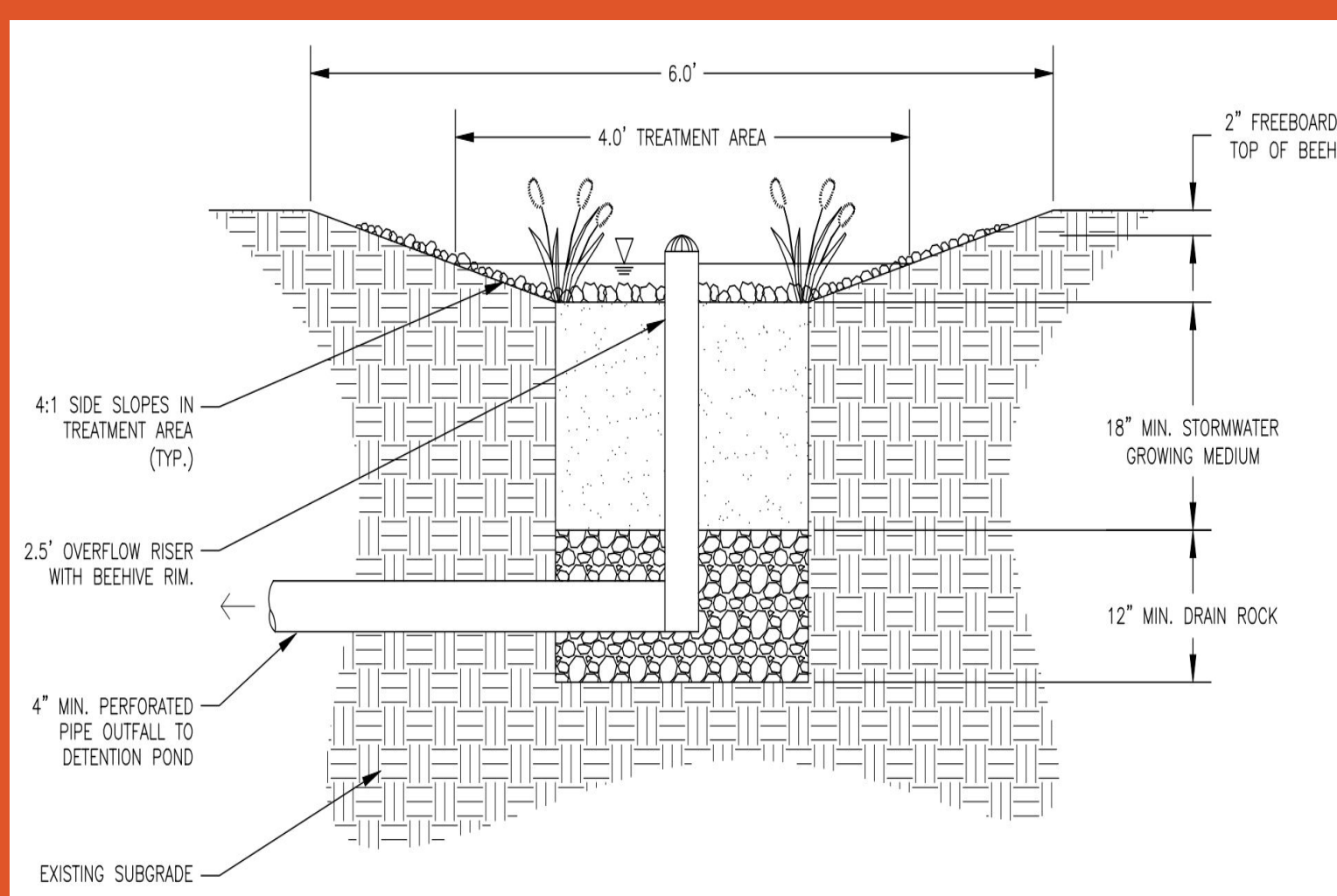


WATER RESOURCES

Biofiltration Swale

- Location: south of proposed site near detention pond
- Peak discharge: 0.414 cubic feet per second
- Length: 100 feet
- Treatment area width: 4 feet
- Design volume: 223.6 cubic feet
- Overflow riser with beehive rim and 4" perforated pipe outfall to detention pond

