

COURT OF APPEALS
DIVISION II

11 DEC 22 PM 1:53

STATE OF WASHINGTON
BY DM
DEPUTY

NO. 42452-5-II

**COURT OF APPEALS, DIVISION II
OF THE STATE OF WASHINGTON**

POTELCO, INC.,

Appellant,

v.

DEPARTMENT OF LABOR AND INDUSTRIES
OF THE STATE OF WASHINGTON,

Respondent.

BRIEF OF RESPONDENT

ROBERT M. MCKENNA
Attorney General

Sarah L. Martin
Assistant Attorney General
WSBA No. 37068
800 Fifth Avenue, Suite 2000
Seattle, WA 98104-3188
(206) 464-7740

P.M. 12-21-2011

ORIGINAL

TABLE OF CONTENTS

I. INTRODUCTION.....1

II. COUNTERSTATEMENT OF THE ISSUES2

III. COUNTERSTATEMENT OF THE CASE2

IV. STANDARD OF REVIEW.....7

 A. WISHA Standard Of Review.....7

 B. Substantial Evidence.....8

V. ARGUMENT10

 A. The Board Did Not Commit Reversible Error In
 Applying The Standard Of Proof.....10

 1. Potelco waived its argument that the Board applied
 the wrong standard of proof by not raising the issue
 at the Board or superior court.....10

 2. The Board applied the correct standard of proof.....12

 B. Substantial Evidence Supports The Board’s Findings,
 Which Compel The Conclusion That Potelco Violated
 WAC 296-155-657(1)(a)16

 1. WAC 296-155-657(1)(a) applies because
 uncontroverted evidence establishes that the trench
 was approximately 10 feet deep17

 2. Potelco failed to meet the requirement because it
 used no benching, sloping, shoring, shielding, or any
 protective system to protect its employees from
 cave-ins.....22

3.	Employees were exposed to or had access to the violative condition because uncontroverted evidence establishes that a Potelco employee was inside the trench	30
C.	The Violation Was Properly Deemed Serious Because Undisputed Evidence Shows That Death Or Serious Physical Harm Could Result From A Cave-in.....	33
D.	Neither The Department Nor The Board Abused Its Discretion In Assessing A Penalty Of \$2,100	37
VI.	CONCLUSION	39

APPENDICES

Appendix 1.....	WAC 296-155-657
Appendix 2.....	WAC 296-155-66401
Appendix 3.....	WAC 296-155-66403
Appendix 4.....	WAC 296-155-66405
Appendix 5.....	WAC 296-155-66407
Appendix 6.....	WAC 296-155-650

TABLE OF AUTHORITIES

Cases

<i>Adkins v. Aluminum Co. of Am.</i> , 110 Wn.2d 128, 750 P.2d 1257 (1988).....	30, 33
<i>Allen Howe & Son, Inc.</i> , 19 BNA OSHC 1765, 2001 WL 1673742 (No. 01-1077, 2001)....	20, 35
<i>Baird v. Webb</i> , 160 Wash. 157, 294 P. 1000 (1931)	18
<i>Bartel v. Zuckriegel</i> , 112 Wn. App. 55, 47 P.3d 581 (2002).....	8
<i>Carnation Co. v. Hill</i> , 54 Wn. App. 806, 776 P.2d 158 (1989), <i>aff'd</i> , 115 Wn.2d 184, 796 P.2d 416 (1990).....	11
<i>Citizens for Clean Air v. City of Spokane</i> , 114 Wn.2d 20, 785 P.2d 447 (1990).....	12
<i>Cobra Roofing Serv., Inc. v. Dep't of Labor & Indus.</i> , 122 Wn. App. 402, 97 P.3d 17 (2004), <i>aff'd</i> , 157 Wn.2d 90, 135 P.3d 913 (2006).....	8
<i>Danzer v. Dep't of Labor & Indus.</i> , 104 Wn. App. 307, 16 P.3d 35 (2000).....	8, 37, 38
<i>Dep't of Fisheries v. Gillette</i> , 27 Wn. App. 815, 621 P.2d 764 (1980).....	9
<i>Dep't of Labor & Indus., v. Nat'l Sec. Consultants, Inc.</i> , 112 Wn. App. 34, 47 P.3d 960 (2002).....	11
<i>DGHI, Enters. v. Pac. Cities, Inc.</i> , 137 Wn.2d 933, 977 P.2d 1231 (1999).....	15
<i>Elder Demolition, Inc. v. Dep't of Labor and Indus.</i> , 149 Wn. App. 799, 207 P.3d 453 (2009).....	7

<i>Express Constr. Co. v. Dep't of Labor & Indus.</i> , 151 Wn. App. 589, 215 P.3d 951 (2009).....	35
<i>Garney Constr., Inc.</i> , 2002 CCH OSHD ¶ 32670, 2003 WL 21693001 (No. 02-2134, 2003).....	20, 28, 29, 35
<i>Gulf, Colorado & Santa Fe. R.R. v. Washington</i> , 49 F. 347, 349 (8th Cir. 1892)	18
<i>Guy v. Nw. Bible Coll.</i> , 64 Wn.2d 116, 390 P.2d 708 (1964).....	29
<i>Harrison v. Whitt</i> , 40 Wn. App. 175, 698 P.2d 87 (1985).....	9
<i>In re Cascade Utils.</i> , BIIA Dec., 04 W1392, 2006 WL 4046185 (2006).....	20, 32, 33
<i>In re Dennis R. Craig Constr. Co.</i> , BIIA Dckt. No. 98 W0358, 2000 WL 245817 (Jan. 26, 2000).....	35
<i>In re Dependency of Schermer</i> , 161 Wn.2d 927, 169 P.3d 452 (2007).....	14
<i>In re Mahaffey Enters., Inc.</i> , BIIA Dckt. No. 98 W0580, 2000 WL 245835 (Jan. 21, 2000).....	26
<i>In re Marriage of Greene</i> , 97 Wn. App. 708, 986 P.2d 144 (1999).....	9, 36
<i>In re Pilchuck Contractors, Inc.</i> , BIIA Dckt. No. 07 W1102, 2008 WL 4596301 (Jun. 30, 2008)	35
<i>In re Ray Poland & Sons, Inc.</i> , BIIA Dckt. No. 00 W0024, 2001 WL 394831 (Feb. 26, 2001).....	35
<i>In re Roy Farms, Inc.</i> , BIIA Dckt. No. 99 W0228, 2005 WL 3516500 (Oct. 19, 2005).....	35

<i>Ino Ino, Inc. v. City of Bellevue</i> , 132 Wn.2d 103, 937 P.2d 154 (1997), <i>amended</i> , 943 P.2d 1358 (1997).....	8, 9
<i>J.E. Dunn Nw., Inc. v. Dep't of Labor & Indus.</i> , 139 Wn. App. 35, 156 P.3d 250 (2007).....	7, 17, 22
<i>Kelley v. Centennial Contractors Enters., Inc.</i> , 169 Wn.2d 381, 236 P.3d 197 (2010).....	8
<i>Laser Underground & Earthworks, Inc. v. Dep't of Labor & Indus.</i> , 132 Wn. App. 274, 153 P.3d 197 (2006).....	35, 36
<i>Lee Cook Trucking & Logging v. Dep't of Labor & Indus.</i> , 109 Wn. App. 471, 36 P.3d 558 (2001).....	8, 34
<i>Legacy Roofing, Inc. v. Dep't of Labor & Indus.</i> , 129 Wn. App. 356, 119 P.3d 366 (2005).....	10
<i>McCarthy v. Dep't of Soc. & Health Servs.</i> , 110 Wn.2d 812, 759 P.2d 351 (1988).....	29
<i>Mid Mountain Contractors, Inc. v. Dep't of Labor & Indus.</i> , 136 Wn. App. 1, 146 P.3d 1212 (2006).....	passim
<i>Mowat Constr. Co. v. Dep't of Labor & Indus.</i> , 148 Wn. App. 920, 201 P.3d 407 (2009).....	7, 16, 34, 37
<i>Nelson Constr. Co. of Ferndale, Inc. v. Port of Bremerton</i> , 20 Wn. App. 321, 582 P.2d 511 (1978).....	14
<i>P. Gioioso & Sons, Inc.</i> , 17 BNA OSHC 1825, 1996 WL 304532 (No. 95-0322, 1996)	33
<i>Prezant Assocs., Inc. v. Dep't of Labor & Indus.</i> , 141 Wn. App. 1, 165 P.3d 12 (2007).....	10, 12
<i>Renz v. Spokane Eye Clinic, PS</i> , 114 Wn. App. 611, 60 P.3d 106 (2002).....	19

<i>Rogers Potato Serv., LLC v. Countrywide Potato, LLC,</i> 152 Wn.2d 387, 97 P.3d 745 (2004).....	9
<i>Scafar Contracting, Inc.,</i> 18 BNA OSHC 1540, 1998 WL 597441 (No. 97-0960, 1998) 21, 28, 35	
<i>Smith v. Bates Technical Coll.,</i> 139 Wn.2d 793, 991 P.2d 1135 (2000).....	12
<i>Spring v. Department of Labor & Industries,</i> 96 Wn.2d 914, 640 P.2d 1 (1982).....	14
<i>State v. Guloy,</i> 104 Wn.2d 412, 705 P.2d 1182 (1985).....	32
<i>Sunnyside Valley Irrigation Dist. v. Dickie,</i> 149 Wn.2d 873, 73 P.3d 369 (2003).....	9
<i>Superior Asphalt & Concrete Co. v. Dep't of Labor & Indus.,</i> 121 Wn. App. 601, 89 P.3d 316 (2004).....	16
<i>Supervalu, Inc. v. Dep't of Labor & Indus.,</i> 158 Wn.2d 422, 144 P.3d 1160 (2006).....	16
<i>Tabak v. State,</i> 73 Wn. App. 691, 870 P.2d 1014 (1994).....	9
<i>Tokarz v. Ford Motor Co.,</i> 8 Wn. App. 645, 508 P.2d 1370 (1973).....	9
<i>Upjohn v. Russell,</i> 33 Wn. App. 777, 658 P.2d 27 (1983).....	11
<i>Wash. Cedar & Supply Co. v. Dep't of Labor & Indus.,</i> 119 Wn. App. 906, 83 P.3d 1012 (2003).....	8, 34
<i>Willis v. Simpson Inv. Co.,</i> 79 Wn. App. 405, 902 P.2d 1263 (1995).....	15

Statutes

RCW 49.17.060	22, 27, 29
RCW 49.17.060(1).....	16
RCW 49.17.060(2).....	16
RCW 49.17.150	10, 11, 12
RCW 49.17.150(1).....	10, 11, 12
RCW 49.17.180(2).....	34
RCW 49.17.180(6).....	34, 37, 38

Rules

CR 41(b)(3).....	13, 15
CR 52(a)(5)(B).....	13
ER 701	18
RAP 2.5(a)	10, 11

Regulations

29 C.F.R. § 1926.652(a)(1).....	33
WAC 263-12-145(3).....	11
WAC 296-155-650(d).....	23
WAC 296-155-650(q).....	23, 26
WAC 296-155-650(r).....	23, 26
WAC 296-155-650(t).....	23
WAC 296-155-650(w).....	23, 26

WAC 296-155-657(1).....	23
WAC 296-155-657(1)(a)	passim
WAC 296-155-657(1)(a)(ii).....	18
WAC 296-155-657(2).....	23, 24
WAC 296-155-657(2)(a)(ii).....	25
WAC 296-155-657(2)(c)	26
WAC 296-155-657(2)(d)	26
WAC 296-155-657(3).....	23, 24, 26
WAC 296-155-66401.....	23, 24
WAC 296-155-66401(2)(n)(iii)	28
WAC 296-155-66401(3).....	27
WAC 296-155-66403.....	5, 23, 25, 28
WAC 296-155-66405.....	24
WAC 296-155-66407.....	24
WAC 296-900-14010.....	37, 38
WAC 296-900-14015.....	39

I. INTRODUCTION

This is an appeal under the Washington Industrial Safety and Health Act (WISHA), Chapter 49.17 RCW. The Department of Labor and Industries (Department) cited Potelco for violating a WISHA regulation requiring employers to protect their workers from the hazards of excavations. Both the Board of Industrial Insurance Appeals (Board) and the Kitsap County Superior Court affirmed the Department's citation, and this is Potelco's appeal from those decisions.

Substantial evidence in the record shows that Potelco allowed its employee to enter an approximately 10-foot-deep excavation (trench) that was completely unprotected from cave-ins in violation of WAC 296-155-657(1)(a). Because death or serious physical harm could result if a trench such as this one were to cave-in and crush a worker who was inside, the Department properly cited Potelco for a serious WISHA violation and did not abuse its discretion in assessing a penalty of \$2,100.

The record also shows that the Board correctly weighed the evidence, finding that the Department had proven each element by a preponderance of the evidence. Although Potelco did not raise this issue before the Board and has not preserved it for appeal, it is evident from its findings of fact that the Board applied the correct standard of proof in this case.

II. COUNTERSTATEMENT OF THE ISSUES

1. Should this Court decline to consider whether the Board applied the correct standard of proof when Potelco failed to raise the issue at the Board or superior court? Alternatively, did the Board judge apply the correct standard of proof when it denied Potelco's motion to dismiss and went on to weigh the evidence, making findings of fact and conclusions of law?
2. Does substantial evidence support that Potelco violated WAC 296-155-657(1)(a) when uncontroverted testimony in the record establishes that Potelco allowed its employee to enter a trench that was approximately 10 feet deep and unprotected from cave-ins by any of the alternative protective systems (sloping, benching, shielding, or shoring)?
3. Does substantial evidence support the Board's finding and conclusion that Potelco's violation of WAC 296-155-657(1)(a) was serious under RCW 49.17.180(6) when the Department inspector testified that death would have likely resulted from a trench cave-in and every Washington decision to address the issue has concluded the same?
4. Did the Board correctly exercise its discretion in assessing a penalty of \$2,100 based on the Department inspector's uncontroverted testimony that death or permanent disability could have resulted from a trench cave-in?

