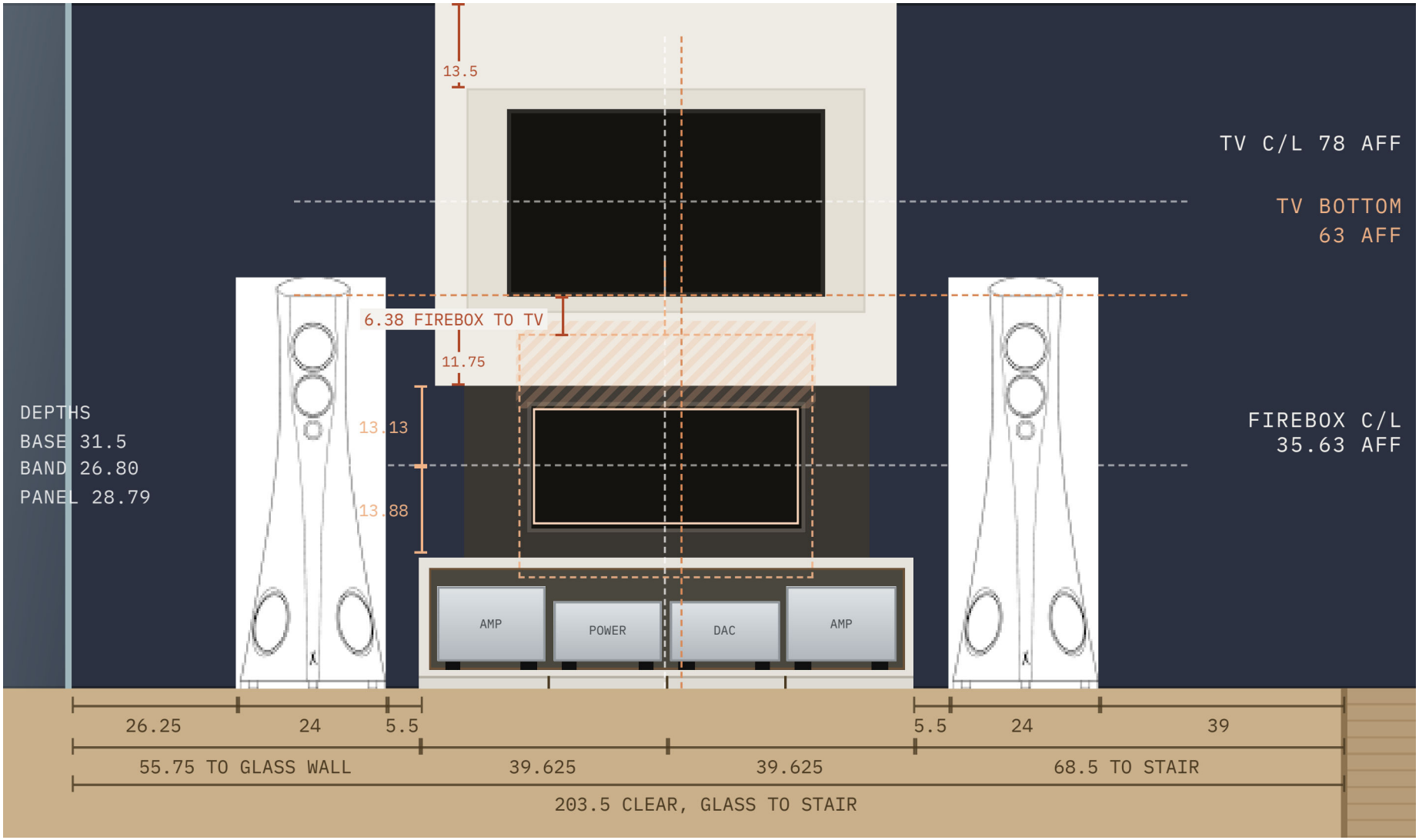


ELEVATION

79.25 in base

110 in · TV C/L 78 in

TV band	61.25 H × 74 W × 28.79 D	TV	51 W × 30 H, C/L 78 AFF
Fireplace band	27.75 H × 65 W × 26.80 D	Firebox	44.5 W × 21 H
		Glass wall	55.75 in left of base
Base band	21 H × 79.25 W × 31.5 D	Stair down	68.5 in right of base
Shift from sofa C/L	**2.125 toward glass**		



COMPONENT DETAILS

Audio components and fireplace unit

inches · lb · W

AUDIO COMPONENTS · H INCLUDES 1.5 FEET

COMPONENT	WHERE	W × H × D	LB	HEAT, W
Amp × 2	Left and right bays	17.5 × 13.5 × 23.6	154 each	200 each
Power	Bay 21.5–39	17.5 × 11 × 16.5	119	150
DAC	Bay 40.25–57.75	17.5 × 10.9 × 16.5	93	150
Niagra	On its side, on the floor against the back wall, 4 from the left side	17.2 × 17.5 × 5.9	82	37.5

Heat outputs are the assumed figures used on the cooling and extraction sheets, 737.5 W in total. Confirm them against the manufacturers' specifications.

FIREPLACE UNIT

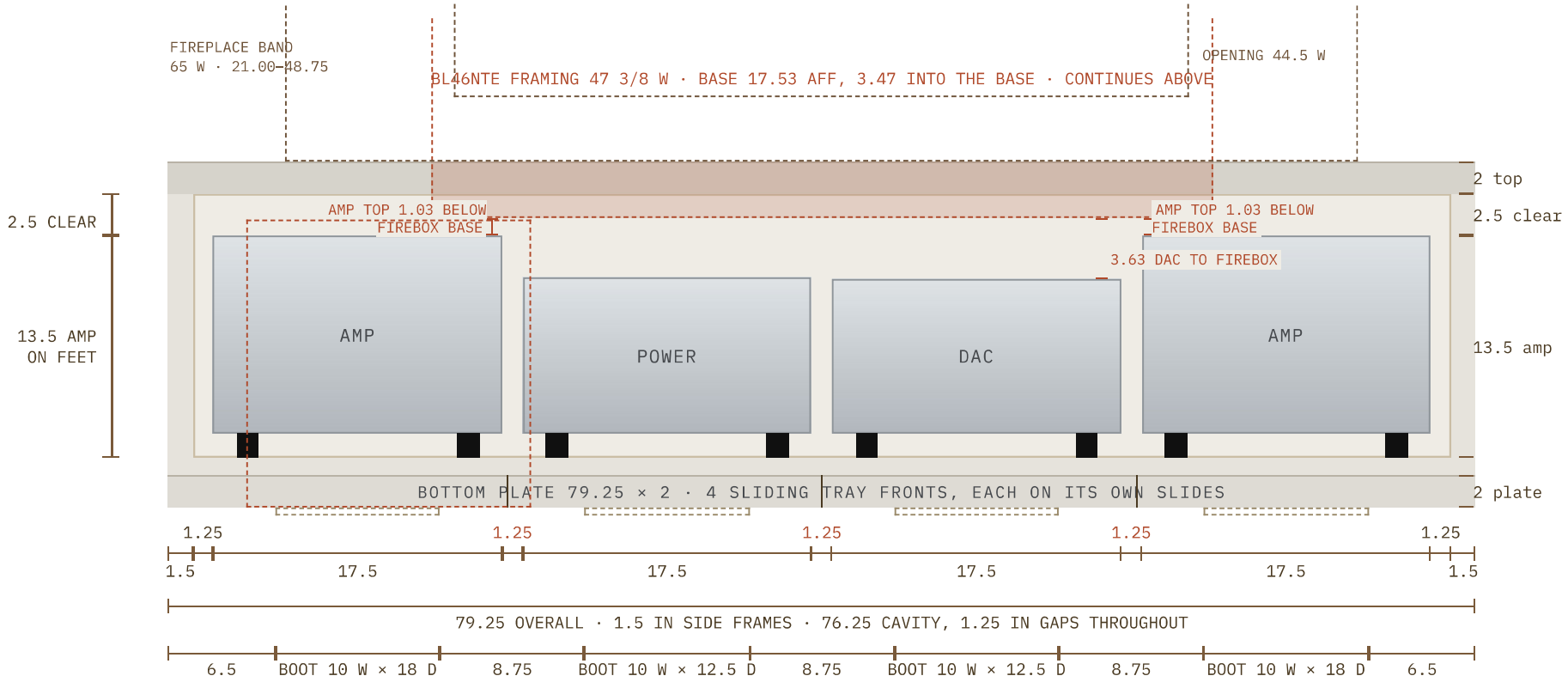
ITEM	SPEC
Model	Napoleon BL46NTE, already owned
Unit	46 7/8 W × 39 1/16 H × 18 5/16 D
Framing	47 3/8 W × 39 3/8 H × 18 9/16 D
Weight	158 lb, 168 lb with its vent
Vent	Top vent 4 × 7, with 12 in rise
Position	Base 17.53 AFF, top 56.63 AFF, front flush with the fireplace band face
Firebox opening	44.5 W × 21 H in the fireplace band
Viewing area	42.5 W × 18.8 H, 26.2–45.0 AFF, C/L 35.63 AFF
Support	Four steel brackets at its sides, hung from the doubled trimmer and C

Check chase and TV clearances against the BL46NTE installation manual before building.

BASE

Base band, enlarged — 79.25 W × 21 H × 31.5 D

7.7 px = 1 in · inches



FINISHING

Finish schedule — base, bands and fittings

inches

BASE BAND

SURFACE	FINISH	NOTES
Outside faces	Fenix NTM Bianco Dover 0757, Arpa Industriale, supermatt	On MDF inserts flush with the steel frame; both faces laminated or backed. Outside corners mitred or banded in matching Fenix edge tape.
Interior, all surfaces	Fenix NTM Bianco Dover 0757	Inside faces of both side frames, inner face of the 1/2 back panel, back of the face plate and tray fronts, exposed tube edges, and a 1/4 Fenix-faced MDF soffit under the top. The soffit stops at the fireplace recess and the rear opening, which stay open for the stack air path.
Tray fronts, 2.00 face plate	Fenix NTM Bianco Dover 0757 on MDF	Four 18.95 fronts, 0.75 thick, with 3/32 gaps between and to each side frame; keep sheet orientation the same across all four.
Top panels	Fenix NTM Bianco Dover 0757 on 3/4 MDF	4.70 front ledge across the full 79.25 and a 7.13 return at each end, flush with the steel top. None under the fireplace band.
Tray decks	Perforated steel, powder coated to match Fenix 0757; 3 in front edge in Fenix-faced MDF	Laminate would close the perforation and stop the boots drawing air, so the decks are colour-matched instead.
Rails, posts and fireplace brackets	Powder coated to match Fenix 0757	Steel inside the bay that carries slides or loads and cannot take laminate.
Cable grommets, 2	Ø3.00, brushed satin, with cover	One in each side frame rear panel.
Lighting	Lutron Lumaris RGB + tunable white, hidden behind A	Not a visible finish; see the Lighting sheets.

FIREPLACE BAND

SURFACE	FINISH	NOTES
Front and sides	Slate tile, 3/8 in, on 1/2 cement board over 20 ga steel studs	Set in polymer-modified thinset. Slate and cement board are non-combustible, so the cladding can run right up to the opening. Colour and format to be chosen.

TV BAND

SURFACE	FINISH	NOTES
Front and sides	1/2 cement board, skimmed and painted to match	Steel studs and cement board throughout; paint only, no laminate.
TV recess lining and top	1/2 cement board, painted to match	

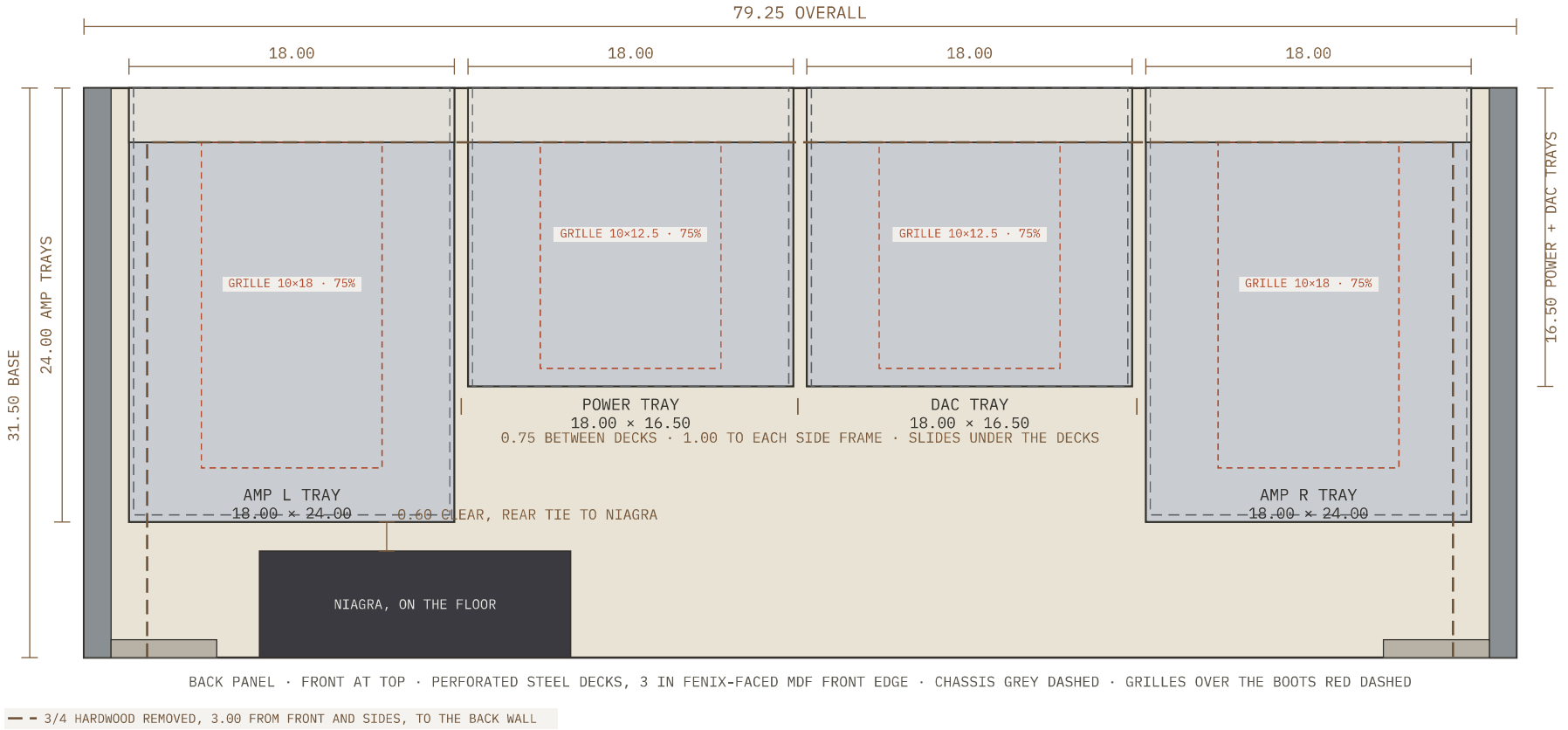
Paint colour matched to Fenix NTM Bianco Dover 0757; the fireplace band is clad in slate. Check a physical Fenix sample against the painted cement board before ordering.

The TV band is painted throughout and the fireplace band is slate, so both bands are non-combustible. Confirm finish limits above the opening in the BL46NTE manual, W415-2757.

BASE TOP

Base top view — trays — 79.25 W × 31.5 D

plan at tray level · inches



TRAY	ACROSS	DECK W × D	GRILLE	SLIDES
Amp L	2.50–20.50	18.00 × 24.00	10 × 18 at 6.50–16.50, 3–21 back, over the 10 × 18 boot	24 in, 250 lb
Power	21.25–39.25	18.00 × 16.50	10 × 12.5 at 25.25–35.25, 3–15.5 back, over the 10 × 12.5 boot	16 in, 250 lb
DAC	40.00–58.00	18.00 × 16.50	10 × 12.5 at 44.00–54.00, 3–15.5 back, over the 10 × 12.5 boot	16 in, 250 lb
Amp R	58.75–76.75	18.00 × 24.00	10 × 18 at 62.75–72.75, 3–21 back, over the 10 × 18 boot	24 in, 250 lb

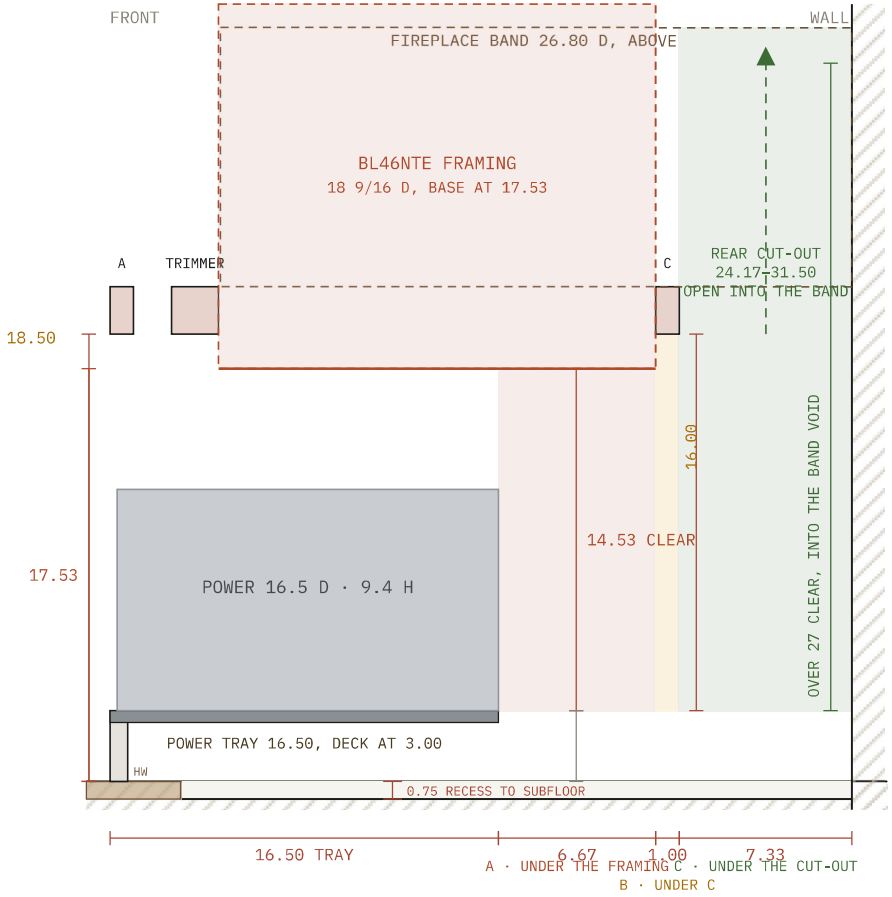
Positions are from the base left edge and from the front face; each grille is the same size as the boot below it. All four decks are 16 ga perforated steel, about 75 per cent open, with a 3.00 solid Fenix-faced MDF front edge, and 18.00 wide, centred on their chassis with 0.75 between decks and 1.00 to each side frame; each runs on its own pair of full-extension slides mounted under the deck to the tops of its own rail pair, welded into a U by a rear tie (see 02B); the tray fronts, 18.95 wide and 0.75 thick, one per deck with 3/32 between and to each side frame, make up the 2.00 bottom face plate, flush with P1 when closed. Behind the Power and DAC trays the bay is clear to the back panel; the Niagra stands on the floor behind the left Amp tray, at 9.73–26.93 across, 1.80 clear of the P5 leg, and 25.6–31.5 back. The Amp L rear tie, at 24.00–25.00 behind the 24.00 tray, ends 0.60 in front of its front face, so the tray slides out without touching it; across, it runs from 3.50 inside the tray's left edge to 2.20 past its right edge.

