PRCA20240148

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PROJECT: TOYOTA CANOPY			SHEET NO.
BY: CF	DATE: 1/24/24	JOB NO. 2402	1 of 10

Install per approved Engineers Design for alternative and column detail.
Per Sec 1704.6.1 Structural observations for seismic resistance. (Special Inspection) maybe required per #5

STRUCTURAL CALCULATIONS
FOR THE
TOYOTA OF PUYALLUP
CANOPY

(1400 RIVER RD E)

- CANOPY

REVISION FOR ALTERNATE FOOTING AND COLUMN DETAIL

City of Puyallup
Building
ACCEPTED
JMontgomery
04/19/2024
2:16:28 PM

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

DESIGN PARAMETERS: 2018 IBC
97 mph EXP "B"
SEISMIC CAT "D"
SNOW LOAD = 25 psf

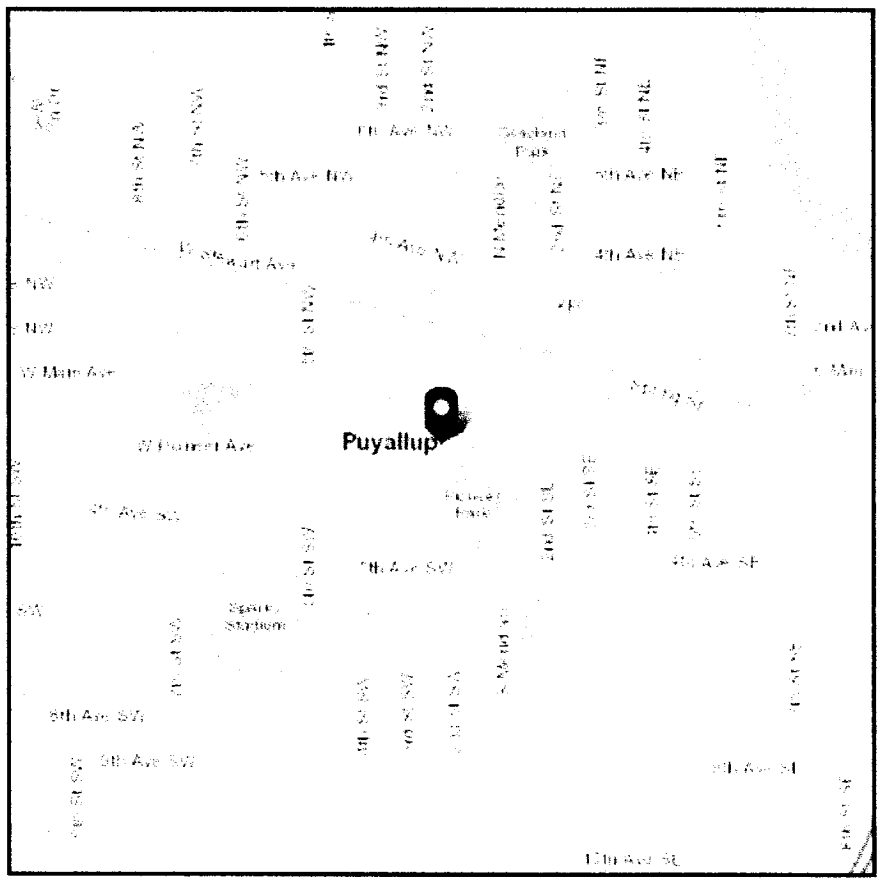
CHRISTIAN FYNBOE
STATE OF WASHINGTON
22148
REGISTERED
PROFESSIONAL ENGINEER

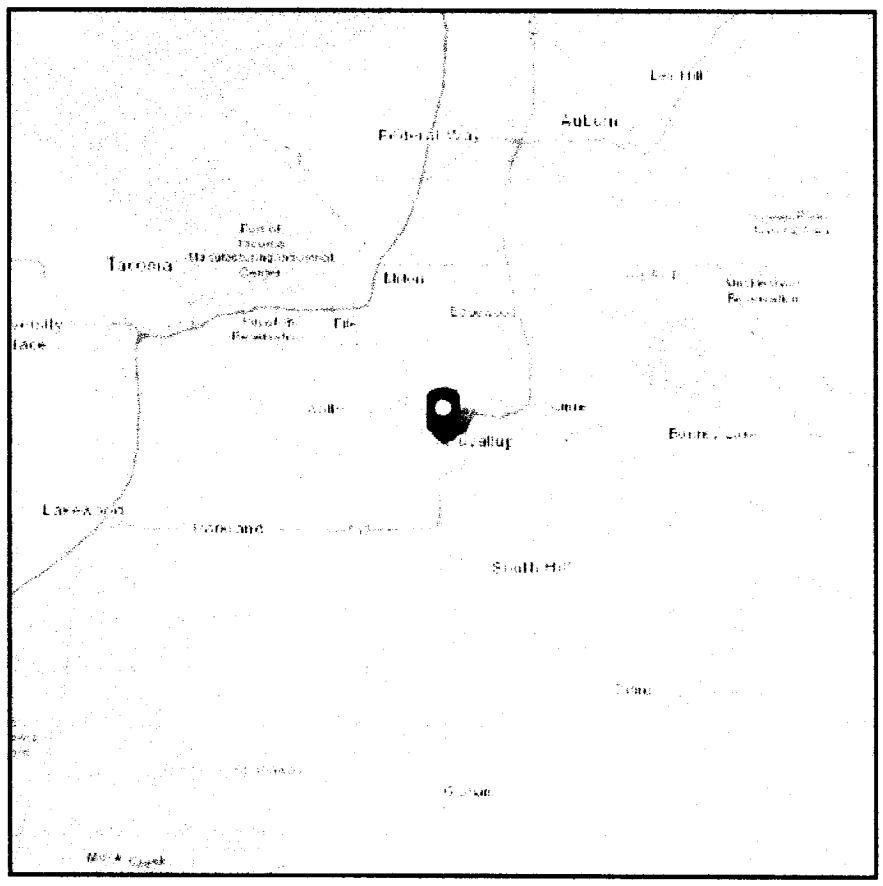
ASCE 7 Hazards Report

Address:
Puyallup
Washington,

Standard: ASCE/SEI 7-22
Risk Category: II
Soil Class: Default

