIN REVEGETATION SHEETS 27–32

NEW CULVERT SHEETS 11–22

NEW CHANNEL SHEETS 5–10

102ND AVE NE

SURVEY CONTROL POINT #2

FLOODPLAIN FILL AREA, SHEETS 23–24

EAST RIVERSIDE DRIVE

PARCEL 0726059497
CITY OF BOTHELL

PARCEL 0726059053
KING COUNTY

PROPERTY LINE

POOLS WITH ROOTWADS SHEETS 5–10

CONNECT TO EXISTING SIDE SLOUGH

CUT EXTENT/RIPARIAN REVEGETATION SHEETS 27–32

WEST RIVERSIDE DRIVE

SAMMAMISH RIVER

SAMMAMISH RIVER TRAIL

STAGING AREA FOR CULVERT CONSTRUCTION (PROTECT TREES AND TRAIL AMENITIES)

ALTERNATE ACCESS FROM WEST RIVERSIDE DRIVE /BURKE–GILMAN TRAIL

200 0 100 200

SCALE: 1"= 200'

PLAN VIEW

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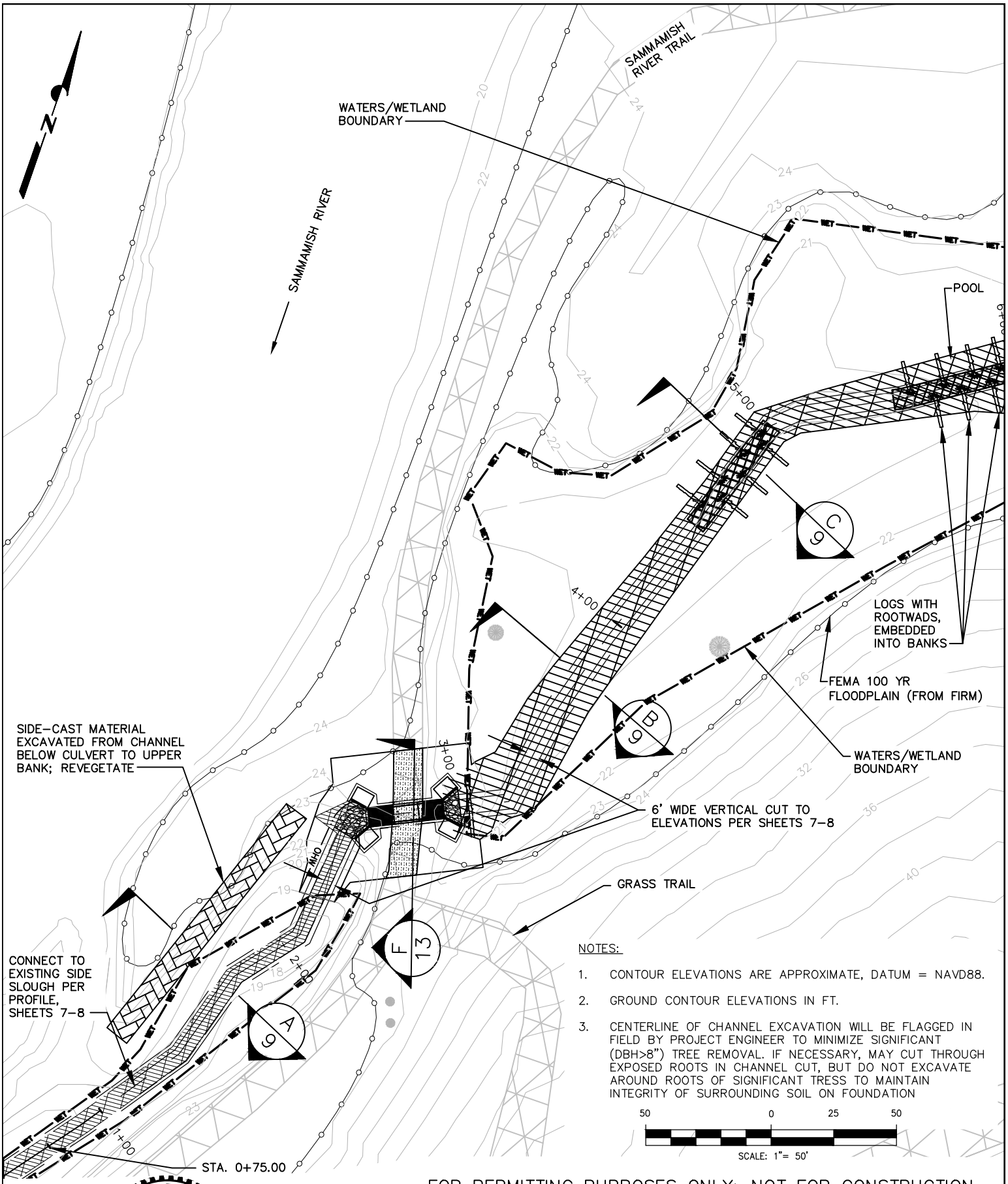
SAMMAMISH RIVER OFF–CHANNEL HABITAT RESTORATION

SITE PLAN; ACCESS/STAGING PROPERTY BOUNDARIES



NOTES:

1. CONTOUR ELEVATIONS ARE APPROXIMATE, DATUM = NAVD88.
2. GROUND CONTOUR ELEVATIONS IN FT.
3. CENTERLINE OF CHANNEL EXCAVATION WILL BE FLAGGED IN FIELD BY PROJECT ENGINEER TO MINIMIZE SIGNIFICANT (DBH>8") TREE REMOVAL. IF NECESSARY, MAY CUT THROUGH EXPOSED ROOTS IN CHANNEL CUT, BUT DO NOT EXCAVATE AROUND ROOTS OF SIGNIFICANT TRESS TO MAINTAIN INTEGRITY OF SURROUNDING SOIL ON FOUNDATION

50 0 25 50

SCALE: 1"= 50'

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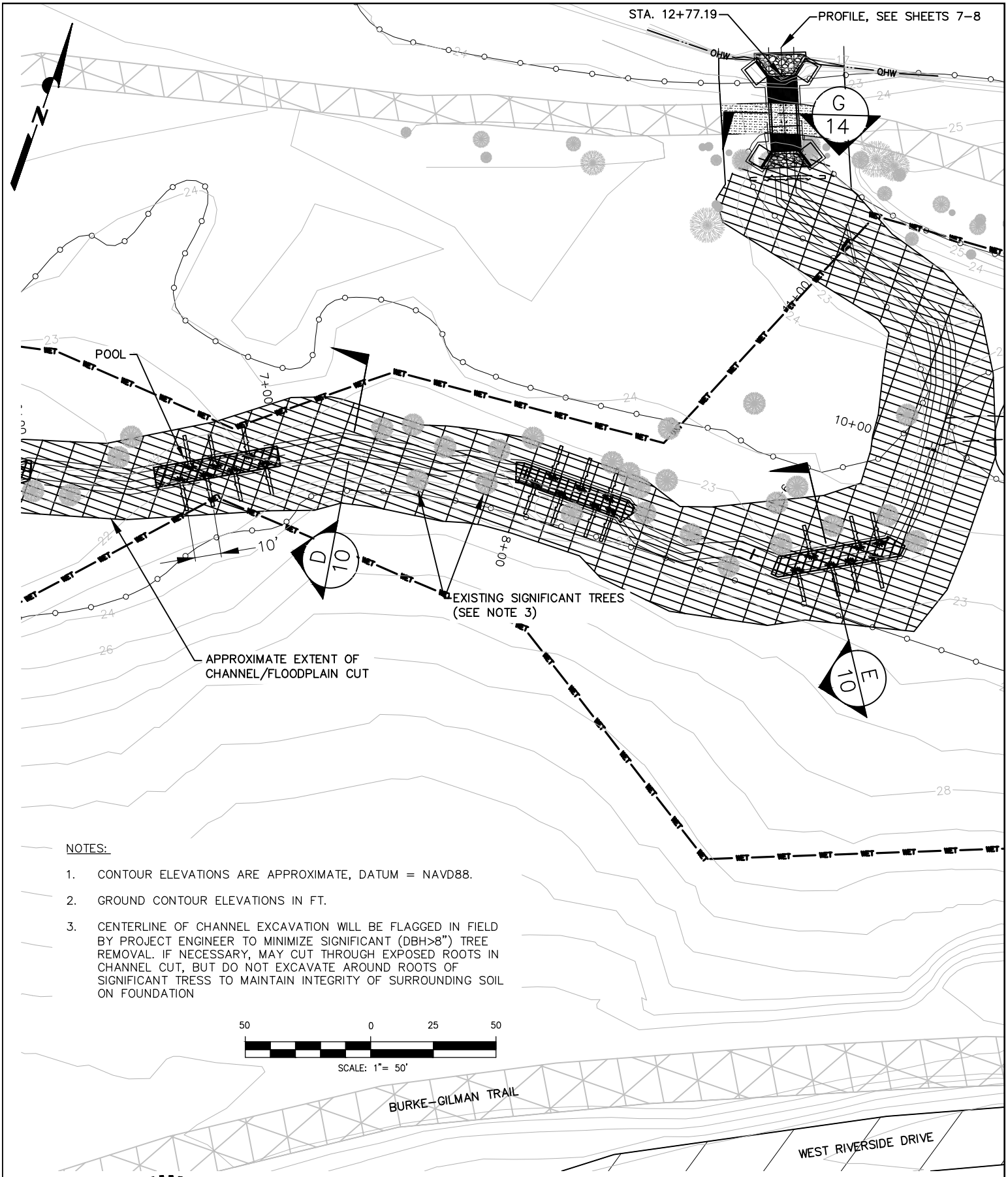
CITY OF BOTHELL
SAMMIMISH RIVER OFF-CHANNEL HABITAT RESTORATION

CHANNEL EXCAVATION PLAN
1 OF 2

SHEET 5 OF 32 SHEETS



NOTES:

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50 0 25 50

SCALE: 1"= 50'

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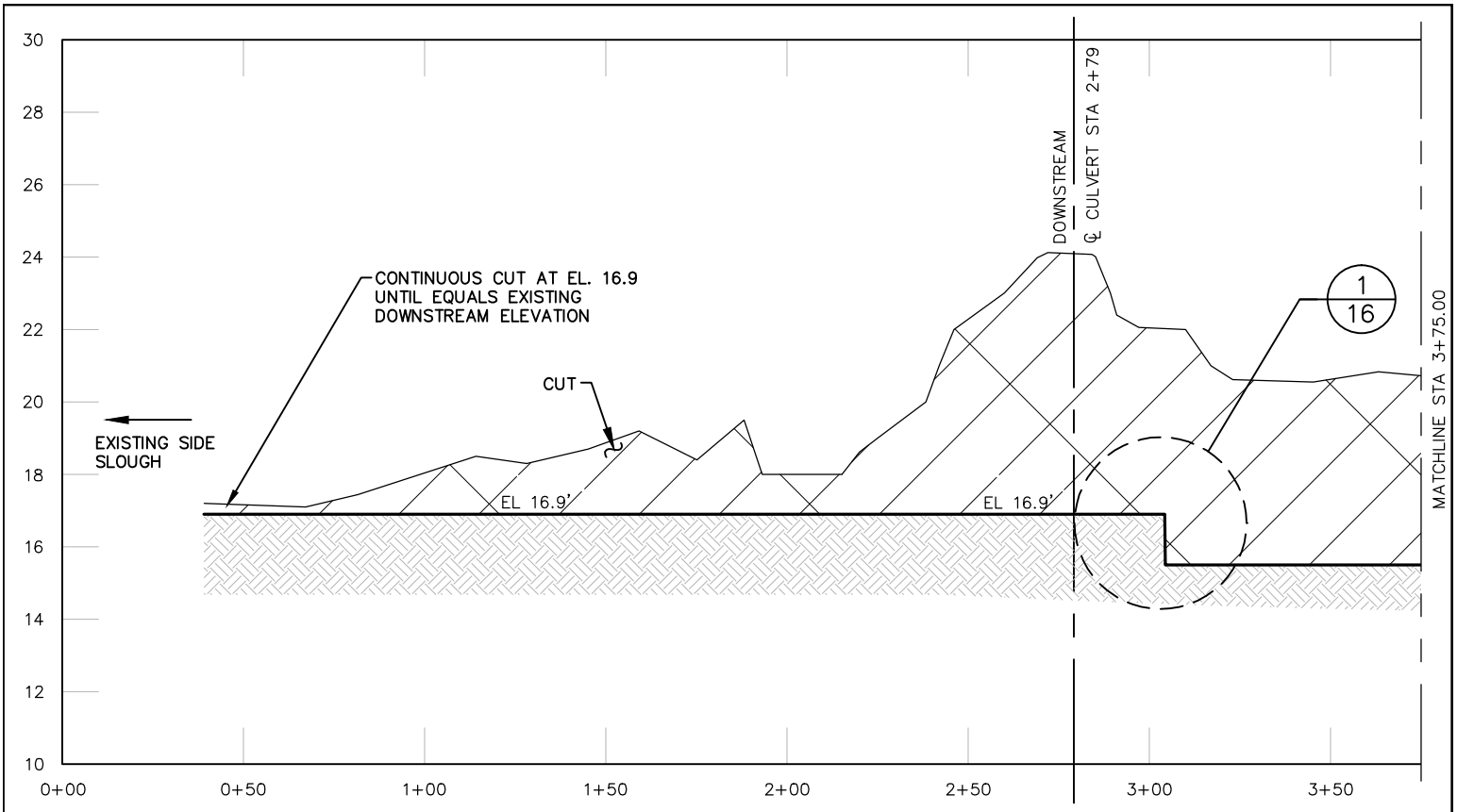
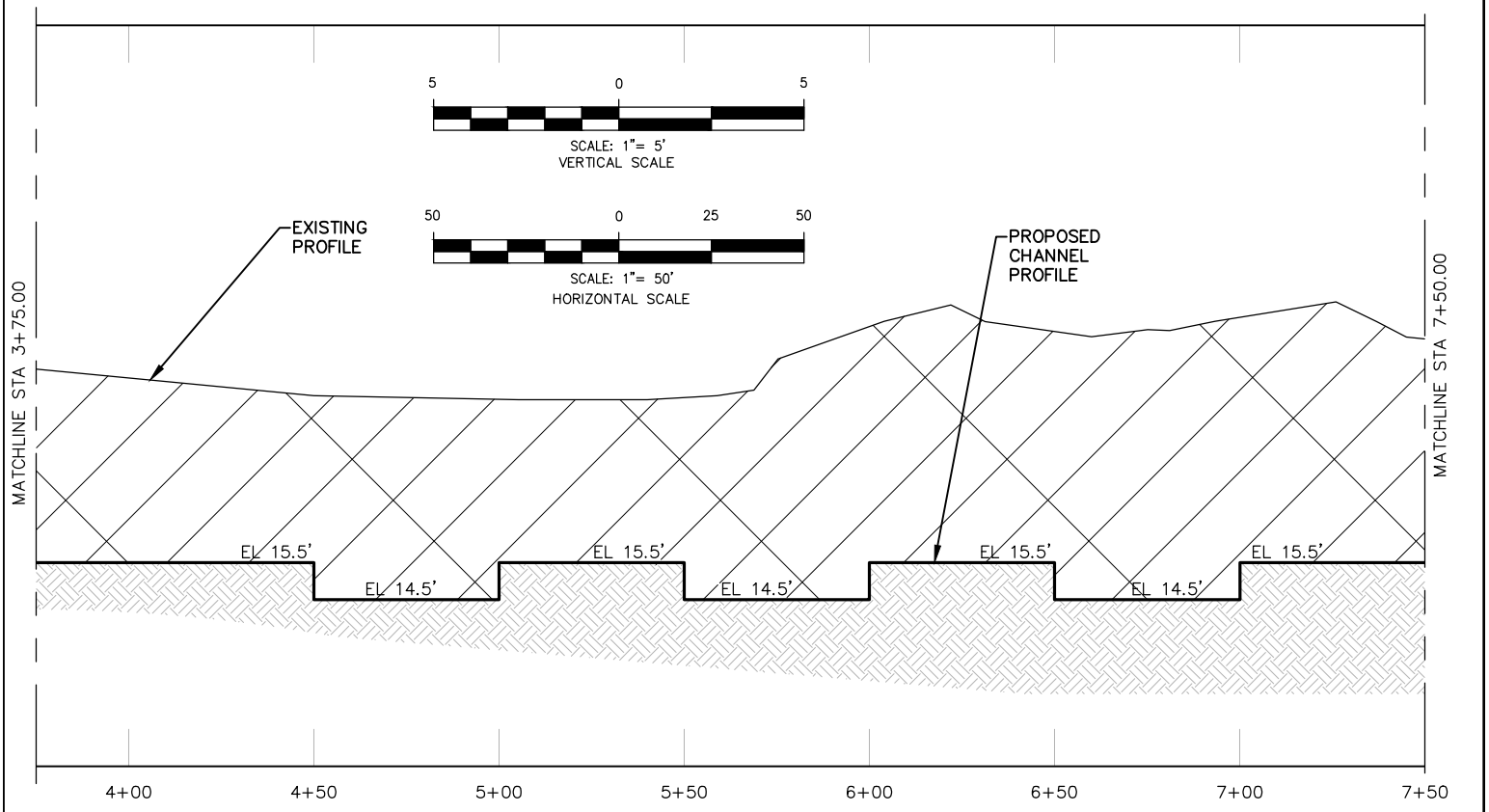
SAMMAMISH RIVER OFF-CHANNEL HABITAT RESTORATION

