MARSHALL DAY
ACOUSTICS

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AUSTRALIA

Attention: Mr Steve Marlor

Dear Sirs,

OPINION OF POWERSCAPE WALL SYSTEMS

1.0 INTRODUCTION

Marshall Day Acoustics Pty Ltd has been asked to provide an opinion on the Sound Transmission Class (STC) and Weighted Sound Reduction Index (R_w) that would be achieved by Powerscape® Rocklining wall systems. Opinions on the eight main wall types are provided in the enclosed reports:

Wall Type	Report Number
Single Steel Stud – no cavity insulation	89135/RPJOV041012 sst
Single Steel Stud with cavity insulation	89135/RPJOV041013 sstins
Staggered Steel Stud with cavity insulation	89135/RPJOV041013 stagstins
Double Steel Stud with insulation	89135/RPJOV041013 dstins
Single Timber Stud – no cavity insulation	89135/RPJOV041012 st
Single Timber Stud with cavity insulation	89135/RPJOV041013 stins
Double Timber Stud with insulation	89135/RPJOV041013 dtins
Separate Staggered Timber Stud with insulation	89135/RPJOV041207 sepstagt

2.0 SUMMARY TABLE

The estimated laboratory performance of these wall systems is summarised in the table below. The estimate is expected to be in error by less than ±2 STC/R_w and ±3 R_w+C_{tr} for all systems.

Powerscape system ID	Side1[1]		Side2[1]		Frame	Infill	STC	R_w	R_w+C	R_w+C
	Outer	Inner	Outer	Inner						
Steel - Single										
PRS30SiA	13mm	-	13mm	-	64mm single	None	39	39	37	33
PRS60SiB	16mm	-	16mm	-	89mm single	None	41	42	40	36
PRS90SiA	13mm	16mm	13mm	16mm	64mm single	None	48	48	46	42
PRS90SiD	13mm	16mm	13mm	16mm	89mm single	None	50	50	48	43
PRS120SiA	16mm	16mm	16mm	16mm	89mm single	None	51	51	49	44
PRS30SiE	13mm	-	13mm	-	64mm single	R2.0 batts	45	44	40	33
PRS60SiA	13mm		13mm	-	64mm single	**Mineralwool**	45	44	40	33
PRS30SiC	13mm	-	13mm	-	89mm single	R2.0 batts	47	47	44	39
PRS60SiC	13mm	-	13mm	-	89mm single	**Mineralwool**	47	47	44	39
PRS60SiD	16mm	-	16mm	-	89mm single	R2.0 batts	47	47	45	40
PRS30SiD	13mm	13mm	13mm	-	89mm single	R2.0 batts	51	51	49	43
PRS90SiB	13mm	13mm	13mm	13mm	64mm single	**Mineralwool**	54	54	52	47
PRS90SiC	13mm	13mm	13mm	13mm	89mm single	**Mineralwool**	54	56	53	49
PRS90SiE	13mm	16mm	13mm	16mm	89mm single	R2.0 batts	55	56	53	50
PRS120SiB	16mm	16mm	16mm	16mm	89mm single	R2.0 batts	54	56	53	51
Steel – Staggered (Common top and bottom plates)										
PRS30StA	13mm	-	13mm	-	89mm cavity staggered	R2.0 batts	52	53	50	43
PRS60StB	13mm	-	13mm	-	89mm cavity staggered	**Mineralwool**	52	53	50	43
PRS30StB	13mm	13mm	13mm	-	89mm cavity staggered	R2.0 batts	57	58	55	50
PRS60StE	13mm	13mm	13mm	13mm	89mm cavity staggered	R2.0 batts	62	61	58	52
PRS60StC	13mm	13mm	16mm	-	89mm cavity staggered	R2.0 batts	58	59	56	50
PRS60StA	16mm	-	16mm	-	89mm cavity staggered	R2.0 batts	54	55	52	45
PRS60StD	16mm	16mm	16mm	-	89mm cavity staggered	R2.0 batts	59	60	58	52
PRS90StA	13mm	13mm	13mm	13mm	89mm cavity staggered	**Mineralwool**	62	62	58	52
PRS120StA	16mm	16mm	16mm	16mm	89 cavity staggered	R2.0 batts	63	63	60	55
Steel - Double										
PRS30DoA	13mm	13mm	13mm	-	205mm cavity double	R2.0 batts	62	62	60	54
PRS60DoA	13mm	13mm	13mm	13mm	205mm cavity double	R2.0 batts	69	68	66	60
PRS90DoA	13mm	16mm	13mm	16mm	205mm cavity double	R2.0 batts	70	69	67	62
PRS90DoB	13mm	16mm	13mm	16mm	205mm cavity double	**Mineralwool**	71	70	68	63
PRS120DoA	16mm	16mm	16mm	16mm	205mm cavity double	R2.0 batts	70	71	68	64

