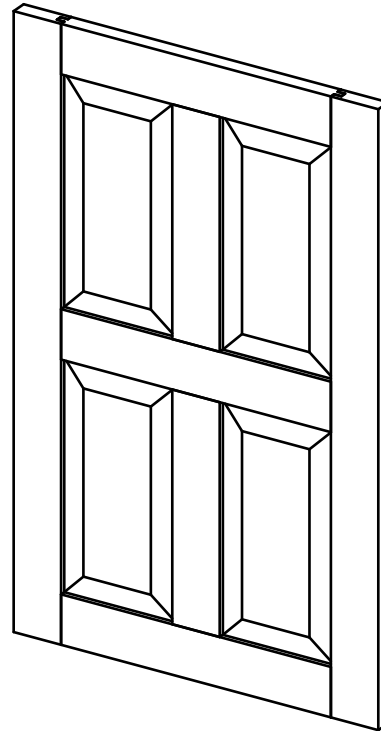


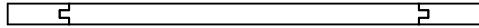
Frame and panel door



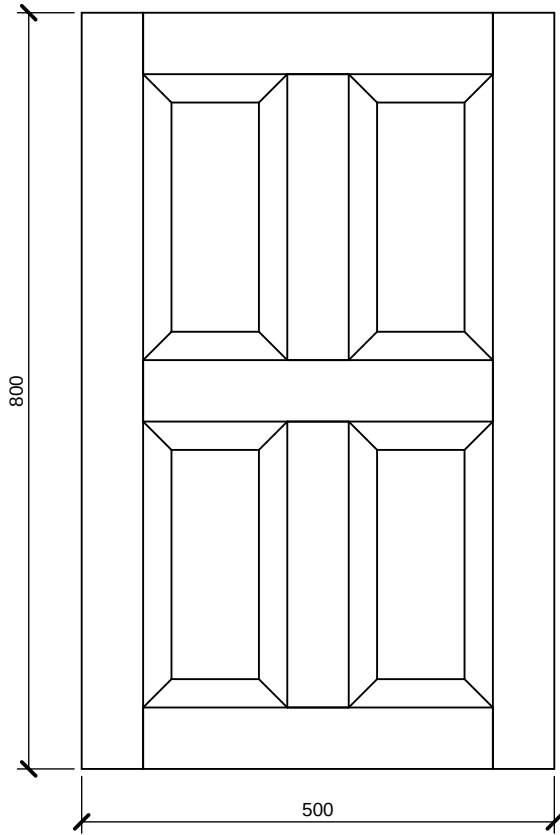
parts	11 (5 different)
overall	500 x 22 x 800 (W x D x H)
material	oak
date	2026-10-25
made with	woodwright 0.9.0

Contents

Drawings	3
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Parts	4
1 stile	5
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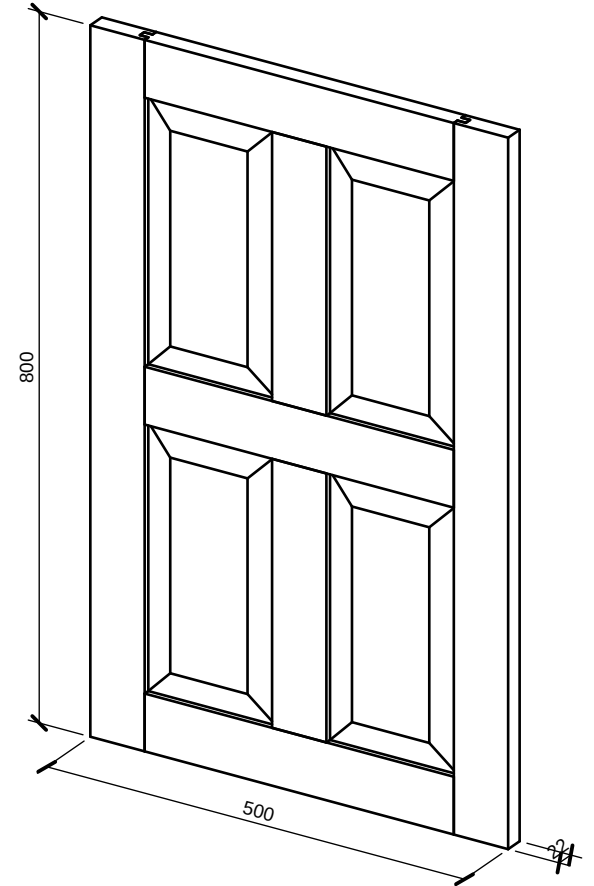
TOP



