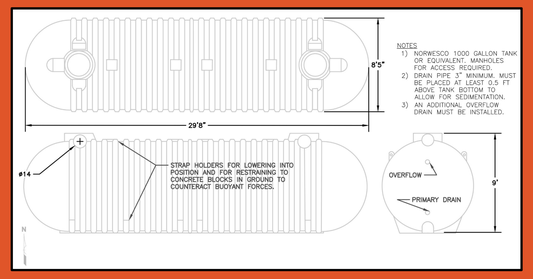
SPORTS PERFORMANCE BUILDING

WATER RESOURCES

HORIZONTAL DETENTION FACILITY
- One Northern horizontal detention facility
- Aproxomate size: 30ft x 8.5ft x 9ft
- The long tank length allows for settlement
- Drainage ties into city strom system
- Roof drainage is routed into this tank



Proposed stormwater detention tank

MECHANICAL SYSTEMS

- ~ 60 tons of AC needed
- Variant Air Volume (VAV) System
- Gym Challenges and Solutions:
  - Lack of Insulation from Curtain Wall:
    - Install a floor slot diffuser along the floor of the gym near the curtain wall.
    - Warm air will rise and warm the cool air from the windows before nearby athletes can be chilled.
  - Size of Gym
    - Wall-mounted jet diffusers to blow air from the South and East walls across gym. This is more effective than pushing air straight down.
- General Energy Efficiency Measures
  - Enthalpy Wheel
  - Occupancy sensors

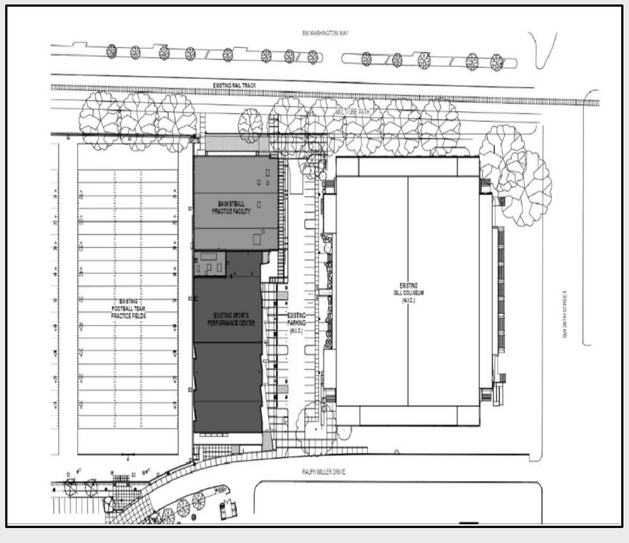
Oregon State University

PROJECT KEYNOTES

- All new 17,000 square-foot indoor athletic training and weight lifting center.
- Located on the campus of Oregon State University, adjacent to Gill Coliseum, and Reser Stadium.
- A two story, 34,000 square-foot basketball training facility, designed for acoustic isolation between floors.
- Floor to ceiling curtain wall allowing additional sunlight into the building
- 82.3 ft. spans within the basketball court control the structural design.

Sports Performance Center
(https://guides.library.oregonstate.edu/buildings/p-wayne-valley-sports-performance-center)

SITE LOCATION



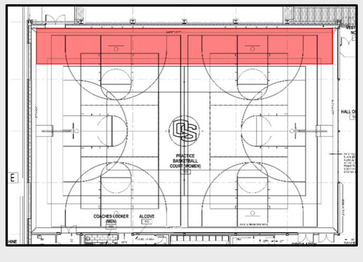
Location of Sports Performance Center within Oregon State University
((OSU Basketball Center Working- Presentation)

BUILDING ENVELOPE

Exterior wall systems:
- Concrete Masonry Units (CMU)
- Mineral wool continuous insulation
- A sheet air-weather barrier
- Brick veneer facade

Low-E Window Coating:
- Two-story curtain wall

Lighting Design:
- Two-setting lighting system



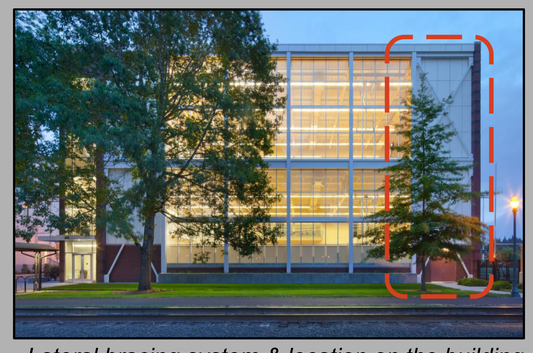
Gym lighting alternative
(HNTB Architecture Drawings)

STRUCTURAL

- Trusses have been designed using A36 steel, with W21x93 steel making up the members included in the truss. The trusses have been designed to span the width of the basketball court resulting in a 82.3 ft span length.
- Beams run perpendicular to trusses at 10 ft increments to support the corrugated metal decking running along the trusses.

Structural steel members during construction
(OSU Basketball Center Working- Presentation)

- **Columns** were designed to be W-shaped steel due to its high strength to weight ratio and stiffness.
- Various dimensions of W-10 steel columns were designed according to the columns placement and load demand



Lateral bracing system & location on the building
(OSU Basketball Center Working- Presentation)

- **Lateral Force Resisting System** is steel bracing integrated with the steel gravity system, and allowing room for architectural features.
- The SPB has 2 bays of 2-Story X-bracing per side, as seen beside large curtain windows. (above)
- Gill Annex (Phase 1) has V-bracing configuration

Summary of Bracing Member Sizes

Story	SPB E-W	SPB N-S	Gill E-W & N-S
1	W14 x 132	W14 x 132	W14 x 193
2	W14 x 82	W10 x 112	W14 x 145