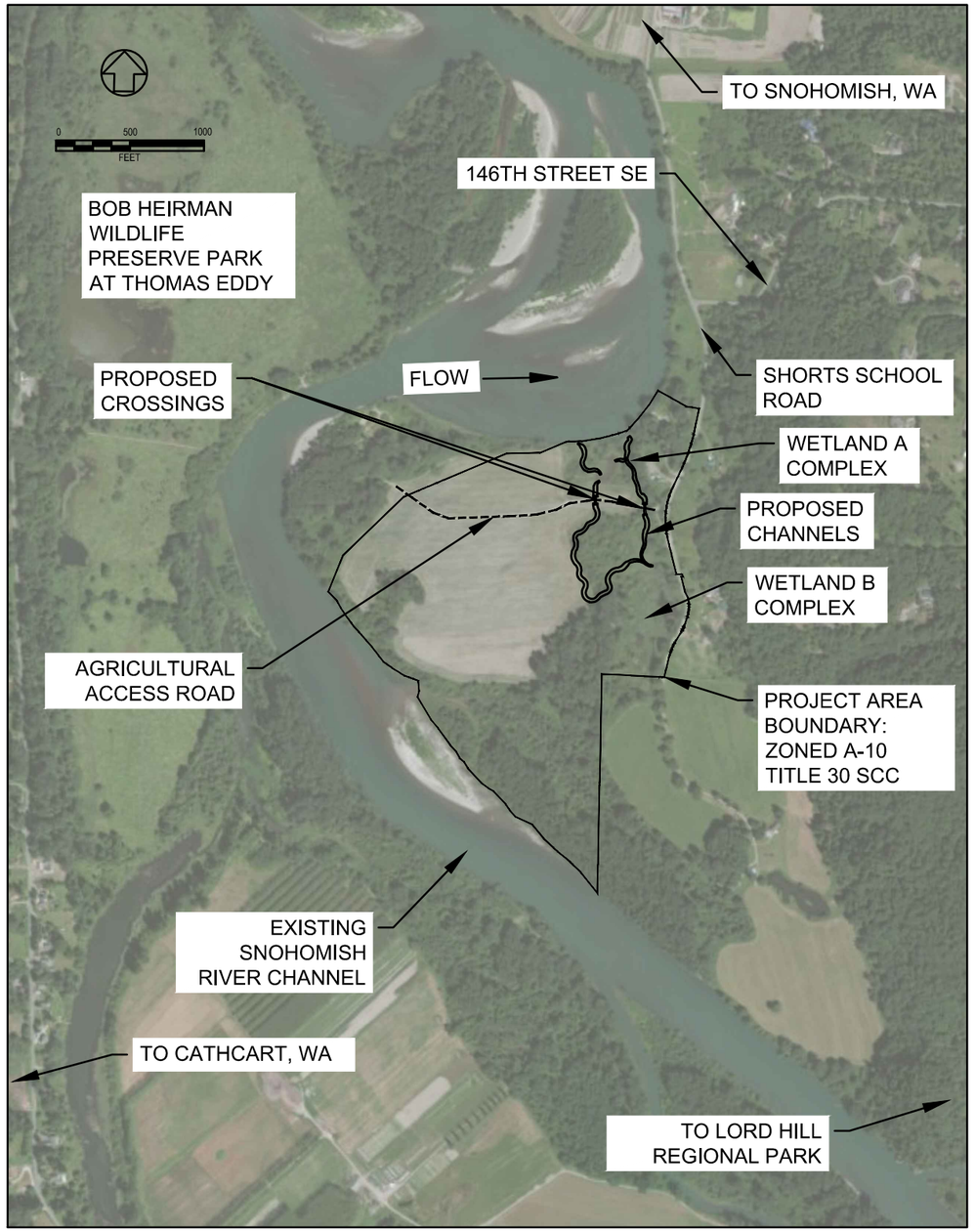
SNOHOMISH CONSERVATION DISTRICT

SECTION 6, TOWNSHIP 27, RANGE 06

MOGA BACK-CHANNEL RECONNECTION PROJECT

SNOHOMISH COUNTY, WASHINGTON



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USACE REFERENCE #: NWS-2015-723
APPLICANT: SNOHOMISH CONSERVATION DISTRICT
ADJACENT PROPERTY OWNERS:

1. APN: 27060500200700
2. APN: 27060500200600
3. APN: 27060500300200

LOCATION: APN 27060600100400, 27060600100700 27060500200600, 27060500200400
OWNER: MOGA
LAT/LONG: 47°51'27.3"N / 122°04'34.1"W
PROPOSED PROJECT:
CRITICAL OFF-CHANNEL HABITAT RECONNECTION

IN: RELICT SNOHOMISH RIVER CHANNEL
NEAR: SNOHOMISH & CATHCART
COUNTY: SNOHOMISH
STATE: WA

CESCL: DANIEL ELEFANT, CARDNO

SNOHOMISH COUNTY PLANNING DEPT. SERVICES APPROVED FOR CONSTRUCTION

BY: _____
RANDOLPH P. SLEIGHT, P.E., P.L.S.

PERMIT NO: _____

REVISIONS	DATE
PRELIMINARY PLANS	10/23/15
90% PLANS	12/30/15

SKY D. MILLER
STATE OF WASHINGTON
28561
REGISTERED PROFESSIONAL ENGINEER

ENGINEER: SKY MILLER
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SNOHOMISH CONSERVATION DISTRICT

APPLICANT NAME:
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SNOHOMISH CONSERVATION DISTRICT
528 91ST AVE NE, LAKE STEVENS, WA 98258
PHONE: 425-377-7005

TITLE

MOGA BACK-CHANNEL RECONNECTION PROJECT

SNOHOMISH COUNTY, WA

DATE:	DEC 30, 2015
DESIGNED BY:	DE
DRAWN BY:	DE
CHECKED BY:	JB/SM
CARDNO JOB NO.	E515004000
PLAN NO.	1
SHEET	1 of 11

GENERAL NOTES

GENERAL

1. ALL IMPROVEMENTS SHALL BE ACCOMPLISHED UNDER THE APPROVAL, INSPECTION, AND TO THE SATISFACTION OF THE SNOHOMISH CONSERVATION DISTRICT (SCD). IMPROVEMENT CONSTRUCTION SHALL COMPLY WITH THESE PLANS AND THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION (WSDOT) STANDARD PLANS, CURRENT EDITION. ALL REFERENCES TO THE "STANDARD SPECIFICATIONS" SHALL MEAN THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION (WSDOT) STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION, CURRENT EDITION. CONSTRUCTION NOT SPECIFIED ON THESE PLANS SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS. THE CONTRACTOR IS OBLIGATED TO BE FAMILIAR WITH APPLICABLE SECTIONS OF THE STANDARD SPECIFICATIONS NOT DISCUSSED IN THE GENERAL NOTES. THE CONTRACT SPECIAL PROVISIONS SHALL SUPERSEDE THOSE OF THE STANDARD SPECIFICATIONS WHERE DISCREPANCIES OCCUR.

2. CONSTRUCTION HOURS SHALL BE WEEKDAYS BETWEEN 8:00 A.M. AND 6:30 P.M. UNLESS PRIOR APPROVAL IS RECEIVED FROM THE SCD. SEASONAL CONSTRUCTION WORK WINDOW WILL BE REQUIRED BY THE DEPT. OF FISH AND WILDLIFE. SEE HPA PERMIT.

3. THE CONTRACTOR AGREES TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, AND FURTHER AGREES THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS IN ACCORDANCE WITH THE PROVISIONS OUTLINED BY THE PROJECT CONTRACT AND STANDARD SPECIFICATIONS.
4. IT IS THE RESPONSIBILITY OF THE CONTRACTOR AND HIS SUBCONTRACTOR(S) TO EXAMINE THE PROJECT SITE PRIOR TO THE OPENING OF BID PROPOSALS. THE CONTRACTOR SHALL BECOME FAMILIAR WITH THE CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED, SUCH AS THE NATURE AND LOCATION OF THE WORK AND THE GENERAL AND LOCAL CONDITIONS, PARTICULARLY THOSE AFFECTING THE AVAILABILITY OF TRANSPORTATION, THE DISPOSAL, HANDLING, AND STORAGE OF MATERIALS, AVAILABILITY OF LABOR, WATER, ELECTRICITY, ROADS, THE UNCERTAINTIES OF WEATHER, THE CONDITIONS OF THE GROUND, SURFACE AND SUBSURFACE MATERIALS, THE EQUIPMENT AND FACILITIES NEEDED PRIMARILY FOR AND DURING THE PERFORMANCE OF THE WORK, AND THE COSTS THEREOF. ANY FAILURE BY THE CONTRACTOR AND SUBCONTRACTOR(S) TO ACQUAINT HIMSELF WITH ALL THE AVAILABLE INFORMATION WILL NOT RELIEVE HIM FROM RESPONSIBILITY FOR PROPERLY ESTIMATING THE DIFFICULTY AND COST OF SUCCESSFULLY PERFORMING THE WORK.

5. THE CONTRACTOR SHALL OBTAIN AT HIS OWN EXPENSE ALL PERMITS, LICENSES, INSURANCE POLICIES, ETC., NOT ALREADY OBTAINED BY SCD, AS MAY BE NECESSARY TO COMPLY WITH STATE AND LOCAL LAWS ASSOCIATED WITH THE PERFORMANCE OF THE WORK.

6. THE CONTRACTOR IS RESPONSIBLE TO REVIEW THE CONTRACT DOCUMENTS FOR ALL SUBMITTALS REQUIRED FOR SCD REVIEW AND ACCEPTANCE.

7. THE ENGINEER RESPONSIBLE FOR PREPARATION OF THESE PLANS AND SPECIFICATIONS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE OVERSEEING ENGINEER RESPONSIBLE FOR PREPARATION OF THESE PLANS.

8. IF, DURING CONSTRUCTION, ARCHAEOLOGICAL REMAINS ARE ENCOUNTERED, CONSTRUCTION IN THE VICINITY SHALL BE HALTED, AND THE STATE OFFICE OF HISTORIC PRESERVATION, SCD AND A QUALIFIED ARCHEOLOGIST SHALL BE NOTIFIED IMMEDIATELY.

9. THE CONTRACTOR SHALL COMPLETE ALL WORK IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS AS WELL AS ALL PERMIT REQUIREMENTS.

10. THE CONTRACTOR IS RESPONSIBLE FOR COMPLETING ALL FISH REMOVAL (DEFISH) AND DEWATERING AS PER SPECIFICATIONS.

TRAFFIC CONTROL

11. THE CONTRACTOR SHALL PROVIDE, PLACE, AND MAINTAIN ALL LIGHTS, SIGNS, BARRICADES, FLAG PERSONS, PILOT CAR, OR OTHER DEVICES NECESSARY TO CONTROL TRAFFIC IN THE CONSTRUCTION AREA AND FOR PUBLIC SAFETY IN ACCORDANCE WITH THESE PLANS, THE STANDARD SPECIFICATIONS, FEDERAL HIGHWAY ADMINISTRATION (FHWA) MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) 2003 EDITION.

