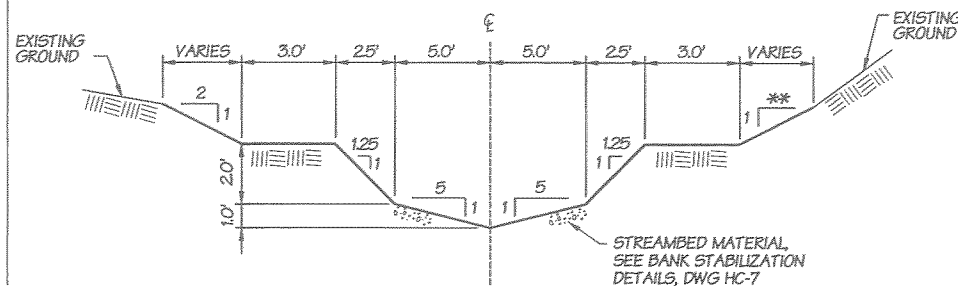


CHUMSTICK CREEK TYPICAL SECTION NO. 1

STA. 2+29 TO STA. 2+68 *
LOOKING UPSTREAM

* FOR DETAILED TRANSITION REQUIREMENTS
SEE FEEL END DETAIL, DWG HC-8



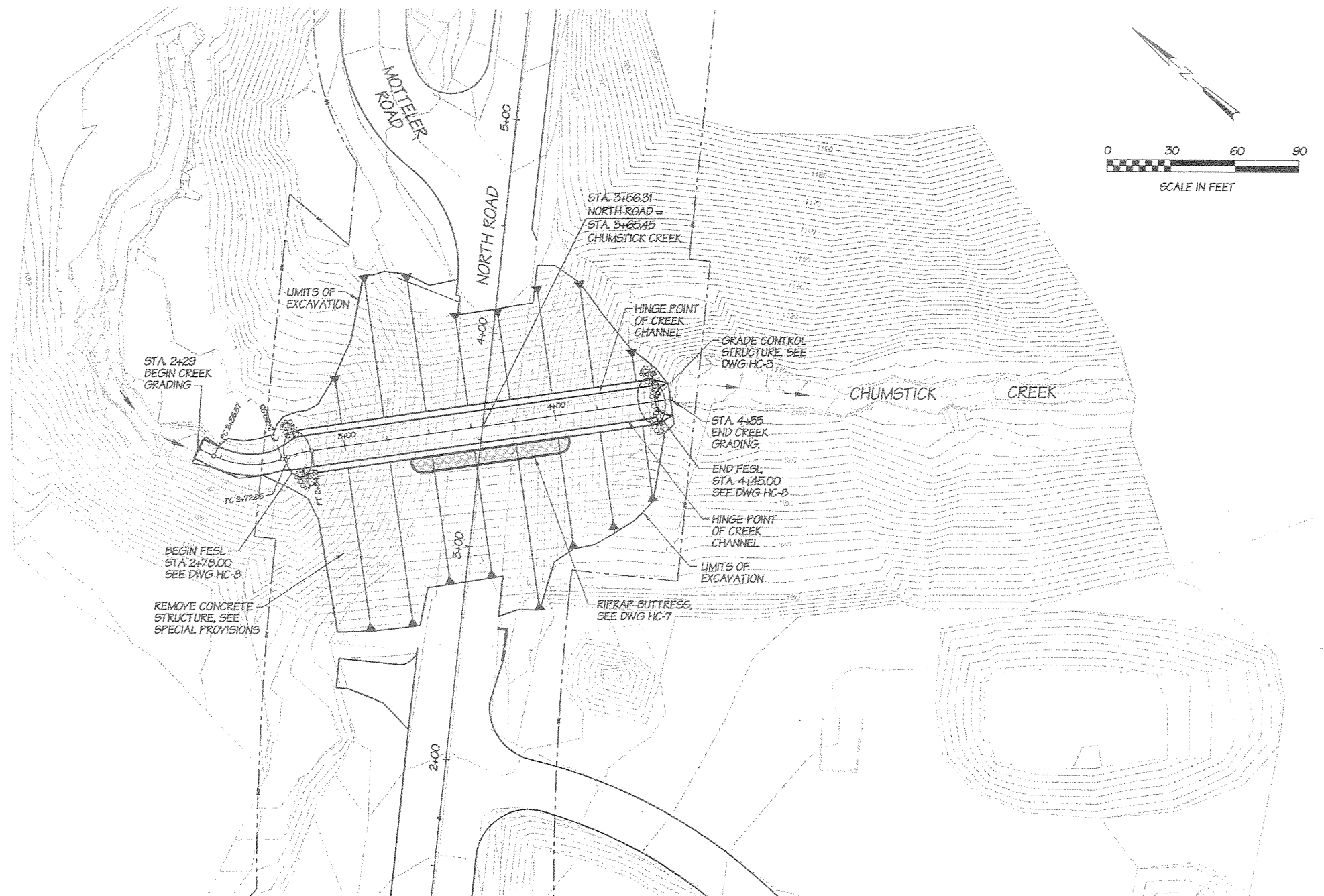
CHUMSTICK CREEK TYPICAL SECTION NO. 2

STA. 2+78 TO STA. 4+55
LOOKING UPSTREAM

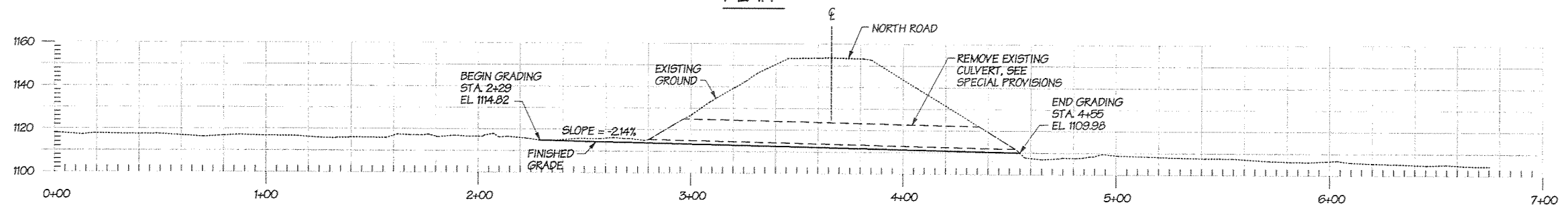
** SLOPE VARIES
2:1, STA. 2+78 TO STA. 3+25
TRANSITION FROM 2:1 TO 1.5:1, STA. 3+25 TO STA. 3+50
1.5:1, STA. 3+50 TO STA. 4+55

NOTES:

1. SEE DWG HC-2 FOR ADDITIONAL GRADING DETAILS.
2. SEE DWG HC-2 FOR GEOMETRIC CONTROL.
3. FOR TEMPORARY CREEK BYPASS DURING CONSTRUCTION,
SEE SPECIAL PROVISIONS.