FRONT

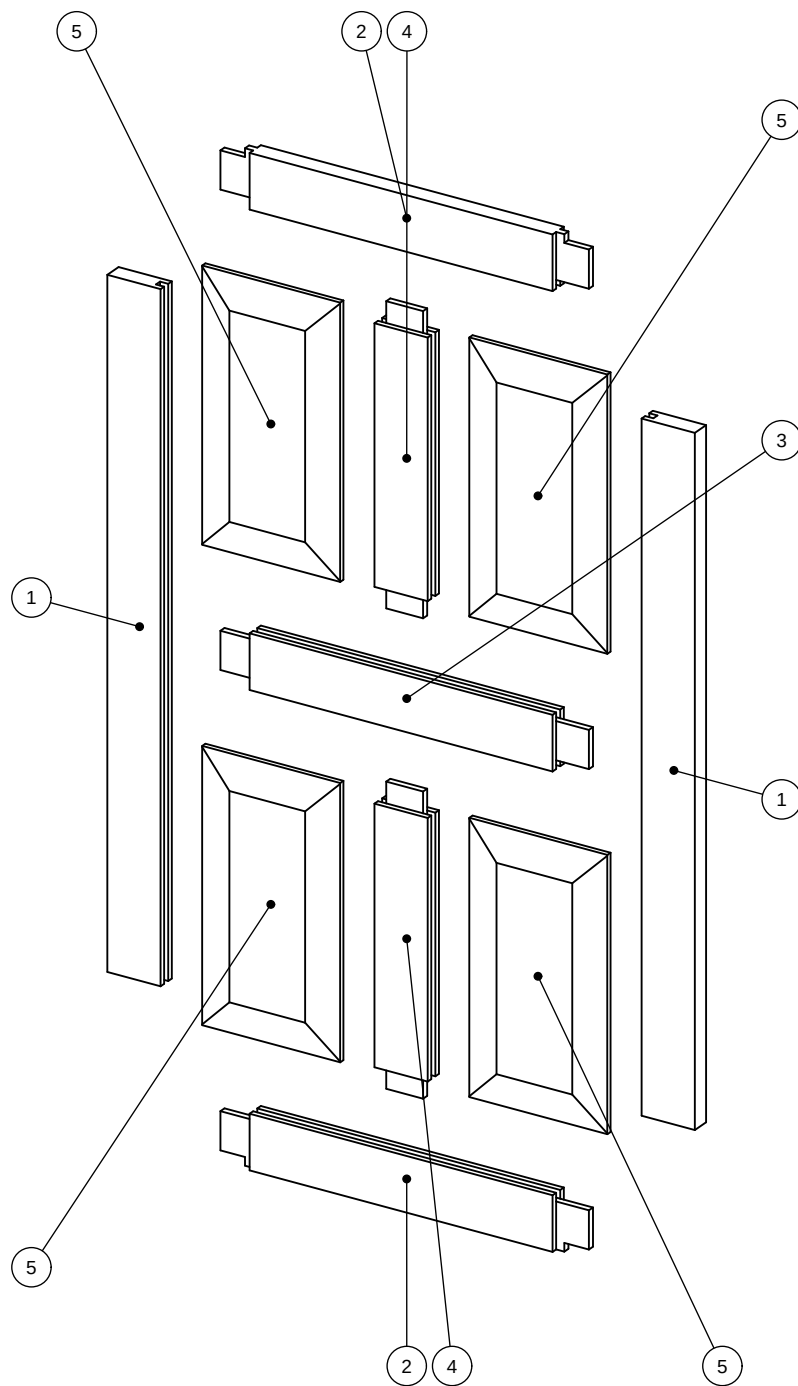


RIGHT SIDE



ISOMETRIC

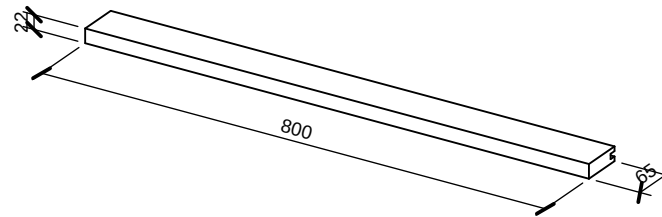
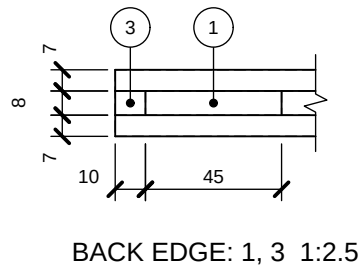
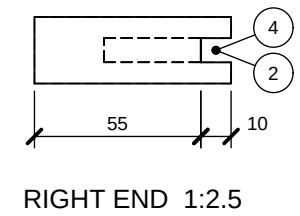
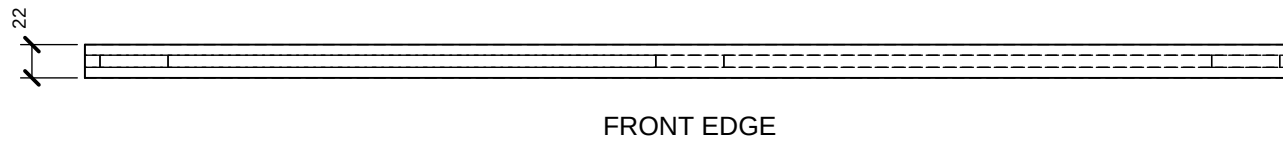
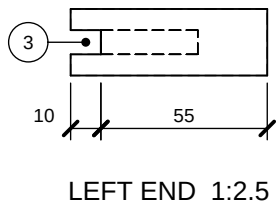
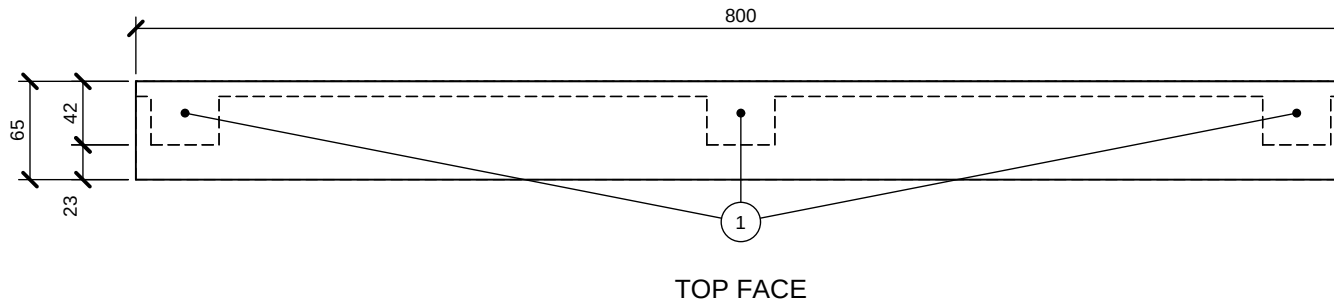
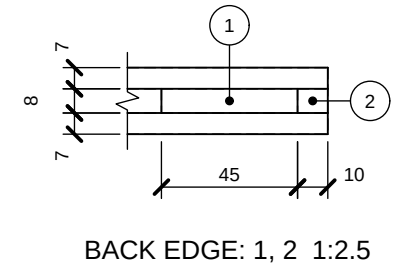
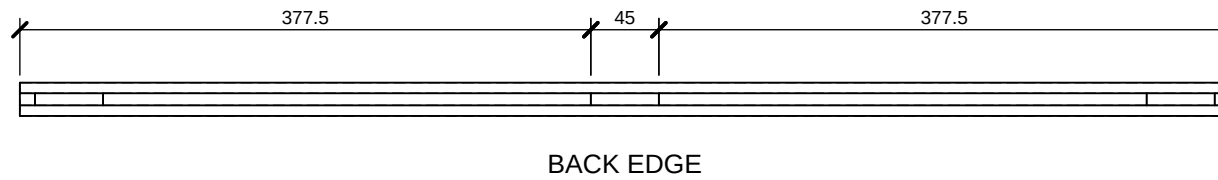
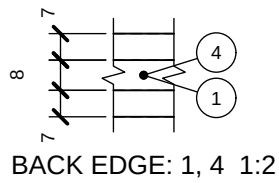
assembly	frame_and_panel_door
parts	11 (5 different)
overall	500 x 22 x 800 (W x D x H)
material	oak
scale	1:8, mm



EXPLODED

no.	part	qty	cut size (L x W x T)	material
