KANSAS STATE UNIVERSITY | Salina

Traffic Control Inspection Workbook

Certified Inspector Training Program

Kansas Department of Transportation

Traffic Control Inspection Certification Workbook

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TRAFFIC CONTROL INSPECTION
CIT PROGRAM

Computer (Written) Test: Open book – 30 multiple choice questions

Grading: Must score 70% or better to pass.

Exam Results: Exams will be graded in two to three weeks. Exam results are emailed to the student. Exam results are not given over the phone.

Exam Re-takes: Students who need to re-take either the written and/or performance exam need to register to do so. The re-take registration form can be found on the CIT website at www.citksu.com.

To be certified: Students must successfully pass the written exam. The student will be emailed a certification card and letter.

Reasons for Certified Inspector Training (CIT) Training Program

Overview

The Kansas Department of Transportation (KDOT) has established this training program to educate, test and certify those individuals responsible for performing inspection and testing functions on KDOT construction projects. KDOT's Bureau of Construction and Materials has responsibility for the establishment and administration of the materials portion of the KDOT's Quality Control/Quality Assurance (QC/QA) Program. The Bureau develops standards and specifications for materials, establishes sampling procedures and frequencies, and test procedures used in the laboratory and the field in order to assure compliance with specifications. It performs materials testing to assist each of the six KDOT districts in administering quality assurance functions of the QC/QA Program. Such testing includes tests on materials purchased by contractors or the State for use in maintenance or construction activities. The Bureau also conducts tests on soils, concrete, bituminous mixtures and numerous other specialized materials, the results of which are used by others for a variety of reasons.

Quality control and quality assurance activities involve the routine sampling, testing and analysis of various materials to determine the quality of a given product and to attain a quality product. The goal of the Certified Inspection and Testing Training Program (CIT^2) is to provide persons engaged in the inspection and/or testing of KDOT construction projects specific training in, but not limited to, soils, aggregates, and concrete and/or asphalt disciplines.

Each student is required to demonstrate specific abilities as defined by the training modules described in the CIT^2 manual. The manual can be found online at: https://www.ksdot.org/Assets/wwwksdotorg/bureaus/burMatrRes/Documents/CIT_Manual_2019.pdf

Federal Funding

On projects involving federal funds, KDOT must certify to the Federal Highway Administration as to the quality of each type of material used on each project before the State is completely reimbursed by the federal government.

The certification and training requirements contained in this manual are intended to comply with the requirements of 23 CFR Part 637 which states, "After June 29, 2000, all sampling and testing data to be used in the acceptance decision or the IA (Independent Assurance) program shall be executed by qualified sampling and testing personnel."

Reasons for Quality Control/Quality Assurance

Inspectors fulfill a very important job on any project—they safeguard the public interest in a number of ways.

The primary reason for materials inspection, sampling and testing requirements is to verify that all materials incorporated into the work will meet the requirements of the contract documents, including the plans, specifications, and special provisions.

Plans and specifications are prepared to require the use of certain specific materials known or expected to perform satisfactorily with minimum maintenance throughout the life of the facility or infrastructure project. Any material that deviates appreciably from the specifications requirements will not perform as expected and, in all probability, will shorten the useful life of the facility or add unexpected costs in maintenance. Because there are limited dollars available for transportation infrastructure, the useful life and long-term maintenance costs of every project are critical considerations.

Secondly, all contractors bidding or furnishing materials to a project should be treated equally. That is, the contract documents provide a fair and uniform basis for bidding because they define the requirements to be met--ideally with the least possible difference of interpretation. The contractor commits to furnish materials and complete work that will equal or exceed such requirements. For this reason it is essential that quality assurance be correctly understood and applied uniformly by engineers and inspectors from project-to-project so that all contractors and suppliers are treated alike.

Thirdly, the expenditure of public funds must be documented to substantiate whether taxpayers actually received the quantity and quality of materials specified in exchange for tax dollars spent. Whether or not to pay the costs invoiced by contractors is a decision which relies heavily upon inspection reports and test results. In a fundamental way, inspectors play a key role in serving the public--to justify the expenditure of public monies and the acceptance of any contractor's work. Through the work of knowledgeable, competent and skilled inspectors, KDOT can verify and confirm whether or not the contractor has fulfilled its obligations to build the project as intended.

Finally, the specification requirements for materials are constantly evolving, based on new developments, past performance of material in the field, research and technological innovations. Accurate recordkeeping of materials and test results using consistent inspection practices provides a basis to compare results over time—an indispensable advantage for meaningful research. Data properly collected and recorded by inspectors can confirm whether or not changes in material specifications and testing requirements have, in fact, resulted in a better product, state-wide or in a particular location or application.

All inspectors should review the applicable clauses of the Standard Specifications at regular intervals to refresh their understanding of material and testing requirements.

Traffic Control

Kansas Department of Transportation

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Why does this matter?

MoDOT worker dies after being hit by semi-truck on Highway O near Sedalia

Worker hit and killed in Interstate 40 work zone south of Raleigh early Friday

BY RICHARD STRADLING

UPDATED AUGUST 23, 2024 2:45 PM

Study shows a high rate of highway contractors experiencing work zone crashes

3 workers die in Pennsylvania highway construction zone crash

The fatalities occurred after a truck driver entered an active work area during the state's Work Zone Awareness Week.

Published April 18, 2024

4 Killed in Work Zone Crash Caused by Semi Truck in Minnesota

Don McLoud
Aug 19, 2024

Department of Transportation

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3

Why does this matter?
Good traffic control improves:

1. **Safety – everyone gets to their destination**
2. **Commute Delays – inevitable, but kept to a minimum**
3. **Project – Keeps cost down and on schedule**
4. **Legal Liability – Be beyond reproach**

Kansas
Department of Transportation

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This course

1. Intro (this module)
2. KDOT Specs
3. Traffic Control Devices
4. KDOT Typicals
5. Mash/350 compliance
6. Practice test questions

5

Traffic Control Resources: Humans

This Course:
AJ Wilson, D5A3 Engineer
Andrew.Wilson@ks.gov

HQ Temp Traffic Control:
Nick Rogers, Temp Traffic Control Engineer
Nick.rogers@ks.gov
Office: (785) 817-6116

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Traffic Control Resources: Documents

1.
2.
3.
4.
5.
6. **MUTCD**

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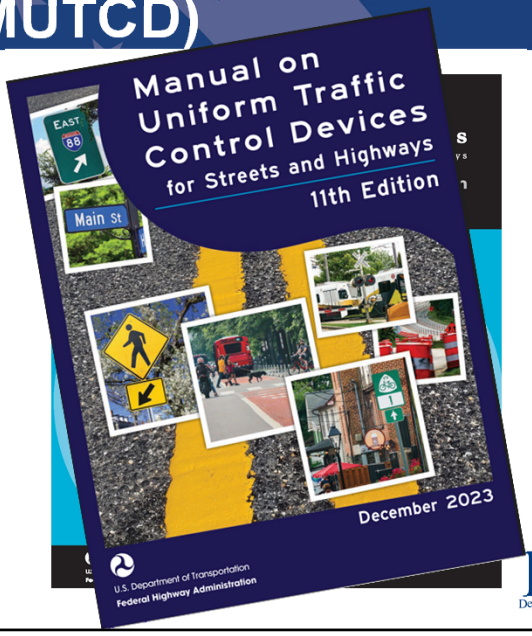
Manual on Uniform Traffic Control Devices (MUTCD)

2009 Edition
KDOT adopted in 2011

11th Edition – 2023
KDOT adoption:2026?



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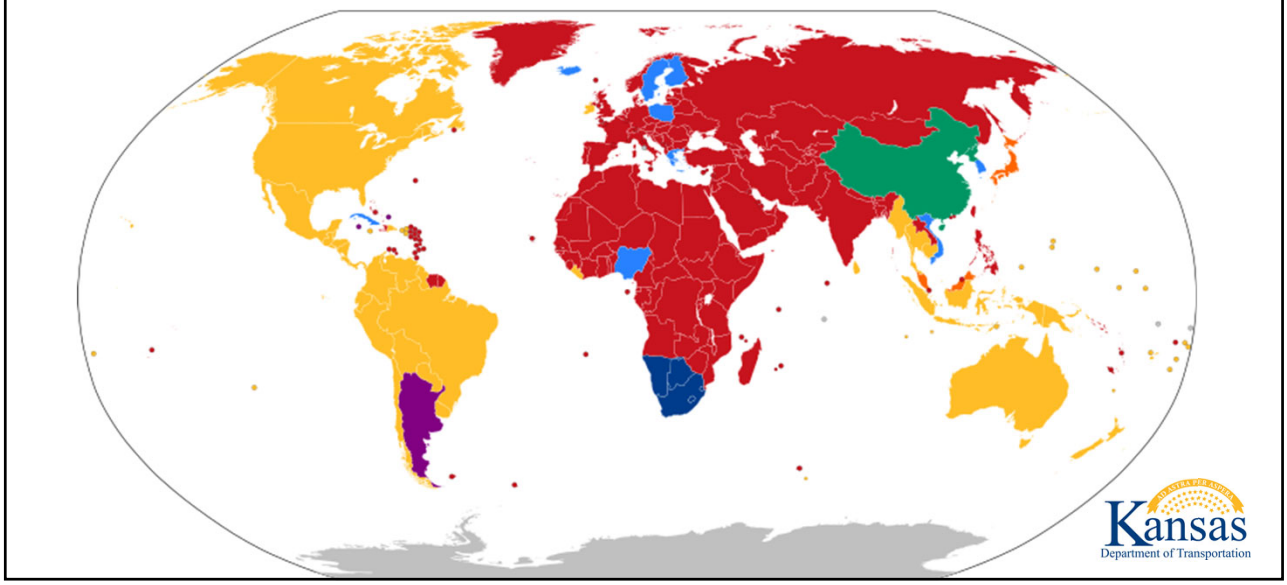
Countries that use the MUTCD



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Countries that don't use METRIC

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Countries that have SENT A MAN TO THE MOON

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Traffic Control Resources: Documents

1.
2.
3.
4.
5. **Standard Specifications**
6. **MUTCD**

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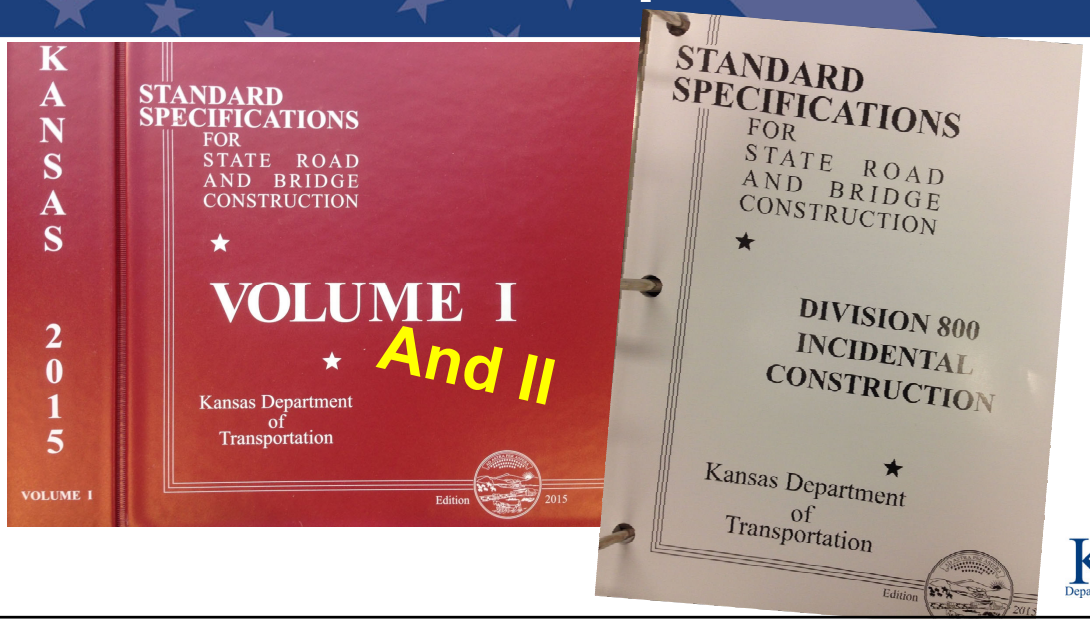
2015 Standard Specifications



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Traffic Control Resources: Documents

1.
2.
3.
4. **Standard Drawings**
5. **Standard Specifications**
6. **MUTCD**

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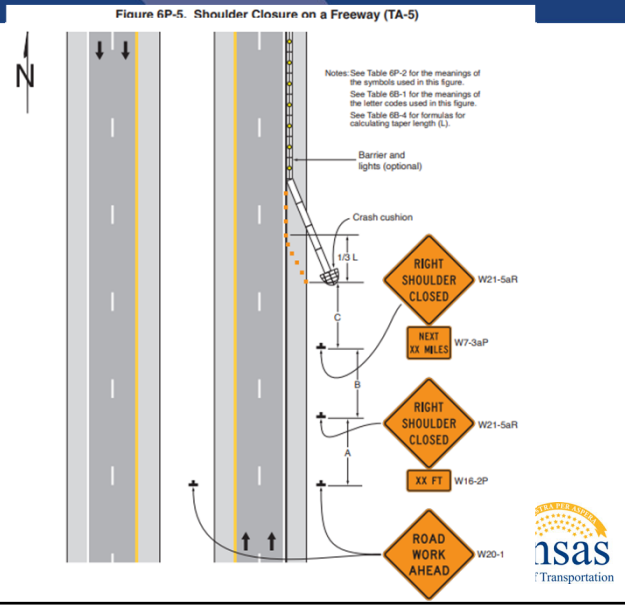
Traffic Engineering Standards

MUTCD Typical →



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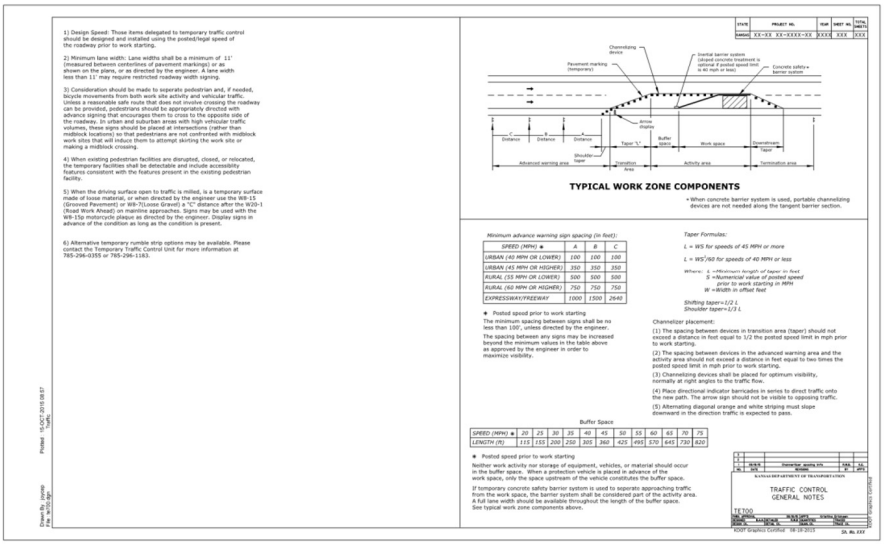
Traffic Engineering Standards

- **Retain a copy of current standards.**
- **Standards available on Internet at KART**

http://kart.ksdot.org/ and at WWW.KSDOT.org under "Doing Business with Us" click "Info for Highway Contractors" then in the bottom Rt. corner under "Engineering Services" is "Standard Drawings"



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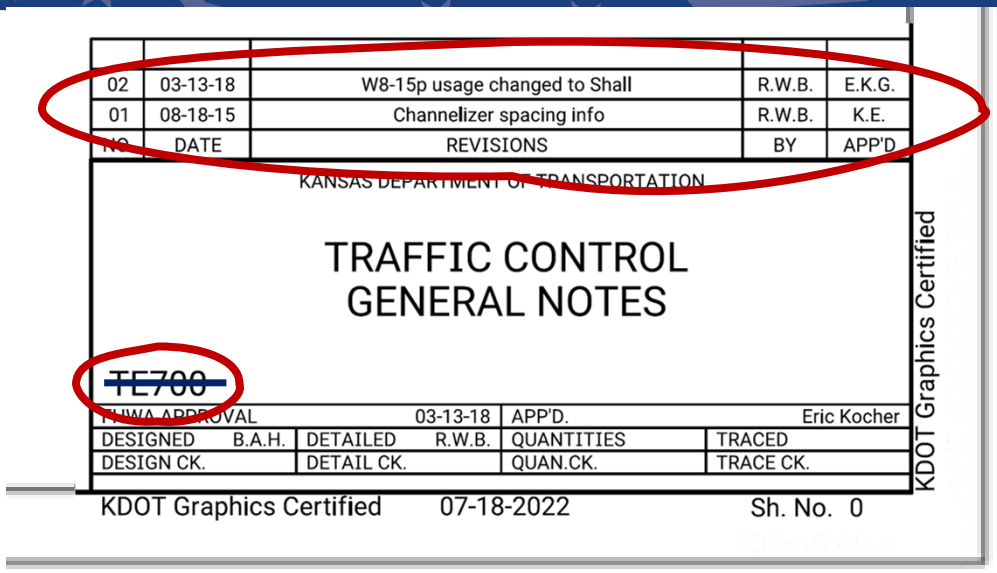
Traffic Engineering Standards



NO	DATE	REVISIONS	BY	APP'D
02	03-13-18	W8-15p usage changed to Shall	R.W.B.	E.K.G.
01	08-18-15	Channelizer spacing info	R.W.B.	K.E.

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL
GENERAL NOTES

~~TE700~~

KDOT Graphics Certified

FHWA APPROVAL		03-13-18	APP'D.		Eric Kocher
DESIGNED	B.A.H.	DETAILED R.W.B.	QUANTITIES	TRACED	
DESIGN CK.		DETAIL CK.	QUAN.CK.	TRACE CK.	

KDOT Graphics Certified 07-18-2022 Sh. No. 0

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Traffic Engineering Standards

How to get Traffic Control standards

Available on Internet at KART
http://kart.ksdot.org/

(bookmark this website)

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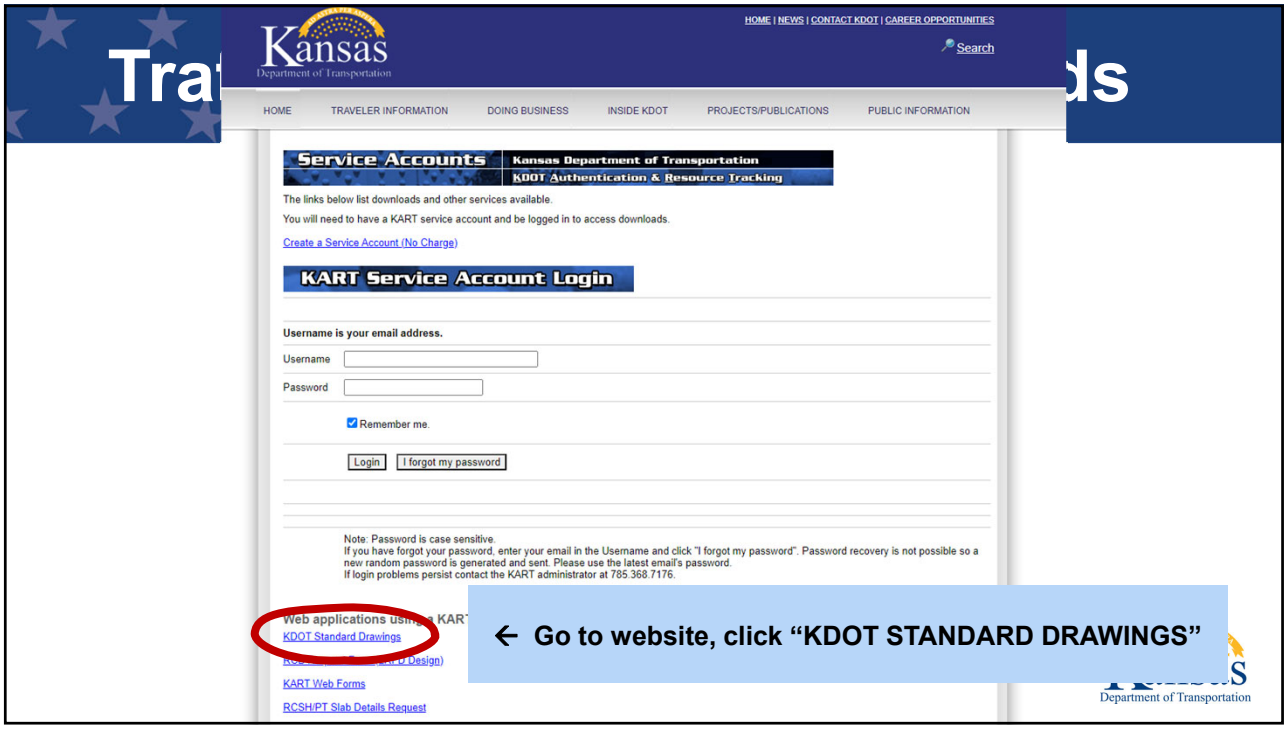
Kansas
Department of Transportation
HOME | NEWS | CONTACT KDOT | CAREER OPPORTUNITIES
Search
HOME
TRAVELER INFORMATION
DOING BUSINESS
INSIDE KDOT
PROJECTS/PUBLICATIONS
PUBLIC INFORMATION
Service Accounts
Kansas Department of Transportation
KDOT Authentication & Resource Tracking
The links below list downloads and other services available.
You will need to have a KART service account and be logged in to access downloads.
Create a Service Account (No Charge)
KART Service Account Login
Username is your email address.
Username
Password
Remember me.
Login
I forgot my password
Note: Password is case sensitive.
If you have forgot your password, enter your email in the Username and click "I forgot my password". Password recovery is not possible so a new random password is generated and sent. Please use the latest email's password.
If login problems persist contact the KART administrator at 785.368.7176.
KDOT Standard Drawings
KART Web Forms
RCSH/PT Slab Details Request
← Go to website, click "KDOT STANDARD DRAWINGS"
Department of Transportation

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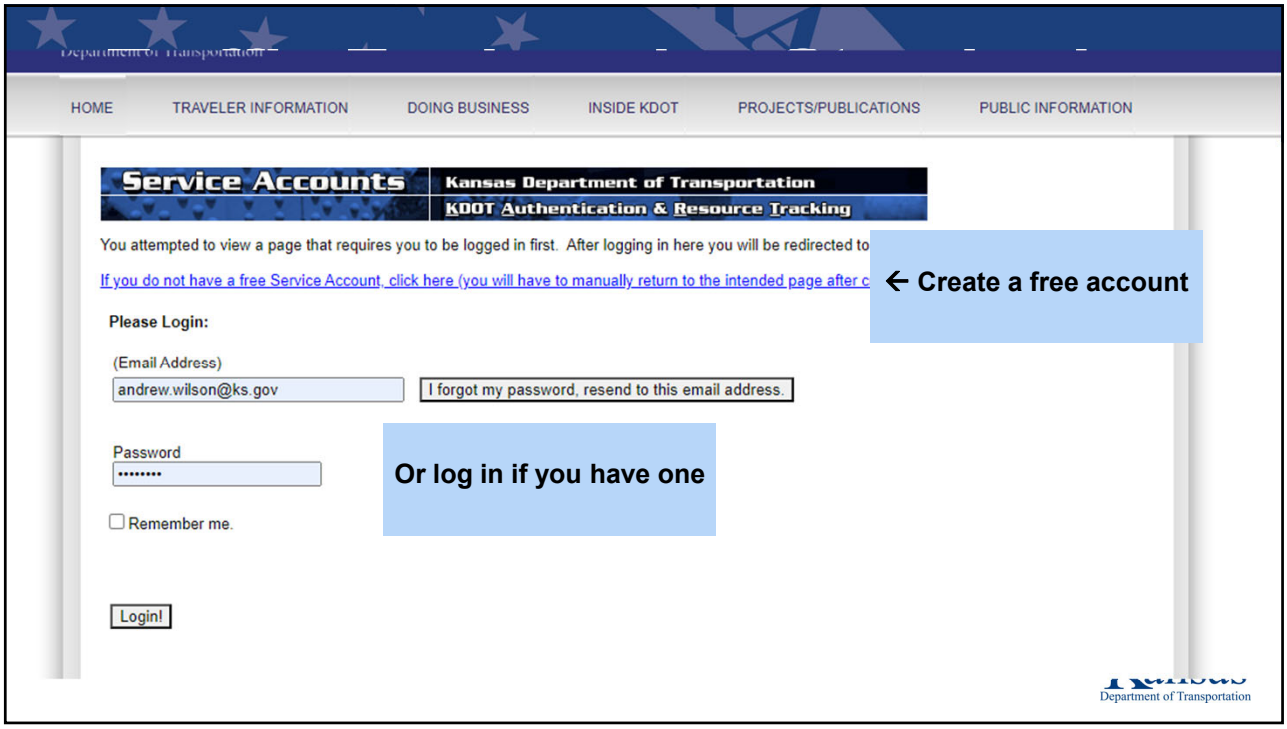
HOME
TRAVELER INFORMATION
DOING BUSINESS
INSIDE KDOT
PROJECTS/PUBLICATIONS
PUBLIC INFORMATION
Service Accounts
Kansas Department of Transportation
KDOT Authentication & Resource Tracking
You attempted to view a page that requires you to be logged in first. After logging in here you will be redirected to
If you do not have a free Service Account, click here (you will have to manually return to the intended page after c
← Create a free account
Please Login:
(Email Address)
andrew.wilson@ks.gov
I forgot my password, resend to this email address.
Password
Remember me.
Or log in if you have one
Login!
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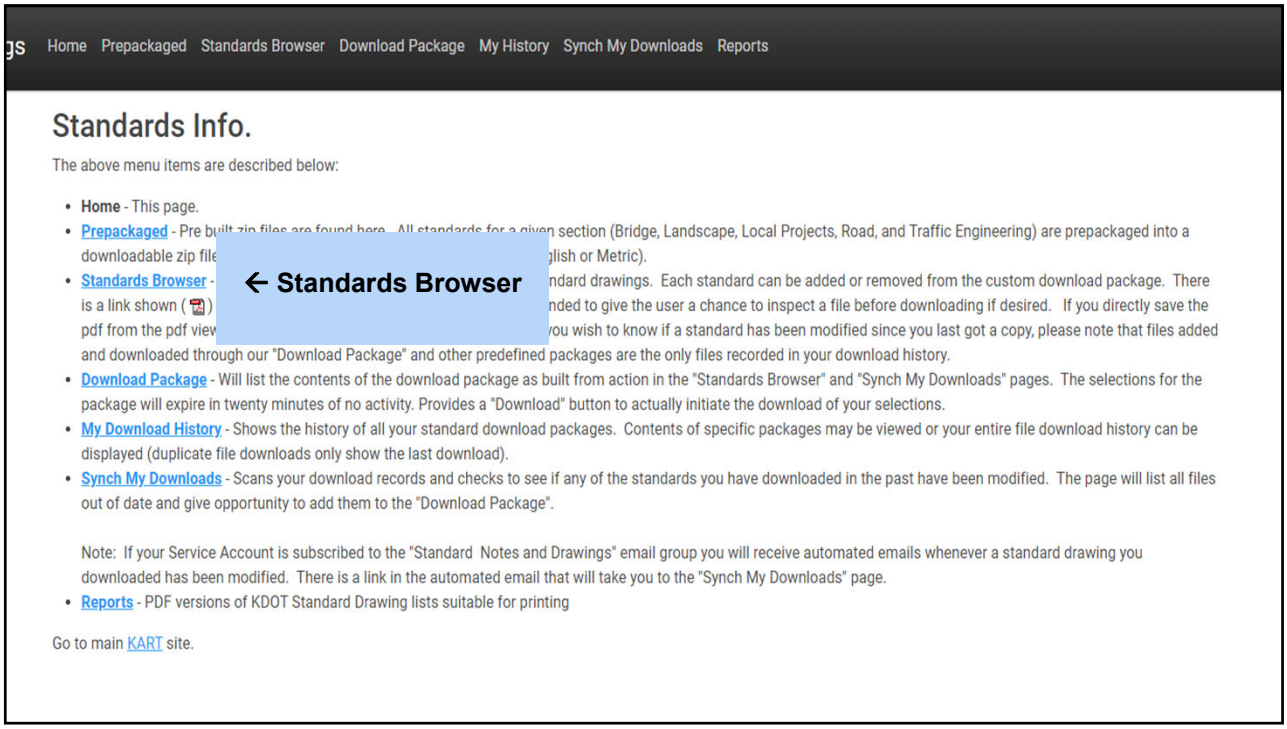
gs Home Prepackaged Standards Browser Download Package My History Synch My Downloads Reports
Standards Info.
The above menu items are described below:
Home - This page.
Prepackaged - Pre built zip files are found here. All standards for a given section (Bridge, Landscape, Local Projects, Road, and Traffic Engineering) are prepackaged into a downloadable zip file
glish or Metric).
Standards Browser -
ndard drawings. Each standard can be added or removed from the custom download package. There is a link shown ( ) nded to give the user a chance to inspect a file before downloading if desired. If you directly save the pdf from the pdf viev ou wish to know if a standard has been modified since you last got a copy, please note that files added and downloaded through our "Download Package" and other predefined packages are the only files recorded in your download history.
Download Package - Will list the contents of the download package as built from action in the "Standards Browser" and "Synch My Downloads" pages. The selections for the package will expire in twenty minutes of no activity. Provides a "Download" button to actually initiate the download of your selections.
My Download History - Shows the history of all your standard download packages. Contents of specific packages may be viewed or your entire file download history can be displayed (duplicate file downloads only show the last download).
Synch My Downloads - Scans your download records and checks to see if any of the standards you have downloaded in the past have been modified. The page will list all files out of date and give opportunity to add them to the "Download Package".
Note: If your Service Account is subscribed to the "Standard Notes and Drawings" email group you will receive automated emails whenever a standard drawing you downloaded has been modified. There is a link in the automated email that will take you to the "Synch My Downloads" page.
Reports - PDF versions of KDOT Standard Drawing lists suitable for printing
Go to main KART site.
← Standards Browser

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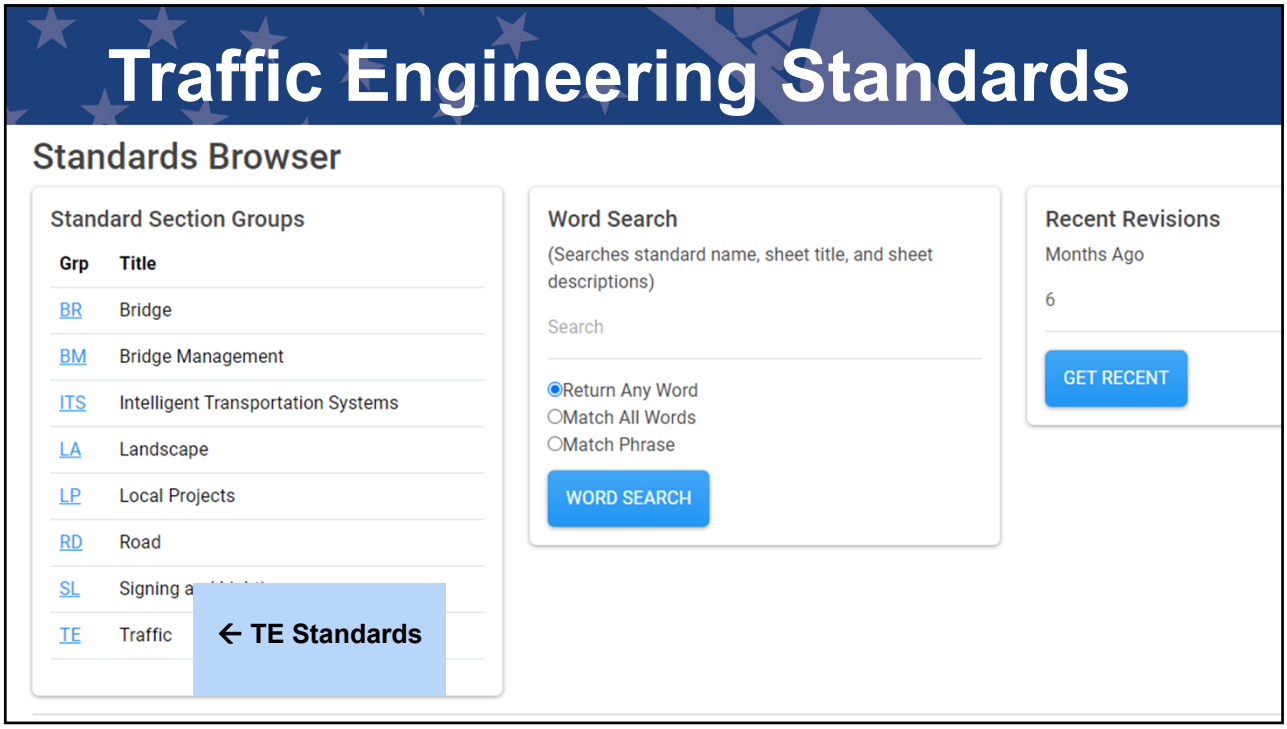
Traffic Engineering Standards
Standards Browser
Standard Section Groups
Grp Title
BR Bridge
BM Bridge Management
ITS Intelligent Transportation Systems
LA Landscape
LP Local Projects
RD Road
SL Signing a
TE Traffic
← TE Standards
Word Search
(Searches standard name, sheet title, and sheet descriptions)
Search
Return Any Word
Match All Words
Match Phrase
WORD SEARCH
Recent Revisions
Months Ago
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GET RECENT

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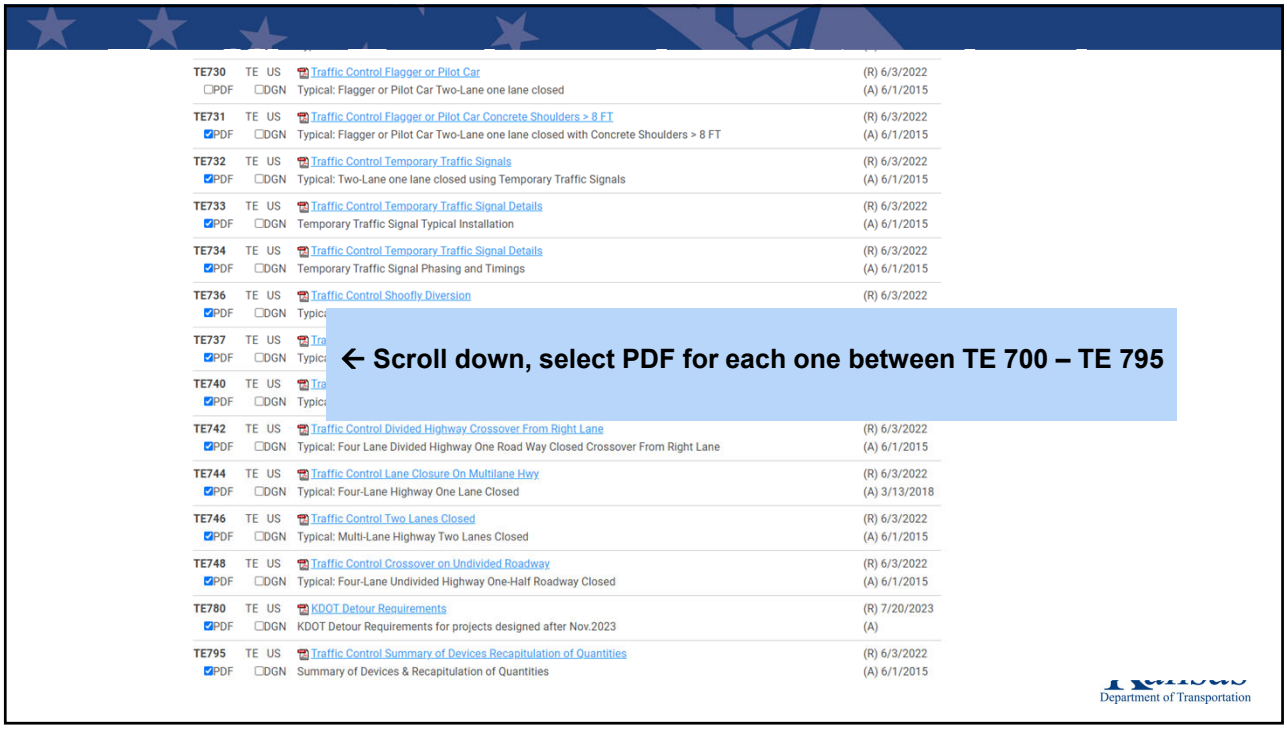
TE730 TE US Traffic Control Flagger or Pilot Car (R) 6/3/2022
PDF DGN Typical: Flagger or Pilot Car Two-Lane one lane closed (A) 6/1/2015
TE731 TE US Traffic Control Flagger or Pilot Car Concrete Shoulders > 8 FT (R) 6/3/2022
PDF DGN Typical: Flagger or Pilot Car Two-Lane one lane closed with Concrete Shoulders > 8 FT (A) 6/1/2015
TE732 TE US Traffic Control Temporary Traffic Signals (R) 6/3/2022
PDF DGN Typical: Two-Lane one lane closed using Temporary Traffic Signals (A) 6/1/2015
TE733 TE US Traffic Control Temporary Traffic Signal Details (R) 6/3/2022
PDF DGN Temporary Traffic Signal Typical Installation (A) 6/1/2015
TE734 TE US Traffic Control Temporary Traffic Signal Details (R) 6/3/2022
PDF DGN Temporary Traffic Signal Phasing and Timings (A) 6/1/2015
TE736 TE US Traffic Control Shoofly Diversion (R) 6/3/2022
PDF DGN
TE737 TE US
PDF DGN
TE740 TE US
PDF DGN
TE742 TE US Traffic Control Divided Highway Crossover From Right Lane (R) 6/3/2022
PDF DGN Typical: Four Lane Divided Highway One Road Way Closed Crossover From Right Lane (A) 6/1/2015
TE744 TE US Traffic Control Lane Closure On Multilane Hwy (R) 6/3/2022
PDF DGN Typical: Four-Lane Highway One Lane Closed (A) 3/13/2018
TE746 TE US Traffic Control Two Lanes Closed (R) 6/3/2022
PDF DGN Typical: Multi-Lane Highway Two Lanes Closed (A) 6/1/2015
TE748 TE US Traffic Control Crossover on Undivided Roadway (R) 6/3/2022
PDF DGN Typical: Four-Lane Undivided Highway One-Half Roadway Closed (A) 6/1/2015
TE780 TE US KDOT Detour Requirements (R) 7/20/2023
PDF DGN KDOT Detour Requirements for projects designed after Nov.2023 (A)
TE795 TE US Traffic Control Summary of Devices Recapitulation of Quantities (R) 6/3/2022
PDF DGN Summary of Devices & Recapitulation of Quantities (A) 6/1/2015
← Scroll down, select PDF for each one between TE 700 – TE 795
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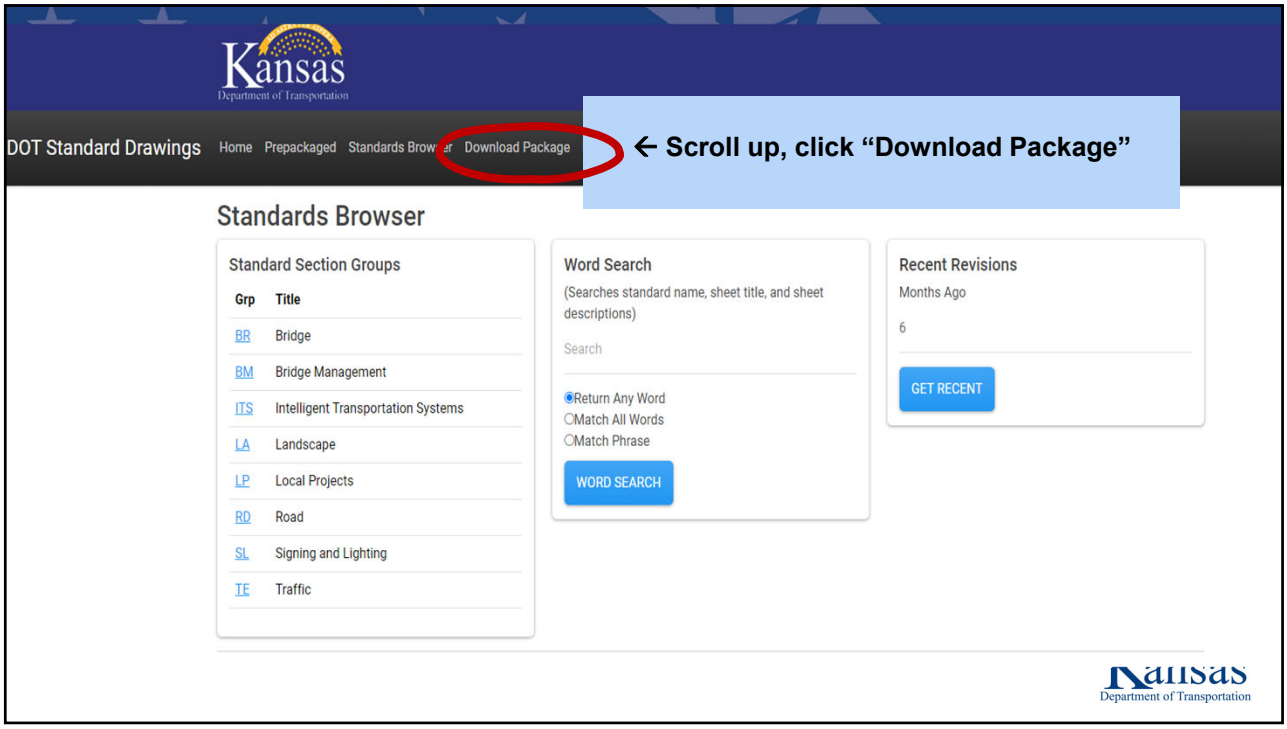
Kansas
Department of Transportation
DOT Standard Drawings
Home
Prepackaged
Standards Brow
Download Package
← Scroll up, click “Download Package”
Standards Browser
Standard Section Groups
Grp Title
BR Bridge
BM Bridge Management
ITS Intelligent Transportation Systems
LA Landscape
LP Local Projects
RD Road
SL Signing and Lighting
TE Traffic
Word Search
(Searches standard name, sheet title, and sheet descriptions)
Search
Return Any Word
Match All Words
Match Phrase
WORD SEARCH
Recent Revisions
Months Ago
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GET RECENT
Department of Transportation