III. COUNTERSTATEMENT OF THE CASE

On January 17, 2008, on the site of an apartment construction project, Bedrock Construction workers damaged an underground electrical conduit while digging a trench. CP 78-79. At least one person was hospitalized as a result of the incident. CP 90. Richard Harris, superintendent of the building project, called the relevant utility company,

which sent a Potelco, Inc., crew to the site to repair the damage to the electrical conduit inside the trench. CP 78-80. The Potelco crew remained onsite for approximately five hours, until the power was restored. CP 88.

Soon after the Potelco crew arrived, Mr. Harris took a photograph of the trench while a Potelco worker was inside, bending over. CP 80-81, 86, 104, 106, 110 (Exhibit 1).¹ Mr. Harris observed the trench to be approximately 10 feet deep. CP 81-82. He noted that the trench wall shown on the right in the photograph was higher than the trench wall shown on the left. CP 82. The Potelco worker in the photograph appeared to be of normal adult height. CP 82.

The Department of Labor and Industries learned about the trench accident through both a complaint from the electrical union and from the fact that a Bedrock employee was hospitalized. CP 90. John Fening, a Department compliance safety and health officer with approximately 19 years of experience in the field, began an investigation of the incident. CP 89-90. When Inspector Fening arrived at the site, the work in the trench had been completed and the trench filled in. CP 91.

¹ The photograph was admitted as Exhibit 1 at the Board. A black and white copy appears at CP 110, but that copy is not clear. The Department will provide a color copy, which the superior court transmitted to this Court, under separate cover.

Although Potelco did not excavate the trench, Inspector Fening understood Potelco to have an independent responsibility to protect its workers from any potential hazards the trench might pose. CP 105. Thus, after beginning investigations of Bedrock and of the general contractor, Inspector Fening also contacted Bryan Sabari, Potelco's safety manager, and opened an investigation with Potelco through an in-person meeting with Mr. Sabari on February 5, 2008. CP 31 (Finding of Fact 1), 91-92, 100.

During his investigation, Inspector Fening received a copy of the photograph Mr. Harris took of the trench.² CP 91. Inspector Fening contacted a former Potelco employee, Ron Torres, who was the Potelco foreman on the January 17 job. CP 104. Mr. Torres stated that he had entered the trench on January 17 and was inside of the trench when the picture was taken. CP 104, 106. Mr. Torres recognized that the trench was not properly protected from cave-ins and, therefore, entered the trench himself rather than allowing his crew to work in it. CP 104-05.

As a result of his investigation and closely examining Mr. Harris' photograph, Inspector Fening determined that the trench was more than four feet deep and was not protected from cave-ins. CP 92. He based his

² Inspector Fening did not admit that the photograph was inconclusive, as Potelco asserts. *See* App. Br. 8. He agreed that the photograph does not show the entire trench, that the trench "might" look different from different angles, and that he did not physically measure the trench. CP 99.

conclusion that the trench was more than four feet deep on Mr. Harris' direct observation and on the fact that the photograph showed a standard five-foot-long shovel standing against the inside wall of the trench, reaching about the half-way point of the wall's height. CP 101.

Inspector Fening based his conclusion that the trench was not properly protected from cave-ins on what he observed from the photograph. CP 92, 101. He observed that there was no physical shield or shoring mechanism present inside of the trench. CP 102. Although he observed one stair that may have been an attempt at benching, Inspector Fening saw from the photograph that each wall's slope was steeper than an angle of 45 degrees from the horizontal, which was the maximum allowable slope for this type of soil. CP 102-03; *see also* WAC 296-155-66403 Table N-1 (explaining that a ratio of one-to-one from the horizontal equals 45 degrees).

Inspector Fening recommended that Potelco be cited for one serious violation of WAC 296-155-657(1)(a). He assessed a severity level of six, the highest on the scale, because if the trench had caved in with a worker inside, the accident could have been fatal. CP 93-94. He assessed a probability level of two, the second to the lowest on the scale, because the probability of such an accident was fairly low. CP 94. Applying the

other factors required by the relevant regulations, Inspector Fening recommended a penalty of \$2,100. CP 95-97.

Based on the recommendation, the Department issued a citation for one serious violation of WAC 296-155-657(1)(a) and assessed a penalty of \$2,100. CP 31 (Finding of Fact 1). Potelco appealed the citation and notice of penalty assessment to the Board of Industrial Insurance Appeals. CP 34. A hearing was held before an industrial appeals judge. The Department called two witnesses—Mr. Harris and Inspector Fening—who testified consistent with the facts above. *See* CP 29-30. At the close of the Department's case in chief, Potelco's counsel stated that he did not believe the Department had made a prima facie case. CP 107. Potelco then rested without calling any witnesses or presenting any evidence. *Id.*

The Board judge issued a proposed decision and order affirming the citation. CP 28-33. Potelco filed a petition for review to the Board, in which it argued that the Department had not made a prima facie case and that even if it had, the violation should not be deemed serious. CP 9-23. The Board denied the petition for review, adopting the proposed decision and order as the final decision and order of the Board. CP 5.

Potelco appealed to Kitsap County Superior Court. After a bench trial, the superior court affirmed the Board's decision, entering findings of fact and conclusions of law. CP 142-44. Potelco appealed to this Court.

IV. STANDARD OF REVIEW

A. WISHA Standard Of Review

In a WISHA appeal, this Court directly reviews the Board's decision based on the record before the agency. *J.E. Dunn Nw., Inc. v. Dep't of Labor & Indus.*, 139 Wn. App. 35, 42, 156 P.3d 250 (2007). The Board's findings of fact are conclusive if they are supported by substantial evidence when viewed in light of the record as a whole. *Mowat Constr. Co. v. Dep't of Labor & Indus.*, 148 Wn. App. 920, 925, 201 P.3d 407 (2009) (citing RCW 49.17.150(1)). Unchallenged findings of fact are verities on appeal. *Mid Mountain Contractors, Inc. v. Dep't of Labor & Indus.*, 136 Wn. App. 1, 4, 146 P.3d 1212 (2006).

This Court reviews whether the Board's findings of fact support its conclusions of law. *Id.* WISHA statutory provisions and regulations must be interpreted in light of WISHA's stated purpose of ensuring safe and healthful working conditions for all Washington workers. *Elder Demolition, Inc. v. Dep't of Labor and Indus.*, 149 Wn. App. 799, 806, 207 P.3d 453 (2009) (citing RCW 49.17.010). In interpreting WISHA, courts look for guidance to federal cases interpreting similar provisions of the federal Occupational Safety & Health Act (OSHA). *Id.* This Court gives great deference to the Department's interpretation of WISHA. *See*

Lee Cook Trucking & Logging v. Dep't of Labor & Indus., 109 Wn. App. 471, 478 n.7, 36 P.3d 558 (2001).

The WISHA penalty amount is reviewed for an abuse of discretion. *Danzer v. Dep't of Labor & Indus.*, 104 Wn. App. 307, 326, 16 P.3d 35 (2000). A fact finder abuses its discretion when its decision is manifestly unreasonable or exercised on untenable grounds or for untenable reasons. *Kelley v. Centennial Contractors Enters., Inc.*, 169 Wn.2d 381, 386, 236 P.3d 197 (2010).

B. Substantial Evidence

Appellate courts give deference to the fact finder's (here, the Board's) findings of fact because the fact finder is in the best position to weigh disputed facts and determine the credibility of witnesses. *Bartel v. Zuckriegel*, 112 Wn. App. 55, 62, 47 P.3d 581 (2002). This is especially true when the fact finder is an agency addressing issues within its area of expertise. See *Wash. Cedar & Supply Co. v. Dep't of Labor & Indus.*, 119 Wn. App. 906, 914, 83 P.3d 1012 (2003); *Cobra Roofing Serv., Inc. v. Dep't of Labor & Indus.*, 122 Wn. App. 402, 411, 97 P.3d 17 (2004), *aff'd*, 157 Wn.2d 90, 135 P.3d 913 (2006).

Therefore, the Court of Appeals must uphold the Board's findings of fact if they are supported by substantial evidence. See *Ino Ino, Inc. v. City of Bellevue*, 132 Wn.2d 103, 112, 937 P.2d 154 (1997), *amended*, 943

P.2d 1358 (1997). Evidence is substantial if it is sufficient to convince a fair-minded person of the truth of the declared premise. *Id.*

The Court of Appeals does not weigh evidence or make credibility determinations on appeal. *In re Marriage of Greene*, 97 Wn. App. 708, 714, 986 P.2d 144 (1999). Likewise, the reviewing court will not substitute its judgment for that of the fact finder even though it may have resolved a factual dispute differently. *Sunnyside Valley Irrigation Dist. v. Dickie*, 149 Wn.2d 873, 879-80, 73 P.3d 369 (2003).

A plaintiff may establish any fact by circumstantial evidence. *Tabak v. State*, 73 Wn. App. 691, 696, 870 P.2d 1014 (1994). Indeed, circumstantial evidence is “as good” as direct evidence. *Rogers Potato Serv., LLC v. Countrywide Potato, LLC*, 152 Wn.2d 387, 391, 97 P.3d 745 (2004). Findings do not rest on mere speculation or conjecture when they are based on reasonable inferences drawn from circumstantial facts. *Harrison v. Whitt*, 40 Wn. App. 175, 177, 698 P.2d 87 (1985). An inference is a logical conclusion or deduction from an established fact. *Tokarz v. Ford Motor Co.*, 8 Wn. App. 645, 654, 508 P.2d 1370 (1973). On appeal, the reviewing court may affirm findings based entirely on circumstantial evidence. *See Dep’t of Fisheries v. Gillette*, 27 Wn. App. 815, 821-22, 621 P.2d 764 (1980).

V. ARGUMENT

A. The Board Did Not Commit Reversible Error In Applying The Standard Of Proof

1. Potelco waived its argument that the Board applied the wrong standard of proof by not raising the issue at the Board or superior court

For the first time on appeal, Potelco argues that the industrial appeals judge applied the wrong standard of proof. This Court should decline to consider that argument because Potelco did not preserve the issue for appeal.

Regarding appeals from the Board to superior court, WISHA states that the court may not consider errors that were not first raised before the Board:

No objection that has not been urged before the board shall be considered by the court, unless the failure or neglect to urge such objection shall be excused because of extraordinary circumstances.

RCW 49.17.150(1). RAP 2.5(a) similarly restricts this Court from considering issues that were not raised below. Applying these two provisions, the Court of Appeals has consistently refused to consider issues not specifically argued at the Board in WISHA appeals. *Prezant Assocs., Inc. v. Dep't of Labor & Indus.*, 141 Wn. App. 1, 10 n.4, 165 P.3d 12 (2007) (citing RCW 49.17.150 and RAP 2.5(a)); *Legacy Roofing, Inc. v. Dep't of Labor & Indus.*, 129 Wn. App. 356, 361-62, 119 P.3d 366

(2005) (citing RCW 49.17.150(1) and RAP 2.5(a)); *Dep't of Labor & Indus., v. Nat'l Sec. Consultants, Inc.*, 112 Wn. App. 34, 37, 47 P.3d 960 (2002) (emphasizing that RCW 49.17.150's exclusion is mandatory, not permissive).

The Board has also promulgated rules regarding the preservation of errors. Its rule regarding petitions for review explicitly requires parties to raise objections in petitions for review or else waive those objections:

A petition for review shall set forth in detail the grounds for review. A party filing a petition for review *waives all objections or irregularities not specifically set forth therein*. . . . If legal issues are involved, the petition for review shall set forth the legal theory relied upon and citation of authority and/or argument in support thereof. . . .

WAC 263-12-145(3) (emphasis added); *see also Carnation Co. v. Hill*, 54 Wn. App. 806, 810-11, 776 P.2d 158 (1989), *aff'd*, 115 Wn.2d 184, 796 P.2d 416 (1990) (reiterating that an aggrieved party waives objections not raised at the Board); *accord Upjohn v. Russell*, 33 Wn. App. 777, 782, 658 P.2d 27 (1983).

Here, Potelco filed a petition for review from the industrial appeals judge's proposed decision and order. CP 9-23. Nowhere in its petition for review did Potelco argue that the judge had applied the wrong standard of proof. *See id.* It also did not argue the issue in its bench trial brief in superior court. *See* CP 111-28. Thus, Potelco has waived the argument.

See RCW 49.17.150; *Prezant*, 141 Wn. App. at 10 n.4; *Nat'l Sec. Consultants*, 112 Wn. App. at 37-38 (refusing to consider an issue when the aggrieved party did not explicitly argue it and the Board did not explicitly rule on it in its ultimate findings and conclusions).

Potelco has not identified any extraordinary circumstances justifying its failure to raise this issue before the Board, and the record shows none. *See* RCW 49.17.150(1). Because Potelco neither raised this issue at the Board nor showed extraordinary circumstances, this issue should not be considered for the first time on appeal.³

2. The Board applied the correct standard of proof

Even assuming Potelco properly preserved this issue for appeal, which it did not, the Court should reject Potelco's argument because the Board correctly denied the motion to dismiss and proceeded to weigh all of the evidence.

Potelco's counsel stated at the close of the Department's case in chief that it did not believe the Department had made a prima facie case. CP 107. The Board judge apparently interpreted this statement to be a

³ Similarly, the doctrine of exhaustion of administrative remedies should operate to exclude Potelco's new argument. *See Smith v. Bates Technical Coll.*, 139 Wn.2d 793, 808, 991 P.2d 1135 (2000). Requiring Potelco to exhaust its administrative remedies serves the purposes of, among others, allowing the Board to exercise its expertise and correct its own errors. *See Citizens for Clean Air v. City of Spokane*, 114 Wn.2d 20, 30, 785 P.2d 447 (1990) (listing five purposes).

motion to dismiss under CR 41(b)(3). *See* CP 29 (“Potelco, Inc.’s attorney moved for an order of dismissal . . .”). The Board judge denied the motion and then went on to weigh all of the evidence and make findings of fact and conclusions of law. CP 29-32.

Under CR 41(b)(3), the court considering a motion to dismiss has two options—it can either grant the motion and enter judgment against the plaintiff, or it can deny the motion and proceed to hear the defendant’s evidence. If it grants the motion, the court must enter findings of fact and conclusions of law because granting the motion operates as an adjudication on the merits of the plaintiff’s case. *See* CR 41(b)(3). But denying the motion requires no such findings because the court is declining to render judgment until the close of all the evidence. *See id.*; *see also* CR 52(a)(5)(B) (findings of fact are not required except in situations not applicable to this case).