TEMPORARY EROSION & SEDIMENT CONTROL

12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING ALL TEMPORARY EROSION CONTROL MEASURES. THE EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH SNOHOMISH COUNTY AND STATE REGULATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND PERFORMANCE OF THE TEMPORARY EROSION CONTROL MEASURES THROUGHOUT THE DURATION OF THE PROJECT.

    ANY AREAS OF EXPOSED SOILS, INCLUDING ROADWAY EMBANKMENTS, THAT WILL NOT BE DISTURBED FOR TWO DAYS DURING THE WET SEASON OR SEVEN DAYS DURING THE DRY SEASON SHALL BE IMMEDIATELY STABILIZED WITH AN APPROVED ESC COVER METHOD

    ANY AREA NEEDING ESC MEASURES, NOT REQUIRING IMMEDIATE ATTENTION, SHALL BE ADDRESSED WITHIN SEVEN (7) DAYS

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

    PRIOR TO THE BEGINNING OF THE WET SEASON (OCT 1), ALL DISTURBED AREAS SHALL BE REVIEWED TO IDENTIFY THOSE TO BE SEEDED IN PREPARATION FOR WINTER RAINS. THESE AREAS SHALL BE SEEDED WITHIN ONE WEEK OF THE BEGINNING OF THE WET SEASON A MAP OF THOSE AREAS TO BE SEEDED AND THOSE TO REMAIN UNCOVERED SHALL BE SUBMITTED TO THE DDES INSPECTOR FOR REVIEW

13. GROUNDWATER CONDITIONS ON THE SITE WERE NOT EVALUATED BUT CONTRACTOR SHOULD EXPECT HIGH GROUNDWATER INFLOWS TO WORK AREAS. CONTRACTOR SHALL SUBMIT A DIVERSION & DEWATERING PLAN TO THE ENGINEER FOR APPROVAL IF FIELD CONDITIONS WARRANT.

    NOTE DEWATER - DEFISH SPECIFICATOIN IF NEEDED; CONSTRUCTION SEQUENCE #4 THIS SHEET

14. THE CONTRACTOR SHALL HAVE AN EMERGENCY SPILL KIT ONSITE AT ALL TIMES.

15. THE CONTRACTOR SHALL FURNISH AND IMPLEMENT A STORMWATER POLLUTION PREVENTION PLAN PER SECTION 8-01.3(1)

16. PERMIT CONDITIONS MAY CONTAIN SPECIFIC REQUIREMENTS FOR THE CONTROL OF OFF-SITE TURBIDITY FROM PROJECT OPERATIONS. TURBIDITY WILL BE MONITORED ON A FREQUENT BASIS BY THE PROJECT MANAGEMENT AND INSPECTION STAFF ON-SITE. TURBIDITY AMOUNTS IN EXCESS OF THE PERMITTED AMOUNT AND/OR DURATIONS WILL CAUSE WORK TO BE STOPPED UNTIL IMPROVED PRACTICES ARE IN EFFECT AND THE PROBLEMS CONTROLLED. THE CONTRACTOR IS COMPLETELY RESPONSIBLE FOR ANY PROJECT DELAYS THAT OCCUR BY NATURE OF THIS FAILURE TO ADEQUATELY CONTAIN SEDIMENT ON-SITE.

17. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT NO PETROLEUM PRODUCTS, HYDRAULIC FLUID, SEDIMENTS, SEDIMENT-LADEN WATER, CHEMICALS, OR ANY OTHER TOXIC OR DELETERIOUS MATERIALS ARE ALLOWED TO ENTER OR LEACH INTO THE RIVER. CONTRACTOR SHALL COMPLY WITH THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) AND SPILL PREVENTION, CONTROL AND COUNTERMEASURES PLAN (SPCC).

18. THE CONTRACTOR IS RESPONSIBLE FOR LAYING ZONE 1 EROSION CONTROL FABRIC AND PLACING NATIVE WETLAND SEED MIX TO ZONE 1 AS SHOWN ON PLAN SHEET 6 - REVEGETATION.

UTILITIES

18. THE LOCATIONS AND EXTENT OF EXISTING UNDERGROUND UTILITIES IN THE WORK AREA AS SHOWN ARE APPROXIMATE AND ARE NOT NECESSARILY COMPLETE. A REASONABLE EFFORT HAS BEEN MADE TO LOCATE AND DELINEATE EXISTING UTILITIES BASED UPON AVAILABLE RECORDS. THE CONTRACTOR SHALL DETERMINE THE TYPE, LOCATION, SIZE, AND/OR DEPTH OF THE EXISTING UTILITIES WITHIN THE WORK AREA BEFORE COMMENCING WORK. THE CONTRACTOR OR ANY SUBCONTRACTOR FOR THIS CONTRACT SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL CONTACT UNDERGROUND SERVICE ALERT AT (800) 642-2444 AT LEAST 48 HOURS PRIOR TO ANY CONSTRUCTION. THE CONTRACTOR SHALL ASSUME COMPLETE RESPONSIBILITY FOR DAMAGED UTILITIES.

19. AT NO TIME SHALL THE CONTRACTOR UNDERTAKE TO CLOSE OFF ANY EXISTING UTILITY LINES OR OPEN VALVES OR TAKE ANY OTHER ACTION WHICH WOULD AFFECT THE OPERATION OF EXISTING WATER OR SEWER SYSTEMS WITHOUT PRIOR APPROVAL FROM THE UTILITY OWNER. APPROVAL SHALL BE REQUESTED AT LEAST 48 HOURS IN ADVANCE OF THE TIME THAT THE INTERRUPTION OF THE EXISTING SYSTEM IS REQUIRED. ANY INTERRUPTION OF SERVICE TO ACTIVE WATER OR SEWER SERVICES, INCLUDING FIRE HYDRANTS, WHETHER INTENTIONAL OR NOT, MUST BE KEPT TO A MINIMUM TIME PERIOD. IF SERVICE TO BUILDINGS IS TO BE OFF FOR MORE THAN FOUR HOURS, THE CONTRACTOR MUST ADVISE THE UTILITY OWNER.

SITE ACCESS

20. WITHIN THE CONSTRUCTION LIMITS, EXISTING VEGETATION SHALL BE PROTECTED TO THE EXTENT FEASIBLE. ALL EXISTING TREES SHALL BE PROTECTED UNLESS SHOWN ON THE PLANS TO BE REMOVED. ANY NATIVE TREES WITHIN GRADING LIMITS SHALL BE SALVAGED FOR USE AS LWD AND RACKING. ALL TREES CONFLICTING WITH GRADING SHALL BE TRIMMED. NO GRADING SHALL TAKE PLACE WITHIN THE DRIP LINE OF TREES NOT TO BE REMOVED UNLESS OTHERWISE APPROVED.

21. ALL EXTERNAL GREASE AND OIL SHALL BE PRESSURE-WASHED OFF THE EQUIPMENT PRIOR TO TRANSPORT TO THE SITE.

22. THE CONTRACTOR SHALL USE ONLY DESIGNATED SPECIFIC SITES FOR STORAGE OF EQUIPMENT AND MATERIALS AS SHOWN ON THESE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SECURITY OF ALL EQUIPMENT AND MATERIALS. HAUL ROUTES SHALL BE LIMITED TO THE AREAS APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL DE-COMPACT AND REVEGETATE ALL HAUL ROADS AND STAGING AREAS PRIOR TO DEMOBILIZING FROM THE SITE.

SURVEY

23. UNLESS NOTED OTHERWISE ON THE PLANS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING SURVEY MONUMENTS AND OTHER SURVEY MARKERS DURING CONSTRUCTION.

24. ELEVATIONS SHOWN ON THE PLANS FOR PIPE INVERTS, TOPS OF BANKS,THALWEGS ,GRADE CONTROLS, ETC., ARE BASED UPON THE TOPOGRAPHIC INFORMATION SHOWN ON THE PLANS. THE CONTRACTOR SHALL VERIFY ALL NECESSARY SURFACE ELEVATIONS IN THE FIELD AND NOTIFY SCD OF ANY DISCREPANCIES, WHICH MIGHT AFFECT PROPER OPERATION OF THE NEW FACILITIES BEFORE BREAKING GROUND AND PRIOR TO FACILITY INSTALLATION. SCD SHALL BE CONTACTED IN THE EVENT ELEVATIONS ARE INCORRECT SO THAT THE PROPER ADJUSTMENTS CAN BE MADE PRIOR TO THE INSTALLATION OF THE FACILITIES, AS SET FORTH IN THE SPECIAL PROVISIONS.

ABBREVIATIONS

AC	ASPHALT CONCRETE
APN	ASSESSOR'S PARCEL NUMBER
APPROX	APPROXIMATE
BLDR	BOULDER
BLVD	BOULEVARD
BMP	BEST MANAGEMENT PRACTICE
CF	CUBIC FEET OR CURB FACE
CFS	CUBIC FEET PER SECOND
℄	CENTERLINE
CLF	CONSTRUCTION LIMIT FENCE
CLR	CLEAR
CO.	COUNTY
CONC	CONCRETE
CONST	CONSTRUCT
CMP	CORRUGATED METAL PIPE
CT	COURT
CY	CUBIC YARD
DET	DETAIL
DIAM OR Ø	DIAMETER
DR	DRIVE
D/W	DRIVEWAY
E	EAST
EA	EACH
EC	EROSION CONTROL
EG	EXISTING GRADE
ELEV	ELEVATION
ELEC	ELECTRIC
EX	EXISTING
F	FIR
FF	FILTER FENCE
FG	FINISHED GRADE
FH	FIRE HYDRANT
FL	FLOWLINE
FS	FINISH SURFACE
G	GAS
GB	GRADE BREAK
HORIZ	HORIZONTAL
INST	INSTALL
LF	LINEAR FEET
L	LEFT
LONG	LONGITUDINAL
LWD	LARGE WOODY DEBRIS
MIN	MINIMUM
MISC	MISCELLANEOUS
N	NORTH
NTS	NOT TO SCALE
OC	ON CENTER
PL	PROPERTY LINE
PP	POWER/UTILITY POLE
PRC	POINT OF REVERSE CURVATURE
PROP	PROPOSED
RD	ROAD
REF	REFERENCE
ROW	RIGHT-OF-WAY
R	RIGHT
S	SOUTH OR SLOPE
SD	STORM DRAIN
SF	SQUARE FEET
SHT	SHEET
SS	SANITARY SEWER
ST	SEDIMENT TRAP OR STREET
STA	STATION
TG	THALWEG
TOB	TOP OF BANK
TYP	TYPICAL
VERT	VERTICAL
W	WEST OR WATER
WA	WASHINGTON
W/	WITH
W/O	WITHOUT
WSDOT	WA STATE DEPARTMENT OF TRANSPORTATION
FO	FIBER OPTIC CABLE

LEGEND

*NOTE: LEGEND PROVIDED ON SHEET SUPERCEDES THIS LEGEND

EXISTING	PROPOSED
MAJOR CONTOUR	MAJOR CONTOUR
MINOR CONTOUR	MINOR CONTOUR
PROPERTY LINE	NEW CHANNEL ALIGNMENT
WETLAND BOUNDARY	LWD STRUCTURE TYPE 1
	LWD STRUCTURE TYPE 2
	LWD STRUCTURE TYPE 3

