KANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION TO THE
STANDARD SPECIFICATIONS, EDITION 2007

SECTION 805
WORK ZONE TRAFFIC CONTROL AND SAFETY

TYPICAL TRAFFIC CONTROL, 2-LANE HIGHWAY WITH 1 LANE CLOSED, FLAGGER, PILOT CAR
TEMPORARY TRAFFIC SIGNALS OR AUTOMATED FLAGGER ASSISTANCE DEVICE (A.F.A.D)
Provide, erect, and maintain all traffic control devices required by the Contract Documents according to the details
shown on the applicable Standard Plan Sheets TE700, TE702, TE704, TE710, TE712, TE714, TE720, TE728,
TE729, TE730, TE731, TE732, TE733 and/or TE734.

TYPICAL TRAFFIC CONTROL, 4-LANE DIVIDED HIGHWAY WITH 1 LANE CLOSED, CROSSOVER
FROM THE LEFT LANE OR RIGHT LANE
Provide, erect and maintain all traffic control devices required by the Contract Documents according to the details
shown on the applicable Standard Plan Sheets TE700, TE702, TE704, TE710, TE712, TE714, TE722, TE740,
TE742, TE743 and/or TE744.

TYPICAL TRAFFIC CONTROL, MULTI-LANE HIGHWAY WITH 2 LANES CLOSED AND 4-LANE
UNDIVIDED HIGHWAY WITH ONE-HALF OF THE ROADWAY CLOSED
Provide, erect and maintain all traffic control devices required by the Contract Documents according to the details
shown on the applicable Standard Plan Sheets TE700, TE702, TE704, TE710, TE712, TE714, TE722, TE746
and/or TE748.

TYPICAL TRAFFIC CONTROL, 4-LANE HIGHWAY WITH CONSTRUCTION TRAFFIC ACROSS
THE MEDIAN
With the permission of the Engineer, construction equipment may use the median crossovers. Provide, erect and
maintain all traffic control devices required for the median crossovers that complies with the attached sheet and the
applicable Standard Plan Sheets TE700, TE702, TE704, TE710, TE712 and TE714 at no cost to the KDOT.

05-19-09 TE (AA)
Jul-09 Letting
TRAFFIC CONTROL SIGNING FOR CONSTRUCTION
TRAFFIC ACROSS ASPHALT OR CONCRETE MEDIAN
ON FOUR LANE HIGHWAY (WITHOUT SIDE ROAD)

THE CONTRACTOR'S CONSTRUCTION EQUIPMENT
WILL NOT BE ALLOWED TO USE ANY MEDIAN
CROSSOVER WITHIN ONE MILE OF AN
INTERCHANGE. WHEN THE CONTRACTOR'S
CONSTRUCTION EQUIPMENT IS ALLOWED TO USE
A MEDIAN CROSSOVER, IF THE DISTANCE BETWEEN
1475' ACCELERATION ZONE AND THE ADVANCE
SIGNING FOR THE ACTUAL WORK OPERATION IN
PROGRESS IS LESS THAN 1000' (300m), THE NEXT
APPROPRIATE CROSSOVER SHOULD BE USED.

DUE TO EXISTING CONDITIONS, A TYPE 'A' LOW
INTENSITY WARNING LIGHTS MAY BE REQUIRED
ON ANY SIGN OR DEVICE AS DEEMED NECESSARY
BY THE ENGINEER.

IN URBAN AREAS WITH SPEEDS LESS THAN 40 MPH,
THE SIGN SPACING MAY BE REDUCED. THE DESIRED
MINIMUM SPACING IS 200' (60 m).

A CONTRACTOR WORKER MAY BE USED TO DIRECT
ASPHALT TRUCKS AT THE CROSSOVER MEDIAN.

VEHICLES NOT ASSOCIATED WITH
CONSTRUCTION/MAINTENANCE SHALL NOT BE
PERMITTED TO USE THE CROSSOVER MEDIAN.
1. MUTCD COMPLIANCE:
   All temporary traffic control devices and their installation and maintenance shall comply with the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD) for streets and highways which has been adopted by the Secretary of Transportation. Whenever the temporary traffic control standards conflict with the MUTCD, the standards shall govern.

2. DESIGN SPEED:
   Those items delegated to temporary traffic control should be designed and installed using the posted/legal speed of the roadway prior to work starting.

3. CLEAR ZONE:
   All construction equipment (including vehicles), materials, and debris shall be stored out of the clear zone. Where this cannot be achieved, the contractor shall place appropriate signs, object identifiers, and/or barricades as designated by the engineer. Temporary traffic control devices needed for this condition shall be considered subsidiary to other bid items.

4. MINIMUM LANE WIDTHS:
   Lane widths shall be a minimum of 11’ (measured between centerlines of pavement markings) or as shown on the plans, or as directed by the engineer. A lane width less than 11’ may require restricted roadway width signing.

5. FLAGGER:
   A minimum of one flagger shall be stationed within each multi-lane roadway activity area where work is in a closed lane adjacent to traffic and not separated by a concrete safety barrier system.

6. PAVEMENT MARKING:
   When the work will occupy a location more than three days, all conflicting pavement markings shall be removed or masked and all transition tapers, crossovers, and edge lines along channelizing devices shall be marked with solid 4” wide pavement marking.

7. FIRST MODULE OF IBS:
   The first module of each inertial barrier system (IBS) shall have a minimum of 2 sq. ft. of fluorescent orange ASTM Type IV sheeting facing traffic, either a vertical rectangle or diamond shape may be used.

8. PEDESTRIAN / BICYCLE SAFETY:
   Work zone signs shall not inhibit pedestrian and bicycle traffic on sidewalks or other areas designated for pedestrian or bicycle use. Consideration should be made to separate pedestrian and bicycle movements from both work site activity and vehicular traffic. Unless a reasonable safe route that does not involve crossing the roadway can be provided, pedestrians and bicyclists should be appropriately directed with advance signing that encourages them to cross to the opposite side of the roadway. In urban and suburban areas with high vehicular traffic volumes, these signs should be placed at intersections (rather than midblock locations) so that pedestrians and bicyclists are not confronted with midblock work sites that will induce them to attempt skirting the work site or making a midblock crossing.

   When existing pedestrian facilities are disrupted, closed, or relocated, the temporary facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility.

9. CHANGED STOP CONDITIONS:
   Attach two flags and a red type "B" high intensity warning light to any stop sign that creates a new stop condition or moves the stop condition to a new location. Leave flags and lights in place for at least the first 30 days. Install W3-1 (symbolic stop ahead) sign in advance of stop sign if stop sign is not visible for a minimum of distance 'A' (see chart on TE710) or if stop condition is moved to less than distance 'A' from an existing stop ahead sign.

10. LUMP SUM BIDDING:
    When traffic control is bid lump sum, additional devices will be paid for as extra work.
11. NIGHTTIME LIGHTING:
When nighttime work is required, floodlights should be used to illuminate flagger stations, equipment crossings, and other areas where existing lighting is not adequate for the work to be performed safely.

In no case shall floodlights be permitted to create a disabling glare for the driver. The adequacy of the floodlight placement and elimination of potential glare should be checked by driving through the project.

12. NCHRP REPORT 350 CRASHWORTHY REQUIREMENTS:

Any device not addressed by the TE standards may be approved on a case by case basis by the engineer. The device shall be accompanied by and installed according to NCHRP Report 350.

The contractor shall:
1) Provide to the engineer a copy of the manufacturer's self-certification that any category 1 (i.e., plastic conical delineators, tubular markers, drums without attachments) and category 2 (i.e., portable sign stands (with signs), type II and III barricades, and vertical panels) devices used on the project are NCHRP Report 350 compliant.

2) Provide to the engineer a copy of the entire FHWA NCHRP Report 350 acceptance letter (WZ-xxx) for any category 2 device (i.e., portable sign stands (with signs), type II and III barricades, and vertical panels) used on the project. Work Zone FHWA NCHRP Report 350 Acceptance Letters (WZ-xxx) are available on the Internet at: http://safety.fhwa.dot.gov/roadway_dept/road_hardware/listing.cfm?code=workzone

3) Certify that the truck mounted attenuators (TMA's) which are defined as category 3 devices by the FHWA memorandum were purchased prior to October 1, 1998, and include a copy of the entire FHWA acceptance letter stating that the TMA's are NCHRP Report 350 compliant, or if the devices were purchased after October 1, 1998, include a copy of the entire FHWA's acceptance letter stating that the TMA's are NCHRP Report 350 compliant.

