The Geo-Institute of the American Society of Civil Engineers Presents

Competition Rules for the National GeoWall

Held During

International Foundations Conference and Equipment Expo 2015

Important Dates

Rules published: August 6, 2014
Design papers due: January 16, 2015
Finalists notified: February 9, 2015
Pre-Competition Captains' Meeting: March 17, 2015
Competition: March 18, 2015

Geo-Congress 2014 Info: http://www.ifcee2015.com/

GeoChallenge Official Information Site:
http://www.mygeoworld.info/groups/profile/61033/geochallenge

Revision 02: October 2, 2014

GeoWall 2015 Competition Rules
Geo-Institute of the ASCE

1. **Objective** – The objective of the GeoWall competition is to design and build a model mechanically stabilized earth (MSE) retaining wall using paper reinforcement taped to a posterboard wall facing. The competition objectives are for students to:

    a) Design a MSE wall using the least amount of reinforcement needed to support the retained soil and design loads
    b) Effectively communicate their analysis and design processes
    c) Enjoy a friendly but spirited competition among schools
    d) Attend a world-class professional engineering conference.

2. **Background** – MSE walls have root to prehistoric builders who used sticks and branches to reinforce soil structures. The modern use of reinforced soils dates to the 1960s and French architect Henri Vidal's development of the Reinforced Earth® system. In the US the first MSE wall was built on California SR-39 near Los Angeles in 1971. A more recent application of MSE walls is as support for bridge abutments as shown in Figure 1. This year's competition will model this application of MSE walls by requiring teams to construct a three sided wall.

Figure 1: Typical use of MSE walls as bridge abutments

3. **Eligibility --** Only one team per school will be allowed to compete. A team consists of a maximum of four (4) students consisting of not more than two (2) graduate students. Each team shall designate a captain who shall be the point of contact for the team. All team members must be enrolled students at the date of the national competition.
4. **Design Report Submittal** – The Mechanically Stabilized Earth Wall Design Report: Invitation to the National Competition will be based upon submittal and ranking of the Design Report. The report must include:

    a) Cover page with name of institution; names and status (graduate, undergraduate) of each team member; identification of team captain with email address; and name, title, and email address of faculty advisor.
    b) Material properties used in design including methods (lab tests, correlations, assumptions) used to obtain the properties.
    c) Description of the engineering design and construction procedures including assumptions and equations used.
    d) A complete description of the geometry and placement of all reinforcing elements. Estimated mass of the reinforcing paper in grams (not including facing material or tape).
    e) A safety appendix which outlines the potentially hazardous tasks reasonably expected during the competition and how the team will mitigate these hazards.

Formatting requirements:

f) Length shall be a maximum of three (3) pages long (not including references, cover page, or safety appendix).
g) One inch margins, single spacing, and 12 point Times New Roman font.
h) All pages after the cover page shall contain a header identifying the team and a footer with the page number.
i) Entire paper must be submitted in a single pdf format file with a filename of <School Abbreviation>2015GeoWall.pdf.

Design reports will be judged by a panel of practicing engineers and professors. Judging will consider reasonableness of design equations, material properties, factors of safety, and assumptions. "Trial and error" designs will be heavily penalized. The judging rubric is presented in Appendix B.

Complete Design Report must be submitted in PDF format via email to Dr. William Kitch, (*wakitch@csupomona.edu*) by 6:00 pm PST January 16, 2015. Subject line must include "GeoWall 2015 Submittal." Sender will receive confirmation of receipt by e-mail. Any changes or corrections made to the design report after this time will incur a penalty.

5. **National Competition Selection** – Up to twenty teams will be selected for the National Finals GeoWall competition based upon scores earned on the design reports.

