Add the following to SECTION 805:

WORK ZONE TRAFFIC CONTROL AND SAFETY

Traffic Control Type: Flagger or Pilot Car
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, TE705, TE710, TE712, TE720, and TE730 or TE731.

Traffic Control Type: Temporary Signals (To control two way traffic on one 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, TE705, TE710, TE712, TE720, TE730 or TE731, TE732, TE733 and TE734.

Traffic Control Type: 4 Lane Highway with Crossover and Head to Head Traffic
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, TE705, TE710, TE712, TE722, TE744, and (TE740 or TE742) or TE748.

Traffic Control Type: 4 Lane Highway with Construction Traffic Using Median Break
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 comply with the attached sheet and the applicable Standard Plan Sheets: TE700, TE702, TE704, TE710, and TE712 at no cost to the KDOT.

5-21-15 TST (KRE)
Jul-15 Letting
The selected crossover should not be within ½ mile of the advanced signing of the work. Contractor's construction equipment will not be allowed to use any median crossover within one mile of an interchange. Vehicles not associated with construction/maintenance shall not be allowed to use the crossover median.

CHANNELIZING DEVICES

ARROW DISPLAY

REFER TO TE 744 FOR ADVANCED WARNING SIGNS.

CHANNELIZING DEVICE

ARROW DISPLAY

TYPE "A" LOW INTENSITY WARNING LIGHT
1) 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.

2) Minimum lane width: 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.

3) Consideration should be made to separate pedestrian and, if needed, 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 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 are not confronted with midblock work sites that will induce them to attempt skirting the work site or making a midblock crossing.

4) 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.

5) When the driving surface open to traffic is milled, is a temporary surface made of loose material, or when directed by the engineer use the W8-15 (Grooved Pavement) or W8-7(Loose Gravel) a "C" distance after the W20-1 (Road Work Ahead) on mainline approaches. Signs may be used with the W8-15p motorcycle plaque as directed by the engineer. Display signs in advance of the condition as long as the condition is present.

6) Alternative temporary rumble strip options may be available. Please contact the Temporary Traffic Control Unit for more information at 785-296-0335 or 785-296-1183.
TYPICAL WORK ZONE COMPONENTS

- When concrete barrier system is used, portable channelizing devices are not needed along the tangent barrier section.

Minimum advance warning sign spacing (in feet):

<table>
<thead>
<tr>
<th>SPEED (MPH)</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>URBAN (40 MPH OR LOWER)</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>URBAN (45 MPH OR HIGHER)</td>
<td>350</td>
<td>350</td>
<td>350</td>
</tr>
<tr>
<td>RURAL (55 MPH OR LOWER)</td>
<td>500</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>RURAL (60 MPH OR HIGHER)</td>
<td>750</td>
<td>750</td>
<td>750</td>
</tr>
<tr>
<td>EXPRESSWAY/FREeway</td>
<td>1000</td>
<td>1500</td>
<td>2640</td>
</tr>
</tbody>
</table>

- Posted speed prior to work starting
  The minimum spacing between signs shall be no less than 100', unless directed by the engineer.
  The spacing between any signs may be increased beyond the minimum values in the table above as approved by the engineer in order to maximize visibility.

Taper Formulas:

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

Where: 
\[ S = \text{Numerical value of posted speed prior to work starting in MPH} \]
\[ W = \text{Width in offset feet} \]

Shifting taper=1/2 \( L \)
Shoulder taper=1/3 \( L \)

Buffer Space

<table>
<thead>
<tr>
<th>SPEED (MPH)</th>
<th>20</th>
<th>25</th>
<th>30</th>
<th>35</th>
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<th>45</th>
<th>50</th>
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<td>425</td>
<td>495</td>
<td>570</td>
<td>645</td>
<td>730</td>
<td>820</td>
</tr>
</tbody>
</table>

- Posted speed prior to work starting
  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.