All category 1 & 2 devices shall be NCHRP Report 350 compliant. TMA's, purchased prior to October 1, 1998, may be used until the end of their serviceable lives.

13. TYPE "A" LOW INTENSITY WARNING LIGHTS:
A Type "A" low intensity warning light is an L.E.D. bi-directional flashing work zone warning light.

ARROW DISPLAYS

FLASHING ARROW

CAUTION

SEQUENTIAL ARROW

SEQUENTIAL CHEVRON

Arrow display elements shall be capable of a minimum 50 percent dimming from their full-rated lamp voltage. Full lamp voltage should be used during the day and dimmed mode shall be used at night. For shoulder work, roadside work near the shoulder, blocking the shoulder, or for temporary closing one lane on a two-lane, two-way roadway, an arrow panel shall be used only in the caution mode.
NEITHER WORK ACTIVITY NOR STORAGE OF EQUIPMENT, VEHICLES, OR MATERIAL SHOULD OCCUR IN THE BUFFER SPACE. WHEN A PROTECTION VEHICLE IS PLACED IN ADVANCE OF THE WORK SPACE, ONLY THE SPACE UPSTREAM OF THE VEHICLE CONSTITUTES THE BUFFER SPACE.

* POSTED SPEED PRIOR TO WORK STARTING

IF TEMPORARY CONCRETE SAFETY BARRIER SYSTEM IS USED TO SEPARATE APPROACHING TRAFFIC FROM THE WORK SPACE, THE BARRIER SYSTEM SHALL BE CONSIDERED PART OF THE ACTIVITY AREA. A FULL LANE WIDTH SHOULD BE AVAILABLE THROUGHOUT THE LENGTH OF THE BUFFER SPACE. SEE TYPICAL WORK ZONE COMPONENTS.

NOTE:
REFER TO STD. TE702 FOR TAPER "L" FORMULA.
DRUMS AND CONICAL DELINEATORS SHALL HAVE AT LEAST TWO ORANGE AND TWO WHITE 6" TO 8" WIDE RETROREFLECTIVE STRIPES. ADDITIONAL STRIPES MAY BE NON-RETROREFLECTIVE. IF THERE ARE NON-RETROREFLECTIVE SPACES BETWEEN ADJACENT STRIPES, THEY SHALL BE NO MORE THAN 3" WIDE.

ALL RETROREFLECTIVE STRIPES ON DRUMS SHALL BE ASTM TYPE III SHEETING. THE WHITE STRIPES ON CONICAL DELINEATORS SHALL BE ASTM TYPE I] SHEETING. ORANGE STRIPES ON ALL CONICAL DELINEATORS SHALL BE FLUORESCENT ORANGE ASTM TYPE IV SHEETING.

<table>
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<th>ITEM</th>
<th>LOCATION</th>
<th>CROSS-OVERS</th>
<th>SHOVELY DIVERSIONS</th>
<th>TANGENTS</th>
<th>TAPERS</th>
<th>RAMPS</th>
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1. Not allowed on centerline delineation along freeways or expressways.
2. The stripes shall slope downward to the traffic side for channelization.
3. May be used upon the approval of the Engineer.

TRAFFIC CONES MAY BE USED AS CHANNELIZING DEVICES FOR DAYTIME OPERATIONS ONLY. THEY WILL NOT BE PAID FOR SEPARATELY, BUT WILL BE SUBSIDIARY TO OTHER TRAFFIC CONTROL BID ITEMS. THE ENGINEER MAY REQUIRE THAT TRAFFIC CONES BE SUPPLEMENTED BY OTHER TRAFFIC CONTROL DEVICES IN CERTAIN SITUATIONS.
TAPER FORMULAS:

\[ L = WS \text{ for speeds of 45 MPH or more} \]
\[ L = WS^{2/60} \text{ for speeds of 40 MPH or less} \]

WHERE:  
- \( L \) = minimum length of taper in feet
- \( S \) = numerical value of posted speed prior to work starting in MPH
- \( W \) = width of offset in feet

CHANNELIZER PLACEMENT:

(A) The spacing between devices in transition area (taper) should not exceed a distance in feet equal to \(1/2\) the posted speed limit in MPH prior to work starting.

(B) The spacing between devices in the advanced warning area and the activity area should not exceed a distance in feet equal to two times the posted speed limit in MPH prior to work starting.

(C) Channelizing devices shall be placed for optimum visibility, normally at right angles to the traffic flow.

(D) Channelizing devices placed along shoulder edges or in dropoffs shall have a minimum of 24” from the top of the channelizing device to the top of the pavement.

THE ENTIRE AREA OF BARRICADE RAILS, BOTH FRONT AND BACK, SHALL BE ASTM TYPE III SHEETING.

THE STRIPES SHALL SLOPE DOWNWARD TO THE TRAFFIC SIDE FOR CHANNELIZATION.

THE TWO WHITE RETROREFLECTIVE STRIPES SHALL BE ASTM TYPE III SHEETING.
THE DIRECTION INDICATOR BARRICADE SHALL BE USED IN SERIES TO DIRECT THE MOTORIST INTO THE INTENDED LANE OF TRAVEL.

THE ARROW PANEL SHOULD NOT BE VISIBLE TO OPPOSING TRAFFIC.

THE ENTIRE AREA OF VERTICAL PANELS, BOTH FRONT AND BACK, SHALL HAVE ASTM TYPE III SHEETING. THE STRIPES SHALL SLOPE DOWNWARD TO THE TRAFFIC SIDE FOR CHANNELIZATION.
NOTE: SIGNS SHOWN FOR ONE APPROACH TO WORK ZONE.

FIGURE 1: TYPICAL SIGNING FOR ROAD CLOSURE

NOTE: SIGNS SHOWN FOR ONE APPROACH TO WORK ZONE.

FIGURE 2: TYPICAL SIGNING FOR SIDE ROAD OPEN

NOTE: SIGNS SHOWN FOR ONE APPROACH TO WORK ZONE.

FIGURE 3: TYPICAL SIGNING FOR SIDE ROAD CLOSED
NOTES:

1. SIGNS:

   THE R11-4 (ROAD CLOSED TO THRU TRAFFIC OR ROAD CLOSED LOCAL TRAFFIC ONLY) SIGN SHALL BE USED WHEN THE DISTANCE TO THE POINT OF COMPLETE CLOSURE OF THE ROADWAY IS LESS THAN 1 MILE.

   THE R11-3A (ROAD CLOSED # MILES AHEAD LOCAL TRAFFIC ONLY) SIGN SHALL BE USED WHEN THE DISTANCE TO THE POINT OF COMPLETE CLOSURE OF THE ROADWAY IS 1 MILE OR GREATER.

   THE WORDS "BRIDGE OUT" (OR BRIDGE CLOSED) MAY BE SUBSTITUTED FOR THE WORDS "ROAD CLOSED" ON THE R11-3A OR R11-4 SIGN WHERE APPLICABLE.

2. BARRICADE PLACEMENT:

   A) COMPLETE ROAD CLOSURE

      WHEN A ROADWAY IS CLOSED, TYPE III BARRICADES SHALL BE PLACED END-TO-END TO COMPLETELY COVER THE ROADWAY AND SHOULDERS. WHEN ACCESS MUST BE ALLOWED FOR CONSTRUCTION OR OTHER OFFICIAL/GOVERNMENT VEHICLES, TYPE III BARRICADES SHALL BE LONGITUDINALLY STAGGERED FAR ENOUGH APART FROM ONE ANOTHER TO ALLOW SAFE PASSAGE OF VEHICLES AND MAINTAIN THE APPEARANCE OF A CLOSED ROADWAY. TYPE III BARRICADES SHALL BE REALIGNED AND PLACED END-TO-END TO DENY ANY ACCESS WHEN THE CONSTRUCTION ACTIVITY HAS CEASED FOR THE DAY.

