February 2019 UPDATES

The following is a listing of revisions to the previous edition dated April 1, 2017.

WORK ZONE TRAFFIC CONTROL PROCEDURES

FLAGGING OPERATIONS NIGHTTIME FLAGGING OPERATIONS Page 22 The 4th paragraph has been revised.

Utilize portable plastic drums or 42" oversized traffic cones during nighttime flagging operations. In the event that portable plastic drums or 42" oversized traffic cones are not utilized in a daytime flagging operation and the flagging operation extends into the nighttime hours, replace all 28" or 36" standard traffic cones with either portable plastic drums or 42" oversized traffic cones.

FLAGGING OPERATIONS

BUFFER SPACE

Page 22

The 3rd paragraph has been added.

When using a truck mounted attenuator (TMA), the length of the Buffer Space is measured from the downstream end of the Approach Taper to the back of the TMA. When not using a TMA, the length of the Buffer Space is measured from the downstream end of the Approach Taper to the beginning of the Work Activity Area.

SIGNS AND TRAFFIC CONTROL DEVICES Page 23

The 8th paragraph has been revised.

Utilize portable plastic drums or 42" oversized traffic cones during nighttime flagging operations. In the event that portable plastic drums or 42" oversized traffic cones are not utilized in a daytime flagging operation and the flagging operation extends into the nighttime hours, replace all 28" or 36" standard traffic cones with either portable plastic drums or 42" oversized traffic cones. Reflectorize all portable plastic drums and all traffic cones with Type III or greater flexible microprismatic retroreflective sheeting unless otherwise directed by the SCDOT.

LANE CLOSURES – INSTALLATION & REMOVAL STANDARD DRAWING NO. 305-01-A through STANDARD DRAWING NO. 305-03

DRAWING NO. 305-01-A Page LCIR-3 Title changed for clarity.

> Page LCIR-3 Revised distance between work vehicle and the first shadow vehicle to 75' -100'.

DRAWING NO. 305-01-B Page LCIR-4 Title changed for clarity. Page LCIR-4 Revised distance between work vehicle and the first shadow vehicle to 75' -100'.

DRAWING NO. 305-02

Page LCIR-5

Title changed for clarity.

Page LCIR-5

Revised distance between work vehicle and the first shadow vehicle to 75' -100'.

DRAWING NO. 305-03 Page LCIR-6 Title changed for clarity.

Page LCIR-6

Revised distance between work vehicle and the first shadow vehicle to 75' -100'.

FLAGGING OPERATIONS STANDARD DRAWING NO. 405-01-A through STANDARD DRAWING NO. 405-02

DRAWING NO. 405-01-A Page FO-1 Changed Note 2 to Note 3.

Page FO-1

Added new Note 2.

When using a truck mounted attenuator (TMA), the length of the Buffer Space is measured from the downstream end of the Approach Taper to the back of the TMA. When not using a TMA, the length of the Buffer Space is measured from the downstream end of the Approach Taper to the beginning of the Work Activity Area.

Page FO-2

Revised "40 – 55 MPH" in Table A to "40 MPH or Greater".

Page FO-2

Revised "High Speed – 55 MPH" in Table B to "High Speed – 55 MPH or Greater".

Page FO-2

Revised "High Speed – 55 MPH" in Table C to "High Speed – 55 MPH or Greater".

Page FO-2

Revised note "See Table B" used for the work activity area.

Now says "See Table A for Device Spacing Intervals".

Page FO-2

Revised "changeable message sign" to "CMS".

DRAWING NO. 405-01-B(1)

Page FO-3

Revised "limits of the intersection" to "Limits of the Intersection".

Page FO-3

Added new Note 4.

When the work zone proceeds through a "stop sign controlled" intersection, continue the work operations through the intersection to a specific location point within the Departure Lane no less than 300 feet to 500 feet beyond the Limits of the Intersection to allow the work train and all portions of the lane closure to clear the intersection.

Page FO-4

Revised "40 – 55 MPH" in Table A to "40 MPH or Greater".

Page FO-4

Revised "High Speed – 55 MPH" in Table B to "High Speed – 55 MPH or Greater".

