Take five minutes or less to answer the questions on the handout sheet

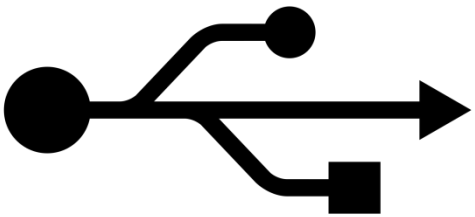
This presentation was possible through a grant provided by:

Establishing Freshman-to-Senior Bookend Experiences to Provide Academic and Professional Introductions to Standardization

Dr. Mike Ogle, Principal Investigator

Does Any of This Look Familiar?

IEEE 802.11



IEC 62680

ISO 9001 Certified

General Prohibition Sign

"This safety sign cannot be used on its own and requires a supplementary sign to give further information about the action which is prohibited."

ISO 7010:2011 — Graphical symbols -- Safety colours and safety signs -- Registered safety signs

ISO/TC 145/SC 2

Website reference: https://www.iso.org/obp/ui/#iso:grs:7010:2:P001

General Mandatory Action Sign

"This safety sign cannot be used on its own and requires a supplementary sign to give further information about the action to be taken."

ISO 7010:2011 — Graphical symbols -- Safety colours and safety signs -- Registered safety signs

ISO/TC 145/SC 2

Website reference: https://www.iso.org/obp/ui/#iso:grs:7010:2:M001

General Warning Sign

"This safety sign cannot be used on its own and requires a supplementary sign to give further information about the hazard."

ISO 7010:2011 — Graphical symbols -- Safety colours and safety signs -- Registered safety signs

ISO/TC 145/SC 2

Website reference: https://www.iso.org/obp/ui/#iso:grs:7010:2:W001

"Do not wear metal-studded footwear"

General Prohibition Sign

"This safety sign cannot be used on its own and requires a supplementary sign to give further information about the action which is prohibited."

Designation

ISO 7010:2011 — *Graphical symbols -- Safety colours and safety signs -- Registered safety signs*

Responsible committee

ISO/TC 145/SC 2

Website reference: https://www.iso.org/obp/ui/#iso:grs:7010:2:P001

What Is a Standard?

A standard is a document that provides requirements, specifications, guidelines or characteristics that can be used consistently to ensure that materials, products, processes and services are fit for their purpose.

http://www.iso.org/iso/home/standards.htm

More Important, Why Standardize?

Interoperability (size, shape, frequency, voltage),
Performance (capacity, strength, lifespan, flexibility)
Safety (impact resistance, fire resistance, labeling)
Consistent terminology for the above functionality
Consistent tests for the above functionality
Consumer confidence to enable a market