   B) ROAD CLOSED - LOCAL TRAFFIC

      AS SHOWN IN FIGURE 4, WHEN LOCAL TRAFFIC MUST BE ALLOWED ACCESS INTO THE WORK ZONE, TYPE III BARRICADES SHALL BE LONGITUDINALLY STAGGERED TO MAINTAIN THE APPEARANCE OF A CLOSED ROADWAY. A SECOND LINE OF END-TO-END TYPE III BARRICADES SHALL BE PLACED JUST BEYOND THE LAST ACCESS POINT IN THE WORK ZONE, TO COMPLETELY CLOSE THE ROADWAY AS DESCRIBED IN NOTE 2-A.

      AS SHOWN IN FIGURE 1 AND FIGURE 3, AT THE POINT WHERE THRU TRAFFIC MUST DETOUR AND LOCAL TRAFFIC CAN PROCEED TO THE LOCATION WHERE THE ROADWAY IS COMpletely CLOSED, THE R11-3A (ROAD CLOSED # MILES AHEAD LOCAL TRAFFIC ONLY) OR R11-4 (ROAD CLOSED LOCAL TRAFFIC ONLY OR ROAD CLOSED TO THRU TRAFFIC) SIGN SHALL BE USED WITH TYPE III BARRICADES (STAGGERED POSITION), PLACED ON THE SHOULDERS OF ROADWAY.
TYPE III BARRICADE WITH LIGHTS

THE ENTIRE AREA OF BARRICADE RAILS, BOTH FRONT AND BACK, SHALL HAVE ASTM TYPE III SHEETING.

THE STRIPES SHALL SLOPE DOWNWARD TO THE SIDE TRAFFIC IS TO PROCEED OR TOWARD THE CENTER OF THE ROADWAY AT ROAD CLOSURES.

APPROVED SIGNS MOUNTED ON TYPE III BARRICADES SHOULD NOT COVER MORE THAN 50% OF THE TOP TWO RAILS OR 33% OF THE TOTAL AREA OF THE THREE RAILS.

WHEN BARRICADES ARE PLACED END-TO-END OR STAGGERED, A TYPE “A” LOW INTENSITY WARNING LIGHT SHALL BE MOUNTED TO THE VERTICAL POST NEAR EACH OUTSIDE CORNER OF THE END BARRICADES.

TYPE “A” LOW INTENSITY WARNING LIGHTS SHALL BE MAINTAINED SO AS TO BE VISIBLE ON A CLEAR NIGHT FROM A DISTANCE OF 3000’.
GENERAL NOTES

1. MAINTENANCE:
   THE CONTRACTOR SHALL MAINTAIN ALL SIGNS AND DEVICES IN AN UPRIGHT POSITION. THE CONTRACTOR SHALL CLEAN OR REPLACE ANY DAMAGED OR ILLEGIBLE SIGN OR DEVICE AS DIRECTED BY THE ENGINEER.

2. EXISTING SIGNS:
   IF EXISTING SIGNS THAT ARE TO REMAIN (WHETHER DENOTED ON THE PLANS OR NOT) INTERFERE WITH CONSTRUCTION WORK, THE CONTRACTOR SHALL REMOVE, STORE, AND RESET THE SIGNS. THIS SHALL BE SUBSIDIARY TO OTHER TRAFFIC CONTROL BID ITEMS. SIGNING DAMAGED BY THE CONTRACTOR SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

3. CONFLICTING SIGNS, SIGNS NOT IN USE, AND TRAFFIC SIGNALS:
   SIGNS AND TRAFFIC SIGNALS THAT ARE IN CONFLICT WITH THE TRAFFIC CONTROL PLAN OR DO NOT APPLY TO THE TRAFFIC OPERATIONS SHALL BE IMMEDIATELY REMOVED, TURNED SO NOT VISIBLE TO TRAFFIC FROM ANY DIRECTION, OR COMPLETELY COVERED WITH ADEQUATE OPAQUE WATERPROOF MATERIAL. TAPE SHALL NOT BE APPLIED TO THE FACE OF THE SIGN.

4. PORTABLE AND POST MOUNTED SIGNS:
   TEMPORARY TRAFFIC CONTROL SIGNS THAT ARE ANTICIPATED TO REMAIN IN PLACE FOR 3 DAYS OR LESS ARE CONSIDERED "PORTABLE." PORTABLE SIGNS SHALL BE MOUNTED ON AN APPROVED SUPPORT AT A MINIMUM HEIGHT OF 12" ABOVE THE TRAVELED WAY. TRAFFIC CONTROL SIGNS IN PLACE FOR OVER 3 DAYS ARE REQUIRED TO BE MOUNTED ON APPROVED POSTS. A MINIMUM OF 42" OF THE APPROVED POST MUST BE BELOW THE GROUND SURFACE WITH ADEQUATE BACKFILL AND COMPACTION. ALL POSTS AT MINIMUM SHALL EXTEND TO THE TOP EDGE OF THE SIGN AND NO GREATER THAN 6" ABOVE THE SIGN.

   WHEN THE SIGN WIDTH IS EQUAL TO OR GREATER THAN 9', THREE OR MORE WOOD POSTS MAY BE USED WITH A MINIMUM OF 4' BETWEEN THE CENTERLINE OF EACH POST. ALL SIGNS LESS THAN 9' IN WIDTH SHALL USE A MAXIMUM OF TWO WOOD POSTS.

   "ROLL-UP" SIGNS MAY BE USED FOR PORTABLE WARNING SIGNS. THEY MUST BE FLUORESCENT ORANGE ASTM TYPE IV SIGNS OF OPAQUE MATERIAL. MESH SIGNS ARE NOT ALLOWED.

5. SHEETING:
   ALL ORANGE SIGNS SHALL HAVE FLUORESCENT ORANGE ASTM TYPE IV SHEETING. ALL OTHER SIGNS SHALL HAVE ASTM TYPE III SHEETING OF STANDARD COLORS.

6. SIGNS INVOLVING SPEEDS:
   THE W3-5 (SPEED REDUCTION) SHOULD BE USED ONLY IF THE ENGINEER DETERMINES THAT A REDUCED SPEED IS REQUIRED ON THE PROJECT.

   THE KM4-20 (WORK ZONE) PLAQUE SHALL BE PLACED ABOVE ALL SPEED LIMIT SIGNS, (R2-1), EXISTING AND TEMPORARY. MOUNT THE WORK ZONE PLAQUES TO THE POST. DO NOT OVERLAP THE R2-1 AND KM4-20 SIGNS.

   FOR SPEEDS OF 30 MPH OR LESS, THE W1-1(TURN) OR W1-3(REVERSE TURN) SHOULD BE USED. FOR SPEEDS OF 35 MPH OR MORE, THE W1-2(CURVE) OR W1-4(REVERSE CURVE) SHOULD BE USED. THE W13-1(MPH) IS TO BE ELIMINATED IF THE ADVISORY SPEED IS WITHIN 5 MPH OF THE SPEED LIMIT.

7. SIGNS CONTROLLING WORK ZONE:
   THE KG20-2(END ROAD WORK) SHOULD BE PLACED 500' FROM THE END OF THE ACTUAL WORK SPACE, NOT NECESSARILY AT THE EXTREME LIMITS OF THE PROJECT. THE KG20-2 SHOULD BE MOUNTED ON TWO POSTS. THE KG20-2 MAY BE MOUNTED ON ONE POST IF IN URBAN AREAS WHERE UTILITIES ARE A PROBLEM AND WIND LOADS ARE NOT AN ISSUE.

   WHERE TWO WORK ZONES ARE LESS THAN 1 MILE APART IN RURAL AREAS OR 1/4 MILE APART IN URBAN AREAS, THE KG20-2(END ROAD WORK) FOR THE FIRST WORK ZONE AND THE W20-1(ROAD WORK) FOR THE SECOND WORK ZONE SHOULD BE ELIMINATED.
8. WARNING LIGHTS ON SIGNS:

TYPE “A” LOW INTENSITY WARNING LIGHTS SHOULD BE USED WITH ALL CONSTRUCTION ACTION WARNING SIGNS AND SHALL NOT BE USED ON SIGNS MOUNTED LESS THAN 5’ HIGH ON TEMPORARY SUPPORTS. ON ALL OTHER CONSTRUCTION WARNING SIGNS, TYPE “A” LOW INTENSITY WARNING LIGHTS ARE TO BE USED AS DIRECTED BY THE ENGINEER.