Page FO-4

Revised "High Speed – 55 MPH" in Table C to "High Speed – 55 MPH or Greater"

Page FO-4

Revised "changeable message sign" to "CMS".

Page FO-4

Added "300' to 500'" for the range of the work activity area beyond the intersection.

DRAWING NO. 405-01-B(2)

Page FO-5

Revised "limits of the intersection" to "Limits of the Intersection".

Page FO-5

Revised "4-way stop" to "4-Way STOP".

Page FO-5

Revised Note 4.

When the work zone proceeds through a "4-Way STOP controlled" intersection, continue the work operations through the intersection to a specific location point within the Departure Lane no less than 300 feet to 500 feet beyond the Limits of the Intersection to allow the work train and all portions of the lane closure to clear the intersection.

Page FO-6

Revised "40 – 55 MPH" in Table A to "40 MPH or Greater".

Page FO-6

Revised "High Speed – 55 MPH" in Table B to "High Speed – 55 MPH or Greater".

Page FO-6

Revised "High Speed – 55 MPH" in Table C to "High Speed – 55 MPH or Greater".

Page FO-6

Revised "changeable message sign" to "CMS".

DRAWING NO. 405-01-C(1)

Page FO-7

Revised "limits of the intersection" to "Limits of the Intersection".

Page FO-7

Revised Note 4.

When the work zone proceeds through a "traffic signal controlled" intersection, continue the work operations through the intersection to a specific location point within the Departure Lane no less than 300 feet to 500 feet beyond the Limits of the Intersection to allow the work train and all portions of the lane closure to clear the intersection.

Page FO-8

Revised "40 – 55 MPH" in Table A to "40 MPH or Greater".

Page FO-8

Revised "High Speed – 55 MPH" in Table B to "High Speed – 55 MPH or Greater".

Page FO-8

Revised "High Speed – 55 MPH" in Table C to "High Speed – 55 MPH or Greater".

Page FO-8

Revised "changeable message sign" to "CMS".

DRAWING NO. 405-01-C(2)

Page FO-9

Revised Note 4.

When the work zone proceeds through a "traffic signal controlled" intersection, continue the work operations through the intersection to a specific location point within the Departure Lane no less than 300 feet to 500 feet beyond the Limits of the Intersection to allow the work train and all portions of the lane closure to clear the intersection.

Page FO-10

Revised "40 – 55 MPH" in Table A to "40 MPH or Greater".

Page FO-10

Revised "High Speed – 55 MPH" in Table C to "High Speed – 55 MPH or Greater".

Page FO-10

Revised "changeable message sign" to "CMS".

Page FO-10

Added hatched pattern to the work activity area to be consistent with other drawings.

DRAWING NO. 405-01-D(1)

Page FO-11

Revised Note 3.

Convert this traffic control setup to a standard multiple flagger operation in compliance with Drawing No. 405-01-A for a Work Activity Area located in the Departure Lane when the Limits of the Work Activity Area nearest the intersection progress beyond a minimum distance interval away from the intersection as specified in Table 12*. The Limits of the Work Activity Area nearest to the adjacent intersection must be located at a specific location point no less than the cumulative distance from the intersection as specified by the "Total Distance Required for Conversion"** in Table 12*.

* Table 12 – "Departure Lane from the Intersection Minimum Distance Intervals from Intersection Required for Conversion to Standard Multiple Flagger Flagging Operation Installation per Drawing No. 405-01-D(1)."

** The distance figures specified in the "Total Distance Required for Conversion" are calculated based upon the posted regulatory speed limit of the road prior to beginning the work.

Page FO-13

Added "The messages should be "PREPARE TO STOP", "FLAGGER AHEAD" to Note 7.

Page FO-14

Revised "40 – 55 MPH" in Table A to "40 MPH or Greater".

Page FO-14

Revised "High Speed – 55 MPH" in Table B to "High Speed – 55 MPH or Greater".

Page FO-14

Revised "High Speed – 55 MPH" in Table C to "High Speed – 55 MPH or Greater".

Page FO-14

Revised "changeable message sign" to "CMS".

Page FO-14

Added box "***" with the message "Prepare to Stop", "Flagger Ahead" to be used with the changeable message sign.

DRAWING NO. 405-01-D(2)

Page FO-15

Revised Note 2.

