Supplemental Specification
2017 Standard Specification Book

SECTION 01554

TRAFFIC CONTROL

Delete Section 01554 in its entirety and replace with the following:

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Temporary traffic control requirements, signs, devices, and personnel necessary to control vehicular and pedestrian traffic flow in a safe and efficient manner in construction zones.

B. Work zone traffic control devices, arrow boards, and pilot cars.

1.2 RELATED SECTIONS

A. Section 00555: Prosecution and Progress

B. Section 02845: High Tension Cable Barrier

C. Section 02890: Retroreflective Sheeting

1.3 REFERENCES

A. AASHTO Roadside Design Guide, Current Edition

B. American National Standards Institute (ANSI)

C. Americans with Disabilities Act

D. ATSSA: American Traffic Safety Services Association
Quality Standards for Work Zone Traffic Control Devices

E. Department Flagger Training Handbook

F. Department Guidelines for Crash Cushions and Barrier End Treatments

G. International Safety Equipment Association (ISEA)

H. NCHRP Report 350: Recommended Procedures for the Safety Performance Evaluation of Highway Features

I. Utah Manual on Uniform Traffic Control Devices (Utah MUTCD)

J. MASH 2016: AASHTO Manual for Assessing Safety Hardware published 2016

1.4 DEFINITIONS

A. Peak Hours –Peak hours are 6:30 a.m. to 9:00 a.m. and 3:30 p.m. to 7:00 p.m., Monday through Friday unless otherwise defined by the Engineer or in the Special Provision for Section 00555.

B. TPAR – Temporary Pedestrian Access Route – A temporary detectable pedestrian route that is provided when existing routes are disrupted, closed or relocated and includes accessibility features present in the existing facility.

C. TPRS – Temporary Portable Rumble Strips – An array of three heavy rubber strips that create noise when they are run over and are used to alert drivers to the presence of road construction.

D. Traffic Slow Down – An isolated planned event where traffic on a highway is reduced in speed to provide a gap for work to proceed.
   1. Examples include the crossing of the highway with heavy equipment or the adjustment of traffic control devices.

1.5 SUBMITTALS

A. Traffic control plan for review before beginning work.
   1. Include at least the following:
      a. Traffic control measures for each phase of work in sufficient detail to provide for the safe and efficient movement of traffic, pedestrians, and bicycles during construction.
         1) Describe equipment, devices, and implementation instructions.
      b. Work elements to be accomplished in each phase.
      c. Details for each change to traffic control that is planned for the duration of the project.
      d. Expected duration of each traffic control configuration.
      e. Length of Need (LON) for temporary barriers.
      f. Taper lengths, lane shift widths, device spacing, and sign locations for temporary and existing signs.

g. Removal or masking of traffic control elements that conflict with temporary traffic control measures, such as existing traffic signs, traffic signals, and markings.
h. Worker parking, work vehicle access, and equipment access.
i. Location and hours of use for TPRS.
j. TPAR and devices for pedestrian access.

2. Provide supporting engineering calculations.
3. Provide the seal of a Professional Engineer licensed in the State of Utah on drawings and calculations.

B. Traffic Control Inspection forms weekly for information.
1. Submit on a day and time acceptable to the Engineer.

1.6 REQUIRED MEETING

A. At least the following must attend a meeting before beginning construction at the time and location determined by the Engineer:
1. Contractor's Traffic Control Designer
2. Contractor's Traffic Control Maintainer

1.7 DEVICE CRASHWORTHINESS

A. Crashworthiness requirements.
1. Devices manufactured on or before December 31, 2019 and that meet NCHRP 350 crashworthiness criteria may be used until December 31, 2022.
2. Devices manufactured after December 31, 2019 are required to meet MASH 2016 crashworthiness criteria.

