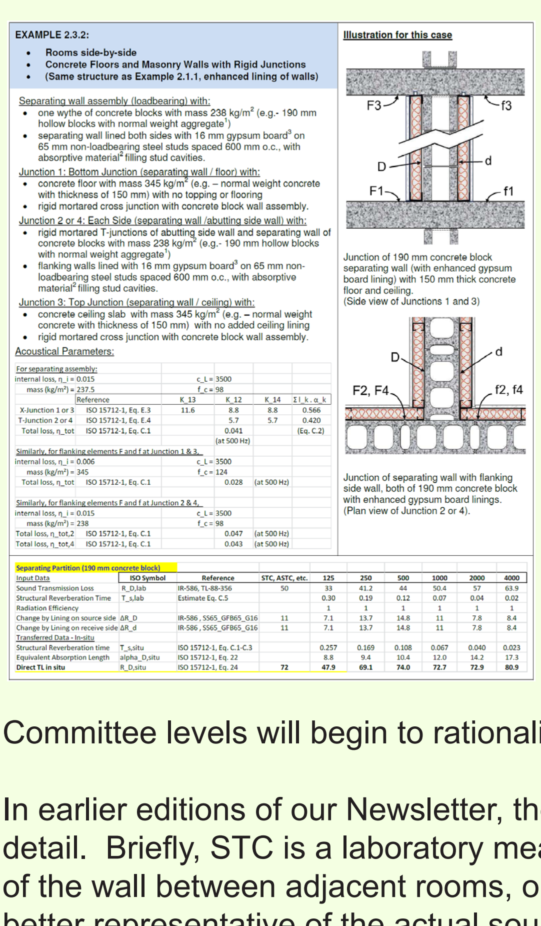


News on the Block

Canadian Concrete Masonry Producers Association
Region 6 of the National Concrete Masonry Association
CCMPA Building Strength

Issue # 1 for 2016
Published quarterly

CCMPA strives to keep its members informed and up-to-date. With that in mind, we'd like to introduce our first quarterly newsletter. We welcome your feedback and story ideas. Email your suggestions to info@ccmpa.ca.


EXAMPLE 2.3.2:
- Rooms side-by-side
- Concrete Floors and Masonry Walls with Rigid Junctions
- (Same structure as Example 2.1.1, enhanced lining of walls)

Separating wall assembly (loadbearing) with:
- one wythe of concrete blocks with mass 238 kg/m² (e.g.- 190 mm hollow blocks with normal weight aggregate[1])
- separating wall lined both sides with 16 mm gypsum board[3] on 65 mm non-loadbearing steel studs spaced 600 mm o.c., with absorptive material[4] filling stud cavities.

Junction 1: Bottom Junction (separating wall / floor) with:
- concrete floor with mass 345 kg/m² (e.g. – normal weight concrete with thickness of 150 mm) with no topping or flooring
- rigid mortared cross junction with concrete block wall assembly.

Junction 2 or 4: Each Side (separating wall /abutting side wall) with:
- rigid mortared T-junctions of abutting side wall and separating wall of concrete blocks with mass 238 kg/m² (e.g.- 190 mm hollow blocks with normal weight aggregate[1])
- flanking walls lined with 16 mm gypsum board[3] on 65 mm non-loadbearing steel studs spaced 600 mm o.c., with absorptive material[4] filling stud cavities.

Junction 3: Top Junction (separating wall / ceiling) with:
- concrete ceiling slab with mass 345 kg/m² (e.g. – normal weight concrete with thickness of 150 mm) with no added ceiling lining
- rigid mortared cross junction with concrete block wall assembly.

