JOBSTEP SAFETY

Job Hazard Analysis: free example

Trench excavation with a trench box

Company	_____
Site or project	_____
Location on site	_____
Conditions today	_____ (weather, ground, access, other work nearby)
Task	Trench excavation with a trench box
Trade	Excavation
State	_____
Work type	Construction (29 CFR Part 1926)
Prepared by	_____
Date of the work	_____
Library reference	L11, Excavation and sitework

HOW TO USE THIS JHA

1. This JHA is filled in for the task as it is usually done. Walk the job: cross out what does not apply, and add any step, hazard or control your site needs.
2. Fill in every highlighted line before work starts. In the Word file you can type them in.
3. Go through each step with the crew at the start of the shift, on site, before anyone starts work.
4. Have everyone who does the work sign the crew sign-on sheet. Keep a copy on site.
5. It follows federal OSHA construction rules (29 CFR Part 1926). In a State Plan state, check your state's rules as well.

Before work starts

Highlighted lines must be filled in or confirmed for your site before anyone starts work.

- ☐ Confirm whether a hospital or clinic can be reached quickly from this site.
- ☐ Person in charge on site: _____
- ☐ Address or location to give 911 callers: _____
- ☐ Nearest hospital or clinic: _____
- ☐ Person on site with valid first-aid training: _____
- ☐ Competent person for the excavation: _____

☐ How and when underground utilities were located: _____

☐ Cave-in protection to be used, and who selected it: _____

Protective equipment for this job

- Hard hat
- Safety glasses
- High-visibility vest
- Safety-toe work boots
- Hearing protection near the excavator
- Work gloves

Training and competent person

29 CFR 1926.651(k)(1)
A competent person inspects the excavation before work, as needed during the shift, and after rain or other hazard-increasing events.

29 CFR 1926.21(b)(2)
Every worker must be instructed in recognizing and avoiding the unsafe conditions and rules that apply to their work.

Step by step

Step 1. Call in the utility locate and mark out the trench

WHAT CAN GO WRONG

- Digging into a gas, electric, water or communication line (explosion, electrocution, flooding, service outage)

HOW WE CONTROL IT

Work practices and checks

- Contact the utility locate service before digging, describe the work, and wait until the marks are in.
- Mark out the trench line in white, and check the locate marks against the drawings and what you see on site.
- Look for private lines the locate service does not mark, such as site lighting, irrigation and lines to outbuildings.

Rules: 1926.651(b)(1), 1926.652(a)(1), 1926.651(j)(2), 1926.651(k)(1), 1926.651(b)(2), 1926.651(b)(3), 1926.651(b)(4), 1926.416(a)(2) (see Rules that apply)

Step 2. Set up the site, the spoil area and the equipment path

WHAT CAN GO WRONG

- Spoil or equipment too close to the trench edge (cave-in, or material rolling onto workers)
- Workers on foot in the excavator swing area (struck or crushed by the machine)
- Open trench left unguarded (falls into the trench by workers or the public)

HOW WE CONTROL IT

Guards, barriers and equipment

- Mark off the excavator swing area and keep workers on foot out of it.
- Fence or barricade the trench area and post warning signs.

Work practices and checks

- Plan the spoil pile at least 2 feet back from the edge, on the side away from where the crew works.

Rules: 1926.651(b)(1), 1926.652(a)(1), 1926.651(j)(2), 1926.651(k)(1), 1926.602(a)(9)(ii), 1926.25(a) (see Rules that apply)

Step 3. Dig the trench with the excavator

WHAT CAN GO WRONG

- Bucket strikes a marked line near the estimated location (line damage, explosion or electrocution)
- Machine near the edge undermines the trench wall (cave-in or machine tipping in)
- Workers under the bucket or next to trucks being loaded (struck by the load or spillage)
- Engine and bucket noise (hearing loss)

HOW WE CONTROL IT

Work practices and checks

- Near a mark, stop and expose the line by hand or vacuum excavation before digging with the machine.
- Keep everyone out from under the bucket and away from trucks being loaded.
- Keep the excavator tracks back from the edge as far as its reach allows.
- Wear the seat belt, and sound the horn before moving.

Protective equipment

- Wear hearing protection near the running machine.

