WORK ZONE TRAFFIC SAFETY

STEEP CREEK, LLC

2024

AGENDA

- Work Zone Traffic Safety Program
- Work Zone Statistics
- Maintenance of Traffic
  - Control Plans
  - Devices and Signage
  - Flaggers
- Team Member Safety – High Visibility PPE

Work Zone Traffic Safety Program

Purpose and Scope

To safely control the movement of workers, vehicles, and equipment within a roadway construction area. This program is intended to ensure that team members involved in work zone activities are trained and aware of their responsibilities, understand work zone hazards, and know how to perform their work safely.

Program Responsibilities

Program Administrator. The Program Administrator is responsible for developing and implementing the program, including:

- Annually reviewing and updating this written plan
- Receive continuing education training on work zone safety
- Ensure maintenance of traffic and work zone protective systems have been designed and approved before work begins
- Determining the means of protection that must be used for each work zone project prior to and during construction
- Documenting all training and evaluations
- Reviewing copies of inspection checklists

Project Leads. Project Leads are responsible for:

- Providing appropriate training on the safe operations in work zones
- Providing protective systems and personal protective equipment as needed to ensure team members are highly visible to equipment operators, vehicles, pedestrians, and other team members
- Notifying team members of potential work zone hazards prior and during construction
- Relaying the escape route in the event of an emergency
- Inspecting work zone sites daily for safe working conditions
- Ensuring that team members who are found to have insufficient skills or understanding of safe work zone operations received additional training
- Ensuring team members comply with all safe work practices described in this program
- Providing program feedback to the Program Administrator

Team Members. Team members are responsible for:

- Wearing high visibility clothing
- Being alert to construction operations and vehicular operations
- Knowing permissible travel routes for equipment in work zones
- Treating motorist with respect and courtesy. **Do NOT pick fights or respond to angry individuals**
- Reporting hazardous practices or situations to their Project Lead, Division Lead, or the Program Administrator immediately

Training

Team members who perform operations in work zones must receive training by Project Leads or Division Leads before work commences. Training must cover both general safety topics and hazard prevention, including:

- An overview of the Safety Program
- Required safe work practices in work zones
- Required traffic control devices and signage
- Protection from vehicular traffic
- Protection from other team members or contractors working on the same site
- Use of flaggers and flagger safety
- Company policy on reporting incidents that cause injuries

Authorized Trainers
1. Division Leads
2. Project Leads
3. Program Administrator
4. Certified Trainers

All training and evaluations are documented and will include the name of the trainee, name of the trainer and the date of training. All training will be recorded using the form in **Appendix A**.

Refresher Training

Refresher training will be conducted to ensure that all team members have the knowledge and skills needed for work zone construction areas. Refresher training will be conducted for individuals when the individual:

- Has received an evaluation that reveals he/she is not following safety protocols
- Has been observed working in an unsafe manner
- Is provoking motorists or pedestrians
- Has been involved in an accident or near-miss incident
- A condition in the workplace has changed which could affect the safe operations

Refresher training will be evaluated by the Program Administrator to gauge the effectiveness of the training.

Safe Work Zone Practices

The following procedures will be followed at all times.

- Traffic Control Devices and Signage
  - Standard traffic control devices, signals, signage, and message boards will instruct drivers to follow a path away from where work is being done. Approved traffic control devices include:

        - Cones
        - Barrels
        - Barricades
        - Delineator posts
        - Portable stoplights
    - Signage must be clear, short, and spaced so that the needed information is understood in time for the motorists to safely perform the needed maneuvers.
    - Signage type and spacing is determined by speed limits and type of roadways (residential street, county road, state highway, interstate)
    - If warning lights are used, ensure light levels are adjusted in a timely manner. Bright daytime lighting can blind drivers in dark hours and dimmer night lights are difficult to see in daylight hours.
    - Establish a detour route whenever possible
    - Use pilot cars as needed in work zones that require long, single lane traffic.
- Depending on project size, an internal traffic control plan may be necessary. Worksite team members should utilize site specific signage to ensure team members, equipment, deliveries, and subcontractor operations and travel routes do not conflict with approved Maintenance of Traffic plan.
    - Additionally, post signage alerting workers to clearances below high voltage lines, blind corners, hazardous drop-offs for operators
- Test Work Zone Effectiveness
    - Once a traffic control zone is in use, the Project Lead or Division Lead should verify its effectiveness by walking or riding through the zones at varying times based on weather conditions and traffic volume.
    - Project Lead should inspect the areas and note any evidence of near misses, such as skid marks or damaged signage/barriers
- Protection from vehicular traffic includes
    - Team members must wear reflective or high visibility warning vests or similar when working near traffic
    - Use red or orange reflective material on warning vests if worn at night
    - Erect emergency lighting such as spotlights or portable lights as needed to perform work safely. Lighting for night work should be placed to prevent blinding operators or workers in the work zone.
- Flaggers
    - Drivers should be warned in advance with signs that there will be a flagger ahead. Flaggers should use STOP/SLOW paddles or paddles with lights. The STOP sign should be octagonal with a red background and white letters and border. The SLOW sign is the same shape, with an orange background and black letters and a border.
    - The best way to protect flaggers from hazards include
        - Wearing high visibility clothing (orange, yellow, or green vest)/retro-reflective vest at night so flaggers are visible for at least 1,000'
        - Wearing hard hats
        - Wearing appropriate clothes for the expected weather
        - Never standing in the open traffic lane
        - Staying alert and focused on work
        - Making sure hand signals don't conflict with the traffic signals
        - Don't stand where you can't be seen by equipment operators
        - Don't stand in the shade over the crest of a hill or around a sharp curve
        - Don't leave your position until properly relieved
        - Don't make unneeded conversations or stand in a group
        - Use radios for traffic control operations only, not team member conversations
        - Don't read, daydream, listen to music, use earphones, or play on devices
        - Don't turn your back to traffic