CHANNEL EXCAVATION PLAN
2 OF 2

SHEET 6 OF 32 SHEETS





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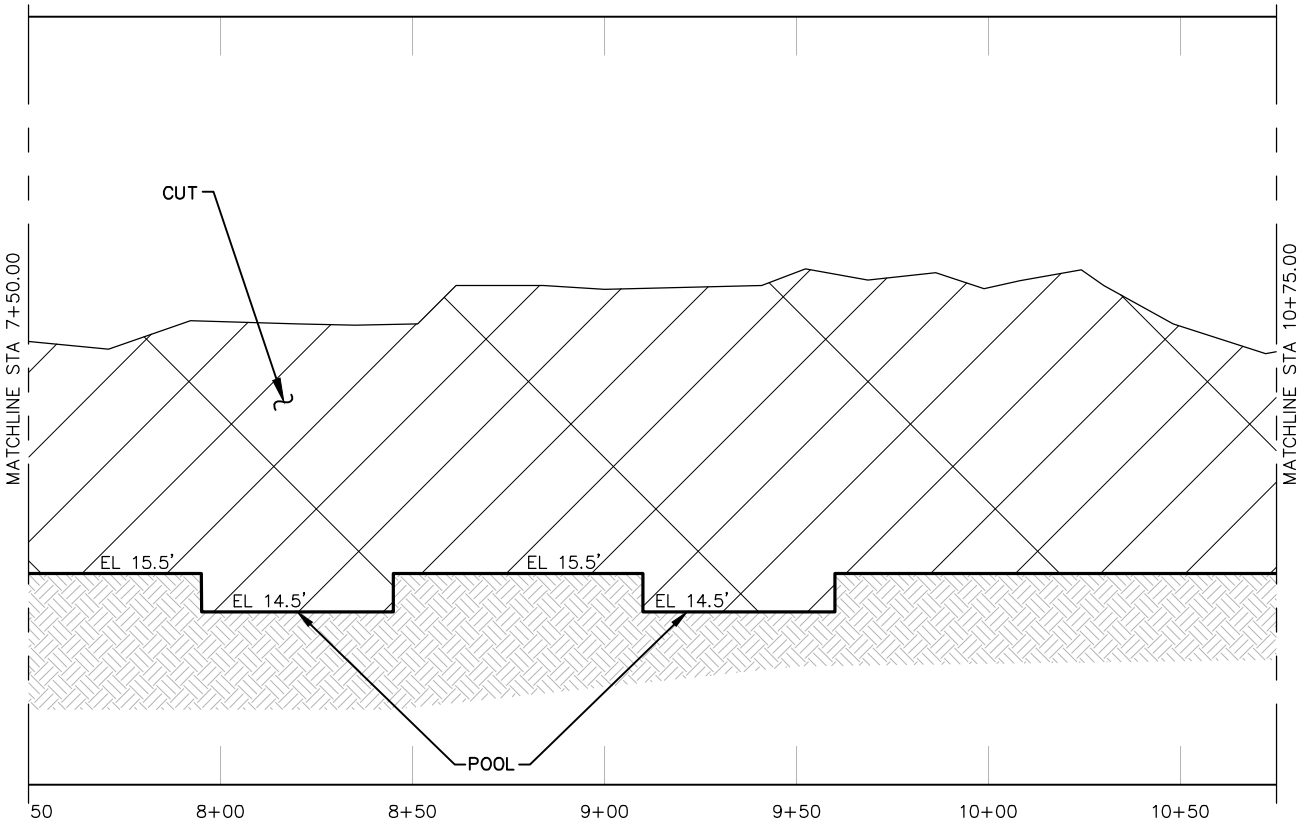
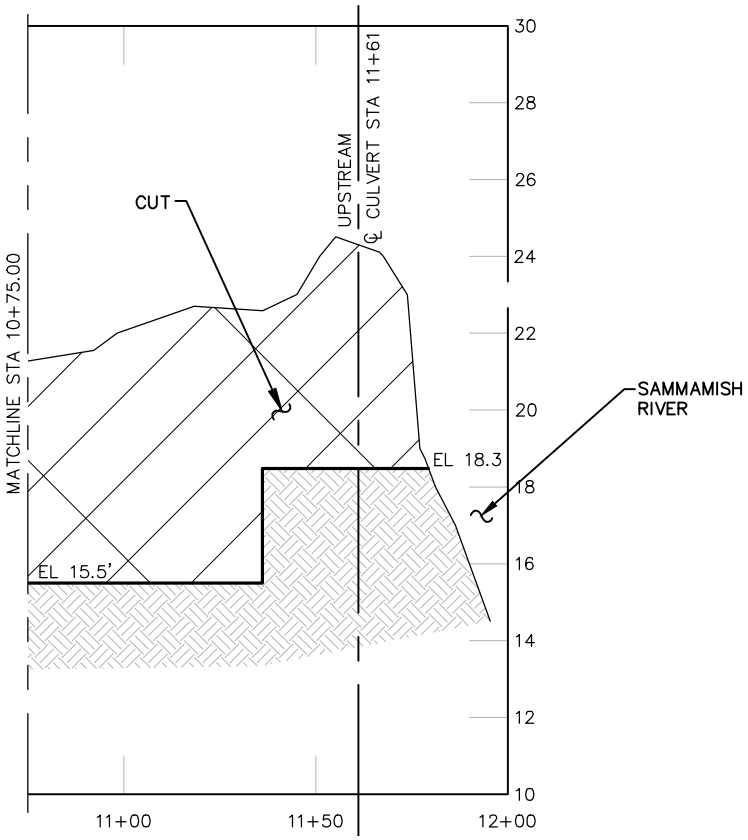
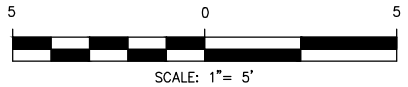
CITY OF BOTHELL
SAMMIMISH RIVER OFF-CHANNEL
HABITAT RESTORATION

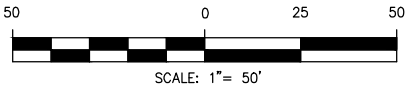
PROPOSED CHANNEL PROFILE
1 OF 2

SHEET 7 OF 32 SHEETS









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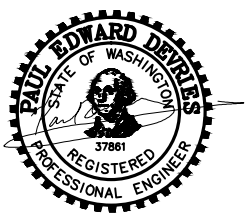

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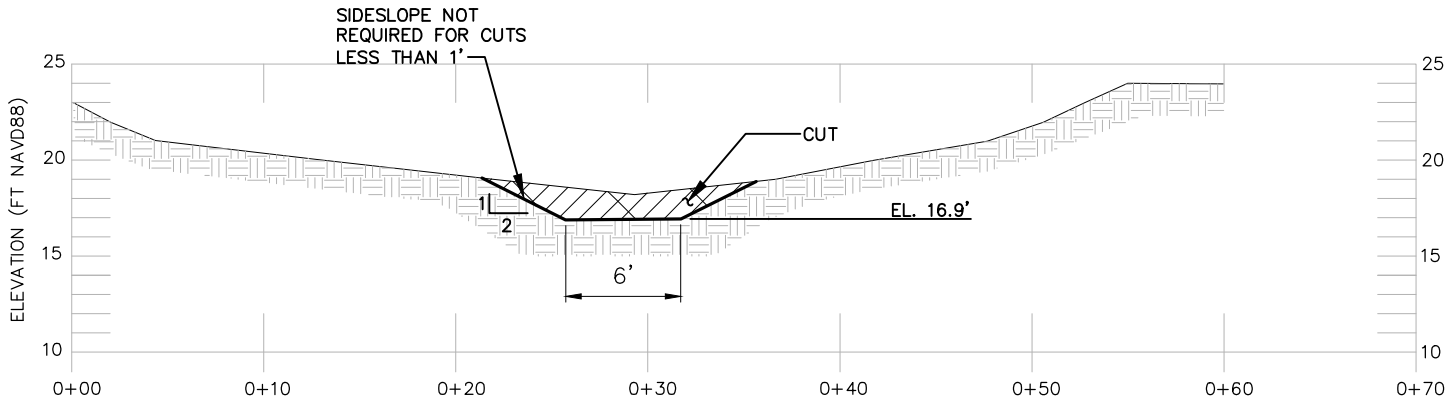
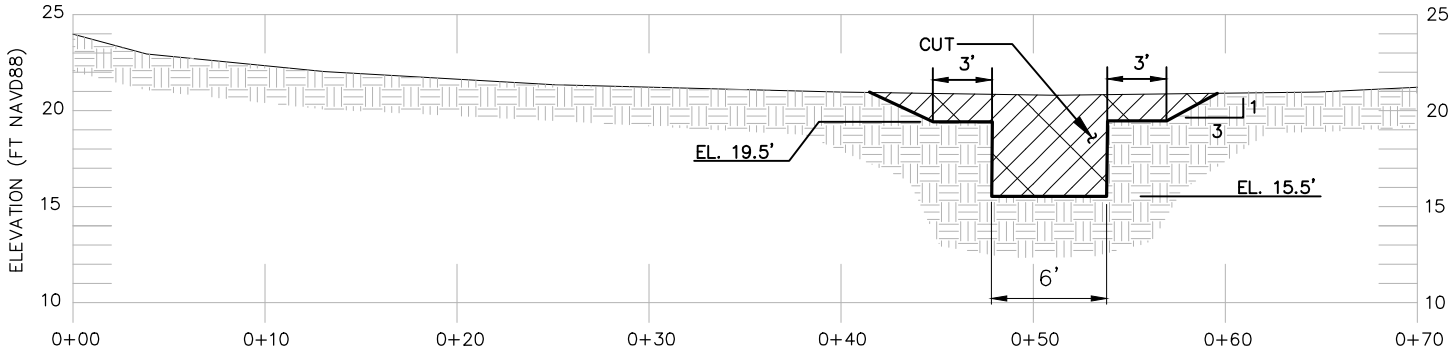
CITY OF BOTHELL
SAMMIMISH RIVER OFF-CHANNEL
HABITAT RESTORATION

PROPOSED CHANNEL PROFILE
2 OF 2

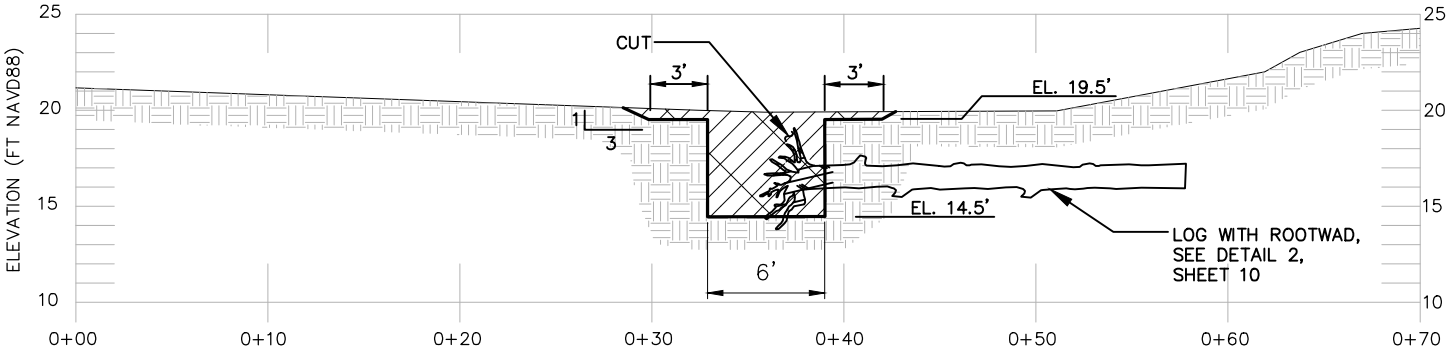
SHEET 8 OF 32 SHEETS



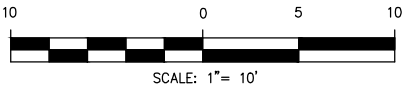
SECTION A 5
PROPOSED CHANNEL CUT



SECTION B 5
PROPOSED CHANNEL CUT



SECTION C 5
PROPOSED CHANNEL CUT



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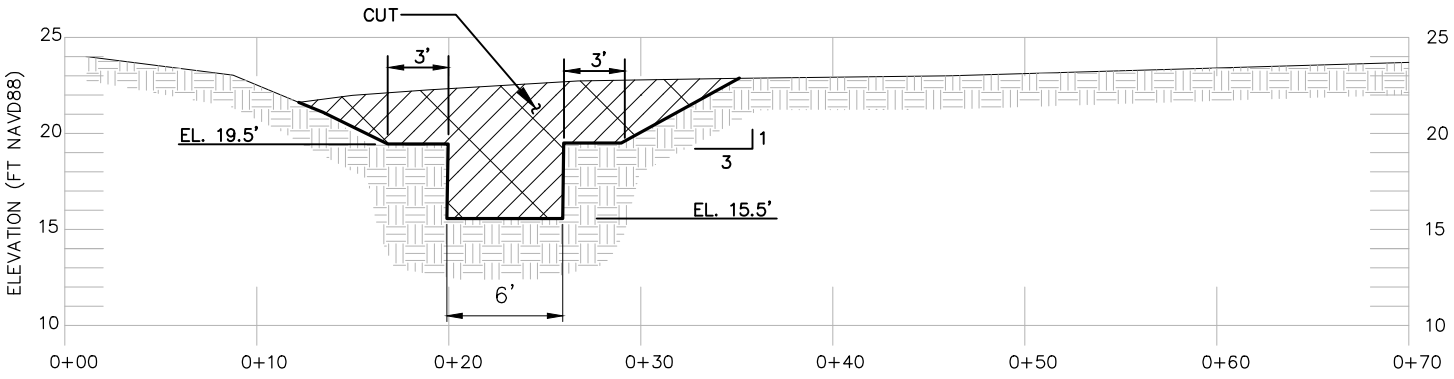
CITY OF BOTHELL
SAMMIMISH RIVER OFF-CHANNEL
HABITAT RESTORATION

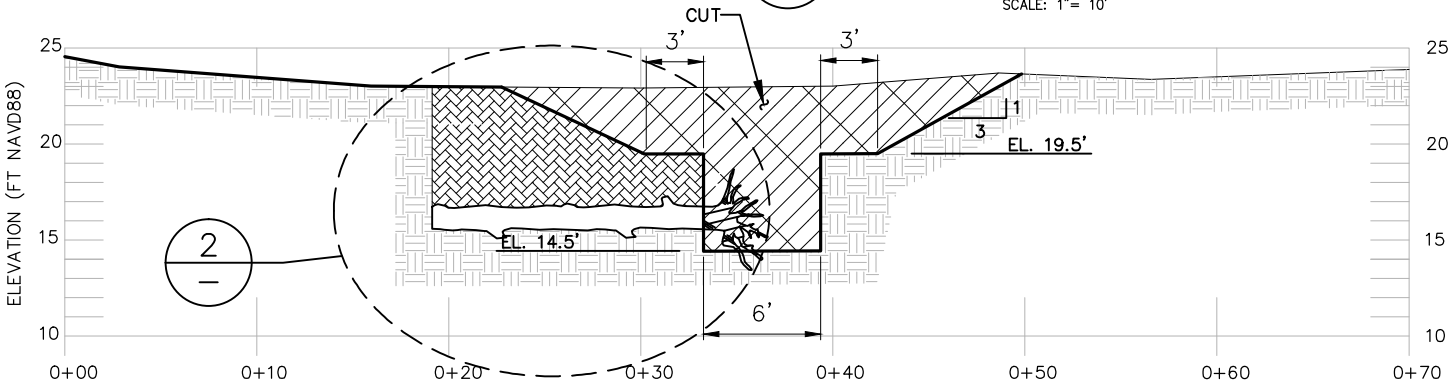
PROPOSED CHANNEL SECTIONS,
LOG INSTALLATION DETAIL 1 OF 2

SHEET 9 OF 32 SHEETS



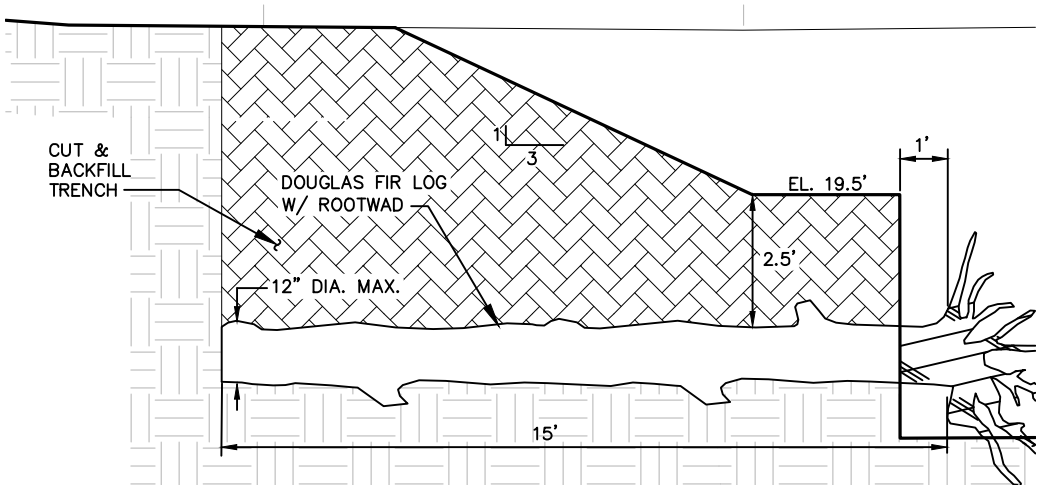
SECTION D/6
PROPOSED CHANNEL CUT

10 0 5 10
SCALE: 1"= 10'



SECTION E/6
PROPOSED CHANNEL CUT

10 0 5 10
SCALE: 1"= 10'



DETAIL 2/—
LOG INSTALLATION

4 0 2 4
SCALE: 1"= 4'