In this case, after the Department’s case in chief, Potelco moved to dismiss. Then, although the Board gave Potelco a full opportunity to present evidence to refute the Department’s case, Potelco presented none. The Board judge denied the motion to dismiss, viewing all of the evidence in the light most favorable to the Department and ruling as a matter of law that the Department had made a prima facie case. CP 29. This legal ruling required no findings of fact. *See* CR 41(b)(3); CR 52(a)(5)(B).

The judge then went on to weigh all of the evidence presented in the case, as indicated by his written findings of fact and conclusions of law. See CP 31-32; *In re Dependency of Schermer*, 161 Wn.2d 927, 939-40, 169 P.3d 452 (2007) (“The entry of findings strongly suggests that the trial court weighed the evidence because no findings or conclusions are required when the court views the evidence in the light most favorable to the plaintiff and rules as a matter of law.”); accord *Nelson Constr. Co. of Ferndale, Inc. v. Port of Bremerton*, 20 Wn. App. 321, 327, 582 P.2d 511 (1978). Thus, the Board applied the correct standard by weighing all of the evidence after denying the motion to dismiss.

Further, it is clear that the Board judge was aware that findings of fact were not required in support of his ruling on the motion to dismiss. The Board judge cited *Spring v. Department of Labor & Industries*, 96 Wn.2d 914, 640 P.2d 1 (1982), for the motion to dismiss standard. CP 29. *Spring* clarified that ruling on a motion to dismiss as a matter of law does not require findings of fact. 96 Wn.2d at 918 (“In ruling as a matter of law, the court does not make factual determinations or evaluate the credibility of plaintiff’s evidence”) (internal quotation omitted). This is further evidence that the Board judge intended to weigh the evidence after denying the motion, and his findings were based on a preponderance of the evidence standard.

Potelco asserts that “[i]t is unclear” why the Board applied the standard for judgment as a matter of law. App. Br. 15. It is clear, however, that the Board judge considered Potelco’s oral statement to be a motion to dismiss for failure to make a prima facie case. CP 29. Potelco itself characterizes its statement that way in its brief to this Court. App. Br. 12.

The standards for dismissal for judgment as a matter of law (directed verdict) and motions to dismiss for failure to make a prima facie case under CR 41(b)(3) are the same. *DGHI, Enters. v. Pac. Cities, Inc.*, 137 Wn.2d 933, 952 n.1, 977 P.2d 1231 (1999); *Willis v. Simpson Inv. Co.*, 79 Wn. App. 405, 410, 902 P.2d 1263 (1995). Thus, given the judge’s understanding that Potelco had filed a motion to dismiss under CR 41(b)(3), he was correct in first applying the standard for judgment as a matter of law and denying the motion before weighing the evidence in the case.

It is possible that Potelco’s comment at the conclusion of the Department’s case was not intended to be a motion to dismiss. But if the Board erred in considering it a motion, any error was harmless since the judge merely denied the motion as a matter of law and proceeded to weigh all of the evidence and render a decision on the merits of Potelco’s appeal. Potelco’s arguments to the contrary should be rejected.

B. Substantial Evidence Supports The Board's Findings, Which Compel The Conclusion That Potelco Violated WAC 296-155-657(1)(a)

Employers are statutorily mandated to comply with all rules and regulations the Department promulgates under WISHA. *Superior Asphalt & Concrete Co. v. Dep't of Labor & Indus.*, 121 Wn. App. 601, 604, 89 P.3d 316 (2004) (citing RCW 49.17.060(2), the "specific duty clause"). Unlike under WISHA's general duty clause,⁴ citations under this specific duty clause do not require the Department to prove that a hazard exists. *Supervalu, Inc. v. Dep't of Labor & Indus.*, 158 Wn.2d 422, 433-34, 144 P.3d 1160 (2006). Rather, the standards set forth in properly promulgated rules and regulations presume a hazard, and the Department must only show that the standard in question was violated. *Id.*; *Mowat Constr.*, 148 Wn. App. at 930.

Accordingly, to make a prima facie case of a serious violation of a specific rule under WISHA, the Department bears the initial burden of proving the following elements:

- (1) the cited standard applies;
- (2) the requirements of the standard were not met;
- (3) employees were exposed to, or had access to, the violative condition;
- (4) the employer

⁴ The general duty clause obligates an employer to "furnish to each of his employees a place of employment free from recognized hazards that are causing or likely to cause serious injury or death to his employees." RCW 49.17.060(1). A violation of this clause requires proof that the employer failed to protect the workplace from a recognized hazard. *Supervalu, Inc. v. Dep't of Labor & Indus.*, 158 Wn.2d 422, 433, 144 P.3d 1160 (2006).

knew or, through the exercise of reasonable diligence, could have known of the violative condition; and (5) there is a substantial probability that death or serious physical harm could result from the violative condition.

J.E. Dunn Nw., 139 Wn. App. at 44-45 (internal quotation omitted).

In this case, the Department cited Potelco for one violation of WAC 296-155-657(1)(a), which states:

Each employee in an excavation shall be protected from cave-ins by an adequate protective system designed in accordance with subsections (2) or (3) of this section except when:

- (i) Excavations are made entirely in stable rock; or
- (ii) Excavations are less than 4 feet (1.22m) in depth and examination of the ground by a competent person provides no indication of a potential cave-in.

Potelco appears to challenge the sufficiency of the evidence to support four of these five elements of the violation—(1) the standard applies; (2) Potelco violated the standard; (3) Potelco employees were exposed to the hazard; and (5) there is a substantial probability that death or serious physical harm could have resulted from the violation. These elements will be addressed in turn.

1. WAC 296-155-657(1)(a) applies because uncontroverted evidence establishes that the trench was approximately 10 feet deep

Potelco argues that two individuals' independent estimates of the trench depth do not constitute substantial evidence that the trench was at least four feet deep. App. Br. 20-21. Because lay estimates of depth are

probative of that fact, the Department met its burden to prove that WAC 296-155-657(1)(a) applies, and substantial evidence supports Finding of Fact 2. *See* CP 31.

It has long been held in Washington that lay witnesses can properly testify to an estimate of distance “or some similar matter” when it is within common perception and about which experts have no advantage over lay persons. *See Baird v. Webb*, 160 Wash. 157, 161-63, 294 P. 1000 (1931). Lay witness opinion testimony is also admissible if it is rationally based on the witness’ perception and is helpful to a clear understanding of the testimony or the determination of a factual issue. ER 701. “[T]o hold that a witness could not testify to the distance between objects, or the distance a given object could be seen from a particular stand-point familiar to him, unless he had actually measured the distance, would entail intolerable expense and delay in the administration of the law” *Baird*, 160 Wash. at 162 (quoting *Gulf, Colorado & Santa Fe. R.R. v. Washington*, 49 F. 347, 349 (8th Cir. 1892)).

The Department’s citation in this case required evidence that the trench in question was at least four feet deep. *See* WAC 296-155-657(1)(a)(ii). Mr. Harris testified that he was on site that day, personally observed the trench with a person inside, and estimated it to be about 10 feet deep. CP 80-82. Inspector Fening looked at the photograph (Exhibit

1, CP 110), which included both a person bending over and a shovel estimated to be five feet long,⁵ inside the trench and well below the top. He concluded that the trench was at least four feet deep. CP 92, 101. These separate lay estimates of depth each constitute substantial evidence that the trench was at least four feet deep.

Potelco argues that Inspector Fening should have measured the trench. App. Br. 20-21. Because lay estimates of depth are competent, and there is no reason that Mr. Harris' first-hand observation and estimate were not competent, the Board was entitled to believe the evidence that the trench was approximately 10 feet deep, a full six feet deeper than needed to trigger the requirements of WAC 296-155-657(1)(a). At best, Potelco's argument is relevant to the weight the fact finder gives the undisputed lay evidence, but it does not negate the fact that the Department produced substantial evidence to prove this fact. *See Renz v. Spokane Eye Clinic, PS*, 114 Wn. App. 611, 623, 60 P.3d 106 (2002) ("Our job is to pass upon whether a burden of production has been met, not whether the evidence *produced* is persuasive.").

⁵ Inspector Fening testified that standard shovels are five feet long from toe to head. CP 101. The photograph clearly shows the shovel in relation to the person standing in the trench. *See* CP 110 (Exhibit 1). Given Inspector Fening's extensive experience in the field, it was reasonable for him to recognize the shovel as a standard-sized one and to estimate the trench depth based in part on that fact. The record does not support Potelco's argument to the contrary (App. Br. 21).

Potelco cites administrative decisions in support of its argument that actual measurements are required to prove a violation of this regulation's "highly technical requirements." App. Br. 18-19. But those decisions do not hold that measurements are required to meet the Department's burden. They are merely examples of cases in which measurements were noted in the record or found to be insufficient based on the particular facts presented. *See In re Cascade Utils.*, BIIA Dec., 04 W1392, 2006 WL 4046185, at *8 (2006) (concluding that the Department's evidence did not outweigh the employer's when the inspector did not measure the trench and there was conflicting evidence about its depth)⁶; *Garney Constr., Inc.*, 2002 CCH OSHD ¶ 32670, 2003 WL 21693001, at *4-5 (No. 02-2134, 2003) (ALJ) (discussing the trench's width at the top and bottom in order to calculate whether the slope was adequate); *Allen Howe & Son, Inc.*, 19 BNA OSHC 1765, 2001 WL 1673742, at *1-3 (No. 01-1077, 2001) (ALJ) (affirming a violation based on insufficient sloping when the inspector approximated the depth of the

⁶ This Court should not follow *Cascade Utilities* for the additional reason that it rested on a premise that this Court has held to be incorrect. *See Mid Mountain*, 136 Wn. App. at 5 (holding that an employee had access to the unprotected trench even if the employee was working in the portion of the trench that was less than four feet deep). This is discussed more fully below at 32-33.

trench, used an angle indicator to approximate the slope of the trench walls, and examined the soil visually and manually).⁷

Potelco also cites *Scafar Contracting, Inc.*, 18 BNA OSHC 1540, 1998 WL 597441, at *10 (No. 97-0960, 1998) (ALJ), for the proposition that measurements are required. App. Br. 18-19. The portion of this case Potelco quoted concludes a discussion of conflicting evidence regarding both the trench's depth and the slope of its walls. The fact finder was simply more persuaded by the employer's evidence on these two factual issues and disagreed with the Secretary's explanation that the employer witnesses were not credible. In this complicated case involving several trenches and conflicting evidence, the judge held that the Secretary had not produced a preponderance of reliable evidence as to three of the five items on appeal. *Id.* at *10.

Just as the fact finder in *Scafar* was entitled to find the employer's evidence more persuasive, the Board judge in this case was entitled to be persuaded that the Department had proven a violation of the analogous Washington regulation. Nothing in *Scafar* or any of the cases cited by Potelco supports its argument that a lack of precise measurement is

⁷ Significant Board decisions can be found on the Board's website (www.bia.wa.gov/search-page.htm) and on Westlaw in the wawc-admin database. OSHA decisions can be found on the Occupational Safety & Health Review Commission's website (www.oshrc.gov/decisions/index.html) and on Westlaw in the flb-osrc and flb-osrcalj databases.

insufficient as a matter of law to prove a violation of this regulation. Therefore, these decisions cannot justify overturning the Board's findings of fact for lack of substantial evidence.

Moreover, the "highly technical requirements" of WAC 296-155-657(1)(a) are obligations of Potelco, not of the Department. Potelco had a duty to comply with the requirements of the regulation, and the Department had the burden to prove by a preponderance of the evidence that Potelco failed in its duty. *Compare* RCW 49.17.060, with *J.E. Dunn Nw.*, 139 Wn. App. at 44-45. Potelco may not reverse these duties by stating that the Department had a duty to take particular measurements the regulations require employers to take. For these reasons, the Court should affirm the Board's finding that the standard applies because the trench was more than four feet deep.

2. Potelco failed to meet the requirement because it used no benching, sloping, shoring, shielding, or any protective system to protect its employees from cave-ins

Potelco asserts that there is not substantial evidence to support the finding that the trench was not protected from cave-ins by an adequate protective system. *See* CP 31 (Finding of Fact 2). This argument should be rejected because uncontroverted evidence shows that Potelco did not use any protective system in the trench.

Employers must use at least one protection system from WAC 296-155-657(2) or (3) for excavations of more than four feet that are not made entirely in stable rock. WAC 296-155-657(1).

Subsection (2) describes sloping and benching systems and provides four alternatives for compliance. WAC 296-155-657(2). As it sounds, “sloping” entails building an excavation’s walls so that they are inclined away from the excavation. WAC 296-155-650(t) (definition). “Benching” means building “a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.” WAC 296-155-650(d) (definition). Unless a benching or sloping system is designed in accordance with written data or engineered design that have been produced to the Department upon request, the steepest slope allowed for type B soil under subsection (2) is 45 degrees from the horizontal. *See* WAC 296-155-657(2), 296-155-66401, 296-155-66403.

Subsection (3) of the WAC describes support systems, shield systems, and other protective systems, including shoring, and also provides four alternatives for compliance. WAC 296-155-657(3). Support systems, shield systems, and shoring are all three defined to require a structure constructed out of some material, such as timber or metal. *See* WAC 296-155-650(q), (r), (w) (definitions); *see also* WAC 296-155-657(3) (“Designs . . . shall be selected *and constructed* by the

employer) (emphasis added). Unless a protective system is designed in accordance with written data or engineered design that have been produced to the Department upon request, the system must be constructed of timber or aluminum. *See* WAC 296-155-657(3), 296-155-66401, 296-155-66405, 296-155-66407.

Before recommending the citation in this case, Inspector Fening held an opening conference with Potelco's safety manager. CP 91-92. He also held similar conferences with Bedrock Construction and the general contractor. CP 91, 100. It is reasonable to infer from the record that neither Potelco nor Bedrock used any official, written designs or data allowed under WAC 296-155-657(2) or (3), or else those would have been produced upon request during the investigation as required by the WAC.