Install, maintain and conduct multiple flagger flagging operations for a work zone that ends at an intersection and is present within the travel lane of a two-lane two-way roadway approaching the intersection as illustrated by this standard drawing. Install and maintain all advance warning signs and traffic control devices as illustrated.

Page FO-15

Revised Note 3.

Convert a standard multiple flagger operation installed per Drawing No. 405-01-A for a Work Activity Area located in the Approach Lane of a two-lane two-way road when the Limits of the Work Activity Area nearest the intersection encroach upon a specific location that will not permit the required distances for the traffic to queue, proper installation of the advance warning signs, the Open Lane Flagger station and the Downstream Taper. The minimum distances that determine when conversion to this traffic control setup is required are found in *Table 13**. The Limits of the Work Activity Area nearest the intersection should not encroach upon a specific location point no less than the cumulative distance from the intersection as specified by the "Total Distance Required for Conversion"** in *Table 13*.

* Table 13 – "Approach Lane to the Intersection Minimum Distance Intervals from Intersection Required for Conversion from a Standard Multiple Flagger Flagging Operation Installation per Drawing No. 405-01-D(2)."

** The distance figures specified in the "Total Distance Required for Conversion" are calculated based upon the posted regulatory speed limit of the road prior to beginning the work.

Page FO-16

Added "The messages should be "PREPARE TO STOP", "FLAGGER AHEAD" to Note 7.

Page FO-17

Revised "40 – 55 MPH" in Table A to "40 MPH or Greater".

Page FO-17

Revised "High Speed – 55 MPH" in Table B to "High Speed – 55 MPH or Greater".

Page FO-17

Revised "High Speed – 55 MPH" in Table C to "High Speed – 55 MPH or Greater.

Page FO-17

Revised "changeable message sign" to "CMS".

Page FO-17

Added box "***" with the message "Prepare to Stop", "Flagger Ahead" to be used with the changeable message sign.

DRAWING NO. 405-01-E(1)

Page FO-18

Revised Note 2.

Install, maintain and conduct multiple flagger flagging operations for work zones that are present within the Departure Lane or the Approach Lane of a two-lane two-way roadway intersecting with a low speed (\leq 35 MPH) multilane roadway as illustrated by this standard drawing. Install and maintain all advance warning signs and traffic control devices as illustrated.

When the Work Activity Area is present within the Departure Lane, conduct the multiple flagger flagging operations on the two-lane two-way roadway in accordance with the requirements specific to Drawing 405-01-D(1). For the intersecting multilane roadway, set up the multiple flagger flagging operations as shown on Drawing 405-01-E(1) and Drawing 405-01-E(2).

When the Work Activity Area is present within the Approach Lane, conduct the multiple flagger flagging operations on the two-lane two-way roadway in accordance with the requirements specific to Drawing 405-01-D(2). For the intersecting multilane roadway, set up the multiple flagger flagging operations as shown on Drawing 405-01-E(1) and Drawing 405-01-E(2).

Page FO-18

Revised Paragraph 2 in Note 5.

A tangent area no less than 250 feet is required between the downstream end of the merging taper of the lane closure and the initial advance warning signs array of the flagging operation, or the changeable message sign when utilized. Dependent upon the traffic volumes, the tangent section may be extended to mitigate the development of traffic queues in advance of the beginning of the merging taper of the lane closure. On high volume roads, spotters placed at the beginning of the merging taper of the lane closure should be utilized to notify flaggers of the status of any traffic queues to allow flaggers the opportunity to minimize the time durations of the stops in an effort to minimize the traffic queues.

Page FO-18

Revised Note 7.

When the Work Activity Area is in the Departure Lane of the two-lane, two-way roadway use the conversion distances listed in Table 12 as the Work Activity Area

progresses to a location that requires this multiple flagger flagging operation to be converted to a standard multiple flagging operation as shown on Drawing 405-01-A. In addition, comply with the requirements of Drawing 405-01-D(1) as necessary.

When the Work Activity Area is in the Approach Lane of the two-lane, two-way roadway use the conversion distances listed in Table 13 as the Work Activity Area progresses to a location that requires this multiple flagger flagging operation to be converted to a standard multiple flagging operation as shown on Drawing 405-01-A. In addition, comply with the requirements of Drawing 405-01-D(2) as necessary.

