



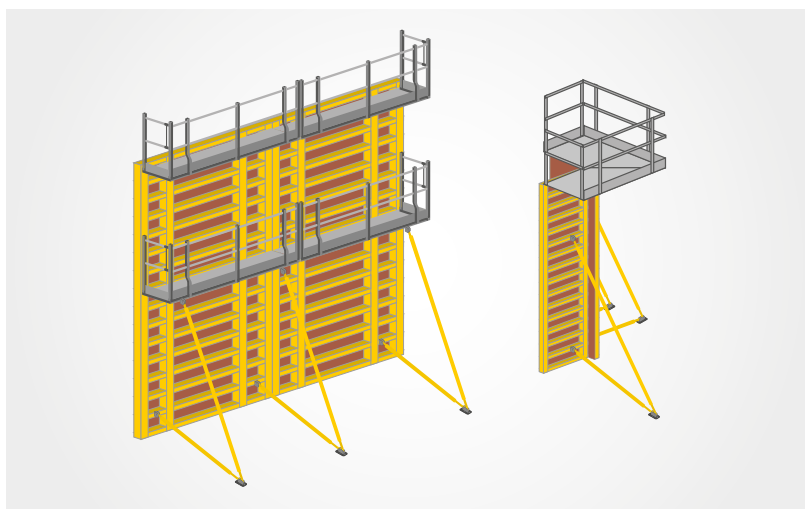
SCOPE | Installation of formworks for walls and piles

GENERAL RECOMMENDATIONS:

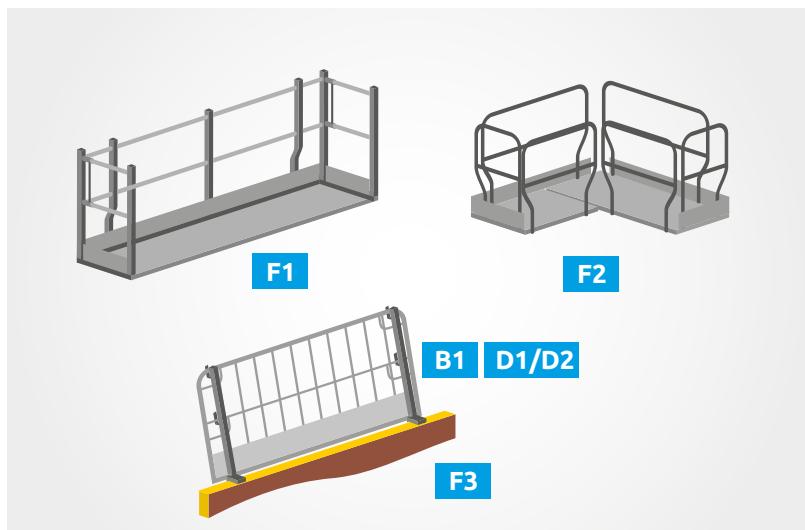
- Ensure the planned and adopted solutions are included in the protection plan and ISPW, which is an obligatory appendix to the HASP schedule.
- Provide a design from a formworks supplier.
- Analyse whether collective protection measures appropriate for the adopted technology of works and the formworks type.
- Plan a sequence for installation of formworks components, as provided in an installation and operating manual for the formworks, to minimise installation works at height
- Installation works must always be performed by at least 2 people.

FORMWORKS SETTING STAGE:

Select formwork components required for the installation, including components joining panels of the set formworks with panels of opposite formworks (locks, girts, walers, bracing, nuts) in accordance with Operation and Maintenance Documentation.