1	stile	2	800 x 65 x 22	oak
2	rail	2	450 x 65 x 22	oak
3	rail_middle	1	450 x 65 x 22	oak
4	muntin	2	352.5 x 65 x 22	oak
5	panel	4	320.5 x 168.5 x 14	oak

assembly	frame_and_panel_door
parts	11 (5 different)
overall	500 x 22 x 800 (W x D x H)
material	oak
scale	not to scale, mm



2 pieces: stile_left, stile_right

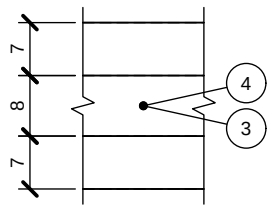
1 3 x mortise 45 x 8 mm, 42 deep, in back_edge

2 haunch mortise 10 x 8 mm, 10 deep, in back_edge at right_end

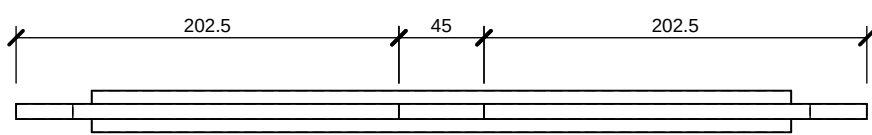
3 haunch mortise 10 x 8 mm, 10 deep, in back_edge at left_end