Powerscape system ID	Side1[1]		Side2[1]		Frame	Infill	STC	R_w	R_w+C	R_w+C
	Outer	Inner	Outer	Inner						
Timber - Single										
PRT30SiA	13mm	-	13mm	-	75mm single	None	39	37	37	31
PRT60SiA	16mm	-	16mm	-	90mm single	None	39	39	39	32
PRT90SiA	13mm	16mm	13mm	16mm	90mm single	None	45	43	42	35
PRT120SiA	16mm	16mm	16mm	16mm	90mm single	None	45	43	42	36
PRT60SiB	13mm	-	13mm	-	90mm single	**Mineralwool**	43	42	42	37
PRT30SiC[2]	13mm	13mm	13mm	-	90mm single	R2.0 batts	45	44	43	40
PRT60SiC[2]	16mm	16mm	16mm	-	90mm single	R2.0 batts	43	43	42	38
PRT90SiB	13mm	13mm	13mm	13mm	90mm single	**Mineralwool**	46	45	44	40
PRT90SiC	13mm	16mm	13mm	16mm	90mm single	R2.0 batts	46	45	44	40
PRT120SiB[2]	16mm	16mm	16mm	16mm	90mm single	R2.0 batts	46	45	44	40
Timber - Double										
PRT30DoA	13mm	-	13mm	-	205mm cavity double	R2.0 batts	56	56	54	49
PRT60DoB	16mm	-	16mm	-	205mm cavity double	R2.0 batts	57	58	56	52
PRT60DoA	13mm	-	16mm	-	205mm cavity double	**Mineralwool**	59	58	56	51
PRT30DoB	13mm	13mm	13mm	-	205mm cavity double	R2.0 batts	62	62	60	54
PRT60DoC	16mm	16mm	16mm	-	205mm cavity double	R2.0 batts	63	65	62	58
PRT90DoA	13mm	13mm	13mm	13mm	205mm cavity double	**Mineralwool**	70	69	67	61
PRT90DoB	13mm	16mm	13mm	16mm	205mm cavity double	R2.0 batts	70	69	67	62
PRT120DoA	16mm	16mm	16mm	16mm	205mm cavity double	R2.0 batts	70	71	68	64
Timber – Separate staggered										
PRT60StA	16mm	-	16mm	-	146mm cavity separate staggered	R2.0 batts	58	56	54	47
PRT60StB	13mm	16mm	16mm	-	146mm cavity separate staggered	R2.0 batts	62	61	58	52
PRT90StB	13mm	13mm	13mm	13mm	146mm cavity separate staggered	**Mineralwool**	68	67	62	56
PRT90StA	13mm	16mm	13mm	16mm	146mm cavity separate staggered	R2.0 batts	68	67	64	57

Powerscape system ID	Side1[1]		Side2[1]		Frame	Infill	STC	R_w	R_w+C	R_w+C
	Outer	Inner	Outer	Inner						
PRT120StA	16mm	16mm	16mm	16mm	146mm cavity separate staggered	R2.0 batts	70	69	65	59
PRT30StA[2]	13mm	-	13mm	-	146mm cavity separate staggered	R2.0 batts	56	54	51	44
PRT30StB[2]	13mm	-	13mm	13mm	146mm cavity separate staggered	R2.0 batts	62	61	57	50

Note: [1] All material Powerscape Rocklining
[2] Measured

Notes on summary table

1. Mineral wool insulation is assumed to be 50mm thick or greater, minimum density 60kg/m^3.
2. R2.0 batts assumes 75mm thick or greater fibreglass insulation with a minimum density of 10kg/m^3, or alternatively, 95mm thick or greater polyester insulation with a minimum density of 10kg/m^3.
3. Single timber stud wall system predictions assume linings are screw-fixed to the studs at 300mm centres with **no fixing to the top and bottom plates**.
4. Separate staggered double timber stud wall system predictions assume linings are screw-fixed to the studs at 300mm centres and screw-fixed to the top and bottom plates. Each frame consists of 90 x 45mm studs attached to 70 x 45mm top and bottom plates, with the inner edges of the studs bevelled to ensure they do not come in contact with the other frame.

3.0 BUILDING CODE OF AUSTRALIA (BCA) MAY 2004 VERSION

Marshall Day Acoustics considers that Powerscape wall systems tabled above with:

- $R_w \geq 45$ meet the BCA airborne requirements for Class 9a aged care walls
- $R_w \geq 50$ meet the BCA airborne requirements for Class 1, 2 and 3 walls between occupancies and service rooms or public spaces
- $R_w + C_{tr} \geq 50$ meet the BCA airborne requirements for Class 1, 2 and 3 walls between adjoining occupancies
- Double stud constructions meet the BCA requirement for control of impact sound through walls
- Staggered stud constructions would meet the BCA requirement for control of impact sound through walls provided they are detailed with separate top and bottom plates and separate perimeter channels.

We trust the above is sufficient for your requirements at this time. Should you have any queries, please do not hesitate to contact me.

Yours faithfully,
MARSHALL DAY ACOUSTICS

Tim Marks
Director