Constructability & Envelope Durability

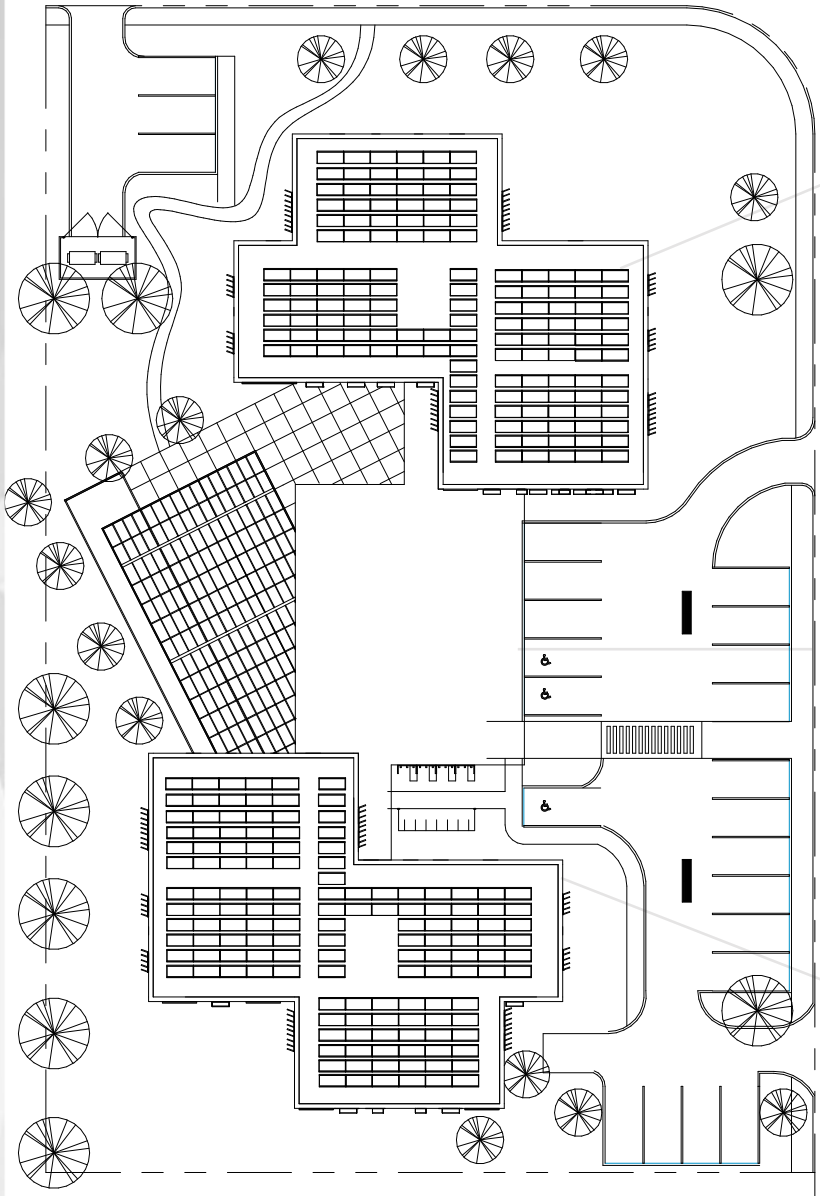

Figure 24

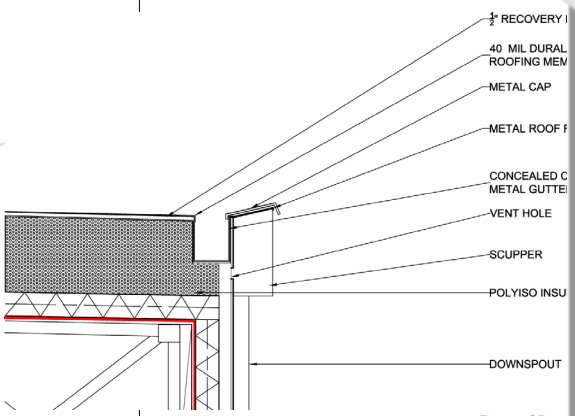

Figure 25

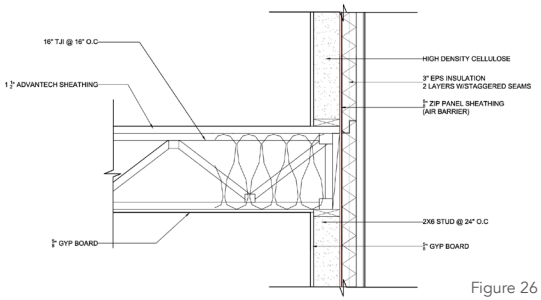

Figure 26

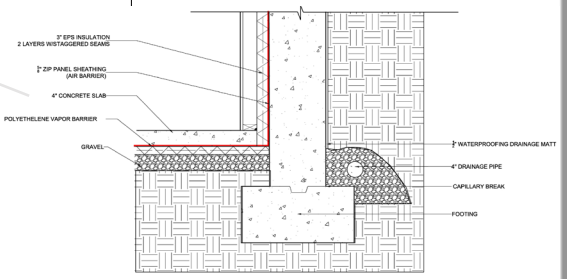

Figure 27

Decisions & Approaches

General Strategy on Building Envelope

The initial approach to the building envelope was based on the principles of Passive House design and construction methodologies: super insulation, energy gain windows, continuous airtight construction, and minimal thermal bridging. This comprehensive strategy minimizes the heating and cooling demands and ensures overall thermal comfort and building durability.

The building is a wood framed structure with "perfect wall" construction, as promoted by Joe Lstiburek from Building Science Corporation. This strategy is also used for the roof and the slab by rotating the "perfect wall" horizontally to achieve a "perfect roof" and a "perfect slab". Special attention to the protection against moisture related damage is addressed by using a vented rain screen on exterior walls and fluid applied water management systems around areas such as window and door areas. Exterior EPS insulation combined with dense packed cellulose insulation in the wall cavity provides a vapor diffuse wall system appropriate for southwestern Ohio climate. The fiber-cement exterior siding is a durable solution for the exterior wall finishes.