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STATE OF VERMONT
AGENCY OF TRANSPORTATION

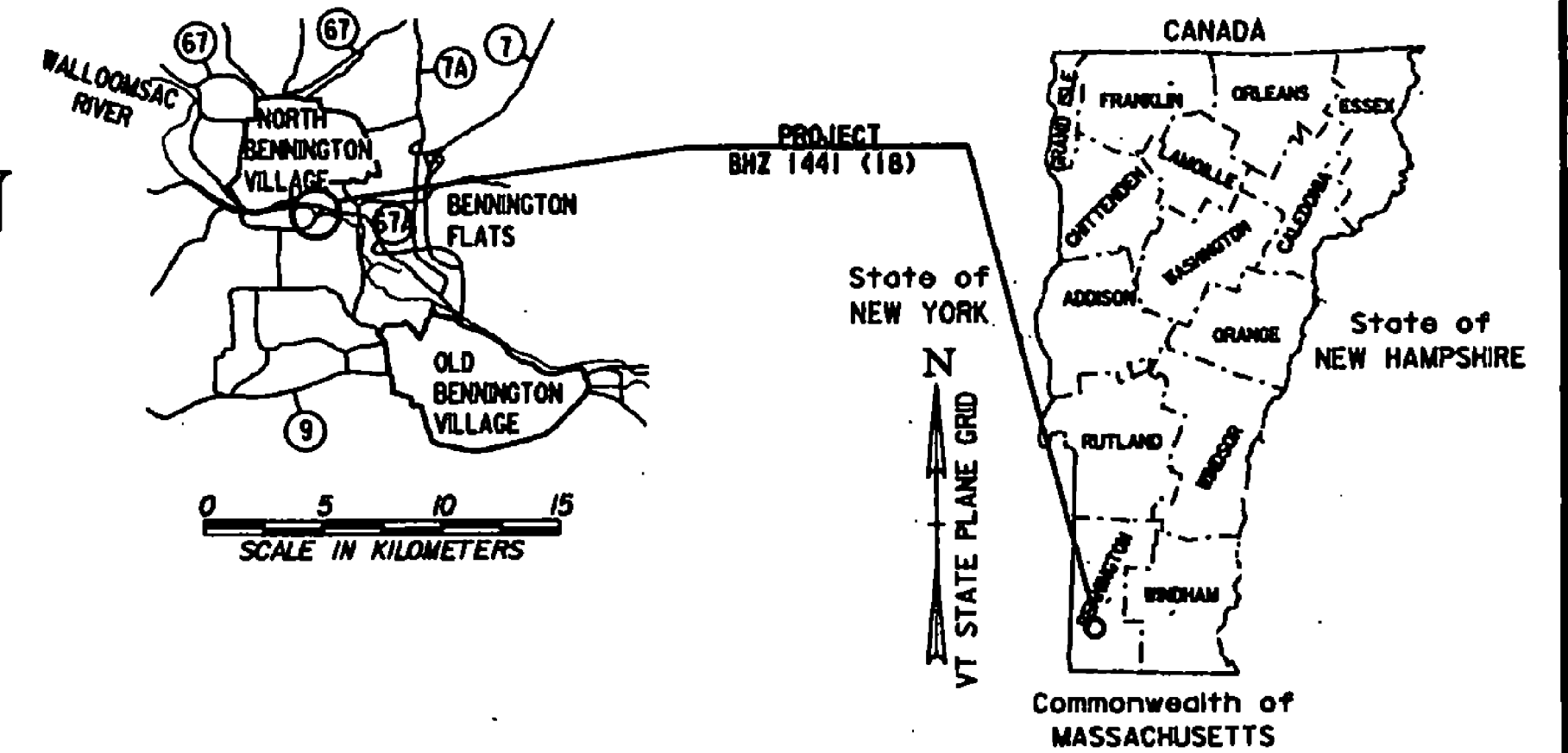


PROPOSED IMPROVEMENT
TOWN OF BENNINGTON
COUNTY OF BENNINGTON
TOWN HIGHWAY NO. 19, CLASS 3
BRIDGE NO. 31

BEGINNING AT A POINT APPROXIMATELY 0.1 KILOMETERS SOUTH OF VT. ROUTE 67A
ON T.H. #19 AND EXTENDING NORTH APPROXIMATELY 38 METERS ALONG T.H. #19.

WORK TO BE PERFORMED UNDER THIS PROJECT INCLUDES REHABILITATION OF BRIDGE NO. 31
OVER THE WALLOOMSAC RIVER

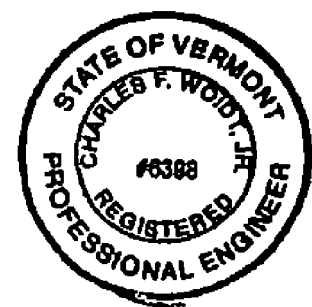
LENGTH OF STRUCTURE 38.161 METERS
LENGTH OF ROADWAY ---
LENGTH OF PROJECT 38.161 METERS



Date JUL 22 1999
Blow & Cote, Inc
Contractor
[Signature]
Signature
V. President
Title
Ellen Howard
Director of Administration And Duty
Authorized Agent

CONVENTIONAL SIGNS

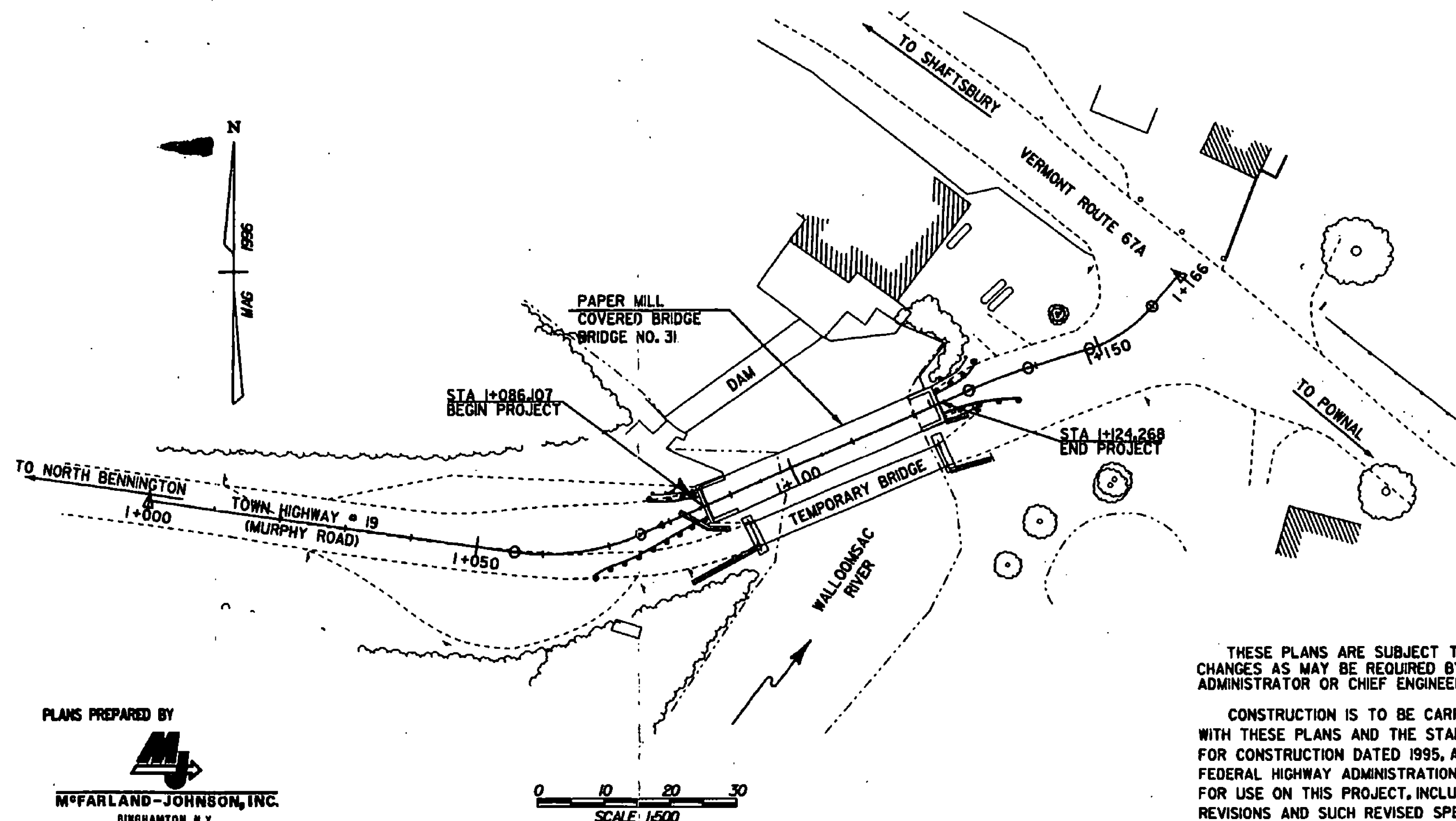
- COUNTY LINE
- TOWN LINE
- LIMITS OF ACCESS
- POINT OF ACCESS
- FENCE LINE
- STONE WALL
- TRAVELED WAY
- GUARD RAIL
- RAILROAD
- SURVEY LINE
- CULVERT
- POWER POLE
- TELEPHONE POLE
- TREES
- CONTROL OF ACCESS
- PROPERTY LINE
- R.O.W. TAKING LINE
- SLOPE RIGHTS
- TOP OF CUT
- TOE OF SLOPE



DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

PLANS PREPARED BY
M FARLAND-JOHNSON, INC.
BENNINGTON N.Y.

BY Charles F. Worth, Jr. 5-14-99



CONTRACT PLANS
THESE PLANS DO NOT REFLECT
CHANGES MADE ON THE PROJECT.

THESE PLANS ARE SUBJECT TO SUCH ENGINEERING
CHANGES AS MAY BE REQUIRED BY THE FEDERAL HIGHWAY
ADMINISTRATOR OR CHIEF ENGINEER.

CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE
WITH THESE PLANS AND THE STANDARD SPECIFICATIONS
FOR CONSTRUCTION DATED 1995, AS APPROVED BY THE
FEDERAL HIGHWAY ADMINISTRATION ON AUGUST 21, 1995
FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT
REVISIONS AND SUCH REVISED SPECIFICATIONS AND
SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE
PLANS.

ALL STATIONS ARE IN KILOMETERS, ALL
ELEVATIONS ARE IN METERS, AND ALL
DIMENSIONS ARE IN MILLIMETERS UNLESS
OTHERWISE NOTED.

SUBMITTED BY ORDER OF THE
STATE TRANSPORTATION BOARD

APPROVED [Signature] DATE 5/24/99
DIRECTOR OF PROJECT DEVELOPMENT

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED _____ DATE _____
DIVISION ADMINISTRATOR

PROJECT NAME BENNINGTON
PROJECT NO. BHZ 1441 (18)
SHEET 1 OF 22 SHEETS





PAPER MILL GENERAL NOTES

- 1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, ADOPTED 1995, AND ITS LATEST REVISIONS AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 16TH EDITION, DATED 1996, AND ITS LATEST REVISIONS.
2. DESIGN OF THE REHABILITATED STRUCTURE IS FOR AASHTO M-18 TRUCK LOADING.
3. BRIDGE NO. 31 WILL CONTINUE TO BE CLOSED TO ALL PEDESTRIAN AND VEHICULAR TRAFFIC DURING CONSTRUCTION. TRAFFIC WILL BE MAINTAINED ON EXISTING TEMPORARY BRIDGE.
4. ALTHOUGH THIS PROJECT INVOLVES MAJOR REHABILITATION OF THE BRIDGE, INCLUDING REPLACEMENT OF MANY MEMBERS, THE INTENT OF THE PROJECT IS TO MAINTAIN THE DIMENSIONAL GEOMETRY OF THE BRIDGE, ALONG WITH MOST OF THE CONNECTION TYPES AND DETAILS. ALL EXISTING DIMENSIONS, SHOWN ON THE PLANS, SHALL BE CHECKED IN THE FIELD PRIOR TO COMMENCING THE WORK. ACTUAL WORK SHALL MATCH FIELD CONDITIONS. SIDING AND ROOF LINES SHALL MATCH EXISTING CONDITIONS. NO CHANGE IN VERTICAL PROFILE IS INTENDED AND NO CONCRETE WORK IS REQUIRED.
5. ALL NEW SAWN STRUCTURAL TIMBERS SHALL BE SOUTHERN PINE, SELECT STRUCTURAL, FULL SAWN (DIMENSIONS EQUAL TO NOMINAL SIZING), EXCEPT AS NOTED. IF SOUTHERN PINE IS NOT AVAILABLE IN THE SIZES INDICATED, DOUGLAS FIR, SELECT STRUCTURAL, MAY BE SUBSTITUTED.
FULL SAWN STRUCTURAL TIMBERS INCLUDE THE FOLLOWING MEMBERS:
STRUCTURAL UNTREATED (ITEM 522.20)
- NEW KNEE BRACES
- NEW AND REPLACEMENT LATERAL ROOF BRACING
- REPLACEMENT LATTICE MEMBERS
- REPLACEMENT UPPER BRACING COMPONENTS (IF REQUIRED)
- NEW RAFTERS (SPRUCE-PINE-FIR, NO. 1 GRADE ACCEPTABLE)
- NEW CROSS TIE BEAMS
- REPLACEMENT RIDGE BEAM (IF REQUIRED)
- TRUNNELS
- COLLAR TIES
- ROOF MAILERS
STRUCTURAL TREATED (ITEM 522.25)
- BEARING BLOCKS, & BEDDING TIMBERS
- REPLACEMENT UPPER TOP CHORDS
- REPLACEMENT LOWER TOP CHORDS
- REPLACEMENT UPPER BOTTOM CHORDS
- REPLACEMENT LOWER BOTTOM CHORDS
- REPLACEMENT END POSTS
- BOTTOM LATERAL BRACING
* (TREATMENT SHALL COMPLY WITH STD. SPEC 726.01 PRESERVATIVE TYPE IV).
** (TREATMENT SHALL COMPLY WITH STD. SPEC 726.01 PRESERVATIVE TYPE II).
6. NON-STRUCTURAL LUMBER - UNTREATED (ITEM 522.30) SHALL INCLUDE:
- SIDING FOR REPLACEMENT OF DAMAGED PIECES
- NAILING STRIPS
- ROOF BLOCKING
7. NON-STRUCTURAL LUMBER - TREATED (522.35) SHALL INCLUDE:
- BLOCKING BETWEEN BOTTOM CHORDS AT NEW BOLTS BENEATH FLOOR BEAMS **
- CURBS AND BLOCKING **
8. NEW STRUCTURAL GLUED LAMINATED MEMBERS SHALL BE AS FOLLOWS:
FLOOR BEAMS: SOUTHERN PINE #24F-E2 SP/SP, PENTA TREATED 2400 PSI FIBER BONDING STRESS PRIOR TO TREATMENT.
DECK PANELS: SOUTHERN PINE #16F-V1SP/SP (OR COMBINATION 46 SP)
TREATMENT OF STRUCTURAL GLUED LAMINATED MEMBERS SHALL COMPLY WITH STD. SPEC. 726.01 TYPE D IF TREATED AFTER GLUING, OR STD. SPEC. 726.01 TYPE II IF TREATED PRIOR TO GLUING.

- 9. REGARDING DECK PANELS:
CONTRACTOR SHALL SUBMIT SHOP PLANS SHOWING NUMBER, WIDTH, LENGTH, AND CONNECTION DETAILS FOR DECK PANELS. FOR REVIEW AND COMMENT BY ENGINEER. APPROVAL IS REQUIRED PRIOR TO FABRICATION. PANELS SHALL BE NON-INTERCONNECTED. USE 4 PANELS OF EQUAL WIDTH ACROSS THE SECTION OF THE BRIDGE. USE PANELS OF MINIMUM LENGTH OF 6.4 m. STAGGER END JOINTS OVER FLOOR BEAMS. ALUMINUM DECK BRACKETS SHALL CONFORM TO MANUFACTURER'S SPECIFICATIONS.
10. ALL NEW WOOD TRUNNELS SHALL BE UNTREATED, DRIED (MAX. MOISTURE CONTENT 19%), WHITE OAK OR WHITE ASH, AND SHALL BE DRIVEN IN A MANNER WHICH AVOIDS SPLITTING OF THE TRUNNELS OR THE PIECES CONNECTED BY THEM. TRUNNELS SHALL BE 50 MM DIAMETER. TRUNNELS MAY BE DIPPED IN BOILED LINSEED OIL PRIOR TO DRYING. TRUNNELS WILL BE PAID FOR UNDER ITEM 522.20.
11. REGARDING SIDING:
THE EXISTING SIDING SHALL BE REMOVED CAREFULLY. ALL SIDING IN GOOD CONDITION SHALL BE SAVED AND REUSED ON THE NORTH-FACING SIDE OF THE BRIDGE. (SEE NOTE 20)
ALL NEW SIDING SHALL BE NO. 1 GRADE WHITE PINE OR EASTERN SPRUCE.
ALL SIDING SHALL BE FASTENED WITH NO. 8 GALVANIZED SCREWS 65mm (2 1/2") LONG, COST INCIDENTAL TO SIDING.
SIDING SHALL BE PAINTED TO MATCH EXISTING COLORS. AFTER INSTALLATION IS COMPLETE, ALL SIDING IS TO BE PAINTED. NEW SIDING IS TO BE PRIMED AND PAINTED.
12. REGARDING ROOF:
THE OVERHANG DIMENSIONS SHALL REMAIN THE SAME ON ALL FOUR EDGES.
ANY ROOF BOARDS DETERMINED BY THE RESIDENT ENGINEER TO BE IN GOOD CONDITION SHALL BE REUSED. REUSING THE EXISTING ROOF BOARDS WILL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED SUBSIDIARY TO ITEM 665J8 - METAL ROOFING. ANY ADDITIONAL BOARDS REQUIRED WILL BE PAID FOR UNDER ITEM 522.20 - STRUCTURAL LUMBER (UNTREATED).
SEE SPECIAL PROVISIONS FOR OTHER ROOF REQUIREMENTS.
13. THE INITIAL CAMBER BEFORE SHORING REMOVAL SHALL BE NOT LESS THAN 100 MM AT MID-SPAN. THE BRIDGE SHALL BE STRAIGHT ALONG A HORIZONTAL LINE BETWEEN THE ABUTMENTS. THE BRIDGE SHALL NOT BE RACKED WHEN COMPLETED.
14. THE CONTRACTOR SHALL SUBMIT JACKING AND SHORING PLANS TO THE ENGINEER FOR REVIEW AND COMMENT. APPROVAL OF THE INFORMATION IS REQUIRED PRIOR TO COMMENCEMENT OF THE WORK.
15. THE INTENDED ERECTION SEQUENCE FOR THE FLOOR BEAMS ASSUMES INSTALLATION OF NEW TRUSS LATTICE AND LOWER BOTTOM CHORDS AND TIE RODS BENEATH FLOOR BEAMS, FOLLOWED BY INSTALLATION OF FLOOR BEAMS AND BRACING, THEN UPPER BOTTOM CHORDS. ACCORDINGLY, NO NOTCHING OF THE TOPS OF THE FLOOR BEAMS IS REQUIRED.
16. ALL STRUCTURAL MEMBERS AND CONNECTORS INDICATED TO BE RETAINED AND/OR REUSED, SHALL BE CHECKED IN THE FIELD FOR DAMAGE AND DECAY AND SHALL BE REMOVED AND REPLACED AS DEEMED NECESSARY BY THE ENGINEER IN THE FIELD. PAYMENT SHALL BE UNDER THE APPROPRIATE LUMBER PAY ITEM.
17. STRUCTURAL STEEL ITEMS SHALL INCLUDE ALL TIE RODS THROUGH BOTTOM CHORDS BENEATH THE FLOOR BEAMS, TIE RODS BETWEEN THE TRUSSES AT THE BOTTOM CHORD AND TIE BEAM ANCHOR BOLTS. STRUCTURAL STEEL SHALL BE AASHTO M270, GRADE 345. ALL STRUCTURAL STEEL SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M232. ALL OTHER HARDWARE SHALL BE PAID FOR SUBSIDIARY TO THE ITEM TO WHICH IT IS ATTACHED. ALL NEW BOLTS, LAG SCREWS, NUTS AND WASHERS SHALL BE ASTM A307 AND GALVANIZED IN ACCORDANCE WITH AASHTO M232. THE CONTRACTOR SHALL SUBMIT A TYPE A CERTIFICATION IN ACCORDANCE WITH VAOT SPECIFICATIONS. REFER ALSO TO SPECIAL PROVISIONS.

- 18. 'UNTREATED LUMBER AND TIMBER' AND 'TREATED LUMBER AND TIMBER' QUANTITIES ARE FOR ESTIMATING PURPOSES ONLY. ACTUAL QUANTITIES MAY VARY DEPENDING ON CONDITION OF LUMBER SCHEDULED TO BE RETAINED.
19. REPAIR OF SPLITS AND CHECKS IN EXISTING LATTICE TO BE RETAINED, OR OTHER LOCATIONS, SHALL BE MADE WITH APPROVED WATERPROOF GLUE AND CLAMPING TO ACHIEVE FULL STRENGTH OF THE REPAIRED MEMBERS. CONTRACTOR SHALL SUBMIT MATERIAL SPECIFICATION AND PROCEDURE DESCRIPTION TO THE ENGINEER FOR APPROVAL PRIOR TO COMMENCING THE WORK. PAYMENT TO BE INCLUDED UNDER ITEM 522.20.
20. ITEM 529.20 'PARTIAL REMOVAL OF STRUCTURE' SHALL INCLUDE, BUT NOT BE LIMITED TO:
- THE COMPLETE DISMANTLING OF THE EXISTING SUPERSTRUCTURE.
- REMOVAL OF BEDDING TIMBERS AND CLEANING OF BEARING AREAS TO THE SATISFACTION OF THE ENGINEER.
- REMOVAL AND STOCKPILING OF THE EXISTING STEEL BRACING SYSTEM ON SITE. STEEL TO BE REMOVED FROM THE SITE BY THE TOWN OF BENNINGTON.
PAYMENT FOR ITEM 529.20 TO INCLUDE SALVAGE AND REUSE OF:
- CURB TIMBERS
- BOTTOM LATERAL BRACING
- END LATTICE MEMBERS AS INDICATED
- RIDGE BEAM
- UPPER KNEE BRACES
- LATERAL ROOF BRACING
- LONGITUDINAL BEAM ABOVE TIE BEAMS
- TIE BEAMS
- COLLAR TIES
- SIDING (ALSO SEE NOTE 10)
- BOTTOM LATERAL BRACING
21. SEE SPECIAL PROVISION FOR TIE DOWN ANCHOR SYSTEM. THE SYSTEM SHALL BE PAID FOR UNDER ITEM 63J0 'BEARING DEVICE ASSEMBLY (MOD.)'. THE CONTRACTOR MAY PROPOSE AN ALTERNATIVE ANCHOR SYSTEM HAVING THE SAME CAPACITY, FOR REVIEW AND COMMENT BY THE ENGINEER. APPROVAL OF THE SYSTEM TO BE USED IS REQUIRED PRIOR TO ORDERING ANY COMPONENTS OR ANY INSTALLATION.
22. ITEM 665J5 'REMOVE EXISTING ROOFING' INCLUDES THE COST OF REMOVAL OF THE EXISTING TIMBER SHINGLES. REMOVAL OF THE TIMBER SUPPORT COMPONENTS (E.G. NAILERS AND RAFTERS) IS INCLUDED IN ITEM 529.20.
23. FOR ESTIMATING PURPOSES THE FOLLOWING MEMBERS WERE INCLUDED IN THE ESTIMATED LUMBER QUANTITIES:
- TWO TIE BEAMS.
- FOUR UPPER KNEE BRACES.
- FOUR COLLAR TIES.
- FOUR LATERAL ROOF BRACES.
- FOUR BOTTOM LATERAL BRACES.
- 30% OF SIDING
THE RESIDENT ENGINEER MAY REQUIRE ADDITIONAL MEMBERS TO BE REPLACED.
24. THE BID PRICES FOR ITEMS 522.25, 522.35 AND 522.40 SHALL NOT DIFFERENTIATE BETWEEN THE VARIOUS PRESERVATIVE TREATMENT TYPES.
25. THE EXISTING TEMPORARY BRIDGE ABUTMENTS AND EMBANKMENTS ARE TO REMAIN IN PLACE.
26. TWO COATS OF NFPA CLASS 'B', CLEAR FIRE RETARDANT SHALL BE APPLIED TO ALL INTERIOR UNTREATED WOOD SURFACES OF THE BRIDGE AS SPECIFIED BY THE MANUFACTURER. FIRE RETARDANT TO BE PAID USING ITEM 513.30, STRUCTURE PAINTING, FIELD APPLIED (MOD.). REFER TO SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION.
27. EXISTING CONCRETE TRAFFIC BARRIERS ARE THE TOWN OF BENNINGTON'S. WHEN COVERED BRIDGE IS OPEN TO TRAFFIC, THE BARRIER WILL BE RESET TO BLOCK ENTRANCE TO TEMPORARY BRIDGE UNTIL THE TEMPORARY BRIDGE IS REMOVED BY STATE FORCES. COST FOR REMOVAL AND RESETTING IS TO BE INCLUDED IN ALL OTHER CONTRACT ITEMS.

DESCRIPTION OF WORK

GENERAL - THIS REHABILITATION PROJECT INCLUDES AN EXTENSIVE REPLACEMENT OF STRUCTURAL COMPONENTS AS FOLLOWS:
- REPLACE TRUSSES, DECKING AND FLOOR BEAMS, AND ROOFING AND PURLINS
- RETAIN LATTICE MEMBERS AT ENDS, AS INDICATED
- RETAIN EXISTING BRACING WITH MODIFICATIONS INDICATED
- NO CONCRETE WORK IS REQUIRED
THE DESIGN HAS BEEN BASED ON REPLACEMENT OF STRUCTURAL COMPONENTS WITH THE STRUCTURE SUPPORTED BY A TEMPORARY FALSEWORK SYSTEM IN ITS CURRENT LOCATION. STRUCTURE DETAILS AND SIZES HAVE NOT BEEN EXAMINED FOR LOADING CONDITIONS RELATED TO OTHER ERECTION SCHEMES. THE REHABILITATED STRUCTURE SHALL BE OF OVERALL GEOMETRY SIMILAR TO THE EXISTING BRIDGE WITH NO CHANGE TO ROADWAY SURFACE ELEVATION.
WORK TO BE PERFORMED, INCLUDES (BUT IS NOT LIMITED TO):
1. REHABILITATION OF COVERED BRIDGE:
- TEMPORARY SHORING
- REMOVAL OF COMPONENTS - NO SALVAGE:
- ROOFING MATERIALS AND NAILERS
- RAFTERS
- ALL CHORD MEMBERS
- ALL LATTICE MEMBERS EXCEPT THOSE IDENTIFIED AT THE ENDS OF THE BRIDGE
- END POSTS OF TRUSSES
- NAIL LAMINATED DECKING
- FLOOR BEAMS
- LOWER DIAGONAL KNEEBRACES, AS INDICATED
- SUPPORT TIMBER BLOCKING AT ABUTMENTS
- COMPONENTS TO BE RETAINED FOR REUSE:
- EXTERIOR SIDING, INCLUDING THAT ON THE INSIDE AT THE ENDS OF THE BRIDGE
- TIMBER CURBS
- LOWER LATERAL BRACING
- TIE BEAMS
- LATERAL ROOF BRACING
- UPPER KNEE BRACING
- RIDGE BEAM AND LONGITUDINAL BEAM ABOVE TIE BEAM
- LATTICE MEMBERS AT THE ENDS OF THE TRUSSES, AS INDICATED
- PROVIDE AND INSTALL REPLACEMENT COMPONENTS
- ALL CHORD MEMBERS
- ALL LATTICE MEMBERS, EXCEPT THOSE SALVAGED AT THE ENDS OF THE TRUSSES
- END POSTS OF TRUSSES
- GLULAM FLOOR BEAMS
- RAFTERS
- GLULAM DECKING COMPONENTS
- BEARING BLOCKS/TIMBERS AT ABUTMENTS
- LOWER KNEEBRACES
- EXTERIOR SIDING, AS REQUIRED
- ROOF NAILERS
- METAL ROOFING
- MISCELLANEOUS WORK:
- PROVIDE AND INSTALL NEW BOLTS IN ROOF LATERAL SYSTEM AT INTERSECTIONS, AS INDICATED.
- PROVIDE AND INSTALL NEW STEEL ROD ASSEMBLIES AT EACH KNEE BRACE.
- PROVIDE AND INSTALL NEW STEEL ROD ASSEMBLIES BETWEEN TRUSSES, AS INDICATED.
- PAINT WOOD AND METAL COMPONENTS AS INDICATED.
- APPLY FIRE RETARDANT TO INSIDE AS INDICATED.

DATUM
VERTICAL _____
HORIZONTAL _____

STATE OF VERMONT AGENCY OF TRANSPORTATION
Town Of BENNINGTON Bridge No. 31
Highway No. T.H. #19 (MURPHY ROAD) Log Sta.
PAPER MILL COVERED BRIDGE REHABILITATION
Srvy. Sta.
GENERAL NOTES
Designed By J. MIECZKOWSKI Drawn By K. NICHOLS
Checked By J. MIECZKOWSKI Date 1/99 Bridge Design Supervisor P. MALACHOWSKI 1/99
PROJECT BENNINGTON PROJECT NO. 8HZ 144(118)
I.G.C. Info. m:\1954810\str\ut\144\gen.doc
Bridge Sheet No. Sheet 4 of 22
14-MAY-1999

REMOVAL AND DISPOSAL OF GUARD RAIL

STA. I+078.4 LT. TO STA. I+086.0 LT.
 STA. I+124.4 LT. TO STA. I+132.0 LT.
 STA. I+124.4 RT. TO STA. I+130.0 RT.

HEAVY DUTY STEEL BEAM GUARD RAIL W/ WOOD POSTS, TYPE IV

STA. I+067.0 RT. TO STA. I+086.0 RT.
 STA. I+078.4 LT. TO STA. I+086.0 LT.
 STA. I+124.4 LT. TO STA. I+132.0 RT.
 STA. I+124.4 RT. TO STA. I+135.8 LT.

ANCHOR FOR STEEL BEAM RAIL

STA. I+068.9 RT.
 STA. I+080.3 LT.
 STA. I+130.1 LT.
 STA. I+133.9 RT.

REMOVING SIGNS

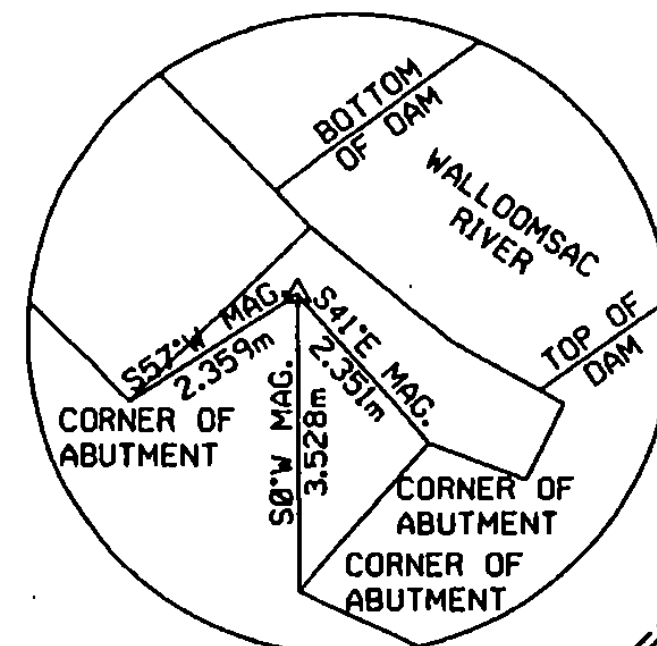
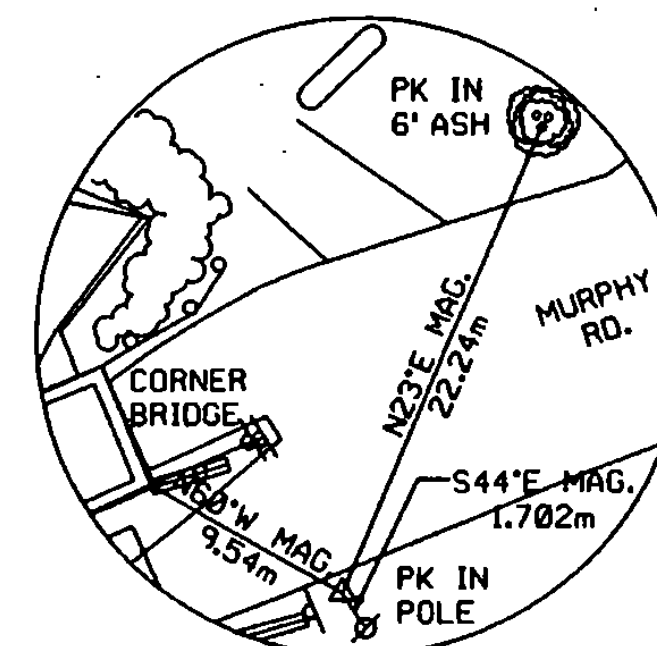
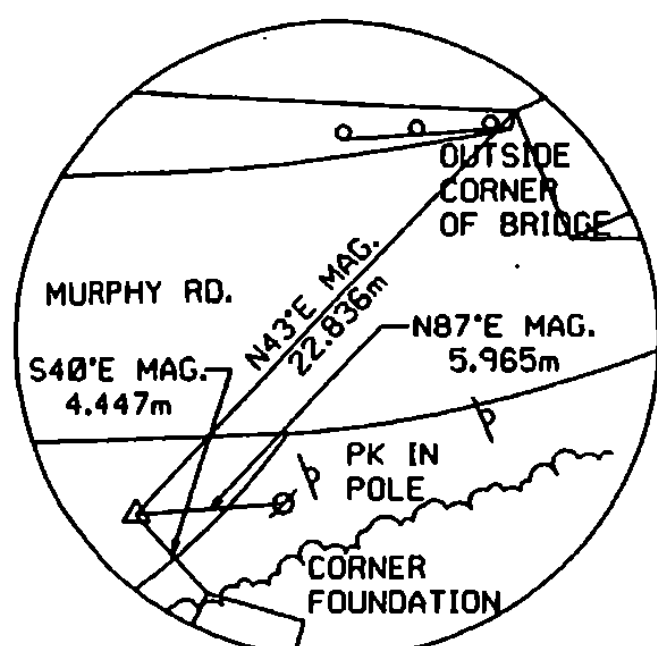
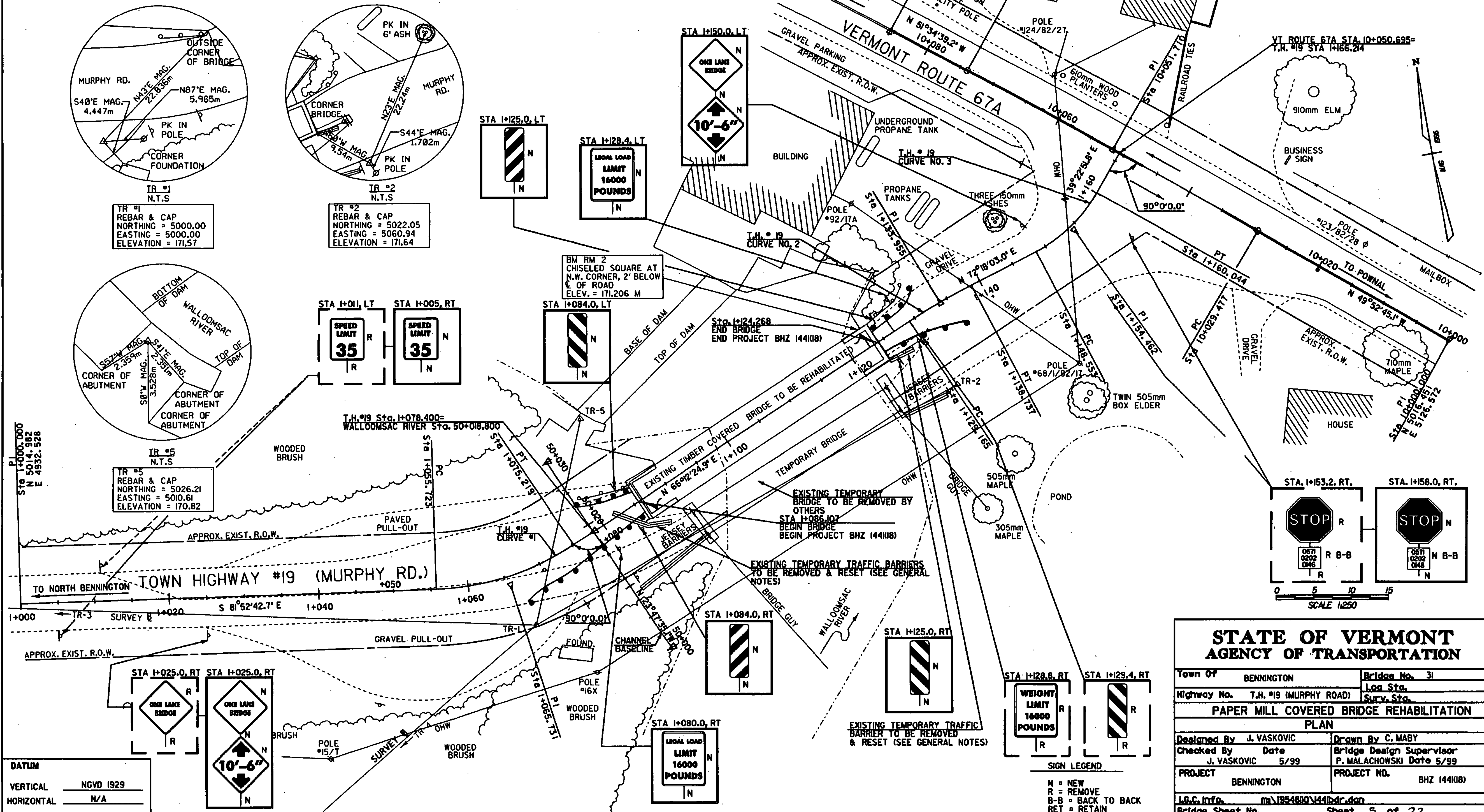
AS SHOWN - 4

T.H. # 19 CURVE DATA CURVE NO. 1
PI Sta I+065.731 N 5005.696 E 4992.600 Δ = 3°54'52.8" LT R = 35.000 m T = 10.008 m L = 19.496 E = 1.403

T.H. # 19 CURVE DATA CURVE NO. 2
PI Sta I+133.955 N 5033.430 E 5060.502 Δ = 6°05'58.4" RT R = 30.000 m T = 5.909 m L = 9.572 E = 0.227

T.H. # 19 CURVE DATA CURVE NO. 3
PI Sta I+154.462 N 5039.667 E 5080.046 Δ = 32°55'11.2" LT R = 20.000 m T = 22.233 m L = 11.491 E = 0.855

VT RTE 67A CURVE DATA CURVE NO. 1
PI Sta I+051.710 N 5049.773 E 5087.030 Δ = 1°41'54.1" LT R = 1500.000 m T = 22.233 m L = 44.463 E = 0.165



DATUM
 VERTICAL NGVD 1929
 HORIZONTAL N/A

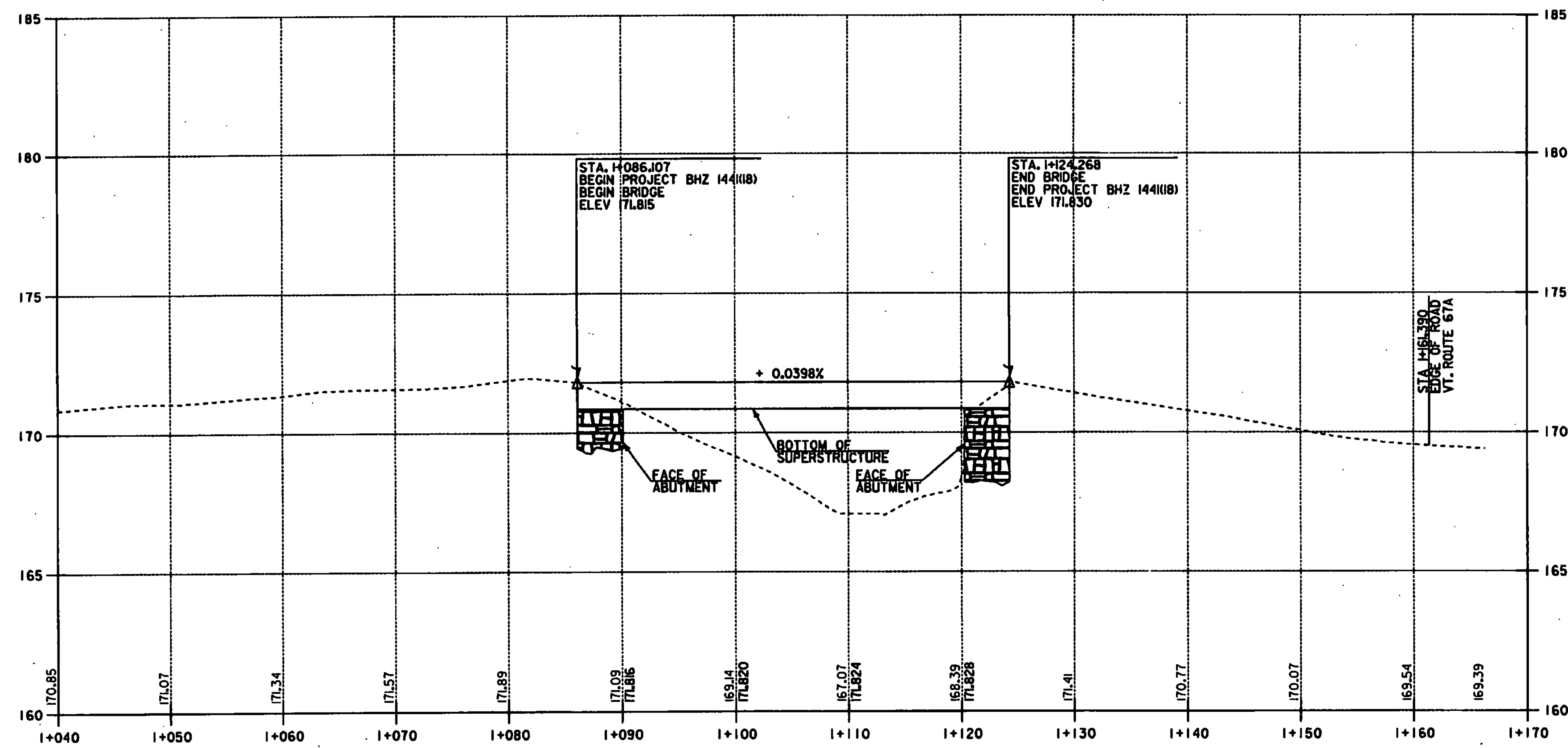
DATUM
 VERTICAL NGVD 1929
 HORIZONTAL N/A

SIGN LEGEND
 N = NEW
 R = REMOVE
 B-B = BACK TO BACK
 RET = RETAIN

**STATE OF VERMONT
 AGENCY OF TRANSPORTATION**

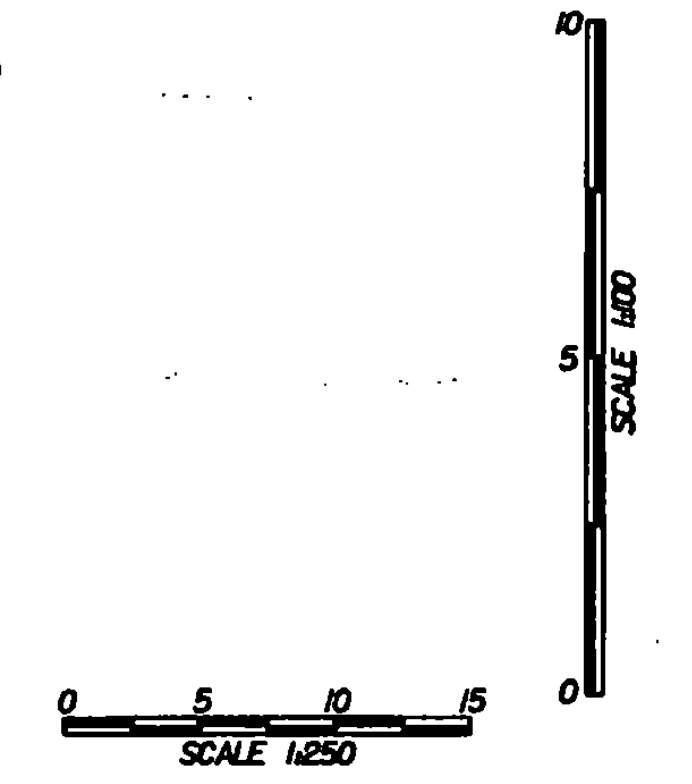
Town Of	BENNINGTON	Bridge No.	31
Highway No.	T.H. #19 (MURPHY ROAD)	Loc. Sta.	
PAPER MILL COVERED BRIDGE REHABILITATION			
PLAN			
Designed By	J. VASKOVIC	Drawn By	C. MABY
Checked By	J. VASKOVIC	Date	5/99
		Bridge Design Supervisor	P. MALACHOWSKI
		Date	5/99
PROJECT	BENNINGTON	PROJECT NO.	BHZ (144)(B)
I.G.C. Info.		m:\195488Q\144\brd.dwg	
Bridge Sheet No.	Sheet 5 of 22		

14-MAY-1999



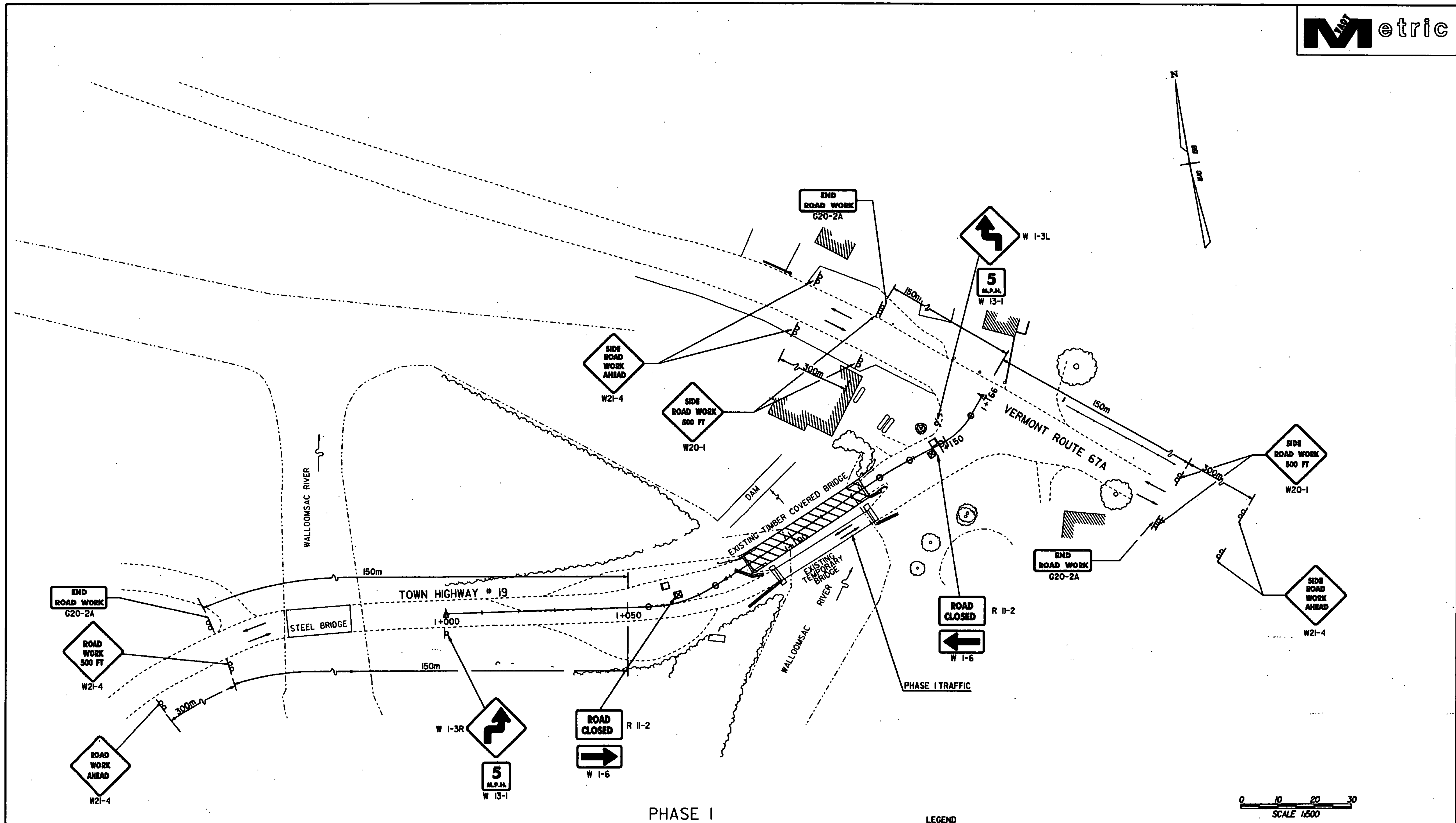
TOWN HIGHWAY * 19
(MURPHY ROAD)

NOTES
1. ELEVATION OF BOTTOMS OF ABUTMENTS ARE UNKNOWN.



DATUM
VERTICAL _____
HORIZONTAL _____

STATE OF VERMONT AGENCY OF TRANSPORTATION			
Town Of	BENNINGTON	Bridge No.	31
Highway No.	T.H. #19 (MURPHY ROAD)	Loc. Sta.	
		Surv. Sta.	
PAPER MILL COVERED BRIDGE REHABILITATION			
PROFILE			
Designed By	J. VASKOVIC	Drawn By	C. MABY
Checked By	J. VASKOVIC	Bridge Design Supervisor	P. MALACHOWSKI
Date	5/99	Date	5/99
PROJECT	BENNINGTON	PROJECT NO.	BHZ 144(118)
I.C.C. Info.	m\1994880\144bdr.dgn		
Bridge Sheet No.	Sheet 6 of 22		

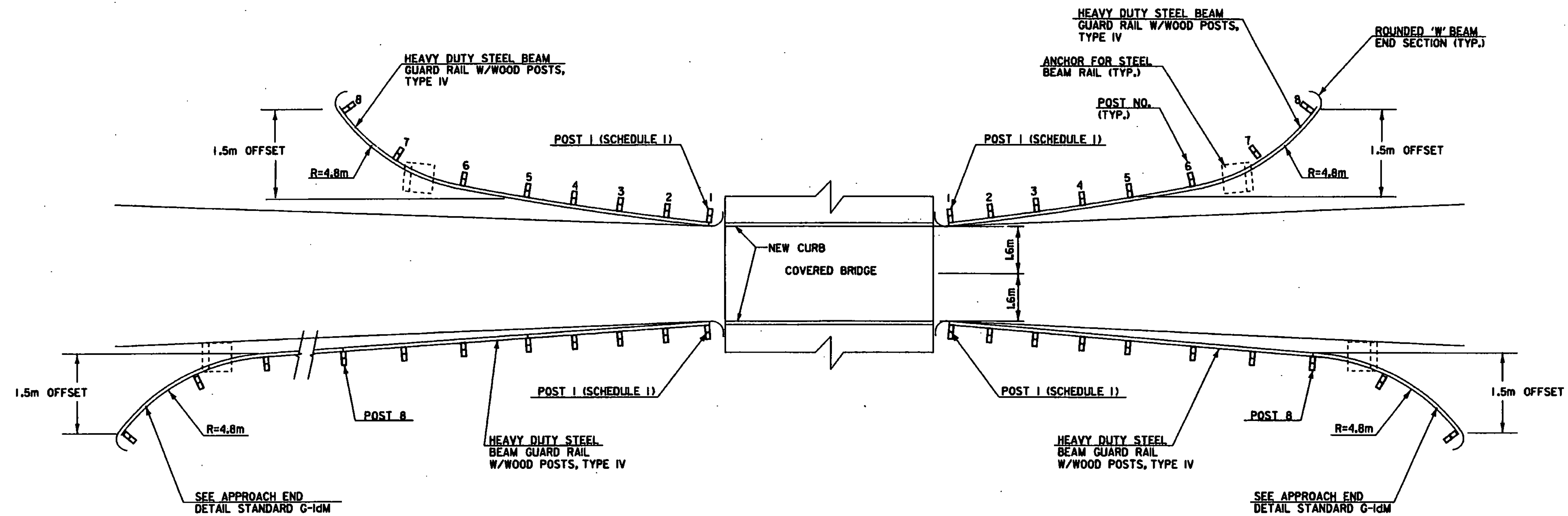


NOTES
 1. LOCATION OF SIGNS ARE APPROXIMATE. CONTRACTOR TO DETERMINE FINAL LOCATION IN THE FIELD AS APPROVED BY THE ENGINEER.

- LEGEND**
- SIGNS AND POSTS
 - PHASE I CONSTRUCTION
 - TYPE II BARRICADE
 - TYPE III BARRICADE (MOD.)
 - EXIST. TEMP BARRIER
 - INDICATES TRAFFIC DIRECTION

DATUM
 VERTICAL _____
 HORIZONTAL _____

STATE OF VERMONT AGENCY OF TRANSPORTATION	
Town of BENNINGTON	Bridge No. 31
Highway No. T.H. #19 (MURPHY ROAD)	Log. Sta. _____ Sury. Sta. _____
PAPER MILL BRIDGE REHABILITATION	
TRAFFIC CONTROL PLAN	
Designed By J. VASKOVIC	Drawn By _____
Checked By J. VASKOVIC	Bridge Design Supervisor P. MALACHOWSKI
Date 5/99	Date 5/99
PROJECT BENNINGTON	PROJECT NO. BHZ 144(118)
I.G. Info. m:\195480\144\trc.dwg	
Bridge Sheet No. _____	Sheet 8 of 22



BRIDGE APPROACH RAILING

WHEN A RAIL PANEL SPLICE OCCURS AT POST NO. 1 USE SCHEDULE 1 FOR APPROACH RAILING.

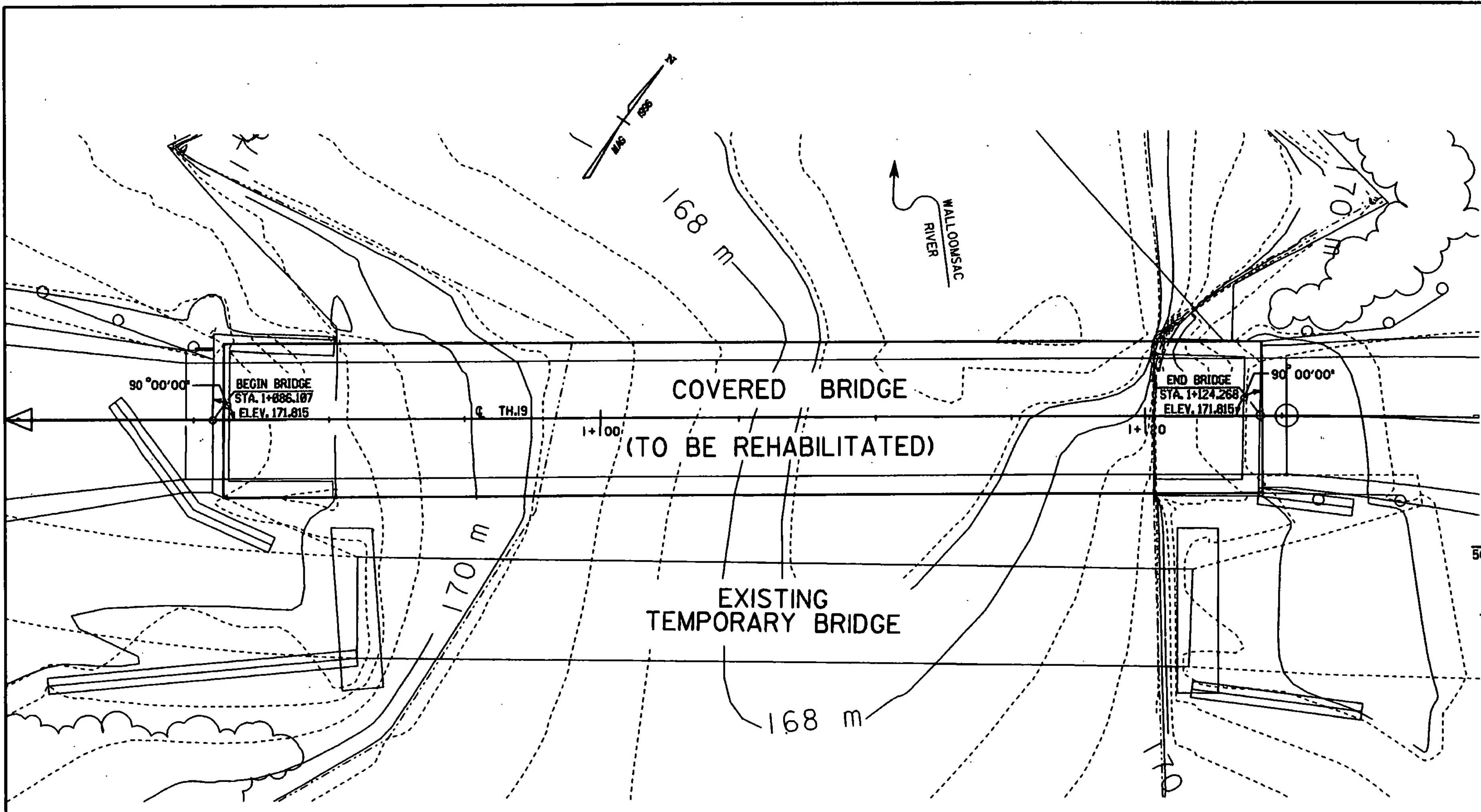
SCHEDULE 1		
POST NO.	SPACING	PAYMENT FACTOR
1	952.5	1.4 x 3810
2	952.5	
3	952.5	
4	952.5	
5	952.5	
6	1270	1.2 x 3810
7	1270	
8	1270	1.0 (TYP.)
9	1905 (TYP.)	

NOTES:

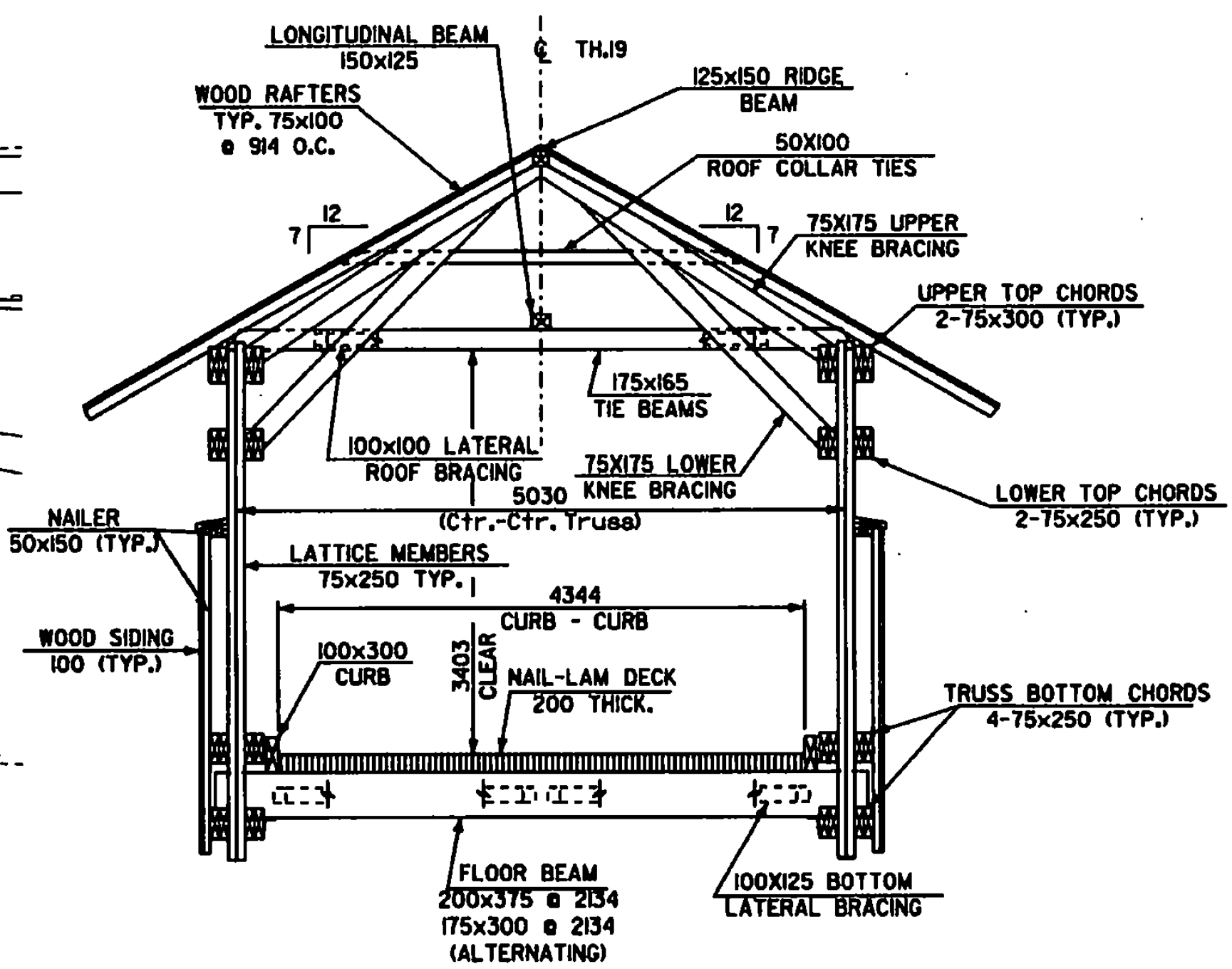
- BRIDGE RAIL SHALL BE HEAVY DUTY STEEL BEAM RAIL W/WOOD POSTS.
- BRIDGE APPROACH RAIL HEIGHT SHALL BE TRANSITIONED TO NORMAL ROADWAY RAIL HEIGHT IN 7.62 METERS.
- APPROACH RAILING SHALL BE HEAVY DUTY STEEL BEAM FOR 7.62 METERS FROM THE ENDS OF THE BRIDGE.
- SPLICES SHALL LAP IN DIRECTION OF TRAFFIC FLOW.
- SEE STANDARD SHEET G-1M FOR DELINEATION DETAILS AND PLACEMENT.
- ERECT DELINEATORS ON EVERY FIFTH POST OR APPROXIMATELY 9 METERS APART PAYMENT SHALL BE SUBSIDIARY TO OTHER ITEMS.

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED

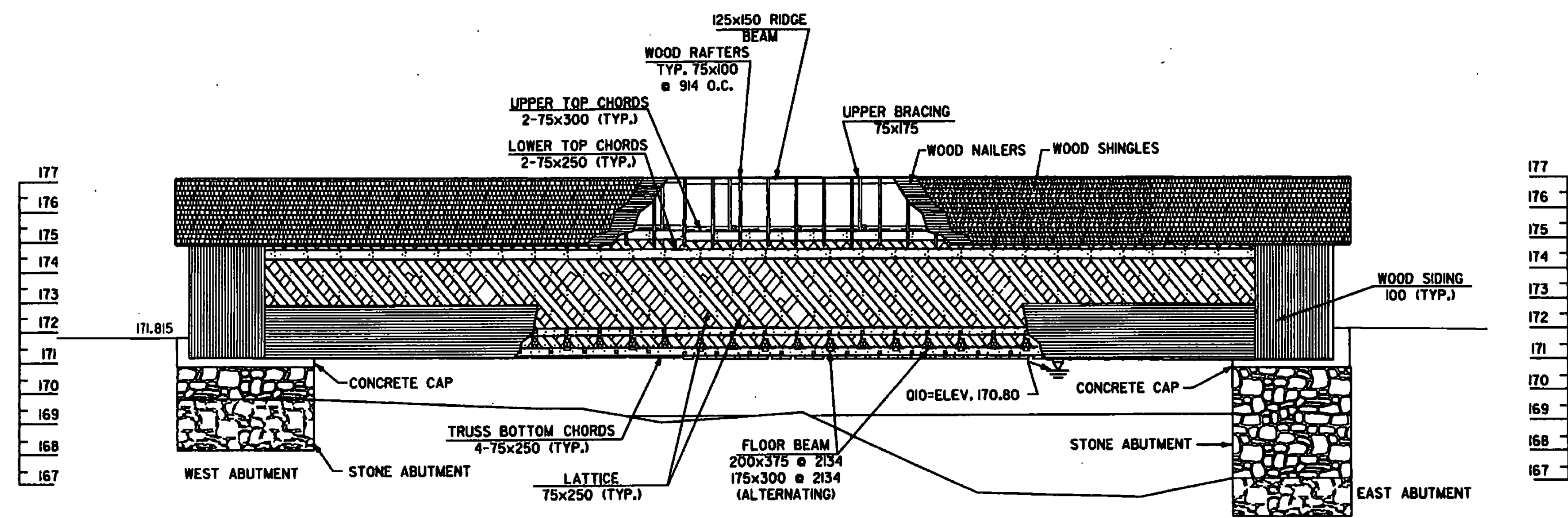
STATE OF VERMONT AGENCY OF TRANSPORTATION	
Town Of BENNINGTON	Bridge No. 31
Highway No. T.H. #19 (MURPHY ROAD)	Log Sta. Surv. Sta.
PAPER MILL BRIDGE REHABILITATION	
GUARD RAIL DETAILS	
Designed By J. VASKOVIC	Drawn By R. REMY
Checked By J. VASKOVIC	Bridge Design Supervisor P. MALACHOWSKI
Date 5/99	Date 5/99
PROJECT BENNINGTON	PROJECT NO. BHZ 1441 (18)
Log. Info. m:\1954810\1441frm.dgn	
Bridge Sheet No.	Sheet 9 of 22



EXISTING BRIDGE PLAN
SCALE 1:100



EXISTING BRIDGE SECTION
SCALE 1/40

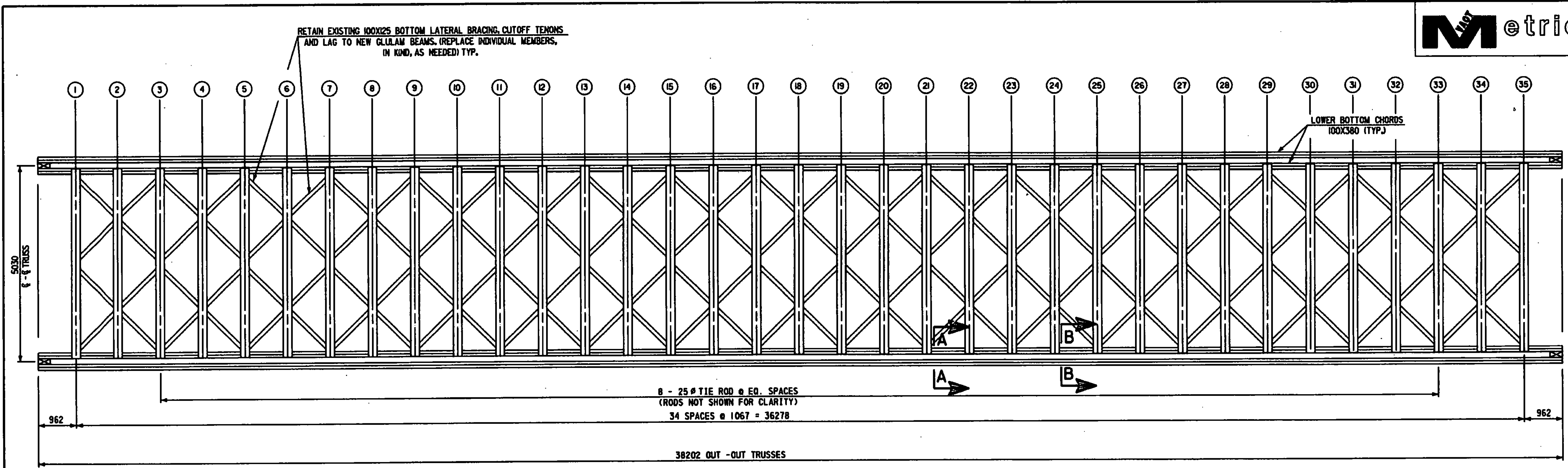


EXISTING BRIDGE ELEVATION
SCALE 1:100

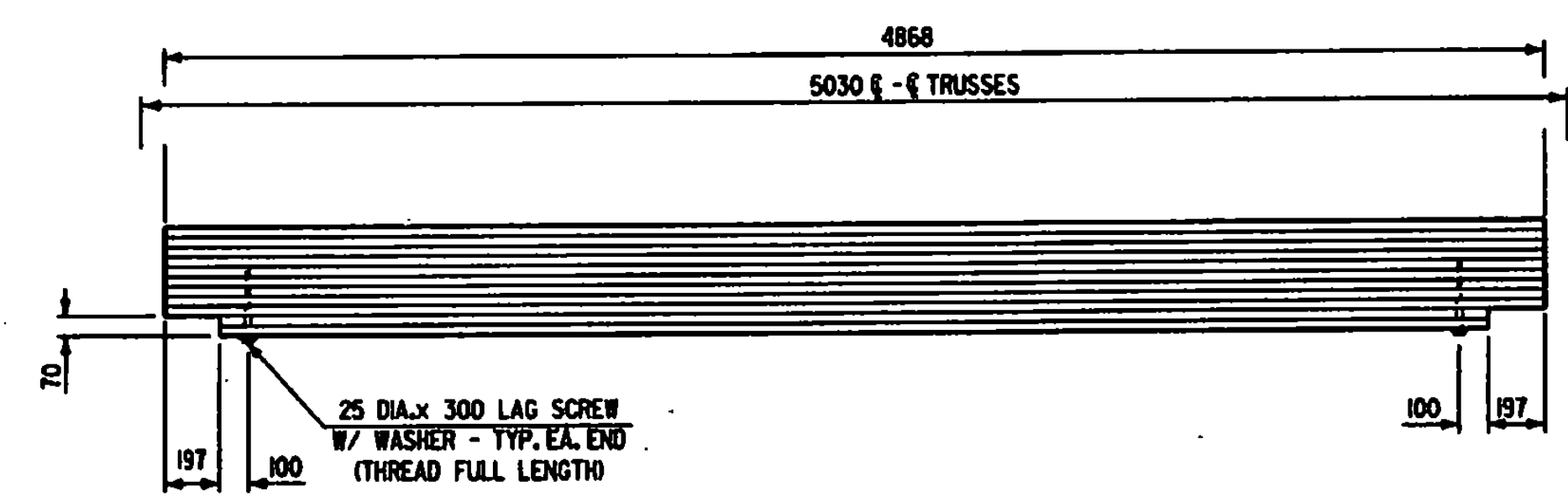
- NOTES:**
1. ALL LUMBER DIMENSIONS ARE NOMINAL.
 2. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS OTHERWISE NOTED.

