TEMPORARY TRAFFIC CONTROL

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Temporary Traffic Control Devices
B. Installation
C. Maintenance
D. Quality Control

1.02 DESCRIPTION OF WORK

This part of the specifications includes materials, equipment, and procedures for traffic control during construction. Furnish, erect, operate, maintain, move, and remove all traffic control devices required. Comply with the current edition of the MUTCD as adopted by the Iowa DOT.

1.03 SUBMITTALS

Comply with Division 1 - General Provisions and Covenants, as well as the following:
A. Submit a traffic control plan for review and approval prior to installation.
B. Submit proposed modifications to the traffic control plan for review and approval prior to making changes.

1.04 SUBSTITUTIONS

Comply with Division 1 - General Provisions and Covenants.

1.05 DELIVERY, STORAGE, HANDLING, AND SALVAGING

Comply with Division 1 - General Provisions and Covenants.

1.06 SCHEDULING AND CONFLICTS

Comply with Division 1 - General Provisions and Covenants.

1.07 SPECIAL REQUIREMENTS

A. When a bid item for Temporary Traffic Control is included on the proposal form, comply with this section for measurement and payment
B. When the proposal form does not include a bid item for temporary traffic control, all costs incurred by the contractor for temporary traffic control are incidental to other work and will not be paid for separately.
C. Provide 10 calendar days advance notification of a pedestrian path closure to the Engineer and the National Federation of the Blind of Iowa (www.nfbi.org).
1.08 MEASUREMENT AND PAYMENT

A. Temporary Traffic Control:

1. Measurement: Lump sum item; no measurement will be made.

2. Payment: Payment will be at the lump sum price for temporary traffic control. Proportional payments will be made equal to the percentage of the dollar amount paid on the original contract amount.

3. Includes: Lump sum price includes, but is not limited to, installation, maintenance, and removal of temporary traffic control; total roadway closures with installation and removal of detour signing as shown in the contract documents; removal and reinstallation or covering of permanent traffic control devices that conflict with the temporary traffic control plan; monitoring and documenting traffic control conditions; and flaggers. When required in the contract documents, the following are also included in traffic control unless a separate bid item is provided: portable dynamic message signs, temporary barrier rail, temporary flood lighting, and pilot cars.
PART 2 - PRODUCTS

2.01 GENERAL

Use products and materials complying with Part 6 of the MUTCD.

2.02 SIGNS

A. Material: Sheet aluminum, galvanized steel, plywood, or flexible roll-up material complying with Iowa DOT Article 4186.02.

B. Size and Type:
   1. Regulatory Signs: As indicated in the contract documents or recommended in the MUTCD.
   2. Sidewalk Signs: Minimum size 12 inch by 24 inch.
   3. Warning Signs: Comply with Table 8030.01.

   Table 8030.01: Warning Signs

<table>
<thead>
<tr>
<th>Speed Limit (mph)</th>
<th>Minimum Sign Size</th>
<th>Minimum Uppercase Letter Size</th>
<th>Minimum Plaque Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 25</td>
<td>30” x 30”</td>
<td>4”</td>
<td>18” x 18”</td>
</tr>
<tr>
<td>25 - 35</td>
<td>36” x 36”</td>
<td>5”</td>
<td>18” x 24”</td>
</tr>
<tr>
<td>&gt; 35</td>
<td>48” x 48”</td>
<td>7”</td>
<td>24” x 30”</td>
</tr>
</tbody>
</table>

C. Retroreflective Sheeting: Comply with Iowa DOT Article 4186.03.

D. Posts:
   1. Wood Posts: Comply with Iowa DOT Section 4164.
   2. U-Shaped Rail Steel Posts: 3.0 pounds per foot.
   3. Perforated Square Steel Tube Posts: 2 1/4 or 2 1/2 inch square 12 gage perforated steel tubing.