Acoustical Parameters:

For separating assembly:
internal loss, η_i = 0.015 c_L = 3500
mass (kg/m²) = 237.5 f_c = 98

	Reference	K_13	K_12	K_14	Σ l_k · α_k
X-Junction 1 or 3	ISO 15712-1, Eq. E.3	11.6	8.8	8.8	0.566
T-Junction 2 or 4	ISO 15712-1, Eq. E.4		5.7	5.7	0.420
Total loss, η_tot	ISO 15712-1, Eq. C.1		0.041 (at 500 Hz)		(Eq. C.2)

Similarly, for flanking elements F and f at Junction 1 & 3:
internal loss, η_i = 0.006 c_L = 3500
mass (kg/m²) = 345 f_c = 124
Total loss, η_tot ISO 15712-1, Eq. C.1 0.028 (at 500 Hz)

Similarly, for flanking elements F and f at Junction 2 & 4:
internal loss, η_i = 0.015 c_L = 3500
mass (kg/m²) = 238 f_c = 98
Total loss, η_tot,2 ISO 15712-1, Eq. C.1 0.047 (at 500 Hz)
Total loss, η_tot,4 ISO 15712-1, Eq. C.1 0.043 (at 500 Hz)

Illustration for this case

Junction of 190 mm concrete block separating wall (with enhanced gypsum board lining) with 150 mm thick concrete floor and ceiling. (Side view of Junctions 1 and 3)

Junction of separating wall with flanking side wall, both of 190 mm concrete block with enhanced gypsum board linings. (Plan view of Junction 2 or 4).

Separating Partition (190 mm concrete block)									
Input Data	ISO Symbol	Reference	STC, ASTC, etc.	125	250	500	1000	2000	4000
Sound Transmission Loss	R_D,lab	IR-586, TL-88-356	50	33	41.2	44	50.4	57	63.9
Structural Reverberation Time	T_s,lab	Estimate Eq. C.5		0.30	0.19	0.12	0.07	0.04	0.02
Radiation Efficiency				1	1	1	1	1	1
Change by Lining on source side	ΔR_D	IR-586 , SS65_GFB65_G16	11	7.1	13.7	14.8	11	7.8	8.4
Change by Lining on receive side	ΔR_d	IR-586 , SS65_GFB65_G16	11	7.1	13.7	14.8	11	7.8	8.4
Transferred Data - In-situ									
Structural Reverberation time	T_s,situ	ISO 15712-1, Eq. C.1-C.3		0.257	0.169	0.108	0.067	0.040	0.023
Equivalent Absorption Length	alpha_D,situ	ISO 15712-1, Eq. 22		8.8	9.4	10.4	12.0	14.2	17.3
Direct TL in situ	R_D,situ	ISO 15712-1, Eq. 24	72	47.9	69.1	74.0	72.7	72.9	80.9

CCMPA's Commitment to Sound Buildings

by Gary Sturgeon, B.Eng., MSc., P.Eng.

The 2015 edition of the National Building Code of Canada (NBCC-15) contains substantive new requirements for measuring airborne sound transmission between adjacent spaces, and new compliance requirements. The old measure using Sound Transmission Class (STC) rating and a minimum STC 50 requirement between dwelling units are replaced by the Apparent Sound Transmission Class (ASTC) rating and a minimum requirement of ASTC 47. Whereas STC and ASTC are different metrics, STC = 50 and ASTC = 47 are comparable, and thus, the sound requirements in the updated NBCC are considered to be "status quo" with those of earlier editions. There is intention to increase the minimum ASTC rating in subsequent editions of the NBCC. Additionally, on a related noise control issue, discussions at the Standing Committee levels will begin to rationalize the inclusion of requirements for impact noise.

