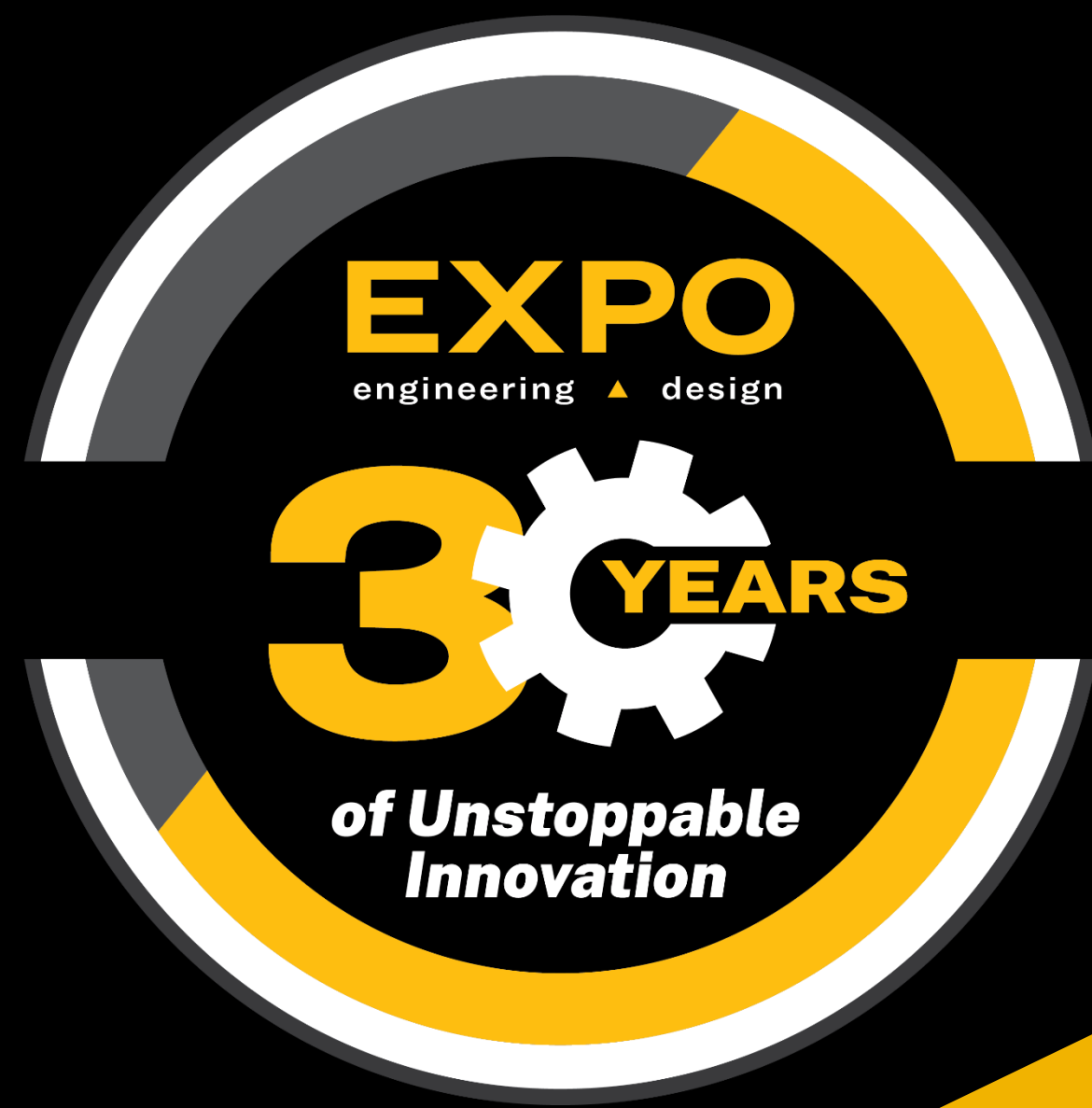


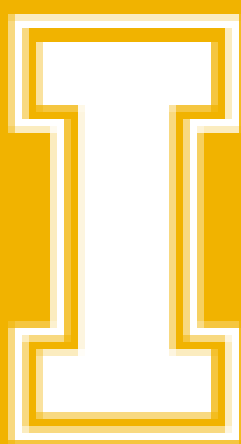


KOOTENAI COUNTY INTEGRATED CLINIC

Anna Young, Clinton Ponozzo, Philip Lohman, Xinyi Li

Sponsors: Chaney Wood, Lucas Coutinho | Faculty: Dr. Richard Nielsen, Dr. Ahmed Ibrahim

