

PERFORMANCE ACTIVITY 305

DRAINAGE STRUCTURES

WORK DESCRIPTION 1	Repair
WORK DESCRIPTION 2	Install
WORK DESCRIPTION 3	Upgrade
WORK DESCRIPTION 4	Clean

305 DRAINAGE STRUCTURES

ACTIVITY DESCRIPTION

Repair, install, upgrade and clean manholes, catch basins, drop inlets and box culverts.

WORK DESCRIPTION 1 Repair
WORK DESCRIPTION 2 Install
WORK DESCRIPTION 3 Upgrade
WORK DESCRIPTION 4 Clean

TRAFFIC CONTROL

TWO-LANE TWO-WAY ROADWAYS

On low speed roadways with speeds of 35 mph or less, shoulder closures designed for minor encroachment are acceptable for work activities conducted within 30 feet of the near edge of an adjacent travel lane that may require encroachment upon the roadway by personnel, tools, equipment, materials, vehicles, etc. to the extent that may require a reduction of the lane width of an adjacent travel lane to no less than 10 feet.

On low speed roadways with speeds of 35 mph or less, standard shoulder closures are required for work activities that require the presence of personnel, tools, equipment, materials, vehicles, etc. beyond 1 foot but within 30 feet of the near edge of an adjacent travel lane.

On intermediate to high speed roadways, standard shoulder closures are required for work activities that require the presence of personnel, tools, equipment, materials, vehicles, etc. beyond 1 foot but within 30 feet of the near edge of an adjacent travel lane.

On intermediate to high speed roadways, flagging operations are required when the work activities require the presence of personnel, tools, equipment, materials, vehicles, etc. to encroach upon the roadway or to within 1 foot of the near edge of an adjacent travel lane.

For operations conducted by machine, implementation of intermittent mobile operations to conduct the work are acceptable under the following conditions:

Condition 1 - The maximum time duration of a stop is 15 minutes if the work vehicle and/or the shadow vehicle encroach upon a travel lane more than 2 feet.

Condition 2 - The maximum time duration of a stop is 30 minutes if the work vehicle and/or the shadow vehicle encroach upon a travel lane 2 feet or less.

During intermittent mobile operations, utilize a shadow vehicle when the stopping sight distance interval between the work vehicle or road machinery and an approaching motorist is unavailable based upon the posted regulatory speed limit of the work location.

Flagging operations are required for work activities that cannot be conducted under the conditions required for standard shoulder closures, shoulder closures with minor encroachment or intermittent mobile operations.

TYPICAL DRAWING APPLICATIONS

FLAGGING OPERATIONS

DRAWING 405-01-A	-	FLAGGING OPERATIONS MULTIPLE FLAGGERS TWO-LANE TWO-WAY ROADWAYS PRIMARY & SECONDARY ROUTES
DRAWING 405-01-B(1)	-	FLAGGING OPERATIONS MULTIPLE FLAGGERS TWO-LANE TWO-WAY ROADWAYS PRIMARY & SECONDARY ROUTES STOP SIGN CONTROLLED SIDE ROADS