BASE SIDE

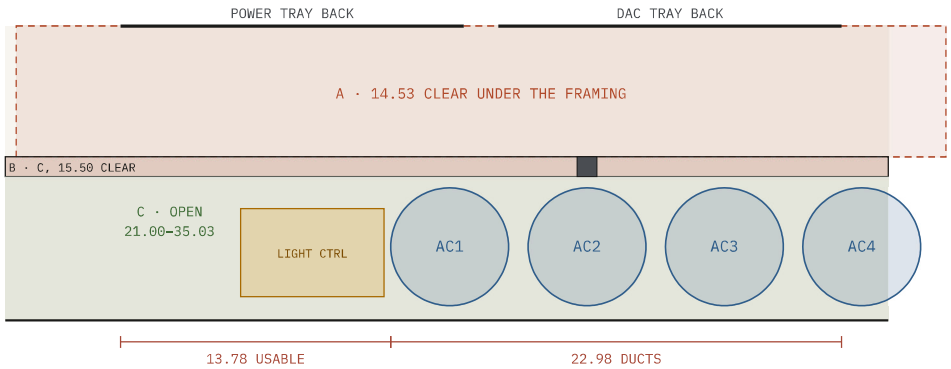
Clearance behind the Power and DAC

inches · heights from the top of the hardwood; from 3 behind the front face to the wall the floor is the subfloor, 0.75 lower

SECTION THROUGH THE POWER BAY · FRONT AT LEFT



PLAN OF THE REAR CAVITY, 21.00–57.75 ACROSS



PLAN BEHIND THE POWER AND DAC TRAYS · FRONT AT TOP · WALL AT BOTTOM

	BACK	CLEAR, FLOOR / DECK	CONSTRAINT
A	16.50–23.17	**17.53 / 14.53 above deck**	BL46NTE framing drops into the base to 17.53, across 15.94–63.31
B	23.17–24.17	**18.50 / 16.00**	C underside; one post, P11, stands in this strip at 44.53–45.53, in front of AC2; the Power bay strip is clear
C	24.17–31.50	**open, over 27**	Rear cut-out into the band. Behind the Power, 21.00–35.03 is free except the lighting controllers on the floor; 35.03–57.75 is filled by AC1–AC4, 1.00 apart

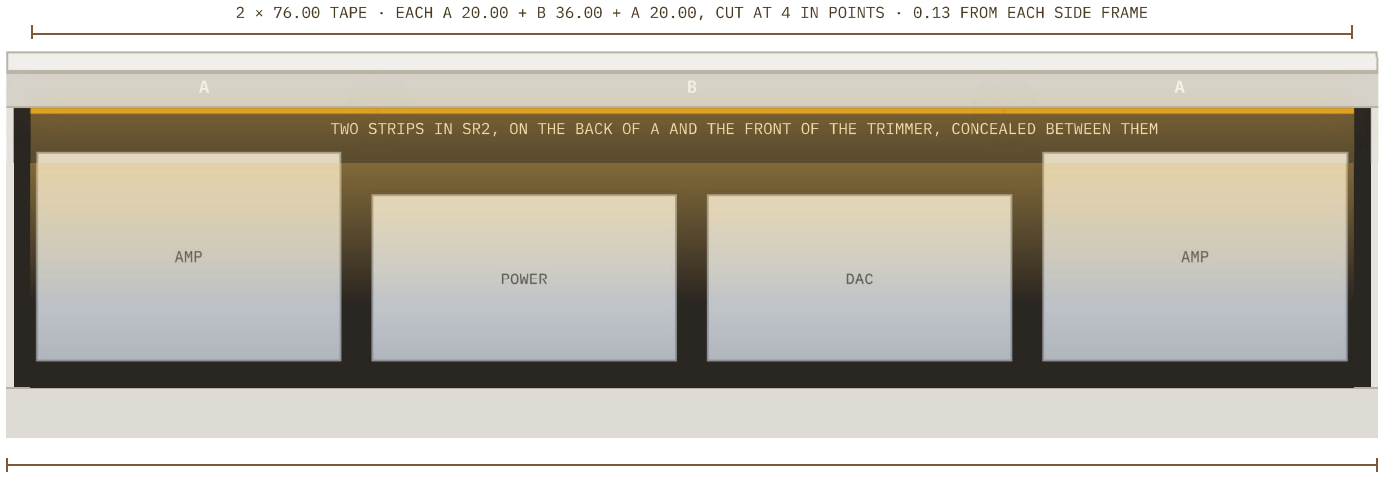
Zone C, behind C and under the open rear cut-out, is open to the band; in it, only 21.00–35.03 behind the Power is usable width. Zone B is 18.50 under C, and zone A is held to 17.53 by the fireplace framing. Power chassis height is nominal. The 3/4 hardwood is removed from 3 behind the front and 3 in from each side, back to the wall, so loose items on the floor here, the lighting controllers, sit on the subfloor and gain 0.75.

LIGHTING

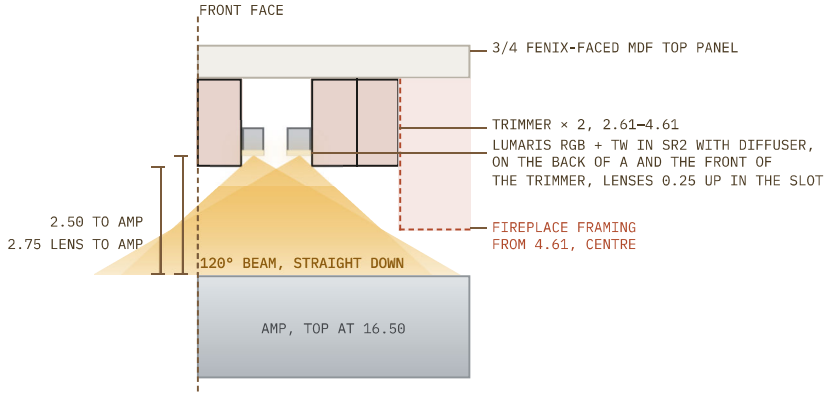
Base band — two tape strips concealed between A and the trimmer

INCHES

FRONT ELEVATION · 10 PX = 1 IN · AMBER: TAPE, SEGMENT A OVER THE AMPS, B OVER THE POWER AND DAC



SECTION AT A · 28 PX = 1 IN · FRONT AT LEFT



PRODUCT	Lutron Lumaris Tape Light – RGB + Tunable White LED, LU-T05-RT-IN, 16.4 ft reel
LIGHT	RGB + tunable white 1,800–4,000 K, 90+ CRI, 200 lm/ft
TAPE	12 mm wide, 24 V, cut every 4 in, 22 AWG leads
BEAM	About 120° through the diffuser, both lenses facing straight down, 0.25 up in the slot at 19.25; A cuts the front strip's beam to about 48° forward and the trimmer cuts the rear strip's to about 48° back
RUN	Two identical strips in SR2 channels, one on the back face of A at 1.00–1.55 back and one on the front face of the trimmer at 2.06–2.61 back. Each: A 2 × 20.00 over the Amps, 1.63–21.63 and 57.63–77.63, joined by a 5-wire jumper; B 36.00 over the Power and DAC, 21.63–57.63. The two A runs are wired in parallel to controller A and the two B runs to controller B
LOAD	Per strip A 3.33 ft = 9.7 W, B 3.00 ft = 8.7 W; 36.8 W total
CONTROL	Two Lumaris Multi-Channel Wireless Controllers, one for A and one for B, on one 24 V 96 W power supply; RadioRA 3 / HomeWorks
EXTRUSION	Lutron SR2 surface profile with diffuser, 2 × 8 ft, each cut to 76.00

Each strip sits in an SR2 channel with its diffuser, fixed to a vertical face with the lens facing down at 19.25, 0.25 up in the slot: one on the back face of A, 1.00–1.55 back, and one on the front face of the trimmer, 2.06–2.61 back, leaving 0.51 between them. Both run the full 76.25 cavity less 0.13 at each side frame. Both sit inside the slot between A and the trimmer, so A and the trimmer hide the lenses from any normal eye height, sitting or standing. Together they light the Amp tops from the front edge to 6.0 back and the Power and DAC tops to 10.4 back, and spill onto the floor 3.4–31.0 in front of the Power and DAC and 7.7–31.0 in front of the Amps.

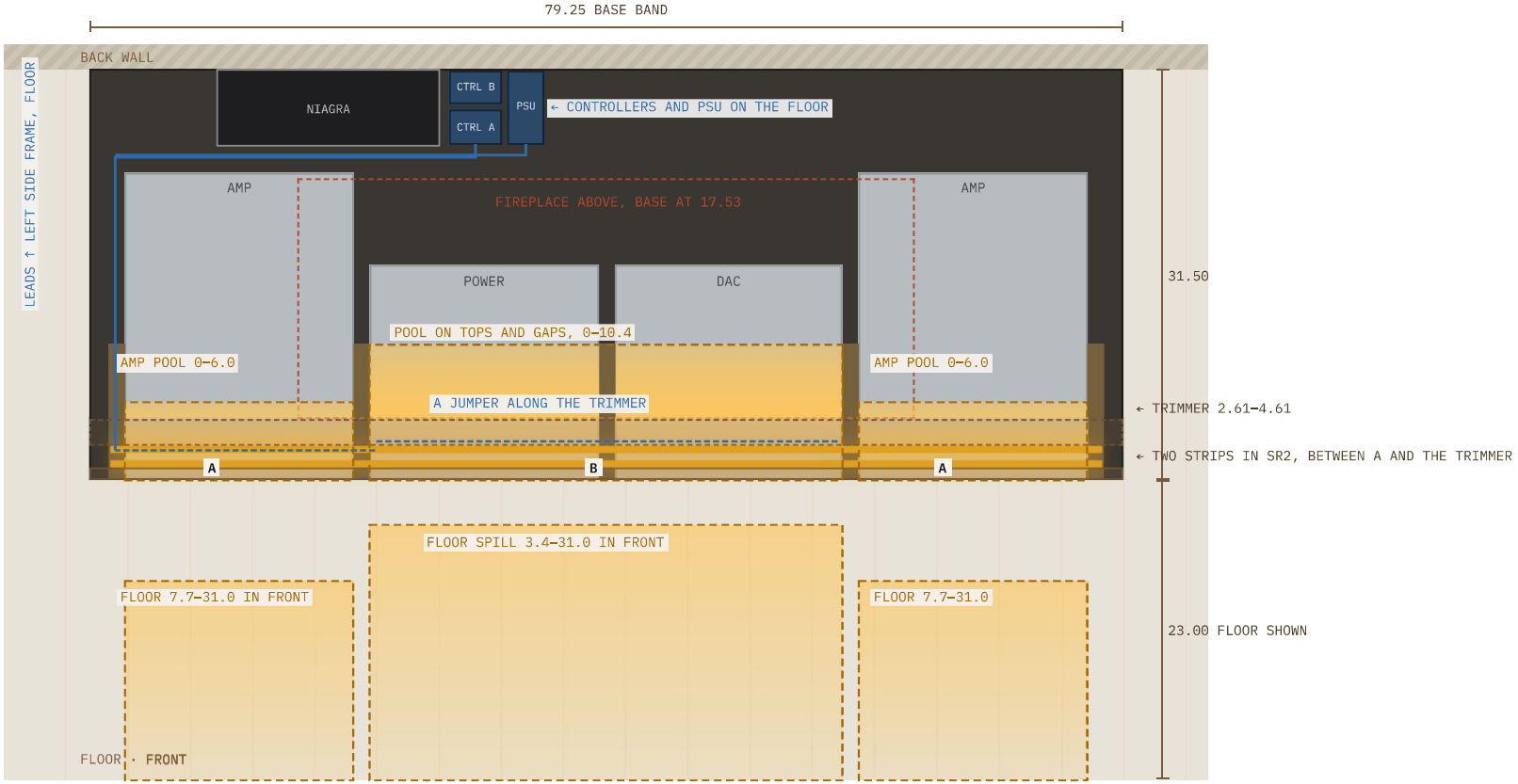
Fix the SR2 clips to the back face of A and the front face of the trimmer with low-profile screws into rivnuts, or VHB. Segment A's two halves are joined by a jumper run along the trimmer above B. Each segment's leads run to its own controller; the leads run along the trimmer to the left side frame, down to the floor and back between the Amp tray and the Niagra, and both controllers and the shared supply stand on the floor beside the Niagra, 27.4–34.7 across, 25.8–31.4 back. See Lighting (2). 36.8 W adds about 5.0 per cent to the base heat.

LIGHTING · 2

Top view — light pattern, base and 23 in of floor

8.6 PX = 1 IN

PLAN, BACK WALL AT TOP · TOP PANELS REMOVED; A AND TRIMMER OUTLINED · AMBER: TAPE · YELLOW: LIGHT ON SURFACES · BLUE: LIGHTING LEADS, CONTROLLERS AND PSU · DASHED: EDGE OF EACH PATTERN



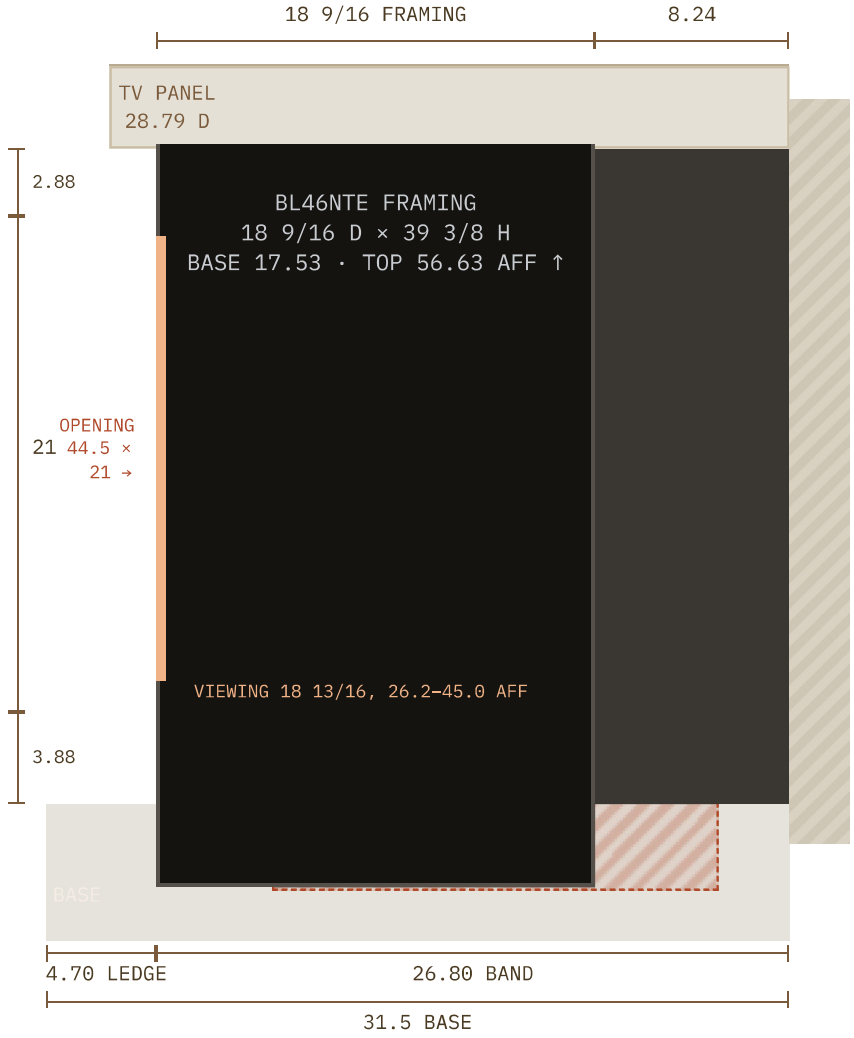
Two strips run the full width in SR2 channels with diffusers, concealed in the slot between A and the trimmer, both lenses facing straight down at 19.25, 0.25 up in the slot: one on the back of A, 1.00–1.55 back, and one on the front of the trimmer, 2.06–2.61 back. Together they light the Amp tops from the front edge to 6.0 back and the Power and DAC tops, and the gaps, to 10.4 back. The forward rays land on the floor 3.4–31.0 in front of the Power and DAC and 7.7–31.0 in front of the Amps, a band past the 23 in shown. Leads from A and B run along the trimmer to the left side frame, down its inside face and along the floor, between the Amp tray and the Niagra at 24.8–25.0 back, to the two controllers and the shared supply on the floor beside the Niagra at 27.4–34.7 across and 25.8–31.4 back, between the Niagra at 26.93 and AC1 at 35.03. Dashed lines mark the edge of each pattern; the pattern is geometric, from the beam and slot only.

FIREPLACE BAND SIDE AND TOP VIEW

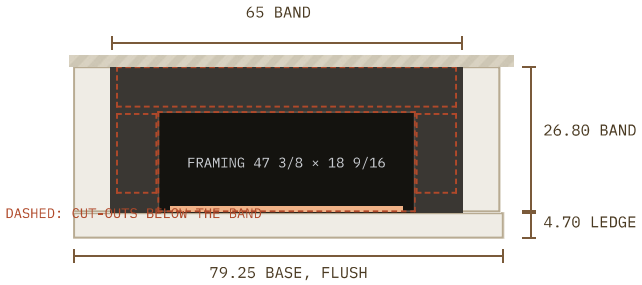
Fireplace Band Side and Top View — 65 W × 27.75 H × 26.80 D

inches

SECTION AT THE CENTRE LINE · FRONT AT LEFT · 10.5 PX = 1 IN



PLAN ON THE STEEL TOP, FENIX TOP PANEL LEDGE AND RETURNS · FRONT AT BOTTOM



FIREPLACE BAND FRONT VIEW

Fireplace Band Front View — 65 W × 27.75 H

inches · AFF

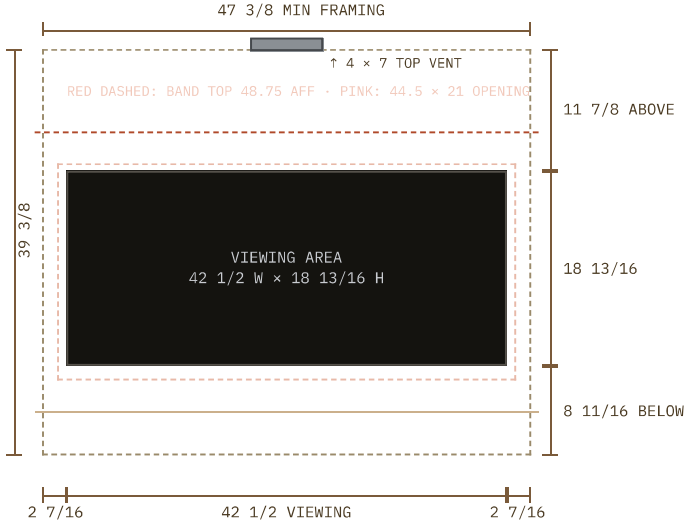
FIREPLACE BAND FRONT ELEVATION · OPENING CENTRED · 6.6 PX = 1 IN



Tile Line Centered and aligned with the center of the unit

TV band to be built entirely of non-combustible material: steel studs, cement board, steel ledgers.

NAPOLEON BL46NTE · FRONT VIEW, BASE AT 17.53 AFF, VIEWING 26.2–45.0 AFF, CENTRED IN THE OPENING 24.88–45.88 · PER MANUAL W415-2757



CABLES

Cable length — connector depth

inches (cm)

COMPONENT	DEPTH	CONNECTOR DEPTH	CLEAR BEHIND	POWER CABLE	XLR	SPEAKER
Amp, left Left bay, 2.75–20.25, Niagra behind	23.6" (59.9 cm)	**29.6"** (75.2 cm)	25.6" (65.0 cm) ✗ 4.0" (10.2 cm) over	**1.0 m** (37.18" / 94.4 cm) 37.18": 25.18 to Niagra plugs + 2 × 6	**1.7 m** (64.0" / 162.6 cm) 64.0": 56.0 edge to edge + 2 × 4	**1.1 m** (40.5" / 102.9 cm) 40.5": 10.5 centre to outside + 30
Amp, right Right bay, 59–76.5	23.6" (59.9 cm)	**29.6"** (75.2 cm)	31.0" (78.7 cm) ✓ 1.4" (3.6 cm) spare	**1.6 m** (62.08" / 157.7 cm) 62.08": 50.08 to Niagra plugs + 2 × 6	**1.2 m** (44.75" / 113.7 cm) 44.75": 36.75 edge to edge + 2 × 4	**1.1 m** (40.5" / 102.9 cm) 40.5": 10.5 centre to outside + 30
DAC Bay 40.25–57.75, 16.5 tray	16.5" (41.9 cm)	**22.5"** (57.1 cm)	31.0" (78.7 cm) ✓ 8.5" (21.6 cm) spare	**1.1 m** (42.83" / 108.8 cm) 42.83": 30.83 to Niagra plugs + 2 × 6	–	–
Power Bay 21.5–39, 16.5 tray	16.5" (41.9 cm)	**22.5"** (57.1 cm)	31.0" (78.7 cm) ✓ 8.5" (21.6 cm) spare	**0.6 m** (23.58" / 59.9 cm) 23.58": 11.58 to Niagra plugs + 2 × 6	–	–

SPEAKER

Each Amp to its speaker: from the Amp's centre, 10.5" in from the base end, to the outside of the base, plus 30" (76.2 cm) to reach the speaker 5.5" off the base.

XLR

DAC to each Amp: the distance across from the Amp's edge furthest from the DAC to the DAC's furthest edge, plus 2 × 4" (2 × 10.2 cm), one at each end.

POWER CABLE

Run to the Niagra's plugs, taken at its rear panel, which faces the Power at 26.93" from the base left edge: the Niagra stands on its side behind the left Amp, 9.73–26.93 across and 25.6–31.5 back, on the floor touching the wall between the rear floor stubs. The distance across from the component's edge furthest from the plugs to that point, plus 2 × 6" (2 × 15.2 cm), one at each end.

CONNECTOR DEPTH

Component depth plus 6" (15.2 cm) for the rear connectors and cable bend, measured from the front face of the base. Every chassis sits flush with the face.

