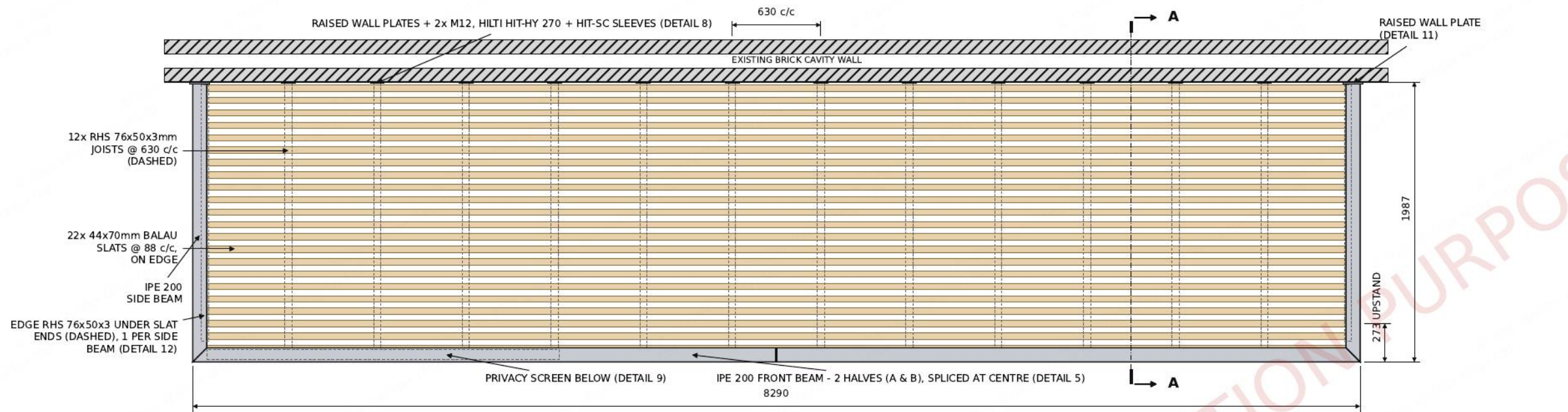
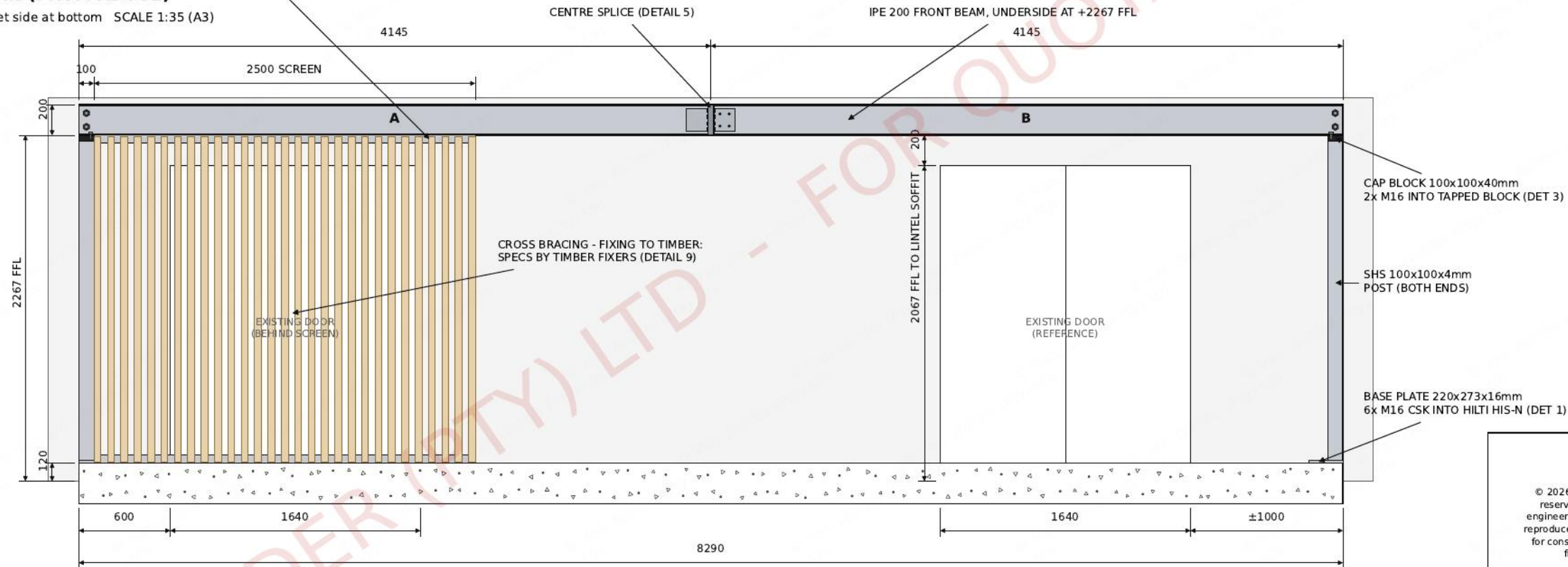




PLAN (FROM ABOVE)

Street side at bottom SCALE 1:35 (A3)



FRONT ELEVATION (FROM STREET)

Balau timber, cladding not shown SCALE 1:35 (A3)

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BALCONY PERGOLA - EXAMPLE DESIGN (GALVANISED, PAINTED MATTE BLACK)