ISO 3873:1977(en) Industrial safety helmets

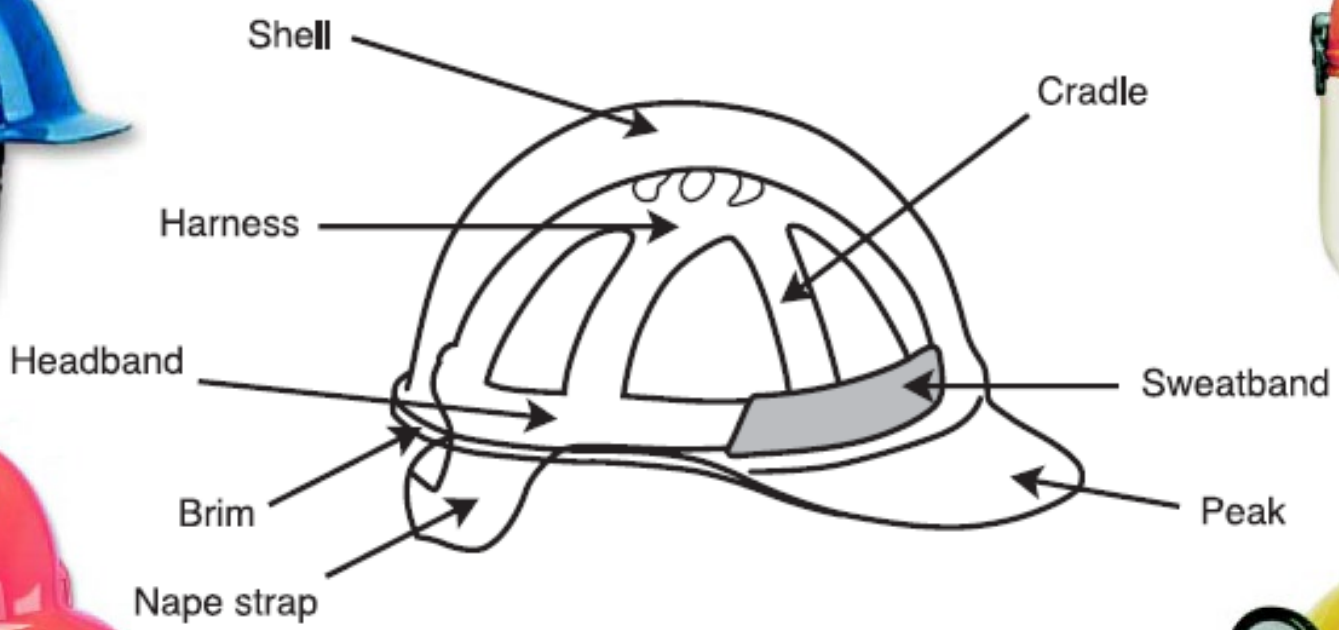


Figure C: General design

http://www.labour.gov.hk/eng/public/os/C/helmet_eng.pdf

Other Standards for Industrial safety helmets

- American National Standard - For industrial head protection (ANSI Z89.1)
- Australian/New Zealand Standard - Occupational protective helmets (AS/NZS 1801)
- Canadian Standard - Safety helmets (CSA Z94.1)
- European Standard - Specification for industrial safety helmets (EN 397)
- International Standard - Industrial safety helmets (ISO 3873)
- Japanese Industrial Standard - Industrial safety helmets (JIS T 8131)
- People's Republic of China National Standard - Safety helmets (GB 2811)

ISO 3873:1977(en) Industrial safety helmets

Technical Committee ISO/TC 94, *Personal safety — Protective clothing and equipment*

It has been approved by the member bodies of the following countries :

Australia	Israel	Spain
Austria	Italy	Sweden
Bulgaria	Mexico	Switzerland
Denmark	Netherlands	Turkey
France	New Zealand	United Kingdom
Germany	Norway	U.S.S.R.
Hungary	Poland	Yugoslavia
Iran	Romania	
Ireland	South Africa, Rep. of	

The member body of the following country expressed disapproval of the document on technical grounds : Belgium

ISO 3873:1977(en) Industrial safety helmets

1 SCOPE

This International Standard specifies physical and performance requirements, methods of test and marking requirements for industrial safety helmets.

3 DEFINITIONS

3.1
safety helmet
A helmet primarily intended to protect the upper part of a wearer's head against a blow.

3.2
shell
The hard, smoothly finished material that provides the general form of the helmet.

3.3
peak
A permanent extension of the shell above the eyes.

3.4
brim
A rim surrounding the shell.

ISO 3873:1977(en) Industrial safety helmets

What are the words for the ANSI acronym?	American National Standards Institute

ANSI is a private organization, coordinating the U.S. consensus standards system, providing a neutral forum for the development of policies on standards issues and serves as a watchdog for standards development and conformity assessment programs and processes by accrediting and auditing standards developers.

1,073	Total ANSI Members
605	Company Members
343	Organizational Members
64	Government Members
23	Educational/Institutional Members
38	International Members

240	ANSI-Accredited Standards Developers (ASDs)
11,368	Approved American National Standards (ANS)

http://publicaa.ansi.org/sites/apdl/Documents/News%20and%20Publications/Brochures/Annual%20Report%20Archive/ANSI_2014_15_Annual_Report.pdf

All Standards, Specifications, Guidelines are not ANSI Standards, but all American National Standards (ANS) are ANSI Standards

So What Do You Get with an ANS Process?

- open, balanced group of interested/affected people (concensus body)
- broad-based, open public review/comment on draft standards
- anyone can comment and be considered during public review
- incorporation of approved changes into a draft standard
- right to appeal if due process was not respected

What does ISO mean?	equal

ISO formed in 1946 when 25 countries met at the Institute of Civil Engineers in London

ISO International Organization for Standardization

Commonly thought of as:

We are a private, non-governmental, organization.

We are a global network of national standards bodies with one member per country.

