**2018 Illinois Highway Standards for Traffic Control**

January 1, 2018

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**Symbols:**
- Drum with steady turning to directional light
- Temporary concrete barrier
- Temporary rumble strip (when specified)
- Double vertical panel (see detail)
- Crystal translucent rectangular/round reflector
- Drum

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**Please Note:**
This booklet is based on the Illinois Department of Transportation’s Highway Standards and Standard Specifications for Road and Bridge Construction, adopted April 1, 2016. Refer to your contract documents for the appropriate provisions that are in effect for each Specific Contract. If you have any questions or concerns, please contact the Bureau of Safety Programs and Engineering at (217) 782-3568.

FOR INFORMATIONAL USE ONLY

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**Lane Closure, 2L, 2W, Bridge Repair with Barrier**

- 7-18
- 11-17
- Type B barricades
- Revised
- Type C

**Standard:** 701321-17

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Additional copies of this book may be obtained from:

State Safety Engineer
Illinois Department of Transportation
Bureau of Safety Programs and Engineering
2300 South Dirksen Parkway
Springfield, Illinois 62764
(217) 782-3568

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January 2018

Driving Zero Fatalities to a Reality
Partnering for Illinois

To view the Illinois Highway Safety Plan (ISHSP) and additional safety information go to:
www.ISHSP.org
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Bold indicates a change from the previous booklet
Traffic Control Deficiency Deduction

Article 105.03

(b) Traffic Control Deficiency Deduction. When the Engineer is notified, or determines a traffic control deficiency exists, he/she will notify and direct the Contractor to correct the deficiency within a specified time. The specified time, which begins upon notification to the Contractor, will be from 1/2 hour to 12 hours based upon the urgency of the situation and the nature of the deficiency. The Engineer shall be the sole judge.

A deficiency may be any lack of repair, maintenance, or non-compliance with the traffic control plan. A deficiency may also be applied to situations where corrective action is not an option such as the use of non-certified flaggers for short term operations; working with lane closures beyond the time allowed in the contract; or failure to perform required contract obligations such as traffic control surveillance.

If the Contractor fails to correct a deficiency within the specified time, a daily monetary deduction will be imposed for each calendar day or fraction thereof the deficiency exists. The calendar day(s) will begin with notification to the Contractor and end with the Engineer’s acceptance of the correction. The daily monetary deduction will be $2,500.00. For those deficiencies where corrective action was not an option, this monetary deduction will be immediate.

Public Convenience and Safety

Article 107.09

No broken pavement, open holes, trenches, barricades, cones, or drums will remain on or adjacent to the traveled way and all lanes shall be opened to traffic during any legal holiday period, except where major bridge construction and/or other roadway reconstruction (excluding patching and resurfacing) requiring overnight lane closures would make it impractical. The legal holidays will include:

New Year’s Day Labor Day
Easter Thanksgiving Day
Memorial Day Christmas Day
Independence Day

The length of the holiday period shall vary as follows, depending on the day of the week the legal holiday falls on or is observed:

<table>
<thead>
<tr>
<th>Day of Holiday</th>
<th>Length of Holiday Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunday</td>
<td>3 p.m. Friday – 11:59 p.m. Monday</td>
</tr>
<tr>
<td>Monday</td>
<td>3 p.m. Friday – 11:59 p.m. Monday</td>
</tr>
<tr>
<td>Tuesday</td>
<td>3 p.m. Friday – 11:59 p.m. Tuesday</td>
</tr>
<tr>
<td>Wednesday</td>
<td>3 p.m. Tuesday – 11:59 p.m. Wednesday</td>
</tr>
<tr>
<td>Thursday</td>
<td>3 p.m. Wednesday – 11:59 p.m. Sunday</td>
</tr>
<tr>
<td>Friday</td>
<td>3 p.m. Thursday – 11:59 p.m. Sunday</td>
</tr>
<tr>
<td>Saturday</td>
<td>3 p.m. Thursday – 11:59 p.m. Sunday</td>
</tr>
</tbody>
</table>

On weekends, excluding holidays, roadways with Average Daily Traffic of 25,000 or greater, all lanes shall be open to traffic from 3:00 PM Friday to midnight Sunday except where structure construction or major rehabilitation makes it impractical.
TYPICAL APPLICATIONS

- Landscaping work
- Utility work
- Fencing contracts and maintenance
- Cleaning culverts

GENERAL NOTES

This Standard is used where all times all vehicles, equipment, workers or their activities are more than 15 ft (4.5 m) from the edge of pavement.

When the work operation requires that two or more work vehicles cross the 15' (4.5 m) zone in any one hour, traffic control shall be astounding to Standard 70809.

All dimensions are in inches (millimeters) unless otherwise shown.

OFF-ROAD OPERATIONS,
2L, 2W, MORE THAN
15' (4.5 m) AWAY

DATE REVISIONS

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>1-1-09</td>
<td>Switched units to English format.</td>
</tr>
<tr>
<td>1-1-09</td>
<td>Revised title and notes.</td>
</tr>
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STANDARD 701001-02
Standard 701001

General Information:

1. No special signing is required.

2. All personnel on foot, excluding flaggers, within the highway right-of-way shall wear a fluorescent orange, fluorescent yellow/green, or a combination of fluorescent orange and fluorescent yellow/green vest meeting the requirements of ANSI/ISEA 107-2004 or ANSI/ISEA 107-2010 for Conspicuity Class 2 garments. Other types of garments may be substituted for the vest as long as the garments have a manufacturer’s tag identifying them as meeting the ANSI Class 2 requirement. [SS pg. 586 / 701.12]

3. When the work operation requires that two or more work vehicles cross the 15 ft. clear zone in any one hour, traffic control should be in conformance with STANDARD 701006. [Standard – General Notes]
GENERAL NOTES
This Standard is used where any vehicular, equipment, workers or their activities will approach the area 15' (4.5 m) to 24" (600 mm) from the edge of pavement.

Calculate L as follows:

\[ S = \frac{W}{2} \pm \frac{L}{10} \]

where:
- \( W \) = Width of offset
- \( L \) = Normal posted speed

All dimensions are in inches (millimeters) unless otherwise shown.

TYPICAL APPLICATIONS
- Utility operations
- Culvert excavations
- Gravel road construction and maintenance
- Drainage installation and maintenance
- Landscaping operations
- Railroad work
- Sign installation and maintenance

SYMBOLS
- Work area
- Sign
- Cone, drum or barricade

When the work operation extends one hour, cones, drums or barricades shall be placed at 25' (7.5 m) centers for L/3 distances, and at 50' (15 m) centers through the remainder of the work area.
**Standard 701006**

When the work operation requires four or more work vehicles enter through traffic lanes in a one hour period, a flagger shall be provided and a “FLAGGER” (W20-7) sign shall be substituted for the “WORKER” sign. [SS pg. 595 / 701.18(a)]

**Various Specifications:**

1. The traffic control shall remain in place only as long as needed and shall be removed when directed by the Engineer. Signs that do not apply to current conditions shall be removed, covered, or turned from the view of motorists. [SS pg. 584 / 701.04]

2. All personnel on foot, excluding flaggers, within the highway right-of-way shall wear a fluorescent orange, fluorescent yellow/green, or a combination of fluorescent orange and fluorescent yellow/green vest meeting the requirements of ANSI/ISEA 107-2004 or ANSI/ISEA 107-2010 for Conspicuity Class 2 garments. Other types of garments may be substituted for the vest as long as the garments have a manufacturer’s tag identifying them as meeting the ANSI Class 2 requirement. [SS pg. 586 / 701.12]

3. The Contractor shall keep all equipment, material, and vehicles off the pavement and shoulders on the side of the pavement which is open to traffic. … At any location on existing pavements less than three lanes in width, the sequence of construction shall limit operations to one side of the pavement. [SS pg. 585 / 701.08]

4. Equipment Parking and Storage: [BDE special provision “Equipment Parking and Storage”]

5. Any unattended obstacle or excavation (not patching) in the work area which constitutes a hazard in the opinion of the Engineer, shall be delineated by devices at 50 ft. (15 m) centers. If the hazard exceed 250 ft. (75 m) in length, the spacing of devices may be increased to 100 ft. (30 m) [SS pg. 586 / 701.11]

6. Devices delineating isolated obstacles, excavations, or hazards at night. (Does not apply to patching.) Lights required: Flashing bi-directional lights. [BDE special provision “Lights on Barricades”]

7. Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the Engineer. [SS pg. 588 / 701.14]

**General Information:**

If the work operation does not exceed 60 minutes, traffic may be in conformance with STANDARD 701301.
Standard 701011

When the work operation requires four or more work vehicles enter through traffic lanes in a one hour period, a flagger shall be provided and a “FLAGGER” (W20-7) sign shall be substituted for the “WORKER” sign. [SS pg. 595 / 701.18(a)]

Various Specifications:

1. The traffic control shall remain in place only as long as needed and shall be removed when directed by the Engineer. Signs that do not apply to current conditions shall be removed, covered, or turned from the view of motorists. [SS pg. 584 / 701.04]

2. All personnel on foot, excluding flaggers, within the highway right-of-way shall wear a fluorescent orange, fluorescent yellow/green, or a combination of fluorescent orange and fluorescent yellow/green vest meeting the requirements of ANSI/ISEA 107-2004 or ANSI/ISEA 107-2010 for Conspicuity Class 2 garments. Other types of garments may be substituted for the vest as long as the garments have a manufacturer’s tag identifying them as meeting the ANSI Class 2 requirement. [SS pg. 586 / 701.12]

3. Equipment Parking and Storage: [BDE special provision “Equipment Parking and Storage”]

4. Any unattended obstacle or excavation (not patching) in the work area which constitutes a hazard in the opinion of the Engineer, shall be delineated by devices at 50 ft. (15 m) centers. If the hazard exceed 250 ft. (75 m) in length, the spacing of devices may be increased to 100 ft. (30 m) [SS pg. 586 / 701.11]

5. Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the Engineer. [SS pg. 588 / 701.14]

6. Devices delineating isolated obstacles, excavations, or hazards at night. (Does not apply to patching.) Lights required: Flashing bi-directional lights. [BDE special provision “Lights on Barricades”]

7. Devices delineating obstacles, excavations, or hazards exceeding 100 ft. (30 m) in length at night. (Does not apply to widening.) Lights required: Steady burn bi-directional lights. [BDE special provision “Lights on Barricades”]

General Information:

All signs are to be removed at the completion of the day’s operations.
**TYPICAL APPLICATIONS**
- Utility operations
- Current extensions
- Signage changes
- Sidewalk installation and maintenance
- Deflector installation
- Landscaping operations
- Shoulder repairs
- Sign installation and maintenance

**SYMBOLS**
- / / Work area
- O Sign
- O Cone, drum or barricade

**GENERAL NOTES**
This standard is used where any vehicular, equipment, or other activities will encroach in the area 15" (4.5 m to 24" (600 mm) from the edge of pavement.

Calculate L as follows:

**SPEED LIMIT**

<table>
<thead>
<tr>
<th>Formula</th>
<th>English</th>
<th>Metric</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 mph (64 km/h)</td>
<td>L \leq 60 ft</td>
<td>L \leq 18 m</td>
</tr>
<tr>
<td>45 mph (72 km/h)</td>
<td>L \leq 75 ft</td>
<td>L \leq 23 m</td>
</tr>
</tbody>
</table>

W = Width of offset

S = Normal posted speed

All dimensions are in inches (millimeters) unless otherwise shown.
Standard 701101

When the work operation requires four or more work vehicles enter through traffic lanes in a one hour period, a flagger shall be provided and a “FLAGGER” (W20-7) sign shall be substituted for the “WORKER” sign [SS pg. 595 / 701.18(a)]

Various Specifications:

1. The traffic control shall remain in place only as long as needed and shall be removed when directed by the Engineer. Signs that do not apply to current conditions shall be removed, covered, or tuned from the view of the motorists. [SS pg. 584 / 701.04]

2. All personnel on foot, excluding flaggers, within the highway right-of-way shall wear a fluorescent orange, fluorescent yellow/green, or a combination of fluorescent orange and fluorescent yellow/green vest meeting the requirements of ANSI/ISEA 107-2004 or ANSI/ISEA 107-2010 for Conspicuity Class 2 garments. Other types of garments may be substituted for the vest as long as the garments have a manufacturer’s tag identifying them as meeting the ANSI Class 2 requirement. [SS pg. 586 / 701.12]

3. Any unattended obstacle or excavation (not patching) in the work area which constitutes a hazard in the opinion of the Engineer, shall be delineated by devices at 50 ft. (15 m) centers. If the hazard exceeds 250 ft. (75 m) in length, the spacing of devices may be increased to 100 ft. (30 m). [SS pg. 586 / 701.11]

4. Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the Engineer. [SS pg. 588 / 701.14]

5. Devices delineating isolated obstacles, excavations, or hazards at night. (Does not apply to patching.) Lights required: Flashing bi-directional lights. [BDE special provision “Lights on Barricades”]

6. Devices delineating obstacles, excavations, or hazards exceeding 100 ft. (30 m) in length at night. (Does not apply to widening.) Lights required: Steady burn bi-directional lights. [BDE special provision “Lights on Barricades”]
TYPICAL APPLICATIONS
- Utility work
- Fencing contracts

GENERAL NOTES
This standard is used where all times of vehicles, equipment, workers or their activities are more than 15' (4.5 m) from the edge of pavement.

When the work operation requires that two or more work vehicles cross the 15' (4.5 m) clear zone in any one hour, traffic control shall be according to Standard 701106.

All dimensions are in inches (millimeters) unless otherwise shown.

DATE | REVISIONS
--- | ---
1-1-08 | Switched units to English inches.
1-1-05 | Revised title.

OFF-RD OPERATIONS, MULTILANE, MORE THAN 15' (4.5 m) AWAY

STANDARD 701106-02
**Standard 701106**

**General Information:**

1. No special signing required.

2. All personnel on foot, excluding flaggers, within the highway right-of-way shall wear a fluorescent orange, fluorescent yellow/green, or a combination of fluorescent orange and fluorescent yellow/green vest meeting the requirements of ANSI/ISEA 107-2004 or ANSI/ISEA 107-2010 for Conspicuity Class 2 garments. Other types of garments may be substituted for the vest as long as the garments have a manufacturer’s tag identifying them as meeting the ANSI Class 2 requirement. [SS pg. 586 / 701.12]

4. When the work operation requires that two or more work vehicles cross the 15 ft. clear zone in any one hour, traffic control shall be in conformance with STANDARD 701101. [Standard – General Notes]

3. This standard also applies to work performed in the median more than 15 ft. (4.5 m) from either pavement. [Standard – General Notes]
Standard 701201

Various Specifications:

1. The traffic control shall remain in place only as long as needed and shall be removed when directed by the Engineer. Signs that do not apply to current conditions, shall be removed, covered, or turned from the view of the motorists. [SS pg. 584 / 701.04]

2. All personnel on foot, excluding flaggers, within the highway right-of-way shall wear a fluorescent orange, fluorescent yellow/green, or a combination of fluorescent orange and fluorescent yellow/green vest meeting the requirements of ANSI/ISEA 107-2004 or ANSI/ISEA 107-2010 for Conspicuity Class 2 garments. Other types of garments may be substituted for the vest as long as the garments have a manufacturer’s tag identifying them as meeting the ANSI Class 2 requirement. [SS pg. 586 / 701.12]

3. The Contractor shall keep all equipment, material, and vehicles off the pavement and shoulders on the side of the pavement which is open to traffic. … At any location on existing pavements less than three lanes in width, the sequence of construction shall limit operations to one side of the pavement. [SS pg. 585 / 701.08]

4. The longitudinal placement of the flagger may be increased up to 100 ft. (30 m) from that shown on the plans to improve the visibility of the flagger. … Flaggers will not be required when no work is being performed, unless there is a lane closure on two-lane, two-way pavement. [SS pg. 587 / 701.13]

5. Two Lane Highways. Two flaggers will be required for each separate operation where two-way traffic is maintained over one lane of pavement. Work operations controlled by flaggers shall be no more than 1 mile (1600 m) in length. Flaggers shall be in sight of each other or in direct communication at all times. Direct communication shall be obtained by using portable two-way radios or walkie-talkies. [SS pg. 587 / 701.13(a)]

6. Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the Engineer. [SS pg. 588 / 701.14]

7. Pavement patching: [SS pg. 593 - 594 / 701.17(e)]

8. No broken pavement, open holes, or partially filled patches shall remain overnight and all devices shall be removed before dark. If patches are not opened when required, additional traffic control shall be provided at no additional cost to the Department. [SS pg. 594 / 701.17(e) (2)b]

General Information:

1. At the completion of the day’s operations, all materials, equipment, signs, cones, barricades, and drums are to be removed and the work area opened to traffic.

2. If the work operation does not exceed 60 minutes, traffic may be in conformance with STANDARD 701301.

FOR INFORMATIONAL USE ONLY
1. Bollard at 50' (15 m) centers for the first 250' (75 m) and at no greater than 100' (30 m) centers through the remainder of the work area.

- [Diagram of traffic control symbols and applications]

**TYPICAL APPLICATIONS**
- Island painted
- Installation of drainage structure
- Utility operations

**SYMBOLS**
- Work area
- Sign
- Flagger with traffic control sign
- Bollard or drum
- Bollard or drum with flashing light
- Bollard or drum with steady burning light

**GENERAL NOTES**
This Standard is used where at any time, any vehicle, equipment, workers or their activities will encroach in the area between the center line and a line 24' (600) from the edge of pavement for nighttime operation.

All dimensions are in inches (millimeters) unless otherwise shown.

**LANE CLOSURE, 2L, 2W, NIGHT ONLY, FOR SPEEDS ≥ 45 MPH**

<table>
<thead>
<tr>
<th>DATE</th>
<th>REVISIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1-18</td>
<td>Dimmed steady burning lights or tangents.</td>
</tr>
<tr>
<td>1-1-11</td>
<td>Revised flagger sign.</td>
</tr>
</tbody>
</table>

STANDARD 701206-04
Standard 701206

Various Specifications:

1. The Contractor shall keep all equipment, material, and vehicles off the pavement and shoulders on the side of the pavement which is open to traffic. ... At any location on existing pavements less than three lanes in width, the sequence of construction shall limit operations to one side of the pavement. [SS pg. 585 / 701.08]

2. The longitudinal placement of the flagger may be increased up to 100 ft. (30 m) from that shown on the plans to improve the visibility of the flagger. [SS pg. 587 / 701.13]

3. For nighttime flagging, flaggers shall be illuminated by an overhead light source providing a minimum vertical illuminance of 10 fc (108 lux) measured 1 ft. (300 mm) out from the flagger's chest. The bottom of any luminaire shall be a minimum of 10 ft. (3 m) above the pavement. Luminaire(s) shall be shielded to minimize glare to approaching traffic and trespass light to adjoining properties. [SS pg. 587 / 701.13]

Nighttime flaggers shall be equipped with a fluorescent orange or fluorescent orange and fluorescent yellow/green apparel meeting the requirements of ANSI/ISEA 107-2004 or ANSI/ISEA 107-2010 for Conspicuity Class 3 garments. [SS pg. 587 / 701.13]

4. Flaggers shall be in sight of each other or in direct communication at all times. Direct communication shall be obtained by using portable two-way radios or walkie-talkies. [SS pg. 587 / 701.13(a)]

5. When work operations exceed four days, signs shall be post mounted unless the signs are located on the pavement or define a moving or intermittent operation. ... Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the Engineer. [SS pg. 587-588 / 701.14]

First two warning signs on each approach to the work involving a nighttime lane closure. Lights required: Flashing mono-directional lights. [BDE special provision “Lights on Barricades”]

General Information:

1. This standard may be used for bridge repair projects in lieu of STANDARD 701316 where the minimum passing sight distance (Section 3B-5 MUTCD) through the barricaded area is available from a point approximately 350 ft. (105 m) in advance of the first barricade in either direction, the maximum length of closure, including taper, is approximately 300 ft. (90 m) and the estimated ADT does not exceed 1,000.

2. When Standard 701206 is specified for bridge repair projects, the bridge rail and guardrail adjacent to the open traffic lane shall be delineated with guardrail/parapet markers at 25 ft. (7.6 m) centers.

3. Refer to Section 702 for Nighttime Work Zone Lighting. [SS pg. 603-605 / 702] and also pages 105-106 of this booklet.

FOR INFORMATIONAL USE ONLY
Various Specifications:

1. The traffic control shall remain in place only as long as needed and shall be removed when directed by the Engineer. Signs that do not apply to current conditions shall be removed, covered, or turned from the view of motorists. [SS pg. 584 / 701.04]

2. All personnel on foot, excluding flaggers, within the highway right-of-way shall wear a fluorescent orange, fluorescent yellow/green, or a combination of fluorescent orange and fluorescent yellow/green vest meeting the requirements of ANSI/ISEA 107-2004 or ANSI/ISEA 107-2010 for Conspicuity Class 2 garments. Other types of garments may be substituted for the vest as long as the garments have a manufacturer’s tag identifying them as meeting the ANSI Class 2 requirement. [SS pg. 586 / 701.12]

3. The Contractor shall keep all equipment, material, and vehicles off the pavement and shoulders on the side of the pavement which is open to traffic. … At any location on existing pavements less than three lanes in width, the sequence of construction shall limit operations to one side of the pavement. [SS pg. 585 / 701.08]

4. The longitudinal placement of the flagger may be increased up to 100 ft. (30 m) from that shown on the plans to improve the visibility of the flagger. [SS pg. 587 / 701.13]

5. Flaggers shall be in sight of each other or in direct communication at all times. Direct communication shall be obtained by using portable two-way radios or walkie-talkies. [SS pg. 587 / 701.13(a)]

6. Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the Engineer. [SS pg. 588 / 701.14]

General Information:

During working hours, all vehicles and/or nonoperating equipment which are parked, two hours or less, shall be parked at least 8 ft (2.5 m) from the open traffic lane. For other periods of time during working and for all nonworking hours, all vehicles, materials, and equipment shall be parked or stored as follows.

(a) When the project has adequate right-of-way, vehicles, materials, and equipment shall be located a minimum of 30 ft (9 m) from the pavement.

(b) When adequate right-of-way does not exist, vehicles, materials, and equipment shall be located a minimum of 15 ft (4.5 m) from the edge of any pavement open to traffic.

(c) Behind temporary concrete barrier, vehicles, materials, and equipment shall be located a minimum of 24 in. (600 mm) behind free standing barrier or a minimum of 6 in. (150 mm) behind barrier that is either pinned or restrained according to Article 704.04. The 24 in. or 6 in. measurement shall be from the base of the non-traffic side of the barrier.

(d) Behind other man-made or natural barriers meeting the approval of the Engineer.”

FOR INFORMATIONAL USE ONLY
GENERAL NOTES
This Standard is used when at any time, any vehicular, equipment, workers or their activities require an intermittent or continuous moving operation on the pavement where the average speed of movement is greater than 5 mph (8 km/h) and less than 45 mph (72 km/h).

When the operation does not exceed 60 minutes, traffic control may be according to Standard 701201.

All dimensions are in inches (millimeters) unless otherwise shown.