GENERAL ARRANGEMENT - PLAN & FRONT ELEVATION

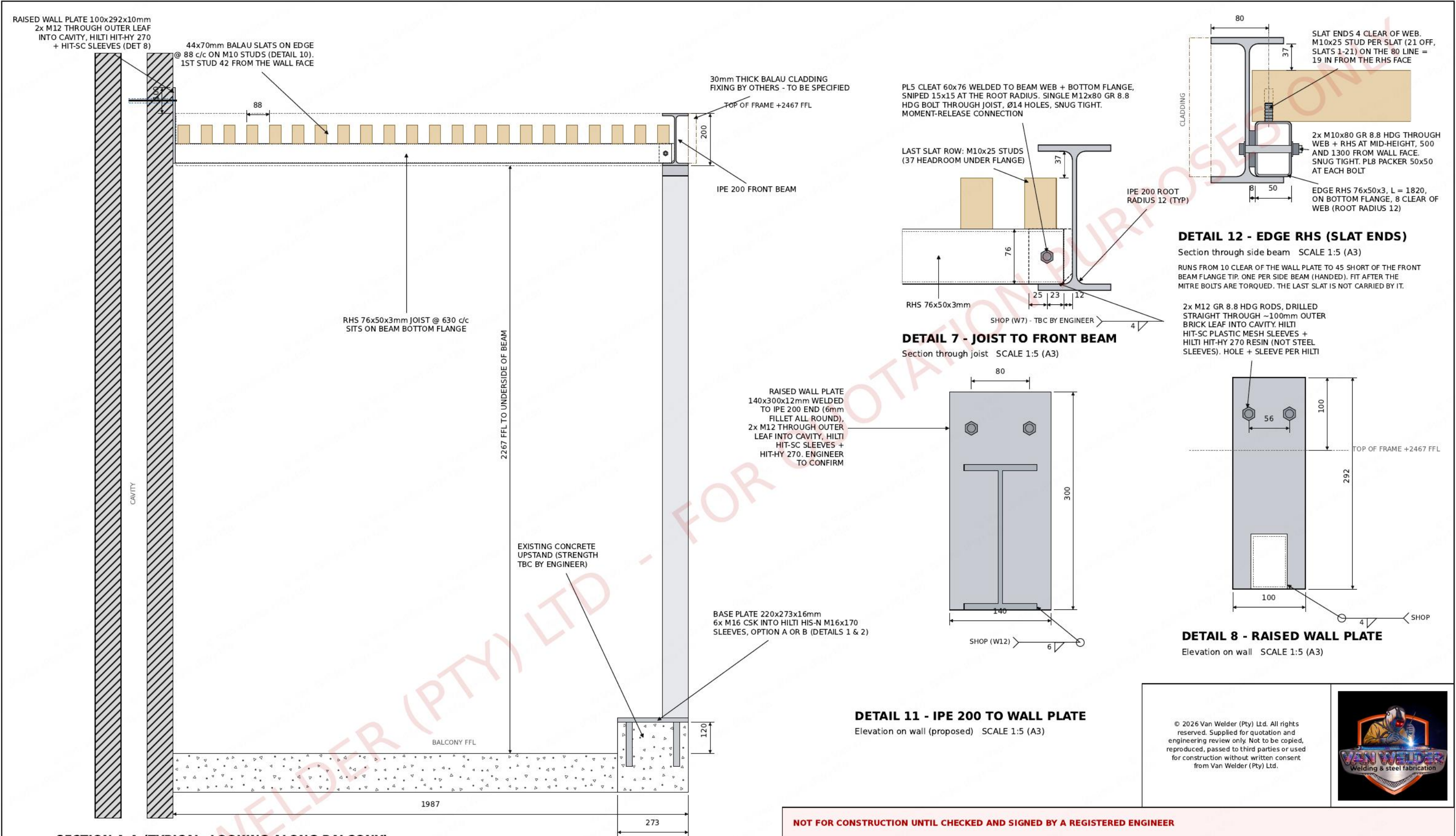
SHEET 1 OF 6

Client / site: withheld - example drawing for illustration

Dimensions in mm. Do not scale.

Fabricator / drawn by: Van Welder (Pty) Ltd | Date: 2026-10-13

REV G - FOR ENGINEER REVIEW



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BALCONY PERGOLA - EXAMPLE DESIGN (GALVANISED, PAINTED MATTE BLACK)

SECTION A-A, JOIST & WALL CONNECTIONS

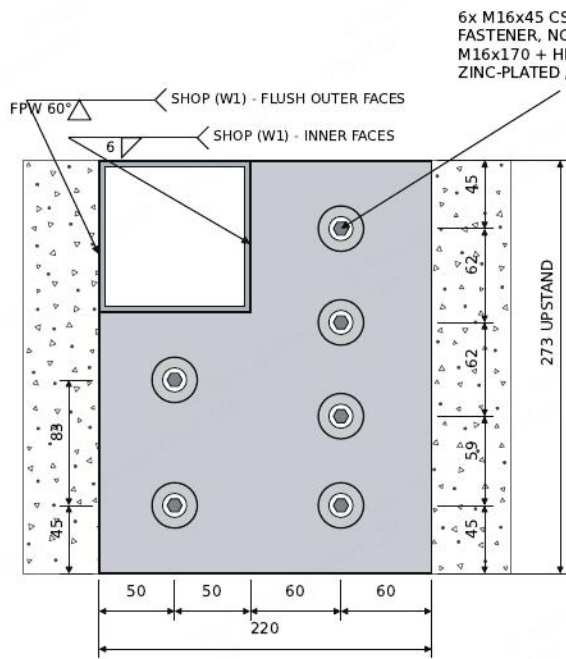
SHEET 2 OF 6

Client / site: withheld - example drawing for illustration

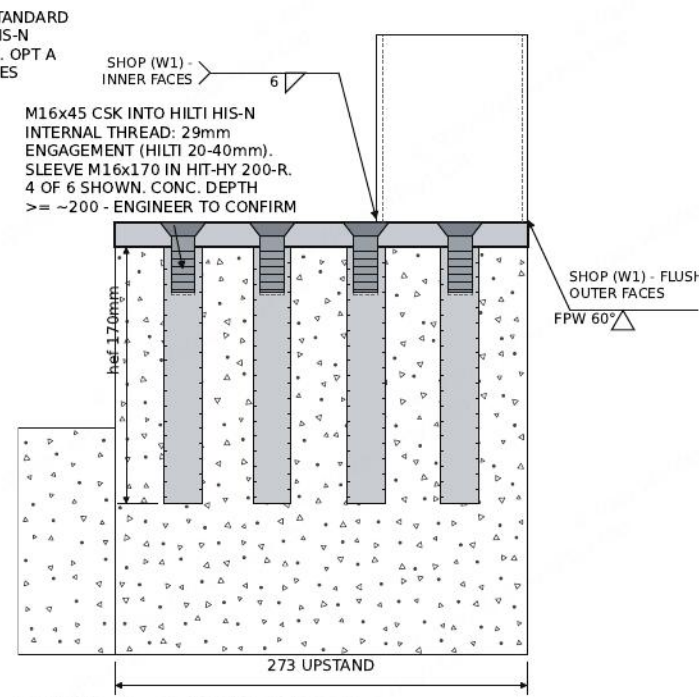
Dimensions in mm. Do not scale.