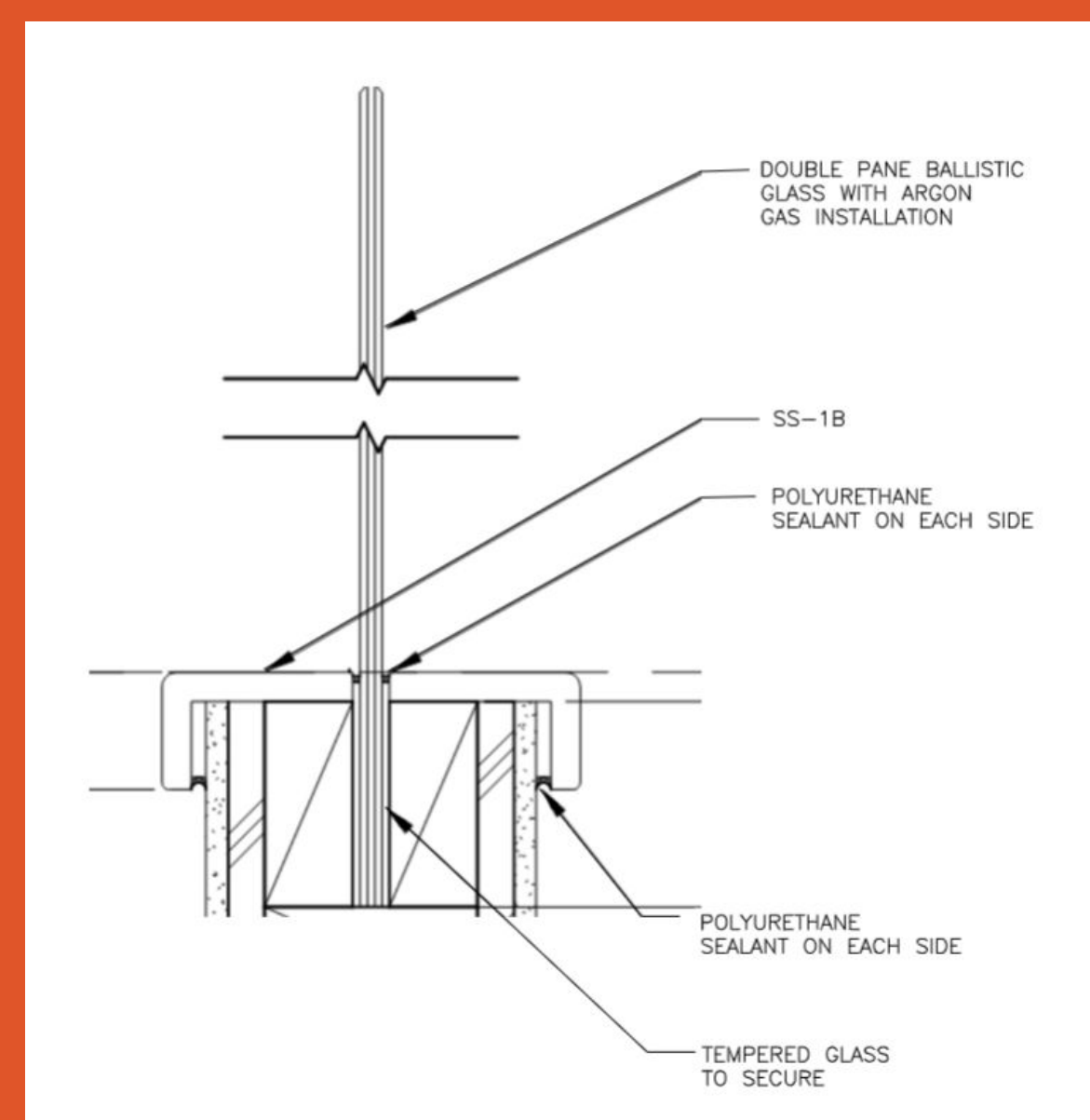


Proposed Biofiltration Swale

BUILDING ENVELOPE

Windows and Wall Section

- Double pane ballistic glass
- Argon gas installation
- Polyurethane sealant



PUBLIC SAFETY BUILDING

OLD PORTLAND ROAD,  
ST. HELENS, OREGON

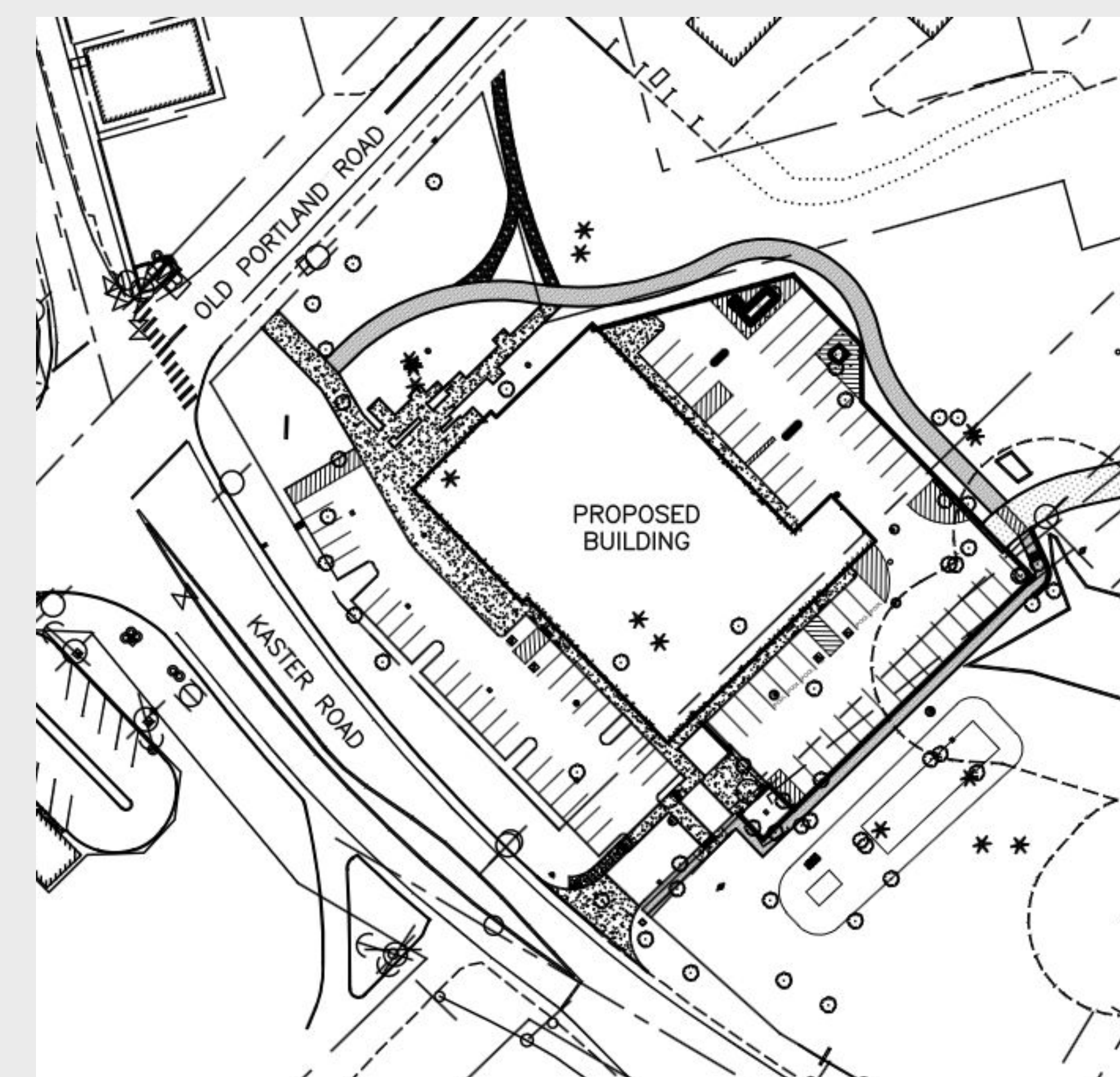


Building rendering of the Public Safety Building Project (rendering courtesy of Mackenzie Engineering)

PROJECT DESCRIPTION & OBJECTIVES

The client has requested the design of a public safety building and surrounding site improvements for a project site spanning approximately 2.3 acres and located along Old Portland Road in St. Helens, Oregon. The goal of the design is to propose a building that can house police department facilities while also serving as a community social hub. The Hard Rock Engineering team's objectives are to develop a cost-effective design that minimizes the structure's environmental impact, while also ensuring its safety and durability against design loads. To achieve a successful design solution, the team has collaborated and evaluated various alternatives and methods for all disciplines involved.