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 above.
<table>
<thead>
<tr>
<th>ITEM</th>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Crossover</td>
</tr>
<tr>
<td>PORTABLE</td>
<td>Yes</td>
</tr>
<tr>
<td>Drums</td>
<td>Yes</td>
</tr>
<tr>
<td>Conical Delineators</td>
<td>Yes</td>
</tr>
<tr>
<td>Vertical Panels</td>
<td>(2)</td>
</tr>
<tr>
<td>Direction Indicator</td>
<td>NO</td>
</tr>
<tr>
<td>Barricade</td>
<td>NO</td>
</tr>
<tr>
<td>Type 2 Barricade</td>
<td>(2)</td>
</tr>
<tr>
<td>Traffic Cones</td>
<td>NO</td>
</tr>
<tr>
<td>FIXED</td>
<td></td>
</tr>
<tr>
<td>Tubular Markers</td>
<td>(3)</td>
</tr>
<tr>
<td>Vertical Panels</td>
<td>(3)</td>
</tr>
</tbody>
</table>

(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.
(4) Daytime operations only.

For rails less than 36" long, 4" wide stripes may be used. All stripes shall slope downward to the traffic side for channelization.

The stripes shall slope downward to the traffic side for channelization.

**DRUM**

**CONICAL DELINEATOR**

**TYPE 2 BARRICADE**

**VERTICAL PANEL**
DIRECTION INDICATOR BARRICADE
stripes shall slope downward in the direction traffic is to pass.
direction indicator barricade shall be used in series to direct
motorist into the intended lane of travel.

PEDESTRIAN CHANNELIZER
1. Support device shall not project beyond the detection plate
into the pathway.
2. Hand trailing edges and detection plates are optional for
continuous walls.
3. Interconnect pedestrian channelizers to prevent displacement
and to provide continuous guidance through or around work.
4. Alternate pathways shall be firm, stable, and slip resistant.
5. Treat height differentials > 1/2" in the surfaces of alternate
paths with a firm, stable, and slip resistant temporary ramp
having a slope of 12:1 or flatter and having a width equal to
the alternate path.
6. Use alternating orange/white on interconnected devices.
Note: Signs shown for one approach to work zone.

Complete closure Type 3 barricades

Note: Signs shown for one approach to intersection (work zone).

Complete Closure Type 3 barricades

Note: Signs shown for one approach to work zone.

FIGURE 1: TYPICAL SIGNING FOR ROAD CLOSURE (MAINLINE OR SIDE ROAD)

FIGURE 2: TYPICAL SIGNING FOR SIDE ROAD OPEN

FIGURE 3: TYPICAL SIGNING FOR ROAD CLOSURE - LOCAL TRAFFIC ACCESS
ROAD CLOSED GENERAL NOTES

As shown in Figure 1, 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 3 barricades (winged position), placed on the shoulders of roadway.

As shown in Figure 3, when local traffic must be allowed access into the work zone, Type 3 barricades shall be longitudinally staggered to maintain the appearance of a closed roadway. A second line of end-to-end Type 3 barricades shall be placed just beyond the last access point in the work zone, to completely close the roadway.

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.
FIGURE 1: SIDE ROAD OR ENTRANCE CLOSED THROUGH WORK AREA

FIGURE 2: SIDE ROAD OR ENTRANCE OPEN THROUGH WORK AREA

FIGURE 3: LOW VOLUME ENTRANCE CONTRACTED HALF AT A TIME

Note: Consider large vehicles making right turns into and out of entrance and use figure 4 as needed.
FIGURE 4: SIDE ROAD OR ENTRANCE CONSTRUCTED HALF AT A TIME: TWO WAY TRAFFIC REQUIRED

FIGURE 5: SIDE ROAD OPEN THROUGH WORK AREA ON DIVIDED ROADWAY
SIGN LAYOUT INFORMATION

END ROAD WORK
KG20-2

WAIT FOR PILOT CAR
KG20-5

WORK ZONE
KM4-20

NEXT X MILES
W7-3a

Mileage to be determined by the engineer.

