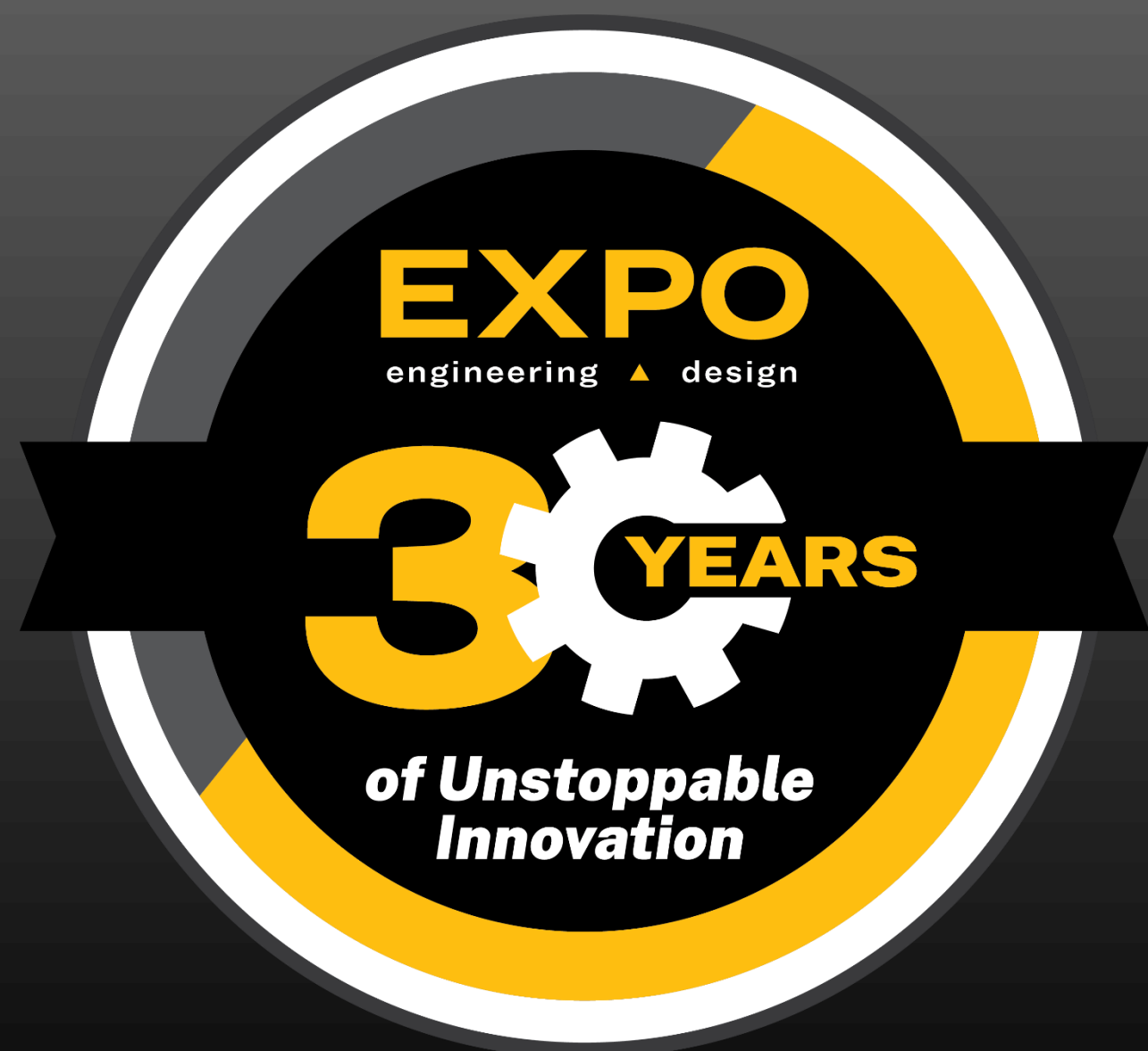




NEW OFFICE BUILDING PROJECT



MEN OF STEEL DESIGN TEAM: AUSTIN EMERICK, JOHN TAYLOR, DEVIN STEED, PARKER WATSON

SPONSOR: GARRETT DAVIS AND DEREK PECK, TAMARACK GROVE ENGINEERING

ACADEMIC ADVISORS: DR. RICHARD NIELSEN AND DR. AHMED IBRAHIM, UNIVERSITY OF IDAHO