OVERALL SITE PLAN

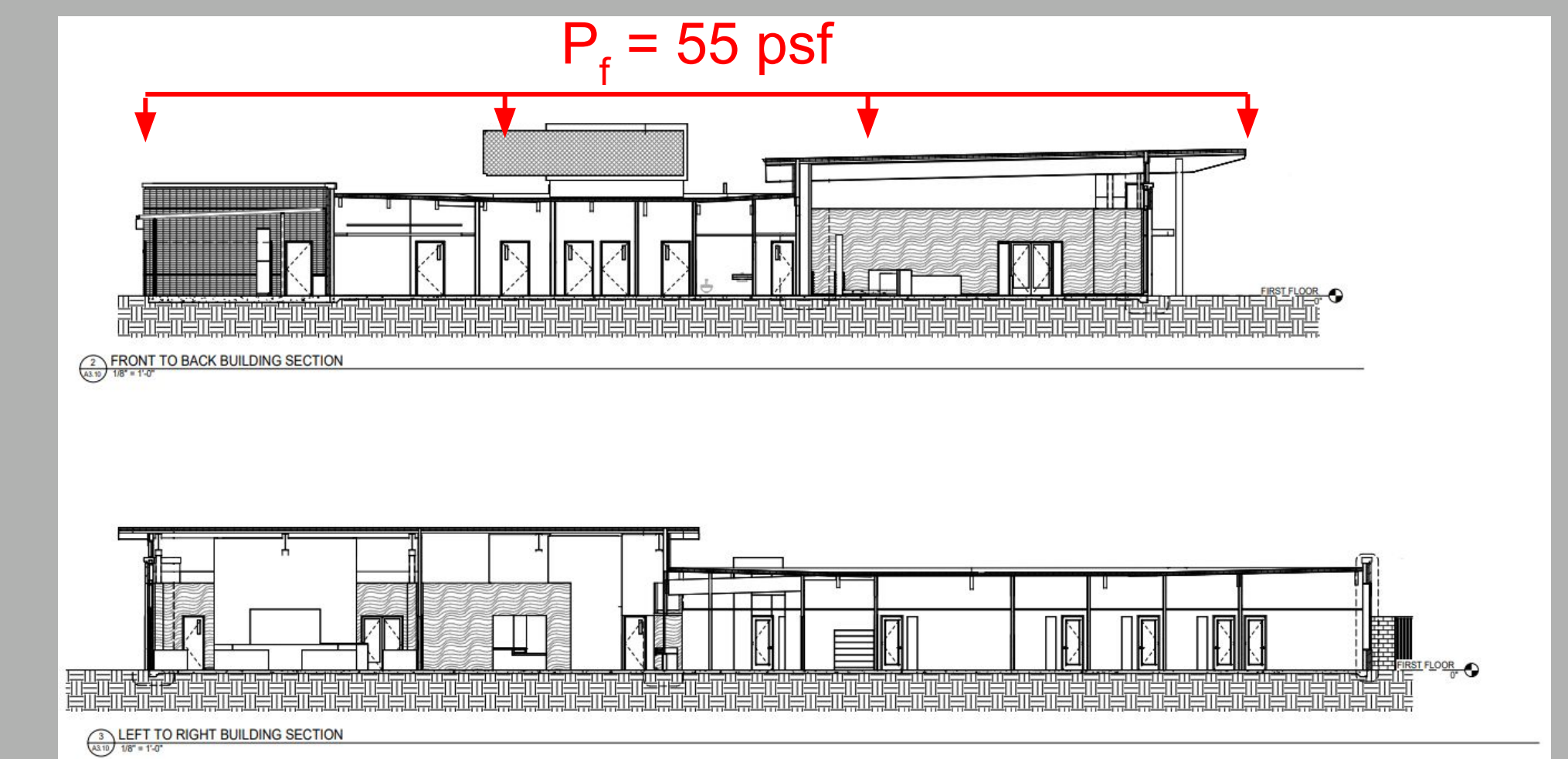


Original drawing by Mackenzie Engineering

STRUCTURAL

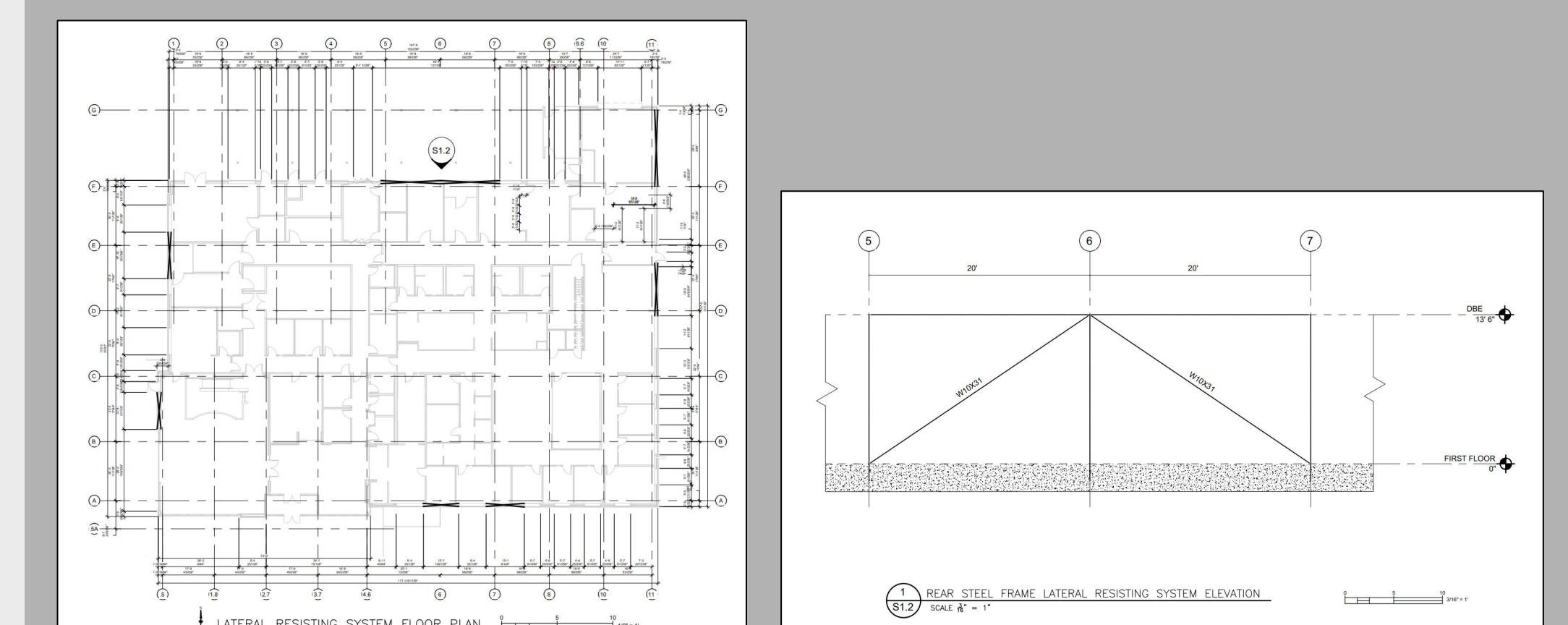
Gravity Force Resisting System

- Controlling vertical load
  - Snow = 31.2 psf
