

5.20 CONSTRUCTION WORK ZONE TRAFFIC CONTROL

5.21 TRAFFIC CONTROL SPECIFICATION REFERENCES

Contract documents include references to traffic control requirements in many locations. Project plans contain references to traffic control requirements in the traffic control plan tabulation usually found on estimate of quantities sheet. Plans may also contain project specific traffic control and/or staging details. An extensive list of information sources regarding traffic control is found in [Appendix 5-8](#).

~~Effective with the October 2006 letting, traffic control related Standard Road Plans are now included in the TC Series, where previously they had been included in the RS Series. A reference sheet to relate the new TC Standard Road Plans to their old RS equivalent can be found in Appendix 5-11.~~

Traffic control requirements may also be found in the specifications for specific construction activity.

~~ATSSA Quality Standards for Work Zone Devices~~

ATSSA Quality Guidelines for Temporary Traffic Control Devices and Features

The American Traffic Safety Services Association (ATSSA) ~~"Quality Standards for Work Zone Traffic Control Devices"~~ **"Quality Guidelines for Temporary Traffic Control Devices and Features"** is intended to be used by field personnel to help them inspect the work zones. The guide is a defacto national industry standard to determine an acceptable quality level for a typical work zone traffic control device. The guide includes examples of acceptable, marginal, and unacceptable work zone traffic control devices. It is intended to further define the language in the Manual on Uniform Traffic Control Devices which requires that "devices used are clearly visible, clean, and in good repair."

The current edition of this document is the 2008-09 editions. The updated edition also contains information regarding abbreviations used on traffic control devices, crash cushions, high visibility work zone apparel, quality guidelines for temporary concrete barriers and nighttime visibility.

To order additional copies of the ~~"Quality Standards for Work Zone Traffic Control Devices,"~~ **"Quality Guidelines for Temporary Traffic Control Devices and Features"**, contact the American Traffic Safety Services Association at ~~800-272-8772~~ **540-368-1701** or on the web at: <http://www.atssa.com/cs/roadway-safety-store>.

5.22 TRAFFIC CONTROL EVALUATION AND CHANGES

Specification 2528.11 states that traffic control changes cannot be made without concurrence by the RCE Office. Field flexibility is often necessary due to situations that do not fit standard traffic control layouts such as hilly terrain, overhead power lines or side roads and entrances that may impact the location of temporary traffic control signs and devices. Presence of unusual traffic generators or high turning movements at a specific location may also require traffic control adjustments.

In order to minimize the potential for traffic control changes, evaluate construction work zones prior to installation of traffic control signing, and again when operational, to look for any problem situations prior to the preconstruction conference will allow traffic control detail changes to be made before public traffic is impacted. During construction operations, traffic control evaluations

should be held during work hours, on weekends, and also at night. Presence of skid marks is a good indication of a problem area.

Oftentimes, it is difficult to determine appropriate traffic control improvements to respond to traffic handling problems on projects. [Appendix 5-9](#) discusses possible traffic control problems and potential solutions to these problems.

The Office of Construction is available to help evaluate traffic control changes in conjunction with RCE Office staff to ensure uniformity statewide and to help provide a perspective on what has been successful for similar problems in the past.

In order to allow for field uniformity for effective decision making relating to traffic control changes, the following paragraphs can be used to help determine appropriate traffic control changes:

Make **immediate** changes when obvious operational problems exist. For other than obvious operational problems that could be dangerous to motorists or workers, contact the Office of Construction **first** for help in determining appropriate changes.

The following modifications to traffic control details **should not** be made:

- Do **not** reduce the number of traffic control signs
- Do **not** change taper lengths
- Do **not** change the sign word message or symbol
- Do **not** change the sign color combination
- Do **not** reduce sign size or alter sign shape

Field adjustments can be made in the following areas **without** RCE Office notification:

- Individual sign locations may be adjusted up to a maximum of 30 m (100 feet) as long as no two signs, either permanent or temporary, become closer than 30 m (100 feet) apart. Removal, covering, or adjusting of permanent signs in the vicinity of construction work zones should be coordinated with the area maintenance manager (AMM).
- Paired signs may be adjusted a maximum of 30 m (100 feet).
- Taper location, arrow display location, and corresponding lane merge signs may be adjusted up to 150 m (500 feet) further away from the construction work area. This is appropriate with poor advance sight distance due to hills or curves, or when earlier detection of the arrow display is needed.

5.23 CONSTRUCTION WORK ZONE CRASH REPORTING

Prior to the start of construction, the resident construction engineer (RCE) for the Iowa DOT will notify in writing the appropriate Iowa State Patrol Post with a copy to the Iowa State Patrol Communications Office serving that area. This correspondence should identify location, construction dates, and other pertinent construction project data including names and phone numbers of responsible contact persons from the contractor and RCE office in case of crash or other construction work zone problems.