B. Devices in the following FHWA device category are required to meet crashworthiness requirements:
1. Category 1 - cones, barrels and delineators
2. Category 2 - barricades and sign stands
3. Category 3 - barriers, crash cushions and truck mounted attenuators

C. Devices in the following FHWA device category are not required to meet crashworthiness requirements:
1. Category 4 - arrow boards and portable variable message signs

1.8 TRAFFIC CONTROL REQUIREMENTS

A. Meet the following requirements for traffic control and document them in the traffic control plan:

1. Meet the requirements in the TC series Standard Drawings, Utah MUTCD, and the Americans with Disabilities Act.
2. Provide for the safe and efficient movement of traffic.
    a. Address expected delay with the Project Public Involvement Team or the Region Communications Manager if the project does not have a Public Involvement Team.
3. Provide for the safe and efficient movement of pedestrians and cyclists when existing facilities are disrupted, closed or relocated by a work zone.
    a. Provide detectable temporary facilities that include accessibility features consistent with the features present in the existing pedestrian facility
4. Provide concrete barrier, crash cushions and attenuators including:
    a. Protection as required for hazard mitigation for workers. Refer to TC 3 Series Standard Drawings.
    b. Protect all hazards to motorists within the appropriate AASHTO clear zone including bridge parapets, barrier blunt ends, poles, and large equipment. Refer to the Department Guidelines for Crash Cushions and Barrier End Treatments for acceptable devices.
5. Provide temporary pavement markings and pavement marking removal.
6. Incorporate traffic signal timing and detection plans as determined by the Engineer.
7. Incorporate TPRS when there is a change in the width, alignment or number of lanes on freeways or interstates with 2 lanes in a single direction.

1.9 TRAFFIC CONTROL MAINTAINER

A. Provide a traffic control maintainer to install, maintain and remove temporary traffic control devices according to the authorized traffic control plan.

B. Qualifications:
    1. Certified by the Department or by the American Traffic Safety Services Association (ATSSA) as a Traffic Control Technician. A list of certifying agencies is available at http://www.udot.utah.gov/go/standardsreferences

C. Authority
    1. Obtains and uses labor, equipment, and materials necessary to maintain traffic control.
    2. Changes traffic control operations according to the authorized traffic control plan.

D. Responsibilities and Duties

1. Oversee traffic control operations and TPAR devices.
2. Be present and an active participant during the installation, maintenance, and removal of temporary traffic control devices.
3. Implement the authorized traffic control plan.
4. Remain available 24 hours a day, 7 days a week and can be on-site within 30 minutes of notification.
5. Correct deficiencies immediately upon notification from the Engineer.
6. Manage traffic control inspections.
    a. Document inspections on a form acceptable to the Engineer.
        1) Include at least the following:
            a) Assessment of device quality.
            b) Items in compliance with the authorized traffic control plan.
    b. A person with the Department or ATSSA Traffic Control Technician (TCT) certification performs the inspections and signs the documentation.
        1) Persons that have passed TCT certification but do not have the required experience may also perform the inspections and sign documentation.
    c. Inspect at least four times each day with at least one of the inspections conducted during nighttime hours when construction work is occurring:
        1) Before beginning of shift,
        2) At mid-shift,
        3) Half-hour after shift ends, and
        4) At the midpoint of the off-shift period.
    d. Conduct traffic control inspections twice each day when construction is not occurring, but traffic control is present.
        1) Once during daylight hours.
        2) Once during nighttime hours.
        3) At least 8 hours between inspections.
7. Coordinate project traffic control with emergency services and local law enforcement agencies.
8. Monitor traffic queue lengths and adjust advanced warning signs to provide adequate warning of the actual back of queue resulting from construction activities.
9. Adjust the TPRS as necessary to maintain proper alignment, spacing and location.
10. Adjust the TPAR devices as necessary to maintain a detectable route that is consistent with the accessibility present in the existing pedestrian facility.

1.10 PRICE ADJUSTMENTS

A. The Department reduces payment when traffic control is not in compliance with the authorized traffic control plan or when the Contractor fails to meet all requirements cited or referenced in this specification.
   1. The amount per day by which the Contractor's compensation will be reduced is calculated using the daily charge for Calendar Day in the Schedule of Liquidated Damages in Table of Section 00555 or the Contract lump sum bid price for Traffic Control divided by the number of contract days, whichever is greater.