GROOVED PAVEMENT
W8-15

LOOSE GRAVEL
W8-7

UNEVEN LANE
W8-11

SHOULDER DROP-OFF
W8-17P (OPTIONAL)

NB US-75 CLOSED FOLLOW DETOUR
SP-01 (SPECIAL SIGN)

US-75 CLOSED NORTH OF TOPEKA FOLLOW DETOUR
SP-02 (SPECIAL SIGN)

ALL CITY NAMES AND STREET NAMES ON SPECIAL SIGNS AND DESTINATION SIGNS MUST HAVE UPPER AND LOWER CASE LETTERS.
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 BREATHABLE 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.
   IN THE CASE OF HITTING ROCK WHEN DRIVING POSTS
   1. SHIFT THE SIGN LOCATION. DO NOT VIOLATE MINIMUM SIGN SPACING.
   2. WITH THE ENGINEER’S APPROVAL, USE ACCEPTABLE ALTERNATIVE SIGN STANDS

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
   W1-6(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
   ¼ 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.
Notes:

Typically, there are two sets of informational signs installed per project: one for each direction of traffic.

Install signs a minimum of 500' 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.
Perforated square steel tube (P.S.S.T.) post setup

Details for 2", 2 1/4", or 2 1/2" sign posts
Place bolts in the same corner along each sign post.
Notes:

Place two bolts at both ends of the splice through the holes nearest the ends of the splice.

Use manufacturer recommended spacers over the bolts between the spliced pieces of U-Channel.

Setup 3 lb/f U-Channel

Source: Department of Transportation

KDOT Graphics Certified 05-28-2015
Notes:

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.

* Omit taper if paved shoulder is less than 8' wide.
OFF SHOULDER- WITHIN THE CLEAR ZONE

ON SHOULDER

Notes:

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.

X Length to the nearest whole mile
■ Channelizing device

Omit taper if paved shoulder is less than 8’ wide.

Eliminate W7-3A if shoulder is closed for less than 2 miles.
One W24-1 may be used per approach where the tangent distance between two reverse curves is less than 600 ft. If used, use in place of the first W1-4 and eliminate the second.
Notes:

Trucks hauling material to the project should STOP at the Flagger. After stopping, upon approval of the Engineer, trucks may be allowed to move around the Flagger.

Place a Flagger at all highway and major collector intersections and at-grade railroad intersections with lights and gates in the work space to control traffic crossing the tracks to the left of the gate arm. The need for a Flagger at minor road intersections shall be determined by the Engineer. Place a W20-7 (Flagger symbol) sign on each side road that is controlled by a Flagger.

Existing signs shall not be covered or removed between Flagger stations.

Temporary rumble strips may be used in lieu of lead in channelizing devices when the roadway is less than or equal to 30' including paved shoulders. When extenuating circumstances exist, the Area Engineer may elect to eliminate both the lead in channelizers and the rumble strips.

* Minimum six (6) channelizers spaced at 20’ intervals.

** Optional rumble strips may be placed: One set between the W20-1 and W20-4, and one set between the R4-1 and W3-4, on each approach.

Channelizing device
- III Ahead, 1500 ft, or 1 mile
- IIII Ahead, 1000 ft, 1500 ft, or 1/2 mile
- ○ Speed to be determined by the Engineer
- Type "A" low intensity warning light
- III Temporary portable rumble strips

USE TE731 FOR FLAGGER OR PILOT CAR ON ROADWAYS WITH CONCRETE SHOULDERS GREATER THAN 8 FT.
USE TE731 FOR FLAGGER OR PILOT CAR ON ROADWAYS WITH CONCRETE SHOULDERS GREATER THAN 8 FT.