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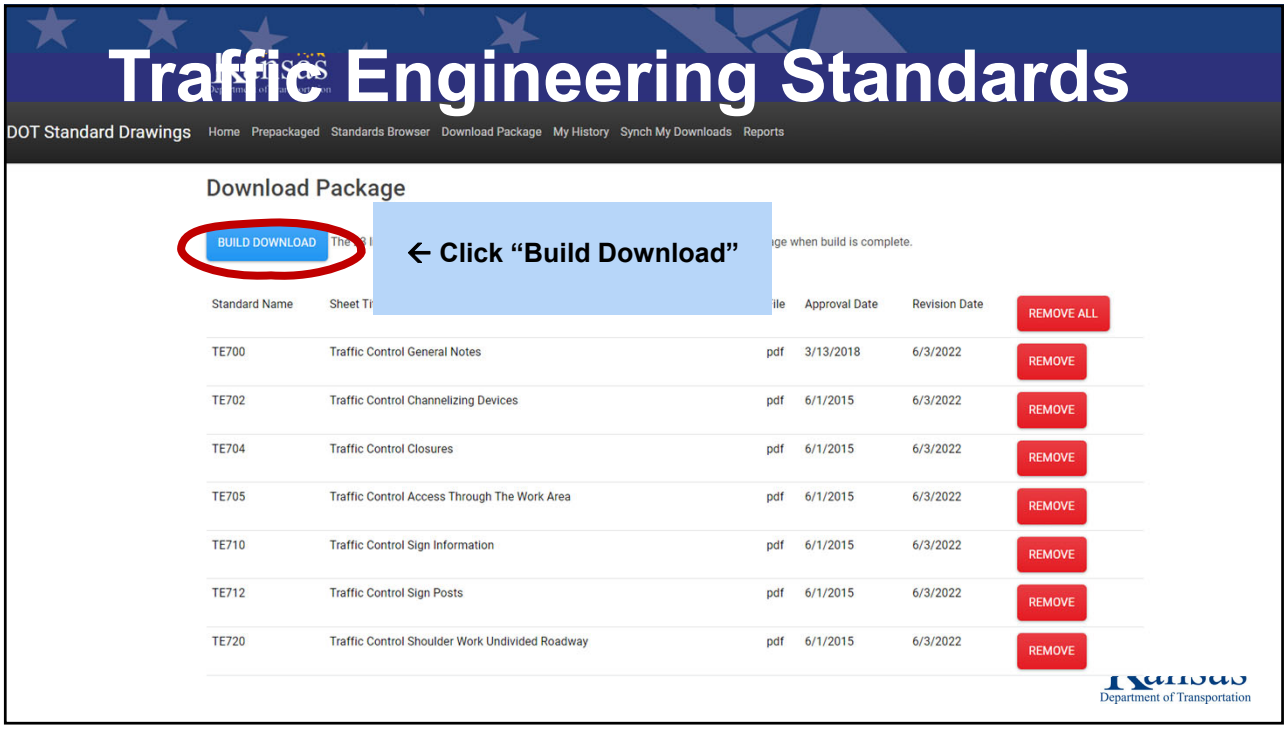
Traffic Engineering Standards



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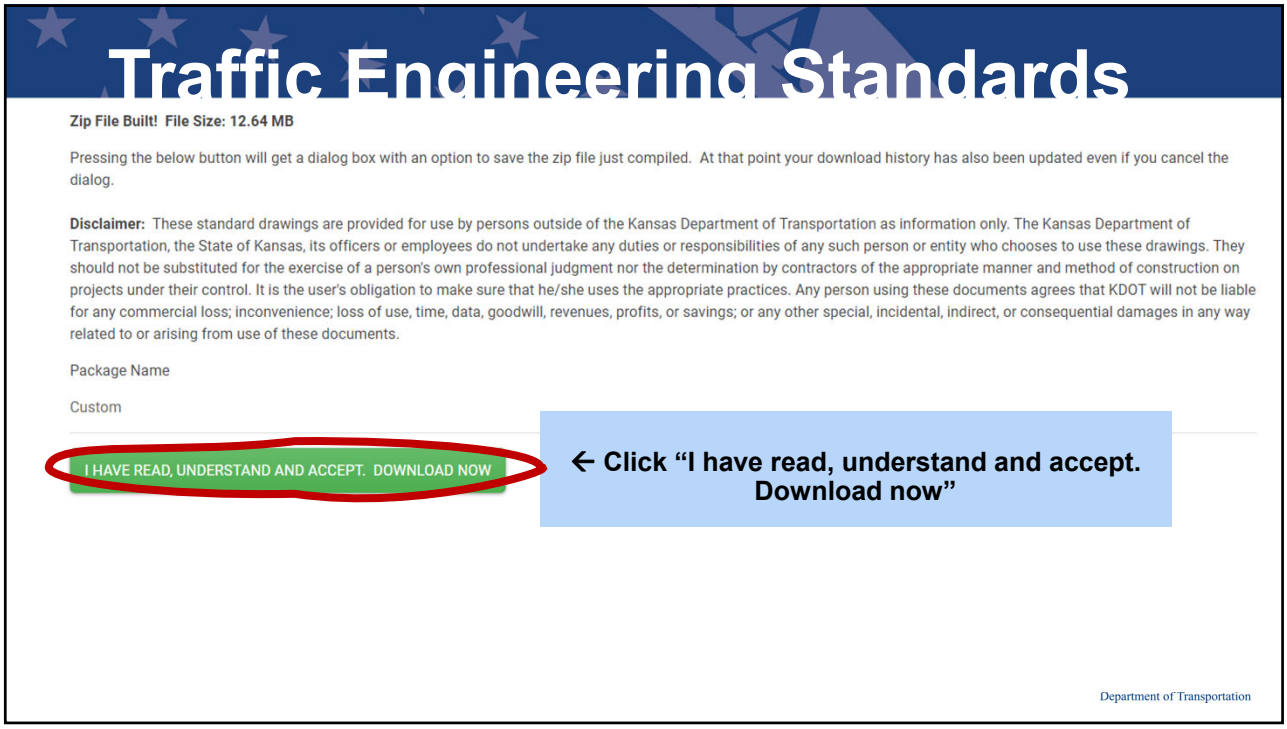
Traffic Engineering Standards



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ONE ETERNITY LATER…

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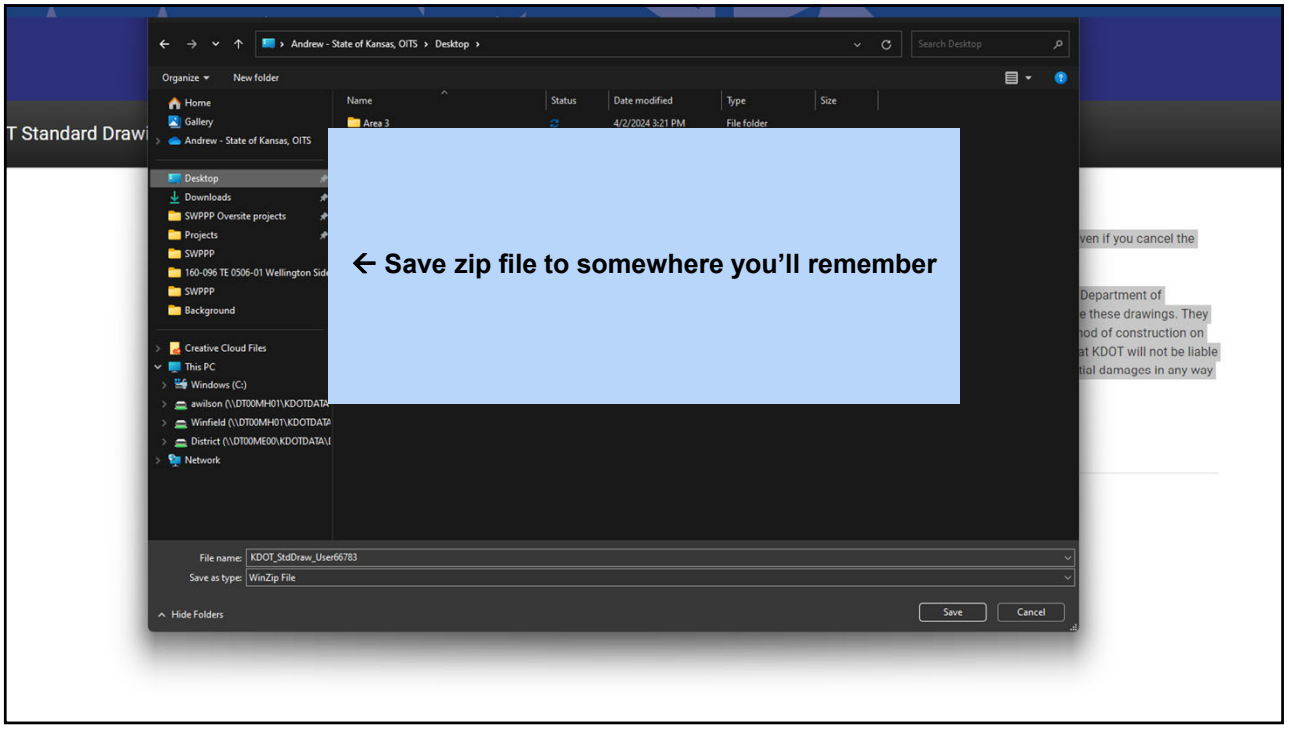

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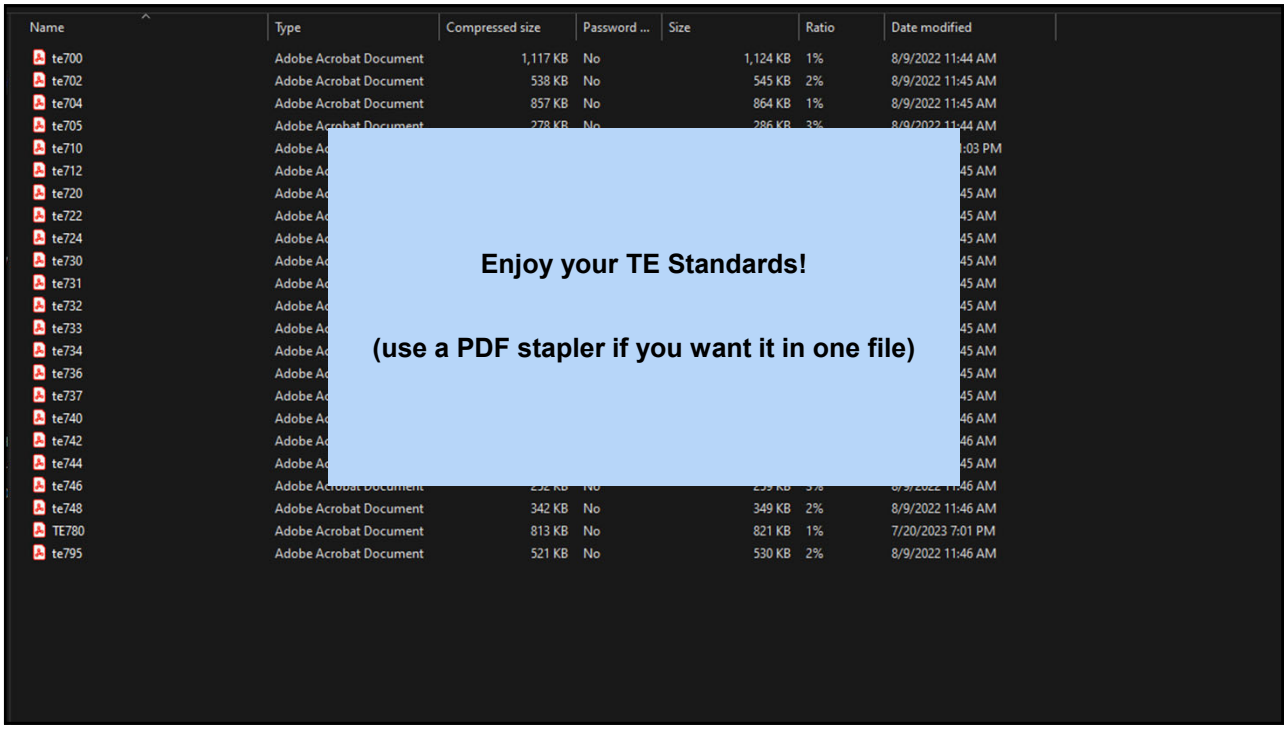

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Traffic Control Resources: Documents

1. Project Special Provisions
2. Special Provisions
3. Plans
4. Standard Drawings
5. Standard Specifications
6. MUTCD

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Traffic Control

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Temporary Traffic Control
Standard Spec - 805

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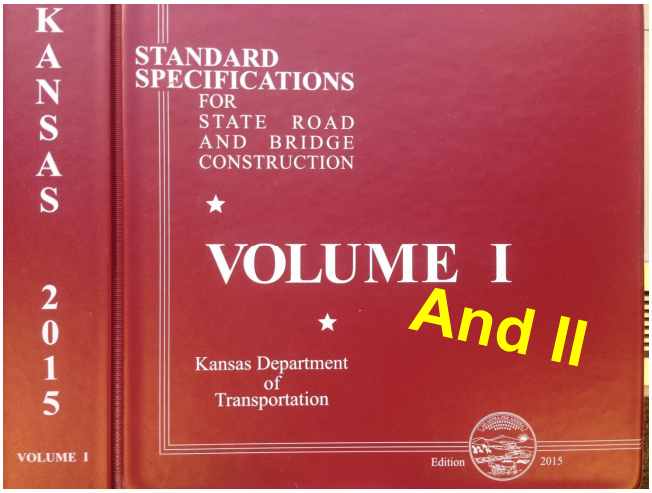
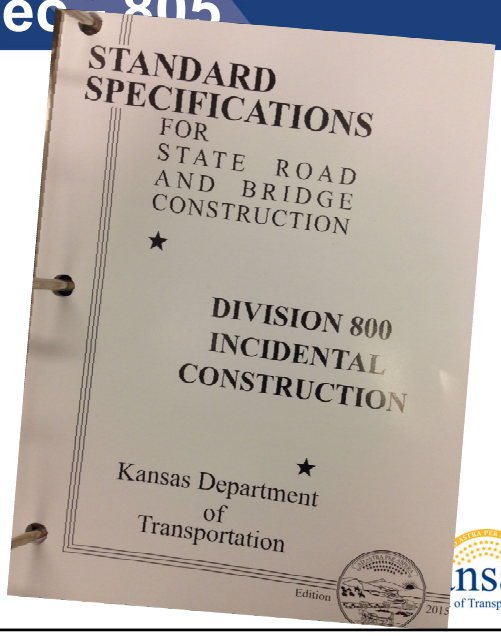
Temporary Traffic Control
Standard Spec - 805





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DIVISION 800
INCIDENTAL CONSTRUCTION

3

Temporary Traffic Control St

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805 - WORK ZONE TRAFFIC CONTROL & SAFETY

SECTION 805

WORK ZONE TRAFFIC CONTROL AND SAFETY

805.1 DESCRIPTION

Provide, erect, maintain and remove traffic control devices as shown in the Contract Documents.

BID ITEMS	UNITS
Work Zone Signs (0 to 9.25 Sq. Ft.)	Each Per Day
Work Zone Signs (9.26 to 16.25 Sq. Ft.)	Each Per Day
Work Zone Signs (16.26 Sq. Ft. and over)	Each Per Day
Work Zone Sign (Special) (**)	Each
Work Zone Barricades (Type 3 – 4 to 12 Lin. Ft.)	Each Per Day
Work Zone Barricades (Pedestrian)	Each per Day
Arrow Display	Each Per Day
Portable Changeable Message Sign	Each Per Day
Channelizer (Fixed)	Each Per Day
Channelizer (Portable)	Each Per Day
Channelizer (Pedestrian)	Each per Day
Work Zone Warning Light (Type "A" Low Intensity)	Each Per Day
Work Zone Warning Light (Red Type "B" High Intensity)	Each Per Day
Pavement Marking (Temporary)	
4" Solid (*)	Sta./Line
4" Broken (8 ft.) (*)	Sta./Line
4" Broken (3 ft.) (*)	Sta./Line
4" Dotted Extension (*)	Sta./Line
Broken (Line Masking Tape)	Sta./Line
Solid (Line Masking Tape)	Sta./Line
Symbol (*)	Each
Flexible Raised Pavement Marker (4" Broken (8 ft.))	Sta./Line
Flexible Raised Pavement Marker (4" Broken (3 ft.))	Sta./Line
Rigid Raised Pavement Marker (*)	Each
Flagger (Set Price)	Hour
Traffic Signal Installation (Temporary)	Lump Sum
Traffic Control	Lump Sum
Traffic Control (Initial Setup)	Lump Sum

4

805.1 DESCRIPTION

Provide, erect, maintain and remove traffic control devices as shown in the Contract Documents.

BID ITEMS	UNITS
Work Zone Signs (0 to 9.25 Sq. Ft.)	Each Per Day
Work Zone Signs (9.26 to 16.25 Sq. Ft.)	Each Per Day
Work Zone Signs (16.26 Sq. Ft. and over)	Each Per Day
Work Zone Sign (Special) (**)	Each
Work Zone Barricades (Type 3 – 4 to 12 Lin. Ft.)	Each Per Day
Work Zone Barricades (Pedestrian)	Each per Day
Arrow Display	Each Per Day
Portable Changeable Message Sign	Each Per Day
Channelizer (Fixed)	Each Per Day
Channelizer (Portable)	Each Per Day

5 *Arrow Displays x* 10 *Days* =

80

4" Dotted Extension (*)	Sta./Line

5

Channelizer (Pedestrian)	Each per Day
Work Zone Warning Light (Type "A" Low Intensity)	Each Per Day
Work Zone Warning Light (Red Type "B" High Intensity)	Each Per Day
Pavement Marking (Temporary)	
4" Solid (*)	Sta./Line
4" Broken (8 ft.) (*)	Sta./Line
4" Broken (3 ft.) (*)	Sta./Line
4" Dotted Extension (*)	Sta./Line
Broken (Line Masking Tape)	Sta./Line
Solid (Line Masking Tape)	Sta./Line
Symbol (*)	Each
Flexible Raised Pavement Marker (4" Broken (8 ft.))	Sta./Line
Flexible Raised Pavement Marker (4" Broken (3 ft.))	Sta./Line
Rigid Raised Pavement Marker (*)	Each
Flagger (Set Price)	Hour

100 feet = 1 sta

5,309 feet ÷ 100 feet/StaL=

80

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4" Broken (3 ft.) (*)	Sta./Line
4" Dotted Extension (*)	Sta./Line
Broken (Line Masking Tape)	Sta./Line
Solid (Line Masking Tape)	Sta./Line
Symbol (*)	Each
Flexible Raised Pavement Marker (4" Broken (8 ft.))	Sta./Line
Flexible Raised Pavement Marker (4" Broken (3 ft.))	Sta./Line
Rigid Raised Pavement Marker (*)	Each
Flagger (Set Price)	Hour
Traffic Signal Installation (Temporary)	Lump Sum
Traffic Control	Lump Sum
Traffic Control (Initial Setup)	Lump Sum

*Type (Type I or II)
**Size

805.2 MATERIALS

Provide materials as shown in the Contract Documents that comply with the following requirements.

Retroreflective Sheeting	**DIVISION 2200**
Portable Changeable Message Signs	**DIVISION 1700**
Work Zone Warning Lights	**DIVISION 1700**
Temporary Pavement Marking/Line Masking Tape	**DIVISION 2200**
Traffic Line Paint	**DIVISION 2200**
Raised Pavement Markers	**DIVISION 2200**

a. General. The size, shape, color, placement, installation, and maintenance of all traffic control devices and appurtenances shall comply with the details shown in the Contract Documents and the Manual on Uniform Traffic Control Devices (MUTCD).

Use crashworthy supports used for mounting signs or devices for temporary conditions that comply with AASHTO MASH. All traffic control devices shall be tested and found acceptable using test methods compliant with

800-13

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Temporary Traffic Control Standard Spec - 805

805 - WORK ZONE TRAFFIC CONTROL & SAFETY

Provide pedestrian channelizers with Type III orange and white retroreflective sheeting on the side meant to face vehicular traffic. The side facing pedestrians must have high contrast orange and white sheeting that may be Type III retroreflective sheeting.

f. Automated Flagger Assistance Devices (AFADs). At Contractor's option, provide an AFAD that complies with the MUTCD.

805.3 CONSTRUCTION REQUIREMENTS

a. General. The safe and satisfactory movement of traffic through the project is a high priority and is the responsibility of the Contractor. Use reasonable and appropriate devices and methods to safeguard the persons and property of the traveling public on roads on which construction work is in progress. Failure of the Engineer to notify the Contractor to maintain such devices or use such methods does not relieve the Contractor of responsibility.

Traffic Control must be in place and in acceptable condition as shown in the Contract Documents for work to progress.

While working within the right-of-way limits on KDOT projects, all workers shall wear high visibility garments which comply with ANSI Class II during Daylight Hours and ANSI Class I: retroreflectorized pants with an ANSI Class II vest during all other times.

Obtain the Engineer's approval before erecting, changing or removing traffic control devices, except if an emergency situation requires immediate action. Erect signs and traffic control devices as shown in the Contract Documents or Traffic Control Plan, unless directed otherwise by the Engineer. When directed by the Engineer, move any traffic control devices from one location to another and re-erect it. The Engineer may require additional traffic control devices or flaggers at any time, or at any place. When the Contract Documents provide that traffic be carried through construction, routing of traffic on a detour is prohibited without written approval from the Engineer.

At all times during the progress or temporary suspension of work, provide, erect, remove, relocate, clean, replace and maintain acceptable signs, barricades, channelizers or other necessary traffic control devices and pavement marking shown in the Contract Documents. With the Engineer, determine the frequency of inspections based on the needs of every project. Designate an employee who can be contacted 24 hours a day and can be on site within an agreed upon amount of time to repair, replace, remove, relocate, clean and maintain any traffic control device required as directed by the Engineer. Advise the Engineer of the name, address and telephone number of the person given this responsibility. Compliance with minimum inspections and providing a person to be contacted does not relieve the Contractor of the responsibility to inspect and maintain all required traffic control devices.

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Park and store all vehicles, equipment, tools, debris and materials off the right-of-way or 30 feet from the edge of the travelled way, whichever is less. When this cannot be achieved, place appropriate signs, use positive

Kansas Department of Transportation

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Temporary Traffic Control
Standard Spec - 805

QUIZ:
Whose responsibility is it to ensure that traffic moves safely and satisfactorily through a project?

A. The Inspector
B. The Construction Engineer
C. The Secretary of Transportation
D. The Contractor

9

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10

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Immediately upon discovering or receiving notification of unacceptable traffic control devices, either repair

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Class 1 Garments

Work permits undivided attention to traffic and there is ample separation between worker and motor vehicles. Background is not complex and vehicle/equipment speeds do not exceed 25 mph. (Examples: parking attendants, warehouse workers, workers on sidewalks)

Note: ANSI/ISEA 107 Class 1 garments do not provide compliance with 2009 MUTCD highway worker regulations.

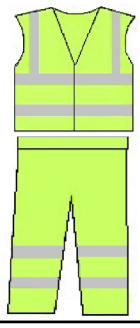
Class 2 Garments

For work in inclement weather and/or areas with complex backgrounds. Worker's attention may be diverted from approaching traffic or worker is in closer proximity to traffic. Vehicles and equipment travel at speeds greater than those specified for Class 1. (Examples: roadway construction workers, utility workers, survey crews.) *These are guidelines for assessing conditions; other variables may apply.*

Class 3 Garments

For workers exposed to high speed traffic and/or conditions where visibility of workers may be reduced. For conditions where equipment operators perform tasks near pedestrian workers. Worker must be conspicuous through a full range of body motions at a minimum of 1,280 feet and identifiable as a person. (Examples: flaggers, roadway construction workers, utility workers, survey crews, emergency responders).

Class E Garments



The combination of a Class 2 (or 3) vest with Class E pants or shorts creates a Performance CLass 3 ensemble. A possible use for this ensemble would be wearing a Class II vest during daylight hours, and adding the pants during night operations to create a Class III garment.

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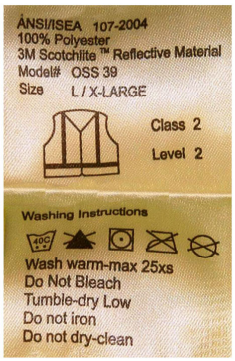
Unclassified Garments

Be careful to select clothing that meets ANSI/ ISEA 107 Standards. There are a number of products on the market that appear similar to ANSI garments, but are made of inferior materials and do not provide sufficient visibility, durability and protection.

Read the Label



When purchasing and selecting high visibility clothing, be sure to look at the label. It will include information about class, standards compliance, and care instructions.

Kansas Department of Transportation

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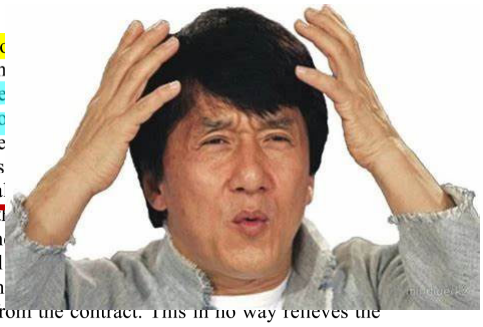

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Department of Transportation

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MASH testing requirements. Devices that were accepted under the NCHRP 350 testing requirements prior to the adoption of MASH criteria may remain in place and continue to be used. Provide the following to the Engineer for a case by case approval of traffic control devices not addressed in the Contract Documents:

(1) A copy of the manufacturer's self certification stating that the Category 1 devices to be used on the project are crashworthy.

(2) A copy of the entire FHWA acceptance letter for the Category 2 devices to be used on the project.

(3) A copy of the entire FHWA acceptance letter for the Category 3 truck mounted attenuators (TMAs) to be used on the project and certification stating that the Category 3 items to be used on the project meet crashworthy specifications, as defined above.

b. Work Zone Signs. The size and layout of the sign message shall comply with the Contract Documents and the "Standard Highway Signs and Markings", latest edition. Use fluorescent orange Type IV or better sheeting for all work zone orange signs. Use standard colors in Type III sheeting or better for all other work zone signs. Opaque, fluorescent orange Type IV or better, roll up signs may be used in approved situations. Do not use mesh signs.

c. Work Zone Barricades. Size and design of all work zone barricades, including those used for pedestrian closures, shall comply with the Contract Documents. Provide Type 3 barricades with ASTM Type III orange and white retroreflective sheeting, as shown in the Contract Documents. Provide pedestrian barricades with orange and white high contrast sheeting as shown in the Contract Documents.

d. Flashing or Sequencing Arrow/Warning Display Signs. When specified, provide, install and maintain a flashing or sequencing arrow/warning display sign that complies with the Contract Documents and the MUTCD.

Provide a display that is capable of being legible for a minimum of ½ mile. Displays shall have an automatic control for lamp intensity, backed up by a manual switch and be capable of dimming 50% from the rated lamp voltage for nighttime operation. The display shall be capable of flashing lamps at a rate between 25 and 40 flashes per minute.

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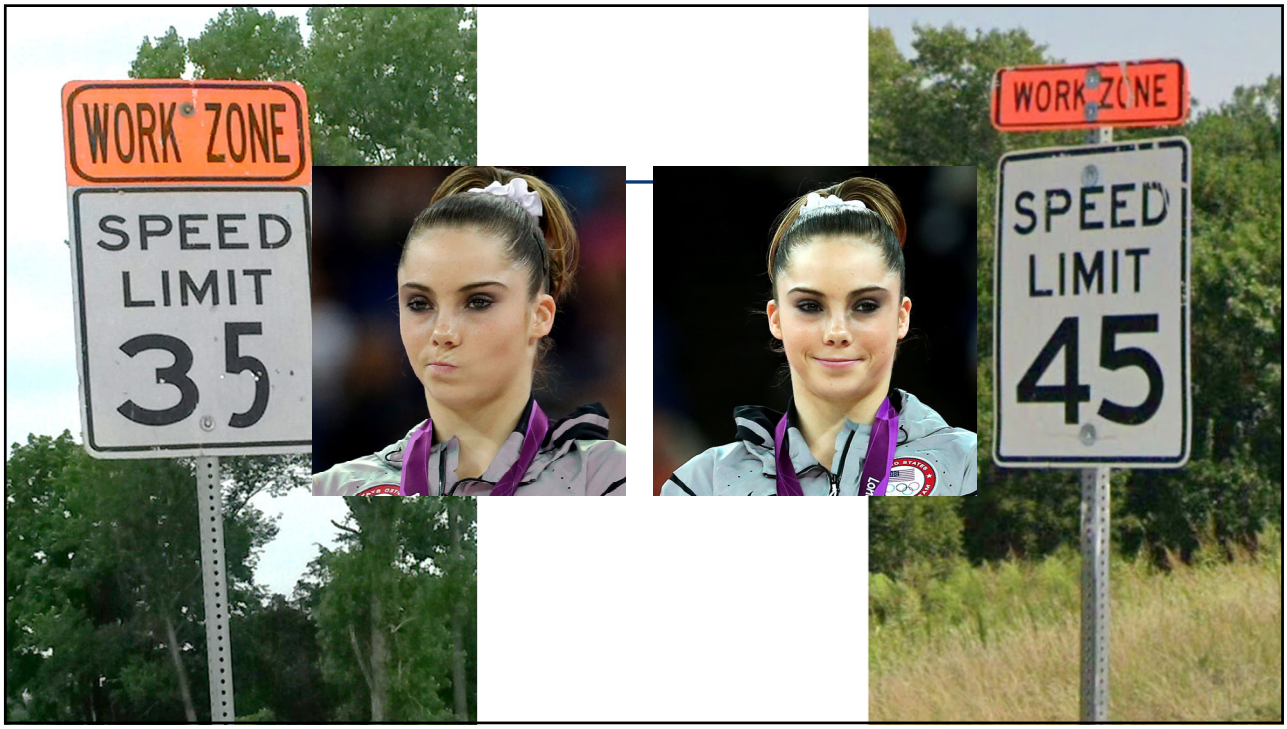

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STOP
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Department of Transportation

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WORK ZONE
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800-16
Install sign posts as shown in the Contrac
for more than 3 days on approved posts. Posts sho
above the sign. In the case of hitting rock, or ot

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b. Work Zone Signs. Work Zone Signs (Special) are signs whose legends are specific to the project for which they are fabricated, and if used, will be designated in the Contract Documents. Do not place signs that restrict pedestrian and bicycle traffic on sidewalks or other areas designated for pedestrian or bicycle use. Signs that are anticipated to remain in place for 3 days or less are considered "portable". Mount portable signs on an approved support at least 12 inches above the edge of the traveled way. When directed by the Engineer, mount portable signs on an approved support at least 5 feet above the traveled way for increased visibility. Do not use the legend "Travel at Your Own Risk" on any sign.

When an existing Stop condition changes to a new location, or when a new Stop condition is created, attach 2 fluorescent-red flags and a Type "B" red high intensity warning light to the Stop sign posts. Leave flags and lights in place for at least 30 days after installation. Install or relocate the symbolic Stop Ahead sign (W3-1) an "A" distance in advance of the Stop sign if the Stop sign is not visible for a minimum "A" distance. See standard drawings to determine "A".

Remove, store and reset existing signs that interfere with the work, but are intended to remain in place after the project is complete. This work will be considered subsidiary to other bid items. Remove, turn away from all traffic or cover traffic signs or signals that conflict with or are not applicable to the traffic operations.

When existing signs need to be covered, use an opaque, breathable material. Do not use plastic bags, burlap or similar materials. Hanging or bolting rigid material to the sign is acceptable when approved by the Engineer and spacers are used to minimize contact between the rigid material and the sign face. Rigid components of the cover, such as a handle for lifting, shall not hang below the minimum sign height. Do not place tape directly to the face of any existing sign.

Install sign posts as shown in the Contract Documents. Mount signs that are anticipated to remain in place for more than 3 days on approved posts. Posts should extend to the top edge of the sign, but no more than 6 inches above the sign. In the case of hitting rock, or otherwise not being able to drive posts to comply with Contract Documents, shift sign location without violating minimum sign spacing or use a crashworthy sign stand, with the Engineer's approval.

800-16 The Engineer will establish all work zone speed limits, except for pilot car operations. Only use the Reduced Speed Ahead (W3-5) sign if the Engineer determines that a reduced speed is required on the project. Install Work Zone plaques (KM4-20) above all existing and temporary Speed Limit (R2-1) signs located between the Road

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TRAFFIC SYSTEMS

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Part 805 – General, Vests, Signs

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Part 805 – Posts, Barricades

38

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39

support at least 12 inches above the edge of the traveled way. When directed by the Engineer, mount portable signs on an approved support at least 5 feet above the traveled way for increased visibility. Do not use the legend "Travel at Your Own Risk" on any sign.

When an existing Stop condition changes to a new location, or when a new Stop condition is created, attach 2 fluorescent-red flags and a Type "B" red high intensity warning light to the Stop sign posts. Leave flags and lights in place for at least 30 days after installation. Install or relocate the symbolic Stop Ahead sign (W3-1) an "A" distance in advance of the Stop sign if the Stop sign is not visible for a minimum "A" distance. See standard drawings to determine "A".

Remove, store and reset existing signs that interfere with the work, but are intended to remain in place after the project is complete. This work will be considered subsidiary to other bid items. Remove, turn away from all traffic or cover traffic signs or signals that conflict with or are not applicable to the traffic operations.

When existing signs need to be covered, use an opaque, breathable material. Do not use plastic bags, burlap or similar materials. Hanging or bolting rigid material to the sign is acceptable when approved by the Engineer and spacers are used to minimize contact between the rigid material and the sign face. Rigid components of the cover, such as a handle for lifting, shall not hang below the minimum sign height. Do not place tape directly to the face of any existing sign.

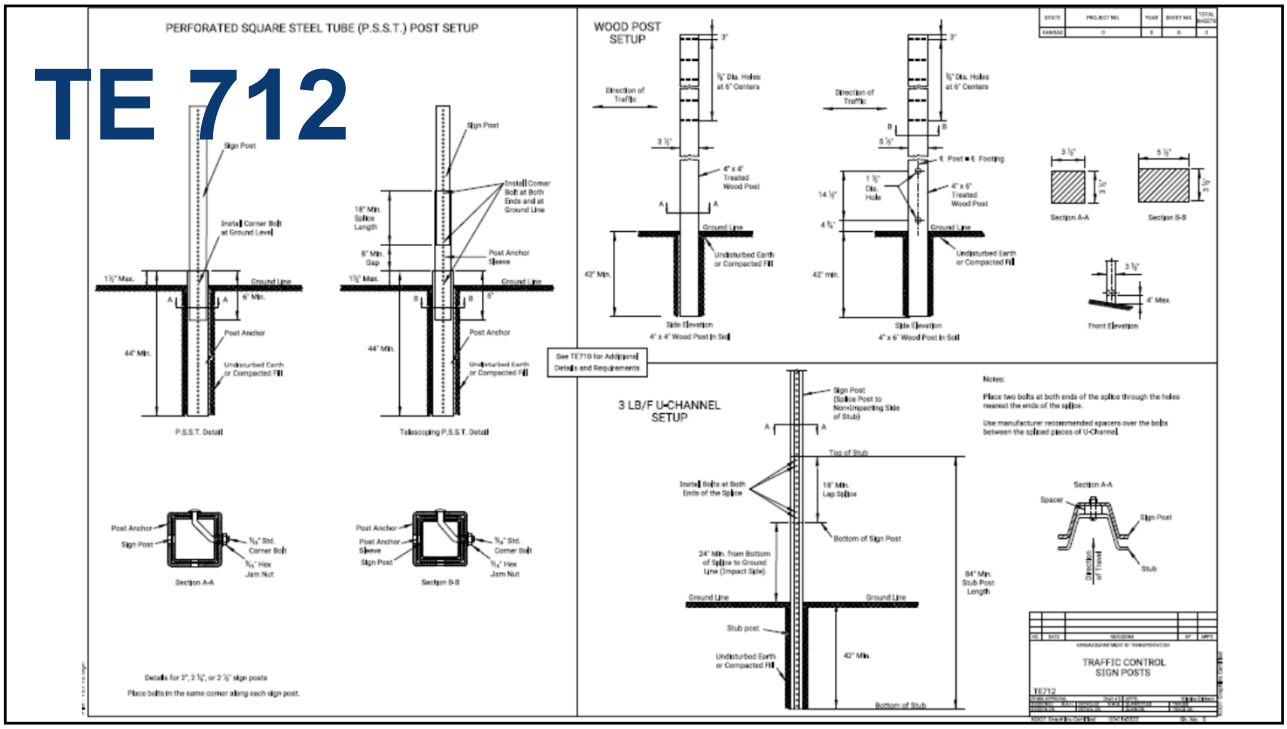
Install sign posts as shown in the Contract Documents. Mount signs that are anticipated to remain in place for more than 3 days on approved posts. Posts should extend to the top edge of the sign, but no more than 6 inches above the sign. In the case of hitting rock, or otherwise not being able to drive posts to comply with Contract Documents, shift sign location without violating minimum sign spacing or use a crashworthy sign stand, with the Engineer's approval.

The Engineer will establish all work zone speed limits, except for pilot car operations. Only use the Reduced Speed Ahead (W3-5) sign if the Engineer determines that a reduced speed is required on the project. Install Work Zone plaques (KM4-20) above all existing and temporary Speed Limit (R2-1) signs located between the Road Work Ahead (W20-1) and the End Road Work (KG20-2). Do not allow the plaque to overlap any portion of the Speed Limit sign.

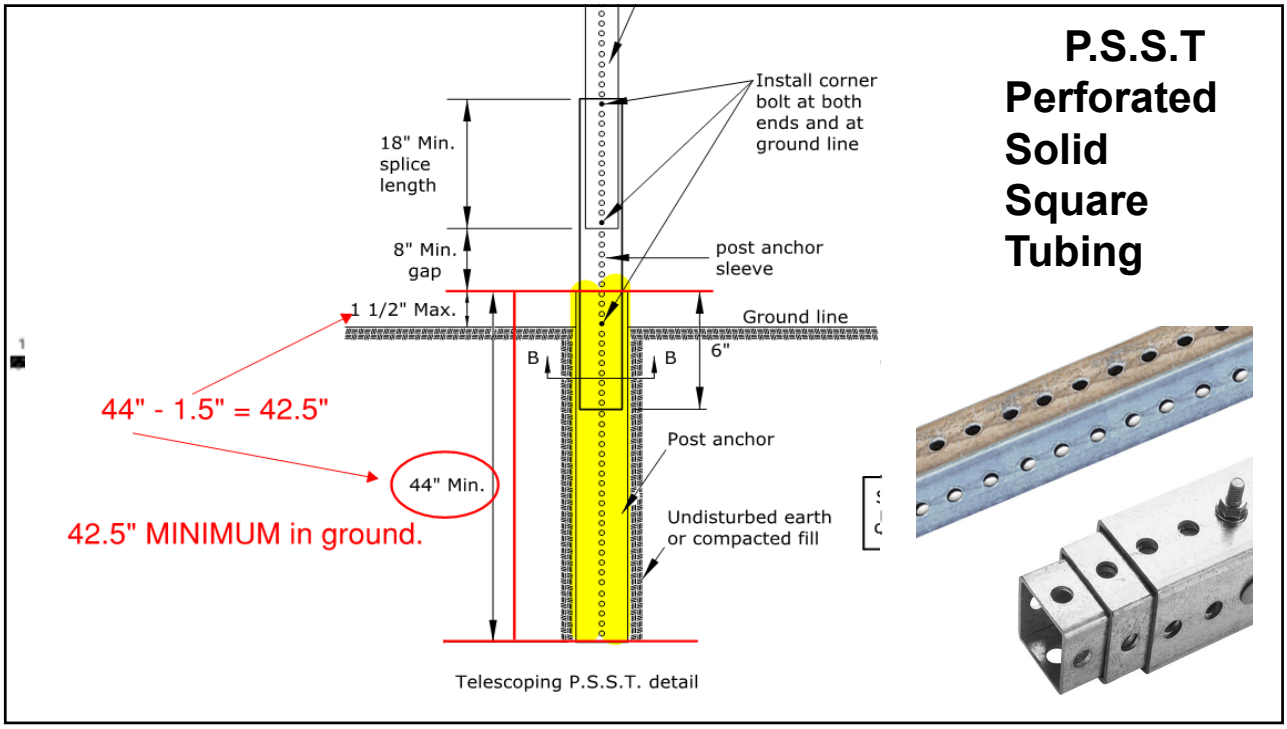
Where two work zones are less than a mile apart in rural areas, or less than ¼ mile apart in urban areas, eliminate the End Road Work (KG20-2) for the first work zone and the Road Work Ahead (W20-1) for the second work zone.