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

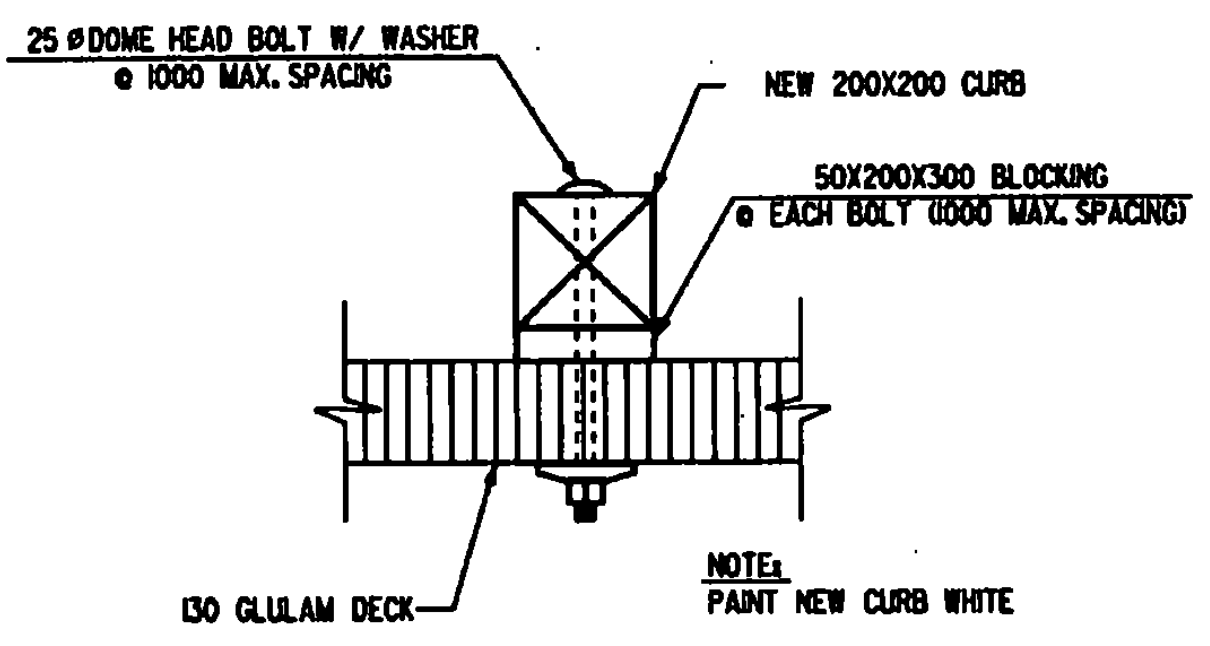
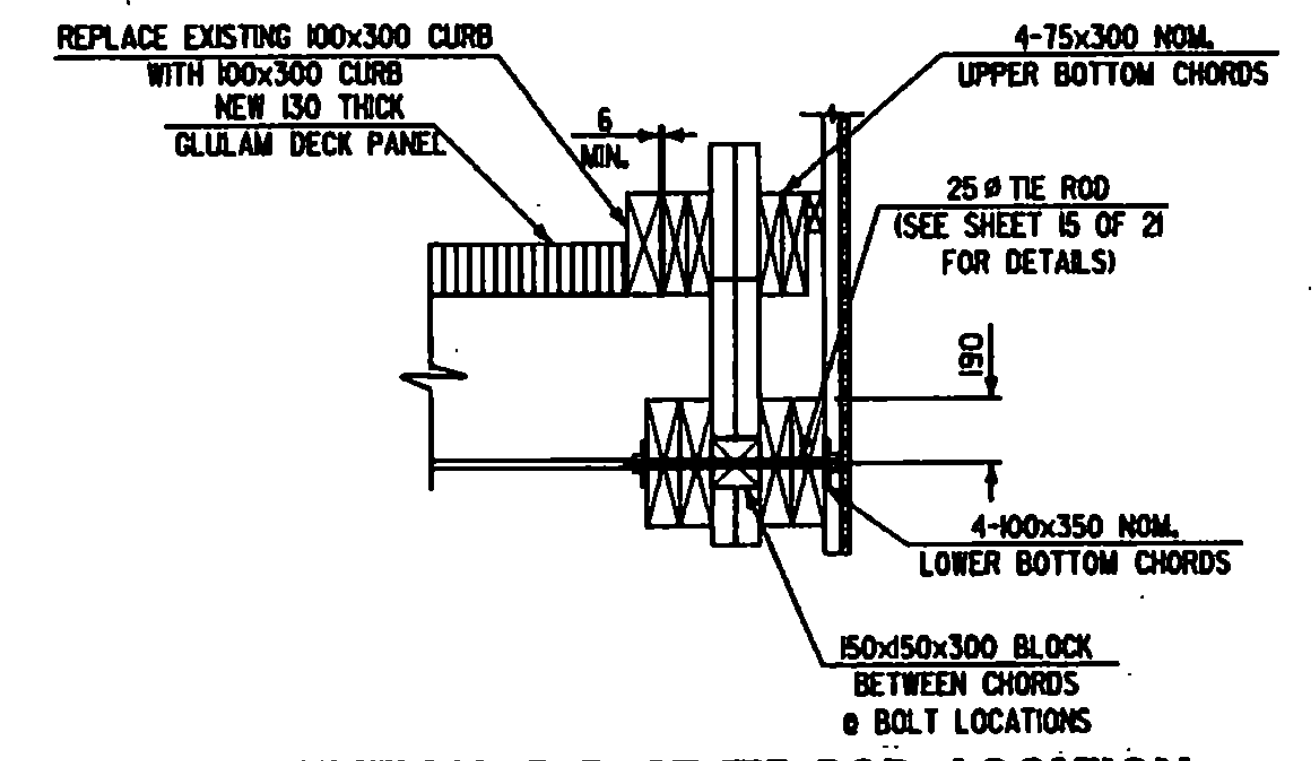
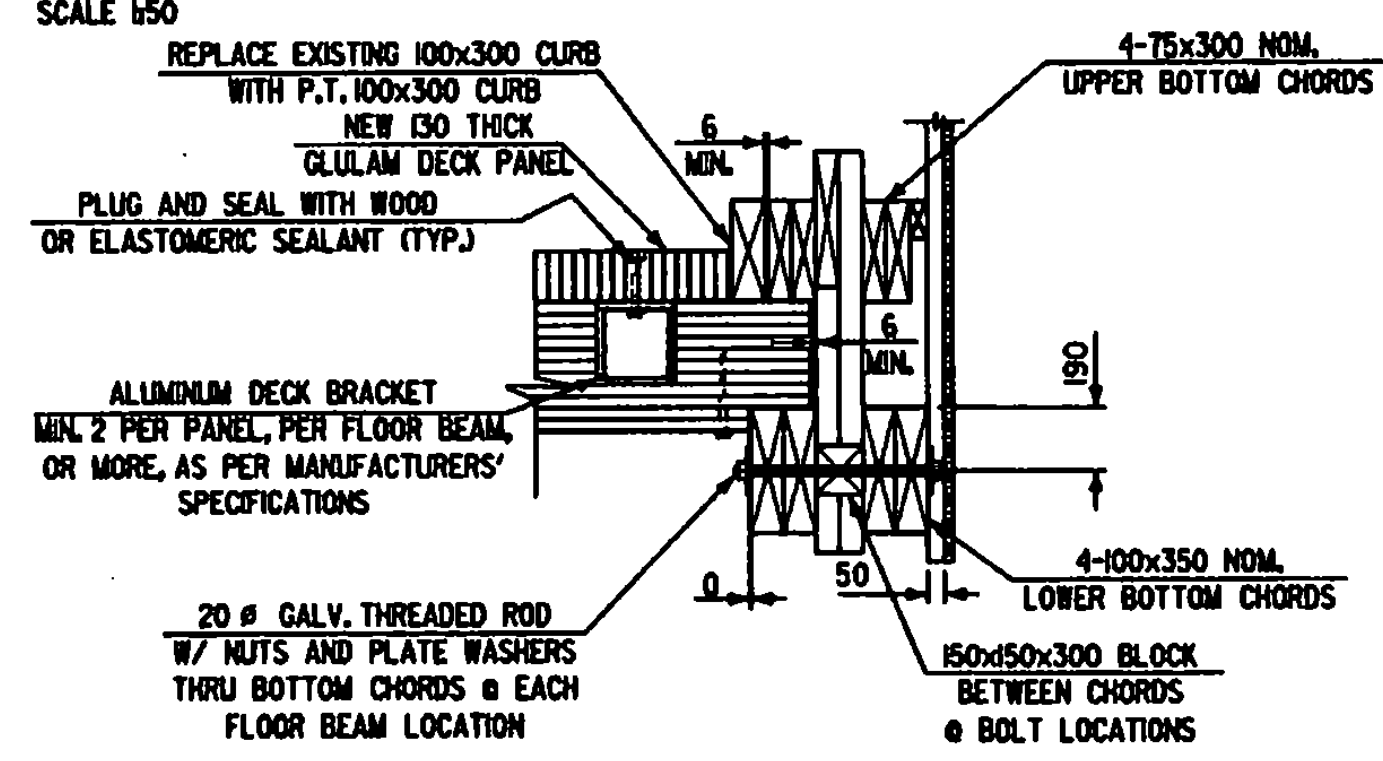
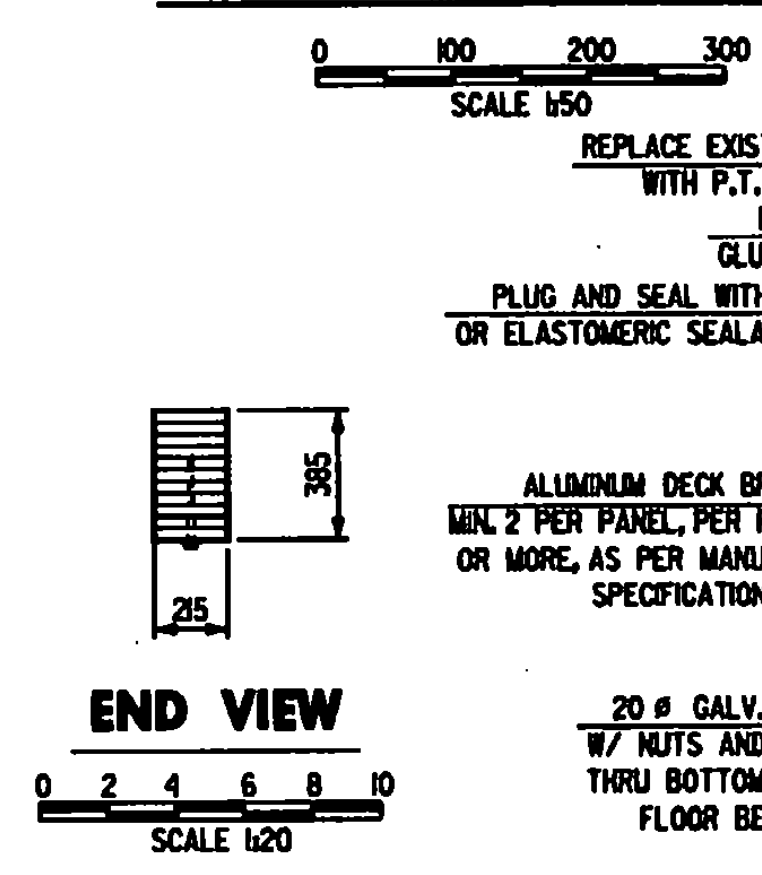
STATE OF VERMONT AGENCY OF TRANSPORTATION	
Town Of	BENNINGTON
Highway No.	T.H. #19 (MURPHY ROAD)
Bridge No.	31
Leg. Sta.	
Surv. Sta.	
PAPER MILL BRIDGE REHABILITATION EXISTING BRIDGE PLAN, ELEVATION, AND SECTION	
Designed By	J. MIECZKOWSKI
Checked By	J. MIECZKOWSKI
Date	5/99
Drawn By	K. NICHOLS
Bridge Design Supervisor	P. MALACHOWSKI
Date	5/99
PROJECT	BENNINGTON
PROJECT NO.	BHZ 144(18)
I.G.C. Info.	m:\1994880\etr\041441plan.dgn
Bridge Sheet No.	Sheet 10 of 22



BRIDGE DECK FRAMING PLAN



TYP. 215x385 FLOOR BEAM



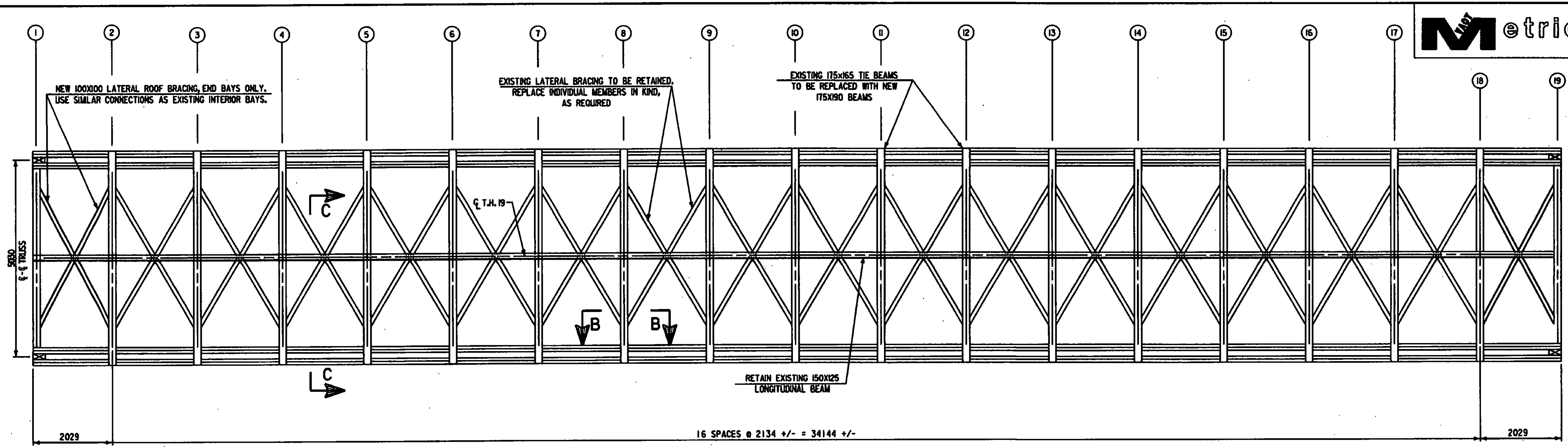
- NOTES**
- REFER TO GENERAL NOTES FOR DETAILS OF GLULAM DECK PANELS AND CONNECTIONS.
 - ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS OTHERWISE NOTED.

STATE OF VERMONT AGENCY OF TRANSPORTATION	
Town Of BENNINGTON	Bridge No. 31
Highway No. T.H. #19 (MURPHY ROAD)	Log Sta.
	Surv. Sta.
PAPER MILL COVERED BRIDGE REHABILITATION FLOOR FRAMING PLANS AND DETAILS	
Designed By J. MIECZKOWSKI	Drawn By K. NICHOLS
Checked By J. MIECZKOWSKI	Bridge Design Supervisor P. MALACHOWSKI
Date 5/99	Date 5/99
PROJECT BENNINGTON	PROJECT NO. BHZ 144(118)
I.G.C. Info. m:\19548110\struet\144fr.dgn	
Bridge Sheet No. 	Sheet 11 of 22

DATUM

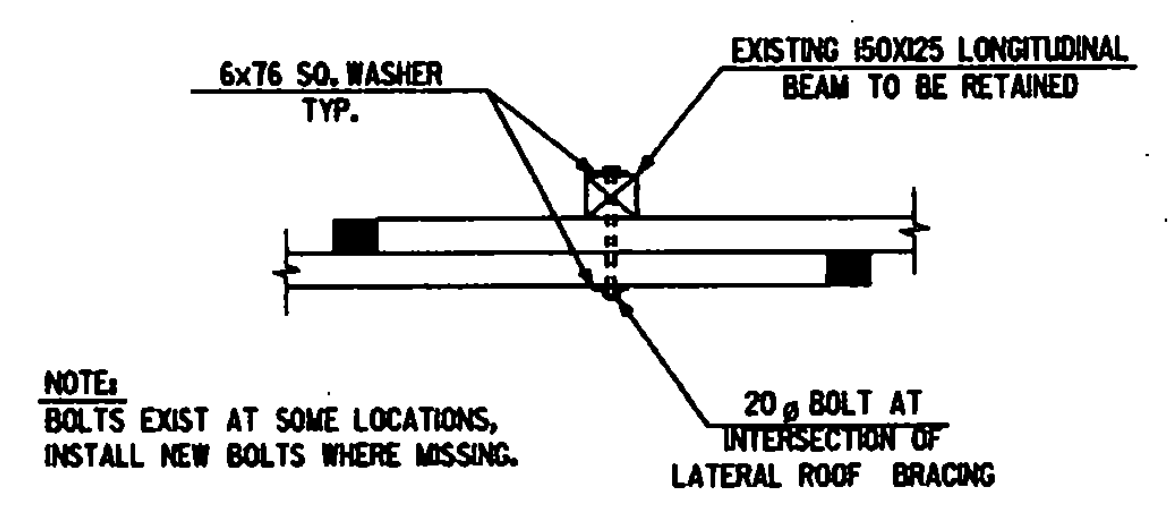
VERTICAL _____

HORIZONTAL _____



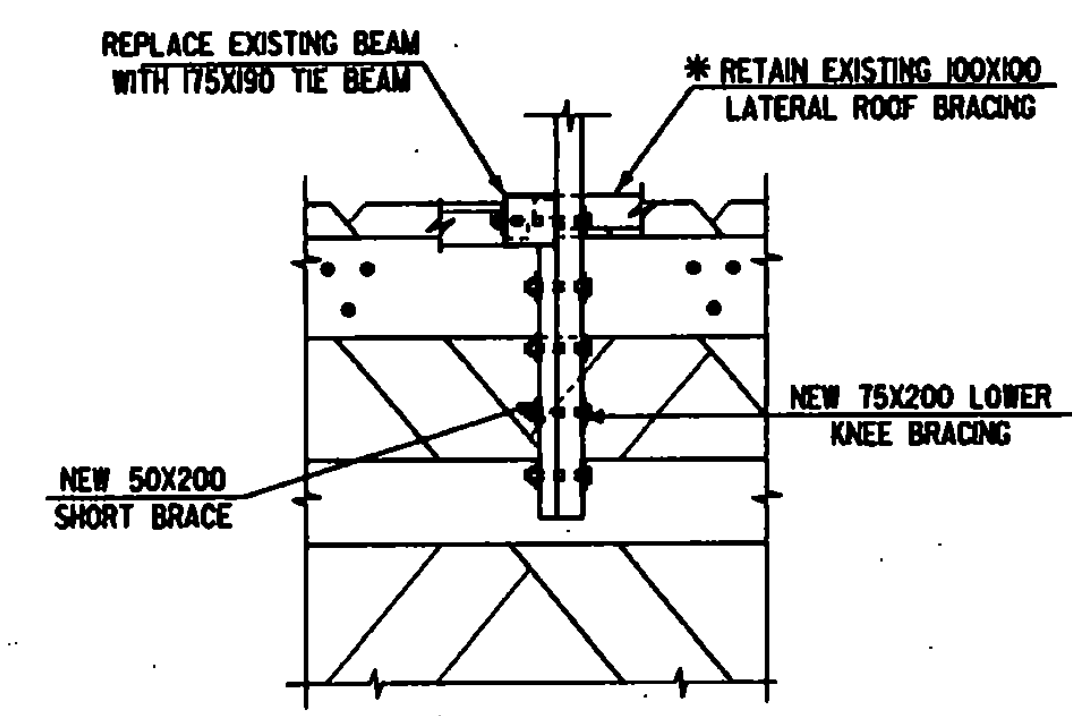
TOP CROSS FRAMING PLAN

0 100 200 300
SCALE 1/50

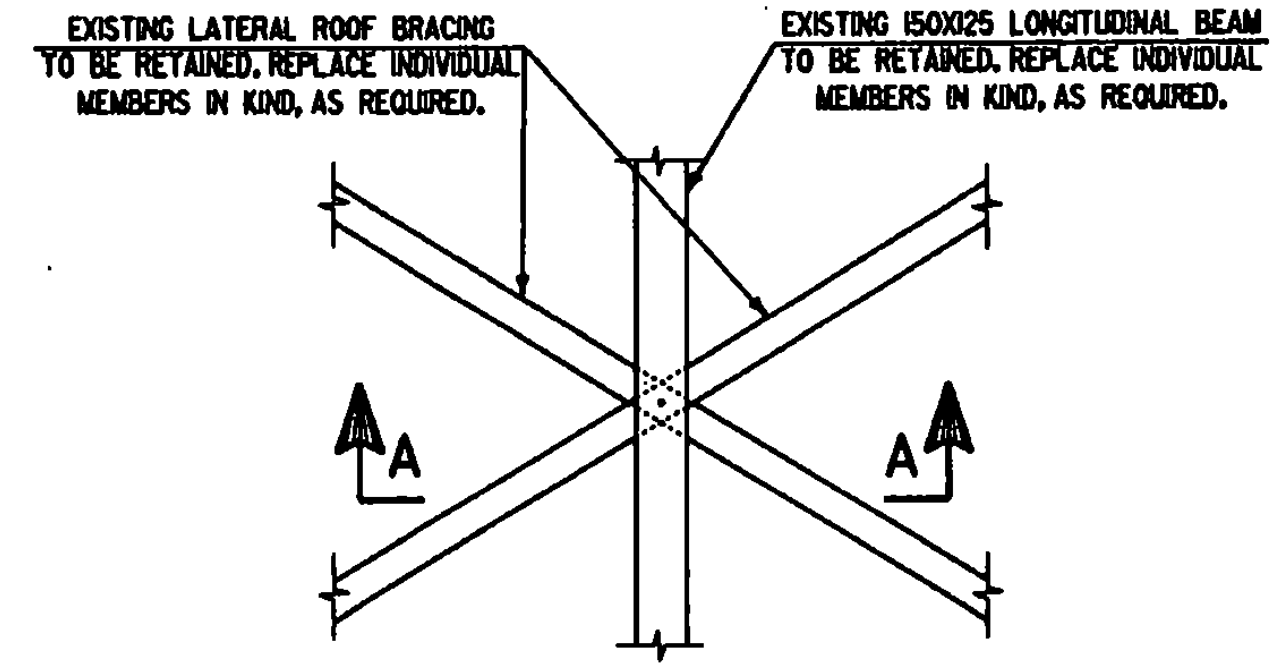


NOTE:
BOLTS EXIST AT SOME LOCATIONS,
INSTALL NEW BOLTS WHERE MISSING.

SECTION A - A
0 2 4 6 8 10
SCALE 1/20

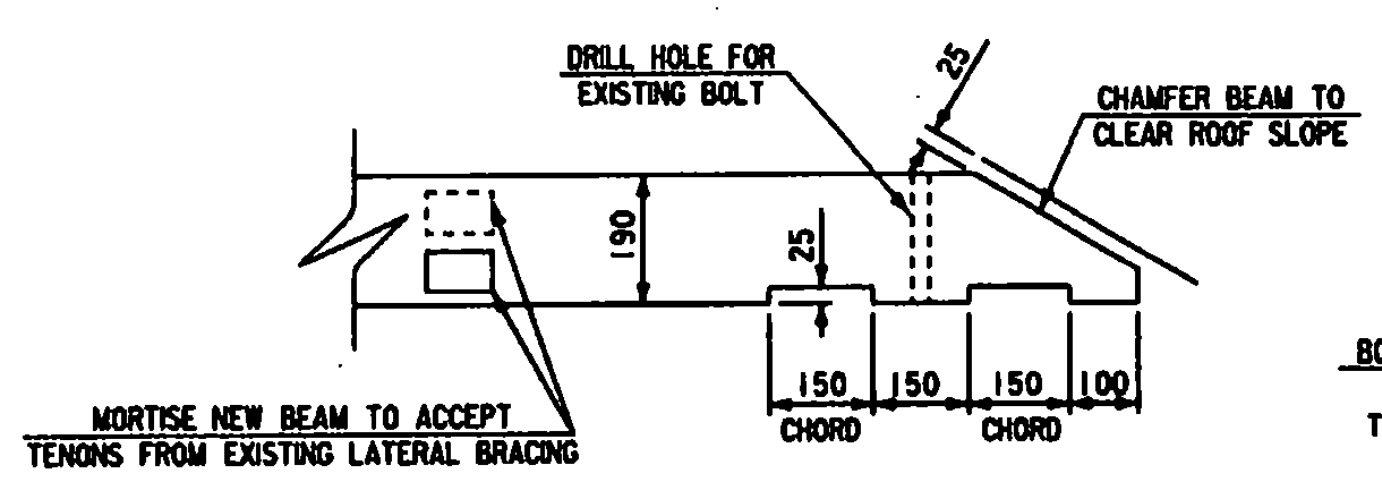


SECTION B - B
0 2 4 6 8 10
SCALE 1/20



TOP LATERAL ROOF BRACE DETAIL

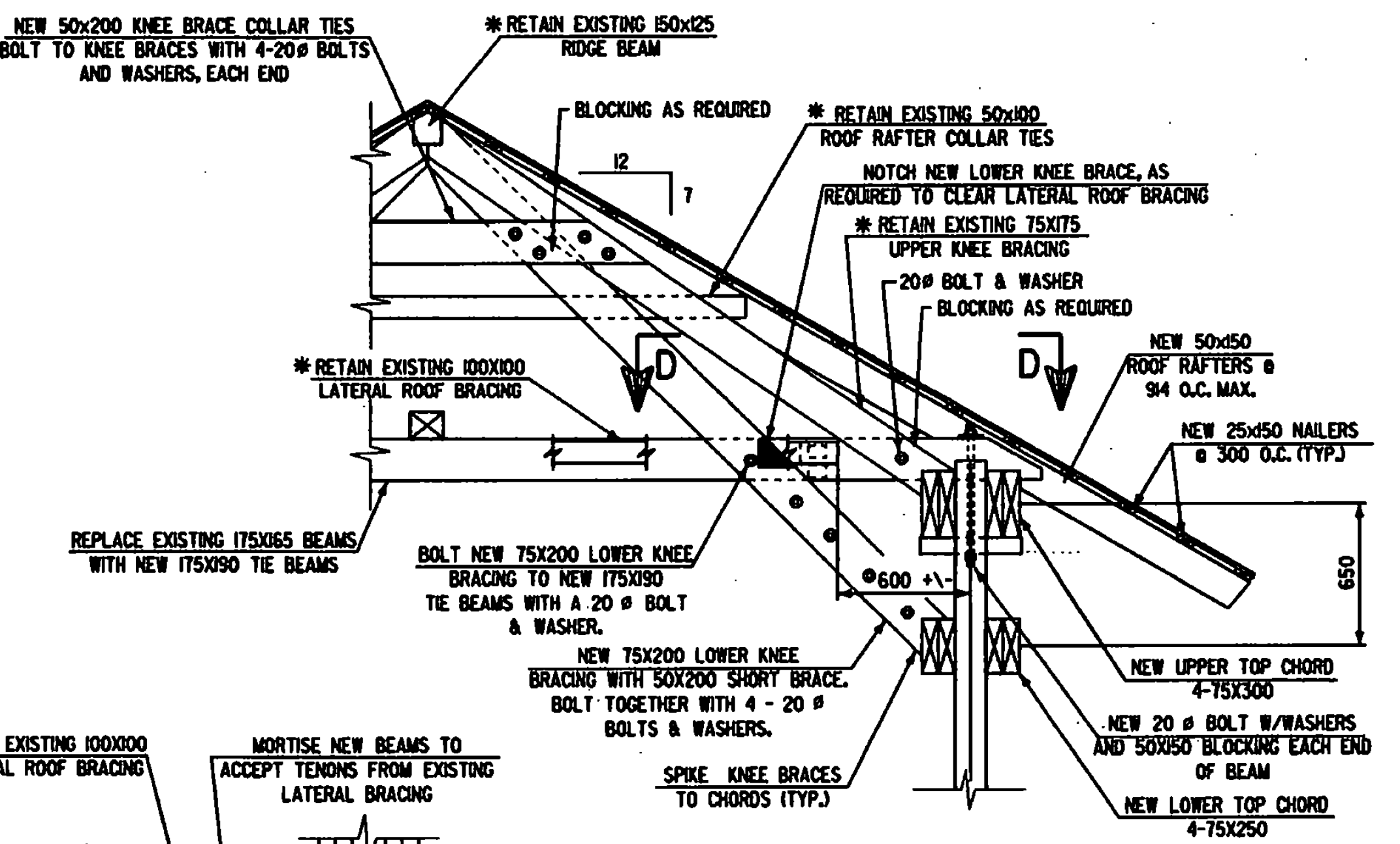
0 2 4 6 8 10
SCALE 1/20



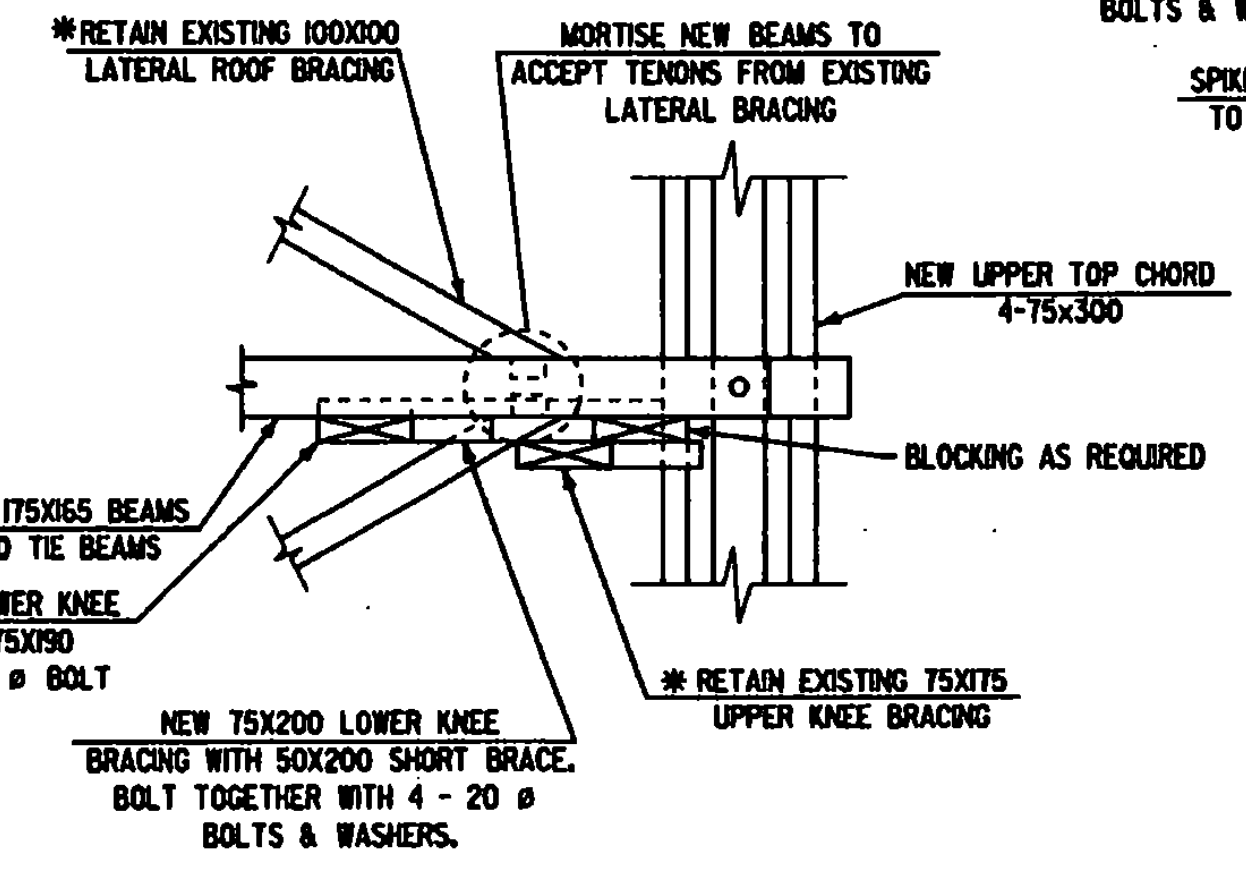
NEW 175X190 BEAM CONNECTION DETAIL

0 2 4 6
SCALE 1/10

* REPLACE INDIVIDUAL MEMBERS AS REQUIRED



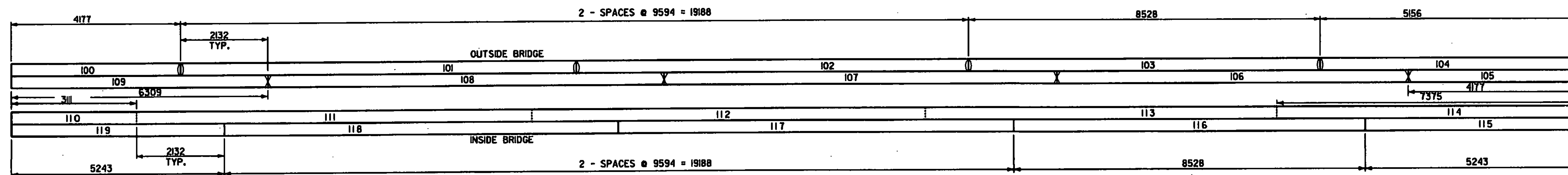
SECTION C - C
0 2 4 6 8 10
SCALE 1/20



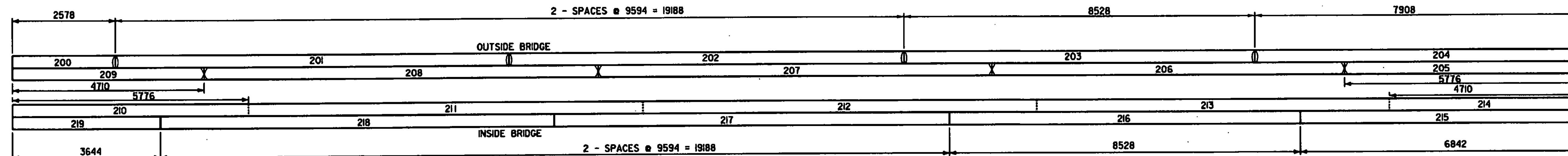
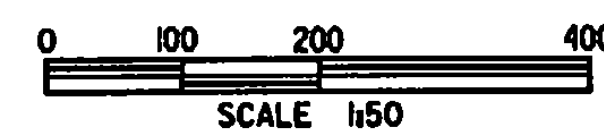
SECTION D - D
0 2 4 6 8 10
SCALE 1/20

STATE OF VERMONT AGENCY OF TRANSPORTATION	
Town Of BENNINGTON	Bridge No. 31
Highway No. T.J.H. #19 (MURPHY ROAD)	Loc. Sta. Surv. Sta.
PAPER MILL COVERED BRIDGE REHABILITATION TOP LATERAL FRAMING PLAN AND DETAILS	
Designed By J. MIECZKOWSKI	Drawn By K. NICHOLS
Checked By J. MIECZKOWSKI	Bridge Design Supervisor P. MALACHOWSKI
Date 5/99	Date 5/99
PROJECT BENNINGTON	PROJECT NO. BHZ 144118
I.C.C. info. m:\1994810\at\tr\144118.dgn	
Bridge Sheet No.	Sheet 12 of 22

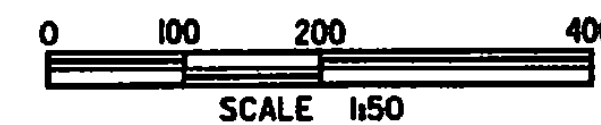
DATUM	_____
VERTICAL	_____
HORIZONTAL	_____



UPPER TOP AND LOWER BOTTOM CHORD PLAN VIEW



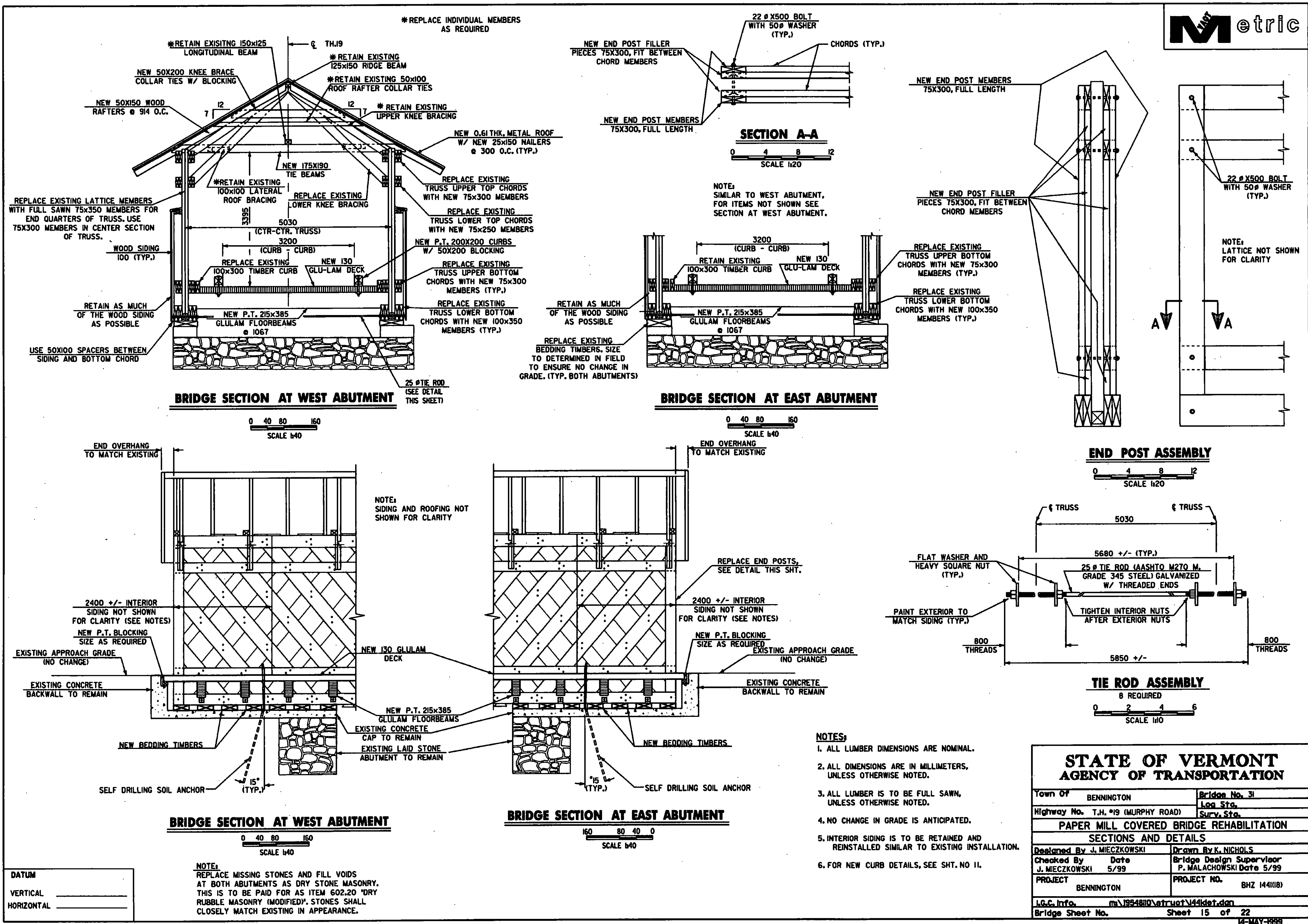
LOWER TOP AND UPPER BOTTOM CHORD PLAN VIEW



- LEGEND**
- XXX - CHORD MEMBER NUMBER
 - ⋮ INSIDE CHORD INSIDE JOINT
 - | INSIDE CHORD OUTSIDE JOINT
 - ⊖ OUTSIDE CHORD OUTSIDE JOINT
 - ⋈ OUTSIDE CHORD INSIDE JOINT

DATUM
 VERTICAL _____
 HORIZONTAL _____

STATE OF VERMONT AGENCY OF TRANSPORTATION	
Town Of BENNINGTON	Bridge No. 31
Highway No. T.H. #19 (MURPHY ROAD)	Log Sta. _____ Surv. Sta. _____
PAPER MILL COVERED BRIDGE REHABILITATION REPLACEMENT TRUSS CHORD PLAN VIEWS	
Designed By J. MIECZKOWSKI	Drawn By K. NICHOLS
Checked By J. MIECZKOWSKI	Date 5/99 Bridge Design Supervisor P. MALACHOWSKI Date 5/99
PROJECT BENNINGTON	PROJECT NO. BHZ 144(118)
I.G.C. Info. m:\19548\10\struot\44\lato.dgn	Bridge Sheet No. _____
Sheet 14 of 22 05-MAY-1999	

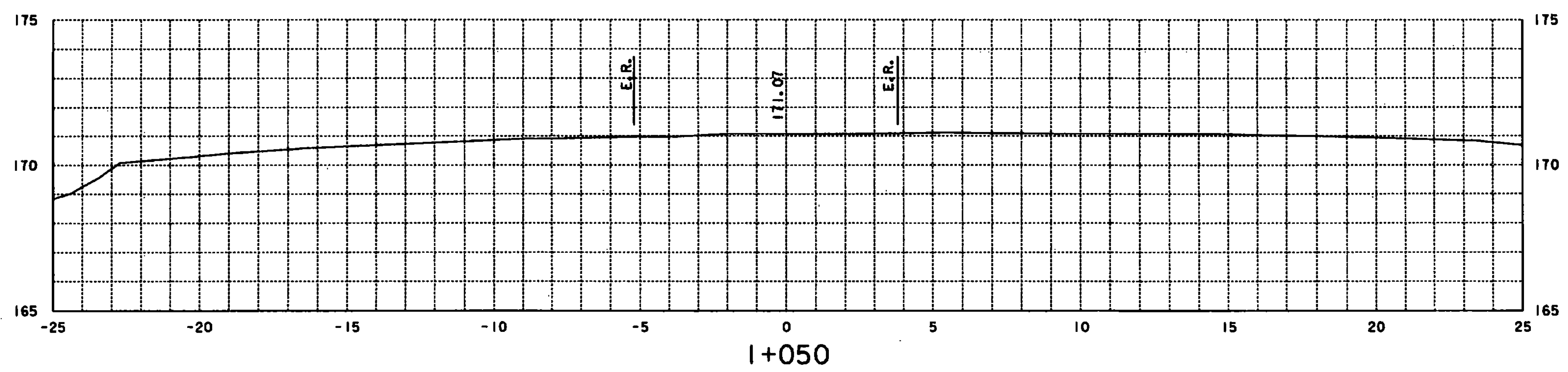
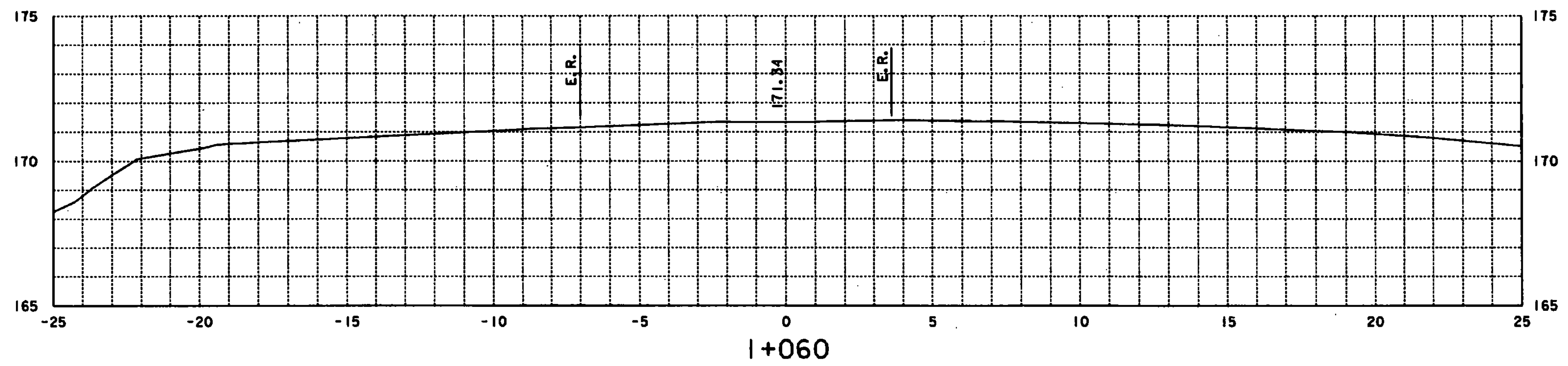
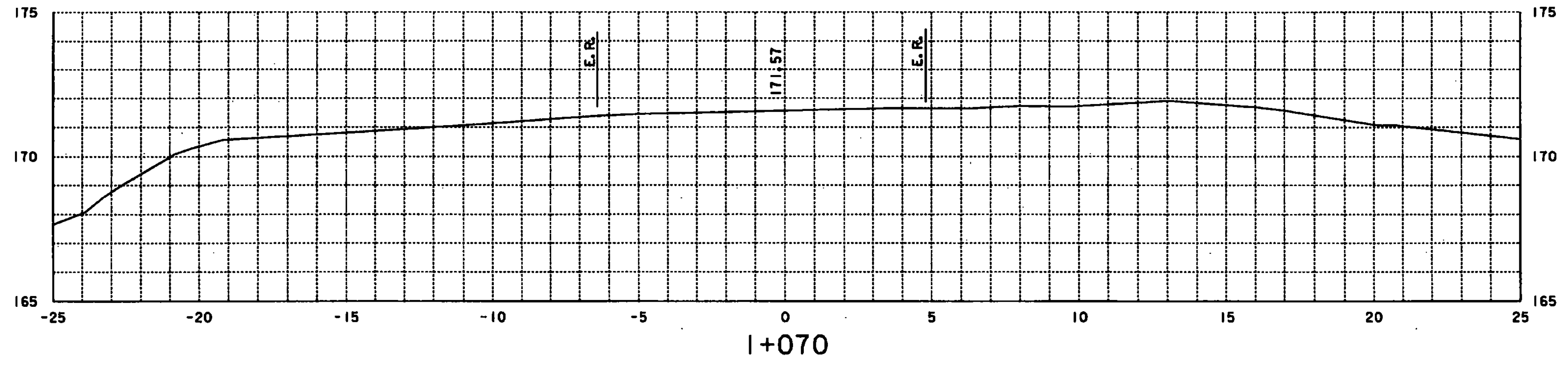


DATUM
 VERTICAL _____
 HORIZONTAL _____

NOTE:
 REPLACE MISSING STONES AND FILL VOIDS AT BOTH ABUTMENTS AS DRY STONE MASONRY. THIS IS TO BE PAID FOR AS ITEM 602.20 "DRY RUBBLE MASONRY (MODIFIED)". STONES SHALL CLOSELY MATCH EXISTING IN APPEARANCE.

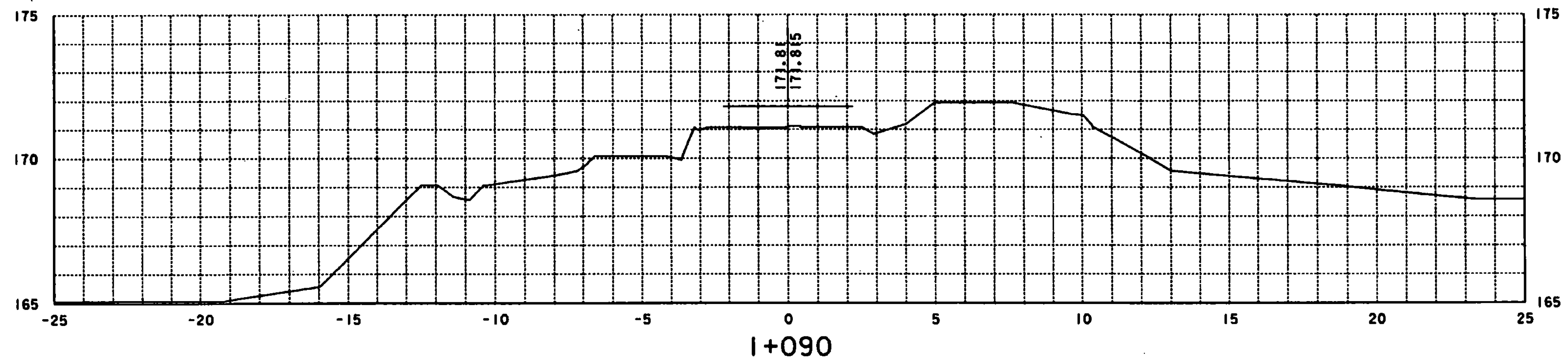
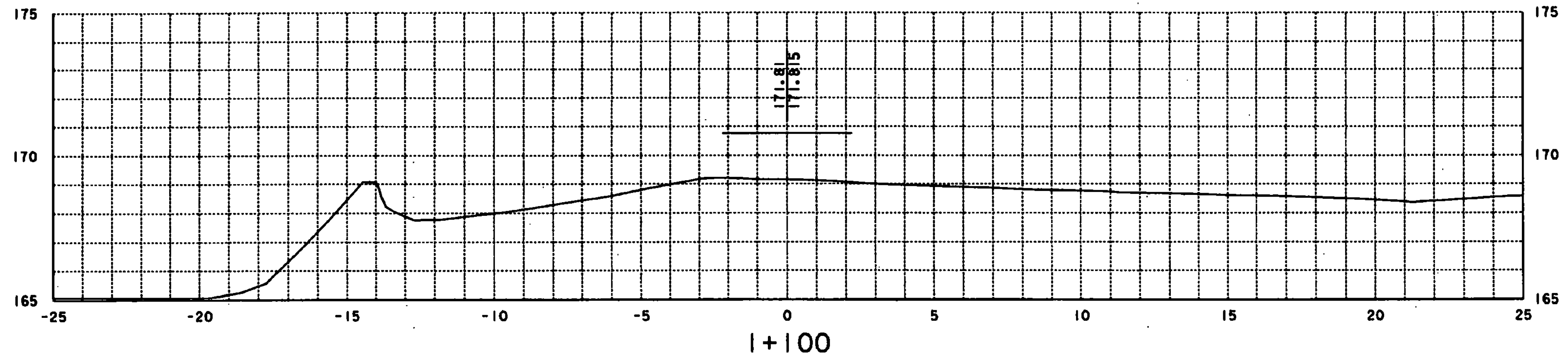
- NOTES:**
1. ALL LUMBER DIMENSIONS ARE NOMINAL.
 2. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS OTHERWISE NOTED.
 3. ALL LUMBER IS TO BE FULL SAWN, UNLESS OTHERWISE NOTED.
 4. NO CHANGE IN GRADE IS ANTICIPATED.
 5. INTERIOR SIDING IS TO BE RETAINED AND REINSTALLED SIMILAR TO EXISTING INSTALLATION.
 6. FOR NEW CURB DETAILS, SEE SH. NO 11.

STATE OF VERMONT AGENCY OF TRANSPORTATION			
Town Of	BENNINGTON	Bridge No.	31
Highway No.	T.H. #19 (MURPHY ROAD)	Log Sta.	
		Surv. Sta.	
PAPER MILL COVERED BRIDGE REHABILITATION			
SECTIONS AND DETAILS			
Designed By	J. MIECZKOWSKI	Drawn By	K. NICHOLS
Checked By	J. MIECZKOWSKI	Date	5/99
		Bridge Design Supervisor	P. MALACHOWSKI Date 5/99
PROJECT	BENNINGTON	PROJECT NO.	8HZ 144(118)
I.G.C. Info.	m:\19948\10\str\scot\144\det.dgn		
Bridge Sheet No.	Sheet 15 of 22		

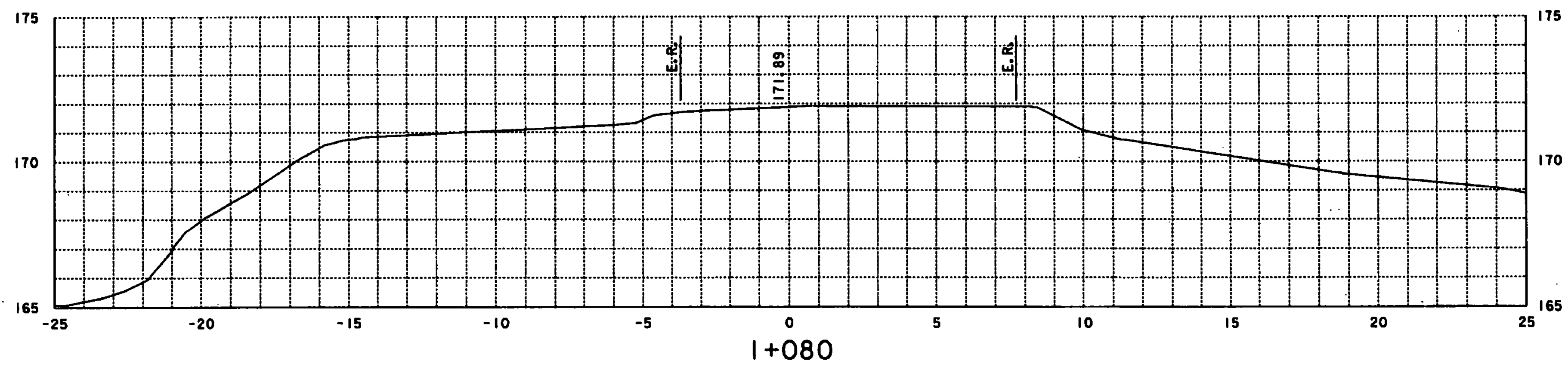


FROM STA. I+050 TO STA. I+070 T.H. 419
 PROJECT NAME: BENNINGTON
 PROJECT NO. BHZ 14408
 PLOTTED BY: JAV 8/27/96 CHECKED BY:
 SHEET 16 OF 22 SHEETS

SCALE 1" = 1m



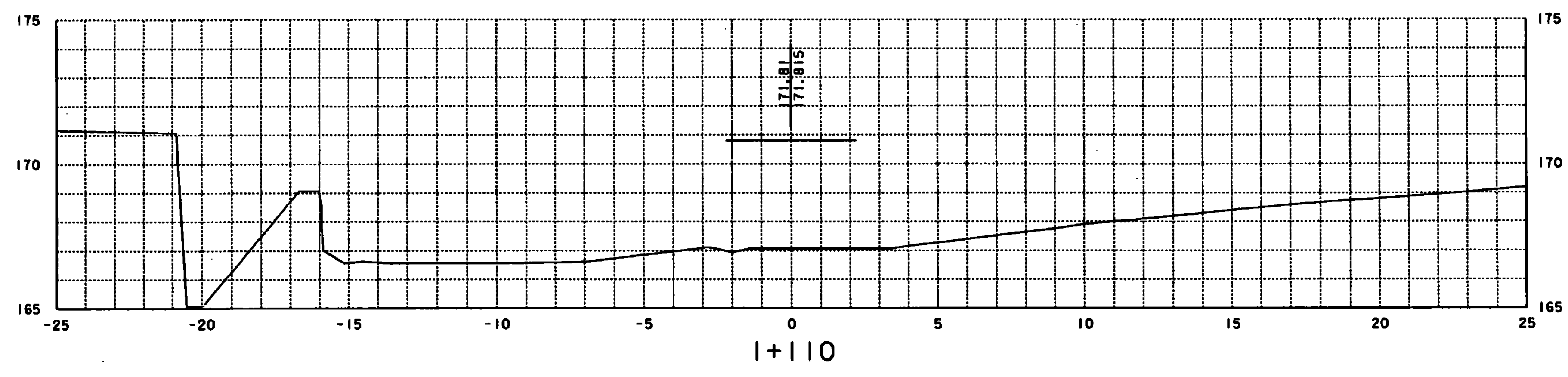
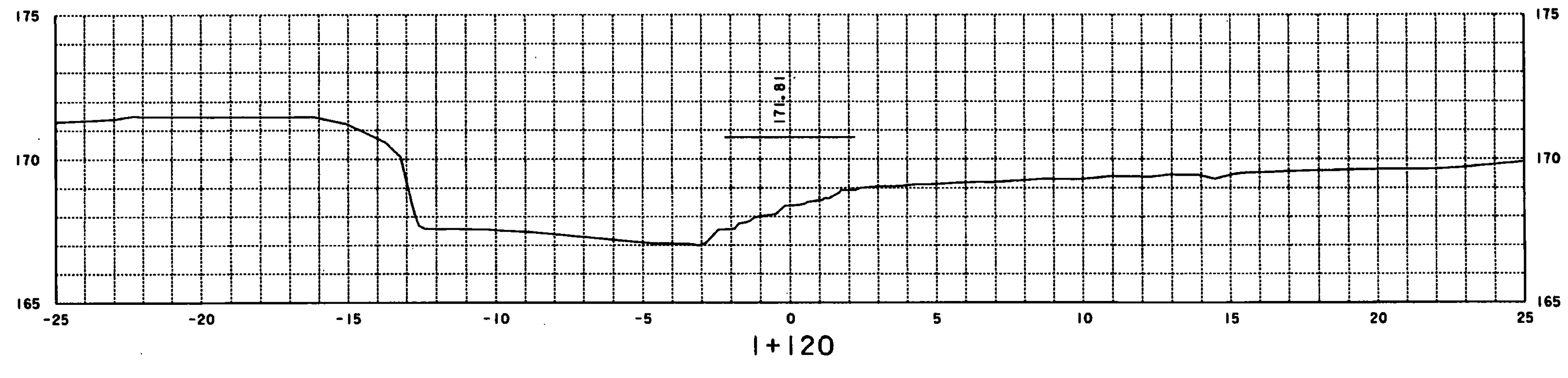
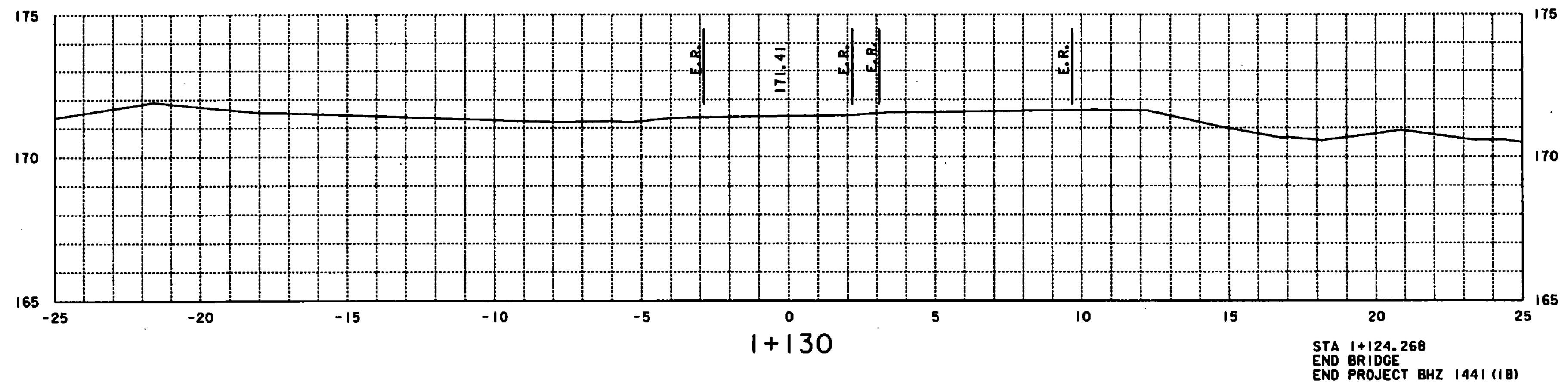
STA I+086.107
 BEGIN PROJECT BHZ 1441 (18)
 BEGIN BRIDGE



SCALE 1" = 1m

FROM STA. I+080 TO STA. I+100	T.J.L. '99
PROJECT NAME: BENNINGTON	
PROJECT NO. BHZ 1441(18)	
PLOTTED BY: JAV 8/27/96 CHECKED BY:	
SHEET 17 OF 22 SHEETS	

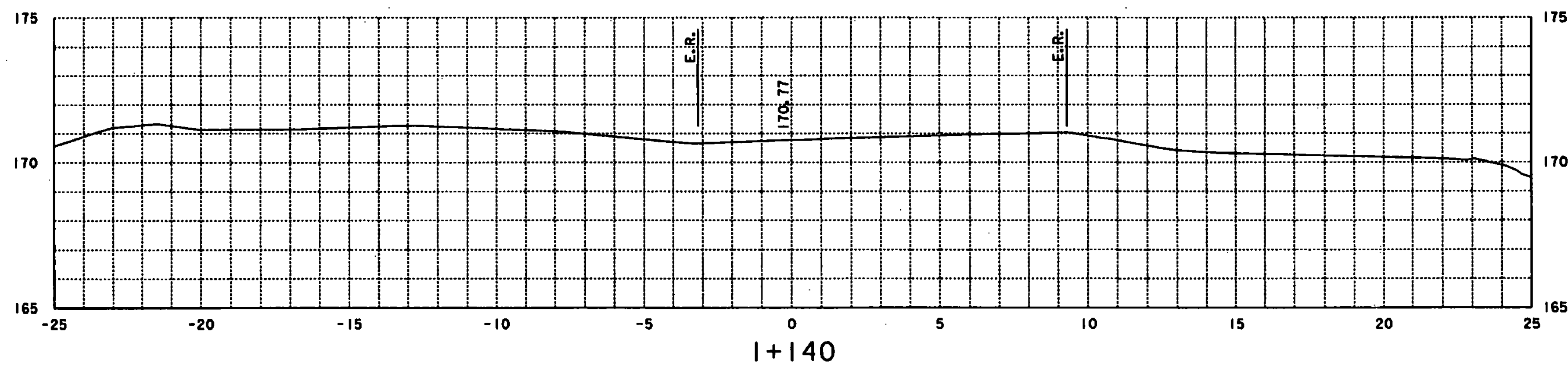
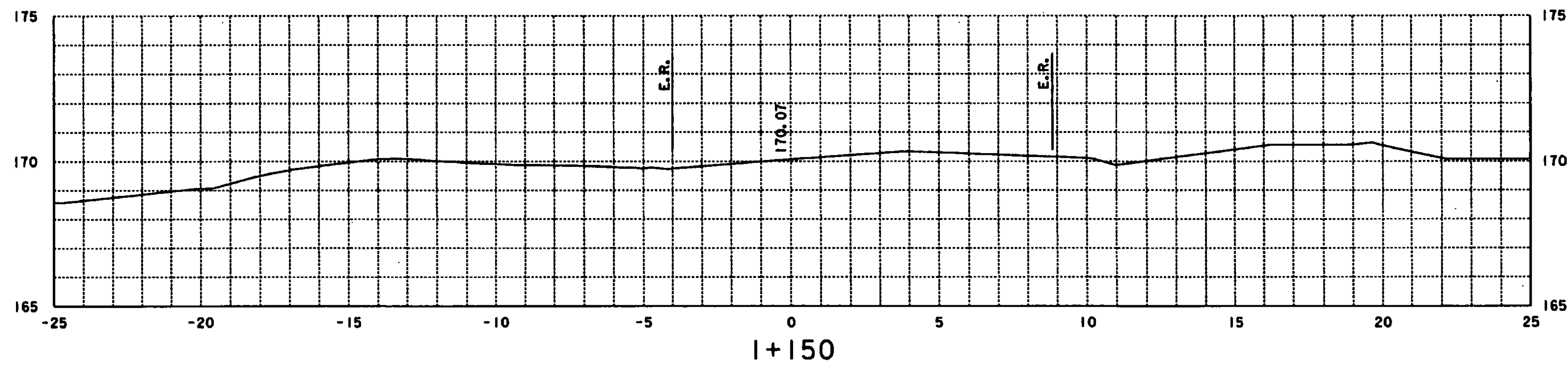
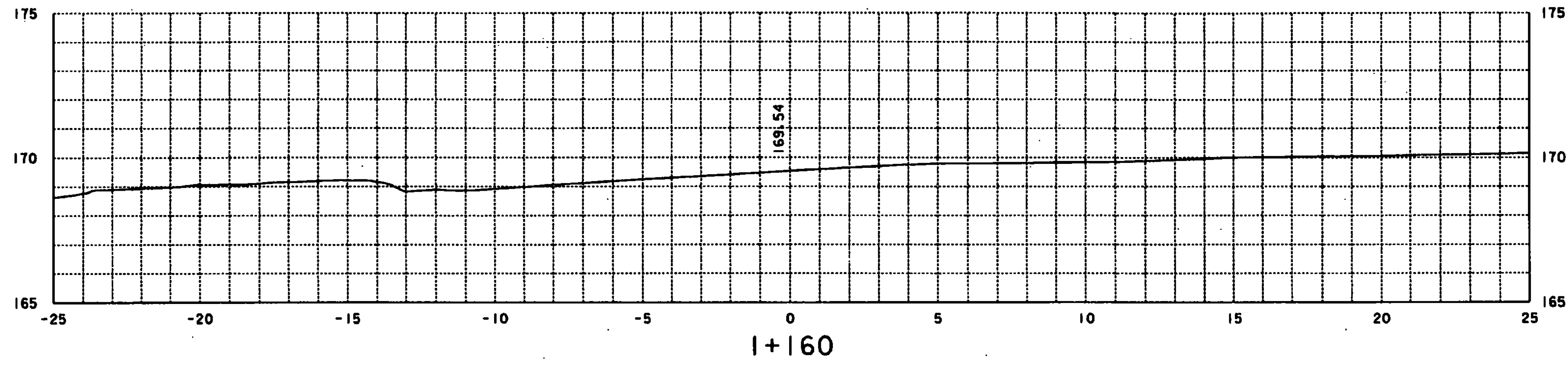
en:\p\2000\1441\18.dgn



FROM STA. I+110 TO STA. I+130 T.J.L. #19
 PROJECT NAME: BENNINGTON
 PROJECT NO. BHZ 1441(18)
 PLOTTED BY: JAV 8/27/96 CHECKED BY:
 SHEET 18 OF 22 SHEETS

SCALE 1" = 1m

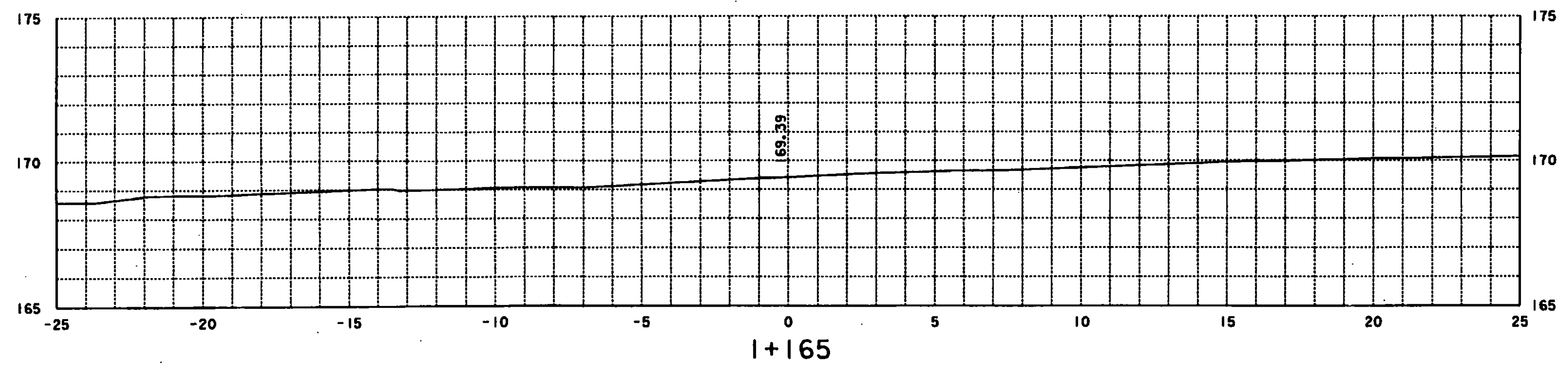
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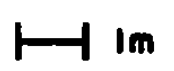
en 1/25/95/144/100/149