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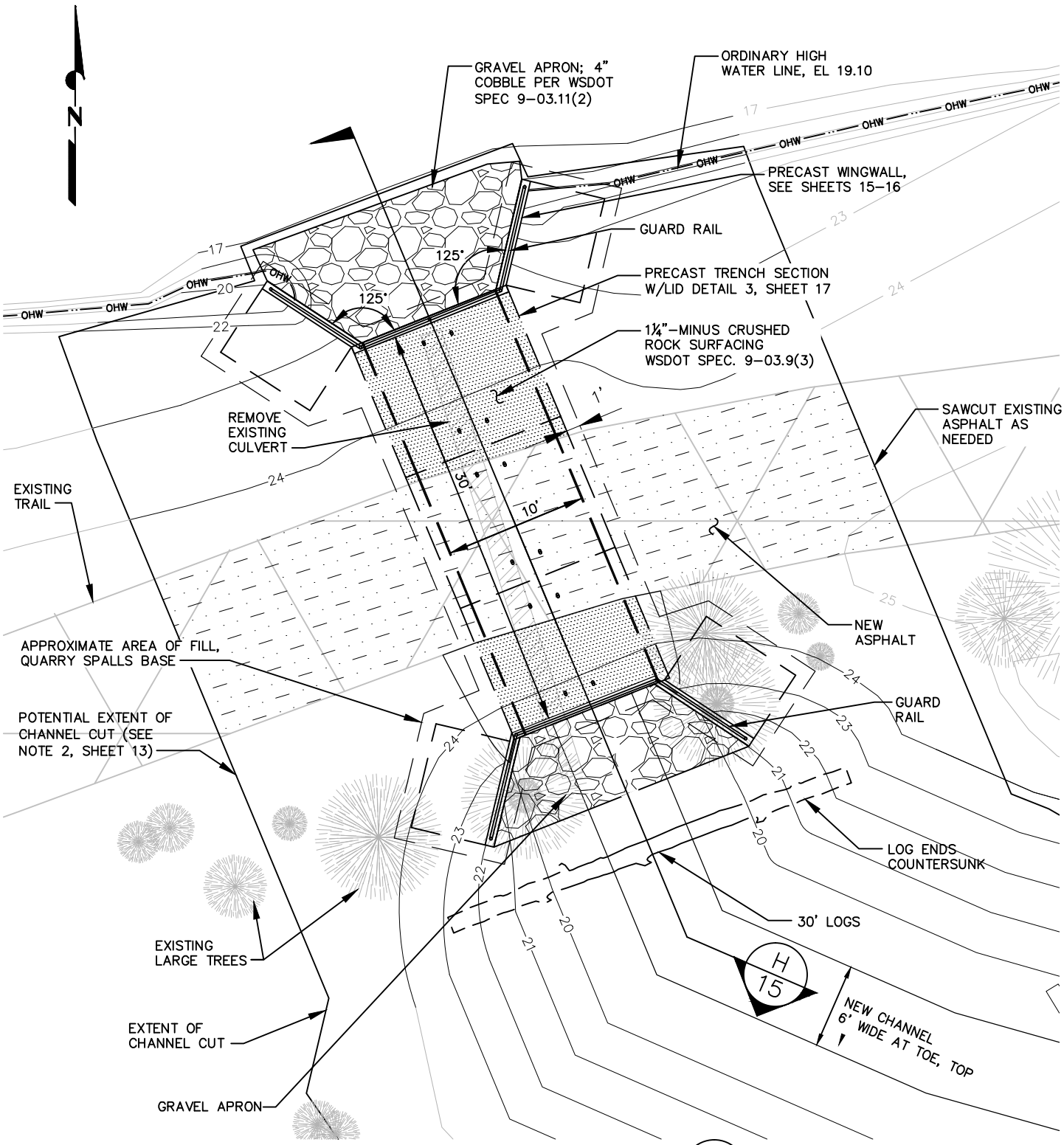
HABITAT RESTORATION

PROPOSED CHANNEL SECTIONS,
LOG INSTALLATION DETAIL 2 OF 2

SHEET 10 OF 32 SHEETS



PLAN

UPSTREAM CULVERT

10 0 5 10

SCALE: 1"= 10'

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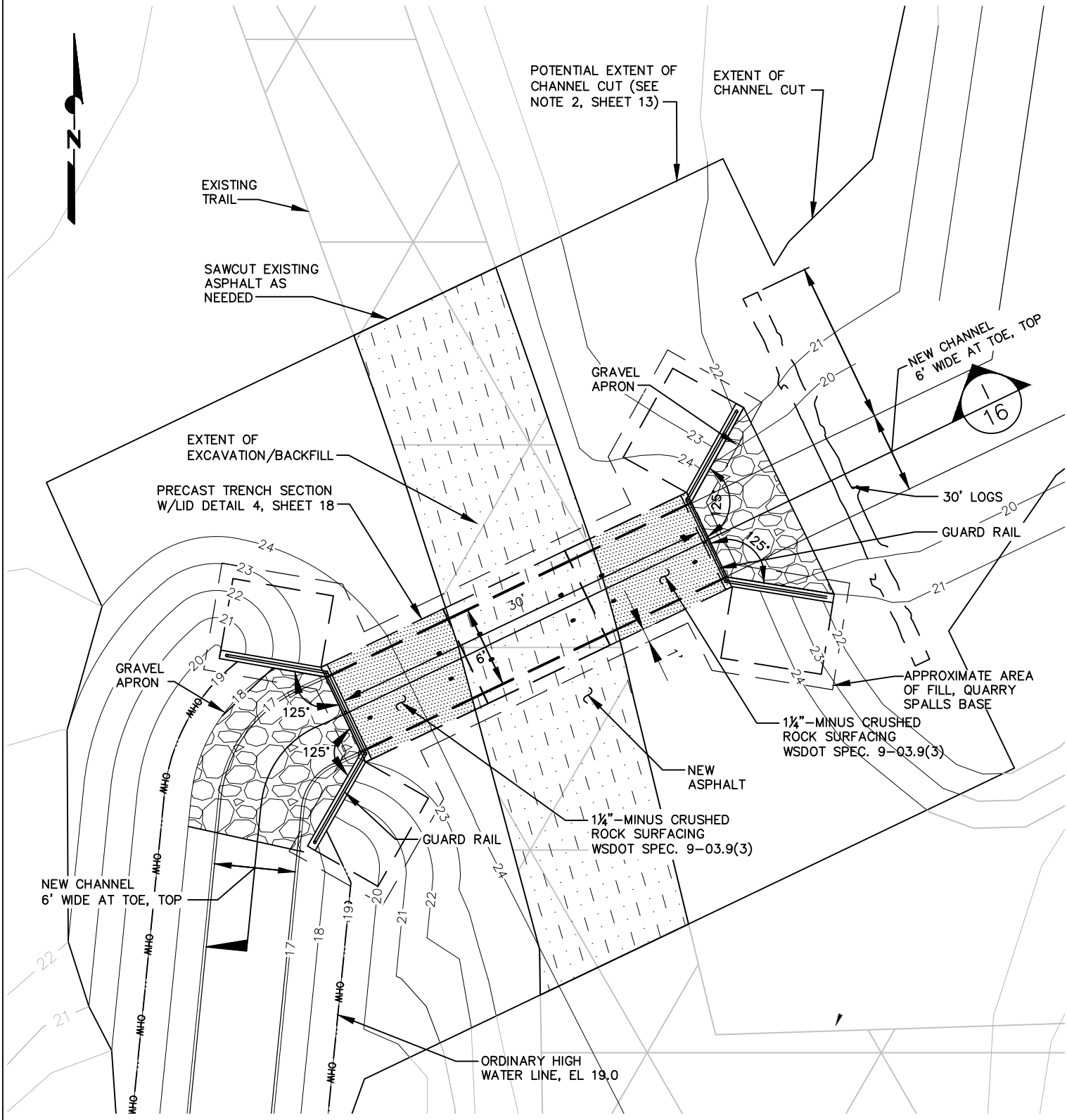
UPSTREAM CULVERT PLAN



PLAN

DOWNSTREAM CULVERT

10 0 5 10

SCALE: 1"= 10'

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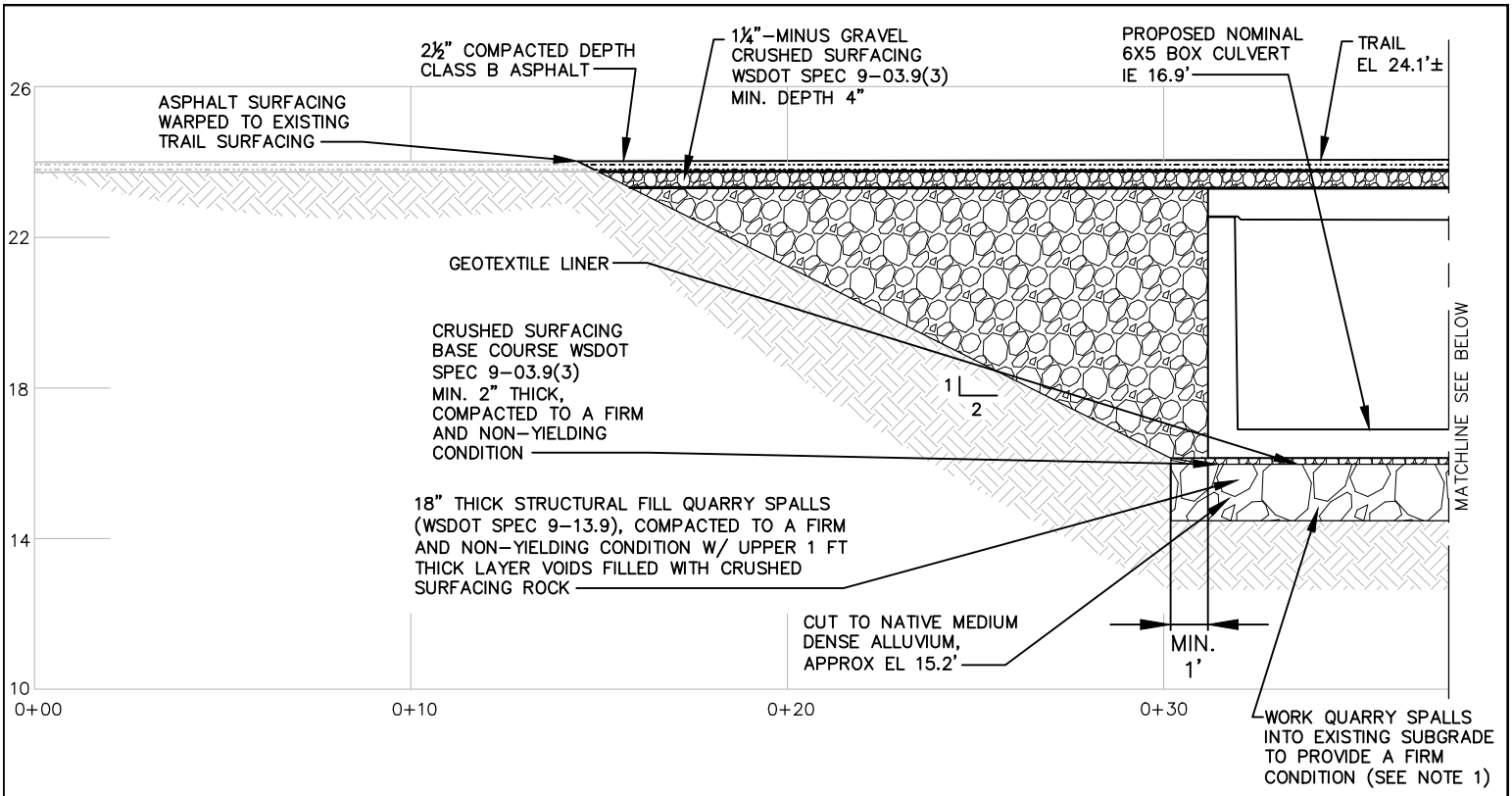
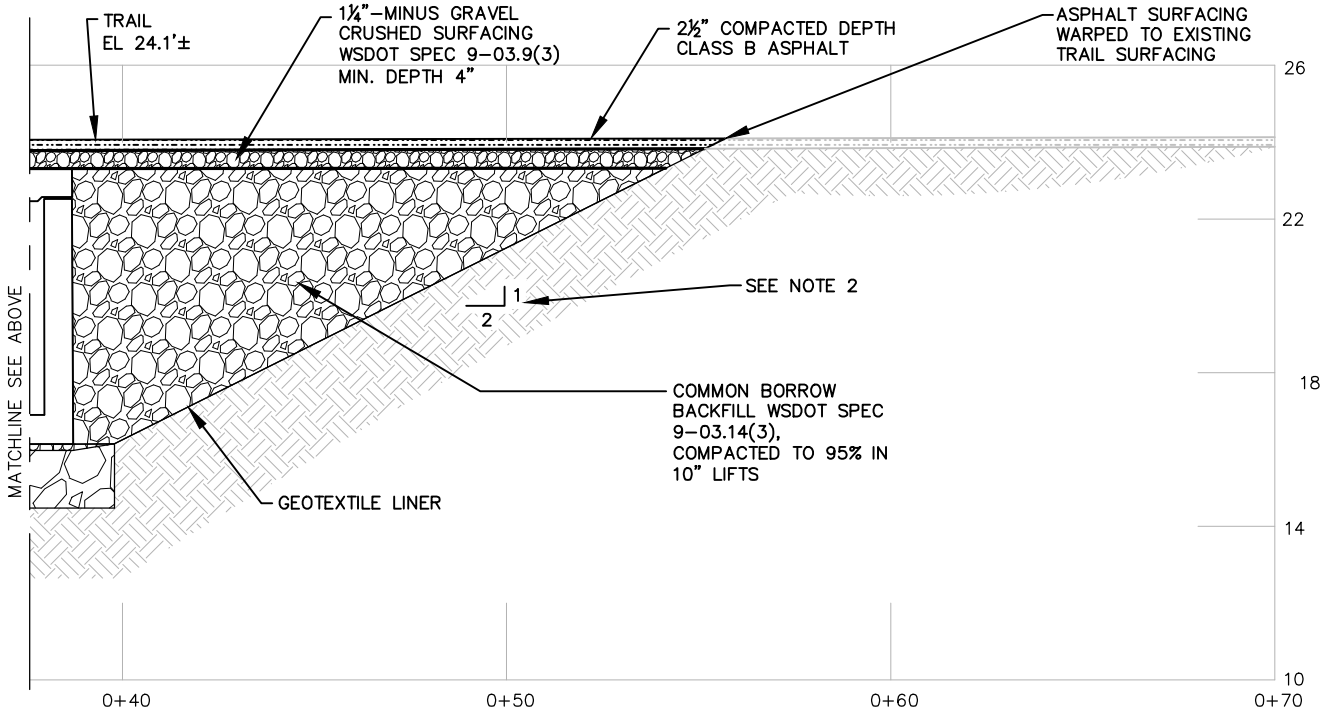
SAMMIMISH RIVER OFF-CHANNEL HABITAT RESTORATION

DOWNSTREAM CULVERT PLAN

SHEET 12 OF 32 SHEETS





SECTION (ALONG TRAIL)
DOWNSTREAM CULVERT

F
5

5 0 5
SCALE: 1"= 5'

NOTES:

1. IF ORGANIC RICH ZONES ARE ENCOUNTERED IN EXISTING SUBGRADE AT THE DESIGN SUBGRADE ELEVATION THEY MUST BE REMOVED AND REPLACED WITH QUARRY SPALLS.

2. A 2H:1V SIDE SLOPE IS SHOWN FOR REFERENCE THE CONTRACTOR SHOULD MAKE A DETERMINATION OF EXCAVATION SIDE SLOPES BASED ON CLASSIFICATION OF SOILS ENCOUNTERED AT THE TIME OF EXCAVATION. ADJUSTMENTS TO THE SLOPE ANGLES SHOULD BE DETERMINED BY THE CONTRACTOR AT THAT TIME. A TRENCH BOX MAY ALSO BE USED. REMOVAL OF LARGE DIAMETER TREES LIKELY REQUIRED AT UPSTREAM CULVERT.