PLAN



CHUMSTICK CREEK PROFILE

CALL BEFORE YOU DIG 1-800-424-5555
48 HOUR NOTICE REQUIRED

FILE NAME: 381989_hc01_plan.dgn

DESIGNED BY: J. YOUNG

REVIEWED BY: J. BUTLER

DRAWN BY: M. CHRISTIAN

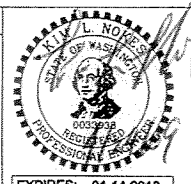
PLOT DATE: April 23, 2009

REVISIONS

DATE

BY

CH2MHILL



EXPIRES: 01-14-2010

Chelan County
Public Works Department
316 Washington Street, Suite 402
Wenatchee, Washington, 98801
509.667.6415
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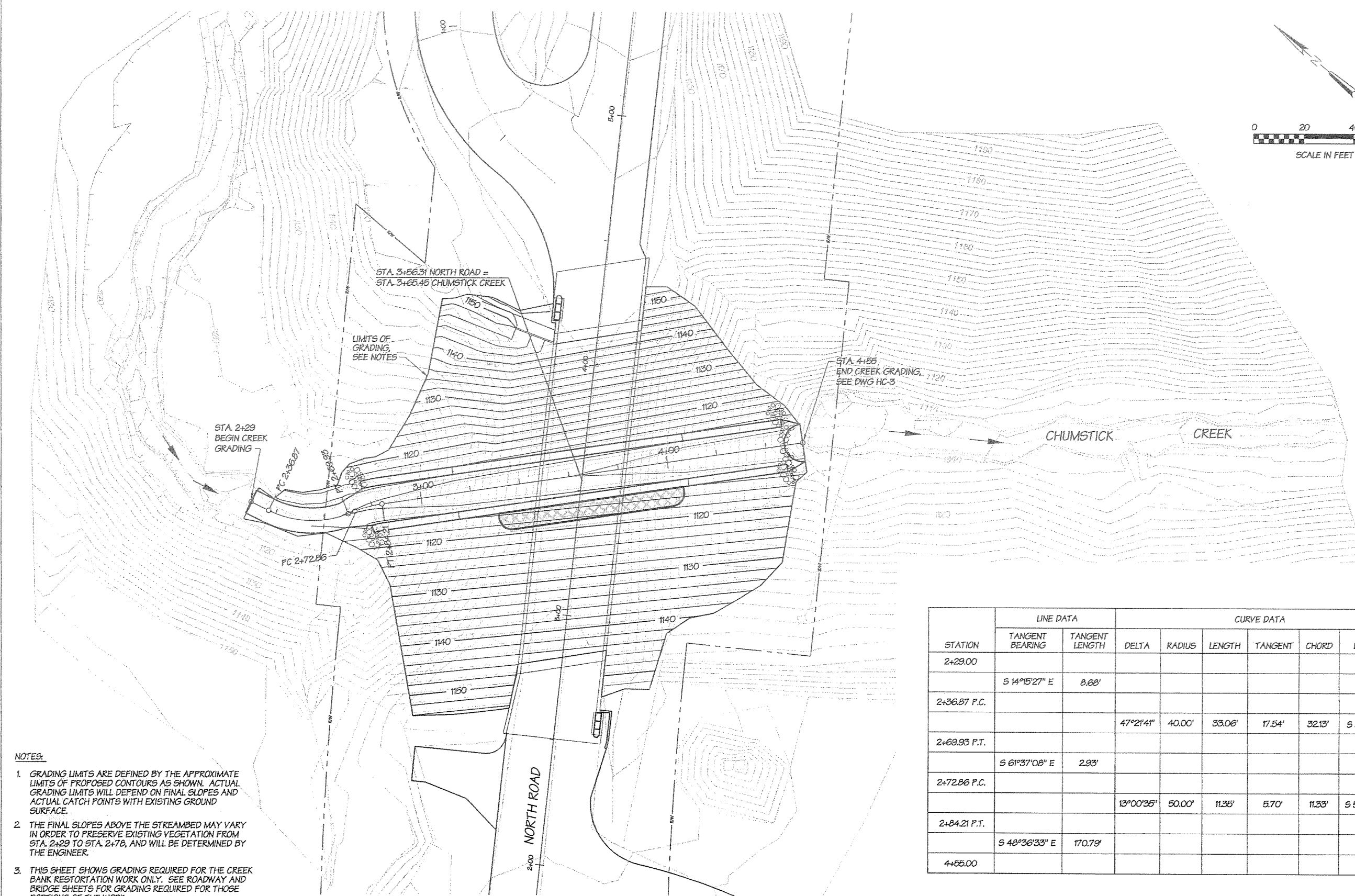
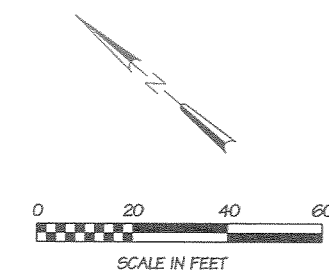
NORTH ROAD
Road Improvement Project
CHUMSTICK CREEK PLAN & PROFILE

C.R.P. 636

Dwg. No. Sheet No.

50

HC-1



- NOTES:
1. GRADING LIMITS ARE DEFINED BY THE APPROXIMATE LIMITS OF PROPOSED CONTOURS AS SHOWN. ACTUAL GRADING LIMITS WILL DEPEND ON FINAL SLOPES AND ACTUAL CATCH POINTS WITH EXISTING GROUND SURFACE.
 2. THE FINAL SLOPES ABOVE THE STREAMBED MAY VARY IN ORDER TO PRESERVE EXISTING VEGETATION FROM STA. 2+29 TO STA. 2+78, AND WILL BE DETERMINED BY THE ENGINEER.
 3. THIS SHEET SHOWS GRADING REQUIRED FOR THE CREEK BANK RESTORATION WORK ONLY. SEE ROADWAY AND BRIDGE SHEETS FOR GRADING REQUIRED FOR THOSE PORTIONS OF THE WORK.