SCALE 1" = 1m

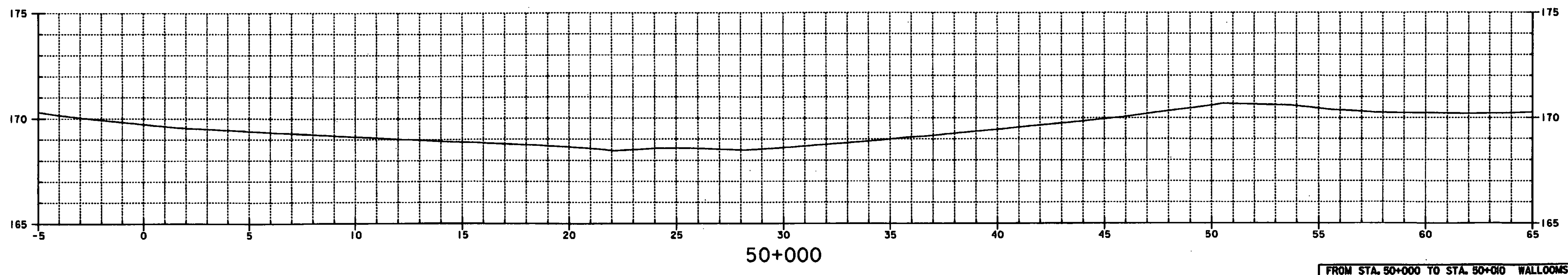
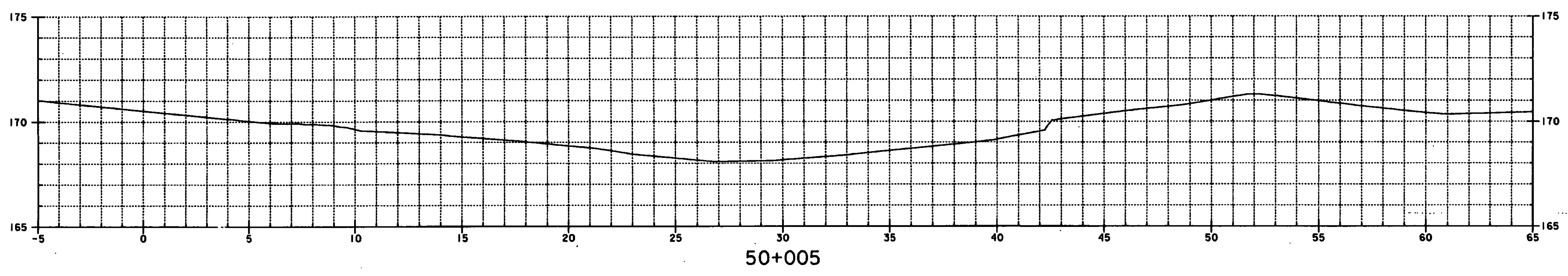
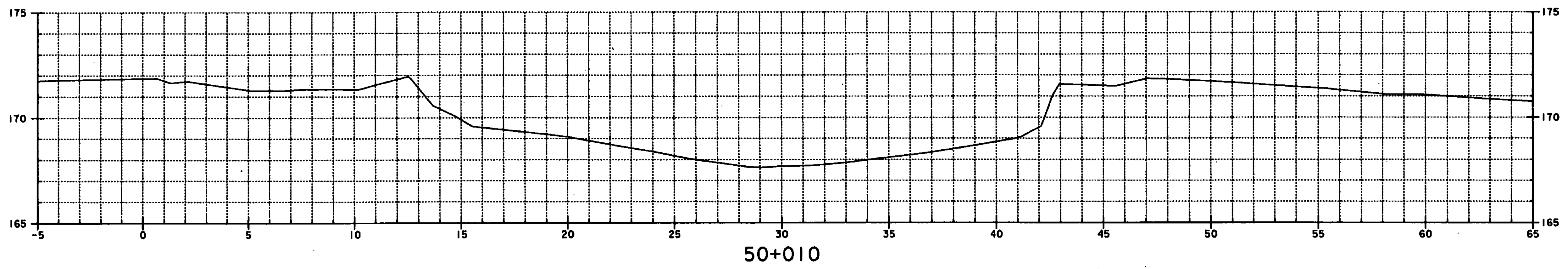
FROM STA. 1440	TO STA. 1460	T.J.L. #19
PROJECT NAME: BENNINGTON		
PROJECT NO. BHZ 144108		
PLOTTED BY: JAV 8/27/96		CHECKED BY:
SHEET 19 OF 22 SHEETS		



m:\projects\144\144.dgn

SCALE  1m

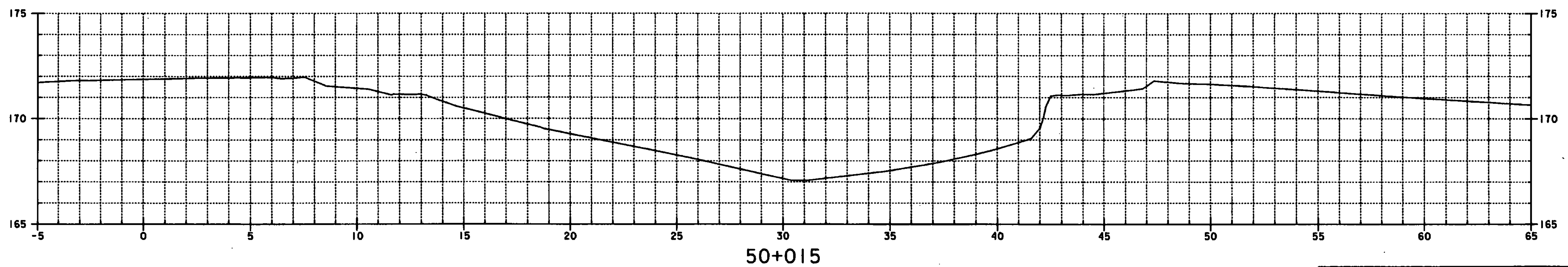
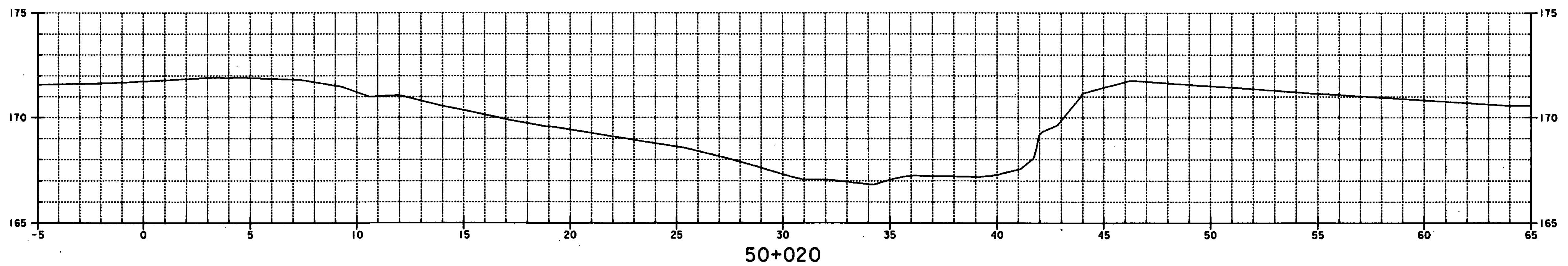
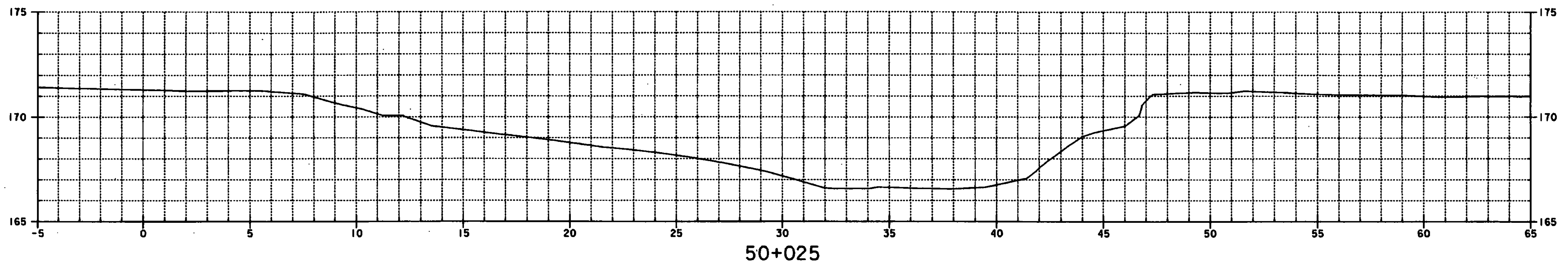
FROM STA. 1465	TO STA.	T.J.L. '99
PROJECT NAME: BENNINGTON		
PROJECT NO. BHZ 144(08)		
PLOTTED BY: JAV 8/27/96		CHECKED BY:
SHEET 20 OF 22 SHEETS		



A:\a\2\10400\10400.dwg

SCALE 1" = 100'

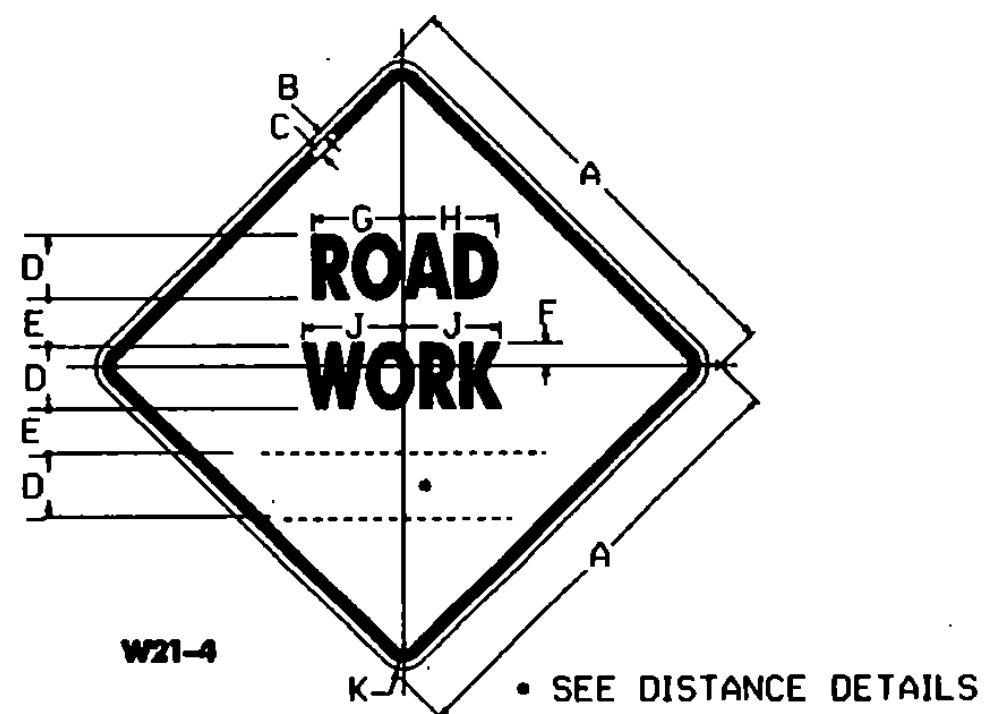
FROM STA. 50+000 TO STA. 50+010 WALLOOMSAC RIVER
 PROJECT NAME: BENNINGTON
 PROJECT NO. BHZ 144108
 PLOTTED BY: JAV 8/27/98 CHECKED BY:
 SHEET 21 OF 22 SHEETS



A:\m\2\15000\15000.dgn

SCALE 1" = 1m

FROM STA. 50+015 TO STA. 50+025 WALLOONSAC RIVER
 PROJECT NAME: BENNINGTON
 PROJECT NO. BHZ 14408
 PLOTTED BY: JAV 8/27/96 CHECKED BY:
 SHEET 22 OF 22 SHEETS



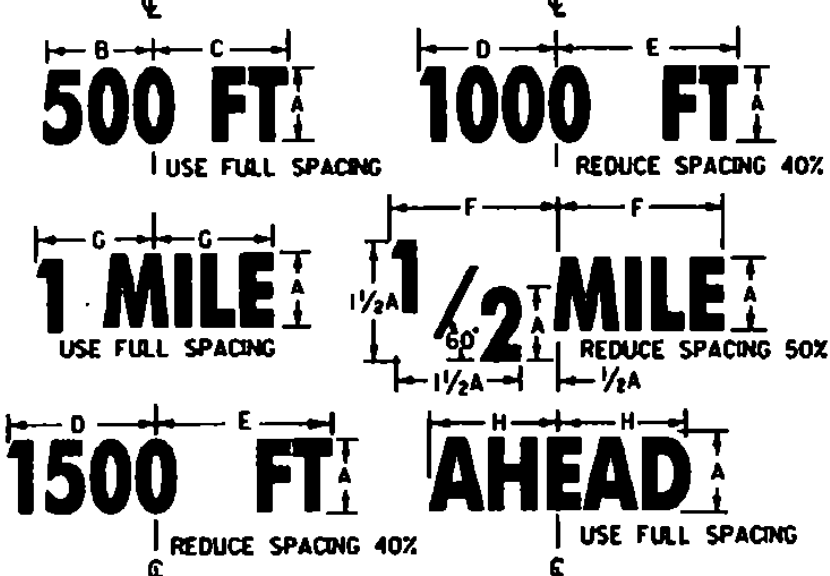
W21-4

• SEE DISTANCE DETAILS

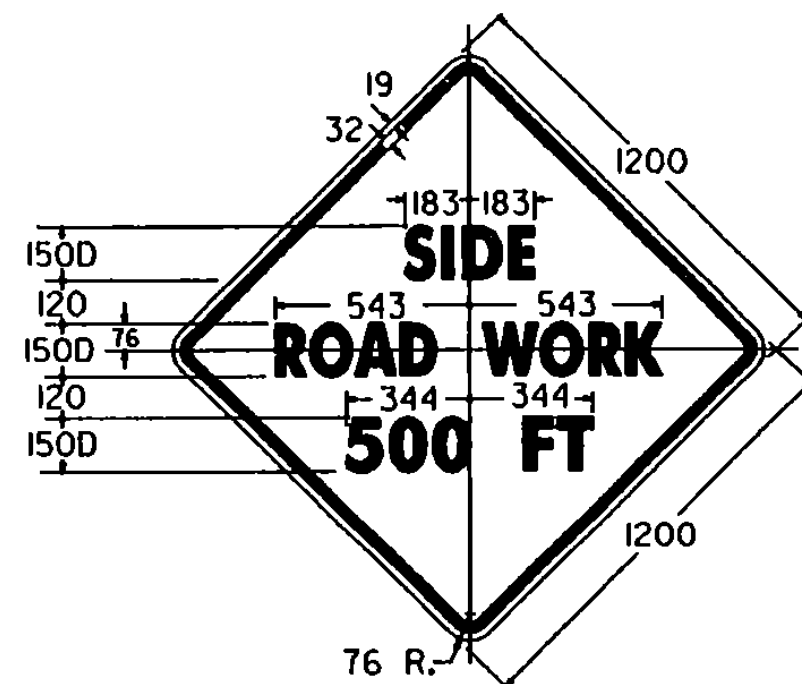
COLORS
TEXT AND BORDER - BLACK (NON-REFL.)
BACKGROUND - ORANGE (REFL.)

SIGN	DIMENSIONS (mm)										
	A	B	C	D	E	F	G	H	J	K	
MIN.	750	13	19	1880	73	67	171	178	183	48	
STD.	900	16	22	1250	89	83	213	229	229	57	
SPECIAL	1200	19	32	1750	121	114	297	316	321	76	

DISTANCE DETAILS

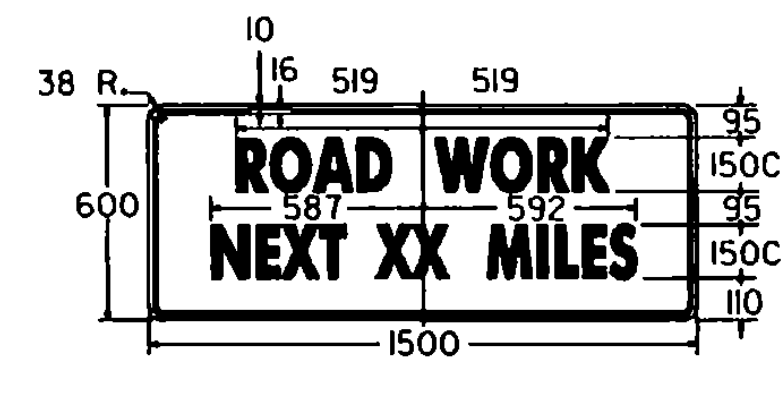


DIMENSIONS (mm)								
A	B	C	D	E	F	G	H	
150C	264	267	286	305	318	232	267	
175C	305	310	333	356	370	270	310	
125D	259	275	295	286	286	241	276	
150D	310	329	324	343	343	300	333	
175D	362	384	378	400	400	332	394	
200D	413	438	432	457	457	365	443	



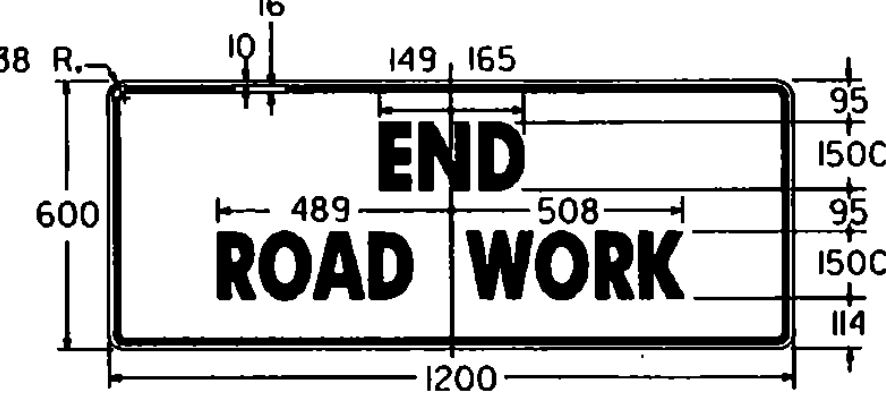
VC-839

OR LEFT - 451
RIGHT - 559
500 FT - 375
FT - 205



G20-1

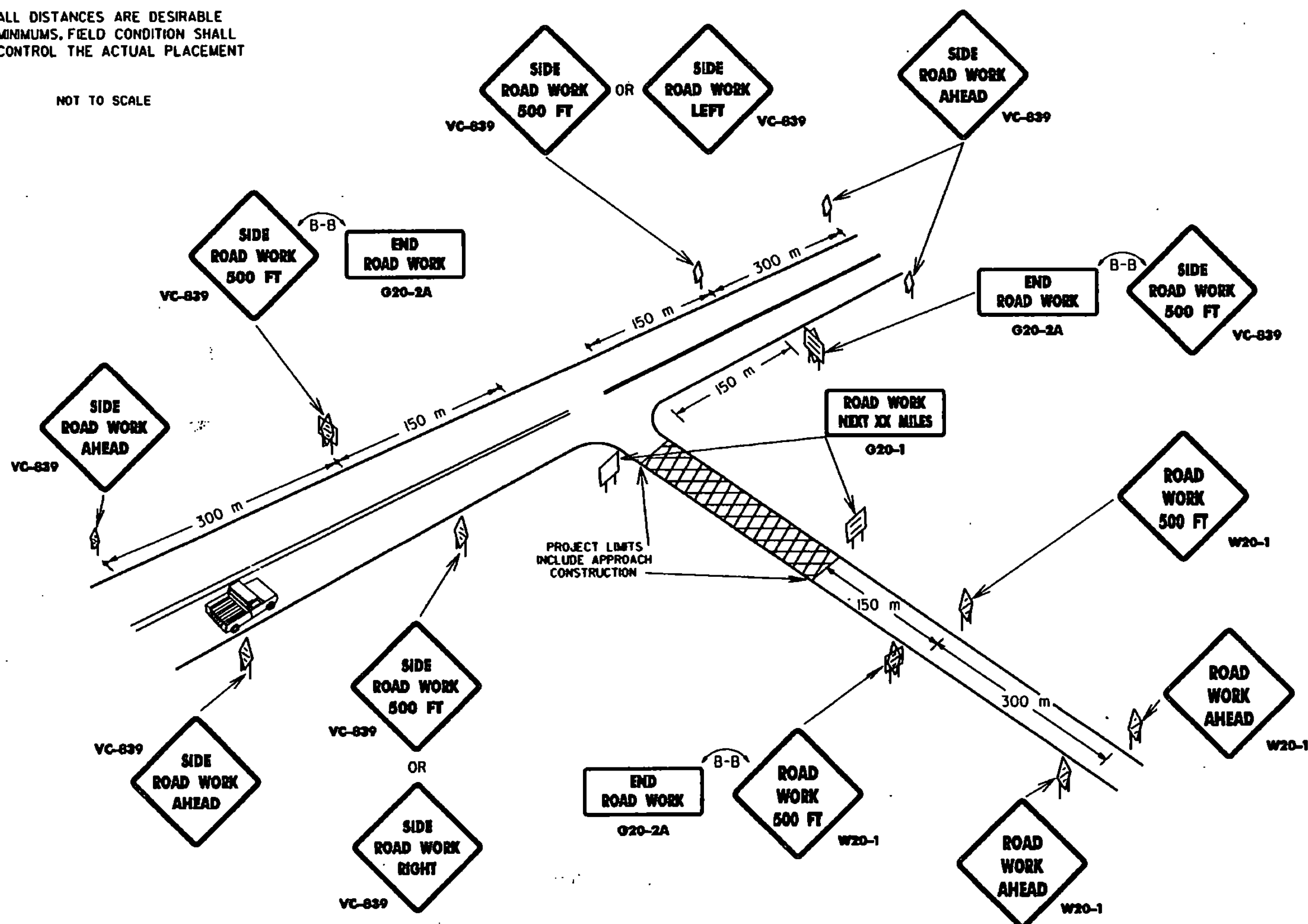
THIS SIGN TO BE USED WHEN PROJECT LENGTH EXCEEDS 3 km OR AS REQUESTED BY THE RESIDENT ENGINEER. SHOW MILEAGE TO NEAREST 1/4 MILE* USING FRACTIONS, NOT DECIMALS. HAND LETTERING OF MILEAGE WILL NOT BE ALLOWED.



G20-2A

ALL DISTANCES ARE DESIRABLE MINIMUMS. FIELD CONDITION SHALL CONTROL THE ACTUAL PLACEMENT

NOT TO SCALE



SIDE ROAD CONSTRUCTION APPROACH SIGNING (TO BE USED WHEN CONSTRUCTION IS UP TO 300m FROM THE INTERSECTION)

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. WHEN 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

SINCE IT IS NOT POSSIBLE TO PRESCRIBE DETAILED STANDARDS OF APPLICATION FOR ALL OF THE SITUATIONS THAT MAY COME ARISING ON A CONSTRUCTION PROJECT, REFERENCE SHALL BE MADE TO THE 'MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES' FOR THE PRINCIPLES, PROCEDURES, AND STANDARDS THAT WILL BE REQUIRED IN CONNECTION WITH ADVANCE 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

LETTERS, DIGITS, ARROWS SPACING AND TEXT DIMENSIONS SHALL CONFORM WITH THE 'STANDARD ALPHABET FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS' AND DESIGNS PRESCRIBED IN THE STANDARD HIGHWAY SIGNS AS SPECIFIED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES ADOPTED BY THE U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMIN.

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 OVERLAPPED PLYWOOD 13 mm, 16 mm OR 19 mm
GALVANIZED SHEET STEEL 2.77 mm

REFLECTORIZATION

ALL REFLECTORIZED MATERIAL SHALL CONSIST OF TYPE 11B OR TYPE 111 SHEETING.

COLORS

THE COLORS SHALL CONFORM WITH THE STANDARD COLORS ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS AND APPROVED BY THE U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION. 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, AND THE NEAREST EDGE OF A SIGN SHALL BE AT LEAST 1800 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.

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 PHASES OF CONSTRUCTION. DURING ALL PHASES OF CONSTRUCTION THE REQUIREMENTS SET FORTH IN THE 'MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES' 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. 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 DEGRADATE BY EXPOSURE TO THE WEATHER DURING THE PROJECT. THE 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 EXTENSIVE FIBER IN BENDING "FV" 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, DATED 1986.

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

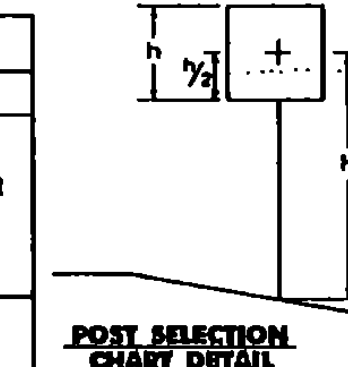
- 100 x 100 (ACTUAL DIMENSIONS ARE 90 x 90)
 - a) ACCEPTABLE FOR SINGLE OR DUAL POSTS INSTALLATION WITH NO MODIFICATIONS.
- 100 x 150 (ACTUAL DIMENSIONS ARE 90 x 140)
 - a) ACCEPTABLE FOR SINGLE POST INSTALLATIONS ONLY WHEN MODIFIED BY DRILLING TWO 30mm DIAMETER HOLES, ONE AT 100mm AND THE OTHER AT 460mm ABOVE THE GROUND LINE AND PERPENDICULAR TO THE ROADWAY CENTERLINE.
- 150 x 150 (ACTUAL DIMENSIONS ARE 140 x 140)
 - a) ACCEPTABLE FOR SINGLE POST INSTALLATIONS ONLY WHEN MODIFIED BY DRILLING TWO 30mm DIAMETER HOLES, ONE AT 100mm AND THE OTHER AT 460mm ABOVE THE GROUND LINE AND PERPENDICULAR TO THE ROADWAY CENTERLINE.
- 150 x 200 (ACTUAL DIMENSIONS ARE 140 x 190)
 - a) ACCEPTABLE FOR SINGLE POST INSTALLATIONS ONLY WHEN MODIFIED BY DRILLING TWO 76mm DIAMETER HOLES, ONE AT 100mm AND THE OTHER AT 460mm ABOVE THE GROUND LINE AND PERPENDICULAR TO THE ROADWAY CENTERLINE.

ADDITIONAL DESIGN CRITERIA

THE LONGER DIMENSION OF THE POST(S), SUCH AS THE 150mm DIMENSION OF THE 100 x 150 POST, SHALL BE PLACED PARALLEL TO THE ROADWAY CENTERLINE. ALL WOODEN POSTS SHALL HAVE AN EMBEDMENT DEPTH OF 1200mm. 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 OCCUR:

- 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 1.125 m².
- c) THE S_v OF A SINGLE POST IS EXCEEDED. (SEE THE POST SELECTION CHART BELOW)

WOOD POST SELECTION CHART		
SIGN AREA (m ²) X HEIGHT (m) C _s v (SELECTION VALUE)		
POST SIZE	S _v	DESIGN CRITERIA
100 x 100	1.54	WIND SPEED = 108km/h (118-YEAR MEAN OCCURRENCE INTERVAL)
100 x 150	3.51	WIND PRESSURE = 740 Pa
150 x 150	5.17	ALLOWABLE BENDING STRESS F _b = 9700 kPa
150 x 200	9.30	



OTHER STDS. REQUIRED:

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

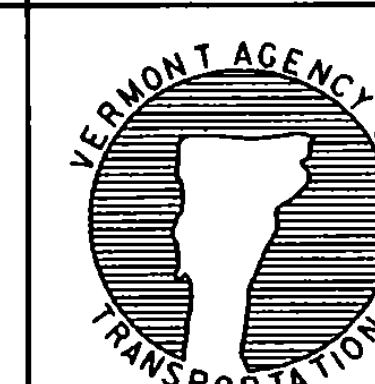
REVISIONS AND CORRECTIONS
FEB 2, 1998 - DATE OF ORIGINAL ISSUE

APPROVED

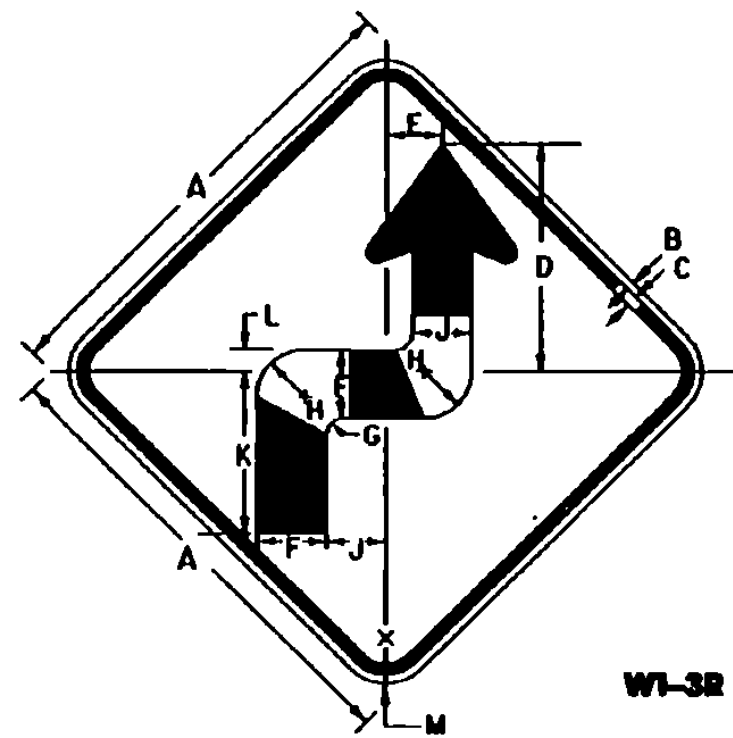
[Signature]
DIRECTOR OF PROJECT DEVELOPMENT

[Signature]
DIRECTOR OF CONSTRUCTION AND MAINTENANCE

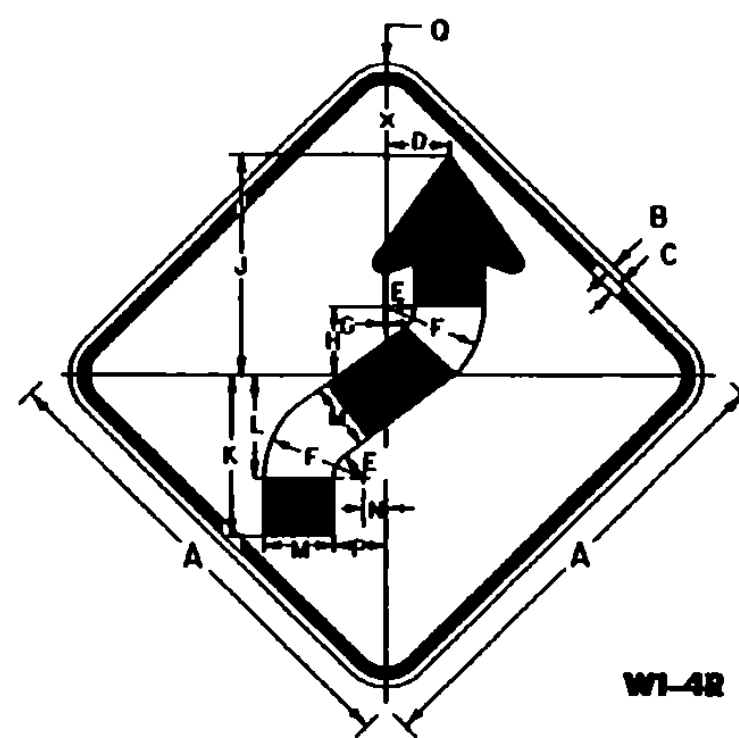
SIDE ROAD CONSTRUCTION APPROACH SIGNS



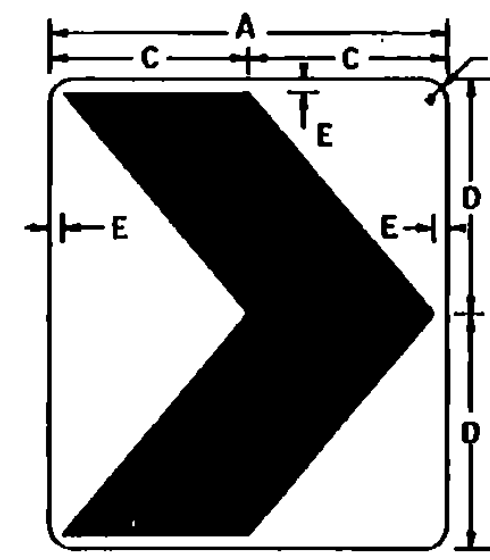
Metric STANDARD E-100AM



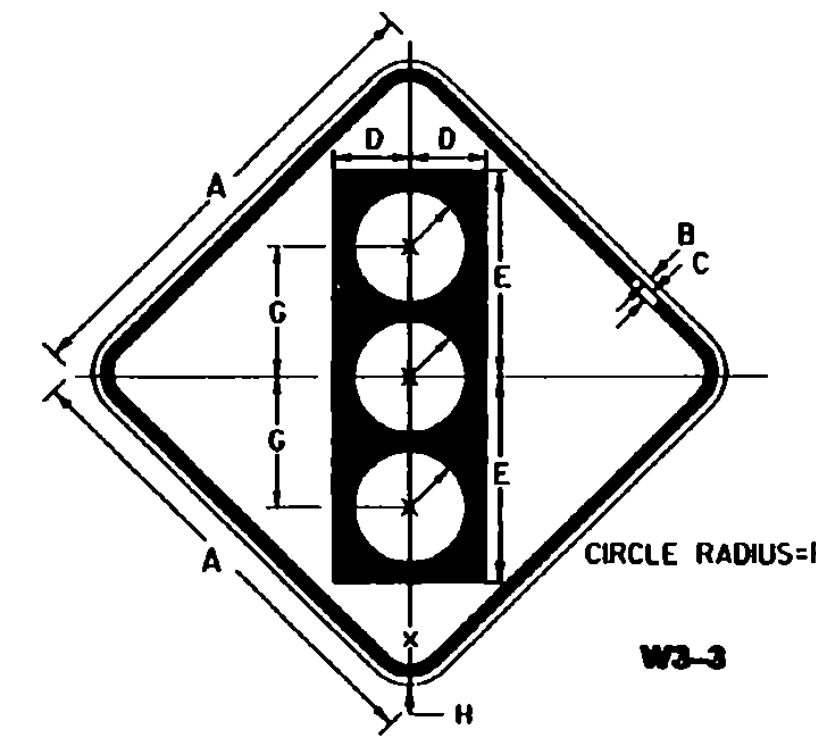
SIGN	DIMENSIONS (mm)											
	A	B	C	D	E	F	G	H	J	K	L	M
STD. & MIN.	900	15	20	435	105	130	30	90	110	310	40	55
SPECIAL	1200	20	30	580	140	175	40	120	150	415	55	75



SIGN	DIMENSIONS (mm)														
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	O
STD. & MIN.	900	15	20	86	55	185	4	130	420	310	195	130	45	100	55
SPECIAL	1200	20	30	157	75	250	5.5	175	560	410	260	175	55	130	75



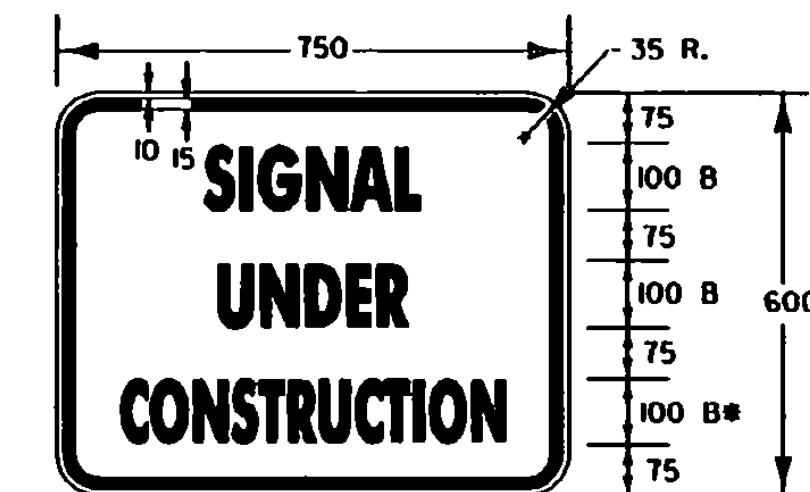
SIGN	DIMENSIONS (mm)					
	A	B	C	D	E	F
STD.	450	600	225	300	20	35
SPECIAL	600	750	300	375	20	35
EXPT. FRWY.	750	900	375	450	25	45
FRWY.	900	1200	450	600	30	55



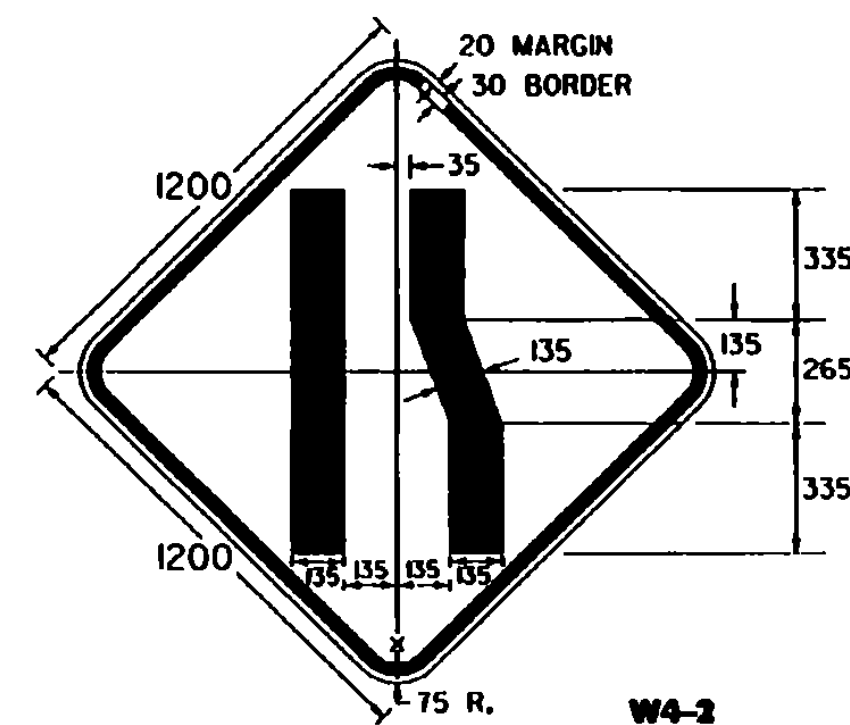
SIGN	DIMENSIONS (mm)							
	A	B	C	D	E	F	G	H
STD. & MIN.	900	15	20	145	395	105	250	55
SPECIAL	1200	20	30	190	500	125	315	75

COLORS

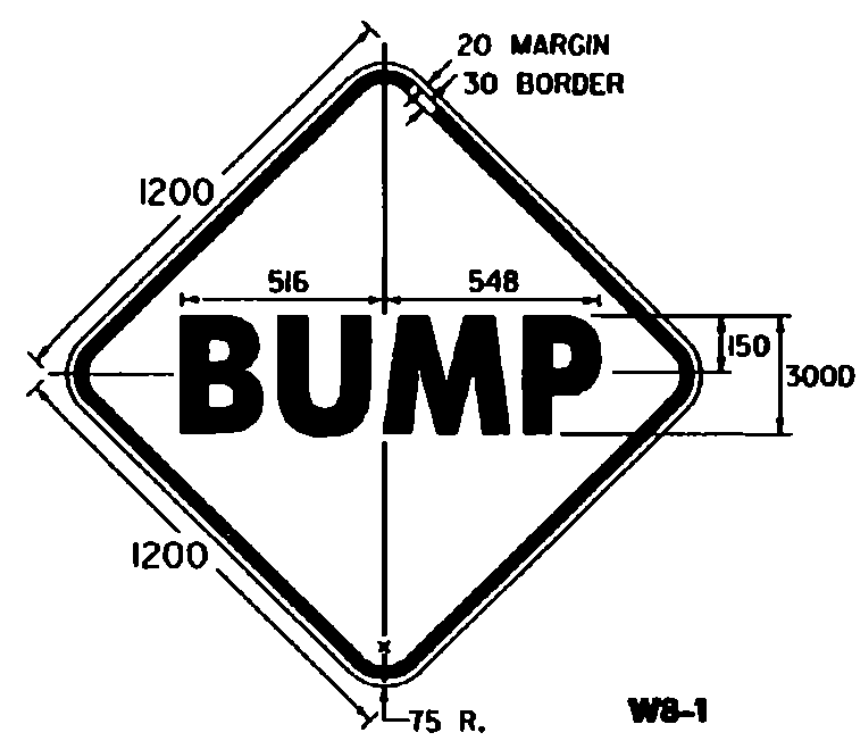
SYMBOL & LEGEND - BLACK (NON-REFL)
BACKGROUND - ORANGE (REFL)
TOP CIRCLE - RED (REFL)
MIDDLE CIRCLE - YELLOW (REFL)
BOTTOM CIRCLE - GREEN (REFL)



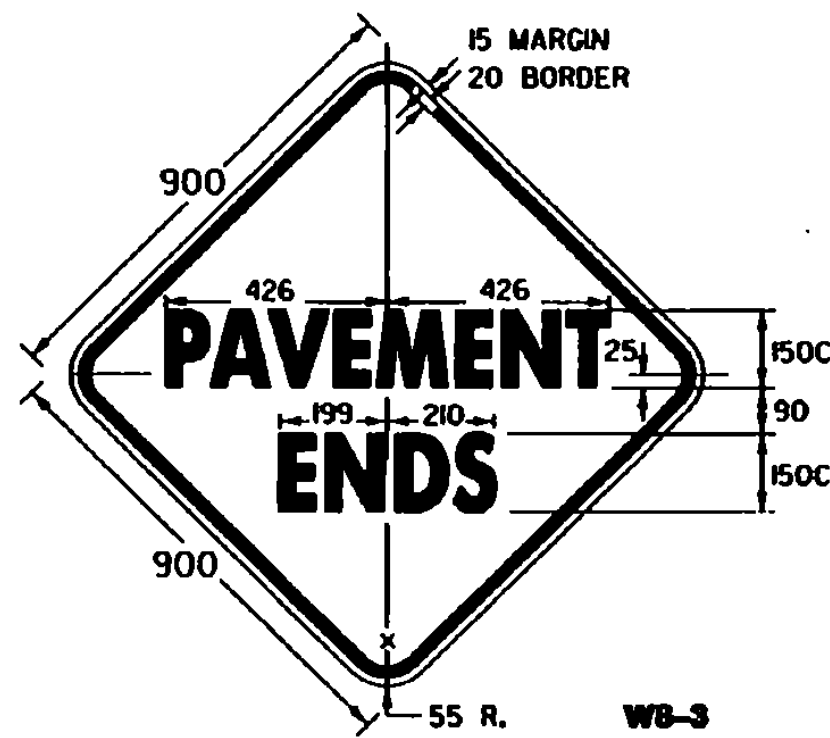
* REDUCE SPACING 50%



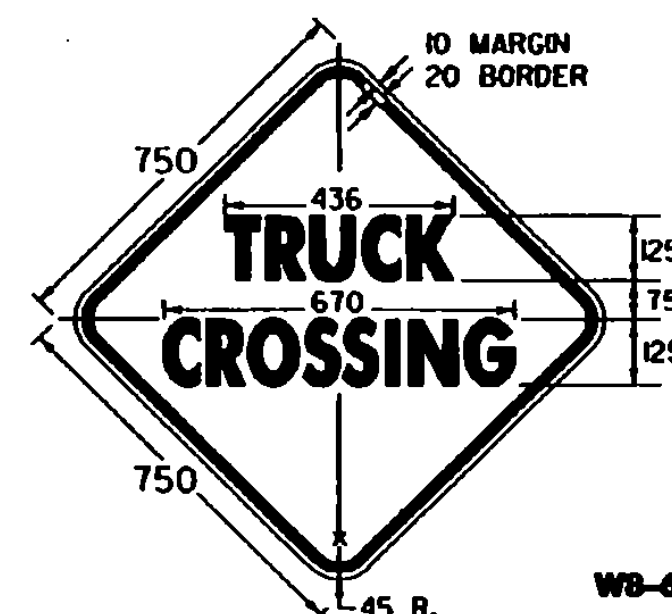
W4-2



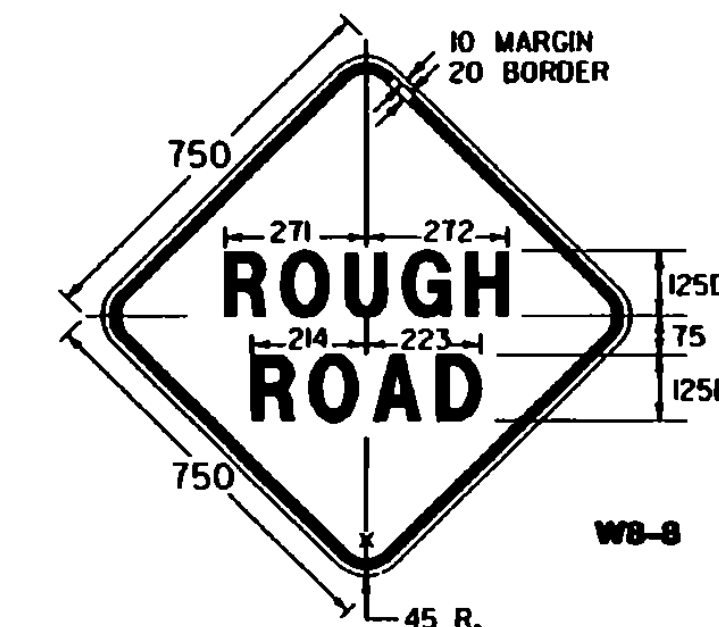
WB-1



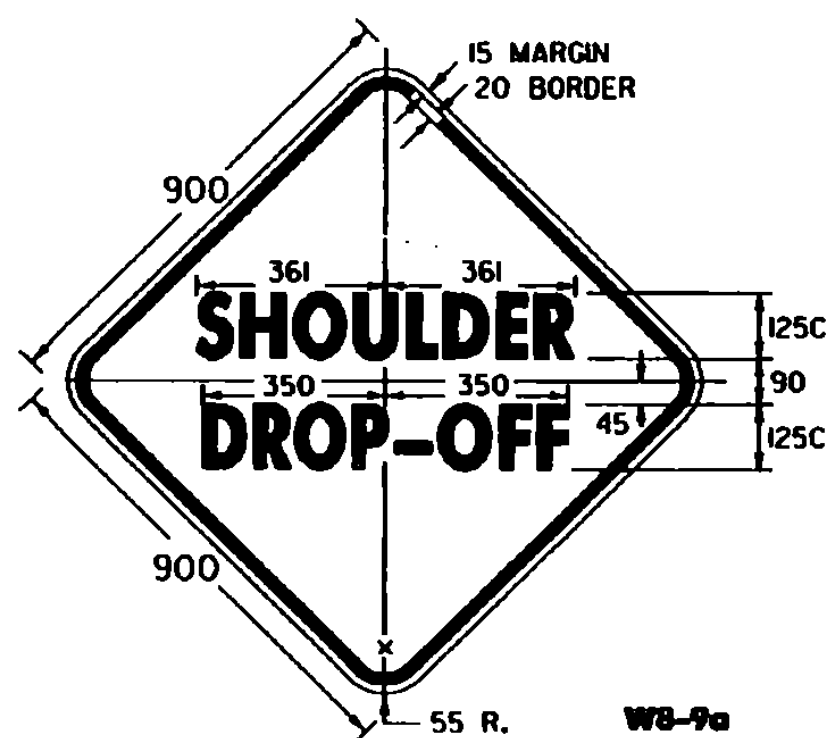
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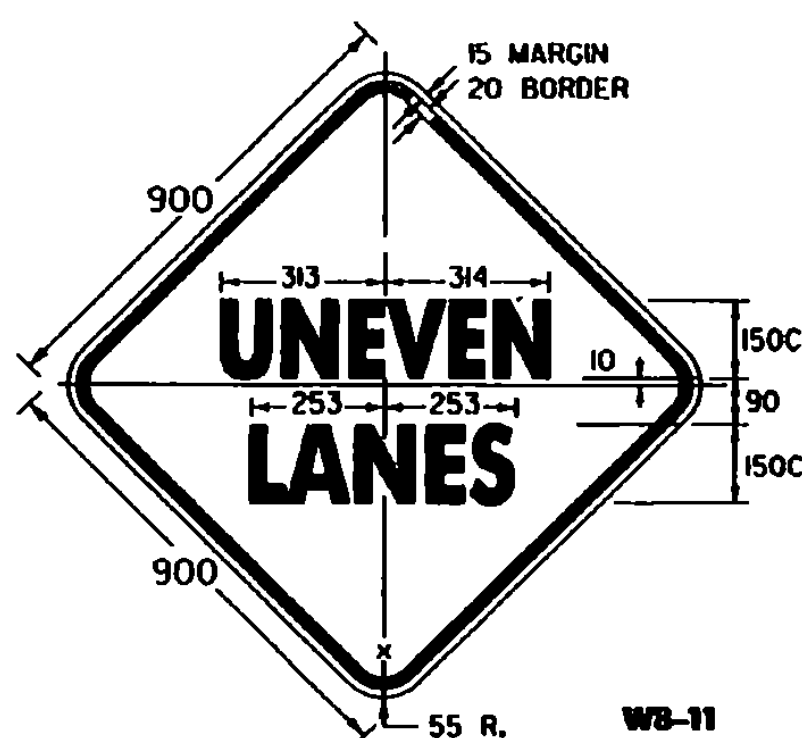
WB-6



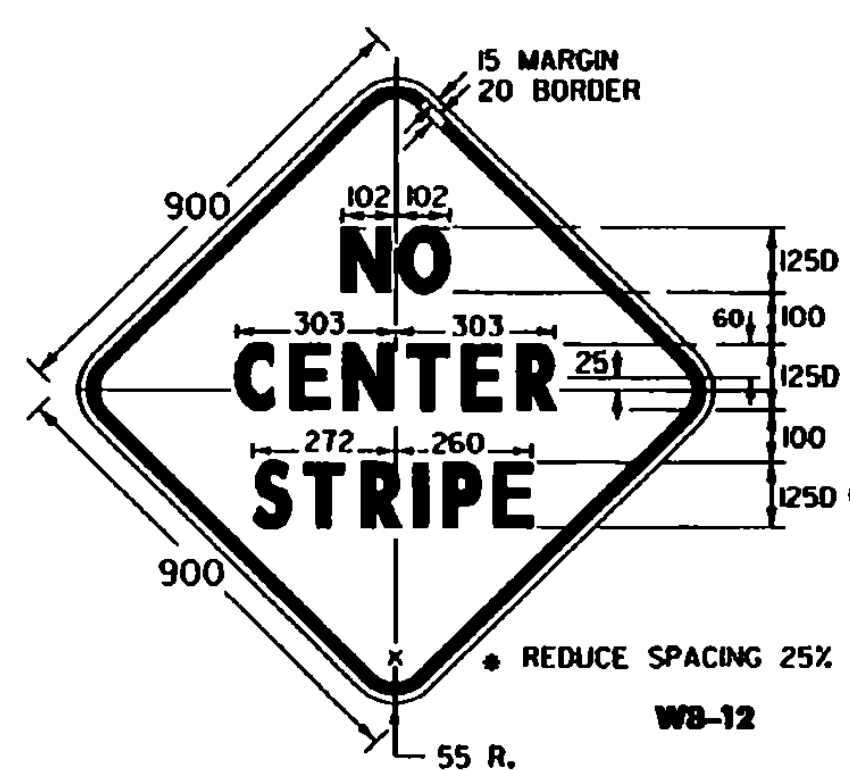
WB-8



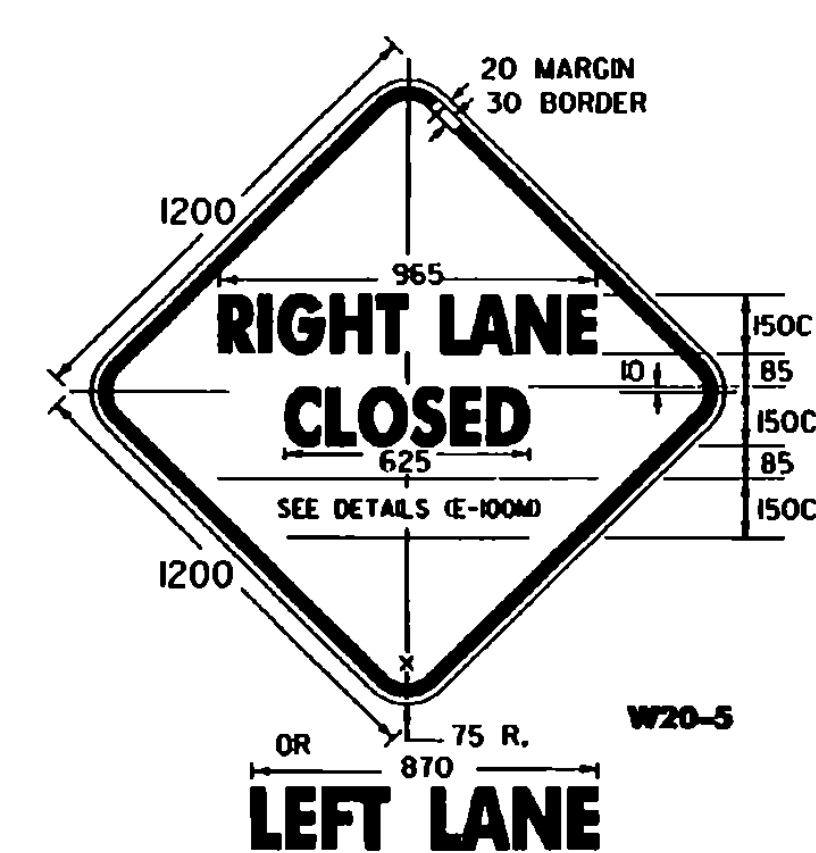
WB-9a



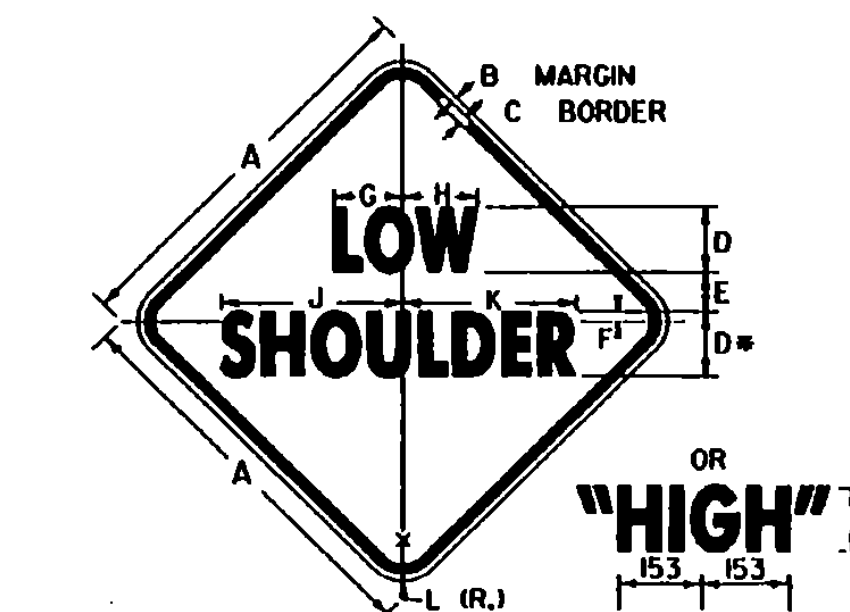
WB-11



WB-12



W20-5



WB-9

SIGN	DIMENSIONS (INCHES)										
	A	B	C	D	E	F	G	H	J	K	L
STD.	150	10	20	125C	75	20	13	143	348	39	45
FRWY.	1200	20	30	200C	125	30	20	229	556	532	75

* REDUCE SPACING 25%

NOTES

SEE STANDARD SHEET E-100M FOR NOTES AND TEXT DETAILS.
COLORS FOR SIGNS SHOWN ON THIS SHEET SHALL BE BLACK TEXT, BORDER AND SYMBOLS ON A REFLECTORIZED TYPE II B OR TYPE III ORANGE BACKGROUND, UNLESS OTHERWISE NOTED.

SIGNS USED ONLY FOR DAYTIME MAINTENANCE OPERATIONS DO NOT NEED TO BE REFLECTORIZED; HOWEVER, THESE SIGNS SHALL BE LABELED "DAYTIME USE ONLY" ON THE BACK OF THE SIGN PANEL WITH 75-MM SERIES C LETTERS.

OTHER STDS. E-100M REQUIRED:

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

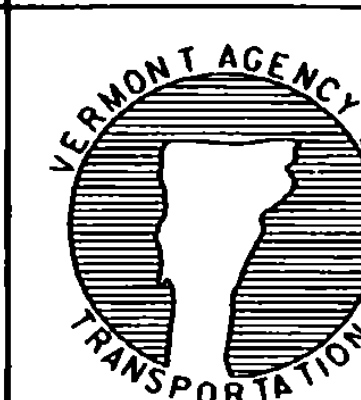
REVISIONS AND CORRECTIONS
JUNE 13, 1997 - ORIGINAL APPROVAL DATE

APPROVED

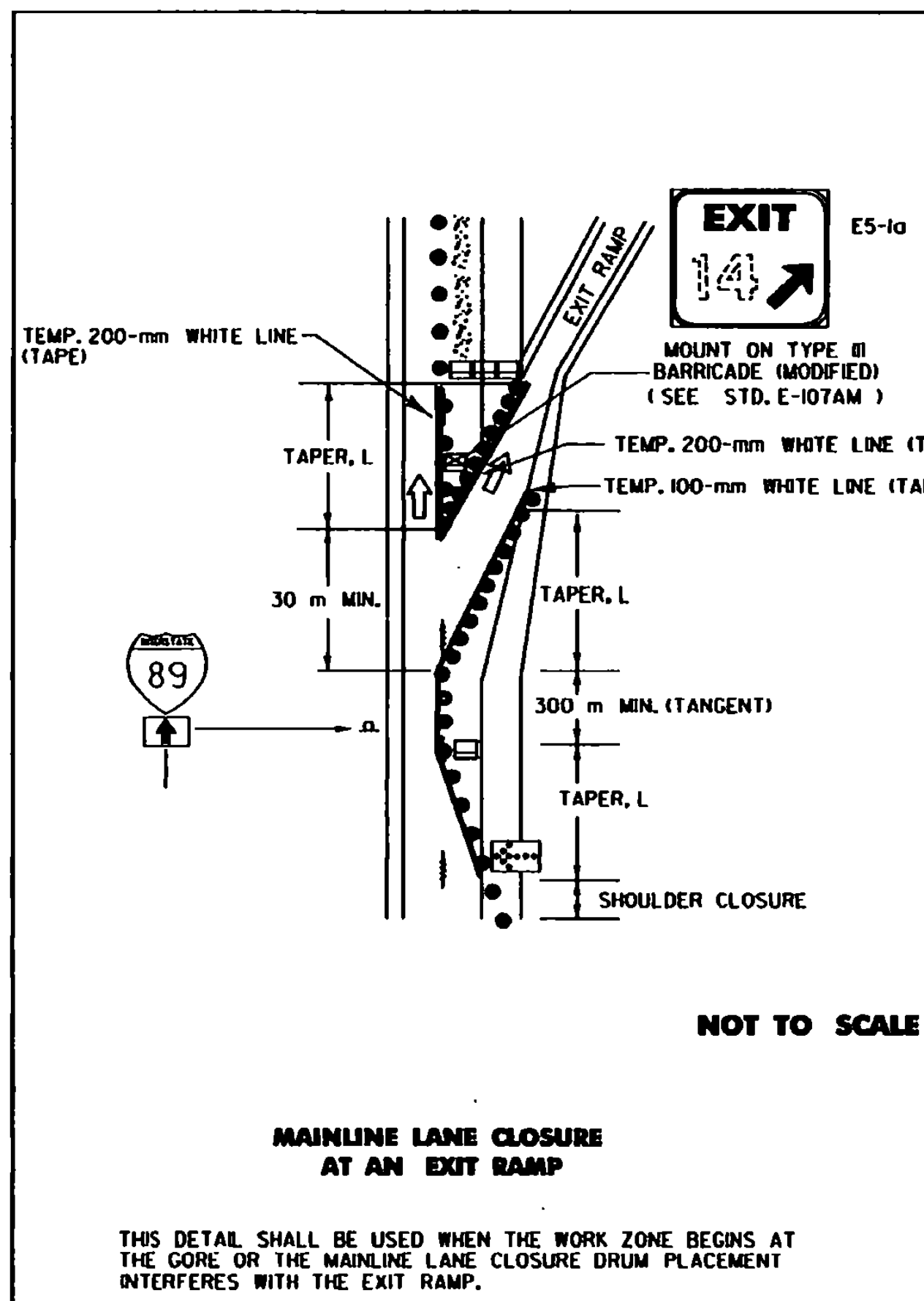
[Signature]
DIRECTOR OF ENGINEERING

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DIRECTOR OF CONSTRUCTION AND MAINTENANCE

CONSTRUCTION SIGN
DETAILS

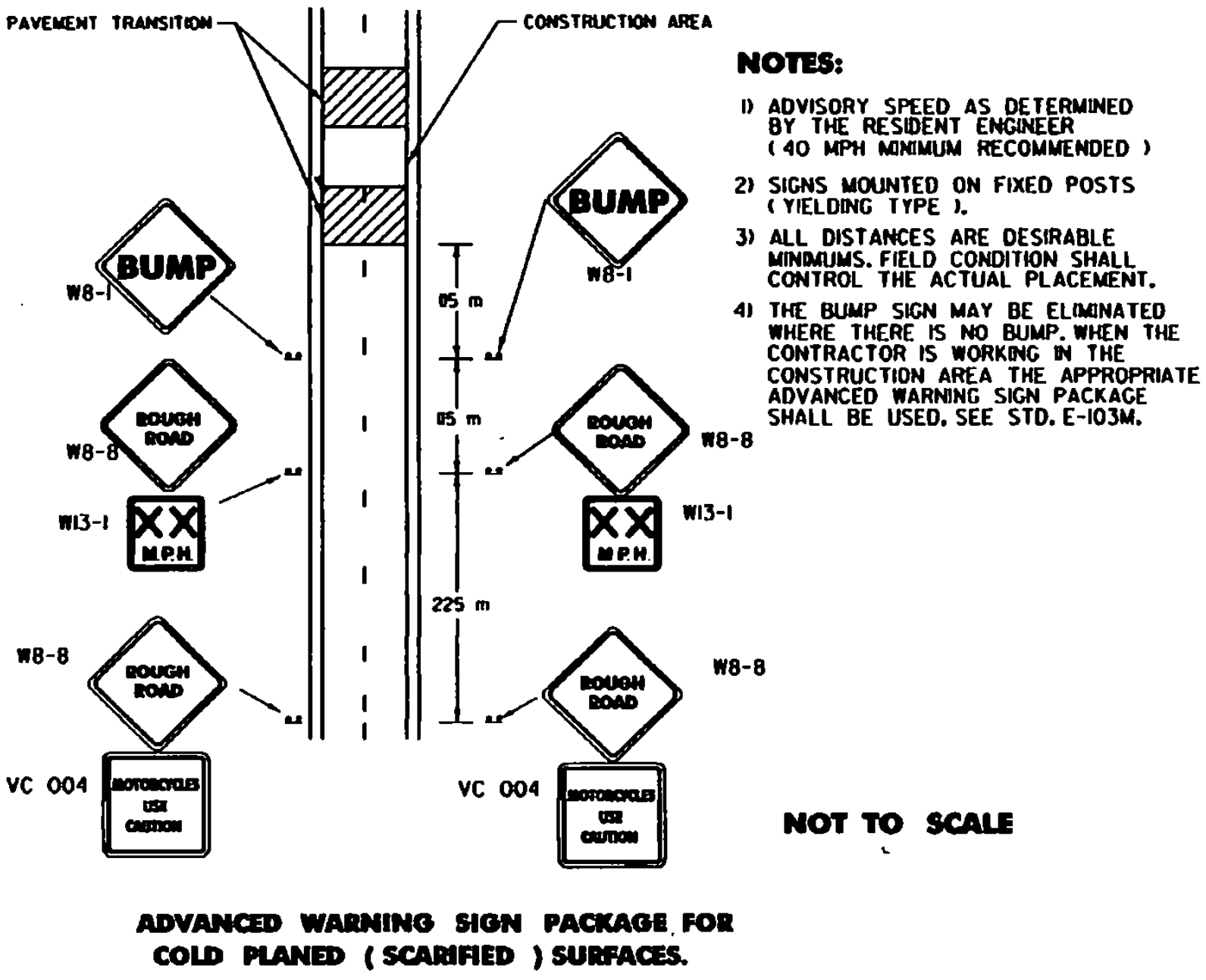
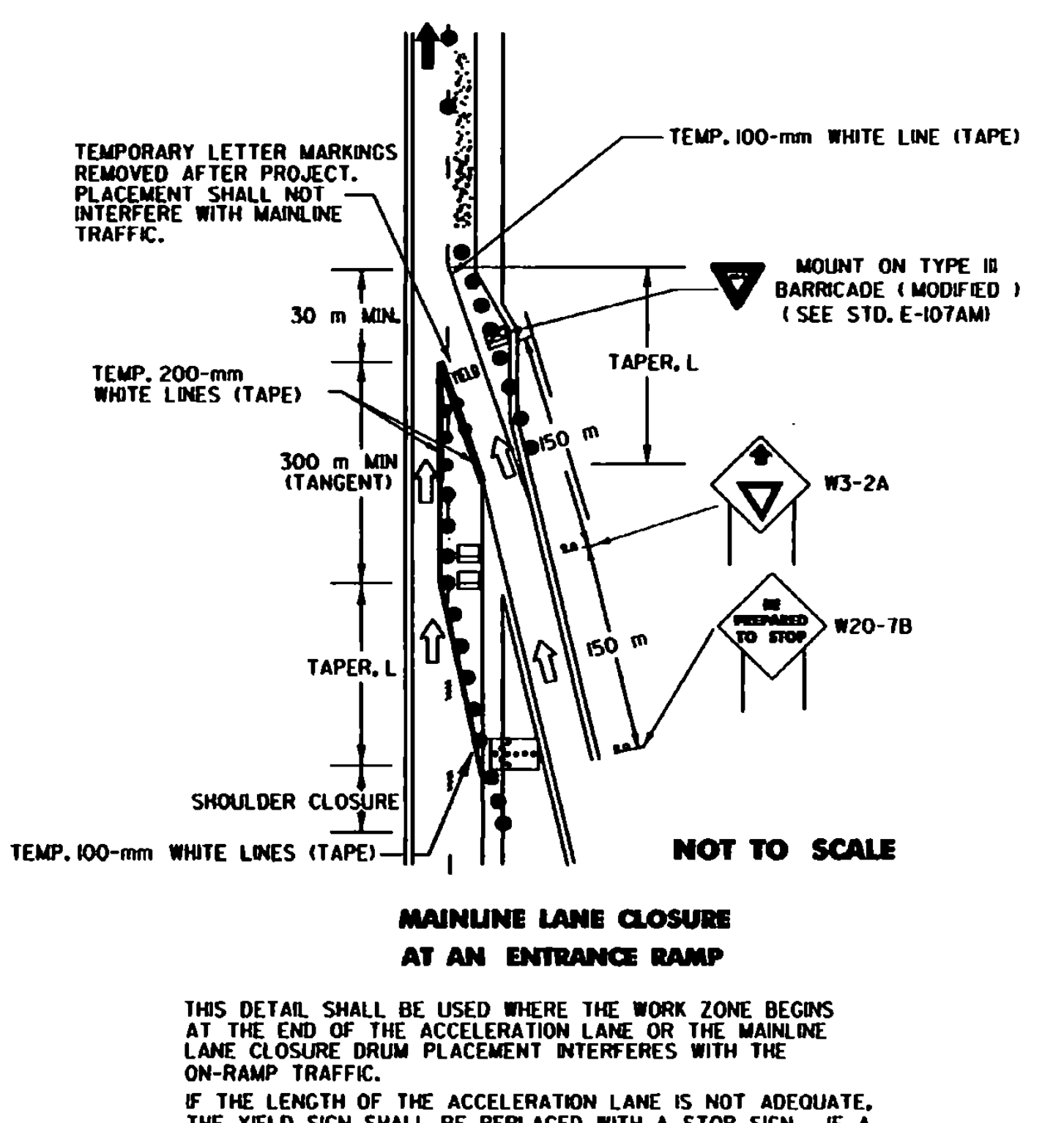


Metric
STANDARD
E-101M

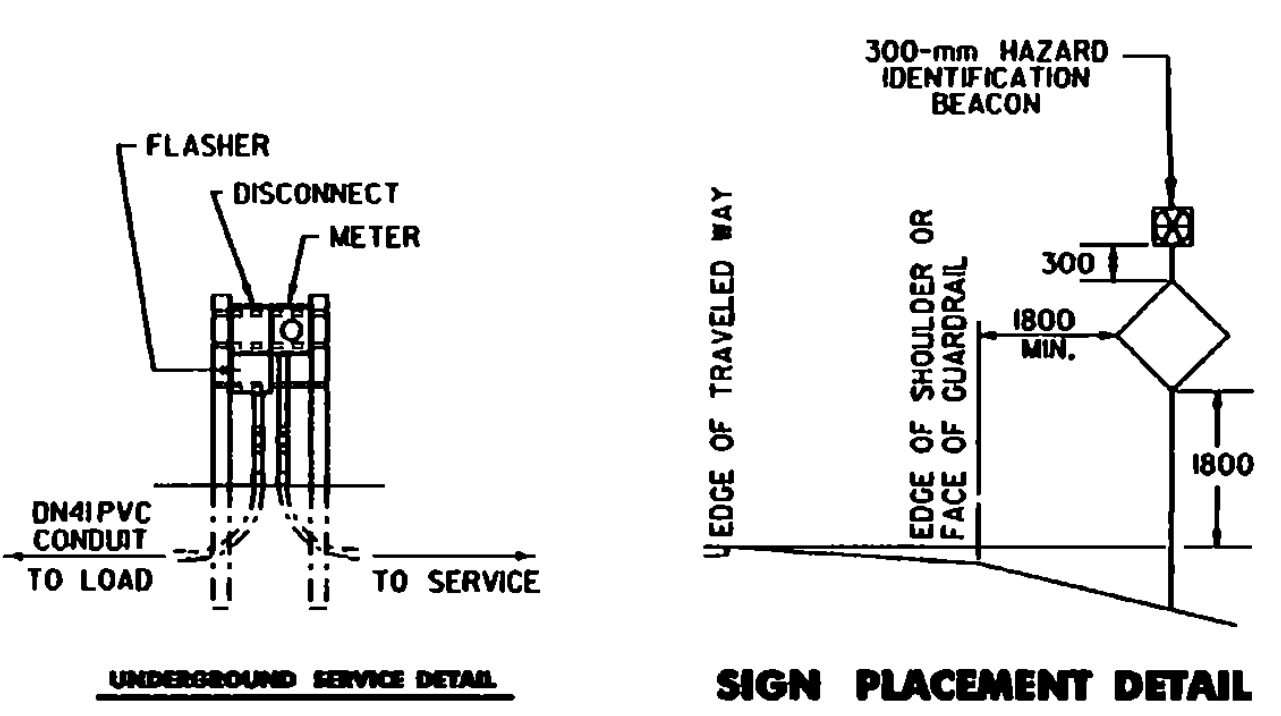
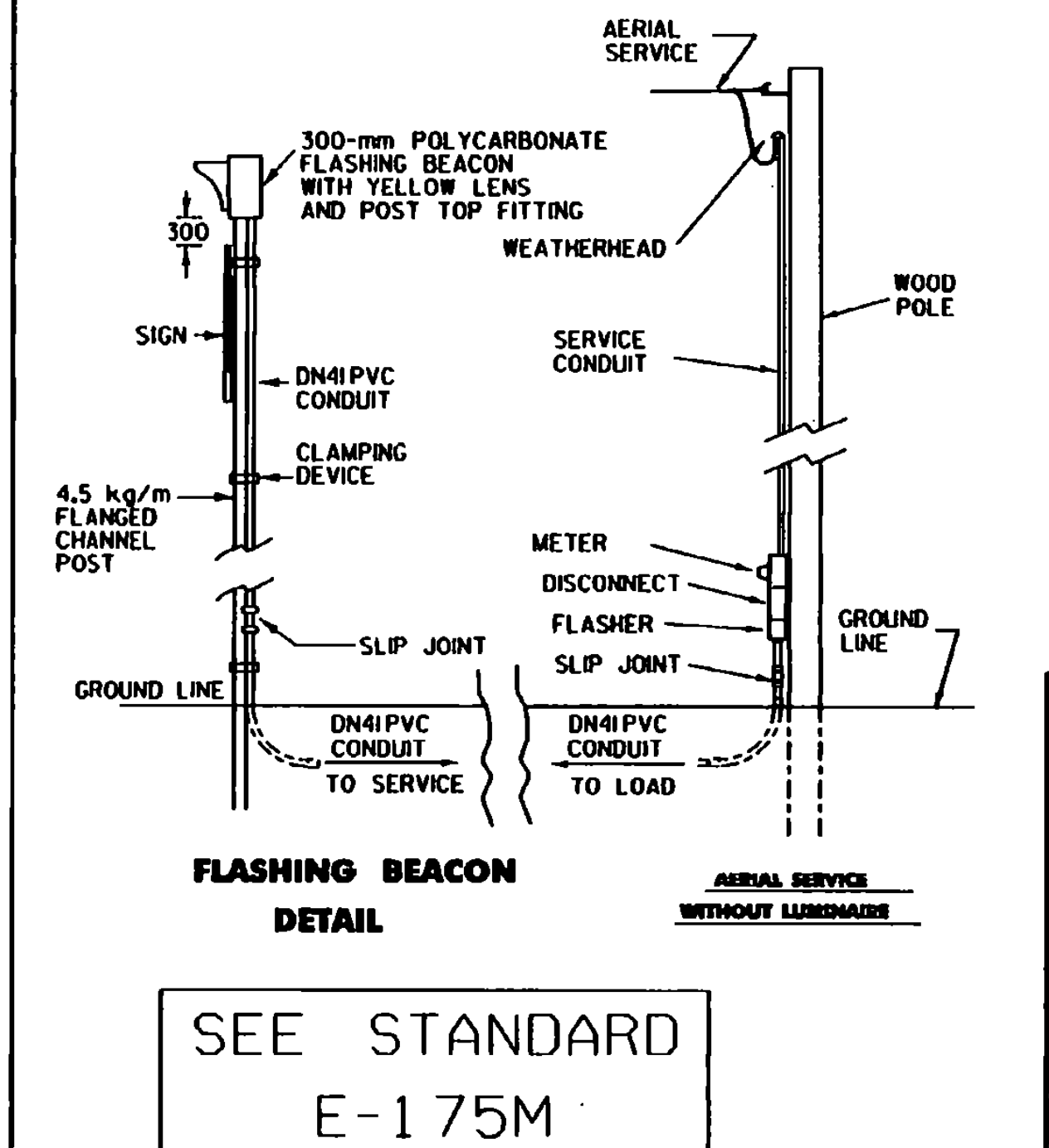


- NOTES:**
- 1) ALL SIGNS SHALL BE MOUNTED ON FIXED POSTS (YIELDING TYPE) UNLESS OTHERWISE NOTED.
 - 2) CHANNELIZING DEVICES SHALL BE PLACED IN ACCORDANCE WITH THE TABLE ON THIS SHEET.
 - 3) ALL DISTANCES ARE DESIRABLE MINIMUMS FIELD CONDITIONS SHALL CONTROL THE ACTUAL PLACEMENT.
 - 4) TAPER RATES ARE BASED ON THE POSTED MAINLINE AND EXIT SPEEDS.
 - 5) TEMPORARY PAVEMENT MARKINGS ARE REQUIRED WHEN THE LAYOUT IS TO BE IN EFFECT FOR THREE DAYS OR MORE.
 - 6) LANE CLOSURES SHALL BE AS DETAILED ON STANDARD E-103M.
 - 7) EXIT SIGN SHALL BE MOUNTED A MINIMUM OF 900 mm ABOVE THE GROUND AND HIGH ENOUGH TO BE SEEN ABOVE CHANNELIZING DEVICES.