CONSTRUCTION SEQUENCE

1. SUBMIT FOR WRITTEN APPROVAL AN ANTICIPATED SCHEDULE TO PROJECT MANAGER PRIOR TO START.
2. CALL FOR PRE-CONSTRUCTION MEETING WITH PROJECT MANAGER, ENGINEER AND OWNER
3. ESTABLISH TBM'S AND PERFORM CONSTRUCTION STAKING.
4. DE-WATER, DE-FISH SITE. CONTRACTOR MAY REFER TO SECTION 8-01.3(9)C IN SPECIFICATIONS OR SUBMIT PLAN TO PROJECT MANAGER AND ENGINEER FOR APPROVAL
   DE-FISHING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR
5. BEGIN CONSTRUCTION ACTIVITIES

EROSION AND SEDIMENT CONTROL SEQUENCE

1. PRE CONSTRUCTION MEETING
2. FLAG OR FENCE CLEARING LIMITS
3. INSTALL PERIMETER PROTECTION
4. GRADE AND STABILIZE ACCESS ROADS
5. CONSTRUCT SURFACE WATER CONTROL SIMULTANEOUSLY WITH CLEARING AND GRADING FOR PROJECT DEVELOPMENT
6. MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH SNOHOMISH COUNTY STANDARDS AND MANUFACTURER'S RECOMMENDATIONS
7. RELOCATE EROSION CONTROL MEASURES OR INSTALL NEW MEASURES AS SITE CONDITIONS CHANGE
8. STABILIZE ALL AREAS THAT REACH FINAL GRADE WITHIN SEVEN (7) DAYS
9. SEED OR SOD ALL AREAS TO REMAIN UNWORKED FOR 30 DAYS
10. UPON COMPLETION OF PROJECT, ALL DISTURBED AREAS MUST BE STABILIZED AND BMP'S REMOVED IF APPROPRIATE

UTILITIES

ELECTRIC	SNOHOMISH PUD, (425) 783-1000
SEWER & WATER	SNOHOMISH PUD, (425) 783-1000

HORIZONTAL AND VERTICAL CONTROL/PROJECTION

VERTICAL CONTROL IS NAVD 88; HORIZONTAL CONTROL IS WA STATE PLANE NAD 83, NORTH ZONE (US FEET).

BASE TOPOGRAPHY OBTAINED FROM THE FOLLOWING SOURCES.
-LiDAR DATA FROM PUGET SOUND LIDAR CONSORTIUM (2014)
-SITE TOPOGRAPHY FROM: CARDNO RTK SURVEY (2015)

QUANTITIES

EXCAVATION AND CULVERT BACKFILL = 1200 CY
EXCAVATION AND SPREAD = 7910 CY
EAST CULVERT 12 FT DIA.; 80 LF
WEST CULVERT 12 FT DIA; 54 LF

SNOHOMISH COUNTY PLANNING DEPT. SERVICES
APPROVED FOR CONSTRUCTION

BY: _____
RANDOLPH P. SLEIGHT, P.E., P.L.S.

PERMIT NO: _____

REVISIONS	DATE
PRELIMINARY PLANS	10/23/15
90% PLANS	12/30/15
SM	01.11.16

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28561
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SNOHOMISH CONSERVATION DISTRICT

USACE REFERENCE NUMBER:
NWS-2015-723

APPLICANT NAME:
SNOHOMISH CONSERVATION DISTRICT

CONSTRUCTION NOTES

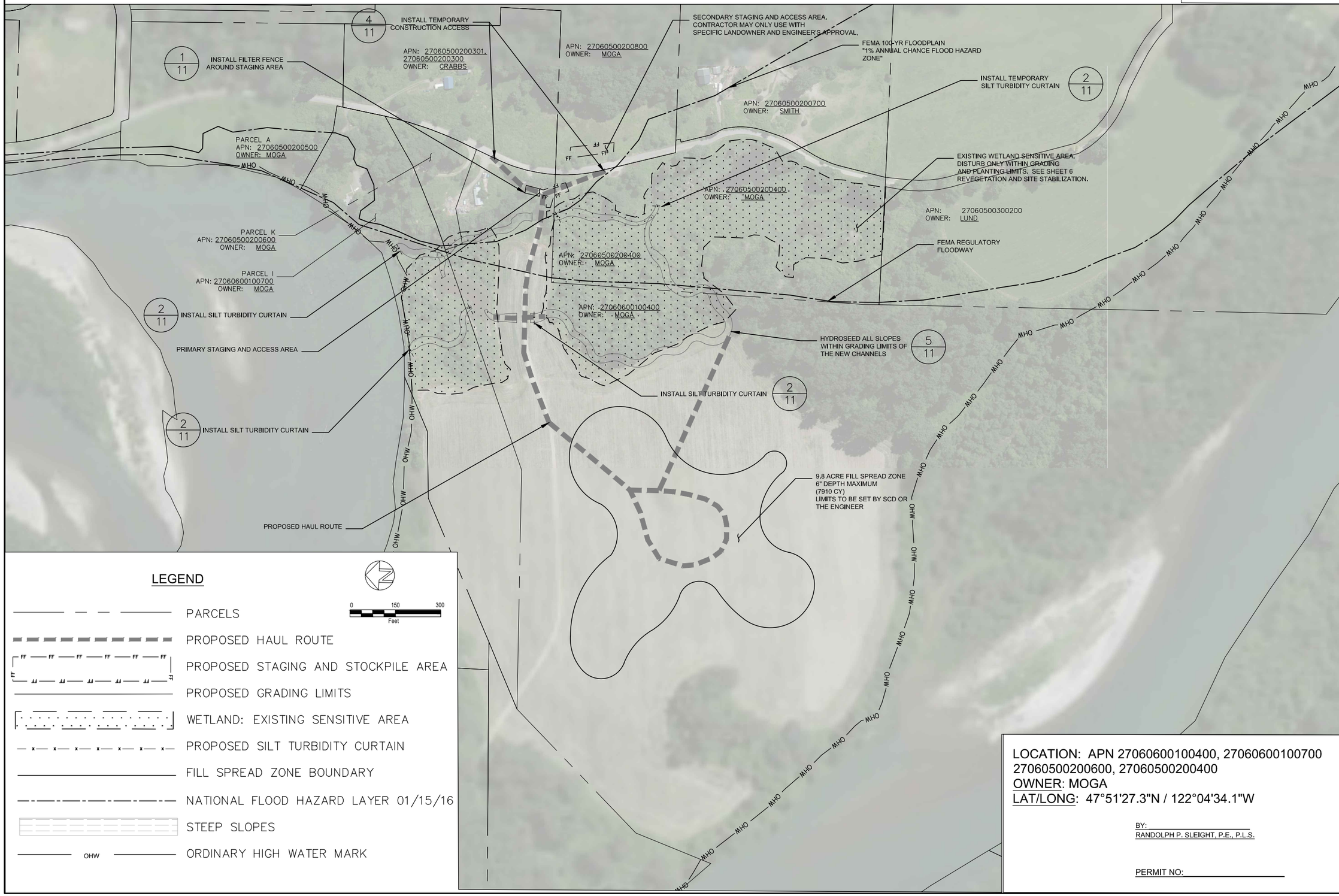
MOGA BACK-CHANNEL RECONNECTION PROJECT

SNOHOMISH COUNTY, WA

DATE:	DEC 30, 2015
DESIGNED BY:	DE
DRAWN BY:	DE
CHECKED BY:	JB/SM
CARDNO JOB NO.	E515004000
PLAN NO.	2

SHEET 2 of 11

SECTION 6, TOWNSHIP 27, RANGE 06



LOCATION: APN 27060600100400, 27060600100700 27060500200600, 27060500200400
OWNER: MOGA
LAT/LONG: 47°51'27.3"N / 122°04'34.1"W

BY: _____
RANDOLPH P. SLEIGHT, P.E., P.L.S.

PERMIT NO: _____

REVISIONS	DATE
SM	12.28.15
SM	01.07.16
SM	01.11.16

SKY D. MILLER STATE OF WASHINGTON 28581 REGISTERED PROFESSIONAL ENGINEER

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SNOHOMISH CONSERVATION DISTRICT

