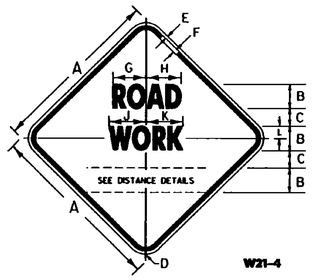
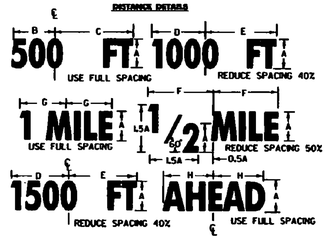
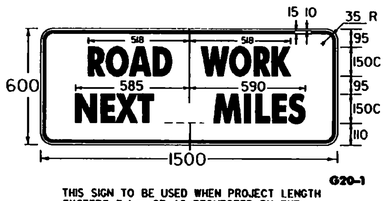


W21-4

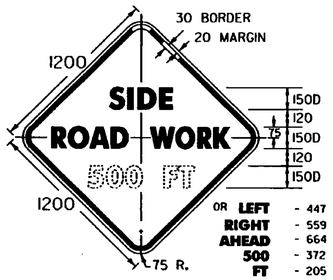
DISTANCE DETAILS





G20-1

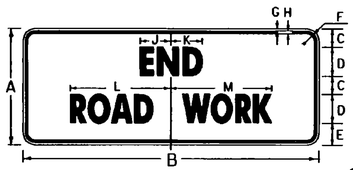
THIS SIGN TO BE USED WHEN PROJECT LENGTH EXCEEDS 3 km OR AS REQUESTED BY THE RESIDENT ENGINEER. SHOW DISTANCE TO NEAREST 1/4 MILE* USING FRACTIONS, NOT DECIMALS. HAND LETTERING OF DISTANCE WILL NOT BE ALLOWED.



W20-1

DIMENSIONS (mm)											
	A	B	C	D	E	F	G	H	J	K	L
STD.	1200	175C	120	75 R.	20	30	244	253	267	268	114
URBAN	900	125C	88	55 R.	15	20	173	180	189	192	82

DIMENSIONS (mm)							
	A	B	C	D	E	F	G	H
125D	258	274	295	285	285	241	276
150C	263	266	285	304	317	232	267
175C	305	310	333	355	370	270	318
200D	412	438	432	457	457	365	443

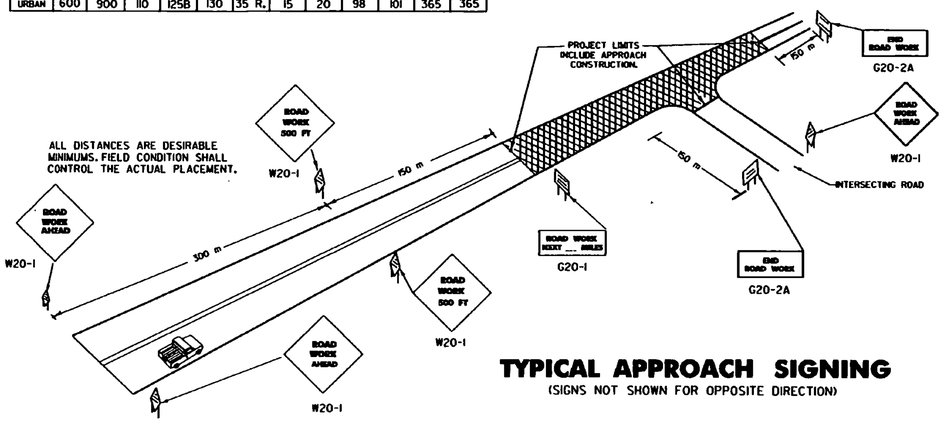


G20-2A

DIMENSIONS (mm)											
	A	B	C	D	E	F	G	H	J	K	L	M
STD.	600	1500	95	150C	80	35 R.	10	15	148	152	517	518
URBAN	600	900	110	125B	130	35 R.	15	20	98	101	365	365

NOTE:

THE "END ROAD WORK" SIGN MAY BE PLACED BACK TO BACK WITH THE "ROAD WORK 500 FT." SIGN THAT WILL BE SET UP FOR CARS TRAVELING IN THE OPPOSITE DIRECTION.