LANE CLOSURE, 2L, 2W, SLOW MOVING OPERATIONS DAY ONLY, FOR SPEEDS ≥ 45 MPH

STANDARD 701308-04
Standard 701306:

Various Specifications:

1. The traffic control shall remain in place only as long as needed and shall be removed when directed by the Engineer. Signs that do not apply to current conditions, shall be removed, covered, or turned from the view of the motorists. [SS pg. 584 / 701.04]

2. The Contractor shall keep all equipment, material, and vehicles off the pavement and shoulders on the side of the pavement which is open to traffic. ... At any location on existing pavements less than three lanes in width, the sequence of construction shall limit operations to one side of the pavement. [SS pg. 585 / 701.08]

3. The longitudinal placement of the flagger may be increased up to 100 ft. (30 m) from that shown on the plans to improve the visibility of the flagger. [SS pg. 587 / 701.13]

4. Work operations controlled by flaggers shall be no more than 1 mile (1600 m) in length. Flaggers shall be in sight of each other or in direct communications at all times. Direct communication shall be obtained by using portable two-way radios or walkie-talkies. [SS pg. 587 / 701.13(a)]

5. Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the Engineer. [SS pg. 588 / 701.14]

6. Where construction operations on two-lane roads open to traffic result in the removal or covering of any pavement striping indicating passing restrictions, “NO PASSING ZONES NOT STRIPED NEXT __ MILES” (G20-I100) signs shall be used. The contractor shall place the signs at the beginning of the unstriped area, just beyond each major intersection within the unstriped area and at other locations as directed by the engineer, to ensure a minimum spacing of 5 miles (8 km). The signs shall be placed just prior to removal or covering of the striping and shall remain in place until full no passing zone striping has been restored. [SS pg. 592 / 701.17(c)]

7. Prime or Tack Coat. “FRESH OIL” (W21-2) signs shall be erected when prime or tack and fine aggregate are applied to pavement that is open to traffic. The signs shall remain until tracking of the prime or tack ceases as directed by the Engineer. The signs shall be erected a minimum of 500 ft. (150 m) preceding the start of the prime or tack. [SS pg. 592 / 701.17(c)(1)]

8. Cold Milling. “ROUGH GROOVED SURFACE” (W8-I107) signs shall be erected when the road has been cold milled and opened to traffic. The signs shall be placed just prior to the cold milling operation and shall remain in place until the milled surface condition no longer exists. These signs shall be erected a minimum of 500 ft. (150 m) preceding the start of the milled pavement, just before each major intersection within the milled area, and at other locations as directed by the Engineer. The signs shall have an amber flashing light attached. [SS pg. 592 / 701.17(c)(2), and BDE Special Provision “Lights on Barricades”]

FOR INFORMATIONAL USE ONLY
**TYPICAL APPLICATIONS**
- Conducing work
- Utility work
- Pavement marking
- Med. mowing
- Roadometer measurements
- Doors, odors, water
- Crack pouring

**SYMBOLS**
- Arrow board (hazard zone only)
- Truck with headlights, emergency flashers and flashing amber light, visible from all directions
- 18x18 in. (450x450 mm), orange flag
  - Use when guide wheel is used
- Truck mounted attenuator

**GENERAL NOTES**
This Standard is used where any vehicle, equipment, workers or their activities will require a continuous moving operation where the average speed is greater than 3 mph (15 km/h).

For shoulder operations not encompassing on the pavement, use DETACT A, Standard T6025.

All dimensions are in inches (millimeters) unless otherwise shown.

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**LANE CLOSURE 2L, 2W**
**MOVING OPERATIONS—DAY ONLY**

<table>
<thead>
<tr>
<th>DATE</th>
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| 1-1-09 | Switched units to
| 1-1-09 | Long span
| 1-1-09 | Pass with Care, aligned
| 1-1-09 | Lim. speed restrictions
| 1-1-09 | In Standard lane

**STANDARD 701311-03**
Standard 701311

Various Specifications:

Truck Mounted/Trailer Mounted Attenuators (TMA). TMA host vehicles shall have the parking brake engaged when stationary. [SS pg. 590 / 701.15(h)]

Truck Mounted/Trailer Mounted Attenuators (TMA). The attenuator shall be either a NCHRP 350 or MASH approved unit for Test Level 3. Test Level 2 may be used as directed by the Engineer for normal posted speed less than or equal to 45 mph. [SS pg. 1130 / 1106.02(g)]

General Information:

During pavement marking operations, “WET PAINT” signs with the appropriate arrow(s) shall be mounted on the back of the striper and the following vehicle where necessary to reduce tracking.
Type III barricade to be placed when no work is being performed.

Guardrail/barrier wall reflectors at 25' (7.6 m) cts. See Standards 701301 & 7100200.

Vibrant panels at 3M (7.6 m) cts. Throughout lane shift. These panels may be omitted when the general, workmen, extends to at least this point on the taper.

The edge of the pavement mounted signal head shall be between 24 (610) and W (1.8 m) from edge of shoulder.

For contract construction projects:
- W20-103(0)-48
- W13-102(0)-48
- W3-2(0)-48
- R10-6A-2430

For maintenance projects:
- W20-10(0)-48
- W15-10(0)-48
- R10-6A-2430
- W13-10(0)-3424

Drums at 50' (15 m) cts. for 280' (80 m)

Drums at 25' (7.6 m) cts.

See detail for placement of detector loops.

**SYMBOLS**
- Work area
- Sign
- Traffic signal
- Detector loops
- Type II barricade with flashing lights
- Drum with steady burn bi-directional light
- Temporary rumble strip (when specified)
- Crystal, bidirectional guardrail/barrier wall reflector
- Double vertical panel (see detail)
- Drum
Standard 701316

The exact location of the signals, detector loops, stop bars, and signs shall be as directed by the Engineer. The locations shall also be adjusted as required for stage construction.

The Engineer shall be notified at least 72 hours in advance of placing the signals in operation and at least one week prior to a traffic lane width reduction.

Any damage to the temporary traffic signals from any cause shall be repaired at no additional cost to the Department. If at any time the Contractor fails to perform any work deemed necessary by the Engineer to keep the temporary traffic signals in proper operating condition, the Department reserves the right to have other electrical Contractors perform the needed work, and the cost will be deducted from compensation due or which may become due the Contractor under the contract.

During daytime operations when workers are present, the Engineer may allow Type I or Type II barricades to be placed parallel to the centerline. Cones may be substituted for barricades at half the barricade spacing during the daytime operations.

Lane Closure on Two-Way, Two-Lane Rural Road. The Contractor shall furnish, install, maintain, and remove temporary traffic signals including a traffic actuated controller, a cabinet, detector amplifiers, and other associated equipment as listed below and on Standard 701316 for each location specified. The Contractor shall have available one spare controller and cabinet. The Contractor shall retain ownership of all traffic control equipment, miscellaneous accessories, and the installation methods shall be according to the following.

a. TRAFFIC SIGNAL HEADS: Two signal heads shall be provided for each mainline approach and for each sideroad within the designated work area. When using incandescent signal heads, all lamps shall be new. When the signals are not operating, the signal head shall be hooded according to Article 880.03 and the “SIGNAL AHEAD” sign covered or removed. The left signal head shall be mounted at a height of 10 ft. (3.0 m) above the road surface measured to the bottom of the signal head. The right signal head shall be mounted at a height of 14 ft. (4.3 m) above the road surface. Back plates will be required on all signals.

The right signal head shall be aimed so the centers of the light beams of the indications are directed toward a point in the center of the approach lane 500 ft. (150 m) in advance of the signal. The left indication shall be aimed at a point in the center of the approach lane 100 ft. (30 m) in advance of the stop line.

b. LENSES: All lenses shall be 12 in. (300 mm) nominal diameter.

c. WIRE AND CABLE: The contractor shall supply all overhead and underground wiring for both signal circuits and loop detector lead-ins. The electric cable shall be aerially suspended, at a minimum height of 10 ft. (3.0 m) and as close to the right-of-way line as possible. When the electric cable crosses a roadway or entrance, it shall be aerially suspended, at a minimum height of 18 ft. (5.5 m), according to the local utility requirements, or placed in a trench with a minimum of 2 ft. (600 mm) of cover, or protected in a manner approved be the Engineer.
Standard 701316 - Continued

d. MOUNTING: The controller shall be mounted on a post, pole, or temporary concrete foundation. The signal heads shall be mounted on 25 ft. (7.5 m) standard tubular steel posts or on a minimum Class 4 wood pole, when overhead wiring is used between signals. Alternative methods of mounting the cabinet or signal heads shall be approved by the Engineer. The supports shall be kept in a vertical position for the duration of the project.

e. SERVICE INSTALLATION: The Contractor shall be responsible for the installation and cost of 110 V electrical service. When the service cable from the controller to the power source is suspended overhead, the line height shall not be less than 10 ft. (3.0 m) above the ground and located as close to the right-of-way lines as practicable. When the cable crosses a roadway or entrance, the cable shall be raised to a minimum height of 18 ft. (5.5 m) or pass under the pavement through a culvert opening. Portable power generating equipment may be used for a short period of time until local power is available, provided at least one person is present at all times at the site to ensure proper operation.

f. TRAFFIC SIGNAL CONTROLLER:

1. The controller shall be standard eight phase NEMA controller housed in a weather proof cabinet. The traffic signals shall dwell in All-Red. The long All-Red intervals shall be adjustable up to 99 seconds in one second increments. Long All-Red intervals shall be obtained by using a trail green feature or an equivalent, or by using dummy phases. The long All-Red interval shall be preempted if the previous movement is detected before the conflicting movement is detected and shall cause the previous movement to return to the green display with a minimum four second delay. When a conflict or failure is detected, the signal shall display a flashing All-Red. When an additional phase is used for a side road movement, only one long red interval shall be used between active phases on each side of the work area.

All devices used, in lieu of controller software to produce this sequence, shall be mounted within the cabinet but not within the controller. The Contractor shall provide an operational demonstration of the controller assembly for the Engineer subsequent to installation and prior to being placed into operation. The Contractor shall program the controller, trouble shoot, and correct any problems that arise, and verify the equipment is functions according to the contract. If any controller malfunction occurs during the time of operation or in the event of a power failure, the Contractor shall, without delay, provide flaggers for traffic control and immediately install a replacement controller to operate the signals.

2. When specified, the Department will furnish the traffic actuated controller. The controller, complete with loop detector-amplifiers and pole mount cabinet, shall be picked up and returned upon completion of the project to the location designated on the plans. The Contractor shall provide notice to the Department at least two weeks in advance of requiring the traffic actuated controller. The Contractor shall be responsible for maintenance of the controller and all related equipment within the controller cabinet. The controller shall be inspected by the Contractor and Engineer subsequent to installation and prior to being placed into operation. Any malfunction of the Department owned equipment revealed during the inspection by the Contractor shall be repaired and will be paid for
Standard 701316 - Continued

according to Article 109.04. The Contractor shall be responsible for any damage to the Department-owned equipment as a result of negligence or poor workmanship during installation at his/her expense. The Contractor shall provide all maintenance required, at his/her expense, to keep the Department-owned equipment functioning properly after being placed in operation.

g. DETECTOR LOOPS: Three detector loops shall be installed on each approach as shown on the plan. The near detector loop shall be placed 12 in. (300 mm) from the centerline and the far loop shall be placed 12 in. (300 mm) from the edge line. Each loop shall be connected to a separate detector amplifier channel. Call delay feature shall be used for the loops nearest the stop lines and defeated during the green of that phase. An alternate method of detection may be used if it has been demonstrated and approved by the Department.

The loop detector lead-in cable shall be protected from construction and maintenance activities. In the event of detector loop failure, the Contractor shall have 48 hours to repair or replace the loops. Upon completion of the project, the detector loop shall be terminated in such a manner as to provide for future use. [SS pg. 595 - 598 / 701.18(b)]

Various Specifications:

1. When work operations exceed four days, all signs shall be post mounted unless the signs are located on the pavement or define a moving or intermittent operation. When approved by the Engineer, temporary sign supports may be used where posts are impractical. … Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the engineer. [SS pg. 587 - 588 / 701.14]

2. First two warning signs on each approach to the work involving a nighttime lane closure. Lights Required: Flashing mono-directional lights. [BDE Special Provision "Lights on Barricades]

4. Devices in nighttime lane closure tapers on Standards 701316 and 701321. Lights Required: Steady burn bi-directional lights. [BDE Special Provision "Lights on Barricades]

General Information:

Temporary rumble strips conforming to Standard 701901 are recommended where poor alignment or restricted sight distance indicated potential operational problems.
DETECTOR LOOPS

TEMPORARY PAVEMENT MARKING

VERTICAL PANELS
(Pair mounted, one each side)

TRAFFIC SIGNAL SEQUENCE

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<td>BELOW 40 mph</td>
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ADVISORY SPEED LIMIT

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GENERAL NOTES
This Standard is used where, at any time, any vehicle, equipment, workers, or their activities will encroach on one lane of a bridge. Traffic signals and a positive barrier are required.

Traffic signals shall be operational only when all traffic controls are in place. When traffic signals are not in operation, flaggers shall be used and traffic control shall conform to Standard 701270 or 701296.

Temporary concrete barrier shall be according to Standard 704001.

Existing or temporary pavement markings shall be on both sides of open lane from stop bar to stop bar.

All dimensions are in inches (millimeters) unless otherwise shown.

LANE CLOSURE, 2L, 2W,
BRIDGE REPAIR WITH BARRIER

STANDARD 701321-17

(Sheet 2 of 2)
**Standard 701321**

Where the clear width through a work zone with temporary concrete barrier will be 16.0 ft. (4.88 m) or less, the Contractor shall notify the Engineer at least 21 days in advance of implementing the traffic control for that restriction. [SS pg. 584 / 701.06]

The exact location of the signals, detector loops, stop bars, and signs shall be as directed by the Engineer. The locations shall also be adjusted as required for stage construction. [SS pg. 595-598 / 701.18(b)]

The Engineer shall be notified at least 72 hours in advance of placing the signals in operation and at least one week prior to a traffic lane width reduction.

Any damage to the temporary traffic signals from any cause shall be repaired at no additional cost to the Department. If at any time the Contractor fails to perform any work deemed necessary by the Engineer to keep the temporary traffic signals in proper operating condition, the Department reserves the right to have other electrical Contractors perform the needed work, and the cost will be deducted from compensation due or which may become due the Contractor under the contract.

Lane Closure on Two-Way, Two-Lane Rural Road. The Contractor shall furnish, install, maintain, and remove temporary traffic signals including a traffic actuated controller, a cabinet detector amplifiers, and other associated equipment as listed below and on Standard 701321 for each location specified. The Contractor shall have available one spare controller and cabinet. The Contractor shall retain ownership of all traffic control equipment, miscellaneous accessories, and the installation methods shall be according to the following.

a. **TRAFFIC SIGNAL HEADS:** Two signal heads shall be provided for each mainline approach and for each sideroad within the designated work area. When using incandescent signal heads, all lamps shall be new. When the signals are not operating, the signal head shall be hooded according to Article 880.03 and the “SIGNAL AHEAD” sign covered or removed. The left signal head shall be mounted at a height of 10 ft. (3.0 m) above the road surface measured to the bottom of the signal head. The right signal head shall be mounted at a height of 14 ft. (4.3 m) above the road surface. Back plates will be required on all signals.

   The right signal head shall be aimed so the centers of the light beams of the indications are directed toward a point in the center of the approach lane 500 ft. (150 m) in advance of the signal. The left indication shall be aimed at a point in the center of the approach lane 100 ft. (30 m) in advance of the stop line.

b. **LENSES:** All lenses shall be 12 in. (300 mm) nominal diameter.

c. **WIRE AND CABLE:** The Contractor shall supply all overhead and underground wiring for both signal circuits and loop detector lead-ins. The electric cable shall be aerially suspended, at a minimum height of 10 ft. (3.0 m) and as close to the right-of-way line as possible. When the electric cable crosses a roadway or entrance, it shall be aerially suspended, at a minimum height of 18 ft. (5.5 m), according to the local utility requirements, or placed in a trench with a minimum of 2 ft. (600 mm) of cover, or protected in a manner approved by the Engineer.
d. MOUNTING: The controller shall be mounted on a post, pole, or temporary concrete foundation. The signal heads shall be mounted on 25 ft. (7.5 m) standard tubular steel posts or on a minimum Class 4 wood pole, when overhead wiring is used between signals. Alternative methods of mounting the cabinet or signal heads shall be approved by the Engineer. The support shall be kept in a vertical position for the duration of the project.

e. SERVICE INSTALLATION: The Contractor shall be responsible for the installation and cost of 110 V electrical service. When the service cable from the controller to the power source is suspended overhead, the line height shall not be less than 10 ft. (3.0 m) above the ground and located as close to the right-of-way lines as practicable. When the cable crosses a roadway or entrance, the cable shall be raised to a minimum height of 18 ft. (5.5 m) or pass under the pavement through a culvert opening. Portable power generating equipment may be used for a short period of time until local power is available, provided at least one person is present at all times at the site to ensure proper operation.

f. TRAFFIC SIGNAL CONTROLLER:

1. The controller shall be a standard eight phase NEMA controller housed in a weather proof cabinet. The traffic signals shall dwell in All-Red. The long All-Red intervals shall be adjustable up to 99 seconds in one second increments. Long All-Red intervals shall be obtained by using a trail green feature or an equivalent, or by using dummy phases. The long All-Red interval shall be preempted if the previous movement is detected before the conflicting movement is detected and shall cause the previous movement to return to the green display with a minimum four second delay. When a conflict or failure is detected, the signal shall display a flashing All-Red. When an additional phase is used for a side road movement, only one long red interval shall be used between active phases on each side of the work area.

All devices used, in lieu of controller software to produce this sequence, shall be mounted within the cabinet but not within the controller. The Contractor shall provide an operational demonstration of the controller assembly for the Engineer subsequent to installation and prior to being placed into operation. The Contractor shall program the controller, trouble shoot, and correct any problems that arise, and verify the equipment is functioning according to the contract. If any controller malfunction occurs during the time of operation or in the event of a power failure, the Contractor shall, without delay, provide flaggers for traffic control and immediately install are placement controller to operate the signals.

2. When specified, the Department will furnish the traffic actuated controller. The controller, complete with loop detector-amplifiers and pole mount cabinet, shall be picked up and retuned upon completion of the project to the location designated on the plans. The Contractor shall provide notice to the Department at least two weeks in advance of requiring the traffic actuated controller. The Contractor shall be responsible for maintenance of the controller and all related equipment within the controller cabinet. The controller shall be inspected by the Contractor and Engineer subsequent to installation and prior to being placed into operation. Any malfunction of the Department owned equipment revealed during the inspection
Standard 701321 - Continued

by the Contractor shall be repaired and will be paid for according to Article 109.04. The Contractor shall be responsible for any damage to the Department-owned equipment as a result of negligence or poor workmanship during installation at his/her expense, to keep the Department-owned equipment functioning properly after being placed in operation.

g. DETECTOR LOOPS: Three detector loops shall be installed on each approach as shown on the plans. The near detector loops shall be placed 12 in. (300 mm) from the centerline and the far loop shall be placed 12 in. (300 mm) from the edge line. Each loop shall be connected to a separate detector amplifier channel. Call delay feature shall be used for the loops nearest the stop lines and defeated during the green of that phase. An alternate method of detection may be used if it has been demonstrated and approved by the Department.

The loop detector lead-in cable shall be protected from construction and maintenance activities. In the event of detector loop failure, the Contractor shall have 48 hours to repair or replace the loops. Upon completion of the project, the detector loop shall be terminated in such a manner as to provide for future use.

Various Specifications:

1. All existing pavement marking which conflict with revised traffic pattern shall be removed according to Section 783. [SS pg. 584 / 701.04]

2. When work operations exceed four days, all signs shall be post mounted unless the signs are located on the pavement or define a moving or intermittent operation. When approved by the Engineer, temporary sign supports may be used where posts are impractical. … Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the engineer. [SS pg. 587-588 / 701.14]

3. First two warning signs on each approach to the work involving a nighttime lane closure. Lights Required: Flashing mono-directional lights. [BDE Special Provision “Lights on Barricades”]


General Information:

Temporary rumble strips conforming to Standard 701901 are recommended where poor alignment or restricted sight distance indicates potential operational problems.
**Standard 701326**

No paving or excavating operations shall be performed at night unless authorized by the Engineer.  
[SS pg. 598 / 701.18(c)]

**Various Specifications:**

1. The Contractor shall keep all equipment, material, and vehicles off the pavement and shoulders on the side of the pavement which is open to traffic.  …  At any location on existing pavements less than three lanes in width, the sequence of construction shall limit operations to one side of the pavements.  [SS pg. 585 / 701.08]

2. The longitudinal placement of the flagger may be increased up to 100 ft. (30 m) from that shown on the plans to improve the visibility of the flagger.  [SS pg. 587 / 701.13]

3. Work operations controlled by flaggers shall be no more than 1 mile (1600 m) in length.  Flaggers shall be in sight of each other or in direct communication at all times.  Direct communication shall be obtained by using portable two-way radios or walkie-talkies.  [SS pg. 587 / 701.13(a)]

4. When work operations exceed four days, signs shall be post mounted unless the signs are located on the pavement or define a moving or intermittent operation.  …  Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the Engineer.  [SS pg. 587-588 / 701.14]
TYPICAL APPLICATIONS
- Bridge construction
- Curved construction

SYMBOLS
- Work zone
- Sign
- Barricade or drum with steady burn bidirectional light
- Double vertical panel
- Type III barricade

GENERAL NOTES
This Standard is used where at any time, any vehicle, equipment, workers or their activities require the closure of both lanes and a temporary run-around is constructed.

Barricades or drums at 55' (16 m) centers shall be used in lieu of vertical panels on the detour where they are to be placed as a secondary or existing pavement.

Where the tangent distance on the temporary run-around exceeds 600' (180 m), crystal delineators at 50' (15 m) centers may be substituted for the vertical panels, or the spacing between vertical panels may be increased to 100' (30 m) within the limits of the tangent.

All dimensions are in inches (millimeters) unless otherwise shown.

LANE CLOSURE, 2L, 2W, WITH RUN-AROUND, FOR SPEEDS ≥ 45 MPH
STANDARD 701331-05

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<td></td>
<td>To double vertical panel</td>
</tr>
</tbody>
</table>
**Standard 701331**

Various Specifications:

1. When work operations exceed four days, signs shall be post mounted unless the signs are located on the pavement or define a moving or intermittent operation. … Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the Engineer. [SS pg. 587-588 / 701.14]

2. First two warning signs on each approach to the work involving a nighttime lane closure. Lights Required: Flashing mono-directional lights. [BDE Special Provision “Lights on Barricades”]

General Information:

1. No passing zones shall be striped where sight distance restrictions warrant.

2. Edge and centerline pavement markings are required for this Standard.

FOR INFORMATIONAL USE ONLY
GENERAL NOTES
This standard is used where at any time, any vehicle, equipment, workers or their activities will encroach in the area between the center line and a line 24" (600 mm) outside the edge of the pavement.

Two flaggers shall be required for each separate lane closure. The flagger shall be a minimum of 200' (60 m) and a maximum of 1/2 day's operation beyond the flagger sign. When the distance between successive setbacks exceeds 2000' (600 m), additional flaggers, warning signs, and tape shall be placed as shown.