- LEGEND**
- REFL. 700-mm CONES
 - REFL. PLASTIC DRUMS
 - PAVEMENT MARKING REMOVAL
 - ↑ INDICATES TRAFFIC FLOW
 - ▭ WORK AREA
 - ▭ FLASHING ARROW PANEL
 - ▭ TYPE III BARRICADES
 - ▭ TYPE III BARRICADES (MOD.)



- NOTES:**
- 1) ADVISORY SPEED AS DETERMINED BY THE RESIDENT ENGINEER (40 MPH MINIMUM RECOMMENDED)
 - 2) SIGNS MOUNTED ON FIXED POSTS (YIELDING TYPE).
 - 3) ALL DISTANCES ARE DESIRABLE MINIMUMS. FIELD CONDITIONS SHALL CONTROL THE ACTUAL PLACEMENT.
 - 4) THE BUMP SIGN MAY BE ELIMINATED WHERE THERE IS NO BUMP. WHEN THE CONTRACTOR IS WORKING IN THE CONSTRUCTION AREA THE APPROPRIATE ADVANCED WARNING SIGN PACKAGE SHALL BE USED. SEE STD. E-103M.



CHANNELIZING DEVICES

TAPER RATES ARE DETERMINED USING THE FOLLOWING EQUATION:

$L = 0.6WS$ FOR DESIGN SPEEDS OF 70 km/h OR GREATER

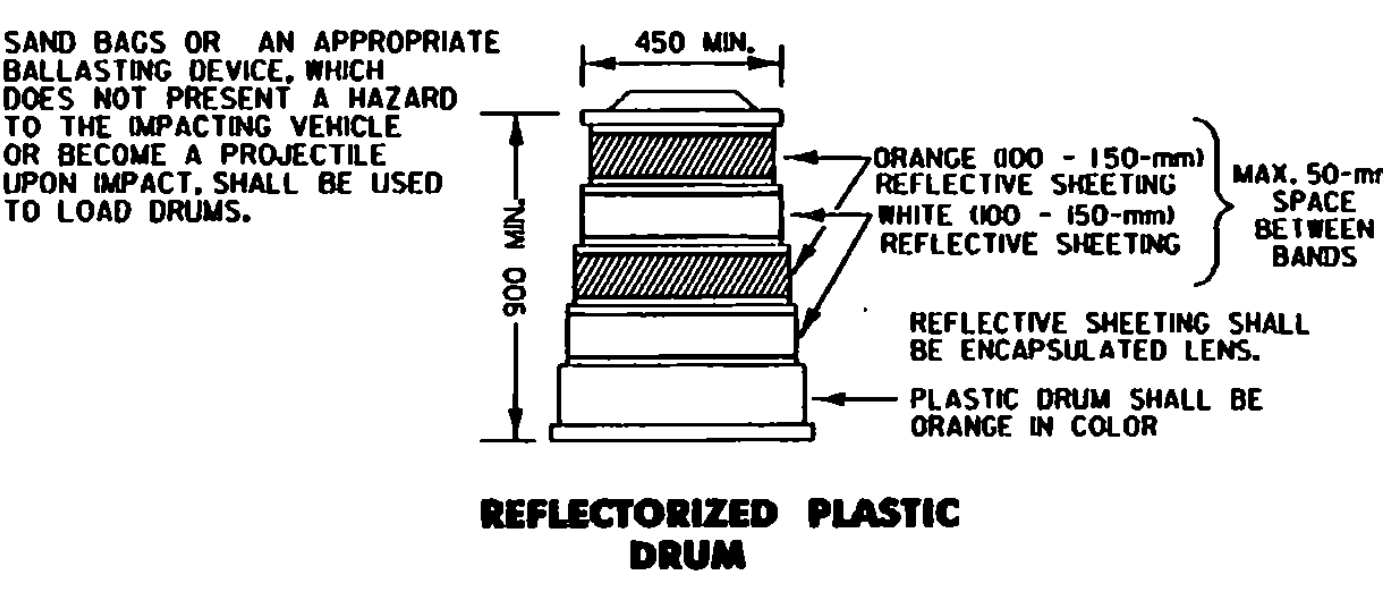
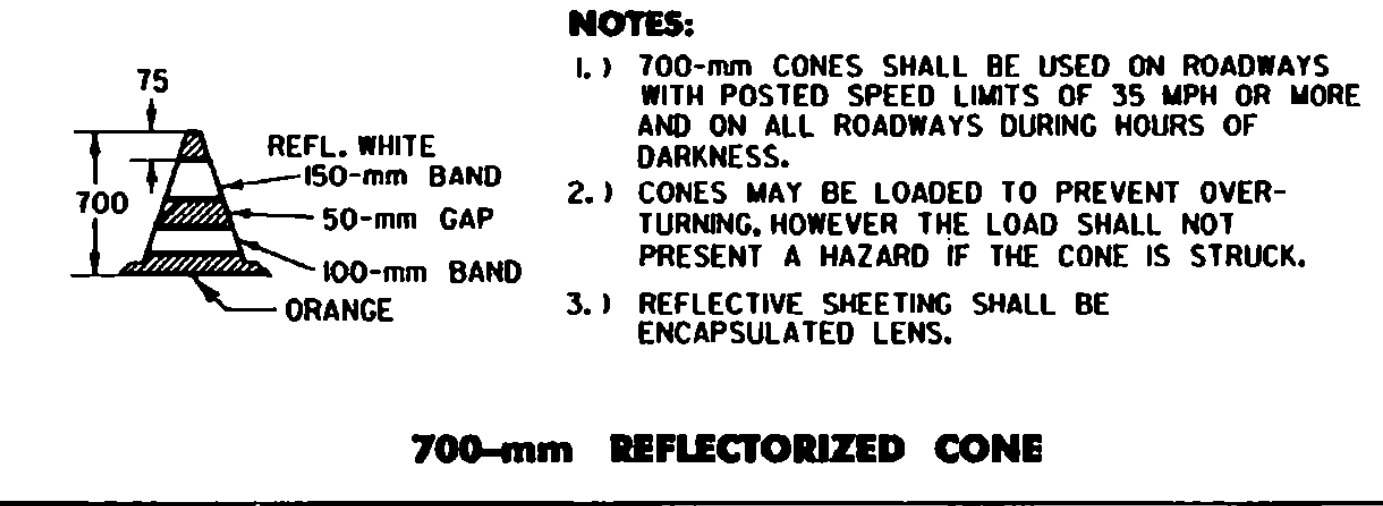
$L = WS^2/95$ FOR DESIGN SPEEDS OF 60 km/h OR LESS

WHERE: L = MINIMUM LENGTH OF TAPER IN METERS

W = WIDTH OF OFFSET USUALLY LANE WIDTH IN METERS

S = DESIGN SPEED IN KILOMETERS PER HOUR

POSTED SPEED OR 85th PERCENTILE (mph)	DESIGN SPEED (km/h)	TAPER LENGTHS (m)			TANGENT SECTION LENGTHS (L/2) (m)	MINIMUM BUFFER SPACE LENGTH (m)	MAXIMUM CHANNELIZING DEVICE SPACING (m)		BARRIER FLARE RATE (MIN)
		MERGING 3.6-m LANE (L)	SHIFTING W=4.8 m (L/2)	SHOULDER W=3 m (L/3)			TAPER	ALONG LANE LINE & WORK ZONE	
≤40	60	90	55	25	45	50	0	22	h9
45	70	160	100	40	80	65	13	26	h9
50	80	180	115	50	90	85	15	30	h11
55	90	200	130	55	100	100	17	34	h13
60 & 65	100	220	145	60	110	135	19	38	h13
70	110	240	160	65	120	170	21	42	h13



OTHER STDS. REQUIRED: E-101M E-102AM E-107AM E-150M E-102M E-103M E-136M E-175M

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

REVISIONS AND CORRECTIONS

JUNE 13, 1997 - ORIGINAL APPROVAL DATE

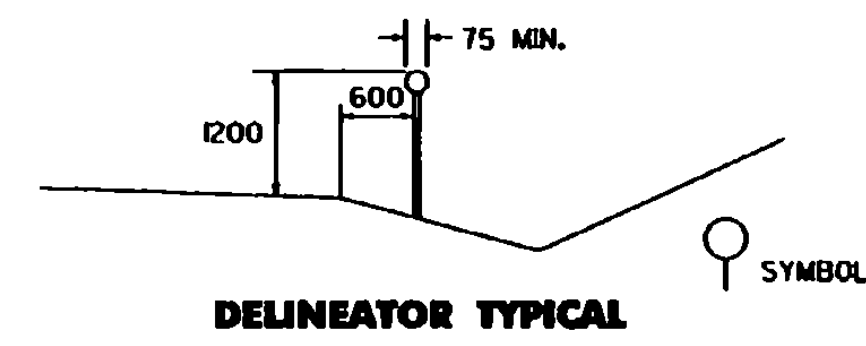
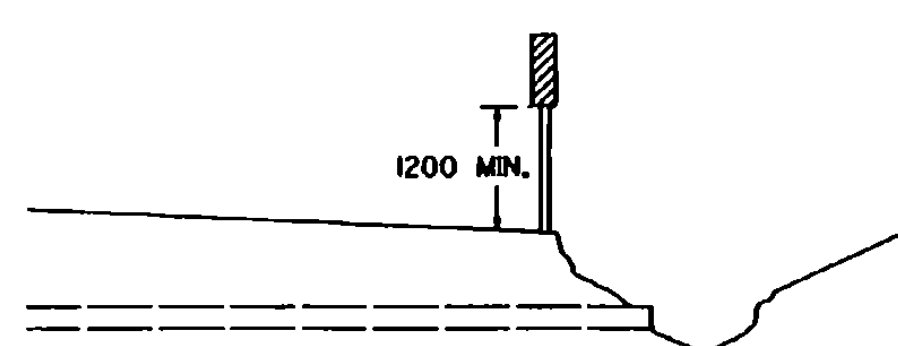
APPROVED

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DIRECTOR OF ENGINEERING

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DIRECTOR OF CONSTRUCTION AND MAINTENANCE

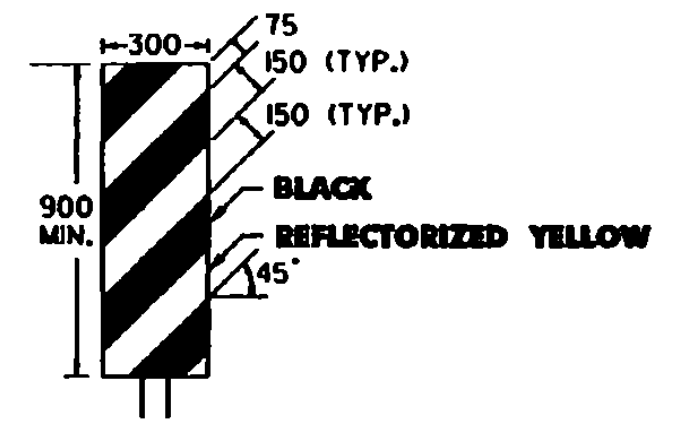
TRAFFIC CONTROL MISCELLANEOUS DETAILS





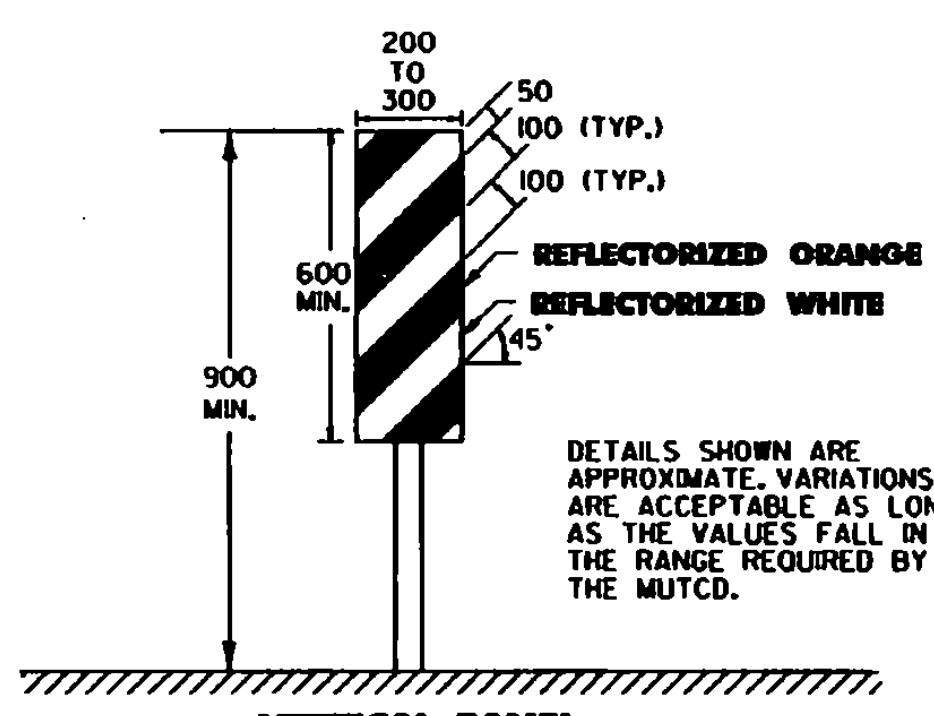
DELINEATOR TYPICAL

DELINEATORS SHALL BE REFLECTORIZED WHITE IN COLOR. THEY SHALL HAVE A MINIMUM OF 4400 mm² THEY MAY BE ROUND, SQUARE, OR OBLONG.



OBJECT MARKER TYPICAL

OBJECTS MARKERS ARE USED TO MARK OBSTRUCTIONS WITHIN OR ADJACENT TO THE ROADWAY. IN SOME CASES THERE MAY NOT BE A PHYSICAL OBJECT INVOLVED, BUT OTHER ROADSIDE CONDITIONS SUCH AS NARROW SHOULDER DROP-OFFS, GORES, D.I. EXCAVATIONS AND ABRUPT CHANGES IN THE ROADWAY ALIGNMENT MAY MAKE IT UNDESIRABLE FOR A DRIVER TO LEAVE THE ROADWAY. THE INSIDE EDGE OF THE OBJECT MARKER SHALL BE IN LINE WITH THE INNER EDGE OF THE OBSTRUCTION, WHEREVER POSSIBLE. OBJECT MARKERS SHALL HAVE ALTERNATING BLACK AND REFLECTORIZED YELLOW STRIPES. (SLOPING DOWNWARD IN THE DIRECTION TRAFFIC IS TO PASS).

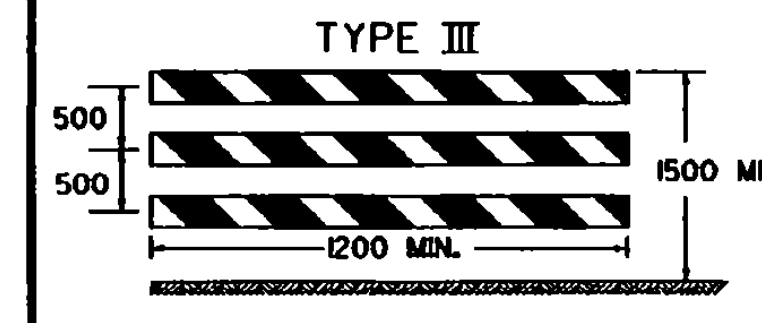
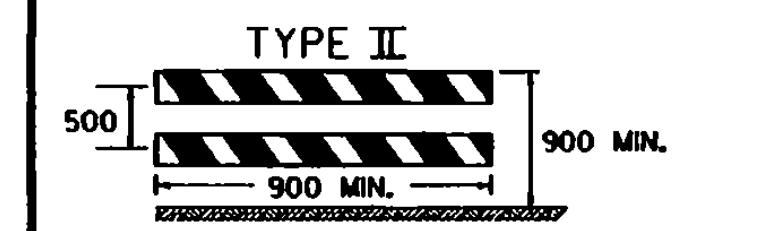
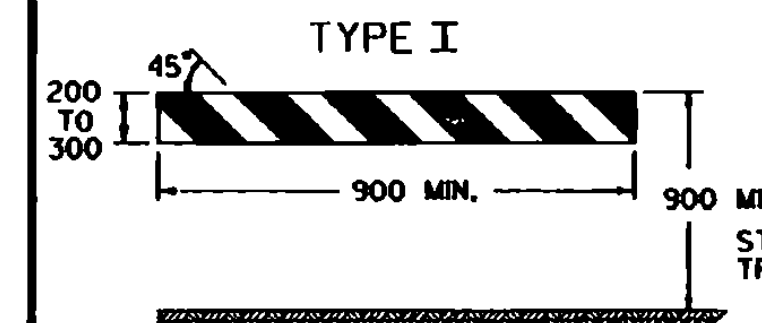


VERTICAL PANEL

VERTICAL PANELS SHALL HAVE ALTERNATING ORANGE AND WHITE REFLECTORIZED STRIPES (SLOPING DOWNWARD IN THE DIRECTION TRAFFIC IS TO PASS). THESE DEVICES MAY BE USED FOR TRAFFIC SEPARATION, CHANNELIZING OR BARRICADING WHERE SPACE IS AT A MINIMUM.

DELINEATOR, VERTICAL PANEL AND OBJECT MARKER DETAILS FOR CONSTRUCTION AREAS WHERE TRAFFIC IS MAINTAINED

ALL SIGN PLACEMENT DISTANCES ARE DESIRABLE SPECIFICATIONS. FIELD CONDITIONS SHALL CONTROL THE ACTUAL PLACEMENT. PROJECT CONSTRUCTION APPROACH SIGNING PLACEMENT SHALL TAKE INTO CONSIDERATION SPACING REQUIREMENTS FOR THE DETOUR SIGN LAYOUT REQUIREMENTS.



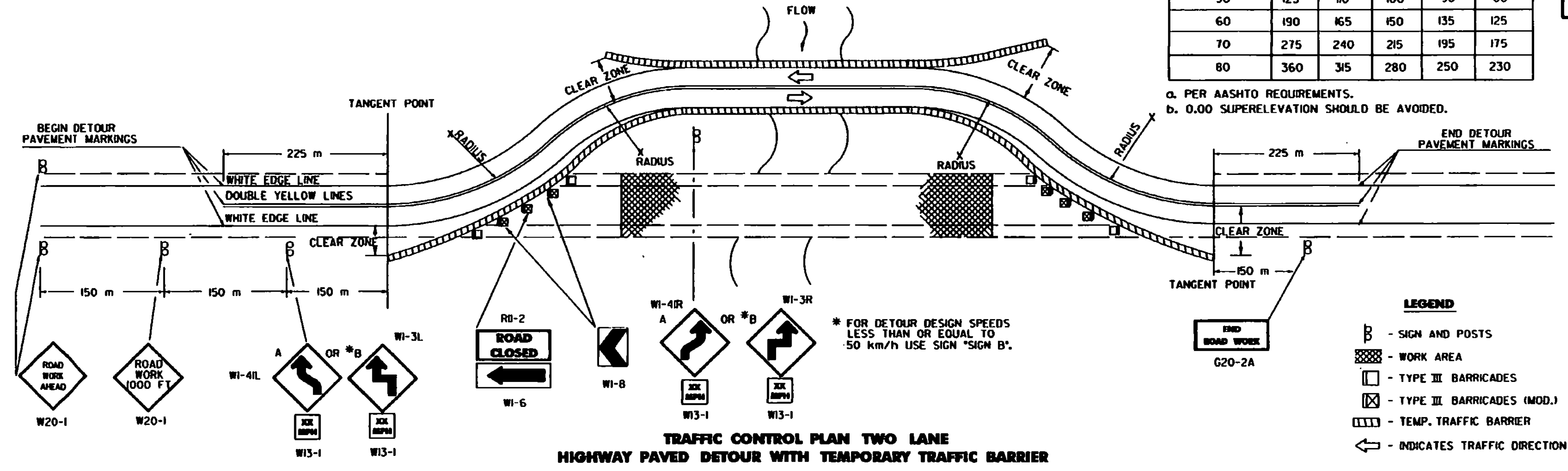
A TYPE III (MODIFIED) BARRICADE SHALL CONSIST OF TYPE II BARRIS MOUNTED ON A BREAKAWAY BARRICADE AS SHOWN ON STANDARD SHEET E-107AM.

BARRICADE CHARACTERISTICS	TYPE		
	I	II	III
WIDTH OF RAIL	200 MIN. 300 MAX.	200 MIN. 300 MAX.	200 MIN. 300 MAX.
LENGTH OF RAIL	900 MIN.	900 MIN.	1200 MIN.
WIDTH OF STRIPES	150	150	150
HEIGHT	900 MIN.	900 MIN.	1500 MIN.
TYPE OF FRAME	SEE E-107AM	SEE E-107AM	SEE E-107AM
FLEXIBILITY	PORTABLE	PORTABLE	PORTABLE
ANGLE OF STRIPE	45°	45°	45°
COLOR OF STRIPES	ORANGE AND WHITE	ORANGE AND WHITE	ORANGE AND WHITE

BARRICADE CHARACTERISTICS

DETOUR DESIGN SPEED km/h	MINIMUM RADIUS (m) ^a				
	SUPERELEVATION				
	0.000 ^b	0.020	0.040	0.060	0.080
30	40	35	35	30	30
40	75	65	60	55	50
50	125	110	100	90	80
60	190	165	150	135	125
70	275	240	215	195	175
80	360	315	280	250	230

a. PER AASHTO REQUIREMENTS.
b. 0.00 SUPERELEVATION SHOULD BE AVOIDED.



TRAFFIC CONTROL PLAN TWO LANE HIGHWAY PAVED DETOUR WITH TEMPORARY TRAFFIC BARRIER

- LEGEND**
- ⊙ - SIGN AND POSTS
 - ▨ - WORK AREA
 - ▭ - TYPE II BARRICADES
 - ▧ - TYPE III BARRICADES (MOD.)
 - ▩ - TEMP. TRAFFIC BARRIER
 - ← - INDICATES TRAFFIC DIRECTION

BARRICADES

APPLICATION NOTES

TYPE I BARRICADES SHALL BE USED ON CONVENTIONAL ROADS OR URBAN STREETS AND ARTERIALS TO MARK A SPECIFIC HAZARD.
TYPE II BARRICADES SHALL BE USED ON EXPRESSWAYS AND FREEWAYS, SERVING THE SAME FUNCTIONS AS TYPE I BARRICADES.
TYPE III BARRICADES (SEE STD. E-107AM) SHALL ONLY BE USED WHEN A ROAD SECTION OR LANE IS CLOSED TO TRAFFIC AND ARE TO BE ERECTED AT THE POINT OF CLOSURE.

MATERIALS

THE BARRICADES SHOWN ON THIS SHEET SHOULD BE OF LOW MASS MATERIAL. IF WOOD IS USED THE FOLLOWING CONDITIONS SHALL APPLY:

1. WOODEN BARRICADES (TYPE I AND II)
 - A) SHALL NOT BE USED TO CHANNELIZE OR DELINEATE WORK AREAS WITHIN THE CLEAR ZONE OF ANY HIGHWAY WHERE OPERATING SPEEDS IN EXCESS OF 20 mph ARE EXPECTED UNLESS INSTALLED FOR PEDESTRIAN CONTROL BEHIND APPROVED POSITIVE BARRIERS.
 - B) MAY BE USED WHERE OPERATING SPEEDS OF 20 mph OR LESS ARE EXPECTED.
2. TYPE III WOODEN BARRICADES SHALL NOT BE USED.

COLORS

THE BARRICADE PANELS SHOWN ON THIS SHEET SHALL HAVE ALTERNATING REFLECTORIZED WHITE AND ORANGE STRIPES. THE ORANGE SHALL CONFORM WITH THE STANDARD COLORS ADOPTED BY AASHTO AND APPROVED BY THE FHWA. THE BARRICADE COMPONENTS SHALL BE WHITE UNLESS UNPAINTED METAL OR ALUMINUM IS USED.

REFLECTORIZATION

THE REFLECTIVE SHEETING ON BARRICADE PANELS SHALL BE TYPE III.

LOCATION

THE BARRICADES SHOWN ON THIS SHEET WILL BE LOCATED BY THE RESIDENT ENGINEER IN THE FIELD OR AS SHOWN ON THE PLANS. THE LOCATION OF THE BARRICADES SHALL FOLLOW THE PROCEDURES SET FORTH IN THE "MUTCD" OR AS OTHERWISE NOTED.

MAINTENANCE

BARRICADES SHALL BE MAINTAINED IN CLEAN CONDITION, SATISFACTORY TO THE RESIDENT ENGINEER. THEY SHALL BE COMPLETELY VISIBLE TO THE APPROACHING TRAFFIC AT ALL TIMES. DAMAGED, DEFACED OR DIRTY BARRICADES SHALL BE REPAIRED, CLEANED OR REPLACED AS ORDERED BY THE RESIDENT ENGINEER.

DETOUR NOTES

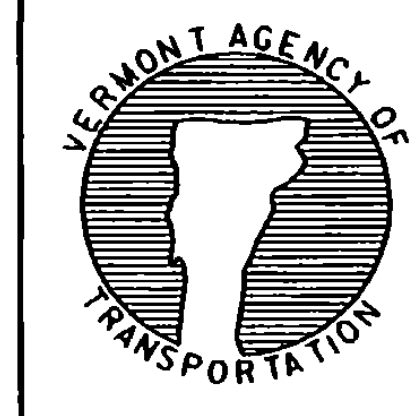
- 1.) SIGNS AND DELINEATION SHOWN FOR ONE DIRECTION OF TRAFFIC ONLY.
- 2.) THE CONTRACTOR IS RESPONSIBLE FOR PAVEMENT MARKING AND SHALL REMOVE ANY CONFLICTING OR CONFUSING EXISTING MARKINGS.
- 3.) ADDITIONAL SIGNING MAY BE REQUIRED AT THE DISCRETION OF THE RESIDENT ENGINEER.
- 4.) UNPAVED DETOURS REQUIRE PAVEMENT MARKINGS FOR TRANSITIONS FROM EXISTING PAVEMENT.
- 5.) THE NUMBER OF CHANNELIZING DEVICES, BARRICADES AND OTHER TRAFFIC CONTROL DEVICES SHOWN ON THIS SHEET ARE FOR ILLUSTRATIVE PURPOSES ONLY. THE ACTUAL NUMBER REQUIRED SHALL BE DETERMINED BASED ON INDIVIDUAL DETOUR CONDITIONS (TAPERS, SPEED LIMITS, LENGTH OF DETOUR CURVE, ETC.).
- 6.) AASHTO CLEAR ZONE REQUIREMENTS SHOULD BE MET. IF NOT THEN AN APPROVED ENERGY ABSORPTION ATTENUATOR SUITABLE FOR THE TEMPORARY TRAFFIC BARRIER USED AND FOR THE DESIGN SPEED SHALL BE INSTALLED PER THE CURRENT AASHTO ROADSIDE DESIGN GUIDE.
- 7.) THE DETOUR CLEAR ZONE REQUIREMENTS SHOULD BE NO LESS THAN 15 km/h BELOW THE POSTED SPEED LIMIT, UNLESS PHYSICAL RESTRICTIONS PREVENT THIS.
- 8.) SEE STANDARD SHEETS E-100M, E-101M AND E-102M FOR SIGN DETAIL AND MATERIAL REQUIREMENTS.
- 9.) IF THE USE OF TEMPORARY TRAFFIC BARRIER IS NOT REQUIRED, THEN REFLECTORIZED PLASTIC DRUMS SHALL BE USED.

REVISIONS AND CORRECTIONS
JUNE 13, 1997 - ORIGINAL APPROVAL DATE

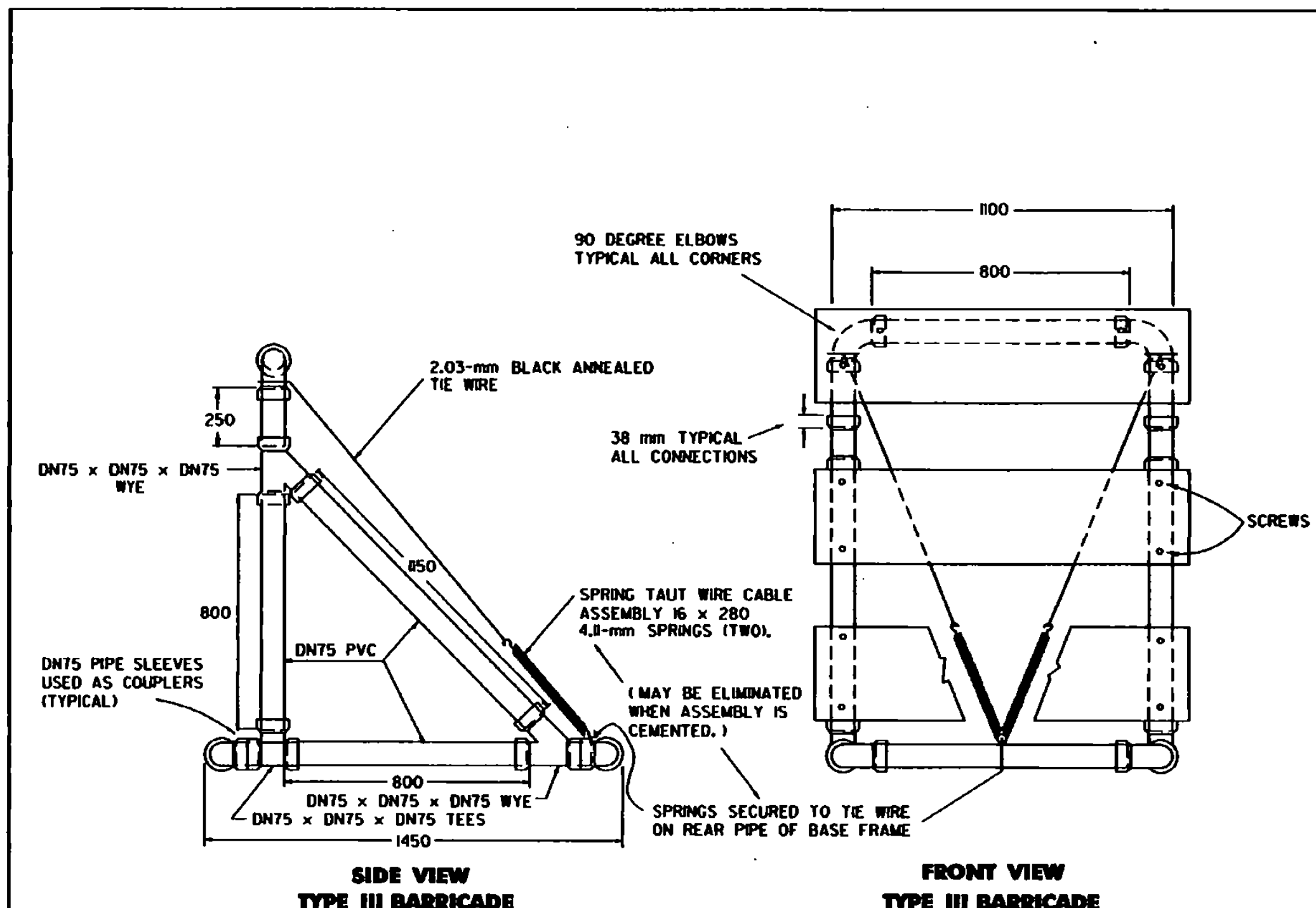
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DIRECTOR OF ENGINEERING
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DIRECTOR OF CONSTRUCTION AND MAINTENANCE

DELINEATION, BARRICADES AND DETOURS FOR CONSTRUCTION AREAS

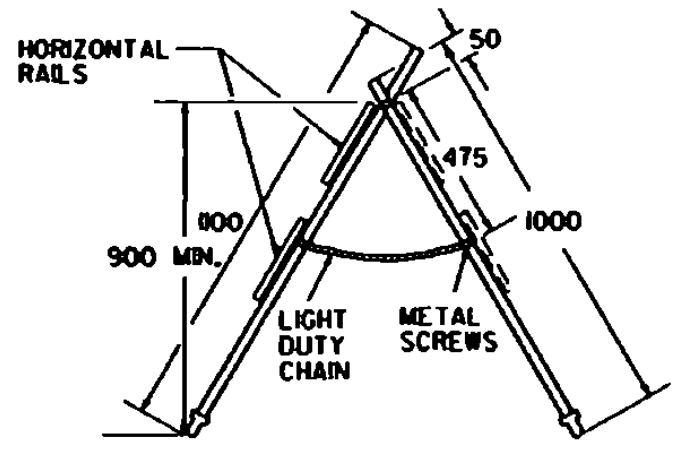
OTHER STDS. REQUIRED: E-100M E-101M E-102M E-102AM E-107AM
NOTE: ALL DIMENSIONS ARE IN MILLIMETERS (mm) EXCEPT WHERE NOTED.



Metric STANDARD E-107M



- MATERIALS FOR TYPE I AND II BARRICADES**
- 6 m - DN25 PVC
 - 4 - DN25 PVC 90° ELBOWS
 - 750 mm - DN25 THINWALL PVC CONDUIT
 - 900 mm - 6-mm STEEL ROD
 - 4 - M24 WASHERS
 - 600 mm - LIGHT DUTY CHAIN
 - M6 x 1 x 14 PAN HEAD METAL SCREWS (AS REQUIRED)
 - 2 - M20 COTTER PINS
 - 2 OR 4 - 200 OR 300 X 900 X 0.64 BARRICADE RAILS (AS REQUIRED)



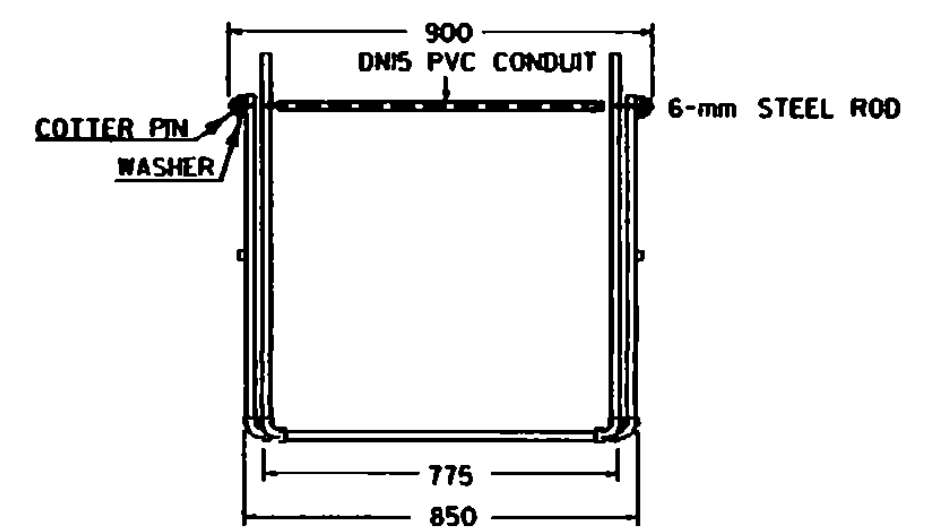
MATERIALS

THE PIPE, WYES, TEES AND ELBOWS USED TO CONSTRUCT BARRICADES SHALL CONFORM TO THE REQUIREMENTS OF ASTM D 2241 FOR PVC 120 OR PVC 1220, SDR-21, PRESSURE RATING 1380 KPa. THE WYES, TEES AND ELBOWS SHALL CONFORM TO THE REQUIREMENTS OF ASTM D 2466, TYPE II, GRADE I. ALL JOINTS SHALL BE SLIP-FIT AND MAY BE LIGHTLY CEMENTED. THE BARRICADE RAILS SHALL BE FABRICATED FROM 0.64-mm ANODIZED ALUMINUM AND SHALL HAVE REFLECTORIZED ALTERNATING ORANGE AND WHITE STRIPES (SLOPING DOWNWARD AT AN ANGLE OF 45° IN THE DIRECTION TRAFFIC IS TO PASS).

MAINTENANCE

BARRICADES SHALL BE MAINTAINED IN CLEAN AND LEGIBLE CONDITIONS SATISFACTORY TO THE ENGINEER. THEY SHALL BE COMPLETELY VISIBLE TO APPROACHING TRAFFIC AT ALL TIMES. DAMAGED, DEFACED OR DIRTY BARRICADES SHALL BE REPAIRED, CLEANED OR REPLACED AS ORDERED BY THE ENGINEER. THE PVC PIPE AND FITTINGS SHALL BE WHITE IN COLOR. AT LEAST TWO (2) HOLES SHALL BE DRILLED (5 mm DIAM.) IN EACH SECTION OF PIPE AND FITTINGS IF THE ASSEMBLY IS NOT CEMENTED.

- MATERIALS FOR TYPE III BARRICADES**
- 9 m - DN75 PVC PIPE
 - 6 - DN75 90° ELBOWS
 - 2 - DN75 TEES
 - 4 - DN75 WYES
 - 3 - 200 OR 300 X 1200 X 0.64 BARRICADE RAILS
 - 2 - 16 X 280, 4.8-mm SPRINGS (IF ASSEMBLY IS NOT CEMENTED)
 - 12 - M6 x 1 x 25 PAN HEAD METAL SCREWS
 - 4.5 m - 2.03-mm BLACK ANNEALED TIE WIRE (IF ASSEMBLY IS NOT CEMENTED)

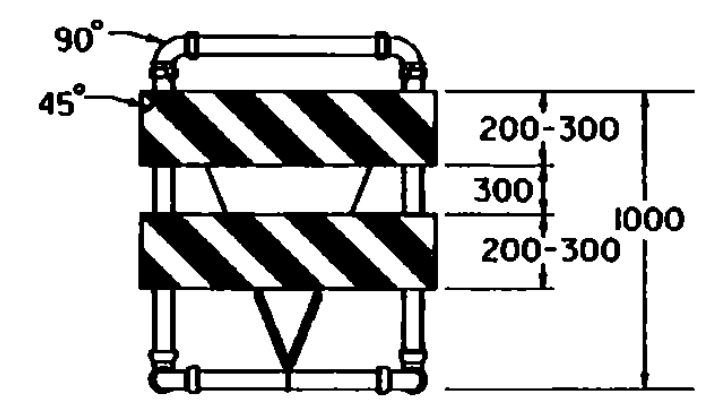


BARRICADES SHALL BE STABILIZED WITH SAND BAGS OF MINIMUM MASS WHICH WILL NOT CONSTITUTE A HAZARD IF THE BARRICADE IS HIT. THESE SHALL BE PLACED ONLY ON THE FRONT AND REAR PIPES OF THE BASE FRAME OF THE BARRICADE. SAND BAG STABILIZERS SHALL BE SO PLACED AS NOT TO A HAZARD TO VEHICLES PASSING ON EITHER SIDE. GLUED JOINTS MAY PROVIDE ADDITIONAL STABILITY TO THE INSTALLATION.

TYPE I BARRICADES SHALL UTILIZE ONE HORIZONTAL RAIL IN EACH DIRECTION. TYPE II BARRICADES SHALL BE A TYPE I BARRICADE WITH AN ADDITIONAL HORIZONTAL RAIL MOUNTED BELOW THE OTHER IN EACH DIRECTION.

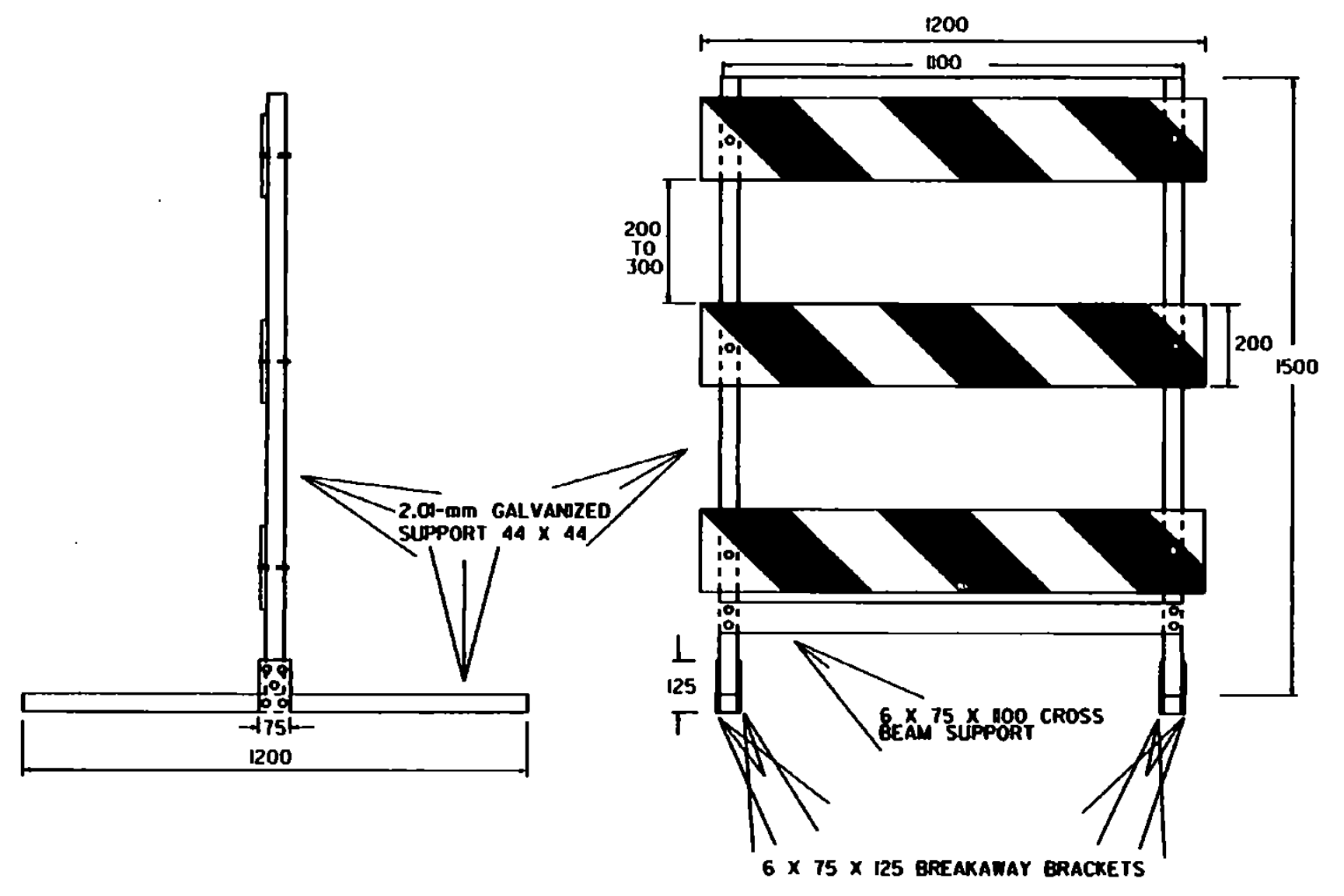
TYPE III BARRICADES (MODIFIED) SHALL CONSIST OF THE BREAKAWAY DN75 PVC DESIGN SHOWN ON THIS SHEET WITH THE TWO-RAIL LAYOUT DETAILED ABOVE LEFT.

SEE STD E-107M FOR ADDITIONAL INFORMATION.

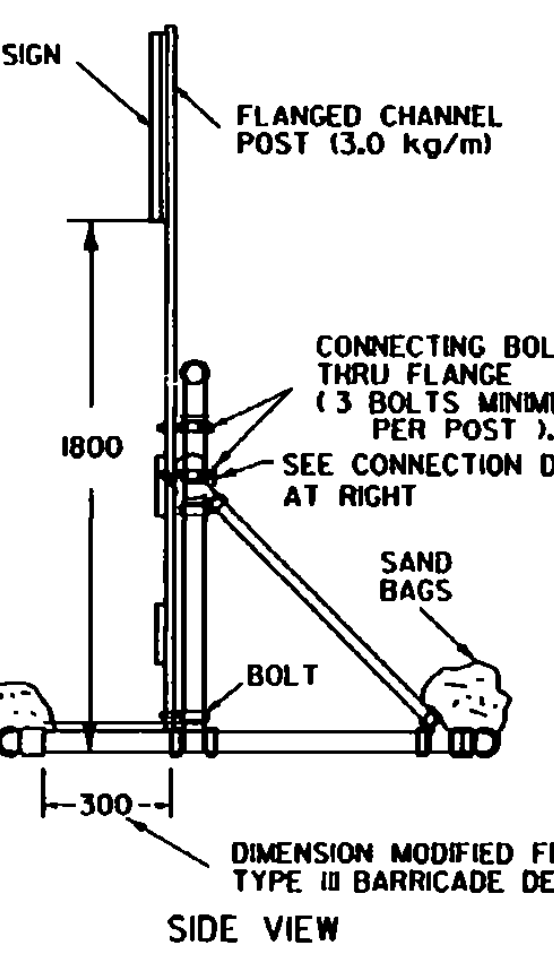
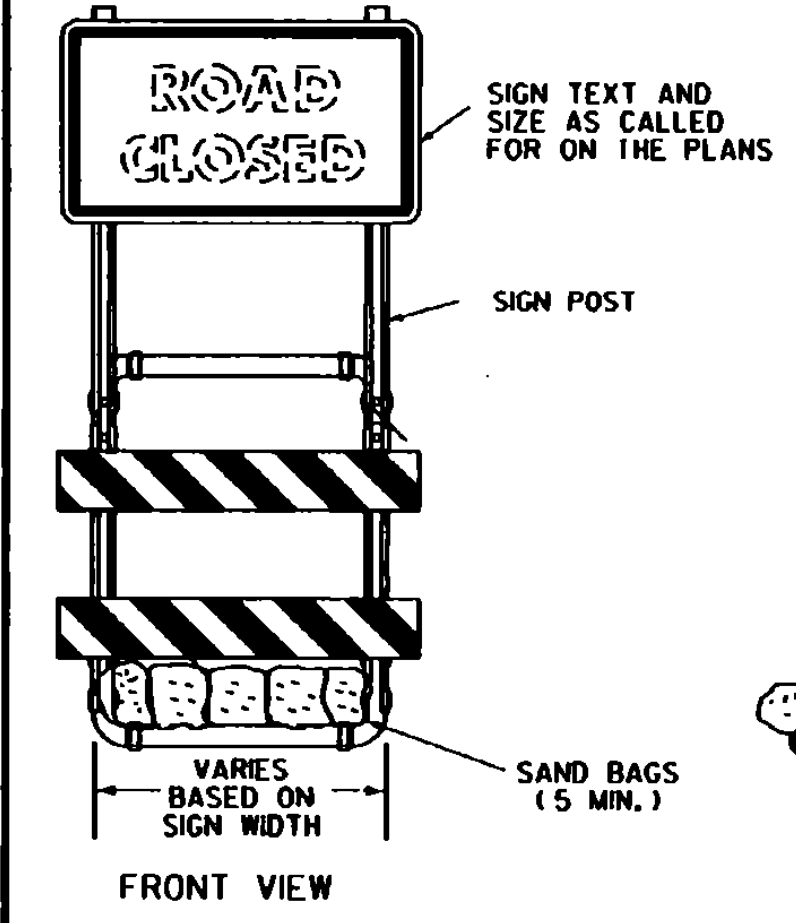


TYPE III (MODIFIED) BARRICADE
(STRIPING IS SHOWN WITH TRAFFIC PASSING TO THE RIGHT.)

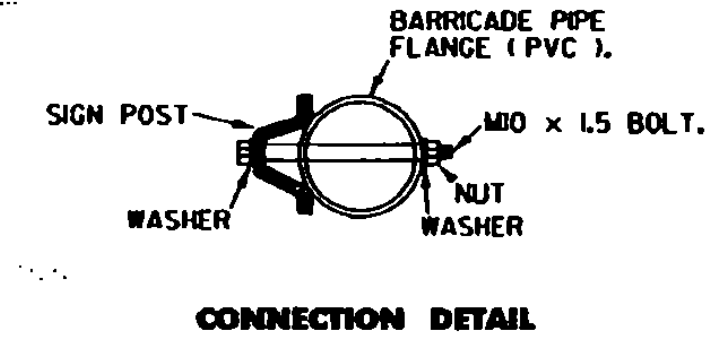
- MATERIALS FOR METAL TYPE III BARRICADES**
- PANELS (3):
200 X 1200 GALVANIZED STEEL...COVERED (OR 2 SIDES WITH WHITE/ORANGE, DIAGONALLY STRIPED REFLECTIVE SHEETING)
- VERTICAL SUPPORTS (2): 2.01-mm GALVANIZED TUBING 44 X 44 X 1500
- HORIZONTAL SUPPORTS (2): 2.01-mm GALVANIZED TUBING 44 X 44 X 1200
- CROSS BEAM SUPPORT (1): COLD GALVANIZED STEEL 6 X 75 X 800
- BREAKAWAY BRACKETS (4): COLD GALVANIZED STEEL 6 X 75 X 125
- FASTENERS:**
6 - SHEAR BOLTS WITH LOCK NUTS M6 X 1 X 70
4 - FULCRUM BOLTS WITH LOCK NUTS M10 X 1.5 X 70
4 - FASTENER BOLTS WITH LOCK NUTS M10 X 1.5 X 70
6 - PANEL BOLTS WITH LOCK NUTS AND WASHERS M6 X 1 X 50
- ALL FASTENERS GALVANIZED STEEL. ALL BOLTS HEX HEAD.



SIDE AND FRONT VIEW OF TYPE III METAL BARRICADE



- NOTES:**
- REFER TO STANDARD TYPE III BARRICADE (ABOVE LEFT).
 - ALL BARRICADE JOINTS SHALL BE GLUED.
 - FIVE SAND BAGS ARE REQUIRED BOTH FRONT AND BACK, 25 kg MINIMUM EACH.



SIGN MOUNTING ON TYPE III BARRICADE (MODIFIED)

DIMENSION MODIFIED FROM STANDARD TYPE III BARRICADE DETAIL (ABOVE LEFT)

REVISIONS AND CORRECTIONS
JUNE 13, 1997 - ORIGINAL APPROVAL DATE

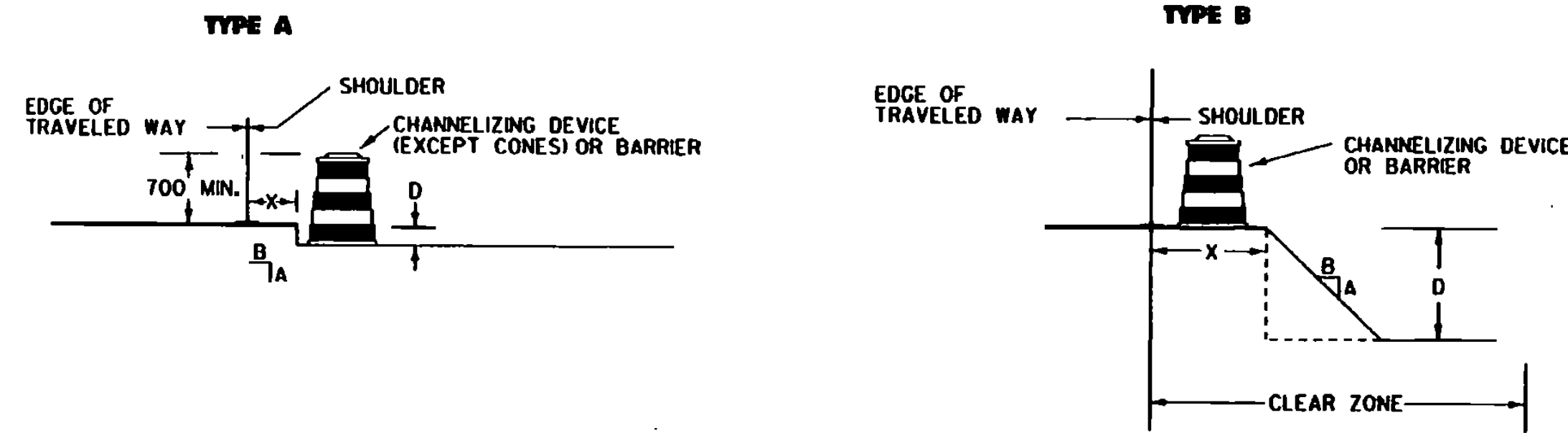
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DIRECTOR OF CONSTRUCTION AND MAINTENANCE

BREAKAWAY BARRICADE DETAILS

OTHER STDS. E-107M REQUIRED:
NOTE: ALL DIMENSIONS ARE IN MILLIMETERS (mm) EXCEPT WHERE NOTED.

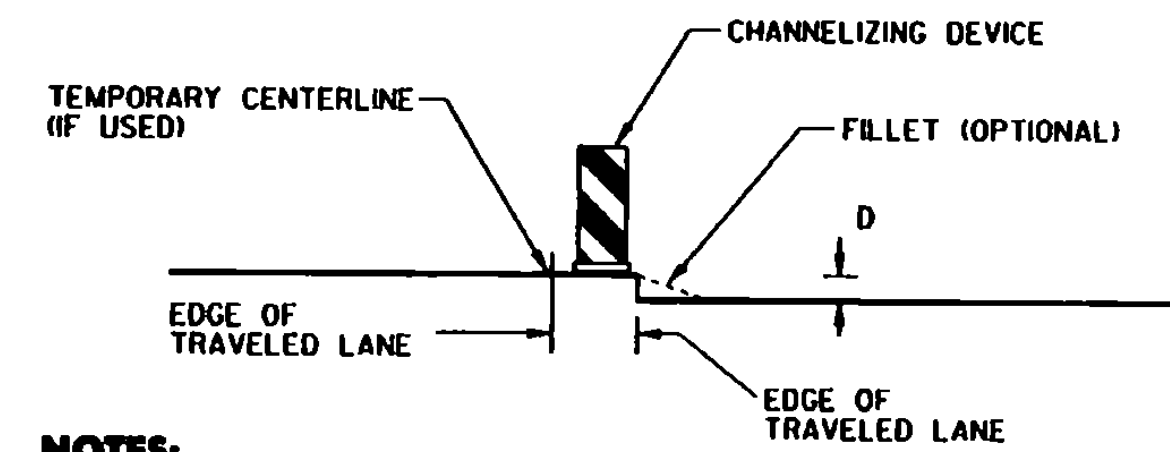
Metric STANDARD E-107AM

**CONDITION 1
DROP-OFF ADJACENT TO TRAVELED WAY**



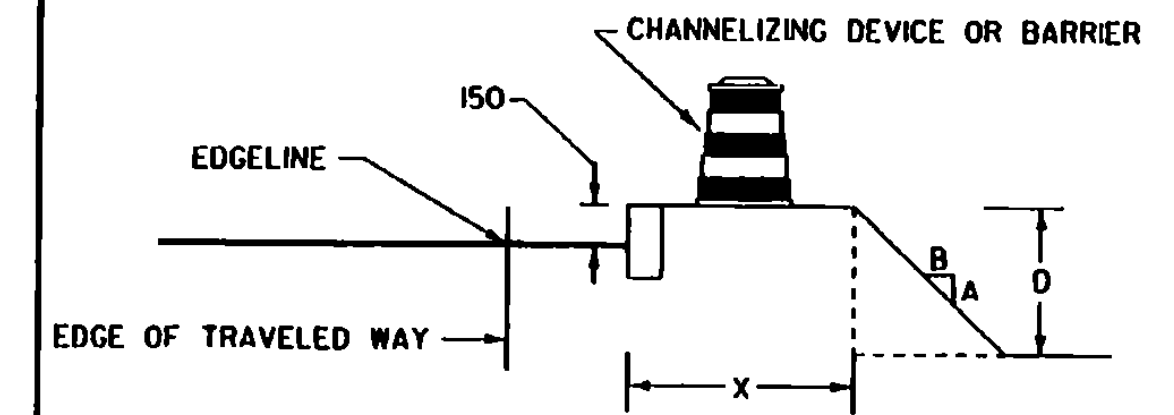
- NOTES:**
1. CHANNELIZING DEVICES OR BARRIER SHOULD BE PLACED TO MAXIMIZE THE WIDTH OF THE TRAVELED WAY.
 2. FOR SPECIFIC REQUIREMENTS USE CHART "A".
 3. IF THE DROP-OFF REQUIRES CHANNELIZING DEVICES TO REMAIN INPLACE OVERNIGHT, THEN "LOW SHOULDER" OR "SHOULDER DROP OFF" SIGNS SHOULD BE INSTALLED.

**CONDITION 2
DROP-OFF BETWEEN ADJACENT TRAVELED LANES**



- NOTES:**
1. WHEREVER A LONGITUDINAL DROP-OFF BETWEEN ADJACENT TRAVELED LANES IS TO BE LEFT OVERNIGHT THEN "UNEVEN LANES" SIGNS AND CHANNELIZING DEVICES SHOULD BE INSTALLED.
 2. IF REQUIRED, THE CHANNELIZING DEVICES USED SHOULD BE THOSE WHICH MAXIMIZE THE TRAVELED LANE (I.E. CONES, VERTICAL PANELS OR TUBULAR MARKERS).
 3. A BITUMINOUS CONCRETE FILLET WITH A 1:3 SLOPE MAY BE USED IN LIEU OF CHANNELIZING DEVICES, HOWEVER THE "UNEVEN LANES" SIGNS SHOULD BE INSTALLED REGARDLESS.

**CONDITION 3
DROP-OFF BEYOND SHOULDER OR CURB**



- NOTES:**
1. CHANNELIZING DEVICES OR BARRIER SHOULD BE PLACED TO MAXIMIZE THE WIDTH OF THE TRAVELED WAY.
 2. FOR SPECIFIC REQUIREMENTS USE CHART "A" OR "B" AS APPLICABLE.

**CHART A
ALL SPEEDS
NO CURB**

X (mm)	DROP (D) (mm)	A:B SLOPE	DEVICE REQUIRED
0 TO 1200	LESS THAN 50	ANY	NONE
	50 TO 125	1/3 OR FLATTER	NONE
		STEEPER THAN 1/3	CHANNELIZING DEVICE
1200 TO 3000	GREATER THAN 125	1/3 OR FLATTER	NONE
		STEEPER THAN 1/3	BARRIER
	LESS THAN 125	ANY	NONE
1200 TO 3000	125 TO 300	1/3 OR FLATTER	NONE
		STEEPER THAN 1/3	BARRIER
	GREATER THAN 300	1/3 OR FLATTER	NONE
		STEEPER THAN 1/3	BARRIER
3000 TO CZ	LESS THAN OR EQUAL TO 300	ANY	NONE
	GREATER THAN 300	1/3 OR FLATTER	NONE
		STEEPER THAN 1/3	BARRIER

1. CLEAR ZONE (CZ) IS TO BE DETERMINED PER THE CURRENT AASHTO ROADSIDE DESIGN GUIDE.
2. CHANNELIZING DEVICES MAY BE USED INSTEAD OF BARRIER FOR SHORT TERM (ONE-DAY) OPERATIONS.
3. ON BORDERLINE CONDITIONS, THE ENGINEER SHALL DETERMINE WHICH TREATMENT IS ADEQUATE FOR THE EXISTING CONDITIONS.

GENERAL NOTES

1. THESE CONDITIONS AND TREATMENTS ARE ONLY PART OF THE TRAFFIC CONTROL SYSTEM AND SHALL BE USED IN ADDITION TO THE PROPER WORK ZONE SIGGING.
2. THE FOLLOWING ARE ACCEPTABLE CHANNELIZING DEVICES: (SEE STANDARD SHEETS E-106M, E-107M AND E-107AM FOR FURTHER DETAILS)
 - A. VERTICAL PANEL
 - B. TYPE I OR TYPE II BARRICADE
 - C. PLASTIC DRUM
 - * D. CONE - WHERE APPLICABLE

* CONES SHALL NOT BE USED WHERE THE CHANNELIZING DEVICE IS REQUIRED TO BE PLACED BELOW THE GRADE OF THE TRAVELED WAY (SEE CONDITION 1, TYPE A).
3. WHERE BARRIER IS CALLED FOR, EITHER CONCRETE BARRIER (JERSEY SHAPE), STEEL BEAM GUARDRAIL OR OTHER FHWA APPROVED BARRIER MAY BE USED.
 - BARRIER ENDS FACING ONCOMING TRAFFIC SHALL BE TAPERED BEYOND THE CLEAR ZONE OR PROTECTED WITH AN APPROVED END TREATMENT DESIGNED FOR THE 85TH PERCENTILE SPEED OR THE POSTED SPEED LIMIT OF THE ROADWAY.
4. THE LOCATION OF CHANNELIZING DEVICES SHALL BE BASED ON THE CRITERIA SHOWN ON SHEET E-106M.
5. "LOW SHOULDER" OR "UNEVEN LANES" SIGNS, WHERE USED, SHALL BEGIN PRIOR TO THE DROP-OFF CONDITION AND SHOULD BE REPEATED EVERY 450 m.

**CHART B
POSTED SPEED OF
40 MPH OR LESS
WITH CURB**

X (mm)	DROP (D) (mm)	DEVICE REQUIRED
0 - 3000	LESS THAN OR EQUAL TO 300	NONE
0 - 3000	GREATER THAN 300	CHANNELIZING DEVICE
GREATER THAN 3000	ANY	NONE

- NOTES:**
1. USE THIS CHART ONLY FOR CONDITION 3.
 2. USE THIS CHART FOR VERTICAL CURBS OF 150 mm OR GREATER, FOR LOWER OR MOUNTABLE CURBS USE CHART A.
 3. FOR CURBED SECTIONS WITH POSTED SPEEDS ABOVE 40 MPH, USE CHART A.

OTHER STDS. E-101M E-107M
REQUIRED: E-106M E-107AM

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

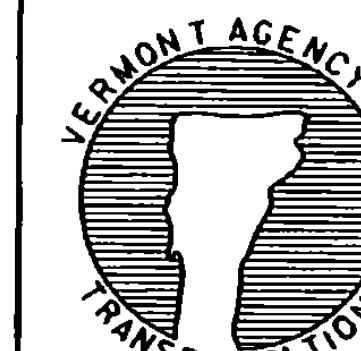
REVISIONS AND CORRECTIONS
JUNE 13, 1997 - ORIGINAL APPROVAL DATE

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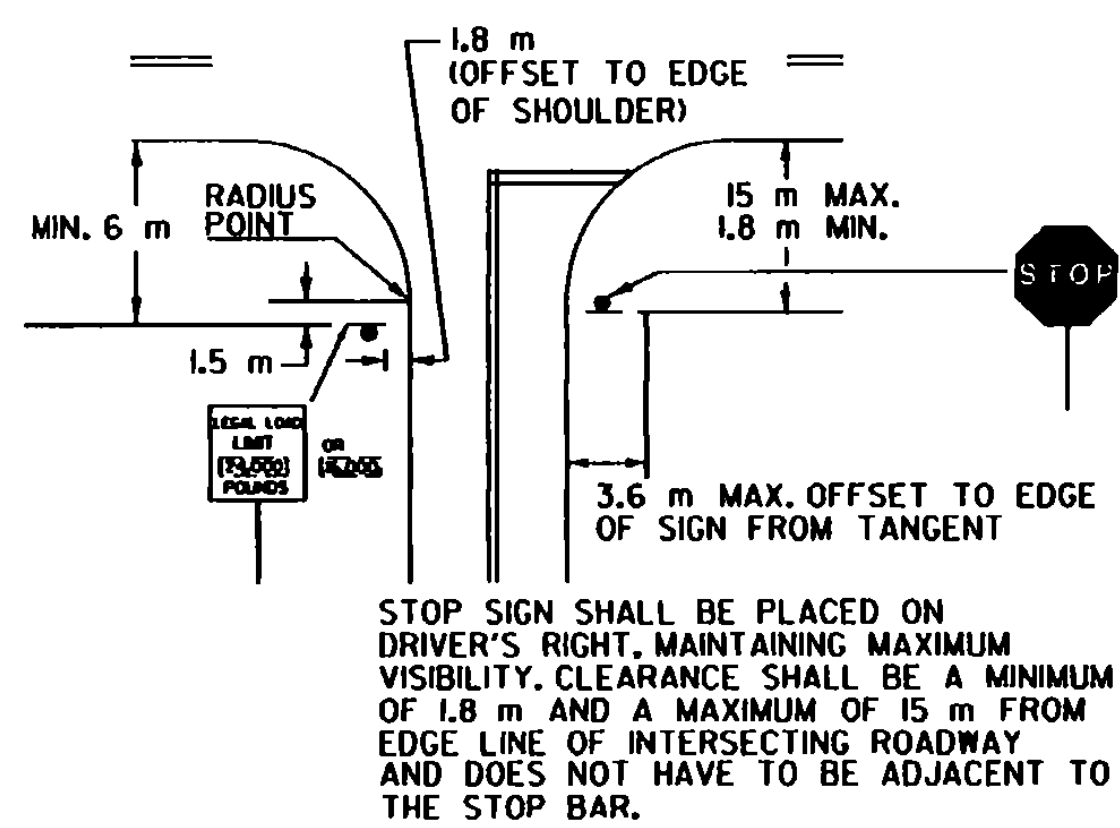
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**CONSTRUCTION ZONE
LONGITUDINAL DROP OFFS**

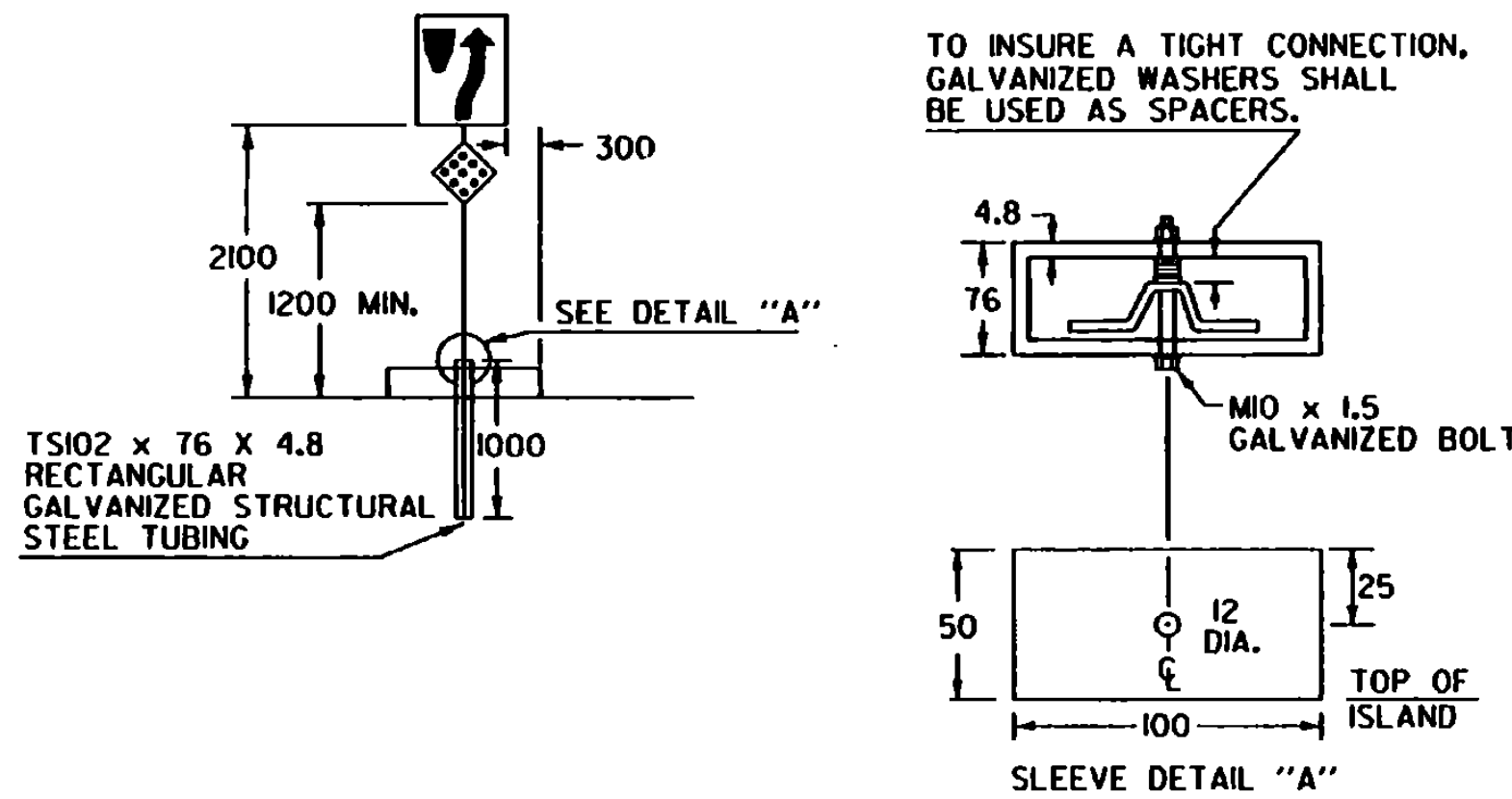


**Metric
STANDARD
E-108 M**



LEGAL LOAD LIMIT AND STOP SIGNS AT INTERSECTIONS WITH TOWN HIGHWAYS

STOP SIGN SHALL BE PLACED ON DRIVER'S RIGHT, MAINTAINING MAXIMUM VISIBILITY. CLEARANCE SHALL BE A MINIMUM OF 1.8 m AND A MAXIMUM OF 15 m FROM EDGE LINE OF INTERSECTING ROADWAY AND DOES NOT HAVE TO BE ADJACENT TO THE STOP BAR.