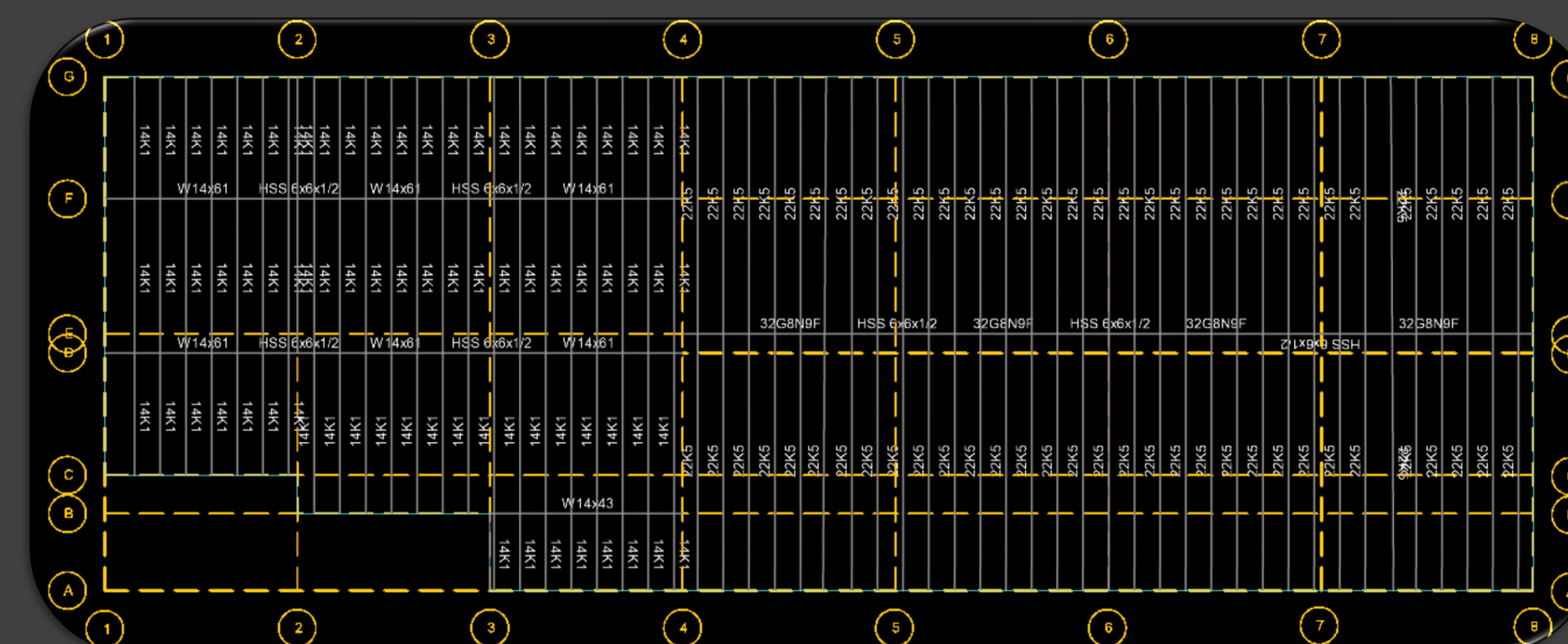
BACKGROUND

- Tristate General Contractors were wanting to expand their operations to Kapolei, Hawaii, with the addition of a new office building.
- Office Building Layout
 - 23,815 Square Ft.
 - Finished Office Space
 - Storage Mezzanine
 - Large Open Warehouse Area