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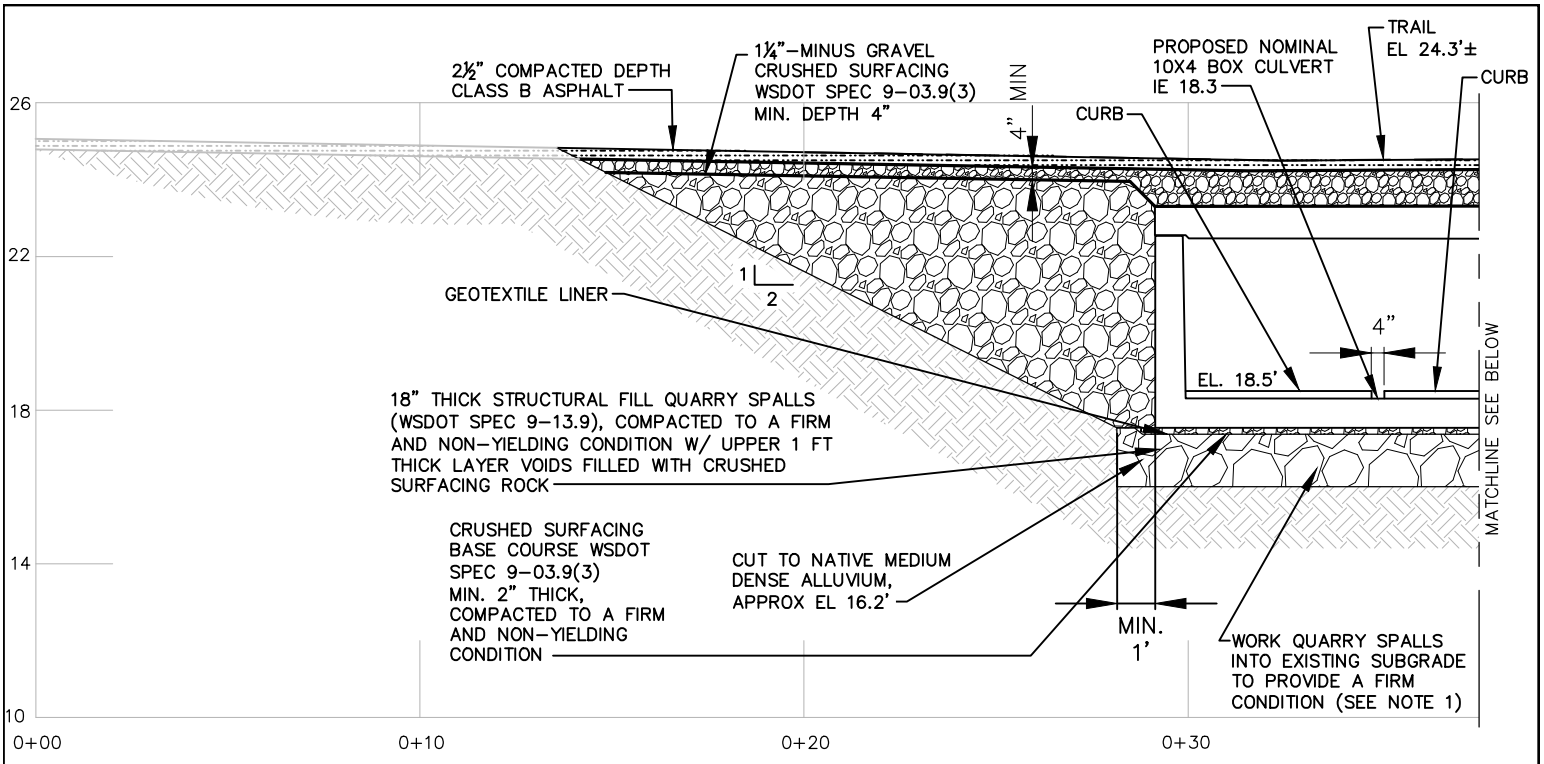
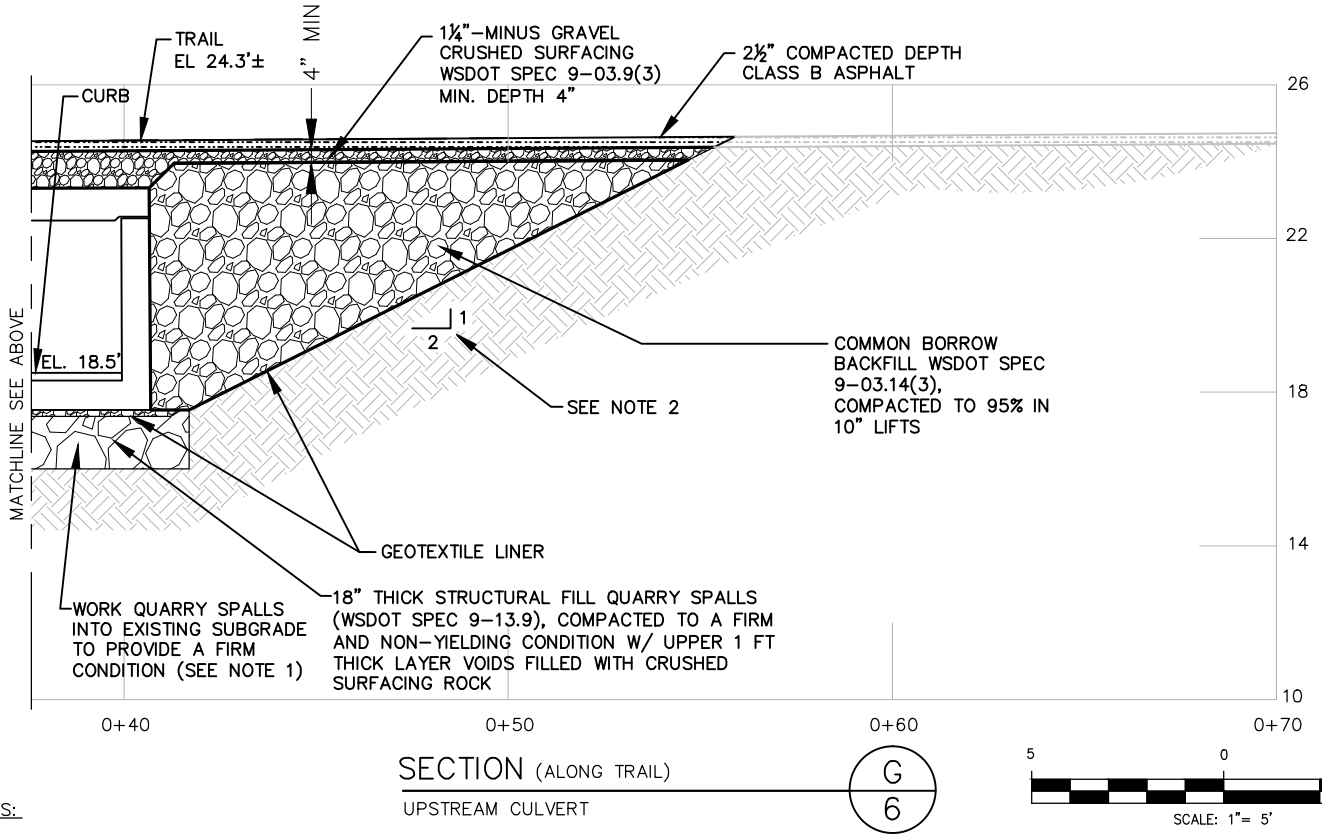
SAMMAMISH RIVER OFF–CHANNEL HABITAT RESTORATION

CULVERT SECTIONS I
1 OF 2

SHEET 13 OF 32 SHEETS





SECTION (ALONG TRAIL) G/6

UPSTREAM CULVERT

5 0 5

SCALE: 1"= 5'

NOTES:

1. IF ORGANIC RICH ZONES ARE ENCOUNTERED IN EXISTING SUBGRADE AT THE DESIGN SUBGRADE ELEVATION THEY MUST BE REMOVED AND REPLACED WITH QUARRY SPALLS.

2. A 2H:1V SIDE SLOPE IS SHOWN FOR REFERENCE THE CONTRACTOR SHOULD MAKE A DETERMINATION OF EXCAVATION SIDE SLOPES BASED ON CLASSIFICATION OF SOILS ENCOUNTERED AT THE TIME OF EXCAVATION. ADJUSTMENTS TO THE SLOPE ANGLES SHOULD BE DETERMINED BY THE CONTRACTOR AT THAT TIME. A TRENCH BOX MAY ALSO BE USED. REMOVAL OF LARGE DIAMETER TREES LIKELY REQUIRED AT UPSTREAM CULVERT.

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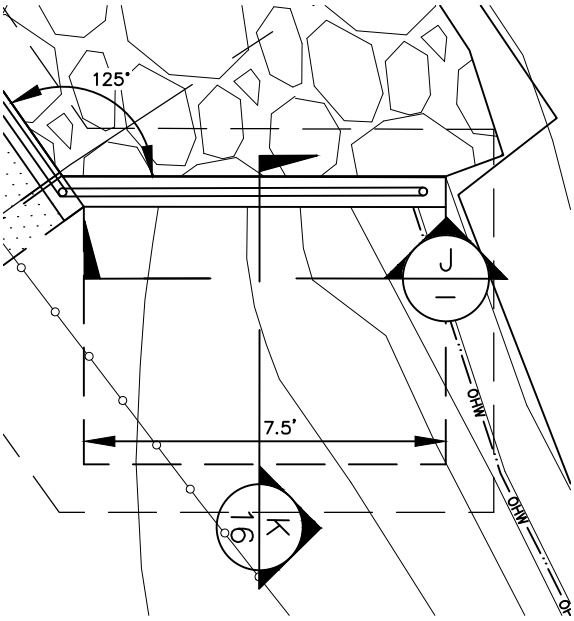
REDMOND, WA.

CITY OF BOTHELL
SAMMAMISH RIVER OFF–CHANNEL HABITAT RESTORATION

CULVERT SECTIONS I
2 OF 2

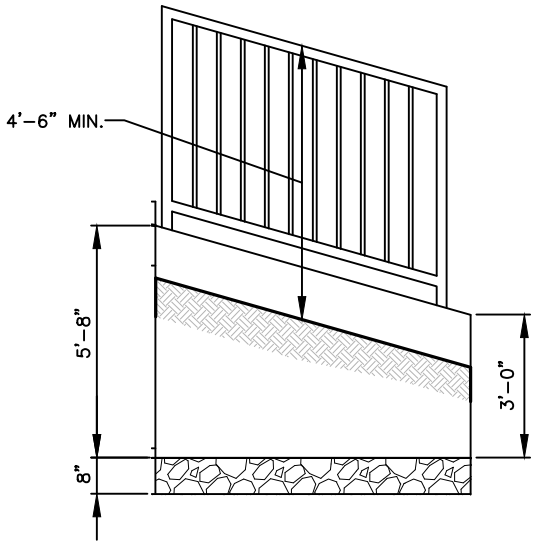
SHEET 14 OF 32 SHEETS



WING WALL PLAN

2' 1' 0 2' 4'

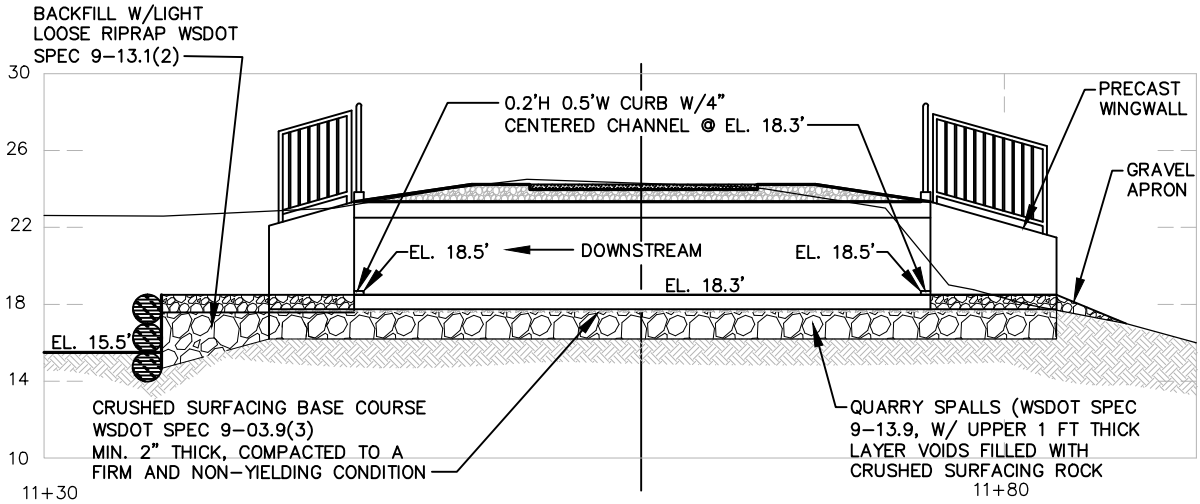
SCALE: 1"=4'



SECTION J — WING WALL

2' 1' 0 2' 4'

SCALE: 1"=4'



SECTION (STREAMWISE) H — 11

UPSTREAM CULVERT

5' 2.5' 0 5' 10'

SCALE: 1"=10'

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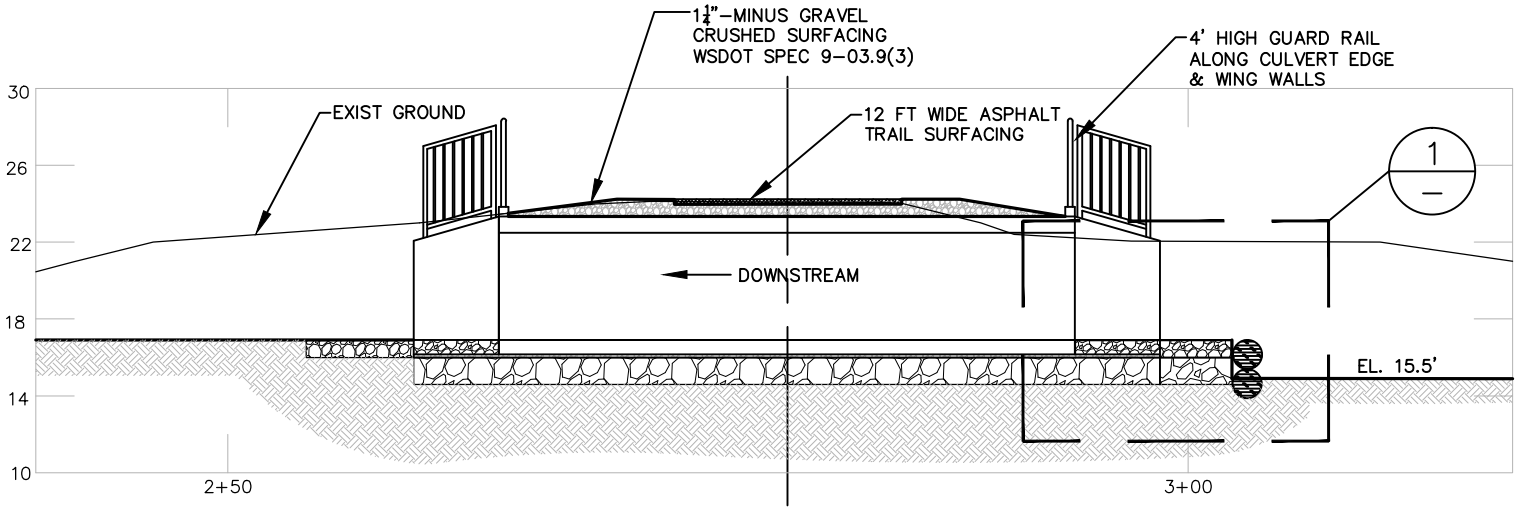
SAMMAMISH RIVER OFF-CHANNEL HABITAT RESTORATION

CULVERT SECTIONS II
1 OF 2

SHEET 15 OF 32 SHEETS

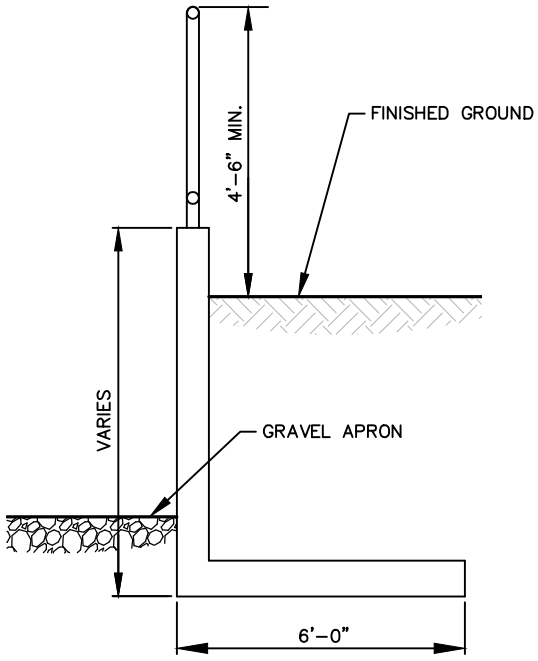


SECTION (STREAMWISE) — I / 12

DOWNSTREAM CULVERT

5' 2.5' 0 5' 10'

SCALE: 1"=10'

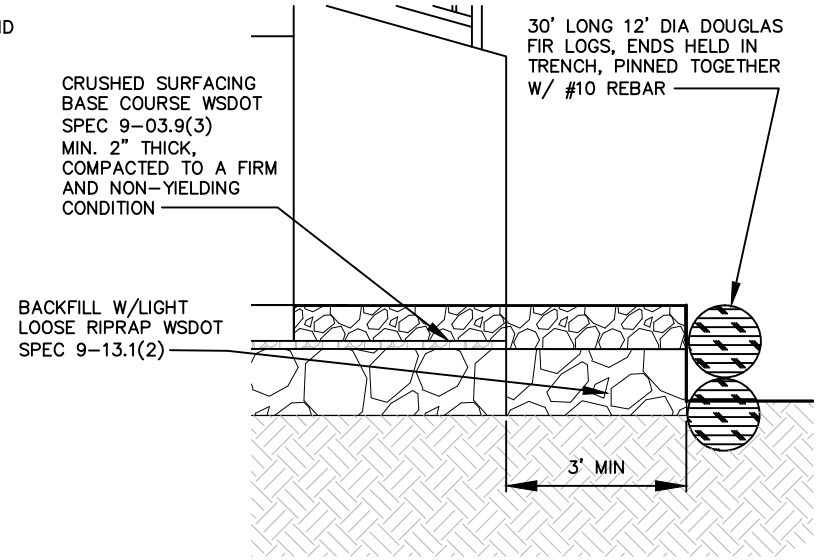


SECTION — K / 15

WING WALL

2' 1' 0 2' 4'

SCALE: 1"=4'



DETAIL — 1 / 7,16

PRECAST TRENCH & LOGS

2' 1' 0 2' 4'

SCALE: 1"=4'

NOTES:

1. WING WALLS TO BE DESIGNED BY PRECAST CONTRACTOR.

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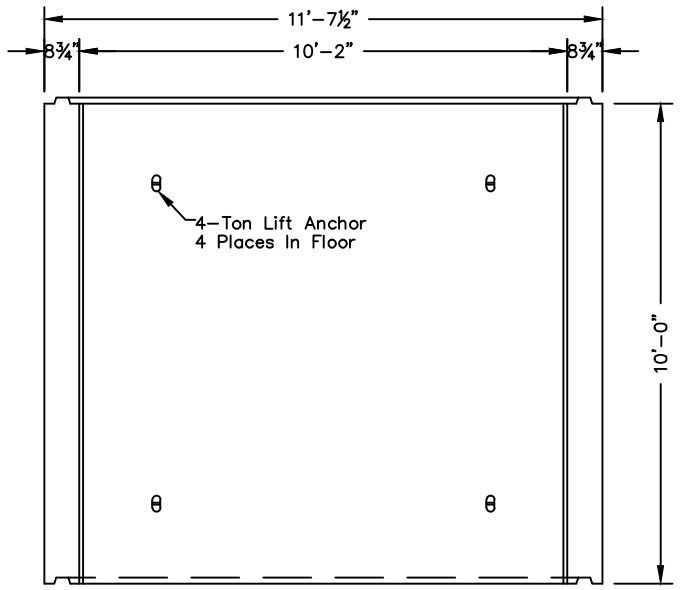
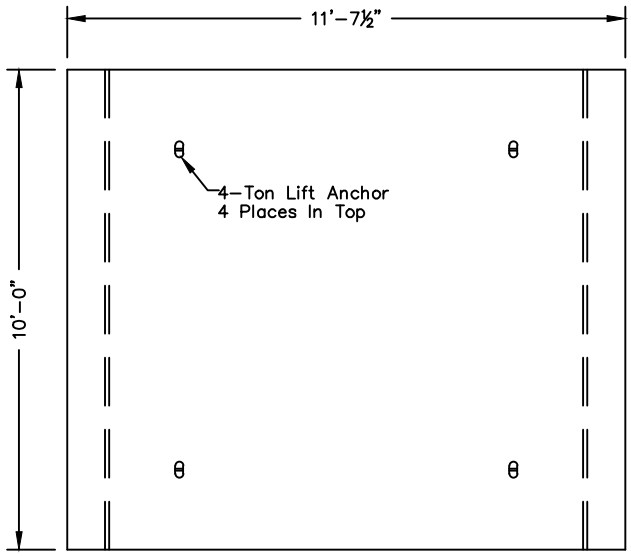
SAMMAMISH RIVER OFF–CHANNEL
HABITAT RESTORATION