STATION	LINE DATA		CURVE DATA						COORDINATES	
	TANGENT BEARING	TANGENT LENGTH	DELTA	RADIUS	LENGTH	TANGENT	CHORD	CHORD BEARING	NORTHING	EASTING
2+29.00									220826.18	1686007.91
	S 14°15'27" E	8.68'								
2+36.87 P.C.									220818.56	1686009.85
			47°21'41"	40.00'	33.06'	17.54'	32.13'	S 37°56'18" E		
2+69.93 P.T.									220793.21	1686029.60
	S 61°37'08" E	2.93'								
2+72.86 P.C.									220791.82	1686032.18
			13°00'35"	50.00'	11.35'	5.70'	11.33'	S 55°06'51" E		
2+84.21 P.T.									220785.34	1686041.47
	S 48°36'33" E	170.79'								
4+85.00									220672.42	1686169.60

CALL BEFORE YOU DIG 1-800-424-5555
48 HOUR NOTICE REQUIRED

FILE NAME: 381989_hc02_grading.dgn	REVISIONS				DATE	BY
DESIGNED BY: J. YOUNG						
REVIEWED BY: J. BUTLER						
DRAWN BY: M. CHRISTIAN						
PLOT DATE: April 23, 2009						

Chelan County
Public Works Department

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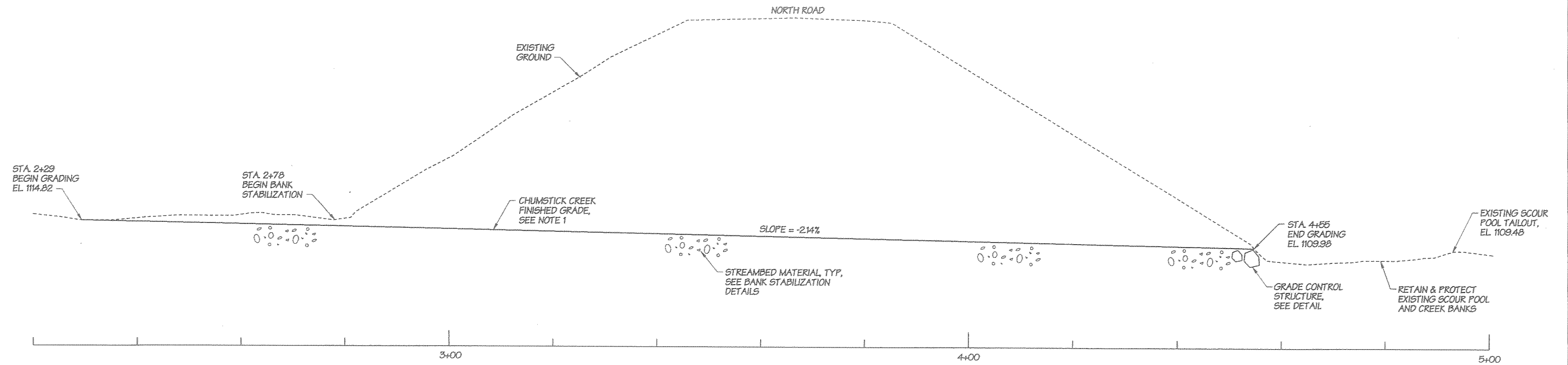
NORTH ROAD

Road Improvement Project

DETAIL GRADING PLAN

C.R.P. 636

Dwg. No. **HC-2** Sheet No. **51**



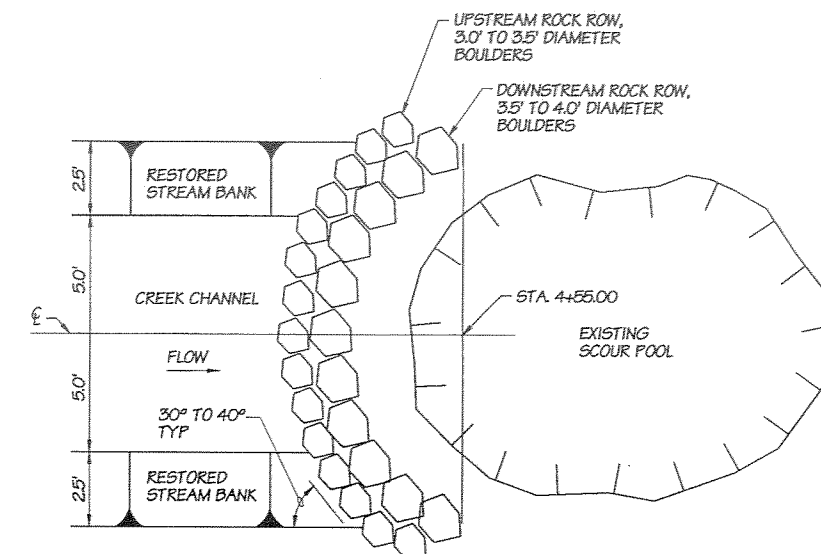
CHUMSTICK CREEK GRADE CONTROL PROFILE
1" = 10'

ESTIMATED QUANTITIES
FOR INFORMATION ONLY, SEE SPECIAL PROVISIONS

DESCRIPTION	UNIT	QUANTITY
FABRIC ENCAPSULATED SOIL LIFT (FESL)	LF	360
BRUSHLAYER	LF	1380
PERMANENT TURF REINFORCEMENT MAT	SY	538
BOULDERS FOR GRADE CONTROL STRUCTURE	CY	20
DRIP TUBING	LF	1740
LIVE CUTTINGS	EA	36720
DEAD STAKES	EA	540
HEAVY LOOSE RIPRAP	CY	15

NOTES:

- CREEK BED SHALL BE RECONSTRUCTED WITH VERTICAL VARIABILITY. UNDULATIONS WITH 1-FOOT VERTICAL DIFFERENTIAL SHALL BE SPACED APPROXIMATELY EVERY 60-FEET AS DIRECTED BY FIELD ENGINEER.
- GRADE CONTROL STRUCTURE SHALL CONSIST OF 3' TO 4' DIAMETER ROUNDED BOULDERS. MAXIMUM TOP ELEVATION SHALL BE 1109.98 (0.5' ABOVE EXISTING SCOUR POOL TAILOUT) ACROSS ENTIRE STRUCTURE.



TYPICAL PLAN VIEW

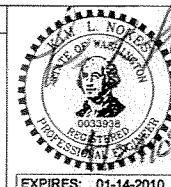
GRADE CONTROL STRUCTURE
NTS

CALL BEFORE YOU DIG 1-800-424-5555
48 HOUR NOTICE REQUIRED

FILE NAME: 331929_hc03_gradecontrol.dgn

DESIGNED BY:	REVISIONS	DATE	BY
J. YOUNG			
REVIEWED BY: J. BUTLER			
DRAWN BY: M. CHRISTIAN			
PLOT DATE: April 24, 2009			

CH2MHILL



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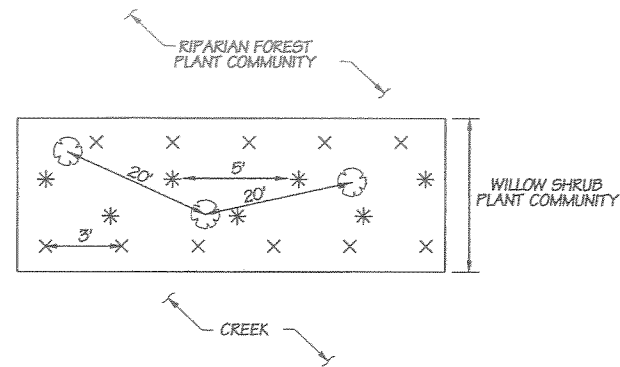
NORTH ROAD Road Improvement Project		C.R.P. 636
Dwg. No.	Sheet No.	
GRADE CONTROL & ROCK BAND DETAILS	HC-3	52



