



Department of Energy

Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208-3621

PUBLIC AFFAIRS

April 29, 2009

In reply refer to: DK-7

Helen Turner
Puget Sound Energy
P.O. Box 90868 EST-07W
Bellevue, WA 98009-0868

RE: FOIA #09-033

Dear Ms. Turner:

Thank you for your request for information that you made to the Bonneville Power Administration (BPA), under the Freedom of Information Act (FOIA), 5 U.S.C. 552. Your letter was received in this office on Tuesday, April 28, 2009, and was assigned a control number, 09-033. Please use this number in any correspondence with the Agency about your request.

You have requested a copy of the following:

BPA Technical Specification for Wood Poles (TFN 65-12.2 latest revision) BPA Wood Pole Structures, Douglas Fir Poles, Drilling and Marketing Details (129321-FDG-A1 latest revision)

Response:

BPA has provided the responsive documents in their entirety.

If you are dissatisfied with this determination, you may make an appeal within thirty (30) days of receipt of this letter to the Director of Office of Hearings and Appeals, Department of Energy, 1000 Independence Avenue SW, Washington, DC 20585. Both the envelope and the letter must be clearly marked "Freedom of Information Act Appeal." There is no charge for your request.

I appreciate the opportunity to assist you with this matter. If you have any questions about this letter, please contact Laura M. Atterbury, FOIA/Privacy Act Specialist, at 503-230-7305.

Sincerely,

Christina J. Brannon
Freedom of Information Act/Privacy Act Officer

Enclosures: Responsive Documents

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TECHNICAL SPECIFICATION

WOOD POLES, NO. 65-12, APRIL 19, 2007

3-1 SCOPE

This specification covers the technical requirements for the fabrication, testing, and preparation for delivery of full-length treated Douglas Fir, Western Red and Alaska Yellow Cedar wood poles for use on BPA transmission lines.

3-2 GENERAL REQUIREMENTS

3-2.1 ORDER OF PRECEDENCE

Discrepancies shall be resolved by giving precedence in the following order:

- a. Purchase Order Item Description.
- b. Technical Specification.
- c. Drawings.
- d. Referenced Documents.

3-2.2 REFERENCED DOCUMENTS

The following documents of the issue indicated form a part of this specification.

(The latest editions or editions apply)

a. American National Standards Institute (ANSI) Standards:

O5.1 Wood Poles - Specifications and Dimensions

b. American Wood-Preservers' Association (AWPA) Standards:

U1, Com. Spec. D	Poles - Preservative Treatment by Pressure Processes
U1, Com. Spec. D	Western Red Cedar and Alaska Yellow Cedar Poles - Preservative Treatment by the Full-Length Thermal Process
M1	Standard for the Purchase of Treated Wood Products
M2	Standard for Inspection of Treated Timber Products
P8	Standards for Oil-Borne Preservatives
P9	Standards for Solvents and Formulations for Organic Preservative Systems

3-2.3 LANGUAGE AND UNITS

3-2.3.1 All correspondence, literature, drawings, and markings shall be in the English language.

3-2.3.2 Dimensioning and tolerancing shall conform to ANSI Y14.5M. Dimensions shall be in the U.S. customary units, unless SI (metric system) units are requested. If fabricating in the SI unit, both units shall be shown on the drawings. Conversion dimensions shall be 1 inch = 25.4 mm. Converted dimensions may be rounded off to the nearest 1/32 of an inch (0.794 mm) provided the rounded dimension falls within the design limits.

3-2.4 MATERIALS

Materials shall be of the type and grade most suitable for the application and shall conform to industry standards and practices. All materials shall be free of defects, of recent manufacture, and unused.

3-2.5 WORKMANSHIP

All work shall be performed by skilled craftsmen following the best modern practices of the industry.

3-3 DETAIL REQUIREMENTS

3-3.1 GENERAL

Poles shall be cut from live Western Red or Alaska Yellow Cedar (subsequently referred to as Cedar) or Pacific Coast Douglas Fir (subsequently referred to as Fir) timber. Douglas Fir, Interior North (Intermountain) timber is not acceptable. Poles shall meet the requirements of ANSI O5.1 with the following exceptions:

- Poles will be visually examined at the butt end for growth rate. Poles shall have an average of not less than 6 annual rings per inch as measured in the outer 3 inches. Poles failing the visual examination will be cored at 6 feet from the butt and re-examined. Poles with five rings per inch shall be acceptable if 50 percent or more summerwood is present.
- No pole shall have more than one-half twist of grain in any 15 feet of length.
- Class 2 poles shall have a maximum top circumference of 38 inches.
- Class 1 poles shall have a maximum top circumference of 39 inches.
- Class H-1 poles shall have a maximum top circumference of 41 inches.