800-16

40


TE 712
PERFORATED SQUARE STEEL TUBE (P.S.S.T.) POST SETUP
WOOD POST SETUP
3 LB/F U-CHANNEL SETUP
TRAFFIC CONTROL SIGN POSTS

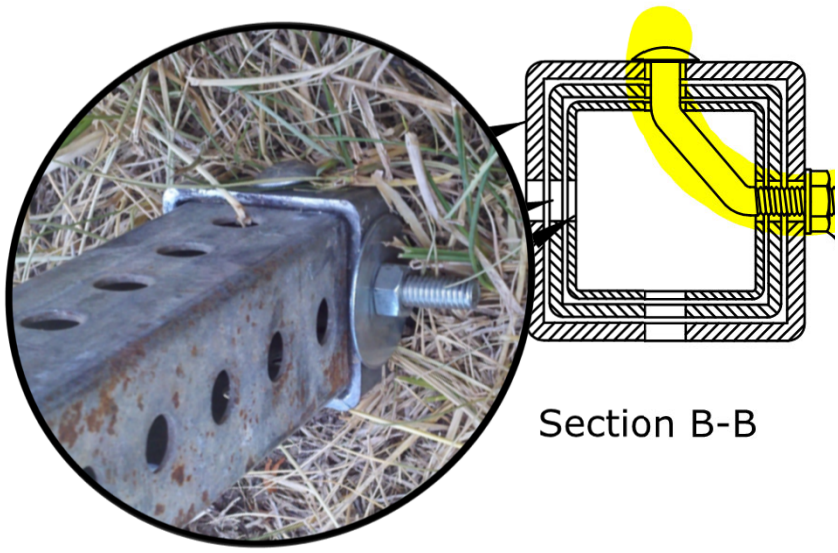
41


P.S.S.T
Perforated
Solid
Square
Tubing
Install corner bolt at both ends and at ground line
18" Min. splice length
8" Min. gap
post anchor sleeve
1 1/2" Max.
Ground line
6"
B
B
44" - 1.5" = 42.5"
44" Min.
Post anchor
42.5" MINIMUM in ground.
Undisturbed earth or compacted fill
Telescoping P.S.S.T. detail

42

43

TE 721 - TELESPAR



Section B-B

44

TE 721 - TELESPAR

45

46

Portable Sign Stand

Kansas
Department of Transportation

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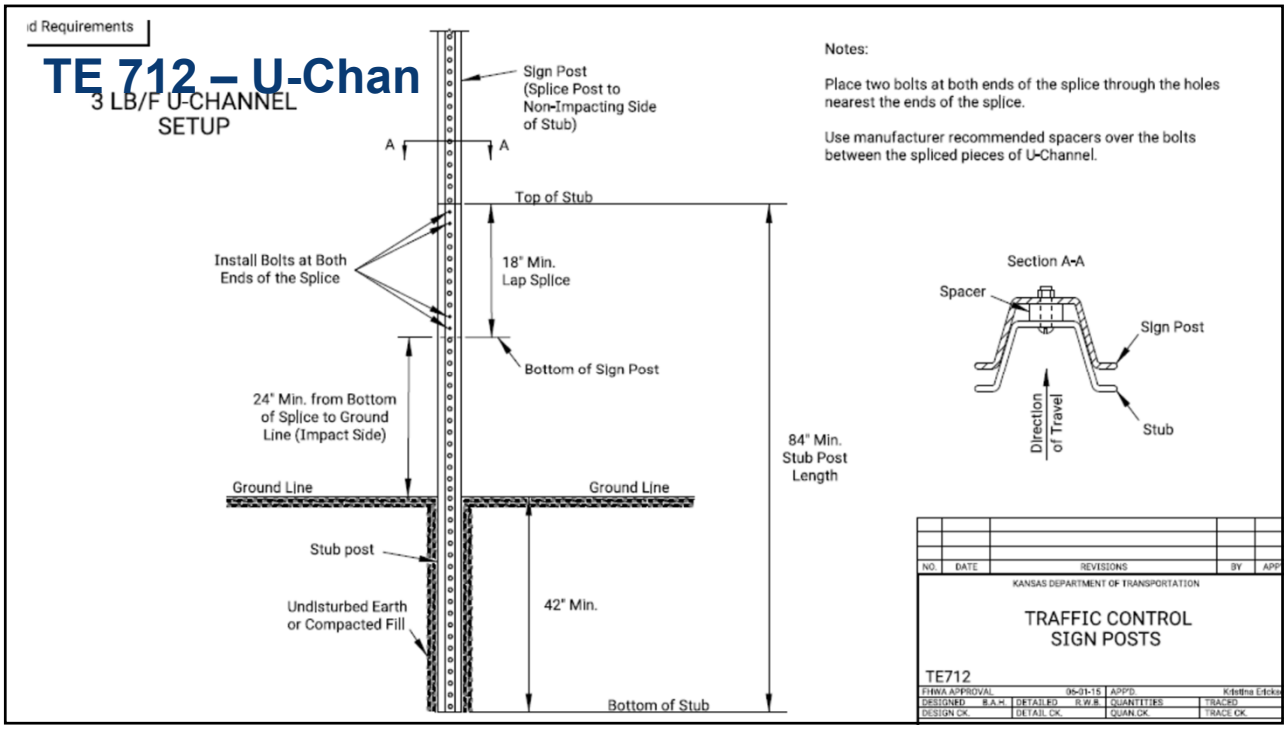
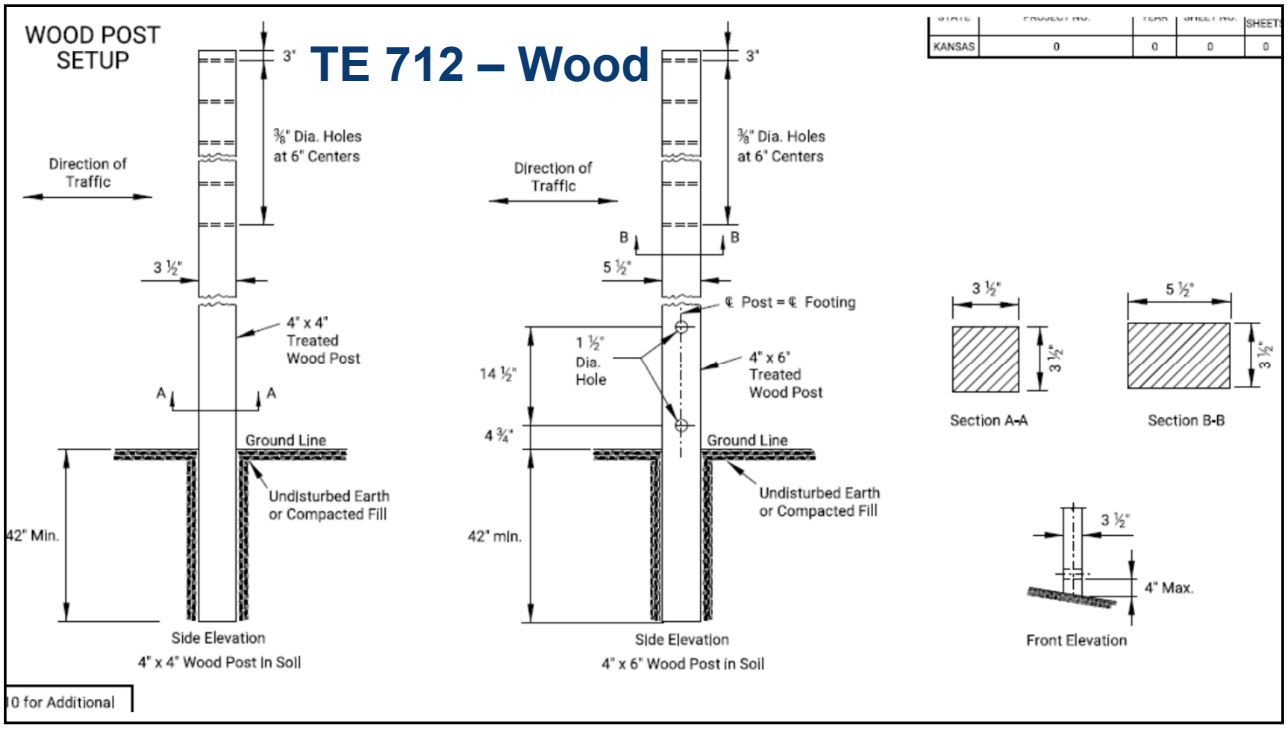
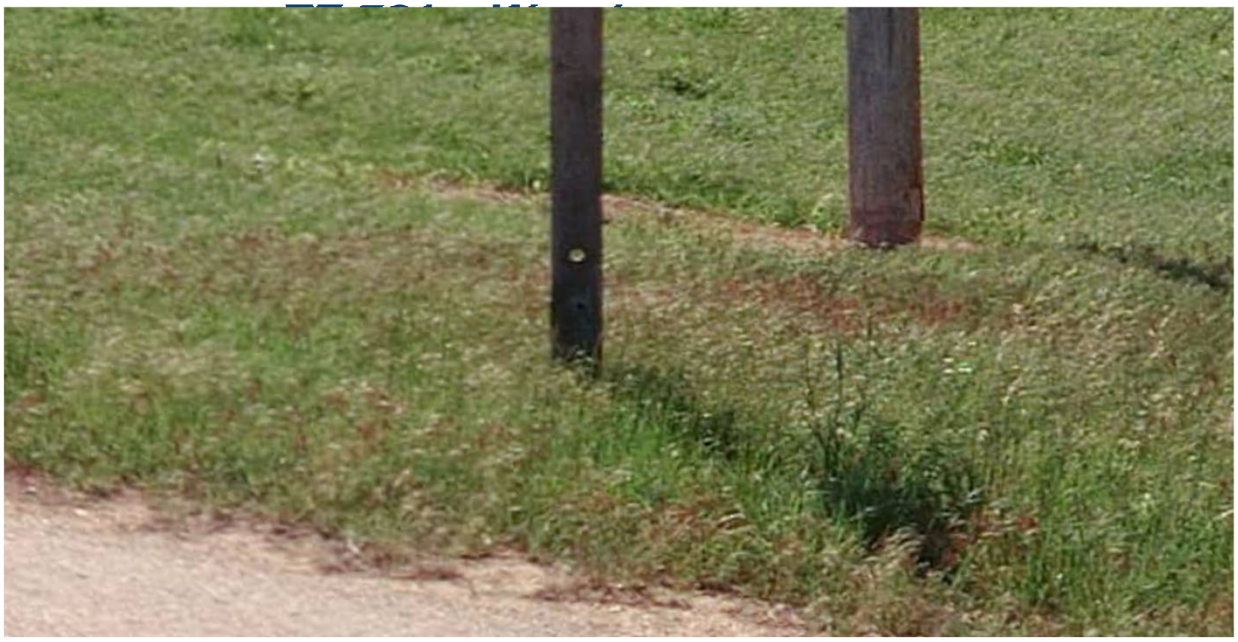

TE 712 – U-Chan
3 LB/F U-CHANNEL SETUP
Sign Post (Splice Post to Non-Impacting Side of Stub)
Top of Stub
Install Bolts at Both Ends of the Splice
18" Min. Lap Splice
Bottom of Sign Post
24" Min. from Bottom of Splice to Ground Line (Impact Side)
84" Min. Stub Post Length
Ground Line
Ground Line
Stub post
Undisturbed Earth or Compacted Fill
42" Min.
Bottom of Stub
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.
Section A-A
Spacer
Sign Post
Direction of Travel
Stub
KANSAS DEPARTMENT OF TRANSPORTATION
TRAFFIC CONTROL SIGN POSTS
TE712

49


WOOD POST SETUP
TE 712 – Wood
3"
3/8" Dia. Holes at 6" Centers
Direction of Traffic
3 1/2"
4" x 4" Treated Wood Post
Ground Line
Undisturbed Earth or Compacted Fill
42" Min.
Side Elevation
4" x 4" Wood Post In Soil
5 1/2"
Post = Footing
1 1/2" Dia. Hole
14 1/2"
4" x 6" Treated Wood Post
4 3/4"
42" min.
Side Elevation
4" x 6" Wood Post in Soil
Section A-A
Section B-B
4" Max.
Front Elevation
KANSAS

50



51

case by case approval of traffic control devices not addressed in the Contract Documents:

(1) A copy of the manufacturer's self certification stating that the Category 1 devices to be used on the project are crashworthy.

(2) A copy of the entire FHWA acceptance letter for the Category 2 devices to be used on the project.

(3) A copy of the entire FHWA acceptance letter for the Category 3 truck mounted attenuators (TMAs) to be used on the project and certification stating that the Category 3 items to be used on the project meet crashworthy specifications, as defined above.

b. Work Zone Signs. The size and layout of the sign message shall comply with the Contract Documents and the "Standard Highway Signs and Markings", latest edition. Use fluorescent orange Type IV or better sheeting for all work zone orange signs. Use standard colors in Type III sheeting or better for all other work zone signs. Opaque, fluorescent orange Type IV or better, roll up signs may be used in approved situations. Do not use mesh signs.

c. Work Zone Barricades. Size and design of all work zone barricades, including those used for pedestrian closures, shall comply with the Contract Documents. Provide Type 3 barricades with ASTM Type III orange and white retroreflective sheeting, as shown in the Contract Documents. Provide pedestrian barricades with orange and white high contrast sheeting as shown in the Contract Documents.

d. Flashing or Sequencing Arrow/Warning Display Signs. When specified, provide, install and maintain a flashing or sequencing arrow/warning display sign that complies with the Contract Documents and the MUTCD.

Provide a display that is capable of being legible for a minimum of ½ mile. Displays shall have an automatic control for lamp intensity, backed up by a manual switch and be capable of dimming 50% from the rated lamp voltage for nighttime operation. The display shall be capable of flashing lamps at a rate between 25 and 40 flashes per minute.

The minimum lamp "on time" shall be 50% for the flashing arrow and 25% for the sequential chevron. Display lamps or lenses shall be recessed or alternately equipped with a minimum 180° upper hood. The color of light emitted shall be yellow or orange.

The following are allowable displays:

800-14

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BARRICADES – 3 TYPES

TYPE 1
Temp closures – City

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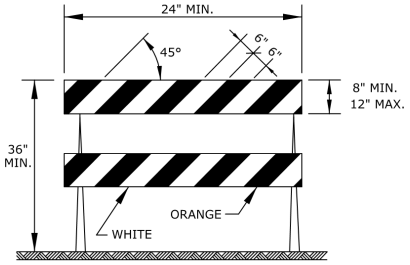
BARRICADES – 3 TYPES



TYPE 2 BARRICADE

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

TYPE 2
- Pedestrian + some highway applications

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PEDESTRIAN BARRICADES

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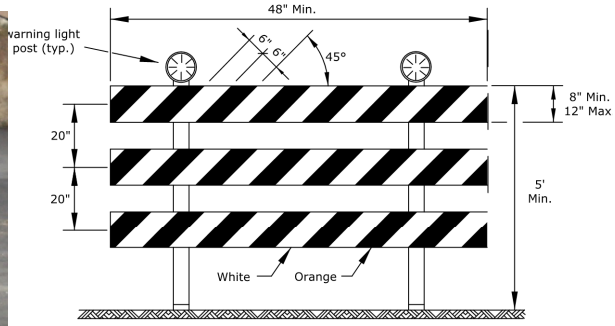
TYPE 3



TYPE 3 BARRICADE WITH LIGHTS

Approved signs mounted on Type 3 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.

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Reduced Speed Ahead (W3-5) sign if the Engineer determines that a reduced speed is required on the project. Install Work Zone plaques (KM4-20) above all existing and temporary Speed Limit (R2-1) signs located between the Road Work Ahead (W20-1) and the End Road Work (KG20-2). Do not allow the plaque to overlap any portion of the Speed Limit sign.

Where two work zones are less than a mile apart in rural areas, or less than ¼ mile apart in urban areas, eliminate the End Road Work (KG20-2) for the first work zone and the Road Work Ahead (W20-1) for the second work zone.

c. Work Zone Barricades. To fully close a road, place Type 3 barricades end-to-end from pavement edge to pavement edge with striping sloped downward toward the center of the road. When Contractor access is required, stagger barricades longitudinally far enough apart that the intended vehicles can safely weave through while still maintaining the appearance of a full closure from the approach. Realign barricades end-to-end to fully close the road when construction activity has ceased for the day. When barricades are placed end-to-end or staggered, mount a Type "A" light to the top of the outside vertical post of each of the end barricades using crashworthy hardware.

Place winged Type 3 barricades in a level position off the pavement or on the shoulders when shown in the Contract Documents. Mount a Type "A" light to the top of each outside vertical post of each winged barricade using crashworthy hardware.

To fully close a sidewalk or other pedestrian pathway, place pedestrian barricades or pedestrian channelizers on the pathway from edge to edge.

d. Flashing or Sequencing Arrow/Warning Display Signs. Where specified, provide, install and maintain a lighted sign capable of displaying flashing or sequential arrows/warnings as shown in the Contract Documents. Mount on a portable chassis and operate continuously when required to divert or warn traffic. Adjust the lamp intensity for the display to prevent a blinding effect and to compensate for daytime and nighttime light conditions.

Use the arrow panel in Caution Mode or Alternating Diamonds Mode only for shoulder work, roadside work near the shoulder, blocking the shoulder or for temporary closure of 1-lane on a 2-lane 2-way roadway.

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TYPE 3

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Reduced Speed Ahead (W3-5) sign if the Engineer determines that a reduced speed is required on the project. Install Work Zone plaques (KM4-20) above all existing and temporary Speed Limit (R2-1) signs located between the Road Work Ahead (W20-1) and the End Road Work (KG20-2). Do not allow the plaque to overlap any portion of the Speed Limit sign.

Where two work zones are less than a mile apart in rural areas, or less than ¼ mile apart in urban areas, eliminate the End Road Work (KG20-2) for the first work zone and the Road Work Ahead (W20-1) for the second work zone.

c. Work Zone Barricades. To fully close a road, place Type 3 barricades end-to-end from pavement edge to pavement edge with striping sloped downward toward the center of the road. When Contractor access is required, stagger barricades longitudinally far enough apart that the intended vehicles can safely weave through while still maintaining the appearance of a full closure from the approach. Realign barricades end-to-end to fully close the road when construction activity has ceased for the day. When barricades are placed end-to-end or staggered, mount a Type "A" light to the top of the outside vertical post of each of the end barricades using crashworthy hardware.

Place winged Type 3 barricades in a level position off the pavement or on the shoulders when shown in the Contract Documents. Mount a Type "A" light to the top of each outside vertical post of each winged barricade using crashworthy hardware.

To fully close a sidewalk or other pedestrian pathway, place pedestrian barricades or pedestrian channelizers on the pathway from edge to edge.

d. Flashing or Sequencing Arrow/Warning Display Signs. Where specified, provide, install and maintain a lighted sign capable of displaying flashing or sequential arrows/warnings as shown in the Contract Documents. Mount on a portable chassis and operate continuously when required to divert or warn traffic. Adjust the lamp intensity for the display to prevent a blinding effect and to compensate for daytime and nighttime light conditions.

Use the arrow panel in Caution Mode or Alternating Diamonds Mode only for shoulder work, roadside work near the shoulder, blocking the shoulder or for temporary closure of 1-lane on a 2-lane 2-way roadway.

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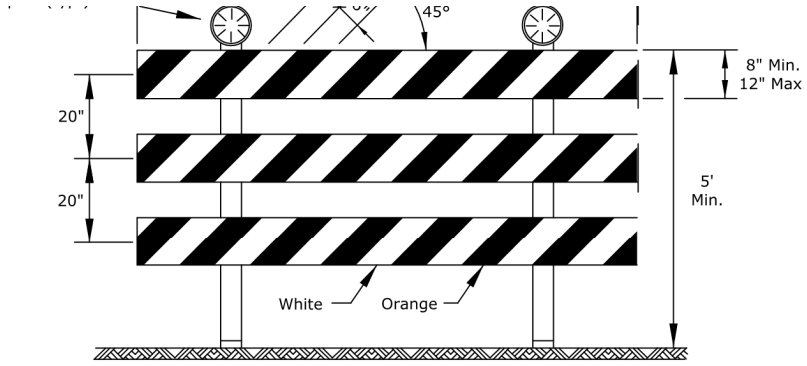
TYPE 3



TYPE 3 BARRICADE WITH LIGHTS

Approved signs mounted on Type 3 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.

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BIKE ROUTE
SHARE THE ROAD
SIDEWALK CLOSED
DETOUR
SIDEWALK CLOSED

73


HOW DARE YOU!!

74

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Part 805 – Arrow and Message Boards

Kansas
Department of Transportation

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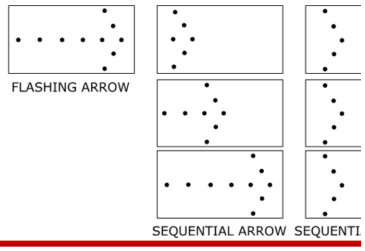
c. Work Zone Barricades. Size and design of all work zone barricades, including those used for pedestrian closures, shall comply with the Contract Documents. Provide Type 3 barricades with ASTM Type III orange and ments. Provide pedestrian barricades with orange and nts.

Signs. When specified, provide, install and maintain lies with the Contract Documents and the MUTCD. for a minimum of ½ mile. Displays shall have an witch and be capable of dimming 50% from the rated pable of flashing lamps at a rate between 25 and 40

flashing arrow and 25% for the sequential chevron.



800-14

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Reduced Speed Ahead (W3-5) sign if the Engineer determines that a reduced speed is required on the project. Install Work Zone plaques (KM4-20) above all existing and temporary Speed Limit (R2-1) signs located between the Road Work Ahead (W20-1) and the End Road Work (KG20-2). Do not allow the plaque to overlap any portion of the Speed Limit sign.

Where two work zones are less than a mile apart in rural areas, or less than ¼ mile apart in urban areas, eliminate the End Road Work (KG20-2) for the first work zone and the Road Work Ahead (W20-1) for the second work zone.

c. Work Zone Barricades. To fully close a road, place Type 3 barricades end-to-end from pavement edge to pavement edge with striping sloped downward toward the center of the road. When Contractor access is required, stagger barricades longitudinally far enough apart that the intended vehicles can safely weave through while still maintaining the appearance of a full closure from the approach. Realign barricades end-to-end to fully close the road when construction activity has ceased for the day. When barricades are placed end-to-end or staggered, mount a Type "A" light to the top of the outside vertical post of each of the end barricades using crashworthy hardware.

Place winged Type 3 barricades in a level position off the pavement or on the shoulders when shown in the Contract Documents. Mount a Type "A" light to the top of each outside vertical post of each winged barricade using crashworthy hardware.

To fully close a sidewalk or other pedestrian pathway, place pedestrian barricades or pedestrian channelizers on the pathway from edge to edge.

d. Flashing or Sequencing Arrow/Warning Display Signs. Where specified, provide, install and maintain a lighted sign capable of displaying flashing or sequential arrows/warnings as shown in the Contract Documents. Mount on a portable chassis and operate continuously when required to divert or warn traffic. Adjust the lamp intensity for the display to prevent a blinding effect and to compensate for daytime and nighttime light conditions.

Use the arrow panel in Caution Mode or Alternating Diamonds Mode only for shoulder work, roadside work near the shoulder, blocking the shoulder or for temporary closure of 1-lane on a 2-lane 2-way roadway.

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805 - WORK ZONE TRAFFIC CONTROL & SAFETY

e. Portable Changeable Message Sign (PCMS). Where specified, provide, install and maintain a PCMS as shown in the Contract Documents. Mount on a portable chassis and operate continuously when required. Adjust the lamp intensity for the display to prevent a blinding effect and to compensate for daytime and nighttime light conditions. When feasible, place the PCMS behind guardrail or barrier, or delineate with channelizers. Messages must be approved by the Engineer prior to use.

f. Channelizers. Install the individual devices used for the channelization of traffic through the work area, as shown in the Contract Documents.

Channelizers (Fixed) are devices that are physically adhered to the road surface with an adhesive or mounting hardware, or are embedded into the ground.

Channelizer (Portable) devices are those that are self-standing and are held in place with deformable ballast material that is either integral with the device or is applied on or around the base of the device. When the Contract Documents specify Channelizer (Fixed), only fixed channelizers may be used. When the plans specify Channelizer (Portable), the Contractor has the option to use either fixed or portable devices, as approved by the Engineer.

Keep the devices clean and bright for maximum target value.

Traffic cones may be used as channelizing devices for daytime operations only.

Place channelizers according to the following:

(1) Tapers. Space devices in merging and shifting tapers so they do not exceed a distance in feet equal to ½ the posted speed limit (mph) prior to work starting.

(2) Advanced Warning Area and Activity Area. Space devices in the advanced warning area and the activity area so they do not exceed a distance in feet equal to 2 times the posted speed limit (mph) prior to work starting. Spacing should be reduced in some situations, such as to delineate access points or to maintain positive guidance when traffic regularly moves slowly in the work zone.

800-17

(3) Visibility. Place channelizing devices for optimum visibility, normally at right angles to the traffic flow.

(4) Diagonal Striping. Alternating diagonal orange and white striping must slope downward in the direction

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Part 805 – Channelizers, AFADs, Warning Lights

Kansas Department of Transportation

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must be approved by the Engineer prior to use.

f. Channelizers. Install the individual devices used for the channelization of traffic through the work area, as shown in the Contract Documents.

Channelizers (Fixed) are devices that are physically adhered to the road surface with an adhesive or mounting hardware, or are embedded into the ground.

Channelizer (Portable) devices are those that are self-standing and are held in place with deformable ballast material that is either integral with the device or is applied on or around the base of the device. When the Contract Documents specify Channelizer (Fixed), only fixed channelizers may be used. When the plans specify Channelizer (Portable), the Contractor has the option to use either fixed or portable devices, as approved by the Engineer.

Keep the devices clean and bright for maximum target value.

Traffic cones may be used as channelizing devices for daytime operations only.

Place channelizers according to the following:

(1) Tapers. Space devices in merging and shifting tapers so they do not exceed a distance in feet equal to ½ the posted speed limit (mph) prior to work starting.

(2) Advanced Warning Area and Activity Area. Space devices in the advanced warning area and the activity area so they do not exceed a distance in feet equal to 2 times the posted speed limit (mph) prior to work starting. Spacing should be reduced in some situations, such as to delineate access points or to maintain positive guidance when traffic regularly moves slowly in the work zone.

(3) Visibility. Place channelizing devices for optimum visibility, normally at right angles to the traffic flow.

(4) Diagonal Striping. Alternating diagonal orange and white striping must slope downward in the direction that traffic is expected to pass.

(5) Directional Barricades. Place direction indicator barricades in series to direct traffic onto the new path.

(6) Pedestrian Channelizers. Place pedestrian channelizers, as shown in the Contract Documents, along entire intended route, and end to end so that there are no gaps in the detectable edging or in the hand trailing surfaces.

800-17 **g. Automated Flagger Assistance Devices (AFADs).** The Contractor may choose to use a trained flagger operating an AFAD in lieu of a flagger at any time. Such use of AFADs will be subsidiary to other contract items.

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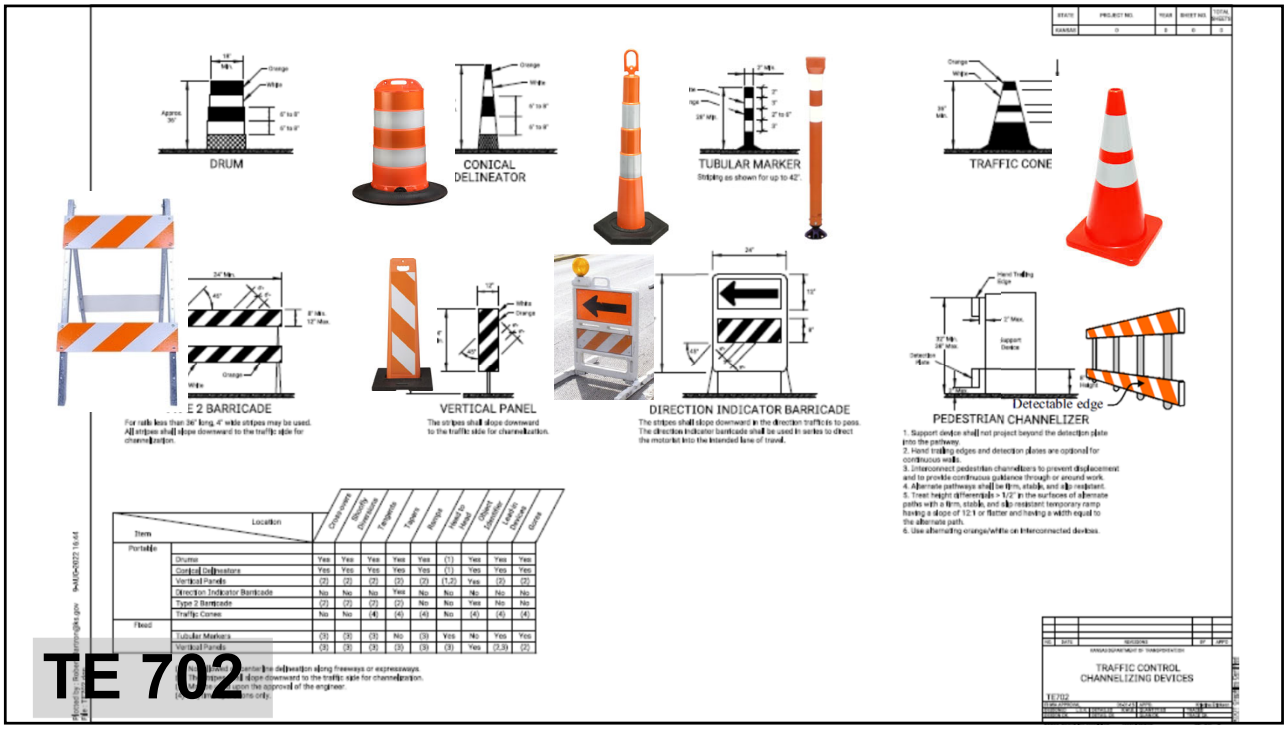
DRUM
CONICAL DELINEATOR
TUBULAR MARKER
TRAFFIC CONE
E 2 BARRICADE
VERTICAL PANEL
DIRECTION INDICATOR BARRICADE
PEDESTRIAN CHANNELIZER
Detectable edge
TRAFFIC CONTROL CHANNELIZING DEVICES
TE702
TE 702

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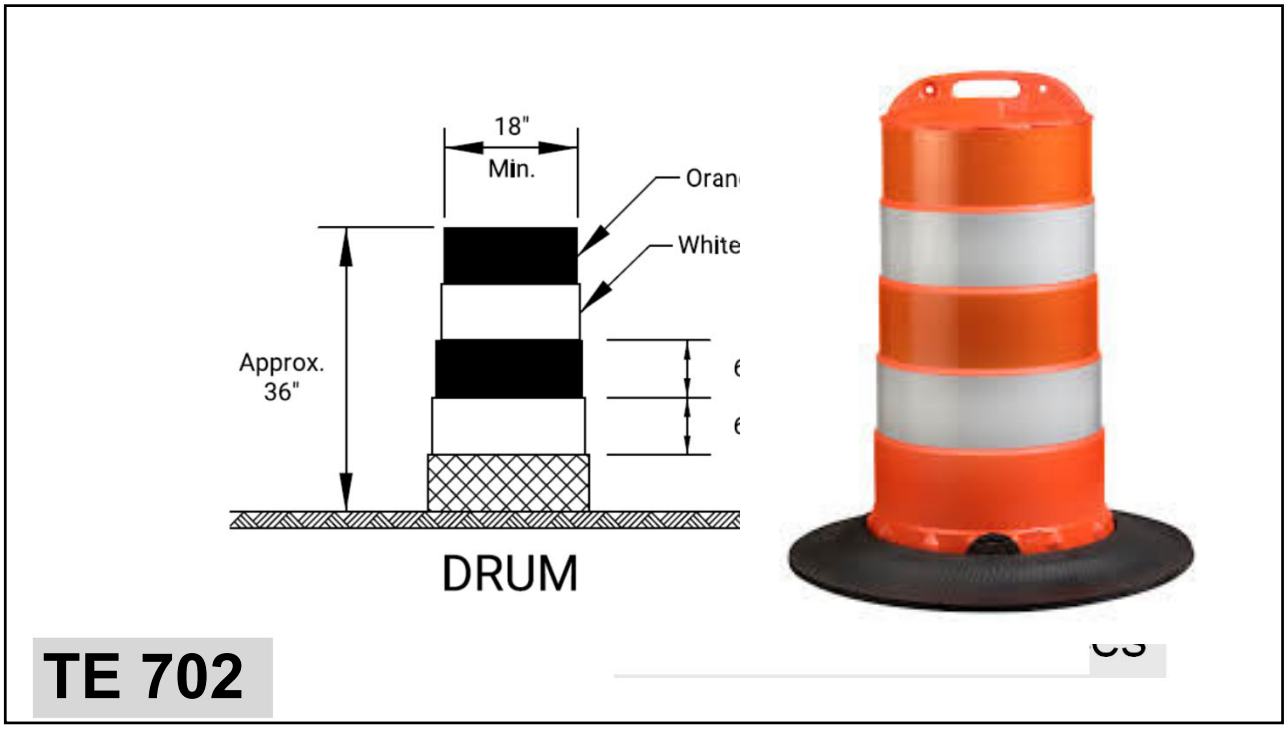
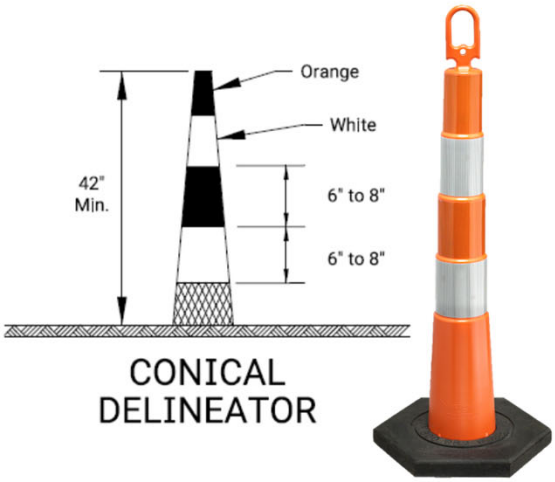
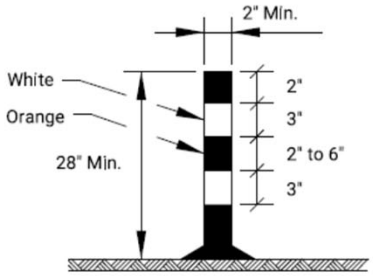

18"
Min.
Orang
White
Approx.
36"
DRUM
TE 702

84



CONICAL DELINEATOR



TUBULAR MARKER

Striping as shown for up to 42".

TE 702

Channelizing Devices

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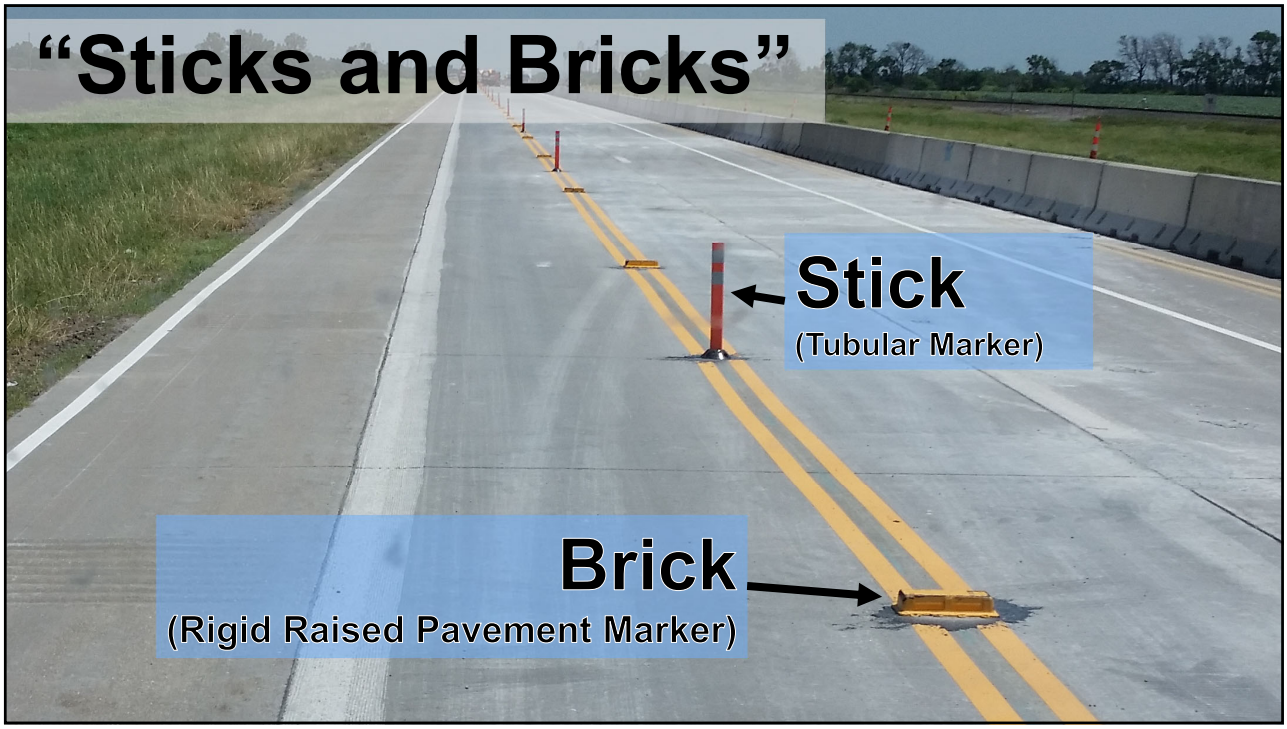
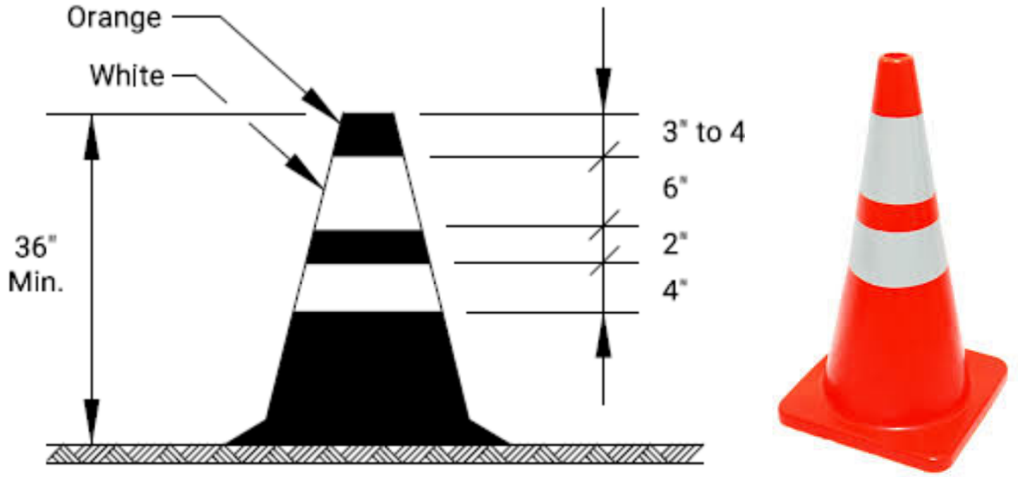


86



TRAFFIC CONE

TE 702

Channelizing Devices

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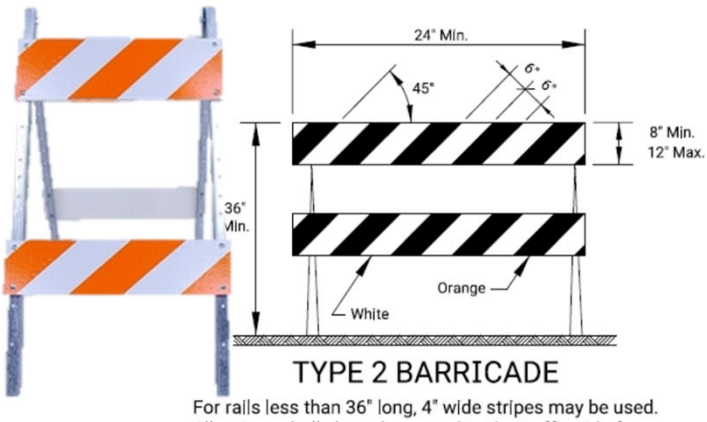
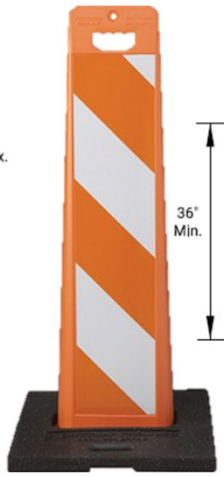
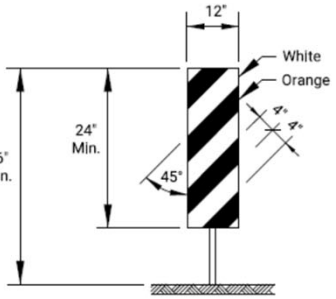


TYPE 2 BARRICADE

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





VERTICAL PANEL

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

TE 702

Channelizing Devices

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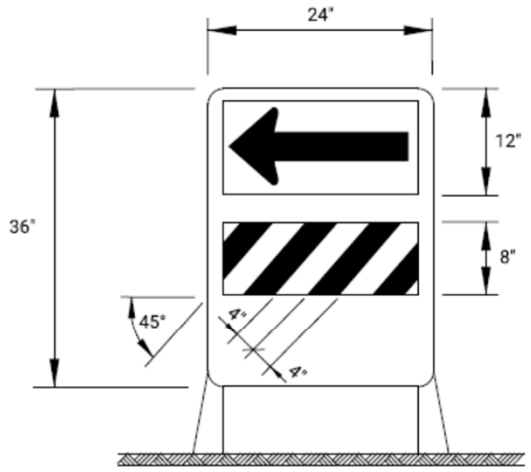

DIRECTION INDICATOR BARRICADE

The stripes shall slope downward in the direction traffic is to pass. The direction indicator barricade shall be used in series to direct the motorist into the intended lane of travel.

TE 702 Channelizing Devices

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Can we use portable Type 2 Barricades for Head-to-Head traffic?

ITEM	LOCATION	Cross-overs	Shoofly Diversions	Tangents	Tapers	Ramps	Head to Head	Object Identifier	Lead-in Devices	Gores
PORTABLE										
	Drums	Yes	Yes	Yes	Yes	Yes	(1)	Yes	Yes	Yes
	Conical Delineators	Yes	Yes	Yes	Yes	Yes	(1)	Yes	Yes	Yes
	Vertical Panels	(2)	(2)	(2)	(2)	(2)	(1,2)	YES	(2)	(2)
	Direction Indicator Barricade	NO	NO	NO	Yes	NO	NO	NO	NO	NO
	Type 2 Barricade	(2)	(2)	(2)	(2)	NO	NO	Yes	NO	NO
	Traffic Cones	NO	NO	(4)	(4)	(4)	NO	(4)	(4)	(4)
FIXED										
	Tubular Markers	(3)	(3)	(3)	NO	(3)	Yes	NO	Yes	Yes
	Vertical Panels	(3)	(3)	(3)	(3)	(3)	(3)	Yes	(2,3)	(2)

(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.

TE 702 Channelizing Devices

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Can we use portable Traffic Cones on tapers in a TC Setup?

ITEM \ LOCATION		Cross-overs	Shoofly Diversions	Tangents	Tapers	Ramps	Head to Head	Object Identifier	Lead-in Devices	Gores
PORTABLE										
	Drums	Yes	Yes	Yes	Yes	Yes	(1)	Yes	Yes	Yes
	Conical Delineators	Yes	Yes	Yes	Yes	Yes	(1)	Yes	Yes	Yes
	Vertical Panels	(2)	(2)	(2)	(2)	(2)	(1,2)	YES	(2)	(2)
	Direction Indicator Barricade	NO	NO	NO	Yes	NO	NO	NO	NO	NO
	Type 2 Barricade	(2)	(2)	(2)	NO	NO	NO	Yes	NO	NO
	Traffic Cones	NO	NO	(4)	(4)	(4)	NO	(4)	(4)	(4)
FIXED										
	Tubular Markers	(3)	(3)	(3)	NO	(3)	Yes	NO	Yes	Yes
	Vertical Panels	(3)	(3)	(3)	(3)	(3)	(3)	Yes	(2,3)	(2)

(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.

TE 702 Channelizing Devices

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starting. Spacing should be reduced in some situations, such as to delineate access points or to maintain positive guidance when traffic regularly moves slowly in the work zone.

(3) Visibility. Place channelizing devices for optimum visibility, normally at right angles to the traffic flow.

(4) Diagonal Striping. Alternating diagonal orange and white striping must slope downward in the direction that traffic is expected to pass.

(5) Directional Barricades. Place direction indicator barricades in series to direct traffic onto the new path.

(6) Pedestrian Channelizers. Place pedestrian channelizers, as shown in the Contract Documents, along entire intended route, and end to end so that there are no gaps in the detectable edging or in the hand trailing surfaces.

g. Automated Flagger Assistance Devices (AFADs). The Contractor may choose to use a trained flagger operating an AFAD in lieu of a flagger at any time. Such use of AFADs will be subsidiary to other contract items.

h. Warning Lights. Use the required type warning lights as shown in the Contract Documents.

Provide, install, and maintain Type "A" warning lights which are lighted from sunset to sunrise. Use Type "A" warning lights on all post mounted action warning signs greater than 5 feet high. Do not use lights on portable signs.

Provide, install, and maintain red Type "B" (high intensity) lights lighted 24 hours per day. Use Type "B" lights on all changed and new Stop conditions.

Maintain lights so they are visible on a clear night from a distance of 3000 feet.

Mount warning lights on action warning signs, as shown in the Contract Documents, on the top of the sign post nearest to the traveled way such that moving flags will not interfere with the visibility of the warning light.

Mount the battery case, for warning lights whose batteries are located in a separate case, no higher than 1 foot above the ground and on the back side of the post holding the light.

Signs that require warning lights also require 2 flags. Flags are made of 18-inch square fluorescent red-orange cloth-like material. Do not use rigid material for the flags. Mount the flags as shown on the Contract Documents on flag staffs that are long enough to allow the flag to flutter without obscuring the warning light or sign.

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AFAD – Automated Flagger Assistance Device

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starting. Spacing should be reduced in some situations, such as to delineate access points or to maintain positive guidance when traffic regularly moves slowly in the work zone.

(3) Visibility. Place channelizing devices for optimum visibility, normally at right angles to the traffic flow.

(4) Diagonal Striping. Alternating diagonal orange and white striping must slope downward in the direction that traffic is expected to pass.

(5) Directional Barricades. Place direction indicator barricades in series to direct traffic onto the new path.

(6) Pedestrian Channelizers. Place pedestrian channelizers, as shown in the Contract Documents, along entire intended route, and end to end so that there are no gaps in the detectable edging or in the hand trailing surfaces.

g. Automated Flagger Assistance Devices (AFADs). The Contractor may choose to use a trained flagger operating an AFAD in lieu of a flagger at any time. Such use of AFADs will be subsidiary to other contract items.

h. Warning Lights. Use the required type warning lights as shown in the Contract Documents.

Provide, install, and maintain Type "A" warning lights which are lighted from sunset to sunrise. Use Type "A" warning lights on all post mounted action warning signs greater than 5 feet high. Do not use lights on portable signs.

Provide, install, and maintain red Type "B" (high intensity) lights lighted 24 hours per day. Use Type "B" lights on all changed and new Stop conditions.