Page FO-19

Changed "</=" to "≤".

Page FO-19

Added CMS panels with the message "Prepare to Stop" and "Flagger Ahead" on the approach lane.

Page FO-19

Revised "changeable message sign" to "CMS".

DRAWING NO. 405-01-E(2)

Page FO-21

Changed "</=" to " \leq ".

Page FO-21

Revised "changeable message sign" to "CMS".

DRAWING NO. 405-01-F(1)

Page FO-22

Revised Note 2.

Install, maintain and conduct multiple flagger flagging operations for work zones that are present within the Departure Lane or the Approach Lane of a two-lane two-way roadway intersecting with an intermediate to high speed (40 MPH to 60 MPH) multilane roadway as illustrated by this standard drawing. Install and maintain all advance warning signs and traffic control devices as illustrated.

When the Work Activity Area is present within the Departure Lane, conduct the multiple flagger flagging operations on the **two-lane two-way roadway** in accordance with the requirements specific to Drawing 405-01-D(1).

When the Work Activity Area is present within the Approach Lane, conduct the multiple flagger flagging operations on the **two-lane two-way roadway** in accordance with the requirements specific to Drawing 405-01-D(2).

Page FO-22

Revised Paragraph 2 in Note 5.

A tangent area no less than 500 feet is required between the downstream end of the merging taper of the lane closure and the initial Advance Warning sign array of the flagging operation, or the changeable message sign when utilized. Dependent upon the traffic volumes, the tangent section may be extended to mitigate the development of traffic queues in advance of the beginning of the merging taper of the lane closure. On high volume roads, spotters placed at the beginning of the merging taper of the lane closure should be utilized to notify flaggers of the status of any traffic queues to allow flaggers the opportunity to minimize the time durations of the stops in an effort to minimize the traffic queues. Revised Note 7.

When the Work Activity Area is in the Departure Lane of the two-lane, two-way roadway use the conversion distances listed in Table 12 as the Work Activity Area progresses to a location that requires this multiple flagger flagging operation to be converted to a standard multiple flagging operation as shown on Drawing 405-01-A. In addition, comply with the requirements of Drawing 405-01-D(1) as necessary.

When the Work Activity Area is in the Approach Lane of the two-lane, two-way roadway use the conversion distances listed in Table 13 as the Work Activity Area progresses to a location that requires this multiple flagger flagging operation to be converted to a standard multiple flagging operation as shown on Drawing 405-01-A. In addition, comply with the requirements of Drawing 405-01-D(2) as necessary.

Page FO-24

Revised "High Speed – 55 MPH" in Table A to "High Speed – 55 MPH or Greater".

Page FO-24

Added CMS panels with the message "Prepare to Stop" "Flagger Ahead" on the approach lane.

Page FO-24

Revised "changeable message sign" to "CMS".

DRAWING NO. 405-01-F(2)

Page FO-26

Revised "High Speed – 55 MPH" in Table A to "High Speed – 55 MPH or Greater".

Page FO-26

Revised "changeable message sign" to "CMS".

LANE CLOSURES – PRIMARY & SECONDARY ROUTES STANDARD DRAWING NO. 505-01 through STANDARD DRAWING NO. 505-04-C

DRAWING NO. 505-01 Page LCPS-1 Revised Note 11.

If work is being conducted at two different locations at the same time in the same travel lane on a low speed roadway, \leq 35 MPH, separate the two locations by no less than 1 mile from the end of the first lane closure to the beginning of the taper of the second lane closure.

Page LCPS-1 Changed "</= 35 MPH" in Note 12 to "≤ 35 MPH".

Page LCPS-3 Changed "</=" to "≤".

DRAWING NO. 505-02 Page LCPS-4 Revised Note 9.

If work is being conducted at two different locations at the same time in the same travel lane on a low speed roadway, \leq 35 MPH, separate the two locations by no less

than 1 mile from the end of the first lane closure to the beginning of the taper of the second lane closure.

Page LCPS-4

Changed "</= 35 MPH" in Note 10 to "≤ 35 MPH".

Page LCPS-6 Changed "</=" to "≤".