E. Portable Sign Stands: Crashworthy per the test and evaluation criteria of NCHRP Report 350 or Manual on Assessing Safety Hardware (MASH). Must be stable in windy conditions.

2.03 CHANNELIZING DEVICES

Channelizing devices include cones, channelizers, tubular markers, vertical panels, drums, and barricades.

A. Retroreflective Sheeting: Comply with Iowa DOT Article 4186.03.

B. Cones: Minimum height of 18 inches for daytime and speed less than or equal to 35 mph. Minimum height of 28 inches with retroreflective bands for nighttime or speed greater than 35 mph.

C. Channelizers: 42 inch height with retroreflective bands and 16 pound base.

D. Tubular Markers: Minimum diameter 2 inches with retroreflective bands. Minimum height 18 inches for daytime and speed less than or equal to 35 mph. Minimum height 28 inches for nighttime or speed greater than 35 mph.
2.03 CHANNELIZING DEVICES (Continued)

E. Vertical Panels: Minimum height 36 inches with 8 to 12 inch panel width and 24 inch minimum panel height.

F. Drums: Minimum width 18 inches. Minimum height 36 inches.

G. Barricades: Minimum rail length 2 feet for Type I or Type II barricades. Minimum rail length 4 feet for Type III barricades. Minimum height of top rail for Type I and Type II equals 3 feet and minimum height to top rail of a Type III is 5 feet.

2.04 MISCELLANEOUS PRODUCTS

A. Orange Mesh Safety Fence: Comply with Iowa DOT Article 4188.03.

B. Temporary Barrier Rail: Unless otherwise specified, use precast concrete units. Comply with Iowa DOT Standard Road Plan BA-401.

2.05 EQUIPMENT

A. Warning Lights:

1. For nighttime installation, provide Type A warning lights visible to both directions of traffic.

2. For 24 hour installations, provide Type B warning lights.

B. Arrow Boards: When required, provide Type A, B, or C arrow boards operating in sequential chevron mode.

C. Portable Dynamic Message Signs: Comply with Iowa DOT Article 4188.07.

D. Pilot Cars: Pickup trucks or automobiles with G20-4 signs reading: PILOT CAR - FOLLOW ME. Mount two signs on each vehicle, visible from both directions of traffic. Mount signs with bottom of signs at least 1 foot above the top of the vehicle’s roof.

E. Vehicle Warning Lights: Supply amber, high-intensity rotating, flashing, oscillating, or strobe light.

2.06 FLAGGERS

A. General: Comply with the current Iowa DOT Flagger’s Handbook for flagger operations, equipment, and apparel.

B. Lighting: Provide auxiliary lighting at flagger stations when nighttime flagging is required.

C. Training: For other than short time, emergency, or relief assignment of flaggers, provide flagger training to include the following:

1. Issuing a copy of the current Iowa DOT Flagger’s Handbook to and review by each flagger.

2. Presentation of the current Iowa Professional Flagging Video to each flagger.

3. Issuing a flagger training card to each flagger, to be carried at all times and shown upon request. Include the following information on training card:
   a. Employee name
   b. Date of training
   c. Name of instructor
   d. Expiration date of December 31 of the year following the training date
PART 3 - EXECUTION

3.01 INSTALLATION

A. **General:** Install temporary traffic control devices according to the Section 8030 figures and Part 6 of the MUTCD.

B. **Sign Posts:** For durations more than 3 consecutive calendar days, mount the signs on fixed posts. For durations 3 consecutive calendar days or less, mount the signs on fixed posts or movable skids.

C. **Temporary Barrier Rail:** Place at locations specified in the contract documents. Tie and anchor units as shown on Iowa DOT Standard Road Plan BA-401.

D. **Sandbags:** Use sandbags to anchor all traffic control devices subject to movement by wind. Do not place sandbags on tops of barricades, drums, or vertical panels.

E. **Conflicting Signs:** Cover or remove signs with messages conflicting with temporary traffic control as approved or directed by the Engineer.