Latitude: 47.19044
Longitude: -122.29537
Elevation: 45.776816077718955 ft (NAVD 88)





Wind

Results:

Wind Speed	97 Vmph
10-year MRI	67 Vmph
25-year MRI	73 Vmph
50-year MRI	78 Vmph
100-year MRI	83 Vmph
300-year MRI	92 Vmph
700-year MRI	97 Vmph
1,700-year MRI	104 Vmph
3,000-year MRI	108 Vmph
10,000-year MRI	118 Vmph
100,000-year MRI	136 Vmph
1,000,000-year MRI	154 Vmph

Data Source: ASCE/SEI 7-22, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Fri Dec 01 2023

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-22 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years). Values for 10-year MRI, 25-year MRI, 50-year MRI and 100-year MRI are Service Level wind speeds, all other wind speeds are Ultimate wind speeds.

Site is not in a hurricane-prone region as defined in ASCE/SEI 7-22 Section 26.2.

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Seismic

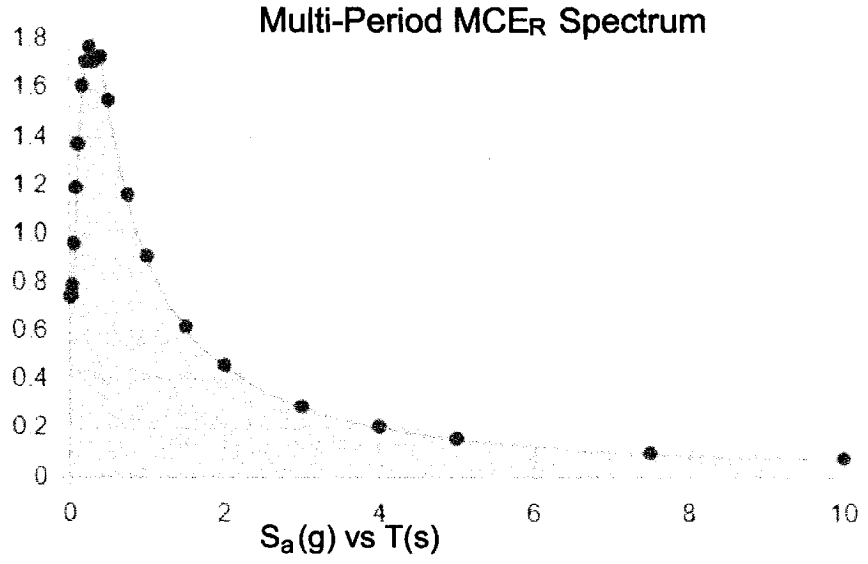
Site Soil Class: Default

Results:

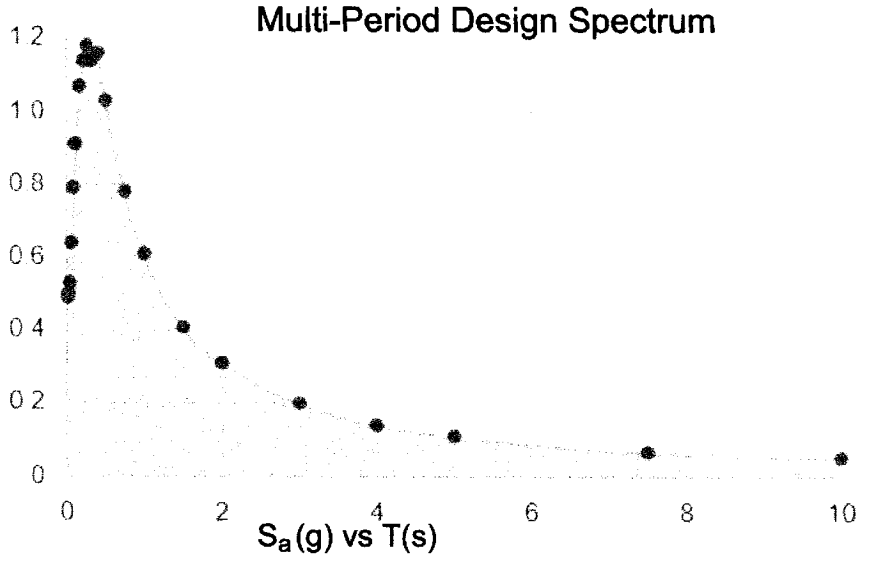
PGA_M :	0.56	T_L :	6
S_{MS} :	1.59	S_S :	1.44
S_{M1} :	0.91	S_1 :	0.43
S_{DS} :	1.06	V_{S30} :	260
S_{D1} :	0.61		