Barricades/drums shall be placed at intervals not greater than 100' (30 m) or cones and be placed at intervals not greater than 50' (15 m) centers throughout the work zone. The spacing between cones shall be not greater than 50' (15 m), two barricades/drums shall be placed in front of each open hole and one on the backside close to the centerline. Where the open hole is greater than 12" (300 mm) parallel to the centerline, one barricade/drum shall be placed in each hole. For large holes, barricades/drums shall be placed at 60' (18 m) intervals.

All dimensions are in inches (metric) unless otherwise shown.

TYPICAL APPLICATIONS
- Potting
- Sign
- Flagger with traffic control sign
- Barricades or drums
- Cones, barricades or drums

SYMBOLS

DATE REVISIONS
1-11 Revised flagger sign.
1-19 Switched units to English.

LANE CLOSURE, 2L, 2W,
WORK AREAS IN SERIES,
FOR SPEEDS ≥ 45 MPH

STANDARD 701335-06
Standard 701336

Two flaggers shall be required for each separate construction operations. The flagger shall be a minimum of 200 ft. (60 m) and a maximum distance of ½ day’s operation beyond the flagger sign. When the distance between successive patches exceeds 2000 ft. (600 m), additional flaggers warning signs, and tapers shall be places as shown.

Barricades/drums shall be placed at intervals not greater than 100 ft. (30 m) or cones shall be placed at intervals not greater than 50 ft. (15 m) centers throughout the work zone.

When the spacing between open holes is greater than 50 ft. (15 m), two barricades/drums shall be places in front of each open hole and one on the backside close to the centerline.

When the open hole is greater than 10 ft. (3 m) parallel to the centerline, one barricade/drum shall be placed in each hole. For larger holes, barricades/drums shall be placed at 50 ft. (16 m) centers.

Various Specifications:

1. The longitudinal placement of the flagger may be increased up to 100 ft. (30 m) from that shown on the plans to improve the visibility of the flagger. [SS pg. 587 / 701.13]

2. Work operations controlled by flaggers shall be no more than 1 mile (1600 m) in length. Flaggers shall be in sight of each other or in direct communication at all times. Direct communication shall be obtained by using portable two-way radios or walkie-talkies. [SS pg. 587 / 701.13(a)]

3. When work operations exceed four days, signs shall be post mounted unless the signs are located on the pavement or define a moving or intermittent operation. . . . Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the Engineer. [SS pg. 587-588 / 701.14]

4. First two warning signs on each approach to the work involving a nighttime lane closure. Lights Required: Flashing mono-directional lights. [BDE Special Provision “Lights on Barricades”]

5. Pavement Patching: [SS pg. 593 - 594 / 701.17(e)]

6. No broken pavement, open holes, or partially filled patches shall remain overnight and all devices shall be removed before dark. If patches are not opened when required, additional traffic control shall be provided at no additional cost to the Department. [SS pg. 594 / 701.17(e)(2)b]
**SYMBOLS**

- Arrow board
- Trailer mounted sign
- Sign
- Type II bar code, drum, or vertical bar code with non-directional flange light

1. The Work Construction Ahead sign shall be located 3 to 5 miles in advance of the project limits.
2. The message and size of the Work Zone Public Information Sign shall be as specified by the Department.
3. The message board shall be used to display status of lanes within the project. The primary messages shall be:
   - "Right Lane Closed" / "x Miles Ahead"
   - "Left Lane Closed" / "x Miles Ahead"
   - "All Lanes Open"
4. Three Type II bar codes, drums, or vertical bar codes at 25' (8 m) centers.
5. This sign shall be used when 2 lanes are closed.
6. This sign shall be omitted when median width is less than 10' (3 m).
7. This sign shall only be used if the existing speed limit is greater than 60 mph.

**GENERAL NOTES**

This standard is used where at any time a lane is closed on a freeway/expressway. When the left lane is closed, LEFT LANE CLOSED signs shall be substituted for the RIGHT LANE CLOSED signs.

The first two signs and the message board are mandatory.

The last four signs and arrow board shall be moved as necessary to maintain the required distance from the start of the lane closure to permit.

All dimensions are to be based on individual unless otherwise short.

**APPROACH TO LANE CLOSURE, FREEWAY/EXPRESSWAY**

**STANDARD 701400-09**

<table>
<thead>
<tr>
<th>DATE</th>
<th>REVISIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1-17</td>
<td>Added trailer mounted speed display sign, Changed speed limit to 65 mph</td>
</tr>
<tr>
<td>1-1-19</td>
<td>Revised &quot;RIGHT LANE CLOSED&quot; sign number</td>
</tr>
</tbody>
</table>
Standard 701400

Various Specifications:

First two warning signs on each approach to the work involving a nighttime lane closure.  
Lights Required: Flashing mono-directional lights.  [BDE Special Provision “Lights on Barricades”]

General Information:

1. This Standard is to be used with Standards 701401, 701402, 701406, 701416, and 701446.

2. The message panel shall be a minimum of 7 ft (2.1 m) above the edge of pavement in urban areas and a minimum of 5 ft (1.5 m) above the edge of pavement in rural areas, present a level appearance, and be capable of displaying up to eight characters in each of three lines at a time.  [BDE Special Provision “Portable Changeable Message Signs”]

3. When portable changeable message signs are shown on the Standard, this work will not be paid for separately but shall be considered as included in the cost of the Standard.  [SS pg. 603 / 701.20(h)]

4. When speed display trailers are shown on the Standard, this work will not be paid for separately, but shall be considered as included in the cost of the Standard.  [BDE special provision “Speed Display Trailer” (page 146 of this booklet)].
SYMBOLS
- **Arrow Board**
- **Work area**
- **Sign**
- **Direction indicator barricade with temporary bollard or light**
- **Type II barricade, drum, or vertical barricade**
- **Flagger with traffic control sign**

1. Reflective temporary pavement marking course shall be placed throughout the lane and for 300 ft (100 m) along side the work area when the closure time is greater than 14 days. The orange line shall be white for right lane closure and yellow for left lane closures.
2. Work Zone speed limit signs and FLAUGGER signs shall be placed as necessary to maintain the required spacing between the signs and the workers in each separate work activity. Work Zone Speed Limit signs shall be placed whenever the work consists of lane closures within 500' (150 m) of the End Work Zone Speed Limit Sign.

**GENERAL NOTES**
This standard is used where at any time any vehicle, equipment, or essential workers or their activities will encroach on the lane adjacent to the shoulder, or on the shoulder within 100' (30 m) of the edge of pavement.

This standard must always be used in combination with Standard 701-100.

This standard also applies when work is being performed in the left lane. Under these conditions, the setup would be a mirror image of what is shown.

A checkered yellow line shall be placed in the middle of the adjacent lane and at the shoulder at 100' (30 m) centers.

All dimensions are in inches (millimeters) unless otherwise shown.

**DATE** | **REVISIONS**
--- | ---
1-1-20 | Omits signs in tangent.
1-1-27 | Revised END WORK ZONE SPEED LIMIT sign from orange to white background.

**LANE CLOSURE, FREEWAY / EXPRESSWAY**

**STANDARD 701401-11**
**Standard 701401**

The END WORK ZONE SPEED LIMIT sign shall be black on white. [Standard – Sign Code]

1. Multilane Pavement Resurfacing: For the construction of binder course, surface course and shoulder resurfacing on multilane pavements, Standards 701401, 701406, 701421, 701422, or 701446 shall be used from the beginning of business on Monday to 4:30 p.m. on Friday. Only Standards 701406 and 701421 shall be used from 4:30 p.m. Friday to start of business on Monday. [SS pg. 598 / 701.18(d)(1)]

2. Shoulder Upgrading and Replacement: The following shall apply to shoulder pipe underdrain installation and/or shoulder reconstruction on existing multilane divided highways.

The Contractor shall close the adjacent lane of pavement according to the Standard within the limits of the construction zone:

   a. When required by the Contractor’s operations; and,

   b. When no workers are present and the difference in elevation between the pavement and the shoulder and/or widening is greater than 12 in. (300).

During shoulder work on ramps, refer to standard 701456.

Standard 701401 and 701422 will only be measured for payment where the average depth of shoulder reconstruction required by the plans, exclusive of any trench for pipe underdrain installation, is in excess of 3 in. (75 mm). Where such shoulder reconstruction is 3 in. (75 mm) or less, no open trench greater than 3 in. (75 mm) deep will be permitted overnight. If, because of unforeseen circumstances, an open trench greater than 3 in. (75 mm) deep should occur overnight, the Contractor shall, at no additional cost to the Department, close the adjacent traffic lane according to Standards 701400 and 701401 or according to Standard 701422.

Excavations greater than 3 in. (75 mm) in depth between the pavement and shoulder, including any trenches within the shoulder area, shall be restricted to one shoulder in each direction of travel. In addition, shoulder drop-offs greater than 1 ½ in. (38 mm) caused by the Contractor’s operations will not be permitted over the winter shutdown.

The Contractor shall schedule the work so the lane closure at any one-work area does not exceed five working days. The closure time may be exceeded for conditions beyond the Contractor’s control, except if continual and persistent closures in excess of the five working days are made, the Engineer will initiate measures to delay or limit the daily production of the Contractor’s operations.

All debris shall be removed from the shoulder and right-of-way prior to the removal of barricades, drums, or vertical panels. [SS pg. 598-599 / 701.18(d)(2)]

**Various Specifications:**

1. The traffic control shall remain in place only as long as needed and shall be removed when directed by the Engineer. Signs that do not apply to current conditions, shall be removed, covered, or turned from the view of the motorists. [SS pg. 584 / 701.04]
2. The longitudinal placement of the flagger may be increased up to 100 ft. (30 m) from that shown on the plans to improve the visibility of the flagger. [SS pg. 587 / 701.13]

3. One flagger will be required for each separate activity of an operation that requires frequent encroachment in a lane open to traffic. [SS pg. 587 / 701.13(b)]

4. When work operations exceed four days, signs shall be post mounted unless the signs are located on the pavement or define a moving or intermittent operation. ... Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the Engineer. [SS pg. 587-588 / 701.14]

5. Work Zone Speed Limit Signs. Work zone speed limit sign assemblies shall be provided and located as shown on the plans. Two additional assemblies shall be placed 500 ft. (150 m) beyond the last entrance ramp for each interchange or sideroad.

All permanent “SPEED LIMIT” signs located within 500 ft. (150 m) in advance of the first work zone speed limit sign to the end of the work zone shall be removed or covered. This work shall be coordinated with the lane closures(s) by promptly establishing a posted work zone speed zone when the lane closures(s) are put into effect and promptly reinstating the posted speed zone when the lane closure(s) are removed.

The work zone speed limit signs and end work zone speed limit signs shown in advance of and at the end of the lane closure(s) shall be used for the entire duration of the closures(s).

The work zone speed limit signs shown within the lane closure(s) shall only be used when workers are present in the closed lane adjacent to traffic. The sign assemblies shown within the lane closure(s) will not be required when the worker(s) are located behind a concrete barrier wall. [SS pg. 588-589 / 701.14(b)]


8. Devices delineating patches at night on roadways with an ADT of 25,000 or more. Lights Required: None. [BDE Special Provision “Lights on Barricades”]

9. “ROUGH GROOVED SURFACE” signs. [SS pg. 592 / 701.17(c)(2)]

10. Pavement Patching: [SS pg. 593-594 / 701.17(e)]

11. Where posted speeds are greater than 40 mph cones shall be a minimum of 28 in. (700 mm) in height. [Standard 701901]

General Information:

This standard does not apply when work is being performed in the middle lane(s) of a six or more lane highway. Special plans will be required.

FOR INFORMATIONAL USE ONLY
Standard 701402

The END WORK ZONE SPEED LIMIT sign shall be black on white. [Standard – Sign Code]

Various Specifications:

1. All existing pavement markings which conflict with the revised traffic pattern shall be removed according to Section 783. [SS pg. 584 / 701.04]

2. Where the clear width through a work zone with temporary concrete barrier will be 16.0 ft. (4.88 m) or less, the Contractor shall notify the Engineer at least 21 days in advance of implementing the traffic control for that restriction. [SS pg. 584 / 701.06]

3. When work operations exceed four days, signs shall be post mounted unless the signs are located on the pavement or define a moving or intermittent operation. ... Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the Engineer. [SS pg. 587-588 / 701.14]


FOR INFORMATIONAL USE ONLY
Standard 701406

The END WORK ZONE SPEED LIMIT sign shall be black on white. [Standard – Sign Code]

1. Multilane Pavement Resurfacing. For the construction of binder course, surface course and shoulder resurfacing on multilane pavements, this standard may be used at all times. [SS pg. 598 / 701.18(d)(1)]

2. Shoulder Upgrading and Replacement. The following shall apply to shoulder pipe underdrain installation and/or shoulder reconstruction on existing multilane divided highways.

The Contractor shall close the adjacent lane of pavement according to the Standard within the limits of the construction zone.

a. When required by the contractor’s operations; and,

b. When no workers are present and the difference in elevation between the pavement and the shoulder and/or widening is greater than 12 in. (300 mm).

During shoulder work on ramps, refer to Standard 701456.

Excavations greater than 3 in. (75 mm) in depth between the pavement and shoulder, including any trenches within the shoulder area, shall be restricted to one shoulder in each direction of travel. In addition, shoulder drop-offs greater than 1 ½ in. (38 mm) caused by the Contractor’s operations will not be permitted over the winter shutdown.

The Contractor shall schedule the work so the lane closure at any one work area, does not exceed five working days. The closure time may be exceeded for conditions beyond the Contractor’s control, except if continual and persistent closures in excess of the five working days are made, the Engineer will initiate measures to delay or limit the daily production of the Contractor’s operations.

All debris shall be removed from the shoulder and right-of-way prior to the removal of barricades, drums, or vertical panels. [SS pg. 598-599 / 701.18(d)(2)]

Various Specifications:

1. The traffic control shall remain in place only as long as needed and shall be removed when directed by the Engineer. Signs that do not apply to current conditions, shall be removed, covered, or turned from the view of the motorists. [SS pg. 584 / 701.04]

2. The longitudinal placement of the flagger may be increased up to 100 ft. (30 m) from that shown on the plans to improve the visibility of the flagger. [SS pg. 587 / 701.13]

3. One flagger will be required for each separate activity of an operation that requires frequent encroachment in a lane open to traffic. [SS pg. 587 / 701.13(b)]

4. Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the Engineer. [SS pg. 588 / 701.14]
Standard 701406 - Continued

5. Work Zone Speed Limit Signs. Work zone speed limit sign assemblies shall be provided and located as shown on the plans. Two additional assemblies shall be placed 500 ft. (150 m) beyond the last entrance ramp for each interchange or sideroad.

All permanent “SPEED LIMIT” signs located within 500 ft. (150 m) in advance of the first work zone speed limit sign to the end of the work zone shall be removed or covered. This work shall be coordinated with the lane closures(s) by promptly establishing a reduced posted speed zone when the lane closures(s) are put into effect and promptly reinstating the posted speed zone when the lane closure(s) are removed.

The work zone speed limit signs and end work zone speed limit signs shown in advance of and at the end of the lane closure(s) shall be used for the entire duration of the closures(s).

The work zone speed limit signs shown within the lane closure(s) shall only be used when workers are present in the closed lane adjacent to traffic. The sign assemblies shown within the lane closure(s) will not be required when the worker(s) are located behind a concrete barrier wall. [SS pg. 588-589 / 701.14(b)]

6. Cold Milling. “ROUGH GROOVED SURFACE” (W8-I107) signs shall be erected when the road has been cold milled and opened to traffic. The signs shall be placed just prior to the cold milling operation and shall remain in place until the milled surface condition no longer exists. These signs shall be erected a minimum of 500 ft. (150 m) preceding the start of the milled pavement, just before each major intersection within the milled area, and at other locations as directed by the Engineer. The signs shall have an amber flashing lights attached. [BDE Special Provision “Lights on Barricades”]

7. Daylight operations. Lights Required: None [BDE Special Provision “Lights on Barricades”]

8. Where posted speeds are greater than 40 mph cones shall be a minimum of 28 in. (700 mm) in height. [Standard 701901]

General Information:

1. Equipment, materials, signs, cones, barricades, and drums are to be removed at the completion of the day’s operations and the work area opened to traffic.

2. This standard does not apply when work is being performed in the middle lane(s) of a six or more lane highway. Special plans will be required.

FOR INFORMATIONAL USE ONLY
APPLICATION NO. 1

Application No. 1 depicts a modified entrance ramp. This method shall be utilized whenever existing entrance ramps cannot be utilized due to the condition of the work zone. The entrance location may be shifted, with the approval of the Engineer, to perform work in the entrance area. Application No. 2 shall be put into effect as soon as possible.

APPLICATION NO. 2

Application No. 2 depicts a shortening of the normal entrance ramp. This method shall be used whenever the existing geometry can be retained. Consideration should be given to the entering motorists' line of sight, through, between, or over the obstruction devices.

SYMBOLS

- Work area
- Sign
- Type I barricades or drums with steady burning monodirectional light
- Type II barricades or drums
- Drums with steady burning multidirectional light

GENERAL NOTES

This Standard is used where, at any time any vehicle, equipment, workers, or their activities require a lane closure in close proximity of an exit or entrance ramp and supplements other traffic control standards for lane closures.

These applications are used when work is being performed in the left lane and the ramps enter and exit on the left. Under these conditions, the Exit sign arrow and the Side road symbol sign shall be changed.

Cones may be utilized during daylight operations, at one half the spacing of drums/barricades.

Use of these APPLICATION NO. 1 and APPLICATION NO. 2 shall be limited to five days per location.

When work does not exceed five days, pavement marking tape may be utilized.

All dimensions are in inches (millimeters) unless otherwise shown.

LANE CLOSURE, MULTILANE, AT ENTRANCE OR EXIT RAMP, FOR SPEEDS ≥ 45 MPH

STANDARD 701411-99
APPLICATION NO. 3

Application No. 3 depicts a modified exit ramp. The channelizing devices shall provide a clearly defined path for the exiting motorists. The minimumdimensions shown shall be increased as soon as the progress of the work will permit. The open portion of the ramp may be shifted, with the approval of the Engineer, to perform work in stages on the area adjacent to the ramp exit. Application No. 4 shall be put into effect as soon as possible.

APPLICATION NO. 4

Application No. 4 depicts an extension of the normal exit ramp. This method shall be used whenever existing geometrics can be retained. Consideration should be given to the exiting motorists' line of sight through, between or over the deflection devices.
Standard 701411

This Standard shall supplement mainline traffic controls for lane closures.

The channelizing devices shall clearly define a path for motorists entering or exiting the highway.

Raised reflectorized pavement markers at 25 ft. (8 m) centers may be used in lieu of tape where the pavement marking is to be placed adjacent to the barricades or drums.

When work does not exceed 5 days, pavement marking tape may be omitted.

Use of APPLICATION NO. 1 and APPLICATION NO. 3 shall be limited to five days per location.

Various Specifications:

1. When work operations exceed four days, signs shall be post mounted unless the signs are located on the pavement or define a moving or intermittent operation. … Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the Engineer. [SS pg. 587-588 / 701.14]

2. Daylight operations. Lights Required: None [BDE Special Provision “Lights on Barricades”]

3. First two warning signs on each approach to the work involving a nighttime lane closure. Lights Required: Flashing mono-directional lights. [BDE Special Provision “Lights on Barricades”]


Standard 701416

The END WORK ZONE SPEED LIMIT sign shall be black on white. [Standard – Sign Code]

A reflective solid edge line and yellow centerline for each direction of traffic shall be used when the closure time exceeds four days or when the normal posted speed outside the area of operations exceeds 50 mph. Reflectorized pavement marking tape shall be used for marking the edge lines and centerline on existing pavement. Either tape or reflectorized pavement marking paint may be used for markings on the paved crossovers. Raised reflective pavement markers at 25 ft. (8 m) centers shall be installed for additional delineation.

Vertical panels may be attached to concrete barriers where available space prohibits the use of drums. [SS pg. 599 / 701.18(e)]

Various Specifications:

1. All existing pavement markings which conflict with the revised traffic pattern shall be removed according to Section 783. [SS pg. 584 / 701.04]

2. Where the clear width through a work zone with temporary concrete barrier will be 16.0 ft. (4.88 m) or less, the Contractor shall notify the Engineer at least 21 days in advance of implementing the traffic control for that restriction. [SS pg. 584 / 701.06]

3. Work Zone Speed Limit Signs. Work zone speed limit sign assemblies shall be provided and located as shown on the plans. Two additional assemblies shall be place 500 ft. (150 m) beyond the last entrance ramp for each interchange or sideroad.

All permanent “SPEED LIMIT” signs located within 500 ft. (150 m) in advance of the first work zone speed limit sign to the end of the work zone shall be removed or covered. This work shall be coordinated with the lane closures(s) by promptly establishing a reduced posted speed zone when the lane closures(s) are put into effect and promptly reinstating the posted speed zone when the lane closure(s) are removed.

The work zone speed limit signs and end work zone speed limit signs shown in advance of and at the end of the lane closure(s) shall be used for the entire duration of the closures(s).

The work zone speed limit signs shown within the lane closure(s) shall only be used when workers are present in the closed lane adjacent to traffic. The sign assemblies shown within the lane closure(s) will not be required when the worker(s) are located behind a concrete barrier wall. [SS pg. 588-589 / 701.14(b)]


FOR INFORMATIONAL USE ONLY
**Standard 701421**

The END WORK ZONE SPEED LIMIT sign shall be black on white. [Standard – Sign Code]

1. Multilane Pavement Resurfacing. For the construction of binder course, surface course and shoulder resurfacing on multilane pavement, this standard may be used at all times. [SS pg. 598 / 701.18(d)(1)]

2. Shoulder Upgrading and Replacement: The following shall apply to shoulder pipe underdrain installation and/or shoulder reconstruction on existing multilane divided highways.

   The Contractor shall close the adjacent lane of pavement according to the Standard within the limits of the construction zone.

   a. When required by the contractor’s operations; and,

   b. When no workers are present and the difference in elevation between the pavement and the shoulder and/or widening is greater than 12 in. (300 mm).

During shoulder work on ramps, refer to Standard 701456.

Excavations greater than 3 in. (75 mm) in depth between the pavement and shoulder, including any trenches within the shoulder area, shall be restricted to one shoulder in each direction of travel. In addition, should drop-offs greater than 1 ½ in. (38 mm) caused by the Contractor’s operations will not be permitted over the winter shutdown.

The Contractor shall schedule the work so the lane closure at any one work area does not exceed five working days. The closure time may be exceeded for conditions beyond the Contractor’s control, except if continual and persistent closures in excess of the five working days are made, the Engineer will initiate measures to delay or limit the daily production of the Contractor’s operations.

