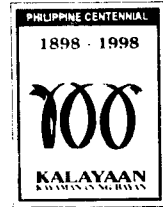




097-13-DPWH
3-12-02

Republic of the Philippines
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
OFFICE OF THE SECRETARY
Manila



MAR 12 2002

DEPARTMENT ORDER)

No. 87)
Series of 2002 3-12-02)

**SUBJECT: PROGRAMMING OF CY-2002
ANNUAL MAINTENANCE WORK
PROGRAM – MAINTENANCE BY
CONTRACT**

It has been observed that vehicular accidents frequently occur in our highways because of the lack or absence of adequate traffic control and safety devices to forewarn motorists and pedestrians of the on-going construction or maintenance activities.

It is also noted that programs for routine and periodic maintenance activities for both Maintenance by Contract (MBC) and Maintenance by Administration (MBA) do not include provisions for traffic control and safety devices and traffic safety gears.

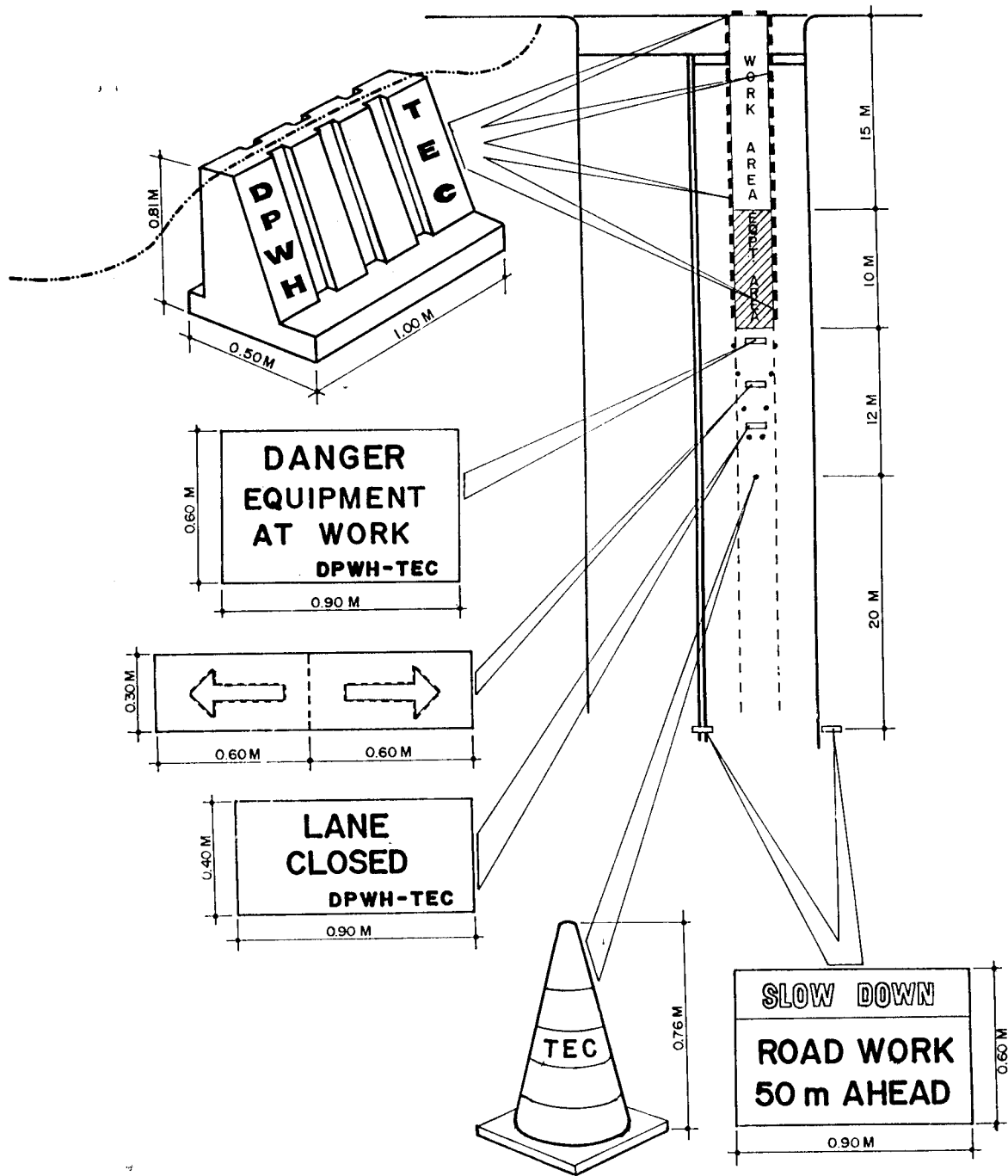
In this regard, all Regional Directors and District Engineers are hereby directed to include in the CY-2002 Annual Maintenance Work Program for MBC a special pay item for the provision of traffic control and safety devices and traffic safety gears. The equivalent amount to be programmed shall not exceed ten percent (10%) for each MBC project whose cost is more than P 5.0 Million.