ANSI is the official U.S. member

165 members

20 500 International Standards

More than 100 000 experts

http://www.iso.org/iso/isoinbrief_2015.pdf

What is the value of "x" in terms of 10^x for the number of ANSI standards (3 => 1000 4 => 10,000 5 => 100.000 6 => 1,000,000) and what is "x" for the number of ISO standards?			
ANSI	**<4.1**	***ISO***	**>4.3**

11,368 Approved American National Standards (ANS)

http://publicaa.ansi.org/sites/apdl/Documents/News%20and%20Publications/Brochures/Annual%20Report%20Archive/ANSI_2014_15_Annual_Report.pdf

20 500 International Standards

http://www.iso.org/iso/isoinbrief_2015.pdf

Many American National Standards (ANS) become ISO standards

One example is the intermodal freight container

https://en.wikipedia.org/wiki/Intermodal_container

Who develops the standards that affect your everyday lives (for example: bicycle helmets, concrete strength, safety signage, USB drive size, gasoline octane levels, Wi-Fi, etc.)?

… well, you may be the *future* you

Most people think there is a group of people (hopefully, smart, caring, people) in Washington or some other big city, that know everything about everything and they develop all the standards.

Look to your left and look to your right…for better or worse…those are the people that will be creating your standards!

International Organization for Standardization

What is the civil engineering professional organization you can join as a student.	ASCE

ASCE AMERICAN SOCIETY OF CIVIL ENGINEERS

CODES & STANDARDS

http://www.asce.org/codes-and-standards/codes-and-standards/

ASCE Standards provide technical guidelines for promoting safety, reliability, productivity, and efficiency in civil engineering. Many of our standards are referenced by model building codes and adopted by state and local jurisdiction. They also provide guidance for design projects around the world.

Accredited by ANSI, ASCE has a rigorous and formal process overseen by the Codes and Standards Committee (CSC). Standards are created or updated by a balanced, volunteer standards committee, followed by a public review period.

http://ascelibrary.org/standards lists 89 published standards documents

Over 12,000 standards

Over 550 standards

Approximately 1300 standards

Over 1300 standards

Approximately 150 standards

Over 130 standards

Standards are enforceable as laws	Circle one of the choices below		
	YES	NO	It depends

ANSI and ISO standards are voluntary

Adopt them or don't, it is up to you!

However, if the Code of Federal Regulations or a Building Code references the standard for work you, your company, or your employees are doing, then you follow the standard.

If your client references that you must follow a standard, again you can voluntarily choose not to follow the standard...

...and therefore voluntarily choose not to have their business

How long (number of months from inspiration to publication) does it take to develop an ANSI standard? An ISO standard?			
ANSI	**It depends…** **min 1+30+45+1 days*A**	***ISO***	**It depends…** **on a lot of factors**

*A

- assuming the ASCE CSC agrees to give idea consideration on day one
- then ASCE/ANSI posts public announcement in *Standards Action* (30 days)
- then complete draft document is created/completed during the 30-day period
- draft is posted instantly for public comment after the 30-day mark by ANSI
- then after 45 days there is complete agreement with no comments
- then the next morning, the ANSI standards review board gave its blessing
- then that afternoon, the standard could be published by ASCE

The above is a fantasy world. More likely is 2-4 years of multiple committee meetings, ballots, comment review periods, revisions, administrative/committee/member communication delays, formatting, etc.

ASTM D2435 / D2435M

(Current Version: 2011)

Standard Test Method for One-Dimensional Consolidation Properties of Soils Using Incremental Loading

Developed by ASTM Subcommittee D18.05

900 members
300 standards

https://en.wikipedia.org/wiki/Leaning_Tower_of_Pisa

If you don't want this to happen…

…then do this test of the soil

http://d-2inc.com/astm-d02-conference-june-2015/

Example: Palacio De Bellas Artes

- Located in Mexico City
- Built on very soft clay layer
- Structure has sunk more than 15 feet since construction
- ASTM D2435 used to test for settlement of soil specimen