  - Ice = 23.8 psf\*



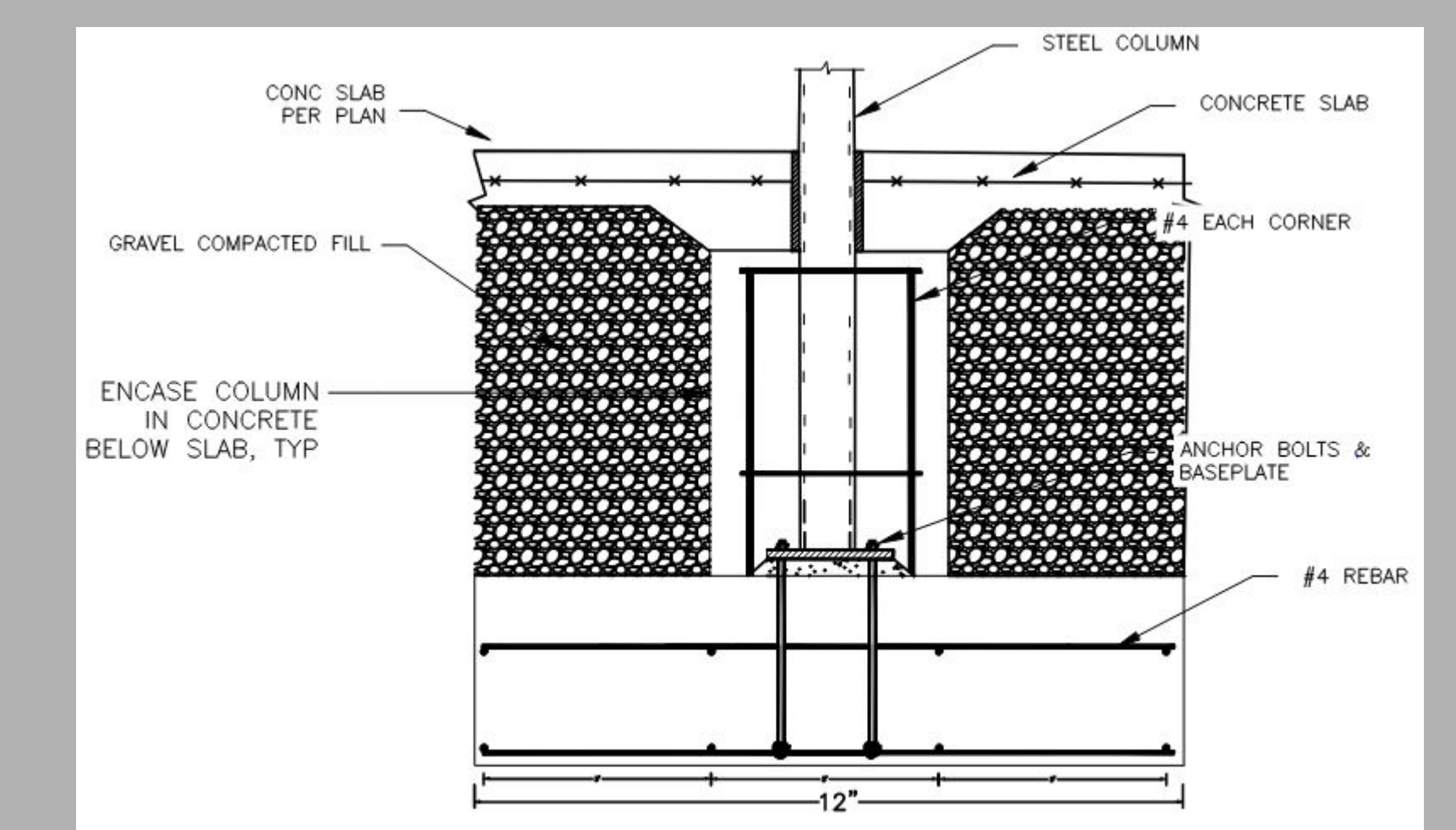
Lateral Force Resisting System

- Wind load = 25 kips
- Seismic load = 193 kips
- Steel single brace lateral resisting system
- Steel tension only cross braces placed between upper and lower roof to resolve torsion



Footing Design

- 12 inch by 12 inch column square footing
- 1 foot depth
- 8 #4 rebar
- Gravel compacted fill above footing
- Shallow foundation with spread footing



Interior Column Footing