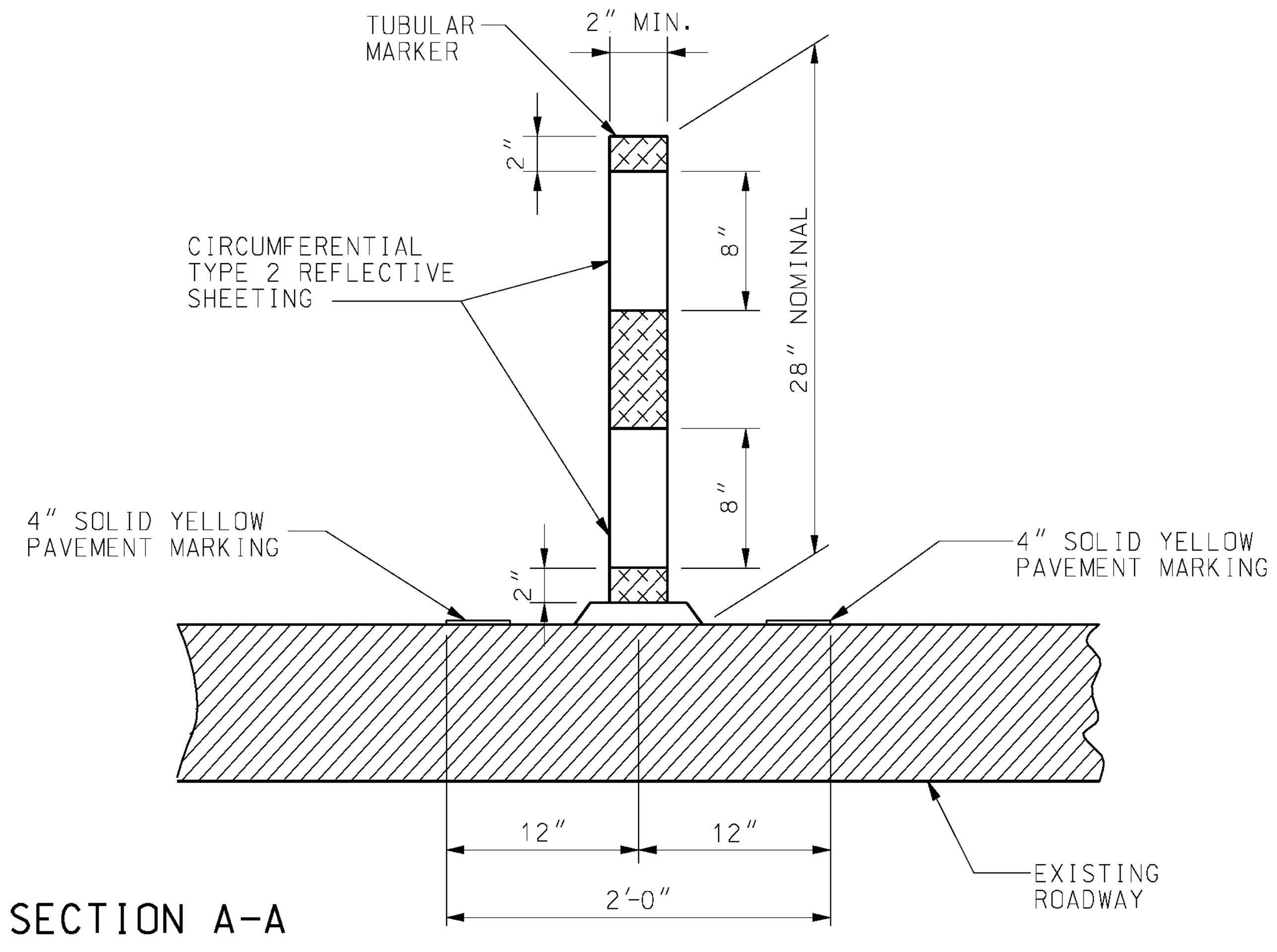


TUBULAR MARKER DETAIL

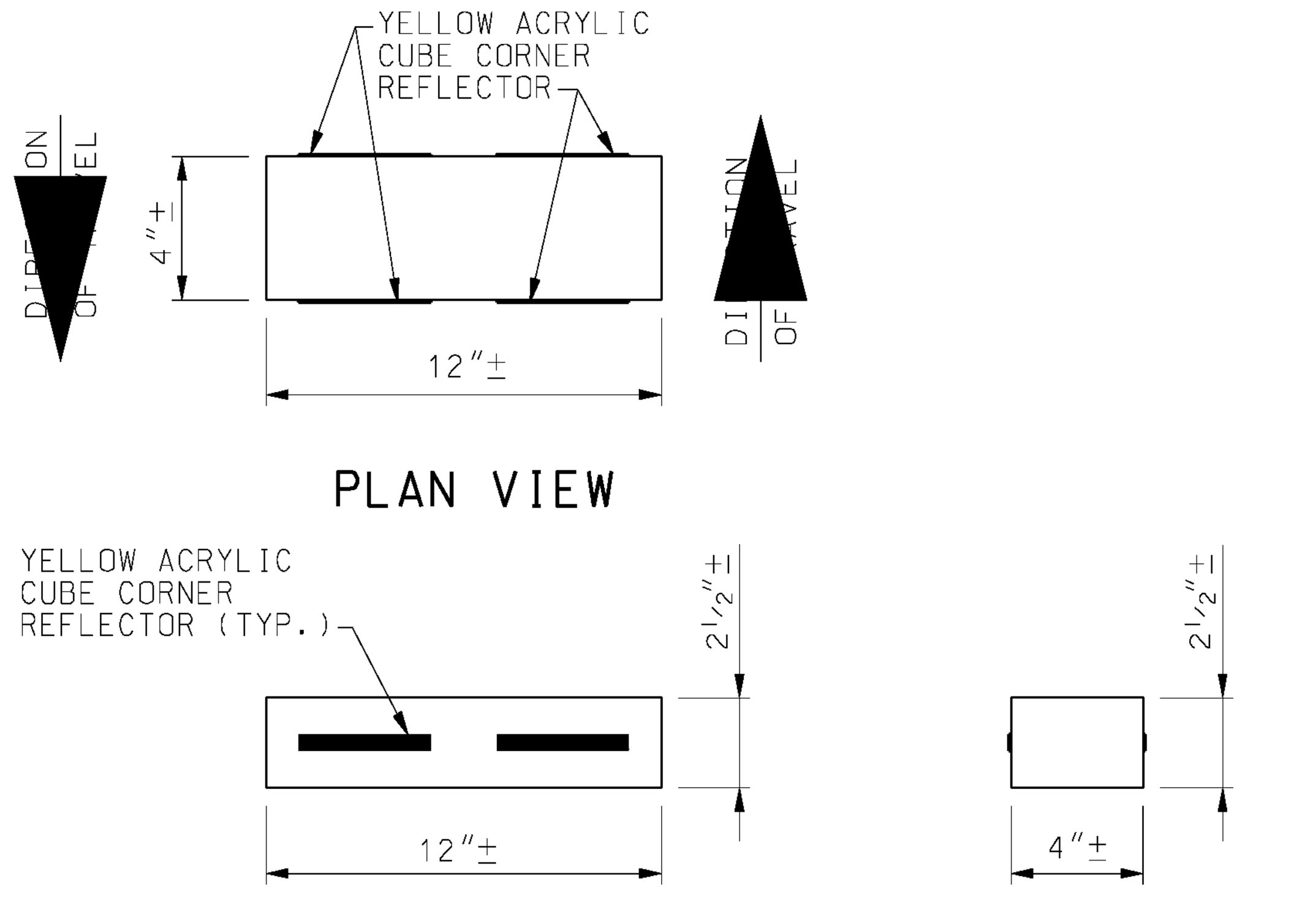
TUBULAR MARKERS SHALL CONFORM TO CRASH TEST REQUIREMENTS OF NCHRP 350.

THE TUBULAR MARKER SHALL BE MADE OF A FLEXIBLE MATERIAL OR HAVE A FLEXIBLE JOINT AT THE BASE SUCH THAT IT WILL NOT CAUSE DAMAGE TO VEHICLES UPON IMPACT AND WILL RETURN TO IT'S ORIGINAL SHAPE AFTER BEING STRUCK BY 5000 LB VEHICLE AT A VELOCITY OF 75 FT/SEC.

THE TUBULAR MARKER SHALL BE ORANGE WITH TWO WHITE TYPE 2 REFLECTORIZED BANDS.

