Denny Substation Concept Design Phase Review

with the

Seattle Design Commission

June 6, 2013
PROJECT SCOPE AND SCHEDULE

- **ULTIMATELY DELIVER 825 - 930 MVA TRANSMISSION AND DISTRIBUTION CAPACITY**
- **PROVIDE A SECURE AND RELIABLE POWER SUPPLY AND REQUIRED POWER CAPACITY TO SOUTH LAKE UNION, DENNY TRIANGLE AND ADJACENT AREAS**
- **TO SUPPORT AND ADVANCE THE URBAN CENTER STRATEGIES AS DEFINED IN THE COMPREHENSIVE PLAN**
- **ADDRESS THE GROWING NEEDS OF CURRENT AND FUTURE DEVELOPMENT**
- **DEVELOP A LAYOUT FOR LONG TERM PHASING TO MEET FUTURE POWER NEEDS**
- **FIRST PHASE TO BE OPERATIONAL BY MID-2016 (270 MVA)**

SITE AND PROJECT REQUIREMENTS

- **SITE IS MOST COST EFFICIENT GIVEN ITS PROXIMITY TO EXISTING TRANSMISSION LINES**
- **SITE FACILITATES MULTIPLE ROUTES FOR POWER DISTRIBUTION**
- **SITE FACILITATES EASE OF ACCESS FOR OVERSIZE VEHICLES**
- **UTILIZE GIS VERSUS AIR INSULATED EQUIPMENT TO MINIMIZE SITE AREA REQUIREMENTS**
- **IN ORDER TO ADDRESS THE DISTRIBUTION, PHASING AND ACCESS REQUIREMENTS PURSUE THE VACATION OF PONTIUS**
- **DEVELOP A PUBLIC BENEFIT PACKAGE TO ADDRESS THE ADJOINING NEIGHBOR AND COMMUNITY CONCERNS AND NEEDS**
- **DEVELOP A MASSING AND SITE EDGES THAT MITIGATE THE VISUAL IMPACT OF THE SUBSTATION**
- **SHOWCASE SUSTAINABLE STRATEGIES**
*On Valley Street, all Class 1 Pedestrian Streets requirements apply only to lots abutting on the south side of the street.
9 BLOCK FOCUS AREA
OPEN SPACE

CASCADE PARK and PEA PATCH

REI TRAIL SYSTEM

SEATTLE TIMES BLDG. POCKET PARK
TRAFFIC COUNTS

THOMAS ST. = 240 VEHICLES / P.M. PEAK HOUR

PONTIUS AVE. N = 120 VEHICLES / P.M. PEAK HOUR

DENNY WAY = 2,000 VEHICLES / P.M. PEAK HOUR
TECHNICAL CONSTRAINTS

No Vacation of Pontius: Distribution Routing

Vacation of Pontius: Distribution Routing

No Vacation of Pontius: Two Levels

Vacation of Pontius: One Level
ALT. 1: NO VACATION OF PONTIUS
ALT. 3: VACATION OF PONTIUS

AERIAL CONCEPT RENDERINGS LOOKING NORTH

SECTION LOOKING NORTH

SITE PLAN

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DESIGN COMMISSION RECOMMENDATIONS (October 2012)

- DESIGN CONCEPTS THAT “EXPOSE THE EQUIPMENT”
- THE BUILDING OBJECT IS THE AMENITY AND DRAW PEOPLE TO IT
- EXPLORE DESIGN BEYOND TRADITIONAL SUBSTATION INFRASTRUCTURE
- THE PROJECT AS A UNION OF A DOWNTOWN UTILITY AND ART
- DO NOT DEVELOP A DESIGN WITH BLANK WALLS
- ADDRESS DENNY WAY - CHALLENGES AND OPPORTUNITIES
- EMPHASIZE PROGRAMMING THAT BENEFITS THE NEIGHBORHOOD
- DEVELOP PUBLIC SPACES...OPTIONS FOR PROGRAMMING...24 HOUR DIVERSE USE
- STUDY CORNER OF JOHN AND DENNY SITE
- MITIGATE HEAT ISLAND, NOISE, AND EMF
- EXPLORE OPPORTUNITY FOR EDUCATION OF POWER GENERATION AND USE
ALTERNATIVE 1