Fabricator / drawn by: Van Welder (Pty) Ltd | Date: 2026-10-13

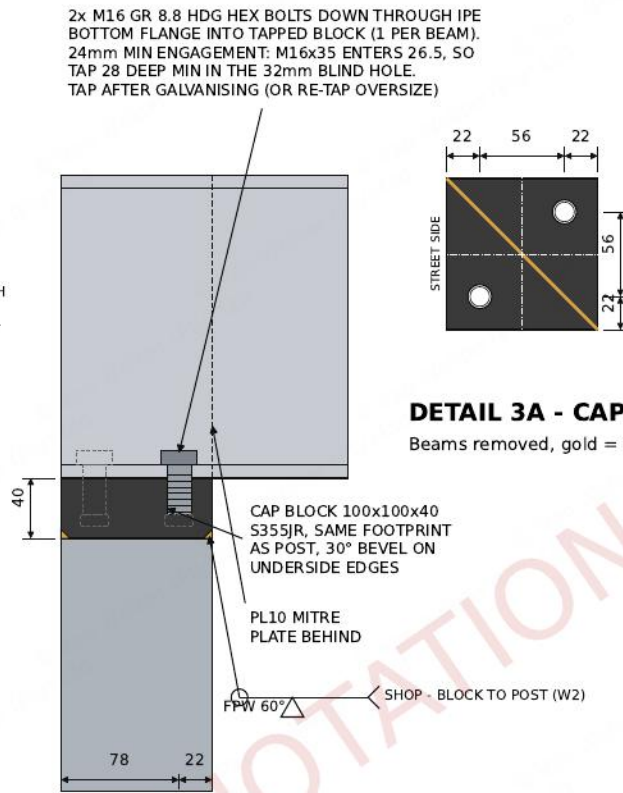
REV G - FOR ENGINEER REVIEW



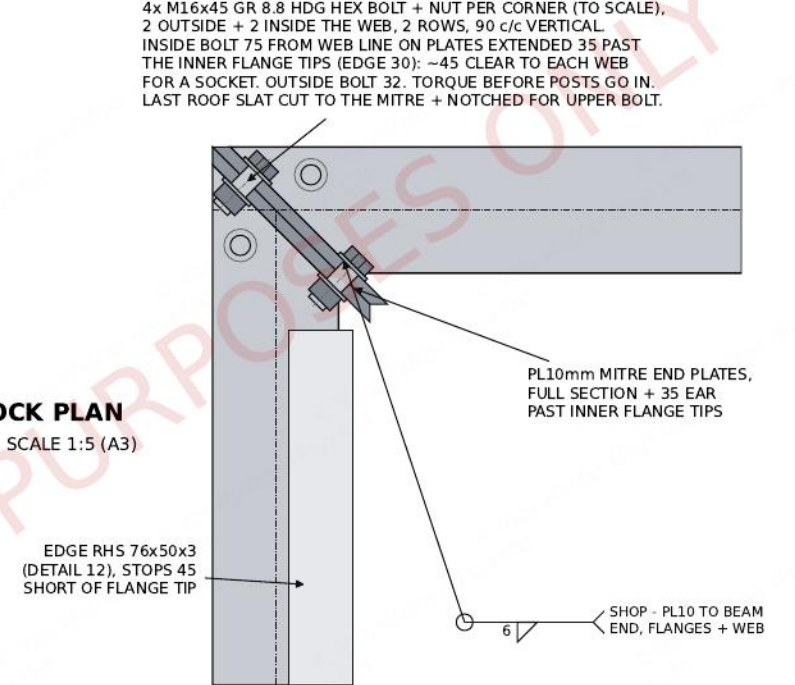
DETAIL 1 - POST BASE PLATE PLAN
Street edge at top SCALE 1:5 (A3)



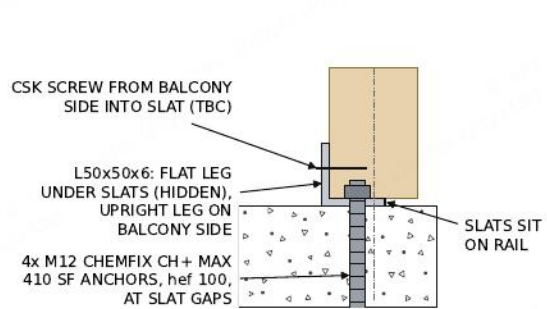
DETAIL 2 - BASE SECTION
Across upstand, through bolt line x = 160 SCALE 1:5 (A3)



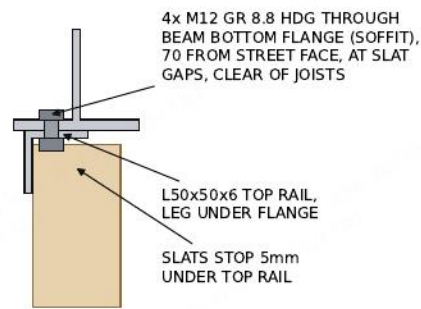
DETAIL 3 - POST CAP BLOCK / BEAM SEAT
Elevation from street SCALE 1:5 (A3)



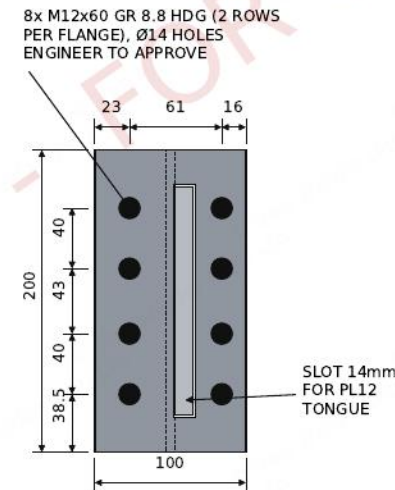
DETAIL 4 - MITRE CORNER (PLAN)
Typical both ends, top flange omitted SCALE 1:6 (A3)



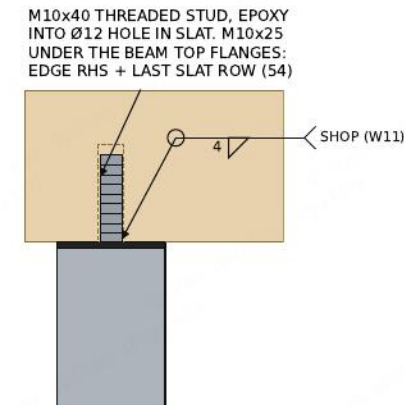
DETAIL 9A - SCREEN
Bottom rail SCALE 1:6 (A3)