All debris shall be removed from the shoulder and right-of-way prior to the removal of barricades, drums or vertical panels. [SS pg. 598-599 / 701.18(d)(2)]

**Various Specifications:**

1. The traffic control shall remain in place only as long as needed and shall be removed when directed by the Engineer. Signs that do not apply to current conditions shall be removed, covered, or turned form the view of motorists. [SS pg. 584 / 701.04]

2. The longitudinal placement of the flagger may be increased up to 100 ft. (30 m) from that shown on the plans to improve the visibility of the flagger. [SS pg. 587 / 701.13]

3. One flagger will be required for each separate activity of an operation that requires frequent encroachment in a lane open to traffic. [SS pg. 587 / 701.13(b)]

4. When work operations exceed four days, signs shall be post mounted unless the signs are located on the pavement or define a moving or intermittent operations. … Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the Engineer. [SS pg. 587-588 / 701.14]
Standard 701421 - Continued

5. Work Zone Speed Limit Signs. Work zone speed limit sign assemblies shall be provided and located as shown on the plans. Two additional assemblies shall be placed 500 ft. (150 m) beyond the last entrance ramp for each interchange or sideroad.

All permanent “SPEED LIMIT” signs located within 500 ft. (150 m) in advance of the first work zone speed limit sign to the end of the work zone shall be removed or covered. This work shall be coordinated with the lane closures(s) by promptly establishing a reduced posted speed zone when the lane closures(s) are put into effect and promptly reinstating the posted speed zone when the lane closure(s) are removed.

The work zone speed limit signs and end work zone speed limit signs shown in advance of and at the end of the lane closure(s) shall be used for the entire duration of the closures(s).

The work zone speed limit signs shown within the lane closure(s) shall only be used when workers are present in the closed lane adjacent to traffic. The sign assemblies shown within the lane closure(s) will not be required when the worker(s) are located behind a concrete barrier wall. [SS pg. 588-589 / 701.14(b)]

6. Daylight operations. Lights Required: None. [BDE Special Provision “Lights on Barricades”]

7. Cold Milling. “ROUGH GROOVED SURFACE” (W8-I107) signs shall be erected when the road has been cold milled and opened to traffic. The signs shall be placed just prior to the cold milling operation and shall remain in place until the milled surface condition no longer exists. These signs shall be erected a minimum of 500 ft. (150 m) preceding the start of the milled pavement, just before each major intersection within the milled area, and at other locations as directed by the Engineer. The signs shall have an amber flashing light attached. [BDE Special Provision “Lights on Barricades”]

8. Pavement Patching. [SS pg. 593-594 / 701.17(e)]

9. Where posted speeds are greater than 40 mph cones shall be a minimum of 28 in. (700 mm) in height. [Standard 701901]

General Information:

1. Equipment, materials, signs, cones, barricades, and drums are to be removed at the completion of the day’s operations and the work area opened to traffic.

2. This standard does not apply when work is being performed in the middle lane(s) of a six or more lane highway. Special plans will be required.
The END WORK ZONE SPEED LIMIT sign shall be black on white. [Standard – Sign Code]

1. Multilane Pavement Resurfacing: For the construction of binder course, surface course and shoulder resurfacing on multilane pavements, Standard 701422 shall be used for the beginning of business on Monday to 4:30 p.m. on Friday. Only Standards 701406 and 701421 shall be used from 4:30 p.m. Friday to start of business on Monday. [SS pg. 598 / 701.18(d)(1)]

2. Shoulder Upgrading and Replacement: The following shall apply to shoulder pipe underdrain installation and/or shoulder reconstruction on existing multilane divided highways.

The Contractor shall close the adjacent lane of pavement according to the Standard within the limits of the construction zone.

   a. When required by the contractor’s operations; and,

   b. When no workers are present and the difference in elevation between the pavement and the shoulder and/or widening is greater than 12 in. (300 mm).

During shoulder work on ramps, refer to standard 701456.

Standards 701401 and 701422 will only be measured for payment where the average depth of shoulder reconstruction required by the plans, exclusive of any trench for pipe underdrain installation, is in excess of 3 in. (75 mm). Where such shoulder reconstruction is 3 in. (75 mm) or less, no open trench greater than 3 in. (75 mm) deep will be permitted overnight. If, because of unforeseen circumstances, and open trench greater than 3 in. (75 mm) deep should occur overnight, the Contractor shall, at no additional cost to the Department, close the adjacent traffic lane according to Standard 701422.

Excavations greater than 3 in. (75 mm) in depth between the pavement and shoulder, including any trenches within the shoulder area, shall be restricted to one shoulder in each direction of travel. In addition, shoulder drop-offs greater than 1 ½ in. (38 mm) caused by the Contractor’s operations will not be permitted over the winter shutdown.

The Contractor shall schedule the work so the lane closure at any one work area does not exceed five working days. The closure time may be exceeded for conditions beyond the Contractor’s control, except if continual and persistent closures in excess of the five working days are made, the Engineer will initiate measures to delay or limit the daily productions of the Contractor’s operations.

All debris shall be removed from the shoulder and right-of-way prior to the removal of barricades, drums or vertical panels. [SS pg. 598-599 / 701.18(d)(2)]
Standard 701422 - Continued

Various Specifications:

1. The traffic control shall remain in place only as long as needed and shall be removed when directed by the Engineer. Signs that do not apply to current conditions shall be removed, covered, or turned form the view of motorists. [SS pg. 584 / 701.04]

2. The longitudinal placement of the flagger may be increased up to 100 ft. (30 m) from that shown on the plans to improve the visibility of the flagger. [SS pg. 587 / 701.13]

3. One flagger will be required for each separate activity of an operation that requires frequent encroachment in a lane open to traffic. [SS pg. 587 / 701.13(b)]

4. Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the Engineer. [SS pg. 588 / 701.14]

5. Work Zone Speed Limit Signs. Work zone speed limit sign assemblies shall be provided and located as shown on the plans. Two additional assemblies shall be placed 500 ft. (150 m) beyond the last entrance ramp for each interchange or sideroad.

   All permanent “SPEED LIMIT” signs located within 500 ft. (150 m) in advance of the first work zone speed limit sign to the end of the work zone shall be removed or covered. This work shall be coordinated with the lane closures(s) by promptly establishing a reduced posted speed zone when the lane closures(s) are put into effect and promptly reinstating the posted speed zone when the lane closure(s) are removed.

   The work zone speed limit signs and end work zone speed limit signs shown in advance of and at the end of the lane closure(s) shall be used for the entire duration of the closures(s).

   The work zone speed limit signs shown within the lane closure(s) shall only be used when workers are present in the closed lane adjacent to traffic. The sign assemblies shown within the lane closure(s) will not be required when the worker(s) are located behind a concrete barrier wall. [SS pg. 588-589 / 701.14(b)]

6. First two warning signs on each approach to the work involving a nighttime lane closure. Lights Required: Flashing mono-directional lights. [BDE Special Provision “Lights on Barricades”]


General Information:

1. This standard does not apply when work is being performed in the middle lane(s) of a six or more lane highway. Special plans will be required.

FOR INFORMATIONAL USE ONLY
GENERAL NOTES
This standard is used where at any time any vehicle, equipment, workers or their activities will encroach on the pavement or on the shoulder within 24 (600) of the edge of pavement for daylight operation exceeding one day and where temporary concrete barrier is utilized.

When work is being performed in the left lane, the set up would be a mirror image to what is shown.

Calculate L as follows:

\[ L = \frac{W \times 40000}{S} \]

where
- \( W \) = width of offset
- \( S \) = Normal posted speed

All dimensions are in inches or millimeters unless otherwise shown.

LANE CLOSURE, MULTILINE, WITH BARRIER, FOR SPEEDS > 45 MPH TO 55 MPH

STANDARD 701423-10

DATE
REVISIONS
1-1-11 Revised END WORK ZONE SPEED
LIMIT sign. Changed device
speeding at first arrow
3-1-15 Corrected reference to
standard in note 3.
Standard 701423

The END WORK ZONE SPEED LIMIT sign shall be black on white. [Standard – Sign Code]

Various Specifications:

1. All existing pavement markings which conflict with the revised traffic pattern shall be removed according to Section 783. [SS pg. 584 / 701.04]

2. Where the clear width through a work zone with temporary concrete barrier will be 16.0 ft. (4.88 m) or less, the Contractor shall notify the Engineer at least 21 days in advance of implementing the traffic control for that restriction. [SS pg. 584 / 701.06]

3. When work operations exceed four days, signs shall be post mounted unless the signs are located on the pavement or define a moving or intermittent operation. … Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the Engineer. [SS pg. 587-588 / 701.14]

4. First two warning signs on each approach to the work involving a nighttime lane closure. Lights Required: Flashing mono-directional lights. [BDE Special Provision “Lights on Barricades”]


7. Channelizing devices for nighttime along lane shifts on multilane roads. Lights Required: Steady burn mono-directional lights. [BDE Special Provision “Lights on Barricades”]

8. Work Zone Speed Limit Signs. Work zone speed limit sign assemblies shall be provided and located as shown on the plans. Two additional assemblies shall be place 500 ft. (150 m) beyond the last entrance ramp for each interchange or sideroad.

All permanent “SPEED LIMIT” signs located within 500 ft. (150 m) in advance of the first work zone speed limit sign to the end of the work zone shall be removed or covered. This work shall be coordinated with the lane closures(s) by promptly establishing a reduced posted speed zone when the lane closures(s) are put into effect and promptly reinstating the posted speed zone when the lane closure(s) are removed.

The work zone speed limit signs and end work zone speed limit signs shown in advance of and at the end of the lane closure(s) shall be used for the entire duration of the closures(s).

The work zone speed limit signs shown within the lane closure(s) shall only be used when workers are present in the closed lane adjacent to traffic. The sign assemblies shown within the lane closure(s) will not be required when the worker(s) are located behind a concrete barrier wall. [SS pg. 588-589 / 701.14(b)]
Standard 701426

The truck mounted/trailer mounted attenuator shown on the shoulder is required.

Various Specifications:

1. Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the Engineer. [SS pg. 588 / 701.14]

2. Truck Mounted/Trailer Mounted Attenuators (TMA). TMA host vehicles shall have the parking brake engaged when stationary [SS pg. 590 / 701.15(h)]
Standard 701427

The truck mounted /trailer mounted attenuator shown on the shoulder is required.

Various Specifications:

1. Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the Engineer. [SS pg. 588 / 701.14]

2. Truck Mounted/Trailer Mounted Attenuators (TMA). TMA host vehicles shall have the parking brake engaged when stationary [SS pg. 590 / 701.15(h)]

3. Truck Mounted/Trailer Mounted Attenuators (TMA). The attenuator shall be either a NCHRP 350 or MASH approved unit for Test Level 3. Test Level 2 may be used as directed by the Engineer for normal posted speed less than or equal to 45 mph. [SS pg. 1130 / 1106.02(g)]
CASE I
CASE I depicts the setup of delineating devices for a single outside lane closure.

CASE II
CASE II depicts the setup of delineating devices for a two lane closure. The single lane closure setup as depicted in CASE I shall be performed prior to the setup for the second lane closure.

SYMBOLS

- Arrow board
- Truck with flashing amber light
- Truck/trailer mounted attenuator

GENERAL NOTES
This Standard is used for setup and removal of lane closure on freeways/expressways having ADT greater than 25,000.

Trucks with arrow boards and truck-mounted attenuators shall be in place as shown for the setup and removal of the lane closure (CASE I) and the first 100' (30 m) of channelizing devices (CASE II).

This Standard is also applicable when work is being performed in the left lane(s) or on the median shoulder. Under these conditions arrow board indications shall be directed to the right.

All dimensions are in inches (millimeters) unless otherwise shown.

TRAFFIC CONTROL
SETUP AND REMOVAL
FREeway/EXPressway

DATE REVISIONS
4-1-06 Added trailer option for attenuator symbol.
1-1-14 New Standard.

STANDARD 701428-01
Standard 701428

This standard is to be used when the ADT is greater than 25,000. [Standard – General Notes]

The truck mounted/trailer mounted attenuator shown on the shoulder is required.

When the shoulder width will not allow placement of the shoulder truck and provide 9 ft. (3.0 m) of unobstructed lane width in the lane being closed, the shoulder truck shall not be used. [SS pg. 600 / 701018(j)]

Various Specifications:

1. Truck Mounted/Trailer Mounted Attenuators (TMA). TMA host vehicles shall have the parking brake engaged when stationary [SS pg. 590 / 701.15(h)]
GENERAL NOTES
This Standard is used where at any time, any vehicle, equipment, workers, or their activities require the closure of two adjacent lanes and a temporary crossover is provided by making use of one lane of pavement normally used by opposing flow of traffic, and flexible delineators are used to separate the opposing traffic.

Cones may be substituted for flexible delineators during daytime operations at half the spacing.

All dimensions are in inches (millimeters) unless otherwise shown.

LANE CLOSURE, MULTILANE, UNDIV. WITH CROSSOVER, FOR SPEEDS ≥ 45 MPH TO 55 MPH

STANDARD 701431-13

<table>
<thead>
<tr>
<th>DATE</th>
<th>REVISIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1-18</td>
<td>Omitted lights on drums in tangent for westbound traffic and at work area.</td>
</tr>
<tr>
<td>1-1-17</td>
<td>Replaced W7.3a plaque with W7.3a plaques. Changed flexible delineator to tubular marker.</td>
</tr>
</tbody>
</table>
**Standard 701431**

The END WORK ZONE SPEED LIMIT sign shall be black on white. [Standard – Sign Code]

Reflective solid edge lines and a double yellow centerline shall be used when the closure time exceeds four days or when the normal posted speed outside the area of operations exceeds 50 mph. Reflectorized pavement marking tape shall be used for marking the centerline and edge lines on the existing pavement. Raised reflective pavement markers at 25 ft. (8 m) centers shall be installed under good weather conditions to supplement the pavement marking tape. [SS pg. 599 / 701.18(f)]

Devices no greater than 24 in. (600 mm) wide, maybe used in place of tubular markers when the two-way operation is to be in place four days or less. [BDE Special Provision Tubular Markers]

**Various Specifications:**

1. When work operations exceed four days, signs shall be post mounted unless the signs are located on the pavement or define a moving or intermittent operation. … Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the Engineer. [SS pg. 587-588 / 701.14]

2. Work Zone Speed Limit Signs. Work zone speed limit sign assemblies shall be provided and located as shown on the plans. Two additional assemblies shall be place 500 ft. (150 m) beyond the last entrance ramp for each interchange or sideroad.

   All permanent “SPEED LIMIT” signs located within 500 ft. (150 m) in advance of the first work zone speed limit sign to the end of the work zone shall be removed or covered. This work shall be coordinated with the lane closures(s) by promptly establishing a reduced posted speed zone when the lane closures(s) are put into effect and promptly reinstating the posted speed zone when the lane closure(s) are removed.

   The work zone speed limit signs and end work zone speed limit signs shown in advance of and at the end of the lane closure(s) shall be used for the entire duration of the closures(s).

   The work zone speed limit signs shown within the lane closure(s) shall only be used when workers are present in the closed lane adjacent to traffic. The sign assemblies shown within the lane closure(s) will not be required when the worker(s) are located behind a concrete barrier wall. [SS pg. 588-589 / 701.14(b)]

3. First two warning signs on each approach to the work involving a nighttime lane closure. Lights Required: Flashing mono-directional lights.
   [BDE Special Provision “Lights on Barricades”]


**FOR INFORMATIONAL USE ONLY**
The length of the tangent section shall be:

<table>
<thead>
<tr>
<th>Duration of Closure</th>
<th>Length of Tangent Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 15 Days</td>
<td>1000' (300 m)</td>
</tr>
<tr>
<td>≥ 14 Days</td>
<td>2000' (600 m)</td>
</tr>
</tbody>
</table>

Reflective temporary pavement marking type shall be placed throughout the lanes and for 1000' (300 m) adjacent the work area when the closure time is greater than four days. The edge line shall be white for right lane closures and yellow for left lane closures.

Work zone speed limit signs and FLASHER signs shall be moved as necessary to maintain the required spacing between the signs and the workers in each lane and outside.

Work Zone Speed Limit Sign: The reflectorized speed limit sign shall be the same as the work zone speed limit sign. Placement of the sign array within 500' (150 m) of the End Work Zone Speed Limit sign.

**TWO LANE CLOSURE, FREEWAY / EXPRESSWAY**

**DATE**

<table>
<thead>
<tr>
<th>1-1-18</th>
<th>Revised END WORK ZONE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SPEED LIMIT sign from orange to white background.</td>
</tr>
</tbody>
</table>
Standard 701446

The END WORK ZONE SPEED LIMIT sign shall be black on white. [Standard – Sign Code]

Various Specifications:

1. When work operations exceed four days, signs shall be post mounted unless the signs are located on the pavement or define a moving or intermittent operation. … Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the Engineer. [SS pg. 587-588 / 701.14]

2. First two warning signs on each approach to the work involving a nighttime lane closure. Lights Required: Flashing mono-directional lights. [BDE Special Provision “Lights on Barricades”]


5. Channelizing devices for nighttime along lane shifts on multiline roads. Lights Required: Steady burn mono-directional lights. [BDE Special Provision “Lights on Barricades”]

General Information:

This Standard is to be used when two lanes are to be closed on a freeway/expressway. Specifications applicable to Standards 701401 shall be applicable to this Standard.
Drums at 25' (7.6 m) cts.

EXIT RAMP CLOSURE

1. Omit this sign when median is less than 10' (3 m).
2. See sign spacing table.
3. Drums for entrance ramp closure shall be omitted if turn lanes are not present.

Drums at 25' (7.6 m) cts.

ENTRANCE RAMP CLOSURE

SYMBOLS

- Sign
- Type B barricade with flashing lights
- Drum

W20-10(X)(C)-48
W20-10(X)(C)-48

R20-1-2424
R20-1-2424

M5-100-2115
M5-100-2115

All dimensions are in inches (millimeters) unless otherwise shown.

RAMP CLOSURE
FREeway/Expressway

DATE: REVISIONS
1-1-18: Omitted light from drums.
1-1-17: Added flashing lights to Type III barricade.

STANDARD 701451-05
Standard 701451

Only one interchange at a time may have ramps closed and only one exit ramp and one entrance ramp may be closed at a time. [SS pg. 600 / 701.18(i)]

Various Specifications:

1. When work operations exceed four days, signs shall be post mounted unless the signs are located on the pavement or define a moving or intermittent operation. ... Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the Engineer. [SS pg. 587-588 / 701.14]

2. First two warning signs on each approach to the work involving a nighttime lane closure. Lights Required: Flashing mono-directional lights. [BDE Special Provision “Lights on Barricades”]
Standard 701456

On ramps, drop-offs at the edge of pavement greater than 1 1/2 in. (38 mm) caused by the Contractor’s operations will be allowed only on one side of the ramp at a time. [SS pg. 585 / 701.07]

Various Specifications:

1. When work operations exceed four days, signs shall be post mounted unless the signs are located on the pavement or define a moving or intermittent operation. … Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the Engineer. [SS pg. 587-588 / 701.14]

2. No broken pavement, open holes, or partially filled patches shall remain overnight and all devices shall be removed before dark. [SS pg. 594 / 701.17(e)(2)b]

3. Cleaning Up. Prior to opening the pavement to traffic, the entire right-of-way adjacent to the patching operations shall be cleared of all materials caused by the Contractor’s operations, and the backfill along the shoulder edge of the pavement shall be compacted. [SS pg. 594 / 701.17(e)(3)a]
**Standard 701501**

On two-lane/two-way roadways, construction operations shall be confined to one traffic lane leaving the opposite lane open to traffic. [SS pg. 600 / 701.18 (h)(2)]

“NO PARKING” (R8-3) signs shall be installed throughout the work area.

When the work area is in the parking lane “ROAD CONSTRUCTION AHEAD” (W20-I103) signs shall be installed 200 ft. (60 m) in advance of the work area and the area shall be delineated with cones and barricades. [SS pg. 599 / 701.18 (h)(1)]

**Various Specifications:**

1. Flaggers shall be in sight of each other or in direct communication at all times. Direct communication shall be obtained by using portable two-way radios or walkie-talkies.

   The engineer will determine when a side road or entrance shall be closed to traffic. A flagger will be required at each side road or entrance remaining open to traffic within the operation where two-way traffic is maintained on one lane of pavement. [SS pg. 587 / 701.13(a)]

2. Flaggers will not be required when no work is being performed, unless there is a lane closure on a two-lane, two-way pavement. [SS pg. 587 / 701.13]

3. When work operations exceed four days, signs shall be post mounted unless the signs are located on the pavement or define a moving or intermittent operations. … Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the Engineer. [SS pg. 587-588 / 701.14]

4. First two warning signs on each approach to the work involving a nighttime lane closure. Lights Required: Flashing mono-directional lights. [BDE Special Provision “Lights on Barricades”]


**General Information:**

1. In lieu of utilizing flaggers during nonworking hours with one lane closed, one direction of traffic may be detoured over an approved route.
CASE I
(Signs required for both directions)

1. Refer to SIGN SPACING TABLE for distances.
2. Required for speeds > 40 mph (65 km/h).
3. Required if work exceeds 600' (183 m) or 1 block.
4. Cones at 25' (8 m) centers for 200' (60 m) on approach. Additional cones may be placed at 50' (15 m) centers. When drums or Type I or II barricades are used, the interval between devices may be doubled.
5. For approved side road closures.
6. Cones, drums or barricades at 20' (6 m) centers in taper.
7. Use flagger sign only when flagger is present.

SYMBOLS
- Work area
  - Barricade or drum
  - Flag with traffic control sign
  - Cone, drum or barricade
  - Sign on portable or permanent support
  - Type II barricade with flashing lights

GENERAL NOTES
This Standard is used to close one lane of an urban, two lane, two way roadway with a bidirectional turn lane.

Case 1 applies when no workers are present. When workers are present, two lanes shall be closed and traffic control shall be according to Standard 701501.

Calculate L as follows:

SPEED LIMIT

<table>
<thead>
<tr>
<th>English</th>
<th>Metric</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 mph (65 km/h) or less</td>
<td>L = ( \frac{600}{W} )</td>
</tr>
<tr>
<td>45 mph (70 km/h) or greater</td>
<td>L = ( \frac{600}{W \times 0.65} )</td>
</tr>
</tbody>
</table>

W = Width of offset in feet (meters)

S = Normal posted speed in mph (km/h)

All dimensions are in inches (millimeters) unless otherwise shown.

URBAN LANE CLOSURE, 2L, 2W, WITH BIDIRECTIONAL LEFT TURN LANE

STANDARD 701502-08
**Standard 701502**

“NO PARKING” (R8-3) signs shall be installed throughout the work area.

When the work area is in the parking lane “ROAD CONSTRUCTION AHEAD” (W20-I103) signs shall be installed 200 ft. (60 m) in advance of the work area and the area shall be delineated with cones and barricades.

Reflectorized temporary pavement marking tape shall be placed throughout the taper and alongside the adjacent work area where the closure time exceeds 14 days. The edge line shall be yellow for left lane closures. [SS pg. 599-600 / 701.18(h)(1)]

Various Specifications:

1. The traffic control shall remain in place only as long as needed and shall be removed when directed by the Engineer. Signs that do not apply to current conditions shall be removed, covered, or turned from the view of motorists. [SS pg. 584 / 701.04]

2. Flaggers shall be in sight of each other or in direct communication at all times. Direct communication shall be obtained by using portable two-way radios or walkie-talkies. [SS pg. 587 / 701.13(a)]

3. Flaggers will not be required when no work is being performed, unless there is a lane closure on two-lane, two-way pavement. [SS pg. 587 / 701.13]

4. When work operations exceed four days, signs shall be post mounted unless the signs are located on the pavement or define a moving or intermittent operation. … Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the Engineer. [SS pg. 587-588 / 701.14]

5. First two warning signs on each approach to the work involving a nighttime lane closure. Lights Required: Flashing mono-directional lights. [BDE Special Provision “Lights on Barricades”]


8. Channelizing devices for nighttime lane closures on multi-lane roads separating opposing directions of traffic. Lights Required: Steady burn bi-directional lights. [SS pg. 591 / 701.16]

General Information:

When necessary, additional flaggers should be positioned so as to regulate side street traffic.