Maintain lights so they are visible on a clear night from a distance of 3000 feet.

Mount warning lights on action warning signs, as shown in the Contract Documents, on the top of the sign post nearest to the traveled way such that moving flags will not interfere with the visibility of the warning light.

Mount the battery case, for warning lights whose batteries are located in a separate case, no higher than 1 foot above the ground and on the back side of the post holding the light.

Signs that require warning lights also require 2 flags. Flags are made of 18-inch square fluorescent red-orange cloth-like material. Do not use rigid material for the flags. Mount the flags as shown on the Contract Documents on flag staffs that are long enough to allow the flag to flutter without obscuring the warning light or sign.

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(6) Pedestrian Channelizers. Place pedestrian channelizers, as shown in the Contract Documents, along

Type "A" = Nighttime only
Type "B" = Daytime + Night: [B for Bright]

h. Warning Lights. Use the required type warning lights as shown in the Contract Documents.

Provide, install, and maintain Type "A" warning lights which are lighted from sunset to sunrise. Use Type "A" warning lights on all post mounted action warning signs greater than 5 feet high. Do not use lights on portable signs.

Provide, install, and maintain red Type "B" (high intensity) lights lighted 24 hours per day. Use Type "B" lights on all changed and new Stop conditions.

Maintain lights so they are visible on a clear night from a distance of 3000 feet.

Mount warning lights on action warning signs, as shown in the Contract Documents, on the top of the sign post nearest to the traveled way such that moving flags will not interfere with the visibility of the warning light.

Mount the battery case, for warning lights whose batteries are located in a separate case, no higher than 1 foot above the ground and on the back side of the post holding the light.

Signs that require warning lights also require 2 flags. Flags are made of 18-inch square fluorescent red-orange cloth-like material. Do not use rigid material for the flags. Mount the flags as shown on the Contract Documents on flag staffs that are long enough to allow the flag to flutter without obscuring the warning light or sign.

i. Temporary Pavement Marking and Temporary Raised Pavement Markers (RPMs). When traffic is carried through construction, provide and maintain temporary pavement marking and temporary RPMs as shown in the Contract Documents. When work will occupy a location more than 3 days, remove or mask all conflicting pavement marking and any markings specified in the Contract Documents, according to **SECTION 808**, and mark all transition tapers, crossovers, relocated lane lines and relocated edge lines with temporary pavement marking. Use temporary pavement markings according to **TABLE 805-1**.

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Part 805 – Temporary Pavement Marking, One Way Traffic (flaggers), Pilot Cars

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lights on all changed and new Stop conditions.

Maintain lights so they are visible on a clear night from a distance of 3000 feet.

Mount warning lights on action warning signs, as shown in the Contract Documents, on the top of the sign post nearest to the traveled way such that moving flags will not interfere with the visibility of the warning light.

Mount the battery case, for warning lights whose batteries are located in a separate case, no higher than 1 foot above the ground and on the back side of the post holding the light.

Signs that require warning lights also require 2 flags. Flags are made of 18-inch square fluorescent red-orange cloth-like material. Do not use rigid material for the flags. Mount the flags as shown on the Contract Documents on flag staffs that are long enough to allow the flag to flutter without obscuring the warning light or sign.

i. Temporary Pavement Marking and Temporary Raised Pavement Markers (RPMs). When traffic is carried through construction, provide and maintain temporary pavement marking and temporary RPMs as shown in the Contract Documents. When work will occupy a location more than 3 days, remove or mask all conflicting pavement marking and any markings specified in the Contract Documents, according to **SECTION 808**, and mark all transition tapers, crossovers, relocated lane lines and relocated edge lines with temporary pavement marking. Use temporary pavement markings according to **TABLE 805-1**.

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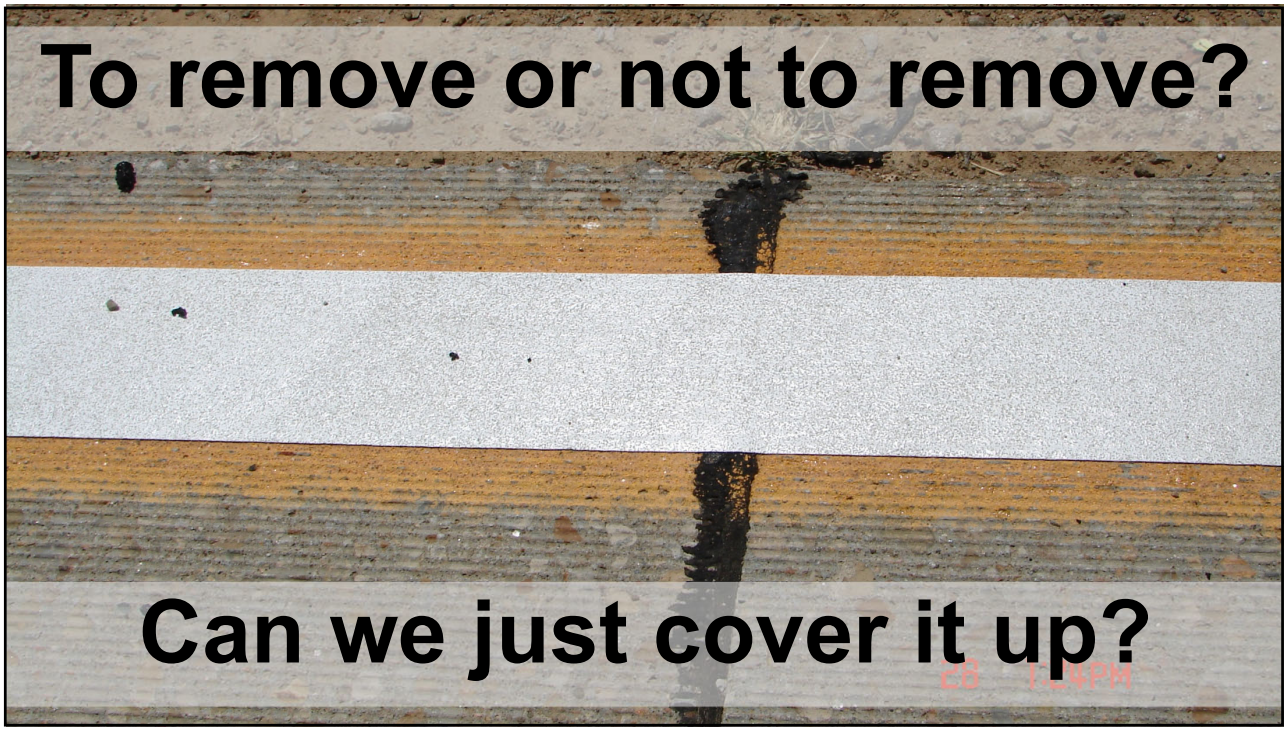
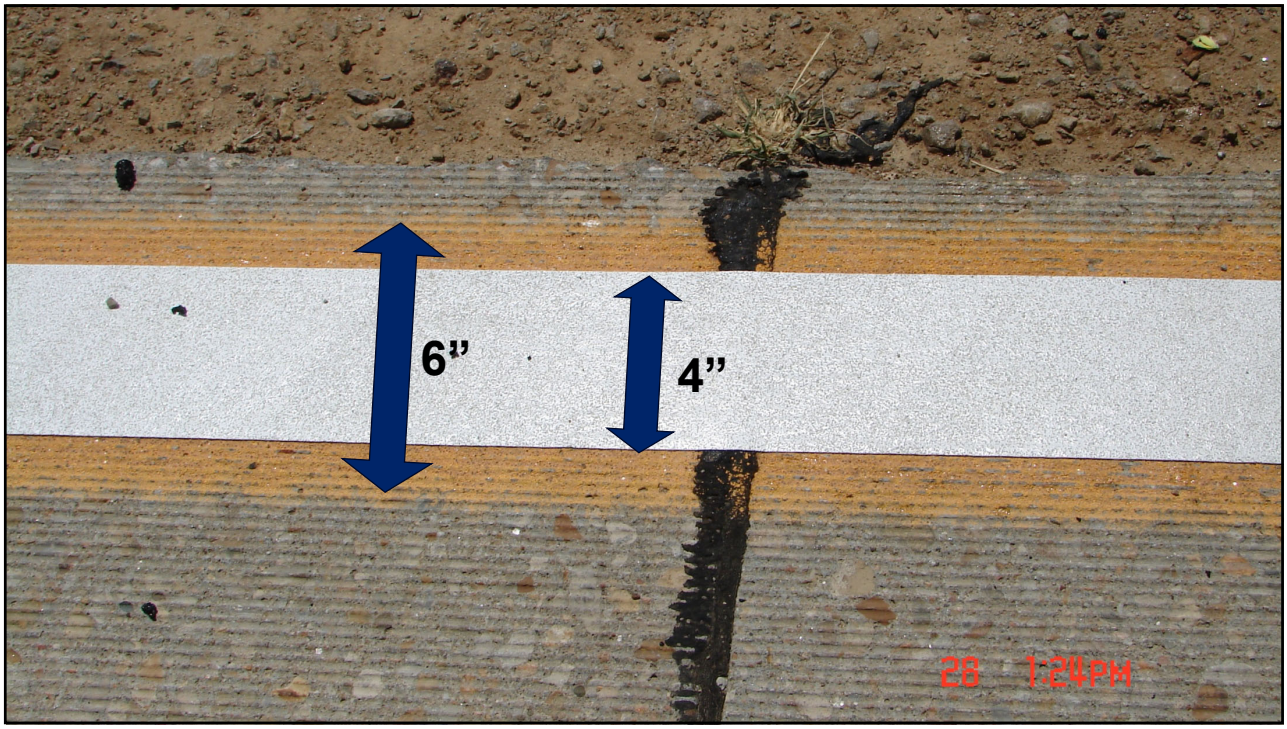

To remove or not to remove?
Can we just cover it up?
28 1:24PM

101


6”
4”
28 1:24PM

102

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TABLE 805-1: TEMPORARY PAVEMENT MARKING ***	
Type	**Use**
Type I	Final surface (new pavement or any surface that will remain when the project is complete). When Type I is specified and in areas where permanent pavement marking will be placed in the same layout/location as the temporary markings, the Contractor has the option to use either Type I tape or paint. Do not use paint on final surfaces where the markings will not follow the same layout/location.
Type II	Any surface that is to be removed or covered by future construction. When Type II is specified, the Contractor has the option to use Type I tape, Type II tape, or paint.

***Do not use paint on Ultrathin Bonded Asphalt Surfaces to remain in place.

(1) Configuration. The following are general guidelines for temporary pavement marking and temporary RPM configurations. Use **TABLE 805-2** and **TABLE 805-3** to determine broken pavement marking dimensions.

- Solid and Broken (8 ft.) markings are intended for use on expressways, freeways, and for traffic configurations in place longer than 45 days, where the markings are different from the original or final pavement markings.
- Broken (3 ft.) markings are intended for use on intermediate lifts of asphalt surfacing projects where movement of traffic through the project is required, and on final surfaces that are opened to traffic prior to placing the permanent pavement markings.
- Flexible Raised Pavement Markers (Broken (8 ft.)), for use on expressways and freeways, and Flexible Raised Pavement Markers (Broken (3 ft.)) are for use in place of tape or paint for resurfacing projects where the permanent pavement marking is expected to be in place within 14 days.
- Dotted extension lines may be used to provide extra guidance through intersections or interchanges.
- Use the severe curve pattern on curves with less than a 1000-foot radius.
- Rigid Raised Pavement Markers (Type II) with Tubular Markers (Channelizer (Fixed)) in a repeating cycle according to the Contract Documents are used to separate opposing traffic in a normally divided roadway that is head to head during construction.

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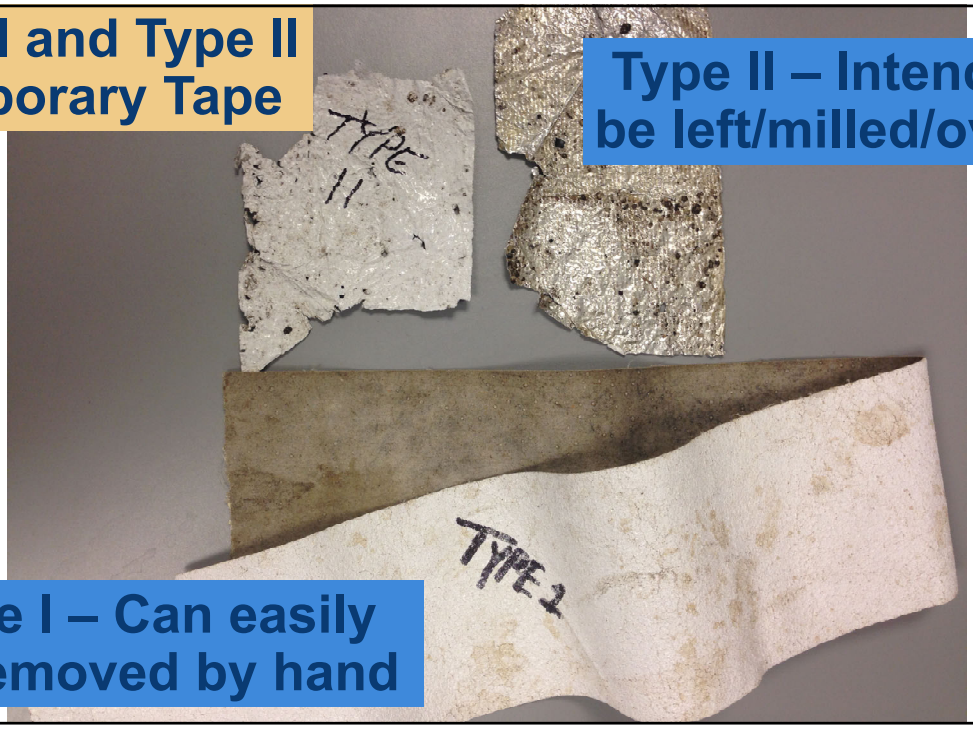
Type I and Type II Temporary Tape



Type II – Intended to be left/milled/overlaid

Type I – Can easily be removed by hand

105

Downsides of Tape

- Time consuming to put down.
- Can get pulled up by traffic.
- Can meander.
- Higher relative cost.

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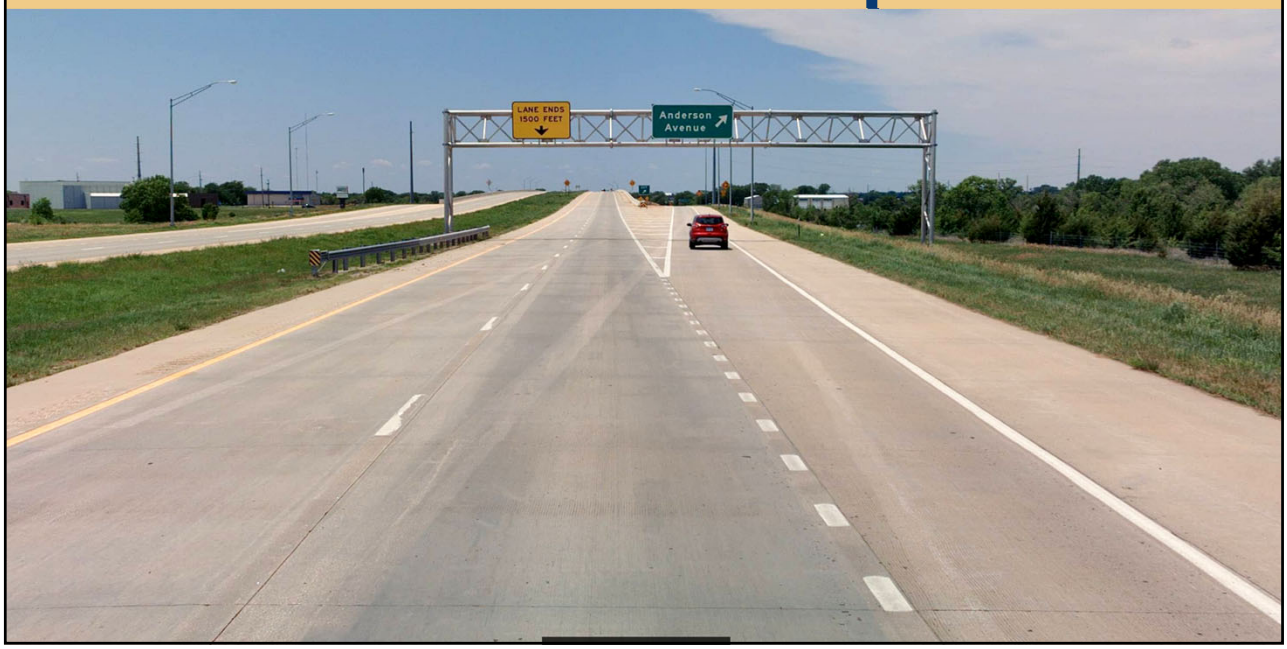
Downsides of Temp Paint



107

Downsides of Paint

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TABLE 805-1: TEMPORARY PAVEMENT MARKING ***	
Type	**Use**
Type I	Final surface (new pavement or any surface that will remain when the project is complete). When Type I is specified and in areas where permanent pavement marking will be placed in the same layout/location as the temporary markings, the Contractor has the option to use either Type I tape or paint. Do not use paint on final surfaces where the markings will not follow the same layout/location.
Type II	Any surface that is to be removed or covered by future construction. When Type II is specified, the Contractor has the option to use Type I tape, Type II tape, or paint.

***Do not use paint on Ultrathin Bonded Asphalt Surfaces to remain in place.

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- Dotted extension lines may be used to provide extra guidance through intersections or interchanges.
- Use the severe curve pattern on curves with less than a 1000-foot radius.
- Rigid Raised Pavement Markers (Type II) with Tubular Markers (Channelizer (Fixed)) in a repeating cycle according to the Contract Documents are used to separate opposing traffic in a normally divided roadway that is head to head during construction.

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Type II	Any surface that is to be removed or covered by future construction. When Type II is specified, the Contractor has the option to use Type I tape, Type II tape, or paint.

***Do not use paint on Ultrathin Bonded Asphalt Surfaces to remain in place.

(1) Configuration. The following are general guidelines for temporary pavement marking and temporary RPM configurations. Use **TABLE 805-2** and **TABLE 805-3** to determine broken pavement marking dimensions.

- Solid and Broken (8 ft.) markings are intended for use on expressways, freeways, and for traffic configurations in place longer than 45 days, where the markings are different from the original or final pavement markings.
- Broken (3 ft.) markings are intended for use on intermediate lifts of asphalt surfacing projects where movement of traffic through the project is required, and on final surfaces that are opened to traffic prior to placing the permanent pavement markings.
- Flexible Raised Pavement Markers (Broken (8 ft.)), for use on expressways and freeways, and Flexible Raised Pavement Markers (Broken (3 ft.)) are for use in place of tape or paint for resurfacing projects where the permanent pavement marking is expected to be in place within 14 days.
- Dotted extension lines may be used to provide extra guidance through intersections or interchanges.
- Use the severe curve pattern on curves with less than a 1000-foot radius.
- Rigid Raised Pavement Markers (Type II) with Tubular Markers (Channelizer (Fixed)) in a repeating cycle according to the Contract Documents are used to separate opposing traffic in a normally divided roadway that is head to head during construction.

TABLE 805-2: BROKEN MARKING DIMENSIONS			
Type	**Approximate Length (ft.)**	**Gap (ft.)**	**Repeating Cycle (ft.)**
Broken (8 ft.)	8	24	32
Broken (3 ft.)	3	29	32
Dotted Extension	2	4	6
Severe Curve	2	14	16

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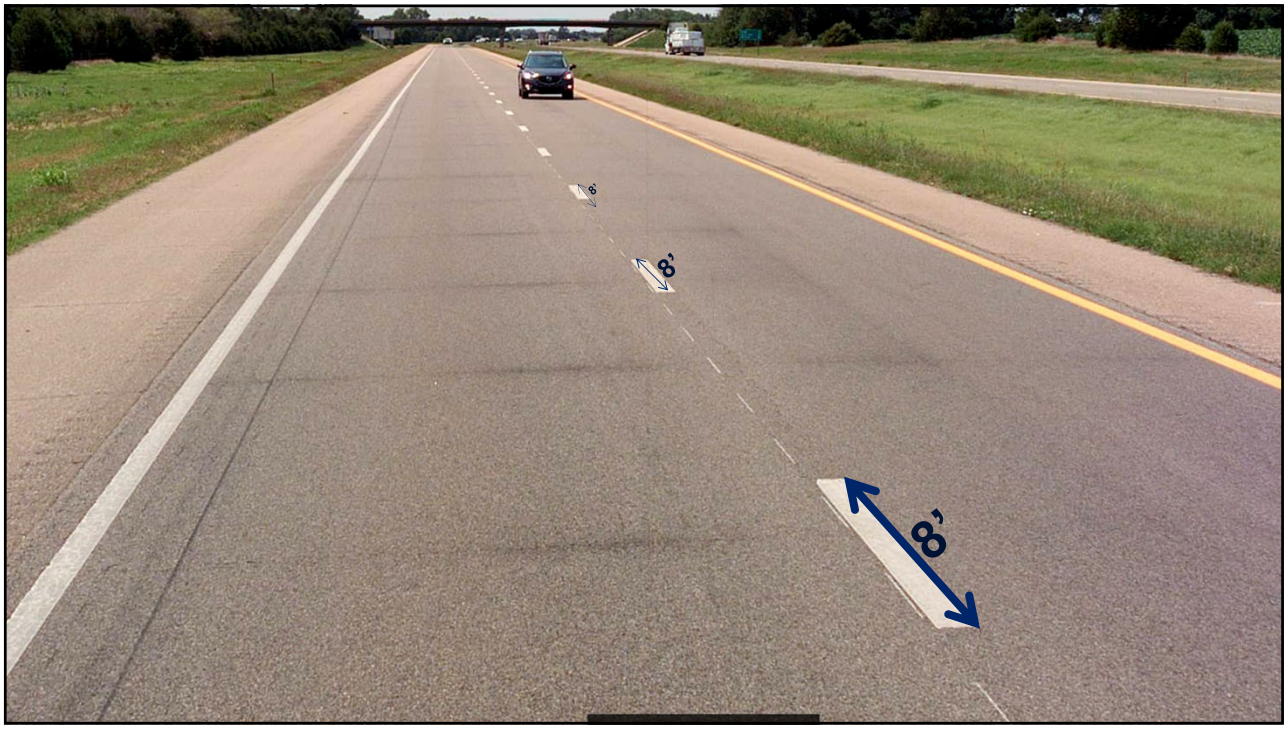
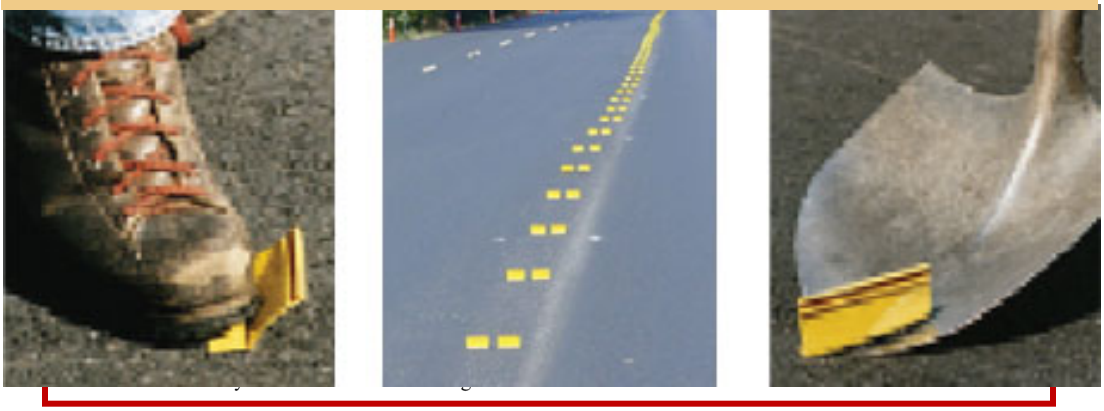


111

Type II	Any surface that is to be removed or covered by future construction. When Type II is specified, the Contractor has the option to use Type I tape, Type II tape, or paint.

Flexible Raised Pavement Markers



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Dotted Extension	2	4	6
Severe Curve	2	14	16

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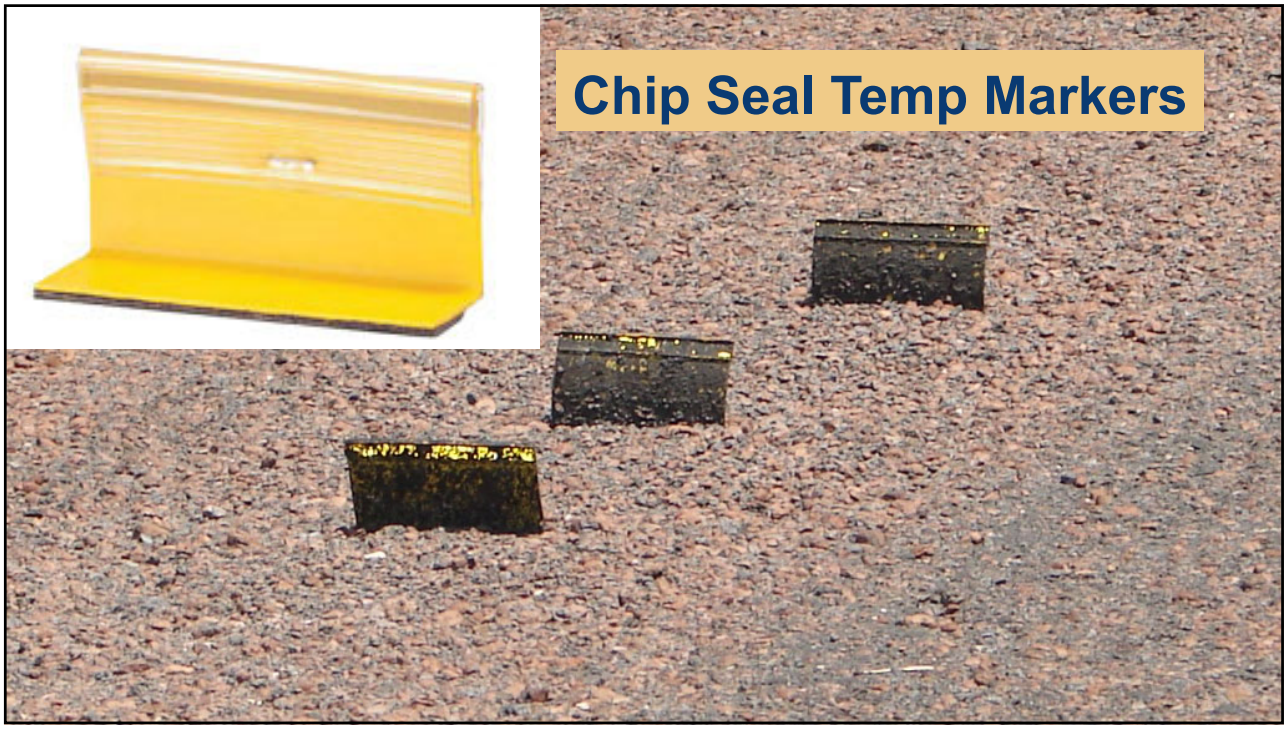

114

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805 - WORK ZONE TRAFFIC CONTROL & SAFETY

Place either temporary or permanent pavement markings or temporary RPMs the same day the existing markings are removed, and before opening to traffic, at the following locations: yellow skip line on undivided roads, white skip lines on multi-lane sections, white gore lines, white intersection dotted extension lines, and solid yellow ramp edge lines. Fixed tubular markers or conical delineators may be placed, and if used shall be maintained, in lieu of temporary gore lines with the Engineer's approval. If used, space the devices at 5-foot intervals on the gore edge line. They are subsidiary to other temporary pavement marking bid items.

(3) Maintenance. Maintain all temporary pavement markings and temporary RPMs for the duration of the project and for 14 days after the work is complete. Temporary pavement marking and temporary RPMs must be in an acceptable condition and location, as described in the Contract Documents.

When temporary pavement markings or temporary RPMs are deemed deficient by the Engineer (no longer retroreflective, damaged, displaced, etc.), the Engineer will notify the Contractor in writing of areas requiring replacement.

Replacement of temporary pavement marking or temporary RPMs could be required as soon as 24 hours from notification and will be noted in the notification. Failure to replace the temporary pavement marking or temporary RPMs within the allotted time could result in a deduct of $500 per day. Deduct assessments are cumulative until deficiencies are corrected, and could be assessed even if the project is in liquidated damages for failure to complete work within the specified time.

Conditions considered for deduct include, but are not limited to the following:

- Visibility less than 300 feet in daytime or nighttime conditions.
- Retroreflectivity less than what is specified for the specific type of pavement marking (**SECTIONS 806** and **807**) or temporary RPM (**DIVISION 2200**).
- Loss of material.

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Yellow SKIPS on a 2-way undivided

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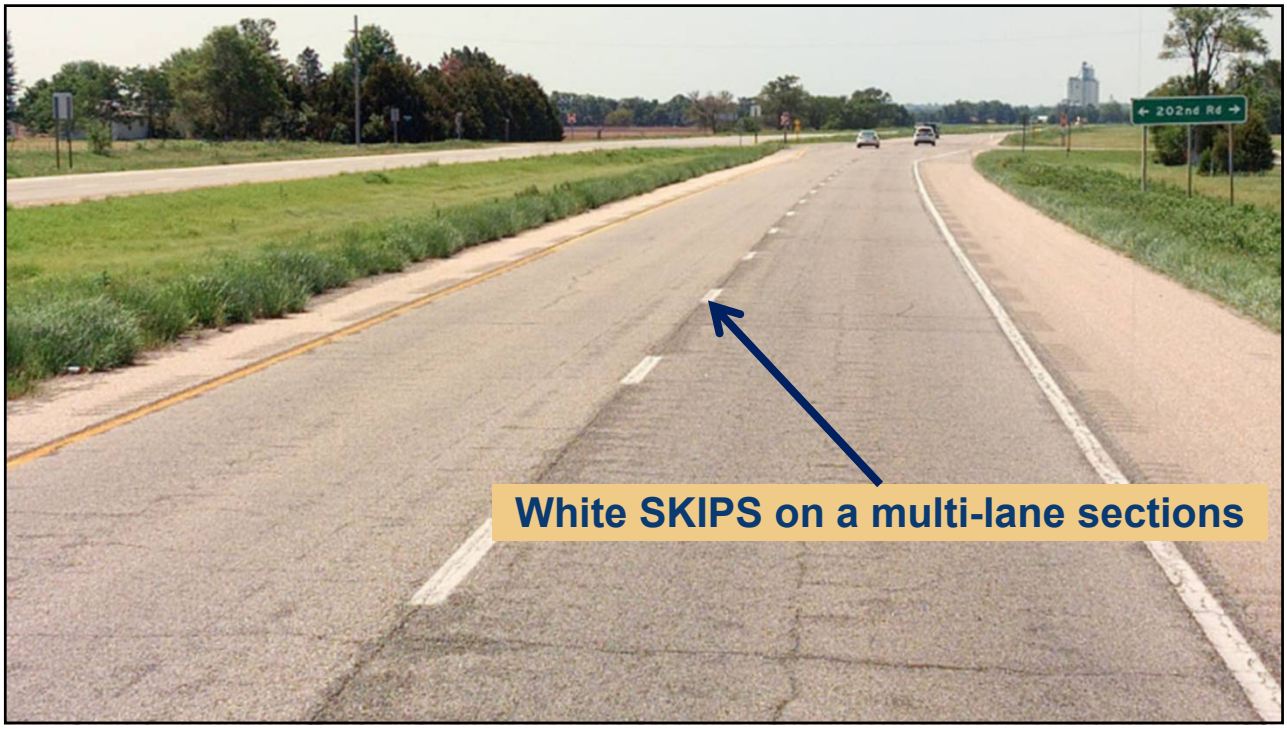
202nd Rd
White SKIPS on a multi-lane sections

118


White gore lines
800-19

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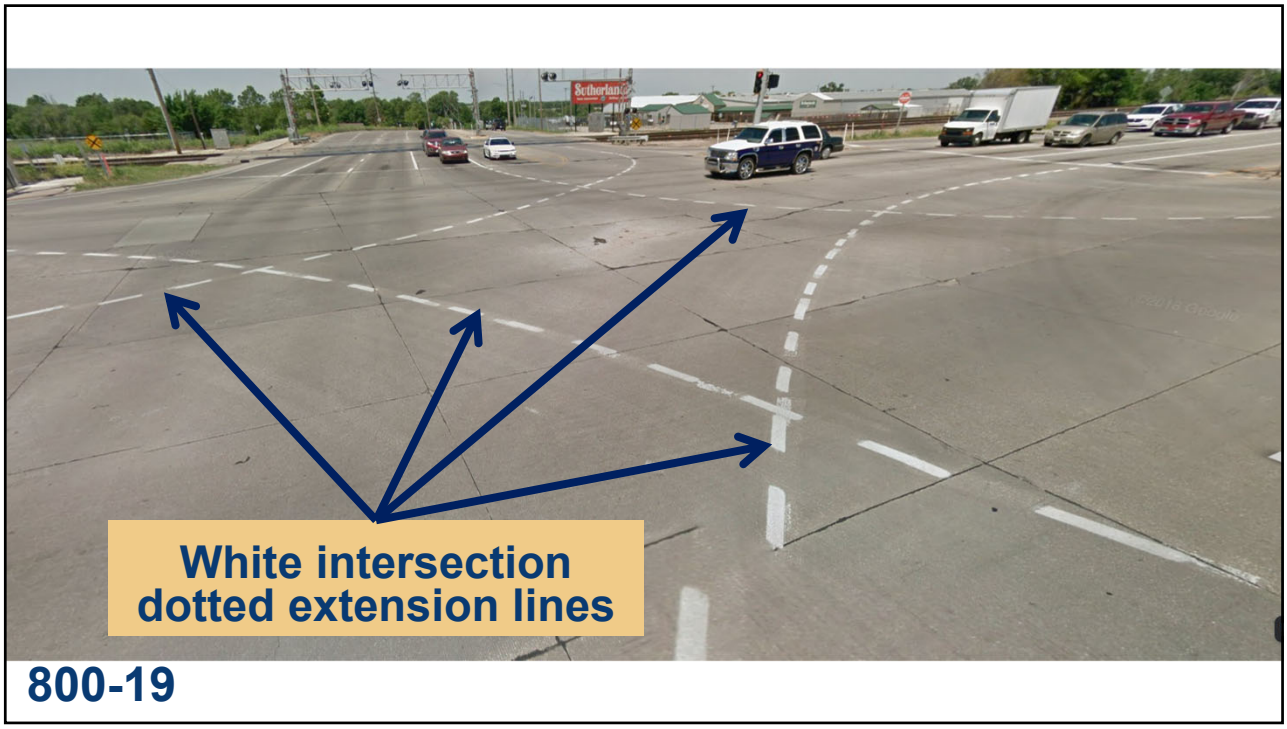
White intersection
dotted extension lines
800-19

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- Loss of material.

Temporary pavement marking or temporary RPMs exceeding the following loss thresholds are subject to the indicated daily deduct:

- Continuous markings cannot have deficiencies of more than 10% of the total feet of pavement marking. Also, no more than 50 consecutive feet can be deficient nor can any deficiency be within 10 feet of another deficiency.
- Intermittent markings, including but not limited to RPMs and broken markings, cannot have deficiencies of more than 10% of the total number of devices (or 10% of the broken markings required) and no more than 2 consecutive devices or markings can be deficient.
- No more than 10% of any temporary marking or temporary RPMs in a curve can be deficient.

(4) Temporary Pavement Marking Tape. Apply pavement marking tape according to the manufacturer's recommendations. If solid lane markings are required, cut through the entire width and thickness of the tape at approximately 100-foot intervals after it is applied to the pavement.

When shown in the Contract Documents, or with the Engineer's approval, apply line masking tape to the surface to temporarily cover the existing pavement markings in widths or sizes sufficient to extend approximately 1 inch beyond the edges of the existing pavement markings.

(5) Traffic Line Paint. When paint is approved, comply with **SECTION 807**.

(6) Flexible Raised Pavement Markers. With the Engineer's approval, the Contractor may place flexible RPMs in lieu of temporary skip lines and solid lines as shown in the Contract Documents. Adhere according to manufacturer's recommendations.

When used on asphalt seals, place the flexible RPMs on the roadway prior to the sealing operation and remove the cover protecting the retroreflective material after the sealing operation.

The adhesive used shall allow the markers to be removed without damage to the roadway surface. Acquire the Engineer's approval before using epoxy as an adhesive.

(7) Rigid Raised Pavement Markers (Type I or Type II). Install and maintain rigid RPMs at locations shown in the Contract Documents. Install and maintain according to the manufacturer's recommendations.

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j. One Way Traffic. Provide 2-way traffic and avoid 1-way traffic, where reasonable. When 1-way traffic

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- Intermittent markings, including but not limited to RPMs and broken markings, cannot have deficiencies of more than 10% of the total number of devices (or 10% of the broken markings required) and no more than 2 consecutive devices or markings can be deficient.
- No more than 10% of any temporary marking or temporary RPMs in a curve can be deficient.

(4) Temporary Pavement Marking Tape. Apply pavement marking tape according to the manufacturer's recommendations. If solid lane markings are required, cut through the entire width and thickness of the tape at approximately 100-foot intervals after it is applied to the pavement.

When shown in the Contract Documents, or with the Engineer's approval, apply line masking tape to the surface to temporarily cover the existing pavement markings in widths or sizes sufficient to extend approximately 1 inch beyond the edges of the existing pavement markings.

(5) Traffic Line Paint. When paint is approved, comply with **SECTION 807**.

(6) Flexible Raised Pavement Markers. With the Engineer's approval, the Contractor may place flexible RPMs in lieu of temporary skip lines and solid lines as shown in the Contract Documents. Adhere according to manufacturer's recommendations.

When used on asphalt seals, place the flexible RPMs on the roadway prior to the sealing operation and remove the cover protecting the retroreflective material after the sealing operation.

The adhesive used shall allow the markers to be removed without damage to the roadway surface. Acquire the Engineer's approval before using epoxy as an adhesive.

(7) Rigid Raised Pavement Markers (Type I or Type II). Install and maintain rigid RPMs at locations shown in the Contract Documents. Install and maintain according to the manufacturer's recommendations.

j. One Way Traffic. Provide 2-way traffic and avoid 1-way traffic, where reasonable. When 1-way traffic is required, do so according to the following:

(1) Flaggers. Provide courteous, competent flaggers, able to communicate with the traveling public, to direct traffic in a one-way traffic operation. Flaggers must be trained once every 3 years on the flagger procedures outlined in Part VI of the MUTCD and on the flagger procedures outlined in the KDOT Flagger Handbook, latest

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j. One Way Traffic. Provide 2-way traffic and avoid 1-way traffic, where reasonable. When 1-way traffic is required, do so according to the following:

(1) Flaggers. Provide courteous, competent flaggers, able to communicate with the traveling public, to direct traffic in a one-way traffic operation. Flaggers must be trained once every 3 years on the flagger procedures outlined in Part VI of the MUTCD and on the flagger procedures outlined in the KDOT Flagger Handbook, latest version. Trained flaggers are expected to behave in accordance with the previously stated flagger procedures regardless of the source of the training. Once trained, flaggers shall carry certification cards showing the flagger's name and date of training. Copies of the KDOT Flagger Handbook are available on the KDOT website, from the Engineer or from the Bureau of Transportation Safety and Technology.

In addition to being trained in flagger procedures, flaggers shall have and use the following equipment:

- Stop/Slow Paddles: Equip flaggers with a minimum 18-inch wide Stop/Slow sign mounted on a rigid staff that is a minimum of 60 inches long from the end to the bottom of the sign.
- Flags: In emergency situations, equip flaggers with flags that are bright red, a minimum of 24 inches square, and attached to a minimum 36-inch long staff. Flags used at night shall be retroreflective.
- Apparel: Flaggers shall wear high visibility headgear and an ANSI Class II vest while on duty during daytime operations. When nighttime work is required, flaggers shall wear ANSI Class E retroreflectorized pants in addition to the high visibility headgear and ANSI Class II vest.
- Illumination: When nighttime work is required, illuminate flagger stations and equipment crossings with temporary lighting. Place all lighting so that it does not create a disabling glare for approaching road users, flaggers or workers. To determine if lighting is adequate and if disabling glare exists, drive toward the flagger station from all approaches at night.

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(2) Law Enforcement. The Contractor may use uniformed enforcement officers as flaggers. When used as a flagger by the Contractor, law enforcement officers shall wear their official uniform with badge and meet the requirements for Flagger Apparel as shown in the Contract Documents.

(3) Traffic Signal Installation (Temporary). Install temporary traffic signals as shown in the Contract Documents. Place temporary signals on the shoulder when feasible, and in all cases, delineate with channelizers.

800-20

Temporary traffic signals may be used in lieu of flaggers and left unattended when each approach is visible to the other, and when approved by the Engineer. When each approach is not visible to the other, or if unattended

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Required Equipment

- Stop/Slow paddle
- Flags (emergency only)
- Reflective Vest & ORANGE hat
- Illumination (night work)
- *Radio/Walkie-Talkie

* AJ’s recommendation

Kansas Department of Transportation

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road users, flaggers or workers. To determine if lighting is adequate and if disabling glare exists, drive toward the flagger station from all approaches at night.

(2) Law Enforcement. The Contractor may use uniformed enforcement officers as flaggers. When used as a flagger by the Contractor, law enforcement officers shall wear their official uniform with badge and meet the requirements for Flagger Apparel as shown in the Contract Documents.

(3) Traffic Signal Installation (Temporary). Install temporary traffic signals as shown in the Contract Documents. Place temporary signals on the shoulder when feasible, and in all cases, delineate with channelizers.

Temporary traffic signals may be used in lieu of flaggers and left unattended when each approach is visible to the other, and when approved by the Engineer. When each approach is not visible to the other, or if unattended signals are not approved by the Engineer, then the signal shall be manually operated, directly or by remote, by a Flagger trained in the operation of the signal. Temporary signals may be used at night. When signals are controlled by flaggers at night, comply with all nighttime flagger requirements. A single flagger may simultaneously operate multiple signals when:

- The flagger has an unobstructed view of the signals
- The flagger has an unobstructed view of approaching traffic in each direction; and
- The flagger is accurately able to read the signals' indicators.

(4) Automated Flagger Assistance Device (AFAD). AFADs may be used in the same manner as temporary traffic signals, except that they cannot be left unattended. Manually operate the AFAD directly or by remote, by a Flagger trained in the operation of the AFAD. AFADs may be used at night when the AFAD station is illuminated with temporary lighting and all other nighttime flagger requirements are met. A single flagger may simultaneously operate multiple AFADs when:

- The flagger has an unobstructed view of the AFADs;
- The flagger has an unobstructed view of approaching traffic in each direction; and
- The flagger is accurately able to read the AFADs' indicators.

800-20

(5) Pilot Cars. A pilot car may be used to assist and lead traffic between flaggers or flagger-manned AFADs. Maintain pilot car operations continuously, causing no delay to traffic for reasons such as refueling and

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AFAD – Automated Flagger Assistance Device

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- The flagger is accurately able to read the signals' indicators.

(4) Automated Flagger Assistance Device (AFAD). AFADs may be used in the same manner as temporary traffic signals, except that they cannot be left unattended. Manually operate the AFAD directly or by remote, by a Flagger trained in the operation of the AFAD. AFADs may be used at night when the AFAD station is illuminated with temporary lighting and all other nighttime flagger requirements are met. A single flagger may simultaneously operate multiple AFADs when:

- The flagger has an unobstructed view of the AFADs;
- The flagger has an unobstructed view of approaching traffic in each direction; and
- The flagger is accurately able to read the AFADs' indicators.