FLAGGER AND PILOT CAR

- Lead in channelizing devices on centerline between R4-1 & Flagger

Notes:
- Trucks hauling material to the project should STOP at the Flagger. After stopping, upon approval of the Engineer, trucks may be allowed to move around intersections and at-grade railroad intersections with lights and gates in the work space to control traffic crossing the tracks to the left of the gate arm. The need for a Flagger at minor side road intersections shall be determined by the Engineer. Place a W20-7 (Flagger symbol) sign on each side road that is controlled by a Flagger.
- Existing signs shall not be covered or removed between Flagger stations.
- Temporary rumble strips may be used in lieu of lead in channelizing devices when the roadway is less than or equal to 30' including paved shoulders. When extenuating circumstances exist, the Area Engineer may elect to eliminate both the lead in channelizers and the rumble strips.

Minimum six (6) channelizers spaced at 20' intervals.

**Optional rumble strips may be placed: One set between the W20-1 and W20-4, and one set between the R4-1 and W3-4, on each approach.

**Notes:
- Trucks hauling material to the project should STOP at the Flagger. After stopping, upon approval of the Engineer, trucks may be allowed to move around the Flagger.
- Place a Flagger at all highway and major collector intersections and at-grade railroad intersections with lights and gates in the work space to control traffic crossing the tracks to the left of the gate arm. The need for a Flagger at minor side road intersections shall be
determined by the Engineer. Place a W20-7 (Flagger symbol) sign on each side road that is controlled by a Flagger.
- Existing signs shall not be covered or removed between Flagger stations.
- Temporary rumble strips may be used in lieu of lead in channelizing devices when the roadway is less than or equal to 30' including paved shoulders. When extenuating circumstances exist, the Area Engineer may elect to eliminate both the lead in channelizers and the rumble strips.

- 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.

Typical signing for a minor side road approach to work space

Notes:
- Channelizing device
  - 1500 ft, 1 mile
  - 1000 ft, 1500 ft, or 3/2 mile
  - Speed to be determined by the Engineer
  - Type "A" low intensity warning light
  - Temporary portable rumble strips

Typical signing for highway or major collector approach to work space

Typical signing for a minor side road approach to work space
Notes:

Trucks hauling material to the project should STOP at the Flagger. After stopping, upon approval of the Engineer, trucks may be allowed to move around the Flagger. Place a Flagger at all highway, major collector intersections and at-grade railroad intersections with lights and gates in the work space to control traffic crossing the tracks to the left of the gate arm. The need for a Flagger at minor side road intersections shall be determined by the Engineer. Place a W20-7 (Flagger symbol) sign on each side road that is controlled by a Flagger. Existing signs shall not be covered or removed between Flagger stations. Temporary rumble strips may be used in lieu of lead in channelizing devices when the roadway is less than or equal to 30' including paved shoulders. When extenuating circumstances exist, the Area Engineer may elect to eliminate both the lead in channelizers and the rumble strips.

Minimum six (6) channelizers spaced at 20' intervals.

Typical signing for highway or major collector approach to work space
Minimum six (6) channelizers spaced at 20’ intervals.

Notes:
- Trucks hauling material to the project should STOP at the Flagger. After stopping, upon approval of the Engineer, trucks may be allowed to move around the Flagger.
- Place a Flagger at all highway, major collector intersections and at-grade railroad intersections with lights and gates in the work space to control traffic crossing the tracks to the left of the gate arm. The need for a Flagger at minor side road intersections shall be determined by the Engineer. Place a W20-7 (Flagger symbol) sign on each side road that is controlled by a Flagger.
- Existing signs shall not be covered or removed between Flagger stations.
- Temporary rumble strips may be used in lieu of lead in channelizers when the roadway is less than or equal to 30’ including paved shoulders. When extenuating circumstances exist, the Area Engineer may elect to eliminate both the lead in channelizers and the rumble strips.

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: Refer to TE733 and TE734 for additional temporary traffic signal details.