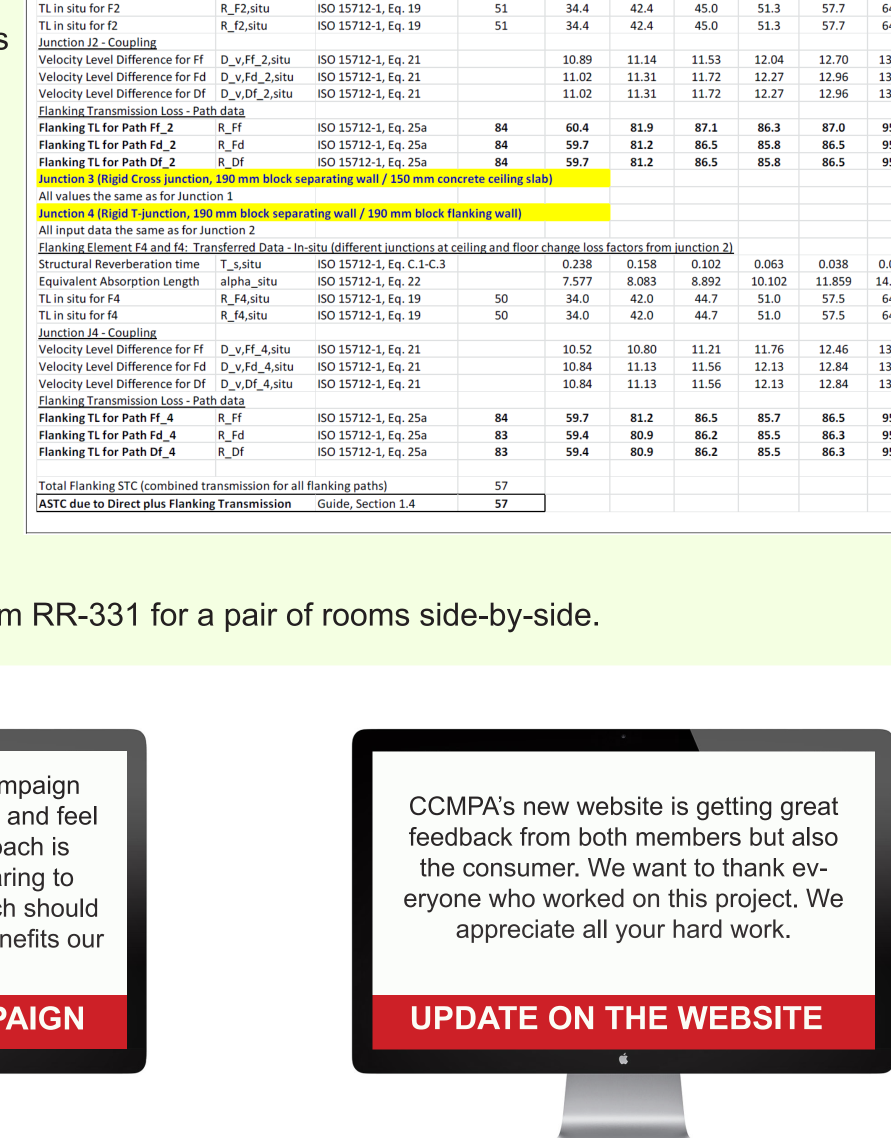
In earlier editions of our Newsletter, the differences between STC and ASTC were described in some detail. Briefly, STC is a laboratory measure of sound insulation only of the separating element, that is, of the wall between adjacent rooms, or of the floor between rooms one-above-the-other. The ASTC is better representative of the actual sound experienced by an occupant in the receiving rooms. It is a laboratory measure that includes for the passage of sound via the flanking paths around the separator, that is, through the structure of the building that connects the walls and floor elements, in addition to the sound that moves directly through the main separating element. The ASTC rating for the wall and floor assembly is always less than the STC value for each of the separating elements.