(5) Pilot Cars. A pilot car may be used to assist and lead traffic between flaggers or flagger-manned AFADs. Maintain pilot car operations continuously, causing no delay to traffic for reasons such as refueling and breaks. The maximum time for a pilot car round trip is 15 minutes. Coordinate the work accordingly. Do not use the pilot car for other purposes.

Equip the pilot car with signs reading "Pilot Car Follow Me," complying with Contract Documents as they pertain to sign sheeting and lettering requirements. Mount signs a minimum of 1 foot above the top of the vehicle and clearly visible from the front and rear. Display the Contractor's company logo and contact information on pilot car vehicles.

Maintain one-way traffic and use the pilot car to restrict speeds to a maximum of 40 miles per hour in the work zone and restrict speeds in the vicinity of workers to 20 miles per hour until the last car in the pilot queue exits the vicinity of the workers.

k. Height Differential Treatment. On projects that carry traffic through construction, the following criteria shall be considered a minimum for treatment of height differentials adjacent to traffic lanes. A height

800-20

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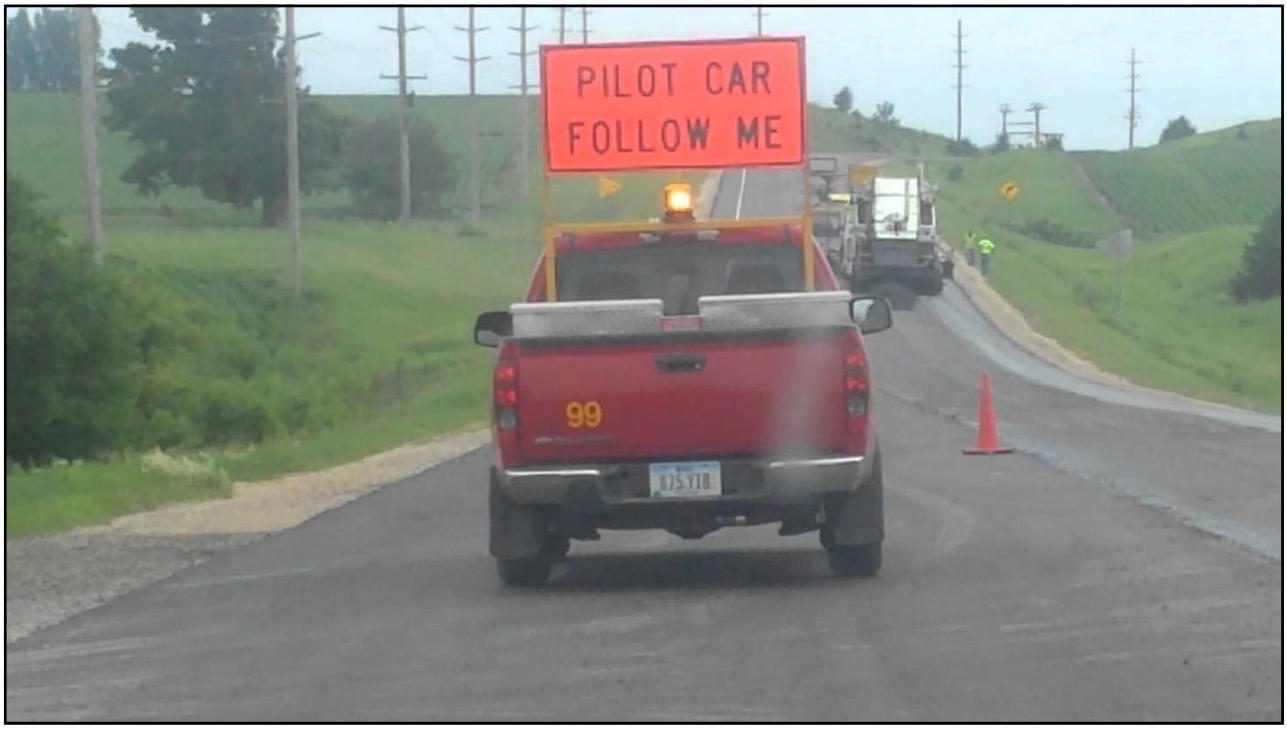
PILOT CAR
FOLLOW ME
99

131


FOLLOW
ME
PILOT CAR
FOLLOW ME
WORK ZONE
FINES
DOUBLED

132

- The flagger is accurately able to read the signals' indicators.

(4) Automated Flagger Assistance Device (AFAD). AFADs may be used in the same manner as temporary traffic signals, except that they cannot be left unattended. Manually operate the AFAD directly or by remote, by a Flagger trained in the operation of the AFAD. AFADs may be used at night when the AFAD station is illuminated with temporary lighting and all other nighttime flagger requirements are met. A single flagger may simultaneously operate multiple AFADs when:

- The flagger has an unobstructed view of the AFADs;
- The flagger has an unobstructed view of approaching traffic in each direction; and
- The flagger is accurately able to read the AFADs' indicators.

(5) Pilot Cars. A pilot car may be used to assist and lead traffic between flaggers or flagger-manned AFADs. Maintain pilot car operations continuously, causing no delay to traffic for reasons such as refueling and breaks. The maximum time for a pilot car round trip is 15 minutes. Coordinate the work accordingly. Do not use the pilot car for other purposes.

Equip the pilot car with signs reading "Pilot Car Follow Me," complying with Contract Documents as they pertain to sign sheeting and lettering requirements. Mount signs a minimum of 1 foot above the top of the vehicle and clearly visible from the front and rear. Display the Contractor's company logo and contact information on pilot car vehicles.

Maintain one-way traffic and use the pilot car to restrict speeds to a maximum of 40 miles per hour in the work zone and restrict speeds in the vicinity of workers to 20 miles per hour until the last car in the pilot queue exits the vicinity of the workers.

k. Height Differential Treatment. On projects that carry traffic through construction, the following criteria shall be considered a minimum for treatment of height differentials adjacent to traffic lanes. A height

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Part 805 – Height Differentials, Measurement and Payment

Kansas Department of Transportation

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differential is defined as the vertical distance between the top of the surface being constructed (or the riding surface) to the top of the adjacent pavement. Use **TABLE 805-4** to determine what treatment is required for the given situations.

When **TABLE 805-4** indicates the use of signs as part of the Traffic Control Plan, place the signs at the beginning of the condition and at each intersecting crossroad or approximately half mile intervals and remove or cover the signs when not applicable.

When the table indicates the use of a wedge, use hot mix asphalt or other material that will remain intact under anticipated traffic as approved by the Engineer.

TABLE 805-4: HEIGHT DIFFERENTIAL TREATMENT

Condition	Height Differential ("D")	Treatment
Nominal height differential between driving lanes open to traffic	1 inch < D ≤ 2 inches	Use the Uneven Lanes signs (W8-11) as part of the Traffic Control Plan.
	2 inches < D ≤ 4 inches	Use the Uneven Lanes signs (W8-11) as part of the Traffic Control Plan. Construct a 3:1 or flatter slope wedge against the pavement edge.
	D > 4 inches	This condition is not permitted unless otherwise indicated by the contract documents.
Nominal height	D ≤ 2 inches	Use the Shoulder Drop-Off sign (W8-17 and W8-17P) as part of the Traffic Control Plan.
	2 inches < D ≤ 4 inches	Use Shoulder Drop-Off signs (W8-17 and W8-17P) signs as part of the Traffic Control Plan. Construct a 1:1 or flatter slope wedge against the pavement edge. Channelizing devices may be used instead of a wedge if approved by the Engineer and when placed so the maximum device spacing, measured in feet, is equal to the posted speed limit prior to construction.

800-21

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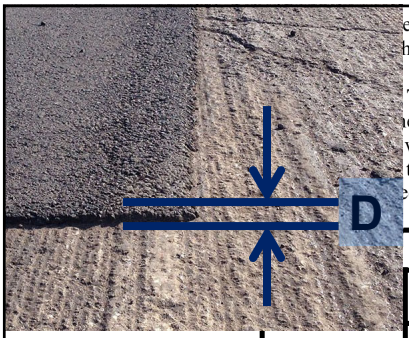

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Nominal height	D ≤ 2 inches	Use the Shoulder Drop-Off sign (W8-17 and W8-17P) as part of the Traffic Control Plan.
	2 inches < D ≤ 4 inches	Use Shoulder Drop-Off signs (W8-17 and W8-17P) signs as part of the Traffic Control Plan. Construct a 1:1 or flatter slope wedge against the pavement edge. Channelizing devices may be used instead of a wedge if approved by the Engineer and when placed so the maximum device spacing, measured in feet, is equal to the posted speed limit prior to construction.

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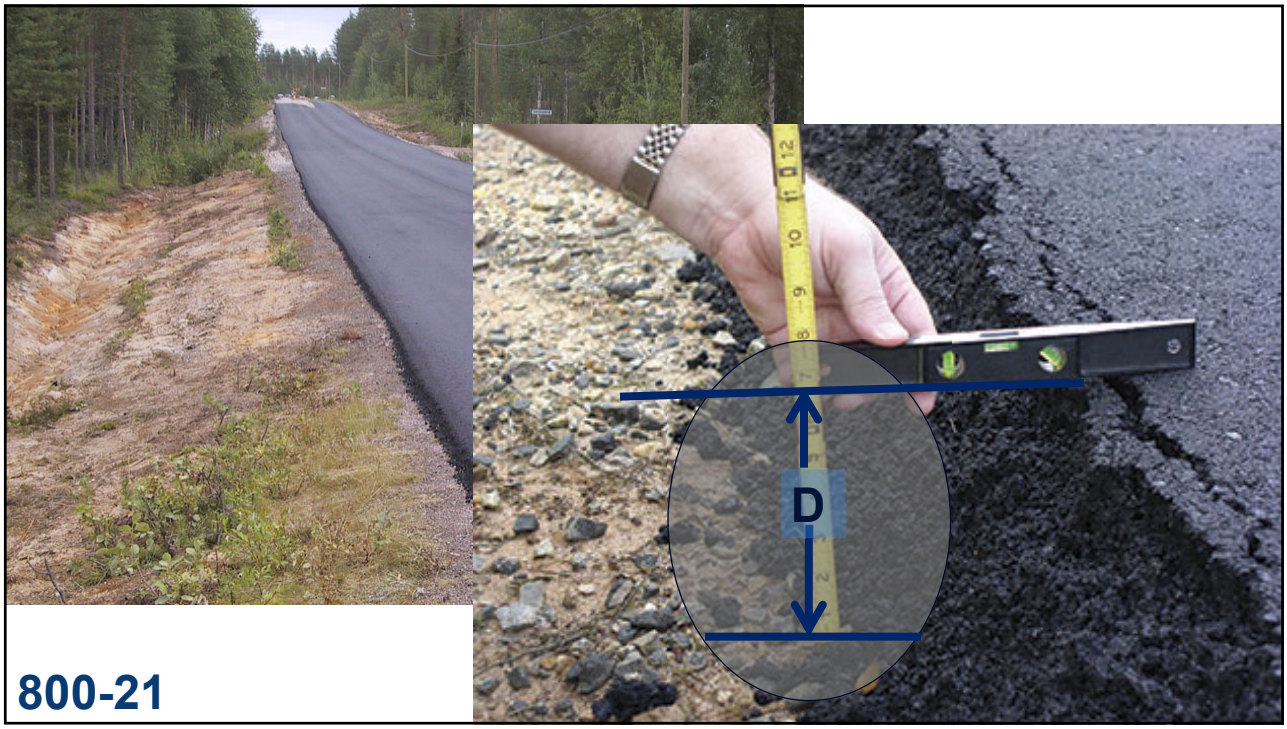
open to	D > 4 inches	This condition is not permitted unless otherwise indicated by the contract documents.
Nominal height differential between driving lane and shoulder or adjacent pavement that is closed to traffic	D ≤ 2 inches	Use the Shoulder Drop-Off sign (W8-17 and W8-17P) as part of the Traffic Control Plan.
	2 inches < D ≤ 4 inches	Use Shoulder Drop-Off signs (W8-17 and W8-17P) signs as part of the Traffic Control Plan. Construct a 1:1 or flatter slope wedge against the pavement edge. Channelizing devices may be used instead of a wedge if approved by the Engineer and when placed so the maximum device spacing, measured in feet, is equal to the posted speed limit prior to construction. height differential is expected to last longer than 2 weeks, the use of a 3:1 or flatter slope wedge against the pavement edge is required and the use of channelizing devices instead of a wedge is not permitted unless otherwise indicated in the Contract Documents.
	D > 4 inches	To the extent feasible, provide an obstruction free recovery area between the channelizing devices and height differential. Use Shoulder Drop-Off signs (W8-17 and W8-17P) as part of the Traffic Control Plan. **Construct a 3:1 or flatter slope wedge against the pavement edge.** Channelizing devices may be used instead of a wedge as approved by the Engineer when the channelizers are placed so the maximum device spacing, measured in feet, is equal to the posted speed limit prior to construction and no height differentials greater than 4 inches are left overnight without a wedge, unless otherwise indicated in the Contract Documents.

l. Weather and Increased Traffic Volume Conditions. During periods of inclement weather, or during periods of unusually heavy traffic, from any cause, the Engineer may require construction operations to cease in order to adequately handle traffic. The Engineer reserves the right to require the suspension or delay of certain

138



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Nominal height differential between driving lane and shoulder or adjacent pavement that is closed to traffic	D > 4 inches	This condition is not permitted unless otherwise indicated by the contract documents.
	D ≤ 2 inches	Use the Shoulder Drop-Off sign (W8-17 and W8-17P) as part of the Traffic Control Plan.
	2 inches < D ≤ 4 inches	Use Shoulder Drop-Off signs (W8-17 and W8-17P) signs as part of the Traffic Control Plan. Construct a 1:1 or flatter slope wedge against the pavement edge. Channelizing devices may be used instead of a wedge if approved by the Engineer and when placed so the maximum device spacing, measured in feet, is equal to the posted speed limit prior to construction. height differential is expected to last longer than 2 weeks, the use of a 3:1 or flatter slope wedge against the pavement edge is required and the use of channelizing devices instead of a wedge is not permitted unless otherwise indicated in the Contract Documents.
	D > 4 inches	To the extent feasible, provide an obstruction free recovery area between the channelizing devices and height differential. Use Shoulder Drop-Off signs (W8-17 and W8-17P) as part of the Traffic Control Plan. **Construct a 3:1 or flatter slope wedge against the pavement edge.** Channelizing devices may be used instead of a wedge as approved by the Engineer when the channelizers are placed so the maximum device spacing, measured in feet, is equal to the posted speed limit prior to construction and no height differentials greater than 4 inches are left overnight without a wedge, unless otherwise indicated in the Contract Documents.

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805.4 MEASUREMENT AND PAYMENT

a. General. No Adjustments in the contract unit price will be made regardless of the amount of underruns or overruns.

b. Traffic Control (Lump Sum). When traffic control is shown in the Contract Documents as a lump sum it will be measured as such. The Engineer will not measure Uneven Lane signs (W8-11), Shoulder Drop Off signs (W8-17 and W8-17P), or wedge material for separate payment.

TABLE 805-5: TRAFFIC CONTROL (LUMP SUM) PARTIAL PAYMENTS

Percent of Original Contract Amount Completed*	Pay Lesser of the Two	
	% of Traffic Control	% of Original Contract Amount
10	50	5
80	100	10
100	100	NA

*The Percent of Original Contract Amount Completed = the amount earned by the Contractor** divided by the total dollar value of the original contract (all bid items).
**Do not include monies earned for "Mobilization", "Traffic Control (Lump Sum)", "Contractor Construction Staking" and "Stored Materials".

c. Individual Devices and Pavement Marking.

(1) General. When bid items are shown in the Contract Documents for individual traffic control devices, the Engineer will measure each item by the designated unit when the device is required and in acceptable condition and position. Once the Contractor has been notified, payment will not be made for any traffic control devices that remain in an unacceptable condition beyond the time specified in the notification.

Measurement for payment of traffic control devices will begin on the day they are installed for traffic control and direction. When traffic control devices are not needed, they shall be removed or covered and will not be measured. During non-working periods such as Sundays and holidays, the list of devices in satisfactory condition

800-22

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c. Individual Devices and Pavement Marking.

(1) General. When bid items are shown in the Contract Documents for individual traffic control devices, the Engineer will measure each item by the designated unit when the device is required and in acceptable condition and position. Once the Contractor has been notified, payment will not be made for any traffic control devices that remain in an unacceptable condition beyond the time specified in the notification.

Measurement for payment of traffic control devices will begin on the day they are installed for traffic control and direction. When traffic control devices are not needed, they shall be removed or covered and will not be measured. During non-working periods such as Sundays and holidays, the list of devices in satisfactory condition and location will be measured for payment on the day following, to determine the measurement for pay. During suspended periods, measurement of the devices used will be based on periodic checks conducted by the Engineer. These periodic checks do not relieve the Contractor of responsibility for traffic control. Units used for only a portion of a day will be paid for as one full day's use, regardless of the length of time they are used during the day and number of times the unit is moved and re-erected.

The following items are subsidiary to other items when specified by the Traffic Control Plan, shown in the Contract Documents, or used in an approved alternate Traffic Control Plan: barrier delineators, traffic cones, pilot cars, flaggers, temporary traffic signals used in addition to flaggers, AFADs, and wedges at the pavement edge, or channelizing devices used in lieu of wedges. Traffic cones and all traffic control devices used to delineate vehicles, equipment, tools, debris and materials stored within the right-of-way or 30 feet from the edge of the travelled way, whichever is less, are subsidiary to other items. The temporary removal, storage, and final placement of existing signs that conflict with construction work, but are intended to remain in place after the project is complete, is subsidiary to other items and signs damaged while in the Contractor's possession will be replaced at the Contractor's expense.

(2) Work Zone Signs (Size). The Engineer will measure each Work Zone Signs (Size) per each calendar day the device is required in acceptable condition and position.

(3) Work Zone Sign (Special)(Size). The Engineer will measure each Work Zone Signs (Special) when the sign is first installed and in place for traffic control and direction. No additional measurement will be made for relocating, repairing or maintaining the special signs. On the first estimate following the initial installation of a Work Zone Sign (Special), the price bid per sign will be paid for each sign installed.

800-22

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Contractor is allowed to use temporary traffic signals in lieu of flaggers, temporary signals will not be paid for separately, but will be considered subsidiary to other items of the contract. If the Contractor elects to use AFADs in addition to flaggers, AFADs will not be paid for separately, but will be considered subsidiary to other items of the contract. If the Engineer determines that additional flaggers are required, each additional flagger will be measured for each hour they are required.

(10) Traffic Signal Installation (Temporary). The Engineer will measure temporary traffic signals by the Lump Sum, when shown in the Contract Documents as part of the Traffic Control Plan. The Engineer will make payments as follows:

Pay 75% of the contract unit price after the traffic signals are initially installed and operational.

Pay 100% after the traffic signals are no longer needed for the movement of traffic and have been removed or stockpiled, as specified.

(11) Traffic Control (Initial Set Up). If the amount bid for this item is less than 25% of the sum of amounts bid for all traffic control items, 100% of the amount bid for this item will be paid on the first estimate following the beginning of any traffic control set up done on the project. If the bid amount for this item is 25%, or greater, than the sum of the amounts bid for all traffic control items, the amount equal to 25% of the sum of the amounts bid for all traffic control items will be paid on the first estimate following any traffic control set up done on the project. Upon completion of all work on the project, 100% of the amount bid for this item will be paid.

(12) Uneven Lane and Shoulder Drop Off Signs. When individual traffic control bid items are shown in the Contract Documents, the Engineer will measure the Uneven Lane signs (W8-11) and the Shoulder Drop Off signs (W8-17 and W8-17P) each per day. See **subsection 805.4b.** when traffic control is bid lump sum.

(13) Liquidated Damages. Once the Contractor is being assessed liquidated damages according to **SECTION 108**, no traffic control devices will be measured for payment. This does not relieve the Contractor from the responsibility for providing and maintaining all necessary traffic control on the project until it has been completed and accepted. Such traffic control will be at the Contractor's expense.

On calendar completion date projects with interim completion dates, no traffic control devices will be measured other than those required between the interim completion date and the next beginning work period. This does not relieve the Contractor from the responsibility for maintaining all necessary traffic control on the project until it has been completed and accepted.

Contract Deducts may be assessed while the contract is in liquidated damages.

143

144

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146

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Part 805 – Temporary Pavement Marking, One Way Traffic (flaggers), Pilot Cars

Kansas Department of Transportation

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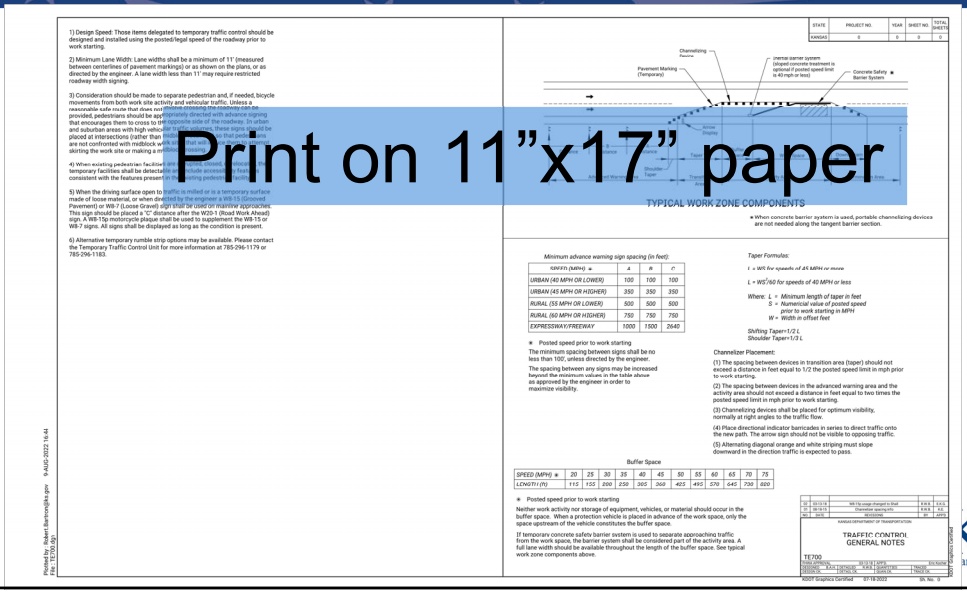
Temporary Traffic Control
Traffic Engineering Standards

Kansas Department of Transportation

1

Temporary Traffic Control
TE 700



Print on 11”x17” paper

2

Temporary Traffic Control
TE 700

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

3

Temporary Traffic Control
TE 700

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skirting the work site or making a midblock crossin

4) When existing pedestrian facilities are disrupted,
temporary facilities shall be detectable and include

4

Temporary Traffic Control
TE 700

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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 or is a temporary surface made of loose material, or when directed by the engineer a W8-15 (Grooved Pavement) or W8-7 (Loose Gravel) sign shall be used on mainline approaches.

5

Temporary Traffic Control
TE 700

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.

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5) When the driving surface open to traffic is milled or is a temporary surface made of loose material, or when directed by the engineer a W8-15 (Grooved Pavement) or W8-7 (Loose Gravel) sign shall be used on mainline approaches. This sign should be placed a "C" distance after the W20-1 (Road Work Ahead) sign. A W8-15p motorcycle plaque shall be used to supplement the W8-15 or W8-7 signs. All signs shall be displayed 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 785-296-1179 or 785-296-1183.

6

Temporary Traffic Control

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Kansas
Department of Transportation

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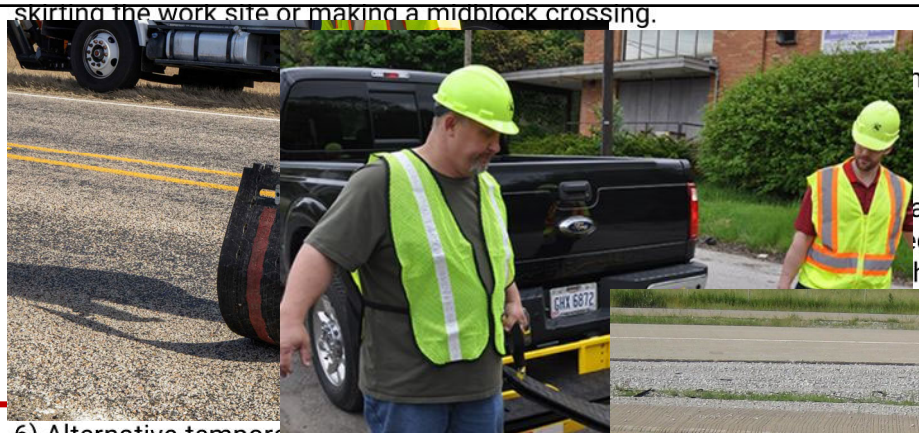
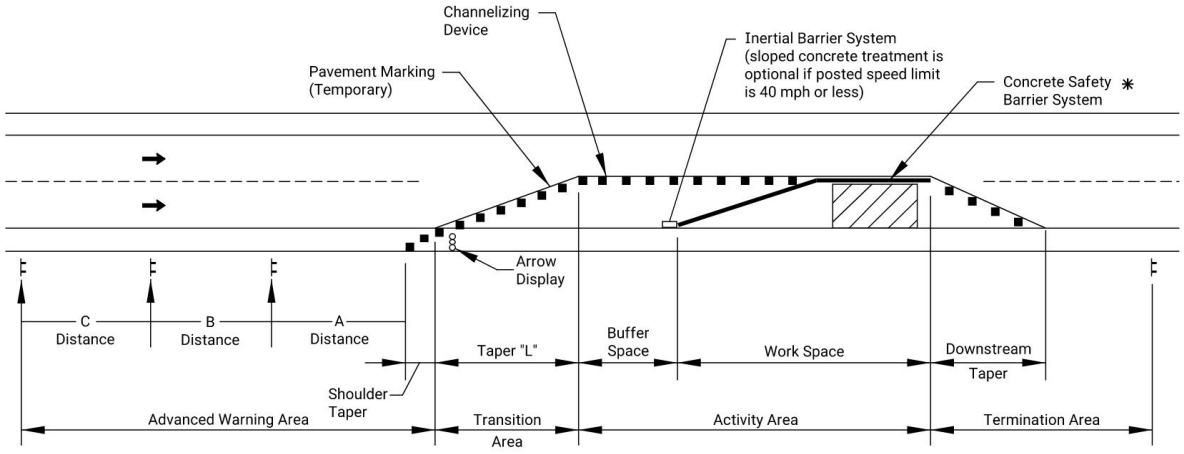
skirting the work site or making a midblock crossing.



6) Alternative tempora
the Temporary Traffic
785-296-1183.

8

STATE	PROJECT NO.	YEAR	SHEET NO.
KANSAS	0	0	0



TYPICAL WORK ZONE COMPONENTS

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

9

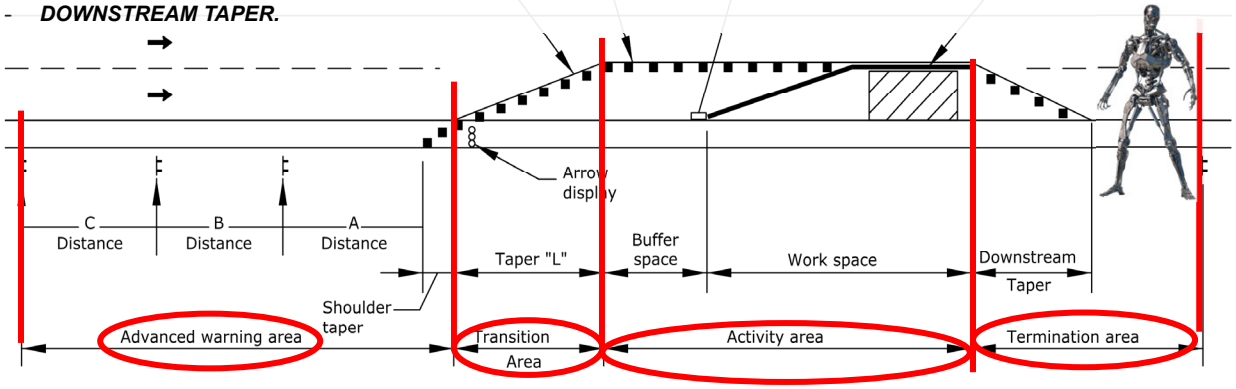
Workzone Areas

- **ADVANCE WARNING AREA** - ***TELLS TRAFFIC WHAT TO EXPECT AHEAD!!! INCLUDES THE SHOULDER TAPER.***
- **TRANSITION AREA** - ***MOVES TRAFFIC OUT OF ITS NORMAL PATH.***
- **ACTIVITY AREA** - ***IS WHERE THE WORK TAKES PLACE AND INCLUDES, THE BUFFER SPACE WHICH PROVIDES PROTECTION FOR TRAFFIC AND WORKERS AND THE WORK SPACE WHICH IS SET ASIDE FOR WORKERS, EQUIPTMENT, AND MATERIAL STORAGE.***
- **TERMINATION AREA** - ***LETS TRAFFIC RESUME NORMAL OPERATIONS. INCLUDES A BUFFER SPACE AND A DOWNSTREAM TAPER.***

10

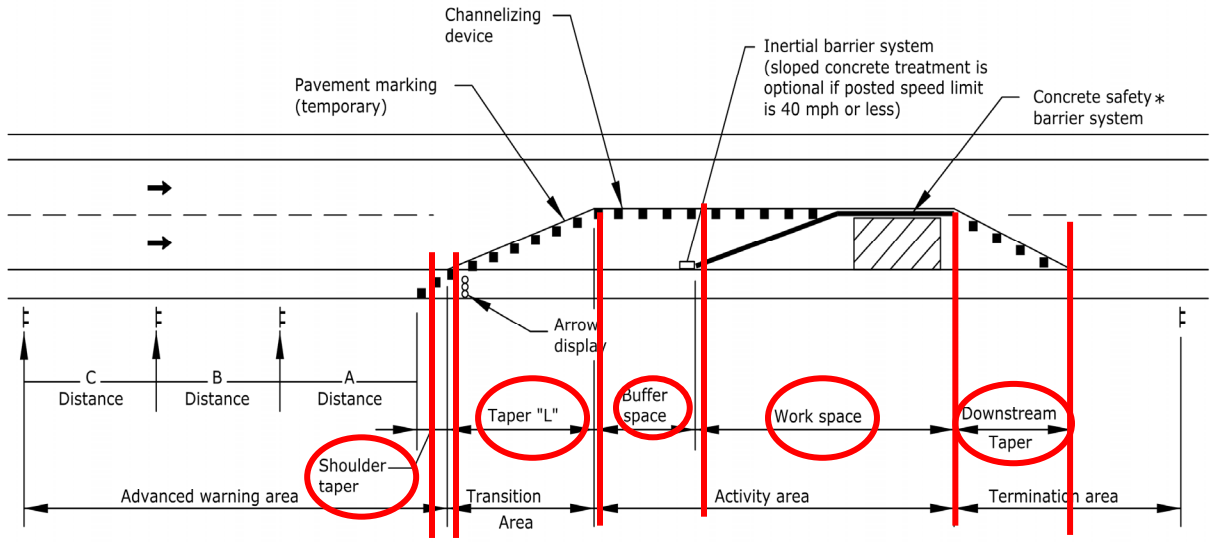
Work Areas

- **ADVANCE WARNING AREA** - *TELLS TRAFFIC WHAT TO EXPECT AHEAD !!! INCLUDES SHOULDER TAPER.*
- **TRANSITION AREA** - *MOVES TRAFFIC OUT OF ITS NORMAL PATH.*
- **ACTIVITY AREA** - *IS WHERE THE WORK TAKES PLACE AND INCLUDES, THE BUFFER SPACE WHICH PROVIDES PROTECTION FOR TRAFFIC AND WORKERS AND THE WORK SPACE WHICH IS SET ASIDE FOR WORKERS, EQUIPTMENT, AND MATERIAL STORAGE.*
- **TERMINATION AREA** - *LETS TRAFFIC RESUME NORMAL OPERATIONS. INCLUDES A BUFFER SPACE AND A DOWNSTREAM TAPER.*



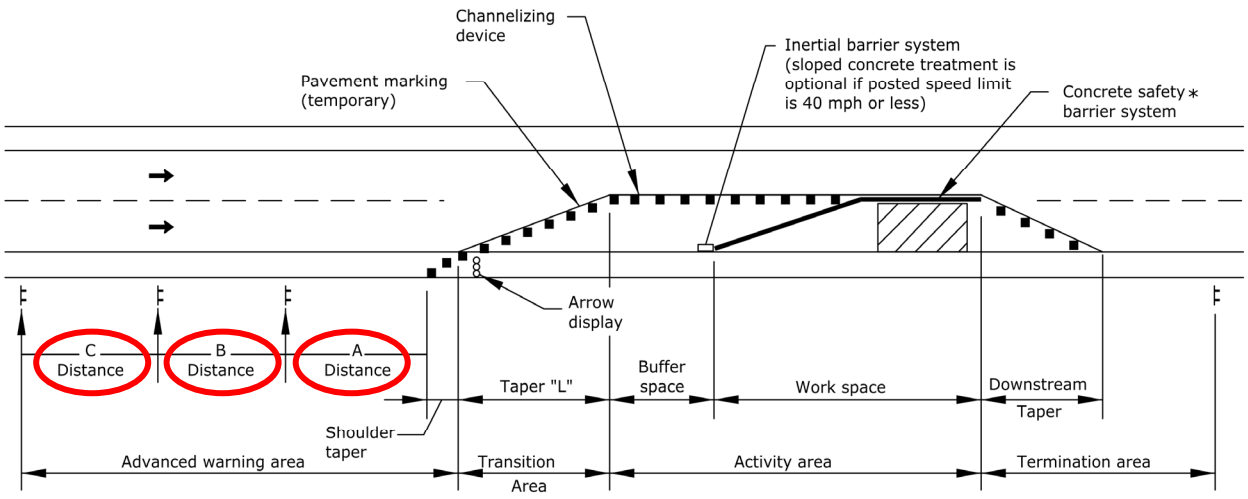
11

Work Spaces



12

Sign Distances



13

Minimum advance warning sign spacing (in feet):

SPEED (MPH) ∗	A	B	C
URBAN (40 MPH OR LOWER)	100	100	100
URBAN (45 MPH OR HIGHER)	350	350	350
RURAL (55 MPH OR LOWER)	500	500	500
RURAL (60 MPH OR HIGHER)	750	750	750
EXPRESSWAY/FREEWAY	1000	1500	2640

∗ 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 for speeds of 45 MPH or more

L = $WS^2/60$ for speeds of 40 MPH or less

Where: L = Minimum length of taper in feet
S = Numericial value of posted speed prior to work starting in MPH
W = Width in offset feet

Shifting Taper=1/2 L
Shoulder Taper=1/3 L

Channelizer Placement:

(1) 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.

(2) 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.

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

(4) Place directional indicator barricades in series to direct traffic onto the new path. The arrow sign should not be visible to opposing traffic.

(5) Alternating diagonal orange and white striping must slope downward in the direction traffic is expected to pass.

Buffer Space

SPEED (MPH) ∗	20	25	30	35	40	45	50	55	60	65	70	75
LENGTH (ft)	115	155	200	250	305	360	425	495	570	645	730	820

∗ 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.

NO.	DATE	REVISIONS	BY	APP'D
02	03-13-18	WB-15p usage changed to Shall	R.W.B.	E.K.G.
01	08-18-15	Channelizer spacing info	R.W.B.	K.E.

KANSAS DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL GENERAL NOTES

TE700

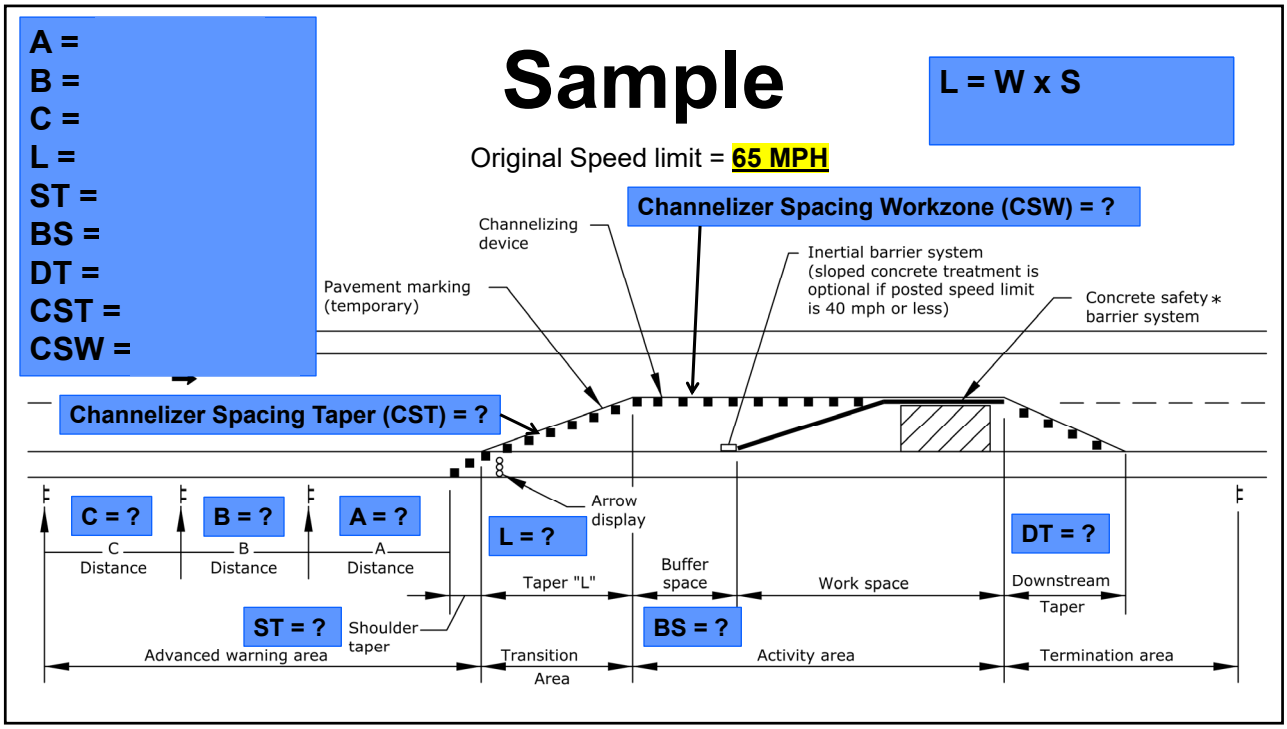
FHWA APPROVAL		03-13-18	APP'D.	Eric Kocher	
DESIGNED	B.A.H.	DETAILED	R.W.B.	QUANTITIES	TRACED
DESIGN CK.		DETAIL CK.		QUAN.CK.	TRACE CK.