In the absence of any indication that the trench was constructed using acceptable written data or design, and given the fact that the trench had already been filled in, Inspector Fening reasonably consulted all of the sources available to him—Mr. Harris, Potelco's former employee Ron Torres, Potelco's safety manager, and the photograph (Exhibit 1). He testified that the photograph clearly showed that no benching, sloping, or protective system was used in the trench. CP 92, 101-03.

A shield or shoring would be visible against the inside walls of the trench, but the photograph showed no such system. CP 102. Similarly,

Inspector Fening could see from the photograph that although there was one attempt at a single stair built into the dirt, it was insufficient to qualify as proper benching. CP 102. Likewise, the photograph showed improper sloping. Potelco's counsel specifically asked Inspector Fening whether he would need to measure the slope to know whether it was adequate, and he answered "no," explaining that the slope for the sides of this trench in type B soil would need to be one-to-one, or 45 degrees from the horizontal (*see* WAC 296-155-66403 Table N-1), which was noticeably not met here. CP 103.

Potelco argues that Inspector Fening was not able to tell from a photograph whether an adequate system was in place. App. Br. 23. To the contrary, a close reading of the regulations illustrates that these systems would be visible to the naked eye. Exhibit 1 clearly shows that the walls of the excavation are close to 90 degrees from the horizontal (straight up and down vertically), drastically steeper than the 45 degrees allowed for type B soil. *See* WAC 296-155-657(2)(a)(ii), 296-155-66403 Table N-1. It also shows the contents of the trench, which does not include any shielding or protective system made of timber, aluminum, or some other protective material. A benching system (or series of steps), likewise cannot be seen in Exhibit 1. These systems simply were not

present in the excavation at all, as Inspector Fening or any other person could see by examining the photograph.

Contrary to Potelco's arguments, the Board has previously relied on photographic evidence to support its findings regarding violations of WAC 296-155-657(1)(a). See *In re Mahaffey Enters., Inc.*, BIIA Dckt. No. 98 W0580, 2000 WL 245835 (Jan. 21, 2000) (relying on photographs to support the findings that the trench was more than four feet deep, the soil was type B, and the trench was not adequately benched or sloped).

Likewise, a system designed by a registered engineer or one that is based on tabulated data would also be visible, contrary to Potelco's argument that the trench's physical characteristics are irrelevant when these options are used (App. Br. 17-18, 22). An employer selecting one of these options still needs to implement either a sloping system that adequately protects its workers from the risk of cave-ins (WAC 296-155-657(2)(c), (d) (allowing slopes that have been "determined to be safe")), or a protective system constructed out of some material (WAC 296-155-657(3); WAC 296-155-650(q), (r), (w) (defining these physical structures)). Inspector Fening testified that there was no system whatsoever in this trench, and it is apparent from Exhibit 1 that the walls of the trench were not sloped at all. CP 102-03, 110.

Had the photograph revealed that Potelco attempted some protective system, such as sloping, it is possible that the Department would have needed to present evidence that it measured the slope in order to satisfy the substantial evidence standard. Since Potelco used no sloping or other protective system in this trench, measurements are simply unnecessary to meet this standard. The photograph alone makes it abundantly clear to a fair-minded person that the slope of the trench's walls was much greater than 45 degrees (around 90 degrees, in fact) and that no other protective system was present inside the trench. The record is not detailed regarding a particular protective system because Potelco used none. This Court should not interpret Potelco's complete lack of compliance with the rule to be the Department's failure to prove its case.

Potelco also argues that Inspector Fening did not do proper tests on the soil in order to conclude that it was type B. App. Br. 23. Potelco cites no authority holding that a Department safety inspector must perform a particular test on the soil before concluding that the soil is a particular type. To the contrary, WISHA and its corresponding regulations place on *employers* an affirmative duty to protect their workers in the ways required by the rules. *See* RCW 49.17.060 ("Each employer" shall protect its employees from recognized hazards and comply with the WISHA rules and regulations); WAC 296-155-66401(3) (requiring employers to classify

the soil type through visual and manual analyses by a competent person); *Garney Constr.*, 2002 CCH OSHD ¶ 32670, 2003 WL 21693001, at *6-8 (discussing the employer's duty to perform soil tests under the analogous federal regulation).

It is reasonable to infer from the record that Inspector Fening learned the soil type after speaking with Mr. Harris, Bedrock, and Potelco and after physically visiting the site. The fact that he did not explain in detail how he determined the soil type does not change the fact that his testimony is substantial evidence that the soil is type B. Potelco's argument is relevant to, if anything, how the fact finder weighs the evidence, which is beyond the appellate role of this Court to consider.⁸

Similarly, Potelco implies that it reasonably relied on Bedrock's assurance that the trench was safe and that the Department had a duty to determine whether this reliance was reasonable by following up with Bedrock. App. Br. 23. This argument ignores the fact that every

⁸ If the Court considers Potelco's argument, then it should conclude that the soil is type B because it has been previously disturbed, as evidenced by the fact that an electrical line was installed under the soil at some time prior to Bedrock digging the trench. See WAC 296-155-66401(2)(n)(iii) (type B soil includes previously disturbed soils other than those that are classified as type C); *Scafar Contracting*, 18 BNA OSHC 1540, 1998 WL 597441, at *5 (finding that soil was previously disturbed because a sewer line was placed in the ground in the 1880s). In this case, soil type is relevant only to the allowed slope of the trench walls. Type B soil requires a slope of no steeper than 45 degrees from the horizontal. WAC 296-155-66403 Table N-1. But even if the soil were type C (the only other type that includes previously disturbed soil), the slope would need to be even less steep—no more than 34 degrees from the horizontal. In any event, trenches in all soil types require adequate protective systems, none of which were present in this case.

employer in the State of Washington has a positive, nondelegable duty to provide its own workers with a reasonably safe place to work and to protect its own workers from recognized hazards. RCW 49.17.060; *Guy v. Nw. Bible Coll.*, 64 Wn.2d 116, 118, 390 P.2d 708 (1964); *see also McCarthy v. Dep't of Soc. & Health Servs.*, 110 Wn.2d 812, 818, 759 P.2d 351 (1988) (the common law duty was codified in WISHA). An employer may not escape that duty simply because another party may have been negligent. *Guy*, 64 Wn.2d at 118. Potelco had an affirmative duty to protect its own employees from the hazards of the unprotected trench, regardless of the fact that Bedrock employees may have constructed the trench and incorrectly assured others that it was safe to enter.

Potelco also contends that the photograph (Exhibit 1) only showed a portion of the trench. However, the entire portion of the trench that was at least four feet deep had to be adequately protected from cave-ins. *See Mid Mountain*, 136 Wn. App. at 3, 7 (affirming a violation when only one wall was not properly sloped); *Garney Constr.*, 2002 CCH OSHD ¶ 32670, 2003 WL 21693001, at *5 (“all faces of the excavation must be sloped or benched . . .”). The fact that there could be a portion not shown in the photograph that was adequately protected does not negate that the photograph clearly shows an unprotected trench of more than four feet deep. Potelco’s argument should be rejected.

3. Employees were exposed to or had access to the violative condition because uncontroverted evidence establishes that a Potelco employee was inside the trench

Potelco appears to challenge the sufficiency of the Department's evidence for the third element, that employees were exposed to or had access to the violative condition, when it argues that the Department did not prove that the person in the photograph was a Potelco employee. *See* App. Br. 21. The Court should reject this argument because the Department presented uncontroverted evidence that a Potelco employee was in the trench on January 17, 2008. Finding of Fact 3 is supported by substantial evidence and should be affirmed. *See* CP 31.

To prove that workers had access to a violative condition requires the Department to show "by 'reasonable predictability that, in the course of [the workers'] duties, employees will be, are, or have been in the zone of danger.'" *Mid Mountain*, 136 Wn. App. at 5 (quoting *Adkins v. Aluminum Co. of Am.*, 110 Wn.2d 128, 147, 750 P.2d 1257 (1988)). In the case of an unprotected trench, this test is met if the employees work inside the trench within proximity of the unprotected portion that is more than four feet deep (*i.e.*, are within the "zone of danger" of the hazardous condition). *Mid Mountain*, 136 Wn. App. at 7.

The fallacy of Potelco's argument is that the Department need not prove that a Potelco employee is pictured in Exhibit 1. Exhibit 1 graphically depicts the trenching hazard to which Potelco employees were exposed. The Department proved, by other evidence, that a Potelco employee was exposed to the hazard depicted in Exhibit 1 at some point on the date in question. Whether Exhibit 1 depicts that particular employee is irrelevant. Potelco cites no authority for its implicit argument that a photograph must depict every element of a safety violation in order to be probative. Exhibit 1 shows the dangerous condition of the trench in question, but it is not the sum total of the Department's case.

The Department has easily proven that employees were exposed to the hazard. Inspector Fening testified that he interviewed Ron Torres, a former Potelco employee who was at the work site on January 17, 2008. CP 30. Mr. Torres told Inspector Fening directly that he went inside of the trench on that day, when he was still a Potelco employee. *Id.* It is completely irrelevant whether he was in the trench at the moment the photograph was taken, or what the depth was of the portion of the trench that he was in, as long as he was within the zone of danger of the hazard.

Mr. Harris also testified that a Potelco crew arrived on the scene in order to fix the electrical conduit problem inside the trench, and that at the time he took the photograph, he was not aware of any other persons who

would have been present on the site. CP 79-80, 81, 86. In its brief, Potelco admits that it sent a crew to respond to the emergency call, which involved a broken electrical conduit inside the trench. App. Br. 5-6. Thus, it would be disingenuous for Potelco to argue now that the Department has not proved that Potelco employees had access to the unprotected trench on January 17.

Potelco argues that the Department presented hearsay evidence on this issue, namely, the interview with Ron Torres. App. Br. 21. But Potelco failed to object to this testimony during the hearing, has waived this objection, and, therefore, cannot challenge the alleged hearsay for the first time on appeal. *See State v. Guloy*, 104 Wn.2d 412, 421-22, 705 P.2d 1182 (1985).

Potelco cites the Board's decision in *Cascade Utilities*, which vacated a citation based on the fact that it was not clear whether the worker was in a part of the trench that was at least four feet. App. Br. 18 (citing *Cascade Utils.*, BIIA Dec., 04 W1392). However, based on this Court's and the Supreme Court's decision in *Mid Mountain*, discussed above, *Cascade Utilities* was wrongly decided because it held that the worker had to be in a particular portion of the trench.

There is no requirement that in order to prove a violation, the Department must prove that an employee was within the portion of the

unprotected trench that was more than four feet deep. In applying the “zone of danger” test, this Court in *Mid Mountain* explicitly rejected that identical argument. 136 Wn. App. at 5 (“It is irrelevant that Mid Mountain’s employees were in a portion of the trench less than four feet in depth.”). At least one federal decision has concluded the same. *P. Gioioso & Sons, Inc.*, 17 BNA OSHC 1825, 1996 WL 304532, at *4 (No. 95-0322, 1996) (ALJ) (“But no matter where they were standing, the employees were still inside a trench that was not protected in accordance with [29 C.F.R.] § 1926.652(a)(1),” which “speaks of the depth of the trench, not of the position of employees in the trench.”) (internal quotation omitted).

Since the holding in *Cascade Utilities* directly conflicts with *Mid Mountain* and *Adkins* in that it requires the Department to prove that an employee was inside of the portion of the unprotected trench that was more than four feet deep, this Court should not treat it as persuasive authority or rely on it for any of the reasons Potelco cited it in its brief. *See* App. Br. 16, 18, 24.

C. The Violation Was Properly Deemed Serious Because Undisputed Evidence Shows That Death Or Serious Physical Harm Could Result From A Cave-in

Potelco argues that the Department erred in categorizing the violation as “serious.” App. Br. 24. The Court should affirm Finding of

Fact 4 (*see* CP 31) because it is supported by Inspector Fening’s testimony and numerous WISHA decisions.

WISHA defines a “serious violation”:

. . . a serious violation shall be deemed to exist in a work place if there is a *substantial probability that death or serious physical harm could result* from a condition which exists, or from one or more practices, means, methods, operations, or processes which have been adopted or are in use in such work place

RCW 49.17.180(6) (emphasis added). A serious violation warrants a civil penalty of no more than \$7,000 per violation. RCW 49.17.180(2).

The phrase “substantial probability that death or serious physical harm could result” means the likelihood that *if* an accident occurred, it could result in death or serious physical harm. *Lee Cook Trucking*, 109 Wn. App. 471; *Mowat*, 148 Wn. App. at 932; *Wash. Cedar*, 119 Wn. App. at 917. “Substantial probability” does *not* take into account the likelihood that an accident will occur, in part because the probability of an accident is separately accounted for in the penalty amount. *Lee Cook Trucking*, 109 Wn. App. at 481. Thus, the issue in this case is whether death or serious physical harm could result if there was a trench cave-in while a Potelco employee was in the trench.

This Court has squarely held that violations of WAC 296-155-657(1)(a) are serious because trench cave-ins could lead to death or serious physical harm:

Allowing workers to enter a trench in which they could be buried or crushed if a cave-in occurred constitutes a serious WISHA violation.

Laser Underground & Earthworks, Inc. v. Dep't of Labor & Indus., 132 Wn. App. 274, 279, 153 P.3d 197 (2006); *see also Express Constr. Co. v. Dep't of Labor & Indus.*, 151 Wn. App. 589, 600, 215 P.3d 951 (2009) (affirming the serious finding when a worker died by being buried from the waist down as a result of a trench cave-in). Based on a diligent search of Washington opinions and both significant and non-significant Board decisions, it also appears that every Washington decision addressing the issue has found that a violation of this regulation is serious because death or physical harm could result from a trench cave-in.⁹

⁹ *E.g., In re Pilchuck Contractors, Inc.*, BIIA Dckt. No. 07 W1102, 2008 WL 4596301, at *2 (Jun. 30, 2008); *In re Roy Farms, Inc.*, BIIA Dckt. No. 99 W0228, 2005 WL 3516500, at *2 (Oct. 19, 2005); *In re Ray Poland & Sons, Inc.*, BIIA Dckt. No. 00 W0024, 2001 WL 394831, at *2 (Feb. 26, 2001); *In re Dennis R. Craig Constr. Co.*, BIIA Dckt. No. 98 W0358, 2000 WL 245817, at *3 (Jan. 26, 2000). Even the federal decisions Potelco cited recognize the seriousness of violating this rule. *Allen Howe & Sons*, 19 BNA OSHC 1765, 2001 WL 1673742, at *4 (“Collapsing soils exert extreme pressure on the body and can cause asphyxiation.”); *Garney Constr.*, 2002 CCH OSHD ¶ 32670, 2003 WL 21693001, at *5 (affirming a serious violation and noting that the analogous federal regulation “presumes a hazard of cave-in or collapse of sides of excavations when improperly sloped”); *Scafar Contracting*, 18 BNA OSHC 1540, 1998 WL 597441, at *6 (“Employees working in a trench which is improperly sloped run the risk of serious injury or death in the event of a cave-in.”).