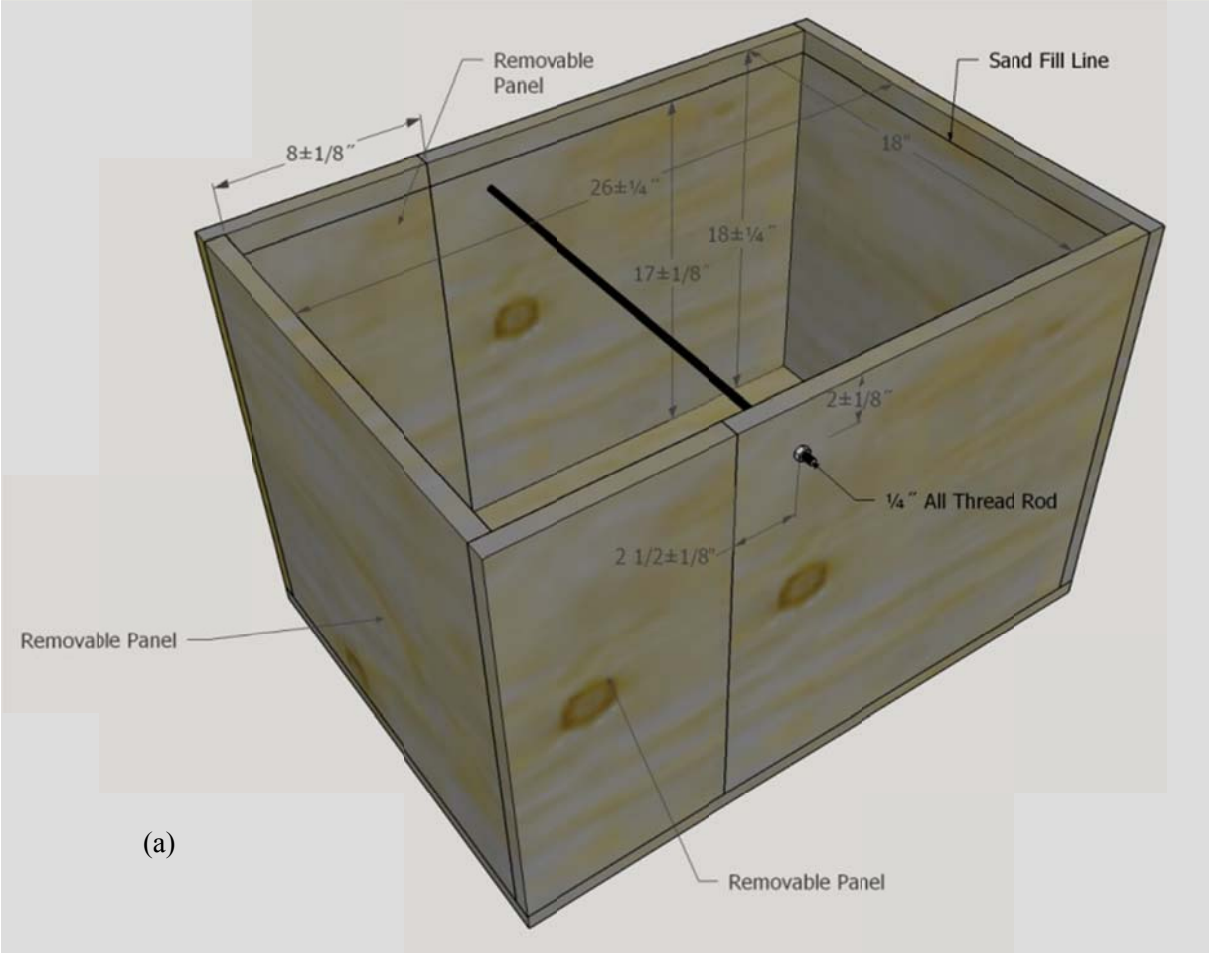
   Teams selected for National Finals must complete Appendices D and E and submit copies to Dr. Kitch at the email address in paragraph 4.

6. **Sandbox** – The MSE wall will be constructed within an apparatus hereafter referred to as a sandbox. Each team shall bring their own sandbox to the competition. Painting and addition of school or sponsor logos and other decorations to the exterior of the sandbox is highly encouraged. The sandbox shall be made up of a bottom and four vertical sides with no top. The front panel and part of the two side panels will be removable as shown in Figure 2. The removable box panels will be in place during wall construction and removed after construction to expose the MSE wall. The sandbox will meet the following requirements:

   a) Have exteriors walls and base constructed of any grade of plywood not to exceed 3/4-inch (19 mm) thick.
   b) Have planar inside surfaces with the natural plywood finish.
   c) Have removable front and side panels as shown in Figure 2. Panels must be flush with the base of the box and held in place with threaded inserts, screws, hinges or other easily removable fasteners.
   d) Have a full-sized base such that it extends no more than 3/4 inch (19 mm) beyond the base of the wall once the front and side panels have been removed.
   e) Include a steel tie rod designed to keep the two fixed sides of the box parallel after removal of the facing panel.
   f) All dimensions of the sandbox shall be as shown in Figure 2.

   For convenience, sandboxes may be designed so they can be transported as flat pieces and reassembled at the competition site.

   Sandboxes will be checked for compliance at the pre-competition captains' meeting. Teams will have until the beginning of competition to correct any compliance issues. Any team with a box out of compliance at the start of competition will be penalized.