F. **Modifications:** Submit proposed traffic control plan modifications to the Engineer for review and approval prior to making changes.

3.02 MAINTENANCE

A. **General:** Promptly repair, replace, reposition, or clean traffic control devices, as needed, or as directed by the Engineer.

B. **Non-working Hours:** At the end of working hours, remove, cover, or turn down traffic control devices intended for working hours only.

3.03 QUALITY CONTROL

A. **Traffic Control Technician:** Maintain a traffic control technician on staff, responsible for the Contractor’s traffic control quality control program, that has attended and passed the exam in one of the following classes:

1. ATSSA Traffic Control Technician
2. IMSA Work Zone Traffic Control
3. Minnesota DOT Traffic Control Supervisor
4. Texas Engineering Extension Service Work Zone Traffic Control

B. **Monitoring and Documentation:** Provide 24 hour mobile phone number for the traffic control technician. On a daily basis, perform the following quality control work associated with monitoring and documenting traffic control conditions.

1. Review all traffic control operations for compliance with the contract documents.
2. Monitor traffic operations and submit proposed traffic control plan changes to the Engineer for approval.
3. Coordinate all changes to the traffic control plan.
4. Coordinate all traffic control operations, including those of subcontractors and suppliers.
3.03 QUALITY CONTROL (Continued)

5. Maintain a traffic control diary to be submitted at the end of the project or as requested by the Engineer, with the following information:
   a. Listing and locating traffic control used each day, referenced to appropriate plan sheet or standard.
   b. All reviews of traffic control devices and operations, whether satisfactory or unsatisfactory, and corrections made.
   c. Approved changes to traffic control specified in the contract documents.
   d. Incidental affecting the efficiency and safety of traffic.
   e. A list of trained flaggers used.

END OF SECTION
### General Information

- **Temporary Traffic Control**

  - **Flagger**: Facing left
  - **Sign (shown oscillating, or strobe rotating, flashing)**
  - **Vehicle Warning Light** (amber, high-intensity flaring, oscillating, or strobe light)

### Advance Warning Area

- Tells traffic what to expect ahead

### Transition Area

- Moves traffic out of its normal path

### Activity Area

- Is where work takes place

- **Buffer Space (lateral)**: Provides protection for traffic and workers

- **Traffic Space (longitudinal)**: Allows traffic to pass through the activity area

- **Work Space (longitudinal)**: Set aside for workers, equipment, and material storage

### Shoulder Taper

- Normal operations let traffic resume

### Termination Area

- Taper downstream

### Key

- **Arrow Board**
- **Safety Fence**
- **Sign (shown facing left)**
- **Shadow Vehicle**
- **Channelizing Device**
- **Type III Barricade**
- **Direction of Traffic**
- **Work Space**
- **Work Vehicle**
- **Pedestrian Channelizing Device**

### Distance Between Signs

<table>
<thead>
<tr>
<th>Speed Limit (mph)</th>
<th>A</th>
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<tbody>
<tr>
<td>20-25</td>
<td>100</td>
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<tr>
<td>30-40</td>
<td>250</td>
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<tr>
<td>45-50</td>
<td>350</td>
</tr>
<tr>
<td>55</td>
<td>500</td>
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</table>

### Channelizing Device Spacing

<table>
<thead>
<tr>
<th>Speed Limit (mph)</th>
<th>Taper (ft)</th>
<th>Buffer (ft)</th>
<th>Work Space (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>20</td>
<td>40</td>
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<tr>
<td>55</td>
<td>55</td>
<td>110</td>
<td>110</td>
</tr>
</tbody>
</table>

### Merging Taper Lengths for Lane Closure

<table>
<thead>
<tr>
<th>Speed Limit (mph)</th>
<th>Taper Length (L)</th>
<th>Number of Devices</th>
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</thead>
<tbody>
<tr>
<td>20</td>
<td>80</td>
<td>5</td>
</tr>
<tr>
<td>25</td>
<td>125</td>
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<tr>
<td>45</td>
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</tr>
<tr>
<td>50</td>
<td>660</td>
<td>13</td>
</tr>
</tbody>
</table>

### Notes

- **Values shown are for a 12 foot shift. Table does not apply to one-lane, two-way (flagger) tapers**

- It may be necessary to combine two or more examples to adequately address the traffic control needed.