REFLECTORIZED MATERIALS SHALL HAVE A SMOOTH SEALED OUTER SURFACE WHICH WILL DISPLAY THE SAME APPROXIMATE COLOR DAY AND NIGHT.

AN ADHESIVE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS SHALL BE USED TO APPLY THE TUBULAR MARKER TO THE ROADWAY SURFACE. THE ADHESIVE SHALL PERMIT EASY REMOVAL OF THE TUBULAR MARKER WITHOUT DAMAGE TO THE ROADWAY SURFACE.



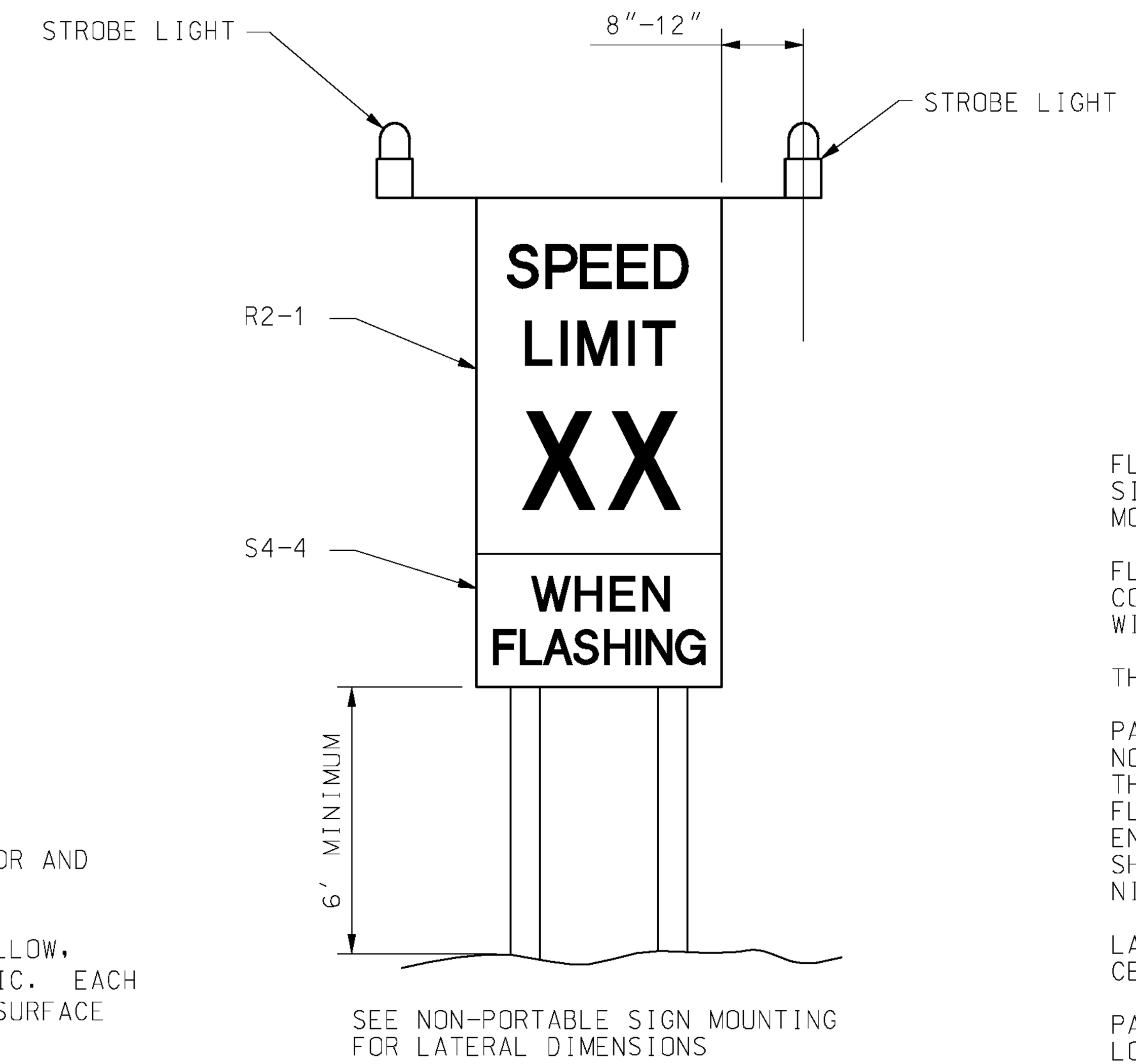
NOTE: SEE SPECIAL PROVISIONS FOR TYPE I CHANNELIZER/MARKER REQUIREMENTS.