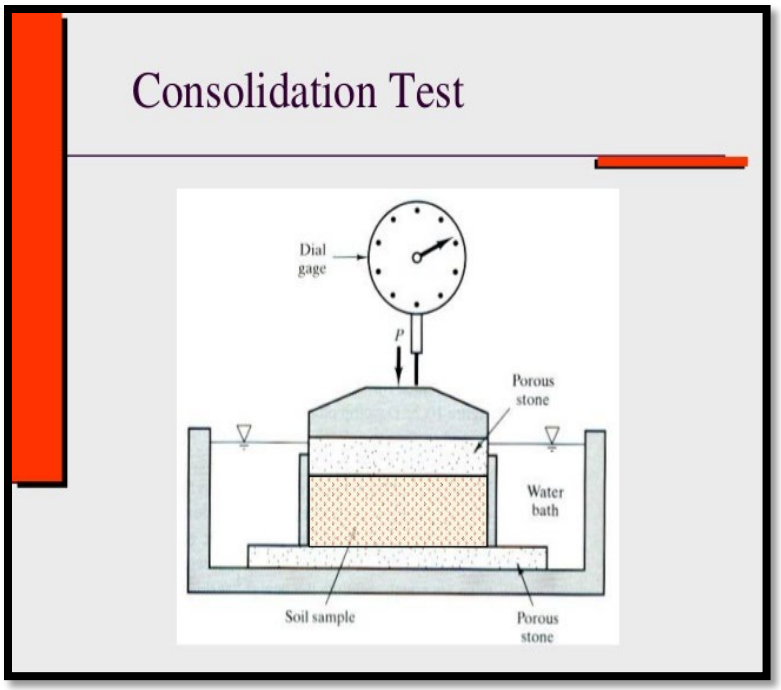
https://kshitija.wordpress.com/2006/05/05/significance-of-geotechnical-engineering-part-ii-total-settlement/

ASTM D2435 / D2435M

- First version of the standard was adopted in 1996
- This standard was implemented to test for total settlement of a soil specimen when subjected to vertical pressures

http://cooper.co.uk/shop/soil-mechanics/front-loading-oedometer/

Versions:
2004
2003
2002
1996



http://cooper.co.uk/shop/soil-mechanics/front-loading-oedometer/

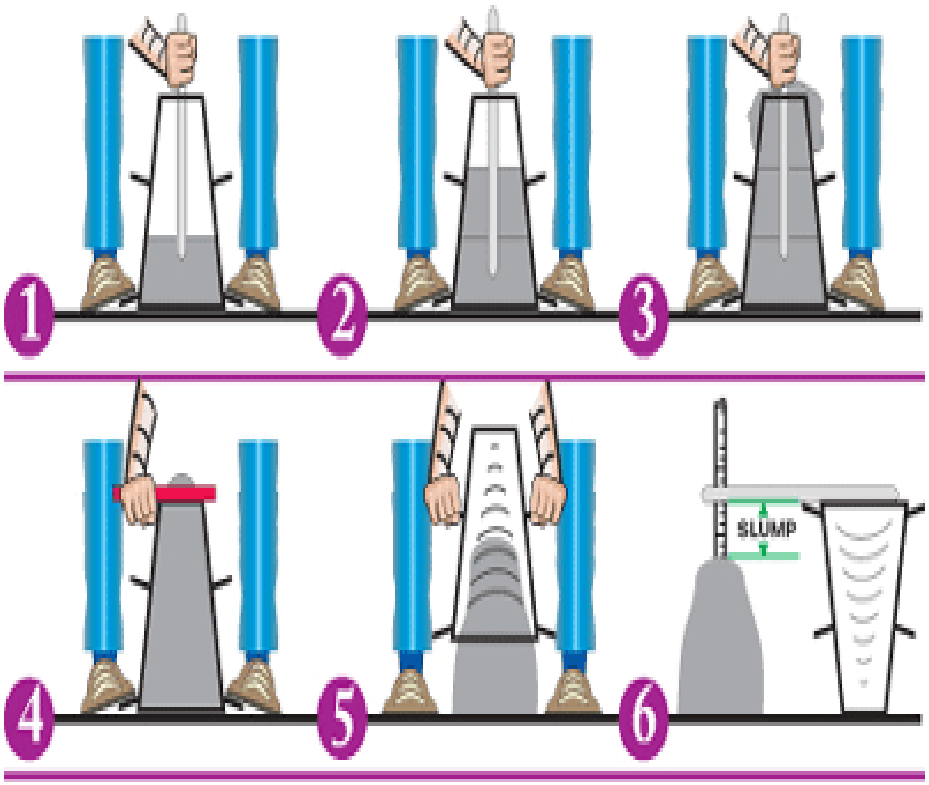
ASTM C143 / C143M

(Current Version: 2015)

Standard Test Method for Slump of Hydraulic Cement Concrete

Developed by ASTM Subcommittee C09.60 ← 1400 members
176 standards

Performed on every batch of concrete used for construction to determine workability



http://www.lmcc.com/concrete_news/0801/5-minute-classroom-slump.asp

"Slump Test"

http://www.humboldtmfg.com/test_sets.html

Should

Recommendation of good practice, but not mandated

(shoulds allow judgement calls)

vs.

