

# Skamania Courthouse Plaza

Electrical Basis of Design Narrative

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## Table of Contents

1.0	Project Description .....	1
1.1	Plaza Description .....	1
1.2	Codes and Standards.....	1
2.0	Electrical.....	2
2.1	Design Criteria.....	2
2.2	Service and Distribution.....	2



# Project Directory

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# 1.0 Project Description

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## 1.1 Plaza Description

The City of Stevenson is planning to renovate the area directly south of the Skamania County Courthouse at 240 Vancouver Avenue into a public use plaza. The new plaza program includes multiple flexible spaces that can be used for outdoor events, restaurant overflow seating and community gatherings. Current planned features include tiered gathering and seating areas, a water feature, and a public restroom.

## 1.2 Codes and Standards

The following codes, guidelines, regulations and other references that will be put into practice in the design of the project.

- 2020 National Electrical Code with Washington Amendments
- National Fire Protection Association (NFPA) Standards
- American National Standards Institute (ANSI)
- Institute of Electrical and Electronics Engineers (IEEE)
- National Electrical Manufacturers Association (NEMA)
- Underwriters Laboratories (UL)



## 2.0 Electrical

### 2.1 Design Criteria

The following load allowances will be provided for the project as described in the following sections:

**Table 1: Lighting and Power Load Densities**

Load Description	kVA	Amps @ 240V/1PH	Amps @ 208V/3PH
Plaza Lighting	8	33	22
QTY (10) Booth Power Boxes	5	21	14
Christmas Tree Power Outlet	1	4	3
Stage/Event Power at (1) Location	10	42	28
QTY (2) Food Truck Power Outlets	6	25	17
Street holiday Lighting Outlets	1	4	3
Irrigation Pump	15	63	42
Water Feature Power (Minimal Option)	10	42	-
Water Feature Power (Programmed Option)	80	-	222
<b>Total Power Draw</b>	-	<b>233</b>	<b>350</b>

### 2.2 Service and Distribution

#### PLAZA MAIN POWER SERVICE

The plaza will be provided with an oil filled, pad mount transformer by the utility, to be located on grade in coordination with PUD requirements—tentatively planned for the southeast corner of site adjacent to the public restroom. This transformer will serve a 42 pole main service panel that will be located in a two section outdoor rated enclosure. The left hand section will contain the service panel for the plaza, and the right hand section will be allocated to future telecommunications/wifi equipment. (2) 4”C will be provided underground from telecommunications section to nearby handholes in sidewalk along Lewis and Clark Highway.

Two options for utility service to the power transformer for the plaza have been identified, to be coordinated and confirmed with the PUD based on final size and load requirements:

- Option 1: tap primary service to existing transformer serving courthouse in Northeast corner of planned plaza area, and extend to new transformer location.
- Option 2: pull service from overhead distribution in alleyway between 1<sup>st</sup> Street and Lewis and Clark Highway, extend primary feed underground through city park on south side of Lewis and Clark and across the Highway to new transformer location.

Two options are also being carried for Plaza service panel sizing and phasing, dependent on final water feature power requirements (refer to table above):



- Option 1: serves all power requirements requested by the city as outlined below, with minimal extra capacity for irrigation and/or water feature power. Service panel in this scenario sized at minimum 42 pole, 250A, 240/120V 1 phase.
- Option 2: based on best known information of pumping and UV treatment system for programmed water feature design plus loads listed above. Recommended service panel in this scenario sized and minimum 42 pole, 400A, 208/120V 3 phase.

The availability of three phase service power vs single phase will need to be confirmed with the PUD.

### **PLAZA LOADS SERVED BY POWER PANEL**

As listed in the load table above, the plaza power panel will be arranged to serve the following loads listed here:

- Plaza lighting by others – expected to be a mixture of bollard lighting, pedestrian poles, accent lighting built into seating, and/or decorative fixtures. Lighting controls may be integrated into power panelboard or provided separately, to be determined in following design phases. Street lighting to remain, separate from plaza power.
- Power for event booths. Assume quantity 10 duplex receptacles spread across all tiered open areas, either within handholes or boxes built into vertical walls as is practical for each location.
- Dedicated receptacle in handhole for annual town Christmas tree lights.
- Public restroom. The restroom will be provided a single dedicated 20A 120V circuit and will come prewired internally as required.
- Event power for minor stage performances in one location at primary/bottom plaza level. Assume 40A twistlock receptacle within handhole.
- Two 30A 240V or 208V single phase receptacles in handholes at Highway for food trucks.
- 120V receptacles located in handholes at Highway (can be combined with food truck receptacles) for annual holiday street/sidewalk decorative lighting.
- Irrigation pump and/or controller as required.
- Power to water feature. For currently programmed water feature (power service option 2), a dedicated 250A three phase feed will be provided via sub feed circuit breaker integral to main power panel to a vendor provided MCC located in below ground vault per water feature vendor drawings.

### **Branch Circuit Wiring**

Copper conductors routed in EMT raceway will be used throughout the plaza for branch distribution. Conductors will be run underground in minimum 1" Schedule 40 PVC conduit. No specific locking or anti-theft measures have been identified as necessary by the City at this time. GFCI protection will be provided on all receptacles and devices located within handholes or vaults.

### **Equipment Connections**

Electrical power connections will be made to support miscellaneous equipment. Connections include disconnect safety switches and wiring to support interlocks to remote devices.



### **Grounding System**

A grounded power system will be provided in compliance with the NEC. This ground system consists of the service ground consisting of minimum one ground rod, UFER ground, and bonding to the water service piping. The grounding system will be extended throughout all electrical systems in the plaza. An equipment grounding conductor will be provided in all feeder and branch wiring runs.