CLEAR BEHIND

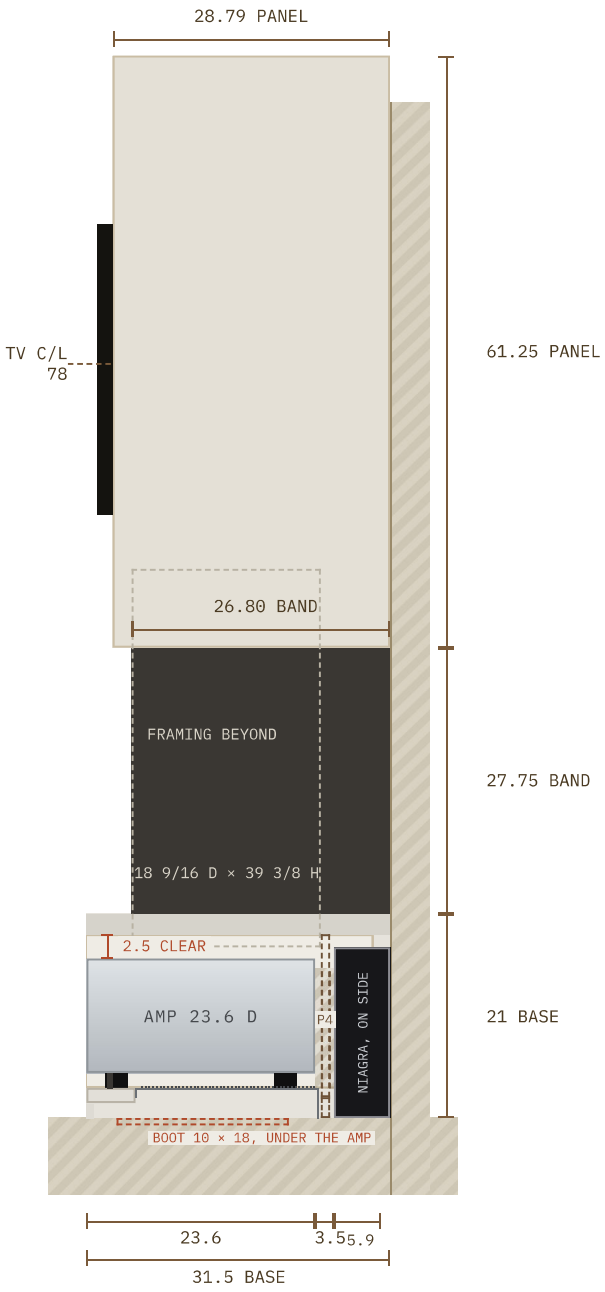
Distance from the front of the base to the first obstruction behind the component: 31.0" (78.7 cm) to the 1/2 back panel, except the left Amp, 25.6" (65.0 cm) to the Niagra behind it. ✓ means the connector depth fits.

SIDE

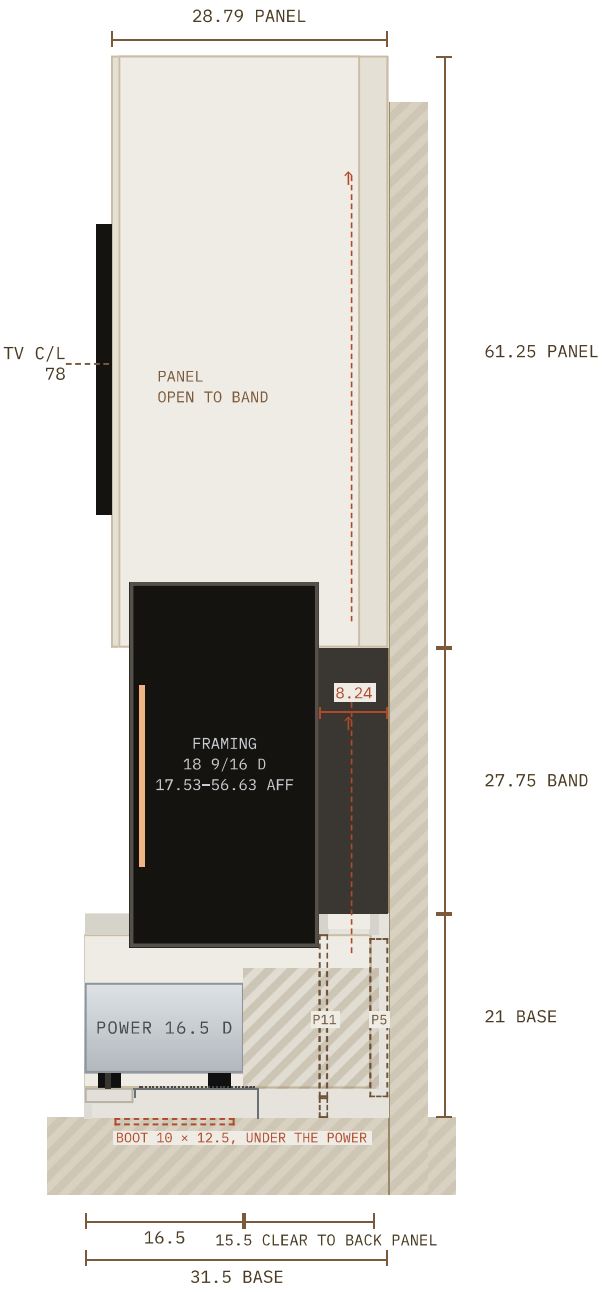
Depth profile — 31.5 / 26.80 / 28.79, front at left

5 px = 1 in · inches

SECTION THROUGH THE LEFT END BAY, NIAGRA BEHIND THE AMP



SECTION THROUGH THE CENTRE, POWER BAY

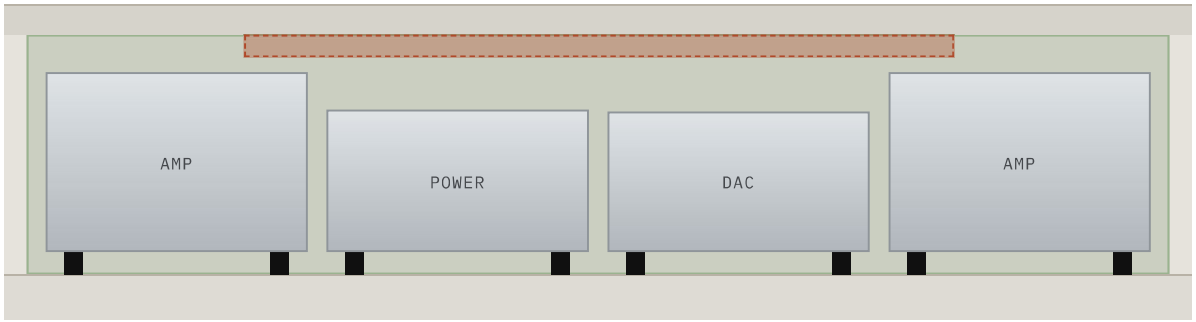


COOLING

Free vent area, net of components and framing

79.25 IN BASE

FRONT OPENINGS · 8 PX = 1 IN · GREEN: OPEN, 3 TO 19 · RED: FIREPLACE FRAMING FROM 17.53



BY FAN SIDE	FREE in²	HEAT W	in²/W
Amp, left bay	96	200	
Power bay	113	150	
Niagra, behind the left Amp	—	37.5	
Left fan	**209**	**387.5**	**0.54**
DAC bay	115	150	
Amp, right bay	96	200	
Right fan	**211**	**350**	**0.60**
Total	**420**	**737.5**	**0.57**

Free area per bay is the 16.0 opening between the deck tops at 3.00 and the top (the 1.00 strip above the 2.00 plate is the decks' Fenix-faced MDF front edge and passes no air), across the bay and half of each 1.25 in gap (the full 1.25 in side gap at the ends), less the chassis face above its 1.5 feet and less the fireplace framing where it drops 1.5 into the bay.

Heat: Amps 200 W each, Power and DAC 150 W, Niagra 37.5 W. The Director is removed, so the base carries 737.5 W, down from 775.

The left fan serves the boots under the left Amp and the Power and also takes the Niagra, which stands behind the left Amp; the right fan serves the boots under the DAC and right Amp.

EXTRACTION

Four floor boots, two fans, left and right sides

79.25 IN BASE · 75°F ROOM · 737.5 W

FLOOR BOOTS ×4
10 × 18 AND 10 × 12.5, ø8 COLLAR

→

HOSE ×4
8 IN, ONE PER BOOT, EXIT LEFT (A1 02D)

→

SILENCER ×4
8 IN, ONE PER HOSE, 0.05 IN W.G.

→

SPLITTER ×2
TWO 8 IN INTO ONE 8 IN

→

T8 FAN ×2
PULLS, ROOM BELOW

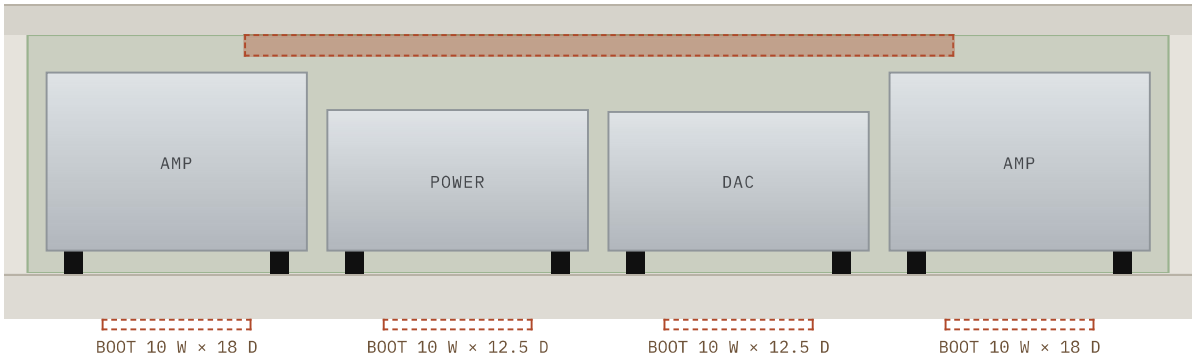
→

SILENCER ×2
8 IN, ONE PER FAN, DISCHARGE SIDE, 0.10 IN W.G.

→

DISCHARGE
AWAY FROM THE ROOM

ELEVATION · BASE 79.25 W × 21 H · FLOOR BOOTS DASHED, UNDER THE CHASSIS



Boots under the Amps: 10 W × 18 D, 180 in², under the perforated area only, centred across each Amp at 6.50–16.50 and 62.75–72.75, between the tray rails, and running 3.0–21.0 back, behind the 3 in Fenix-faced MDF edge. The Amp leaves 7.4 behind it to the 1/2 back panel for cables.

Each tray deck is 16 ga perforated steel, about 75 per cent open, with a 3 in solid Fenix-faced MDF front edge; the grilles are the deck over each boot, 10 × 18 on the Amp trays and 10 × 12.5 on the Power and DAC trays behind the Fenix-faced MDF edge. Air enters at the front between the face plate and the top, passes over and under the chassis on its 1.5 feet and drops through the perforated deck into the boot below, less the 3 in under the Fenix-faced MDF edge.

Boots under the Power and DAC: 10 W × 12.5 D, 125 in², at 25.25–35.25 and 44.00–54.00 across, 3.0–15.5 back, under the perforated tray decks, centred under each chassis. The Niagra, fixed on the floor behind the left Amp, has no boot. Five ø6 AC ducts, AC1–AC5, pass from the base into the fireplace band through the rear cut-out behind C (A1 02C); they are separate from the extraction.

Each boot takes off through an ø8 collar into its own 8 in hose, which leaves the base to the left as in A1 02D and runs through its own 8 in silencer to a splitter below the floor. The left splitter joins the Amp L and Power hoses, the right one the DAC and Amp R, and each feeds one T8 through an 8 in run; a second 8 in silencer on each fan's discharge, between the T8 and the outlet, takes out fan noise carried down the discharge duct. A1 02D shows only the hoses under the base; the silencers, splitters and fans are beyond it, positions to be confirmed.

EXTRACTION · 2

Fan table, four floor boots

79.25 IN BASE · 75°F ROOM · 737.5 W

LEFT FAN · 190 in² · 387.5 W, NIAGRA IN THE AMP L BAY · RIGHT FAN · 192 in² · 350 W

			COMPONENT SURFACE, °F				VELOCITY, fpm			
T8 level	CFM per fan	CFM each boot	Amp L + Niagra	Power	DAC	Amp R	Amp grille	Centre grille	8 in hose, each	8 in run
Fans off	–	–	123.4	115.4	116.4	123.4	–	–	–	–
10%	**72.6**	**36**	**113.7**	**101.1**	**102.1**	**110.4**	38	55	103	208
20%	145.1	73	103.3	94.5	95.5	101.7	78	112	209	416
30%	217.7	109	99.9	92.4	93.4	98.8	116	167	312	**624**
40%	290.2	145	98.2	91.3	92.3	97.4	155	223	415	831
50%	362.8	181	97.1	90.6	91.6	96.5	193	278	**519**	1,039
60%	435.4	218	96.4	90.2	91.2	95.9	233	335	625	1,247
70%	507.9	254	96.0	89.9	90.9	95.5	271	390	728	1,455
80%	580.5	290	95.6	89.6	90.6	95.2	309	445	831	1,663
90%	653.0	327	95.3	89.5	90.5	94.9	349	**502**	937	1,871
100%	725.6	363	95.1	89.3	90.3	94.7	387	558	1,040	2,079

Each fan's flow splits evenly between its two boots. Surface temperature is the bay exhaust air, the room at 75°F plus ΔT = 3.412 × W / (1.08 × CFM) over the boot's flow, plus a film rise of 18°F for an Amp, 13 for the Power and 14 for the DAC.

Bold rows mark the first T8 level that keeps every component surface under 120°F: 10 per cent, with the left Amp hottest at 113.7°F because the Niagra sits behind the left Amp. Grille velocities are taken through the grilles, the perforated deck over each boot behind the 3 in Fenix-faced MDF edge, 75 per cent open: about 135 in² over each Amp boot and 94 in² over each Power and DAC boot. The Amp grilles reach only 387 fpm at full output and never pass 500; the centre grilles pass 500 at 90 per cent and reach 558; the 8 in hoses, one per boot, pass 500 fpm at 50 per cent and reach 1,040 at full output, and the 8 in run from each splitter to its T8, and on through the discharge silencer, passes 500 at 30 per cent and reaches 2,079. The discharge silencers add about 0.10 in w.g. at full output, so each fan runs against about 0.15 in w.g. of silencer loss in total. In each velocity column the first figure over 500 fpm is bold; the Amp grilles never reach it. With the fans off the base relies on convection through the top cut-out behind the fireplace, 24.17–31.5, and the boots draw nothing. The fans-off row estimates that case: about 127 cfm of stack flow through the 278 in² rear cut-out, an 18.4°F rise in the bay air, and a natural-convection film rise of 30°F for an Amp, 22 for the Power and 23 for the DAC, so the Amps reach about 123°F; the Power, now without the Niagra beside it, is unchanged at about 115°F.

BOTTOM TIER · BASE

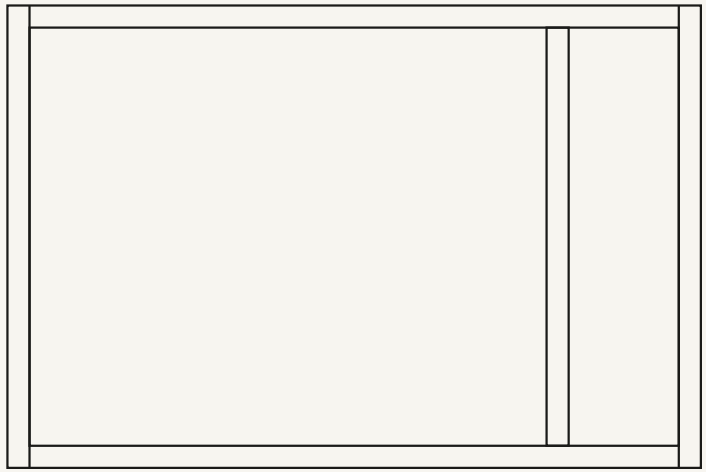
Base Frame

Two side frames in 14 ga steel tube, 1.5" × 2" uprights and 1" × 1.5" rails, 1.50 across the width, with the doubled trimmer in 11 ga and the box posts in 1" × 1" 14 ga, 21.00" high × 31.50" deep outside, at 79.25" overall width, joined at the top by a welded ladder of five 76.25 members and at the floor by two ties. There are no inner frames: the base is one 76.25 clear bay holding Amp, Power, DAC and Amp on four sliding trays, with the Niagra on the floor behind the left Amp.

SHEET	A1 of 4
UNITS	inches
MATERIAL	1 × 2 × 14 ga, trimmer 11 ga
REV	D · 05 OCT 26

01 Side frame — elevation

2 required (outer L + R)

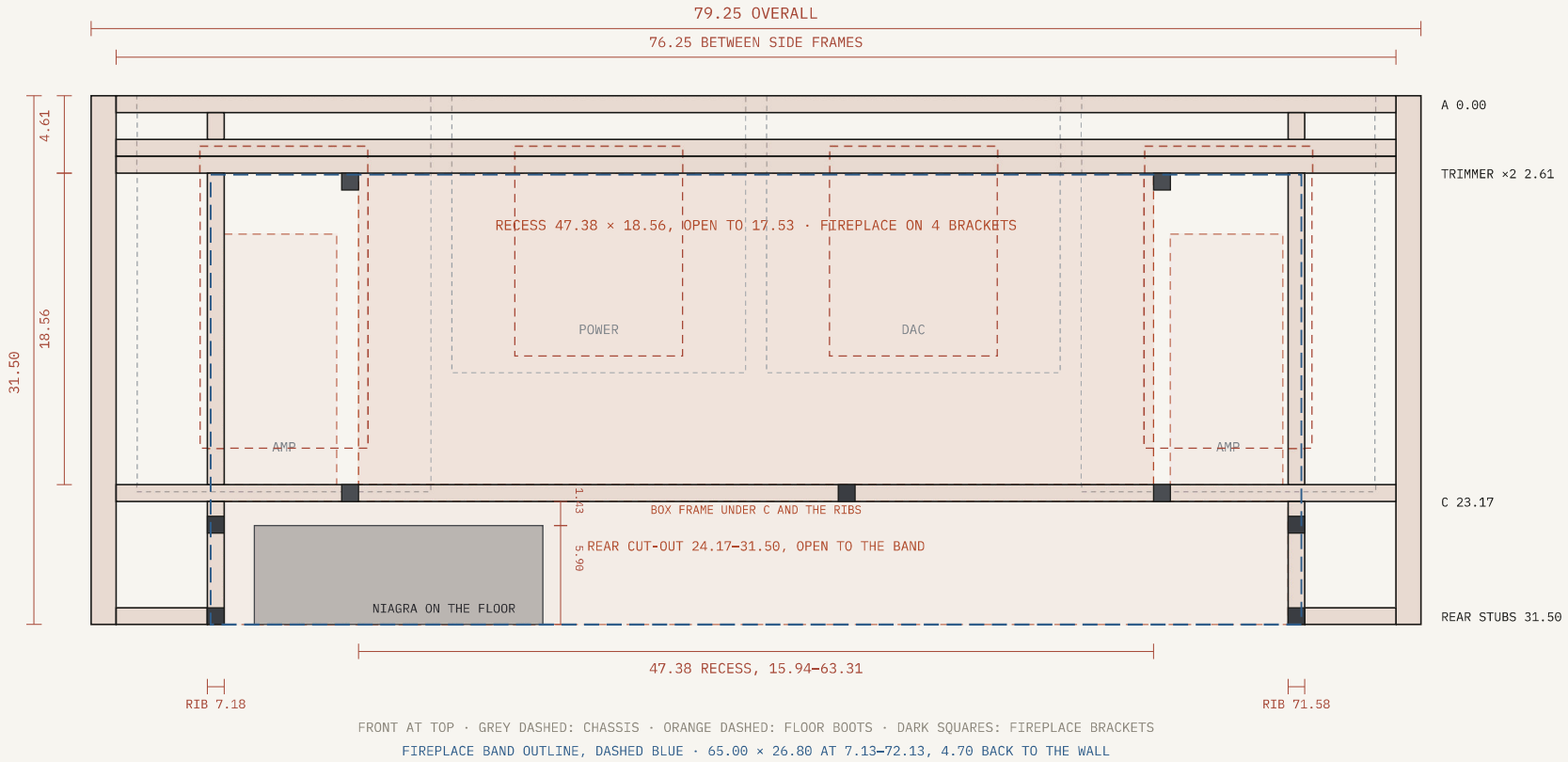


Corner uprights, 2.00 deep, run the full 21.00; top and bottom rails, 1.00 tall with the 1.50 face across the width, butt between them at 29.50. One intermediate upright at 24.00–26.00, behind the Amp tray, runs 17.00 between the rails; the bonded infill stiffens the two openings either side of it. Nothing crosses the bay below the top, so the Amps keep their 2.50 to the 19.00 underside. The 3/4 hardwood is removed from 3 behind the front and 3 in from each side, back to the wall; the frame, ties and rails stay on the 3 front and side strips, with the rear floor stubs on the subfloor and P5, P7 and the rear corner uprights extended 0.75 to reach it, no shims, and the Niagra and lighting controllers sit on the subfloor 0.75 lower.