In this case, because the potential hazard is the same as in *Laser Underground* and the above-cited decisions, namely, cave-in of the unprotected trench of at least four feet, the conclusion should also be the same. As in any case involving a potential trench cave-in, death or serious physical harm could result if an accident occurred.

Consistent with this reasoning, Inspector Fening testified that if the sides of the trench had caved in while a worker was inside, the accident could have been fatal. CP 93-94. Exhibit 1 confirms this, as it is apparent from looking at the photograph that a person inside the trench could be completely buried if the approximately 10-foot-deep trench were to cave in. This is substantial evidence.

Potelco argues that the inspector's testimony does not constitute substantial evidence because he has never investigated a fatal cave-in. App. Br. 25-26. But while his experience might affect his credibility, such credibility determinations are beyond the scope of appellate review. *See Greene*, 97 Wn. App. at 714. And while his testimony might deserve more or less weight based on his training and experience, that fact does not negate that his testimony constitutes substantial evidence in support of the "serious" finding, consistent with every Washington case addressing the issue. Potelco presented no evidence to the contrary.

Moreover, if Potelco's argument is taken to its logical conclusion, the Department would never be able to cite employers for serious WISHA violations unless the inspector had personally observed death or serious physical harm from that type of accident in the past. That cannot be what the legislature intended when it enacted the law requiring a violation to be deemed serious if there is a substantial probability that death or serious physical harm could result from the violation. *See* RCW 49.17.180(6); *see also Mowat*, 148 Wn. App. at 931 (the hazard is presupposed by the standard, and WISHA does not require the Department to wait until someone is injured before citing the employer for violating it). Accordingly; this Court should reject Potelco's argument and affirm that Potelco's violation of WAC 296-155-657(1)(a) was serious.

D. Neither The Department Nor The Board Abused Its Discretion In Assessing A Penalty Of \$2,100

Potelco also challenges the severity level of six that the Department and Board assigned to the violation. Because this was not an abuse of discretion and Finding of Fact 4 is supported by substantial evidence, the penalty should be affirmed. *See Danzer*, 104 Wn. App. at 326 (penalty amount is reviewed for an abuse of discretion).

The Department applied the formula in WAC 296-900-14010 to determine the penalty amount in this case. That regulation provides that

the weight, or “gravity” of a violation is determined by multiplying the violation’s severity by its probability. *Id.* Both the severity and probability scales range from one to six, with one being the lowest. *Id.* A probability rating describes the likelihood of an injury, illness, or disease occurring. *Id.*

The severity rating describes “the most serious injury, illness, or disease that could be reasonably expected to occur because of the hazardous condition.” *Id.* Like the “serious” definition under RCW 49.17.180(6), the severity rating is “the extent of injury that can potentially result if an injury does occur.” *Danzer*, 104 Wn. App. at 322. A severity rating of six corresponds with the following “most serious” injury, illness, or disease:

- * Death
- * Injuries involving permanent severe disability
- * Chronic, irreversible illness

WAC 296-900-14010 Table 3.

Here, the Department and Board assigned a severity level of six, the highest, because death could be reasonably expected to occur from an improperly supported trench. CP 94, 31 (Finding of Fact 4). Multiplying the severity by a probability of two (which Potelco does not challenge) corresponds with a base penalty of \$3,000. WAC 296-900-14010 Table 4. The Department and Board applied the other relevant factors (*see* WAC

296-900-14015), which Potelco also does not challenge, and calculated the penalty at \$2,100.

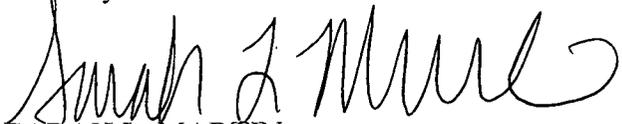
For the same reasons that the Department correctly deemed this violation serious, it was not an abuse of discretion to assign a severity level of six and assess a penalty of \$2,100 for this serious violation. *See* Section V.C, above. Inspector Fening testified that if a trench cave-in occurred, it could have resulted in death, serious injury, or permanent disability. CP 94. This evidence is not contradicted in the record.

VI. CONCLUSION

For the foregoing reasons, the Department respectfully requests that this Court affirm the February 18, 2009 decision and order of the Board of Industrial Insurance Appeals, and thereby sustain the Department's Citation and Notice No. 311630081 dated March 12, 2008.

RESPECTFULLY SUBMITTED this 21 day of December, 2011.

ROBERT M. MCKENNA
Attorney General


SARAH L. MARTIN
Assistant Attorney General
WSBA No. 37068

Appendix 1

WAC 296-155-657

Wash. Admin. Code 296-155-657

Washington Administrative Code Currentness

Title 296B. (Ch. 60-900) Labor and Industries, Department of
Chapter 296-155. Safety Standards for Construction Work

Part N Excavation, Trenching, and Shoring

➔296-155-657. Requirements for protective systems.

(1) Protection of employees in excavations.

(a) Each employee in an excavation shall be protected from cave-ins by an adequate protective system designed in accordance with subsections (2) or (3) of this section except when:

(i) Excavations are made entirely in stable rock; or

(ii) Excavations are less than 4 feet (1.22m) in depth and examination of the ground by a competent person provides no indication of a potential cave-in.

(b) Protective systems shall have the capacity to resist without failure all loads that are intended or could reasonably be expected to be applied or transmitted to the system.

(2) Design of sloping and benching systems. The slopes and configurations of sloping and benching systems shall be selected and constructed by the employer or employer's designee and shall be in accordance with the requirements of subdivision (a); or, in the alternative, subdivision (b); or, in the alternative, subdivision (c); or, in the alternative, subdivision (d), as follows:

(a) Option 1 -- Allowable configurations and slopes.

(i) Excavations shall be sloped at an angle not steeper than one and one-half horizontal to one vertical (34 degrees measured from the horizontal), unless the employer uses one of the other options listed below.

(ii) Slopes specified in item (i) of this subdivision, shall be excavated to form configurations that are in accordance with the slopes shown for Type C soil in Appendix B to this part.

(b) Option 2 -- Determination of slopes and configurations using Appendices A and B. Maximum allowable slopes, and allowable configurations for sloping and benching systems, shall be determined in accordance with the conditions and requirements set forth in appendices A and B to this part.

(c) Option 3 -- Designs using other tabulated data.

(i) Designs of sloping or benching systems shall be selected from and be in accordance with tabulated data, such as tables and charts.

(ii) The tabulated data shall be in written form and shall include all of the following:

(A) Identification of the parameters that affect the selection of a sloping or benching system drawn from such data;

(B) Identification of the limits of use of the data, to include the magnitude and configuration of slopes determined to be safe;

(C) Explanatory information as may be necessary to aid the user in making a correct selection of a protective system from the data.

(iii) At least one copy of the tabulated data which identifies the registered professional engineer who approved the data, shall be maintained at the jobsite during construction of the protective system. After that time the data may be stored off the jobsite, but a copy of the data shall be made available to the director upon request.

(d) Option 4 -- Design by a registered professional engineer.

(i) Sloping and benching systems not utilizing Option 1 or Option 2 or Option 3 under subsection (2) of this section shall be approved by a registered professional engineer.

(ii) Designs shall be in written form and shall include at least the following:

(A) The magnitude of the slopes that were determined to be safe for the particular project;

(B) The configurations that were determined to be safe for the particular project; and

(C) The identity of the registered professional engineer approving the design.

(iii) At least one copy of the design shall be maintained at the jobsite while the slope is being constructed. After that time the design need not be at the jobsite, but a copy shall be made available to the director upon request.

(3) Design of support systems, shield systems, and other protective systems. Designs of support systems, shield systems, and other protective systems shall be selected and constructed by the employer or employer's designee and shall be in accordance with the requirements of subdivision (a); or, in the alternative, subdivision (b); or, in the alternative, subdivision (c); or, in the alternative, subdivision (d) as follows:

(a) Option 1 -- Designs using appendices A, C, and D. Designs for timber shoring in trenches shall be determined in accordance with the conditions and requirements set forth in appendices A and C to this part. Designs for aluminum hydraulic shoring shall be in accordance with subdivision (b) of this subsection, but if manufacturer's tabulated data cannot be utilized, designs shall be in accordance with appendix D.

(b) Option 2 -- Designs using manufacturer's tabulated data.

(i) Design of support systems, shield systems, or other protective systems that are drawn from manufacturer's tabulated data shall be in accordance with all specifications, recommendations, and limitations issued or made by the manufacturer.

(ii) Deviation from the specifications, recommendations, and limitations issued or made by the manufacturer shall only be allowed after the manufacturer issues specific written approval.

(iii) Manufacturer's specifications, recommendations, and limitations, and manufacturer's approval to deviate from the specifications, recommendations, and limitations shall be in written form at the jobsite during construction of the protective system. After that time this data may be stored off the jobsite, but a copy shall be made available to the director upon request.

(c) Option 3 -- Designs using other tabulated data.

(i) Designs of support systems, shield systems, or other protective systems shall be selected from and be in accordance with tabulated data, such as tables and charts.

(ii) The tabulated data shall be in written form and include all of the following:

(A) Identification of the parameters that affect the selection of a protective system drawn from such data;

(B) Identification of the limits of use of the data;

(C) Explanatory information as may be necessary to aid the user in making a correct selection of a protective system from the data.

(iii) At least one copy of the tabulated data, which identifies the registered professional engineer who approved the data, shall be maintained at the jobsite during construction of the protective system. After that time the data may be stored off the jobsite, but a copy of the data shall be made available to the director upon request.

(d) Option 4 -- Design by a registered professional engineer.

(i) Support systems, shield systems, and other protective systems not utilizing Option 1, Option 2 or Option 3, above, shall be approved by a registered professional engineer.

(ii) Designs shall be in written form and shall include the following:

(A) A plan indicating the sizes, types, and configurations of the materials to be used in the protective system; and

(B) The identity of the registered professional engineer approving the design.

(iii) At least one copy of the design shall be maintained at the jobsite during construction of the protective system. After that time, the design may be stored off the jobsite, but a copy of the design shall be made available to the director upon request.

(4) Materials and equipment.

(a) Materials and equipment used for protective systems shall be free from damage or defects that might impair their proper function.

(b) Manufactured materials and equipment used for protective systems shall be used and maintained in a manner that is consistent with the recommendations of the manufacturer, and in a manner that will prevent employee exposure to hazards.

(c) When material or equipment that is used for protective systems is damaged, a competent person shall examine the material or equipment and evaluate its suitability for continued use. If the competent person cannot assure the material or equipment is able to support the intended loads or is otherwise suitable for safe use, then such material or equipment shall be removed from service, and shall be evaluated and approved by a registered professional engineer before being returned to service.

(5) Installation and removal of support.

(a) General.

- (i) Members of support systems shall be securely connected together to prevent sliding, falling, kickouts, or other predictable failure.
 - (ii) Support systems shall be installed and removed in a manner that protects employees from cave-ins, structural collapses, or from being struck by members of the support system.
 - (iii) Individual members of support systems shall not be subjected to loads exceeding those which those members were designed to withstand.
 - (iv) Before temporary removal of individual members begins, additional precautions shall be taken to ensure the safety of employees, such as installing other structural members to carry the loads imposed on the support system.
 - (v) Removal shall begin at, and progress from, the bottom of the excavation. Members shall be released slowly so as to note any indication of possible failure of the remaining members of the structure or possible cave-in of the sides of the excavation.
 - (vi) Backfilling shall progress together with the removal of support systems from excavations.
- (b) Additional requirements for support systems for trench excavations.
- (i) Excavation of material to a level no greater than 2 feet (.61 m) below the bottom of the members of a support system shall be permitted, but only if the system is designed to resist the forces calculated for the full depth of the trench, and there are no indications while the trench is open of a possible loss of soil from behind or below the bottom of the support system.
 - (ii) Installation of a support system shall be closely coordinated with the excavation of trenches.
- (6) Sloping and benching systems. Employees shall not be permitted to work on the faces of sloped or benched excavations at levels above other employees except when employees at the lower levels are adequately protected from the hazard of falling, rolling, or sliding material or equipment.
- (7) Shield systems.
- (a) General.
- (i) Shield systems shall not be subjected to loads exceeding those which the system was designed to withstand.
 - (ii) Shields shall be installed in a manner to restrict lateral or other hazardous movement of the shield in the event of the application of sudden lateral loads.
 - (iii) Employees shall be protected from the hazard of cave-ins when entering or exiting the areas protected by shields.
 - (iv) Employees shall not be allowed in shields when shields are being installed, removed, or moved vertically.
- (b) Additional requirement for shield systems used in trench excavations. Excavations of earth material to a level not greater than 2 feet (.61 m) below the bottom of a shield

shall be permitted, but only if the shield is designed to resist the forces calculated for the full depth of the trench, and there are no indications while the trench is open of a possible loss of soil from behind or below the bottom of the shield.

[Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-155-657, filed 10/30/92, effective 12/8/92. Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-155-657, filed 1/10/91, effective 2/12/91.]

WAC 296-155-657, WA ADC 296-155-657

Current with amendments included in the Washington State Register, Issue 11-21, dated November 2, 2011.

(C) 2011 Thomson Reuters.