If an Iowa State Patrol officer determines the Iowa DOT needs to make immediate repairs at a construction work zone crash site, the investigating officer will contact the nearest Iowa State Patrol communication base station. They will notify the local maintenance area supervisor who will assess damage to Iowa DOT facilities and take necessary action. The area supervisor will contact the RCE if construction work zone traffic control devices or other items are damaged. The RCE will inform the contractor representative of needed corrective action. When construction

work zone crash site does not require immediate corrective action by DOT or contractor representatives, the investigating officer is to report crash to the RCE within 12 hours.

Investigation Procedure

When a crash occurs within a construction work zone, the RCE will complete Form 181300 "Report of Investigation - Vehicle Accident" (See [Appendix 5-1](#)). Report should include pictures, diagrams, weather conditions, and other pertinent information as appropriate. Attach a copy of any crash report by other agencies (highway patrol, county sheriff, or city police).

For crashes resulting in property damage to Iowa DOT facilities, the RCE should identify repair costs. When public traffic is maintained through a project, the Operations and Finance Division will be responsible for recovering damages from motorists on work that is essentially complete and acceptable. An example is damage to new guardrail on a staged bridge construction. The RCE should identify work status when submitting investigative report. Repair costs and supporting documentation should be submitted on Form 181310 "Memorandum Cost Report." An approved change order can be attached to Form 181310 to document costs in lieu of completing that part of the form.

Forms 181300 and 181310 should be forwarded to the Claims Manager, Operations and Finance Division within seven days of construction work zone crash. A copy of Form 181300 should be sent to the Office of Construction, along with a note on what type of construction activity (i.e. HMA paving, grading, patching, etc.) was occurring at the time of the crash. The RCE office should complete investigation and submit entire file and supporting documents to the Claims Manager as soon as possible.

Crash Notification Procedure

Inspection or contractor staff should report construction work zone crashes to appropriate enforcement authorities (usually Iowa State Patrol for rural Iowa DOT administered projects) and notify appropriate medical responders if needed. Both the inspection supervisory staff and contractor supervisory staff should be notified promptly. Note additional reporting procedures for severe personal injury or fatality crashes.

Reporting of Severe Personal Injury and Fatal Crashes

If a crash results in a severe personal injury or fatality within an Iowa DOT administered construction work zone, immediately notify the Office of Construction.

Additional information to be gathered and forwarded by FAX within one working day to the Office of Construction, Highway Division Director, Office of Media and Marketing, Operations and Finance Division-Claims Manager, and District Construction Engineer includes:

- Project Number
- County
- Route Number
- Direction
- Milepost
- Date of Crash
- Time of Crash
- Contractor
- Traffic Control Required in the Contract Documents
- Approved Traffic Control Modifications
- Brief Description of Facts Surrounding Crash

(Do not include hearsay, assumptions, or unsubstantiated facts.)

A sample format is included in [Appendix 5-5](#).

Incident Reporting by Contractors

The bid item Monitoring With Incident Response, defined in [Specification Article 2528.01](#), requires contractors to report any construction work zone incidents on forms provided by project engineer. A sample form is included in [Appendix 5-2](#).

5.24 STOP SIGNS ON CONSTRUCTION PROJECTS

The Iowa DOT policy on how to handle the placement of stop signs on construction projects follows. Particularly during grading activities, the need arises to frequently move stop signs as intersections are staged to allow access into project corridor. Instructions regarding the placement of stop signs during grading activity are as follows (See [Appendix 5-3](#) for details on stop sign location.):

- Existing stop signs should be left in place until work in that area necessitates removal. If an intersection does not have an existing stop sign, the appropriate area maintenance manager (AMM) should be notified to install a stop sign immediately. All side roads to primary highways must have a stop sign unless the side road is physically closed.
- At the time work progresses to the point that the existing stop sign is no longer in the proper location or in the way of construction activities, the stop sign should be removed by the Iowa DOT Maintenance staff. A temporary stop sign with a minimum size of 750 mm x 750 mm (30 inch x 30 inch) should be furnished through the AMM and placed by the contractor. A temporary stop sign should be mounted approximately 1.5 m (5 feet) high on a 1.2 m (4 feet) Type III barricade furnished by the contractor. See drawing in [Appendix 5-3](#). This sign may be moved as needed to allow construction to proceed, but must be maintained in an effective position at all times traffic is staged through the intersection.
- When work at the intersection is completed to the point where the permanent stop sign can be installed, the Maintenance supervisor should be notified to install the permanent stop sign. This notification should be given on an intersection by intersection basis and not delayed until entire project is completed.