The Amp trays are 24.00 deep with their decks landing at 3.00, the cavity floor. The 10 × 18 floor boot, dashed, sits directly under the Amp, 3.00–21.00 back; 7.40 is left behind the Amp to the 1/2 back panel. The grommet sits in the rear opening, centre 4.50 from the back and 4.00 above the floor.

02 Top supports — plan

79.25 overall



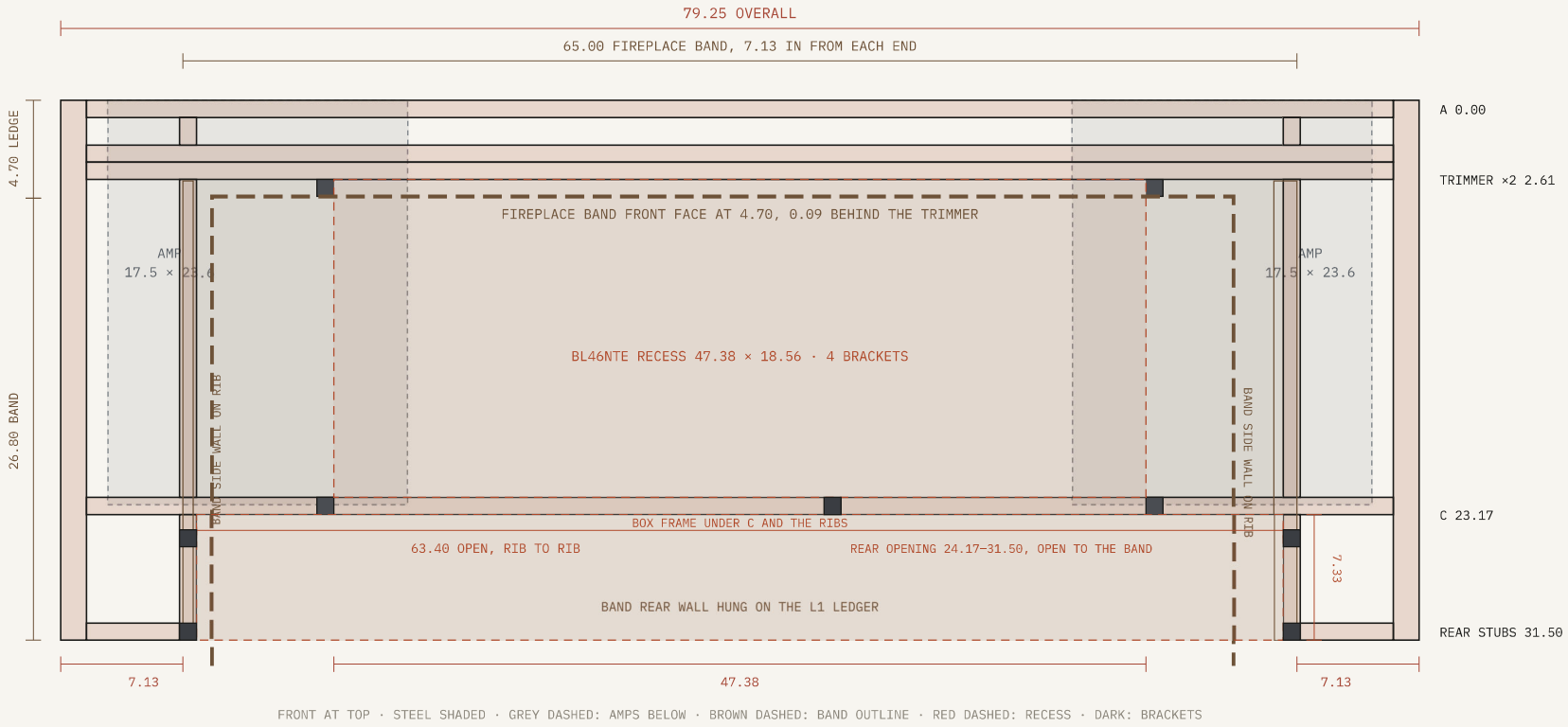
Support A is flush with the front face and takes the top edge laminate. The ladder is five 1 × 2 members, 76.25 between the side frames: A at 0.00, the doubled trimmer at 2.61–4.61, C at 23.17–24.17 on the box frame posts, and short rear stubs at 31.50 from each side frame to its rib; between the ribs the back is open to the wall. Ribs run front to back at 6.93 and 71.33 under the fireplace band side walls, in segments between the members, with a 1.61 block tying the trimmer to A at each rib.

The recess, 47.38 × 18.56 at 15.94–63.31, is open down to the fireplace base at 17.53. There are no floor supports: the BL46NTE is carried on four steel brackets at its sides, each a 1 × 1 hanger welded to the back face of the trimmer or the front face of C, 1.60 long, with a 1/8 × 1 shoe plate under the unit edge at 17.41, 0.91 over the Amp tops. Behind C the top is open from 24.17 to 31.50 between the ribs, and either side of the recess from 8.25 to 23.17, so base air reaches the band.

Box frame: five 1 × 1 posts, P4, P6 and P11 17.00 long and P5 and P7 17.75 long to the subfloor, stand between the floor frame and the top ladder. P4 and P6 are on the ribs just behind C, at 6.93 and 71.33, 25.05–26.05 back, clear of the Amp rear ties; P11, a single post, is under C at 44.53–45.78, directly in front of AC2, replacing the two posts behind the Power and DAC; P5 and P7 are at the rear ends of the ribs, 6.93 and 71.33, 30.50–31.50 back. There is no bottom rail tying P4, P11 and P6: each post runs to its own 2 × 2 × 1/4 foot plate, lagged to the subfloor, clear of the trays. There are no floor rails between the front and rear posts, so the Niagra stands clear on the floor behind the left Amp.

02A Top supports — bracing with the fireplace band edge

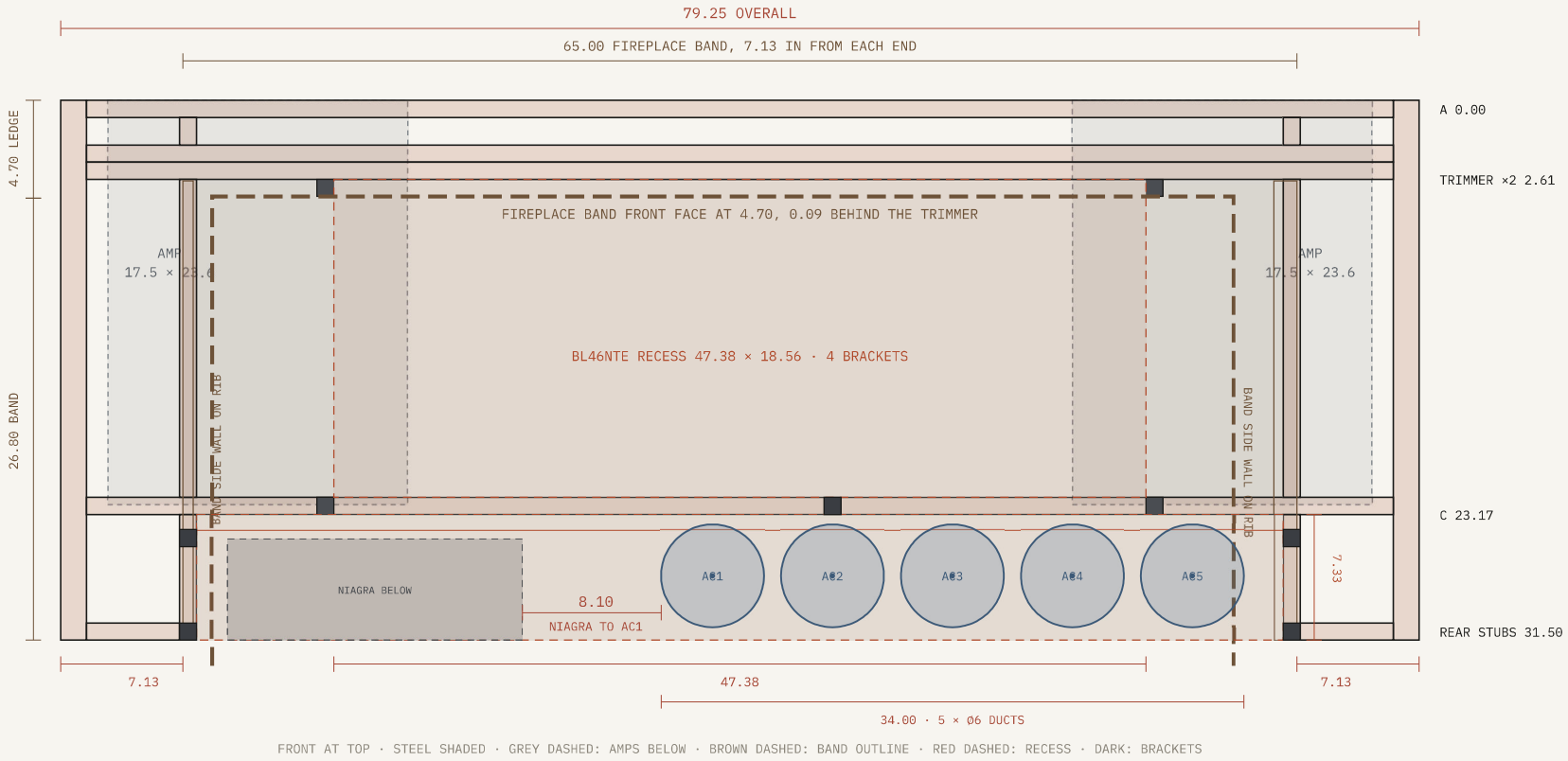
plan, 79.25 overall



The fireplace band, 65.00 × 26.80, stands 7.13 in from each end of the base and 4.70 back from the face. Its front face lands on the doubled trimmer at 2.61–4.61, so the trimmer carries the band front; its side walls sit directly over the ribs at 6.93 and 71.33, which carry them back to A, the trimmer, C and the rib-end posts P5 and P7; between the ribs its rear wall hangs on the L1 ledger, with nothing under it. The 47.38 recess sits inside the band footprint with 6.11 of top each side between the recess and the ribs.

02C Top openings — 6 in AC ducts behind the firebox

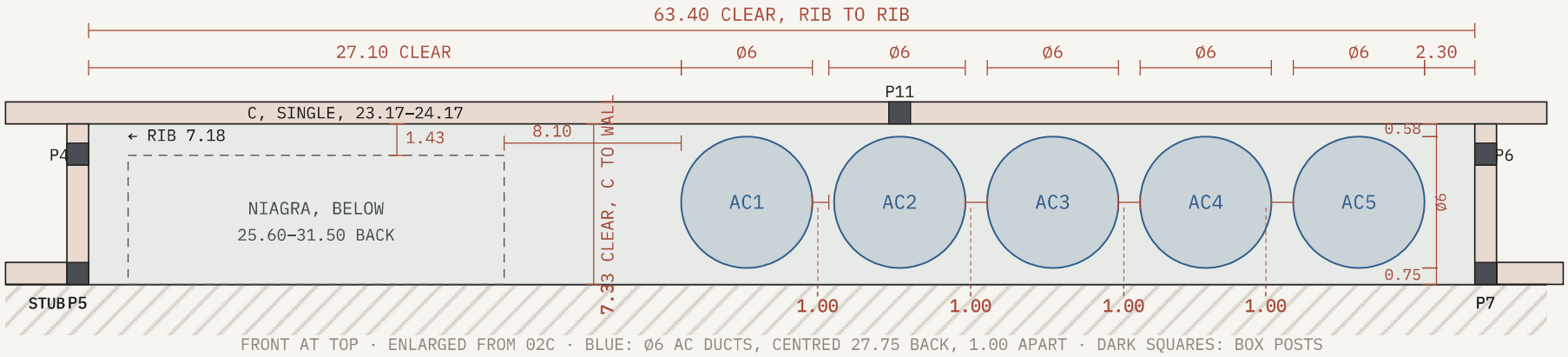
plan, 79.25 overall



Five Ø6 ducts, AC1–AC5, rise from the base into the fireplace band through the rear cut-out behind C, 24.17–31.50 back, now open to the wall, centred at 27.75, 0.58 clear of C at the front and 0.75 clear of the wall at the back. They are packed toward the right, behind the firebox, between 35.03 and 69.03 across, the last 2.30 from the right edge of the opening at 71.33: AC1 to AC5 at 38.03, 45.03, 52.03, 59.03 and 66.03, 1.00 apart, clear of the posts. The left 27.10 of the cut-out, 7.93–35.03, over and beside the Niagra, is left open. Duct area 5 × 28.3 = 141 in².

02C-E **Rear opening, enlarged — C to the wall**

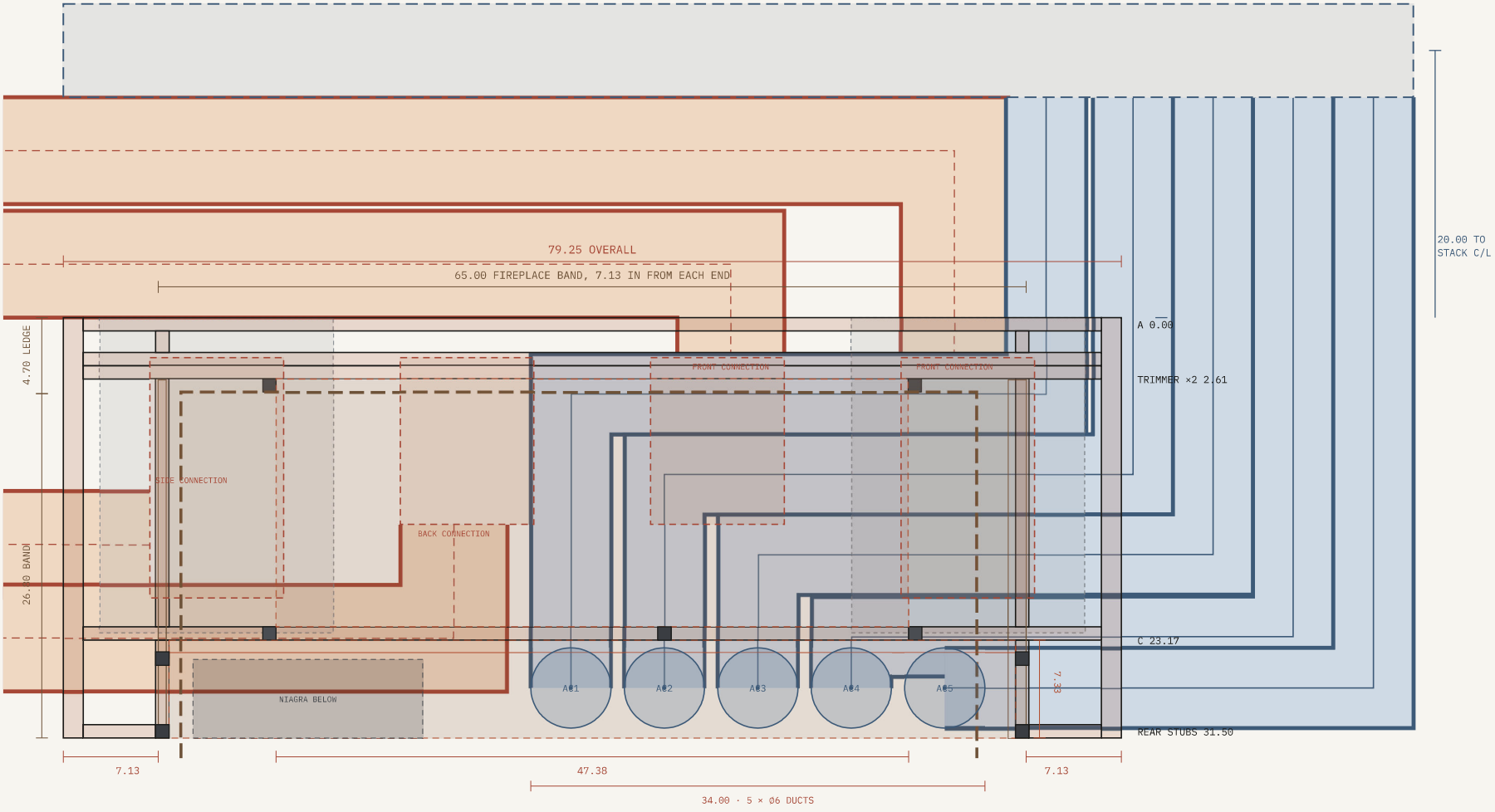
plan, 24.17–31.50 back



The rear opening is 63.40 clear between the ribs and 7.33 clear from the back of C to the wall. Across it: 27.10 open on the left, over and beside the Niagra, then the five Ø6 ducts 1.00 apart, and 2.30 from AC5 to the right rib. Front to back each duct has 0.58 to C and 0.75 to the wall. The Niagra below starts 1.43 behind C and touches the wall; its right side is 8.10 from AC1, and AC5 is 0.58 behind C.

02D Below-floor services — boots, hoses and AC stack

plan, 79.25 overall



FRONT AT TOP · STEEL SHADED · GREY DASHED: AMPS BELOW · BROWN DASHED: BAND OUTLINE · RED DASHED: RECESS · DARK: BRACKETS

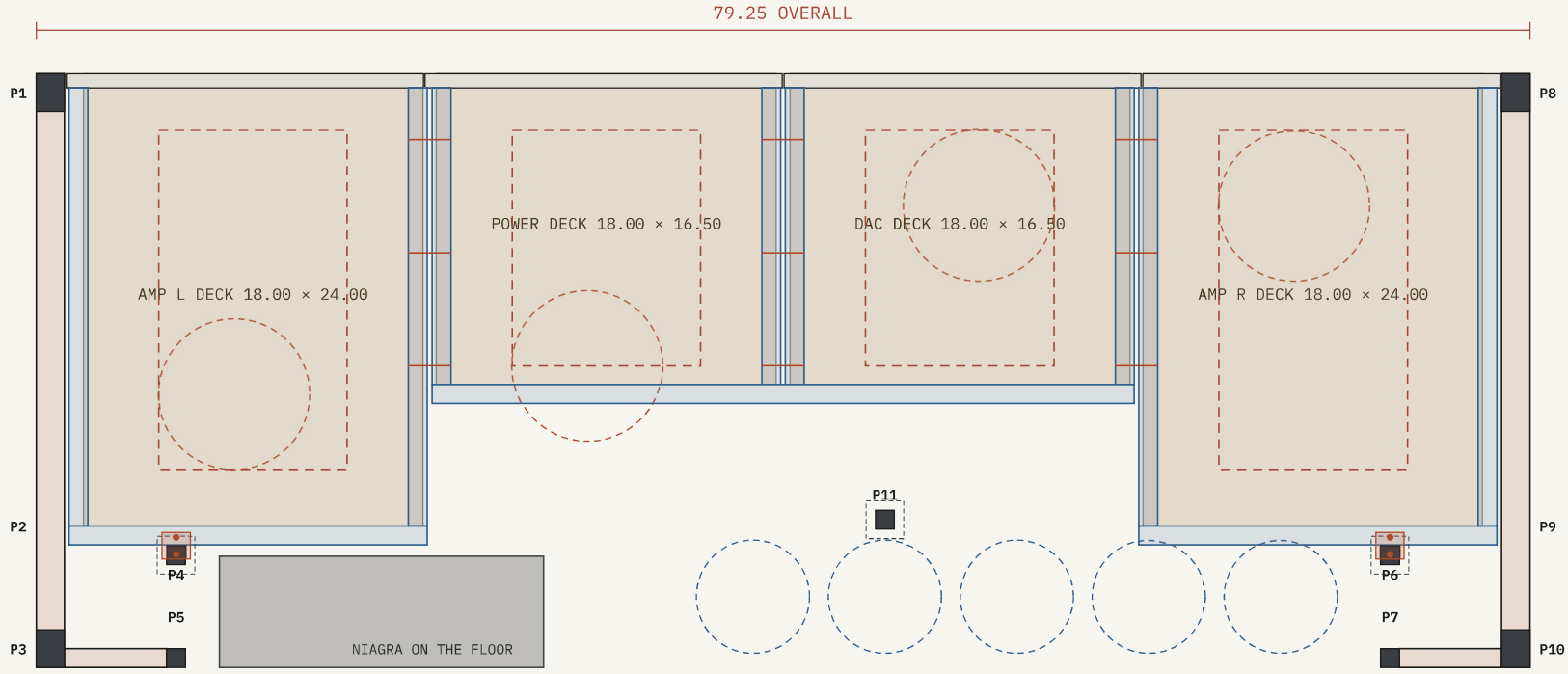
02D · BELOW-FLOOR SERVICES, DRAWN TO WIDTH: ORANGE — FOUR Ø8 HOSES FROM THE BOOTS, EXITING LEFT · BLUE — AC1–AC5, Ø6, RUNNING FORWARD TO THE MAIN STACK