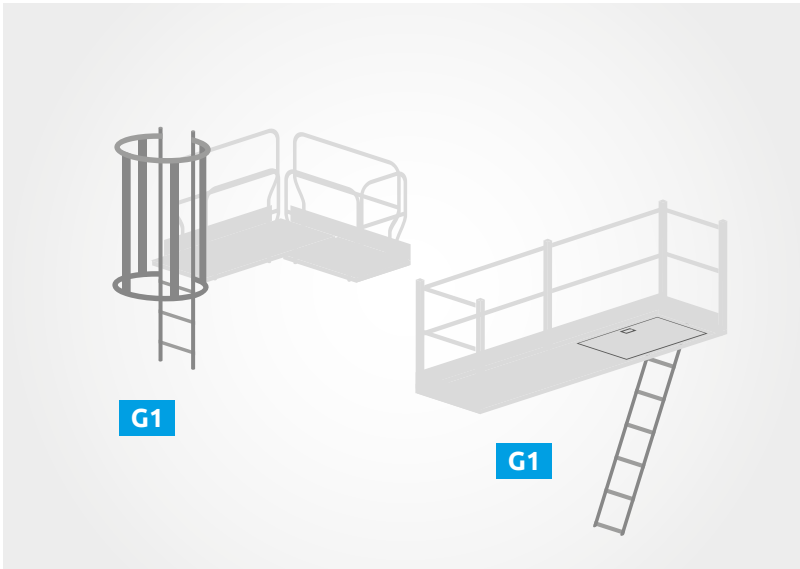


Check selection and completeness of modular working platforms for concrete works (F)

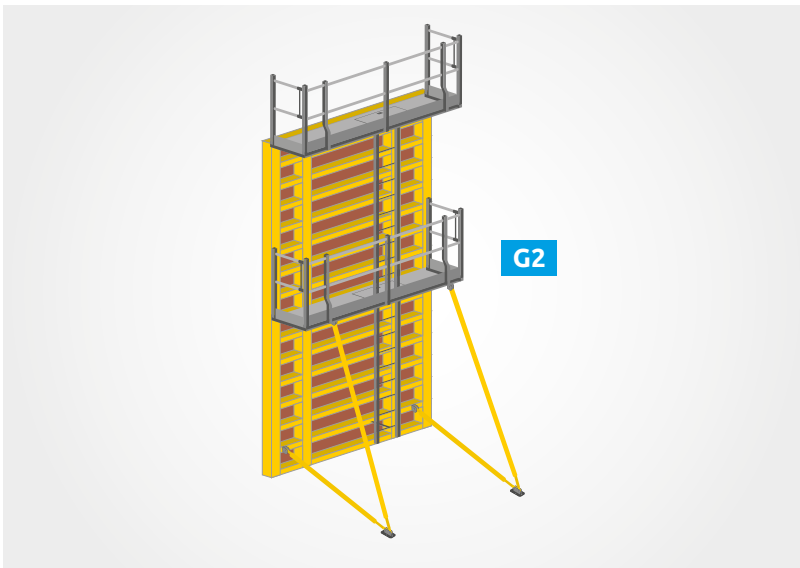


- Modular working platform for concrete works (F1)
- A working platform on the entire pile circumference, installed with a such span that it is possible to install strews and locks from the working platform level, and a modular external corner platform (F2)
- A modular balustrade on the opposite formworks (F3) with a handle adopted to the formworks system.

Plan appropriate traffic routes, provide access ladders (G) depending on a type and a height of formworks or mobile scaffoldings dedicated to a given type of the ground.



- A modular access ladder integrated with formworks, for access to a platform for concrete works, and for screwing formworks together (on one side) (G1)



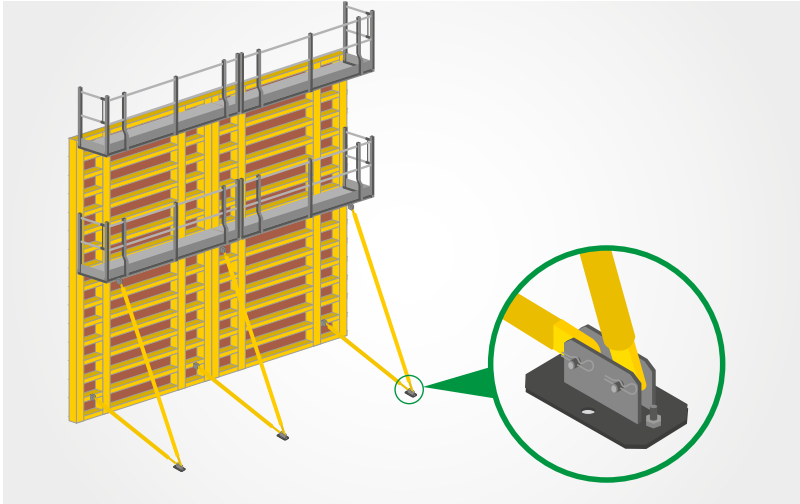
- A modular access ladder integrated with formworks on its entire height (G2)

Provide mobile platforms in a good operating condition and adopted to specific works (H).