KDOT Graphics Certified 07-18-2022 Sh. No. 0

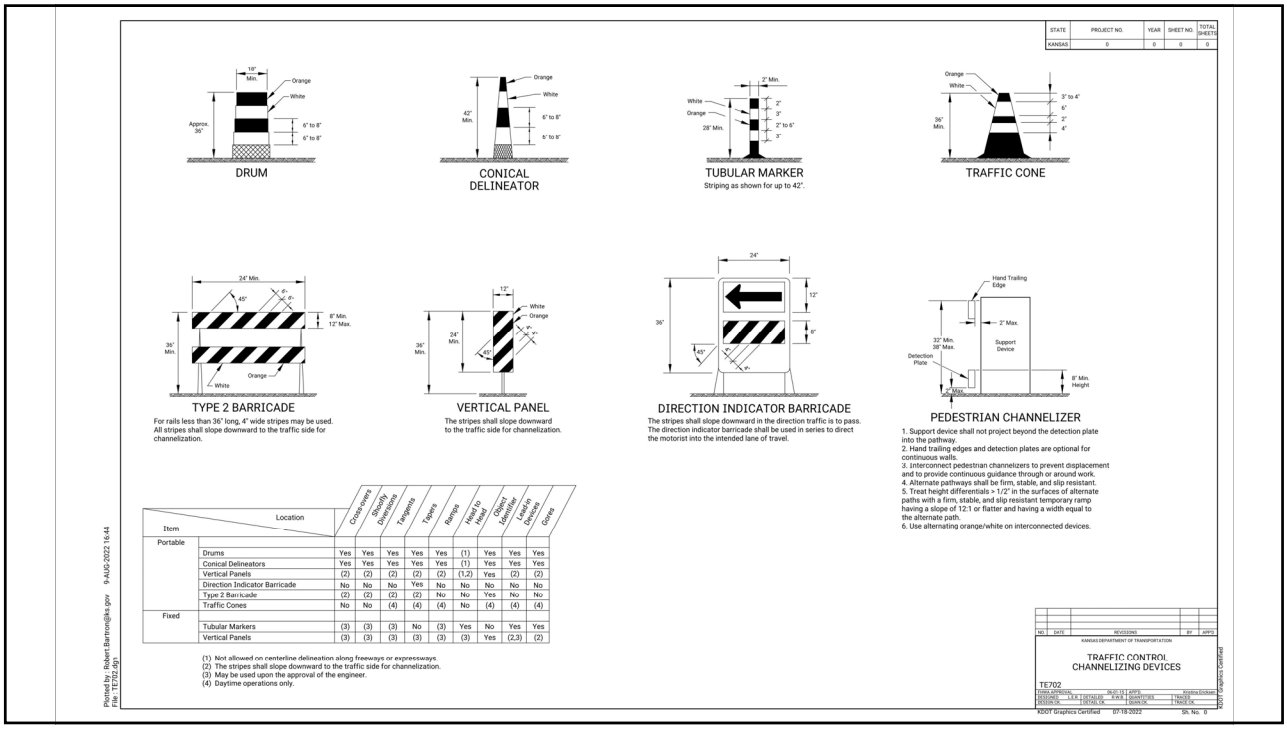
KDOT Graphics Certified

Kansas Department of Transportation

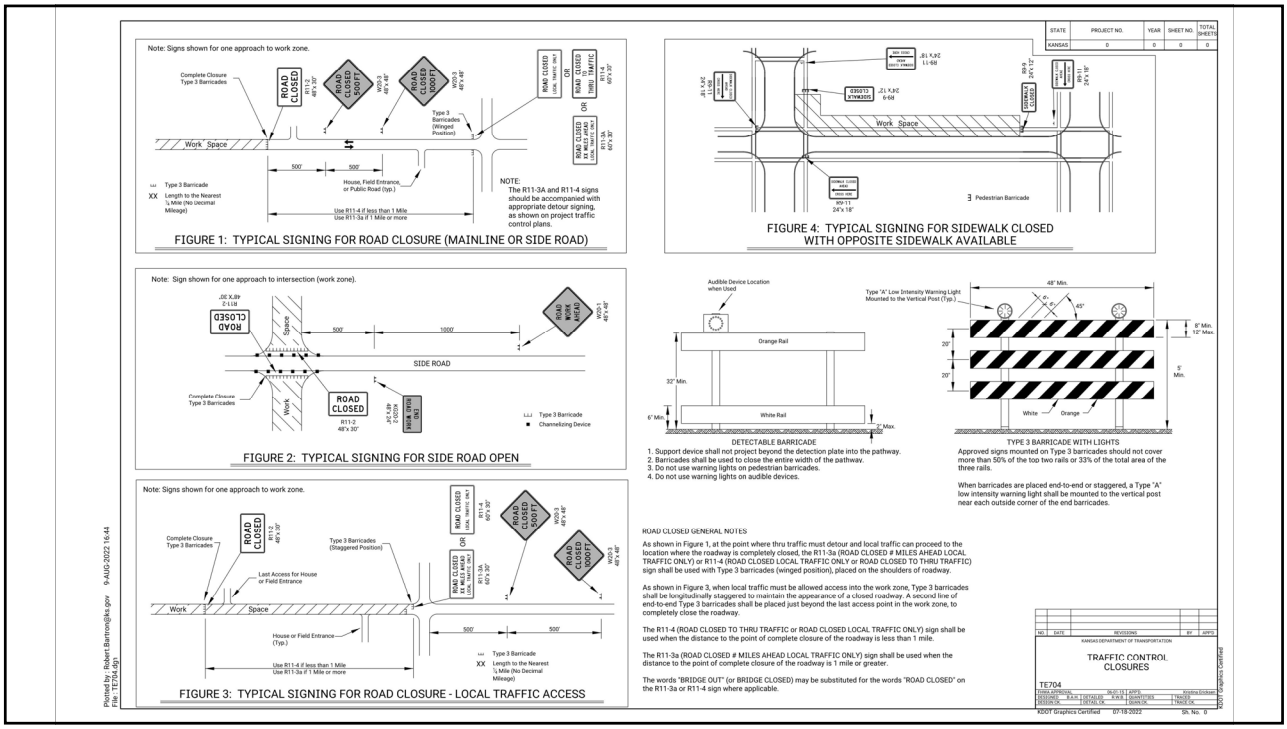
14


A =
B =
C =
L =
ST =
BS =
DT =
CST =
CSW =
Sample
L = W x S
Original Speed limit = 65 MPH
Channelizer Spacing Workzone (CSW) = ?
Channelizing device
Inertial barrier system (sloped concrete treatment is optional if posted speed limit is 40 mph or less)
Pavement marking (temporary)
Concrete safety barrier system
Channelizer Spacing Taper (CST) = ?
Arrow display
C = ?
B = ?
A = ?
L = ?
DT = ?
C Distance
B Distance
A Distance
Taper "L"
Buffer space
Work space
Downstream Taper
ST = ?
Shoulder taper
BS = ?
Advanced warning area
Transition Area
Activity area
Termination area

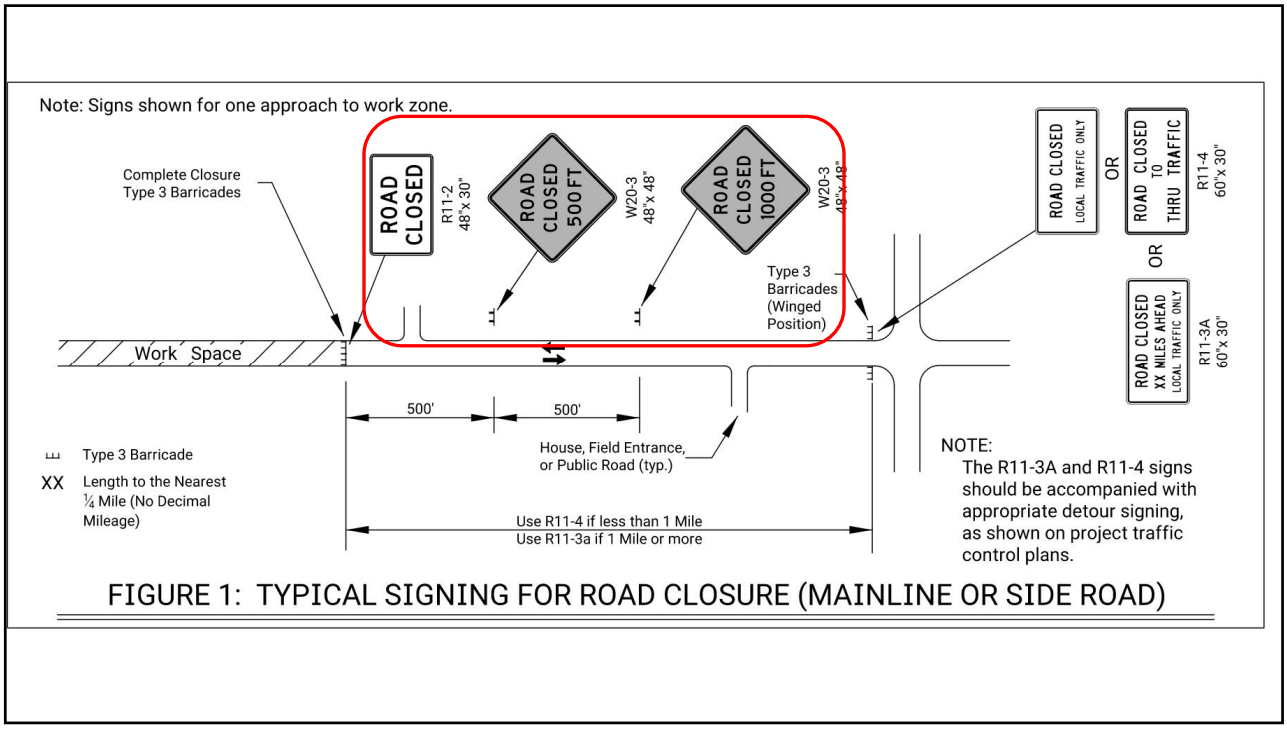
15


DRUM
CONICAL DELINEATOR
TUBULAR MARKER
Striping as shown for up to 42".
TRAFFIC CONE
TYPE 2 BARRICADE
For rails less than 36" long, 4" wide stripes may be used. All stripes shall slope downward to the traffic side for channelization.
VERTICAL PANEL
The stripes shall slope downward to the traffic side for channelization.
DIRECTION INDICATOR BARRICADE
The stripes shall slope downward in the direction traffic is to pass. The direction indicator barricade shall be used in series to direct the 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.
Item
Location
Portable
Drums
Conical Delineators
Vertical Panels
Direction Indicator Barricade
Type 2 Barricade
Traffic Cones
Fixed
Tubular Markers
Vertical Panels
(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.
TRAFFIC CONTROL CHANNELIZING DEVICES
TE702
KDOT Graphics Certified
07-18-2022

16


Note: Signs shown for one approach to work zone.
Complete Closure Type 3 Barricades
ROAD CLOSED
R11-2 48"x 30"
ROAD CLOSED 500 FT
W20-3 48"x 48"
ROAD CLOSED 1000 FT
W20-3 48"x 48"
ROAD CLOSED LOCAL TRAFFIC ONLY
OR
ROAD CLOSED TO THRU TRAFFIC
R11-4 60"x 30"
Work Space
Type 3 Barricades (Winged Position)
500'
500'
House, Field Entrance or Public Road (typ.)
Use R11-4 if less than 1 Mile
Use R11-3a if 1 Mile or more
ROAD CLOSED XX MILES AHEAD LOCAL TRAFFIC ONLY
R11-3A 60"x 30"
Type 3 Barricade
XX Length to the Nearest ¼ Mile (No Decimal Mileage)
NOTE:
The R11-3A and R11-4 signs should be accompanied with appropriate detour signing, as shown on project traffic control plans.
FIGURE 1: TYPICAL SIGNING FOR ROAD CLOSURE (MAINLINE OR SIDE ROAD)
Work Space
Pedestrian Barricade
FIGURE 4: TYPICAL SIGNING FOR SIDEWALK CLOSED WITH OPPOSITE SIDEWALK AVAILABLE
Note: Sign shown for one approach to intersection (work zone).
ROAD CLOSED
R11-2 48"X 30"
Space
500'
1000'
ROAD WORK AHEAD
W20-1 48"X 48"
SIDE ROAD
Complete Closure Type 3 Barricades
Work
ROAD CLOSED
R11-2 48"x 30"
Type 3 Barricade
Channelizing Device
FIGURE 2: TYPICAL SIGNING FOR SIDE ROAD OPEN
Audible Device Location when Used
Type "A" Low Intensity Warning Light Mounted to the Vertical Post (Typ.)
Orange Rail
32" Min.
White Rail
6" Min.
42" Max.
DETECTABLE BARRICADE
1. Support device shall not project beyond the detection plate into the pathway.
2. Barricades shall be used to close the entire width of the pathway.
3. Do not use warning lights on pedestrian barricades.
4. Do not use warning lights on audible devices.
48" Min.
6"
6"
45°
8' Min. 12' Max.
20"
20"
5' Min.
White
Orange
TYPE 3 BARRICADE WITH LIGHTS
Approved signs mounted on Type 3 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.
Note: Signs shown for one approach to work zone.
ROAD CLOSED
R11-2 48"x 30"
Complete Closure Type 3 Barricades
Type 3 Barricades (Staggered Position)
ROAD CLOSED
OR
ROAD CLOSED XX MILES AHEAD
R11-3A 60"x 30"
R11-4 60"x 30"
ROAD CLOSED 500 FT
W20-3 48"x 48"
ROAD CLOSED 1000 FT
W20-3 48"x 48"
Last Access for House or Field Entrance
Work
Space
House or Field Entrance (Typ.)
500'
500'
Use R11-4 if less than 1 Mile
Use R11-3a if 1 Mile or more
Type 3 Barricade
XX Length to the Nearest ¼ Mile (No Decimal Mileage)
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.
KANSAS DEPARTMENT OF TRANSPORTATION
TRAFFIC CONTROL CLOSURES
TE704
KDOT Graphics Certified 07-18-2022
Sh. No. 0
Printed by: Robert.Barton@ks.gov 9-AUG-2022 16:44
File: TE704.dgn

17


Note: Signs shown for one approach to work zone.
Complete Closure Type 3 Barricades
ROAD CLOSED
R11-2 48"x 30"
ROAD CLOSED 500 FT
W20-3 48"x 48"
ROAD CLOSED 1000 FT
W20-3 48"x 48"
ROAD CLOSED LOCAL TRAFFIC ONLY
OR
ROAD CLOSED TO THRU TRAFFIC
R11-4 60"x 30"
OR
ROAD CLOSED XX MILES AHEAD LOCAL TRAFFIC ONLY
R11-3A 60"x 30"
Work Space
Type 3 Barricades (Winged Position)
500'
500'
House, Field Entrance, or Public Road (typ.)
Use R11-4 if less than 1 Mile
Use R11-3a if 1 Mile or more
Type 3 Barricade
XX Length to the Nearest ¼ Mile (No Decimal Mileage)
NOTE:
The R11-3A and R11-4 signs should be accompanied with appropriate detour signing, as shown on project traffic control plans.
FIGURE 1: TYPICAL SIGNING FOR ROAD CLOSURE (MAINLINE OR SIDE ROAD)

18

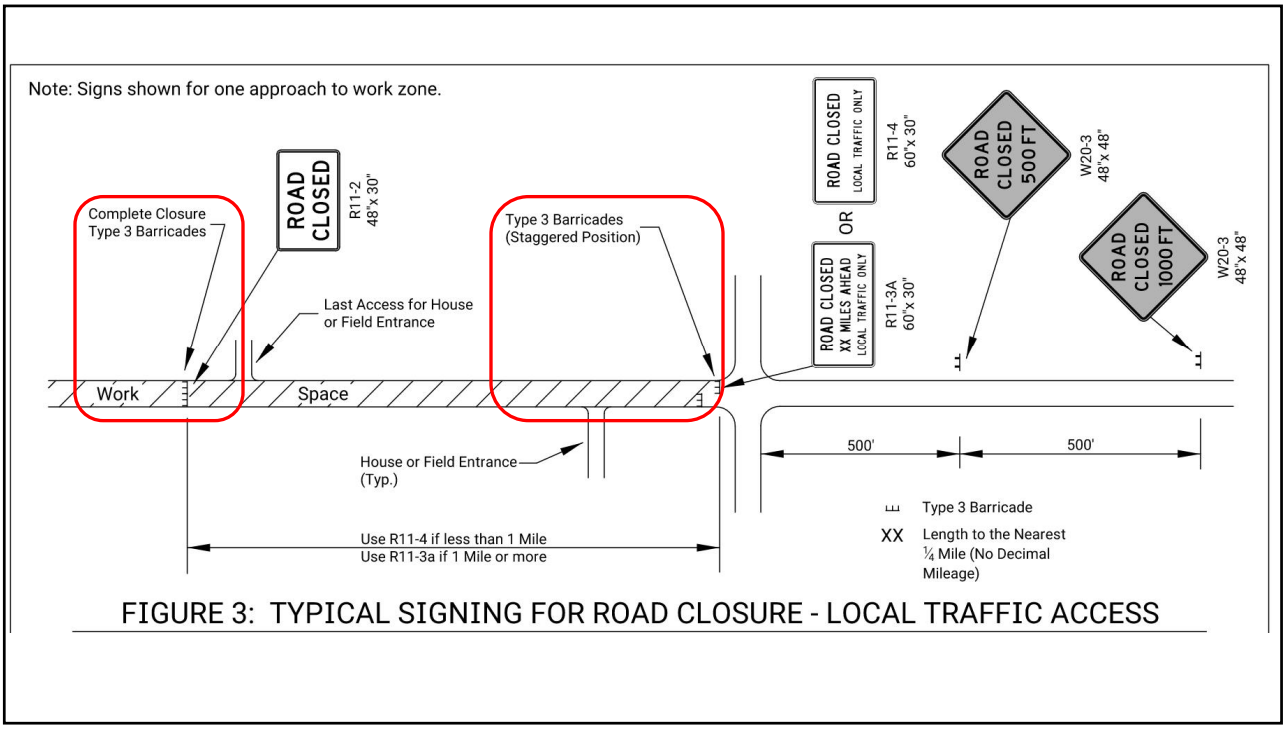


FIGURE 3: TYPICAL SIGNING FOR ROAD CLOSURE - LOCAL TRAFFIC ACCESS

19

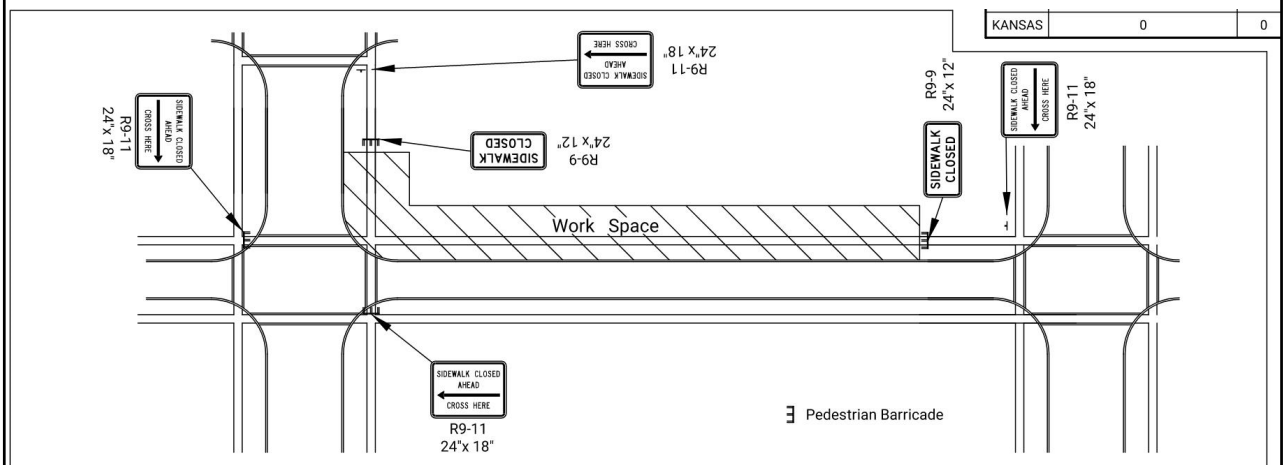
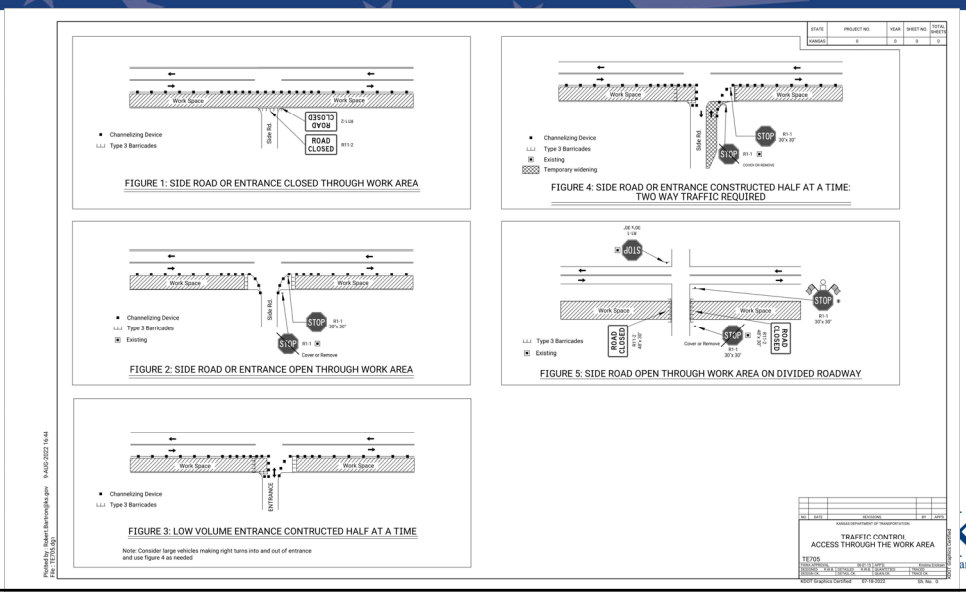


FIGURE 4: TYPICAL SIGNING FOR SIDEWALK CLOSED
WITH OPPOSITE SIDEWALK AVAILABLE

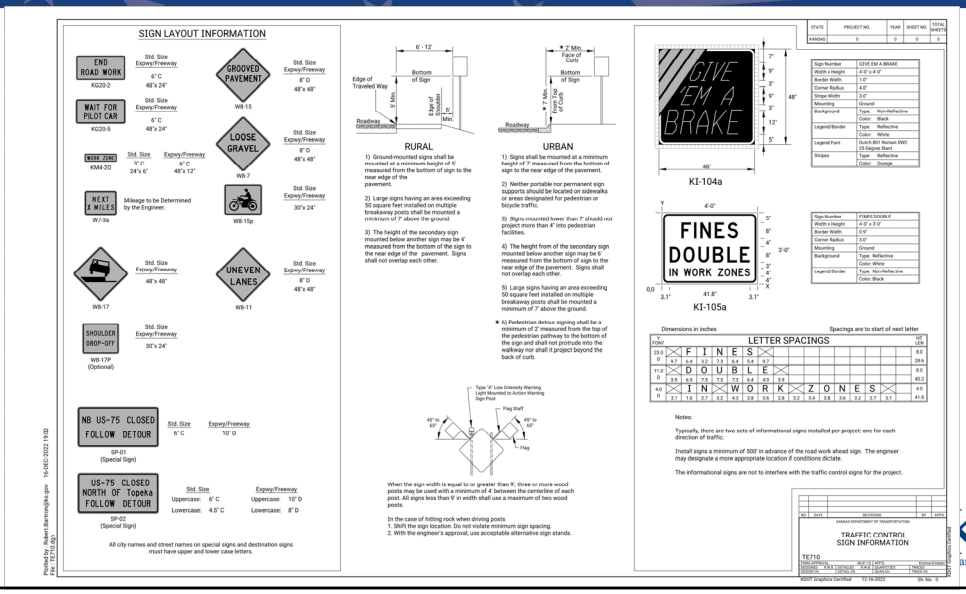
20

Temporary Traffic Control
TE 705



21

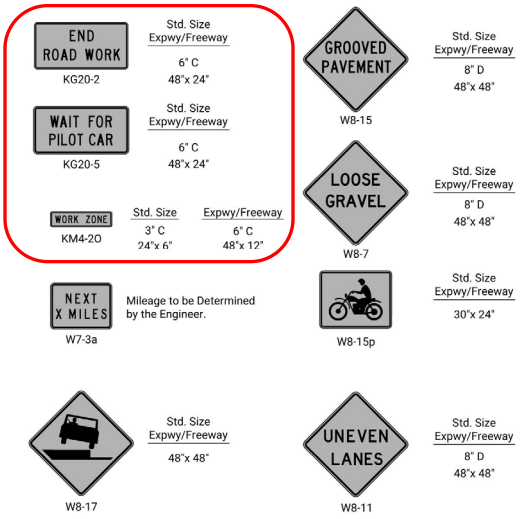
Temporary Traffic Control
TE 710



22

Temporary Traffic Control
TE 710

SIGN LAYOUT INFORMATION



Kansas Department of Transportation

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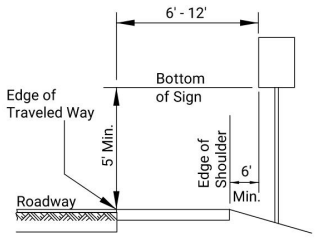

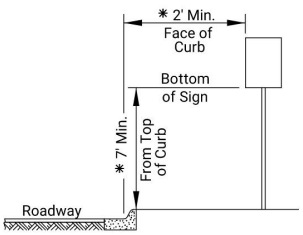

RURAL

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 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.

URBAN

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 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.

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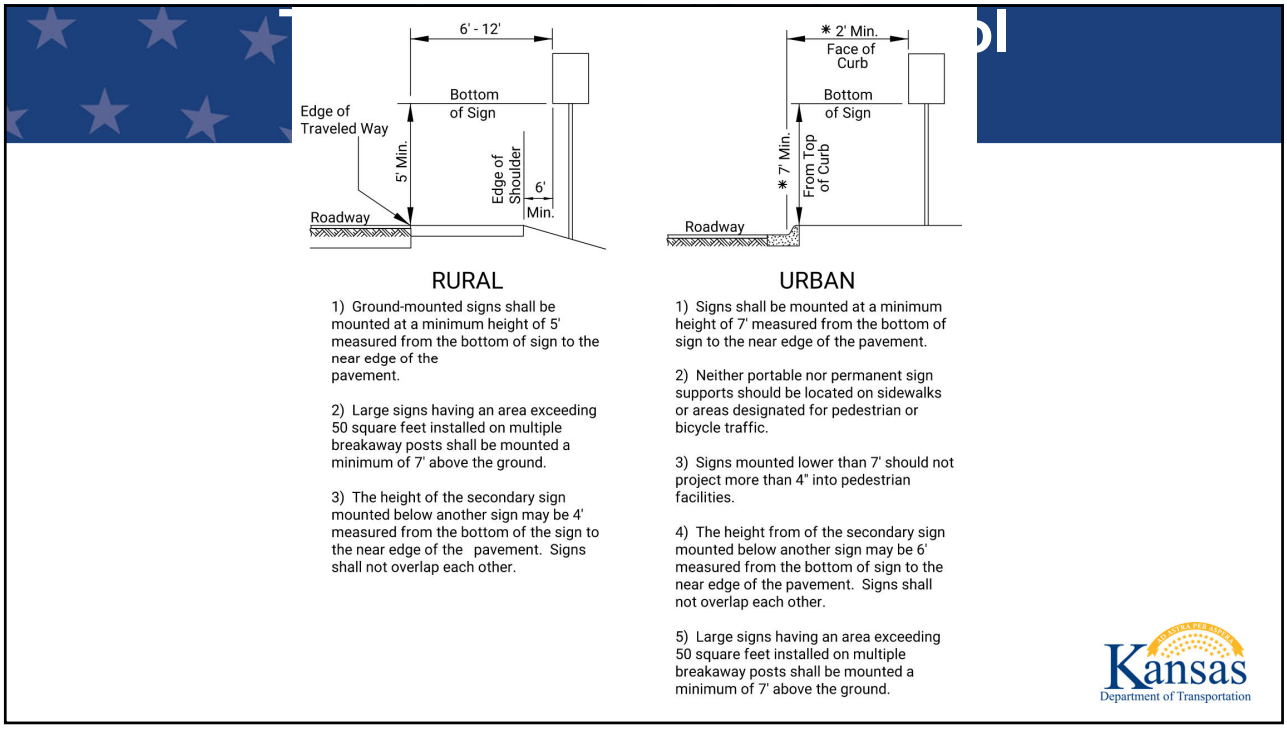
24

25



RURAL

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 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.

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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.

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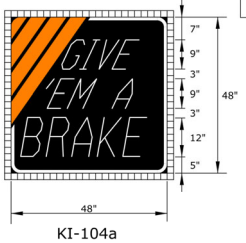
KANYE HITS HIS HEAD ON A STOP SIGN WHILE HIDING FROM PAPALAZZI

Department of Transportation

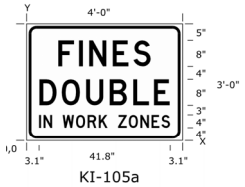
27

Temporary Traffic Control TE 710



KI-104a

SIGN NUMBER	GIVE EM A BRAKE
WIDTH x HEIGHT	4'-0" x 4'-0"
BORDER WIDTH	1.0"
CORNER RADIUS	4.0"
STRIPE WIDTH	3.0"
MOUNTING	GROUND
BACKGROUND	TYPE: NON-REFLECTIVE
	COLOR: BLACK
LEGEND/BORDER	TYPE: REFLECTIVE
	COLOR: WHITE
LEGEND FONT	DUTCH 801 ROMAN SWC 25 DEGREE SLANT
STRIPES	TYPE: REFLECTIVE
	COLOR: ORANGE



KI-105a

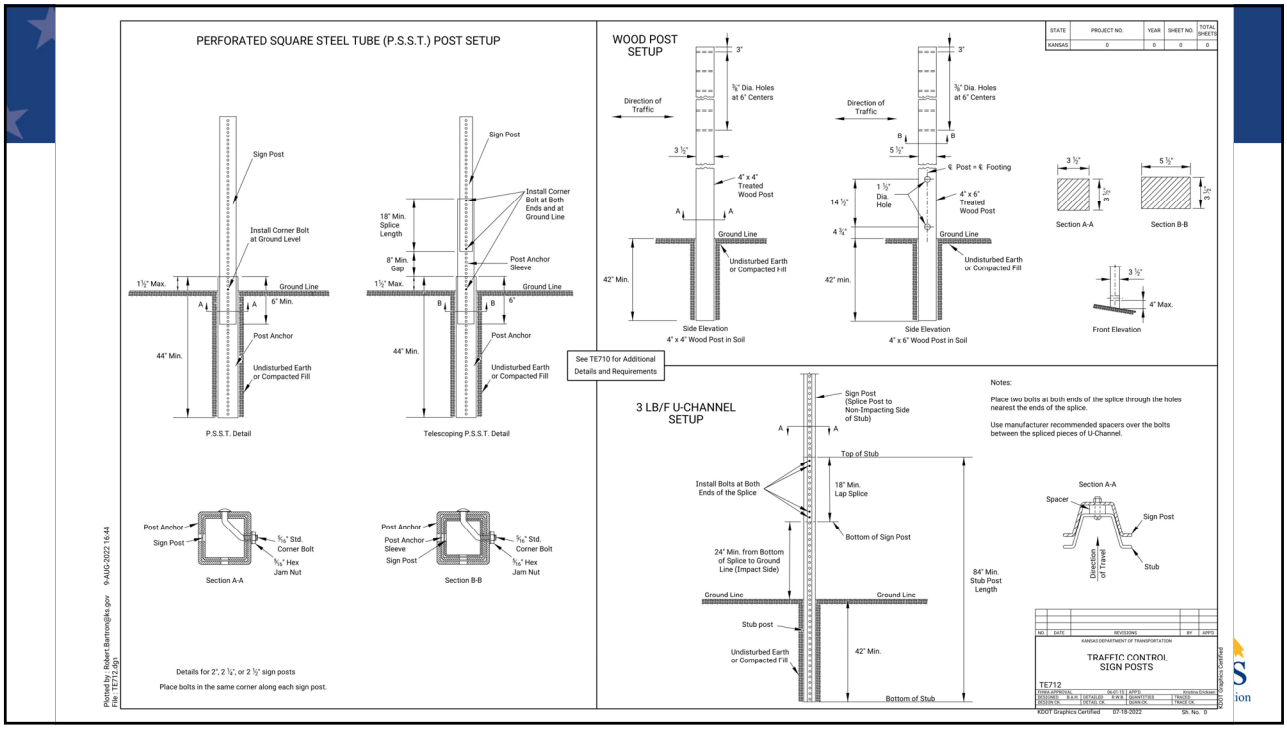
SIGN NUMBER	FINES DOUBLE
WIDTH x HEIGHT	4'-0" x 3'-0"
BORDER WIDTH	0.9"
CORNER RADIUS	3.0"
MOUNTING	GROUND
BACKGROUND	TYPE: REFLECTIVE
	COLOR: WHITE
LEGEND/BORDER	TYPE: NON-REFLECTIVE
	COLOR: BLACK

DIMENSIONS IN INCHES — SPACINGS ARE TO START OF NEXT LETTER

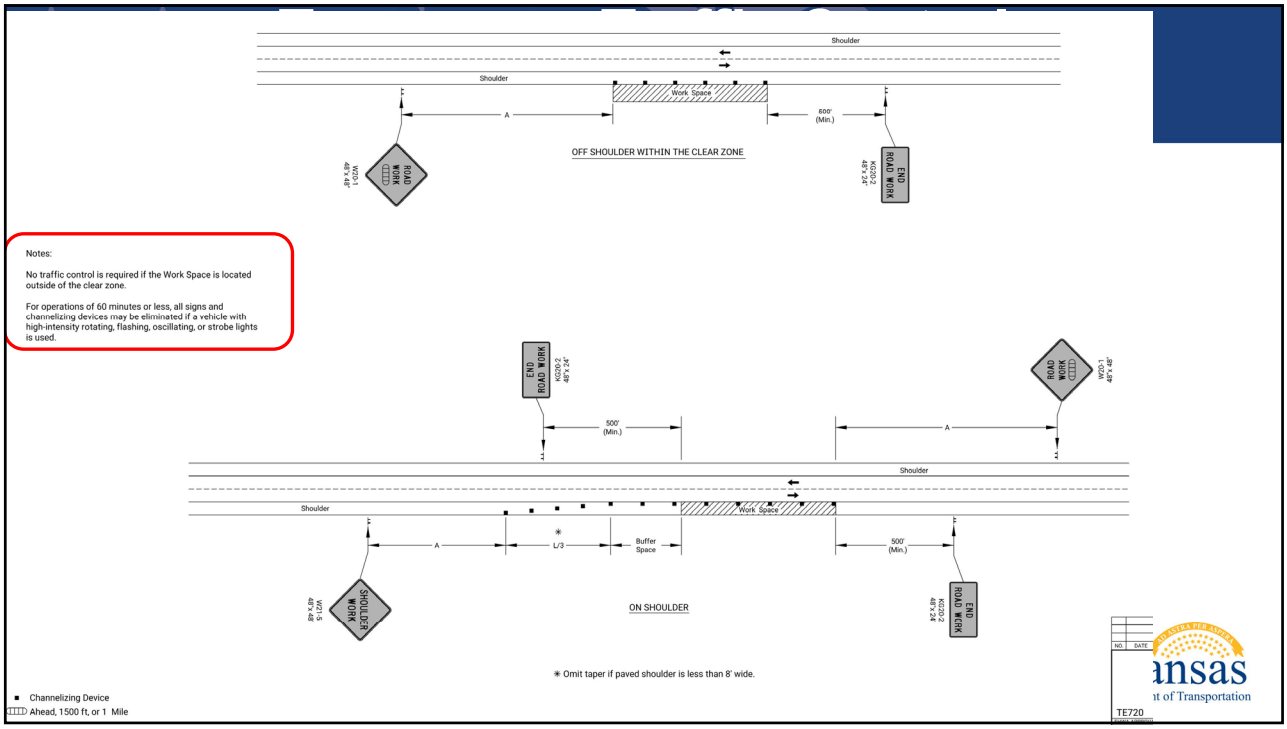
Y FONT	LETTER SPACINGS															HT LEN
23.0 D		F	I	N	E	S										8.0
	9.7	6.4	3.2	7.3	6.4	5.4	9.7									28.6
11.0 D		D	O	U	B	L	E									8.0
	3.9	6.9	7.5	7.3	7.3	6.4	4.9	3.9								40.3
4.0 D		I	N		W	O	R	K		Z	O	N	E	S		4.0
	3.1	1.6	2.7	3.2	4.3	3.8	3.6	2.8	3.2	3.4	3.8	3.6	3.2	2.7	3.1	41.8

Kansas Department of Transportation

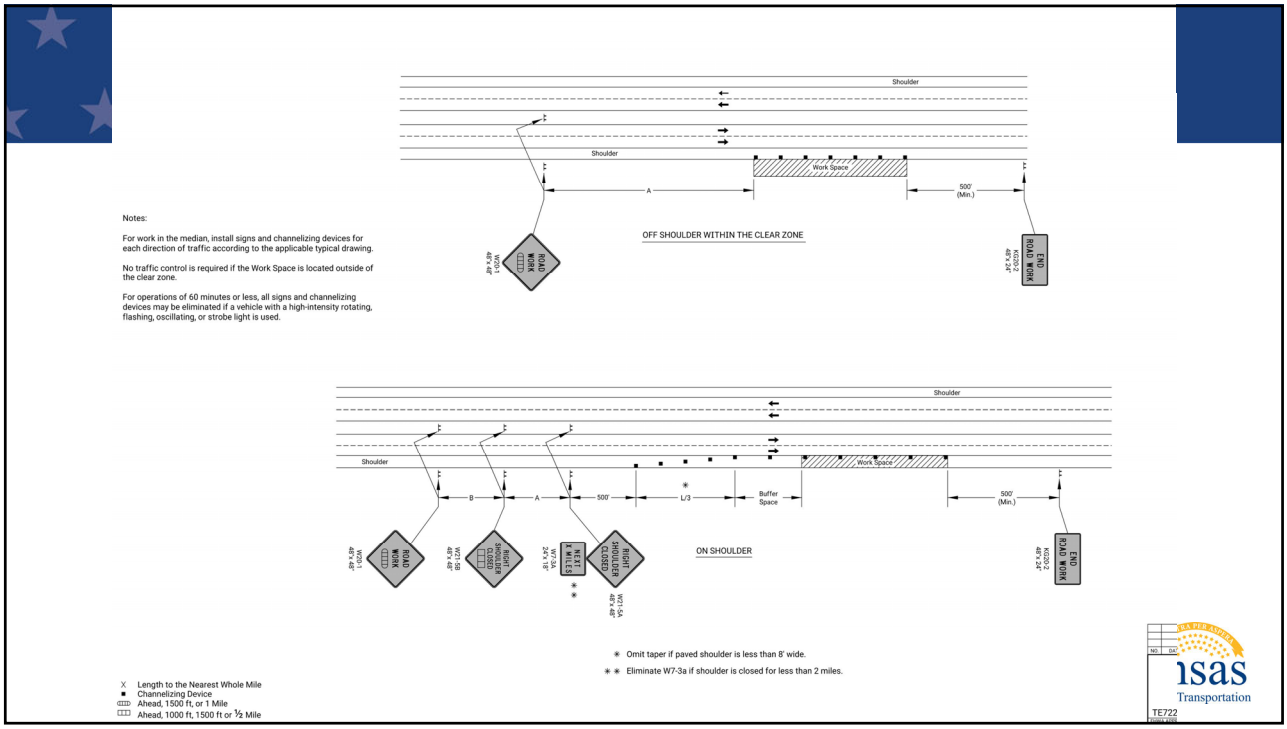
28


PERFORATED SQUARE STEEL TUBE (P.S.S.T.) POST SETUP
Sign Post
Install Corner Bolt at Ground Level
1½" Max.
Ground Line
6" Min.
Post Anchor
44" Min.
Undisturbed Earth or Compacted Fill
P.S.S.T. Detail
18" Min. Splice Length
8" Min. Gap
Install Corner Bolt at Both Ends and at Ground Line
Post Anchor Sleeve
Telescoping P.S.S.T. Detail
Post Anchor
Sign Post
⅝" Std. Corner Bolt
⅝" Hex Jam Nut
Section A-A
Section B-B
Details for 2", 2 ½", or 2 ½" sign posts
Place bolts in the same corner along each sign post.
WOOD POST SETUP
Direction of Traffic
¾" Dia. Holes at 6" Centers
3 ½"
4" x 4" Treated Wood Post
42" Min.
Side Elevation 4" x 4" Wood Post in Soil
5 ½"
1 ½" Dia. Hole
14 ½"
4 ¾"
4" x 6" Treated Wood Post
42" min.
Side Elevation 4" x 6" Wood Post in Soil
Section A-A
Section B-B
Front Elevation
4" Max.
See TE710 for Additional Details and Requirements
3 LB/F U-CHANNEL SETUP
Sign Post (Splice Post to Non-Impacting Side of Stub)
Top of Stub
Install Bolts at Both Ends of the Splice
18" Min. Lap Splice
Bottom of Sign Post
24" Min. from Bottom of Splice to Ground Line (Impact Side)
84" Min. Stub Post Length
Stub post
42" Min.
Bottom of Stub
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.
Section A-A
Spacer
Sign Post
Direction of Travel
Stub
TRAFFIC CONTROL SIGN POSTS
TE712
KDOT Graphics Certified
Plotted by: Robert.Barton@ks.gov 9-AUG-2022 16:44
File: TE712.dgn

29

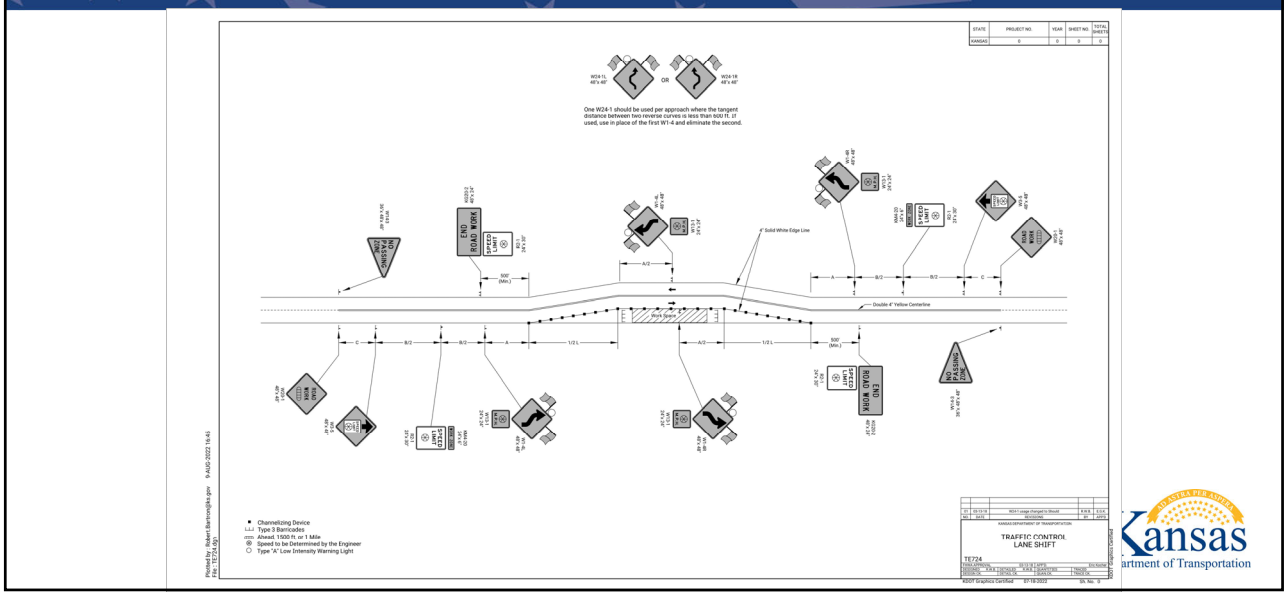

Shoulder
Work Space
A
600' (Min.)
OFF SHOULDER WITHIN THE CLEAR ZONE
ROAD WORK
W20-1
48" x 48"
END ROAD WORK
R20-2
48" x 24"
Notes:
No traffic control is required if the Work Space is located outside of the clear zone.
For operations of 60 minutes or less, all signs and channelizing devices may be eliminated if a vehicle with high-intensity rotating, flashing, oscillating, or strobe lights is used.
500' (Min.)
L/3
Buffer Space
SHOULDER WORK
W21-5
48" x 48"
ON SHOULDER
✳ Omit taper if paved shoulder is less than 8' wide.
■ Channelizing Device
Ahead, 1,500 ft, or 1 Mile
TE720

30



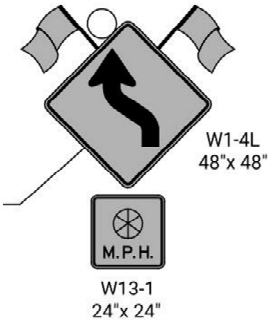
31

Temporary Traffic Control
TE 724

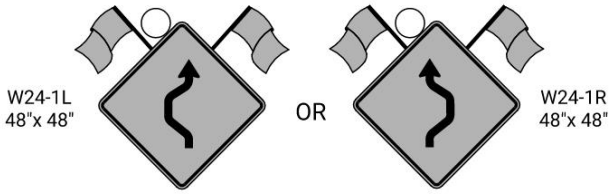


32

Temporary Traffic Control
TE 724



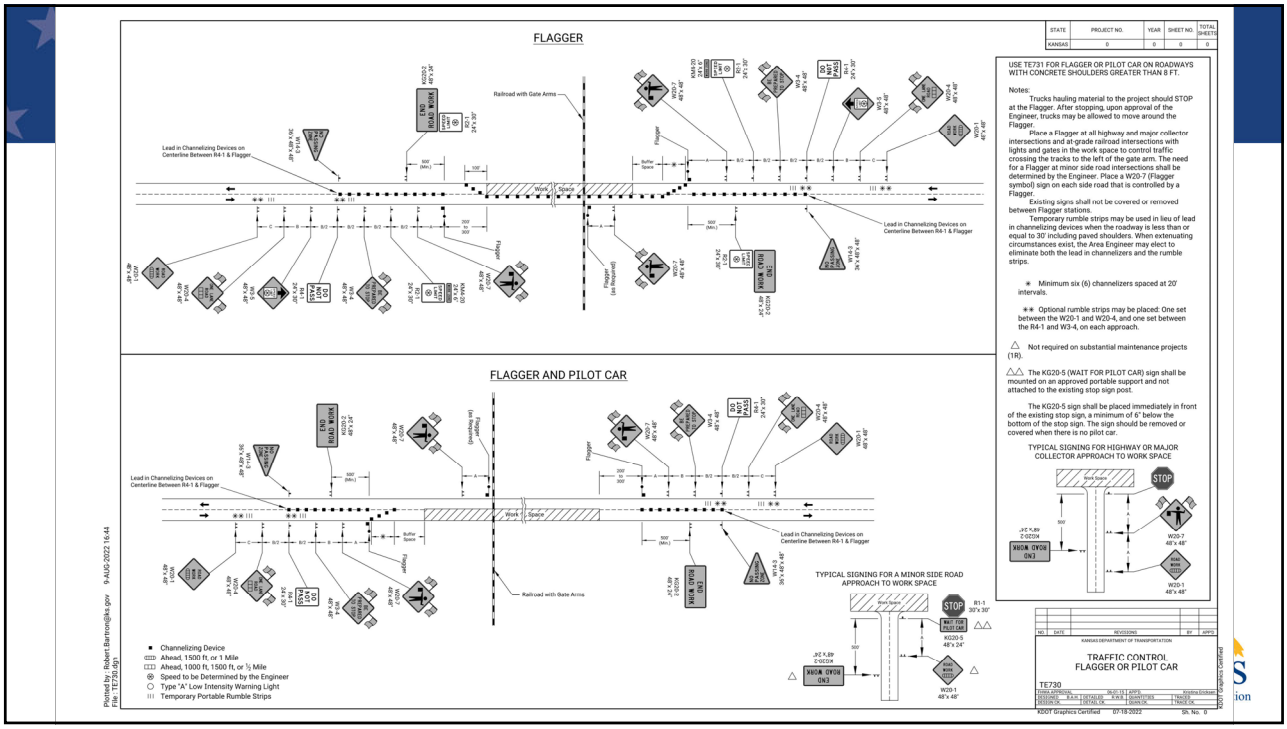
OR



One W24-1 should 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.