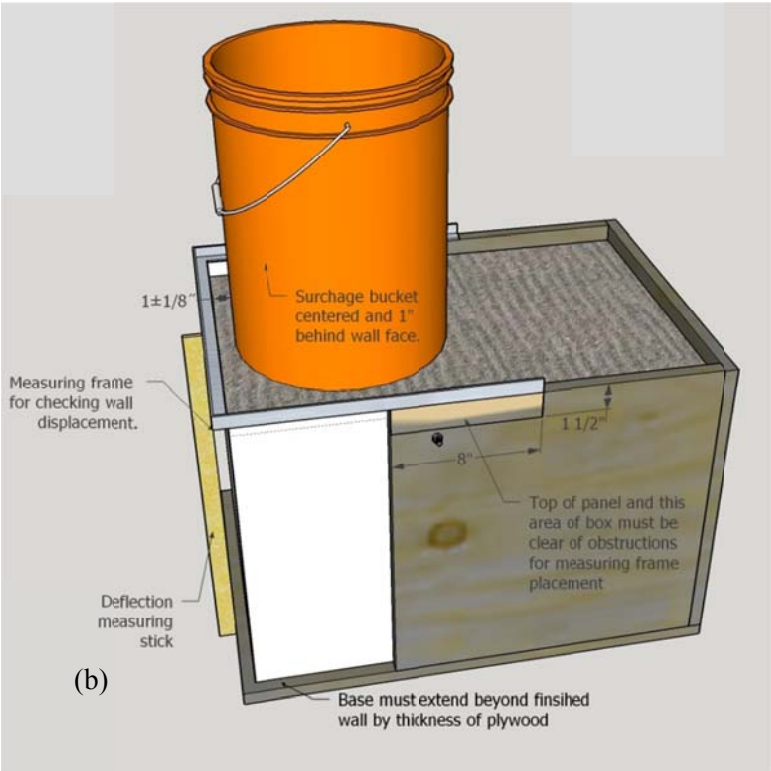


Figure 2: Sandbox illustrations: a) Assembled box before wall placement with dimensions. b) Box with wall and backfill in place and front and side planes removed. Note obstruction free area required for placement of temporary measuring frame. Measuring frame will be provided by conference organizers (not to scale)

7. **Backfill Material-** The backfill material will be sand provided by competition organizers on site. The sand will be a clean, dry, rounded to subrounded sand with grain size as specified in Table 1 and Figure 3. The backfill material must be used as-is: no water, additives, or chemical stabilizers may be placed in the backfill material.

   Competition organizers will make reasonable efforts to ensure the competition backfill materials meet the specifications in Table 1 and Figure 3. Teams will be allowed to examine a sample of the competition backfill at the captains' meeting. No backfill samples may be removed from the meeting room. Teams may modify their wall design at this time if they desire. See paragraph 11 below.

Table 1: Representative grain-size distribution for GeoChallenge competition sand.

Typical Distribution		**Lower Bound**		**Upper Bound**	
Size (mm)	**% Passing**	**Size (mm)**	**% Passing**	**Size (mm)**	**% Passing**
2.00	100.0	1.30	100.0	2.50	100.0
1.70	96.8	1.20	96.9	2.30	96.9
1.18	41.8	1.15	93.7	2.10	93.7
1.00	15.8	0.80	38.7	1.60	38.7
0.85	3.3	0.60	12.7	1.30	12.7
		0.50	2.0	1.10	2.0