USACE REFERENCE NUMBER: NWS-2015-723

APPLICANT NAME: SNOHOMISH CONSERVATION DISTRICT

ACCESS, STAGING & BMPS

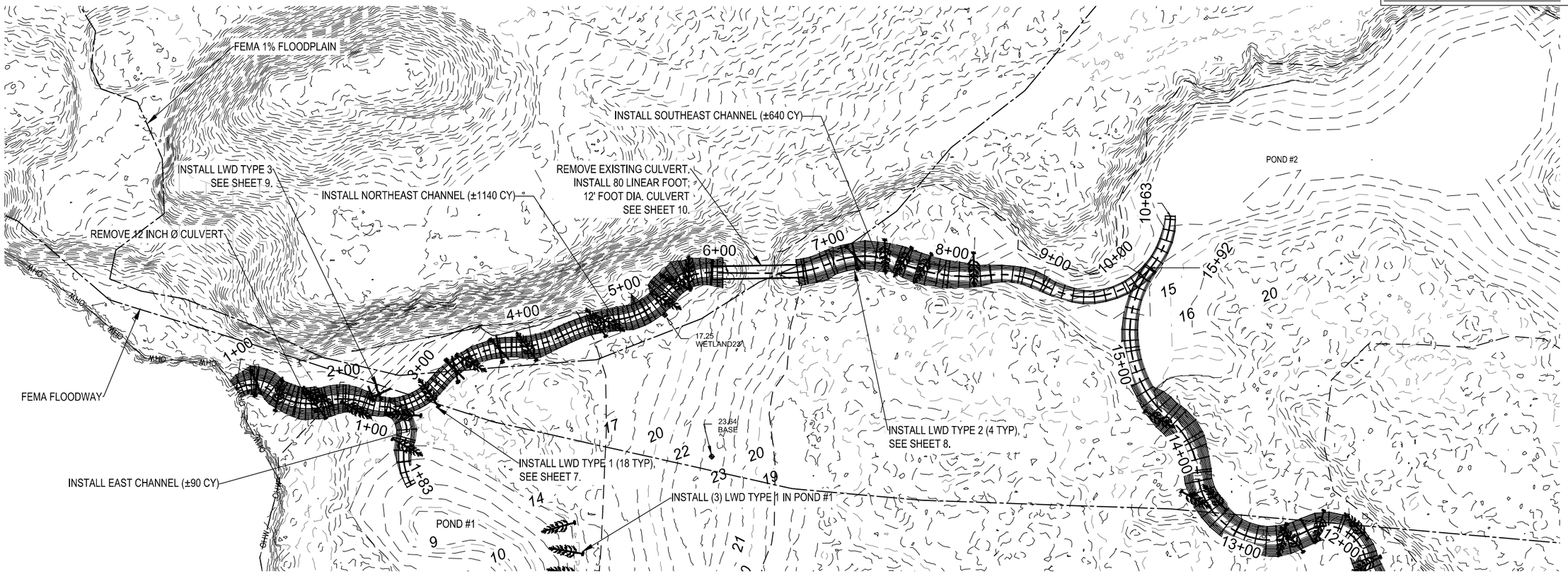
MOGA BACK-CHANNEL RECONNECTION PROJECT

SNOHOMISH COUNTY, WASHINGTON

DATE:	DEC 15, 2015
DESIGNED BY:	DE
DRAWN BY:	DE
CHECKED BY:	JB/SM
CARDNO JOB NO.	E515004000
PLAN NO.	3

SHEET 3 of 11

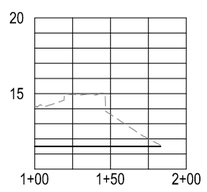
SECTION 6, TOWNSHIP 27, RANGE 06



PLAN

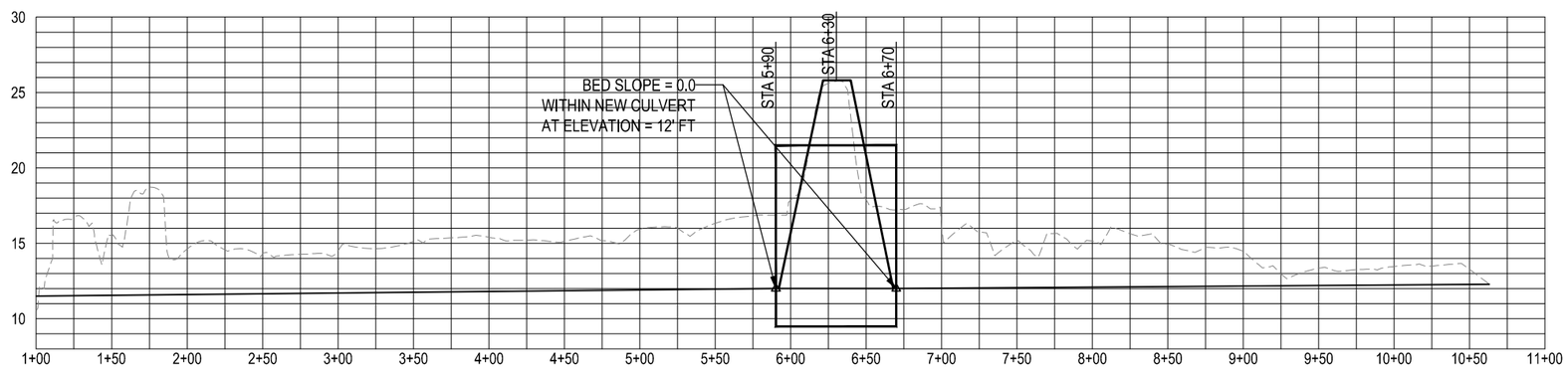
HORIZONTAL SCALE: 1" =100'

0 50 100
Feet



EAST CHANNEL THALWEG: LONG PROFILE

HORIZONTAL SCALE: 1" =100'
VERTICAL SCALE: 10X HORIZONTAL



NORTHEAST & SOUTHEAST CHANNEL THALWEG: LONG PROFILE

HORIZONTAL SCALE: 1" =100'
VERTICAL SCALE: 10X HORIZONTAL

SURVEY CONTROL POINTS			
Point #	Elevation	Northing	Easting
WETLAND 23	17.25	315746.99	1335276.32
BASE	23.64	315703.22	1335144.34
EAST CULVERT D/S END; CENTERLINE	9.6	315702.92	1335315.58
EAST CULVERT U/S END; CENTERLINE	9.6	315617.94	1335317.21

SNOHOMISH COUNTY PLANNING DEPT. SERVICES
APPROVED FOR CONSTRUCTION

BY: _____
RANDOLPH P. SLEIGHT, P.E., P.L.S.

PERMIT NO: _____

REVISIONS	DATE
PRELIMINARY PLANS	10/23/15
90% PLANS	12/30/15
SM	1/11/2016

SKY D. MILLER
STATE OF WASHINGTON
28591
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SNOHOMISH CONSERVATION DISTRICT

PLAN - EAST

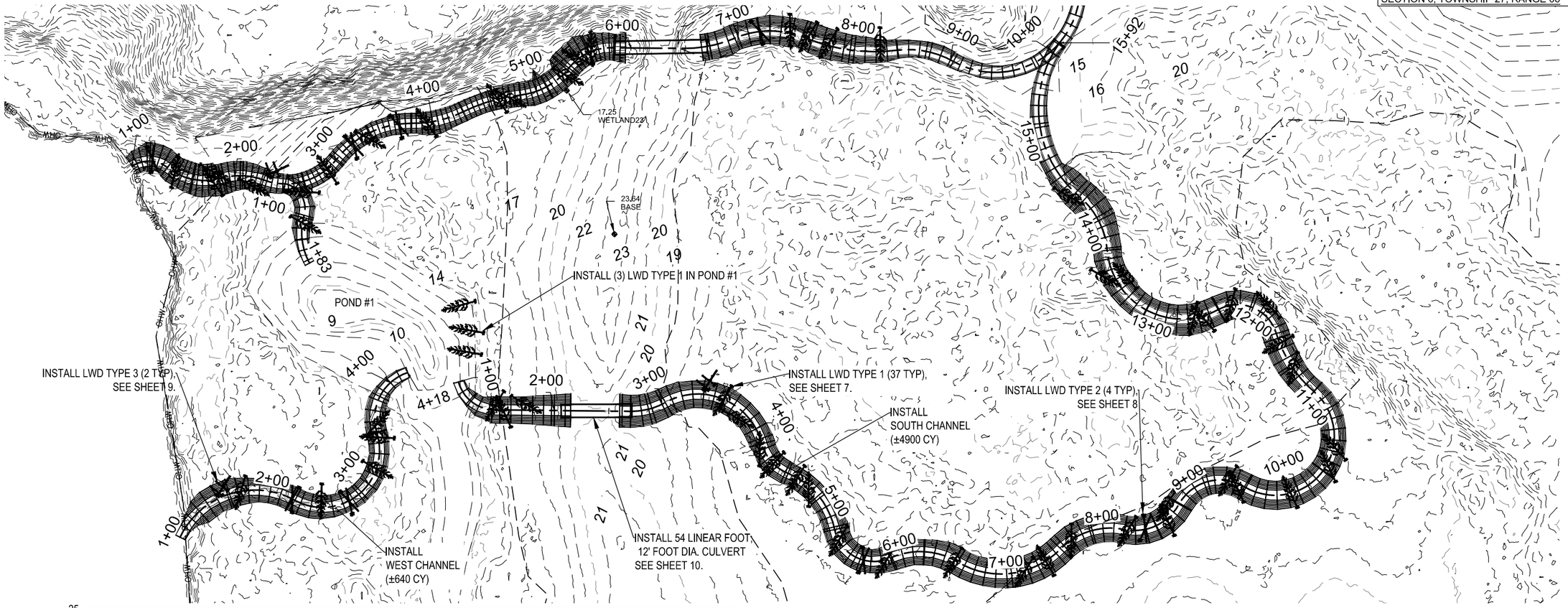
MOGA BACK-CHANNEL RECONNECTION PROJECT

SNOHOMISH COUNTY, WA

DATE:	DEC 30, 2015
DESIGNED BY:	DE
DRAWN BY:	DE
CHECKED BY:	JB/SM
ENTRIX JOB NO.	E515004000
PLAN NO.	4

SHEET 4 of 11

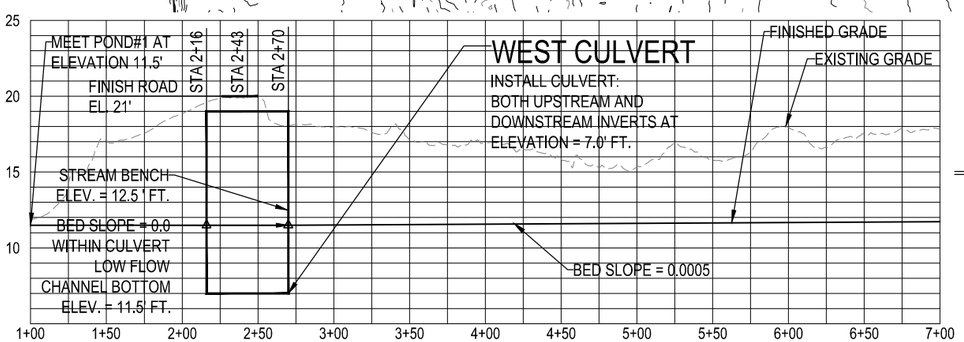
SECTION 6, TOWNSHIP 27, RANGE 06



PLAN

HORIZONTAL SCALE: 1" =100'

0 50 100
Feet



SOUTH CHANNEL THALWEG: LONG PROFILE STA 1+00 TO 7+00

HORIZONTAL SCALE: 1" =100'
VERTICAL SCALE: 10X HORIZONTAL

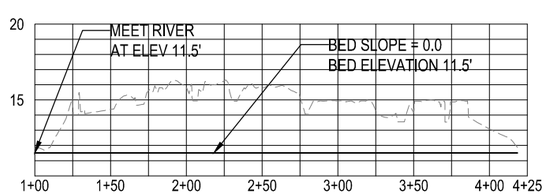
SNOHOMISH COUNTY PLANNING DEPARTMENT SERVICES
APPROVED FOR CONSTRUCTION

BY:
RANDOLPH P. SLEIGHT, P.E., P.L.S.

PERMIT NO:

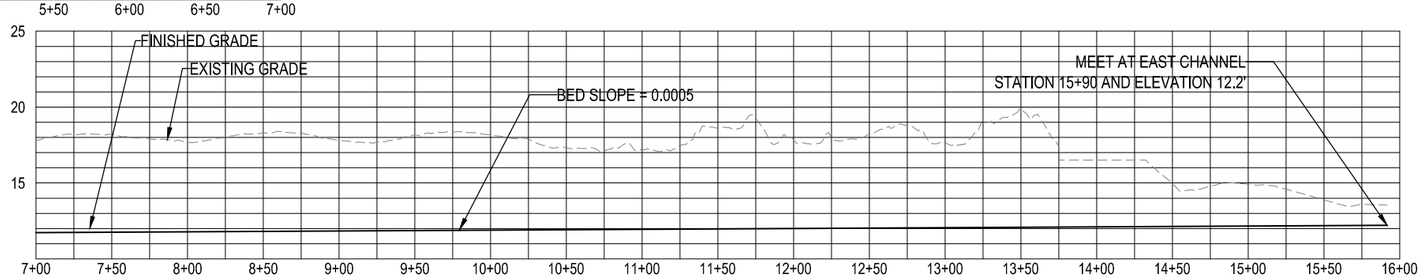
SURVEY CONTROL POINTS

Point #	Elevation	Northing	Easting
WETLAND 23	17.25	315746.99	1335276.32
BASE	23.64	315703.22	1335144.34
WEST CULVERT D/S END; CENTERLINE	7.0	315752.14	1334981.98
WEST CULVERT U/S END; CENTERLINE	7.0	315687.14	1334981.98



WEST CHANNEL THALWEG: LONG PROFILE

HORIZONTAL SCALE: 1" =100'
VERTICAL SCALE: 10X HORIZONTAL



SOUTH CHANNEL THALWEG: LONG PROFILE STA 7+00 TO 16+00

HORIZONTAL SCALE: 1" =100'
VERTICAL SCALE: 10X HORIZONTAL

REVISIONS	DATE
PRELIMINARY PLANS	10/23/15
90% PLANS	12/30/15
SM	1/11/16

SKY D. MILLER
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www.cardnoentrix.com

