

Placement of safety critical waterway signs at Lock and Dams Steps To Take

Determination of need, location, and size for these large Warning, Danger, and Restricted signs are identified and engineered on a project-by-project, site-by-site basis. Local conditions will dictate the precise number of safety zones needed to be signed above a dam. (See USACE Sign Standards Manual, EP 310-1-6a, page 14.47)

1. Determination of Zones: The type of zones needed (Warning, Danger, or Restricted), the location of each zone, and the size of each zone must be determined. The hydraulic line and buffer zone (equals restricted zone) is determined by an evaluation team conducting an onsite survey in accordance with Chapter 10 of EP/ER 1130-2-520. The evaluation team will consist of an interdisciplinary team from Safety, Hydraulics, and Operations appointed by the District Commander in accordance with ER 1130-2-520. The team will evaluate the sites and recommend restricted area boundaries and associated control measures. (Note: the project will determine whether or not Warning and/or Danger zones are needed and will be subject to approval by the District Sign Manager.)
2. Glare Reduction or Elimination:
 - a. Identify the landing or target areas used at lock approaches. Coordinate with the tow industry to identify if problematic glare is occurring at the identified location.
 - b. Projects should review existing sign plans to eliminate/minimize high grade retro-reflective signage from industry target areas. As an alternative, lower grade sheeting can be considered when signs are necessary in target areas.
 - c. When projects plan a waterway sign layout, every effort should be made to avoid highly reflective signs in the vicinity of structural features or areas that are used as approach targets.
3. Approval: The approval authority (MSC or District Commander) will sign the boundary determination (hydraulic line and buffer zone).
4. Develop Sign Plan: After the detailed study is done and prior to implementation, a lock, dam, and waterway sign plan developed by the project must be submitted to the District Sign Program Manager for review. The plan is then submitted to the Chief of Operations for final approval. (See page 14.1).
5. Site Plan: Once the zones have been established, they should be marked on a site plan.
6. Determine Letter Size: IF large text signs are to be placed on the shoreline, measure the river width at the entrance of each zone and use the formula found in the sign manual to determine initial letter size, or "A". (See page 14-59.)
7. Prepare Sign Order: Legends are predetermined by the Sign Manual. You must supply UNICOR with the A letter size, and the legend with specific distance information where needed. UNICOR will calculate the size of the panel, rounding it to the nearest half foot.

8. Mounting Hardware: UNICOR will no longer send mounting hardware with an order unless specifically requested. Nor do they provide framework materials and mounting posts.
9. Placement: The placement of large signs requires an engineering study. (See pp. 14-57, *et seq*)
10. Engineering: The engineering study can either be done by district office engineers or the Sign Program MCX in St. Paul. Construction must be based on specifications in EC 1110-2-288. For more information on obtaining engineering services from the Sign MCX, contact Tim Grundhoffer at 651-290-5574 or Rick Magee at 651-290-5578.
11. If engineering is done by the district, it should be reviewed by the MCX.