Case I only applies when no workers are present. When workers are present, Standard 701501 shall be used. [Standard – General Notes]

**FOR INFORMATIONAL USE ONLY**
SYMBOLS

1. Arrow Board
2. Cone, drum or barrel
3. Sign on portable or permanent support
4. Work area
5. Barrel or drum with flashing light
6. Type III barrel with flashing lights
7. Flagger with traffic control sign.

1. Refer to SIGN SPACING TABLE for distances.
2. Required for speeds > 40 MPH.
3. Cones at 25' (8 m) centers for 250' (75 m). Additional cones may be placed at 50' (15 m) centers, then drums or Type I or Type II barrels are used. The interval between devices may be doubled.
4. Use flagger sign only when flagger is present.
5. For approved sideroad closures.
6. Cones, drums or barrels at 20' (6 m) in fiction.

GENERAL NOTES

This standard is used where at any time, day or night, any vehicle, equipment, workers or their activities encroach on the pavement during shoulder operations or where construction requires lane closures in urban areas.

Colours to be used is follows:

SPEED LIMIT
FORMULAS

40 mph (km/hr)

W x 3’

L x 3’

45 mph (km/hr)

W x 5’

L x 5’

W = Width of offset

L = Length of offset

S = Normal posted speed

All dimensions are in inches (millimeters) unless otherwise shown.

URBAN LANE CLOSURE, MULTILANE, 1W OR 2W WITH NONTRAVERSABLE MEDIAN

STANDARD 701601-09

DATE

REVISIONS

1-1-20
Revised workers sign
Number to agree with current WITEC.

1-1-13
Quilified text "WORKERS"
Sign.

80
Standard 701601

“NO PARKING” (R8-3) signs shall be installed throughout the work area.

When the work area is in the parking lane “ROAD CONSTRUCTION AHEAD” (W20-I103) signs shall be installed 200 ft. (60 m) in advance of the work area and the area shall be delineated with cones and barricades.

Reflectorized temporary pavement marking tape shall be placed throughout the taper and alongside the adjacent work area where the closure time exceeds 14 days. The edge line shall be yellow for left lane closures. [SS pg. 599-600 / 701.18(h)(1)]

Various Specifications:

1. When work operations exceed four days, signs shall be post mounted unless the signs are located on the pavement or define a moving or intermittent operation. … Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the Engineer. [SS pg. 587-588 / 701.14]

2. First two warning signs on each approach to the work involving a nighttime lane closure. Lights Required: Flashing mono-directional lights. [BDE Special Provision “Lights on Barricades”]


General Information:

This standard does not apply when work is being performed in the middle lane(s) of a six or more lane highway. Special plans approved by the Engineer will be required.
Standard 701602

“NO PARKING” (R8-3) signs shall be installed throughout the work area.

When the work area is in the parking lane “ROAD CONSTRUCTION AHEAD” (W20-I103) signs shall be installed 200 ft. (60 m) in advance of the work area and the area shall be delineated with cones and barricades.

Reflectorized temporary pavement marking tape shall be placed throughout the taper and alongside the adjacent work area where the closure time exceeds 14 days. The edge line shall be yellow for left lane closures. [SS pg. 599-600 / 701.18(h)(1)]

Various Specifications:

1. The traffic control shall remain in place only as long as needed and shall be removed when directed by the Engineer. Signs that do not apply to current conditions shall be removed, covered, or turned from the view of motorists. [SS pg. 584 / 701.04]

2. When work operations exceed four days, signs shall be post mounted unless the signs are located on the pavement or define a moving or intermittent operation. … Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the Engineer. [SS pg. 587-588 / 701.14]

3. First two warning signs on each approach to the work involving a nighttime lane closure. Lights Required: Flashing mono-directional lights. [SS pg. 591 / 701.16]


5. Channelizing devices for nighttime lane closures on multi-lane roads separating opposing directions of traffic. Lights Required: Steady burn bi-directional lights. [SS pg. 591 / 701.16]

General Information:

When necessary, additional flaggers should be positioned so as to regulate side street traffic.

FOR INFORMATIONAL USE ONLY
Standard 701606

“NO PARKING” (R8-3) signs shall be installed throughout the work area.

When the work area is in the parking lane “ROAD CONSTRUCTION AHEAD” (W20-1103) signs shall be installed 200 ft. (60 m) in advance of the work area and the area shall be delineated with cones and barricades.

Reflectorized temporary pavement marking tape shall be placed throughout the taper and alongside the adjacent work area where the closure time exceeds 14 days. The edge line shall be yellow for left lane closures. [SS pg. 599-600 / 701.18(h)(1)]

Various Specifications:

1. The traffic control shall remain in place only as long as needed and shall be removed when directed by the Engineer. Signs that do not apply to current conditions shall be removed, covered, or turned from the view of the motorists. [SS pg. 584 / 701.04]

2. When work operations exceed four days, signs shall be post mounted unless the signs are located on the pavement or define a moving or intermittent operation. … Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the Engineer. [SS pg. 587-588 / 701.14]

3. First two warning signs on each approach to the work involving a nighttime lane closure. Lights Required: Flashing mono-directional lights. [BDE Special Provision “Lights on Barricades”]


General Information:

This standard does not apply when work is being performed in the middle lane(s) the highway. Special plans approved by the Engineer will be required.

FOR INFORMATIONAL USE ONLY
GENERAL NOTES

This Standard is used where all or part of a highway, road or street, any vehicle, equipment, workers, or their activities approach the pavement requiring the closure of more than one traffic lane in an urban area.

Calculate L as follows:

\[ L = \min \left( \begin{array}{c}
L_1 \quad \text{or} \\
L_2 \quad \text{or} \\
L_3 \quad \text{or} \\
L_4 \quad \text{or}
\end{array} \right) \]

Where:

- \( L_1 \) = Width of offset
- \( L_2 \) = Normal posted speed
- \( L_3 \) = Normal posted speed
- \( L_4 \) = Normal posted speed

All dimensions are in inches (millimeters) unless otherwise shown.

DATE | REVISIONS
--- | ---
4-1-15 | Moved first reverse
7-1-11 | Curve return sign at middle of tangent.
1-1-15 | New Standard.

URBAN HALF ROAD CLOSURE, MULTILANE, 2W WITH MOUNTABLE MEDIAN

STANDARD 701611-01
**Standard 701611**

Reflective pavement markings shall be used when the closure time exceeds four days. The double yellow centerline shall be used in the two-way traffic area in addition to barricades or drums. Single yellow left edge line shall be used to outline the barricade island. White right edge line shall be used along the barricades delineating the work area. [SS pg. 600 / 701.18(h)(3)]

“NO PARKING” (R8-3) signs shall be installed throughout the work area.

When the work area is in the parking lane “ROAD CONSTRUCTION AHEAD” (W20-I103) signs shall be installed 200 ft. (60 m) in advance of the work area and the area shall be delineated with cones and barricades.

Reflectorized temporary pavement marking tape shall be placed throughout the taper and alongside the adjacent work area where the closure time exceeds 14 days. The edge line shall be yellow for left lane closures. [SS pg. 599-600 / 701.18(h)(1)]

**Various Specifications:**

1. The traffic control shall remain in place only as long as needed and shall be removed when directed by the Engineer. Signs that do not apply to current conditions shall be removed, covered, or turned from the view of the motorists. [SS pg. 584 / 701.04]

2. When work operations exceed four days, signs shall be post mounted unless the signs are located on the pavement or define a moving or intermittent operation. … Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the Engineer. [SS pg. 587-588 / 701.14]

3. First two warning signs on each approach to the work involving a nighttime lane closure. Lights Required: Flashing mono-directional lights. [BDE Special Provision “Lights on Barricades”]


**General Information:**

This standard does not apply when work is being performed in the middle lane(s) of a six or more lane highway. Special plans approved by the Engineer will be required.

---

**FOR INFORMATIONAL USE ONLY**
**LEFT TURN LANE OR CENTER MEDIAN OPERATIONS**

1. **Refer to SIGN SPACING TABLE** for distance.
2. Required for speed > 40 mph.
3. Cones at 25'-15' intervals for 250'-175' area. Additional cones may be placed at 50'-15' intervals. When drums or Type I or Type II barricades are used, the interval between devices may be doubled.
4. Use flagger sign only when flagger is present.
5. Place this sign when median is less than 60' (15 m) or for bidirectional turn lanes.
6. Cones, drums or barricades at 20'-15' intervals.
7. Advanced arrow board required for speeds > 45 mph.
8. Three Type II barricades, drums or vertical barricades at 60'-65' intervals.

**SYMBOLS**

- Work area
- Cone, drum or barricade
- Sign on portable or permanent support
- Arrow board
- Barricade or drum with flashing light
- Flagger with traffic control sign

**GENERAL NOTES**

This Standard is used where on any turn, any night, any vehicle, equipment, workers or their activities are not on the pavement during shoulder operations or where construction requires lane closures in an urban area.

**SPEED LIMIT**

- **English**
  - 60 mph (100 km/h)
  - or less
- **Metric**
  - 80 km/h

**FTESTAL**

- L = Width of offset
- S = Normal posted speed

- All dimensions are in inches (millimeters) unless otherwise shown.

**URBAN LANE CLOSURE, MULTILANE INTERSECTION**

<table>
<thead>
<tr>
<th>DATE</th>
<th>REVISIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-1-16</td>
<td>Corrected sign number for LEFT TURN LANE CLOSED</td>
</tr>
<tr>
<td>AHEAD</td>
<td></td>
</tr>
<tr>
<td>1-3-14</td>
<td>Added devices on arrow board upstream from flagger</td>
</tr>
<tr>
<td>Rev. workers sign number</td>
<td></td>
</tr>
</tbody>
</table>
Standard 701701

“NO PARKING” (R8-3) signs shall be installed throughout the work area.

When the work area is in the parking lane “ROAD CONSTRUCTION AHEAD” (W20-103) signs shall be installed 200 ft. (60 m) in advance of the work area and the area shall be delineated with cones and barricades.

Reflectorized temporary pavement marking tape shall be placed throughout the taper and alongside the adjacent work area where the closure time exceeds 14 days. The edge line shall be yellow for left lane closures. [SS pg. 599-600 / 701.18(h)(1)]

Various Specifications:

1. The traffic control shall remain in place only as long as needed and shall be removed when directed by the Engineer. Signs that do not apply to current conditions shall be removed, covered, or turned from the view of the motorists. [SS pg. 584 / 701.04]

2. When work operations exceed four days, signs shall be post mounted unless the signs are located on the pavement or define a moving or intermittent operation. … Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the Engineer. [SS pg. 587-588 / 701.14]

3. First two warning signs on each approach to the work involving a nighttime lane closure. Lights Required: Flashing mono-directional lights. [BDE Special Provision “Lights on Barricades”]


   Lights Required: None. [BDE Special Provision “Lights on Barricades”]

FOR INFORMATIONAL USE ONLY
GENERAL NOTES

This Standard is used wherever, at any time, pedestrian traffic must be rerouted due to work being performed.

This Standard must be used in conjunction with other Traffic Control & Protection Standards when roadway traffic is affected.

Temporary facilities shall be detectable and accessible.

The temporary pedestrian facilities shall be provided on the same side of the closed facilities whenever possible.

The SIDEWALK CLOSED / USE OTHER SIDE sign shall be placed at the nearest crosswalk or intersection to each end of the closure. Where the closure occurs at a corner, the sign shall be erected on the corner across the street from the closure. The SIDEWALK CLOSED signs shall be used at the ends of the actual closures.

Type III barricades and AASHTO signs shall be positioned as shown in "ROAD CLOSED TO ALL TRAFFIC" detail on Standard 701010. All dimensions are in inches (millimeters) unless otherwise shown.

SIDEWALK, CORNER OR CROSSWALK CLOSURE

<table>
<thead>
<tr>
<th>DATE</th>
<th>REVISIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1-12</td>
<td>Revised SIDEWALK DIVERSION</td>
</tr>
</tbody>
</table>

STANDARD 70101-06
Standard 701801

“NO PARKING” (R8-3) signs shall be installed throughout the work area. [SS pg. 599 / 701.18(h)(1)]

Where a temporary walkway encroaches on an existing parking lane, the lane shall be closed with cones, barricades, or drums.

Where a temporary walkway encroaches on a travel lane, the lane shall be closed according to Standards 701501, 701601, or 701606.

All walkways shall be clearly identified, protected from motor vehicle traffic and free of any obstructions and hazards, such as holes, debris, construction equipment, and stored materials.

All hazards near or adjacent to walkways shall be clearly delineated.

When barricades are impractical to use or do not provide enough protection, orange safety fence shall be used to close off an area, with the approval of the Engineer. [SS pg. 600 / 701.18(h)(4)]

Detectable Pedestrian Channelizing Barricade. Detectable pedestrian channelizing barricades are cane detectable and visible to persons having low vision. These barricades are used to channelize pedestrian traffic. [SS pg. 590 / 701.15(l)]

Various Specifications:

1. When work operations exceed four days, signs shall be post mounted unless the signs are located on the pavement or define a moving or intermittent operation. [SS pg. 587 / 701.14]

2. Channelizing devices for nighttime lane closures on two-lane roads.
   Lights Required: None. [BDE Special Provision “Lights on Barricades”]

3. The top and bottom panels shall have alternating white and orange stripes sloping 45 degrees on both sides.
   The top and bottom rails shall be continuous to allow for detection for hand trailing and cane trailing, respectively
   The faces of the barricade rails shall be vertical. [SS pg. 1133 / 1106.02(m)]
POST MOUNTED SIGNS

When curbs or paved shoulder are present, the dimension shall be 24 (600) to the face of curb or 6” (18 m) to the outside edge of the paved shoulder.

SIGNS ON TEMPORARY SUPPORTS

When work operations exceed four days, this dimension shall be 5’ (1.5 m) min. If located behind other devices, the height shall be sufficient to be seen completely above the devices.

HIGH LEVEL WARNING DEVICE

WORK LIMIT SIGNING

W11-5(B)/0-36LB
R2-3-364B
R10-108B-36LB
R2-108B-35LB

X (200) Federal series C

FLAGGER TRAFFIC CONTROL SIGN

TRAFFIC CONTROL DEVICES

STANDARD 701901-07
Reflected striping may be omitted on the back side of the barricades. If a Type III barricade with an attached sign panel which meets NCHRP 350 is not available, the sign may be mounted on an NCHRP 350 temporary sign support directly in front of the barricade.

**TYPICAL APPLICATIONS OF TYPE III BARRICADES CLOSING A ROAD**

Reflected striping shall appear on both sides of the barricades. If a Type III barricade with an attached sign panel which meets NCHRP 350 is not available, the signs may be mounted on NCHRP 350 temporary sign supports directly in front of the barricade.

**TRAFFIC CONTROL DEVICES**

STANDARD 701901-07
Standard 701901

701.15 Traffic Control Devices. For devices that must meet FHWA crashworthiness standards, the Contractor shall provide a manufacturer’s self-certification letter for each Category 1 device and a FHWA acceptance letter for each Category 2 and Category 3 device used on the contract. The letter(s) shall state the device has been accepted by FHWA for its respective category and test level, and shall include a detailed drawing of the device. The set-up and use of certified/accepted devices shall be the same as that described in the letter.

All devices shall be kept clean. Any device which has become ineffective due to damage or defacement shall be replaced.

Devices having angled striping shall be oriented with the striped sloping down toward the side on which traffic will pass. Lights on devices shall be mounted on the side of the device on which traffic shall pass and shall not obscure any reflectorized portion of the device.

Where more than one type of device is permissible, only one type of device shall be used within that individual run of devices or lane closure taper.

Additional requirements for the use of specific devices are as follows.

a. Cones. Cones are used to channelize traffic during daylight operations. Reflectorized cones are for nighttime operation, but shall only be used when specified in the plan or when approved by the Engineer.

b. Type I, II, and III Barricades. Type I and Type II barricades are used to channelize traffic; to delineate unattended obstacles, patches, excavations, drop-offs, and other hazards; and as check barricades.

Type I barricades are for use on roads with normal posted speeds of 40 mph or less. However, they may be used on higher speed roads provided the reflective area of the upper rail is at least 2 sq. ft. (0.18 sq m).

Type III barricades are used to close lanes and to close roads.

c. Vertical Barricades. Vertical barricades are used to channelize traffic, as well as to delineate unattended excavations, patches excavations, drop-offs, and other hazards. Vertical barricades shall not be used not be used in lane closure tapers or as check barricades.

d. Vertical Panels. Vertical panels are used to channelize traffic and to delineate unattended excavations and drop-offs.

e. Direction Indicator Barricades. Direction indicator barricades are used in lane closure tapers.
Standard 701901 - Continued

f. Drums. Drums are used to channelize traffic and to delineate unattended obstacles, patches, excavations, drop-offs, and other hazards.

g. Tubular Markers. Tubular markers are used to channelize traffic. They shall only be used when specified. [Supplemental Specifications Sections 704 and 1106]

h. Truck Mounted/Trailer Mounted Attenuators (TMA). TMA host vehicles shall have the parking brake engaged when stationary.

i. Arrow Boards. Arrow boards are used to warn motorists of an upcoming lane closure. Arrow boards shall not be used to direct passing moves into lanes used by opposing traffic or to shift traffic without having a lane change.

On roads with normal posted speeds of 45 mph and above, Type C units shall be used for all operations 24 hours or more in duration, and Type B units may be used for operations less than 24 hours in duration. On roads with normal posted speed less than 45 mph, Type A, B, or C units may be used for all operations.

j. Portable Changeable Message Signs. The Contractor shall supply the modem, the cellular phone, and the necessary software to run the sign from a remote computer at a location designated by the Engineer. The Contractor shall promptly program and/or reprogram the computer to provide the messages as directed by the Engineer.

The Contractor shall provide all preventive maintenance efforts deemed necessary to achieve uninterrupted service. If service is interrupted for any cause and not restored within 24 hours, the Engineer will cause such work to be performed as may be necessary to provide this service and the cost of such work will be deducted from compensation due or which may become due to the Contractor under the contract.

k. Temporary Ruble Strips. Temporary rumble strips be placed snugly against one another and attached to the pavement with an adhesive meeting the recommendations of the rumble strip manufacturer.

l. Detectable Pedestrian Channelizing Barricade. Detectable pedestrian channelizing barricades are cane detectable and visible to persons having low vision. These barricades are used to channelize pedestrian traffic. [SS pg. 589-590 / 701.15]
**Standard 701901 - Continued**

**701.14 Signs.** When work operations exceed four days, signs shall be post mounted unless the signs are located on the pavement or define a moving or intermittent operation. When approved by the Engineer, temporary sign supports may be used where posts are impractical. When post mounting is not required, either temporary sign supports or sign trailers may be used.

Post mounted signs shall be a “breakaway” design. The signs shall be within five degrees of vertical. Two posts shall be used for signs greater than 16 sq. ft. (1.5 sq m) in area or where the height between the sign and the ground exceeds 7 ft. (2.1 m).

Signs on temporary supports shall meet the requirements of NCHRP Report 350 or MASH. Documentation of meeting the requirements shall be the FHWA letter stating acceptance of the sign support system for the required test level. The signs shall be supported within 20 degrees of vertical. Weights used to stabilize signs shall be attached to the sign support as per the manufacturer's specifications.

Sign trailers, when erected, shall have their tires resting on the ground or elevated a maximum of 6 in. (150 mm) above the ground. Weights used to stabilize the trailer shall be sandbags mounted a maximum of 12 in. (300 mm) above the ground. To prevent wind induced rolling of the trailer, the wheels shall be chocked with sandbags or the trailer tongue may be pinned. The pinning method shall be designated to give way in the event of a vehicular impact and shall meet the approval of the Engineer.

The sign trailer shall only be attached to its tow vehicle when the sign is actually being moved. The tow vehicle, when not attached to the trailer, shall be parked according to Article 701.11.

Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 ft. (30 m) to avoid obstacles, hazards, or to improve sight distance, when approved by the Engineer.

a) “ROAD CONSTRUCTION AHEAD” Signs. “ROAD CONSTRUCTION AHEAD” (W20-I103) signs shall be erected on all side roads located within the limits of the mainline “ROAD CONSTRUCTION AHEAD” signs.

b) Work Zone Speed Limit Signs. Work zone speed limit signs assemblies shall be provided and located as shown on the plans. Two additional assemblies shall be placed 500 ft. (150 m) beyond the last entrance ramp for each interchange or sideroad.

All permanent “SPEED LIMIT” signs located within 500 ft. (150 m) in advance of the first work zone speed limit sign to the end of the work zone shall be removed or covered. This work shall be coordinated with the lane closures(s) by promptly establishing a reduced posted speed zone when the lane closures(s) are put into effect and promptly reinstating the posted speed zone when the lane closure(s) are removed.

The work zone speed limit signs and end work zone speed limit signs shown in advance of and at the end of the lane closure(s) shall be used for the entire duration of the closure(s).

The work zone speed limit signs shown within the lane closure(s) shall only be used when workers are present in the closed lane adjacent to traffic. The sign assemblies shown within the lane closure(s) will not be required when worker(s) are located behind a concrete barrier wall.
Standard 701901 – Continued

701.16 Lights. Lights shall be used on devices as required in the traffic control plan and the following table.

<table>
<thead>
<tr>
<th>Circumstance</th>
<th>Lights Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daylight operations</td>
<td>None</td>
</tr>
<tr>
<td>First two warning signs on each approach to the work involving a nighttime lane closure and “ROUGH GROOVED SURFACE” (W8-I107) signs</td>
<td>Flashing mono-directional lights</td>
</tr>
<tr>
<td>Devices delineating isolated obstacles, excavations, or hazards at night (Does not apply to patching)</td>
<td>Flashing bi-directional lights</td>
</tr>
<tr>
<td>Devices delineating obstacles, excavations, or hazards exceeding 100 ft (30 m) in length at night (Does not apply to widening)</td>
<td>Steady burn bi-directional lights</td>
</tr>
<tr>
<td>Channelizing devices for nighttime lane closures on two-lane roads</td>
<td>None</td>
</tr>
<tr>
<td>Channelizing devices for nighttime lane closures on multi-lane roads</td>
<td>None</td>
</tr>
<tr>
<td>Channelizing devices for nighttime lane closures on multi-lane roads separating opposing directions of traffic</td>
<td>None</td>
</tr>
<tr>
<td>Channelizing devices for nighttime along lane shifts on multilane roads</td>
<td>Steady burn mono-directional lights</td>
</tr>
<tr>
<td>Channelizing devices for night time along lane shifts on two lane roads</td>
<td>Steady burn bi-directional lights</td>
</tr>
<tr>
<td>Devices in nighttime lane closure tapers on Standards 701316 and 701321</td>
<td>Steady burn bi-directional lights</td>
</tr>
<tr>
<td>Devices in nighttime lane closure tapers</td>
<td>Steady burn mono-directional lights</td>
</tr>
<tr>
<td>Devices delineating a widening trench</td>
<td>None</td>
</tr>
<tr>
<td>Devices delineating patches at night on roadways with an ADT less than 25,000</td>
<td>None</td>
</tr>
<tr>
<td>Devices delineating patches at night on roadways with an ADT of 25,000 or more</td>
<td>None</td>
</tr>
</tbody>
</table>

(From the BDE special provision. See Page 141 of this booklet)

Batteries for the lights shall be replaced on a group basis at such times as may be specified by the Engineer. [SS pg. 591 / 701.16]

1106.02 Devices. Work zone traffic control devices and combinations of devices shall meet FHWA crashworthiness standards for their respective categories. The categories are as follows.