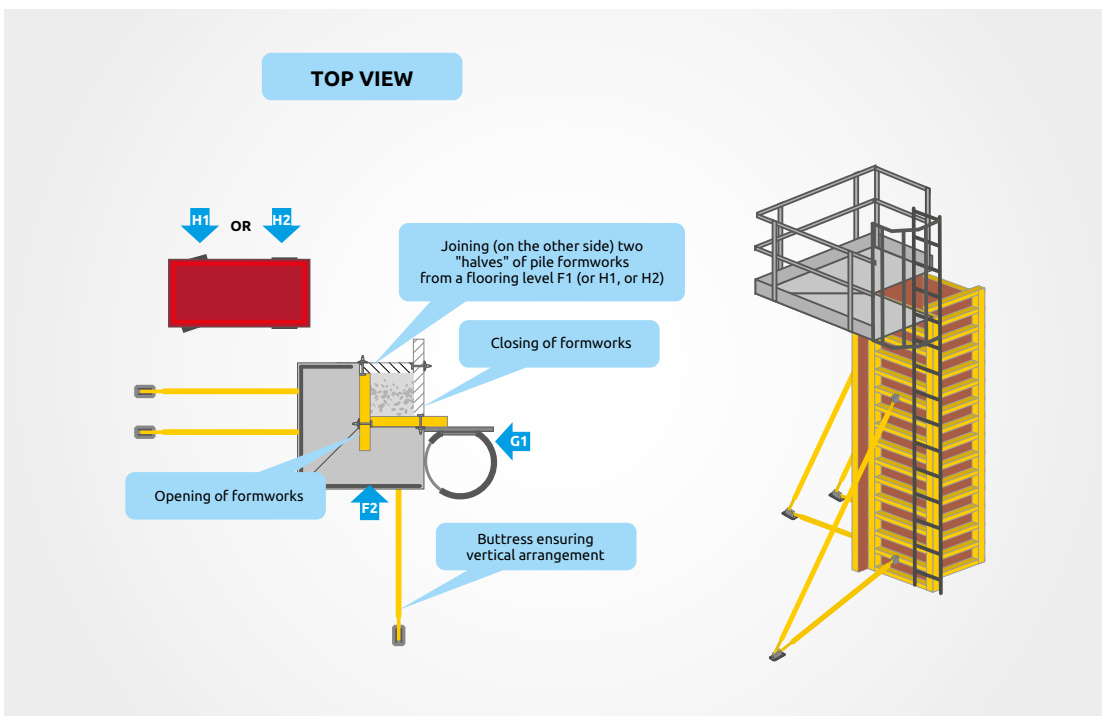


- Working ladder platform (H1)
- Modular mobile scaffolding (H2)
- Aerial platform or scissor lift (H3)

Plan buttresses and struts appropriate for formworks, and ensure required anchoring to the ground.



RULES FOR INSTALLING FORMWORKS FOR PILES - TO A HEIGHT OF 3.30–3.60 M



Formworks components:

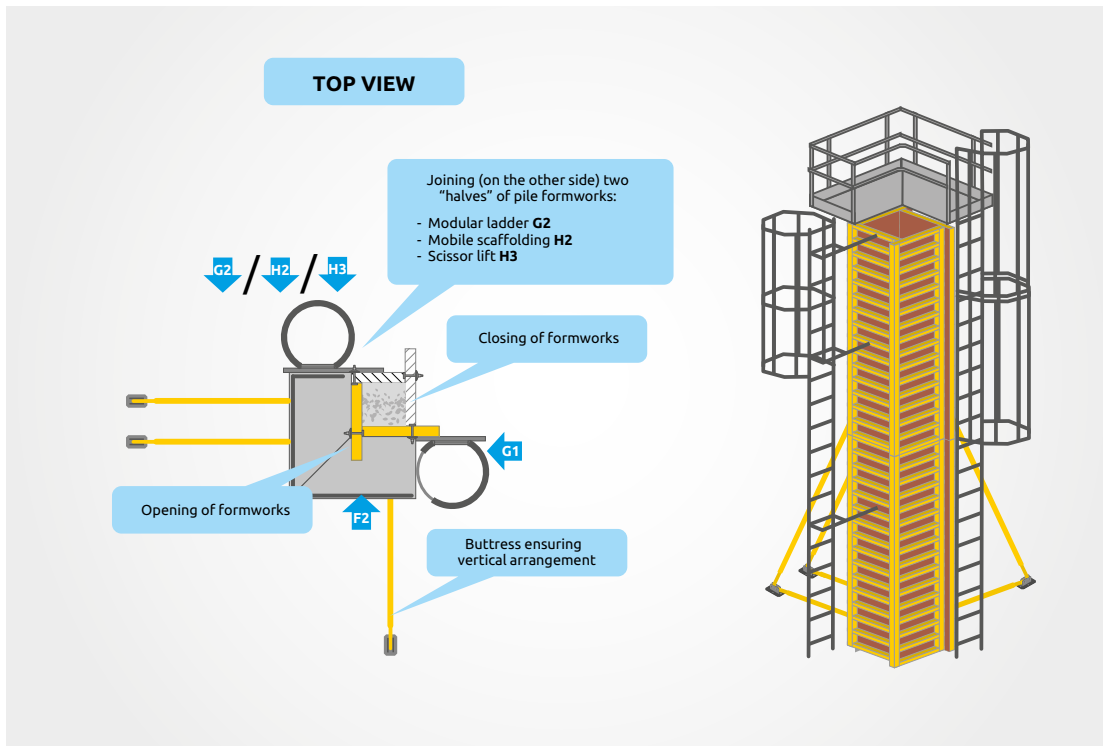
- Modular working platform for concrete works (F1)
- A modular access ladder integrated with formworks, for access to a platform for concrete works, and for screwing formworks together (on one side) (G1)

Auxiliary elements

- Working ladder platform (H1)
- Modular mobile scaffolding (H2)

RULES FOR INSTALLING FORMWORKS FOR PILES - TO A HEIGHT OF CA. 8.00 M

A way for preparing formworks for high piles depends on a height (length) of pile formworks that can be lifted to a vertical position without a risk of their destruction (deformation). In general, this height is close to ca. 8.00 m.



Formworks components:

- Modular working platform for concrete works (F1)
- A modular access ladder integrated with formworks, for access to a platform for concrete works, and for screwing formworks together (on one side) (G1)
- A modular access ladder integrated with formworks on its entire height (G2)

Auxiliary elements

- Modular mobile scaffolding (H2)
- Aerial platform or scissor lift (H3)