Periodic Program Review

The Work Zone Traffic Safety Program and procedures are reviewed annually. The review is documented on the form located in **Appendix C**.

Revision History

Revision 1 – December 2023

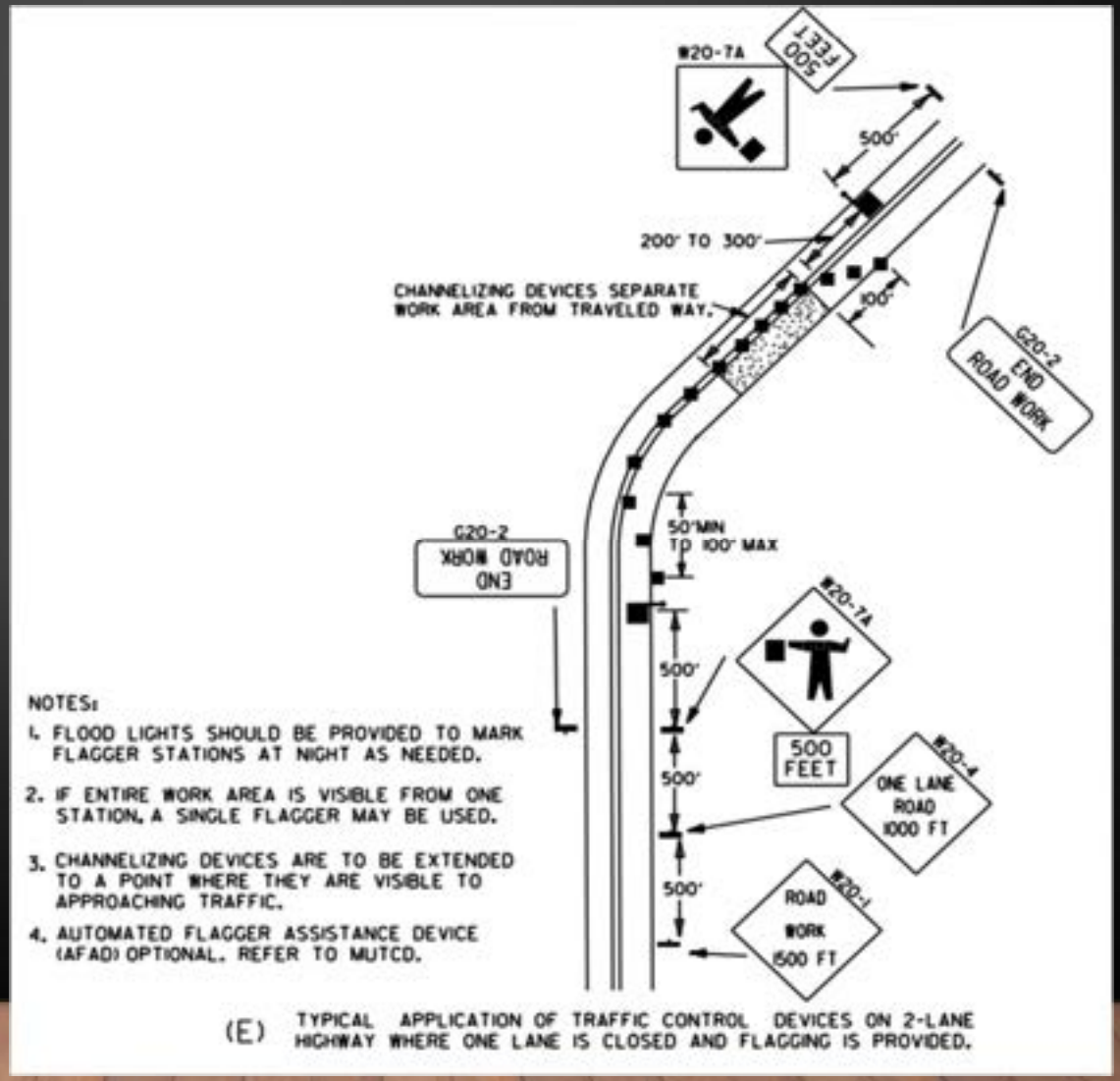
WORK ZONES

- What is a work zone?
  - A work zone is an area of trafficway with construction, maintenance, or utility work activities.
- Who is impacted by work zones?
  - Team members, drivers & passengers of motor vehicles, pedestrians, bicyclists, materials delivery drivers
- When is work zone traffic safety important?
  - Always – even when we are not onsite
- Why does it matter?