Category 1 includes small, lightweight, channelizing, and delineating devices that have been in common use for many years and are known to be crashworthy by crash testing of similar devices or years of demonstrable safe performance. These include cones, tubular markers, flexible delineators, and plastic drums with no attachments. Category 1 devices shall be crash tested and accepted or may be self-certified by the manufacturer.

Category 2 includes devices that are not expected to produce significant vehicular velocity change but may otherwise be hazardous. These include drums and vertical panels with lights, barricades, and portable sign supports. Category 2 devices shall be crash tested and accepted for Test Level 3.
Standard 701901 - Continued

Category 3 includes devices that are expected to cause significant velocity changes or other potentially harmful reactions to impacting vehicles. These include crash cushions (impact attenuators), truck mounted attenuators, and other devices not meeting the definitions of Category 1 or 2. Category 3 devices shall be crash tested and accepted for either Test Level 3 or the test level specified.

Category 4 includes portable or trailer-mounted devices such as arrow boards, changeable message signs, temporary traffic signals, and area lighting supports. Currently, there is no implementation date set for this category and it is exempt from the NCHRP 350 or MASH compliance requirement.

The Contractor shall provide a manufacturer’s self-certification letter for each Category 1 device and an FHWA acceptance letter for each Category 2 and Category 3 device used on the contract. The letters shall state the device meets FHWA crashworthiness standards for its respective category and test level, and shall include a detailed drawing of the device. The set-up and use of certified/accepted devices shall be the same as that described in the letter.

1106.01 Signs. Sign faces shall be according to the MUTCD and Section 1091, except as modified herein.

At the time of manufacturing, the retroreflective prismatic sheeting shall meet or exceed the minimum coefficient of retroreflection specified in Article 1091.03 for the sheeting type required by the Department’s Fabrications of Highway Signs Policy. Orange signs shall be fluorescent orange in color.

Sign sheeting shall be mounted on materials such as aluminum, rigid plastic, or exterior grade plywood. Signs utilizing a base of fabric, fiberboard, or other highly flexible or frangible material will not be permitted, except signs having a reflective sheeting face bonded to a durable plastic or fabric base will be permitted, (a) in work zones with posted speeds above 45 mph (70 km/hr) when workers are present to maintain the devices and (b) in all work zones having posted speeds of 45 mph (70 km/hr) or less.

Specific requirements for various signs shall be as follows.

(a) Work Zone Speed Limit Signs. Work zone speed limit sign assemblies shall be as shown on the plans. The individual signs that make up an assembly may be combined on a single panel.

(b) Flagger Traffic Control Paddle. The “STOP” face shall consist of white letters and border on a red background. The “SLOW” face shall consist of black letters and border on a fluorescent orange background. Areas outside sign borders shall be light blue or black.

The staff may consist of two sections joined by a coupling.

Various Specifications:

1. Lights shall be maintained so as to be visible on a clear night from a distance of 3000 ft. (900 m). [SS pg. 1129 / 1106.02]

FOR INFORMATIONAL USE ONLY
Section 702. NIGHTTIME WORK ZONE LIGHTING

702.01 Description. This work shall consist of furnishing, installing, maintaining, moving, and removing lighting for nighttime work zones. Nighttime shall be defined as occurring shortly before sunset until after sunrise.

702.02 Materials. The lighting shall consist of mobile and/or stationary lighting systems as required herein for the specific type of construction. Mobile lighting systems shall consist of luminaires attached to construction equipment or moveable carts. Stationary lighting systems shall consist of roadway luminaires mounted on temporary poles or trailer mounted light towers at fixed locations. Some lighting systems, such as balloon lights, may be adapted to both mobile and stationary applications.

702.03 Equipment. The Contractor shall furnish an illuminance meter for use by the Engineer. The meter shall have a digital display calibrated to NIST standards, shall be cosine and color corrected, and shall have an accuracy of ± five percent. The sensor shall have a level indicator to ensure measurements are taken in a horizontal plane.

CONSTRUCTION REQUIREMENTS

702.04 General. At the preconstruction conference, the Contractor shall submit the type(s) of lighting system to be used and the locations of all devices.

Before nighttime construction may begin, the lighting system shall be demonstrated as being operational.

702.05 Nighttime Flagging. The requirements for nighttime flagging shall be according to Article 701.13 of the Standard Specifications and the glare control requirements contained herein.

702.06 Lighting System Design. The lighting system shall be designed to meet the following.

(a) Lighting Levels. The lighting system shall provide a minimum of 5 foot candles (54 lux) throughout the work area. For mobile operations, the work area shall be defined as 25 ft. (9 m) in front of and behind moving equipment. For stationary operations, the work area shall be defined as the entire area where work is being performed.

Lighting levels will be measured with an illuminance meter. Readings will be taken in a horizontal plane 3 ft. (1 m) above the pavement or ground surface.

(b) Glare Control. The lighting system shall be designed and operated so as to avoid glare that interferes with traffic, workers, or inspection personnel. Lighting systems with flood, spot, or stadium type luminaires shall be aimed downward at the work and rotated outward no greater than 30 degrees from nadir (straight down). Balloon lights shall be positioned at least 12 ft. (3.6 m) above the roadway.

As a large component of glare, the headlights of construction vehicles and equipment shall not be operated within the work zone except as allowed for specific construction operations. Headlights shall never be used when facing oncoming traffic.
Section 702 - Continued

(c) Light Trespass. The lighting system shall be designed to effectively light the work area without spilling over to adjoining property. When, in the opinion of the Engineer, the lighting is disturbing adjoining property, the Contractor shall modify the lighting arrangement or add hardware to shield the light trespass.

702.07 Construction Operations. The lighting design required above shall be provided at any location where construction equipment is operating or workers are present on foot. When multiple operations are being carried on simultaneously, lighting shall be provided at each separate work area.

The lighting requirements for specific construction operations shall be as follows.

(a) Installation or Removal of Work Zone Traffic Control. The required lighting level shall be provided at each truck and piece of equipment used during the installation or removal of work zone traffic control. Headlights may be operated in the work zone.

(b) Milling and Paving. The required lighting level shall be provided by mounting a minimum of one balloon light to each piece of mobile construction equipment used in the work zone. This would include milling machines, mechanical sweepers, material transfer devices, spreading and finishing machines, and rollers; but not include trucks used to transport materials and personnel or other vehicles that are continuously moving in and out of the work zone. The headlights of construction equipment shall not be operated within the work zone.

(c) Patching. The required lighting level shall be provided at each patching location where work is being performed.

(d) Pavement Marking and Raised Reflective Pavement Marker Removal/Installation. The striping truck and the attenuator/arrow board trucks may by operated by headlights alone; however, additional lighting may be necessary for the operator of the striping truck to perform the work.

For raised reflective pavement marker removal and installation and other pavement marking operations where workers are on foot, the required lighting level shall be provided at each truck and piece of equipment.

(e) Layout, Testing, and Inspection. The required lighting level shall be provided for each active area of construction layout, material testing, and inspection. The work area shall be defined as 15 ft. (7.6 m) in front and back of the individual(s) performing the tasks.

702.08 Basis of Payment. This work will be paid for at the contract lump sum price for NIGHTTIME WORK ZONE LIGHTING.

FOR INFORMATIONAL USE ONLY
END VIEW (Showing lifting slot)

SECTION A-A
LIFTING SLOT

CONNECTING DETAIL

CONNECTING LOOP BAR

CONNECTING AND ANCHOR PINS
(End may be reversed ½ in. max.)

ELEVATION
(Showing connecting loop bars and vertical panel bolt/insert)

PLAN

TOP VIEW

BARRIER WALL REFLECTORS

GENERAL NOTES

Each F shape barrier shall be clearly marked with "ILLINOIS F SHADE", the Precontractor's mark and the date of manufacture. The markings shall be indented on the barrier or painted therewith waterproof paint/ink.

The insert for the ½ in. (12.5 mm) bolt shall be capable of 3,000 lb (13 kW) pull-out strength.

When barrier separates opposing flows of traffic markers and be on both sides of barrier.

See Standard 782004 for dimensions of Type C reflector.

All dimensions are in inches unless otherwise shown.

DATE
4-1-16

REVISIONS
Rev. 0, altered on all edges to 1/2". Reference to Fig. 834604 new 782006.

3-1-12

We note ALTERED from connecting and anchoring pin details.

TEMPORARY CONCRETE BARRIER

STANDARD 704001-08

Sheet 1 of 2
Standard 704001

704.01 Description. This work shall consist of furnishing, placing, maintaining, relocating, and removing precast concrete barrier at temporary locations.

704.03 General. Precast concrete barrier shall be the F shape as detailed on the plans.

704.04 Installation. The barriers shall be seated on bare, clean pavement or paved shoulder and pinned together in a smooth, continuous line at the exact locations provided by the Engineer. The barrier unit at each end of the installation shall be secured to the pavement or paved shoulder using six anchoring pins and protected with an impact attenuator as shown on the plans.

Barriers or attachments damaged during transportation or handling, or by traffic during the life of the installation, shall be repaired or replaced. The Engineer will be the sole judge in determining which units or attachments require repair or replacement.

The barriers shall be removed when no longer required by the contract. After removal, all anchoring holes in the pavement or paved shoulder shall be filled with a rapid hardening mortar or concrete. Only enough water to permit placement and consolidation by rodding shall be used and the material shall be struck-off flush.

704.05 Method of Measurement. This work will be measured for payment in feet (meters) in place along the centerline of the barrier. When the barrier is relocated within the limits of the jobsite, the relocated barrier will be measured for payment in feet (meters) in place along the centerline of the barrier.

704.06 Basis of Payment. When the Contractor furnishes the barrier, this work will be paid for at the contract unit price per foot (meter) for TEMPROARY CONCRETE BARRIER or RELOCATE TEMPORARY CONCRETE BARRIER.

When the Department furnishes the barrier, this work will be paid for at the contract unit price per foot (meter) for TEMPROARY CONCRETE BARRIER, STATE OWNED, or RELOCATED TEMPORARY CONCRETE BARRIER, STATE OWNED.

Impact attenuators will be paid for separately.

Supplemental Specifications:

Except on bridge decks,....the barrier unit at each end of an installation shall be anchored to the pavement or paved shoulder using six anchor pins and protected with an impact attenuator as shown on the plans. When pinning of additional barrier units within the installation is specified, three anchor pins shall be installed in the traffic side holes of the required barriers.

Where both pinned and unpinned barrier units are used in a continuous installation, a transition shall be provided between them. The transition from pinned to unpinned barrier shall consist of two anchor pins installed in the end holes on the traffic side of the first barrier beyond the pinned section and one anchor pin installed in the middle hole on the traffic side of the second barrier beyond the pinned section. The third barrier beyond the pinned section shall then be unpinned.

Anchor pins, except for the six anchor pins for the barrier unit at each end of an installation, will be measured for payment as each, per anchor pin installed. [Supplemental Specifications / Section 704]

FOR INFORMATIONAL USE ONLY
**Two-Lane, Two-Way Traffic, Rural Operations Exceeding One Daylight Period**

Resident traffic and door labor force's equipment to use road shoulder for passing barriered.

Use when shoulders are too narrow for passage of traffic.

**Type III Barriers are to be width of pavement only.**

Reflective striping shall appear on both sides of barriers. Barriers shall be positioned so that stripes are downward toward the side on which traffic is to pass.

Although not shown, advance warning signs with minimum dimensions of 20 in. (510 mm) and black legends on orange reflectorized background shall be utilized where needed.

This page is for use on rural road needs where the local authority considers this protection to be appropriate for the specific job conditions.

All dimensions are in inches (inferred) unless otherwise shown.

**Traffic Control Devices – Day Labor Construction**

**Standard B.L.R. 17-4**


**GENERAL NOTES**

Maintenance operations shall be confined to one traffic lane, leaving the opposite lane open to traffic. At least 300' (90 m) of both traffic lanes shall be available for traffic movement between work areas at intervals not greater than 1000' (300 m).

When operations are on the pavement and auxiliary crews are not being used, a sign with a speed of less than 4 mph (6.4 km/h) or a ONE LANE AHEAD or other appropriate sign, shall be placed in each direction between the ROAD WORK AHEAD sign and the work area. The distance between this sign and the work area shall be a minimum of 400' (120 m) but in no case to exceed the length of the road ahead's operation or 4 miles (6 km), whichever is less.

The distance between the two signs shall be approximately 400' (120 m).

All signs are to be removed at completion of the day's operations.

Any unattended obstacles, excavation, or pavement drop off greater than 3 inches (75 mm) in the work area shall be protected by Type I or Type II barricades with flashing lights.

Longitudinal dimensions may be adjusted slightly to fit field conditions.

All vehicles, equipment, men, and their activities are restricted at all times to one side of the pavement.

Flashing lights or rotating beacons are required for all maintenance vehicles while in operation.

Applicable operations illustrated in Standard T.C.301 may be used when operations do not exceed 15 minutes on the pavement or 30 minutes on the shoulder, respectively.

All warning signs shall have minimum dimensions of 36 x 48. WORK ZONE and have black legend on an orange reflectorized background.

When fluorescent signs are used, orange flags are not required.

This case is for use on rural local roads where the local authority considers this protection to be appropriate for the specific job conditions.

All dimensions are in inches (millimeters) unless otherwise shown.

<table>
<thead>
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<td>11-19</td>
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<td>Switched units to</td>
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</table>

English metrics. Moved

one General Note.

**TRAFFIC CONTROL DEVICES—DAY LABOR MAINTENANCE**

**STANDARD B.L.R. 18-6**
**CONDITION I**
When distance from closure to crossroad is less than 1500 (450) m.

**CONDITION II**
When distance from closure to crossroad is greater than 1500 (450) m.

**SYMBOLS**
- **Work area**
- **Type III Barricade**
- **Sign with 18x28 (450x700) mm, orange flag attached**

**GENERAL NOTES**
Type III Barricades and R1-2-R80 signs shall be positioned as shown in "Keep Closed To All Traffic" detour signs. Install signs in accordance with the standard dimensions.

Two Type A low-intensity flashing lights shall be used on each sign. In advance of the work zone during hours of darkness, one light shall be installed above the barricade and the other above the first advance warning sign.

All warning signs shall have a minimum dimension of 36 x 36 (100 x 100) mm and have a black legend on an orange reflectorized background.

When fluorescent signs are used, orange signs are not required.

Longitudinal dimensions may be adjusted to fit field conditions.

When the distance between the barricade and the intersection is less than 1500 (450) m and 2000 (600) m, the centerline sign shall be placed at the intersection. When the distance between the barricade and the intersection is over 2000 (600) m, an additional sign shall be placed at the intersection. The additional sign and give the distance to the barricade in miles or fractions of a mile.

All dimensions are in inches imperial unless otherwise stated.

**TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES FOR CONSTRUCTION ON RURAL LOCAL HIGHWAYS**

**STANDARD B.1.B. 21-0**
CONDITION I
APPROACH TRAFFIC STOPPED

CONDITION II
APPROACH TRAFFIC DOES NOT STOP

SYMBOLS

- Work area
- Type III Barricade
- Sign with 18x8 (450x200 mm)
  orange flag attached

GENERAL NOTES
Type III Barricades and M0-4-40039 Signs shall be positioned as shown in the "Road Closed To All Traffic" direction (Highway Standard T21903). If the distance "D" exceeds 2000 (6000 mm), an additional set of barricades and M0-4-40039 shall be placed at each end of the work area.

Two Type A Low Intensity Flashing Lights shall be used on each approach in advance of the work area. One light shall be placed above each barricade. If only one barricade is required, the other light shall be placed above the first advance warning sign.

Warning signs shall have minimum dimensions of 36 x 36 (900 x 900 mm) and have a black legend on an orange reflectorized background.

When fluorescent signs are used, orange flags are not required.

Longitudinal dimensions may be adjusted to fit field conditions.

DATE
1-1-12
1-1-08

REVISIONS
Drafted two notes from GENERAL NOTES.
Revised General Notes
and switched units to English metric.

TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES FOR CONSTRUCTION ON RURAL LOCAL HIGHWAYS (TWO-LANE TWO WAY RURAL TRAFFIC ROAD CLOSSED TO THRU TRAFFIC)

STANDARD B.L.R. 22-7
**SECTION D-D**

- Dimensions shown for cross sections are minimum.
- All holes are 3/16" ID.
- $S_x$ is the minimum section modulus about the $x-x$ axis of the post as shown. For posts in which holes are punched or drilled for more than half their length, $S_x$ shall be computed for the net section.

**GENERAL NOTES**

**METAL POSTS FOR SIGNS, MARKERS & DELINEATORS**

**STANDARD 720011-01**

---

### Table

<table>
<thead>
<tr>
<th>Type</th>
<th>c</th>
<th>d</th>
<th>e</th>
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<th>$S_{y}$</th>
<th>$S_{z}$</th>
<th>$I_{x}$</th>
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---

**DATE | REVISIONS**

1-1-09 | Switched units to English metric.
1-1-97 | Reprint, Standard 2360-A.
For diamond shaped sign with side s as shown, use required post size for a sign with W = 0.75 and D = 1.45.

**GENERAL NOTES**


LOADING: For 60 mph (96 km/h) wind velocity with 30% gust factor, named to sign.

SOIL PRESSURE: Minimum allowable soil pressure 5psf (20 kPa).

See Standard 720001 for details of Types A and B posts.

All dimensions are in inches (millimeters) unless otherwise shown.

**APPLICATIONS OF TYPES A & B METAL POSTS (FOR SIGNS & MARKERS)**

<table>
<thead>
<tr>
<th>DATE</th>
<th>REVISIONS</th>
</tr>
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<tbody>
<tr>
<td>1-1-09</td>
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</tr>
<tr>
<td>1-1-07</td>
<td>Revis. Standard 72003.</td>
</tr>
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</table>

STANDARD 720001-01
LANE AND EDGE LINES

Approximately 10 ft (3.05 m) from nearest rail or rail line at edge from center, if present, stop line placed perpendicular to center line.

NOTES
The transverse spread of the "X" may vary according to lane width.

On multi-lane roads, the stop lines shall extend across all approach lanes and separate RRV symbols shall be placed adjacent to each other in each lane.

When the pavement marking symbol is used, a portion of the symbol should be located directly adjacent to the advance warning sign (902-13) as placed by Table 30-4, Condition B of the MUTCD.

PAVEMENT MARKINGS AT
RAILROAD-HIGHWAY GRADE CROSSING

TYPICAL PAVEMENT MARKINGS

DATE REVISIONS
1-1-15 Added symbols. Revised
1-1-16 Added symbol. Revised note
for stop line at RR crossing.
1-1-18 Added symbol. Revised
LANE DEP ART. CATCH TO
LANE-REDUCTION ARROW.
SECTION 703. WORK ZONE PAVEMENT MARKING

703.01 Description. This work shall consist of furnishing, installing, maintaining, and removing short term and temporary pavement markings.

703.02 Materials. Materials shall be according to the following.

<table>
<thead>
<tr>
<th>Item</th>
<th>Article/Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Pavement Marking Tape</td>
<td>1095.06</td>
</tr>
<tr>
<td>(b) Paint Pavement Markings</td>
<td>1095.02</td>
</tr>
</tbody>
</table>

CONSTRUCTION REQUIREMENTS

703.03 General. Short term pavement markings shall consist of abbreviated patterns for edge, lane, and centerline markings. Within a specified time limit, short term pavement markings shall either be resurfaced or replaced and replaced with the full pavement marking patterns indicated on the plans with either a temporary material paid for as temporary pavement marking or with permanent material. Within the conditions as specified, the Contractor may be required to place all or a part of the quantities shown on the plans for short term pavement markings and temporary pavement markings.

The surface to which the pavement marking is to be applied shall be clean and dry. Pavement marking tape shall be applied to the prepared surface according to the manufacturer's recommendations or by a method approved by the Engineer. Painted lines shall be installed according to Section 780, except hand-operated stripers may be used for all applications of short term and temporary pavement marking.

703.04 Short Term Pavement Markings. Before the lane is opened to traffic, appropriate short term pavement markings shall be installed between all lanes open to traffic. Centerline or lane line markings shall consist of an abbreviated pattern of single stripes 4 ft. (1.2 m) in length and a minimum of 4 in. (100 mm) wide at a maximum spacing of 40 ft. (12 m) between stripes. Centerlines on two-lane highways shall be yellow and lane lines separating two or more lanes of traffic moving in the same direction shall be white. Edge line markings shall consist of 4 ft. (1.2 m) stripes on 100 ft. (30 m) centers installed at approximately a 45 degree diagonal pointing in the direction of traffic. Edge line markings will only be required on multilane divided highways and other highways with a paved shoulder greater than 4 ft. (1.2 m) wide. Markings on the final wearing surface shall be transversely offset from the permanent pavement marking location as directed by the Engineer. Markings shall be removed within five days after the permanent pavement markings are installed.

The short term pavement markings shall be removed and replaced with the required full standard pavement markings consisting of either temporary or permanent pavement marking as soon as possible. Except as indicated below, temporary pavement marking or the permanent pavement markings shall be installed for no passing zones within three calendar days and for all other markings within 14 calendar days, respectively, after the completion of any intermediate or final surface treatment. This time restriction shall begin at the completion of each intermediate or final lift on resurfacing projects.
Section 703 - Continued

If the existing markings are obliterated by milling or any other surface treatment, the time restriction shall begin when the entire surface has been treated. These restrictions may be delayed by the Engineer whenever the Contractor cannot apply pavement markings due to unanticipated inclement weather (other than winter shutdown on the project), strike activities, or other circumstances beyond the Contractor's control as determined by the Engineer. In these cases, the required full standard temporary or permanent markings shall be installed as soon as construction activities are resumed. Prior to winter shutdown, standard edge lines, lane lines, centerlines, no passing zones, and any other necessary markings as determined by the Engineer shall be installed on any intermediate or final surface remaining open to traffic during the winter shutdown period.

703.05 Temporary Pavement Marking. When any intermediate course cannot be overlaid or if the final surface cannot be permanently marked within the time restrictions listed above, the full standard markings shall be installed with temporary pavement marking. The temporary markings shall be of the same color and dimensions as shown on the plans for the permanent markings, or as directed by the Engineer.