CULVERT SECTIONS II
2 OF 2

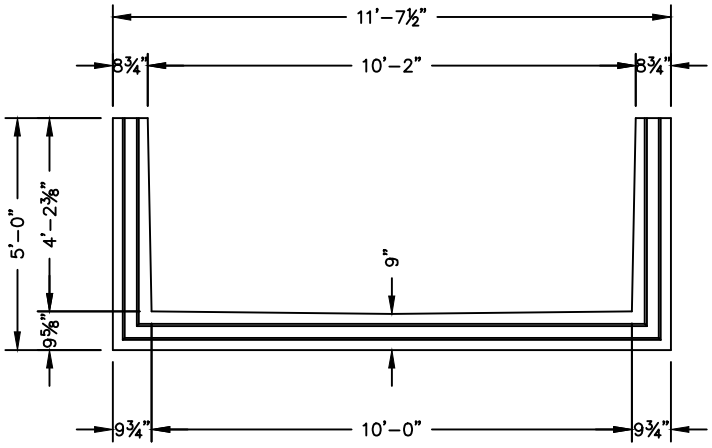
SHEET 16 OF 32 SHEETS



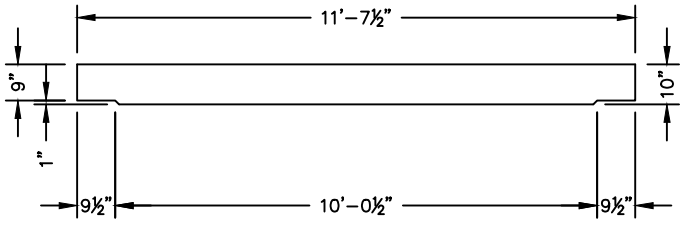
PLAN-TRENCH



PLAN-COVER



END-TRENCH



END-COVER

NOTES:

1. DETAILS SHOWN ARE FOR OLDCASTLE TRENCH SECTIONS 6070 TRENCH & 1050 TRENCH. CONTRACTOR MAY SUBMIT EQUAL PRODUCT.

DETAIL 3/11

UPSTREAM CULVERT (3 REQUIRED)

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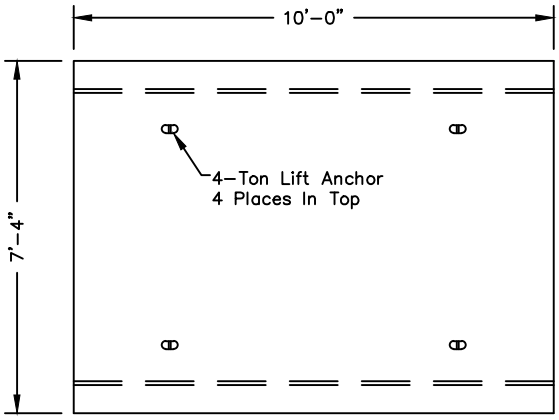
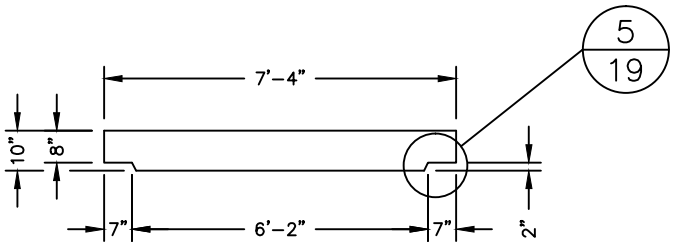
SAMMAMISH RIVER OFF–CHANNEL HABITAT RESTORATION

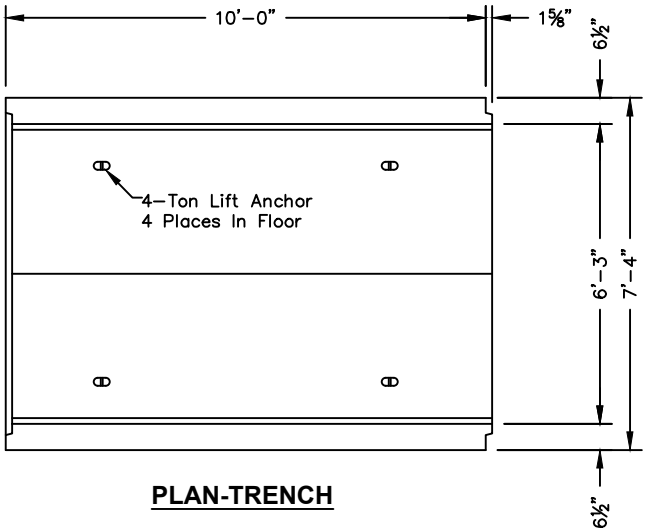
CULVERT SPECIFICATIONS
UPSTREAM



PLAN-COVER

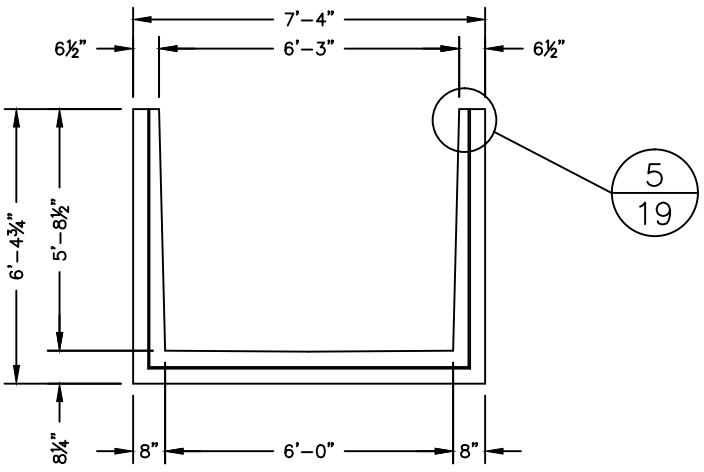


END-COVER



PLAN-TRENCH

SIDE-TRENCH



NOTES:

1. DETAILS SHOWN ARE FOR OLDCASTLE TRENCH SECTIONS 6070 TRENCH & 1050 TRENCH. CONTRACTOR MAY SUBMIT EQUAL PRODUCT.

DETAIL 4/12
DOWNSTREAM CULVERT (3 REQUIRED)

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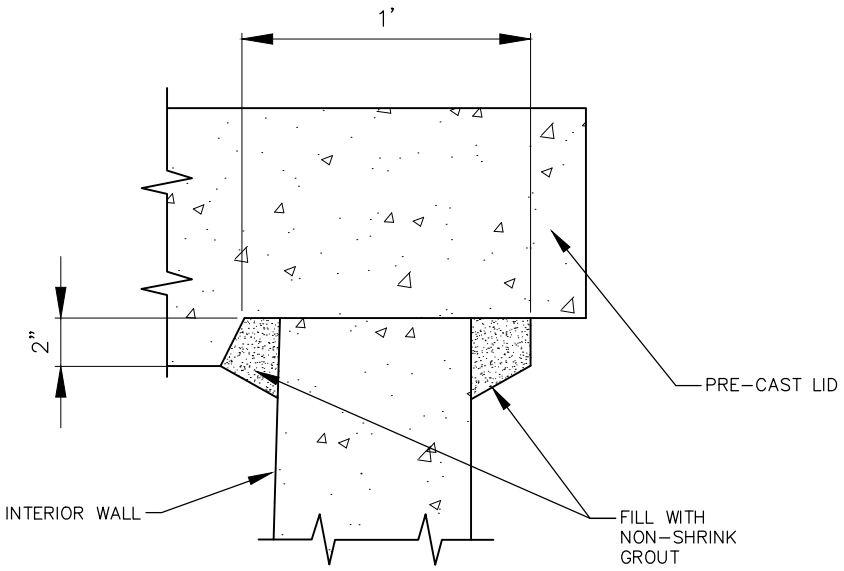
SAMMIMISH RIVER OFF–CHANNEL HABITAT RESTORATION

CULVERT SPECIFICATIONS
DOWNSTREAM

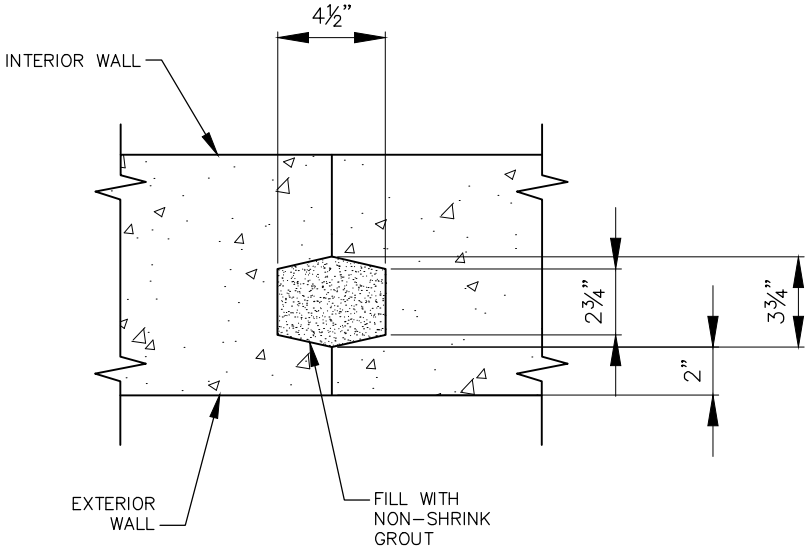


DETAIL 5/18

WALL/LID JOINT

SCALE: 1-1/2"=1'-0"

12" 9" 6" 3" 0 1'



DETAIL 6/—

VERTICAL WALL JOINT TYP. BETWEEN SECTIONS

SCALE: 1-1/2"=1'-0"

12" 9" 6" 3" 0 1'

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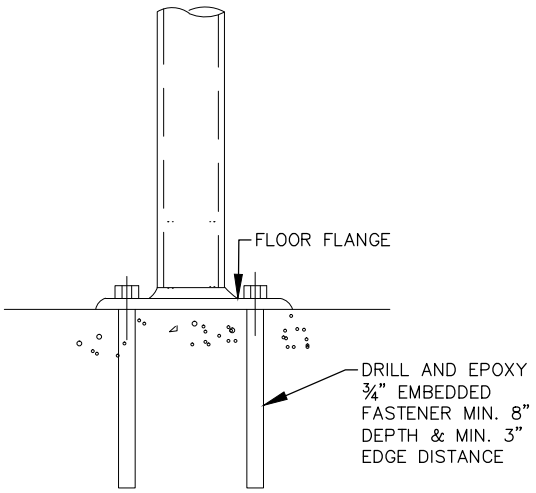
CITY OF BOTHELL
SAMMIMISH RIVER OFF-CHANNEL
HABITAT RESTORATION

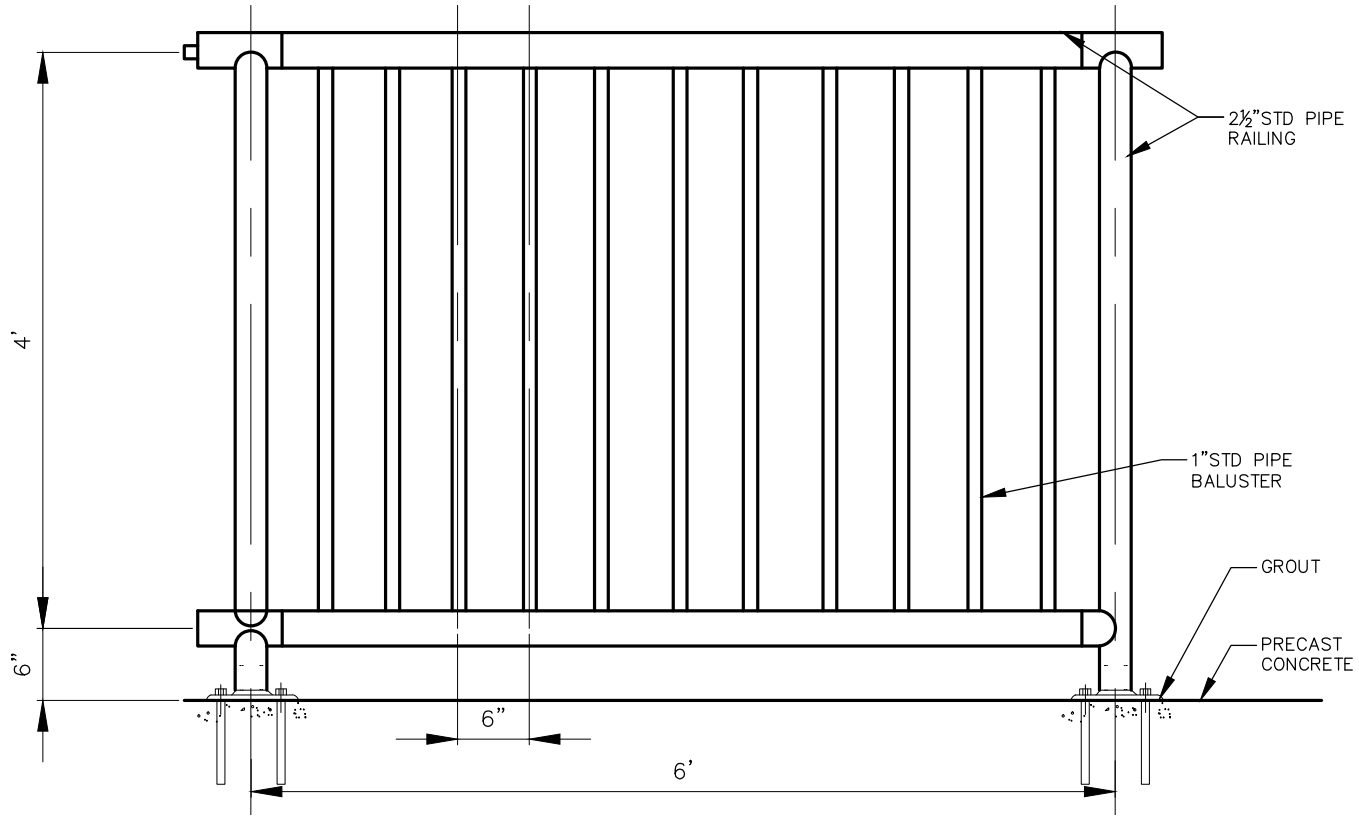
CULVERT/RAILING DETAILS
1 OF 2

SHEET 19 OF 32 SHEETS



RAILING FLOOR FLANGE 7/—

NTS



PEDESTRIAN RAILING DETAIL 8/—

SCALE: ¾"=1'-0"

0 3" 6" 1' 2' 3'

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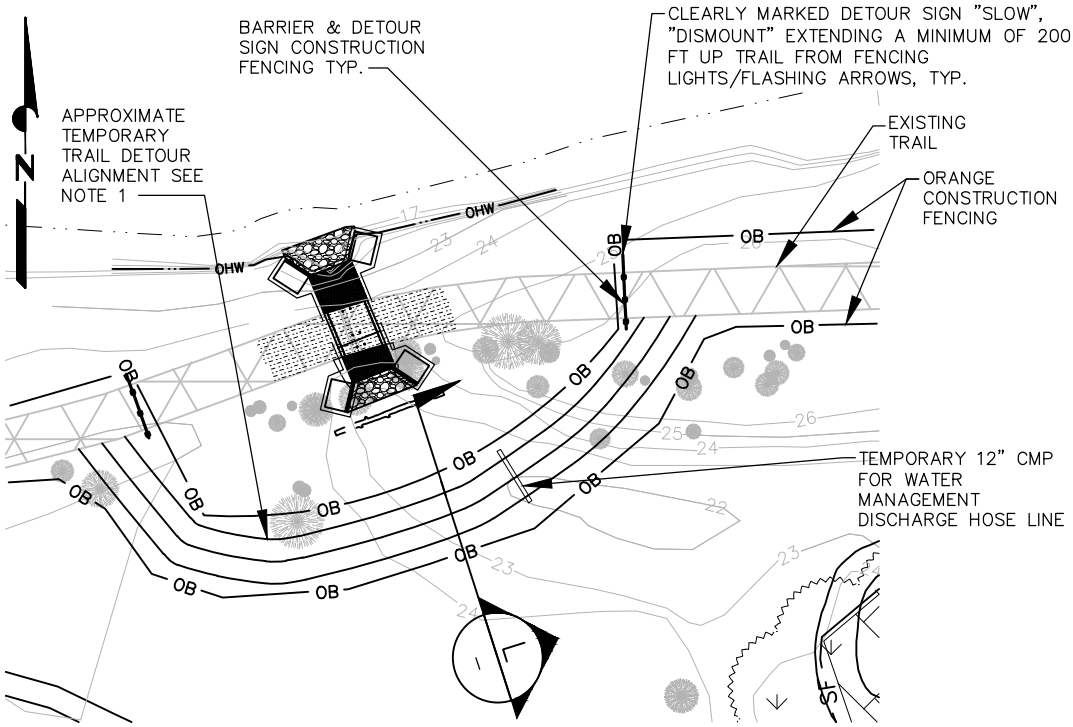
CITY OF BOTHELL
SAMMIMISH RIVER OFF-CHANNEL
HABITAT RESTORATION

CULVERT/RAILING DETAILS
2 OF 2

SHEET 20 OF 32 SHEETS

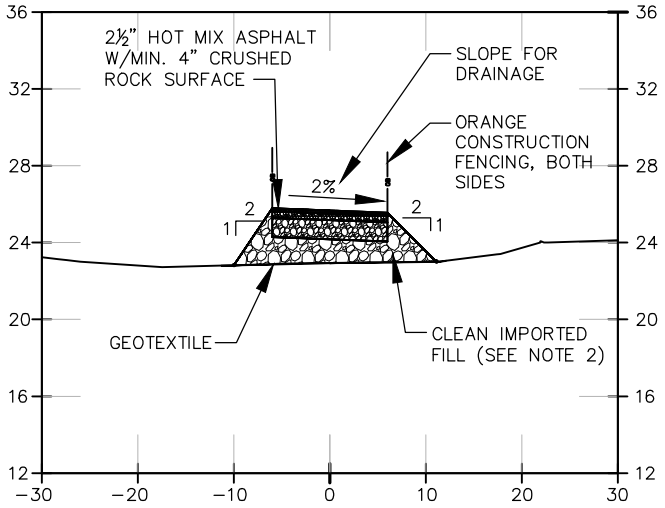


DETOUR PLAN (UPSTREAM)

SCALE: 1"=50'

50 0 25 50

SCALE: 1"= 50'



TYPICAL DETOUR SECTION

HORIZONTAL SCALE: 1"=20'
VERTICAL SCALE: 1"=10'

10 0 5 10

SCALE: 1"= 10'

20 0 10 20

SCALE: 1"= 20'

NOTES:

1. ALIGNMENT WILL BE LOCATED ON−SITE IN CONSULTATION WITH CITY OF BOTHELL AND KING COUNTY PARKS DEPARTMENT TO MINIMIZE IMPACTS TO TREES. CONTRACTOR TO PREPARE TRAFFIC MANAGEMENT PLAN AND SUBMIT TO CITY OF BOTHELL FOR APPROVAL.
2. CUT OR FILL AS NEEDED TO CREATE AN EVEN SLOPE BETWEEN THE POINTS OF DETOUR. USE CLEAN IMPORTED FILL MATERIAL, COMPACT IN 6" LIFTS.
3. DISPOSE OF TEMPORARY FILL MATERIAL OFF−SITE WHEN DE−COMMISSIONING TEMPORARY TRAIL DETOUR.
4. ALTERNATIVE DETOUR AVAILABLE VIA BURKE−GILMAN TRAIL.