PLANT SCHEDULE						
PLANT COMMUNITY		SCIENTIFIC NAME	COMMON NAME	MIN. SPACING (FEET)	QUANTITY	SIZE
WILLOW SHRUB 1,550 SQ. FT.	TREE	SALIX LASIANDRA	PACIFIC WILLOW	20	20	CUTTING
	SHRUB	SALIX BEBBIANA	BEBB'S WILLOW	3	66	CUTTING
		SALIX EXIGUA	COYOTE WILLOW	3	66	CUTTING
		ALNUS INCANA	GRAY (MOUNTAIN) ALDER	5	157	10 CU IN
		CORNUS SERICEA (STOLONIFERA)	RED-OSIER DOGWOOD	3	131	10 CU IN
RIPARIAN FOREST 2,320 SQ. FT.	TREE	POPULUS BALSAMIFERA TRICHOCARPA	BLACK COTTONWOOD	20	15	CUTTING
	SHRUB	ACER GLABRUM	DOUGLAS MAPLE	5	31	10 CU IN
		ALNUS RUBRA	RED ALDER	5	31	10 CU IN
		CRATAEGUS DOUGLASII	BLACK HAWTHORN	5	31	10 CU IN
UPLAND FOREST 17,680 SQ. FT.	TREE	PINUS PONDEROSA	PONDEROSA PINE	20	45	10 CU IN
	SHRUB	SYMPHORICARPOS ALBUS	COMMON SNOWBERRY	5	354	10 CU IN
		AMELACHIER ALNIFOLIA	SERVICEBERRY	5	354	10 CU IN

SEED MIX				
PLANT COMMUNITY	SCIENTIFIC NAME	COMMON NAME	RATE	QUANTITY
WILLOW SHRUB 1,550 SQ. FT.	GLYCERIA STRIATA	FOWL MANNA GRASS	30 LBS/ACRE	1.1 LB
RIPARIAN FOREST 2,320 SQ. FT.	CALAMAGROSTIS CANADENSIS	BLUEJOINT	10 LBS/ACRE	0.6 LB
	DESCHAMPSIS CAESPITOSA	TUFTED HAIRGRASS	20 LBS/ACRE	1.1 LB
UPLAND FOREST 17,680 SQ. FT.	CALAMAGROSTIS RUBESCENS	PINEGRASS	20 LBS/ACRE	8.2 LB
	ELYMUS GLAUCUS	WESTERN RYEGRASS	20 LBS/ACRE	8.2 LB
	HESPEROSTIPA COMATA	NEEDLE AND THREAD GRASS	20 LBS/ACRE	8.2 LB
	LUPINUS SERICEUS	SILKY LUPINE	3 LBS/ACRE	12 LB
	LOMATIUM TRITERNATUM	NINE-LEAF LOMATIUM	0.5 LBS/ACRE	0.2 LB

- NOTES:
- NO WOODY SPECIES SHALL BE PLANTED UNDER THE BRIDGE IN THE UPLAND FOREST PLANT COMMUNITY.
 - BEBB'S WILLOW AND RED-OSIER DOGWOOD ARE THE ONLY WOODY SPECIES TO BE PLANTED UNDER THE BRIDGE IN THE WILLOW SHRUB PLANT COMMUNITY.
 - NURSERY STOCK MAY BE SUBSTITUTED FOR CUTTINGS.
 - PLANTING ZONES COINCIDE WITH BANK STABILIZATION DETAILS. SEE DWG HC-6 FOR ILLUSTRATION.
 - ADDITIONAL PLANTS (LIVE CUTTINGS) ARE REQUIRED BELOW THE 100 YEAR WSE. SEE DWG HC-7 AND HC-8 FOR DETAILS.
 - NO FERTILIZER IS ALLOWED IN THE CHUMSTICK CREEK RESTORATION AREA.



KEY TO PLANT MATERIALS

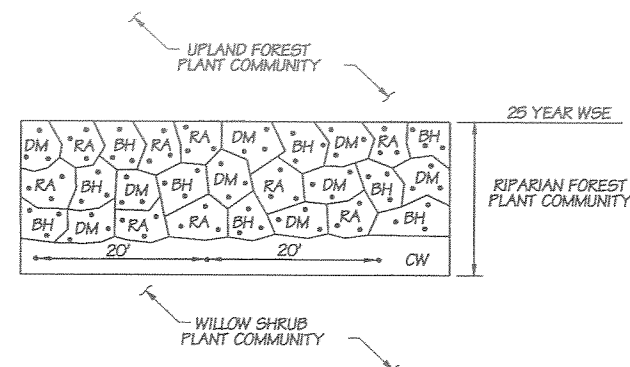
- x BEBB'S WILLOW, REDOSIER DOGWOOD, COYOTE WILLOW
- * GRAY ALDER
- PACIFIC WILLOW

NOTES:

1. BEBB'S WILLOW AND REDOSIER DOGWOOD PLANTED IN TWO OFFSET ROWS ADJACENT TO STREAM ON BENCH. PLANTS ARE 5- FEET ON CENTER.
2. GREY ALDER PANTED IN TWO OFFSET ROWS ON BENCH. PLANTS ARE 5- FEET ON CENTER.
3. PACIFIC WILLOWS RANDOMLY PLANTED ON BENCH AT 20- FEET ON CENTER.
4. ADDITIONAL LIVE CUTTINGS ARE REQUIRED IN THIS ZONE, SEE DWG HC-8.

PLANTING DENSITY PLAN WILLOW SHRUB PLANT COMMUNITY

NTS



KEY TO PLANT MATERIALS

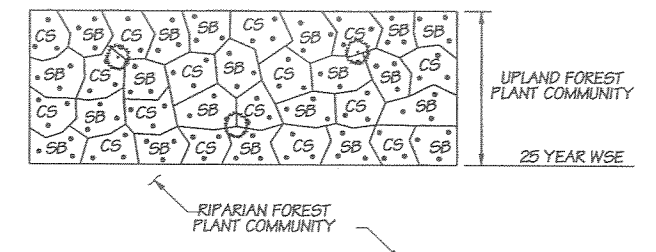
- DM DOUGLAS MAPLE
- RA RED ALDER
- BH BLACK HAWTHORNE
- CW COTTONWOOD

NOTES:

1. PLANTS INSTALLED AT 5- FEET ON CENTER. PLANTS INSTALLED IN GROUPS OF THREE OF A SINGLE SPECIES.
2. SPECIES GROUPS SHALL BE RANDOMLY ASSIGNED WITHIN THE PATTERN OF POLYGONS.
3. COTTONWOODS SHALL BE PLANTED AT BOTTOM OF SLOPE AND SPACED 20- FEET ON CENTER.
4. ADDITIONAL LIVE CUTTINGS ARE REQUIRED IN THIS ZONE, SEE DWG HC-8.

