

2.5 BRIDGE DECK DRAINAGE

2.5.1 GENERAL

The policy establishes bridge deck drainage requirements for the collection, conveyance, and removal of surface runoff to prevent ponding on the bridge deck and intrusion into the traveled way.

2.5.2 POLICY

The allowable spread of water on the deck shall be per Table 831.3 of the Caltrans *Highway Design Manual* (HDM). The roadway engineer typically provides the project's rainfall intensity in accordance with HDM requirements.

The deck drain inlets shall be at the following locations:

1. If a sag vertical curve is unavoidable, an auxiliary drainage system shall be provided. The auxiliary drainage system shall be capable of draining the bridge deck pursuant to the *AASHTO Drainage Manual* if the drainage inlet in the lowest point of the sag is obstructed. Acceptable auxiliary systems include raised scuppers or drainage inlets with separate discharge piping and outlets.
2. Locations that would mitigate surface flow across the deck due to the reversal of superelevation.
3. Immediately preceding and upstream of the expansion joints in bridge decks. Complete interception of all flow across the joint is not required.

2.5.3 CRITERIA FOR PIPING

1. Piping shall be 6" minimum diameter welded steel pipe with 1/8" minimum wall thickness. All bends shall be smooth and on an 18" minimum radius for 6" diameter pipe and a 24" minimum radius for 8" diameter pipe. Mitered bends shall not be used. The minimum horizontal slope shall be 2 percent.
2. Expansion couplings shall be shown on the plans where drainpipes cross expansion joints at hinges and abutments.
3. The pipe shall be supported by the bridge elements.
4. Bridge aesthetics shall be considered when laying out and designing piping.
5. The pipes shall include cleanouts at appropriate locations to facilitate maintenance, such as:
 - Where a vertical pipe transitions to horizontal
 - The bend is greater than 45 degrees
 - Every 100 feet, maximum, of horizontal pipe

- Where pipe size changes from larger to smaller diameter
- Where the bend is within 6 feet from the outlet, a cleanout is not required

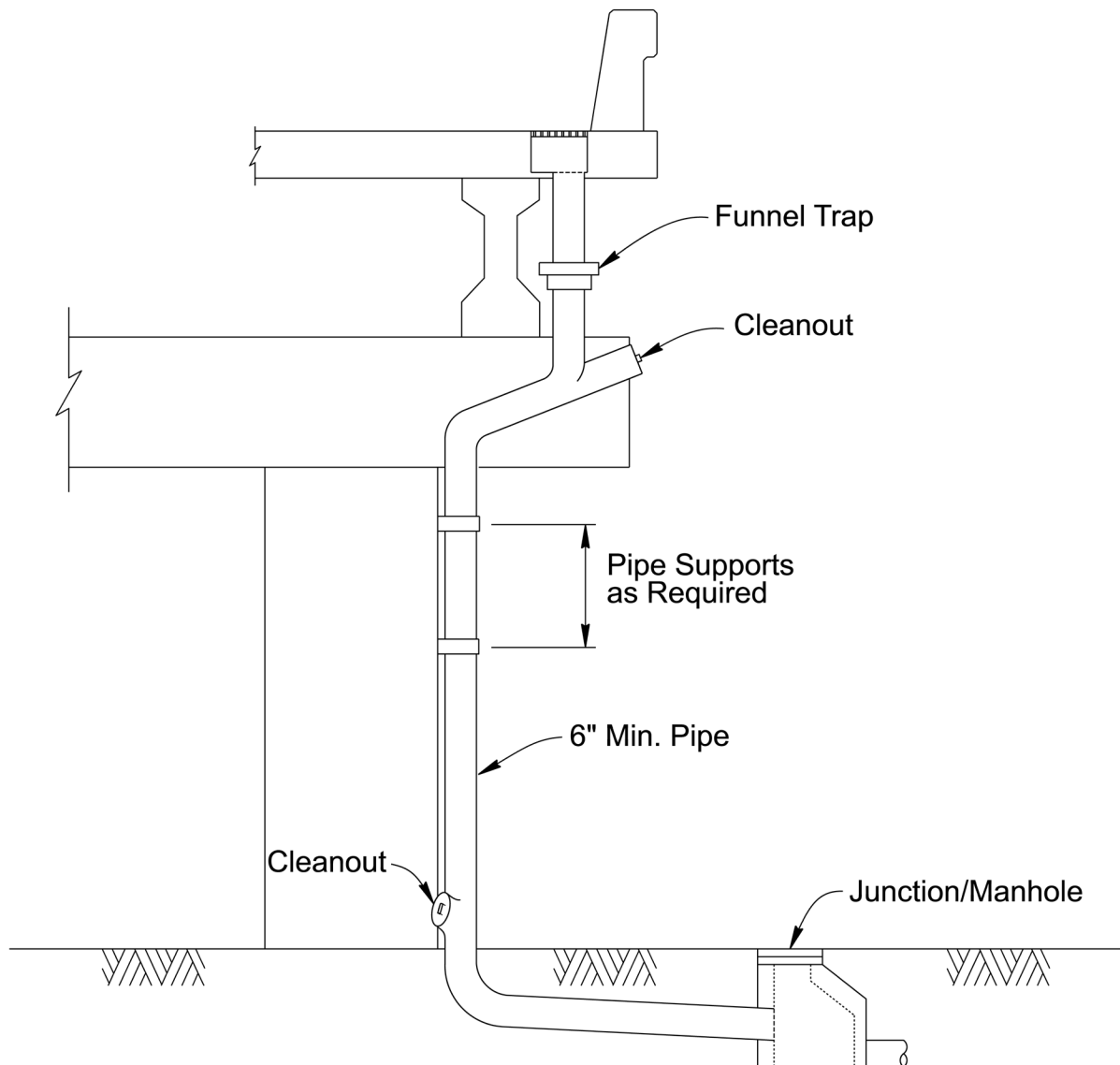


Figure 2.5.3.1. Example of Cleanout Locations

2.5.4 REFERENCES

1. AASHTO. (2014). *AASHTO Drainage Manual*, American Association of State Highway and Transportation Officials, Washington, DC.
2. Caltrans. (2020). *Highway Design Manual*, California Department of Transportation, Sacramento, CA.