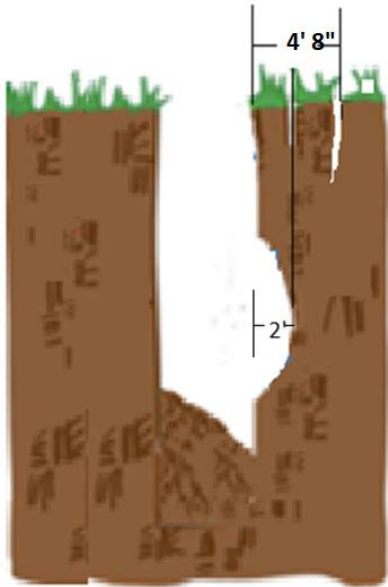


## QUIZ #1-

- 1) Trench #1- Fissures at both 2' and 4'-8" from the lip with no surcharge load.

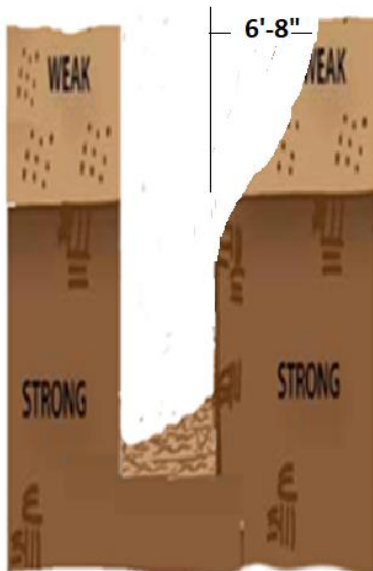


- What is the Simple L for this trench?
- What is the Total L?
- What Wale type(s) with an 8' span (Distributed Load) can be safely used?

<b>WALE CHART</b>		
4' Maximum Vertical Spacing		
DISTRIBUTED LOAD CHART		
Wale Type	8' Span	12' Span
6"x6"	Maximum Total L-2	Maximum Total L-1
8"x8"	Maximum Total L-5	Maximum Total L-2
7"x7" LVL	Maximum Total L-12	Maximum Total L-4
Paratech	Maximum Total L-10	Maximum Total L-1
NOTES:		
*Span is the distance between the struts supporting the wales		
*Gaps between the wales and panels at the panel edges and both ends of the wales must be filled with spacers and/or wedges		
*2' vertical Spacing will increase the capacity (Total L Value) of each wale by 150% (Total L x 1.5)		
*6"x6" and 8"x8" timber capacities are based on #1 Douglas Fir/SPF		
*7"x7" LVL capacity is based on bending strength of 3,100		

- What Wale type(s) with a 12' span (Distributed Load) can be safely used?

**2) Trench #2- Lip Shear 6'-8" from the lip with no surcharge load.**



- a) What is the Simple L for this trench?
- b) What is the Total L?

**PANEL CHART**

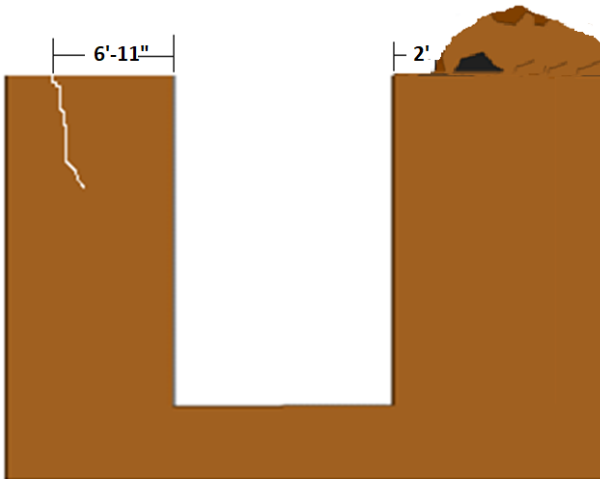
NON-COMPOSITE CONSTRUCTION	MAXIMUM TOTAL "L"	COMPOSITE CONSTRUCTION	MAXIMUM TOTAL "L"
2x12 LVL/FinForm	5	2x12 LVL/FinForm	20
2x12 Wood/FinForm	3	2x12 Wood/FinForm	11
2x12 Wood/CDX	1	2x12 Wood/CDX	8

- c) What Panel type(s) with 2x12 strongbacks can be safely used?

**QUIZ #2-**

**1) Trench #3- Farthest failure is at 6'-11" from the lip with a spoil pile surcharge load starting at 2' from the lip.**

- a) What is the Simple L for this trench?
- b) What is the Surcharge L?
- c) What is the Total L?



<b>SURCHARGE (ScL)- Feet within Simple L (SL)</b>				
SPOIL	Add to SL		EQUIP.	Add to SL
1	1		1	1
2	1		2	2
3	1		3	3
4	2		4	5
5	3		5	8
6	4		6	11
7	5		7	N/A
8	7		8	N/A
9	9		9	N/A
10	10		10	N/A

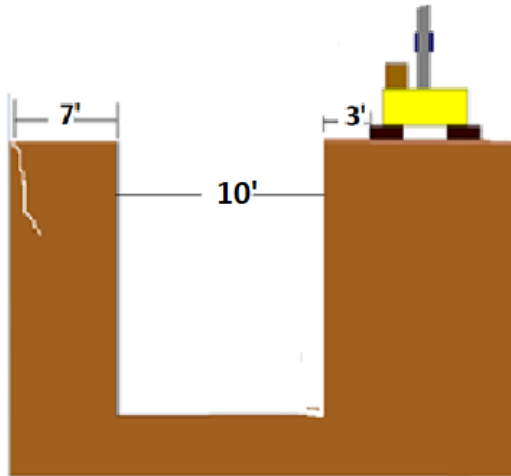
**Note: Total L (L)=Simple L (SL) plus Surcharge L (ScL)**  
**Charts are valid for Total L of 20 or less**

c)What Wale type(s) with an 8' span Distributed Load) can be safely used?

