



FORMWORK, FALSEWORK**Potential Hazards**

1. flying objects
2. hearing loss (noise)
3. exposure to chemicals
4. impalement
5. cuts/lacerations
6. fall from elevated heights
7. form collapse/kick-out

Personal Protective Equipment Required

- | | | |
|-----------------|--------------------|-----------------|
| Hard hat | CSA Boots | Eye protection |
| Hand protection | Hearing protection | Skin protection |
| Respirator/mask | Face protection | (clothing) |
| Fall protection | | |

PRELIMINARY ACTIVITIES

Where multiple trade activity is scheduled, the general contractor is to review in advance the priority of work and schedule the appropriate time frame to allow each trade to complete their scope of work. Prior to any work commencing supervisors must conduct a hazard assessment of all applicable work areas. Any hazards that are found during the hazard assessment must be addressed prior to any work commencing.

DO'S:

1. Identify and fix falsework members correctly, according to drawings or standard details.
2. Rectify unbalanced loads, acting on formwork, promptly.
3. Control the rate of concrete pour.
4. Inspect falsework during and after concrete placement to detect any abnormal deflection that could lead to failure.
5. Check that falsework can be dismantled.
6. Make sure that there are adequate sleepers or sole plates, that they have been set level, and that they are adequately bedded and fixed in position.
7. Check that the ground has not deteriorated due to previous excavations, adjacent drains or pipelines, erosion, shrinkage, etc.
8. Check for signs of settlement or possible washout after heavy rain and flooding.
9. Make sure that supports are plumb.
10. Check that the props being used are correct in size, number and location.
11. Locate and secure heads of props centrally to the underside of supported bearer.
12. Locate base plates securely over the centre line of the sole plate.
13. Check that base plates, capping plates or forkheads are not bent
14. Tighten bolts and screw jacks correctly.
15. Use correct locking pins in adjustable steel props.
16. Use timber props and wedges that are sound and free from defects.
17. Tighten bolts and screw jacks correctly.
18. Use correct locking pins in adjustable steel props.
19. Locate bearers on the centre line of supports and fix securely.
20. Check that there is no crushing at supports due to inadequate bearing area.
21. Use paired timber members that do not vary in depth, and are gauged and secured together with staggered joints.
22. Check that joints in paired steel beams are staggered between supports.
23. Make sure that members are placed as specified, and connected as close to node points as possible.
24. Tighten couplers or bolt connections properly.

DON'Ts:

1. Do not use faulty materials.
2. Do not deposit materials or spoil against the side of the falsework.
3. Do not subject falsework to vibration and shock loads.
4. Do not prematurely remove props.
5. Do not place sleepers or sole plates over soft areas or over unsuitable soil.
6. Do not extend screw jacks beyond the limit recommended by the manufacturer.



SAFE WORK PROCEDURE

Falsework is any temporary structure or framework used in construction work to support materials, equipment or any assembly.

Falsework is used to support a permanent structure during its erection and until it becomes self-supporting. Falsework does not include scaffolding.

Falsework should be designed in accordance with sound engineering practice, and should be constructed according to the drawing of standard design details.

The design and supervision of falsework should be carried out by persons who are competent and experienced in this kind of work. Falsework should likewise be erected by experienced tradespeople.

Formwork and falsework drawings and supplementary instructions must be available on the project site during erection and use of the formwork and falsework.

1. Formwork and falsework must be formed of materials and in the manner specified by the plans. Deviations from the original plans must be authorized in writing by a professional engineer.
2. Manufactured formwork pieces should be used and maintained in the manner specified by the manufacturers.
3. Foundation load-bearing capacity must be protected from potential deterioration resulting from weather or other causes.
4. Vertical supports of a falsework structure should be founded on a level base that is strong enough to carry the imposed loads.
5. Topsoil and weak material at founding levels should be removed and the bearing surface compacted if necessary.
6. Sole plates under props may need to be bedded on a well-graded granular material, or on a layer of concrete blinding, to get an even bearing.
7. All falsework structures are subject to horizontal forces which may be caused by wind, settlement of foundations, supports being out of plumb or surge loads due to concrete discharge from skips or pumps. Bracing must therefore be provided to ensure that the falsework is stable.
8. Grade or ground beams are usually the first part of wall forming. The rebar dowels protrude above the beam so that the rebar can be attached to the wall.
9. Protection must be provided to prevent workers from being injured by or impaled on the dowels.
10. After the wall forms have been installed, ladders and work platforms must be used to provide safe access to and around the formwork.
11. Stripping of the formwork should be done in an organized way that eliminates hazards such as tripping and nail punctures. For example, nails should be removed or bent as the stripping takes place.
12. Formwork bracket scaffolding may be used on wall forms for light-duty work.
13. All guardrails should be installed in areas described under Guardrails in the WorkSafeBC Regulation.
14. Immediately prior to the pour, the formwork and falsework for the pour must be inspected by a professional engineer who will then certify in writing that the specifications have been met.
15. Workers underneath formwork during a pour must only be under those areas where concrete has not been placed.
16. Pouring of concrete or placing of other loads must stop when any weakness, undue settlement or distortion of the framework occurs and should restart only after the formwork has been repaired or strengthened in a manner specified by a professional engineer.
17. Only specified loads must be placed on ensured concrete structures.
18. Directions specified in the plans should be followed when dismantling formwork.



19. Precast concrete units or structural steel beams should not be dragged into final positions on the falsework as this can produce large lateral forces and result in overloading of the falsework.
20. The sequence and rate of pouring concrete onto form work should be controlled; concrete should not be allowed to accumulate unnecessarily and cause local overloading.
21. Frequent checks of the support system should be carried out during concreting.
22. Likewise, dismantling of falsework should be done in a systematic manner. The striking of formwork and removal of falsework under floor slabs are potential hazards.
23. When the falsework supports are lowered and large areas of formwork are to be dropped on to the lowered falsework supports, the supervisor should check that the impact loadings do not overstress the falsework.
24. Good housekeeping requirements should be met when stacking dismantled formwork.
25. Falsework for structures over any area of public access, or over construction roads, should be protected where necessary by a barrier or other means to prevent damage or interference to its soundness.
26. Suitable provisions should be made to keep unauthorized persons (or mobile plant) away from the falsework and to safeguard it from accidental impact.
27. Falsework should be inspected before and immediately after loading, and particularly after it has been subjected to strong winds, extreme temperatures, heavy rain or earthquakes.
28. Workers should not be employed in the vicinity of or under structures supported by falsework while the pouring of concrete is in progress.
29. Propping of concrete block walls, tilt-up wall panels and precast concrete flooring need particular attention.
30. Clear and simple communication between all those in the area of the activity involving formwork and falsework is good for prevention of accidents.