Shall

Mandatory requirement to follow the standard.

(shalls give a standard its teeth)

Performance Standards

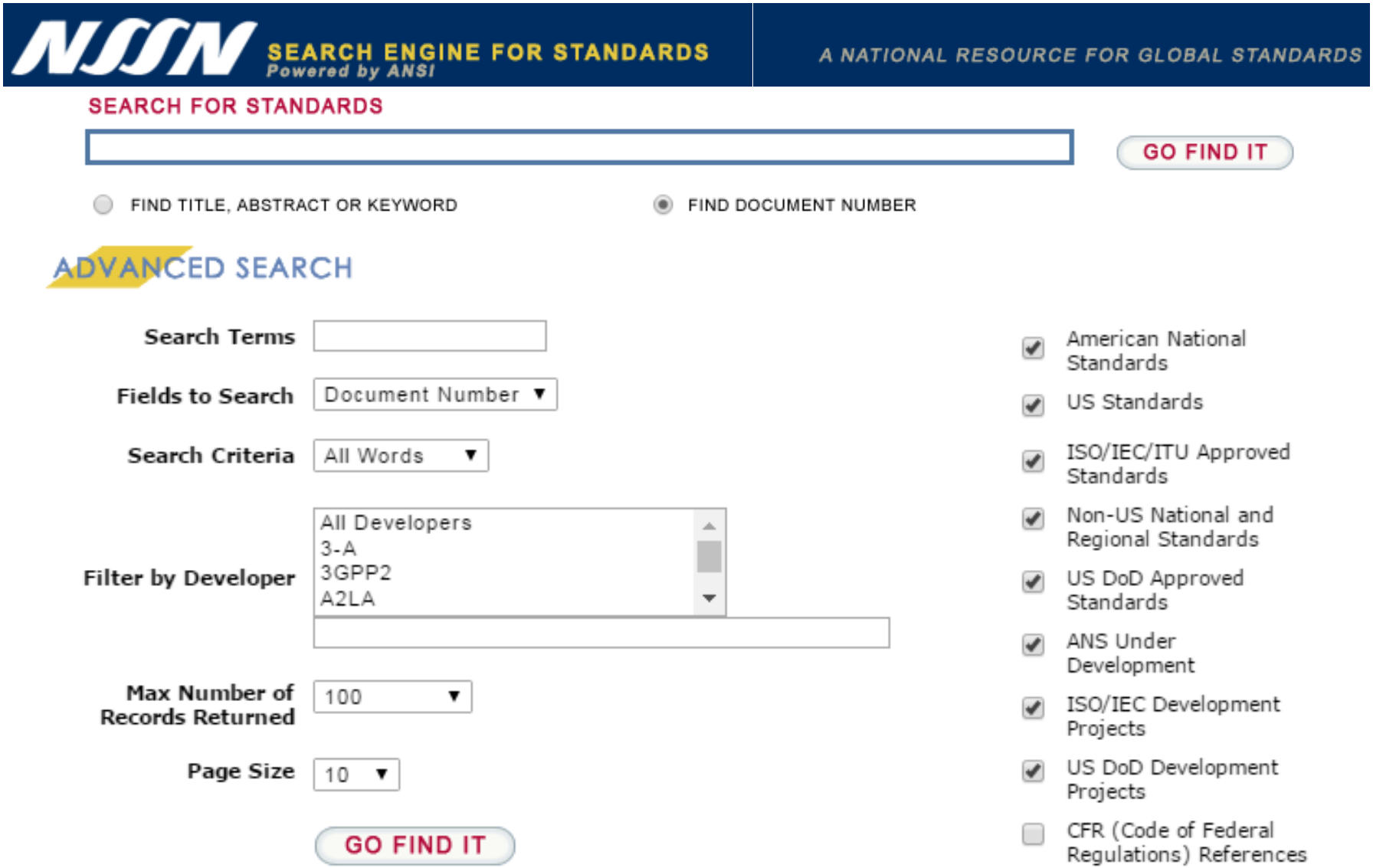
Specify clearly how something should/shall perform by providing clear guidance regarding what is desired and how to measure that performance

vs.

Prescriptive Standards

Specify exactly how something should/shall be done by providing clear guidance regarding materials, dimensions, processes, procedures, etc.

Where can you find the most comprehensive list of ANSI and ISO standards?	www.NSSN.org



Given what you know now about standards…

Take a few minutes to answer the questions on the handout sheet.

Then turn them in as you leave.