TYPE “A” LOW INTENSITY WARNING LIGHTS SHALL BE MAINTAINED SO AS TO BE CAPABLE OF BEING VISIBLE ON A CLEAR NIGHT FROM A DISTANCE OF 3000 FT. IF A TYPE “A” LOW INTENSITY WARNING LIGHT HAS A SEPARATE BATTERY CASE, THE BATTERY CASE SHALL BE MOUNTED NO HIGHER THAN 12” ABOVE THE GROUND AND MOUNTED BEHIND THE SIGN POST. A TYPE “A” LOW INTENSITY WARNING LIGHT WHERE THE LENS AND BATTERY ARE ONE UNIT SHALL BE MOUNTED ON THE TEMPORARY SIGN POST NEAREST TO THE TRAVELED WAY. FLAGS SHALL NOT INTERFERE WITH THE VISIBILITY OF THE TYPE “A” LOW INTENSITY WARNING LIGHT.

Two (2) 18” x 18” fluorescent red-orange flags shall be attached (in the position shown) on the W20-2(DETOUR), W1-1(TURN), W1-2(CURVE), W1-3(REVERSE TURN), W1-4(REVERSE CURVE), W3-3(SIGNAL AHEAD), W4-2(LANE REDUCTION), W20-4(ONE LANE ROAD), W20-5(LANE CLOSED), W20-7A(FLAGGER), AND W3-4 (BE PREPARED TO STOP) SIGNS AND ANY OTHER ACTION SIGNS AS SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER. THE FLAGS AND STAFFS ARE TO BE ATTACHED IN SUCH A MANNER THAT THE SIGN WILL NOT BE OBSCURED. THE FLAGS MAY BE EITHER A CLOTH OR VINYL MATERIAL. THE FLAGS SHALL BE SUBSIDIARY TO THE CONSTRUCTION SIGN BID ITEMS.

9. AFAD’S

FLAGGER SHALL BE A PERSON WHO PROVIDES TEMPORARY TRAFFIC CONTROL.

FLAGGER STATIONS SHALL BE LOCATED SUCH THAT APPROACHING ROAD USERS WILL HAVE SUFFICIENT DISTANCE TO STOP AT AN INTENDED STOPPING POINT.

THE FIVE CATEGORIES OF WORK DURATION AND THEIR TIME AT A LOCATION SHALL BE:

A. LONG-TERM STATIONARY IS WORK THAT OCCUPIES A LOCATION FOR MORE THAN 3 DAYS.
B. INTERMEDIATE-TERM STATIONARY IS WORK THAT OCCUPIES A LOCATION MORE THAN ONE DAYLIGHT PERIOD UP TO 3 DAYS, OR NIGHTTIME WORK LASTING LONGER THAN 1 HOUR.
C. SHORT-TERM STATIONARY IS DAYTIME WORK THAT OCCUPIES A LOCATION FOR MORE THAN 1 HOUR WITHIN A SINGLE DAYLIGHT PERIOD.
D. SHORT DURATION IS WORK THAT OCCUPIES A LOCATION UP TO 1 HOUR.
E. MOBILE IS WORK THAT MOVES INTERMITTENTLY OR CONTINUOUSLY.

ONE LANE, TWO-WAY VEHICULAR TRAFFIC FLOW REQUIRES AN ALL-RED INTERVAL OF SUFFICIENT DURATION FOR ROAD USERS TO CLEAR THE PORTION OF THE TEMPORARY TRAFFIC CONTROL ZONE CONTROLLED BY THE TRAFFIC CONTROL SIGNALS. SAFEGUARDS SHALL BE INCORPORATED TO AVOID THE POSSIBILITY OF CONFLICTING SIGNAL INDICATIONS AT EACH END OF THE TEMPORARY TRAFFIC CONTROL ZONE.
SIGN LAYOUT INFORMATION

END ROAD WORK

KC20-2
(BLACK ON ORANGE)

STANDARD SIZE

EXPWY/FREEWAY

6" C
48" x 24"

ADVANCE WARNING SIGN SPACING (IN FEET):

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THE SPACING BETWEEN ANY SIGNS MAY BE ADJUSTED AS APPROVED BY THE ENGINEER IN ORDER TO MAXIMIZE VISIBILITY.

THE SPACING BETWEEN SIGNS SHALL BE NO LESS THAN 100', UNLESS DIRECTED BY THE ENGINEER.

LETTER SIZES FOR BLACK ON ORANGE "DESTINATION" SIGNS

STANDARD SIZE

EXPWY/FREEWAY

6" C
10" D

WORK ZONE

KM4-20
(BLACK ON ORANGE)

STANDARD SIZE

EXPWY/FREEWAY

3" C
6" C
24" x 6"
48" x 12"

COLORS:

LEGEND - BLACK (NON-REFLECTIVE)
BACKGROUND - ORANGE (REFLECTIVE)

UNEVEN LANES

W8-11

COLORS:

LEGEND - BLACK (NON-REFLECTIVE)
BACKGROUND - ORANGE (REFLECTIVE)

THE SIGN IS TO BE INSTALLED FOR CONDITIONS OF HEIGHT DIFFERENTIAL BETWEEN ADJACENT LANES OVER ONE (1) INCH. IT IS TO BE PLACED AT EACH INTERSECTING CROSSROAD, MAJOR TRAFFIC GENERATOR, OR AT APPROXIMATELY ONE-HALF (1/2) MILE INTERVALS. THE SIGNS ARE TO BE REMOVED OR COVERED WHEN NOT APPLICABLE.

NEXT 7 MILES

COLORS:

LEGEND - BLACK (NON-REFLECTIVE)
BACKGROUND - ORANGE (REFLECTIVE)

SHOULDER DROP OFF

W8-9a

COLORS:

LEGEND - BLACK (NON-REFLECTIVE)
BACKGROUND - ORANGE (REFLECTIVE)

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SIGNS
NOTE:
SIGN POSTS, POST ANCHORS, AND POST ANCHOR SLEEVES:

The sign posts, post anchors, and post anchor sleeves shall conform to (1) Hot Rolled Carbon Steel ASTM A-570 Grade 33 or ASTM Structural Quality C 1021 with a Hot-Dipped Galvanizing conforming to AASHTO M-120 with an Inline System followed by a Chromate Conversion and a Cross-Linked Polyurethane Acrylic Exterior Coating or (2) A Galvanized Finish Cold Rolled Carbon Steel ASTM A-446 Grade A with a Galvanizing Conforming to ASTM A 525, Designation G-90.

The sign post shall have 7/16" Dia. holes or 7/16" Dia. Embossed Ring (Die-Cut Knockouts) at 1" Centers on all four sides for the total length of the post. The corner bolts, nuts, and washers shall be bid subsidiary.

All holes shall be drilled or punched and all welds, cuts, burrs, and sharp edges are to be smoothed off before application of finish.

BASIS OF ACCEPTANCE:
Accepting of the steel posts, anchors, sleeves, and fasteners furnished to comply with the above requirements will be based on receipt and approval of a Type D Certification as described in Section 2600 of the Standard Specifications for State Road and Bridge Construction (2007) and visual inspection for condition and dimensional requirements.
NOTE:
ALL SIGN MOUNTING HOLES IN THE WOOD POSTS SHALL BE DRILLED PRIOR TO TREATING.

BREAKAWAY HOLES AND FIELD CUTS SHALL BE TREATED IN ACCORDANCE WITH THE PRESERVATIVE TREATMENT SPECIFICATIONS.

SECTION A-A
SECTION B-B

FRONT ELEVATION

4" X 4" WOOD POST IN SOIL
4" X 6" WOOD POST IN SOIL

3 LB/F U-CHANNEL SETUP

NOTE:

The lap splice is 18" min. and is fastened by four 5/16" dia. galvanized A449 bolts (SAE J429 Grade 5) or galvanized A325 bolts.

Two bolts at both ends of the splice through the holes nearest the ends of the splice.