- f. Class H-2 poles shall have a maximum top circumference of 43 inches.
- g. Class H-3 poles shall have a maximum top circumference of 45 inches
- h. All inner bark shall be removed from the entire surface of the pole.
- i. Trimming shall not extend below the adjoining surfaces. Poles unnecessarily damaged when peeling and trimming will not be accepted.
- j. Poles shall be of uniform taper, with no variations in cross-sectional areas that reduce pole strength.

3-3.2 DEFECTS

3-3.2.1 The following defects are prohibited:

- a. Splits or combinations of checks considered a climbing hazard or that reduce pole strength whether present before or after preservative treatment.
- b. Sucker knots, hollow knots, decayed knots, spike knots, or fall knots that reduce pole strength.
- c. Decayed scars.
- d. Knots:
 - 1. The maximum size of single knots permitted for a Class 1 to 3 pole is 3 inches, or 3 1/2 inches for H1 to H3 poles.
 - 2. Excessive ring knots will be rejected based on the discretion of the BPA Contracting Officer's Technical Representative (COTR) .
 - 3. Knot clusters in a one foot pole section will be rejected if: the sum exceeds 1/3 of the average circumference or 10 inches, whichever is greater, but not to exceed 12 inches for Class 1 to 3, and 14 inches for Class H poles.
- e. Rot, hollow pith, or shakes in the pole top of Cedar.
- f. Powder post beetle damage in Cedar.

3-3.3 SEASONING

3-3.3.1 Seasoning of Fir shall be by the Boulton drying method or a combination of Boulton drying with air seasoning or kiln drying. Boulton drying shall be at a temperature between 180 degrees F and 220 degrees F for not less than 24 hours.

- a. Air seasoning of Fir shall not exceed 2 years.
- b. For kiln drying of Cedar and Fir, the maximum dry bulb temperature shall be increased gradually and shall not exceed 160 degrees F and 190 degrees F, respectively. The maximum wet bulb temperature shall not exceed 50 degrees F, with the exception that during the first 24 hours, there is no limitation on wet bulb depression.

3-3.3.2 The average moisture content after preservative treatment shall be conducted by the Contractor using one of the following three methods: resistance type moisture meter, oven-dry basis, or toluene extraction. Samples shall be taken from 0.5 to 1.5 inch and 0 to 1.0 inch zones at mid-length of Fir and Cedar, respectively. Moisture content for Fir and Cedar shall not exceed 21 percent.

3-3.4 INCISING

Incising may be required to meet the penetration or checking requirements of the preservative treatment.

3-3.4.1 Full-length incising of Fir poles is required. Cedar poles shall be incised in a zone from 2 feet above to 4 feet below the ground line. The pattern and depth of incising of the pole shall be at the option of the Contractor.

3-3.4.2 Incising shall be accomplished in a manner which will not unduly damage the surface of the pole by splintering, raising the wood fibers from the surface, gouging, or loosening the sapwood from the heartwood.

3-3.5 DRILLING

The ground line area and the top of the Fir poles shall be drilled for internal treatment in accordance with the pattern and hole drilling table shown on BPA Drawing 129321-FDG-A1. Drilling shall be done carefully to avoid charring or glazing of the inner surfaces.

3-3.5.1 Through-boring will not be required for full-length treated Cedar.

3-3.5.2 A star-lock anti-splitting device will be centered and driven into the top of each pole prior to or after treatment as recommended by the manufacturer and/or the (COTR).

3-3.6 MARKING DISC RECESSES

Two marking disc recesses with flat bottoms shall be cut into each pole before treatment as shown on BPA Drawing 129321-FDG-A1, revision 11. One recess shall be cut on the face of the pole on the inside of the sweep, if any, at a distance of 5 feet measured from the ground line of the pole to the center of the cut. The other recess shall be cut near the center of the pole butt. The recess on the face and butt of the pole shall have a depth at the recess periphery of 1/4 inch to 1/2 inch.