<b>WALE CHART</b>		
4' Maximum Vertical Spacing		
DISTRIBUTED LOAD CHART		
Wale Type	8' Span	12' Span
6"x6"	Maximum Total L-2	Maximum Total L-1
8"x8"	Maximum Total L-5	Maximum Total L-2
7"x7" LVL	Maximum Total L-12	Maximum Total L-4
Paratech	Maximum Total L-10	Maximum Total L-1

NOTES:  
 \*Span is the distance between the struts supporting the wales  
 \*Gaps between the wales and panels at the panel edges and both ends of the wales must be filled with spacers and/or wedges  
 \*2' vertical Spacing will increase the capacity (Total L Value) of each wale by 150% (Total L x 1.5)  
 \*6"x6" and 8"x8" timber capacities are based on #1 Douglas Fir/SPF  
 \*7"x7" LVL capacity is based on bending strength of 3,100

2) Trench #4- This trench is 10' wide and 14' deep. The farthest failure is 7' from the lip with an equipment surcharge load starting at 3' from the lip.



- a) What is the Simple L for this trench?
- b) What is the Scl?
- c) What is the Total L?

SURCHARGE (ScL)- Feet within Simple L (SL)				
SPOIL	Add to SL		EQUIP.	Add to SL
1	1		1	1
2	1		2	2
3	1		3	3
4	2		4	5
5	3		5	8
6	4		6	11
7	5		7	N/A
8	7		8	N/A
9	9		9	N/A
10	10		10	N/A

**Note: Total L (L)=Simple L (SL) plus Surcharge L (ScL)**  
**Charts are valid for Total L of 20 or less**

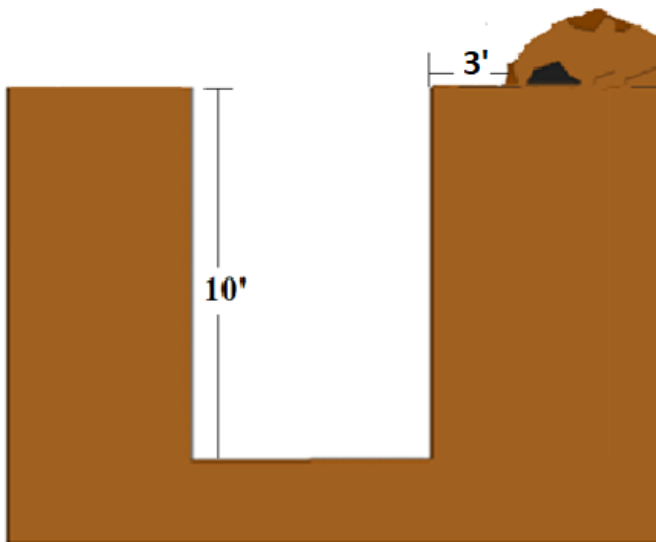
- d) What is the maximum vertical spacing for Paratech Gray struts?

**PARATECH GRAY STRUTS**  
**(4' maximum horizontal spacing)**

Total "L"	Trench Width < 8'	Trench Width 8'-10'
L-1	4' vertical spacing	4' vertical spacing
L-2	4' vertical spacing	4' vertical spacing
L-3	4' vertical spacing	4' vertical spacing
L-4	4' vertical spacing	4' vertical spacing
L-5	4' vertical spacing	4' vertical spacing
L-6	4' vertical spacing	4' vertical spacing
L-7	4' vertical spacing	4' vertical spacing
L-8	4' vertical spacing	4' vertical spacing
L-9	4' vertical spacing	4' vertical spacing
L-10	4' vertical spacing	3' vertical spacing
L-11	4' vertical spacing	3' vertical spacing
L-12	4' vertical spacing	3' vertical spacing
L-13	4' vertical spacing	3' vertical spacing
L-14	4' vertical spacing	3' vertical spacing
L-15	4' vertical spacing	2' vertical spacing
L-16	4' vertical spacing	2' vertical spacing
L-17	4' vertical spacing	2' vertical spacing
L-18	4' vertical spacing	2' vertical spacing
L-19	4' vertical spacing	2' vertical spacing
L-20	4' vertical spacing	N/A

**QUIZ #3-**

- 1) Trench #5- This trench is 6' wide and 10' deep. No failures are apparent. There is a spoil pile surcharge that starts 3' from the lip



- What is the Simple L for this trench? (Depth Conversion Chart)
- What is the Surcharge L?
- What is the Total L? (add surcharge/spoil to converted L)

## DEPTH CONVERSION POCKET GUIDE

DEPTH TO SIMPLE L (SL) CONVERSION GUIDE	
Trench Depth	SL Equivalent
4- 8 feet	SL 6
9 feet	SL 7
10 feet	SL 7
11 feet	SL 8
12 feet	SL 9
13 feet	SL 10
14 feet	SL 10
15 feet	SL 11
16 feet	SL 12
17 feet	SL 12
18 feet	SL 13
19 feet	SL 14
20 feet	SL 14

**Note: Total L (L)=Simple L (SL) plus Surcharge L (ScL)**

SURCHARGE (ScL)- Feet within Simple L (SL)				
SPOIL	Add to SL		EQUIP.	Add to SL
1	1		1	1
2	1		2	2
3	1		3	3
4	2		4	5
5	3		5	8
6	4		6	11
7	5		7	N/A
8	7		8	N/A
9	9		9	N/A
10	10		10	N/A

**Note: Total L (L)=Simple L (SL) plus Surcharge L (ScL)**  
**Charts are valid for Total L of 20 or less**