


PRFN20240667

**City of Puyallup  
Building  
REVIEWED  
FOR  
COMPLIANCE**

BSnowden  
05/10/2024  
9:58:50 AM




April 09, 2024

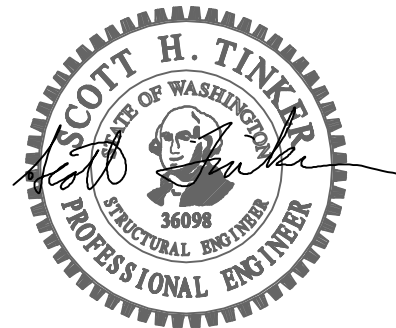
City of Puyallup Development & Permitting Services ISSUED PERMIT	
Building	Planning
Engineering	Public Works
Fire	Traffic

**STRUCTURAL CALCULATIONS**  
(Permit Submittal)

**CENTERIS DATA CENTER  
CHAIN LINK FENCE FOUNDATION**  
1023 39<sup>th</sup> Avenue SE  
Puyallup, WA 98374

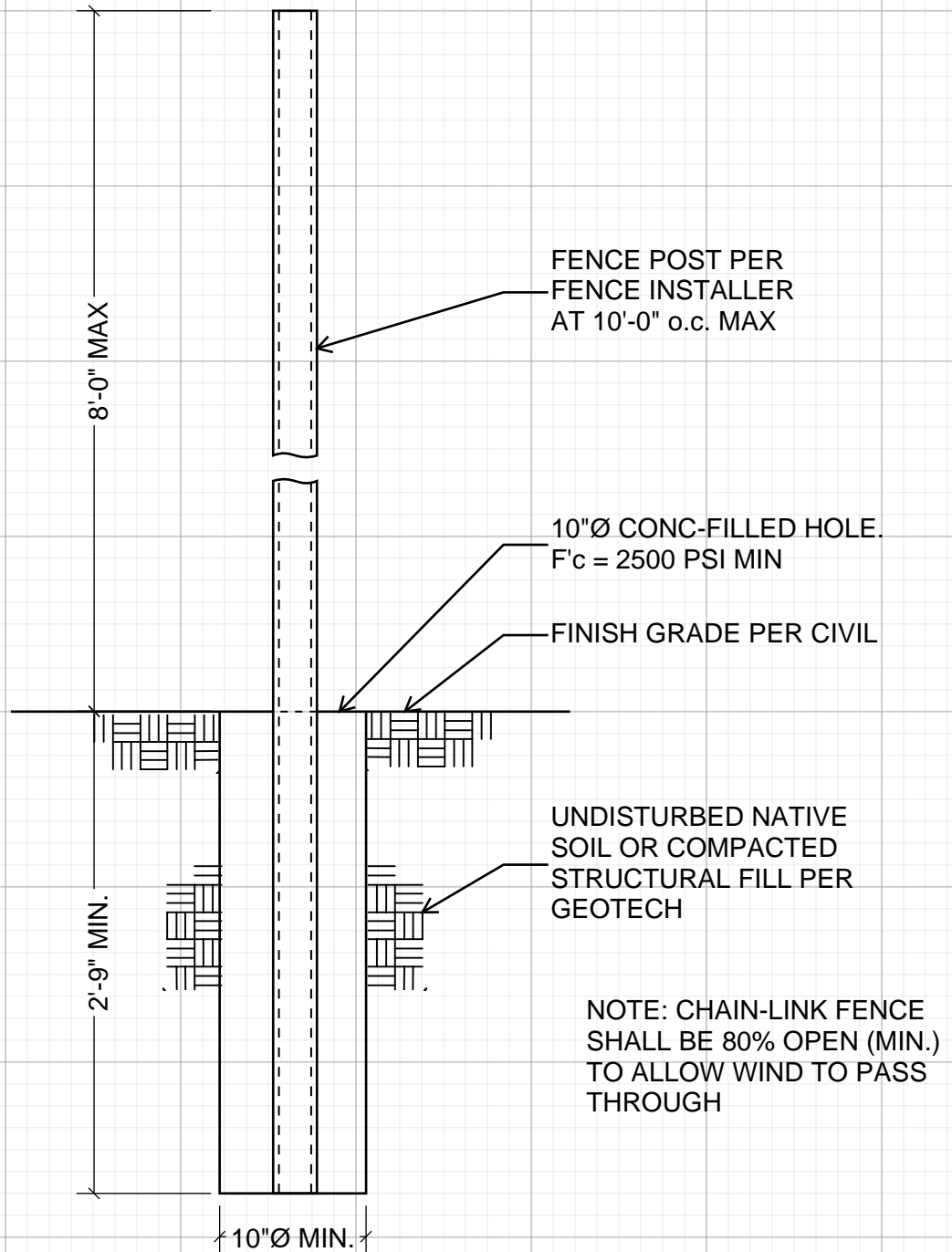
Quantum Job Number: 23444.01

*Prepared for:*  
CENTERIS DATA CENTERS  
18300 Cascade Avenue S  
Seattle, WA 981188



*Prepared by:*  
QUANTUM CONSULTING ENGINEERS  
1511 Third Avenue, Suite 323  
Seattle, WA 98101  
TEL 206.957.3900  
FAX 206.957.3901

Calculations required to be provided by  
the Permittee on site for all Inspections



TYPICAL CHAIN-LINK FENCE POST FOUNDATION

SCALE: N.T.S.



1511 THIRD AVENUE  
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SEATTLE, WA 98101  
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CENTERIS DATA CENTER - SOUTH HILL  
project

CENTERIS  
client

04/04/2024  
date

drawn by:  
TVM  
design by:

23444.01  
job no.

SSK-11  
sheet no.

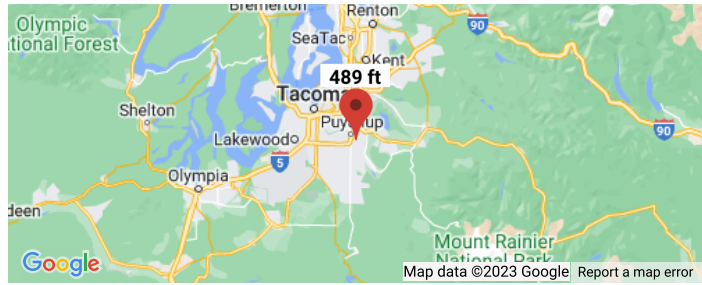
⚠ This is a beta release of the new ATC Hazards by Location website. Please [contact us](#) with feedback.

ℹ The ATC Hazards by Location website will not be updated to support ASCE 7-22. [Find out why.](#)