4 groove 8 mm, 10 deep, in back_edge

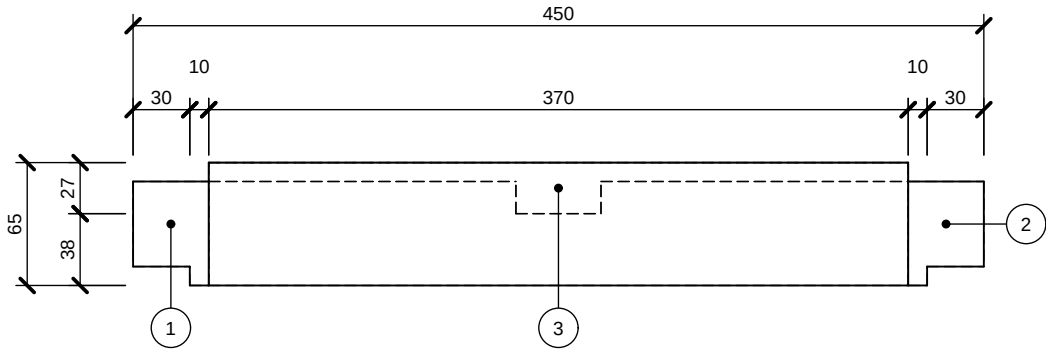
part	stile
of	frame_and_panel_door
make	2
cut size	800 x 65 x 22
material	oak
scale	1:5, mm



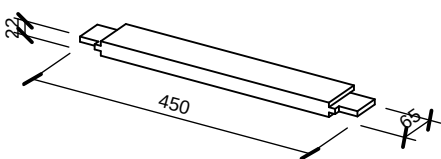
BACK EDGE: 3, 4 1:1



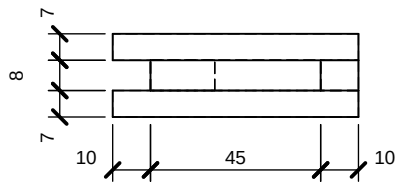
BACK EDGE



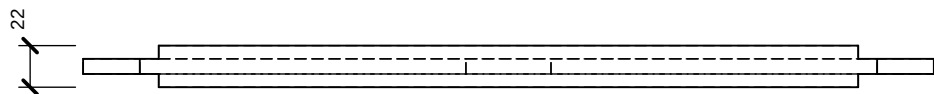
TOP FACE



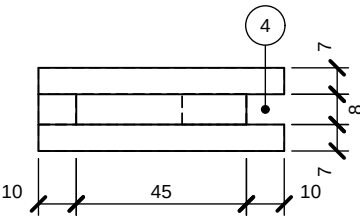
ISOMETRIC



LEFT END 1:2



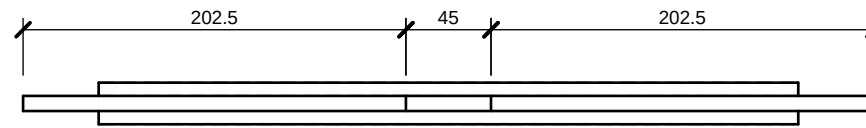
FRONT EDGE



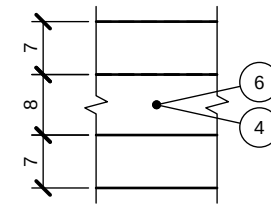
RIGHT END 1:2

- 2 pieces: rail_top, rail_bottom
- 1 haunched tenon 45 x 8 mm, 40 long, haunch 10 long, on left_end
 - 2 haunched tenon 45 x 8 mm, 40 long, haunch 10 long, on right_end
 - 3 mortise 45 x 8 mm, 27 deep, in back_edge
 - 4 groove 8 mm, 10 deep, in back_edge

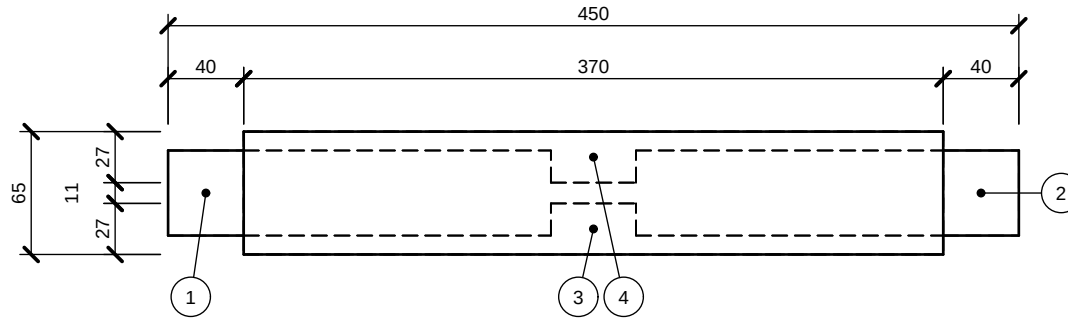
part	rail
of	frame_and_panel_door
make	2
cut size	450 x 65 x 22
material	oak
scale	1:4, mm