- Utilize vehicle warning lights (amber, high-intensity flaring, oscillating, or strobe light) on all shadow and work vehicles.

- Vehicle hazard lights may be used to supplement warning lights. Do not use hazard lights alone.

- Flags may be used to call attention to the advanced warning signs.

- If a closure extends overnight, utilize channelizing devices with retroreflective sheeting.

- Speed limit refers to the legally established and signed speed limit.

- If an arrow board is used on 2-lane roads, operate only in the caution mode.

- Adjust the position of warning signs and channelizing devices for available sight distance.

- Do not install temporary traffic control devices until work is ready to begin, and remove or cover all signs and devices promptly when they are not needed.

- The END WORK (G20-2) signs shown on all figures are optional.
Use only on minor, low speed (≤ 40 mph) streets. Provide a lane closure for higher speed traffic conditions.

Maintain a minimum lane width of 10 feet as measured to the rear face of channelizing devices. For short-term use on low speed, low volume roads without wider heavy commercial vehicles, a minimum lane width of 9 feet may be used.

Where the opposite shoulder is suitable for carrying vehicular traffic, lanes may be shifted by using closely spaced channelizing devices provided the resulting lane widths are at least 10 feet wide.

Additional advanced warning may be appropriate, such as a ROAD NARROWS sign.

For short-term work, the taper and channelizing devices may be omitted if a shadow vehicle with activated vehicle warning lights is used.

Refer to Figure 8030.101 for symbol key and sign spacing.
Maintain a minimum lane width on either side of the center work space of 10 feet as measured from the near edge of channelizing devices to the edge of pavement, paved shoulder, or face of curb.

A lane width of 9 feet may be used for short-term stationary work on low speed (< 40 mph), low volume roads when motor vehicle traffic does not include longer and wider heavy commercial vehicles.

A work vehicle displaying vehicle warning lights may be used instead of the channelizing devices forming the tapers.

Refer to Figure 8030.101 for symbol key and sign spacing.
Traffic on Coming

50' to 100'

Alternate 1

Use of Alternate 1 is restricted to low-speed roadways with good sight distance (paved or unpaved) during daylight hours.

Traffic may be self-regulating when the work space is short and drivers can see the roadway beyond.

Use one or two flaggers when motor vehicle traffic cannot effectively self-regulate.

Refer to Figure 8030.101 for symbol key and sign spacing.

Alternate 2

Use of Alternate 2 is restricted to roadways where average daily traffic is fewer than 400 vehicles and good sight distance exists.

Do not use within 2,500 feet of a similar work site.

May be used for overnight closures. During non-working hours remove materials, equipment, or stockpiled waste and fill or cover excavations.
Use is restricted to roadways where average daily traffic is fewer than 2,000 vehicles per day and good sight distance exists. Use during daylight hours only.

Do not park vehicles or equipment on opposite side of work area.

A work vehicle displaying vehicle warning lights may be substituted for the Type III barricade.

Refer to Figure 8030.101 for symbol key and sign spacing.

Flagger Notes:
Allow traffic in the open lane to flow freely.

Stop the first vehicle in the closed lane from the flagger position shown, then move toward the centerline to stop other vehicles.

A second flagger may be required when the flagger's view of approaching traffic in the open lane is less than 1⁄4 mile or the work site is in an area of restricted sight distance (such as a No Passing Zone); and excessive traffic delays and conflicts are encountered.