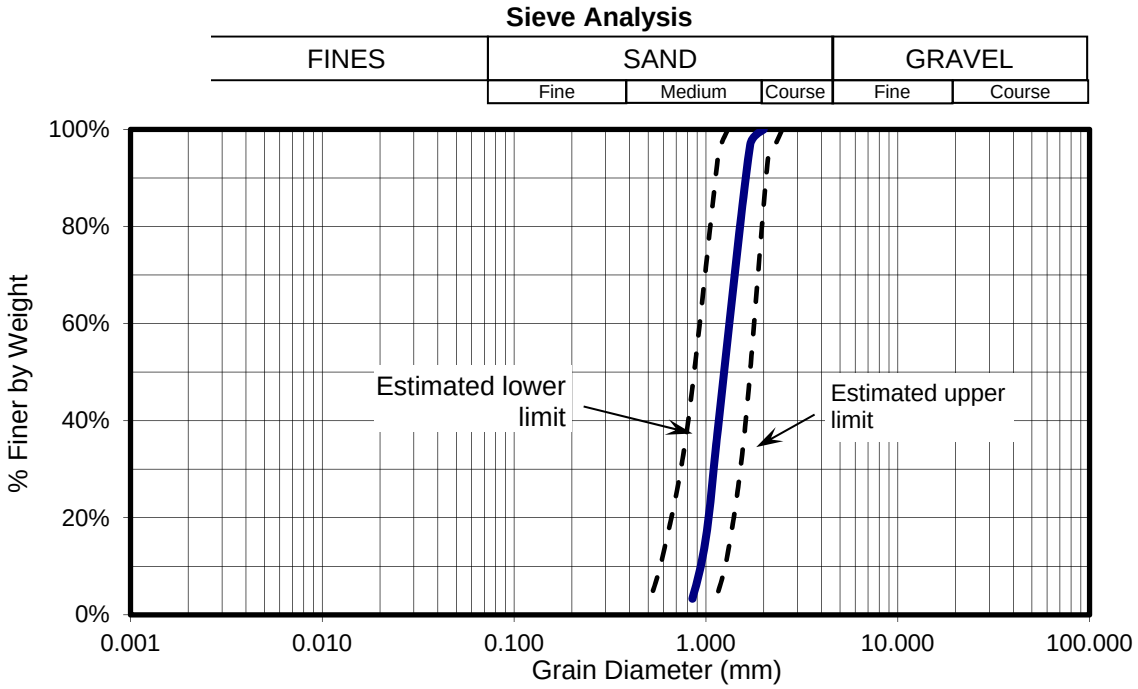


Figure 3: Estimated grain size distribution of backfill sand

8. **Wall Materials** – Materials will be provided by competition organizers on site. See Appendix A for detailed specifications.

    a) Facing – Two pieces of poster board must be joined with a lap splice. See Figure 4 for dimensions.
    b) Reinforcement – 60 lb kraft Paper. Quantity of reinforcement will be measured by mass to the nearest 0.01g. There are no restrictions on the shape or geometry of reinforcing elements, but all reinforcement must be cut from a single sheet 24″ × 24″.
    c) Reinforcement Attachment to Facing – Heavy duty polypropylene packaging tape, 2″ wide.

    Competition organizers will make reasonable efforts to ensure the wall materials meet the specifications in Appendix A. Teams will be provided small samples of the reinforcing material at the captains' meeting. Teams may modify their wall design at this time if they desire. See paragraph 11 below.

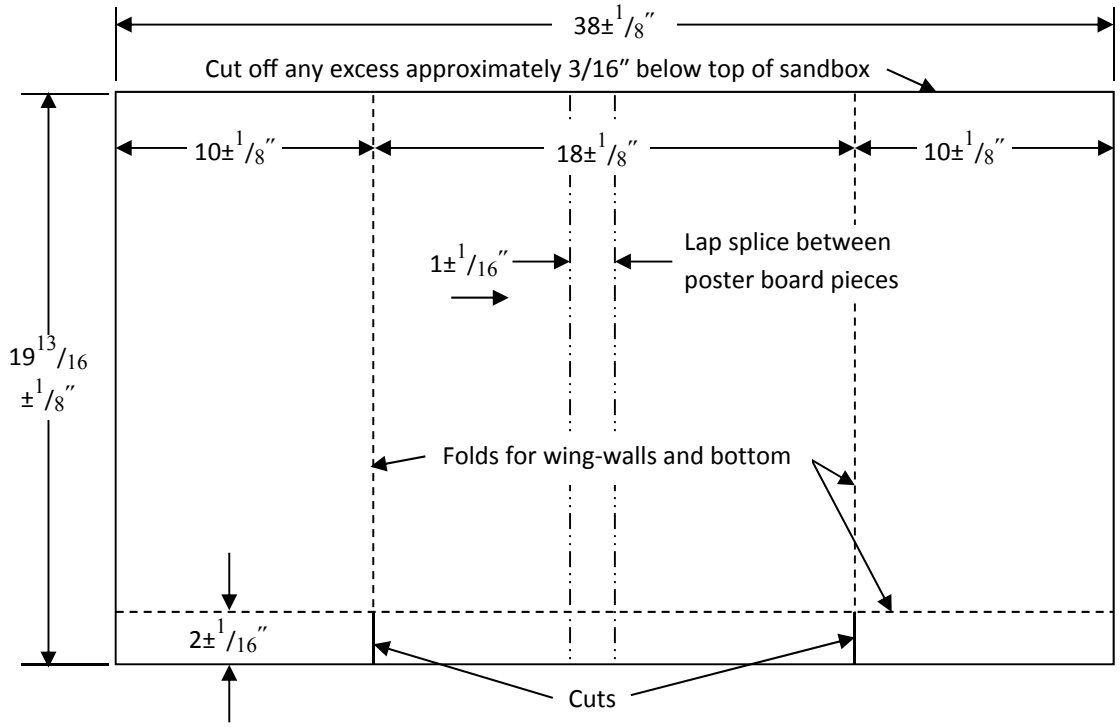


Figure 4: Dimensions of the posterboard wall facing (not to scale)