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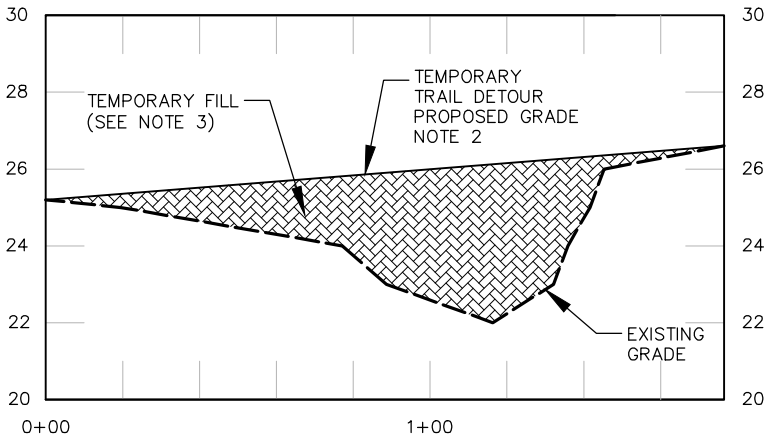
CITY OF BOTHELL
SAMMAMISH RIVER OFF−CHANNEL HABITAT RESTORATION

PATH DETOUR PLAN AND SECTION
1 OF 2

SHEET 21 OF 32 SHEETS

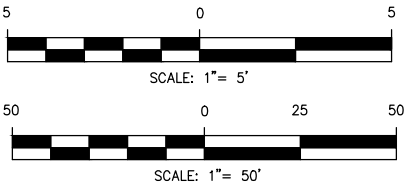
NOTES:

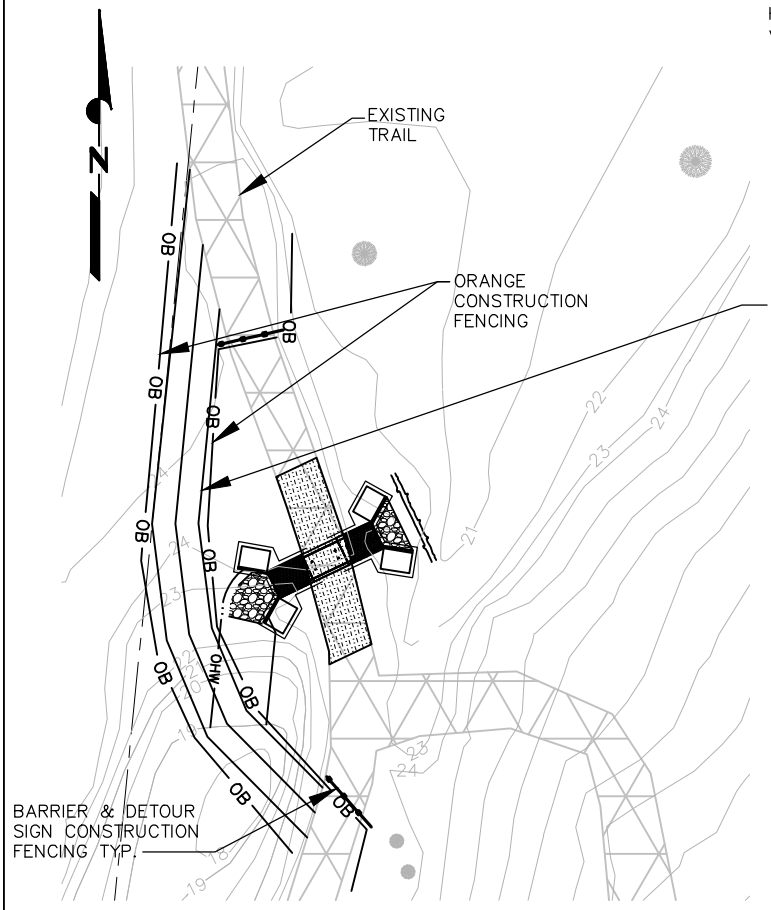
1. ALIGNMENT WILL BE LOCATED ON-SITE IN CONSULTATION WITH CITY OF BOTHELL AND KING COUNTY PARKS DEPARTMENT TO MINIMIZE IMPACTS TO TREES. CONTRACTOR TO PREPARE TRAFFIC MANAGEMENT PLAN AND SUBMIT TO CITY OF BOTHELL FOR APPROVAL.
2. CUT OR FILL AS NEEDED TO CREATE AN EVEN SLOPE BETWEEN THE POINTS OF DETOUR. USE CLEAN IMPORTED FILL MATERIAL, COMPACT IN 6" LIFTS.
3. DISPOSE OF TEMPORARY FILL MATERIAL OFF-SITE WHEN DE-COMMISSIONING TEMPORARY TRAIL DETOUR.
4. ALTERNATIVE DETOUR AVAILABLE VIA BURKE-GILMAN TRAIL.



SECTION ALONG DETOUR (UPSTREAM)

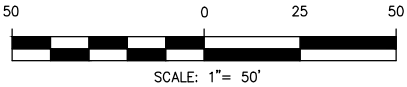
HORIZONTAL SCALE: 1"=50'
VERTICAL SCALE: 1"=5'

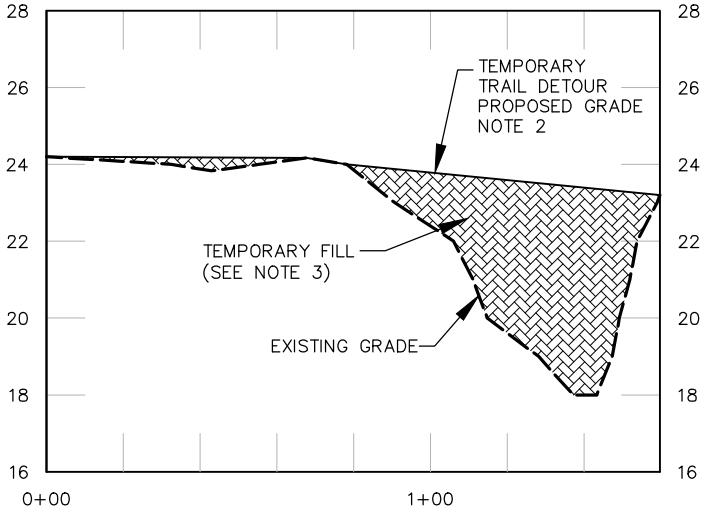




DETOUR PLAN (DOWNSTREAM)

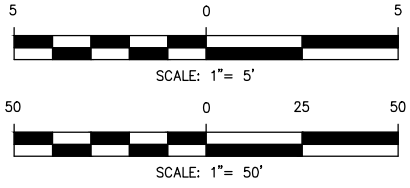
SCALE: 1"=50'





SECTION ALONG DETOUR (DOWNSTREAM)

HORIZONTAL SCALE: 1"=50'
VERTICAL SCALE: 1"=5'



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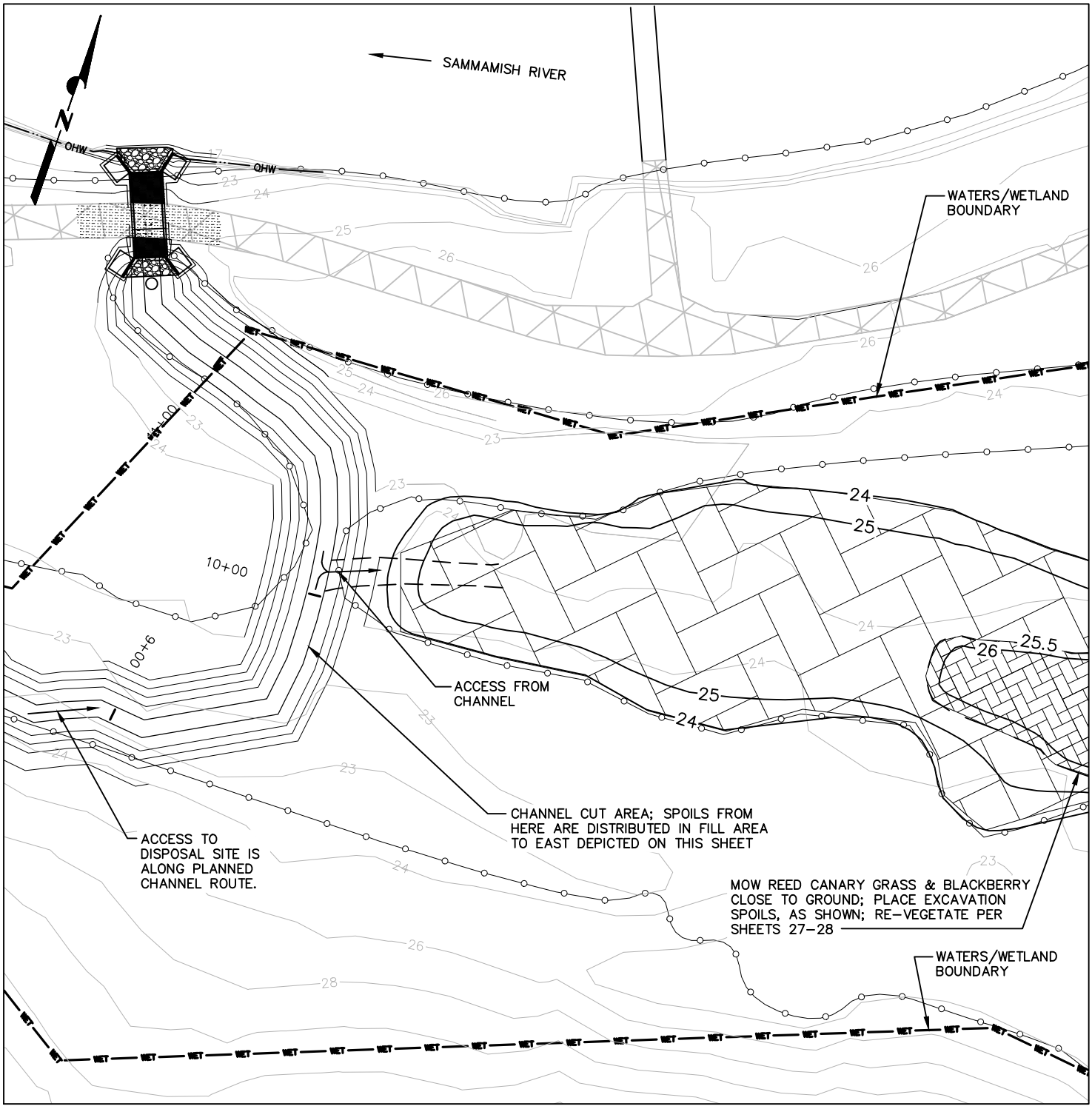
CITY OF BOTHELL
SAMMAMISH RIVER OFF-CHANNEL HABITAT RESTORATION

PATH DETOUR PLAN AND SECTION
2 OF 2

SHEET 22 OF 32 SHEETS



GRADING PLAN

REED CANARY GRASS FILL AREA

50 0 25 50

SCALE: 1"= 50'

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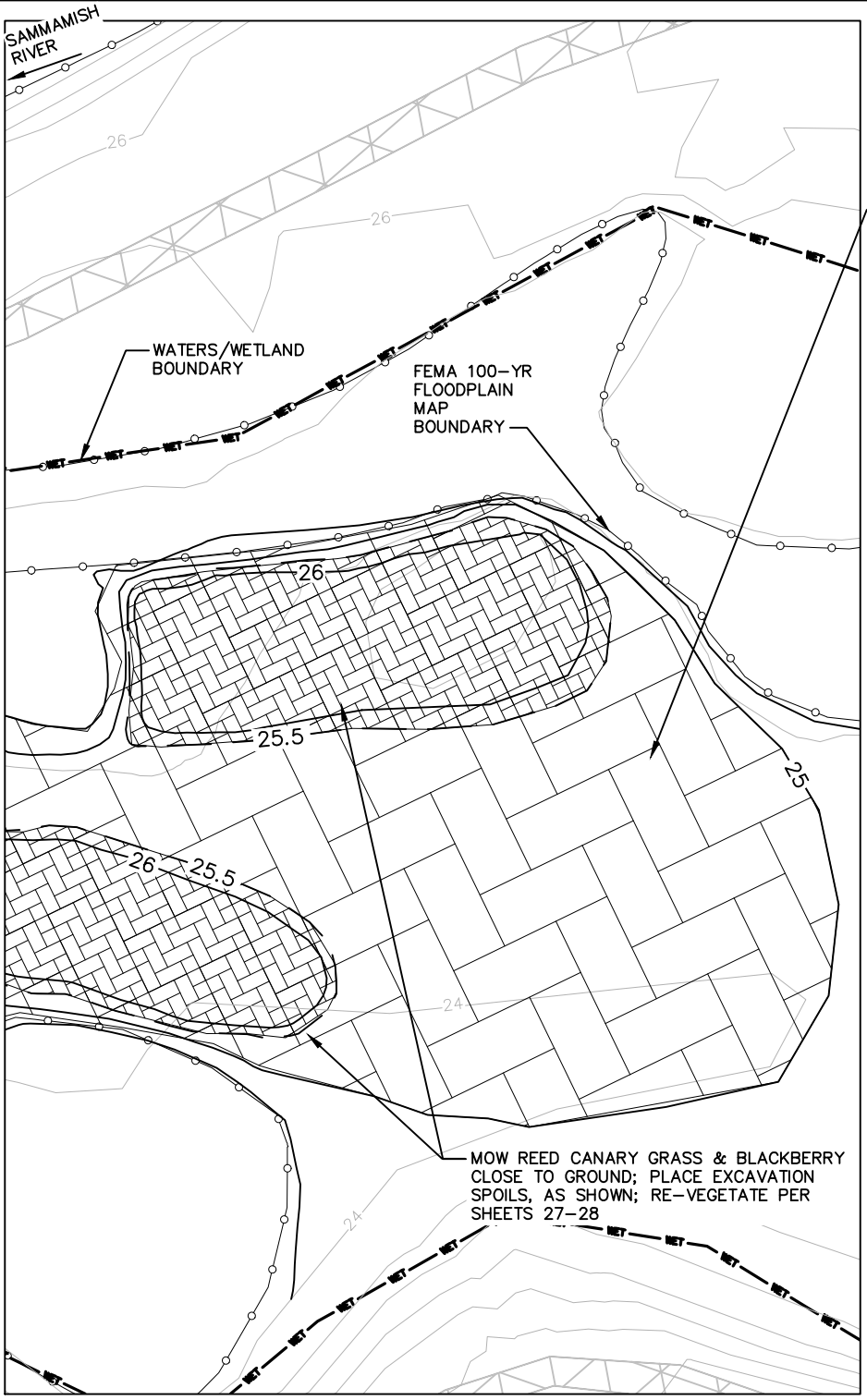
SAMMIMISH RIVER OFF-CHANNEL HABITAT RESTORATION

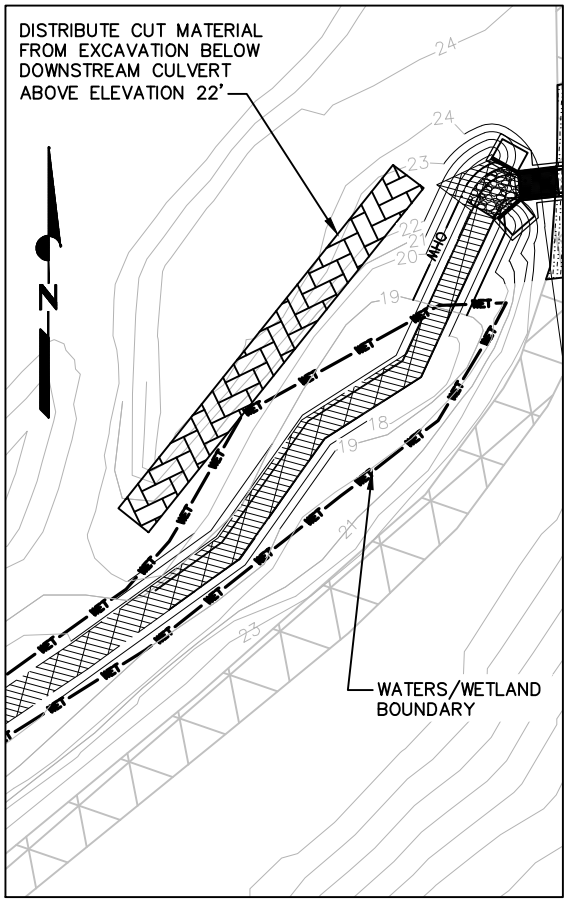
FLOODPLAIN FILL/GRADING PLAN
1 OF 2

SHEET 23 OF 32 SHEETS



GRADING PLAN

REED CANARY GRASS FILL AREA



GRADING PLAN

CHANNEL CONNECTION AREA BELOW DOWNSTREAM CULVERT

50 0 25 50

SCALE: 1"= 50'