Rules: 1926.651(b)(1), 1926.652(a)(1), 1926.651(j)(2), 1926.651(k)(1), 1926.651(b)(2), 1926.651(b)(3), 1926.651(b)(4), 1926.416(a)(2), 1926.602(a)(9)(ii), 1926.602(a)(2)(i), 1926.602(a)(9)(i), 1926.600(a)(3)(i), 1926.651(e), 1926.651(h)(1), 1926.651(g)(1)(i), 1926.651(j)(1), 1926.52(b) (see Rules that apply)

Step 4. Set the trench box

WHAT CAN GO WRONG

- Entering the trench before the box is in (cave-in, burial)
- Box set on uneven ground or with gaps to the trench wall (box shifts or soil falls in)
- Box swung or lowered over workers (struck or crushed)

HOW WE CONTROL IT

Remove the hazard

- Nobody enters the trench until the box is set. Set it from the top with the excavator.

Work practices and checks

- Use a box with the maker's tabulated data for this depth, and set it as the data says.
- Keep everyone clear while the box is lifted and lowered, and use rigging inspected that shift.

Rules: 1926.651(b)(1), 1926.652(a)(1), 1926.651(j)(2), 1926.651(k)(1), 1926.652(g)(1)(iii), 1926.651(e), 1926.651(h)(1), 1926.651(g)(1)(i), 1926.651(j)(1) (see Rules that apply)

Step 5. Place the ladder and inspect the trench before entry

WHAT CAN GO WRONG

- No quick way out (workers trapped by water, a cave-in or a gas leak)
- Cracks, bulges, seepage or rain since the last check (cave-in)
- Low oxygen or exhaust gas in a deep trench (unconsciousness or death)

HOW WE CONTROL IT

Guards, barriers and equipment

- Place a ladder inside the box so no one travels more than 25 feet to get out, and extend it above the top.

Work practices and checks

- The competent person inspects the trench and the box before anyone enters, as needed during the shift, and after rain.
- Where a hazardous atmosphere could be present, test the air before entering a trench deeper than 4 feet.
- Keep engines and generators away from the trench so exhaust cannot collect in it.

Rules: 1926.651(b)(1), 1926.652(a)(1), 1926.651(j)(2), 1926.651(k)(1), 1926.651(c)(2), 1926.651(e), 1926.651(h)(1), 1926.651(g)(1)(i), 1926.651(j)(1) (see Rules that apply)

Step 6. Work inside the trench

WHAT CAN GO WRONG

- Standing outside the box or at its open ends (cave-in, burial)
- Water collecting in the bottom (slips, soil failure and drowning risk)
- Tools or material dropped from the top (head injuries)

HOW WE CONTROL IT

Work practices and checks

- Stay inside the box at all times. Enter and leave only by the ladder inside the box.
- Stop work and get out if water is collecting, until it is pumped down and the competent person has re-inspected.
- Lower tools and material in a bucket or sling, never throw them in.

Protective equipment

- Wear a hard hat and safety glasses.

Rules: 1926.651(b)(1), 1926.652(a)(1), 1926.651(j)(2), 1926.651(k)(1), 1926.652(g)(1)(iii), 1926.651(e), 1926.651(h)(1), 1926.651(g)(1)(i), 1926.651(j)(1), 1926.100(a), 1926.102(a)(1) (see Rules that apply)

Step 7. Pull the box and backfill

WHAT CAN GO WRONG

- Workers in the trench while the box is moved (cave-in or struck by the box)
- Machine backing over a worker on foot (crushing)

HOW WE CONTROL IT

Work practices and checks

- Everyone is out of the trench before the box is moved or pulled.
- Backfill in lifts as the box comes up, and use a spotter when backing.

Rules: 1926.651(b)(1), 1926.652(a)(1), 1926.651(j)(2), 1926.651(k)(1), 1926.652(g)(1)(iii), 1926.602(a)(9)(ii), 1926.602(a)(2)(i), 1926.602(a)(9)(i), 1926.600(a)(3)(i) (see Rules that apply)

Rules that apply to this job

Each rule in plain words. The regulation text itself is at osha.gov under the section number.

