This laboratory project challenges students to design, construct and develop a structural system that spans horizontally and is resolved vertically around a prescribed no-build zone to the bearing surface. The project options [one, two and three way] have unique load applicators and bearing surfaces specific to their number. Each option presents opportunities and constraints specific to its numeric, dimensional and conceptual conditions. The general intention of this project is to further cultivate the structural design skills developed in the previous laboratory exercises and apply them to an abstract spatial context. The no-build zone is critical and suggests architectural space.

This project is executed in its entirety by student teams of three. The 1-2-3 way project consists of three iterations. The iterations are sequenced with distinct objectives: concept, specificity and efficiency. Each stage begins with a collaborative design process through drawing and diagramming, teams subsequently develop their designs in response to instructor feedback and construct the design.

Projects are tested in a collective forum where concepts, performance, force diagrams and details are sketched and reviewed on a chalkboard. The diversity of projects ensures that every static structural phenomenon is demonstrated. The projects are subsequently reviewed in a lecture forum through photographs and high-speed video.

Objectives: following the completion of this project students should be able to:
- Design, develop and construct an abstract structural design in response to specific given conditions
- Understand the interrelationships of structural systems, elements and connections
- Understand the spatial connotations of an abstract structural design
- Utilize an empirical methodology to transform intuition into a critical understanding and knowledge of structures
- Analyze and Diagram structural conditions
- Engage in structural discourse

Course Context:
The 1-2-3 way exercise is administered concurrently with lectures on structural systems, structural space and strategies for structural integration. It is also administered concurrently with computational exercises related to tributary areas and force flow, and the calculation of loads, reactions, shear and moment in beams.
Example 1-way Sequence - Iteration 1
Example 1-way Sequence - Iterations 2 and 3
Diverse 1-way Examples
Diverse 1-way Examples
Example 2-way Sequence - Iteration 1

**Plan - Loading and Bearing Surfaces**

Scale: 1" = 1' - 0"

**Section A - Loading and Bearing Surfaces**

Scale: 1" = 1' - 0"

Concept
Example 2-way Sequence - Iterations 2 and 3

Specificity

Efficiency
Diverse 2-way Examples
Diverse 2-way Examples

| teaching | structures | system: 1 - 2 - 3 way | 183
Example 3-way Sequence - Iteration 1

T R E E

W A Y

T H R E E

W A Y

Example 3-way Sequence - Iteration 1

T R E E

W A Y

T H R E E

W A Y

Concept

System: 1 - 2 - 3 way
Diverse 3-way Examples