PLANTING DENSITY PLAN RIPARIAN FOREST PLANT COMMUNITY

NTS



KEY TO PLANT MATERIALS

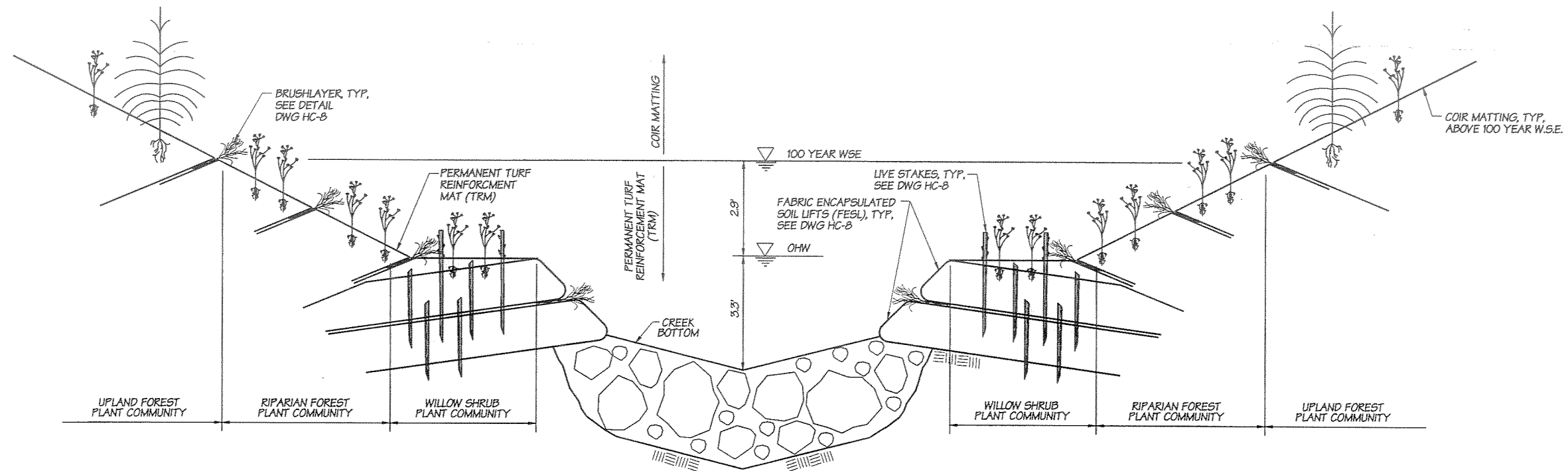
- CS COMMON SNOWBERRY
- SB SERVICEBERRY
- PONDEROSA PINE

NOTES:

1. COMMON SNOWBERRY AND SERVICEBERRY INSTALLED AT 5- FEET ON CENTER. PLANTS INSTALLED IN GROUPS OF THREE OF A SINGLE SPECIES.
2. SPECIES GROUPS SHALL BE RANDOMLY ASSIGNED WITHIN THE PATTERN OF POLYGONS.
3. PONDEROSA PINE SHALL BE RANDOMLY PLANTED AT 20- FEET ON CENTER.

PLANTING DENSITY PLAN UPLAND FOREST PLANT COMMUNITY

NTS



ILLUSTRATIVE SECTION OF PLANTING ZONES

NTS

CALL BEFORE YOU DIG 1-800-424-5555
48 HOUR NOTICE REQUIRED

FILE NAME: 381989_hc06_plantingdetails2.dgn

DESIGNED BY:	J. YOUNG	REVISIONS	DATE	BY
REVIEWED BY:	J. BUTLER/D. MENGEL			
DRAWN BY:	M. CHRISTIAN			
PLOT DATE:	April 23, 2009			

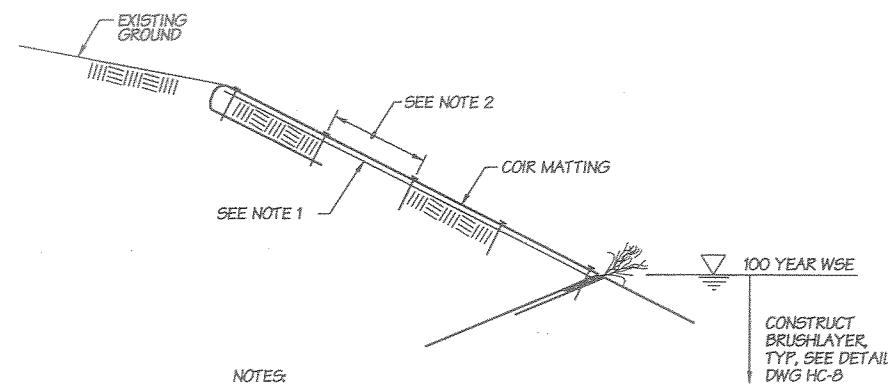


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NORTH ROAD
Road Improvement Project
PLANTING DETAILS (2 of 2)