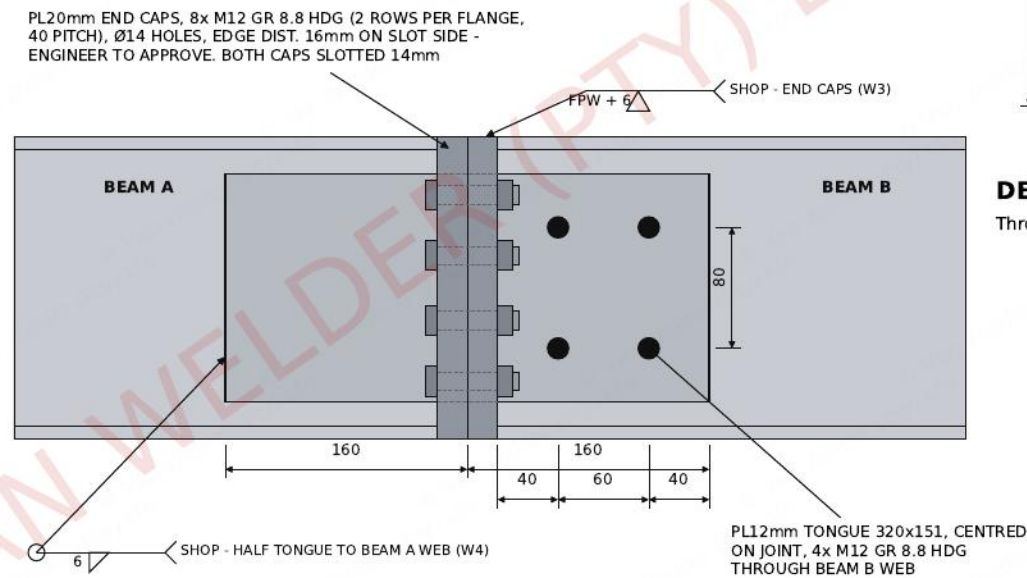
DETAIL 9B - SCREEN
Top rail SCALE 1:6 (A3)



DETAIL 6 - SPLICE SECTION
Through end cap B SCALE 1:5 (A3)



DETAIL 10 - SLAT STUD
Section across joist SCALE 1:3.5 (A3)



DETAIL 5 - BEAM SPLICE ELEVATION
Viewed from street side SCALE 1:5 (A3)

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BALCONY PERGOLA - EXAMPLE DESIGN (GALVANISED, PAINTED MATTE BLACK)

CONNECTION DETAILS & WELDS

SHEET 3 OF 6

Client / site: withheld - example drawing for illustration

Dimensions in mm. Do not scale.

Fabricator / drawn by: Van Welder (Pty) Ltd | Date: 2026-10-13

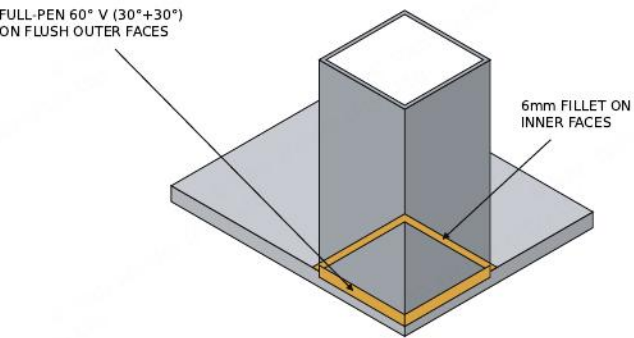
REV G - FOR ENGINEER REVIEW

WELD SCHEDULE

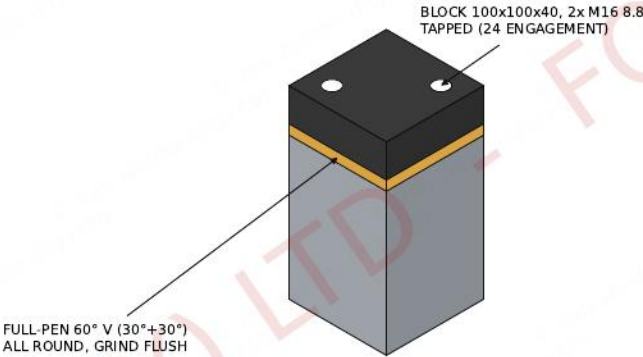
Weld symbols per ISO 2553. Fillet sizes are leg lengths in mm. Shop welding only before galvanising, except where noted.

REF	CONNECTION	WELD
W1	Post to base plate (edge posts)	Flush outer faces (2): full-penetration single-V butt weld, 30 deg bevel each side (60 deg V), root gap 2-3mm, root face 1.5-2mm. Inner faces (2): 6mm fillet. Backing or back-gouging per engineer.
W2	Cap block 100x100x40 to post	Full-penetration single-V butt weld all round, 30 deg bevel each side (60 deg V) on block underside edges and post top, block flush with post, grind flush. ENGINEER TO CONFIRM.
W3	Splice end cap PL20 to IPE 200	Full-penetration bevel butt weld to flange outer faces + 6mm fillet to flange inner faces and both sides of web. ENGINEER TO CONFIRM.
W4	Half splice tongue PL12 to beam A web	6mm fillet all round. Tongue centred on the joint; half welded to beam A web, other half bolted to beam B web with 4x M12.
W5	Mitre end plates PL10 to beam ends	6mm fillet all round (flanges and web).
W6	Joist RHS to raised wall plate	4mm fillet all round. (Front-end joist end plates deleted - see W7.)
W7	Joist fin cleat PL5 to front beam	4mm fillet both sides to web and bottom flange (TBC by engineer). Cleat 60 wide, sniped 15x15 at the root radius.
W8	NOT USED	Screen rails are not welded to the posts (no frame).
W9	NOT USED	Screen lugs deleted - bottom rail anchored straight into the upstand.
W10	NOT USED	Screen top rail bolted to beam soffit with 4x M12. No site welding on the job.
W11	Slat studs M10	4mm fillet all round, or stud weld.
W12	Side beam IPE 200 to raised wall plate PL12	6mm fillet all round (Detail 11, proposed).

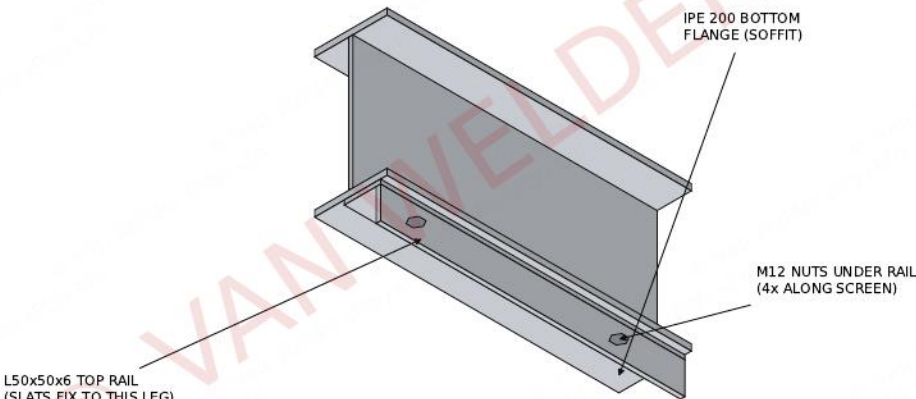
- Full-penetration welds to be verified by the engineer; back-gouging or backing to be confirmed.
- Isometric sketches below are schematic, not to scale. Weld types and sizes per the schedule above.
- Galvanised steel: any welding after galvanising requires cold-galvanising repair of the affected area.



