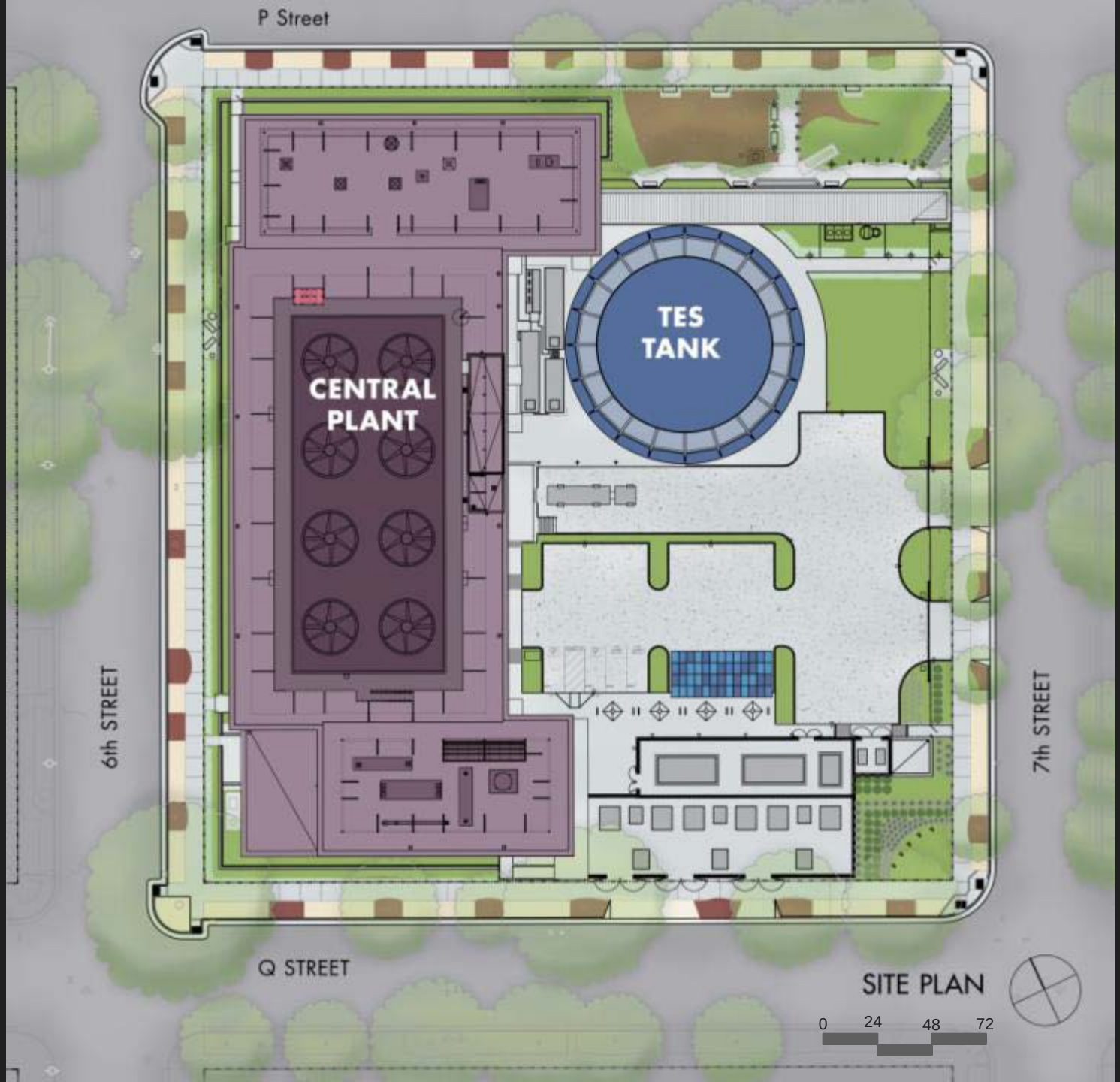
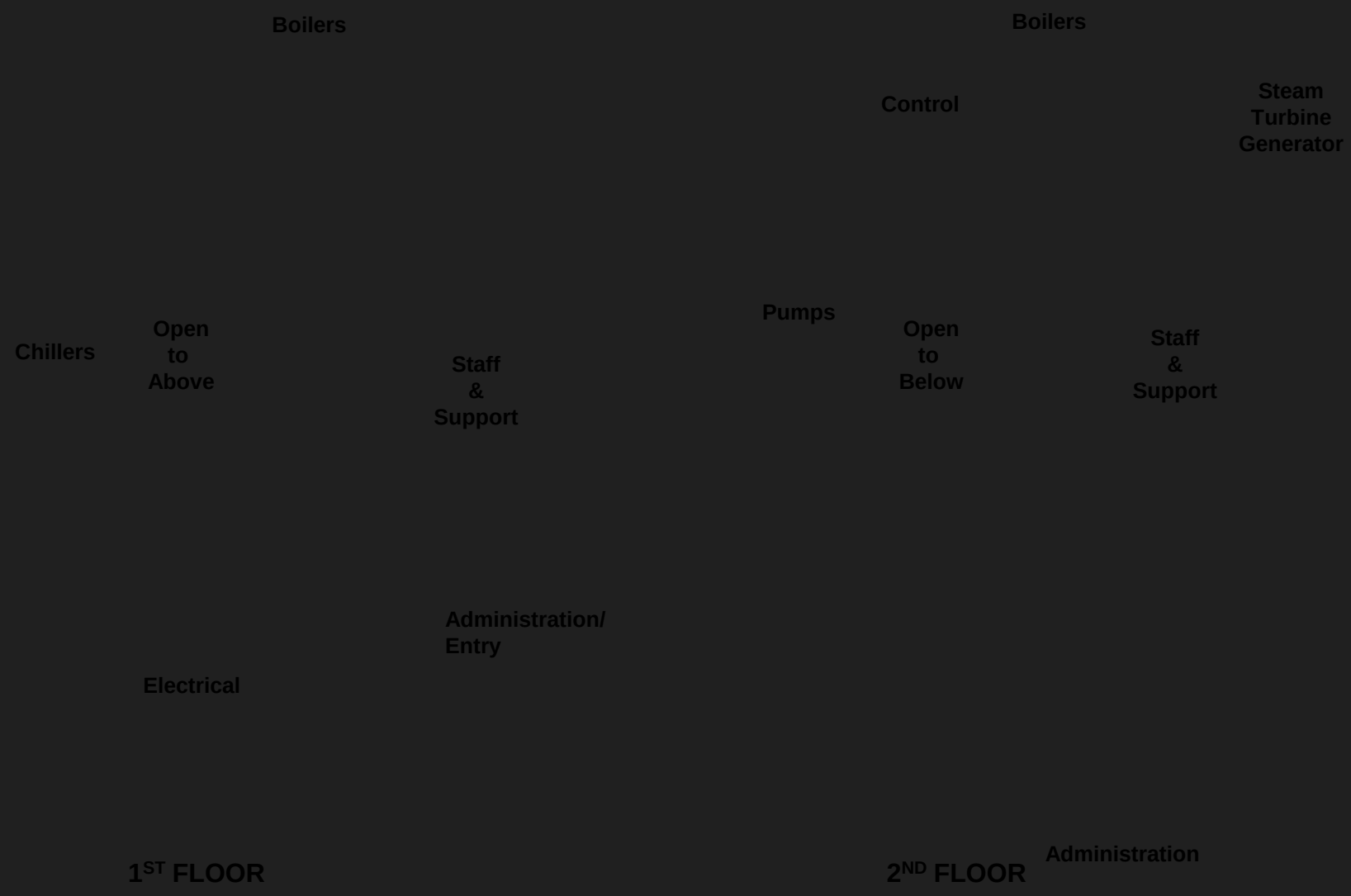
DGS Central Utility Plant
Sacramento, CA