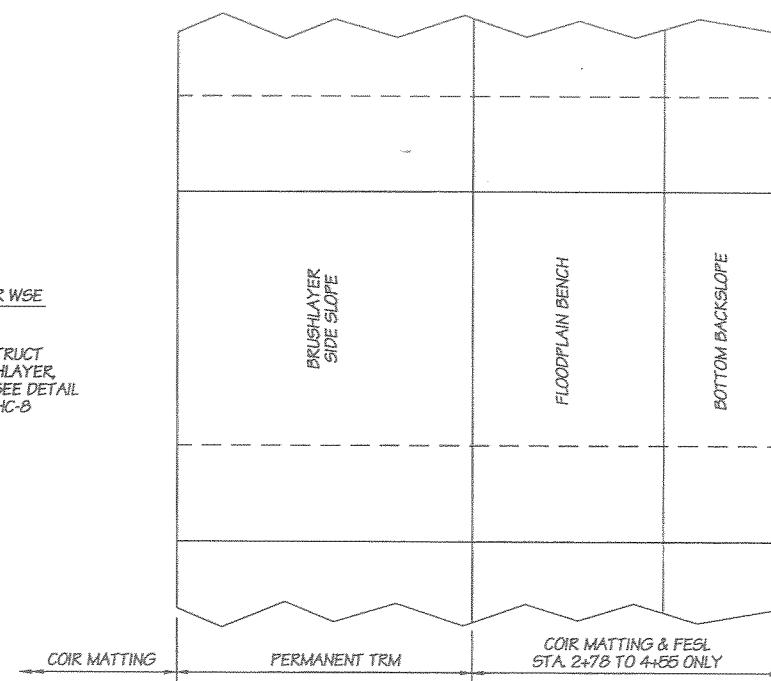
C.R.P. 636
Dwg. No. Sheet No.
55
HC-6



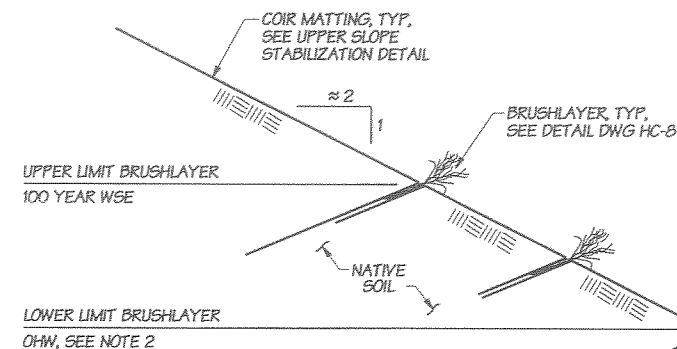
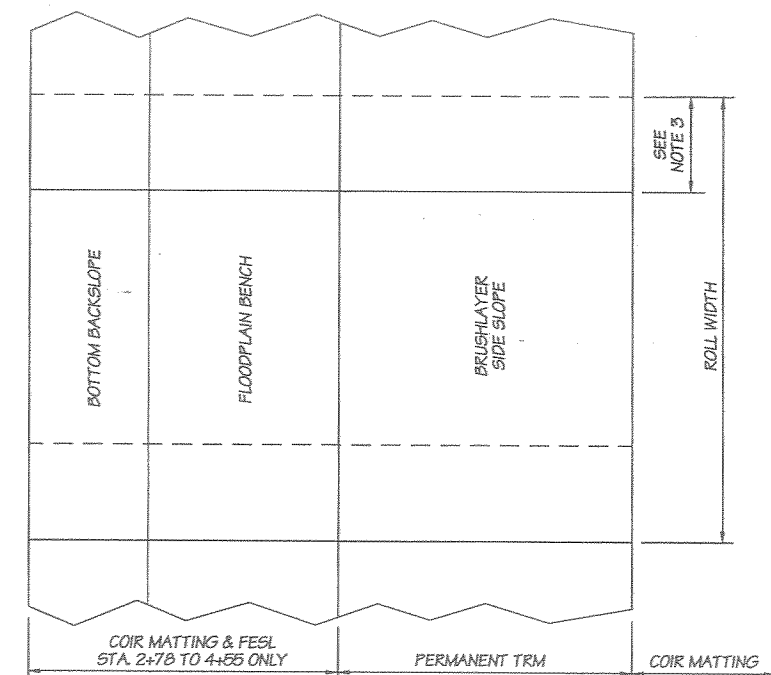
NOTES:

1. 12" TOPSOIL (TYPE B) AND SEED LAYER WHERE REQUIRED BENEATH COIR MATTING.
2. STAKE PER MANUFACTURER'S RECOMMENDATIONS.
3. CONSTRUCT ON BOTH BANKS ABOVE 100 YEAR W.S.E.

UPPER SLOPE STABILIZATION DETAIL
NT5



CHANNEL BOTTOM
FLOW DIRECTION



NOTES:

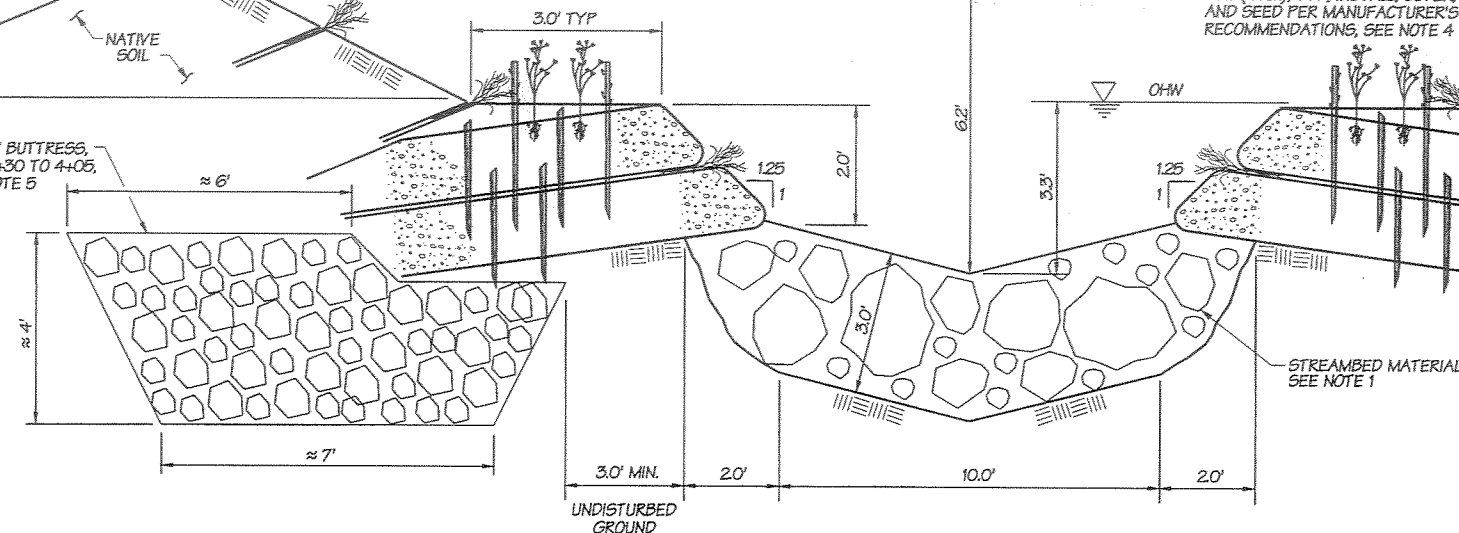
1. STREAMBED MATERIAL SHALL CONSIST OF A MIX OF ROUNDED GRAVEL WITH THE FOLLOWING GRADATION REQUIREMENTS:

PERCENT PASSING (BY WEIGHT)	EQUIVALENT DIAMETER
D100	36"
D84	30"
D50	12"
D16	3"

SEE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS. ALSO PLACE STREAMBED MATERIAL TO THE DIMENSIONS AND SLOPES SHOWN IN THE SECTION FROM STA. 2+29 TO 2+78.

2. UPSTREAM OF STA. 2+78, DO NOT CONSTRUCT FESL OR FLOODPLAIN BENCH. INSTEAD CONSTRUCT BRUSHLAYER SIDE SLOPE ON TOP OF STREAMBED MATERIAL UP UNTIL INTERSECTION WITH EITHER EXISTING GROUND OR 100 YEAR W.S.E., WHICHEVER COMES FIRST.
3. OVERLAP PERMANENT TURF REINFORCEMENT MAT (TRM) 2' MINIMUM OR PER MANUFACTURER'S RECOMMENDATIONS. OVERLAP COIR MATTING 1' MINIMUM OR PER MANUFACTURER'S RECOMMENDATIONS.
4. ONE-INCH TOPSOIL OVER TRM; MECHANICALLY APPLY SEED TO TOPSOIL; APPLY BONDED FIBER MATRIX OVER TOPSOIL AND SEED PER MANUFACTURER'S RECOMMENDATIONS.
5. RIPRAP BUTTRESS SHALL CONSIST OF HEAVY LOOSE RIPRAP, AS DEFINED IN THE WSDOT STANDARD SPECIFICATIONS, AND SHALL BE INSTALLED ON WEST BANK ONLY. THE ACTUAL STATION LIMITS AND SECTION DIMENSIONS SHALL BE DETERMINED DURING CONSTRUCTION BY THE ENGINEER. FOR BIDDING, THE CROSS SECTIONAL AREA OF RIPRAP BUTTRESS IS APPROXIMATELY 32 SQUARE FEET.