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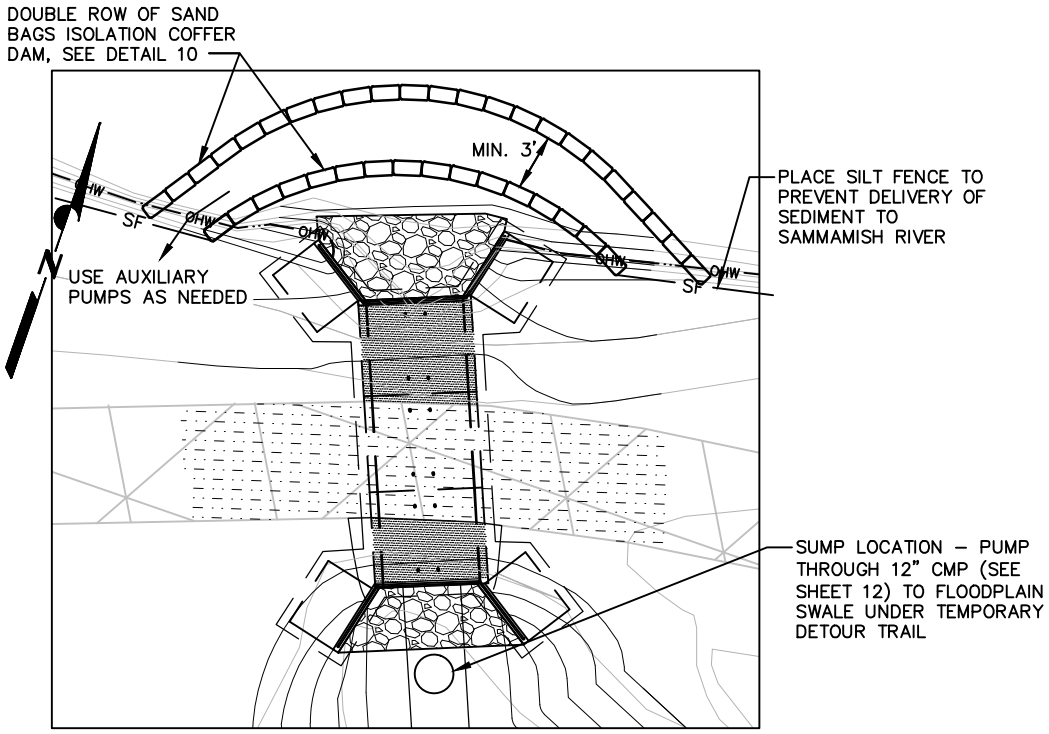
SAMMIMISH RIVER OFF-CHANNEL HABITAT RESTORATION

FLOODPLAIN FILL/GRADING PLAN
2 OF 2

SHEET 24 OF 32 SHEETS

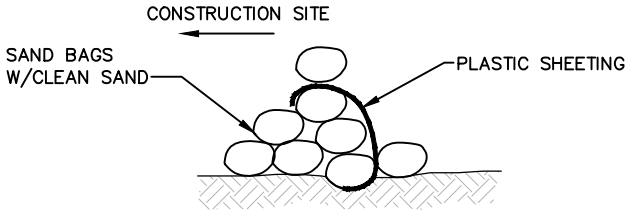


TESC & WATER MANAGEMENT PLAN — 1 — 1

UPSTREAM CULVERT

20 0 10 20

SCALE: 1"= 20'

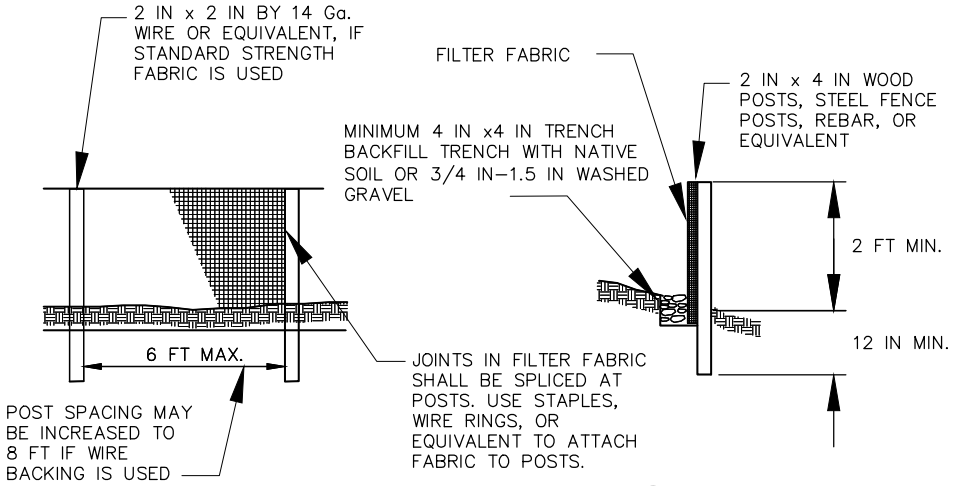


DETAIL — 10 — 1

SAND BAG COFFER DAM, NTS

SILT FENCE NOTE:

1. SILT FENCE SHALL BE USED FOLLOWING THESE SPECIFICATIONS:
   – FABRIC SHALL BE EQUAL TO "MIRAFI" WITH 100 LB GRAB TENSILE STRENGTH,
   – 200 PSI BURST STRENGTH, AND 70–200 SIEVE # APPARENT OPENING.



DETAIL — 9 — 1

SILT FENCE BARRIER, NTS

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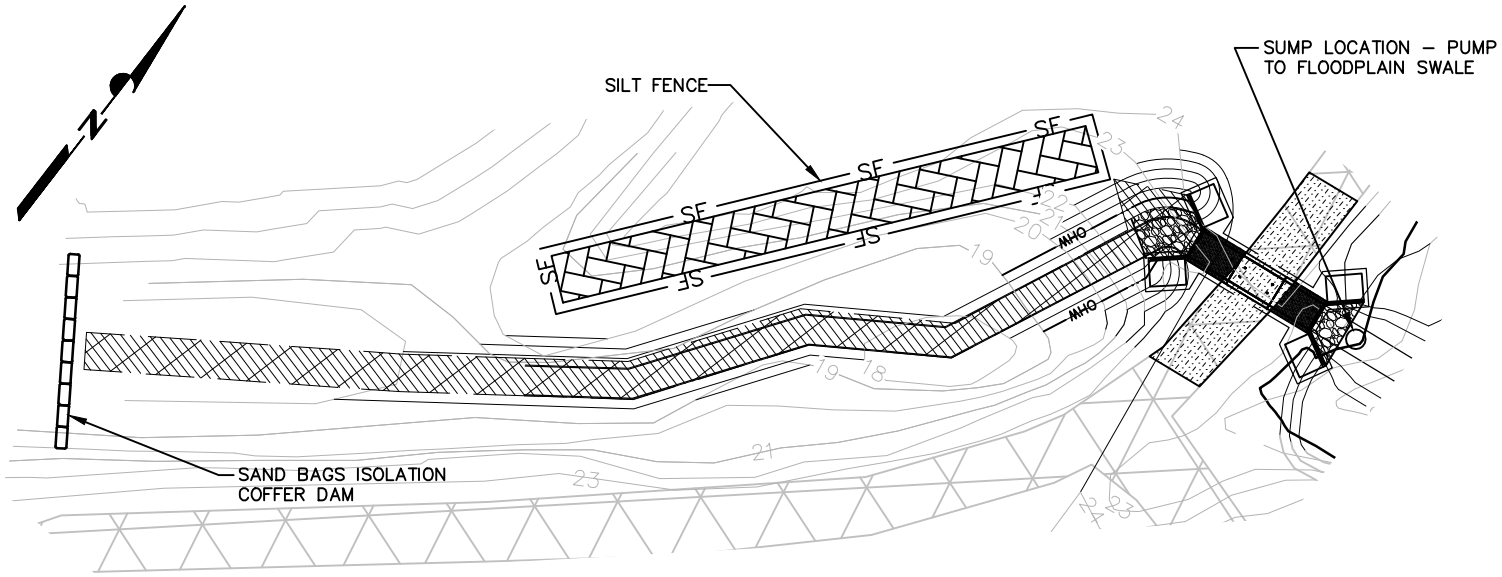
CITY OF BOTHELL
SAMMIMISH RIVER OFF–CHANNEL HABITAT RESTORATION

TESC/WATER MANAGEMENT
1 OF 2

SHEET 25 OF 32 SHEETS



TESC & WATER MANAGEMENT PLAN
DOWNSTREAM CULVERT

40 0 20 40

SCALE: 1"= 40'

TEMPORARY EROSION AND SEDIMENT CONTROL NOTES

1. ALL IN–CHANNEL EXCAVATION WORK WILL BE CONDUCTED PER HPA, IN–WATER TIMING CONDITIONS. ALL IN–CHANNEL EXCAVATION WILL BE ISOLATED USING SAND BAGS AND PLASTIC SHEETING, THERE SHALL BE A BACKUP PUMP AVAILABLE ON THE PROJECT SITE. ALL PUMPED WATER SHALL BE DISCHARGED ONTO THE FLOOD PLAIN, DRAINING AWAY FROM THE CHANNEL.
2. THE IMPLEMENTATION OF THESE TESC PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE TESC FACILITIES SHALL BE REVIEWED AND SUPERVISED BY AN INDIVIDUAL WITH CESCL CERTIFICATION AND EXPERIENCE IN IMPLEMENTING TESC PLANS.
3. BOUNDARIES OF CLEARING LIMITS IN VEGETATION AREAS SHALL BE CLEARLY FLAGGED WITH SURVEY TAPE BY ENGINEER AND/OR OWNER PRIOR TO CONSTRUCTION; DURING CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE CLEARING LIMITS SHALL BE PERMITTED. THE CLEARING LIMITS SHALL BE MAINTAINED BY OWNER PROJECT MANAGER FOR THE DURATION OF CONSTRUCTION.
4. THE TESC FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED PRIOR TO OR IN CONJUNCTION WITH ALL CLEARING AND GRADING SO AS TO ENSURE THAT THE TRANSPORT OF SEDIMENT TO SURFACE WATERS, AND ADJACENT PROPERTIES IS MINIMIZED.
5. THE TESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR THE ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD THESE TESC FACILITIES SHALL BE UPGRADED BY CONTRACTOR AND APPROVED BY THE ENGINEER AS NEEDED FOR UNEXPECTED STORM EVENTS AND MODIFIED TO ACCOUNT FOR CHANGING SITE CONDITIONS (E.G., SUMP PUMP, INSTALLATION/RELOCATION OF SILT FENCES, ETC.)
6. THE TESC FACILITIES SHALL BE INSPECTED DAILY AND MAINTAINED BY CONTRACTOR TO ENSURE CONTINUED PROPER FUNCTIONING.
7. THE TESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN 48 HOURS OF FOLLOWING A STORM EVENT.
8. WHERE TEMPORARY EROSION CONTROL IS REQUIRED STRAW MULCH SHALL BE APPLIED AT A MINIMUM 2–INCH THICKNESS.
9. ALL CONSTRUCTION MATERIALS, WASTE MATERIALS, AND DEMOLITION DEBRIS SHALL BE HANDLED AND DISPOSED OF IN A MANNER SO AS TO PREVENT CONTAMINATION OF STORMWATER RUNOFF AND ADJACENT WATERWAYS.
10. MAINTENANCE AND FUELING OF CONSTRUCTION EQUIPMENT SHALL BE PERFORMED AT THE CITY–APPROVED STAGING AREA AND IN SUCH A MANNER TO PREVENT THE POTENTIAL CONTAMINATION OF STORMWATER RUNOFF AND ADJACENT WATERWAYS. SPILL CONTAINMENT AND CLEANUP KITS SHALL BE MAINTAINED ONSITE AND ANY SPILLS OF FUELS, HYDRAULIC FLUID (VEGETABLE OIL REQUIRED), LUBRICANTS, OR OTHER HAZARDOUS MATERIAL SHALL BE CLEANED UP AND IMMEDIATELY AND DISPOSED OF PROPERLY.
11. EROSION CONTROL WILL MEET ALL COUNTY DESIGN AND CONSTRUCTION STANDARDS.
12. ALL DISTURBED AREAS SHALL BE HYDROSEEDED AT END OF CONSTRUCTION WITH WSDOT NO CLOVER EROSION CONTROL MIX AND TACKIFIER.
13. CHANGES MUST BE APPROVED BY ENGINEER AND OWNER PROJECT MANAGER.

WATER HANDLING NOTE:

1. WATER HANDLING ON SITE CAN BE PERFORMED BY USE OF A SUMP AND PUMP DISCHARGING TO FLOODPLAIN SWALES. THERE SHALL BE A BACKUP PUMP AVAILABLE ON THE PROJECT SITE.
2. CONTRACTOR SHALL HAVE BIOBAGS ON SITE AS BACKUP IF PUMPING OF DIRTY WATER TO SWALES EXCEEDS FLOODPLAIN STORAGE CAPACITY.
3. CONTRACTOR SHOULD ASSESS SITE CONDITIONS AND MAY PROPOSE ALTERNATIVE WATER MANAGEMENT PLAN FOR APPROVAL BY ENGINEER.

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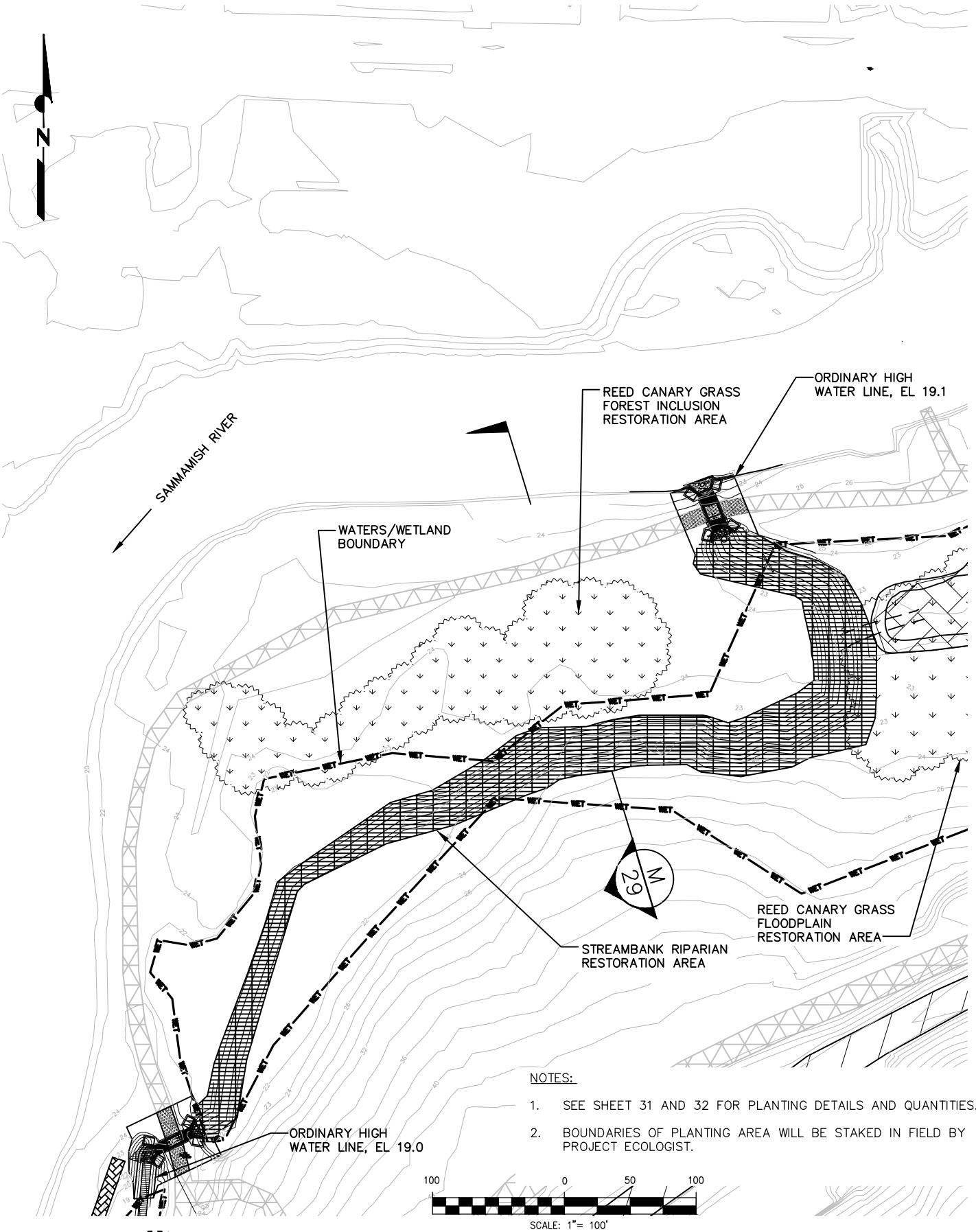
SAMMAMISH RIVER OFF–CHANNEL HABITAT RESTORATION

TESC/WATER MANAGEMENT
2 OF 2



NOTES:

1. SEE SHEET 31 AND 32 FOR PLANTING DETAILS AND QUANTITIES.
2. BOUNDARIES OF PLANTING AREA WILL BE STAKED IN FIELD BY PROJECT ECOLOGIST.