29 CFR 1926.651(b)(1) Steps 1, 2, 3, 4, 5, 6, 7
Find the estimated location of underground utilities before digging.

29 CFR 1926.652(a)(1) Steps 1, 2, 3, 4, 5, 6, 7
Workers in an excavation need a protective system against cave-ins (exceptions: stable rock, or under 5 feet deep with no sign of cave-in found by a competent person).

29 CFR 1926.651(j)(2) Steps 1, 2, 3, 4, 5, 6, 7
Keep spoil, materials and equipment at least 2 feet back from the edge, or use retaining devices.

29 CFR 1926.651(k)(1) Steps 1, 2, 3, 4, 5, 6, 7
A competent person inspects the excavation before work, as needed during the shift, and after rain or other hazard-increasing events.

29 CFR 1926.651(b)(2) Steps 1, 3
Before digging starts, contact the utility companies or owners, tell them about the work and ask them to locate their underground installations.

29 CFR 1926.651(b)(3) Steps 1, 3
As digging gets close to the estimated location of an underground installation, find its exact location by safe and acceptable means.

29 CFR 1926.651(b)(4) Steps 1, 3
While the excavation is open, protect, support or remove underground installations as needed to keep workers safe.

29 CFR 1926.416(a)(2) Steps 1, 3
Where the exact location of underground power lines is unknown, workers using jackhammers, bars or hand tools that could contact a line get insulated protective gloves.

29 CFR 1926.602(a)(9)(ii) Steps 2, 3, 7
Earthmoving or compacting equipment with an obstructed rear view may reverse only with a working backup alarm or a signal person.

29 CFR 1926.25(a) Step 2
Keep scrap lumber with protruding nails and all debris cleared from work areas, passageways and stairs.

29 CFR 1926.602(a)(2)(i) Steps 3, 7
Earthmoving equipment covered by this section has seat belts.

29 CFR 1926.602(a)(9)(i) Steps 3, 7
Rollers, compactors, loaders, dozers and similar machines have a horn that can be heard over the noise, sounded as needed when moving either way.

29 CFR 1926.600(a)(3)(i) Steps 3, 7
Block or crib raised machinery before anyone works under or between it. Fully lower or block blades, buckets and dump bodies when not in use or under repair.

29 CFR 1926.651(e) Steps 3, 4, 5, 6
Nobody stands under loads handled by lifting or digging equipment, and workers stand away from vehicles being loaded or unloaded.

29 CFR 1926.651(h)(1) Steps 3, 4, 5, 6
Nobody works in an excavation with standing or rising water unless adequate precautions protect them from it.

29 CFR 1926.651(g)(1)(i) Steps 3, 4, 5, 6
Where low oxygen or a hazardous atmosphere exists or could reasonably be expected, test the air before anyone enters an excavation deeper than 4 feet.

29 CFR 1926.651(j)(1) Steps 3, 4, 5, 6
Protect workers from loose rock or soil that could fall or roll from an excavation face.

29 CFR 1926.52(b) Step 3
Above the Table D-2 noise levels, use feasible engineering or administrative controls first, then hearing protection.

29 CFR 1926.652(g)(1)(iii) Steps 4, 6, 7
Protect workers from cave-ins while they enter or leave the area inside a shield (trench box).

29 CFR 1926.651(c)(2) Step 5
Trenches 4 feet or deeper need a ladder, ramp or other way out within 25 feet of lateral travel.

29 CFR 1926.100(a) Step 6
Wear a hard hat where there is a possible danger of head injury from impact, falling or flying objects, or electrical shock and burns.

29 CFR 1926.102(a)(1) Step 6
Use eye or face protection against flying particles, molten metal, chemicals, gases or vapors, or harmful light.

29 CFR 1926.21(b)(2) Whole job
Every worker must be instructed in recognizing and avoiding the unsafe conditions and rules that apply to their work.

29 CFR 1926.28(a) Whole job

The employer must require appropriate PPE wherever workers are exposed to hazardous conditions.

29 CFR 1926.50(c) Whole job

If no clinic or hospital is reasonably accessible, a person with valid first-aid training must be available on site.

Crew sign-on

By signing, I confirm this JHA was reviewed with me before I started this task, and I know who to tell if the work or conditions change.

Name (print)	Signature	Date