RIPRAP BUTTRESS,
STA. 3+30 TO 4+05,
SEE NOTE 5



SECTION

CHUMSTICK CREEK BANK STABILIZATION
TYPICAL PLAN AND SECTION

NT5

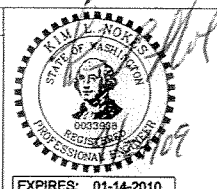
STA. 2+78 TO STA. 4+55
LOOKING UPSTREAM

CALL BEFORE YOU DIG 1-800-424-5555
48 HOUR NOTICE REQUIRED

FILE NAME: 381989_hc07_erosion.dgn

DESIGNED BY:	REVISIONS	DATE	BY
J. BUTLER/J. YOUNG			
REVIEWED BY: K. DAWSON/D. MENGEL			
DRAWN BY: M. CHRISTIAN			
PLOT DATE: April 23, 2009			

CH2MHILL

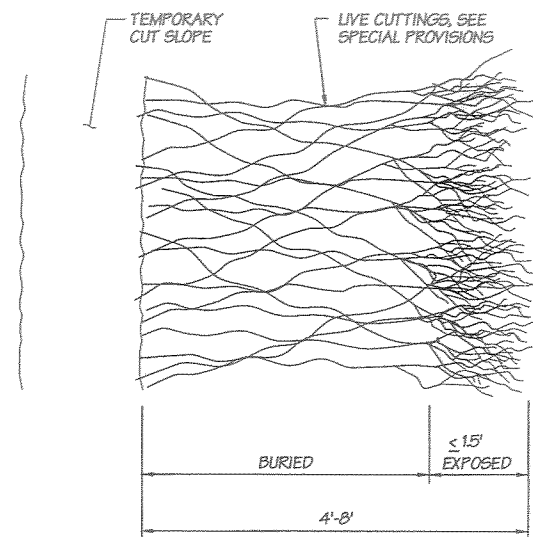


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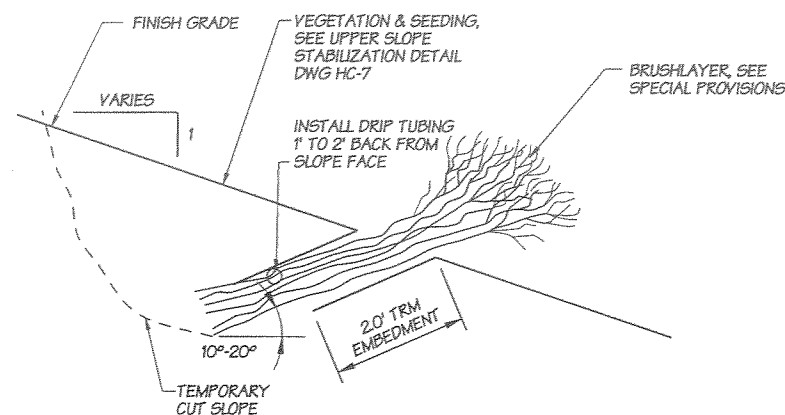
NORTH ROAD
Road Improvement Project
BANK STABILIZATION DETAILS

C.R.P. 636
Dwg. No. Sheet No.
56
HC-7



BRUSHLAYER PLAN VIEW

NTS

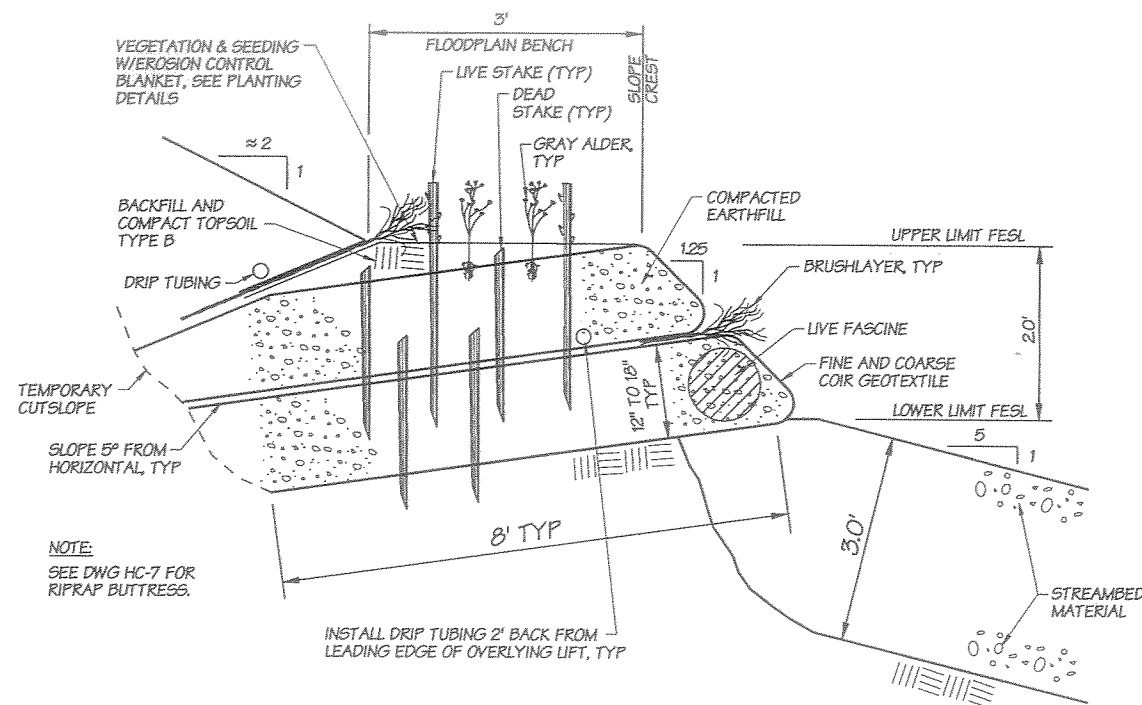


NOTES:

1. SEE PLANTING DETAILS FOR SPECIES SELECTION. SECTION VIEW DOES NOT COMPLETELY APPLY IN AREAS WITH FESL. BRUSHLAYER ANGLE IS FLATTER WITHIN FESL.
2. PLACE LIVE CUTTINGS WITH GROWING TIPS ALIGNED IN DIRECTION OF DOWNWARD SLOPE.
3. PLACE LIVE CUTTINGS AT A DENSITY OF 20-25 CUTTINGS PER FOOT WITHIN EACH BRUSHLAYER ROW.
4. COMPACT TOPSOIL ON TOP OF LIVE CUTTINGS, BACK TO FINISH GRADE (OR TO FORM A BASE FOR THE NEXT SUCCESSIVE SOIL LIFT IN AREAS WITH FESL).
5. DRIP TUBING TO BE INSTALLED AS INDICATED ABOVE EACH BRUSHLAYER ROW.
6. SPACE BRUSHLAYER ROWS EVENLY, BUT NO MORE THAN 3.5' APART, AS MEASURED ALONG THE SLOPE FACE.
7. SEE LIVE CUTTINGS TABLE FOR SELECTION OF ACCEPTABLE SPECIES FOR THIS APPLICATION.