These changes to sound control are a significant change not only for the masonry industry and for other structural systems, but for manufacturers of floor and wall finishes, building designers, and building officials. Direct laboratory testing for the ASTC rating of all permutations and combinations of separating assemblies, flanking assemblies, and acoustical linings is cost and time prohibitive. Other solutions were sought. To minimize the impact, and to offer means to calculate ASTC rather than necessarily measure it, consortium research projects involving industry partners including the Canadian Concrete Masonry Producers Association (CCMPA), the National Research Council of Canada, and the Canadian Codes Centre were launched early in the NBCC-15 development process. Most notable as the development of Guideline RR-331, "Guide to Calculating Airborne Sound Transmission in Buildings"

RR-331 is referenced for use by designers in NBCC-15. It is intended to support the needs of Canadian designers (and perhaps more so of acoustical experts) as we move through the acoustics transition. RR-331 describes the technical concepts, terminologies, convention labelling, needed input data, effects of linings, and the required step-by-step calculation processes with explanation, as well as numerous worked examples to calculate ASTC rating for rooms side-by-side and rooms one-above-the-other. The procedures described in the Guide allow designers to change the various details of the constructed assembly, identify outcomes, and to explore various design solutions with great flexibility.

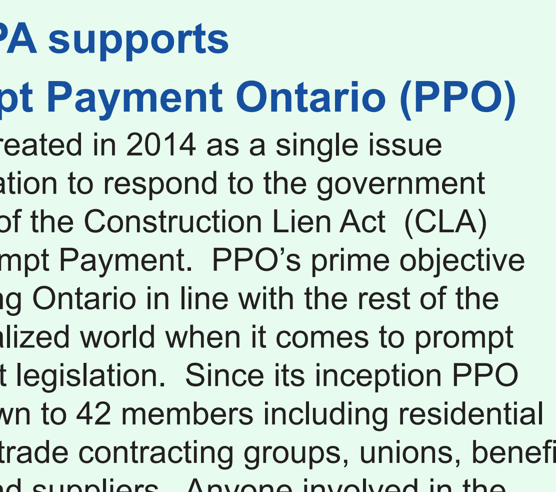
RR-331 contains sections and design examples for wall and floor assembly combinations only where reliable laboratory measured data have been used as input to calculation. Masonry, concrete, steel, and wood systems are all represented in this Guide to varying extents. Wall and floor assemblies that have not been suitably tested in the laboratory to generate input data needed for the calculation procedures, such as measuring the vibration reduction index, have not been included. The vibration index quantifies the structure-borne noise transmitted through the floor into the connected walls and floors through the junctions between them. Without such base-line laboratory measurement, reliable calculation to predict ASTC cannot be performed. Without such base-line measurement in the laboratory, CMU wall systems with wood flooring systems, CMU wall systems with precast plank, and CMU with steel joist cannot be included in RR-331. Without inclusion in RR-331, and without data to otherwise calculate ASTC by any other manner, such wall and floor systems cannot be chosen by designers because compliance cannot be demonstrated and verified.

RR-331 is a "living document". The first edition was published in 2014 for reference by the NBCC-15. Its development by NRC is a consortium research project. CCMPA partners with NRC and is a contributing member both financially and technically. As test data become available in time, it will be revised and new sections will be included for other wall + floor assemblies not currently recognized. In fact, a review of the second edition has just been completed by CCMPA. RR-331 is readily available on the internet for download free of charge. CMU wall systems of both normal weight and lightweight block constructed with various floor assemblies and junctions are well represented in the Guide… but not all CMU walls + flooring systems are represented, pending completion of the on-going laboratory sound research in a comprehensive companion CCMPA/NRC research project. This work has been on-going over the past 3 years and will continue through 2016. Updates on this research will be provided in subsequent editions of the CCMPA Newsletter.

