October 22, 2010

**STATUS AND UPDATE**

**Construction and Demolition Operations**
**Historic Background Document Only**
**Safety Requirements for Excavation**

Update: October 22, 2010


Member interest in the issue excavation accepted practices continues to be strong. In the past several months numerous members of the Construction and Mining Practice Specialties have inquired about the status of the A10.12 Standard since it appears to be in wide use on worksites.

While the standard is currently not referenced by government agencies, it is used in a variety of contracts and/or working agreements. After receiving these inquiries the following website guide and information packet was put together for members with an interest in excavation.

**Background Materials**

**Title:** *Safety Requirements for Excavation*

**Scope:** This standard applies to all open excavations made in the earth’s surface that require worker and/or property protection. See Section 3, Requirements for Protection Systems. Excavations are defined to include trenches.

**Past Versions of the Standard:**

A10.12 -1998
A10.12 (R2004)
The final version of the proposed A10.12 Table of Contents from the approved standard:

<table>
<thead>
<tr>
<th>Contents</th>
<th>SECTION ..................................................................................</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Scope, Application and Definitions Applicable to this Standard ....11</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.1 Scope and Application ..................................................</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>1.2 Definitions .......................................................................</td>
<td>11</td>
</tr>
<tr>
<td>2.</td>
<td>General Requirements ..................................................................</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>2.1 Owner’s Responsibilities ..................................................</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>2.2 Contractor’s or Subcontractor’s Responsibilities ..................</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>2.3 Excavation Competent Person’s Responsibilities .................</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>2.4 Surface Encumbrances .....................................................</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>2.5 Underground Installations ...............................................</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>2.6 Access and Egress ..........................................................</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>2.7 Exposure to Vehicular Traffic ...........................................</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>2.8 Exposure to Falling Loads ...............................................</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>2.9 Warning System for Mobile Equipment ...............................</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>2.10 Hazardous Atmospheres ..................................................</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>2.11 Protection from Hazards Associated with Water Accumulation</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>2.12 Stability of Adjacent Structures ....................................</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>2.13 Protection of Employees from Loose Rock or Soil ...............</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>2.14 Inspections ......................................................................</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>2.15 Fall Protection ..................................................................</td>
<td>18</td>
</tr>
<tr>
<td>3.</td>
<td>Requirements for Protective Systems .......................................</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>3.1 Protection of Employees in Excavations .............................</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>3.2 Design of Sloping and Benching Systems .............................</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>3.3 Design of Support Systems, Shield (Trench Box) Systems, and Other Protective Equipment</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>3.4 Materials and Equipment ..................................................</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>3.5 Installation and Removal of Support ...................................</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>3.6 Sloping and Benching Systems ..........................................</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>3.7 Shield (Trench Box) Systems .............................................</td>
<td>21</td>
</tr>
<tr>
<td>A</td>
<td>Soil Classification ....................................................................</td>
<td>23</td>
</tr>
<tr>
<td>A1</td>
<td>Scope and Application ................................................................</td>
<td>23</td>
</tr>
<tr>
<td>A2</td>
<td>Definitions .............................................................................</td>
<td>23</td>
</tr>
<tr>
<td>A3</td>
<td>Requirements ..........................................................................</td>
<td>25</td>
</tr>
<tr>
<td>A3.1</td>
<td>Classification of Soil and Rock Deposits ................................</td>
<td>25</td>
</tr>
<tr>
<td>A3.2</td>
<td>Basis for Classification ......................................................</td>
<td>25</td>
</tr>
<tr>
<td>A3.3</td>
<td>Visual and Manual Analysis ..................................................</td>
<td>26</td>
</tr>
<tr>
<td>A3.4</td>
<td>Layered Systems ......................................................................</td>
<td>26</td>
</tr>
</tbody>
</table>
A3.5 Reclassification........................................................................26
A4 Acceptable Visual and Manual Tests........................................26
A4.1 Acceptable Visual Analysis ....................................................26
A4.2 Acceptable Manual Test........................................................26
A4.3 Other Strength Tests............................................................27
A4.4 Drying Test ...........................................................................27
B Sloping and Benching.................................................................28
B1 Scope and Application..............................................................28
B2 Definitions...............................................................................28
B3 Requirements ...........................................................................28
B3.1 Soil Classifications...............................................................28
B3.2 Maximum Allowable Slope ....................................................28
B3.3 Actual Slope .........................................................................28
B3.4 Configurations .....................................................................28
B3.5 Excavations Made in Type A Soil..........................................30
B3.6 Excavations Made in Type B Soil..........................................30
B3.7 Excavations Made in Type C Soil..........................................31
B3.8 Excavations Made in Layered Soil........................................32
C Timber Shoring for Trench Excavations....................................33
C1 Scope.......................................................................................33
C2 Soil Classification......................................................................33
C3 Presentation of Information........................................................33
C4 Basis and Limitations of the Data.............................................33
C4.1 Dimensions of Timber Members..........................................33
C4.2 Limitation of Application.......................................................34
C5 Use of Tables.............................................................................34
C6 Examples to Illustrate the Use of Tables C1-C3........................34
C7 Notes for Appendix C Tables ....................................................35
D Aluminum Hydraulic Shoring for Trenches ...............................43
D1 Scope.......................................................................................43
D2 Soil Classification......................................................................43
D3 Presentation of Information.......................................................43
D4 Basis and Limitations of the Data.............................................43
D5 Use of Tables D1-D4...............................................................44
D6 Examples to Illustrate the Use of the Tables .........................44
D7 Notes for Tables D1-D4.........................................................45
E Alternative Worker Protection Systems.................................50
F Selection of Protection Systems.................................................52

