Chapter 4
Temporary Facilities

4-1. References.

a. American Society of Civil Engineers (ASCE) 7, Minimum Design Loads and Associated Criteria for Buildings and Other Structures (https://ascelibrary.org/standards) (4-1.a)

b. Department of Transportation (DOT) Federal Highway Administration's "Manual on Uniform Traffic Control Devices" (MUTCD) (https://mutcd.fhwa.dot.gov) (4-1.b)

c. EM 385-1-97, Explosives Safety and Health Requirements Manual (https://www.publications.usace.army.mil/USACE-Publications/Engineer-Manuals/) (4-1.c)

d. National Fire Protection Association (NFPA) 101, Life Safety Code (https://www.nfpa.org/Codes-and-Standards) (4-1.d)

e. 29 CFR 1910.142, Temporary Labor Camps (https://www.govinfo.gov/content/pkg/CFR-2020-title29-vol5/pdf/CFR-2020-title29-vol5-sec1910-142.pdf) (4-1.e)

4-2. Definitions.

a. Access/Haul Road. A temporary road constructed for the principal purpose of movement of construction materials, construction machinery, and/or access to a construction site. (4-2.a)

b. Barricade. A physical obstruction (for example, tape, screens, cones) intended to warn of and limit access to a hazardous area. (4-2.b)

c. Percent Grade. Equal to the number of feet that the roadway vertically inclines or declines over a horizontal distance of 100 feet (30.5 m). For example, a 10 percent grade means the roadway vertically rises or drops 10 feet (3 m) for every 100 feet (30.5 m) traveled. (4-2.c)

4-3. Personnel Required Training/Qualification.
Not Applicable.

4-4. Roles and Responsibilities.
Not Applicable.

4-5. Inspection Requirements.
Not Applicable.

4-6. Activity Hazard Analysis (AHA) Requirements.
Develop AHAs according to paragraphs 1-6 or 2-6, as applicable.

4-7. Minimum Plan Requirements.

a. Construction Site Plan. A written Construction Site Plan is required when temporary facilities are used and must include the following: (4-7.a)

(1) Locations and dimensions of temporary buildings and facilities to include layouts and details.

(2) Details on required anchoring of temporary structures.

(3) Equipment and material storage areas.

(4) Details of fencing to include ingress/egress points and signage used to secure the site.

(5) Access routes, see paragraphs 4-7.b and 4-8.e for access and haul road requirements.

(6) Location of containers for trash and recycling of materials.

(7) Temporary sanitary facilities.

(8) Parking areas for crews.

Note. See chapter 35 for sanitation, chapter 9 for temporary building spacing requirements, chapter 11 for temporary power distribution approval requirements, and chapter 24 for temporary ramp, trestle, scaffold, and platform approval requirements.

b. Access/Haul Road Plan. A written Access/Haul Road Plan is required when access or haul roads are to be used. Design access and haul roads according to current engineering criteria. Work on the haul road must not commence until the USACE supervisor/KO or COR has accepted the plan. The plan must address the following items: (4-7.b)

(1) Equipment usage, traffic density and patterns, right-of-way rules, and hours of operation.

(2) Road layout and widths, horizontal and vertical curve data, and sight distances.

(3) Sign and flagger requirements, road markings, and traffic control devices.

(4) Drainage controls.

(5) Safety controls (for example, barricades) in areas where construction vehicles and the public may come in contact.

(6) Maintenance requirements, including roadway integrity (for example, roughness, ruts, washout, smoothness) and dust control.

(7) Hazards adjacent to the road (for example, bodies of water, steep embankments).

4-8. General Requirements.

a. Temporary Structures. (4-8.a)

(1) Design and construct temporary structures according to ASCE 7. Consider the following loadings:

(a) Dead and live loads.

(b) Soil and hydrostatic pressures.

(c) Wind loads.

(d) Rain and snow loads.

(e) Flood and ice loads.

(f) Seismic forces.

(2) Anchor trailers and other temporary structures used as field offices, personnel housing, or for storage with rods and cables or by steel straps to ground anchors. Design the anchor system to withstand winds and according to the applicable state or local standards for anchoring mobile trailer homes.

(3) Control the growth of tall grass, brush, and weeds adjacent to trailers and other temporary structures used as field offices, personnel housing, or storage.