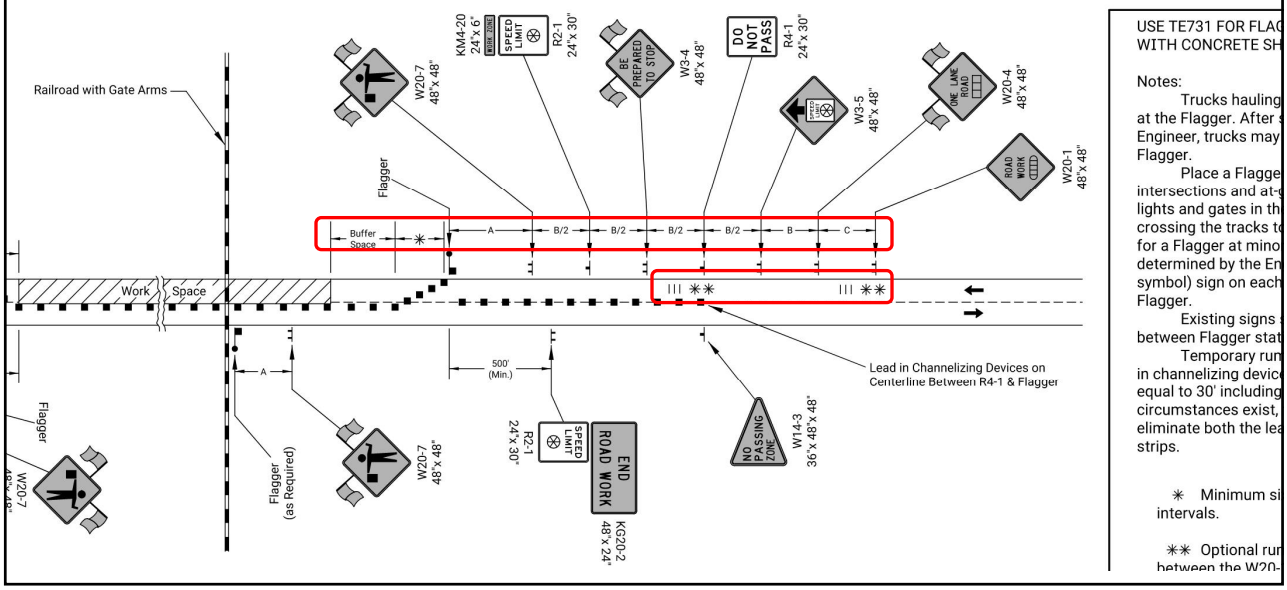
Kansas Department of Transportation

33



34

Temporary Traffic Control
TE 730



USE TE731 FOR FLAG
WITH CONCRETE SH

Notes:

Trucks hauling
at the Flagger. After
Engineer, trucks may
Flagger.

Place a Flagge
intersections and at-
lights and gates in th
crossing the tracks t
for a Flagger at mino
determined by the En
symbol) sign on each
Flagger.

Existing signs
between Flagger stat

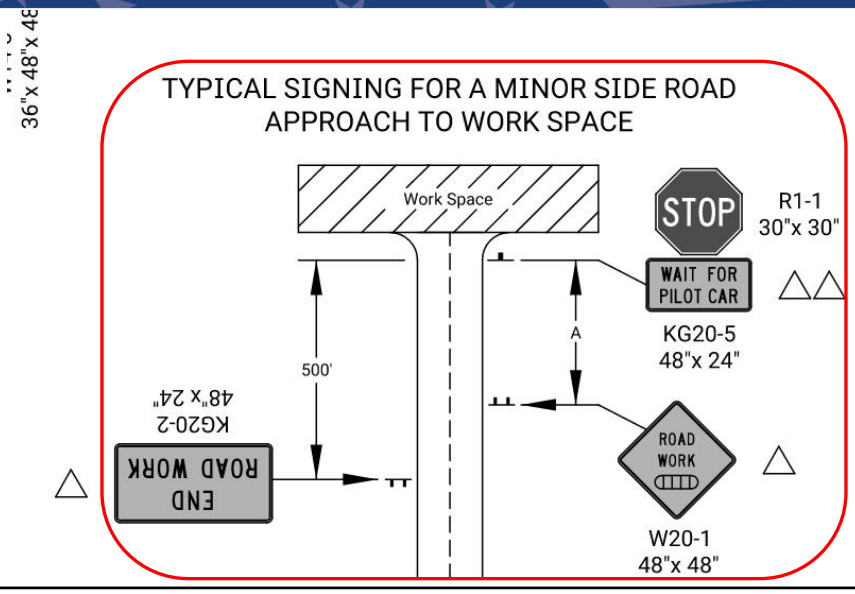
Temporary run
in channelizing devic
equal to 30' including
circumstances exist,
eliminate both the lea
strips.

✳ Minimum si
intervals.

✳✳ Optional run
between the W20-

35

Temporary Traffic Control
TE 730



Kansas Department of Transportation

36

Temporary Traffic Control
TE 730

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

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.

37

Temporary Traffic Control
TE 730

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

38

Temporary Traffic Control
TE 730

between the W20-1 and W20-4, and one set between the R4-1 and W3-4, on each approach.

△ 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 HIGHWAY OR MAJOR

Kansas
artment of Transportation

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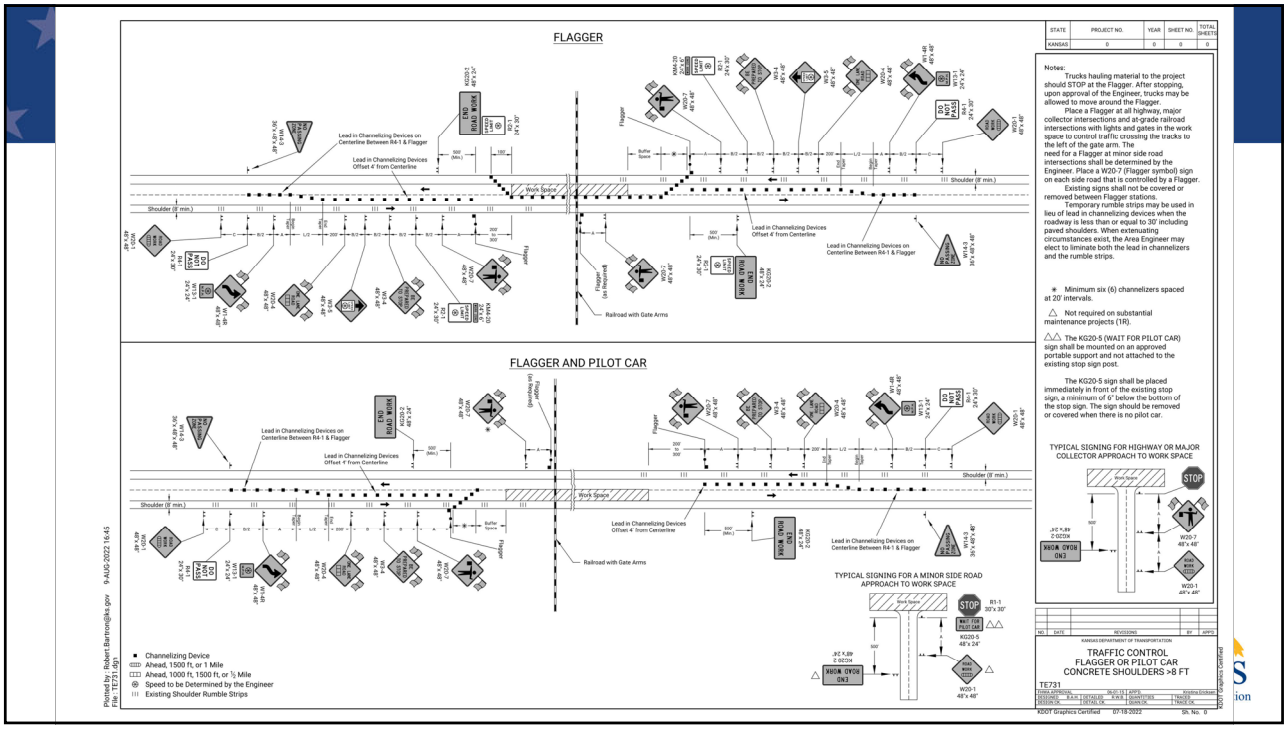
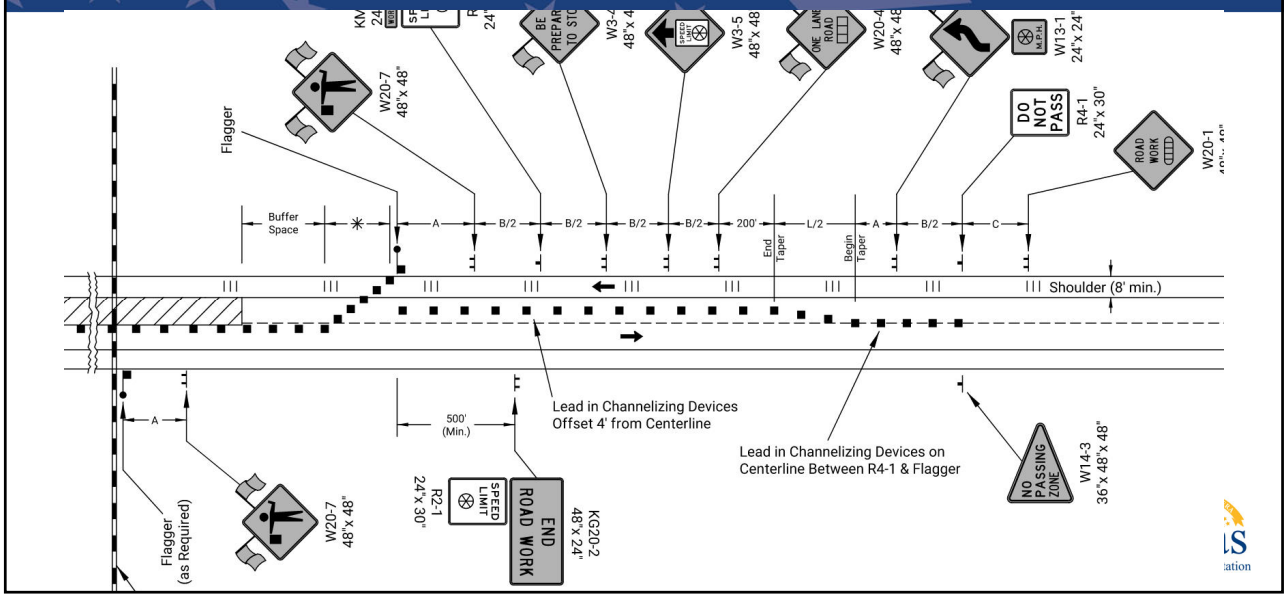


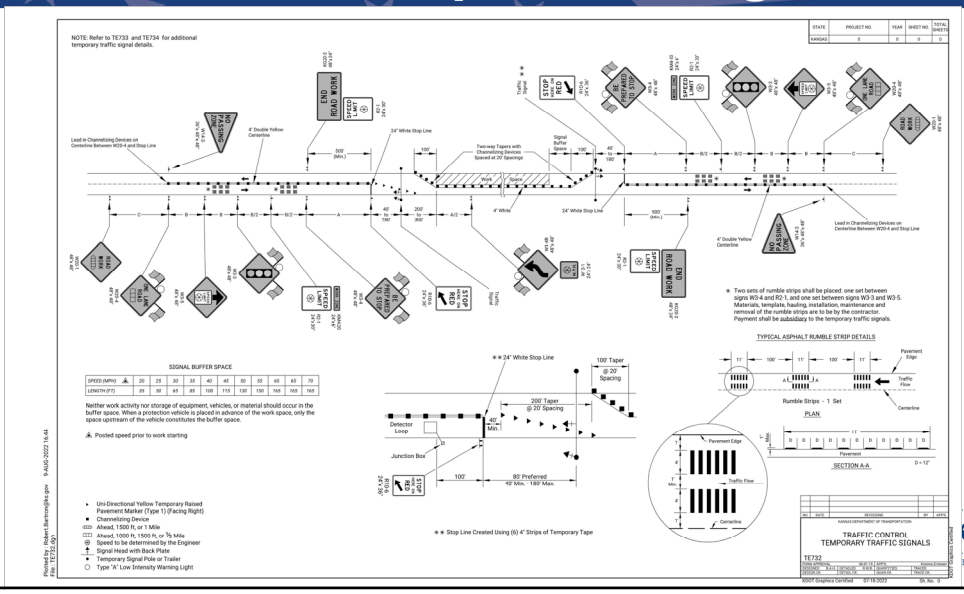
40

Temporary Traffic Control
TE 731



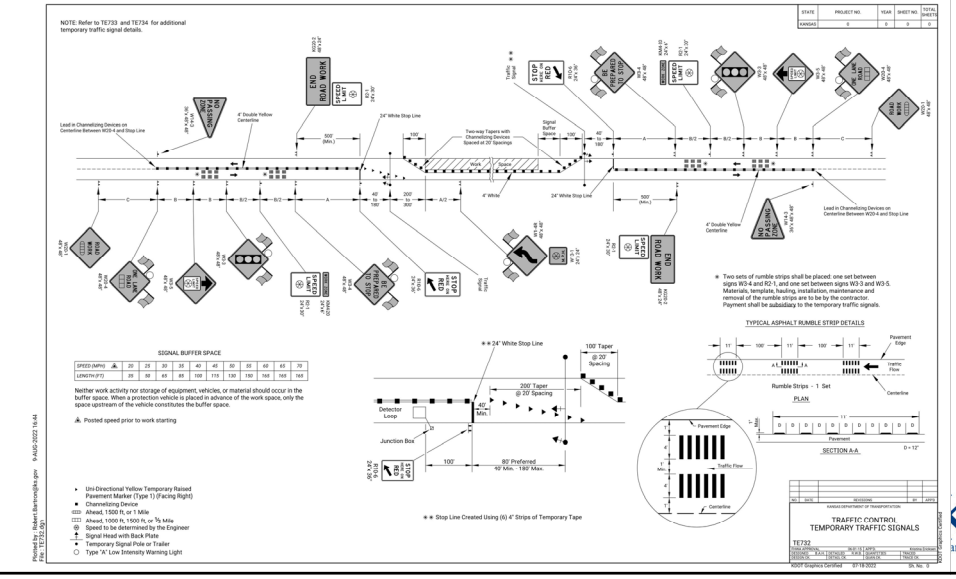
41

Temporary Traffic Control
TE 732 – Temp traffic signals



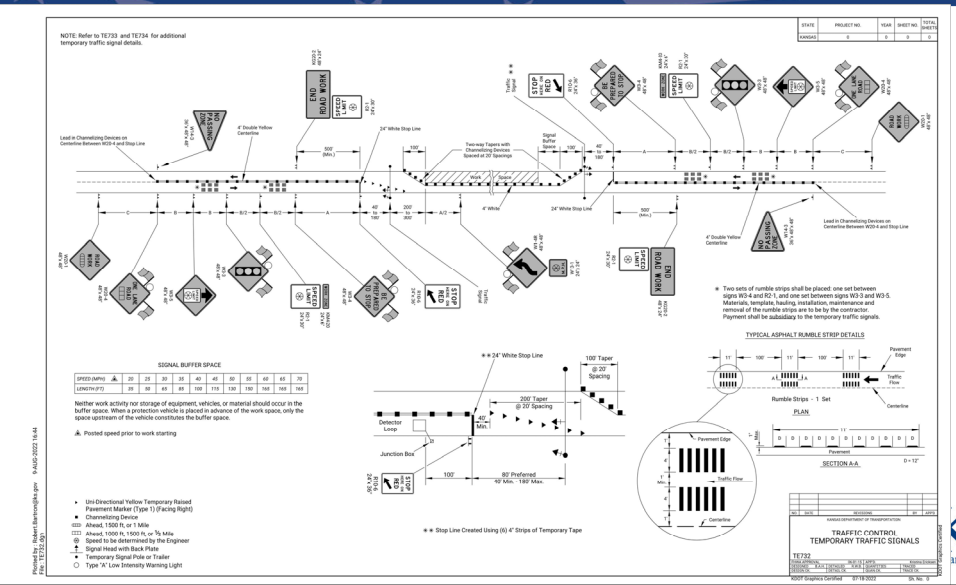
42

Temporary Traffic Control
TE 732 – Temp traffic signals



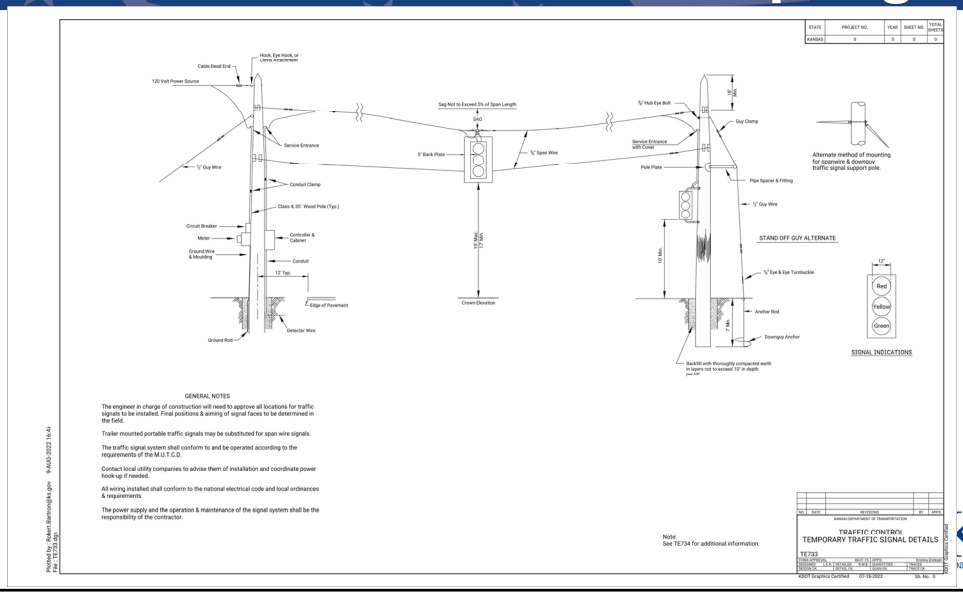
43

Temporary Traffic Control
TE 732 – Closure w/ temp traffic signals



44

Temporary Traffic Control
TE 733 – Traffic Control Temp Signal



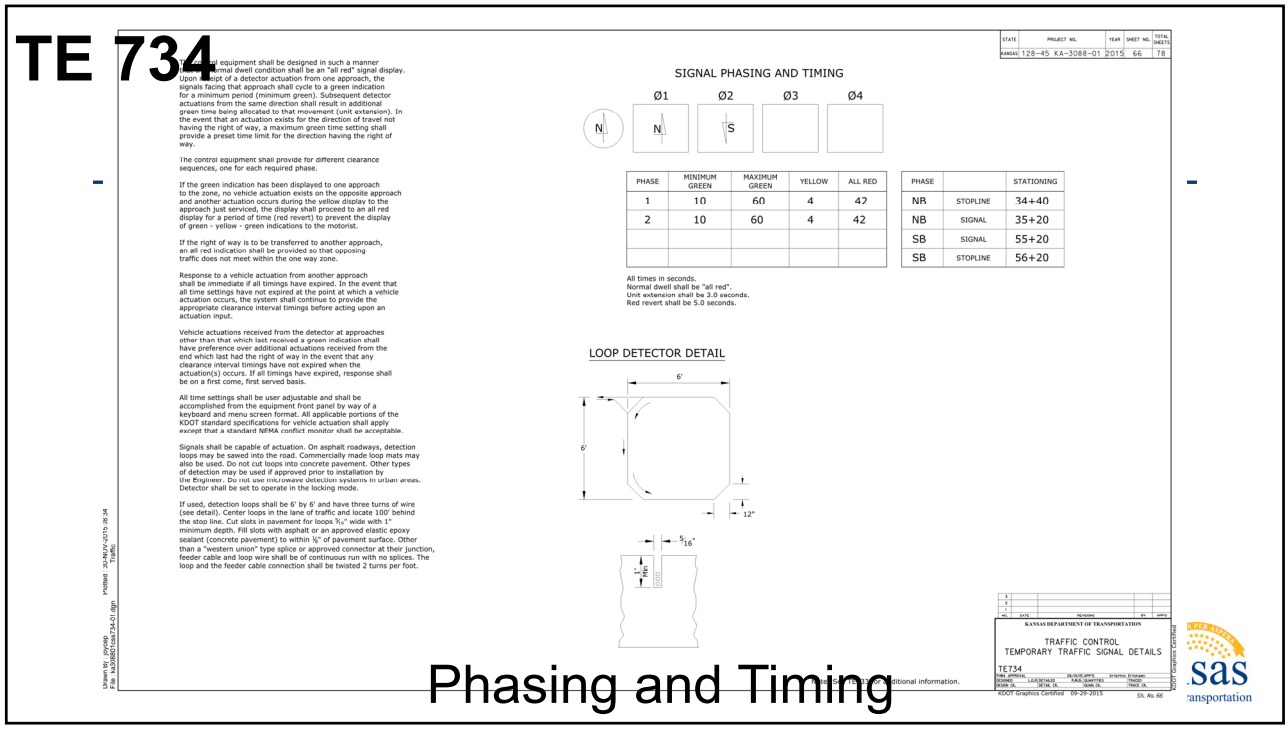
45

46

47

48

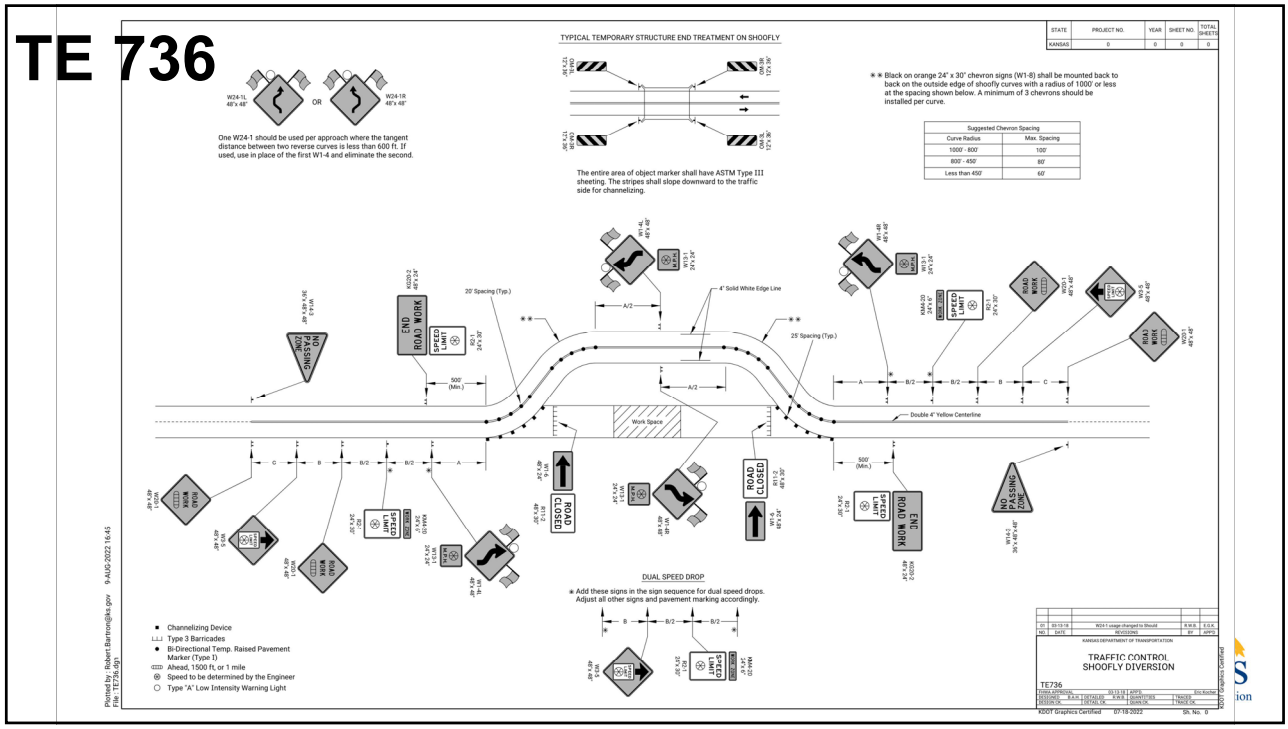
TE 734



Phasing and Timing

49

TE 736

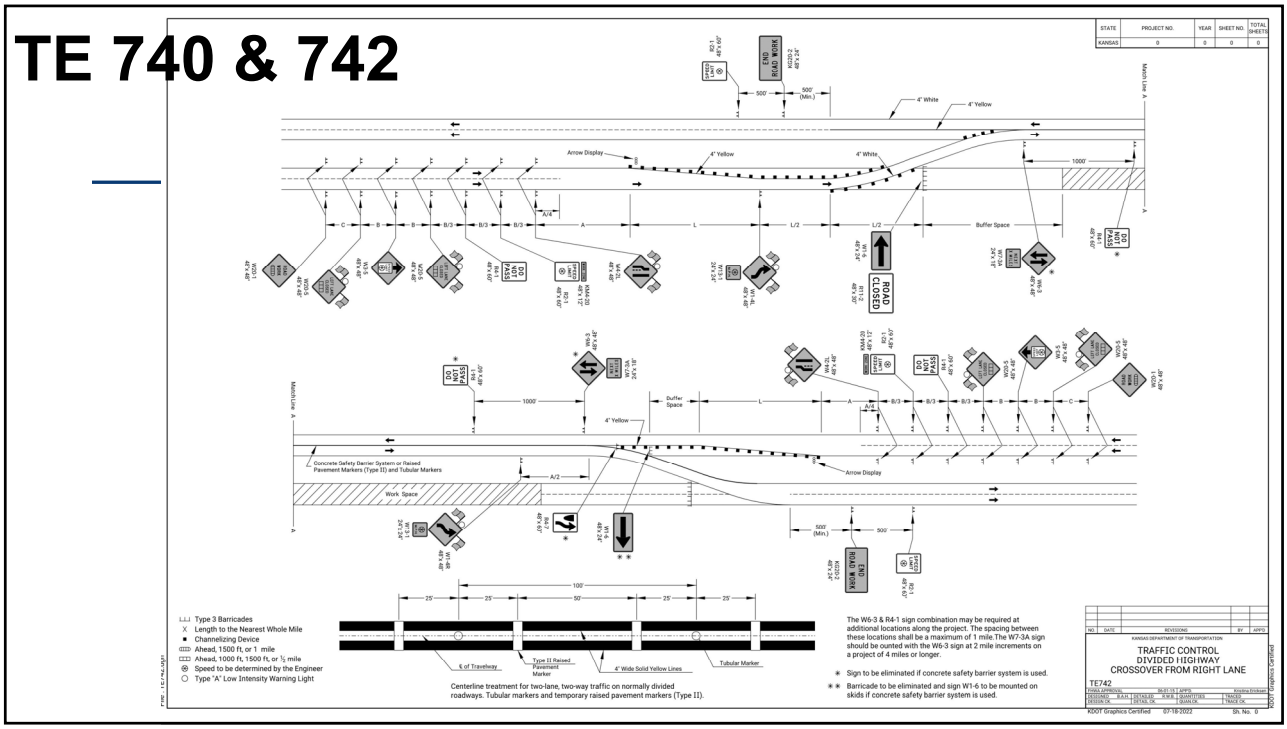


50

51

52

TE 740 & 742



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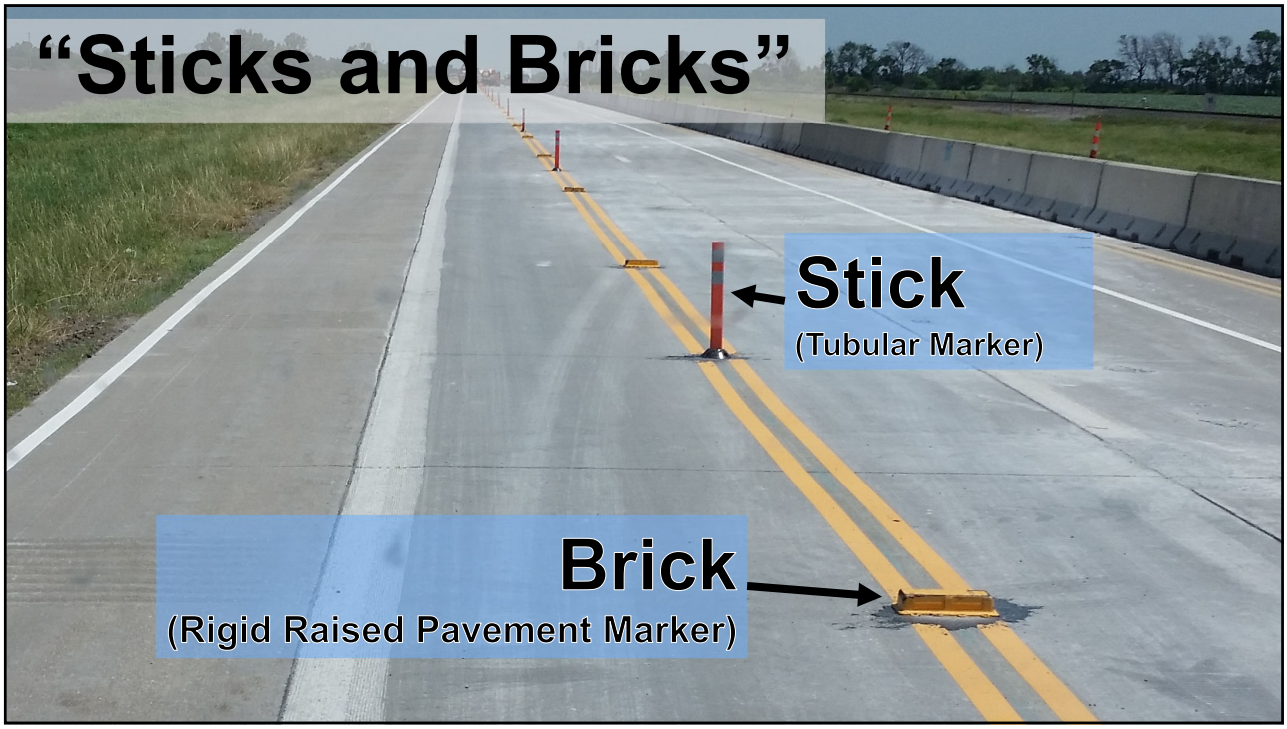
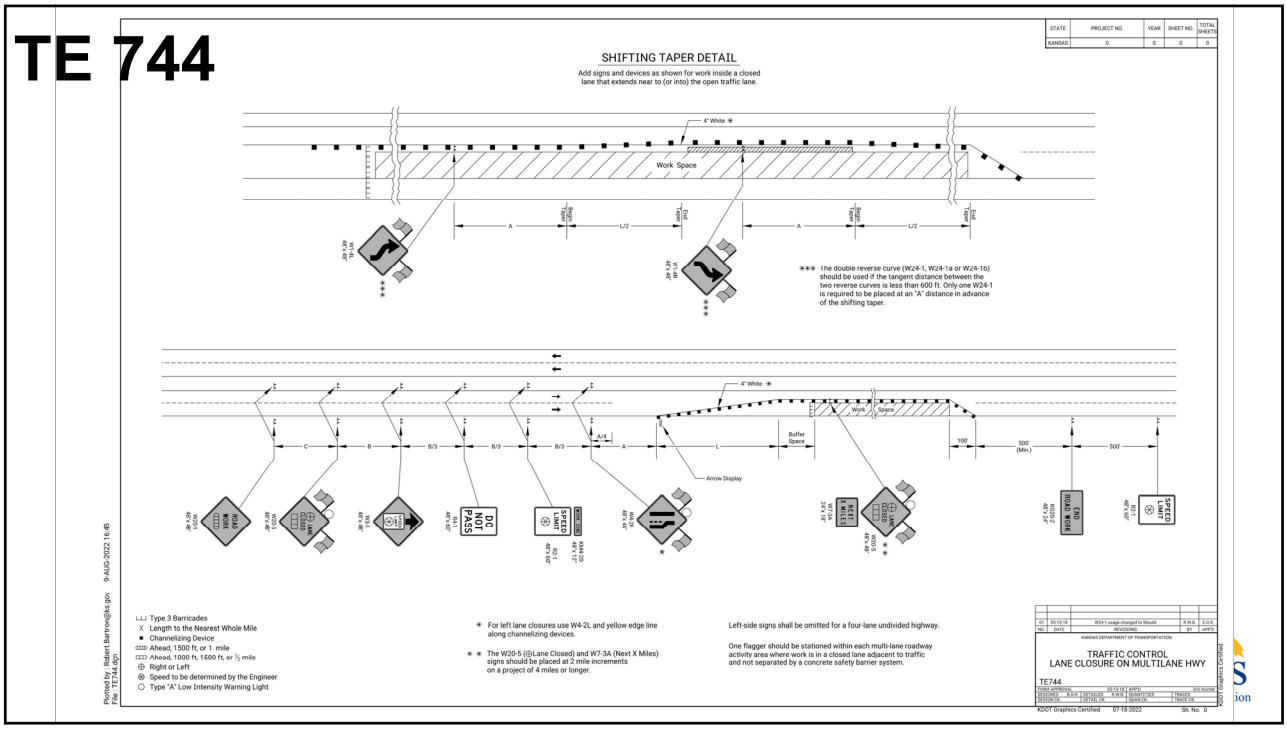
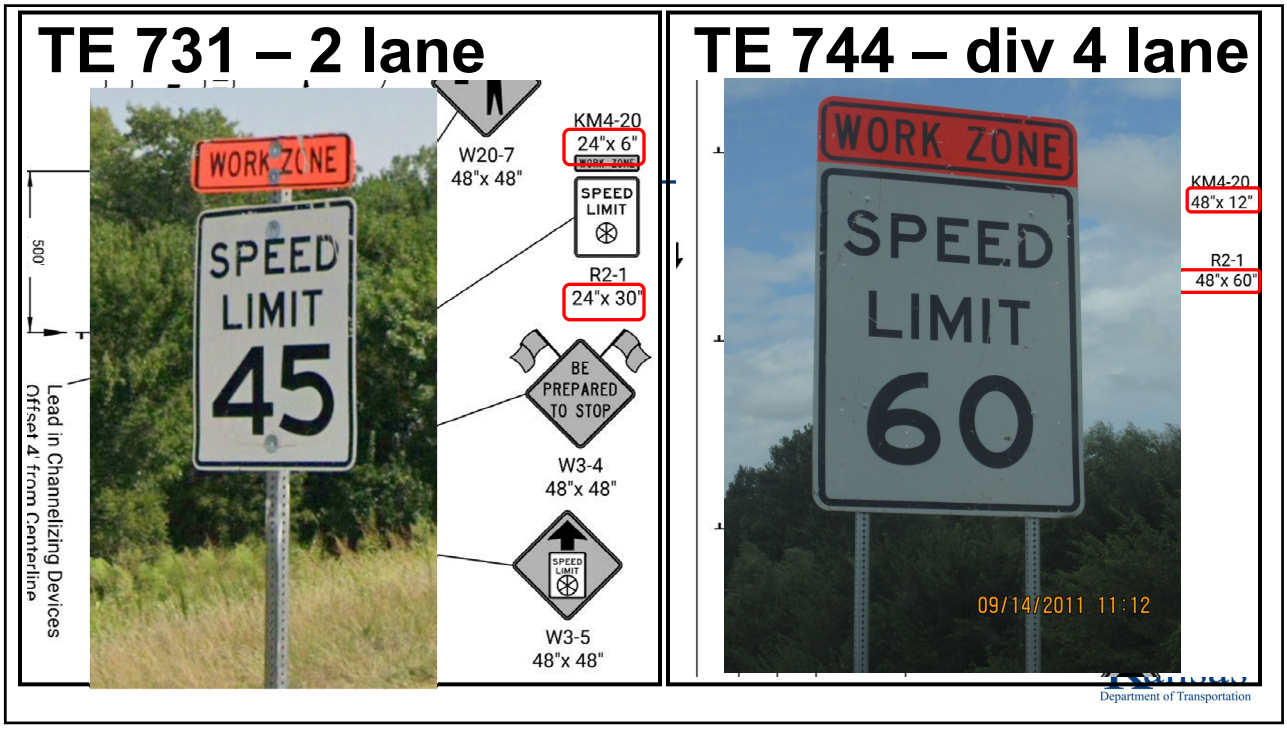


54


TE 744
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.
Work Space
4" White
Buffer Space
Arrow Display
Type 3 Barricades
Length to the Nearest Whole Mile
Channelizing Device
Ahead, 1500 ft, or 1 mile
Ahead, 1000 ft, 1500 ft, or ½ 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 (@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.
TRAFFIC CONTROL
LANE CLOSURE ON MULTILANE HWY
TE744

55


TE 731 – 2 lane
WORK ZONE
SPEED LIMIT
45
500'
Lead in Channelizing Devices
Offset 4' from Centerline
W20-7
48"x 48"
KM4-20
24"x 6"
SPEED LIMIT
R2-1
24"x 30"
BE PREPARED TO STOP
W3-4
48"x 48"
SPEED LIMIT
W3-5
48"x 48"
TE 744 – div 4 lane
WORK ZONE
SPEED LIMIT
60
09/14/2011 11:12
KM4-20
48"x 12"
R2-1
48"x 60"
Department of Transportation

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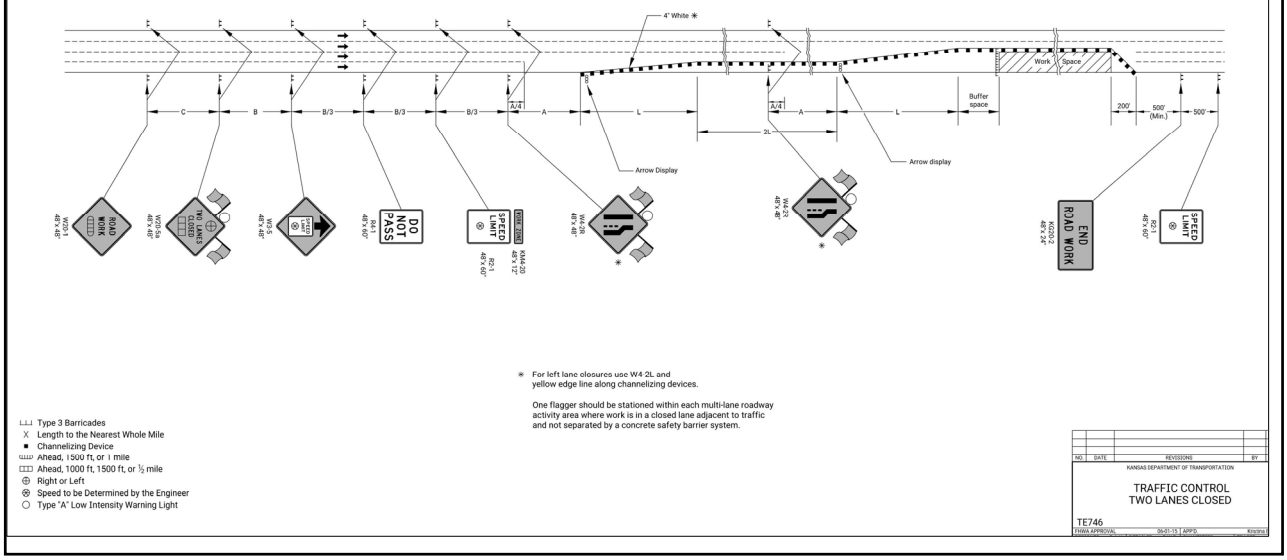
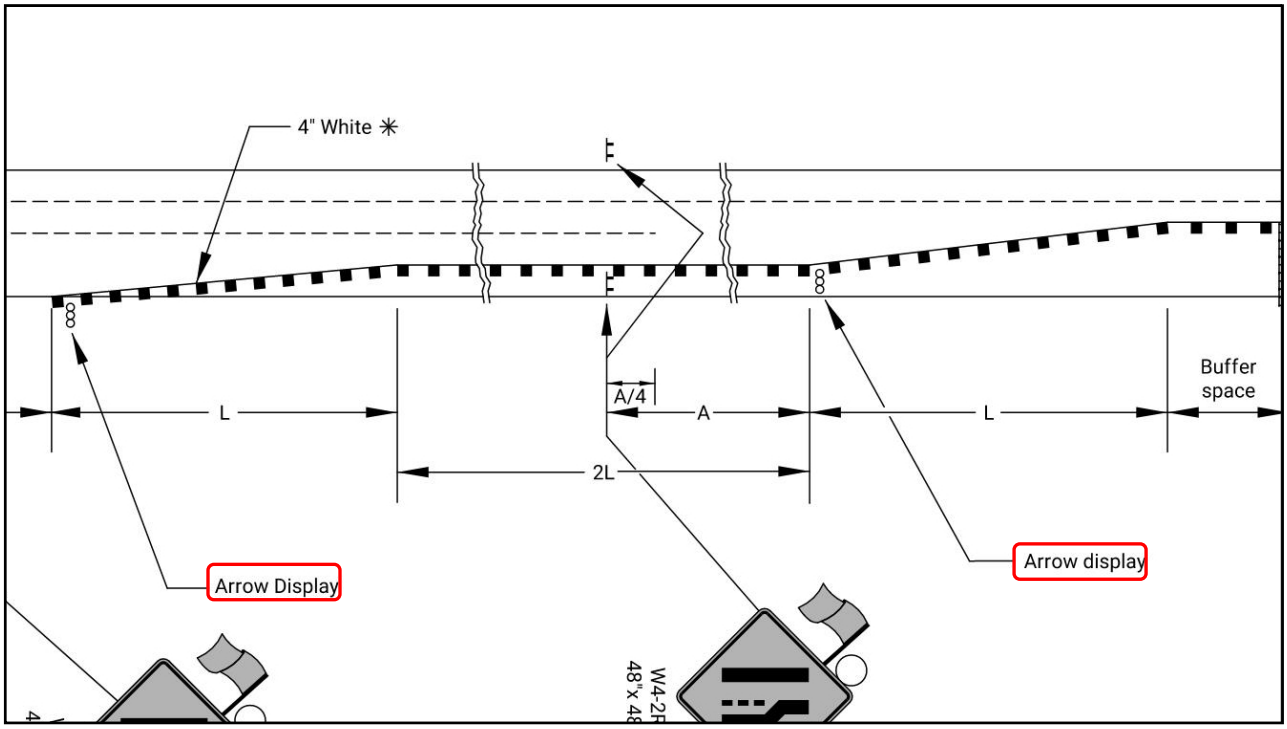
TE 746