5.25 "ROAD WORK AHEAD" AND "END ROAD WORK" SIGNS

[Specification Article 1107.09B](#) requires contractors to place "Road Work Ahead" (W20-1) and "End Road Work" (G20-2) signs at appropriate ends of highway construction projects. These signs need to be placed at all traffic control zones within a project to identify the start and finish of individual construction work areas. On any mainline roadway where a "Road Work Ahead" sign is placed, the opposite end of the work areas shall have an "End Road Work" sign placed.

[Specification Article 1107.09B](#) requires that all "END ROAD WORK" signs be placed separately 150 m (500 feet) beyond the work area. Separately mounting these signs requires that they be made to the correct dimensions, i.e. 1.5 m x 600 mm (60 inches x 24 inches).

The last paragraph of [Specification Article 2528.02](#) states that the "END ROAD WORK" signs may be eliminated for mobile or short duration (less than 1 hour) temporary traffic control zones. This specification DOES NOT allow the "END ROAD WORK" signs to be eliminated from any other type of temporary traffic control zone.

5.26 NO PASSING ZONES ON CONSTRUCTION PROJECTS

Often it is necessary to place temporary no-passing zones through a traffic control zone. Guidelines to aid in proper use of no-passing zones follow:

- Never shorten an existing no-passing zone for temporary traffic control.
- If existing no-passing zone is lengthened, a black on orange "No Passing Zone" (W14-3) sign should be erected at beginning of no-passing zone and existing black on yellow "No Passing Zone" (W14-3) sign should be removed or covered.
- If temporary no-passing zone falls within existing no-passing zone, no additional signs should be added. Either existing black on yellow "No Passing Zone" sign may remain or be replaced with black on orange "No Passing Zone" sign.
- If no-passing zone ends within 120 m (400 feet) of beginning of existing no-passing zone, then both no-passing zones should be connected to make one continuous no-passing zone. Only one "No Passing Zone" sign should be placed at the beginning of continuous no-passing zone.
- Only one type [(black on orange) or (black on yellow)] of "No Passing Zone" sign should be used or visible to the motorist at any time.

5.27 EQUIPMENT AND MATERIAL STORAGE

When maintaining through traffic on construction projects, equipment and materials stored within the right-of-way during non-working hours should normally be stockpiled as far as possible from the traveled way. **Unattended parked contractor and private vehicles should also be located as far as possible from the traveled way.** Avoid storage areas in the following locations unless protected by temporary concrete barrier rail or metal beam guardrail:

- Within 9 m (30 feet) of traveled way on primary highways
- Within 15 m (50 feet) of traveled way on interstate highways
- On fore slopes
- On outside of sharp horizontal curves

Other storage locations may be approved by the project engineer when it is not practical to satisfy the above criteria. Project engineer should refer to *Standard Road Plans TC-202 or TC-402* and *Specification Article 1107.08* when selecting alternate storage areas.

Storage behind guardrail must provide for partial collapse of rail upon impact. For beam guardrail this is normally a minimum of 1.4 m (4.5 feet) on parallel sections of rail (*Standard Road Plan RE-51 A/B and RE-55A/B*). A minimum of 3.6 m (12 feet) should be allowed behind **low tension** cable guardrail (*Standard Road Plan RE-29C*). **A minimum of 2.4 m (8 feet) should be allowed behind high tension cable guardrail (Standard Road Plan RE-88).**

5.28 CONSTRUCTION WORK ZONE SIGNING DURING WINTER SHUTDOWN

Responsibilities of the resident construction engineer (RCE), district operations manager (DOM), and contractor for highway projects not fully completed by winter shutdown are reviewed below.

Unless contract documents identify signing responsibilities different than stated herein, the following guidelines will apply. Unusual circumstances will be handled on a project specific basis with approval of the Office of Construction.

Uncompleted Projects

This category of projects includes contracts having some carry-over work into the next year or intended by plan to be multi-year contracts.

- Prior to winter shutdown, the RCE and DOM should field review the project to identify access, signing, and safety features needing completion before the contractor suspends work. The RCE and DOM will decide which items are the contractor's responsibilities and what is best accomplished by Iowa DOT Maintenance staff. Cost of traffic control devices furnished by Iowa DOT Maintenance staff can be charged against the project.
- During the winter shutdown period, traffic operation services become the responsibility of the DOM according to [Specification Article 1107.09](#). This includes routine surveillance and sign maintenance.
- The contractor will be reimbursed by change order through the RCE for damage to contractor furnished traffic control devices if working days remain going into the winter shutdown period. The RCE and DOM should make arrangements on how to handle repair of damaged contractor furnished devices. If working days do not remain going into winter shutdown, the contractor will be billed using a credit change order for work that Iowa DOT Maintenance staff are required to do on traffic control devices.
- Snow removal for through traffic and local access, if needed, is the responsibility of the AMM.