TYPE I CHANNELIZER/MARKER DETAILS

THE BODY OF THE CHANNELIZER/MARKER SHALL BE YELLOW IN COLOR AND CONSTRUCTED OF TRAFFIC BEARING, HIGH IMPACT PLASTIC.

THE CHANNELIZER/MARKER SHALL BE REFLECTORIZED WITH TWO YELLOW, ACRYLIC, CUBE CORNER REFLECTORS ON EACH SIDE FACING TRAFFIC. EACH REFLECTOR SHALL BE APPPROXIMATELY 4" WIDE WITH A MINIMUM SURFACE AREA OF 1.75 IN*.

AN ADHESIVE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS SHALL BE USED TO APPLY THE CHANNELIZER/MARKER TO THE ROADWAY SURFACE. THE ADHESIVE SHALL PERMIT EASY REMOVAL OF THE CHANNELIZER/MARKER WITHOUT DAMAGE TO THE ROADWAY SURFACE.



SPEED LIMIT ASSEMBLY

THE ASSEMBLY MAY BE EITHER POST OR SKID MOUNTED.

THE ASSEMBLY SHALL ONLY BE USED AS SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

SEE SHEET 3 FOR WORK ZONE SPEED LIMITS.

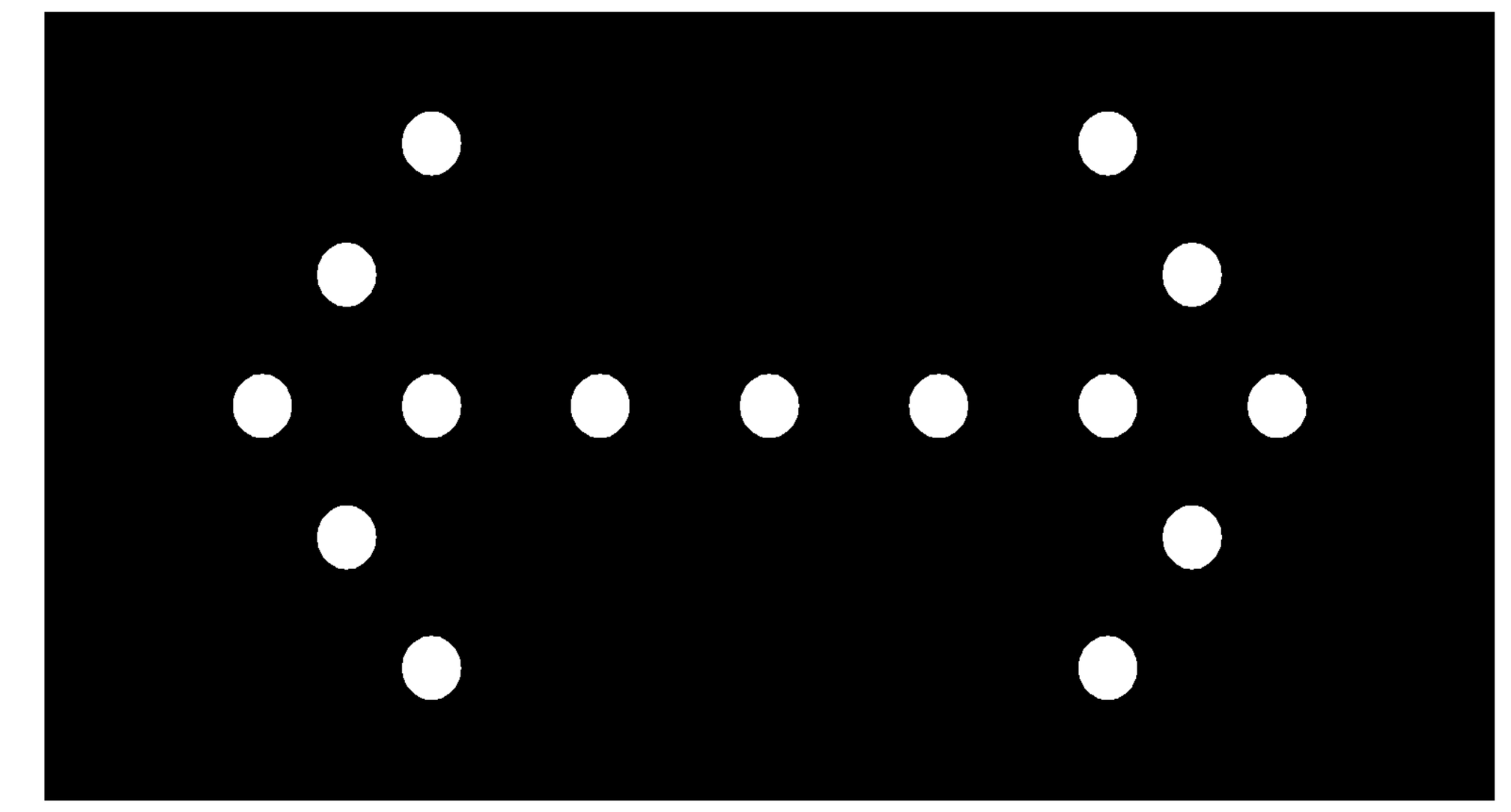
THE ASSEMBLY SHALL BE COVERED OR ROTATED SO THE SIGNS ARE NOT VISIBLE TO TRAFFIC WHEN WORK IS SUSPENDED OR THE CONDITION REQUIRING THE SPEED REDUCTION IS NOT PRESENT FOR 48 HOURS OR MORE.