END OF DOCUMENT

Appendix 2

WAC 296-155-66401

Wash. Admin. Code 296-155-66401

Washington Administrative Code Currentness

Title 296B. (Ch. 60-900) Labor and Industries, Department of
Chapter 296-155. Safety Standards for Construction Work

Part N Excavation, Trenching, and Shoring

➔ **296-155-66401. Appendix A--Soil classification.**

Appendix A--Soil Classification

(1) Scope and application.

(a) Scope. This appendix describes a method of classifying soil and rock deposits based on site and environmental conditions, and on the structure and composition of the earth deposits. The appendix contains definitions, sets forth requirements, and describes acceptable visual and manual tests for use in classifying soils.

(b) Application. This appendix applies when a sloping or benching system is designed in accordance with the requirements set forth in WAC 296-155-657 (2)(b) as a method of protection for employees from cave-ins. This appendix also applies when timber shoring for excavations is designed as a method of protection from cave-ins in accordance with appendix C to part N of this chapter, and when aluminum hydraulic shoring is designed in accordance with appendix D. This Appendix also applies if other protective systems are designed and selected for use from data prepared in accordance with the requirements set forth in WAC 296-155-657(3), and the use of the data is predicated on the use of the soil classification system set forth in this appendix.

(2) Definitions. The definitions and examples given below are based on, in whole or in part, the following; American Society for Testing Materials (ASTM) Standards D653-85 and D2488; The Unified Soils Classification System, The U.S. Department of Agriculture (USDA) Textural Classification Scheme; and The National Bureau of Standards Report BSS-121.

(a) Cemented soil. A soil in which the particles are held together by a chemical agent, such as calcium carbonate such that a hand-size sample cannot be crushed into powder or individual soil particles by finger pressure.

(b) Cohesive soil. Clay (fine grained soil), or soil with a high clay content, which has cohesive strength. Cohesive soil does not crumble, can be excavated with vertical sideslopes, and is plastic when moist. Cohesive soil is hard to break up when dry, and exhibits significant cohesion when submerged. Cohesive soils include clayey silt, sandy clay, silty clay, clay and organic clay.

(c) Dry soil. Soil that does not exhibit visible signs of moisture content.

(d) Fissured. A soil material that has a tendency to break along definite planes of fracture with little resistance, or a material that exhibits open cracks, such as tension cracks, in an exposed surface.

(e) Granular soil. Gravel, sand, or silt, (coarse grained soil) with little or no clay content. Granular soil has no cohesive strength. Some moist granular soils exhibit apparent cohesion. Granular soil cannot be molded when moist and crumbles easily when dry.

(f) Layered system. Two or more distinctly different soil or rock types arranged in layers. Micaceous seams or weakened planes in rock or shale are considered layered.

(g) Moist soil. A condition in which a soil looks and feels damp. Moist cohesive soil can easily be shaped into a ball and rolled into small diameter threads before crumbling. Moist granular soil that contains some cohesive material will exhibit signs of cohesion between particles.

(h) Plastic. A property of a soil which allows the soil to be deformed or molded without cracking, or appreciable volume change.

(i) Saturated soil. A soil in which the voids are filled with water. Saturation does not require flow. Saturation, or near saturation, is necessary for the proper use of instruments such as a pocket penetrometer or shear vane.

(j) Soil classification system. For the purpose of this part, a method of categorizing soil and rock deposits in a hierarchy of Stable Rock, Type A, Type B, and Type C, in decreasing order of stability. The categories are determined based on an analysis of the properties and performance characteristics of the deposits and the environmental conditions of exposure.

(k) Stable rock. Natural solid mineral matter that can be excavated with vertical sides and remain intact while exposed.

(l) Submerged soil. Soil which is underwater or is free seeping.

(m) Type A. Cohesive soils with an unconfined compressive strength of 1.5 ton per square foot (tsf) (144 kPa) or greater. Examples of cohesive soils are: Clay, silty clay, sandy clay, clay loam and, in some cases, silty clay loam and sandy clay loam. Cemented soils such as caliche and hardpan are also considered Type A. No soil is Type A if:

(i) The soil is fissured; or

(ii) The soil is subject to vibration from heavy traffic, pile driving, or similar effects; or

(iii) The soil has been previously disturbed; or

(iv) The soil is part of a sloped, layered system where the layers dip into the excavation on a slope of 4 horizontal to 1 vertical (4H:1V) or greater; or

(v) The material is subject to other factors that would require it to be classified as a less stable material.

(n) Type B.

(i) Cohesive soil with an unconfined compressive strength greater than 0.5 tsf (48 kPa) but less than 1.5 tsf (144 kPa); or

(ii) Granular cohesionless soils including: Angular gravel (similar to crushed rock), silt, silt loam, sandy loam and, in some cases, silty clay loam and sandy clay loam.

(iii) Previously disturbed soils except those which would otherwise be classed as Type C soil.

(iv) Soil that meets the unconfined compressive strength or cementation requirements for Type A, but is fissured or subject to vibration: or

(v) Dry rock that is not stable: or

(vi) Material that is part of a sloped, layered system where the layers dip into the excavation on a slope less steep than 4 horizontal to 1 vertical (4H.1V), but only if the material would otherwise be classified as Type B.

(o) Type C.

(i) Cohesive soil with an unconfined compressive strength of 0.5 tsf (48 kPa) or less: or

(ii) Granular soils including gravel, sand, and loamy sand: or

(iii) Submerged soil or soil from which water is freely seeping: or

(iv) Submerged rock that is not stable, or

(v) Material in a sloped, layered system where the layers dip into the excavation on a slope of 4 horizontal to 1 vertical (4H.1V) or steeper.

(p) Unconfined compressive strength. The load per unit area at which a soil will fail in compression. It can be determined by laboratory testing, or estimated in the field using a pocket penetrometer, by thumb penetration tests, and other methods.

(q) Wet soil. Soil that contains significantly more moisture than moist soil, but in such a range of values that cohesive material will slump or begin to flow when vibrated. Granular material that would exhibit cohesive properties when moist will lose those cohesive properties when wet.

(3) Requirements.

(a) Classification of soil and rock deposits. Each soil and rock deposit shall be classified by a competent person as Stable Rock, Type A, Type B, or Type C in accordance with the definitions set forth in subsection (2) of this section.

(b) Basis of classification. The classification of the deposits shall be made based on the results of at least one visual and at least one manual analysis. Such analyses shall be conducted by a competent person using tests in subsection (4) of this section or in other recognized methods of soil classification and testing such as those adopted by the American Society for Testing Materials, or the U.S. Department of Agriculture textural classification system.

(c) Visual and manual analyses. The visual and manual analyses, such as those noted as being acceptable in subsection (4) of this section, shall be designed and conducted to provide sufficient quantitative and qualitative information as may be necessary to identify properly the properties, factors, and conditions affecting the classification of the deposits.

(d) Layered systems. In a layered system, the system shall be classified in accordance with its weakest layer. However, each layer may be classified individually where a more stable layer lies under a less stable layer.

(e) Reclassification. If, after classifying a deposit, the properties, factors, or conditions affecting its classification change in any way, the changes shall be evaluated by a competent person. The deposit shall be reclassified as necessary to reflect the changed circumstances.

(4) Acceptable visual and manual tests.

(a) Visual tests. Visual analysis is conducted to determine qualitative information regarding the excavation site in general, the soil adjacent to the excavation, the soil forming the sides of the open excavation, and the soil taken as samples from excavated material.

(i) Observe samples of soil that are excavated and soil in the sides of the excavation. Estimate the range of particle sizes and the relative amounts of the particle sizes. Soil that is primarily composed of fine-grained material is cohesive material. Soil composed primarily of coarse-grained sand or gravel is granular material.

(ii) Observe soil as it is excavated. Soil that remains in clumps when excavated is cohesive. Soil that breaks up easily and does not stay in clumps is granular.

(iii) Observe the side of the opened excavation and the surface area adjacent to the excavation. Crack-like openings such as tension cracks could indicate fissured material. If chunks of soil spall off a vertical side, the soil could be fissured. Small spalls are evidence of moving ground and are indications of potentially hazardous situations.

(iv) Observe the area adjacent to the excavation and the excavation itself for evidence of existing utility and other underground structures, and to identify previously disturbed soil.

(v) Observe the opened side of the excavation to identify layered systems. Examine layered systems to identify if the layers slope toward the excavation. Estimate the degree of slope of the layers.

(vi) Observe the area adjacent to the excavation and sides of the open excavation for evidence of surface water, water seeping from the sides of the excavation, or the location of the level of the water table.

(vii) Observe the area adjacent to the excavation and the area within the excavation for sources of vibration that may affect the stability of the excavation face.

(b) Manual tests. Manual analysis of soil samples is conducted to determine quantitative as well as qualitative properties of soil and to provide more information in order to classify soil properly.

(i) Plasticity. Mold a moist or wet sample of soil into a ball and attempt to roll it into threads as thin as 1/8-inch in diameter. Cohesive material can be successfully rolled into threads without crumbling. For example, if at least a 2 inch (50 mm) length of 1/8-inch thread can be held on one end without tearing, the soil is cohesive.

(ii) Dry strength. If the soil is dry and crumbles on its own or with moderate pressure into individual grains or fine powder, it is granular (any combination of gravel, sand, or silt). If the soil is dry and falls into clumps which break up into smaller clumps, but the smaller clumps can only be broken up with difficulty, it may be clay in any combination with gravel, sand or silt. If the dry soil breaks into clumps which do not break up into small clumps and which can only be broken with difficulty, and there is no visual indication the soil is fissured, the soil may be considered unfissured.

(iii) Thumb penetration. The thumb penetration test can be used to estimate the unconfined compressive strength of cohesive soils. (This test is based on the thumb penetration test described in American Society for Testing and Materials (ASTM) Standard designation D2488-"Standard Recommended Practice for Description of Soils (Visual --

Manual Procedure).") Type A soils with an unconfined compressive strength of 1.5 tsf can be readily indented by the thumb; however, they can be and penetrated by the thumb only with very great effort. Type C soils with an unconfined compressive strength of 0.5 tsf can be easily penetrated several inches by the thumb, and can be molded by light finger pressure. This test should be conducted on an undisturbed soil sample, such as a large clump of spoil, as soon as practicable after excavation to keep to a minimum the effects of exposure to drying influences. If the excavation is later exposed to wetting influences (rain, flooding), the classification of the soil must be changed accordingly.

(iv) Other strength tests. Estimates of unconfined compressive strength of soils can also be obtained by use of a pocket penetrometer or by using a hand-operated shear vane.

(v) Drying test. The basic purpose of the drying test is to differentiate between cohesive material with fissures, unfissured cohesive material, and granular material. The procedure for the drying test involves drying a sample of soil that is approximately 1 inch thick (2.54 cm) and 6 inches (15.24 cm) in diameter until it is thoroughly dry:

(A) If the sample develops cracks as it dries, significant fissures are indicated.

(B) Samples that dry without cracking are to be broken by hand. If considerable force is necessary to break a sample, the soil has significant cohesive material content. The soil can be classified as a unfissured cohesive material and the unconfined compressive strength should be determined.

(C) If a sample breaks easily by hand, it is either a fissured cohesive material or a granular material. To distinguish between the two, pulverize the dried clumps of the sample by hand or by stepping on them. If the clumps do not pulverize easily, the material is cohesive with fissures. If they pulverize easily into very small fragments, the material is granular.

Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-155-66401, filed 10/30/92, effective 12/8/92.

WAC 296-155-66401, WA ADC 296-155-66401

Current with amendments included in the Washington State Register, Issue 11-21, dated November 2, 2011.

(C) 2011 Thomson Reuters.

END OF DOCUMENT

Appendix 3

WAC 296-155-66403

Wash. Admin. Code 296-155-66403

Washington Administrative Code Currentness

Title 296B. (Ch. 60-900) Labor and Industries, Department of
Chapter 296-155. Safety Standards for Construction Work

Part N Excavation, Trenching, and Shoring

➔ **296-155-66403. Appendix B--Sloping and benching.**

(1) Scope and application. This appendix contains specifications for sloping and benching when used as methods of protecting employees working in excavations from cave-ins. The requirements of this appendix apply when the design of sloping and benching protective systems is to be performed in accordance with the requirements set forth in WAC 296-155-657(2)(b).

(2) Definitions.

(a) Actual slope. The slope to which an excavation face is excavated.

(b) Distress. Soil that is in a condition where a cave-in is imminent or is likely to occur. Distress is evidenced by such phenomena as the development of fissures in the face of or adjacent to an open excavation; the subsidence of the edge of an excavation; the slumping of material from the face or the bulging or heaving of material from the bottom of an excavation; the spalling of material from the face of an excavation; and raveling, i.e., small amounts of material such as pebbles or little clumps of material suddenly separating from the face of an excavation and trickling or rolling down into the excavation.

(c) Maximum allowable slope. The steepest incline of an excavation face that is acceptable for the most favorable site conditions as protection against cave-ins, and is expressed as the ratio of horizontal distance to vertical rise (H:V).

(3) Requirements.

(a) Soil classification. Soil and rock deposits shall be classified in accordance with appendix A of this Part.

(b) Maximum allowable slope. The maximum allowable slope for a soil or rock deposit shall be determined from Table N-1 of this appendix.

(c) Actual slope.

(i) The actual slope shall not be steeper than the maximum allowable slope.

(ii) The actual slope shall be less steep than the maximum allowable slope, when there are signs of distress. If that situation occurs, the slope shall be cut back to an actual slope which is at least 1/2 horizontal to one vertical (1/2H:1V) less steep than the maximum allowable slope.

(iii) When surcharge loads from stored material or equipment, operating equipment, or traffic are present, a competent person shall determine the degree to which the actual slope must be reduced below the maximum allowable slope, and shall assure that such reduction is achieved. Surcharge loads from adjacent structures shall be evaluated in accordance with WAC 296-155-655(9).

(d) Configurations. Configurations of sloping and benching systems shall be in accordance with Figures N-1 through N-18.

Table N-1
Maximum Allowable Slopes

SOIL OR ROCK TYPE	MAXIMUM ALLOWABLE SLOPES (H ₁ V) ^{1} FOR EXCAVATION LESS THAN 20 FEET DEEP ^{2}
STABLE ROCK	VERTICAL (90°)
TYPE A	3/4:1 (53°)
TYPE B	1:1 (45°)
TYPE C	1 1/2:1 (34°)

Notes:

- {1} Numbers shown in parentheses next to maximum allowable slopes are angles expressed in degrees from the horizontal. Angles have been rounded off.
- {2} Sloping or benching for excavations greater than 20 feet deep shall be designed by a registered professional engineer.