- DRAWING 405-01-B(2)** - FLAGGING OPERATIONS
MULTIPLE FLAGGERS
TWO-LANE TWO-WAY ROADWAYS
PRIMARY & SECONDARY ROUTES
4-WAY STOP CONTROLLED INTERSECTION
- DRAWING 405-01-C(1)** - FLAGGING OPERATIONS
MULTIPLE FLAGGERS
TWO-LANE TWO-WAY ROADWAYS
PRIMARY & SECONDARY ROUTES
TRAFFIC SIGNAL CONTROLLED INTERSECTION
LAW ENFORCEMENT OFFICER(S)
- DRAWING 405-01-C(2)** - FLAGGING OPERATIONS
MULTIPLE FLAGGERS
TWO-LANE TWO-WAY ROADWAYS
PRIMARY & SECONDARY ROUTES
TRAFFIC SIGNAL CONTROLLED INTERSECTION
FLAGGERS
- DRAWING 405-01-D(1)** - FLAGGING OPERATIONS
MULTIPLE FLAGGERS
TWO-LANE TWO-WAY ROADWAYS
PRIMARY & SECONDARY ROUTES
WORK ACTIVITY AREA
BEGINNING at an
INTERSECTION with a
TWO-LANE TWO-WAY ROADWAY
DEPARTURE LANE
- DRAWING 405-01-D(2)** - FLAGGING OPERATIONS
MULTIPLE FLAGGERS
TWO-LANE TWO-WAY ROADWAYS
PRIMARY & SECONDARY ROUTES
WORK ACTIVITY AREA
TERMINATING at an
INTERSECTION with a
TWO-LANE TWO-WAY ROADWAY
APPROACH LANE
- DRAWING 405-01-E(1)**
DRAWING 405-01-E(2) - FLAGGING OPERATIONS
MULTIPLE FLAGGERS
TWO-LANE TWO-WAY ROADWAYS
PRIMARY & SECONDARY ROUTES
WORK ACTIVITY AREA
INTERSECTIONS with
LOW SPEED
< / = 35 MPH
MULTILANE ROADWAYS
- DRAWING 405-01-F(1)**
DRAWING 405-01-F(2) - FLAGGING OPERATIONS
MULTIPLE FLAGGERS
TWO-LANE TWO-WAY ROADWAYS
PRIMARY & SECONDARY ROUTES
WORK ACTIVITY AREA
INTERSECTIONS with
INTERMEDIATE SPEED to HIGH SPEED
40 MPH - 60 MPH
MULTILANE ROADWAYS

- DRAWING 405-02** - FLAGGING OPERATIONS
SINGLE FLAGGER OPERATION
LOW VOLUME
LOW SPEED TO INTERMEDIATE SPEED
TWO-LANE TWO-WAY ROADWAYS
PRIMARY & SECONDARY ROUTES

SHOULDER CLOSURES

- DRAWING 515-01-A** - RIGHT SHOULDER CLOSURE
CASE I / CASE II
TWO-LANE TWO-WAY ROADWAYS
PRIMARY & SECONDARY ROUTES
- DRAWING 515-01-C** - RIGHT SHOULDER CLOSURE
LOW SPEED
< / = 35 MPH
PRIMARY & SECONDARY ROUTES
(MINOR ENCROACHMENT)

MOBILE OPERATIONS – INTERMITTENT

- DRAWING 535-01-A** - MOBILE OPERATIONS – INTERMITTENT
STOPPING SIGHT DISTANCE
VEHICLE TRAIN REQUIREMENTS
VERTICAL CURVE (HILL)
- DRAWING 535-01-B** - MOBILE OPERATIONS – INTERMITTENT
STOPPING SIGHT DISTANCE
VEHICLE TRAIN REQUIREMENTS
HORIZONTAL CURVE (CURVE)
- DRAWING 535-02-A** - MOBILE OPERATIONS – INTERMITTENT
LOW VOLUME
LOW SPEED
PRIMARY & SECONDARY ROUTES
- DRAWING 535-02-B** - MOBILE OPERATIONS – INTERMITTENT
LOW VOLUME
INTERMEDIATE SPEED TO HIGH SPEED
PRIMARY & SECONDARY ROUTES
- DRAWING 535-03-A** - MOBILE OPERATIONS – INTERMITTENT
INTERMEDIATE VOLUME
LOW SPEED
PRIMARY & SECONDARY ROUTES
- DRAWING 535-03-B** - MOBILE OPERATIONS – INTERMITTENT
INTERMEDIATE VOLUME
INTERMEDIATE SPEED TO HIGH SPEED
PRIMARY & SECONDARY ROUTES
- DRAWING 535-04-A** - MOBILE OPERATIONS – INTERMITTENT
HIGH VOLUME
LOW SPEED
PRIMARY & SECONDARY ROUTES
- DRAWING 535-04-C** - MOBILE OPERATIONS – INTERMITTENT
HIGH VOLUME
INTERMEDIATE SPEED TO HIGH SPEED
PRIMARY & SECONDARY ROUTES