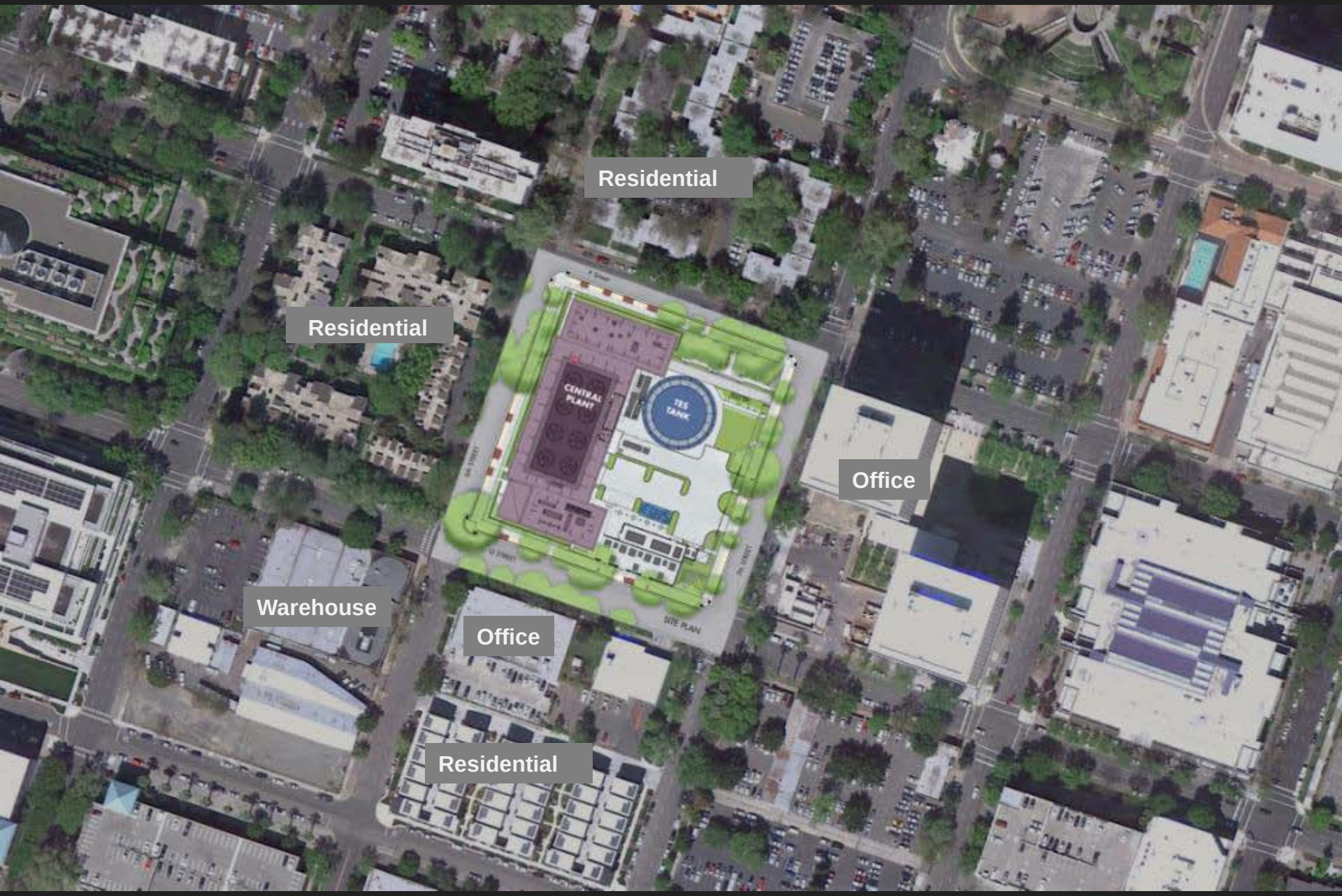
South Elevation


P Street
CENTRAL PLANT
TES TANK
6th STREET
7th STREET
Q STREET
SITE PLAN
0
24
48
72

Site Plan


Boilers
Chillers
Open to Above
Staff & Support
Electrical
Administration/ Entry
1ST FLOOR
Boilers
Control
Steam Turbine Generator
Pumps
Open to Below
Staff & Support
Administration
2ND FLOOR