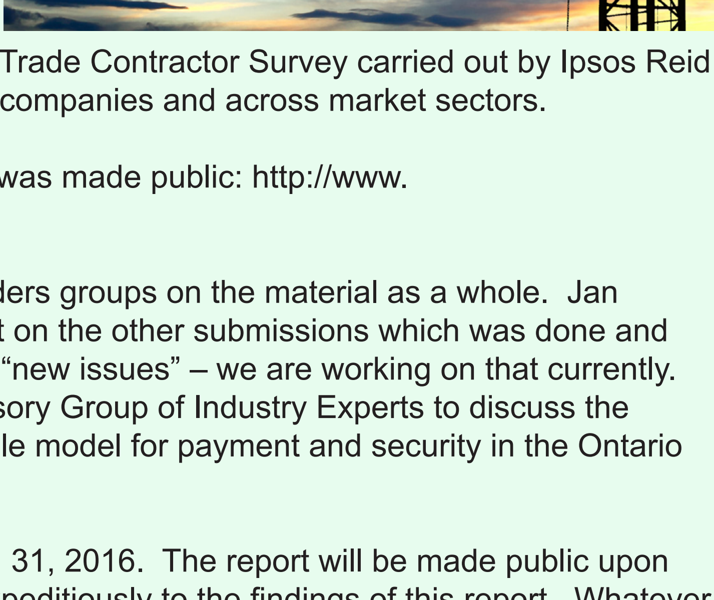


Junction 1 (Rigid Cross junction, 190 mm block separating wall / 150 mm concrete floor)									
Flanking Element F1 and f1: Inpu	ISO Symbol	Reference	STC, ASTC, etc.	125	250	500	1000	2000	4000
Sound Transmission Loss	R_F1,lab	IR-811, TLF-97-107a	52	39.0	39.0	49.0	58.0	67.0	76.0
Structural Reverberation Time	T_s,lab	Measured T_s		0.345	0.293	0.176	0.092	0.046	0.042
Radiation Efficiency	σ			1.00	1.00	1.00	1.00	1.00	1.00
Change by Lining on source side	ΔR_F1	No Lining ,	0	0.0	0.0	0.0	0.0	0.0	0.0
Change by Lining on receive side	ΔR_f1	No Lining ,	0	0.0	0.0	0.0	0.0	0.0	0.0
Flanking Element F1 and f1: Transferred Data - In-situ									
Structural Reverberation time	T_s,situ	ISO 15712-1, Eq. C.1-C.3		0.348	0.238	0.160	0.104	0.066	0.041
Equivalent Absorption Length	alpha_situ	ISO 15712-1, Eq. 22		10.395	10.724	11.318	12.247	13.626	15.621
TL in situ for F1	R_F1,situ	ISO 15712-1, Eq. 19	53	39.0	39.9	49.4	57.4	65.4	76.1
TL in situ for f1	R_f1,situ	ISO 15712-1, Eq. 19	53	39.0	39.9	49.4	57.4	65.4	76.1
Junction J1 - Coupling									
Velocity Level Difference for Ff	D_v,Ff_1,situ	ISO 15712-1, Eq. 21		9.26	9.39	9.62	9.97	10.43	11.02
Velocity Level Difference for Fd	D_v,Fd_1,situ	ISO 15712-1, Eq. 21		11.67	11.88	12.22	12.69	13.29	14.02
Velocity Level Difference for Df	D_v,Df_1,situ	ISO 15712-1, Eq. 21		11.67	11.88	12.22	12.69	13.29	14.02
Flanking Transmission Loss - Path data									
Flanking TL for Path Ff_1	R_Ff	ISO 15712-1, Eq. 25a	**60**	**46.2**	**47.3**	**57.0**	**65.4**	**73.8**	**85.1**
Flanking TL for Path Fd_1	R_Fd	ISO 15712-1, Eq. 25a	**75**	**54.1**	**65.4**	**72.9**	**76.8**	**81.4**	**91.5**
Flanking TL for Path Df_1	R_Df	ISO 15712-1, Eq. 25a	**75**	**54.1**	**65.4**	**72.9**	**76.8**	**81.4**	**91.5**
Junction 2 (Rigid T-Junction, 190 mm block separating wall / 190 mm block flanking wall)									
Flanking Element F2 and f2: Input Data									
Sound Transmission Loss	R_F2,lab	IR-586, TL-88-356	50	33.0	41.2	44.0	50.4	57.0	63.9
Structural Reverberation Time	T_s,lab	Estimate Eq. C.5		0.299	0.191	0.119	0.072	0.042	0.024
Radiation Efficiency	σ			1.00	1.00	1.00	1.00	1.00	1.00
Change by Lining on source side	ΔR_F2	IR-586 , SS65_GFB65_G16	11	7.1	13.7	14.8	11.0	7.8	8.4
Change by Lining on receive side	ΔR_f2	IR-586 , SS65_GFB65_G16	11	7.1	13.7	14.8	11.0	7.8	8.4
Flanking Element F2 and f2: Transferred Data - In-situ									
Structural Reverberation time	T_s,situ	ISO 15712-1, Eq. C.1-C.3		0.219	0.146	0.094	0.059	0.036	0.021
Equivalent Absorption Length	alpha_situ	ISO 15712-1, Eq. 22		8.250	8.756	9.565	10.774	12.532	15.049
