



## Temporary Traffic Control (TTC) Devices

### TEMPORARY BARRIER/CRASH CUSHIONS

- Improper barrier wall flare
- Improper barrier end treatment
- Improper temporary barrier end transition with existing W-Beam or concrete barrier
- Non-standard or no object marker/vertical panel
- Reflector maintenance needed
- Reflector on barrier flare not allowed
- Barrier wall damaged or dirty
- Barrier delineation improper
- Inadequate or no crash cushion
- Improper installation of crash cushions
- Crash cushions damaged or dirty

### ARROW PANEL

- None or Non-standard
- Malfunction (bulb-out, etc)
- Incorrect placement
- Incorrectly aimed (or misaligned bulbs)
- Not dimmed at night
- Not protected as in SHA standard
- Inadequate sight distance
- Wrong indication/display

### SIGNS

- SHA's typical or TCP (for the current phase of job) not followed
- Non-standard type (material, size, color)
- Poor reflectivity
- Conflicting permanent & temporary signing
- Sign legend problem
- Duct tape, obstructed, damaged, dirty, overlay plate, non-standard
- Wrong message
- Inappropriate/ contradictory signs not covered/removed
- Sign support problem
- Sign missing or down
- Horizontal and vertical clearances

### PAVEMENT MARKINGS

- None or non-standard markings
- Less than full complement of pavement markings/ delineation
- Unnecessary or conflicting markings not obliterated completely
- Failing of temporary markings/Raised Pavement Markers (RPMs)
- Less than required number of RPMs
- Improper alignment
- Incorrect skip size/space

### CHANNELIZING DEVICES (CDs) (CONES, DRUMS, ETC.)

- Non-standard device (shape, density)
- Non-standard single or multilane taper
- Incorrect spacing
- Placed too far away from traffic (> 2 ft.)
- Damaged, dirty or non-reflective
- Improper alignment
- No CDs placed preceding barrier end sections
- Improperly weighted
- Missing or poor reflectivity

### FLAGGERS

- Non-certified flagger
- STOP/SLOW paddle is non-standard
- Incorrect signaling device (flag)
- Incorrect flagging
- Wearing improper clothing
- No flaggers present (signs displayed)
- Improper distance from advanced warning sign to flagger

### PORTABLE VARIABLE MESSAGE SIGNS

- Application does not meet SHA guidelines
- Incorrect or unapproved message
- Non-standard or unapproved VMS equipment
- Not protected as in SHA standard
- Improper placement
- Inadequate sight distance
- Too many messages

### GENERAL

- Traffic Control Device is not NCHRP-350 approved or not
- Listed as an SHA "Approved Product"
- Lane closures do not have on-going operations/work
- Improper stopping or detouring of traffic
- Unprotected hazards on or adjacent to travel roadway
- Pavement drop-off not in compliance with SHA standards and special provisions
- Missing or non-compliant retro-reflective apparel (Type II)

## TTC Operations

### WORK ZONE IMPACT

Visible problems/conflicts

- Excessive Queues/Delays
- High Speeds/Sudden Speed Changes
- Pedestrian/Bicycle Issues
- Business/Residential Impacts
- Limited Sight Distance
- Coordination w/ Adjacent Work Zones
- Reduced Ramp Merge Area/Ramp Queues

### INTELLIGENT TRANSPORTATION SYSTEMS (ITS) APPLICATIONS

Not operating as intended/conveying inaccurate information/message not readable

- Speed Display
- Queue Detection System
- Dynamic Late Merge System
- Travel Time Estimation System
- Advanced Speed Information System
- Utilization of PCMS/Overhead DMS signs

### TRAFFIC OPERATIONS STRATEGIES

Not operating as intended

- Lane Closure Restrictions
- Transit Service Operations
- Signal Timing Operations/Coordination
- Temporary Traffic Signal Operations
- Equipment Storage/Parking Issues

### SAFETY

Visible need for/incorrect usage/location of

- Protection Vehicle
- Maryland State Trooper

### ACCIDENTS

Evidence/reports of accidents

- Rear End
- Sideswipe
- Turning
- Run-off-Road/Drop-off
- Head On
- Fixed Object

*Note: Include any suggested applications/strategies that may be applicable for the work zone.*