Type I marking tape or paint shall be used at the option of the Contractor, except paint shall not be applied to the final wearing surface unless authorized by the Engineer for late season applications where tape adhesion would be a problem. Type III marking tape shall be used on the final wearing surface when the temporary pavement marking will conflict with the permanent pavement marking such as on tapers, crossovers and lane shifts.

Except during winter shutdown periods, temporary pavement marking showing deterioration for any reason within seven days after placement, shall be replaced by the Contractor. Temporary pavement markings which are in conflict with subsequently established pavement markings, or which interfere with the permanent pavement markings, shall be removed. Marking tape or paint placed on the final wearing course shall be transversely offset from the permanent pavement marking planned location as directed by the Engineer. All remaining temporary pavement marking tape or paint shall be removed within five working days after placement of the permanent pavement marking. When edge lines or channelizing lines are required, they shall be continuous. When continuous sections of tape are used, they shall be cut completely through at intervals of approximately 25 ft. (8 m).

Instead of pavement markings, no passing zones on two-lane and three-lane roads may be identified by either the pennant “NO PASSING ZONE” (W14-3) warning sign or both the “DO NOT PASS” (R4-1) and “PASS WITH CARE” (R4-2) regulatory signs in conjunction with short term markings for periods of time up to three calendar days after an intermediate or final lift is completed on resurfacing projects.

These signs may also be used in lieu of pavement markings on low volume roads until it is practical and possible to install the permanent pavement markings.

If, in the traffic control plan, the road is specified as low volume, it is exempt from the requirements regarding no passing zone pavement markings.
Section 703 - Continued

703.06 Method of Measurement. Short term pavement markings and temporary pavement markings of the various line widths will be measured for payment in feet (meters) in place and accepted. Double yellow lines will be measured as two separate lines.

The replacement of temporary pavement markings of the various line widths during winter shutdown periods will be measured for payment in feet (meters) as specified above, except only those pavement markings directed by the Engineer to be replaced will be measured for payment.

Letters and symbols used in conjunction with temporary pavement marking conforming to the sizes and dimensions specified will be measured for payment in square feet (square meters) according to the areas listed in Table 1, Section 780.

Short term and temporary pavement marking removal will be measured for payment in square feet (square meters).

703.07 Basis of Payment. This work will be paid for at the contract unit price per foot (meter) for SHORT TERM PAVEMENT MARKING or for TEMPORARY PAVEMENT MARKING of the line width specified, and at the contract unit price per square foot (square meter) for TEMPORARY PAVEMENT MARKING LETTERS AND SYMBOLS.

Removal of short term pavement markings will be paid for at the contract unit price per square foot (square meter) for SHORT TERM PAVEMENT MARKING REMOVAL. Removal of temporary pavement marking will be paid for according to Article 783.06

When temporary pavement marking is shown on the Standard, the cost of the temporary pavement marking will be included in the cost of the Standard.

When Pavement Marking Tape, Type III is specified in the contract other than on a Standard, the work will be paid for at the contract unit price per foot (meter) for PAVEMENT MARKING TAPE, TYPE III of the line width specified and at the contract unit price per square feet (square meter) for PAVEMENT MARKING TAPE, TYPE III - LETTERS AND SYMBOLS.
TWO-LANE / TWO-WAY

LANE REDUCTION TRANSITION

TWO-WAY LEFT TURN

MULTI-LANE UNDIVIDED

MULTI-LANE DIVIDED

FREEWAY EXIT RAMP

SYMBOLS

Yellow stripe

White stripe

One-way amber marker

One-way crystal marker

Two-way amber marker

All dimensions are in inches (36.56 mm) unless otherwise shown.

TYPICAL APPLICATIONS
RAISED REFLECTIVE PAVEMENT MARKERS

STANDARD 781001-04
Errata,
Supplemental
Specifications
and Recurring
Special Provisions

Check Sheets

Adopted January 1, 2018
Page 84 Article 204.02. In the seventh line of the first paragraph change “AASHTO T 99 (Method C)” to “Illinois Modified AASHTO T 99 (Method C)”.

Page 90 Article 205.06. In the first sentence of the third paragraph change “AASHTO T 99 (Method C)” to “Illinois Modified AASHTO T 99 (Method C)”.

Page 91 Article 205.06. In the first sentence of the fourth paragraph change “AASHTO T 99 (Method C)” to “Illinois Modified AASHTO T 99 (Method C)”, and in the second sentence change “AASHTO T 224” to “Illinois Modified AASHTO T 99 (Annex A1)”.

Page 91 Article 205.06. In the second line of the fifth paragraph change “AASHTO T 191” to “Illinois Modified AASHTO T 191”.

Page 91 Article 205.06. In the sixth line of the eighth paragraph change “AASHTO T 99 (Method C)” to “Illinois Modified AASHTO T 99 (Method C)”.

Page 148 Article 302.09. In the second sentence of the fifth paragraph change “AASHTO T 191” to “Illinois Modified AASHTO T 191”, and in the third sentence change “AASHTO T 99” to “Illinois Modified AASHTO T 99”.

Page 152 Article 310.09. In the second sentence of the second paragraph change “AASHTO T 191” to “Illinois Modified AASHTO T 191”, and in the third sentence change “AASHTO T 99” to “Illinois Modified AASHTO T 99”.

Page 155 Article 311.05(a). In the first sentence of the fifth paragraph change “AASHTO T 99 (Method C)” to “Illinois Modified AASHTO T 99 (Method C)”, and in the second sentence change “AASHTO T 224” to “Illinois Modified AASHTO T 99 (Annex A1)”.

Page 155 Article 311.05(a). In the second line of the sixth paragraph change “AASHTO T 191” to “Illinois Modified AASHTO T 191”.

Page 163 Article 351.05(a). In the second sentence of the fifth paragraph change “AASHTO T 99 (Method C)” to “Illinois Modified AASHTO T 99 (Method C)”, and in the third sentence change “AASHTO T 224” to “Illinois Modified AASHTO T 99 (Annex A1)”.

Page 163 Article 351.05(a). In the second line of the sixth paragraph change “AASHTO T 191” to “Illinois Modified AASHTO T 191”.

Page 169 Article 352.11. In the second sentence of the fourth paragraph change “AASHTO T 191” to “Illinois Modified AASHTO T 191”, and in the third sentence change “AASHTO T 134 (Method B)” to “Illinois Modified AASHTO T 134 (Method B)”.
Page 169  
Article 352.12. In the first sentence of the first paragraph change “AASHTO T 22” to “Illinois Modified AASHTO T 22”, and in the second sentence change “AASHTO T 134 (Method B)” to “Illinois Modified AASHTO T 134 (Method B)”. 

Page 196  
Article 406.07(a). After the footnotes in Table 1 - Minimum Roller Requirements for HMA add the following: 

“EQUIPMENT DEFINITION 

V_s - Vibratory roller, static mode, minimum 125 lb/in. (2.2 kg/mm) of roller width. Maximum speed = 3 mph (5 km/h) or 264 ft/min (80 m/min). If the vibratory roller does not eliminate roller marks, its use shall be discontinued and a tandem roller, adequately ballasted to remove roller marks, shall be used. 

V_D - Vibratory roller, dynamic mode, operated at a speed to produce not less than 10 impacts/ft (30 impacts/m). 

P - Pneumatic-tired roller, max. speed 3 1/2 mph (5.5 km/h) or 308 ft/min (92 m/min). The pneumatic-tired roller shall have a minimum tire pressure of 80 psi (550 kPa) and shall be equipped with heat retention shields. The self-propelled pneumatic-tired roller shall develop a compression of not less than 300 lb (53 N) nor more than 500 lb (88 N) per in. (mm) of width of the tire tread in contact with the HMA surface. 

T_B - Tandem roller for breakdown rolling, 8 to 12 tons (7 to 11 metric tons), 250 to 400 lb/in. (44 to 70 N/mm) of roller width, max. speed = 3 1/2 mph (5.5 km/h) or 308 ft/min (92 m/min). 

T_F - Tandem roller for final rolling, 200 to 400 lb/in. (35 to 70 N/mm) of roller width with minimum roller width of 50 in. (1.25 m). Ballast shall be increased if roller marks are not eliminated. Ballast shall be decreased if the mat shoves or distorts. 

3W - Three wheel roller, max. speed = 3 mph (5 km/h) or 264 ft/min (80 m/min), 300 to 400 lb/in. (53 to 70 N/mm) of roller width. The three-wheel roller shall weigh 10 to 12 tons (9 to 11 metric tons).” 

Page 253  
Article 442.06(a)(2). In the third line of the sixth paragraph delete “transverse”. 

Page 331  
Article 505.04(p). Under Range of Clearance in the first table change “in. x 10^-6” to “in. x 10^-3”. 

Page 338  
Article 505.04(t). In the fourth line of the first paragraph change “pins ends” to “pin ends”. 

Page 338  
Article 505.04(t). In the fifth line of the first paragraph change “6 threads to the 1 in. (4.2 mm)” to “6 threads per inch (4.2 mm per thread)”. 

Page 411  
Article 522.09(a)(1). In the third line of the first paragraph change “design life for epoxy and aluminizing” to “design life for aluminizing.”
Page 418  Article 522.11(b)(1). In the fourth line of the fourth paragraph change “CA 7, 8, 11, 13, 14, 15, and 16” to “CA 13, 14, 15, and 16”.

Page 444  Article 542.03. In the Notes in Table IIIB add “CPP Corrugated Polypropylene (CPP) pipe with smooth interior”.

Page 445  Article 542.03. In the fourth column in Table IIIB (metric) change the heading for Type 5 pipe from “CPE” to “CPP”.

Page 445  Article 542.03. In the Notes in Table IIIB (metric) change “PE Polyethylene (PE) pipe with a smooth interior” to “CPP Corrugated Polypropylene (CPP) pipe with smooth interior”.

Page 449  Article 542.04(f)(2). In the third line of the second paragraph change “AASHTO T 99 (Method C)” to “Illinois Modified AASHTO T 99 (Method C)”.

Page 450  Article 542.04(h). In the third sentence of the second paragraph change “in the table below” to “per the Contractor’s design”.

Page 451  Article 542.04(i). In the fourth line of the fourth paragraph change “form” to “from”.


Page 604  Article 702.06(a). In the third line of the first paragraph change “(9 m)” to “(7.6 m)”.

Page 621  Article 727.03. In the first sentence of the third paragraph change “AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals” to “AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals”.

Page 629  Article 734.03(a). In the fourth line of the second paragraph change “AASHTO T 99 (Method C)” to “Illinois Modified AASHTO T 99 (Method C)”.


Page 127
Page 742  Article 1003.04(c). Under Gradation in the table change “(see Article 1003.02(c))” to “(see Article 1003.01(c))”.

Page 755  Article 1004.03(b). Revise the third sentence of the first paragraph to read “For Class A (seal or cover coat), and other binder courses, the coarse aggregate shall be Class C quality or better.”.

Page 755  Article 1004.03(c). In the table for Class A-1, 2, & 3, change the Gradation No. “CA 16” to “CA 16 or CA 20”.

Page 758  Article 1004.06(c). In the second line of the first paragraph change “epoxy coated steel, geosynthetic, or geotextile” to “geosynthetic or geotextile”.

Page 777  Article 1006.29(d). Revise the third sentence of the third paragraph to read “Stainless steel washers shall be plain flat, conforming to ANSI/ASME B18.22.1, Type A or B as appropriate, or MS 15795, and made of 18-8 stainless steel.”

Page 809  Article 1020.04(e). In the third line of the first paragraph change “ITP SCC-3” to “ITP SCC-4”.

Page 810  Article 1020.05(b). In the second line of the first paragraph change “according the qualified products list” to “according to the qualified products list.”.

Page 810  Article 1020.05(b). Delete the first sentence of the second paragraph.

Page 836  Article 1020.15(b)(1)c. Replace the fourth sentence of the first paragraph with the following: "The Contractor shall provide freeze/thaw test results according to AASHTO T 161, and the relative dynamic modulus of elasticity of the mix design shall be a minimum of 80 percent. Testing shall be performed by an independent laboratory accredited by the AASHTO Materials Reference Laboratory (AMRL) for Portland Cement Concrete.”

Page 852  Article 1030.05(a)(6). Change “Hot-Mix Asphalt QC/QA Start-Up Procedures” to “Hot-Mix Asphalt Test Strip Procedures”.

Page 945  Article 1069.05. In the first sentence of the tenth paragraph change “‘Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals’” to “AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals”.


Page 1121  Article 1103.13(a). In the first line of the first paragraph change “Bridge Deck Approach Slabs.” to “Bridge Decks and Approach Slabs.”.
This Supplemental Specification amends the provisions of the Standard Specifications for Road and Bridge Construction, adopted April 1, 2016 and shall be construed to be a part thereof, superseding any conflicting provisions thereof applicable to the work under the contract.

701.03 Equipment. Revise Article 701.03(j) to read:

“(j) Tubular Markers .......................................................1106.02(f)”

701.15 Traffic Control Devices. Revise Article 701.15(g) to read:

“(g) Tubular Markers. Tubular markers are used to channelize traffic. They shall only be used when specified.”

701.18 Highway Standards Application. Revise the second paragraph of Article 701.18(f) to read:

“ Devices no greater than 24 in. (600 mm) wide, may be used in place of tubular markers when the two-way operation is to be in place four days or less.”
This Supplemental Specification amends the provisions of the Standard Specifications for Road and Bridge Construction, adopted April 1, 2016 and shall be construed to be a part thereof, superseding any conflicting provisions thereof applicable to the work under the contract.

704.02 Materials. Revise this Article to read:

“**704.02 Materials.** Materials shall be according to the following.

<table>
<thead>
<tr>
<th>Item</th>
<th>Article/Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Precast Temporary Concrete Barrier</td>
<td>1042</td>
</tr>
<tr>
<td>(b) Reinforcement Bars</td>
<td>1006.10(a)</td>
</tr>
<tr>
<td>(c) Connecting Pins and Anchor Pins (Note 1)</td>
<td></td>
</tr>
<tr>
<td>(d) Connecting Loop Bars (Note 2)</td>
<td></td>
</tr>
<tr>
<td>(e) Packaged Rapid Hardening Mortar or Concrete</td>
<td>1018</td>
</tr>
</tbody>
</table>

Note 1. Connecting pins and anchor pins shall be according to the requirements of ASTM F 1554 Grade 36 (Grade 250).

Note 2. Connecting loop bars shall be smooth bars according to the requirements of ASTM A 36 (A 36M).”

704.04 Installation. Revise this Article to read:

“**704.04 Installation.** The barriers shall be seated on bare, clean pavement or paved shoulder and connected together in a smooth, continuous line at the locations provided by the Engineer.

Except on bridge decks, or where alternate anchoring details are shown on the plans, the barrier unit at each end of an installation shall be anchored to the pavement or paved shoulder using six anchor pins and protected with an impact attenuator as shown on the plans. When pinning of additional barrier units within the installation is specified, three anchor pins shall be installed in the traffic side holes of the required barriers.

Where both pinned and unpinned barrier units are used in a continuous installation, a transition shall be provided between them. The transition from pinned to unpinned barrier shall consist of two anchor pins installed in the end holes on the traffic side of the first barrier beyond the pinned section and one anchor pin installed in the middle hole on the traffic side of the second barrier beyond the pinned section. The third barrier beyond the pinned section shall then be unpinned.

Barriers located on bridge decks shall be restrained as shown on the plans. Anchor pins shall not be installed through bridge decks, unless otherwise noted.
Barriers or attachments damaged during transportation or handling, or by traffic during the life of the installation, shall be repaired or replaced. The Engineer will be the sole judge in determining which units or attachments require repair or replacement.

The barriers shall be removed when no longer required by the contract. After removal, all anchor holes in the pavement or paved shoulder shall be filled with a rapid hardening mortar or concrete. Only enough water to permit placement and consolidation by rodding shall be used and the material shall be struck-off flush.”

704.05 Method of Measurement. Add the following paragraph after the first paragraph of this Article:

“Anchor pins, except for the six anchor pins for the barrier unit at each end of an installation, will be measured for payment as each, per anchor pin installed.”

704.06 Materials. Add the following paragraph after the second paragraph of this Article:

“Anchor pins, except for the six anchor pins for the barrier unit at each end of an installation, will be paid for at the contract unit price per each for PINNING TEMPORARY CONCRETE BARRIER.

State of Illinois
Department of Transportation

SUPPLEMENTAL SPECIFICATION
FOR
SECTION 1106. WORK ZONE TRAFFIC CONTROL DEVICES

This Supplemental Specification amends the provisions of the Standard Specifications for Road and Bridge Construction, adopted April 1, 2016 and shall be construed to be a part thereof, superseding any conflicting provisions thereof applicable to the work under the contract.

1106.02 Devices. Revise the second sentence of the second paragraph of this Article to read:

“These include cones, tubular markers, and plastic drums with no attachments.”

Revise the third sentence of the seventh paragraph of this Article to read:

“Sheeting used on cones, drums, and tubular markers shall be reboundable as tested according to ASTM D 4956.”

Revise Article 1106.02(f) to read:

“(f) Tubular Markers. Tubular Markers shall be designed to bend under repeated impacts and return to an upright position without damage to the impacting vehicle or the markers. The markers shall be readily removable from the bases to permit field replacement.

The markers shall be orange in color having two white and two fluorescent orange bands.”
Revise Article 406.10 of the Standard Specifications to read:

“406.10 Resurfacing Sequence. The resurfacing operations shall satisfy the following requirements:

(a) Before paving in a lane, the adjacent lane and its paved shoulder shall be at the same elevation.

(b) Each lift of resurfacing shall be completed, including paved shoulders, before the next lift is begun.

(c) Elevation differences between lanes shall be eliminated within twelve calendar days.”

Revise the first sentence of the eleventh paragraph of Article 406.13 of the Standard Specifications to read:

“When a HMA binder and surface course mixture is used on shoulders and is placed simultaneously with the traffic lane as specified in Section 482, the quantity of HMA placed on the traffic lane that will be paid for will be limited to a calculated tonnage based upon actual mat width and length, plan thickness or a revised thickness authorized by the Engineer, and design mix weight per inch (millimeter) of thickness.”

Delete the twelfth paragraph of Article 406.13 of the Standard Specifications.

Revise the sixth paragraph of Article 482.05 of the Standard Specifications to read:

“On pavement and shoulder resurfacing projects, the resurfacing sequence shall be according to Article 406.10. When the HMA binder and surface course option is used, the shoulders may be placed, at the Contractor’s option, simultaneously with the adjacent traffic lane for both courses, provided the specified density, thickness and cross slope of both the pavement and shoulder can be satisfactorily obtained.”
State of Illinois
Department of Transportation

SPECIAL PROVISION
FOR
TEMPORARY PORTABLE BRIDGE TRAFFIC SIGNALS

Effective: August 1, 2003
Revised: January 1, 2007

Description. At the Contractor’s option, temporary portable bridge traffic signals may be used in place of temporary bridge traffic signals. Work shall be according to Article 701.18(b) of the Standard Specifications, except as follows:

Materials. Materials shall be according to the following.

<table>
<thead>
<tr>
<th>Item</th>
<th>Article/Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Traffic Signal Head</td>
<td>1078</td>
</tr>
<tr>
<td>(b) Electric Cable</td>
<td>1076.04</td>
</tr>
<tr>
<td>(c) Controller</td>
<td>1073</td>
</tr>
<tr>
<td>(d) Controller Cabinet</td>
<td>1074.03</td>
</tr>
<tr>
<td>(e) Detector Loop</td>
<td>1079</td>
</tr>
</tbody>
</table>

CONSTRUCTION REQUIREMENTS

General. The temporary portable bridge traffic signals shall be trailer-mounted units. The trailer-mounted units shall be set up securely and level. Each unit shall be self-contained and consist of two signal heads. The left signal head shall be mounted on a mast arm capable of extending over the travel lane. Each unit shall contain a solar cell system to facilitate battery charging. There shall be a minimum of 12 days backup reserve battery supply and the units shall be capable of operating with a 120 V power supply from a generator or electrical service.

All signal heads located over the travel lane shall be mounted at a minimum height of 17 ft. (5 m) from the bottom of the signal back plate to the top of the road surface. All far right signal heads located outside the travel lane shall be mounted at a minimum height of 8 ft. (2.4 m) from the bottom of the signal back plate to the top of the adjacent travel lane surface.

The long all red intervals for the traffic signal controller shall be adjustable up to 250 seconds in one-second increments.

As an alternative to detector loops, temporary portable bridge traffic signals may be equipped with microwave sensors or other approved methods of vehicle detection and traffic actuation. All portable traffic signal units shall be interconnected using hardwire communication cable or radio communication equipment. If radio communication is used, a site analysis shall be completed to ensure that there is no interference present that would affect the traffic signal operation. The radio equipment shall meet all applicable FCC requirements.

The temporary portable bridge traffic signal system shall meet the physical display and operational requirements of conventional traffic signals as specified in Part IV of the Manual on
Uniform Traffic Control Devices (MUTCD). The signal system shall be designed to continuously operate over an ambient temperature range between -30 °F (-34 °C) and 120 °F (48 °C).

When not being utilized to inform and direct traffic, portable signals shall be treated as non-operating equipment according to Article 701.11 of the Standard Specifications.

**Basis of Payment.** This work will be paid for according to Article 701.20(c) of the Standard Specifications.

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State of Illinois
Department of Transportation

**SPECIAL PROVISION FOR**

**WORK ZONE PUBLIC INFORMATION SIGNS**

Effective: September 1, 2002
Revised: January 1, 2007

**Description.** This work shall consist of furnishing, erecting, maintaining, and removing work zone public information signs.

Camera-ready artwork for the signs will be provided to sign manufacturing companies upon request by contacting the Central Bureau of Operations at 217-782-2076. The sign number is W21-I116-6048.

**Freeways/Expressways.** These signs are required on freeways and expressways. The signs shall be erected as shown on Highway Standard 701400 and according to Article 701.14 of the Standard Specifications.

**All Other Routes.** These signs shall be used on other routes when specified on the plans. They shall be erected in pairs midway between the first and second warning signs.

**Basis of Payment.** This work will not be paid for separately but shall be considered as included in the cost of the Standard.
State of Illinois  
Department of Transportation  

SPECIAL PROVISION  
FOR  
NIGHT TIME INSPECTION OF ROADWAY LIGHTING  

Effective: May 1, 1996  

The Contractor shall provide traffic control and protection for the night time inspection of the roadway lighting as shown in the contract. Any fixtures found not to be aimed to provide optimum lighting on the roadway during the night time inspection shall be re-aimed to optimum during the inspection. Any work necessary for re-aiming will not be paid for separately but, shall be included in the cost of the highway lighting bid items.
Description. This work shall consist of furnishing and installing temporary raised pavement markers on preventive maintenance projects requiring cape seals or bituminous surface treatments.

Materials. The marker body shall be approximately 0.06 in. (1.5 mm) thick polyurethane formed in an “L” shape. The base of the marker shall be approximately 4 in. (100 mm) wide by 1.125 in. (28 mm) long with a solid 0.125 in. (3.2 mm) thick butyl rubber adhesive pad protected with a release paper. The vertical portion of the marker shall be approximately 4 in. (100 mm) wide by 2 in. (50 mm) high.