100 0 50 100

SCALE: 1"= 100'

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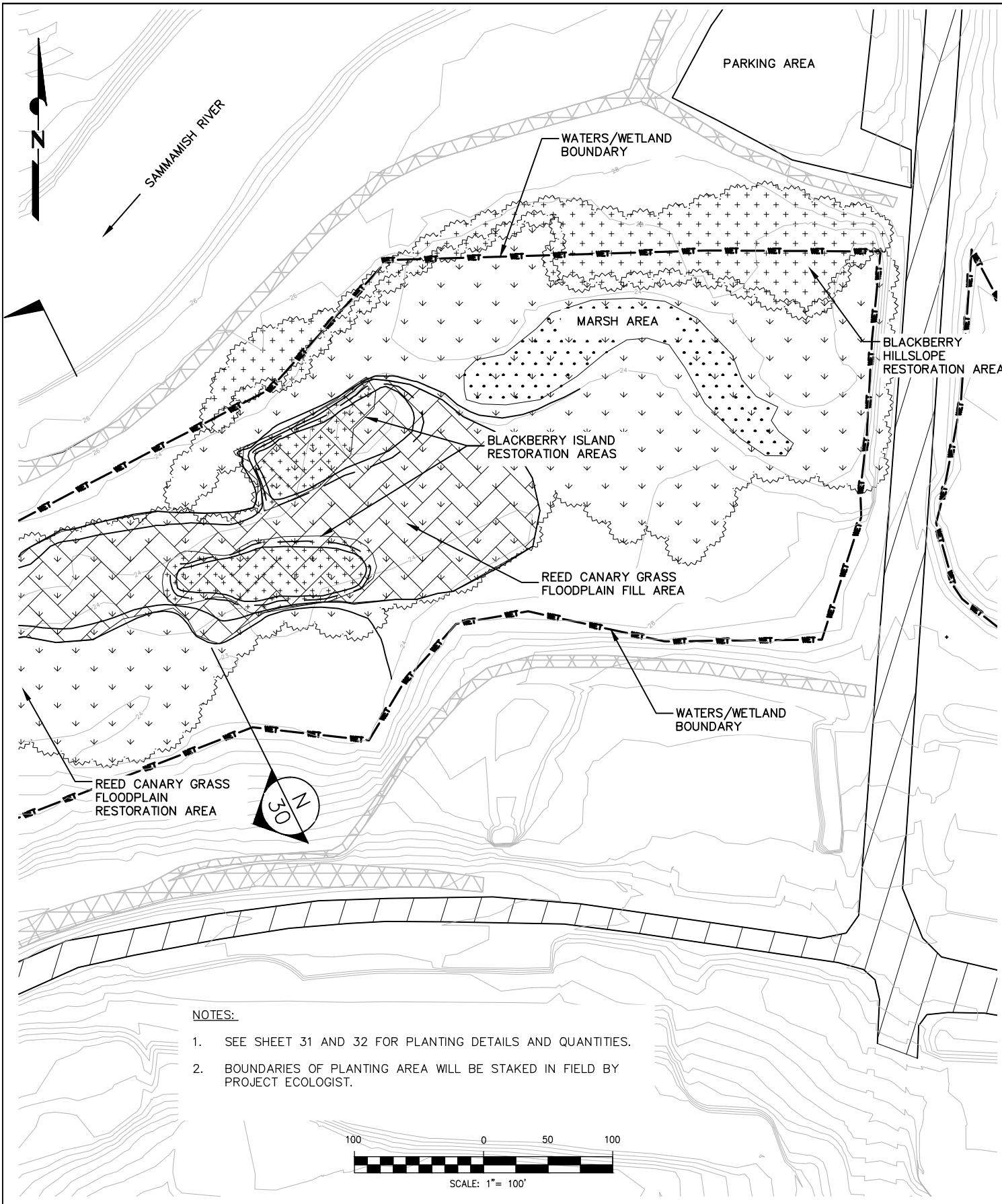
SAMMIMISH RIVER OFF-CHANNEL
HABITAT RESTORATION

PLANTING PLAN VIEW
1 OF 2

SHEET 27 OF 32 SHEETS



NOTES:

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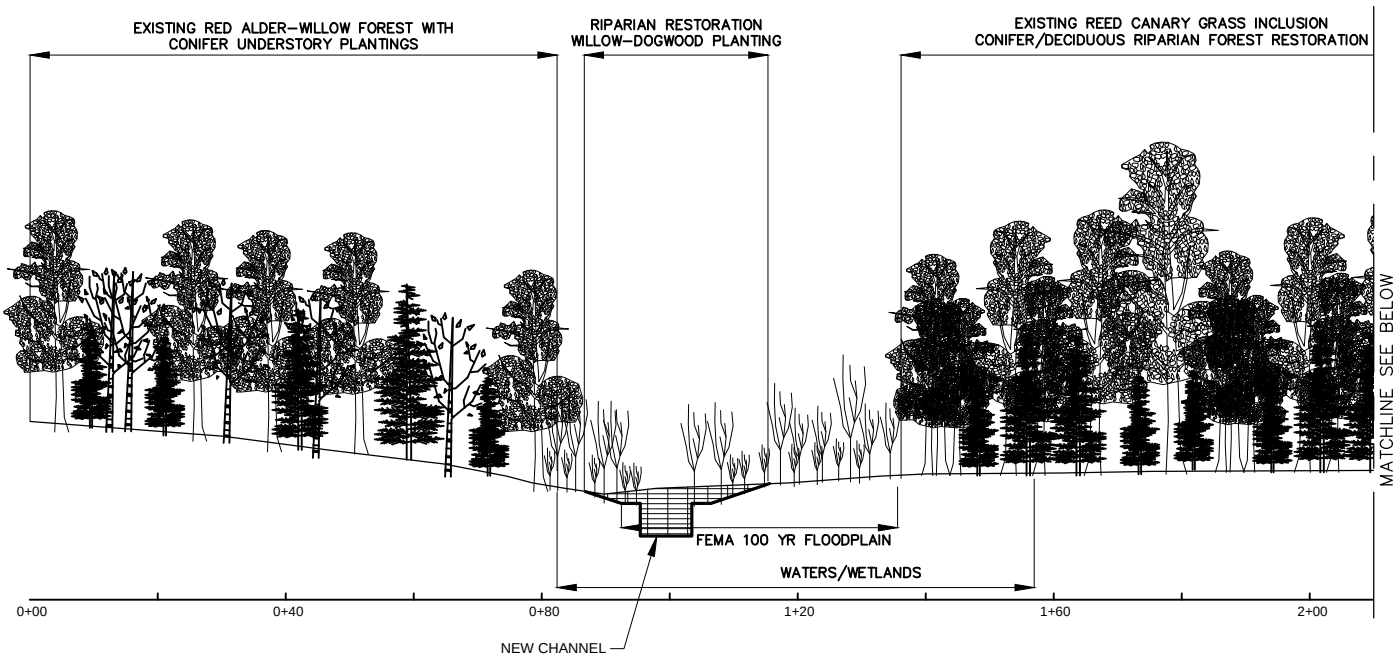
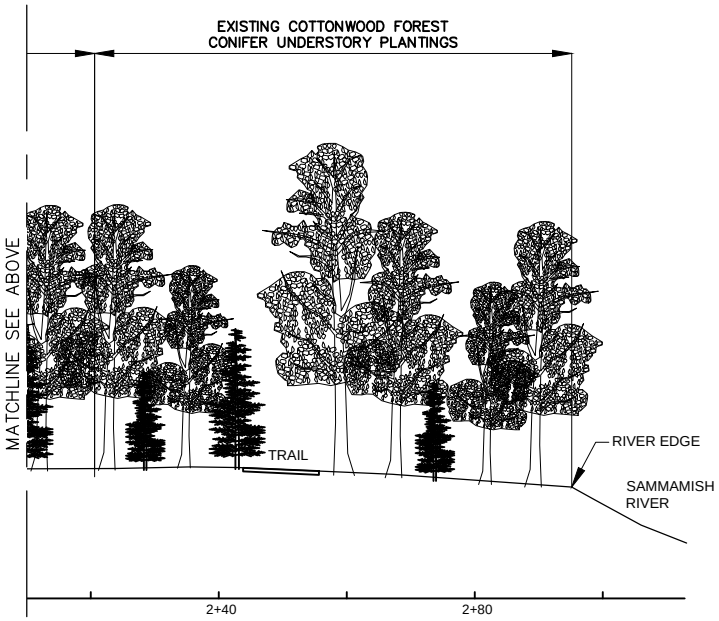
SAMMAMISH RIVER OFF-CHANNEL HABITAT RESTORATION

PLANTING PLAN VIEW
2 OF 2

SHEET 28 OF 32 SHEETS





SECTION M 27

FOREST + RIPARIAN RESTORATION

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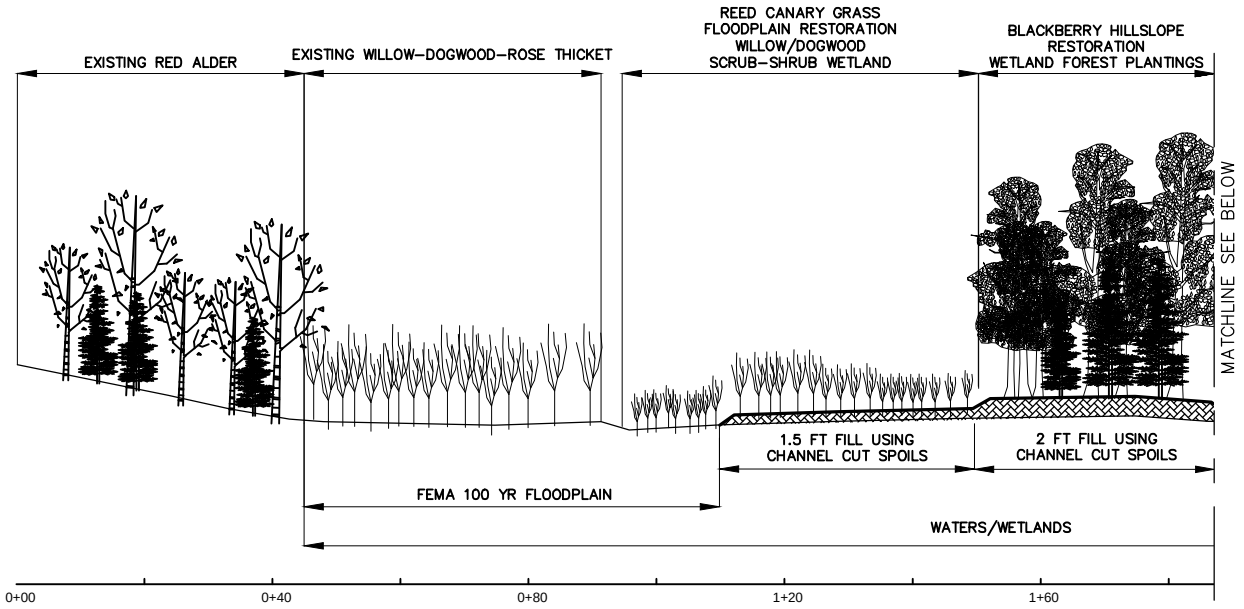
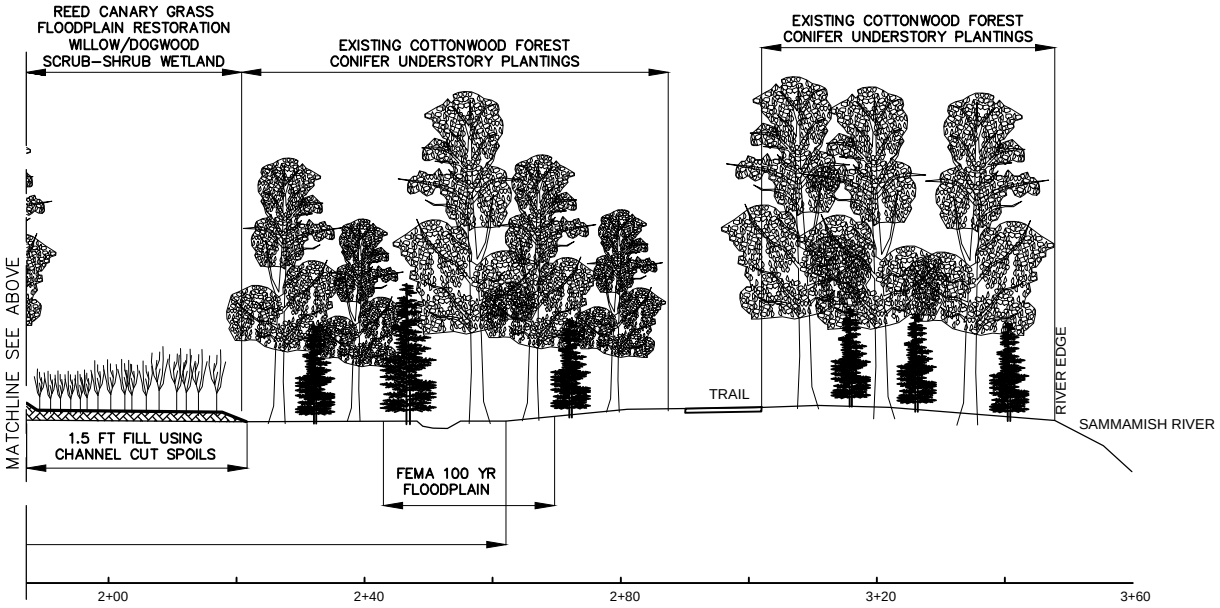
SAMMIMISH RIVER OFF–CHANNEL HABITAT RESTORATION

PLANTING PLAN, SECTIONS, AND DETAILS
1 OF 2

SHEET 29 OF 32 SHEETS





SECTION N 28

FLOODPLAIN RESTORATION

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SAMMIMISH RIVER OFF–CHANNEL
HABITAT RESTORATION

PLANTING PLAN, SECTIONS, AND DETAILS
2 OF 2

SHEET 30 OF 32 SHEETS

Planting specifications for reed canarygrass floodplain, non-fill area

Scientific Name	Common Name	Wetland Indicator Status[1]	Plant Material	On-center Spacing	Area (ft2)	Number of Plants per acre	Number of plants per site
Shrubs							
Salix lasiandra	Pacific willow	FACW	live stakes	2', in clusters	90,674	2723	5100
Salix scouleriana	Scouler willow	FAC	live stakes	2', in clusters	90,674	2723	5100
Salix sitchensis	Sitka willow	FACW	live stakes	2', in clusters	90,674	2723	5100
Cornus sericea	Red osier dogwood	FACW	live stakes	2', in clusters	90,674	2723	5100

Planting specifications for reed canarygrass meadow filll area above 100-year floodplain elevation

Scientific Name	Common Name	Wetland Indicator Status[1]	Plant Material	On-center Spacing	Area (ft2)	Number of Plants per acre	Number of plants per site
Shrubs							
Salix lasiandra	Pacific willow	FACW	live stakes	2', in clusters	22,663	1210	567
Salix sitchensis	Sitka willow	FACW	live stakes	2', in clusters	22,663	1210	567
Spiraea douglasii	Western spirea	FACW	1-gallon pots	3', in clusters	22,663	242	113
Rubus spectabilis	Salmonberry	FAC	1-gallon pots	3', in clusters	22,663	145	68
Rosa nutkana	Nootka rose	FAC	1-gallon pots	3', in clusters	22,663	97	45
Rosa pisocarpa	Cluster rose	FAC	1-gallon pots	3', in clusters	22,663	97	45
Lonicera involucrata	Black twinberry	FAC	1-gallon pots	3', in clusters	22,663	484	227
Frangula purshiana	Cascara	FAC	1-gallon pots	3', in clusters	22,663	145	68
Cornus sericea	Redosier dogwood	FACW	live stakes	3', in clusters	22,663	968	453
Physocarpus capitatus	Pacific ninebark	FACW	1-gallon pots	3', in clusters	22,663	242	113

Planting specifications for Blackberry Island and Blackberry Hillslope Restoration

Scientific name	Common name	Wetland Indicator Status[1]	Plant material	On-center Spacing	Area (ft2)	Number of Plants per acre	Number of plants per site
Trees							
Fraxinus latifolia	Oregon ash	FACW	1-gallon pots	12'	38542	30	24
Picea sitchensis	Sitka spruce	FAC	1-gallon pots	12'	38542	76	60
Thuja plicata	Western red cedar	FAC	1-gallon pots	12'	38542	76	60
Populus balsamifera ssp. *trichocarpa*	Black cottonwood	FAC	1-gallon pots	12'	38542	61	48
Alnus rubra	Red alder	FAC	1-gallon pots	12'	38542	61	48
Shrubs							
Corylus cornuta	Beaked hazelnut	FACU	1-gallon pots	3', in clusters	38542	15	12
Rubus spectabilis	Salmonberry	FAC	1-gallon pots	3', in clusters	38542	15	12
Rosa nutkana	Nootka rose	FAC	1-gallon pots	3', in clusters	38542	242	193
Rosa pisocarpa	Cluster rose	FAC	1-gallon pots	3', in clusters	38542	242	193
Lonicera involucrata	Black twinberry	FAC	1-gallon pots	3', in clusters	38542	968	771
Salix sitchensis	Sitka willow	FACW	Live stakes	3, in clusters	38542	968	771
Sambucus racemosa	Red elderberry	FACU	1-gallon pots	3', in clusters	38542	968	771
Cornus sericea	Redosier dogwood	FACW	1-gallon pots	3', in clusters	38542	968	771

1–FAC = FACULTATIVE
FACU = FACULTATIVE UPLAND
FACW = FACULTATIVE WETLAND

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SAMMIMISH RIVER OFF–CHANNEL HABITAT RESTORATION

PLANTING SPECIFICATIONS
1 OF 2

Planting specifications for reed canarygrass forest inclusions							
Scientific Name	**Common Name**	**Wetland Indicator Status[1]**	**Plant Material**	**On-center Spacing**	**Area (ft2)**	**Number of Plants per acre**	**Number of plants per site**
Trees							
Picea sitchensis	Sitka spruce	FAC	1-gallon pots	12'	25873	152	81
Thuja plicata	Western red cedar	FAC	1-gallon pots	12'	25873	152	81
Shrubs							
Oemlaria cerasiformis	Indian plum	FACU	1-gallon pots	3', in clusters	25873	1452	776
Corylus cornuta	Beaked hazelnut	FACU	1-gallon pots	3', in clusters	25873	968	517
Rubus spectabilis	Salmonberry	FAC	1-gallon pots	3', in clusters	25873	968	517
Rosa pisocarpa	Cluster rose	FAC	1-gallon pots	3', in clusters	25873	484	259
Rosa nutkana	Nootka rose	FAC	1-gallon pots	3', in clusters	25873	484	259

Planting specifications for Existing Riparian Forest Enhancement.							
Scientific Name	**Common Name**	**Indicator status**	**Plant Material**	**On-center Spacing**	**Area (ft2)**	**Number of Plants per acre**	**Number of plants per site**
Trees							
Picea sitchensis	Sitka spruce	FAC	1-gallon pots	12'	81741	76	128
Thuja plicata	Western red cedar	FAC	1-gallon pots	12'	81741	76	128
Psuedotsuga menziesii	Douglas-fir	FACU	1-gallon pots	12'	81741	76	128
Tsuga heterophylla	Western hemlock	FACU	1-gallon pots	12'	81741	76	128

Planting specifications for excavated channel - streambank riparian restoration area							
Scientific Name	**Common Name**	**Indicator status**	**Plant Material**	**On-center Spacing**	**Area (ft2)**	**Number of Plants per acre**	**Number of plants per site**
Shrubs							
Salix lasiandra	Pacific willow	FACW	live stakes	1.5', in clusters	22927	3057	1448
Salix sitchensis	Sitka willow	FACW	live stakes	1.5', in clusters	22927	3057	1448
Cornus sericea	Redosier dogwood	FACW	live stakes	1.5', in clusters	22927	4076	1931
Herbs							
Wetland Grass/Sedge seed mix		FAC-FACW	Hydroseeding	N/A	22927	$4750/acre	

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PLANTING SPECIFICATIONS
2 OF 2

SHEET 32 OF 32 SHEETS