BOOTS 10 × 18 AND 10 × 12.5, ORANGE DASHED · Ø8 HOSES CONNECT TO THE BOOT ENDS (FRONT, BACK OR SIDE), NO TOP COLLARS
ALL FOUR HOSES EXIT LEFT · AMP L FROM ITS SIDE FACE · POWER OUT OF THE BACK OF ITS BOOT, RIGHT BEHIND THE AMP L BOOT
DAC AND AMP R OUT THE FRONT, LEFT IN NESTED LANES BEFORE THE STACK
AC1–AC5 ALL TURN RIGHT IN NESTED LANES AND RUN FORWARD BESIDE THE AMP R AT 74.63 / 80.63 / 86.63 / 92.63 / 98.63
AC STACK, BLUE BAND, C/L 20.00 IN FRONT · SIZE TBC

The 02C plan with the services below the floor added. Each boot, 10 × 18 under the Amps and 10 × 12.5 under the Power and DAC, takes off to an Ø8 hose: the Amp R and DAC boots connect on their front face at 3 back, an end connection with no top collar, so their hoses leave the boot end directly; the Amp L boot connects on its left side face, centred 17 back, an end connection with no top collar, and the Power boot connects on its back face at 15.5, an end connection with no top collar, centred 4 in from its left edge. Each hose, Ø8 and drawn to width, leaves its boot to the left: the Amp L hose connects to the left side face of its boot at 17 back and runs straight out of the left side of the base; the Power hose connects to the back face of its boot at 15.5, leaves the boot end directly, runs back to 25 and then left directly behind the Amp L boot, touching its rear edge at 21 and the Amp L hose, and out of the left side of the base, clear of every AC duct; the DAC hose connects to the front face of its boot and runs straight forward out of the front of the base, then left in the inner lane, centred 5.5 in front of the face, 2 clear of the Amp R hose, clear of the AC ducts; the Amp R hose connects to the front face of its boot and runs straight forward out of the front of the base, then left in the 16.5 between the base face and the main AC stack, in the outer lane against the stack, centred 13.5 in front of the face, clear of the AC ducts and leaving to the left; so no hose crosses another hose. All five AC ducts run forward side by side to the right at 74.63, 80.63, 86.63, 92.63 and 98.63: AC1 over the right side of the Amp R boot, AC2 straddling the base edge, AC3 to AC5 outside it. Each turns right in its own lane, nested so none crosses another: AC1 at 5.75, parallel to AC2 and in front of it, passing over the DAC and Amp R connectors at the front of their boots; AC2 at 11.75, under the DAC and Amp R boots, 1.75 behind the DAC hose and just in front of AC3's lane; AC3 at 17.75, just behind AC2's lane and passing under the DAC and Amp R boots; AC4 at 23.9, just behind the Amp R boot; AC5 at 29.9, just behind its collar, so the AC4 and AC5 lanes touch without overlapping. The stack extends to 101.63 to meet them. The only ducts under a boot are the AC2 and AC3 lanes, under the DAC and Amp R boots; no hose passes under the stack. Their run beyond the base to the T8 fans is to be confirmed. The five Ø6 AC ducts, AC1–AC5, drop from the rear cut-out and run forward under the floor at Ø6 the whole way, beneath the trays, to the main AC stack, which runs side to side 20.00 in front of the base face, measured to its centre line; the stack's size and where it runs beyond the base are to be confirmed. Routing is schematic: hose lengths and bends are set on site. Running forward to their lanes, AC1 passes 0.28 clear of the Power boot's right side, and AC2 and AC3 run under the DAC boot, AC2 4.03 into its left side; the ducts run below the boot bottoms, so these crossings are accepted.

02B Floor — trays, rails and boots

plan at the floor



REAR FLOOR STUBS 5.43, SIDE FRAME TO P5 / P7; OPEN BETWEEN THE RIBS TO THE WALL

DASHED: Ø8 BOOT COLLARS AND Ø6 AC DUCTS FROM 02D; HOSE AND DUCT RUNS ARE SHOWN ON 02D

RAIL PAIRS PER TRAY, WELDED REAR TIES, RAILS BOLTED TOGETHER THROUGH 1/4 SPACERS, NO FRONT TIE · FACE PLATES FLUSH WITH P1 · SEE 02B-T

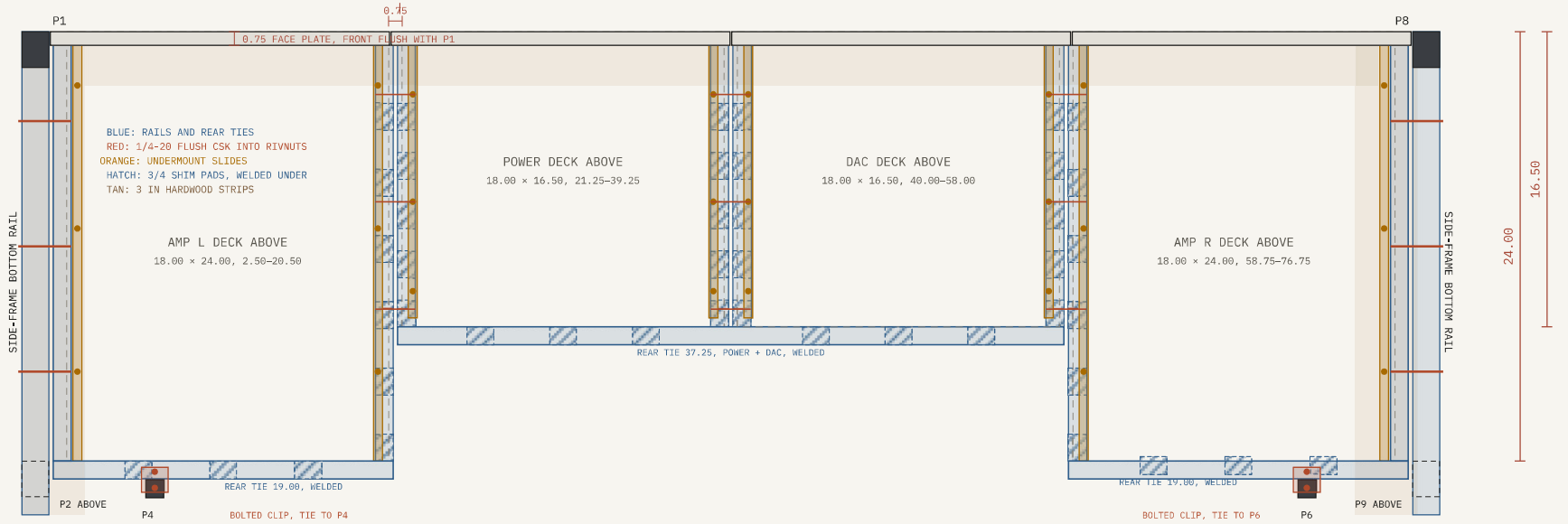
The tray assembly follows 02B-T. Four 18.00 decks, 0.75 apart and 1.00 from each side frame, at Amp L 2.50–20.50, Power 21.25–39.25, DAC 40.00–58.00 and Amp R 58.75–76.75, each with a 0.75 face plate flush with the front of P1. Each deck has its own pair of 1 × 2 rails, starting 0.75 back behind the face plate: 23.25 long under the Amps, at 1.75/19.75 and 58.50/76.50, and 15.75 under the Power and DAC, at 21.00/38.50 and 39.75/57.25. Each pair is welded into a U by a rear tie, 19.00 for each Amp pair at 24.00–25.00, and one 37.25 tie across all four Power and DAC rails at 16.50–17.50, so those two bays are one frame. The Amp R rails stop at 23.75 and its tie sits at 23.75–24.75, clear of the AC ducts. There is no front floor tie and the inner rails are not welded to the frame: neighbouring rails, 0.25 apart, are bolted through 1/4 spacers with three rail-to-rail bolts in each gap, at 2.5–4.5, 8.5–10.5 and 14.5–16.5 back, and only the two outer Amp rails, shown blue, bolt to the side-frame bottom rails through 1/4 spacers. Inner rails and ties stand on 3/4 shim pads over the subfloor recess (shown on 02B-T). Undermount slides sit on the rail tops. The four floor boots sit between each tray’s two rails, under its perforated deck. The Niagra stands on the floor behind the left Amp at 9.73–26.93 and 25.60–31.50, its plug panel facing the Power. There is no box frame base rail: P4, P6 and P11 each stand on their own 2 × 2 × 1/4 foot plate, lagged to the subfloor, shown dashed. P4 and P6 sit on the ribs at 25.05–26.05, just behind the Amp rear ties, and each is bolted to its tie by an angle clip (red), and P11 stays under C at 44.53.

Posts are numbered on the plan: P1–P3 and P8–P10 are the side-frame uprights, P4–P7 and P11 the box frame posts described under 02, 1 × 1 × 14 ga, set under the 1.00 deep C and the rib ends.

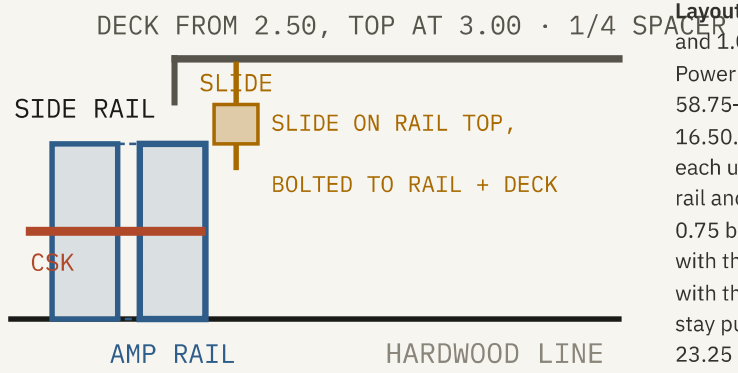
02B-T Tray assembly — rail pairs with welded rear ties, outer Amp rails bolted to the side frames

All four trays shown

PLAN AT THE FLOOR · ALL FOUR BAYS



SECTION AT THE LEFT EDGE · LOOKING FROM THE FRONT



Layout from Base top: four 18.00 decks, 0.75 apart and 1.00 from each side frame: Amp L 2.50–20.50, Power 21.25–39.25, DAC 40.00–58.00, Amp R 58.75–76.75; Amps 24.00 deep, Power and DAC 16.50. A 1 × 2 rail runs under each deck edge, and each undermount slide sits on its rail top, bolted to rail and deck. **Recessed:** the rails and slides start 0.75 back, behind each tray's 0.75 face plate, so with the tray closed the face plate front sits flush with the front of P1 at 0.00. The rear ends and ties stay put, clear of the Niagra, so the Amp rails are 23.25 and the Power and DAC rails 15.75. **Outer Amp rails** at 0.75 and 77.00 sit on the 3 in hardwood strips, 0.25 off the side frames, and bolt to them through 1/4 spacers at 5, 12 and 19 back.

Inner rails at 19.75, 21.00, 38.50, 39.75, 57.25 and 58.50 are not welded to the base frame. Each Amp pair is welded into a U by a 19.00 rear tie; the four Power and DAC rails share one 37.25 rear tie at 16.50–17.50, so the two bays come out as one frame. Neighbouring rails are 0.25 apart and bolted together through 1/4 spacers, evenly spaced along the Power and DAC rails at 2.5–4.5, 8.5–10.5 and 14.5–16.5 back. Every rail and tie over the 0.75 subfloor recess stands on 3/4 shim pads welded underneath. The Amp L and Amp R rear ties are each bolted to the box frame post behind them, P4 and P6, by a 1 × 1 × 1/8 angle clip, 1.50 long, bridging the gap, 0.05 at P4 and 0.30 at P6: one bolt into a rivnut in the tie top and one into the post face. This braces the post feet and anchors the rail set at the back; undo the two clip bolts to take an Amp assembly out. The Amp R rails stop at 23.75 and its tie sits at 23.75–24.75, clear of the Ø6 AC ducts, whose front edge is at 24.75. All bolts are 1/4-20 flat countersunk into rivnuts, heads flush.

05 Panel infill and trays

1.00 / 1.00 thick · flush both faces

PANEL	QTY	SIZE
Side frame — front bay	2	22.00 × 17.00
Side frame — rear bay (grommet)	2	3.50 × 17.00
Back shear panel, 1/2 birch, screwed 4 o.c.	2	39.88 × 21.00
Tray deck — Amps, 16 ga perforated steel, 3 Fenix-faced MDF front edge	2	18.00 × 24.00
Tray deck — Power + DAC, 16 ga perforated steel, 3 Fenix-faced MDF front edge	2	18.00 × 16.50
Bottom face plate — four tray fronts	4	18.95 × 2.00 × 0.75
Full-extension slides, 250 lb	4	2 pr 24 in, 2 pr 16 in
Ø3.00 cable grommet	2	side-frame rear panels

Side-frame openings are closed with 1.00 MDF built up from 1/2 sheets on a full adhesive bed, flush with both faces of the tube. The back is two 1/2 birch shear panels on a centre stile, screwed at 4 o.c.; they brace the base against racking and make the boots draw air across and down through the trays. The 2.00 face plate is split by 3/32 gaps at 20.59, 39.63 and 58.66, one 18.95 front per deck, flush with P1 into four tray fronts.

BOTTOM TIER · BASE

Base Frame — Cut List

Cut list for the welded base frame on A1: 1" × 2" 14 ga tube except the side frames, 1.5" × 2" uprights and 1" × 1.5" rails, and the doubled trimmer in 11 ga; box posts 1" × 1" 14 ga. Lengths in inches.

SHEET	A1 · cut list
UNITS	inches
MATERIAL	1 × 2 × 14 ga, trimmer 11 ga
REV	D · 05 OCT 26

03 Cut list

PART	QTY	LENGTH	TOTAL
Upright — side frame front corners, 1.5×2	2	21.00	42.00
Upright — side frame rear corners, to subfloor, 1.5×2	2	21.75	43.50
Upright — side frames, intermediate, 1.5×2	2	18.50	37.00
Upright — side frames, mid, at 12, 1.5×2	2	18.50	37.00
Rail — side frames, top + bottom, 1×1.5	4	29.50	118.00
Top member — A, C, 1×2 × 14 ga	2	76.25	152.50
Rear stub — side frame to rib, 1×2 × 14 ga	2	5.43	10.86
Trimmer, doubled — 1×2 × 11 ga	2	76.25	152.50
Trimmer block — at the ribs, 1×2	2	2.61	5.22
Box post — P4, P6, P11, 1×1 × 14 ga	3	19.50	58.50
Angle clip — Amp rear tie to P4 / P6, 1×1×1/8	2	1.50	3.00
Box post — P5, P7, to subfloor, 1×1 × 14 ga	2	17.75	35.50
Top rib — segments, 1×2	2	28.00	56.00
Rear floor stub — side frame to P5 / P7, 1×2	2	5.43	10.86
Tray rail — Amp L pair, from 0.75 back, 1×2	2	23.25	46.50
Tray rail — Amp R pair, 0.75–23.75, clear of the AC ducts, 1×2	2	23.00	46.00
Rear tie — Amp rail pairs, welded, 1×2	2	19.00	38.00
Tray rail — Power + DAC pairs, from 0.75 back, 1×2	4	15.75	63.00
Rear tie — Power + DAC, one piece across four rails, welded, 1×2	1	37.25	37.25
Shim pad — 3/4 × 1 flat bar, under inner rails and ties	44	1.50	66.00
Foot plate — P4, P6, P11, 2 × 2 × 1/4 plate	3	2.00	6.00
Back stile — centre panel joint, 1×2	1	17.00	17.00
Fireplace bracket hanger — 1×1 × 11 ga	4	1.60	6.40
Fireplace bracket shoe — 1/8 × 1 flat bar	4	3.00	12.00

STOCK REQUIRED, 1×2 × 14 ga	**40.22 ft**
STOCK REQUIRED, 1.5×2 × 14 ga	**13.46 ft**
STOCK REQUIRED, 1×1.5 × 14 ga	**9.83 ft**
STOCK REQUIRED, 1×2 × 11 ga	**12.71 ft**
STOCK REQUIRED, 1×1 × 14 ga	**7.83 ft**

BOTTOM TIER · BASE

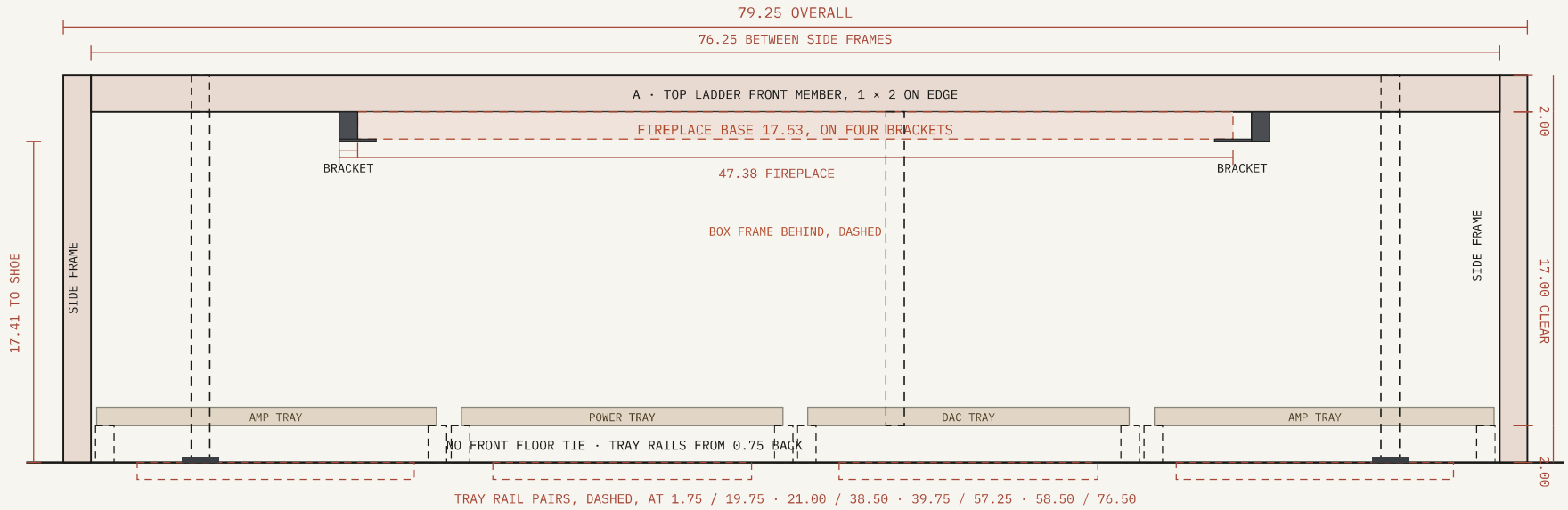
Base Frame — Bracing Views

The welded steel only, from the front and from the side: side frames, top ladder, tray rail U-frames and the fireplace brackets. Laminate, infill and the top panels are omitted; chassis are shown only where they locate a member.

SHEET	A1b
UNITS	inches
MATERIAL	1 × 2 × 14 ga, trimmer 11 ga
REV	D · 05 OCT 26

01 Front view — looking at the face

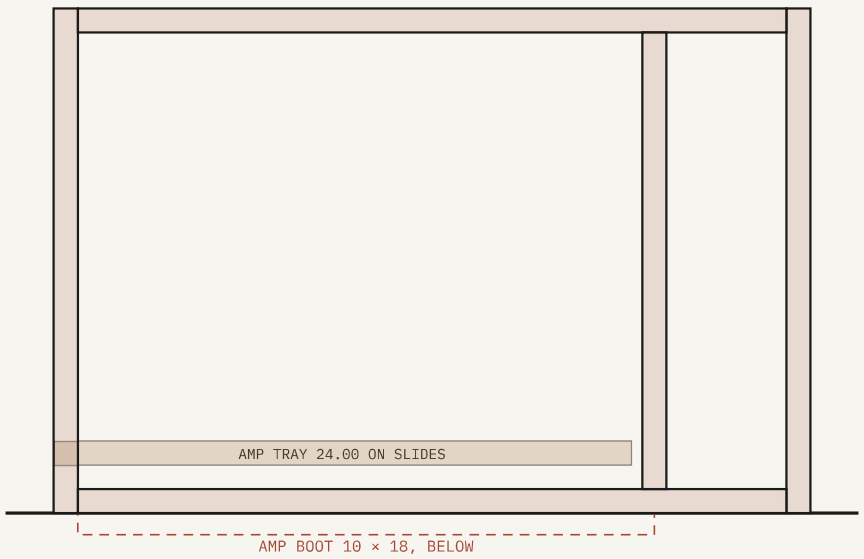
hidden members dashed



Solid: the two side frames, and top member A along the front edge, which make the face frame of the opening; there is no front floor tie. Dashed behind them: the eight 1 × 2 tray rails, in pairs per tray welded into U-frames by rear ties, and the ribs at 6.93 and 71.33 under the top. The four fireplace brackets, dark, hang from the doubled trimmer just behind A and from C at the back; their 1/8 shoes sit at 17.41 under the unit edges, 0.91 over the Amp tops. Nothing else crosses the 17.00 clear opening, so all four trays slide straight out.