9. **Construction Tools** - The following construction tools may be used and must be provided by the competing team (quantities of these items shall not be restricted):

    a) Pencils, pens, and markers
    b) Rulers and straight edges
    c) Levels
    d) Manually operated cutting instruments (e.g., scissors, utility knifes, razor blades, hole punch)
    e) Cutting boards or mats
    f) Design notes, calculations and drawings
    g) Material handling and compaction tools consisting of any hand operated devices.
    h) Screwdrivers (battery operated drills or screwdrivers may be used, but only to remove fasteners when removing the facing panels)

i) Temporary templates for use in any stage of competition. May be made of any material, must not have any moving parts, must be removed at the end of any stage in which they are used.

Buckets and shovels will be provided by the competition organizers.

10. **Execution** – Construction and testing of the wall will be done in the following stages:

a) **Reinforcement Fabrication Stage** – Each team will be provided with a single sheet of 60 lb kraft paper approximately 24″ × 24″. The team must fabricate all their reinforcing elements from this sheet using authorized construction tools. Fifteen (15) minutes will be allotted for this stage. Teams will be penalized for time exceeding the time limit. After all reinforcing elements are fabricated, excess material will be disposed of and the judges will weigh the reinforcing elements to the nearest 0.01 grams.

b) **Wall Assembly Stage** – After each team's reinforcing elements have been fabricated and weighed, the team will be provided with two sheets of poster-board (22″ × 28″) and a roll of packaging tape. The team must assemble their wall using these materials and authorized construction tools. Dimensions for the wall facing are shown in Figure 6.

i) Tape may be used for only two purposes: 1) to join the two poster-board sheets to form the wall facing and 2) to attach reinforcement to wall facing. The poster-board sheets must be joined using a single lap splice not exceeding 1″ to form the wall facing. A single continuous strip of tape may be used on each side of the poster-board to join the poster-board sheets. The tape must be in contact with only the two poster-board sheets. No other adhesives may be used to join the poster-boards.

ii) Tape used to attach reinforcement to the wall facing must be used in individual pieces no larger than 2″ × 2″. The adhesive side of each piece of tape must be in contact with both the wall facing and a reinforcing element. Tape pieces may not overlap one another, although they may overlap the tape forming the poster-board lap splice. All tape pieces must be placed on one of the three vertical planes forming the wall facing.

iii) Tape may not be used for any other purpose, including but not limited to: sealing corners of facing material, joining two or more reinforcing elements, anchoring facing material or reinforcement to the box.

iv) The wall should be trial-fitted to the sandbox during this stage. Any portion of the wall that rises above an imaginary line that is 3/16 ″ below the top of the sandbox must be trimmed off. The assembly stage is complete when the facing material is properly folded and trimmed, all the reinforcing elements are attached to the facing, and the wall is placed in the sandbox. No sand is added to the box in this stage. Fifteen (15) minutes will be allotted for this stage. Teams will be penalized for time exceeding the time limit. Judges will check to ensure the wall is properly assembled.

c) **Construction Stage** – After the wall is assembled and checked by the judges, the judges will instruct the team to start construction. During this stage the team fills the box with sand so that the sand fill line (see Figure 2) is covered and the backfill is level, and places the empty 5 gallon vertical surcharge bucket on top of the sand. The facing material must be in direct contact with the inside of the sandbox at all times during this stage. The tie rod may be removed from the box at the start of this stage, but it must be in place before any sand is placed in the box. Temporary templates or guides may be used during this stage so long as they are removed before the end of the stage.

The construction stage is complete when the wall is in place, the sand backfill covers the sand fill line and is level, any temporary templates or guides have been removed, and the empty vertical surcharge loading bucket is in place. Twenty (20) minutes will be allotted for this

stage. At the end of the phase, judges will check fill ~~and pile~~ placement to ensure they meet requirements.

d) **Loading Stage** – This stage occurs in two steps: 1) removal of front & side panels, and 2) placement of vertical surcharge. During each step, the wall will be checked for the following three criteria: 1) excessive deformation (any portion of the wall extending outside imaginary planes extending vertically from base of sandbox), 2) excessive soil leakage (more than 30 cm^3 of sand passing out of the sandbox), and 3) catastrophic failure. The team will be penalized for excessive soil loss, excessive deformation, and catastrophic failure.

i. When directed by judge, the team shall remove the front and side panels of the sandbox. After the panels are removed, the judge will wait one (1) minute and then check the three criteria.
ii. If the wall does not fail catastrophically, the team will then place 60 lbs of sand in the vertical surcharge bucket. The team will have one (1) minute to place the load. After the load is placed, the judge will wait one (1) minute and then check the three criteria.