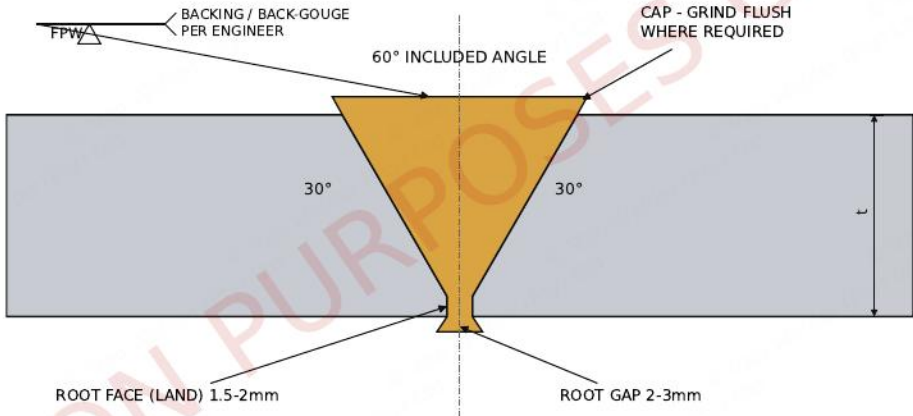
W1 - POST TO BASE PLATE (ISO)



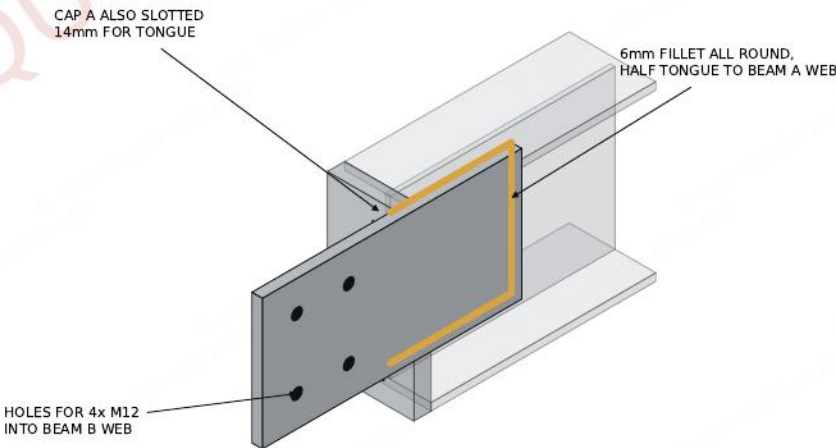
W2 - CAP BLOCK TO POST (ISO)



SCREEN TOP RAIL - BOLTED, NO WELD (ISO FROM BELOW)



W1 / W2 / W3 - TYPICAL FULL-PEN SINGLE-V BUTT WELD
Section, shown for t = 20mm. Joint prep per ISO 9692-1 SCALE 1:0.75 (A3)



W4 - HALF SPLICE TONGUE TO BEAM A (ISO)

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BALCONY PERGOLA - EXAMPLE DESIGN (GALVANISED, PAINTED MATTE BLACK)

WELDING DETAILS - WELD SCHEDULE (ISO 2553 SYMBOLS)

SHEET 4 OF 6

Client / site: withheld - example drawing for illustration

Dimensions in mm. Do not scale.

Fabricator / drawn by: Van Welder (Pty) Ltd | Date: 2026-10-13

REV G - FOR ENGINEER REVIEW

STRUCTURAL CALCULATIONS (PROPOSED) - SANS 10160 LOADS, SANS 10162-1 STEEL

Prepared by the fabricator as a proposal for the registered engineer to VERIFY, AMEND AND SIGN. It does not replace the engineer's independent check. Figures marked ASSUMED are not verified.

Wind: 44 m/s USED as the basic wind speed (SANS 10160-3 map value for Cape Town understood to be 40 m/s; 44 kept as an allowance for the exposed hillside site); qp = 0.5 x 1.25 x 44² = 1.2 kPa, before terrain / height / topography factors. Engineer to confirm from SANS 10160-3. Uplift / screen results below scale with qp.

Partial factors used: 1.2G + 1.6Q (gravity); 0.9G - 1.6W (uplift) - wind factor 1.6 used as the higher value (Rev E used 1.3). Engineer to confirm factors against the current SANS 10160-1 edition. Materials: S355JR plates/IPE (fy 355, fu 470); 350WA hollow sections (fy 350, fu 450); bolts GR 8.8 (fu 800); phi_b = 0.80, phi = 0.90.