The said traffic devices and gears to be procured thru the MBC contracts above mentioned shall follow the specifications set by the DPWH Traffic Engineering Center. Specifications for some of the most urgently required devices are attached herewith.

Subject traffic devices and gears shall become the property of the DEOs after the completion of the project which can be re-used for other projects.

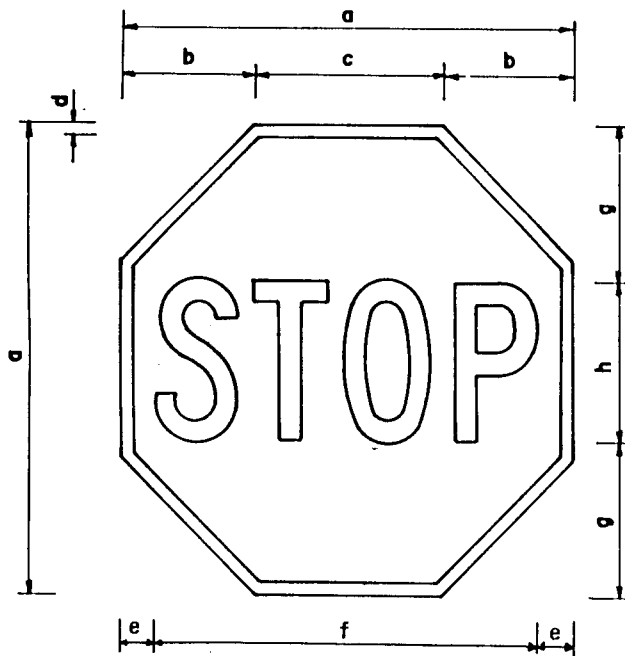
This order supersedes previous issuances to the contrary and shall take effect immediately.