TYPICAL APPROACH SIGNING

(SIGNS NOT SHOWN FOR OPPOSITE DIRECTION)

NOTES

THE SIGNS SHOWN ON THIS SHEET ARE INTENDED FOR USE IN PROVIDING ADVANCE WARNING AND INFORMATION ON CONSTRUCTION PROJECTS OVER WHICH TRAFFIC WILL BE MAINTAINED. WHERE ADDITIONAL APPROACH SIGNS OR OTHER TYPES OF ADVANCE SIGNING OR CONTROL ARE NECESSARY, THE PLANS AND/OR THE SPECIFICATIONS FOR THAT PROJECT WILL GIVE THE DETAILS OF THE SIGNS AND DEVICES REQUIRED. FOR ON-PROJECT CONSTRUCTION SIGNS, REFER TO APPROPRIATE STANDARD SHEETS.

APPLICATION OF STANDARDS

BECAUSE IT IS NOT POSSIBLE TO PRESCRIBE DETAILED STANDARDS OF APPLICATION FOR ALL OF THE SITUATIONS THAT MAY CONCEIVABLY ARISE ON A CONSTRUCTION PROJECT, REFERENCE SHALL BE MADE TO THE MUTCD FOR THE PRINCIPLES, PROCEDURES AND STANDARDS THAT WILL BE REQUIRED IN CONNECTION WITH ADVANCED WARNING AND ON-PROJECT CONSTRUCTION SIGNS AND BARRICADES. THE SIGNS SHOWN IN E-101M AND E-102M REPRESENT A SAMPLE OF THOSE MORE COMMONLY USED.

LOCATION

THE SIGNS SHALL BE LOCATED AS DETAILED ON THIS SHEET OR AS OTHERWISE SHOWN ON THE PLANS. THEY SHALL APPEAR AT EACH END OF THE HIGHWAY UNDER CONSTRUCTION AND ON ALL INTERSECTING PUBLIC HIGHWAYS. THE EXACT PLACEMENT OF ANY SIGN WILL DEPEND UPON THE ALIGNMENT INTENDED TO INDICATE THE SEQUENCE TO BE FOLLOWED AND THE APPROXIMATE SPACING TO BE OBSERVED. THE ENGINEER SHALL DETERMINE THE EXACT LOCATIONS.

DESIGN

THE DESIGN OF THE SIGNS SHALL CONFORM WITH THE DETAILS SHOWN ON THIS SHEET AND WITH THE STANDARDS PRESCRIBED IN THE MUTCD.

MATERIALS

THE SIGN BASE MATERIAL USED FOR THE SIGNS ON THIS SHEET MAY BE ANY OF THE FOLLOWING, WITH MINIMUM THICKNESS AS NOTED.

FLAT SHEET ALUMINUM	3.18 mm
HIGH DENSITY OVERLAYED PLYWOOD	13 mm, 16 mm OR 19 mm
GALVANIZED SHEET STEEL	2.77 mm

REFLECTORIZATION

ALL REFLECTORIZED MATERIAL SHALL CONSIST OF TYPE IIB OR TYPE III SHEETING.

COLORS

THE COLORS SHALL CONFORM WITH THE STANDARD COLORS ADOPTED BY AASHTO AND APPROVED BY THE FHWA. COLORS SHOWN ON THIS SHEET CONSIST OF BLACK TEXT AND BORDER ON A REFLECTORIZED ORANGE BACKGROUND.

INSTALLATION

THE SIGNS SHALL BE ERECTED BEFORE THE START OF ANY WORK AND SHALL BE COVERED UNTIL WORK COMMENCES, DURING PERIODS OF INACTIVITY, OR UPON COMPLETION OF THE WORK. SIGNS MAY BE REMOVED UPON COMPLETION OF THE WORK AT THE DISCRETION OF THE ENGINEER. EACH SIGN SHALL BE ERECTED IN A NEAT AND WORKMANLIKE MANNER ON POSTS SET SECURELY IN THE GROUND. THE BOTTOM OF A SIGN SHALL BE AT LEAST 2100 mm ABOVE THE EDGE OF PAVEMENT. THE NEAREST EDGE OF A SIGN SHALL BE AT LEAST 1300 mm OUTSIDE THE SHOULDER POINT, 1200 mm OUTSIDE GUARD RAIL, OR 600 mm OUTSIDE CURBING OR SIDEWALK. THE INSTALLATION OF SIGNS SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER. IN URBAN AREAS, THE BOTTOM OF THE SIGN SHALL BE AT LEAST 2100 mm ABOVE THE SIDEWALK.