<div>1. FRONT BEAM IPE 200 - BENDING (GRAVITY)</div> <div><div>LOAD</div><div>w* = 1.2 x 0.71 + 1.6 x 0.49 = 1.64 kN/m (G incl. slats, joists, IPE, cladding; trib 0.99 m). M* = wL²/8 = 13.7 kNm, L = 8.19 m</div><div>CAPACITY</div><div>Class 1 (b/t 5.9, h/w 32.7). phiMp = 0.9 x 355 x 220.6e3 = 70.5 kNm</div><div>REF</div><div>SANS 10162-1 cl. 13.5</div><div><div></div>UTIL 19%</div></div>	<div>2. FRONT BEAM - LTB UNDER UPLIFT</div> <div><div>LOAD</div><div>w* = 0.9G - 1.6W = -1.27 kN/m (qp 1.2 kPa). M* = 10.6 kNm, bottom flange in compression</div><div>CAPACITY</div><div>Unbraced 8.19 m (w2 1.13): Mu = 17.6, Mr = 15.8 kNm. Joists @ 630 restrain bottom flange: Mr = 70.5 kNm</div><div>REF</div><div>SANS 10162-1 cl. 13.6 (worst case unbraced)</div><div>ENGINEER TO CONFIRM: confirm restraint / qp</div><div><div></div>UTIL 67%</div></div>	<div>3. FRONT BEAM - SHEAR + DEFLECTION</div> <div><div>LOAD</div><div>V* = 6.7 kN. SLS w = G + Q = 1.20 kN/m. Deflection = 5wL²/384EI = 18.1 mm</div><div>CAPACITY</div><div>Vr = 0.9 x 0.66 x 355 x 200 x 5.6 = 236 kN. Limit L/250 = 32.8 mm (shown: deflection / limit)</div><div>REF</div><div>SANS 10162-1 cl. 13.4; SANS 10160-1 SLS</div><div>ENGINEER TO CONFIRM: confirm frame action</div><div><div></div>UTIL 55%</div></div>	<div>4. SPLICE END CAPS PL20 - 8x M12</div> <div><div>LOAD</div><div>M* = 13.7 kNm at mid-span. Elastic bolt forces about compression flange: rows at 157 / 117 mm lever, 2 bolts per row. T* = 28.1 kN</div><div>CAPACITY</div><div>Tr = 0.75 x 0.8 x 113 x 800 = 54.3 kN (M12). Prying: tc = 18.1 mm < PL20, negligible. (Rev C 2 bolts: 43.7 kN = 80%)</div><div>REF</div><div>SANS 10162-1 cl. 13.12.1.3</div><div>ENGINEER TO CONFIRM: edge 16 mm on slot side</div><div><div></div>UTIL 52%</div></div>
<div>5. SPLICE TONGUE PL12 - 4x M12 (60 x 80)</div> <div><div>LOAD</div><div>V* = 2.3 kN (half-span Q + 0.9 kN point), eccentric 90 mm: M = 203 kNmm. Worst bolt (direct + twist) = 1.4 kN</div><div>CAPACITY</div><div>Vr = 0.6 x 0.8 x 113 x 800 x 0.7 = 30.4 kN/bolt. Bearing web 5.6: 75.8 kN. Edges 35 / 40 (min 22 for M12)</div><div>REF</div><div>SANS 10162-1 cl. 13.12.1.2</div><div>ENGINEER TO CONFIRM: moment-release OK</div><div><div></div>UTIL 5%</div></div>	<div>6. JOISTS RHS 76x50x3 @ 630 + PL5 CLEAT</div> <div><div>LOAD</div><div>Span 1.92 m. M* = 0.87 kNm (UDL or 0.9 kN point governs). End R* = 1.8 kN gravity / 0.9 kN uplift</div><div>CAPACITY</div><div>phiMp = 0.9 x 18.3e3 x 350 = 5.8 kNm. Cleat bolt M12 Vr = 30.4 kN; bearing 3 mm RHS wall 38.9 kN</div><div>REF</div><div>cl. 13.5; bolt cl. 13.12</div><div>ENGINEER TO CONFIRM: confirm bracing to wall</div><div><div></div>UTIL 15%</div></div>	<div>7. MITRE CORNERS - 4x M16 PER CORNER</div> <div><div>LOAD</div><div>Corner seated on cap block; mitre bolts give continuity / robustness. Nominal V* taken as 5 kN per corner (ASSUMED)</div><div>CAPACITY</div><div>4x M16: Vr = 4 x 54.0 = 216 kN; Tr = 4 x 96.5 kN. Inner bolts 75 from web on extended PL10 (edge 30), -45 clear for socket</div><div>REF</div><div>SANS 10162-1 cl. 13.12</div><div>ENGINEER TO CONFIRM: product, brick, embedment</div><div><div></div>UTIL 2%</div></div>	<div>8. CAP BLOCK 100x100x40 - 2x M16 HEX</div> <div><div>LOAD</div><div>Uplift per post T* = 5.5 kN; gravity 7.3 kN bears on block. Horizontal per post top H* = 8.1 kN (screen + beam face)</div><div>CAPACITY</div><div>Tr = 2 x 96.5 = 193 kN; Vr = 2 x 54.0 = 108 kN. Thread engagement 24 mm (1.5d) > -1.2d needed in S355</div><div>REF</div><div>cl. 13.12; edge 22 mm min. (M16 rolled edge)</div><div>ENGINEER TO CONFIRM: sleeve pull-out, fck, depth</div><div><div></div>UTIL 7%</div></div>
<div>9. IPE FLANGE AT CAP BOLTS + WEB OVER POST</div> <div><div>LOAD</div><div>Per bolt T* = 2.7 kN, lever to root 15.6 mm -> flange M* = 42.8 kNmm. Gravity per beam - 3.7 kN on web over block</div><div>CAPACITY</div><div>Flange bending Mr = 289 kNmm (b 50, tf 8.5). Bearing 153 kN, pull-over 127 kN /bolt. Web crippling 127 kN</div><div>REF</div><div>cl. 13.10, 14.3.2 (mitre plate stiffens)</div><div>ENGINEER TO CONFIRM: confirm bracing to wall</div><div><div></div>UTIL 15%</div></div>	<div>10. POSTS SHS 100x100x4 - AXIAL</div> <div><div>LOAD</div><div>C* = 7.3 kN per post. Posts pinned top and bottom, frame braced back to the wall (L = 2.09 m)</div><div>CAPACITY</div><div>A = 1536 mm², r = 39.2 mm, lambda = 0.71, n = 1.34 Cr = 377 kN</div><div>REF</div><div>SANS 10162-1 cl. 13.3</div><div>ENGINEER TO CONFIRM: sleeve pull-out, fck, depth</div><div><div></div>UTIL 2%</div></div>	<div>11. BASE PLATE PL16 - 6x M16 CSK IN HIS-N</div> <div><div>LOAD</div><div>Per anchor: T* = 0.91 kN uplift, V* = 1.35 kN (uplift 5.5 kN and H 8.1 kN shared by 6)</div><div>CAPACITY</div><div>Tr 96.5 / Vr 54.0 kN per bolt. PL16 at post face: M* 54.8 vs Mr 2454 kNmm (beff 120). Spacing 59-110 (>= 2.7d), edges 45. Cone - 22 kN</div><div>REF</div><div>SANS 10100 / Hilti PROFIS</div><div>ENGINEER TO CONFIRM: product, brick, embedment</div><div><div></div>UTIL 4%</div></div>	<div>12. WALL ANCHORS M12 - THROUGH LEAF INTO CAVITY</div> <div><div>LOAD</div><div>Per joist plate (2 anchors): V* = 0.91 kN, T* = 0.44 kN per anchor. Hilti HIT-SC sleeve + HIT-HY 270, brick cavity</div><div>CAPACITY</div><div>Capacity depends on brick and sleeve product - take from manufacturer data for the actual brick (not assumed here)</div><div>REF</div><div>manufacturer data</div><div>ENGINEER TO CONFIRM: product, brick, embedment</div><div><div></div>UTIL TBC</div></div>

LOAD BASIS (SANS 10160) - ASSUMED, ENGINEER TO CONFIRM

- G roof: 44x70 Balau @ 88 + RHS joists = 0.43 kPa; IPE 200 = 0.22 kN/m
- G cladding 30 mm Balau = 0.06 kN/m on beam faces
- Q: inaccessible roof 0.5 kPa or 0.9 kN point (SANS 10160-2)
- W: qp = 1.2 kPa from 44 m/s (map value for Cape Town understood to be 40 m/s)
- Wind factor 1.6 (Rev E: 1.3). Roof net cp = 1.0 (uplift). Screen cf = 1.2
- Post reactions: gravity 7.3 kN, uplift 5.5 kN (Rev E: 4.0 at factor 1.3)
- Screen gross area 5.4 m² -> W* = 1.6 x 1.2 x 1.2 x A = 12.4 kN
- Sensitivity (box 2, unbraced): 92% at qp 1.5 kPa (49 m/s); 100% at -50 m/s.
- With joists restraining the bottom flange box 2 = 15%. Splice unchanged (gravity).