Figure N-1 through Figure N-12: SLOPE CONFIGURATIONS



Image 1 in PDF format. Available for Offline Print

Figure N-13 through Figure N-18: EXCAVATIONS MADE IN LAYERED SOILS



Image 2 in PDF format. Available for Offline Print

Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. 99-17-094, § 296-155-66403, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-155-66403, filed 10/30/92, effective 12/8/92.

WAC 296-155-66403, WA ADC 296-155-66403

Current with amendments included in the Washington State Register, Issue 11-21, dated November 2, 2011.

(C) 2011 Thomson Reuters.

END OF DOCUMENT

Appendix 4

WAC 296-155-66405

Wash. Admin. Code 296-155-66405

Washington Administrative Code Currentness

Title 296B. (Ch. 60-900) Labor and Industries, Department of
Chapter 296-155. Safety Standards for Construction Work

Part N Excavation, Trenching, and Shoring

➔ **296-155-66405. Appendix C--Timber shoring for trenches.**

Appendix C--Timber Shoring for Trenches

(1) Scope. This appendix contains information that can be used when timber shoring is provided as a method of protection from cave-ins in trenches that do not exceed 20 feet (6.1 m) in depth. This appendix must be used when design of timber shoring protective systems is to be performed in accordance with WAC 296-155-657(3)(a). Other timber shoring configurations; other systems of support such as hydraulic and pneumatic systems; and other protective systems such as sloping, benching, shielding, and freezing systems must be designed in accordance with the requirements set forth in WAC 296-155-657(2) and (3).

(2) Soil classification. In order to use the data presented in this appendix, the soil type or types in which the excavation is made must first be determined using the soil classification method set forth in appendix A of this part.

(3) Presentation of information. Information is presented in several forms as follows:

(a) Information is presented in tabular form in Tables N-2 through N-7 following subsection (7) of this appendix. Each table presents the minimum sizes of timber members to use in a shoring system, and each table contains data only for the particular soil type in which the excavation or portion of the excavation is made. The data are arranged to allow the user the flexibility to select from among several acceptable configurations of members based on varying the horizontal spacing of the crossbraces. Stable rock is exempt from shoring requirements and therefore, no data are presented for this condition.

(b) Information concerning the basis of the tabular data and the limitations of the data is presented in subsection (4) of this appendix, and on the tables themselves.

(c) Information explaining the use of the tabular data is presented in subsection (5) of this appendix.

(d) Information illustrating the use of the tabular data is presented in subsection (6) of this appendix.

(e) Miscellaneous notations regarding Tables N-2 through N-7 are presented in subsection (7) of this Appendix.

(4) Basis and limitations of the data.

(a) Dimensions of timber members.

(i) The sizes of the timber members listed in Tables N-2 through N-7 are taken from the National Bureau of Standards (NBS) report, "Recommended Technical Provisions for Construction Practice in Shoring and Sloping of Trenches and Excavations." In addition,

where NBS did not recommend specific sizes of members, member sizes are based on an analysis of the sizes required for use by existing codes and on empirical practice.

(ii) The required dimensions of the members listed in Tables N-2, N-3, and N-4 refer to actual dimensions and not nominal dimensions of the timber. Employers wanting to use nominal size shoring are directed to Tables N-5, N-6, and N-7, or have this choice under WAC 296-155-657(3)(c), and are referred to The Corps of Engineers, The Bureau of Reclamation or data from other acceptable sources.

(b) Limitation of application.

(i) It is not intended that the timber shoring specification apply to every situation that may be experienced in the field. These data were developed to apply to the situations that are most commonly experienced in current trenching practice. Shoring systems for use in situations that are not covered by the data in this appendix must be designed as specified in WAC 296-155-657(3).

(ii) When any of the following conditions are present, the members specified in the tables are not considered adequate. Either an alternate timber shoring system must be designed or another type of protective system designed in accordance with WAC 296-155-657.

(A) When loads imposed by structures or by stored material adjacent to the trench weigh in excess of the load imposed by a two-foot soil surcharge. The term "adjacent" as used here means the area within a horizontal distance from the edge of the trench equal to the depth of the trench.

(B) When vertical loads imposed on cross braces exceed a 240-pound gravity load distributed on a one-foot section of the center of the crossbrace.

(C) When surcharge loads are present from equipment weighing in excess of 20,000 pounds.

(D) When only the lower portion of a trench is shored and the remaining portion of the trench is sloped or benched unless: The sloped portion is sloped at an angle less steep than three horizontal to one vertical; or the members are selected from the tables for use at a depth which is determined from the top of the overall trench, and not from the toe of the sloped portion.

(5) Use of Tables. The members of the shoring system that are to be selected using this information are the cross braces, the uprights, and the wales, where wales are required. Minimum sizes of members are specified for use in different types of soil. There are six tables of information, two for each soil type. The soil type must first be determined in accordance with the soil classification system described in appendix A of this Part. Using the appropriate table, the selection of the size and spacing of the members is then made. The selection is based on the depth and width of the trench where the members are to be installed and, in most instances, the selection is also based on the horizontal spacing of the crossbraces. Instances where a choice of horizontal spacing of crossbracing is available, the horizontal spacing of the crossbraces must be chosen by the user before the size of any member can be determined. When the soil type, the width and depth of the trench, and the horizontal spacing of the crossbraces are known, the size and vertical spacing of the crossbraces, the size and vertical spacing of the wales, and the size and horizontal spacing of the uprights can be read from the appropriate table.

(6) Examples to illustrate the use of Tables N-2 through N-4.

(a) Example 1.

A trench dug in Type A soil is 13 feet deep and five feet wide.

From Table N-2, for acceptable arrangements of timber can be used.

Arrangement #1

Space 4 x 4 crossbraces at six feet horizontally and four feet vertically.

Wales are not required.

Space 3 x 8 uprights at six feet horizontally. This arrangement is commonly called "skip shoring."

Arrangement #2

Space 4 x 6 crossbraces at eight feet horizontally and four feet vertically.

Space 8 x 8 wales at four feet vertically.

Space 2 x 6 uprights at four feet horizontally.

Arrangement #3

Space 6 x 6 crossbraces at 10 feet horizontally and four feet vertically.

Space 8 x 10 wales at four feet vertically.

Space 2 x 6 uprights at five feet horizontally.

Arrangement #4

Space 6 x 6 crossbraces at 12 feet horizontally and four feet vertically.

Space 10 x 10 wales at four feet vertically.

Space 3 x 8 uprights at six feet horizontally.

(b) Example 2.

A trench dug in Type B soil in 13 feet deep and five feet wide.

From Table N-3 three acceptable arrangements of members are listed.

Arrangement #1

Space 6 x 6 crossbraces at six feet horizontally and five feet vertically.

Space 8 x 8 wales at five feet vertically.

Space 2 x 6 uprights at two feet horizontally.

Arrangement #2

Space 6 x 8 crossbraces at eight feet horizontally and five feet vertically.

Space 10 x 10 wales at five feet vertically.

Space 2 x 6 uprights at two feet horizontally.

Arrangement #3

Space 8 x 8 crossbraces at 10 feet horizontally and five feet vertically.

Space 10 x 12 wales at five feet vertically.

Space 2 x 6 uprights at two feet vertically.

(c) Example 3.

A trench dug Type C soil is 13 feet deep and five feet wide.

From Table N-4 two acceptable arrangements of members can be used.

Arrangement #1

Space 8 x 8 crossbraces at six feet horizontally and five feet vertically.

Space 10 x 12 wales at five feet vertically.

Position 2 x 6 uprights as closely together as possible.

If water must be retained use special tongue and groove uprights to form tight sheeting.

Arrangement #2

Space 8 x 10 crossbraces at eight feet horizontally and five feet vertically.

Space 12 x 12 wales at five feet vertically.

Position 2 x 6 uprights in a close sheeting configuration unless water pressure must be resisted. Tight sheeting must be used where water must be retained.

(d) Example 4.

A trench dug in Type C soil is 20 feet deep and 11 feet wide. The size and spacing of members for the section of trench that is over 15 feet in depth is determined using Table N-4. Only one arrangement of members is provided.

Space 8 x 10 crossbraces at six feet horizontally and five feet vertically.

Space 12 x 12 wales at five feet vertically.

Use 3 x 6 tight sheeting.

Use of Tables N-5, N-6, and N-7 would follow the same procedures.

(7) Notes for all tables.

(a) Member sizes at spacings other than indicated are to be determined as specified in WAC 296-155-657(3). "Design of Protective Systems."

(b) When conditions are saturated or submerged use Tight Sheeting. Tight Sheeting refers to the use of specially edged timber planks (e.g., tongue and groove) at least three inches thick, steel sheet piling, or similar construction that when driven or placed in position provide a tight wall to resist the lateral pressure of water and to prevent the loss of backfill material. Close Sheeting refers to the placement of planks side-by-side allowing as little space as possible between them.

(c) All spacing indicated is measured center to center.

(d) Wales to be installed with greater dimension horizontal.

(e) If the vertical distance from the center of the lowest crossbrace to the bottom of the trench exceeds two and one-half feet, uprights shall be firmly embedded or a mudsill shall be used. Where uprights are embedded, the vertical distance from the center of the lowest crossbrace to the bottom of the trench shall not exceed 36 inches. When mudsills are used, the vertical distance shall not exceed 42 inches. Mudsills are wales that are installed at the toe of the trench side.

(f) Trench jacks may be used in lieu of or in combination with timber crossbraces.

(g) Placement of crossbraces. When the vertical spacing of crossbraces is four feet, place the top crossbrace no more than two feet below the top of the trench. When the vertical spacing of crossbraces is five feet, place the top crossbrace no more than 2.5 feet below the top of the trench.

Table N-2 -- Timber Trench Shoring -- Minimum Timber Requirements* -- Soil Type A $P_a - 25 \times H + 72$ psf (2 ft. Surcharge)

Table N-2



Image 1 in PDF format. Available for Offline Print

* Mixed oak or equivalent with a bending strength not less than 850 psi.

** Manufactured members of equivalent strength may be substituted for wood.

Table N-3 -- Timber Trench Shoring -- Minimum Timber Requirements* -- Soil Type B $P_a - 45 \times H + 72$ psf (2 ft. Surcharge)

Table N-3



Image 2 in PDF format. Available for Offline Print

* Mixed oak or equivalent with a bending strength not less than 850 psi.

** Manufactured members of equivalent strength may be substituted for wood.

Table N-4 -- Timber Trench Shoring -- Minimum Timber Requirements* -- Soil Type C P_a - 80 x H + 72 psf (2 ft. Surcharge)

Table N-4



Image 3 in PDF format. Available for Offline Print

* Mixed oak or equivalent with a bending strength not less than 850 psi.

** Manufactured members of equivalent strength may be substituted for wood.

Table N-5 -- Timber Trench Shoring -- Minimum Timber Requirements* -- Soil Type A P_a - 25 x H + 72 psf (2 ft. Surcharge)

Table N-5



Image 4 in PDF format. Available for Offline Print

* Mixed oak or equivalent with a bending strength not less than 850 psi.

** Manufactured members of equivalent strength may be substituted for wood.

Table N-6 -- Timber Trench Shoring -- Minimum Timber Requirements* -- Soil Type B P_a - 45 x H + 72 psf (2 ft. Surcharge)

Table N-6



Image 5 in PDF format. Available for Offline Print

* Mixed oak or equivalent with a bending strength not less than 850 psi.

** Manufactured members of equivalent strength may be substituted for wood.

Table N-7 -- Timber Trench Shoring -- Minimum Timber Requirements* -- Soil Type C P_a - 80 x H + 72 psf (2 ft. Surcharge)

Table N-7



Image 6 in PDF format. Available for Offline Print

* Mixed oak or equivalent with a bending strength not less than 850 psi.

** Manufactured members of equivalent strength may be substituted for wood.

History Note:

Amendment Filed: 6/5/02, effective 8/1/02, RCW 49.17.010, [49.17].040, [49.17].050, WSR 02-12-098.

WAC 296-155-66405, WA ADC 296-155-66405

Current with amendments included in the Washington State Register, Issue 11-21, dated November 2, 2011.

(C) 2011 Thomson Reuters.

END OF DOCUMENT

Appendix 5

WAC 296-155-66407

Wash. Admin. Code 296-155-66407

Washington Administrative Code Currentness

Title 296B. (Ch. 60-900) Labor and Industries, Department of
Chapter 296-155. Safety Standards for Construction Work

Part N Excavation, Trenching, and Shoring

➤ **296-155-66407. Appendix D--Aluminum hydraulic shoring for trenches.**

Appendix D--Aluminum Hydraulic Shoring for Trenches

(1) Scope. This appendix contains information that can be used when aluminum hydraulic shoring is provided as a method of protection against cave-ins in trenches that do not exceed 20 feet (6.1m) in depth. This appendix must be used when design of the aluminum hydraulic protective system cannot be performed in accordance with WAC 296-155-657 (3)(b).

(2) Soil Classification. In order to use data presented in this appendix, the soil type or types in which the excavation is made must first be determined using the soil classification method set forth in appendix A of this Part.

(3) Presentation of information. Information is presented in several forms as follows:

(a) Information is presented in tabular form in Tables N-8 through N-11. Each table presents the maximum vertical and horizontal spacings that may be used with various aluminum member sizes and various hydraulic cylinder sizes. Each table contains data only for the particular soil type in which the excavation or portion of the excavation is made. Tables N-8 and N-9 are for vertical shores in Types A and B soil. Tables N-10 and N-11 are for horizontal waler systems in Types B and C soil.

(b) Information concerning the basis of the tabular data and the limitations of the data is presented in subsection (4) of this appendix.

(c) Information explaining the use of the tabular data is presented in subsection (5) of this appendix.

(d) Information illustrating the use of the tabular data is presented in subsection (6) of this appendix.

(e) Miscellaneous notations (footnotes) regarding Table N-8 through N-11 are presented in subsection (7) of this appendix.