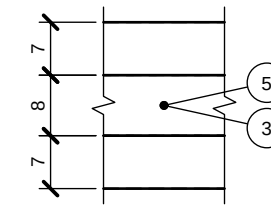
BACK EDGE



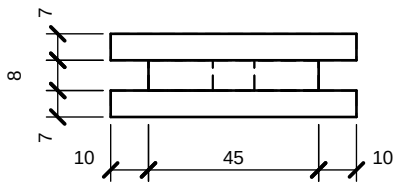
BACK EDGE: 4, 6 1:1



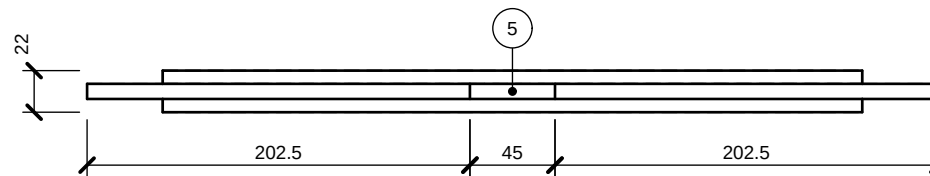
TOP FACE



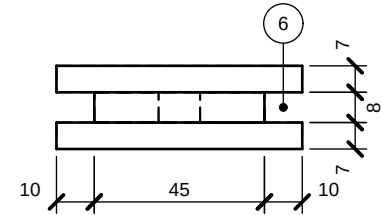
FRONT EDGE: 3, 5 1:1



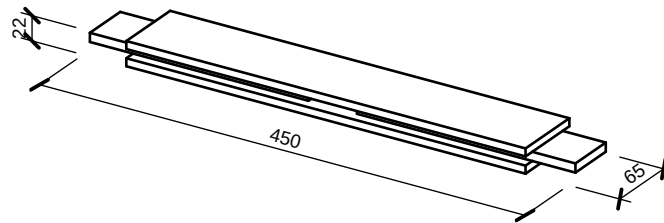
LEFT END 1:2



FRONT EDGE



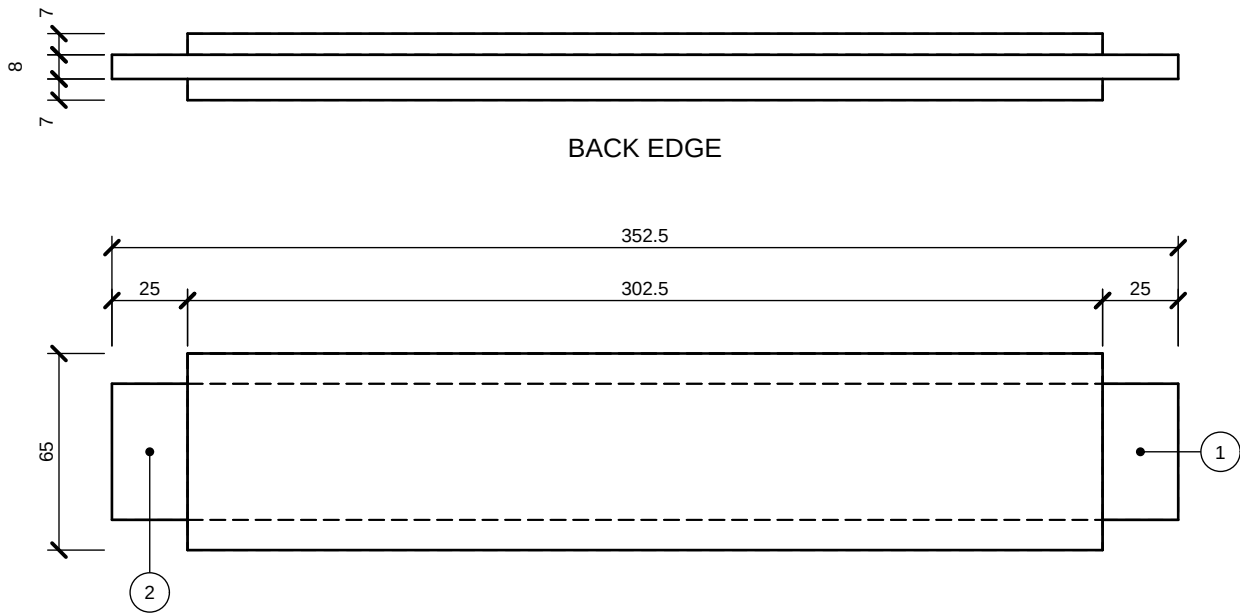
RIGHT END 1:2



ISOMETRIC

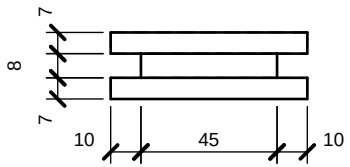
- 1 tenon 45 x 8 mm, 40 long, on left_end
- 2 tenon 45 x 8 mm, 40 long, on right_end
- 3 mortise 45 x 8 mm, 27 deep, in front_edge
- 4 mortise 45 x 8 mm, 27 deep, in back_edge
- 5 groove 8 mm, 10 deep, in front_edge
- 6 groove 8 mm, 10 deep, in back_edge

part	rail_middle
of	frame_and_panel_door
make	1
cut size	450 x 65 x 22
material	oak
scale	1:4, mm