(4) Properly bond and ground temporary structures, equipment, and fencing placed under or near overhead electrical power transmission and distribution lines (see chapter 11).

b. Fencing and Warning Signs. (4-8.b)

(1) Provide temporary project fencing, or a substitute approved by the USACE supervisor or accepted by the KO or COR and delineated in the Construction Site Plan, on all projects located in areas of active use by members of the public. This includes sites near family housing areas or school facilities.

(2) Fencing must extend from grade to a minimum of 4 feet (1.2 m) above grade and must have a maximum mesh size of 2 inches (5 cm). Fencing must remain rigid and taut (that is, less than 4 inches (10 cm) of deflection when a minimum of 200 pounds (0.9 kilonewtons (kN) of force is exerted on it from any direction).

(3) Post signs on the fencing warning of the presence of construction hazards and for unauthorized persons to keep out of the construction area. At minimum, post signs every 150 feet (45.7 m). Post at least one warning sign on the fenced sides of project sites that are less than 150 feet (45.7 m) long. (See chapter 8)

(4) Depending upon the nature and location of the project site, the USACE supervisor/KO or COR may determine that fencing is not required. Perform a risk analysis of public exposure and project-specific considerations to make this determination and include the results in the Construction Site Plan. In those locations where the USACE supervisor/KO or COR has determined fencing is not needed, conspicuously post warning signs that identify the construction hazards.

c. Temporary Work Camps (Floating Plant Excluded). Design and construct work and labor camps according to 29 CFR 1910.142 and NFPA 101. (4-8.c)

(1) Provide shelters for protection from the elements. Each room used for sleeping purposes must contain at least 55 ft^2 (5.1 m^2) of floor space for each employee currently remaining onsite during off duty hours, without regard to shift work, and at least 7 feet-6 inch (2.3 m) ceilings. The floor space does not include areas occupied by closets or wall lockers.

(2) Elevate all wooden floors not less than 1.5 feet (0.5 m) above the ground level at all points to prevent dampness and permit free circulation of air beneath and for easier and safer maintenance.

(3) Temporary sleeping quarters must be heated, cooled, ventilated, lighted, and kept in a clean and safe condition.

d. Temporary Explosives Storage Areas. Store explosives in temporary explosives storage areas according to EM 385-1-97. (4-8.d)

e. Access/Haul Roads. Prior to construction or use of an access/haul road, a written Access/Haul Road Plan must be developed according to paragraph 4-7. (4-8.e)

(1) Do not move any equipment or vehicle upon an access or haul road unless the roadway is constructed and maintained to safely accommodate the movement of the equipment or vehicle involved and has been approved by the USACE supervisor or accepted by the KO or COR.

(2) When road levels are above working levels, construct berms, barricades, or curbs to prevent vehicles overrunning the edge or end of embankment. The height of

the berms and curbs must be at least one-half the diameter of the tires on the largest piece of equipment using the roadway.

(3) Roadways must have a crown and ditches for drainage. Intercept water runoff before it reaches a switch back or large fill area and drain it away from these areas in a suitable manner (for example, culvert).

(4) Construct haul roads to widths suitable for safe operation of the equipment at the travel speeds proposed by the contractor and accepted by the KO or COR.

(5) Post maximum speed limit signs on all roads, including access and haul roads.

(6) Provide an adequate amount of turn-outs on single lane roads with two-way traffic. When turn-outs are not practical, the contractor must establish a traffic control system to prevent accidents.

(7) Whenever possible, use a right-hand traffic pattern on two-way haul roads.

(8) Horizonal Curves.

(a) All curves must have open sight lines and as great a radius as practical.

(b) Limit vehicle speed on curves so that vehicles can be stopped within one-half the visible distance of the roadway.

(c) The design of horizontal curves must consider vehicle speed, roadway width and surfacing, and superelevation.

(9) Grades.

(a) When necessary, based on grade and machine and load weight, equip machines with retarders to assist in controlling downgrade descent.

(b) Access and haul roads should be kept to 10 percent grade or less. There should be no more than 400 feet (121.9 m) of continuous grade exceeding 10 percent.

(c) Grades may not exceed 12 percent. Steeper grades may be allowed if sufficient evidence is provided to the USACE supervisor/KO or COR that all equipment using the haul road can operate on the designed slope, documented in the Access and Haul Road Plan and accepted by the local Chief of the SOHO.

(10) Provide adequate lighting (see chapter 7).

(11) Provide traffic control lights, barricades, road markings, signs, and flaggers for the safe movement of traffic according to the DOT Federal Highway Administration's MUTCD and this chapter.