Multi-Contract Projects

Some projects are phased so a series of contracts are awarded over several years. The most common examples are separate grading and paving projects. Unless contract documents identify responsibility for traffic signing between completion of one project and start of the next, the DOM is responsible for traffic services. The RCE and DOM should evaluate how to best resolve each specific situation. Options include:

- Maintenance staff installing and maintaining appropriate traffic control devices
- Purchasing or renting traffic control devices from contractor by change order

District construction engineer (DCE) should address special needs in contract documents.

Special Concerns

When temporary traffic signals are involved, the RCE should arrange through the contractor for emergency maintenance services. For routine winter maintenance, no payment will be made to contractor.

On urban projects, the RCE and DOM need to coordinate with the city on who is responsible for access, signing, and safety features.

5.29 FLAGGERS & PILOT CARS

Flagger Bid Item

Many project plans include a bid item for flaggers or pilot cars. This predetermined price item is based on Davis-Bacon wage rates for the flagger labor classification and for pilot cars it also includes the operating cost of the vehicle.

Questions have arisen regarding measurement for these items when the contractor is working split shifts or two shift operations. According to *Specification Article 2528.12*, a flagger or pilot car must work four hours or more per day to be counted as one flagger day and flaggers or pilot cars working more than 16 hours in a calendar day will be counted as two days.

In essence, this means that: flaggers or pilot cars working between 0 to 4.0 hours in a day would count as one half (1/2) day, flaggers or pilot cars working between 4.1 to 12.0 hours in a day would count as one day, flaggers and pilot cars working between 12.1 and 16.0 hours in a day would count as one and one half (1 - 1/2) days, and flaggers and pilot cars working more than 16.0 hours would count as two (2) days.

The following guidelines should be used to determine appropriate number of flagger days:

- If the contractor has entire crew working long extended days, then regardless of the number of hours worked above four hours, one flagger day will be counted for each individual flagger operation. This holds true if the contractor takes an extended lunch break or other breaks due to project traffic control plan requirements, **if the same work crew** returns to work after the break.
- If during a single day, distinctly separate shifts with different work crews are worked, then for the number of hours worked above four hours for each shift, one flagger day will be counted for each individual flagger operation per shift. For this option to qualify, the **entire contractor work force must change**. This should not allow a contractor to collect multiple flagger days by rotating flagger personnel only.

Method of Measurement

If an item for flaggers and pilot cars is included in the bid proposal, days are estimated to determine the low bidder. These bid items often overrun due to contractors using multiple work crews at different locations within the same project.

Specification Article 2528.12 states "The Engineer will count the number of days each flagger (or pilot car) was used." Every flagger and pilot car used as part of a preplanned work operation is to be paid if their usage is required as a part of required traffic control and with project engineer approval. All flaggers used on construction projects should be measured and paid. This includes measuring and paying for flaggers that are also used solely to control the contractor's equipment at side road haul crossings or ramp crossing; in addition to those flaggers used to control the normal public traffic.

The method of measurement is intended to count the flagger or pilot car operation and not a specific person or vehicle. For a typical **TC-214** (Lane Closure with Flaggers and Pilot Car) that crosses a single side road; the count would be as follows for a twelve hour operation:

- 1 flagger for each flagger station at the ends of the mainline lane closure (2 flaggers total)
- 1 flagger for each flagger located on each side of the side road (2 flaggers total)
- 1 Pilot Car

This intent DOES NOT include measuring and paying for the signal operators at temporary signalized equipment crossings (haul roads). The cost of these signal operators are intended to

be included in the lump sum bid price for the temporary traffic signal bid item used at the equipment crossing.

Trained Flaggers

Some confusion exists regarding the required format to be used for the daily documentation for trained flaggers per Specification Article 2528.10. A simple spreadsheet listing the flaggers' names and dates worked that can be included as an appendix to the bound daily diary would be sufficient to fulfill the Department's needs regarding this issue. Use of a spreadsheet would eliminate the need to have flaggers' names specifically included in the daily diary documentation. A sample spreadsheet is shown as [Appendix 5-6](#).

Flaggers trained through a national recognized flagger training program such as the American Traffic Safety Services Association (ATSSA) or the National Safety Council (NSC) are allowed to work in Iowa if they can also document their Iowa specific training per Specification Article 2528.10.

Specification Article 2528.10 requires flaggers to carry a flagger training card. The Iowa AGC has developed a sample training card, but any format can be used as long as the required information is included. Required information consists of the following:

- Employee name
- Date of training
- Name of Instructor
- Expiration date of December 31 of the year following the training date.

Flagger Price Adjustments

Refer to [Construction Manual Section 2.53.F.4](#) for appropriate price adjustments for improper flagging procedures, inappropriate apparel, or use of untrained flaggers.