Spacers will be used over the bolts between the spliced pieces of u-channel. Threaded or unthreaded spacers may be used. Do not substitute pipe or other "things" for the spacers.
KI-104a

COLORS:
- BACKGROUND - BLACK
- BORDER - WHITE
- LEGEND - WHITE
- STRIPES - ORANGE

BORDER WIDTH - 1"
STRIPES WIDTH - 4"
CORNER RADIUS - 3"

LEGEND:
" GIVE " - DUTCH 801 ROMAN SWC - 25 DEGREE SLANT
" 'EM A " - DUTCH 801 ROMAN SWC - 25 DEGREE SLANT
" BRAKE " - DUTCH 801 ROMAN SWC - 10 DEGREE SLANT

KI-105a

DIMENSIONS IN INCHES

LETTER SPACINGS

<table>
<thead>
<tr>
<th>Y</th>
<th>FONT</th>
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KI-104a

KI-105a

GIVE 'EM A BRAKE
FINES DOUBLE
IN WORK ZONES

GROUND MOUNTED SIGNS DETAIL
DETAILS FOR "GIVE 'EM A BRAKE" AND "FINES DOUBLE" SIGNS
NOTE:

THE SIGN BLANK MATERIAL SHALL BE ALUMINUM, WOOD, OR FIBERGLASS REINFORCED PLASTIC.

THE ORANGE PORTION OF THE KI-104a SIGN SHALL BE ASTM TYPE IV SHEETING. THE WHITE PORTION SHALL BE ASTM TYPE III SHEETING.

THE KI-105a SIGN FACE SHALL BE COVERED WITH ASTM TYPE III SHEETING.

THE SIGNS ARE TO BE MOUNTED ON CRASHWORTHY SUPPORTS. BRACING, Guy WIRES AND TIE-DOWNS ARE NOT ALLOWED.

TYPICALLY, THERE ARE TWO SETS OF INFORMATIONAL SIGNS INSTALLED PER PROJECT: ONE FOR EACH DIRECTION OF TRAFFIC.

INSTALL SIGNS A MINIMUM OF 250' IN ADVANCE OF THE ROAD WORK AHEAD SIGN. THE ENGINEER MAY DESIGNATE A MORE APPROPRIATE LOCATION IF CONDITIONS DICTATE.

THE INFORMATIONAL SIGNS ARE NOT TO INTERFERE WITH THE TRAFFIC CONTROL SIGNS FOR THE PROJECT.
HEIGHT AND LATERAL DIMENSIONS FOR GROUND MOUNTED SIGNS (SIGNS LEFT IN PLACE OVER 3 DAYS)

RURAL DISTRICT

1) GROUND-MOUNTED SIGNS SHALL BE MOUNTED AT A MINIMUM HEIGHT OF 5' MEASURED FROM THE BOTTOM OF SIGN TO THE NEAR EDGE OF THE PAVEMENT.

2) LARGE SIGNS HAVING AN AREA EXCEEDING 50 SQUARE FEET INSTALLED ON MULTIPLE BREAKAWAY POSTS SHALL BE MOUNTED A MINIMUM OF 7' ABOVE THE GROUND.

3) THE HEIGHT FROM THE BOTTOM OF THE SECONDARY SIGN MOUNTED BELOW ANOTHER SIGN MAY BE 4' MEASURED FROM THE BOTTOM OF THE SIGN TO THE NEAR EDGE OF THE PAVEMENT. SIGNS SHALL NOT OVERLAP EACH OTHER.

4) SIGN SUPPORTS SHALL BE CRASHWORTHY.

URBAN DISTRICT

1) SIGNS SHALL BE MOUNTED AT A MINIMUM HEIGHT OF 7' MEASURED FROM THE BOTTOM OF SIGN TO THE NEAR EDGE OF THE PAVEMENT.

2) NEITHER PORTABLE NOR PERMANENT SIGN SUPPORTS SHOULD BE LOCATED ON SIDEWALKS OR AREAS DESIGNATED FOR PEDESTRIAN OR BICYCLE TRAFFIC.

3) SIGNS MOUNTED LOWER THAN 7' SHOULD NOT PROJECT MORE THAN 4" INTO PEDESTRIAN FACILITIES.

4) THE HEIGHT FROM BOTTOM OF THE SECONDARY SIGN MOUNTED BELOW ANOTHER SIGN MAY BE 6' MEASURED FROM THE BOTTOM OF SIGN TO THE NEAR EDGE OF THE PAVEMENT. SIGNS SHALL NOT OVERLAP EACH OTHER.

5) LARGE SIGNS HAVING AN AREA EXCEEDING 50 SQUARE FEET INSTALLED ON MULTIPLE BREAKAWAY POSTS SHALL BE MOUNTED A MINIMUM OF 7' ABOVE THE GROUND.

6) SIGN SUPPORTS SHALL BE CRASHWORTHY.

(SEE NOTE 4 FOR "ROLL-UP" SIGNS OPTION)

HEIGHT AND LATERAL DIMENSIONS FOR SIGNS MOUNTED ON SKIDS OR OTHER SUPPORTS ON PAVEMENT
Refer to STD. TE710 for additional information on temporary traffic control signs and sign spacing. Refer to STD. TE702 for information on tapers and channelizing devices. Refer to STD. TE700 for length of buffer space.

Note:

No traffic control is required if the work space is located outside of the clear zone.

For operations of 60 minutes or less, all signs and channelizing devices may be eliminated if a vehicle with high-intensity rotating, flashing, oscillating, or strobe lights is used.

When concrete barrier system is used, portable channelizing devices are not needed along the tangent barrier section. Delineation on the barrier system is still required. See RD622.

*Omit taper if paved shoulder is less than 8' wide.
SHOULDER WORK SPACE

OFF SHOULDER - WITHIN THE CLEAR ZONE

ON SHOULDER

NOTE:

FOR WORK IN THE MEDIAN, INSTALL SIGNS AND CHANNELIZING DEVICES FOR EACH DIRECTION OF TRAFFIC ACCORDING TO THE APPLICABLE TYPICAL DRAWING.

NO TRAFFIC CONTROL IS REQUIRED IF THE WORK SPACE IS LOCATED OUTSIDE OF THE CLEAR ZONE.

FOR OPERATIONS OF 60 MINUTES OR LESS, ALL SIGNS AND CHANNELIZING DEVICES MAY BE ELIMINATED IF A VEHICLE WITH A HIGH-INTENSITY ROTATING, FLASHING, OSCILLATING, OR STROBE LIGHT IS USED.

WHEN CONCRETE BARRIER SYSTEM IS USED, PORTABLE CHANNELIZING DEVICES ARE NOT NEEDED ALONG THE TANGENT BARRIER SECTION. Delineation on the barrier system is still required. See RD22.

ELIMINATE W7-3A IF SHOULDER IS CLOSED FOR LESS THAN 2 MILES.

OMIT TAPER IF PAVED SHOULDER IS LESS THAN 8' WIDE.

X Length To The Nearest Whole Mile

Channelizing Device

AHEAD, 1500 FT. OR 1 MILE

AHEAD, 1000 FT, 1500 FT OR 1/2 MILE
CONFlicting Signs and Signs Not in Use:

* WHEN APPLICABLE, USE TYPE "A" LOW INTENSITY WARNING LIGHTS FOR NIGHTTIME OPERATIONS ONLY OR AS DIRECTED BY ENGINEER.

** THERE SHOULD BE A MINIMUM OF SIX (6) CHANNELIZERS SPACED AT 20' INTERVALS.

CONFLICTING SIGNS AND SIGNS NOT IN USE:

SIGNS THAT ARE IN CONFLICT WITH THE TEMPORARY TRAFFIC CONTROL PLAN OR DO NOT APPLY TO THE TRAFFIC OPERATIONS SHALL BE IMMEDIATELY REMOVED, TURNED SO NOT VISIBLE TO TRAFFIC FROM ANY DIRECTION, OR COMPLETELY COVERED WITH ADEQUATE OPAQUE WATERPROOF MATERIAL. TAPE SHALL NOT BE APPLIED TO THE FACE OF THE SIGN.
CONFLICTING SIGNS AND SIGNS NOT IN USE:

SIGNS THAT ARE IN CONFLICT WITH THE TEMPORARY TRAFFIC CONTROL PLAN OR DO NOT APPLY TO THE TRAFFIC OPERATIONS SHALL BE IMMEDIATELY REMOVED. TURNED SO NOT VISIBLE TO TRAFFIC FROM ANY DIRECTION, OR COMPLETELY COVERED WITH ADEQUATE OPAQUE WATERPROOF MATERIAL. TAPE SHALL NOT BE APPLIED TO THE FACE OF THE SIGN.