SIGNS ON MEDIAN ISLANDS IN THE LINE OF TRAFFIC

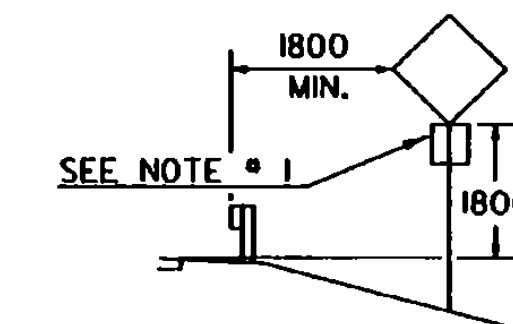
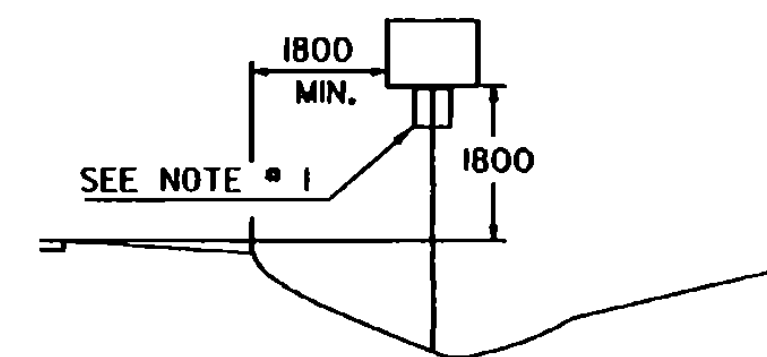
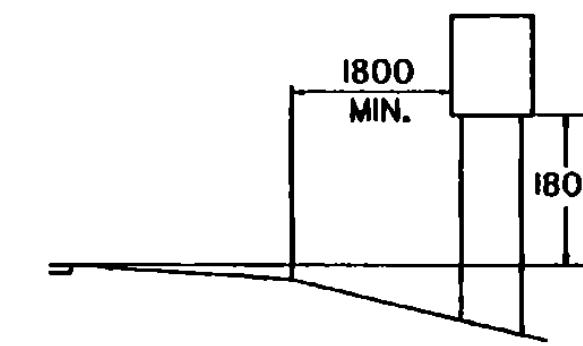
TS102 x 76 x 4.8 RECTANGULAR GALVANIZED STRUCTURAL STEEL TUBING

TO INSURE A TIGHT CONNECTION, GALVANIZED WASHERS SHALL BE USED AS SPACERS.

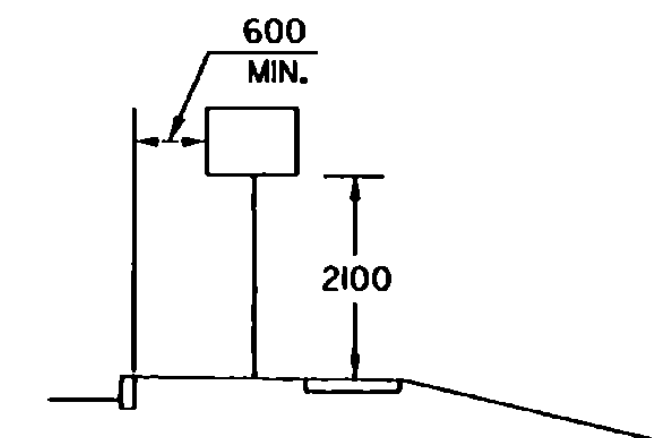
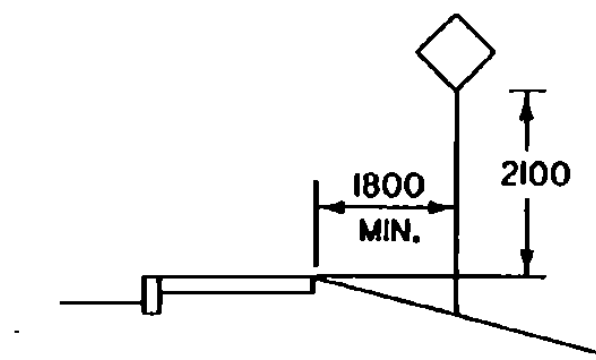
M10 x 1.5 GALVANIZED BOLT

50 100 12 DIA. 25 TOP OF ISLAND SLEEVE DETAIL "A"

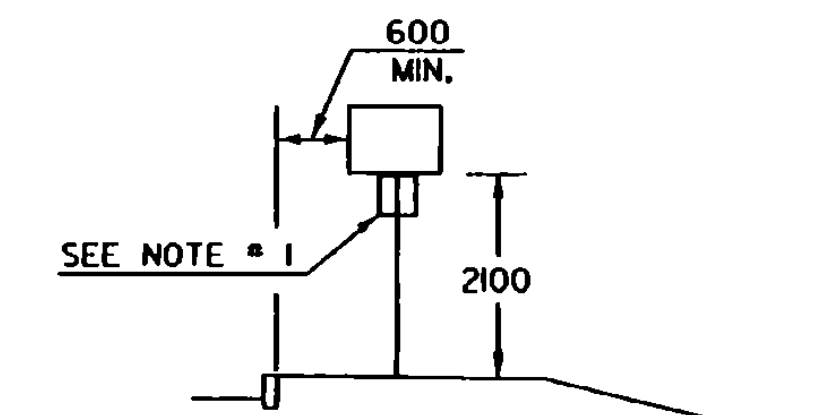
INCREASE VERTICAL CLEARANCE TO 2.1m IN AREAS OF FREQUENT ROADSIDE PARKING OR PEDESTRIAN ACTIVITY.



RURAL



IF SUFFICIENT CLEARANCE IS NOT AVAILABLE BETWEEN CURB AND SIDEWALK, MOUNT SIGN BEHIND SIDEWALK AS SHOWN AT TOP. CHECK FOR ADEQUATE RIGHT-OF-WAY.



URBAN

NOTES:

1. IN BOTH RURAL AND URBAN LOCATIONS, IF A SECONDARY SIGN IS MOUNTED BELOW ANOTHER SIGN, THE MINIMUM CLEARANCE MAY BE REDUCED BY 300 mm.
 2. IN RURAL AREAS WITH NO OR MINIMAL SHOULDER, THE LATERAL CLEARANCE TO THE EDGE OF A SIGN SHOULD BE A MINIMUM OF 3.6 m FROM THE EDGE OF THE TRAVELED WAY.
 3. ALSO SEE OTHER STANDARD SHEETS FOR MOUNTING CLEARANCE AND SPACING OF DESTINATION AND ROUTE MARKER ASSEMBLIES AND TOWN LINE SIGNS.
- POST REFERENCE:
REFER TO THE DETAILS ON THE APPROPRIATE STANDARD DRAWING FOR INFORMATION CONCERNING THE PROPER MOUNTING OF SIGNS ON APPROPRIATE POSTS.

OTHER STDS. E-160M E-162M E-164M
REQUIRED: E-161M E-163M

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

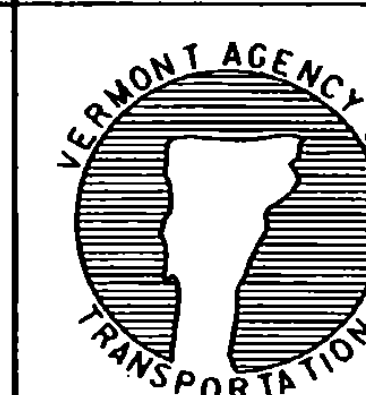
REVISIONS AND CORRECTIONS
JUNE 13, 1997 - ORIGINAL APPROVAL DATE

APPROVED

Paul C. Evans
DIRECTOR OF ENGINEERING

Stephen S. MacArthur
DIRECTOR OF CONSTRUCTION AND MAINTENANCE

**STANDARD SIGN PLACEMENT
CONVENTIONAL ROAD**

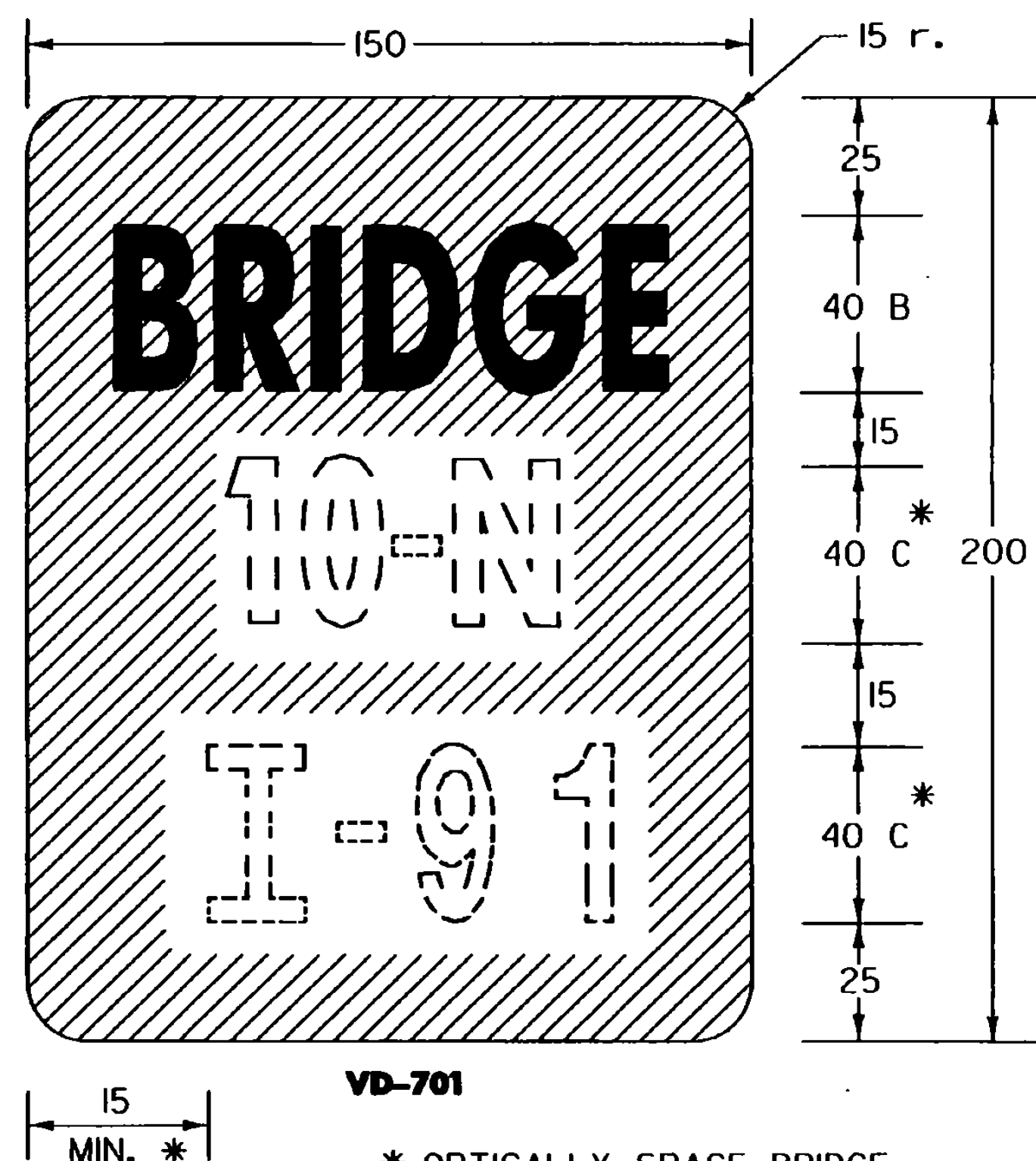
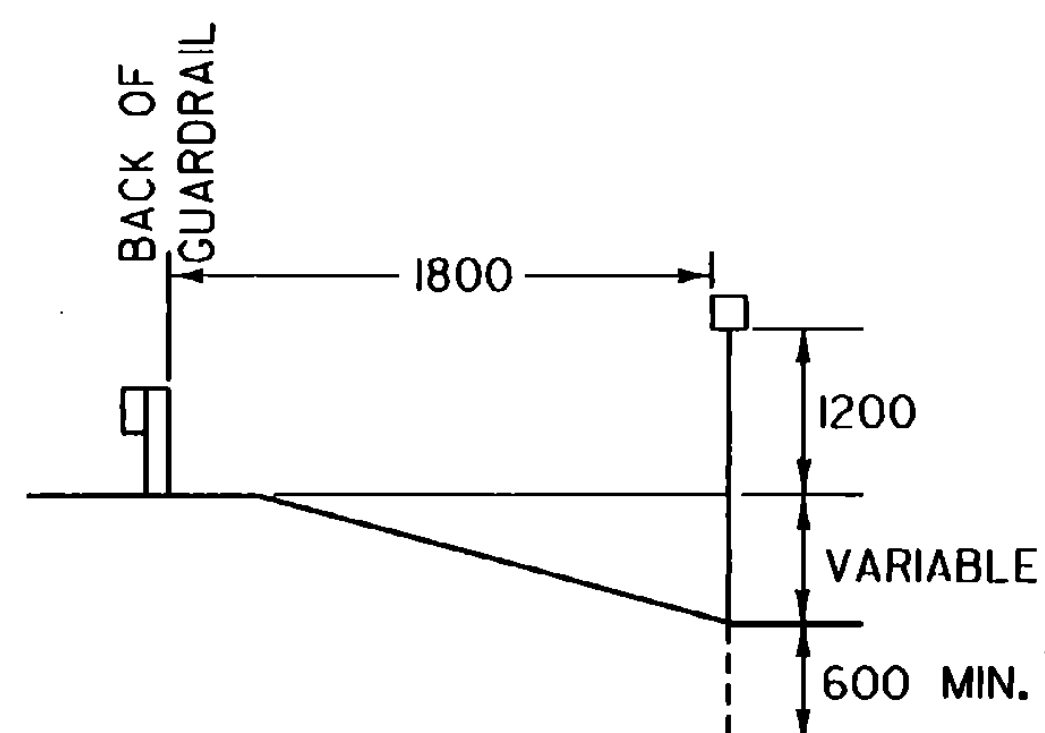
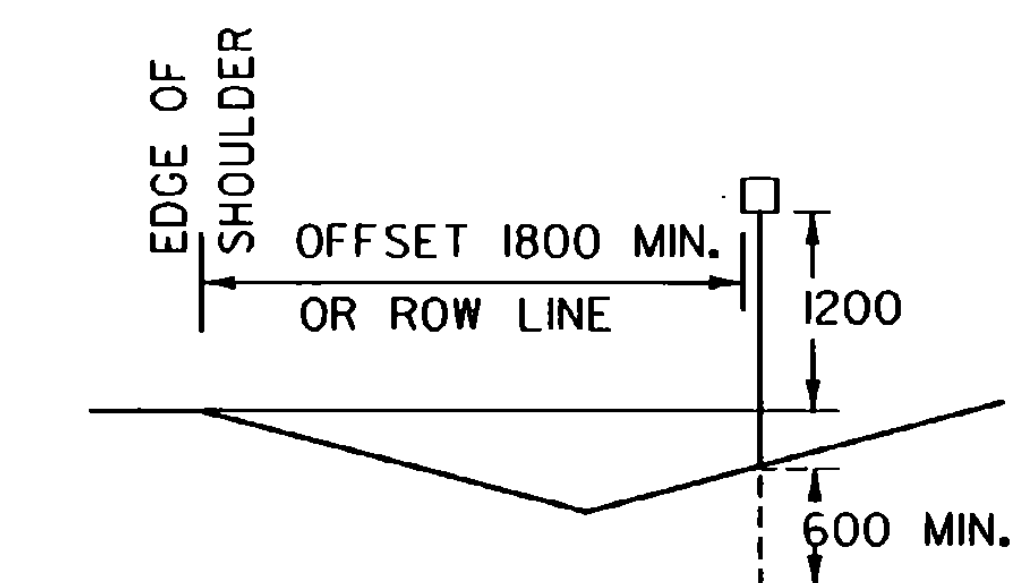


**Metric
STANDARD
E-121M**

I-91
 ←50→

HYPHENATED WORD DETAIL

FOR EXAMPLE, ROUTE NUMBERS SHALL APPEAR AS: I-91, US5, VT22.



VD-701

* OPTICALLY SPACE BRIDGE AND ROUTE NUMBERS. SERIES B LETTERS MAY BE USED TO MAINTAIN VISUAL INTEGRITY.

NOTES:

GENERAL:
 DOTTED LINES AND NUMERALS INDICATE TEXT THAT VARIES.

PAYMENT:
 BRIDGE PLAQUES SHALL BE PAID AS TRAFFIC SIGNS, TYPE "A", AND POSTS PAID AS FLANGED CHANNEL STEEL SIGN POSTS.

MATERIAL:
 THE SIGN BASE MATERIAL SHALL BE 1.02 mm FLAT SHEET ALUMINUM.

COLORS:
 THE SIGN SHALL HAVE A REFLECTORIZED WHITE TEXT ON REFLECTORIZED GREEN BACKGROUND. THE COLORS SHALL CONFORM WITH THOSE FOUND IN STANDARD COLOR TOLERANCE CHARTS AS APPROVED BY THE FHWA.

LETTERING:
 LETTERS AND DIGITS SHALL CONFORM TO THE LATEST VERSION OF FHWA'S "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS".

POSTS:
 FLANGED CHANNEL STEEL 3.0 kg/m POSTS SHALL BE USED WHEN THE POST LENGTH EXCEEDS 2100 mm. FOR LENGTHS OF 2100 mm OR LESS, A 1.7 kg/m STEEL SIGN POST SHALL BE USED.

OTHER STDS. REQUIRED:

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

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APPROVED

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 DIRECTOR OF ENGINEERING

[Signature]
 DIRECTOR OF CONSTRUCTION AND MAINTENANCE

BRIDGE NUMBER PLAQUE



Metric
STANDARD
E-134M

REFERENCE PLAQUE INFORMATION

TO PROVIDE FOR AN ACCURATE SYSTEM OF LOCATION, REFERENCE PLAQUES ARE INSTALLED ALONG NON-INTERSTATE ARTERIALS AND COLLECTORS.

THE FOLLOWING INFORMATION IS PROVIDED FOR INSTALLATION GUIDANCE:

REFERENCE PLAQUES WILL NORMALLY BE INSTALLED AT 250-m INTERVALS AND ALTERNATE FROM ONE SIDE OF THE ROAD TO THE OTHER. A SIGN WILL FACE TRAFFIC AT EACH 500-m INTERVAL. A REFERENCE PLAQUE WILL ALSO BE INSTALLED AT EACH INTERSECTION AND ON THE POST WITH THE STOP SIGN. (REFERENCE PLAQUE TO BE PLACED PARALLEL TO MAINLINE VISIBLE TO TRAFFIC.) ANY REFERENCE PLAQUE LOCATION FALLING WITHIN 80 m OF AN INTERSECTION WILL BE OMITTED. IF A NORMAL REFERENCE PLAQUE LOCATION FALLS WITHIN 15 m OF AN EXISTING HIGHWAY SIGN, THE REFERENCE PLAQUE WILL BE INSTALLED ON THE EXISTING POST. WHERE THE LOCATION OF A REFERENCE PLAQUE IS UNDESIRABLE (I.E., ON A LAWN, DRIVEWAY, LEDGE) AN ATTEMPT WILL BE MADE TO LOCATE IT ACROSS THE ROAD. IF A SUITABLE LOCATION CANNOT BE FOUND WITHIN 15 m OF THE DESIRED LOCATION ON EITHER SIDE OF THE ROAD, IT MAY BE OMITTED. IF A NORMAL REFERENCE PLAQUE LOCATION FALLS WITHIN 15 m OF A POWER POLE, MAIL BOX OR OTHER OBJECT WHICH PROVIDES PARTIAL PROTECTION, LOCATE THE PLAQUE NEAR OR AT SUCH A PROTECTIVE FEATURE.

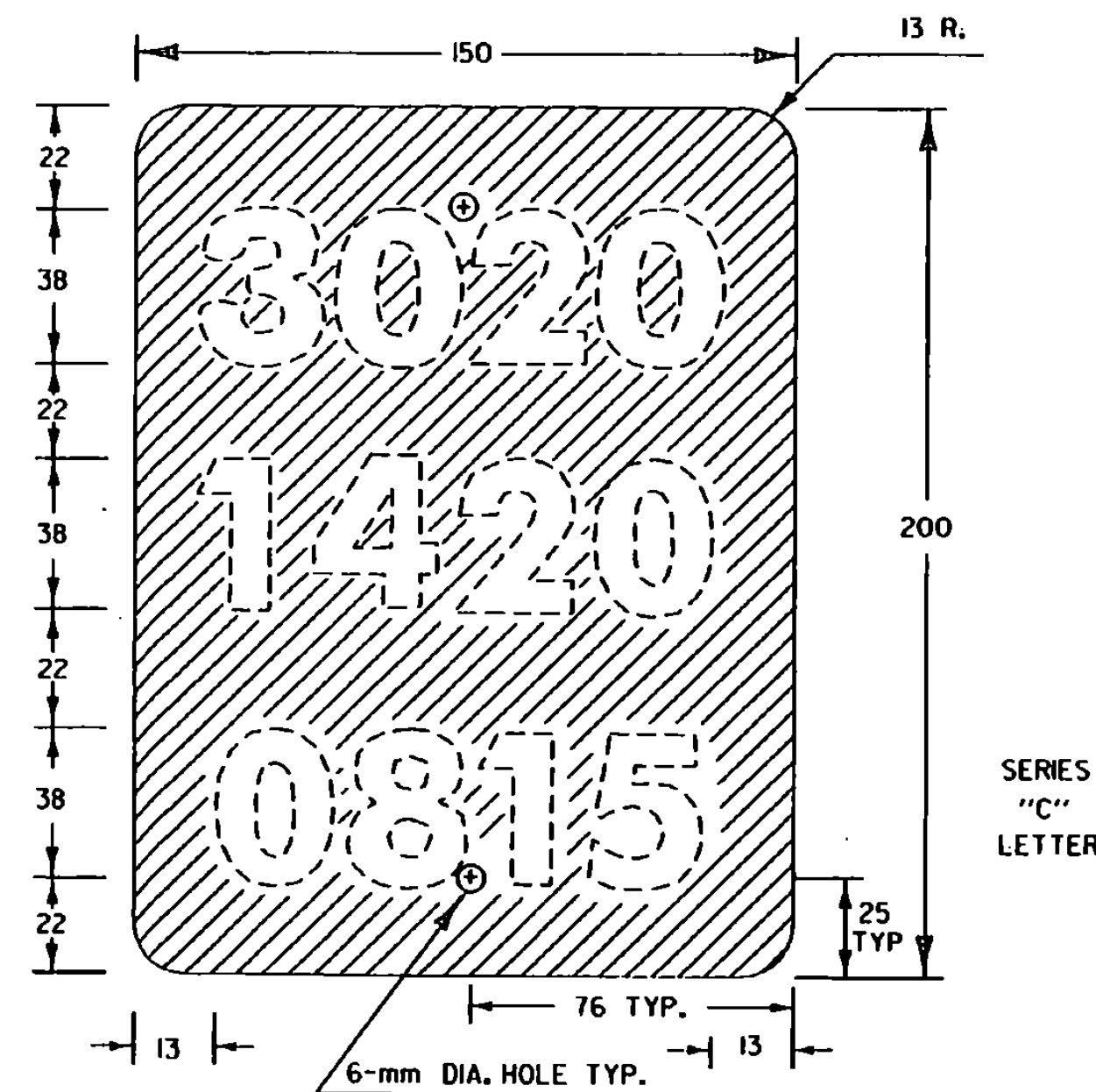
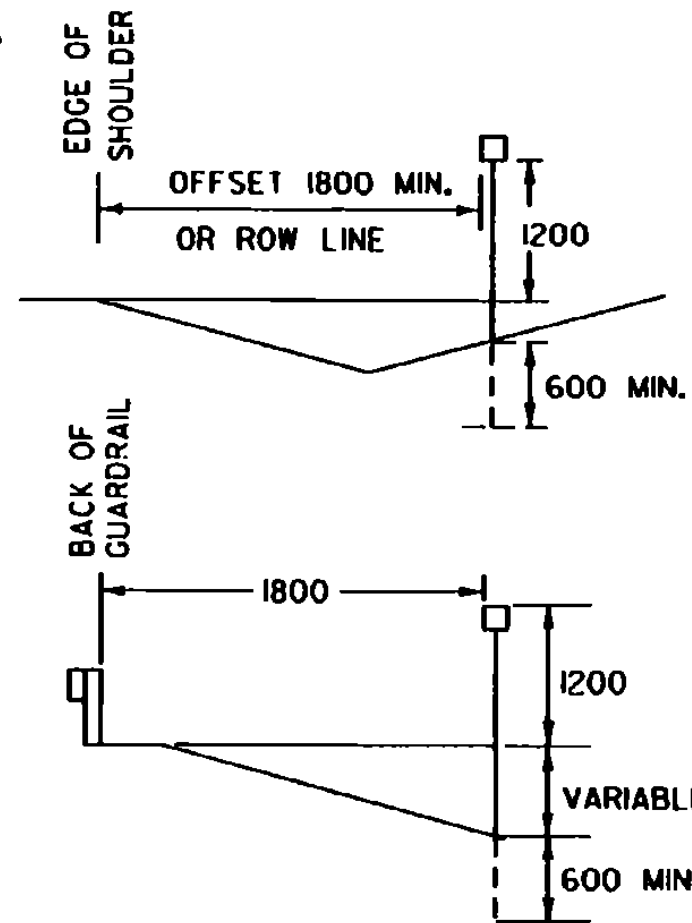
ON CLASS I TOWN HIGHWAYS (E.G., CITIES, VILLAGES) OR OTHER CONGESTED AREAS, REFERENCE PLAQUES WILL ONLY BE INSTALLED ON EXISTING SIGN POSTS AND WILL CARRY THE ACTUAL DISTANCE TO THAT LOCATION. DESIRABLY, A REFERENCE PLAQUE WILL BE INSTALLED AT 200-m INTERVALS THROUGH SUCH AREAS.

THE TOP ROW OF NUMERALS INDICATE THE ROUTE NUMBER. THESE INCLUDE:

- 1) THE STATE ROUTE NUMBER, THE FOURTH NUMERAL IS THE LETTER DESIGNATION, THUS, U.S. 2 WOULD BE 0020, ROUTE 100B WOULD BE 100Z, ETC.;
- 2) A 9000 SERIES NUMBER FOR NAMED STATE HIGHWAYS, CLASS I AND II TOWN HIGHWAYS AS LISTED ON THIS SHEET; AND
- 3) FEDERAL-AID STP ROUTES ON TOWN HIGHWAYS, USE FEDERAL-AID ROUTE DESIGNATION NUMBERS, AS SHOWN ON THE PLANNING DIVISION'S MAP TITLED "FEDERAL-AID SYSTEMS ON VERMONT HIGHWAYS".

THE SECOND ROW OF NUMERALS INDICATE THE COUNTY AND TOWN, THE COUNTY IS INDICATED IN THE FIRST TWO NUMBERS, CODED ALPHABETICALLY, THE TOWN WITHIN THE COUNTY IS INDICATED IN THE LAST TWO NUMBERS, CODED ALPHABETICALLY. THUS WATERBURY, THE EIGHTEENTH TOWN ALPHABETICALLY IN WASHINGTON COUNTY WHICH IS THE TWELFTH COUNTY ALPHABETICALLY WITHIN THE STATE, WOULD BE INDICATED AS 1218 ON THE MARKER.

THE BOTTOM ROW OF NUMERALS INDICATES THE DISTANCE, ROUNDED TO THE NEAREST 10 m, FROM THE TOWN LINE OR BEGINNING OF A ROUTE (I.E., TRAVELING SOUTH TO NORTH OR WEST TO EAST), THE ROUTE DIRECTION IS ESTABLISHED USING THE AGENCY'S "ROUTE LOG AND PROGRESS CHARTS" AS A GUIDE.



CLASS I AND II TOWN HIGHWAYS

ROUTE CODE NUMBER	NAMED STATE HIGHWAY
9020	BARNET STATE HIGHWAY
9025	BENNINGTON NORTH STATE HIGHWAY
9030	BERLIN STATE HIGHWAY
9030	BRATTLEBORO STATE HIGHWAY
9150	CASTLETON STATE HIGHWAY
9180	COVENTRY STATE HIGHWAY
9210	FAIR HAVEN STATE HIGHWAY
9240	FAIRLEE STATE HIGHWAY
9270	FERRISBURG STATE HIGHWAY
9330	MAIDSTONE STATE HIGHWAY
9360	MIDDLESEX STATE HIGHWAY
9390	MONTPELIER STATE HIGHWAY
9420	MONTPELIER JUNCTION STATE HIGHWAY
9430	NEWBURY STATE HIGHWAY
9480	NORTON STATE HIGHWAY
9540	NORWICH STATE HIGHWAY
9600	PUTNEY STATE HIGHWAY
9630	QUECHEE STATE HIGHWAY
9720	ST. ALBANS ST. HWY. SOUTH
9730	ST. JOHNSBURY ST. HWY
9750	SOUTH ALBURG STATE HIGHWAY
9840	WESTMINSTER STATE HIGHWAY
9870	WILDER STATE HIGHWAY
9900	WINHALL STATE HIGHWAY
9990	WEST RUTLAND-RUTLAND (BUS. US-4)
9991	BELLOWS FALLS S01171 ROCK-WEST ST.)
9992	BELLOWS FALLS S11171 BRIDGE ST.)
9993	BURLINGTON (ALTERNATE US-7)
9995	MONTPELIER (BUS. US-2)
9996	NEWPORT (ALTERNATE US-5)
9997	ST. JOHNSBURY (ALTERNATE US-5)
9998	SO. BURLINGTON-KENNEDY DRIVE

COUNTY/TOWN DESIGNATIONS

1 - ADDISON	2 - BENNINGTON	3 - CALEDONIA	4 - CHITTENDEN	5 - ESSEX	6 - FRANKLIN	7 - GRAND ISLE
0101 ADDISON	0201 ARLINGTON	0301 BARNET	0401 BOLTON	0501 AVERILL	0601 BAKERSFIELD	0701 ALBURG
0102 BRIDPORT	0202 BENNINGTON	0302 BURKE	0402 BUEL'S GORE	0502 AVERY'S GORE	0602 BERKSHIRE	0702 GRAND ISLE
0103 BRISTOL	0203 DORSET	0303 DANVILLE	0403 BURLINGTON	0503 BLOOMFIELD	0603 ENOSBURG	0703 ISLE LA MOTTE
0104 CORNWALL	0204 GLASTENBURY	0304 GROTON	0404 CHARLOTTE	0504 BRIGHTON	0604 FAIRFAX	0704 NORTH HERO
0105 FERRISBURGH	0205 LANDGROVE	0305 HARDWICK	0405 COLCHESTER	(ISLAND POND)	0605 FAIRFIELD	0705 SOUTH HERO
0106 GOSHEN	0206 MANCHESTER	0306 KIRBY	0406 ESSEX	0506 BRUNSWICK	0606 FLETCHER	
0107 GRANVILLE	0207 PERU	0307 LYNDON	0407 HINESBURG	0507 CONCORD	0607 FRANKLIN	
0108 HANCOCK	0208 POWNAL	0308 NEWARK	0408 HUNTINGTON	0508 EAST HAVEN	0608 GEORGIA	
0109 LEICESTER	0209 READSBORO	0309 PEACHAM	0409 JERICHO	0509 FERDINAND	0609 HIGHGATE	
0110 LINCOLN	0210 RUPERT	0310 RYEGATE	0410 MILTON	0510 GRANBY	0610 MONTGOMERY	
0111 MIDDLEBURY	0211 SANDGATE	0311 ST. JOHNSBURY	0411 RICHMOND	0511 GUILDHALL	0611 RICHFORD	
0112 MONKTON	0212 SEARSBURG	0312 SHEFFIELD	0412 ST. GEORGE	0512 LEMINGTON	0612 ST. ALBANS CITY	
0113 NEW HAVEN	0213 SHARPSBURY	0313 STANNARD	0413 SHELburne	0513 LEWIS	0613 ST. ALBANS TOWN	
0114 ORWELL	0214 STAMFORD	0314 SUTTON	0414 SO. BURLINGTON	0514 LUNENBURG	0614 SHELDON	
0115 PANTON	0215 SUNDERLAND	0315 WALDEN	0415 UNDERHILL	0515 MAIDSTONE	0615 SWANTON	
0116 RIPTON	0216 WINHALL	0316 WATERFORD	0416 WESTFORD	0516 NORTON		
0117 SALISBURY	0217 WOODFORD	0317 WHEELLOCK	0417 WILLISTON	0517 VICTORY		
0118 SHOREHAM			0418 WINOOSKI	0518 WARNER'S GRANT		
0119 STARKSBORO				0519 WARREN'S GORE		
0120 VERGENNES						
0121 WALTHAM						
0122 WEYBRIDGE						
0123 WHITING						

8 - LAMONVILLE	9 - ORANGE	10 - ORLEANS	11 - RUTLAND	12 - WASHINGTON	13 - WINDHAM	14 - WINDSOR
0801 BELVIDERE	0901 BRADFORD	1001 ALBANY	1101 BENSON	1201 BARRE CITY	1301 ATHENS	1401 ANDOVER
0802 CAMBRIDGE	0902 BRAINTREE	1002 BARTON	1102 BRANDON	1202 BARRE TOWN	1302 BRATTLEBORO	1402 BALTIMORE
0803 EDEN	0903 BROOKFIELD	(ORLEANS VILLAGE)	1103 CASTLETON	1203 BERLIN	1303 BROOKLINE	1403 BARNARD
0804 ELMORE	0904 CHELSEA	1003 BROWNINGTON	1104 CASTLETON	1204 CABOT	1304 DOVER	1404 BETHEL
0805 HYDE PARK	0905 CORINTH	1004 CHARLESTON	1105 CLARENDON	1205 CALAIS	1305 DUMMERSTON	1405 BRIDGEWATER
0806 JOHNSON	0906 FAIRLEE	1005 COVENTRY	1106 DANBY	1206 DUXBURY	1306 GRAFTON	1406 CAVENDISH
0807 MORRISTOWN	0907 NEWBURY	1006 CRAFTSBURY	1107 FAIR HAVEN	1207 E. MONTPELIER	1307 GUILFORD	1407 CHESTER
(MORRISTOWN)	0908 ORANGE	1007 DERBY	1108 HUBBARDTON	1208 FAYSTON	1308 HALIFAX	1408 HARTFORD
0808 STOW	0909 RANDOLPH	1008 GLOVER	1109 JRA	1209 MARSHFIELD	1309 JAMAICA	(WHITE RIVER
0809 WATERVILLE	0910 STRAFFORD	1009 GREENSBORO	1110 MENDON	1210 MIDDLESEX	1310 LONDONDERRY	JUNCTION)
0810 WOLCOTT	0911 THETFORD	1010 HOLLAND	1111 MIDDLETOWN	1211 MONTPELIER	1311 MARLBORO	1409 HARTLAND
	0912 TOPSHAM	1011 IRASBURG	(SPRINGS)	1212 MORETOWN	1312 NEWFANE	1410 LUDLOW
	0913 TUNBRIDGE	1012 JAY	1112 MT. HOLLY	1213 NORTHFIELD	1313 PUTNEY	1411 NORWICH
	0914 VERMIRE	1013 LOWELL	1113 MT. TABOR	1214 PLAINFIELD	1314 ROCKINGHAM	1412 PLYMOUTH
	0915 WASHINGTON	1014 MORGAN	1114 PAWLET	1215 ROXBURY	(SAXTONS RIVER)	1413 POMFRET
	0916 WEST FAIRLEE	1015 NEWPORT CITY	1115 PITTSFIELD	1216 WAITSFIELD	(BELLOWS FALLS)	1414 READING
	0917 WILLIAMSTOWN	1016 NEWPORT TOWN	1116 PITTSFORD	1217 WARREN	1315 SOMERSET	1415 ROCHESTER
		1017 TROY	1117 POULTNEY	1218 WATERBURY	1316 STRATTON	1416 ROYALTON
		1018 WESTFIELD	1118 PROCTOR	1219 WOODBURY	1317 TOWNSHEND	1417 SHARON
		1019 WESTMORE	1119 RUTLAND CITY	1220 WORCESTER	1318 VERNON	1418 SPRINGFIELD
			1120 RUTLAND TOWN		1319 WARDSBORO	1419 STOCKBRIDGE
			1121 SHERBURNE		1320 WESTMINSTER	1420 WEATHERSFIELD
			1122 SHREWSBURY		1321 WHITINGHAM	1421 WESTON
			1123 SUDBURY		1322 WILMINGTON	1422 WEST WINDSOR
			1124 TUNMOUTH		1323 WINDHAM	1423 WINDSOR
			1125 WALLINGFORD			1424 WOODSTOCK
			1126 WELLS			
			1127 WEST HAVEN			
			1128 WEST RUTLAND			

PAYMENT:

REFERENCE PLAQUES SHALL BE PAID AS TRAFFIC SIGNS, TYPE "A", AND POSTS SHALL BE PAID AS FLANGED CHANNEL STEEL SIGN POSTS.

MATERIAL:

THE SIGN BASE MATERIAL SHALL BE 1.02-mm FLAT SHEET ALUMINUM. FLANGED CHANNEL STEEL 3 kg/m POST SHALL BE USED IF THE POST EXCEEDS 2100 mm. FLANGED CHANNEL STEEL 1.7 kg/m POST SHALL BE USED FOR LENGTHS OF 2100 mm OR LESS.

COLORS:

THE SIGN SHALL HAVE A REFLECTORIZED WHITE TEXT ON A REFLECTORIZED GREEN BACKGROUND. THE COLORS SHALL CONFORM WITH THOSE FOUND IN THE STANDARD COLOR TOLERANCE CHARTS AS APPROVED BY THE FHWA.

TEXT:

LETTERS AND DIGITS SPACING AND TEXT DIMENSIONS SHALL CONFORM TO THE LATEST VERSION OF FHWA'S "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS".

OTHER STDS. E-160M

REQUIRED:

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

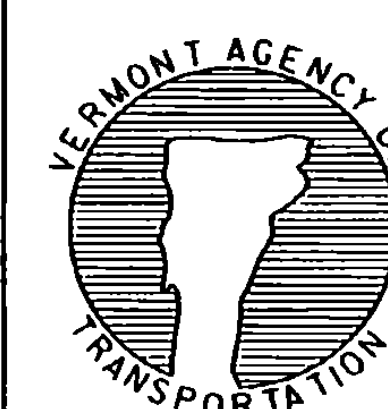
REVISIONS AND CORRECTIONS
JUNE 13, 1997 - ORIGINAL APPROVAL DATE.

APPROVED

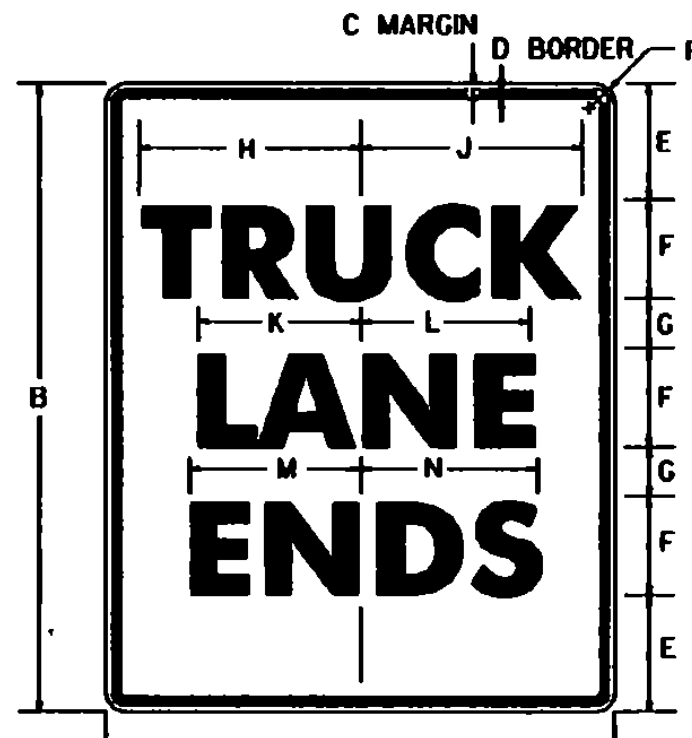
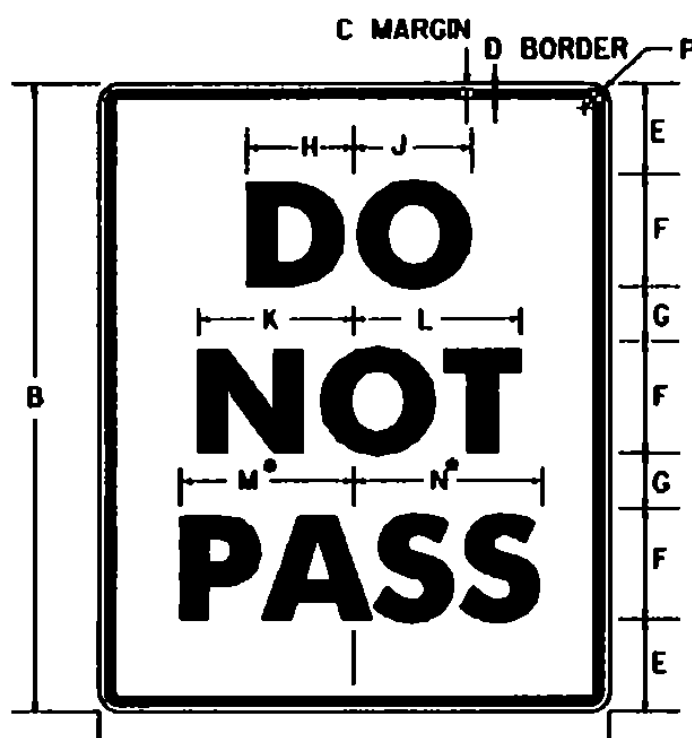
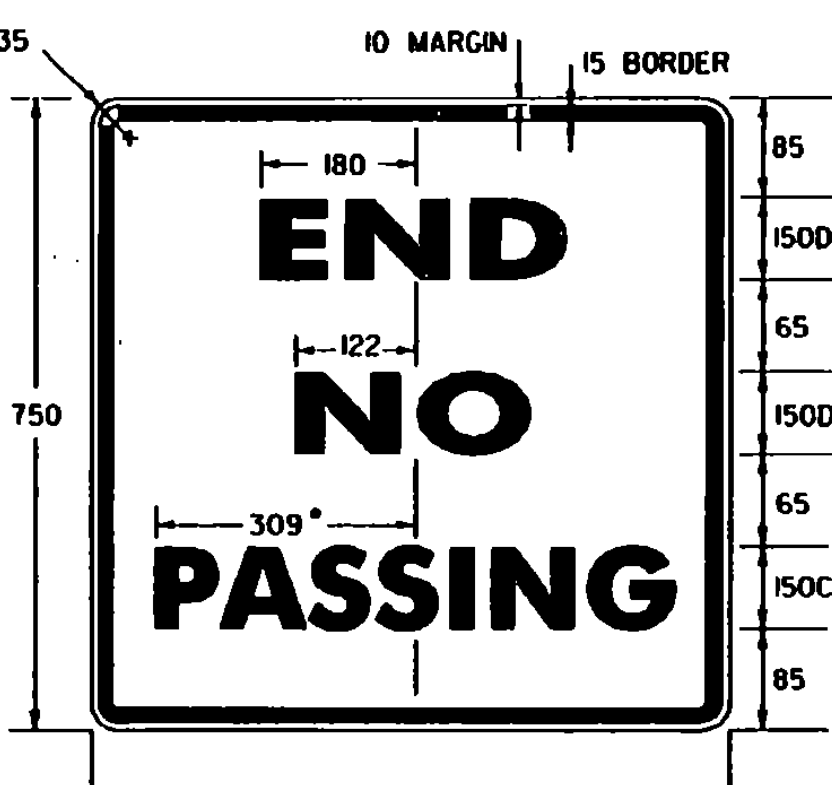
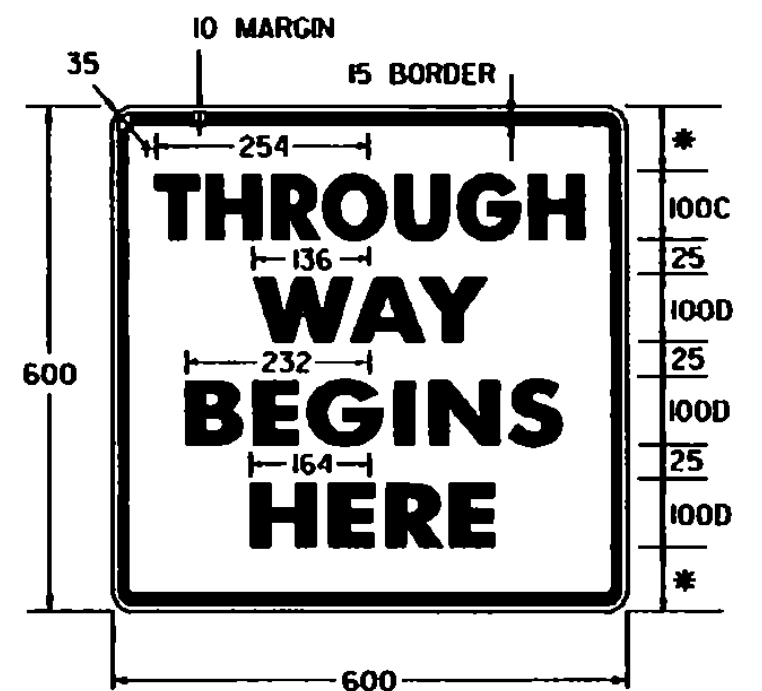
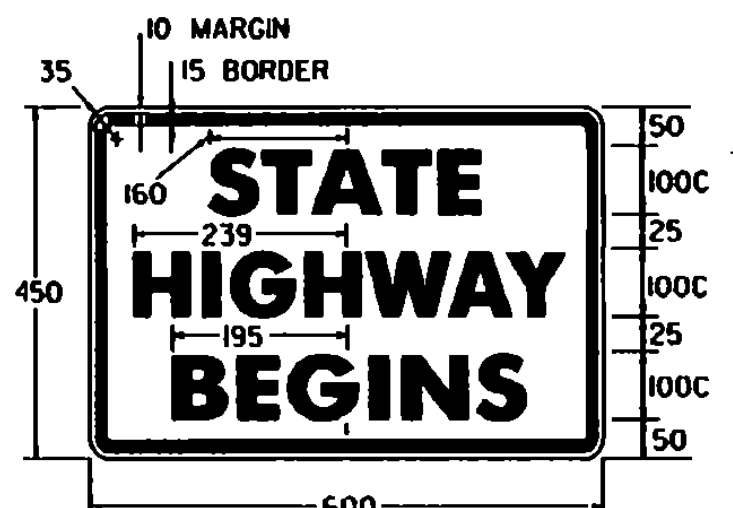
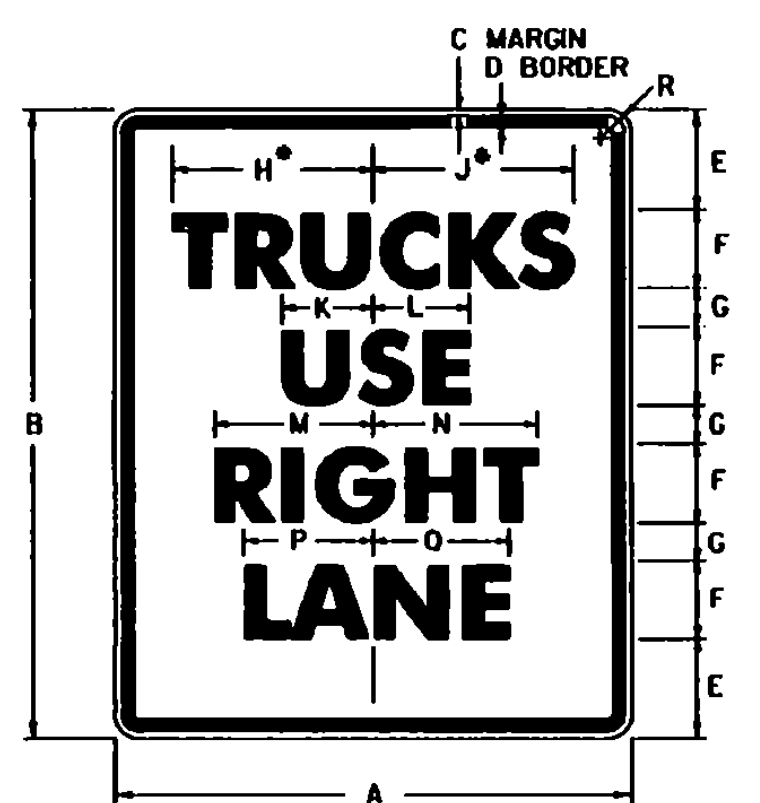
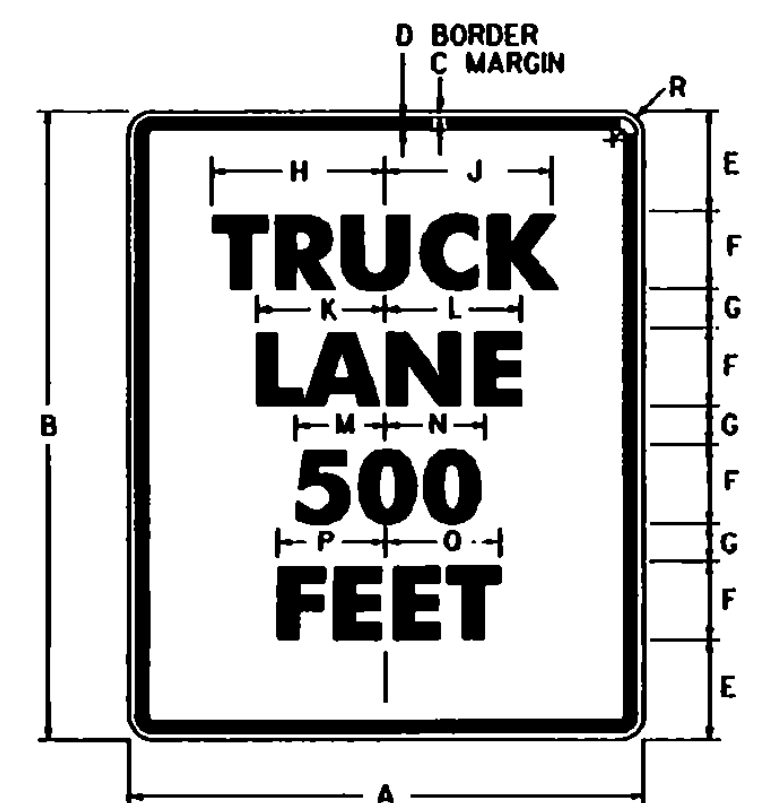
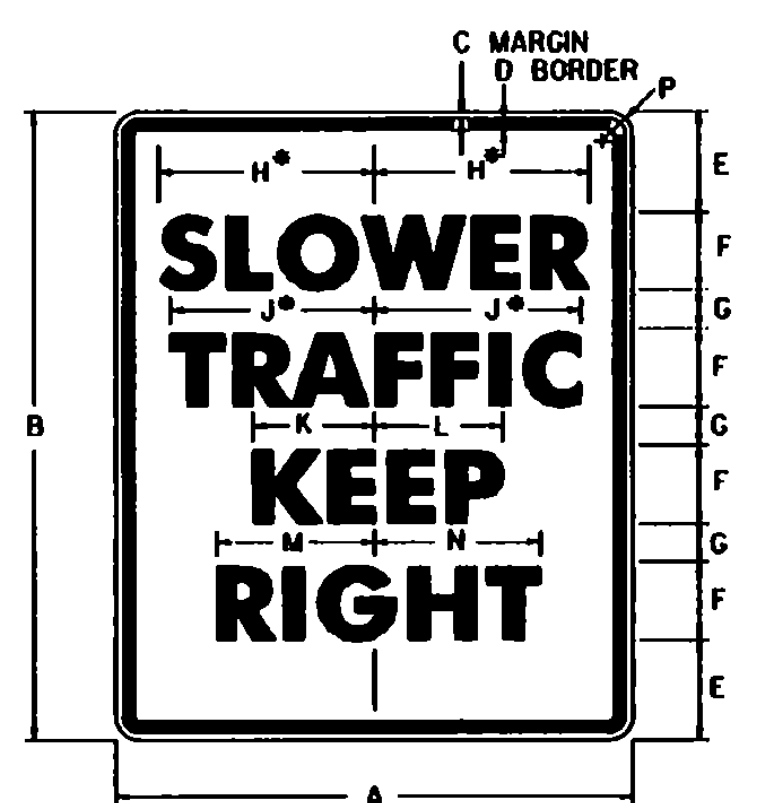
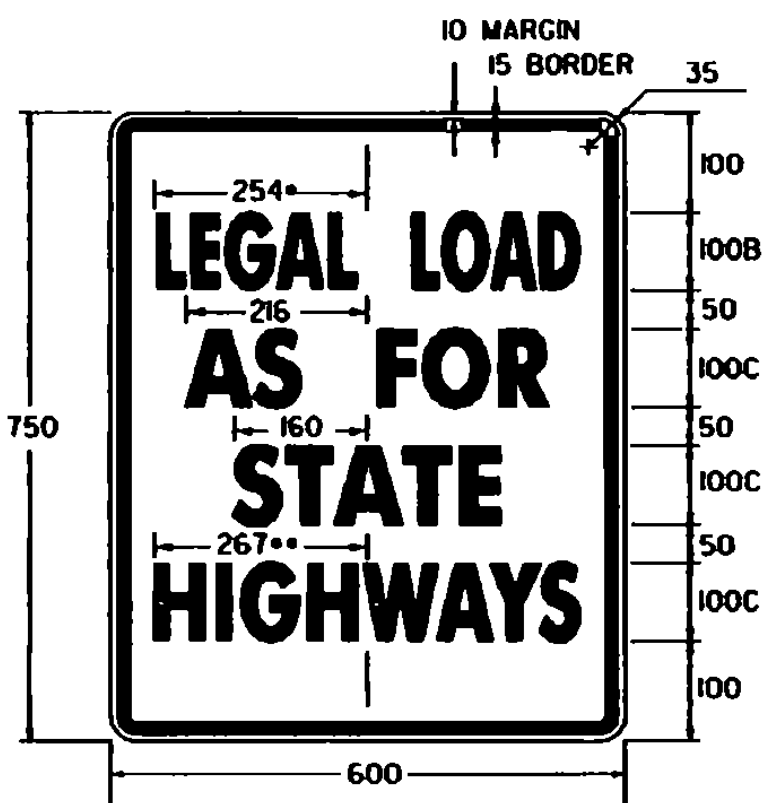
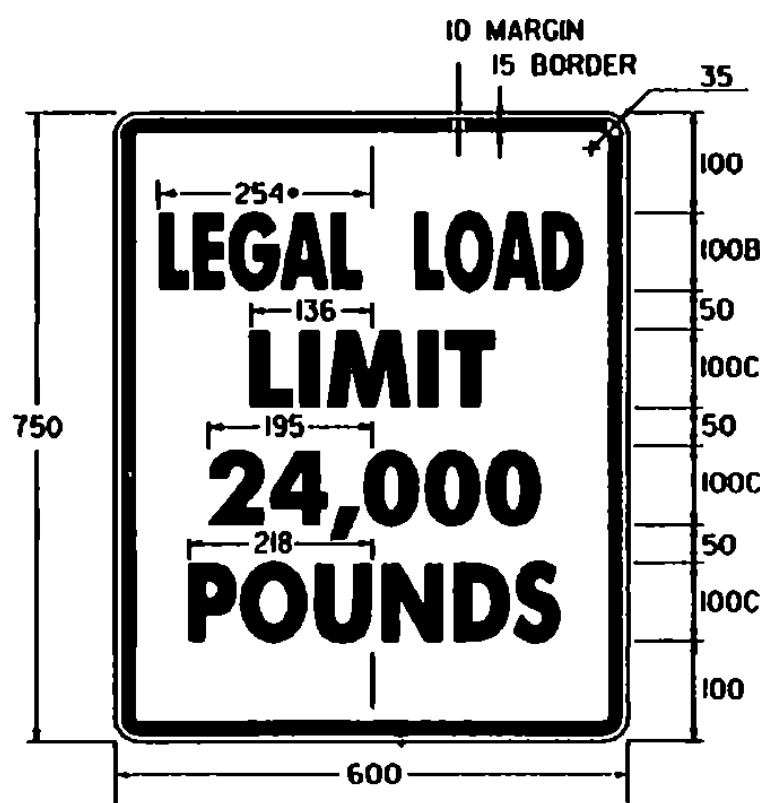
[Signature]
DIRECTOR OF PROJECT DEVELOPMENT

[Signature]
DIRECTOR OF CONSTRUCTION AND MAINTENANCE

**REFERENCE PLAQUE DETAILS
STATE AND TOWN
HIGHWAYS**



Metric
STANDARD
E-138 M



SIGN	DIMENSIONS (mm)															
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
STD.	600	750	10	15	85	100D	60	248	254	152	167	180	193	35		
EXPWY.	900	1200	15	20	150	150D	100	371	381	228	249	270	289	55		
FWY.	1200	1500	20	30	185	200D	110	495	508	305	334	361	388	75		

SIGN	DIMENSIONS (mm)															
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
STD.	600	750	10	15	85	100E	60	249	246	191	196	143	148	175	181	35
EXPWY.	900	1200	15	20	150	150E	100	373	368	286	292	215	222	262	271	55
FWY.	1200	1500	20	30	185	200E	110	497	491	382	389	287	295	349	359	75

SIGN	DIMENSIONS (mm)															
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
STD.	600	750	10	15	85	100D	60	242	233	119	127	180	193	158	168	35
EXPWY.	900	1200	15	20	150	150D	100	362	350	179	190	270	289	237	253	55
FWY.	1200	1500	20	30	185	200D	110	486	469	240	254	361	388	317	337	75

COLORS:
THE REGULATORY SIGNS SHOWN ON THIS SHEET SHALL HAVE BLACK TEXT ON REFLECTORIZED WHITE BACKGROUND, UNLESS OTHERWISE NOTED. THE COLORS SHALL CONFORM WITH THE COLORS ADOPTED BY AASHTO AND APPROVED BY THE FHWA.

MATERIALS:
THE SIGN BASE MATERIALS USED FOR REGULATORY SIGNS SHOWN ON THIS SHEET MAY BE ANY OF THE FOLLOWING MINIMUM THICKNESSES NOTED:

600 X 450	2.03 mm	2.54 mm
600 X 600	13 mm	16 mm
600 X 750	1.63 mm	2.01 mm
750 X 750		1200 X 1500

FLAT SHEET ALUMINUM
HIGH DENSITY OVERLAID PLYWOOD
GALVANIZED FLAT SHEET STEEL

THE REFLECTIVE MATERIAL FOR GROUND MOUNTED SIGNS SHALL BE AASHTO TYPE 11 OR 111 WHITE REFLECTIVE SHEETING APPLIED TO THE ENTIRE BACKGROUND OF THE SIGN. THE TEXT OF THE SIGNS MAY BE LETTERING FILM, SILK SCREENED OR HAND PAINTED. HAND PAINTING MUST BE COMPARABLE IN QUALITY TO THE RESULTS OBTAINED BY SILK SCREENING.

SPECIFICATIONS:
REGULATORY SIGNS SHALL MEET THE VERMONT STANDARD SPECIFICATIONS FOR TRAFFIC SIGNS AS PRESCRIBED IN THE VDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION.

TEXT DESIGN:
LETTERS, DIGITS, ARROWS, SPACING AND TEXT DIMENSIONS SHALL CONFORM TO THE LATEST VERSION OF FHWA'S "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS". DESIGNS SHALL CONFORM WITH THOSE PRESCRIBED IN THE PUBLICATION "STANDARD HIGHWAY SIGNS" AS SPECIFIED IN THE MUTCD.

SIGN	DIMENSIONS (mm)															
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
STD.	600	750	10	15	85	150D	65	114	123	179	187	237	247	35		
EXPWY.	900	1200	15	20	175	200D	125	154	164	241	249	318	331	55		
FWY.	1200	1500	20	30	200	250D	175	192	206	301	311	397	414	75		

SIGN	DIMENSIONS (mm)															
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
STD.	600	750	10	15	85	150C	65	262	262	198	199	203	206	35		
EXPWY.	900	1200	15	20	175	200C	125	350	350	265	265	273	273	55		
FWY.	1200	1500	20	30	200	250C	175	528	529	407	409	411	412	75		

REVISIONS AND CORRECTIONS
JUNE 13, 1997 - ORIGINAL APPROVAL DATE

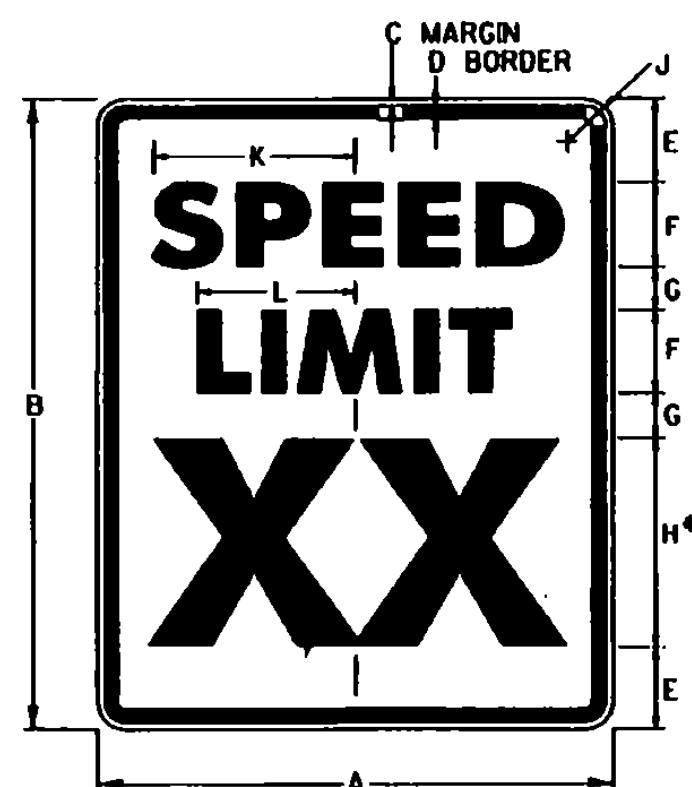
APPROVED
[Signature]
DIRECTOR OF ENGINEERING
[Signature]
DIRECTOR OF CONSTRUCTION AND MAINTENANCE

REGULATORY SIGN DETAILS

OTHER STDS. NONE
REQUIRED:

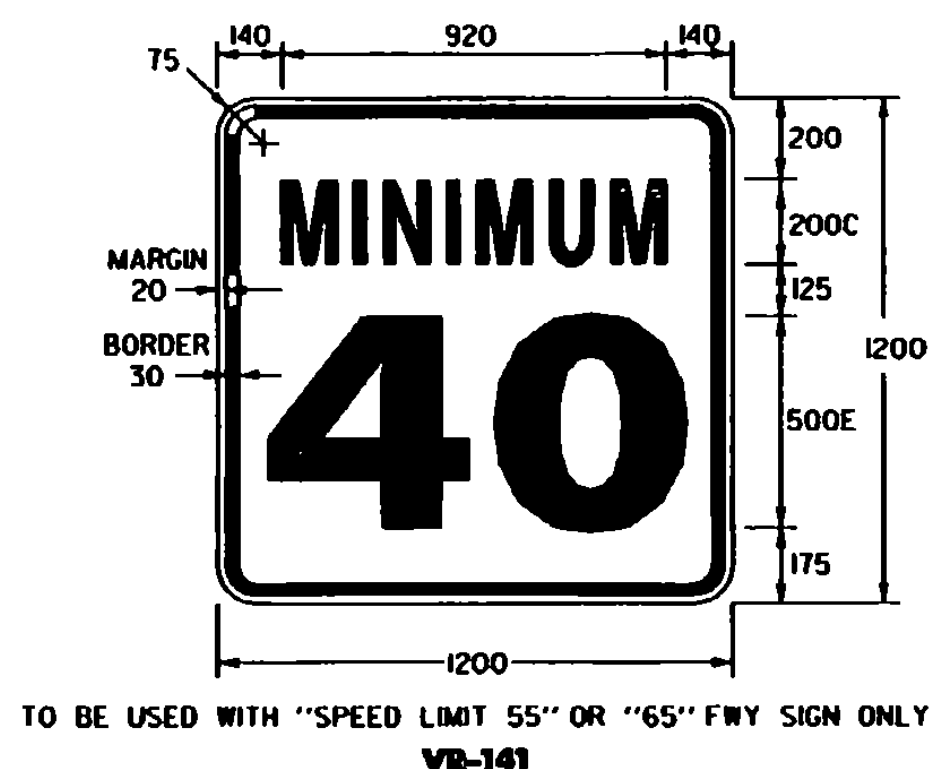
NOTE: ALL DIMENSIONS ARE IN MILLIMETERS (mm) EXCEPT WHERE NOTED.