TL in situ for F2	R_F2,situ	ISO 15712-1, Eq. 19	51	34.4	42.4	45.0	51.3	57.7	64.5
TL in situ for f2	R_f2,situ	ISO 15712-1, Eq. 19	51	34.4	42.4	45.0	51.3	57.7	64.5
Junction J2 - Coupling									
Velocity Level Difference for Ff	D_v,Ff_2,situ	ISO 15712-1, Eq. 21		10.89	11.14	11.53	12.04	12.70	13.50
Velocity Level Difference for Fd	D_v,Fd_2,situ	ISO 15712-1, Eq. 21		11.02	11.31	11.72	12.27	12.96	13.80
Velocity Level Difference for Df	D_v,Df_2,situ	ISO 15712-1, Eq. 21		11.02	11.31	11.72	12.27	12.96	13.80
Flanking Transmission Loss - Path data									
Flanking TL for Path Ff_2	R_Ff	ISO 15712-1, Eq. 25a	**84**	**60.4**	**81.9**	**87.1**	**86.3**	**87.0**	**95.7**
Flanking TL for Path Fd_2	R_Fd	ISO 15712-1, Eq. 25a	**84**	**59.7**	**81.2**	**86.5**	**85.8**	**86.5**	**95.4**
Flanking TL for Path Df_2	R_Df	ISO 15712-1, Eq. 25a	**84**	**59.7**	**81.2**	**86.5**	**85.8**	**86.5**	**95.4**
Junction 3 (Rigid Cross junction, 190 mm block separating wall / 150 mm concrete ceiling slab)									
All values the same as for Junction 1									
Junction 4 (Rigid T-junction, 190 mm block separating wall / 190 mm block flanking wall)									
All input data the same as for Junction 2									
Flanking Element F4 and f4: Transferred Data - In-situ (different junctions at ceiling and floor change loss factors from junction 2)									
Structural Reverberation time	T_s,situ	ISO 15712-1, Eq. C.1-C.3		0.238	0.158	0.102	0.063	0.038	0.021
Equivalent Absorption Length	alpha_situ	ISO 15712-1, Eq. 22		7.577	8.083	8.892	10.102	11.859	14.377
TL in situ for F4	R_F4,situ	ISO 15712-1, Eq. 19	50	34.0	42.0	44.7	51.0	57.5	64.3
TL in situ for f4	R_f4,situ	ISO 15712-1, Eq. 19	50	34.0	42.0	44.7	51.0	57.5	64.3
Junction J4 - Coupling									
Velocity Level Difference for Ff	D_v,Ff_4,situ	ISO 15712-1, Eq. 21		10.52	10.80	11.21	11.76	12.46	13.30
Velocity Level Difference for Fd	D_v,Fd_4,situ	ISO 15712-1, Eq. 21		10.84	11.13	11.56	12.13	12.84	13.70
Velocity Level Difference for Df	D_v,Df_4,situ	ISO 15712-1, Eq. 21		10.84	11.13	11.56	12.13	12.84	13.70
Flanking Transmission Loss - Path data									
Flanking TL for Path Ff_4	R_Ff	ISO 15712-1, Eq. 25a	**84**	**59.7**	**81.2**	**86.5**	**85.7**	**86.5**	**95.3**
Flanking TL for Path Fd_4	R_Fd	ISO 15712-1, Eq. 25a	**83**	**59.4**	**80.9**	**86.2**	**85.5**	**86.3**	**95.2**
Flanking TL for Path Df_4	R_Df	ISO 15712-1, Eq. 25a	**83**	**59.4**	**80.9**	**86.2**	**85.5**	**86.3**	**95.2**
Total Flanking STC (combined transmission for all flanking paths)			57						
ASTC due to Direct plus Flanking Transmission		Guide, Section 1.4	57						