**SIGNAL BUFFER SPACE**

<table>
<thead>
<tr>
<th>SPEED (MPH)</th>
<th>20</th>
<th>25</th>
<th>30</th>
<th>35</th>
<th>40</th>
<th>45</th>
<th>50</th>
<th>55</th>
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<tbody>
<tr>
<td>LENGTH (FT)</td>
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<td>65</td>
<td>85</td>
<td>100</td>
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<td>130</td>
<td>150</td>
<td>165</td>
<td>165</td>
<td>165</td>
</tr>
</tbody>
</table>

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 W3-4 and R2-1, and one set between signs W3-3 and W3-5. Materials, template, hauling, installation, maintenance and removal of the rumble strips are to be by the contractor. Payment shall be subsidiary to the temporary traffic signals.

- Stop line created using (6) 4" strips of temporary tape
- Stop line created using (6) 4" strips of temporary tape

**TYPICAL ASPHALT RUMBLE STRIP DETAILS**

- Rumble strips = 1 set
- Rumble strips = 1 set

**SECTION A-A**

- D = 12"
GENERAL NOTES

The engineer in charge of construction will need to approve all locations for traffic signals 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.

The traffic signal system shall conform to and be operated according to the requirements of the M.U.T.C.D.

Contact local utility companies to advise them of installation and coordinate power hook-up if needed.

All wiring installed shall conform to the national electrical code and local ordinances & requirements.

The power supply and the operation & maintenance of the signal system shall be the responsibility of the contractor.

Note:
See TE734 for additional information.
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 different clearance sequences, one for each required phase.

If the green indication has been displayed to one approach to the zone, 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 another 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 another approach 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 approaches other than 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 actuation shall apply except that a standard NEMA conflict monitor shall be acceptable.

Signals shall be capable of actuation. On asphalt roadways, detection loops may be sawed into the road. Commercially made loop mats may also be used. Do not cut loops into concrete pavement. Other types of detection may be used if approved prior to installation by the Engineer. Do not use microwave detection systems in urban areas. Detector shall be set to operate in the locking mode.

If used, detection loops shall be 6' by 6' and have three turns of wire (see detail). Center loops in the lane of traffic and locate 100' behind the stop line. Cut slots in pavement for loops %6" wide with 1" minimum depth. Fill slots with asphalt or an approved elastic epoxy sealant (concrete pavement) to within ¼" 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 loop and the feeder cable connection shall be twisted 2 turns per foot.

### SIGNAL PHASING AND TIMING

<table>
<thead>
<tr>
<th>PHASE</th>
<th>MINIMUM GREEN</th>
<th>MAXIMUM GREEN</th>
<th>YELLOW</th>
<th>ALL RED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

All times in seconds.
Normal dwell shall be "all red".
Unit extension shall be 3.0 seconds.
Red revert shall be 5.0 seconds.

### LOOP DETECTOR DETAIL

Note: See TE733 for additional information.
The entire area of object marker shall have ASTM Type III sheeting. The stripes shall slope downward to the traffic side for channelizing.

** ** Black on orange 24" x 30" chevron signs (W1-8) shall be mounted back to back on the outside edge of shoofly curves with a radius of 1000' or less at the spacing shown below. A minimum of 3 chevrons should be installed per curve.

<table>
<thead>
<tr>
<th>Curve radius</th>
<th>Max. spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000' - 800'</td>
<td>100'</td>
</tr>
<tr>
<td>800' - 450'</td>
<td>80'</td>
</tr>
<tr>
<td>LESS THAN 450'</td>
<td>60'</td>
</tr>
</tbody>
</table>

** Suggested chevron spacing

Add these signs in the sign sequence for dual speed drops. Adjust all other signs and pavement marking accordingly.