MAINTENANCE

SIGNS SHALL BE MAINTAINED IN A CLEAN AND LEGIBLE CONDITION SATISFACTORY TO THE ENGINEER. THEY SHALL BE COMPLETELY VISIBLE TO APPROACHING TRAFFIC AT ALL TIMES. THEY SHALL BE KEPT PLUMB AND LEVEL, AND ALWAYS PRESENT A NEAT APPEARANCE. DAMAGED, DEFACED OR DIRTY SIGNS SHALL BE REPAIRED, CLEANED OR REPLACED AS ORDERED BY THE ENGINEER.

NOTES CONT.

GENERAL

THE COST OF FURNISHING, INSTALLING, MAINTAINING AND REMOVING ALL CONSTRUCTION APPROACH SIGNS WILL BE CONSIDERED SUBSIDIARY WORK PERTAINING TO THE PROJECT AS A WHOLE AND SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR VARIOUS ITEMS INVOLVED IN THE CONTRACT. DURING ALL PHASES OF CONSTRUCTION, THE REQUIREMENTS SET FORTH IN THE MUTCD SHALL BE MET. WHEN THE PROJECT IS CLOSED DOWN FOR TEMPORARY PERIODS, THE SIGNS SHALL BE COVERED IN A WORKMANLIKE MANNER.

SIGN COVERS

SIGN COVERS SHALL CONSIST OF A PANEL PAINTED FLAT BLACK THAT IS THE SAME SIZE AS THE SIGN IT COVERS. THE PANEL SHALL BE OF WOOD, PLYWOOD, HARDBOARD OR ANY MATERIAL SATISFACTORY TO THE ENGINEER. NO MATERIAL WILL BE APPROVED THAT WILL DETERIORATE BY EXPOSURE TO THE WEATHER DURING THE PROJECT. MOUNTING OF THE PANEL SHALL BE DONE IN SUCH A WAY AS NOT TO DAMAGE THE SIGN FACE MATERIAL.

CONTRACTORS SHALL COORDINATE THEIR SIGNING ACTIVITIES WITH OTHER CONTRACTORS WITHIN THE PROJECT LIMITS, AS DIRECTED BY THE REGIONAL CONSTRUCTION ENGINEER.

SIGN POSTS

WHERE CONSTRUCTION SIGN INSTALLATIONS ARE NOT PROTECTED BY GUARD RAIL OR OTHER APPROVED TRAFFIC BARRIERS, THE POSTS ON WHICH THE SIGNS ARE MOUNTED SHALL BE YIELDING METAL POSTS AS DESIGNATED IN THE E SERIES OF STANDARD DRAWINGS OR YIELDING WOODEN POSTS IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS:

WOODEN POSTS ARE ACCEPTABLE FOR USE WITH CONSTRUCTION SIGNS. THESE POSTS SHALL HAVE A UNIFORM CROSS-SECTION AND SHALL BE MADE FROM GRADE 2, AIR-DRIED SOUTHERN YELLOW PINE OR ANOTHER EQUIVALENT SOFTWOOD. AN ACCEPTABLE EQUIVALENT SOFTWOOD SHALL HAVE AN EXTREME FIBER IN BENDING "Fb" DESIGN VALUE NOT TO EXCEED 9700 kPa AND HORIZONTAL SHEAR "Fv" DESIGN VALUE NOT TO EXCEED 620 kPa. SPECIFICATION "DESIGN VALUES FOR WOOD CONSTRUCTION" AND RELATED SUPPLEMENT, LATEST EDITION.

AS ESTABLISHED BY THE NATIONAL FOREST PRODUCTS ASSOCIATION IN THEIR NATIONAL DESIGN, THE FOLLOWING ARE CONSIDERED TO BE ACCEPTABLE WOODEN POSTS:

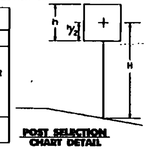
1. 100 X 100 (ACTUAL DIMENSIONS ARE 90 X 90)
   - A) ACCEPTABLE FOR SINGLE OR DUAL POSTS INSTALLATION WITH NO MODIFICATIONS.
   - B) ACCEPTABLE FOR THREE POSTS (OR MORE) INSTALLATION ONLY IF THERE ARE NO MORE THAN TWO POSTS IN A 2100 mm PATH.
2. 100 X 150 (ACTUAL DIMENSIONS ARE 90 X 140)
   - A) ACCEPTABLE FOR SINGLE POST INSTALLATIONS ONLY IF MODIFIED BY DRILLING TWO 38-mm DIAMETER HOLES, ONE AT 100 mm AND THE OTHER 460 mm ABOVE THE GROUND LINE AND PERPENDICULAR TO THE ROADWAY CENTERLINE.
   - B) ACCEPTABLE FOR MULTIPLE POSTS (TWO OR MORE) INSTALLATIONS ONLY IF MODIFIED AS ABOVE AND THE MINIMUM SPACING BETWEEN POSTS IS 2100 mm.
3. 150 X 150 (ACTUAL DIMENSIONS ARE 140 X 140)
   - A) ACCEPTABLE FOR SINGLE POST INSTALLATIONS ONLY IF MODIFIED BY DRILLING TWO 51-mm DIAMETER HOLES, ONE AT 100 mm AND THE OTHER AT 460 mm ABOVE THE GROUND LINE AND PERPENDICULAR TO ROADWAY CENTERLINE.
   - B) ACCEPTABLE FOR MULTIPLE POST INSTALLATION ONLY IF MODIFIED AS ABOVE AND THE MINIMUM SPACING BETWEEN POSTS IS 2100 mm.
4. 150 X 200 (ACTUAL DIMENSIONS ARE 140 X 190)
   - A) ACCEPTABLE FOR SINGLE POST INSTALLATIONS ONLY IF MODIFIED BY DRILLING TWO 76-mm DIAMETER HOLES, ONE AT 100 mm AND THE OTHER AT 460 mm ABOVE THE GROUND LINE AND PERPENDICULAR TO THE ROADWAY CENTERLINE.
   - B) ACCEPTABLE FOR MULTIPLE POST INSTALLATIONS ONLY IF MODIFIED AS ABOVE AND THE MINIMUM SPACING BETWEEN POSTS IS 2100 mm.

ADDITIONAL DESIGN CRITERIA:

THE LONGER DIMENSION OF THE POST(S), SUCH AS THE 150-mm DIMENSION OF THE 100 X 150 POST, SHALL BE PLACED PARALLEL TO THE ROADWAY CENTERLINE.
ALL WOODEN POSTS SHALL HAVE AN EMBEDMENT DEPTH OF 1200 mm.
NO CROSS-BRACING OR BACK-BRACING TO KEEP THE POSTS PLUMB WILL BE ALLOWED.
CONCRETE FOUNDATIONS, COLLARS, OR SOIL BEARING PLATES ARE NOT PERMITTED.
CONSTRUCTION SIGNS SHALL BE PLACED ON TWO OR MORE POSTS WHEN ANY OF THE FOLLOWING CONDITIONS GOVERN:...

- A) THE SIGN WIDTH (HORIZONTAL DIMENSIONS FOR DIAMOND SHAPED SIGNS) EXCEEDS 1050 mm.
- B) THE EXPOSED SIGN AREA OF ANY SINGLE SIGN OR ASSEMBLY EXCEEDS 1.25 m².
- C) THE Sv OF A SINGLE POST IS EXCEEDED. (SEE THE POST SELECTION CHART BELOW).

WOOD POST SELECTION CHART		
SIGN AREA (m²) X HEIGHT (m) ≤ Sv (SELECTION VALUE)		
POST SIZE	Sv	DESIGN CRITERIA:
100 X 100	1.54	WIND SPEED = 100 km/h 10-YEAR MEAN OCCURENCE INTERVAL)
100 X 150	3.51	
150 X 150	5.17	WIND PRESSURE = 740 Pa
150 X 200	9.30	ALLOWABLE BENDING STRESS F_b = 9700 kPa



POST SELECTION CHART DETAIL

OTHER STDS. REQUIRED:

NOTE: ALL DIMENSIONS ARE IN MILLIMETERS (mm) EXCEPT WHERE NOTED.

REVISIONS AND CORRECTIONS

JUNE 13, 1997 - ORIGINAL APPROVAL DATE

APPROVED

DIRECTOR OF ENGINEERING

DIRECTOR OF CONSTRUCTION AND MAINTENANCE

CONSTRUCTION APPROACH SIGNS

VERMONT AGENCY OF TRANSPORTATION

Metric STANDARD E-100M