PART 2 PRODUCTS

2.1 PILOT CAR

A. Equip with a retroreflectorized sign.
   1. Refer to Section 02890.
   2. Utah MUTCD sign G20-4.

B. Equip with at least two rotating, oscillating, or strobe lights.
   1. Minimum 4 inch diameter/width and minimum 6 ft mounting height.
   2. Yellow color.

2.2 FLAGGER EQUIPMENT AND CLOTHING

A. Refer to the Department's Flagger Training Handbook.

B. Safety Clothing
   1. Flagger vest and hard hat – Orange, red-orange, or fluorescent version of these colors.
      a. Wear safety apparel meeting the requirements of ANSI/ISEA "American National Standard for High-Visibility Apparel and Headwear" or equivalent revisions and labeled as meeting the current ANSI/ISEA publication year, standard performance for Class 3 risk exposure.
      b. Hard hat with 10 square inches of white or strong yellow-green retroreflective tape placed around the base of the hard hat and visible to traffic from all directions.

2.3 TRAFFIC CONTROL SIGNING AND DEVICES

A. Signs
   1. Comply with Section 02890.
   2. Comply with TC Series Standard Drawings.

3. Comply with SN Series Standard Drawings when using post mounted signs.

B. Channelizing Devices
   1. Comply with TC Series Standard Drawings.
   2. Comply with Section 02890.

C. Precast Concrete Barrier
   1. Comply with TC Series Standards Drawings.
   2. Use an approved construction zone attenuator or permanent style end sections, as listed in Department Guidelines for Crash Cushions & Barrier End Treatments.
      a. Use a construction zone attenuator when approach ends of temporary precast barrier are within the maximum AASHTO clear zone.
         1) Use AASHTO Roadside Design Guide to determine proper clear zone distance requirements
         2) Refer to the CC Series Standard Drawings and manufacturer's recommendations to install crash cushions.

D. Use properly rated truck-mounted attenuator for the pre-construction posted speed limit.
   1. Test Level 2 for speeds 45 mph or less.
   2. Test Level 3 for speeds greater than 45 mph.
   3. Do not use a truck-mounted attenuator (TMA) to protect blunt end for more than 72 hours.

E. Maintain cable barrier and anchor systems during construction.
   1. Protect existing hazards when cable barrier and anchor systems are rendered inoperable by work.
      a. Address barrier length of need for the hazard.
   2. Maintain the required tension in the cable barrier system when the cable is disconnected by installing anchor systems on each end of the disconnect.
      a. Do not cut cable.
   3. Disconnect cable at cable splice or anchor system locations only.
   4. Install approved terminal compatible with existing cable system. Refer to Section 02845.
      a. Tension cable to manufacturer's requirements.

2.4 ARROW BOARD

A. Comply with all standards as specified in the Utah MUTCD, Section 6F.61 Arrow Boards.

B. Refer to the TC Series Standard Drawings and the Utah MUTCD.

2.5 TEMPORARY PORTABLE RUMBLE STRIPS

A. Roadquake 2 Series
Temporary Portable Rumble Strip manufactured by:
Plastic Safety Systems
2444 Baldwin Road
Cleveland, OH 44104
(800) 662-6338

B. Space and locate TPRS as shown in TC Series Standard Drawings.

2.6 TEMPORARY WALKWAY AND RAMPS

A. Refer to TC Series Standard Drawings and the Utah MUTCD

PART 3 EXECUTION

3.1 GENERAL

A. Implement and maintain traffic control according to the authorized traffic control plan.
1. Make changes immediately and notify the Engineer if traffic control changes that deviate from the authorized traffic control plan are required to make the work zone safe for workers or the traveling public.
2. Update the traffic control plan with the changes and resubmit for review.

B. Maintain traffic control as required by the authorized traffic control plan when traffic control is in place and work is not actively occurring, including overnight, weekends and holidays. Inspect according to this Section, Article 1.9.