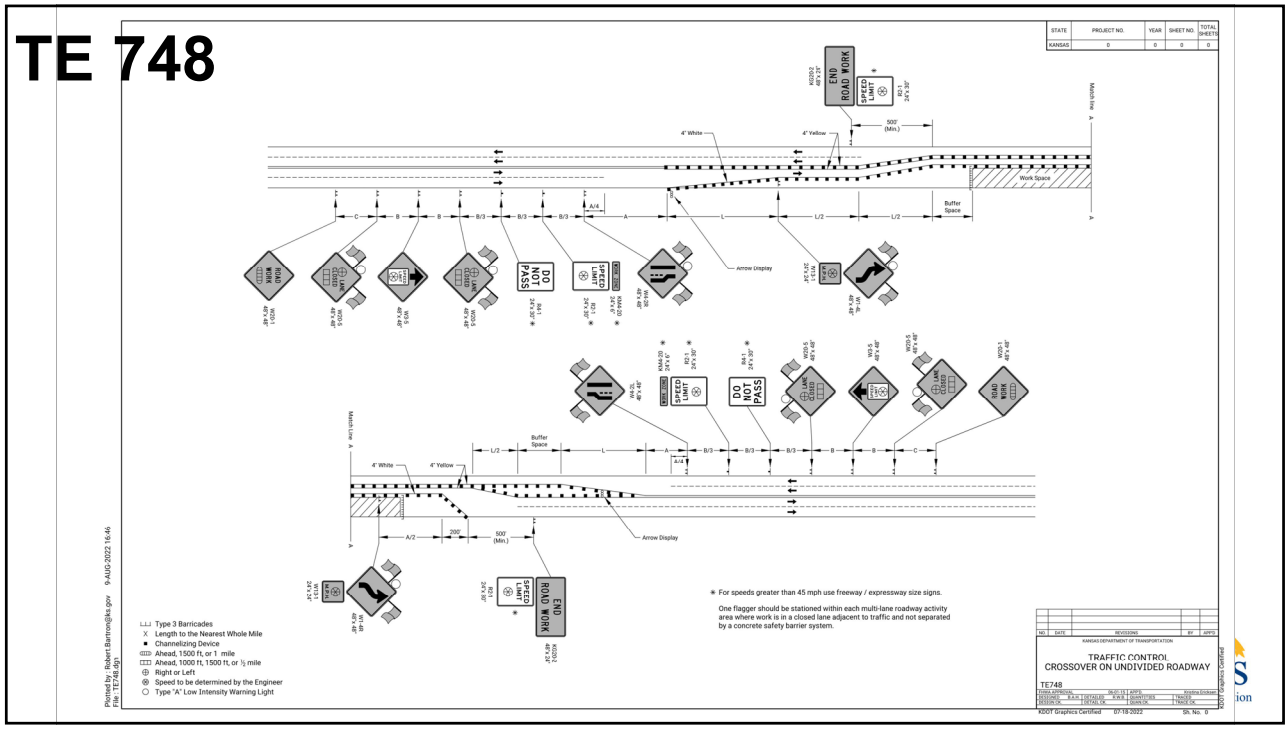

4" White ✳
Arrow Display
Arrow display
Buffer space
Work Space
200'
500' (Min.)
500'
ROAD WORK
TWO LANES CLOSED
DO NOT PASS
SPEED LIMIT
END ROAD WORK
✳ For left lane closures use W4-2L and yellow edge line along channelizing devices.
One flagger should be stationed within each multi-lane roadway activity 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 ½ mile
Right or Left
Speed to be Determined by the Engineer
Type "A" Low Intensity Warning Light
NO. DATE REVISIONS BY
KANSAS DEPARTMENT OF TRANSPORTATION
TRAFFIC CONTROL
TWO LANES CLOSED
TE746

57


4" White ✳
L
A/4
A
L
Buffer space
2L
Arrow Display
Arrow display

58

TE 748



59

TE 795

Work Zone Sign (Special)	
16.25 Sq.Ft. & Less	16.26 Sq.Ft. & Over

Signs: Designations/ Identifications

Quantity of Each

Work Zone Signs *			
Sign No.	Size - Sq.Ft. 0-9.25	9.26-16.25	16.26 & Over
W20-7		3	
KG20-2	2		
R2-1	2		
KM4-20	2		
R4-1	2		
KI-105A		2	
KI-104A		2	
W21-5		1	
W20-1		3	
W14-3		2	
W3-4		2	
W3-5		2	
W20-4		2	
R11-2		2	
W20-3		2	
W3-3		2	
W1-4		1	
W13-1	1		
R10-6	2		
R1-1	2		
R3-1	1		
R3-2	1		

60

TE 795

Number of Barricades

Barricades ✳		Channelizing Devices ✳		
Type 3 (4' To 12')	Pedestrian	Fixed	Portable	Pedestrian
20			100	

Lighted Device Quantities

Lighted Devices ✳	
Work Zone Warning Light (Type "A" Low Intensity)	10
Work Zone Warning Light (Red Type "B" High Intensity)	2
Arrow Display	
Portable Changeable Message Sign	

61

TE 795

Recapitulation of Quantities		
Item	Quantity	Unit
Work Zone Signs (0 to 9.25 Sq.Ft.)	46,940	Each Per Day
Work Zone Signs (9.26 to 16.25 Sq.Ft.)	5040	Each Per Day
Work Zone Signs (16.26 Sq.Ft. & Over)		Each Per Day
Work Zone Barricades (Type 3 - 4' to 12')	4410	Each Per Day
Work Zone Barricades (Pedestrian)		Each Per Day
Channelizer (Fixed)		Each Per Day
Channelizer (Portable)	6300	Each Per Day
Channelizer (Pedestrian)		Each Per Day
Work Zone Warning Light (Type "A" Low Intensity)	3780	Each Per Day
Work Zone Warning Light (Red Type "B" High Intensity)		Each Per Day
Arrow Display		Each Per Day
Portable Changeable Message Sign		Each Per Day
Pavement Marking (Temporary)		
4" Solid (Type I)		Sta./Line

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Temporary Traffic Control
Traffic Engineering Standards

Kansas
Department of Transportation

63

Kansas
Department of Transportation

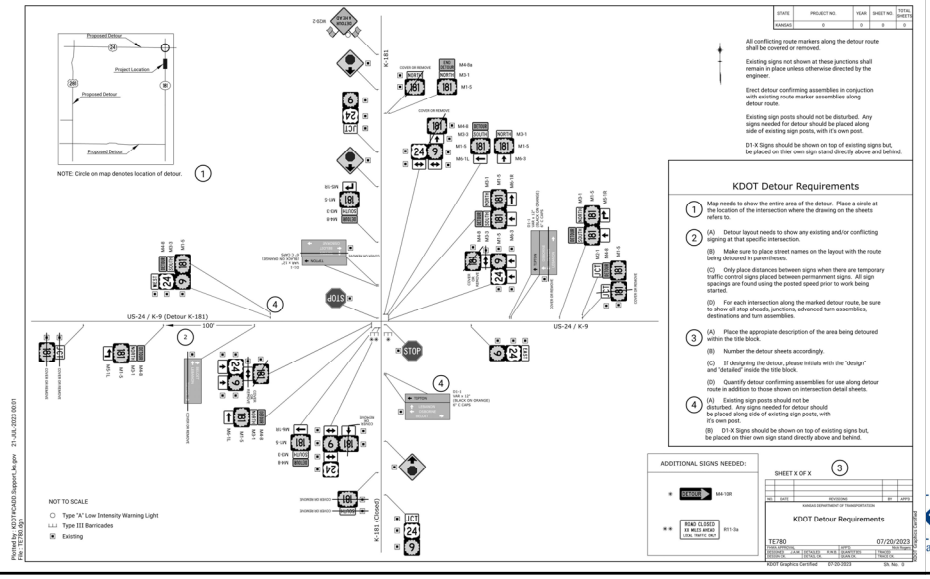
1

Temporary Traffic Control
Detours and Common Sense

Kansas
Department of Transportation

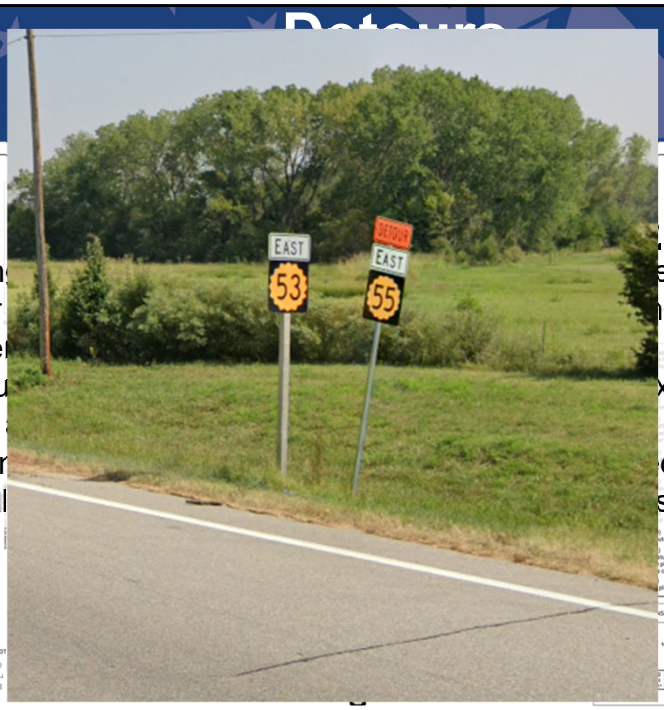
2

Detours
TE 780



3

Detours



1. All conflictin e covered or removed
2. All signs for neer dismisses them – usually whe
3. Erect "detou xisting route marker assemblies
4. Existing sign ded for detour should be placed al st.

4

Detours
TE 780

1. Responsibility – who replaces it if/when it gets knocked down?
2. Is it crash compliant?
3. Wind load

Kansas Department of Transportation

5

Detours
TE

Kansas Department of Transportation

6


SHOULD BE 44” LONG MINIMUM!!!
Sign Post
Install Corner Bolt at Ground Level
1½" Max.
Ground Line
A
A
6" Min.
Post Anchor
44" Min.
Undisturbed Earth or Compacted Fill
P.S.S.T. Detail

7


IS THIS A VIABLE SOLUTION?!!?

8

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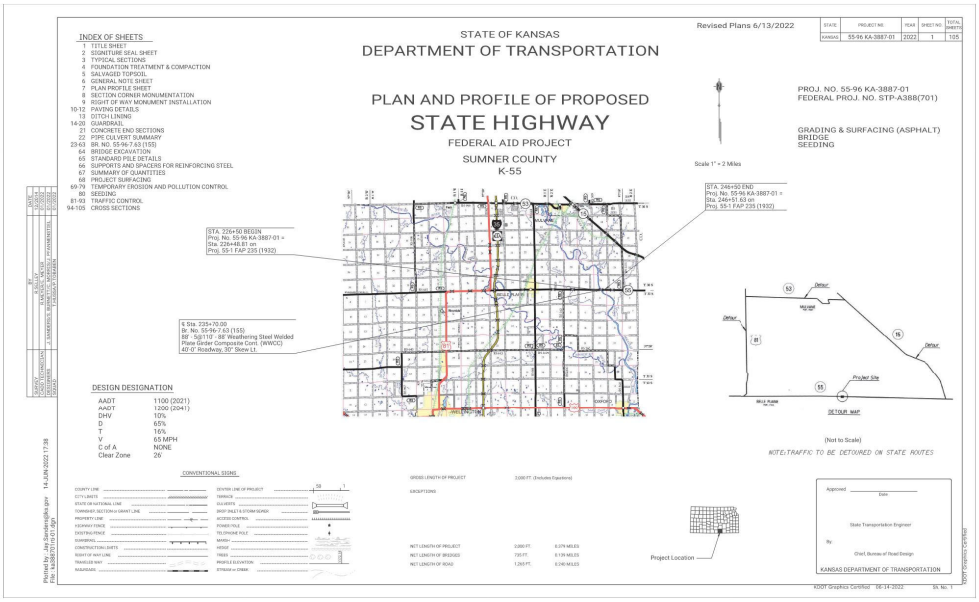
nt of Transportation

9

Detours



STATE OF KANSAS
DEPARTMENT OF TRANSPORTATION

Revised Plans 6/13/2022

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	55-96 KA-3887-01	2022	1	105

PLAN AND PROFILE OF PROPOSED
STATE HIGHWAY
FEDERAL AID PROJECT
SUMNER COUNTY
K-55

PROJ. NO. 55-96 KA-3887-01
FEDERAL PROJ. NO. STP-A388(701)

GRADING & SURFACING (ASPHALT)
BRIDGE
SEEDING

INDEX OF SHEETS
1 TITLE SHEET
2 SIGNITURE SEAL SHEET
3 TYPICAL SECTIONS
4 FOUNDATION TREATMENT & COMPACTION
5 SALVAGED TOPSOIL
6 GENERAL NOTE SHEET
7 PLAN PROFILE SHEET
8 SECTION CORNER MONUMENTATION
9 RIGHT OF WAY MONUMENT INSTALLATION
10-12 PAVING DETAILS
13 DITCH LINING
14-20 GUARDRAIL
21 CONCRETE END SECTIONS
22 PIPE CULVERT SUMMARY
23-63 BR. NO. 55-96-7.63 (155)
64 BRIDGE EXCAVATION
65 STANDARD PILE DETAILS
66 SUPPORTS AND SPACERS FOR REINFORCING STEEL
67 SUMMARY OF QUANTITIES
68 PROJECT SURFACING
69-79 TEMPORARY EROSION AND POLLUTION CONTROL
80 SEEDING
81-93 TRAFFIC CONTROL
94-105 CROSS SECTIONS

DESIGN DESIGNATION
AADT 1100 (2021)
AADT 1200 (2041)
DHV 10%
D 65%
T 16%
V 65 MPH
C of A NONE
Clear Zone 26

DETOUR MAP
(Not to Scale)
NOTE: TRAFFIC TO BE DETOURED ON STATE ROUTES

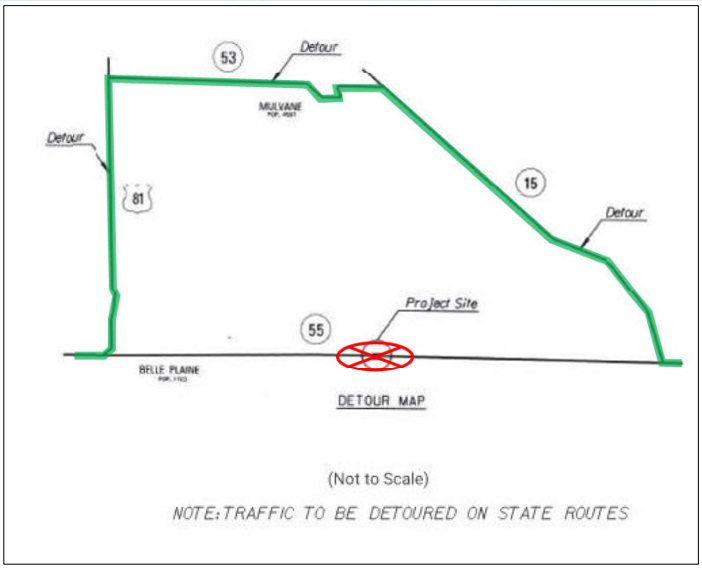
Project Location

KANSAS DEPARTMENT OF TRANSPORTATION

ansas
ent of Transportation

10

Detours



Kansas Department of Transportation

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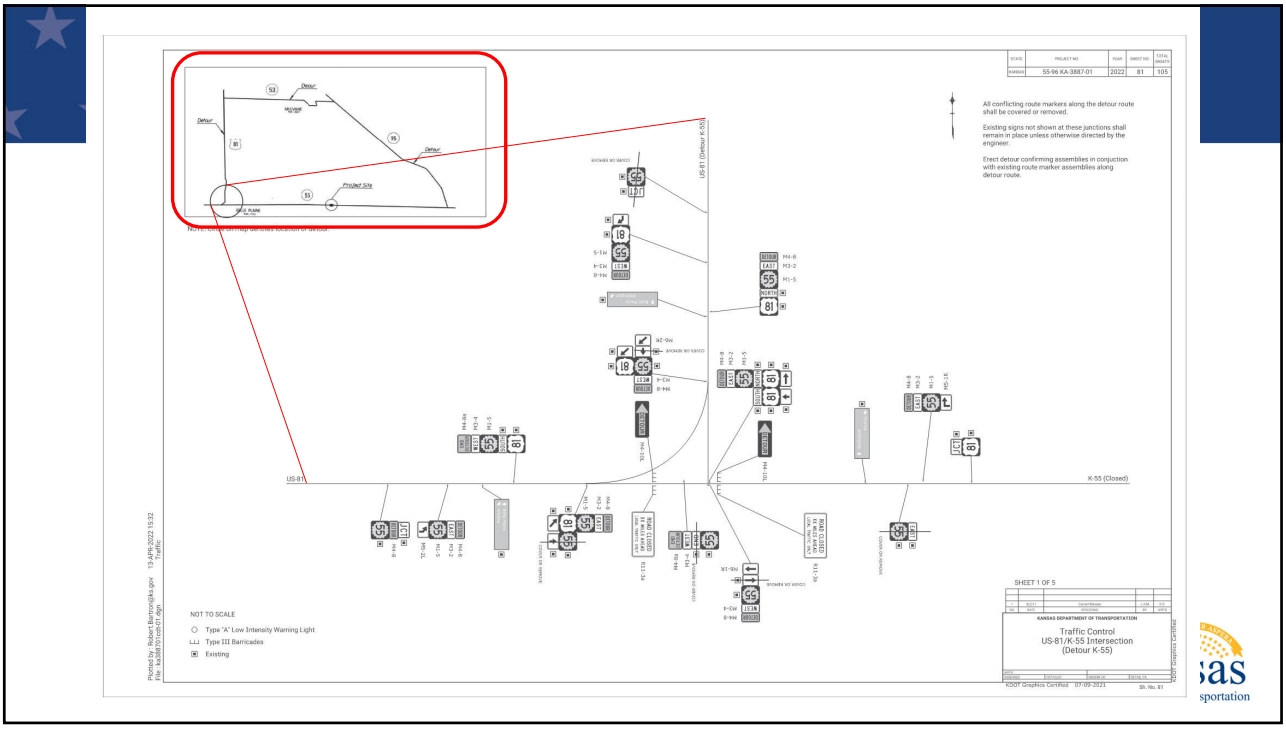
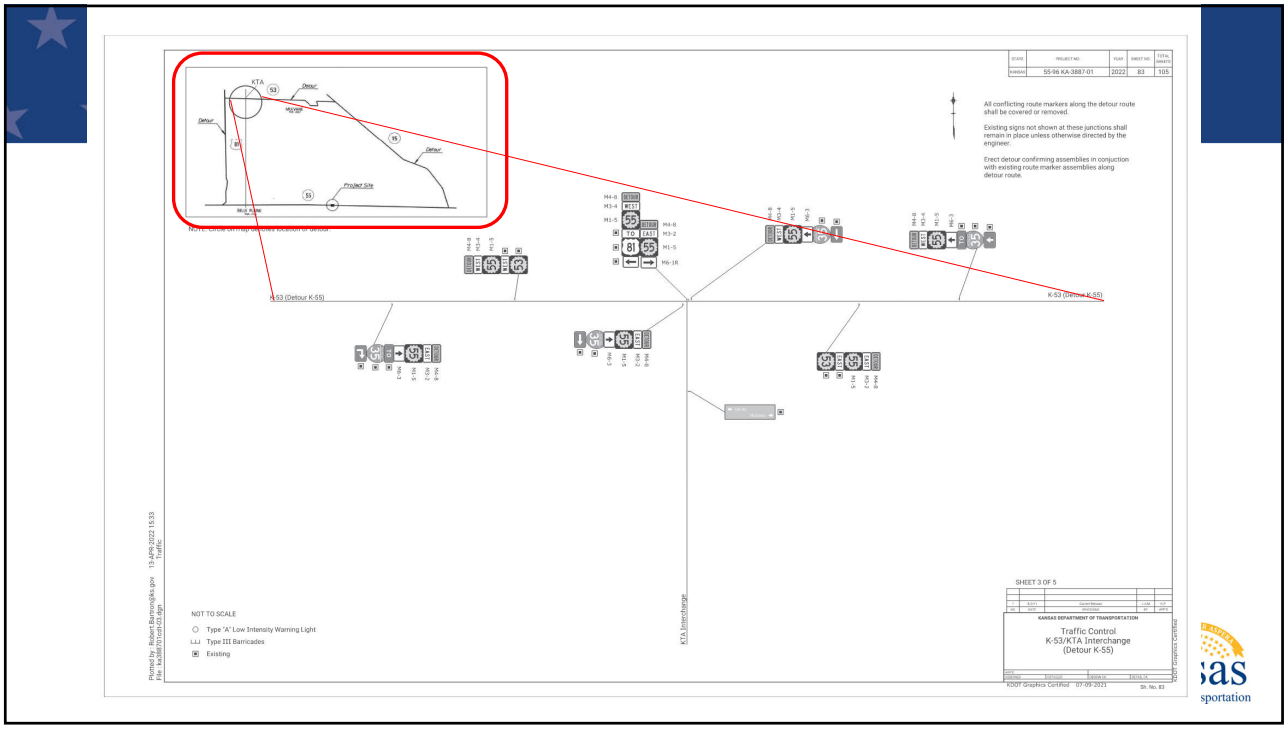
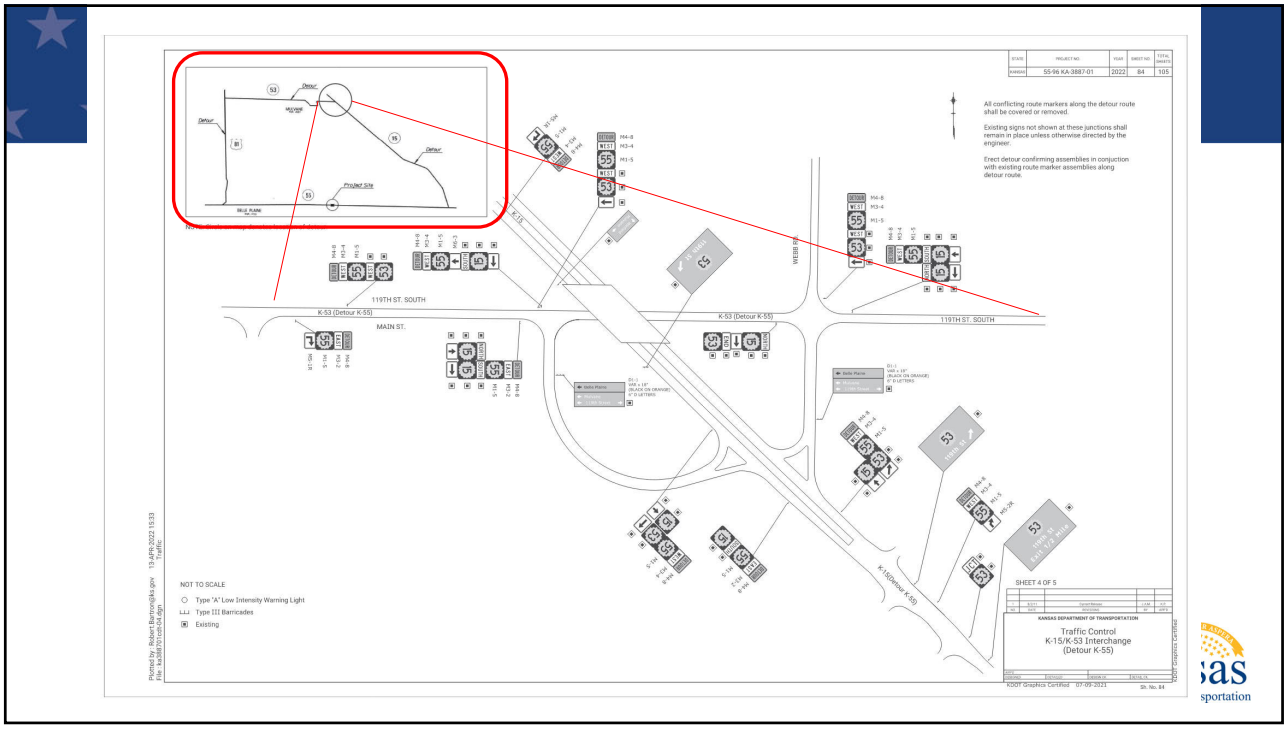


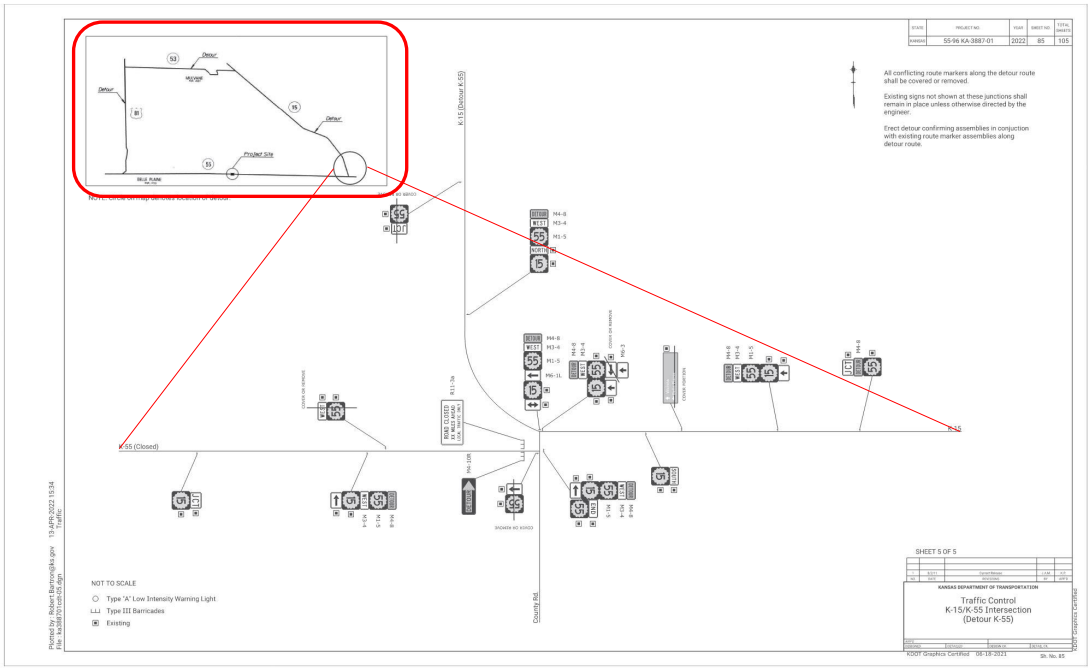
12


All conflicting route markers along the detour route shall be covered or removed.
Existing signs not shown at these junctions shall remain in place unless otherwise directed by the engineer.
Erect detour confirming assemblies in conjuction with existing route marker assemblies along detour route.
K-53 (Detour K-55)
K-53 (Detour K-55)
KTA Interchange
NOT TO SCALE
Type 'A' Low Intensity Warning Light
Type III Barricades
Existing
SHEET 3 OF 5
Traffic Control
K-53/KTA Interchange
(Detour K-55)
KANSAS DEPARTMENT OF TRANSPORTATION

13


All conflicting route markers along the detour route shall be covered or removed.
Existing signs not shown at these junctions shall remain in place unless otherwise directed by the engineer.
Erect detour confirming assemblies in conjuction with existing route marker assemblies along detour route.
119TH ST. SOUTH
K-53 (Detour K-55)
MAIN ST.
K-53 (Detour K-55)
119TH ST. SOUTH
K-15(Detour K-55)
NOT TO SCALE
Type 'A' Low Intensity Warning Light
Type III Barricades
Existing
SHEET 4 OF 5
Traffic Control
K-15/K-53 Interchange
(Detour K-55)
KANSAS DEPARTMENT OF TRANSPORTATION

14



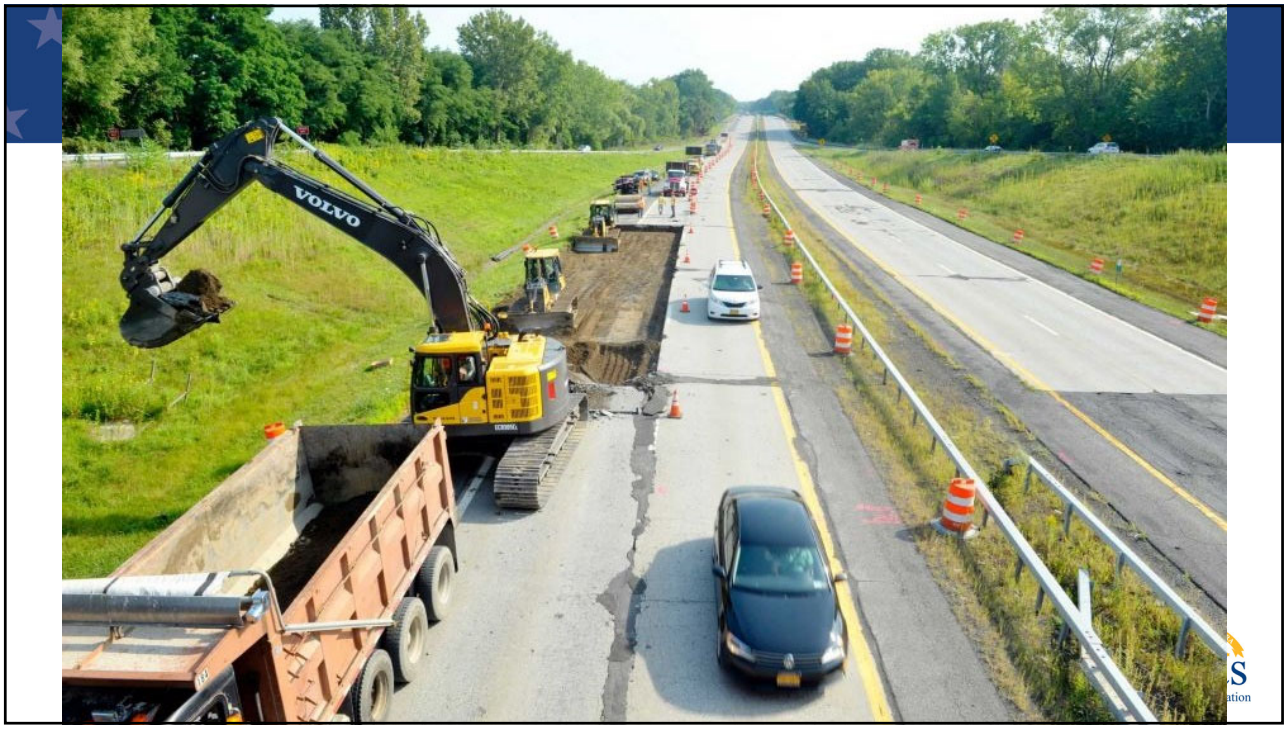
15

Common Sense

16

17

18



19

20

Common Sense

21

Common Sense

The Zipper Merge

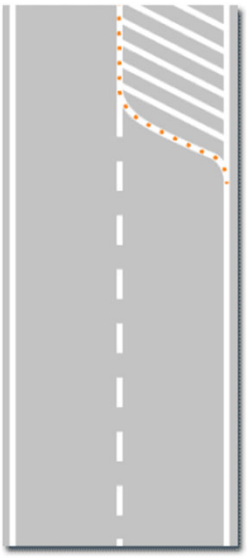
22

Common Sense

The Zipper Merge

Zipper merge

The zipper merge keeps cars in both lanes for as long as possible before they merge, one by one, into the open lane. Traffic moves at a consistent speed, making it safer for drivers and avoiding heavy congestion by up to 40 per cent, according to the Minnesota Department of Transportation.



Department of Transportation

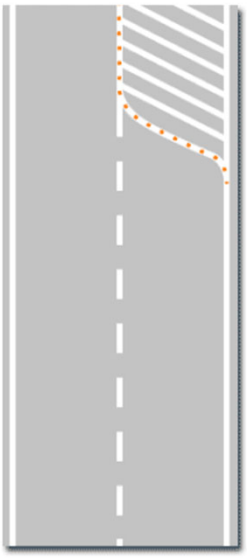
23

Common Sense

The Zipper Merge

Zipper merge

The zipper merge keeps cars in both lanes for as long as possible before they merge, one by one, into the open lane. Traffic moves at a consistent speed, making it safer for drivers and avoiding heavy congestion by up to 40 per cent, according to the Minnesota Department of Transportation.



Department of Transportation

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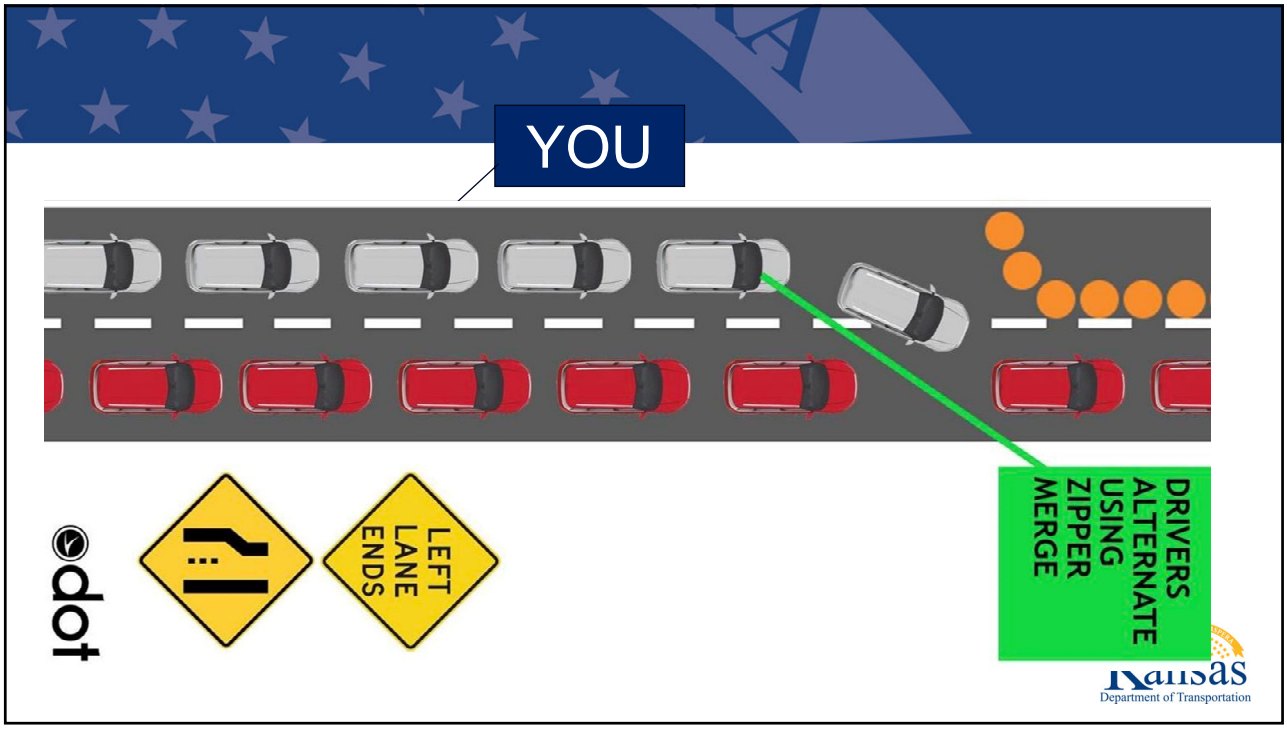
YOU
LEFT LANE ENDS
DRIVERS ALTERNATE USING ZIPPER MERGE
Kansas
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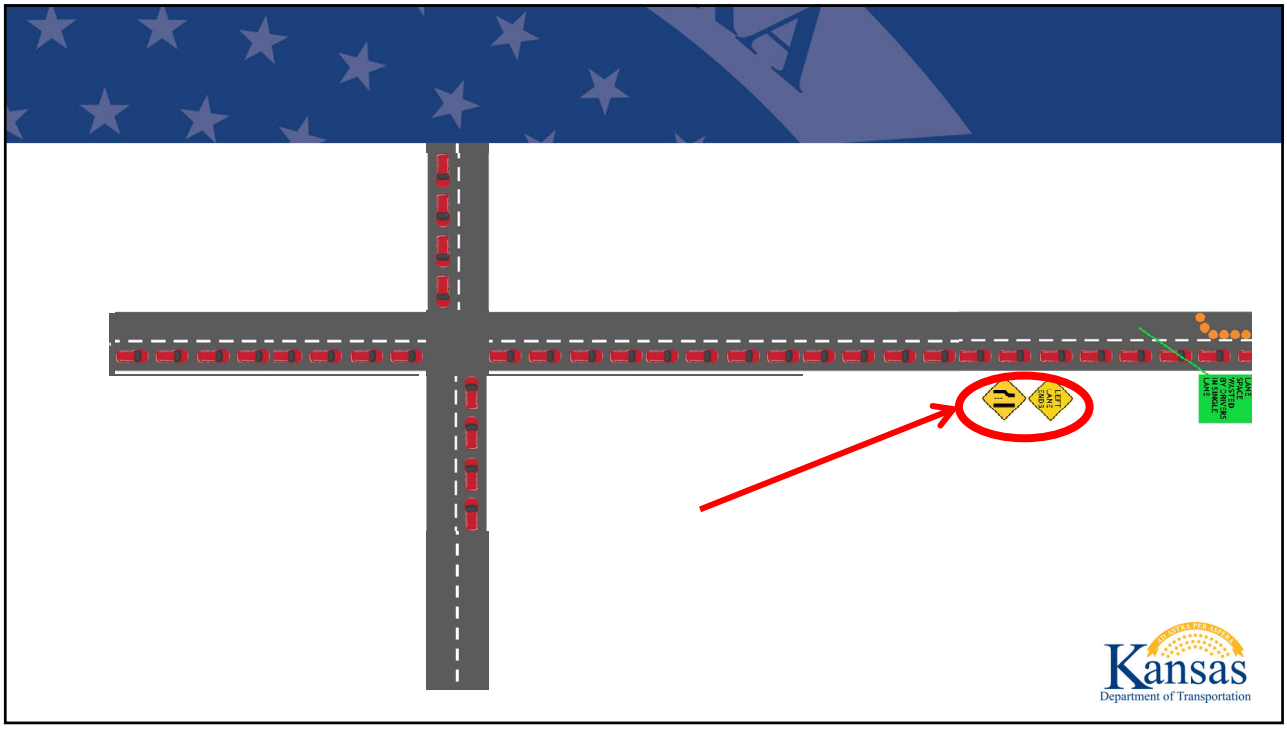
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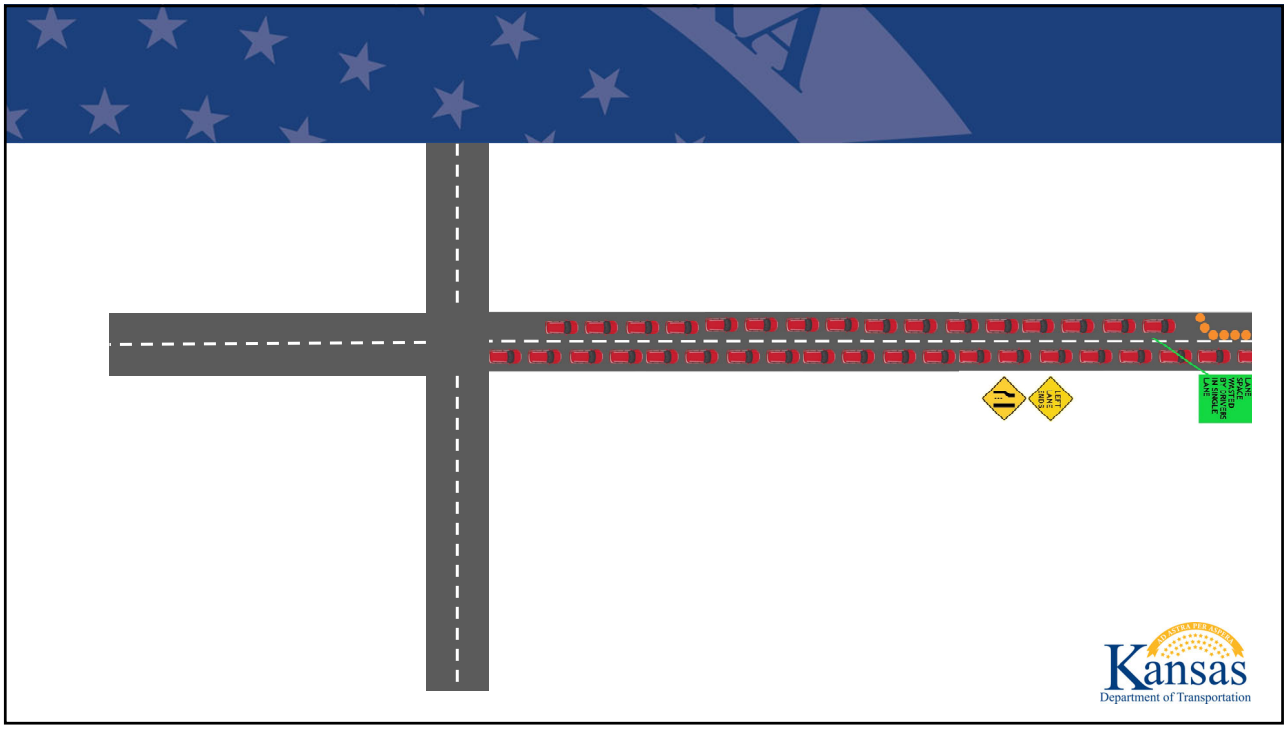
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Department of Transportation

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ZIPPER MERGE AHEAD
SR 529 NORTH
USE BOTH LANES TO MERGE POINT
merge' in
TAKE TURNS
TAKE TURNS AT MERGE
Project Completion
Drive Safely
BEGIN MERGE

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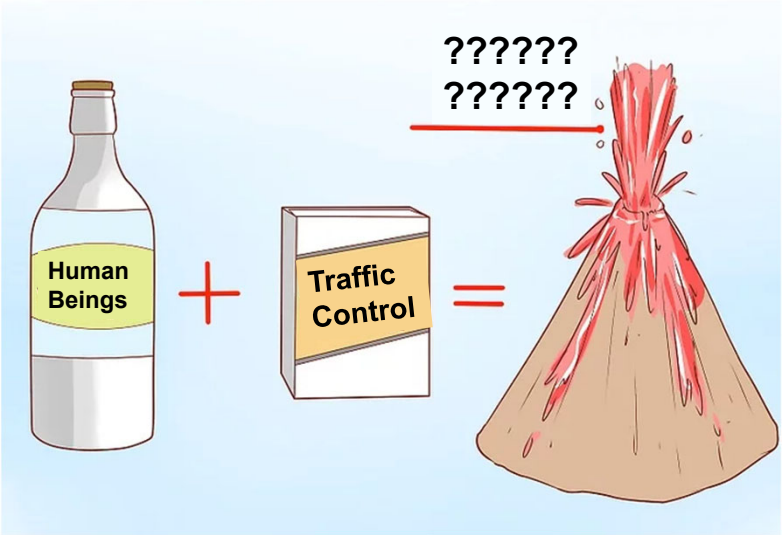
Common Sense



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Common Sense

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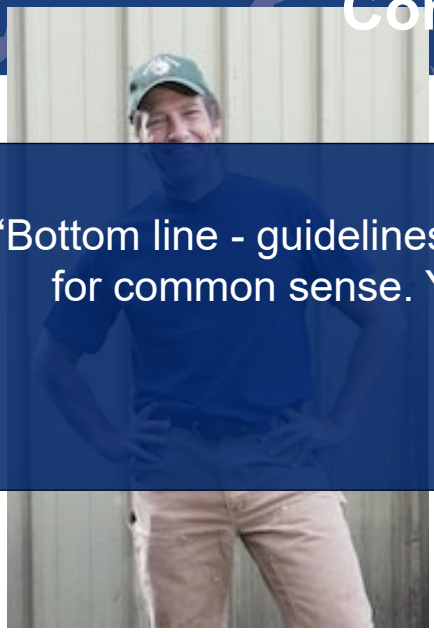
Common Sense



"Bottom line - guidelines are great, but they're no substitute for common sense. Your safety is your responsibility"

-Mike Rowe

Kansas
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