TYPICAL TRAFFIC CONTROL - AFAD

RED/YELLOW LENS
AUTOMATED FLÄGGER ASSISTANCE DEVICE
(AFAD)

CONICAL DELINEATORS OR DRUMS ON CENTERLINE BETWEEN R4-1 AND AFAD

TWO-LANE HIGHWAY ONE LANE CLOSED EXCLUDING CONCRETE SHOULDERS EQUAL TO OR GREATER THAN 8'

CONICAL DELINEATORS OR DRUMS ON CENTERLINE BETWEEN R4-1 AND AFAD

* WHEN APPLICABLE, USE TYPE "A" LOW INTENSITY WARNING LIGHTS FOR NIGHTTIME OPERATIONS ONLY OR AS DIRECTED BY ENGINEER.

* * THERE SHOULD BE A MINIMUM OF SIX (6) CHANNELIZERS SPACED AT 20' INTERVALS.

KANSAS DEPARTMENT OF TRANSPORTATION

TWO-LANE HIGHWAY ONE LANE CLOSED.
NOTE:
TRUCKS HAULING MATERIAL TO THE PROJECT ARE REQUIRED TO STOP AT FLAGGER. AFTER STOPPING, UPON APPROVAL OF ENGINEER, TRUCKS MAY BE ALLOWED TO MOVE AROUND FLAGGER.

APPLICATION OF THE DETAIL (TE729) FOR ALL ROADWAYS WITH CONCRETE SHOULDERS EQUAL TO OR GREATER THAN 8' WIDE WITH OR WITHOUT EXISTING RUMBLE STRIPS

* WHEN APPLICABLE, USE TYPE "A" LOW INTENSITY WARNING LIGHTS FOR NIGHTTIME OPERATIONS ONLY OR AS DIRECTED BY ENGINEER.

** THERE SHOULD BE A MINIMUM OF SIX (6) CHANNELIZERS SPACED AT 20' INTERVALS.

CONFLICTING SIGNS AND SIGNS NOT IN USE:
SIGNS THAT ARE IN CONFLICT WITH THE TEMPORARY TRAFFIC CONTROL PLAN OR DO NOT APPLY TO THE TRAFFIC OPERATIONS SHALL BE IMMEDIATELY REMOVED. TURNED SO NOT VISIBLE TO TRAFFIC FROM ANY DIRECTION, OR COMPLETELY COVERED WITH ADEQUATE OPAQUE WATERPROOF MATERIAL. TAPE SHALL NOT BE APPLIED TO THE FACE OF THE SIGN.
CONFLICTING SIGNS AND SIGNS NOT IN USE:
SIGNS THAT ARE IN CONFLICT WITH THE TEMPORARY TRAFFIC CONTROL PLAN OR DO NOT APPLY TO THE TRAFFIC OPERATIONS SHALL BE IMMEDIATELY REMOVED. TURNED SO NOT VISIBLE TO TRAFFIC FROM ANY DIRECTION, OR COMPLETELY COVERED WITH ADEQUATE OPAQUE WATERPROOF MATERIAL. TAPE SHALL NOT BE APPLIED TO THE FACE OF THE SIGN.

* WHEN APPLICABLE, USE TYPE "A" LOW INTENSITY WARNING LIGHTS FOR NIGHTTIME OPERATIONS ONLY OR AS DIRECTED BY ENGINEER.

** THERE SHOULD BE A MINIMUM OF SIX (6) CHANNELIZERS SPACED AT 20' INTERVALS.
TRUCKS HAULING MATERIAL TO THE PROJECT ARE REQUIRED TO STOP AT FLAGGER. AFTER STOPPING, UPON APPROVAL OF ENGINEER, TRUCKS MAY BE ALLOWED TO MOVE AROUND FLAGGER.

APPLY THIS DETAIL (TE730) FOR ALL SHOULDERS (EXCLUDING CONCRETE SHOULDERS EQUAL TO OR GREATER THAN 8')

* WHEN APPLICABLE, USE TYPE "A" LOW INTENSITY WARNING LIGHTS FOR NIGHTTIME OPERATIONS ONLY OR AS DIRECTED BY ENGINEER.

* THERE SHOULD BE A MINIMUM OF SIX (6) CHANNELIZERS SPACED AT 20' INTERVALS.

CONFLICTING SIGNS AND SIGNS NOT IN USE:

SIGNS THAT ARE IN CONFLICT WITH THE TEMPORARY TRAFFIC CONTROL PLAN OR DO NOT APPLY TO THE TRAFFIC OPERATIONS SHALL BE IMMEDIATELY REMOVED, TURNED SO NOT VISIBLE TO TRAFFIC FROM ANY DIRECTION, OR COMPLETELY COVERED WITH ADEQUATE OPAQUE WATERPROOF MATERIAL. TAPE SHALL NOT BE APPLIED TO THE FACE OF THE SIGN.
**WAIT FOR PILOT CAR**

TYPICAL SIGNING FOR A MINOR SIDE ROAD APPROACH TO WORK SPACE

- **CONICAL DELINITATORS OR DRUMS**
  - On Centerline Between R4-1 and Flagger

- **BLADE MOUNT**
  - 6" C 6" C 48" 24" 48" 24" 12" 6" H 48" H 48" H

- **EDGEBLOWERS**
  - 6" C 6" C 48" 24" 48" 24" 12" 6" H 48" H 48" H

- **EDGE TRIMMER**
  - 6" C 6" C 48" 24" 48" 24" 12" 6" H 48" H 48" H

- **NOT REQUIRED ON SUBSTANTIAL MAINTENANCE PROJECTS (1R)**

- **THE KG20-5 (WAIT FOR PILOT CAR) SIGN SHALL BE MOUNTED ON AN APPROVED PORTABLE SUPPORT AND NOT ATTACHED TO THE EXISTING STOP SIGN POST.**

- **THE KG20-5 SIGN SHALL BE PLACED IMMEDIATELY IN FRONT OF THE EXISTING STOP SIGN. A MINIMUM OF 6" BELOW THE BOTTOM OF THE STOP SIGN. THE SIGN SHOULD BE REMOVED OR COVERED WHEN THERE IS NO PILOT CAR.**

**NOTE:**
- PLACE A FLAGGER AT ALL HIGHWAY AND MAJOR COLLECTOR INTERSECTIONS IN THE WORK SPACE. THE NEED FOR A FLAGGER AT A MINOR SIDE ROAD INTERSECTION SHALL BE DETERMINED BY THE ENGINEER. A SINGLE FLAGGER AT EACH INTERSECTION IS SUBSIDIARY TO OTHER ITEMS. IF REQUESTED BY THE ENGINEER, EACH ADDITIONAL FLAGGER WILL BE MEASURED AND PAID FOR EACH HOUR THEY ARE REQUIRED. PLACE A KG20-7A (FLAGGER SYMBOL) SIGN ON EACH SIDE ROAD APPROACH THAT IS CONTROLLED BY A FLAGGER.

**NOTE:**
- EXISTING SIGNS SHALL NOT BE COVERED OR REMOVED BETWEEN FLAGGER STATIONS.

**WHEN APPLICABLE, USE TYPE "A" LOW INTENSITY WARNING LIGHTS FOR NIGHTTIME OPERATIONS ONLY OR AS DIRECTED BY ENGINEER.**

**TYPICAL TRAFFIC CONTROL FLAGGER OR PILOT CAR**

- **TYPICAL WORK SPACE**
  - 500'

- **CONICAL DELINITATORS OR DRUMS**
  - On Centerline Between R4-1 and Flagger

- **WAIT FOR PILOT CAR**
  - 48" BLACK ON ORANGE

**TYPICAL TRAFFIC CONTROL SIGN**

- **WAIT FOR PILOT CAR**
  - 48" 24" 6" 6" 24" 120'

- **90° Z, 90° Z**
  - 48" 48" 48" 48" 48" 48" 48" 48" 48" 48" 48" 48"

- **STOP**
  - 500'
FLAGGER AND PILOT CAR

NOTE:
EXISTING SIGNS SHALL NOT BE COVERED OR REMOVED BETWEEN
FLAGGER STATIONS.