3-3.7 PRESERVATIVE TREATMENT

3-3.7.1 Treatment. Fir poles shall be full-length pressure-treated by an empty-cell process in accordance with AWPA U1, Commodity Specification D. Cedar poles shall be full-length pressure-treated or thermal-treated in accordance with AWPA U1, Commodity Specification D. Poles shall be clean and dry after treatment. Bleeders shall be rejected.

3-3.7.2 Preservative. Preservative for Cedar and Fir shall be Pentachlorophenol or Copper Naphthenate meeting the requirements of AWPA P8. The petroleum shall be hydrocarbon solvent, Type A only, meeting the requirements of AWPA P9.

3-3.7.3 Penetration.

- a. For Fir, the minimum penetration of preservative shall be 100 percent in the top and ground line through-drilled areas. Skips in penetration are allowed in up to 3 consecutive annual rings as long as the skips are located in the inner-most third (3/3) of the core sample.
- b. For Fir, the minimum penetration of preservative shall be 90 percent of sapwood in all other areas where the sapwood has a minimum thickness of 7/8 inch. The penetration of preservative shall be a minimum of 3/4 inch.
- c. For Cedar, the minimum penetration at ground line of the pole shall be 100 percent for 1/8 to 1/2 inch sapwood thickness and 90 percent of the sapwood over 1/2 inch.

3-3.7.4 Retention.

- a. For Cedar poles, the minimum retention of preservative in the ground line area shall be:

Inches From	Pentachlorophenol	Copper Naphthenate
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<u>Surface</u>		<u>Lbs/cu.ft.</u>	<u>Lbs/cu.ft.</u>
0.10 - 0.60	1.00	0.12	

b. For Fir, the minimum retention of preservative in the ground line area shall be:

<u>Inches From Surface</u>	<u>Pentachlorophenol</u>	<u>Copper Naphthenate</u>	<u>Lbs/cu.ft.</u>	<u>Lbs/cu.ft.</u>
0.25 - 1.0	0.60	0.095		

3-3.7.5 Checking. After treatment the surface dimension of any check shall not exceed a width greater than 1/2 inch for any 4 feet of continuous length with the exception of the top 6 feet, and lower section from the marking disk to the butt. Checks are separated by more than 1/4 inches, or they are considered continuous.

3-3.7.6 Retreatment. Poles shall be retreated only once. See paragraph 3-3.9.3 for marking requirements.

3-3.8 HANDLING

Treated poles shall be handled in a manner which will prevent breaks or punctures in any part of the poles other than in the lower 2 feet of the pole. Poles damaged during handling shall be rejected.

3-3.9 MARKING

3-3.9.1 All poles shall be marked by 2 aluminum discs having the company name, year treated, length, class, species and preservative stamped or embossed thereon. The discs shall be made of 24 gage aluminum, and shall be approximately 2 inches in diameter. The discs shall be punched for nails, placed in the marking disc recesses on the pole face and butt, and attached with two 2 inch aluminum twist nails.

3-3.9.2 After poles have been accepted for treatment, the BPA (COTR) shall hammer stamp the butt of each pole with the brand "BPA".

3-3.9.3 Retreated poles shall have the letter "R" hammer stamped in the butt of the pole.

3-4 TEST REQUIREMENTS

3-4.1 SAPWOOD TESTS

A boring shall be made either before or after treatment at the midpoint in each pole to determine the following:

3-4.1.1 For Fir, 7/8 inch of sapwood is present. The results of the boring specimen shall determine the required depth of preservative penetration (being either 90 percent of sapwood or 3/4 inch) in accordance with the penetration requirements stated herein.

3-4.2 MOISTURE TESTS

3-4.2.1 The BPA (COTR) will randomly test poles, after treatment, for moisture content. Measurements shall be made with a resistance type moisture meter equipped with insulated electrodes. These measurements will be taken at midpoint to a depth of 1 inch for Fir and 1/2 inch for Cedar.

3-4.2.2 Poles having a moisture content in excess of that specified shall be rejected.

3-4.3 TREATMENT TESTS

3-4.3.1 Poles shall be tested for preservative penetration and retention in accordance with AWPA M2. Verification of penetration in the 100 percent areas shall be done by visual examination of the borings.

3-4.3.2 All treated poles which do not meet the penetration and retention of preservative requirements of this specification shall be rejected.