RULES FOR INSTALLING FORMWORKS FOR HIGH PILES > 8.00 M

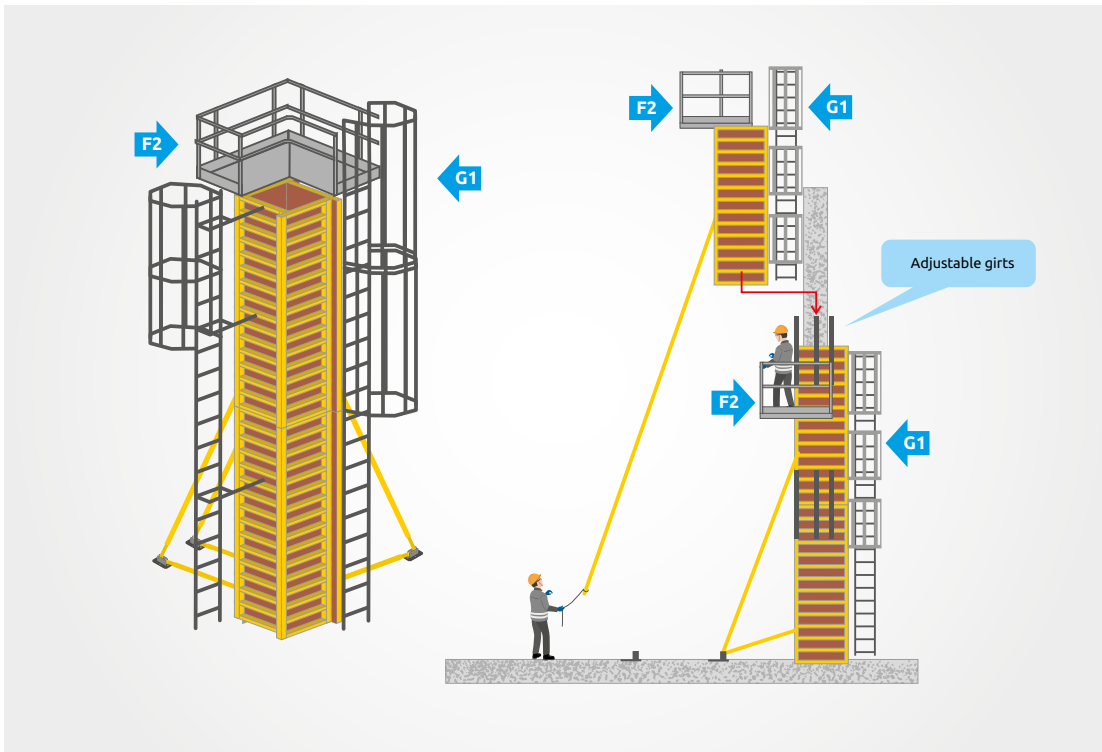
Installation of formworks for high piles requires an individual design. Formworks can only be installed when division of formwork mould "halves" is designed appropriately along their height, so-called "extensions". The installation of formworks "extensions" and ready to set and use units is performed on the ground, in a horizontal position. When it is not possible to assemble the extension on the ground, due to the installation technology, the extension is installed from indirect platforms installed along the complete circumference of the pile (1A). Elements of horizontal connections of the moulds and connections of "flanges" of round piles are also installed from these platforms.

Concrete works on the high pile should be performed at least in two (or more) stages.

Attention!

Horizontal connections of extensions cannot be screwed together from communication ladders integrated with formworks, therefore, the following solutions should be used:

- Working platforms on the entire pile circumference, installed with a such span that it is possible to install strews and locks from the working platform level (F2)
- Aerial platforms or scissor lifts adapted to the pile height (H3)
- Modular mobile scaffolding (H2) set around pile formworks



Formworks components:

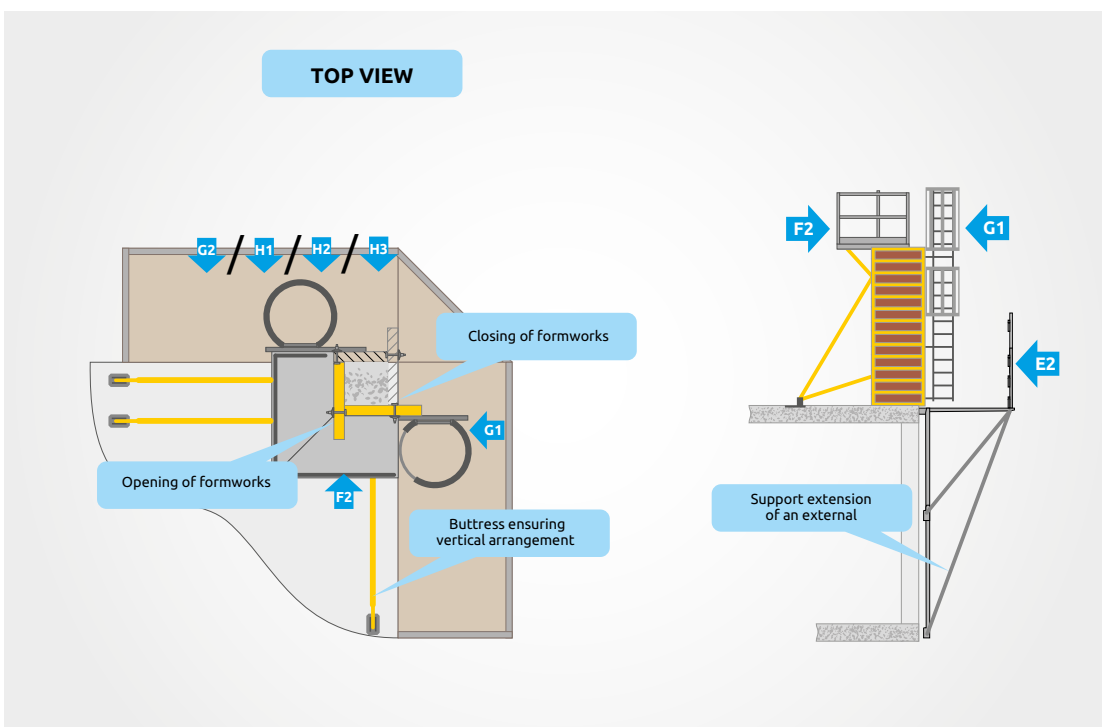
- Modular working platform for concrete works (F1)
- Modular working platform on a circumference for installation of formwork “halves” along the pile height and circumference (F2)
- Modular access ladder (G1) integrated with formworks and a working platform (F2), providing access to intermediate and concreting platforms
- A modular access ladder integrated with formworks on its entire height (G2)

Auxiliary elements

- Modular mobile scaffolding (H2)
- Aerial platform or scissor lift (H3)

RULES FOR INSTALLING FORMWORKS FOR EDGE/CORNER PILES

Connecting “halves” for a standard pile solution.



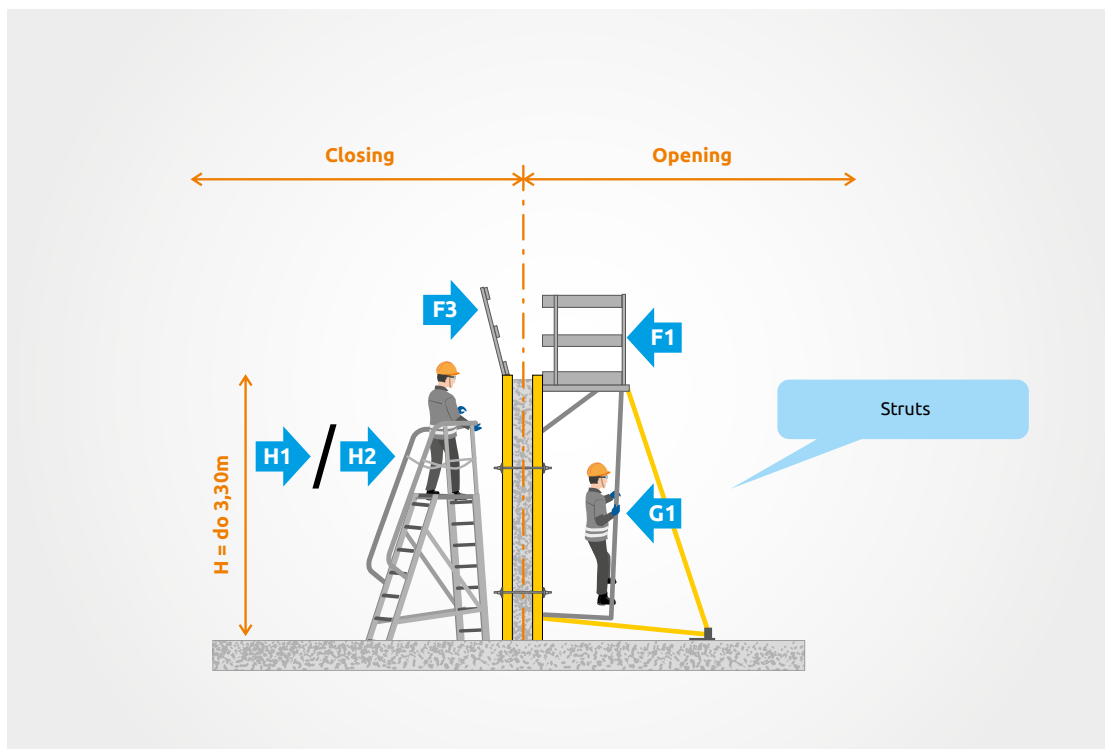
Formworks components:

- Modular working platform for concrete works (F1)
- Modular external corner platform (E2)
- A modular access ladder integrated with formworks, for access to a platform for concrete works, and for screwing formworks together (on one side) (G1)
- A modular access ladder integrated with formworks on its entire height (G2)

Auxiliary elements

- Working ladder platform (H1)
- Modular mobile scaffolding (H2)
- Aerial platform or scissor lift (H3)

RULES FOR INSTALLING FORMWORKS FOR A LOW WALL, UP TO 3.30 M



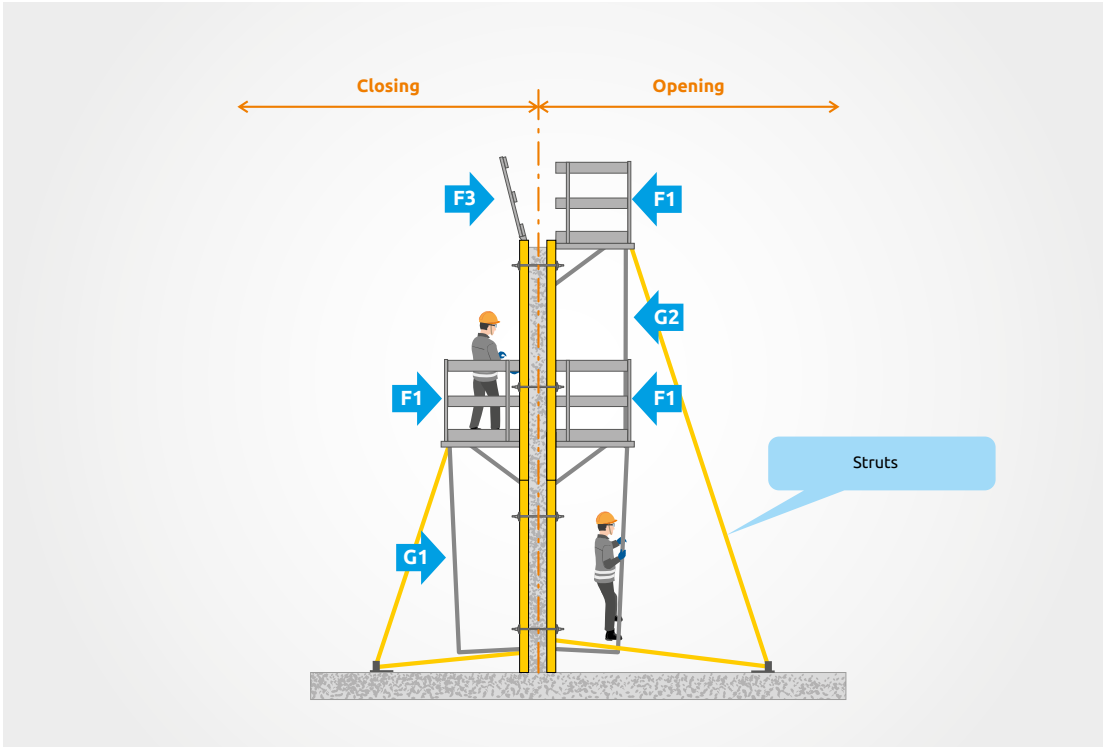
Formworks components:

- Modular working platform for concrete works (F1)
- Modular access ladder integrated with formworks and a platform (G1)
- Modular balustrade at closing or a working platform for concrete works (F3)
- A strut ensuring vertical arrangement and a bottom strut set as in an installation instruction (at least 2 per an installed component)

Auxiliary elements

- Working ladder platform (H1)
- Modular mobile scaffolding (H2)

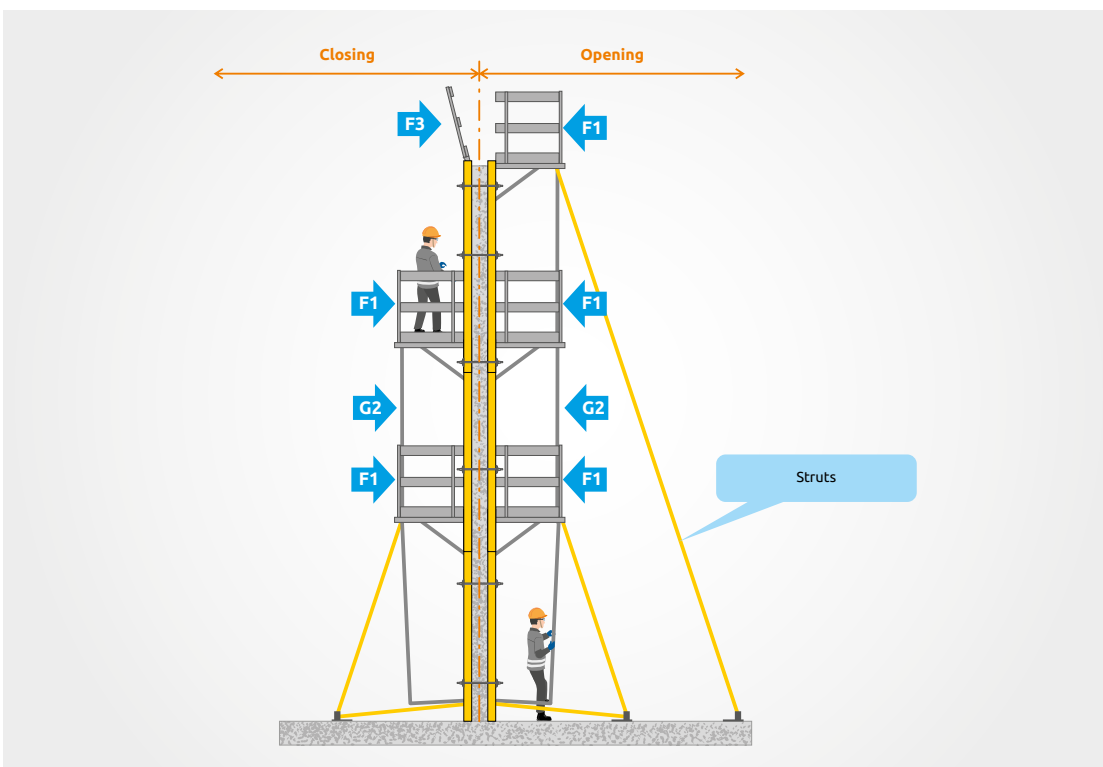
RULES FOR INSTALLING FORMWORKS FOR A HIGH WALL (ONE BUTTRESS PER HEIGHT)



Formworks components:

- Modular working platform for concrete works (F1)
- Modular access ladder integrated with formworks and a platform (G1)
- Modular balustrade at closing or a working platform for concrete works (F3)
- A strut ensuring vertical arrangement and a bottom strut set as in an installation instruction (at least 2 per an installed component) Connection to a bottom edge of a working platform

RULES FOR INSTALLING FORMWORKS FOR A HIGH WALL (TWO AND MORE BUTTRESSES PER HEIGHT)



Formworks components:

- Modular working platform for concrete works (F1)
- Modular access ladder integrated with formworks and a platform (G1)
- Modular balustrade at closing or a working platform for concrete works (F3)
- A strut ensuring vertical arrangement and a bottom strut set as in an installation instruction (at least 2 per an installed component) Connection to a bottom edge of a working platform