Metric
STANDARD
E-141M

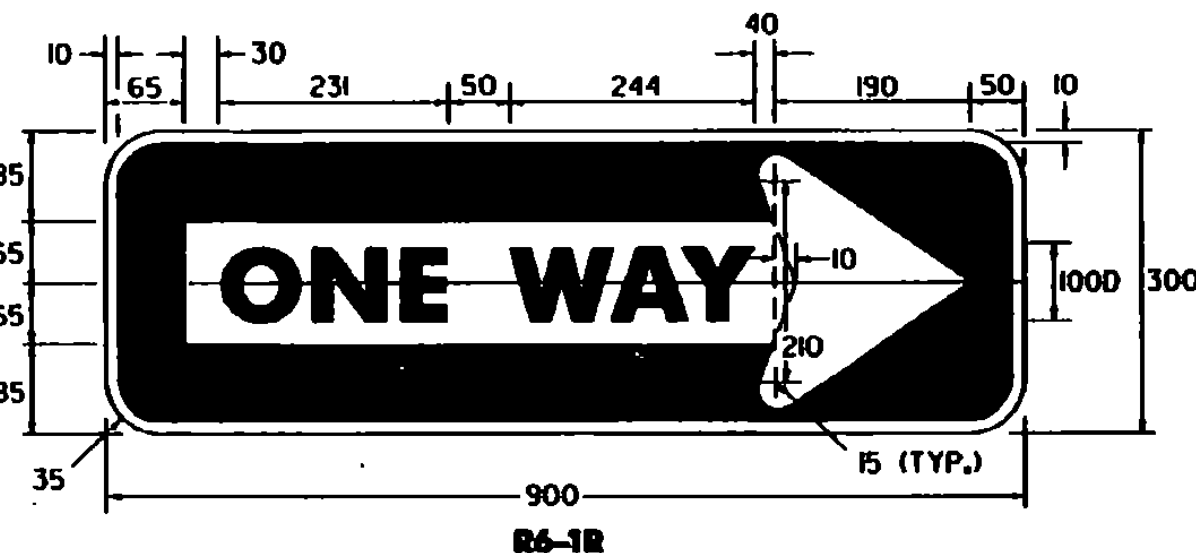


• OPTICALLY SPACE NUMERALS ABOUT VERTICAL CENTERLINE.
R2-1

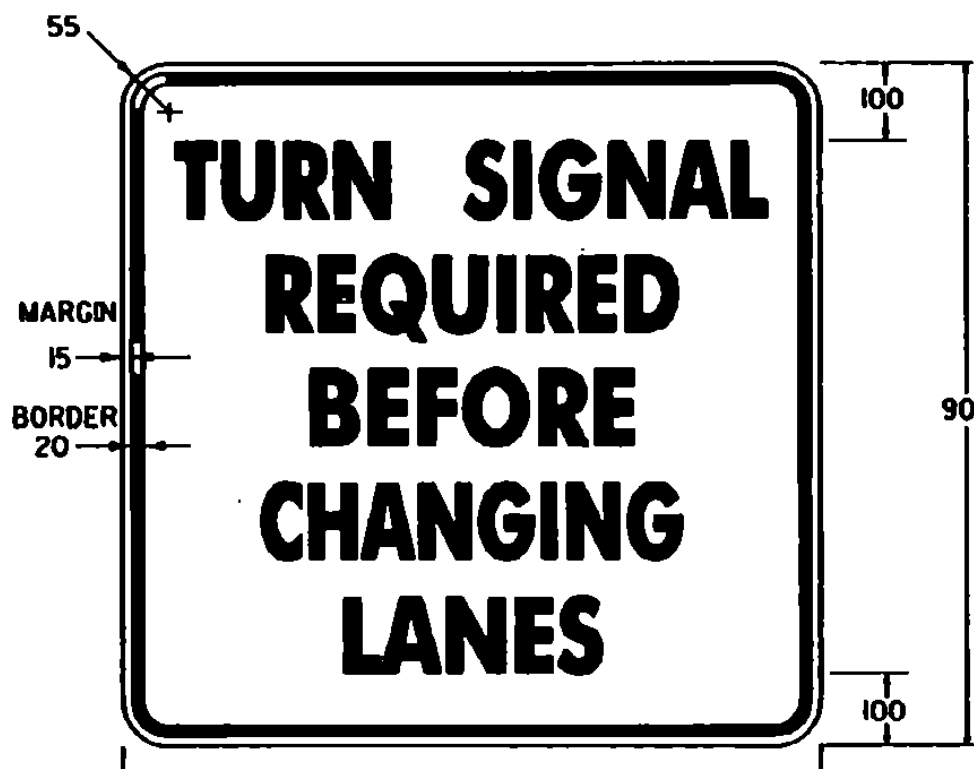
SIGN	DIMENSIONS (mm)										
	A	B	C	D	E	F	G	H	J	K	L
MIN.	450	600	10	15	75	75E	50	200E	35	182	140
STD.	600	750	10	15	100	100E	50	250E	35	244	187
EXPWY.	900	1200	15	20	150	150E	125	350E	55	365	279
FWY.	1200	1500	20	30	200	200E	100	500E	75	486	372



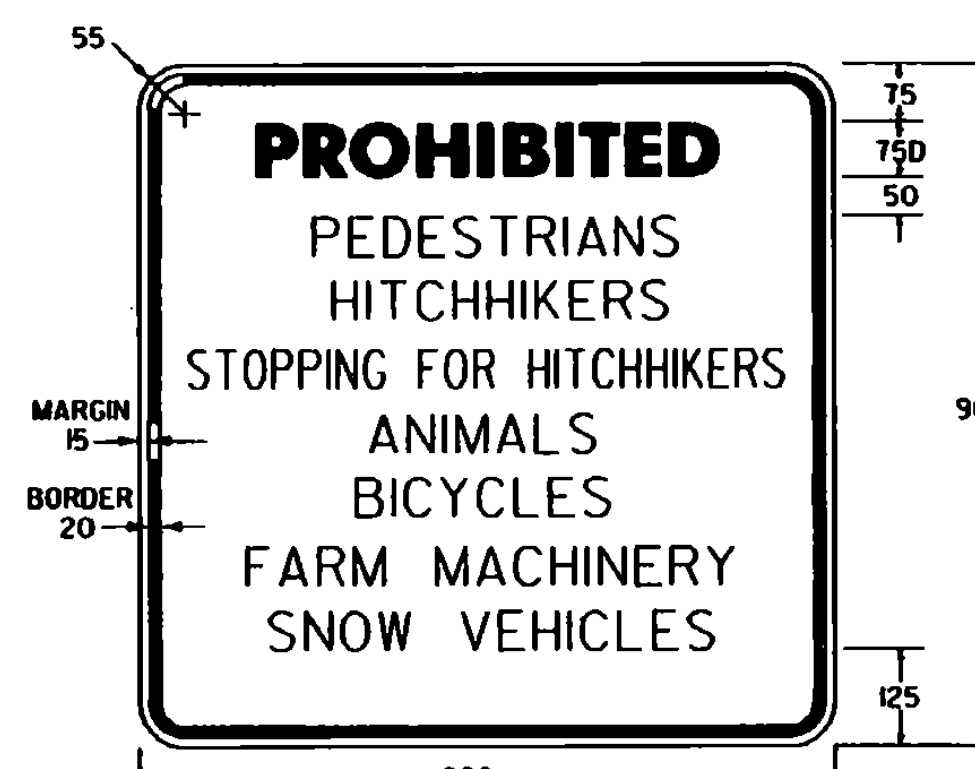
TO BE USED WITH "SPEED LIMIT 55" OR "65" FWY SIGN ONLY
VR-141



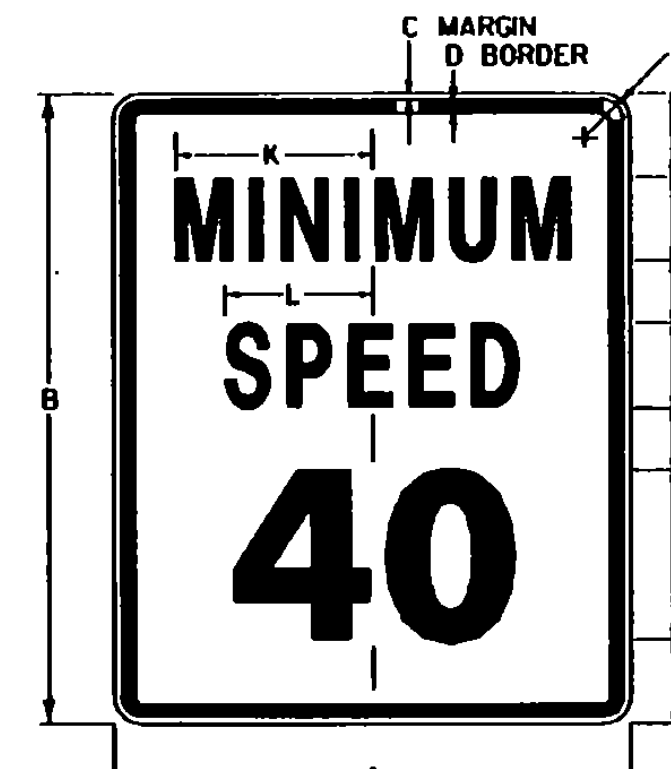
R6-1R



TEXT 100C, SPACING 50
VR-002

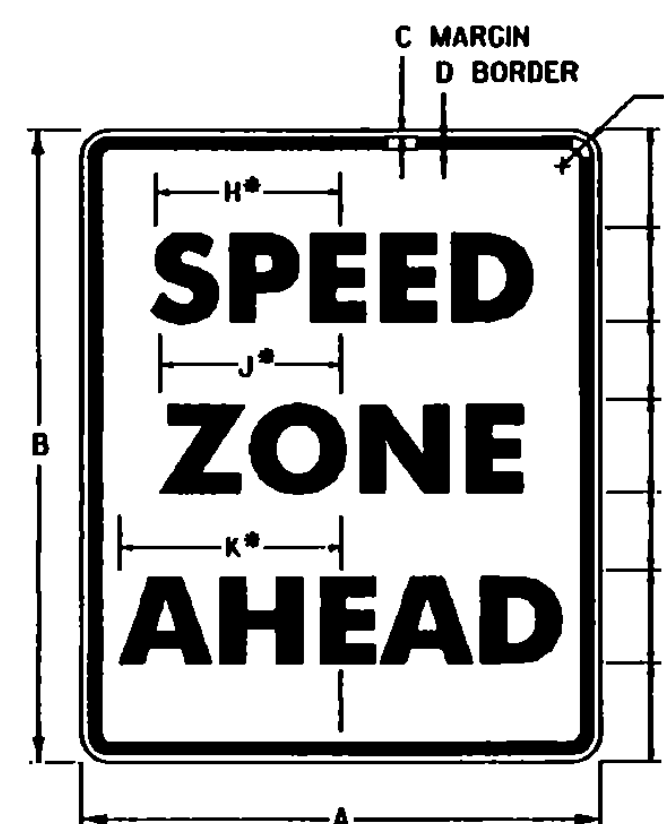


TEXT 50C, WITH EQUAL LINE SPACING, EXCEPT WHERE NOTED.
VR-046



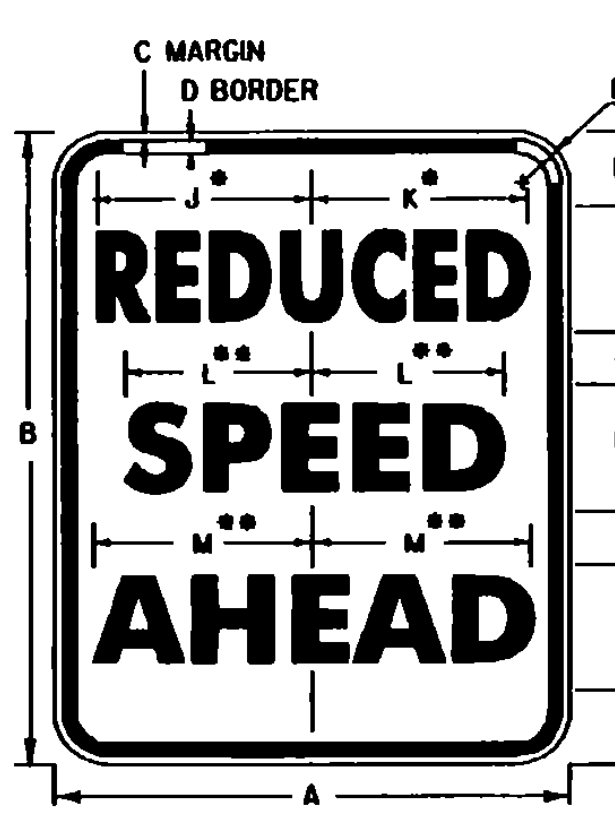
• OPTICALLY SPACE NUMERALS ABOUT VERTICAL CENTERLINE.
R2-4

SIGN	DIMENSIONS (mm)										
	A	B	C	D	E	F	G	H	J	K	L
STD.	600	750	10	15	100	100C	50	250D	35	232	173
EXPWY.	900	1200	15	20	150	150C	125	350D	55	349	259
FWY.	1200	1500	20	30	200	200C	100	500D	75	466	346



• FOR STD SIZE, REDUCE SPACING 40 %
R2-3C

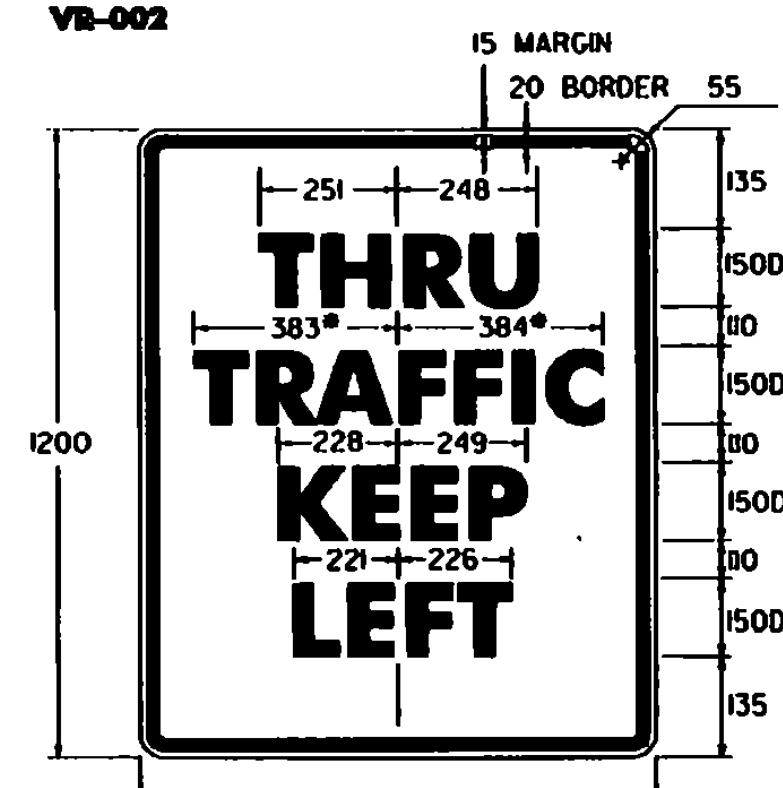
SIGN	DIMENSIONS (mm)										
	A	B	C	D	E	F	G	H	J	K	L
MIN.	450	600	10	15	85	100C	65	173	141	178	35
STD.	600	750	10	15	85	150C	65	233	192	247	35
EXPWY.	900	1200	15	20	175	200C	125	346	280	356	55
FWY.	1200	1500	20	30	225	250C	150	432	352	445	75



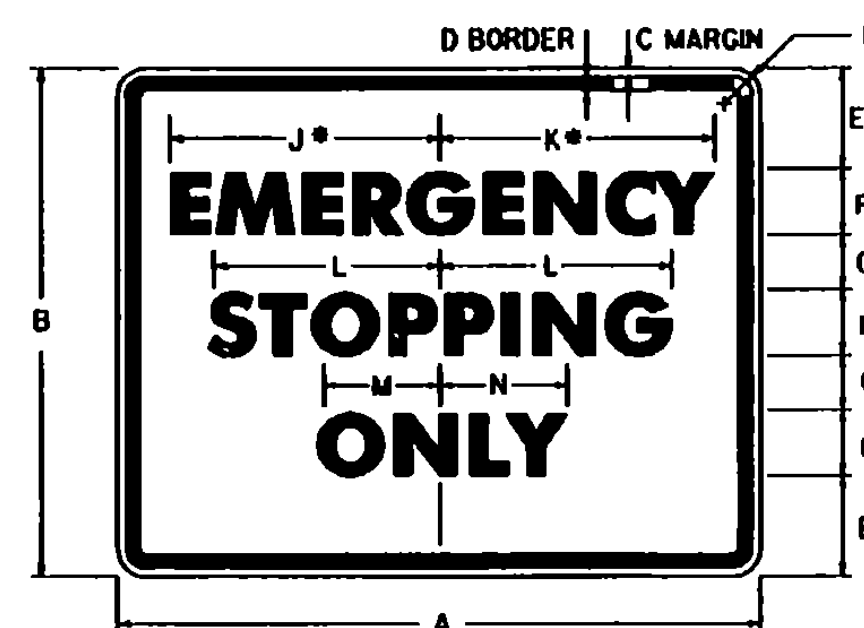
R2-3A

SIGN	DIMENSIONS (mm)													
	A	B	C	D	E	F	G	H	J	K	L	M	N	
MIN.	450	600	10	15	85	100B	65	100C	182	186	173	178	35	
STD.	600	750	10	15	85	150B	65	150C	246	266	235	247	35	
EXPWY.	900	1200	15	20	175	200B	125	200C	361	374	346	356	55	
FWY.	1200	1500	20	30	225	250B	150	250C	450	468	432	445	75	

• REDUCE SPACING 50% FOR STD. SIZE AND 25% FOR OTHER SIZES.
•• REDUCE SPACING 40% FOR STD. SIZE.



• REDUCE SPACING 25 %
VR-118L



• FOR FWY SIZE, REDUCE SPACING 50 %
R8-7

SIGN	DIMENSIONS (mm)														
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	
EXPWY.	750	600	10	15	85	100C	65	100D	318	331	324	163	178	35	
FWY.	1200	900	15	20	125	150D	100	150D	517	536	485	249	263	55	

COLORS:

THE REGULATORY SIGNS SHOWN ON THIS SHEET SHALL HAVE BLACK TEXT ON REFLECTORIZED WHITE BACKGROUND, UNLESS OTHERWISE NOTED. THE COLORS SHALL CONFORM WITH THE COLORS ADOPTED BY AASHTO AND APPROVED BY THE FHWA.

MATERIALS:

THE SIGN BASE MATERIALS USED FOR REGULATORY SIGNS SHOWN ON THIS SHEET MAY BE ANY OF THE FOLLOWING MINIMUM THICKNESSES NOTED:

MATERIAL	450 X 600			600 X 750			900 X 300		
	MIN.	STD.	EXPWY.	MIN.	STD.	EXPWY.	MIN.	STD.	EXPWY.
FLAT SHEET ALUMINUM	1.52 mm	1.52 mm	1.52 mm	2.03 mm	2.03 mm	2.03 mm	2.54 mm	2.54 mm	2.54 mm
HIGH DENSITY OVERLAP PLYWOOD	13 mm	13 mm	13 mm	16 mm	16 mm	16 mm	16 mm	16 mm	16 mm
GALVANIZED FLAT SHEET STEEL	1.32 mm	1.32 mm	1.32 mm	1.63 mm	1.63 mm	1.63 mm	2.01 mm	2.01 mm	2.01 mm

THE REFLECTIVE MATERIAL FOR GROUND MOUNTED SIGNS SHALL BE AASHTO TYPE II OR III WHITE REFLECTIVE SHEETING APPLIED TO THE ENTIRE BACKGROUND OF THE SIGN. THE TEXT OF THE SIGNS MAY BE LETTERING FILM, SILK SCREENED OR HAND PAINTED. HAND PAINTING MUST BE COMPARABLE IN QUALITY TO THE RESULTS OBTAINED BY SILK SCREENING.

SPECIFICATIONS:

REGULATORY SIGNS SHALL MEET THE VERMONT STANDARD SPECIFICATIONS FOR TRAFFIC SIGNS AS PRESCRIBED IN THE VADT STANDARD SPECIFICATIONS FOR CONSTRUCTION.

TEXT DESIGN:

LETTERS, DIGITS, ARROWS, SPACING AND TEXT DIMENSIONS SHALL CONFORM TO THE LATEST VERSION OF FHWA'S "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS". DESIGNS SHALL CONFORM WITH THOSE PRESCRIBED IN THE PUBLICATION "STANDARD HIGHWAY SIGNS" AS SPECIFIED IN THE MUTCD.

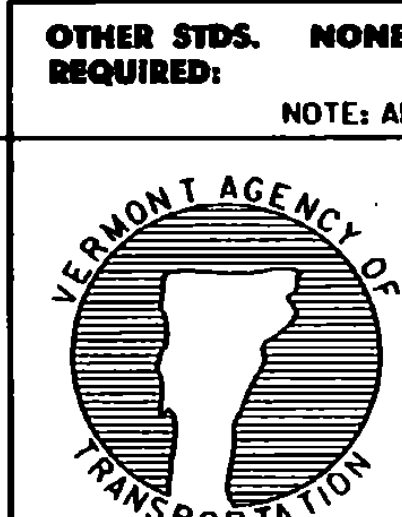
REVISIONS AND CORRECTIONS
JUNE 13, 1997 - ORIGINAL APPROVAL DATE

APPROVED

[Signature]
DIRECTOR OF ENGINEERING

[Signature]
DIRECTOR OF CONSTRUCTION AND MAINTENANCE

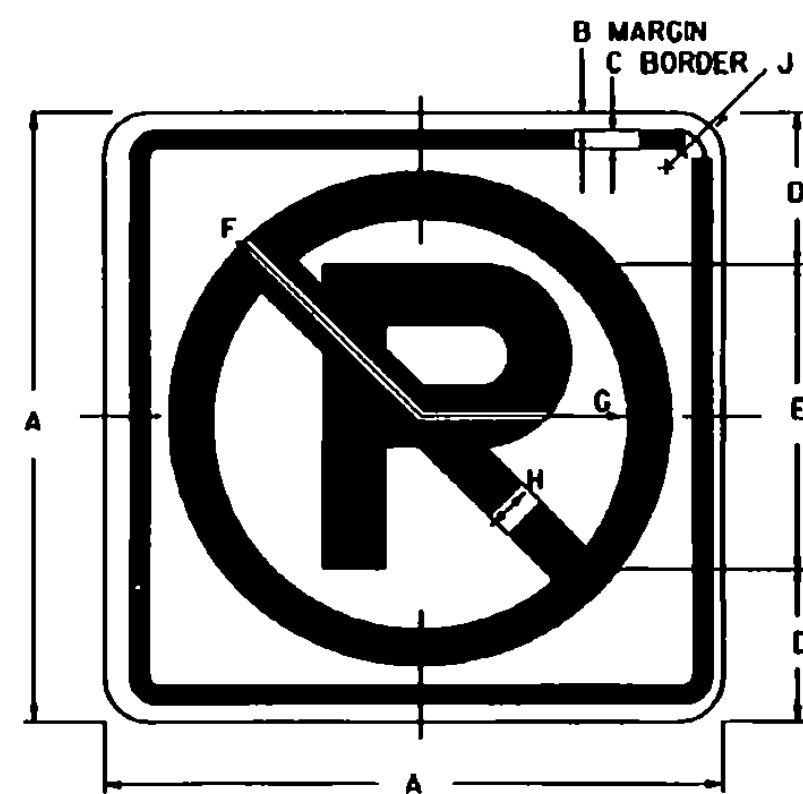
REGULATORY SIGN
DETAILS



OTHER STDS. NONE
REQUIRED:

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

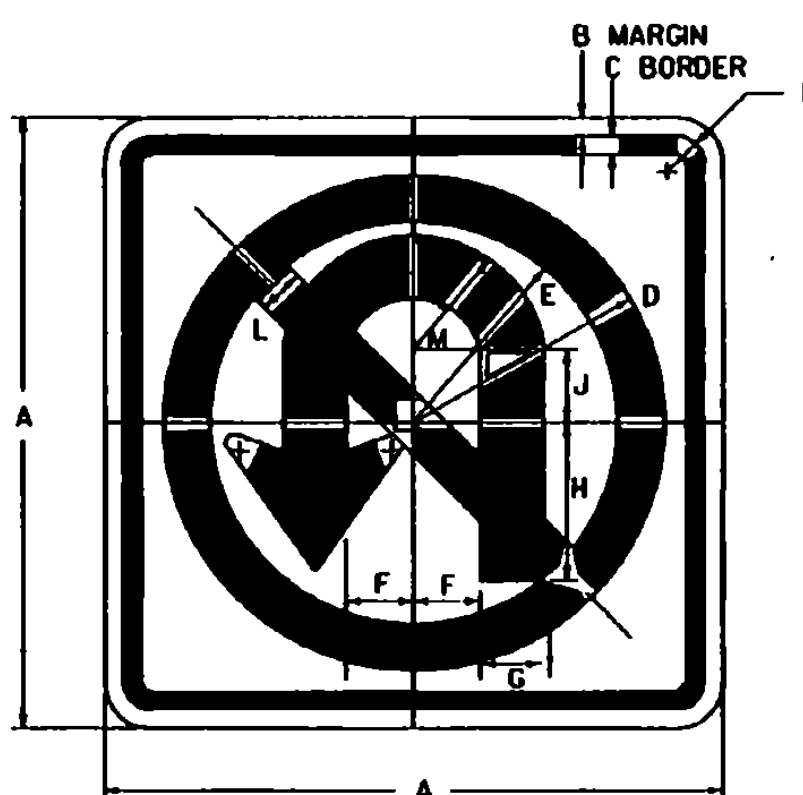
Metric
STANDARD
E-142M



COLORS
CIRCLE AND DIAGONAL - RED (REFL - RURAL)
SYMBOL AND BORDER - BLACK (NON - REFL)
BACKGROUND - WHITE (REFL - RURAL)

R2-3A

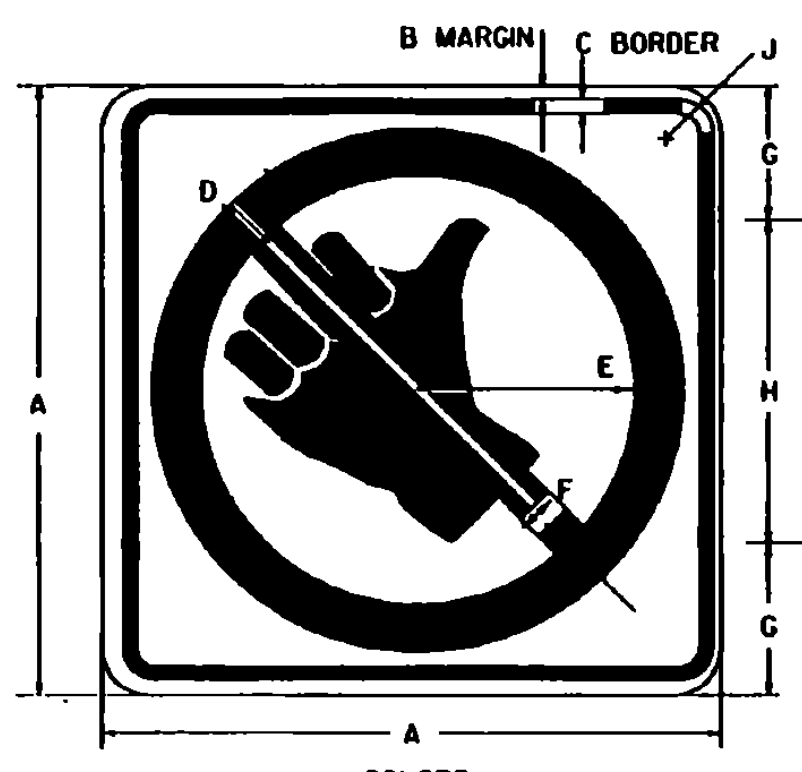
SIGN	DIMENSIONS (mm)										
	A	B	C	D	E	F	G	H	J		
URBAN MIN. AND STD.	300	10	10	75	150E(M)	120	95	25	35		
RURAL MIN. AND STD.	600	10	15	150	300E(M)	260	210	50	35		
EXPWY.	900	15	20	225	450E(M)	395	320	75	55		
F.WY.	1200	20	35	300	600E(M)	525	425	100	75		



COLORS
CIRCLE AND DIAGONAL - RED (REFL)
ARROW AND BORDER - BLACK (NON - REFL)
BACKGROUND - WHITE (REFL)

R3-4

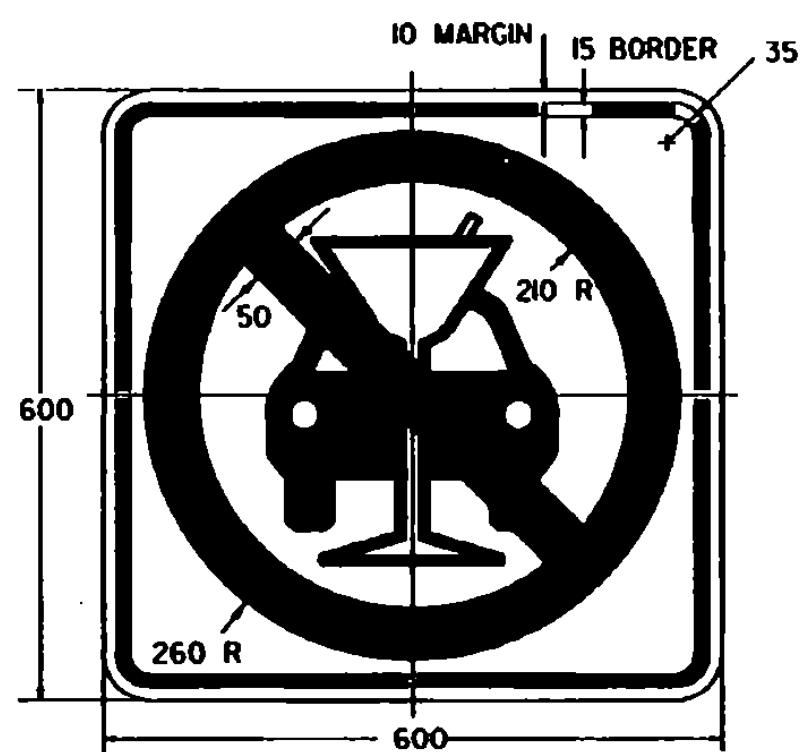
SIGN	DIMENSIONS (mm)												
	A	B	C	D	E	F	G	H	J	K	L	M	
MIN. AND STD.	600	10	15	265	215	60	60	150	55	35	50	120	
SPECIAL	750	10	20	330	270	80	80	190	70	45	60	160	
EXPWY.	900	15	20	395	320	95	95	225	85	55	75	190	
SPECIAL	1200	20	30	525	425	125	125	300	100	75	100	250	



COLORS
CIRCLE AND DIAGONAL - RED (REFL)
SYMBOL AND BORDER - BLACK (NON - REFL)
BACKGROUND - WHITE (REFL)

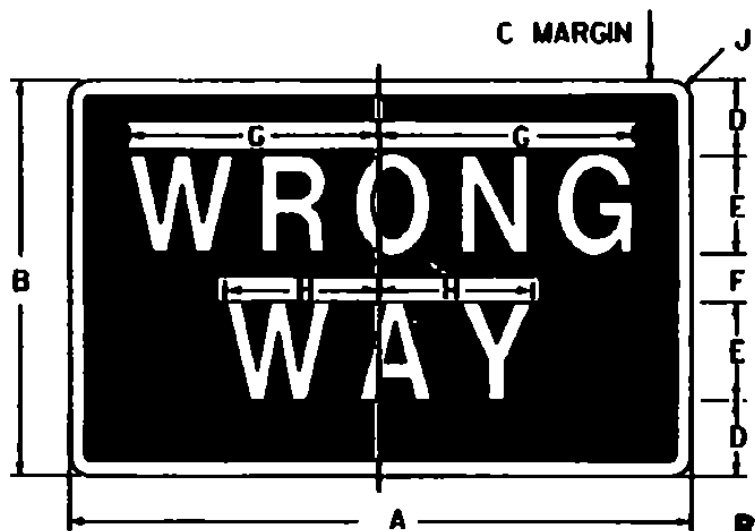
R9-4A

SIGN	DIMENSIONS (mm)									
	A	B	C	D	E	F	G	H	J	
MIN.	450	10	15	195	160	35	95	260	35	
STD.	600	10	15	260	210	50	125	350	35	



COLORS
CIRCLE AND DIAGONAL - RED (REFL)
SYMBOL AND BORDER - BLACK (NON - REFL)
BACKGROUND - WHITE (REFL)

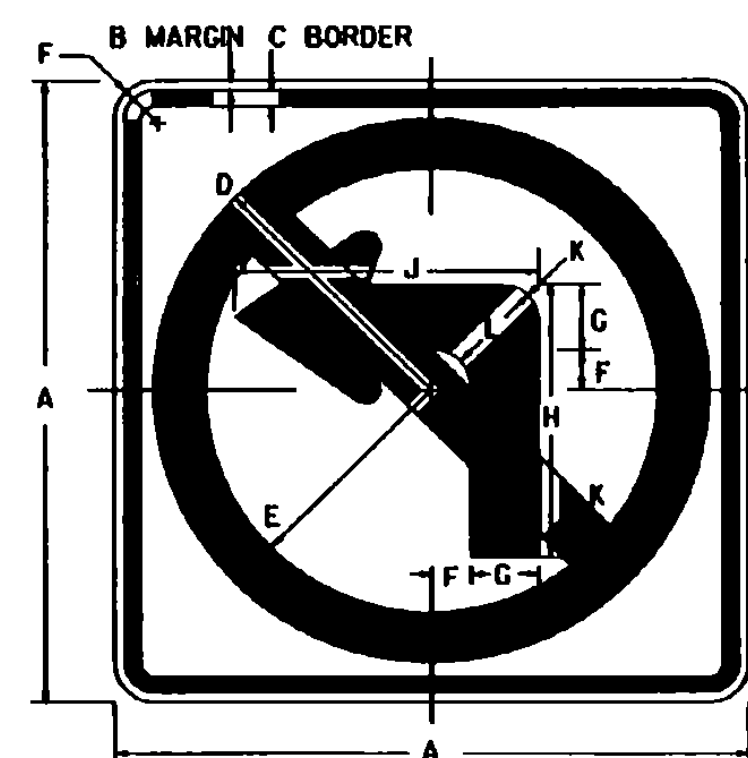
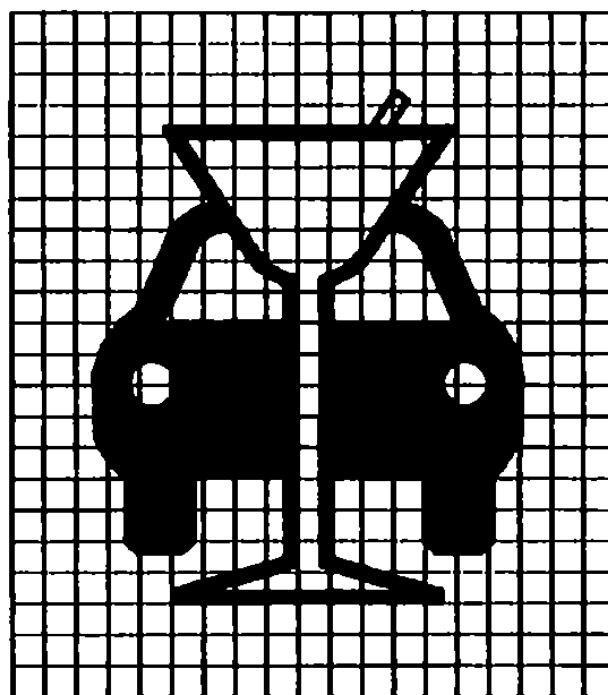
VB-654



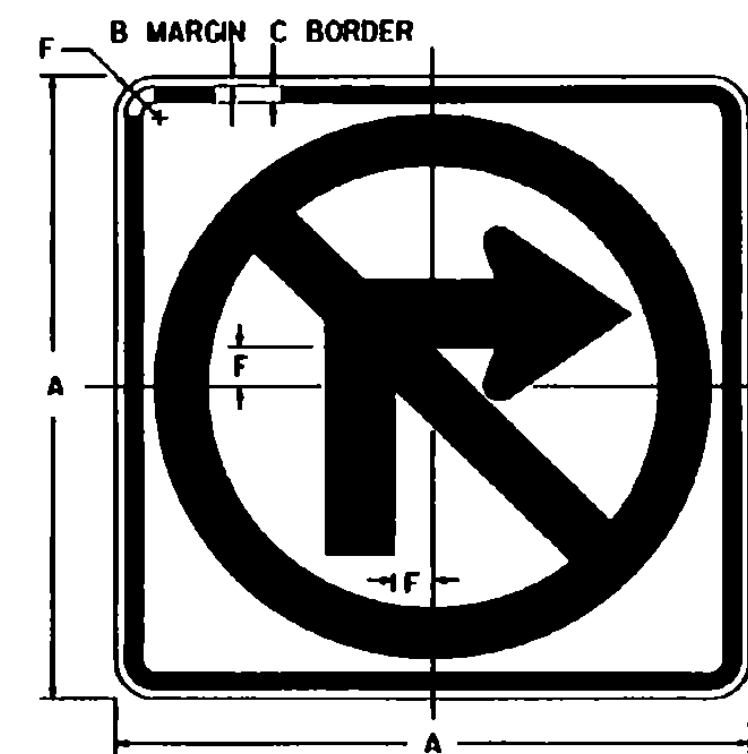
"WRONG WAY"

COLORS
LEGEND - WHITE (REFL)
BACKGROUND - RED (REFL)
ENCAPSULATED LENS

SIGN	DIMENSIONS (mm)									
	A	B	C	D	E	F	G	H	J	
MIN.	750	450	15	75	125D	50	282	170	35	
STD.	900	600	20	100	150D	80	337	205	35	
SPECIAL	1050	750	20	125	200D	100	452	273	45	



R3-2

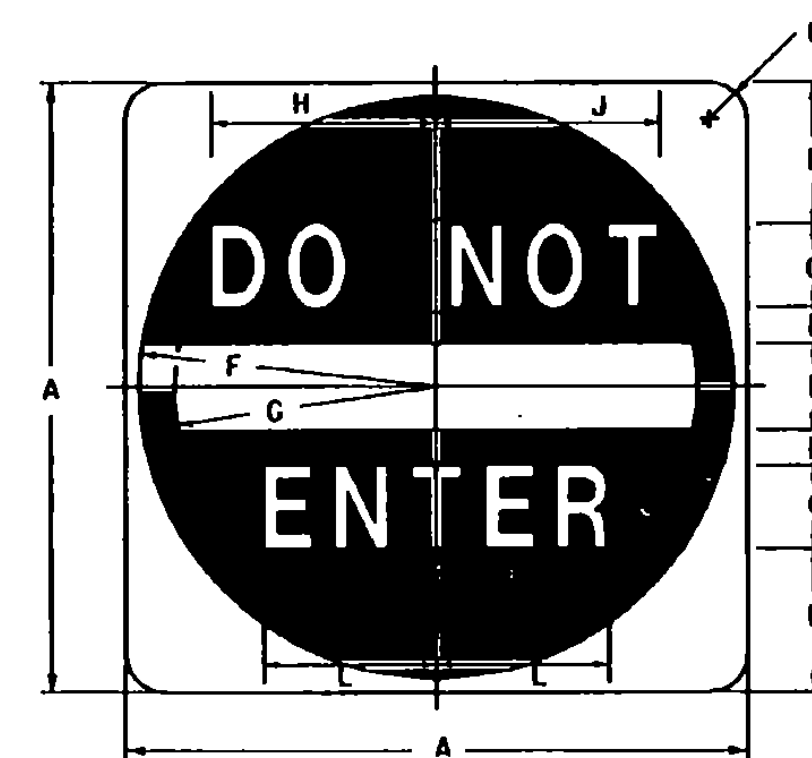


R3-1

NOTE:
USE SAME ARROW DETAIL FOR R3-1 AND R3-2

COLORS
CIRCLE AND DIAGONAL - RED (REFL)
ARROW AND BORDER - BLACK (NON - REFL)
BACKGROUND - WHITE (REFL)

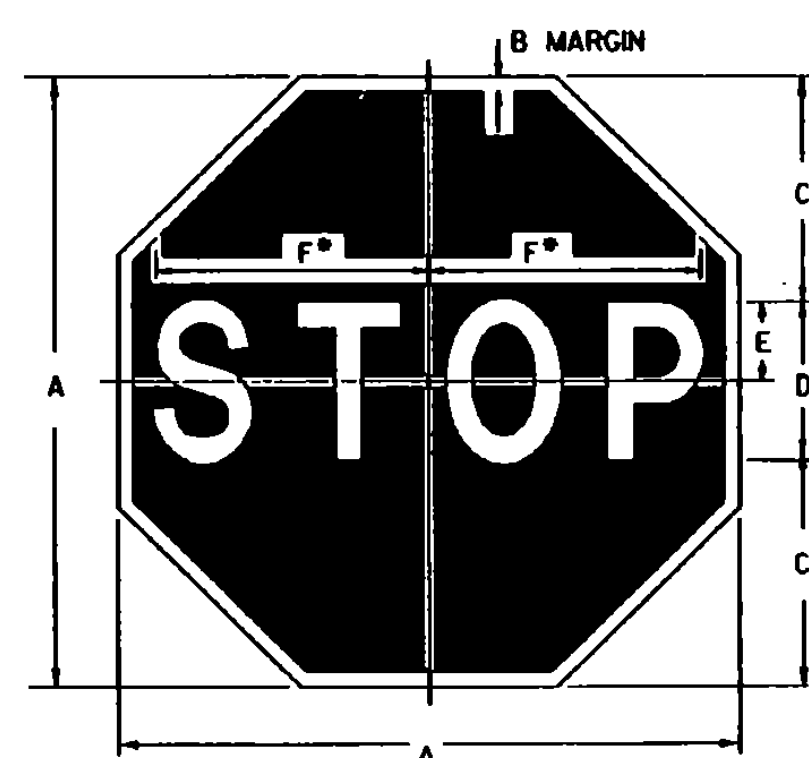
SIGN	DIMENSIONS (mm)										
	A	B	C	D	E	F	G	H	J	K	L
MIN. AND STD.	600	10	15	265	215	35	60	265	285	50	10
SPECIAL	750	10	20	330	270	45	80	330	360	60	15
EXPWY.	900	15	20	395	320	55	95	395	430	75	20
SPECIAL	1200	20	35	525	425	75	125	525	575	100	25



R5-1

COLORS
SYMBOL - RED (REFL)
LEGEND AND BACKGROUND - WHITE (REFL)
ENCAPSULATED LENS

SIGN	DIMENSIONS (mm)										
	A	B	C	D	E	F	G	H	J	K	L
MIN. AND STD.	750	165	1000	50	120	360	310	248	254	45	199
EXPWY.	900	190	1250	60	150	435	375	309	319	55	249
SPECIAL	1200	275	1500	75	200	585	500	370	383	75	298



R1-1

* REDUCE SPACING 40 %
COLORS
LEGEND - WHITE (REFL)
BACKGROUND - RED (REFL)
ENCAPSULATED LENS

SIGN	DIMENSIONS (mm)					
	A	B	C	D	E	F
BIKE	450	10	150	150	75	196
MIN.	600	15	200	200	100	254
STD.	750	20	250	250	125	318
EXPWY.	900	20	300	300	150	382
SPECIAL	1200	30	400	400	200	508

GENERAL:

1. SEE STANDARD E-144M FOR ARROWHEAD DETAILS.

COLORS:

THE REGULATORY SIGNS SHOWN ON THIS SHEET SHALL BE AS DETAILED FOR EACH SIGN. THE COLORS SHALL CONFORM WITH THE COLORS ADOPTED BY AASHTO AND APPROVED BY THE FHWA.

MATERIALS:

THE SIGN BASE MATERIALS USED FOR REGULATORY SIGNS SHOWN ON THIS SHEET MAY BE ANY OF THE FOLLOWING MINIMUM THICKNESSES NOTED:

300 X 300	600 X 600	900 X 300
450 X 450	750 X 450	900 X 900
	750 X 750	1050 X 750
		1200 X 1200
FLAT SHEET ALUMINUM	1.52 mm	2.03 mm
HIGH DENSITY OVERLAID PLYWOOD	13 mm	13 mm
GALVANIZED FLAT SHEET STEEL	1.32 mm	1.63 mm
		2.54 mm
		16 mm
		2.01 mm

THE REFLECTIVE MATERIAL SHALL BE AASHTO TYPE II OR III WHITE REFLECTIVE SHEETING APPLIED TO THE ENTIRE BACKGROUND OF THE SIGN. THE BLACK PORTIONS OF THE SIGNS MAY BE LETTERING FILM, SILK SCREENED OR HAND PAINTED. HAND PAINTING MUST BE COMPARABLE IN QUALITY TO THE RESULTS OBTAINED BY SILK SCREENING. ENCAPSULATED LENS REFLECTIVE SHEETING SHALL BE USED FOR THE SIGN BACKGROUND WHERE NOTED.

SPECIFICATIONS:

REGULATORY SIGNS SHALL MEET THE VERMONT STANDARD SPECIFICATIONS FOR TRAFFIC SIGNS AS PRESCRIBED IN THE VDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION.

TEXT DESIGN:

LETTERS, DIGITS, ARROWS, SPACING AND TEXT DIMENSIONS SHALL CONFORM TO THE LATEST VERSION OF FHWA'S "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS". DETAILS SHALL CONFORM WITH THOSE PRESCRIBED IN THE PUBLICATION "STANDARD HIGHWAY SIGNS" AS SPECIFIED IN THE MUTCD.

REVISIONS AND CORRECTIONS
JUNE 13, 1997 - ORIGINAL APPROVAL DATE

APPROVED

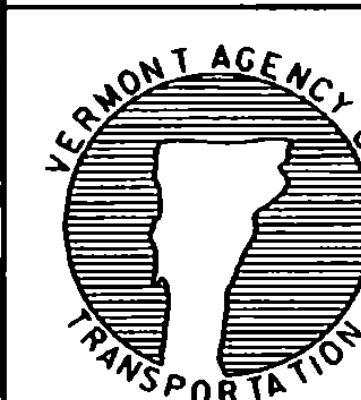
Paul C. ...
DIRECTOR OF ENGINEERING

Stephen D. MacArthur
DIRECTOR OF CONSTRUCTION AND MAINTENANCE

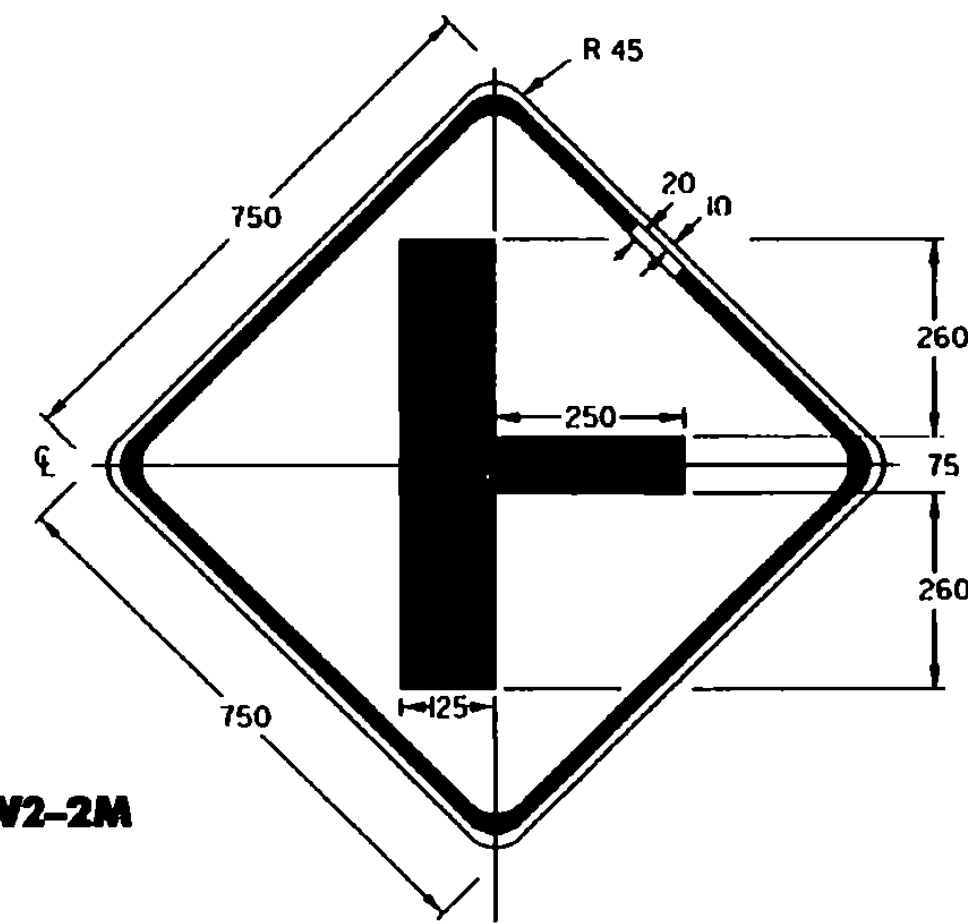
REGULATORY SIGN
DETAILS

OTHER STDS. E-144M
REQUIRED:

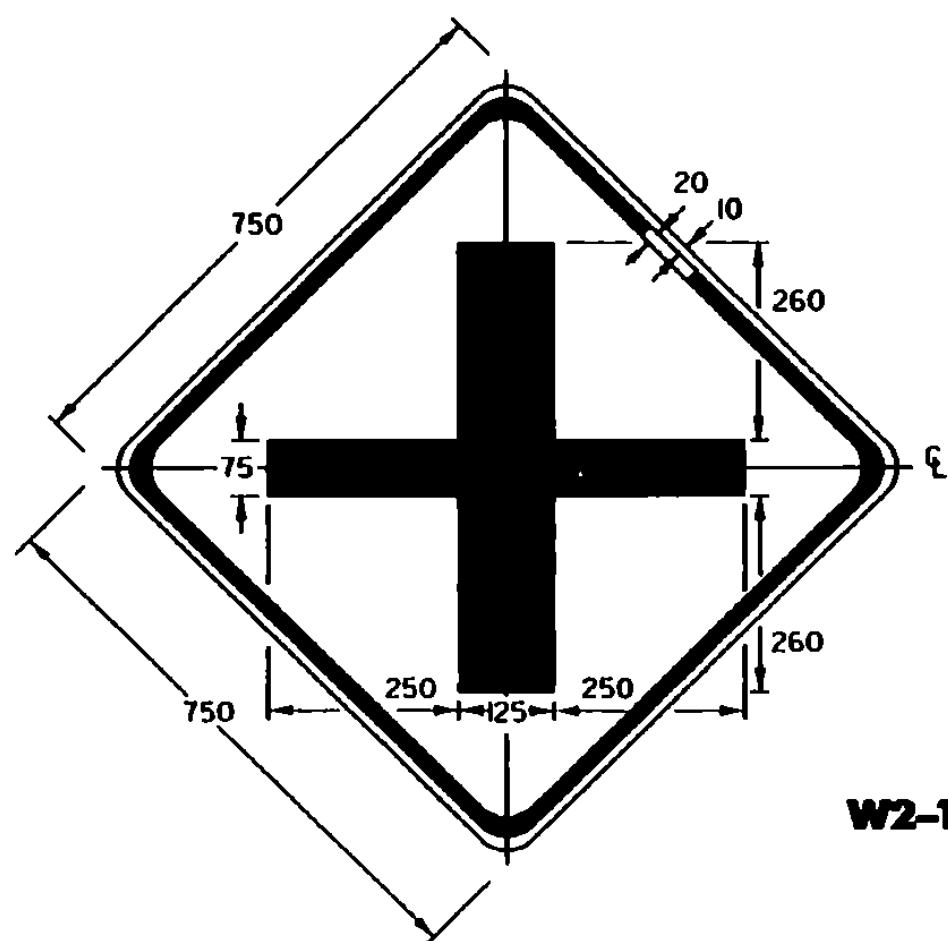
NOTE: ALL DIMENSIONS ARE IN MILLIMETERS (mm) EXCEPT WHERE NOTED.



Metric
STANDARD
E-143M

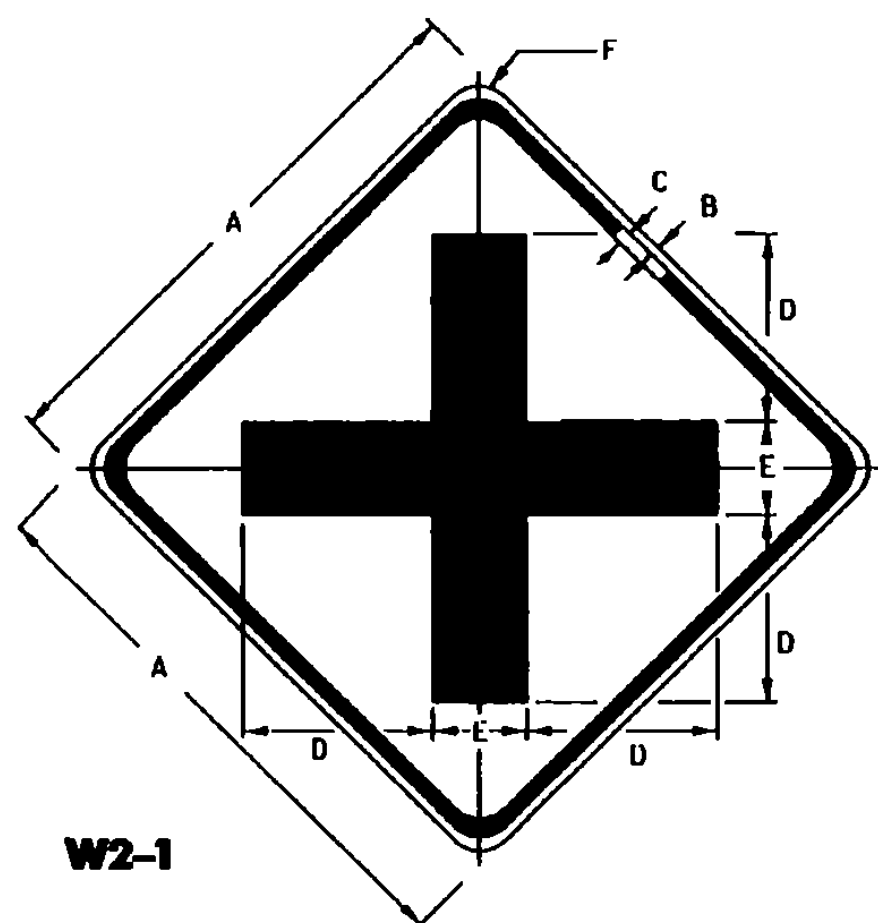


W2-2M

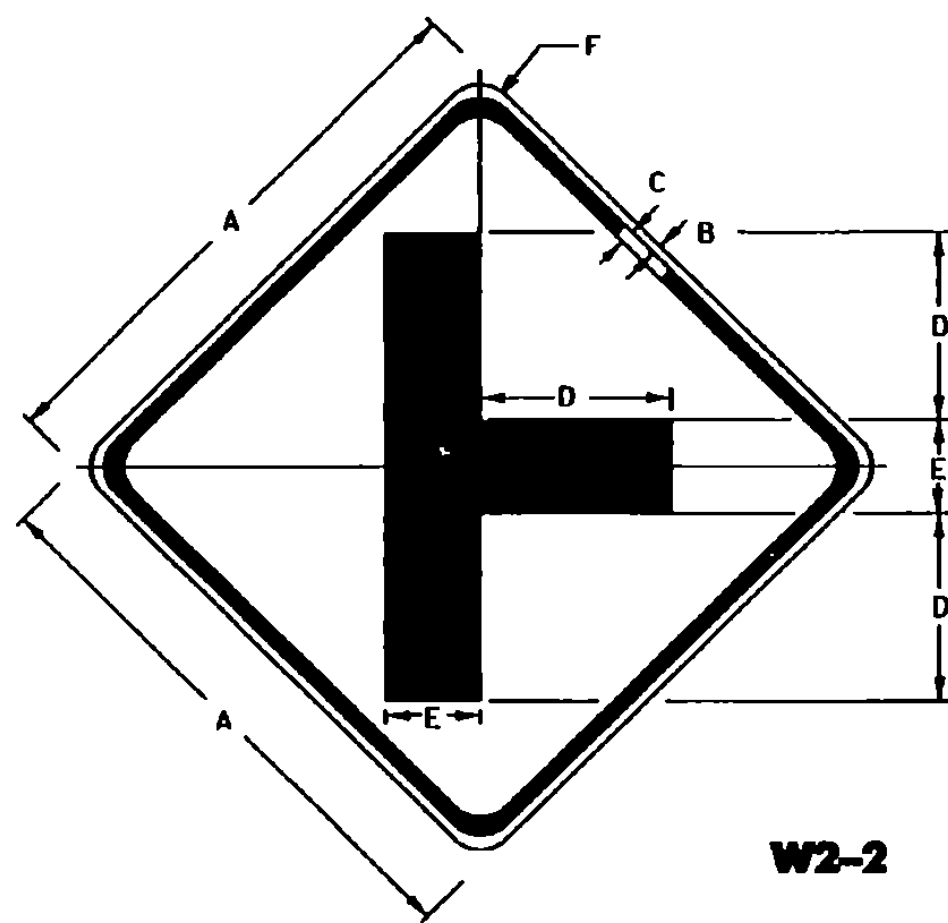


W2-1M

STATE ROUTE /TOWN HIGHWAY INTERSECTION SIGNS (TYP.)



W2-1

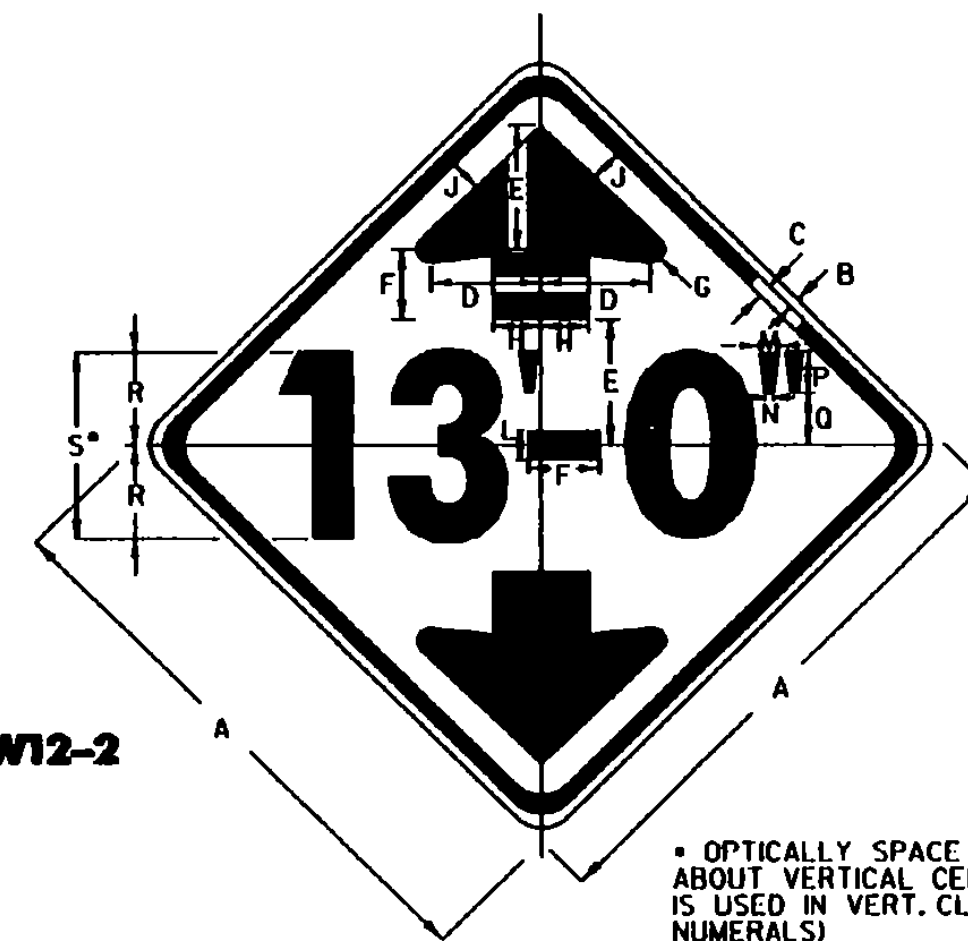


W2-2

SIGN	DIMENSIONS (mm)					
	A	B	C	D	E	F
BIKE	450	10	15	150	75	35
MIN.	600	10	15	200	100	35
STD.	750	10	20	250	125	45
EXPWY.	900	15	20	300	150	55
SPECIAL	1200	20	30	400	200	75

SIGN	DIMENSIONS (mm)					
	A	B	C	D	E	F
BIKE	450	10	15	150	75	35
MIN.	600	10	15	200	100	35
STD.	750	10	20	250	125	45
EXPWY.	900	15	20	300	150	55
SPECIAL	1200	20	30	400	200	75

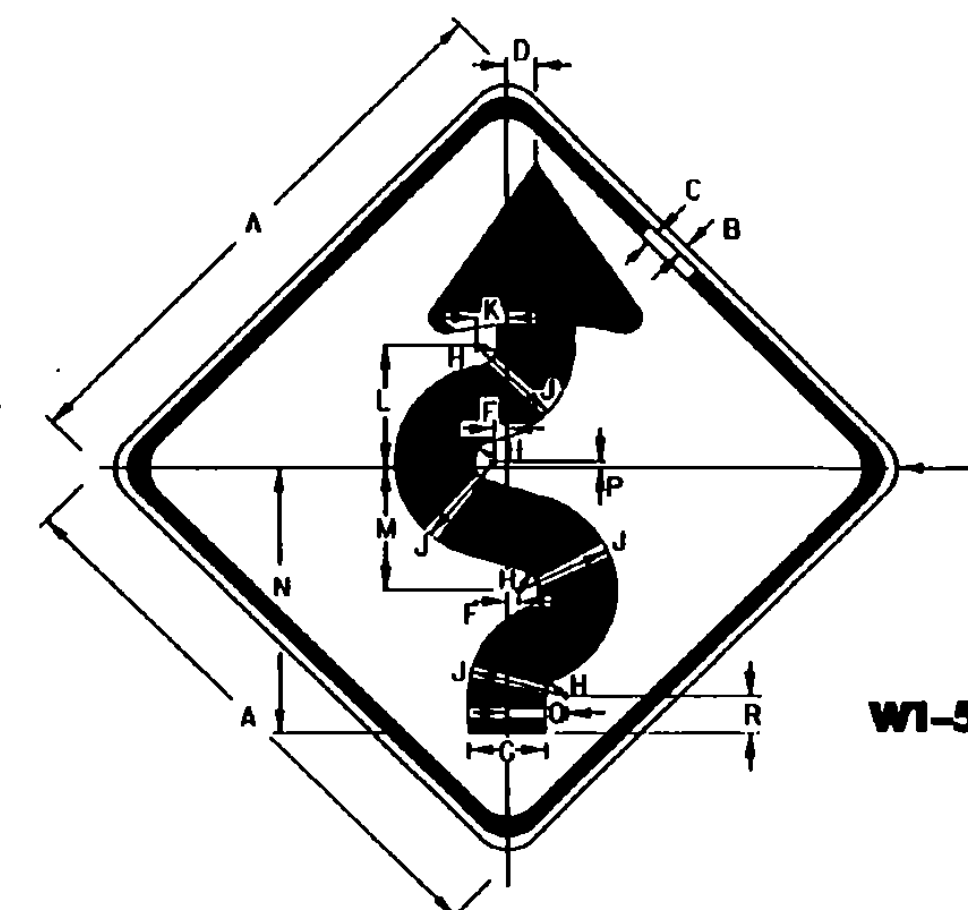
STATE ROUTE /STATE ROUTE INTERSECTION SIGNS (TYP.)



W12-2

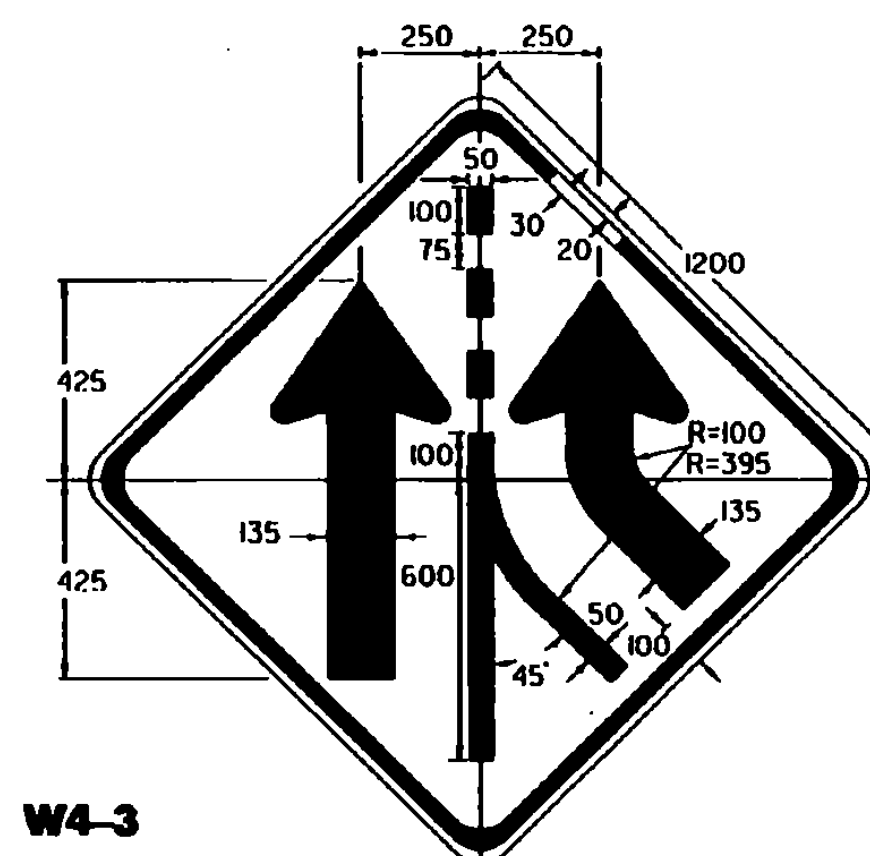
* OPTICALLY SPACE VERTICAL CLEARANCE ABOUT VERTICAL CENTERLINE (WHERE 250 mm IS USED IN VERT. CLEARANCE, USE SERIES C NUMERALS)

SIGN	DIMENSIONS (mm)																
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	O	R	S
MIN.	750	10	20	145	165	95	20	60	40	45	40	25	10	55	85	125	2500
STD. & EXPWY.	900	15	20	170	200	110	25	75	50	55	45	30	10	70	100	150	3000
F.WY.	1200	20	30	230	265	145	35	100	65	75	60	40	15	90	135	200	4000

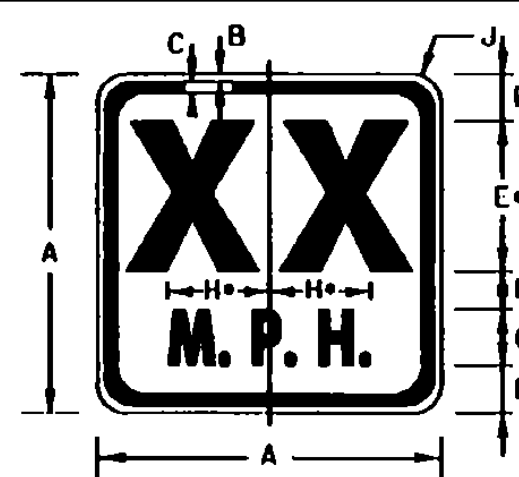


W1-SR

SIGN	DIMENSIONS (mm)																
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	O	R	S
BIKE	450	10	10	25	240	10	60	15	75	20	96	100	215	6	45	34	35
MIN.	600	10	10	30	320	10	80	25	105	35	135	130	285	6	65	41	35
STD.	750	10	20	40	400	15	100	30	130	40	167	165	355	8	80	47	45
EXPWY.	900	15	20	45	480	20	120	35	135	50	198	195	425	9	95	59	55
SPECIAL	1200	20	25	60	635	25	160	45	205	65	262	260	570	13	125	86	75



W4-3



W13-1

SIGN	DIMENSIONS (mm)								
	A	B	C	D	E	F	G	H	J
STD.	450	10	15	60	200	55	75	135	35
SPECIAL	600	10	15	90	250	70	100	180	35

* INCREASE SPACING 100%
 ** OPTICALLY SPACE NUMERALS ABOUT VERTICAL CENTERLINE

COLORS:

ALL THE WARNING SIGNS SHOWN ON THIS SHEET SHALL HAVE BLACK TEXT AND SYMBOLS ON REFLECTORIZED YELLOW BACKGROUND EXCEPT AS OTHERWISE NOTED. THE COLORS SHALL CONFORM WITH THE COLORS ADOPTED BY AASHTO AND APPROVED BY THE FHWA.

MATERIALS:

THE SIGN BASE MATERIALS USED FOR THE WARNING SIGNS SHOWN ON THIS SHEET MAY BE ANY OF THE FOLLOWING MINIMUM THICKNESSES NOTED:

	FLAT SHEET ALUMINUM		HIGH DENSITY OVERLAID PLYWOOD		GALVANIZED FLAT SHEET STEEL	
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
450 X 450	1.52	mm	13	mm	1.32	mm
600 X 600, 750 X 750	2.03	mm	13	mm	1.63	mm
900 X 900	2.54	mm	16	mm	2.01	mm
1200 X 1200	3.18	mm	16	mm	2.77	mm

THE TEXT, BORDER AND SYMBOLS SHALL BE LETTERING FILM, SILK SCREENED OR HAND PAINTED. IF HAND PAINTED, POOR WORKMANSHIP SHALL BE CAUSE FOR REJECTION. THE REFLECTIVE MATERIAL SHALL BE REFLECTIVE SHEETING APPLIED TO THE ENTIRE BACKGROUND OF THE SIGN. ENCAPSULATED LENS REFLECTIVE SHEETING SHALL BE USED FOR THE SIGN BACKGROUND WHERE NOTED.

TEXT:

LETTERS, DIGITS, SYMBOLS, SPACINGS AND TEXT DIMENSIONS SHALL CONFORM TO THE LATEST VERSION OF FHWA'S "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS". DESIGNS SHALL CONFORM WITH THOSE PRESCRIBED IN THE MUTCD. SEE STANDARD SHEET E-150M FOR ARROWHEAD DETAILS.

SPECIFICATIONS:

WARNING SIGNS SHALL MEET THE VERMONT STANDARD SPECIFICATIONS FOR "TRAFFIC SIGNS" AS PRESCRIBED IN THE VDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION.

OTHER STDS. E-150M REQUIRED:

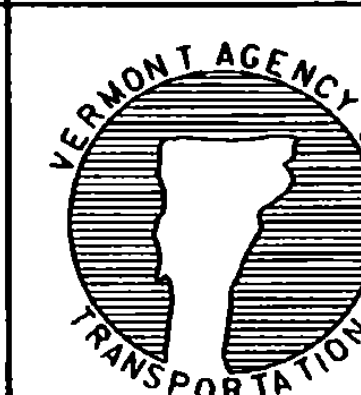
NOTE: ALL DIMENSIONS ARE IN MILLIMETERS (mm) EXCEPT WHERE NOTED.