Page LCPS-6

Added CMS panels "Left Two Lanes Closed" "Merge Right" and note "When closing right two travel lanes, the sign shall flash alternately to read "Right Two Lanes Closed", "Merge Left" as necessary."

DRAWING NO. 505-03-A Page LCPS-7

Revised Note 12.

If work is being conducted at two different locations at the same time in the same travel lane on an intermediate to high speed roadway, 40 to 60 MPH, separate the two locations by no less than 2 miles from the end of the first lane closure to the beginning of the taper of the second lane closure.

Page LCPS-9

Added CMS panels "Right Lane Closed" "Merge Left" and note "When closing left travel lane, the sign shall read "Left Lane Closed" "Merge Right" as necessary."

DRAWING NO. 505-04-A DRAWING NO. 505-04-B Page LCPS-12 Revised Note 10.

If work is being conducted at two different locations at the same time in the same travel lane on an intermediate to high speed roadway, 40 to 60 MPH, separate the two locations by no less than 2 miles from the end of the first lane closure to the beginning of the initial taper of the second lane closure.

LANE CLOSURES – INTERSTATE ROUTES STANDARD DRAWING NO. 510-01-A through STANDARD DRAWING NO. 510-02-C

DRAWING NO. 510-01-A Page LCI-1 Revised Note 12.

If work is being conducted at two different locations at the same time in the same travel lane, separate the two locations by no less than 2 miles from the end of the first lane closure to the beginning of the taper of the second lane closure.

Page LCI-3

Added CMS panels "Right Lane Closed" "Merge Left" and note "When closing left travel lane, the sign shall read "Left Lane Closed" "Merge Right" as necessary."

DRAWING NO. 510-02-A DRAWING NO. 510-02-B Page LCI-6 Revised Note 10.

If work is being conducted at two different locations at the same time in the same travel lane, separate the two locations by no less than 2 miles from the end of the first lane closure to the beginning of the initial taper of the second lane closure.

SHOULDER CLOSURES – PRIMARY & SECONDARY ROUTES STANDARD DRAWING NO. 515-01-A through STANDARD DRAWING NO. 515-03

DRAWING NO. 515-01-A Page SCPS-1 Revised CASE I in Note 9.

Install advance warning signs and traffic control devices to provide a 250 foot taper in advance of the closed shoulder area and to delineate the closed shoulder area when a work zone occupies the shoulder area within 15 feet but not closer than 1 foot from the near edge of the adjacent travel lane. A truck mounted attenuator is optional. An advance warning arrow panel is optional on the truck mounted attenuator. When an advance warning arrow panel is used, the advance warning arrow panel shall operate in the "Four Corner" caution mode displaying four lamps with one lamp in each corner.

DRAWING NO. 515-01-B

Page SCPS-3

Revised "4 Corner" to "Four Corner" in Note 9.

DRAWING NO. 515-01-C

Page SCPS-5

Added new Note 10.

When a truck mounted attenuator is used, maintain the truck mounted attenuator approximately 100 feet in advance of the work activities.

An advance warning arrow panel is optional on the truck mounted attenuator. When used the advance warning arrow panel shall operate in a flashing arrow mode when pedestrian workers are present within 15 feet of the near edge of the adjacent travel lane; when pedestrian workers are not present operate the advance warning arrow panel in the "Four Corner" caution mode.

Page SCPS-5 Changed Previous Note 10 to Note 11.

Page SCPS-5

Changed Previous Note 11 to Note 12.

Page SCPS-6 Changed "</=" to "≤".

DRAWING NO. 515-01-D

Page SCPS-7

Added new Note 10.

When a truck mounted attenuator is used, maintain the truck mounted attenuator approximately 100 feet in advance of the work activities.

An advance warning arrow panel is optional on the truck mounted attenuator. When used the advance warning arrow panel shall operate in a flashing arrow mode when pedestrian workers are present within 15 feet of the near edge of the adjacent travel lane; when pedestrian workers are not present operate the advance warning arrow panel in the "Four Corner" caution mode.

Page SCPS-7 Changed Previous Note 10 to Note 11.

Page SCPS-7 Changed Previous Note 11 to Note 12.

