

STRUCTURAL CALCULATIONS

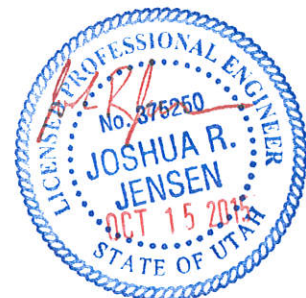
Mackley Storage Units

Ogden, Utah

Prepared By:



177 E. Antelope Dr. #B, Layton, Utah 84041
(801) 499-5054



Silver Peak Engineering

Project: Mackley Storage Units, Ogden
By: Josh Jensen
Date: 10/15/2015

Project No.: 15-128
Plan Name: --
Sheet: 1

Structural Design Criteria

Type of Structure: Storage
Construction Materials: Concrete
Design Codes: 2012 International Building Code, ASCE 7-10, NDS 2012

Live Loads

Per Metal Buliding Manufacturer	_____	Reducible?	<u>No</u>
_____	_____	Reducible?	<u>No</u>
_____	_____	Reducible?	<u>No</u>
_____	_____	Reducible?	_____

Dead Loads

Per Metal Buliding Manufacturer	_____
_____	_____
_____	_____
_____	_____
_____	_____

Wind Loads

Per Metal Building Manufacturer	_____
_____	_____
_____	_____
_____	_____

Seismic Loads

Per Metal Building Manufacturer	_____
_____	_____
_____	_____
_____	_____
_____	_____

Structural Specifications for Materials and Hardware

Structural Steel Specifications

Per metal building manufacturer

Light Guage Steel Framing:

Per metal building manufacturer

Silver Peak Engineering

Project: Mackley Storage Units, Ogden
By: Josh Jensen
Date: 10/15/2015

Project No.: 15-128
Plan Name: --
Sheet: 2

Foundation Criteria

Soils Report:

By: n/a
Date of Report: n/a

Foundation consists of concrete spread footings, and simply supported concrete walls.

Allowable Bearing Pressure Q_a : 1500 psf (assumed)
Minimum Footing Depth: 30 inches min or per local Building Code
Passive Pressure γ_p : 300 pct (assumed) $K_p = 1 + \sin(\phi) / 1 - \sin(\phi)$
At Rest Pressure γ_o : 55 pct (assumed) $K_o = 1 - \sin(\phi)$
Active Pressure: 35 pct (assumed) $K_a = 1 - \sin(\phi) / 1 + \sin(\phi)$
Friction Angle ϕ : 30 degrees (assumed)
Soil Weight: 120 pcf (assumed)
Coefficient of Friction: 0.4 alone, 0.3 with passive pressure (assumed).

Reinforcing Steel

ASTM A615 Grade 60
ASTM A706 Grade 60 Weldable Rebar

Welded Wire Fabric

ASTM A185

Minimum Required Concrete Strength

Footings: 3000 psi
Grade Beams: 3000 psi
Slab on Grade: 4000 psi
Walls: 3000 psi

	(Strength)	(Density)
Topping over Steel Deck:	<u>n / a</u> psi	<u>n / a</u> pcf
Topping over Plywood:	<u>n / a</u> psi	<u>n / a</u> pcf

Silver Peak Engineering

Project: Mackley Storage Units, Ogden

Project No.: 15-128

By: Josh Jensen

Plan Name: --

Date: 10/15/2015

Sheet: 3

Footing & Foundation Calculations

Allowable Soil Bearing Pressure (Qa) = 1,500 psf (assumed)

Continuous Footings

Mark	Load Type				Total (plf)	Min Width Req'd (in)
	Roof (plf)	Floor (plf)	Wall (plf)	Fnd. (plf)		
12"	990	0	0	350	1,340	10.72

Spot Footings

Mark	MAX Load	
24"	6,000	lbs
36"	13,500	lbs
48"	24,000	lbs
60"	37,500	lbs

Foundation Walls:

UTAH AMENDED FOUNDATION CODE

Max Ht	Top Edge Support	Vert Steel Note 1	Hori Steel Note 2	Steel at Openings	Max Lintel Length	Max Lintel Depth	Max Grade Differential
2'-0"	None	Note 4	(2) #4 Bars	(2) #4 Bars	2 ft	Two inches for ea. Foot of opening width	18" Note 5
4'-0"		#4 @ 32"	(4) #4 Bars	above. (1) #4 Bar ea. side	3 ft		42" Note 5
6'-0"	Floor or Roof Diaphragm	#4 @ 24"	(5) #4 Bars	(1) #4 Bar below Note 3	6 ft	Min. 6"	5 ft Note 6
8'-0"			(6) #4 Bars		6 ft		5 ft Note 6
9'-0"			(7) #4 Bars		6 ft		5 ft Note 6
Over 9'-0"	Engineering Required						

Notes:

- To be placed in the center of wall & extend from the footing to within 3" of the top of wall. Dowel of #4 rebar w/ standard hook shall be provided in the footing to match the vert steel with the vert leg extending 24" into fndtn wall.
- One bar shall be located in the top 4", one bar in the bottom 4" and the other bars equally spaced between. Corner reinforcing shall be provided so as to lap 24".
- Bars shall be placed within 2" of the openings & extend 24" beyond edge of opening. Vert bars may terminate 3" from the top of concrete.
- Dowels of #4 rebar at 32" o.c. with standard hook shall be provided in the footing with vert leg extending within 3" of the top of the fndtn wall.
- Difference in grade from one side of the wall to the other.
- Difference in grade from the highest grade to the lowest grade on the perimeter of fndtn.
- ALL REBAR TO BE GRADE 60
- 2 ft tall wall may be 6" thick. All other walls to be 8" thick.