C. The ATSSA publication Quality Standards for Work Zone Traffic Control Devices identifies different levels of device quality. Meet the acceptable level for all traffic control devices.
1. Wash or replace devices as needed to meet acceptable level.

D. Maintain traffic control devices during and after all snow plowing operations.
   1. Clear snow and ice away from the following:
      a. Traffic control devices to function as intended.
      b. TPAR devices to function as intended.
      c. Contractor provided TPAR features.

3.2 FLAGGING

A. Flaggers must have a current Utah flagging certificate and must present proof of certification upon request by the Department.
   1. Acceptable certifications. Refer to http://www.udot.utah.gov/go/standardsreferences for a list of acceptable courses taught by certified instructors.

3.3 TRAFFIC CONTROL SIGNING AND DEVICES

A. Use pre-construction posted speed limit to compute sign spacing, taper lengths, buffer zones, and construction clear zone.
   1. Use plastic drums or directional barricades for lane closure taper devices for speeds 50 mph and greater.
   2. Refer to the TC Series Standard Drawings for use of cones or tubular markers at night.

B. Use pre-construction posted speed limit during construction to compute the tangent spacing for channelizing devices.

C. Remove all traffic control devices from site of work that are no longer necessary for the authorized traffic control plan.
   1. Relocate traffic control devices from the roadway a distance twice that of the Work Clear Zone if they will be used within 24 hours of the daily work stoppage and are not required for immediate traffic control. Refer to the TC Series Standard Drawings.
      a. Obtain written permission from property owner before storing traffic control devices on private property.
   2. Crashworthy traffic control devices moved with a barrel mover or similar equipment may be relocated to the hard surface shoulder within 1 ft of the outer edge of shoulder if they will be used for traffic control within 48 hours of the daily work stoppage and are not required for immediate traffic control. Refer to TC Series Standard Drawings.
   3. Cover post mounted signs completely with an opaque and durable covering when the signs are not applicable.

3.4 ARROW BOARD

A. May substitute Type C units for Type B units. Refer to the TC Series Standard Drawings.

B. Do not substitute Type B units for Type C units.

C. Remove Arrow Board from the site of work when not needed for the control of traffic within a four-hour period.

3.5 TRAFFIC SIGNALS

A. Use uniformed police officer when construction activities are impacting an operating signalized intersection.

B. Use of flaggers at traffic signals permitted when the signals have been turned to red flash mode or are inoperable.
   1. Control each approach by separate flaggers.
      a. Flaggers can control only two lanes of approach traffic.
         1) Third lane control permitted when left or right turn bays present.

C. The Department will make all changes to traffic signal operations.

3.6 CONSTRUCTION ZONE SPEED LIMIT REQUIREMENTS

A. Obtain approval for regulatory and advisory speed reductions through the Engineer.
   1. Use speed reductions only during impacted times and areas.
   2. Restore pre-construction regulatory speed limit at locations where traffic is not being impacted by work activities.
   3 Refer to http://www.udot.utah.gov/go/standardsreferences for policy information.
   4. Refer to TC Series Standard Drawings.
   5. Use speed reduction only when construction activities impact traffic.
   6. Refer to SN Series Standard Drawings for post mounted sign requirements.

3.7 LIMITATION OF OPERATIONS

A. Traffic Slow Down
   1. Notify and obtain approval from the Department and law enforcement a minimum of 48 hours prior to slow down.
   2. Use a Highway Patrol Trooper, or other law enforcement officer, in a marked vehicle with overhead flashing lights to conduct the slow down.

3. Use the officer in the marked vehicle to slow down one or two lanes.
    a. Use, in any combination either, contractor-supplied vehicles equipped with overhead amber flashing lights or additional officers in marked vehicles at the rate of one vehicle per lane thereafter for all lanes of the highway to affect the traffic slow down.
4. Additional vehicles as described in this article may be used in the traffic slow down to supplement the law enforcement vehicle when required by the officer.
5. The duration of any traffic slow down is not to exceed five minutes or as approved by the Region Traffic Engineer and communicated through the Engineer.