TABLES
B1 Maximum Allowable Slopes...................................................29
C1 Timber Trench Shoring – Minimum Timber
   Requirements Soil Type A.........................................................37
C2 Timber Trench Shoring – Minimum Timber
   Requirements Soil Type B.........................................................38
C3 Timber Trench Shoring – Minimum Timber Requirements Soil Type C .................................................. 39
C4 Timber Trench Shoring – Minimum Timber Requirements Soil Type A .................................................. 40
C5 Timber Trench Shoring – Minimum Timber Requirements Soil Type B .................................................. 41
C6 Timber Trench Shoring – Minimum Timber Requirements Soil Type C .................................................. 42
D1 Aluminum Hydraulic Shoring, Vertical Shores, For Soil Type A .................................................. 46
D2 Aluminum Hydraulic Shoring, Vertical Shores, For Soil Type B .................................................. 46
D3 Aluminum Hydraulic Shoring, Water Systems, For Soil Type B .................................................. 46
D4 Aluminum Hydraulic Shoring, Water Systems, For Soil Type C .................................................. 46

FIGURES
B1 Simple Slope – Type A .................................................. 30
B2 Simple Slope – Short-Term .................................................. 30
B3 Simple Bench .................................................. 30
B4 Multiple Bench .................................................. 30
B5 Supported or Shielded Vertically Sided Lower Portion .................................................. 30
B6 Simple Slope – Type B .................................................. 30
B7 Simple Bench .................................................. 31
B8 Multiple Bench .................................................. 31
B9 Vertically Sided Lower Portion .................................................. 31
B10 Simple Slope – Type C .................................................. 31
B11 Vertical Sided Lower Portion .................................................. 31
B12 B Over A .................................................. 32
B13 C Over A .................................................. 32
B14 C Over B .................................................. 32
B15 A Over B .................................................. 32
B16 A Over C .................................................. 32
B17 B Over C .................................................. 32
D1 Vertical Aluminum Hydraulic Shoring (Spot Bracing) .................................................. 47
D2 Vertical Aluminum Hydraulic Shoring (With Plywood) .................................................. 47
D3 Vertical Aluminum Hydraulic Shoring (Stacked) .................................................. 48
D4 Aluminum Hydraulic Shoring Water System (Typical) .................................................. 49
E1 Aluminum Hydraulic Shoring .................................................. 50
E2 Pneumatic/Hydraulic Shoring .................................................. 50
E3 Trench Jacks (Screw Jacks) .................................................. 51
E4 Trench Shields .................................................. 51
F1 Preliminary Decisions .................................................. 52
F2 Sloping Options .................................................. 53
F3 Shoring and Shielding Options .................................................. 54

Links of how A10.12 is used:
ASSE position statement on the use of consensus standards:

Safeguarding – Are ANSI Standards Really Voluntary?

What is the Difference Between an ANSI Rule and an OSHA Standard?

Memorandum of Understanding Between the Occupational Safety and Health Administration and the American National Standards Institute

Example of a 5A1 proceeding (General Duty Clause)
http://www.osha.gov/pls/imis/generalsearch.citation_detail?id=314376609&cit_id=01001