Girl Boss, Inc. kcpff

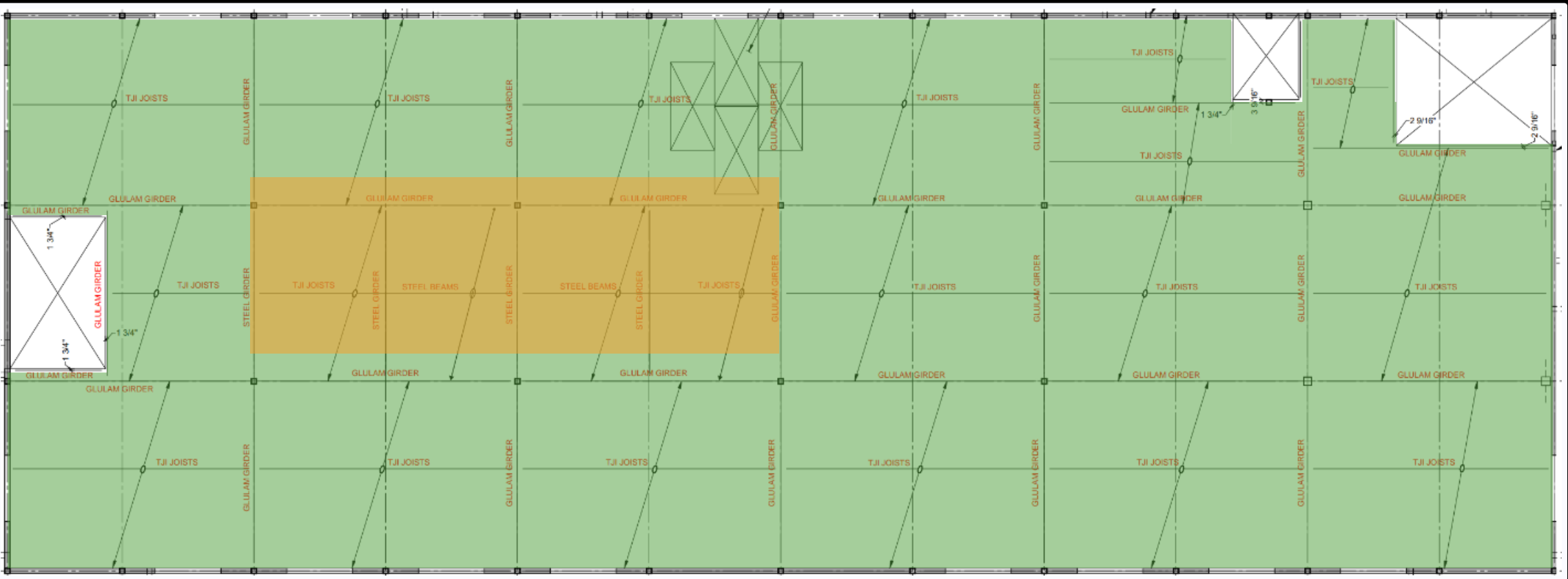


LOADS

Loads were determined using the IBC 2018, the ASCE 7-16, and ASCE Hazards Report. Worst case scenarios of loading were used for design of typical members. All steel elements used the LRFD method. All wood elements utilized the ASD method.

Location	Load Type	Magnitude (psf)
2 nd Floor	Live	65 125 (Storage)
	Dead	26.67
Roof	Live	20
	Dead	52.2
	Wind	-17.92
	Snow	93.44
	Seismic	5.44

2ND FLOOR LIVE LOAD MAP



Partition and Office Area (65 psf)

Storage Area (125 psf)

PROJECT OBJECTIVES

- Design gravity and lateral systems for the medical clinic in Post Falls, ID.
- Develop drawings for gravity and lateral systems.
- Create a project budget and time/task management schedule.

DESIGN

Design work was split into a gravity system (resisting live, dead, and snow loads) and a lateral system (resisting wind and seismic loads). A top-down approach was utilized to size members starting with the roof TJI joists down to the foundation footing sizes.

GRAVITY SYSTEM

Location	Element	Size
2 nd Floor	TJI Joist	16" TJI 360 @ 12" OC
	Transverse Glulam Girder	12" x 5.5"
	Longitudinal Glulam Girder	15" x 10.75"
	Steel Girder	W 6" x 8.5"
	Elevator Hoist Beam	W 8" x 15"
Roof	Floor Sheathing	40/20 - 4 Ply Plywood
	TJI Joist	14" TJI 110 @ 14" OC
	Transverse Glulam Girder	16" x 5.5"
	Longitudinal Glulam Girder	15" x 8.75"
Multiple Floors	Steel Column	W 8" x 31"

LATERAL SYSTEM

The lateral system comprises of the shear wall design and headers, trimmers, and king studs.

- Header: 1.75" x 5.5"
- Trimmer: 4 x 12 DF No.2 @ 7" OC
- King Stud: 9.5" x 11.5"

Shear Wall Schedule

Type Mark	Stud or Blocking Size at Adjoining Panel Edges	Fastener Spacings	
		Wall Boundaries and Panel Edges	Intermediate Studs
SW-4	3 x	3"	12" OC
SW-3	3 x	4"	12" OC
SW-2	3 x	2"	12" OC
SW-1	3 x	3"	12" OC
2SW-4	3 x	4"	12" OC
2SW-3	3 x	2"	12" OC
2SW-1	3 x	4"	12" OC

FOUNDATION

- Factor of Safety: 1.2
- Soil Bearing Capacity: 3500 psf
- Foundation Bearing Pressure: 2917 psf
- Height: 24"
- Width: 72"

COST

Members tracked hours spent on each item and estimated rates for professional consultation (\$175/hr), sponsor consultation (\$150/hr), and personnel time (\$100/hr) to develop an estimated cost for the design work completed.

	Time (hrs)	Total Cost (\$)
Codes	25	\$2,500
Load Calculations	40	\$4,000
Design	140	\$140,000
Consulting	50	\$8,250
Total	225	\$154,750



University of Idaho
Department of Civil and
Environmental Engineering

2023 Capstone Project