MULTILANE SECONDARY AND PRIMARY ROADWAYS

On low speed roadways with speeds of 35 mph or less, shoulder closures designed for minor encroachment are acceptable for work activities conducted within 30 feet of the near edge of an adjacent travel lane that may require encroachment upon the roadway by personnel, tools, equipment, materials, vehicles, etc. to the extent that may require a reduction of the lane width of an adjacent travel lane to no less than 10 feet.

On low speed roadways with speeds of 35 mph or less, standard shoulder closures are required for work activities that require the presence of personnel, tools, equipment, materials, vehicles, etc. beyond 1 foot but within 30 feet of the near edge of an adjacent travel lane.

On intermediate to high speed roadways, standard shoulder closures are required for work activities that require the presence of personnel, tools, equipment, materials, vehicles, etc. beyond 1 foot but within 30 feet of the near edge of an adjacent travel lane.

On intermediate to high speed roadways, lane closures are required when the work activities require the presence of personnel, tools, equipment, materials, vehicles, etc. to encroach upon the roadway or to within 1 foot of the near edge of an adjacent travel lane.

For operations conducted by machine, implementation of intermittent mobile operations to conduct the work are acceptable under the following conditions:

Condition 1 - The maximum time duration of a stop is 15 minutes if the work vehicle and/or the shadow vehicle encroach upon a travel lane more than 2 feet.

Condition 2 - The maximum time duration of a stop is 30 minutes if the work vehicle and/or the shadow vehicle encroach upon a travel lane 2 feet or less.

During intermittent mobile operations, utilize a shadow vehicle when the stopping sight distance interval between the work vehicle or road machinery and an approaching motorist is unavailable based upon the posted regulatory speed limit of the work location.

Lane closures are required for work activities that cannot be conducted under the conditions required for standard shoulder closures, shoulder closures with minor encroachment or intermittent mobile operations.

TYPICAL DRAWING APPLICATIONS

LANE CLOSURES

DRAWING 505-01	-	LANE CLOSURE LOW SPEED MULTILANE < / = 35 MPH PRIMARY & SECONDARY ROUTES
DRAWING 505-02	-	DUAL LANE CLOSURE LOW SPEED MULTILANE < / = 35 MPH PRIMARY & SECONDARY ROUTES
DRAWING 505-03-A	-	LANE CLOSURE INTERMEDIATE SPEED TO HIGH SPEED 40 MPH - 60 MPH MULTILANE PRIMARY & SECONDARY ROUTES
DRAWING 505-04-A	-	DUAL LANE CLOSURE TRANSITION / ACTIVITY AREAS INTERMEDIATE SPEED TO HIGH SPEED 40 MPH - 60 MPH MULTILANE PRIMARY & SECONDARY ROUTES

DRAWING 505-04-B - DUAL LANE CLOSURE
ADVANCE WARNING AREA
INTERMEDIATE SPEED TO HIGH SPEED
40 MPH - 60 MPH
MULTILANE
PRIMARY & SECONDARY ROUTES

SHOULDER CLOSURES

DRAWING 515-01-B - RIGHT SHOULDER CLOSURE
CASE I / CASE II
MULTILANE
PRIMARY & SECONDARY ROUTES

DRAWING 515-01-C - RIGHT SHOULDER CLOSURE
LOW SPEED
< / = 35 MPH
PRIMARY & SECONDARY ROUTES
(MINOR ENCROACHMENT)