# ATC Hazards by Location

## Search Information

**Address:** 1015 39th Ave SE Puyallup, WA 98374  
**Coordinates:** 47.1590004, -122.2794422  
**Elevation:** 489 ft  
**Timestamp:** 2023-12-01T15:13:57.333Z  
**Hazard Type:** Wind



### ASCE 7-16

MRI 10-Year ..... 67 mph  
 MRI 25-Year ..... 73 mph  
 MRI 50-Year ..... 78 mph  
 MRI 100-Year ..... 82 mph  
 Risk Category I ..... 92 mph  
 Risk Category II ..... 97 mph  
 Risk Category III ..... 104 mph  
 Risk Category IV ..... 108 mph

### ASCE 7-10

MRI 10-Year ..... 72 mph  
 MRI 25-Year ..... 79 mph  
 MRI 50-Year ..... 85 mph  
 MRI 100-Year ..... 91 mph  
 Risk Category I ..... 100 mph  
 Risk Category II ..... 110 mph  
 Risk Category III-IV ..... 115 mph

### ASCE 7-05

ASCE 7-05 Wind Speed ..... 85 mph

*The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.*

*Please note that the ATC Hazards by Location website will not be updated to support ASCE 7-22. [Find out why.](#)*

## Disclaimer

Hazard loads are interpolated from data provided in ASCE 7 and rounded up to the nearest whole integer. Per ASCE 7, islands and coastal areas outside the last contour should use the last wind speed contour of the coastal area – in some cases, this website will extrapolate past the last wind speed contour and therefore, provide a wind speed that is slightly higher. NOTE: For queries near wind-borne debris region boundaries, the resulting determination is sensitive to rounding which may affect whether or not it is considered to be within a wind-borne debris region.

Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.

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# Fence Wind Loading

ASCE 7-16 Chapter 29 Procedure

## 1.) Fence Parameters

Height = 8 ft  
Post Spacing = 10 ft  
% Open = 20 % (Conservative)  
Wind Speed = 104 mph  
Exposure Cat. B  
Exposure Coe.  $K_z = 0.57$  Table 26.10-1 ( $H = 15'$ )  
Direction Coe.  $K_d = 0.85$  Table 26.6-1  
Topo Coe.  $K_{zt} = 1.00$  Sec. 26.8

## 2.) Wind Load

V\_Pressure  $q_z = 13.42$  psf EQ 26.10-1  
C<sub>f</sub> = 1.80 Figure 29.4-2  
F = 386 plf EQ 29.3-1



Quantum Consulting Engineers LLC  
1511 Third Avenue, Suite 323  
Seattle, WA 98101

Project: Centeris  
Client: Centeris

Date: 4/8/24 Job No: 23444.01  
Designer: TVM Sheet: 1  
Checked:

## Pole Footing Embedded in Soil

Lic. #: KW-06005835

DESCRIPTION: Fence Foundation

### Code References

Calculations per IBC 2018 1807.3, CBC 2019, ASCE 7-16

Load Combinations Used : ASCE 7-16

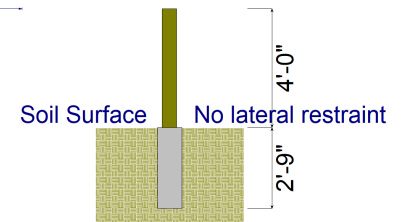
### General Information

Pole Footing Shape Circular  
 Pole Footing Diameter ..... 10.0 in  
 Calculate Min. Depth for Allowable Pressures  
 No Lateral Restraint at Ground Surface  
 Allow Passive ..... 700.0 pcf  
 Max Passive ..... psf

**Allowable passive pressure = 350 psf applied of 2D**

Controlling Values	
Governing Load Combination :	+0.60W
Lateral Load	0.2316 k
Moment	0.9264 k-ft
<b>NO Ground Surface Restraint</b>	
Pressures at 1/3 Depth	
Actual	626.40 psf
Allowable	632.12 psf
<b>Minimum Required Depth 2.750 ft</b>	
Footing Base Area	0.5454 ft <sup>2</sup>
Maximum Soil Pressure	0.0 ksf

Point Load



### Applied Loads

Lateral Concentrated Load (k)	Lateral Distributed Loads (klf)	Vertical Load (k)
D : Dead Load k	k/ft	k
Lr : Roof Live k	k/ft	k
L : Live k	k/ft	k
S : Snow k	k/ft	k
W : Wind 0.3860 k	k/ft	k
E : Earthquake k	k/ft	k
H : Lateral Earth k	k/ft	k
Load distance above ground surface 4.0 ft	TOP of Load above ground surface ft	
	BOTTOM of Load above ground surface ft	

### Load Combination Results

Load Combination	Forces @ Ground Surface		Required Depth - (ft)	Pressure at 1/3 Depth		Soil Increase Factor
	Loads - (k)	Moments - (ft-k)		Actual - (psf)	Allow - (psf)	
	0.000	0.000	0.13	0.0	0.0	1.000
+0.60W	0.232	0.926	2.75	626.4	632.1	1.000
+0.450W	0.174	0.695	2.50	563.7	565.3	1.000