SIMEON A. DATUMANONG
Secretary



TRAFFIC MANAGEMENT PLAN CONSTRUCTION OF MIDDLE LANE

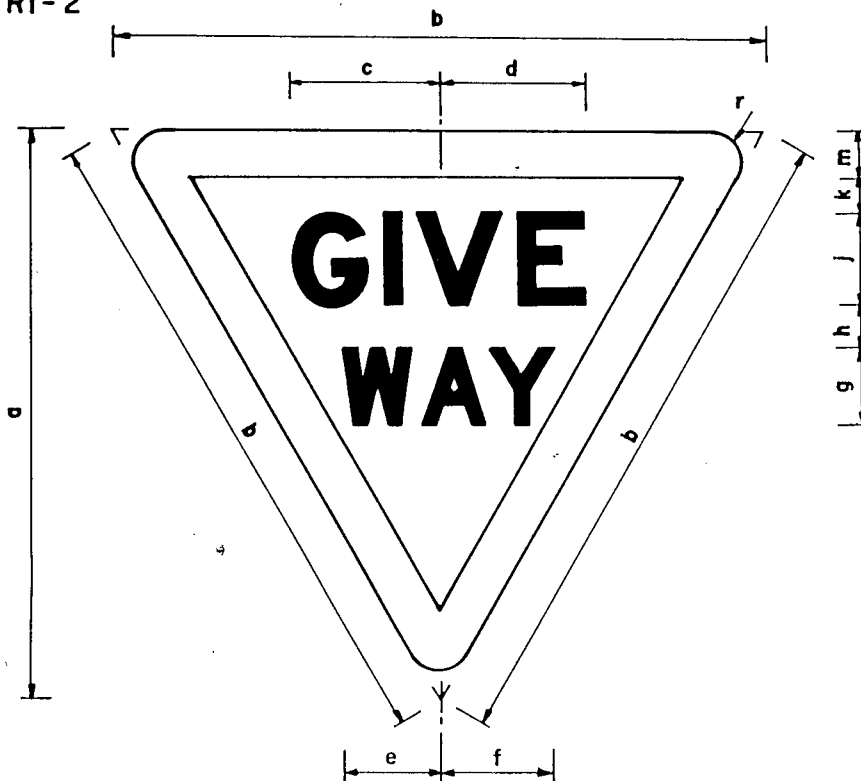
RI-1



	RI-1A	RI-1B
a	600	750
b	176	220
c	248	310
d	16	20
e	47	72
f	506	606
g	200	255
h	200 CN	240 CN

White reflectorized letters and border on red reflectorized ground

RI-2



	RI-2A	RI-2B	RI-2C
a	750	900	1200
b	866	1039	1385
c	194	230	325
d	190	217	314
e	129	157	210
f	150	177	236
g	100 DN	120 DN	160 DN
h	55	65	90
j	120 EN	140 EN	200 EN
k	50	60	70
m	60	75	100
r	40	50	70

Black letters on white reflectorized ground with red reflectorized border

8 MATERIALS FOR SIGN FACES

8.1 Any materials used for the sign face, and not otherwise described in this specification, shall be in accordance with the approved standard specifications as follows:

8.2 **Retro-reflective material.** Where reflectorization is required the retro-reflecting material shall comply with established standards for retro-reflective materials and devices for road traffic control purposes.

The reflective sheeting shall be weather resistant and show no appreciable cracking, blistering, crazing or dimensional change after two years of unprotected outdoor exposure

The reflective sheeting shall have high reflectivity normal to vehicle headlight dependent on the angle of incidence. The reflective material shall be sharp and glareless and directed towards the light source of approved angle of incidence.

The reflective sheeting shall perform effectively for a minimum of seven (7) years from date of fabrication.

The reflective sheeting must retain at least 70% (Type 1) and 50% (Type 2) of its original brightness for regular and fluorescent sheeting respectively at the end of seven years. All signs used for road projects should be warranted by the sheeting manufacturer for above-stated performance.

Signs must be dated at the time of installation in order to initiate the 7-year performance warranty. A sign-dating sticker that indicates the month and year of installation should be placed at the back of the sign face.

The reflective sheeting to be used maybe of two types:

Type I- High Performance Reflective Sheeting

Type I material is to be used for all overhead signs, signs related to movement of pedestrian, chevron alignment signs and signs identified as black spot areas. The reflective sheeting shall consist of micro-prismatic lens sheeting with an interlocking diamond seal pattern with pre-coated adhesive backing protected by a removable liner. The minimum reflective brightness value of reflective sheeting shall be in accordance with Table 1.

