DECISION DOCUMENT

Culverts or Drainage System Repair – Defining Fix Culverts and the Associated Attributes

Problem Statement. Senate Bill 1 (SB1), the *Road Repair and Accountability Act of 2017*, provides additional funding for the State of California to address the deferred maintenance needs of the transportation system's assets and designates an annual allocation of $400 million, specifically, for culverts and bridges. This new law states that the Department of Transportation (Caltrans) meet the preliminary performance outcomes, and indicates there is to be, *"Not less than 90 percent of culverts in good or fair condition,"* by the end of the year 2027.

Many of the state's culverts and drains are in need of repair, and in an effort to ensure Caltrans delivers statewide consistency, and meets SB1's preliminary performance outcomes pertaining to culverts, it is necessary to clarify when a culvert is to be fixed, as well as, the attributes for determining the appropriate strategy for fixing the drainage system. SB1 does not provide a clearly stated definition, nor guidance, regarding the commonly used term, Fix Culvert.

Recommendation. It is recommended that Caltrans use and implement the following definition for the term Fix Culvert (see below) when deciding if a culvert or drain meets the requirements for repair. It is also recommended that the appropriate strategy for fixing the drainage system be determined based on the attributes of the culvert or drainage system.

Fix Culvert (or Fix Drain) consists of:

- Any project that improves the condition of a culvert from a lesser condition to a better condition shall be counted as a fixed culvert.
  - In terms of adopted performance metrics, this includes any project or activity that improves the culvert condition from Poor to Good, Fair to Good, or Poor to Fair.
  - The culvert's condition is assessed and categorized as either: Good, Fair, or Poor by assessing the Culvert and Drainage System's five attributes (see next section for descriptions). Each attribute, Waterway Adequacy, Joints, Materials, Shape, and Alignment is given an assessment grade based on its observed condition. A calculation by an algorithm in the CIP software application, using the final score derived from the assessment scores of the five attributes, determines the culvert's condition category based on which category that number falls into. The numerical range for each category is categorized as follows:
    - Good: 80-100.
    - Fair: 50-79.
    - Poor: 0-49.

- Any corrective or preventive maintenance activity or project, or rehabilitative project that extends the service life of a culvert or other drainage system's elements to prevent future, and more costly, rehabilitation repairs.

Culvert and Drainage System Attributes:

- *Waterway Adequacy.* The percent blockage of a culvert and storm drain system.
  - The mitigation activities on a drainage system to remove debris and sediments for the purpose of improving the water way adequacy. This includes culverts, riser pipes, drainage inlets, flared end sections, and headwalls.
  - An acceptable waterway adequacy will prevent blockage or flooding of roadways and/or adjacent properties. Any such improvements that restores the hydraulic capacity of a culvert is defined and counted as a fix.

- *Shape.* The amount that is deformed from the original design shape.
  Changes in shape can threaten the structural stability of the element. The mitigation activities on the drainage systems to repair the settlement and alignment, are all counted as fixed culverts or drains. This includes culverts, headwalls, flared end sections, and riser pipes.

- *Joints.* The degree of joint failure, such as separation and evidence of soil infiltration or water exfiltration.
  - Dislocated joints could allow backfill to infiltrate the culvert's barrel. Separation at the joints compromises the integrity of the culverts or the roadway above the culvert.
  - The mitigation activities to repair the compromised joints, or other remedies to alleviate the condition, are defined and identified as a fix.

- *Alignment.* The amount that still exists from the originally designed alignment.
  - Changes in alignment can threaten the structural stability of the drainage system.
  - The mitigation activities on the culverts and other appurtenances to repair the alignment are identified as a fix.

- *Material Condition.* The degree of deterioration of the original material.
  - Deterioration of the material could cause infiltration/exfiltration, compromise the integrity of the culvert, and also cause minor to complete collapse of the culvert.
  - The mitigation activities to repair or replace the compromised material are defined and identified as a fix.

Fiscal Impact. No fiscal impact.

Organizational Impact

- **Employee Impact.** Implementation will help ensure statewide consistency by providing documentation and guidelines, to Caltrans employees, pertaining to when a culvert or drainage system is to be fixed and the attributes to use with determining the appropriate strategy for repair. Employees may also be impacted as a result of any potential additions, or changes, to charging codes that are used by the employees.

- **Stakeholder Impact.** No stakeholder impact.

Policy Impact. This decision document defines a widely utilized metric, which is currently referred to as *Fix Culvert*, and is an aggregate count of the numerous activities being performed. The recommended definition does not impact the performance of the activities, nor does it impact the charging practice.

Risks. None identified.

Proposed Implementation Schedule. Upon approval, this policy will be retroactively implemented to July 1, 2017, for all projects and activities that were made possible through Senate Bill 1.

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APPROVAL RECOMMENDED:

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