Seismic Design Category: D

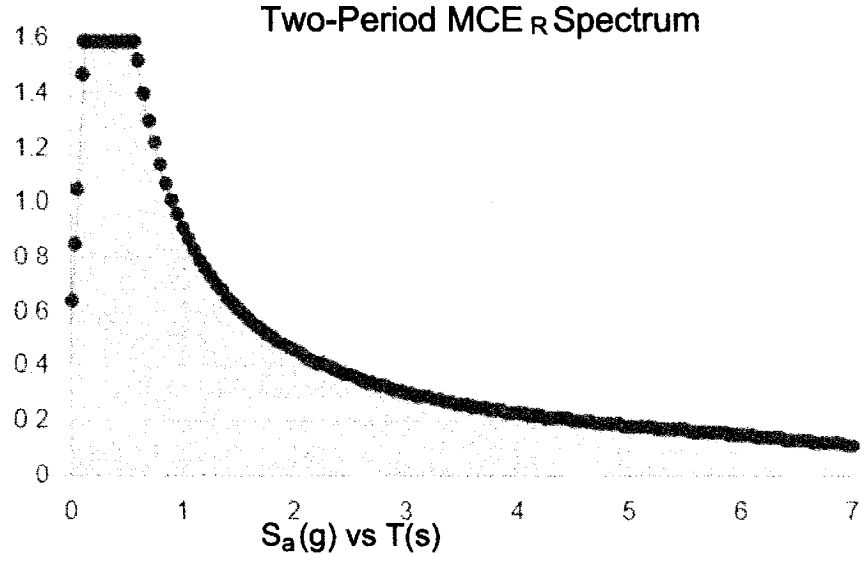
Multi-Period MCE_R Spectrum



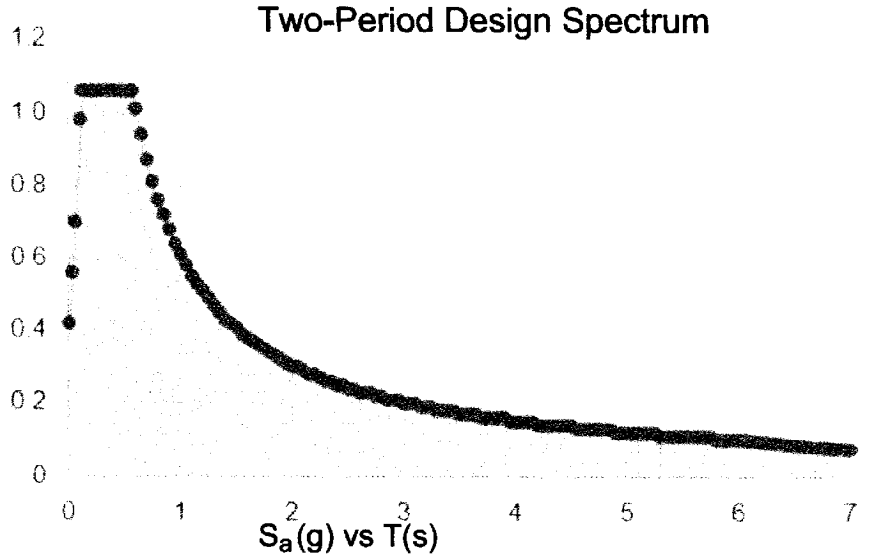
Multi-Period Design Spectrum



Two-Period MCE_R Spectrum



Two-Period Design Spectrum



MCE_R Vertical Response Spectrum

Vertical ground motion data has not yet been made available by USGS.

Design Vertical Response Spectrum

Vertical ground motion data has not yet been made available by USGS.

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PROJECT:			SHEET NO.
BY:	DATE:	JOB NO. 4662	5 of 10

h = 12'

W = .105(16)26 = 6.2k

V = 1.0C0/1.25(14) W = .161W

V = .161(6.2)/2 = 1.9k

M = 1.9(12)12 = 274k"

SREQD = 27.4/46(16) = 9.9 in²

HSS 5x5x1/2

3'0" ϕ x 5' DESIGN

$d = \sqrt{\frac{4.25(1900)(12)}{2000(3)}} = 4.0$

USE 3'0" ϕ x 4'6" DESIGN

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PROJECT:			SHEET NO.
BY:	DATE:	JOB NO. 24052	6 of 10