If second flagger is required, refer to Figure 8030.106.
FIGURE 8030.106

Road Work Ahead

LANE CLOSURE ON TWO-LANE ROAD USING TWO FLAGGERS

An optional BE PREPARED TO STOP sign may be added between the Flagger sign and the ONE LANE ROAD AHEAD sign.

Extend the buffer space as required so the two-way traffic taper is placed before a horizontal curve (or crest vertical curve) to provide adequate sight distance for the flagger and a queue of stopped vehicles.

Refer to Figure 8030.105 for symbol key and sign spacing.

Flagger Notes:

Stop the first vehicle in the closed lane from the flagger position shown, then move toward the centerline to stop other vehicles.

Provide lighting to mark flagger stations at night.

A single flagger may be used for low volume situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions. Refer to Figure 8030.105.

Refer to Figure 8030.107 for work in vicinity of a street-rail crossing.
Coordinate with railroad company early, before work starts.

When roadway work activities come within or near railroad grade crossing, take extra care to eliminate the possibility of lane restrictions, flagging, or other operations where vehicles might be stopped within the grade crossing, which is defined as 15 feet from the closest rail.

Extend the buffer space of the activity area upstream of the grade crossing (as depicted in the figure) as a vehicle backup by the flagging operation will not extend across the grade crossing.

Refer to Figure 8030.101 for symbol key and sign spacing.

Flagger Notes:

The railroad company may require railroad-supplied flaggers.
May be used for short-term daylight operations in urban areas on 3-lane street. Nighttime operations require additional traffic control and retroreflective sheeting.

Cones may be used as channelizing devices during daylight hours.

Flaggers and additional traffic control devices may be required for higher traffic volumes or commercial areas.

Refer to Figure 8030.101 for symbol key and sign spacing.
May be used for short-term daylight operations in urban areas on 3-lane or 5-lane streets. Nighttime operations require additional traffic control and retroreflective sheeting.

Cones may be used as channelizing devices during daylight hours.

Flaggers and additional traffic control devices may be required for higher traffic volumes or commercial areas.

Refer to Figure 8030.101 for symbol key and sign spacing.
For low speed, low volume, urban streets the LEFT/RIGHT LANE CLOSED AHEAD sign may be omitted.

Refer to Figure 8030.101 for symbol key and sign spacing.
Place arrow board within the closed lane behind the channelizing devices and as close to the beginning of the taper as practical, while keeping it on the paved surface.

If the work area extends across the crosswalk, the crosswalk should be closed using appropriate information and devices.

For traffic signal maintenance, consider using law enforcement and/or a shadow vehicle.

For intersection approaches reduced to a single lane, left-turning movements may be prohibited to maintain capacity for through motor vehicle traffic.

Right lane closure shown; for left lane closure, modify sign messages and arrow board.

Refer to Figure 8030.101 for symbol key and sign spacing.
If the work area extends across the crosswalk, the crosswalk should be closed using appropriate information and devices.

For traffic signal maintenance, consider using law enforcement and/or a shadow vehicle.

Right lane closure shown; for left lane closure, modify sign messages and arrow board.

Refer to Figure 8030.101 for symbol key and sign spacing.
Left lane closure shown; for right lane closure, modify sign messages and channelizing devices.

For intersection approaches reduced to a single lane, left turn movements may be prohibited to maintain capacity for through motor vehicle traffic.

Prohibit left turn movements if sight distance from the through lane is restricted for left turning vehicles.

If work area extends across the crosswalk, the crosswalk should be closed using appropriate information and devices.

Refer to Figure 8030.101 for symbol key and sign spacing.
Maintain a minimum lane width of 10 feet as measured to the near face of channelizing devices. For short-term use on low speed, low volume roads without wider heavy-commercial vehicles, a minimum lane width of 9 feet may be used.

Left turns may be prohibited as required by geometric and traffic conditions.

For short-duration work, the channelizing devices may be eliminated if a vehicle displaying vehicle warning lights is positioned in the work space. Arrow signs (W1-6) may be used to replace the KEEP RIGHT signs.