THE STROBE LIGHTS SHALL BE TURNED OFF WHEN THE SPEED LIMIT IS NOT IN EFFECT.

STROBE LIGHT REQUIREMENTS

THE STROBE LIGHTS SHALL BE 12/24 VDC BATTERY OR SOLAR POWERED WITH AMBER FRESNEL, HIGH PROFILE LENSES. THE INPUT CURRENT SHALL BE 1.75 AMPS OR LESS. THE STROBE LIGHT SHALL HAVE A FLASH RATE OF 60 TO 80 FLASHES PER MINUTE. EACH STROBE LIGHT WILL PROVIDE NOT LESS THAN 500,000 CANDLEPOWER OF ILUMINATION. EACH LIGHT SHALL BE FULLY VISIBLE THROUGH AN ARC OF APPROXIMATELY 120 DEGREES WHEN VIEWED FACING THE SIGN. THE LIGHTS SHALL BE SHIELDED SO THEY WILL NOT BE DIRECTLY VISIBLE FROM THE SHIELDED SO THEY WILL NOT BE DIRECTLY VISIBLE FROM THE REAR. NO DIRECT PAYMENT WILL BE MADE FOR THE BATTERIES REQUIRED TO POWER THE STROBE LIGHTS.

AT THE CONTRACTOR'S OPTION, THE STROBE LIGHTS MAY BE CONTROLLED BY A SWITCH LOCATED ON THE SIGN OR BY A STANDARD TWO CHANNEL DIGITAL TRANSMITTER AND RECEIVER UNIT. IF THE TRANSMITTER AND RECEIVER METHOD IS USED, ONE TRANSMITTER SHALL BE FURNISHED TO THE ENGINEER AT THE TIME OF INSTALLATION OF THE SPEED LIMIT ASSEMBLY. THE TRANSITTER WILL BE RETURNED TO THE CONTRACTOR AT THE COMPLETION OF THE PROJECT. THE TRANSMITTER AND RECEIVERS WILL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER THE PROJECT IS COMPLETED. NO DIRECT PAYMENT WILL BE MADE FOR THE COST OF THE TRANSMITTER AND RECEIVER.



FLASHING ARROW PANEL REQUIREMENTS

FLASHING ARROW PANELS USED IN STATIONARY OPERATIONS SHALL HAVE A NOMINAL PANEL SIZE OF 4 FEET HIGH BY 8 FEET WIDE. PANELS MAY BE EITHER TRAILER OR TRUCK MOUNTED.

FLASHING ARROW PANELS USED IN OPERATIONS WHICH MOVE INTERMITTENTLY OR CONTINUOUSLY SHALL HAVE A MINIMUM NOMINAL PANEL SIZE OF 3 FEET HIGH BY 6 FEET WIDE. PANELS SHALL BE TRUCK MOUNTED.

