



September 30, 2013

For: Mr. David Champagne
124 Kilgore Court
Slidell, LA 70461

Re: La Mason Charles
3801 St. Charles Ave., Unit #301
New Orleans, La.

Determine if a 2" hole can be cut in existing 10" C-channel

w loading for existing 10" C-channel:

Lighting	1 psf
Hvac ductwork	2 psf
5/8" Sheetrock ceiling	2.8 psf
Metal decking for concrete	2.5 psf
3" concrete floor 3/12 * 120 pcf =	30 psf
Hardwood floor	4 psf

Each C-channel is approximately 24" o.c. so the floor area supported is approximately 24" wide x 12" along the C-channel: $42.3 \text{ psf} \times 2' \times 1' = 84.6 \text{ plf}$

Assumption : 10" C-channel weights 7 plf

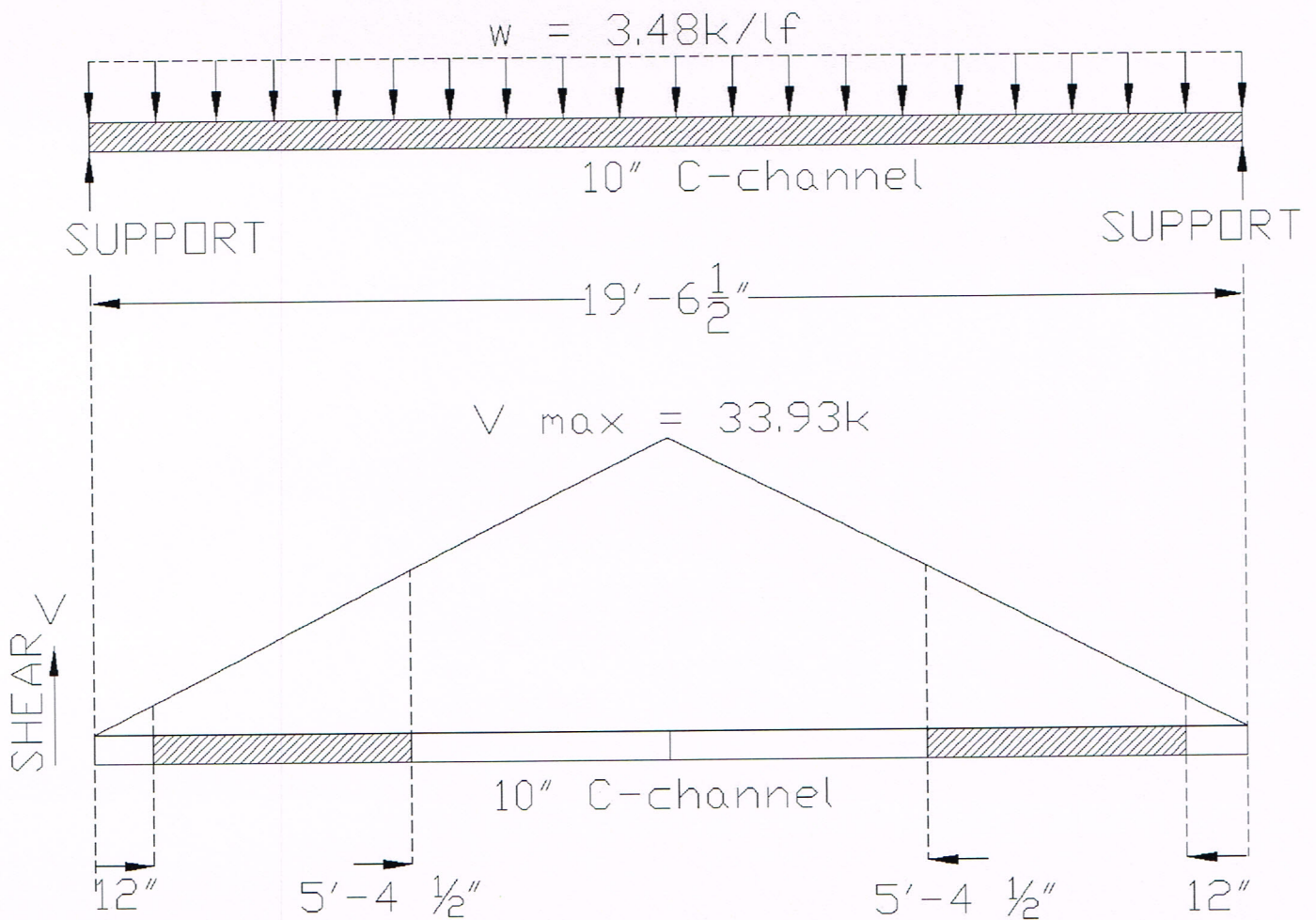
Adding these together we get $84.6 \text{ plf} + 7 \text{ plf} = 91.6 \text{ plf}$ along each C-channel

The DEAD LOAD from each C-channel supported by load bearing wall =
 $[(19.5' / 2) + (9.5' / 2)] \times 91.6 \text{ plf} = 1328.2 \text{ \#/lf}$ (1.3k/lf)

LIVE LOAD on each C-channel @ 40 psf =
 $[(19.5' / 2) + (9.5' / 2)] \times 2 \text{ s.f.} \times 40 \text{ psf} = 1160 \text{ \#/lf}$ (1.2k/lf)

LRFD Loads 1.2 D + 1.6 L
 $w = [(1.3 \text{ k} \times 1.2) + (1.2 \text{ k} \times 1.6)] = 3.48 \text{ k/lf}$

$V_{\max} = 3.48 \text{ k/lf} \times 19.5' / 2 = 33.93 \text{ k}$



@ 1' from either support the shear = $V/l = 33.93k/9.75$; $V = 3.48k$

@ 5.375' from either support the shear = $V/5.375 = 33.93k/9.75$; $V = 18.7k$

Assume 10" C-channel $F_y = 50ksi$

Assume 10" C-channel $t_w = 0.083"$ thick

Available shear at any point = $d * t_w * F_y$ $10 * .083 * 50ksi = 41.5 ksi$

2" hole @ 1' from support $V_{avail} = (10"-2") * .083 * 50ksi = 33.3k > 3.48k$

2" hole @ 5.375' from support $V_{avail} = (10"-2") * .083 * 50ksi = 33.3k > 18.7k$

Recommendations: It is highly recommended to drill holes only after 1ft of the end support and within the first and last 25% remaining of the beam. (i.e. $(19'-6\frac{1}{2}" - 2ft) / 4$) It is also highly recommended to leave a 6" space horizontally between holes.

Sincerely,

Emmett G. (Pete) Dammon, P.E.