Floor Plan



Vicinity Plan

West Elevation – Highly Articulated for Civic Presence

North Elevation – Thermal Energy Storage (TES) Tank in Background

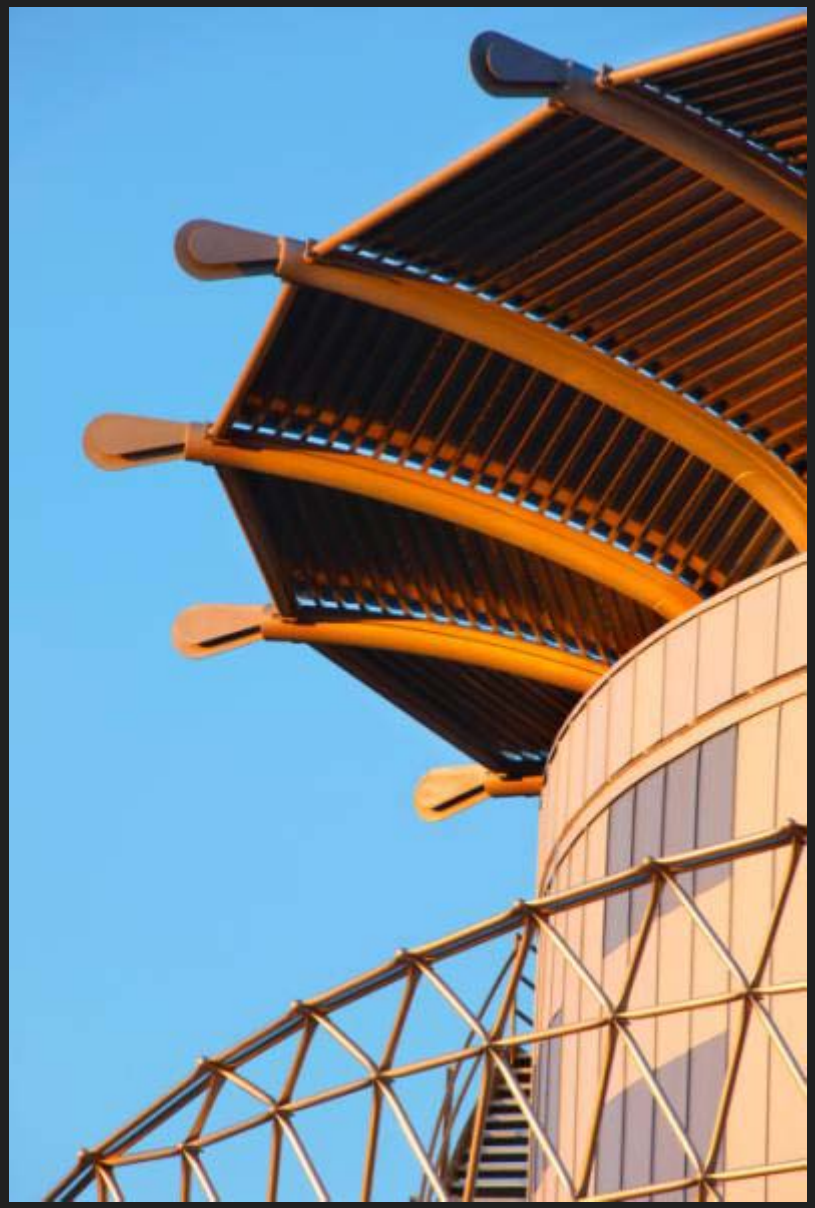
Exterior from Southwest

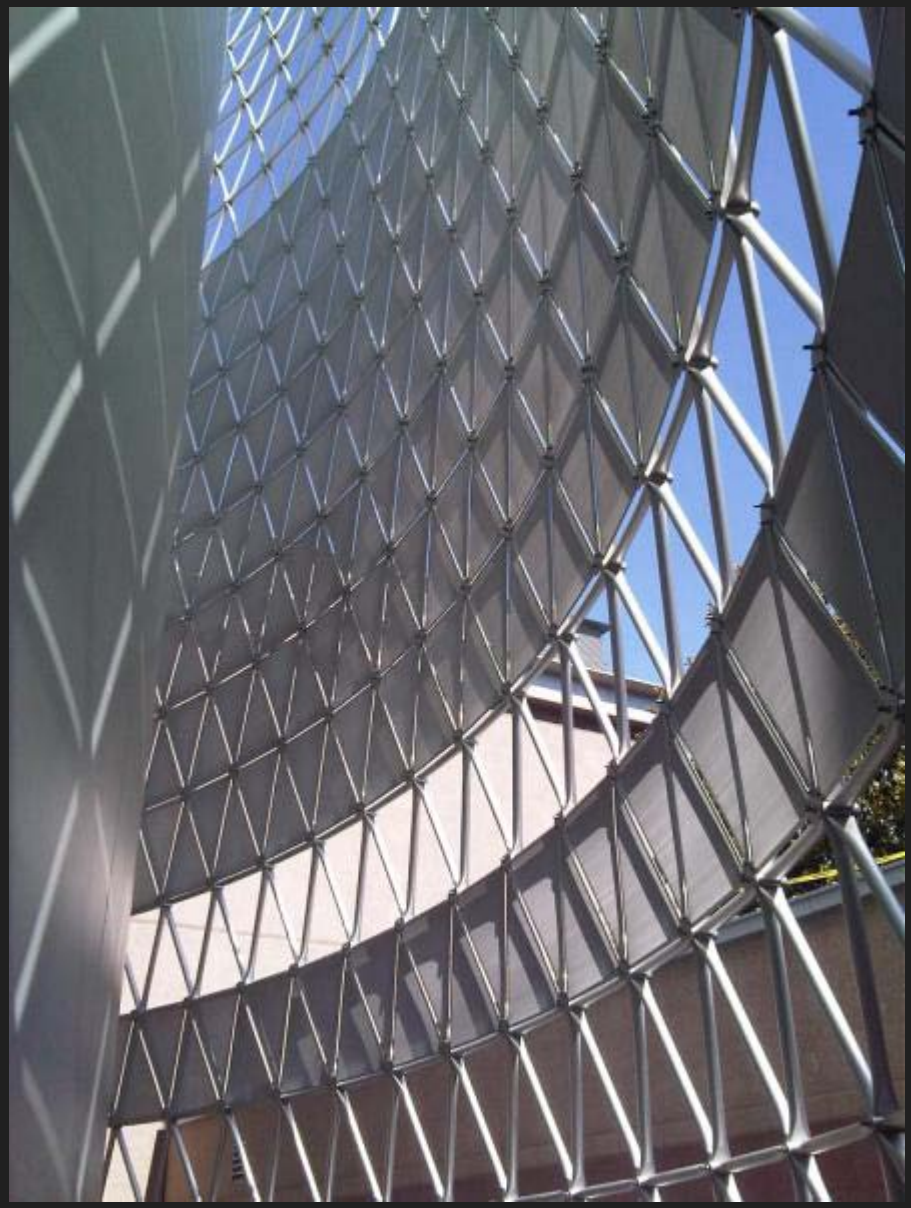
Boiler Room Equipment

Chillers and VFD’s at First Floor – Pumps and Control Room on Second Floor

Pumps and Piping on Second Floor

TES Tank & Splash





Details

Central Plant

SUSTAINABILITY FEATURES

The Central Plant provides chilled water for cooling, steam for heating and compressed air for controls to 23 existing State-owned buildings in the Capital area. The new plant will eliminate the water discharge into the adjacent river by utilizing cooling towers.

The project includes a thermal energy storage tank that reduces the electrical costs and impact on the grid by reducing the chiller electrical load during peak conditions.

The heating and cooling capacity will be increased to match existing loads and future loads. This will allow for more reliable and efficient heating and cooling. In addition, steam-turbine distributed generation will be utilized to minimize the impact on the downtown electrical grid.

Sustainable Site

- Cooling Tower uses environmentally friendly water treatment with no chemicals
- White 'Cool' roof
- Stepped-back facade for neighborhood scale
- Bicycle storage
- Staff shower and locker facilities
- Creating Magnolia Park for neighbors to enjoy
- Rain garden for runoff
- High albedo concrete to reduce heat island effect
- No new parking

Water Efficiency

- Reclaimed cooling tower water for landscape irrigation
- Reclaimed water for toilet fixtures

Energy and Atmosphere