ARKANSAS STATISTICS



MAINTENANCE OF TRAFFIC



R1-1



STANDARD 30"X30"
EXPRESSWAY 36"X36"
SPECIAL 48"X48"

R1-2



STD. 36"X36"X36"
EXPRY. 48"X48"X48"
FWY. 60"X60"X60"

R2-1



STD. 24"X30"
EXPRY. 36"X48"
FWY. 48"X60"

R3-5



STD. 36"X36"
EXPRY. 48"X48"
FWY. 48"X48"

R3-5a



STD. 36"X36"
EXPRY. 48"X48"
FWY. 48"X48"

R4-1



STD. 24"X30"
EXPRY. 36"X48"
FWY. 48"X60"

R4-2



STD. 24"X30"
EXPRY. 36"X48"
FWY. 48"X60"

ADVANCE DISTANCES
(XXXX)

500 FT	½ MILE
1000 FT	¾ MILE
1500 FT	1 MILE

AHEAD

GENERAL NOTES:

1. ALL TRAFFIC CONTROL DEVICES USED ON ROAD CONSTRUCTION SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, AND TO THE STANDARD HIGHWAY SIGNS, LATEST EDITION, OR AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION.

2. TRAFFIC CONTROL DEVICES SHALL BE SET UP JUST BEFORE THE START OF CONSTRUCTION OPERATIONS AND SHALL BE PROPERLY MAINTAINED DURING THE TIME SUCH CONDITIONS EXIST. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS NEEDED AND REMOVED THEREAFTER.

3. EXISTING SIGNS AND CONSTRUCTION SIGNS SHALL BE KEPT IN PROPER POSITION AND BE CLEAN AND LEGIBLE AT ALL TIMES. SIGNS THAT DO NOT APPLY TO EXISTING CONDITIONS SHALL BE REMOVED. SIGNS THAT ARE DAMAGED, DEFACED, OR THAT ACCUMULATE DIRT DURING CONSTRUCTION SHALL BE CLEANED, REPAIRED, OR REPLACED.

* 4. SIGNS ARE USUALLY MOUNTED ON A SINGLE POST, ALTHOUGH THOSE WIDER THAN 36" OR LARGER THAN 10 SQ.FT. SHALL BE MOUNTED ON TWO POSTS OR ABOVE A TYPE III BARRICADE.

* 5. SIGN POSTS DIRECT BURIED IN SOIL SHALL BE 2 LB. MINIMUM CHANNEL POST OR 4"x4" WOOD POSTS. CHANNEL POSTS SHALL BE PAINTED GREEN, WOOD POSTS SHALL BE PAINTED WHITE. ALL POSTS SHALL BE NEATLY CONSTRUCTED, AND SHALL BE REPLUMBED, CLEANED, OR REPAIRED AS NEEDED FOR THE DURATION OF THE JOB. THERE SHALL NOT BE MORE THAN 2 POSTS IN A 7' PATH FOR WOOD OR CHANNEL POSTS. ANY CHANNEL POST SPLICE SHALL BE IN ACCORDANCE WITH STANDARD DRAWING TC-5.

6. POST MOUNTED SIGNS IN RURAL AREAS SHALL BE CONSTRUCTED WITH THE NEAR EDGE OF THE SIGN FROM 6 TO 12 FEET FROM THE PAVEMENT EDGE. SIGNS IN URBAN AREAS AND BARRICADE MOUNTED SIGNS SHALL BE MOUNTED A MINIMUM OF 2 FEET FROM THE PAVEMENT EDGE.

7. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN URBAN AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE. ALL POST AND BARRICADE MOUNTED SIGNS MOUNTED IN RURAL AREAS SHALL BE MOUNTED A MINIMUM DISTANCE OF 7' FROM THE BOTTOM OF THE SIGN TO THE ROADWAY SURFACE, EXCEPT A MINIMUM OF 6' SHALL BE USED WHEN MOUNTING AN ADVISORY SIGN BELOW A WARNING SIGN. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR INTERMEDIATE TERM STATIONARY WORK CONDITIONS. THE SIGNS MINIMUM MOUNTING HEIGHT SHALL BE 5'. RETROREFLECTIVE DEVICES SHALL BE USED. TEMPORARY SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS FOR SHORT-TERM, SHORT DURATION, AND MOBILE CONDITIONS. THEY SHALL BE NO LESS THAN ONE HUNDRED FOOT ABOVE THE TRAVELED WAY. LONG-TERM STATIONARY SIGNS SHALL BE DIRECT BURIED IN SOIL, UNLESS CONDITIONS NECESSITATE THE USE OF PORTABLE SIGNS, OR AS APPROVED BY THE ENGINEER. CONCRETE FOOTS, CONCRETE OR ROCK BALLAST, OR OTHER SOLID MATERIALS SHALL NOT BE UTILIZED WITH PORTABLE SIGN SUPPORTS.

8. FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.

9. MOST OF THE SIGNS SHOWN ARE ORIENTED TO THE RIGHT, HOWEVER, THIS DOES NOT PRECLUDE THE USE OF MIRROR IMAGES OF THESE SIGNS WHERE THE REVERSE ORIENTATION MIGHT BETTER CONVEY TO MOTORISTS THE PROPER DIRECTION OF MOVEMENT.

10. R5-1 SIGNS SHALL BE PLACED AT LEAST 1000 BUT NOT MORE THAN 1500 IN ADVANCE OF THE WORK ZONE. IF A SPEED LIMIT REDUCTION IS IN EFFECT, THE SIGN SHALL BE PLACED A MINIMUM OF 500 IN ADVANCE OF THE "REDUCED SPEED AHEAD" SIGN.

* NOTE: SUPPORTS FOR SIGNS, BARRICADES, AND VERTICAL PANELS THAT ARE DIFFERENT FROM THE BREAKAWAY REQUIREMENTS SHOWN IN NOTES 4 & 5 BUT MEET THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH), WILL BE ACCEPTED. COMPLIANCE WITH THE REQUIREMENTS OF MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) IS REQUIRED FOR ALL PROJECTS.

4-07-12	REVISED FOR MASH	
4-07-17	DELETED NOTE 6 & ADDED NOTE 10	
4-21-16	REVISED REQUIRED SPEED LIMIT AHEAD SIGNS & ADDED ROAD WORK NEXT XX MILES	
4-04-14	REVISED NOTE 4	
4-07-12	DELETED NOTE 4a & ADDED NOTE 5	
10-15-08	ADDED REFERENCE TO MASH & ADDED SIGN M4-10	
4-17-08	REVISED SIGN DESIGNATIONS	
1-08-04	REVISED NOTES	
8-13-03	REVISED NOTE 1	
1-16-01	REVISED NOTE 1	
5-26-00	REVISED NOTE	
1-16-98	ADDED NOTE	
6-26-97	REVISED NOTE 5	
4-30-97	REVISED NOTE 5	
10-18-96	ADDED CONTROLLED ACCESS XMT. SIGN & TO NOTE 1	
7-17-96	REVISED PER PART IV, MUTCD 1993, & MMS	
8-15-95	REVISED TO CORRECT SIGN ILLUSTRATIONS	8-8-95
7-7-95	REVISED PER PART IV, MUTCD 1993, & MMS	
8-15-91	DRAWN AND PLACED IN USE	
DATE	REVISION	FILMED

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-1

R5-1



STD. 30"X30"
EXPRY. 36"X36"
SPECIAL 48"X48"

R6-1



48"X30"

R6-2a



60"X30"

R6-4



60"X30"

R9-1



STD. 36"X36"
FWY. 48"X48"

W1-1



STD. 36"X36"
FWY. 48"X48"

W1-2



STD. 36"X36"
FWY. 48"X48"

W1-3



STD. 48"X48"

W1-4



STD. 48"X48"

W1-6



STD. 48"X24"
SPECIAL 60"X30"

W1-8



STD. 18"X24"
SPECIAL 24"X30"
EXPRY. 30"X36"
FWY. 36"X48"

W3-1



STD. 36"X36"
SPECIAL 48"X48"

W3-2



STD. 36"X36"
SPECIAL 48"X48"

W4-2



STD. 36"X36"
FWY. 48"X48"

W5-1



STD. 36"X36"
SPECIAL 48"X48"

W6-3



EXPRY. 36"X36"
SPECIAL 48"X48"

W8-7



EXPRY. 36"X36"
FWY. 48"X48"

W9-2



STD. 36"X36"
FWY. 48"X48"

W13-1



STD. 24"X24"

W20-1



STD. 48"X48"

W20-2



STD. 48"X48"

W20-3



STD.48"X48"

W20-4



STD. 48"X48"

W20-5



STD. 48"X48"

W20-7a



STD. 36"X36"
FWY. 48"X48"

W21-2



STD. 30"X30"
SPECIAL 36"X36"

W21-5



STD. 30"X30"
SPECIAL 36"X36"

W24-1



STD. 36"X36"

W1-4b



STD. 48"X48"

R56-1



STD. 18"X18"

W8-6



STD. 36"X36"
FWY. 48"X48"

W8-9



STD. 36"X36"
FWY. 48"X48"

G20-1



60"X24"

G20-2

48"X24"

OM-3L OM-3R

12"X36"

M4-9

STD. 30"X24"
SPECIAL 48"X36"
SPECIAL 60"X48"

M4-10

48"X18"