3-4.4 PRESERVATIVE TESTS

The preservative used in the treating of poles shall be tested in accordance with AWPA M2 to assure compliance with this specification.

3-5 PREPARATION FOR DELIVERY

Poles shall be prepared for delivery and shipped in such a manner as to protect them from damage during transit. Gondola type cars shall not be used where BPA will do the unloading.

3-6 APPENDIX

3-6.1 DRAWING

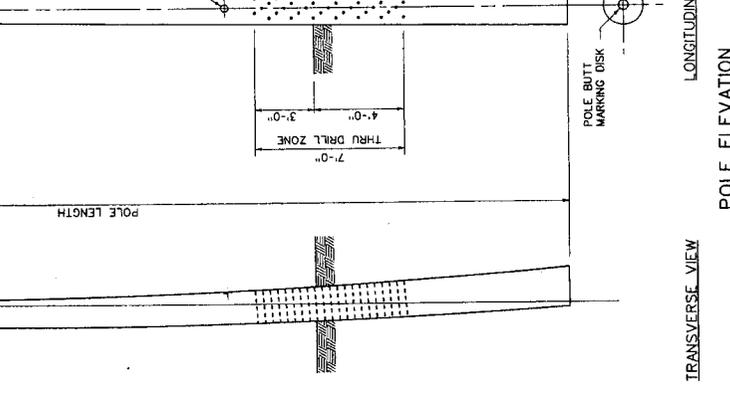
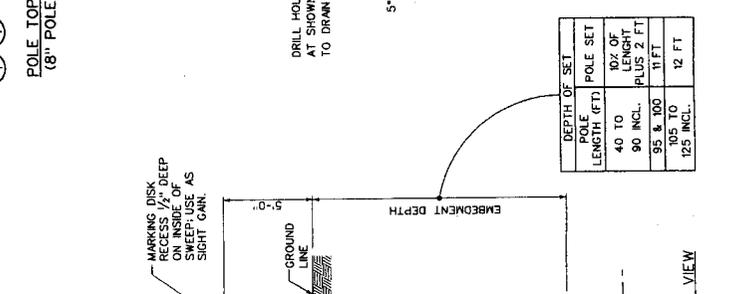
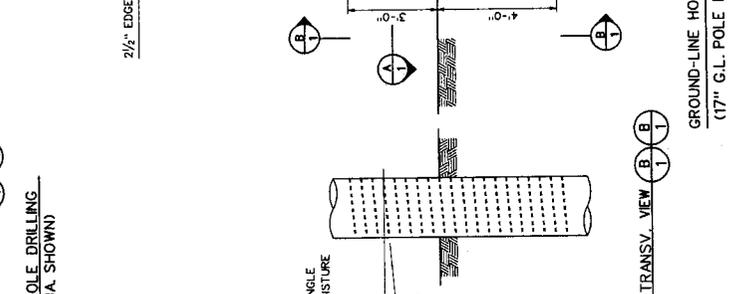
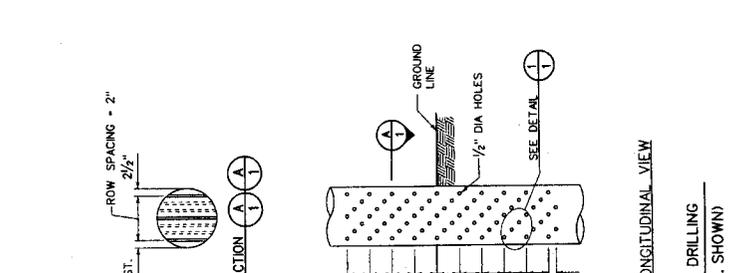
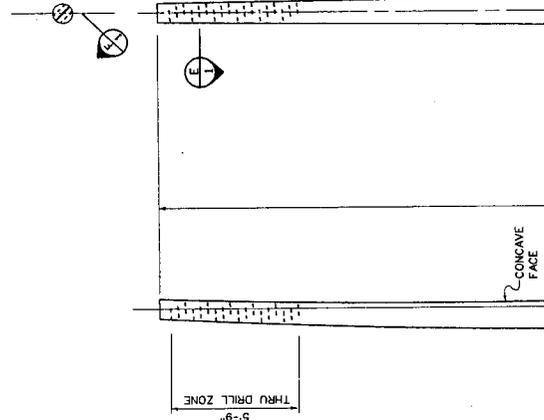
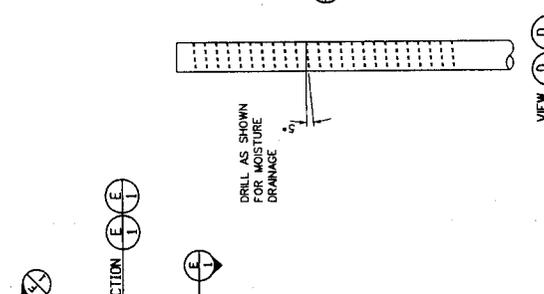
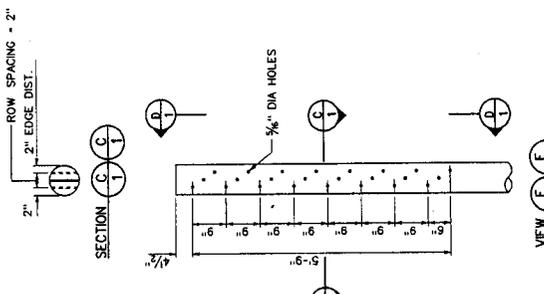
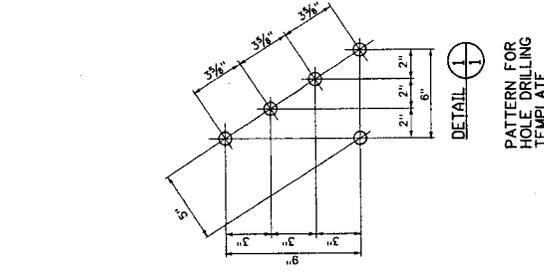
The following BPA drawing forms a part of this specification.