Page SCPS-8 Changed "</=" to "≤".

DRAWING NO. 515-02 Page SCPS-9 Revised "4 Corner" to "Four Corner" in Note 9.

DRAWING NO. 515-03 Page SCPS-11 Revised "4 Corner" to "Four Corner" in Note 9.

SHOULDER CLOSURES – INTERSTATE ROUTES STANDARD DRAWING NO. 520-01 through STANDARD DRAWING NO. 520-06

DRAWING NO. 520-01 Page SCI-1 Revised "4 Corner" to "Four Corner" in Note 9.

DRAWING NO. 520-02 Page SCI-3 Revised "4 Corner" to "Four Corner" in Note 9.

DRAWING NO. 520-03 Page SCI-5 Revised "4 Corner" to "Four Corner" in Note 9.

DRAWING NO. 520-04 Page SCI-7 Revised "4 Corner" to "Four Corner" in Note 9.

MOBILIZED SHOULDER OPERATIONS – PRIMARY & SECONDARY ROUTES STANDARD DRAWING NO. 525-01 through STANDARD DRAWING NO. 525-04

DRAWING NO. 525-02 Page MSOPS-3 Revised Note 6.

> Whenever a shoulder closure is required, supplement the shoulder closure advance warning sign array with an advance warning sign assembly appropriate to the type of work activity being conducted. Install this supplemental advance warning sign in advance of the shoulder closure advance warning sign array at interval spacing appropriate to the posted regulatory speed as prescribed by this manual.

MOBILIZED SHOULDER OPERATIONS – INTERSTATE ROUTES STANDARD DRAWING NO. 530-01 through STANDARD DRAWING NO. 530-03

DRAWING NO. 530-02

Page MSOI-3

Revised Note 5.

Whenever a shoulder closure is required, supplement the shoulder closure advance warning sign array with an advance warning sign assembly appropriate to the type of work activity being conducted. Install this supplemental advance warning sign in advance of the shoulder closure advance warning sign array at interval spacing appropriate to the posted regulatory speed as prescribed by this manual.

DRAWING NO. 530-03

Page MSOI-5

Revised Paragraph 2 in Note 5.

Shoulder Shadow Vehicle - The initial shadow vehicle encountered by approaching motorists. This shadow vehicle shall operate in the paved shoulder to minimize access by errant vehicles into the shoulder work area where pedestrian workers are present. Operate this vehicle in the paved shoulder area. Maintain approximately 100 feet between the Shoulder Shadow Vehicle and the first Travel Lane Shadow Vehicle operating in the adjacent travel lane.

MOBILE OPERATIONS – INTERMITTENT STANDARD DRAWING NO. 535-01-A through STANDARD DRAWING NO. 535-04E

DRAWING NO. 535-01-A Page MOI-3 Revised (Y) on the Table "Stopping Sight Distance Requirements." DRAWING NO. 535-01-B Page MOI-4 Revised (Y) on the Table "Stopping Sight Distance Requirements." DRAWING NO. 535-02-A Page MOI-6 Revised (Y) on the Table "Stopping Sight Distance Requirements." DRAWING NO. 535-02-B Page MOI-7

Revised (Y) on the Table "Stopping Sight Distance Requirements."

DRAWING NO. 535-03-A Page MOI-9

Revised (Y) on the Table "Stopping Sight Distance Requirements."

DRAWING NO. 535-03-B

Page MOI-10

Revised (Y) on the Table "Stopping Sight Distance Requirements."

DRAWING NO. 535-04-A

Page MOI-12

Revised (Y) on the Table "Stopping Sight Distance Requirements."

Page MOI-14 Revised (Y) on the Table "Stopping Sight Distance Requirements." DRAWING NO. 535-04-C Page MOI-16 Revised (Y) on the Table "Stopping Sight Distance Requirements." DRAWING NO. 535-04-D(1) Page MOI-17 Changed "MULTILANE ROADWAYS" to "INTERSTATE ROUTES". DRAWING NO. 535-04-D(1) Page MOI-18 Revised (Y) on the Table "Stopping Sight Distance Requirements." DRAWING NO. 535-04-E

Revised (Y) on the Table "Stopping Sight Distance Requirements."

Page MOI-23