KDOT Guidelines for Temporary Pre-Cast Concrete Safety Barrier Condition Inspection

This is a guide developed for educational purposes to aid in evaluating the condition of Temporary Pre-Cast Concrete Safety Barrier (TCSB) used in work zones and is based, in part, on information published by the American Traffic Safety Services Association (ATSSA). This guide illustrates examples of TCSB categorized into acceptable, marginal, and unacceptable conditions. It should not be considered comprehensive and should be used in conjunction with good engineering judgement.

ACCEPTABLE

Acceptable TCSB meeting the requirements in the contract documents may be used on KDOT projects.

1. The barrier is typically completely intact and there may be only a few minor blemishes that can be seen, which may include superficial gouges or minor cracks.
2. The face of the barrier is intact and there is low probability of vehicles being snagged or otherwise damaged on spalls, chipped concrete, or exposed rebar.
3. The connecting loop and pin assemblies are not damaged, are all intact, and fixed in their positions.
4. Each barrier section is permanently marked with the following information:
    - Type F3
    - Manufacturer code (as specified by KDOT Bureau of Construction & Maintenance)
    - Date manufactured (month and year)
    - Where the barrier is not marked, the pre-cast barrier section should be reviewed to verify the dimensions of the face, the number of loops, the number of holes, and other details meet the contract documents. If the barrier does not meet the contract documents it should be rejected on KDOT projects.
5. Examples of acceptable TCSB may be seen in Figures 1 and 2.

Figure 1: Acceptable TCSB

Figure 2: Acceptable TCSB

MARGINAL

For marginal TCSB that meets the requirements in the contract documents, it is at the discretion of the Engineer to determine whether the barrier may be used on KDOT projects.

1. The barrier may have some cracks, minor spalls, and imperfections. If cracks are present, they should not propagate through both sides of the barrier section. In general, spall dimensions less than or equal to approximately 12” L x 3” D x 3” H may be considered minor.
2. The connecting loop and pin assemblies are not damaged, are all intact, and fixed in their positions.
3. There may be limited sections of concrete that have fallen off or become disengaged from the barrier.
4. Some rebar may be exposed.
5. Significant structural cracking is not present.
6. Examples of marginal TCSB may be seen in Figure 3.

Figure 3: Marginal TCSB

UNACCEPTABLE

If TCSB meets one or more of the following conditions it should be considered unacceptable and may be rejected on KDOT projects.

1. The barrier exhibits signs of significant structural cracking where large spalls and cracks may be seen throughout the barrier. Some cracks may propagate through both sides of the barrier section. In general, spall dimensions greater than approximately 12” L x 3” D x 3” H are unacceptable.
2. Concrete has become disengaged from the barrier section and could easily be knocked loose if hit.
3. The shape of the barrier face is no longer intact presenting the potential for the barrier not to perform as intended during a crash due to vehicles to becoming snagged or damaged.
4. The connecting loop and pin assemblies are deformed, bent, broken, or no longer fixed in their position.
5. Significant amounts of rebar may be exposed or protruding from the barrier.

6. Barrier is not an F-Shape Barrier and therefore does not meet the contract documents. An example of a Non F-Shape Temporary Pre-Cast Concrete Safety Barrier may be seen in Figure 4.
7. Examples of unacceptable TCSB may be seen in Figure 5.

Figure 4: Non F-Shape TCSB

Figure 5: Unacceptable TCSB

QUESTION AND ANSWER

Q: If one side of the barrier is in marginal condition and the Engineer recommends the barrier be rejected, but the other side of the same barrier section is in acceptable condition; can the barrier be used on KDOT projects?

A: The decision is at the discretion of the Engineer, but provided the acceptable face of the barrier section faces traffic; the performance of the barrier should not be affected.