* WHEN APPLICABLE: USE TYPE "A" LOW INTENSITY WARNING LIGHTS
FOR NIGHTTIME OPERATIONS ONLY OR AS DIRECTED BY ENGINEER.

** THERE SHOULD BE A MINIMUM OF SIX (6) CHANNELIZERS SPACED
AT 20' INTERVALS.

△ NOT REQUIRED ON SUBSTANTIAL MAINTENANCE PROJECTS (1R)

△ THE KG20-5 (WAIT FOR PILOT CAR) SIGN SHALL
BE MOUNTED ON AN APPROVED PORTABLE SUPPORT
AND NOT ATTACHED TO THE EXISTING STOP SIGN POST.

THE KG20-5 SIGN SHALL BE PLACED IMMEDIATELY
IN FRONT OF THE EXISTING STOP SIGN. A
MINIMUM OF 6" BELOW THE BOTTOM OF THE
STOP SIGN. THE SIGN SHOULD BE REMOVED
OR COVERED WHEN THERE IS NO PILOT CAR.

NOTE:
PLACE A FLAGGER AT ALL HIGHWAY AND
MAJOR COLLECTOR INTERSECTIONS IN
THE WORK SPACE. THE NEED FOR A
FLAGGER AT A MINOR SIDE ROAD
INTERSECTION SHALL BE DETERMINED
BY THE ENGINEER. A SINGLE FLAGGER AT
EACH INTERSECTION IS SUBSIDIARY TO
OTHER ITEMS. IF REQUESTED BY THE
ENGINEER, EACH ADDITIONAL FLAGGER WILL
BE MEASURED AND PAID FOR EACH HOUR
THEY ARE REQUIRED. PLACE A W20-7A
(FLAGGER SYMBOL) SIGN ON EACH SIDE
ROAD APPROACH THAT IS CONTROLLED BY A
FLAGGER.

TYPICAL SIGNING FOR A MINOR SIDE ROAD
APPROACH TO WORK SPACE
WITHOUT A FLAGGER

KG20-5
BLACK ON ORANGE

WAIT FOR
PILOT CAR

48''x 24''

CONCRETE SHOULDERS EQUAL TO OR GREATER
THAN 8' WITH OR WITHOUT RUMBLE STrips

W20-1

48''x 48''
**NOTE:**

UNI-DIRECTIONAL YELLOW TEMPORARY RAISED PAVEMENT MARKERS (TYPE I) SHALL BE SUBSIDIARY TO OTHER TRAFFIC CONTROL BID ITEMS.

- **SIGNAL BUFFER SPACE**

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NEITHER WORK ACTIVITY NOR STORAGE OF EQUIPMENT, VEHICLES, OR MATERIAL SHOULD OCCUR IN THE BUFFER SPACE. WHEN A PROTECTION VEHICLE IS PLACED IN ADVANCE OF THE WORK SPACE, ONLY THE SPACE UPSTREAM OF THE VEHICLE CONSTITUTES THE BUFFER SPACE.

▲ POSTED SPEED PRIOR TO WORK STARTING

* TWO SETS OF RUMBLE STRIPS SHALL BE PLACED: ONE SET BETWEEN SIGNS W3-3 AND R2-1, AND ONE SET BETWEEN SIGNS W3-4 AND W3-5. MATERIALS, TEMPLATE, HAULING, INSTALLATION AND REMOVAL OF THE RUMBLE STRIPS ARE TO BE BY THE CONTRACTOR. PAYMENT SHALL BE SUBSIDIARY TO THE TEMPORARY TRAFFIC SIGNALS.

TYPICAL RUMBLE STRIP DETAILS

- 11' 100' 11' 100' 11'
- PAVEMENT EDGE
- TRAFFIC FLOW
- CENTERLINE

DETECTOR LOOP
- 24" x 36"
- R10-6

STOP HERE ON RED

NOTE:

9/1/00

SIGNIFICANT CHANGE

- UPDATED WARN. SIGNS, ADDED CHNNL. DEVICES

2-1-05

B.H.

- M4-20 CHANGED TO KM4-20

12-29-05

M.B.

- TEMP. RAISED PAVEMENT MARKER NOTE

8-8-07

A.A.A.
GENERAL NOTES

THE ENGINEER IN CHARGE OF CONSTRUCTION WILL NEED TO APPROVE ALL LOCATIONS FOR TRAFFIC SIGNAL POLES TO BE INSTALLED, FINAL POSITIONS & AIMING OF SIGNAL FACES TO BE DETERMINED IN THE FIELD.

TRAILER MOUNTED PORTABLE TRAFFIC SIGNALS MAY BE SUBSTITUTED FOR SPAN WIRE SIGNALS WITH THE APPROVAL OF THE ENGINEER.

THE TRAFFIC SIGNAL SYSTEM SHALL CONFORM TO AND BE OPERATED ACCORDING TO THE REQUIREMENTS OF THE LATEST M.U.T.C.D. ADOPTED BY THE SECRETARY.

CONTACT LOCAL UTILITY COMPANIES TO ADVISE THEM OF INSTALLATION AND COORDINATE POWER HOOK-UP.

ALL WIRING INSTALLED SHALL CONFORM TO THE NATIONAL ELECTRICAL CODE AND LOCAL ORDINANCES & REQUIREMENTS.

The control equipment shall be designed in such a manner that the normal dwell condition shall be an "All Red" signal display. Upon receipt of a detector actuation from one approach, the signals facing that approach shall cycle to a green indication for a minimum period (Minimum Green). Subsequent detector actuations from the same direction shall result in additional green time being allocated to that movement (Unit Extension). In the event that an actuation exists for the direction of travel not having the right of way, a Maximum Green time setting shall provide a preset time limit for the direction having the right of way.

The control equipment shall provide for two different clearance sequences depending upon both the immediately preceding operation of the system and the required subsequent action.

If the green indication has been displayed to one approach, no vehicle actuation exists on the opposite approach and another actuation occurs during the yellow display to the approach just serviced, the display shall proceed to an all red display for a period of time (Red Revert) to prevent the display of green - yellow - green indications to the motorist.

If the right of way is to be transferred to the opposite approach, an all red indication shall be provided so that opposing traffic does not meet within the one way zone.

Response to a vehicle actuation from either end of the zone shall be immediate if all timings have expired. In the event that all time settings have not expired at the point at which a vehicle actuation occurs, the system shall continue to provide the appropriate clearance interval timings before acting upon an actuation input.

Vehicle actuations received from the detector at the opposite end of the zone from that which last received a green indication shall have preference over additional actuations received from the end which last had the right of way in the event that any clearance interval timings have not expired when the actuation(s) occurs. If all timings have expired, response shall be on a first come, first served basis.

All time settings shall be user adjustable and shall be accomplished from the equipment front panel by way of a keyboard and menu screen format. All applicable portions of the KDOT Standard Specifications for vehicle actuated equipment shall apply except that a standard NEMA conflict monitor shall be acceptable.

Detector loops, or equivalent approved by the Engineer, shall be used for actuation of the signals. On asphalt roadways, the loops may be sewed into the road. Loops of this type shall be 6' by 6' and shall have three turns of wire (see detail). Commercially made loop mats may also be used. On concrete pavement, only the loop mats may be used unless the pavement is to be removed after the loops are no longer in use. Other types of detection may be used if approved prior to installation by the Engineer. The loops shall be centered in the lane of traffic and located 100' behind the stop line. See TE732.

### SIGNAL PHASING AND TIMING

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<th>PHASE</th>
<th>MINIMUM GREEN</th>
<th>MAXIMUM GREEN</th>
<th>YELLOW</th>
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All times in seconds.
Normal Dwell shall be "All Red".
Unit Extension shall be 3.0 seconds.
Red Revert shall be 5.0 seconds.

Detector shall be set to operate in the locking mode.

MICROWAVE DETECTION SYSTEMS FOR TEMPORARY TRAFFIC SIGNALS SHALL NOT BE USED IN URBAN AREAS.