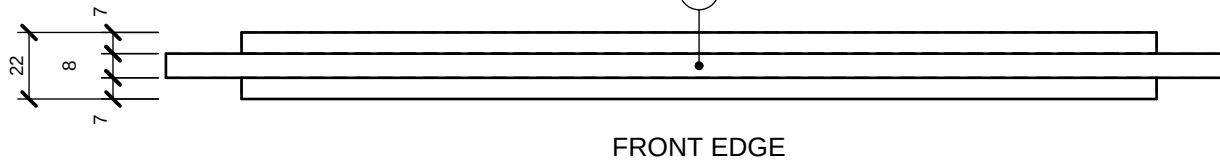


BACK EDGE

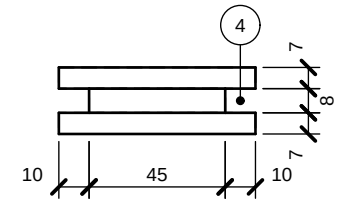
TOP FACE



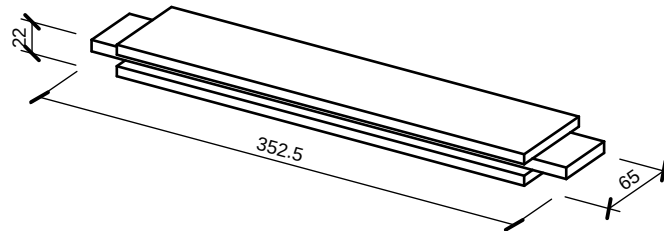
LEFT END



FRONT EDGE



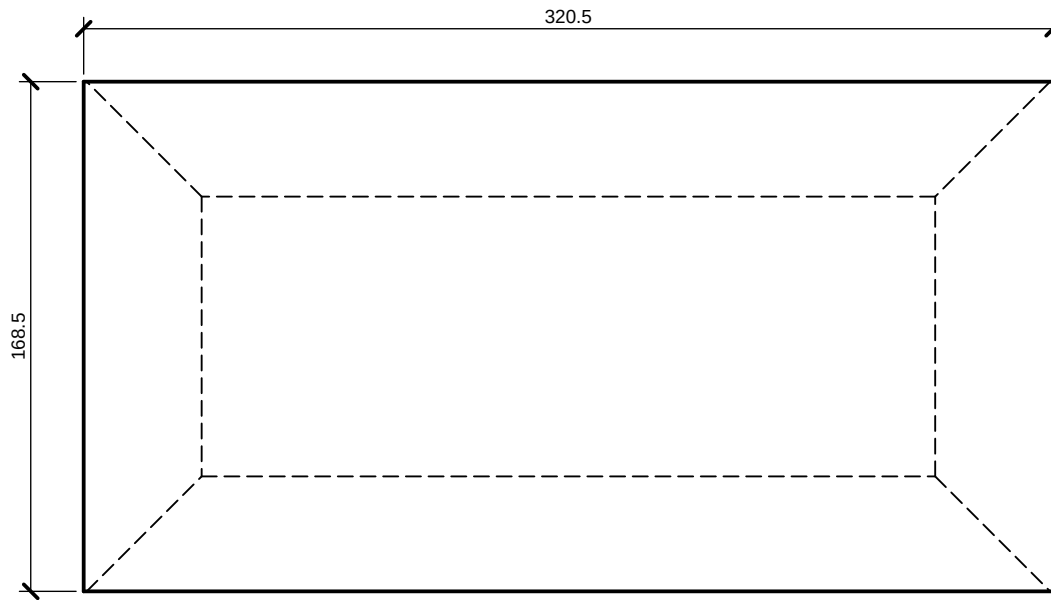
RIGHT END



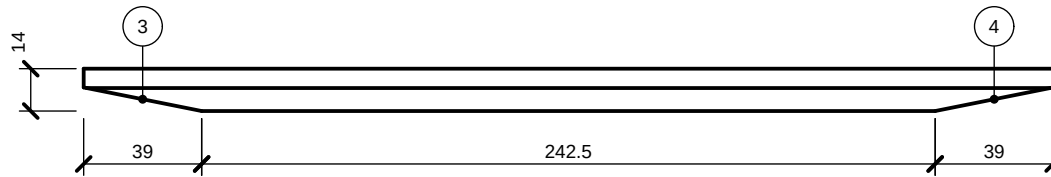
ISOMETRIC

- 2 pieces: muntin_top, muntin_bottom
- 1 tenon 45 x 8 mm, 25 long, on right_end
- 2 tenon 45 x 8 mm, 25 long, on left_end
- 3 groove 8 mm, 10 deep, in front_edge
- 4 groove 8 mm, 10 deep, in back_edge

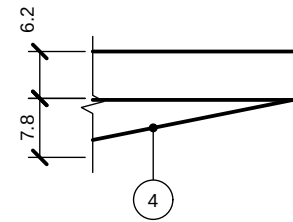
part	muntin
of	frame_and_panel_door
make	2
cut size	352.5 x 65 x 22
material	oak
scale	1:2.5, mm