THE FRONT SURFACE OF THE PANEL SHALL BE NONREFLECTIVE FLAT BLACK.

PANELS SHALL HAVE A MINIMUM OF 15 SEALED BEAM LAMPS. EACH LAMP SHALL HAVE A NOMINAL 5 INCH, 360° TUNNEL VISOR. MINIMUM LAMP "ON TIME" SHALL BE 50 PERCENT. THE FLASHING RATE OF THE LAMPS SHALL NOT BE LESS THAN 25 NOR GREATER THAN 40 FLASHES PER MINUTE. A LAMP ON THE BACK SIDE OF THE PANEL SHALL BE CONTINUOUSLY ENERGIZED DURING OPERATION OF THE ARROW PANEL. AUTOMATIC CONTROL CIRCUITRY SHALL PROVIDE A MINIMUM OF 50 PERCENT VOLTAGE REDUCTION TO ALL LAMPS DURING NIGHT OPERATIONS.

LAMPS MUST BE VISIBLE AT AN ANGLE OF 15° TO THE LEFT AND RIGHT OF CENTER AND 4° UP AND DOWN FROM CENTER DURING "ON TIME."

PANEL MOUNTING HEIGHT SHALL BE 7 TO 9 FEET FROM THE ROADWAY SURFACE TO THE LOWEST POINT ON THE PANEL. THE BOTTOM OF THE PANEL SHALL BE RELATIVELY LEVEL WHEN IN USE.

PANEL MUST CONTAIN A DEVICE TO ALIGN THE ARROW PANEL TO ONCOMING TRAFFIC.

NO DIRECT PAYMENT WILL BE MADE FOR RELOCATING ARROW PANEL.

CONTROL PROGRAM:

CAUTION: FLASH THE 2 HIGHEST AND 2 LOWEST LAMPS ON THE PANEL SIMULTANEOUSLY.

LEFT OR RIGHT ARROW: FLASH 5 LAMPS IN THE ARROWHEAD AND 5 LAMPS IN THE HORIZONTAL SHANK SIMULTANEOUSLY.

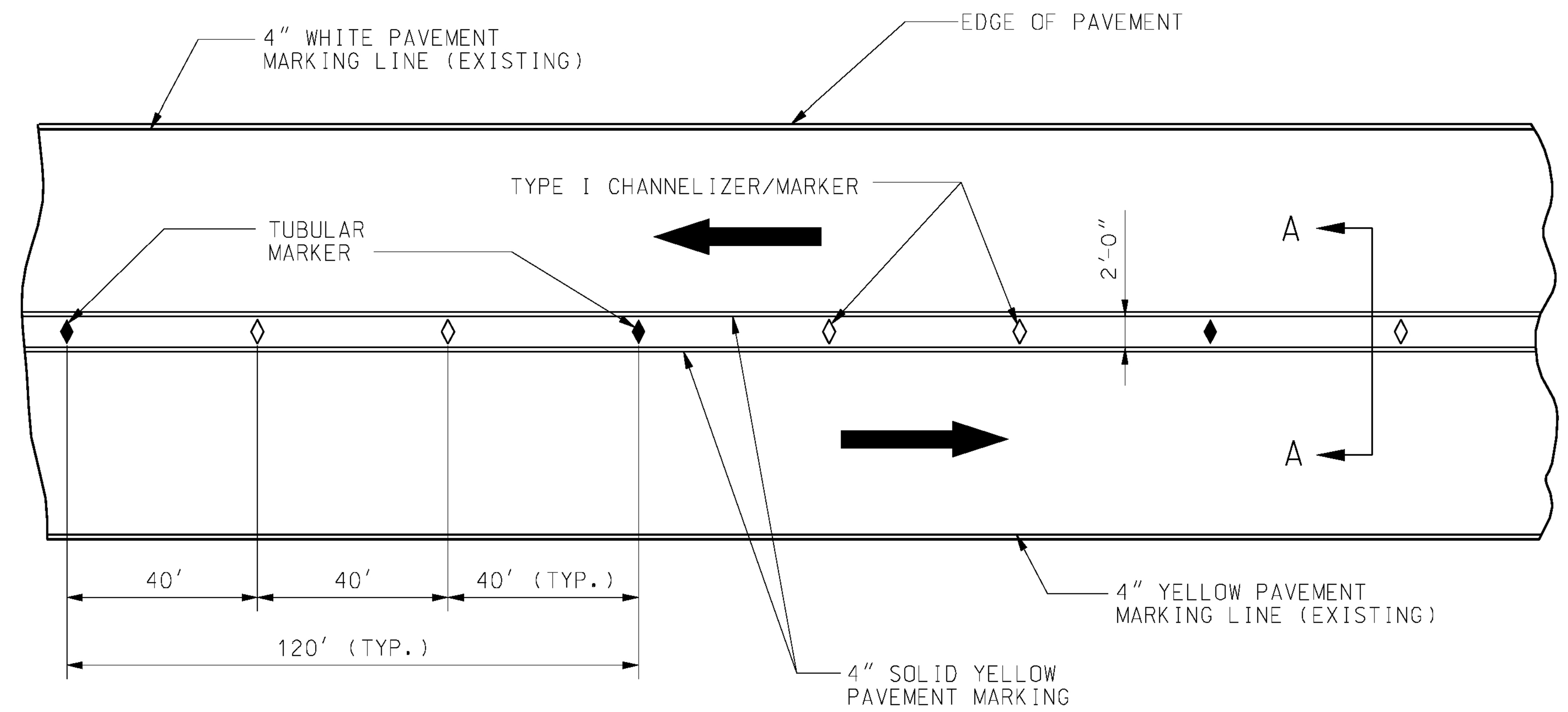
DOUBLE ARROW: FLASH 5 LAMPS IN BOTH THE LEFT AND RIGHT ARROWHEADS AND 3 LAMPS IN THE HORIZONTAL SHANK SIMULTANEOUSLY.

