

Stainless in Seattle

Type 316 stainless steel adorns the face of a new Seattle infrastructure project: an electrical substation that doubles as a public park. As cities grow and global energy demand continues to rise, the new Denny Substation is a welcome glimpse into what a future powered by accessible, sustainable infrastructure might look like.

Regardless of the necessity of electricity in modern life, most people do not give much thought to their local electrical substation. Despite the vital service they provide, electrical substations are mostly eyesores: unattractive clusters of wire and blinking grey surfaces, peripheral to the communities they serve. But for some, the rapid growth of 21st-century cities provides an opportunity to improve and reimagine public infrastructure. In this spirit, a new Seattle utility project, the Denny Substation, designed by Seattle architecture firm NBBJ, was destined not for the city outskirts, but the heart of one of its busiest neighborhoods. A glass and stainless steel façade, adjoining green space, and art installations transform the alien-like hive of wire and knobs

into a sleek, inviting space. In its double life as both a public utility and park, the Denny Substation aims not only to illuminate Seattle's South Lake Union neighborhood, but also the community's understanding of sustainable energy consumption.

A utility and an amenity

The Denny Substation is more than just a power provider; it is an integrated, community space. The architects and urban planners behind the substation wanted to highlight the idea of growth with both sustainability and neighborhood welfare in mind. A commitment to accessibility, open space, and energy efficiency is reflected in

the substation's design, which offers over 4,000 square meters of public area and energy-neutral facilities. The campus surrounding the substation includes an elevated walkway, an outdoor event space, art installations, solar panels, and – last but not least – an off-leash area for dogs.

These features pander to 10-meter high stainless steel walls that slope inward to form a trapezoidal structure, disguising the substation's unseemly, electrical organs. For curious visitors, the elevated walkway, which extends for 400 meters, allows for a stroll above the walls to peer inside at the substation's innards through glass panels. While on the walking path, the public can engage with interactive



An aerial view of the substation prior to opening to the public in July 2019. © Seattle City Light



Type 316 stainless steel panels offer a modern aesthetic to an often overlooked public utility.
© Samuel Sproule

art installations like the ‘Switchwall,’ which changes color as the wind blows past. The inward sloping angle of the substation’s walls allows for enough sunlight to nourish gardens of local, low-maintenance plants. Around the Denny Substation campus, various other elements such as informative sign plaques, seating, and window frames all integrate stainless steel for its low maintenance requirements and its sleek finish. The substation opened to the public on July 20th of 2019.

Sustainable solutions to growth

As of 2015, Seattle had not constructed a new electrical substation in nearly 40 years. Over those four decades, the city’s population exploded. The influx of tech and service giants ushered in scores of new residents, with many more expected to arrive in the coming years. For some

of the fastest growing neighborhoods, such as South Lake Union, public utilities were beginning to fall short of

capacity. To meet demand pressures, Seattle City Light began construction on the Denny Substation and underground distribution network in the spring of 2016. A derelict bus maintenance facility and its adjacent alley were chosen for the site. A ‘street vacation,’ which grants a private entity control of a public right-of-way, allowed the substation to be built over the street. This street vacation provided enough room for key aesthetic and sustainability features such as the sloping, pentagonal design and local plant life. The rest is history, as dogs, food trucks, and performance artists now frequent the Denny Substation campus.

Although the initial phase of the project is now completed, an expanded subterranean distribution network is planned for 2020 to increase capacity beyond South Lake Union, into other Seattle neighborhoods, sustaining future population growth.

Bringing urban lighting out of the shadows

The designers of the Denny Substation wanted to highlight sustainability by building net-zero energy facilities, meaning all buildings on site generate the entirety of their own power. Indeed, the substation itself contains on-site solar power, and a heat recycling system that provides 100% of the facility’s heat. ➤

Visitors take a look inside the substation through windows. © Curtis Kovach



This pledge to energy-neutrality was no easy feat in a densely populated, city neighborhood. Typically, it is difficult for a small, low-lying area in a high-rise, urban environment to receive enough direct sunlight for solar power and plant life. That is where the Denny Substation's molybdenum-containing stainless steel walls come in. By sloping inward at an angle, the reflective surface of the stainless steel-clad panels allows enough sunlight to reach the public areas and support plant growth. Furthermore, the use of Type 316 stainless steel itself contributes to sustainability through material longevity, as its corrosion resistance, thanks to the addition of 2% molybdenum, helps protect against both marine and de-icing salts endemic to Seattle. For these reasons, stainless steel is essential to the sustainable design features at the Denny Substation.



A closer look at the substation's stainless steel panels. © Seattle City Light

Furthering the commitment to sustainability, the plants chosen for the substation's gardens are native to the Pacific Northwest, require very little water, and encourage proper drainage. Because the Denny Substation rests on a former bus maintenance facility, before construction the soil of the site was shallow and polluted, and contaminated debris frequently drained into storm sewers. The site was cleaned, the debris removed, the soil deepened, and a bioretention planter placed to treat

stormwater, removing contaminants around the station. In concert with solar power capacity and heat recycling, these measures make the Denny Substation a sustainable facility.

In an age when citizens are increasingly distant from the processes that sustain life, the Denny Substation facilitates awareness of energy consumption while

highlighting the promise of sustainable growth. Seattle's decision to invite the public to enjoy an ordinarily obscure utility indicates an innovative future for urban infrastructure. By highlighting the unique properties of Type 316 stainless steel, the Denny Substation also signals the centrality of molybdenum to a future of sustainable, community-centered urban growth. (Karlee Williston)

Sculptures near the entrance of the walkway incorporate stainless steel. © Seattle City Light



The off-leash area for dogs also uses sleek, stainless steel elements. © Samuel Sproule