(f) Figures, illustrating typical installations of hydraulic shoring, are included just prior to the Tables. The illustrations page is entitled "Aluminum Hydraulic Shoring: Typical Installations."

(4) Basis and limitations of the data.

(a) Vertical shore rails and horizontal walers are those that meet the Section Modulus requirements in Tables N-8 through N-10. Aluminum material is 6061-T6 or material of equivalent strength and properties.

(b) Hydraulic cylinders specifications.

(i) 2-inch cylinders shall be a minimum 2-inch inside diameter with a minimum safe working capacity of no less than 18,000 pounds axial compressive load at maximum extension. Maximum extension is to include full range of cylinder extensions as recommended by product manufacturer.

(ii) 3-inch cylinders shall be a minimum 3-inch inside diameter with a safe working capacity of not less than 30,000 pounds axial compressive load at extensions as recommended by product manufacturer.

(c) Limitation of application.

(i) It is not intended that the aluminum hydraulic specification apply to every situation that may be experienced in the field. These data were developed to apply to the situations that are most commonly experienced in current trenching practice. Shoring systems for use in situations that are not covered by the data in this appendix must be otherwise designed as specified in WAC 296-155-657(3).

(ii) When any of the following conditions are present; the members specified in the Tables are not considered adequate. In this case, an alternative aluminum hydraulic shoring system or other type of protective system must be designed in accordance with WAC 296-155-657.

(A) When vertical loads imposed on cross braces exceed a 100 Pound gravity load distributed on a one foot section of the center of the hydraulic cylinder.

(B) When surcharge loads are present from equipment weighing in excess of 20,000 pounds.

(C) When only the lower portion of a trench is shored and the remaining portion of the trench is sloped or benched unless: The slope portion is sloped at an angle less steep than three horizontal to one vertical; or the members are selected from the tables for use at a depth which is determined from the top of the overall trench, and not from the toe of the sloped portion.

(5) Use of Tables N-8 through N-11. The members of the shoring system that are to be selected using this information are the hydraulic cylinders, and either the vertical shores or the horizontal wales. When a waler system is used the vertical timber sheeting to be used is also selected from these tables. The Tables N-8 and N-9 for vertical shores are used in Type A and B soils that do not require sheeting. Type B soils that may require sheeting, and Type C soils that always require sheeting are found in the horizontal wale Tables N-10 and N-11. The soil type must first be determined in accordance with the soil classification system described in appendix A of this Part. Using the appropriate table, the selection of the size and spacing of the members is made. The selection is based on the depth and width of the trench where the members are to be installed. In these tables the vertical spacing is held constant at four feet on center. The tables show the maximum horizontal spacing of cylinders allowed for each size of wale in the waler system tables, and in the vertical shore tables, the hydraulic cylinder horizontal spacing is the same as the vertical shore spacing.

(6) Example to Illustrate the Use of the Tables:

(a) Example 1: A trench dug in Type A soil is 6 feet deep and 3 feet wide. From Table N-8: Find vertical shores and 2 inch diameter cylinders spaced 8 feet on center (o.c.) horizontally and 4 feet on center (o.c.) vertically. (See Figures N-23 & N-25 for typical installations.)

(b) Example 2: A trench is dug in Type B soil that does not require sheeting, 13 feet deep and 5 feet wide. From Table N-9: Find vertical shores and 2 inch diameter cylinders spaced 6.5 feet o.c. horizontally and 4 feet o.c. vertically. (See Figures N-23 & N-25 for typical installations.)

(c) A trench is dug in Type B soil that does not require sheeting, but does experience some minor raveling of the trench face. The trench is 16 feet deep and 9 feet wide. From Table N-9: Find vertical shores and 2 inch diameter cylinder (with special oversleeves as designated by subdivision (7)(b)) spaced 5.5 feet o.c. horizontally and 4 feet o.c. vertically, plywood (per subdivision (7)(g) to the N-8 through N-11 Tables) should be used behind the shores. (See Figures N-24 & N-25 for typical installations.)

(d) Example 4: A trench is dug in previously disturbed Type B soil, with characteristics of a Type C soil, and will require sheeting. The trench is 18 feet deep and 12 feet wide. 8 foot horizontal spacing between cylinders is desired for working space. From Table N-10: Find horizontal wale with a section modulus of 14.0 spaced at 4 feet o.c. vertically and 3 inch diameter cylinder spaced at 9 feet maximum o.c. horizontally, 3x12 timber sheeting is required at close spacing vertically. (See Figure N-26 for typical installation.)

(e) Example 5: A trench is dug in Type C soil, 9 feet deep and 4 feet wide. Horizontal cylinder spacing in excess of 6 feet is desired for working space. From Table N-11: Find horizontal wale with a section modulus of 7.0 and 2 inch diameter cylinders spaced at 6.5 feet o.c. horizontally. Or, find horizontal wale with a 14.0 section modulus and 3 inch diameter cylinder spaced at 10 feet o.c. horizontally. Both wales are spaced 4 feet o.c. vertically. 3x12 timber sheeting is required at close spacing vertically. (See Figure N-26 for typical installation.)

(7) Footnotes, and general notes, for Tables N-8 through N-11.

(a) For applications other than those listed in the tables, refer to WAC 296-155-657 (3)(b) for use of manufacturer's tabulated data. For trench depths in excess of 20 feet, refer to WAC 296-155-657 (3)(b) and (c).

(b) 2-inch diameter cylinders, at this width, shall have structural steel tube (3.5x3.5x0.1875) oversleeves, or structural oversleeves of manufacturer's specification, extending the full, collapsed length.

(c) Hydraulic cylinders capacities.

(i) 2-inch cylinders shall be a minimum 2-inch inside diameter with a safe working capacity of not less than 18,000 pounds axial compressive load at maximum extension. Maximum extension is to include full range of cylinder extensions as recommended by product manufacturer.

(ii) 3-inch cylinders shall be a minimum 3-inch inside diameter with a safe work capacity of not less than 30,000 pounds axial compressive load at maximum extension. Maximum extension is to include full range of cylinder extensions as recommended by product manufacturer.

(d) All spacing indicated is measured center to center.

(e) Vertical shoring rails shall have a minimum section modulus of 0.40 inch.

(f) When vertical shores are used, there must be a minimum of three shores spaced equally, horizontally, in a group.

(g) Plywood shall be 1.125 in. thick softwood or 0.75 inch thick, 14 ply, arctic white birch (Finland form).

Please note that plywood is not intended as a structural member, but only for prevention of local raveling (sloughing of the trench face) between shores.

(h) See appendix C for timber specifications.

(i) Wales are calculated for simple span conditions.

(j) See subsection (4) of this appendix, for basis and limitations of the data.

Aluminum Hydraulic Shoring -- Typical Installations



Image 1 in PDF format. Available for Offline Print

Table N-8



Image 2 in PDF format. Available for Offline Print

Table N-9



Image 3 in PDF format. Available for Offline Print

Table N-10



Image 4 in PDF format. Available for Offline Print

Table N-11



Image 5 in PDF format. Available for Offline Print

Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-155-66407, filed 10/30/92, effective 12/8/92.

WAC 296-155-66407, WA ADC 296-155-66407

Current with amendments included in the Washington State Register, Issue 11-21, dated November 2, 2011.

(C) 2011 Thomson Reuters.

END OF DOCUMENT

Appendix 6

WAC 296-155-650

Wash. Admin. Code 296-155-650

Washington Administrative Code Currentness

Title 296B. (Ch. 60-900) Labor and Industries, Department of

Chapter 296-155. Safety Standards for Construction Work

Part N Excavation, Trenching, and Shoring

➔ **296-155-650. Scope, application, and definitions applicable to this part.**

(1) Scope and application. This part applies to all open excavations made in the earth's surface. Excavations are defined to include trenches.

(2) Definitions applicable to this part.

(a) "Accepted engineering requirements or practices." Those requirements which are compatible with standards of practice required by a registered professional engineer.

(b) "Aluminum hydraulic shoring." A preengineered shoring system comprised of aluminum hydraulic cylinders (crossbraces) used in conjunction with vertical rails (uprights) or horizontal rails (walers). Such system is designed, specifically to support the sidewalls of an excavation and prevent cave-ins.

(c) "Bell-bottom pier hole." A type of shaft or footing excavation, the bottom of which is made larger than the cross section above to form a belled shape.

(d) "Benching (benching system)." A method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.

(e) "Cave-in." The separation of a mass of soil or rock material from the side of an excavation, or loss of soil from under a trench shield or support system, and its sudden movement into the excavation in quantity that it could entrap, bury, injure, or immobilize a person.

(f) "Competent person." One who can identify existing or predictable hazards in the surroundings that are unsanitary, hazardous, or dangerous to employees. Also has authorization or authority by the nature of their position to take prompt corrective measures to eliminate them. The person shall be knowledgeable in the requirements of this part.

(g) "Cross braces." The horizontal members of a shoring system installed perpendicular to the sides of the excavation, the ends of which bear against either uprights or wales.

(h) "Excavation." Any person-made cut, cavity, trench, or depression in the earth's surface, formed by earth removal.

(i) "Faces or sides." The vertical or inclined earth surfaces formed as a result of excavation work.

(j) "Failure." The breakage, displacement, or permanent deformation of a structural member or connection so as to reduce its structural integrity and its supportive capabilities.

(k) "Hazardous atmosphere." A atmosphere which by reason of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen deficient, toxic, or otherwise harmful, may cause death, illness, or injury.

(l) "Kickouts." Accidental release or failure of a cross brace.

(m) "Protective system." A method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Protective systems include support systems, sloping and benching systems, shield systems, and other systems that provide the necessary protection.

(n) "Ramp." An inclined walking or working surface that is used to gain access to one point to another, and is constructed from earth or from structural materials such as steel or wood.

(o) "Registered professional engineer." A person who is registered as a professional engineer in the state of Washington. The registered professional engineer shall comply with the Washington state department of licensing requirements, chapter 18.43 RCW.

(p) "Sheeting." The members of a shoring system that retain the earth in position and in turn are supported by other members of the shoring system.

(q) "Shield (shield system)." A structure that is able to withstand the forces imposed on it by a cave-in and thereby protect employees within the structure. Shields can be permanent structures or can be designed to be portable and moved along as work progresses. Additionally, shields can be either premanufactured or job-built in accordance with WAC 296-155-657 (3)(c) or (d). Shields used in trenches are usually referred to as "trench boxes" or "trench shields."

(r) "Shoring (shoring system)." A structure such as a metal hydraulic, mechanical, or timber shoring system that supports the sides of an excavation and which is designed to prevent cave-ins.

(s) "Sides." See "faces."

(t) "Sloping (sloping system)." A method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.

(u) "Stable rock." A natural solid mineral material that can be excavated with vertical sides and will remain intact while exposed. Unstable rock is considered to be stable when the rock material on the side or sides of the excavation is secured against caving-in or movement by rock bolts or by another protective system that has been designed by a registered professional engineer.

(v) "Structural ramp." A ramp built of steel or wood, usually used for vehicle access. Ramps made of soil or rock are not considered structural ramps.

(w) "Support system." A structure such as underpinning, bracing or shoring, which provides support to an adjacent structure, underground installation, or the sides of an excavation.

(x) "Tabulated data." Tables and charts approved by a registered professional engineer and used to design and construct a protective system.

(y) "Trench (trench excavation)." A narrow excavation in relation to its length made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet (4.6m). If forms or other structures are installed or constructed in an excavation so as to reduce the dimension measured from the forms or structure to the side of the excavation to 15 feet (4.6 m) or less (measured at the bottom of the excavation), the excavation is also considered to be a trench.

(z) Trench box. See "shield."

(aa) "Trench shield." See "shield."

(bb) "Uprights." The vertical members of a trench shoring system placed in contact with the earth and usually positioned so that individual members do not contact each other. Uprights placed so that individual members are closely spaced, in contact with or interconnected to each other, are often called "sheeting."

(cc) "Wales." Horizontal members of a shoring system placed parallel to the excavation face whose sides bear against the vertical members of the shoring system or earth.

[Statutory Authority: Chapter 49.17 RCW. 94-15-096 (Order 94-07), § 296-155-650, filed 7/20/94, effective 9/20/94. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. 92-22-067 (Order 92-06), § 296-155-650, filed 10/30/92, effective 12/8/92. Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-155-650, filed 1/10/91, effective 2/12/91. Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-074 (Order 86-14), § 296-155-650, filed 1/21/86. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-13-053 (Order 81-9), § 296-155-650, filed 6/17/81; Order 74-26, § 296-155-650, filed 5/7/74, effective 6/6/74.]

WAC 296-155-650, WA ADC 296-155-650

Current with amendments included in the Washington State Register, Issue 11-21, dated November 2, 2011.

(C) 2011 Thomson Reuters.

END OF DOCUMENT

FILE
COURT OF APPEALS
DIVISION II

NO. 42452-5-II

**COURT OF APPEALS, DIVISION II
OF THE STATE OF WASHINGTON**

11 DEC 22 PM 1:53

POTELCO, INC.,

Plaintiff,

v.

DEPARTMENT OF LABOR AND
INDUSTRIES OF THE STATE OF
WASHINGTON,

Defendant.

STATE OF WASHINGTON

CERTIFICATE OF SERVICE
BY _____
DEPUTY

The undersigned, under penalty of perjury pursuant to the laws of the State of Washington, certifies that on December 21, 2011, she caused to be served the Brief of Respondent, Department of Labor and Industries with Appendices 1-6 and this Certificate of Service in the below-described manner.

Via First Class United States Mail, Postage Prepaid + 1 Copy to:

Mr. David Ponzoha
Court Administrator/Clerk
Court of Appeals, Division Two
950 Broadway, Suite 300
Tacoma, WA 98402

Via First Class United States Mail, Postage Prepaid to:

Skylar A. Sherwood & Gena M. Bomotti
Riddell Williams
1001 Fourth Avenue, Suite 4500
Seattle, WA 98154-1192

ORIGINAL

Signed this 21st day of December, 2011, in Seattle, Washington
by:


EILEEN T. WEST
Legal Assistant
Office of the Attorney General
800 Fifth Avenue, Suite 2000
Seattle, WA 98104-3188
(206) 464-7740