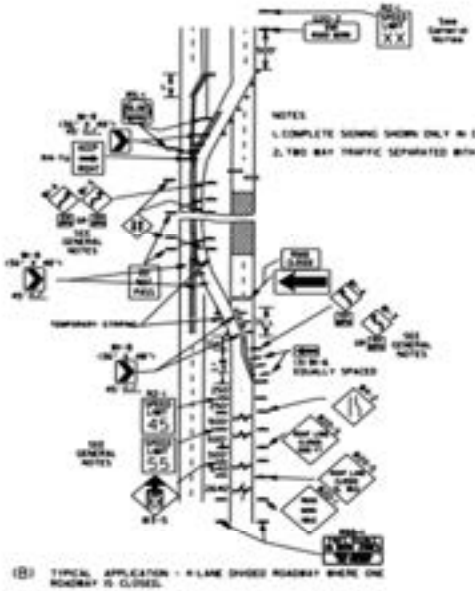
R55-1

36"X60"

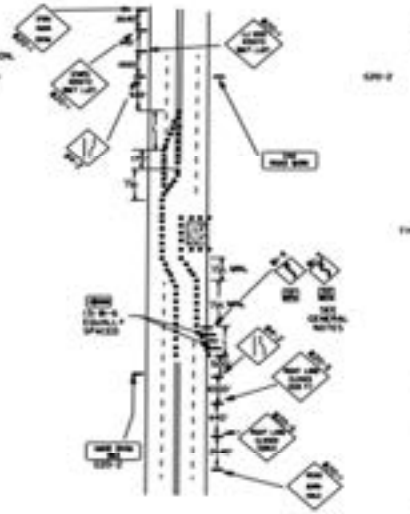
* USE 6" C LETTERS
** USE 4" D LETTERS



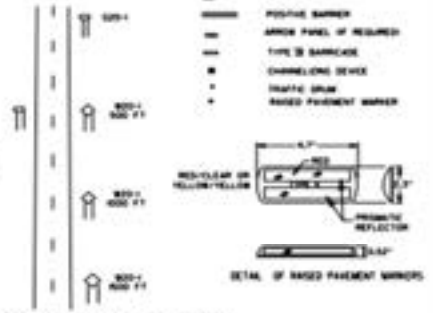
(A) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON A 2-LANE HIGHWAY WHERE THE ENTIRE ROADWAY IS CLOSED AND A BYPASS DETOUR IS PROVIDED.



(B) TYPICAL APPLICATION - 4-LANE DIVIDED ROADWAY WHERE ONE ROADWAY IS CLOSED.



(C) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WHERE HALF OF THE ROADWAY IS CLOSED.



DETAIL OF RAISED PAVEMENT MARKERS

TYPICAL ADVANCE WARNING SIGN PLACEMENT

TAPER FORMULAS:

L=WS FOR SPEEDS OF 40MPH OR MORE,

$L=\frac{WS^2}{60}$ FOR SPEEDS OF 40MPH OR LESS.

WHERE:

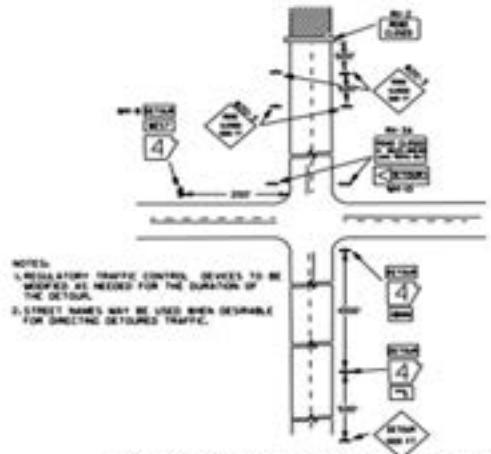
L= MINIMUM LENGTH OF TAPER,

S= NUMERICAL VALUE OF POSTED SPEED LIMIT PRIOR TO WORK OR 85TH PERCENTILE SPEED,

W= WIDTH OF OFFSET.

GENERAL NOTES:

1. THE MAINTENANCE DIVISION SHALL CONDUCT A BALL BANK STUDY TO DETERMINE THE ADVISORY SPEED LIMIT PRIOR TO OPENING TO TRAFFIC. THE ADVISORY SPEED WILL BE POSTED ON W1-1 OR W1-2 CURVE WARNING SIGNS. USE W1-2 WHEN SPEED IS GREATER THAN 30MPH AND W1-1 WHEN 30MPH OR LESS.
2. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 45MPH, THE R2-1(55) SHALL BE OMITTED, AND THE R2-1(45) SHALL BE INSTALLED AT THAT LOCATION. ADDITIONAL R2-1(45)MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1-MILE INTERVALS, AT THE END OF THE WORK AREA A R2-1(55) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
3. WHEN THE EXISTING SPEED LIMIT IS 55MPH AND THE PLANS REQUIRE A SPEED LIMIT OF 35MPH, THE R2-1(45) SHALL BE OMITTED. ADDITIONAL R2-1(35)MPH SPEED LIMIT SIGNS SHALL BE INSTALLED AT A MAXIMUM OF 1-MILE INTERVALS, AT THE END OF THE WORK AREA A R2-1(55) SHALL BE INSTALLED TO MATCH ORIGINAL SPEED LIMIT.
4. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED LIMIT. BEYOND THE TAPER, MAXIMUM SPACING SHALL BE TWO TIMES THE SPEED LIMIT, OR AS DIRECTED BY THE ENGINEER.
5. WARNING LIGHTS AND/OR FLAGS MAY BE MOUNTED TO SIGNS OR CHANNELIZING DEVICES AT NIGHT AS NEEDED.
6. PAVEMENT MARKINGS NO LONGER APPLICABLE WHICH MIGHT CREATE CONFUSION IN THE MINDS OF VEHICLE OPERATORS SHALL BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE.
7. TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL BE DELINEATED BY HITTING CONSPICUITY MATERIAL IN A CONTINUOUS LINE ON THE FACE OF THE TRAILER WHEN PLACED ON OR ADJACENT TO THE SHOULDER AND NOT HAVING A POSITIVE BARRIER. THESE DEVICES SHALL BE DELINEATED BY PLACING FIVE (5) TRAFFIC DRUMS EQUALLY SPACED ALONG THE TRAFFIC SIDE OF THE DEVICE. PAYMENT FOR TRAFFIC DRUMS SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR VARIOUS TRAILER MOUNTED DEVICES.
8. DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER, REQUESTING APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERRING TO THE ARDOT QUALIFIED PRODUCTS LIST.
9. ALL TRAILER MOUNTED DEVICES SUCH AS ARROW PANELS AND PORTABLE CHANGEABLE MESSAGE SIGNS SHALL MEET THE REQUIREMENTS OF THE MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).



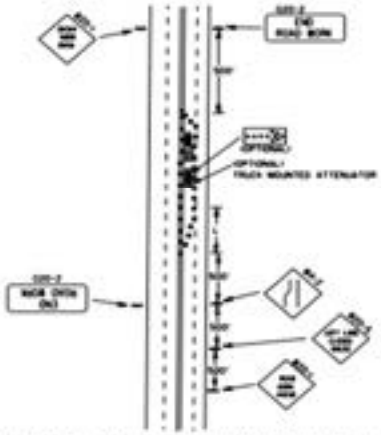
(D) TYPICAL APPLICATION - ROADWAY CLOSED BEYOND DETOUR POINT.

NOTES:
1. REGULATORY TRAFFIC CONTROL DEVICES TO BE MODIFIED AS NEEDED FOR THE DURATION OF THE DETOUR.
2. STREET NAMES MAY BE USED WHEN DESIRABLE FOR DIRECTING DETOURED TRAFFIC.



(E) TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES ON 2-LANE HIGHWAY WHERE ONE LANE IS CLOSED AND FLAGGING IS PROVIDED.

NOTES:
1. FLOOD LIGHTS SHOULD BE PROVIDED TO MARK FLAGGER STATIONS AT NIGHT AS NEEDED.
2. IF ENTIRE WORK AREA IS VISIBLE FROM ONE STATION, A SINGLE FLAGGER MAY BE USED.
3. CHANNELIZING DEVICES ARE TO BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.
4. AUTOMATED FLAGGER ASSISTANCE DEVICE (AFAD) OPTIONAL, REFER TO MUTCD.



(F) TYPICAL APPLICATION - 4-LANE UNDIVIDED ROADWAY WITH INSIDE LANE CLOSED.

DATE	REVISION	FILMED
04-20-21	REVISED NOTE 7	
4-27-16	REVISED NOTE 1, ADDED NOTE 9	
9-21-15	REVISED NOTE 2, ADDED NOTE 8 REVISED DRAWING 10-5 REPLACES REVISE W14-5 W14-5	
9-2-15	REVISED DETAIL OF RAISED PAVEMENT MARKERS	
4-2-15	ADDED 'AT 45'	
2-20-08	REVISED SIGN DESIGNATIONS	
2-18-04	ADDED GENERAL NOTE	
12-16-96	ADDED W20-1	
7-30-96	CORRECTED 'LANE CLOSED' SIGN 2	
6-3-96	CORRECTED SIGN HEIGHT ON W-44	6-3-96
2-7-96	REVISED PER PART 6, MUTCD, 1988	
8-15-95	ORIGIN AND PLACED IN USE	

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS FOR HIGHWAY CONSTRUCTION

STANDARD DRAWING TC-2

CHANNELIZING DEVICES



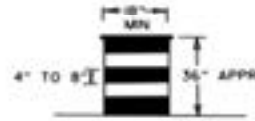
- WHEN CONES ARE USED ON FREEWAYS AND MULTI-LANE HIGHWAYS, THEY SHALL BE 28" MIN. DURING HOURS OF DARKNESS, 28" CONES SHALL BE USED ON ALL ROADWAYS, AND SHALL BE REFLECTORIZED IN ACCORDANCE WITH THE M.U.T.C.D.