11. **Design Changes** – Teams may change their design between the time the design report is submitted and the wall is tested. The adjusted mass of the reinforcing material used for scoring, M, will be computed as

$$M = m_A + 0.6\left(m_D - m_A\right)^2 \quad (1)$$

Where

m_D = reinforcing mass reported in design report;
m_A = reinforcing mass used during competition

12. **Scoring** – After completion of the loading stage, the score for each team will be computed using the following formula:

$$Score = R + 15\left(20 - M\right) - 10N_{\min} - 40N_{maj} - 2T - 20D - 40F \quad (2)$$

Where

R = report score out of 50 points
M = adjusted mass of the reinforcement material in grams
N_{min} = number of minor rules violations
N_{maj} = number of major rules violations
T = total number of minutes over time limit for all phases rounded up to nearest minute
D = deflection rating
5 if wall fails deflection criterion during initial loading without surcharge
3 if wall fails deflection criterion during vertical surcharge loading
0 if wall passes deflection criterion for all loading phases
F = Failure rating
5 if wall fails catastrophically during initial loading without surcharge
3 if wall fails catastrophically during vertical surcharge loading
0 if wall never fails catastrophically

Note that a wall that fails, by definition, also exceeds the deformation limit and both deductions will be applied.

a) Minor Penalties

i) Box dimension out of spec

ii) ~~Pile location out of spec~~<paragraph deleted>
iii) Any addendum to the design report required by judges which simply clarifies content but does not change the design
iv) Any other rule violation that in the opinion of the judges that has the potential to provide the team with a measureable but minor advantage

b) Major Penalties

i) Soil leakage greater than 30 cm^3 (volume of standard 1 oz plastic medicine cup)
ii) Improper use of adhesive tape
iii) Any addendum to the design report required by judges which results in a significant change to the design
iv) Any other rule violation that in the opinion of the judges has the potential to provide the team with a significant advantage, but does not warrant disqualification

c) Disqualification – Teams may be disqualified for the following:

i) Failure to send a representative to the pre-competition captains' meeting
ii) Unsafe practices
iii) Design or construction techniques which violate the spirit of the competition and provide an large and unfair advantage

Scores will be recorded to the nearest tenth of a point. In the event of a tie the following criteria will be used, in order, to break the tie: 1) lowest actual reinforcement mass, 2) higher report score, 3) lowest deflection rating, 4) judges' consensus of best decorated box.

The judges will follow the rules as published using reasonable judgment and interpretation. The head judge will be the arbiter of any disputes. Decisions of the head judge are final.

Scoring Example: Assume a team constructs a wall with following characteristics

- Report Score: 38/50, $R = 38$
- Design report specifies 8.57 g. Reinforcement used, 8.25 g.

$$M = 8.25 + 0.6(8.57 - 8.25)^2$$

$$M = 8.31$$

- Minor deduction for tape overlapping on wall, $N_{min} = 1$
- Execution times were
  - Reinforcement fabrication: 15:18 (18 sec over allotted time, round up to 1 min)
  - Wall assembly: 16:05 (1:05 over allotted time, round up to 2 min)
  - Construction: 18:27 (under allotted time)
  - Total time over: 3 min , $T = \#$
    Note: Only times over limit during each stage are counted. Teams get no benefit for times under the limit of any individual stage.
- Wall passed deflection test in first loading phase but failed deflection test during second loading phase, $D = 3$, $F = 0$

Using equation 1, the final score would be

$$Score = 38 + 15(20 - 8.311) - 10(1) - 40(0) - 2(3) - 20(3) - 40(0)$$

$$= 137.3$$

See Appendix C for scoring checklists.

13. **Pre-Competition Team Captains' Meeting** – A team captains' meeting will be held prior to the competition for the purposes of: checking sandboxes for compliance, establishing competition order, gathering team biographical information, and disseminating any logistical or administrative

information. This is a MANDATORY meeting. Each team must have the team captain (or designee) present. All team members are encouraged to attend. Specific meeting time and location will be announced on the GeoWall website before the conference. Teams without a representative at the captains' meeting will be disqualified.

Teams should bring their sandboxes, and any hardware or tools needed for assembly. Sandboxes will be assembled and checked for compliance at the meeting. Teams will have until the beginning of competition to correct any compliance issues identified during the captains' meeting.