SNOHOMISH
CONSERVATION DISTRICT

PLAN - WEST

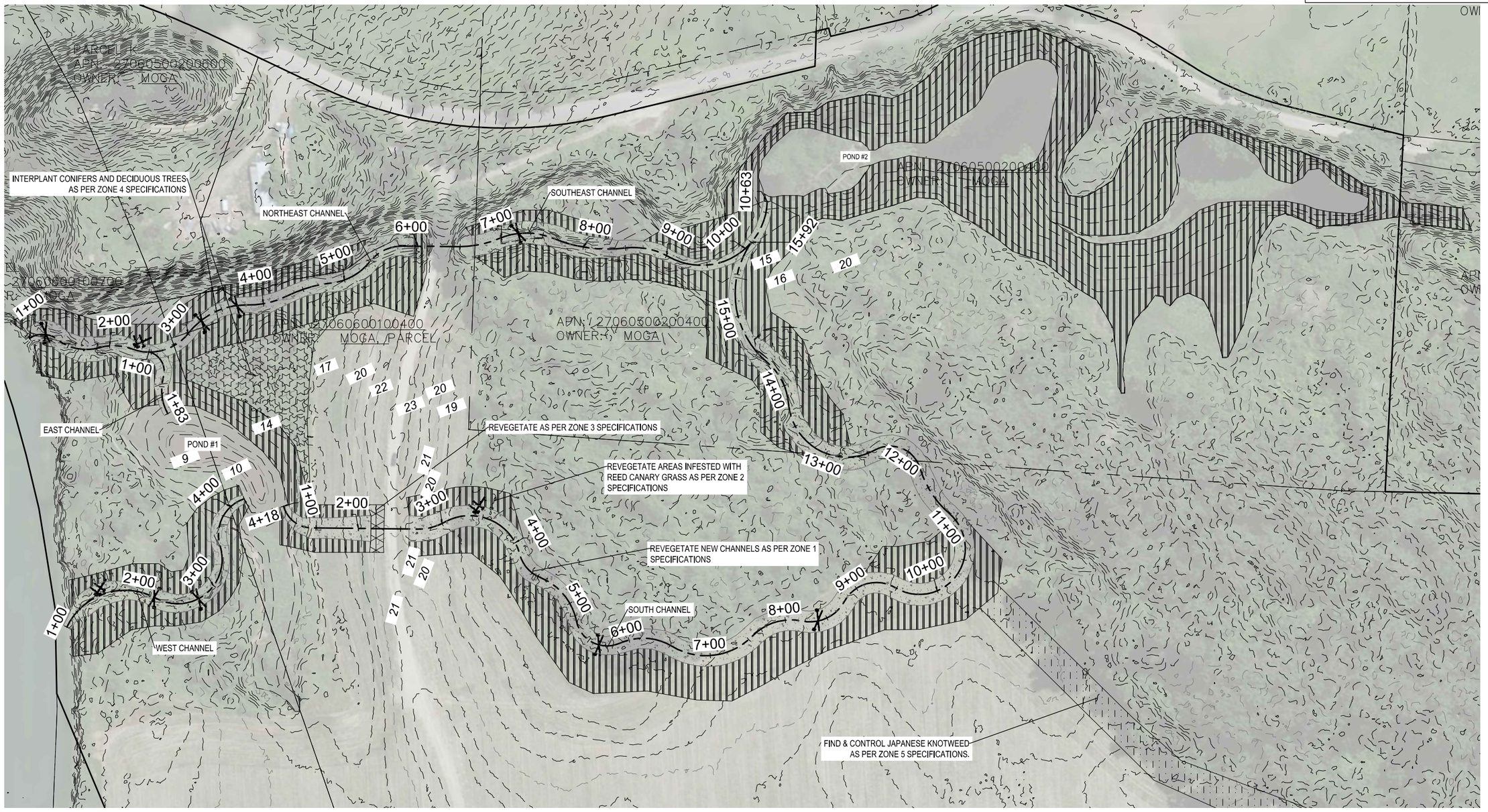
MOGA BACK-CHANNEL RECONNECTION PROJECT

SNOHOMISH COUNTY, WA

DATE:	DEC 30, 2015
DESIGNED BY:	DE
DRAWN BY:	DE
CHECKED BY:	JB/SM
ENTRIX JOB NO.	E515004000
PLAN NO.	5

SHEET 5 of 11

SECTION 6, TOWNSHIP 27, RANGE 06



NATIVE REVEGETATION SPECIFICATIONS

ZONE 1: HYDROSEED NEW ALCOVE CHANNELS PER 2014 WDOT SECTION 8-01.3(2)B WITH A NATIVE MIXTURE WETLAND GRASSES INCLUDING RED FESCUE, ROEMERS FESCUE, BLUE WILD RYE (ELYMUS GLAUCUS), MEADOW BARLEY (HORDEUM BRACHYANTHERUM), SLENDER HAIRGRASS (DESCHAMPSIA ELONGATE), TUFTED HAIRGRASS (DESCHAMPSIA CESPITOSA), NATIVE MANNA GRASSES (GLYCERIA SP), AND NATIVE FOXTAILS (ALOPECURUS SP).

ZONE 2: OVERLAP WITH ZONE 1 AND ZONE 3. CONTROL REED CANARY GRASS. LIVE STAKE THESE PERSISTENT WET AREAS WITH A DENSE MATRIX OF VARIOUS NATIVE SALIX SPECIES ON 2' CENTERS. INTER PLANT WETLAND SHRUBS SUCH AS LONICERA INVOLUCRATA, OEMLERIA CERASIFORMIS, PHYSOCARPUS CAPITATUS, ROSA SPECIES, RUBUS SPECTABILIS, SAMBUCUS RECEMOSA. ALSO, CONSIDER SPIREA DOUGLASII FOR PERSISTENT WET AREAS IMMEDIATELY ADJACENT TO PONDS.

ZONE 3: OVERLAP WITH ZONE 2. PLANT NATIVE RIPARIAN SHRUBS INCLUDING ACER CIRCINATUM, OEMLERIA CERASIFORMIS, PHYSOCARPUS CAPITATUS, ROSA SPECIES, RUBUS SPECTABILIS, SAMBUCUS RECEMOSA. INTER PLANT NATIVE RIPARIAN FOREST INCLUDING CONIFERS (PICEA SITCHENSIS, THUJA PLICATA, &TSUGA HETEROPHYLLA) AND DECIDUOUS TREES (ACER MACROPHYLUM, ALNUS RUBRA, AND POPULUS BALSAMIFERA).

ZONE 4: INTER PLANT NATIVE CONIFERS ON 10' TO 15' CENTERS (PICEA SITCHENSIS, THUJA PLICATA, &TSUGA HETEROPHYLLA) AND DECIDUOUS TREES (ACER MACROPHYLUM, ALNUS RUBRA, AND POPULUS BALSAMIFERA).

ZONE 5: LOCATE AND CONTROL JAPANESE KNOTWEED. DO NOT DISTURB EXISTING NATIVE VEGETATION. CONSIDER FOLIAR APPLICATION OF HERBICIDE AT THE HEIGHT OF THE GROWING SEASON (AUGUST) USING 1% IMAZAPAYR (AQUATIC FORMULATION - HABITAT OR POLARIS) WITH 1% COMPETITOR SURFACTANT. OTHER KNOTWEED CONTROL METHODS MAY ALSO BE SUITABLE SUCH AS STEM INJECTION.

PLANTING IN ZONES 2-5 TO BE COMPLETED BY SNOHOMISH CONSERVATION DISTRICT NOT BY CONTRACTOR DO NOT INCLUDE IN BID

0 60 120
Feet

SNOHOMISH COUNTY PLANNING DEPARTMENT SERVICES APPROVED FOR CONSTRUCTION

BY:
RANDOLPH P. SLEIGHT, P.E., P.L.S.

PERMIT NO:

REVISIONS	DATE
PRELIMINARY PLANS	10/23/15
90% PLANS	12/30/15
SM	1/11/2016

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SNOHOMISH CONSERVATION DISTRICT

PLAN - REVEGETATION & SITE STABILIZATION

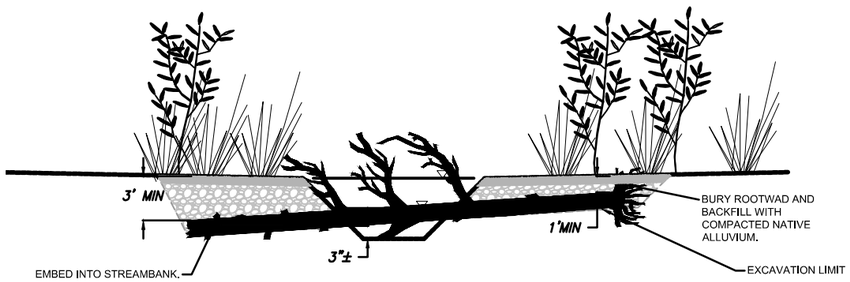
MOGA BACK-CHANNEL RECONNECTION PROJECT

SNOHOMISH COUNTY, WA

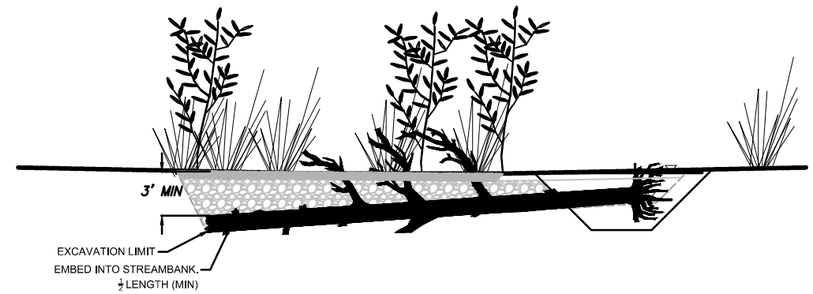
DATE:	DEC 30, 2015
DESIGNED BY:	DE
DRAWN BY:	DE
CHECKED BY:	JB/SM
ENTRIX JOB NO.	E515004000
PLAN NO.	6