02 Side view — left side frame

front at left



03 What braces what

Side frames carry everything to the floor: 2.00 deep corner uprights, top and bottom rails, and one intermediate upright at 24.00–26.00, with bonded 1.00 MDF infill in both openings acting as a shear web.

Top ladder, five 76.25 members welded flat and dropped onto the side frames, ties their tops together: A at 0.00, the doubled trimmer at 2.61–4.61, C at 23.17–24.17 on P11 and on the ribs, which stand on P4 and P6 just behind it, and short rear stubs at 31.50 from each side frame to its rib; between the ribs the back is open to the wall, shown here in section.

Floor: there is no front floor tie. Each tray has its own pair of rails from 0.75 back, 23.25 under the Amps and 15.75 under the Power and DAC, welded into U-frames by rear ties, one 37.25 tie shared by the Power and DAC; neighbouring rails are bolted directly together, and the two outer Amp rails bolt to the side-frame bottom rails. P4, P6 and P11 stand on their own lagged foot plates.

Racking side to side is resisted by the two 1/2 birch back shear panels on the centre stile, screwed at 4 o.c. to the side frames, and along the top to a wood cleat on the wall between the ribs; front to back by the side-frame infill.

Fireplace brackets: 1 × 1 hangers, 1.60 long, welded to the back face of the trimmer and the front face of C, each with a 1/8 × 1 shoe under the unit edge.

BOTTOM TIER · BASE

Base Frame — Load Capacity

Maximum capacity against current load, by member, 1 × 2 × 14 ga tube with the doubled trimmer in 11 ga and 1 × 1 × 14 ga box posts, no inner frames. Preliminary hand calculation — not a stamped engineering result.

SHEET	A2 of 4
METHOD	ASD, elastic
STEEL	A500 Gr B
REV	D · 05 OCT 26

00R Revised check — 1 × 2 × 14 ga, trimmer 11 ga, box posts 1 × 1 × 14 ga

MEMBER	SPAN	LOAD PATTERN	MAX lb	CURRENT lb	USE	CAP
A, front edge	77.75	uniform, top panel + items	227	28	12%	OK
Trimmer, doubled, 11 ga, blocked to A	77.75	band front at the two ribs plus the front brackets, shared by 3 tubes	1,201	533	44%	OK
C, single, on box posts	36.60	uniform, rib reactions + rear brackets	1,099	417	38%	OK
Rear stubs, side frame to rib	6.18	rib-end posts and side frames	ledger	—	—	OK
Fireplace bracket, each	1.60	hanger + 1/8 shoe, quarter of the fireplace	144	42	29%	OK
Upright, 1.5 × 2 × 14 ga at 21.00	—	axial	>9,000	<300	<5%	OK
Box post, 1 × 1 × 14 ga, P4–P7, P11	16.50	axial	>7,000	<100	<2%	OK

1 × 2 × 14 ga on edge: I = 0.238 in^4, S = 0.238 in^3, against 0.321 for 11 ga. Over the 77.75 span between side-frame centres the L/360 limit, 0.22, governs every 14 ga member: 227 lb spread, so A is at 12 per cent. The doubled trimmer stays in 11 ga, 1,201 lb, because at 14 ga it would be at 60 per cent under the off-centre bracket loads. The fireplace band front, about 332 lb at 5.1 lb/in over 65, comes down at the two ribs, 6.93 and 71.33, close to the side frames. The doubled trimmer, blocked to A at the ribs, takes the band front plus half the fireplace through the two front brackets, 533 lb across three tubes now D1 is removed, 44 per cent. C, a single tube carried on box frame posts P4, P11 and P6, takes the other half through the rear brackets plus the rear row: 228 lb against 2,540 at 14 ga over its longest span, 36.60 clear from P4 to P11: 417 lb against 1,099 at L/360 (bending allows 1,436), 38 per cent, deflection governing; the 25.80 span from P11 to P6 is lighter. At 11 ga it would take 1,480. The box posts, 1 × 1 × 14 ga and 17.00 long, carry under 100 lb each against over 7,000 in compression. Each bracket carries a quarter of the 168 lb fireplace, 42 lb; the 1/8 × 1 shoe, loaded 0.50 out from the hanger, is good for 144 lb, 29 per cent. Everything passes. Load shares are estimates from the band perimeter loads in 06.

The by-member table below summarises 00R with the wall ledgers and studs added.

MEMBER	MAX CAPACITY, LB	CURRENT LOAD, LB	CAP
A, front edge, 77.75 span	227	28	OK
Trimmer, doubled, 11 ga, blocked to A	1,201	533	OK
C, single, on box posts	2,540	228	OK
Fireplace bracket, each	144	42	OK
Upright, 1.5 × 2 × 14 ga at 21.00	>9,000	<300	OK
Box post, 1 × 1 × 14 ga, P4–P7, P11	>7,000	<100	OK
Wall ledger L2, TV band rear wall	1,200	327	OK
Wall ledger L1, fireplace band rear track	1,200	46	OK
Wall stud, worst, from L1 + L2	3,150	97	OK

Max capacity is the lower of the L/360 deflection and bending limits for the tube, under each member's own load pattern. Current load is the planned dead load landing on it. CAP is TRUE where the current load exceeds the max. With the wall ties, 373 lb of the band rear walls hangs on the wall studs. Calculations, other gauges, the tie detail and recommendations are on the Load capacity planning sheet.

BOTTOM TIER · BASE

Load Capacity Planning

Planned loads, member capacities by tube gauge, load path and recommendations behind the A2 summary. Preliminary hand calculation — not a stamped engineering result.

SHEET	A2 calculations
METHOD	ASD, elastic
STEEL	A500 Gr B
REV	D · 05 OCT 26

00 Planned load against capacity, by member · 79.25 W base, no inner frames, from 00R on A2

lb · 1 × 2 tube · capacity = L/360 or bending, whichever is lower

MEMBER	SPAN	PLANNED LOAD	PLANNED	14 GA	Δ	USE	11 GA	Δ
A, front edge	77.75	top panel and items	28	227	+199	12%	305	+277
Trimmer, doubled, blocked	77.75	band front at the ribs plus the front brackets, three tubes	533	891	+358	44%	1,201	+668
C, single, on box posts	36.60	rear brackets, rib reactions	417	1,099	+682	38%	1,480	+1,063
Fireplace bracket, each	1.60	1 × 1 hanger, 1/8 × 1 shoe, quarter of 168	42	144	+102	29%	144	+102
Upright, 1.5 × 2	21.00	axial	<300	>9,000	>+8,700	<5%	>13,800	>+13,500
Box post, P4–P7, P11, 1 × 1	17.00	axial	<100	>7,000	>+6,900	<2%	>9,000	>+8,900
Whole top, if spread evenly	**—**	**reference only: 638 less 373 to the wall**	**265**	**1,656**	**+1,388**	**16%**	**2,288**	**+2,020**

Base 79.25 × 31.50 × 21.00 on 1 × 2 × 14 ga side frames and a five-member top ladder, with the doubled trimmer in 11 ga and 1 × 1 × 14 ga box posts, no inner frames. Use is now read from the 14 ga column except for the trimmer. Band loads from 06, taken down the band walls round their bearing perimeter. With the wall ties in 08–09, 373 lb of the rear walls hangs on the wall studs and no member is over capacity.

01 Assumptions

Fy = 46 ksi, allowable bending Fb = 0.6 Fy = 27.6 ksi, E = 29,000 ksi. All top members and ribs are 1 × 2 × 14 ga on edge except the doubled trimmer, which is 11 ga; box posts are 1 × 1 × 14 ga, spanning 77.75 between side-frame centres; each span is taken as simply supported, deflection $5qL^4/384EI$ and moment $qL^2/8$. Welded corners are treated as pinned, so the figures are conservative by roughly 1.5–2×. Static load only: no seismic, impact or eccentric loading.

02 Load path and where it fails first

Top → A at 0.00, the doubled trimmer at 2.61–4.61, C at 23.17–24.17 on the box frame posts, and short rear stubs at 31.50 from each side frame to its rib; between the ribs the back is open to the wall, with ribs at 6.93 and 71.33 under the band side walls → side-frame top rails → four corner and two intermediate uprights → floor. The trays bear on four rail pairs, one per tray, each welded into a U by a rear tie and standing on shim pads; the Amp pairs bolt to the side frames and to P4 and P6. The fireplace hangs from the trimmer and C on four brackets, so it puts nothing on the floor or the trays.

The doubled trimmer governs at 44 per cent, then the fireplace bracket shoes at 29 per cent; C, on four box posts, is at 9 per cent; every member passes. The narrower base shortens every span from 94.50 to 77.75, which raises each member’s capacity by about half, and the band front now lands at the ribs near the side frames instead of mid-span. If the installed fireplace comes in above 168 lb, the shoes are the first thing to check: a 3/16 shoe takes 323 lb each.

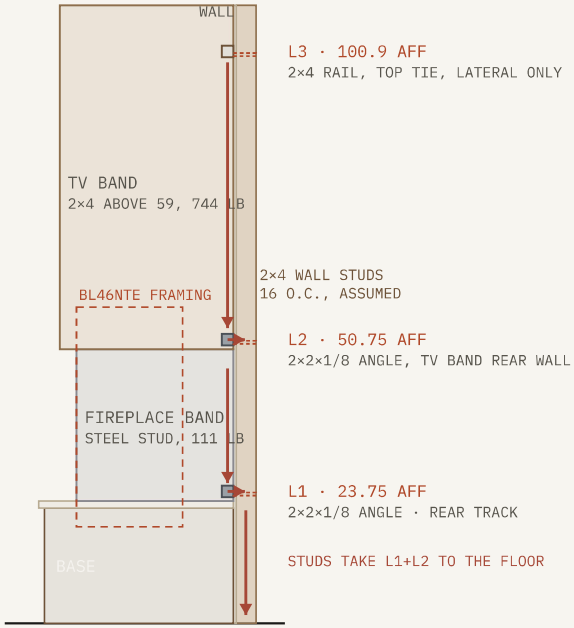
06 Dead load from the bands, finishes and TV

lb

ITEM	WHERE	QUANTITY	LB
TV band · 61.25 H × 74 W × 28.79 D			
Cement board, 1/2 in, skimmed and painted	front less recess, both sides, above 59.88	36.1 ft² × 3.0 psf	108
Cement board, 1/2 in, painted to match	48.75–59.88 non-combustible strip	8.0 ft² × 3.0 psf	24
Cement board, soffit	TV band underside past the fireplace band, front and both sides	2.7 ft² × 3.0 psf	8
Recess lining and top, 1/2 cement board	recess and top	31.8 ft² × 3.0 psf	95
Steel stud framing, 20 ga	above 59: front and side studs 16 o.c., track, recess box	90 lf × 0.65 lb/ft	59
Steel stud framing, 20 ga	48–59, non-comb. zone	25 lf × 0.65 lb/ft	16
Fasteners, mud, paint	5 per cent		15
Frame TV, 51 × 30, slim mount	confirm model		40
TV band subtotal			366
Fireplace band · 27.75 H × 65 W × 26.80 D			
Slate tile, 3/8 in, with thinset	front less opening, both sides	16.4 ft² × 7.0 psf	115
Cement board backer, 1/2 in	behind the slate	16.4 ft² × 3.0 psf	49
Steel stud framing, 20 ga	perimeter, piers, header	62 lf × 0.65 lb/ft	40
Fasteners, finish			5
Fireplace band subtotal			**209**
Top of the base			
Top panels, 3/4 Fenix-faced MDF	4.70 front ledge × 79.25 and two 7.13 × 26.80 end returns, none under the band	5.0 ft² × 2.5 psf	13
Allowance for items on the top			50
Total on the base top	through the band walls and top panels		638
BL46NTE with its vent	on the four brackets, checked separately	158 + 10	168

Areas from the elevation: TV band front 74 × 61.25 less an assumed 53 × 32 TV recess; firebox opening 44.5 × 21 at 24.88–45.88 AFF, so the 14 in non-combustible zone runs to 59.88. TV band framing counted from the 74 × 28.79 × 50.25 frame above the non-combustible zone, 90 lf; the soffit is the 1.99 front strip and the 4.5 side overhangs. Unit weights are typical published values. The TV band is 1/2 cement board, skimmed and painted, on all faces; the fireplace band is clad in 3/8 slate on cement board. The TV band is built entirely of non-combustible material: 20 ga steel studs and track, cement board sheathing and recess lining, steel ledgers; it is painted, with no laminate.

08 Wall ties — section



Section at the rear wall, front at left. Ledgers shaded grey are steel, inside the non-combustible zone; L3 is wood. Red dashed: lag line into the studs. Ledger heights are unchanged; only their lengths shrink with the bands.

09 Wall ties — load transfer

lb

MEMBER	WHERE	LOAD	LB	MAX	USE	BASIS
L1, fireplace band rear track	23.75 AFF, 65 long, 4 studs	0.70 lb/in × 65	46	960	5%	2 lags per stud × 120 lb
L2, TV band rear wall	50.75 AFF, 65 long, 4 studs	5.03 lb/in × 65	327	960	34%	2 lags per stud × 120 lb
L3, top tie	100.9 AFF, 74 long	lateral only	0	1,200	0%	1 lag per stud × 300 lb withdrawal
Wall stud, worst	one of four	(46 + 327) / 4, plus eccentricity	97	3,150	3%	2×4 SPF No. 2, 8 ft, sheathed
Rear stubs, side frame to rib	5.55	top panel edge outside the ribs	1	>9,000	<1%	1 × 2 × 11 ga, from 00R on A2

Lags 1/4 × 4 in SPF through 1/2 in drywall, about 120 lb each in shear with a steel side plate and 300 lb in withdrawal. Behind a 65 band there are four studs at 16 o.c.; add 2 × 6 flat blocking wherever a ledger end falls between studs, metal-faced or fire-treated behind L1 and L2. Confirm the stud layout before fixing.

NOTE: preliminary hand calculation, not a stamped engineering result. Have a licensed engineer review if the stand carries people or is anchored.

BOTTOM TIER · BASE

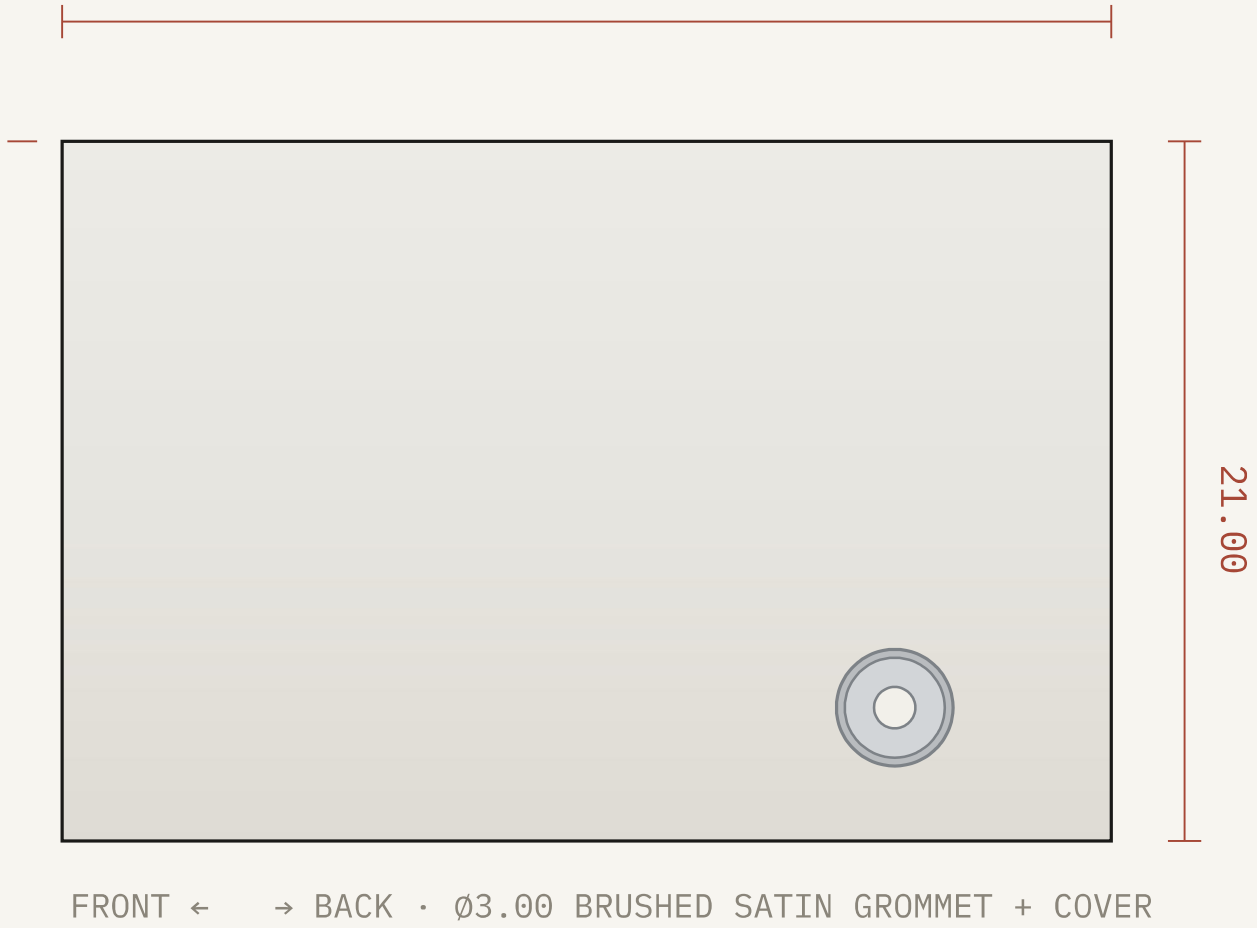
Finished Views

Fenix NTM Bianco Dover (0757) by Arpa Industriale over every face, inside and out, top included. Steel and MDF both disappear under a continuous supermatt surface.