Worked ASTC example excerpted from RR-331 for a pair of rooms side-by-side.



CCMPA supports Prompt Payment Ontario (PPO)



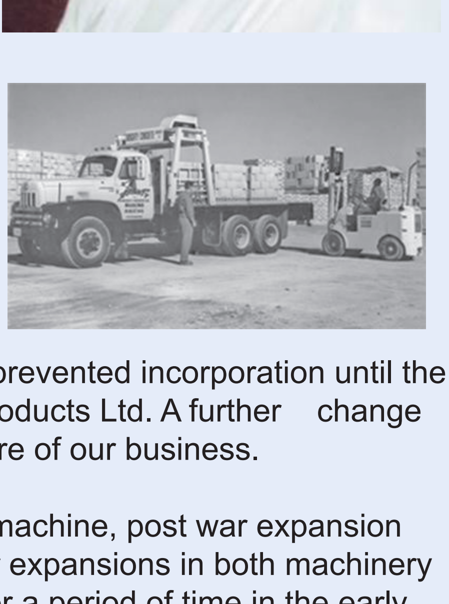
It was created in 2014 as a single issue organization to respond to the government review of the Construction Lien Act (CLA) and Prompt Payment. PPO's prime objective is to bring Ontario in line with the rest of the industrialized world when it comes to prompt payment legislation. Since its inception PPO has grown to 42 members including residential and ICI trade contracting groups, unions, benefit plans and suppliers. Anyone involved in the construction payment chain has a stake in this process. PPO has been participating with the CLA Review throughout the consultation process and in November submitted its report and the results of a Trade Contractor Survey carried out by Ipsos Reid. That survey had 535 responses across all sizes of companies and across market sectors.

As of Jan 13th all material submitted to the review was made public: http://www.constructionlienactreview.com/documents/.

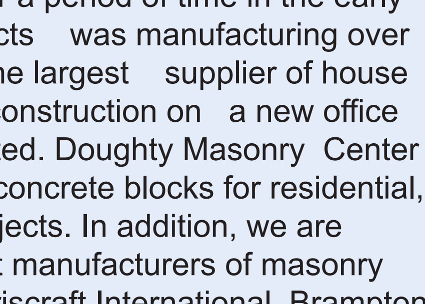
The review asked for comments from the stakeholders groups on the material as a whole. Jan 22nd was the deadline for PPO to reply / comment on the other submissions which was done and by Jan 29th PPO has to submit any comments on "new issues" – we are working on that currently. In February the CLA Review is convening the Advisory Group of Industry Experts to discuss the material and work towards developing an acceptable model for payment and security in the Ontario construction industry.

The deadline for the CLA Review's report is March 31, 2016. The report will be made public upon completion. PPO must be prepared to respond expeditiously to the findings of this report. Whatever recommendations are brought forward we must be able to support them or counter them immediately. To this effect PPO has retained a government relations firm and is negotiations with a 'branding' firm to assist on the social media side. PPO anticipates that there will still be work to do once the report is released. In order to be prepared PPO has asked its members for another $10,000 commitment, with the caveat if the money isn't required, whatever is left will be returned to the members. In the meantime PPO will be calling on its members to lend their support in lobbying the government for Prompt Payment Legislation – It's about fairness.