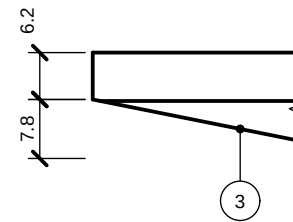
TOP FACE



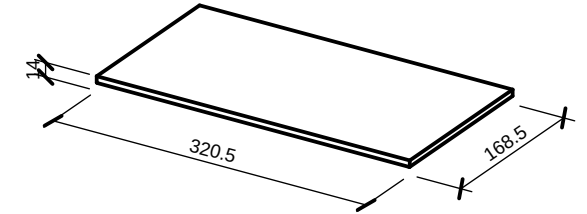
FRONT EDGE



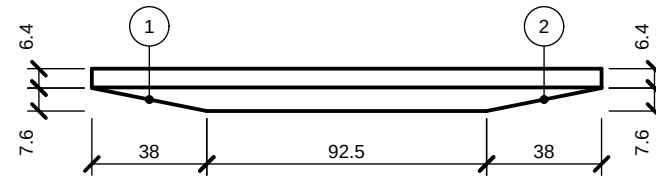
FRONT EDGE: 4 1:1



FRONT EDGE: 3 1:1



ISOMETRIC



RIGHT END

- 4 pieces: panel_top_left, panel_top_right, panel_bottom_left, panel_bottom_right
- 1 chamfer 30 x 6 mm on bottom_face_front_edge_arris, running out past front_edge
 - 2 chamfer 30 x 6 mm on bottom_face_back_edge_arris, running out past back_edge
 - 3 chamfer 30 x 6 mm on bottom_face_left_end_arris, running out past left_end
 - 4 chamfer 30 x 6 mm on bottom_face_right_end_arris, running out past right_end

part	panel
of	frame_and_panel_door
make	4
cut size	320.5 x 168.5 x 14
material	oak
scale	1:2.5, mm

Cut list

stile	800 x 65 x 22 mm oak, 2 pieces: stile_left, stile_right - 3 x mortise 45 x 8 mm, 42 deep, in back_edge - haunch mortise 10 x 8 mm, 10 deep, in back_edge at right_end - haunch mortise 10 x 8 mm, 10 deep, in back_edge at left_end - groove 8 mm, 10 deep, in back_edge
rail	450 x 65 x 22 mm oak, 2 pieces: rail_top, rail_bottom - haunched tenon 45 x 8 mm, 40 long, haunch 10 long, on left_end - haunched tenon 45 x 8 mm, 40 long, haunch 10 long, on right_end - mortise 45 x 8 mm, 27 deep, in back_edge - groove 8 mm, 10 deep, in back_edge
rail_middle	450 x 65 x 22 mm oak - tenon 45 x 8 mm, 40 long, on left_end - tenon 45 x 8 mm, 40 long, on right_end - mortise 45 x 8 mm, 27 deep, in front_edge - mortise 45 x 8 mm, 27 deep, in back_edge - groove 8 mm, 10 deep, in front_edge - groove 8 mm, 10 deep, in back_edge
muntin	352.5 x 65 x 22 mm oak, 2 pieces: muntin_top, muntin_bottom - tenon 45 x 8 mm, 25 long, on right_end - tenon 45 x 8 mm, 25 long, on left_end - groove 8 mm, 10 deep, in front_edge - groove 8 mm, 10 deep, in back_edge
panel	320.5 x 168.5 x 14 mm oak, 4 pieces: panel_top_left, panel_top_right, panel_bottom_left, panel_bottom_right - chamfer 30 x 6 mm on bottom_face_front_edge_arris, running out past front_edge - chamfer 30 x 6 mm on bottom_face_back_edge_arris, running out past back_edge - chamfer 30 x 6 mm on bottom_face_left_end_arris, running out past left_end - chamfer 30 x 6 mm on bottom_face_right_end_arris, running out past right_end

Appendix: source

Made with woodwright 0.9.0, build123d 0.13.0, Python 3.14.4.

To make these plans again:

```
uvx --python 3.14 woodwright==0.9.0 export projects.frame_and_panel_door
```

projects.frame_and_panel_door, in woodwright/examples/projects.py

```
def frame_and_panel_door(
    height: float = 800,
    width: float = 500,
    member_width: float = 65,
    groove_width: float = 8,
    groove_depth: float = 10,
    tenon_length: float = 40,
    muntin_tenon_length: float = 25,
    bevel: float = 30,
    clearance: float = 2,
    stock: Stock = DOOR_OAK,
    panel_stock: Stock = PANEL_OAK,
) -> Assembly:
    """A door of four raised panels in a mortise-and-tenon frame; outside sizes.
```

Two stiles, a top, a middle and a bottom rail, and between the rails above and below the middle one a short muntin. A groove runs through along the inside edges of all of them, centered in the thickness, as cut on a table saw. The rails are tenoned into the stiles, the muntins into the rails, the tenons as thick as the grooves are wide and with shoulders as wide as they are deep, so that the grooves run out beside them. At the ends of the stiles, the tenons of the top and the bottom rails have haunches filling the grooves; the muntins' short tenons leave room for each other in the middle rail.