SHEET 6 of 11

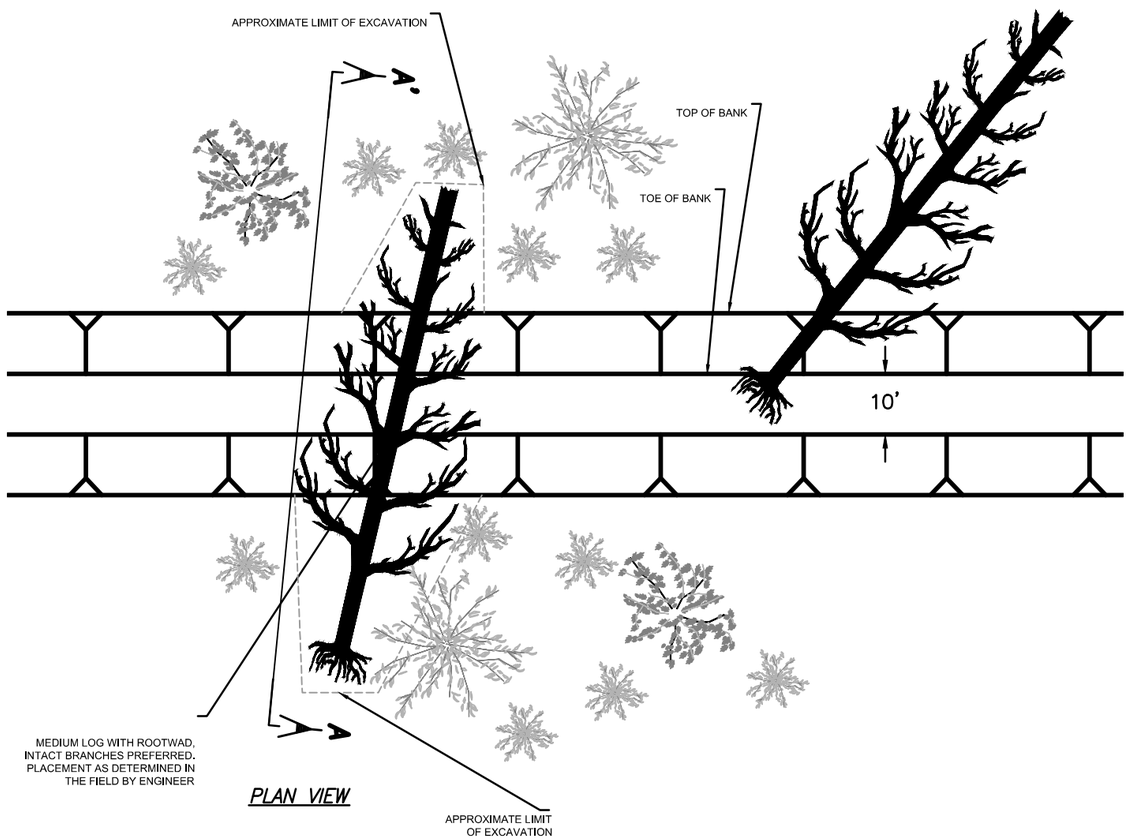
SECTION 6, TOWNSHIP 27, RANGE 06



SECTION A–A' BURIED ON BOTH ENDS (TYPE 1)
NOT TO SCALE



SECTION A–A' BURIED ON ONE END (TYPE 1)
NOT TO SCALE



PLAN VIEW

TYPE 1 – CHANNEL SPANNING JAM (SINGLE LOG)
NOT TO SCALE

TYPE 1 - CHANNEL SPANNING JAM (SINGLE LOG)						
LOG TYPE	SIZE (DBH)	MIN. LENGTH (FT)	ROOTWAD	MIN. ROOTWAD DIAMETER (FT)	BRANCHES	QUANTITY
LARGE KEY	24"+					
KEY	18" - 24"					
MEDIUM	12" - 18"	30'	Optional	3'	Yes	1
SMALL	6" - 12"					
PINNING	6" - 8"					
SLASH	1" - 6"					
LARGE BOULDERS	> 24"					

NOTES:

1. TREES WITH BRANCHES INTACT PREFERRED.
2. STRUCTURE LOCATION WILL BE MARKED IN THE FIELD BY ENGINEER.
3. ALL LOG AND RACKING MATERIAL MUST BE TIGHT GRAIN, SOUND, UNTREATED NATIVE CONIFEROUS WOOD WITH NO ROT AND OF THE SIZE NOTED ON THE PLANS.

SNOHOMISH COUNTY PLANNING DEPT. SERVICES APPROVED FOR CONSTRUCTION

BY: _____
RANDOLPH P. SLEIGHT, P.E., P.L.S.

PERMIT NO: _____

REVISIONS	DATE
PRELIMINARY PLANS	10/23/15
90% PLANS	12/30/15

SKY D. MILLER
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SNOHOMISH CONSERVATION DISTRICT

USACE REFERENCE NUMBER:
NWS-2015-723

APPLICANT NAME:
SNOHOMISH CONSERVATION DISTRICT

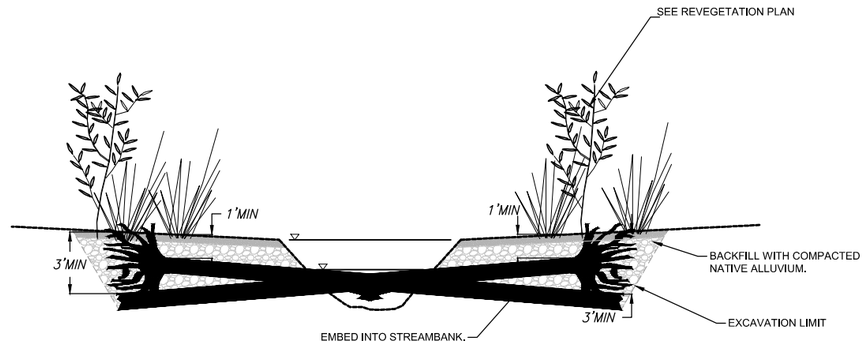
LWD DETAILS - TYPE 1

MOGA BACK-CHANNEL RECONNECTION PROJECT

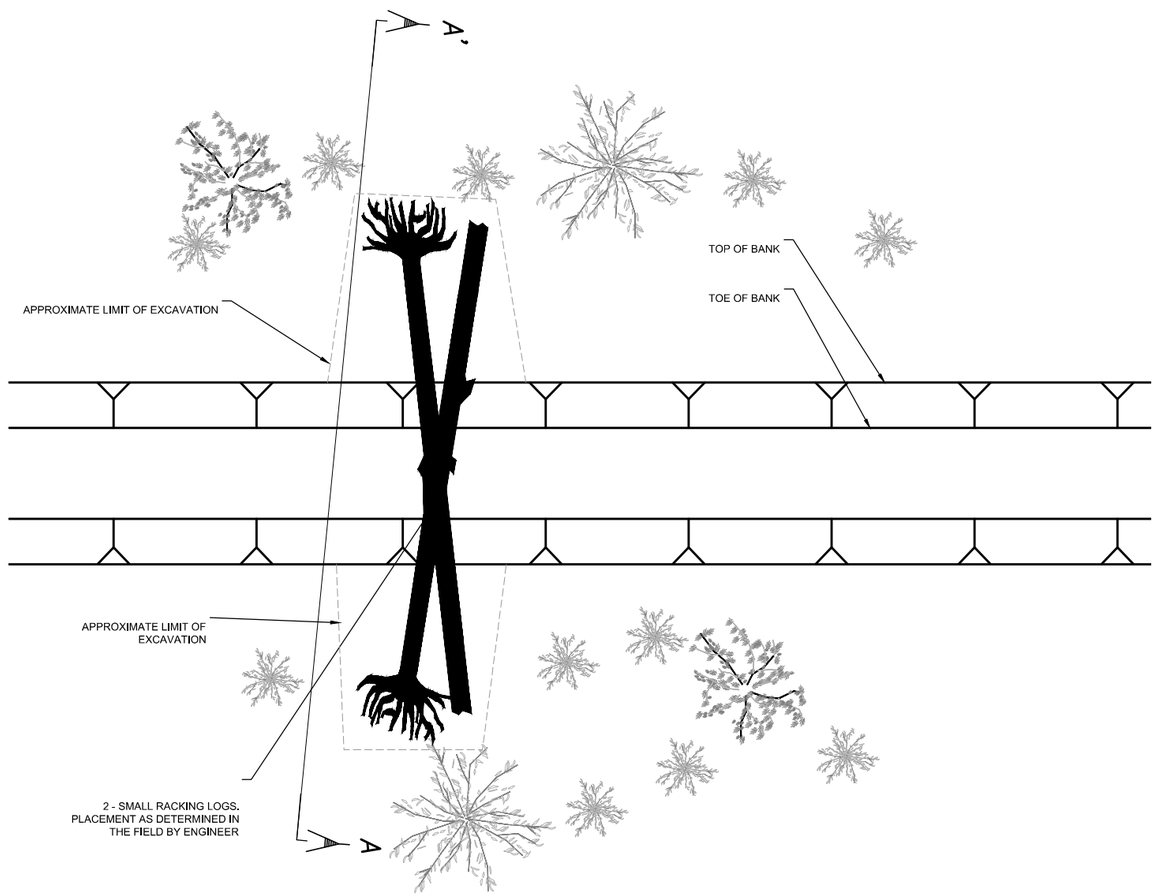
SNOHOMISH COUNTY, WA

DATE:	DEC 30, 2015
DESIGNED BY:	DE
DRAWN BY:	DE
CHECKED BY:	JB/SM
CARDNO JOB NO.	E515004000
PLAN NO.	7
SHEET	7 of 11

SECTION 6, TOWNSHIP 27, RANGE 06



SECTION A–A'
NOT TO SCALE



PLAN VIEW

TYPE 2 – CHANNEL SPANNING JAM (SCISSOR JAM)
NOT TO SCALE

TYPE 2 - CHANNEL SPANNING JAM (SCISSOR JAM)						
LOG TYPE	SIZE (DBH)	MIN. LENGTH (FT)	ROOTWAD	MIN. ROOTWAD DIAMETER (FT)	BRANCHES	QUANTITY
LARGE KEY	24"+					
KEY	18" - 24"					
MEDIUM	12" - 18"					
SMALL	6" - 12"	30'	Optional	3'	Yes	2
PINNING	6" - 8"					
SLASH	1" - 6"					
LARGE BOULDERS	> 24"					

NOTES:

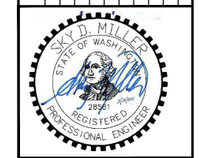
1. TREES WITH BRANCHES INTACT PREFERRED.
2. STRUCTURE LOCATION WILL BE MARKED IN THE FIELD BY ENGINEER.
3. ALL LOG AND RACKING MATERIAL MUST BE TIGHT GRAIN, SOUND, UNTREATED NATIVE CONIFEROUS WOOD WITH NO ROT AND OF THE SIZE NOTED ON THE PLANS.

SNOHOMISH COUNTY PLANNING DEPT. SERVICES
APPROVED FOR CONSTRUCTION

BY:
RANDOLPH P. SLEIGHT, P.E., P.L.S.

