After the space shuttle *Columbia* disintegrated while reentering Earth's atmosphere in 2003, civil engineer Henry Petroski wrote a *New York Times* essay titled “Failure is Always an Option.” He described how engineers consider failure: “[T]he way engineers achieve success in their designs is by imagining how they might fail” (2003). For this assignment, you will write about a different failure while using Petroski’s essay to help you consider ethical decision-making in engineering.

**OVERVIEW OF REQUIREMENTS**
- Individual essay for 10% of course grade
- Two drafts (first and final)
- 1000-1250 words
- One figure
- Three credible sources, including Petroski
- APA format citations and references page
- One 25-minute appointment with the Hanson Center

**ASSIGNMENT GUIDELINES**
In this individually written essay, you will analyze one specific structure or system and how it failed. Write a cohesive, 1000-1250-word paper about one of the subjects from the list below. If you choose another topic, you must have it pre-approved by HCTC Director Scott Coffel.

<table>
<thead>
<tr>
<th>Hartford Civic Center, 1978</th>
<th>Sewol Ferry, 2014</th>
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<tbody>
<tr>
<td>Oakland Bay Bridge, 1989</td>
<td>Sampoong Superstore, 1995</td>
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<td>Autoroute 19 de la Concorde Overpass, 2006</td>
<td>Falls View Bridge, 1938</td>
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<td>Sando Arch Bridge, 1939</td>
<td>St. Francis Dam, 1928</td>
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<tr>
<td>Oklahoma City Murrah Federal Building, 1995</td>
<td>Peace River Bridge, 1957</td>
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<td>Bjork-Shiley Tilting Heart Valve, 1986</td>
<td>Antelope Valley Freeway, 1971 and 1994</td>
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<tr>
<td>L’Ambiance Plaza, 1987</td>
<td>Florida International University Bridge, 2018</td>
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<td>Charles de Gaulle Airport, 2004</td>
<td>Kemper Arena, 1979</td>
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<td>Bangqiao Reservoir Dam, 1975</td>
<td>Schoharie Creek Bridge, 1987</td>
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<td>Rana Plaza Building, 2013</td>
<td>Minneapolis I-35 Bridge, 2007</td>
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<td>Hyatt Regency Walkway, 1981</td>
<td>Big Blue Crane, 1999</td>
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<tr>
<td>Morandi Bridge, 2018</td>
<td>Second Narrows Bridge Collapse, 1958</td>
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<tr>
<td>Delhi Dam, 2010</td>
<td>Mainus River Bridge, 1983</td>
</tr>
<tr>
<td>Cypress Viaduct, 1989</td>
<td>Colorado State Route 470 Bridge, 2004</td>
</tr>
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</table>

**Your essay must do all of the following:**
1. Explain for a non-engineering audience how and why the structure failed using basic statics principles from class. Incorporate research into the engineering aspects of the failure.
2. Discuss the ethical failure(s) that led to the structural collapse. Reflect on the broader ethical implications of this disaster.
3. Address this question: What responsibilities do engineers face in the design and maintenance of structures? Consider this regarding your failure and also engineered structures generally.
4. Include at least one figure (with citation and caption) that enhances your discussion.
5. Cite at least three sources: the Petroski article and two other credible sources (no Wikipedia).
6. Cite all references within the essay. Include a References page in APA format.
Statics Writing Assignment

Questions that will help you craft your essay include:
- Did a design flaw involving insufficient consideration of moments, loads, and/or forces cause the structure to fail?
- Did the structure lack redundant safety mechanisms?
- Was the failure preventable?
- What steps could have been taken before the structure failed?

REQUIRED AND RECOMMENDED READING
- “Failure is Always an Option,” Henry Petroski (Note: You must read and cite this article.)
- National Society of Professional Engineers (NSPE) Code of Ethics
- Model essays from previous Statics classes
- Engineering Case Studies Online (Note: Some of these subjects are not appropriate paper topics.)
- Beyond Failure: Forensic Case Studies for Civil Engineers (Norbert J Delatte, PE)
- Source Use and Plagiarism Policy for the HCTC

FORMAT AND SUBMISSION REQUIREMENTS
- Title page: Create an original title. Center and double-space. Include one line each for title, your name, course name and section, professor’s name, and due date.
- Length: 1000-1250 words (Note: Both drafts must meet this length to receive full credit.)
- File Name: Last name, First name, Section, Draft/Final (Example: “Smith, Jane, 000B, Draft”)
- Submission type: Electronic attachment, through Canvas; .doc or .docx only (no PDFs)

SCHEDULE AND DEADLINES
- Feb. 18
  In-class visits by the Hanson Center to introduce the assignment.
- April 1 (Wed.)
  First Draft due to Canvas by 11:59 p.m.
- Week of April 13
  First drafts returned online.
- Feb. 25-April 1 OR April 15-April 29
  Attend HCTC appointment. (Note: Because drafts will be under evaluation, appointments scheduled from April 2-April 14 will not count for credit.)
- April 29 (Wed.)
  Final Paper due to Canvas by 11:59 p.m.
- Week of May 11
  Final papers returned online.

Note on appointments: Bring a printed copy of 1) your paper and 2) all feedback received. You must stay the full 25 minutes for credit. You may schedule more than one appointment for your Statics essay.

Late Policy: Late work will be accepted but with mandatory point deductions. Exceptions to this policy will be made for documented illnesses or emergencies on a case-by-case basis. Further information can be found on the Registrar’s website.

The Hanson Center for Technical Communication
Location: 3307 SC
Appointments: schedule online at https://hanson.mywconline.com
Email: scott-coffel@uiowa.edu (Scott Coffel, Director)