The panels, the grain upright, are raised on the front, their backs flat: the bevel, as planed by hand, runs from the field right out to the edges, at the mouths of the grooves (`bevel` out from the field) as thick as the grooves are wide, and on into them, getting thinner; the field of a 14 mm panel lies 1 mm behind the face of a 22 mm frame. They

aren't glued, but float in the grooves: the edges are `clearance` short of the bottom across the grain, so the panels can swell, and 1 mm along it.

"""

```
rail_length = width - 2 * member_width
```

```
def corner(rail_end: SideRef, stile_edge: SideRef, position: Position, outer: SideRef) -> Joint:
```

```
    return MortiseTenon(
        tenon=rail_end,
        mortise=stile_edge,
        position=position,
        tenon_length=tenon_length,
        haunch=outer,
        haunch_length=groove_depth,
        tenon_thickness=groove_width,
        shoulder=groove_depth,
    )
```

```
asm, (stile_left, stile_right, rail_top, rail_bottom) = _frame(
    "frame_and_panel_door", corner, height, rail_length, member_width, stock
)
```

```
# The rails' front edges are at the top.
```

```
rail_middle = asm.add(Board("rail_middle", stock, length=rail_length, width=member_width))
```

```
middle = (height - member_width) / 2
```

```
for rail_end, stile_edge, stile_end in [
    (rail_middle.left_end, stile_left.back_edge, stile_left.left_end),
    (rail_middle.right_end, stile_right.front_edge, stile_right.left_end),
]:
```

```
    asm.join(
        MortiseTenon(
            tenon=rail_end,
            mortise=stile_edge,
            position=offset(middle, stile_end),
            tenon_length=tenon_length,
            tenon_thickness=groove_width,
            shoulder=groove_depth,
        )
    )
```

```
# Standing like the stiles: their right ends up, back edges to the right.
```

```
opening_height = middle - member_width
```

```
muntins = []
```

```

for name, top, bottom in [
    ("top", rail_top, rail_middle),
    ("bottom", rail_middle, rail_bottom),
]:
    muntin = asm.add(Board(f"muntin_{name}", stock, length=opening_height, width=member_width))
    for end, rail_edge in [
        (muntin.right_end, top.back_edge),
        (muntin.left_end, bottom.front_edge),
    ]:
        asm.join(
            MortiseTenon(
                tenon=end,
                mortise=rail_edge,
                tenon_length=muntin_tenon_length,
                tenon_thickness=groove_width,
                shoulder=groove_depth,
            )
        )
    muntins.append(muntin)

def into_groove(edge: SideRef, groove: SideRef, position: Position, length: float) -> None:
    # The bevelled edge goes in whole, the back of the panel against the
    # back of the groove.
    asm.join(
        TongueAndGroove(
            tongue=edge,
            groove=groove,
            tongue_thickness=groove_width,
            tongue_length=length,
            tongue_offset=0,
            cut_tongue=False,
            position=position,
            across=offset((stock.thickness - groove_width) / 2),
            clearance=groove_depth - length,
        )
    )

# Standing like the stiles too, their reference faces at the back: the
# front edges to the left, the right ends up.
opening_width = (rail_length - member_width) / 2
edge_reach, end_reach = groove_depth - clearance, groove_depth - 1

```

```

for row, muntin, above, under, stile_end in [
    ("top", muntins[0], rail_top.back_edge, rail_middle.front_edge, "right_end"),
    ("bottom", muntins[1], rail_middle.back_edge, rail_bottom.front_edge, "left_end"),
]:
    for column, stile_groove, muntin_groove, rail_end in [
        ("left", stile_left.back_edge, muntin.front_edge, "left_end"),
        ("right", stile_right.front_edge, muntin.back_edge, "right_end"),
    ]:
        panel = asm.add(
            Board(f"panel_{row}_{column}", panel_stock, opening_height, opening_width)
        )
        outer, inner = panel.front_edge, panel.back_edge
        if column == "right":
            outer, inner = inner, outer
        stile_position = offset(member_width, getattr(stile_groove.part, stile_end))
        into_groove(outer, stile_groove, stile_position, edge_reach)
        into_groove(inner, muntin_groove, CENTERED, edge_reach)
        for end, groove in [(panel.right_end, above), (panel.left_end, under)]:
            into_groove(end, groove, flush_with(getattr(groove.part, rail_end)), end_reach)
        # On the design box, the bevel ends at the mouth of the groove.
        for side in (panel.front_edge, panel.back_edge, panel.left_end, panel.right_end):
            panel.cut(
                Chamfer(
                    panel.aris(panel.bottom_face, side),
                    size=bevel,
                    size_b=panel_stock.thickness - groove_width,
                    run_out=True,
                )
            )
return asm

```