### LOOP DETECTOR DETAIL

Slots in pavement for loops to be cut 5/8" wide with 1" minimum depth. Fill slots with type SS-1H emulsified asphalt (asphalt pavement) or an approved elastic sealant (concrete pavement) to within 1/8" of pavement surface. Other than a "Western Union" type splice or approved connector at their junction, feeder cable and loop wire shall be of continuous run with no splices. The loops and the feeder cable connection shall be twisted 2 turns per foot.

Note: See TE733 for additional information.
Typical Traffic Control

Four-Lane Divided Highway

One Roadway Closed

Crossover From Left Lane

September 1, 2000

B.A.H. TE740

B.H. 2-1-05

A.A.A. M4-20 Changed to KM4-20

12-29-05

Clarified Notes, Updated Warning Signs

Anthony A. Alrobaire

A.A.A.

Sheet 1 of 2

Kansas Department of Transportation

FHWA Approval

Designed

Detailed

QC'd

Traced

App'd

Quantities

Trace CK.

DESIGNED

DETAILED

APP'D

QUANTITIES

TRACE CK.

State Kansas

Project No.

Year

Sheet No.

Total

Sheets

Channelizing Devices.

Refer to STD. TE702 for Information on Tapers and Channelizing Devices.

Refer to STD. TE710 for Additional Information on Temporary Traffic Control Signs and Sign Spacing.

Refer to STD. TE704 for Type III Barricades.

Refer to STD. TE702 for Information on Tapers and Channelizing Devices.

Refer to STD. TE700 for Length of Buffer Space.

**Channelizing Device**

X Length To The Nearest Whole Mile

- Speed To Be Determined By The Engineer

Type "A" Low Intensity Warning Light

Type III Barricades

AHEAD, 1500 FT, OR 1 MILE

AHEAD, 1000 FT, 1500 FT, OR 1/2 MILE

Speed To Be Determined By The Engineer

Type "A" Low Intensity Warning Light
TYPICAL TRAFFIC CONTROL
FOUR-LANE DIVIDED HIGHWAY
ONE ROADWAY CLOSED
CROSSOVER FROM LEFT LANE

THE W6-3 & R4-1 SIGN COMBINATION MAY BE REQUIRED AT ADDITIONAL LOCATIONS ALONG THE PROJECT. THE SPACING BETWEEN THESE LOCATIONS SHALL BE A MAXIMUM OF 1 MILE.

THE W7-3A SIGN SHOULD BE MOUNTED WITH THE W6-3 SIGN AT 2 MILE INCREMENTS ON A PROJECT OF 4 MILES OR LONGER.

* SIGN TO BE ELIMINATED IF CONCRETE SAFETY BARRIER SYSTEM IS USED.

** BARRICADE TO BE ELIMINATED AND SIGN W1-6 TO BE MOUNTED ON SKIDS IF CONCRETE SAFETY BARRIER SYSTEM IS USED.
Typical Traffic Control
Four-Lane Divided Highway

One Roadway Closed

Crossover From Right Lane

Speed To Be Determined By The Engineer
Type "A" Low Intensity Warning Light

Refer to Std. TE710 for additional information on temporary traffic control signs and sign spacing.
Refer to Std. TE704 for type III barricades.
Refer to Std. TE702 for information on tapers and channelizing devices.
Refer to Std. TE700 for length of buffer space.

Anthony A. Alrobaire

Channelizing Device

Refer to Std. TE702 for information on tapers and channelizing devices.

Refer to Std. TE700 for type III barricades.

Length To The Nearest Whole Mile

Road Work

48"x48"

48"x60"

48"x24"

48"x60"

48"x24"

48"x30"

48"x60"

48"x48"
**Typical Traffic Control**

**Four-Lane Divided Highway**

**One Roadway Closed**

**Crossover from Right Lane**

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**THE W6-3 & R4-1 SIGN COMBINATION MAY BE REQUIRED AT ADDITIONAL LOCATIONS ALONG THE PROJECT. THE SPACING BETWEEN THESE LOCATIONS SHALL BE A MAXIMUM OF 1 MILE.**

**THE W7-3A SIGN SHOULD BE MOUNTED WITH THE W6-3 SIGN AT 2 MILE INCREMENTS ON A PROJECT OF 4 MILES OR LONGER.**

- **SIGN TO BE ELIMINATED IF CONCRETE SAFETY BARRIER SYSTEM IS USED**
- **BARRICADE TO BE ELIMINATED AND SIGN W1-6 TO BE MOUNTED ON SKIDS IF CONCRETE SAFETY BARRIER SYSTEM IS USED.**
TUBULAR MARKER - TEMPORARY RAISED PAVEMENT MARKERS (TYPE II)
TWO-LANE, TWO WAY TRAFFIC ON
INTERSTATE ROADS & OTHER FREeways

- Tubular Marker

- Temporary Raised Pavement Marker (Type II)

4” Wide Solid Yellow Lines

© of Travelway

- Tubular Marker

- Temporary Raised Pavement Markers (Type II)

REFER TO STD. TE702 FOR INFORMATION ON CHANNELIZING DEVICES.
TEMPORARY RAISED PAVEMENT MARKERS (TYPE II) & FLEXIBLE RAISED PAVEMENT MARKERS SPACING

- Flexible Raised Pavement Markers

36.1'
3.3'
32.8'
1.65'
29.5'
1.65'
1.65'
1.65'
32.8'
36.1'

% of Travelway
LEFT-SIDE SIGNS SHALL BE OMITTED FOR A FOUR-LANE UNDIVIDED HIGHWAY.

* FOR LEFT LANE CLOSURES USE W4-2L AND YELLOW EDGE LINE ALONG CHANNELIZING DEVICES.

** THE W20-5 (_LANE CLOSED) AND W7-3A (NEXT X MILES) SIGNS SHOULD BE PLACED AT 2 MILE INCREMENTS ON A PROJECT OF 4 MILES OR LONGER.

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** Type III Barricades
- Length To The Nearest Whole Mile
- Channelizing Device
- AHEAD, 1500 FT. OR 1 MILE
- AHEAD, 1000 FT. 1500 FT. OR 1/2 MILE
- RIGHT OR LEFT
- Speed To Be Determined By The Engineer
- Type "A" Low Intensity Warning Light
Refer to Std. TE710 for additional information on temporary traffic control signs and sign spacing.
Refer to Std. TE704 for Type III Barricades.
Refer to Std. TE702 for information on tapers and channelizing devices.
Refer to Std. TE700 for length of buffer space.

* For left lane closures use W4-2L and yellow edge line along channelizing devices.
REFER TO STD. TET01 FOR ADDITIONAL INFORMATION ON TEMPORARY TRAFFIC CONTROL SIGNS AND SIGN SPACING.
REFER TO STD. TET04 FOR TYPE III BARRICADES.
REFER TO STD. TET02 FOR INFORMATION ON TAPERS AND CHANNELIZING DEVICES.
REFER TO STD. TET00 FOR LENGTH OF BUFFER SPACE.

TYPICAL TRAFFIC CONTROL
FOUR-LANE UNDIVIDED HIGHWAY
ONE-HALF ROADWAY CLOSED

WORK SPACE

MATCH LINE A

48"x 48"

48"x 48"

48"x 48"

48"x 48"

500'

4 " WHITE

4 " YELLOW

ARROW DISPLAY

L/2

A/2

200'

MATCH LINE B

48"x 48"

W4-2R

48"x 48"

W4-2L

A/4

W1-4R

W1-4L

C

B

B

B

B/3

B/3

A

L/2

L/2

WORK SPACE

L

BUFFER SPACE

Type III Barricades
- Channelizing Device
- AHEAD, 1500 FT. OR 1 MILE
- AHEAD, 1000 FT. 1500 FT. OR 1/2 MILE
- RIGHT OR LEFT
- Speed To Be Determined By The Engineer
- Type "A" Low Intensity Warning Light

Speed Limit

End Road Work

Do Not Pass

48"x 48"

W13-1

24"x 30"

W20-5

LANE CLOSED

LANE CLOSED

48"x 48"

DO NOT PASS

48"x 48"

END ROAD WORK

48"x 48"

MATCH LINE

SPEED LIMIT

4 " WHITE

4 " YELLOW

48"x 48"

W3-5