PERMIT NO:

REVISIONS	DATE
PRELIMINARY PLANS	10/23/15
90% PLANS	12/30/15



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SNOHOMISH CONSERVATION DISTRICT

USACE REFERENCE NUMBER:
NWS-2015-723

APPLICANT NAME:
SNOHOMISH CONSERVATION DISTRICT

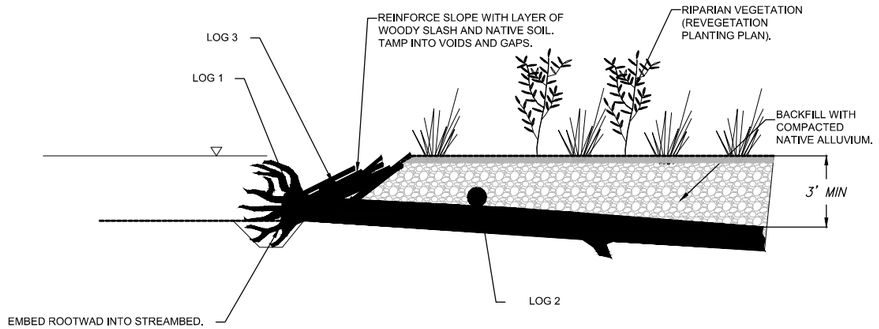
LWD DETAILS - TYPE 2

MOGA BACK-CHANNEL RECONNECTION PROJECT

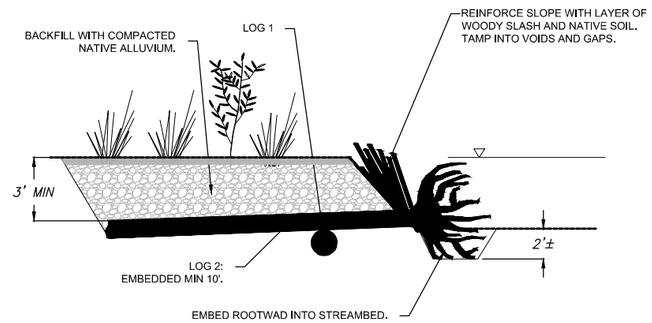
SNOHOMISH COUNTY, WA

DATE:	DEC 30, 2015
DESIGNED BY:	DE
DRAWN BY:	DE
CHECKED BY:	JB/SM
CARDNO JOB NO.	E515004000
PLAN NO.	8
SHEET	8 of 11

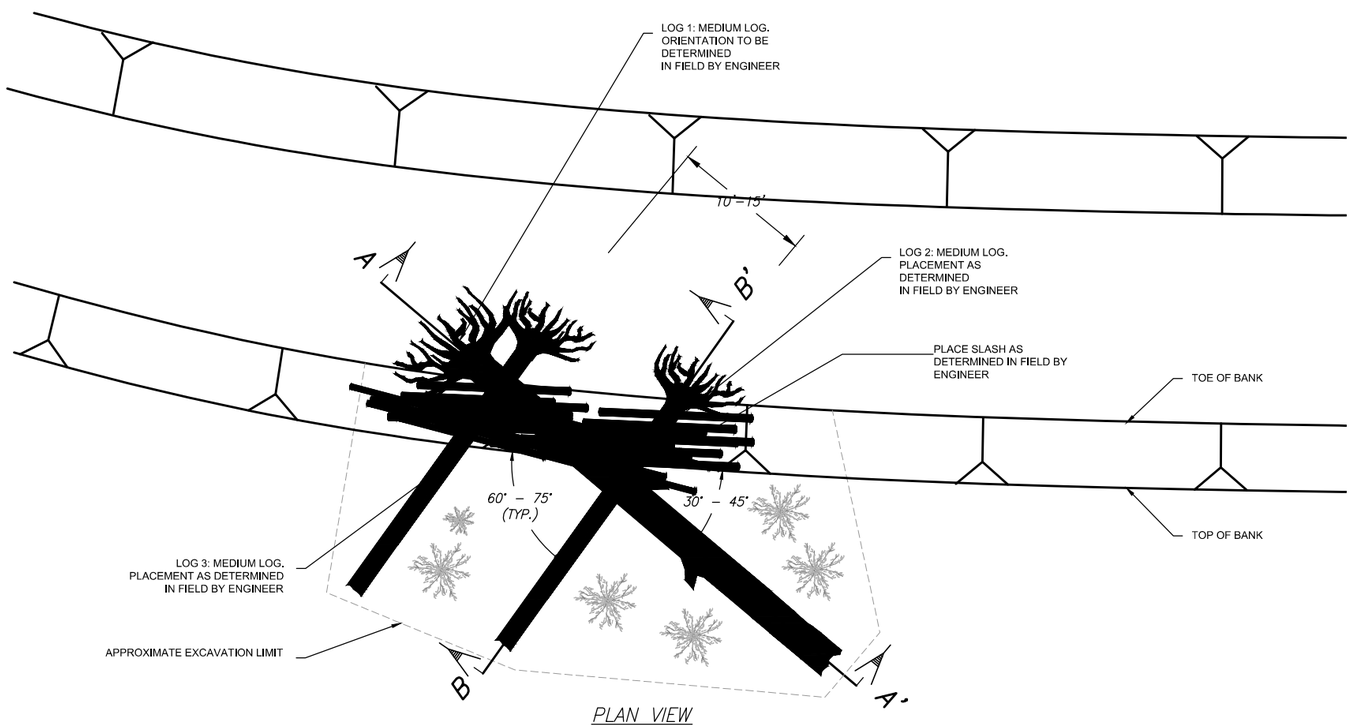
SECTION 6, TOWNSHIP 27, RANGE 06



SECTION A–A' TYPE 3
NOT TO SCALE



SECTION B–B' TYPE 3
NOT TO SCALE



PLAN VIEW

TYPE 3 – ANGLED CHANNEL MARGIN JAM
NOT TO SCALE

TYPE 3 - ANGLED CHANNEL MARGIN JAM						
LOG TYPE	SIZE (DBH)	MIN. LENGTH (FT)	ROOTWAD	MIN. ROOTWAD DIAMETER (FT)	BRANCHES	QUANTITY
LARGE KEY	24"+					
MEDIUM	12"-18"	20'	Yes	3'	Yes	1
MEDIUM	12" - 18"	20'	Yes	3'	No	2
SMALL	6" - 12"					
PINNING	6" - 8"					
SLASH	1" - 6"	5'				10 CY
LARGE BOULDERS	> 24"					

NOTES:

1. TREES WITH BRANCHES OR MULTIPLE TRUNKS PREFERRED.
2. LOG 1 SHALL BE PLACED SO ITS UPSTREAM END RESTS ON STREAM BED WITH ITS ROOTWAD EMBEDDED.
3. LOG 2 AND LOG 3 SHALL BE INSTALLED ON TOP OF LOG 1.
4. SLASH MATERIAL SHALL BE PLACED BETWEEN KEY MEMBERS.
5. STRUCTURE LOCATION WILL BE MARKED IN THE FIELD BY ENGINEER.
6. ALL LOG AND RACKING MATERIAL MUST BE TIGHT GRAIN, SOUND, UNTREATED NATIVE CONIFEROUS WOOD WITH NO ROT AND OF THE SIZE NOTED ON THE PLANS.

SNOHOMISH COUNTY PLANNING DEPT. SERVICES
APPROVED FOR CONSTRUCTION

BY: _____
RANDOLPH P. SLEIGHT, P.E., P.L.S.

PERMIT NO: _____

REVISIONS	DATE
PRELIMINARY PLANS	10/23/15
90% PLANS	12/30/15

SKY D. MILLER
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SNOHOMISH CONSERVATION DISTRICT

USACE REFERENCE NUMBER:
NWS-2015-723

APPLICANT NAME:
SNOHOMISH CONSERVATION DISTRICT

LWD DETAILS - TYPE 3

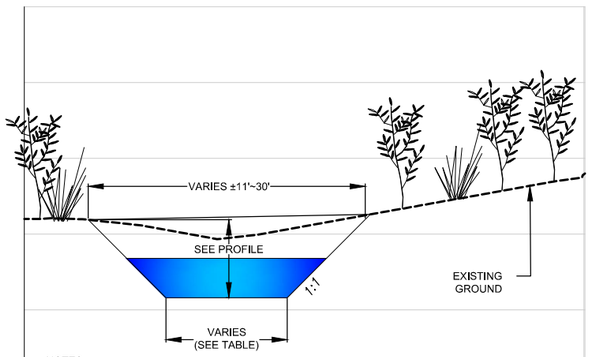
MOGA BACK-CHANNEL RECONNECTION PROJECT

SNOHOMISH COUNTY, WA

DATE:	DEC 30, 2015
DESIGNED BY:	DE
DRAWN BY:	DE
CHECKED BY:	JB/SM
CARDNO JOB NO.	E515004000
PLAN NO.	9
SHEET	9 of 11

SECTION 6, TOWNSHIP 27, RANGE 06

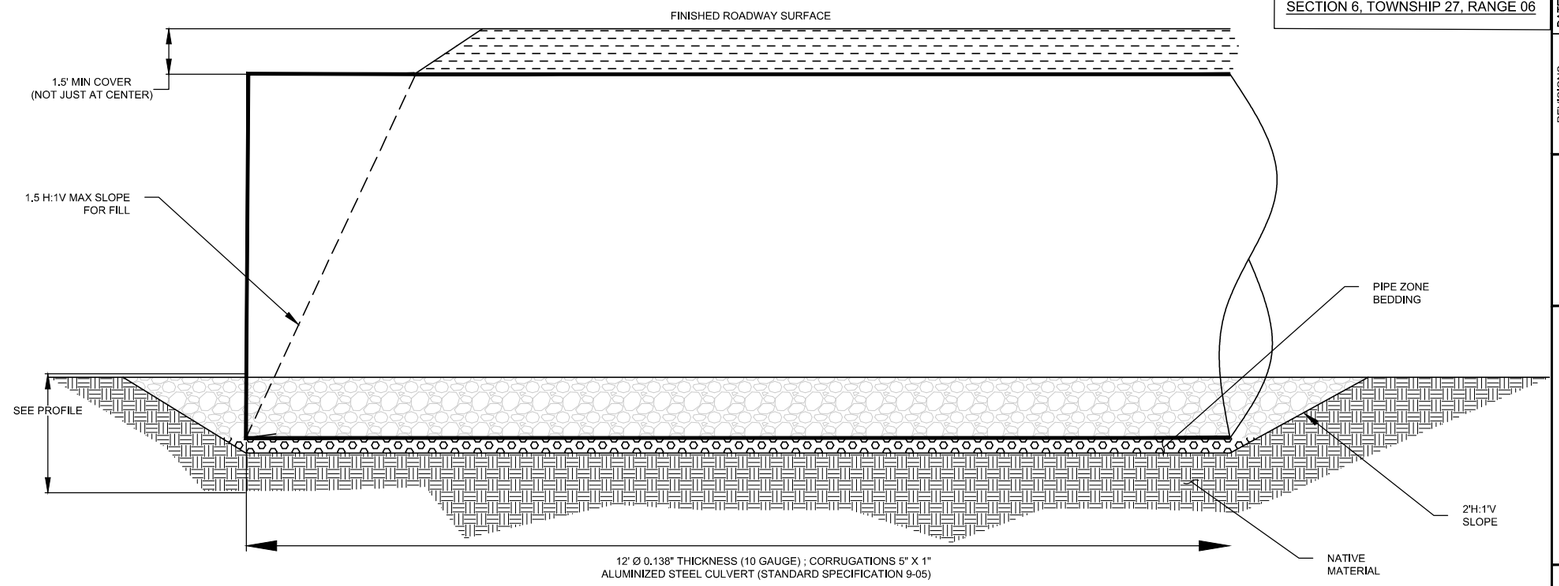
CHANNEL DIMENSIONS		
CHANNEL	BOTTOM WIDTH (FT)	TOP WIDTH (FT)
NE	9'	18'
SE	11'	30'
EAST	10'	16'
WEST	10'	25'
SOUTH	10'	25'



NOTES:
1. CONTRACTOR TO VARY BOTTOM WIDTH AND SIDE SLOPES FOR NATURAL APPEARANCE.

