DESIGN DATA

EFFECTIVE FETCH	4.7 MI.
WIND DIRECTION	NNE
STRESS FACTOR	29 MPH
MN DNR OHW LEVEL	1194.0
DESIGN WAVE HEIGHT	1.4 Ft.
RUNUP	1.8 Ft.
SETUP	0.1 Ft.
SLOPE RATIO	3:1
DIMENSION OF MEDIAN ROCK	6.0 IN.
ROCK SHAPE 30% ANGULAR, 70%ROUND	
RIPRAP THICKNESS	15 IN.

RIPRAP GRADATION

% PASSING BY WEIGHT	ROCK SIZE (IN.)
100	12
60-85	9
25-50	6
5-20	3
0-5	1

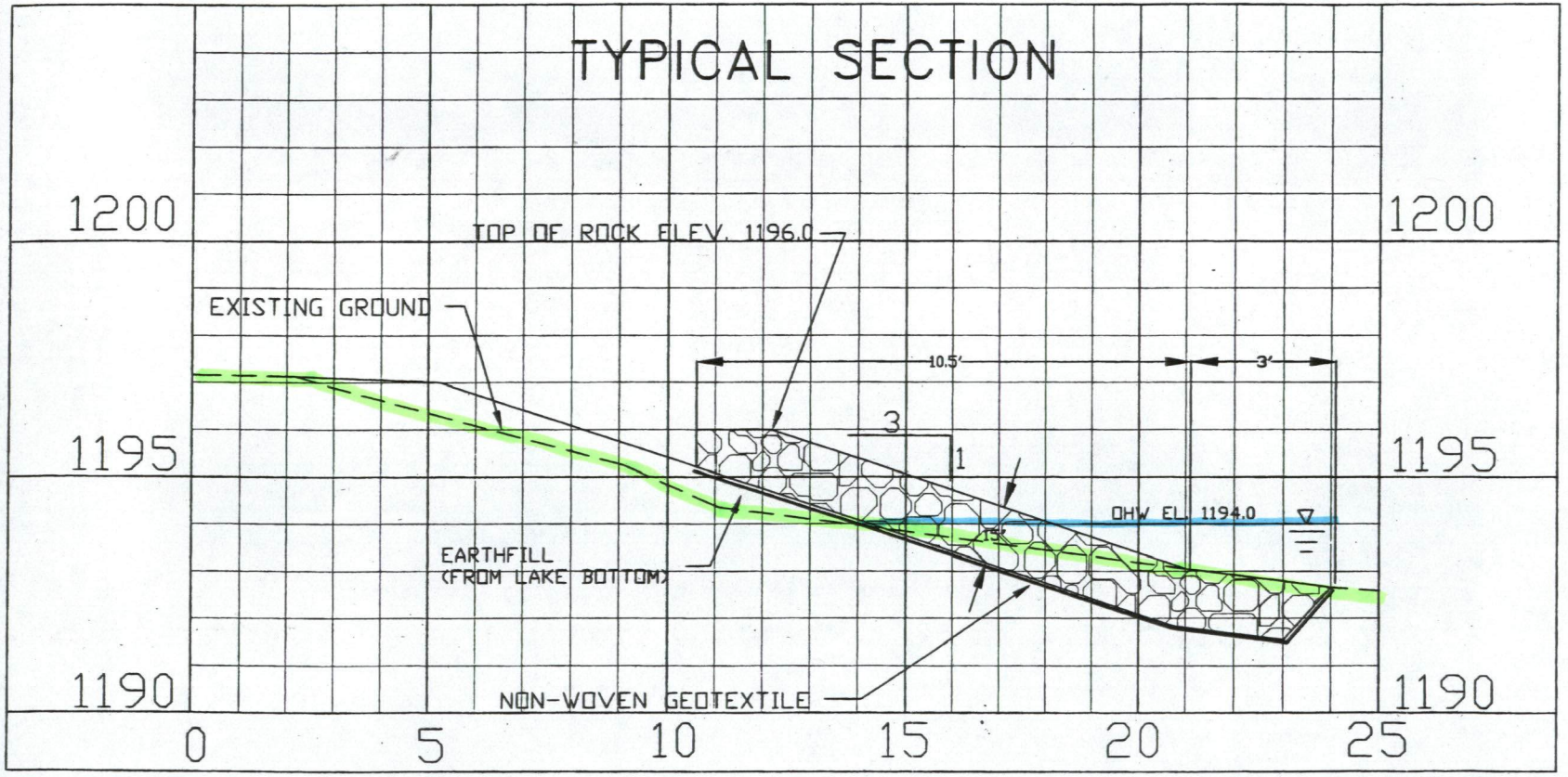
** ESTIMATED QUANTITIES BASED ON PROTECTING 500 LIN. FT. OF SHORELINE.

ESTIMATED QUANTITIES

ITEM	QUANTITY	UNIT
Clearing, Grubbing and Debris Removal	1	Job
Excavation	150	Cu. Yd.
Geotextile	840	Sq. Yd
Rock Riprap	300	Cu. Yd.

TBM - SPIKE IN E. SIDE OF POWER POLE 6" ABOVE GROUND
NEAR EAST END OF PROJECT. ELEV. 1195.84

TYPICAL SECTION



SLOPE AND TOE PROTECTION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.

PREPARED BY
NORTH CENTRAL MINNESOTA JOINT POWERS BOARD
3217 BEMIDJI AVE. N. BEMIDJI, MINNESOTA 56601 (218) 755-4341

Drawn by JDH | Checked by CJL | Date 9/15/99 | Sheet 2 of 2