SCREEN, SLATS, STUDS & SPLICE WELD

- Screen: W* 12.4 kN, half per rail = 6.2 kN
- Top rail 4x M12 through beam soffit: 1.55 kN / bolt vs Vr 30.4 (5%)
- Bottom rail 4x M12 chem. anchors: 1.55 kN / anchor (per mfr)
- L50x50x6 rails load in plane of the bolted leg - not governing
- Roof slat 44x70 on edge, 0.9 kN point: 6.3 MPa (Balau grade TBC)
- Screen slat span ~2.1 m: 3.0 MPa bending (wind on gross width) - not governing
- Slat studs M10: net uplift ~0.09 kN / stud - not governing
- Edge RHS (slat ends): on side beam flange; uplift 0.46 kN / M10 bolt vs Vr 21.1 - not governing
- Splice weld W3: flange force M*/(h - tf) = 71.7 kN vs full-pen flange 272 kN (26%)
- Timber to SANS 10163 - ENGINEER / TIMBER SUPPLIER TO CONFIRM

ENGINEER'S CHECKLIST - ITEMS NOT VERIFIED BY THE CONTRACTOR

- Site wind: 44 m/s / qp 1.2 kPa and wind factor 1.6 used for this site (map value understood to be 40 m/s) - terrain / height / topography factors and current SANS 10160 partial factors
- Front beam LTB: bottom-flange restraint from joists under uplift (box 2)
- Frame stability: posts pinned, frame braced back to the wall via side beams + joists (boxes 7, 10)
- Splice: PL20 end caps, W3 full-pen weld, 8x M12 edge distance 16 mm on the slot side (box 4)
- Cap block: W2 full-pen weld to post, 24 mm thread engagement, tap after galvanising (box 8)
- Base: Hilti HIS-N M16x170 pull-out, corrosion option A or B, upstand concrete strength and depth (>= ~200), 45 mm edge (box 11)
- Wall anchors: Hilti HIT-HY 270 + HIT-SC capacity in the actual brick, through outer leaf into cavity (box 12)
- Screen bottom rail: Chemfix CH+ MAX 410 SF anchors (via Multifix) - embedment; mitre corner plate extension (box 7)
- Timber: Balau grade for roof and screen slats (SANS 10163)
- Existing balustrade clash with base plates / screen (alterations excluded from fabricator scope)
- Rev G details: joist end + cleat (Detail 7), edge RHS slat supports + M10x25 studs under the top flanges (Detail 12), screen top rail bolt seating (Detail 9B) - sheet 6 items 9, 15, 16

Utilisation = demand / capacity (bar: green < 50%, amber < 90%, red >= 90%).

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BALCONY PERGOLA - EXAMPLE DESIGN (GALVANISED, PAINTED MATTE BLACK)

STRUCTURAL CALCULATIONS (PROPOSED)

SHEET 5 OF 6

Client / site: withheld - example drawing for illustration

Dimensions in mm. Do not scale.

Fabricator / drawn by: Van Welder (Pty) Ltd | Date: 2026-10-13

REV G - FOR ENGINEER REVIEW

DESIGN BASIS

- Loads to SANS 10160 (Parts 1-3). Steel design to SANS 10162-1. Anchors/concrete to SANS 10100 or anchor manufacturer data.
- Imposed load (inaccessible roof): 0.5 kPa / 0.9 kN point. Dead load incl. 44x70 Balau slats @ 88 c/c: ~0.43 kPa.
- Wind: 44 m/s USED as the basic wind speed (SANS 10160-3 map value for Cape Town understood to be 40 m/s; 44 kept for the exposed hillside site) -> qp ~1.2 kPa, wind load factor 1.6, roof net pressure coeff 1.0 (uplift), screen cf 1.2 on gross area. ENGINEER TO CONFIRM per SANS 10160-3.
- Front beam IPE 200 simply supported 8.19 m: M* 13.7 kNm gravity / 10.6 kNm uplift; deflection ~18 mm total (L/453). Full checks on Sheet 5.
- Net uplift per post ~5.5 kN (factored, Sheet 5). Wind on screen ~12.4 kN total, half to upstand anchors (4x M12), half to beam soffit bolts (4x M12).
- Rev F (2026-10-13): wind load factor raised from 1.3 to 1.6; horizontal load at the post tops and anchor demands recomputed from the screen wind. Geometry unchanged from Rev E.
- Rev G (2026-10-13): drawing corrections, calc basis as Rev F - joist end 12 clear of the front beam web with a 60 wide cleat and M12x80 bolt (Detail 7); base anchor edge 45 in Section A-A; Detail 6 bolts drawn at the labelled 23 / 16; W1 shown on Detail 2 as on Detail 1; edge RHS slat supports drawn (Detail 12); slat studs under the beam top flanges M10x25 (37 headroom over the slats); 273 upstand width dimensioned.

MATERIALS

- Hot-rolled sections and plates: S355JR (SANS 50025 / equivalent). Hollow sections: grade 350WA (SANS 657-1 / equivalent).
- Fasteners: GR 8.8 HDG bolts to SANS 1700 / ISO 4014, with HDG nuts and washers. No stainless fixings in contact with galvanised steel, except base anchor Option B (isolated, Detail 1).
- Anchors: base plates - Hilti HIS-N M16x170 sleeves + Hilti HIT-HY 200-R, with standard M16x45 CSK socket GR 8.8 bolts (not a Hilti part), finish to match the sleeve: Option A zinc-plated or Option B A4 stainless.
- Brick wall plates - Hilti HIT-HY 270 + HIT-SC plastic mesh sleeves. Screen bottom rail - Chemfix CH+ MAX 410 SF (supplied by Multifix). Embedment and edge distances per manufacturer software.
- Timber: Balau 44x70mm slats and 30mm thick Balau cladding.

CORROSION PROTECTION

- All steel hot-dip galvanised to SANS 121 (ISO 1461) after fabrication, then painted matte black.
- Surface prep over galvanising before painting: sweep blast or etch primer / T-wash, as per paint supplier.
- Vent and drain holes (12 dia min.) in all hollow sections and closed boxes, on hidden faces, BEFORE galvanising.