$L = 14'$

$W = .104(9) = .136\ k/ft$

$M = \frac{.136(14)^2}{8} \times 12 = 10.6\ k''$

$S_{req'd} = 10.6 / 24(1.15) = 3.83''$

$5\frac{1}{2}'' \times 5''$ C

$L = 5\frac{1}{2}'$ CANT

$W = .136\ k/ft$

$M = \frac{.136(5.5)^2}{2} \times 12 = 6.53\ k''$

$S_{req'd} = 6.53 / 1.65(1.15) = 3.0''$

$5\frac{1}{2}'' \times 15''$ C

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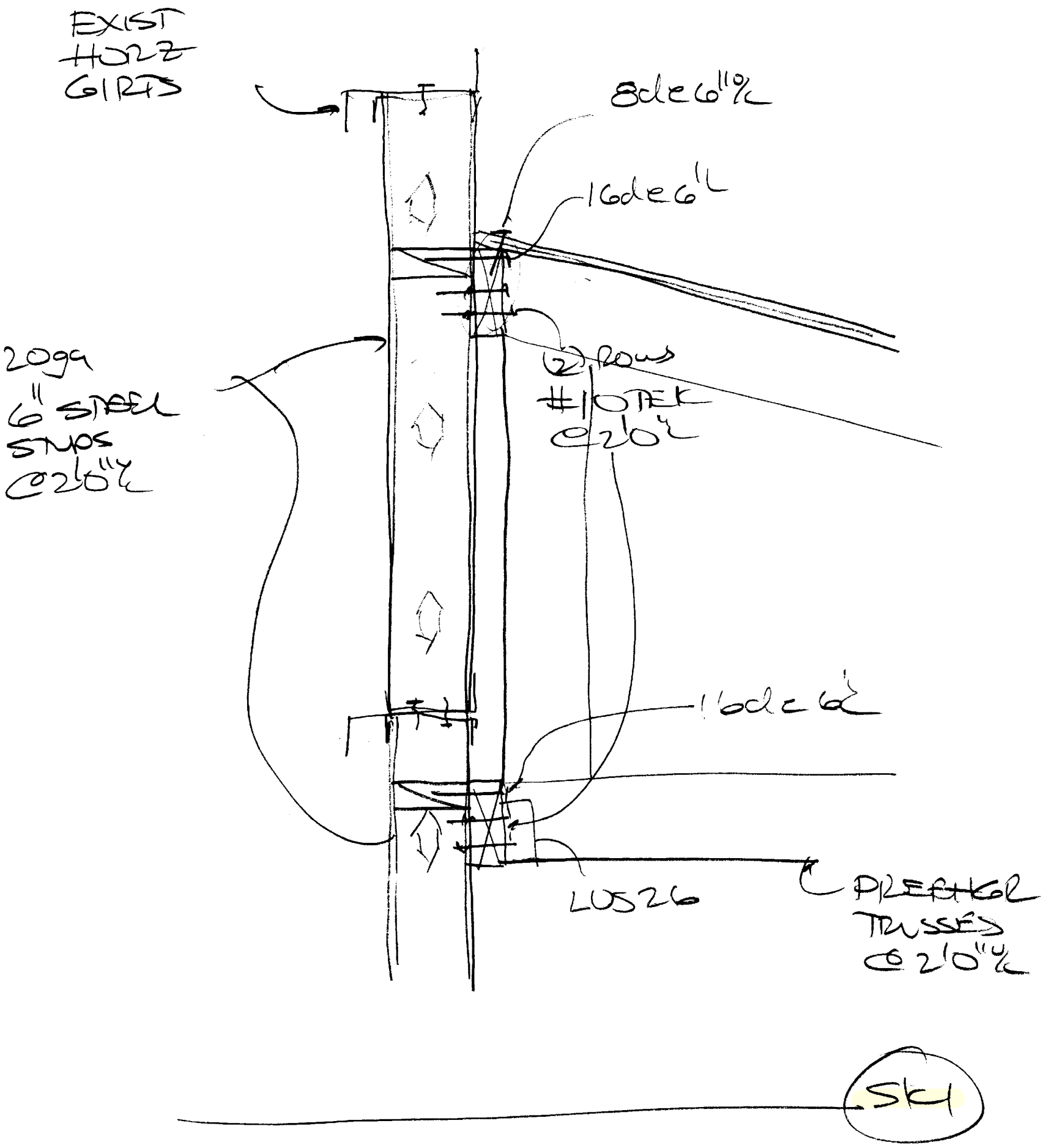
PROJECT:			SHEET NO.
BY:	DATE:	JOB NO. 2402	7 of 10



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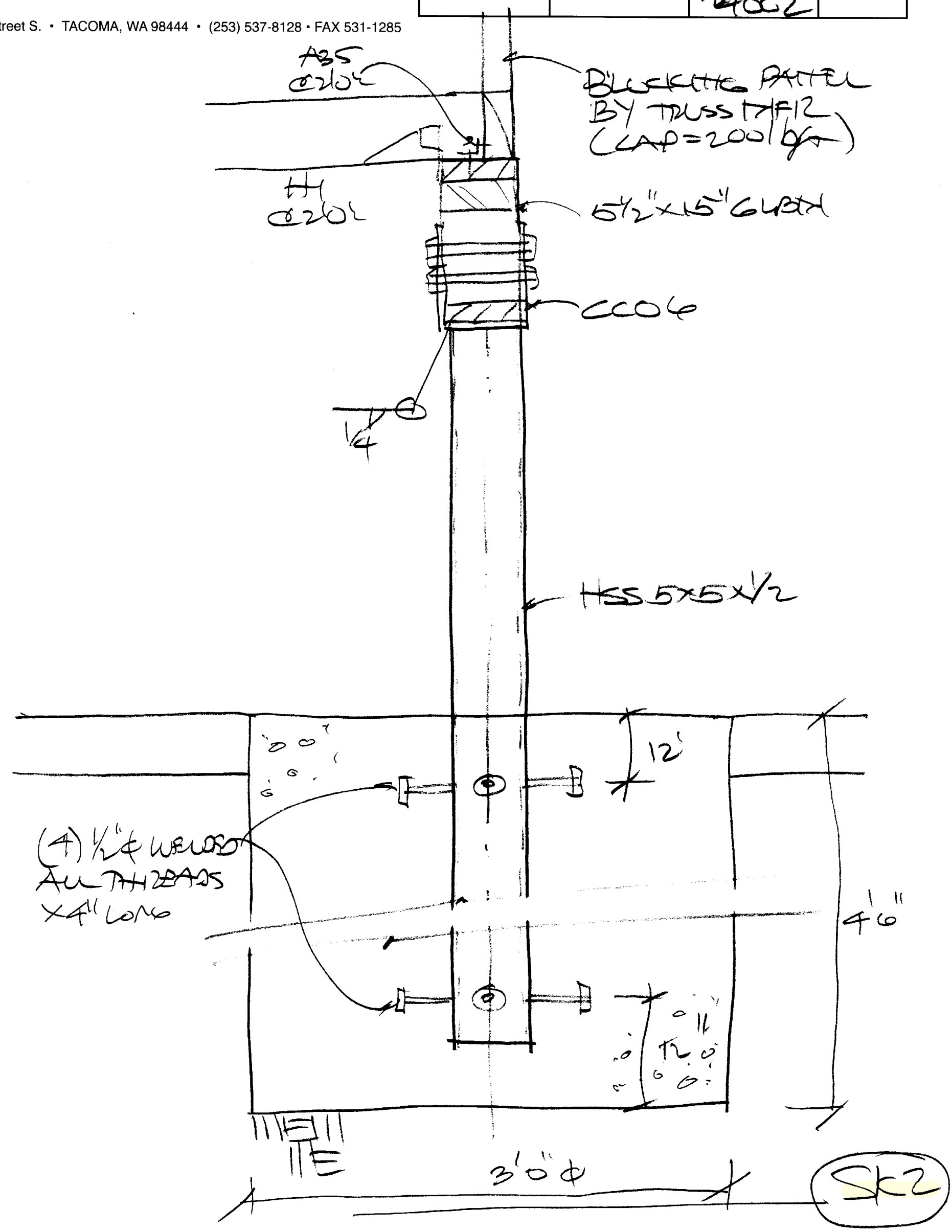
PROJECT:			SHEET NO.
BY:	DATE:	JOB NO. 24062	8 of 10