Remebering Carl Doughty



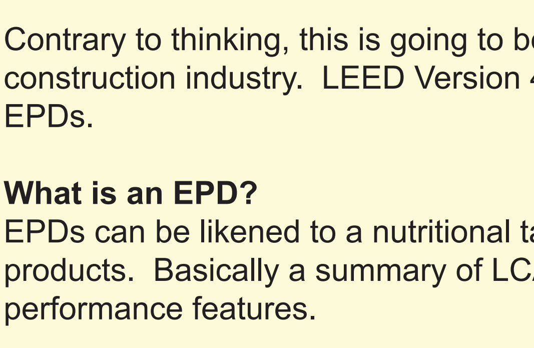
(Founder of Doughty Masonry Center) Passed away at the Peterborough Regional Health Centre on Sunday, January 24, 2016 at the age of 86. Beloved husband of Wilma for over 63 years. Loving father of Brian (Judy) and Leslie Fair (Paul). Cherished grandfather of Kristopher and Sophie. Dear brother of Ted (Anne) and the late Ken and brother-in-law of Hilda Dunford. Uncle Carl will be fondly remembered by his many nieces, nephews and their extended families. Visitation will be held on Thursday, January 28th, 2016 from 2 - 4 and 6 - 8 p.m. at the NISBETT FUNERAL HOME , 600 MONAGHAN ROAD S. 705-745-3211. A memorial service will be held on Friday, January 29th at 11 a.m. at Northminster United Church (300 Sunset Blvd). In memory of Carl, donations to Northminster United Church or a Charity of your choice would be appreciated.Prompt Payment Legislation – It's about fairness.



About Doughty Masonry Center
Since 1950, Doughty Masonry Center has been providing our customers with the best in service, selection and good old-fashioned value.

Founded in 1950 by Carl Doughty, the company was then known as Crown Concrete Products. Restrictions on use of the word "crown" prevented incorporation until the following year when the name was changed to Doughty Concrete Products Ltd. A further change in 1999 to Doughty Masonry Center better reflected the changing nature of our business.

Progressing from our beginnings with a hand operated single block machine, post war expansion was rapid. Between 1950 and 1959 the company underwent 4 major expansions in both machinery and plant at which point a new plant was built on the present site. For a period of time in the early 1960's Doughty Concrete Products was manufacturing over 2 million bricks per year & was the largest supplier of house brick in Peterborough. In 1989, construction on a new office building/warehouse was completed. Doughty Masonry Center now produces a huge variety of concrete blocks for residential, commercial, and institutional projects. In addition, we are distributors for some of the finest manufacturers of masonry products in Canada including Arriscraft International, Brampton Brick Limited, Hanson Hardscapes, and many others.



Environmental Product Declarations (EPDs)

EPD
Environmental Product Declaration

Contrary to thinking, this is going to become a reality in the construction industry. LEED Version 4 is now looking for EPDs.

What is an EPD?
EPDs can be likened to a nutritional table for construction products. Basically a summary of LCA and product performance features.

EPD (Environmental Product Declarations)
↓
LCA (Life Cycle Assessment)
↙ ↘
Data PCR (Product Category Rule)

There is a need to know about what energy goes in and what emissions come out of construction products. There are potentially 3 levels: a label, self-declaration and a nutritional label which is need for LEED Version 4. PCRs = rules. Every product will have its own PCR.

How do we get EPDs?
This can be attained by LCI calculators and white papers. An EPD template needs to be developed and does not have to be product specific. Vendors will have to be called upon to assist unless their product is less than 1% of product. NCMA will work with ASTM to develop a template. NCMA may send out a heads up document to every plant.

UPDATE
- Product Category Rules were published last year
- NCMA had consultants write the 'Road Map'
- The consultants developed the Life Cycle Inventory Data Collection Tool and did the webinar about it which I reported on. They are doing some final tweaks and that will be available to members in the next week or two
- A few producers have started publishing EPDs, verified either through ASTM or NSF Environmental

DROP US A LINE

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