One W24-1 may be used per approach where the tangent distance between two reverse curves is less than 600 ft. If used, use in place of the first W1-4 and eliminate the second.
**TYPICAL TEMPORARY STRUCTURE END TREATMENT ON SHOOFLY**

The entire area of object marker shall have ASTM Type III sheeting. The stripes shall slope downward to the traffic side for channelizing.

- **Black on orange 24" x 30" chevron signs (W1-8)** shall be mounted back to back on the outside edge of shoofly curves with a radius of 1000' or less at the spacing shown below. A minimum of 3 chevrons should be installed per curve.

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<td>80'</td>
</tr>
<tr>
<td>Less than 450'</td>
<td>60'</td>
</tr>
</tbody>
</table>

- **DUAL SPEED DROP**

- Add these signs in the sign sequence for dual speed drops. Adjust all other signs and pavement marking accordingly.

- One W24-1 may be used per approach where the tangent distance between two reverse curves is less than 600 ft. If used, use in place of the first W1-4 and eliminate the second.

- **Channelizing device**
- **Type 3 barricades**
- **Ahead, 1500 ft, or 1 mile**
- **Speed to be determined by the Engineer**
- **Type "A" low intensity warning light**
Concrete safety barrier system or raised pavement markers (Type II) and tubular markers alongside Type III raised pavement markers.

- Ahead, 1500 ft, or 1 mile
- Ahead, 1000 ft, 1500 ft, or $\frac{1}{2}$ mile
- Speed to be determined by the Engineer
- Type "A" low intensity warning light

Centerline Treatment for two-lane, two-way traffic on normally divided roadways. Tubular markers and temporary raised pavement markers (Type II).

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.
Concrete safety barrier system or raised pavement markers (Type II) and tubular markers.

Centerline Treatment for two-lane, two-way traffic on normally divided roadways. Tubular markers and temporary raised pavement markers (Type II).

Type 3 barricades

X Length to the nearest whole mile
☐ Channelizing device
☐ 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

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.

** Barricades to be eliminated and sign W1-6 to be mounted on skids if concrete safety barrier system is used.
SHIFTING TAPER DETAIL

Add signs and devices as shown for work inside a closed lane that extends near to (or into) the open traffic lane.

- Type 3 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

For left lane closures use W4-2L and yellow edge line along channelizing devices.

The W20-5 (Ø Lane Closed) and W7-3A (Next X Miles) signs should be placed at 2 mile increments on a project of 4 miles or longer.

Left-side signs shall be omitted for a four-lane undivided highway.

One flagger should 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.

*** The double reverse curve (W24-1, W24-1a or W24-1b) may be used if the tangent distance between the two reverse curves is less than 600' (feet). Only one W24-1 is required to be placed at an "A" distance in advance of the shifting taper.
For left lane closures use W4-2L and yellow edge line along channelizing devices.

One flagger should 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.
Type 3 barricades
X Length to the nearest whole mile
■ Channelizing device
□ Ahead, 1500 ft, or 1 mile
□ Ahead, 1000 ft, 1500 ft, or \( \frac{1}{2} \) mile
□ Right or left
□ Speed to be determined by the Engineer
□ Type "A" low intensity warning light

* For speeds greater than 45 mph use freeway / expressway size signs.

One flagger should 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.
### Recapitulation Of Quantities