REVISIONS AND CORRECTIONS
 JUNE 13, 1997 - ORIGINAL APPROVAL DATE

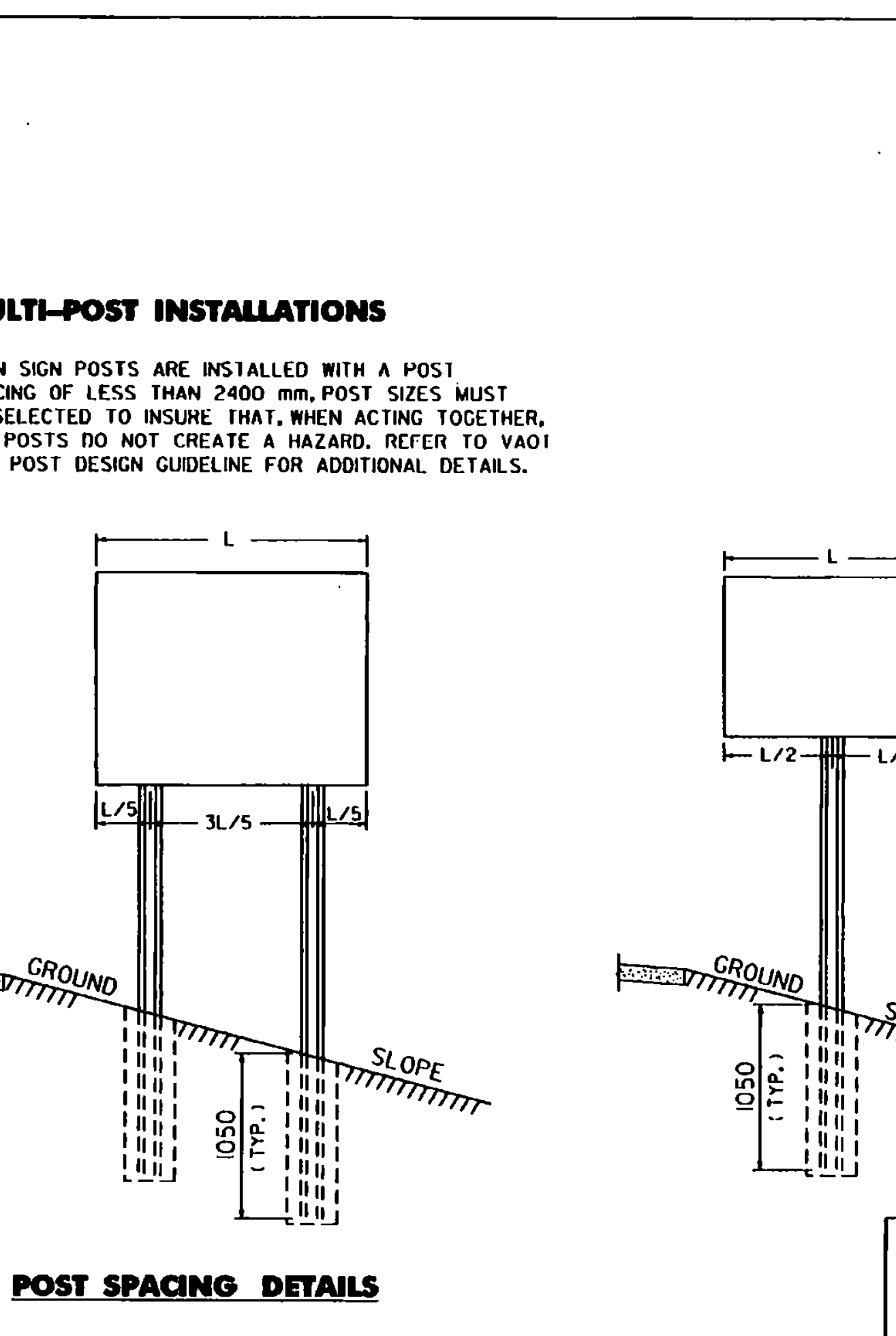
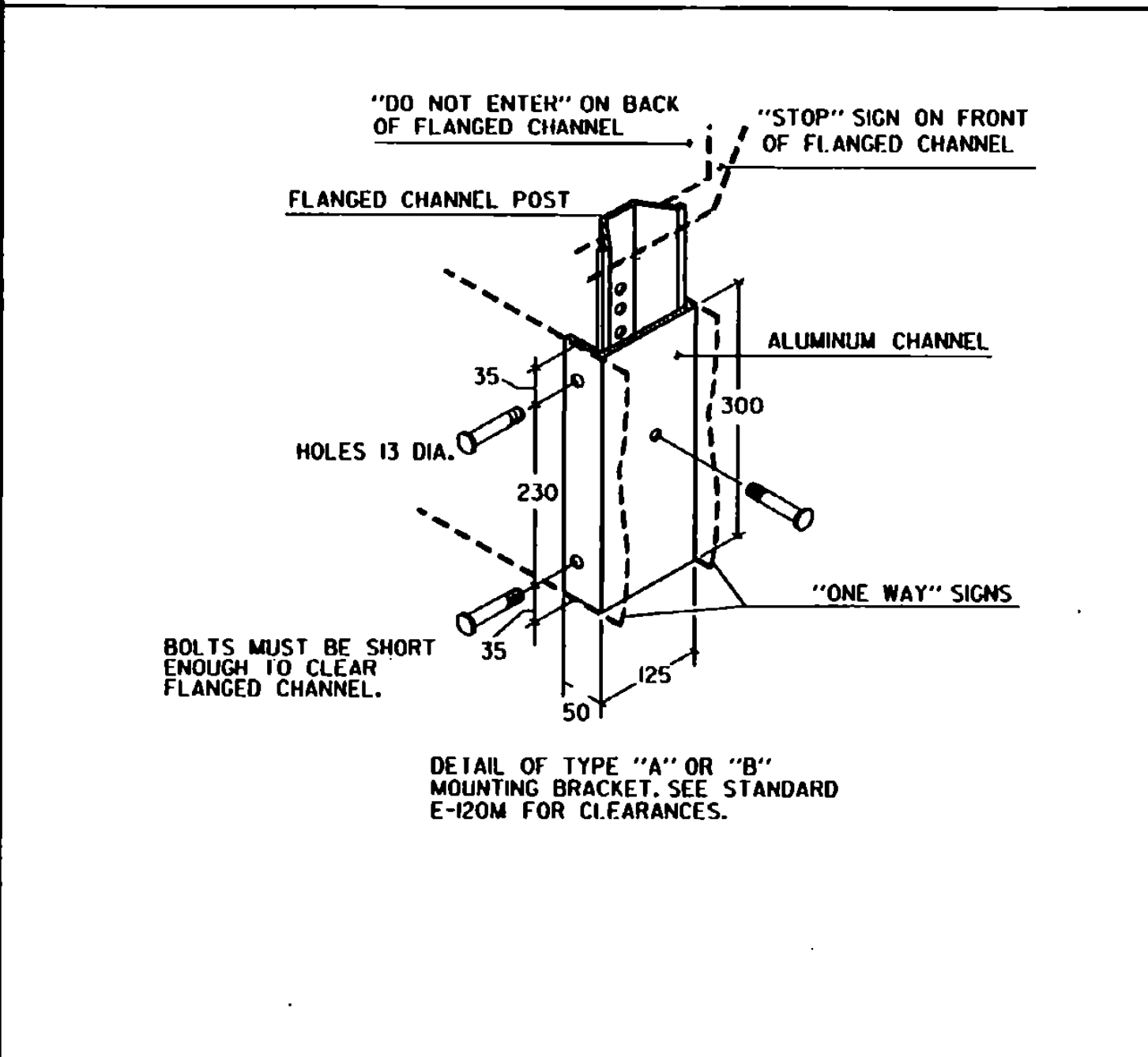
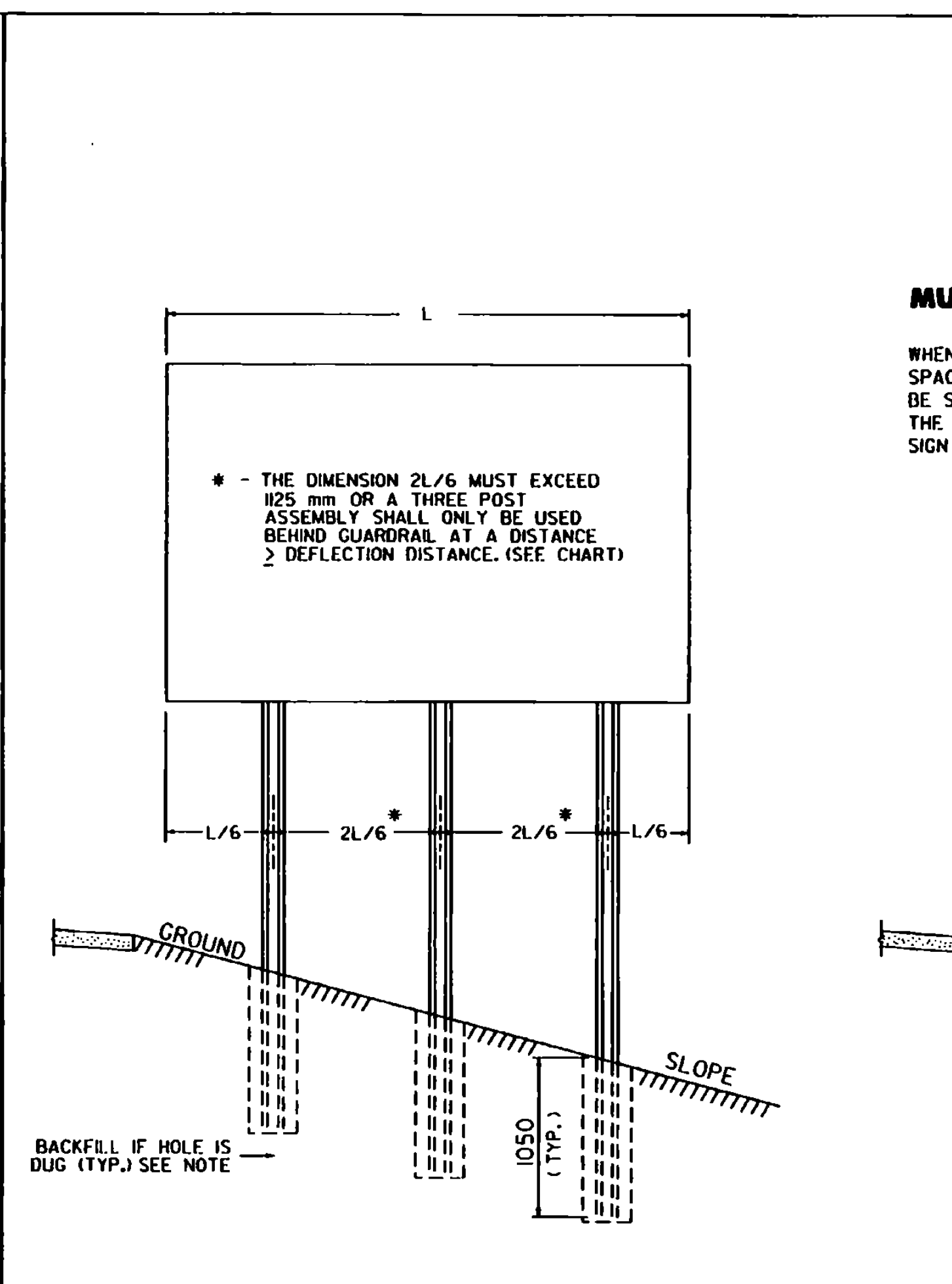
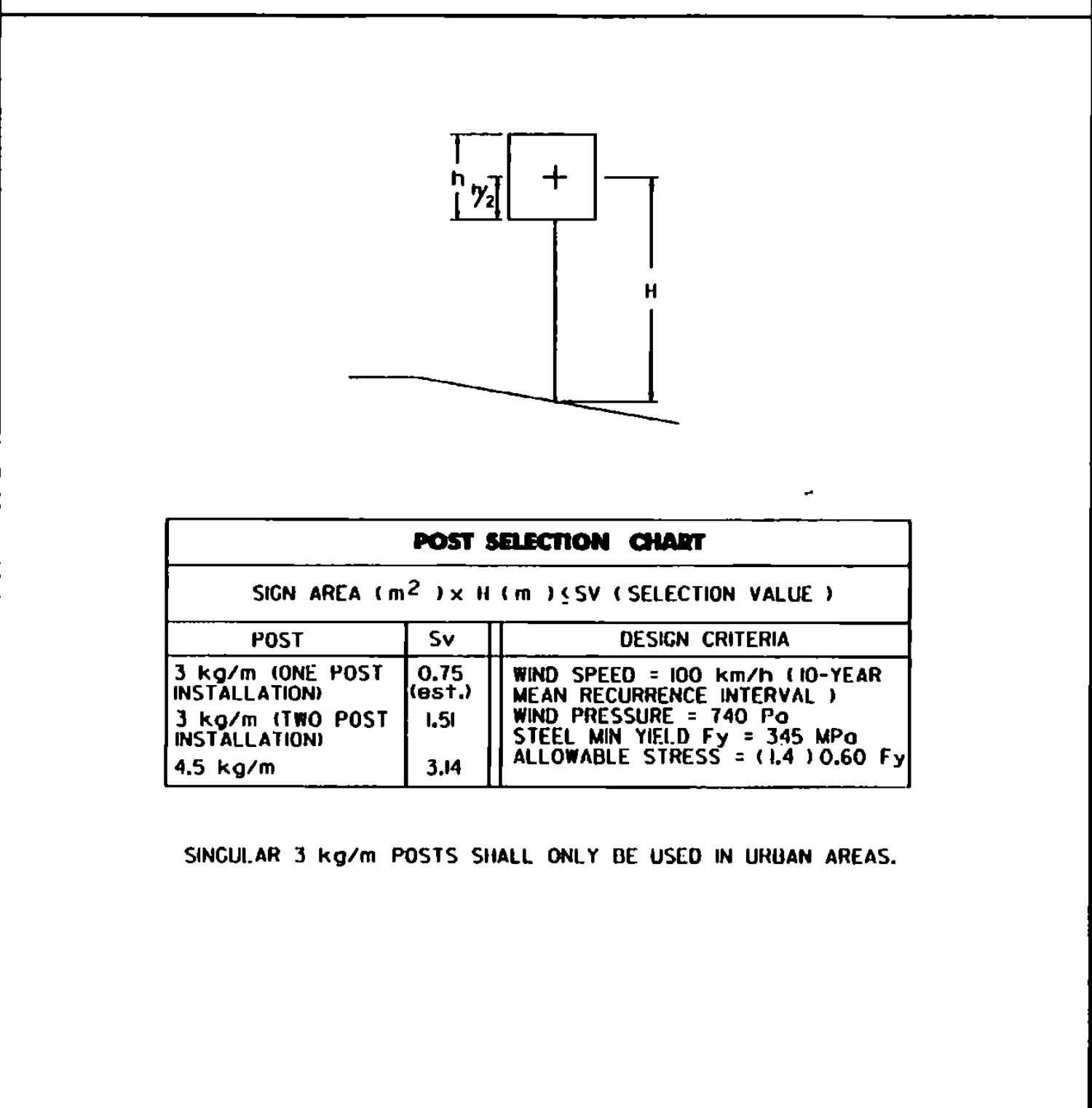
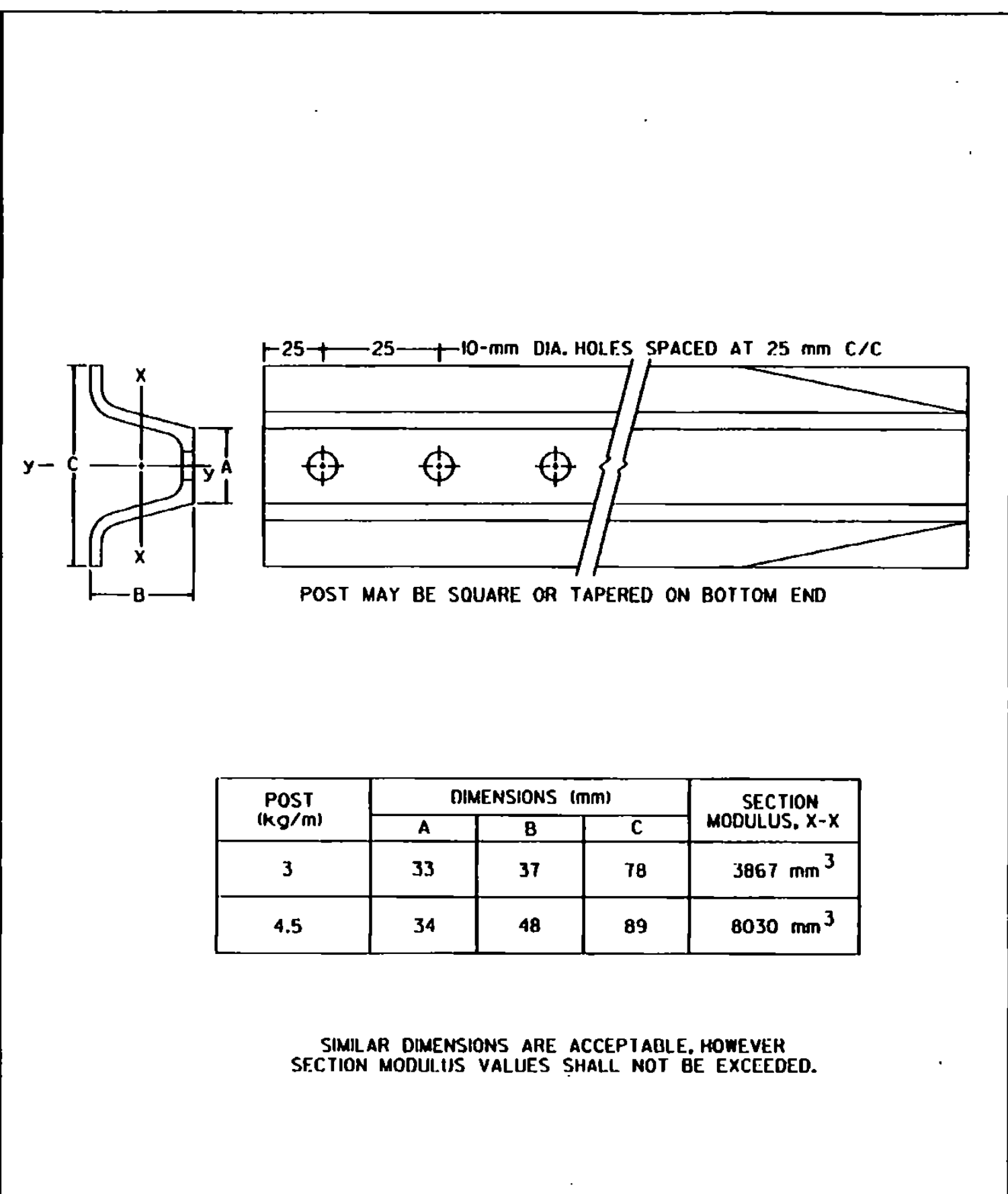
APPROVED

[Signature]
 DIRECTOR OF ENGINEERING
[Signature]
 DIRECTOR OF CONSTRUCTION AND MAINTENANCE

WARNING SIGN
 DETAILS



Metric
 STANDARD
 E-155 M



GUARDRAIL DEFLECTION CHART
(PER AASHTO - ROADSIDE DESIGN GUIDE)

TYPE	GR POST SPACING	DEFLECTION
THREE CABLE W/STEEL POSTS	5.0 m	3.5 m
W-BEAM W/WEAK POST	3.8 m	2.0 m
W/STRONG POST	1.9 m	0.9 m
BOX BEAM	1.83 m	1.5 m
THREE BEAM W/WEAK POST	3.8 m	1.2 m
W/STRONG POST	1.9 m	0.6 m

THIS CHART LISTS THE THEORETICAL DEFLECTION DISTANCE UPON IMPACT OF VARIOUS GUARDRAIL WITH DIFFERENT TYPES AND SPACING OF POSTS.

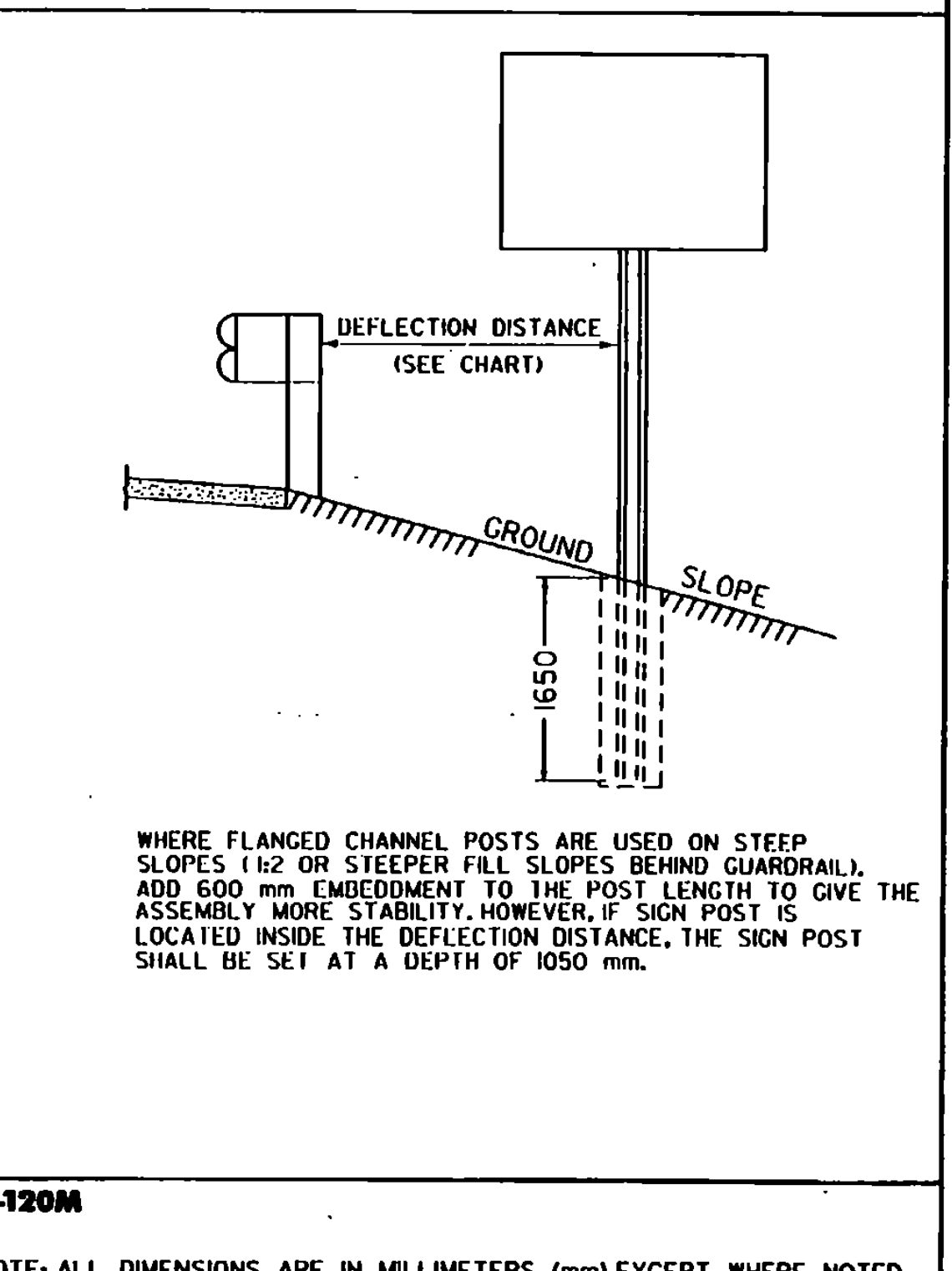
GENERAL NOTES

CONSTRUCTION METHODS - POSTS MAY BE DRIVEN OR SET IN A DUG HOLE AND BACKFILLED. IF DRIVEN, A DRIVING CAP SHALL BE USED. THE DUG-HOLE INSTALLATION SHALL BE USED IN AREAS OF POOR SOIL CONDITIONS OR AS DIRECTED BY THE RESIDENT ENGINEER. BACKFILL SHALL BE COMPACTED AS DIRECTED BY THE RESIDENT ENGINEER.

IN AREAS WHERE LEDGE ROCK IS ENCOUNTERED, POSTS WILL BE SET IN A HOLE WITH 50-mm CLEARANCE AND GROUTED WITH TYPE 4 MORTAR 600 mm BELOW THE SURFACE OF THE SOLID ROCK, UNLESS THE POSTS PENETRATE THE GROUND A MINIMUM OF 1050 mm. THE PORTION OF THE POST IN CONTACT WITH THE MORTAR SHALL BE COATED WITH AN APPROVED COATING.

SIGN CLEARANCES - HORIZONTAL AND VERTICAL SIGN CLEARANCES SHALL BE SHOWN ON THE PLANS OR THE APPROPRIATE STD. SHEETS.

SINGLE POST INSTALLATIONS SHALL BE LIMITED TO A SIGN AREA OF 1.25 m² OR LESS.



REVISIONS AND CORRECTIONS
JUNE 13, 1997 - ORIGINAL APPROVAL DATE

APPROVED
[Signature]
DIRECTOR OF ENGINEERING
[Signature]
DIRECTOR OF CONSTRUCTION AND MAINTENANCE

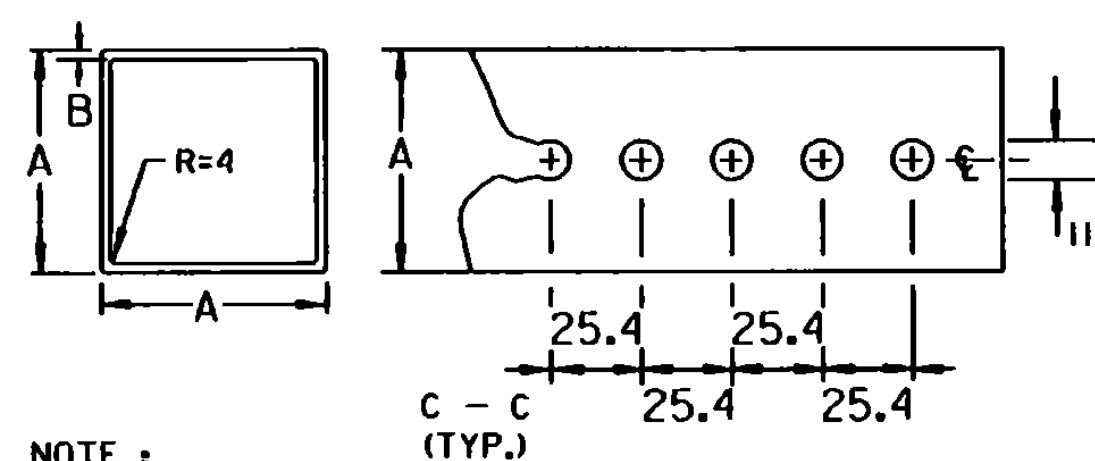
FLANGED CHANNEL STEEL SIGN POST

OTHER STDS. E-120M REQUIRED:
NOTE: ALL DIMENSIONS ARE IN MILLIMETERS (mm) EXCEPT WHERE NOTED.

Metric STANDARD E-160M

GUARDRAIL DEFLECTION CHART (PER AASHTO - ROADSIDE DESIGN GUIDE)		
TYPE	GR POST SPACING	DEFLECTION
THREE CABLE W/STEEL POSTS	5.0 m	3.5 m
W-BEAM	W/WEAK POST	3.8 m
	W/STRONG POST	1.9 m
BOX BEAM	1.83 m	1.5 m
THRE BEAM	W/WEAK POST	3.8 m
	W/STRONG POST	1.9 m

THIS CHART LISTS THE THEORETICAL DEFLECTION DISTANCE UPON IMPACT OF VARIOUS GUARDRAIL WITH DIFFERENT TYPES AND SPACING OF POSTS.



NOTE :

THE POSTS SHALL BE CAREFULLY FORMED OF STEEL, WITH A MINIMUM YIELD OF 380 MPa INTO A SIZE AND SHAPE WITH CORNERS INDUCTION WELDED IN SUCH A MANNER THAT NEITHER FLASH NOR WELD SHALL INTERFERE WITH THE TELESCOPING PROPERTIES NOR DAMAGE THE GALVANIZATION.

- THE 2.7-mm WALL THICKNESS TOLERANCES SHALL BE +0.125 mm AND -0.250 mm.
- THE 2.0-mm WALL THICKNESS TOLERANCES SHALL BE +0.050 mm AND -0.200 mm.

DIMENSION DETAILS AND POST SELECTION CHART

POST SELECTION CHART							
SIGN AREA (m ²) X H (m) ≤ Sv (SELECTION VALUE)							
POST SIZE	DIMENSIONS		SECTION MODULUS mm ³	ONE POST Sv	TWO POST Sv	THREE POST Sv	NUMBER PERMITTED IN 2.4-m PATH
	kg/m	A					
2.8	45	2.0	3770	1.63	3.26	4.89	TWO
3.2	51	2.0	4850	2.09	4.18	6.27	TWO
5.0	64	2.7	10 520	4.54	9.08	13.62	ONE

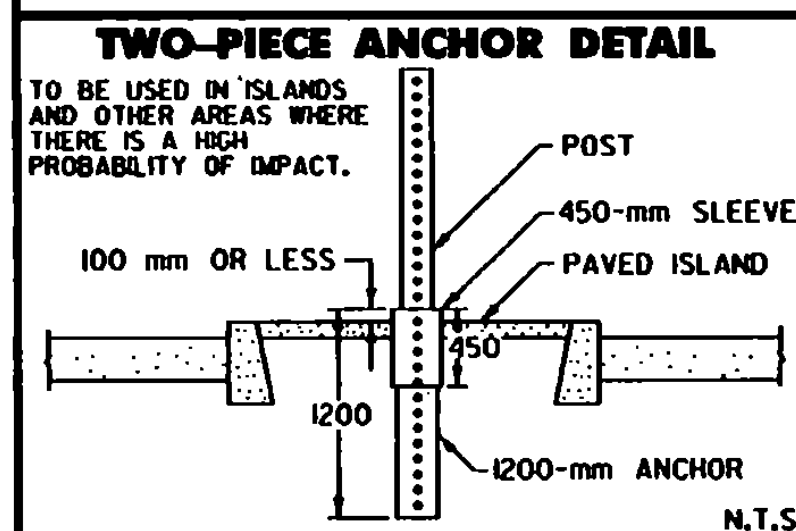
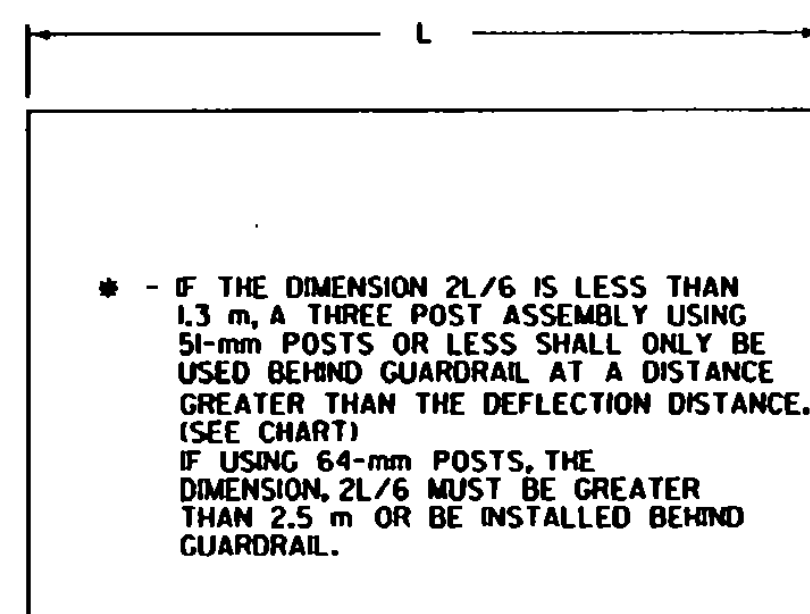
DESIGN CRITERIA:

WIND SPEED = 100 km/h (10 -YEAR MEAN RECURRENCE INTERVAL)
 WIND PRESSURE = 740 Pa
 STEEL MINIMUM YIELD = 380 MPa
 ALLOWABLE STRESS = (1.4) 0.60 Fy

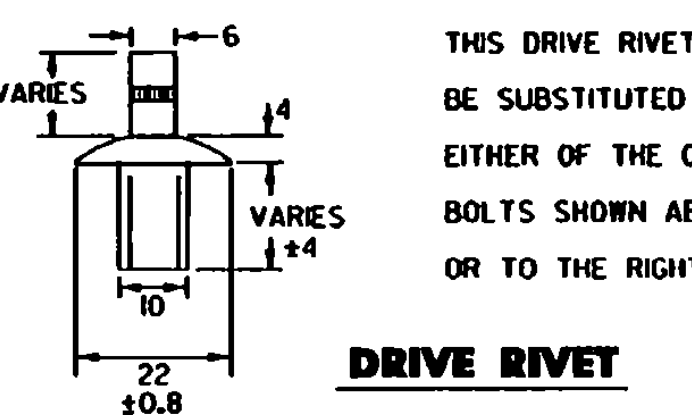
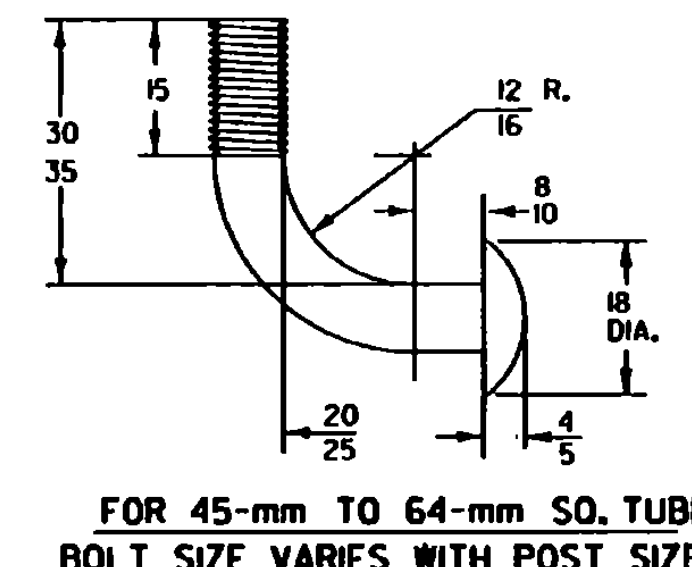
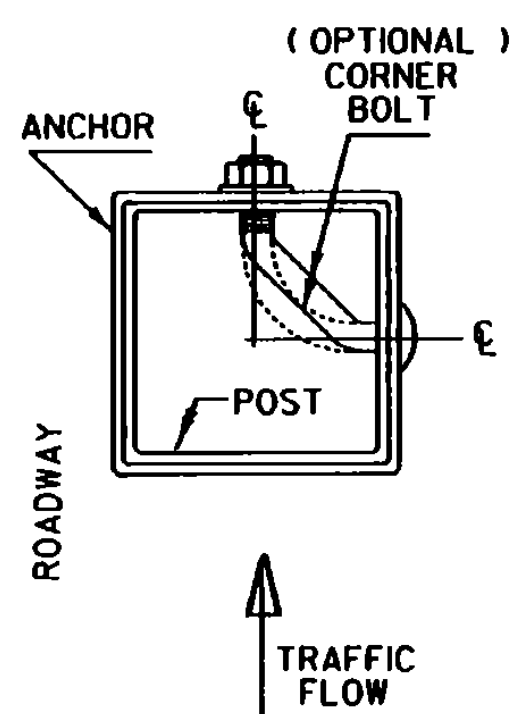
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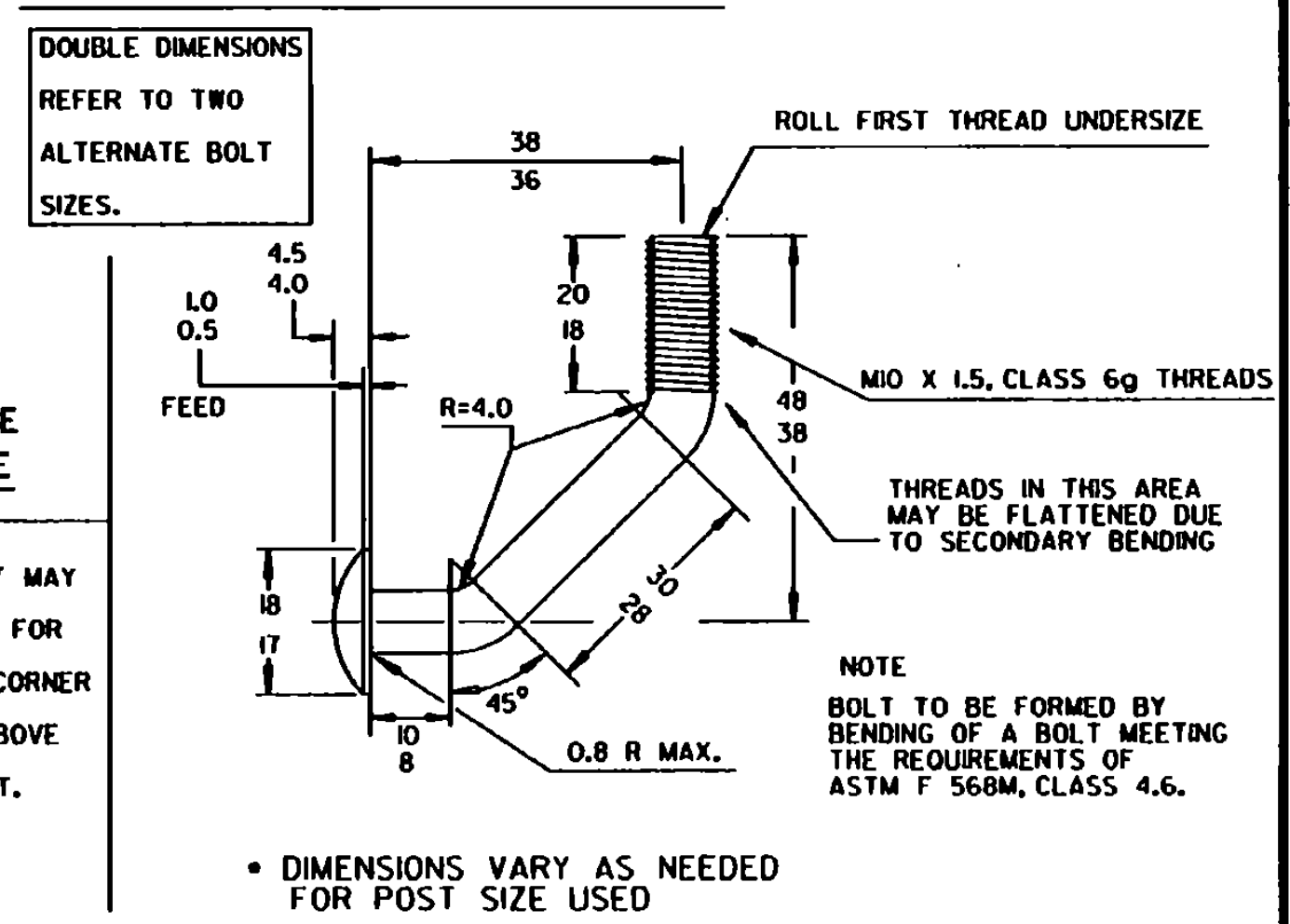
[Signature]
 DIRECTOR OF ENGINEERING
[Signature]
 DIRECTOR OF CONSTRUCTION AND MAINTENANCE



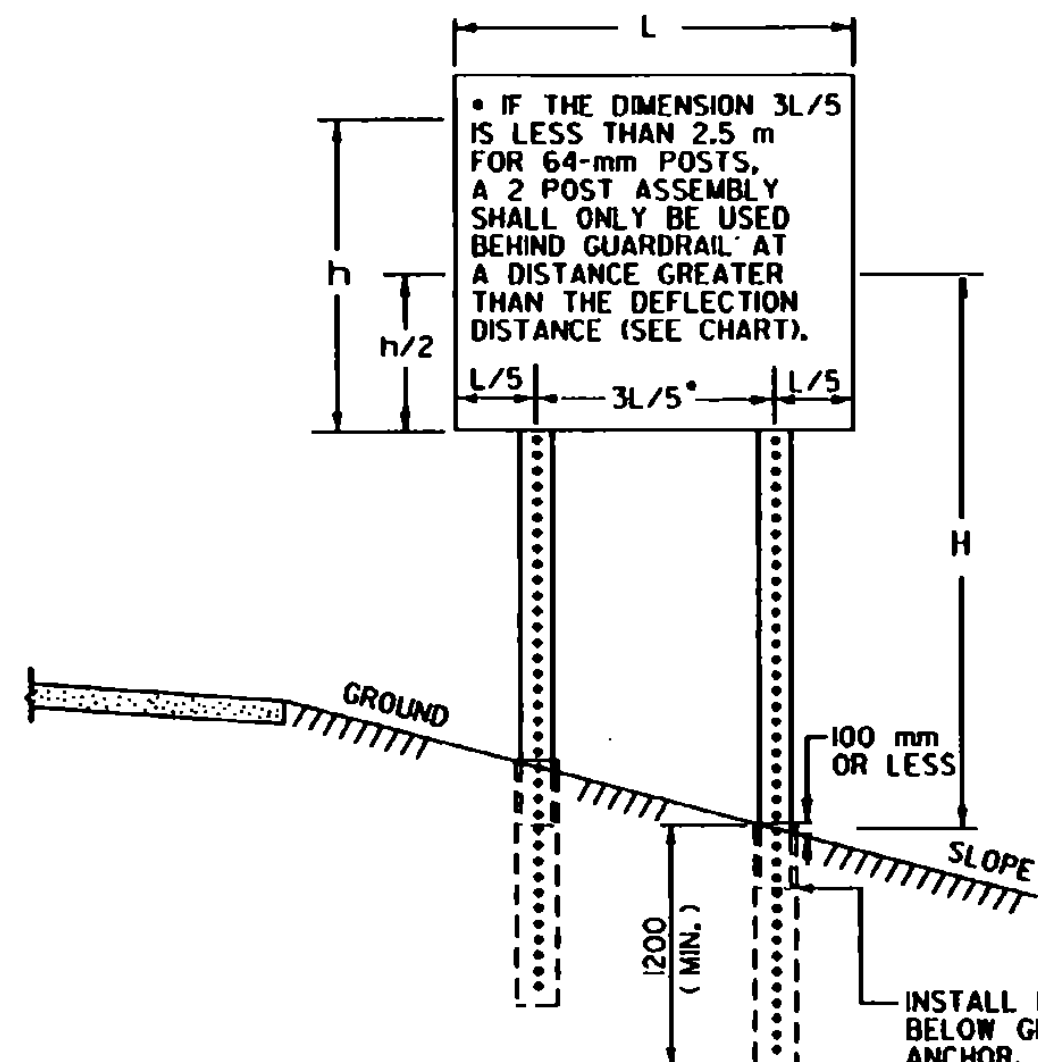
TOP VIEW OF ANCHOR, POST AND BOLT



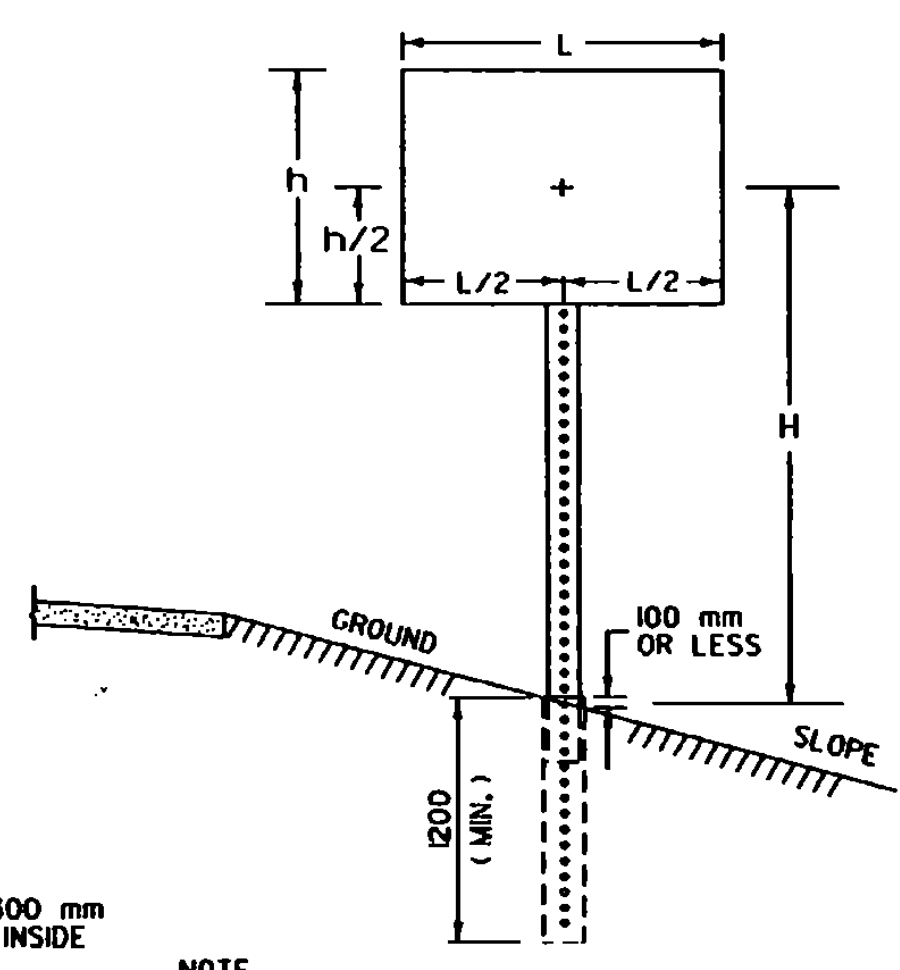
OPTIONAL CORNER BOLT DETAILS



MULTI-POST INSTALLATIONS



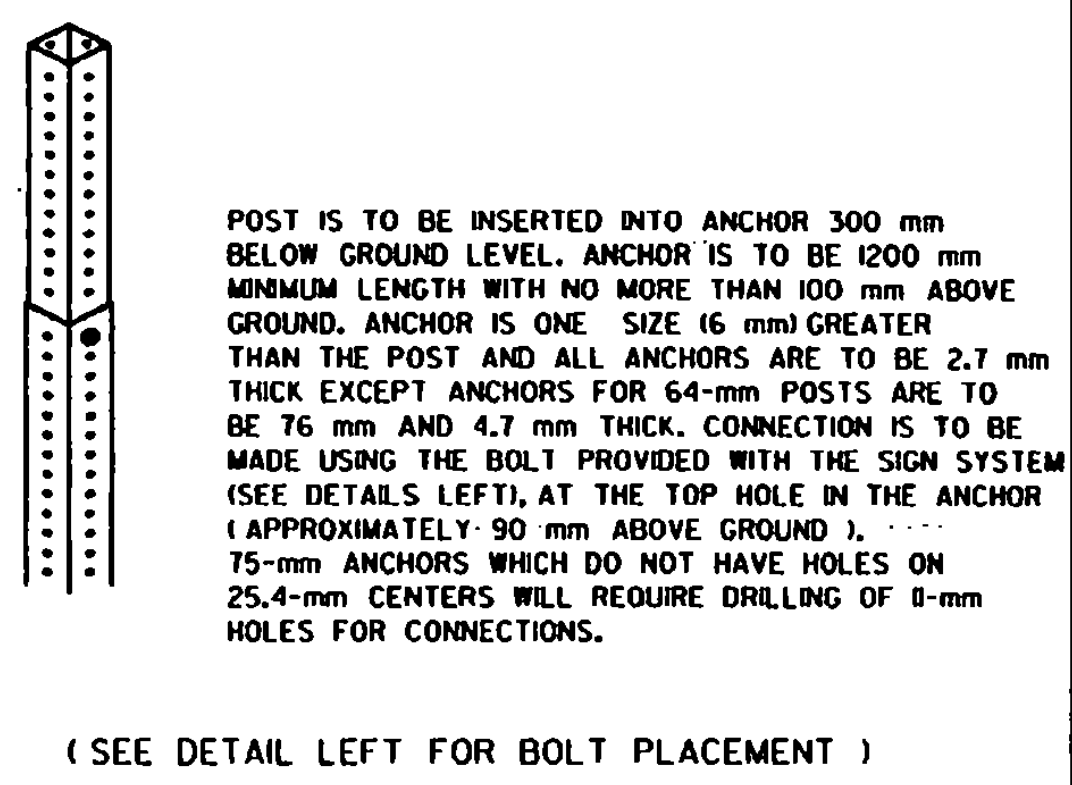
POST SPACING DETAILS



GENERAL NOTES

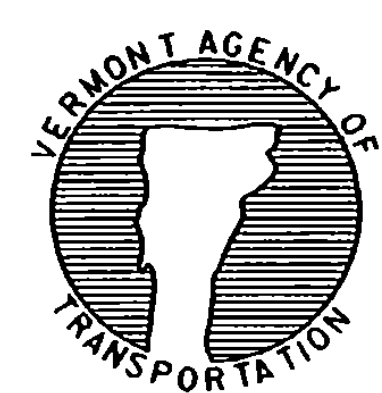
CONSTRUCTION METHODS - POSTS MAY BE DRIVEN OR SET IN A DUG HOLE AND BACKFILLED, IF DRIVEN, A DRIVING CAP SHALL BE USED, THE DUG HOLE INSTALLATION SHALL BE USED IN AREAS OF POOR SOIL CONDITIONS OR AS DIRECTED BY THE RESIDENT ENGINEER. BACKFILL SHALL BE COMPACTED AS DIRECTED BY THE RESIDENT ENGINEER.
 SIGN CLEARANCES - HORIZONTAL AND VERTICAL SIGN CLEARANCES SHALL BE SHOWN ON THE PLANS OR THE APPROPRIATE STD. SHEETS.
 SINGLE POST INSTALLATIONS SHALL BE LIMITED TO A SIGN AREA OF 1.8 m² OR LESS

CONNECTION DETAIL

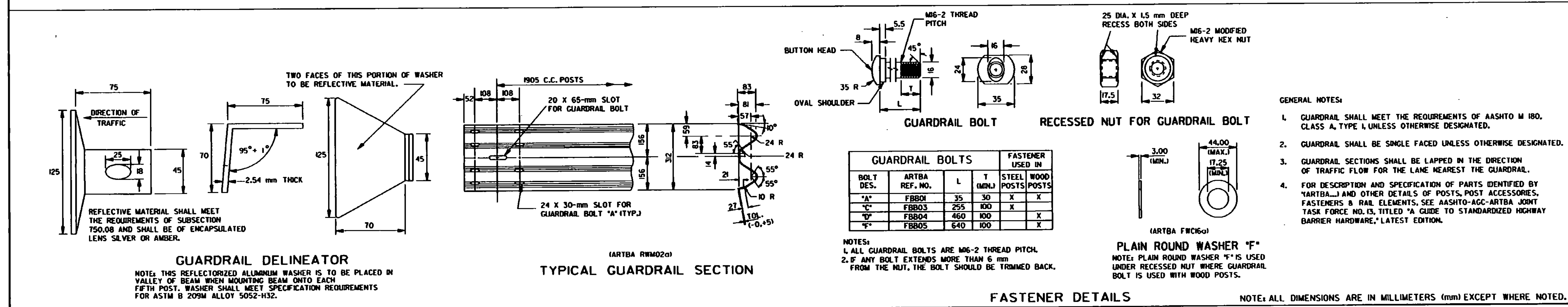
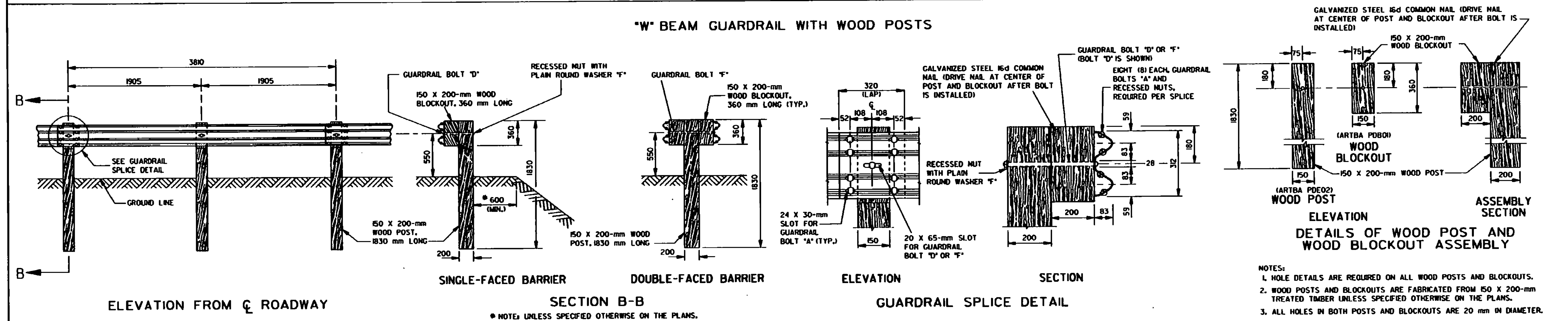
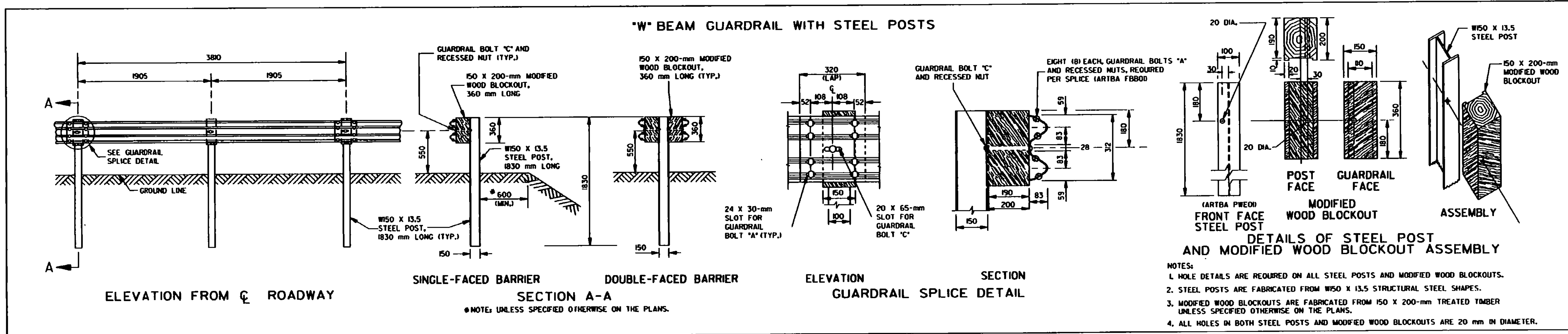


OTHER STDS. REQUIRED: E-120M E-160M
 NOTE: ALL DIMENSIONS ARE IN MILLIMETERS (mm) EXCEPT WHERE NOTED.

SQUARE STEEL SIGN POST



Metric STANDARD E-164M



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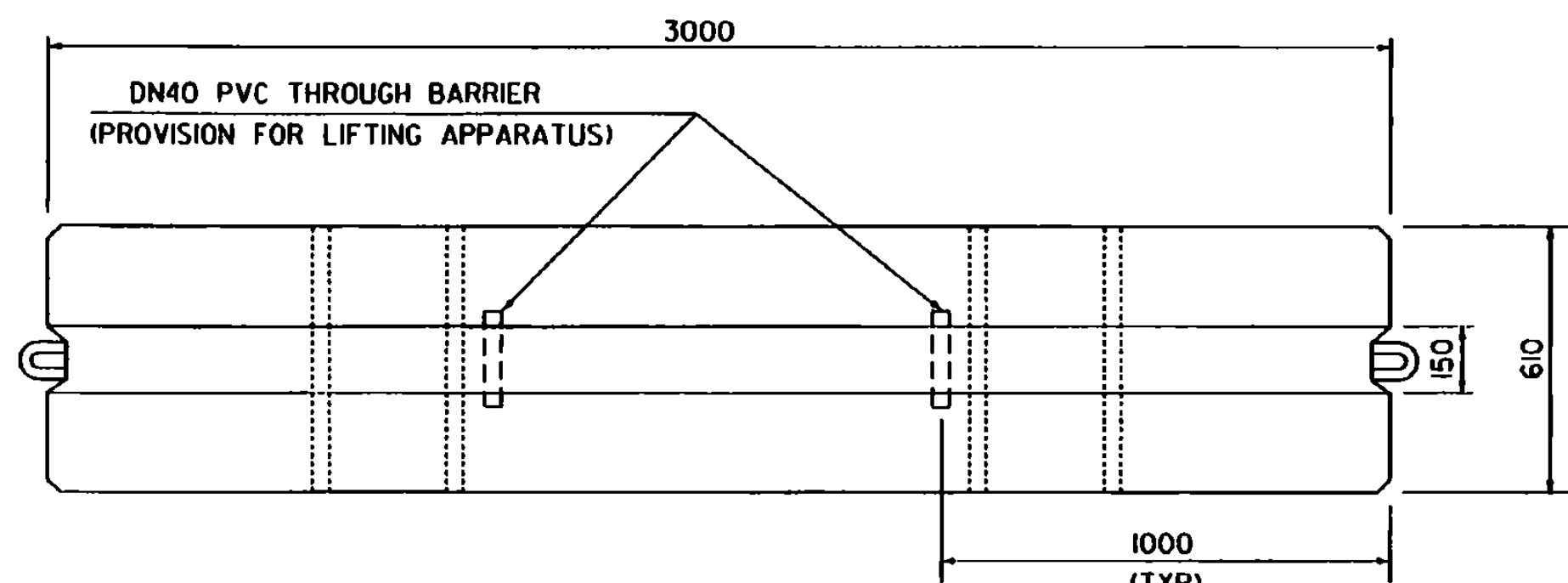
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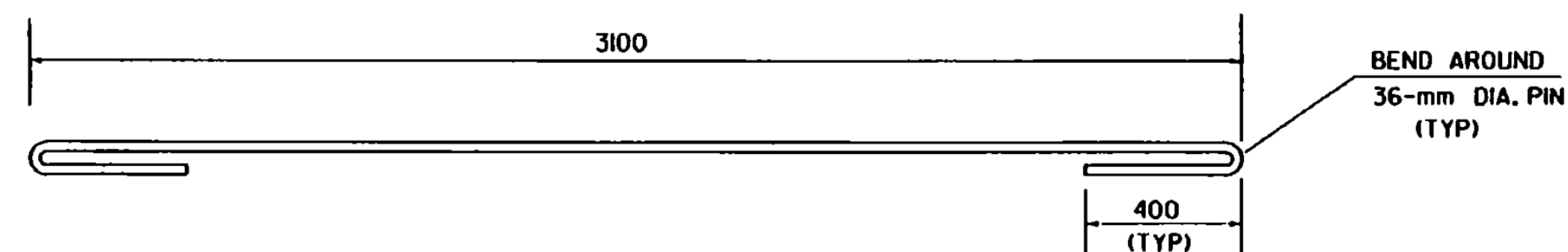
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 DESIGN ENGINEER

STEEL BEAM GUARDRAIL WITH STEEL POSTS
STEEL BEAM GUARDRAIL WITH WOOD POSTS

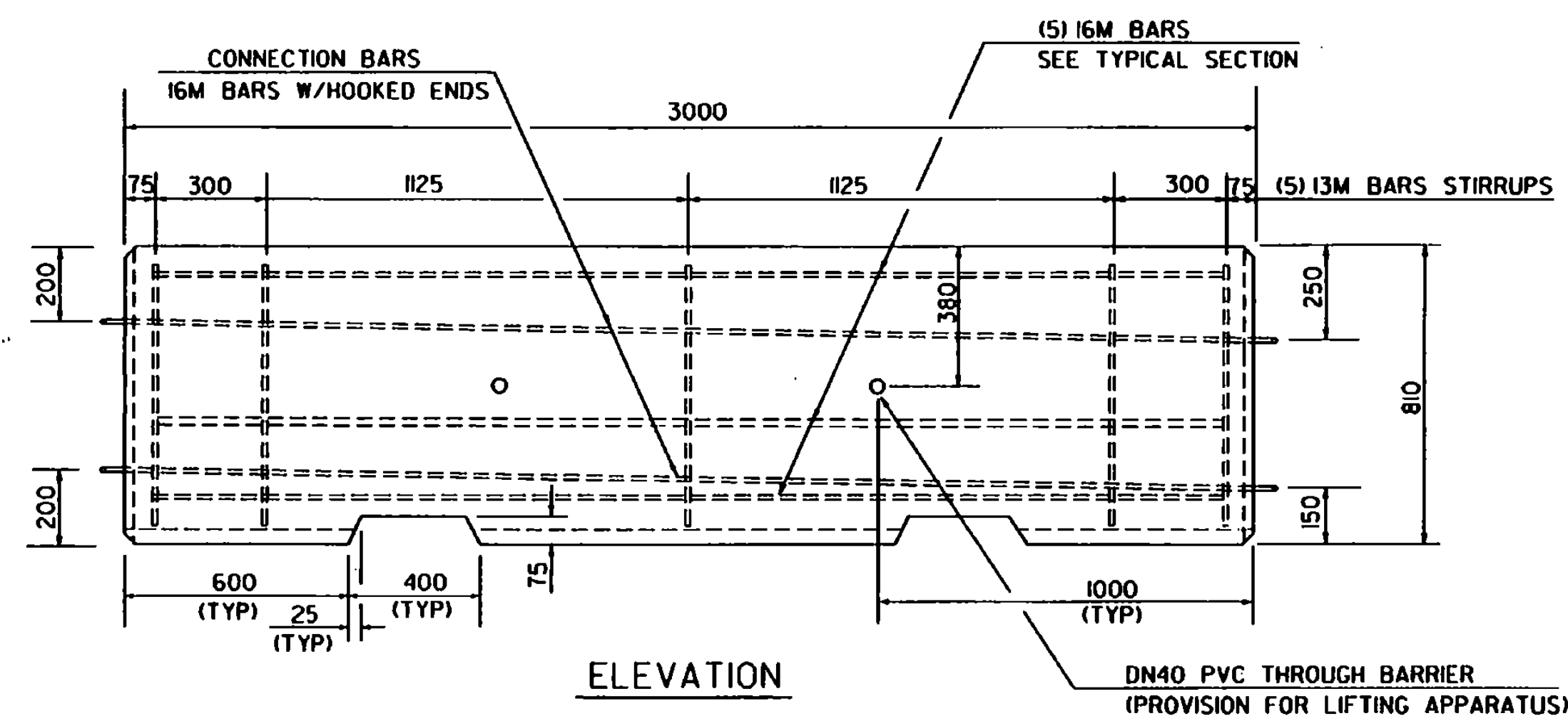




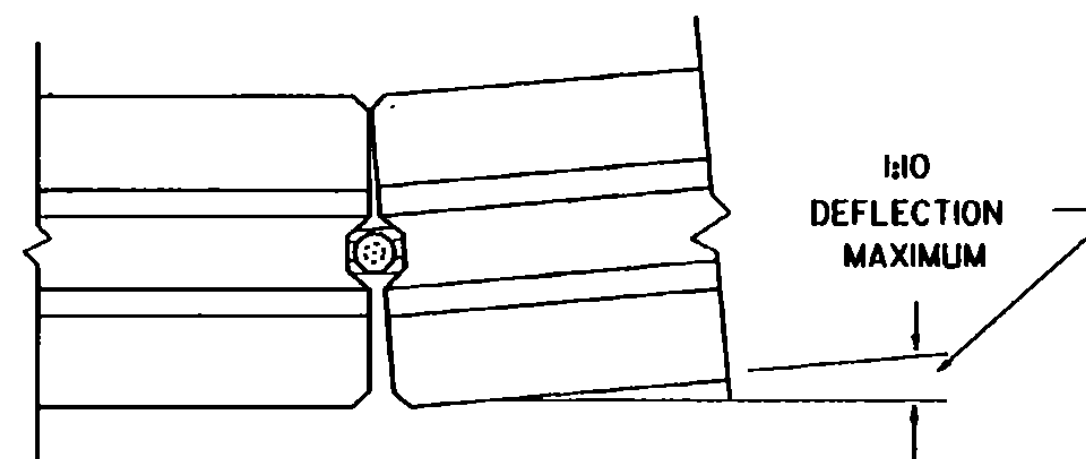
PLAN



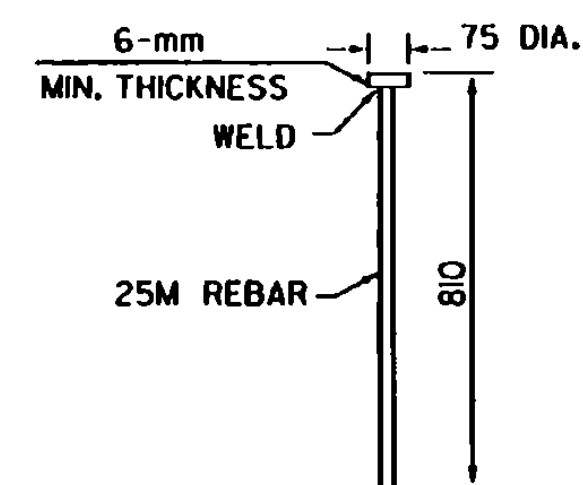
CONNECTION BAR DETAIL
16M REBAR



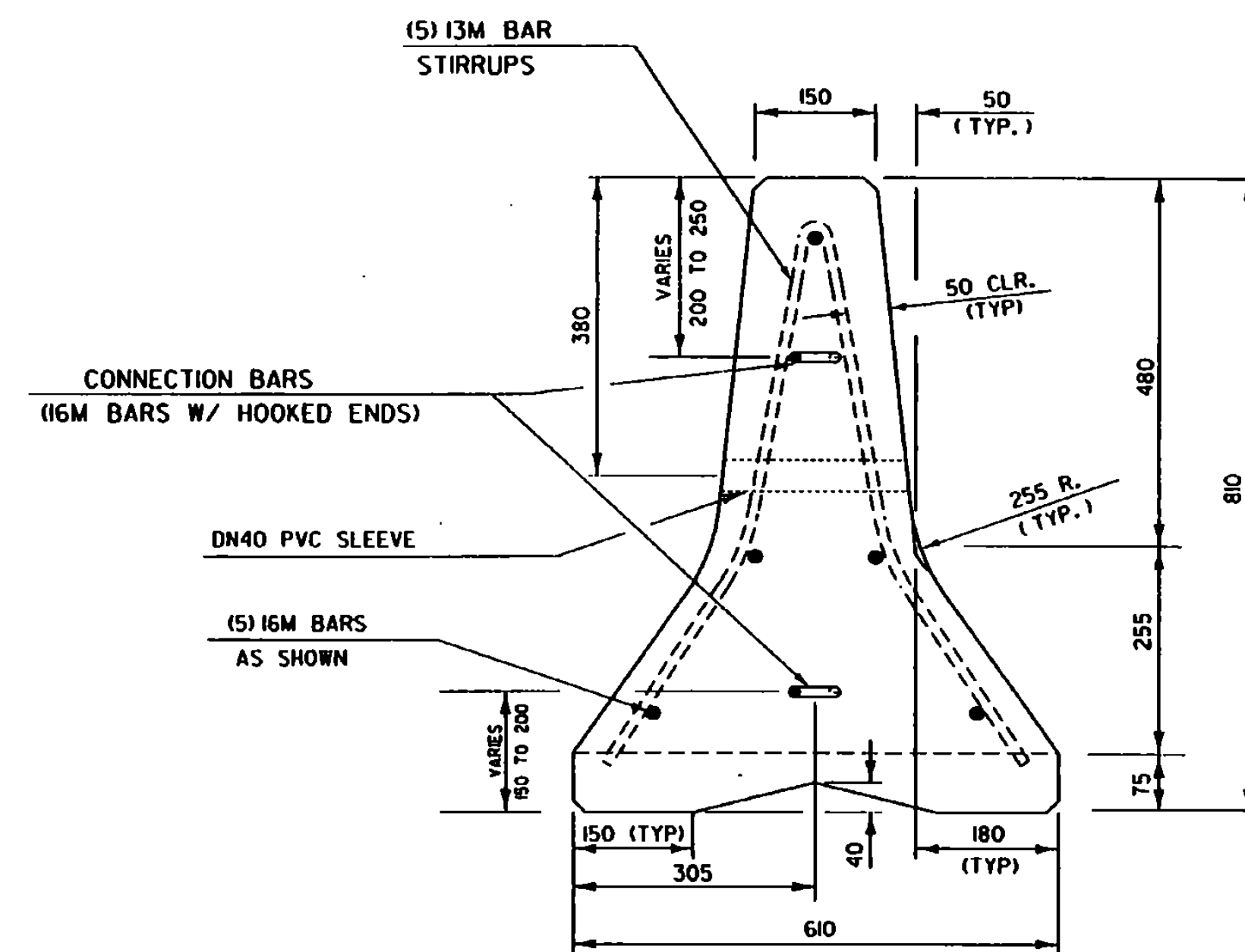
ELEVATION



PLAN CONNECTION DETAIL



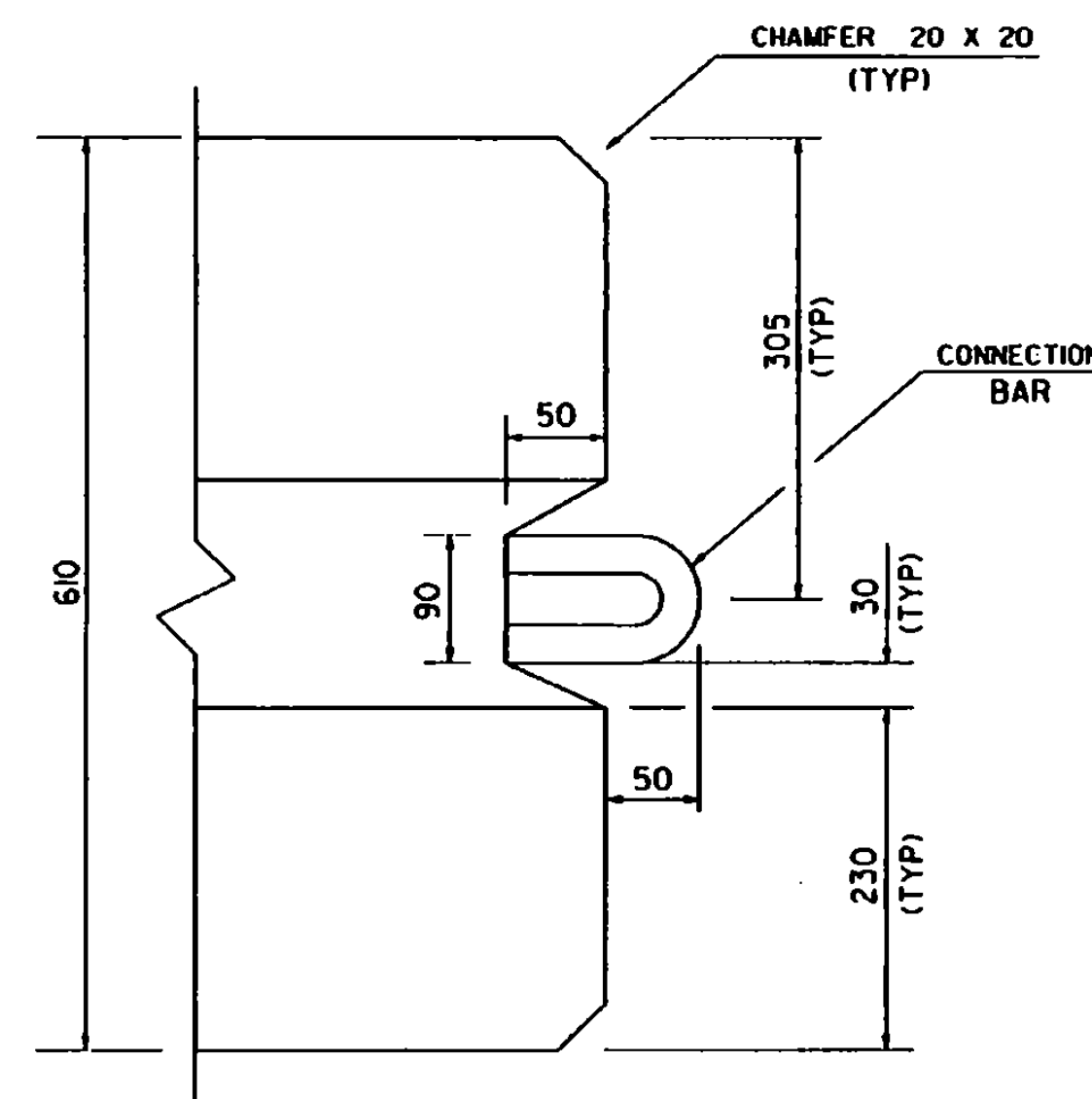
CONNECTION PIN



TYPICAL SECTION

NOTES

1. ALL CONCRETE WILL BE CLASS A.
2. ALL REINFORCING STEEL SHALL CONFORM TO AASHTO M-31M, GRADE 420.
3. REFLECTORS SHALL BE INSTALLED ON THE SIDE OF THE TEMPORARY TRAFFIC BARRIER. WHEN PLACED ON THE DRIVERS LEFT SIDE, THE REFLECTORS SHALL BE YELLOW. THE REFLECTORS SHALL BE WHITE WHEN PLACED ON THE DRIVERS RIGHT SIDE. THE REFLECTORS SHALL BE INSTALLED AT A HEIGHT OF 530 mm AT 6-m INTERVALS AND SHALL BE AT LEAST 5800 mm². THE REFLECTORS SHALL MEET THE REQUIREMENTS FOR SECTION 751.02 OR 751.03. THE REFLECTORS SHALL BE INSTALLED ON BOTH SIDES WHEN PLACED IN THE MEDIAN AND IN ALL CASES SHALL BE FIRMLY ATTACHED TO THE SIDE OF BARRIER. THE TYPE OF REFLECTOR AND THE INSTALLATION PROCEDURE SHALL BE SUBMITTED FOR REVIEW PRIOR TO INSTALLATION. COST OF FURNISHING AND INSTALLING REFLECTORS SHALL BE INCLUDED IN THE PRICE BID FOR TEMPORARY TRAFFIC BARRIERS.