- Ultra-high efficient all-variable speed chiller plant
- Chilled water thermal storage system to provide cooling for State buildings during high electrical rate period
- Non-ozone depleting refrigerant
- Energy efficient evaporative cooling
- Steam powered electric generator to provide emergency cooling and load leveling during energy emergency conditions
- Solar heating for domestic and space heating hot water
- Advance M-Cycle evaporative air systems for office spaces to reduce energy use by effectively applying psychometric energy from the atmosphere
- High-performance, low-E glass
- New steam heating plant that will increase the overall heating system operating efficiency
- Plant controls based on the engineering principle that provides energy optimization of all systems
- Overall monitoring of system performance
- Photovoltaic panels will provide electrical power for office support areas
- Radiant heating and cooling system for thermal comfort in support areas
- Post occupancy monitoring of system performance
- Enhanced Commissioning
- City trees retained for shading
- Energy efficient integrated occupancy control of lighting, conditioning and ventilation

Materials and Resources

- Recycling of demolished materials
- Selection of materials with high-recycled content
- Slabs with 30% fly ash
- Lab tested no or low VOC finishes

Indoor Environmental Quality

- CO2 monitored throughout office area and demand based ventilation control will provide excellent Indoor Air Quality.
- Maximize the use of day lighting with automatic light fixture dimming control
- Low energy direct-indirect lighting fixtures
- Lab tested no or low VOC finishes
- Operable windows for natural ventilation