Appendices

Appendix A: Material Specifications

- **Sand**:
  - Clean sand with grain size distribution as specified in Table 1 and Figure 3
  - Grain shape will be rounded to sub-rounded
- **Sandbox Material**:
  - Walls and Base: 23/32 or 3/4″ plywood, any grade
  - Tie Rod: ¼″ threaded steel rod with washers and nuts as needed
  - Fasteners: any suitable wood fasteners
- **Facing Material**:
  - Poster Board, 22" x 28", White
  - Grammage: 194 g/m^2, 0.125 g/in^2
  - Office Depot® Item # 858277 (Pack Of 10)
- **Reinforcing Material**:
  - 60 lb Kraft Paper
  - Grammage: 97.7 g/m^2, 0.063 g/in^2
  - Office Depot® Postal Wrap Item # 444835 (2' x 50' roll)
- **Adhesive Material**:
  - Heavy duty, clear, 2″ wide, polypropylene package tape
  - Scotch® 142-B Super Strength Mailing Tape, clear
  - Office Depot® Item #650457, 2" x 22.2 Yd with dispenser

Appendix B: Design Report Judging Rubric

Geo-Institute of the ASCE: GeoWall Design Paper – Scoring Form			
Reviewer Guidelines: 1) Place weight on the team ability for engineering reasoning not technical knowledge 2) Place weight on team communication skills on procedures, findings and observations 3) Score in 0.5-point increments 4) Team to be awarded higher score if verifying design parameters beyond assumptions and references			
Criterion	**Max**	**Actual**	**Notes**
1) Formatting, Mechanics, Grammar & Safety			
a. Paper length, margins & font are acceptable	2		Paper complies with specifications
b. Layout, or structure, of paper is logical	2		Paper organization is clear and supports the message.
c. Grammar and punctuation are correct	2		Error free paper with writing that clearly presents design.
d. Figures & tables are clear, properly numbered, captioned and referenced in the text	2		Good choice of tables vs. figures, clear presentation of data.
e. References are reasonably formatted and complete	2		Quantity appropriate with correct citations and references
f. Safety appendix complete with reasonable controls	3		Clearly identifies key safety concerns and provides viable plans to keep team safe during competition.
2) Experimental Methods, Analyses and Design:			
a. Methods to obtain soil properties	3		Experimental methods are reasonable and clearly described
b. Methods to determine reinforcement properties	3		Experimental methods are reasonable and clearly described
c. Methods to determine backfill-reinforcement interaction	3		Experimental methods are reasonable and clearly described
d. Engineering properties are reasonable	3		Backfill unit weight, friction angle, interface friction angle, reinforcement strength are compared to typical values
e. Earth-pressure calculations	3		Calculations for both backfill and surcharge are correct and presented in a logical, readily followed format
f. Method used to account for 3-D wall geometry	3		Method and assumptions are reasonable
g. Determination of reinforcement length	3		Model accounting for 3-D geometry is reasonable and appropriate
i. Determination of reinforcement spacing	3		Method and assumptions are reasonable
j. Evaluation of connection strength	3		Method and assumptions are reasonable
3) Engineering Reasoning and Communication			
The report is, on the whole, clear, precise, and well-reasoned. Engineering terms and distinctions are used effectively and in keeping with established professional usage. The report demonstrates a clear and precise analysis of the MSE wall design problem, very little or no irrelevant information is presented, key assumptions are identified, and key concepts are clarified. The authors have shown, through their report, excellent engineering reasoning and problem-solving skills.	10		Scores may range from 0 to 10. It is the opinion of the reviewer as to how the overall report measures up to the criteria listed under item 3 "engineering reasoning and communication".
Total	50		

Appendix C: Judges' Scoring Checklist for GeoWall Competition

C1: Captains' meeting—Box check

Team School:		Deductions	
Item	**Instruction**	**Minor**	**Major**
Plywood	☐ 23/32 or ¾″ thickness ☐ Inside surfaces planar and natural		
Box dimensions	☐ Within tolerance ☐ Sand fill height marked		
Facing panels	☐ Flush to box base ☐ Removable fasteners		
Tie rod	☐ ¼″ dia ☐ Located within tolerances		
Measuring frame attachment	☐ Frame fits properly on box		
Tools	☐ Only authorized tools used		
Other minor, explain:			
Other major, explain:			
Disqualification, explain:			
	Total deductions		

Notes:

C2: Reinforcement fabrication

Item	Instruction	Time	
		Total	**> 15:00 (Min:sec)**
Time	Give start command. Time ends when all elements cut to size and shape		
		Mass (g)	
		Design	**Actual**
Mass	Weigh reinforcement to nearest 0.01 g		
Compute official Mass, *M*, using Equation 2		*M* =	
		Deductions	
Deductions		**Minor**	**Major**
Tools	Only authorized tools used		
Safety	No mishaps		
Other, explain			
	Total deductions		