CONES



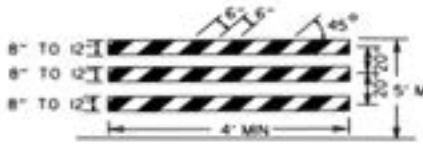
TYPE I BARRICADE

PLASTIC DRUM



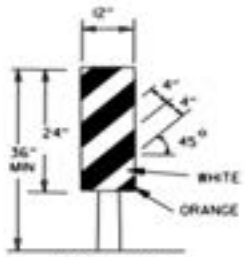


TYPE II BARRICADE



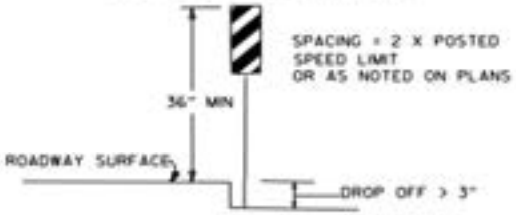
TYPE III BARRICADE

NOTE:
FOR ALL ROAD CLOSURES, THE TYPE III BARRICADES SHALL BE OF SUFFICIENT LENGTH TO EXTEND ACROSS ENTIRE ROADWAY.



VERTICAL PANEL
VP-1R

VERTICAL PANEL PLACEMENT



FLAG



FLAG SHALL BE OF GOOD GRADE RED MATERIAL

TRAFFIC CONTROL DEVICES

NON-INTERSTATE

VERTICAL DIFFERENTIAL	LOCATION	TRAFFIC CONTROL	
		≤ 45 MPH	> 45 MPH
≤ 1"	CENTERLINE	W8-11	W8-11
> 1" ≤ 3"	CENTERLINE	W8-11 AND CENTERLINE LANE STRIPING	W8-11 AND CENTERLINE LANE STRIPING
> 3"	CENTERLINE	STANDARD LANE CLOSURE[6]	STANDARD LANE CLOSURE[6]
≤ 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-9 AND TRAFFIC DRUMS[1]	W8-9 AND TRAFFIC DRUMS[1]
> 3" ≤ 6"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS[1]	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS[1]
> 6" ≤ 18"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS[1]	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS[2]
> 18" ≤ 24"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS[1]	A STABILIZED WEDGE, W8-17, EDGE LINE STRIPING AND TRAFFIC DRUMS[2]
> 24"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	PRECAST CONCRETE BARRIER[4] & EDGE LINES	PRECAST CONCRETE BARRIER[4] & EDGE LINES

INTERSTATE

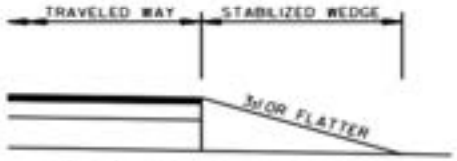
VERTICAL DIFFERENTIAL	LOCATION	TRAFFIC CONTROL
≤ 3"	CENTERLINE	W8-11 AND LANE STRIPING
≤ 3"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-9, EDGE LINE STRIPING, AND TRAFFIC DRUMS[2]
> 3" ≤ 6"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	W8-17, EDGE LINE STRIPING, AND TRAFFIC DRUMS[2]
> 6"	EDGE OF TRAVELED LANE OR EDGE OF SHOULDER	PRECAST CONCRETE BARRIER & EDGE LINES

INTERSTATE AND NON-INTERSTATE

FORESLOPE	HEIGHT	TRAFFIC CONTROL
1:1	> 2 FT	PRECAST CONCRETE BARRIER
2:1	≤ 5 FT	TRAFFIC DRUMS
2:1	> 5 FT	PRECAST CONCRETE BARRIER
Flatter than 2:1	N/A	TRAFFIC DRUMS

GENERAL NOTES:

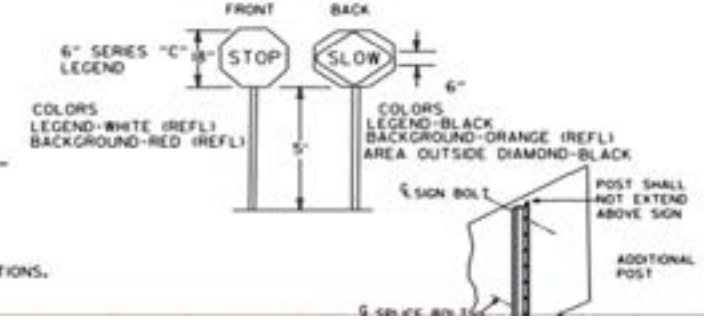
1. WHEN THE SHOULDER AREA IS USED AS PART OF THE TRAVELED LANE AND THERE IS INSUFFICIENT WIDTH TO PLACE TRAFFIC DRUMS ON THE REMAINING SHOULDER WIDTH, THEN VERTICAL PANELS SHALL BE USED.
2. WHEN THERE IS INSUFFICIENT WIDTH TO PLACE TRAFFIC DRUMS ON THE REMAINING SHOULDER WIDTH, A STABILIZED WEDGE SHALL BE USED.
3. PRECAST CONCRETE BARRIER WALL CAN BE USED IN LIEU OF A STABILIZED WEDGE, W8-17 SIGN, EDGE LINE STRIPING, AND TRAFFIC DRUMS, IF AND WHERE DIRECTED BY THE ENGINEER.
4. A STABILIZED WEDGE, W8-17 SIGN, EDGE LINE STRIPING, AND TRAFFIC DRUMS CAN BE USED IN LIEU OF PRECAST CONCRETE BARRIER WALL, IF AND WHERE DIRECTED BY THE ENGINEER.
5. W21-5, W21-5a, AND/OR W21-5b SIGNS SHALL BE USED WHERE THE ROADWAY IS UNOBSTRUCTED IF AND WHERE DIRECTED BY THE ENGINEER.
6. TIME LIMITATIONS MUST CONFORM TO SECTION 603 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION).