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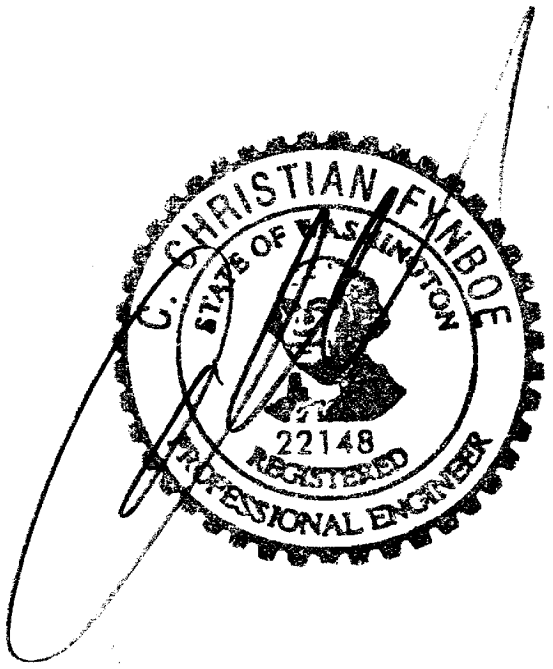
ALTERNATE FOOTING AND COLUMN DETAIL

PROJECT: TOYOTA OF PUYALLUP			SHEET NO. 9 of 10
BY: CF	DATE: 3/27/24	JOB NO. 24002	



MODIFIED MF6 DETAIL

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ALTERNATE FOOTING AND COLUMN DETAIL

PROJECT:			SHEET NO.
BY:	DATE:	JOB NO. 24002	10 of 10

↓ $W = .01(9)9 = 0.81^k$

← $H = .01(13)9(.61) = 0.7^k$
REVERSO LOAD

12'

18"

TRY 4X4X16" CONC PD

$Wt_{conc} = 1.5(4)4(.15) = 3.6^k$

$F_{B_{OT}} = \frac{(3.6+.81)2}{.7(13.5)} = 1.93^k$

TRY 5X5X2'

$WT = 1.5(5)5(.15) = 5.6^k$

$FS_{OT} = \frac{(3.6+.81)25}{.7(13.5)} = 1.7^{ck}$

$M = 0.7(12)12 = 100.8^{k''}$

$S_{REQD} = 100.8/24(.6) = 3.6 \rightarrow$ HSS 5X5X1/4

AB:

$M = 100.8^{k'}$

$T = 100.8/6.5/2 = 7.7^k$

USE 3/4" ϕ A.R. THREAD