A cube-corner micro-prism reflective tape material shall be placed horizontally along both sides at the top of the vertical section of the marker. The reflective material shall be recessed in an “I-Beam” design to protect the reflective material from aggregate. A clear flexible polyvinyl chloride plastic cover is to be attached to the vertical section of the marker with a heavy duty staple to cover the reflective material during surfacing operations. The flexible raised pavement marker shall be readily visible at night when viewed with high beam automobile headlamps from a distance of at least 300 ft. (90 m).

Construction Requirements

Application. The temporary markers shall be installed at the centerline or lane line(s) prior to application of any surface treatment which would cover the existing pavement markings. Temporary markers shall also be applied at edge lines when specified on the plans.

For temporary replacement of skip dash markings, an abbreviated pattern of two markers spaced 4 ft. (1.2 m) apart with a maximum spacing of 40 ft. (12 m) between sets of markers shall be used. For temporary replacement of solid lines, one marker shall be placed every 5 ft. (1.5 m). The marker color and location shall match the existing line color and location.

Basis of Payment. This work will be paid for at the contract unit price per each for TEMPORARY RAISED PAVEMENT MARKER.
State of Illinois  
Department of Transportation  
Bureau of Local Roads and Streets  

SPECIAL PROVISION  
FOR  
WORK ZONE TRAFFIC CONTROL SURVEILLANCE  

Effective: January 1, 1999  
Revised: January 1, 2010  

Revise Article 701.10 of the Standard Specifications to read:

"The Contractor shall conduct inspections of the worksite at a frequency that will allow for the timely replacement of any traffic control device that has become displaced, worn, or damaged. A sufficient quantity of replacement devices, based on vulnerability to damage, shall be readily available to meet this requirement."

Delete Articles 701.19(d) and Article 701.20(g) of the Standard Specifications.

State of Illinois  
Department of Transportation  
Bureau of Local Roads and Streets  

SPECIAL PROVISION  
FOR  
FLAGGERS IN WORK ZONES  

Effective: January 1, 1999  
Revised: January 1, 2007  

Revise the last paragraph of Article 701.13 of the Standard Specifications to read:

"Flaggers are required only when workers are present."
Bureau of Design & Environment
Special Provisions

January 1, 2018
AUTOMATED FLAGGER ASSISTANCE DEVICES (BDE)

Effective: January 1, 2008

Description. This work shall consist of furnishing and operating automated flagger assistance devices (AFADs) as part of the work zone traffic control and protection for two lane highways where two-way traffic is maintained over one lane of pavement. Use of these devices shall be at the option of the Contractor.

Equipment. AFADs shall be according to the FHWA memorandum, “MUTCD - Revised Interim Approval for the use of Automated Flagger Assistance Devices in Temporary Traffic Control Zones (IA-4R)”, dated January 28, 2005. The devices shall be mounted on a trailer or a moveable cart and shall meet the requirements of NCHRP 350, Category 4.

The AFAD shall be the Stop/Slow type. This device uses remotely controlled “STOP” and “SLOW” signs to alternately control right-of-way.

Signs for the AFAD shall be according to Article 701.03 of the Standard Specifications and the MUTCD. The signs shall be 24 x 24 in. (600 x 600 mm) having an octagon shaped “STOP” sign on one side and a diamond shaped “SLOW” sign on the opposite side. The letters on the signs shall be 8 in. (200 mm) high. If the “STOP” sign has louvers, the full sign face shall be visible at a distance of 50 ft. (15 m) and greater.

The signs shall be supplemented with one of the following types of lights.

(a) Flashing Lights. When flashing lights are used, white or red flashing lights shall be mounted within the “STOP” sign face and white or yellow flashing lights within the “SLOW” sign face.

(b) Stop and Warning Beacons. When beacons are used, a stop beacon shall be mounted 24 in. (600 mm) or less above the “STOP” sign face and a warning beacon mounted 24 in. (600 mm) or less above, below, or to the side of the “SLOW” sign face. As an option, a Type B warning light may be used in lieu of the warning beacon.

A “WAIT ON STOP” sign shall be placed on the right hand side of the roadway at a point where drivers are expected to stop. The sign shall be 24 x 30 in. (600 x 750 mm) with a black legend and border on a white background. The letters shall be at least 6 in. (150 mm) high.

This device may include a gate arm or mast arm that descends to a horizontal position when the “STOP” sign is displayed and rises to a vertical position when the “SLOW” sign is displayed. When included, the end of the arm shall reach at least to the center of the lane being controlled. The arm shall have alternating red and white retroreflective stripes, on both sides, sloping downward at 45 degrees toward the side on which traffic will pass. The stripes shall be 6 in. (150 mm) in width and at least 2 in. (50 mm) in height.

Flagging Requirements. Flaggers and flagging requirements shall be according to Article 701.13 of the Standard Specifications and the following.

AFADs shall be placed at each end of the traffic control, where a flagger is shown on the plans. The flaggers shall be able to view the face of the AFAD and approaching traffic during operation.

To stop traffic, the “STOP” sign shall be displayed, the corresponding lights/beacon shall flash, and when included, the gate arm shall descend to a horizontal position. To permit traffic to move, the
“SLOW” sign shall be displayed, the corresponding lights/beacon shall flash, and when included, the gate arm shall rise to a vertical position.

If used at night, the AFAD location shall be illuminated according to Section 701 of the Standard Specifications.

When not in use, AFADs will be considered nonoperating equipment and shall be stored according to Article 701.11 of the Standard Specifications.

Basis of Payment. This work will not be paid for separately but shall be considered as included in the cost of the various traffic control items included in the contract.

EQUIPMENT PARKING AND STORAGE (BDE)

Effective: November 1, 2017

Replace the first paragraph of Article 701.11 of the Standard Specifications with the following.

“701.11 Equipment Parking and Storage. During working hours, all vehicles and/or nonoperating equipment which are parked, two hours or less, shall be parked at least 8 ft (2.5 m) from the open traffic lane. For other periods of time during working and for all nonworking hours, all vehicles, materials, and equipment shall be parked or stored as follows.

(a) When the project has adequate right-of-way, vehicles, materials, and equipment shall be located a minimum of 30 ft (9 m) from the pavement.

(b) When adequate right-of-way does not exist, vehicles, materials, and equipment shall be located a minimum of 15 ft (4.5 m) from the edge of any pavement open to traffic.

(c) Behind temporary concrete barrier, vehicles, materials, and equipment shall be located a minimum of 24 in. (600 mm) behind free standing barrier or a minimum of 6 in. (150 mm) behind barrier that is either pinned or restrained according to Article 704.04. The 24 in. or 6 in. measurement shall be from the base of the non-traffic side of the barrier.

(d) Behind other man-made or natural barriers meeting the approval of the Engineer.”
LIGHTS ON BARRICADES (BDE)

Effective: January 1, 2018

Revise Article 701.16 of the Standard Specifications to read:

“701.16 Lights. Lights shall be used on devices as required in the plans, the traffic control plan, and the following table.

<table>
<thead>
<tr>
<th>Circumstance</th>
<th>Lights Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daylight operations</td>
<td>None</td>
</tr>
<tr>
<td>First two warning signs on each approach to the work involving a nighttime lane closure and &quot;ROUGH GROOVED SURFACE&quot; (W8-I107) signs</td>
<td>Flashing mono-directional lights</td>
</tr>
<tr>
<td>Devices delineating isolated obstacles, excavations, or hazards at night (Does not apply to patching)</td>
<td>Flashing bi-directional lights</td>
</tr>
<tr>
<td>Devices delineating obstacles, excavations, or hazards exceeding 100 ft (30 m) in length at night (Does not apply to widening)</td>
<td>Steady burn bi-directional lights</td>
</tr>
<tr>
<td>Channelizing devices for nighttime lane closures on two-lane roads</td>
<td>None</td>
</tr>
<tr>
<td>Channelizing devices for nighttime lane closures on multi-lane roads</td>
<td>None</td>
</tr>
<tr>
<td>Channelizing devices for nighttime lane closures on multi-lane roads separating opposing directions of traffic</td>
<td>None</td>
</tr>
<tr>
<td>Channelizing devices for nighttime lane shifts on multilane roads</td>
<td>Steady burn mono-directional lights</td>
</tr>
<tr>
<td>Channelizing devices for night time lane shifts on two lane roads</td>
<td>Steady burn bi-directional lights</td>
</tr>
<tr>
<td>Devices in nighttime lane closure tapers on Standards 701316 and 701321</td>
<td>Steady burn bi-directional lights</td>
</tr>
<tr>
<td>Devices in nighttime lane closure tapers</td>
<td>Steady burn mono-directional lights</td>
</tr>
<tr>
<td>Devices delineating a widening trench</td>
<td>None</td>
</tr>
<tr>
<td>Devices delineating patches at night on roadways with an ADT less than 25,000</td>
<td>None</td>
</tr>
<tr>
<td>Devices delineating patches at night on roadways with an ADT of 25,000 or more</td>
<td>None</td>
</tr>
</tbody>
</table>

Batteries for the lights shall be replaced on a group basis at such times as may be specified by the Engineer.”

Delete the fourth sentence of the first paragraph of Article 701.17(c)(2) of the Standard Specifications.

Revise the first paragraph of Article 603.07 of the Standard Specifications to read:

“603.07 Protection Under Traffic. After the casting has been adjusted and Class SI concrete has been placed, the work shall be protected by a barricade for at least 72 hours.”
Revise the fourth paragraph of Article 701.04 of the Standard Specifications to read:

“The traffic control shall remain in place only as long as needed and shall be removed when directed by the Engineer. Signs that do not apply to current conditions shall be removed, covered, or turned from the view of motorists. All existing pavement markings which conflict with the revised traffic pattern shall be removed according to Section 783 or when specified, temporarily covered with pavement marking blackout tape. The width of blackout tape shall be at least 1 in. (25 mm) wider than the width of the pavement marking being covered. The removing or covering of existing markings shall be scheduled immediately to facilitate the revised traffic pattern. If darkness or inclement weather prohibits the removal or covering operations, such operations shall be resumed the next morning or when weather permits.”

Revise Article 701.19(f) of the Standard Specifications to read:

“(f) Removal of existing pavement markings and raised reflective pavement markers will be measured for payment according to Article 783.05. Temporary covering of existing pavement markings with blackout tape will be measured for payment in feet (meters) in place. Removal of blackout tape will be measured for payment in square feet (square meters).”

Revise Article 701.20(j) of the Standard Specifications to read:

“(j) Removal of existing pavement markings and raised reflective pavement markers will be paid for according to Article 783.06. Temporary covering of existing pavement markings with blackout tape will be paid for at the contract unit price per foot for PAVEMENT MARKING BLACKOUT TAPE, of the line width specified.” Removal of blackout tape will be paid for as short term pavement marking removal according to Article 703.07.”

Revise the first two paragraphs of Article 1095.06 of the Standard Specifications to read:
**1095.06 Pavement Marking Tape.** White or yellow marking tape shall consist of glass spheres of high optical quality embedded into a binder on a suitable backing that is precoated with a pressure sensitive adhesive. The spheres shall be of uniform gradation and distributed evenly over the surface of the tape. Blackout marking tape shall be a Type III tape consisting of a matte black, non-reflective, patterned surface that is precoated with a pressure sensitive adhesive. The surface of the blackout pavement marking tape shall provide a minimum skid resistance value of 45 BPN when tested according to ASTM E 303-74.

The material shall be white, yellow, or matte black as specified. White and yellow colors shall conform closely to Federal color tolerances for pavement marking paint.”

Revise the second table of Article 1095.06 to read:

<table>
<thead>
<tr>
<th>Test</th>
<th>Type I</th>
<th>Type III</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>White</td>
<td>Yellow</td>
<td>White</td>
</tr>
<tr>
<td>Initial Thickness, mils (mm)</td>
<td>20 (0.51)</td>
<td>20 (0.51)</td>
<td>20 (0.51)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Durability (cycles)</td>
<td>5,000</td>
<td>5,000</td>
<td>1,500</td>
</tr>
</tbody>
</table>

Notes:
1/ Measured at the thickest point of the patterned surface.
2/ Measured at the thinnest point of the patterned surface.”

80349
PAVEMENT MARKING REMOVAL (BDE)

Effective: July 1, 2016

Revise Article 783.02 of the Standard Specifications to read:

“783.02 Equipment. Equipment shall be according to the following.

<table>
<thead>
<tr>
<th>Item</th>
<th>Article/Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Grinders (Note 1)</td>
<td></td>
</tr>
<tr>
<td>(b) Water Blaster with Vacuum Recovery</td>
<td>1101.12</td>
</tr>
</tbody>
</table>

Note 1. Grinding equipment shall be approved by the Engineer.”

Revise the first paragraph of Article 783.03 of the Standard Specifications to read:

“783.03 Removal of Conflicting Markings. Existing pavement markings that conflict with revised traffic patterns shall be removed. If darkness or inclement weather prohibits the removal operations, such operations shall be resumed the next morning or when weather permits. In the event of removal equipment failure, such equipment shall be repaired, replaced, or leased so removal operations can be resumed within 24 hours.”

Revise the first and second sentences of the first paragraph of Article 783.03(a) of the Standard Specifications to read:

“The existing pavement markings shall be removed by the method specified and in a manner that does not materially damage the surface or texture of the pavement or surfacing. Small particles of tightly adhering existing markings may remain in place, if in the opinion of the Engineer, complete removal of the small particles will result in pavement surface damage.”

Revise the first paragraph of Article 783.04 of the Standard Specifications to read:

“783.04 Cleaning. The roadway surface shall be cleaned of debris or any other deleterious material by the use of compressed air or water blast.”

Revise the first paragraph of Article 783.06 of the Standard Specifications to read:

“783.06 Basis of Payment. This work will be paid for at the contract unit price per each for RAISED REFLECTIVE PAVEMENT MARKER REMOVAL, or at the contract unit price per square foot (square meter) for PAVEMENT MARKING REMOVAL – GRINDING and/or PAVEMENT MARKING REMOVAL – WATER BLASTING.”

Delete Article 1101.13 from the Standard Specifications.
PAVEMENT MARKING TAPE TYPE IV (BDE)

This special provision is now named “Temporary Pavement Marking”. See 147 of this booklet.

PORTABLE CHANGEABLE MESSAGE SIGNS (BDE)

Effective: November 1, 2016
Revised: April 1, 2017

Revise the second paragraph of Article 701.20(h) of the Standard Specifications to read:

“For all other portable changeable message signs, this work will be paid for at the contract unit price per calendar day for each sign as CHANGEABLE MESSAGE SIGN.”

Revise this second sentence of the first paragraph of Article 1106.02(i) of the Standard Specifications to read:

“The message panel shall be a minimum of 7 ft (2.1 m) above the edge of pavement in urban areas and a minimum of 5 ft (1.5 m) above the edge of pavement in rural areas, present a level appearance, and be capable of displaying up to eight characters in each of three lines at a time.”

80377
REVISE THE THIRD PARAGRAPH OF ARTICLE 701.11 OF THE STANDARD SPECIFICATIONS TO READ:

“When not being utilized to inform and direct traffic, sign trailers, speed display trailers, arrow boards, and portable changeable message boards shall be treated as nonoperating equipment.”

ADD THE FOLLOWING TO ARTICLE 701.15 OF THE STANDARD SPECIFICATIONS:

“(m) Speed Display Trailer. A speed display trailer is used to enhance safety of the traveling public and workers in work zones by alerting drivers of their speed, thus deterring them from driving above the posted work zone speed limit.”

ADD THE FOLLOWING TO ARTICLE 701.20 OF THE STANDARD SPECIFICATIONS:

“(k) When speed display trailers are shown on the Standard, this work will not be paid for separately but shall be considered as included in the cost of the Standard.

For all other speed display trailers, this work will be paid for at the contract unit price per calendar month or fraction thereof for each trailer as SPEED DISPLAY TRAILER.”

ADD THE FOLLOWING TO ARTICLE 1106.02 OF THE STANDARD SPECIFICATIONS:

“(o) Speed Display Trailer. The speed display trailer shall consist of a LED speed indicator display with self-contained, one-direction radar mounted on an orange see-through trailer. The height of the display and radar shall be such that it will function and be visible when located behind concrete barrier.

The speed measurement shall be by radar and provide a minimum detection distance of 1000 ft (300 m). The radar shall have an accuracy of ±1 mile per hour.

The speed indicator display shall face approaching traffic and shall have a sign legend of “YOUR SPEED” immediately above or below the speed display. The sign letters shall be between 5 and 8 in. (125 and 200 mm) in height. The digital speed display shall show two digits (00 to 99) in mph. The color of the changeable message legend shall be a yellow legend on a black background. The minimum height of the numerals shall be 18 in. (450 mm), and the nominal legibility distance shall be at least 750 ft (250 m).

The speed indicator display shall be equipped with a violation alert that flashes the displayed detected speed when the work zone posted speed limit is exceeded. The speed indicator shall have a maximum speed cutoff. On roadway facilities with a normal posted speed limit greater than or equal to 45 mph, the detected speeds of vehicles traveling more than 25 mph over the work zone speed limit shall not be displayed. On facilities with normal posted speed limit of less than 45 mph, the detected speeds of vehicles traveling more than 15 mph over the work zone speed limit shall not be displayed. On any roadway facility if detected speeds are less than 25 mph, they shall not be displayed. The display shall include automatic dimming for nighttime operation.

The speed indicator measurement and display functions shall be equipped with the power supply capable of providing 24 hours of uninterrupted service.”
TEMPORARY PAVEMENT MARKING (BDE)

Effective: April 1, 2012
Revised: April 1, 2017

Revise Article 703.02 of the Standard Specifications to read:

“703.02 Materials. Materials shall be according to the following.

(a) Pavement Marking Tape, Type I and Type III ....................................................... 1095.06
(b) Paint Pavement Markings ..................................................................................... 1095.02
(c) Pavement Marking Tape, Type IV ......................................................................... 1095.11”

Revise the second paragraph of Article 703.05 of the Standard Specifications to read:

“Type I marking tape or paint shall be used at the option of the Contractor, except paint shall not be applied to the final wearing surface unless authorized by the Engineer for late season applications where tape adhesion would be a problem. Type III or Type IV marking tape shall be used on the final wearing surface when the temporary pavement marking will conflict with the permanent pavement marking such as on tapers, crossovers and lane shifts.”

Revise Article 703.07 of the Standard Specifications to read:

“703.07 Basis of Payment. This work will be paid for as follows.

(a) Short Term Pavement Marking. Short term pavement marking will be paid for at the contract unit price per foot (meter) for SHORT TERM PAVEMENT MARKING. Removal of short term pavement markings will be paid for at the contract unit price per square foot (square meter) for SHORT TERM PAVEMENT MARKING REMOVAL.

(b) Temporary Pavement Marking. Where the Contractor has the option of material type, temporary pavement marking will be paid for at the contract unit price per foot (meter) for TEMPORARY PAVEMENT MARKING of the line width specified, and at the contract unit price per square foot (square meter) for TEMPORARY PAVEMENT MARKING LETTERS AND SYMBOLS.

Where the Department specifies the use of pavement marking tape, the Type III or Type IV temporary pavement marking will be paid for at the contract unit price per foot (meter) for PAVEMENT MARKING TAPE, TYPE III or PAVEMENT MARKING TAPE, TYPE IV of the line width specified and at the contract unit price per square feet (square meter) for PAVEMENT MARKING TAPE, TYPE III - LETTERS AND SYMBOLS or PAVEMENT MARKING TAPE, TYPE IV – LETTERS AND SYMBOLS.

Removal of temporary pavement markings will be paid for at the contract unit price per square foot (square meter) for TEMPORARY PAVEMENT MARKING REMOVAL.

When temporary pavement marking is shown on the Standard, the cost of the temporary pavement marking and its removal will be included in the cost of the Standard.”

Add the following to Section 1095 of the Standard Specifications:
“1095.11 Pavement Marking Tape, Type IV.  The temporary, preformed, patterned markings shall consist of a white or yellow tape with wet retroreflective media incorporated to provide immediate and continuing retroreflection during both wet and dry conditions. The tape shall be manufactured without the use of heavy metals including lead chromate pigments or other similar, lead-containing chemicals.

The white and yellow Type IV marking tape shall meet the Type III requirements of Article 1095.06 and the following.

(a) Composition. The retroreflective pliant polymer pavement markings shall consist of a mixture of high-quality polymeric materials, pigments and glass beads distributed throughout its base cross-sectional area, with a layer of wet retroreflective media bonded to a durable polyurethane topcoat surface. The patterned surface shall have approximately 40% ± 10% of the surface area raised and presenting a near vertical face to traffic from any direction. The channels between the raised areas shall be substantially free of exposed beads or particles.

(b) Retroreflectance. The white and yellow markings shall meet the following for initial dry and wet retroreflectance.

(1) Dry Retroreflectance. Dry retroreflectance shall be measured under dry conditions according to ASTM D 4061 and meet the values described in Article 1095.06 for Type III tape.

(2) Wet Retroreflectance. Wet retroreflectance shall be measured under wet conditions according to ASTM E 2177 and meet the values shown in the following table.

<table>
<thead>
<tr>
<th>Color</th>
<th>Wet Retroreflectance, Initial $R_l$</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>300</td>
</tr>
<tr>
<td>Yellow</td>
<td>200</td>
</tr>
</tbody>
</table>

(c) Color. The material shall meet the following requirements for daylight reflectance and color, when tested, using a color spectrophotometer with 45 degrees circumferential/zero degree geometry, illuminant D65, and a two degree observer angle. The color instrument shall measure the visible spectrum from 380 to 720 nm with a wavelength measurement interval and spectral bandpass of 10 nm.

<table>
<thead>
<tr>
<th>Color</th>
<th>Daylight Reflectance %Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>65 minimum</td>
</tr>
<tr>
<td>*Yellow</td>
<td>36-59</td>
</tr>
</tbody>
</table>

*Shall match Federal 595 Color No. 33538 and the chromaticity limits as follows.

<table>
<thead>
<tr>
<th>x</th>
<th>0.490</th>
<th>0.475</th>
<th>0.485</th>
<th>0.530</th>
</tr>
</thead>
<tbody>
<tr>
<td>y</td>
<td>0.470</td>
<td>0.438</td>
<td>0.425</td>
<td>0.456</td>
</tr>
</tbody>
</table>

(d) Skid Resistance. The surface of the markings shall provide an average minimum skid resistance of 50 BPN when tested according to ASTM E 303.

(e) Sampling, Testing, Acceptance, and Certification. Prior to approval and use of the wet reflective, temporary, removable pavement marking tape, the manufacturer shall submit a notarized certification from an independent laboratory, together with the results of all tests,
stating that the material meets the requirements as set forth herein. The certification test report shall state the lot tested, manufacturer’s name, and date of manufacture.

After approval by the Department, samples and certification by the manufacturer shall be submitted for each batch used. The manufacturer shall submit a certification stating that the material meets the requirements as set forth herein and is essentially identical to the material sent for qualification. The certification shall state the lot tested, manufacturer’s name, and date of manufacture.

All costs of testing (other than tests conducted by the Department) shall be borne by the manufacturer.”

TUBULAR MARKERS (BDE)

Moved to Section 701 and Section 1106 of the Supplemental Specifications. See pages 129 and 131 of this booklet.