Refer to Figure 8030.101 for symbol key and sign spacing.
Use for pavement marking and surface maintenance operations in daylight hours only.

Place vehicle-mounted signs at an elevation so they are not obscured by equipment or materials and are fully visible to approaching traffic.

Cover or turn sign legends from view when work is not in progress.

Refer to Figure 8030.101 for symbol key and sign spacing.

If an arrow board is used, operate in the caution mode.

Use sign shape and legend appropriate to the type of work. Examples include:

- CRACK SEALING
- FRESH OIL
- WET PAINT

Examples include:

- SEALING
- CRACK
- OIL
- FRESH
- PAINT
- WET
When distance "A" is less than 500 feet, place the barricade with the ROAD CLOSED TO THRU TRAFFIC sign in the middle of the traffic lane approaching the work area. The barricade may be omitted if the distance to the work area is less than 250 feet.

Maintain safety fence closures to prevent unauthorized vehicles from passing through.

Place staggered Type III barricades in the roadway after the last public road intersection prior to the closure.

If local traffic is allowed to pass a Type III barricade, retroreflective sheeting is required on both sides of the barricade.

Refer to Figure 8030.101 for symbol key and sign spacing.
Use when crosswalks, sidewalks, or other pedestrian facilities are closed or relocated. Ensure temporary facilities are detectable and include accessibility features consistent with the features present in the existing pedestrian facility.

Signs such as KEEP RIGHT (LEFT) may be placed to guide or direct pedestrians.

Provide continuous barriers or fencing complying with the requirements of PROWAG to secure work areas from pedestrians.

When required in the contract documents, provide auxiliary lighting or audible information devices to assist pedestrians with visual disabilities.

Only the temporary traffic control devices related to pedestrians are shown. Other devices related to control of vehicular traffic may be necessary.

Refer to Figure 8030.101 for symbol key and sign spacing.
Use when crosswalks, sidewalks, or other pedestrian facilities are closed or relocated. Ensure temporary facilities are detectable and include accessibility features consistent with the features present in the existing pedestrian facility.

Provide continuous barriers or fencing complying with the requirements of PROWAG to secure work areas from pedestrians.

Where pedestrians are diverted onto high-speed roadways, provide a temporary traffic barrier and, if specified in the contract documents, a crash cushion, to separate the temporary sidewalk from vehicular traffic.

When required in the contract documents, provide auxiliary lighting or audiol information devices to assist pedestrians with visual disabilities.

Only the temporary traffic control devices related to pedestrians are shown. Other devices related to control of vehicular traffic may be necessary.

Refer to Figure 8030.101 for symbol key and sign spacing.

Use ADA Compliant Channelizing Device

Use temporary circulation path

Use temporary curb ramp

Provide 48" min.

Use when crosswalks, sidewalks, or other pedestrian facilities are closed or relocated. Ensure temporary facilities are detectable and include accessibility features consistent with the features present in the existing pedestrian facility.

Provide continuous barriers or fencing complying with the requirements of PROWAG to secure work areas from pedestrians.

Where pedestrians are diverted onto high-speed roadways, provide a temporary traffic barrier and, if specified in the contract documents, a crash cushion, to separate the temporary sidewalk from vehicular traffic.

When required in the contract documents, provide auxiliary lighting or audible information devices to assist pedestrians with visual disabilities.

Only the temporary traffic control devices related to pedestrians are shown. Other devices related to control of vehicular traffic may be necessary.

Refer to Figure 8030.101 for symbol key and sign spacing.
Use when work activities close crosswalk or reduce width to less than 4 feet. Ensure temporary facilities are detectable and include accessibility features consistent with the features present in the existing pedestrian facility.

When required in the contract documents, provide auxiliary lighting or audible information devices to assist pedestrians with visual disabilities.

Refer to Figure 8030.101 for symbol key and sign spacing.