ADDITIONAL REQUIREMENTS FOR SOLAR POWERED ARROW PANELS:

THE FLASHING ARROW SHALL BE ABLE TO OPERATE IN THE SINGLE ARROW MODE IN TOTAL DARKNESS FOR 20 CONSECUTIVE DAYS.

A DEVICE SHALL BE PROVIDED TO INDICATE THE REMAINING CHARGE IN THE BATTERIES.

ANY ADDITIONAL REQUIREMENTS OF THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES SHALL BE ADHERED TO.



TWO LANE / TWO WAY TRAFFIC DELINEATION PLAN FOR DIVIDED HIGHWAY

PORTABLE WARNING LIGHTS

	TYPE A LOW INTENSITY	TYPE B HIGH INTENSITY	TYPE C STEADY BURN
LENS DIRECTIONAL FACES	1 OR 2	1	1 OR 2
FLASHING RATE PER MINUTE	55 TO 75	55 TO 75	CONSTANT
MINIMUM ON-TIME(1)	10%	8%	CONSTANT
HOURS OF OPERATION	DUSK TO DAWN	24HRS/DAY	DUSK TO DAWN

TYPE A AND C LIGHTS SHALL BE VISIBLE ON A CLEAR NIGHT FROM A DISTANCE OF 3000 FEET(2).

TYPE B LIGHTS SHALL BE VISIBLE ON A SUNNY DAY WHEN VIEWED WITHOUT THE SUN DIRECTLY ON OR BEHIND THE DEVICE FROM A DISTANCE OF 1000 FEET(2).

(1) LENGTH OF TIME THAT INSTANTANEOUS INTENSITY IS EQUAL TO OR GREATER THAN EFFECTIVE INTENSITY.

(2) THIS VISIBILITY MUST BE MAINTAINED WITHIN A SOLID ANGLE 9° ON EACH SIDE OF THE VERTICAL AXIS, AND 5° ABOVE AND 5° BELOW THE HORIZONTAL AXIS.

MINIMUM MOUNTING HEIGHT 36 INCHES TO BOTTOM OF LENS.

PORTABLE WARNING LIGHTS SHALL BE BATTERY POWERED.

ADVISORY SPEED PLAQUE W013-1

ADVISORY SPEED PLAQUE NUMERICAL DESIGNATION SHALL BE INSTALLED AS SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

TRAFFIC CONTROL DEVICES

DATE: ________ EFFECTIVE: 01-01-2002 616.10Z 3/5