Drawing No.	Revision	Title
129321-FDG-A1	11	Wood Pole Structures, Douglas Fir Poles, Drilling and Marking Details

DRAWING 129321-FDG-A1, REVISION 11

NOTES:

1. THRU-DRILL POLE TOP AND GROUND-LINE AREA AS SHOWN. $\frac{3}{16}$ " HOLES AT THE POLE TOP & $\frac{1}{2}$ " HOLES AT THE GROUND LINE.
2. ALL HOLES SHALL BE DRILLED AND MARKING DISK RECESS FORMED BEFORE POLES ARE TREATED.
3. DRILL HOLES THROUGH POLE TOP ON A 45° AXIS TO THAT OF THE HOLES IN THE GROUND-LINE AREA.
4. ALL HOLES SHALL BE COMPLETELY DRILLED THROUGH THE POLE FROM ONE DIRECTION.
5. MAINTAIN A 2 1/2-INCH MINIMUM EDGE DISTANCE AT THE GROUND LINE AND 2" AT THE POLE TOP.



NO.	DESCRIPTION	DATE	BY	DATE	APPROVED
11	ISSUED ORIENTATION, HOLE DIAMETER AND EDGE DISTANCE FOR GROUND-LINE HOLE PATTERN.	JBR 2-08-07	JBR	2/8/07	JBR
10	REVISED NOTES & CHANGED HOLE DIAMETER AND ORIENTATION FOR GROUND-LINE HOLE PATTERN.	JBR 2-03-03	JBR	3/1/03	JBR
9	MODIFIED HOLE PATTERN AND DIMENSION.	CAB 3-7-94	PTB	3/7/94	WAG
8	HOLE PATTERN DIMEN., NOTES & TITLE BLOCK.	S-4E 10-28-84	PTB	10/28/84	WAG
7	CHANGED TITLE BLOCK.	CAB 10-25-82	PTB	10/25/82	WAG
6	ADDED DETAIL V1	ROG 4-18-92	PTB	4/18/92	WAG
5	ORIGINAL DWG DATED 10-28-84				
4	REVISION 5 BEGINNING				
3	REVISION 4				
2	REVISION 3				
1	REVISION 2				

Design	Drawn	Checked	Sub	Rec	Appr	Date
ERE	RHW	ERE EAST	M. N. M.	F. W. FARR		4-16-92

Serial	Sheet	Revision
129321	FDG A1	1 of 11

BONNEVILLE POWER ADMINISTRATION
WOOD POLE STRUCTURES
DOUGLAS FIR POLES
DRILLING & MARKING DETAILS

DATE: JUN 1978