PLAN AT ENDS OF BARRIER

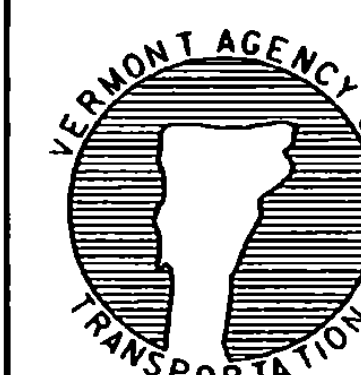
NOTE: ALL DIMENSIONS ARE IN MILLIMETERS (mm) EXCEPT WHERE NOTED.

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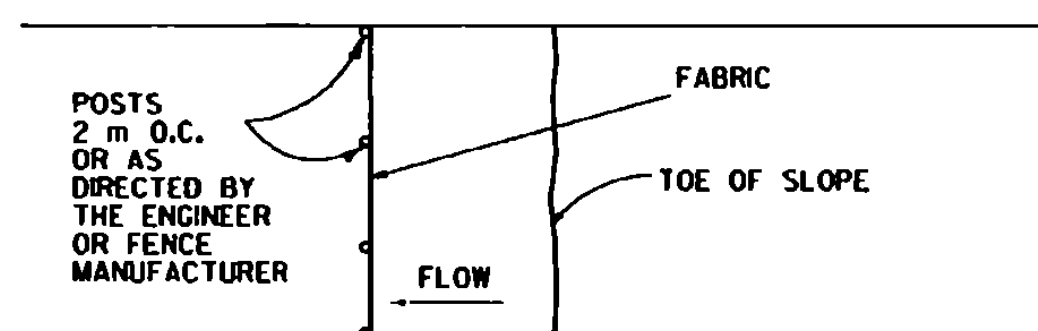
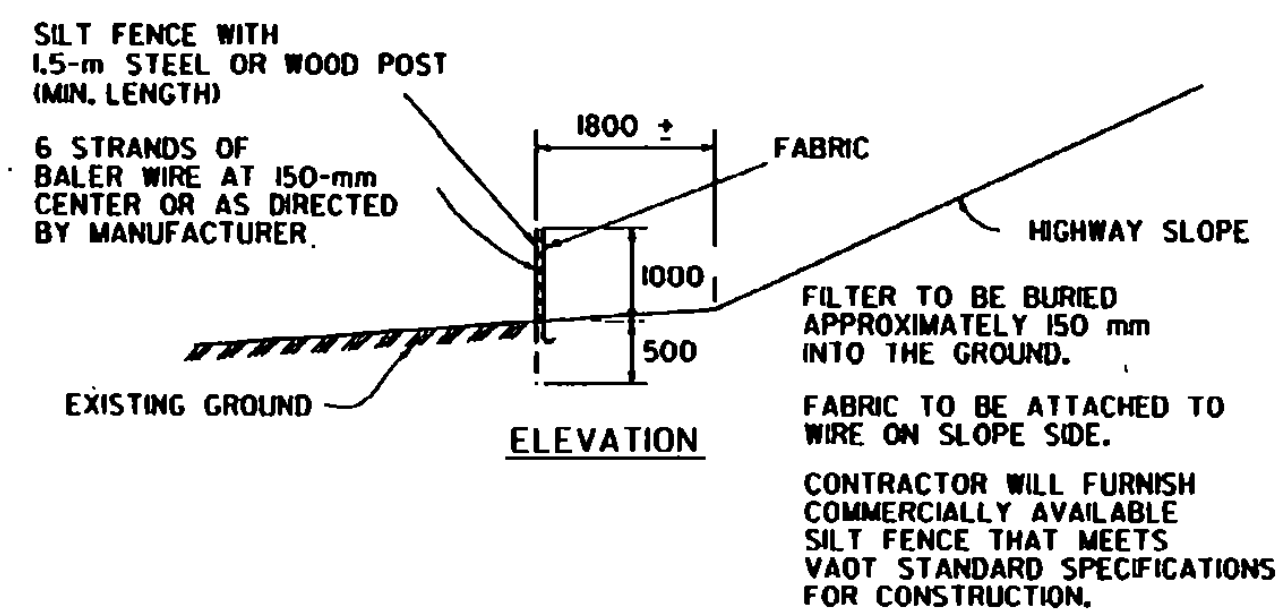
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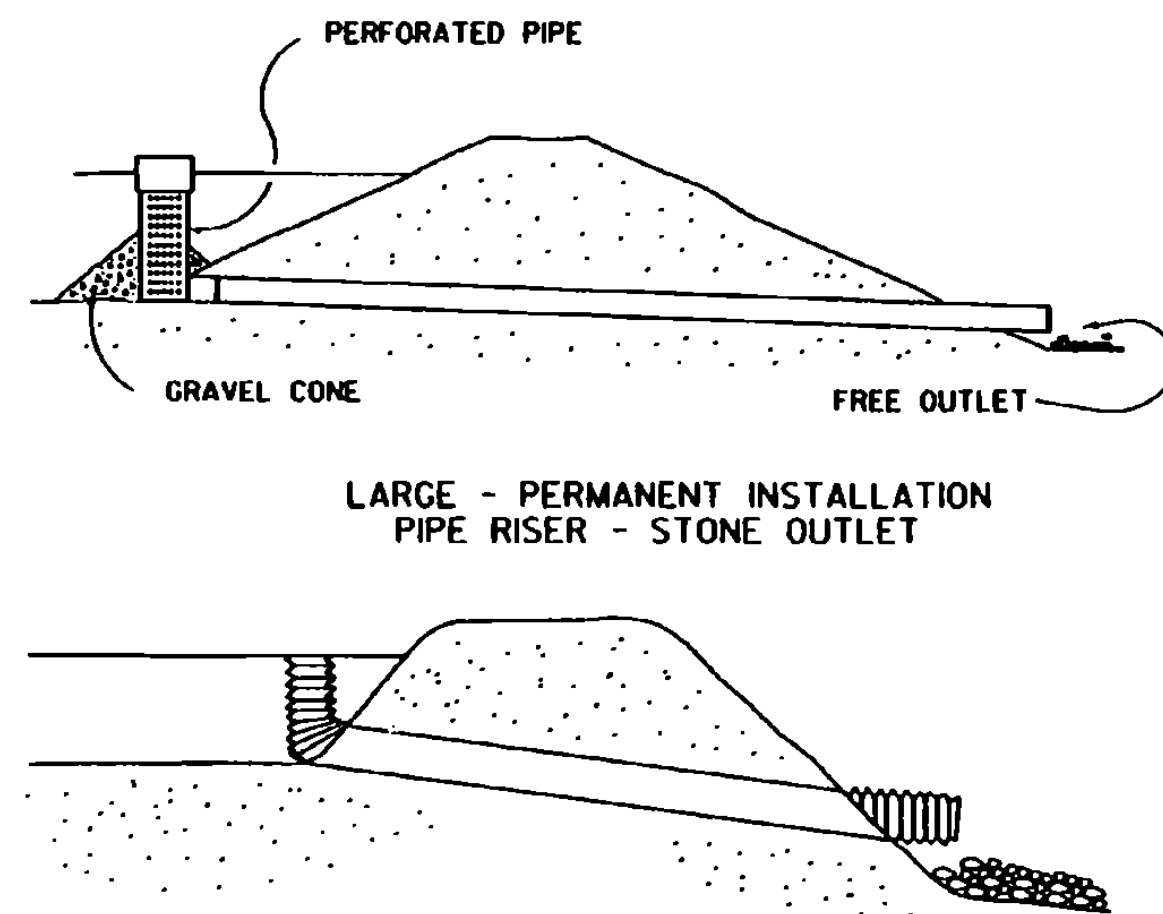
PRECAST CONCRETE TEMPORARY TRAFFIC BARRIER



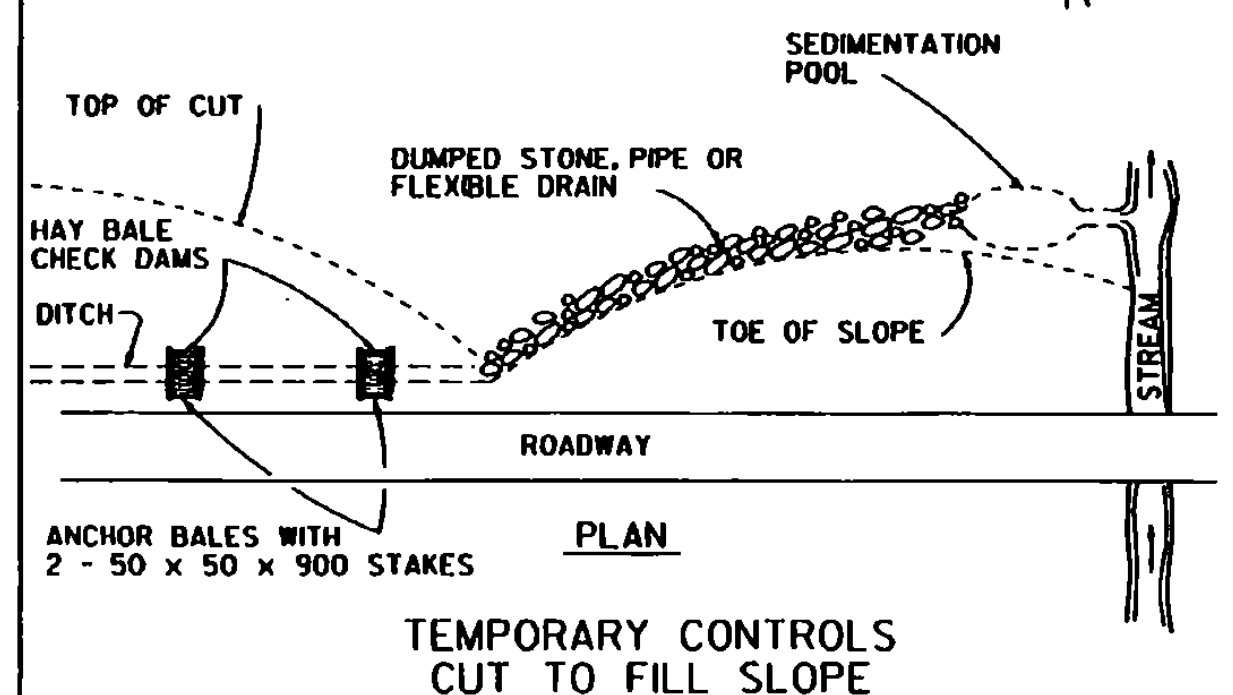
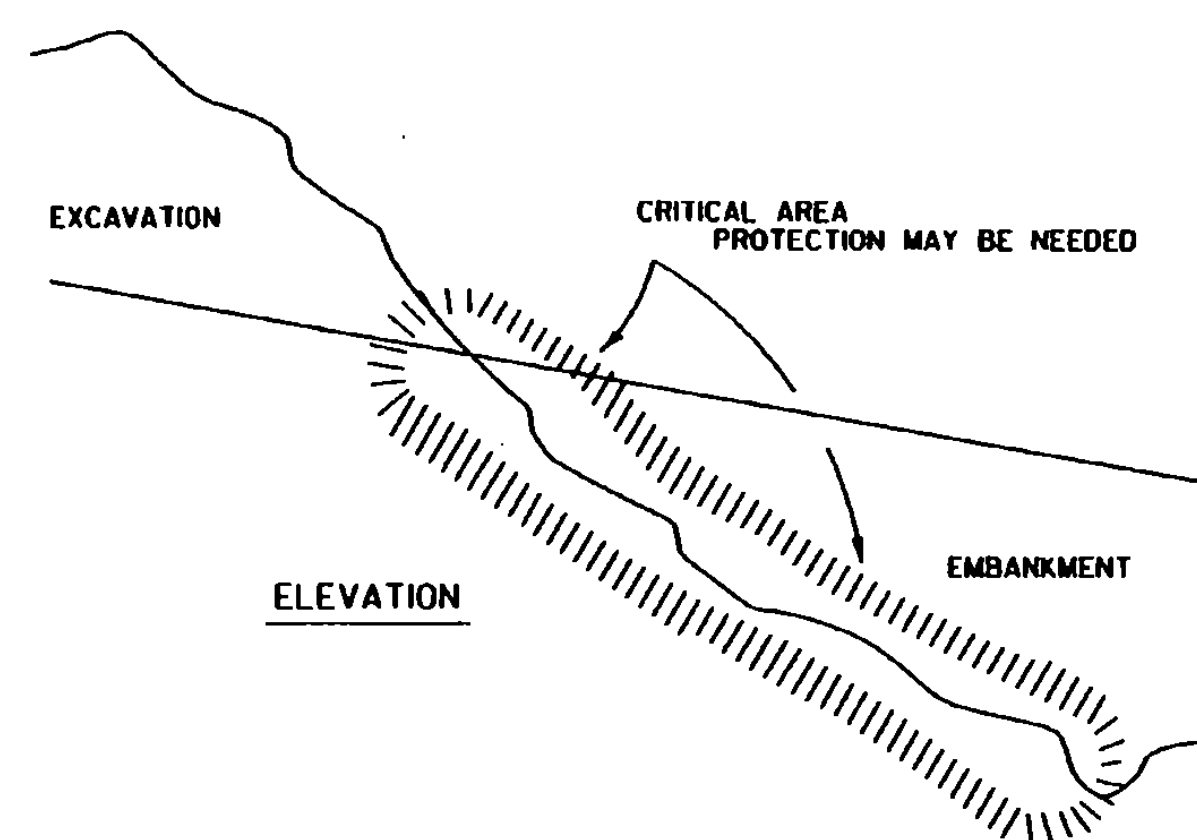
Metric
STANDARD
G-18 M



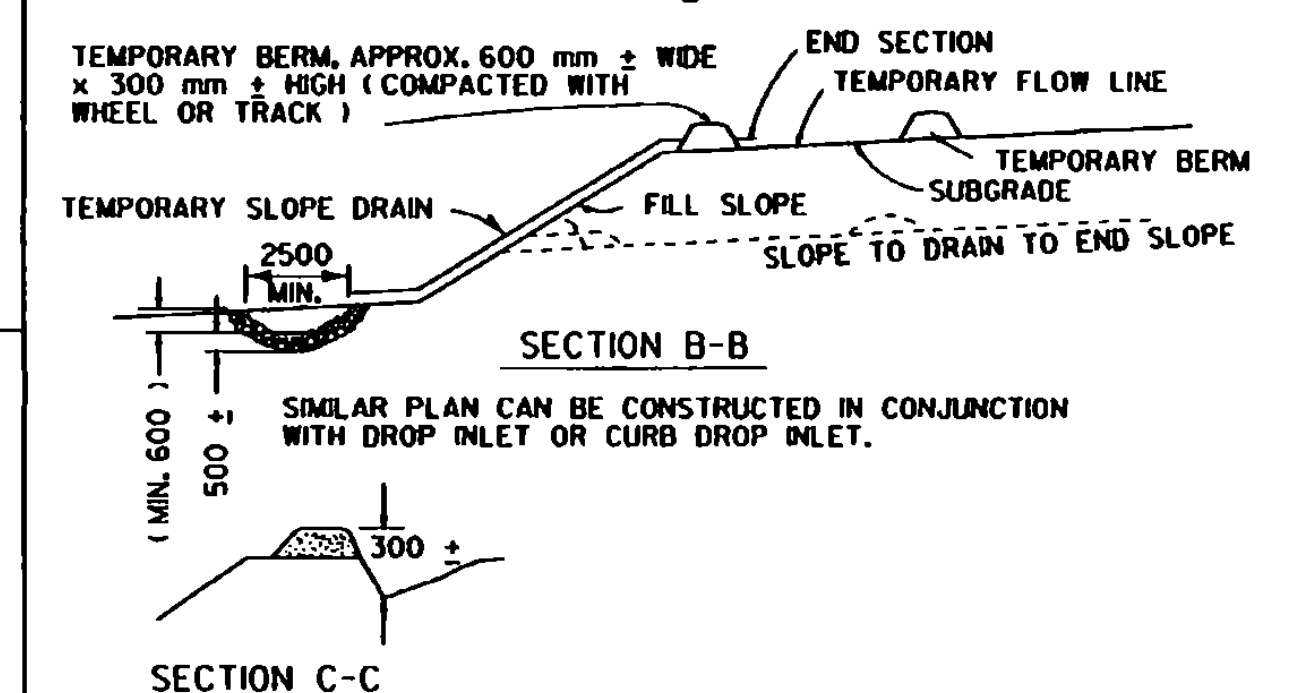
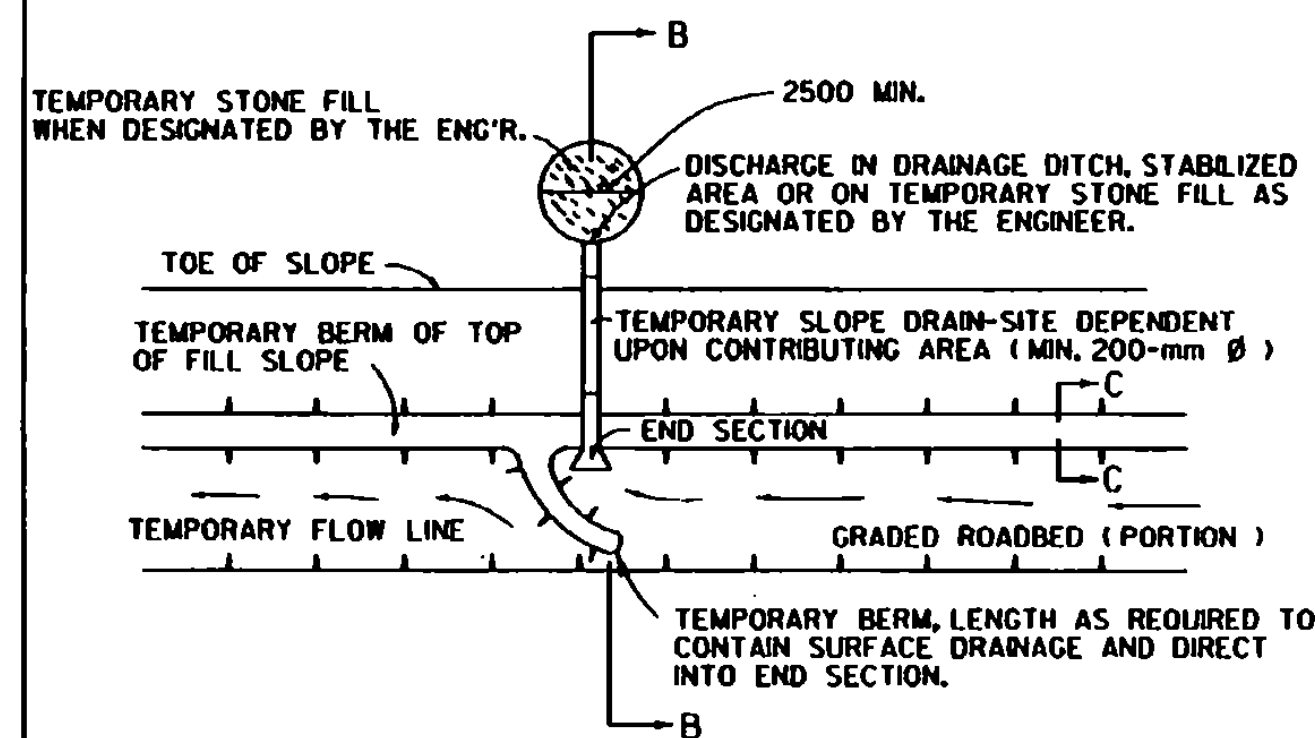
PLAN
SILT FENCE



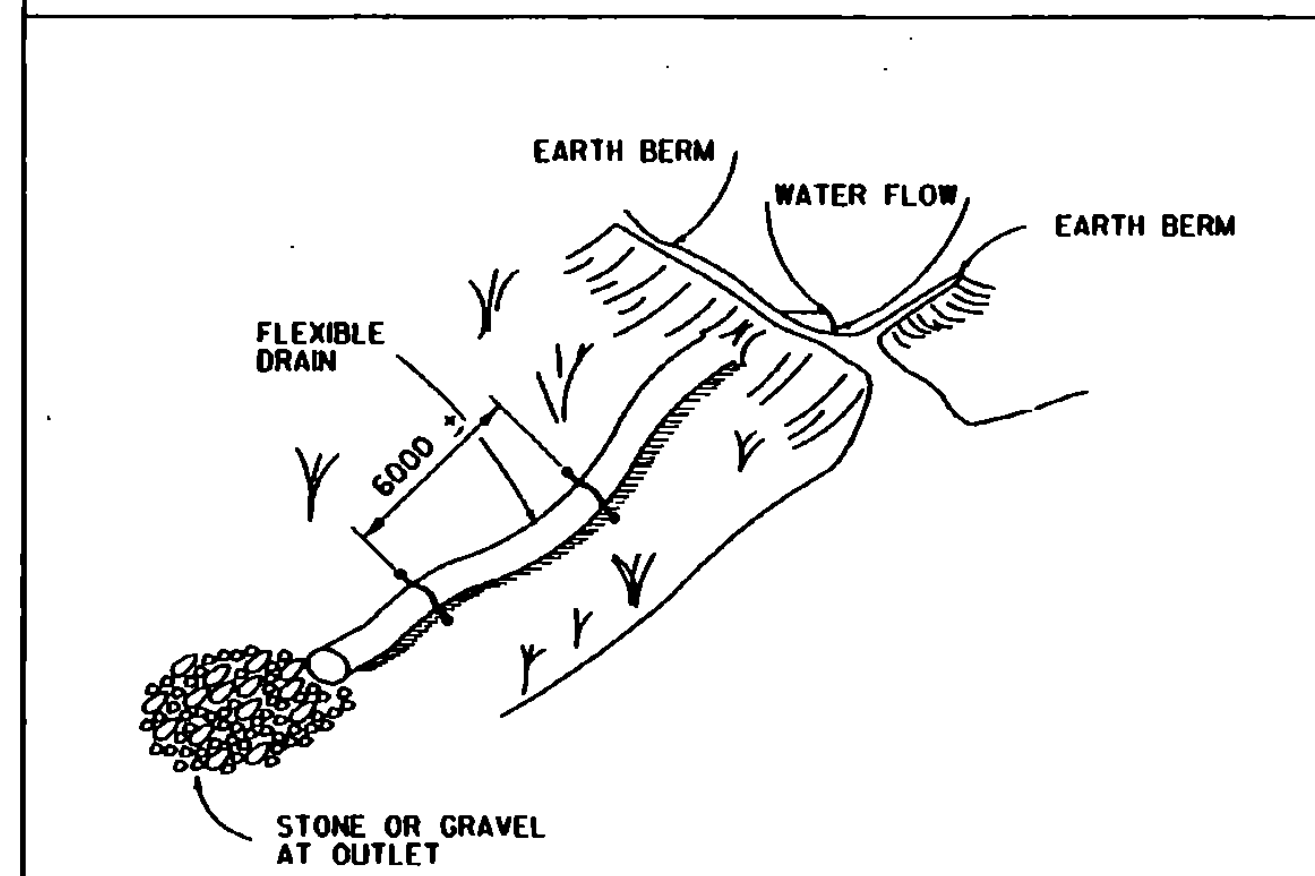
LARGE - PERMANENT INSTALLATION
PIPE RISER - STONE OUTLET
SMALL - TEMPORARY INSTALLATION
CORRUGATED METAL PIPE WITH RISER - STONE OUTLET
SEDIMENT DAMS



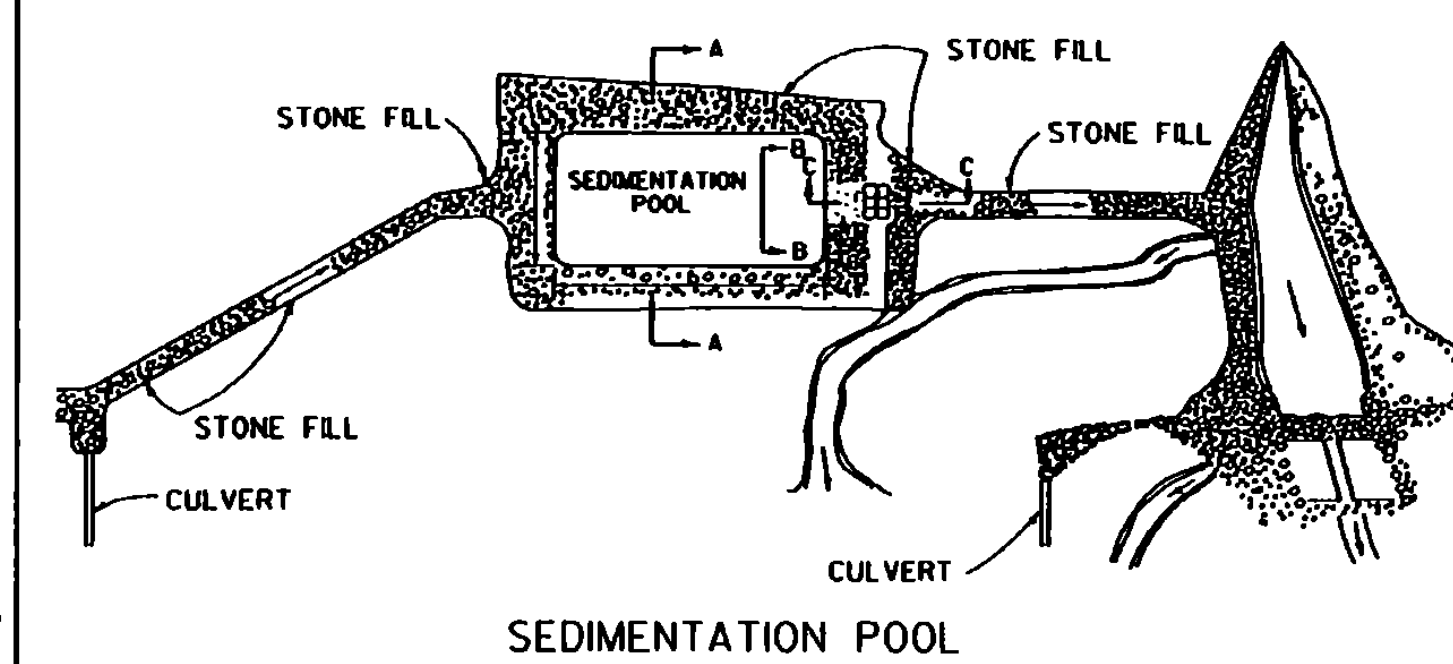
PLAN
TEMPORARY CONTROLS
CUT TO FILL SLOPE



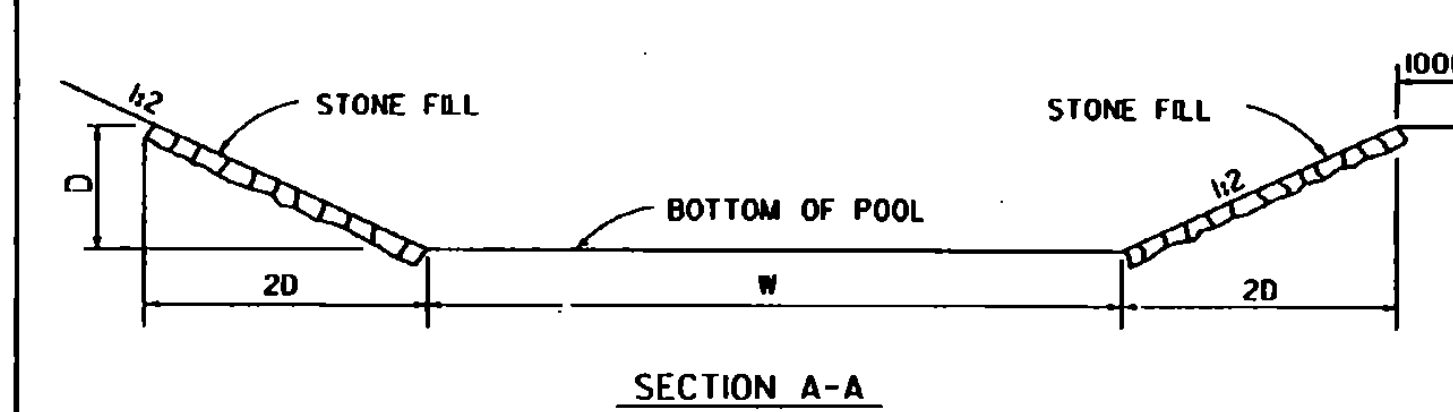
SECTION B-B
SECTION C-C
TEMPORARY BERMS AND SLOPE DRAINS
FOR FILL SLOPES



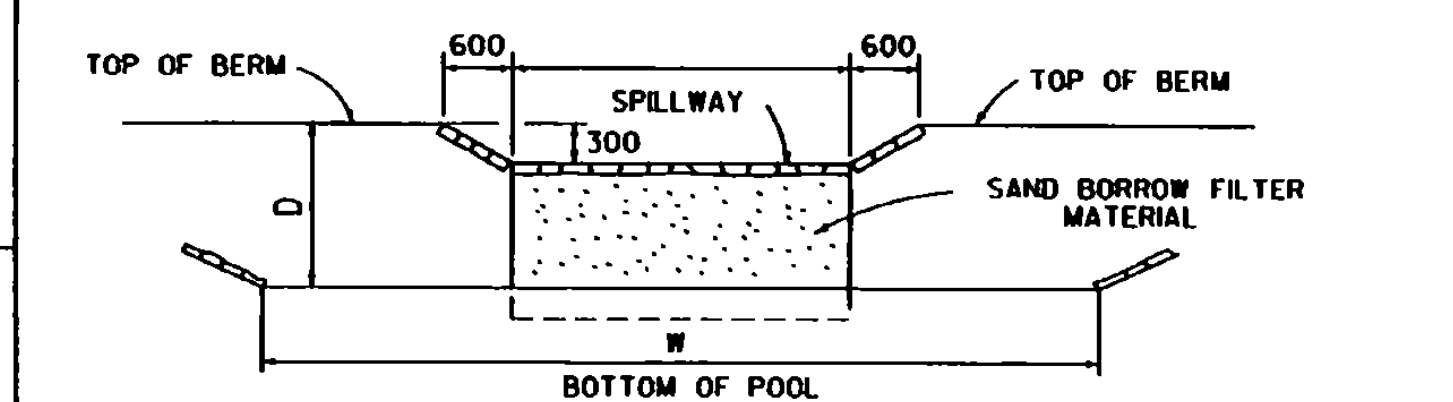
TEMPORARY FLEXIBLE SLOPE DRAIN



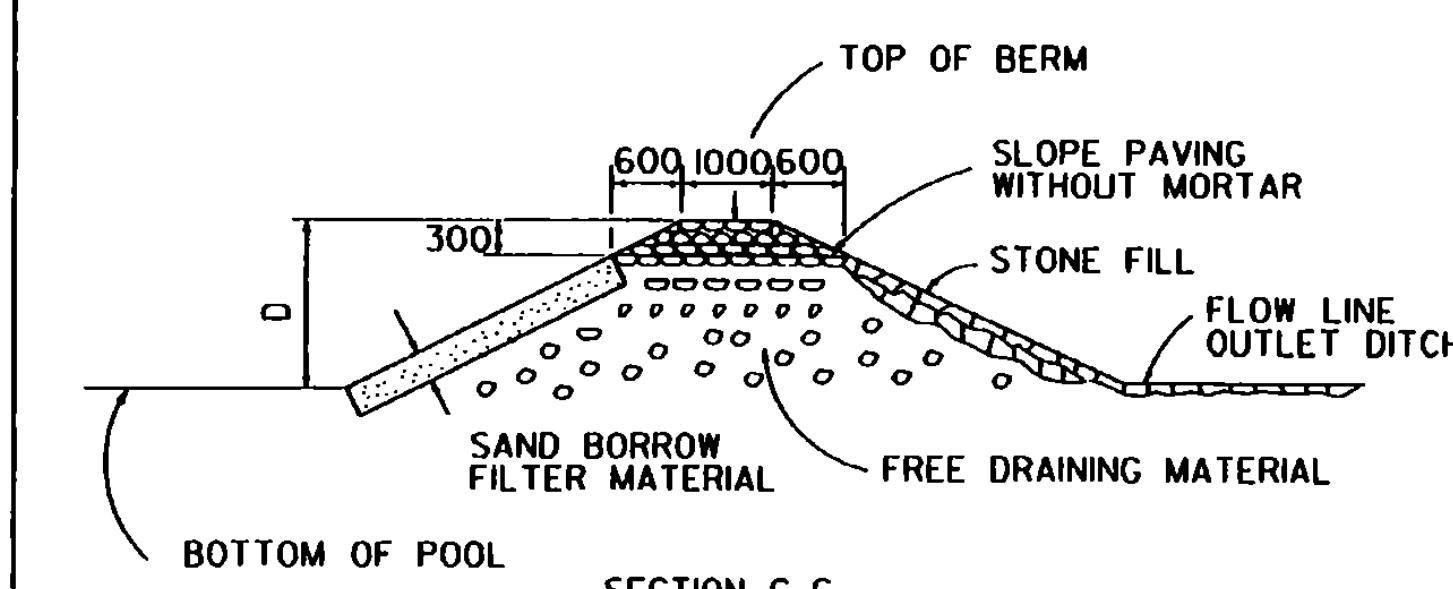
SEDIMENTATION POOL



SECTION A-A



DETAILS OF SPILLWAY TO BE DETERMINED BY HYDRAULIC SECTION.
SECTION B-B



SECTION C-C

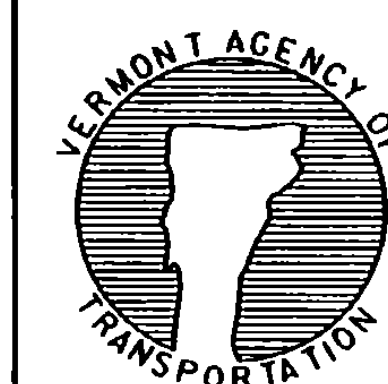
NOTE: ALL DIMENSIONS ARE IN MILLIMETERS (mm) EXCEPT WHERE NOTED.

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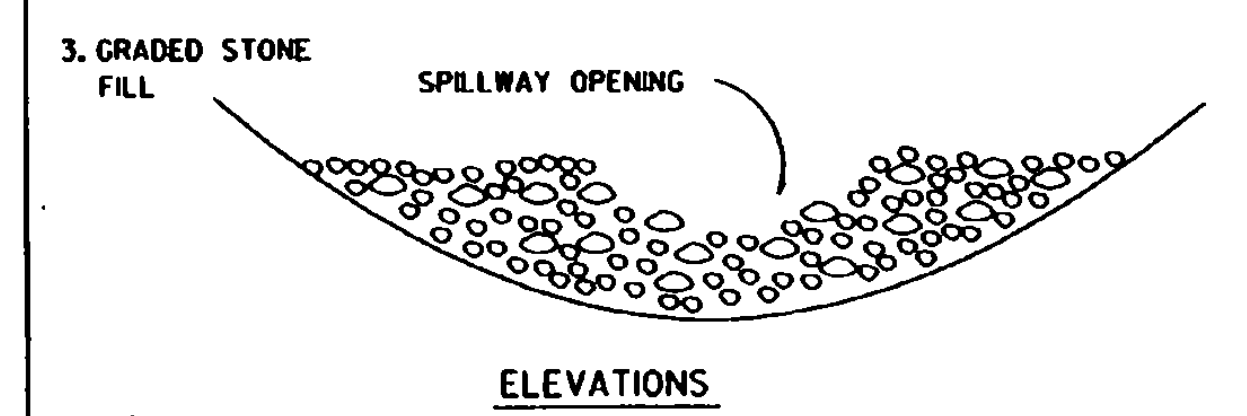
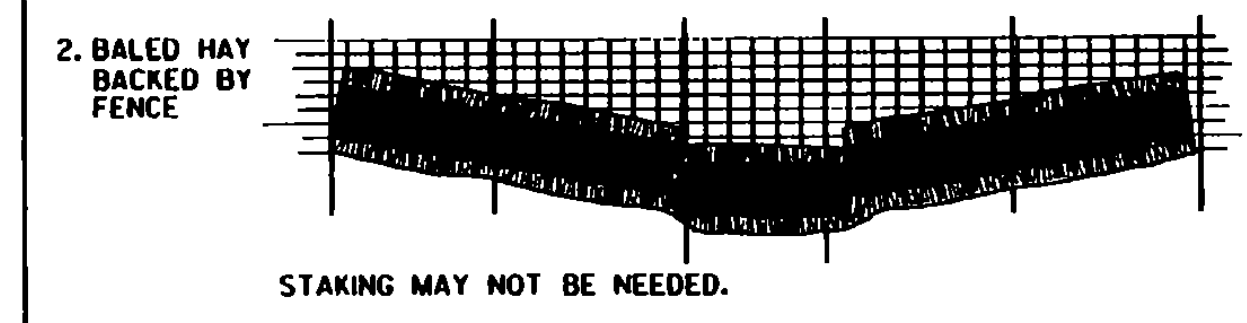
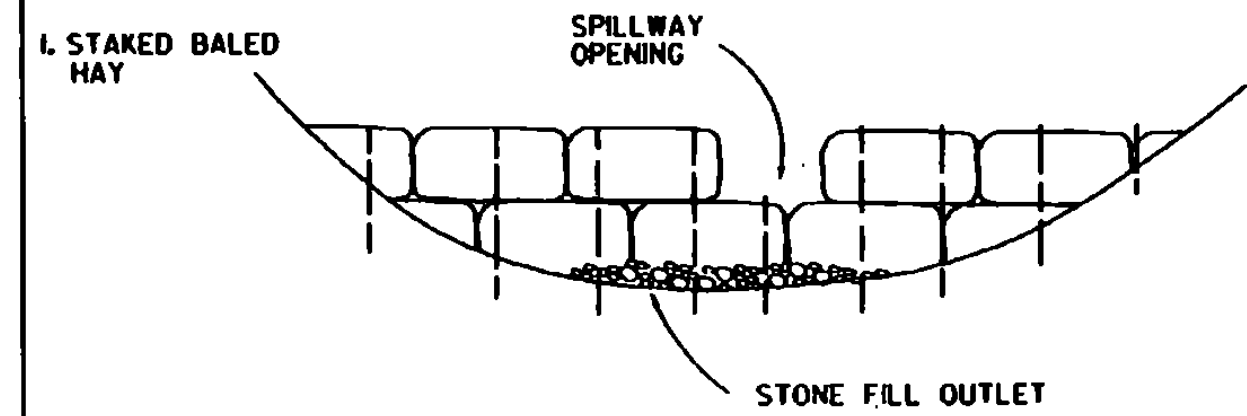
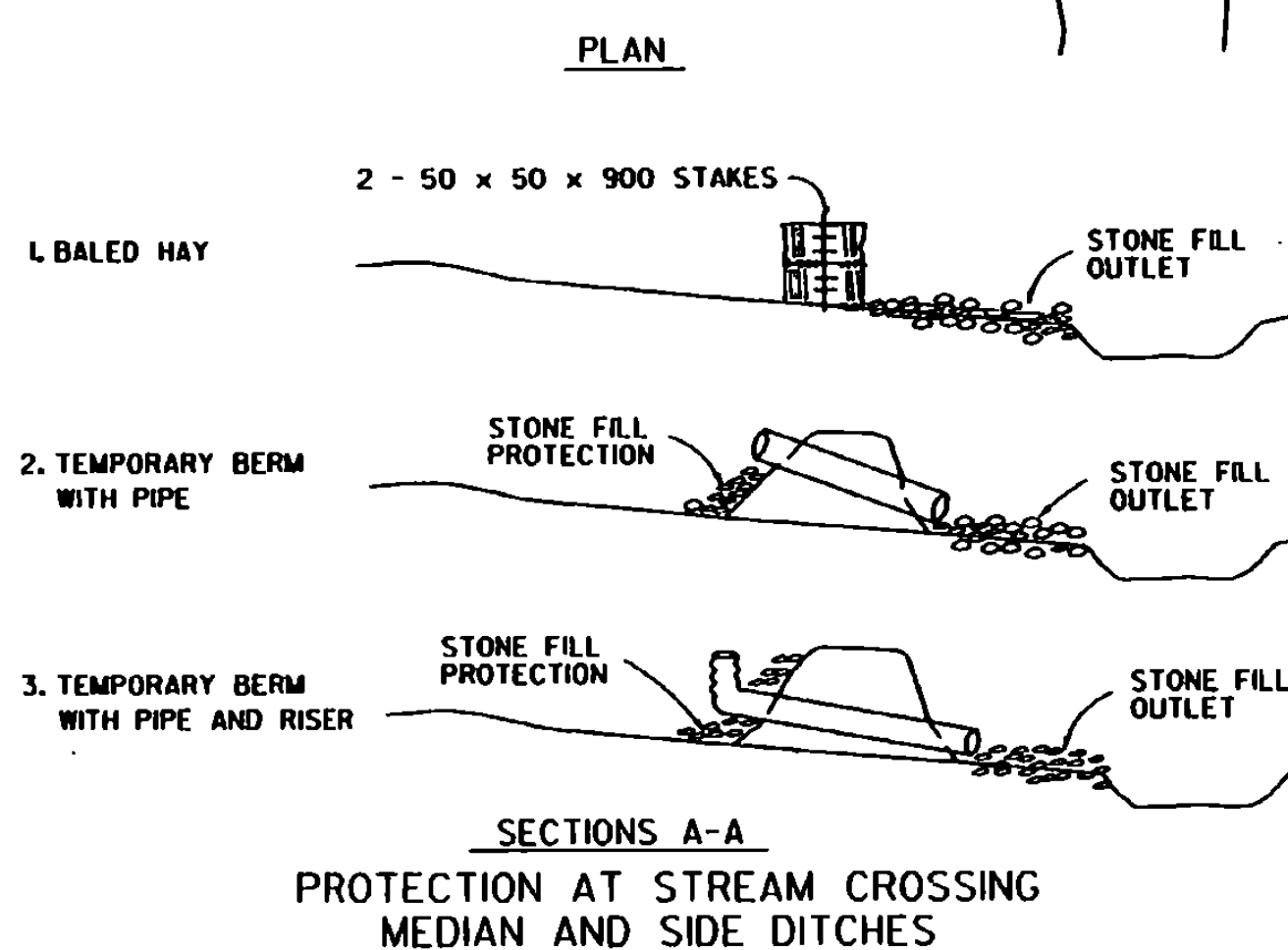
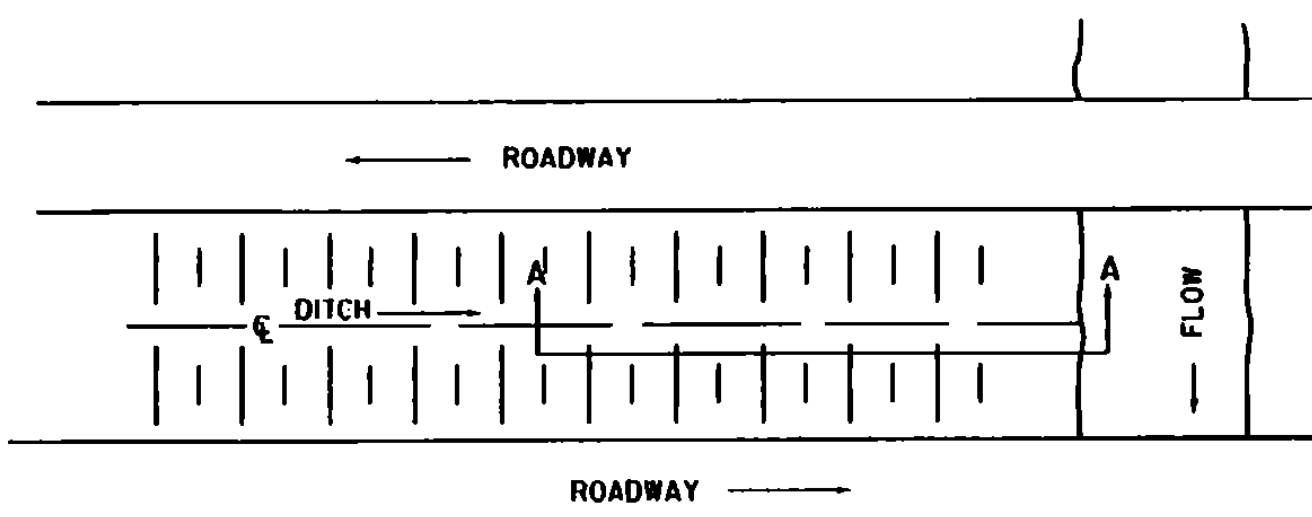
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TEMPORARY EROSION CONTROL DETAILS

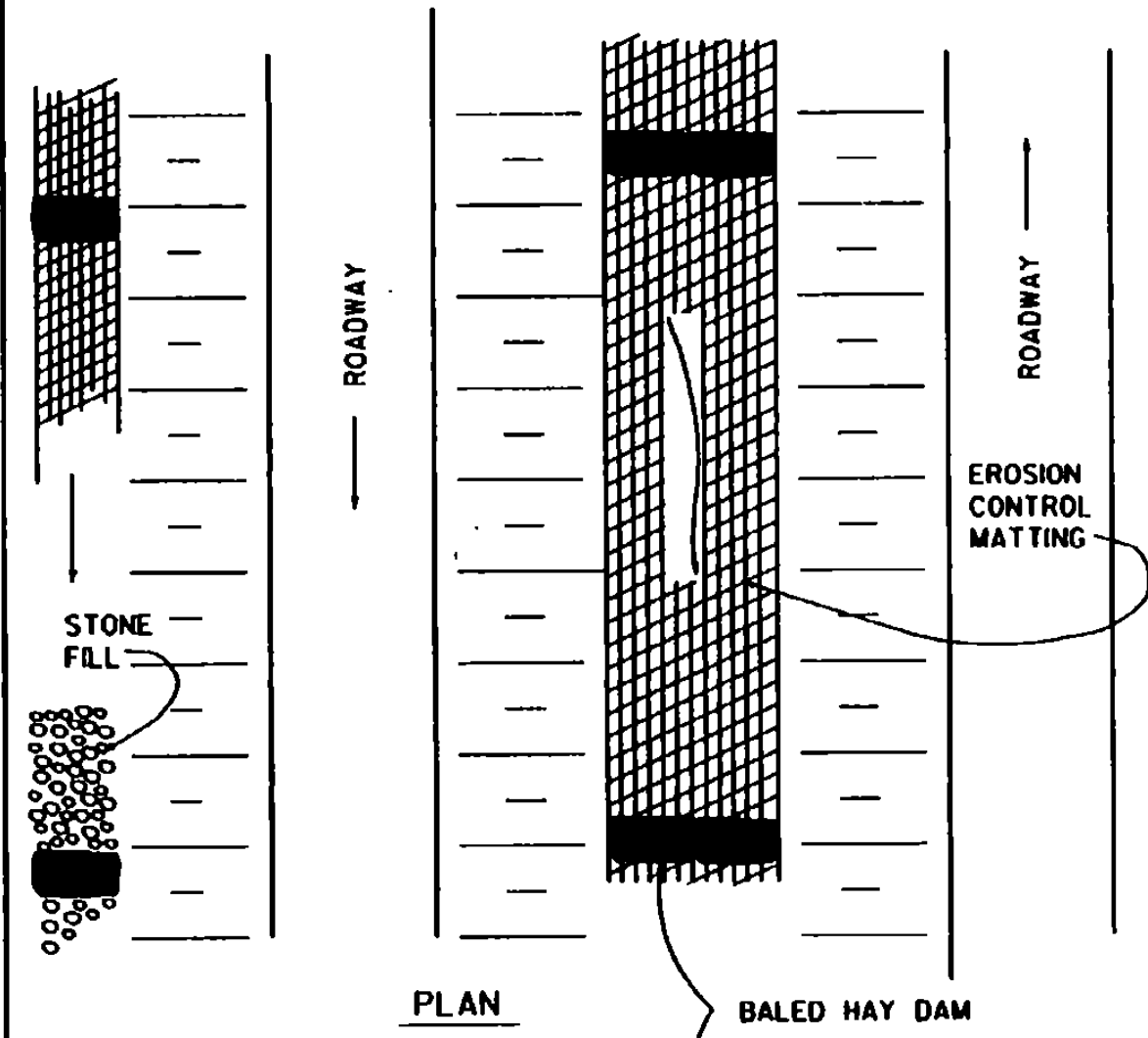


Metric
STANDARD
T-1M

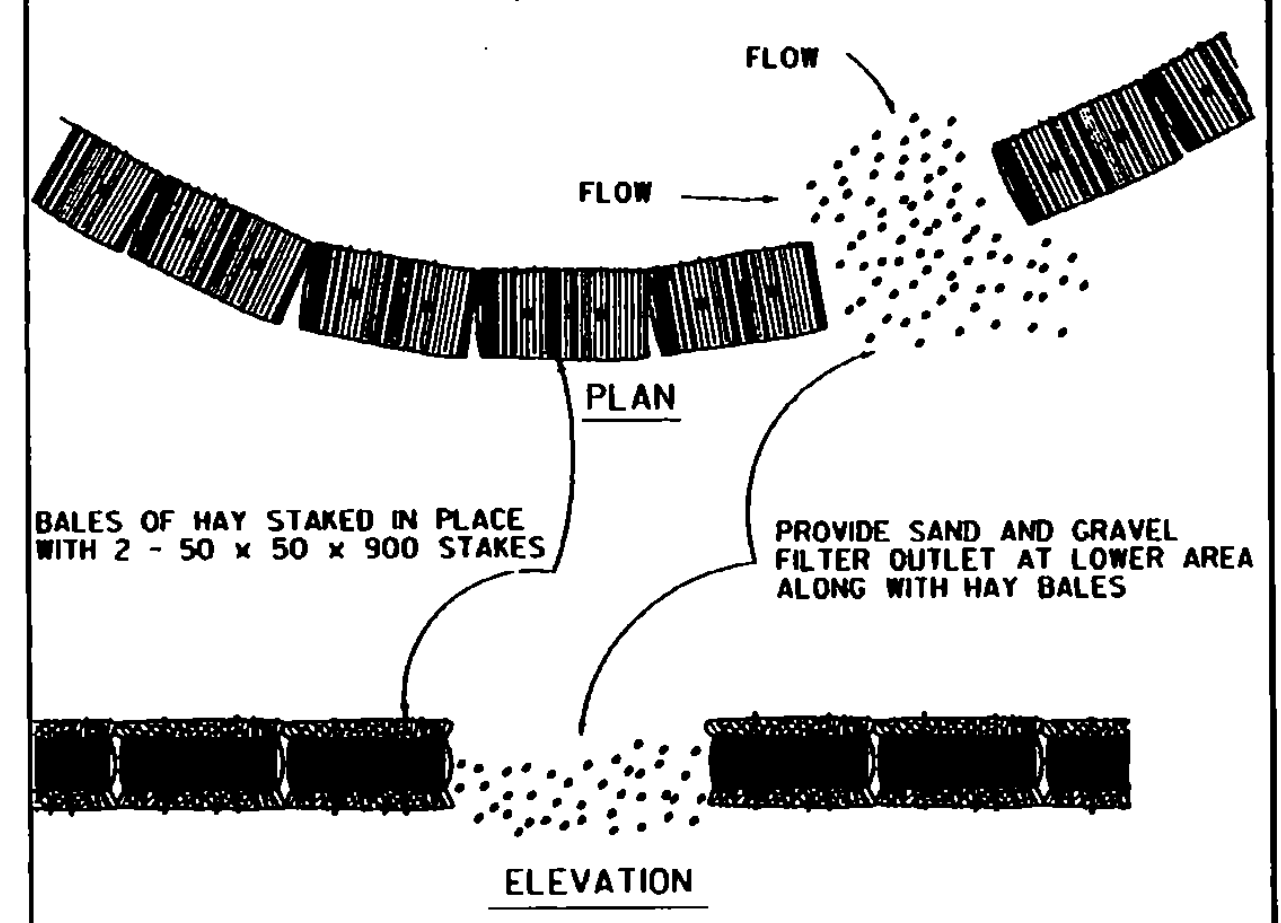


TYPES OF TEMPORARY DAMS

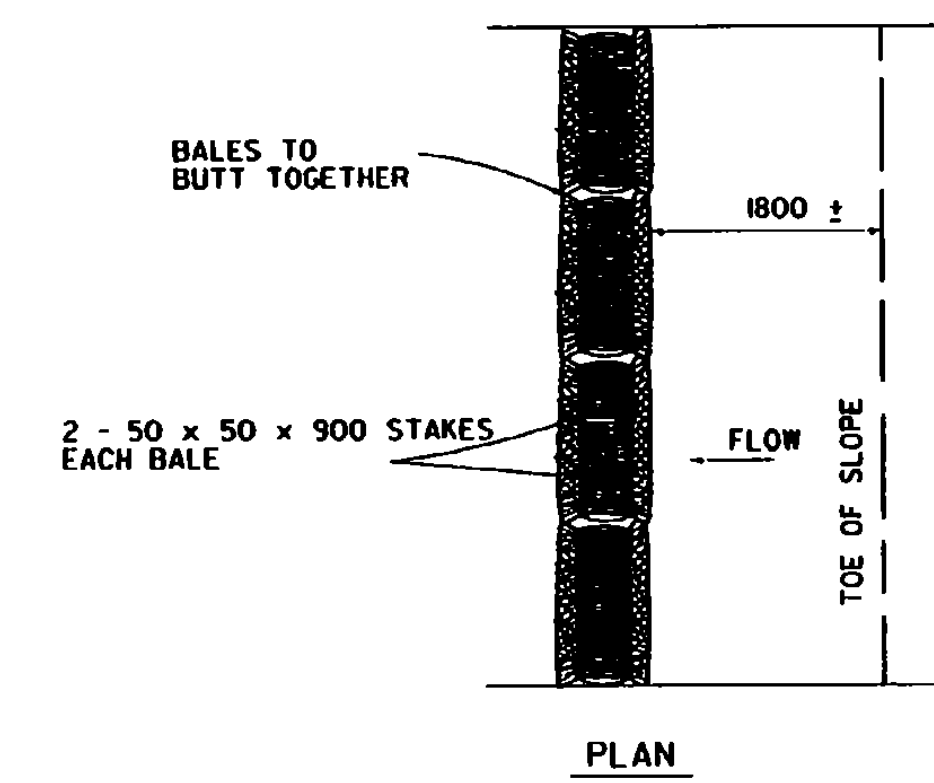
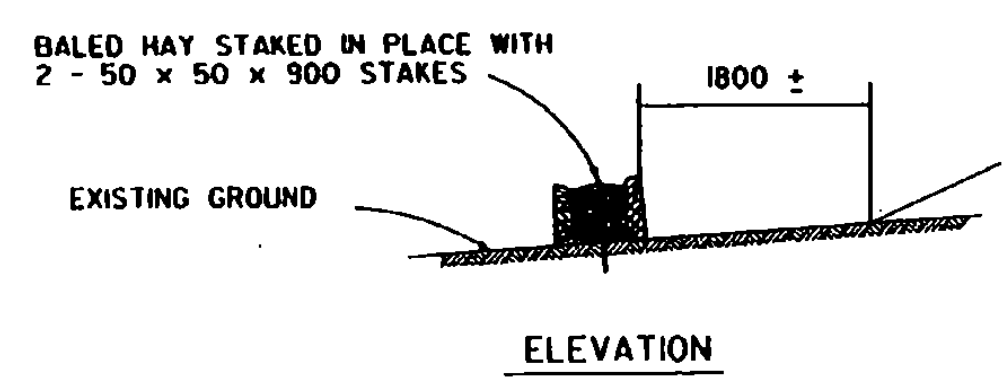
DAM SHOULD EXTEND FAR ENOUGH UP DITCH SIDE SLOPES TO EFFECTIVELY POND THE RUNOFF AND PREVENT EROSION AND WASHOUT.



BALED HAY DAMS USED IN DITCHES

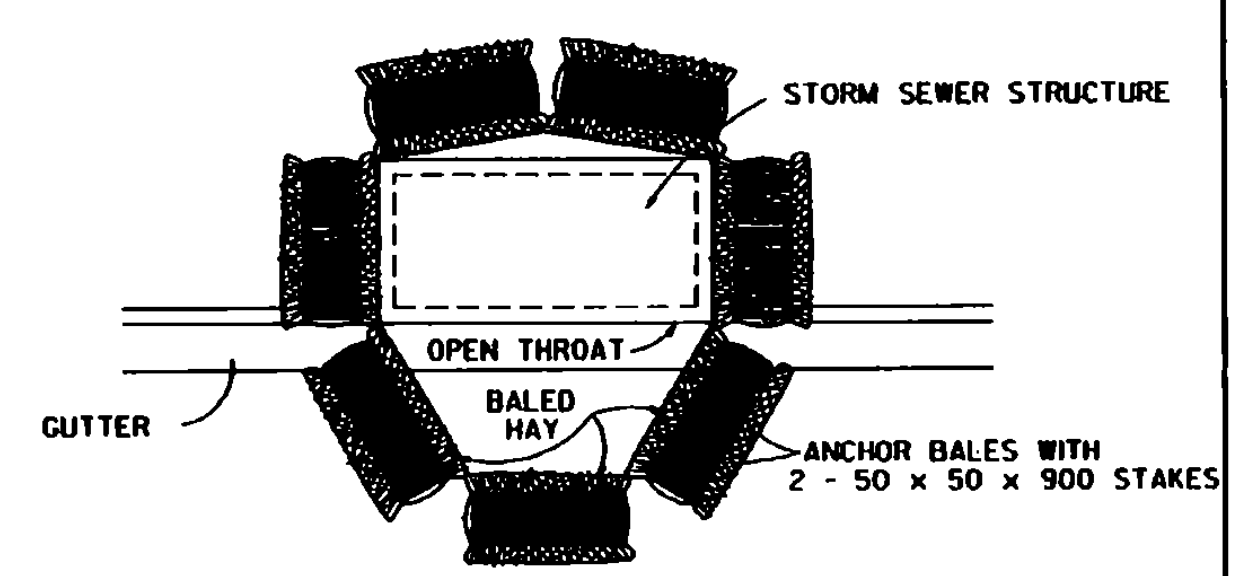
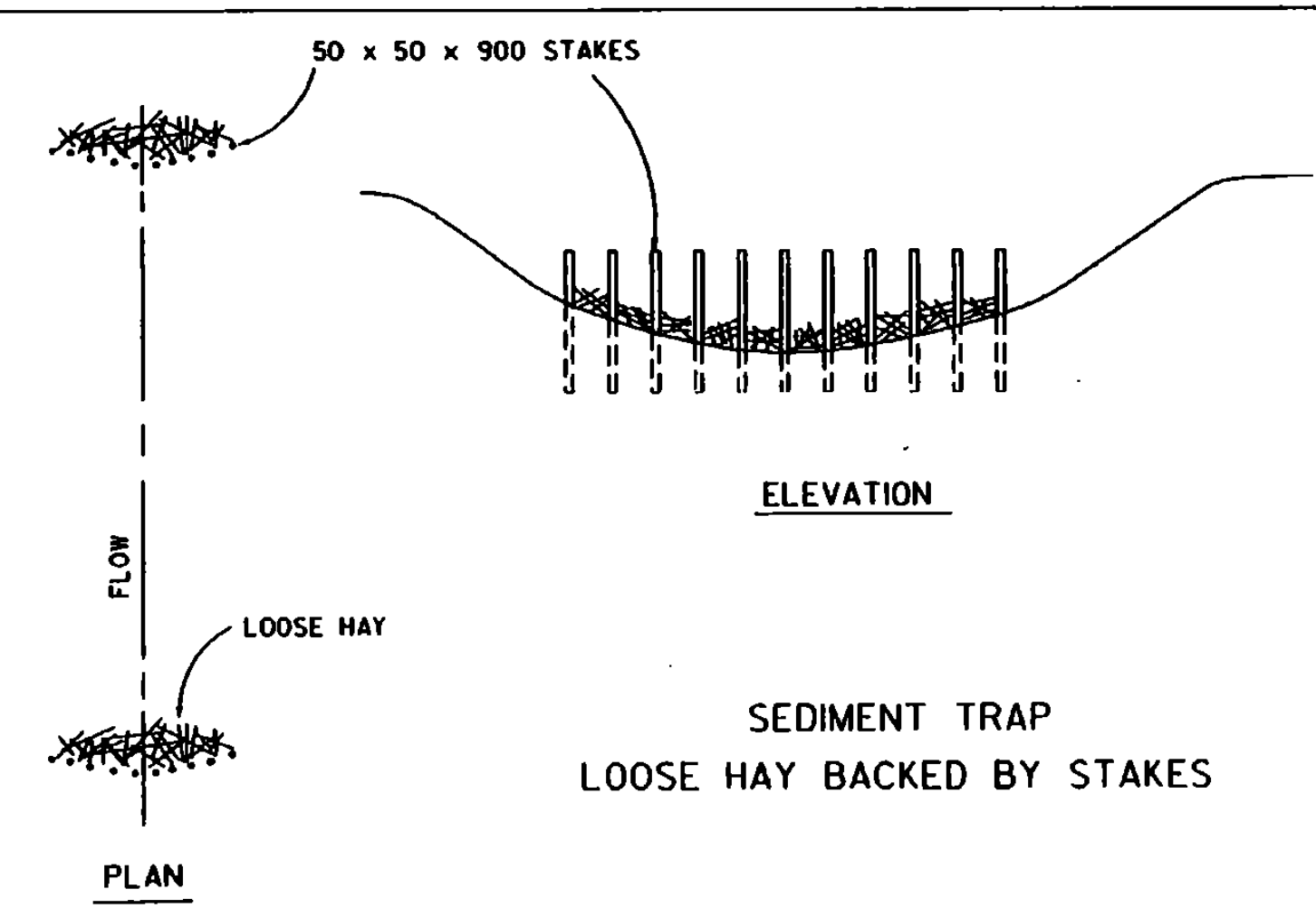


BALED HAY DAMS ALONG TOE OF SLOPE

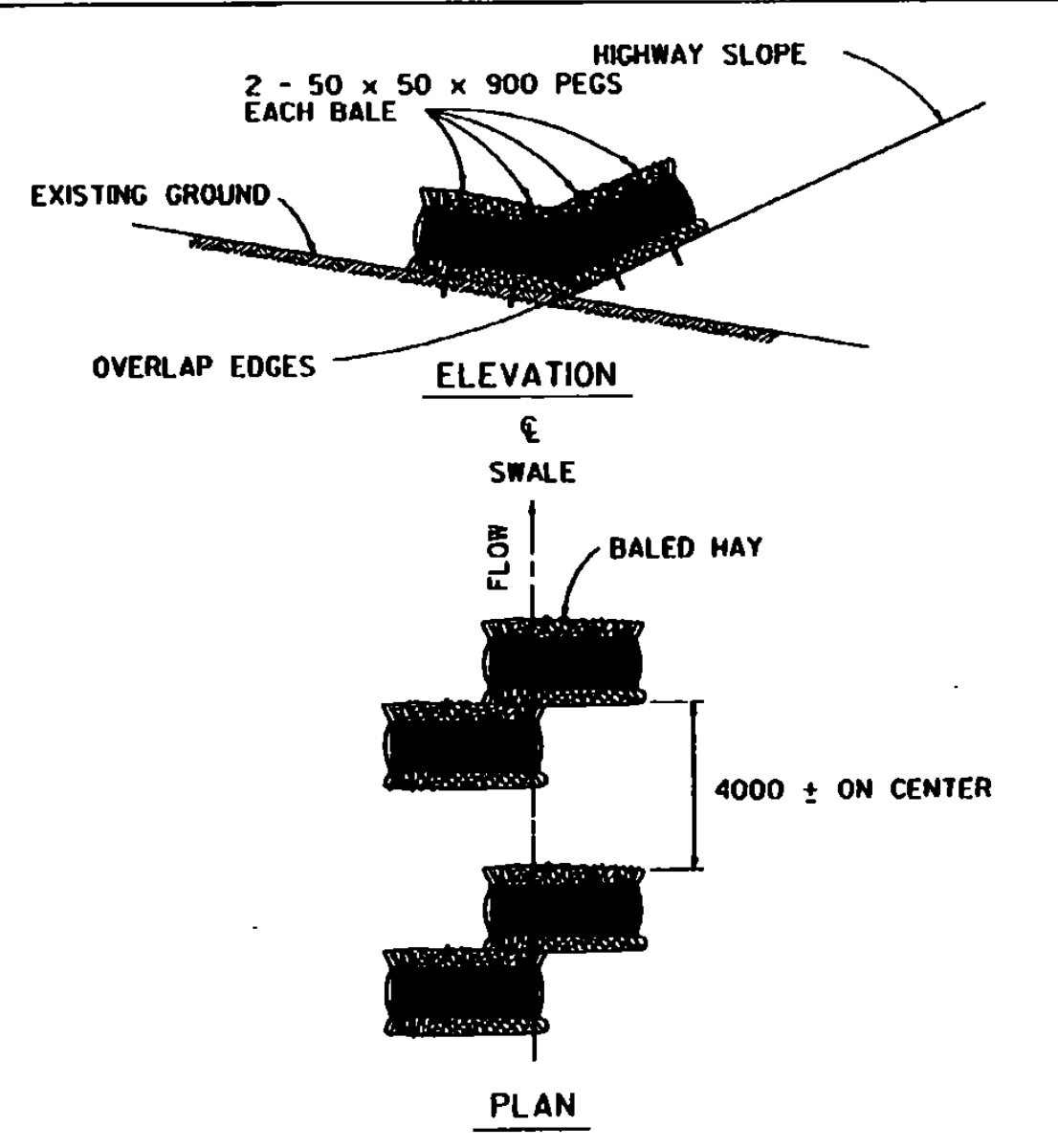


TO BE USED WHERE THE EXISTING GROUND SLOPES AWAY FROM THE HIGHWAY EMBANKMENT.

BALED HAY EROSION CHECKS



INLET PROTECTION
TEMPORARY BARRIER - HAY BALES



TO BE USED IN LOCATIONS WHERE THE EXISTING GROUND SLOPES IN TOWARD THE EMBANKMENT. BALES WILL BE ALLOWED TO ROT IN PLACE.

BALED HAY EROSION CHECKS

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

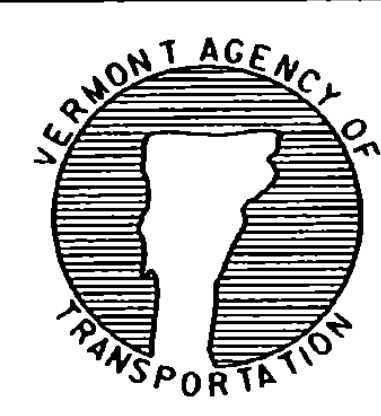
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TEMPORARY EROSION CONTROL DETAILS



Metric
STANDARD
T-2M