SHEET	A3 of 4
LAMINATE	Fenix NTM Bianco Dover 0757
FINISH	supermatt, Arpa Industriale
REV	D · 05 OCT 26

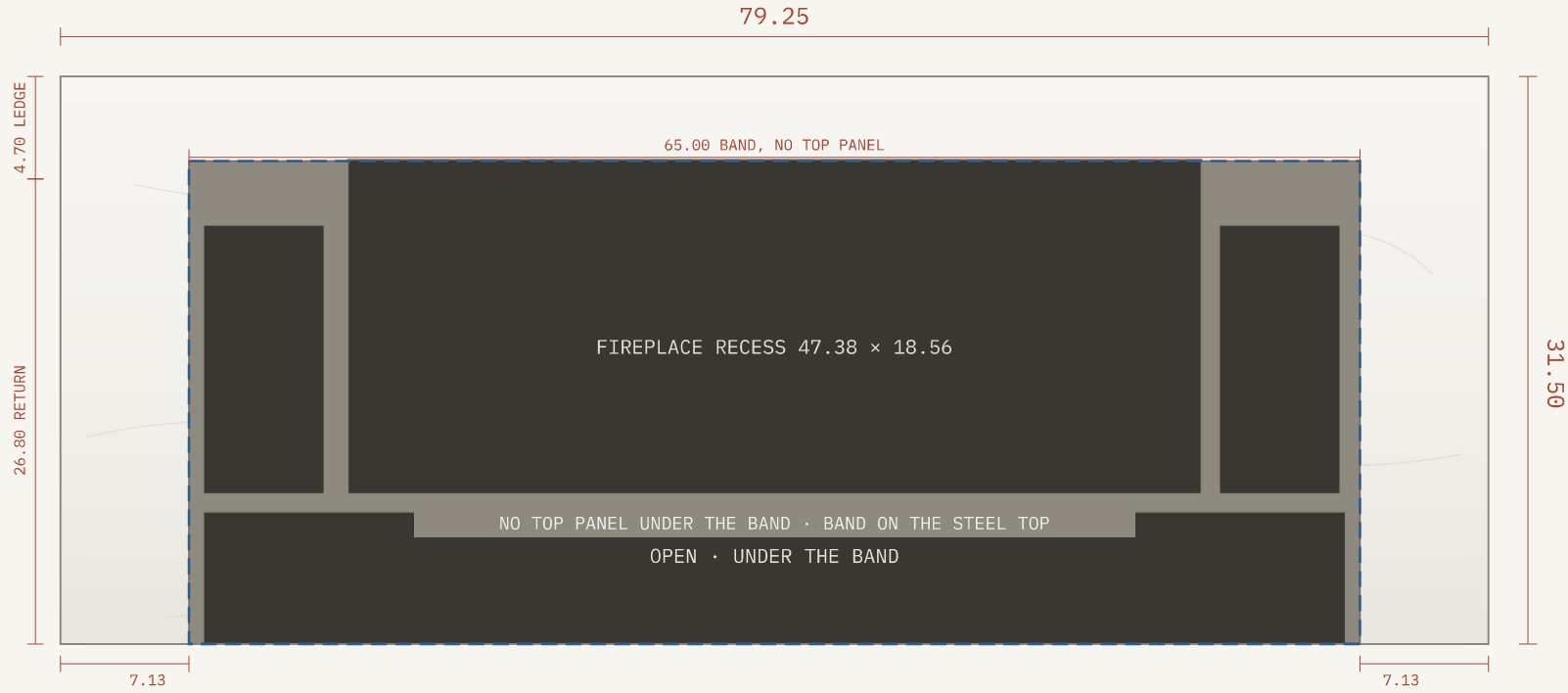
01 Side view — finished

outside face · Fenix NTM, no grain



02 Top view — Fenix top panels

Fenix NTM on 3/4 MDF, flush with the steel



BACK · FENIX-FACED MDF TOP PANELS: 4.70 FRONT LEDGE AND 7.13 END RETURNS ONLY

FIREPLACE BAND OUTLINE, DASHED BLUE · 65.00 × 26.80 AT 7.13–72.13

03 Finish schedule

Fenix NTM Bianco Dover (0757), Arpa Industriale's supermatt warm white nano-tech laminate, over every visible surface — outside faces, every interior face including the inner face of the back panel and a Fenix-faced soffit under the top, face plates and all exposed tube edges; the perforated tray decks and the steel inside the bay are powder coated to match. Because the MDF inserts finish flush with the steel, the laminate crosses from panel to frame without a step, so the finished base reads as one solid white block rather than a clad frame. The surface is anti-fingerprint and soft to the touch; light scratches can be repaired with heat. The top is finished outside the fireplace band only, in 3/4 Fenix-faced MDF top panels flush with the steel: a 4.70 front ledge across the full 79.25 and a 7.13 return at each end. Under the band there is no panel; the band walls sit on the steel top.

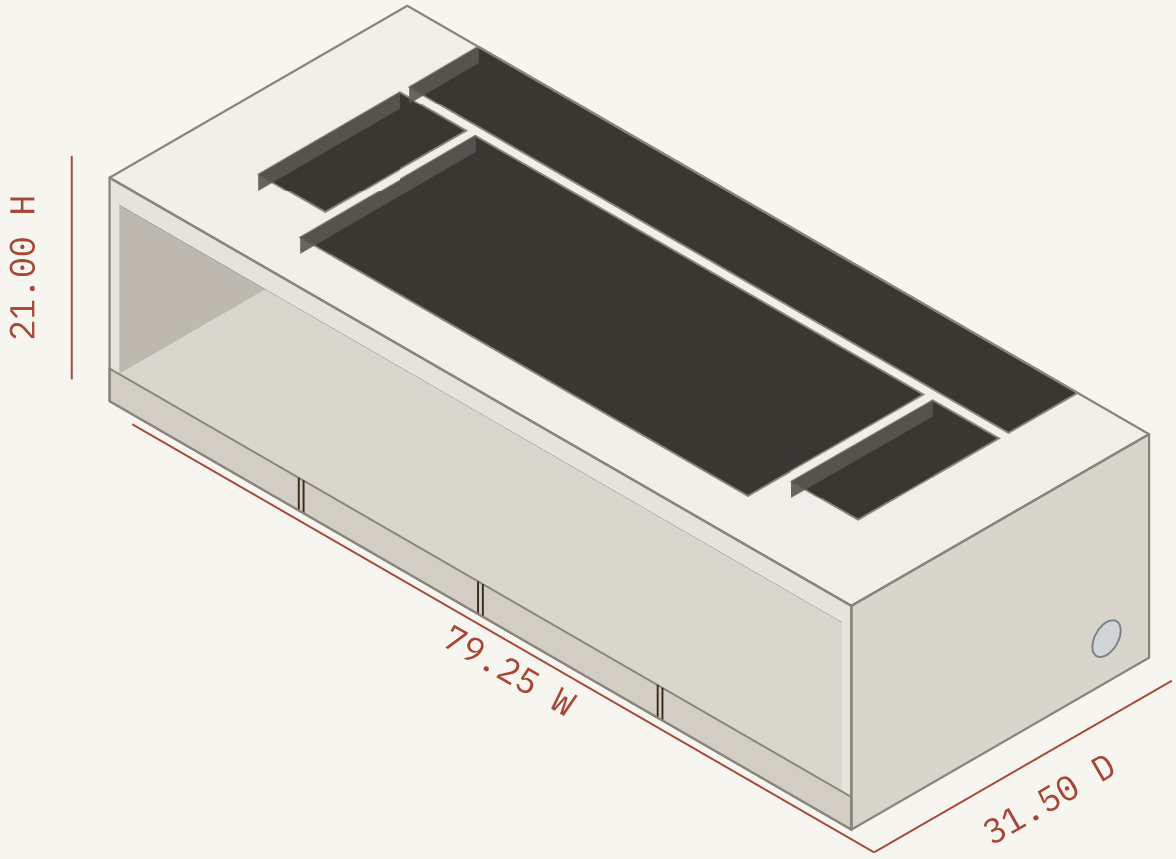
Laminate both faces of every insert, or use Fenix balancing backer — one-sided lay-up cups.
No grain: cut panels in any direction, but keep the factory sheet orientation on adjoining faces for an even matt sheen.
Edges: mitre the outside corners, or band them in matching Fenix Bianco Dover edge tape; avoid exposed dark core.

BOTTOM TIER · BASE

Completed Assembly — 45° View

Axonometric projection from 45° to the side and 35° down, drawn to true dimension. Finished in Fenix NTM Bianco Dover, all inserts fitted, the trays and floor boots omitted for clarity; the top is shown in Fenix with the recess, the side strips and the rear opening between the ribs, open to the wall

SHEET	A4 of 4
VIEW	front-right, above
PROJ	45° / 35.26°
REV	D · 05 OCT 26



01 What the view shows

79.25 wide, 31.50 deep and 21.00 high overall. The 2.00 bottom face plate runs the full width, split by 3/32 gaps at 20.59, 39.63 and 58.66, one 18.95 front per deck, flush with P1 into four sliding tray fronts, one per chassis, each on its own pair of full-extension slides; above it one bay, 76.25 wide with no inner frames, is open from the 3.00 tray decks to the underside of the top at 19.00. The fireplace recess, 47.38 × 18.56, drops into the top from 4.61 behind the face, centred; the rear row is open between the ribs, under the band, and either side of the recess.

Projection is true axonometric — all three axes measure at the same scale.
Face tones indicate orientation only, not a lighting study.

02 Reading the drawing

Lightest face — top, with the recess and rear openings dark
Mid face — front frame edges and top rail
Darkest face — right side, 31.50 × 21.00
Recessed tones — bay interiors, decks at 3.00
Band — 2.00 bottom face plate in four sliding 18.95 tray fronts, 0.75 thick, 3/32 gaps at 20.59, 39.63 and 58.66, flush with P1
Deep recess — fireplace recess in the top, unit base at 17.53

> **NOTE:** this is a drafted projection, not a rendered image — no real light, shadow or surface texture.

TRAYS — BASE — 79.25 × 21 × 31.5

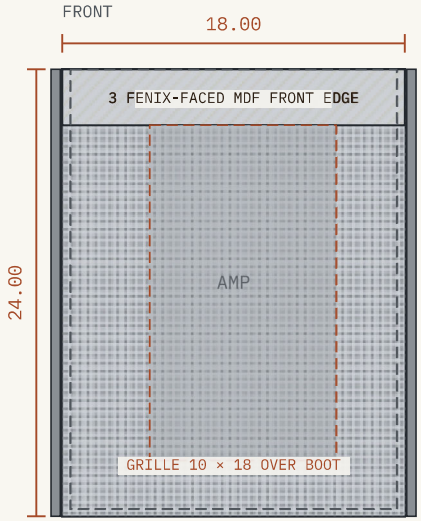
four sliding trays, perforated steel with a 3 in Fenix-faced MDF front edge · Niagra on the floor behind the left Amp · 2 bottom face plate · inches unless noted

2a Amp trays · 2b Power + DAC trays · 2c tray folds

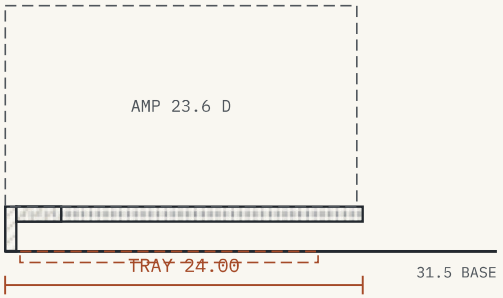
2a AMP TRAYS

2 off · 18.00 × 24 · perforated steel on slides

PLAN · CHASSIS DASHED



SECTION



FRONT AT LEFT · DECK TOP AT 3.00 · FACE PLATE HANGS BELOW, 0–2.00

1. Deck 16 ga perforated steel, 1/2 square holes on 9/16 centres, about 75 per cent open, 18.00 × 24.00, formed with 1.5 flanges down both sides and across the back and two 1.5 hat ribs across under the chassis feet; the front 3.00 is a solid Fenix-faced MDF edge, 1 thick, flush with the steel. On a pair of 24 in full-extension slides rated 250 lb, mounted under the deck to the tops of its two 23.25 rails, welded into a U by a 19.00 rear tie (see 02B).

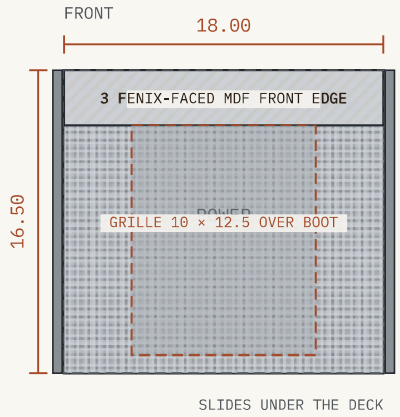
2. Top at 3.00, the cavity floor. The 18.95 tray front, 2.00 high and 0.75 thick, flush with P1 when closed, screws to the Fenix-faced MDF edge and closes the face plate.

3. The Amp sits flush with the front, 23.6 deep. The perforated deck sits over the 10 × 18 floor boot at 3.00–21.00 back; behind the 3.00 Fenix-faced MDF edge the deck over it, 3.00–21.00, is the 10 × 18 grille, 75 per cent open, about 135 in²; 7.40 is left behind the Amp for cables.

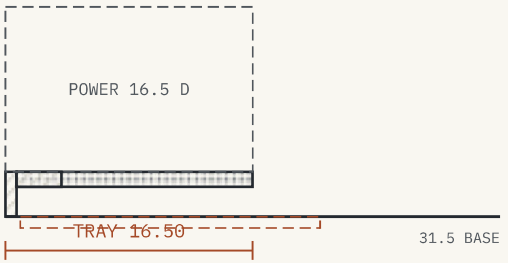
2b POWER + DAC TRAYS

2 off · 18.00 × 16.5 · perforated steel on slides

PLAN · CHASSIS DASHED



SECTION



FRONT AT LEFT · DECK TOP AT 3.00 · FACE PLATE HANGS BELOW, 0–2.00

1. Deck 16 ga perforated steel as 2a, 18.00 × 16.50, cut to the chassis depth, with the same 3.00 Fenix-faced MDF front edge, on a pair of 16 in full-extension slides rated 250 lb, mounted under the deck to the tops of its two 15.75 rails, welded with the DAC (or Power) pair into one frame by a shared 37.25 rear tie (see 02B).

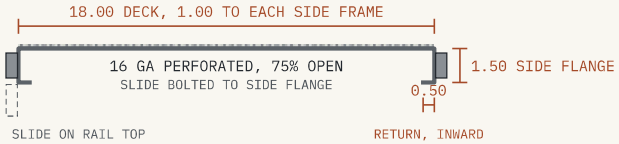
2. The Power and DAC, 16.5 deep, fill the tray front to back; their connectors hang off the back of the tray, so leave cable slack before sliding it out.

3. The perforated deck sits over the 10 × 12.5 floor boot at 3.00–15.50 back; behind the 3.00 Fenix-faced MDF edge the deck over it, 3.00–15.50, is the 10 × 12.5 grille, 75 per cent open, about 94 in². The bay behind the tray is clear to the back panel, 14.5; the Niagra now stands behind the left Amp.

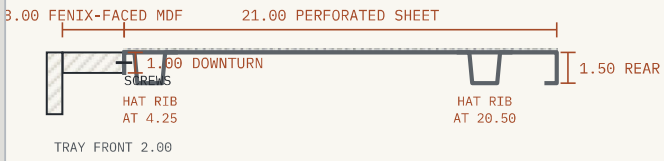
2c TRAY FOLDS

all four decks · 16 ga perforated steel

SECTION ACROSS THE TRAY · LOOKING FROM THE FRONT



SECTION FRONT TO BACK · AMP TRAY, FRONT AT LEFT



1. Blank: one sheet of 16 ga (0.060) perforated steel, 1/2 square holes on 9/16 centres, with a 1.5 solid unperforated margin along every fold line so the bends do not crack through the holes.

2. Side flanges: folded down 90° to 1.50 along both long edges, then a 0.50 return folded inward at 90°. The slides bolt to the outside of the flange through three holes each side; the return stiffens the flange edge.

3. Rear flange: folded down 90° to 1.50 across the back with the same 0.50 return. Corners are notched before bending and welded or riveted closed.

4. Front downturn: folded down 90° to 1.00 at 3.00 back. The 3.00 × 1 Fenix-faced MDF edge sits in front of it, flush with the steel top, screwed through the downturn at 4 per tray; the 2.00 tray front screws to the Fenix-faced MDF edge.

5. Hat ribs: two 16 ga hats, 1.50 deep with 1.50 crown and 0.50 flanges, spot-welded under the sheet across the full width, under the chassis feet at 4.25 and 20.50 back on the Amp trays and 4.25 and 13.00 on the Power and DAC trays. Confirm foot positions on the chassis before welding.

6. All bends 90°, inside radius 1t (1/16). Powder-coat after fabrication.

LOAD CHECK · TRAY DECKS AND SLIDES

TRAY	SPAN	LOAD	SAG, LONG	LIMIT L/360	STRESS
2a Amp, 154 lb	18.5	77	0.006	0.051	5,090
2b Power, 119 lb	18.5	60	0.005	0.051	3,970
2b DAC, 93 lb	18.5	47	0.004	0.051	3,110
Slides, Amp tray	—	164	—	250	66%

Inches, lb, psi. Each chassis is taken half on its front feet and half on its rear, as a point load at mid-span across the tray. Load is taken on a 16 ga hat rib, 1.5 deep, I about 0.06 in⁴, spanning 18.5 between the slides; steel at E 29 million psi, no creep, allowable 21,600 psi. The 75 per cent open sheet carries no load of its own; it only spreads load to the ribs and flanges. Slide load includes a 10 lb tray. Every tray passes; the Amp slides, at two thirds of their rating, govern.

COMMON TO ALL · VENTILATION

All four decks are 16 ga perforated steel, about 75 per cent open, with a 3.00 solid Fenix-faced MDF front edge, tops at 3.00. The four tray fronts make up the 2.00 bottom face plate, split by 3/32 gaps at 20.59, 39.63 and 58.66, one 18.95 front per deck, flush with P1.

The grilles are the perforated deck over each boot: each boot, 10 × 18 under the Amps and 10 × 12.5 under the Power and DAC, draws through the perforation above it, less the 3.00 under the Fenix-faced MDF edge. Air enters at the front between the face plate and the top, passes over and under the chassis on its 1.5 feet and drops through the deck into the boot.

Pull a tray only with its cables slack: the Amp trays have about 6 in of connector allowance behind the chassis, the Power and DAC trays none, as they are cut to the chassis.

MATERIAL COST

Materials estimate

CAD · materials only, no labour

ITEM	QTY	UNIT	TOTAL
STEEL FRAME			
1 × 2 × 14 ga A500 tube · top ladder, ribs, stubs, rails, 39.74 ft needed; 3 × 20 ft sticks	60 ft	$4.60	**$276**
1.5 × 2 × 14 ga A500 tube · side-frame uprights, 13.13 ft; 1 × 20 ft stick	20 ft	$5.40	**$108**
1 × 1.5 × 14 ga A500 tube · side-frame rails, 9.83 ft; 1 × 20 ft stick	20 ft	$3.90	**$78**
1 × 2 × 11 ga A500 tube · doubled trimmer, 12.50 ft; 1 × 20 ft stick	20 ft	$6.15	**$123**
1 × 1 × 14 ga A500 tube · box posts, 8.25 ft; 1 × 20 ft stick	20 ft	$3.20	**$64**
Outer Amp rail bolts · six 1/4-20 bolts, rivnuts in the side-frame bottom rails; slide and deck bolts	lot	$30	**$30**
Shim pads, foot plates, angle clips · 44 shim pads, three 2 × 2 × 1/4 foot plates with lags, two angle clips, rail-to-rail bolts	lot	$45	**$45**
Fireplace brackets, 1 × 1 tube and 1/8 × 1 flat bar · four hangers with shoes	lot	$25	**$25**
Primer, filler, welding consumables	lot	$123	**$123**
TOP PANELS AND TRAYS			
Fenix-faced MDF top panels, 3/4 · 4.70 front ledge and two 7.13 end returns, about 5 ft², none under the band	lot	$95	**$95**
Perforated steel tray decks, 16 ga · 1/2 square holes, 75 per cent open, formed flanges, two hat ribs each	4	$135	**$540**
Fenix-faced MDF tray front edges · 3 × 18.5 × 1, one per deck	4	$18	**$72**
FINISHES			
Fenix NTM Bianco Dover 0757, Arpa Industriale, 1.3 × 3.05 m · base sides, top panels, face plates, tray fronts, all interior faces incl. back panel and soffit, about 54 ft²	2 sheets	$690	**$1,380**
MDF, 1/4, for the soffit under the top · about 9 ft², faced in Fenix	1 sheet	$60	**$60**
Powder coat, matched to Fenix 0757 · four tray decks, rails, posts and fireplace brackets	lot	$160	**$160**
Contact adhesive · and matching Fenix edge tape	lot	$55	**$55**
Fenix-faced MDF for face plates and tray fronts · 79.25 × 2 plate, four tray fronts	lot	$170	**$170**
Drawer slides, full extension · four trays, 250 lb rated	4 pairs	$55	**$220**
Brushed satin cable grommet ø3 with cover · one each side frame	2	$34	**$68**
BANDS			
Cement board, 1/2 in, 3 × 5 · TV band faces and recess lining, skimmed and painted, 68.1 ft²	5 sheets	$22	**$110**
Cement board, 1/2 in, 3 × 5 · fireplace band 16.7 + TV band non-combustible strip and soffit 10.6 ft²	2 sheets	$22	**$44**
Slate tile, 3/8 in · fireplace band front and sides, 16.7 ft² + 10%	19 ft²	$11	**$209**
Thinset and grout · fireplace band slate	lot	$45	**$45**
Tape, mud, primer, paint · incl. full skim of the TV band	lot	$180	**$180**
Steel studs and track, 20 ga 3-5/8, 10 ft · 177 lf, all TV band and fireplace band framing, non-combustible	18	$9.60	**$173**
Wall ledgers L1–L3, angle, 8 ft	3	$27	**$81**
Lag screws 1/4 × 4 in and anchors	30	$2.05	**$61**

MATERIAL COST

Materials estimate

CAD · materials only, no labour

ITEM	QTY	UNIT	TOTAL
EXTRACTION			
Floor duct boots, 8 in collar · 10 × 18 ×2, 10 × 12.5 ×2	4	$58	**$232**
Insulated flex hose, 8 in	50 ft	$4.60	**$230**
Silencers, 8 in · one per hose	4	$120	**$480**
Y splitters, 8 to 8 in · two hoses into one 8 in run, one per T8	2	$70	**$140**
Inline fans, 8 in, with speed controller · T8, one per side	2	$178	**$356**
Discharge silencers, 8 in · one per T8, after the fan	2	$120	**$240**
AC ducts, 6 in, with collars · five runs through the top, A1 02C	5	$33	**$165**
LIGHTING			
Lutron Lumaris tape, RGB + tunable white, 16.4 ft reel · LU-T05-RT-IN; 12.67 ft used, two strips, under A and under the trimmer, each A 40 in + B 36 in	1	$420	**$420**
Lumaris Multi-Channel Wireless Controller · one for segment A, one for B	2	$330	**$660**
Power supply, 24 V, 96 W · feeds both controllers	1	$190	**$190**
Jumper and lead cables, 5-wire · A jumper over B; leads down the left side frame and along the floor to the controllers, about 12 ft	lot	$60	**$60**
Lutron SR2 extrusion with diffuser, 8 ft · two, each cut to 76.00	2	$85	**$170**
Mounting clips and end caps	lot	$35	**$35**
SUNDRIES			
Slim TV wall mount · TV not included	1	$110	**$110**
Fasteners, sundries	lot	$137	**$137**
Subtotal			**$8,220**
Contingency, 10%			$822
Estimated total, before GST/HST and delivery			**$9,042**

Quantities from the cut list, load planning and band sheets. Unit prices are typical retail estimates in Canadian dollars, not quotes. The Napoleon BL46NTE is already owned and excluded; its vent kit is assumed to come with it. The audio components and the Frame TV are not included. Lighting prices are allowances; confirm Lumaris parts and pricing with a Lutron dealer.