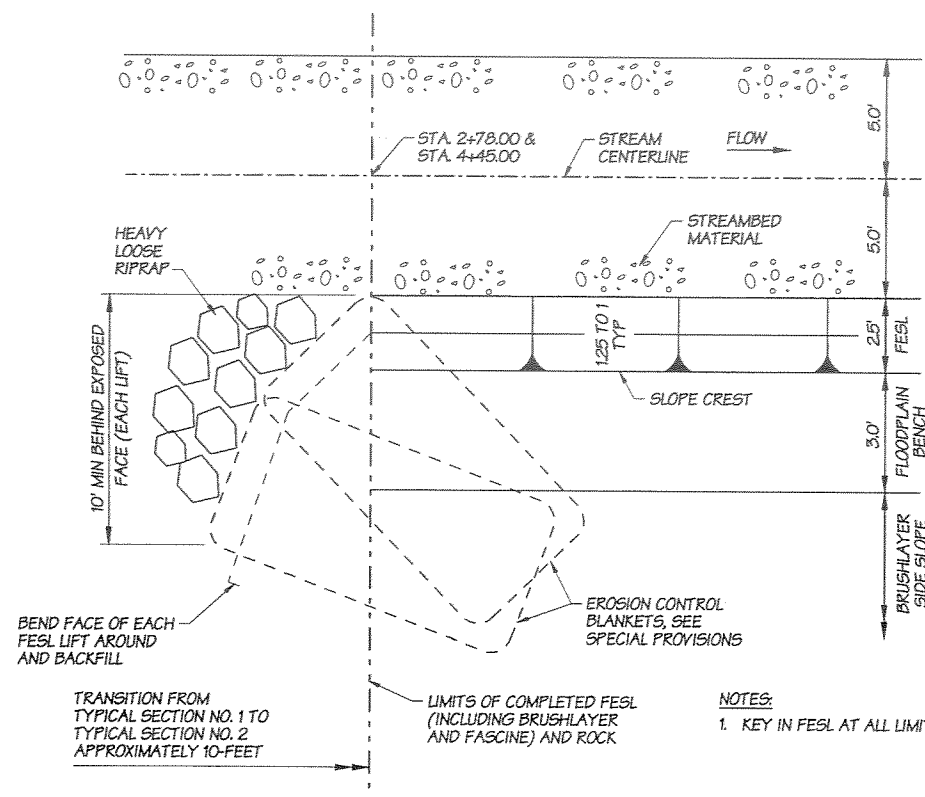
BRUSHLAYER SECTION

NTS



FABRIC-ENCAPSULATED SOIL LIFT (FESL) AND BRUSHLAYER DETAIL

NTS



FESL END DETAIL

NTS

STA. 2+78.00
STA. 4+45.00

NOTES:

1. CONSTRUCT FESL FROM STA 2+78 TO GRADE CONTROL STRUCTURE, APPROXIMATE STA. 4+55.
2. EXCAVATE SLOPE ACCORDING TO PLANS. PLACE FINE AND COARSE COIR GEOTEXTILE, AND BACKFILL WITH ROCK AND SOIL LIFTS TO FINISH GRADES. USE A FORM OR BUTTRESS AT THE FACE OF EACH FESL LIFT TO ACHIEVE THE DIMENSIONS SHOWN, AND COMPACT BACKFILL. PULL EACH LAYER OF GEOTEXTILE TIGHT AND ANCHOR WITH DEAD OR LIVE STAKES. REMOVE FORM AT FACE OF LIFTS.
3. HARVEST OF MATERIAL FOR LIVE STAKES, FASCINES, AND BRUSHLAYERS SHALL OCCUR WHEN PLANT MATERIAL IS DORMANT (OCTOBER/NOVEMBER FOLLOWING HARD FROST) AND AT LOCATIONS APPROVED BY CONTRACTING OFFICER. IF DORMANT MATERIAL IS NOT AVAILABLE, NURSERY STOCK MAY BE SUBSTITUTED. SEE LIVE CUTTINGS TABLE FOR SELECTION OF ACCEPTABLE SPECIES FOR THIS APPLICATION.
4. PREPARE FASCINE BUNDLE IN ACCORDANCE WITH THE SPECIFICATIONS AND PLACE INSIDE LEADING EDGE OF LOWEST LIFT.
5. FOR EACH LIFT, PLACE FABRIC WITH ROLLS ORIENTED PERPENDICULAR TO THE CHANNEL START AT DOWNSTREAM END OF TREATMENT AND WORK UPSTREAM, ENSURING THE EDGE OF EACH UPSTREAM PIECE OVERLAPS (IS "SHINGLED" OVER) THE EDGE OF ADJACENT DOWNSTREAM PIECE BY 1 FOOT MINIMUM.
6. DRIP TUBING TO BE PLACED APPROXIMATELY 2 FEET BEHIND LEADING EDGE OF OVERLYING LIFT. FEMALE HOSE ENDS TO EXTEND ABOVE GROUND SURFACE. CAP ALL TUBE ENDS.

LIVE CUTTINGS TABLE

SCIENTIFIC NAME	COMMON NAME	APPROXIMATE %
<i>SALIX BEBBIANA</i>	BEBB'S WILLOW	35 - 40
<i>CORNUS SERICEA (STOLONIFERA)</i>	RED-OSIER DOGWOOD	10 - 25
<i>SALIX LASIANDRA</i>	PACIFIC WILLOW *	5 - 10
<i>SALIX EXIGUA</i>	SANDBAR OR COYOTE WILLOW *	35 - 40

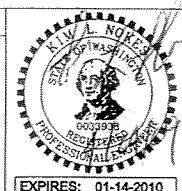
* THIS SPECIES SHALL NOT BE PLANTED BENEATH THE BRIDGE DECK, STA. 3+40 TO STA. 3+95

CALL BEFORE YOU DIG 1-800-424-5555
48 HOUR NOTICE REQUIRED

FILE NAME: 381989_hc08_fesl-details.dgn

DESIGNED BY:	J. BUTLER	REVISIONS	DATE	BY
REVIEWED BY:	S. CLAYTON			
DRAWN BY:	M. CHRISTIAN			
PLOT DATE:	April 23, 2009			

CH2MHILL



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Public Works Department**
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NORTH ROAD
Road Improvement Project
FABRIC ENCAPSULATED SOIL LIFT (FESL)
DETAILS

C.R.P. 636
Dwg. No. **57**
Sheet No. **HC-8**