NO VACATION ALTERNATIVE
proposed “green street”

hard urban edge

street conditions - denny vs. john
lightweight luminous enclosure
combined elements

lightweight luminous enclosure

soft landscape wrapper

hard substation wrapper
ALTERNATIVE 1

NO VACATION ALTERNATIVE

- Equipment layout restricted to Parcel 2
- Requires an above and below grade substation design
- Stacked layout complicates accessibility, maintenance, and safety
- Distribution lines routing occurs further below grade than desirable
- No opportunity for prominent urban amenities at the perimeter
- Higher capital cost ($37M higher cost than Alternative 3)
ALTERNATIVE 3

STREET VACATION ALTERNATIVE
SUBSTATION FOOTPRINT and EQUIPMENT LAYOUT
existing transmission line
- respecting the Brewster
- creating through block connection
- allowing for open space on site
equipment layout and routing
structure and truck access routes
SECTIONAL MASSING DIAGRAM
2 level substation above and below grade
1 level substation above grade
terrace the facade to reduce the massing for the pedestrian experience
angling the facade further to allow greater access to light and air in adjacent spaces
vertical and angled surfaces identified to allow views into the substation
geometrical form allows for opportunities to occupy the interior edges of the substation
MASSING DIAGRAM
no vacate option - 2 level substation
vacate option - 1 level substation spread across parcels 1 and 2
optimized footprint - through block connection; open space; relief for Brewster Apartments
reducing the massing through terracing the facade
reducing the massing further through sloping the facade and allowing urban access and movement through and around the substation
lifted edges of the substation become an extension of the ground plane; the elevated planes give relief from the congestion of Denny Way and provide unique views and experience of the city.
facades articulation of solid vs. translucent zones for revealing the inner workings of the substation
full composition of components
CONTEXTUAL CONNECTION
circulation - site flows
OPEN SPACE and “BREATHING ROOM” for BREWSTER APTS.

“THROUGH BLOCK” CONNECTION

OPTIMIZED SUBSTATION FOOTPRINT
elevated park ring
substation equipment
USES: amphitheatre / large step seating
USES: recreation uses
USES: art walk / elevated park
USES: unassigned spaces
OPEN SPACE NETWORK ALONG THE CASCADE NEIGHBORHOOD EDGE

DENNY PARK

SEATTLE TIMES BLDG.
POCKET PARK

DENNY WAY

DENNY SUBSTATION

CASCADE PARK and PEA PATCH

REI TRAIL SYSTEM
SITE DIMENSIONS

120'-0"
45'-0"
335'-0"
180'-0"
190'-0"
240'-0"
220'-0"
305'-0"

~13,500 SF
~112,100 SF

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VIEW FROM DENNY LOOKING NE
PEDESTRIAN EXPERIENCE

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TRANSLUCENT GLAZING
METAL PANEL
STRUCTURAL “PURLINS”
STRUCTURAL “CRANES”
ELEVATED WALKWAYS and STOREFRONT GLAZING
PARAMETRIC DESIGN PROCESS

RHINO and GRASSHOPPER

• Parametric design is the generation of geometry from the definition of a family of initial parameters and the design of the formal relations they keep with each other. It is about the use of variables and algorithms to generate a hierarchy of mathematical and geometric relations that allow you to generate a certain design, but to explore the whole range of possible solutions that the variability of the initial parameters may allow.

• Parametric design is fundamental when minimizing the effort needed to create and test design variants. Generating an automated process eliminates tedious repetitive tasks, the need for complicated calculations on the fly, the possibility of human error, and generates huge shifts in the outcomes with slight variations of the original parameters.

(http://www.parametriccamp.com/)
Lead Pencil Studio

DANIEL MIHALYO and ANNIE HAN

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Ned Kahn Studios
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- EXPLORE OPPORTUNITY FOR EDUCATION OF POWER GENERATION AND USE
Equipment layout occurs on Parcel 2, a portion of Parcel 1, and over Pontius Street.

Substation facility is accessible at grade for ease of maintenance and safety.

Distribution lines occur slightly below grade as per standard for ease of access, maintenance, and lower cost.

Unassigned open space affords opportunities for potential public amenities.

Creates a unique condition for experiencing the neighborhood, art, and the substation.

Serves as a prominent landmark for the city and the neighborhood.

Current costs are aligned with anticipated baseline project cost.