Notes:

C3: Wall Assembly

Team School:			
Item	**Instruction**	**Time**	
		Total	**> 15:00 (Min:sec)**
Time	Give start command. Time ends when wall is assembled and trial fit to box (NO SAND PLACED DURING THIS PHASE)		
		Deductions	
		Minor	**Major**
Facing construction	☐ Single lap joint 1" wide ☐ Trimmed ~3/16 below top of wall		
Reinforcement attachment	☐ Each tape piece ≤ (2″ × 2″) ☐ On vertical front plane only ☐ Not overlapping ☐ Touch both wall and reinforcement		
Tools	☐ Only authorized tools used		
Safety	☐ No mishaps		
	Total deductions		

Notes:

C4: Construction

Item	**Instruction**	**Time**	
		Total	**> 20:00 (Min:sec)**
Time	Give start command. Time ends when soil filled to line and empty bucket & load frame are in place		
		Deductions	
		Minor	**Major**
Backfill	☐ Level ☐ Filled to fill line		
Tools	☐ Only authorized tools used		
Safety	☐ No mishaps		
	Total deductions		

Notes:

C5: Loading

Team School:			
Item	**Instruction**		
Stage 1: Backfill only	• Place clean posterboard on floor in front and sides of box • At judge's direction students remove panels from box. Electric drills/screwdriver may be used to remove fasteners. • Once panels are completely removed start 1 min wait period • Attach measuring frame • At end of 1 min make following checks		
	☐ Swipe front wall front and sides with straight edge to check wall deflection	☐ Pass	☐ Fail *D* = 5
	☐ Less than 30 cm^3 sand leaked from box onto floor	☐ Pass	☐ Fail Major Ded
	☐ Catastrophic failure	☐ Pass	☐ Fail *F* = 5
Stage 2: Vertical Surcharge	• Bucket preweighed with 60 lbs of sand should be ready. • At judge's direction students add 60 lbs of sand to surcharge bucket. Students have one minute to complete loading. • Once load is placed start 1 min wait period • At end of 1 min make following checks		
	☐ Loading complete within 1 minute	☐ Yes	☐ No Minor Ded
	☐ Swipe front wall face with straight edge to check wall deflection	☐ Pass	☐ Fail *D* = 3
	☐ Less than 30 cm^3 sand leaked from box onto floor	☐ Pass	☐ Fail Major Ded
	☐ Catastrophic failure	☐ Pass	☐ Fail *F* = 3

C6: Scoring

Adjusted mass, M, computed by

$$M = m_A + 0.6\left(m_D - m_A\right)^2$$

$$Score = R + 15\left(20 - M\right) - 10N_{\min} - 40N_{maj} - 2T - 20D - 40F$$

Team School:			
Item	**Score**	**Weight**	**Extended**
Report score out of 50, *R*		1	
Reinforcement mass score, enter as (20 – *M*)		15	
Total # of minor deductions, N_{min}		-10	
Total # of major deductions, N_{maj}		-40	
Total time over limit rounded up to nearest whole minute, *T*		-2	
Deflection rating, *D* 5 = Deflection exceeded at Stage 1 3 = Deflection exceeded at Stage 2 0 = Deflection never exceeded		-20	
Failure rating, *F* 5 = Catastrophic failure at Stage 1 3 = Catastrophic failure at Stage 2 0 = No catastrophic failure		-40	
		Final Score	

Notes:

Appendix D: Bio-form to be completed by each team captain and submitted to the chief judge at the pre-competition meeting

Geo-Institute of ASCE GeoCongress, 2015 **GeoWall Competition Bios**
Team School:
Team Mascot:
No. of Years Competing at Nationals:
Team Advisor:
Team Captain:
Current Year in School (junior, senior, MS, or PhD):
Hometown (City and State or Country)
Other School Activities:
Interests/Hobbies:
Future Plans, e.g., graduate school, consulting, government, other?
Geographical preferences?

Appendix E: Bio-form to be completed by each <u>team member</u> and submitted to the chief judge at the pre-competition meeting

Geo-Institute of ASCE GeoCongress, 2015 **GeoWall Competition Bios**
Team School:
Team Mascot:
No. of Years Competing at Nationals:
Team Advisor:
Team Member:
Current Year in School (junior, senior, MS, or PhD):
Hometown (City and State or Country)
Other School Activities:
Interests/Hobbies:
Future Plans, e.g., graduate school, consulting, government, other?
Geographical preferences?