NOTES All notes

ELEVATION AND BASE

ELEVATION

- Base 79.25 W × 21 H × 31.5 D, cavity 76.25 W between 1.5 in sides (1.5 × 2 uprights and 1 × 1.5 rails, with the 1.5 in face across the width, a mid upright at 12 in each), one open bay with no inner frames. Amp, Power, DAC and Amp sit 1.25 in apart and 1.25 in from each side: Amp 2.75–20.25, Power 21.5–39, DAC 40.25–57.75, Amp 59–76.5. The Director is removed and the Niagra stands on its side behind the left Amp.
- BL46NTE base at 17.53 AFF, top 56.63, viewing 26.2–45.0, centred in the 44.5 × 21 opening at 24.88–45.88. It drops 3.47 into the base; the Amp tops are 1.03 below its base.
- Fenix-faced MDF top panels finish the base top outside the fireplace band only, a 4.70 front ledge across the full 79.25 and a 7.13 return at each end, flush with the steel; there is no panel under the band; the fireplace band, 27.75 H × 65 W × 26.80 D, sits on it at 21.00–48.75 AFF, and the TV band, 61.25 H × 74 W × 28.79 D, runs to the 110 in ceiling with the TV centre line at 78.
- The unit sits 26.25 from the glass and 39 from the right speaker to the stair; its centre line sits 2.125 toward the glass from the sofa centre line.

BASE

- Four sliding trays at 3 in, each on its own full-extension slides: Amp trays 18.00 × 24, Power and DAC trays 18.00 × 16.5, cut to the chassis. The 2 in bottom face plate is four 18.95 tray fronts, 0.75 thick, with 3/32 gaps at 20.59, 39.63 and 58.66, flush with P1 when closed.
- The 3/4 hardwood floor is removed under the base band from 3 behind the front and 3 in from each side, back to the wall; the side frames and outer Amp rails stay on the 3 hardwood strips at the front and side; the inner rails and rear ties stand on 3/4 shim pads and P4, P6 and P11 on foot plates on the subfloors, height unchanged; at the back the rear floor stubs sit directly on the subfloor, and P5, P7 and the rear corner uprights are 0.75 longer to reach it; no shims. The Niagra, 17.2 along the run × 17.5 high × 5.9 deep, stands on the subfloor in the 0.75 recess behind the left Amp, top 16.75 above the hardwood, 1.80 clear of the P5 leg at 9.73–26.93 and on the floor at 25.6–31.5, touching the wall between the rear floor stubs, its plugs facing the Power.
- The cavity is open from the bottom plate to the underside of the 2 in top at 19.0; the Amps have 2.5 clear above.
- The fireplace is carried on four steel brackets at its sides, hung from the doubled trimmer and C, which sits on the box frame posts; nothing stands under it.
- A box frame of six posts carries C and the rib ends: P4 and P6 under the ribs just behind C, P11 under C in front of AC2, at 44.53–45.53, P5 and P7 under the rear ends of the ribs, at 6.93 and 71.33.80 bottom front rail. C, single, spans 20.00 at most between posts.

FIREPLACE BAND

- **The TV band must be built entirely of non-combustible material**: 20 ga steel studs and track, 1/2 in cement board sheathing and recess lining, and steel ledgers. No wood or MDF. All TV band faces, the soffit and the recess are cement board, skimmed and painted; no laminate.
- Band 27.75 H × 65 W × 26.80 D on the steel top, against the wall, 7.13 in from each end of the base and 4.70 back from its face, leaving a 4.70 ledge. The TV band sits directly on top.
- Opening 44.5 W × 21 H at 24.88–45.88 AFF, 10.25 solid each side, 2.88 above and 3.88 below. The unit front is flush with the band face, with 8.24 behind the framing to the wall.
- The base top is open below the band over the 47.38 × 18.56 recess, either side of it from 8.25 to 23.17, and behind C from 24.17 to 31.50 between the ribs, so base, band and TV band share one void.

SIDE

- Depths 31.5 / 26.80 / 28.79 in. The band sits 4.70 back from the base face and the TV band 2.71.
- End bay: the Amp, 23.6 deep, sits flush with the face; its 10 × 18 boot sits in the floor under it at 3.0–21.0 back. On the left the Niagra stands behind it on the floor, leaving 1.6 from the tray; on the right 7.4 is clear to the back panel.
- Power bay: the Power, 16.5 deep, on its 16.5 tray; its 10 × 12.5 boot under it at 3.0–15.5 back; 14.5 clear behind it to the back panel.
- The fireplace framing drops through the open top from 4.61 to 23.17 back; C at 23.17–24.17, on the box frame posts, carries the rear brackets.

COOLING AND EXTRACTION

- Free front area is the 16.0 opening between the deck tops and the top, net of each chassis face and the fireplace framing: 96 / 113 / 115 / 96 in² across the four bays, 420 in total.
- Four floor boots sit directly under the Amps, Power and DAC, 10 × 18 under the Amps and 10 × 12.5 under the Power and DAC, drawing air down through the perforated steel tray decks above them, behind each deck's 3 in Fenix-faced MDF front edge. Each boot takes off into its own 8 in hose, which leaves the base to the left as in A1 02D and runs through its own 8 in silencer to a splitter, two hoses per splitter, one T8 per side, with a second 8 in silencer on each fan's discharge.
- Heat 737.5 W: Amps 200 each, Power and DAC 150, Niagra 37.5. The left fan takes the left Amp, Power and Niagra, 387.5 W; the right fan the DAC and right Amp, 350 W.
- At 10 per cent fan output every component surface is under 120°F, the left Amp hottest at 113.7°F with the Niagra behind it; run the fans whenever the equipment is on. Fireplace heat is not included.

FRAME A1 · WELD SEQUENCE

1. Cut and deburr all members square; check the 21.00, 19.00, 29.50, 76.25, 23.25 and 15.75 lengths against one story stick.
2. Tack each side frame flat with its intermediate upright at 24.00, diagonals equal within 1/16, then fill welds.
3. Weld the top ladder flat: the five 76.25 members at 0.00, 3.61 and 4.61 (doubled trimmer), 24.17 (C) and 31.50, the trimmer pair welded along its length, the trimmer blocks and rib segments at 6.93 and 71.33.
4. Weld the tray rail pairs: each tray's two rails, starting 0.75 back behind its face plate, into a U with a rear tie — Amp rails 23.25 at 1.75/19.75 and 58.50/76.50 with 19.00 ties at 24.00, Power and DAC rails 15.75 at 21.00/38.50 and 39.75/57.25 with one 37.25 tie across all four at 16.50 — and weld the 3/4 shim pads under the inner rails and ties. There is no front floor tie. Set the U-frames in, bolt neighbouring rails together through 1/4 spacers, bolt the two outer Amp rails to the side-frame bottom rails through 1/4 spacers with three 1/4-20 flat countersunk bolts each into rivnuts, and bolt the Amp rear ties to P4 and P6 with the angle clips.
5. Weld the box frame: three 19.50 posts, P4 and P6 at 6.93 and 71.33 at 25.05 back under the ribs and P11 at 44.53 under C, each on a lagged 2 × 2 × 1/4 foot plate, and two 17.75 posts, P5 and P7, at 6.93 and 71.33 at 30.50–31.50 back on the rear floor stubs; C and the rib ends land on their tops.
6. Stand the side frames on the hardwood strips, outer faces at 79.25; drop the ladder on and weld to the top rails; check diagonals in plan.
7. Weld the four fireplace brackets to the trimmer and C at 14.94 and 63.31, shoes level at 17.41; set the unit on them and check 0.91 over the Amp tops.
8. Weld the two rear stubs, 5.43 each, from the side frames to the rib ends; fix a wood cleat to the wall between the ribs for the top of the shear panels; fit the back shear panels and stile.
9. Grind the top faces flush so the top panels sit flat; wire-brush and prime.

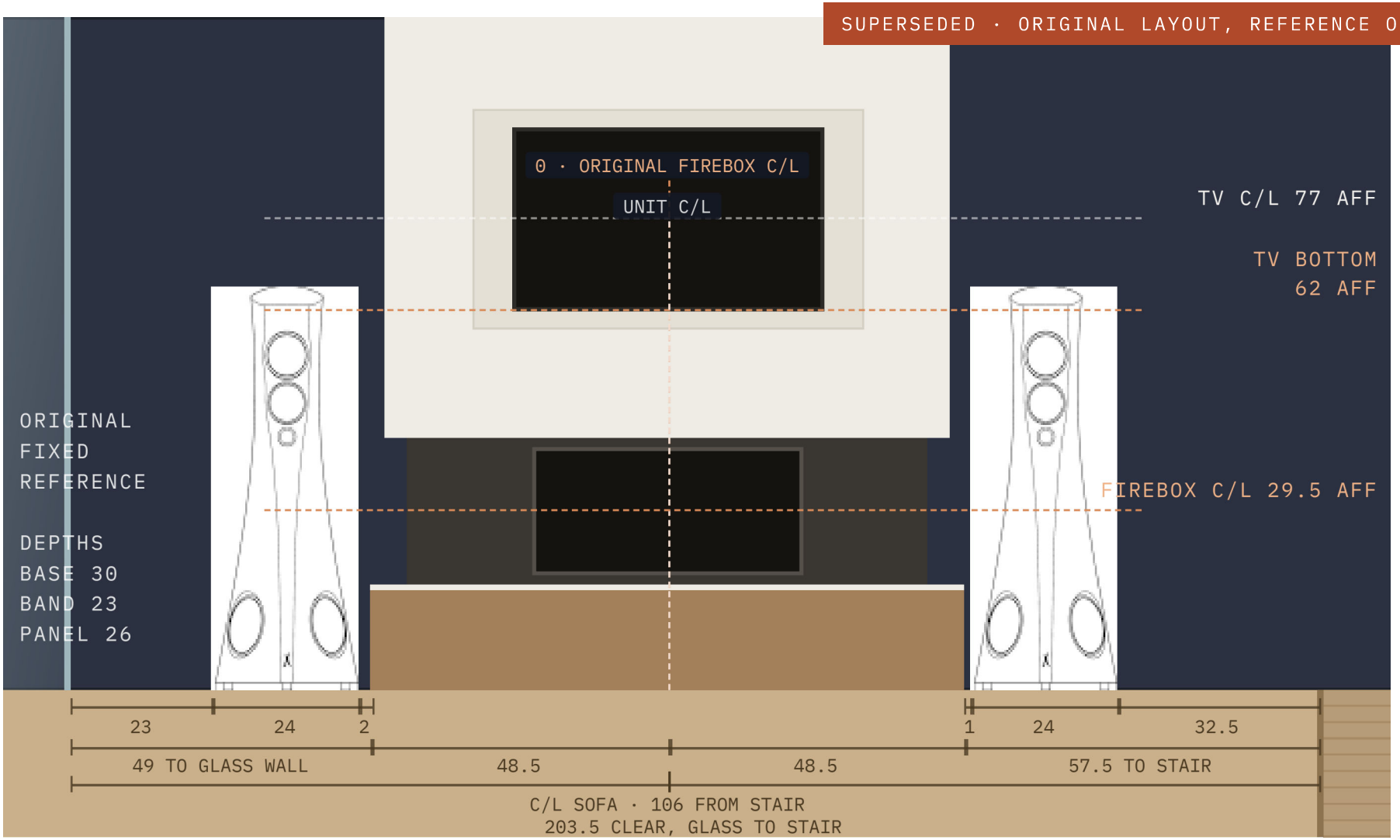
FRAME A3 · FINISHES

- Prime and fill the steel, then skim the weld lines so the laminate has a flat substrate across the joints.
- Fenix NTM over bare steel needs a two-part or solvent contact adhesive; PVA will not hold. Over the MDF inserts use PVA in a press or contact adhesive, per Arpa's guidelines.
- Lay the tube edges before the faces so the face panels cover the edge seam, or mitre the outside corners.
- Finish is Fenix NTM Bianco Dover 0757 by Arpa Industriale, supermatt, no grain. Check a physical sample before ordering.

TRAYS

- Amp trays: 16 ga perforated steel with a 3 in Fenix-faced MDF front edge, 18.00 × 24, on 24 in 250 lb slides; sag 0.006 on the hat ribs
- Power and DAC trays: 16 ga perforated steel with a 3 in Fenix-faced MDF front edge, 18.00 × 16.5, cut to the chassis, on 16 in slides.
- All tray tops at 3.00; tray fronts form the face plate.
- Pull a tray only with its cables slack.

SUPERSEDED · ORIGINAL LAYOUT, REFERENCE ONLY



0 Original

110 in · TV C/L 77 in

AS SUPPLIED — FIXED, NOT TO BE VARIED

TV band	68.5 H × 92.5 W × 26 D	TV	51 W × 30 H, C/L 77 AFF
Fireplace band	24 H × 85 W × 23 D	Firebox	44.5 W × 21 H
Base band	17.5 H × 97 W × 30 D	Glass wall	49 in left of base
Niche inner	64 W × 36 H	Stair down	57.5 in right of base

COMPONENT SCHEDULE — W × H × D

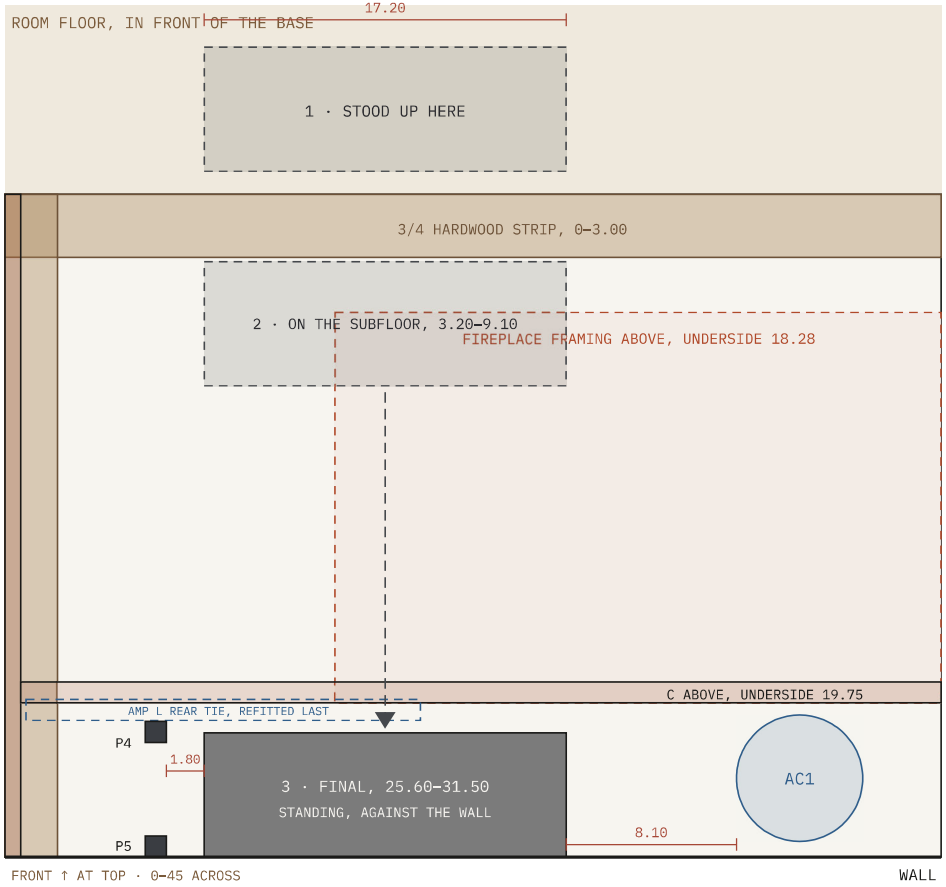
COMPONENT	IN	LB
Amp ×2	17.5 × 11.8 × 23.6	154
Power	17.5 × 9.4 × 16.5	119
DAC	17.5 × 4.3 × 16.5	93
Director	17.5 × 4.3 × 16.5	46
Niagra	17.5 × 5.9 × 17.3	93

Fixed reference, not to be varied. Layers 17.5 + 24 + 68.5 reach the 110 in ceiling; the niche starts 17.5 in above the band with 3 in of reveal above and below the TV and 6.5 in each side.

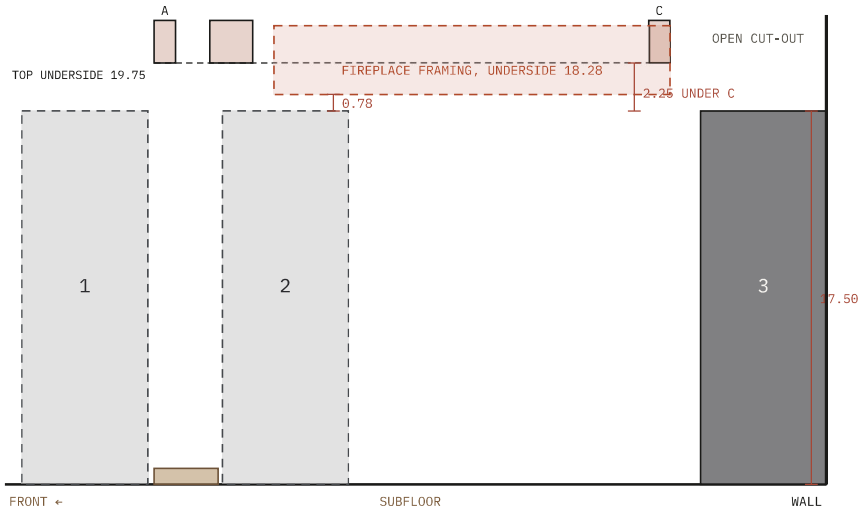
NIAGRA PLACEMENT SEQUENCE

Niagra placement sequence

PLAN · AMP L AND POWER + DAC ASSEMBLIES OUT · DASHED: NIAGRA ON ITS WAY IN, BLUE DASHED: REFITTED LAST



SECTION AT THE NIAGRA, FRONT AT LEFT · HEIGHTS FROM THE SUBFLOOR



WHERE	CEILING	NIAGRA TOP	CLEAR
Under A, on the 3/4 hardwood strip	19.75	18.25	1.50
Under the fireplace framing, on the subfloor	18.28	17.50	0.78
Under C, on the subfloor	19.75	17.50	2.25
Final, under the open cut-out	open	17.50	–

1 **Take the Amp L and the Power + DAC tray assemblies out.** Undo the Amp L clip bolt at P4 and lift each assembly out whole: decks, slides, rails and rear ties; the Power and DAC share one rear tie and come out together as one 37.25 × 17.5 frame, after undoing the bolts to its neighbouring rails. AC1 stays in at 35.03–41.03.

2 **Stand the Niagra up in the room.** Flip it onto its side on the room floor in front of the base, where there is no ceiling: tipped about a bottom edge it peaks at $\sqrt{(5.9^2 + 17.5^2)} = 18.47$. It now stands 17.5 high, 17.2 across and 5.9 deep.

3 **Walk it in standing, at 9.73–26.93 across.** Tip it back slightly so its back edge drops onto the subfloor behind the 3.00 hardwood strip, then walk the front off the strip. It clears A by 1.50 while on the strip, and once on the subfloor it clears the fireplace framing by 0.78 and C by 2.25. Keep it off the strip before its back face passes 5.61.

4 **Push it back to 25.60–31.50, against the wall.** It ends 1.80 from P4 and P5 and 8.10 from AC1, under the open rear cut-out.

5 **Refit the tray assemblies and re-bolt the P4 clip.** The Amp L rear tie at 24.00–25.00 ends 0.60 in front of the Niagra. Set the lighting controllers in the 8.10 gap beside AC1.

There is no tipping inside the cavity. Tipped in place about its front edge at 25.60, its top corner would rise to 18.40 under the fireplace framing at about 67°, 0.12 over its 18.28 underside, so it must go in already standing. Feet and rack ears are not included; add their height if fitted.