TYPICAL CHANNEL CROSS SECTION

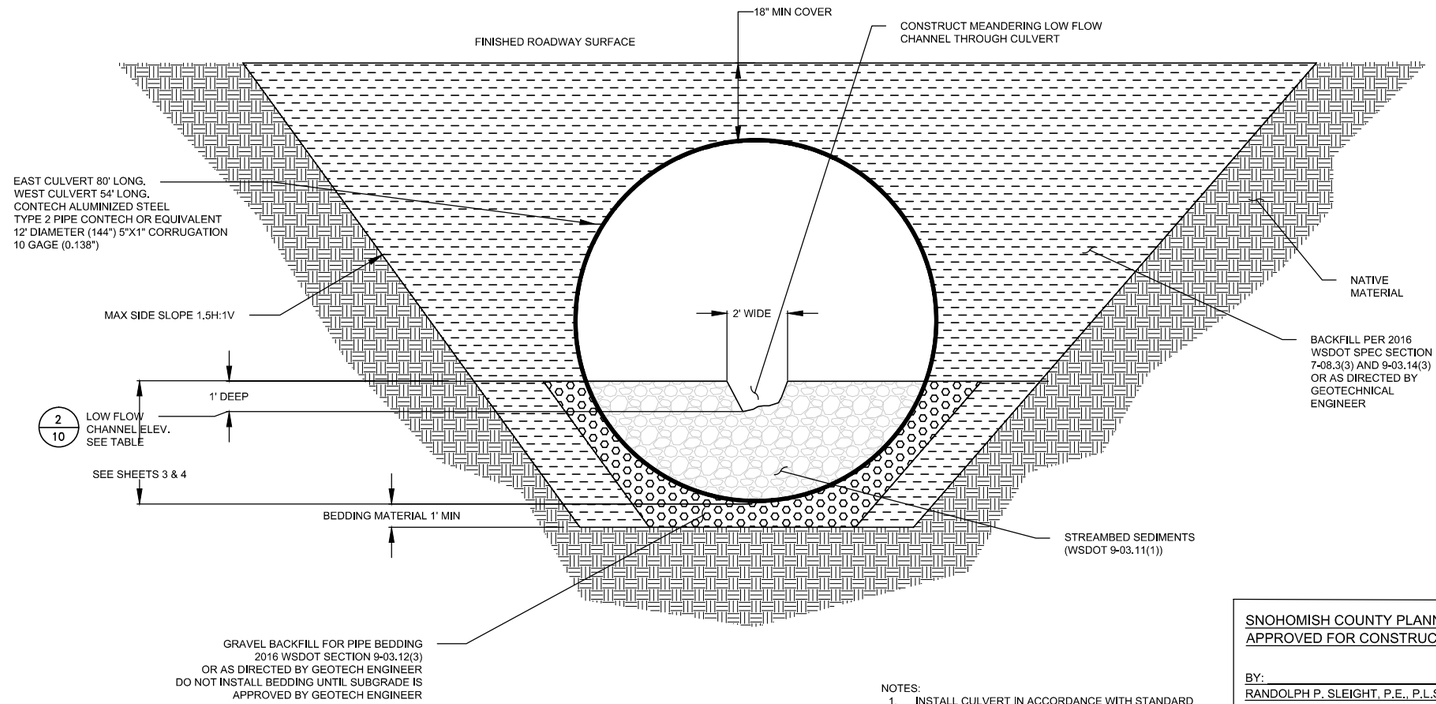
NTS



TYPICAL CULVERT TRENCH PROFILE

NTS

TABLE 2/10		
SPEC	EAST CULVERT	WEST CULVERT
DIAMETER	12' FT	12' FT
TYPE	CONTECH ALUMINIZED STEEL TYPE 2 OR EQUIV	CONTECH ALUMINIZED STEEL TYPE 2 OR EQUIV
CORRUGATION	5" IN X 1" IN	5" IN X 1" IN
GAUGE	10 GAUGE	10 GAUGE
LENGTH	80' FT	54' FT
STREAM BENCH ELEVATION	13.0' FT	12.5' FT
LOW FLOW CHANNEL ELEVATION	12.0' FT	11.5' FT
UPSTREAM INVERT ELEVATION	9.6' FT	7.0' FT
DOWNSTREAM INVERT ELEVATION	9.6' FT	7.0' FT



NOTES:
1. INSTALL CULVERT IN ACCORDANCE WITH STANDARD SPECIFICATIONS 7-02 AND 7-08.

CULVERT CROSS SECTION (TYP)

NTS

SNOHOMISH COUNTY PLANNING DEPT. SERVICES
APPROVED FOR CONSTRUCTION

BY: _____
RANDOLPH P. SLEIGHT, P.E., P.L.S.

PERMIT NO: _____

REVISIONS	DATE
PRELIMINARY PLANS	10/23/15
90% PLANS	12/30/15

SKY D. MILLER
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www.cardnoentrix.com

SNOHOMISH CONSERVATION DISTRICT

USACE REFERENCE NUMBER:
NWS-2015-723

APPLICANT NAME:
SNOHOMISH CONSERVATION DISTRICT

DETAILS - CULVERT & CHANNEL

MOGA BACK-CHANNEL RECONNECTION PROJECT

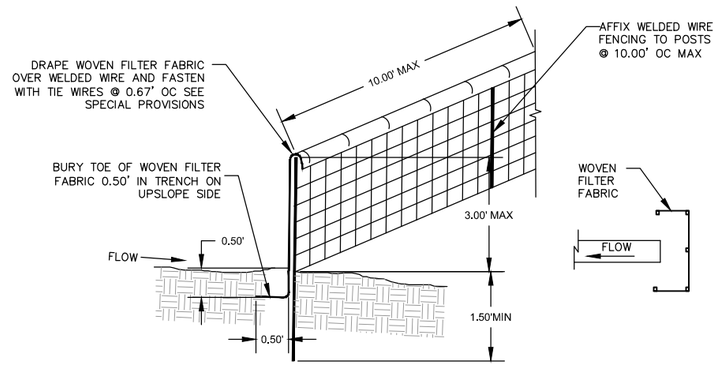
SNOHOMISH COUNTY, WA

DATE:	DEC 30, 2015
DESIGNED BY:	DE
DRAWN BY:	DE
CHECKED BY:	JB/SM
CARDNO JOB NO.	E515004000

PLAN NO.
10

SHEET 10 of 11

SECTION 6, TOWNSHIP 27, RANGE 06

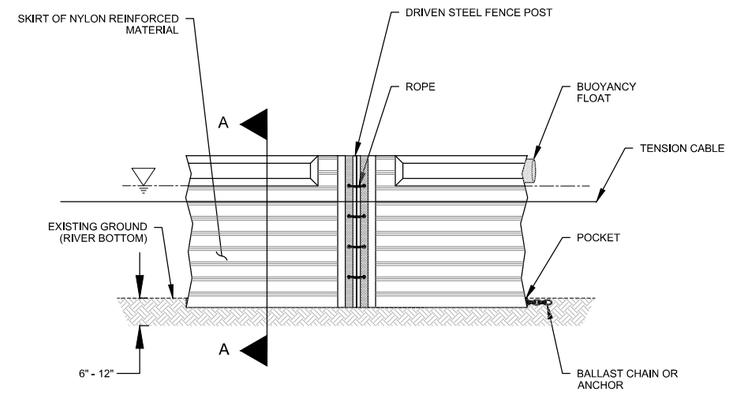


NOTES: 1. CONTRACTOR MAY USE PRE MANUFACTURED SEDIMENT CONTROL FENCE AS APPROVED BY THE ENGINEER. SEE SPECIAL PROVISIONS.

2. PLACE FENCING SUCH THAT STORM RUNOFF CANNOT PASS AROUND OR UNDER FENCE

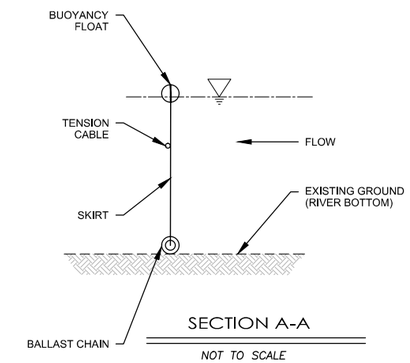
SILT FENCE (TYP.)

NOT TO SCALE — 1/11



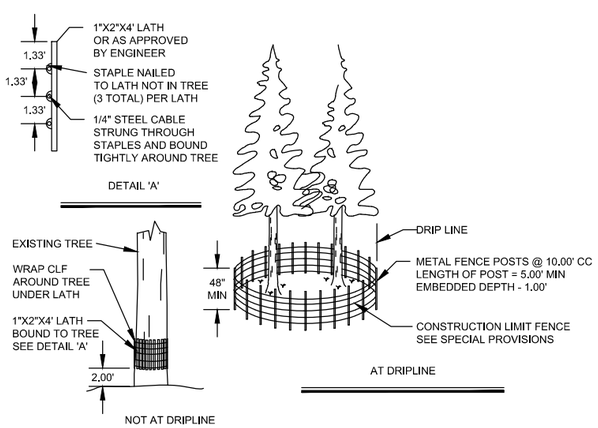
SILT TURBIDITY CURTAIN

NOT TO SCALE — 2/11



SECTION A-A

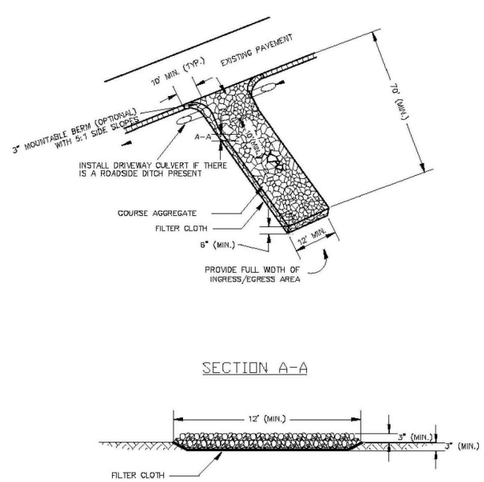
NOT TO SCALE



NOTE:
1. CLF AND TREE PROTECTION FENCE SHALL BE A MINIMUM OF 49" HIGH. FOR TREES WITH DRIPLINES THAT OVERHANG THE CONSTRUCTION AREAS, THE LOCATION OF THE TREE PROTECTION FENCE SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
2. THE DETAIL SHOWN IS FOR TREE PROTECTION. MATERIAL AND SPACING SHOWN ALSO APPLIES TO CLF.

CONSTRUCTION LIMIT FENCE (TYP.)

NOT TO SCALE — 3/11



CONSTRUCTION ACCESS

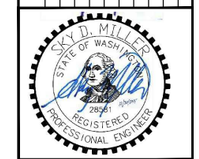
NOT TO SCALE — 4/11

SNOHOMISH COUNTY PLANNING DEPT. SERVICES APPROVED FOR CONSTRUCTION

BY: _____
RANDOLPH P. SLEIGHT, P.E., P.L.S.

PERMIT NO: _____

REVISIONS	DATE
SM	12.28.15



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SEATTLE, WA 98104
TEL: (206) 269-0104 FAX: (206) 269-0038
www.cardnoentrix.com

USACE REFERENCE NUMBER: NWS-2015-723

APPLICANT NAME: SNOHOMISH CONSERVATION DISTRICT

DETAILS - BMPS

MOGA BACK-CHANNEL RECONNECTION PROJECT

SNOHOMISH COUNTY, WASHINGTON

DATE:	DEC 30, 2015
DESIGNED BY:	DE
DRAWN BY:	DE
CHECKED BY:	JB/SM
CARDNO JOB NO.	E515004000
PLAN NO.	11
SHEET	11 of 11