STABILIZED WEDGE

NOTE:
MATERIALS FOR THE STABILIZED WEDGE SHALL MEET THE REQUIREMENTS PROVIDED IN SECTION 603.02 OF THE STANDARD SPECIFICATIONS.

STOP SLOW PADDLE



CONTROL OF TRAFFIC

- Signage
- Flaggers
- Automatic Flagger Assistance Devices
- Portable/Trailer Mounted Traffic Signals
- Pilot Car











CHANNELIZING DEVICES



- Place advance warning signs before beginning construction
- All traffic control devices and signs must be crash worthy. No homemade signs or stands
- Signs must be legible both day and night
- No faded signs or signs with missing letters
- Channelizers must be of acceptable quality; minimal scratches/damage



FLAGGERS

- Stop/slow paddle sizes – 5’ min pole, 18’’ min sign
- Never turn your back to oncoming traffic
- Never stand in traffic
- Station at the crest of a hill to allow maximum visibility
- Stand alone/away from other workers
- Make eye contact with driver to get them to stop
- Signal drivers only when you’ve checked it’s clear
- When 2 flaggers are used, they must be able to communicate with each other. If line of sight isn’t possible, flaggers will use radios. Make sure radios are charged daily and backup batteries are readily available.
- Night flagging has additional precautions
- When working on city streets, flaggers are not allowed to override stoplights
- Don’t prop paddle on anything; always stand while flagging so you are fully alert
- Be visible to oncoming traffic; don’t park vehicles near the flagging operation
- Never abandon your post
- If a driver fails to stop for you, try to capture any information you can: car color, make, model, description of the driver, license plate number, any damage, bumper stickers, etc



FLAGGER DON'TS



FLAGGER DON'TS



FLAGGER DON'TS



FLAGGER DON'TS



FLAGGER SUMMARY

- Wear Appropriate Apparel, including high viz and hard hat
- Stand on the shoulder and face oncoming traffic
- Make eye contact with the approaching driver
- Do not engage with angry motorists
- Never stand in traffic lane; Do not cross centerline
- Stay visible to motorists and fellow equipment operators
- Use radios for traffic control operations only, not team member conversations

PROTECTING YOURSELF

- Don't trust that motorists will be attentive, obey the law, or be courteous in work zones
- Expect to encounter rudeness; don't engage in conflict
- Wear your PPE everyday, all day
- Get plenty of rest prior to starting work
- Know your escape
- DO NOT consume alcohol or other substances before or during work (including lunch breaks)
- Stay off your phone



PROTECTING YOURSELF – HI-VIS

- Always wear High Visibility (Hi-Vis) reflective clothing when working near traffic
- Stand Out - Select vest color based on surroundings:
  - 1.) If surrounded by a bunch of orange drums, wear yellow vests
  - 2.) If surrounded by trees and green foliage, wear orange vests
- Select PPE that is the proper size for you. Keep it zipped to provide proper coverage
- Vests are to be ANSI (American National Standards Institute) approved. ANSI specifies minimum amounts of retroreflective material, colors, and placement. Ensure your vest is marked Class 2 or Class 3



PPE – CLASSES & TYPES

- Class 1 – cheap, Velcro vest; not acceptable for working near traffic
- Class 2 – Required for all workers within Right-of-Way
- Class 3 – Reflective gear has sleeves (not just a vest); best protection; recommended for nighttime operations
- ANSI Type R is for individuals exposed to traffic, moving equipment, and vehicles
- ANSI Type O is for offroad work
- ANSI Type P is for Public Safety Workers (police, fire, EMS)

Review of Apparel

	Class 1	Class 2	Class 3
Background material	217 in²	755 in²	1240 in²
Retroreflective or combined performance material with background material	155 in²	201 in²	310 in²
Example Pictures			

PPE – DURABILITY

- Storage in hot or cold environments
- Laundry frequency
- Type of work
- When to toss and replace?
  - Little or no reflectivity
  - Soiled material
  - Faded color with poor color contrast
  - Not visible from 1,000’ day or night
  - Deteriorated or missing reflective strips



NEXT STEPS

- For Others: Can you see clearly team members on the jobsite?
  - Early in the morning?
  - Late afternoon?
  - If not, TELL THEM!
- For Yourself: Check your high viz apparel
  - Is it compliant?
  - How does it look?
  - Does it fit?
  - Should it be replaced?
- Questions?