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Zone Signs (0 To 9.25 Sq. Ft.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work Zone Signs (9.26 To 16.25 Sq. Ft.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work Zone Signs (16.26 Sq. Ft. &amp; Over)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work Zone Barricades (Type 3 - 4' To 12')</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work Zone Barricades (Pedestrian)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Channelizer (Fixed)</td>
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<tr>
<td>Channelizer (Portable)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Channelizer (Pedestrian)</td>
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<td></td>
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<tr>
<td>Work Zone Warning Light (Type &quot;A&quot; Low Intensity)</td>
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<td></td>
</tr>
<tr>
<td>Work Zone Warning Light (Red Type &quot;B&quot; High Intensity)</td>
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</tr>
<tr>
<td>Arrow Display</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Portable Changeable Message Sign</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pavement Marking (Temporary)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4&quot; Solid (Type I)</td>
<td></td>
<td>Sta./Line</td>
</tr>
<tr>
<td>4&quot; Solid (Type II)</td>
<td></td>
<td>Sta./Line</td>
</tr>
<tr>
<td>4&quot; Broken (8.0') (Type I)</td>
<td></td>
<td>Sta./Line</td>
</tr>
<tr>
<td>4&quot; Broken (8.0') (Type II)</td>
<td></td>
<td>Sta./Line</td>
</tr>
<tr>
<td>4&quot; Broken (3.0') (Type I)</td>
<td></td>
<td>Sta./Line</td>
</tr>
<tr>
<td>4&quot; Broken (3.0') (Type II)</td>
<td></td>
<td>Sta./Line</td>
</tr>
<tr>
<td>4&quot; Dotted Extension (Type I)</td>
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<tr>
<td>4&quot; Dotted Extension (Type II)</td>
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<td>Sta./Line</td>
</tr>
<tr>
<td>Solid (Line Masking Tape)</td>
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<td>Sta./Line</td>
</tr>
<tr>
<td>Broken (Line Masking Tape)</td>
<td></td>
<td>Sta./Line</td>
</tr>
<tr>
<td>Symbol (Type I)</td>
<td></td>
<td>Each</td>
</tr>
<tr>
<td>Symbol (Type II)</td>
<td></td>
<td>Each</td>
</tr>
<tr>
<td>Flexible Raised Pavement Marker (4&quot; Broken (8.0'))</td>
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<td>Sta./Line</td>
</tr>
<tr>
<td>Flexible Raised Pavement Marker (4&quot; Broken (3.0'))</td>
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<td>Sta./Line</td>
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<tr>
<td>Pavement Marking Removal</td>
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<td>Lin. Ft.</td>
</tr>
<tr>
<td>Work Zone Sign (Special) (16.25 Sq. Ft. &amp; Less)</td>
<td></td>
<td>Each</td>
</tr>
<tr>
<td>Work Zone Sign (Special) (16.26 Sq. Ft. &amp; More)</td>
<td></td>
<td>Each</td>
</tr>
<tr>
<td>Temporary Raised Pavement Marker (Type I)</td>
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<td>Each</td>
</tr>
<tr>
<td>Temporary Raised Pavement Marker (Type II)</td>
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<td>Each</td>
</tr>
<tr>
<td>Traffic Signal Installation (Temporary)</td>
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<td>Lump Sum</td>
</tr>
<tr>
<td>Traffic Control (Initial Set Up)</td>
<td></td>
<td>Lump Sum</td>
</tr>
<tr>
<td>Traffic Control</td>
<td></td>
<td>Lump Sum</td>
</tr>
<tr>
<td>Flagger (Set Price)</td>
<td></td>
<td>1 Hour</td>
</tr>
</tbody>
</table>

### Summary Of Traffic Control Devices (Each)

<table>
<thead>
<tr>
<th>Work Zone Sign (Special)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sign No.</td>
</tr>
<tr>
<td>16.25 Sq. Ft. &amp; Less</td>
</tr>
<tr>
<td>16.26 Sq. Ft. &amp; Over</td>
</tr>
</tbody>
</table>

### Lighted Devices *

<table>
<thead>
<tr>
<th>Lighted Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Zone Warning Light (Type &quot;A&quot; Low Intensity)</td>
</tr>
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</tbody>
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### Barricades *

| Type 3 (4' To 12') Pedestrian                        |

### Channelizing Devices *

<table>
<thead>
<tr>
<th>Channelizing Devices</th>
</tr>
</thead>
<tbody>
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</tr>
<tr>
<td>Portable</td>
</tr>
<tr>
<td>Pedestrian</td>
</tr>
</tbody>
</table>