DRAWING 515-01-D - LEFT SHOULDER CLOSURE
LOW SPEED
< / = 35 MPH
MULTILANE DIVIDED HIGHWAY
w/ GRASSED EARTH MEDIAN
PRIMARY & SECONDARY ROUTES
(MINOR ENCROACHMENT)

DRAWING 515-02 - LEFT SHOULDER CLOSURE
CASE I / CASE I
MULTILANE
PRIMARY & SECONDARY ROUTES

DRAWING 515-03 - LEFT SHOULDER CLOSURE
CASE I / CASE II
MULTILANE
PRIMARY & SECONDARY ROUTES

MOBILE OPERATIONS – INTERMITTENT

DRAWING 535-01-A - MOBILE OPERATIONS – INTERMITTENT
STOPPING SIGHT DISTANCE
VEHICLE TRAIN REQUIREMENTS
VERTICAL CURVE (HILL)

DRAWING 535-01-B - MOBILE OPERATIONS – INTERMITTENT
STOPPING SIGHT DISTANCE
VEHICLE TRAIN REQUIREMENTS
HORIZONTAL CURVE (CURVE)

DRAWING 535-03-A - MOBILE OPERATIONS – INTERMITTENT
INTERMEDIATE VOLUME
LOW SPEED
PRIMARY & SECONDARY ROUTES

DRAWING 535-03-B - MOBILE OPERATIONS – INTERMITTENT
INTERMEDIATE VOLUME
INTERMEDIATE SPEED TO HIGH SPEED
PRIMARY & SECONDARY ROUTES

DRAWING 535-04-A - MOBILE OPERATIONS – INTERMITTENT
HIGH VOLUME
LOW SPEED
PRIMARY & SECONDARY ROUTES

- DRAWING 535-04-B** - MOBILE OPERATIONS – INTERMITTENT
HIGH VOLUME
LOW SPEED
INTERIOR TRAVEL LANE OPERATIONS
PRIMARY & SECONDARY ROUTES
- DRAWING 535-04-C** - MOBILE OPERATIONS – INTERMITTENT
HIGH VOLUME
INTERMEDIATE SPEED TO HIGH SPEED
PRIMARY & SECONDARY ROUTES

INTERSTATE ROADWAYS

Lane closures are required for work activities that require equipment, personnel, materials, or any vehicles to encroach upon a travel lane or within 10 feet of a travel lane. When the work may be performed without the necessity for equipment, personnel, materials, or vehicles to encroach within 10 feet of the adjacent travel, utilize shoulder closures.

TYPICAL DRAWING APPLICATIONS

LANE CLOSURES

- DRAWING 510-01-A** - LANE CLOSURE
INTERSTATE ROUTES
- DRAWING 510-01-B** - LANE CLOSURE
EXIT / ENTRANCE RAMPS
INTERSTATE ROUTES

SHOULDER CLOSURES

- DRAWING 520-01** - RIGHT SHOULDER CLOSURE
CASE I / CASE II
INTERSTATE ROUTES
- DRAWING 520-02** - LEFT SHOULDER CLOSURE
CASE I / CASE I
NARROW MEDIAN
INTERSTATE ROUTES
- DRAWING 520-03** - LEFT SHOULDER CLOSURE
CASE I / CASE I
WIDE MEDIAN
INTERSTATE ROUTES
- DRAWING 520-04** - LEFT SHOULDER CLOSURE
CASE I / CASE II
WIDE MEDIAN
INTERSTATE ROUTES
- DRAWING 520-05** - LEFT SHOULDER CLOSURE
CASE II / CASE II
WIDE MEDIAN
INTERSTATE ROUTES

MOBILIZED SHOULDER OPERATIONS

- DRAWING 530-03** - MOBILIZED SHOULDER OPERATIONS
PEDESTRIAN WORKERS – MAJOR ENCROACHMENT
UPON PAVED SHOULDER
ROAD MACHINERY – MAJOR ENCROACHMENT
UPON TRAVEL LANE
INTERSTATE ROUTES