

SHOPP Roadside Safety Improvements Program

Guidance and Performance Output Calculations

The goal of the Roadside Safety Improvements Program is to reduce roadside worker fatalities to zero by minimizing the frequency and duration of highway worker exposure to traffic. Projects that provide comprehensive solutions for worker safety issues and reduce the frequency and duration of worker exposure will be given funding priority.

The risk of injury or fatality increases with the length of time a worker is exposed to traffic without protection. Historical data shows that Maintenance workers have a much higher percentage of fatalities when compared to other functions, and Maintenance workers on foot adjacent to the traveled way have the highest risk. During the planning and design of projects, the Project Development Team should consider that the common factors of worker fatalities are urban location, high Average Daily Traffic, roadside work near shoulder, vehicle parked on shoulder, and worker on foot.

Project planning and design accomplishes the objective to reduce the frequency and duration of worker exposure through the application of the **SAFER** design philosophy:

1. **Site** – improve safety by locating features in safe locations;
2. **Accessible** – provide safe worker access to the roadside and highway features;
3. **Facilitate** – accommodate mechanized maintenance activities and understand equipment constraints;
4. **Eliminate** – implement design decisions that eliminate the maintenance activity and the need for workers on foot adjacent to the travel way;
5. **Relocate** – minimize the need for recurrent damage repair by relocating equipment and irrigation systems out of the clear recovery zone and away from traffic.

The following types of work qualify as Roadside Safety Improvement activity categories. Other types of work not shown should be presented to the Roadside Program Advisor for consideration. Use the information below to calculate the performance output for updating the 10-year SHOPP Plan and SHOPP Tool.

Worker Safety - Safe Access

- Gates (walk and drive) – each gate = 1 location
- Light duty vehicle trails – each 2000 square feet (SQFT) = 1 location
- Shoulder widening/turnout – each 2000 SQFT = 1 location
- Staircases – each staircase = 1 location
- Maintenance Vehicle Pullouts (MVP) – each MVP = 1 location
- Upgrade safety rails on overhead signs to CalOSHA mandates – each sign = 1 location
- Provide access for workers and equipment to drainage/storm water facilities for inspection and cleaning – each location = 1 location.

Worker Safety - Miscellaneous Facilities and Equipment

Miscellaneous facilities and equipment includes, but is not limited to: Signs, Lighting, Vehicle Detection, Ramp Meters, Changeable Message Signs (CMS), Irrigation Systems, Chain Control Areas, Drainage/Storm water facilities, and Graffiti control for facilities/equipment.

- Relocate control cabinets and pull boxes to safe locations – each cluster of equipment = 1 location
- Reorient control cabinets so back of cabinets face nearest oncoming traffic – each location = 1 location
- Relocate signs and lighting to safe locations a minimum of 30 feet from Edge of Traveled Way (ETW) or at gate – each sign or light standard = 1 location
- Make exit signs safer to replace or repair or relocate out of the gore to minimize damage – each sign = 1 location
- Remove duplicate/excessive signage – each sign removed = 1 location
- Relocate and cluster irrigation control cabinets and valves to safe locations – each clustering of equipment = 1 location
- Relocate irrigation equipment to safe locations a minimum of 30 feet from ETW – each cluster of equipment = 1 location
- Relocate irrigation mainlines, control wires and pull boxes away from shoulder to Right of Way line – each 500 linear feet (LF) of roadway = 1 location
- Relocate backflow preventers, booster pumps, irrigation controller cabinets and electrical cabinets to protected area or near access points away from shoulder – each cluster = 1 location
- Remove irrigation sprinklers adjacent to shoulder – each 500 LF = 1 location
- Shield equipment where relocation is not possible – each location = 1 location
- Combine various types of electrical equipment into fewer cabinets – each clustering of equipment = 1 location
- Upgrade chain control areas with lighting, signage, or additional paving – each area = 1 location
- Correct concentrated flow issues that are causing erosion – each location = 1 location
- Plant shrubs or vines at base of wall in high exposure/high vandalism areas – each 500 LF = 1 location
- Reduce wildlife conflicts with traffic where frequent hits occur – each location = 1 location

Worker Safety - Barriers

- Upgrade guardrail to concrete (non-median spot areas no greater than 200 feet in length to protect equipment that cannot be relocated) – each spot location = 1 location
- Fencing at spot locations to minimize unauthorized access to R/W – each run = 1 location

- Safety rail on retaining walls – each wall = 1 location
- Upgrade barrier and rail end treatments to compression (compressor) type in high hit areas – each end treatment = 1 location

Worker Safety - Miscellaneous Paving/Treatment

- Areas beyond the gore – each location = 1 location
- Narrow areas in front of walls, barriers or other roadside features – each 2000 SQFT of paving = 1 location
- Slope paving under and adjacent to bridge structures – each bridge slope = 1 location
- Under existing guardrail and around sign posts – each 500 LF or sign = 1 location
- At equipment clusters – each cluster = 1 location
- At access points – each apron = 1 location
- Rumble strip installation where not required for traffic safety for audio clue for workers on foot – each 1000 LF = 1 location
- At low visibility areas and road edge – each 2000 SQFT of treatment = 1 location

Worker Safety - Vegetation Control

- Preserve visibility to signage, safety hardware, maintain sight distance, etc. – each location = 1 location
- Facilitate drainage in ditches, swales, inlets and outlets – each location = 1 location
- Minimize homeless and transient activity – each location = 1 location
- Minimize herbicide use and erosion – each ¼ acre = 1 location
- Replace vegetation with inert materials – each 2000 SQFT. = 1 location
- Prevent accumulation of snow and ice – each location = 1 location
- Create fire strip next to shoulder and reduce fuels that could spread fires to wild lands or adjacent development – each 500 LF = 1 location
- Remove inappropriate high maintenance/high water use plant material and replace with sustainable native or drought tolerant species on temporary irrigation systems – each ¼ acre = 1 location

The following types of work **DO NOT qualify** as Roadside Safety Improvements:

Non-Repetitive Maintenance Activities

- Tree removal (contact District Landscape Architect and District Landscape Specialist)
- Emergency work

Standard Maintenance Activities (contact District Landscape Specialist)

- Pruning vegetation
- Application of mulch

Highway Planting

- Replacement planting except where critical to reduce maintenance worker activities for slope stability, erosion control, water conservation, or storm water compliance mandate or court order.

Paving (contact Roadway Preservation Program)

- Center medians
- Shoulders
- Gores

Traveler Safety items (contact Collision Reduction Program)

- CHP turn around points
- Median barriers
- Barriers to prevent run-off the road accidents (rather than shielding roadside facilities that cannot be relocated)

Upgrades to or replacement of existing equipment

- Cameras, CMS signs or other Traffic Management System equipment (contact Mobility Program)
- Lighting (contact Signs and Lighting Program)