Table 1. Reflective Brightness of Traffic Signs Surfaces
(Cd/Lux/Sq. Meter)

-4° Entrance Angle	Observation Angle			
	0.1°	0.2°	0.5°	1.0°
White	625	370	275	75
Yellow	565	300	220	58
Red	165	98	70	20
Green	80	45	32	9
Blue	42	22	17	45

30° Entrance Angle

	Observation Angle			
	0.1°	0.2°	0.5°	1.0°
White	430	225	125	42
Yellow	315	180	100	35
Red	110	65	32	11
Green	45	28	16	6
Blue	22	14	8	3

45° Entrance Angle

	Observation Angle			
	0.1°	0.2°	0.5°	1.0°
White	120	90	35	10
Yellow	90	70	27	8.8
Red	24	26	10	3
Green	12.5	9.8	3.5	1.6
Blue	6	4.5	1.5	0.8

Type II – Medium Performance Reflective Sheeting

Type II material is to be used as minimum standard for all other types of signs not qualified for use under Type I. The reflective sheeting shall consist of encapsulated spherical lens elements in a hexagonal pattern embedded within a transparent plastic having a smooth flat surface with either a pressure sensitive adhesive or tack free heat-activated adhesive for mechanical vacuum heat application. The minimum reflective brightness of the reflective sheeting shall be as described in Table 2.

Table 2. Reflective Brightness of Traffic Signs Surfaces
(CD/Lux/Sq.meter)

-4° Entrance Angle

	Observation Angle		
	0.2°	0.5°	1.0°
White	250	95	10
Yellow	170	62	9
Red	45	15	2
Green	45	15	1
Blue	20	7.5	0.5

30° Entrance Angle

	Observation Angle		
	0.2°	0.5°	1.0°
White	175	70	9.5
Yellow	135	60	8.5
Red	30	12	1.5
Green	30	12	0.8
Blue	5	0.3	0.3

45° Entrance Angle

	Observation Angle		
	0.2°	0.5°	1.0°
White	95	55	9
Yellow	50	40	1
Red	12	10	1
Green	12	10	0.5
Blue	6	4	0.1

- 8.3 **Fluorescent Reflective Sheeting.** The fluorescent reflective sheeting shall consist of a visible-activated fluorescent material and micro-prismatic lens sheeting with an interlocking diamond seal pattern with pre-coated adhesive backing protected by a removable liner. The minimum reflective brightness shall be in accordance with Table 3.

Table 3. Reflective Brightness of Traffic Signs Surfaces
(CD/Lux/Sq.meter)

-4° Entrance Angle

	Observation Angle		
	0.1°	0.2°	0.5°
Yellow Green	560	375	225
Orange		200	80

30° Entrance Angle

	Observation Angle		
	0.1°	0.2°	0.5°
Yellow Green	465	225	145
Orange		120	90

45° Entrance Angle

	Observation Angle		
	0.1	0.2	0.5
Yellow Green	30	25	7
Orange		50	20

9 POST AND ATTACHMENTS

Posts required for the erection of signs shall be made of galvanized steel pipes not less than 48.8mm OD x 3.25mm thick, or other sections of equivalent strength. Aluminum alloy may be used. Plastics may be considered, provided they have been suitably evaluated.

Wide flange posts and frames shall be fabricated from structural steel conforming to ASTM A 283 Grade D. In lieu of wide flange steel posts, the Contractor may use tubular steel posts conforming to ASTM A 501. All posts shall be thoroughly cleaned, free from grease, scale and rusts and shall be given one coat of rust-inhibiting priming paint and two coats of gray paint in accordance with Item 411, Paint DPWH Standard Specification.

Attachments shall provide for the positive and robust connection of signs to their mounting posts. Consideration shall be given to distributing attachment loads, e.g. by the provision of suitably shaped saddles and clamps or brackets for a round post.

For larger signs, the design of the sign support system as a whole shall take into account possible wind loading, and the criteria specified in appropriate Philippine code for structural designs.

10 PROTECTIVE TREATMENT

All materials used for signs and sign supports shall be either resistant to, or protected against deterioration under exposed paint system.

Where corrosion protection is destroyed or damaged in the manufacturing or fixing process, steps shall be taken to restore protection by appropriate after-treatment.

Where dissimilar metals are in contact, appropriate action shall be taken to prevent galvanic action and resultant corrosion.

Timber signs shall be sealed at the edges, and posts shall be on the end grain. The timber shall then be properly printed and painted for protection against weather.

PROPOSED CHANNELIZING DEVICE (WITH LIGHTING FACILITY)