GRAVITY MEMBER SIZES

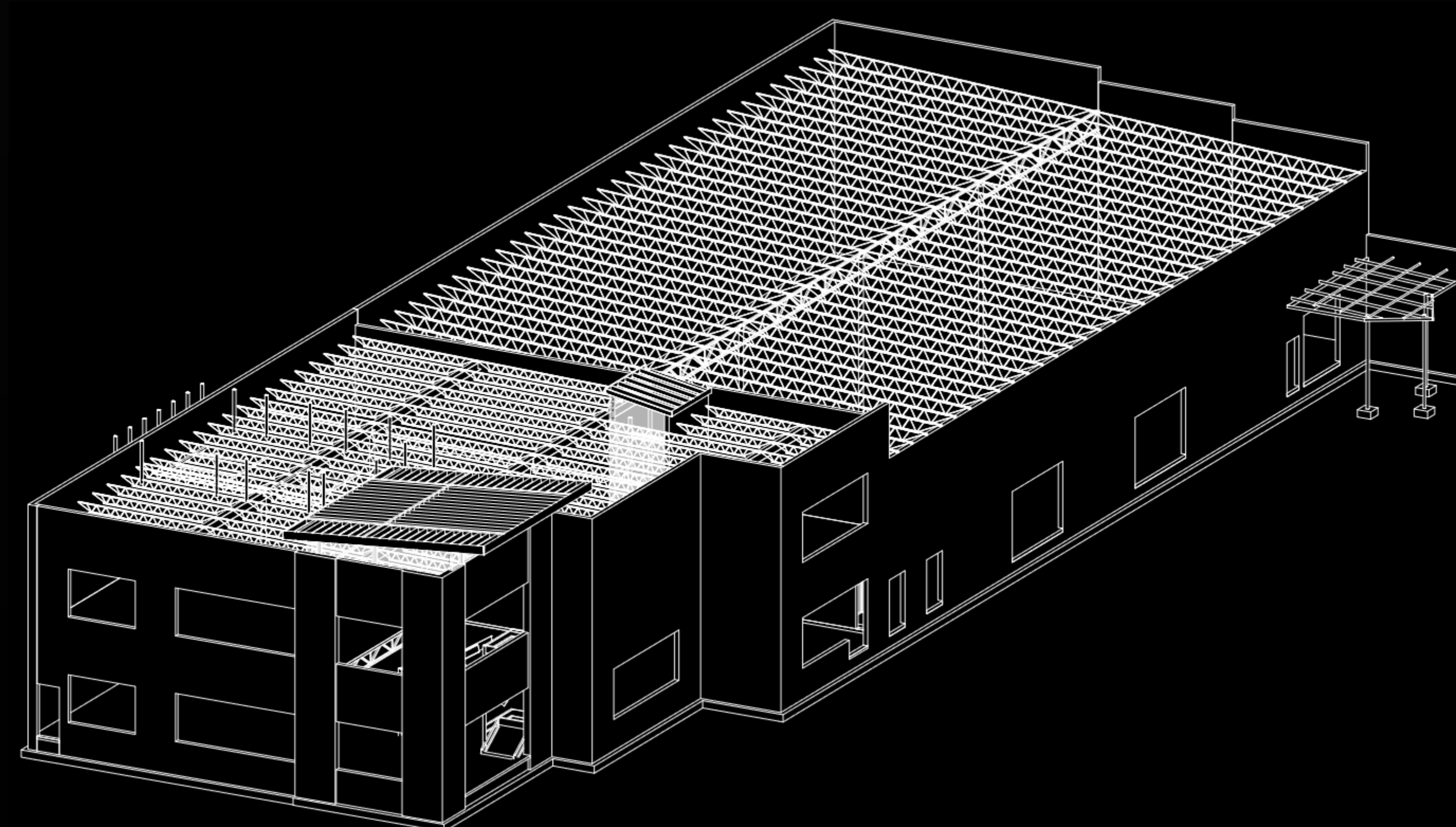
- Warehouse Section Roof Joists: 22K5
- Warehouse Section Joist Girders: 32G8N9K
- Warehouse Section Columns: HSS6x6x1/2
- Mezzanine Roof Joists: 14K1
- Mezzanine Roof Girders: W14x61, W14x43
- 2nd Floor Joists: 20K4
- 2nd Floor Joist Girder: 24G8N9K
- Office Section Columns: HSS6x6x1/2

ROOF FRAMING PLAN



DESIGN PARAMETERS

- In Accordance with ASCE 7 – 10 and IBC 2012
- Roof
 - Live Load: 20 PSF
 - Dead Load: 15 PSF
- Floor
 - Live Load: 125 PSF (Light Storage)
 - Mezzanine Dead Load: 30 PSF
 - Misc. Dead Load: 10 PSF
- Lateral
 - Seismic Load: Top Story Force of 63 Kips
 - Wind Load: 20.1 PSF



Graphic Provided by Tamarack Grove Engineering

SHEAR WALL DESIGN

- 8 in thick grouted CMU blocks
- Rebar: #4 bars 24in O.C in both vertical and horizontal directions

FOUNDATION DESIGN

- Column Sizing
 - Warehouse Footing: 10'x10'x2'
 - Rebar: #5 @ 12in spacing, top and bottom
 - Office Footing :7'-6"x7'-6"x2'
 - Rebar: #5 @ 12in spacing, top and bottom
- Continuous Footing
 - Interior Wall: 1'
 - Rebar: #5 @ 12in spacing
 - Exterior Wall: 2'
 - Rebar: #5 @ 12in spacing



2023 Capstone Project