3.8 TEMPORARY PORTABLE RUMBLE STRIPS (TPRS)

A. Clean road surface with broom or blower to remove all gravel, sand, dust, or other debris.

B. Assemble modular pieces into strips that match the width of the travel lane as closely as possible.
    1. Follow manufacturer's recommendations so that pieces are properly interlocked.

C. Place TPRS perpendicular to traffic and centered in lane.
    1. Follow manufacturer's recommendations and TC series standard drawings for installation and product orientation.
    2. Do not glue, nail, or otherwise affix TPRS to the road surface.

D. Place TPRS at the same time as other traffic control devices, prior to work taking place.
    1. Maintain the TPRS in proper condition, alignment, spacing, and location.
        a. Set TPRS perpendicular to the travel lane.
            1) Adjust TPRS when any one rumble strip becomes skewed by a distance of 3 ft or more. Skew distance is the distance parallel to direction of travel between the ends of the strip.
            2) Adjust the TPRS if the parallel distance between the individual rumble strips decreases by 5 ft or more.
            3) Temporary paint marks may be placed to give reference of original locations.
        b. Make adjustments to TPRS as often as necessary during working hours, but at least during each traffic control inspection.
            1) Adjustments to TPRS must be made within 30 minutes of discovery or notification of misalignment.
        c. Remove TPRS during non-working hours.

d. Implement a Traffic Slow Down if necessary to enter the travel lanes to deploy or reset TPRS.

E. Do not use TPRS during snow events, or at temperatures outside of the manufacturer's recommendations.

3.9 LANE CLOSURES

A. Notify the Engineer in advance of every lane closure.
   1. Provide notification:
      a. As soon as it is known that a lane closure is necessary to execute the work, but not less than 72 hours before the closure begins.
      b. As soon as practical when the schedule, location, or need for an upcoming lane closure arises or changes.
         1) Contact the Engineer immediately in person, by email, by phone call, or by text message.
   2. Include at least the following:
      a. The route,
      b. The beginning and ending mileposts or mile markers,
      c. Number of lanes to be closed,
      d. Direction of the closure,
      e. The date and time of the beginning of closure, and
      f. The date and time of the ending of the closure.

B. Coordinate lane closures with the Engineer (or designee) at least 72 hours before each closure to allow for Department entry into the UDOT Traffic Lane Closure system via the UDOT Traffic website

C. Provide real-time confirmation of every lane closure on the state routes listed in Table 1, and subsequent lane reopening, using the UDOT Lane Closure mobile application. (Use an iOS or Android smartphone; download instructions for the mobile application will be provided by UDOT.)
   1. Begin Lane Closure: Confirm lane closure details 30 to 45 minutes before placing the first traffic control device in the travel lane.
      a. Mobile application will generate a confirmation of the upcoming closure 45 minutes before the scheduled start time; the Contractor accepts the confirmation to activate the lane closure, or cancels or reschedules the lane closure as needed.
   2. End Lane Closure: Confirm lane reopening 30 to 45 minutes before removing the last traffic control device in the lane.

a. Mobile application will generate a confirmation 45 minutes before the scheduled expiration of lane closure; the Contractor accepts the confirmation to confirm the scheduled end time, or extends the closure as needed.

3. Call the TOC at (801) 887-3700 and provide information to activate, modify, or delete lane closure in the UDOT Traffic Lane Closure system in the event the mobile application is not working or is unavailable.
   a. Make this call 30 to 45 minutes before placing the first device in the travel lane, and 30 to 45 minutes before reopening the lane.

Table 1

State Routes Requiring Real Time Lane Closure Confirmation
All interstates (I-15, I-70, I-80, I-84, I-215)
US-6 (East of I-15)
SR-30 (I-15 to Logan)
SR-36 (I-80 to Tooele)
SR-67
SR-85
SR-154
SR-201
SR-224
SR-248
US-40
US-89 (Davis, Weber, Cache, Rich and Box Elder Counties)
US-91 (I-15 to Logan)
US-189
US-191 (Moab to I-70)

END OF SECTION