WELDING NOTES

- ALL WELDING IN SHOP BEFORE GALVANISING. NO SITE WELDING (screen bolted and anchored, not welded).
- Welding to SANS 10162-1 with weld quality per SANS 3834 (ISO 3834-3). Weld symbols per ISO 2553.
- Process: MMAW with E7018 (ISO 2560-A E 42 4 B) or GMAW with ER70S-6 (ISO 14341-A G 42 4 M21 3Si1), or equivalent matching S355.
- Welders qualified to SANS 9606-1; procedures to SANS 15614-1 or pre-qualified. Fillet sizes are leg lengths in mm.
- Hollow section joints welded ALL ROUND and sealed (no pin holes) except where vent holes are shown.
- Splice end caps PL20 to IPE 200 (W3): full-pen bevel butt weld to flange outer faces + 6mm fillet to flange inner faces and web. ENGINEER: confirm back-gouging / backing.
- Mitre plates PL10 to beam ends: 6mm fillet all round. Base plate: W1. Cap block: W2 (full-pen 60 deg V). Joist fin cleats PL5: 4mm. Wall plates to RHS: 4mm all round. Side beams to wall plates PL12: 6mm all round (W12).
- Splice tongue PL12 (centred on joint): half welded to beam A web, 6mm fillet all round; other half bolted to beam B web, 4x M12. Screen rails: no welding. Tap cap blocks AFTER galvanising.
- Slat studs M10: 4mm fillet all round (or stud-weld). Clean all slag/spatter before galvanising. Visual inspection 100%.

ITEMS FOR ENGINEER TO CONFIRM

- 1. Site wind for this exposure: 44 m/s / qp ~1.2 kPa and wind load factor 1.6 used (map value understood to be 40 m/s) - confirm terrain, height and topography factors and the current partial factors.
- 2. Concrete strength of upstand (weak/cracked concrete fck 20 assumed) and depth below upstand top (>= ~200 mm needed for Hilti HIS-N M16x170, hef 170).
- 3. Base anchor edge distance 45 mm on 273 upstand: estimated group concrete cone NRd ~22 kN vs ~0.9 kN tension / ~1.3 kN shear demand per anchor (Sheet 5, box 11) - verify with manufacturer software.
- 4. House wall and end walls construction for the M12 wall anchors (brick cavity wall assumed throughout).
- 5. Splice end-cap weld type (fillet vs butt) and PL20 thickness (PL15 failed simple plate bending check).
- 6. Existing balustrade on upstand may clash with post base plates - alterations to balustrade are excluded from fabricator scope.
- 7. Base plate 220x273x16, 6x M16 CSK into Hilti HIS-N M16x170 + HIT-HY 200-R: pull-out check and corrosion option (A zinc-plated / B A4 stainless).
- 8. Splice end caps: 8x M12 (2 rows per flange zone) - tension bolts ~52% (Sheet 5). Edge distance 16 mm on slot side - engineer to approve.
- 9. Joist connection: single M12 bolt through PL5 fin cleat (moment release). Rev G: joist stops 12 short of the beam web to clear the 12 mm root radius; cleat 60 wide, bolt 35 from the web face (23 end distance in the joist, 25 edge distance in the cleat). Confirm acceptable.
- 10. Wall anchors: M12 through ~100mm outer leaf into the cavity, Hilti HIT-HY 270 + HIT-SC sleeves - confirm sleeve size and embedment for the actual brick.
- 11. Cap block 100x100x40 with 2x M16 tapped (24mm min engagement; M16x35 with no washer enters 26.5, so tap 28 deep min): confirm W2 full-pen weld, and block thickness / thread engagement.
- 12. Raised wall plate for IPE side beams (Detail 11) proposed 140x300x12 with 2x M12 - confirm.
- 13. Screen bottom rail: 4x M12 Chemfix CH+ MAX 410 SF anchors hef 100 at slat gaps - confirm embedment.
- 14. Mitre comers: plates extended 35 past the inner flange tips so the inner M16 bolts (75 from the web line, edge 30) can be tightened - confirm.
- 15. Edge RHS 76x50x3 slat supports (Detail 12): sit on the side beam bottom flange, 8 clear of the web on PL8 packers, 2x M10 through the web per member. They carry slats 1-21; the last slat cantilevers about 0.6 m past the end joists. Slat studs under the beam top flanges are M10x25 - confirm.
- 16. Screen top rail bolts (Detail 9B): at 70 from the street face the M12 head sits about 4 mm onto the beam root radius and the nut reaches the root of the angle - confirm the bolt size / position or a bevelled seat.

DESIGN CALCULATIONS

- See SHEET 5 - structural calculations (proposed), one check box per member and connection, with load basis, capacity and utilisation. ENGINEER TO VERIFY.

FIXINGS SCHEDULE

- 12x M16x45 CSK socket GR 8.8 (standard fastener) into Hilti HIS-N M16x170 + HIT-HY 200-R - base plates (6 per post). Option A zinc-plated / Option B A4 stainless - ENGINEER TO SELECT
- 28x M12 through outer leaf, Hilti HIT-HY 270 + HIT-SC sleeves - raised wall plates (2 per plate) | 4x M12 Chemfix CH+ MAX 410 SF, hef 100 - screen bottom rail
- 8x M12x60 - splice end caps (2 rows per flange, ENGINEER TO APPROVE) | 4x M12x40 - splice tongue | 8x M16x45 hex + nut - mitre comers (4 per corner)
- 4x M16x35 hex - cap blocks (2 per post, into tapped block) | 12x M12x80 - joist fin cleats | 4x M12x30 - screen top rail | 4x M10x80 + PL8 packers - edge RHS (Detail 12)
- 252x M10x40 + 54x M10x25 (under the beam top flanges) weld-on studs - roof slats (epoxy) | screen slats: countersunk fixings, type TBC

ENGINEER - REVIEWED

NAME: _____

SIGNATURE: _____

DATE: _____

CLIENT - ACCEPTED

NAME: _____

SIGNATURE: _____

DATE: _____

ENGINEER'S NOTES / CHANGES

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NOT FOR CONSTRUCTION UNTIL CHECKED AND SIGNED BY A REGISTERED ENGINEER

BALCONY PERGOLA - EXAMPLE DESIGN (GALVANISED, PAINTED MATTE BLACK)

GENERAL NOTES, WELDING & DESIGN BASIS, SIGN-OFF		SHEET 6 OF 6
Client / site: withheld - example drawing for illustration		Dimensions in mm. Do not scale.
Fabricator / drawn by: Van Welder (Pty) Ltd Date: 2026-10-13		REV G - FOR ENGINEER REVIEW